TITLE: OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE. PATENTS.

REEL NO: 1 Patents 4,794,652-4,802,241

VOLUME: 1098 Issues: 1-5

DATE: JANUARY 3 - 31, 1989

PUBLICATION NO: 10,426

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ISS
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Vol. 1098 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

VOL
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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
January 3, 1989 Volume 1098 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.50 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

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CONSOLIDATED LISTING OF OFFICIAL GAZETTE NOTICES RE PATENT AND TRADEMARK OFFICE PRACTICES AND PROCEDURES

PATENT NOTICES

The following is a compilation of the more important notices and rule changes which have been published in the Official Gazette from July 1, 1964, through December 31, 1988. These notices and rule changes are currently in effect unless otherwise noted.

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INFORMATION AND CORRESPONDENCE

(1) Official Patent Office Mailing Address Remains Washington, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

(Office name change per Public Law 93–596, Jan. 2, 1975)

[860 O.G. 662]

(2) Group Number on all Communications Going to the Examining Groups

Applicants and their attorneys or agents are reminded that the Group number should be typed on amendments and other communications relating to matters handled in the examining groups in order to expedite the processing of mail. The number of the Group should be placed on right-hand side, opposite the serial number or name of the applicant.

This reminder does not apply to notices and reasons of appeal to the United States Court of Appeals for the Federal Circuit. These communications should be sent to the Solicitor at the address below:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Attention to these details will improve the efficiency and reduce the time necessary to process incoming mail.

THERESA A. BRELSFORD,
Nov. 23, 1983. *Assistant Commissioner for Administration.*

[1037 OG 25]

(3) Mailing of Papers to the PTO in Patent Interference Proceedings

Effective immediately, attorneys and agents are requested to address all papers mailed to the Patent and Trademark Office in connection with an interference proceeding, and any patent or application involved in an interference proceeding, as follows:

BOX INTERFERENCE
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Use of this address will considerably assist the Board in its administration of patent interference proceedings.

DONALD J. QUIGG,
Nov. 28, 1983. *Deputy Commissioner of Patents and Trademarks.*

[1037 OG 25]

(4) Establishment of a Special Box for Expedited Processing of Issue Fees

Effective immediately, the Patent and Trademark Office has established a special box designator for issue fees to allow expedited processing of the Issue Fee Transmittal (PTOL Form 85), and the order for advance copies.

In order to take advantage of this new service, the envelope should be addressed:

Box Issue Fees
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Only the Issue Fee Transmittal (PTOL Form 85), advance copy orders and the fees associated with these two services are to be placed in the envelope. Including documents other than those specified will delay their reaching the area for which they were intended.

PLEASE USE THE NEW ISSUE FEE BOX.

THERESA A. BRELSFORD,
Mar. 4, 1988 *Assistant Commissioner for Administration.*

[1088 OG 41]

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(5) Establishment of Three Special Boxes for Expedited Processing

The Patent and Trademark Office has established three additional special boxes to allow expedited processing of non-fee amendments to patent applications, petitions for filing date and/or serial number information for patent applications, and issue fees.

In order to take advantage of these new expedited services, the envelope must be addressed:

For non-fee amendments to patent applications:

Box Non-Fee Amendments (Pats)
Commissioner of Patents and Trademarks
Washington, D.C. 20231

For petitions under 37 CFR 1.182 and associated fees for obtaining filing date and/or serial number information for patent applications prior to receipt of the official "Filing Receipt", "Notice to File Missing Parts", or "Notice of Incomplete Application".

Box SN
Commissioner of Patents and Trademarks
Washington, D.C. 20231

For Issue Fee Transmittals (PTOL Form 85) and associated fees and corrected drawings:

Box Issue Fees
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Only those documents specified for the special box are to be placed in the envelope addressed to that special box. Placing extraneous documents in an envelope marked for any special box will significantly delay their reaching the area for which they were intended.

THERESA A. BRELSFORD,
Mar. 22, 1988. *Assistant Commissioner for Administration.*

1089 OG 45

(6) Identification for Application Correspondence

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL–85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

(7) Identifying Application Correspondence With Issue Batch Number

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example; "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
Jan. 16, 1976. *Assistant Commissioner for Administration.*

[943 O.G. 519]

(8) Hand Delivery of Papers

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

[919 O.G. 1070]

(9) Post Card Receipt Reminder

Applicants and the agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

(10) Acknowledgement of Receipt of a Patent or Trademark Application

When early notification of the serial number of newly filed application papers is desired, a *stamped, self-adressed post card* should be submitted with each application. Immediately after the mail has been opened in the Patent and Trademark Office, the post card will be stamped with both the receipt date and the serial number, and then returned to the addressee.

Within recent months, hundreds of cards could not be successfully returned because of insufficient postage or incomplete or nonexistent forwarding addresses. Accurate and complete addresses, including ZIP codes, are necessary to ensure prompt acknowledgement of the receipt of patent and trademark applications.

To assist in easy identification once the post card has been returned, it is suggested that the post card include applicant's names and title of invention.

When more than one set of application papers is filed under one cover, a return post card should be attached to each set of papers for which a receipt is desired.

THERESA A. BRELSFORD,
July 19, 1982. *Acting Assistant Commissioner for Administration.*

[1021 O.G. 96]

(11) Inclusion of Preliminary Classification on Filing Receipts

In response to a request from a patent attorney, we will print the preliminary classification assigned to an application on the filing receipt. It will show the class only and will be labeled "PRELIMINARY CLASS:". The new field will appear on the filing receipt shortly. We will not accept requests to correct the filing receipt for errors in or changes to the preliminary class.

THERESA A. BRELSFORD,
Feb. 18, 1987. *Assistant Commissioner, for Administration.*

[1076 OG 25]

(12) Status Inquiries

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL–327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL–327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL–85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL–327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the *Official Gazette* are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

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In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

(13) **Change of Address**

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice or change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,
May 28, 1975. *Deputy Assistant Commissioner for Patents.*

[935 O.G. 1352]

(14) **Change of Address or Practitioner in a Plurality of Patent Applications**

Change of Address

This notice is supplemental to the Notice of May 28, 1975, 935 O.G. 1352.

In those instances where a change in the correspondence address of a registered attorney or agent is necessary in a plurality of applications, and the number of applications is such as to cause undue hardship, the notification filed in each application may be a reproduction of a properly executed, original notification. The original notice may be sent to the Office of the Solicitor as notification to the Attorney's Roster of the change of address, or may be filed in one of the applications affected, provided that the notice includes an authorization for the public to inspect and copy the original notice in the event one of the applications containing a copy matures into a patent and the application containing the original paper is either pending or has become abandoned. The copies submitted in each affected application must identify where the original paper is located. Otherwise, the practice governing the filing of notifications of change of address remains the same.

Powers of Attorney

In the event of a need to file a change in the power of attorney in a plurality of applications of a common assignee or inventive entity, and the number of applications is such as to cause undue hardship, a single, original paper may be used provided that a reproduction of this original paper is supplied in each of the affected applications. The copy of the original paper must identify in which application the original paper is located and authorize the public to inspect and copy the original paper in the event one of the applications containing a copy matures into a patent and the application containing the original paper is pending or has become abandoned. The procedures and usual prerequisites for the filing of grants and/or revocations or power of attorney otherwise remain the same.

WILLIAM FELDMAN,
Sept. 9, 1976. *Deputy Assistant Commissioner for Patents.*

[951 O.G. 454]

(15) **Express Mail**

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the *Official Gazette* of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
May 15, 1975. *Acting Assistant Commissioner for Administration.*

[936 O.G. 1554]

(16) **Certificate of Mailing Procedures**

On November 1, 1976, the Patent and Trademark Office instituted the Certificate of Mailing Procedure by promulgating 37 CFR 1.8 in an attempt to reduce the number of problems resulting from late receipt of responses due to mail delays. This notice was published in the *Official Gazette* on October 26, 1976 (951 O.G. 1342 and TM 210). Guidelines relative to this procedure were published in the *Official Gazette* on November 16, 1976 (952 O.G. 918 and TM 174).

Although the new procedure has gained wide acceptance, it has not been entirely without problems. One major problem involves the correlation of the certification with the appropriate papers when presented on a separate sheet. In order to curtail this problem and other minor ones, the guidelines published on November 16, 1976, are superseded by the following guidelines. They are applicable to responses in both patent and trademark matters, as permitted by 37 CFR 1.8.

Guidelines

A) The certification requires a signature. Specifically, if the certification appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification. Although not specifically required by 37 CFR 1.8, it is preferred that the certificate be signed by the applicant, assignee, or registered practitioner.

B) When possible, the certification should appear on a portion of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO–85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, the sheet must (1) be signed and (2) fully identify and be securely attached to the paper it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., responses to rejection or refusal, Notice of Appeal, etc. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

If the sheet should become detached from the paper and thereafter not associated with the appropriate file, evidence that this sheet was received in the Office can be supported by submitting a copy of a post card receipt specifically identifying this sheet and the paper and by submitting a copy of the sheet as originally mailed. Attention is directed to the notice of November 21, 1968 published in the *Official Gazette* (857 O.G. 667) relative to the use of post cards as receipts.

D) In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO–85 and an assignment), each paper must have its own certification as a part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a Notice of Appeal), each paper should have its own certification as a part thereof or attached thereto.

Use of Stamped Certification

Some practitioners are placing the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on _____
(Date of Deposit)

_____
Name of applicant, assignee, or
Registered Representative

_____
Signature

_____
Date of Signature

Interpretations

The phrase "prior to expiration of the set period" in 37 CFR 1.8(a) includes the last day of the set period, which last day may be the "next succeeding secular or business day" as set out in 35 U.S.C. 21. Also, the filing of a 37 CFR 3.54 form to effect a filing under 37 CFR 1.60 is considered the filing of an application and is, therefore, excluded from the Certificate of Mailing Procedure.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 20]

(17) **Change in Legal Holidays**

The Commissioner's Notice of Sept. 25, 1979, "Change in Legal Holidays," is hereby rescinded, in view of Public Law 98–144, enacted Nov. 2, 1983, which amended the listing of legal public holidays in 5 USC §6103. That amendment took effect in 1986 and added a new legal holiday relating to the birthday of Martin Luther King, Jr. This new holiday is designated for the third Mon. in Jan.

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Section 6103, as amended, reads as follows:
New Year's Day, Jan. 1.
Birthday of Martin Luther King, Jr., the third Mon. in Jan.
Washington's Birthday, the third Mon. in Feb.
Memorial Day, the last Mon. in May.
Independence Day, July 4.
Labor Day, the first Mon. in Sept.
Columbus Day, the second Mon. in Oct.
Veterans Day, Nov. 11.
Thanksgiving Day, the fourth Thurs. in Nov.
Christmas Day, Dec. 25.

Each of the holidays enumerated will constitute a "Federal holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code. In accordance with 37 CFR 1.6(a) and 1.10(a), the Patent and Trademark Office will not receive papers on these holidays. Actions required to be taken on such days may be taken on the next succeeding day that the Office is open for business in accordance with 37 CFR 1.7.

DONALD J. QUIGG,
July 15, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1069 OG 12]

(18) **Closing of Patent and Trademark Office on Monday, Jan. 26, 1987**

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on Jan. 26, 1987, the Patent and Trademark Office will consider Jan. 26, 1987, a "federal holiday within the District of Columbia" under 35 U.S.C. §21. Any action or fee due that day will be considered as timely for the purpose of, e.g., 35 U.S.C. §§119, 133 and 151, if the action is taken, or fee paid, on Jan. 27, 1987.

DONALD W. PETERSON,
Jan. 28, 1987. *Acting Assistant Secretary and Commissioner of Patents and Trademarks.*

[1075 OG 29]

(19) **Closing of Patent and Trademark Office on Monday, Feb. 23, 1987**

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on Feb. 23, 1987, the Patent and Trademark Office will consider Feb. 23, 1987, a "federal holiday within the District of Columbia" under 35 U.S.C. §21. Any action or fee due that day will be considered as timely for the purposes of, e.g., 35 U.S.C. §§119, 133 and 151, if the action is taken, or fee paid, on Feb. 24, 1987.

DONALD J. QUIGG,
Feb. 27, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1076 OG 68]

(20) **Filing of Papers During Unscheduled Closings of the Patent and Trademark Office**

When the Patent and Trademark Office is officially closed by Executive Order of the President or by the Office of Personnel Management for an entire day because of some unscheduled event, such as adverse weather conditions, the Patent and Trademark Office will consider that day as a "federal holiday within the District of Columbia" under 35 U.S.C. §21. Any action or fee due that day will be considered as timely for the purposes of, e.g., 35 U.S.C. §§119, 133 and 151, if the action is taken, or fee paid, on the next succeeding business day on which the Patent and Trademark Office is open.

When the Patent and Trademark Office is open for business during any part of a business day between 8:30 a.m. and 5:00 p.m., papers are due on that day even though the Office may be officially closed for some period of time during the business day because of an unscheduled event. The procedures of 37 CFR 1.8 or 1.10 may be used, as appropriate, for the filing of papers. On any day the Office is open for at least part of the day, papers may also be deposited up to midnight in any boxes which are provided by the Patent and Trademark Office under 37 CFR 1.6(c).

Information regarding whether or not the Office is officially closed on any particular day may be obtained by calling (703)-557-INFO.

DONALD J. QUIGG,
Nov. 18, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

1097 OG 53

(21) **Change in Drafting Practice**

Effective Apr. 12, 1982, the Patent and Trademark Office is terminating its drawing correction service.

In order to effect any changes in the drawings, applicants will be responsible for submitting either new drawings or having the drawings corrected by a bonded commercial draftsman, at applicant's expense, in the manner specified below. The new practice will permit applicants to delay correction of drawings in almost all cases until after the Notice of Allowance is mailed.

The initial list of bonded commercial draftsmen appears below. This list will be expanded as more commercial draftsmen are bonded. Applicants will, at least initially, be supplied with a current list of the bonded draftsmen with all Office actions requiring a drawing change.

The following is a letter which will be supplied, at least initially, to applicants in all Office actions requiring a drawing change. This letter explains the procedures for accomplishing the above, sets forth the time period within which the drawings must be corrected, and lists all of the currently bonded commercial draftsmen.

U.S.Department of Commerce, Patent and Trademark Office	Attachment to Paper Number
	Serial No.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities (Draftsman's objections on PTO–948)

In order to correct any informalities in the drawings, applicants *MUST* comply with options (a) or (b) below. Failure to do so will result in *ABANDONMENT* of the application.

a) File new drawings with the changes incorporated therein. Applicant may delay filing the new drawings until the application is allowed by the examiner. If delayed, the new drawings *MUST* be filed within the *THREE MONTH* statutory period set for payment of the base issue fee in the **"NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE"** (PTOL–85). Also, if delayed, the drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsman and which indicates the following in the upper right hand corner:

Date of the Notice of Allowance
Issue Batch Number
Serial Number

b) Request a commercial bonded drafting firm (see list below) to make the necessary corrections.

A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE* DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE IN THE "NOTICE OF ALLOWANCE AND BASE ISSUE FEE DUE" (PTOL–85). NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

2. Corrections other than Informalities Noted by the Draftsman on the PTO–948

All changes to the drawings, other than informalities noted by the Draftsman, *MUST* be made in the same manner as above except that, if delayed option (a) is selected, normally, a sketch of the changes to be incoroprated into the new drawings *MUST* be approved by the examiner before the application will be allowed. If option (b) is selected, normally, applicants must submit, in duplicate, a separate paper containing a sketch of the proposed changes before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

3. Listing of Bonded Draftsmen

Graphe-Tech
11301 Rockville Pike
Kensington, Md. 20895
(301) 881–9400

Ultra Graphics, Inc.
Suite 300
3720 Farragut Ave.
Kensington, Md. 20795
(301) 946–1343

Mantech International Corp.
4th Fl.
Alexandria, Va. 22301
(703) 548–3879

Ord-Marine Engineering
10315 Kensington Pkwy.
Kensington, Md. 20895
(301 949–3282

Patent Reproduction Co.
26 "N" St., S.E.
Washington, D.C. 20003
(202) 488–7096

National Graphic Center
205 W. Jefferson St.
Falls Church, Va. 22046
(703) 838–5793

Kirby Lithographic Co.
2900 South Eads St.
Arlington, Va. 22202
(703) 684–7600

Mil-R Production
2107 Mt. Vernon Ave.
Alexandria, Va. 22314
(703) 838–5793

Quinn Pat. Drwg. Service Co.
2021 Crystal Plaza Dr.
Arlington, Va. 22202
(703) 521–1650

Technical Illustrator
1911 Jeff. Davis Hwy.
Suite 600–CMI
P.O. Box 2627
Arlington, Va. 22202
(703) 920–8900

IT IS SUGGESTED THAT APPLICANTS DETACH THIS LETTER FROM THE OFFICE ACTION AND ATTACH IT TO THE FRONT OF APPLICANT'S FILE AS A REMINDER THAT, IN ORDER TO AVOID ABANDONMENT, A BONDED DRAFTSMAN MUST BE *AUTHORIZED, THE CORRECTIONS EXECUTED AND THE CORRECTED DRAWINGS RETURNED TO THE OFFICE,* OR NEW DRAWINGS SUBMITTED, DURING THE THREE MONTH STATUTORY PERIOD SET FOR PAYMENT OF THE BASE ISSUE FEE. NOTE THAT THE STATUTE DOES NOT PERMIT EXTENSION OF THE THREE MONTH PERIOD SET TO PAY THE BASE ISSUE FEE.

Currently there is a large backlog of applications pending before the Office draftsmen. Applicants whose applications are part of this backlog are strongly encouraged to have the necessary drawing corrections made by one of the bonded commercial draftsmen to expedite the issuance of their applications. If there has been authorization to charge a deposit account for these corrections, the authorization will not be processed. If a fee has been paid with cash, a refund will be processed.

The requirement of 37 CFR §§1.85, 1.86(b) and 1.123(a), specifying that drawings, or corrections to the drawings, may or must be made by the Office, is hereby waived.

GERALD J. MOSSINGHOFF,
Mar. 16, 1982. *Commissioner of Patents and Trademarks.*

[1017 O.G. 4]

(22) **Response to Drawing Requirements**

The "Change in Drafting Practice" announcement, made in Mar. 1982 (1017 O.G.4), indicated that corrections to drawings or formal drawings had to be filed within a three-month period set in a Notice of Allowance (Rev. 2–85).

Henceforth, the period for response for filing corrections to drawings or formal drawings will be set in the Notice of Allowability, PTOL–37.

For your information, the period for response is a shortened statutory period of three (3) months, which may be extended under the provisions of 37 CFR 1.136 (a). The three (3) month shortened statutory period is calculated from the "Date Mailed" indicated on the Notice of Allowability (Rev. 2–85).

JAMES E. DENNY,
Apr. 30, 1985. *Deputy Assistant Commissioner for Patents.*

[1055 OG 12]

(23) **Submission of Drawings**

As further clarification of the O.G. Notice of Oct. 29, 1985, drawings for patent applications do *not* need to be submitted on bristol board.

Since corrections are now the responsibility of applicants, it is more convenient for the original drawings to be kept in their possession. Copies only need to be supplied to the Patent and Trademark Office. Whether or not bristol board is used for the copies is the applicant's choice. However, the copies that are submitted to the Office must be on strong, white, smooth, and non-shiny paper. High quality copies are necessary not only for the patent examination process, but for printing purposes.

If corrections are necessary, they should be made to the original drawings. Either a good copy of the corrected drawings or the corrected original can then be submitted after the Notice of Allowability is mailed.

We will be revising 37 CFR to clarify the requirements for drawing submissions.

This change is being made for the convenience of applicants and attorneys.

THERESA A. BRELSFORD,
Nov. 25, 1985. *Assistant Commissioner, for Administration.*

[1061 OG 12]

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(24) **Discontinuation of Drawing Comparison Fee**

The Patent and Trademark Office no longer requires a $10 (ten dollar) comparison fee payment with the submission of formal sheets of drawings to replace originally filed informal drawings. Accordingly, no fee should be submitted, and all existing requirements for a drawing comparison fee are hereby rescinded.

THERESA A. BRELSFORD,
June 9, 1982. *Acting Assistant Commissioner for Administration.*

[1020 O.G. 10]

(25) **New Patent Drawing Correction Procedures**

Drawings charged out from the Patent and Trademark Office, for the purpose of making changes or corrections, will be released from the Drafting Branch after the mailing of the Notice of Allowance. Most drawings should be available for charge out one week to ten days after the Notice of Allowance mail date. The major exception to this procedure will be when the examiner requires that drafting corrections be made prior to the Notice of Allowance issuance. We anticipate that this exception requirement will occur only for Design applications being appealed.

Unless a duplicate copy of the Drafting Letter has been filed by the attorney/applicant, the Office will not normally provide the commercial bonded draftsman with copies of either examiner approved drawing correction letters or a copy of the Patent and Trademark Office draftsman's noted informalities. It is the applicant's responsibility to provide copies of the necessary drawing corrections and the noted informalities. When drawings are borrowed from the Office draftsman, the serial number, batch number, and Notice of Allowance mailing date should be identified.

If for any reason a corrected and/or substitute drawing is not acceptable, a letter will be sent to the attorney/applicant. A bonded commercial draftsman must present a copy of this letter in order to borrow the unacceptable drawings.

THERESA A. BRELSFORD,
June 28, 1982. *Acting Assistant Commissioner for Administration.*

[1020 O.G. 18]

(26) **Listing of Commercial Bonded Draftsmen**

The following listing of bonded draftsmen supersedes the listing published on Sept. 24, 1985 at 1058 O.G. 27.

John A. Ballard
2001 Jefferson Davis Hwy.
Suite 705, Crystal Plz. 1
Arlington, Va. 22202
(703) 685–7228

Anthony L. Costantino
17300 Lafayette Dr.
Olney, Md. 20832
(301) 924–3491

Robert MacCollum
Patent Drafting Services
13108 Engelwood Dr.
Silver Spring, Md. 20904
(301) 622–3940

Mason, Fenwick and Lawrence
1730 Rhode Island Ave., NW.
Washington, D.C. 20036
(202) 293–2010

Mil-R Productions
3110 Mt. Vernon Ave.
Suite 100
Alexandria, Va. 22305
(703) 548–3879

Gerald M. Murphy
P.O. Box 2098
Eads St. Station
Arlington, Va. 22202

Suzanne Nahmias
P.O. Box 9252
Arlington, Va. 22209
(703) 528–8157

Oliver Patent Drafting Service
1205 Darlington St.
Forestville, Md. 20747
(301) 336–0351

Patent Reproduction Co.
26 N St., SE.
Washington, D.C. 20003
(202) 488–7096

Quality Patent Printing
P.O. Box 2404
556 S. 22nd St.
Arlington, Va. 22202
(703) 892–6212

Quinn Patent Drawing Services
1416 Duke St.
Alexandria, Va. 22134
(703) 548–3766

Karen L. Robertson
P.O. Box 2128
Eads St. Station
Arlington, Va. 22202

Philip Sweet T/A and For Oblon
Fisher, Spivak, et al., P.C.
1755 S. Jefferson Davis Hwy.
Crystal Square Five
Suite 400
Arlington, Va. 22202
(703) 521–5940

TEM Patent Drafting
P.O. Box 15809
Arlington, Va. 22215

Publication of this list does not constitute a recommendation or endorsement of any individual or firm by the Patent and Trademark Office. All arrangements for drafting related services are the sole responsibility of users of such services.

THERESA A. BRELSFORD,
Mar. 11, 1987. *Assistant Commissioner for Administration.*

[1077 OG 4]

(27) **Submission of Corrected Drawings in Allowed Applications**

When drawings need to be corrected in an allowed application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.

THERESA A. BRELSFORD,
Jan. 14, 1985. *Assistant Commissioner for Administration.*

[1051 OG 3]

(28) **Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities and Enforcement Procedures**

Agency: Patent and Trademark Office, Department of Commerce
Action: Notice
Summary: The Patent and Trademark Office is revising its regulations relating to use of Patent and Trademark Office records or search facilities and procedures for enforcing these regulations. These regulations and their enforcement are necessary to promote an atmosphere conducive to research and to maintain the integrity of the files and records in the Patent and Trademark Office.
Effective Date: July 1, 1987
For Further Information Contact: Theresa A. Brelsford, Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557–2290.
Supplementary Information: The procedures will apply to all visitors to the Patent and Trademark Office.

Visitors are reminded that unauthorized removal of government material or property may be prosecuted as a criminal felony under the provisions of 18 U.S.C. 2071, in addition to the imposition of administrative sanctions contained in these procedures.

Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities

These regulations are established for all persons using the facilities of the Patent and Trademark Office (PTO), and will be appropriately enforced as specified herein.

Smoking within PTO is prohibited except in designated areas (41 CFR 101–20.109–10).

All persons using the facilities of the PTO are subject to regulations governing conduct on property under the charge of the General Services Administration which appear in 41 CFR Subpart 101–20.3 (41 CFR §§101–20.300 through 101–20.315).

Packages, briefcases and other personal effects brought into the PTO, as well as storage lockers provided for general use, are subject to search by authorized personnel for reasonable cause under the provisions of 41 CFR 101–20.301.

Unauthorized removal of PTO files, documents, reference materials, or any government property is prohibited. In addition to the administrative sanctions specified in these regulations, violators may also be subject to arrest and prosecution under the provisions of 18 U.S.C. 2071 which carries a possible "fine of $2,000 or imprisonment for not more than three years, or both", and/or the violator may be subject to discipline under the PTO Code of Professional Responsibility if he or she is a practitioner as defined in 37 CFR 10.1(r).

All persons must comply with posted Official Notices and with verbal requests made by PTO personnel for compliance with these regulations.

1. User Passes
   a. Individuals visiting any area of the PTO must obtain a valid, non-transferable user pass and wear it visibly displayed at all times while on the premises.
   b. Permanent User Passes may be obtained from the Manager of the Patent Public Search Room. The first Permanent User Pass is issued at no charge. Permanent User Passes subsequently issued as replacements will be provided at a charge of $5.00 per Pass. The holder of a Permanent User Pass may be issued one (1) Temporary User Pass, within a ninety (90) day period at no charge. A request for a second Temporary User Pass during the same ninety day period will require the purchase of a Permanent User Pass at the required replacement fee.
   c. Temporary User Passes may be obtained by visitors at no charge from the managers of the Patent or Trademark Public Search Rooms and are valid through the expiration date stamped thereon.
   d. Permanent and Temporary User Passes must be surrendered to the PTO upon request for cause.

2. Use of Search Areas
   a. The Patent and Trademark Office facilities may be used by visitors only during the hours specified, Monday through Friday, and are closed to the public on Saturdays, Sundays and Legal Holidays:

Patent Public Search Rm., Mezzanine and Microfilm Center	8:00 a.m.—8:00 p.m.*
Trademark Public Search Rm.	8:00 a.m.—5:30 p.m.*
Assignment Search Rm., Public Service Center, and Scientific Library	8:30 a.m.—5:00 p.m.*
Patent Examining Organizations, Trademark Examining Law Offices and all other public access areas of the PTO	8:30 a.m.—5:00 p.m.*

* Clearing of these areas would begin prior to this time to ensure all visitors are out of the building by the time designated.

   b. Materials available for search purposes in the Patent and Assignment Search Rooms and patent application file histories shall not be removed from those areas.
   c. Trademark registrations in the Trademark Search Library shall not be removed from the secured bundles in the registered file. Photocopying from bound volumes of trademarks is prohibited.
   d. Trademark files shall not be removed from PTO space in Crystal Plz. Bldg. 2.
   e. Use of Patent Examining Group search areas is strictly limited to searching materials unavailable in the Patent Public Search Room or the Scientific Library. Examining Group search areas may be used only when such use does not conflict with the regular business of the organization.
   f. Visitors to a Patent Examining Group Search Area must register with the designated Group Search Area representative indicating the times entering and leaving the area, User Pass number, and the class(es) and subclass(es) to be searched.
   g. Documents removed from the files of Patent Examining Group search areas must be immediately returned to their proper location after use. Documents shall not be removed from the area in which they were obtained without specific written authorization from a Group Director or Supervisory Patent Examiner in the Examining Group where the material(s) reside. Such authorization will not be given for U.S. Patents and other material readily available through the Scientific Library.

3. PROHIBITIONS
The following are prohibited:

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a. Conduct which is rude or abusive to PTO employees or others.
b. Smoking and consumption of food or beverages in other than designated areas.
c. Loud talking or any conduct which may be disruptive to others.
d. Use of radios, televisions, typewriters, photographic equipment, dictation equipment and other mechanical, electrical or electronic items without specific authorization from an Assistant Commissioner of the PTO.
e. Improper use, mutilation, destruction or unauthorized removal of PTO records, documents or government property.
f. Reserving seats or work areas.
g. Affixing messages to walls, telephone booths or other government property, except designated message boards.
h. Use of the PTO as a mailing address, use of PTO stationery, and use of PTO emblem or seal.
i. Use of PTO telephones and other office equipment, such as copiers, etc., except where specifically provided for public use. This includes the use of PTO telephones to receive incoming calls.
j. Use of any computer terminal other than the TRAM terminals provided for public use in the Trademark Search Library, and the CASPIR and FOUR-PHASE terminals (or CASSIS terminal if the FOUR-PHASE terminals are not operating) provided in th Patent Public Search Room for public use.
k. Placing PTO files or documents, government property or government owned reference materials in rental storage lockers.
l. Use of rental storage lockers without depositing the required fee or holding the key to a storage locker beyond the specified maximum period of use.

Procedures for Enforcement of the Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities

Under applicable statutes and regulations, including 40 U.S.C. 486(c), 41 CFR 101–20.3, and appropriate sections of Department Organization Orders 10–14 and 30–3 of the Department of Commerce, the procedures appearing below are established.

1. Violations involving unauthorized removal of PTO files, documents, records or government property.
   a. Each observed or reported violation will be investigated.
   b. Persons found in possession of PTO material or government property, other than in areas or under circumstances where possession is specifically authorized, shall be required to immediately surrender the material or property and if appropriate, their User Pass. An oral explanation for the possession of such material or property will be requested by the PTO.
   c. Each incident involving unauthorized possession of PTO material or government property shall be immediately reported by telephone or in person to the Office or Group Director of the area from which the material or property was taken.
   d. If it appears to the Office or Group Director that possession of the materials was inadvertent or otherwise unintentional, no further action will be taken. The materials will be replaced appropriately and the person's User Pass will be returned.
   e. If it appears to the Office or Group Director that possession of the materials was intentional, all persons involved shall be required to submit written statements detailing the circumstances and, in the case of a PTO User/visitor, show cause why the User Pass and visitor privileges should not be suspended or revoked. Statements will also be obtained from other witnesses where appropriate. The material or property shall be secured for possible use as evidence by the Office or Group Director, if appropriate.
   f. If the involved person possesses a Permanent User Pass, it shall be retained and forwarded with the written statements to the Assistant Commissioner for Administration. A Temporary User Pass may be issued as replacement by the Assistant Commissioner for Administration, pending action on an alleged violation.
   g. If the involved person possesses only a Temporary User Pass it shall be retained and forwarded with the written statements to the Assistant Commissioner for Administration within two weeks of the incident. No replacement will be provided pending action by the Assistant Commissioner for Administration.

2. Other violations of public use regulations.
   a. Each observed or reported violation will be investigated. The persons involved shall be informed of the nature of the violation and requested to comply with regulations.
   b. If it appears that the violation was inadvertent or otherwise unintentional and the involved person immediately conforms to the regulations, no further action will be taken.
   c. If the violation appears to be intentional or if the person involved refuses to comply with a verbal request from a PTO employee or continues to violate the regulations after being requested to comply, the person shall be required to surrender his or her User Pass to the PTO. A written report of each violation and the User Pass will be submitted to the Assistant Commissioner for Administration for a final decision. User Pass replacement procedures shall be as specified in paragraphs 1.f. or 1.g.
   d. If the Assistant Commissioner for Administration determines that a reported violation was inadvertent or otherwise not intentional, the User Pass will be returned and no further action will be taken. In all other cases, the Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass and visitor privileges should not be suspended or revoked.
   e. A written decision will be rendered by the Assistant Commissioner for Administration after consideration of any timely submitted response.
   f. In the case of a written decision by the Assistant Commissioner for Administration adverse to a practitioner as defined by 37 CFR 10.1(r), a copy of the written decision will be forwarded to the Director of the Office of Enrollment and Discipline for whatever further action, including sanctions, as may be appropriate under the PTO Code of Professional Responsibility.

3. Factors to be Considered in Assessing Penalties.
   a. Penalties will be determined on a case by case basis.
   b. Prior violations of regulations will be considered when assessing whether any violation is willful, deliberate or intentional, and when determining the penalty to be imposed.
   c. Penalties may be assessed as follows, depending on circumstances:
      (1) For a first offense: from a written warning to a 30 day suspension of the User Pass and visitor privileges.
      (2) For a second offense: a suspension of the User Pass and visitor privileges from 5 days to one year.
      (3) For a third or subsequent offense: from a suspension of 30 days to permanent revocation of the User Pass and visitor privileges.
      (4) For any single serious or aggravated violation: suspension of the User Pass and visitor privileges for up to one year or permanent revocation of the User Pass and visitor privileges. A serious or aggravated violation is defined as *any instance involving multiple violations of regulations during a single event or acts which also constitute a violation of Federal or local criminal law.*

4. Record of Penalties Imposed.
A record of penalties imposed for given violations will be maintained by the Assistant Commissioner for Administration. These records will be made available to the public upon request.

5. Use of Public Facilities During Suspension or After Revocation of User Pass.
No individual will be permitted to use the facilities specified in these regulations while his or her User Pass is suspended or revoked.

6. Absence of Assistant Commissioner for Administration.
In the absence of the Assistant Commissioner for Administration, the Deputy Assistant Commissioner for Administration will carry out the responsibilities assigned by these regulations.

7. Absence of Designated PTO Officials.
In the absence of any Designated PTO Official, a Deputy or Acting Official will carry out the responsibilities assigned by these regulations.

8. Assistance.
PTO employees may, when necessary, request the Security Officer of the Patent and Trademark Office or the Federal Protective Service or their contractors to provide assistance in carrying out their assigned responsibilities in paragraphs 1. and 2.

9. Appeals.
Decisions rendered by the Assistant Commissioner for Administration may be reviewed on petition to the Commissioner.

THERESA A. BRELSFORD,
May 11, 1987. *Assistant Commissioner for Administration.*

[1079 OG 6]

(29) **Unlawful Removal of Labels**

We have found a large number of security labels, torn from Search Room patent copies, in stack areas of the Public Search Room. We remind persons removing security labels or otherwise mutilating Search Room patent copies, or removing Search Room patent copies from the Search Room without authorization, that such acts are criminal offenses punishable by fine, imprisonment or both.

You should be aware that engaging in such acts violates the prohibition against "the willful destruction of or damage to property; the theft of property." 41 Code of Federal Regulations §101–20.303. Violations are punishable by "a fine of not more than $50 or imprisonment of not more than 30 days, or both." 41 Code of Federal Regulations §101–20.315.

You should also be aware that engaging in such acts subjects you to punishment under the following criminal provision in Title 18 U.S. Code, §2071:

> (a) Whoever willfully and unlawfully conceals, removes, mutilates, obliterates, or destroys, or attempts to do so, or, with intent to do so takes and carries away any record, proceeding, map, book, paper, document or other thing * * * shall be fined not more than $2,000 or imprisoned not more than three years, or both.
>
> (b) Whoever, having custody of any such record, proceeding, map, book, document, paper, or other thing, willfully and unlawfully conceals, removes, mutilates, obliterates, falsifies, or destroys the same, shall be fined not more than $2,000 or imprisoned not more than three years, or both; and shall forfeit his office and be disqualified from holding any office under the United States.

UNLESS THE REMOVAL OF SECURITY LABELS FROM SEARCH ROOM PATENT COPIES CEASES, THE OFFICE WILL TAKE APPROPRIATE ACTION, SUCH AS EXERCISING ITS AUTHORITY UNDER 41 CODE OF FEDERAL REGULATIONS §101–20.301 TO INSPECT PACKAGES, BRIEFCASES AND OTHER CONTAINERS BROUGHT INTO, WHILE ON, OR BEING REMOVED FROM THE SEARCH ROOM.

GERALD J. MOSSINGHOFF,
Mar. 28, 1983. *Commissioner of Patents and Trademarks.*

[1029 OG 136]

(30) **Out-of-Town Request for Files**

Delays are being experienced in receiving files ordered from the Federal Records Center in Suitland, Md. Therefore, more time must be allowed when out-of-town requestors are ordering patented files or abandoned or registered trademark files in advance of their arrival in the area. Until recently, a five-day notice was sufficient to obtain a file located in the Federal Records Center. Now we are suggesting that ten days be allowed when ordering Suitland files. A 24-hour notice is still normally adequate when the file is located in the PTO File Repository in Crystal City. Out-of-town requests for files should be directed to Ms. Jacqueline Waldo on (703) 557–2977. Requestors will be notified by phone, prior to planned arrival date, whether or not the requested file will be available.

THERESA A. BRELSFORD,
July 10, 1984 *Assistant Commissioner for Administration.*

[1045 O.G. 3]

(31) **Use of Certificate of Correction Forms**

The purpose of this notice is, to once again, remind patentees and their attorneys and agents to submit the text of any correction under 37 CFR 1.322 and 1.323 on the Certificate of Correction form, PTO–1050, which is available free of charge from the Patent and Trademark Office. The presentation of all corrections on this form permits its use as camera copy for prompt, direct offset printing of the Certificate of Correction.

Instructions for use of Form PTO–1050 are printed on the top portion thereof, and are also set forth, in further detail, in Section 1402.02 of the Manual of Patent Examining Procedures. It is especially important that the typing be clean and clear. Both thin, light type and heavy, smudged type should be avoided. Changes and corrections are preferably made by use of white opaque correction fluid.

The typing should be within the borders printed on the form and a two-inch blank space should be left at the bottom of the last page of the form for the placement of the signature of the Attesting Officer.

Both sheets of the printed form should be forwarded to the Office. The copies should be stapled together

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only at the upper left-hand margin at the indicated location.

Copies of form PTO–1050 may be obtained, as needed, from either the Correspondence and Mail Division in Building 2, or from the receptionist in the lobby of Building 3, Crystal Plaza, Arlington, Va.

RICHARD J. SHAKMAN,
May 10, 1977. *Assistant Commissioner for Administration.*

[959 O.G. 3]

(32) **ARS Patent Culture Collection Initiation of Fees**

As a result of recent policy changes, the ARS Culture Collection (NRRL) henceforth will charge a user fee for deposit and distribution of microbial cultures maintained in conjunction with U.S. and foreign patent applications. User fees apply to patent cultures only; as it has in the past, the ARS Culture Collection will continue to exchange other microbial germplasm with the scientific community without charge. The fee schedule will apply to all patent cultures deposited after Sept. 30, 1983. A fee of $500.00 will be charged for each strain, payable at the time of deposit. A $20.00 fee will be charged for the distribution of all released patent cultures that have been deposited after Sept. 30, 1983. There will be no charge for distribution of patent cultures already on deposit or for others received before this date. Checks, in U.S. dollars, should be made payable to the Agricultural Research Service, USDA. USDA laboratories and designated cooperators will be exempt from fee assessment. The types of microorganisms accepted by the ARS Culture Collection are the same as announced in the past and include industrially important bacteria, yeasts, molds, and *Actinomycetales*. Viruses and highly pathogenic or especially fastidious microorganisms are not accepted. Further information on types of microorganisms accepted and conditions for deposit may be obtained by contacting A. J. Lyons, Curator, ARS Patent Culture Collection, Northern Regional Research Center, USDA-ARS-NCR, 1815 N. University St., Peoria, Ill. 61604 (Tel. 309/685–4011).

[1033 OG 26]

(33) **Notice to Subscribers**

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the Official Gazette, Manual of Patent Examining Procedures Revisions, Annual Indices, or other patent and trademark publications. All correspondence and inquiries concerning subscription services including requests for reinstatement or renewal of subscriptions should be directed to:

Mr. Michael F. DiMario
Assistant Public Printer
Superintendent of Documents (SD)
U.S. Government Printing Office
Washington, D.C. 20401

Furthermore, the Superintendent of Documents advises that expiration notices are sent out approximately three months before the expiration date. However, subscribers should not rely on this schedule. If a notice is not received within two months of the expiration date, the subscriber should renew the subscription with the Superintendent of Documents. Attach a label from the envelope in which the publication is received, together with a check covering the amount of the subscription. If a deposit account with the Superintendent of Documents is to be used, include the deposit account number with the renewal.

This notice is effective with the publication date and supersedes the notice published on this subject in 969 O.G. 2, dated Mar. 14, 1978.

THERESA A. BRELSFORD,
Aug. 3, 1984. *Assistant Commissioner for Administration.*

[1045 O.G. 28]

(34) **Subscription Pricing Information**

The subscription prices on the following publications have been changed as indicated below:

Title: Official Gazette, Patent Section	
First-class domestic mailing	$375.00
Fourth-class domestic mailing	270.00
Fourth-class foreign mailing	337.50
Single copies each, domestic	13.00
Single copies each, foreign	16.25

Back copies will not be furnished.

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer, 1984.

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
Sept. 11, 1984. *Assistant Commissioner for Administration.*

[1047 O.G. 11]

(35) **Subscription Pricing Information**

The annual subscription prices on the following publication have been changed as indicated below:

Title: Patent and Trademark Office Notices	
First-class domestic mailing	$ 71.00
First-class foreign mailing	not available
Third-class domestic mailing	57.00
Third-class foreign mailing	71.25

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer 1984.

Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
May 7, 1984. *Assistant Commissioner for Administration.*

[1042 O.G. 58]

(36) **Rules Service Company Address Change**

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are.

Rules Service Company
4341 Montgomery Avenue
Bethesda, Maryland 20014
(301) 656–4660

SIDNEY A. DIAMOND,
Apr. 7, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 10]

(37) **Patent and Trademark Office Services**

The Patent and Trademark Office is making every effort to utilize its resources as effectively and efficiently as possible. However, delays in some services are being experienced. To improve services, the PTO is taking the following steps:

Beginning with the issue of January 1, 1980, the original formal drawing which is supplied by the patent applicant and is 8 1/2 by 14 inches (21.0 by 29.7 cm.) is being stored within the patented file in the Patent Search Division. This is a change from the earlier practice under which the drawing is stored in a separate location from the patent file wrappers. The new procedure will simplify obtaining the complete patented file. This procedure will be used for a three month trial period and then reevaluated for its effectiveness.

Effective Dec. 3, 1979, sale of tokens and maintenance of all token operated photocopy and microfilm reader-printer equipment throughout the Patent and Trademark Office are being performed by a private contractor, T S Info Systems, Inc. (TSI). Improved quality and timeliness of copy service to the public are anticipated.

All token sales are made between the hours of 8:30 A.M. and 5:00 P.M. at the token sales booth in the Record Room located in Building CP–4. When purchasing tokens by check, please make the check payable to "TSI" rather than "Commissioner of Patents and Trademarks." Tokens will not be sold at the cashier's window in CP2.

Effective February 1, 1980, charges for tokens to PTO customer deposit accounts will no longer be accepted.

Effective immediately, no requests for new patent or trademark drawings will be accepted by the Patent and Trademark Office. New drawings will be prepared only for requests already received. All currently available drafting time and facilities are required to correct the backlog of drawings needing correction prior to issue. When this backlog has been eliminated, a notice will be issued to that effect and new drawings can again be prepared for the public.

Effective immediately, three additional special mail room boxes will be established in the PTO:

Box 4 will be used for all mail for the Office of Legislation and International Affairs.

Box 5 will be used for documents which are related to trademarks and for which *no fee* is required at the time of filing; e.g., amendments to applications and requests for extensions of time to file an opposition. For mail directed to the Trademark Trial and Appeal Board, put "Attention TTAB" on the envelope in addition to "Box 5."

Box 7 will be used for reissue applications which are involved in litigation and any subsequently filed papers for these applications.

Mail appropriately addressed will be sorted and forwarded on a more timely basis.

Applicants and other users of the PTO services can assist in improving the efficiency of office by doing the following:

Use the following special PTO box numbers for forwarding particular types of mail. The boxes should be used only for the specified purpose.

Box 2—Replenishment of funds in deposit accounts.

Box 4—Mail for the Office of Legislation and International Affairs.

Box 5—"No fee" mail related to trademarks.

Box 7—Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.

Box 8—All papers for the Office of the Solicitor.

Box 9—Coupon orders for U.S. patent and trademark copies.

Box 10—Orders for certified copies of patent and trademark applications.

Box PCT—Mail related to applications filed under the Patent Cooperation Treaty.

Only that material for which the special box was established should be enclosed.

The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.

Envelopes should be addressed:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Consider the fact that some PTO services are experiencing delays, and allow sufficient lead time for services requested of the Office. Where possible, urgent items which require no fee should be hand delivered to the appropriate area.

Minimize the number of inquiries to the PTO regarding acknowledgment of receipt of applications, fee papers, orders for patent copies, etc.

Include a self addressed return post card with newly filed applications. The serial number assigned the application will be stamped on the post card, which will constitute the means by which the application can be identified.

Use commercial services for preparation of new patent and trademark application drawings.

On all papers which are filed in patent and trademark applications and are being sent to an examining group, include the appropriate identifying data, such as examining group number, examiner's name, and the number of the application paper to which the response is directed. The paper should also identify the type of document being presented (e.g., response to Office action #___, amendment, etc.). The name and telephone number of the individual representing the applicant also should appear on all papers.

These steps have been devised in an effort to minimize delays in services. We solicit the help and cooperation of the public.

SIDNEY A. DIAMOND,
Jan. 4, 1980. *Commissioner of Patents and Trademarks.*

[990 O.G. 184]

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(38) Filing of a Notice of Appeal to the Federal Circuit and Service of Court Papers on the Commissioner of Patents and Trademarks

1. *Service of court papers*

This notice supersedes the Solicitor's Notice of Sept. 10, 1982 [1023 *Official Gazette* 3 (Oct. 5, 1982)].

Court papers may be served on the Solicitor in the following manner:

A. By hand between 8:30 A.M. and 5:00 P.M. at the Office of the Solicitor located in Crystal Plz., Bldg. No. 2, 2011 Jefferson Davis Hwy., 5th Fl., Rm. 5–C–15, Arlington, Va.

B. By mail in an envelope addressed as follows:

Office of the Solicitor
P.O. Box 15667
Arlington, Va. 22215.

Court papers mailed to an address other than the Solicitor's service address above, or hand-delivered to the Office of the Solicitor, are deemed to be served when actually received in the Office of the Solicitor.

Papers which are not court papers and are intended to be filed in the Patent and Trademark Office in connection with an application or other proceeding pending in the Office should not be mailed to the Solicitor's mail service address. Any such papers which are mailed to the Solicitor's mail service address will not be filed in the Office and will be returned. No exceptions will be made to this policy.

2. *Filing of a notice of appeal to the Federal Circuit*

A notice of appeal from a decision of the Board of Patent Appeals and Interferences in an *ex parte* or *inter partes* patent matter or a decision of the Trademark Trial and Appeal Board in an *ex parte* or *inter partes* trademark matter must be timely filed.

A certificate of mailing under 37 CFR §1.8 *cannot* be used for the purpose of effecting "filing" of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit. *In re Thrifty*, 231 USPQ 560 (Comm'r. Pat. 1986), *mandamus denied mem.*, Misc. No. 137 (Fed. Cir. Nov. 21, 1986) (unpublished). Thus, a notice of appeal which reaches the Patent and Trademark Office after the due date, is not considered to be timely filed, even though mailed prior to the due date with a certificate of mailing under 37 CFR §1.8.

A notice of appeal to the U.S. Court of Appeals for the Federal Circuit may be filed in the Patent and Trademark Office in any of the following ways:

A. By mail addressed as follows, in which case the notice of appeal must actually reach the Patent and Trademark Office by the due date:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

B. By "Express Mail" (U.S. Postal Service *only*) under 37 CFR §1.10 addressed as follows, in which case the notice of appeal is deemed filed on the date of the Express Mail certificate:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

C. By hand to the Office of the Solicitor.

A notice of appeal to the U.S. Court of Appeals for the Federal Circuit should *not* be mailed to the Solicitor's mail service address.

JOSEPH F. NAKAMURA,
June 8, 1987. *Solicitor.*

[1079 OG 72]

(39)

(39) Appeals to CAFC

In every case of an appeal to the CAFC from a decision of the Board of Patent Appeals and Interferences or the Trademark Trial and Appeal Board, a copy of the notice of appeal should be separately transmitted to the Office of the Solicitor at the time the original notice is filed with the Commissioner. The Solicitor's copy should be sent in an envelope addressed as follows:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attn: Office of the Solicitor

In lieu of mailing, the copy for the Solicitor may be hand-delivered to the Office of the Solicitor. Sending a copy of the notice of appeal to the Solicitor's Office will prevent or reduce delays in docketing appeals in the CAFC.

DONALD W. PETERSON,
July 17, 1987. *Deputy Commissioner of Patents and Trademarks.*

[1081 OG 14]

(40)

(40) Service of Court Papers on the Commissioner of Patents and Trademarks

The procedure set forth in M.P.E.P. §1216 (5th ed., revs. 1 to 6) under the heading "Service of Court Papers on Commissioner of Patents and Trademarks" was superceded by the procedure set forth in the Solicitor's Notice of June 8, 1987 [1079 OG 72], which remains in effect and which also describes the procedure for filing a notice of a appeal to the Federal Circuit. The portion of that notice concerning service of court papers on the Commissioner is repeated below, as modified to include additional guidelines about supplementation of the mail service address.

Court papers may be served on the Commissioner in either of the following ways:

A. By *hand* between 8:30 A.M. and 5:00 P.M. at the Office of the Solicitor, located in Crystal Plaza Bldg. No. 2, 2011 Jefferson Davis Hwy., 5th Floor, Room 5-C-15, Arlington, Va.

B. By *mail* in an envelope addressed as follows:

Office of the Solicitor
P.O. Box 15667
Arlington, Va. 22215

While the above mail service address may be supplemented to include the name of the particular attorney assigned to the court case, it must *not* be supplemented to refer to either the Commissioner of Patents and Trademarks or the U.S. Patent and Trademark Office (PTO).

Court papers mailed to an address other than the above mail service address and court papers delivered by hand are deemed to have been served on the Commissioner when actually received in the Office of the Solicitor.

Papers which are not court papers and are intended to be filed in the PTO in connection with an application or other proceeding pending in the Office should not be mailed to the solicitor's mail service address. Any such papers which are mailed to the Solicitor's mail service address will not be considered to have been filed in the PTO. Instead, all such papers will be returned. No exceptions will be made to this policy.

JOSEPH F. NAKAMURA,
Feb. 22, 1988 *Solicitor.*

[1088 OG 39]

(41)

(41) Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 2

[Docket No. 80480–8080]
Communications with the Office of the Solicitor

Agency: Patent and Trademark Office, Commerce.
Action: Final rule; technical amendments.
Summary: On Mar. 24, 1987, final rules regarding the address of certain communications to the Patent and Trademark Office were issued. (52 FR 9394, Mar. 24, 1987.) Also, on Mar. 7, 1985 and Aug. 11, 1986, final rules regarding the court review of decisions by the Patent and Trademark Office Board of Patent Appeals and Interferences and the Trademark Trial and Appeal Board, respectively, were issued. (50 FR 9383, Mar. 7, 1985 and 51 FR 28710, Aug. 11, 1987.)

This notice makes technical corrections to §§1.1, 1.302 and 2.145(b) by specifying the address to which correspondence should be sent to the Office of the Solicitor. The change reflects existing practice consistent with rules of court governing service of court papers on the Solicitor. The change also will expedite the processing of other non-court communications with the Office of the Solicitor.
Effective Date: June 9, 1988
For Further Information Contact: John H. Raubitschek by telephone at [703] 557–4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: The Patent and Trademark Office (PTO) finds for good cause that because the technical changes made by this rule will have no substantive effect, it is unnecessary to seek prior public comment of this rule under 5 U.S.C. 553. Because a notice of proposed rulemaking and an opportunity for public comment is not required for this technical amendment, this rule is also exempt from the provisions of the Regulatory Flexibility Act requiring a regulatory flexibility analysis. The PTO has determined that this rule is not a major rule within the meaning of section 1(b) of Executive Order 12291. The PTO has also determined that this rule has no federalism implications affecting the relationship between the national government and the States as outlined in Executive Order 12612. This rule does not contain a collection of information for purposes of the Paperwork Reduction Act.

List of subjects:

Administrative practice and procedure, Courts, Inventions and patents, Trademarks

For the reasons set forth above, 37 CFR Parts 1 and 2 are amended as follows:

Part 1 — Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.1 [Amended]

Section 1.1 is amended by adding new paragraph (g)

*****

(g) All communications relating to pending litigation which are required by the Federal Rules of Civil or Appellate Procedure or by a rule or order of a court to be served on the Solicitor shall be hand-delivered to the Office of the Solicitor or shall be mailed to: Office of the Solicitor, P.O. Box 15667, Arlington, Va. 22215 or such other address as may be designated in writing in the litigation. All other communications to the Office of the Solicitor should be addressed to: Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Any communication which does not involve pending litigation which is received at P.O. Box 15667 will not be filed in the Office but will be returned. See § §1.302(c) and 2.145(b)(3) for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit.

3. Section 1.302 [Amended]

Section 1.302 is amended by adding new paragraph (c)

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(c) A notice of appeal, if mailed to the Office, shall be addressed as follows: Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Part 2 — Rules of Practice in Trademark Cases

4. The authority citation for 37 CFR Part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

5. Section 2.145(b) [Amended]

Section 2.145(b) is amended by adding new paragraph (b)(3).

*****

(b)(3) The notice, if mailed to the Office, shall be addressed as follows: Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

DONALD J. QUIGG
May 3, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

1090 OG 72

(42)

(42) Sale of Copies of Reexamination Requests

Copies of reexamination requests, all cited references, and the file wrapper and contents of the patent file for which reexamination is requested are available at a charge of $0.30 per page. Orders for such copies must indicate the control number assigned the reexamination request. Orders should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Customer Services Division.

GERALD J. MOSSINGHOFF,
July 31, 1981. *Commissioner of Patents and Trademarks.*

[1010 O.G. 4]

(43)

(43) Department of Commerce
Patent and Trademark Office
[Docket No. 70470-8021]

Electronic Data Dissemination Policies and Guidelines

Agency: Patent and Trademark Office, Commerce.
Action: Proposed Amendment of Electronic Data Dissemination Policies and Guidelines; Request for Public Comment.
Summary: The U.S. Patent and Trademark Office (PTO) has undertaken a program to automate its operations. As a result, electronic patent and trademark data are being created and new techniques are being implemented to expand the use of the PTO's collection of electronic information, which will contain all U.S. patents and registered trademarks and selected foreign patents. These

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data bases comprise one of the largest information resources of the Nation.

To fulfill its mission to disseminate information and to guide the management of its electronic information resources, on June 8, 1984, the PTO issued guidelines and policies for dissemination and distribution of electronic patent data. These were published in 49 *Federal Register* 24585 (June 14, 1984). Subsequently, the Office of Management and Budget issued revised policies and expanded guidelines for electronic data dissemination in OMB Circular A-130 dated Dec. 1985 and entitled "Management of Federal Information Resources."

On Aug. 20, 1987, PTO published in 52 *Federal Register* 31442 a notice (1) to inform the public of the PTO's intention to amend its pricing policy for data base products, and to expand the scope of its dissemination policies and guidelines to encompass patent and trademark electronic data; (2) to explain the current situation with regard to public access to automated patent and trademark search rooms and libraries; and (3) to solicit public comments on the intended proposals.

On Dec. 10, 1987, PTO published in 52 *Federal Register* 46815 a notice amending the pricing policy for data base products and expanding the scope of the policies and guidelines to encompass patent and trademark data. That notice also extended the period to Dec. 31, 1987 for receiving public comments on alternatives for funding public access to patent or trademark search rooms or libraries.

The purpose of this notice is to inform the public of the PTO's intention to publish a comprehensive edition of the policies and guidelines and to solicit comments about them. The proposed policies and guidelines in this notice would replace the policies and guidelines published in the June 14, 1984 and Dec. 10, 1987 notices.

Date: Comments should be submitted no later than Aug. 24, 1988.

Address: Comments should be addressed to: Donald J. Quigg, Assistant Secretary and Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20231.

For Further Information Contact: Bradford R. Huther at 703-557-1572.

Supplementary Information:

The Patent and Trademark Office (PTO) has determined that this notice is not a major rule within the meaning of section 1(b) of Executive Order 12291. Therefore, a Regulatory Impact Analysis has not nor will be prepared. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this amended policy statement by the Administrative Procedure Act (5 U.S.C. 553(b)(A)), no initial or final Regulatory Flexibility Analysis has to be or will be prepared. The PTO has also determined that this notice has no federalism implications affecting the relationship between the national government and the States as outlined in Executive Order 12612. This notice does not contain a collection of information for purposes of the Paperwork Reduction Act

Background:

In response to Public Law 96-517, the 1980 legislation which amended patent and trademark laws, the PTO prepared and submitted a plan for the automation of its operations to Congress on Dec. 13, 1982. The plan centered on two basic concepts: the creation of electronic data bases that (1) would eventually replace the PTO's all-paper patent and trademark files, and thereby improve their integrity and quality; and (2) would support searches, examinations, office actions and other office functions through electronic workstations which would provide text and image retrieval capabilities and perform other automation functions.

Active Federal trademark registrations have been converted to an electronic data base of textual and digital image data. A computer system has been installed to enable examiners to search the data base for textual data and codes describing designs, and to retrieve and display all information as a substitute for paper file searches.

An Automated Patent System (APS) has been installed for test and evaluation purposes, using one patent examining group as an operational testbed. Major operational components of APS — large scale computers with conventional magnetic storage devices, a high-speed local area data communications network, and electronic workstations equipped with two high resolution graphic displays and laser printers — were interconnected on July 1, 1986 to enable system test and evaluation to begin in the testbed group. Optical disk storage units were subsequently installed to house the test data base of digital images of U.S. and foreign patents. Other equipment needed to simulate the system's performance under full workload conditions has been installed and is being evaluated.

The text of U.S. patents issued since 1975 was entered in the system to provide the data base for use with full text searching capabilities of APS. Images of all U.S. and selected foreign patents in the testbed group's search files have been converted to digital form and are being placed on optical disks for use in electronic classification and combined text classification searches. Work has begun to digitize the entire backfile of U.S. patents. Through exchange agreements with the European and Japanese Patent Offices, European patents issued since 1920 and all Japanese patents have been or will be converted to a common facsimile standard and key patents will be entered for on-line retrieval.

Text search capabilities of APS are now available to all PTO examiners. A decision on the next incremental deployment of the digital image retrieval and other electronic searching capabilities is planned to be made in mid-1988. Additional system capabilities for office automation and other administrative support will be added to those already installed in the testbed over the next several months to supplement the search and retrieval capabilities. Examiners will be provided with access to commercial data bases, such as industry-specific data bases, through APS, from the electronic workstations.

At the present time, neither the trademark nor the patent automated systems has been deployed to the public search rooms. However, public evaluation of the Automated Patent System began Jan. 1988 and is scheduled to conclude in June 1988. It is expected that public evaluation of the trademark automated system will be conducted in mid-year 1988, and that such system could be ready for public deployment prior to the end of the current authorization cycle, which is Sept. 30, 1988. According to the 1987 edition of the Automation Master Plan, full deployment of the automated patent system to the public search room is scheduled for fiscal year 1991.

Under the provisions of Public Law 99-607, which authorizes appropriations through Sept. 30, 1988, "The Commissioner of Patents and Trademarks may not impose a fee for use of public patent or trademark search rooms and libraries. The costs of such rooms and libraries shall come from amounts appropriated by Congress." In anticipation of the need to propose authorizing legislation for fiscal years 1989 through 1991, comments were requested regarding three potential funding alternatives to support the automated public search rooms. They are:

(1) Use of taxpayer revenues. The costs of supporting the automated public search rooms could be covered by funds appropriated specifically for that purpose by Congress. No statutory changes would be required for this option. Presently, the paper search rooms are being supported with appropriated funds. Under current funding levels and, in the absence of authority to charge fees for this purpose, the public's access to automated search rooms would be restricted. By 1995, 85%–90% of the total operating cost of the Office will be supported by fees. Progressive implementation of maintenance fees account for that income.

(2) Use of general fee revenues. The marginal costs of supporting the automated public search rooms could be apportioned as a cost of prosecuting an application or derived from the total available fee revenues collected by the PTO. Under this alternative, the costs for the automated public search rooms would be borne by all users of the patent and trademark systems. The user charge prohibition in Public Law 99-607 would have to be modified to permit this option.

(3) Establish specific user charges for access to the public search rooms. Under this alternative such charges for access to the automated trademark and patent systems in the public search rooms would be consistent with the guidelines of OMB Circular A-130, and would be established through the rulemaking process. The marginal costs for the public search rooms under this alternative would be borne only by those who actually use the public search rooms. A selected number of free hours would be provided to all users of the system. The user charge prohibition in Public Law 99-607 would have to be rescinded to permit this option.

Response to Comments on the Proposed Funding Alternatives:

The PTO received 21 letters in response to the notices published on Aug. 20, 1987 and Dec. 10, 1987, which extended the time for commenting on the proposed funding alternatives.

Twelve respondents advocated the use of taxpayer revenues. Four reasons generally were given to support this position: (1) Congress mandated that PTO use taxpayer revenues to provide public access to the automated search systems; (2) free access to automated search systems is instrumental to achieving Constitutional purpose of the PTO; (3) user fees would impose an undue burden on private inventors, small businesses and sole practitioners; and (4) user fees would restrict availability of public information and research.

Seven respondents supported at least some reliance on user fees for the following reasons: (1) Use of taxpayer funds is preferable but not realistic in a time of budget deficits—specific user fees for on-line access is the only alternative since the use of general fee revenues negatively impacts small inventors; (2) there should not be an unlimited 100 percent tax subsidy for online searching for full-time practitioners who charge fees for their services—a minimum service level of no charge to any customer as instituted by the National Agricultural Library should be considered; (3) PTO should establish specific user fees to cover the use of the search facilities from anywhere in the U.S. instead of any changes which give Washington, D.C. patent attorneys an unfair advantage; (4) PTO should consider a combination of general fee revenues and specific user charges; and (5) PTO should consider a combination of taxpayer revenues and minimal use of general fee revenues.

Two respondents addressed issues not directly related to funding alternatives.

The following comments were submitted concerning policies and guidelines not included in the amendment adopted on Dec. 10, 1987.

Comment

One person expressed concern that PTO plans to offer data in the public search rooms which was obtained through agreements with certain commercial sources. If there is any change in the original conditions upon which the agreements were predicated, the agreements should be renegotiated.

Response

The PTO plans only to offer data in the public search rooms for which there are no restrictions against general dissemination. In order to access commercial data bases through the automated search system, the user will have had to have established an account with the data base vendor.

Comment

One person stated that the PTO has no legal authority to conduct any automation project in the Patent Depository Libraries (PDLs).

Response

The PTO's activities with regard to the Patent Depository Libraries, including activities associated with automated systems, are being carried out under sections 6 and 13 of title 35, United States Code.

Comment

PTO should clarify its plans for using published nonpatent literature which is private material and subject to copyright protection.

Response

PTO has not developed plans for the use of nonpatent literature in conjunction with the Automated Patent System, pending resolution of technical and, possibly, legal issues.

Comment

One person expressed concerns about the trademark automated search system including PTO's plans for retaining paper files, applicability of the system for use by the public, and public evaluation of the system.

Response

PTO consistently has made the commitment to hold a public hearing prior to making any decision about the disposition of the paper patent or trademark files. A group of trademark practitioners and searchers has been conducting a limited prototype public evaluation, and this evaluation is being expanded. Full details were published in the *Trademark Official Gazette* dated May 10, 1988.

Electronic Data Dissemination Policies and Guidelines

Dissemination in Government Public Search Facilities and Depository Libraries

It is the goal of the PTO to achieve effective, widespread dissemination of information concerning patents and Federally registered trademarks to all segments of the U.S. public.

A. The dissemination goal will be accomplished directly by the PTO by providing electronic search and retrieval services to the public in search facilities located in the PTO, in other facilities which may be established by the Government and in Patent Depository Libraries (PDLs). PDLs are Federal, state and local government, university or non-profit organization libraries designated by the PTO to offer public access to patent collections.

B. To the extent funding is authorized and appropriated, search and retrieval services will be provided in the PTO's search facilities and PDLs either:

(1) by the PTO, using its own data bases, computers, communications equipment, and software, and/or
(2) by PTO contractors

C. Access to commercial data bases that are available to the PTO's examiners, for example industry-specific data bases, will be furnished either through an APS workstation or a terminal furnished by data base vendors in the PTO public search facilities at commercial rates, provided the user has established a commercial account with the data base vendor. The PTO will not act as an agent for any data base

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vendor in providing training for, assisting in, or collecting fees for the use of such commercial data bases.

D. Services furnished in the PTO public search facilities and in PDLs will be at no cost to the public for access to PTO owned data bases and systems, provided that funds are appropriated for this purpose, or the Congress specifically authorizes the establishment or use of PTO fee revenues to cover the costs of such services and such fee revenues are not required for other PTO operations. If funds for public access to the PTO's automated systems are not authorized or appropriated, search and retrieval services will principally be furnished through the use of the PTO's paper and microfilm collections and existing collections in the PDLs.

E. The type of service for public search and retrieval, either PTO or commercial services, will be chosen based on the method and criteria established by the 1983 revision to OMB Circular A-76, entitled "Performance of Commercial Activities."

Distribution of PTO Data for Commercial Dissemination

F. In addition to B. and C. above, the PTO will pursue its dissemination goal indirectly by encouraging the private sector to offer commercial patent and trademark search and retrieval services and will seek to avoid competition with private sector firms in providing such services to the public outside the PTO search facilities and PDLs.

G. Fees charged for bulk data developed by the PTO will be based on the marginal cost of providing such distribution services.

H. Normally, arrangements will be non-exclusive. Bulk resale of PTO data will be permitted subject to the terms of each bulk data sales agreement.

I. Fees charged to the public for U.S. patent and trademark data products will be based on the marginal cost of providing such products.

J. The PTO will receive non-U.S. electronic patent data through exchange agreements with other patent offices and international intergovernmental organizations. In general, the PTO will not distribute such data, except in conjunction with services that may be provided by the PTO or its contractors in the PTO public search facilities and PDLs. Rather, it will seek to have contractual arrangements established directly between the organization and the commercial data base vendor and will not act as a service agent or representative unless there is a special need that cannot be met otherwise.

DONALD J. QUIGG.
June 17, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

[Billing Code 3510-16]

1092 OG 24

(44) **Computer Aided Search for Class 364 Subclasses 200 and 900**

In 1975 the Patent and Trademark Office installed an experimental computer search system for searching the computer and digital data processing system arts classified in Class 364/200 and 900. This system, known as Computer Controlled Microform Search System (CCMSS), functioned until 1983 when it could no longer be kept operational.

A new computer aided search system, Computer Aided Search and Patent Image Retrieval (CASPIR), has been installed and is available to the public. The new system possesses features similar to the previous system in that each subclass is searchable using a topic index list of approximately 400 terms, which may be combined with Boolean logic into a search question. The user is able to view from 5 to 12 pages of documents meeting the search strategy under computer control of a microfilm viewer.

CASPIR has all of the original data base of the CCMSS (which covered patents dated 1950–1981). In addition, its data base, coded and filmed, has been updated through Sept., 1984.

It is anticipated that CASPIR will be updated according to the following schedule. Once a month the codes assigned to new documents will be entered into the data base by Patent and Trademark Office personnel. Documents thus entered will not be available on the microfilm viewer but will show up on the data terminal in response to search questions. Users would need to consult search room paper files to see the documents. To assure efficient filming and maximum use of the film strips, the filming of coded documents will take place on a quarterly basis — Jan., Apr., July and Oct. Following this procedure, the coded data base should not be more than one to two months behind current patent issue dates and the filmed copies of coded documents should not be more than three to four months behind current patent issue dates.

Terminals are currently available for public use in Crystal Plz. 2, Room 5C–22. Reservations for terminal use may be made by calling 703–557–3651 during normal business hours. Patent and Trademark Office personnel are available to assist the user in terminal operation. Effective Mar. 11, 1985 these public terminals will be moved to the Public Search Room in Crystal Plz. CP3–1A–3. Reservations for use may then be made by contacting Mr. Bernard Thomas at 703–557–2276.

EARL LEVY,
Feb. 5, 1985. *Director, Group 230 Patent and Trademark Office.*

[1052 OG 56]

(45) **Availability of Concordance — Fifth Edition**

The Patent and Trademark Office announces the availability of the "Concordance Fifth Edition-1985 United States Patent Classification to International Patent Classification" which relates the U.S. Patent Classification, as revised through Feb. 29, 1984, (Classification Order No. 929) to the Fourth Edition of the International Patent Classification, 1984, as published for the World Intellectual Property Organizations by Carl Heymanns Verlag K. G., Munich.

Copies of the Concordance are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, Stock Number 003–004–00611–1. The price for this publication is $6.50 for U.S. and $8.15 for foreign mailing.

WILLIAM S. LAWSON,
July 3, 1985. *Administrator for Documentation.*

[1057 OG 20]

(46) **Availability of Copies of the Magnetic Tape of the Fourth Edition of the International Patent Classification (IPC)**

The Assembly of the IPC Union has decided to make available copies of the magnetic tapes of the IPC through the International Bureau of the World Intellectual Property Organization.

The IPC Assembly made the following decisions:

"The International Bureau should put at the disposal of the Industrial Property Offices of any country member of the IPC Union which so wishes the magnetic tape. . .of the IPC *at cost,* provided that any such Office receiving a tape accepts the three conditions set forth. . .below:

(i) the tape is used by those Offices. . .for the purposes of carrying out their functions,
(ii) no reproduction of the tape or its contents, in whole or in part, is made in the form of paper copies or microfiches, except in the case of online printouts, and
(iii) the tapes or copies thereof, in whole or in part, are not made available to any third party."

The Committee of Experts of the IPC Union decided that the tape (in English *or* French language) would be made available to Industrial Property Offices of countries being members of the IPC Union at the price of 1,000 Swiss francs.

In order to carry out its function of disseminating patent information contained on IPC tapes, the U.S. Patent and Trademark Office may need the assistance of qualified U.S. public organizations or private companies. Accordingly, the Office will consider requests from such organizations or companies interested in disseminating such information.

The Committee also decided that, subject to the conditions enumerated in (ii) and (iii) above, the tapes would be made available for the following prices to any public organization or private company authorized by its government:

- for internal use only, at the price of 5,000 Swiss francs; and
- for exploitation of the tape on a commercial basis, at the price of 30,000 Swiss francs.

The Patent and Trademark Office will authorize United States public organizations and private companies to purchase the tape under these conditions and at the agreed upon prices quoted.

For further information contact:

Office of International Patent Classification
Crystal Square, Bldg. 4, Room 108
U.S. Patent and Trademark Office
Washington, D.C. 20231
Tel: (703) 557–3756

WILLIAM S. LAWSON,
Feb. 1, 1985. *Administrator for Documentation.*

[1052 OG 56]

(47) **Simultaneous Issue of Patents**

Applicants and their attorneys who desire the simultaneous issue of allowed applications must submit the request to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Publications
CP2–6C07

The request must contain the following information about each allowed application for which simultaneous issue is requested:

(1) serial number
(2) filing date
(3) name(s) of inventor(s)
(4) title of invention
(5) date of allowance
(6) batch number

Separate copies of the request must accompany each Issue Fee Transmittal (PTO–85b).

Questions concerning this practice may be directed to Mr. Stanley J. Bania, Director, Office of Publications, Area Code (703) 557–3794.

This notice supersedes the notice published on Aug. 25, 1978, at 974 O.G. 16.

THERESA A. BRELSFORD,
Nov. 9, 1987. *Assistant Commissioner for Administration.*

1085 OG 6

(48) **Filing of Certain Papers and Authorizations to Charge Deposit Accounts by Facsimile Transmission**

Effective Nov. 1, 1988, certain papers to be filed in national patent applications and reexamination proceedings for consideration by the Office of the Assistant Commissioner for Patents, the Office of the Deputy Assistant Commissioner for Patents, and the Patent Examining Groups (Patent Examining Corps) may be submitted to the Patent and Trademark Office (PTO) by facsimile transmission.

The provision of 37 CFR 1.33(a), requiring signatures on amendments and other papers filed in applications, is hereby waived to the extent that a facsimile signature is acceptable. The paper that is used as the original for the facsimile transmission must have an original signature, and should be retained by applicant or the representative as evidence of the content of the facsimile transmission. No special format, addressing information or written ratification is required for facsimile transmissions. However, the paper size must be 8½" by 14" or smaller to be accepted.

A facsimile center has been established in the Patent Examining Corps to receive and process submissions. The filing date accorded the submission will be the date the complete transmission is received by the PTO facsimile unit unless that date is a Saturday, Sunday or Federal holiday within the District of Columbia, in which case the official date of receipt will be the next business day.

Each transmission session must be limited to papers to be filed in a single national patent application or reexamination proceeding. It is recommended that the Serial Number of the application or Control Number of the reexamination be entered as a part of the sender's identification, if possible. It is also recommended that the sending facsimile machine generate a report confirming transmission for each transmission session. The transmitting activity report should be retained along with the paper used as the original.

The papers, including authorizations to charge deposit accounts, which may be submitted using this procedure, are limited to those which may be filed in national patent applications and reexamination proceedings and which are to be considered by the PTO organizations named above. Examples of such papers are amendments, responses to restriction requirements, request for reconsideration before the examiner, petitions, terminal disclaimers, powers of attorney, notices of appeal and appeal briefs.

New or continuing patent applications of any type, assignments, issue fee payments, maintenance fee payments, declarations or oaths under 37 CFR 1.63 or 1.67, and formal drawings are excluded, as are all papers relating to international patent applications. Papers to be filed in applications that are subject to a secrecy order under 37 CFR 5.1 - 5.8, and directly related to the secrecy order content of the application, are also excluded. Informal communications between applicant and the examiner, such as proposed claims for interview purposes, are permissible and are encouraged. Informal communications from applicants will not be made of record in the application or reexamination and must be clearly identified as informal such as by including the word "DRAFT" on each paper. To facilitate informal

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communications from examiners, applicants are encouraged to supply their facsimile phone numbers on communications to the Office.

The facsimile submissions may include a certificate for each paper stating the date of transmission. A copy of the facsimile submission with a certificate attached thereto will be evidence of transmission of the paper should the original be misplaced. The person signing the certificate should have a reasonable basis to expect that the paper would be facsimile transmitted on the date indicated. An example of a preferred certificate is:

Certification of Facsimile Transmission

I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

_____
Type or print name of person signing certification

_____ _____
Signature Date

When possible, the certification should appear on a portion of the paper being transmitted. If the certification is presented on a separate paper, it must identify the application to which it relates, and the type of paper being transmitted; e.g. amendment, notice of appeal, etc.

In the event that the facsimile submission is misplaced or lost in the PTO, the submission will be considered filed as of the date of the transmission, if the party who transmitted the paper:

(1) Informs the PTO of the previous facsimile transmission promptly after becoming aware that the submission has been misplaced of lost;
(2) Supplies another copy of the previously transmitted submission with the Certification of Transmission; and
(3) Supplies a copy of the sending unit's report confirming transmission of the submission. In the event that a copy of the report is not available, the party who transmitted the paper may file a declaration under 37 CFR 1.68 which attests on a personal knowledge basis or to the satisfaction of the Commissioner to the previous timely transmission.

If all criteria above cannot be met, the PTO will require applicant to submit a verified showing of facts. Such a showing must show to the satisfaction of the Commissioner the date the PTO received the submission.

The facsimile center will have five facsimile units and will be staffed during the business hours of 8:30 a.m. and 5:00 p.m., Monday through Friday, excluding holidays. Although the units may normally be accessed at all times, including non-business hours, there may be times when reception is not possible due to equipment failure or maintenance requirements. Accordingly, applicants are cautioned not to rely on the availability of this service at the end of response periods.

The telephone number for accessing the facsimile machines is (703) 557-9564. In the event that the transmission cannot be accepted at the telephone number above, a backup number has been established at (703) 557-9567. The facsimile center staff can be reached at telephone number (703) 557-4277 during normal business hours.

DONALD J. QUIGG,
Oct. 19, 1988 *Assistant Secretary and Commissioner for Patents and Trademarks.*

[1096 OG 30]

RECORDS AND FILES

(49) Assignee Names

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the *same* party are identified on the Base Issue Fee Transmittal form, POL–85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL–85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL –85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

RICHARD J. SHAKMAN,
Dec. 17, 1975. *Assistant Commissioner for Administration.*

[942 O.G. 186]

(50) Submission of Uniform Assignee Names on the Issue Fee Payment Form PTOL–85b

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL–85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL–85b should ensure that the same company name form is used for all patents issuing to a particular company.

RICHARD J. SHAKMAN,
Nov. 17, 1977. *Assistant Commissioner for Administration.*

[965 O.G. 8]

(51) Assignments Affecting Applications of Joint Inventors

Over the past several years, the Assignment Branch of the Patent and Trademark Office has been charging a single fee for recording the assignment of a patent or patent application of joint inventors when separate assignment documents are executed by the joint inventors and then filed together for recording.

This practice is in error because it conflicts with 37 CFR 1.21 Miscellaneous Fees and Charges (h) Recording of Documents which states:

(1) For recording each assignment, agreement or other paper relating to the property in a patent or applications . . . . . $20.00.

Effective Nov. 1, 1984, the Assignment Branch will charge in accordance with the above regulation, the fee of $20.00 for each assignment document of the joint inventors which relates to the patent or patent applications.

THERESA A. BRELSFORD,
Oct. 1, 1984. *Assistant Commissioner for Administration.*

[1047 O.G. 49]

(52) Recordability of Foreclosures for Assignment Purposes

It has been the practice of the Assignment Branch to record security agreements between a secured party and a debtor which refer specifically to a patent or a patent application and which are signed by the debtor. However, foreclosures by the secured party were not recorded because they were not signed by the debtor. Accordingly, before recording a foreclosure not signed by a debtor, the Assignment Branch required a Court order. This requirement forced the secured party to bring action in a court of law where otherwise Court action might not have been necessary.

To facilitate recording of foreclosures not signed by a debtor and avoid unnecessary court proceedings, the Office will record foreclosures which comply with all of the following criteria:

(1) Submission of the foreclosure document with original endorsement by the secured party, or a verified copy thereof;
(2) Identification of the patent by patent number or the patent application by serial number, or other acceptable identifier(s) as specified in 37 CFR 1.331(c), in the body of the foreclosure document itself or any addenda incorporated by reference;
(3) Reference to the security agreement recorded under 37 CFR 1.331; and
(4) Submission of a verified statement by a representative of the secured party stating that the patent or the patent application has been legally foreclosed on based upon the applicable state laws.

A foreclosure document complying with the above criteria will be deemed to be a recordable instrument in accordance with 37 CFR 1.331.

THERESA A. BRELSFORD,
March 14, 1988. *Assistant Commissioner for Administration.*

[1089 OG 35]

(53) Title of Invention Carried on Office Records

The Patent and Trademark Office is experiencing an increased incidence in the number of newly filed applications in which the title of the invention is inconsistent within the papers. This has resulted in applicants requesting correction of the official filing receipt in many instances to indicate the title preferred by applicants.

Hereafter, whenever the title of the invention appears inconsistent within the papers of a newly filed application for patent, the records of the Office will carry the title as indicated on the first page of the specification and no corrected filing receipt will be issued to indicate another title. Note that 37 CFR 1.72(a) indicates that the title of the invention should appear as a heading on the first page of the specification.

It should also be noted that applicant may amend the title under 37 CFR 1.115 if any changes are subsequently desired before issuance of a patent.

BRADFORD R. HUTHER,
Aug. 31, 1977. *Acting Assistant Commissioner for Administration.*

[962 O.G. 23]

(54) Notice to Patent Owners and Parties Responsible for Paying Maintenance Fees Concerning Fee Address and Payor Number

37 CFR 1.363, effective Nov. 1, 1984, provides for a "fee address" to be entered in the Office patent file records for use in all correspondence relating to maintenance fees. The "fee address" is in addition to the "correspondence address" under 37 CFR 1.33 which will continue to be used for all reexamination and interference purposes. If no separate "fee address" is specified, the "correspondence address" will also be used for maintenance fee correspondence.

In order to simplify changes in address by patent owners having several patents, and data input by the Patent and Trademark Office, a "payor number" will be assigned to each "fee address" when a "fee address" is presented to the Office in a patent or earlier upon request. A request for a "payor number" before a maintenance fee is paid or due will permit a patent owner to request that the "fee address" or "payor number" be recorded in the Office records of the patents owned on which maintenance fees are due so that all notices relating to maintenance fees will be sent to the "fee address".

The Patent and Trademark Office has established a procedure for assigning a "payor number" upon request by a patent owner or a party responsible for paying maintenance fees. Such a party may be, for example, the finance office of a corporation or of a separate organization specializing in maintenance fee payments. Under the procedure, a patent owner or other party may request a "payor number" for a particular "fee address" by writing to: Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231. Each request for a "payor number" should include:

— the "fee address" to be used by the Office, and
— the telephone number of the fee addressee to be used to resolve problems.

After receipt of a "payor number", it may be used to indicate to the Patent and Trademark Office the "fee address" to be used in particular patents on which maintenance fees will become due and in applications in which issue fees have been or are being paid. Any request for entry of a "payor number" or "fee address" in the Office records of a patent, however, must be signed by the patent owner or his or her attorney or agent of record.

After a "payor number" has been assigned, it should be used in all future maintenance fee payments and related correspondence. However, where a "payor number" has not been previously entered in the Office records for a patent, the mere indication of a "payor number" at the time of payment of the maintenance fee, without the signature of the patent owner or the owner's attorney or agent of record, will not serve to make the "payor number" of record in the Office for that patent.

THERESA A. BRELSFORD,
Oct. 19, 1984. *Assistant Commissioner for Administration.*

[1048 O.G. 48]

(55) New System To Monitor Patent Applications

During this summer the Patent and Trademark Office will begin implementation of a new office-wide computer system, the Patent Application Locator and Monitor System (PALM 3), for monitoring the location and status of pending patent applications. The system will also have the ability to print data on certain form letters such as the Notice of Allowance, using computer-controlled printers located in the Examining Groups. This will permit the Notice of Allowance to be printed and mailed by the Groups shortly after the Examiner has decided

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that an application is in condition for allowance. Under the new system, the Notice of Allowance will be mailed prior to completion of final issue revision by the Group clerical staff. In those applications where an Examiner's Amendment is required, it will normally be mailed as an attachment to the Notice of Allowance.

When existing printing backlogs have been eliminated, this accelerated mailing should reduce the time between allowance by the examiner and issuance of the patent grant in most cases. The nature and/or extent of the revisions or processing requirements subsequent to mailing of the Notice of Allowance may result in little or no reduction in the time required for the printing of a few patents. In addition, it is possible that, as a result of this additional processing, withdrawal or correction of the Notice for a given application may be required. For instance, prosecution might be reopened as a result of the Quality Review Program. In situations where the Base Issue Fee has been paid and the Notice of Allowance is subsequently withdrawn, the applicant may request that a refund be made or that the fee be credited to a Deposit Account.

Applicants will continue to receive a three part Notice of Allowance packet, but, as a result of automated printing, the Notice will be produced in a slightly revised format. This new format will have the following application data printed thereon:

—Serial Number
—Filing Date
—Total Claims Allowed
—Date of Mailing
—Examiner Name and Group Art Unit
—First Named Applicant
—Title of the Invention
—Base Issue Fee Due (Utility Applications Only)
—Attorney's Docket Number
—Class and Subclass Where Issued

Copy (a) of the new Notice of Allowance will be used as applicant's record copy in the current manner. Copy (b) will continue to be used as a transmittal for the fee with copy (c) required when a charge to a deposit account is authorized. The new version of copy (c) will also have a section to notify the Office of a change in an inventor's address. Note that this address change need not be signed by the inventor. This procedure eliminates the need for the separate Inventor's Address Change form (PTOL–231) now in use.

One other change to current practice will also be implemented as a result of the new system. Beginning with patents issuing in the late fall of this year, advance orders for patent copies will only be sent to the correspondence address of record in the application. This practice will permit computer generation of mailing labels for the orders and thereby eliminate the need for the separate, pink Advance Order form (PTO–721) now in use. Requests for advance orders will now be made in a special section of copy (b) of the Notice of Allowance. During the transition from the old order method to the new, it will be necessary to send some advance orders to the correspondence address of record in the application rather than some other address as has been requested on an earlier submitted Advance Order Form.

While the major impacts on the public will be limited to those discussed above, one other minor matter should be mentioned. It is anticipated that, due to the absence of data in the master data base, some information occasionally may not be printed on the Notice of Allowance or on other form correspondence. However, this does not necessarily mean that a corrected Notice or form letter is required. Furthermore, since the data base is not used for printing of the patent grant, the missing information should appear on the final issued patent if it is in the application file wrapper. This problem is expected to diminish as the implementation of the system proceeds and the data base becomes more complete. The cooperation of applicants and their representatives during this system implementation is sincerely appreciated by the Patent and Trademark Office.

June 16, 1980. SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[997 O.G. 9]

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(56) **Policy Regarding Storage, Retention and Availability of the Foreign Patent Documents in the Numeric Collection of the Patent & Trademark Office***

The U.S. Patent and Trademark Office (PTO) maintains the largest collection of foreign patent documents in the United States. This collection is a major technical information resource that supports the patent examination function as well as the PTO's mission of disseminating technical information. The collection is divided into two parts—the classified collection which is distributed among the examiners' search files, and the numeric collection which is maintained by the PTO's Scientific Library. A large portion of the numeric collection is in paper form, but it also includes considerable microfilm with some overlap between the two forms. Some of the documents are republished versions of earlier publications (e.g., unexamined and examined applications). One of the PTO's objectives has been to reduce the bulky paper foreign patent files in the numeric collection by replacing them, where possible, with good quality microfilm and by eliminating duplicates. A number of other considerations bear on the management of this collection. Because of the importance of the collection, the PTO has established a policy intended to ensure the effective storage, retention, and availability of the foreign patent documents in its numeric collection. The purpose of this notice is to inform the public of this policy which is set forth below.

The public is invited to consider and submit comments on the policy. Please address comments to:

William S. Lawson
Administrator for Documentation
U.S. Patent and Trademark Office
Washington, D.C. 20231

General Policy

The U.S. Patent and Trademark Office (1) is the National repository for all foreign patent documents, except design patents; (2) will maintain, in numerically retrievable collections, as many as possible of these documents for which there is or may be a reasonable level of need, and (3) will make these documents conveniently accessible to the PTO and to the public.

Implementation

1. The Scientific Library is responsible for policy implementation.

2. At least all post-1920 foreign patent documents needed to meet "Minimum Documentation" requirements of the Patent Cooperation Treaty will be housed in the Scientific Library in either paper or microfilm form.

3. All paper copies of foreign patent documents not needed to meet "Minimum Documentation" requirements will be housed either in the Scientific Library or other storage space in accordance with usage activity. The documents with greater activity will be housed in the Scientific Library until space therein is exhausted and the remaining documents will be housed in the other storage space.

4. All foreign journals (official gazettes) will be housed in the Scientific Library.

5. All paper copies of foreign patent documents needed for copy request fulfillment will be stored in a form accessible for prompt retrieval.

6. Whenever feasible, paper copies of foreign patent documents will be replaced by good quality microfilm.

7. 16mm roll microfilm will be the microform preferred for PTO use and archival storage. If 16mm microfilm is not available or is unacceptable, the Library may decide, on a case-by-case basis, whether a different microform should be obtained.

8. All microfilm of foreign patent documents intended for use by the PTO and the public will be housed in the Scientific Library. All archival microfilm will be housed in a facility that is suitable for the preservation and protection of the microfilm and for needed access.

9. Paper copies of foreign patent documents will be disposed of if good quality microfilm of the corresponding documents is available in the Library, good quality *archival* microfilm is available in the PTO, and the PTO has the legal rights to sell paper copies made from the microfilm and to reproduce the microfilm for internal use; paper copies for which there is little or no demand may be disposed of despite the availability of only marginal-quality microfilm. Paper copies for which good quality microfilm is available in the Library, but for which the other conditions noted above are not met, will be retained, although they need not be stored in a form accessible for prompt retrieval. However, such documents will be stored in accordance with a procedure designed to ensure preservation of the documents, adequate records of stored material and efficient utilization of space.

10. Where an application has been republished, a decision will be made on a "country-by-country" basis as to whether the duplicate version or versions of the initial document will be retained. The basis for this decision will be the current or anticipated utility of the duplicate documents to the PTO and the public.

11. Collections of paper copies that are not needed by the PTO will be disposed of promptly. Such collections will first be offered, for a limited time, to developing countries through the World Intellectual Property Organization. Collections which cannot be disposed of in this manner may then be disposed of, preferably by offering them for sale, as part of some exchange, or as gifts. However, if unneeded paper copy collections cannot be disposed of in a beneficial manner within a reasonable period of time, they will be discarded.

12. Requests for copies of foreign patent documents from within the PTO and from the public will be fulfilled promptly.

13. Fees to the public for copies of foreign patent documents will be set at a level commensurate with full cost recovery and with the provision of prompt, efficient copy service.

14. As the complete text of foreign patent documents is captured in electronic form and becomes retrievable, numerically and otherwise, to the PTO and to the public, in the automated patent system, paper copies will be disposed of and the retention of microfilm reconsidered.

15. It is recognized that this policy does not provide for all possible circumstances regarding the foreign patent document collection and there may be limited instances where some deviation from the policy is justified. In such cases, the deviation will be justified in writing by the Program Manager of the Scientific Library and approved by the Administrator for Documentation and the Assistant Commissioner for Patents.

Nov. 26, 1984. WILLIAM S. LAWSON,
Administrator for Documentation.

[1052 OG 3]

*The PTO also maintains a very large, technologically classified collection of foreign patent documents. This policy *does not* apply to the classified collection

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FEES AND PAYMENT OF MONEY

(57) **DEPARTMENT OF COMMERCE**
Patent and Trademark Office
37 CFR Parts 1 and 2

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish fee related procedures and fees in amounts which would comply with the requirements of either Public Law 96–517 or H.R. 6260, dependent upon which is effective on Oct. 1, 1982. This action is necessary at this time in view of the requirements to establish fees and procedures contained in Public Law 96–517 and the requirements which would also be present under H.R. 6260 enacted as a Public Law. This final rule is being issued in two sections with the first section relating to patent fees and the second section relating to trademark fees. This final rule is also being issued in alternative form so that the proper fees and procedures will become effective on Oct. 1, 1982, under either Public Law 96–517 or the Public Law which results from enactment of H.R. 6260. Thus, if Public Law 96–517 remains fully effective on Oct. 1, 1982, the rule changes contained herein which are common to Public Law 96–517 and H.R. 6260, as well as those specific to Public Law 96–517, contained in Alternative A of each section, will become effective. Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, the rule changes contained herein which are common to Public Law 96–517 and H.R. 6260, as well as those specific to H.R. 6260, contained in Alternative B of each section, will become effective. Thus, the intended effect of this action is to adopt rules which will be effective on Oct. 1, 1982, establishing patent and trademark fees and procedures regardless of whether Public Law 96–517 remains fully effective or whether H.R. 6260 has been enacted.
Effective Date: Oct. 1, 1982. However, prior to Oct. 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.
For Further Information Contact: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557–3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Rm. 3–11A13, Washington, D.C. 20231.
For Further Information Contact: As to the trademark rules contact Miss Maude Williams by telephone at (703) 557–2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Rm. 3–11C17, Washington, D.C. 20231.
Supplementary Information:

SECTION I—REVISION OF PATENT FEES

Background

A notice of proposed rulemaking was published in the *Federal Register* on June 28, 1982, at 47 FR 28042–28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57–120. An oral hearing was held on July 9, 1982. Fourteen written letters and statements were submitted. Five persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These rule changes are designed primarily to implement the Patent and Trademark Office fees which are provided for by Public Law 96–517, or which would be set in, or provided for by, the Public Law resulting from H.R. 6260.

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Public Law 96–517

Public Law 96–517 presently requires that fees be established by the Commissioner for the processing of patent applications from filing through issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. Public Law 96–517 requires that by Oct. 1, 1982, fees for the processing of patent applications, other than design patents, be set by the Commissioner to recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. Similarly, fees for processing design patents are to be set to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. By Oct. 1, 1982, fees for all other services or materials related to patents are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

Public Law 96–517 also requires that fees be set for maintaining all patents filed on or after Dec. 12, 1980, other than design patents, in force. It also requires that maintenance fees must recover 25 per centum of the estimated cost to the Office of processing patent applications, other than design patent applications, by the fifteenth fiscal year following Dec. 12, 1980. Under Public Law 96–517, the maintenance fees are due 3½, 7½, and 11½ years after grant of the patent.

Public Law 96–517 is presently effective and this rule change is designed to implement the fee provisions of that law if it remains fully effective on Oct. 1, 1982. The changes which will become effective on Oct. 1, 1982, under Public Law 96–517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96–517 and H.R. 6260, and (2) the rule changes under only Public Law 96–517, which appear in Alternative A.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. H.R. 6260 would establish a number of statutory fees which the Commissioner is required to charge. Among the more significant of these are fees for filing a patent application, issuing, and maintaining a patent in force. The fees for filing a patent application and issuing a patent would be set forth in §41(a) of Title 35, United States Code, as proposed to be amended by H.R. 6260. Certain other fees, such as appeal fees, the fee for filing a disclaimer, and fees for filing petitions seeking to revive an abandoned application and for extensions of time, would also be set in §41(a) of Title 35, United States Code. Section 41(b) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would set forth the fees for maintaining a patent in force. These fees would be due 3½, 7½, and 11½ years after grant of the patent or within a grace period of six months thereafter. Section 41(c) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would provide for the acceptance of maintenance fees after the statutory grace period under certain conditions and with certain effects.

H.R. 6260 would also provide for the reduction by 50 per centum in the fees paid under §41(a) and (b) of Title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established, and to be established therefor.

Section 41(d) of Title 35, Untied States Code, as proposed to be amended by H.R. 6260, would also provide that the Commissioner establish fees for all other processing, services, or materials related to patents which are not covered in §41(a)–(c) of Title 35, United States Code, to recover the estimated average cost to the Office of the procesing, services, or materials.

The changes which will become effective on Oct. 1, 1982, *upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982*, are (1) the rule changes common to Public Law 96–517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. H.R. 6260 includes other provisions which would be the subject of other proposals for rulemaking.

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a patent application, or during the term of a patent. A number of significant changes are made in order to implement either Public Law 96–517 or H.R. 6260.

Under H.R. 6260, and Alternative B of this rule making, fees under §41(a) and (b) of Title 35, United States Code, would be reduced by 50 per centum for independent inventors, small business concerns, and nonprofit organizations. H.R. 6260 would give the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking, in Alternative B, implements the fee system which would be established by H.R. 6260 and lists all applicable fees.

* * * * *

Another significant change relates to fees established under Public Law 96–517 and which would be established by H.R. 6260 for petitions for extensions of time to take actions required by the Commissioner in an application. H.R. 6260 would establish a fee of $50 for filing a petition for a first one-month extension of time, an additional fee of $100 for filing a petition for a second one-month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a petition for a third one-month extension of time which would expire three months after the end of the time period set for taking action. A fourth one-month extension with an additional fee of $200 could be requested if additional time was available under the statute. Under H.R. 6260, the Commissioner would have authority to issue regulations providing when, within any maximum time period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. The Commissioner would also not be precluded by H.R. 6260 from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause. This rulemaking implements the extension of time provisions of H.R. 6260 by permitting applicants in the majority of situations to file the petition for an extension of time and the fee at the time of and along with the filing of the response for which a non-statutory or shortened statutory time period has been set. This will reduce the amount of paperwork involved and should significantly reduce the expenses of applicants and the Office since resources now devoted to the separate processing of petitions for extensions of time will no longer be required to be expended thereon. The fees are set to provide a proper control on the number of extensions of time given. The same procedures relating to extensions of time which would be established under Alternative B and H.R. 6260 will also be established under Alternative A and Public Law 96–517. Thus, whether the rules are effective on Oct. 1, 1982, under Public Law 96–517 and Alternative A, or under H.R. 6260 and Alternative B, the same procedures for obtaining extensions of time will be in effect with the only differences being in the amount of the fees.

Another significant change relates to the implementation of the fee for revival of an unintentionally abandoned application which would be authorized under H.R. 6260. H.R. 6260 would establish two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees would be applicable to petitions to accept the delayed payment of the fee for issuing a patent. Under H.R. 6260, a fee of $50 is established in §1.17(1) for filing a petition for revival under §§133 or 151 of Title 35, United States Code, in accordance with standards presently in effect where the delay resulting in the abandonment, or the delay in payment of the issue fee, was unavoidable. Under H.R. 6260, a fee of $500 is established in §1.17(m) for filing each petition for revival, or for acceptance of the delayed payment of an issue fee, where the abandonment or the failure to pay the issue fee was unintentional. A mere statement that abandonment was unintentional plus the $500 fee is all that is required in this case for this purpose. Under H.R. 6260 and this rulemaking an applicant would have a choice of which petition and fee to file seeking revival depending on the circumstances involved. The changes discussed in this paragraph cannot be made effective without enactment of H.R. 6260 as a Public Law.

The rulemaking also provides for fees for filing certain petitions which have, in some cases, heretofore, been decided without a charge. These fees are established under Public Law 96–517 and are provided for by the amendment of §41(d) of Title 35, United States Code, which would be introduced by H.R. 6260. Under §41 of Title 35, United States Code, as amended by Public Law 96–517 or as it would be amended by H.R. 6260, fees are authorized for the processing of various petitions desiring certain actions to be taken regarding patent applications, for the recording of assignments, for reexamination of patents, and for the processing of international applications under the Patent Cooperation Treaty. In general, fees are not being required for those petitions which are supervisory in nature. For example, where applicants are petitioning from an allegedly improper action of the examiner, it is felt that such petitions should be processed and decided without charge since they are not asking for any special privilege but are attempting to correct an allegedly incorrect Office holding. The changes discussed in this paragraph will be in effect on Oct. 1, 1982, whether the rules become effective under Public Law 96–517 and Alternative A, or under H.R. 6260 and Alternative B.

Many of the fees currently set forth in §1.21 are being increased to reflect the cost of currently performing that service.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this proposal under three different categories. Those changes which are common to Public Law 96–517 and H.R. 6260 appear first and are numbered 1–54. Those changes which relate only to Public Law 96–517 appear as Alternative A and are numbered 55–62. Those changes which are dependent upon enactment of H.R. 6260 appear as Alternative B and are numbered 63–71. The changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, Alternative B will become effective on Oct. 1, 1982, in which case Alternative A will not become effective.

Rule Changes Common To Public Law 96–517 and H.R. 6260

The following sections are changed, effective Oct. 1, 1982, under either Public Law 96–517 or H.R. 6260:

Section 1.11 is amended to change the reference for the reexamination request fee to §1.20(c).

Section 1.12 is amended to break the section into four paragraphs. Paragraph (a) maintains current practice but adds specific reference to §1.19(a)(5) which sets the cost of copies.

Paragraph (b) maintains current wording except for inserting "patent" after "abandoned" and changing "his" to "applicant's". Paragraph (c) includes new language relating to obtaining copies of assignment records not open to the public. Access can be obtained only with the applicant's permission or by petition with fee to the Commissioner for such access in particular situations. No change in the showing required by petition to obtain access is intended by this amendment. Paragraph (d) contains present language except for reference to the specific rule which sets forth the charge for time consumed in making assignment searches.

New paragraph (e) of §1.14, sets forth the two ways in which access can be obtained to patent applications which are not open to the public. The two ways are (1) by petitioning and paying the petition fee and approval of the Commissioner of such petition and (2) by obtaining written approval from the applicant.

New §1.19 provides fees for copies of various documents supplied by the Office. The fees have been grouped into 5 paragraphs. New paragraph (a) provides fees for uncertified copies. Subparagraphs (a)(1) and (2) indicate the prices of printed patent copies. Subparagraph (a)(3) provides a single fee for a copy of an application, as filed, for each 50 pages, or fraction thereof. This practice should make it much easier to determine the amount of the required fee. Subparagraph (a)(4) sets a single fee for a copy of each 100 pages, or fraction thereof, of a patent file wrapper. Subparagraph (a)(5) provides for a charge of 30 cents per page for copies of Office records other than those covered by subparagraphs (a)(1) through (4). Subparagraph (a)(6) provides a fee for a microfiche copy of a microfiche.

Paragraph (b) of §1.19 sets fees for certified copies of Office documents. Subparagraph (b)(1) sets a fee for certifying Office records. Subparagraph (b)(2) provides a single fee for searching assignment records, preparing an abstract of the title and certification thereof. Subparagraph (b)(3) provides a fee for comparing copies not prepared by the Office prior to certification in order to provide basis for certification. Paragraph 1.19(c) sets the fees for subscribing to all of the patents issued annually in particular subclasses. This charge is in addition to the normal copy charge under §1.19(a)(1) and (2). Paragraph 1.19(d) sets the fee for providing patent copies to libraries under 35 U.S.C. 13. Paragraph 1.19(e) provides fees for lists of United States patents in particular subclasses.

Section 1.21 is amended to contain those miscellaneous fees which do not relate to the topics covered in §§1.16–1.20. All of the fees in §1.21 are established under the authority given the Commissioner by 35 U.S.C. 41(d) as amended by Public Law 96–517 or as proposed in H.R. 6260. Paragraph 1.21(a) establishes fees for admission to the examination for registration to practice, registration, reinstatement and issuance of certificates of good standing of patent attorneys and agents. Subparagraph 1.21(b)(1) sets forth the fee for establishing and reinstating deposit accounts, while subparagraph 1.21(b)(2) sets forth the fee due when the balance at the end of each month is below $40. Paragraph 1.21(c) sets the fee for filing a disclosure document. Paragraph 1.21(d) sets the fee for renting a delivery box. Paragraph 1.21(e) sets the fee for an international-type search report. Although all national applications now receive what is known as an international-type search, if a report thereof is desired in addition to an Office action, the fee set in §1.21(e) is required. Paragraph 1.21(f) sets a fee for searching Office records for purposes not otherwise specified. Paragraph 1.21(g) sets the fee for tokens for copying machines. Paragraph 1.21(h) sets the fee for recording assignments, agreements, and other documents. Paragraph 1.21(i) sets forth the fee for publishing a notice of availability of a patent for licensing or sale in the *Official Gazette*. Paragraph 1.21(j) sets the fee for the Office providing a duplicate or replacement of a permanent Office user pass. Paragraph 1.21(k) indicates that the Commissioner may specify charges for items and services not otherwise specified at a level to recover the actual cost of providing such an item or service by the Office.

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Section 1.24 is revised so that the denomination of coupons sold by the Office will be in more convenient amounts.

Section 1.25 is amended to provide, in paragraph (a), a reference to the fee for establishing a deposit account and a service charge if the end of the month balance is below $40.00. Paragraph (b) is amended by revising the present sentence to refer to post-issuance fees and by adding a second sentence which would specifically provide in the regulations for the possibility of an applicant giving a general authorization to charge any fee due under §§1.16–1.18 in a particular application to a deposit account during the entire pendency of the application. This general authorization would not apply after the patent issues, e.g., to maintenance fees. The last sentence of paragraph (b) permits fees during reexamination to be charged to a deposit account by filing an authorization with the request for reexamination.

Section 1.26 is amended to provide in paragraph (a) that a withdrawal of a request for an oral hearing will not entitle appellant to a refund. Paragraph 1.26(a) raises the amount which will not be refunded without specific request from fifty cents to one dollar. Paragraph (b) relating to refunds of international search fees during subsequent examination of a national application is deleted since such refunds are now covered by reductions in the appropriate fees paid under §1.445 rather than solely by direct refunds. Paragraph (c) is amended to bring the spelling of "requester" into conformance with that used in other sections of the regulations.

Section 1.45 is amended to provide in paragraphs (b) and (c) for a petition and petition fee to be filed to correct misjoinder of inventorship situations in pending applications. The fee will cover the additional time required by the Office to process such applications.

Section 1.47 is amended to provide for petitions and fees for filing applications signed by less than all inventors, or a person not the inventor.

Section 1.51 is amended to refer to the filing fees in new §1.16 and to add a new paragraph (c) indicating that applicants may file authorizations to charge fees required under any of §§1.16–1.18 to deposit accounts.

Section 1.52 is amended to add a reference in paragraph (a) to new paragraph (d). New paragraph (d) provides in the rules for filing an application in a language other than English if a verified English translation and fee under §1.17(k) are timely submitted.

Section 1.55 is amended in paragraph (b) to require a petition and fee for processing priority papers submitted after the issue fee is paid.

Section 1.75 is amended to add a reference to §1.16 and a sentence referring to the fee for multiple dependent claims set forth in §1.16(d).

Section 1.85 is amended to delete the sentence relating to mounting of informal drawings.

Section 1.86 is removed to delete the reference to the Office draftsman making drawings since such service is no longer available.

Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d). Revised paragraph (a) refers to paragraph (b) and added paragraphs (c) and (d). Paragraph (c) requires a petition but no fee where the basis for the petition to make special is the applicant's age or health or the impact of the invention on improving the environment or conservation of energy. Paragraph (d) requires a petition and the fee set forth in §1.17(i) for petitions to make special on grounds other than those above.

Section 1.103 is amended in paragraph (a) to provide for filing a petition and the fee set forth in §1.17(i) for a suspension of action except that no fee would be required where the reason for the suspension is the fault of the Patent and Trademark Office. Paragraph (b) is amended to clearly indicate that suspensions are directed to actions by the Office and not responses by the applicant.

Section 1.104, paragraph (d) is amended to change the fee reference to correspond to §1.21(e).

Section 1.134 is added to indicate that unless applicant is notified of any non-statutory or shortened statutory period in an Office action, a maximum period for response of six months is allowed.

Section 1.135 is amended to provide that if no response is filed within the time set in the Office action under §1.134 or as it may be extended under §1.136, the application will be abandoned unless an Office action indicates that another consequence, such as disclaimer, will take place. Paragraph (b) is amended to include a reference to paragraph (a). Paragraph (c) is amended to add that applicant's reply must be a bona fide attempt to respond as well as to advance the case to final action in order for applicant to be given an opportunity to supply any omission.

Section 1.136 is amended to revise the title and provide for two distinct procedures to extend the period for action or response in particular situations. The procedure which is available for use in a particular situation will depend upon the circumstances. Paragraph 1.136(a) permits an applicant to file a petition for extension of time and a fee as in §1.17(a), (b), (c), or (d) up to four months after the end of the time period set to take action except (1) where prohibited by statute, (2) in interference proceedings, or (3) where applicant has been notified otherwise in an Office action. The petition and fee can be filed prior to or with the response. The filing of the petition and fee will extend the time period to take action up to four months dependent on the amount of the fee paid except in those circumstances noted above. Paragraph 1.136(a) will effectively reduce the amount of paperwork required by applicants and the Office since the extension will be effective upon filing of the petition and payment of the appropriate fee and without acknowledgment or action by the Office and since the petition and fee can be filed with the response. Paragraph (b) provides for requests for extensions of time upon a showing of sufficient cause when the procedure of paragraph (a) is not available. Although the petition and fee procedure of §1.136(a) will normally be available within 4 months after a set period for response has expired, an extension request for cause under §1.136(b) must be filed during the set period for response. The sentence in paragraph (b) relating to who may grant an extension under paragraph (b) is eliminated thereby providing additional flexibility to designate persons to act on requests under paragraph (b). Extensions of time in interference proceedings are governed by §1.245.

Section 1.165, paragraph (b) is amended to delete therefrom the last sentence which refers to a fee for mounting copies. Since little or no need has been found for this provision in the rules, it is deleted.

Section 1.171, as amended, adds a reference to §1.19 (b)(2) which sets forth the fee for title reports.

Section 1.177 is amended to require a petition and fee as set forth in §1.17(i) where it is desired that divisions of a reissue issue on different dates.

Section 1.181 is amended to indicate in paragraph (d) that if a petition to the Commissioner is filed under the provisions of a section which requires a petition fee and the required fee is not paid, the petition will be dismissed. The amendment to paragraph (g) deletes the reference to §1.183.

Section 1.182 is amended to add a sentence requiring any petition filed under this section to be accompanied by the petition fee set forth in §1.17(h).

Section 1.183 is amended to specifically refer to the inherent authority of the Commissioner to suspend or waive the rules at the Commissioner's initiative. The amendment also indicates the Commissioner's authority to designate others to act for the Commissioner in appropriate circumstances. The rule language also requires the payment of the petition fee set forth in §1.17(h) if a petition to suspend or waive the rules is filed.

Section 1.191 is amended to change the fee reference for filing a notice of appeal to §1.17(e) and delete the word "primary" since some actions which are subject to appeal are not made by a "primary" examiner.

Section 1.192, paragraph (a), is amended to refer to the fee for filing an appeal brief set forth in §1.17(f). The present language requiring a showing of sufficient cause for extensions of time for filing the brief and an indication that an oral hearing is desired at the time of filing the brief are removed from paragraph 1.192(a). Under the amendment to paragraph 1.192(a), the provisions of §1.136 will apply to extensions of time for filing the brief. The time for requesting an oral hearing is now set in §1.194(b).

Section 1.194 is amended to revise paragraphs (b) and (c) to refer to the fee for oral hearing in §1.17(g) and to indicate in paragraph (b) that any request for an oral hearing must be made within one month after the mailing date of the examiner's answer.

Section 1.197, paragraph (b), is amended to modify the last sentence relating to extensions of time to make the provisions of §1.136 applicable thereto. Paragraph 1.197(b) is also amended to limit requests for rehearing, reconsideration or modification of a Board decision to one. This will not significantly change present practice since such requests are now required to be filed within thirty days from the date of the original decision.

Section 1.231, paragraph (a)(1), is amended to change the reference to the fee for filing a request for reexamination to §1.20(c).

Sections 1.245 and 1.246 are amended to indicate that the provisions of §1.136 do not apply to time periods in interferences.

Section 1.263 is amended to add a reference to the fee for filing a disclaimer contained in §1.20(d).

New section 1.268 is added to provide a rule relating to the filing of interference settlement agreements. The rule generally follows 35 U.S.C. 135(c) and provides for filing of petitions and fees in paragraphs 1.268(b) and (c).

Section 1.292, paragraph (a), is amended to require the payment of the fee set forth in §1.17(j) with any petition for the institution of public use proceedings.

Section 1.304, paragraph (a), is amended to provide for extension of the time period for filing an appeal or civil action to be subject to the provisions of §1.136 and refer to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals.

Section 1.311 is amended to designate the present section as paragraph (a) and revise it in several ways. Paragraph (a) indicates that the notice of allowance will be sent to the correspondence address as indicated under §1.33. The issue fee (§1.18) is indicated as being due 3 months from the date of mailing of the notice of allowance. Paragraph 1.311(b) permits an authorization to be filed either before or after the mailing of the notice of allowance to charge the issue fee to a deposit account.

Section 1.312 is amended to divide the section into two paragraphs and require a petition and payment of the fee under §1.17(i) for any amendment filed after payment of the issue fee.

Section 1.313 is amended to provide in paragraph (a) clear basis for the Office withdrawing applications from issue on its own initiative or upon petition by applicant accompanied by the petition fee set forth in §1.17(i). Any accompanying amendment must comply with the requirements of §1.312. Paragraph (b) clarifies when an application will be withdrawn from issue after assignment of the issue date and patent number.

Section 1.314 is amended to revise the wording to eliminate reference to a portion of the issue fee and adds reference to the possibility that an application in which the issue fee was paid can be withdrawn from issue under §1.313 or the issuance thereof deferred pursuant to a petition by the applicant and the payment of the petition fee under §1.17(i).

Section 1.321 is amended to include references in both paragraphs (a) and (b) to the statutory disclaimer fee in §1.20(d) and delete the reference to §1.21.

Section 1.324 is amended to include reference to the fee in §1.20(b) and change the word "application" to "petition".

Section 1.331, paragraph (a), is amended to add a new sentence which gives the citation of the fee for recording assignments and to indicate that instruments recorded on the Government register under Part 7 of Title 37, Code of Federal Regulations, do not require payment of such fee.

Section 1.332 is amended to refer to the fee in §1.21 (h) for recording an assignment.

Section 1.334 is amended to divide the rule into three paragraphs and also require an address of the assignee so that correspondence can be directed to the assignee if required. New paragraph (c) provides for filing a petition and the fee set in §1.17(i) seeking to have the patent issue to the assignee where such assignment has not been recorded at the time the issue fee is paid.

Section 1.341, paragraph (h), is amended to refer to the fee set forth in §1.21(a)(2) for registration of an attorney or agent.

Section 1.347 is amended to add a sentence referring to the fee set forth in §1.21(a)(3) for reinstatement of an attorney or agent.

Section 1.445 is amended to increase the PCT transmittal fee and search fee to a level needed to cover the cost of performing the required functions. Paragraph 1.445(a)(2) is also amended to provide, in effect, for a reduction in the international search fee due to the United States Patent and Trademark Office as an International Searching Authority where a corresponding United States national application with fee has been filed. In addition, paragraph 1.445(a)(4) is amended to credit the national fee required under §1.16(a)–(d) where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. The supplemental search fee for inventions in addition to the first, where lack of unity of invention has been found, is reduced since the present fee is more than is required to cover the costs. The national fee amount is the same as the national application filing fees in §1.16(a)–(d).

Section 1.446(b) is revised to permit a refund of a portion of the search fee to the extent set forth in §1.445(a)(4), if such refund is requested at the time of paying the national fee.

Section 1.451 is amended in paragraph (b) to revise the citation of the fees for a certified copy.

Section 1.510 is amended to cite the section which sets forth the fee for requesting reexamination. There is no change in the amount of this fee.

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Alternative B—Rule Changes Under H.R. 6260

The following sections will become effective on Oct. 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to that date:

Section 1.16 in Alternative B establishes in the regulations those statutory fees which would be charged by the Commissioner for filing patent applications under H.R. 6260. Section 1.16 also includes additional filing fees set in 35 U.S.C. 41(a)(1) to cover the cost of examining complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. Section 1.16 also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under 35 U.S.C. 41(a) as it would be amended by H.R. 6260, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in §112 of Title 35, United States Code, or any claim depending therefrom, is

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considered as separate dependent claims in accordance with the number of claims to which reference is made.

The fees in §1.16 are reduced by 50 per centum for applications filed by small entities, i.e., independent inventors, nonprofit organizations and small business concerns, in accordance with H.R. 6260. Therefore, two fees are listed under each paragraph.

New §1.16 relates to application filing fees. Paragraph (a) sets a basic filing fee of $300 which will be required in all original patent applications. The term "original" as used in the regulations means "non-reissue". An "original" application can be a first filing, a division, a continuation, or a continuation-in-part application. Paragraph 1.16(b) provides for an additional fee of $30 for each independent claim in excess of 3 in an original application. New paragraph 1.16(c) provides for an additional fee of $10 for each claim in excess of 20, whether independent or dependent. A multiple dependent claim is considered to be that number of claims to which direct reference is made. Also, any claim which refers to a multiple dependent claim is considered for fee calculation purposes to be the number of claims to which direct reference is made in the multiple dependent claim. Paragraph 1.16(d) provides for a new fee of $100 in each application which contains one or more multiple dependent claims. The note following paragraph 1.16(d) is intended to clearly indicate that the applicant, attorney, or agent may pay any additional fees required under paragraphs (b), (c) and (d) of §1.16, or cancel such claims without payment of such additional fees, either at the time of filing or by the time a response is due to any notice of fee deficiency mailed by the Office. If the fees are not paid or the claims cancelled by the end of the period set for response to the notice of fee deficiency, the application will be held abandoned. New paragraph 1.16(e) establishes the amount of the surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application. This fee is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. New paragraph 1.16(f) provides for a filing fee of $125.00 for a design application.

Paragraphs 1.16(g) and (h) incorporate into the regulations the filing fees for plant and reissue applications.

Paragraphs 1.16(i) and (j) set forth the additional claim fees required in reissue applications based on claims in excess of those in the original patent.

New §1.17 relates to patent application processing fees which are normally due during the time a patent application is pending. New paragraphs (a), (b), (c) and (d) provide for the payment of an extension fee for obtaining an automatic extension of time upon filing a petition as provided for in §1.136(a). The extension fee can be paid during the period for which an extension of time to respond is desired, or after the original period for response has expired, provided that any maximum statutory period which may apply has not expired. The fees set forth in §1.17 are the total fees required under §1.136(a) for the periods indicated and any extension fee previously paid to extend a particular period is credited toward the total extension fee required. Paragraph (e) sets forth the fee for filing a notice of appeal to the Board of Appeals. Paragraph (f) sets forth the fee for filing an appeal brief for appellant. Paragraph (g) provides for a new fee for requesting an oral hearing before the Board of Appeals. Paragraphs (h) and (i) set forth fees which will be required with petitions to the Commissioner under those sections of the regulations which specifically indicate that such petition fees are required. The amount of the fees are set at two levels based on the degree of complexity of the petitions in order to recover the estimated average cost to the Office of processing the petitions. Paragraph (j) provides for a fee to be paid with any petition for institution of a public use proceeding to cover the estimated average cost of such a proceeding. Paragraph (k) sets forth a new fee for processing an application filed with a non-English language specification. The fee will cover the additional processing costs involved in such applications. New paragraph (l) incorporates into the regulations the fee which will be charged for filing a petition to revive or to accept late payment of the issue fee where the delay was unavoidable. New paragraph (m) incorporates into the regulations the fee which will be established in 35 U.S.C. 41(a)7, as amended by H.R. 6260, to be charged for a petition for the revival of an unintentionally abandoned application for patent or for the unintentionally delayed payment of an issue fee.

Since paragraphs 1.17(h), (i), (j) and (k) are established under the authority given the Commissioner under 35 U.S.C. 41(d) as it would be amended by H.R. 6260, only one level of fee is set. H.R. 6260 only provides for the reduction of fees charged to small entities of those fees established in 35 U.S.C. 41(a) and (b).

New §1.18 sets the amount of the issue fees specified by H.R. 6260. New paragraph (a) establishes an issue fee of $500.00 for all original and reissue patents except for designs and plants. New paragraph (b) sets the amount of the issue fee for a design patent. New paragraph (c) sets forth the issue fee for a plant patent. All fees in §1.18 will be reduced by 50 per centum for small entities.

New §1.20 sets fees for various post-issuance functions performed by the Office. New paragraph (a) sets forth a fee for providing a certificate of correction of an applicant's mistake. New paragraph (b) sets a fee to accompany a petition to correct inventorship in a patent under §1.324. New paragraph (c) transfers the $1,500.00 fee for requesting reexamination from present §1.21(x) to this new section. New paragraph (d) provides for a fee for filing a disclaimer under §1.321. Maintenance fees required by Public Law 96–517 and which would be set in H.R. 6260 are placed in this section. Specific maintenance fees, which are required by Public Law 96–517, for those patents resulting from applications filed on and after Dec. 12, 1980 and up to the date of enactment of H.R. 6260 are being established at this time in paragraphs 1.20(e)–(g). New paragraphs 1.20(h)–(j) incorporate into the regulations the maintenance fees which would be provided in 35 U.S.C. 41(b) by H.R. 6260. The fees in paragraphs 1.20(a)–(c) are only set at one level because they are established under 35 U.S.C. 41(d). The fees in paragraphs 1.20(e)–(g) are only set at one level because they are established under Public Law 96–517 and are not subject to reduction for small entities. The details implementing the payment of maintenance fees are not being established at this time.

Section 1.66 is amended to provide for the use of an apostille of a foreign official to attest to oaths or affirmations made in foreign countries in accordance with 35 U.S.C. 115 and 261, as amended by H.R. 6260.

Section 1.137, as amended, designates the existing section as part of paragraph (a), adds a reference to the new fee under §1.17(l) for a petition for revival where the delay which resulted in abandonment was unavoidable, indicates that the petition must be promptly filed, and states when the showing that the delay was unavoidable must be verified. New paragraph 1.137(b) provides for filing a statement and a fee under §1.17(m) for revival of an application which was unintentionally abandoned, and also indicates when such petitions can be filed. Paragraph (c) requires that any petition for revival under paragraph (a) of §1.137 be promptly filed and that a terminal disclaimer, equivalent to the period of abandonment of the application, be filed with any petition under paragraph (a) filed more than six months after the date of abandonment.

Section 1.155 is amended to refer in paragraph (a) to §1.18(b) which sets forth the issue fee for a design application. Paragraph 1.155(b), as amended, includes a reference to the fee for delayed payment of the issue fee set forth in §1.71(1) where the delay in payment was unavoidable, indicates that the petition must be promptly filed, and states when showings that the delay was unavoidable must be verified. New paragraph 1.155(c) provides for acceptance of the late payment of the issue fee where the delay was unintentional upon petition and payment of the fee set forth in §1.17(m). New paragraph 1.155(c) also indicates when such petitions can be filed. Paragraph 1.155(d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where petition under paragraph (b) of §1.155 is not filed within six months of the date of abandonment.

Section 1.316 is amended to implement the statutory provisions of 35 U.S.C 41(a) with regard to petition fees for revival of applications abandoned for failure to pay the issue fee. Paragraph (b) is amended to provide for petitions for revival with the fee in §1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions for revival with the fee in §1.17(m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where a petition under paragraph (b) of §1.316 is not filed within six months of the date of abandonment.

Section 1.317 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for patents lapsed for failure to pay the remaining balance of the issue fee. Paragraph (a) is amended to show that it applies only to patents in which the issue fee was paid prior to Oct. 1, 1982. Issue fees paid on or after that date will be in accordance with §1.18. Paragraph (b) is amended to provide for petitions with the fee in §1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions with the fee in §1.17 (m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of lapse of the patent where a petition under paragraph (b) of §1.317 is not filed within six months of the date of lapse.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Written comments were received from three patent law groups and eleven individuals. The three patent law groups were (1) the American Patent Law Association whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office; (2) the Patent, Trademark and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of The Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups and by 3 individuals on their own behalf.

These comments appear below along with responses thereto.

Comments received relating to §§1.9, 1.27 and 1.28 and the forms of Part 3 are not discussed in substance in this rule change since additional time for submitting written comments is provided until Aug. 13, 1982. All comments presented to these rules will be discussed in a later rule promulgation.

Comment:

One person argued that it is unreasonable to require fees to lengthen a shortened statutory period.

Reply:

A shortened statutory time is provided for by statute. The shortened period helps reduce patent pendency time and speed the disclosure of technology and information about patent rights. Many applicants can reply within the present three month shortened period which has been in effect for over fifteen years. The fee for extending the time provides a positive method for applicants to obtain an extension of time while still expediting the prosecution of their applications.

Comment:

Another person commented that H.R. 6260 should be rejected in that the fee levels are too high.

Reply:

The consideration of the merits of H.R. 6260 is not before the Office in this rule change.

Comment:

Three patent bar groups and two individuals presented comments relating to the effect of the new extension of time fees in §1.17 and the effect thereof on the current practice of granting an automatic one-month extension of time if a timely first response to a final rejection is filed by the applicant.

Reply:

The Office plans to terminate the automatic one-month extension of time practice on Oct. 1, 1982. It is felt that the extensions of time which are readily available under §§1.17 and 1.136 will meet the needs of applicants. The amount of the fees required to obtain an extension will be the same for periods of response before and after final rejection.

Comment:

One suggestion was made to permit the filing of an appeal without the appeal fee where the Office has not acted on a timely response after final rejection by applicant.

Reply:

Such a procedure is not possible under the provisions of H.R. 6260 since it calls for the appeal fee "On filing an appeal" in §41(a)6.

Comment:

Two comments were received requesting that the rules be changed to make the due date for paying the fee for an oral hearing on appeal after the examiner's answer on appeal.

Reply:

A change in the rules has been made to provide that the fee for an oral hearing is due no later than one month after the date of mailing of the examiner's answer.

Comment:

Two comments were received requesting that no charge for revival of an abandoned application be made where the abandonment resulted from the non-receipt of an Office action by the applicant.

Reply:

It is present Office practice to remail any Office action which is not received at applicant's correspondence address and start anew the response period. This procedure will continue in the future under the revised rules.

Comment:

Three patent bar groups and two individuals indicated that the proposed deletion of the refund provisions due to PCT search reports in §1.26(b) and §1.446(b) would make the cost of filing under the Patent Cooperation Treaty prohibitively high and does not recognize the benefit of an earlier search on a corresponding application.

Reply:

In view of these comments, proposed §1.445(a) (2) and (4) and §1.446(b) have been amended to provide a credit of $250 where there is a corresponding application.

Comment:

One individual requested that the multiple dependent claim practice set forth in §1.75(c) be changed to permit one multiple dependent claim to refer to another multiple dependent claim as permitted under European practice.

Reply:

This suggestion cannot be adopted since it is contrary to 35 U.S.C. 112 and cannot therefore be changed by rule.

Comment:

One suggestion was made to change "official" to "Office" in §1.135(b).

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Reply:
The suggestion has been adopted.
Comment:
One suggestion was made to allow refund of the oral hearing fee if an oral hearing is not held.
Reply:
This suggestion was not adopted since such refund is not appropriate in view of the fact that the fee is stated to be "for requesting an oral hearing" and not the actual conduct thereof.
Comment:
Three patent bar groups raised the question as to whether an applicant would be permitted to revive an unintentionally abandoned application under §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a) and suggested that this be made clear when the proposed rules are promulgated.
Reply:
Yes, an applicant under certain conditions could use §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a).
Comment:
Several comments related to the possibility of reviving applications unintentionally abandoned up to 15 years ago.
Reply:
In view of the comments received, §1.137(b) is being implemented to provide only for the revival of applications which were unintentionally abandoned for a reasonable but limited period of time. This should create no substantial problems in regard to intervening rights situations. It would permit some greater flexibility than that originally proposed but should have no significant effect on the current case backlog, pendency or number of interferences pending.
Comment:
One comment was received pointing out that the availability of an "unintentional abandonment" revival under §1.137(b) should not result in stricter holdings in "unavoidable abandonment" revival petitions under §1.137(a).
Reply:
The Office plans to continue to use the current criteria used to decide petitions to revive applications unavoidably abandoned.
Comment:
One written comment questioned whether the Commissioner has statutory authority to revive unintentionally abandoned applications.
Reply:
If Congress did not intend the Commissioner to have such authority there would have been no reason to establish fees in §41(a)7 in H.R. 6260. The legislative history of H.R. 6260, House Report No. 97–542 (Committee on the Judiciary), also makes the Congressional intent clear. The provisions in H.R. 6260 relating to unintentional abandonment are substantive in addition to setting the fee.
Comment:
One letter questioned what is intended by the statement in §1.137(b) that the Commissioner may require additional information where there is a question whether the abandonment was unintentional.
Reply:
Additional information would be required only where there is an indication that the abandonment was intentional, for example, where an express abandonment has been filed. The record should be clear how such an express abandonment was unintentional if the petition is to be granted.
Comment:
One comment raised the question as to whether in a petition to revive on grounds that the delay was unavoidable under §1.137(a), it would be sufficient that a registered attorney's statement be submitted which merely recites facts as related to him or her by another.
Reply:
Statements must be made, where possible, by the person having direct personal knowledge of the facts. No change in the "showing" required or the persons making them is intended in such petitions. The rule merely clarifies that a statement by a registered attorney or agent need not be in the form of an oath or declaration.
Comment:
One comment suggested that §1.317 be changed to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.
Reply:
Section 1.317 has now been changed to provide for this lapse situation.
Comment:
Three patent bar groups and one individual indicated that a full credit of the amount equal to the international search fee be made where both a U.S. national and international seach are made by the United States Patent and Trademark Office.
Reply:
While a complete credit is not considered proper in view of additional processing work (including searching) required in the second application, a credit of $250 has been provided in revising §1.445(a) (2) and (4).
Comment:
One person commented that the term "patent" should be inserted after "abandoned" in §1.12(b).
Reply:
The suggestion has been adopted.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of other changes which have been made as a result of the comments received and further review of the proposed rulemaking are identified below.

Implementation of the changes to §1.9, new §§1.27 and 1.28, and the deletion of Part 3 are being deferred for further comments by Aug. 13, 1982. See the discussion below.

Subparagraph (a) (5) of §1.19 has been changed from that proposed by referring to subparagraphs (1) through (4) rather than (3) and (4) in order to clarify that copies of patents cannot be ordered at the rate set in subparagraph (a) (5). Instead, copies of patents must be ordered under paragraphs (a) (1) and (2) of §1.19.

Section 1.24 has been changed from that proposed to provide for the sale of 40-cent coupons. Coupons in this denomination may be useful in view of the charge of forty cents for a printed copy of a registered mark in §2.6(m) of Alternative A of the trademark rules.

Sections 1.137, 1.155 and 1.316 have been changed from that proposed in Alternative B to further specify the conditions under which unintentionally abandoned applications can be revived.

Sections 1.192 and 1.194 have been changed from that proposed so as to allow a request for an oral hearing and the payment of the required fee therefor to be made one month after the date of the examiner's answer. Previously, appellant was required to indicate a desire for an oral hearing at the time of filing the brief. The sections will now permit appellant to consider the examiner's answer before deciding whether to request an oral hearing and pay the required fee.

Section 1.317 has been changed in Alternative B to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Section 1.445(a) (2) and (4) have been changed from that proposed to provide for a reduction in the international search fee where there has been a corresponding United States national application and a credit to the national fee where an international search fee has been paid in a corresponding international application and the international search has been made by the United States Patent and Trademark Office.

Section 1.446(b) has been changed from that proposed to permit a refund of a portion of the search fee to the extent set forth in §1.445(a) (4), if such refund is requested at the time of paying the national fee.

IMPLEMENTATION OF PATENT FEE REVISION

The effective date of the patent fee revisions contained in this rulemaking is Oct. 1, 1982.

* * * * *

The changes which will become effective on Oct. 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, are (1) the rule changes common to Public Law 96–517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to Oct. 1, 1982.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, the rule changes in Alternative B will become effective on Oct. 1, 1982, in which case the rule changes in Alternative A will not become effective on Oct. 1, 1982.

Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of specific sections is set forth below:

IMPLEMENTATION OF SPECIFIC SECTIONS

The various sections will be implemented in the manner set forth below:

§1.16 National application filing fees.

Any national patent application filing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section. Any additional fees which become due under §1.16 in pending applications on or after Oct. 1, 1982, or which have not been paid prior to Oct. 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to Oct. 1, 1982. For example, if an application filed prior to Oct. 1, 1982, is amended on or after Oct. 1, 1982, to include a multiple dependent claim for the first time, the fee set forth in §1.16(d) must be paid.

The surcharge in §1.16(e) of Alternative B is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. The statutory authority for the late filing of the fee or the oath or declaration becomes effective six months after enactment of H.R. 6260 as a Public Law.

§1.17 Patent application processing fees.

Any patent application processing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section.

The extension fees which must accompany a petition for an extension of time become effective on Oct. 1, 1982, and apply to any application for which the period for responding, i.e., taking action, expires on Oct. 1, 1982, or thereafter. If a response or action by the applicant was due before Oct. 1, 1982, and was not filed timely or an extension of time until Oct. 1, 1982, or thereafter, was not obtained, then §1.136(a) cannot be used to obtain an extension. *Any response or action required before Oct. 1, 1982, cannot have its time extended by using §1.136(a).* If one or more previous extensions have been granted prior to Oct. 1, 1982, extending the time for taking action unitl Oct. 1, 1982, or thereafter, the fees which are due for additional extensions under §1.136(a) will be as set forth in §1.17(a)–(d) under either Alternative A or B.

* * * * *

The previous practice of extending the shortened statutory period an additional month upon the filing of a timely first response to a final rejection is being discontinued effective with any first response to a final rejection filed on or after Oct. 1, 1982. Applicants can obtain additional time for response after that date by paying the appropriate fee for the same. An object of the previous practice, as expressed in §714.13 of the Manual of Patent Examining Procedure, was to obviate the necessity for appeal or filing a continuing application merely to gain time to consider the examiner's position in reply to a response timely filed after final rejection. Under §1.136(a) the object of the previous practice can be achieved without continuing the previous practice. Thus, under §1.136(a) an applicant can file a timely first response to a final rejection within the initial period without having to file an appeal or a continuing application if the examiner's response is not received prior to the expiration of the initial period for response. If the timely first response places the application in condition for allowance no additional response and no extension fee from applicant is required. If the examiner's advisory action indicates the timely first response did not place the application in condition for allowance the applicant may then consider the examiner's position to determine whether further prosecution is desirable. If further prosecution is not desired the application can be abandoned without further response or expense. If further prosecution is desired, the applicant can petition and pay the necessary fee to extend the time to the extent appropriate up to the maximum permitted by statute. The availability of this flexibility under §1.136(a) eliminates the necessity for the previous practice. Further, under H.R. 6260 extensions of time would be granted in most instances by virtue of the payment of fees rather than without fees as in the previous practice. The elimination of the previous practice after final rejection is thus consistent with the letter and spirit of H.R. 6260.

After an applicant has petitioned and paid the extension fees of $550 for response within the fourth month pursuant to §1.136(a), any further extensions which are permitted under the statute must be obtained under §1.136(b).

A petition for extension of time under §1.136(a) may incorporate by reference a previously filed response without including an additional copy of the response in circumstances where the response was received late and the petition is filed to extend the time so that the response will be considered timely.

The appeal fees set forth in §1.17(e)–(g) are due for notices of appeal or briefs filed, or requests for oral hearings filed, on or after Oct. 1, 1982. If more than one appeal occurs in an application, the fees are due for each notice of appeal, each brief, and each request filed for an oral hearing as long as a decision on the merits by the Board of Appeals resulted from the first notice of appeal, brief, and request for an oral hearing. If the examiner reopens prosecution in the application after appeal and prior to the decision by the Board of Appeals then the fee for the notice of appeal, brief, and request for an oral hearing will apply to a later appeal which does result in a decision by the Board of Appeals. No refund of any appeal fees is permitted since such are due on filing or on requesting an oral hearing. No fee is required for a reply brief.

The fees for petitions set forth in §1.17(h)–(j) and (l) apply to any such petition filed on or after Oct. 1, 1982. The fee set forth in §1.17(m) of Alternative B would apply, with enactment of H.R. 6260 prior to Oct. 1, 1982, to petitions (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent. Section 1.137(b) of Alternative B would apply to applications uninten-

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tionally abandoned by failure to prosecute, e.g., failure to respond to an Office action. Sections 1.155(c) and 1.316(c) of Alternative B would apply to applications in which the payment of the fee for issuing a patent is unintentionally delayed. These sections would be implemented, with enactment of H.R. 6260 prior to Oct. 1, 1982, by making them effective as to any applications which would be covered by the literal language of the sections. In addition, and for a transition period between Oct. 1, 1982, and Dec. 31, 1982, a petition to revive an unintentionally abandoned application would be granted if (i) the application received a decision on a petition to revive the application on or after Oct. 1, 1981, and before July 30, 1982, or (ii) a petition was filed or renewed on or after Oct. 1, 1981, and before July 30, 1982, provided in the case of both (i) and (ii) that a petition to revive was filed within one year of the date of abandonment. The dates in question were chosen so as to permit this remedial provision to be given as wide an application as possible to benefit applicants whose applications have previously been unintentionally abandoned, but who could not meet the previous requirements for a showing that the delay resulting in the abandonment was unavoidable. The dates were also chosen to prevent an applicant whose application has been abandoned for an unduly long period from attempting to take advantage of this new provision, possibly to the detriment of individuals or companies who had begun to make, use, or sell the subject matter of the application after the date of abandonment of the application. By using these dates the possibility of reviving the application of an applicant who has, in effect, abandoned the invention under 35 U.S.C. 102(c) is minimized. Implementing these sections in the manner set forth would be appropriate and proper in view of the legislative history of H.R. 6260, contained in House Report No. 97-542 (Committee on the Judiciary), which indicates that the Commissioner can establish time limits within which petitions to revive or to accept late payment of issue fees can be filed. Thus, it is entirely proper to limit such petitions in the manner set forth in order to prevent abuses from occurring. To ensure that abuses do not occur, §§1.137(b), 1.155(c), 1.316(c), and 1.317(c) specifically indicate that waivers of the time periods involved will not be considered via petitions under §1.183.

The fee set forth in §1.17(k) is required for any application filed on or after Oct. 1, 1982, with a specification in a non-English language.

§1.18 Patent issue fees.

Any patent issue fee paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section even if the notice of allowance was mailed prior to Oct. 1, 1982, and indicates different amounts due. If the issue fee is paid prior to Oct. 1, 1982, any balance of issue fee due must be paid in accordance with §1.317.

§1.19 Document supply fees.

The document supply fees set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after Oct. 1, 1982.

§1.20 Post-issuance fees.

The post-issuance fees set forth in §1.20(a)-(d) apply to any petitions, requests, or actions filed on or after Oct. 1, 1982. The amounts of the maintenance fees are included in §1.20.

Maintenance fees will be required for any patent actually applied for on or after Dec. 12, 1980, whether or not the patent is entitled to the benefit of an earlier filing date under 35 U.S.C. 120 or a right of priority under 35 U.S.C. 119. For reissue patents, the controlling date would be the filing date of the original patent. For example, maintenance fees would only be required where the application for the original patent was filed on or after Dec. 12, 1980. As to patents resulting from international applications filed under the Patent Cooperation Treaty, maintenance fees will be required on all patents resulting from international applications having PCT filing dates on or after Dec. 12, 1980.

The details implementing payment of the maintenance fees are not being established at this time since such fees will not be due for some time and additional consideration of the problems thereof is required.

§1.21 Miscellaneous fees and charges.

The miscellaneous fees and charges set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after Oct. 1, 1982.

§1.445 International application filing and processing fees.

Any international application filing and processing fees paid on or after Oct. 1, 1982, must be paid in the amounts set forth in this section.

Implementation Of Certain Sections Deferred For Further Comments

In view of the comments and the recommendations received at the hearing on July 9, 1982, the period for written comments on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, has been extended until Aug. 13, 1982 (see 47 FR 32458, July 27, 1982). Comments received at the hearing on July 9, 1982, expressed the view that there is no necessity to publish final rules on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, by August 2, 1982, and that further time for consideration and comment was necessary. Persons commenting stated a belief that the pressure of time does not apply to §§1.27 and 1.28 as it does apply to the fee rulemaking. Accordingly, the period for written comments on these sections is extended until Aug. 13, 1982. After receiving written comments by Aug. 13, 1982, the changes to §1.9 and proposed §§ 1.27 and 1.28 will be adopted as final rules with such modifications as are found to be appropriate after review of the comments. These rule changes, with any appropriate modifications thereof, must become effective on Oct. 1, 1982, with enactment of H.R. 6260 prior to Oct. 1, 1982. Accordingly, adoption of the changes to §1.9 and new §§1.27 and 1.28 is being deferred at this time to permit additional written comments by Aug. 13, 1982. However, these rule changes will be adopted, with any appropriate modifications, as soon as possible after receipt of the additional written comments. No additional proposal will be published and no additional hearing will be held prior to adoption of final rules on the changes to §1.9 and on new §§1.27 and 1.28.

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 3 was also extended until Aug. 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change. Since it is not essential that this deletion be published by Aug. 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 3 as proposed.

SECTION II—REVISION OF TRADEMARK FEES

Background

A notice of proposed rulemaking was published in the *Federal Register* on June 28, 1982, at 47 FR 28063–28065 and in the *Official Gazette* on June 29, 1982, at 1019 TMOG 110–119. An oral hearing was held on July 9, 1982. Three written letters and statements were submitted. Three persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These amendments establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks.

Public Law 96–517

Public Law 96–517 authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks. Public Law 96–517 requires that by Oct. 1, 1982, fees for the filing and processing of an application for the registration of a trademark or other mark be set to recover in the aggregate 50 percent of the estimated average cost to the Office of such processing. Also by Oct. 1, 1982, fees for providing all other services and materials relating to trademarks and other marks are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. This bill would amend the fee provisions to be implemented on Oct. 1, 1982. H.R. 6260 would repeal the provisions in Public Law 96–517 requiring that filing and processing fees be set to recover in the aggregate 50 percent of the estimated average cost of such processing to the Office, and that fees for providing all other services and materials relating to trademarks and other marks be set to recover the estimated average cost to the Office of performing the service or furnishing the material. In passing H.R. 6260, the House of Representatives recommended a fee schedule to the Commissioner for fiscal year 1983. The fees set in Alternative B adopt the House recommendation.

This rule change, therefore, is also designed in the alternative to implement the fee provisions as they would be amended by H.R. 6260. The rule change contains changes which are common to Public Law 96–517 and H.R. 6260, as well as alternative rule changes which are specific to Public Law 96–517 (Alternative A) and to H.R. 6260 (Alternative B).

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a trademark application, or during the life of a registration.

Rule changes for implementing provisions of Public Law 96–517 or H.R. 6260 other than the fee provisions have not been included. Rule changes for implementing provisions other than the fee provisions will be published in a later rulemaking proposal.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this document under three different categories. Those changes which are common to Public Law 96–517 and H.R. 6260 appear first and are numbered 72–76. The change which relates only to Public Law 96–517 appears as Alternative A and is numbered 77. The change which is dependent upon enactment of H.R. 6260 appears as Alternative B and is numbered 78. The changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, Alternative B will become effective on Oct. 1, 1982, in which case Alternative A will not become effective.

The specific rules for which changes are made are §§2.6, 2.85, 2.101, 2.146, 2.162 and 2.167.

Rule Changes Common to Public Law 96–517 and H.R. 6260

Section 2.85, paragraph (e), is amended to delete reference to late filed fees for oppositions and affidavits. The manner in which such fees shall be handled is described in the pertinent sections for affidavits and oppositions.

Section 2.101, paragraph (c), is amended to delete the reference to a service charge which will no longer be charged for late-filed fees for oppositions.

Section 2.146, paragraph (b), is amended to add a fee for filing a petition to the Commissioner. Paragraph (f) of this section which indicates that no fee is required is deleted.

Section 2.162, paragraph (d), is amended to remove the reference to a service charge for late-filed fees on §8 affidavits.

Section 2.167, paragraph (g), is added to establish procedures relating to the fee for affidavits under §15, 15 U.S.C. 1065, and to state the Office's action when no fee or an insufficient fee is filed.

* * * * *

Alternative B—Rule Change Only Under H.R. 6260

Section 2.6 is revised to establish the fees recommended by the House of Representatives under H.R. 6260 for filing and processing applications for the registration of trademarks or other marks and for providing services and materials relating to trademarks or other marks. The $10 fee recommended by the House for certified copies appears in paragraphs (n) and (o) as a fee of $6.50 for a copy of a registered mark showing title and/or status and a fee of $3.50 for certification.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on several of the sections. All of the comments included in the written submissions and the oral testimony were considered in adopting the changes set forth herein.

Written comments were received from three individuals. Oral comments were presented at the hearing on behalf of a patent and trademark law group, the American Patent Law Association, and an organization of trademark owners and lawyers, the United States Trademark Association. One individual spoke on behalf of a law firm and expanded upon the points raised in his previously submitted written comments.

These comments appear below along with responses thereto, where appropriate.

Comment:

The representative of the trademark association spoke favorably about the proposal presented. The organization opposed 100% recovery of trademark costs from user fees. It was felt that such an approach reflected a misconception that trademarks benefit only their owners and not consumers and the economy as a whole. The speaker solicited the assistance of the Patent and Trademark Office in altering this viewpoint.

Comment:

The representative of the bar group questioned the fairness of the Office in establishing the fees under Alternative B. It appeared that the Office had accepted the USTA proposals only where they were higher. In all cases where the USTA recommendations were lower than those proposed, the difference was split. The filing fee was singled out as the most unfair fee.

Reply:

In Alternative B, the rules adopt the fee levels recommended by the House Committee on the Judiciary in House Report No. 97–542. The Report recognizes that

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the Office needs to recover a certain amount of fee income over the next three years. The application filing fee is expected to furnish more than 60% of the estimated annual income. It could not be reduced further without endangering operations. The reduction from $200.00 to $175.00 per class was covered to a large extent by higher fees for other services.

Comment:

The philosophy of H.R. 6260 is to recover no more than 100%. Final fees should recover this level and no more.

Reply:

Projecting processing costs three years in advance can never be absolutely accurate. The Office must have sufficient funds to process anticipated workloads under the fees set during fiscal years 1983–1985 when costs are expected to be somewhat higher than present costs.

Comment:

One suggestion involved retaining Part 4 of 37 CFR, at least for the present. Occasional users of the registration system find it to be a readily available reference. Certain information in the forms is available from no other source. The speaker believed the time pressures to implement the fee changes precluded proper consideration of the merits of Part 4.

Reply:

The period for comment on deletion of Part 4 has been extended to August 13, 1982 to allow for additional public comment and internal consideration.

Comment:

The suggestion was made that references to affidavits and oppositions should be eliminated from §2.85(e) as the handling of late filed fees for these items is already covered directly in §§2.101(c), 2.162(d) and 2.167(g).

Reply:

This suggestion was implemented.

Comment:

A suggestion was made that §§2.101(c), 2.162(d) and 2.167(g) dealing with oppositions and affidavits under Section 8 and Section 15 be amended to require payment of all late filed fees within the time period specified in the notification by the Office.

Reply:

All of the sections state that the affidavit or opposition "will not be refused if the required fee(s). . . are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office." This language is considered sufficient to require payment of all fees or have the opposition, affidavit or declaration refused.

Comment:

One suggestion was made to either cite §2.6 in all sections being changed relative to fees or to cite it in none.

Reply:

Citations of §2.6 have been added to §2.101(c) and §2.146(b) to conform to §2.162(d) and §2.167(g).

Comment:

It was suggested that the fee for a combined section 8 and 15 affidavit needed to be specified in the rules.

Reply:

Section 2.6 has been changed to provide this combined fee.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of changes which were made as a result of the comments received and further review of the proposed rulemaking are identified below.

Deletion of Part 4 has been deferred for further comments by Aug. 13, 1982 (see 47 FR 32458, July 27, 1982). As elimination of Part 4 is not essential to the setting of fees, and does not have to be in place 60 days before implementation, it was decided to ask for further public comment.

Section 2.85(e) has been revised to eliminate the references to oppositions and affidavits. Because the handling of late filed fees for these items is specified elsewhere, these references in §2.85(e) were redundant and confusing.

Both alternatives of §2.6 have been revised to add a fee for a combined affidavit under sections 8 and 15 of the Act. In order to prevent possible confusion by users of the Trademark system, it was included separately.

IMPLEMENTATION OF TRADEMARK FEE REVISION

The effective date of the trademark fee revisions contained in this rulemaking is Oct. 1, 1982.

* * * * *

The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to Oct. 1, 1982, are (1) the rule changes common to Public Law 96–517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96–517 and H.R. 6260 will become effective on Oct. 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to Oct. 1, 1982.

* * * * *

Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes in Alternative B will become effective on Oct. 1, 1982, in which case the rule changes in Alternative A will not become effective on Oct. 1, 1982.

Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of Section 2.6 is set forth below:

IMPLEMENTATION OF SECTION 2.6

Fees set forth in Section 2.6 must be paid in the amounts set forth in this section on or after Oct. 1, 1982. Any additional fees which become due under §2.6 in pending applications on or after Oct. 1, 1982, or which have not been paid prior to Oct. 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to Oct. 1, 1982. For example, if an application filed prior to Oct. 1, 1982, is amended on or after Oct. 1, 1982, to include additional classes, the fee set forth in §2.6(a) must be paid per class added.

IMPLEMENTATION OF CERTAIN SECTIONS DEFERRED FOR FURTHER COMMENTS

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 4 has also been extended until August 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change (see 47 FR 32458, July 27, 1982). Since it is not essential that this deletion be published by Aug. 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 4 as proposed.

OTHER CONSIDERATIONS RELATING TO PATENT AND TRADEMARK FEE REVISIONS

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et. seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Public Law 96–517 and H.R. 6260 have both taken into consideration the impact they may have on small entities. The fees under Public Law 96–517 are set to recover 50% of patent and trademark processing costs rather than full costs and generally the rate of increase in the fees is less than that of inflation since the last increase in fees in 1965. Further, the rules implementing Public Law 96–517 take into consideration small entities by setting a lower patent filing fee than issue fee to recover the required level of patent processing costs. The lower filing fee permits a small entity to file a patent application for a relatively low cost and not have to pay the higher balance of fees required to achieve Public Law 96–517 recovery levels until examination is complete and it is known that a patent will issue. Under H.R. 6260 and this rulemaking, small entities would be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to requests for extensions of time, will be reduced.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, 15 U.S.C.§§1113, and 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, are amended as set forth below.

July 14, 1982. GERALD J. MOSSINGHOFF, *Commissioner of Patents and Trademarks.*

* * * * *

[Note: H.R. 6260 became Public Law 97–247 on Aug. 27, 1982. Rules that became effective Oct. 1, 1982 are those rules common to Public Law 96–517 and H.R. 6260 and those set forth in Alternative B. The adopted rules are reproduced in the notice entitled "Revision of Patent and Trademark Fees Confirmation," published at 1022 O.G. 21, which is reprinted immediately following this notice.]

[1021 O.G. 19]

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Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 2
[Docket No. 2714–129]

Revision of Patent and Trademark Fees Confirmation

Agency: Patent and Trademark Office, Commerce.
Action: Confirmation of rules.
Summary: This document confirms certain rule changes for patent and trademark fees and fee-related procedures which take effect on Oct. 1, 1982. These rule changes implement H.R. 6260 which was enacted as Public Law 97–247 on Aug. 27, 1982.
Effective Date: Oct. 1, 1982.
For Further Information Contact: As to the patent rules contact: R. Franklin Burnett, by telephone at (703) 557–3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Rm. 3–11A13, Washington, D.C. 20231.

As to the trademark rules contact: Miss Maude Williams, by telephone at (703) 557–2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Rm. 3–11C17, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office is required by law to publish a notice in the Federal Register of its fees at least 60 days before the effective date thereof (35 U.S.C. 41(g)). Thus, on July 30, 1982 a final rule document was published at 47 FR 33086 setting forth rule changes for patent and trademark fees and procedures which take effect on Oct. 1, 1982. The document was based on the public law in effect at that time, Public Law 96–517, and on H.R. 6260, which was then pending but is now Public Law 97–247. The final rule document published on July 30, 1982, in the Federal Register sets out—

(1) rules that are common to both Pub. L. 96–517 and H.R. 6260 (now Pub. L. 97–247);
(2) Alternative A which contains rule changes implementing Pub. L. 96–517 alone; and
(3) Alternative B which contains rule changes implementing H.R. 6260 (now Pub. L. 97–247).

H.R. 6260 was enacted as Public Law 97–247 on Aug. 27, 1982, and the Patent and Trademark Office hereby confirms that the rule changes common to both Pub. L. 96–517 and H.R. 6260 and Alternative B are those which go into effect on Oct. 1, 1982. The rules under Alternative A are hereby withdrawn. Additional rule changes required by Public Law 97–247 will be made the subject of separate rulemakings.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons set out in the preamble, 37 CFR Parts 1 and 2 are confirmed as being amended by the final rule published on July 30, 1982 at 47 FR 33086 as set forth below.

Sept. 14, 1982. GERALD J. MOSSINGHOFF, *Commissioner of Patents and Trademarks.*

1. The rule changes made in Alternative A relating to patents which begin at 47 FR 33107 and in Alternative A relating to trademarks which begin at 47 FR 33112 are hereby withdrawn.
2. Confirmed as effective Oct. 1, 1982 are the rule changes published July 30, 1982 common to Public Law 96–517 and H.R. 6260 (now Public Law 97–247) and Alternatives B. The rule changes relating to patents com-

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mon to Public Law 96–517 and H.R. 6260 (now Public Law 97–247) were published on July 30, 1982 at 47 FR 33099. The rule changes relating to patents under Alternative B were published at 47 FR 33108. The rule changes relating to trademarks common to Public Law 96–517 and H.R. 6260 (now Public Law 97–247) were published on July 30, 1982 at 47 FR 33111. The rule changes relating to trademarks under Alternative B were published at 47 FR 33112. Corrections to the July 30, 1982 publication were published on Aug. 4 and 5, 1982 at 47 FR 33688 and 33959.

(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

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Department of Commerce
Patent and Trademark Office
37 CFR Parts 1, 3 and 4
[Docket No. 2827–167]

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish procedures for the payment of fees under §41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for independent inventors and nonprofit organizations as required by the public law resulting from H.R. 6260. This action is necessary at this time in order that the procedures for paying the reduced fees will be effective on Oct. 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by the public law resulting from H.R. 6260. This final rule also deletes Parts 3 and 4 which contain outdated sample forms and corrects a reference to a section which appears in §1.451.
Effective Date: Oct. 1, 1982.
For Further Information Contact: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557–3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Rm. 3–11A13, Washington, D.C. 20231.

As to the trademark rules contact Miss Maude Williams by telephone at (703) 557–2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3–11C17, Washington, D.C. 20231

Supplementary Information: Notices of proposed rulemaking relating to the revision of patent and trademark fees were published in the *Federal Register* on June 28, 1982, at 47 FR 28042–28065 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57–120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on Aug. 10, 1982, at 1021 O.G. 19–94. In view of comments received at the hearings, additional time for comment on the rules covered by this change was given until Aug. 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458.

This final rule is being adopted as soon as possible after the enactment of the public law resulting from H.R. 6260. The Patent and Trademark Office has determined that the requirement of 5 U.S.C. 553 (d) for publication not less than 30 days before its effective date does not apply to this final rule since it will reduce patent fees for independent inventors and nonprofit organizations.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by the public law resulting from H.R. 6260.

Public Law Resulting From H.R. 6260

The public law resulting from H.R. 6260 provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of Title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The public law resulting from H.R. 6260 gives the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. The public law resulting from H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking establishes regulations defining independent inventors and nonprofit organizations. The Small Business Administration is establishing the definition of a small business concern for the purpose of paying reduced fees under the public law resulting from H.R. 6260. This rulemaking also establishes the procedures which will be followed by independent inventors and nonprofit organizations when paying the reduced fees.The procedures to be followed by small business concerns when paying the reduced fees will be established in a separate final rule.

Discussion of Specific Sections

The following sections are changed by this final rule, effective Oct. 1, 1982:

Section 1.9, as amended, adds paragraphs (c), (e), and (f) which define "independent inventor" and "nonprofit organizations" as used in Title 37, Code of Federal Regulations, Chapter I. Each of these along with "small business concern" is identified as a "small entity" for purposes of paying fees which are set under §41 (a) and (b) of Title 35, United States Code, as amended by the public law resulting from H.R. 6260. Paragraph (d) of §1.9 relates to the definition of small business concern which is being established by the Small Business Administration. Accordingly, proposed paragraph 1.9(d) is not being promulgated at this time.

The public law resulting from H.R. 6260 authorizes the Commissioner to establish regulations defining independent inventors and nonprofit organizations. Section 1.9(c) defines an independent inventor as any inventor who (1) has not assigned, granted, conveyed, or licensed, and (2) is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization. Once an individual sole inventor, or one of several joint inventors, has assigned, granted, conveyed, or licensed, or comes under an obligation to assign, grant, convey, or license, any rights to the invention to anyone who could not likewise obtain status as a small entity, the inventor(s) will no longer be entitled to pay fees in the amounts established for an independent inventor (§1.9(c)). Section 1.9 (c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to another individual or individuals who could qualify as an independent inventor or inventors if they had made the invention. In addition,§1.9 (c) will permit an individual inventor to make an assignment, grant, conveyance, or license of partial rights in the invention to a small business concern or nonprofit organization. Under the circumstances described in the previous two sentences the individual inventor could still qualify as an independent inventor. However, if the independent inventor assigned, granted, conveyed, or licensed, or came under an obligation to assign, grant, convey, or license, any rights to the invention to any individual or organization which could not qualify as a small entity (§1.9 (f)), then the inventor would no longer qualify as an independent inventor.

Proposed section 1.9 (d) relating to the definition of a small business concern is not being promulgated at this time.

Section 1.9(e) defines a nonprofit organization by utilizing and broadening the definition contained in 35 U.S.C. 201 (i). The term "university or other institution of higher education" as used in §1.9 (e) means an educational institution which (1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate, (2) is legally authorized within the jurisdiction in which it operates to provide a program of education beyond secondary education, (3) provides an educational program for which it awards a bachelor's degree or provides not less than a two-year program which is acceptable for full credit toward such a degree, (4) is a public or other nonprofit institution, and (5) is accredited by a nationally recognized accrediting agency or association. The definition of "university or other institution of higher education" as set forth herein essentially follows the definition of "institution of higher education" contained in 20 U.S.C. 1141(a). Institutions which are strictly research facilities, manufacturing facilities, service organizations, etc., are not intended to be included within the term "other institution of higher education" even though such institutions may perform an educational function or publish the results of their work.

Section 1.9(f) identifies an independent inventor, a small business concern, or a nonprofit organization as a "small entity" for purposes of paying fees set under §41 (a) and (b) of Title 35, United States Code, as amended by the public law resulting from H.R. 6260. Fees established under §41 (c) or (d) of Title 35, United States Code, will not be reduced for small entities since such a reduction is not permitted or authorized by the public law resulting from H.R. 6260. Paragraphs (c), (e), and (f) of §1.9 should be read together with §§1.27 and 1.28 which deal with establishing status as a small entity and the effect thereof.

New §1.27 provides in paragraph (a) that any person seeking to establish as a small entity, as defined in §1.9 (f) for the purpose of paying reduced fees, must file a statement to that small entity. Paragraph 1.27(b) provides specifically for inventors filing statements claiming status as independent inventors. Paragraph 1.27 (c) relating to claiming status as a small business concern is not being promulgated at this time, but will be subject of a separate final rule. Paragraph 1.27 (d) provides for claiming status as a nonprofit organization. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

New §1.28 provides guidance as to the effect of failure to establish, or notify the Office of any change from, small entity status. Paragraph 1.28 (a) provides that once status as a small entity has been established in an application or patent, without the filing of a further verified statement pursuant to §1.27, unless the Office is notified of a change in status. Under paragraph 1.28 (a), status as a small entity in one application or patent does not affect any other application or patent except in applications filed under §1.60 where a reference is made to a verified statement in a parent application. Paragraph 1.28 (b) requires that notification of any change in status resulting in loss of entitlement to small entity status be filed in the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. Section 1.28 also provides guidance as to the effect of improperly establishing status as a small entity. The intent of the reduced fees for small entities is to soften the impact of the fee increases under §41(a) and (b) of Title 35, United States Code, as such sections are amended by the public law resulting from H.R. 6260, upon those who are least able to absorb the increased fees without overall damage to their ability to participate in the patent system through the filing, issuing and maintaining of patents. Accordingly, any attempt to improperly establish status as a small entity will be viewed as a serious matter by the office and paragraph 1.28(d) indicates that any attempt to fraudulently establish status as a small entity or pay fees as a small entity will be considered as a fraud practiced or attempted on the Office. In addition, improperly and through gross negligence establishing status as a small entity or paying fees as a small entity will be considered as a fraud practiced or attempted on the Office. Normally, the Office will not question a claim to status as a small entity. However, if the Office must resolve such an issue in a question arising before it, the Office will look to the actual or practical status ot the individual or oganization claiming status as a small entity rather than the professed or apparent status.

Section 1.451, paragraph (b), is amended to correct a reference to another section of the regulations.

Parts 3 and 4 are removed to eliminate all of the patent and trademark forms from the Code of Federal Regulations. The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which is available for sale to the public from the Superintendent of Documents and which includes full size copies of substantially all the forms in the Code of Federal Regulations in view of the difficulty of keeping such forms is not mandatory.

Discussion of Significant Differences Between Proposed and Final Rules

A number of changes which have been made to §§1.9, 1.27 and 1.28 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (c) of §1.9 has been changed from that proposed to simplify the definition by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention". No change in substance is intended by removing these words since the phrase "any rights in the invention" obviously is inclusive of all rights regardless of how they are, or would be, transferred. The words "or otherwise" have also been removed to simplify the definition without a change in substance.

Paragraph (d) of §1.9 is not being promulgated by this rule change.

Paragraph (e) of §1.9 is changed from that proposed by adding the words "located in any country" in item (e) (1) to clarify the fact that a university or other institution of higher education can qualify regardless of location. Paragraph (e) is also changed from that proposed by adding an item (4) to clarify that a nonprofit organization if it could qualify as a nonprofit organization under item (2) or (3) of paragraph (e) "if it were located in this country." Thus, under paragraph (e) of §1.9 nonprofit organizations will be treated the same for purposes of paying fees regardless of location.

Paragraph (a) of §1.27 has been changed from that proposed by substituting the words "any fee paid as a small entity". This change is intended to clarify the fact that a verified statement is not required with every fee.

Paragraph (b) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern or nonprofit organization is to be filed by "the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization . . ." The term "official" as used in paragraph (b) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern or nonprofit organization. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Paragraph (c) of §1.27 relating to claiming status as a small business concern is not being promulgated at this time, but will be the subject of a separate final rule.

Paragraph (d) of §1.27 has been changed from that proposed in the same manner as paragraph (b) of §1.27

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has also been changed from that proposed by adding a reference to §1.9 (e)(4).

Paragraph (a) of §1.28 has been changed from that proposed by adding the words "or patent" in the first and third sentences since the failure to establish status as a small entity could occur in a patent as well as in an application. An exception to the requirement for a verified statement has also been inserted into paragraph (a) of §1.28 for applications filed under §1.60 where the status as a small entity has been established in a parent application and is still proper. Under this change in paragraph (a) of proposed §1.28, the application filed under §1.60 "must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired."

Paragraph (b) of §1.28 has been completely rewritten from that proposed to remove the requirement that the notification of a change in status resulting in loss of entitlement to small entity status must be filed prior to paying the next fee due. Instead, paragraph (b) of §1.28 provides that after establishment of small entity status, "fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue is due or any maintenance fee is due." Paragraph (b) of §1.28 is also changed from that proposed by removing the sentence stating that payment of any fee as a small entity serves "as a representation that such payment as a small entity is proper at the time the payment is made." This change does not sanction the payment of improper fees, but is no longer necessary in view of another change in paragraph (b) which specifically provides that notification of any change in status resulting in loss of entitlement to small entity status "must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." The effect of the changes to paragraph (b) of §1.28 is to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. This means that only four checks are required during the pendency and term of a patent after initial establishment of small entity status if such establishment was prior to payment of the issue fee. The last sentence of paragraph (b) has been changed from that proposed by inserting the words "of change in status" after "notification" for clarity.

Paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error occurred. This change from paragraph (c) as proposed will reduce paperwork and will provide a three-month grace period to correct errors with no explanations required for correction during that three-month period. The change has also been made to alleviate concerns about paragraph (d) of §1.28 which is being adopted as proposed.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the patent rules and forms affected by this final rule were received from three patent law groups and thirteen individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment:

One comment suggested that the definition of "independent inventor" be simplified.

Reply:

The definition of "independent inventor" has been simplified without a change in substance by removing the words "including (i) the right to make, use, or sell the invention, and (ii) the right to exclude others from making, using, or selling the invention."

Comment:

One comment suggested that there is no need to include any more than a simplified statement that a "nonprofit organization includes a university or other institution of higher education"

Reply:

The suggestion has not been adopted since it is the intent of the rules to delineate as clearly as possible what organizations can qualify as nonprofit organizations without having to expend undue resources deciding each request on a case-by-case basis.

Comment:

One comment suggested that §1.9(e) discriminates against foreigners and thus violates the principle of national equality set forth in the Stockholm text of the Paris Convention for the Protection of Industrial Property.

Reply:

Section 1.9(e), as promulgated, defines a nonprofit organization in such a way that it is clear that foreigners are not excluded.

Comment:

One comment questioned whether or not government organizations can qualify as nonprofit organizations and more specifically, whether or not a government research facility can qualify under the broad definition of a nonprofit scientific or educational organization. Another comment recommended that §1.9(e) be expanded to include the U.S. Government in the definition of a "nonprofit organization."

Reply:

Government organizations as such, whether domestic or foreign, cannot qualify as nonprofit organizations as defined in §1.9(e). Section 1.9(e) was based upon 35 U.S.C. 201(i), as established by Public Law 96–517. The limitation to "an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a))" would by its nature exclude the U.S. government and its agencies and facilities, including research facilities and government corporations. State and foreign governments and governmental agencies and facilities would be similarly excluded. Section 1.9(e) is not intended to include within the definition of a nonprofit organization government organizations of any kind located in any country. A university or other institution of higher education located in any country would qualify, however, as a "nonprofit organization" under §1.9(e) even though it has some government affiliation since such institutions are specifically included.

Comment:

One comment was directed to, and opposed, Public Law 96–517 and H.R. 6260 rather than the specific provisions of §§1.9, 1.27 and 1.28 on the ground that the concept of a self-supporting agency is ill-conceived, shortsighted and wrong.

Reply:

Public Law 96–517 and H.R. 6260 are not issues for consideration in this rule change.

Comment:

One comment asserted that the imposition of different fees depending upon the status of an applicant is unwise, unworkable, and will not "improve the efficiency of the Patent Office", while another comment urged the Office to "disavow the proposal for a two-tier fee system and adopt a different approach to assuring that patent and trademark fees are set so that individual inventors and small businesses can continue to obtain the protection of the patent and trademark system." Another comment supported the two-tier fee system, particularly as related to universities.

Reply:

The imposition of different fees is a legislative mandate imposed by the public law resulting from H.R. 6260 and is not an issue for consideration in this rule change.

Comment:

Four comments expressed concern that small entity status is required to be confirmed each time a fee as a small entity is paid. Alternative procedures which involve (1) confirming status at the time of filing and at the time the issue fee is paid, or (2) allowing a statement of status to hold for a period of time were recommended.

Reply:

The last sentence in §1.27(a) states that "[s]uch a verified statement need only be filed once in an application or patent and remains in effect until changed." It was not intended that such statements would be required each time a fee is paid. In order to clarify §1.27(a), the first sentence has been changed to require the statement prior to or with the first fee paid as a small entity. Thereafter, notice is only required where a change in status occurs. In addition, §1.28(b) has been rewritten to provide that "[o]nce status as a small entity has been established in an application or patent, fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due."

Comment:

One comment suggested that a paragraph 1.27(e) be added which would require confirmation of small entity status at the time of paying the patent issue fee and each maintenance fee and that this be done by a statement which designates the applicant's small entity status as of the close of the last fiscal year next preceding the date of the statement.

Reply:

The suggested paragraph has not been added. However, paragraph (b) of §1.29 has been completely rewritten to permit status to be established and then checked only (1) at the payment of the issue fee and (2) at the time of payment of each maintenance fee. Instead of requiring papers to be filed confirming status as suggested in the comment, the rules as adopted require that "[n]otification of any change in status resulting in loss of entitlement to small entity status must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to §1.9." Paragraph (b) of §1.28, as promulgated, is considered preferable to the suggested paragraph (e) of §1.27 since it will eliminate the filing of a confirming statement where there has been no change in status as a small entity. This reduces unnecessary paperwork.

Comment:

One comment suggested that verified statements of small entity status need not be filed in Rule 60 applications.

Reply:

The suggestion was adopted and is reflected by the change in §1.28(a). In such applications, it will be sufficient to include a reference to a verified statement establishing small entity status in a parent application if status as a small entity is still proper and desired.

Comment:

One comment suggested that proposed paragraph 1.28(b) be amended by inserting the words "believed to be" after "small entity is" in the second sentence.

Reply:

Paragraph (b) of §1.28 as promulgated does not contain the sentence to which the suggestion is directed.

Comment:

One comment suggested that paragraph (c) of §1.28 be amended by deleting the word "verified" so that a statement explaining how an error in good faith occurred can be made "on the basis of information and belief."

Reply:

The suggestion has not been adopted. However, paragraph (c) of §1.28 as promulgated permits the correction of errors without a verified statement if the correction is accomplished within three months after the date the error occurred.

Comment:

Three comments expressed concern about the provision dealing with fraud on the Patent and Trademark Office because of some questionable act in connection with paying fees as a small entity and indicated that some persons have raised a question as to the Office's authority to designate the payment of a lesser fee as fraud. The comments suggested that proposed §1.28 be withdrawn and turned over to an ad hoc group of Patent and Trademark Office officials and practitioners for immediate examination and timely comment.

Reply:

The period for comments was extended until Aug. 13, 1982, as an alternative to, and in response to, the suggestion that §1.28 be withdrawn and turned over to an ad hoc committee. The extended period for comments has now expired and all comments which have been received have been carefully considered. In response to the statement that some persons have raised a question regarding the Office's authority to designate payment of a lesser fee as fraud, no authority has been cited which would establish or suggest that the Office does not have the authority to adopt this section. Paragraph (d) of §1.28 has been strictly limited to those situations in which there is an attempt to fraudulently establish entity, or improperly and through gross negligence establish status or pay fees as a small entity. Paragraph (d) of §1.28 is clearly within the rule-making authority provided to the Commissioner pursuant to 35 U.S.C. 6 to protect the integrity of the system established by the public law resulting from H.R. 6260, whereby fees are reduced for small entities. In order to alleviate the concerns expressed about paragraph (d) of §1.28, paragraph (c) of §1.28 has been changed from that proposed to require a verified statement explaining how the error in good faith occurred only in situations where the error is not corrected within three months of the date on which the error occurred. This three-month grace period to correct errors with no explanations required for correction during that three-month period should reduce the concern about paragraph (d) of §1.28.

Comment:

One comment by an attorney (1) objected to and requested removal of the second sentence of §1.28(d) because he has to rely on the information provided by the client and does not have the facilities to check the reliability of information the client provides relating to the client's status as a small entity, and (2) raised the question as to how much investigation any attorney or other individual must make in order to avoid being guilty of "gross negligence" under §1.28(d).

Reply:

The rules do not authorize an attorney to sign a verified statement establishing status as a small entity on behalf of a client. The client has to sign the verified statement. Paragraph (b) of §1.27 requires that any verified statement filed on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47. Paragraph (d) of §1.27 requires that any verified statement filed on behalf of a nonprofit organization must be signed by an official of the nonprofit organization empowered to act on behalf of the organization. The intent of paragraphs (b) and (d) of §1.27 is that the verified statement be signed by the person in the best position to know the facts as to whether or not status as a small entity can be properly established. Insofar as the attorney's irresponsibilities and duty to investigate are concerned, these do not differ from those presently owed the Office under §§1.56, 1.346, and 1.555.

Comment:

One comment suggested that paragraph (d) of §1.28 be replaced by a provision under which a "stiff fine" would be assessed against "a wrongdoer who has not paid fees in good faith."

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Reply:
The suggestion has not been adopted. Assessing a fine as the only penalty against "a wrongdoer who has not paid fees in good faith" might tend to encourage the payment of incorrect fees on the theory that it is unlikely that such a matter would be brought to the attention of the Office.
Comment:
Three comments opposed the proposed deletion of Part 3 for the reasons that (1) it is useful to have an up-to-date set of forms and (2) there does not seem to be a pressing need to delete the forms.
Reply:
The Patent and Trademark Office has prepared a booklet entitled "Patent and Trademark Forms Booklet" which includes full size copies of substantially all of the forms in Part 3. Since the forms currently in Part 3 are not "up-to-date" as was suggested in the comment, no present need is seen to maintain Part 3.

Response to Comments on the Trademark Rules

Specific comments were received on the proposed deletions of Part 4. All of the comments included in the written submissions and the oral testimony were considered.
Written comments were received from four individuals. Oral comments restating previously submitted written comments on Part 4 were presented by one individual on behalf of his law firm.
These comments appear below along with replies thereto.
Comment:
One comment stated that there are rules in Part 4 which are not set forth elsewhere. Such guidelines and information include, among others, the types of commerce on which an application may be based and a requirement for the use of bond paper for typed drawings.
Reply:
Part 4 does not really carry the effect of rules because the forms are not mandatory, but are merely illustrative. The information referred to by this individual can be found elsewhere, such as in the Trademark Manual of Examining Procedure. Furthermore, despite the fact that the forms do not carry the force of rules, any correction or modification to them requires the cumbersome and time-consuming processes that are associated with a rules change.
Comment:
Several comments reflected the opinion that some attorneys, particularly those who do not specialize in trademark matters, may rely on the forms that appear in Part 4. It was believed that these individuals may not have or be aware of the compilation of forms identified as the "Patent and Trademark Office Forms Booklet." In the absence of such forms in Part 4, these individuals may devise their own application formats. Such a practice would result in increased informalities which, in turn, would result in unnecessary correspondence and delayed prosecution. In addition, the commenters believed that the number of written and oral inquiries to the Office of the Director of the Trademark Examining Operation would increase dramatically.
Reply:
The Office of the Director of the Trademark Examining Operation currently has a general information telephone line to answer inquiries and to accept requests for trademark application forms and related literature. While the Office of the Director indicates the availability of the forms booklet to many callers, copies of the appropriate trademark application form are sent to those individuals who request them. It is more likely that an individual who is unaware of the trademark application form would call the Office of the Director to request an application form than create one for the particular purpose.
Comment:
One individual, aware of the Office's plans for automation of the trademark program, saw the present deletion of the forms to be inappropriate. This individual felt that the deletion of the forms at this point would signal to the user community that the Office no longer had any interest in receiving applications in any particular format. To take such a position within a year or two of the introduction of a rigidly standardized application format was, in the opinion of this commenter, unwise. The adoption of a machine-readable application form would require greater, rather than diminished, reliance on a prescribed format.
Reply:
Within the next year or two, the Office will begin experimenting with the use of optical character recognition (OCR) equipment to automate the current data capture processes. Trademark application formats that are compatible with this equipment are likely to require special sizing and printing and, as such, are not acceptable for reduced size printing in the Code of Federal Regulations. If the existing forms were to be maintained in Part 4, they would remain available for use by applicants. As a result, the implementation of the new standardized application formats would be made more difficult.
Comment:
One commenter believed that since the next reprinting of Volume 37 of the Code of Federal Regulations will be in July, 1983, there is no pressing need to eliminate Part 4 at this time. This individual felt that users of the trademark registration system should be given additional opportunity to consider the significance of removing Part 4.
Reply:
Only four comments have been received on the deletion of Part 4. The elimination of Part 4 at this time will guarantee that the forms do not appear in the 1983 reprinting of the CFR. Of course, they will appear in the 1982 version of the CFR booklet and will be available until the new edition is published. In this matter, future access to these forms will be limited and those requiring help may contact the Office and receive the proper trademark forms.

Implementation of §§1.9, 1.27, and 1.28

Status as a small entity can be established in any application or patent for which a fee is due on or after Oct. 1, 1982, and in which small entity status is available and desired.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conversation of energy resources.
This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et. seq.*).
The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L 96–354) for several reasons. The public law resulting from H.R. 6260 has taken into consideration the impact the increase in fees may have on small entities. Under the public law resulting from H.R. 6260 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.
The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.
This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are place upon the public.

List of Subjects in 37 CFR Parts 1, 3 and 4

Administrative practice and procedure, Colleges and universities, Courts, Fraud, Inventions and patents, Nonprofit organizations, Small businesses, Trademarks.
(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

Aug. 26, 1982. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1022 OG 29]

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(60) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 2909–187]

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Final rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish a definition and procedures for the payment of fees under section 41(a) and (b) of Title 35, United States Code, by small business concerns as required by Pub. L. 97–247. This action adopts the definition of a "small business concern" for purposes of paying patent fees established by the Small Business Administration and is necessary at this time in order that the procedures for paying reduced fees will be effective on Oct. 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by Pub. L. 97–247.
Effective Date: Oct. 1, 1982
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557–3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3–11A13, Washington, D.C. 20231.
Supplementary Information: A notice of proposed rulemaking was published in the Federal Register on June 28, 1982, at 47 FR 28042–28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57–120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982 at 47 FR 33959. The final rule was also published in the *Official Gazette* on Aug. 10, 1982, at 1021 O.G. 19–94. In view of comments received at the hearings, additional time for comment on certain rules, including those covered by this change, was given until Aug. 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on Sept. 10, 1982 at 47 FR 40134–40140.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by Pub. L. 97–247.

Public Law 97–247

Pub. L. 97–247, signed Aug. 27, 1982, provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41(a) and (b) of title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The Commissioner has established regulations defining independent inventors and nonprofit organizations. Pub. L. 97–247 defines small business concerns by reference to Section 3 of the Small Business Act and regulations established by the Small Business Administration. The Small Business Administration has now established the definition of a small business concern for the purpose of paying reduced fees under Pub. L. 97–247. That definition is hereby incorporated into the patent rules of practice in §1.9(d). This rulemaking also establishes the procedures which will be followed by small business concerns when paying the reduced fees.

Discussion of Specific Sections

The following sections are changed by this final rule, effective Oct. 1, 1982:

Section 1.9, as amended, adds paragraph (d) which defines small business concern as used in Title 37, Code of Federal Regulations, Chapter I. A small business concern is identified as a "small entity" for purposes of paying fees which are set under section 41(a) and (b) of Title 35, United States Code, as amended by Pub. L. 97–247.
Section 1.9(d) defines a small business concern by reference to and incorporation of §121.3–18 of Title 13, Code of Federal Regulations. A small business concern is defined therein as any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. The section further defines affiliates of concerns and defines also the terms "employees" and "number of employees." Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees a business concern has is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Business concerns located in any country which meet the small business definition and which comply with the applicable procedures can qualify as a "small business concern". Under the definition, a small business concern would no longer qualify as a small business concern if any rights were assigned to any individual or concern which could not qualify as a small entity pursuant to §1.9(f), or if the concern came under an obligation to assign any rights to any individual or concern which could not qualify as a small entity.
Section 1.9(d) also incorporates paragraph (b) of 13 CFR 121.3–18 which provides for appeals to the Small Business Administration from Patent and Trademark Office adverse initial size determinations.
Paragraph 1.27(c) provides for claiming status as a small business concern. Any person seeking to establish status as a small entity, for the purpose of paying reduced fees, must file a statement to that effect prior to or with the payment of the first fee paid as a small entity. Under §1.27, as long as all of the rights remain in small entities, the fees established for a small entity can

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be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

A number of changes which have been made to §§1.9 and 1.27 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (d) of §1.9 has been changed from that proposed so as to incorporate into §1.9(d), the definition established by the Small Business Administration in §121.3–18 of Title 13, Code of Federal Regulations. The definition differs from that proposed in specifying the number of employees constituting a small business concern and specifying that the concern must be one which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person or concern which could not be classified as an independent inventor, small business concern, or nonprofit organization.

Paragraph (c) of §1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern is to be signed by "the owner or an official of the small business concern empowered to act on behalf of the concern." The term "official" as used in paragraph (c) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the rules affected by this final rule were received from three patent law groups and a number of individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment:

Two comments urged that in view of the "exceedingly complex" definitions of a "small business" in 13 CFR 121.3, the patent system and those associated with it would be best served by setting forth clear guidelines as to whether or not a business qualifies as a small business without reference to the Small Business Act and without incorporation by reference of "the too many pages of SBA regulatory definition."

Reply:

Pub. L. 97–247 specifically refers to section 3 of the Small Business Act and regulations established by the Small Business Administration for determining whether or not a business concern qualifies as a small business concern. Pub. L. 97–247 therefore does not permit the establishment of guidelines without reference to the Small Business Act and regulations established by the Small Business Administration. Section 1.9(d), however, does incorporate the definition as established in §121.3–18 of Title 13, Code of Federal Regulations. This will enable persons to utilize §1.9(d) without also referring to a copy of Title 13, CFR.

Comment:

One comment argued that §1.27 should be corrected or clarified to indicate that a small business concern would be entitled to the 50 percent fee reduction even though it may grant a non-exclusive or even an exclusive license to some non-small entity.

Reply:

The suggestion has not been adopted. Section 1.27 requires that the concern qualify as a small business concern as defined in §1.9(d). Section 1.9(d) defines a small business concern by incorporating 13 CFR 121.3–18, which in turn defines a small business concern as one not exceeding a particular size "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section." The intent of both 13 CFR 121.3–18 and 37 CFR 1.9(d) and 1.27(c) is to limit the payment of reduced fees under section 41 (a) and (b) of Title 35, United States Code, to those situations in which all of the rights in the invention are owned by small entities, i.e., independent inventors, small business concerns, or nonprofit organizations. To do otherwise would be clearly contrary to the intended purpose of the legislation which contains no indication that fees are to be reduced in circumstances where rights are owned by non-small entities. Adopting the suggestion might, for example, permit a non-small entity to transfer patent rights to a small business concern which would pay the reduced fees and grant an exclusive license to the non-small entity.

Comment:

One comment suggested that the specific Small Business Administration regulations which are applicable be specified in §1.9(d).

Reply:

The definition of a small business concern as established by the Small Business Administration is now incorporated into §1.9(d).

Implementation of §§1.9 and 1.27

Status as a small entity can be established in any application or patent for which a fee is due on or after Oct. 1, 1982, and in which the individual inventor, small business concern, or nonprofit organization meets the qualifications established for small entity status.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Pub. L. 97–247 has taken into consideration the impact the increase in fees may have on small entities. Under Pub. L. 97–247 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Small businesses.

Amendment of Regulations

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and Pub. L. 97–247, Part 1 of Title 37, Code of Federal Regulations, is amended as set forth below.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. Section 1.9 is amended by adding a new paragraph (d) to read as follows:

§1.9 Definitions.

* * * * *

(d) A small business concern as used in this chapter means any business concern as defined by the Small Business Administration in 13 CFR 121.3–18, published on September 30, 1982 at 47 FR 43273. For the convenience of the users of these regulations, that definition states:

§121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error; and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

2. Section 1.27 is amended by adding a new paragraph (c) to read as follows:

§1.27 Statement of status as small entity.

* * * * *

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in §1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Sept. 23, 1982.

[FR Doc.82–26941 Filed 9–29–82; 8:45 am]
BILLING CODE 3610–16–M

SMALL BUSINESS ADMINISTRATION
13 CFR Part 121

Definition of Small Business for Paying Reduced Patent Fees Under Title 35, United States Code

Agency: Small Business Administration.

Action: Final rule.

Summary: The Small Business Administration in conjunction with the Patent and Trademark Office is establishing a definition of small business for the purpose of paying patent fees under section 41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for small business concerns as required by Pub. L. 97–247. The definition would be implemented by the Patent and Trademark Office, which has recently published its regulations on the fee reduction procedures (47 FR 40134, Sept. 10, 1982).

Effective Date: Oct. 1, 1982.

For Further Information Contact:
R. Franklin Burnett (703) 557–3054.
Harvey Bronstein (202) 653–6373.

Supplementary Information: Pub. L. 97–247 provides that funds available under the Act to the Patent and Trademark Office "shall be used to reduce by 50 per centum the payment of fees under Section 41 (a) and (b) of Title 35, United States Code, by small business concerns as defined in Section 3 of the Small Business Act and by regulations established by the Small Business Administration."

A notice of proposed rulemaking relating to the definition of a small business was published in the **Federal Register** on Aug. 31, 1982 (47 FR 38331). The regulation being issued is the same as that which was proposed. In order to be a small business, the number of employees of the concern, including those of its affiliates, may not exceed 500 persons. Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of a business concern is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year.

The definition also requires a small business for this purpose to be one "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section."

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Discussion of Comments

One comment from the American Patent Law Association, whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office, expressed "no comment regarding the definition" and expressed "[t]hanks for all that's been done toward a hopefully workable definition." The remaining comments were from individual patent attorneys rather than comments on behalf of any organization.

Two comments raised questions about the intended scope of the term "license." It was suggested that clarification is needed as to what is included within the scope of the term. One comment susggested that, "[a]t the very least, the record should reflect that the definition is not intended to reach implied licenses to use and resell patented articles purchased from a small business." The comment is correct insofar as it suggests that such "implied licenses" are not intended to be included within the scope of the term. Likewise, an order by the applicant to a firm to build a proto-type machine or product for the applicant's own use is not considered to constitute a license for purposes of the definition.

Another suggestion was that the regulation be reworded to deny small business status where revenue above a certain dollar amount was received from licensing rights under the invention to a concern which could not qualify as a small entity. It was also suggested that the term "exclusive license of any of the rights in the invention" be used instead of the term "license." The latter two suggestions have not been adopted. Adoption of these suggestions would cause the regulation to become more complicated, and does not appear necessary to aid small concerns in accord with the purposes of the legislation. In addition, it could substantially broaden the number of concerns which could qualify with a resulting excessive loss of revenue to the Patent and Trademark Office. It is not seen likely that the restriction on licensing would unduly or adversely affect the ability of the small business concern to participate in the patent system.

Another comment which was made related to a firm which is a subsidiary of a university or other nonprofit organization. The suggestion was made that the number of employees of the university or other nonprofit affiliate be excluded from consideration in determining whether or not the business concern qualifies as a small business concern. The suggestion has not been adopted since the situation raised is already treated under the definition of nonprofit organization established by the Patent and Trademark Office on Sept. 10, 1982, at 47 FR 40134–40140. Under that Patent and Trademark Office regulation, a wholly owned subsidiary of a nonprofit or university is considered a part of the university or nonprofit and thus is already eligible for the fee reduction.

One comment suggested that the regulation contain language specifying that concerns meeting its requirements are also independently owned and operated and not dominant in their field of operation under the Small Business Act. It is not necessary to include this language since this regulation already contains an affiliation test for this purpose; and it is generally unlikely that a small concern would be found to be dominant. The legislative history of the Small Business Act indicates that "The mere fact that a small business makes a particular product or item and is dominant in its field with respect to the particular product or item is not intended to disqualify it from the benefits of this Act * * * "(House Report 494, 83rd Congress, 1st Session 1953). SBA Size Appeals Board precedents have consistently stated that dominance under the Act and the SBA regulations is not viewed in narrow industry subdivisions. It, therefore, does not appear that concerns defined as small business under this provision would be dominant within the meaning of the Small Business Act.

Another comment suggested that foreign concerns should not be eligible as small business under this provision. Since this patent legislation was enacted by the Congress with knowledge of the Paris Convention for the Protection of Industrial Property, there is no indication that Congress intended that foreign small business not be eligible for the fee reduction. It is the view of the Patent and Trademark Office that excluding foreign small concerns would violate U.S. treaties in the patent area.

This comment also questioned whether the Patent and Trademark Office should make initial size determinations, or whether they could more appropriately be made by SBA. Since the fee reduction procedure is part of the patent application and of other Patent and Trademark Office actions and may involve Patent law questions, it would be administratively infeasible to have initial size determinations made by the SBA. The Patent and Trademark Office recently issued regulations (Sept. 10, 1982, 47 FR 40134) which set forth the fee reduction procedures.

Other Considerations Relating to the Rulemaking

Environmental, energy, and other considerations: The rule will not have a significant impact on the quality of the human environment or the conservation of energy resources.

Small business concerns will be benefited by the rule. The proposed rule will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). Public Law 97–247 has taken into consideration the impact it may have on small entities and has reduced the fees, therefore, by 50 per centum.

The Small Business Administration has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 13 CFR Part 121

Small businesses, Inventions and patents.

PART 121—SMALL BUSINESS SIZE STANDARDS

Accordingly, pursuant to Section 3 of the Small Business Act and Pub. L. 97–247, Part 121 of Title 13 of the Code of Federal Regulations is amended by adding §121.3–18 to read as follows:

§121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code.

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

ROBERT B. WEBBER,
Sept. 23, 1982. *Acting Administrator.*

[FR Doc. 82–20940 Filed 9–29–82; 8:45 am]
BILLING CODE 8025–01–M

[1023 O.G. 23]

(61) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 31–201–229]

Revision of Patent Practice

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part 1 of 37 CFR, to clarify the practice under certain sections of Public Law 97–247 of 1982 and to make certain other changes and clarifications in practice which have been found desirable after some experience. The rulemaking changes the practice under §§1.27 and 1.28 with regard to subsequently establishing small entity status and qualifying for a refund of fees paid in full. The changes in other rules clarify and improve the practice in certain areas.
Effective Date: Apr. 1, 1984
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557–3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to 1) clarify the small entity status of independent inventors, small business concerns and nonprofit organizations having funding agreements with a federal governmental agency as defined in 35 U.S.C. 202(c) (4); 2) rewrite §1.28 to provide a system for obtaining a refund of a portion of a fee paid in full when small entity status is established within two months of the date of such payment; 3) provide that a separate statement establishing small entity status is not required in an application filed under §1.62 when such status has been established in the parent application; and 4) modify certain other rules to clarify practice.

New §1.21(1) establishes a fee for processing and retaining any application which is abandoned for failing to complete the application pursuant to §1.53(d). This new paragraph, as well as the changes to §§1.53 and 1.78, indicate that in order to obtain benefit of a prior U.S. application, either the basic filing fee or the processing and retention fee of §1.21(1) must be paid. Section 1.53(d) further establishes that the application will be disposed of if the required fee is not paid within a set period. Section 1.56(b) requires submission of copies of foreign patent documents, non-patent publications, or other non-patent items of information disclosed pursuant to the duty to disclose. New §1.191(d) clarifies that §1.136 applies in patent applications and that §1.550(c) applies in reexamination proceedings to all time periods set forth in §§1.191-1.194, 1.196 and 1.197.

Discussion of Specific Rules and Significant Differences Between Proposed and Final Rules: Section 1.5, paragraph (a) is amended to remove a reference to §1.55, which is no longer appropriate and to clarify how letters to the Office are to be identified.

Section 1.6 is amended as proposed to clarify the manner in which letters and papers, including fees, filed in accordance with §1.10 by "Express Mail" are date stamped when received in the Patent and Trademark Office. Such letters and papers, which comply with §1.10, will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday or federal holiday within the District of Columbia, in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or a federal holiday within the District of Columbia. No papers are received in the Patent and Trademark Office on Saturdays, Sundays, or federal holidays within the District of Columbia.

Section 1.10, paragraphs (a) and (c), are amended to clarify that papers deposited as "Express Mail" on a Saturday, Sunday, or a federal holiday within the District of Columbia will be stamped with the date of the next succeeding day which is not a Saturday, Sunday, or a federal holiday within the District of Columbia. A cross reference to §1.6(a) has also been added to the rule. This change was not contained in the notice of proposed rulemaking but is being made to avoid confusion and to ensure that the Office's practice in date-stamping of papers is clearly understood. The change was suggested by a comment received on the proposed rules.

Section 1.14 is amended as proposed to revise paragraph (b) to clarify that only complete patent applications as defined in §1.51(a) which become abandoned will be retained for a period of twenty years from the filing date. Incomplete applications will be retained as provided in §§1.21 and 1.53.

Section 1.19, paragraph (b)(3), is amended as proposed to clarify that only copies made from Office records, but not prepared by the Office, will be compared with the original prior to certification of the copies. The Office will not compare copies made from some other copy or record with Office records for purposes of certification. The stated charge of ten cents per page would not be sufficient to make a word-by-word comparison. The requirements of the public appear to still be served by limiting the use of the comparison fee to Office records.

Section 1.21 is amended as proposed to revise paragraph (b) (2) and establish a new paragraph (1). The change in paragraph (b) (2) is in accord with the change in §1.25 (a). New paragraph (1) provides a fee for processing and retaining any application which is abandoned pursuant to §1.53(d). Such applications have received a filing date pursuant to 35 U.S.C. 111 but have been abandoned for failure to complete the application by filing the oath or declaration, filing fee or surcharge (§1.16(e)). The fee covers the handling, filming, processing, data input and storage required to retain an application. The fee is not due in any application in which the basic filing fee was paid.

Section 1.25 is amended as proposed to revise paragraph (a) to set the minimum deposit for a deposit account at $1000 and to clarify that an amount sufficient to cover all fees as well as services, copies, etc., requested must always be on deposit. This minimum amount is considered necessary and proper in view of the substantial increase in the amounts of fees being charged to deposit accounts and the processing costs of handling overdrawn accounts. Paragraph (b) clarifies that fees may be charged against a deposit account only where sufficient funds are on deposit to cover the entire amount of the fees. Paragraph (b) also clarifies that an authorization to charge a fee to a deposit account will not be considered payment on the date the authorization

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to charge is effective as to that fee unless sufficient funds are present in the account to cover the fee.

Section 1.27 is amended as proposed to revise paragraphs (b), (c) and (d) to provide clearly that an independent inventor, small business concern, or nonprofit organization, which is otherwise qualified as a small entity for purposes of paying reduced patent fees under 37 CFR 1.9 and 1.27, is not disqualified therefrom because of a license to a federal agency pursuant to 35 U.S.C. 202(c) (4). Section 1.27 is amended to state that such a license does not constitute a license or a conveyance of rights which would preclude qualifying for small entity status. The amendment is necessary for clarification and to avoid frustrating the intent of Public Law 97–247 and Public Law 96–517 when taken together.

The text of Title 35, United States Code, §202(c) (4) reads as follows:

§202. Disposition of rights

(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

* * * * *

(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

Section 1.28 is amended as proposed to revise paragraph (a) to clarify that a separate verified statement is not required to be filed in a file wrapper continuing application filed pursuant to §1.62, if status as a small entity has been established in the parent application and is still proper. Section 1.28(a) also permits a refund of a fee timely paid in the full amount if within two months of the date of the full timely payment: (1) small entity status is properly established, and (2) a refund is requested. Under §1.28(a), no request for a refund filed later than two months after the date on which a full fee has been paid will be entertained even if additional time is sought to file the request. The two-month period referred to in §1.28(a) is not a period for response under §1.136 and cannot be extended. Section 1.28(a) provides for, in somewhat modified form, the practice presently in effect pursuant to a waiver of §1.28 published at 1023 O.G. 77 on Oct. 26, 1982 and extended at 1027 O.G. 115 on Feb. 15, 1983. The revised refund procedures in §1.28(a) will apply to any fees timely paid in full on or after the effective date of the final rule. The refund procedures set forth in the Patent and Trademark Office *Official Gazette* Notice entitled "Filing of Verified Statements Claiming Small Entity Status" published at 1023 O.G. 77 on October 26, 1982, and the *Official Gazette* Notice entitled "Requirement for Filing Verified Statements Claiming Small Entity Status" published at 1027 O.G. 115 on Feb. 15, 1983, continue in effect until the effective date of the final rule.

Section 1.52(d) is amended as proposed to clarify that the verified English translation of a non-English language application and the fee set forth in §1.17(k) can be filed with the application or within such time as may be set by the Office.

Section 1.53, paragraphs (b) and (d), are amended to clarify in paragraph (b) that the application for patent must be filed in the name of the actual inventor or inventors by giving all their names as required by §1.41. Paragraph 1.53(d) states that if a correspondence address is provided, notice will be provided to that address where the appropriate filing fee or oath or declaration does not accompany the application. Paragraph 1.53(d) also provides that if the required filing fee is not paid, or the processing and retention fee is not paid, within one year of the date of mailing of notification pursuant to paragraph 1.53(d) or within one year from the filing date if no correspondence address is included in the application, the application will be disposed of. The paragraph further indicates that no copies will be provided or certified by the Office of an application which has been disposed of or in which neither the basic filing fee nor the processing fee has been paid. Finally, paragraph 1.53(d) specifies that if no correspondence address is included in the application, applicant will have two months from the filing date to file the fee, oath or declaration and to pay the surcharge set forth in §1.16(e) in order to prevent abandonment of the application.

Section 1.55, paragraph (b), is amended as proposed to correct an error in referring to paragraph (a) of this section.

Section 1.56 is amended as proposed to revise paragraph (b) and add a new paragraph (j). Paragraph 1.56(b) requires that a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form being disclosed pursuant to §1.56 accompany such disclosures unless the copy is not in the possession of the person making the disclosure. In such a situation, a statement to that effect is required. Paragraph 1.56(b) also adds "or her" to refer to both genders. New paragraph 1.56(j) states that applicant will be notified if a copy or statement required pursuant to §1.56(b) is not submitted and that applicant will be given a time period within which to file the copy or a statement that the copy is not in the possession of the person making the disclosure. Such a time period would be extendable under §1.136. Failure to respond in a proper and timely manner would result in abandonment of the application.

Section 1.59 is amended as proposed to clarify that the Office will furnish copies of papers received in the Office at the usual cost only if the basic filing fee or the processing and retention fee has been paid.

Section 1.60 is amended to break the section into paragraph (a) and new paragraph (b). Paragraph (a) adds a reference to amended §1.78(a) to clarify the conditions under which continuation or divisional applications may be filed. New paragraph 1.60(b) provides that the signing of the oath or declaration can be omitted if the prior application was complete as set forth in §1.51(a). New paragraph 1.60(b) also requires that a true copy of the prior complete application be filed. The final rule also clarifies that the copy of the oath or declaration filed must show the applicant's signature or contain an indication it was signed. Paragraph 1.60(b) also provides that only amendments reducing the number of claims or adding a reference to the prior application will be entered before calculating the filing fee and granting the filing date.

Section 1.62 is amended as proposed to revise paragraphs (a) and (d). Paragraph 1.62(a) provides that the file wrapper continuing procedure is applicable only to prior complete applications under §1.51(a). Paragraph 1.62(d) clarifies that the filing fee referred to is the basic filing fee.

Section 1.78 is amended as proposed to change the title to more explicitly define the contents of the section. Paragraph 1.78(a) specifies that in order for an application to claim the benefit of a prior filed copending national application, the prior application must be complete as set forth in §1.51(a) or be entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16, or be entitled to a filing date as set forth in §1.53(b) and have paid the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d).

Section 1.121 is amended as proposed to revise paragraph (e) to specify how amendments to the description and claims are to be made in reissue applications.

Section 1.123 is amended as proposed to clarify that the sketch showing proposed amendments to the drawing with its cover letter should be a separate paper.

Section 1.135 is amended as proposed to remove paragraph (d) since it is not necessary in view of the ability to obtain extensions of time under §1.136(a) by petition and payment of fee.

Section 1.136 is amended as proposed to clarify in paragraphs (a) and (b) that the extension of time practice under this section does not apply in interference proceedings or in reexamination proceedings. Extension of time practice in interference proceedings, including extension of time for appeal or civil action (§1.304), is subject to §1.245. Extension of time practice in reexamination proceedings, including extension of time for appeal or civil action (§1.304), is subject to §1.550(c).

Section 1.191 is amended as proposed to add a new paragraph (d) to provide that the time periods for appeal and review set forth in §§1.191–1.194, 1.196 and 1.197 are subject to the provisions of §1.136 for patent applications or §1.550(c) for reexamination proceedings.

Section 1.192 is amended as proposed to revise paragraph (a) to delete the reference to §1.136 since it is provided for in new §1.191(d).

Section 1.197 is amended as proposed to revise paragraph (b) to delete the reference to §1.136 since it is provided for in new §1.191(d).

Section 1.304 is amended as proposed to clarify that extensions of time periods set forth therein are subject to the provisions of §1.245 for interferences or §1.550(c) where reexamination proceedings are involved rather than to §1.136 which applies in all other cases.

Section 1.550 is amended as proposed to revise paragraph (c) to clarify that the time for taking any action, including appeal, by a patent owner in a reexamination proceeding is governed solely by this section.

Section 1.555 is amended to revise paragraphs (a) and (b). In paragraph 1.555(a) "prior art" statement has been changed to "information disclosure" statement to conform to the language of §1.98. Paragraph 1.555(b) requires that disclosures pursuant to this paragraph be accompanied by a copy of each foreign patent document or non-patent printed publication which is being disclosed and which is in the possession of the person making the disclosure.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. Thirty-five letters presenting written comments were received. No oral testimony was presented at the public hearing conducted on Oct. 18, 1983. All of the comments were considered in adopting the changes set forth herein. Comments appear below with responses thereto.

Comments from Associations

Comment:

The American Patent Law Association commented that they were in full accord with most of the proposed changes. They submitted comments and suggestions from some members. The Patent, Trademark and Copyright Section of the American Bar Association did not render an official section position on the proposed rule changes but polled its members and found the majority of the member responding either to favor the proposed rule changes or to view them as acceptable. They also submitted comments and suggestions from some members. The United States Trademark Association commented on the proposed rules concerning deposit accounts.

Reply:

The efforts and input of these organizations are appreciated. Specific comments and suggestions from individual members of the organizations are covered below.

Comments from Individuals

Comment:

One comment was received that the proposed amendment to §1.6 was unnecessary and possibly improper.

Reply:

The amendment to §1.6 has been adopted as proposed. The amended rule sets out the Patent and Trademark Office practice which has been in effect. No papers are stamped as having arrived in the Office on Saturday, Sunday, or a federal holiday within the District of Columbia no matter how the papers are filed. Article 4, C(3) of the Paris Convention says that the period of priority shall be extended until the first following working day "when the Office is not open for the filing of applications in the country where protection is claimed". To accept papers through use of "Express Mail" or some other way on Saturdays, Sundays or federal holidays within the District of Columbia would raise the possibility that the Office would be viewed as open for the filing of papers on such days and thereby remove the current ability to file a priority claiming application on the first working day if the priority year ended on a nonworking day. The final rule avoids this implication.

Comment:

One comment indicated that the change to §1.6 should not be applied retroactively to papers filed before the clarifying language was placed in the rule.

Reply:

Any such fact situation will be reviewed through the normal petition procedure.

Comment:

One comment suggested that §1.10 be amended rather than §1.6 with regard to papers deposited as "Express Mail" on a Saturday, Sunday, or federal holiday within the District of Columbia.

Reply:

This comment has been adopted in that both §§1.6 and 1.10 have been amended to avoid any possible confusion.

Comment:

One comment suggested that §1.19(b) (3) be changed to permit the Office to certify material not copied from the records of the Office when reproduction of Office records is not feasible or possible.

Reply:

This comment has not been adopted. The Office will only certify that material is a copy of an Office record if, in fact, the material was reproduced from the Office record.

Comment:

One person commented that the $100 processing and retention fee under §1.21 was excessive and unnecessary.

Reply:

The fee is considered proper and necessary in view of the cost to the Office in handling, filming, processing and storage required to retain an application which has a filing date but in which no basic filing fee has been paid. If this expense is not covered by the applicant, it must be recovered from other sources.

Comment:

Twenty-seven comments were received on the proposal to amend §1.25 to raise to $1000 the minimum balance required in a deposit account. The amount is also referred to in §1.21(b) (2). These comments generally suggested that the $1000 amount was too high for account holders who did not use their accounts for charges other than small fees such as for patent copies. Several comments received acknowledged that the minimum balance for deposit accounts should be raised and suggested various amounts less than the proposed $1000. Several comments suggested a separate account category for persons who do not use their accounts for other than small fees. Two comments suggested that the Office accept credit cards for payment of fees.

Reply:

These comments and suggestions have not been adopted. The fees for filing, processing and issuing of patent and trademark applications have increased so as to make the present $40 minimum balance for deposit accounts totally inadequate. A number of persons objecting to the $1000 minimum balance acknowledged that they used their deposit accounts as a safeguard against failure to calculate or to submit proper fees by a

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check. An account with a very low balance obviously cannot be effective as a safeguard when a patent filing fee is $300 and a patent issue fee is $500. Dealing with overdrawn accounts causes administrative problems for the Patent and Trademark Office. An authorization to charge an account without sufficient funds to cover a charge will not be effective as payment and may result in loss of rights to an applicant. Also, unnecessary expense will be incurred by an applicant if an insufficient balance in an account results in abandonment of an application and the necessity of filing a petition to revive under 37 CFR 1.137(b) with the requisite $500 fee. Experience has shown that many single practitioners and small firms have failed to have sufficient funds in their accounts when needed. The increase of the minimum balance in deposit accounts to $1000 is seen to be necessary and proper. A failure to raise the minimum balance in deposit accounts to $1000 would serve as an incorrect indication that the Patent and Trademark Office views a minimum balance of less than $1000 as acceptable. If it is not possible for a small firm or individual to maintain a minimum balance of $1000, the deposit account could still be retained and used by paying the service charge set forth in §1.21(b) (2) for any month in which the balance at the end of the month is below $1000. The use of credit cards is not considered viable since legislation would be required to do so.

Comment:

Two comments were received suggesting that a license to a federal agency in an invention made by a federal employee should not preclude the employee from qualifying as a small entity and that §1.27 should be amended to cover this situation.

Reply:

These comments have not been adopted. Such an amendment was not proposed and the public has not had an opportunity to comment on it.

Comment:

One comment suggested that the time for filing a verified statement claiming small entity status to obtain a refund of a filing fee pursuant to §1.28 should run from the date of mailing of the filing receipt due to difficulty in identifying the new application before the filing receipt is received. Three persons suggested that the period for establishing small entity status and requesting a refund should be three months rather than two months as proposed.

Reply:

These comments have not been adopted. An application may be identified before the filing receipt is issued in a number of ways including title, inventor's name, filing date and attorney docket number. Also, a postcard may be included with filing of the application to learn the application serial number. The two month period for obtaining a refund is seen to be adequate since the small entity practice is no longer new and the public has had time to become familiar with it. It allows sufficient time to have a small entity statement executed and sent to the Patent and Trademark Office.

Comment:

One comment suggested that it should be made clear that an application filed in a foreign language (§1.52(d)) without including a signed oath or declaration can receive a filing date under the provisions of §1.53(b).

Reply:

The regulations permit and this reply makes it clear that an application filed in a language other than English can receive a filing date by complying with §1.53(b).

Comment:

Three comments were received suggesting that the proposed language not be added to §1.53(b). One comment alleged that the requirement to name the inventors upon filing a patent application is not required or even authorized by statute.

Reply:

35 U.S.C. 111 says that application for patent "shall be made, or authorized to be made, by the inventor". The rules of practice (§1.41(a)) contain the same requirement. The amendment to §1.53(b) is only clarifying the rules by also placing the requirement in that section. Further, United States patent practice has long required that the inventors be named at the time of filing.

Comment:

One person commented that the language of §1.53(d) should be changed to reflect that only one of the filing fee or processing and retention fee must be paid to prevent the application being disposed of.

Reply:

The language of the rule is seen to be unambiguous in this regard.

Comment:

One person commented that the language of §1.53(d) should be changed to establish a time within which the processing and retention fee may be paid to prevent the application being disposed of when no correspondence address has been provided.

Reply:

The suggestion has been adopted.

Comment:

One person suggested that §1.56(b) which states that copies of disclosed documents must be filed is inconsistent with §1.56(j) which provides that such copies must be filed unless they are not in the possession of the person making the disclosure.

Reply:

The language of §1.56(b) has been modified to clarify this point.

Comment:

Three persons commented that the requirement of §1.56(b) that copies of disclosed documents be supplied was an unnecessary burden. One person commented similarly on the requirement of §1.555 that copies of disclosed documents be supplied. Another person suggested that the proposed amendment to §1.56(b) would require submission of a complete document even if only a small portion were relevant.

Reply:

The Office agrees with another person who commented that the "requirement that disclosers in application and reexamination proceedings provide copies of disclosed documents which they have is fair and reasonable and should aid the Examiner in making an informed as possible decision in any given proceeding". The portion of a document required to be submitted under §1.56(b) is the portion which is material to the examination of the application under §1.56(a).

Comment:

One person commented that the proposed amendment to §1.78(a) would appear to require that a petition for correction of inventorship under §1.48 be filed in a parent application as well as in the continuing application in which the inventorship was corrected.

Reply:

The amendment to §1.78 does not change the practice regarding the filing of petitions under §1.48.

Comment:

One person commented that §1.123 is unclear as amended in not referring to the paper requesting that amendments to the drawing be made.

Reply:

The Patent and Trademark Office no longer makes amendments to the drawings. Applicants must submit new drawings with the changes or use bonded draftsmen to make the amendments. A paper requesting that the Office make the amendments is therefore inappropriate.

Comment:

Four persons commented that §1.135(d) should not be deleted since they thought it desirable to be able to ratify unsigned papers without paying any fee.

Reply:

The statute and rules now provide for obtaining extensions of time through simple petition and payment of fee and for revival through a simple statement that the abandonment was unintentional and the payment of a fee. Further, a filing date can now be obtained on filing an application without the oath or declaration. The handling of unsigned papers by the Patent and Trademark Office causes administrative problems and expense to the Office and delays the processing of applications. The emergency-type situations involving loss of rights which the previous practice was intended to cover have been substantially eliminated by the changes in the law and rules.

Comment:

One person commented that §1.191(d) was undecipherable in that it refers to a number of other rules.

Reply:

This section was intended to serve as a point of summarization for the applicable extension of time rules in appeals before the Board of Appeals. The section is seen to adequately serve that purpose.

Comment:

One person commented that the final sentence of §1.555(b) needs clarification.

Reply:

This sentence was not changed by the proposed rules and is seen to be clear as written.

Comment:

One person commented that proposed §1.555(b) requires copies and does not make any exceptions or qualifications on this requirement.

Reply:

The language of §1.555(b) has been clarified to require filing of a copy of each foreign patent document or nonpatent printed publication which is being disclosed and which is in the possession of the person making the disclosure.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354). Public Laws 96–517 and 97–247 have both taken into consideration the impact they may have on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to filing of small entity statements in applications filed under §1.62 will be reduced.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97–247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

37 CFR, Part 1, is amended as follows:

1. Section 1.5 is amended by revising paragraph (a) to read as follows:

§1.5 Identification of application, patent or registration.

(a) When a letter concerns an application for patent, it should state the name of the applicant, the title of the invention, the serial number or international application number of the application, the date of filing the same, and, if known, the group art unit or other unit within the Patent and Trademark Office responsible for considering the letter and the name of the examiner or other person to which it has been assigned.

* * * * *

2. Section 1.6 is amended by revising paragraph (a) to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt except where such letters and papers are filed in accordance with §1.10. Any such letters and papers filed in accordance with §1.10 will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or federal holiday within the District of Columbia in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or federal holiday within the District of Columbia. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

* * * * *

3. Section 1.10 is amended by revising paragraphs (a) and (c) to read as follows:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the "Express Mail Post Office to Addressee" service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or federal holiday within the District of Columbia. See §1.6(a).

* * * * *

(c) The Patent and Trademark Office will accept the certificate of mailing by "Express Mail" and accord the paper or fee the certificate date under 35 U.S.C. 21(a) (unless the certificate date is a Saturday, Sunday, or federal holiday within the District of Columbia—see §1.6(a)) without further proof of the date on which the mailing by "Express Mail" occurred unless a question is present regarding the date of mailing. If more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date or if other questions regarding the date of mailing are present, the person mailing the paper or fee may be required to file a copy of the "Express Mail" receipt showing the actual date of mailing and a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

4. Section 1.14 is amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

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(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application which is open to inspection pursuant to §1.139, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Complete applications (§1.51(a)) which are abandoned may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

* * * * *

5. Section 1.19 is amended by revising paragraph (b) (3) to read as follows:

§1.19 Document supply fees.

* * * * *

(b) * * *

(3) For comparing copies, made from Patent and Trademark Office records but not prepared by the Patent and Trademark Office, with the original, prior to certification of the copies, per page	$0.10

* * * * *

6. Section 1.21 is amended by revising paragraph (b) (2) and by adding a new paragraph (1) to read as follows:

§1.21 Miscellaneous fees and charges.

* * * * *

(b) * * *

(2) Service charge for each month when the balance at the end of the month is below $1000	$2.00

* * * * *

(1) For processing and retaining any application abandoned pursuant to §1.53(d) unless the required basic filing fee has been paid	$100.00.

7. Section 1.25 is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $1000 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all fees, services, copies, etc., requested must always be on deposit. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $1000.

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts if sufficient funds are on deposit to cover such fees. A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account containing sufficient funds may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to §1.510 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination. An authorization to charge a fee to a deposit account will not be considered payment of the fee on the date the authorization to charge the fee is effective as to the particular fee to be charged unless sufficient funds are present in the account to cover the fee.

8. Section 1.27 is amended by revising paragraphs (b), (c) and (d) to read as follows:

§1.27 Statement of status as small entity.

* * * * *

(b) Any verified statement filed pursuant to paragraph (a) of this section on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47 of this part, and must aver that the inventor qualifies as an independent inventor in accordance with §1.9(c) of this part. Where there are joint inventors in an application, each inventor must file a verified statement establishing status as an independent inventor in order to qualify as a small entity. Where any rights have been assigned, granted, conveyed, or licensed, or there is an obligation to assign, grant, convey, or license, any rights to a small business concern, a nonprofit organization, or any other individual, a verified statement must be filed by the individual, the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization averring to their status. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to U.S.C. 202(c)(4) does not constitute a license as set forth in §1.9 of this part.

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in §1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a license as set forth in §1.9 of this part.

(d) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a nonprofit organization must (1) be signed by an official of the nonprofit organization empowered to act on behalf of the organization; (2) aver that the organization qualifies as a nonprofit organization as defined in §1.9(e) of this part specifying under which one of §1.9(e)(1), (e)(2), (e)(3), or (e)(4) of this part the organization qualifies; and (3) aver that exclusive rights to the invention have been conveyed to and remain with the organization or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9 of this part. Where the rights of the nonprofit organization as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such. For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a conveyance of rights as set forth in this paragraph.

9. Section 1.28 is amended by revising paragraph (a) to read as follows:

§1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(a) The failure to establish status as a small entity (§§1.9(f) and 1.27 of this part) in any application or patent prior to paying, or at the time of paying, any fee precludes payment of the fee in the amount established for small entities. A refund pursuant to §1.26 of this part, based on establishment of small entity status, of a portion of fees timely paid in full prior to establishing status as a small entity may only be obtained if a verified statement under §1.27 and a request for a refund of the excess amount are filed within two months of the date of the timely payment of the full fee. The two-month time period is not extendable under §1.136. Status as a small entity is waived for any fee by the failure to establish the status prior to paying, at the time of paying, or within two months of the date of payment of, the fee. Status as a small entity must be specifically established by a verified statement filed in each application or patent in which the status is available and desired, except those applications filed under §1.60 or §1.62 of this part where the status as a small entity has been established in a parent application and is still proper. Once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to §1.27 of this part unless the Office is notified of a change in status. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established, except those filed under §1.60 or §1.62 of this part. Applications filed under §1.60 or §1.62 of this part must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired.

* * * * *

10. Section 1.52 is amended by revising paragraph (d) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(d) An application may be filed in a language other than English. A verified English translation of the non-English language application and the fee set forth in §1.17(k) are required to be filed with the application or within such time as may be set by the Office.

11. Section 1.53 is amended by revising paragraphs (b) and (d) to read as follows:

§1.53 Serial number, filing date, and completion of application.

* * * * *

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by §1.41. No new matter may be introduced into an application after its filing date (§1.118).

* * * * *

(d) If the application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified, if a correspondence address has been provided, and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. If the required filing fee is not timely paid, or if the processing and retention fee set forth in §1.21(1) is not paid within one year of the date of mailing of the notification required by this paragraph, the application will be disposed of. No copies will be provided or certified by the Office of an application which has been disposed of or in which neither the required basic filing fee nor the processing and retention fee has been paid. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. If no correspondence address is included in the application, applicant has two months from the filing date to file the fee, oath or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application or one year from the filing date to pay the processing and retention fee set forth in §1.21(1) to prevent disposal of the application.

* * * * *

12. Section 1.55 is amended by revising paragraph (b) to read as follows:

§1.55 Claim for foreign priority.

* * * * *

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his or her attorney or agent, when submitting a claim for such right as specified in paragraph (a) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

13. Section 1.56 is amended by revising paragraph (b) and by adding a new paragraph (j) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(b) Disclosures pursuant to this section must be accompanied by a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form which is being disclosed or by a statement that the copy is not in the possession of the person making the disclosure and may be made to the Office through an attorney or agent having responsibility for the preparation or prosecution of the application or through an inventor who is acting in his or her own behalf. Disclosure to such an attorney, agent or inventor shall satisfy the duty, with respect to the information disclosed, of any other individual. Such an attorney, agent or inventor has no duty to transmit information which is not material to the examination of the application.

* * * * *

(j) If any disclosure pursuant to this section does not include a copy of each foreign patent document, non-patent publication, or other non-patent item of information

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in written form which is being disclosed or a statement that a copy thereof is not in the possession of the person making the disclosure, applicant will be so notified and given a period of time within which to file the copy or a statement that a copy is not in the possession of the person making the disclosure. The time period set may be extended under §1.136.

14. Section 1.59 is revised to read as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost of any application in which either the required basic filing fee (§1.16) or the processing and retention fee (§1.21(l)) has been paid.

15. Section 1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

(a) A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 and §1.78(a)), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a) and (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

16. Section 1.62 is amended by revising paragraphs (a) and (d) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declaration from a prior complete application (§1.51(a)) to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior complete application.

* * * * *

(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate basic filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section.

* * * * *

17. Section 1.78 is amended by revising the title and paragraph (a) to read as follows:

§1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a) An application may claim an invention disclosed in the same applicant's prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

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18. Section 1.121 is amended by revising paragraph (e) to read as follows:

§1.121 Manner of making amendments.

* * * * *

(e) In reissue applications, both the descriptive portion and the claims are to be amended by either (1) submitting a copy of a portion of the description or an entire claim with all matter to be deleted from the patent being placed between brackets and all matter to be added to the patent being underlined, or (2) indicating the exact word or words to be stricken out or inserted and the precise point where the deletion or insertion is to be made. Any word or words to be inserted must be underlined. See §1.173.

* * * * *

19. Section 1.123 is revised to read as follows:

§1.123 Amendments to the drawing.

No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by bonded draftsmen, at applicant's expense, or by the submission of substitute drawings by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner and should be a separate paper.

20. Section 1.135 is amended by removing paragraph (d).

21. Section 1.136 is revised to read as follows:

§1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a nonstatutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in §1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to §1.207. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available. See §1.245 for extension of time in interference proceedings and §1.550(c) for extension of time in reexamination proceedings.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See §1.245 for extension of time in interference proceedings and §1.550(c) for extension of time in reexamination proceedings.

22. Section 1.191 is amended by adding a new paragraph (d) to read as follows:

§1.191 Appeal to Board of Appeals.

* * * * *

(d) The time periods set forth in §§1.191 through 1.194, 1.196 and 1.197 are subject to the provisions of §1.136 for patent applications or §1.550(c) for reexamination proceedings.

23. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved.

* * * * *

24. Section 1.197 is amended by revising paragraph (b) to read as follows:

§1.197 Action following decision.

* * * * *

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states.

* * * * *

25. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to §1.197(b) or §1.256(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The time periods set forth herein are subject to the provisions of §1.136 or §1.550(c) as to decisions of the Board of Appeals, or §1.245 as to decisions of the Board of Patent Interferences.

* * * * *

26. Section 1.550 is amended by revising paragraph (c) to read as follows:

§1.550 Conduct of reexamination proceedings.

* * * * *

(c) The time for taking any action by a patent owner in a reexamination proceeding will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of the request effect any extension.

* * * * *

27. Section 1.555 is amended by revising paragraphs (a) and (b) to read as follows:

§1.555 Duty of disclosure in reexamination proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. All such individuals who are aware, or become aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. An information disclosure statement, preferably in accordance with §1.98, should be filed wihin two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publications to the attention of the Office.

(b) Disclosures pursuant to this section must be accompanied by a copy of each foreign patent document or non-patent printed publication which is being disclosed or by a statement that the copy is not in the possession of the person making the disclosure and may be made to the Office through an attorney or agent having responsibility on behalf of the patent owner for the reexamination proceeding or through a patent owner acting in his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the reexamination.

* * * * *

Nov. 30, 1983.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

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(62) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 40442–49092]

Final Rules for Patent Maintenance Fees

Agency: Patent and Trademark Office, Commerce
Action: Notice of final rulemaking
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part 1 of Title 37, Code of Federal Regulations, to provide rules and procedures for the payment of patent maintenance fees. Public Law 96–517, enacted on Dec. 12, 1980 and Public Law 97–247, enacted on Aug. 27, 1982, provided for the payment of maintenance fees at intervals of 3½, 7½ and 11½ years from the date of grant of the patent for maintaining in force an original patent, a reissue patent of an invention, and under Public Law 96–517, a plant patent and reissues thereof. The changes provide specific rules and procedures which will assist patentees in avoiding the inadvertent expiration of a patent for failure to pay the appropriate maintenance fee.
Effective Date: Nov. 1, 1984
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557–3054 or by mail to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to 1) establish a set of rules and procedures for the payment of patent maintenance fees; and 2) effect the provisions of Public Laws 96–517 and 97–247 with respect to payment of maintenance fees. The proposed rules were published on Apr. 24, 1984, in Vol. 49 of the *Federal Register*, pages 17692 through 17698; and on May 8, 1984, at Vol. 1042 of the *Official Gazette*, pages 22 through 38. A public hearing was held on the proposed rule changes on June 26, 1984.

A public briefing on the Office's maintenance fee payment plans was announced at 49 *Federal Register* 2806 on Jan. 23, 1984, and at 1038 *Official Gazette* 293 on Jan. 31, 1984. The public briefing was held on Feb. 22, 1984.

Discussion of Specific Rules

Section 1.1., is amended as proposed to add a new paragraph (d) to provide a "Box M. Fee" in the Patent and Trademark Office to which all maintenance fee correspondence and payments should be directed. Changes in small entity status in patents and changes in the "fee address" under §1.363, as well as payments of maintenance fees should be directed to "Box M. Fee".

Section 1.9, paragraph (d) is amended as proposed to make a change in citation and title of the rule of the Small Business Administration which relates to the small business size standard for paying reduced patent fees. This change was published in the Federal Register as a final rule on Feb. 9, 1984 at 49 Fed. Reg. 5024–5048. The wording of the rule itself was not changed. This change is made to bring the wording of title 37, Code of Federal Regulations into conformance with title 13, Code of Federal Regulations.

Section 1.17, is amended as proposed to establish in paragraph (h) a fee of $120 for review of a decision refusing to accept and record payment of a maintenance fee filed prior to the expiration of a patent. Paragraph (h) of §1.17 is also amended to establish a fee of $120 for reconsideration of a decision on petition refusing to accept the delayed payment of a maintenance fee in an expired patent.

Section 1.19, is amended as proposed to add new paragraphs (f) and (g). New paragraph (f) provides for a $10.00 fee for a microfiche copy of a patent file wrapper record. Microfiche copies of these patent files have recently become available for patents issued after Jan. 1, 1984. No fee had previously been set by rule for this service. This fee is not directly related to maintenance fees but is set at this time for convenience. New paragraph (g) establishes a $3.00 fee for providing an uncertified statement indicating either the status of payment of maintenance fees due on a patent or the expiration of a patent. This charge does not apply to any receipt normally provided to the fee addressee as a result of the payment of a maintenance fee, but does apply in any other instance when written evidence of the status of payment of maintenance fees on a patent is requested, whether by the patentee or a member of the public.

Section 1.20, is amended as proposed to add new paragraphs (k), (l) and (m). New paragraph (k) provides for a $100.00 surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982. Since Public Law 96–517 did not provide for small entities, the surcharge amount of $100 applies to all such patents. New paragraph (l) provides for a $100 surcharge for patentees other than a small entity and a $50 surcharge for small entity patentees when paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant based on an application filed on or after Aug. 27, 1982. This surcharge of $100 is subject to a 50% reduction for small entities pursuant to Public Law 97–247. New paragraph (m) provides for a $500 surcharge for accepting payment of a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee. This $500 surcharge applies only under Public Law 97–247 where the patent is based on an application filed on or after Aug. 27, 1982 and where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable. The requirement that the delay be "unavoidable" is the same as that for reviving an abandoned application under 35 U.S.C. 133. However, the amount of evidence required will depend upon when the showing that the delay was "unavoidable" is made. This surcharge does not apply to patents based on applications filed prior to Aug. 27, 1982 since acceptance of a maintenance fee after expiration of a patent for non-timely payment is not possible under Public Law 96–517. Since this surcharge is provided for under 35 U.S.C. 41(c), it is not subject to a 50% reduction for small entities. The surcharge in paragraph (m) is not in addition to the surcharge in paragraph (l), but is in lieu thereof.

Section 1.33 is amended as proposed to add a new paragraph (d) which allows a "correspondence address" or change thereto to be filed during the enforceable life of the patent. The "correspondence address" will be used in correspondence relating to maintenance fees unless a separate "fee address" has been specified. Paragraph (d) also includes a reference to §1.363 relating to the "fee address" to be used for maintenance fee purposes.

New §1.362 is added to provide for times for payment of maintenance fees. New paragraph (a) sets forth the requirement that maintenance fees as set forth in §1.20(e)-(j) must be paid in order to maintain a patent in force if the application maturing into a patent was filed on or after Dec. 12, 1980 and is subject to the payment of maintenance fees. The maintenance fee amounts set in §1.20(e)-(g) are subject to adjustment in accordance with the provisions of Public Law 96–517. The maintenance fee amounts set in §1.20(h)-(j) are subject to adjustment in accordance with the provisions of Public Law 97–247 on Oct. 1, 1985, and every third year thereafter, to reflect fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Other patent fees are also subject to similar adjustments.

New paragraph (b) of §1.362 stipulates that no maintenance fees are due for plant patents if the plant patent application was filed on or after Aug. 27, 1982 or for any design patents. Maintenance fees are not required for a reissue patent if the patent being reissued did not require maintenance fees. New paragraph (c) defines the pertinent application filing dates for purposes of determining whether maintenance fees are applicable. Paragraph (c) (1) establishes that for national applications not claiming benefit of an earlier application, the actual United States filing date controls. Paragraph (c) (2) establishes that for national applications claiming benefit of an earlier foreign application under 35 U.S.C. 119, the United States filing date controls. Paragraph (c) (3) provides that for continuing national applications claiming benefit of a prior application under 35 U.S.C. 120, the actual United States filing date of the continuing application is the controlling date. Paragraph (c) (4) provides that for a reissue application, the United States filing date of the application which matured into the original patent upon which the reissue application is based will control. Paragraph (c) (5) establishes that for an international application which has entered the United States as a Designated Office under 35 U.S.C. 371, the international filing date granted under Article 11(1) of the Patent Cooperation Treaty controls. This is consistent with 35 U.S.C. 363.

Paragraph (d) of new §1.362 sets forth the time periods when maintenance fees can be paid without a surcharge. Those periods, referred to generally as the "window period," are the six-month periods preceding each due date, i.e., 3 years through 3 years and six months, 7 years through 7 years and six months, and 11 years through 11 years and six months after grant of the patent. The "due dates" are defined in 35 U.S.C. 41(b). A maintenance fee paid on the last day of a window period can be paid without surcharge. The last day of a window period is the same date (anniversary date) the patent was granted 3 years and six months, 7 years and six months, or 11 years and six months after grant of the patent. Paragraph (d) has been modified from the proposal to add "and" between items (2) and (3) and change the comma at the end of the paragraph to a period.

Paragraph (e) of new §1.362 sets forth the grace periods during which maintenance fees, under either Public Law 96–517 or Public Law 97–247, may be paid with the surcharge under §1.20(k) or (l). The grace periods are the six-month periods immediately following each due date, i.e., after 3 years and six months and up to 4 years, after 7 years and six months and up to 8 years, and after 11 years and six months and up to 12 years after grant of the patent. A maintenance fee may be paid with the surcharge on the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant to prevent the patent from expiring.

Paragraph (f) of new §1.362 specifies that where the last day for paying a maintenance fee falls on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee may be paid on the next succeeding day which is not a Saturday, Sunday, or federal holiday. For example, if the "window period" provided by paragraph (d) for paying a maintenance fee without surcharge ended on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee can be paid without surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday. Likewise, if the grace period provided by paragraph (e) for paying a maintenance fee with surcharge ended on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee could be paid with surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday. In the latter situation, the failure to pay the maintenance fee and surcharge on the next succeeding day which is not a Saturday, Sunday, or federal holiday will result in the patent expiring on a date (4, 8, or 12 years after the date of grant) earlier than the last date on which the maintenance fee and surcharge could be paid. This situation results from the provisions of 35 U.S.C. 21, but those provisions do not extend the expiration date of the patent if the maintenance fee and any required surcharge are not paid when required. For example, if the grace period ended on Saturday, the maintenance fee and surcharge could be paid on the next succeeding business day, e.g. Monday, but the patent will have expired at midnight on Saturday if the maintenance fee and surcharge were not paid on the following Monday. Paragraph (f) has been modified from the proposal to explicitly refer to "any necessary surcharge" for clarity since the ability to pay on the next succeeding day which is not a Saturday, Sunday, or federal holiday within the District of Columbia applies to the maintenance fee, including any necessary surcharge.

Paragraph (g) of new §1.362 establishes that if the proper fees are not received within the time period specified in paragraphs (d), (e), or (f) the patent expires at the end of the grace period set forth in paragraph (e). Paragraph (g) also specifies that a patent which expires for the failure to pay the maintenance fee will expire at the end of the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant.

New §1.363 is added as proposed to provide for a "fee address" for maintenance fee purposes. New paragraph (a) specifies that the correspondence address used during prosecution of the application will be used unless 1) a "fee address" is provided for maintenance fee purposes when submitting the issue fee, 2) a correspondence address change for all purposes is filed after payment of the issue fee, or 3) a "fee address" or a change in the "fee address" is filed after payment of the issue fee.

Paragraph (b) of new §1.363 specifies that an assignment does not result in a change of address for maintenance fee purposes. Due to the possible expiration of a patent for failure to timely pay the appropriate maintenance fee, patentees should ensure that the Patent and Trademark Office is properly notified of the proper "fee address" to which all maintenance fee communications are to be directed. Under both Public Law 96–517 and Public Law 97–247 the burden is on the patentee to timely pay maintenance fees. The Patent and Trademark Office will attempt to assist patentees through appropriate courtesy notices. However, the failure to receive one or more notices will not relieve the patentee of the obligation to timely pay the appropriate maintenance fee to prevent the patent from expiring by operation of law if the maintenance fee is not paid. Section 1.363 does not provide for maintenance fee correspondence to be directed to more than one address.

New §1.366 is added to establish the guidelines and procedures for submission of maintenance fees, including any necessary surcharges. New paragraph (a) states that the patentee may pay maintenance fees and any necessary surcharges or any person or organization may pay maintenance fees and any necessary surcharges on behalf of the patentee without filing in the Patent and Trademark Office evidence of authorization by the patentee to pay maintenance fees. This will enable patentees to pay the maintenance fees and any necessary surcharges themselves or authorize some person or organization to pay maintenance fees and any necessary surcharges on their behalf. No verification of the authority to pay maintenance fees and any necessary surcharges in a particular patent will be made by the Patent and Trademark Office. While anyone may pay the maintenance fees and any necessary surcharges on a patent, any Patent and Trademark Office notices relating to maintenance fees will be mailed to the "fee address" set forth in §1.363. Paragraph (a) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity.

Paragraph (b) of new §1.366 specifies that a maintenance fee and any necessary surcharge for a patent must be submitted in the amount due on the date the maintenance fee and any necessary surcharge are paid, and at the proper time, i.e., within the periods set forth in §1.362. Paragraph (b) has been modified from the proposal by changing "proper amount" to "amount due on the date the maintenance fee and any necessary surcharge are paid." This change results from adoption of a suggestion that a maintenance fee payment made during the window period should not require adjustment if the maintenance fees are thereafter increased to reflect increases in the Consumer Price Index. Under paragraph (b) as adopted herein, if the amount of the maintenance fee is correct on the date it is paid and credited to the patent, a later change in the maintenance fees to reflect

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changes in the Consumer Price Index will not require a modification in the amount paid. However, in order for the maintenance fee to be considered paid it must be submitted in accordance with §1.366. Paragraph (b) has also been modified from the proposal to explicitly refer to §1.362(f) for purposes of clarity where the last day for paying a maintenance fee with or without a surcharge falls on a Saturday, Sunday, or a federal holiday within the District of Columbia. In such circumstances, the fee with any necessary surcharge may be paid on the next succeeding day which is not a Saturday, Sunday, or federal holiday. The maintenance fee and any necessary surcharge may be paid in the manner set forth in §1.23, i.e., it should be in United States specie, Treasury notes, national bank notes, post office money orders, or by certified check. As indicated in §1.23, if the maintenance fee payment is sent in any other form, the Office may delay or cancel the credit until collection is made. For example, a personal or other uncertified check drawn on a United States bank which is not immediately negotiable, e.g., because of lack of signature or insufficient funds, will not constitute payment of a maintenance fee. However, a personal check drawn on a United States bank can be used if it is immediately negotiable. Any remittance from foreign countries must be payable and immediately negotiable in the United States for the full amount of the maintenance fee required.

Paragraph (b) of new §1.366 also provides that maintenance fees may be paid by an authorization to charge a deposit account established pursuant to §1.25. The authorization to charge the deposit account must be submitted within the periods set forth in §1.362 and must be limited to maintenance fees payable on the date of submission. The authorization to charge the deposit account can not, under paragraph (b), be submitted prior to the third, seventh, or eleventh year after the grant of the patent. If an authorization to charge a deposit account were submitted to pay the maintenance fee due at three years and six months after grant, a new authorization to charge a deposit account or other form of payment will have to be submitted at the appropriate time for each of the maintenance fees due at 7 years and six months and 11 years and six months. Paragraph (b) also specifies that any payment or authorization filed at any time other than that set forth in §1.362(d), (e) or (f) will not serve as a payment of the maintenance fee, except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner pursuant to §1.378. Paragraph (b) also specifies that a payment of less than the required amount, a payment in a manner other than that set forth in §1.23, or the filing of an authorization to charge a deposit account having insufficient funds, will not constitute payment of a maintenance fee on a patent. The authorization is required to authorize the immediate charging of the fee to the deposit account. An authorization would be improper if it only authorized the fee to be charged at a later date, e.g., on the last possible day of payment without surcharge. Such an authorization would not serve as payment of the maintenance fee. Any payment which fails to result in the entire proper amount of the maintenance fee being present on the due date will not constitute payment of the maintenance fee. Paragraph (b) also specifies that the certificate of mailing procedures of §1.8 or the mailing by "Express Mail" provisions of §1.10 may be utilized in paying maintenance fees. The specific requirements of either §1.8 or §1.10 must be fully complied with if either is used.

Paragraph (c) of new §1.366 establishes the data necessary and desired when submitting maintenance fee payments and any necessary surcharges. New paragraph (c) specifies that maintenance fee payments and any necessary surcharges must include at least the 1) patent number and 2) United States application serial number. Paragraph (c) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity since the identifying information must also be supplied when submitting surcharges. The wording of §1.366(c) has also been changed from the proposal to clarify that the required application serial number is that of the application upon which the patent issued. This change from the proposal makes clear that the serial number required to be submitted is not that of a prior parent application but rather, the actual application which matured into the patent for which maintenance fees are to be paid. If the maintenance fee is being paid on a reissue patent, the serial number required is that of the reissue application. Since this required information will be used as a cross-check to ensure that the maintenance fee is properly credited, the application serial number must correspond to the patent which issued therefrom. If less than the required information is submitted, the Office will not credit the payment. Additionally, if notice is required that the proper identifying data has not been submitted, it would result in requiring the payment of a surcharge if the necessary data is submitted after the "window period" closes. If the required information is not submitted until after the end of the grace period, the patent would have expired because of the failure to properly identify the patent to which the maintenance fee payment is to be credited prior to the expiration of the grace period. The patentee in such a circumstance could proceed under §1.378, if appropriate, or could file a petition under §1.377 within the period set therein seeking to have the maintenance fee accepted as timely even though all of the proper identifying data was not present prior to the expiration of the grace period.

Paragraph (d) of new §1.366 specifies that the following information should also be submitted for each patent on which a maintenance fee or surcharge is paid: 1) whether it is the 3½, 7½, or 11½ year fee, 2) whether small entity status is being changed or claimed with the payment, 3) the amount of the maintenance fee and any surcharge being submitted, 4) any assigned payor number, 5) patent issue date and 6) United States application filing date. Paragraph (d) has been modified from the proposal to explicitly refer to "any necessary surcharges" for clarity. Paragraph (d) has also been changed from the proposal to emphasize that when the payment is being made on a reissue patent the required patent number and application serial number are those of the reissue patent and reissue application. Where the payment is a maintenance fee and any necessary surcharge on a reissue patent, in addition to the information requested for all payments, paragraph (d) as adopted herein also requests certain identifying data relating to the original patent, i.e., original patent number, original patent issue date, and original United States application filing date. The reason for requesting the original patent number, original patent issue date, and original United States application filing date is that the original filing and issue dates are the dates which control if and when maintenance fees must be paid to prevent the reissue patent from expiring. The reference to a payor number has been added. A payor number will be assigned to each "fee address" in order to facilitate data input and subsequent changes in the location of the "fee address." Details of the "payor number" system will be announced to the public in a future *Official Gazette* notice. Although the submission of the information requested in paragraph (d) is not mandatory, it would expedite the processing of the maintenance fee payments.

The final rule thus requires less mandatory information, i.e., the patent number and U.S. application serial number, than would have been required by the proposed rule. The required information is considered to be the least that is required to make a cross-check and thus assure that the maintenance fee is being credited to the proper patent. The patent issue date and the application filing date, which were included in the proposed rule as mandatory information, are included in the final rule as desirable, but not mandatory, information The effect of this change is that an error in either the patent issue date or the application filing date, or both, by the person paying the maintenance fee would not result in a refusal to accept the maintenance fee and to credit the payment thereof to the patent, if the patent number and United States application serial number were correct, i.e., in agreement. However, if any error included either the patent number or the United States application serial number such that they were not in agreement the payment would not be accepted and credited until correction was made. The date of the correction would be the date the maintenance fee payment is credited as being made.

Paragraph (e) of new §1.366 specifies that maintenance fee payments and any surcharges relating thereto must be submitted separate from any other payments for fees or charges, whether submitted in the manner set forth in §1.23 or by an authorization to charge a deposit account. Maintenance fee payments and surcharge payments relating thereto which are co-mingled with payments for other fees or charges, e.g., application filing fees, issue fees, petition fees, document supply fees, etc., will not be accepted. The maintenance fees require processing by a separate area of the Office and are not processed in the same manner as other fees and charges. Maintenance fees for a number of patents can be submitted together in one submission and one payment. Paragraph (e) specifies that if maintenance fee payments for more than one patent are submitted together, they should be submitted on as few sheets as possible, listing the patent numbers in increasing patent number order. If the payment submitted, which can be made as a single payment, is insufficient to cover the maintenance fees and any surcharges for all the listed patents, the payment will be applied in the order the patents are listed. In such a circumstance where the fees are insufficient, the maintenance fee and any surcharge for one or more of the last listed patents will not be paid.

Paragraph (f) of new §1.366 serves as a reminder to patentees of the necessity to check for the loss of small entity status prior to paying each maintenance fee on a patent. This is already a requirement of §1.28(b). Paragraph (f) provides that notification of any change in status resulting in loss of entitlement to small entity status must be filed in a patent prior to paying, or at the time of paying, the earliest maintenance fee due after the date on which status as a small entity is no longer appropriate. If status as a small entity has been previously established by filing a statement and such status is checked and is found to be proper, no notification is required. It is not necessary to file new verified statements claiming small entity status at this point if the status as a small entity has been established and is still proper even if rights have been transferred to a small entity who has not previously filed a verified statement. The requirement is to notify the Patent and Trademark Office of the loss of entitlement and to pay the maintenance fee in the proper amount for other than a small entity where appropriate. The refund provisions of §1.28(a) for later submitted small entity statements will apply to maintenance fees.

Paragraph (g) of new §1.366 provides that maintenance fees and surcharges relating thereto will not be refunded except in accordance with §§1.26 and 1.28(a). A patentee cannot obtain a refund of a maintenance fee which was due and payable on the patent. Any duplicate payment will be refunded to the fee address.

New §1.377 is added as proposed to provide a mechanism for review of a decision refusing to accept and record payment of a maintenance fee filed prior to the expiration of a patent. Paragraph (a) of new §1.377 specifies that a patentee who is dissatisfied with the refusal of the Patent and Trademark Office to accept and record a maintenance fee which was filed prior to the expiration of the patent may petition the Commissioner to accept and record the maintenance fee. This petition may be used, for example, in situations where an error is present in the identifying data required by §1.366(c) with the maintenance fee payment, i.e., either the patent number or the application serial number are incorrect. A petition under §1.377 would not be appropriate where there is a complete failure to include at least one correct mandatory identifier as required by §1.366(c) for the patent since no evidence would be present as to the patent on which the maintenance fee was intended to be paid. If the maintenance fee payment with an incorrect mandatory identifier was made near the end of the grace period, the patent might expire since the Office would not credit the fee to a patent. For patents based on applications filed between Dec. 12, 1980 and Aug. 27, 1982, there is no provision for acceptance of a maintenance fee after the grace period such as in §1.378 and so the filing of a petition under §1.377 would provide an avenue for seeking relief. A petition under §1.377 would not be appropriate where the patentee paid a maintenance fee on one patent when the patentee intended to pay the maintenance fee on a different patent but through error identified the wrong patent by patent number and application serial number. Likewise, a petition under §1.377 would not be appropriate where the entire maintenance fee payment, including any necessary surcharge, was not filed prior to expiration of the patent.

Paragraph (b) of new §1.377 specifies that any petition under new §1.377 must be filed within 2 months of the action complained of, or within such other time as may be set in the action complained of. The petition must be accompanied by the petition fee of $120 provided for in the amendment to §1.17(h). Paragraph (b) also provides that the petition may include a request that the petition fee be refunded if the refusal to accept and record the maintenance fee is determined to have resulted from an error by the Patent and Trademark Office.

Paragraph (c) of new §1.377 specifies that any petition filed under the section must comply with the requirements of paragraph (b) of §1.181 and must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. A person or organization whose only responsibility insofar as the patent is concerned is the payment of a maintenance fee is not a party in interest for purposes of paragraph (c) of §1.377. The petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office. If the petition is signed by a person not registered to practice before the Patent and Trademark Office, the petition must include the authority of the person signing the petition as patentee, assignee, or other party in interest.

New §1.378 is added as proposed to establish the procedure for acceptance of the delayed payment of a maintenance fee in an expired patent in order to reinstate that patent. This procedure is only available under Public Law 97–247 where the application on which the patent is based was filed on or after Aug. 27, 1982. If the maintenance fee is due under Public Law 96–517, i.e., the application on which the patent is based was filed on or after Dec. 12, 1980, and before Aug. 27, 1982, the delayed payment of the maintenance fee is not provided for by statute and cannot be accepted after expiration of the patent, and the patent cannot be reinstated.

Paragraph (a) of new §1.378 provides that the Commissioner may accept the payment of any maintenance fee due on a patent based on an application filed on or after Aug. 27, 1982, after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable. The surcharge set forth in §1.20(m) must be paid as a condition of accepting payment of the maintenance fee. No separate petition fee is required for this petition. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the intervening rights provisions of 35 U.S.C. 41(c) (2).

Paragraph (b) of new §1.378 specifies the requirements of a petition for acceptance of the delayed payment of a maintenance fee filed within six months of the expiration of the patent. Under paragraph (b), the petition must include the required maintenance fee set forth in §1.20(h)-(j); the surcharge set forth in §1.20(m); and a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee. In view of the requirement to enumerate the steps taken to ensure timely payment of the maintenance fee, an ar-

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gument that the patentee was ignorant of the requirement to pay maintenance fees will not constitute a showing of unavoidable delay. Evidence that despite reasonable care on behalf of the patentee and/or the patentee's agents, and reasonable steps to ensure timely payment, the maintenance fee was unavoidably not paid, could be submitted in support of an argument that the delay in payment was unavoidable. For example, an error in a docketing system could possibly result in a finding that a delay in payment was unavoidable if it were shown that reasonable care was exercised in designing and operating the system and if it were shown that the patentee took reasonable steps to ensure that the patent was entered into the system to ensure timely payment of the maintenance fees.

Paragraph (c) of new §1.378 specifies the requirements of a petition for acceptance of the delayed payment of a maintenance fee filed more than six months after the expiration of a patent. These requirements are much more stringent in view of the heavy burden of proof that the delay was unavoidable. The legislative history of Public Law 97–247, House Report No. 97–542 (Committee on the Judiciary), indicates that "[a]fter the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable." The six month period provided for petition under paragraph (b) is considered to be a reasonable period of time within which to seek reinstatement of a patent which expired for failure to pay the maintenance fee. Any petition filed more than six months after expiration must meet the more stringent requirements of paragraph (c). Under paragraph (c), the petition must include the same elements as in paragraph (b) and, in addition, must demonstrate that the failure to pay the maintenance fee was unavoidable due to circumstances outside of the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee. The showing in a petition under paragraph (c) must be sufficient in scope and content to meet the heavy burden of proof required to show that a delay in payment of the maintenance fee of more than six months after expiration of the patent was unavoidable. In contrast to a petition under paragraph (b), a showing in a petition under paragraph (c) of an error in a docketing system will not be sufficient to find that the delay was unavoidable. Instead, a petition filed under paragraph (c) must demonstrate that the circumstances resulting in the delay were entirely outside the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee, e.g., serious efforts without success to raise the funds required to pay the maintenance fee.

Paragraph (d) of new §1.378 requires that a petition filed under §1.378 be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. A person or organization whose only responsibility insofar as the patent is concerned is the payment of a maintenance fee is not a party in interest for purposes of paragraph (d) of §1.378. Under paragraph (d), the petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office. If the petition is signed by a person not registered to practice before the Patent and Trademark Office, the petition must include the authority of the person signing the petition as patentee, assignee, or other party in interest.

Paragraph (e) of new §1.378 provides a mechanism for obtaining reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a). This mechanism is a petition for reconsideration which may be filed within two months of, or such other time as set in the decision refusing to accept the delayed payment of the maintenance fee. In contrast to petitions filed under paragraph (a), the petition for reconsideration filed under paragraph (e) of new §1.378 will require the separate petition fee set forth in the amendment to §1.17(h). Paragraph (e) also provides that after the decision on the petition for reconsideration, no further reconsideration or review of the matter will be undertaken by the Commissioner. Paragraph (e) also provides for refund of the maintenance fee and the surcharge set forth in §1.20(m) if the delayed payment of the maintenance fee is not accepted. The refund will be made following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. Paragraph (e) specifies that the fee for filing the petition for reconsideration will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Eight letters submitting written comments were received. Oral testimony was presented by two persons (one person testified on behalf of the American Intellectual Property Law Association) at the public hearing conducted on June 26, 1984. All of the written and oral comments were considered in adopting the changes set forth herein. The comments submitted appear below along with responses thereto.

Comment:

One comment suggested that the surcharge set at 37 CFR 1.20(m) for accepting a maintenance fee after expiration of the patent should be reduced from $500.00 to $50.00 and that this amount should be reduced by 50 percent for small entities.

Reply:

The suggestion has not been adopted. The surcharge set at 37 CFR 1.20(m) is considered to be appropriate in view of the importance of the relief being obtained. Before a surcharge under 37 CFR 1.20(m) is due the patent will have already expired due to the failure to pay a maintenance fee within a one-year period provided for the payment. Setting a lower amount as the surcharge would tend to denigrate the importance of the relief obtained by the acceptance of a maintenance fee after expiration of a patent. Further, a lower surcharge amount is not justified in view of the ample opportunity for payment of the maintenance fee which is presented by the one-year period in which payment can be made and the fact that the public is now on notice that maintenance fees are due and payable. Further, the Patent and Trademark Office will provide courtesy notices regarding the need to pay maintenance fees at a plurality of points in time before the patent expires. Such a notice now appears on the patent grant and presently plans are to print such a courtesy notice on the Notice of Allowance and the Issue Fee Receipt. Notices will be printed in the *Official Gazette* listing the patent number ranges of patents on which maintenance fees can be paid and a notice will be mailed to the patentee during the grace period if the maintenance fee is not paid. Therefore, relatively few patentees should fail to pay the maintenance fee before expiration of the patent due to unavoidable circumstances. The surcharge set at 37 CFR 1.20(m) is established pursuant to 35 U.S.C. 41(c) and therefore the small entity provisions of Public Law 97–247 do not apply to this fee. Also, Public Law 97–247 provides that the surcharge set at 37 CFR 1.20(m) could be in addition to any surcharge established for payment of the maintenance fee during the grace period as set at 37 CFR 1.20(1). The Patent and Trademark Office has established a separate surcharge set at 37 CFR 1.20(m) not in addition to the surcharge set at 37 CFR 1.20(1), but in lieu thereof. The amount set at 37 CFR 1.20(m) is not seen to be excessive.

Comment:

Two comments suggested that the small entity reduced fee provisions of Public Law 97–247 should have been applied to maintenance fees required under Public Law 96–517.

Reply:

The maintenance fee amounts under Public Law 96–517 set at 37 CFR 1.20(e)-(g) were previously set and are not part of the present rulemaking. It should be noted, however, that Public Law 96–517 did not provide for reduction of fees for small entities. Reductions of fees for small entities were established in Public Law 97–247 only for fees under 35 U.S.C. 41(a) and (b) thereof. The maintenance fee levels in 37 CFR 1.20(e)-(g), however, were established under 35 U.S.C. 41(c) of Public Law 96–517 rather than 35 U.S.C. 41(a) or (b) of Public Law 97–247. Therefore, the fee amounts previously set at 37 CFR 1.20(e)-(g) are not seen to be subject to reduction for small entities.

Comment:

One comment suggested that the Office permit any of the maintenance fees to be paid in advance, either at the time of paying the issue fee or during any of the window periods. Another comment suggested that the Office should accept a fee payment earlier than the window period if the fee has no possibility of being changed due to changes in the Consumer Price Index.

Reply:

These suggestions have not been adopted. The second comment listed above points out the problem with regard to the suggestion in the first comment. Public Law 97–247 provided for adjustments of the maintenance fees every third year to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Allowing maintenance fees to be paid in advance would preclude such adjustments to these maintenance fees unless very burdensome administrative steps were implemented to require adjustments in the fee amount previously paid when the maintenance fees are adjusted at a later time. Requiring maintenance fees to be paid in a consistently time-ordered basis as in §1.362 will also be helpful administratively and for budgeting purposes. As to the second comment above, it is not seen that there would be substantial benefit to the public since the period would be short during which a maintenance fee could not change due to changes in the Consumer Price Index. Thus, the patentee would only be able to make the maintenance fee payment a short time before the period during which payment may be made pursuant to §1.362.

Comment:

Two comments suggested that a maintenance fee payment made during the window period should not require adjustment if the maintenance fees are thereafter increased toreflect increases in the Consumer Price Index.

Reply:

These comments have been adopted by an appropriate change in paragraph (b) of §1.366. Maintenance fees which are paid during the window period in the amount required on the date of payment will be accepted as proper and full payment. If the maintenance fees change after such a proper payment, no adjustment in the amount will be required or permitted. Thus, if the maintenance fee increases before the close of the window period, the patentee will not be required to make up any deficiency between the amount properly paid during the window period and the new increased fee. Likewise, if the maintenance fee decreases before the close of the window period, no refund will be permitted of part of the maintenance fee properly paid in the amount due when the payment was made. Payments must be made in the amount proper on the date of payment. For example, if payment is made during the grace period, the payment must be made in the amount then required irrespective of the amount of the maintenance fee which would have been due if payment had been made during the window period.

Comment:

Three comments were directed to the proposed requirements in §1.366(c) for data identifying the patent upon which maintenance fee payments are being made. One comment indicated that many computer annuity systems now existing have a data base designed to accept only two identifying numbers. This comment and one other comment suggested that the patent number and issue date be required to be submitted with the maintenance fee to identify the patent number. Another comment suggested that the required identifying data be the patent number, issue date, name of the inventor and title of the invention.

Reply:

The suggested changes to the proposed rule have been adopted in part. The requirement for identifying data to uniquely identify the patent for which maintenance fees are being paid is an important one. The Patent and Trademark Office and the public must be able to determine with certainty which patents are in force and which patents have expired because the maintenance fees were not paid. The comments seem to recognize that at least two identifiers are necessary so that a cross-check can be made to avoid errors. The suggested use of the issue date with the patent number would not provide a reliable cross-check. In excess of one thousand patents usually issue on each issue date. Therefore a mistake in the last four digits in the patent number supplied with the maintenance fee payment would often not be detected by use of the issue date as a cross-check. The Patent and Trademark Office has determined that the two best identifying data units for use as a cross-check are the patent number and the application serial number. These identifiers are unique since each is specific to one patent or application and are thus required to be provided with a maintenance fee payment by the final rule. The application serial number and the patent number are both listed on the issued patent and in the *Official Gazette* and therefore should be readily available to patentees.

Comment:

One comment suggested that no petition fee should be charged for filing a petition under 37 CFR 1.377 seeking review of a decision refusing to accept and record payment of a maintenance fee filed prior to expiration of a patent. The comment further suggested that, if a fee is charged, the filing of a petition thereunder should be presumed to be a request for a return of the petition fee if it is determined that the refusal to accept and record a maintenance fee payment was due to Patent and Trademark Office error.

Reply:

The suggestion that no petition fee be charged has not been adopted. The petition fee, although required in advance, will be retained by the Patent and Trademark Office only in those instances where the refusal to accept and record the fee resulted from an error on the part of someone other than the Patent and Trademark Office. In those instances where the refusal to accept and record the fee resulted from a Patent and Trademark Office error the Office intends to refund the petition fee, either based upon the request included in the petition or upon the initiative of the Office. The reason for including a request for a refund, where appropriate, in the petition is to ensure that such request is not inadvertently overlooked. In view of the expense involved, it would be inappropriate to process a petition without a petition fee where the error necessitating the petition was made by the petitioner or someone acting on behalf of the patentee.

Comment:

One comment suggested that the term "unavoidable" should be more specifically defined in 37 CFR 1.378(b)(3) and (c)(3), if possible.

Reply:

As stated in this rulemaking, the requirement that the delay in payment of the maintenance fee be "unavoidable" is the same as that for reviving an abandoned application under 35 U.S.C. 133. This standard has been in effect for many years and should be well understood by the public. The rule is seen to be adequate as written, especially in view of the discussion in this rulemaking which includes several specific examples based on when the petition to accept the delayed payment of a maintenance fee is filed.

Comment:

One comment suggested that Public Law 97–247 should be "liberally interpreted" to permit acceptance of delayed payments of maintenance fees required under Public Law 96–517. Proposed 37 CFR 1.378 was limited to patents issuing on applications filed on or after Aug. 27, 1982, the effective date of Public Law 97–247.

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Reply:
The final rule has not been changed from the proposal. The remedy suggested by the comment cannot be provided in view of the language of 35 U.S.C. 41(c) (1) which applies only to maintenance fees required by 35 U.S.C. 41(b) of Public Law 97–247. Section 17(a) of Public Law 97–247 clearly states "the maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act."
Comment:
Several of the comments received were directed to proposed statutory changes which were said to be desirable in the area of maintenance fees.
Reply:
These comments were not suggesting that the proposed rules were not in compliance with the present statutes, but rather that the statutes themselves should be changed. These comments are beyond the scope and purpose of this rule change.

Implementation of Maintenance Fee Payment Procedures

The Patent and Trademark Office is presently developing its internal working procedures for processing maintenance fee payments and for notifying the public as to the status of maintenance fee payments on particular patents. The first maintenance fees become due early in 1985. In order to be as helpful as possible in informing the public as to the Patent and Trademark Office's current plans it is useful to outline the basic procedures the Patent and Trademark Office intends to adopt to process maintenance fees so that the interrelationship with the rules is understood. These basic procedures are subject to change as experience and circumstances dictate.

Notices by the Patent and Trademark Office

Under the statutes, the Patent and Trademark Office has no duty to notify patentees when their maintenance fees are due. It is the responsibility of the patentee to assure that the maintenance fees are paid to prevent expiration of the patent. The Patent and Trademark Office will, however, provide some notices as reminders that maintenance fees are due, but the notices, errors in the notices, or the lack of notices, will in no way relieve a patentee from the responsibility to make timely payment of each maintenance fee to prevent the patent from expiring by operation of law. The notices provided by the Patent and Trademark Office will be merely courtesy in nature and intended to aid patentees. These notices, errors in these notices, or the lack of notices, will in no way shift the burden of monitoring thetime for paying maintenance fees on patents from the patentee to the Patent and Trademark Office.

Preprinted Standard Notice Wording

The patent grant currently includes a reminder that maintenance fees may be due. The Notice of Allowance and Issue Fee Receipt are presently planned to be revised to contain reminder notice wording that maintenance fees may be due.

Official Gazette Notice

A notice will appear in each issue of the *Official Gazette* which will indicate which patents have been granted 3, 7 and 11 years earlier, that the window period has opened and that maintenance fee payments will now be accepted for these patents.

Another *Official Gazette* notice published after expiration of the grace period will indicate any patent which has expired due to non-payment of maintenance fees and any patents which have been revived under 35 U.S.C. 41(c). An annual compilation of such expirations and revivals will also be published.

Courtesy Reminder Notice

Since patentees are expected to maintain their own record systems and since most patentees are expected to pay their maintenance fees during the "window period" to prevent payment of a surcharge, the Office will not send any reminder notices to patentees at the fee address until after the grace period has begun. This will reduce and simplify the mailing of notices but still give patentees an opportunity to pay their maintenance fees with surcharge during the grace period before expiration of their patents. Such notices will be mailed to the fee address as set forth in §1.363.

Action Notices

The Office will issue a receipt for payment of maintenance fees after entry of the maintenance fee payment. Such a receipt will provide an opportunity for the patentee to check if the Office has properly credited the payment. The original document submitted by the patentee when paying the maintenance fee will also be appropriately marked and returned to the fee address. If actual experience indicates that they are not needed, the receipt notices and/or the return of the original document may be discontinued.

The patentee will also be notified by mail at the fee address as set forth in §1.363 of any expiration or revival of the patent.

Fee Address

The patentee may provide the Patent and Trademark Office with a fee address under §1.363, which address may be different from the correspondence address under §1.33, when submitting the issue fee or in a separate later-filed paper. The fee address will be used by the Office for all correspondence directed to the patentee concerning maintenance fees. If no separate fee address is provided by the patentee under §1.363, the correspondence address under §1.33 will also be used for maintenance fee purposes.

Payment of Maintenance Fees

Transmittals of maintenance fees may be limited to a single patent or may involve several patents. If a transmittal involves several patents they should be listed in increasing numerical order. The following format is suggested for use when paying maintenance fees and any necessary surcharges. Although only the mandatory identification elements consisting of the patent number and United States application serial number, set forth in §1.366(c) are required, the items referred to in §1.366(d) should also be included to expedite processing of maintenance fees and any necessary surcharges. In addition,

February 22, 1987

Commissioner of Patents and Trademarks
Box M. Fee
Washington, D.C. 20231

Dear Sir:

Enclosed is a check drawn for the amount of $1,500 for the payment of the maintenance fees on the following patents.

Patent Number	Serial Number	Patent Date	Application Filing Date	Payment Year	Small Entity	Amount Paid	Surcharge	Fee Code
P.P.5,188	380,062	Feb. 7, 1984	May 20, 1981	4	—	$ 200.00	—	170
Re. 31,522	481,494	Feb. 14, 1984	April 1, 1983	4	—	$ 200.00	$100.00	170/176
*(4,374,741)	—	(Feb. 22, 1983)	(July 21, 1981)	—	—	—	—	—
4,429,419	339,620	Feb. 7, 1984	Jan. 15, 1982	4	—	$ 200.00	—	170
4,429,433	412,101	Feb. 7, 1984	Aug. 27, 1982	4	No	$ 400.00	—	173
4,429,439	458,474	Feb. 7, 1984	Jan. 17, 1983	4	Yes	$ 200.00	—	273
**4,432,000	380,681	Feb. 14, 1984	Aug. 26, 1981	4	—	$ 200.00	—	170
				Subtotals		$ 1,400.00	$100.00	
				Total Amount Paid		$1,500.00		

The Commissioner is hereby authorized to charge any deficiency in the required fee or to credit any overpayment to Account No. 12–3456.

Respectfully submitted,

John Doe
(703) 557–3054

*Note: Information from original patent is included in parenthesis for the reissue patent for which payment is being made.

**Note: Application filing Date is the PCT International Filing Date.

The indication of the fee code used by the Patent and Trademark Office would assist in proper financial crediting within the Office. It is also suggested that the telephone number of the person submitting the payment be supplied.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). Public Law 97–247 has taken into consideration the impact it may have on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no siginificant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The maintenance fee payment information collection requirement contained in the final rules has been submitted to OMB for review under Section 3504(h) of the Paperwork Reduction Act. Comments relating to this requirement should be directed to the Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for Commerce, Patent and Trademark Office.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 96–517 and Pub. L. 97–247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

Part I [Amended]

37 CFR, Part I, is amended as follows:

1. Section 1.1 is amended by adding a new paragraph (d) to read as follows:

§1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

* * * * *

(d) Payments of maintenance fees in patents and other communications relating thereto should be additionally marked "Box M. Fee."

§1.9 [Amended]

2. Paragraph (d) of §1.9 is amended by changing the citation "13 CFR 121.3–18, published on Sept. 30, 1982 at 47 FR 43273." to "13 CFR 121.12." and by changing the words "§121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code" to "§121.12 Small business for paying reduced patent fees."

3. Section 1.17 is amended by adding to the end of paragraph (h) the following:

§1.17 Patent application processing fees.

* * * * *

(h) * * *

- §1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent

- §1.378(e) - for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent

4. Section 1.19 is amended by adding new paragraphs (f) and (g) to read as follows:

§1.19 Document supply fees.

* * * * *

(f) Microfiche copy of patent file record $10.00
(g) Uncertified statement as to status of the payment of maintenance fees due on a patent or expiration of a patent . . . . . $ 3.00

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5. Section 1.20 is amended by adding new paragraphs (k), (l), and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . $100.00

(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9 (f))	$ 50.00
By other than a small entity	$100.00

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $500.00

6. Section 1.33 is amended by adding a new paragraph (d) to read as follows:

§1.33 Correspondence respecting patent applications, reexamination proceedings, and other proceedings.

* * * * *

(d) A "correspondence address" or change thereto may be filed with the Patent and Trademark Office during the enforceable life of the patent. The "correspondence address" will be used in any correspondence relating to maintenance fees unless a separate "fee address" has been specified. See §1.363 for "fee address" used solely for maintenance fee purposes.

7. A new center heading and §1.362 is added to Subpart B to read as follows:

Maintenance Fees

§1.362 Time for payment of maintenance fees.

(a) Maintenance fees as set forth in §1.20(e)-(j) are required to be paid in all patents based on applications filed on or after Dec. 12, 1980, except as noted in paragraph (b) of this section, to maintain a patent in force beyond 4, 8 and 12 years after the date of grant.

(b) Maintenance fees are not required for plant patents based on applications filed on or after Aug. 27, 1982 or for any design patents. Maintenance fees are not required for a reissue patent if the patent being reissued did not require maintenance fees.

(c) The application filing dates for purposes of payment of maintenance fees are as follows:

(1) For an application not claiming benefit of an earlier application, the actual United States filing date of the application.

(2) For an application claiming benefit of an earlier foreign application under 35 U.S.C. 119, the United States filing date of the application.

(3) For a continuing (continuation, division, continuation-in-part) application claiming the benefit of a prior patent application under 35 U.S.C. 120, the actual United States filing date of the continuing application.

(4) For a reissue application, the United States filing date of the original non-reissue application on which the patent reissued is based.

(5) For an international application which has entered the United States as a Designated Office under 35 U.S.C. 371, the international filing date granted under Article 11(1) of the Patent Cooperation Treaty which is considered to be the United States filing date under 35 U.S.C. 363.

(d) Maintenance fees may be paid in patents without surcharge during the periods extending respectively from:

(1) 3 years through 3 years and 6 months after grant for the first maintenance fee,

(2) 7 years through 7 years and 6 months after grant for the second maintenance fee, and

(3) 11 years through 11 years and 6 months after grant for the third maintenance fee.

(e) Maintenance fees may be paid with the surcharge set forth in §1.20(k) or (l) during the respective grace periods after:

(1) 3 years and 6 months and through the day of the 4th anniversary of the grant for the first maintenance fee,

(2) 7 years and 6 months and through the day of the 8th anniversary of the grant for the second maintenance fee, and

(3) 11 years and 6 months and through the day of the 12th anniversary of the grant for the third maintenance fee.

(f) If the last day for paying a maintenance fee without surcharge set forth in paragraph (d) of this section, or the last day for paying a maintenance fee with surcharge set forth in paragraph (e) of this section, falls on a Saturday, Sunday, or a federal holiday within the District of Columbia, the maintenance fee and any necessary surcharge may be paid under paragraph (d) or paragraph (e) respectively on the next succeeding day which is not a Saturday, Sunday, or federal holiday.

(g) Unless the maintenance fee and any applicable surcharge is paid within the time periods set forth in paragraphs (d), (e) or (f) of this section, the patent will expire as of the end of the grace period set forth in paragraph (e) of this section. A patent which expires for the failure to pay the maintenance fee will expire at the end of the same date (anniversary date) the patent was granted in the 4th, 8th, or 12th year after grant.

8. A new §1.363 is added to Subpart B to read as follows:

§1.363 Fee address for maintenance fee purposes.

(a) All notices, receipts, refunds, and other communications relating to payment or refund of maintenance fees will be directed to the correspondence address used during prosecution of the application as indicated in §1.33(a) unless:

(1) a "fee address" for purposes of payment of maintenance fees is set forth when submitting the issue fee, or

(2) a change in the correspondence address for all purposes is filed after payment of the issue fee, or

(3) a "fee address" or a change in the "fee address" is filed for purposes of receiving notices, receipts and other correspondence relating to the payment of maintenance fees after the payment of the issue fee, in which instance, the latest such address will be used.

(b) An assignment of a patent application or patent does not result in a change of the "correspondence address" or "fee address" for maintenance fee purposes.

9. A new §1.366 is added to Subpart B to read as follows:

§1.366 Submission of maintenance fees.

(a) The patentee may pay maintenance fees and any necessary surcharges, or any person or organization may pay maintenance fees and any necessary surcharges on behalf of a patentee. Authorization by the patentee need not be filed in the Patent and Trademark Office to pay maintenance fees and any necessary surcharges on behalf of the patentee.

(b) A maintenance fee and any necessary surcharge submitted for a patent must be submitted in the amount due on the date the maintenance fee and any necessary surcharge are paid and may be paid in the manner set forth in §1.23 or by an authorization to charge a deposit account established pursuant to §1.25. Payment of a maintenance fee and any necessary surcharge or the authorization to charge a deposit account must be submitted within the periods set forth in §1.362(d), (e) or (f). Any payment or authorization of maintenance fees and surcharges filed at any other time will not be accepted and will not serve as a payment of the maintenance fee except insofar as a delayed payment of the maintenance fee is accepted by the Commissioner in an expired patent pursuant to a petition filed under §1.378. Any authorization to charge a deposit account must authorize the immediate charging of the maintenance fee and any necessary surcharge to the deposit account. Payment of less than the required amount, payment in a manner other than that set forth in §1.23, or the filing of an authorization to charge a deposit account having insufficient funds will not constitute payment of a maintenance fee or surcharge on a patent. The certificate of mailing procedures of either §1.8 or §1.10 may be utilized in paying maintenance fees and any necessary surcharges.

(c) In submitting maintenance fees and any necessary surcharges, identification of the patents for which maintenance fees are being paid must include the following:

(1) the patent number, and

(2) the serial number of the United States application for the patent on which the maintenance fee is being paid.

(d) Payments of maintenance fees and any surcharges should identify the fee being paid for each patent as to whether it is the 3½, 7½ or 11½ year fee, whether small entity status is being changed or claimed, the amount of the maintenance fee and any surcharge being paid, any assigned payor number, the patent issue date and the United States application filing date. If the maintenance fee and any necessary surcharge is being paid on a reissue patent, the payment must identify the reissue patent by reissue patent number and reissue application serial number as required by paragraph (c) of this section and should also include the original patent number, the original patent issue date and the original United States application filing date.

(e) Maintenance fee payments and surcharge payments relating thereto must be submitted separate from any other payments for fees or charges, whether submitted in the manner set forth in §1.23 or by an authorization to charge a deposit account. If maintenance fee and surcharge payments for more than one patent are submitted together, they should be submitted on as few sheets as possible with the patent numbers listed in increasing patent number order. If the payment submitted is insufficient to cover the maintenance fees and surcharges for all the listed patents, the payment will be applied in the order the patents are listed, beginning at the top of the listing.

(f) Notification of any change in status resulting in loss of entitlement to small entity status must be filed in a patent prior to paying, or at the time of paying, the earliest maintenance fee due after the date on which status as a small entity is no longer appropriate. See §1.28(b).

(g) Maintenance fees and surcharges relating thereto will not be refunded except in accordance with §§1.26 and 1.28(a).

10. A new §1.377 is added to Subpart B to read as follows:

§1.377 Review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.

(a) Any patentee who is dissatisfied with the refusal of the Patent and Trademark Office to accept and record a maintenance fee which was filed prior to the expiration of the patent may petition the Commissioner to accept and record the maintenance fee.

(b) Any petition under this section must be filed within 2 months of the action complained of, or within such other time as may be set in the action complained of, and must be accompanied by the fee set forth in §1.17(h). The petition may include a request that the petition fee be refunded if the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

(c) Any petition filed under this section must comply with the requirements of paragraph (b) of §1.181 and must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Such petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

11. A new §1.378 is added to Subpart B to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent based on application filed on or after Aug. 27, 1982.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent based on an application filed on or after Aug. 27, 1982, after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as a condition of accepting payment of the maintenance fee. If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c) (2).

(b) Any petition to accept the delayed payment of a maintenance fee filed under paragraph (a) of this section within six months of the expiration of the patent must include:

(1) the required maintenance fee set forth in §1.20(h)-(j);

(2) the surcharge set forth in §1.20(m); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee.

(c) Any petition to accept the delayed payment of a maintenance fee filed under paragraph (a) of this section more than six months after the expiration of the patent must include:

(1) the required maintenance fee set forth in §1.20(h)-(j);

(2) the surcharge set forth in §1.20(m); and

(3) a showing that the delay was unavoidable since reasonable care was taken to ensure that the maintenance fee would be paid timely and the failure to timely pay the maintenance fee was due entirely to circumstances outside of the control of the patentee. The showing must enumerate the steps taken to ensure timely payment of the maintenance fee and the circumstances which were outside of the control of the patentee and those acting on behalf of the patentee in paying the maintenance fee. The showing must be sufficient in scope and content to meet the heavy burden of proof required to show that a delay in payment of the mainte-

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nance fee of more than six months after expiration of the patent was unavoidable.

(d) Any petition under this section must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest. Such petition must be in the form of a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

(e) Reconsideration of a decision refusing to accept a maintenance fee upon petition filed pursuant to paragraph (a) of this section may be obtained by filing a petition for reconsideration within two months of, or such other time as set in, the decision refusing to accept the delayed payment of the maintenance fee. Any such petition for reconsideration must be accompanied by the petition fee set forth in §1.17(h). After decision on the petition for reconsideration, no further reconsideration or review of the matter will be undertaken by the Commissioner. If the delayed payment of the maintenance fee is not accepted, the maintenance fee and the surcharge set forth in §1.20(m) will be refunded following the decision on the petition for reconsideration, or after the expiration of the time for filing such a petition for reconsideration, if none is filed. The fee set forth in §1.17(h) for filing the petition for reconsideration will not be refunded unless the refusal to accept and record the maintenance fee is determined to result from an error by the Patent and Trademark Office.

GERALD J. MOSSINGHOFF,
July 30, 1984. *Commissioner of Patents and Trademarks.*

[1046 O.G. 28]

(63) **Revision of Patent and Trademark Fees**

The purpose of this notice is to remind the public of changes in patent and trademark fees, effective Oct. 1, 1982, pursuant to Public Law 97–247, enacted Aug. 27, 1982. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982, at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Patent and Trademark Office Official Gazette on Aug. 10, 1982, at 1021 O.G. 19–94. In view of the enactment of Public Law 97–247, the "Alternative A—Rule Changes Under Only Public Law 96–517" relating to both patents and trademarks will *not* become effective. Instead, the "Rule Changes Common To Public Law 96–517 and H.R. 6260" and "Alternative B—Rule Changes Under H.R. 6260" will become effective for other patents and trademarks on Oct. 1, 1982. H.R. 6260 is now Public Law 97–247.

The Patent and Trademark Office has recieved a number of questions regarding the implementation of the changes in fees. The final rule published in the Federal Register on July 30, 1982, and in the Official Gazette on Aug. 10, 1982, contains implementing instructions which should be carefully read and followed. The final rule includes in the implementing instructions the following.

> "*Any fee which is due and payable on or after Oct. 1, 1982, must be paid in the amont and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office.*"

A "Certificate of Mailing under §1.8" is *not* "proper" for items which arespecifically excluded from the provisions of §1.8. Section 1.8 of Title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is *not* "proper." Such items include, *inter alia*, the filing of national and international applications for patent and the filing of trademark applications. Any application for patent or trademark filed, i.e., received in the Office, on or after Oct. 1, 1982, must include the fees which are effective on Oct. 1, 1982, since §1.8 does not apply to, and specifically excludes from its provisions, the filing of applications for patents and trademarks.

GERALD J. MOSSINGHOFF,
Sept. 14, 1982. *Commissioner of Patents and Trademarks.*

[1022 O.G. 59]

(64) **Filing of Verified Statements Claiming Small Entity Status**

In view of the fact that the rules implementing the definition of small business concern were not published in the Federal Register until Sept. 30, 1982, any verified statement claiming small entity status will be accepted as timely filed if (1) the first fee in a patent application has been paid on or after Oct. 1, 1982, but before Feb. 27, 1983, in the amount established for a non-small entity and (2) such verified statement is filed within 3 months of the date of payment of the first fee in a patent application paid on or after Oct. 1, 1982, but before Feb. 27, 1983. If such a verified statement is timely filed within three months of the date of payment of the first fee paid on or after Oct. 1, 1982, but before Feb. 27, 1983, the statement will be treated as though it were present on the date the fee was paid. The correct amount of the fee will be determined and any excess will be refunded upon request. Section 1.28(a) of 37 CFR is waived until Feb. 27, 1983 to the extent it is inconsistent with this practice.

DONALD J. QUIGG,
Oct. 15, 1982. *Acting Commissioner of Patents and Trademarks.*

[1023 O.G. 77]

(65) **Effect on Small Entity Status of License Pursuant to 35 USC 202(c)(4)**

Public Law 96–517 added a new chapter 38 to Title 35 of the United States Code entitled "Patent Rights in Inventions Made With Federal Assistance." Under the provisions of the statute, each funding agreement between a Federal agency and an individual, small business firm or nonprofit organization must provide, inter alia, that ". . . the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid up license to practice or have practiced for or on behalf of the United States any subject invention . . ." See 35 U.S.C. 202(c)(4).

Under provisions of 37 CFR 1.9 and 1.27, an independent inventor, small business concern or nonprofit organization cannot qualify for reduced patent fees if it has assigned, granted, conveyed or licensed or is under an obligation under contract or law to assign, grant, convey or license any rights in the invention to other than an individual who could be classified as an independent inventor if that person had made the invention, a small business concern or a nonprofit organization. The Federal agencies do not qualify as nonprofit organizations for paying reduced patent fees under the rules. Applying this construction to the licensing of an invention to a Federal agency by an independent inventor, small business concern or nonprofit organization pursuant to a funding agreement under 35 U.S.C. 202(c)(4) would preclude their qualifying for paying reduced fees. This, however, would frustrate the intent of Public Law 97–247 and Public Law 96–517 when taken together.

This notice will serve as clarification that an independent inventor, small business concern or nonprofit organization, which is otherwise qualified as a small entity for purposes of paying reduced patent fees under 37 CFR 1.9 and 1.27, is not disqualified therefrom because of a license to a Federal agency pursuant to 35 U.S.C. 202(c)(4). A license to a Federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a license for purposes of 37 CFR 1.9 or a transfer of rights for purposes of 37 CFR 1.27. Any other license or rights to a Federal agency will, of course, preclude qualification as a small entity for purposes of paying reduced fees.

Applicants who have previously paid fees which were not reduced for small entity status because of a license to a Federal agency pursuant to 35 U.S.C. 202(c)(4) may claim a refund by filing the proper verified statement as required by 37 CFR 1.27 and by making reference to this notice.

GERALD J. MOSSINGHOFF,
Jan. 14, 1983. *Commissioner of Patents and Trademarks.*

[1027 OG 71]

(66) **Department of Commerce**
Patent and Trademark Office
37 CFR Part I
[Docket No. 50725–5025]

Revision of Patent Fees

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark office is amending the rules of practice in patent cases, Part I of title 37, Code of Federal Regulations to adjust fee amounts. This action is necessary at this time because operating costs have increased over the past three years and the Commissioner is authorized by §41(f) of title 35, United States Code, to adjust fees established in §41 (a) and §41(b) of title 35, United States Code, on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index. Fees for other processing, services or materials related to patents as provided by §41(d) and §376 of title 35, United States Code, are being adjusted to recover the estimated average cost to the Office of such processing, services or materials.
Effective Date: Oct. 5, 1985.
For Further Information Contact: Frances Michalkewicz by telephone at (703) 557–1610 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to adjust patent fees because costs have increased and the Commissioner is authorized to (1) adjust statutory patent fees set forth in §41(a) and §41(b) of title 35, United States Code, to reflect fluctuations occurring during the previous three years in the Consumer Price Index (CPI), as authorized by §41(f) of title 35, United States Code, (2) adjust fees for processing, services, or materials related to patents which have been established by the Commissioner in accordance with §41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing, services or materials, and (3) adjust fees for filing and processing an application under the Patent Cooperation Treaty which have been established by the Commissioner to recover the estimated average cost of such processing in accordance with Section 376 of title 35, United States Code.

Adjustments to fees for filing and processing a trademark application and for other processing, services or materials related to trademarks were not proposed at this time, pending review of trademark automation cost requirements.

A notice of proposed rulemaking was published in the *Federal Register* on June 21, 1985, at 50 FR 25896–25902. Corrections of typographical errors were published on July 1, 1985, at 50 FR 27030, and on July 15, 1985, at 50 FR 28596. The notice also was published in the *Official Gazette* on July 2, 1985, at Vol. 1056, pages 6 through 25. An oral hearing was held on July 18, 1985. Fifteen written letters and statements were submitted. One person testified at the oral hearing. Full consideration has been given to all of these letters, statements, and testimony.

Background Information: Patent and Trademark Office fees are authorized by sections 41 and 376 of title 35, United States Code. Section 41(a) of title 35, United States Code, establishes a number of statutory fees. Among the more significant of these are fees for filing a patent application and issuing a patent. Certain other fees, such as appeal fees, the fee for filing a disclaimer, fees for filing petitions seeking to revive an abandoned application and for extensions of time also are set in §41(a) of title 35, United States Code. Section 41(b) of title 35, United States Code, sets forth the statutory fees for maintaining a patent in force if the application was filed on or after Aug. 27, 1982.

The provisions of Public Law 96–517 also authorize maintenance fees for applications other than design and plant patent applications filed on or after Dec. 12, 1980 and before Aug. 27, 1982. These maintenance fees are to recover 25 percent of the estimated cost to the Office of processing patent applications.

Section 1 of Public Law 97–247 authorized the reduction by 50 percent in the fees paid under §41(a) and §41(b) of title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established. This authorization will expire on Sept. 30, 1985. Legislation has been introduced to authorize this reduction for an additional three years. If such authority is not continued, the small entity reduction will be rescinded and appropriate amendments to the regulations will be made.

Section 41(f) of title 35, United States Code, provides that fees established in §41(b) of title 35, United States Code, "may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor." Section 41(f) also provides that changes of less than one percent may be ignored.

Policy for applying the Consumer Price Index: The Department of Labor's Consumer Price Index (CPI) is made public approximately twenty-one days after the end of the month being calculated. The time lag between the initiation and the completion of the rulemaking process dictated that the Mar. through Sept. 1985 inflation rate be projected in the original rulemaking proposal. This estimate resulted in a cumulative three-year CPI of 11.7 percent applied to patent fees.

Based upon actual data through June 1985 and projecting the CPI to Sept. 30, 1985, the Administration's revised projected cumulative CPI for the three-year (1982–1985) period is 11.8 percent. The Patent and Trademark Office has used the 11.8 percent projection in adjusting the fees established in §41(a) and §41(b) of title 35, United States Code. The revised CPI projection has not caused a change from the proposal in any of the §41(a) and §41(b) fees.

After application of the 11.8 percent projected fluctuation in the CPI to fees set forth in §41(a) and §41(b), amounts for all non-small entity fees were rounded by applying standard arithmetical rules so that the amounts rounded would be de minimis and convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees below $100 were rounded to the nearest even number so that all comparable small entity fees would be in whole numbers. Section 41(d) of title 35, United States Code, provides that the "Commissioner will establish fees for all other processing, services, or materials related to patents" which are not covered in §41(a) and §41(b) of title 35, United States Code, "to recover the estimated average cost to the Office of such processing, services or materials."

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Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty. The fees under the Patent Cooperation Treaty are keyed to full cost recovery of the processing costs under the Treaty.

The general guidelines used by the Patent and Trademark Office in determining the non-statutory fees are set forth in OMB Circular A–25. Costs were determined from the best available records and included direct and indirect costs to the Office of carrying out the activity.

Since these non-statutory fees are expected to remain in place for the three year fee cycle 1986–1988, the calculated costs were then adjusted by a mid-cycle inflation rate of 6.21 percent derived from the Administration's inflation projection. After application of the projected mid-cycle inflation rate, amounts were rounded by applying standard arithmetical rules so that the amounts rounded would be de minimis and convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees between $2 and $99 were rounded to the nearest whole number. Fees under $2 were rounded for convenience.

The fees established under §41(d) and §376 of title 35, United States Code have been modified from the proposal. For the first fee cycle (1983–1985), fees established under §41(d) and §376 were set in the aggregate to recover the estimated average cost to the Office of processing, services and materials as defined in PTO budget documents. Because of the significant increase in fees that was instituted on Oct. 1, 1982, as well as the establishment of new fees, the PTO did not have the necessary experience to accurately predict (nor could it control) fee volumes for the first fee cycle. First cycle fees were thus set at levels sufficient to maintain financial solvency despite possible fluctuations in costs or in workload. Fee amounts in most cases also were set at convenient integers (e.g., $5 or $10). For the second fee cycle (1986–1988), the PTO had proposed to set fees established under §41(d) and §376 using the same methodology. Several comments to the proposed rules suggested that the PTO should establish §41(d) and §376 fees to more precisely recover the estimated average cost to the Office of the processing, service or material. The fees have been modified to reflect the following: (1) PTO experience over the past two and one-half years in predicting fee volumes, (2) virtual elimination of the reserve income for fluctuations in cost or workload, and (3) greater reliance upon and use of the individual fee costs developed by the PTO's Office of Finance.

It is intended that the amount of any fee due and payable on or after Oct. 5, 1985 is the amount set in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing, where authorized under §1.8 of title 37, Code of Federal Regulations, will be considered to be the date of receipt in the Office. A "Certificate of Mailing under §1.8" is *not* "proper" for items which are specifically excluded from the provisions of §1.8. Section 1.8 of title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is *not* "proper". Such items include, *inter alia*, the filing of national and international applications for patents and the filing of trademark applications. The provisions of §1.10 of title 37, Code of Federal Regulations relating to filing of papers and fees by "Express Mail" with certificate, however, do apply to *any paper or fee* (including patent and trademark applications) to be filed in the Office. If an application or fee is filed by "Express Mail" with a certificate of mailing dated on or after Oct. 5, 1985, the amount of the fee to be paid is the fee established herein if a change is being made in the fee.

It is further intended that the amount due and payable for services provided in Fiscal Year 1986 will be the amount set in this rulemaking even if the fee becomes due prior to Oct. 5, 1985. Such fees include, but are not limited to, the annual service charge for subscription services (§1.19(c)(1)) and the annual rental for a delivery box (§1.21(d)).

In order to ensure clarity in the implementation of the fee proposals, a discussion of specific sections is set forth below:

DISCUSSION OF SPECIFIC RULES

Section 1.16 National application filing fees

Section 1.16 is amended to adjust patent application filing fees established in §41(a) of title 35, United States Code and set forth in paragraphs (a)-(d) and (f)-(j) of this section to reflect fluctuations in the Consumer Price Index.

Section 1.16, paragraph (e) is amended to adjust the patent application surcharge fee authorized by §111 of title 35, United States Code. Paragraph (e) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.17 Patent application processing fees

Section 1.17 is amended to adjust patent application processing fees established in §41(a) of title 35, United States Code, and set forth in paragraphs (a)-(g), (l) and (m) of this section to reflect fluctuations in the Consumer Price Index. The wording of paragraph (l) has been broadened to include reference to applicaitons abandoned under §371(d) of title 35, United States Code.

Section 1.17, paragraphs (h)-(k) are amended to adjust the patent application processing fees authorized by §41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing. Paragraphs (h)-(k) have been modified from the proposal to more precisely recover the estimated average cost to the Office of processing petitions to the Commissioner, public use proceedings, and non-English language specifications.

Section 1.18 Patent issue fees

Section 1.18 is amended to adjust patent issue fees established in §41(a) of title 35, United States Code and set forth in paragraphs (a)-(c) of this section to reflect fluctuations in the Consumer Price Index.

Section 1.19 Document supply fees

Section 1.19 is amended to adjust the fees authorized by §41(d) of title 35, United States Code for services and materials as set forth in paragraphs (a)-(c), (e) and (f) of this section to recover the estimated average cost to the Office of the specified services and materials. Paragraphs (a)-(c) have been modified from the proposal to more precisely recover the estimated average cost to the Office of supplying the documents specified in these paragraphs. Section 1.19 has been modified further to reduce the fees specified in paragraphs (e) and (f), which were not proposed for adjustment to more precisely recover the estimated average cost to the Office of supplying the documents.

Section 1.19, paragraph (a) is amended further to clarify the services and documents provided. It would provide for copies of specific documents at a flat fee. Copies of general Office records would be provided at a per page fee. Paragraph (a)(4) has been modified from the proposal to provide copies of a patent file wrapper and its contents at $75 for each 200 pages or a fraction thereof.

Section 1.19, paragraph (b) is amended further to delete subparagraph (3). A flat fee for comparing and certifying copies of documents made from Office records is provided in new paragraph (i) of this section.

Section 1.19, paragraph (c) is amended further to provide for ten subclasses with the annual service charge.

Section 1.19 is amended to provide in new paragraph (h) a $10 per document flat fee for an uncertified copy of a non-United States patent document. This fee would apply to copies of foreign patent applications such as those which are published at 18 months or when allowable for opposition.

Section 1.19 is amended to provide in new paragraph (i) a flat fee for comparison and certification of each copy of a document made from Office records but not prepared by the Office.

Section 1.19 is amended to provide in new paragraph (j) a fee for duplicate filing receipts and corrected filing receipts due to applicant error.

Paragraphs (i) and (j) have been modified from the proposal to more precisely recover the estimated average cost to the Office of supplying the documents specified.

Section 1.20 Post-issuance fees

Section 1.20, paragraphs (a)-(c) are amended to adjust patent post-issuance fees authorized by §41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing. Section 1.20 has been modified from the proposal to more precisely recover the estimated average cost to the Office of the post-issuance fees set forth in paragraphs (b)-(c). Section 1.20 has been modified further to reduce the fee set forth in paragraph (a), which was not proposed for adjustment, to more precisely recover the estimated average cost to the Office of providing a certificate of correction.

Section 1.20, paragraphs (d) and (h)-(j), are amended to adjust patent post-issuance fees established in §41(a) and §41(b) of title 35, United States Code, to reflect fluctuations in the Consumer Price Index.

Section 1.20, paragraphs (e)-(g), are amended to adjust post-issuance fees authorized by Section 2 of Public Law 96–517, as modified by Section 404 of Public Law 98–622. These fees must be set at a level to eventually recover 25 percent of the estimated cost to the Office of processing patent applications. In order to achieve this level of recovery, these maintenance fees are adjusted to reflect fluctuations in the Consumer Price Index.

Section 1.20, paragraph (k), is amended to adjust the patent maintenance surcharge fee authorized by Section 2 of Public Law 96–517. Paragraph (k) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.20, paragraph (l), is amended to adjust the post-issuance fee authorized by §41(b) of title 35, United States Code. Paragraph (l) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.21 Miscellaneous fees and charges

Section 1.21 is amended to adjust the miscellaneous fees and charges authorized by §41(d) of title 35, United States Code and set forth in paragraphs (a)-(f), (h) and (i) of this section to recover the estimated average cost to the Office of such processing. Section 1.21 has been modified from the proposal to more precisely recover the estimated average cost to the Office of the miscellaneous services for which fees were set forth in paragraphs (a)(2)-(a)(6), (b)(1), (d)-(f), (h)(1) and (i). Section 1.21 has been modified further to reduce the fees specified in paragraphs (c) and (h)(2), which were not proposed for adjustment, to more precisely recover the estimated average cost to the Office of those services.

Section 1.21, paragraph (g), is modified from the proposal to change the term "copy machine tokens" to "CopiShare card."

Section 1.21, paragraph (k), is amended to change the word "section" to "part" to clarify that any charge not provided for in these rules would be made at actual cost.

Section 1.21 is amended to provide in new paragraph (m) a $20 fee for processing checks returned "unpaid" by a bank.

Section 1.24 Coupons

Section 1.24 is amended to adjust the fee for the purchase of coupons for patents to make it comparable to the fee required for the purchase of U.S. patents.

Section 1.24 is amended to delete reference to forty cent coupons which are no longer sold by the Patent and Trademark Office.

Section 1.25 Deposit accounts

Section 1.25 is amended to establish a restricted subscription deposit account to be used exclusively for subscription orders of patent copies as issued. A minimum deposit of $300 is required to establish and maintain, without payment of a monthly service fee, a restricted subscription deposit account.

Section 1.26 Refunds

Section 1.26 is amended to change paragraph (c) to provide for a refund of $1,300 if the Commissioner decides not to institute reexamination proceedings. The $1,300 refund would apply to those instances where the reexamination fee of $1,770 under §1.20(c) was paid. The current $1,200 refund will be made in those cases where the current $1,500 reexamination fee was paid.

Section 1.53 Serial number, filing date, and completion of application.

Section 1.53 is amended to change paragraph (c) to reduce to $15 the handling fee charged in the event a specification or drawing is not submitted within the time period set by the Office. Section 1.53 has been modified to more precisely recover the estimated average cost to the Office of handling an application with missing parts.

Section 1.297 Publication of statutory invention registration

Section 1.297, paragraph (b), is amended to modify the statement to be printed on each statutory invention registration. The language of the statement is modified so as to be more easily understood.

Section 1.445 International application filing and processing fees

Section 1.445, paragraphs (a)(1)-(a)(4), are amended to adjust the fees authorized by §376 of title 35, United States Code, for international application processing to recover the estimated average cost to the Office of such processing. The cost of the international search fee set forth in paragraph 1.445(a)(2)(i) has been reduced and the amount credited by the Office under paragraph 1.445(a)(2)(ii) is not changed. Paragraphs (a)(1) and (a)(3) have been modified from the proposal to more precisely recover the estimated average cost to the Office of processing international applications. However, the amount of the credit under 1.445(a)(4) is somewhat less than at present and is the same as in the proposed rules.

Section 1.445(a)(5) is amended to adjust the surcharge authorized by §371(d) of title 35, United States Code.

Paragraph (a)(5) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index and to provide for a small and large entity amount to be consistent with §1.16(e).

Section 1.445(a)(6) is amended to adjust the processing fee for an English translation filed after 20 months from the priority date to recover the estimated average cost to the Office of such processing. Paragraph (a)(6) has been modified from the proposal to more precisely recover the estimated average cost to the Office of processing an English translation and to be consistent with §1.17(k).

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Section 1.446 Refund of international application filing and processing fees.

Section 1.446 is amended to delete paragraph (b). The substance of the deleted material is included in section 1.445, paragraph (a)(4).

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Fifteen letters submitting written comments and eight questions by telephone were received. Oral testimony was presented by one person at the public hearing conducted on July 18, 1985. All of the written and oral comments were considered in adopting the changes set forth herein. The comments submitted appear below along with responses thereto.

Comment:

PTO fees are already too high and burdensome to the patent community.

Reply:

There has been no indication that PTO fees are burdensome to the patent community. In 1984, we expected to receive 107,000 patent applications and actually received 109,539. In 1985, we are currently receiving applications at an annual rate of approximately 116,000.

The PTO is adjusting patent processing and patent service fees because costs have increased. The Commissioner may adjust patent statutory fees by changes which have occurred during the past three years in the Consumer Price Index (CPI). This authority is provided by 35 U.S.C. 41(f). The intent of the Congress in indexing the statutory patent fees set in 1982 to the CPI was to assure that a precipitous drop in the level of recovery did not occur due to inflation. Indexing of statutory patent fees was not intended to raise additional revenues beyond the rate of inflation.

The Commissioner also is authorized to adjust non-statutory patent fees to recover the estimated average cost to the Office of processing, services and materials. This authority is provided by 35 U.S.C. 41(d). As previously discussed, several of the proposed fees have been modified to more precisely recover the estimated average cost to the Office of processing, materials and services.

Comment:

PTO has failed to abide by the provisions of Public Law 96–517 and the accompanying report (House Report 96–1307). Specifically, the PTO has failed to abide by the 50 percent recovery limitation for patent processing fees and the restrictions on the use of fee income.

Reply:

Public Law 96–517, although enacted into law, was never fully implemented because the Congress passed H.R. 6260 which was enacted as Public Law 97–247 on Aug. 27, 1982. Public Law 97–247 provides for an eventual 100 percent cost recovery through processing and maintenance fees except for the subsidy for certain small entities, and contains no restrictions on the use of income from fee revenues.

This rulemaking adjusts, by the Consumer Price Index (CPI), the patent processing (41(a)) and patent maintenance (41(b)) fees established by Public Law 97–247. The CPI adjustment allows the programs supported by §41(a) and (b) fees to keep pace with inflation. Any growth in the aggregate rate of recovery of fees versus costs in this second cycle of fees is due primarily to the first time collection of maintenance fee receipts.

The restrictions on the use of income from fee revenues, which were included in House Report 96–1307 accompanying Public Law 96–517, were based upon a 50 percent recovery of patent costs from user fees. Then-Commissioner Mossinghoff testified before the Subcommittee on Courts, Civil Liberties, and Administration of Justice, when Congress was considering H.R. 6260, that the Administration's PTO user fee program was proposed to improve the quality of service at the PTO by reducing patent pendency, trademark pendency and automating patent and trademark operations. The Commissioner went on to say that "The major increases in the three program areas will be paid for by the sharp increase in user fees that we are recommending." The Congressional debate on this proposal indicates that the Subcommittee approved these innovative fee provisions in order to improve the level of patent and trademark services provided to users of the Office.

Comment:

Fees should relate to the actual "costs of processing patent applications" and should not include "overhead" expenses.

Reply:

The fees applicable to patent filing, issuance and maintenance fees were established by the Congress and set forth in 35 U.S.C. §41(a) and (b). Regardless if Congress included "overhead" expenses when setting these statutory patent fees, these fees may be adjusted only to reflect the fluctuations in the CPI every three years. Fees for other processing, services or materials related to patents are set by the Commissioner pursuant to 35 U.S.C. 41(d) to recover the Office's estimated average cost. The legislative history of Public Law 97–247, including the accompanying House Report, does not provide guidance regarding how "estimated average cost" was to be determined. These fees were determined under the general guidelines of OMB Circular A–25, entitled "User Charges," which established general policies for developing an equitable and uniform system of charges for certain government services and property. Circular A–25 provides that a reasonable charge should be imposed to recover the full cost to the Government of rendering a service to an identifiable recipient, who receives a substantial benefit not accruing to the general public, e.g., receiving a patent. The concept of full cost recovery includes an appropriate overhead charge. Therefore, the inclusion of overhead expenses in calculating the costs of processing patent applications is appropriate.

Comment:

The PTO does not include a description of any cost containment measure.

Reply:

The PTO has taken all possible measures to contain costs. During fiscal year 1985, a zero-based analysis was conducted of all programs and their associated funding. The purpose of the review was to assure that adequate resources were available to meet the PTO's most important priorities while addressing unanticipated costs such as, the full absorption of the fiscal year 1985 pay raise, new pay scale for patent examiners, higher postal and telephone rates, greater use of PTO services, etc. The PTO's annual budget request is thoroughly reviewed by the Department of Commerce, by the Office of Management and Budget, and by the Congressional Appropriations Committees prior to enactment. The PTO is complying with the President's Deficit Reduction Program. The fiscal year 1986 budget request reflects reductions to travel, printing and consultants as required by the Deficit Reduction Act of 1984; administrative cost savings; and grade reductions and pay cuts. The PTO program to reduce patent pendency, once achieved in 1987, will require less resources than are currently expended. The Automation program, too, as it achieves its major milestones, will deliver cost benefits.

Comment:

The PTO has proposed to adjust fees because costs have increased but they did not include an explanation of how costs were calculated.

Reply:

Patent statutory fees, which are set forth in 35 U.S.C. 41(a) and (b), can be adjusted on Oct. 1, 1985 and every three years thereafter to reflect fluctuations which have occurred in the Consumer Price Index (CPI). The costs of processing a patent application from receipt to issue or abandonment were calculated in 1982 at the time the present fees were set by statute. The most significant elements of processing a patent application are compensation costs, space and the costs incurred for printing the *Official Gazette* and patent grants.

As a result of these increases to the major costs incurred in the processing of a patent application, the PTO is adjusting the statutory 41(a) and (b) patent fees

by the full CPI of 11.8 percent in order to recover the projected budgeted collections for patent processing for the years 1986–1988.

Non-statutory patent and patent service fees are being set to recover the estimated average cost to the Office over the next three years (1986–1988) of processing, services and materials. Costs for goods and services were determined under the general guidelines set forth in OMB Circular A–25 entitled "User Charges," which establishes general policies for developing an equitable and uniform system of charges for certain Government services and property. The cost of all processing, services and/or materials associated with each non-statutory (§41(d)) patent fee was determined. Since these fees are expected to remain in place for three years (1986–1988), each cost was adjusted by a mid-cycle inflation rate of 6.21 percent which was derived from the Administration's 1986–1988 inflation projection.

Comment:

The PTO has proposed to set §41(d) fees at a level which exceeds the estimated average cost to the Office. PTO's cost calculations do not support the proposed §41(d) fees.

Reply:

Fees established pursuant to 35 U.S.C. 41(d) and 376, non-statutory patent and patent service fees, are being set to recover the estimated average cost to the Office over the next three years (1986–1988) of processing, services and materials. Costs for goods and services were determined under the general guidelines set forth in OMB Circular A–25 entitled "User Charges," which establishes general policies for developing an equitable and uniform system of charges for certain Government services and property.

The PTO employed cost-finding techniques for determining the costs of all processing, services and/or materials associated with each non-statutory patent fee. These costs were documented by the Director, Office of Finance and reviewed by each responsible Assistant Commissioner. Since the revised fees are expected to remain in place for the next three years (1986–1988), each cost was adjusted by the mid-cycle inflation rate of 6.21 percent. The fee was then set based upon this inflated cost.

For the first fee cycle (1983–1985), fees established under §41(d) and §376 were set in the aggregate to recover the estimated average cost to the Office of processing, services and materials as defined in PTO budget documents. Because of the significant increase in fees that was instituted on Oct. 1, 1982, as well as the establishment of new fees, the PTO did not have the necessary experience to accurately predict (nor could it control) fee volumes for the first fee cycle. First cycle fees were thus set at levels sufficient to maintain financial solvency despite possible fluctuations in costs or in workload. Fee amounts in most cases also were set at convenient integers (e.g., $5 or $10). For the second fee cycle (1986–1988), the PTO had proposed to set fees established under §41(d) and §376 using the same methodology. Several comments to the proposed rules suggested that the PTO should establish §41(d) and §376 fees to more precisely recover the estimated average cost to the Office of the processing, service or material. The fees have been modified to reflect the following: (1) PTO experience over the past two and one-half years in predicting fee volumes, (2) virtual elimination of the reserve income for fluctuations in cost or in workload, and (3) greater reliance upon and use of the individual fee costs developed by PTO financial analysts.

In modifying the proposed fees, the PTO used the raw cost data derived for each fee, adjusted that amount by the projected mid-cycle inflation rate of 6.21 percent, and rounded the adjusted cost by applying standard arithmetical rules. Fees of $100 or more were rounded to the nearest $10. Fees between $99 and $2 were rounded to the nearest whole number. Fees under $2 were rounded for convenience.

Comment:

The increase in maintenance fees appears to be driven by non-cost considerations. Since they have just begun to be collected, there could be no actual cost histories on which to base the adjustments.

Comment:

The increase in claim fees seem to be proposed without any seemingly real increase in cost specifically attributable to these items.

Reply:

Patent statutory fees such as claim and maintenance fees, which are set forth in 35 U.S.C. 41(a) and (b), may be adjusted every three years to reflect changes which have occurred in the Consumer Price Index (CPI) for the prior three years. The costs of processing, issuing and maintaining patents were calculated in 1982 at the time the present fees were set by statute. Patent maintenance fees as set forth in both Public Laws 96–517 and 97–247 are one of several sources of income available to the PTO to cover the costs of processing, issuing and maintaining a patent. The most significant elements of processing, issuing and maintaining patents are personnel compensation, benefits, space and printing costs. Since 1982, these costs have risen in an amount equal to and in some cases, in an amount exceeding, the CPI increase for the individual year.

As a result of these cost increases, the PTO is adjusting §41(a) and §41(b) patent fees and the Public Law 96–517 maintenance fees by the full CPI of 11.8 percent.

Comment:

PTO's proposed adjustments to §41(a) and §41(b) fees are higher than the 11.7 percent fluctuation in the Consumer Price Index because of the rounding principles PTO has applied.

Reply:

The intent of the Congress in indexing the statutory patent fees, 35 U.S.C. 41(a) and (b), to the CPI was to assure that a precipitous drop in the level of recovery did not occur due to inflation with regard to the fees set in 1982. Indexing of statutory patent fees was not intended to be a method of raising additional revenues, nor has the PTO used it for that purpose, but rather for administrative ease. Rounding will ease the administration of these fees by permitting the PTO and users to deal in increments of ten when the adjusted fee is $100 or greater or in even amounts when the fee is below $99. This will ease implementation of the 50 percent reduction in fees for small businesses, non-profit organizations and individuals. Moreover, any surpluses which may result are for the short-term only. By applying routine techniques, there should be a balancing out of shortfalls and surpluses in the long-run.

Comment:

The fee for a deferred declaration under 34 U.S.C. 111 should be changed so that such a fee would only be required if the declaration were filed later than three months from the actual filing date.

Reply:

The suggestion for permitting the declaration to be filed up to three months after the actual filing date without a surcharge has not been adopted. It would place administrative burdens on the Office since it would encourage the late filing of oaths or declaration.

Comment:

There appears to be no justification for the significant increase to the surchage fees.

Reply:

In proposing adjustments to penalty surcharge fees, the PTO considered the costs incurred in providing speci! handling to certain cases, and proposed to set the fee at a level that would recover costs and preclude unnecessary resort to pertinent procedures but not so high as to be burdensome where resort to these procedures is necessary. In response to several comments received on the proposed surcharge fees, the proposal has been modified to limit the adjustments to surcharge fees set forth in §1.16(e), §1.20(k), §1.20(l) and §1.445 (a)(5) to changes which have occurred during the past three years in the Consumer Price Index.

Comment:

Patent Cooperation Treaty (PCT) fee increases far exceed the 11.7 percent average increase applied to nation-

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al applications. This increase could seriously affect use of PCT system.

Reply:

The PCT fees set under 35 U.S.C. 376 are based on cost recovery and are not adjusted by the Consumer Price Index. The fees under §1.445 are set to reflect estimated average processing costs. A reduction was made in the amount of the international search fee if performed by the U.S. Patent and Trademark Office. While the credit for a prior U.S. search is unchanged and other PCT fees are increased, the overall adjustment level of PCT fees is generally in line with the CPI.

Comment:

The small entity reduction should be adopted for the PCT surcharge.

Reply:

The final rule has been modified from the proposal to provide for small and large entity amounts in §1.445(a)(5). This is to correspond to a similar fee in §1.16(e).

Comment:

The proposed fees for a copy of a patent file wrapper and its contents (1.19(a)(4)) are unfair at the breakpoint. It would be more equitable to charge $75 for each 200 pages or fraction thereof.

Reply:

In proposing a fee of $75 for up to 200 pages and $350 for 201 pages or more for a copy of a patent file wrapper and its contents, the PTO was attempting to move to a flat fee for this service. Since there were objections to the breakpoint, the final rule has been modified from the proposal to reflect a fee of $75 for each 200 pages or fraction thereof.

Comment:

The proposed increase in §1.20(c) regarding requests for reexamination and the related decrease in §1.26(c) relating to refunds where reexamination is not ordered, appeared to be set from a revenue generating standpoint rather than being cost-driven.

Reply:

While the comment does not suggest what the fees should be, it is noted that the two fees have to be considered together. The notice of proposed rulemaking set a fee of $1,800 for filing a request for reexamination, which was an increase from the previous fee of $1,500. This fee has been modified from the proposal and is now set at $1770. The refund where reexamination is denied was proposed to be raised from $1,200 to $1,300, which raises the refund from the amount previously refunded. The amount refunded has not changed from the proposal. The relative amounts of the initial fee and the refund are set to obtain the necessary recovery of costs from reexamination.

Comment:

A separate schedule of fees should be instituted for interference proceedings, but such fees should apply only to junior parties, since interferences are conducted primarily for their benefit.

Reply:

The rules already provide for certain fees relating to interference proceedings; see §1.644(e) and (f), and §1.666(b) and (c). In general, however, the PTO decided in 1982 that the costs of interference proceedings should be factored into the fees charged in connection with the processing and examination of patent applications, because (1) an interference is a proceeding instituted by the PTO, and (2) it would not be administratively feasible to attempt to provide a fee schedule to cover the myriad of different situations which may occur in the course of an interference. Since these reasons are still considered applicable, the suggestion has not been adopted.

Comment:

The proposed fee for admission to the examination (1.21(a)(1)) for registration to practice is too high for students who often sit for the exam and it is inappropriate because administering the exam is not a service to the public but a cost of operating the PTO.

Reply:

The fee for admission to the examination for registration to practice reflects the costs of conducting the examination twice a year nationwide. The significant increase is due to the fact that the fee had been understated in relation to cost during the 1983–1985 fee cycle. Fees established in this rulemaking will more precisely recover the estimated average cost to the Office of administering and grading the examination and are consistent with the cost recovery principles of OMB Circular A–25.

Comment:

The proposed fee for requesting a regrading of an examination (1.21(a)(6)) should be waived if the regrading request was necessitated by a PTO error.

Reply:

Any fee may be refunded if paid by mistake or paid in excess of that required. See 35 U.S.C. 42(d).

Comment:

The PTO should retain the present fee for admission to the examination to practice before the Office (1.21(a)(1)) and increase the fee payable upon registration to practice (1.21(a)(2)).

Reply:

This suggestion has not been adopted in this rulemaking. The fees for admission to the examination and for registration to practice have been set to recover the cost of those services.

Comment:

The proposed fee for reviewing a decision of the Director of Enrollment and Discipline (1.21(a)(5)) appears to be low in view of the significant amount of time and effort involved in a review.

Reply:

The fee for this service, as modified, recovers the estimated average cost to the Office of providing the service.

Comment:

The fees for processing an application filed with a specification in a non-English language (1.17(k)) and for filing an English translation of an international application later than 20 months after the priority date (1.445 (a)(6)) appear to be in excess of cost.

Reply:

The final rules have been modified from the proposed to provide for a fee of $26, the cost of processing applications filed with non-English language specifications in both domestic and international cases.

Comment:

An extension of time to Aug. 16, 1985 for the submission of comments was requested.

Reply:

The PTO is required by 35 U.S.C. 41(g) to publish a notice of fee increases in the *Federal Register* at least 60 days prior to the effective date of the fee increase. In order to have the proposed fee increases become effective near the start of the fiscal year, the extension of time could not be granted.

Comment:

Why were there no proposals to adjust trademark fees?

Reply:

Adjustments to fees for filing and processing a trademark application and for other processing, services or materials related to trademarks were not proposed at this time, pending review of trademark automation cost requirements.

Comment:

Do we plan to verify the inflation rate before publication of the final rules?

Reply:

The projected inflation rate has been verified. The Administration's latest projected annual cumulative Consumer Price Index for the three year period 1982–1985 is 11.8 percent. Application of this index to §41(a) and §41(b) fees results in no change from the proposal.

Other Considerations: The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. There are no information collection requirements relating to patent fee rules.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Public Law 96–354). The principal impact of the major patent fees has already been taken into account in Public Law 97–247, which provided small entities with a 50 percent reduction in the major patent fees. Although that legislation will expire on Sept. 30, 1985, legislation has been introduced to reauthorize the 50 percent reduction in patent fees for an additional three years. The rule change adjusts fees to reflect the change in the Consumer Price Index and cost of processing services as provided by statute (35 U.S.C. 41(d) and 41(f)).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 41, 111, 157, 302, and 376 and Public Laws 96–517, 97–247 and 98–622, the Patent and Trademark Office is amending 37 CFR Part 1 as set forth below.

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is revised to read as follows:

§1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases:

By a small entity (§1.9(f)) $170.00
By other than a small entity $340.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§1.9(f)) $17.00
By other than a small entity $34.00

(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20. (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes):

By a small entity (§1.9(f)) $6.00
By other than a small entity $12.00

(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§1.9(f)) $55.00
By other than a small entity $110.00

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:

By a small entity (§1.9(f)) $55.00
By other than a small entity $110.00

(f) For filing each design application:

By a small entity (§1.9(f)) $70.00
By other than a small entity $140.00

(g) Basic fee for filing each plant application:

By a small entity (§1.9(f)) $110.00
By other than a small entity $220.00

(h) Basic fee for filing each reissue application:

By a small entity (§1.9(f)) $170.00
By other than a small entity $340.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§1.9(f)) $17.00
By other than a small entity $34.00

(j) In addition to the basic filing fee in a reissue application; for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent. (Note that §1.75(c) indicates how multiple dependent claims are considered for fee purposes):

By a small entity (§1.9(f)) $6.00
By other than a small entity $12.00

(Note, see §1.445 for international application filing and processing fees).

(35 U.S.C. 6, 41, 111; Public Law 97–247)

3. Section 1.17 is amended by revising paragraphs (a)-(m) to read as follows:

§1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to §1.136(a):

By a small entity (§1.9(f)) $28.00
By other than a small entity $56.00

(b) Extension fee for response within second month pursuant to §1.136(a):

By a small entity (§1.9(f)) $85.00
By other than a small entity $170.00

(c) Extension fee for response within third month pursuant to §1.136(a):

By a small entity (§1.9(f)) $195.00
By other than a small entity $390.00

(d) Extension fee for response within fourth month pursuant to §1.136(a):

By a small entity (§1.19(f)) $305.00
By other than a small entity $610.00

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(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity (§1.9(f)) $65.00
By other than a small entity $130.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§1.9(f)) $65.00
By other than a small entity $130.00

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in appeal under 35 U.S.C. 134:

By a small entity (§1.9(f)) $55.00
By other than a small entity $110.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $140.00

§1.47 — for filing by other than all the inventors or a person not the inventor.
§1.48 — for correction of inventorship.
§1.182 — for decision on questions not specifically provided for.
§1.183 —to suspend the rules.
§1.295 — for review of refusal to publish a statutory invention registration.
§1.377 — for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.
§1.378(e) — for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent.
§1.644(e) — for petition in an interference.
§1.644(f) — for request for reconsideration of a decision on petition in an interference.
§1.666(c) — for late filing of interference settlement agreement.
§§5.12, 5.13, & 5.14 — for expedited handling of foreign filing license.
§5.15 — for changing the scope of a license.
§5.25 — for retroactive license.

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $72.00

§1.12 — for access to an assignment record.
§1.14 — for access to an application.
§1.55 — for entry of late priority papers.
§1.102 — to make application special.
§1.103 — to suspend action in application.
§1.177 — for divisional reissues to issue separately.
§1.312 — for amendment after payment of issue fee.
§1.313 — to withdraw an application from issue.
§1.314 — to defer issuance of a patent.
§1.334 — for patent to issue to assignee, assignment recorded late.
§1.666(b) — for access to interference settlement agreement.

(j) For filing a petition to institute a public use proceeding under §1.292 . . . . . $860.00

(k) For processing an application filed with a specification in a non-English language (§ 1.52(d)) $26.00

(l) For filing a petition (1) for the revival of an unavoidably abandoned application under 35 U.S.C. 133, or 371 or (2) for delayed payment of the issue fee under 35 U.S.C. 151:

By a small entity (§1.9(f)) $28.00
By other than a small entity $56.00

(m) For filing a petition (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§1.19(f)) $280.00
By other than a small entity $560.00

(35 U.S.C. 6, 41, 157, 376; Public Law 97–247)

4. Section 1.18 is revised to read as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§1.9(f)) $280.00
By other than a small entity $560.00

(b) Issue fee for issuing a design patent:

By a small entity (§1.9(f)) $100.00
By other than a small entity $200.00

(c) Issue fee for issuing a plant patent:

By a small entity (§1.9(f)) $140.00
By other than a small entity $280.00

(35 U.S.C. 6, 41, Public Law 97–247)

5. Section 1.19 is amended by revising paragraphs (a)-(c), (e) and (f), and by adding new paragraphs (a)(7), and (h)-(j) to read as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:

(1) Printed copy of a patent, including a design patent, statutory invention registration, or defensive publication document, except color plant patent or color statutory invention registration $1.50
(2) Printed copy of a plant patent or statutory invention registration in color $6.00
(3) Copy of patent application as filed . . . $9.00
(4) Copy of patent file wrapper and contents, per 200 pages or a fraction thereof . $75.00
(5) Copy of Office records, except as otherwise provided in this section, per page . $.50
(6) Microfiche copy of microfiche, per microfiche . . . . . $.50
(7) Copy of patent assignment record $1.50

(b) Certified copies of Office documents:

(1) For certifying Office records, per certificate $3.00
(2) For a search of assignment records, abstract of title and certification, per patent . $12.00

(c) Subscription services:

(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and ten subclasses $7.00
(2) For annual subscription to each additional subclass in addition to the ten covered by the fee under paragraph (c)(1) of this section, per subclass . . . . . $.70

* * * * *

(e) List of patents in subclass:

(1) For list of all United States patents and statutory invention registrations in a subclass, per 100 numbers or fraction thereof $1.00
(2) For list of United States patents and statutory invention registrations in a subclass limited by date or number, per 50 numbers or fraction thereof $1.00

(f) Microfiche copy of patent file record $6.00

* * * * *

(h) Uncertified copy of a non-United States patent document, per document $10.00

(i) To compare and certify copies made from Patent and Trademark Office records but not prepared by the Patent and Trademark Office, per copy of document $5.00

(j) Additional filing receipts:

Duplicate $14.00
Corrected due to applicant error $14.00

(35 U.S.C. 6, 41, 157)

6. Section 1.20 is amended by revising paragraphs (a)-(l) to read as follows:

§1.20 Post-Issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§1.323) $29.00

(b) Petition for correction of inventorship in patent (§1.324) $140.00

(c) For filing a request for reexamination (§1.510(a)) $1,770.00

(d) For filing each statutory disclaimer (§1.321):

By a small entity (§1.9(f)) $28.00
By other than a small entity $56.00

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . $225.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years, the fee is due by seven years and six months after the original grant . . $445.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant $670.00

(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) $225.00
By other than a small entity $450.00

(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)) $445.00
By other than a small entity $890.00

(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§1.9(f)) $670.00
By other than a small entity $1,340.00

(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $110.00

(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) $55.00
By other than a small entity $110.00

* * * * *

(35 U.S.C. 6, 41, 302; Public Laws 96–517, 97–247, 98–622)

7. Section 1.21 is amended by revising paragraphs (a)-(i) and (k), and adding a new paragraph (m) to read as follows:

§1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents:

(1) For admission to examination for registration to practice, fee payable upon application $250.00
(2) On registration to practice $81.00
(3) For reinstatement to practice $9.00
(4) For certificate of good standing as an attorney or agent $10.00
Suitable for framing $88.00
(5) For review of a decision of the Director of Enrollment and Discipline under §10.2(c) $92.00
(6) For requesting regrading of an examination under §10.7(c) $92.00

(b) Deposit accounts:

(1) For establishing or reinstating a deposit account $8.00
(2) Service charge for each month when the balance at the end of the month is below $1,000 . . . . . $20.00
(3) Service charge for each month when the balance at the end of the month is below $300 for restricted subscription deposit accounts used exclusively for subscription order of patent copies as issued $20.00

(c) Disclosure document: For filing a disclosure document $6.00

(d) Delivery box: Local delivery box rental, per annum $43.00

(e) International-type search reports: For preparing an international-type search report of an international-type search made at the

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time of the first action on the merits in a national patent application $28.00

(f) Search of Office records: For searching Patent and Trademark Office records for purposes not otherwise specified, per one-half hour or fraction thereof $14.00

(g) CopiShare card: Cost per copy $0.20

(h) Recording of documents:

(1) For recording each assignment, agreement or other paper relating to the property in a patent or application $7.00
(2) Where a document to be recorded under paragraph (h)(1) of this section refers to more than one patent or application, for each additional patent or application $2.00

(i) Publication in *Official Gazette:* For publication in the *Official Gazette* of a notice of the availability of an application or a patent for licensing or sale, each application or patent $7.00

* * * * *

(k) For items and services, that the Commissioner finds may be supplied, for which fees are not specified by statute or by this part, such charges as may be determined by the Commissioner with respect to each such item or service ..... actual cost

* * * * *

(m)For processing each check returned "unpaid" by a bank $20.00

(35 U.S.C. 6, 41)

8. Section 1.24 is proposed to be revised to read as follows:

§1.24 Coupons.

Coupons in denominations of one dollar for the purchase of trademark registrations and one dollar and fifty cents for the purchase of patents, designs, defensive publications, and statutory invention registrations are sold by the Patent and Trademark Office for the convenience of the general public; these coupons may not be used for any other purpose. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50 and the one dollar and fifty cent coupons are sold individually and in books of 50 with stubs for record for $75. These coupons are good until used; they may be transferred but cannot be redeemed.

(35 U.S.C. 6)

9. Section 1.25, paragraph (a), is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $1,000 is required for paying any fees due or in ordering any services offered by the Office. However, a minimum deposit of $300 may be paid to establish a restricted subscription deposit account used exclusively for subscription order of patent copies as issued. At the end of each month, a deposit account statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit. An amount sufficient to cover all fees, services, copies, etc., requested must always be on deposit. Charges to accounts with insufficient funds will not be accepted. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $1,000. For restricted subscription deposit accounts, a service charge (§1.21(b)(3)) will be assessed for each month that the balance at the end of the month is below $300.

* * * * *

(35 U.S.C. 6)

10. Section 1.26 is amended by revising paragraph (c) to read as follows:

§1.26 Refunds.

* * * * *

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,300 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

(35 U.S.C. 6, 41)

11. Section 1.53 is amended by revising paragraph (c) to read as follows:

§1.53 Serial number, filing date, and completion of application.

* * * * *

(c) If any application is filed without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period with which to submit the omitted specification or drawing in order to obtain a filing date as of the date of filing of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $15.00 handling fee.

* * * * *

12. Section 1.297, paragraph (b), is revised to read as follows:

§1.297 Publication of statutory invention registration.

* * * * *

(b) Each statutory invention registration published will include a statement relating to the attributes of a statutory invention registration. The statement will read as follows:

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

(35 U.S.C. 6, 157)

13. Section 1.445 is amended by revising paragraph (a) to read as follows:

§1.445 International application filing and processing fees.

(ii) Corresponding prior United States national application with fee has been filed $250.00

(3) A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2), per additional invention $140.00

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited, if requested at the time of filing, by an amount of $170.00 where an international search fee as required by paragraph (a)(2)(i) of this section has been paid on the corresponding international application to the United States Patent and Trademark Office as an International Searching Authority. Only one such credit is permitted based on a single international search fee.

(5) Surcharge for filing the national fee or oath or declaration later than 20 months from the priority date:

By a small entity (§1.9(f)) $55.00
By other than a small entity $110.00

(6) For filing an English translation of an international application later than 20 months after the priority date (§1.61(b)) .. $26.00

* * * * *

(35 U.S.C. 6, 376)

14. Section 1.446 is amended by removing paragraph (b):

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) [Reserved]

(35 U.S.C. 6, 376)

July 31, 1985. DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

[1057 OG 24]

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(67)

Public Law 96-517
96th Congress
An Act

To amend the patent and trademark laws.

Dec. 12, 1980
[H.R. 6933]
Patent and trademark laws, amendment

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 29 the following new chapter 30:

"CHAPTER 30–PRIOR ART CITATIONS TO OFFICE AND REEXAMINATION OF PATENTS

" Sec.
"301. Citation of prior art.
"302. Request for reexamination.
"303. Determination of issue by Commissioner.
"304. Reexamination order by Commissioner.
"305. Conduct of reexamination proceedings.
"306. Appeal.
"307. Certificate of patentability, unpatentability, and claim cancellation.

"§ 301. Citation of prior art 35 USC 301

Any person at any time may cite to the Office in writing prior art consisting of patents or printed publications which that person believes to have a bearing on the patentability of any claim of a particular patent. If the person explains in writing the pertinency and manner of applying such prior art to at least one claim of the patent, the citation of such prior art and the explanation thereof will become a part of the official file of the patent. At the written request of the person citing the prior art, his or her identity will be excluded from the patent file and kept confidential.

"§ 302. Request for reexamination 35 USC 302

"Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. The request must be in writing and must be accompanie- by payment of a reexamination fee established by the Commissioner of Patents pursuant to the provisions of section 41 of this title. The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested. Unless the requesting person is the owner of the patent, the Commissioner promptly will send a copy of the request to the owner of record of the patent. Fee.

"§ 303. Determination of issue by Commissioner 35 USC 303

"(a) Within three months following the filing of a request for reexamination under the provisions of section 302 of this title, the Commissioner will determine whether

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a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is raised by patents and publications discovered by him or cited under the provisions of section 301 of this title.

Record. "(b) A record of the Commissioner's determination under subsection (a) of this section will be placed in the official file of the patent and a copy promptly will be given or mailed to the owner of record of the patent and to the person requesting reexamination, if any.

Refund "(c) A determination by the Commissioner pursuant to subsection (a) of this section that no substantial new question of patentability has been raised will be final and nonappealable. Upon such a determination, the Commissioner may refund a portion of the reexamination fee required under section 302 of this title.

35 USC 304. **"§ 304. Reexamination order by Commissioner**

Filing period. "If, in a determination made under the provisions of subsection 303(a) of this title, the Commissioner finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent for resolution of the question. The patent owner will be given a reasonable period, not less than two months from the date a copy of the determination is given or mailed to him, within which he may file a statement on such question, including any amendment to his patent and new claim or claims he may wish to propose, for consideration in the reexamination. If the patent owner files such a statement, he promptly will serve a copy of it on the person who has requested reexamination under the provisions of section 302 of this title. Within a period of two months from the date of service, that person may file and have considered in the reexamination a reply to any statement filed by the patent owner. That person promptly will serve on the patent owner a copy of any reply filed.

35 USC 305 **"§ 305. Conduct of reexamination proceedings**

35 USC 132, 133. "After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under the provisions of sections 132 and 133 of this title. In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Appeals, will be conducted with special dispatch within the Office.

35 USC 306. **"§ 306. Appeal**

35 USC 134. "The patent owner involved in a reexamination proceeding under this chapter may appeal under the provisions of section 134 of this title, and may seek court review under the provisions of sections 141 to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent.

35 USC 141-145.

35 USC 307. **"§ 307. Certificate of patentability, unpatentability, and claim cancellation**

"(a) In a reexamination proceeding under this chapter, when the time for appeal has expired or any appeal proceeding has terminated, the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent any proposed amended or new claim determined to be patentable.

35 USC 252. "(b) Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents on the right of any person who made, purchased, or used anything patented by such proposed amended or new claim, or who made substantial preparation for the same, prior to issuance of a certificate under the provisions of subsection (a) of this section."

SEC. 2. Section 41 of title 35, United States Code, is amended to read as follows:

35 USC 41. **"§ 41. Patent fees**

"(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

"(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through dispostion by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

" (c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

"(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50. 35 USC 13

Waiver "(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge. 35 USC 132

"(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three years.

Notice "(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register."

SEC. 3. Section 42 of title 35, United States Code, is amended to read as follows:

35 USC 42 **"§ 42. Patent and Trademark Office funding**

"(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

"(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

"(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office.

Refund "(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required."

SEC. 4. Section 154 of title 35, United States Code, is amended by deleting the word "issue".

SEC. 5. Section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended to read as follows:

"§ 31. Fees

"(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material. However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register. Notice

Waiver. "(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with any occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups." Indian products, exception.

SEC. 6. (a) Title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 37 the following new chapter 38:

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"CHAPTER 38–PATENT RIGHTS IN INVENTIONS MADE WITH FEDERAL ASSISTANCE

"Sec.

"200. Policy and objective.
"201. Definitions.
"202. Disposition of rights.
"203. March-in rights.
"204. Preference for United States industry.
"205. Confidentiality.
"206. Uniform clauses and regulations.
"207. Domestic and foreign protection of federally owned inventions.
"208. Regulations governing Federal licensing.
"209. Restrictions on licensing of federally owned inventions.
"210. Precedence of chapter.
"211. Relationship to antitrust laws.

35 USC 200

"§200. Policy and objective.

"It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

35 USC 201

"§201. Definitions

"As used in this chapter—

"(a) The term 'Federal agency' means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

"(b) The term 'funding agreement' means any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as herein defined.

"(c) The term 'contractor' means any person, small business firm, or nonprofit organization that is a party to a funding agreement.

"(d) The term 'invention' means any invention or discovery which is or may be patentable or otherwise protectable under this title.

"(e) The term 'subject invention' means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement.

"(f) The term 'practical application' means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are to the extent permitted by law or Government regulations available to the public on reasonable terms.

"(g) The term 'made' when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"(h) The term 'small business firm' means a small business concern as defined at section 2 of Public Law 85–536 (15 U.S.C 632) and implementing regulations of the Administrator of the Small Business Administration.

"(i) The term 'nonprofit organization' means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

35 USC 202

"§202. Disposition of rights

Funding agreement

"(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: *Provided, however,* That a funding agreement may provide otherwise (i) when the funding agreement is for the operation of Government-owned research or production facility, (ii) in exceptional circumstances when it is determined by the agency that restriction or elimination of the right to retain title to any subject invention will better promote the policy and objectives of this chapter or (iii) when it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counterintelligence activities that the restriction or elimination of the right to retain title to any subject invention is necessary to protect the security of such activities. The rights of the nonprofit organization or small business firm shall be subject to the provisions of paragraph (c) of this section and the other provisions of this chapter.

Written determination.

"(b)(1) Any determination under (ii) of paragraph (a) of this section shall be in writing and accompanied by a written statement of facts justifying the determination. A copy of each such determination and justification shall be sent to the Comptroller General of the United States within thirty days after the award of the applicable funding agreement. In the case of determinations applicable to funding agreements with small business firms copies shall also be sent to the Chief Counsel for Advocacy of the Small Business Administration.

Copy to Comptroller General.

Copy to SBA.

Contrary agency determinations

"(2) If the Comptroller General believes that any pattern of determinations by a Federal agency is contrary to the policy and objectives of this chapter or that an agency's policies or practices are otherwise not in conformance with this chapter, the Comptroller General shall so advise the head of the agency. The head of the agency shall advise the Comptroller General in writing within one hundred and twenty days of what action, if any, the agency has taken or plans to take with respect to the matters raised by the Comptroller General.

Report to congressional committees.

"(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

funding agreement requirements.

"(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:

"(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

"(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

"(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.

"(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

"(5) The right of the Federal agency to require periodic reporting on the utilization or efforts at obtaining utilization that are being made by the contractor or his licensees or assignees: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

"(6) An obligation on the part of the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, to include within the specification of such application and any patent issuing thereon, a statement specifying that the invention was made with Government support and that the Government has certain rights in the invention.

"(7) In the case of a nonprofit organization, (A) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor); (B) a prohibition against the granting of exclusive licenses under United States Patents or Patent Applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale or use in one field of use shall not be deemed commercial sale or use as to other fields of use, and a first commercial sale or use with respect to a product of the invention shall not be deemed to end the exclusive period to different subsequent products covered by the invention; (C) a requirement that the contractor share royalties with the inventor; and (D) a requirement that the balance of any royalties or income earned by the contractor with respect to subject inventions, after payment of expenses (including pay-

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ments to inventors) incidental to the administration of subject inventions, be utilized for the support of scientific research or education.

"(8) The requirements of sections 203 and 204 of this chapter.

Rights, retention.

"(d) If a contractor does not elect to retain title to a subject invention in cases subject to this section, the Federal agency may consider and after consultation with the contractor grant requests for retention of rights by the inventor subject to the provisions of this Act and regulations promulgated hereunder.

Rights, transfer or assignment.

"(e) In any case when a Federal employee is a coinventor of any invention made under a funding agreement with a nonprofit organization or small business firm, the Federal agency employing such coinventor is authorized to transfer or assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

Third-party licensing, prohibition.

"(f)(1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this paragraph.

"(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for an agency hearing. Any action commenced for judicial review of such determination shall be brought within sixty days after notification of such determination.

35 USC 203

"§203. March-in rights

"With respect to any subject invention in which a small business firm or nonprofit organization has acquired title under this chapter, the Federal agency under whose funding agreement the subject invention was made shall have the right, in accordance with such procedures as are provided in regulations promulgated hereunder to require the contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the contractor, assignee, or exclusive licensee refuses such request, to grant such a license itself, if the Federal agency determines that such–

"(a) action is necessary because the contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

"(b) action is necessary to alleviate health or safety needs which are not reasonably satisfied by the contractor, assignee, or their licensees;

"(c) action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor, assignee, or licensees; or

"(d) action is necessary because the agreement required by section 204 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 204.

35 USC 204.

"§204. Preference for United States industry

"Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such small business firm or nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

Waiver.

35 USC 205

"§205. Confidentiality

"Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application for patent filed with the United States Patent and Trademark Office or with any foreign patent office.

35 USC 206.

"§206. Uniform clauses and regulations

"The Office of Federal Procurement Policy, after receiving recommendations of the Office of Science and Technology Policy, may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and the Office of Federal Procurement Policy shall establish standard funding agreement provisions required under this chapter.

35 USC 207

"§207. Domestic and foreign protection of federally owned inventions

"Each Federal agency is authorized to–

"(1) apply for, obtain, and maintain patents or other forms of protection in the United States and in foreign countries on inventions in which the Federal Government owns a right, title, or interest;

"(2) grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patent applications, patents, or other forms of protection obtained, royalty-free or for royalties or other consideration, and on such terms and conditions, including the grant to the licensee of the right of enforcement pursuant to the provisions of chapter 29 of this title as determined appropriate in the public interest;

35 USC 281 *et seq*

"(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

"(4) transfer custody and administration, in whole or in part, to another Federal agency, of the right, title, or interest in any federally owned invention.

35 USC 208

"§208. Regulations governing Federal licensing

"The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention, other than inventions owned by the Tennessee Valley Authority, may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

35 USC 209

"§209. Restrictions on licensing of federally owned inventions

Development or marketing plan

"(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has supplied the agency with a plan for development and/or marketing of the invention, except that any such plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

Manufacture in U.S

"(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying the invention or produced through the use of the invention will be manufactured substantially in the United States.

"(c)(1) Each Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a federally owned domestic patent or patent application only if, after public notice and opportunity for filing written objections, it is determined that–

"(A) the interests of the Federal Government and the public will best be served by the proposed license, in view of the applicant's intentions, plans, and ability to bring the invention to practical application or otherwise promote the invention's utilization by the public;

"(B) the desired practical application has not been achieved, or is not likely expeditiously to be achieved, under any nonexclusive license which has been granted, or which may be granted, on the invention,

"(C) exclusive or partially exclusive licensing is a reasonable and necessary incentive to call forth the investment of risk capital and expenditures to bring the invention to practical application or otherwise promote the invention's utilization by the public; and

"(D) the proposed terms and scope of exclusivity are not greater than reasonably necessary to provide the incentive for bringing the invention to practical application or otherwise promote the invention's utilization by the public.

Antitrust factors

"(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

Small business preference.

"(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and equally likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

Antitrust factors.

"(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such license will tend

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substantially to lessen competition or result in undue concentration in any section of the United States in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with antitrust laws.

Record.

"(e) The Federal agency shall maintain a record of determinations to grant exclusive or partially exclusive licenses.

Terms and conditions.

"(f) Any grant of a license shall contain such terms and conditions as the Federal agency determines appropriate for the protection of the interests of the Federal Government and the public, including provisions for the following:

"(1) periodic reporting on the utilization or efforts at obtaining utilization that are being made by the licensee with particular reference to the plan submitted: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code;

"(2) the right of the Federal agency to terminate such license in whole or in part if it determines that the licensee is not executing the plan submitted with its request for a license and the licensee cannot otherwise demonstrate to the satisfaction of the Federal agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

"(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

35 USC 210.

"§210. Precedence of chapter

"(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit organizations contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

"(1) section 10(a) of the Act of June 29, 1935, as added by title I of the Act of Aug. 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);

"(2) section 205(a) of the Act of Aug. 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);

91 Stat. 1320.

"(3) section 501(c) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 951(c); 83 Stat. 742);

"(4) section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1395(c); 80 Stat. 721);

64 Stat. 154.

"(5) section 12 of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a); 82 Stat. 360);

68 Stat. 944.

"(6) section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182, 68 Stat. 943);

"(7) section 305 of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457);

"(8) section 6 of the Coal Research Development Act of 1960 (30 U.S.C. 666; 74 Stat. 337);

"(9) section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b; 74 Stat. 920);

"(10) section 32 of the Arms Control and Disarmament Act of 1961 (22 U.S.C. 2572; 75 Stat. 634);

"(11) subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C. App. 302(e); 79 Stat. 5);

88 Stat. 1887.
42 USC 5908.

"(12) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901); 88 Stat. 1878);

"(13) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 86 Stat. 1211);

"(14) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);

"(15) section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c); 90 Stat. 2829);

"(16) section 219 of the Foreign Assistance Act of 1961 (22 U.S.C. 2179; 83 Stat. 806);

"(17) section 427(b) of the Federal Mine Health and Safety Act of 1977 (30 U.S.C. 937(b); 86 Stat. 155);

"(18) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);

"(19) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);

"(20) section 6(b) of the Solar Photovoltaic Energy Research Development and Demonstration Act of 1978 (42 U.S.C. 5585(b); 92 Stat. 2516);

7 USC 178j.

"(21) section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178(j); 92 Stat. 2533); and

92 Stat. 1316.

"(22) section 408 of the Water Resources and Development Act of 1978 (42 U.S.C. 7879; 92 Stat. 1360).

The Act creating this chapter shall be construed to take precedence over any future Act unless that Act specifically cites this Act and provides that it shall take precedence over this Act.

"(b) Nothing in this chapter is intended to alter the effect of the laws cited in paragraph (a) of this section or any other laws with respect to the disposition of rights in inventions made in the performance of funding agreements with persons other than nonprofit organizations or small business firms.

Rights, disposition

"(c) Nothing in this chapter is intended to limit the authority of agencies to agree to the disposition of rights in inventions made in the performance of work under funding agreements with persons other than nonprofit organizations or small business firms in accordance with the Statement of Government Patent Policy issued on Aug. 23, 1971 (36 Fed. Reg. 16887), agency regulations, or other applicable regulations or to otherwise limit the authority of agencies to allow such persons to retain ownership of inventions. Any disposition of rights in inventions made in accordance with the Statement or implementing regulations, including any disposition occurring before enactment of this section, are hereby authorized.

Disclosure

"(d) Nothing in this chapter shall be construed to require the disclosure of intelligence sources or methods or to otherwise affect the authority granted to the Director of Central Intelligence by statute or Executive order for the protection of intelligence sources or methods.

35 USC 211.

"§211. Relationship to antitrust laws

"Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law."

(b) The table of chapters for title 35, United States Code, is amended by adding immediately after the item relating to chapter 37 the following:

"38. Patent rights in inventions made with Federal assistance."

SEC. 7. AMENDMENTS TO OTHER ACTS.—The following Acts are amended as follows:

(a) Section 156 of the Atomic Energy Act of 1954 (42 U.S.C. 2186; 68 Stat. 947) is amended by deleting the words "held by the Commission or".

(b) The National Aeronautics and Space Act of 1958 is amended by repealing paragraph (g) of section 305 (42 U.S.C. 2457(g); 72 Stat. 436).

(c) The Federal Nonnuclear Energy Research and Development Act of 1974 is amended by repealing paragraphs (g), (h), and (i) of section 9 (42 U.S.C. 5908 (g), (h), and (i); 88 Stat. 1889–1891).

Effective dates.

SEC. 8. (a) Sections 2, 4, and 5 of this Act will take effect upon enactment.

35 USC 41 note

(b) Section 1 of this Act will take effect on the first day of the seventh month beginning after its enactment and will apply to patents in force as of that date or issued thereafter.

(c) Section 3 of this Act will take effect on the first day of the first fiscal year beginning on or after one calendar year after enactment. However, until section 3 takes effect, the Commissioner may credit the Patent and Trademark Office appropriation account in the Treasury of the United States with the revenues from collected reexamination fees, which will be available to pay the costs to the Office of reexamination proceedings.

(d) Any fee in effect as of the date of enactment of this Act will remain in effect until a corresponding fee established under section 41 of title 35, United States Code, or section 1113 of title 15, United States Code, takes effect.

(e) Fees for maintaining a patent in force will not be applicable to patents applied for prior to the date of enactment of this Act.

(f) Sections 6 and 7 of this Act will take effect on the first day of the seventh month beginning after its enactment. Implementing regulations may be issued earlier.

(g) Sections 8 and 9 will take effect on the date of enactment of this Act.

Computerized data and retrieval system, report to Congress
35 USC 14 note

SEC. 9. The Commissioner of Patents and Trademarks shall report to Congress, within two years after the effective date of this Act, a plan to identify, and if necessary develop or have developed, computerized data and retrieval systems equivalent to the latest state of the art which can be applied to all aspects of the operation of the Patent and Trademark Office, and particularly to the patent search file, the patent classification system, and the trademark search file. The report shall specify the cost of implementing the plan, how rapidly the plan can be implemented by the Patent and Trademark Office, without regard to funding which is or which may be available for this purpose in the future.

SEC. 10. (a) Section 101 of title 17 of the United States Code is amended to add at the end thereof the following new language:

"Computer program."

"A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."

(b) Section 117 of title 17 of the United States Code is amended to read as follows:

17 USC 117.

"§117. Limitations on exclusive rights: Computer programs

17 USC 106

"Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

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"(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or

"(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

"Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner."

Approved Dec. 12, 1980.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 96-1307, Pt. I (Comm. on the Judiciary) and No. 96-1307, Pt. 2 (Comm. on Government Operations).

CONGRESSIONAL RECORD, Vol. 126 (1980):

Nov. 17, considered and passed House.

Nov. 20, considered and passed Senate, amended.

Nov. 21, House concurred in Senate amendment.

(68)

Public Law 97-247
97th Congress
An Act

To authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That there is authorized to be appropriated for the payment of salaries and necessary expenses of the Patent and Trademark Office to become available for fiscal year 1983, $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary as well as such additional or supplemental amounts as may be necessary, for increases in salary, pay, retirement, or other employee benefits authorized by law. Funds available under this section shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of title 35, United States Code, by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration. When so specified and the the extent provided in an appropriation Act, any amount appropriated pursuant to this section and, in addition, such fees as shall be collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), may remain available without fiscal year limitation. 15 USC 632.

SEC. 2. Notwithstanding any other provision of law, there is authorized to be appropriated for the payment of salaries and expenses of the Patent and Trademark Office, $121,461,000 for the fiscal year ending September 30, 1982, and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

SEC. 3. (a) Section 41(a) of title 35, United States Code, is amended to read as follows: Fees.

"(a) The Commissioner shall charge the following fees:

"1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner. 35 USC 112

"2. For issuing each original or reissue patent, except in design or plant cases, $500.

"3. In design and plant cases:

"a. On filing each design application, $125.

"b. On filing each plant application, $200.

"c. On issuing each design patent, $175.

"d. On issuing each plant patent, $250.

"4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30. for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

"5. On filing each disclaimer, $50.

"6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

"7. On filing each petition for the revival of an unintentionally abondoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50. 35 USC 133, 151

"8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

"a. On filing a first petition, $50.

"b. On filing a second petition, $100.

"c. On filing a third or subsequent petition, $200.".

(b) Section 41(b) of title 35, United States Code, is amended to read as follows: Maintenance fees.

"(b) The Commissioner shall charge the following fees for maintaining a patent in force:

"1. Three years and six months after grant, $400.

"2. Seven years and six months after grant, $800.

"3. Eleven years and six months after grant, $1,200.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an application maintenance fee. No fee will be established for maintaining a design or plant patent in force." Expiration. Surcharge

(c) Section 41(c) of title 35, United States Code, is amended to read as follows:

"(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period. Maintenance fee, delayed payment. Surcharge

"(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection."

(d) Section 41(d) of title 35, United States Code, is amended to read as follows:

"(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 113 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50." Fees. 35 USC 13

(e) Section 41(f) of title 35, United States Code, is amended to read as follows:

"(f) The fees established in subsections (a) and (b) of this section may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occuring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored,". Adjusted fees.

(f) Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended by deleting "Fees will be set and adjusted by the Commissioner to recover the aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or funished the material.".

(g) Section 42(c) of the title 35, United States Code, is amended by adding the following sentence at the end thereof: "Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.".

SEC. 4. Section 3(a) of title 35, United States Code is amended (1) by deleting the phrase "not more than fifteen"; and (2) by inserting the phrase "appointed under section 7 of this title" immediately after the phrase "examiners-in-chief".

SEC. 5. Section 111 of title 35, United States Code, is amended to read as follows:

"SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this Applications

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35 USC 112.
35 USC 113.
35 USC 115

title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by secti115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.".

Filing date

SEC. (a) Section 116 of title 35, United States Code, is amended (1) by deleting the phrase "Joint inventors" from the title and inserting in its place "Inventors"; and (2) in the third paragraph, by deleting the phrase "a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error" and inserting in its place the phrase "through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application".

(b) Section 256 of title 35, United States Code, is amended to read as follows:

"§256. Correction of named inventor

"Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

"The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.".

SEC. 7. Section 6 of the title 35, United States Code, is amended by deleting paragraph (d) thereof.

SEC. 8. (a) Section 8(a) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(a)), is amended (a) by deleting the word "still"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

(b) Section 8(b) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(b)), is amended (1) by deleting the word "stille"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

SEC. 9. (a) Section 13 of the Trademark Act of 1946, as amended (15 U.S.C. 1063), is amended (1) by deleting the phrase "a verified" and inserting in its place the word "an"; (2) by adding the phrase "when requested prior to the expiration of an extension" immediately after the word "cause"; and (3) by deleting the fourth sentence.

(b) Section 14 of the Trademark Act of 1946, as amended (15 U.S.C. 1064), is amended by deleting the word "verified".

SEC. 10. Section 15 of the Trademark Act of 1946, as amended (15 U.S.C. 1065), is amended by deleting the phrase "the publication" and inserting in its place the word "registration".

SEC. 11. The first sentence of section 16 of the Trademark Act of 1946, as amended (15 U.S.C. 1066), is amended to read as follows: "Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive.".

SEC. 12. Section 21 of title 35, United States Code, is amended–

(1) by deleting the phrase "Day for taking action falling on Saturday, Sunday, or holiday" from the title and inserting in its place the phrase "Filing date and day for taking action";

(2) by inserting the following as subsection (a):

Filing date.

"(a) The Commissioner may be rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.";

(3) by designating the existing paragraph as subsection (b); and

(4) by inserting the word "federal" in subsection (b), as designated above, immediately after the word "a".

SEC. 13. Section 6(a) of title 35, United States Code, is amended (1) by deleting the word "and", third occurrence, and inserting in its place a comma; (2) by inserting the phrase ", or exchanges of items or services" immediately after the word "programs"; and (3) by inserting the phrase "or the administration of the Patent and Trademark Office" immediately after the word "law", second occurrence.

SEC. 14. (a) Section 115 of title 35, United States Code, is amended by (1) deleting the phrase "shall be" and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(b) Section 261 of title 35, United States Code, is amended, in the third paragraph, by inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(c) Section 11 of the Trademark Act of 1946, as amended (15 U.S.C. 1061), is amended by (1) deleting the phrase "shall be", first occurrence, and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

SEC. 15. Section 13 of title 35, United States Code, is amended by deleting "(a)9" and inserting in its place "(d)".

SEC. 16. Section 173 of title 35, United States Code, is amended to read as follows: "Patents for designs shall be granted for the term of fourteen years."

Effective dates
35 USC 41 note

SEC. 17. (a) Sections 1, 2, 4, 7, and 13 through 15 of this Act shall take effect on the date of enactment of this Act. Sections 3 and 16 of this Act shall take effect on Oct. 1, 1982. The maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act. Each patent applied for on or after the date of enactment of this Act shall be subject to the maintenance fees established pursuant to section 3(b) of this Act or to maintenance fees hereafter established by law, as to the amounts paid and the number and timing of the payments.

(b)(1) Title 35, United States Code, is amended by inserting after section 293 the following new section of chapter 29:

§294. Voluntary arbitration

"(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

Awards
9 USC 1 *et seq*

"(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

35 USC 282

"(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

Modification

"(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall, upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

Notices.

Modification

"(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner."

(2) The analysis for chapter 29 of title 35 of the United States Code is amended by adding at the end the following:

"294. Voluntary arbitration.".

(c) Sections 5, 6, 8 through 12, and 17(b) of this Act shall take effect six months after enactment.

Approved Aug. 27, 1982.

LEGISLATIVE HISTORY—H.R. 6260

HOUSE REPORT No. 97-542 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 128 (1982):
June 8, considered and passed House.
Aug. 12, considered and passed Senate.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 18, No. 36 (1982):
Aug. 28, Presidential statement.

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(69) 97TH CONGRESS HOUSE OF REPRESENTATIVES REPORT

2d Session No. 97-542

PATENT AND TRADEMARK OFFICE AUTHORIZATION

May 17, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. KASTENMEIER, from the Committee on the Judiciary, submitted the following

REPORT

[To accompany H.R. 6260]

[Including cost estimate of the Congressional Budget Office]

The Committee on the Judiciary, to whom was referred the bill (H.R. 6260) to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment strikes out all after the enacting clause of the bill and inserts a new text which appears in italic type in the reported bill.

PURPOSE OF THE BILL

The purpose of H.R. 6260 is to authorize appropriations for the Patent and Trademark Office for fiscal years 1983 through 1985.

STATEMENT

The Subcommittee on Courts, Civil Liberties and the Administration of Justice previously held two days of hearings on the legislation, receiving testimony from a representative group of witnesses including the Commissioner of Patents and Trademarks, the American Bar Association Section of Patent, Trademark and Copyright Law, the American Patent Law Association, the Patent, Trademark and Copyright Section of the State Bar of Virginia, the United States Trademark Association and the General Patent Counsel of the General Electric Corporation.

H.R. 6260 reflects the recommendation of the Administration with three modifications as follows. First, the Administration proposal authorized the Commissioner of Patents and Trademarks to establish fees administratively. The subcommittee approved an amendment to set forth specific fees in the statute and limited the Commissioner's authority to raise fees. Second, the Administration recommended that user fees recover 100% of the costs of actual processing of patents and trademarks. The subcommittee amended the bill to reduce by 50% patent filing and maintenance fees for individual inventors, small businesses and not for profit institutions. The effect of the amendment is to increase by $8 million the authorized appropriation which would have been provided under the original Administration request. Third, the subcommittee adopted a recommendation of the Commissioner of Patents and Trademarks, the American Bar Association and a coalition of corporate patent counsel permitting arbitration of patent disputes.

H.R. 6260 was considered by the Full Committee on the Judiciary on May 11, 1982 and was approved as reported by the subcommittee with an amendment offered by Mr. Frank described below.

SYNOPSIS OF H.R. 6260

SECTIONS 1—3

Authorizes the Patent and Trademark Office for fiscal year 1983 at an appropriations level of $76,000,000 and for fiscal years 1984 and 1985 such sums as may be necessary. This would be augmented by additional fee income under the bill of approximately $79 million for a total budget of $155 million. In fiscal year 1982 the Patent and Trademark Office was authorized at a level of $118,961,000 of which $29,600,000 was provided through fee income. Fiscal year 1983 will be the first year in which fee income under P.L. 96-517 will be credited to the Patent and Trademark Office without being counted as part of its authorized appropriation. Had this new accounting procedure been applied to fiscal year 1982 the authorization and appropriation for the Patent and Trademark Office would have been $89 million. This constitutes the actual level of taxpayer support of the Office. Thus, H.R. 6260 authorizes the expenditure of tax revenue in fiscal 1983 to support the Patent and Trademark Office at a level $21 million lower than for fiscal 1982. H.R. 6260 proposes to double current fees as the means of making up for the difference between a lower level of taxpayer support and an increased total budget. Further, maintenance fees which were first authorized in P.L. 96-517 and which will not begin to be collected until fiscal year 1986 (Oct. 1, 1985) will also be doubled over the amounts provided for under P.L. 96-517.

The overall objective of H.R. 6260 is to provide for increased user support for the Patent and Trademark Office costs associated with the actual processing of patent applications by fiscal year 1996. The fee schedule is designed to return to the government 100% of actual costs. However, an amendment to the original Administration proposal adopted by the subcommittee would reduce by half the fees for individuals, small businesses and nonprofit inventors. At the present time less than 25% of the actual costs of processing patent applications are supported by fee revenue and under P.L. 96-517, which becomes effective on

Oct. 1, 1982, this amount will gradually begin to rise but will only reach 50% of actual costs in 1996.

The amendment offered by Mr. Frank and approved by the Committee modifies that portion of Section 3 of H.R. 6260 dealing with Trademark fees. Public Law 96-517 (35 United States Code, section 31(a)) provides, "Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost. . .of performing the service or furnishing the material."

The Administration requested that the figure, "50 per centum", be changed to "100 per centum", thus mandating full recovery to the Treasury of all costs associated with processing trademarks.An amendment offered during subcommittee consideration of the legislation proposed to reduce fee generated revenue supporting processing of trademarks to less than the 100 per centum recovery level. The amendment was not agreed to. The author of the amendment, Mr. Frank, then proposed to amend the law to provide a statutory fee schedule which would return revenue to the Patent and Trademark Office at a level designed to recover 100 per centum of costs. However, following consultations with interested parties, Mr. Frank modified his amendment simply to repeal those portions of P.L. 96-517 which mandate a specified level of cost recovery for the processing of trademark registrations. Thus, the level of cost recovery for processing of trademark registrations will be within the discretion of the Commissioner. The Committee is aware of the concerns of users of the Trademark registration system, however, and intends to exercise vigorous oversight with respect to the Commissioner to ensure that fees remain at a reasonable level and that trademark registrations are processed in an efficient and cost effective manner. As part of this oversight, the Committee recommends the following fee structure to the Commissioner for Fiscal Year 1983.

Type of fee:	*Proposed fee*
Application filing fee per class	$175
Renewal fee	300
Late renewal	100
Section 12(c) claim	100
New certificate	100
Certificate of correction	100
Disclaimer to registration	100
Amendment to registration	100
Per class combines section 8 and 15 affidavit	200
Per class section 8 affidavit alone	100
Per class section 15 affidavit alone	100
All petitions to Commissioner	100
Cancellation opposition per class	200
TTAB appeal	100
Certified copies	10
Copies of trademarks	1
Assignments	(1)

[1]100 plus for each mark in addition to 1.

Section 3(d) also permits the Commissioner of Patents to accept late payment of maintenance fees where it is established that the delay in payment was unavoidable.

Section 4 permits the Commissioner of Patents and Trademarks to appoint temporary examiners in chief for the Board of Patent Appeals to deal more flexibly with workload.

Section 5 permits late filing of the oath and fee accompanying submission of specifications and drawings which accompany patent claims.

Section 6 permits greater flexibility in correcting mistakes in the naming of inventors on a patent application.

Section 7 allocates funds from the Patent and Trademark Office to the Department of State to pay the financial obligations of administering the patent Cooperation Treaty.

Section 8 clarifies the Trademark law with respect to what constitutes use of a mark "in commerce".

Section 9 deletes the burdensome technical requirement that trademark oppositions be verified.

Section 10 makes the date of registration rather than the date of publication the crucial date for purposes of establishing the incontestability of a trademark. This eliminates an ambiguity in the present law.

Section 11 limits the declaration of interferences under the trademark law to situations where extraordinary circumstances exist.

Section 12 authorizes the Commissioner of the Patent and Trademark Office the flexibility to deal with problems of delay in filing due to postal service breakdowns.

Section 13 permits the Commissioner of Patents to enter into cooperative studies, programs, exchanges and similar ventures associated with the administration of the Patent Office.

Section 14 conforms U.S. Patent and Trademark Law to a recent international treaty governing diplomatic or consular legalization of documents.

Section 15 corrects a mistaken citation in P.L. 96-517.

Section 16 creates a uniform term for design patents.

Section 17 establishes the effective dates for provisions of the Act. Increased filing fees would apply to all applications made on or after the date of enactment of H.R. 6260.

Section 18 permits voluntary arbitration of patent disputes.

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SECTION-BY-SECTION ANALYSIS

SECTION 1

This section authorizes appropriations for the Patent and Trademark Office for the payment of salaries and necessary expenses of the Office. For Fiscal Year 1983, this section authorizes appropriations of $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary, as well as such additional and supplemental amounts as may be necessary to cover any increases in salary, pay, retirement, or employee benefits which may be authorized by law. Funds made available by these appropriations are to be used to reduce by 50 per centum the amount of the fees to be paid under title 35, United States Code, section 41(a) and (b) by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration.

In addition, fees collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), will augment the authorized appropriation to provide the resources needed to conduct the operations of the Office for fiscal year 1983. The total resources for the Office in fiscal year 1983, that is, the amount appropriated pursuant to this section plus fees collected pursuant to the patent and trademark laws, which will be available to the Office, are estimated to be $154,934,000. The corresponding levels for fiscal year 1984 and fiscal year 1985 are estimated in the President's Budget to be $167 million and $176 million, respectively. Any additional amounts to cover increases in salary, pay, retirement, or other employee benefits which may be authorized by law will be in addition to, and will therefore increase, those program levels. Finally, any funds appropriated pursuant to this section and all fees collected, when specified in an appropriation act, will remain available without any fiscal year limitation.

SECTION 2

This section provides that, notwithstanding any other provision of law, there is authorized to be appropriated to the Patent and Trademark Office for fiscal year 1982, $121,461,000 and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law. This section increases the amount authorized for the Patent and Trademark Office by 2.5 million over that authorized in Public law 97-35. The President is recommending a supplemental appropriation of $2,500,000 for the Patent and Trademark Office for fiscal year 1982 in order to carry out the program recommendations included in his fiscal year 1983 Budget.

SECTION 3

This section establishes certain statutory fees which are to be charged by the Commissioner and authorizes the Commissioner to establish other fees whose amounts are not specifically set. Thus, the major routine fees which are applicable to patents and patent application processing are established (e.g., filing, issuance, and maintenance fees). The Commissioner is authorized to establish fees for all other processing, services, or materials related to patents which are not specifically established by statute. The processing and service fees, which would be established at a level to recover the estimated average costs to the Office. A more specific discussion of the various provisions of this section is set forth below.

Section 3(a) amends section 41(a) of title 35 to provide the amounts of the fees for filing and issuance of patent applications. In addition, the section includes provisions for increasing the filing fees due to increased complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. The section also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under section 41(a)1, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of title 35, United States Code, or any claim depending therefrom, will be considered as separate dependent claims in accordance with the number of claims to which reference is made. Under the section, errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner. This will enable the Commissioner to establish regulations whereby patent applications may correct, without prejudice, errors in payment of the additional fees, i.e., those in addition to the basic fees established.

Under section 41(a)2, the fee for issuing all original and reissue patents, except in design or plant cases, would be a uniform amount of $500. No supplemental issue fees are required.

Section 41(a)3 establishes fixed fees for filing applications for, and issuance of design and plant patents. For design patent cases, the filing fee would be $200 and the issue fee $250.

Section 41(a)4 relates to fees in reissue cases and establishes a fee of $300 for filing each application for the reissue of a patent. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 is due for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of

claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

Under section 41(a)5, a fee of $50 would be established for filing each disclaimer in a patent or patent application.

Section 41(a)6 establishes a fee due on filing an appeal from the examiner to the Board of Appeals of $115. In addition, a fee of $115 is due on filing a brief in support of the appeal, and a fee of $100 is due for requesting an oral hearing before the Board of Appeals.

Section 41(a)7 establishes two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees are applicable to petitions to accept the delayed payment of the fee for issuing a patent. The fees set forth in this section are due on filing the petition. Since the section provides for two alternative fees with different standards, the section would permit the applicant seeking revival or acceptance of a delayed payment of the fee for issuing a patent to choose one or the other of the fees and standards under such regulations as the Commissioner may establish. Under the section the Commissioner could establish time limits within which petitions under each of the different fees and standards can be filed. The section establishes a fee of $500 for filing each petition for revival or for acceptance of the delayed payment of an issue fee where the abandonment or the failure to pay the issue fee is unintentional. In order to prevent abuse and injury to the public the Commissioner could require a terminal disclaimer equivalent to the period of abandonment and could require applicants to act promptly after becoming aware of the abandonment. The section establishes a fee of $50 for filing a petition under sections 133 or 151 of title 35 in accordance with standards presently in effect requiring that the delay resulting in the abandonment, or the delay in payment of the issue fee, be unavoidable. Under this section a petition accompanied by either a fee of $500 or a fee of $50 would not be granted where the abandonment or the failure to pay the fee for issuing the patent was intentional as opposed to being unintentional or unaviodable. This section would permit the Commissioner to have more discretion than present law to revive abandoned applications and accept late payment of the fee for issuing a patent in appropriate circumstances.

Section 41(a)8 establishes fees for filing of petitions for extensions of time. Various time periods are set by the Office for taking actions on matters relating to patent applications. These time periods are set pursuant to statute or by regulations established by the Commissioner under the authority granted to the Commissioner by statute. This section would provide for fees for filing petitions to extend the time periods set pursuant to statute or by regulations for taking action within any limitations set by statute.

A fee of $50 is established for filing a request for a first one month extension of time, an additional fee of $100 for filing a request for a second one month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a request for a third one month extension of time which would expire three months after the end of the time period set for taking action. A subsequent or fourth extension could be requested if additional time was available under the statute. In no case could a period be extended beyond the maximum time set by statute.

The Commissioner may issue regulations providing when, within any maximum period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. This section does preclude the Commissioner from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause.

Section 41(b) provides that the Commissioner charge the following fees for maintaining a patent other than a design or plant patent, in force: at three years and six months after grant, $400; at seven years and six months after grant, $800; and at eleven years and six months after grant, $1,200. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace priod the late payment of a maintenance fee.

In order to avoid an inequitable loss of patent rights, the Commissioner is given the authority to accept payment of any maintenance fee after the six-month grace period if it is established that the delay in payment was unavoidable. It is intended that the Commissioner will issue regulations establishing guidelines for acceptance of late payment. After the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable. A surcharge may be imposed by the Commissioner as a precondition to acceptance of a late fee. This surcharge may be in addition to any surcharge imposed for payment during the grace period.

A provision is included to protect the rights of one who began using or who took steps to begin use of a patent which expired for failure to pay a maintenance fee and which was subsequently reestablished by acceptance of the late payment. The intervening rights provision in section 41(c)(2) is similar to the intervening rights provision in 35 U.S.C. 252 concerning reissued patents.

Section 41(d) provides that the Commissioner establish fees for all other processing services, or materials related to patents not specified in section 41 at an amount calculated to recover the estimated average cost to the Office of such processing, services, or materials. Such processing and other services includes, but is not limited to, the processing of various petitions desiring certain actions to be taken regarding patent applications, recording of assignments, reexamination of patents and the processing of international applications. Fees for materials include the price of patent copies, certifications and other copying services. The yearly fee for providing a library specified in section 13 of title 35 with uncertified copies of the specifications and drawings for all patents issued in that year is set at $50.

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Section 41(f) provides that the fees established in subsections (a) and (b) of section 41 may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than one per centum may be ignored by the Commissioner in making such adjustments.

Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is being changed to grant the Commissioner discretion to establish the level of recovery of office costs related to trademarks. It is expected that the Commissioner will set the fees in a way that the filing fee will be kept as low as possible to foster use of the Federal registration system. This may require that other fees for services or materials related to trademarks recover more than their actual estimated cost in order that the Commissioner achieve in the aggregate adequate cost recovery for the entire trademark operation.

A provision is inserted in section 42(c) of title 35 in order to ensure that the trademark fees collected are used to fund trademark operations only and not the processing of patent applications.

SECTION 4

Section 3 of title 35 is amended by deleting specific reference to the number of examiners-in-chief in the first sentence. Elimination of the upper limit on the number of permanent members of the Board of Appeals would provide greater flexibility in filling most of its personnel needs, thereby avoiding an excess of examiner details. The authority to appoint acting examiners-in-chief, however, is maintained in order that temporary fluctuations in the workload of the Board may be accommodated.

SECTION 5

Under revised section 111 of title 35, the filing date of an application would be that on which the specification and any required drawings are received by the Patent and Trademark Office. The oath or declaration and filing fee could be submitted at such later time as established by the Commissioner, without any loss of the original filing date. Under the amendment, an applicant could either file the oath or declaration (including the applicant's signature) and fee together with an application or submit them at a later time as determined by the Commissioner.

The section would also authorize the imposition of a surcharge as a condition for accepting filing of the oath of payment of the filing fee after the filing date of the application. Since an application filed without the oath or declaration would not be signed or "made" by the applicant, the amendment permits a patent attorney or agent, authorized by the applicant, to submit the specification and drawings for the purpose of obtaining a filing date. Should the applicant, however, fail to file the oath or declaration, or pay the filing fee within the time limits set by the Commissioner, the application would be regarded as having been abandoned.

SECTION 6

The third paragraph of section 116 of title 35 is amended to enlarge the possibilities for correcting misnamed inventive entities. As a consequence, correction would be permitted also in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Commissioner would have the authority to substitute the true inventor for the erroneously named person. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to a different, but actual, joint inventors, conversions from erroneously identified joint inventors to different but actual, joint inventors, and conversions from erroneously identified joint inventors to a different, but actual, sole inventor would also be permitted. In each instance, however, the Commissioner must be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name.

The ability to receive a filing date based on a specification and drawings without signature as set forth in revised section 111 of title 35, and to file the oath or declaration and pay the filing fee within such period as determined by the Commissioner is also available to joint inventors.

Section 256 of title 35, which is a companion to section 116, would be amended to similarly enlarge the possibilities for correction of misnamed inventors in issued patents.

SECTION 7

Section 6(d) of title 35, which provides for the allocation of appropriated Patent and Trademark Office funds to the Department of State for payment of United States financial obligations under the Patent Cooperation Treaty, is deleted. The Department of State has traditionally assumed responsibility for financial obligations for international agreements to which the United States adheres.

SECTION 8

Section 8(a) of the Trademark Act is amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission of the words "in commerce" may have been inadvertent in the 1946 Act, this section has been interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" . Although it is believed by some that omission of the words " in commerce" may have been inadvertent in the 1946 Act, this section has interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" for registrations published under section 12(c) of the Act. (This pertains to registrations issued under the Act of Mar. 3, 1881 and the Act of Feb. 20, 1905).

The word "still" has been deleted from section 8(a) and 8(b). Thus, the owner of a registration issued on the basis of a foreign registration under the provisions of section 44(e) of the Act will have to submit an affidavit to the effect that the mark is in use in commerce. Since the mark need not be used in commerce when it is registered, the requirement cannot be required to state that it is "still" in such use.

SECTION 9

Section 13 of the Trademark Act is amended to delete the requirement that an opposition be verified. The sentence which allowed an unverified application to be verified at a later date has been deleted. In addition, a phrase has been added to make it clear that any subsequent extension of time to file an opposition, beyond the first extension, must be requested before the end of the preceding extension.

Section 14 of the Trademark Act would also be amended to delete the requirement that a petition to cancel a registration be verified.

SECTION 10

Section 15 of the Trademark Act is amended to change the term "the publication" to "registration" in the first sentence. This change makes the date of registration rather than the date of publication the crucial date for purposes of incontestablility. It will also make section 15 consistent with sections 22 and 33 of the Act.

SECTION 11

Section 16 of the Trademark Act is amended to limit the declaration of interferences to those situations where a petition to the Commissioner shows that extraordinary circumstances exist, the rights of the parties can be determined adequately by the existing opposition and cancellation procedures. Additionally, if an interference is declared between an application and a registration and the applicant wins, a cancellation must still be initiated against the registration.

SECTION 12

A new subsection (a) has been added to section 21 of title 35 to authorize, but not to require, the Commissioner of Patents and Trademarks to give as the filing date of any paper or fee which is required to be filed in the Patent and Trademark Office the date on which the paper or fee was deposited with the United States Postal Service. The Commissioner may also give as the filing date of any paper or fee which was required to be filed in the Patent and Trademark Office the date it would have been deposited with the United States Postal Service but for postal service interruptions or emergencies which the Commissioner designates. The requirements governing whether any given paper or fee may be given the filing date of the day on which it was, or would have been deposited with the United States Postal Service will be set forth in regulations established by the Commissioner.

Section 21(b) of title 35 is identical to existing section 21 with two minor amendments. The word "federal" has been inserted before the phrase "holiday within the District of Columbia" to clarify the nature of the holiday.

SECTION 13

This section clarifies the authority of the Commissioner in section 6(a) of title 35 to enter into a wide range of cooperative agreements concerning the patent and trademark laws or the administration of the Patent and Trademark Office. These agreements are in addition to the exchange of publications authorized in 35 U.S.C. 11(b) and 12. These cooperative agreements may take the form of studies, programs, exchanges, and other similar ventures. Thus, the Patent and Trademark Office could, for example, exchange patent copies, non-patent literature, tapes or services in return for goods or services of value to the Patent and Trademark Office.

SECTION 14

The amendments of 35 U.S.C. 115 and Section 11 of the Trademark Act of 1946 recognize the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" which entered into force in the United States on Oct. 15, 1981. The Convention abolishes the requirement of diplomatic or consular legalization for foreign public documents which are sworn to or acknowledged by a notary public in any of the countries adhering to the Convention. For documents executed by a notary public of all other for-

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eign countries, diplomatic or consular legalization will still be required.

The amendment of 35 U.S.C. 261 is intended to give affirmative effect to acknowledgments executed pursuant to the Hague Convention.

SECTION 15

This section corrects an incorrect citation. Public Law 96–517 amended section 41 of title 35, United States Code, in a way which eliminated 35 U.S.C. §41(a)(9). Unfortunately, section 13 of title 35, United States Code, was not amended accordingly by Public Law 96–517. This section corrects that oversight.

SECTION 16

This section sets a uniform term of fourteen years for all design patents.

SECTION 17

Sections 17(a) and (c) specify the effective dates of the Act. Section 17(a) also specifies that the maintenance fees provided for in section 3(b) of this Act will only apply to patents in which the application was filed on and after the date of enactment or to maintenance fees later established by law.

Section 17(b) adds a section to title 35 providing for the voluntary arbitration of patent disputes by the parties to the dispute. The section requires that the Commissioner be notified in writing of an award made by an arbitrator or modified by a court. Such notification will be entered in the record of the prosecution of the patent.

At present, agreements to arbitrate some aspects of disputes arising under patent licenses are enforceable by the courts; however, there have been court decisions that have disapproved arbitration of disputes concerning patent validity or infringement. In this regard, see, for example, *Zip Mfg. Co.* v. *Pep Mfg. Co.* 44 F.2d 184, 7 U.S.P.Q. 62 (D. Del. 1930) and *Beckman Instruments, Inc.* v. *Technical Developments Corp.* 433 F.2d 55, 167 U.S.P.Q. 10 (7th Cir. 1965).

Partly as a reaction to those decisions, during the 93rd Congress both the Department of Commerce and the Department of Justice endorsed a provision specifically authorizing arbitration of validity and infringement disputes. This provision, included in an omnibus patent law revision bill, S. 2504, was never enacted due tot he many controversial aspects of that legislation.

In the view of the Committee, a statutory authorization of voluntary agreements to arbitrate validity and infringement disputes would benefit both the parties to these disputes and the public.

Statutory endorsement of arbitration agreements would assure the parties that they could avail themselves of the numerous advantages of arbitration without the possibility of having to reargue the dispute in court. The advantages of arbitration are many: it is usually cheaper and faster than litigation; it can have simpler procedural and evidentiary rules; it normally minimizes hostility and is less disruptive of ongoing and future business dealings among the parties; it is often more flexible in regard to scheduling of times and places of hearings and discovery devices; and, arbitrators are frequently better versed than judges and juries in the area of trade customs and the technologies involved in these disputes.

The enforcement of voluntary arbitration provisions would serve the public in two ways. First, the availablity of arbitration with its numerous advantages will enhance the patent system and thus will encourage innovation. This view is supported by the Committee for Economic Development in their Jan. 1980 statement entitled "Stimulating Technological Progress." Secondly, arbitration could relieve some of the burdens on the overworked Federal courts. Chief Justice Burger in his speech to the American Bar Association on Jan. 24, 1982, generally endorsed the use of arbitration to reduce the judicial backlog. Also, I think it is important to note that the American Bar Association's Section on Patent, Trademark and Copyright Law has endorsed court enforcement of arbitration agreements calling for arbitration of validity and infringement.

The recommendations of the Secretary of Commerce to increase substantially patent and trademark user fees were made on the promise that such increases "will lay the groundwork for revitalizing the patent and trademark systems." The Secretary committed to three major goals: (1) to reach an average patent application pendency time of 18 months by FY 1987, (2) to issue an examiner's first action on trademark registrability in three months and disposal of an application within 13 months, and (3) to move realistically toward a fully automated Office by the 1990's. In accepting the Administration's recommendations on user fees, the Committee fully expects the Administration to live up to its end of the bargain to bring about a first-class Patent and Trademark Office. To provide an opportunity for timely and effective Committee oversight of progress toward improving the Patent and Trademark Office, the Committee directs that the Secretary of Commerce report annually to the Committee on progress toward achieving the three major goals of the Patent and Trademark Office, as outlined above, and, in addition, promptly inform the Committee at any time it appears that any of the goals, for any reason, is viewed as not attainable.

OVERSIGHT STATEMENT

The Committee on the Judiciary has oversight responsibility over the Patent and Trademark Office in the Department of Commerce. In addition to its ongoing oversight, the Committee's Subcommittee on Courts, Civil Liberties and the Administration of Justice held an oversight hearing with respect to the Patent and Trademark Office on Mar. 4,

1981, published as Oversight Hearings Before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the Committee on the Judiciary, House of Representatives, Ninety-Seventh Congress, First Session on the Copyright Office, The U.S. Patent and Trademark Office, and the Copyright Royalty Tribunal. Serial No. 17.

The Committee expects to continue its oversight activities in this area.

STATEMENT OF THE BUDGET COMMITTEE

No statement has been received on H.R. 6260 from the House Committee on the Budget.

STATEMENT OF THE CONGRESSIONAL BUDGET OFFICE

Pursuant to clause 7, rule XIII of the Rules of the House of Representatives and section 403 of the Congressional Budget Act of 1974, the following is the cost estimate of H.R. 6260, as amended, prepared by the Congressional Budget Office.

U.S. CONGRESS
CONGRESSIONAL BUDGET OFFICE,
Washington, D.C., May 13, 1982.

Hon. PETER W. RODINO, Jr.,
Chairman, Committee on the Judiciary, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional budget Office has prepared the attached cost estimate for H.R. 6260, a bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely

ALICE M. RIVLIN, *Director.*

CONGRESSIONAL BUDGET OFFICE, COST ESTIMATE

1. Bill number: H.R. 6260.

2. Bill title: A bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

3. Bill status: As ordered reported by the House Committee on the Judiciary, May 11, 1982.

Bill purpose: H.R. 6260 would authorize 1982 appropriations at a level $2.5 million above the amount already appropriated, and would provide a $76 million authorization level in 1983 to carry out the activities of the Patent and Trademark Office (PTO). In addition, such sums as may be necessary are authorized for fiscal years 1984 and 1985, plus such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other benefits authorized by law for each fiscal year 1983 thorugh 1985. PTO would also have available for obligation offsetting fee collections as provided for in Public Law 96–517, plus the additional fees as specified in H.R. 6260.

Assuming enactment of H.R. 6260, total PTO collections over time would result in recovery of approximately 100 percent of patent and trademark processing costs. Individuals, small businesses, and non-profit institutions would be exempt from the proposed additional fees, however, but would continue to follow the fee schedule outlined in P.L. 96–517, which assumes the ultimate recovery of approxiamtely 50 percent of all processing costs.

The President's 1982 budget includes a request for a $2.5 million supplemental for the PTO. The Administration has recommended increasing user fees to ultimately recover 100 percent of processing costs beginning in 1983, but does not provide for any exemptions to the proposed fee increases relative to current law. The effect of exemptions is to increase by approximately $8 million the authorized level of appropriations relative to the Administration's request.

In addition, the bill would make a number of other changes that are not expected to have a cost impact.

5. Cost estimate:

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Authorization level:					
Specified	2.5	76.0	....	....	....
Estimated	....	6.8	86.4	86.8	....
Subtotal	2.5	82.8	86.4	86.8	....
Total estimated outlays	2.4	61.8	82.4	82.8	5.5

Including outlays from appropriations to date for PTO, total 1982 outlays are estimated to be $121.5 million, and total 1983 outlays are estimated to be $79.8.

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The costs of this bill fall within budget subfunction 376.

6. Basis of estimate: The authorization levels for PTO for 1982 and 1983 are those specified in the bill. The estimate authorization levels for 1984 and 1985 assume a level of funding sufficient to maintain a program level of $167 million and $176 million, respectively, including offsetting collections. In addition, authorization for increases in pay and other benefits of approximately $6.8 million, $7.4 million, and $7.8 million for fiscal years 1983 through 1985, respectively, were estimated based on CBO's current inflators. Outlays are based on historical spending patterns.

The estimated collections to PTO as a result of fees charged to cover the costs of processing trademarks and patents were provided by the agency, and assume the fee structure outlined in the bill. The estimated collections, under current law and under H.R. 6260, are shown in the table below.

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Estimated offsetting collections:					
Current law	....	47.8	52.7	57.7	....
Added by H.R. 6260	....	31.2	35.3	39.3	....
Total—H.R. 6260	....	79.0	88.0	97.0	....

7. Estimate comparison: None.
8. Previous CBO estimate: None.
9. Estimate prepared by: Mary B. Maginniss.

10. Estimate approved by: C. G. Nuckols (James L. Blum, Assistant Director for Budget Analysis).

COMMITTEE VOTE

The Committee on the Judiciary ordered H.R. 6260 as amended reported by a voice vote, without objection being heard, with a quorum of Members being present.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, existing law in which no change is proposed is shown in roman):

TITLE 35, UNITED STATES CODE
PART 1—PATENT AND TRADEMARK OFFICE

* * * * *

CHAPTER 1—ESTABLISHMENT, OFFICERS, FUNCTIONS

* * * * *

§3. Officers and employees.

(a) There shall be in the Patent and Trademark Office a Commissioner of Patents and Trademarks, a Deputy Commissioner, two Assistant Commissioners, and [not more than fifteen] examiners-in-chief *appointed under section 7 of this title.* The Deputy Commissioner, or, in the event of a vacancy in that office, the Assistant Commissioner senior in date of appointment shall fill the office of Commissioner during a vacancy in that office until the Commissioner is appointed and takes office. The Commissioner of Patents and Trademarks, the Deputy Commissioner, and the Assistant Commissioners shall be appointed by the President, by and with the advice and consent of the Senate. The Secretary of Commerce, upon the nomination of the Commissioner, in accordance with law shall appoint all other officers and employees.

* * * * *

§6. Duties of Commissioner.

(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies [and] programs, *or exchanges of items or services* regarding domestic and international patent and trademark law *or the administration of the Patent and Trademark Office,* and shall have charge of property belonging to the Patent and Trademark Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office.

(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize

such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent and Trademark Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to internatinal intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States.

[(d) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, allocate funds appropriated to the Patent Office, to the Department of State for the purpose of payment of the share on the part of the United States to the working capital fund established under the Patent Cooperation Treaty. Contributions to cover the share on the part of the United States of any operating deficits of the International Bureau under the Patent Cooperation Treaty shall be included in the annual budget of the Patent Office and may be transferred by the Commissioner, under the direction of the Secretary of Commerce, to the Department of State for the purpose of making payments thereof to the International Bureau.]

* * * * *

§13. Copies of patents for public libraries.

The Commissioner may supply printed copies of specifications and drawings of patents to public libraries in the United States which shall maintain such copies for the use of the public, at the rate for each year's issue established for this purpose in section 41 [(a)9] *(d)* of this title.

* * * * *

CHAPTER 2—PROCEEDINGS IN THE PATENT AND TRADEMARK OFFICE

* * * * *

§21. [Day for taking action falling on Saturday, Sunday, or holiday] *Filing date and day for taking action.*

(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.

(b) When the day, or the last day, for taking any action or paying any fee in the United States Patent and Trademark Office falls on Saturday, Sunday, or a *Federal* holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding secular or business day.

* * * * *

CHAPTER 4—PATENT FEES

* * * * *

§41. Patent fees

[(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

[(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

[(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Tradmark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

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[(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.]

(a) The Commissioner shall charge the following fees:

1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

2. For issuing each original or reissue patent, except in design or plant cases, $500.

3. In design and plant cases:

a. On filing each design application, $125.

b. On filing each plant application, $200.

c. On issuing each design patent, $175.

d. On issuing each plant patent, $250.

4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

5. On filing each disclaimer, $50.

6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50.

8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

a. On filing a first petition, $50.

b. On filing a second petition, $100.

c. On filing a third or subsequent petition. $200.

(b) The Commissioner shall charge the following fees for maintaining a patent in force:

1. Three years and six months after grant, $400.

2. Seven years and six months after grant, $800.

3. Eleven years and six months after grant, $1,200.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee. No fee will be established for maintaining a design or plant patent in force.

(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection.

(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.

(3) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

[(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three times.]

(f) The fees established in subsection (a) and (b) of this section may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored.

(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register.

§42. Patent and Trademark Office funding.

(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office. *Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.*

(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required.

PART II—PATENTABILITY OF INVENTIONS AND GRANT OF PATENTS

* * * * *

CHAPTER 11—APPLICATION FOR PATENT

* * * * *

[§111. Application for patent

[Application for patent shall be made by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include: (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be signed by the applicant and accompanied by the fee required by law.]

SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.

* * * * *

§115. Oath of applicant

The applicant shall make oath that he believes himself to be the original and first inventor of the process, machine, manufacture, or composition of matter, or improvement thereof, for which he solicits a patent; and shall state of what country he is a citizen. Such oath may be made before any person within the United States authorized by law to administer oaths, or when, made in a foreign country, before any diplomatic or consular office of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority [shall be] *is* proved by certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States* and such oath shall be valid if it complies with the laws of the state or country where made. When the application is made as provided in this title by a person other than the inventor, the oath may be so varied in form that it can be made by him.

§116. [Joint inventors] *Inventors.*

When an invention is made by two or more persons jointly, they shall apply for patent jointly and each sign the application and make the required oath, except as otherwise provided in this title.

If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf

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of himself and the omitted inventor. The Commissioner, on proof of the pertinent facts and after such notice to the omitted inventor as he prescribes, may grant a patent to the inventor making the application, subject to the same rights which the omitted inventor would have had if he had been joined. The omitted inventor may subsequently join in the application.

Whenever [a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error] *through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application,* and such error arose without any deceptive intention on his part, the Commissioner may permit the application to be amended accordingly, under such terms as he prescribes.

* * * * *

CHAPTER 16—DESIGNS

* * * * *

§173. Term of design patent.

[Patents for designs may be granted for the term of three years and six months, or for seven years, or for fourteen years, as the applicant, in his application, elects.]

Patents for designs shall be granted for the term of fourteen years.

* * * * *

PART III—PATENTS AND PROTECTION OF PATENT RIGHTS

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CHAPTER 25—AMENDMENT AND CORRECTION OF PATENTS

* * * * *

[§256. Misjoinder of inventor.

[Whenever a patent is issued on the application of persons as joint inventors and it appears that one of such persons was not in fact a joint inventor, and that he was included as a joint inventor by error and without any deceptive intention, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate deleting the name of the erroneously joined person from the patent.

[Whenever a patent is issued and it appears that a person was a joint inventor, but was omitted by error and without deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate adding his name to the patent as a joint inventor.

[The misjoinder or nonjoinder of joint inventors shall not invalidate a patent, if such error can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.]

§256. Correction of named inventor.

Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without and deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.

CHAPTER 16—OWNERSHIP AND ASSIGNMENT

* * * * *

§261. Ownership; assignment.

Subject to the provisions of this title, patents shall have the attributes of personal property.

Applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing. The applicant, patentee, or his assigns or legal representatives may in like manner grant and convey an exclusive right under his application for patent, or patents, to the whole or any specified part of the United States.

A certificate of acknowledgment under the hand and official seal of a person authorized to administer oaths within the United States, or, in a foreign country, of a diplomatic or consular officer of the United States or an officer authorized to administer oaths whose authority is proved by a certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* shall be prima facie evidence of the execution of an assignment, grant or conveyance of a patent or application for patent.

An assignment, grant or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration, without notice, unless it is recorded in the Patent and Trademark Office within three months from its date or prior to the date of such subsequent purchase or mortgage.

CHAPTER 29—REMEDIES FOR INFRINGEMENT OF PATENT, AND OTHER ACTIONS

Sec.
281. Remedy for infringement of patent.

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294. Voluntary arbitration.

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§294. Voluntary arbitration.

(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner.

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TRADEMARK ACT OF 1946

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Sec. 8 (a). Duration of registration—Cancelation at end of 6 years unless affidavit of use filed.

Each certificate of registration shall remain in force for 20 years: *Provided,* That the registration of any mark under the provisions of this Act shall be canceled by the Commissioner at the end of 6 years following its date, unless within 1 year next preceding the expiration of such 6 years the registrant shall file in the Patent and Trademark Office an affidavit showing that said mark is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. Special notice of the requirement for such affidavit shall be attached to each certificate of registration.

Sec. 8(b). Cancelation of republished prior registrations unless affidavit of use filed.

Any registration published under the provisions of subsection (c) of section 12 of this Act shall be canceled by the Commissioner at the end of 6 years after the date of such publication unless within 1 year next preceding the expiration of such 6 years and registrant shall file in the Patent and Trademark Office an affidavit showing that said marks is [still] in use

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in commerce or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

* * * * *

Sec. 11. Acknowledgments and verifications.

Acknowledgments and verifications required hereunder may be made before any person within the United States authorized by law to administer oaths, or, when made in a foreign country, before any diplomatic or consular officer of the United States or before any official authorized to administer oaths in the foreign country concerned whose authority [shall] *is* proved by a certificate of a diplomatic or consular officer of the United States *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* and shall be valid if they comply with the laws of the state or country where made.

* * * * *

Sec. 13. Opposition to registration of marks on the Principal Register.

Any person who believes that he would be damaged by the registration of a mark upon the principal register may upon payment of the required fee, file [a verified] *an* opposition in the Patent and Trademark Office, stating the grounds therefor, within thirty days after the publication under subsection (a) of section 12 of this Act of the mark sought to be registered. Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause *when requested prior to the expiration of an extension.* The Commissioner shall notify the applicant 86 of each extension of the time for filing opposition. [An unverified opposition may be filed by a duly authorized attorney, but such opposition shall be null and void unless verified by the opposer within a reasonable time after such filing to be fixed by the Commissioner.] An opposition may be amended under such conditions as may be prescribed by the Commissioner.

SEC. 14. A [verified] petition to cancel a registration of a mark, stating the grounds relied upon, may, upon payment of the prescribed fee, be filed by any person who believes that he is or will be damaged by the registration of a mark on the principal register established by this Act, or under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905—

(a) within five years from the date of the registration of the mark under this Act; or

(b) within five years from the date of publication under section 12(c) hereof of a mark registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905; or

(c) at any time if the registered mark becomes the common descriptive name of an article or substance, or has been abandoned, or its registration was obtained fraudulently or contrary to the provisions of section 4 or of subsections (a), (b), or (c) of section 2 of this Act for a registration hereunder, or contrary to similar prohibitory provisions of said prior Acts for a registration thereunder, or if the registered mark is being used by, or with the permission of, the registrant so as to misrepresent the source of the goods or services in connection with which the mark is used; or

(d) at any time if the mark is registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905, and has not been published under the provisions of subsection (c) of section 12 of this Act; or

(e) at any time in the case of a certification mark on the ground that the registrant (1) does not control, or is not able legitimately to exercise control over, the use of such mark, or (2) engages in the production or marketing of any goods or services to which the certification mark is applied, or (3) permits the use of the certification mark for purposes other than to certify, or (4) discriminately refuses to certify or to continue to certify the goods or services of any person who maintains the standards or conditions which such mark certifies:

> *Provided,* That the Federal Trade Commission may apply to cancel on the grounds specified in subsections (c) and (e) of this section any mark registered on the principal register established by this Act, and the prescribed fee shall not be required.

Sec. 15. Incontestability under certain conditions of right to use mark.

Except on a ground for which application to cancel may be filed at any time under subsections (c) and (e) of section 14 of this Act, and except to the extent, if any, to which the use of a mark registered on the principal register infringes a valid right acquired under the law of any State or Territory by use of a mark or trade name continuing from a date prior to the date of [the publication] *registration* under this Act of such registered mark, the right of the registrant to use such registered mark in commerce for the goods or services on or in conncection with which such registered mark has been in continuous use for 5 consecutive years subsequent to the date of such registration and is still in use in commerce, shall be incontestable: *Provided,* That—

(1) there has been no final decision adverse to registrant's claim of ownership of such mark for such goods or services, or to registrant's right to register the same or to keep the same on the register; and

(2) there is no proceeding involving said rights pending in the Patent Office or in a court and not finally disposed of; and

(3) an affidavit is filed with the Commissioner within 1 year after the expiration of any such 5-year period setting forth those goods or services stated in the registration on or in connection with which such mark has been in continuous use for such 5 consecutive years and is still in use in commerce, and the other matters specified in subsections (1) and (2) hereof; and

(4) no incontestable right shall be acquired in a mark which is the common descriptive name of any article or substance, patented or otherwise.

Subject to the conditions above specified in this section, the incontestable right with reference to a mark registered under this Act shall apply to a mark registered under the Act of Mar. 3, 1881, or the Act of Feb. 20, 1905, upon the filing of the required affidavit with the Commissioner within 1 year after the expiration of any period of 5 consecutive years after the date of publication of a mark under the provisions of subsection (c) of section 12 of this Act.

The Commissioner shall notify any registrant who files the above-prescribed affidavit of the filing thereof.

Sec. 16. Interference.

[Whenever application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive, the Commissioner may declare that an interference exists.]*Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to decieve.* No interference shall be declared between an application and the registration of a mark the right to the use of which has become incontestable.

* * * * *

§31. Fees Aug. 27, 1982

(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. [Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material.] However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register. [H.R. 6260]

Patent and Trademark Office

(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with an occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups.

Appropriation authorization

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(70) **Department of Commerce**
Patent and Trademark Office

37 CFR Part 1

Rules of Practice in Patent Cases; Reexamination Proceedings

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office is amending its rules of practice in patent cases to provide procedures for the reexamination of patents. Public Law 96–517 amended the patent act to authorize reexamination proceedings as a means for improving the quality of United States patents. The Patent and Trademark Office intends, through this amendment of its rules, to provide patent owners and the public with guidance on the procedures the Office will follow in conducting reexamination proceedings.
Date: Effective date: July 1, 1981.
For Further Information Contract: Mr. R. Franklin Burnett by telephone at [703]557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

Supplementary Information: This rule change relates to a procedure for reexamination of patents as provided for in Public Law 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981.

Background

A notice of proposed rulemaking was published in the Federal Register on Jan. 13, 1981 at 46 FR 3162–3175 and in the *Official Gazette* on Feb. 17, 1981 at 1003 O.G. 36–47.

The proposed rulemaking set forth two somewhat distinct procedures directed towards determining and improving the quality and reliability of United States patents. The procedures were (1) provisions for reexamination of patents as provided for in Pub. L. 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981, and (2) provisions for inter partes protest proceedings in a patent application between the patent applicant and a member (or members) of the public who has (have) access to the application file.

An oral hearing was held on Apr. 16, 1981. Fifty-nine written letters and statements were submitted. Nineteen

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persons testified at the oral hearing which resulted in 107 pages of testimony.

Discussion of General Issues Involved

After careful consideration of the comments which have been received, the part of the proposed rulemaking relating to reexamination of patents as set forth in new Chapter 30 which Pub. L. 96–517 added to Title 35 of the United States Code [35 U.S.C. 301–307] is being adopted with certain changes. The remainder of the proposal relating to inter partes protest proceedings is not being adopted.

The comments relating to the proposed rules for inter partes protest proceedings were generally mixed, with a majority of persons and associations submitting comments either opposed to these proposed rules or indicating that adoption of the proposed rules should be delayed or deferred for further study and consideration.

A number of comments were received requesting some further changes to the rules be made. The thrust of some of the suggested changes would be to remove public access to reissue applications and to limit public participation in the examination of reissue applications. The changes suggested included restoring the rules in these areas to essentially their pre-1977 form. In particular, it was suggested that §1.175 be amended to eliminate paragraph (a)(4). These changes were not a part of the published proposal and are not being adopted at this time. Their consideration and adoption would require a new notice of proposed rulemaking.

Further, since the subject matter of reissue applications is already known to the public the necessity for maintaining them in confidence is not compelling. The elimination of paragraph (a)(4) of §1.175 would not have a significant effect since less than one-fourth of the currently filed reissue applications are based solely upon the 1977 change to §1.175. Under the present circumstances, it is more appropriate to defer any consideration of such changes until this issue has been reviewed further and possibly until some experience is gained under the rules adopted herein relating to reexamination. Such experience may indicate the desirability of either retaining the 1977 change to §1.175, deleting the 1977 change, or making different changes in the rules.

The comments relating to reexamination were generally favorable with most of the comments indicating general approval of the proposed rules. Among the more often mentioned specific comments were suggestions relating to public notice of reexamination requests and/or orders. A number of comments also related to requester and/or third party participation in the reexamination proceeding and also to the scope of the proceeding.

After careful review of the comments and suggestions it has been decided to adopt the suggestions relating to the publication in the *Official Gazette* of requests for reexamination for which the fee has been paid. In addition, any reexaminations ordered at the initiative of the Commissioner will also be announced in the *Official Gazette*. The announcement will include at least the date of the request or any Commissioner initiated order, a reexamination request or order control number, the patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

The suggestions and comments relating to more participation in the reexamination proceeding by the requester and third parties have been adopted only to a limited degree. The requester will in general have only that participation provided by the rules as proposed. However, any citations under §1.501 by any person will be entered in the patent file up until the date of an order to reexamine. The essentially ex parte nature of the proceeding is believed to be in keeping with the spirit and intent of the statute even though the statute does not require ex parte proceedings. Ex parte proceedings will minimize the costs and other effects of reexamination requests on patentees, especially individuals and small businesses.

The scope of the reexamination proceeding which was originally proposed has been essentially adopted in the final rules. The suggestions that the rules be broadened to include other issues have not been adopted since the other issues would unduly complicate the proceedings, raise the expense of the proceedings and raise questions whether such issues can be considered under Pub. L. 96–517

Discussion of the Major Specific Issues Involved

The rules relating to reexamination proceedings are directed to the procedures set forth in new Chapter 30 of Title 35 of the United States Code (35 U.S.C. 301–307). This Chapter provides for the citation of prior art in patents, filing of requests for reexamination, decisions on such requests, reexamination and appeal from reexamination decisions, and the issuance of a certificate at the termination of the reexamination proceedings. Present §§1.1, 1.5, 1.11, 1.33, 1.34, 1.36, 1.104, 1.107, 1.109, 1.111, 1.112, 1.113, 1.115, 1.116, 1.121, 1.191, 1.192, 1.196, 1.197, 1.231, 1.248, 1.301, and 1.303 are amended to provide for reexamination procedures. A new "Subpart D-Reexamination of Patents" includes new §§1.501, 1.510, 1.515, 1.520, 1.525, 1.530, 1.535, 1.540, 1.550, 1.552, 1.555, 1.560, 1.565, and 1.570. Paragraph (b) of §1.291, relating to prior art citations in patents, is deleted, since provisions therefor appear in §1.501.

Section 1.1, as amended, provides for communications relating to reexamination proceedings to be marked "Box Reexam" to speed internal Office mail processing. No comments were received concerning this section. The proposal has been modified to indicate that only requests should be marked "Box Reexam".

Section 1.5, as amended, provides for all letters relating to a reexamination proceeding to be identified by patent number and a reexamination request control number. No comments were received concerning this section. Section 1.5 has been modified to also include reference to the Group Art Unit and the examiner, if known.

Section 1.11, as amended, provides for all papers made of record in reexamination proceedings to be open to inspection and copying by the public. Eighteen comments were received relating to publication of a notice in the *Official Gazette*. A new paragraph (c) has been added which provides for the publication of requests with sufficient fees paid and orders initiated by the Commissioner. Proposed paragraph "c" has been adopted as paragraph "d".

Section 1.33, as amended, has a new paragraph (c) relating to which address communications for the patent owner will be sent and who may sign papers filed. Four comments were received on this section relating to whom the mail should be addressed. One proposal, which suggested use of the current address of the attorney or agent of record, was adopted.

Section 1.34, as amended, provides for the appointment of an attorney or agent in a reexamination proceeding. Only one comment was received on this section which proposed a rule specifically allowing attorneys to file requests without identifying their clients. Since any person may request reexamination, such a rule is not felt necessary.

Section 1.36, as amended, provides for the revocation and withdrawal of powers of attorney in a reexamination proceeding. No comment was received. Section 1.36 is adopted as proposed with an additional change which added "or her" near the end.

Section 1.104, as amended, broadens the present section to also include reexamination. Three comments were received on §1.104. All comments indicated that the examiner should not make a prior art search. Although no complete new search by the examiner is required, the use of patents and printed publications in addition to those submitted by the requester is clearly indicated in 35 U.S.C. 303(a). According, §1.104 is adopted as proposed.

Section 1.107, as amended, provides for the citation of prior art by the examiner in a reexamination proceeding. The amended rule also refers to foreign published applications, as well as patents. No comments were received on this section. It is adopted as proposed.

Section 1.109, as amended, provides for the examiner to supply reasons for allowance in a reexamination proceeding if the examiner believes that the record does not make clear the reasons for allowing a claim or claims. No comments were received on this section. Except for a clarifying change in language, it is adopted as proposed.

Section 1.111, as amended, provides for replies by the patent owner in a reexamination proceeding. One comment was received which suggested a clarification. The suggestion was adopted. Other non-substantive changes have been made in the proposed section to shorten the sentences for clarity.

Section 1.112, as amended, provides for reexamination and reconsideration of the patent under reexamination after responses by the patent owner. Three comments were received on this section.

The wording has been changed as suggested to avoid any confusion between "reexamination" and "reexamine". The sentences have also been shortened for clarity

Section 1.113, as amended, provides for a final rejection or action in a reexamination proceeding. One comment was received which pointed out a possible conflict between the amendment rights of section 305 and the final rejection of section 1.113. No problem is seen in this regard because of the provision of section 305 which states that"reexamination will be conducted according to the procedures established for initial examination." The section is adopted as proposed with the last sentence being divided into two sentences for clarity.

Section 1.115, as amended, provides for amendments by the patent owner in a reexamination proceeding. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity.

Section 1.116, as amended, provides for amendments after final action in reexamination proceedings. One comment was received which was the same as that mentioned and responded to in Section 1.113 above. The sentences have been shortened for clarity.

Section 1.121, as amended, contains a new paragraph (f) which requires a complete copy of any new or amended claim when presented during reexamination proceedings. Two persons commented on this section. One proposed side-by-side presentation of amended and original claims. The other proposed that exactly the same procedure be used as is now in effect for amending reissue claims. Neither suggestion was adopted since neither lends itself to printing only the amended claims in a certificate as easily as the procedure set forth in §1.121(f). The proposed section was revised to also provide for the amendment of the description. In addition, the last three sentences of §1.510(e) have been inserted as the last three sentences of §1.121(f) in order to provide a more complete description therein of the manner of making amendments, including the numbering of claims, the restriction on scope of the claims and the prohibition against the introduction of new matter.

Section 1.191, as amended, provides for appeal to the Board of Appeals by the patent owner from any decision adverse to patentability, in accordance with 35 U.S.C. 306. One comment was received on proposed §1.191 which urged that the requester should also be entitled to appeal. This proposal was not adopted because it is not provided for in the law and could result in harassment if permitted. The section is adopted as proposed except that "primary" contained in the existing rule is retained.

Section 1.192, as amended, provides two months from the date of the Notice of Appeal for the patent owner to file an appeal brief in a reexamination proceeding. Five comments were received relating to §1.192 which proposed that the period for filing an appeal brief in a reexamination appeal be two months as in other appeals. The proposed rule has been adopted with the suggested two month period. The sentences have been shortened for clarity.

Section 1.196 and §1.197 are being amended to refer to "appellants", which is a term which includes both applicants and patent owners.

These two sections were not published for comment, however, the issues involved were presented in proposed§§1.191 and 1.192. Paragraph (c) of §1.197 has also been rewritten for clarity.

Section 1.231(a)(1), as amended, provides for a motion that a patent claim is unpatentable in an interference proceeding where reexamination thereof has also been requested.

Three comments were received concerning §1.231. All comments related to when interference or reexamination proceedings would be suspended. Section 1.565 provides basis for such suspensions. Decisions will be made on a case by case basis, depending on the particular fact situation. The sentences in §1.231(a)(1) have been shortened and rearranged for clarity.

An amendment was proposed to delete the last two sentences of §1.247 relating to proof of service. No comments were received concerning this section but, on reconsideration, no need for such deletion is felt necessary and no change is being adopted.

Section 1.248, as amended, includes a new paragraph (b) relating to methods of serving papers and proof of service. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity and to conform to the Federal Rules of Civil Procedure.

Section 1.291, as amended, deletes paragraph (b). Former paragraph (b) dealt with the citation of prior art provisions. It was deleted since the provisions are now covered by §1.501. Five persons commented on §1.291. One comment relating to filing protests in reexamination proceedings was not adopted since such proceedings are ex parte in nature and are limited to consideration of prior art patents and printed publications cited by the public prior to the order. Two persons mentioned providing a procedure for citation of prior art by patentees. Citation of prior art by patentees is included in §1.501. The two other comments related to the content of protest proceedings, which are not part of this final rule. Section 1.291 is adopted as proposed except that the paragraph designation of (c) is not being changed.

Section 1.301, as amended, provides for appeal by the owner of a patent in reexamination proceedings to the U.S. Court of Customs and Patent Appeals. Four comments were received relating to §1.301. One person suggested the insertion of "any" as the fourth word in the section. This suggestion was adopted. The other three comments related to appeals in inter partes protest proceedings which are not a part of this promulgation. Section 1.301 is adopted as proposed with only the above mentioned change.

Section 1.303, as amended, provides for remedy by civil action under 35 U.S.C. 145 for the owner of a patent in reexamination proceedings. No comments were received concerning this section. The changes from the proposal are the insertion of "any" as the fourth word in the section as suggested in §1.301 and the addition of, "306" to the title.

New §1.501 provides a system for citation of patents and printed publications to the Patent and Trademark Office for placement in the patent file by any person during the period of enforceability of the patent in accordance with 35 U.S.C. 301. Seventeen persons commented on §1.501. Nine comments indicated that citations should be limited to patents or printed publications. Six comments indicated that persons citing art should be required to apply it to at least one claim. Three persons held the opposite view. The final rule wording provides for citations limited to patents and printed publications where the person making the citation states the pertinency and applicability of the citation to the patent and the bearing the citation has on the patentability of at least one claim of the patent. The final

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rule provides that a citation made by the patent owner may include an explanation of how the claims differ from the prior art cited. Any citations which include items other than patents and printed publications will not be entered in the patent file. This does not, of course, limit in any manner the kinds and types of information which can be relied upon in protests against pending patent applications, whether such be original applications or reissue applications. Four persons stated that a separate letter requesting confidentiality should be required in cases desiring confidentiality. This provision was not considered to be necessary. One comment requested clarification of the term "period of enforceability of a patent." The meaning of this term appears to be clear since it includes any period for which recovery can be had for infringement. Under usual circumstances, this would be the term of the patent plus the six years provided by 35 U.S.C. 286. Five comments were received relating the paragraph (c) concerning service of citations on the patent owner. The wording has been clarified. A suggestion was made that prior art copies and translations of non-English documents be required. This suggestion was not adopted since such documents are not absolutely essential until a request for reexamination has been filed. However, if the person citing the patents or printed publications desires that they be considered in any subsequent reexamination proceedings, copies and any necessary English translation should be included with the citation. A proposal was also made to charge a fee to prevent harassment. This proposal was not adopted since the mere citation of prior art is not considered to constitute harassment. A suggestion was made to change the title of the section. This suggestion was adopted in slightly modified form.

New §1.510 sets forth procedures for any person to request reexamination in accordance with 35 U.S.C. 302. Paragraph (a) of new §1.510 limits the period for such request to the period of enforceability of the patent for which the request is filed and requires payment of the fee for requesting reexamination. Paragraph (b) of new §1.510 indicates what each request for reexamination must include. Paragraph (c) of new §1.510 indicates under which conditions a request for reexamination will be considered. Paragraph (d) of new §1.510 indicates the date on which the entire fee is received will be considered to be the date of the request for reexamination. Upon reconsideration of the paragraph as proposed, it was considered more appropriate to base the filing date of the request for reexamination on the receipt of the fee for requesting reexamination rather than include other matters. Proposed paragraph (d) has been amended accordingly and is adopted. Paragraph (e) of new §1.510 covers amendments which a patent owner can propose. Such amendments can accompany a request for reexamination by the patent owner. The paragraph, with changes in wording for clarity, is adopted as proposed. A new paragraph (f) was added to clarify that requests for reexamination may be filed by attorneys or agents on behalf of a requester. Nineteen persons commented on §1.510. One person inquired as to whether confidential requests would be accepted. In response thereto, §1.510 provides that any person may file a request for reexamination. That person's name will not be maintained in confidence. One suggestion was made to permit comment and rebuttal before the decision under §1.515. No need for such a procedure is seen since the only question to be considered is whether or not a substantial new question of patentability has been raised. An opportunity for comment and rebuttal is provided after the issuance of the order. One comment was received which desired provision for supplemental requests at a reduced fee. This proposal was not adopted since it is felt that all requesters should share equally in the cost. One comment was received which proposed that duplicate copies of the request be filed in the Office so that one copy would be available for public inspection at all times. This proposal was not adopted since it would appear to create more problems than it would solve. One comment was received that only "readily available" translations should be required. It is felt that if a document is considered to be sufficiently pertinent to request reexamination, that an English translation should be provided to insure complete and proper consideration. A suggestion was made relating to paragraph (b)(5) that direct service be limited to registered patent attorneys. No need for such a restriction is seen. Various other comments relating to procedures were considered but were not adopted.

New §1.515 relates to a determination as to whether the request has presented a substantial new question of patentability under 35 U.S.C. 303. Paragraph (a) of new §1.515 requires that the determination be made within 3 months of the filing date of the request. Paragraph (b) of new §1.515 refers to the refund provisions. Paragraph (c) of new §1.515 provides for review by petition to the Commissioner of any decision refusing reexamination. Seven persons commented on §1.515. Several comments were received suggesting that the term "reexamination" should be dropped before "examiner". This proposal was adopted. Several persons requested that all art cited in the patent file at the time of the order under §1.525 be considered when deciding whether a substantial new question of patentability is presented in the request. This is possible under the provision of §1.515(a) which permits "consideration of other patents or printed publications", but is not required insofar as prior art not relied upon in the request is concerned. One person suggested that "is" be changed to-affirms-in paragraph (c). This proposal has been adopted. One commentor questioned whether a right to review was available under paragraph (c) if reexamination was ordered. No right to review exists in such a case because all claims will be reviewed in view of all prior art during the reexamination under §1.550.

New §1.520 provides for reexamination at the initiative of the Commissioner under the provisions of the last sentence of paragraph (a) of 35 U.S.C. 303. Six persons commented on §1.520. One comment was received that indicated that the section did not include a reference to patents "discovered by the Commissioner" which is contained in 35 U.S.C. 303(a). This phrase has been added to the rule. A request was made that the sentence "Normally requests from outside-will not be considered." be deleted from the rule. The sentence is being retained since the rule wording provides an easy reference for Office policy. Two comments were received that indicated a desire to have any decisions not to reexamine in Commissioner initiated situations be made part of the patent file. This proposal was not adopted since the basis for not reexamining may involve many policy issues in addition to whether a substantial new question of patentability exists in the case. If all papers in such a case would be made part of a file, it may lead to conclusions that there are no new questions of patentability when this question may not have been addressed because the reexamination was not ordered for other reasons such as little or no interest in a patent about to expire. One comment stated that the section safeguards the rights of the patentee. The language referring to the designation and delegation of authority to appropriate Patent and Trademark Office officials is deleted as unnecessary since the Commissioner's authority to designate and delegate is implicit and understood.

New §1.525 provides for ordering reexamination where a substantial new question of patentability has been found pursuant to §§1.515 or 1.520. Six comments were received relating to §1.525. One comment was made that the attorney should be able to return notices to the sender if he is unable to contact the patent owner. This topic has not been added to the rules but will be handled on a case by case basis. One comment requested that the patent owner have the option to request that the reexamination be performed by an examiner (1) other than the original examiner, or (2) other than the examiner who issued the order. Comments were also received on both sides of the question as to whether the original examiner should conduct the reexamination. In response, it would appear to be inappropriate to allow an interested party to select the examiner. Under the section, the only limitation placed on the selection of the examiner by the Office is that the same examiner whose decision was reversed on petition ordinarily will not conduct the reexamination. Paragraph (b) has been changed to provide that the notices published in the *Official Gazette* will be considered to be constructive notice.

New §1.530 relates to the statement and proposed amendments provided for in the second sentence of 35 U.S.C. 304. Amendments submitted by the patent owner cannot enlarge the scope of a claim in the patent. Amendments will not be effectively entered into the patent until the certificate under §1.570 and 35 U.S.C. 307 is issued. Nine comments were received on §1.530. Several persons felt that the patent owner should be allowed to comment before the decision under §1.515 is made. Providing for such a comment would delay the decision under §1.515 which must be made within three months following the filing date of the request. Further, no need is seen for a statement relating to whether a new question of patentability is present since the patent owner has the opportunity to address any issues of patentability only after the first Office action. One comment questioned whether paragraph (d) also related to the description. This paragraph has been amended to clarify the matter. One person questioned whether an amendment could be filed with a statement. Paragraph (b) clearly answers this question in the affirmative. Several comments requested more time than two months for the patent owner to file a statement. In reply, the law in section 304 indicates that a reasonable period of not less than two months be provided for the patent owner's statement. If the period is too short in particular situations, extensions of time can be requested. It is felt that two months should be retained in the rule in view of the "Special Dispatch" required in reexamination cases. The proposed second sentence of paragraph (b) has not been adopted since §1.525(b) now provides for the publication of notices of the filing of all requests which are accompanied by the proper fee.

New §1.535 provides for reply by the reexamination requester to the statement under §1.530 of the patent owner and for service on the patent owner of any such reply. The last sentence of proposed §1.540 has been added as the last sentence of §1.535. Five persons commented on §1.535. Four persons indicated that the requester should be given additional opportunity to comment. The reasons for the limited participation are that it is all that is required under the law, it prevents to a great degree, harassment of a patent owner, it results in a less expensive proceeding for all parties, and it results in an earlier conclusion of the proceedings.

New §1.540 relates to the consideration of statements under §1.530 and replies under §1.535. One comment was received that the phrase "may result in their being refused" was worded too loosely. In the absence of any specific suggestion, the proposed wording is considered to be adequate and is adopted as proposed. In addition, it is appropriate that the Office retain discretion as to consideration in such cases.

New §1.550 covers the basic items relating to the conduct of reexamination proceedings. These proceedings basically follow the same procedures used for examining patent applications. The patent owner will be required to serve the reexamination requester with any response by the patent owner to the Office, in order to remove the necessity of the requester having to continuously monitor the file wrapper. Fourteen persons commented on §1.550.

Several persons commented that they felt that at least some input by third parties should be permitted. Paragraph (e) has been revised to permit third party input up until the time of the order. Several comments were received that the periods for response should be extended to be similar to those in regular application Office actions. Although problems may arise in certain cases and extensions of time may be granted, it is felt that relatively short response times are necessary in order to process reexaminations with "special dispatch." A question was raised as to the effect of failure to respond to an Office action. Paragraph (d) has been amended to clarify this matter.

New §1.552 covers the scope of reexamination in a reexamination proceeding. While it is not intended that the examiners will routinely complete a new search when conducting reexamination, the examiners will be free to, and will, very likely, conduct additional searches and cite and apply additional prior patents and publications when they consider it is appropriate and beneficial to do so. Insofar as the actual reexamination is concerned, the examination as to original patent claims is only on the basis of patents or printed publications. However, narrowed amended claims or new claims limited to the original disclosure will also be examined for compliance with other sections of the statute (35 U.S.C. 112 and 132) which are necessary in order to ensure that any amended or new claims are supported, valid, and do not introduce new matter. New §1.552 also provides that questions relating to matters other than those identified in paragraphs (a) and (b) of the section would merely be noted by the examiner as being an open question in the record. Patent owners could then file a reissue application if they wish such questions to be resolved. Ten persons commented on §1.552. Several persons commented that the question of fraud should be considered in reexamination proceedings. Comments were also received that the proceedings should be limited to patents and printed publications. The rules have been written to follow the statute which speaks only to reexamination based on patents and printed publications. Mixed comments were also received concerning the retention of the second sentence of paragraph (c). The paragraph is being adopted as proposed with the addition of a reference to the fact that the examiner will note the existence of unresolved questions in an Office action. In addition, the phrase "raised or" has been deleted from paragraph (c) as unnecessary.

New §1.555 covers the duty of disclosure by a patent owner in a reexamination proceeding involving the owner's patent. Nine persons commented on §1.555. Four persons supported placing a duty of disclosure on the patent owner. One comment was received that an oath or declaration be required of the patent owner in a reexamination so as to minimize the appearance and occurrence of any fraudulent acts and to emphasize the patentee's obligation of candor. While the suggestion for an oath or declaration has not been adopted, §1.555 does place an obligation of candor on the patent owner insofar as bringing patents or printed publications to the attention of the Office is concerned. The necessity for an oath or declaration in addition to the obligation placed on the patent owner by §1.555 is not apparent at this time. Accordingly, the suggestion has not been adopted. Two persons felt the duty of disclosure should apply to both the patent owner and requester. This proposal was not adopted since no sanction could be easily applied against the requester who violated such a rule. One person suggested broadening the duty requirements to include information in addition to patents and printed publications. Although such a practice may be desirable, no need is seen to require information under the reexamination rules which cannot be used during the reexamination. One person felt that there should be no duty of disclosure requirement in reexamination proceedings since the Office will be considering specific prior art and the presence or absence of other prior art does not seem terribly relevant. This suggestion was not adopted since the issue of patentability is not limited to the specific prior art presented and the duty to disclose is consistent with current practice under §1.56. The section is adopted as proposed except for the indication that prior art statements should be filed in accordance with §1.98. Also, the section has been divided into two sentences for clarity.

New §1.560 relates to the conduct of interviews in reexamination proceedings. Seven comments were received directed to §1.560. One comment requested elimination of interviews. This suggestion was not adopted since interviews have been found to be very helpful in

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resolving issues. Five comments were received which indicated that the requester should be permitted to attend all interviews. This suggestion was not adopted because of the otherwise ex parte nature of the examination. Two comments were received which indicated that interviews should be permitted before the first Office action. This suggestion was not adopted since such interviews would be held at a time when the Office has not yet taken a position on the allowability of the claims under reexamination. Section 1.560 is adopted as proposed.

New §1.565 provides for the Commissioner to determine which, if any, proceedings should be stayed, consolidated, or suspended, if concurrent proceedings involving the patent under reexamination are instituted or in progress. Four comments were received concerning§1.565. One comment pointed out the desirability of combining copending reexamination proceedings. This concept has been accepted and a new paragraph (c) has been added to cover this matter. Two comments voiced concern over the possibility of delay resulting from stayed, suspended or combined cases. Although some delay may result, it is felt that a resolution of all issues should occur at an earlier date. Decisions as to whether to delay or combine cases will be made on a case by case basis to minimize delays and to protect the interests of all parties concerned. One comment was made to allow the patent owner to comment prior to any decision to stay proceedings by the Commissioner. The desirability of such comment will be decided on a case by case basis and is not considered desirable for placement in the rules. The addition of paragraph (c) and the insertion of "is or" before "becomes" in the first sentence of paragraph (b) are the only changes from the proposed rule.

New §1.570 concerns the issuance of the reexamination certificate under 35 U.S.C. 307 after conclusion of reexamination proceedings. The certificate will cancel any patent claims determined to be unpatentable, confirm any patent claims determined to be patentable, and incorporate into the patent any amended or new claim determined to be patentable. Three commentors mentioned §1.570. Two persons questioned the statutory authority for paragraph (d). In response to the concern for statutory authority, it is the position of the Office that once all of the claims have been canceled from the patent, the patent ceases to be enforceable for any purpose. Accordingly, any pending reissue or other Office proceeding relating to a patent in which such a certificate has been issued will be terminated. This provides a degree of assurance to the public that patents with all the claims canceled via reexamination proceedings will not again be asserted. One commentor indicated that copies of the certificate should be part of subsequently sold copies of the patent. Such a practice is intended but is not being made part of the regulations.

Environmental, energy, and other consideration: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

[Text of adopted rules appears in 37 CFR. revised July 1, 1982.]

RENE D. TEGTMEYER,
May 12, 1981. *Acting Commissioner of Patents and Trademarks.*

ROBERT B. ELLERT,
May 15, 1981. *Acting Assistant Secretary for Productivity, Technology, and Innovation.*

[FR Doc. 81-16031 Filed 5-26-81; 8:45 am]

[1007 O.G. 30]

(71)

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 & 5
[Docket No. 21223–259]

Revision of Patent Procedure

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part 1 of 37 CFR, to implement the sections of Public Law 97–247 of 1982 which become effective on Feb. 27, 1983, and to make other miscellaneous changes. The other miscellaneous changes are being made to clarify and improve the rules where appropriate. The rulemaking also is amending Part 5 of 37 CFR to establish procedures for expediting the granting of a license under 35 U.S.C. 184 permitting the filing of a patent application in a foreign country.
Effective Date: Feb. 27, 1983.
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557–3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to 1) implement the changes in practice in the Patent and Trademark Office provided for in Public Law 97–247 enacted on Aug. 27, 1982; 2) clarify or rewrite certain rules; and 3) expedite the granting of licenses under 35 U.S.C. 184.

This rule change contains a number of changes in practice designed to benefit both the Patent and Trademark Office in its handling of its mission and the public the Office serves.

Certain of the changes are housekeeping in nature.

A number of final rules have already been issued to implement Public Law 97–247. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086–33112 with corrections in the printing thereof being published on Aug. 4, 1982, at 47 FR 33688 and on Aug. 5, 1982, at 47 FR 33959. The final rule was also published in the Official Gazette on Aug. 10, 1982, at 1021 O.G. 19–94. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on Sept. 10, 1982 at 47 FR 40134–40140 and on Sept. 21, 1982 at 1022 O.G. 29–46. A "Revision of Patent and Trademark Fees Confirmation" was published on Sept. 17, 1982 at 47 FR 41272–41283 and on Sept. 28, 1982 at 1022 O.G. 61–97. A final rule relating to the definition of "small business concern" was published on Sept. 30, 1982 at 47 FR 43272–43276 and on Oct. 19, 1982 at 1023 O.G. 23–29.

Discussion of Specific Rules and Significant Differences Between Proposed and Final Rules:

Section 1.4

Section 1.4 is amended as proposed to add a reference to Subpart D relating to citation of prior art and reexamination.

Section 1.6

Section 1.6 is amended as proposed to insert "federal" before "holidays" in paragraphs 1.6(a)-(c) in accordance with §21(b) of Title 35, United States Code, as amended by Public Law 97–247. New paragraph 1.6(d) will establish in the regulations a procedure under which papers and fees which could not be filed on a particular date because of an interruption or emergency in the United States Postal Service which is so designated by the Commissioner, may be promptly filed after the ending of such a designated interruption or emergency and be considered as having been filed on that particular date. Authority for such a practice is found in §21(a) of Title 35, United States Code, as amended by Public Law 97–247.

Section 1.7

Section 1.7 is amended as proposed to insert "federal" before "holiday" in accordance with 35 U.S.C. 21(b), as amended by Public Law 97–247.

Section 1.8

Section 1.8 is amended to remove in paragraph 1.8(a) the references to §§3.55 and 4.23, which sections were removed from the rules by the rulemaking entitled "Revision of Patent and Trademark Fees" published in the Federal Register on September 10, 1982 at 47 Fed. Reg. 40134–40140. The change in paragraph 1.8(a)(i) results from the change made in §111 of Title 35, United States Code, by Public Law 97–247. Under the revised rule, the certificate of mailing procedure would be available for filing patent oaths or declarations and filing fees. However, the certificate of mailing procedure could not be used for filing patent specifications and drawings to obtain a filing date. Such papers can be filed under new §1.10. The final rule clarifies that each paper or fee filed under §1.8 must include its own certificate of mailing. The proposed amendment to §1.8(a)(viii) referring to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals, has been adopted as a final rule as published on Oct. 26, 1982 at 47 FR 47380–47382 and therefore is not republished here.

Section 1.10

Section 1.10 is amended as proposed to provide a procedure for assigning the date on which any paper or fee is deposited as "Express Mail" with the United States Postal Service as the filing date of the paper or fee in the Patent and Trademark Office. Authority for the Commissioner to establish such a procedure is provided in §21(a) of Title 35, United States Code, as amended by Public Law 97–247 for any paper or fee required to be filed in the Patent and Trademark Office. This procedure covers the filing of all documents, including patent and trademark applications, and fees since they are required to be filed in the Patent and Trademark Office for processing. Questions were raised during the public hearing and in the written comments regarding the authority of the Commissioner to promulgate §1.10 insofar as it would provide for the use of "Express Mail" to file patent and trademark applications. The argument advanced was that the amendment of 35 U.S.C. 21(a) by Public Law 97–247 did not permit the Commissioner to adopt rules whereby "Express Mail" could be used to file patent and trademark applications since such applications are not papers or fees "required to be filed in the Patent and Trademark Office." It was urged that this language of 35 U.S.C. 21(a), in conjunction with amended 35 U.S.C. 111 which states that the "filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office." prevents adoption of proposed §1.10.

The arguments presented are not supported by the legislative history or by the literal language of the statute. Section 111 of Title 35, United States Code, before and after Public Law 97–247, requires patent applications to be made "in writing to the Commissioner." This is apparent from the first sentence of 35 U.S.C. 111 which provides that "[a]pplication for patent shall be made. . .in writing to the Commissioner." Thus, one seeking a patent is "required" to make application for the same "in writing to the Commissioner." The written application clearly constitutes a "paper or fee required to be filed in the Patent and Trademark Office." Section 21(a) of Title 35, United States Code, authorizes the Commissioner to adopt rules whereby "any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service." The authority provided by section 21(a) extends to "any paper or fee" to which the Commissioner, by an appropriate rulemaking, so extends it. The Commissioner can, therefore, by rule, establish that "any paper or fee," including a patent or trademark application, is "filed" or "received in the Patent and Trademark Office" when it is deposited with the United States Postal Service. The terms "filed" and "received" as used in 35 U.S.C. 21(a) and 111 can therefore be given the same meaning by an appropriate rulemaking by the Commissioner.

The legislative history, H.R. Rep. No. 542, 97th Cong., 2nd Sess. 8A (1982), clearly supports the interpretation set forth herein. In discussing new subsection (a) which has been added to section 21 of Title 35, United States Code, the Report emphasizes that the authority extends to "any paper or fee which is required to be filed" in the Patent and Trademark Office. The Report specifically states that the "requirements governing whether any given paper or fee may be given the filing date of the day on which it was . . . deposited with the United States Postal Service will be set forth in regulations established by the Commissioner." Clearly no restrictions were placed by the statute or the legislative history on the types of papers or fees which the Commissioner can consider as having been filed in the Patent and Trademark Office on the date of deposit with the United States Postal Service.

The new procedure, in paragraph 1.10(a), requires the use of the "Express Mail Post Office to Addressee" service of the United States Postal Service. This service provides for the use of a mailing label on which the Post Office clearly indicates the date on which it was deposited. Paragraph 1.10(b) requires (1) that the number of the "Express Mail" mailing label be placed on each paper or fee and (2) that a certificate of mailing by "Express Mail", signed by the person mailing the paper or fee, be included on each paper or fee and state the date of deposit as "Express Mail" in the United States Postal Service. The requirement that each paper or fee have the number of the "Express Mail" mailing label and the certificate of mailing by "Express Mail" included thereon is necessary so that the Patent and Trademark Office can verify when each paper or fee was filed if questions relating thereto arise. The number and certificate must be placed on each separate paper and each fee transmittal either directly on the document or by a separate paper firmly and securely attached thereto. It is not necessary that the number and certificate be placed on each page of a particular paper or fee transmittal. Merely placing the number and certificate in one prominent location on each separate paper or fee transmittal will be sufficient.

Under new paragraph 1.10(c), the Office will accord the paper or fee the date of deposit as "Express Mail" as the filing date without further proof unless a question is present regarding the date of mailing. If, however, more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date, or if other questions regarding the date of mailing are present, new paragraph 1.10(c) provides that the person mailing the paper or fee may be required to file (1) a copy of the "Express Mail" receipt showing the actual date of mailing and (2) a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement (oath or declaration) unless made by a person registered to practice before the Patent and Trademark Office.

The certificate of mailing procedure of §1.8(a) continues to be available in addition to the proposed procedure under §1.10. The final rule (§1.10) has been changed from that proposed to allow for a reasonable time between mailing and delivery rather than only for one day since actual delivery in one day is not always provided from all areas of the country. The final rule clarifies that each paper or fee must include its own certificate of mailing by "Express Mail." This rule is being promulgated at this time so that individuals who desire to use the service may do so after the effective date.

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The "Express Mail" service is seen to be preferable to other types of postal services because a readily legible mailing date is provided to both the applicant and the Patent and Trademark Office on the "Express Mail" label. Also, the labels are of uniform size and can therefore be kept on file relatively easily by the Office, if such is determined to be necessary or desirable. Registered mail and certified mail, on the other hand, provide only a postmark for the mailing date when such mail arrives in the Patent and Trademark Office and such postmarks are often illegible. Also, such mail arrives in various size envelopes which do not easily lend themselves to being filed so that the postmark may be retained. Administrative burdens including lack of certainty of mailing date and storage are considered greater for registered or certified mail than for "Express Mail." The Patent and Trademark Office will monitor closely the use of "Express Mail" by the public and may reconsider permitting the use of other forms of service provided by the United States Postal Service.

Section 1.17

Section 1.17, paragraph (h), is amended as proposed to remove the reference to §1.45 and add a reference to new §1.48 relating to the correction of inventorship in patent applications.

Section 1.22

Section 1.22 is amended to recognize that filing dates may be assigned without payment of the basic filing fee as authorized by §111 of Title 35, United States Code, as amended by Public Law 97–247. New paragraph 1.22(b) indicates that fees paid to the Office should be itemized in such a manner that the purpose for which the payment is submitted can be clearly determined by Office personnel for proper processing. The final rule includes clarification that it refers to patent and trademark fees and charges.

Section 1.24

Section 1.24 is amended as proposed to remove the reference to coupons in denominations of forty cents since coupons in this denomination are no longer necessary.

Section 1.41

Section 1.41 is amended as proposed to require in paragraph 1.14(a) that a patent be applied for in the name of the actual inventor or inventors and that the full names of the inventors be stated. Paragraph 1.41(b), as amended, clarifies the definition of the word "applicant". New paragraph 1.41(c) permits any person authorized by the applicant to file an application for patent in order to receive a filing date on behalf of the inventor or inventors, but the oath or declaration for the application must be made by all of the actual inventors in accordance with §§1.63 and 1.64. Under new paragraph 1.41(d), a showing may be required from the person initially filing an application that the filing was authorized.

Sections 1.42 and 1.43

Sections 1.42 and 1.43 are amended as proposed to remove the requirement that the legal representative sign the application papers in view of the changes in 35 U.S.C. 111, as amended by Public Law 97–247. The oath or declaration must still be signed. Several occurrences of the masculine gender in §1.42 have been removed.

Section 1.45

Section 1.45 is amended as proposed to remove present paragraphs 1.45(b) and (c) in view of new §1.48 and remove the requirement that joint inventors sign the application papers. The joint inventors are, however, still required to make the oath or declaration in accordance with new §§1.63 and 1.64.

Section 1.46

Section 1.46 is amended as proposed, with two commas being added for clarity, to permit anyone to file the application if authorized by the inventor or inventors or one of the persons mentioned in §§1.42, 1.43, or 1.47.

Section 1.47

Section 1.47 is amended as proposed to change the reference for the rule on oaths or declarations from §1.65 to §1.63.

Section 1.48

Section 1.48 adds a new section relating to correction of inventorship as authorized by §116 of Title 35, United States Code, as amended by Public Law 97–247. Under §1.48, if the correct inventor or inventors are not named in an application for patent, the application could be amended to name only the actual inventor or inventors so long as the error in the naming of the inventor or inventors occurred without any deceptive intention on the part of the actual inventor or inventors. Section 1.48 requires that the amendment be diligently made and be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee. Correction will be permitted, if diligently requested, in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Office has the authority to substitute the true inventor for the erroneously named person. If deceptive intention was present on the part of other individuals substantively involved in the preparation or prosecution of the application their conduct will be considered and appropriate action taken under 37 CFR 1.56. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to different, but actual, joint inventors; conversions from erroneously identified joint inventors to different but actual, joint inventors; and conversions from erroneously identified joint inventors to a different, but actual, sole inventor will also be permitted. In each instance, however, the Office will have to be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name. The final rule language has been modified from that proposed to follow more precisely the language of the statute and the legislative history by permitting correction where the error occurred without any deceptive intention on the part of the actual inventor or inventors.

Section 1.51

Section 1.51 is amended to change the reference in paragraph (a)(2) to new §1.63 for the requirements of an oath or declaration and to change paragraph (b) with regard to the required time for filing information disclosure statements. The final rule has been modified from that proposed by eliminating the word "material" before the "information disclosure statement" and the title has been changed to substitute "a complete" for "an" to be more precise.

Section 1.52

Section 1.52 is amended as proposed to revise paragraph 1.52(c) relating to interlineations, erasures, cancellations or other alterations in application papers to specify that such changes must be made before the signing of any accompanying oath or declaration and should be dated and initialed or signed by the applicant on the same sheet of paper. Paragraph 1.52(c), as amended, prohibits making alterations in the application papers after the signing of an oath or declaration referring to such application papers. Under paragraph 1.52(c), as amended, amendments to application papers made after the signing of an oath or declaration referring to the application papers can only be made in the manner provided by §§1.121 and 1.123–1.125.

Section 1.53

Section 1.53 is amended to revise the title to indicate that the section, as amended, relates to application serial numbers, filing dates and completion of applications. Paragraph 1.53(a) indicates that a serial number is assigned to any filed application for identification purposes, even if the application is incomplete or informal. Paragraph 1.53(b) provides that a filing date is assigned to an application as of the date a specification containing a description and claim and any required drawing are filed in the Patent and Trademark Office. Although the filing fee and oath or declaration can be submitted later, no amendments can be made to the specification or drawings which will introduce new matter. This practice is authorized by 35 U.S.C. 111 as amended by Public Law 97–247. New paragraph 1.53(c) provides for notifying applicant of any application incomplete because the specification or drawing is missing and giving the applicant a time period to correct any omission. If the omission is not corrected within the time period given, the application will be returned or otherwise disposed of and a handling fee of $50.00 will be retained from any refund of a filing fee. New paragraph 1.53(d) provides that, where a filing date has been assigned to a filed specification and drawing, the applicant will be notified and be given a period of time in which to file the missing fee, oath or declaration and to pay the surcharge due. The time period the Office plans to set is one month from the date of notification by the Patent and Trademark Office, but in no case less than two months after the date of filing of the application. New paragraph 1.53(e) indicates that a patent application will not be forwarded for examination on the merits until all required parts have been received. New paragraph 1.53(f) indicates that international applications filed under the Patent Cooperation Treaty which designate the United States of America are considered to have a United States filing date under PCT Article 11(3), except as provided in 35 U.S.C. 102(e), on the date the requirements of PCT Article 11(1)(i) to (iii) are met. Paragraphs 1.53(b) and (c) have been modified from those proposed by changing the word "received" to the word "filed." The word "receipt" in paragraph 1.53(c) has also been changed to "filing". These changes have been made to ensure that the language of §1.53 cannot be considered to conflict with the use of "Express Mail" to file patent applications and obtain a filing date as of the date of deposit as "Express Mail" with the United States Postal Service.

Section 1.54

Section 1.54 is amended as proposed to designate the existing section as paragraph (a) and add a reference to §1.53. Paragraph 1.54(b) is added to indicate that applicant will be informed of the serial number and filing date of the application.

Section 1.55

Section 1.55 is amended to limit the section to claims for foreign priority by removing paragraphs (a) and (d) and redesignating paragraphs (b) and (c) as paragraphs (a) and (b). Paragraph 1.55(a) is amended to change the reference from §1.65 to new §1.63. The final rule language includes a reference to 35 U.S.C. 172 which modifies 35 U.S.C. 119 for design patents.

Section 1.56

Section 1.56 is amended to revise paragraph (c) to remove reference to signing of the application but to add reference to signing of the oath or declaration pursuant to new §1.63. Paragraph 1.56(c) has also been modified from that proposed to break it down into four items as suggested by a comment. Under paragraph 1.56(c), an application may be stricken from the files if an oath or declaration pursuant to §1.63 is signed in blank, is signed without review of the oath or declaration by the person making the oath or declaration, or is signed without the review of the specification, including the claims, as required by §1.63(b). Paragraph 1.56(c) also provides for an application to be stricken from the files if application papers filed in the Office are altered after the signing of an oath or declaration pursuant to §1.63 referring to those application papers.

Section 1.57

Section 1.57 is removed as proposed since the requirements relating to applicant's signature to the oath or declaration of the application are adequately covered in other sections.

Section 1.59

Section 1.59 is rewritten as proposed to refer to and conform with the changes proposed in §1.53.

Section 1.60

Section 1.60 is amended to require the applicant to supply a copy of the originally signed application in all cases where the §1.60 filing procedure is used. The Office will no longer prepare copies. The Office, by a separate final rule, published at 47 F.R. 47242 on October 25, 1982, has adopted a new §1.62 to provide for the filing of a file wrapper continuing application which greatly lessens the need for the Office to continue to prepare copies under §1.60. The final rule language makes clear that the statement accompanying a true copy of the parent application must be a verified statement unless made by a person registered to practice before the Office.

Section 1.62

Section 1.62 is amended to avoid inconsistency with 35 U.S.C. 111 which becomes effective on February 27, 1983. 35 U.S.C. 111 as of that date permits filing dates to be granted to patent applications without receipt of the basic filing fee, or oath or declaration. Section 1.62 is therefore being amended to permit the granting of a filing date in accordance with §111. This amendment of §1.62 is necessary to ensure compliance with 35 U.S.C. 111. The Patent and Trademark Office finds that it would be impractical not to amend §1.62 so as to grant a filing date in accordance with 35 U.S.C. 111 and not doing so might also be construed to prevent applicants from taking advantage of the provisions of 35 U.S.C. 111 authorizing the delay in the filing of the fee and oath or declaration. If §1.62 is not amended in the manner set forth in this final rule, questions may be raised as to compliance with 35 U.S.C. 111 as it will exist effective February 27, 1983. Revised paragraph 1.62(a) indicates the minimum requirements for granting of a filing date. Paragraphs 1.62(b) and (c) cover the filing fee and oath or declaration requirements, respectively. Paragraph 1.62(d) relates to later filing of the filing fee or oath or declaration as provided for in 35 U.S.C. 111. Paragraphs 1.62(e)-(i) are identical to former paragraphs 1.62(b)-(f).

Section 1.63

Section 1.63 is added to replace 1.65 relating to the required content and execution of an oath or declaration filed as a part of a patent application and is intended to state the minimum contents thereof. An applicant may, if desired, choose to include one or more additional averments in the oath or declaration such as, for example, stating that the patent is not barred under the provisions of 35 U.S.C. 102. Paragraph 1.63(a) provides that the

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oath or declaration, (1) be executed in accordance with §1.66 or §1.68, (2) identify the specification to which it is directed in some definite manner such as giving the title of the invention or serial number of the application, if previously filed, (3) identify each inventor and his or her residence and country of citizenship, and (4) state whether the inventor is a sole or joint inventor of the claimed invention.

Paragraph 1.63(b) further requires the oath or declaration to state that the person signing the oath or declaration (1) has reviewed and understands the contents of the identified specification, (2) believes the named inventor is the original and the first inventor, and (3) acknowledges the duty to disclose information which is material. While paragraph 1.63(b) requires the person signing the oath or declaration to review and understand the specification including the claims, it is not intended to require that such person be skilled in patent law so as to grasp the legal implications of claim language and drafting. The person must recognize, however, that what is being claimed is the subject matter which that person regards as his or her invention pursuant to 35 U.S.C. 112.

Paragraph 1.63(c) requires that any application in which a claim for foreign priority is made identify in the oath or declaration the foreign application for patent or inventor's certificate on which priority is claimed, and any foreign application having a filing date before that of the application on which priority is claimed.

Paragraph 1.63(d) requires that the oath or declaration in a continuation-in-part application, which discloses and claims subject matter in addition to that disclosed in the prior copending application, state that the person making the oath or declaration acknowledges the duty to disclose material information as defined in §1.56(a) which occurred between the filing date of the parent application and the national or PCT international filing date of the continuation-in-part application. This latter requirement is not new, but is included to serve as a reminder to the person making the oath or declaration of this duty to disclose material information such as foreign patenting, publication, or public use or sale in the United States which occurred more than one year prior to the filing date of the continuation-in-part application. For example, in circumstances where the claims of the continuation-in-part application are not fully supported by the disclosure of the parent application so as to be entitled to an earlier effective filing date under 35 U.S.C. 120, the duty to disclose extends to any material information, as defined in §1.56(a) measured from the filing date of the continuation-in-part application. This would include the first foreign patenting, and any foreign patenting subsequent to the first which materially differs therefrom, of the subject matter of the parent application which occurred more than one year prior to the national or PCT international filing date of the continuation-in-part application. Any publication of the parent application, other than foreign patenting, or any public use or sale in the United States of the subject matter of the prior application, which occurred more than one year prior to the national or PCT international filing date of the continuation-in-part application, would also come within §1.56(a) in such circumstances. See *In re Ruscetta and Jenny*, 118 U.S.P.Q. 101 (C.C.P.A. 1958); *In re van Langenhoven*, 458 F. 2d 132, 173 U.S.P.Q. 426 (C.C.P.A. 1972), and *Chromalloy American Corp.* v. *Alloy Surfaces, Co., Inc.*, 339 F. Supp. 859, 173 U.S.P.Q. 295 (Del. 1972).

Section 1.64

Section 1.64 is added as proposed to clearly indicate who must sign the oath or declaration of a patent application.

Section 1.65

Section 1.65 is removed as proposed because the oath or declaration requirements set forth therein are covered by new §1.63.

Section 1.67

Section 1.67 is amended as proposed to remove all of paragraphs (a) and (b) and substitute therefor new wording. Paragraph 1.67(a) indicates that a supplemental oath or declaration meeting the requirements of new §1.63 may be required to correct deficiencies or inaccuracies present in an earlier oath or declaration. Paragraph 1.67(b) requires a supplemental oath or declaration to be filed (1) when a claim is presented embracing material not originally claimed and (2) when a subsequently filed oath or declaration under §1.53(d) refers to an amendment which includes improper new matter. Paragraph 1.67(b) also clearly states the prohibition against entry of new matter after the filing date of the application.

Section 1.69

Section 1.69, paragraph (b), is amended as proposed to change the time at which a translation of a non-English language oath or declaration which has not been supplied by the Office must be filed. The time period for filing the translation is changed to two months after notification that a translation is required. The reference to §1.65 in paragraph 1.69(b) is changed to §1.63.

Section 1.70

Section 1.70 is amended to refer to §1.63 for the requirements to be met when an oath or declaration is filed under 35 U.S.C. 371(c)(4). The wording of the title in the final rule is changed to reflect more clearly the subject matter of the rule.

Section 1.77

Section 1.77 is amended as proposed to change paragraphs (h) and (i) to refer to the abstract of the disclosure and signed oath or declaration, respectively.

Section 1.97

Section 1.97 is amended to change the title from "prior art statement" to "information disclosure statement". This change is appropriate since the designation "information disclosure statement" more accurately characterizes the nature and content of the information which may be included in such a statement. Information which is required to be submitted pursuant to §1.56 may ultimately be determined not to be "prior art," but nevertheless may be "material" pursuant to §1.56. Section 1.97 has also been modified from that proposed by eliminating the word "material" since information submitted pursuant to §1.97 may be considered to be of questionable materiality or may be determined, upon examination, not to be "material". Section 1.97 now provides that an information disclosure statement should be filed with the application or within the later of three months after the filing date of the application or two months after applicant receives the filing receipt. Paragraph 1.97(b) has been amended in recognition that applicant may choose to furnish other material information in another manner or statement. Paragraph 1.97(b) now also refers to section 1.56(a) for the definition of "material information". The amendments to paragraph 1.97(b) do not in any manner reduce the obligation to submit material information as defined in §1.56(a).

Section 1.98

Section 1.98 indicates that information disclosure statements should list prior art with all of the information which is required to print such citations on the front page of a patent. The final rule states clearly that the publication date indicated on the document should be submitted. This will not serve to preclude a showing of a different, actual publication date. Another purpose of the citation requirements in this section is to permit ready reference to the document from its citation.

Section 1.99

Section 1.99 is amended to change the title to be consistent with the amendment to §1.97.

Section 1.101

Section 1.101 is amended to indicate specifically that applications which are to have their examination advanced pursuant to §1.102 will be taken up for examination out of order by the examiner. The final rule is also modified to set out when international applications which have complied with the requirements of 35 U.S.C. 371(c) are taken up for action.

Section 1.118

Section 1.118 is amended as proposed to designate the previous section as new paragraph (a) and amend it to clearly state that no new matter may be introduced into an application and to make specific reference to §§1.53, 1.63 and 1.67. New paragraph 1.118(b) indicates how improper amendments which introduce new matter in the specification or claims will be handled by the examiner.

Section 1.123

Section 1.123 is amended to require all corrections to drawings to be made by bonded draftsmen at applicant's expense since the Office does not have sufficient draftsmen to make such corrections. Sketches of any desired corrections will, however, still require approval of the examiner. The final rule makes clear that changes in the drawing may be made by submission of substitute drawings.

Section 1.125

Section 1.125 is amended to relax the prohibition against substitute specifications which are not required by the examiner. The section, however, adds the requirement that any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Under the section the statement must be a verified statement if made by a person not registered to practice before the Office. The final rule specifies that a substitute specification may not be accepted unless it is clear to the examiner that processing of the application would be facilitated thereby.

Section 1.131

Section 1.131 is amended as proposed to refer to the use of affidavits or declarations under the section during reexamination of a patent as long as the patent upon which the rejection is based does not claim the rejected invention. Section 1.131 cannot be used to overcome a rejection based upon a United States patent claiming the rejected invention. This is true regardless of whether the rejected claims are contained in an application being examined or a patent being reexamined. Section 1.131 is inapplicable if the same invention is being claimed by the United States patent upon which the rejection is based. Under the section as amended, the same person or persons who would make the affidavit or declaration in an application will be required to make the affidavit or declaration on behalf of the owner of the patent under reexamination.

Section 1.132

Section 1.132 is amended as proposed to refer to the use of affidavits or declarations under the section during reexamination of a patent.

Section 1.137

Section 1.137 is amended as proposed to except from the provisions of paragraph (b) those applications abandoned pursuant to §1.53(d) because the fee, oath, or declaration and the surcharge were not submitted. Section 111 of Title 35, United States Code, as amended by Public Law 97–247, requires that any delay in submission of the fee and oath be shown to be unavoidable. Thus, paragraph (b) of §1.137 permitting revival where abandonment was unintentional is inapplicable to the revival of applications which become abandoned pursuant to §1.53(d).

Section 1.141

The proposed amendments to §1.141 are withdrawn infra to permit the public to study the issues involved and make any further recommendations considered appropriate.

Section 1.153

Section 1.153 is amended to change the reference for oath and declaration requirements from §1.65 to §1.63 and to conform the language of the rule to be consistent therewith.

Section 1.154

Section 1.154 is amended as proposed to revise paragraph (e) to refer to the signed oath or declaration requirements of §1.153(b).

Section 1.162

Section 1.162 is amended as proposed to change the reference from §1.65 to §1.63.

Section 1.163

Section 1.163 is amended as proposed to change the wording of the section to clearly indicate that a signed oath or declaration is required rather than a signed specification.

Section 1.172

Section 1.172 is amended to indicate clearly that the reissue oath is signed and sworn to rather than the reissue application. The final rule has been modified from that proposed by referring to a "reissue oath" rather than to "reissue oaths".

Section 1.174

Section 1.174 is amended as proposed to remove the requirement that photoprints of original drawings be securely mounted or pasted on sheets of drawing board because paper drawings are acceptable.

Section 1.175

Section 1.175 is amended as proposed to change the reference to the oath or declaration from §1.65 to §1.63.

Sections 1.301, 1.302 and 1.303

The proposed amendments to sections 1.301, 1.302 and 1.303, referring to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals, have been adopted as final rules as published on Oct. 26, 1982 at 47 FR 47380–47382 and corrected on Nov. 5, 1982 at 47 FR 50142 and therefore are not republished here.

Section 1.324

Section 1.324 is amended to include wording similar to that in §1.48 for correction of inventorship in applications.

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Section 1.325

Section 1.325 is amended as proposed to include reference to the reexamination procedure.

Section 1.335

Section 1.335 is added as proposed to provide a new section relating to the filing in the Patent and Trademark Office of notices of arbitration awards. Such filing is required under §294 of Title 35, United States Code, as added by Public Law 97–247. The final rule has also been modified in response to a comment to indicate that the notices of arbitration awards are intended to be placed in the patent files.

Section 1.565

The proposed amendments to §1.565 are withdrawn infra to permit the public to study the issues involved and make any further recommendations considered appropriate.

Section 5.12

Section 5.12 is amended as proposed to separate the section into two paragraphs. Paragraph (a) provides that the filing of an application for an invention made in the United States is considered to include a petition for a license for foreign filing. If a license is granted, it will be indicated on the filing receipt. If it is not granted, no indication of the denial will appear. Failure to grant a license should be considered a denial of a first petition for a license. A subsequent petition may be filed under §5 12(b). Section 5.12(b) is essentially the text of §5.12 in its previous form. No rights to file a petition for license are being removed.

Withdrawal of Proposed Amendments To Sections 1.141 and 1.565.

A number of the speakers at the public hearing held on Dec. 16, 1982, urged that the amendments to §§1.141 and 1.565 be deferred or dropped pending further study. Those urging that the proposed amendments to §1.141 not be adopted at this time included speakers from the American Patent Law Association, from Committee 103 of the American Bar Associations's Patent, Trademark & Copyright Section, and from the Bar Association of the District of Columbia. The Boston Patent Law Association urged that the amendment to §1.565 be removed or held in abeyance. The American Patent Law Association indicated that more time was needed for its committees to analyze the issues in the proposed amendments to §§1.141 and 1.565.

In response to the recommendations received at the public hearing, the proposed amendments to §§1.141 and 1.565 are being withdrawn at this time to permit the public to study the issues involved and make any further recommendations considered appropriate. Pending the further study referred to by the speakers at the hearing and consideration of any recommendations resulting therefrom, the Office will continue to operate under present §§1.141 and 1.565 as interpreted by the Manual of Patent Examining Procedure and relevant Patent and Trademark Office and judicial precedents.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Forty-eight letters presenting written comments were received and seven persons testified at the public hearing on Dec. 16, 1982.

Comments appear below along with responses thereto.

Comment:

One comment objected to inadequate notice regarding these proposed rule changes.

Reply:

The proposed rules notice was published in the Federal Register on Oct. 27, 1982. This is more than seven weeks prior to the date of the hearing and four months prior to the effective date of the final rules. Such periods are considered to be reasonable in view of the fact that the legislation requiring the rule changes was only enacted on Aug. 27, 1982 and that other rule changes were required to be implemented by Oct. 1, 1982.

Comment:

One comment proposed that "Patent and Trademark Office" should be used in the rules rather than merely "Office".

Reply:

The proposal has been adopted in the final rules in those locations where confusion may otherwise result.

Comment:

Five comments requested that promulgation of §§1.10, 1.63, 1.97, 1.141 and 1.565(e) be delayed and the period for comment extended until Mar. 30, 1983.

Reply:

Amendments to §§1.141 and 1.565 are not being promulgated at this time to provide time for further consideration and study as requested. If after study, a rule change is felt desirable, a new proposal will be issued. New §1.10 is being promulgated to make it available to applicants as it was intended in the statute. New §1.63 is being added and §1.65 deleted to reduce the formal statements required. If desired, the old oath and declaration forms may continue to be used if the statement is included that applicant "has reviewed and understands the contents of the specification, including the claims". For continuation-in-part applications, it is necessary to also include language is conformance with §1.63(d). Section 1.97 is being promulgated to remove problems relating to the time period in the current wording and to clarify the section in general.

Comment:

One person questioned why Sunday was not mentioned in §1.6(b) or (c).

Reply:

Section 1.6(b) and (c) are limited to weekdays which by definition excludes Sunday.

Comment:

Two comments were received which proposed that only a certificate of mailing procedure as in §1.8(a) be used for determining the date of deposit under 35 U.S.C. 21.

Reply:

The filing date of an application is considered to be much more critical than the filing dates of papers accepted under §1.8. The application filing date is often critical for determining if a statutory bar exists, whether foreign priority can be claimed and who is the senior party in an interference. Therefore, papers filed for purposes of receiving an application filing date should have some clear indication of the date of receipt by the United States Postal Service. Such a practice would also probably require storing all of the envelopes in the file wrapper for record purposes.

Comment:

Three comments were received which stated that private courier services should also be provided for in §1.10.

Reply:

Section 21(a) as amended by Public Law 97–247 provides for filing dates being given only when "deposited with the United States Postal Service." Although private courier services may be used to deliver papers to the Patent and Trademark Office, the actual date of receipt by the Patent and Trademark Office will be considered to be the filing date.

Comment:

A comment was received which argued that the Post Office date stamp should be stamped on the mailing label instead of having to enter the label number on each document.

Reply:

Stamping the mailing label would not add anything since the postal clerk receiving the "Express Mail" must already indicate the date and time of deposit and initial the label. A purpose of placing the label number on each paper is to permit several papers to be placed in a single envelope. The mailing labels may be retained in the Patent and Trademark Office for later verification.

Comment:

Seven comments were received that the requirement that the item be received the following day (§1.10(b)) was unnecessarily restrictive.

Reply:

Section 1.10 does not require that the item be received the next day in the Patent and Trademark Office in order to receive the date of deposit as the mailing date. The one day reference has been deleted. Further proof of mailing may be required where an unreasonable period of time is involved and supporting evidence is not otherwise available to the Patent and Trademark Office. Documents deposited with the United States Postal Service will be given a filing date which corresponds to the date of receipt indicated by the postal clerk on the "Express Mail" mailing label.

Comment:

Four comments indicated that §1.10 does not assist in placing applicants and attorneys outside the Washington area on the same footing as those in Washington.

Reply:

The main purpose of §1.10 is to implement 35 U.S.C. 21(a) in a manner which would provide for granting filing dates for papers and fees as of the date of their deposit with the United States Postal Service. Certainly these provisions using "Express Mail," together with the certificate of mailing procedure available under §1.8, will go a long way in reducing last minute deliveries to the Patent and Trademark Office by persons outside the Washington area.

Comment:

Two comments stated that the comments accompanying§1.10(c) should be clarified to explain the meaning of "more than one day."

Reply:

The final rule has been clarified.

Comment:

It was proposed by one person that the "affidavit or declaration" under §1.10(c) be waived if the statement is made by a registered attorney or agent.

Reply:

The suggestion has been adopted.

Comment:

It was indicated by one person that certified mail provides proof of mailing date under §1.10 by virtue of the Post Office stamp on the certified mail receipt card.

Reply:

The information on the certified mail receipt card is of no benefit to the Patent and Trademark Office since it is immediately returned to the sender. The Patent and Trademark Office would not be able to retain any information which gives proof of the date of mailing.

Comment:

Three comments raised questions as to the need to make the acceptance of the "Express Mail" contingent upon the performance of the Post Office in §1.10(c).

Reply:

The acceptance of the "Express Mail" is not contingent upon "next day delivery". The reference in §1.10(c) to proof of mailing merely provides a basis for the Office requiring proof of mailing where an explanation appears to be necessary to clarify the record. Such information is expected to be required only in a few instances. The rule has also been revised to clarify this matter.

Comment:

Five persons suggested the use of registered or certified U.S. mail for obtaining filing dates under 35 U.S.C. 21.

Reply:

Registered mail does not provide any information or evidence to the Patent and Trademark Office as to the date of mailing other than the postmark, which is often unreadable. Storage of envelopes containing such postmarks is also burdensome. The deficiency of certified mail has already been discussed.

Comment:

One person questioned what treatment will be accorded a paper placed in an "Express Mail" box receptacle after the box has been cleared for the last time on a given day.

Reply:

The paper will be considered to be deposited as of the date of receipt indicated on the "Express Mail" mailing label by the Postal Service clerk.

Comment:

One person commented that he found the idea of using a declaration or affidavit to establish a date of deposit unacceptable because it exposes the integrity of the assignment of filing dates to the risk of deception.

Reply:

The use of declarations or affidavits is usually intended to help explain activities which can be supported by exhibits. For example, if the Office copy of the mailing label was not entirely readable, applicant's copy of the "Express Mail" mailing label could accompany a declaration and serve as the basis for granting a filing date.

Comment:

Three persons objected to permitting only the individual who places the correspondence in an "Express Mail" facility to execute the certificate of express mailing under §1.10(c).

Reply:

The wording of §1.10(c) differs from §1.8 because the documents which are expected to be filed under §1.10 are patent and trademark applications. The filing dates of such documents are very important and should therefore be based on personal knowledge.

Comment:

One comment was received which suggested that §1.10 be adopted with an effective date retroactive to a year earlier.

Reply:

Such an earlier date is not possible since the statutory authority for §1.10 does not come into effect until Feb. 27, 1983.

Comment:

One comment proposed designating the Patent and Trademark Office as an "Express Mail" Post Office to make lower rates available.

Reply:

Such a designation is not possible.

Comment:

One person requested that the Patent and Trademark Office publish a form of certificate of mailing by "Express Mail" suitable for purposes of §1.10(b).

Reply:

A suggested form is included in the preamble of this rule change.

Comment:

One comment proposed that §1.10(c) clearly state what evidence will be necessary and sufficient to prove a filing date by mailing.

Reply:

A specific answer cannot be given since it is dependent upon the particular fact situation and what evidence is actually available.

Comment:

Two comments questioned whether P.L. 97–247 authorized a rule such as §1.10 granting filing dates as of the mailing date.

Reply:

The question raised by this comment has been treated in the discussion of §1.10 supra.

Comment:

One comment proposed that §1.10 be corrected to read—Any paper or fee *required* to be filed—to more closely conform with 35 U.S.C. 21(a).

Reply:

No need is seen to change §1.10 as suggested since, if a patent is desired, it is "required" that each paper relating to an application be filed in the Patent and Trademark Office.

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Comment:
One comment indicated that the requirement to place the "Express Mail" label number on each paper and fee is not realistic.
Reply:
The placement of the label number on each paper or fee allows later verification of the mailing dates of all different papers mailed in one envelope and is not seen to be overly burdensome.
Comment:
A question was raised as to whether the "Express Mail" label number should be placed on every page.
Reply:
The label number need not be placed on each page. It should, however, be placed on the first page of each separate document, such as, a new application, amendment, assignment, and transmittal letter for a fee, along with the certificate of mailing by "Express Mail". Although the label number may be on checks, such a practice is not required.
Comment:
A question was raised by one party as to the location within the Patent and Trademark Office of the mailing labels where papers to different applications are placed in the same envelope.
Reply:
The mailing labels from all "Express Mail" packages are expected to be removed and initially retained centrally in the Mail Room of the Patent and Trademark Office. The number on each document will allow direct access to the appropriate mailing label if any questions should arise.
Comment:
One comment suggested that §1.22(b) be amended to exclude itemization of all fees where a general authorization to charge a deposit account has been given.
Reply:
Even where fees are charged to a deposit account, it is desirable to know specifically which fees are to be paid. Therefore, the suggestion has not been adopted.
Comment:
One comment was received which suggested adding a sentence to §1.41(d) indicating that the filing of an oath or declaration executed by the applicant would constitute proof of authority to file the application.
Reply:
Such an additional sentence is not considered to be necessary since the Patent and Trademark Office does not intend to utilize the provisions of §1.41(d) unless a controversy arises.
Comment:
One comment was received which suggested the addition to the end of §1.42 of the words "except for patents granted to the assignee either of the inventor or of the legal representative of the inventor."
Reply:
No change is considered to be necessary since few, if any, problems have arisen without such additional wording in the past. The existing rule wording "upon proper intervention" also provides protection for assignees.
Comment:
One comment was received which indicated that §1.46 does not clearly authorize an assignee of a part interest to cause an application to be placed on file.
Reply:
Although §1.46 may not make this point clear, it is clear from §1.41(c).
Comment:
One comment recommended that the requirement to show diligence in correcting inventorship under §1.48 be deleted.
Reply:
It is felt that corrections of inventorship should be diligently made in patent applications. The naming of correct inventorship is necessary for the Patent and Trademark Office to make decisions on topics such as double patenting, priority claims and first inventorship.
Comment:
It was recommended in one comment that the verified statement of facts required by §1.48 "by the original named inventor or inventors" be replaced by a requirement that he or they merely assent to the statement of the facts since others may be better able to provide the best evidence.
Reply:
Since it is the original inventorship that is being changed, it is believed that all of the previously named inventors should positively indicate their agreement with the facts in the case. Affidavits by other individuals may also be supplied where such persons have direct personal knowledge of certain aspects of the case.
Comment:
One comment indicated that "it seems a reasonable presumption that if ownership is unaffected, deceptive intent is absent" in a §1.48 correction of inventorship situation and that such a presumption could be written into the rules.
Reply:
Even if applications are commonly owned, the wrong inventorship could be deceptively named to obtain rights which are only available to the same inventive entities. The report on Public Law 97–247 also states that "the commissioner must be assured of the presence of innocent error, without deceptive intention . . ." before permitting a substitution of a true inventor's name.
Comment:
One person suggested that the deceptive intent in §1.48 refer to the acts of the actual inventors rather than to both the alleged and actual inventor or inventors.
Reply:
This suggestion has been adopted in both §§1.48 and 1.324, but deceptive intention on the part of other parties is subject to review under §1.56.
Comment:
One person suggested that in §1.48, line 3 "may" be changed to—must—.
Reply:
The suggestion has not been adopted. Corrections may only be made if the conditions set forth in §1.48 are satisfied.
Comment:
Two comments objected to the insertion of "material" in §1.51(b).
Reply:
This word has been removed and does not appear in the final rule.
Comment:
One comment suggested changing "an" to—a complete—in the title of §1.51.
Reply:
This suggestion has been adopted.
Comment:
One comment indicated that §§1.52(c) and 1.56(c) seemed overly inflexible and harsh when considering minor grammatical changes.
Reply:
Although §1.56 indicates that applications "may" be stricken, rather than "must" be stricken, it is still considered important to maintain a clear line in the regulations against changes in the original applications made after the execution of the application oath or declaration. The line between grammatical changes and changes relating to the merits is frequently unclear.
Comment:
Three comments noted an apparent inconsistency between proposed §§1.10 and 1.53 as to whether §1.10 relates to the filing of patent applications.
Reply:
Section 1.10 does relate to the filing of patent applications. In order to clarify the wording, "received" in §1.53(b) has been changed to "filed".
Comment:
One comment was received suggesting that a sentence be added to §1.53(d) to indicate that PCT applicants cannot submit late filing fees, oaths or declarations under 35 U.S.C. 371.
Reply:
Such a reference in §1.53 does not appear appropriate because this section relates to "filing dates". In the PCT situation, the filing date was already granted at the time of filing the PCT international application.

Comment:
One comment was received which suggested that §1.53(a) be rewritten to indicate all applications are assigned serial numbers but not accorded filing dates.
Reply:
The proposal was not adopted since it is considered unnecessary.
Comment:
One person suggested that §1.53(b) be amended to specify that only "a specification *purporting* to contain a description and at least one claim . . ." is needed to obtain a filing date.
Reply:
No change is being made since a determination must be initially made as to whether or not a specification has been filed. In any case, sufficiency of the specification must later be checked by the examiner.
Comment:
One person indicated that the time period for filing a correction to a defect in an application is left entirely within the discretion of the Commissioner and that any setting of periods of time would be tantamount to an exercise of rulemaking authority. Section 1.53(d) should be provided with an explicit time limitation.
Reply:
No specific time period is considered to be necessary in the regulations. The Commissioner has full authority and discretion under the statute in 35 U.S.C. 111 to set periods of time. The statute does not require the Commissioner to use the rulemaking process to set time periods for response to an action or requirement by the Patent and Trademark Office in a patent application.
Comment:
Two comments were received objecting to the use of the words "or otherwise disposed of" in §1.53(c).
Reply:
This wording has existed in §1.53(b) in the past without objection. No need is seen to depart from this wording at this time.
Comment:
One person questioned whether the change in §1.54(b) would result in return post cards not being stamped with the application serial number.
Reply:
No change is intended in the existing return post card practice.
Comment:
One comment proposed adding another sentence to §1.154(b) indicating that foreign priority claims will be acknowledged on the filing receipt.
Reply:
This proposal is not being adopted since the examiner must determine whether the statutory requirements of 35 U.S.C. 119 have been met before an acknowledgment can be sent.
Comment:
One comment suggested that the Patent and Trademark Office indicate on the filing receipt both the filing date under §1.10 and the actual date of receipt.
Reply:
The actual date of receipt can be obtained by requesting a receipt from the Postal Service. The actual date of receipt cannot be placed on the filing receipt because of current computer limitations. The suggestion is therefore not being adopted at this time.
Comment:
One comment was received indicating that it is not clear whether or not an application based on a specification and drawing, but containing no oath or declaration or filing fee, could serve as the basis for a priority claim under 35 U.S.C. 120.
Reply:
If the filed specification and drawings fully disclose the invention as required by 35 U.S.C. 112, the application may serve as a basis for a priority claim under §120 even if no oath or declaration, or no fee has been filed, as long as the continuing application is filed prior to the abandonment of the first application under §1.53(d).
Comment:
One comment suggested that §1.55(b) be removed since the requirements of the statute are fully set forth in 35 U.S.C. 119.
Reply:
Although the statutory requirements set forth basic requirements, it is felt that the more specific details of §1.55(b) provide needed guidance for applicants.
Comment:
Two persons questioned the meaning of "inspection and review" in §1.56(c) and suggested certain amendments.
Reply:
The words "inspection and" are being removed to eliminate any redundancy. The paragraph has also been broken down into four items as proposed by a comment.
Comment:
One suggestion was made that applicant be allowed to order a copy of the parent patent, with payment of fee, when filing a §1.60 application.
Reply:
Such a practice is contrary to the intent of the rule change. The problems the Patent and Trademark Office is attempting to solve by the change, which are caused by poor copies and delays in processing, would remain with such a practice.
Comment:
Two persons suggested that §1.60 be amended to drop "and claimed" from the title.
Reply:
The suggestion has been adopted.
Comment:
One person suggested that §1.60 be modified to drop the requirement for verification by affidavit when the statement is made by a registered patent attorney or agent.
Reply:
The suggestion has been adopted.
Comment:
One comment noted that there is no specific requirement in §§1.56, 1.63 or 1.98 to identify foreign applications filed more than one year prior to the U.S. filing date.
Reply:
Section 1.63(b)(3) broadly requires applicant to acknowledge the duty to disclose information material to the examination of the application. This information includes foreign patents based on applications filed more than a year prior to the filing date of the United States application and which issue before the filing date of the United States application.
Comment:
One person felt that §1.63(b)(1) will be a disaster for the patent system since the inventor may not be physically able to review and understand the invention or because the legal language format used in claims may not be understood by the inventor. Five persons argued that adoption of §1.63 would result in raising the defense that the inventor did not understand the claims in each patent infringement suit.
Reply:
The inventor is not expected to understand all the legal interpretations or limitations in a claim. The inventor is expected to recognize that what is being claimed is the subject matter which the inventor regards as his or her invention pursuant to 35 U.S.C. 112. The physical factors have to some extent existed in past practice and have been handled on a case-by-case basis where necessary. The situation outlined would exist in any signing of a legal document. The wording of §1.63 has been explained in the preamble to minimize occurrences of problems.
Comment:
One comment noted that many inventors do not know whether additional subject matter is claimed in a continuation-in-part application under §1.63(d).
Reply:
The wording in §1.63(d) is considered to be appropriate and in accordance with case law. If uncertainty ex-

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ists the attorney or agent, if any, should clarify the matter and §1.63(d) should be followed.
Comment:
One person proposed that §1.63(d) be modified to explicitly require the disclosure of foreign patents granted before the filing of the continuation-in-part application.
Reply:
Section 1.63(d) has been amended to clearly indicate that material information pursuant to §1.56(a) between the filing date of the parent application and the filing date of the continuation-in-part application must be disclosed. The discussion of new §1.63 refers to material foreign patents published during this time interval.
Comment:
Two comments indicated concern with the parenthetical language in proposed §1.63(d) in that it would create severe problems.
Reply:
Paragraph (d) of §1.63 has been amended to remove such problems.
Comment:
One comment suggested adding—he or she is aware of—after information in §1.63(b)(3) and (d).
Reply:
This suggestion is not adopted since such wording is already present in §1.56(a).
Comment:
One comment suggested that §1.63(c) clarify what is intended by "the first filed foreign application," particularly in view of 35 U.S.C. 119, third paragraph.
Reply:
The rule has been amended to clarify the matter.
Comment:
One comment was received suggesting changes be made in the title and that paragraph (b) of §1.70 refer to §1.63 instead of "this section."
Reply:
The change suggested to the title has been made. The suggestion to paragraph (b) has not been made since it is considered unnecessary.
Comment:
Three comments were received which indicated that the wording of §1.97(a) would require an immediate filing of disclosure information if the filing receipt is received just before three months after filing.
Reply:
The wording of §1.97(a) has been changed to remove this problem.
Comment:
One comment was received which urged that the title of §1.97 and contents of §1.97(b) not be changed, since the proposed wording would not require filing of the closest prior art.
Reply:
The proposed changes are not intended to make any changes in the type of information which is to be submitted to the Office. The proposal has been adopted in modified form.
Comment:
One person indicated preference for the use of "prior art" in §§1.51(b), 1.97, 1.98, and 1.99 since it does not create an inferred admission that the information submitted is material. Five comments favored the removal of "prior art" from §1.97 but objected to the addition of "material".
Reply:
The rule change was proposed to answer arguments that the use of the term "prior art" implied that the information was a reference against applicant's invention. Since the majority of the comments supported modifying the rule, the use of the terms "prior art" as well as "material" are being dropped.
Comment:
Two comments were received concerning §1.98(a) suggesting that the "place of publication" be clarified or removed.
Reply:
This suggestion has not been adopted since the "place of publication" is not mandatory. It is intended to mean the city and country of publication. Also the citation of the "place of publication" is consistent with the §1.107(a) requirements.
Comment:
It was suggested by one person that §1.101 be amended to clarify when PCT international applications which have entered the national stage should be taken up for examination.
Reply:
An amendment has been made to §1.101 as suggested to clarify that they are taken up in order based on the date they have entered the national stage by compliance with the requirements of 35 U.S.C. 371(c).
Comment:
One comment was presented suggesting that the words "which are not examined on the merits" in §1.101 be removed.
Reply:
The suggestion has been adopted.
Comment:
One comment urged returning to the use of the Office draftsmen for minor corrections to reduce the burden under proposed §1.123.
Reply:
Some minor corrections may be made by the Office draftsmen on a time-available basis. However, since the Office currently has only a few draftsmen who are responsible for reviewing and approving all drawings, very little time is presently available for making corrections.
Comment:
Four suggestions were made to amend §1.123 to specifically provide for the filing of substitute drawings if corrections are required.
Reply:
These suggestions have been adopted.
Comment:
One comment was received indicating that §1.125 should indicate to whom it should be clear that acceptance of a substitute specification would facilitate processing.
Reply:
An amendment has been made to clarify that it should be clear to the examiner.
Comment:
One comment suggested removal of the last sentence of §1.137(b) to permit §1.183 petitions to be filed to waive time periods for requesting revival of unintentionally abandoned applications.
Reply:
No change in §1.137(b) is considered to be appropriate at this time since §1.137(b) only became effective on Oct. 1, 1982.
(Since changes to §1.141 are not being promulgated in this rule change, comments and replies to this section are not included.)
Comment:
One comment pointed out that the reference to a "period of twelve months" in §1.153 was indefinite.
Reply:
Section 1.153 has been amended to remove the indefiniteness.
Comment:
One comment was presented which suggested that §1.172 refer to a "reissue oath" rather than to "reissue oaths."
Reply:
This suggestion has been adopted.
Comment:
One comment suggested the insertion of "the filing of" before "each patent" in §1.335(a) and (b).
Reply:
The suggestion has been adopted.
(Since the proposed addition of a new paragraph (e) to §1.565 is not being adopted in this rule change, comments and replies to this section are not included.)
Comment:
One suggestion was made that a procedure be designed in which foreign filing licenses could be

granted by return post card without losing the time required to send the filing receipts.
Reply:
It is felt that the procedure under §5.12 should be adopted at this time and be placed into operation. If after some experience additional modifications are found desirable, further changes could be made. To introduce several alternative procedures at this time is considered to be too complex and may endanger the success of the proposed procedure.
Comment:
One comment requested that the Office grant a prospective foreign filing license under §5.12 for all data and amendatory material to be filed abroad.
Reply:
Such petitions are not part of this proposed change but this concept is being considered in a separate rule change proposal.
Comment:
One comment suggested that the Filing Receipt specifically indicate whether or not a license has been denied under §5.12.
Reply:
The proposed practice under §5.12 would indicate on the Filing Receipt when a license is granted. On other cases in which a license is not granted further review is required. A license may still be granted at a later date.
Comment:
One comment stated that it should be possible to petition at any early date for a foreign filing license as well as obtain one on the filing receipt.
Reply:
It will still be possible to petition earlier for a license under revised §5.12.

Implementation Of Patent Procedure Revisions

The effective date of the patent procedure revisions contained in this rulemaking is Feb. 27, 1983. The various sections will be implemented in the manner set forth below:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

The "Guidelines under §1.10" set forth below provide guidance in implementing §1.10:

Guidelines under §1.10

A) The certification under §1.10 requires a signature of the person depositing the paper with the United States Postal Service as "Express Mail". Specifically, if the certification under §1.10 appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification under §1.10.
B) When possible, the certification under §1.10 should appear on an upper portion of the first page of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO–85, the certification should be on a separate sheet securely attached to the paper.
C) When the certification is presented on a separate sheet, that sheet must (1) be signed and (2) fully identify and be securely attached to the paper or fee it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., complete application, specification and drawings, responses to rejection or refusal, notice of appeal, etc. If the serial number of the application is not known, the identification should include at least the name of the inventor(s) and the title of the invention. An unsigned certification will not be considered acceptable.
Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.
D) In situations wherein the correspondence includes papers for more than one application e.g., a single envelope containing separate applications or papers for various parts of the Patent and Trademark Office, each paper must have its own certification and the "Express Mail" label number as part thereof or attached thereto.
E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a notice of appeal), each paper should also have its own certification as a part thereof or attached thereto.
F) Practitioners may place the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

"Express Mail" mailing label number _____

Date of Deposit _____

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

_____
(Typed or printed name of person mailing paper or fee)

_____
(Signature of person mailing paper or fee)

§1.48 Correction of inventorship.

Any patent application pending on or after Feb. 27, 1983, is subject to the provisions of this section.

§1.53 Serial number, filing date, and completion of application.

The provisions of this section apply to any patent application filed on or after Feb. 27, 1983.

§1.63 Oath or declaration.

The provisions of §1.63 will become effective on Feb. 27, 1983, and will apply to any oath or declaration filed on or after that date. However, in order to provide a smooth transition from the old oath or declaration requirements to the new, the Office will continue to accept between Feb. 27, 1983, and June 30, 1983, any oath or declaration in compliance with §1.65 as it existed immediately prior to Feb. 27, 1983, so long as that oath or declaration is attached to and was executed as a part of an application to be filed in the Patent and Trademark Office.
Effective July 1, 1983, all oaths or declarations filed under §1.51(a)(2) as a part of a patent application must fully comply with §1.63.
A suggested format for a declaration is set forth below:

Declaration For Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

_____
the specification of which

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(check one) ☐ is attached hereto.
☐ was filed on _____ as Application Serial No. _____ and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

			Priority Claimed	
(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No
(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No
(Number)	(Country)	(Day/Month/Year Filed)	☐ Yes	☐ No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor _____
Inventor's signature _____
Date _____
Residence _____
Citizenship _____
Post Office Address _____
Full name of second joint inventor, if any _____
Second Inventor's signature _____
Date _____
Residence _____
Citizenship _____
Post Office Address _____

(Supply similar information and signature for third and subsequent joint inventors.)

The declaration form set forth above is specifically designed for use where the specification is attached to the form and the specification and declaration are filed at one time, and also where the declaration form is filed after the specification and drawings in accordance with §1.53. The form can be used where foreign priority is claimed under 35 U.S.C. 119 and where the benefit of one or more United States applications is claimed under 35 U.S.C. 120. Appropriate modifications can be made in the form so long as compliance with the rules is maintained. For example, if the form is being used as a supplemental declaration form which is being submitted after numerous amendments the form might appropriately be modified by changing the words "was amended on" to "with amendments through."

§1.335 Filing of notice of arbitration awards.

The written notices required by this section should be directed to the attention of the Office of the Solicitor, which Office will be responsible for processing of such notices.

Other Considerations

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act. (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*

The rule change will not have a significant averse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Public Law 97–247 has taken into consideration the impact it may have on small entities. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to foreign filing license petitions, will be reduced.

List of Subjects in 37 CFR Parts 1 and 5

Administrative practice and procedure, Courts, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97–247, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

37 CFR, Parts 1 and 5, are amended as follows:

1. Section 1.4 is amended by revising paragraph (a) to read as follows:

§1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises: (1) correspondence relating to services and facilities of the Office, such as general inquiries, requests for publications supplied by the Office, orders for printed copies of patents or trademark registrations, orders for copies of records, transmission of assignments for recording, and the like, and (2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§1.31 to 1.352; of international applications in Subpart C, §§1.401 to 1.482; of reexamination of patents in Subpart D, §§1.501 to 1.570; and of trademark applications, §§2.11 to 2.189.

* * * * *

2. Section 1.6 is revised to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

(b) Mail placed in the Patent and Trademark Office pouch up to midnight on weekdays, excepting Saturdays and federal holidays, by the post office at Washington, D. C., serving the Patent and Trademark Office, is considered as having been received in the Patent and Trademark Office on the day it was so placed in the pouch.

(c) In addition to being mailed or delivered by hand during office hours, letters and other papers may be deposited up to midnight in a box provided at the guard's desk at the lobby of building 3 of the Patent and Trademark Office at Crystal Plaza, Arlington, Virginia and at the main entrance (14th Street) of the Department of Commerce Building, Washington, D. C., on weekdays except Saturdays and federal holidays, and all papers deposited therein are considered as received in the Patent and Trademark Office on the day of deposit.

(d) If interruptions or emergencies in the United States Postal Service which have been so designated by the Commissioner occur, the Patent and Trademark Office will consider as filed on a particular date in the Office any paper or fee which is (1) promptly filed after the ending of the designated interruption or emergency and (2) accompanied by a statement indicating that such paper or fee would have been filed on that particular date if it were not for the designated interruption or emergency in the United States Postal Service. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

3. Section 1.7 is revised to read as follows:

§1.7 Times for taking action: Expiration on Saturday, Sunday or federal holiday.

Whenever periods of time are specified in this part in days, calendar days are intended. When the day, or the last day fixed by statute or by or under this part for taking any action or paying any fee in the Patent and Trademark Office falls on Saturday, Sunday, or on a federal holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding day which is not a Saturday, Sunday, or a federal holiday. See §1.304 for time for appeal or for commencing civil action.

4. Section 1.8 is amended by revising the introductory text of paragraph (a) and paragraph (a)(1), (a)(2) introductory text, and (a)(2)(i) to read as follows:

§1.8 Certificate of mailing.

(a) Except in the cases enumerated below, papers and fees required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if: (1) they are addressed to the Commissioner of Patents and Trademarks, Washington, D. C. 20231, and deposited with the U.S. Postal Service with sufficient postage as first class mail prior to expiration of the set period, and (2) they also include a certificate for each paper or fee stating the date of deposit. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed on or before the date indicated. The actual date of receipt of the paper or fee will be used for all other purposes. This procedure does not apply to the following:

(i) The filing of a national patent application specification and drawing or other papers for the purpose of obtaining an application filing date;

* * * * *

5. A new section 1.10 is added to read as follows:

§1.10 Filing of papers and fees by "Express Mail" with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the "Express Mail Post Office to Addressee" service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as "Express Mail" with the United States Postal Service.

(b) Any paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing, be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and any such paper or fee must also include a certificate of mailing by "Express Mail" which states the date of mailing by "Express Mail" and is signed by the person mailing the paper or fee.

(c) The Patent and Trademark Office will accept the certificate of mailing by "Express Mail" and accord the paper or fee the certificate date under 35 U.S.C. 21(a) without further proof of the date on which the mailing by "Express Mail" occurred unless a question is present regarding the date of mailing. If more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date or if other questions regarding the date of mailing are present, the person mailing the paper or fee may be required to file a copy of the "Express Mail" receipt showing the actual date of mailing and a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

6. Section 1.17 is amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph—$120.00

—§1.47—for filing by other than all the inventors or a person not the inventor
—§1.48—for correction of inventorship
—§1.182–for decision on questions not specifically provided for
—§1.183–to suspend the rules

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—§1.268–for late filing of interference settlement agreement

* * * * *

7. Section 1.22 is revised to read as follows:

§1.22 Fees payable in advance.

(a) Patent and trademark fees and charges payable to the Patent and Trademark Office are required to be paid in advance, that is, at the time of requesting any action by the Office for which a fee or charge is payable with the exception that under §1.53 applications for patent may be assigned a filing date without payment of the basic filing fee.

(b) All patent and trademark fees paid to the Patent and Trademark Office should be itemized in each individual application, patent or other proceeding in such a manner that it is clear for which purpose the fees are paid.

8. Section 1.24 is revised to read as follows:

§1.24 Coupons.

Coupons in denominations of one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

9. Section 1.41 is revised to read as follows:

§1.41 Applicant for patent.

(a) A patent must be applied for in the name of the actual inventor or inventors. Full names must be stated, including the family name and at least one given name without abbreviation together with any other given name or initial.

(b) Unless the contrary is indicated the word "applicant" when used in these sections refers to the inventor or joint inventors who are applying for a patent, or to the person mentioned in §§1.42, 1.43, or 1.47 who is applying for a patent in place of the inventor.

(c) Any person authorized by the applicant may file an application for patent on behalf of the inventor or inventors, but an oath or declaration for the application (§1.63) can only be made in accordance with §1.64.

(d) A showing may be required from the person filing the application that the filing was authorized where such authorization comes into question.

10. Section 1.42 is revised to read as follows:

§1.42 When the inventor is dead.

In case of the death of the inventor, the legal representative (executor, administrator, etc.) of the deceased inventor may make the necessary oath or declaration, and apply for and obtain the patent. Where the inventor dies during the time intervening between the filing of the application and the granting of a patent thereon, the letters patent may be issued to the legal representative upon proper intervention.

11. Section 1.43 is revised to read as follows:

§1.43 When the inventor is insane or legally incapacitated.

In case an inventor is insane or otherwise legally incapacitated, the legal representative (guardian, conservator, etc.) of such inventor may make the necessary oath or declaration, and apply for and obtain the patent.

12. Section 1.45 is amended by removing paragraphs (b) and (c) and the designation (a) to the first paragraph and by revising the text to read as follows:

§1.45 Joint inventors.

Joint inventors must apply for a patent jointly and each must make the required oath or declaration: neither of them alone, nor less than the entire number, can apply for a patent for an invention invented by them jointly, except as provided in §1.47.

13. Section 1.46 is revised to read as follows:

§1.46 Assigned inventions and patents.

In case the whole or a part interest in the invention or in the patent to be issued is assigned, the application must still be made or authorized to be made, and an oath or declaration signed, by the inventor or one of the persons mentioned in §§1.42, 1.43, or 1.47. However, the patent may be issued to the assignee or jointly to the inventor and the assignee as provided in §1.334.

14. Section 1.47 is revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette.* The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.63. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette.* The inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.63. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

15. A new section 1.48 is added to read as follows:

§1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by §1.63; (3) the fee set forth in §1.17(h); and (4) the written consent of any assignee.

16. Section 1.51 is amended by revising paragraphs 1.51(a)(2) and (b) to read as follows:

§1.51 General requisites of a complete application.

(a) * * * * *

(2) An oath or declaration, see §§1.63 and 1.68.

* * * * *

(b) Applicants are encouraged to file an information disclosure statement. See §§1.97 through 1.99.

17. Section 1.52 is amended by revising paragraph (c) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(c) Any interlineation, erasure, cancellation or other alteration of the application papers filed must be made before the signing of any accompanying oath or declaration pursuant to §1.63 referring to those application papers and should be dated and initialed or signed by the applicant on the same sheet of paper. No such alterations in the application papers are permissible after the signing of an oath or declaration referring to those application papers (§1.56(c)). After the signing of the oath or declaration referring to the application papers, amendments may only be made in the manner provided by §§1.121 and 1.123–1.125.

* * * * *

18. Section 1.53 is revised to read as follows:

§1.53 Serial number, filing date, and completion of application.

(a) Any application for a patent received in the Patent and Trademark Office will be assigned a serial number for identification purposes.

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are filed in the Patent and Trademark Office. No new matter may be introduced into an application after its filing date (§1.118).

(c) If any application is filed without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period within which to submit the omitted specification or drawing in order to obtain a filing date as of the date of filing of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $50.00 handling fee.

(d) If an application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section.

(e) An application for a patent will not be placed upon the files for examination until all its required parts, complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required.

(f) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except as provided in 35 U.S.C. 102(e).

19. Section 1.54 is revised to read as follows:

§1.54 Parts of application to be filed together; filing receipt.

(a) It is desirable that all parts of the complete application be deposited in the Office together; otherwise a letter must accompany each part, accurately and clearly connecting it with the other parts of the application. See §1.53 with regard to completion of an application.

(b) Applicant will be informed of the application serial number and filing date by a filing receipt.

20. Section 1.55 is revised to read as follows:

§1.55 Claim for foreign priority.

(a) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119 and 172. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by §1.63. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

21. Section 1.56 is amended by revising paragraph (c) to read as follows:

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§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(c) Any application may be stricken from the files if:
(1) An oath or declaration pursuant to §1.63 is signed in blank;
(2) An oath or declaration pursuant to §1.63 is signed without review thereof by the person making the oath or declaration;
(3) An oath or declaration pursuant to §1.63 is signed without review of the specification, including the claims, as required by §1.63(b);
or
(4) The application papers filed in the Office are altered after the signing of an oath or declaration pursuant to §1.63 referring to those application papers.

* * * * *

§1.57 [Removed]

22. Section 1.57 is removed.

23. Section 1.59 is revised to read as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

24. Section §1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. Signing and execution of the application papers by the applicant may be omitted provided the copy is supplied by and accompanied by a statement by, the applicant or his or her attorney or agent that the application papers comprise a true copy of the prior application as filed. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.

25. Section §1.62 is revised to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification and drawings from a prior application to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on a prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior application.
(b) The filing fee for a continuation, continuation-in-part, or divisional application under this section is based on the number of claims remaining in the application after entry of any preliminary amendment and entry of any amendments under §1.116 unentered in the prior application which applicant has requested to be entered in the continuing application.
(c) In the case of a continuation-in-part application which adds and claims additional disclosure by amendment, an oath or declaration as required by §1.63 must also be filed. In a continuation or divisional application which discloses and claims only subject matter disclosed in a prior application, no additional oath or declaration is required.
(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section.
(e) An application filed under this section will utilize the file wrapper and contents of the prior application to constitute the new continuation, continuation-in-part, or divisional application but will be assigned a new application serial number.
(f) The filing of an application under this section will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning either the prior application or any continuing application filed under the provisions of this section may be given similar access to, or similar information concerning, the other application(s) in the file wrapper.
(g) The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application.
(h) The applicant is urged to furnish the following information relating to the prior application to the best of his or her ability:
(1) Title as originally filed and as last amended;
(2) Name of applicant as originally filed and as last amended;
(3) Current correspondence address of applicant;
(4) Identification of prior foreign application and any priority claim under 35 U.S.C. 119.
(i) Envelopes containing only application papers and fees for filing under this section should be marked "Box FWC".

26. A new section 1.63 is added to read as follows:

§1.63 Oath or declaration.

(a) An oath or declaration filed under §1.51(a)(2) as a part of an application must:
(1) Be executed in accordance with either §1.66 or §1.68;
(2) Identify the specification to which it is directed;
(3) Identify each inventor and the residence and country of citizenship of each inventor; and
(4) State whether the inventor is a sole or joint inventor of the invention claimed.
(b) In addition to meeting the requirements of paragraph (a), the oath or declaration must state that the person making the oath or declaration:

(1) Has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration;
(2) Believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought; and
(3) Acknowledges the duty to disclose information which is material to the examination of the application in accordance with §1.56(a).

(c) In addition to meeting the requirements of paragraphs (a) and (b) of this section, the oath or declaration in any application in which a claim for foreign priority is made pursuant to §1.55 must identify the foreign application for patent or inventor's certificate on which priority is claimed, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing.
(d) In any continuation-in-part application filed under the conditions specified in 35 U.S.C. 120 which discloses and claims subject matter in addition to that disclosed in the prior copending application, the oath or declaration must also state that the person making the oath or declaration acknowledges the duty to disclose material information as defined in §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

27. A new section 1.64 is added to read as follows:

§1.64 Person making oath or declaration.

(a) The oath or declaration must be made by all of the actual inventors except as provided for in §§1.42, 1.43, or 1.47.
(b) If the person making the oath or declaration is not the inventor (§§1.42, 1.43, or 1.47), the oath or declaration shall state the relationship of the person to the inventor and, upon information and belief, the facts which the inventor is required to state.

§1.65 [Removed]

28. Section 1.65 is removed.

29. Section 1.67 is revised to read as follows:

§1.67 Supplemental oath or declaration.

(a) A supplemental oath or declaration meeting the requirements of §1.63 may be required to be filed to correct any deficiencies or inaccuracies present in an earlier filed oath or declaration.
(b) A supplemental oath or declaration meeting the requirements of §1.63 must be filed (1) when a claim is presented for matter originally shown or described but not substantially embraced in the statement of invention or claims originally presented, and (2) when an oath or declaration submitted in accordance with §1.53(d) after the filing of the specification and any required drawings specifically and improperly refers to an amendment which includes new matter. No new matter may be introduced into an application after its filing date even if a supplemental oath or declaration is filed (§1.53(b); §1.118). In proper cases the oath or declaration here required may be made on information and belief by an applicant other than inventor.

30. Section 1.69 is amended by revising paragraph (b) to read as follows:

§1.69 Foreign language oaths and declarations.

* * * * *

(b) Unless the text of any oath or declaration in a language other than English is a form provided or approved by the Patent and Trademark Office, it must be accompanied by a verified English translation, except that in the case of an oath or declaration filed under §1.63, the translation may be filed in the Office no later than two months from the date applicant is notified to file the translation.

31. Section 1.70 is amended by revising the title and paragraph (a) to read as follows:

§1.70 Oath or declaration under 35 U.S.C. 371(c)(4).

(a) When an applicant of an international application, if the inventor, desires to enter the national stage under 35 U.S.C. 371, he or she must file an oath or declaration in accordance with §1.63.

* * * * *

32. Section 1.77 is amended by revising paragraphs (h) and (i) to read as follows:

§1.77 Arrangement of application elements.

* * * * *

(h) Abstract of the disclosure.
(i) Signed oath or declaration.

* * * * *

33. The center heading preceding §1.97 and section 1.97 are revised to read as follows:

INFORMATION DISCLOSURE STATEMENT

§1.97 Filing of information disclosure statement.

(a) As a means of complying with the duty of disclosure set forth in §1.56, applicants are encouraged to file an information disclosure statement at the time of filing the application or within the later of three months after the filing date of the application or two months after applicant receives the filing receipt. If filed separately, the disclosure statement should, in addition to the identification of the application, include the Group Art Unit to which the application is assigned as indicated on the filing receipt. The disclosure statement may either be separate from the specification or may be incorporated therein.
(b) A disclosure statement filed in accordance with paragraph (a) of this section shall not be construed as a representation that a search has been made or that no other material information as defined in §1.56(a) exists.

34. Section 1.98 is amended by revising the title and paragraph (a) to read as follows:

§1.98 Content of information disclosure statement.

(a) Any disclosure statement filed under §1.97 or §1.99 shall include: (1) A listing of patents, publications or other information and (2) a concise explanation of the relevance of each listed item. The disclosure statement shall be accompanied by a copy of each listed patent or publication or other item of information in written form or of at least the portions thereof considered by the person filing the disclosure statement to be pertinent. All United States patents listed should be identified by their patent numbers, patent dates and names of the patentees. Each foreign published application or patent should be cited by identifying the country or office which issued it, the document number and publication date indicated on the document. Each printed publication should be identified by author (if any), title of the publication, pages, date and place of publication.

* * * * *

35. Section 1.99 is revised to read as follows:

§1.99 Updating of information disclosure statement.

If prior to issuance of a patent an applicant, pursuant to his or her duty of disclosure under §1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be includ-

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ed in a supplemental information disclosure statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements of §1.98.

36. Section 1.101 is amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102 and those applications in which the Office has accepted a request for waiver of patent rights filed under §1.139. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

* * * * *

37. Section 1.118 is revised to read as follows:

§1.118 Amendment of disclosure.

(a) No amendment shall introduce new matter into the disclosure of an application after the filing date of the application §1.53(b)). All amendments to the specification, including the claims, and the drawings filed after the filing date of the application must conform to at least one of them as it was at the time of the filing of the application. Matter not found in either, involving a departure from or an addition to the original disclosure, cannot be added to the application after its filing date even though supported by an oath or declaration in accordance with §1.63 or §1.67 filed after the filing date of the application.

(b) If it is determined that an amendment filed after the filing date of the application introduces new matter, claims containing new matter will be rejected and deletion of the new matter in the specification and drawings will be required even if the amendment is accompanied by an oath or declaration in accordance with §1.63 or §1.67.

38. Section 1.123 is revised to read as follows:

§1.123 Amendments to the drawing.

No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by bonded draftsmen, at applicant's expense, or by the submission of substitute drawings by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner. The paper requesting amendments to the drawing should be separate from other papers.

39. Section 1.125 is revised to read as follows:

§1.125 Substitute specification.

If the number or nature of the amendments shall render it difficult to consider the case, or to arrange the papers for printing or copying, the examiner may require the entire specification, including the claims, or any part thereof, to be rewritten. A substitute specification may not be accepted unless it has been required by the examiner or unless it is clear to the examiner that acceptance of a substitute specification would facilitate processing of the application. Any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Such statement must be a verified statement if made by a person not registered to practice before the Office.

40. Section 1.131 is amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the applicant or the owner of the patent under reexamination shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the applicant or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the applicant's or patent owner's application was filed in this country.

* * * * *

41. Section 1.132 is revised to read as follows:

§1.132 Affidavits or declarations traversing grounds of rejection.

When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the invention, or on reference to a foreign patent, or to a printed publication, or to facts within the personal knowledge of an employee of the Office, or when rejected upon a mode or capability of operation attributed to a reference, or because the alleged invention is held to be inoperative or lacking in utility, or frivolous or injurious to public health or morals, affidavits or declarations traversing these references or objections may be received.

42. Section 1.137 is amended by revising paragraph (b) to read as follows:

§1.137 Revival of abandoned application.

* * * * *

(b) An application unintentionally abandoned for failure to prosecute, except pursuant to §1.53(d), may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

* * * * *

43. Section 1.153 is amended by revising paragraph (b) to read as follows:

§1.153 Title, description and claim, oath or declaration.

* * * * *

(b) The oath or declaration required of the applicant must comply with §1.63.

44. Section 1.154 is amended by revising paragraph (e) to read as follows:

§1.154 Arrangement of specification.

* * * * *

(e) Signed oath or declaration (See §1.153(b)).

45. Section 1.162 is revised to read as follows:

§1.162 Applicant, oath or declaration.

The applicant for a plant patent must be the person who has invented or discovered and asexually reproduced the new and distinct variety of plant for which a patent is sought (or as provided in §§1.42, 1.43, and 1.47). The oath or declaration required of the applicant, in addition to the averments required by §1.63, must state that he or she has asexually reproduced the plant. Where the plant is a newly found plant the oath or declaration must also state that it was found in a cultivated area.

46. Section 1.163 is amended by revising paragraph (b) to read as follows:

§1.163 Specification.

* * * * *

(b) Two copies of the specification (including the claim) must be submitted, but only one signed oath or declaration is required. The second copy of the specification may be a legible carbon copy of the original.

47. Section 1.172 is amended by revising paragraph (a) to read as follows:

§1.172 Applicants, assignees.

(a) A reissue oath must be signed and sworn to or declaration made by the inventor or inventors except as otherwise provided (see §§1.42, 1.43, 1.47), and must be accompanied by the written assent of all assignees, if any, owning an undivided interest in the patent, but a reissue oath may be made and sworn to or declaration made by the assignee of the entire interest if the application does not seek to enlarge the scope of the claims of the original patent.

* * * * *

48. Section 1.174 is amended by revising paragraph (a) to read as follows:

§1.174 Drawings.

(a) The drawings upon which the original patent was issued may be used in reissue applications if no changes whatsoever are to be made in the drawings. In such cases, when the reissue application is filed, the applicant must submit a temporary drawing which may consist of a copy of the printed drawings of the patent or a photoprint of the original drawings of the size required for original drawing.

* * * * *

49. Section 1.175 is amended by revising the introductory text of paragraph (a) to read as follows:

§1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of §1.63, must also file with their applications a statement under oath or declaration as follows:

* * * * *

50. Section 1.324 is revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or inventors were not named through error without deceptive intention on the part of the actual inventor or inventors, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors.

51. Section 1.325 is revised to read as follows:

§1.325 Other mistakes not corrected.

Mistakes other than those provided for in §§1.322, 1.323, 1.324, and not affording legal grounds for reissue or for reexamination, will not be corrected after the date of the patent.

52. A new §1.335 is added to read as follows:

§1.335 Filing of notice of arbitration awards.

(a) Written notice of any award by an arbitrator pursuant to 35 U.S.C. 294 must be filed in the Patent and Trademark Office by the patentee, or the patentee's assignee or licensee. If the award involves more than one patent a separate notice must be filed for placement in the file of each patent. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the award.

(b) If an award by an arbitrator pursuant to 35 U.S.C. 294 is modified by a court, the party requesting the modification must file in the Patent and Trademark Office, a notice of the modification for placement in the file of each patent to which the modification applies. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the court's order modifying the award.

(c) Any award by an arbitrator pursuant to 35 U.S.C. 294 shall be unenforceable until any notices required by paragraph (a) or (b) of this section are filed in the Patent and Trademark Office. If any required notice is not filed by the party designated in paragraph (a) or (b) of this section, any party to the arbitration proceeding may file such a notice.

53. Section 5.12 is revised to read as follows:

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§5.12 Petition for license.

(a) Filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 U.S.C. 184 for the subject matter of the application. The filing receipt will indicate if a license is granted. If the initial automatic petition is not granted, a subsequent petition may be filed under paragraph (b) of this section.

(b) Petitions for license under 35 U.S.C. 184 should be presented in letter form and should include petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

GERALD J. MOSSINGHOFF,
Dec. 23, 1982. *Commissioner of Patents and Trademarks.*

[1027 OG 9]

(72) **Deposit Accounts—Statutory Fee Charges**

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

(73) **Request for Refunds**

In order to expedite the processing of refunds for payment of fees by actual mistake or in excess of the designated fees, attorneys and applicants requesting refunds should direct their correspondence to the attention of the "Refund Section, Accounting Division, Office of Finance." This procedure should be followed whether the request is for a refund check or for a credit to the deposit account. The problems of misrouting the request for a refund in the Patent and Trademark Office would be alleviated and the payment of refunds accelerated.

BRADFORD R. HUTHER,
Assistant Commissioner for Finance & Planning.

[1024 O.G. 59 (11–23–82)]

(74) **Deposit Account Authorizations**

The rules of practice were amended effective Oct. 1, 1982, at 37 CFR 1.25(b) to state that: "A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed." A general authorization would not apply to document supply fees under §1.19, such as those required for certified copies; to post-issuance fees under §1.20, such as those required for maintenance fees; or to miscellaneous fees and charges under §1.21, such as assignment recording fees.

Many applications filed prior to Oct. 1, 1982, contain broad language authorizing *any* additional fees which might have been due to be charged to a deposit account. The Patent and Trademark Office does not interpret such broad authorizations, filed prior to Oct. 1, 1982, to include authorization to charge to a deposit account the issue fee or other fees in sections 1.16, 1.17 and 1.18 except those associated with the paper containing the broad authorization. However, such a broad authorization filed in an application on or after Oct. 1, 1982, will be interpreted as authorization to charge the issue fee; as well as any other fee set forth in §§1.16, 1.17 or 1.18. Fees under sections 1.19, 1.20 and 1.21 will not be charged as a result of a general authorization under section 1.25.

It is recommended that authorizations to charge fees to deposit accounts include reference to the particular fees or fee sections of the rules which applicant intends to authorize. For example, if filing and processing fees under §§1.16 and 1.17 only are intended to be included in the authorization, and not the issue fee under §1.18, the authorization could read: "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required during the entire pendency of the application to Deposit Account No. _____." Such an authorization would clearly exclude issue fees under 37 CFR 1.18 while including all the filing and processing fees listed in 37 CFR 1.16 and 1.17. Similarly, if it were intended to authorize the charging of fees relating only to a specific paper, the authorization could read "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required by this paper to Deposit Account No. _____." Such authorizations would cover situations in which a check to cover a filing and processing fee under 37 CFR 1.16 and 1.17 was omitted or was for an amount less than the amount required.

It is extremely important that the authorization be clear and unambiguous. If applicants file authorizations which are ambiguous and which deviate from the usual forms of authorizations, the Office may not interpret the authorizations in the manner applicants intend. In such cases applicants could be subject to further expenses, petitions, etc. in order to correct fees which were not charged as intended due to an ambiguous authorization.

GERALD J. MOSSINGHOFF,
July 1, 1983. *Commissioner of Patents and Trademarks.*

[1032 OG 32]

(75) **Notice to All Deposit Account Holders**

Beginning Oct. 7, 1983, please *mail deposit account remittances only* to:

Patent and Trademark Office
P.O. Box 70541
Chicago, Ill. 60673

To expedite credit to your deposit account and the treasury, and arrangement has been made between the Patent and Trademark Office, Treasury Department, and the First National Bank of Chicago utilizing a special "lockbox" depositary to receive deposit account remittances.

Checks should continue to be made payable to the Commissioner of Patents and Trademarks and be accompanied by *the top portion of your deposit account statement.* Submit only remittances for deposit accounts to this new address. All other correspondence should continue to be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

LEONARD L. NAHME,
Director Office of Finance.

[1035 OG 27]

(76) **Use of Restricted Deposit Account for Electronic Ordering of Patent and Trademark Copies**

Effective July 1, 1986, the restricted deposit account will be made available to those members of the public who wish to use it for electronic ordering of patent and trademark copies. The restricted deposit account requires maintenance of a minimum balance of $300.00 at the end of each month, as compared to the unrestricted account which requires a minimum balance of $1,000.00.

In FY 1986, the Office established the restricted deposit account for use in charging subscriptions for copies of newly issued patents by subject matter classification. Establishment of a PTO deposit account is a prerequisite for subscription service.

Recently, the Office established an electronic ordering service (EOS), a method of ordering copies of patents and trademarks through the use of a computer terminal and modem. EOS is available only to PTO deposit account holders.

Many people who are interested in using EOS to order copies of patents and trademarks and who do not have PTO deposit accounts find the $1,000.00 balance required for the unrestricted account prohibitive. Therefore, the use of restricted account is being expanded to incorporate EOS ordering. Subscription and EOS ordering are the only two services for which restricted accounts may be used. If you have any questions on subscriptions or EOS, please call Mary Brown on (703) 557–3236. If you have questions on deposit accounts, please call Delores Riley on (703) 557–3227.

THERESA A. BRELSFORD,
June 23, 1986. *Assistant Commissioner, for Administration.*

[1068 OG 37]

(77) **Unpaid Fee Checks**

Beginning Dec. 1, 1987, the Office will change the procedure for handling fee checks of attorneys and agents that are returned to the Office unpaid. Presently, when a check submitted as payment for an application, a processing, an issue or any other fee is returned to the Office unpaid, the Office of Finance sends a letter to the attorney or agent who represents the applicant, or to the applicant if unrepresented by an attorney or agent, enclosing the check and calling attention to the fact that the check was returned unpaid. Beginning Dec. 1, 1987, the Office of Finance will send a copy of its letter to the applicant if the letter is addressed to an attorney or agent. The prohibition of 37 CFR §§1.33 and 2.18 against double correspondence is waived in view of the submission of a check that is returned unpaid to the Office.

A registered patent attorney or agent who repeatedly submits checks that are returned unpaid through no fault of the bank may expect to have the matter referred to the Office of Enrollment and Discipline.

DONALD W. PETERSON,
Oct. 5, 1987. *Deputy Commissioner.*

[1083 TMOG 44]

(78) **Posting of Filing Fee Codes**

We are making a minor change in the recording of fees so that we can speed up the processing of mail.

First, a brief explanation of the problem. Incoming mail to the PTO has soared. The number of envelopes received in the Mail Room in the first four months of this fiscal year is almost 30% higher than for the same period last year. This sudden increase has taxed existing resources and a backlog has developed. It takes a new employee over one year to become proficient in recognizing the hundreds of different types of documents entering the Office, the appropriate fee codes to apply, and the appropriate destination.

One of the most time-consuming functions of the Mail Room initial review clerks is the determination of how many independent and dependent claims there are in a patent application so that the appropriate amounts can be coded for the basic application fee, the extra independent claim fee, the extra total claim fee, and the multiple dependent claim fee. This can involve a substantial amount of time in complicated cases, particularly when there are preliminary amendments. With over 30,000 individual documents – patent applications and all other mail – to be processed and routed each day, such time-consuming delays have a severe adverse impact in moving all the work.

So, effective immediately, we are making a change which will move the mail more quickly. Rather than go through the time-consuming computation in the Mail Room to determine the amount to charge to each specific claim fee code, the total amount received will be recorded in one filing code. The detailed calculations will continue to be done later in the process where, in conjunction with the formality review of the application, the analysis takes place as to whether or not the fee submitted was correct. The individual charges remain the same and the information on claims contained in the application will continue to be reported on the application filing receipt without change. Here's what would be seen on deposit account charges and checks:

101 - Includes amount for basic filing fee, extra independent claims, extra total claims, and multiple dependent claims, previously recorded as 101, 102, 103, and 104, respectively.
201 - Includes same items as above for small entity applications, previously recorded as 201, 202, 203, and 204.
108 - Includes same items as above for reissue applications, previously recorded as 108, 109, and 110.
208 - Includes same items as above for small entity reissue applications, previously recorded as 208, 209, and 210.

This revised procedure allows us to be more efficient.

THERESA A. BRELSFORD,
Mar. 31, 1988. *Assistant Commissioner for Administration.*

[1089 OG 57]

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APPLICATION CONTENT

(79) Use of Metric System of Measurements in Patent Applications

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

[924 O.G. 1104]

(80) Filing of Patent Applications Pursuant to 37 CFR 1.60

Applicants are reminded that 37 CFR 1.60 was amended effective Feb. 27, 1983 to require applicants to furnish a copy of the prior application upon filing.

Some applicants continue to request that the copy be made by the Patent and Trademark Office as was done under the practice prior to Feb. 27, 1983. Others are filing a copy of the specification of the prior application, but not a copy of the oath or declaration. The Office will no longer make such copies as part of processing the new application.

The requirements of 37 CFR 1.60 must be complied with before a filing date will be granted for the continuing application.

It should be noted that 37 CFR 1.60 has been amended effective Apr. 1, 1984 to divide the section into paragraph (a) and new paragraph (b). Paragraph (a) adds a reference to amended 37 CFR 1.78(a) to clarify the conditions under which continuation or divisional applications may be filed. New paragraph (b) requires that the prior application be complete as set forth in 37 CFR 1.51(a) in order to properly file an application under 37 CFR 1.60. A complete application under 37 CFR 1.51(a) includes a signed oath or declaration. If the prior application was not a complete application (37 CFR 1.51(a)), a continuation or divisional application cannot be filed utilizing the provisions of 37 CFR 1.60 and any continuation or divisional application must include new application papers and be filed in accordance with 37 CFR 1.53.

Paragraph (b) of 37 CFR 1.60 also requires that a true copy of the prior complete application be filed. The copy must include the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication (on the oath or declaration) that it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. See the final rulemaking published in the Jan. 4, 1984 Federal Register at 49 FR 548–556 and reprinted in the Jan. 24, 1984 Official Gazette at 1038 O.G. 275–283.

GERALD J. MOSSINGHOFF
Apr. 6, 1984. *Commissioner of Patents and Trademarks.*

[1042 O.G. 18]

(81) Information in Oath/Declaration Necessary to Identify the Specification in Accordance with 37 CFR 1.63

Section 1.63 of 37 CFR requires that an oath or declaration "identify the specification to which it is directed." Since filing dates are now granted on applications with the oath or declaration being filed later with a surcharge, the question has arisen as to what information must be supplied in the oath or declaration to identify the specification to which it is directed and to comply with the rule.

The declaration form suggested by the Office includes spaces for filling in the names of the inventors, title of invention, application serial number, filing date, foreign priority application information and United States priority application information. While this information should be provided, it is not essential that all of these spaces be filled in in order to adequately identify the specification in compliance with 37 CFR 1.63.

The following combinations of information supplied in an oath or declaration are acceptable as minimums for identifying a specification:

(1) name of inventor and application serial number;
(2) name of inventor, attorney docket number which was on the application as filed, and filing date of the application;
(3) name of inventor, title of invention and filing date;
(4) name of inventor, title of invention and reference to a specification which is attached to the oath or declaration at the time of execution and filed with the oath or declaration;
(5) name of inventor, title of invention and a statement by a registered attorney or agent that the application filed in the PTO is the application which the inventor executed by signing the oath or declaration.

If the oath or declaration is filed with an "attached" specification as indicated in item (4) above, it must be accompanied by a statement that the "attached" specification is a copy of the specification and any amendments thereto which were filed in the Office in order to obtain a filing date for the application. Such statement must be a verified statement if made by a person not registered to practice before the Office.

Oaths or declarations which do not meet the requirements set forth above will not be accepted as complying with 37 CFR 1.63 for completing an application. Any variance from the above guidelines will only be considered upon the filing of a petition for waiver of the rules under 37 CFR 1.183 accompanied by a petition fee (37 CFR 1.17(h)). Supplemental oaths or declarations in accordance with 37 CFR 1.67 will be required in applications in which the oaths or declarations are not completely filled in but contain sufficient information to identify the specifications to which they apply as detailed above.

GERALD J. MOSSINGHOFF,
Sept. 12, 1983. *Commissioner of Patents and Trademarks.*

[1035 OG 3]

(82) Extension of Transition Period to File Oaths or Declarations in Compliance with 37 CFR 1.63

The Federal Register of Jan. 20, 1983 indicated at 48 FR 2706 that all oaths or declarations filed on and after Feb. 27, 1983, must comply with the requirements of 37 CFR 1.63 except for the transition period as noted below.

The Office indicated that it would continue to accept any oath or declaration in compliance with 37 CFR 1.65 as it existed immediately prior to Feb. 27, 1983 during a transition period ending June 30, 1983, provided that the oath or declaration was attached to and was executed as a part of an application.

Although the Office is not required to do so, it intends to make translated declaration forms available to the public in at least the more frequently required non-English languages. Since these non-English language translations are not yet available, the transition period is extended to end on Sept. 30, 1983 rather than on June 30, 1983. During this period, the Patent and Trademark Office will continue to accept any oath or declaration in compliance with 37 CFR 1.65 as it existed immediately prior to Feb. 27, 1983, if the oath or declaration is attached to and was executed as a part of an application to be filed in the Patent and Trademark Office.

Effective Oct. 1, 1983, all oaths or declarations filed under 37 CFR 1.51(a)(2) as a part of a patent application must fully comply with 37 CFR 1.63.

DONALD J. QUIGG,
May 31, 1983. *Acting Commissioner of Patents and Trademarks.*

[1031 OG 53]

(83) Graphical Illustrations in the Specification

For convenience many applicants have been including graphs or other types of graphical illustrations in the text portion of the specification. These illustrations do not come within the purview of 37 C.F.R. 1.58 which permits tables and chemical and mathematical formulas in the specification in lieu of formal drawings. Frequently, these graphical illustrations do not have satisfactory reproduction characteristics. Moreover, these reproductions are generally less than satisfactory due to the fact that the illustrations are usually reduced in size in order to fit a column of the printed patent page. Accordingly, effective immediately, graphs and graphical type illustrations in the specification will be objected to under 37 C.F.R. 1.58(a) and drawings pursuant to 37 C.F.R. 1.81 will be required.

WILLIAM FELDMAN,
Jan. 12, 1978. *Deputy Assistant Commissioner for Patents.*

[967 O.G. 2]

(84) Inclusion of Copyright or Mask Work Notices in Patents

Under current intellectual property laws, it is possible to obtain copyright protection or mask work protection as well as patent protection for certain designs and technologies. On occasion, an author/inventor considers it desirable to include a notice of copyright or mask work in a design or utility patent which discloses material on which copyright or mask work protection has previously been established.

The inclusion of a copyright or mask work notice in a patent that discloses material on which copyright or mask work protection has previously been established, would serve to publicize and thereby protect the various intellectual property rights of the author/inventor. Further, this publication would tend to protect the public by militating against an unintentional encroachment into these rights. The presence of an unrestricted copyright or mask work notice in a patent could have an inhibiting effect on public dissemination of the patent disclosure to the extent it discourages the facsimile reproduction of the patent. This possible effect would be contrary to the mission of the Patent and Trademark Office to disseminate knowledge and information publicly by way of patent issuance, publication, and distribution. To avoid this effect, it is considered necessary to include an appropriate authorization of the author/inventor with any copyright or mask work notice appearing in a patent.

In light of these considerations, the Patent and Trademark Office will permit the inclusion of a copyright or mask work notice in a design or utility patent application, and thereby any patent issuing therefrom, which discloses material on which copyright or mask work protection has previously been established, under the following conditions:

(1) The copyright or mask work notice must be placed adjacent to the copyright or mask work material. Therefore, the notice may appear at any appropriate portion of the patent application disclosure, including the drawing. However, if appearing on the drawing, the notice must be limited in print size from $\frac{1}{8}$ inch to $\frac{1}{4}$ inch and must be placed within the "sight" of the drawing immediately below the figure representing the copyright or mask work material. If placed on a drawing in conformance with these provisions, the notice will not be objected to as extraneous matter under 37 CFR 1.84.

(2) The content of the notice must be limited to only those elements required by law. For example, "©1983 John Doe" (17 U.S.C. 401) and "*M* John Doe" (17 U.S.C. 909) would be properly limited, and under current statutes, legally sufficient notices of copyright and mask work respectively.

(3) Inclusion of a copyright or mask work notice will be permitted only if the following authorization is included at the beginning (preferably as the first paragraph) of the specification to be printed for the patent:

> A portion of the disclosure of this patent document contains material which is subject to [copyright or mask work] protection. The [copyright or mask work] owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all [copyright or mask work] rights whatsoever.

(4) Inclusion of a copyright or mask work notice after a Notice of Allowance has been mailed will be permitted only if the criteria of 37 CFR 1.312 have been satisfied.

The inclusion of a copyright or mask work notice in a design or utility patent application, and thereby any patent issuing therefrom, under the conditions set forth above will serve to protect the rights of the author/inventor, as well as the public, and will serve to

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promote the mission and goals of the Patent and Trademark Office. Therefore, the inclusion of a copyright or mask work notice which complies with these conditions will be permitted. However, any departure from these conditions may result in a refusal to permit the desired inclusion. If the authorization required under condition (3) above does not include the specific language "(t)he [copyright or mask work] owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, . . .", the notice will be objected to as improper by the examiner of the application. If the examiner maintains the objection upon reconsideration, a petition may be filed in accordance with 37 CFR 1.181.

RENE D. TEGTMEYER,
Mar. 20, 1987. *Assistant Commissioner for Patents.*

[1077 OG 22]

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(85)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket Number 80108-8200]

Miscellaneous Changes in Patent Practice

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark Office is amending its regulations to (1) correct certain rules to conform to previous changes in other rules, (2) require all correspondence directed to the Patent and Trademark Office concerning a patent application to include the series code and serialnumber or serial number and filing date, (3) provide for the indication of copyright and mask work protection in patent applications, (4) require that any necessary corrections to drawings be made only by submission of new or replacement drawings, (5) provide in limited situations for the use of color drawings in utility patent applications, (6) prohibit the use of broken lines in design patent application drawings to show hidden planes and surfaces, and (7) provide for a refund of a portion of the preliminary examination fee where the Demand is withdrawn. The change pertaining to the drawings would remove any need for patent applicants or their representatives to borrow drawings filed in patent applications from the Office after the effective date of the rule change for purposes of making corrections.
Effective Date: Jan. 1, 1989. The non-return of drawings provision of §1.85(b) will apply to drawings in patent applications filed after Jan. 1, 1989.
For Further Information Contact: Louis O. Maassel by telephone at (703) 557-3070 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplemental Information: Proposed rulemaking requesting comment was published on May 9, 1988 in the Federal Register at 53 FR 16522 - 16527 and on May 24, 1988 in the *Official Gazette* at 1090 O.G. 57 - 62.

An oral hearing was conducted on July 21, 1988 to receive comments.

Written comments were received from 5 patent law groups, 2 patent law firms and 6 individuals. One person also presented oral testimony.

No comments were received relating to the proposed amendment of §§1.4, 1.5(b), 1.53(d), 1.56, 1.81, 1.84(j) & (l), 1.152, 1.378, 1.421 and 1.480.

The comments received relating to amendments to particular sections and replys thereto are listed below.

Comments relating to §1.5(a).
Comment

Six comments indicated that they considered the punishment of returning papers with improper identification as too harsh a penalty, since such return could result in the necessity of paying extension of time fees or revival of an abandoned application.

Reply

The return of papers with improper identification is not intended to serve as punishment or a penalty, but as a solution to a major problem. In fact, most of the improperly identified papers are not ones for which a time period is running, e.g., priority papers, information disclosure statements, status inquiries, etc. The Patent and Trademark Office's (PTO) goal is to match papers with the appropriate application as quickly as possible. The practice of the PTO has been to attempt to match papers with the correct application by using the Patent Application Locating and Monitoring (PALM) System to conduct a search by applicant's name. Such a search is very slow and merely lists all application numbers under the name of the inventor. These application numbers must then be individually checked to attempt to match any other identifying information found on the paper. If this process is unsuccessful, attempts are made to reach the sender by telephone. Telephone calls usually require further followup since the paper cannot usually be identified immediately. Frequently, the serial number is not even available to the sender since application-related papers are being sent to the PTO before notification of serial number has been received. For papers not successfully matched after these attempts, the process of using PALM and making telephone calls is repeated days and weeks later. Despite the considerable effort and resources applied to matching papers, there are still thousands of unmatched papers. Undoubtedly, many were followed up by status inquiries or complaint letters from the senders, subsequent PTO searches for missing papers, and resubmissions by senders, some with petitions or extension of time fees. This waste of resources by both the PTO and the applicants is a major concern. Since the goal is to match papers as quickly and efficiently as possible, and not to institute a harsh penalty, the final rule was modified. Papers which are not properly identified will be returned, but if they are resubmitted to the PTO within two weeks of the date they are returned by the PTO, the original date of receipt will be retained without the need for paying fees for extension of time or revival of an abandoned application. Where no return address is available, the papers will be retained for a reasonable period of time to await any followup correspondence. If no followup correspondence is received within a reasonable period of time, the papers will be destroyed.

Comment

Three comments included the proposal that the filing date and serial number be accepted as meeting the requirements of §1.5(a).

Reply

This proposal has been adopted in the final rule.

Comment

One comment proposed that implementation of the proposal be delayed for one year to provide sufficient time to allow applicants to adapt to the requirements.

Reply

The requirements are believed to be quite simple and are already met by almost all papers filed in the PTO. Therefore, an extended period of time to adapt is not seen to be necessary or appropriate.

Comment

Two comments suggested that a procedure be developed under which an applicant could resubmit a corrected return paper with fee in a timely manner, and receive the benefit of the date of the original submission as its filing date.

Reply

The substance of this suggestion has been adopted in final §1.5(a), but without the charge of a fee. The final rule provides resubmission of a returned paper with proper identification within two weeks of the PTO mailing date of the letter returning the paper to the sender to resubmit the paper and retain the benefit of the filing date of the original submission. If desired, the resubmission could be mailed under the certificate of mailing procedure of §1.8 or the "Express Mail" procedure of §1.10.

Comment

Three comments suggested that a form or notice be sent, with a time limit set for return of appropriate identification with minimal fee or subcharge.

Reply

The proposal would require the PTO to retain the unmatched papers in some kind of order, probably alphabetically by inventor name and or by receipt date, so that responses could be matched. A double matching of all papers would be necessary. The responses with the appropriate identification would have to be matched to the original papers submitted, then these would have to be matched with the applications. If responses with appropriate identification did not reference the fact that a notice had been sent, they may not be associated with the original, again resulting in more unmatched papers. Accordingly, the proposal was not adopted.

Comment

One comment indicated that including the word "must" with respect to providing the serial number and series code is too severe a requirement.

Reply

The current rules in 37 CFR 1.5 state such identification "should" be on application-related papers. This term has apparently been too permissive and has contributed to the problem. The use of "must" is believed to be sufficiently strong to aid in resolving the problem.

Comment

One comment included the proposal that a wrong serial number be considered as a defective execution under 35 U.S.C. 26 which could be corrected without loss of filing date.

Reply

The legislative history of 35 U.S.C. 26 is quite clear that the intent of the section was to remedy problems only in the execution of oaths and declarations.

Comment

Two comments questioned the meaning of "series code."

Reply

The series code is the two digit number preceding the serial number on the application filing receipt. A new series code is assigned each time a new series of six digit serial numbers is begun. The current series code is "07". It appears before the serial number, for example 07/123,456. An illustrative example is also included in the final rule.

Comment

One comment included the proposal that a more appropriate name for the combination of series code and serial number would be "application number."

Reply

This proposal has been adopted in the final rule.

Comment

One comment raised the question as to whether correspondence relating to a patent application should contain both the heading "PATENT" as suggested in the helpful hints and "PATENT APPLICATION" as called forin 1.5(a).

Reply

"PATENT APPLICATION" should be used on patent application correspondence. This should be placed in an obvious location on the top page.

Comment

One comment noted that the return post card only contains the serial number and not the series code.

Reply

The PTO plans to begin identifying an eight-digit application number on return post cards. The series code will be the first two digits, followed by a slant "/" and the six digit serial number. Although the series code has not been stamped along with the serial number on the return post card used by many applicants, the series code changes only once about every 7 or 8 years when a new set of serial numbers is begun with 000,001. Therefore, until the eight-digit application number is stamped on return post cards, the current series code "07" can be used along with the serial number currently stamped on the post card.

Comment

Three comments suggested that the rules provide that a paper without proper identification be returned only if the PTO found it impossible to match the paper to a particular application file.

Reply

Attempts to match improperly identified papers with a particular application file is very time consuming and experience has shown that the benefits of such time consuming effort are not worth the effort expended.

Comment

One comment questioned the meansing of "such information" in the second sentence of §1.5(a).

Reply

"Such information" means the items referred to in the first sentence, namely, the series code and serial number, serial number and filing date, or international application number.

Comment

One comment indicated that the PTO may not return a paper in a timely manner.

Reply

Although no assurance can be given as to the prompt return of all impropely identified papers, such papers will be returned in most instances from the PTO Mail Room within one day of the opening of the envelopes containing the papers and discovery of incomplete identification. Also, the time for resubmission of a returned paper is calculated from the PTO mailing date so that no injury would result from a prompt resubmission.

Comment

One comment indicated that if the filing receipt is delayed or lost, it would preclude timely status inquiries or cause delays in preliminary matters such as a request for a foreign filing license.

Reply

A self-addressed return post card, with proper postage, can be used to obtain early notification of the application number.

Comments relating to §1.53.
Comment

One comment pointed out inconsistent wording between proposed §1.53 and the explanatory comments in the notice of proposed rulemaking.

Reply

The apparent inconsistency has been corrected.

Comments relating to §1.71 and §1.84(o).
Comment

One comment raised a question whether the PTO should make a comment as to the legal sufficiency of a copyright notice mentioned in §1.71 since the PTO does not administer the copyright law.

Reply

An indication of what is considered to be legally sufficient copyright notice was included to assist applicants who may not be familiar with the copyright law.

Comments relating to §1.84(a).
Comment

Five comments were received objecting to the prohibition of photolithographs as drawings.

Reply

The final rule does not prohibit photolithographs as drawings.

Comments relating to §1.84(b).
Comment

Three comments were received relating to drawing sheet sizes. One comment favored using only the A4 size and the other two comments favored using letter size (8½ by 11 inches).

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Reply
Since applicants have three different size sheets which may be used as they choose, no need is currently seen to make a single size mandatory. The use of letter size drawing sheets requires further study and if acceptable, will be proposed for public comment in the future.

Comments relating to §1.84(i).
Comment
One comment included the suggestion that clarifying language changes be made in §1.84(i).
Reply
The comment relating to the wording of the last sentence of §1.84(i) has been adopted.

Comments relating to §1.84(n).
Comment
One comment supported the change to §1.84(n).

Comments relating to §1.84(p).
Comment
Two comments relating to color drawings in utility applications were received. One comment proposed that the applicant be permitted to file color drawings at his or her choice but that the patent be printed in black and white only with copies of the color drawings being available at extra cost. The other comment related to the patent examiner having the discretion to accept color drawings rather than requiring a petition to be filed.
Reply
In the past only a very few applications have shown a need to include drawings in color. Until more experience is gained, it is considered best to allow color drawings in limited situations and approval to remain in a central location by petition.
Comment
One comment stated that is is not proper to charge a higher fee where color drawings are required.
Reply
Color drawings are considered to be beyond the normal requirements set forth in the rules and therefore require waiver of the rules for acceptance.

Comments relating to §1.85(a).
Comment
One comment was received suggesting that "may" be changed to "shall" in §1.85(a).
Reply
The PTO is currently very liberal in accepting informal drawings and no need is seen for making the propsed change.

Comments relating to §1.85(b) & (c).
Comment
One comment proposed allowing drawings filed in the PTO to be withdrawn to make minor changes.
Reply
The problems relating to charging out drawings would remain if drawings are allowed to be removed from the PTO for any reason. A major purpose of the rule change is to remove the necessity to have a drawing charge-out system in the PTO in the future.
Comment
One comment asked whether §1.85(b) would be construed to deny access to a PTO drawing for making a copy.
Reply
Applicants and their representatives will continue to have access to their files and obtain copies of drawings.
Comment
One comment proposed adding another sentence to §1.85(c) to clarify that an extension of time is available under §1.136 for filing of formal drawings but not for payment of the issue fee.
Reply
This proposal has been adopted with somewhat different wording.
Comment
One comment indicated that the three month period for submitting corrections should be measured from the "notice of allowability" rather than the "notice of allowance."
Replay
This proposal has been adopted in the final rule.

Discussion of specific rules

Section 1.4, as amended, corrects the listing of rules in paragraph (a)(2).

Section 1.5, as amended, provides that all correspondence related to a U.S. national patent application already filed with the Patent and Trademark Office must include the identification of the application number which comprises both the series code and the serial number assigned to that application by the Patent and Trademark Office, (e.g., 07/123,456) or the serial number and filing date. Any correspondence not containing such identification will be returned to the sender where a return address is available. The final rule has been revised to provide that if the correspondence is remailed to the PTO within two weeks of the mailing date of the PTO's cover letter returning the correspondence, the PTO will grant the benefit of the original date of receipt of the returned correspondence. The two-week period will not be extended under §1.136. Applicants may use either §1.8 or §1.10 mailing procedures for resubmissions of returned correspondence. No correspondence relating to an application should be filed prior to when notification of the application number is received from the PTO. If for some reason returned correspondence is resubmitted later than two weeks after the return mailing by the PTO, the resubmitted correspondence will be accepted but given its date of receipt with proper identification. If the original date of receipt is desired, applicants may petition under §1.183 for waiver of the rules. Given there are over 30,000 documents to be routed each day, this requirement greatly facilitates the matching of correspondence received with the relevant patent application file. Without proper number identification, documents are either significantly delayed during processing or are never matched with the relevant application file. The amendments to paragraph (b) draw attention to the different requirements for identification in correspondence relating to the payment of maintenance fees.

Section 1.53(c) and (d), as amended, state that a copy of the "Notice of Incomplete Application" or "Notice to File Missing Part" form sent to the applicant by the Office should accompany any response submitted to the Office in order for the response to be accepted. This will prevent the inadvertent assignment of a new application number to correspondence sent in response to such notices or the misrouting of the correspondence.

Section 1.56(e), as amended, corrects the reference to the "Board of Appeals" to read "Board of Patent Appeals and Interferences."

Section 1.71, as amended, contains new paragraphs (d) and (e) relating to the inclusion of copyright and mask word notices in patent applications. The provisions proposed are similar to those set forth in the Official Gazette notice dated Mar. 20, 1987 titled "Inclusion of Copyright or Mask Work Notice in Patents" appearing on Apr. 21, 1987 at 1077 O.G. 22. Under current intellectual property laws, it is possible to obtain copyright protection or mask work protection as well as patent protection for certain designs and technologies. On occasion, an author or inventor considers it desirable to include a notice of copyright or mask work in a design or utility patent which discloses material on which copyright or mask work protection previously has been established.

The inclusion of a copyright or mask work notice in a patent that discloses material on which copyright or mask work protection previously has been established, will serve to publicize and thereby protect the various intellectual property rights of the author or inventor. Further, this publication would tend to protect the public by militating against an unintentional encroachment of the rights. The presence of an unrestricted copyright or mask work notice in a patent could have an inhibiting effect on public dissemination of the patent disclosure to the extent it discourages the facsimile reproduction of the patent. The possible effect would be contrary to the mission of the Patent and Trademark Office to disseminate knowledge and information publicly by way of patent issuance, publication, and distribution. To avoid this effect, it is considered necessary to include an appropriate authorization by the author or inventor for copying of the patent itself with any copyright or mask work notice appearing in the patent. Inclusion of a copyright or mask work notice after a Notice of Allowance has been mailed will be permitted only if the criteria of 37 CFR 1.312 have been fulfilled. If the authorization required by amended §1.71(e) is not included, the notice will be objected to as improper by the examiner. If the examiner maintains the objection upon reconsideration, further review must be by way of a petition filed in accordance with 37 CFR 1.181.

Section 1.81, as amended, clarifies that high quality copies of drawings should be sumitted in patent applications. Since corrections are the responsibility of the applicant, the original drawing(s) should be retained by the applicant for future correction, if necessary.

Section 1.84(a), as amended, elimates reference to two-ply or three-ply bristol board. Amended paragraph (a) also adds a reference to paragraph 1.84(p) relating to color drawings in utility patent applications.

Only one copy of the drawing is required or desired. The Office had attempted to encourage the submission of three copies, but compliance was very low. It was determined that it is more efficient for the Office to rely on consistency and only one copy. Accordingly, hereafter only one copy of the drawings should be submitted.

The Patent and Trademark Office will no longer release to applicants, bonded drafting companies, or others, drawings from patent applications filed after the effective date of these rule changes. See amended §1.85(b). If corrections to the drawings are necessary, new corrected drawings must be prepared by the applicant and filed in the Patent and Trademark Office. Therefore, the applicant, attorney or agent should retain the original drawing so that a corrected original drawing or corrected copy may be later submitted if necessary.

The Office will continue to allow applicants to borrow drawings for correction which have been filed prior to the effective date of these rule changes.

Section 1.84(b), as amended, provides for applicants using drawing sheets which are 8½ by 13 inches in size.

Section 1.84(i), as amended, contains grammatical corrections in the test of the rules and clarifies Office drawing requirements as to exploded views, enlarged views and views which require several sheets.

Section 1.84(j), as amended, clarifies how views should be arranged when they are placed sideways on the drawing sheet.

Section 1.84(l) as amended, indicates that drawings may be identified by lightly writing identifying information in the top margin on the drawings. For identification by application number, the Office prefers that the information be placed on the front of the drawing. When the applicant forwards drawings separate from the original application papers, a cover letter identifying the application by application number should accompany the drawings. The application number should also be placed on drawings filed after the application number has been indicated in correspondence to the applicant, in accordance with §1.84(l).

Section 1.84(n) is added and permits numbering of the drawing sheets. However, such numbering would not appear on the drawings of the printed patent.

Section 1.84(o) is added and provides for the indication of copyright or mask work protection notice on patent application drawings. This procedure is the same as that established by the OfficialGazette notice dated Mar. 20, 1987 published on Apr. 21, 1987 at 1077 O.G. 22.

Section 1.84(p) is added and provides in the rules for the filing of color drawings in a very limited number of utility patent applications. An Official Gazette notice relating to this topic dated Aug. 6, 1986, titled "Use of Color Drawings in Utility Patents" was published on Sept. 15, 1987 at 1082 O.G. 25. In light of the substantial administrative and economic burden associated with printing a utility patent with color drawings, the letters patent and the patent copies which are printed at the issuance of the patent will be only in black and white. However, copies of the patent with the color drawings may be purchased separately from the Patent and Trademark Office upon special request and payment of the fee.

It is anticipated that color drawings will only be permitted when color drawings are the only practical method in a utility patent application in which to disclose the subject matter sought to be patented. In order to avoid issues of lack of description or enablement under 35 U.S.C. 112 or new matter under 35 U.S.C. 132, applicants are advised to file the desired color drawings as part of the original application papers. The petition should be directed to the attention of the Deputy Assistant Commissioner for Patents.

Section 1.85, as amended, indicates that drawings not complying with §1.84 will be accepted in some instances for purposes of examination and that drawings which do comply with all the rules relating to drawings will be required later, and that no corrections will be permitted to drawings filed in the Patent and Trademark Office after the effective date of the rule change.

When corrected drawings are required to be sumitted at the time of allowance, the applicant is required to submit *acceptable* drawings within three months from the mailing of the "Notice of Allowability." Within that three-month period, two weeks should be allowed for review of the drawings by the Drafting Branch. If the Office finds that further correction is necessary, the applicant must submit a new corrected drawing to the Office within the original three-month period to avoid the necessity of obtaining an extension of time and paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the receipt of the Notice of Allowability.

Section 85(b) provides that the Patent and Trademark Office will not release drawings filed in applications having a filing date after Jan. 1, 1989 for purposes of correction. Also, in order to give sufficient notice to applicants, allow most patent applications currently on file to be processed, and set a time at which the PTO need no longer provide a system for borrowing of any drawings,§1.85(b) provides that after Jan. 1, 1991 no drawings may be borrowed from the PTO for the purpose of making drawing corrections.

Section 1.152, as amended, permits broken lines on drawings to show visible environmental structure but not hidden planes and surfaces in design patent application drawings.

Section 1.378, as amended, conforms with section 404 of Public Law 98-622 which states:

> "(a) Notwithstanding section 41(c) of title 35, United States Code, as in effect before the enactment of Public Law 97-247 (96 Stat. 317), the Commissioner of Patents and Trademarks may accept after the six-month grace period referred to in such section 41(c), the payment of any maintenance fee due on any patent based on an application filed in the Patent and Trademark Office on or after Dec. 12, 1980, and before Aug. 27, 1982, to the same extent as in the case of patents based on applications filed in the Patent and Trademark Office on or after Aug. 27, 1982."

The amended rule wording includes reference to maintenance fees due on patents based on applications

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filed in the Patent and Trademark Office on or after Dec. 12, 1980 and before Aug. 27, 1982.

Section 1.421(f), as amended, deletes reference to a cancelled PCT Rule and adds reference to the current PCT Rule provision.

Section 1.480(d), as amended, provides for a refund of a portion of the international preliminary examination fee where the applicant withdraws the demand before the examiner has begun the international preliminary examination. An amount equal to the transmittal fee would be retained by the Patent and Trademark Office to cover the administrative cost involved.

Environmental, Energy, and Other Considerations

The rule change does not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entitites (Regulatory Flexibility Act, Pub. L. 96-354) because the rule change corrects some rules so that they correspond to earlier changes, relate to identification of applications on correspondence, allow greater flexibility in patent drawing content and handling, and provide for a refund where a proper demand for international preliminary examination has been filed but withdrawn later.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no Federalsim implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The rule change involves collection of information requirements subject to the Paperwork Reduction Act of 1980, 40 U.S.C. 3501 *et seq.*, and are cleared under OMB Control No. 0651-0011.

List of Subjects in 37 CFR Part 1.

Administrative practice and procedure, Authority delegations (Government agencies), Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and 41, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

37 CFR, Part 1, is amended as follows:

PART 1—RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

AUTHORITY: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.4 is amended by revising paragraph (a)(2) to read as follows:

§1.4 Nature of correspondence.

(a) • • •

(2) Correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§1.31 to 1.378; of international applications in Subpart C, §§1.401 to 1.499; of reexamination of patents in Subpart D, §§1.501 to 1.570; of interferences in Subpart E; §§ 1.601 to 1.690; of extension of patent term in Subpart F, §§1.710 to 1.785; and of trademark applications §§2.11 to 2.189.

• • • • •

3. Section 1.5 is amended by revising paragraphs (a) and (b) to read as follows:

§1.5 Identification of application, patent or registration.

(a) No correspondence relating to an application should be filed prior to when notification of the application number is received from the Patent and Trademark Office. When a letter directed to the Patent and Trademark Office concerns a previously filed application for a patent, it must identify on the top page in a conspicuous location, the application number (consisting of the series code and the serial number, e.g., 07/123,456), or the serial number and filing date assigned to that application by the Patent and Trademark Office, or the international application number of the international application. Any correspondence not containing such identification will be returned to the sender where a return address is available. The returned correspondence will be accompanied with a cover letter which will indicate to the sender that if the returned correspondence is resubmitted to the Patent and Trademark Office within two weeks of the mail date on the cover letter, the original date of receipt of the correspondence will be considered by the Patent and Trademark Office as the date of receipt of the correspondence. Applicants may use either the certificate of mailing procedure under §1.8 or the Express Mail procedure under §1.10 for resubmissions of returned correspondence if they desire to have the benefit of the date of deposit in the United States Postal Service. If the returned correspondence is not resubmitted within the two-week period, the date of receipt of the resubmission will be considered to be the date of receipt of the correspondence. The two-week period to resubmit the returned correspondence will not be extended. If for some reason returned correspondence is resubmitted with proper identification later than two weeks after the return mailing by the Patent and Trademark Office, the resubmitted correspondence will be accepted but given its date of receipt. In addition to the application number, all letters directed to the Patent and Trademark Office concerning applications for patent should also state "PATENT APPLICATION," the name of the applicant, the title of the invention, the date of filing the same, and if known, the group art unit or other unit within the Patent and Trademark Office responsible for considering the letter and the name of the examiner or other person to which it has been assigned.

(b) When the letter concerns a patent other than for purposes of paying a maintenance fee, it should state the number and date of issue of the patent, the name of the patentee, and the title of the invention. For letters concerning payment of a maintenance fee in a patent, see the provisions of §1.366(c).

• • • • •

4. Section 1.53 is amended by revising paragraphs (c) and (d) to read as follows:

§1.53 Serial number, filing date, and completion of application.

• • • • •

(c) If any application is filed without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period within which to submit the omitted specification or drawing in order to obtain a filing date as of the date of filing of such submission. A copy of the "Notice of Incomplete Application" form notifying the applicant should accompany any response thereto submitted to the Office. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $15.00 handling fee.

(d) If an application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified, if a correspondence address has been provided and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16 (e) in order to prevent abandonment of the application. A copy of the "Notice to File Missing Parts" formed mailed to applicant should accompany any response thereto submitted to the Office. If the required fee is not timely paid, or if the processing and retention fee set forth in §1.21(l) is not paid within one year of the date of mailing of the notification required by this paragraph, the application will be disposed of. No copies will be provided or certified by the Office of an application which has been disposed of or in which neither the required basic filing fee nor the processing and retention fee has been paid. The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. If no correspondence address is included in the application, applicant has two months from the filing date to file the basic filing fee, oath or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application; or, if no basic filing fee has been paid, one year from the filing date to pay the processing and retention fee set forth in §1.21(l) to prevent disposal of the application.

5. Section 1.56 is amended by revising paragraph (e) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

• • • • •

(e) The examination of an application for compliance with paragraph (d) of this section will normally be delayed until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise prepared for consideration by the Board of Patent Appeals and Interferences, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. The prosecution of the application will be reopened to the extent necessary to conduct the examination pursuant to paragraph (d) of this section including any appeal pursuant to §1.191. If an appeal has already been filed based on a rejection on other grounds, any further rejection under this section shall be treated in accordance with §1.193(c).

• • • • •

6. Section 1.71 is amended by adding new paragraphs (d) and (e) to read as follows:

§1.71 Detailed description and specification of the invention.

• • • • •

(d) A copyright or mask work notice may be placed in a design or utility patent application adjacent to copyright and mask work material contained therein. The notice may appear at any appropriate portion of the patent application disclosure. For notices in drawings, see §1.84(o). The content of the notice must be limited to only those elements required by law. For example, "©1983 John Doe" (17 U.S.C. 401) and "*M* John Doe" (17 U.S.C. 909) would be properly limited and, under current statutes, legally sufficient notices of copyright and mask work, respectively. Inclusion of a copyright or mask work notice will be permitted only if the authorization language set forth in paragraph (e) of this section is included at the beginning (preferably as the first paragraph) of the specification.

(e) The authorization shall read as follows:

A portion of the disclosure of this patent document contains material which is subject to [copyright or mask work] protection. The [copyright or mask work] owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all [copyright or mask work] rights whatsoever.

7. Section 1.81 is amended by revising the title and paragraph (a) to read as follows:

§1.81 Drawings required in patent application.

(a) The applicant for a patent is required to furnish a drawing of his or her invention where necessary for the understanding of the subject matter sought to be patented; this drawing, or a high quality copy thereof, must be filed with the application. Since corrections are the responsibility of the applicant, the original drawing(s) should be retained by the applicant for any necessary future correction.

• • • • •

8. Section 1.84 is amended by revising paragraphs (a), (b), (i), (j) and (l) and by adding new paragraphs (n), (o), and (p), to read as follows:

§1.84. Standards for drawings.

(a) *Paper and Ink.* Drawings or high quality copies thereof which are submitted to the Office must be made upon paper which is flexible, strong, white, smooth, non-shiny and durable. India ink, or its equivalent in quality, is preferred for pen drawings to secure prefectly black solid lines. The use of white pigment to cover lines is not normally acceptable. See paragraph (p) of this section for use of color drawings in utility patent applications.

(b) *Size of sheet and margins.* The size of the sheets on which drawings are made may be exactly 8½ by 14 inches (21.6 by 35.6 cm.), exactly 8½ by 13 inches (21.6 by 33.1 cm.), or exactly 21.0 by 29.7 cm. (DIN size A4). All drawing sheets in a particular application must be the same size. One of the shorter sides of the sheet is regarded as its top.

• • •

(2) On 8½ by 13 inch drawing sheets, the drawing must include a top margin of 1 inch (2.5 cm.) and bottom and side margins of ¼ inch (6.4 mm.) from the edges, thereby leaving a "sight" precisely 8 by 11¾ inches (20.3 by 29.8 cm.). Margin border lines are not permitted. All work must be included within the "sight." The sheets may be provided with two ¼ inch (6.4 mm.) diameter holes having their centerlines spaced 11/16 inch (17.5 mm.) below the top edge and 2¾ inches (7.0 cm.) apart, said holes being equally spaced from the respective side edges.

(3) On 21.0 by 29.7 cm. drawing sheets, the drawing must include a top margin of at least 2.5 cm., a left side

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margin of 2.5 cm., a right side margin of 1.5 cm., and a bottom margin of 1.0 cm. Margin border lines are not permitted. All work must be contained within a sight size not to exceed 17 by 26.2 cm.

• • • • •

(i) *Views.* The drawing must contain as many figures as may be necessary to show the invention; the figures should be consecutively numbered if possible in the order in which they appear. The figures may be plan, elevation, section, or perspective views, and detail views of portions or elements, on a larger scale if necessary, may also be used. Exploded views, with the separated parts of the same figure embraced by a bracket, to show the relationship or order of assembly of various parts are permissible. When an exploded view is shown in a figure which is on the same sheet as another figure, the exploded view should be placed in brackets. When necessary, a view of a large machine or device in its entirety may be broken and extended over several sheets if there is no loss in facility of understanding the view. Where figures on two or more sheets form in effect a single complete figure, the figures on the several sheets should be so arranged that the complete figure can be understood by laying the drawing sheets adjacent to one another. The figures, even through on separate sheets, should be labeled as separate figures, for example as Fig. 1a, Fig. 1b, etc., so that it would be apparent that the views actually comprise one figure. The arrangement should be such that no part of any of the figures appearing on the various sheets is concealed and that the complete figure can be understood even though spaces will occur in the complete figure because of the margins on the drawing sheets. The plane upon which a sectional view is taken should be indicated on the general view by a broken line, the ends of which should be designated by numerals corresponding to the figure number of the sectional view and have arrows applied to indicate the direction in which the view is taken. A moved position may be shown by a broken line superimposed upon a suitable figure if this can be done without crowding, otherwise a separate figure must be used for this purpose. Modified forms of construction can only be shown in separate figures. Views should not be connected by projection lines nor should centerlines be used. When a portion of a figure is enlarged for magnification purposes, the figure and the enlarged figure must be labeled as a separate figures.

(j) *Arrangement of Views.* All views on the same sheet should stand in the same direction and, if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the top of the sheet with the appropriate top margin to be used as the heading space is on the right-hand side. One figure must not be placed upon another or within the outline of another.

• • • • •

(l) *Identification of drawings.* Identifying indicia (such as the application number, group art unit, title of the invention, attorney's docket number, inventor's name, number of sheets, etc.) not to exceed 2¾ inches (7.0 cm.) in width may be placed in a centered location between the side edges within three-fourths inch (19.1 mm.) of the top edge. Either this marking technique on the front of the drawing or the placement, although not preferred, of this information and the title of the invention on the back of the drawings is acceptable. Authorized security markings may be placed on the drawings provided they are outside the illustrations and are removed when the material is declassified. Other extraneous matter will not be permitted upon the face of a drawing.

• • • • •

(n) *Numbering of drawing sheets.* The drawing sheets may be numbered in consecutive arabic numbers at the top of the sheets, in the middle, but not in the margin. Such numbering will be deleted for printing purposes since page numbers are added at the time of printing the patent by the Office.

(o) Copyright or Mask Work Notice. A copyright or mask work notice may appear in the drawing but must be placed with the "sight" of the drawing immediately below the figure representing the copyright or mask work material and be limited to letters having a print size of ⅛ to ¼ inches (3.2 to 6.4 mm) high. The content of the notice must be limited to only those elements required by law. For example, "©1983 John Doe" (17 U.S.C. 401) and "*M* John Doe" (17 U.S.C. 909) would be properly limited and, under current statutes, legally sufficient notices of copyright and mask work, respectively. Inclusion of a copyright or mask work notice will be permitted only if the authorization language set forth in §1.71(e) is included at the beginning (preferably as the first paragraph) of the specification.

(p) *Limited use of color drawings in utility patent applications.* Paragraph (a) of this section requires that drawings in utility patent applications must be in black on white paper. However, on rare occasion, color drawings may be necessary as the only practical medium by which to disclose the subject matter sought to be patented in a utility patent application. The Patent and Trademark Office will accept color drawings in utility patent applications only after granting of a petition by the applicant under §1.183 of this part which requests waiver of the requirements of paragraph (a) of this section. Any such petition should be directed to the Office of the Deputy Assistant Commissioner for Patents and must include the following:

(1) The appropriate fee set forth in §1.17(h).
(2) Five (5) sets of color drawings on DIN size A4 (21.0 by 29.7 cm.) sheets.
(3) A proposed amendment to insert in the specification the following language as the first paragraph in the portion of the specification relating to the brief description of the drawing:

> "The file of this patent contains at least one drawing executed in color. Copies of this patent with color drawing(s) will be provided by the Patent and Trademark Office upon request and payment of the necessary fee."

9. Section 1.85 is revised to read as follows:

§1.85 Corrections to drawings.

(a) The requirements of §1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted for examination but in such case a new drawing must be furnished.

(b) The Patent and Trademark Office will not release drawings in applications having a filing date after Jan. 1, 1989, or any drawings from any applications after Jan. 1, 1991, for purposes of correction. If corrections are necessary, new corrected drawings must be submitted within the time set by the Office.

(c) When corrected drawings are required to be submitted at the time of allowance, the applicant is required to submit acceptable drawings within three months from the mailing of the "Notice of Allowability." Within that three-month period, two weeks should be allowed for review of the drawings by the Drafting Branch. If the Office finds that correction is necessary, the applicant must submit a new corrected drawing to the Office within the original three-month period to avoid the necessity of obtaining an extension of time and paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the receipt of the Notice of Allowability. The provisions with respect to obtaining an extension of time relates only to the late filing of corrected drawings. The time limit for payment of the issue fee is a fixed three-month period which cannot be extended as set forth in 35 U.S.C. 151.

10. Section 1.152 is revised to read as follows:

§1.152 Drawing.

The design must be represented by a drawing made in conformity with the rules laid down for drawings of mechanical inventions and must contain a sufficient number of views to constitute a complete disclosure of the appearance of the article. Appropriate surface shading must be used to show the character or contour of the surfaces represented. Broken lines may be used to show visible environmental structure, but may not be used to show hidden planes and surfaces which cannot be seen through opaque materials.

11. Section 1.478 is amended by revising paragraphs (b)(1) and (c)(1) to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent.

• • • • •

(b) • • •

(1) The required maintenance fee set forth in §1.20 (e) - (j),

• • •

(c) • • •

(1) The required maintenance fee set forth in §1.20 (e) - (j),

• • •

12. Section 1.421 is amended by revising paragraph (f) and adding a new paragraph (g) to read as follows:

§1.421 Applicant for international application.

• • • • •

(f) Changes in the person, name, or address of the applicant of an international application shall be made in accordance with PCT Rule 92bis.

(g) The wording of PCT Rule 92bis is as follows:

PCT Rule 92bis - Recording of Changes in Certain Indications in the Request or the Demand *92bis Recording of Changes by the International Bureau*

(a) The International Bureau shall, on the request of the applicant or the receiving Office, record changes in the following indications appearing in the request or demand:

(i) person name, residence, nationality or address of the applicant,
(ii) person, name or address of the agent, the common representative or the inventor.

(b) The International Bureau shall not record the requested change if the request for recording is received by it after the expiration:

(i) of the time referred to in Article 22(1), where Article 39(1) is not applicable with respect to any Contracting State;
(ii) of the time limit referred to in Article 39(1)(a), where Article 39(1) is applicable with respect to at least one Contracting State.

13. Section 1.480 is amended by revising paragraph (d) to read as follows:

§1.480 Demand for international preliminary examination.

• • • • •

(d) Withdrawal of a proper Demand prior to the start of the international preliminary examination will entitle applicant to a refund of the preliminary examination fee minus the amount of the transmittal fee set forth in §1.445(a)(1).

Nov. 21, 1988

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[1097 OG 36]

(86) **Use of Color Drawings in Utility Patents**

This notice supersedes the Official Gazette notice, dated Aug. 6, 1986, published at 1070 O.G. 10 on Sept. 9, 1986.

Under 37 CFR 1.84, the drawings of a utility patent application must be in black and white. However, on occasion, color drawings may be appropriate. In this circumstance, the Patent and Trademark Office will entertain a petition under 37 CFR 1.183 to waive the requirements of §1.84 to the extent that color drawings on DIN size A4 sheets (21.0 by 29.7 cm.) will be accepted for the purposes and under the conditions set forth below.

The petition must be accompanied by five (5) sets of color drawings on DIN size A4 sheets (21.0 by 29.7 cm.) for examination, copying and archival purposes.

In light of the substantial administrative and economic burden associated with printing a utility patent with color drawings, the patent copies which are printed at issuance of the application will depict the drawings in black and white only. However, a set of color drawings will be attached to the Letters Patent. Moreover, copies of the patent with color drawings attached thereto will be provided by the Patent and Trademark Office upon special request and payment of the fee necessary to recover the actual costs associated therewith.

Accordingly, the petition must also be accompanied by a proposed amendment to insert the following language as the first paragraph in the portion of the specification containing a brief description of the drawings:

> The file of this patent contains at least one drawing executed in color. Copies of this patent with color drawing(s) will be provided by the Patent and Trademark Office upon request and payment of the necessary fee.

It is anticipated that such a petition will be granted only when the Patent and Trademark Office has determined that a color drawing is the only practical medium by which to disclose in a printed utility patent the subject matter sought to be patented.

It is emphasized that a decision to grant the petition should not be regarded as an indication that color drawings are necessary to comply with a statutory requirement. In this latter respect, clearly it is desirable to file any desired color drawings as part of the original appli-

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cation papers in order to avoid issues concerning statutory defects (e.g., lack of enablement under 35 USC 112 or new matter under 35 USC 132). The filing of the petition, however, may be deferred until acceptable drawings are required by the examiner.

The petition should be directed to the attention of the Office of the Deputy Assistant Commissioner for Patents.

RENE D. TEGTMEYER,
July 24, 1987. *Assistant Commissioner for Patents.*

[1082 OG 25]

(87) **Multiple Dependent Claims and New Drawing Filing Requirements**

Introduction

On January 24, 1978, Public Law 94–131 (pages 108–115 of "Patent Laws," August 1976 issue) and the Patent Cooperation Treaty came into force. This public law amends the patent statute, Title 35, United States Code, by providing for procedures and requirements set forth in the Patent Cooperation Treaty. Some of these statutory amendments also effect the laws governing the processing and examination of regular United States national applications filed on and after January 24, 1978.

The amendments of the patent law which will affect *U.S. patent applications filed on and after January 24, 1978,* relate to two elements of the patent application: the claims and the drawings. With regard to claims, the amendments to 35 U.S.C. 41 and 112 provide for multiple dependent claims in accordance with PCT Rule 6.4. With regard to drawings, the amendment to 35 U.S.C. 113 changes the requirements for filing drawings in order to obtain a filing date in accordance with PCT Article 7.

Purpose

This memorandum establishes in more detail the new procedures required by the amended statute. Any questions concerning these instructions may be directed to either Mary Turowski (extension 7–3776) in the administration area or Louis Maassel (extension 7–3070) in the examining area.

Revised 37 CFR sections 1.75(c), (f) and (g); and 1.81 and 1.83(c) were published in the *Official Gazette* of February 21, 1978.

Multiple Dependent Claims

Generally, a multiple dependent claim is a dependent claim which refers back in the alternative to more than one preceding independent or dependent claim.

The second paragraph of 35 U.S.C. section 112 has been revised in view of the multiple dependent claim practice introduced by the Patent Cooperation Treaty. Thus, section 112 authorizes multiple dependent claims, as long as they are in the alternative form (e.g., "A machine according to claims 3 *or* 4, further comprising . . ."). Cumulative claiming (e.g., "A machine according to claims 3 *and* 4, further comprising . . .") is *not* permitted. A multiple dependent claim may refer in the alternative to only one set of claims. A claim such as "A device as in claims 1, 2, 3 or 4, made by a process of claims 5, 6, 7 or 8" is improper. Section 112 allows reference to only a particular claim. Furthermore, a multiple dependent claim may *not* serve as a basis for any other multiple dependent claim, either directly or indirectly. These limitations help to avoid undue confusion in determining how many prior claims are actually referred to in a multiple dependent claim.

The amendment of the second paragraph of section 112 further clarifies that the limitations or elements of each claim incorporated by reference into a multiple dependent claim must be considered separately. Thus, a multiple dependent claim, as such, does not contain all the limitations of all the alternative claims to which it refers, but rather, contains in any one embodiment only those limitations of the particular claim referred to for the embodiment under consideration. Hence, a multiple dependent claim must be considered in the same manner as a plurality of single dependent claims.

Restriction Practice

For restriction purposes, each embodiment of a multiple dependent claim will be considered in the same manner as a single dependent claim. Therefore, restriction may be required between the embodiments of a multiple dependent claim. Also, some embodiments of a multiple dependent claim may be held withdrawn while other embodiments are considered on their merits.

Handling of Multiple Dependent Claims by the Application Division

The Application Division will be responsible for verifying whether multiple dependent claims filed with the application are in proper alternative form, that they depend only upon prior independent and single dependent claims and also for calculating the amount of the filing fee. A new form, PTO–1360, has been designed to be used in conjunction with the current fee calculation form PTO–875.

Handling of Multiple Dependent Claims by the Examining Group Clerical Staff

The examining group clerical staff is responsible for verifying compliance with the statute and rules of multiple dependent claims added by amendment and for calculating the amount of any additional fees required. This calculation should be performed on form PTO–1360.

If a multiple dependent claim (or claims) is added in an amendment without the proper fee, the amendment will not be entered until the fee has been received. In view of the requirements for multiple dependent claims, no amendment containing new claims or changing the dependency of claims will be entered before checking whether the paid fees cover the costs of the amended claims. The applicant, or his attorney or agent, will usually be contacted to pay the additional fee in the same manner as currently in existence for such defects. Where a letter is written in insufficient fee situations, a copy of the multiple dependent claim fee calculation form PTO–1360 will be included for applicant's information.

Handling of Dependent Claims by the Examiner

Should any multiple dependent claim be in an application filed prior to January 24, 1978 or include a claim association or claim structure that violates any of the prohibitions, the claim will be objected to as not being in proper form as required by 37 CFR 1.75 in the next Office action. Such an improper claim will not be further treated on the merits.

When referring to a singular dependent claim or a single embodiment of a multiple dependent claim, as when making a rejection, such a claim or embodiment will be referred to by using the number of all of the claims involved in that claim or embodiment, starting with the highest. For example, if claim 2 was dependent on claim 1, the notations would be 2/1. If in the same application, claim 3 was independent and claim 4 was multiple dependent on claims 2 or 3, the notations would be 4/2/1 and 4/3. Furthermore, if claim 5 depended from claim 4, the notations would be 5/4/2/1 and 5/4/3. Each of these embodiments will be treated individually. It would be possible for claim 4/2/1 to be rejected under section 102 and claim 4/3 to be indicated as avoiding the prior art and being allowable if rewritten in independent form. A number of embodiments may be grouped together if there is a common ground of rejection, but it must be clear how each embodiment is treated.

A claim, such as claim 4, will not be allowed until all embodiments covered thereby are allowable. If an embodiment of a multiple dependent claim avoids the art while other embodiments are rejected over prior art, a statement will be made that that embodiment avoids the art and would be allowed if rewritten in separate dependent or independent form. Wording similar to the following may be used:

> "Embodiment _____ would be allowable if rewritten as a proper dependent or independent claim which contains only the limitations of this embodiment."

Calculation of Fees When Multiple Dependent Claims are Presented, Use of Form PTO–1360

To assist in the computation of the fees for multiple dependent claims, a separate "Multiple Dependent Claim Fee Calculation Sheet," form PTO–1360, has been designed for use with the current "Patent Application Fee Determination Record," form PTO–875. Form PTO–1360 will be placed in the file wrapper by the Application Division where multiple dependent claims are in the application as filed. If multiple dependent claims are not included upon filing, but are later added by amendment, the examining group clerical staff will place the form in the file wrapper. If there are multiple dependent claims in the application, the total number of independent and dependent claims for fee purposes will be calculated on form PTO–1360 and the total number of claims and number of independent claims will then be placed on form PTO–875 for final fee calculation purposes.

If at least $65 is included with the application on filing, but the total fee is insufficient, a "Notice of Insufficient Fee," form PTO–1094, is placed in the file wrapper by the Application Division as is currently done. The notice will be mailed by the examining group in accordance with established procedures.

Calculating Fees for Multiple Dependent Claims Proper Multiple Dependent Claims

Amended section 41(a) of title 35, U.S.C., provides that claims in multiple dependent form cannot be considered as single dependent claims for the purpose of calculating fees. Thus, a multiple dependent claim would be considered to be that number of dependent claims to which it refers. Any proper claim depending directly or indirectly from a multiple dependent claim would also be considered as the same number of dependent claims as referred to in the multiple dependent claim from which it depends.

Improper Multiple Dependent Claim

If any multiple dependent claim is improper, Application Division may indicate that fact by placing an encircled numeral "1" in the "Dep. Claims" column of form PTO–1360. The fee for any improper multiple dependent claim, whether it is defective for not being in the alternative form or for being directly or indirectly dependent on a prior multiple dependent claim, will only be one, since only an objection to the form of such a claim will normally be made.

This procedure also greatly simplifies the calculation of fees. Any claim depending from an improper multiple dependent claim will also be considered to be improper and be counted as one dependent claim.

FEE CALCULATION EXAMPLE

Claim Number
1 Independent
2 Dependent on claim 1
3 Dependent on claim 2
4 Dependent on claim 2 or 3
5 Dependent on claim 4
6 Dependent on claim 5
7 Dependent on claim 1 or 4
8 Dependent on claim 1 or 5
9 Dependent on claim 8
10 Independent
11 Dependent on claim 1 or 10
12 Dependent on claim 1 and 10

FORM PTO-1360 (2/78) U.S. DEPT. COMM. PAT. AND TRADEMARK OFF.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET
(FOR USE WITH FORM PTO-875)

	AS FILED		AFTER 1ST AMDT		AFTER 2ND AMDT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1					
2		1				
3		1				
4		2				
5		2				
6		2				
7		①				
8		①				
9		①				
10	1					
11		2				
12		①				
TOTAL IND.	2					
TOTAL DEP.	14	↵		↵		↵
TOTAL CLAIMS	16					

Comments on Fee Calculation Example

Claim 1.–This is an independent claim; therefore, a numeral "1" is placed opposite claim number 1 in the "Ind." column.

Claim 2.–Since this is a claim dependent on a single independent claim, a numeral "1" is placed opposite claim number 2 in the "Dep." column.

Claim 3.–Claim 3 is also a single dependent claim, so a numeral "1" is placed in the "Dep." column.

Claim 4.–Claim 4 is a proper multiple dependent claim. It refers directly to two claims in the alternative, namely, claims 2 or 3. Therefore, a numeral "2" to indicate direct reference to two claims is placed in the "Dep." column opposite claim number 4.

Claim 5.–This claim is a singularly dependent claim depending from a multiple dependent claim. For fee calculation purposes, such a claim is counted as being that number of claims to which direct reference is made in the multiple dependent claim which it depends. In this case, the multiple dependent claim number 4 it depends from counts as 2 claims; therefore, claim 5 also counts as 2 claims. Accordingly, a numeral "2" is placed opposite claim number 5 in the "Dep." column.

Claim 6.–Claim 6 depends indirectly from a multiple dependent claim 4. Since claim 4 counts as 2 claims, claim 6 also counts as 2 dependent claims. Consequently, a numeral "2" is placed in the "Dep." column after claim 6.

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Claim 7.–This claim is a multiple dependent claim since it refers to claims 1 or 4. However, as can be seen by looking at the "2" in the "Dep." column opposite claim 4, claim 7 directly depends from a multiple dependent claim. This practice is improper under 35 U.S.C. 112 and Rule 1.75(c). Following the procedure for calculating fees for improper multiple dependent claims, a numeral "1" is placed in the "Dep." column with a circle drawn around it to alert the examiner that the claim is improper.

Claim 8.–This claim is a multiple dependent claim since it refers to claims 1 or 5. However, since claim 5 depends from multiple dependent claim 4, claim 8 indirectly depends from multiple dependent claim 4 through claim 5. This practice is improper. See MULTIPLE DEPENDENT CLAIMS, paragraph 2, above. Consequently, a numeral "1" is placed in the dependent claim column with a circle drawn around it.

Claim 9.–Claim 9 is improper since it depends from an improper claim. If the base claim is in error, this error cannot be corrected by adding additional claims depending therefrom. Therefore, a numeral "1" with a circle around it is placed in the "Dep." column.

Claim 10.–Here again we have an independent claim which is always indicated with a numeral "1" in the "Ind." column opposite the claim number.

Claim 11.–This claim refers to two independent claims in the alternative. A numeral "2" is therefore placed in the "Dep." column opposite claim 11.

Claim 12.–Claim 12 is a dependent claim which refers to two claims in the conjunctive ("1 *and* 10") rather than in the alternative ("1 *or* 10"). This form is improper under 35 U.S.C. 112 and Rule 1.75(c). Accordingly, since claim 12 is improper, an encircled numeral "1" is placed in the "Dep." column opposite claim 12.

Calculation of Filing Fee

After the numbers of "Ind." and "Dep." claims are noted on form PTO–1360, each column is added. In this example., there are 2 independent claims and 14 dependent claims or a total of 16 claims. The number of independent and total claims can then be placed on form PTO–875 and the fee calculated. In this example, the total number of claims 16 minus 10 leaves 6, which is multiplied by $2 for an additional total claim fee of $12. The total number of independent claims in the example is 2, which minus 1 is 1, which times the $10 rate is $10. The total filing fee is therefore $65 + $12 + $10, or total of $87.

Drawing Requirements

Revised 35 U.S.C. 113 relaxes the previous requirements for submission of drawings on filing under certain conditions. The first sentence of 35 U.S.C. 113 does require a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention. In this situation the lack of a drawing renders the application incomplete and as such, the application cannot be given a filing date until the drawing is received. The second sentence of 35 U.S.C. 113 deals with the situation wherein a drawing is not necessary for the understanding of the invention but the case admits of illustration and no drawing was submitted on filing. The lack of the drawing in this situation does not render the application incomplete but rather is treated much in the same manner as an informality. The examiner should require such drawings in almost all such instances. Such drawings could be required during the processing of the application but do not have to be furnished at the time the application is filed. The applicant is allowed at least two months from the date of the letter requiring drawings to submit them.

Handling of Drawing Requirements Under the First Sentence of 35 U.S.C. 113

Under the revised provisions the Application Division examiner will continue to make the initial decision in all new applications as to whether a drawing is "necessary" under the first sentence of 35 U.S.C. 113.

If during examination an examiner feels that a filing date should not have been granted in an application because it does not contain drawings, the matter will be brought to the attention of the Supervisory Primary Examiner (SPE) for review. If the SPE decides that drawings are required to understand the subject matter of the invention, the SPE will return the application to the Application Division with a memorandum requesting cancellation of the filing date and identifying the subject matter required to be illustrated.

Handling of Drawing Requirements Under the Second Sentence of 35 U.S.C. 113

35 U.S.C. 113 also deals with the situation wherein the drawing is not necessary for the understanding of the invention, but the subject matter admits of illustration by a drawing and the applicant has not furnished a drawing. The lack of the drawing in this situation does not render the application incomplete but rather is treated as an informality. A filing date will be accorded with the original presentation of the papers, despite the absence of drawings. In these situations, a drawing or further illustration will normally be required by the examiner. This may be done either prior to examination in a separate letter or in the first Office action and may be handled in much the same manner as informal photocopy drawings are presently handled. The examiner should require drawings where appropriate as early as possible, since the possession of the drawing at that time would facilitate the examination process. A letter requiring drawings may contain wording similar to the following:

> "The examiner has decided that the subject matter of this applicaton admits of illustration by a drawing and that a drawing would facilitate the understanding of the subject matter disclosed. (Continue with a specific mention of those items of which drawings are desired.) Applicant is required to furnish a drawing under 37 CFR 1.81. (Incorporate in Office action or set two-month period for response.)"

The applicant will be given at least two months from the date of such requirement to submit drawings. If the requirement for drawings is included in an Office action, the time for supplying the drawings will be the same as the time of response to the Office action. Upon receipt of the drawing within the period set, the examiner will check the drawings for new matter. If new matter is included, the drawing will not be entered. It will be objected to as containing new matter. A new drawing without such new matter may be required if the examiner still feels a drawing is needed under 37 CFR 1.81 or 1.83. The examiner's decision would be reviewable by petition to the Commissioner under Rule 1.181. The decision on such a petition would be handled by the Group Director. If a drawing is not timely received in response to a letter from the examiner which requires a drawing, the application becomes abandoned for failure to respond.

RENE D. TEGTMEYER,
Feb. 8, 1978. *Assistant Commissioner for Patents.*

[968 O.G. 7]

(88) **Use of Symbol "Ø" in Patent Applications**

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or "slash" key to result in "Ø" which is an approximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "O" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("Ø") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "Ø" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any questions about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "Ø" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the patentee's expense (37 CFR 1.323) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (I, 0) in the patent application.

RICHARD J. SHAKMAN,
Dec. 20, 1978. *Assistant Commissioner for Administration.*

[978 O.G. 152]

(89) **U.S. Accession to Hague Convention Abolishing the Requirement of Legalization for Foreign Public Documents**

On Oct. 15, 1981, the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" entered into force between the United States and twenty-eight foreign countries that are parties to the Convention. The Convention applies to any document submitted to the United States Patent and Trademark Office for filing or recording, which is sworn to or acknowledged by a notary public in any one of the member countries. The Convention abolishes the certification of the authority of the notary public in a member country by a diplomatic or consular officer of the United States and substitutes certification by a special certificate, or apostille, executed by an officer of the member country. Accordingly, the Office will accept for filing or recording a document sworn to or acknowledged before a notary public in a member country if the document bears, or has appended to it, an apostille certifying the notary's authority. The requirement for a diplomatic or consular certificate, specified in 37 CFR 1.66 and note 1 of 37 CFR 3.45, will not apply to a document sworn to or acknowledged before a notary public in a member country if an apostille is used.

The member countries that are parties to the Convention are:

Austria	Italy	Spain
Bahamas	Japan	Suriname
Belgium	Lesotho	Swaziland
Botswana	Liechtenstein	Switzerland
Cyprus	Luxembourg	Tonga
Fiji	Malawi	U.K. of Great Britain and N. Ireland
France	Malta	United States
Germany Fed. Rep. of	Mauritius	Yugoslavia
Hungary	Netherlands	
Israel	Portugal	
	Seychelles	

The Convention prescribes the following form for the apostille:

Model of certificate

The certificate will be in the form of a square with sides at least 9 centimetres long

APOSTILLE
(Convention de La Haye du Oct. 5, 1961)

1. Country: . . . . . .
This public document
2. has been signed by . . . . . .
3. acting in the capacity of . . . . . .
4. bears the seal/stamp of . . . . . .

Certified

5. at . . . . . 6. the . . . . . .
7. by . . . . . .
8. No. . . . . .
9. Seal/stamp: 10. Signature:

GERALD J. MOSSINGHOFF,
Nov. 5, 1981. *Commissioner of Patents and Trademarks.*

[1013 O.G. 3]

(90) **Simulated or Predicted Tests or Examples**

In order to provide for uniform practice before the Patent and Trademark Office, the following clarification of current Office practice relating to simulated or predicted tests or examples is being set forth. This notice specifies the Office policy which is currently in effect and is considered to have been in effect in the past in this area. The wording of the MPEP provisions prior to this amendment went further than was intended. The amended sections below spell out more clearly the Office's position from the start.

The following wording will be substituted in revision number 8 for that presently in paragraph D of section 608.01(p) of the Manual of Patent Examining Procedure.

MPEP §608.01(p)

"D. Simulated or Predicted Test Results or Prophetic Examples

Simulated or predicted test results and prophetical examples (paper examples) are permitted in patent applications. Working examples correspond to work actually performed and may describe tests which have actually been conducted and results that were achieved. Paper examples describe the manner and process of making an embodiment of the invention which has not actually been conducted. Paper examples should not be represented as work actually done. No results should be represented as actual results unless they have actually been achieved. Paper examples should not be described using the past tense.

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The first and last paragraphs of MPEP section 707.07(1) are being deleted.

DONALD J. QUIGG,
Apr. 15, 1982. *Deputy Commissioner of Patents and Trademarks.*

[1018 O.G. 27]

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(91) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1 [Docket No. 71008–7208]

Variety Denomination Requirements for Plant Patent Applications

Agency: Patent and Trademark Office, Commerce.
Action: Notice of proposed rulemaking.
Summary: The Patent and Trademark Office proposes to amend certain of the rules of practice applicable to the patenting of plants. Under the proposed rules of practice, an applicant for such a patent would, in addition to any requirements for obtaining a patent, also be required to record an identifying variety denomination for the plant. These proposed rules fulfill an obligation imposed by the Convention of the International Union for the Protection of New Plant Varieties (the UPOV Convention), to which the United States adheres.
Dates: Comments on the proposed rules must be submitted by Jan. 8, 1988, to assure their consideration in formulating the rules put into effect. A public hearing will be held on Jan. 15, 1988, beginning at 9:30 A.M., in the Commissioner's Conference Room, Crystal Plz. 3, the Patent and Trademark Office.
Addresses: Address comments to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231. All comments received will be publicly available in the Patent and Trademark Office, Crystal Plz. 3, Arlington, Va., Rm. 11C28.
For Further Information Contact: Mr. Stanley D. Schlosser, Office of Legislation and International Affairs, by telephone at (703) 557–3065 or by mail addressed to the Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.
Supplementary Information: The UPOV Convention became applicable to the United States on Nov. 8, 1981, as a consequence of the President's exercise of authority to adhere to this international agreement. Under Articles 6 and 13 of the UPOV Convention, each plant variety for which protection is sought must be given a variety denomination and that denomination recorded ("registered" in the language of the Convention) at least by the time the patent is granted. It is left to each of the UPOV member states to determine how recordation is effected. For the United States, the issuance of a patent which includes the denomination of the variety would constitute recordation and registration for the purposes of compliance with UPOV Convention. The patent examining process would include consideration of the suitability for recordation of the proposed variety denomination.

Attention is called to two earlier Commissioner's Notices on this subject. The Notice of Oct. 20, 1981 (46 FR 51426) stated that appropriate rules for the registration of variety denominations, as required by the UPOV Convention, would be issued. The Commissioner's Notice, published in the Federal Register on Aug. 16, 1985, 50 FR 33062, proposed amendments to the Patent and Trademark Office's rules of practice to carry out this requirement. In light of public comments received, the earlier proposed rules are being withdrawn from consideration and replaced by these revised proposed rules. These would apply to plants patented under either 35 U.S.C. 101 or 161, but would not apply to any protection sought under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.), administered by the United States Department of Agriculture.

These proposed rules, in accordance with the patent law requirements for providing a descriptive title for a patent application, would require the variety denomination proposed for recordation to be included in the title of the application. The denomination would be judged for recordability by the examiner assigned the application for examination, who would consult with appropriate trademark examination officials to determine if there exists a possibly conflicting trademark registration or application for registration.

The recordation of a variety denomination for purposes of compliance with UPOV Convention Article 13 is not to be understood as conveying any legal rights in that denomination. Recordation does no more than establish a prima facie case that can be asserted as evidence of the possible generic nature of the variety denomination, if genericness is not already established by its usage in the commercial market, advertising or publication.

Under the proposed rules, the Patent and Trademark Office in examining the recordability of variety denominations will, in addition to its trademark records, utilize the Office's compilation of denominations obtained from horticultural, agricultural, floral and other professional societies, national breeders' rights offices, the UPOV Union's Secretariat, standard references and other available sources. Article 13 of the UPOV Convention requires that the variety denomination must enable the plant variety to be identified, that the denomination not consist solely of numbers except if this is shown to be an established practice for designating plant varieties, and that the denomination not be liable to mislead or cause confusion concerning the characteristics, value or identity of the variety or the identity of the breeder. No specific naming system is required by the Article. While a portion of the consuming public and others might prefer plant variety names conforming to the International Code of Nomenclature for Cultivated Plants or the UPOV Guidelines, common usage, code systems or other ways of identifying plants cannot be ignored.

The Patent and Trademark Office would accept for recordation a variety denomination complying with the requirements of the UPOV Convention's Articles 13(2) and 13(4). A number of variety denomination systems currently in use, such as the system described in the 1980 revision of the International Code of Nomenclature for Cultivated Plants, the UPOV Guidelines and various code systems may also meet these requirements. Sexually reproduced varieties could be named in compliance with the requirements of the Federal Seed Act.

In the event the examiner does not approve a proposed variety denomination for recordation, the applicant could petition the Commissioner for approval. Thus, the examination and approval of variety denominations will be handled in the same way as other procedural and administrative requirements not relating to the merits of the invention, such as the requirement to provide an abstract of the disclosure or the requirement to provide a title. A final refusal by the Commissioner on petition would require submission of another proposed denomination for recordation.

The petition to the Commissioner will be subject to a fee and the other requirements relating to petitions. The Commissioner may in appropriate cases delegate to the Assistant Commissioner for Trademarks or other appropriate trademark officials the decision of such petitions, under 37 C.F.R. 1.181(g).

The UPOV Convention requires the applicant to identify the patented variety by the same variety denomination (or a translation thereof) in all UPOV member states. A different denomination may be recorded in a particular member state, however, in cases where the denomination registered in another member state is unsuitable for business or other reasons. An applicant may during the course of examination be required to inform the Office of any other denomination by which the variety is known.

While these rules provide for the recordation of variety denominations, they recognize at the same time that, in cases of conflict, previously established proprietary rights are paramount. Recordation is in legal effect, therefore, no more than publication of a denomination which is or may become the generic name of a plant variety.

Trademark owners, owners of other proprietary rights and patent applicants share a common interest in knowing as early as possible if a variety denomination proposed for recordation possibly conflicts with a trademark or other proprietary rights. Accordingly, each denomination proposed for recordation, along with the genus and species to which the variety belongs, shall be published in the Official Gazette as soon as reasonably possible after receipt of the application in the Office. The Commissioner has determined that publication of such information constitutes special circumstances under 35 U.S.C. 122.

The public may provide information to the Office concerning the recordability of a proposed denomination. Such information would be entered in the official file wrapper of the application and be available to the examiner. Such information shall be called to the attention of the applicant by the Office.

Also, the *Official Gazette* would list newly recorded denominations in United States patents in order for trademark owners to assert their rights in appropriate cases through private negotiations or judicially, as they may now do in trademark cases. Proceedings in the Office in regard to the registration of variety denominations, however, will be conducted ex parte.

Under the proposed rules, each applicant would be required to specify in an application for protection of a plant variety the date of first use of the denomination if used prior to filing of the patent application, or later to provide information about the date of first commercial use during pendency of the application. In cases of conflict between a trademark and a proposed variety denomination, the variety denomination will not be accepted for recordation unless its first commercial use clearly antedates another's established rights.

If a patentee learns of a conflict between a trademark and the recorded variety denomination after issuance of the patent, the patentee in order to resolve the conflict will be permitted to record a different denomination by means of the Certificate of Correction procedure. Also, a variety denomination found after issuance of a patent to be commercially unsuitable or ill-advised could be changed in a similar manner.

The Office now permits plants and plant varieties to be patented both specifically and broadly under patent 35 U.S.C. 101. In some cases, however, claims in an application will not be limited to a specific variety. These proposed rules would apply only to applications where a specific variety or varieties are claimed. Only these need be identified by a variety denomination, except where the number of varieties involved makes this impractical. In such a case, each claim directed to a specific variety would include its variety denomination, but these variety denominations could be omitted from the title of the patent. Variety denominations would not be required for microorganisms or microscopic plant parts.
Other Considerations: The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. This rule contains a collection of information requirement subject to the Paperwork Reduction Act. This colletion of information requirement has been cleared by OMB under control No. 0651–0011.

The General Counsel of the Department Commerce has certified to the Small Business Administration that the proposed rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). The variety denomination requirement will not impose extra work on patent applicants (whether small or large businesses or individuals). The rules will help avoid burdensome and expensive litigation over trademark rights.

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents.

For the reasons set out in the preamble, 37 CFR Part I is proposed to be amended by revising §§1.72, and 1.17 and adding a new §1.168 as set forth below. All proposed additions are printed between arrows.

PART I - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

AUTHORITY: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.17 is proposed to be amended by adding the following items in numerical order to the list in paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) * * *

► §1.168(d) For petitioning the Commissioner to record a plant variety denomination . . .
§1.168(g) For petitioning the Commissioner to record a substitute plant variety denomination . . . ◄

3. Section 1.72 is proposed to be amended by adding the following paragraph:

§1.72 Title and abstract.

* * *

► (c) In the case of an application for the patenting of a plant variety under the provisions of 35 U.S.C. 101 or 161, the title of the application must include a variety denomination for the specific new variety claimed, except as provided for in §1.168(b). The granting of the patent will be deemed the recordation of the variety denomination for purposes of compliance with Article 13 of the International Convention for the Protection of New Varieties of Plants, as revised on Oct. 23, 1978.

4. A new §1.168 is proposed to be added, to read as follows:

► §1.168 Variety denomination, submission to the Office, examination.
(a) The variety denomination submitted by the patent applicant under §1.72 will be examined for compliance with the International Convention for the Protection of New Varieties of Plants. Specifically, the denomination:

(1) must enable the plant variety to be identified;,
(2) must not be likely to cause confusion, to cause mistake or to deceive concerning the characteristics, value or identity of the plant variety or the identity of the breeder;

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(3) must not consist solely of numbers except if this is an established practice for designating plant varieties; and
(4) must not be likely to cause confusion or mistake or to deceive as to any prior right of a third party, and shall not affect prior rights of third parties.

(b) If a proposed variety denomination is not included as part of the title of the application, when filed, the examiner shall set a period of not less than thirty days to provide a variety denomination. If a plurality of plant varieties are claimed, which make it impractical to include each variety denomination in the title of the application, each claim directed to a specific plant variety shall instead include the denomination of the claimed plant variety. In cases where no specific plant variety is claimed, for example, a patent directed to the improvement of a plant species, the denomination requirement applicable to the patenting of a plant variety or varieties will be waived.
(c) If the examiner determines that a proposed variety denomination is not suitable for recordation, the examiner shall refuse recordation thereof and shall set forth in an Office action the reasons for such refusal. An applicant disagreeing with the reasons for such refusal may request reconsideration and withdrawal of the refusal, giving the reasons therefor. If the examiner's refusal to record a proposed variety denomination is repeated and made final, the examiner shall at the same time require the applicant to propose another variety denomination for recordation.
(d) After a final requirement by the examiner for submission of a proposed new variety denomination, the applicant, in addition to making any response due on the remainder of the action, may in lieu of proposing another variety denomination petition the Commissioner for review of the examiner's holding, upon payment of the fee set forth in §1.17(h).
(e) The applicant is required to submit for recordation the same variety denomination (or, if not in English, a translation or transliteration thereof) as that previously registered or recorded, or proposed for registration in an earlier filed application for protection of the same variety in another member state of the International Union for the Protection of New Varieties of Plants. The applicant may submit another denomination for recordation, however, upon a showing satisfactory to the examiner as to why the denomination originally submitted or registered in another member state of the said Union is unsuitable for recordation in the United States. During pendency of an application, the examiner may require the applicant to provide information regarding all denominations for the same variety registered or proposed for registration in other member states of the said Union before the application was filed in the United States.
(f) The applicant shall indicate in the application the date of first commercial use in the United States if any, of the variety denomination proposed for recordation; or, if not commercially used prior to filing of the application, indicate during pendency of the application when the denomination has first been commercially used in this country. No variety denomination will be recorded if first commercially used after the establishment of third party proprietary rights to the denomination.
(g) A patentee in order to avoid a conflict between a recorded variety denomination and a trademark or other proprietary right, or where the recorded variety denomination is likely to be confused with another, or where business or marketing considerations dictate, may propose for recordation a substitute variety denomination for that already recorded. Such a proposal shall be in the form of a petition to the Commissioner together with the fee set forth in §1.17(h). The proposed substitute denomination will be examined in the same manner as the denomination originally recorded, and upon recordation shall be promptly published in the *Official Gazette*. A Certificate of Correction indicating such substitute denomination shall be issued for the patent. If the patent has been assigned, only the assignee of record may apply for recordation of a substitute denomination.
(h) The Commissioner shall upon its receipt in the Office promptly publish in the *Official Gazette* each variety denomination proposed for recordation and the genus and species of the plant involved. Correspondence from the public objecting to the recordation of such denomination, if accompanied by reasons therefor, will be placed in the official file and considered by the examiner in an ex parte manner. An objection to recordation may be based on an earlier recorded or unrecorded variety denomination, a registered or common law trademark, a trade name or trade indicia, or other alleged prior right timely called to the Office's attention. The applicant shall be notified by the Office of the receipt of such correspondence. The secrecy of any pending application will be preserved in accordance with 35 U.S.C. 122.◀

RENE TEGTMEYER,
Sept. 18, 1987. *Assistant Commissioner for Patents.*

[1085 OG 13]

EXAMINATION OF APPLICATIONS

(92) Examination of Claims For Patentability Under 35 U.S.C. 103

The purpose of this notice is to inform the public of the current Patent and Trademark Office policy concerning determinations of obviousness under 35 U.S.C. 103 in view of the recent Supreme Court decision in *Sakraida* v. *Ag Pro*, 189 USPQ 449 (1976).

The following text is a copy of a memorandum issued to all patent examining personnel relative to this topic. "A clarification of the policy of the Patent and Trademark Office in the examination of claims for patentability under 35 U.S.C. 103 seems in order at this time in view of the Supreme Court's decision in *Sakraida* v. *Ag Pro*, 189 USPQ 449 (decided April 20, 1976) which is similar to the Court's earlier decision in *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.*, 163 USPQ 673 (decided December 8, 1969). "Office policy has consistently been to follow *Graham* v. *John Deere Co.*, 148 USPQ 4559 (decided February 21, 1966) in the consideration and determination of obviousness under 35 U.S.C. 103. The three factual inquiries enunciated therein as a background for determining obviousness are as follows:

1. Determination of the scope and content of the prior art;
2. Ascertaining the differences between the prior art and the claims in issue; and
3. Resolving the level of ordinary skill in the pertinent art.

"Attention is directed to MPEP Section 706 for a more complete discussion of the application of the Graham test. "The Supreme Court reaffirmed and relied upon the Graham three-pronged test in its consideration and determination of obviousness in the fact situations presented in both the Ag Pro and Black Rock decisions. In each case, the Court went on to discuss whether the claimed combinations produced a 'new or different function' and 'a synergistic result,' but clearly decided whether the claimed inventions were unobvious 'on the basis of the three-way test in Graham. Nowhere in its decisions in those cases does the Court state that the 'new or different function' and 'synergistic result' tests supersede a finding of unobviousness or obviousness under the Graham test. "Accordingly, examiners should continue to apply the test for patentability under 35 U.S.C. 103 set forth in Graham. It should be noted that the Supreme Court's application of the Graham test to the fact circumstances in Ag Pro is somewhat stringent, as it was in Black Rock."

C. MARSHALL DANN,
July 8, 1976. *Commissioner of Patents & Trademarks.*

[949 O.G. 3]

(93) Translations of Foreign Language References

Frequently, Office actions cite references that are in a foreign language. In the event a translation of the entire text or portion of the text of the reference is readily available in the examiners' search files, a copy of the translation will normally be included with the Office action. However, applicants are cautioned that the inclusion of a translation with a foreign language reference should not be construed to mean that the examiner used or relied on the translation, or that it is accurate or an official translation made by the Patent and Trademark Office.

While this service may be infrequent, it could be increased by the submission of translations by the applicant to the Office. Accordingly, it is requested that translations of foreign language references be transmitted to the Office, and in particular be transmitted with the response to the Office action or in a separate envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. In addition, it would be of great assistance to the Office in filing the translation, if the translation carried the following: 1. an identification of the foreign language reference and, where possible. 2. its location in the examiners' search files (e.g. location should be known if reference was cited in Office action). If indentifying information is not available, the incoming translation should carry the name "Scientific Library" thereon so that it can be processed by the Library.

WILLIAM FELDMAN,
Oct. 26, 1977. *Deputy Assistant Commissioner for Patents.*

[964 O.G. 24]

(94) Restriction Between Inventions

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
Apr. 9, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 450]

(95) Restriction Policy and Practice

The purpose of this notice is to inform the public of the results of the survey that was conducted on restriction requirements made under 35 U.S.C. 121 in the Patent Examining Groups and to report clarifications that have been implemented as a result of a review of restriction policy and practice.

The survey involved about 320 patent applications in which a restriction only Office action had been prepared by an examiner in the period between July—Sept. 1983. The selection of applications was proportioned among Groups according to the volume of restriction requirements during the period. The statistics collected (Appendix A) and the definitions (Appendix B) for each item on the survey form are provided at the end of this notice.

Some of the significant findings of the survey include:

- 19% (61/320) of the requirements surveyed were not reasonable based on a review of the record
- 35% (88/249) of the requirements surveyed (not involving an election of species) were not supported by any reasons, or contained reasons which were clearly inapplicable to the facts
- 41% (53/128) of the actions following an election and traverse did not address the arguments contained in the traverse
- 91% (48/53) of a sample of 53 applications surveyed —the attorney or agent of record had no record of receiving a telephone call requesting an oral election

In response to the results of this survey, existing guidelines in Chapter 800 of the Manual of Patent Examining Procedure (MPEP) have been reviewed with each examiner and supervisor in the Patent Examining Corps in order to promote uniformity of practice and compliance with existing guidelines. A follow-up survey will be conducted in early 1985. In addition, as a result of a review of our existing policy and guidelines, the following clarifications have been made:

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(1) Telephone Practice (MPEP 812.01)

Except in those cases where the requirement for restriction is complex, the application is being prosecuted by the applicant pro se, or the examiner knows from past experience that an election will not be made by phone, the examiner should make a telephone call to the attorney or agent of record and request an oral election in accordance with MPEP 812.01, first paragraph.

If an election cannot, or will not, be made orally at the time of the call or within a reasonable time thereafter, generally three working days, the Office action requiring the election in writing should contain the following sentence

"A telephone call was made to (name of attorney or agent) on (date) to request an oral election to the above restriction requirement, but did not result in an election being made."

(2) Multiple Inventions In A Continuing Application

Where claims to multiple inventions within the meaning of 35 U.S.C. 121 are presented in a continuing application (continuation, division, continuation-in-part including those which may be filed under 37 CFR 1.60 or 1.62), the examiner should make (or repeat) an appropriate requirement for restriction and require an election by the applicant UNLESS

(1) the applicant acknowledges the previous requirement in the parent application and clearly indicates which invention is to be prosecuted if the requirement is repeated. The examiner should make any proper requirement for restriction in the first Office action, state how applicant has indicated an election (e.g. statement in a preliminary amendment or transmittal letter), and include an action on the merits on the claims of the elected invention;

or

(2) The application is a continuation, but not a division or CIP filed as a File Wrapper Continuation (FWC) under 37 CFR 1.62. The examiner should assume that the requirement and election made in the parent application carries over unless otherwise indicated by applicant. The exmainer's first action should include a repetition of the restriction requirement made in the parent application to the extent it is still applicable in the continuation and an indication that prosecution is being continued on the invention elected and prosecuted by applicant in the parent application.

The policy and practice of making requirements final and seeking review by way of petition (37 CFR 1.144) remains unchanged in a continuing application, whether a requirement for election was first made in the parent and renewed in the continuation application or was made for the first time in the continuation application.

(3) Product, Process of Making, Process of Using (MPEP 806.05(i))

Practice in this situation is being amended to conform to Rule 13.2(i) of the Patent Cooperation Treaty (PCT) so that a three way requirement can be required only where the process of making is not "specially adapted" to make the product (i.e. the requirements of MPEP 806.05(f) are met). Otherwise, the process of using must be joined with the claims directed to the product and the process of making the product even though a showing of distinctness between the product and process of using the product (MPEP 806.05(h)) could be made. A determination of the patentability of the product need not be made prior to making a requirement for restriction.

The Manual of Patent Examining Procedure will be revised to reflect these clarifications in the next revision.

GERALD MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Aug. 1, 1984.

[1046 O.G. 2]

(96) **Restriction Practice Survey II**

This notice is intended to inform the public of the results of a follow-up survey of applications containing a written restriction requirement. The results of the first survey were reported in the Official Gazette on Sept. 4, 1984 (1046 OG 2; Restriction Policy and Practice). Survey II involved 319 applications selected at random in the Patent Examining Groups from those in which a restriction only action had been credited to an examiner in the period of July—Sept. 1984. This period was after the Corps Management Meeting on June 5, 1984 in which restriction policy and practice were reviewed with all SPEs and Directors, and followed the distribution of review materials to all examiners. The results of Survey II showed significant improvements over the results of Survey I, but the results were still not considered satisfactory in several aspects.

Survey Procedure: The selection of applications was generally proportioned among the Groups to correspond to the relative proportion of restriction only actions that were completed in each Group in the last quarter of FY 84. A minimum of ten applications were surveyed from each Group. The distribution was as follows:

110 – 16	210 – 11	310 – 10
120 – 37	220 – 10	320 – 18
130 – 33	230 – 10	330 – 24
150 – 47	240 – 30	340 – 30
	250 – 13	350 – 20
	260 – 10	
TOTALS 133	84	102

The survey team consisted of the same people who conducted the first survey. One person from the survey team reviewed each selected application file and completed the survey form regarding the restriction requirement(s) in the file. The same survey form was used in each survey.

In the event an application file could not be located or was not readily available, a different application was selected for the survey. In general, the substitute application was selected from those requirements completed by the same examiner assigned to the original application.

The survey did not include any design applications.

Survey Results: Statistical results of the survey are set forth on the survey form used in the Appendix including summaries on a Corps and discipline level. References in this notice to "Item ____" refer to the numbered items indicated on the survey form. These results indicate an improvement in all areas which were identified as acute problems in the first survey. We did not do a telephone survey to determine whether applicant's representative had been called prior to writing the requirement.

In addition to the survey, the statistics on restriction requirements before and after the training effort following the first survey are of interest. Statistics show that the number of restriction only actions has decreased 36% Corps-wide (52% in Group 120 which had the highest volume in the first survey) following our training effort. These statistics are shown below.

Quarter	Total First Actions	Total Corps Restriction Requirements	Group 120 Restriction Requirements
Apr–Jun 1984	32,035	2,771	514
Jul–Sep 1984	32,216	1,939	220
Oct–Dec 1984	28,158	1,522	212
	(32,358)*	(1,775)*	(247)*
Oct–Dec vs Apr–Jun		−36%	−52%.

*Figures adjusted (7/6 of actual) to reflect a 7 pay period quarter for comparison with the Apr.–June and July–Sept. quarters which included 7 pay periods.

In addition, 24% of the applications in the second survey contained a specific reference to a telephone call that was made by the examiner, but did not result in an election being made. It was also apparent that some of the requirements were sufficiently complex to warrant a written communication.

The applications reviewed in the second survey resulted in the conclusion that 9% of the requirements that were made were not reasonable on the record that was reviewed (Item 10 – 30/319). This compares to 19% (61/320) in the first survey. Of the 30 cases in which a conclusion of unreasonableness was made, the requirement was traversed in 22 (73%) of those cases, not traversed in 7 cases (23%), and no response was filed in 1 case. In the 22 cases where the unreasonable requirement was traversed, the requirement was withdrawn in 10 cases, not withdrawn in 8 cases, and no subsequent action had been made in 4 cases. In the first survey, 11 unreasonable requirements were withdrawn out of 61 made. The survey form on each of the unreasonable requirements in the second survey was returned and discussed with the Group Director.

In our opinion, the reasons provided by the examiner for insisting upon restriction were not proper (either non-existent or based on the wrong criteria) in 18% (Item 5j – 57/319) of the applications surveyed — compared to 35% in the first survey. In many of these cases, the reviewer determined that the requirement was justified, but for reasons which the examiner did not set forth in the requirement.

Our second survey revealed that applicant had traversed the requirements in 134 cases (Item 7c), and that where the examiner had given another action in those cases (Item 8 – 98), the reasons in the traverse had not been responded to in 30% (Item 8b – 30/98) of the cases. This represents a very modest improvement of the results in the first survey where 41% (53/128) had not responded to the arguments presented in applicants traverse.

In addition to the statistical results, the survey team met to discuss some of the problems observed during the survey. Several members of the team again observed that problems were more likely to arise where complex requirements involving a large number of claims and/or inventions are encountered, and where the claim schedule required the application of combination—subcombination criteria to show patentable distinctness (MPEP 806.05c – two-way distinctness). Where three or more inventions are presented in a single application, it was observed that the examiner rarely showed distinctness among all of the combinations of groups (e.g. I–II, II–III, I–III). Another observation that was frequently made was that many of the problems with incomplete requirements could have been avoided by the use of the form paragraphs and associated instructions.

Further Action: While the second survey indicated that significant improvements have been realized in our pursuit of uniformity in restriction practice, we have not achieved an acceptable level of performance in several areas. The same types of problems predominated in each survey, but are now at a reduced level. There is clearly a continuing need for supervisory review.

Supervisors will take the opportunity to emphasize the following points to examiners in their Art Units:

(1) Use of telephone when appropriate to minimize pendency time;
(2) Reasons to support the requirement (to satisfy the criteria for independence of patentable distinctness) *and* reasons for insisting upon restriction should be given in each written requirement. Mere conclusions are not sufficient;
(3) The substance of arguments contained in applicant's traverse should be responded to in the Office action following the traverse;
(4) A showing of two-way distinctness is required in situations where combination-subcombination criteria are applicable (MPEP 806.05c); and
(5) Use of appropriate form paragraphs should be encouraged.

In addition, each Group will review all restriction requirements made in the Group in a pay period at least once every six months.

Finally, review of restriction practice will not be made a component part of the Quality Review Program on an ongoing basis because of the desirability of identifying problems of this type before prosecution is over and the desirability of maintaining their focus on substantive issues. Of course, the Quality Review Staff will continue to bring problems with restriction requirements to the attention of the Director when they are encountered in the course of their review procedures.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

[1053 OG 5]

(97) **Revised Practice Re Markush-Type Claims**

This notice deals with Markush-type generic claims which include a plurality of alternatively usable substances or members. In most cases, a recitation by enumeration is used because there is no appropriate or true generic language. In many cases, the Markush-type claims include independent and distinct inventions. This is true where two or more of the members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

In applications containing claims of that nature, the Examiner may require a provisional election of a single species prior to examination on the merits. The provisional election will be given effect in the event that the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. Should the Markush-type claim be found not allowable, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration.

As an example, in the case of an application with a Markush-type claim drawn to the compound C-R, wherein R is a radical selected from the group consisting of A, B, C, D, and E, the Examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species. If on examination the elected species is found to be anticipated or rendered obvious by prior art, the Markush-type claim and claims to the elected species shall be rejected, and claims to the non-elected species would be held withdrawn from further consideration. As in the prevailing practice, a second action on the rejected claims would be made final.

On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a *non-elected species*, the Markush-type claim shall be rejected and claims to the non-elected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all non-elected species. Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be re-examined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the re-examination that anticipates or renders obvious the amended Markush-type claim, the claim will be rejected

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and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim will not be entered.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the Examiner is encouraged to examine all claims on the merits, even though they are directed to independent and distinct inventions. In such a case, the Examiner will not follow the above procedure and will not require restriction.

This notice supersedes the practice set out in 922 O.G. 1016, dated May 1, 1974.

Although the above practice is now in effect, a rule change proposal is also being considered to provide for prosecution of multiple inventions in a single patent application by submission of additional fees.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Oct. 23, 1978.

[976 O.G. 128]

(98) Unity of Invention Practice in International Applications and National Phase Applications Entered Under 35 U.S.C. 371

The purpose of this notice is to set forth procedural guidelines for deciding questions of unity of invention which may arise in international applications when searched by the United States Patent and Trademark Office (USPTO) as an International Searching Authority and when examined during the national phase in the United States as a Designated Office after entry under 35 U.S.C. 371 in connection with the Patent Cooperation Treaty (PCT).

The May 28, 1986, decision in *Caterpillar Tractor Co. v. Commissioner of Patents and Trademarks*, Civil Action No. 84–1212–A, (E.D. Va.) held the Patent and Trademark office interpretation of 37 CFR 1.141(b)(2) as applied to unity of invention determinations in international applications was not in accordance with the Patent Cooperation Treaty and its implementing legislation. In the Caterpillar international application, the USPTO, when acting as an International Searching Authority, held lack of unity of invention between a set of claims directed to a process for forming a sprocket and a set of claims drawn to an apparatus (die) for forging such a sprocket. The court stated that it was an unreasonable interpretation to say that the expression "specifically designed" as found in PCT Rule 13.2(ii) means that the process and apparatus can only be used with each other as set forth in the Manual of Patent Examining Procedure (MPEP) §806.05(e).

Therefore, in considering international applications as an International Searching Authority and during the national phase as a Designated Office under 35 U.S.C. 371, PCT Rule 13.1 and 13.2 as interpreted in *Caterpillar* will be followed when considering unity of invention of claims of different categories without regard to 37 CFR 1.141. No change is being made in the restriction practice under 37 CFR 1.141(b) and (c) in United States national applications filed under 35 U.S.C. 111 outside the PCT. No change in practice is being made in regard to claims of the same category of invention either in PCT or U.S. national applications. Such a change in U.S. national restriction practices would require a statutory change in the fee levels to cover the additional examining effort required in individual patent applications.

PCT Rules 13.1 and 13.2 are reproduced below:

PCT RULE 13
Unity of Invention

13.1 Requirement

The international application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention").

13.2 Claims of Different Categories

Rule 13.1 shall be construed as permitting, in particular, one of the following three possibilities:

(i) in addition to an independent claim for a given product, the inclusion in the same international application of an independent claim for a process specially adapted for the manufacture of the said product, and the inclusion in the same international application of an independent claim for a use of the said product, or

(ii) in addition to an independent claim for a given process, the inclusion in the same international application of an independent claim for an apparatus or means specifically designed for carrying out the said process, or

(iii) in addition to an independent claim for a given product, the inclusion in the same international application of an independent claim for a process specially adapted for the manufacture of the product, and the inclusion in the same international application of an independent claim for an apparatus or means specifically designed for carrying out the process.

PCT Rule 13 only will be applied in the restriction practice used in national phase applications entered under 35 U.S.C. 371 because 35 U.S.C. 372(b)(2) provides that "The Commissioner may cause the question of unity of invention to be reexamined under section 121 of this title, within the scope of the requirements of the treaty and the Regulations".

Guidelines As to Implementation of Revised Unity of Invention Practice in International Applications and National Phase Applications Entered Under 35 U.S.C. 371

(1) The revised practice for international and national phase applications will *not* be used for national applications filed under 35 U.S.C. 111.

(2) The revised practice will *not* affect the treatment of the claims of any applications (national or international) where the question of lack of unity of invention relates to other than different categories of invention issues. Therefore, restriction and unity of invention practice involving, for example, Markush type claims, genus-species, intermediate-final product or combination-subcombination situations are *not* affected for any applications by this notice.

(3) The expression "and as set forth in §§1.141" in 37 CFR 1.481(a) will no longer be considered operative in view of the decision in *Caterpillar Tractor Co.*, supra. The criteria of §1.141 continue to be applicable to U.S. national applications filed under 35 U.S.C. 111 as they were in effect prior to the Caterpillar decision and essentially the same as the practice which was in effect for many years prior to the PCT implementation. That is, practice will continue as set forth in MPEP Chapter 800 as modified in 1046 OG 2 for the practice relating to product, process of making and process of using. The practice in this latter situation is that a three way requirement for restriction can only be required where the process of making is distinct from the product (i.e., the requirements of MPEP 806.05(f) are met). Otherwise, the process of using must be joined with the claims directed to the product and the process of making the product even though a showing of distinctness between the product and process of using the product (MPEP 806.05(h)) could be made. A determination of the patentability of the product need not be made prior to making a requirement for restriction.

(4) The criteria of PCT Rule 13 will be applied when determining unity of invention of claims to different categories of invention in considering international applications as an International Searching Authority and during the national phase as a Designated Office under 35 U.S.C. 371.

(5) The revised practice will apply to all international applications before the PTO as an International Searching Authority in which no search report has been issued and in all pending national stage applications entered under 35 U.S.C. 371 in which a holding of lack of unity of invention (requirement for restriction) has not been made final by the examiner or acquiesced in by the applicant as of the date of this notice.

(6) In applying PCT Rule 13 to international applications as an International Searching Authority and to national phase applications under 35 U.S.C. 371, examiners will consider for unity of invention all of the claims to different categories of invention in the application and will permit retention in the same application for searching and/or examination, of claims to the categories which meet the requirements of any one of PCT Rule 13.1(i) to (iii).

In view of the court's treatment of the USPTO's distinctness test in Caterpillar, the USPTO will also permit in the same international application the following two combinations:

(a) an independent claim for a given product and an independent claim for a process specially adapted for the manufacture of said product.

(b) an independent claim for a given product and an independent claim for a process of using the said product.

If the different categories of claims do not fall within any *one* of PCT Rule 13.2(i) to (iii) or additional combinations (a) or (b) above, i.e., they claim more or less categories of invention than permitted in any one of PCT Rule 13.2(i) to (iii) or combination (a) or (b) above, unity of invention may not be present. Further, an independent claim for a use in PCT Rule 13.2(i) and combination (b) above is construed as being limited to a claim directed to a process.

In determining unity of invention under PCT Rule 13.2(i) and (iii) and combination (a) above, the examiner will consider the word "specially" which appears before "adapted" to be an emphasis word rather than a limitation. In determining unity of invention under PCT Rule 13.2(ii), the examiner will consider the word "specifically" which appears before "designed" to be an emphasis word rather than a limitation.

Detailed Explanation

Under PCT Rule 13.2, Unity of Invention as to different categories of inventions is covered on the basis of 4 different categories of invention. They are:

A. a product
B. a process (for manufacture)
C. a use of the said product
D. an apparatus or means for carrying out the process for manufacture.

PCT Rule 13.2 provides for grouping of certain of these different categories of inventions and retaining unity of invention.

i. PCT Rule 13.2(i) provides for grouping claims to:

A. a product
B. a process for the manufacture of said product
C. a use of the said product

ii. PCT Rule 13.2(ii) provides for grouping claims to:

B. a process (e.g. for the manufacture of a product)
D. an apparatus or means for carrying out the said process.

iii. PCT Rule 13.2(iii) provides for grouping claims to:

A. a product
B. a process for the manufacture of the product
D. apparatus or means for carrying out the process.

Also permitted by the USPTO are combinations:

(a) A. a product
B. a process for the manufacture of said product

(b) A. a product
C. a use of the said product

If an application includes claims to all the categories of invention set forth in any one of PCT Rule 13.2(i), (ii), (iii), combinations (a) or (b) above, and no additional categories of invention are present, unity of invention exists and no additional search fees should be required or restriction requirement made.

For example, if an application contains claims to only a process for the manufacture of a product and claims to a use of a product and no product claims is present, there is lack of unity of invention since the provisions of Rule 13.2(i) do not apply and the process for manufacture of a product is independent of the use of the product since neither is dependent on the other. Also, if claims to all three categories of PCT Rule 13.2(i) are present at the time of the first Office action and all the product claims are canceled in the response to the first Office action, a requirement for restriction could be made, if appropriate, in the second Office action in view of the independent inventions remaining in the application. PCT Rule 13.2(i) would no longer apply since all three categories of claims would no longer be present in the application. However, the fact that claims to a certain category of invention are unpatentable does not affect the question of unity of invention provided the unpatentable claims are retained in the application.

Where claims to a category of invention in addition to those listed in any one of PCT Rule 13.2(i), (ii), (iii) or combinations (a) or (b) above included in an application, unity of invention may be lacking between the claims drawn to the categories set forth in any *one* of PCT Rule 13.2(i), (ii), (iii) or combinations (a) or (b) above, and the claims to the additional category of invention. For example, if an application contained claims to a process for manufacture, claims to an apparatus or means for carrying out the process and claims to a use of the product manufactured, there could be lack of unity of invention. In such a situation the examiner should group the claims to the process for manufacture and the claims for an apparatus or means for carrying out the process because unity of these two categories exists under PCT Rule 13.2(ii). The claims to the use of the product could be separately grouped if the "use" is shown to be "independent and distinct" of both the "process for manufacture" and the "apparatus or means for carrying out the process" as provided in Chapter 800 of the Manual of Patent Examining Procedure (MPEP).

When the claims presented in an application are directed to several categories of invention so that more than one paragraph of PCT Rule 13.2 and combinations (a) or (b) above applies, the examiner will inspect the claims to see if the categories of invention set forth in PCT Rule 13.2, paragraphs (i), (iii) and (ii), and then combinations (a) or (b) above are present in the application in that order. For example, if the categories of PCT Rule 13.2(i) are found in the application, the claims to those categories stated in PCT Rule 13.2(i) will be considered as one invention and any claims to different categories of invention will be reviewed to determine if they are "independent and distinct" of *all* the claims covered in PCT Rule 13.2(i) in accordance with theprovisions of Chapter 800 of the MPEP.

Under PCT Rule 13.2 and combinations (a) and (b) above, unity will exist where the claims are limited to one invention in each category of invention recited. For example, under PCT Rule 13.2(i), claims are permitted to one product, one process of manufacturing and one use. If multiple products, processes of manufacture or uses are claimed, the first invention in the category first mentioned in the claims will be considered as the elected invention. The first recited invention of each additional category which is related as described in paragraph 7

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below with the first invention as indicated in the previous sentence will be considered elected. Accordingly, for example, if multiple products are claimed, the first recited product is constructively elected and the first recited process, if multiple processes adapted for making and/or using the product are claimed, is also constructively elected. Any such holding by the examiner will be made in the form of a restriction requirement in an application entered in the USPTO under 35 U.S.C. 371. Such a restriction requirement would be made on the basis of criteria set forth in MPEP Chapter 800. Applicant would have the right to traverse such a restriction requirement in the response to the Office action.

(7) The inventions recited by the claims of different categories must be drawn to related rather than independent inventions. For example, the product as claimed in PCT Rule 13.2(i) and combinations (a) and (b) above must be able to be made by the claimed process for manufacture and the use claimed must be able to use the claimed product. Likewise in PCT Rule 13.2(ii), the apparatus as claimed must be able to carry out the claimed process. In PCT Rule 13.2(iii), the claimed process of manufacture must be able to make the claimed product and the claimed apparatus or means must be able to perform the claimed process of manufacture.

(9) Applicants should clearly indicate on all application papers filed for entry under 35 U.S.C. 371 and 37 CFR 1.61 that the filing is being made under 35 U.S.C. 371. Otherwise, the application papers will be treated as having been filed under 35 U.S.C. 111.

(10) Any prior notices or policies relating to unity of invention which are inconsistent herewith are superceded to the extent they are inconsistent with this notice.

Appropriate changes in the Code of Federal Regulations will be proposed in due course to adjust the level of the search fees and national fees of §1.445 to recover the cost of searching and examining international applications with claims to different categories of invention in a single international application. The fees were originally set based on the unity of invention practice previously in effect.

If necessary, additional guidance for processing applications under PCT Rule 13 will be issued as experience is gained.

DONALD J. QUIGG,
Aug. 15, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1070 OG 11]

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(99)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 61231-7086]

Unity of Invention and Patent Cooperation Treaty [Chapter II]

Agency: Patent and Trademark Office, Commerce.
Action: Notice of Final Rulemaking.
Summary: The Patent and Trademark Office hereby amends its regulations (1) to change the practice in handling unity of invention issues in international applications under the Patent Cooperation Treaty (PCT) and those entering the national stage under 35 U.S.C. 371 and (2) to establish procedures necessary for patent applicants to proceed under Chapter II of the Patent Cooperation Treaty. This rule change is being made because (1) the current rules for handling unity of invention issues in international applications are not consistent with the court decision in *Caterpillar Tractor Co.* v. *Commissioner of Patents and Trademarks*, 231 USPQ 590 (E.D. Va. 1986), and (2) legislation implementing Chapter II of the Patent Cooperation Treaty has recently been enacted. The promulgated rules will result in (1) the treatment of unity of invention issues in international applications consistently with the court decision while retaining the current practice for national applications filed under 35 U.S.C. 111, and (2) procedures adequate for applicants to proceed under Chapter II of the Patent Cooperation Treaty.
Effective Date: July 1, 1987.
For Further Information Contact: Louis O. Maassel by telephone at (703) 557–3070 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This final rule change relates to (1) questions of unity of invention which may arise in international applications when searched as an International Searching Authority and when examined as an International Preliminary Examining Authority by the United States Patent and Trademark Office (USPTO) and during the national stage in the United States as a Designated Office after entry under 35 U.S.C. 371 pursuant to the Patent Cooperation Treaty (PCT) and (2) procedures to be followed and fees to be paid under Chapter II of the Patent Cooperation Treaty. The rule change will also increase the amount of the international search fees and national fees in international applications in view of increased average effort required by the USPTO because of changes in the rules relating to unity of invention. No fees are being established under 35 U.S.C. 41.

Background Information

Unity of Invention

The May 28, 1986, decision in *Caterpillar Tractor Co.* v. *Commissioner of Patents and Trademarks*, 231 USPQ 590 (E. D. Va., 1986) held that the Patent and Trademark Office interpretation of 37 CFR 1.141(b)(2) as applied to unity of invention determinations in international applications was not in accordance with the Patent Cooperation Treaty and its implementing rules. In the Caterpillar international application, the USPTO, acting as an International Searching Authority, had held lack of unity of invention between a set of claims directed to a process for forming a sprocket and a set of claims drawn to an apparatus (die) for forging a sprocket. The court stated that it was an unreasonable interpretation to say that the expression "specifically designed" as found in PCT Rule 13.2(ii) means that the process and apparatus have unity of invention if they can only be used with each other, as set forth in the Manual of Patent Examining Procedure (MPEP) §806.05(e).

Therefore, when the Patent and Trademark Office considers international applications as an International Searching Authority, as an International Preliminary Examining Authority, and during the national stage as a Designated or Elected Office under 35 U.S.C. 371, PCT Rule 13.1 and 13.2 will be followed when considering unity of invention of claims of different categories without regard to the practice in national applications filed under 35 U.S.C. 111. No change is being made in the current restriction practice in United States national applications filed under 35 U.S.C. 111 outside the PCT. No change in practice is being made in regard to claims of the same category of invention either in PCT international applications or in U.S. national applications. Any such change in U.S. national restriction practice would require a statutory change in the fee levels in order to cover the additional examining effort required in individual patent applications.

The unity of invention procedures set forth in the rules are already being substantially followed by the examiners in the USPTO as a result of the notice signed on Aug. 15, 1986, and published in the Official Gazette on Sept. 9, 1986 at 1070 O.G. 11. The notice of Sept. 9, 1986 and any prior notices or policies relating to unity of invention which are inconsistent with the rules and procedures in this final rules notice are superseded to the extent that they are inconsistent.

The unity of invention practice set forth in PCT Rule 13 will be applied in national stage applications entered under 35 U.S.C. 371 because 35 U.S.C. 372(b)(2) provides that "The Commissioner may cause the question of unity of invention to be reexamined under section 121 of this title, within the scope of the requirements of the treaty and the Regulations". However, continuing applications filed under 35 U.S.C. 111 of international applications under the provisions of 35 U.S.C. 365(c) will be subject to the same restriction practice as other United States national applications filed under 35 U.S.C. 111. However, it is noted that where several inventions have been searched in the parent international application, the examination of such inventions in a continuing national application may not be burdensome and the examiner may consider all the inventions in such an application without making a restriction requirement.

Implementation of Unity of Invention Practice in International Applications and National Stage Applications Entered Under 35 U.S.C. 371

(1) The practice established by these rules for international and national stage applications will *not* be applied to national applications filed under 35 U.S.C. 111.

(2) The practice established by these rules will *not* affect the treatment of the claims of any applications (national or international) where the question of lack of unity of invention relates to other than different categories of invention issues.

Therefore, restriction and unity of invention practice involving, for example, Markush type claims, genus-species, intermediate-final product or combination-subcombination situations is *not* affected for any applications by this rule change.

(3) The criteria of §1.141 would continue to be applicable to U.S. national applications filed under 35 U.S.C. 111 in a manner similar to that in effect prior to the Caterpillar decision and essentially the same as the practice which was in effect for many years prior to the PCT implementation. That is, national restriction practice will continue as set forth in MPEP Chapter 800, as modified in 1046 O.G. 2 for the practice relating to product, process of making and process of using. The practice in this latter situation is that a three way requirement for restriction can only be made where the process of making is distinct from the product (i.e., the requirements of MPEP 806.05(f) are met). Otherwise, claims to the process of using must be joined with the claims directed to the product and the process of making the product even though a showing of distinctness between the product and process of using the product (MPEP 806.05(h)) could be made. This concept is included in paragraph 1.141(b).

(4) Under the rules, the criteria of PCT Rule 13.2 will be applied when considering unity of invention of claims drawn to different categories of invention in international applications as an International Searching Authority, International Preliminary Examining Authority, and as a Designated or Elected Office in international applications which enter the national stage under 35 U.S.C. 371.

(5) Under the rules, in applying PCT Rule 13.2 to international applications as an International Searching Authority, an International Preliminary Examining Authority and to national stage applications under 35 U.S.C. 371, examiners will consider for unity of invention all of the claims to different categories of invention in the application and will permit retention in the same application for searching and/or examination, claims to the categories which meet the requirements of any one of PCT Rule 13.2(i) to (iii).

Under the rules, the USPTO will also permit in the same international or national stage application the following two combinations:

(1) An independent claim for a given product and an independent claim for a process specially adapted for the manufacture of said product.

(2) An independent claim for a given product and an independent claim for a process of using the said product.

Under the rules, if an application contains a combination of categories of claims which do not fall within any *one* of the combinations of PCT Rule 13.2(i) to (iii) or additional combinations (1) or (2) above, i.e., they claim more or less categories of invention than permitted in any one of PCT Rule 13.2(i) to (iii) or combination (1) or (2) above, unity of invention may not be present.

Further, an independent claim for a use in PCT Rule 13.2(i) and combination (2) above will be construed as being limited to a claim directed to a process of using. In determining unity of invention under PCT Rule 13.2(i) and (iii) and combination (1) above, under the rules, the examiner will consider the word "specially" which appears before "adapted" to be an emphasis word rather than a limitation. In determining unity of invention under PCT Rule 13.2(ii), the examiner will consider the word "specifically" which appears before "designed" to be an emphasis word rather than a limitation.

Under the rules, if an application includes claims to all the categories of invention set forth in any one of PCT Rule 13.2(i), (ii), (iii), combinations (1) or (2) above, and no additional categories of invention are present, unity of invention will exist and no additional fees will be required or restriction requirement made.

For example, if an application contained claims to only a process for the manufacture of a product and claims to a use of a product and no product claim is present, there will be lack of unity of invention since the provisions of Rule 13.2(i) do not apply because claims to all categories of invention set forth in PCT Rule 13.2(i) are not included in the application and the process for manufacture of a product is independent of the use of the product since neither is dependent on the other. Also if claims to all three categories of PCT Rule 13.2(i) were present at the time of the first Office action in a national stage application and all the product claims are rejected in the first Office action, a requirement for restriction could also be made, if appropriate, in view of independent inventions being in the application without an allowable linking (product) claim.

Under the rules, where claims to a category of invention in addition to those listed in any one of PCT Rule 13.2 (i), (ii), (iii) or combinations (1) or (2) above are included in an application, unity of invention may be lacking between the claims drawn to the combination of the categories of invention set forth in any *one* of PCT Rule 13.2(i), (ii), or (iii) or combinations (1) or (2) above, and the claims to the additional category of invention. For example, if an application contains claims to a process for manufacture, claims to an apparatus or means for carrying out the process and claims to a process of using the product manufactured, there could be lack of unity of invention. In such a situation the examiner should group the claims to the process for manufacture and the claims for an apparatus or means for carrying out the process because unity of these two categories exists under PCT Rule 13.2(ii). The claims to the use of the product can be separately grouped if the "use" is shown to be "independent and distinct" of both the "process for manufacture" and the "apparatus or means for carrying out the process" as provided in Chapter 800 of the Manual of Patent Examining Procedure (MPEP).

When the claims presented in an application are directed to several categories of invention under the rules so that more than one paragraph of PCT Rule 13.2 and combinations (1) or (2) above applies, the examiner would inspect the claims to see if the categories of invention set forth in PCT Rule 13.2, paragraphs (i), (ii) and (iii), and then combinations (1) or (2) above are present in the application in that order. For example, if the categories of PCT Rule 13.2(i) are found in the application, the claims to those categories stated in PCT Rule 13.2(i) will be considered as one invention and any claims to different categories of invention will be reviewed to determine if they are "independent and distinct" of *all* the claims covered in PCT Rule 13.2(i) in

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accordance with the provisions of Chapter 800 of the MPEP.

(6) Under PCT Rule 13.2 and combinations (1) and (2) above, unity will exist where the claims are limited to one invention in each category of invention recited. For example, under PCT Rule 13.2(i), claims are permitted to one product, one process of manufacturing the product and one use of the product. If multiple products, processes of manufacture or uses are claimed, the first invention in the category first mentioned in the claims would be considered as the elected invention under the rules. The first recited invention of each additional category which is related to the first invention as indicated in the previous sentence will be considered elected. Accordingly, for example, if multiple products are claimed, the first recited product will be considered to be constructively elected and if multiple processes adapted for making and/or using the product are claimed, the first recited process will also be constructively elected. Any additional inventions of the same category will be subject to payment of additional fees during the international stage. In a national stage application submitted under 35 U.S.C. 371 any such holding by the examiner will be made in the form of a restriction requirement. Such a restriction requirement will be made on the basis of criteria set forth in MPEP Chapter 800. Applicant will have the right to traverse such a restriction requirement in the response to the Office action.

(7) Inventions of different categories, to have unity of invention, must be related rather than independent inventions. For example, the product as claimed in PCT Rule 13.2(i) and combinations (1) and (2) above must be capable of being made by the claimed process for manufacture or being used in the claimed process of use. Likewise in PCT Rule 13.2(ii), the apparatus as claimed must be capable of carrying out the claimed process. In PCT Rule 13.2(iii), the claimed process of manufacture must be capable of preparing the claimed product and the claimed apparatus or means must be able to perform the claimed process of manufacture.

(8) Under §§1.494 and 1.495, applicants must indicate on all application papers filed for entry under 35 U.S.C. 371 that the filing is being made under 35 U.S.C. 371. Otherwise, the application papers will be treated as having been filed under 35 U.S.C. 111.

Patent Cooperation Treaty, Chapter II

The Patent Cooperation Treaty became effective for the United States on Jan. 24, 1978. The United States, however, was one of six countries (out of the 40 countries who have ratified or acceded to the Treaty) which had reservations not to be bound by Chapter II. The document removing the reservation as to Chapter II was deposited with the Director General of the World Intellectual Property Organization on Apr. 1, 1987. Accordingly, Chapter II of the Treaty for the United States of America, Pub. L. 99–616 and these final regulations become effective 3 months later on July 1, 1987.

Chapter I of the Patent Cooperation Treaty provides a standardized application format and a centralized filing procedure for international patent applications. Pursuant to Chapter I, an applicant may submit an International application, designating those member countries in which the applicant desires patent protection. Filing an international application has the same effect as filing a separate application in all designated member states with respect to the filing date. In addition, by filing an international application, the applicant does not have to incur the expenses associated with national patent prosecution in the designated countries until 20 months from the priority date of the international application. During this period, the applicant obtains an international search report citing prior art deemed to be relevant to the claims of the invention contained in the international application. This helps the applicant decide whether to proceed with patent prosecution in the various countries originally designated.

Chapter II of the Patent Cooperation Treaty provides two further benefits for the applicant. First, an additional 10 months is allowed, for a total of 30 months from the priority date of the international application, before the applicant must decide whether to proceed with national patent prosecution in the elected countries. Second, the applicant is provided with an international preliminary examination report. In contrast to the international search report, which provides citations of prior art pertinent to the invention, the international preliminary examination report is a non-binding opinion from an International Preliminary Examining Authority as to whether the invention is novel, involves an inventive step (is non-obvious), and is industrially applicable. A preliminary examination report will be established within 28 months from the priority date. This preliminary examination report, together with the additional 10 months before the decision to proceed with national prosecution is required, places the applicant in a better position to consider commercial factors associated with the invention and to decide whether to pursue patent protection in the various elected countries.

To take advantage of these benefits provided by Chapter II, an applicant must file a "Demand" for a preliminary examination in an appropriate International Preliminary Examining Authority prior to the expiration of the 19th month from the priority date and pay certain fees. The final rules establish the amounts of some of the necessary fees and procedures under Chapter II and also group all the rules unique to international applications in a separate area of the regulations. The rules fall into three groups: (1) those directed to procedures under Chapter I, (2) those directed to procedures under Chapter II, and (3) those directed to entering the national stage under 35 U.S.C. 371.

Changes From the Proposed Rules

In §1.475, a new paragraph (f) has been added which sets forth in the rules the exact wording of PCT Rule 13. PCT Rule 13 was included in the proposed rules as a footnote. The incorporation of the wording of PCT Rule 13 into §1.475(f) will make it easier to refer to and easier to locate. Sections 1.475, 1.476, 1.487 and 1.499 are also changed to refer to §1.475(f) rather than footnote 1.

In §1.480(c), the wording has been clarified by adding a reference to the election of the United States.

Section 1.484(f) has been modified from the proposal to permit more than one interview in those situations where the examiner considers that an additional interview would be helpful.

In §1.485, paragraph (b) has not been included since the substance thereof is set forth in §1.484(d).

In §1.492(a)(2) and (3), "i" has been deleted in order to refer to both §1.445(a)(2)(i) and (ii).

An additional paragraph (a)(4) has been added to §1.492 and an additional paragraph (b) has been added to §1.496 which provide for a substantially reduced national fee and special procedure, respectively, where the application has satisfied the requirements of novelty, inventive step (non-obviousness) and industrial applicability before the United States International Preliminary Examining Authority as to the identical claims which are in the application at the national stage in the Patent and Trademark Office. Amendments during subsequent prosecution will only be permitted in response to an examiner's rejections or objections. Thus, no new claims are permitted. Therefore, most of such cases will require little or no prosecution to satisfy the requirements for patentability. The title of §1.496 has been broadened in view of the new paragraph (b) and proposed§1.496 has been redesignated as paragraph (a).

In §§1.494 and 1.495, an additional paragraph has been added to indicate the date of abandonment of an international aplication as to the United States if the requirements of 35 U.S.C. 371(c) are not timely fulfilled.

Response to Comments Received

Specific comments were received on several of the proposed rules, particularly those relating to unity of invention and fees. Sixteen letters submitting written comments were received. Oral testimony was presented by five persons at the public hearing conducted on Apr. 6, 1987 resulting in 46 pages of testimony. All of the written and oral comments were considered in adopting the changes set forth herein. Comments suggesting modifications to the proposed rules or requesting clarification thereto appear below with responses thereto.

Comment:

A question was raised as to whether the deadline for filing a continuing application under 35 U.S.C. 365(c) and 120 was 20 or 22 months under Chapter I and 30 or 32 months under Chapter II.

Reply:

The Patent and Trademark Office considers the international application to be pending until the 22nd month from the priority date if the United States has been designated and no Demand for International Preliminary Examination has been filed prior to the expiration of the 19th month from the priority date and until the 32nd month from the priority date if a Demand for International Preliminary Examination which elected the United States of America has been filed prior to the expiration of the 19th month from the priority date provided that a copy of the international application has been communicated to the Patent and Trademark Office within the 20 or 30 month period, respectively. If a copy of the international application has not been communicated to the Patent and Trademark Office within the 20 or 30 month period respectively, the international application becomes abandoned as to the United States 20 or 30 months from the priority date respectively. These periods have been placed in the rules as paragraph (h) of §1.494 and paragraph (i) of §1.495. A continuing application under 35 U.S.C. 365(c) and 120 may be filed anytime during the pendency of the international application.

Comment:

A comment was received concerning the situation where a continuing application is filed under 35 U.S.C. 365(c) of an international application which claims priority of an earlier filed foreign application as to (1) whether the applicant must specifically claim priority in the continuing application and (2) whether the certified copy of the priority application which may have been communicated to the Patent and Trademark Office by the International Bureau may be relied upon without any need to file a certified copy of the priority application in the continuing application.

Reply:

As to item (1), it is necessary under the statute for the applicant to claim priority in the continuing application. Otherwise there is no indication that such benefit is desired in the continuation and the information may not be present for printing of any subsequent patent.

As to item (2), the certified copy of the priority application communicated by the International Bureau is placed in a folder and is not assigned a U.S. serial number unless the national stage is entered. Such folders are disposed of if the national stage is not entered. Therefore such certified copies may not be available if needed later in the prosecution of a continuing application. An alternative would be to physically remove the priority documents from the folders and transfer them to the continuing application. The resources required to request transfer, retrieve the folders, make suitable record notations, transfer the certified copies, enter and make of record such copies in the continuing applications is substantial. Accordingly, the priority documents in folders of international applications which have not entered the national stage may not be relied on.

Comment:

One comment raised the question whether a continuing application filed under 35 U.S.C. 111 and entitled to the benefit of a prior international application designating the United States under 35 U.S.C. 365(c) and 120 would be subject to the PCT unity practice of §1.499 or the national restriction practice under §1.141.

Reply:

A continuing application filed under 35 U.S.C. 111 would be subject to the national restriction practice as set forth in §1.141 and Chapter 800 of the Manual of Patent Examining Procedure. Only those international applications entering the national stage under 35 U.S.C. 371 and §1.494 or §1.495 would be subject to the unity of invention practice set forth in §1.499.

Comment:

Five comments were made to the effect that the unity practice set forth in the rules was not consistent with the unity of invention criteria currently under discussion in the WIPO "harmonization" treaty meetings.

Reply:

At the present time there appears to be no agreed upon unity practice in the harmonization meetings. Only a discussion document has been prepared by WIPO. The Patent and Trademark Office is currently making a very intensive study of unity of invention in the United States, Japan and the European Patent Office. The practice which may result from this study and subsequent discussions is also not clear at this time. For these reasons as well as the fee implications of such a change, it is considered preferable to proceed with a clarification of the unity of invention practice which is to be used as part of the regulations for use by patent applicants and examiners at this time and, if modification of the practice is required in the future, appropriate changes in the law and the rules will be made at that time.

Comment:

Two comments argued that the difference in treatment of unity of invention is contrary to 35 U.S.C. 372(a).

Reply:

35 U.S.C. 372(a) states:

> All questions of substance and, within the scope of the requirements of the treaty and Regulations, procedure in an international application designating the United States shall be determined as in the case of national applications regularly filed in the Patent and Trademark Office.

This section is interpreted as relating only to substantive questions of patentability which includes matters such as the definition of prior art. See PCT Article 27(5). If section 372(a) were interpreted to include items other than those relating to substantive questions of patentability, items such as requirements to obtain a filing date would be included. Clearly, an international application must only meet the filing date requirements of PCT Article 11(1) even though a U.S. national application must meet the requirements of 35 U.S.C. 111.

Comment:

One comments was received stating that the U.S. rules should define prior art for PCT purposes and also the manner of issuing International Preliminary Examination Reports.

Reply:

Prior art for PCT purposes is already defined in PCT Rule 64 and the procedures are set forth in PCT Rules 66 and 70. To repeat the substance of these PCT rules in the U.S. rules would be duplicative and possibly lead to different interpretations if different wording was used.

Comment:

One comment inquired whether the International Preliminary Examining Report was binding on a USPTO examiner in the national stage.

Reply:

An International Preliminary Examination Report is not binding on a USPTO examiner. PCT Article 33(1) clearly states that the "objective of the international preliminary examination is to formulate a preliminary and non-binding opinion." Since the USPTO has had no experience with International Preliminary Examination Reports prepared by foreign offices, as well as foreign offices having no experience with Reports prepared by the USPTO, the degree of reliance on such Reports in the national stage cannot be determined at the present time. Studies underway with the European Patent Office and the Japanese Patent Office regarding inventive step and other matters and experience with Reports from other

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International Preliminary Examining Authorities may be helpful in further addressing this question in the future.

Comment:

Two comments were received asking why §1.141(b) was being changed since there was no change in U.S. restriction practice.

Reply:

No change is being made in U.S. restriction practice in applications filed under 35 U.S.C. 111. The amendments to §1.141 basically delete expressions used in the Patent Cooperation Treaty which are not used in U.S. national practice. The criteria deleted from §1.141(b) still remain in Chapter 800 of the Manual of Patent Examining Procedure.

Comment:

One comment was made that any interpretation by the PTO of the PCT Unity language will carry over to the Harmonization Treaty.

Reply:

The U.S. delegation to the WIPO harmonization meetings has several times requested that guidelines be prepared for consideration with the Unity of Invention Article and Rules. Any interpretation of future treaty wording would be controlled by the guidelines.

Comment:

Three comments were received that the PTO is attempting to promulgate a variation of PCT Rule 13 which is contrary to the Caterpillar decision because the U.S. rules are not identical in scope with PCT Rule 13.

Reply:

The U.S. rules relating to Unity of Invention are considered to be in accordance with PCT Rule 13 and the Caterpillar decision. Rules 1.475, 1.487 and 1.499 are not identical with PCT Rule 13.2 because the U.S. rules are somewhat broader because additional combinations are included. The U.S. rules are also consistent with the Caterpillar decision because this decision related only to the interpretation of the expressions in PCT Rule 13.2.

Comment:

One comment inquired as to the amount of the handling fee.

Reply:

The amount of the handling fee is set forth in the SCHEDULE OF FEES appearing at the end of the PCT Rules. These fees are stated in Swiss Francs. The current amount for the Handling Fee is 200 Swiss Francs. The amount in U.S. dollars will be established by the Director General based on the current exchange rates as provided in PCT Rule 57.2(c).

Comment:

One comment proposed that a rule be implemented under which an examiner must complete the first written opinion within two months of the filing of the Demand.

Reply:

Although the Office will expect an examiner to begin the International Preliminary Examination as early as possible after receipt, delay in issuing the written opinion may occur because the International Preliminary Examination fee was paid later than the filing of the Demand under PCT Rule 58.2, the application contains defects in form or contents or the application lacks unity of invention. Thus, such a rule would not be appropriate.

Comment:

One comment questioned the need to re-impose restriction (holding of lack of unity of invention) if a linking claim is not allowable.

Reply:

There is no mandatory requirement that the examiner impose a holding of lack of unity if the linking claim is shown to lack novelty and inventive step. However, if such a possibility did not exist, applicants could present broad generic claims to entire classes of inventions and thereby prevent any subsequent holding of lack of unity by the examiner.

Comment:

One comment suggested that applicants in national patent applications be allowed to take advantage of the PCT unity criteria by paying a surcharge.

Reply:

Such a fee is not provided for under 35 U.S.C. 41 and would appear to require legislative action.

Comment:

Three comments suggested that the increases in the search fees were either unlawful or inconsistent with the spirit of the Patent and Trademark Office Authorization Act passed by Congress in 1986 in view of the freeze imposed thereby.

Reply:

The Patent and Trademark Office Appropriations Act (Public Law 99–607) at Sec. 3(b) states.

> (b) PATENT FEES.—The Commissioner of Patents and Trademarks may not, during fiscal years 1986, 1987, and 1988, increase fees established under section 41(d) of title 35, United States Code, except for purposes of making adjustments which in the aggregate do not exceed fluctuations during the previous 3 years in the Consumer Price Index, as determined by the Secretary of Labor. The Commissioner also may not establish additional fees under such section during such fiscal years.

The legislative history also makes clear that the prohibition against fee increases relates only to those fees established under section 41(d) and indicates that fees for new types of processing, services, or materials are not prohibited. The prohibition in the appropriation authorization is strictly limited to fees established under 35 U.S.C. 41(d) and does not affect the authority of the Commissioner to set fees under the Patent Cooperation Treaty. Note 35 U.S.C. 376 which authorizes the Commissioner to set fees for both the international and national stages. The new services relating to unity of invention are clealry not within the scope of the appropriation authorization restriction.

Comment:

Three comments stated that the $100 fee increase for an international search is clearly excessive.

Reply:

The increase in the search fee is to recover the average estimated additional cost of processing international applications with claims to more inventions than were permitted when the current search fees were established. The increase is established also to provide for an expected higher percentage of international applications containing claims to more than one category of invention. If experience shows these expectations were in error, fees will be adjusted in the future.

Comment:

One comment stated that the increase in the international search fee was not justified by *Caterpillar Tractor Co.* v. *Commissioner of Patents and Trademarks*, 231 USPQ 590 (E. D. Va. 1986) which merely clarified an aspect of existing law and did not change it.

Reply:

The decision in the Caterpillar case indicated that the Office's criteria for unity of invention on which the amount of the search fee was determined were too strict in construing the language of the Treaty and that broader criteria were permitted under the terms of the Treaty. Fees under the Patent Cooperation Treaty were set based on pre-Caterpillar interpretations of PCT Rule 13.2 by the Patent and Trademark Office. Since such broader criteria require a more extensive search than that on which the search fee was previously calculated, an increase in the search fee is necessary to cover the cost of the additional search required under the broader criteria in accordance with the Caterpillar decision.

Comment:

One comment stated that the increase in the international search fee penalizes an applicant presenting clearly a single invention.

Reply:

A broadening of the interpretation of unity of invention and the increase in the average amount of work required in searching an international application results in a higher fee being required. A more narrow interpretation of unity of invention permits a lower average fee and would tend to benefit applicants with a clearly single invention. The Caterpillar decision and majority of comments received supported a more liberal interpretation of unity of invention. Testimony at the hearing indicated a preference for spreading any additional costs among all applicants.

Comment:

One comment was received which suggested that §1.484(d) be amended by adding a further sentence.

> If, after receipt of any response to the written opinion, the Examiner is of the opinion that some or all of the claims are not patentable, the Examiner shall issue a second written opinion which identifies any patentable subject matter, including any suggestions for claim modification to properly define the invention.

Reply:

The wording of the proposed sentence is clearly inappropriate since the International Preliminary Examination Report does not make any determination of "patentability." Note PCT Article 35(2). Furthermore, the time limits for issuing an International Preliminary Examination Report are such that there may not be sufficient time in most cases to issue a second opinion and receive a response thereto. Modifications in the interview practice are a more practical way of assuring a more complete and thorough international preliminary examination.

Comment:

One comment suggested that §1.484(f) be amended to read:

> An applicant will be permitted *at least* [no more than] one personal [or telephone] interview, which must be conducted *prior to 27 months from the priority date* [during the non-extendable time limit for response by the applicant to the written opinion].

Reply:

A less restrictive interview policy has been incorporated into §1.484(f). The period for an interview cannot be delayed until the 27th month from the priority date since this is the time at which the examiners will be required to complete their Reports in order to allow time for reviews and mailing.

Comment:

One comment proposed that §1.485 be amended as follows:

> The time limit for response in a written opinion of the International Preliminary Examining Authority may not be extended *to expire beyond 27 months from the priority date, without the permission of the Group Director.*

Reply:

No need is seen to limit the end of the response period to the end of the 27th month since the period will be set by the examiner when a written opinion is mailed. The time limit cannot be extended (§1.484(d)) due to tight time frames for establishing the International Preliminary Examination Report within 28 months from the priority date. The time limits for response to a written opinion are set forth in PCT Rule 66.2(d).

Comment:

Two written comments and the oral testimony indicated that the fees for entering the national stage should be considerably less after an international search and preliminary examination. The small $40.00 reduction in national stage fees is criticized as too small and a token fee of $40–$50 is stated as being more reasonable.

Reply:

The fees are based on an adjustment of the U.S. filing fee based on estimated additional work or savings. However, in view of the comments, an additional basic nation fee level has been added as §1.492(a)(4) for those situations where the Patent and Trademark Office has established an International Preliminary Examination Report which indicates that all the claims entering the national stage have satisfied the criteria of PCT Articles 31(1) to (4). Current studies of the benefit of having PCT search reports from the searching authorities indicate an improvement in quality but no overall reduction in search or examining time. The search report from other than international searching authorities, with rare exceptions, does not allow the USPTO examiner to eliminate any part of the national search.

Comment:

One comment argued that reciprocal treatment should be given to foreign applicants for benefits given U.S. applicants.

Reply:

Although the European Patent Office offers a 20% reduction of only the search fee portion of its national stage entry fees, the resulting fee of a little under $1000 at current exchange rates is still more than twice the amount of the highest U.S. national fee. In Japan the national fee for requesting examination is currently 26,000 yen (a little under $200 at current exchange rates) where the search report was not prepared by the Japanese Patent Office and 6,000 yen if the search report was prepared by the Japanese Patent Office.

Comment:

One comment urged that the U.S. rules match the less restrictive EPO rules with regard to the issuance of more than one written opinion and providing additional opportunity for the applicant to communicate with the examiner.

Reply:

The proposed rules (§1.484) have been modified to provide for a less restrictive interview practice. The examiner should permit interview(s) during the time limit for response to the written opinion where such interviews would be useful and time is available to permit issuance of the International Preliminary Examination Report prior to the deadline of 28 months after the priority date.

Although nothing in the rules limit the proceedings to one written opinion, most demands are expected to be filed near the end of the 19th month deadline. Preparation of the first written opinion may be delayed because the fees were not paid at the time of filing the Demand, formal errors are found in the documents or unity of invention is lacking. The time limits for a reply to the first written opinion will normally be set at 2 months, although 3 months may be given where the time limit for reply ends prior to 25 months from the priority date. Response by the 25th month will allow the examiner 2 months to prepare the International Preliminary Examination Report.

However, a Demand may be filed much earlier than 19 months from the priority date and International Preliminary Examination may begin early as provided for in PCT Rule 69.1(b). Where time and other circumstances permit, a second written opinion may be provided, possibly with a one month time limit for reply.

Comment:

One comment stated that proposed §1.485(b) is a duplication of §1.484(d).

Reply:

Proposed paragraph (b) has been deleted in final rule 1.485.

Comment:

One comment stated that procedures for the manner of issuing International Preliminary Examination Reports should be set forth in the U.S. rules.

Reply:

Items already specifically covered in the PCT articles and rules are not needed in U.S. rules. The agreement with WIPO also regulates these matters as do the PCT search and preliminary examination guidelines.

Comment:

One comment stated that the treatment of the International Preliminary Examination Report (IPER) by the USPTO at the national stage is not clear.

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Reply:
The IPER will be considered along with other relevant information when conducting a national examination for patentability. PCT Article 33(1) indicates that the objective of the International Preliminary Examination Report is to formulate a preliminary and non-binding opinion; it is not binding on any office. Any new questions relating to patentability may be raised.
Comment:
One comment stated that a dual standard of unity defies logic.
Reply:
The dual standard is necessary since the fees for patent applications filed under 35 U.S.C. 111 were set based upon an application being limited to one invention as defined at the time the fees were set which differs from the interpretation of unity under PCT required in view of the Caterpillar decision.
Comment:
One comment stated that if additional PCT international search fees are required they should be made by statutory change.
Reply:
The Commissioner is authorized by statute (35 U.S.C. 376) to set the national fee for PCT origin applications. Any change in national restriction practice for applications filed under 35 U.S.C. 111 would be made only after statutory change.
Comment:
One comment indicated that in view of the Caterpillar decision holding the Office interpretation of "specifically designed" to be an unreasonable interpretation, the Office is proposing a double standard.
Reply:
U.S. national law under 35 U.S.C. 121 does not require a consideration or interpretation of "specifically designed" to be made. This must only be made in PCT cases and those entering the national stage under 35 U.S.C. 371.

Discussion of Specific Rules

Section 1.8 is amended to indicate clearly that the certificate of mailing procedures thereunder may not be used for the filing of papers and fees relating to international applications. It should be noted that the provisions of §1.10 regarding the filing of papers or fees by "Express Mail" apply to all papers and fees to be filed in the Patent and Trademark Office, including those relating to international applications.

Section 1.61 "Filing of applications in the United States of America as a Designated Office" is removed and the substance thereof moved to new §1.494. Section 1.70 "Oath or declaration under 35 U.S.C. 371(c)(4)" is removed and the substance thereof moved to new §1.497. These moves result in the rules relating to the international applications entering the national stage being located in a single area of the rules.

Section 1.101 is amended to remove the discussion of the order of examination for international applications entering the national stage, which is covered by new §1.496.

Section 1.141 is amended to basically return the rule to its wording prior to the 1978 rule change implementing the Patent Cooperation Treaty and will be directed solely to national applications. This will avoid confusion with PCT Rule 13.2 which was interpreted by the court in *Caterpillar Tractor Co.* v. *Commissioner of Patents and Trademarks*, supra, to have a different meaning than intended in present §1.141. It does, however, retain for applicants the ability to claim a "reasonable number" of species rather than only 5, which limit existed prior to the 1978 rule change. Paragraph (b) continues the practice stated in the *Official Gazette* notice of Aug. 1, 1984 published at 1046 O.G. 2. Unity of invention in international applications before the USPTO as an International Searching Authority under Chapter I of the Patent Cooperation Treaty is covered by §1.475. Unity of Invention before the USPTO as an International Preliminary Examining Authority under Chapter II of the Patent Cooperation Treaty is covered by §1.487. Unity of invention in international applications entering the national stage under 35 U.S.C. 371 is covered by §1.499.

Section 1.401 is amended to include the definition of some terms used for Chapter II of the Patent Cooperation Treaty.

Section 1.414 is amended to include reference to the United States Patent and Trademark Office functioning as an Elected Office under Chapter II of the Patent Cooperation Treaty as well as a Designated Office under Chapter I.

Section 1.416 is added to indicate and describe the functioning of the United States Patent and Trademark Office as an International Preliminary Examining Authority under Chapter II of the Patent Cooperation Treaty.

Section 1.431 and 1.432 are amended, in accordance with PCT Rule 15.4(b)(ii) and amended 35 U.S.C. 361, to indicate that the time limit for payment of the designation fee is one year from the priority date or one month from the date of receipt of the international application if that one month time limit expires after the expiration of one year from the priority date.

Section 1.445 is amended to increase the amount of the international search fees to provide for recovery of the average additional cost of processing applications with claims to more inventions than were permitted under the unity of invention criteria used when the previous international search fee amounts were established. The amounts for national stage fees are removed from §1.445 and are now set forth in §1.492.

The international search fee and national fees were previously established based on the effort and cost to the Office of searching and examining a single invention as defined by the United States Patent and Trademark Office prior to the decision in the Caterpillar case. Since additional effort will be required to search and examine an average application under the new rules defining unity of invention, the average international search and national fee must also be increased to cover the additional cost to the Office.

Section 1.475 "Changes in person, name, or address of applicants," is redesignated as §1.472 to allow the grouping of rules into PCT Chapter I, PCT Chapter II and national stage related rules. No change other than redesignation is made.

A new §1.475 is added to relate to unity of invention before the International Searching Authority. Paragraph (a) clearly indicates that PCT Rule 13 is to be followed in all such cases and paragraph (b) adds combinations acceptable under unity of invention in addition to those set forth in PCT Rule 13.2. Paragraph (c) relates to the handling of claims to categories in addition to the combinations specified in paragraph (b). Paragraph (d) relates to situations in which more than one invention of the same category of invention is recited in an international application. Paragraph (e) makes clear that inventions of different categories must be related, rather than independent, for unity of invention to exist. Paragraph (f) sets forth PCT Rule 13 for the convenience of patent applicants.

Section 1.481, regarding determination of unity of invention before the International Searching Authority, is redesignated as §1.476 and amended to delete reference to §1.141 from paragraph (a).

Section 1.482 is redesignated as §1.477 and amended to make clear in the title that it deals with protests to findings of lack of unity of invention before the International Searching Authority. The amendment to paragraph (b) corrects an error in referring to another paragraph of the section.

A new §1.480 is added to deal with the Demand for an international preliminary examination. Paragraph (a) indicates that a Demand is required to be filed to obtain an international preliminary examination and that the preliminary examination fee of §1.482(a)(1) and the handling fee of §1.482(b) are due at the time of filing of the Demand. If the fees are not paid at the time of filing of the Demand, the United States Patent and Trademark Office acting as an International Preliminary Examining Authority will provide an opportunity to pay the fees in accordance with PCT Rules 57.4 and 58.2.

Paragraph (b) of §1.480 specifies that the Demand must be made on a standardized form as required by PCT Rule 53.1 and that such forms are available from the United States Patent and Trademark Office.

Paragraph (c) of §1.480 specifies that, if the Demand is made prior to the expiration of the 19th month from the priority date, the provisions of PCT Article 39 and § 1.495 shall apply to allow entry into the national stage prior to the expiration of 30 months after the priority date. The final rule has been changed to add reference to the election of the United States. If the Demand is not filed prior to the expiration of the 19th month from the priority date, the provisions of PCT Article 22 and § 1.494 shall apply to allow entry into the national stage prior to the expiration of 20 months after the priority date.

Paragraph (d) of §1.480 indicates that withdrawal of a proper Demand will not entitle applicant to a refund of the preliminary examination fee even if no claims are found that can or will be searched (PCT Article 34(4)(a)). A Demand that is so informal that it would be considered under the PCT Rules as if it had not been submitted will not be considered a proper Demand under the rule. A change in purpose after the filing of a Demand will not entitle an applicant to a refund of the preliminary examination fee. PCT Rule 57.6 states that in no case shall the handling fee, or any supplement to the handling fee, be refunded.

A new §1.482 is added to specify the international preliminary examination fees. Paragraph (a) sets a lower fee for the international preliminary examination where an international search fee has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority. Paragraph (a) also sets a lower additional preliminary examination fee for the preliminary examination of additional inventions found in the international application where a supplemental search fee has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority. Paragraph (b) indicates that the handling fee is prescribed in PCT Rule 57 and any necessary supplement to the handling fee shall be paid directly to the International Bureau in accordance with PCT Rule 57.1(b).

A new §1.484 is added to describe the conduct of international preliminary examination. The rule describes that, if necessary, a written opinion will be established after consideration of any defects in accordance with PCT Rule 66.2 and after an examination to determine if the claimed invention has novelty, involves an inventive step (is non-obvious) and is industrially applicable. A written opinion prior to the international preliminary examination report would not be necessary if the international application does not contain any defects as mentioned in PCT Rule 66.2 and if all claims are found to be novel, involve an inventive step (non-obvious) and are industrially applicable. The written opinion will set a time limit for applicant to respond in accordance with PCT Rule 66.2(d). The time limit for reply will normally be two months but will be three months where the time limit will expire prior to 25 months from the priority date. The time limit may not be extended due to the tight time constraints under Chapter II of the Patent Cooperation Treaty. An international preliminary examination report will be established and one copy will be submitted to the International Bureau and one copy to applicant. The rule specifies that no international preliminary examination report will be established prior to issuance of an international search report and that no international preliminary examination will be conducted on inventions not previously searched by an International Searching Authority. Paragraph (f) specifies that at least one personal or telephone interview with the examiner will be permitted during the international preliminary examination. Additional interviews are permissible if the examiner determines that it would be helpful. Additional interviews will be governed, in part, by the time remaining before the time for issuance of the international preliminary examination report. The period during which the interview(s) can be held is limited by the non-extendable time limit for response by the applicant to a written opinion. Although nothing in this or any other rule limits the number of written opinions which may be established prior to the International Preliminary Examination Report, in most cases time will limit the number of written opinions to one.

A new §1.485 is added to deal with amendments by applicant during international preliminary examination. An applicant is permitted by the rule to make amendments at the time of filing of the Demand and within the period set in any written opinion on the application as defined in §1.484. Amendments under the rule would be required to be made by submitting replacement sheets and a description of how the replacement sheet differs from the replaced sheet. If an amendment cancels an entire sheet, that amendment should be communicated by letter without a replacement sheet. Proposed paragraph (b) is not promulgated because the substance thereof is set forth in §1.484(d).

New §1.487 defines what constitutes unity of invention before the International Preliminary Examining Authority. The standards for unity of invention generally parallel those set in §1.475 regarding proceedings before the International Searching Authority.

New §1.488 is added to set forth how the International Preliminary Examining Authority will proceed in handling determinations regarding the unity of invention criteria of §1.487.

New §1.489 sets forth the procedures to be followed by an applicant who wishes to protest a holding of lack of unity of invention by the International Preliminary Examining Authority. The additional fees would be required to be paid if more than one invention is to be examined, but could be accompanied by a request for refund and a statement setting forth reasons for disagreement with the holding of lack of unity of invention or why the required additional fees are excessive. This rule is in accordance with PCT Rule 68.3(c).

New §1.491 is added to define the start of the national stage. Section 1.491 is the first rule in a new group of rules relating to applications entering the national stage pursuant to 35 U.S.C. 371.

New §1.492 is added to set forth the fees and charges for international applications entering the national stage under 35 U.S.C. 371. The basic national fee is set forth in paragraph (a) at four levels to reflect the benefit that the United States Patent and Trademark Office will derive from having previously conducted an international preliminary examination or an international search. In § 1.492(a)(2) and (3), "(i)" has been deleted in order to refer to both §1.445(a)(2)(i) and (ii). Paragraph (a)(4) which makes reference to §1.496(b) has been added in view of comments received that indicated that in some instances substantial reliance may be placed upon the International Preliminary Examination Reports by the Patent and Trademark Office. The rule also sets the fee for an independent claim in excess of 3 (paragraph (b)), for presentation of each claim in excess of 20 (paragraph (c)) and for an application containing a multiple dependent claims (paragraph (d)). Paragraphs (e) and (f) include the fees previously contained in §1.445 and include the alternative times for entering the national stage pursuant to §1.494 or §1.495.

New §1.494 is added to contain substantially the provisions of former §1.61 in amended form. This section relating to filing application documents in the United States Patent and Trademark Office to enter the national stage has been grouped with other sections relating to the nation stage for the convenience of applicants and examiners involved in the prosecution of international applications entering the national stage. The rule applies where no Demand for international preliminary examination has been filed prior to the expiration of the 19th month from the priority date. If such a Demand were filed, §1.495 would apply.

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Section 1.494(f) requires that a specific indication be given by the applicant when entering the national stage that the documents being submitted are being submitted under 35 U.S.C. 371. If no clear indication is found, the documents will be considered to be for a regular national application under 35 U.S.C. 111. Paragraph (g) makes clear that the various time limits set out in the rule, some of which are set by the PCT, may not be extended pursuant to §1.136 or otherwise. The extension of time provisions, including petition and payment of a fee, set out in §1.136(a) do not apply to the time limits of the rule or time limits set by the International Searching Authority or the International Preliminary Examining Authority. New paragraph (h) clarifies when an international application designating the United States becomes abandoned as to the United States.

New §1.495 is added to deal with filing application documents in the United States Patent and Trademark Office to enter the national stage where a Demand for international preliminary examination has been filed with an International Preliminary Examining Authority prior to the expiration of the 19th month from the priority date. In such a case, an applicant will have 30 months from the priority date to enter the national stage. The rule parallels in many respects §1.494. New paragraph (i) clarifies when an international application electing the United States becomes abandoned as to the United States.

New §1.496 is added to specify in paragraph (a) that international applications in the national stage will be taken up for action based on the date when the requirements of 35 U.S.C. 371(c) are met. Paragraph (b) indicates that applications entering the U.S. national stage only with claims which have been found in an International Preliminary Examination Report to have satisfied the criteria for novelty, inventive step (non-obviousness) and industrial applicability as defined in PCT Article 33(1) to (4) will be taken up for action before other applications. Preliminary amendments may accompany the filing of the national stage application to cancel claims which do not satisfy the criteria. These applications will have paid the lower filing fee set in §1.492(a)(4) and most will not require extensive prosecution, i.e., objection or rejection before resolving the issue of patentability. Amendments will not be permitted to be made in such applications other than in response to objections as to form or to cancel claims in response to a rejection made by the examiner in the national stage application. Such a rejection could be necessary, for example, where applicant submits information in accordance with the duty of disclosure under 37 CFR 1.56(a).

New §1.497 is added to contain substantially the wording of removed §1.70. This rule relates to the oath or declaration required to enter the national stage and is grouped with other national stage entry requirements.

New §1.499 is added to cover unity of invention during the national stage. The provisions of the section are basically parallel to those of §§1.475 and 1.487. Paragraph (f) indicates the manner of handling a finding of lack of unity of invention on grounds other than those involving different categories of invention.

Environmental, Energy, and Other Considerations

The rule change does not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354) because considerable savings can potentially be achieved under Chapter II of the Patent Cooperation Treaty because additional time is provided for applicants to decide whether to proceed with the cost of foreign prosecution and savings will in fact be achieved under the unity of invention practice and the provision for reduced fees for small entities entering the national stage in making an application for a United States patent.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information collection requirement contained in these rules was submitted to the Office of Management and Budget (OMB) at the time of the proposed rulemaking for review under Section 3504(h) of the Paperwork Reduction Act. OMB has approved the information collection requirement and has assigned OMB control number 0651–0021 thereto.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by a 35 U.S.C. 6 and 376(b) and Pub. L. 99–616, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.8 is amended by revising paragraph (a)(2)(xi) to read as follows:

§1.8 Certificate of mailing.

(a) * * *
(2) * * *
(xi) The filing of international applications for patent and all papers and fees relating thereto.

* * * * *

§1.61 [Removed]

3. Section 1.61 is removed.

§1.70 [Removed]

4. Section 1.70 is removed.

5. Section 1.101 is amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102. See §1.496 for order of examination of international applications in the national stage.

* * * * *

6. Section 1.141 is revised to read as follows:

§1.141 Different inventions in one national application.

(a) Two or more independent and distinct inventions may not be claimed in one national application, except that more than one species of an invention, not to exceed a reasonable number, may be specifically claimed in different claims in one national application, provided the application also includes an allowable claim generic to all the claimed species and all the claims to species in excess of one are written in dependent form (§1.75) or otherwise include all the limitations of the generic claim.

(b) Where claims to all three categories, product, process of making, and process of use, are included in a national application, a three way requirement for restriction can only be made where the process of making is distinct from the product. If the process of making and the product are not distinct, the process of using may be joined with the claims directed to the product and the process of making the product even though a showing of distinctness between the product and process of using the product can be made.

Subpart C—International Processing Provisions

7. The authority for Subpart C is revised to read as follows:

Authority: Pub. L. 94–131, 89 Stat. 685; Pub. L. 99–616, 35 U.S.C. 351 through 376.

8. Section 1.401 is amended to redesignate paragraph (g) as paragraph (i) and add new paragraphs (g) and (h) as follows:

§1.401 Definitions of terms under the Patent Cooperation Treaty

* * * * *

(g) "Demand'," when capitalized, means that document filed with the International Preliminary Examining Authority which requests an international preliminary examination.

(h) "Annexes" means amendments made to the claims, description or the drawings before the International Preliminary Examining Authority.

* * * * *

9. Section 1.414 is revised to read as follows:

§1.414 The United States Patent and Trademark Office as a Designated Office or Elected Office.

(a) The United States Patent and Trademark Office will act as a Designated Office or Elected Office for international applications in which the United States of America has been designated or elected as a State in which patent protection is desired.

(b) The United States Patent and Trademark Office, when acting as a Designated Office or Elected Office during international processing will be identified by the full title "United States Designated Office" or by the abbreviation "DO/US" or by the full title "United States Elected Office" or by the abbreviation "EO/US".

(c) The major functions of the United States Designated Office or Elected Office in respect to international applications in which the United States of America has been designated or elected, include:

(1) Receiving various notifications throughout the international stage and

(2) Accepting for national stage examination international applications which satisfy the requirements of 35 U.S.C. 371.

10. Under "General Information," a new §1.416 is added to read as follows:

§1.416 The United States International Preliminary Examining Authority.

(a) Pursuant to appointment by the Assembly, the United States Patent and Trademark Office will act as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office and in other Receiving Offices as may be agreed upon by the Commissioner, in accordance with agreement between the Patent and Trademark Office and the International Bureau.

(b) The United States Patent and Trademark Office, when acting as an International Preliminary Examining Authority, will be identified by the full title "United States International Preliminary Examining Authority" or by the abbreviation, "IPEA/US."

(c) The major functions of the International Preliminary Examining Authority include:

(1) Receiving and checking for defects in the Demand;

(2) Collecting the handling fee for the International Bureau and the preliminary examination fee for the United States International Preliminary Examining Authority;

(3) Informing applicant of receipt of the Demand;

(4) Considering the matter of unity of invention;

(5) Providing an international preliminary examination report which is a non-binding opinion on the questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), and to be industrially applicable; and

(6) Transmitting the international preliminary examination report to applicant and the International Bureau.

11. Section 1.431 is amended by revising paragraph (d)(2) to read as follows:

§1.431 International application requirements.

* * * * *

(d) * * *

(2) The designation fee, or the amount necessary to cover all the designations made in the request if not paid by the applicant within one year from the priority date or within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date.

* * * * *

12. Section 1.432 is amended by revising paragraph (b) to read as follows:

§1.432 Designation of States and payment of designation fees.

* * * * *

(b) The designation fees may be paid upon filing of the international application, but must be paid before the expiration of one year from the priority date or within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date. Failure to timely pay the designation fee for a particular Designated State will result in the withdrawal of that designation. Failure to timely pay at least one designation fee will result in the withdrawal of the international application.

13. Section 1.445 is amended by revising the title and paragraph (a) to read as follows:

§1.445 International application filing, processing and search fees.

(a) The following fees and charges for international applications are established by the Commissioner under the authority of 35 U.S.C. 376:

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(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14), $170.00.

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with basic filing fee has been filed, $520.00.

(ii) A corresponding prior United States national application with basic filing fee has been filed, $350.00.

(3) A supplemental search fee when required, per additional invention, $140.00.

§1.475 [Redesignated as §1.472]

14. Section 1.475 is redesignated as §1.472.

15. A new §1.475 is added following the heading, "Unity of Invention," to read as follows:

§1.475 Unity of invention before the International Searching Authority.

(a) An international application before the International Searching Authority will be considered to have unity of invention if the claims are in accordance with PCT Rule 13 (see paragraph (f) of this section).

(b) An international application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the combinations of categories as set forth in PCT Rule 13.2 (see paragraph (f) of this section) or to the combination of—

(1) A product and a process for the manufacture of said product, or

(2) A product and a process of use of said product.

If an application contains claims to more or less than one of the combinations of categories set forth in PCT Rule 13.2 (see paragraph (f) of this section) or a combination set forth in paragraphs (b)(1) or (2) of this section, unity of invention may not be present.

(c) If an international application contains claims to a category of invention in addition to those categories included in any one of the combinations specified in paragraph (b) of this section, lack of unity of invention may be held between the categories included in the combination and the claims to the additional category of invention.

(d) Unity of invention will exist where the claims are limited to one of the combinations of categories set forth in PCT Rule 13.2 (see paragraph (f) of this section) or in a combination set forth in paragraphs (b)(1) or (2) of this section. If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application and the first recited invention of each of the other categories related thereto will be considered as the inventions to be searched. Any such holding by the examiner will be made of record as a holding of lack of unity of invention.

(e) The inventions recited by the claims of different categories must be related rather than independent inventions.

(f) The wording of PCT Rule 13 is as follows:

PCT Rule 13—Unity of Invention

13.1 Requirement

The international application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention").

13.2 Claims of Different Categories

Rule 13.1 shall be construed as permitting, in particular, one of the following three possibilities:

(i) in addition to an independent claim for a given product, the inclusion in the same international application of an independent claim for a process specially adapted for the manufacture of the said product, and the inclusion in the same international application of an independent claim for a use of the said product, or

(ii) in addition to an independent claim for a given process, the inclusion in the same international application of an independent claim for an apparatus or means specifically designed for carrying out the said process, or

(iii) in addition to an independent claim for a given product, the inclusion in the same international application of an independent claim for a process specially adapted for the manufacture of the product, and the inclusion in the same international application of an independent claim for an apparatus or means specifically designed for carrying out the process.

13.3 Claims of One and the Same Category

Subject to Rule 13.1, it shall be permitted to include in the same international application two or more independent claims of the same category (i.e., product, process, apparatus, or use) which cannot readily be covered by a single generic claim.

13.4 Dependent Claims

Subject to Rule 13.1, it shall be permitted to include in the same international application a reasonable number of dependent claims, claiming specific forms of the invention claimed in an independent claim, even where the features of any dependent claim could be considered as constituting in themselves an invention.

13.5 Utility Models

Any designated State in which the grant of a utility model is sought on the basis of an international application may, instead of Rules 13.1 to 13.4, apply in respect of the matters regulated in those Rules the provisions of its national law concerning utility models once the processing of the international application has started in that State, provided that the applicant shall be allowed at least two months from the expiration of the time limit applicable under Article 22 to adapt his application to the requirements of the said provisions of the national law.

16. Section 1.481 is redesignated as §1.476 and is amended by revising paragraph (a) to read as follows:

§1.476 Determination of unity of invention before the International Searching Authority.

(a) Before establishing the international search report, the International Searching Authority will determine whether the international application complies with the requirement of unity of invention as set forth in PCT Rule 13 (see §1.475(f)) and §1.475.

* * * * *

17. Section 1.482 is redesignated as §1.477 and is amended by revising the title and paragraph (b) to read as follows:

§1.477 Protest to lack of unity of invention before the International Searching Authority.

* * * * *

(b) Protest under paragraph (a) of this section will be examined by the Commissioner or the Commissioner's designee. In the event that the applicant's protest is determined to be justified, the additional fees or a portion thereof will be refunded.

* * * * *

18. A new Section 1.480 is added preceded by a heading to read as follows:

International Preliminary Examination

§1.480 Demand for international preliminary examination.

(a) On the filing of a Demand and payment of the fees for international preliminary examination (§1.482), the international application shall be the subject of an international preliminary examination. The preliminary examination fee (§1.482(a)(1)) and the handling fee (§1.482(b)) shall be due at the time of filing of the Demand.

(b) The Demand shall be made on a standardized printed form. Copies of the printed Demand forms are available from the Patent and Trademark Office. Letters requesting printed forms should be marked "Box PCT".

(c) If the Demand is made prior to the expiration of the 19th month from the priority date and the United States of America is elected, the provisions of §1.495 shall apply rather than §1.494.

(d) Withdrawal of a proper Demand will not entitle applicant to a refund of the preliminary examination fee or handling fee.

19. A new Section 1.482 is added to read as follows:

§1.482 International preliminary examination fees.

(a) The following fees and charges for international preliminary examination are established by the Commissioner under the authority of 35 U.S.C. 376:

(1) A preliminary examination fee is due on filing the Demand:

(i) Where an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, a preliminary examination fee of, $370.00.

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office, a preliminary examination fee of, $570.00.

(2) An additional preliminary examination fee when required, per additional invention·

(i) Where a supplemental search fee as set forth in § 1.445(a)(3) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, $125.00.

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office, $190.00.

(b) The handling fee is due on filing the Demand. Any necessary supplement to the handling fee shall be paid directly to the International Bureau.

(35 U.S.C. 6, 376)

20. A new §1.484 is added to read as follows:

§1.484 Conduct of international preliminary examination.

(a) An international preliminary examination will be conducted to formulate a non-binding opinion as to whether the claimed invention has novelty, involves an inventive step (is non-obvious) and is industrially applicable.

(b) No international preliminary examination report will be established prior to issuance of an international search report.

(c) No international preliminary examination will be conducted on inventions not previously searched by an International Searching Authority.

(d) The International Preliminary Examining Authority will establish a written opinion if any defect exists or if the claimed invention lacks novelty, inventive step or industrial applicability and will set a non-extendable time limit in the written opinion for the applicant to respond.

(e) If no written opinion under paragraph (d) of this section is necessary, or after any written opinion and the response thereto or the expiration of the time limit for response to such written opinion, an international preliminary examination report will be established by the International Preliminary Examining Authority. One copy will be submitted to the International Bureau and one copy will be submitted to the applicant.

(f) An applicant will be permitted a personal or telephone interview with the examiner, which must be conducted during the non-extendable time limit for response by the applicant to a written opinion. Additional interviews may be conducted where the examiner determines that such additional interviews may be helpful to advancing the international preliminary examination procedure. A summary of any such personal or telephone interview must be filed by the applicant as a part of the response to the written opinion or, if applicant files no response, be made of record in the file by the examiner.

21. A new §1.485 is added to read as follows:

§1.485 Amendments by applicant during international preliminary examination.

The applicant may make amendments at the time of filing of the Demand and within the time limit set by the International Preliminary Examining Authority for response to any written opinion. Any such amendments must—

(1) Be made by submitting a replacement sheet for every sheet of the application which differs from the sheet it replaces unless an entire sheet is cancelled and

(2) Include a description of how the replacement sheet differs from the replaced sheet.

If an amendment cancels an entire sheet of the international application, that amendment shall be communicated in a letter.

22. A new §1.487 is added to read as follows:

§1.487 Unity of invention before the International Preliminary Examining Authority.

(a) An international application before the International Preliminary Examining Authority will be considered to have unity of invention if the claims are in accordance with PCT Rule 13 (see §1.475(f)).

(b) An international application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the combinations of categories as set forth in PCT Rule 13.2 (see §1.475(f)) or to the combination of —

(1) A product and a process for the manufacture of said product or

(2) A product and a process of use of said product.

If an application contains claims to more or less than one of the combinations of categories of invention set forth in PCT Rule 13.2 (see §1.475(f)) or a combination set forth in paragraphs (b)(1) or (2) of this section, unity of invention may not be present.

(c) If an international application contains claims to a category of invention in addition to those categories included in any one of the combinations specified in paragraph (b) of this section, lack of unity of invention may be held between the categories included in the combination and the claims to the additional category of invention.

(d) Unity of invention will exist where the claims are limited to one of the combinations of categories set forth in PCT Rule 13.2 (see §1.475(f)) or a combination set forth in paragraphs (b)(1) or (2) of this section. If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application and the first recited invention of each of the other categories related thereto will be considered as the inventions to be examined. Any such holding by the examiner will be made of record as a holding of lack of unity of invention.

(e) The inventions recited by the claims of different categories must be related rather than independent inventions.

23. A new §1.488 is added to read as follows:

§1.488 Determination of unity of invention before the International Preliminary Examining Authority.

(a) Before establishing any written opinion or the international preliminary examination report, the International Preliminary Examining Authority will de-

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termine whether the international application complies with the requirement of unity of invention as set forth in §1.487.

(b) If the International Preliminary Examining Authority considers that the international application does not comply with the requirement of unity of invention, it may:

(1) Issue a written opinion and/or an international preliminary examination report, in respect of the entire international application and indicate that unity of invention is lacking and specify the reasons therefor without extending an invitation to restrict or pay additional fees. No international preliminary examination will be conducted on inventions not previously searched by an International Searching Authority.

(2) Invite the applicant to restrict the claims or pay additional fees, pointing out the categories of invention found, within a set time limit which will not be extended. No international preliminary examination will be conducted on inventions not previously searched by an International Searching Authority, or

(3) If applicant fails to restrict the claims or pay additional fees within the time limit set for response, the International Preliminary Examining Authority will issue a written opinion and/or establish an international preliminary examination report on the main invention and shall indicate the relevant facts in the said report. In case of any doubt as to which invention is the main invention, the invention first mentioned in the claims and previously searched by an International Searching Authority shall be considered the main invention.

(c) Lack of unity of invention may be directly evident before considering the claims in relation to any prior art, or after taking the prior art into consideration, as where a document discovered during the search shows the invention claimed in a generic or linking claim lacks novelty or is clearly obvious, leaving two or more claims joined thereby without a common inventive concept. In such a case the International Preliminary Examining Authority may raise the objection of lack of unity of invention.

24. A new §1.489 is added to read as follows:

§1.489 Protest to lack of unity of invention before the International Preliminary Examining Authority.

(a) If the applicant disagrees with the holding of lack of unity of invention by the International Preliminary Examining Authority, additional fees may be paid under protest, accompanied by a request for refund and a statement setting forth reasons for disagreement or why the required additional fees are considered excessive, or both.

(b) Protest under paragraph (a) of this section will be examined by the Commissioner of the Commissioner's designee. In the event that the applicant's protest is determined to be justified, the additional fees or a portion thereof will be refunded.

(c) An applicant who desires that a copy of the protest and the decision thereon accompany the international preliminary examination report when forwarded to the Elected Offices, may notify the International Preliminary Examining Authority to that effect any time prior to the issuance of the international preliminary examination report. Thereafter, such notification should be directed to the International Bureau.

25. A new §1.491 is added preceded by a new heading to read as follows:

National Stage

§1.491 Entry into the national stage.

An international application enters the national stage when the applicant has filed the documents and fees required by 35 U.S.C. 371(c) within the periods set forth in §1.494 or §1.495.

26. A new §1.492 is added to read as follows:

§1.492 National stage fees.

The following fees and charges for international applications entering the national stage under 35 U.S.C. 371 are established by the Commissioner under 35 U.S.C. 376:

(a) The basic national fee;

(1) Where an international preliminary examination fee as set forth in §1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§1.9(f))	$150
By other than a small entity	$300

(2) Where no international preliminary examination fee as set forth in §1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in §1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:

By small entity (§1.9(f))	$170
By other than small entity	$340

(3) Where no international preliminary examination fee as set forth in §1.482 has been paid and no international search fee as set forth in §1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§1.9(f))	$225
By other than a small entity	$450

(4) Where the international preliminary examination fee as set forth in §1.482 has been paid to the United States Patent and Trademark Ofice and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33(1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see §1.496(b)):

By a small entity (§1.9(f))	$25
By other than a small entity	$50

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§1.9(f))	$17
By other than a small entity	$34

(c) In addition to the basic national fee, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):

By a small entity (§1.9(f))	$6
By other than a small entity	$12

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§1.9(f))	$55
By other than a small entity	$110

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic national fee or oath or declaration later than 20 months from the priority date pursuant to §1.494(c) or later than 30 months from the priority date pursuant to §1.495(c):

By a small entity (§1.9(f))	$55
By other than a small entity	$110

(f) For filing an English translation of an international application later than 20 months after the priority date (§1.494(c)) or for filing an English translation of the international application or of any annexes to the international preliminary examination report later than 30 months after the priority date (§1.495(c) and (e)), $26.00.

(35 U.S.C. 6, 376)

27. A new §1.494 is added to read as follows:

§1.494 Entering the national stage in the United States of America as a Designated Office.

(a) Where no Demand has been filed with an appropriate International Preliminary Examining Authority by the expiration of 19 months from the priority date (see § 1.495), the applicant must fulfill the requirements of PCT Article 22 and 35 U.S.C. 371 within the time periods set forth in paragraphs (b) or (c) of this section in order to prevent the abandonment of the international application as to the United States of America. International applications for which those requirements are timely fulfilled will enter the national stage and obtain an examination as to the patentability of the invention in the United States of America.

(b) The applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 20 months from the priority date—

(1) A copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the United States Patent and Trademark Office;

(2) A translation of the international application into the English language, if it was originally filed in another language;

(3) The basic national fee (see §1.492(a); and

(4) An oath or declaration of the inventor (see § 1.497).

(c) The applicant may furnish any required English translation of the international application, the basic national fee and the oath or declaration of the inventor after 20 months but not later than the expiration of 22 months from the priority date. The payment of the processing fee set forth in §1.492(f) is required for acceptance of an English translation later than the expiration of 20 months after the priority date. The payment of the surcharge set forth in §1.492(e) is required for acceptance of the basic national fee or the oath or declaration of the inventor later than the expiration of 20 months after the priority date.

(d) A copy of any amendments to the claims made under PCT Article 19, and a translation of those amendments into English, if they were made in another language, must be furnished not later than the expiration of 20 months from the priority date. Amendments under PCT Article 19 which are not received by the expiration of 20 months from the priority date will be considered to be cancelled.

(e) Verification of the translation of the international application or any other document pertaining to an international application may be required where it is considered necessary, if the international application or other document was filed in a language other than English.

(f) The documents and fees submitted under paragraphs (b) and (c) of this section must be clearly identified as a submission to enter the national stage under 35 U.S.C. 371, otherwise the submission will be considered as being made under 35 U.S.C. 111.

(g) The time limits set out in paragraphs (b), (c) and (d) of this section may not be extended pursuant to § 1.136 or otherwise.

(h) An international application becomes abandoned as to the United States 20 months from the priority date if a copy of the international application is not communicated to the Patent and Trademark Office prior to 20 months from the priority date where the United States has been designated but not elected prior to 19 months from the priority date. If a copy of the international application is communicated within 20 months to the Patent and Trademark Office, an international application will become abandoned as to the United States 22 months from the priority date if the required English translation(s), fees and oath or declaration under 35 U.S.C. 371(c) are not filed within 22 months from the priority date.

28. A new §1.495 is added to read as follows:

§1.495 Entering the national stage in the United States of America as an Elected Office.

(a) Where a Demand has been filed with an appropriate International Preliminary Examining Authority and not withdrawn by the expiration of 19 months from the priority date, the applicant must fulfill the requirements of 35 U.S.C. 371 within the time periods set forth in paragraph (b) or (c) of this section in order to prevent the abandonment of the international application as to the United States of America. International applications for which those requirements are timely fulfilled will enter the national stage and obtain an examination as to the patentability of the invention in the United States of America.

(b) The applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 30 months from the priority date—

(1) A copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the United States Patent and Trademark Office;

(2) A translation of the international application into the English language, if it was originally filed in another language;

(3) The basic national fee (see §1.492(a); and

(4) An oath or declaration of the inventor (see § 1.497).

(c) The applicant may furnish any required English translation of the international application, the basic national fee and the oath or declaration of the inventor after 30 months but not later than the expiration of 32 months from the priority date. The payment of the processing fee set forth in §1.492(f) is required for acceptance of an English translation later than the expiration of 30 months after the priority date. The payment of the surcharge set forth in §1.492(e) is required for acceptance of the basic national fee or the oath or declaration of the inventor later than the expiration of 30 months after the priority date.

(d) A copy of any amendments to the claims made under PCT Article 19, and a translation of those amendments into English, if they were made in another language, must be furnished not later than the expiration of 30 months from the priority date. Amendments under PCT Article 19 which are not received by the expiration of 30 months from the priority date will be considered to be cancelled.

(e) A translation into English of any annexes to the international preliminary examination report, if the annexes were made in another language, must be furnished not later than the expiration of 30 months from the priority date. Translations of the annexes which are not received by the expiration of 30 months from the priority date may be submitted within 32 months from the priority date accompanied by the processing fee set forth in §1.492(f). Translations of the annexes which are not timely received will be considered to be cancelled.

(f) Verification of the translation of the international application or any other document pertaining to an international application may be required where it is con-

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sidered necessary, if the international application or other document was filed in a language other than English.

(g) The documents submitted under paragraphs (b) and (c) of this section must be clearly identified as a submission to enter the national stage under 35 U.S.C. 371, otherwise the submission will be considered as being made under 35 U.S.C. 111.

(h) The time limits set out in paragraphs (b), (c), (d) and (e) of this section may not be extended pursuant to §1.136 or otherwise.

(i) An international application becomes abandoned as to the United States 30 months from the priority date if a copy of the international application is not communicated to the Patent and Trademark Office prior to 30 months from the priority date and a Demand for International Preliminary Examination which elected the United States of America has been filed prior to the expiration of 19 months from the priority date. If a copy of the international application is communicated within 30 months to the Patent and Trademark Office, an international application will become abandoned as to the United States 32 months from the priority date if the required English translation(s), fees and oath or declaration under 35 U.S.C. 371(c) are not filed within 32 months from the priority date.

29. A new §1.496 is added to read as follows:

§1.496 Examination of international applications in the national stage.

(a) International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless an express request for early processing has been filed under 35 U.S.C. 371(f), no action may be taken prior to one month after entry into the national stage.

(b) A national stage application filed under 35 U.S.C. 371 may have paid therein the basic national fee as set forth in §1.492(a)(4) if it contains, or is amended to contain, at the time of entry into the national stage, only claims which have been indicated in an international preliminary examination report prepared by the United States Patent and Trademark Office as satisfying the criteria of PCT Article 33(1)–(4) as to novelty, inventive step and industrial applicability. Such national stage applications in which the basic national fee as set forth in §1.492(a)(4) has been paid may be amended subsequent to the date of entry into the national stage only to the extent necessary to eliminate objections as to form or to cancel rejected claims. Such national stage applications in which the basic national fee as set forth in §1.492(a)(4) has been paid will be taken up out of order.

30. A new §1.497 is added to read as follows:

§1.497 Oath or declaration under 35 U.S.C. 371(c)(4).

(a) When an applicant of an international application, if the inventor, desires to enter the national stage under 35 U.S.C. 371 pursuant to §1.494 or §1.495, he or she must file an oath or declaration in accordance with § 1.63.

(b) If the international application was made as provided in §1.422, 1.423 or 1.425, the applicant shall state his or her relationship to the inventor and, upon information and belief, the facts which the inventor is required by §1.63 to state.

31. A new §1.499 is added to read as follows:

§1.499 Unity of invention during the national stage.

(a) An international application which has entered the national stage by meeting the requirements of 35 U.S.C. 371 will be considered to have unity of invention if the claims are in accordance with PCT Rule 13 (see §1.475 (f)).

(b) An application in the national stage containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the combinations of categories as set forth in PCT Rule 13.2 (see §1.475(f)) or to the combination of—

(1) A product and a process for the manufacture of said product or

(2) A product and a process of use of said product.

If an application contains claims to more or less than one of the combinations of categories of invention set forth in PCT Rule 13.2 (see §1.475(f)) or a combination set forth in paragraphs (b)(1) and (2) of this section, unity of invention may not be present.

(c) If an application in the national stage contains claims to a category of invention in addition to those categories included in any one of the combinations specified in paragraph (b) of this section, lack of unity of invention may be held between the categories included in the combination and the claims to the additional category of invention.

(d) Unity of invention will exist in an application in the national stage where the claims are limited to one of the combinations of categories set forth in PCT Rule 13.2 (see §1.475(f)) or a combination set forth in paragraph (b)(1) or (2) of this section. If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application and the first recited invention of each of the other categories related thereto will be considered as the elected invention to be examined. Any such holding of an election by the examiner will be made in the form of a restriction requirement which confirms the election made by the presentation of the claims. Such a restriction requirement would be made on the basis of whether the inventions are independent and distinct. Applicant has the right to traverse such a restriction requirement in the response to the Office action in which the election is indicated.

(e) The inventions recited by the claims of different categories must be related rather than independent inventions.

(f) If the examiner finds that a national stage application lacks unity of invention, the examiner may in an Office action require the applicant in the response to the Office action to elect the invention to which the claims shall be restricted, this official action being called a requirement for restriction. Such requirement may be made before any action on the merits but may be made at any time before the final action at the discretion of the examiner. Review of any such requirement is provided under §§1.143 and 1.144.

Apr. 28, 1987.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[FR Doc. 87–11977 Filed 5–27–87; 8:45 am]
BILLING CODE 3510–16–M

[1079 OG 32]

(100) Revised Procedures for Recording Searches and Considerations of Certain Prior Art

In order to provide a more complete, accurate and uniform record of what has been searched and considered by the examiner for each application the Patent and Trademark Office has established revised procedures for recording search data in the application file. Such a record is of importance to anyone evaluating the strength and validity of a patent, particularly if the patent is involved in litigation. These new procedures will also facilitate the printing of certain search data on patents.

Under the revised procedures, searches are separated into two categories and listed, as appropriate, in either the "SEARCHED" box or a newly added "SEARCH NOTES" box on the file jacket.

Until file jackets can be reprinted to include a second search data box, all file jackets for new applications will have the "SEARCH NOTES" box stamped therein by the Mail Room. If additional space is required, entries will be continued on the outside right flap of the file jacket.

The revised procedures will apply to all new applications in which the first search is made after April 1, 1977 and do not affect the manner in which references are listed on the form PTO–892. "Notice of References Cited." Appropriate changes in the Manual of Patent Examining Procedure will be made.

A. "SEARCHED" Box Entries

Search entries made here, except those for search updates (see item A. 3 below), will be printed under "Field of Search" on the patent front page. Therefore, the following searches will be recorded in the "SEARCHED" box by the examiner along with the date and the examiner's initials, according to the following guidelines:

1. *A complete search of a subclass,* including all United States and foreign patent documents and other publications placed therein. The complete classification (class and subclass) will be recorded.
2. *A limited search of a subclass,* for example, a search that is restricted to an identifiable portion of the patent documents placed therein. If, however, only the publications in a subclass are searched, such an entry is to be made under "SEARCH NOTES" rather than under "SEARCHED." (See item B, 4 below.)
   The class and subclass, followed by the information defining the portion of the subclass searched in parenthesis, will be recorded.
3. *An update of a search previously made.*
   This search entry will be recorded in a manner to indicate clearly which of the previously recorded searches have been updated, followed by the expression "(updated)." Search update, entries, although recorded in the "SEARCHED" box, will not be printed.
   When a search made in a parent application is updated during the examination of a continuing application, those searches updated, followed by "(updated from parent S.N. _____)" will be recorded. If the parent has been patented, the patent number "Pat. N. _____" instead of serial number in the above phrase will be recorded.
4. *A mechanized search* of a file of documents in a specific art, conducted by using key terms to retrieve documents. The name of the mechanized search system as it appears in the following list will be recorded along with the expression "MS File" to indicate mechanized search file.

Mechanized Search Systems

Termatrex Systems:

Automatic Fuel Controls
Boots & Shoes
Chemical Testing
Combined Fasteners
Electrical Contact Materials
Surface Bonding Using Critical Metal

Edge-Notched Card System:

Fluid Devices

Punch Card Systems:

Electrolysis
Organometallics
Steroids

Computer Controlled Microfiche Search Systems (CCMSS):

A-D Convertors
Digital Data Processing Systems
Special Purpose Digital Processing Systems

When a search with a Termatrex or Edge-Notched card system is conducted, the examiner will complete form PTO–1041 in two copies, recording all queries searched, even those which yield only non-relevant documents. All documents returned by the system in response to a query which are not actually reviewed will have an "X" drawn through their associated access and patent numbers. When conducting a search with a Punched Card system, the examiner will place in the application file the Code Sheet on which the terms searched have been marked along with the machine tape listing the documents retrieved. Any document not actually reviewed will have an "X" drawn through that document's number on the listing.

When conducting a search with the CCMSS search systems, the machine-produced search report, which lists the terms and tagged documents, will be placed in the application file on the right flap of the file jacket. Any tagged document not actually reviewed will have an "X" drawn through that document number on the search report.

B. "SEARCH NOTES" Box Entries

Entries made in the "SEARCH NOTES" box are of equal importance to those placed in the "SEARCHED" box; however, these entries will not be printed on any resulting patent. They are intended to complete the application file record of areas and/or documents considered by the examiner in the search. The examiner will record the following searches in the "SEARCH NOTES" box and in the manner indicated, with each search dated and initialled:

1. *A cursory search,* or scanning, of a subclass, i.e., a search usually made to determine if the documents classified there are relevant. The classification will be recorded, followed by "(Cursory)."
2. *A consultation* with other examiners to determine if relevant search fields exist in their areas of expertise. The class and subclass discussed, if not actually searched, will be recorded, followed by "(consulted)." This entry may also include the name of the examiner consulted and the art unit.
3. *A search of a publication* not located within the classified patent file, e.g., a library search, a text book search, a Chemical Abstracts search, etc. The following data will be recorded for each type of literature search:
   a. *Abstracting publications,* such as Chemical Abstracts or the Engineering Index—the name of the publication, the list of terms consulted in the index and the period covered will be recorded.
   b. *Periodicals*—The title and period or volumes covered, as appropriate will be recorded.
   c. *Books*—The title and author, edition or date, as appropriate, will be recorded.
   d. *Other types of literature* not specifically mentioned above (i.e., catalogs, manufacturer's literature, private collections, etc.).
   Unless the search is a cursory or browsing one, data as necessary to provide unique identification of material searched will be recorded. Specific materials cited by the examiner will not be recorded again here.
   e. *Computer search in Scientific Library*—An on-line computerized literature searching service which uses key terms and index terms to locate relevant publications in many large bibliographic data bases is available to examiners in the Scientific Library of the Patent and Trademark Office. A member of the library staff is assigned to assist examiners in selecting key terms and to program the search.
   There are two on-line search systems: The Lockheed Information Systems and the SDC Search Service.
   These search systems include many data bases.
   A copy of the search printout will be made and placed in the application file, attached to the right flap of the file jacket.

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The examiner will also indicate which publications were reviewed by initialling and dating the copy of the printout in the left margin adjacent to each reviewed publication. If only an abstract of a document was reviewed, the note of "ck'ed abst." will be made next to the initials and date. If the complete document was reviewed, the note "ck'ed doc." will be placed with the initials and date.

4. A search of only the *publications in a subclass.* The class and subclass followed by "(publications only)" will be recorded.
5. *A review of art cited in a parent application* or in an original patent, as required for all continuing and reissue applications, or a review of art cited in related applications or patents mentioned within the specification, such as those included to provide background of the invention. The serial number of a parent application that is still Pending or abandoned, followed by "refs. checked" or "refs. ck'ed" will be recorded. If for any reason not all of the references are checked because they are not available or clearly not relevant, such exceptions will be noted. The patent number of a parent or related application that was patented or of an original patent now being reissued will be recorded along with the expressions "refs. checked" or "refs. ck'ed."

C. Not Recorded

The following data will not be recorded in either of the search boxes, but will be noted in the application file as indicated below:

1. *Citations of prior art by applicants conforming to Rule 98 and the practice thereunder.*
In each instance where all prior art referred to in a paper placed in the application file is considered, the examiner will place the notation "all ck'ed" and his or her initials adjacent to the citation.
2. *Citations of prior art by applicants not conforming to Rule 98 and the practice thereunder.*
In each instance where an examiner considers, but does not cite on form PTO–892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference. If all the references referred to in such a paper are reviewed, the examiner will place the notation "all ck'ed" and his or her initials adjacent the citation. If included in the specification, the examiner will write his or her initials adjacent to any reference(s) checked and enter "checked" or "ck'ed" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" or "ck'ed" will be entered adjacent to the citation(s) or wherever possible to indicate clearly those checked.

RENE D. TEGTMEYER,
Feb. 22, 1977. *Assistant Commissioner for Patents.*

[956 O.G. 1546]

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(101) **Prior Art Cited by Applicants**

Effective immediately, applicants are encouraged to use new form PTO–1449, "List of Prior Art Cited by Applicant," when preparing a prior art statement under 37 CFR 1.97–1.99. A copy of the form is included herewith from which suitable reproductions can be made. This form, which will enable applicants to provide the PTO with a uniform listing of prior art citation, supersedes form PTO–3.72.

While the fil ing of prior art statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 CFR 1.97 through 1.99. To be considered a proper prior art statement, form PTO–1449 shall be accompanied by an explanation of relevance of each listed item, a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all prior art citations submitted in conformance with 37 CFR 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the boxes provided on the form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines and has not been considered. A copy of the submitted form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the examiner will be printed on the issued patent in the same manner as prior art cited by the examiner on form PTO–892.

The reference designations "AA," "AB," etc. (referring to applicant's reference A, Applicant's reference B, etc.) will be used by the examiner in the same manner as examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO–1142.

WILLIAM FELDMAN,
Aug. 15, 1980. *Deputy Assistant Commissioner for Patents.*

[998 O.G. 8]

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(102) **Report on the Quality Reinforcement Program**

The Patent and Trademark Office (PTO) has instituted a Quality Reinforcement Program to identify services offered by the PTO that are in need of improvement. As a part of this program, the Office, in cooperation with the American Intellectual Property Law Association (AIPLA), has completed an evaluation of selected practices performed by both patent examiners and representatives of patent applicants duri ng the examination process. The results of this evaluation are detailed in Volume I of the PTO Report of the Quality Reinforcement Program. A summary of the findings of this report is presented below. This summary is presented to report on the findings and to solicit suggestions from both the public and employees of the Patent & Trademark Office on steps that might be taken to raise the level of performance of those practices found to be in need of improvement. The full report and evaluation, which is quite extensive with over 350 pages, is available at the PTO.

Address: Comments and inquiries should be addressed to: The Commissioner of Patents and Trademarks, Washington, D.C. 20231, to the attention of Edward Kubasiewicz, Director, Examining Group 250, Rm. CP4–9D19.

Date: Comments should be submitted by June 16, 1987.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

SUMMARY OF VOLUME I — REPORT ON CURRENT LEVEL OF PERFORMANCE OF SELECTED PATENT EXAMINING CORPS PRACTICES

This is a summary of Volume I of the Quality Reinforcement Program Report, which addresses the current level of performance of selected Patent Examining Corps practices. This summary presents a background of the Quality Reinforcement Program and a synopsis of conclusions reached for each selected practice.

Background of the Quality Reinforcement Program

On Feb. 25, 1986, President Reagan issued an executive order establishing a comprehensive program for the

improvement of productivity throughout all of government. From this executive order the Department of Commerce evolved a Productivity Improvement Program entitled PROJECT PRIDE. The program was announced as encompassing productivity, quality excellence and client satisfaction.

The role of U.S. Patent and Trademark Office (PTO) in PROJECT PRIDE centers around quality, and is entitled the Quality Reinforcement Program.

The goal of the PTO program is to improve the quality of patent examining functions and the timeliness and quality of other public services. In particular, the program focuses on improving the quality of practices performed in three different areas of the PTO, i.e., the Patent Examining Corps, the Office of Administration and the Office of Documentation.

The quality of an issued patent and the record before the PTO in the patented file are extremely important to the patent owner and to others who may be competitors or otherwise affected by the patent. Investment decisions and the recoupment of research, development and marketing expenditures often depend upon patent protection. Potential licensees and infringers need to know where they stand in regard to an issued patent. Patent owners and others need to be able to have a high degree of confidence in the validity of a patent. Valid patents and a clear and correct file record will help to eliminate unnecessary and expensive patent litigation costs which are currently estimated to total at least $800 million per year.

The concern for productivity and productivity improvement is not a recent development at the PTO. During the past quarter of a century one of the most pressing problems for the Office has been a large and growing backlog of unexamined patent applications and the resulting long pendency time between filing an application and issuance of a patent. The average pendency of patent applications in 1964 was 37 months. However, average pendency dropped steadily in the 1970s until it culminated in an average pendency of 18 months in 1977. This pendency was shortlived due to a loss of adequate resources. However, pendency is once again falling and it is expected that an average pendency of 18 months will be achieved in 1989.

Historically, the Office has successfully responded to situations similar to the one in which it presently finds itself. Beginning in the 1960s when the backlog of new applications exceeded 200,000, a program designed to drastically increase the productivity of the Corps was initiated. Part of that program was what has since become known as "compact prosecution". An increased staff of examiners was reinstructed to take a new approach toward examining in which patentable subject matter was looked for and indicated as early in the prosecution of the case as possible, references were automatically furnished with actions, attorneys were urged to originally file claims of the broadest possible range of scope, telephonic prosecution was instituted, first actions and application disposals became the measure of examiners' performance, preprinted first action forms were designed, etc.

The question before the Office now is whether sufficient attention is being given to quality. The intent of the Quality Reinforcement Program, as it applies to the Patent Examining Corps, is to take stock of the present situation and to consider whether any corrective action needs to be taken to improve the quality of the examination process.

The Office is currently using and improving various tools to assure a quality examined patent. These tools include the quality review program, supervisory reviews of examiner work through the performance appraisal system and through the promotion and signatory authority programs, improved and expanded examiner training, development of the automated patent system to improve the quality of examiner searching, recruitment of "top-of-the-class" new examiners, and detailed and clear guidlines on examining policy and procedure.

The Quality Reinforcement Program is a new quality tool for improving the actual quality of the patents issued as well as the record behind the issuance of these patents. This new program differs from the quality review program in that this program looks at the key pieces of the patent examining process that contribute to and make up the end product or patent rather than looking only at the end product. The Quality Reinforcement Program focuses on the effectiveness and consistency with which examiners apply existing law and procedures and how they communicate their findings to applicants. The program also focuses on the attorney's contribution to this work product. Lastly, the program focuses on the timeliness of some of the services provided by the Corps' clerical support staff. Such focusing is not intended to be carried out one time only. Rather, the methodology used in this program will be applied to any key pieces, identified by PTO personnel or the bar in the future, as needing a review of the type dictated by this program. The aim in short is to build quality and timeliness from the ground up and to maintain them at a high level.

This report presents and analyzes the findings of the Quality Reinforcement Program only as the findings relate to practices performed in the Patent Examining Corps. The portion of the program reported in this volume represents a cooperative effort between the Corps and the American Intellectual Property Law Association (AIPLA) through its Ad Hoc Committee on Quality. The focus is on certain practices involved in the prosecution, examination and processing of patent applications by both the PTO and by patent applicants and their representatives.

Methodology

The methodology adopted for the program comprises the following process:

1. select target practices,
2. determine the current quality or performance level of the target practices,
3. compare the current performance of the target practices to the desired level of performance,
4. implement, where appropriate, steps to raise the current level of performance to the desired level,
5. subsequently, determine the level of performance of the target practices, and
6. compare the current level of performance to the subsequently determined level of performance to determine what, if any, change has occurred.

Target Practices

A number of practices were targeted for the program as a result of complaints and concerns, raised by the bar and PTO personnel. The targeted practices are identified as follows:

A. Explanations of Rejections

This program targeted examiner "explanations of rejections" as a practice to be reviewed based in part on a de-emphasis by the Office on the degree to which examiners were required to include detailed explanations of the supporting rationale behind their rejections during the 1970s. The PTO instituted the use of an abbreviated, handwritten form (PTO–1142) for the preparation of first Office actions during the early 1970s. The form provided for a cryptic description of how the references were being combined in a §103 rejection and provided little space for explanation of the supporting rationale behind rejections. The form was mandatory for all first actions, and was discontinued in 1982 primarily due to complaints from the patent bar and the courts that examiner explanations of rejections were not sufficient. The inclusion of "explanations of rejections" as a targeted practice for this program enables the evaluation of whether further improvement is needed in this area.

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B. Final Rejection Practice

This program targeted "final rejection practice" for review based in part on the conflicting needs of PTO and patent applicants/attorneys in this area of practice. In order to reduce the time applicants must wait to obtain a patent and to increase efficiency of the examination process, the PTO uses various incentives for examiners to make their rejections final early in the prosecution.

To the contrary, patent applicants often desire to have the examiner repeatedly reconsider his or her position or to continue to amend the claims. These conflicting incentives often lead to disputes relating to the propriety and/or timeliness of final rejections and to whether amendments are entered after an action has been made final.

C. Information Disclosure Statements

This program targeted "information disclosure statements" for review based upon concerns expressed by both applicants/attorneys and by the Patent Examining Corps over the submission of these statement.

Patent examiners, in the interest of efficiency and productivity, are benefited by the disclosure to the Office of all material information relating to the patentability of the application prior to their first Office action. However, this must be balanced against the practical reality that applicants/attorneys often don't become aware of material information until later in the prosecution, and don't have readily available translations of foreign documents or copies of documents for submission to the PTO. This practice looks at the extent to which the practical needs of both the PTO and the applicant/attorney are served by the procedures relating to "information disclosure statement".

D. Interviews

This program targeted "interviews" for review to determine the extent to which personal discussions are held between examiners and attorneys and to evaluate whether the parties consider personal interviews to be a productive or helpful means for clarifying issues that may not have been clearly communicated in earlier written communications. Selection of "interviews" as a targeted practice was based in part on isolated complaints by some examiners that interviews were not always productive for them and by some attorneys that some examiners are reluctant to hold interviews.

PTO procedures require that all business with the Office be conducted in writing (37 CFR §1.2). To comply with this rule and still accommodate request for oral discussions with examiners, it is PTO policy that the substance of all personal interviews must be reduced to writing (see §713.04 of the MPEP). Selection of "interviews" as a targeted practice was also based on concerns that the written record include an explanation of the substance of all oral interviews. Under this practice, the program focused on determining the perceptions of examiners and attorneys about interviews.

E. Responses by Applicant

This program targeted "responses by applicant" for review to determine the extent to which practitioners representing patent applicants submit responses to examiner actions that are complete and in compliance with current rules and procedures. Specific activities under this topic, such as the extent to which explanations of why claims are considered unobvious over the art cited by the examiner and the degree of compliance with 37 CFR §1.116 when amendments are presented after a final rejection, were selected based upon some complaints by examiners about attorney responses in these areas.

F. Completeness of the Record

This program targeted "Completeness of the Record" for review based primarily upon the importance of a complete file record to those who must review patented files and make important decisions based upon the facts and determinations therein. The necessity of insuring a complete file record has been urged by such diverse interests as federal court judges, potential licensees, potential infringers, and those attempting to avoid infringement.

This topic looks at the extent to which examiners insure a complete file record by including a statement of reasons for allowance where appropriate, fully and properly record the search of the prior art, and check foreign priority information for accuracy and completeness. This topic does not look at the extent to which examiners explain their rejection; see targeted practice A, "Explanation of Rejections." The extent to which applicants file complete responses is covered in targeted practice E, "Responses by Applicant."

G. Compact Prosecution

This program targeted "Compact Prosecution" for review based upon its importance as a key element in current PTO efforts to reduce pendency time of applications to an average of 18 months. The premise behind compact prosecution is that pendency time will be minimized if each stage of prosecution is fully and thoroughly conducted by both examiners and applicants. The demands of such a standard have inevitably led to complaints from each side relating to the completeness of considerations and the willingness to take that "extra step". Examiners have been criticized for confining searches to only what is literally claimed, and for failing to indicate possible areas of patentability at the earliest possible stage. Applicants have been criticized for failure to claim all limitations that might be considered patentable prior to the initial search by the examiner, for amending the claims to include these limitations only after first action, and for failing to correct significant formal deficiencies prior to initial examination.

H. Appeal Practice

This program targeted "Appeal Practice" for review primarily due to the recent and substantial increase in the backlog of appealed applications awaiting decision by the Board of Patent Appeals and Interferences. Primary emphasis was placed on determining the extent to which appellant's brief and the examiner's answer are formally complete so that expeditious consideration may be given by the Board.

As a result of the high priority being given by the PTO to reduce the backlog of cases at the Board, additional survey questions were included to determine the extent to which additional requirements beyond those currently in effect for the preparation of the appellant's brief and examiner's answer would be useful to examiners and the Board.

I. Allowances After Appeal Brief

This program targeted "Allowances after Appeal" for review in response to complaints that examiners often allow cases after appellant has filed a brief when the cases should have been allowed before the brief was filed.

J. Processing Times

This program targeted "Processing Times" for review based upon its importance to the PTO goal of reducing pendency of patent applications to 18 months.

DETERMINATION OF CURRENT LEVELS OF PERFORMANCE

The step of determining the current level of performance of the targeted practices was accomplished through a number of surveys.

One survey, called the Applications Survey, was an internal factual survey that involved selecting a sample of 150 applications on a random basis from all the examining groups. A survey team, comprising three Supervisory Patent Examiners (SPEs) and three reviewers from Qualtiy Review, performed a detailed review of the applications according to a questionnaire, which was developed with the joint cooperation of the AIPLA Ad Hoc Quality Committee.

A second survey, called the AIPLA Survey, was an opinion questionnaire provided by the AIPLA to 5500 of its members. The questionnaire was developed jointly with the AIPLA Ad Hoc Quality Committee. The AIPLA questionnaire sought the perception of the attorneys of the quality of the work performed by the Corps relative to the targeted practices. Space was provided for the respondents to include comments on the questionnaire. Over 1100 attorneys responded to the questionnaire.

Another survey, called the Examiners Survey, was also an opinion questionnaire provided to all patent examiners and SPEs on a voluntary and anonymous basis. The questionnaire queried the examiners and SPEs about the practices of the practitioners before the PTO. Space was provided for the respondents to include comments on the questionnaire. Over 650 responses were received.

A fourth survey, called the Appeals Survey, was also an internal factual survey. The questionnaire was developed with the cooperation of the AIPLA Ad Hoc Quality Committee. The questionnaire sought data about the practices carried out in the appeal process in the PTO. For this survey, 60 applications were selected on a random basis from all the examining groups. The survey team performed a detailed review of the applications according to the questionnaire.

Three other surveys were used to gather data. All of these surveys were developed and conducted by the Office of Quality Review. Two surveys involved the review of 1878 allowed applications concerning information disclosure statements. Another survey involved the review of 290 applications allowed after appellant had filed an appeal brief, but before an examiner's answer was prepared.

Relative to the processing times, PALM reports were used to obtain data on the practices targeted for this activity.

COMPARISON OF CURRENT LEVELS TO DESIRED LEVELS

The step of comparing the current levels of performance to the desired or standard levels of performance was accomplished by setting out the desired or standard level for each target practice. Next, all the information provided by the surveys was analyzed for each target practice and compared to the desired or standard level for the target practice. The analysis resulted in the following general conclusions. (A detailed listing of all conclusions for each targeted practice is presented in Section VII of Volume I of the Quality Reinforcement Program Report.)

SUMMARY OF CONCLUSIONS

A. Explanations of Rejections

1. **Identification of Statutory Basis for Rejection**
   Over 95% of the rejections under 35 USC §§103 and 112, second paragraph (clarity), cited the statutory basis for the rejection. With respect to rejections under 35 USC §102, 92% of the rejections cited the statutory basis. Hence, no significant improvement is needed in specifying the statutory basis of a rejection based on 35 USC §§102, 103 or 112, second paragraph.
   With respect to rejections under 35 USC §112, first paragraph, 14–19% of the rejections based on a non-enabling disclosure and 42% of the rejections based on new matter failed to cite the statutory basis. Hence, improvement is needed in specifying that a rejection, based on new matter or the lack of an enabling disclosure, is under 35 USC §112, first paragraph.

2. **Explanation of Rejections Based on Prior Art**
   Approximately two-thirds of the rejections reviewed failed to explain why the claimed invention would have been obvious in view of the applied prior art. Over 75% of the attorneys responding to the AIPLA survey perceived rejections under 35 USC §103 as lacking an explanation of why the claimed invention would have been obvious. Moreover, 70 comments from attorneys (the highest for any topic) were critical of the explanations of rejections under 35 USC §103. Hence, significant improvement is needed to assure that rejections based on prior art appropriately communicate the rationale for such rejections.

3. **Explanation of Rejections Under 35 USC §112, First Paragraph, Non-Enabling Disclosure**
   Nineteen percent of all the non-enabling disclosure rejections reviewed failed to give reasons in support of the rejection. Hence, improvement is needed in explaining why a disclosure is non-enabling.

4. **Explanation of Rejections Under 35 USC §112, First Paragraph, New Matter**
   With respect to rejections based on new matter, 35% of the rejections reviewed failed to point out the language considered to be new matter, and 40% of these rejections did not give a reason why the language was considered new matter. Hence, significant improvements are needed in pointing out the language that is considered to be new matter, and explaining why the new matter is not supported by the disclosure as originally filed.

5. **Explanation of Rejections Under 35 USC §112, Second Paragraph**
   Approximately 90% of the rejections reviewed pointed out the claim language considered unclear. Thus, no significant improvement is needed in pointing out *what* claim language is considered unclear in rejections under the second paragraph of §112.
   Twenty-three percent of the non-final rejections reviewed failed to explain why the language was considered unclear. In final actions, 8% of the rejections failed to explain why the language was considered unclear. Hence, improvement is needed in explaining *why* the claim language is considered unclear in rejections under the second paragraph of §112.

6. **Alternative Rejections Under 35 USC §§102/103**
   Three percent of the actions reviewed contained alternative rejections under 35 USC §§102, 103. Ten percent of the examiners' answers re-

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viewed contained similar rejections. The number of alternative rejections under either §102 or §103 was sufficiently low so that no further action is required.

B. Final Rejection Practice

1. **Timely Development of Issues in Examiner and Attorney Communications**

The perception surveys indicate that examiner actions and attorney responses leading up to final rejection do not adequately develop the issues. The objective Applications Survey data indicate that 32% of examiners' non-final actions do not fully respond to all arguments raised by the applicant. Improvement is needed by both examiners and attorneys in fully developing the issues prior to final.

Final rejections were found to treat all claims, but were deficient in answering all arguments presented by the applicant and in treating affidavits and declarations submitted to overcome rejections. Improvement is needed in responding to all issues raised during the prosecution when making a final rejection.

2. **Appropriateness of Final Rejection**

Thirteen percent of the final actions surveyed were considered premature. However, 91% of the final rejections reviewed were considered to be reasonable. Thirty-nine percent of the attorneys responding to the AIPLA survey perceived final actions as proper only occasionally or rarely.

Though examiners appear to be doing an acceptable job in making reasonable and proper final rejections, some improvement is needed. However, attorney perception is substantially lower than the factual findings. This may be due to a desire by attorneys for a more liberal after final procedure rather than improper examiner application of the current procedure.

3. **Advisory Actions**

Advisory actions were found to be mailed in a timely manner.

Thirty-three percent of the amendments filed after final were improperly refused entry. Only 46% of the attorneys responding to the AIPLA survey perceived that reasons given by examiners for the non-entry of amendments after final were clear almost always or most of the time. Moreover, only 50% of these attorneys perceived their response to final rejections to have been given full consideration.

In only 39% of the instances when an amendment to existing claims was entered after final did the advisory action clearly specify the grounds of rejection applicable to the amended claims.

Hence, significant improvements are needed in assuring that amendments after final:

a. are not arbitrarily refused entry,
b. are given sufficient consideration, and
c. communicate the ground of rejection for any claim amended after the final rejection.

C. Information Disclosure Statements

1. **Frequency and Timeliness of Submissions**

Information disclosure statements are submitted either as statements in the specification or as separate papers in approximately 60% of the applications. Eighty-two percent of the statements are submitted prior to the first action. However, 47% are filed more than three months from the filing date. In 1978, just after 37 CFR §1.56 was amended, only 21% of the statements were filed more than three months after the filing date. Twelve percent of applications on appeal had statements filed after the final rejection. Two percent of the statements are filed after the application has been allowed.

Only 11% of the statements filed more than three months after the filing date contained an explanation for the delay.

Hence, significant improvements are needed for assuring that information disclosure statements are filed in a timely manner, and with an explanation for the delay when filed late.

2. **Submission Includes Explanation of Relevancy of Documents**

The explanation of the relevance of the art is substantially below standard whether the citation is incorporated in the specification or is in a separate paper. Hence, significant improvement is needed in assuring that explanations of the relevance of documents cited in information disclosure statements are provided.

3. **Copy of Documents Supplied**

Copies of cited documents, regardless of type, are not provided in approximately 60% of cases when statements are incorporated into the specification. Even when eliminating those statements citing only U.S. patent documents, the Applications Survey still shows a 25% level of noncompliance for specification-incorporated statements. There is a need for improvement in supplying copies of documents cited in specification-incorporated statements.

4. **Translation of Foreign Documents Provided**

Either a translation or a statement that a translation is not readily available is generally not provided when the citation is incorporated in the specification. While compliance with the standard is better when the citation is in a separate paper, compliance is still poor. Improvement is needed.

5. **Form PTO–1449 or Equivalent**

Since the use of PTO form 1449 is not mandatory, this section merely reports the degree to which the form is voluntarily used and is thus informational only. Form PTO–1449 is used in about 70% of disclosure statement submissions when the submission is in a separate paper. The form is used in about 25% of the disclosure statements incorporated in the specification.

6. **Miscellaneous**

Examiners considered art submitted prior to first action in 93% of cases reviewed. Improvement is needed to insure 100% compliance.

While the survey results indicate a perception by examiners that related copending applications are not being fully disclosed, no objective survey data was recorded on this topic. Since attorneys are only required to cite related applications that are *material*, the survey question does not measure perceived performance against the current standard. No conclusions can be reached based upon the survey data.

D. Interviews

1. **Interviews in General**

The results of the AIPLA survey indicate that, of the attorneys responding to the survey,

a. 75% perceived interviews as productive,
b. 89% perceived interviews to be kept as scheduled,
c. 68% perceived examiners to be adequately prepared, and
d. 85% perceived the interview summary form to be completed adequately.

The results of the Examiners Survey indicate that, of the examiners responding to the survey,

a. 53% perceived interviews as productive,
b. 96% perceived interviews to be kept as scheduled,
c. 88% perceived attorneys to be adequately prepared, and
d. 67% perceived attorneys as making the substance of the interview of record.

The survey results indicate that attorneys perceive that examiners are willing to grant at least one interview if timely requested. No need for improvement would appear necessary. A substantial number of attorneys (approximately 30%) feel that examiners are only occasionally or rarely willing to discuss and attempt to resolve substantive issues at interviews. However, examiners often express the desire to reserve commitments until after an interview so that full consideration of all points could be made. It cannot be concluded from the survey data whether examiners could be making more substantive commitments at interviews. No need for improvement is indicated. Some improvement is needed by attorneys in ensuring that an adequate written record of the substance of all interviews is provided.

2. **Telephone Restriction**

As a general policy, the examiner should telephone the attorney of record and request an oral election when making a restriction requirement. In 62% of the restriction requirements reviewed, the policy was followed. However, the telephone is not required to be used when examiners know that an election will not be made by phone. The number of instances of the remaining 38% where no restriction was made for this reason was not determined. Hence, while it appears that some improvement is needed, the degree of need for improvement cannot be determined without further study.

E. Responses by Applicant

1. **Responses under 37 CFR §1.111**

Approximately 90% of the responses reviewed were technically fully responsive to Office actions. However, the percentage of responses that explained why the claimed invention would have been unobvious in view of the prior art was significantly lower. Moreover, some of the comments from examiners indicate that they feel responses often argue references individually rather than address the combination of references set forth in the prior Office action. At least part of this may be due to the lack of an examiner explanation in rejections how references are used and combined.

Hence, no significant improvement is needed in assuring that responses under §1.111 treat all objections and rejections. However, significant improvement is needed in assuring that responses include an explanation of why it would have been unobvious to combine or modify the references in the manner suggested by the examiner.

2. **Responses Under 37 CFR §1.116**

Only 16% of the amendments filed after a final rejection that were reviewed presented a showing of good and sufficient reasons why they were necessary and why they were not presented earlier. Moreover, 48% of the examiners and SPEs responding to the Examiners Survey perceived that attorneys generally do not start serious prosecution or make substantial amendments until after the final rejection.

Hence, significant improvement is needed in assuring that responses under §1.116 explain why an amendment was not presented earlier.

3. **Appeal Briefs — Responses to Rejections**

Ninety-four percent of the briefs reviewed contained an explanation why the examiner's modification of the references would have been unobvious. Hence, no significant improvement is needed in assuring that briefs adequately communicate why the examiner's rejection is considered improper.

4. **Affidavits/Declarations Submitted to Overcome Rejections**

Approximately 20% of affidavits/declarations are not filed in a timely manner. Hence, improvement is needed in assuring that affidavits/declarations are submitted in a timely manner.

Examiner perception of the sufficiency of affidavits to either establish proper "nexus" when asserting commercial success or to present evidence to substantiate an allegation of "secondary considerations" was very low, indicating a need for at least some attorney improvement.

F. Completeness of the Record

1. **Reasons for Allowance**

In 22% of the applications reviewed, the reason for allowance was not clear from the record. Moreover, only 50% of the attorneys responding to the AIPLA Survey perceived the reason for allowance made of record by the examiner, as clearly establishing why the claims were allowed. Hence, significant improvement is needed in assuring that the record clearly explain why the claims were allowed.

2. **Recordation of Searches**

Eighty-five percent of the applications surveyed had search boxes properly filled out by the examiner. Approximately 45% of the applications, wherein an automated search was made, were lacking information about the automated search. Hence, improvements are needed in assuring that the search data are recorded in a complete and accurate manner.

3. **Foreign Priority Data Verified**

The priority/PCT data appearing on the face of the file wrapper were not verified in 23% of the applications reviewed. Hence, a significant improvement is needed in assuring that the priority/PCT data appearing on the file jacket are verified.

G. Compact Prosecution

1. **Adequacy of Applications Prior to First Action**

Applications should be devoid of obvious informalities. Significant improvement is needed in foreign origin applications since 70% of the examiners surveyed perceived foreign applications as containing substantial formal deficiencies almost always or most of the time. However, only 16% of the examiners perceived U.S. origin applications as containing substantial formal deficiencies.

The disclosure should be readily understandable and the claims should clearly define the invention to enable the examiner to conduct an adequate search. Improvement is needed in foreign origin applications since 20% of the examiners surveyed perceive such applications as lacking an adequate disclosure to permit examination almost always or most of the time. However, 97% of these examiners perceive U.S. origin applications as containing an adequate disclosure.

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Claims should be presented that range from the broadest to the most detailed that applicant is willing to accept. Substantial improvement is needed in this area since the Applications Survey shows that only approximately 60% of the applications surveyed contained such a range of claims.

2. **Searches**

The first search should cover the invention as described and claimed. Substantial improvement is needed in conducting a more thorough search at the time of the first action since 50% of the applications surveyed revealed newly applied art in subsequent actions that should have been applied in a previous action.

A search should be made in the issuing class/subclass. Improvement is needed in this area because 11% of the allowed applications reviewed did not indicate that the issuing class/subclass was searched.

3. **Indication of Allowable Subject Matter**

Examiners should communicate certain aspects or features of applicant's invention that if properly claimed would receive favorable consideration. Significant improvement is needed in this area since only 59% of the applications that were deemed appropriate for an indication of allowable subject matter had such an indication.

H. Appeal Practice

1. **Appellant's Brief — Format**

Ninety-five percent of the briefs reviewed contained a concise explanation of the invention. However, only 46% of the explanations contained a reference back to the drawings and/or specification. Hence, a significant improvement is needed in assuring that appellant's explanation of the invention refers to the drawing and/or specification. Ninety-five percent of the briefs reviewed contained a copy of the claims. Hence, no significant improvement is needed in assuring that appellants provide a copy of the claims on appeal.

In addition, formal matters that are not currently required in briefs were found to be included in the surveyed briefs to the following extent,

a. 27% of the briefs included a separate summary of the issues on appeal,
b. 53% of the briefs included a citation of the references as well as an explanation of each reference,
c. 7% of the briefs included a reference back to the drawings or specification in the copy of the claims presented in the brief; however, 58% of the examiners surveyed thought that an appeal brief would be more useful if the claims on appeal were read on the drawings or specification, and
d. 2% of the briefs pointed out an exemplary claim; however 60% of the examiners surveyed thought that an appeal brief would be more useful if appellant is required to state whether all the claims on appeal stand or fall together.

The formal requirements of the brief should be reviewed to determine if these additional requirements would improve the manner in which issues on appeal and evidence in support thereof are set forth in the brief.

2. **Examiner's Answer — Format**

Ninety percent of the answers surveyed identified the status of all the claims in the applications. One hundred percent of the answers cited all the references relied upon in the appeal and pointed out any deficiencies in the copy of the claims provided by appellant. Hence, no significant improvements are needed in the format of the examiners' answers, as measured against the formal requirements for examiner's answers.

In addition, formal matters that are not currently required in examiner's answers were found to be included in the surveyed answers to the following extent,

a. 15% of the answers included a summary of the issues on appeal,
b. 40% of the answers included an explanation of the invention, and
c. 28% of the answers included an explanation of the references.

The formal requirements of the examiner's answer should be reviewed to determine if these additional requirements would improve the manner in which issues on appeal and evidence in support thereof are set forth in the examiner's answer.

3. **Examiner's Answer — Completeness**

Seventy-two percent of the answers reviewed responded to every significant argument raised in the briefs. Hence, a significant improvement is needed in assuring that examiners' answers respond to every significant argument/issue raised by appellants.

4. **Post Examiner's Answer Practice**

The Appeals Survey shows that a substantial number of reply briefs are merely noted with no further comment by the examiner. The findings are inconclusive regarding the propriety of the reply briefs or whether reply briefs are being treated properly by examiners.

I. Allowance After Appeal Brief

Thirty-nine percent of applications allowed after an appeal brief had been filed were found to have no change in appellant's position. Hence, significant improvement is needed in assuring that applications are allowed at the earliest appropriate stage of prosecution.

J. Processing Times

1. **Mailing of Office Actions**

Substantial improvement in mailing Office actions earlier than one month from the day when the examiners are given credit for the Office action has been accomplished since the inception of the Quality Reinforcement Program.

2. **Mailing of Notices of Allowance**

Substantial improvement in assuring that Notices of Allowances are mailed promptly has been accomplished since the inception of the Quality Reinforcement Program.

3. **Responses to Amendments After Final**

Substantial improvement in mailing responses to amendments after final has been accomplished since the inception of the Quality Reinforcement Program.

Perceptions

In addition to reaching conclusions on the current level of performance of each target practice, the program determined the opinions of patent examiners and representatives of applicants on various topics involved in the examination process. A summary of their perceptions is presented below.

Examiner legal proficiency was perceived by attorneys to be in definite need of improvement.

Examiner technical competency, care in doing the job, and neatness of attire were perceived by attorneys as more positive than negative, but in need of improvement.

Clerical competency and care in doing the job were perceived by attorneys to be in definite need of improvement.

Clerical functions including neatness of attire, cooperativeness, courteousness and availability were perceived as being more positive than negative, but with substantial room for improvement.

Attorney handling of foreign origin applications was perceived by examiners to be deficient in preparation of the case for examination. Attorney practices including continued prosecution after final, interview practice, submission of information disclosure statements and explanation of reasons for disagreement with §103 rejections were also of concern to examiners.

[1078 OG 22]

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(103) **Report on Results of an Oct. 1985—Feb. 1986 Survey on the Citation by Applicants of Information Disclosure Statements in Patent Applications**

This report summarizes the data compiled from a sample of 1200 allowed utility applications surveyed in the Office of Quality Review during the period of Oct. 1, 1985 to Feb. 14, 1986.

For purposes of the survey, a "citation", whether appearing in the specification or in a separate paper, is defined as either (1) a listing of patents or publications together with a concise explanation of the relevance of each listed item (i.e. an "information disclosure statement" under 37 CFR 1.98(a)), or (2) a "mere listing" of patents or publications. In addition, a "reference", or "document", is defined as any patent or other publication cited by applicant.

This survey report is similar to and presented in the same general format as the survey reports published in the Official Gazette of Nov. 23, 1976, pages 1356 and 1357, of Sept. 26, 1978, pages 22 and 23, and of Aug. 12, 1980, pages 8 and 9. It should be noted, however, that the phrase "prior art statement" used throughout the three previous survey reports has been replaced by the more appropriate phrase "information disclosure statement" reflecting the current terminology of 37 CFR 1.97–1.99 as amended.

This survey indicates, among other things, that 60% of the sampled applications include citations by applicants. This is somewhat less than the 63% finding in the survey reported in the 1980 O.G. and the 64% finding in the 1978 survey but still represents an improvement over the 54% finding in the 1976 survey. In addition, more citations are being submitted later in the prosecution than previously. The percentage of applications having citations submitted in separate papers has increased while the percentage of applications having such papers submitted within three months of the filing of an application is down from 79% in 1978 and 73% in 1979 to 53% presently. Also, while the percentage of applications having citations accompanied by copies of references cited has increased, overall compliance with Office guidelines has decreased.

A separate, recent informal review of citations made after allowance similarly indicated frequent noncompliance with the guidelines of Section 609 of the Manual of Patent Examining Procedure. Often, citations were in the form of prior art search reports made by foreign patent offices many months or years earlier, submitted without copies of the references, discussion of materiality, or any explanation for the late submission. The Office is presently considering action to remedy these problems.

The statistics are otherwise presented without comment as follows:

		Chem.	Elec.	Mech.	Total
(1)	Number of applications in sample	350	415	435	1200
	(Percent of total sample)	29%	35%	36%	100%
Number of applications having citations submitted in:					
(2)	Separate papers only	69	82	82	233
	(Percent of sample 2/1)	20%	20%	19%	19%
(3)	Both separate paper *and* in specification	41	60	44	145
	(Percent of sample 3/1)	12%	14%	10%	12%
(4)	The specification only	121	94	121	336
	(Percent of sample 4/1)	35%	23%	28%	28%
(5)	Total number of applications having citations	231	236	247	714
	(Percent of sample 5/1)	66%	57%	57%	60%

Application in which the applicant submitted citations in the *specification*.

		Chem.	Elec.	Mech.	Total
(6)	Number of applications including citations in the specification	162	154	165	481
	(Percent of applications having citations in the specification 6/1)	46%	37%	38%	40%
(7)	Number of applications including mere listing of references in the specification	12	6	17	35
	(Percent of applications having mere listing of references in the specification 7/1)	3%	1%	4%	3%
(8)	Number of applications including information disclosure statements in the specification	150	148	148	446
	(Percent of applications having disclosure statements in the specification 8/1)	43%	36%	34%	37%
(9)	Number of applications including information disclosure statements in the specification which included copies of the references	67	55	65	187

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	(Percent of applications, with disclosure statements in the specification, having copies of the references 9/8)	45%	37%	44%	42%
(10)	Number of applications including information disclosure statements in the specification which comply fully with the guidelines (37 CFR 1.97–1.99; MPEP §609) (e.g. timely filed, translations where applicable, etc.)	46	45	40	131
	(Percent of applications, with disclosure statements in the specification, which fully comply with CFR and MPEP 10/8)	31%	30%	27%	29%
(11)	Number of applications including information disclosure statements citing non-English documents in the specification	60	36	31	127
	(Percent of applications, with disclosure statements in the specification, citing non-English documents 11/8)	40%	24%	21%	28%

Applications in which applicant submitted citations in *separate papers.*

		Chem.	Elec.	Mech.	Total
(12)	Number of applications including citations in a separate paper	110	142	126	378
	(Percent of applications having citations in separate papers 12/1)	31%	34%	29%	32%
(13)	Number of applications including separate paper citations submitted within 3 months of the filing date of the application	48	[redacted]	65	201
	(Percent of separate paper citations submitted within 3 months 13/12)	43%	62%	52%	53%
(14)	Number of applications including separate paper citations which include a copy(s) of the reference(s)	103	134	114	351
	(Percent of separate paper citations including copy(s) of the reference(s) 14/12)	94%	94%	90%	93%
(15)	Number of applications including separate paper citations which cited a non-English document	47	53	43	143
	(Percent of separate paper citations citing non-English documents 15/12)	43%	37%	34%	38%
(16)	Number of applications including separate papers with information disclosure statements	88	100	81	269
	(Percent of separate paper citations having disclosure statements 16/12)	80%	70%	64%	71%
(17)	Number of applications including separate paper citations which fully comply with the guidelines (37 CFR 1.97–1.99; MPEP §609)	31	58	37	126
	(Percent of separate paper citations which fully comply with CFR and MPEP 17/12)	28%	41%	29%	33%

Applications in which applicant submitted *more than ten* citations.

		Chem.	Elec.	Mech.	Total
(18)	Number of applications having more than ten citations	32	25	22	79
	(Percent of applications having more than ten citations 18/1)	9%	6%	5%	7%

Aug. 15, 1986.

DONALD J. QUIGG,
Commissioner of Patents and Trademarks.

[1070 OG 24]

(104) **Express Abandonments**

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138

Since 1966, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attor ney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP). Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(i) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Apr. 7, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 2]

(105) **Notice of Abandonment for Failure to Prosecute Application**

Effective immediately the Patent Examining Corps will mail a communication, concerning all applications becoming abandoned in the Corps for failure to prosecute, to the correspondence address of record.

The communication to be mailed will merely comprise a copy of the first page of the Office action, to which applicant failed to properly respond, the copy including stamped language thereon indicating that the application has become abandoned and the date that the copy was mailed. The language stamped on the copy will be as follows: APPLICATION HAS BECOME ABANDONED. THIS NOTICE MAILED: _____ In no case will the mere failure to receive a notice of abandonment affect the status of an abandoned application.

This new procedure should enable applicants to take appropriate and diligent action to reinstate an application inadvertently abandoned for failure to timely respond to an official communication. In most cases, a petition to revive under 37 CFR 1.137 will be the appropriate remedy. It may be that a response to the Office action was mailed to the Office with a certificate of mailing declaration as a part thereof (notice of October 26, 1976: 951 O.G. 1342) but was not received in the Office. In this instance, adequate relief may be available by means of a petition to withdraw the holding of abandonment.

In any instance, if action is not taken promptly after receiving the notice of abandonment, appropriate relief may not be granted.

If a lack of diligent action is predicated on the contention that neither the Office action nor the notice of abandonment was received, one may presume that there is a problem with the correspondence address of record. Accordingly, your attention is directed to recent notices of May 28, 1975, and September 9, 1976, dealing with changes of address (935 O.G. 1352 and 951 O.G. 454). In essence, it is imperative that a paper notifying the Office of a change of address be filed promptly in *each* application in which the correspondence address is to be changed.

If an application is abandoned or a patent lapsed for an excessive time a terminal disclaimer may be required. A terminal disclaimer may also be required where the holding of abandonment or lapse is withdrawn but a determination is made that action attempting to correct the problem should have been taken in a more diligent manner.

WILLIAM FELDMAN,
May 9, 1977. *Deputy Assistant Commissioner for Patents.*

[959 O.G. 24]

(106) **Requirement for a Response Under 37 CFR 1.136 and 1.137 Where a Continuing Application is Being Filed.**

This notice is intended to clarify the requirements for a response as required by 37 CFR 1.136 or 1.137 in situations involving a petition for extension of time or a petition to revive an abandoned application for the purpose of filing a continuing application.

In those instances where an extension of time or a revival of an abandoned application is sought solely for the purpose of filing a continuing application under 35 U.S.C. 120 and where the prior application is to be abandoned in favor of the continuing application, the filing of a response as required by 37 CFR 1.111, 1.113, 1.192 or other regulation is considered to be an unnecessary expenditure of resources by the applicant. Accordingly, in these situations, the Patent and Trademark Office will accept the filing of a continuing application as a response under 37 CFR 1.136 or 1.137.

To facilitate processing by the Office, any such petition for extension of time or petition to revive should specifically refer to the filing of a continuing application and also include an express abandonment of the prior application conditioned upon the granting of the petition and the granting of a filing date to the continuing application.

GERALD J. MOSSINGHOFF,
May 13, 1983. *Commissioner of Patents and Trademarks.*

[1031 OG 11]

(107) **Petitions Under 37 CFR 1.183 to Waive One the Year Time Period Requirement in 37 CFR 1.137(b), 1.155(c) and 1.316(c)**

Petitions to revive an unintentionally abandoned application (37 CFR 1.137(b)) or to accept an unintentionally late paid issue fee (37 CFR 1.155(c) or 1.316(c)) must befiled within one year of the date on which the application became abandoned.

In the last sentence of the above-noted subsections of 37 CFR, the Commissioner of Patents and Trademarks has indicated that petitions under 37 CFR 1.183 to

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waive any time period requirements for filing a request pursuant to these subsections will not be considered, but will be returned to the applicant. However, it has become apparent that under certain very limited conditions, the interests of the patent system would be better served by considering such petitions.

These very limited conditions arise when an application becomes abandoned due to an action or inaction by applicant and the Patent and Trademark Office performs a positive, documented and Official act* (e.g., by issuing an Official document) which could lead a reasonable individual to conclude that the action or inaction was appropriate. If this conclusion is a contributing factor in the applicant's failure to realize the true, abandoned status of his application in time to file a petition under one of the above-noted subsections, then conditions exist under which a §1.183 petition will be considered.

For example, if an applicant files papers for a continuing application under 37 CFR 1.60 or 1.62 on a date when the parent application is abandoned (e.g., the applicant neglected to obtain an extension of time in the parent application), the requirements of these regulations are not satisfied and the papers should not be processed into an application. However, if in spite of this error the Office issues a filing receipt for the continuing application, a reasonable individual could conclude that the continuing application had been properly filed on a date when the parent application was pending. Further, if the lack of copendency between the parent and the continuing applications is not discovered until after one year from the date on which the parent application became abandoned, the opportunity to obtain copendency by reviving the parent application under 37 CFR 1.137(b) is lost. As an additional example, if an applicant submits a check for payment of the issue fee and the payment is improper (e.g., the check is not timely submitted or is returned to the Office unpaid due to insufficient funds), the application should be held abandoned. However, if in spite of the improper issue fee payment the Office issues the application as a patent, a reasonable individual could conclude that the issue fee payment had been proper. Further, if the improper issue fee payment is not discovered until after one year from the date on which the application became abandoned, the opportunity to request acceptance of a late paid issue fee under 37 CFR 1.155(c) or 1.316(c) is lost.

The abandonment problems described in the above-noted examples are clearly attributed to an error on the part of the applicant. Nevertheless, such a problem could be aggravated when the Office performs a positive. documented and Official act* which, in the circumstances recounted above, may be a contributing factor in the loss of an opportunity to rectify this problem by filing a petition under one of the above-noted subsections. In light of these factors, the Commissioner will exercise his authority under 37 CFR 1.183 to waive the one year period requirement for filing a petition pursuant to 37 CFR 1.137(b), 1.155(c) or 1.316(c) providing the following strictly limited conditions are present:

(1) The applicant's action or inaction which caused the application to become abandoned was clearly an unintentional oversight which resulted from a bona fide attempt, as evidenced by Patent and Trademark Office records, to comply with patent statutes, rules and procedures in order to keep the application pending as desired; and

(2) The Office performed a positive, documented and Official act* which could lead a reasonable individual to conclude that the action or inaction was proper and this conclusion was a contributing factor in the applicant's failure to realize the true abandoned status of his application in time to file a petition under one of the above-noted subsections; and

(3) A petition under 37 CFR 1.183 and one of the above-noted subsections is filed within three (3) months of the date applicant is notified by the Office or otherwise becomes aware of the abandoned status of the application; and

(4) The petition is accompanied by a terminal disclaimer with fee under 37 CFR 1.321 dedicating to the public a terminal part, equivalent to the period of abandonment, of the term of any patent granted on the application or on any application entitled to the benefit of the filing date of the application under 35 USC 120.

For a transitional period of three (3) months from the date of this Notice, the requirement for filing a petition within three (3) months of the date referred to in condition (3), above, will not be enforced providing:

(a) the abandoned application could have been restored to pending status if a petition under one of the above-noted subsections had been timely filed; and

(b) the applicant made a bona fide attempt, as evidenced by Patent and Trademark Office records, to restore the abandoned application to pending status within three months of the date applicant was notified by the Office or otherwise became aware of the abandoned status of the application.

Applicants should note that this is intended to be a very limited extension of the Commissioner's discretion in exercising his authority to waive the one year period required under the above-mentioned subsections. For this reason, the above-noted conditions and provisions will be strictly adhered to and any petition under §1.183 which fails to comply with these conditions or provisions will be denied.

*NOTE: THE FAILURE OF THE PATENT AND TRADEMARK OFFICE TO SEND AN OFFICIAL COMMUNICATION (E.G., A NOTICE OF ABANDONMENT) IS *NOT* CONSIDERED TO BE A POSITIVE, DOCUMENTED AND OFFICIAL ACT WITHIN THE MEANING OF THIS NOTICE.

JAMES E. DENNY,
Aug. 26, 1985. *Deputy Assistant,*
Commissioner for Patents.

[1059 OG 4]

(108) **Procedure for Handling Amendments under 37 CFR 1.116**

On Oct. 1, 1982, pursuant to Public Law 97–247, the Patent and Trademark Office discontinued the previous practice in patent applications of extending without fee the shortened statutory period for response to a final rejection upon the filing of a timely first response to a final rejection (37 CFR 1.116). Since Oct. 1, 1982, applicants are able to obtain additional time for a first or subsequent response to a final rejection by petitioning and paying the appropriate fee under 37 CFR 1.136(a), provided the additional time does not exceed the six month statutory period.

In order to continue to encourage the early filing of any first response after a final rejection and to take care of any situations in which the examiner does not timely respond to a first response after final rejection which is filed early in the period for response, the Office is changing the manner in which the period for response is set on any final rejection mailed after Feb. 27, 1983.

Under the changed procedure, if an applicant initially responds within two months from the date of mailing of any final rejection setting a three-month shortened statutory period for response and the Office does not mail an advisory action until after the end of the three-month shortened statutory period, the period for response for purposes of determining the amount of any extension fee will be the date on which the Office mails the advisory action advising applicant of the status of the application, but in no event can the period extend beyond six months from the date of the final rejection. This procedure will apply only to a first response to a final rejection and will be implemented by including the following language in each final rejection mailed after Feb. 27, 1983:

A shortened statutory period for response to this final action is set to expire three months from the date of this action. In the event a first response is filed within two months of the mailing date of this final action and the advisory action is not mailed until after the end of the three-month shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than six months from the date of this final action.

For example, if applicant initially responds within two months from the date of mailing of a final rejection and the examiner mails an advisory action before the end of three months from the date of mailing of the final rejection, the shortened statutory period will expire at the end of three months from the date of mailing of the final rejection. In such a case, any extension fee would then be calculated from the end of the three-month period. If the examiner, however, does not mail an advisory action until after the end of three months, the shortened statutory period will expire on the date the examiner mails the advisory action and any extension fee may be calculated from that date.

Statutory periods set in Office actions mailed before Feb. 28, 1983, will not be effected by this change in procedure.

GERALD J. MOSSINGHOFF,
Jan. 14, 1983. *Commissioner of Patents*
and Trademarks.

[1027 OG 71]

(109) **Expedited Procedure for Processing Amendments and Other Responses After Final Rejection (37 CFR 1.116)**

In an effort to improve the timeliness of the processing of amendments and other responses under 37 CFR 1.116, and thereby provide better service to the public, the Patent and Trademark Office (PTO) is establishing, effective immediately, an expedited processing procedure which the public may utilize in filing amendments and other responses after final rejection under 37 CFR 1.116. In order for an applicant to take advantage of the expedited procedure the amendment or other response under 37 CFR 1.116 will have to be marked as a "Response Under 37 CFR 1.116 — Expedited Procedure-Examining Group (Insert Examining Group Number)" on the upper right portion of the amendment or other response and the envelope must be marked "Box AF" in the lower left hand corner. The markings preferably should be written in a bright color with a felt point marker. If the response is mailed to the Office, the envelope should contain only responses under 37 CFR 1.116 and should be mailed to "Box AF, Commissioner of Patents and Trademarks, Washington, D.C. 20231." Instead of mailing the envelope to "Box AF" as noted above, the response may be hand-carried to the particular Examining Group or other area of the Office in which the application is pending and marked on the outside envelope "Response Under 37 CFR 1.116 — Expedited Procedure-Examining Group (Insert Examining Group Number)".

Upon receipt by the PTO from the Postal Service of an envelope appropriately marked "Box AF," the envelope will be specially processed by the PTO Mail Room and forwarded promptly to the Examining Group, via the Office of Finance if any fees have to be charged or otherwise processed. Upon receipt of the response in the Examining Group it will be promptly processed by a designated clerical employee and forwarded to the examiner, via the Supervisory Primary Examiner (SPE), for action. The SPE is responsible for ensuring that prompt action on the response is taken by the examiner. If the examiner to which the application is assigned is not available and will not be available for an extended period, the SPE will ensure that action on the application is promptly taken to assure meeting the PTO goal described below. Once the examiner has completed his or her consideration of the response, the examiner's action will be promptly typed and mailed by clerical employees designated to expedite the processing of responses filed under this procedure. The Examining Group supervisory personnel, e.g., the Supervisory Primary Examiners, Supervisory Applications Clerk, and Group Director are responsible for ensuring that actions on responses filed under this procedure are promptly processed and mailed.

The PTO goal is to mail the examiner's action on the response within one month from the date on which the amendment or response is received by the PTO. The PTO is establishing monitoring procedures to determine how well the goal is being achieved. If the goal of mailing the action on the response within one month or less is not achieved in a high percentage of applications, e.g., at least 90–95% of appropriately marked responses, after a reasonable trial period, the PTO will institute further changes in procedures in the future which will give approprite relief to applicants in cases where the delay is due to Office processing.

Applicants are encouraged to utilize this expedited procedure in order to facilitate PTO processing of responses under 37 CFR 1.116. If applicants do not utilize the procedure by appropriately marking the envelope and enclosed papers, the benefits expected to be achieved therefrom will not be attained. The procedure cannot be expected to result in achievement of the goal in applications in which the delay results from actions by the applicant, e.g., delayed interviews, applicant's desire to file a further response, or a petition by applicant which requires a decision and delays action on the response. In any application in which a response under this procedure has been filed and no action by the examiner has been received within the time referred to herein, plus normal mailing time, a telephone call to the SPE of the relevant Group Art Unit would be appropriate in order to permit the SPE to determine the cause for any delay. If the SPE is unavailable or if no satisfactory response is received, the Group Director of the Examining Group should be contacted.

Any comments on this expedited procedure during the trial period are invited and should be directed to the attention of Rene D. Tegtmeyer, Assistant Commissioner for Patents, U.S. Patent and Trademark Office, Washington, D.C. 20231.

DONALD J. QUIGG,
Sept. 20, 1985. *Commissioner of Patents and*
Trademarks — Designate.

[1059 OG 19]

(110) **New Procedures for Recordation of Interviews**

This notice establishes within the Patent and Trademark Office additional general procedures for the recordation of interviews. Proposed procedures were published in the Official Gazette of June 28, 1977 (959 O.G. 36) for comment from interested members of the public by August 10, 1977. Fifteen written comments were received the majority of which were favorable to the proposed procedures. Careful consideration has been given to the comments and the procedures are being adopted with a few changes.

Under present practice it is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability as set forth in section 713.04 of the Manual of Patent Examining Procedure

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(MPEP). This practice is continued and further amplified as set forth below.

Recent surveys have indicated that the substance of many interviews has not been made of record or the text thereof is incomplete as to substantive matters. In some cases, the substance of an interview may be presented as arguments in a subsequent response filed by the applicant but without any indication that they had been presented at the interview. In order to help insure a better record of examiner-applicant interviews in application files, the following new procedures are adopted to become effective for interviews conducted on and after January 1, 1978. Appropriate changes will be made in the Manual of Patent Examining Procedure (MPEP).

Examiners will complete a two-sheet carbon interleaf Interview Summary Form for each interview held where a matter of substance has been discussed by checking the appropriate boxes and filling in the blanks in neat handwritten form. Discussions regarding only procedural matters, directed solely to restriction requirements (for which interview recordation is otherwise provided for in Section 812.01 of the MPEP), or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the file and listed on the "Contents" list on the file wrapper. The docket and serial register cards will not be updated to reflect this interview. In a personal interview, the duplicate copy of the Form will be removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy will be mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner before an allowance is not likely or if other circumstances dictate, the Form will be mailed promptly after the telephonic interview rather than with the next official communication. The original of the completed Form will be made of record and placed in the right hand flap of the file.

The Form provides for recordation of the following information:

—Serial Number of the application
—Name of applicant
—Name of examiner
—Date of interview
—Type of interview (personal or telephone)
—Name of participant(s) (applicant, attorney or agent, etc.)
—An indication whether or not an exhibit was shown or a demonstration conducted
—An identification of the claims discussed
—An identification of the specific prior art discussed
—An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
—The signature of the examiner who conducted the interview
—Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner will check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

The complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted.
2) an identification of the claims discussed.
3) an identification of specific prior art discussed.
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner.
5) a brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner.
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will take appropriate action as set forth in MPEP Section 713.04. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 21]

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(111) **Viewing of Video Tapes During Interviews**

The Patent and Trademark Office has video tape equipment available in the facilities of the Patent Academy for viewing video tapes from applicants during interviews with patent examiners.

The video tape equipment may use VHS and UHS (½ inch tape) cassettes.

Attorneys or applicants wishing to show a video tape during an examiner interview must be able to demonstrate that the content of the video tape has a bearing on an outstanding issue in the application and its viewing will advance the prosecution of the application. Prior approval of viewing of a video tape during an interview must be granted by the SPE. Also, use of the room and equipment must be granted by the Training Manager to avoid any conflict with the Patent Academy.

Requests to use video tape viewing equipment for an interview should be made at least one week in advance to allow the Patent Academy staff sufficient time to ensure the availability and proper scheduling of both a room and equipment.

Interviews using Office video tape equipment will be held only in the Academy facilities located in One Crystal Park, Rm. 502. Attorneys or applicants should not contact the Patent Academy directly regarding availability and scheduling of video equipment. All scheduling of rooms and equipment should be done through and by the examiner conducting the interview.

RENE D. TEGTMEYER,
May 6, 1986. *Assistant Commissioner for Patents.*

[1067 OG 4]

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(112) **Statements Filed Under Atomic Energy Act And NASA Act**

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (*a*) the full facts in regard to the making or conception of the invention, and (*b*) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an applicaton which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have firsthand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
Aug. 13, 1973. *Deputy Assistant Commissioner for Patents.*

[914 O.G. 2]

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(113) **NOTICE OF CHANGES IN THE ADMINISTRATION OF 42 U.S.C. 2182 AND 2457 (PROPERTY RIGHTS STATEMENTS TO DOE AND NASA).**

Effective Nov. 1, 1986, the PTO will change the procedures under which property rights statements to the Department of Energy (DOE), 42 U.S.C. 2182, or National Aeronautics and Space Administration (NASA), 42 U.S.C. 2457 are requested and processed. These statements are required before a patent can issue on any invention useful in the production or utilization of special nuclear material or atomic energy (for the Department of Energy) or having significant utility in the conduct of aeronautical and space activities (for the National Aeronautics and Space Administration).

Currently, the PTO waits until after an application is otherwise in condition for allowance before property rights statements are requested. Under the new procedure, if a statement is necessary, an informal request for the statement will be issued shortly after filing. The request will identify which chapter(s) of the statute apply and an informal period of 45 days will begin running from the mail date of the notice.

If no response is received within 45 days, a formal notice will be issued. The statutory period for response to the formal notice is 30 days. There is no provision for extension of this time limit, and the penalty for failure to file an acceptable, timely statement is abandonment. In view of these strict time limits and penalties, applicants are strongly urged to take advantage of the period for informal correspondence by responding to the so-called 45-Day Letter. Additionally, the new 45-Day Letter will provide extensive information on the format and content of an acceptable statement. This should relieve many of the difficulties applicants currently experience in generating the statement. See also 914 OG. 2 for additional information on the form and content of property rights statements.

The statement should be an accurate reflection of the ownership of the invention on which patent protection is granted. Thus, if during prosecution before the examiner the claimed invention is so changed or the property rights situation so altered as to impact the accuracy of a statement submitted earlier, a supplemental statement must be filed. In those rare situations where property rights may be changed by an amendment to the claims after the statement has been filed, applicants are reminded that failure to submit such additional information where appropriate may be considered a false representation of material facts and render the patent owner vulnerable to sanctions as set forth in the above statutes. The PTO will not review applications for this possibility. The responsibility for complying with the statutes rests with the applicants.

The text of the new 45-Day Letter is reproduced below.

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The subject matter of this application appears to:

— be "useful in the production or utilization of special nuclear material or atomic energy " as recited in 42 U.S.C. 2181 (Department of Energy (DOE)).
— have significant utility in the conduct of aeronautical and space activities as recited in 42 U.S.C. 2457 (National Aeronautics and Space Administration (NASA)).

Accordingly, no patent can issue on this application unless applicant(s) file a statement (under oath or in the form of a declaration as provided by 37 CFR 1.68) setting forth (1) the full facts concerning the circumstances under which the invention was made and conceived and (2) the relationship (if any) of the invention to the performance of any work under any contract or other arrangement with the Agency(ies) noted above. On the reverse side of this form is an example of an acceptable format for this statement. The language appearing in paragraphs III and/or IV of the example *must* appear if applicant is attempting to establish that no relationship (under item 2 above) exists.

If the invention disclosed in this application was developed under a contract, grant or cooperative agreement between the Agency(ies) indicated above and a person, small business or nonprofit organization and rights to the invention have been determined by specific reference to 35 U.S.C. 202 in the contract, grant or cooperative agreement, then applicant need not submit the statement described above. Instead, applicant may file a verified statement (under oath or in the form of a declaration, 37 CFR 1.68) setting forth the information required by 35 U.S.C. 202(c)(6).

IF NO STATEMENT HAS BEEN RECEIVED WITHIN FORTY-FIVE DAYS OF THE MAIL DATE INDICATED ABOVE, a formal requirement for statement will then be issued. No provision is made for extension of the statutory thirty-day period for response to the formal requirement and the penalty for failure to file an acceptable and timely statement is abandonment of the application. Therefore, applicants are strongly encouraged to submit a statement at this time in order to avoid the issuance of a formal requirement.

IT IS IMPORTANT TO NOTE that the statement must accurately represent the property rights situation of the claimed invention if and when the application is found allowable. Thus, if during prosecution before the examiner, the claimed invention is so altered or the property rights situation so changed as to impact the accuracy of a statement submitted earlier, a supplemental statement must be filed. Failure to submit such additional information where appropriate may be considered as false representation of material facts and render the patent owner vulnerable to loss of patent rights and other sanctions as set forth in the statutes. The PTO will not review allowed applications for this possibility. The responsibility for complying with the statutes rests with the applicants.

Any questions regarding this requirement should be directed to Licensing and Review at (703) 557–4948.

• • • • •

The following is an example of an acceptable property rights statement. Statements of this type are, of course, only suitable for situations in which *NO* Agency funds or other considerations were involved in the making or conception of the invention. While this example is in the form of a declaration, a sworn document is equally acceptable.

• • • • •

I (We)_____,
citizens of _____residing at _____,
declare:

That I (we) made and conceived the invention described and claimed in patent application Serial Number _____filed in the United States of America on _____, titled _____

_____

(Check and complete either I. or II. below)

____I. (For Inventors Employed by an Organization)

That I (we made and conceived this invention while employed by _____

That the invention is related to the work I am (we are) employed to perform and was made within the scope of my (our) employment duties;

That the invention was made during working hours and with the use of facilities, equipment, materials, funds, information and services of (name of employer)
Other relevant facts are _____

That to the best of my (our) knowledge and belief (and/or based upon information provided by _____
of _____):

—OR—

____II. (For Self-Employed Inventors)

that I (we) made and conceived this invention on my (our) own time using only my (our) own facilities, equipment, materials, funds, information and services.
Other relevant facts are _____

That to the best of my (our) knowledge and belief:

(Check III and/or IV below as appropriate)

____III. The invention was not made or conceived in the course of, or in connection with, or under the terms of any contract, subcontract or arrangement entered into with or for the benefit of the United States Atomic Energy Commission or its successors: Energy Research and Development Administration or the Department of Energy.

—AND/OR—

____IV. The invention was not made (conceived or first actually reduced to practice) under nor is there any relationship of the invention to the performance of any work under any contract of the National Aeronautics and Space Administration.

The undersigned inventor(s) declare further that all statements made herein of his or her (their) own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Inventor's Signature:
Post Office Address:
Date:

Inventor's Signature:
Post Office Address:
Date:

• • • • •

Information regarding these changes in the processing of property rights statements may be obtained by calling or writing Mr. Kenneth L. Cage, Director, Special Laws Administration, Group 220, Washington, D.C. 20231 (703–557–2877).

DONALD J. QUIGG,
Sept. 16, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1071 OG 14]

(114) **Extension of Time Limit**

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(c), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

WILLIAM FELDMAN,
Nov. 28, 1977. *Deputy Assistant Commissioner for Patents.*

[965 O.G. 14]

(115) **TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS**

Chapter 1—Patent and Trademark Office, Department of Commerce

Part 1—Rules of Practice in Patent Cases

Patent Examining and Appeal Procedures

On October 4, 1976 notice was given in the Federal Register (41 FR 43729) of a proposal to amend sixteen sections of Title 37 of the Code of Federal Regulations relating to patent examining and appeal procedures. Interested persons were invited to comment on the proposal by December 7, 1976. One hundred seventy-five written letters and statements were submitted. A hearing was held in Arlington, Virginia on December 7, 1976 at which 21 persons testified orally. Careful consideration has been given to all comments received and the proposal is being adopted with certain changes.

The regulations adopted involve all sections that were proposed to be revised, amended or added—namely, §§1.11, 1.14, 1.52, 1.56, 1.65, 1.69, 1.97, 1.98, 1.99, 1.109, 1.175, 1.194, 1.196, 1.291, 1.292, and 1.346. Amendments also are being made in two sections which were not included in the published proposal—§§1.51 and 1.176. Since amendments to these sections are closely related to the substance of matters notice and public comment on these amendments are deemed unnecessary.

In addition, amendments are being adopted which were published for comment in two earlier, much less extensive proposals that concerned availability of certain files for public inspection. A notice of a proposed amendment to §1.14(b) was published on June 4, 1974 (39 FR 19786). A notice of a proposed amendment to §1.11(a) was published on September 17, 1974 (39 FR 33376). No negative comments were submitted with respect to either of these proposals and both are being adopted without change.

The text of the rules will be reproduced in the Patent and Trademark Office **Official Gazette** in about a month with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. A transcript of the hearing, the letters and written statements received, and a summary and analysis of the comments are available for public inspection in Room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

Purpose of Rules

The purpose of the rules that are being adopted is to improve the quality and reliability of issued patents by strengthening patent examining and appeal procedures. It is desirable that patents be as dependable as possible, so as to enhance the incentives provided by the patent system to make inventions, to invest in research and development, to put new or improved products on the market, and to disclose inventions that otherwise would be kept as trade secrets. It is believed that the rules being adopted will help to maintain strong patent incentives.

The rules afford patent owners an opportunity, through the filing of a reissue application, to obtain a ruling from an examiner on the pertinence of additional prior art after a patent has been issued. The rules also broaden the public's opportunity for participation in the patent examining process, consistent with the limitations of statute, the protection of trade secrets, and the need to avoid making it unduly expensive to obtain a patent.

The rules set forth the duty of candor and good faith which applicants have to the Patent and Trademark Office and encourage them to provide information about the prior art in a way that will make it more useful to examiners. A provision for foreign language oaths by individuals who do not understand English is intended to make them more aware of their representations and of their obligations.

Under the rules more Patent and Trademark Office decisions that could have important precedent value will be available to the public, and some additional files will be available for inspection. Proceedings before the Board of Appeals are modified to help avoid the issuance of invalid patents. The rules encourage examiners to see that persons inspecting the file history of issued patents will be able to tell why the case was allowed.

Reissue Applications

Amended §1.175 permits a patent owner to have new prior art considered by the Office by way of a reissue application without making any changes in the claims or specification. It is adopted with no change from the proposal. The requirement for an oath or declaration alleging that the reissue applicant believes "the original patent to be wholly or partly inoperative or invalid. . . ." is dispensed within §1.175(a) (1) unless the applicant believes that to be the case. Section 1.175(a) (4) recognizes that reissues may be filed to have the patentability of the original patent considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

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Thus, a patentee may file a reissue if he believes his patent is valid over prior art not previously considered by the Office but would like to have a reexamination. The procedure may be used at any time during the life of a patent. During litigation, a federal court may, if it chooses, stay proceedings to permit new art to be considered by the Office.

If a reissue application is filed as a result of new prior art with no changes in the claims or specification and the examiner finds the claims patentable over the new art, the application will be rejected as lacking statutory basis for a reissue, since 35 USC 251 does not authorize reissue of a patent unless it is deemed wholly or partly inoperative or invalid. However, the record of prosecution of the reissue will indicate that the prior art has been considered by the examiner.

A substantial majority of the comments received favored amended §1.175 as a means for improving the reliability of patents and avoiding unnecessary litigation costs. The negative comments generally questioned the statutory authority of the Commissioner to adopt this section. Authority for §1.175 is believed to exist in 35 U.S.C. 6, which is the Commissioner's rulemaking authority, and in 35 U.S.C. 251. The latter section of the statute requires that the patent be deemed wholly or partly inoperative or invalid before a reissue may be granted, but does not require such a belief by the patentee before a reissue application may be filed. The case law does not suggest that the approach of new §1.175(a)(4) is inconsistent with 35 U.S.C. 251.[1] Inasmuch as 35 U.S.C. 251 is a remedial provision,[2] it is believed that a liberal interpretation is justified and that adequate authority exists for the amended section.

Amended §1.11(b) opens all reissue applications to inspection by the general public. Section 1.11(b) also provides for announcement of the filings of reissue applications in the *Official Gazette*. This announcement will give interested members of the public an opportunity to submit to the examiner information pertinent to patentability of the reissue application. The announcement will include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned. Section 1.11(b) is amended from the proposal to so indicate. Reissue applications already on file on the effective date of the section will not be automatically open to inspection and will not be announced in the *Official Gazette*. However, a liberal policy will be followed in granting petitions for access to individual applications already on file.

In order that members of the public may have time to review the reissue application and submit pertinent information to the Office before the examiner's action, §1.176 is amended to provide that reissue applications will not be acted on sooner than two months after the *Official Gazette* announcement of filing.

A substantial majority of the comments received favored adoption of §1.11(b). The only opposition was based upon a suggestion that no statutory authority exists. However, since reissue applications contain no new disclosure, and therefore no trade secrets or confidential information, they are considered to present a "special circumstance" within the meaning of 35 U.S.C. 122.

The insertion of "all" as the fifth word of the first sentence of §1.11(b) is for clarity. The word "furnished" is changed to "obtained" in §1.11 for clarity.

Protests and Public Use Proceedings

Amended §§1.291 and 1.292 give greater recognition to the value of written protests and public use petitions in avoiding the issuance of invalid patents.

A substantial majority of the comments favored these sections and viewed them as improving the quality of issued patents. Entry of protests has been upheld in court.[3]

Section 1.291(a) provides that public protests against pending applications will be entered in the application file and will, if they meet stated requirements, be considered by the examiner. To guarantee consideration by the examiner, protests must be accompanied by copies of prior art documents relied upon, although protests without copies will not necessarily be ignored. This is similar to the requirement of new §1.98 that copies of patents and publications accompany prior art statements. Section 1.291 does not contemplate permitting a protester to participate as a party in further proceedings. In the case of applications available to the public, such as reissue applications, the protester may file papers rebutting statements made by the applicant. The examiner at his discretion may request a protester to submit additional written information or may provide extra time for comments by a protester to be filed.

To ensure consideration by the examiner, all protests must be timely submitted. Protests will generally be considered timely submitted, if they are filed before final rejection or allowance of the application by the examiner. The consideration given to protests filed after final rejection or allowance of the application by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Obviously, if the prior art documents anticipate or clearly render obvious one or more claims they will not knowingly be ignored. It must be recognized, however, that the likelihood of consideration by the examiner decreases as the patent date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

The first sentence of §1.291(a) is deleted as unnecessary. Section 1.291(a) also is changed from the proposal to make clear that it applies to pending applications and that all protests will be referred to the examiner having charge of the subject matter involved.

Section 1.291(b) incorporates the existing Office policy of permitting persons to submit prior art citations or copies of prior art after a patent has been granted. The section is changed from the proposal by the addition of the words "any papers related thereto" to recognize that statements as to the pertinence of prior art may be submitted. Both the citations and the related papers are to be entered without comments. The material submitted is not examined by the Office but is available to members of the public inspecting Office records.

Some suggestions were received for major modifications of §1.291. It was suggested that an advisory opinion of the examiner be placed in the patent file when protests were received after issuance of the patent. Several persons supported a suggestion for examiners to state whether a "new issue" was raised by prior art cited by a protester. Another suggestion was that a procedure similar to that used in the recent Trial Voluntary Protest Programs[4] be adopted on a continuing basis. These suggestions were carefully considered, but are not adopted. The suggestions extend substantially beyond §1.291 as proposed, and their benefits do not appear sufficient to justify the added cost at this time.

Materials submitted to the Office under §§1.291 and 1.292 are to be served upon the applicant, patentee, attorney or agent when possible. The term "patentee" is used in its ordinary sense as defined in 35 USC 100(d). If service is not possible, materials are to be submitted in duplicate so that the Office can attempt to send the duplicate copy. The proposal is changed by adding the words "with the Office" after "filed" in §§1.291(c) and 1.292(b) for clarity.

In §1.292, the requirement that petitioner bear the Office's expenses in conducting the public use proceeding is deleted. Section 1.292 is also amended to ensure that

[1] See *In re Clark*, F.2d 623, 187 USPQ 209 (CCPA 1975), at footnote 4 where the court declined to decide whether it is proper to seek reissue merely to disclose uncited prior art. See also *In re Altenpohl*, 500 F.2d 1151, 183 USPQ 38 (CCPA 1974).

[2] See it *In re Oda*, 443 F.2d 1200, 170 USPQ 268 (CCPA 1971).

[3] *International Paper Co. v. Fibreboard Corp., 63 F.R.D. 88, 181 USPQ 740 (D. Del. 1974).*

[4] *923 O.G. 2; 930 O.G. 1454; 938 O.G. 945*

the existence of public use proceedings is recorded in the application file wrapper. Notice of a petition for a public use proceeding will be entered in the file in lieu of the petition itself when the petition and the accompanying papers are too bulky to accompany the file. Any public use papers not physically entered in the file will be publicly available whenever the application file wrapper is available.

Duty of Disclosure

Amended §1.56 defines the duty to disclose information to the Office and the criteria for striking an application when that duty is violated. The wording of the section is changed in several respects from the proposal, but the purpose and general scope are the same as in the proposal. The section codifies the existing Office policy on fraud and inequitable conduct, which is believed consistent with the prevailing case law in the federal courts. The expanded wording of the section is intended to be helpful to individuals who are not expert in the judicially developed doctrines concerning fraud. The section should have a stabilizing effect on future decisions in the Office and may afford guidance to courts as well.

A majority of comments received favored §1.56 as proposed or with modifications. Persons opposed expressed concern over the imprecise definition of the duty of disclosure and the possibility that the proposal would substantially increase the burden on patent applicants. Some stated that there would be increased litigation as a result of the proposal. Several suggestions were received on better ways to define the individuals who should disclose information and the kinds of information that should be disclosed.

The first sentence of §1.56(a) is changed from the proposal by adding the word "substantively," so that individuals having a duty of disclosure are limited to those who are "substantively involved in the preparation or prosecution of the application." This change is intended to make clear that the duty does not extend to typists, clerks, and similar personnel who assist with an application. This phrase, when taken with the last sentence of §1.56(a), is believed to provide an adequate indication of the individuals who are covered by the duty of disclosure. The word "with" is inserted in the first sentence of §1.56(a) before "the assignee" and before "anyone to whom there is an obligation to assign" to make clearer that the duty applies only to individuals, not to organizations.

Numerous comments concerned the term "relevance" that was used in the proposal. In response to the comments, language is substituted in §1.56 and related sections which is believed to establish a clearer standard for determining whether information need be disclosed to the Office. "Relevant" is replaced by "material" because the latter term connotes something more than a trivial relationship. It appears to be more commonly used in court opinions. In addition, the third sentence of §1.56, which defines materiality, is rewritten. The sentence now states that information is material "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." The sentence paraphrases the definition of materiality used by the Supreme Court in its recent decision in *TSC Industries* v. *Northway*.[5] Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in recent patent cases.

The definition of materiality in §1.56 will have to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in *TSC Industries* the Supreme Court considered some of the same matters over which concern was expressed in the public comments on proposed§1.56. The court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information—a result that is hardly conducive to informed decision making."[6]

Although the third sentence of §1.56(a) refers to decisions of an examiner, it is intended that the duty of disclosure would apply in the same manner in the less common instances where the official making a decision on a patent application is someone other than an examiner—e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the Office that is specified in the first sentence of §1.56(a).

Comments and questions were received concerning the term "information" used in the second and third sentences of §1.56(a) and elsewhere. It means all of the kinds of information required to be disclosed under current case law. In addition to prior art patents and publications, it includes information on prior public uses, sales, and the like. It is not believed practicable to define information in the text of the rule at this time. However, the rule is not intended to require disclosure of information favorable to patentability—e.g., evidence of commercial success of the invention. Neither is it meant to require disclosure of information concerning the level of skill in the art for purposes of determining obviousness.

Several comments were received concerning the duty to disclose information the patent applicant regards as confidential, including information the applicant has received from another party under an injunction of secrecy. This problem has existed prior to amendment of §1.56. The Patent and Trademark Office, of course, keeps information disclosed by applicants confidential until a patent is issued. It has been suggested that the Office should develop a mechanism for continuing to hold information in confidence after issuance of a patent if in the judgment of the examiner the information is not material to the examination of the application. The feasibility of offering a rule for public comment on this topic at a later date will be considered.

New §1.56(b) is added to make clear that information may be disclosed to the Office through an attorney or agent of record or through a pro se inventor, and that other individuals may satisfy their duty of disclosure to the Office by disclosing information to such an attorney, agent or inventor. Information that is not material need not be passed along to the Office.

Proposed sections 1.56 (b) and (c) have been revised and shortened and appear at §§1.56 (c) and (d). The proposal was criticized for leaving it open to the Office to apply a different standard of materiality from the one set forth in §1.56.[7] Section 1.56(d) as adopted states that an application "shall" be stricken when the criteria set forth are met. Thus §1.56(d) as adopted establishes a single standard for striking applications.

The term "inequitable conduct" is dropped from §1.56(d) as covering too great a spectrum of conduct to be subject to mandatory striking. Inequitable conduct that is equivalent to fraud is intended to come within the definition of fraud. The Court of Customs and Patent Appeals already has interpreted "fraud" in existing §1.56 to encompass conduct of this sort.[8] Moreover, §1.56(d) as adopted calls for striking an application either for fraud or for a violation of the duty of disclosure.

In §1.56(d) "bad faith" is substituted for the term "deliberate" that was used in the proposal. This change is to make clear than an intent to deceive (or gross negli-

[5] U.S.—, 48 L. Ed. 2d 757, 96 S. Ct. 2126, 44 U.S.L.W. 4852, decided June 14, 1976.

[6] U.S. at—, 48 L. Ed. 2d at 763, 96 S. Ct. at 2132, 44 U.S.L.W. at 4855

[7] See discussion accompanying proposed rules in Federal Register of Oct. 6, 1978, page 43731, first sentence.

[8] *Norton v. curtiss*, 433 F.2d 779, 792, 167 USPQ 532, 543 (CCPA 1970)

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gence equivalent to such an intent) must be shown before an application will be stricken. Bad faith is not present if information is withheld as a result of an error in judgment or inadvertence.

Several comments concerned whether attorneys and agents could represent their clients' interests and at the same time comply with §1.56. Similar comments were directed to §§1.97 to 1.99. It is of course in the interest of the client to have a valid patent and this cannot be obtained without disclosure of known material facts. It is not inconsistent for an attorney or agent to fulfill his duty of candor and good faith to the Office and to act as an advocate for his client. The submission of information under §1.56 does not preclude the submission of arguments that such information does not render the subject matter of the application unpatentable.

In §1.65 a new third sentence is added to require the patent applicant to acknowledge the duty of disclosure. The language is changed from the proposal to be consistent with changes made in §1.56. To allow time for the Office and applicants to revise printed oath and declaration forms now in use, the mandatory acknowledgement of the duty of disclosure in amended §1.65 does not become effective until January 1, 1978. Applicants at their option may include the new language in oaths and declarations filed prior to the effective date. The Office will publish a separate notice in the Federal Register adding a sentence acknowledging the duty of disclosure to appropriate forms in 37 CFR Part 3, "Forms for Patent Cases."

The word "statement" is deleted from the title of §1.65 to avoid confusion with the prior art statement of §1.97 through 1.99.

Amended §1.346 emphasizes that there must be a reasonable basis to support every allegation of improper conduct made by a registered practitioner in any Office proceeding. The language that was proposed is clarified in the section as adopted. Although §1.346 is limited to papers filed in Office proceedings, the amendment to §1.346 is not intended to imply that disciplinary action never will be taken against a registered practitioner under§1.348 for a groundless allegation of improper conduct in a court proceeding.

Prior Art Statement

New §§1.97, 1.98 and 1.99 deal with prior art statements and provide a mechanism by which patent applicants may comply with the duty of disclosure provided in §1.56. The sections have been substantially changed from the proposal, in response to comments received.

Unlike the corresponding part of the proposal, the sections as adopted are not mandatory, though applicants are strongly encouraged to follow the procedures described in them. Applications will be examined whether or not a prior art statement is filed and whether it complies with the rules or is defective. It is nevertheless believed that applicants will find that the use of prior art statements complying fully with the requirements of §§ 1.97 through 1.99 will be the best way to satisfy the duty of disclosure. The Patent and Trademark Office cannot assure that prior art disclosed in other ways will be considered by the examiner.

Sections 1.97 through 1.99 do not prescribe the content of what materials should be submitted in the prior art statement; this is for the applicant and the attorney or agent to decide in the light of the duty of disclosure expressed in §1.56. The only criterion contained in §§1.97 through 1.99 as to content of the art cited is in §1.97(b). This subsection indicates that the statement will be construed as a representation that the prior are listed includes what the submitter considers to be the closest art of which he is aware. The submitter need not decide which particular items of prior art are the closest or identify any items as such; the representation is simply that he is not withholding known prior art which he considers closer than that which is submitted. Section 1.97(b) makes clear that the prior art statement is not representation that a search has been made or that no better art exists.

In §1.97(a) the time for filing the prior art statement is extended from the two months of the original proposal to three months. In most cases prior art submitted within three months will be available to the examiner before he takes up the case for action, though it will be helpful if citations are made as promptly as possible.

Section 1.98 lists the elements of the prior art statement: a listing of the art, a concise explanation of the relevance of each listed item, and copies of the art or the pertinent portions thereof.

The prior art statement resembles somewhat the "patentability statement" of the proposal and the "patentability brief" proposed elsewhere.[9] The name has been changed to reflect a change in the requirements of §1.98(a). Unlike the proposed version of this paragraph, which called for an explanation of why the claimed invention is believed patentable over the cited art, the paragraph as adopted calls only for a concise explanation of the relevance of each listed item. This may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention. It might be a simple statement pointing to similarities between the item of prior art and the claimed invention. It is permissible but not necessary to discuss differences between the prior art and the claims. It is thought that the explanation of relevance will be essentially as useful to the examiner as the formerly proposed explanation of patentability, and should be significantly less burdensome for the applicant to prepare.

Section 1.98 requires a copy of each patent or publication cited, including U.S. patents, to accompany the prior art statement. Several comments questioned the need for burdening the applicant to supply copies of materials that are present in the Office's files. However, substantial time and effort often is needed to locate a document in the Office's files. Since the person submitting the prior art statement generally has available a copy of the item being cited, it is believed that expense and effort can be minimized by having that person supply the copy in all cases. Consideration has been given to proposals to allow the applicant to submit an order for copies of the patents along with his statement instead of actually submitting copies. This will be further studied, but to date no way has been found to assure that the copies will be available to the examiner by the first action unless the applicant submits them with the prior art statement.

Other changes to §§1.97 through 1.99 from the proposal eliminate unnecessary language and clarify the requirements.

A notice published in 1974[10] contained guidelines for the citation of prior art by applicants. Many of those guidelines are repeated or superseded by §§1.97 through 1.99. In order to allow applicants, attorney and agents time to adjust their procedures to comply with the requirements for prior art statements, the effective date of §§1.97 through 1.99 will be July 1, 1977. Until these new sections become effective, applicants should continue to follow the 1974 guidelines. Issuance of a revised notice, to take effect July 1, 1977, is under study.

A survey conducted by the Office in 1976 concludes that many applicants have not been citing prior art to the Office.[11] It is hoped that with the duty of disclosure expressly set forth in §1.56, applicants will perceive that it is to their advantage to use the procedures of §§1.97 through 1.99.

Section 1.51 is amended by designating the existing rule as §1.51(a) and adding new §1.51(b) which contains a reference to §§1.97 through 1.99.

[9]E.g., Federal Register of Sept. 9, 1968, 34 FR 14176, 866 O.G. 1402; S. 2255, 94th Congress, §131(b).
[10]Notice of Aug. 12, 1974, 926 O.G. 2.
[11]BNA's Patent, Trademark and Copyright Journal, No. 301, Oct. 28, 1976, page D-1.

Foreign Language Oaths

Amended §1.52 and new §1.69 are adopted as proposed.

Section 1.69 requires that oaths and declarations be in a language which is understood by the individual making the oath or declaration, i.e., a language which the individual comprehends. If the individual comprehends the English language, he must use it. If the individual cannot comprehend the English language, any oath or declaration must be in a language which the individual can comprehend. If an individual uses a language other than English for an oath or declaration, the oath or declaration must include a statement that the individual understands the content of any documents to which the oath or declaration relates. If the documents are in a language the individual cannot comprehend, the documents may be explained to him so that he is able to understand them.

The Office will provide approved translations for as many of the oath or declaration forms which appear in Part 3 of Title 37 of the Code of Federal Regulations as practicable, and in as many languages as practicable, probably using a side-by-side English/foreign language format. The availability of the foreign language forms will be announced in the *Official Gazette* at a later date.

The change in §1.52, providing for an exception to the requirement that oaths and declarations be in the English language, is necessitated by the adoption of §1.69.

Although very few persons opposed §§1.52 and 1.69, several suggested that the philosophy behind the change be extended to the specification, requiring the specification to be in a language which the applicant understands, accompanied by an English translation. This suggestion was not considered feasible because of the obvious burdens on the applicant and the danger to the applicant and the public if the translation is not literally correct. Also, if a large number of applications were filed in a foreign language, there would be significant administrative burdens on the Office. Attention is directed to the Manual of Patent Examining Procedure. §608.1, which permits non-English language applications to be filed in certain limited circumstances.

Other suggested modifications of the proposed rule included: (1) using an English language oath or declaration with one additional clause in a language understood by the person making the oath or declaration, the clause stating that the person understands all the documents to which the oath or declaration relates; and (2) extending the two month grace period for filling an English translation of an oath or declaration filed under §1.65.

After due consideration, suggestion (1) was believed not to accomplish the objectives of the rule as well as the adopted rule. Suggestion (2) would cause unsatisfactory delays in the initial processing of applications.

Decisions and Files Made Public

Section 1.14(d) makes more explicit the conditions under which significant decisions of the Patent and Trademark Office will be made available to the public, and includes reference to decisions of the Board of Patent Interferences, in addition to decisions of the Board of Appeals and the Commissioner.

A large majority of the comments received were favorable. Several commentators felt that more decisions would be made available as a result of the proposed section and that it would assist in publicizing aspects of Office procedure which may not have been available previously.

Some negative comments were based on the view that the Freedom of Information Act[12] required all decisions of the Office to be made publicly available. A greater number of those opposing the proposed section, however, felt that applicants should have an absolute right to have their applications maintained in confidence and that no information should be made public without specific authorization from them. One commentator felt that rulemaking on this subject should be deferred until currently pending litigation[13] under the Freedom of Information Act was finally resolved.

The section as adopted is applicable to decisions deemed by the Commissioner to involve an interpretation of patent laws or regulations that would be of significant precedent value, where such decisions are contained in either pending or abandoned applications or in interference files not otherwise open to the public. It is applicable whether or not the decision is a final decision of the Patent and Trademark Office.

The parenthetical phrase in the first sentence of the proposed section, which cited other provisions of the rules under which decisions are open to public inspection, is deleted as unnecessary and possibly confusing. Also, in view of several comments received, the period of time during which an applicant or party in interest may object to having a decision made public is extended from one month to two months. At least twenty days is given to request reconsideration and seek court review before a decision is made public over an objection.

Section 1.14(d) is considered to place a duty on the Patent and Trademark Office to identify significant decisions and to take the steps necessary to inform the public of such decisions, by publication of such decisions, in whole or in part. It is anticipated, however, that no more than a few dozen decisions per year will be deemed of sufficient importance to warrant publication under the authority of this section.

Amended §1.14(b) allows public inspection of abandoned applications referred to in defensive publications. The comments received on the proposed amendment on this topic in 1974 expressed no opposition and the proposal is adopted without change.

The amendment is intended to encourage use of the defensive publication program provided under §1.139. The objective of that program is to make available to the public the technical disclosure of applications in which the owner prefers to publish an abstract in lieu of obtaining an examination. Existing §§1.11(b) and 1.139 open the complete defensive publication application to inspection by the general public upon publication of the abstract. With the amendment, an abandoned application referred to in a defensive publication application will likewise be open to public inspection, avoiding any need to repeat its contents in the defensive publication application. Thus, public availability of the applications involved should be of benefit both to the applicant and the public.

A suggestion was made that the section be extended still further to include abandoned applications referred to in foreign patents. This suggestion, however, goes too far beyond the proposal that was published and has too uncertain an impact to be adopted at this time.

Amended §1.11(a) provides earlier access to the file of an interference which involved a patent or an application on which a patent has issued. All comments that were submitted on the 1974 proposal on this topic were favorable and two commentators felt the proposal should be extended further. The proposal is being adopted without change.

Under present practice, access to the file of an interference is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The amended section allows access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. It is believed that such earlier access will be of benefit to members of the public by making available information relevant to the issuance of the patent whether or not the interference decision is still being adjudicated.

Patent Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested, provides for oral argu-

[12]USC 552.
[13]*Irons* v. *Gottschalk*, Slip Opinion, No. 74-1365 (D.C. Cir., Oct. 21, 1976).

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ments by or on behalf of examiners in certain appeals and reduces the time permitted for oral arguments.

Comments relating to this section were favorable by a very substantial majority, although there were several reservations to the effect that §1.194(a) tended to discourage or downgrade oral arguments. Participation by examiners was considered to be desirable not only from the standpoint of improving the overall presentation of the argument, particularly in complex cases, but also for the educational and experience benefits to the examiners themselves.

The only opposition to the section was based on the feeling that oral hearings would be discouraged. The rule is intended to discourage oral hearings only to the same extent as the Office's 1975 Official Gazette notice on the subject.[14] Section 1.194(a) indicates that oral hearings should not be requested as a matter of course in every appeal, but only in those circumstances where the appellant feels that such a hearing will be of material assistance to the proper presentation of the appeal. The section expressly provides that equal consideration will be accorded in deciding all appeals, whether or not an oral hearing is held.

In appeals where the appellant has requested an oral hearing §1.194(b) provides for oral argument by, or on behalf of, the primary examiner, if such argument is considered to be helpful by either the primary examiner or the Board. This provision incorporates the present practice of permitting examiners to present an oral argument before the Board.[15] It gives the Board additional discretionary authority to request presentation of an oral argument by, or on behalf of the examiner to ensure that all issues are fully and accurately presented.

Section 1.194(c) provides, as does existing §1.194, that appeals will be assigned for consideration and decision without an oral hearing where none has been requested by the appellant. Where an oral hearing has been requested, a day of hearing will be set, and both appellant and the primary examiner will be notified. A provision for notice to the examiner is added to the proposed version. Additionally, §1.194(c) reflects the present practice of limiting oral argument on behalf of the appellant to twenty minutes.[16] The time permitted for argument by the examiner has been shortened from twenty minutes, as proposed, to fifteen minutes. The examiner, unlike the appellant, will not ordinarily need time to present the facts of the case or for rebuttal.

In any appeal where oral argument is to be presented by, or on behalf of, the primary examiner, the appellant will be given due notice of that fact.

Proposed §1.196(b) would have authorized the Board of Appeals to reject allowed claims, in cases before it, whenever the Board had knowledge of grounds for so doing.

While a majority of those commenting on this section favored in principle the concept of allowing the Board to have this right, significant concern was voiced that there was no statutory authority for the Board to actually reject allowed claims. Further, the question of proper authority for judicial review of such action by the Board was a matter of concern. Other reasons advanced in opposition to the section were that applicants would be inhibited from appealing by the risk of having allowed claims rejected and that the proposal would create a higher presumption of validity in cases reviewed by the Board. A significant number commented that it would be more appropriate for the Board to remand the case to the primary examiner for consideration of the grounds raised by the Board. This would afford the applicant an opportunity to demonstrate the patentability of the claims and would remove any question as to statutory authority.

In view of the comments received, existing §1.196(b) will not be modified, but a new §1.196(d) is added providing express authority for the Board of Appeals to include, in its decision, a statement of any grounds for rejecting any allowed claim that it believes should be considered by the primary examiner. Section 1.196(d) provides that the Board may remand the case to the examiner for such consideration, and that the applicant shall have an opportunity to respond to the grounds set forth by the Board prior to consideration, by the examiner. If the previously allowed claims are rejected by the examiner, the rejection may be appealed to the Board.

The new section further provides that a decision of the Board which includes a remand will not be considered as a final decision in the case, but that the Board, following conclusion of the proceedings before the primary examiner, will either adopt its earlier decision as final or will render a new decision based on all appealed claims, as it considers appropriate. In either case, final action by the Board will give rise to the existing alternatives available to an appellant following a decision by the Board.

In situations where the primary examiner concludes after consideration of all the evidence and argument that the remanded claims should be allowed, the new rule dealing with reasons for allowance (§1.109) provides an appropriate mechanism for him to explain, on the record, his reasoning for coming to this conclusion, notwithstanding the grounds set forth by the Board in its statement.

Promulgation of new §1.196(d) does not affect the Board's existing authority to remand a case to the primary examiner without rendering a decision in appropriate circumstances. Section 1.196(d) is not intended as an instruction to the Board to reexamine every allowed claim in every appealed application. It is, rather, intended to give the Board express authority to act when it becomes apparent, during the consideration of rejected claims, that one or more allowed claims may be subject to rejection on either the same or on different grounds from those applied against the rejected claims.

Reasons for Allowance

New §1.109 is intended to emphasize and formalize the examiner's authority to state his reasoning for allowing a claim or claims. The authority is discretionary with the examiner and is only to be used when the record does not otherwise reveal the reasons for allowance.

A majority of the comments received favored the rule as proposed because it would tend to provide courts and others who were reviewing the patent with a clearer record. Those who opposed the rule most often gave the reason that the examiner might fail to state all the reasons or the strongest reasons why a claim was allowed, which could place unnecessary limitations on the claims or create an estoppel in subsequent litigation or licensing.

To help insure that the examiner's statement of his reasoning in allowing a claim will not unnecessarily limit the claims or create an estoppel, a final sentence is added to the proposal which states that failure of the applicant to comment upon or rebut the examiner's reasoning "shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner."

Several commenters suggested that stricter enforcement of §§1.111 and 1.133 would eliminate the need for a new rule concerning reasons for allowance. Situations exist, however, where a statement of reasons for allowance could be helpful, for example when an examiner withdraws a rejection for reasons not suggested by the applicant; when an applicant submits several arguments for allowing a claim and the examiner finds not all of them persuasive: when an examiner allows a claim on the first Office action after citing very close prior art: and when the examiner allows a claim after remand from the Board of Appeals (see new §1.196(d)).

The first sentence of the proposed rule is changed to define more precisely the circumstances in which an examiner's statement is appropriate, as well as to define more precisely the content of the statement. The statement will include the examiner's "reasoning." The examiner may state his reasoning whenever he "believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims."

Several persons commented that the rule should provide a procedure for appeal from the examiner's statement of his reasoning. The rule does permit applicants to comment upon the examiner's reasoning. If the applicant does not wish to comment, he may reserve for a later proceeding, without prejudice, any rebuttal. [Text of adopted rules appears in 37 CFR, revised 7–1–77]

Effective Date. These amendments become effective on March 1, 1977, except for §§1.51, 1.97, 1.98, and 1.99 which become effective on July 1, 1977, and §§1.65 and 1.69 which become effective on January 1, 1978.

C. MARSHALL DANN,
Jan. 18, 1977. *Commissioner of Patents and Trademarks.*

Betsy Ancker-Johnson, Ph.D.
Jan. 19, 1977. *Assistant Secretary for Science and Technology.*

[955 O.G. 1054]

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(116) Guidelines for Implementation of Recently Revised Rules

Recently a number of rules relating to Patent Examining and Appeal procedures were revised. The new rules were published in the Federal Register at 42 F.R. 5588 on January 28, 1977, and in the *Official Gazette* at 955 O.G. 1054 on February 22, 1977. The following guidelines are being published to describe the procedures which are being followed in implementing 37 CFR sections 1.11, 1.97–1.99, 1.109, 1.194, 1.291 and 1.292.

Files Open to the Public

Section 1.11(b) is applicable only to those reissue applications filed on or after March 1, 1977. Those reissue applications already on file will not be automatically open to inspection but a liberal policy will be followed by the Office of the Solicitor in granting petitions for access to such applications.

(Note.—These sections as changed will be incorporated into the Manual text in Rev. 3 of the Manual.)

For those reissue applications filed on or after March 1, 1977, the following procedure will be observed:

1) The filing of reissue applications will be announced in the *Official Gazette* and will include certain identifying data as specified in section 1.11(b). Any member of the general public may request access to a particular reissue application filed after March 1, 1977. Since no record of such request is intended to be kept, an oral request will suffice.
2) The reissue application files will be maintained in the examining groups and inspection thereof will be supervised by group personnel. Although no general limit is placed on the amount of time spent reviewing the files, the Office may impose limitation, if necessary, e.g., where the application is actively being processed.
3) Where the reissue application has left the examining group for administrative processing, requests for access should be directed to the appropriate supervisory personnel in the Division or Branch where the application is currently located.
4) Requests for copies of papers in the reissue application file must be in writing addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and may be either mailed or delivered to the Office mailroom. The price for copies made by the Office is thirty cents per page.

Prior Art Statements

This notice supersedes the notices of August 12, 1974 (926 O.G. 2) and May 19, 1975 (935 O.G. 902) relating to citations of prior art. Although new sections 1.97 through 1.99 are not effective until July 1, 1977, and are not mandatory upon applicants, they provide an ideal mechanism for complying with the duty of disclosure under 37 CFR 1.56. The statements should be submitted in accordance with the following guidelines:

1) Prior art statements should be submitted at the time of filing the application or within three months thereafter and may be separate from the specification or incorporated therein. The statement shall serve as a representation that the person preparing it has included therein what he believes to be the closest prior art of which he is aware and shall not be construed as a representation that no better art exists or that a search has been made. If the first action in the application is received prior to three months after filling of the application and no prior art statement has been submitted, the prior art statement may be submitted with the response to the first action and be considered timely.
2) The statement shall include a listing of the patents, publications or other information which the preparer of the statement wishes to cite and a concise explanation of the relevance of each listed item. Copies of the pertinent portions of all listed documents shall be supplied along with the statement, both when incorporated into the specification and when filed separately. If two or more patents or publications considered material are substantially identical, a copy of a representative one shall be included with the statement and others may merely be listed with an indication of which are considered to be substantially identical.
3) A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant. It will be sufficient, however, to transmit an equivalent English language patent or publication so long as it is identified as an equivalent.

   Where the applicant has submitted copies of prior art in accordance with these guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application as far as the copies are concerned. As far as the statement per se is concerned, the relevance of the prior art to the claimed subject matter must be indicated if it differs from its relevance as explained in the prior application.
4) If prior to the issuance of a patent an applicant pursuant to his duty of disclosure under 37 CFR 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements aforementioned. The transmittal should include a statement explaining why the prior art was not earlier submitted.

While the Patent and Trademark Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other information not submitted in accordance with these guidelines will be considered by the examiner.

[14]Mar. 20, 1975, 933 O.G. 1010.
[15]MPEP, §1209
[16]See notice of Mar. 20, 1975, 933 O.G. 1010

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After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an Ex parte Quayle action, a notice of allowability (PTOL–327), an examiner's amendment (PTOL–37), or a Notice of Allowance (PTOL–85), any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;
(*b*) A timely affidavit under 37 CFR 1.131 with respect to the material cited; or
(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other information cited raises a serious question as to the patentability of the claimed subject matter, or is closer prior art than that of record.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under 37 CFR 1.183 requesting a waiver of 37 CFR 1.312. Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

In each instance where an examiner considers, but does not cite on form PTO–892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference according to the following:

> If included in the specification, the examiner will write his or her initials adjacent to any references checked and enter "checked" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" will be entered adjacent to the citations or wherever possible to indicate clearly those checked.

Reasons for Allowance

One of the primary purposes of the change in Section 1.109 is to improve the quality and reliability of issued patents by providing a complete file history which should clearly reflect, as much as is reasonably possible, the reasons why the application was allowed. Such information facilitates evaluation of the scope and strength of a patent by the patentee and the public and may help avoid or simplify litigation of a patent.

The practice of stating the reasons for allowance is not new and the rule merely formalizes the examiner's existing authority to do so and provides applicants an opportunity to comment upon any such statement of the examiner.

When the examiner determines that it is necessary or desirable, a "Statement of Reasons for Allowance" will be prepared. The "Statement" will usually be an attachment to either a notice of allowability (PTOL–327) or Examiner's Amendment (PTOL–37). Any comments considered necessary by applicant must be submitted no later than the issue fee and should preferably *accompany* the issue fee. Submission with the issue fee avoids any delay in the processing of the application and avoids the necessity to associate the comments with the application while it is in issue except at the time the file must be pulled to record the payment of the issue fee. Such comments will be entered in the application file by the Allowed Files Branch with an appropriate notation on the "contents" list of the file wrapper, but will not be reviewed by the examiner.

Oral Hearings Before Board of Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested and provides for oral arguments by, or on behalf of, primary examiners in certain appeals.

Under Section 1.194, the following procedures will be in effect:

1) In accordance with Section 1.192, appellants who desire an oral hearing must request the same at the time of filing the appeal brief.
2) If appellant has requested an oral hearing and the primary examiner intends to present an oral argument, the last paragraph of the examiner's answer will indicate this intention.
3) Notice of the oral hearing will be given to the appellant and, at the same time, to the primary examiner in those cases in which the primary examiner has indicated an intention to present an oral argument.
4) After an oral hearing has been confirmed and the date set as provided in Section 1.194(c), the application file will be delivered to the examiner via the appropriate Group Director at least one week prior to the date of the hearing for those cases in which the examiner is expected to be present at the hearing. In those cases where the Board requests the presentation of an oral argument by, or on behalf of, the primary examiner, the appellant will be so notified. The Board's request for an oral argument may, where appropriate, indicate specific points or questions to which the argument should be particularly directed. The application file will be returned to the Board before the hearing.
5) In those appeals in which an oral hearing has been confirmed and either the primary examiner or the Board has indicated a desire for oral argument, such oral argument may be presented whether or not appellant appears.

Protests and Public Use Proceedings

Amended sections 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions and are intended as an aid in avoiding the issuance of invalid patents.

Under sections 1.291 (b) and (c) and 1.292(b), the following procedures will be observed:

1) Only in those instances where it has not been possible to serve protest papers upon the applicant, attorney or agent, should duplicates of the papers submitted be provided. In this case the appropriate examining group will attempt to get the duplicate copy to the applicant, attorney or agent. However, every effort should be made by the protester to effect service.
2) Citations of prior art and any papers related thereto may be entered in the file after a patent has been granted by submitting them to the attention of the Record Room, where they will be entered without comment by the Office. If after diligent effort it has not been possible to serve the prior art citations and related papers on the patentee, his attorney or agent, duplicate copies should be submitted in which case the Record Room will attempt to get the duplicate copy to the owner of record.
3) When public use petitions and accompanying papers are submitted they, or a notice in lieu thereof, will be entered in the application file. Duplicate copies should be submitted only when, after diligent effort, it has not been possible for petitioner to serve a copy of the petition on the applicant, his attorney or agent in which case the Office of the Solicitor will attempt to get the duplicate copy to the applicant, his attorney or agent.
4) To ensure consideration by the examiner, protests should be timely submitted, i.e., before final rejection or allowance. Consideration of protests filed after final rejection or allowance will depend upon the relevance of the prior art documents and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not knowingly be ignored. If protests are not timely submitted or if they fail to comply with section 1.291(a) as to the submission of a copy of each prior art document relied upon, they will be acknowledged and referred to the examiner having charge of the subject matter involved for entry in the application file and such consideration as seems warranted.

In each instance where an examiner considers but does not cite on form PTO–892 specific prior art referred to in a protest, the examiner will place a notation in the protest paper adjacent to the reference which will include his or her initials and the term "checked."

Additional future guidelines as to protest procedures may be developed after gaining experience with the new practice.

Mar. 18, 1977. C. MARSHALL DANN, *Commissioner of Patents and Trademarks.*

[957 O.G. 11]

(117) **Further Guidelines Relating to 37 CFR 1.175 and 1.291, as Amended Effective March 1, 1977**

The experience with the above revised rules since their effective date has indicated the desirability of further guidelines relating to the manner in which they are to be implemented. The following guidelines are supplemental to those which have already been provided in the publication of the rules in the Federal Register of January 28, 1977 (42 F.R. 5588) (955 O.G. 1054, February 22, 1977), and in the earlier Guidelines published at 957 O.G. 11 on April 12, 1977. Copies of the latter two *Official Gazette* publications appear as items 59 and 60 of the current "Consolidated Listing of Recent Official Gazette Notices" published at 966 O.G. 22–32. The present guidelines are also supplemental to the appropriate sections of the Manual of Patent Examining Procedure, e.g., Sections 1401–1401.12 relating to reissue, and Section 1309.02 relating to protests. Sections 721 and 721.01 of the MPEP contain guidelines to be followed if either a reissue or other application, or a protest relative to any application, raises questions of "fraud" or "violation of the duty of disclosure." Accordingly, the above-noted materials should be consulted in addition to these further guidelines, which are in themselves not intended to completely treat the subjects involved. For the most part, the guidelines herein merely identify and clarify existing requirements and practices. The Patent and Trademark Office has a general study underway of the procedures for handling reissue applications and protests which may result in future modifications in these guidelines.

Section 1.175(a)(4) of the revised rules recognizes that reissues may be filed to have the patentability of the original patent, without changes therein, considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

The experience to date reveals the need to clarify what should be filed by the applicant in order to seek the reexamination contemplated by sub-section (a)(4) and also the type and content of the examination which the examiner will give to applications filed under subsection (a)(4).

First, sub-section (a)(4) does *not* contemplate, or permit, the filing of a reissue application without an oath or declaration. To the contrary, an oath or declaration is required, and such oath or declaration *must* comply with each of sub-sections (a)(4), (a)(5), and (a)(6). Thus, under sub-section (a)(4) the oath or declaration must particularly specify the "prior art or other information relevant to patentability, not previously considered by the Office," which the reissue applicant considers "might cause the examiner to deem the original patent wholly or partly inoperative or invalid." The reissue oath or declaration must also request, under sub-section (a)(4), that "if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent."

Under sub-section (a)(5), the reissue oath or declaration, including those filed under sub-section (a)(4), must particularly specify "the errors or what might be deemed to be errors relied upon, and how they arose or occurred."[1] This sub-section has two specific requirements, *both of which must be complied with* in, or by, the reissue oath or declaration. Thus, insofar as (a)(4) reissue oaths or declarations are concerned, the oath or declaration must particularly specify "what might be deemed to be errors." For example, if the reissue applicant is seeking reexamination in view of particular prior art or other information, the reissue oath or declaration must point out "what might be deemed to be errors" in patentability in view of such prior art or other information. More specifically, the oath or declaration, in appropriate circumstances, might state that some or all claims might be deemed to be too bread and invalid in view of references X and Y which were not of record in the patented files. Usually, a general statement will suffice. But where appropriate, such as where the pertinence of the new references X and Y are not evident, more specificify about "what might be deemed to be errors" should be provided. Of course, the reissue applicant does *not* have to, and presumably does *not*, agree that "errors" exist. However, the reissue applicant does have to, in the reissue oath or declaration of the sub-section (a)(4) type, particularly specify "what might be deemed to be errors relied upon."

In addition to specifying "what might be deemed to be errors relied upon," sub-section (a)(5) also requires "particularly specifying" "how they arose or occurred." This means, of course, that the reissue oath or declaration must specify the manner in which that which "might be deemed to be errors" "arose or occurred." For example, if the (a)(4) reissue is being filed for reexamination in view of prior art or other information, the reissue oath or declaration must indicate when and the manner in which the reissue applicant became aware of the possible error in the patent, e.g., third party allegation, discovery of prior art or other information subsequent to issuance of patent, knowledge of prior art or other information before issuance of patent with significance being brought out after issuance by third party, through allegations made in litigation involving the patent, etc. It is particularly important that the reissue oath or declaration adequately specify how "what might be deemed to be errors" arose or occurred. If the reissue oath or declaration does not particularly specify "how," i.e., the manner in which any possible errors arose or occurred, the Office will be unable to adequately evaluate reissue applicant's statement in compliance with (a)(6) that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant."

Sub-section (a)(6) specifically requires that the reissue oath or declaration, including those filed under sub-section (a)(4), contain the averment that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant." This requirement must not be overlooked in filing since the requirement for an absence of "deceptive intention" is a necessary part of any reissue application, including those of the (a)(4) type.

The significance and importance of sub-sections (a)(5) and (a)(6) must not be overlooked or minimized insofar as reissue oaths or declarations are concerned, including those filed under sub-section (a)(4). These sub-sections, to a large extent, enable the Office to make its determination required by statute that any error is "without any deceptive intention."

In addition to meeting the requirements of Sections 1.175 (a)(4)–(a)(6) insofar as the reissue oath or declaration is concerned, the reissue applicant, at the time of filing the reissue application, including the (a)(4) type reissue application, must also be aware of the requirements of 37 CFR 1.56, as revised effective March 1, 1977. Reissue applicants may, of course, utilize new Sections 1.97–1.99 to comply with the duty of disclosure required by Sec-

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tion 1.56. While Section 1.97(a) provides for filing of the prior art statement within three months of the filing of the application, reissue applicants are encouraged to file the prior art statement at the time of filing the application in order that such prior art statements will be availale to the public during the two-month period provided by Section 1.176.

In situations in which the patent for which reexamination is being sought is, or has been, involved in litigation, which raised a question material to examination of the reissue application, such as the validity of the patent, or any allegation of fraud, the existence of such litigation must be brought to the attention of the Office at the time of, or shortly after, filing the application, either in the reissue oath or declaration, or in a separate paper, preferably accompanying the application as filed. Litigation begun after filing of the reissue application also should be promptly brought to the attention of the Office. The details and documents from the litigation, insofar as they are "material to the examination" of the reissue application as defined in 37 CFR 1.56(a), should accompany the application as filed, or be submitted as promptly thereafter as possible. For example, the defenses raised against validity of the patent, or charging fraud or inequitable conduct in the litigation, would normally be "material to the examination" of the reissue application. It would, in most situations, be appropriate to bring such defenses to the attention of the Office by filing in the reissue application a copy of the Court papers raising such defenses. As a minimum, the applicant should call the attention of the Office to the litigation, the existence and nature of any allegations relating to validity and/or "fraud" relating to the original patent, and the nature of litigation materials relating to these issues. Enough information should be submitted to clearly inform the Office of the nature of these issues so that the Office can intelligently evaluate the need for asking for further materials in the litigation. Thus, the existence of supporting materials which may substantiate allegations of invalidity or "fraud" should, at least, be fully described, or submitted. The Office is *not*, of course, interested in receiving voluminous litigation materials which are *not* relevant to the Office's consideration of the reissue application. The status of the litigation should be updated in the reissue application as soon as significant events happen in the litigation.

The Examination of Reissue Applications, Including Those Filed Under 37 CFR 1.175(a)(4)

The examination of reissue applications, including those filed under sub-section (a)(4), will be in accordance with Sections 1401–1401.12, M.P.E.P. Attention is particularly directed to Section 1401.09, M.P.E.P. which refers to the two aspects of reissue examination, i.e., examination in the same manner as an original application and examination for compliance with the reissue statute and rules. The purpose of the present guidelines is to supplement those presently in existence and to emphasize certain points, particularly as they relate to reissue applications filed under sub-section (a)(4).

When examining the reissue application the examiner will consider whether or not applicant, in the reissue oath or declaration, has complied with each of the requirements of 37 CFR 1.175. For example, in all reissue applications, the reissue oath or declaration must comply with the requirements of the first sentence of 37 CFR 1.65. When the reissue application is other than the (a)(4) type, the reissue oath or declaration must comply with the appropriate sub-sections (a)(1) to (a)(3) and sub-sections (a)(5) and (a)(6). When the reissue application is filed under sub-section (a)(4), the reissue oath or declaration must also comply with sub-sections (a)(5) and (a)(6). Thus, all reissue applications must comply with sub-sections (a)(5) and (a)(6). If the examination reveals a lack of compliance with any requirement of Section 1.175, e.g., the requirements of sub-sections (a)(5) and/or (a)(6), a rejection will be made on the basis that the reissue oath or declaration is insufficient. See Section 1401.08, M.P.E.P. Under no circumstances will any reissue application be passed for issue without full compliance with 37 CFR 1.175.

Applications filed under sub-section (a)(4) will not, of course, be passed for issue without amendment, but will be rejected as lacking statutory basis for a reissue if *there are no other grounds for rejection*, since 35 U.S.C. 251 does not authorize reissue of a patent unless the patent is deemed wholly or partly inoperative or invalid. If a reissue filed under sub-section (a)(4) is subsequently amended thereby converting it into an application under sub-sections (a)(1) to (a)(3), *a supplemental reissue oath or declaration must be filed containing the appropriate averments*, If such a proper supplemental oath or declaration is not filed, a rejection will be made on the basis that the reissue oath or declaration is insufficient. The supplemental oath or declaration insures compliance with 35 U.S.C. 251 by providing appropriate averments relating to actual errors rather than possible errors.

If the examiner becomes aware of litigation involving the patent sought to be reissued during examination of the reissue application, and applicant has not made the details regarding that litigation of record in the reissue application, the examiner, in the next office action, will inquire regarding the same. The following paragraph may be used for such an inquiry:

> "It has come to the attention of the examiner that the patent sought to be reissued by this application (is) (has been) involved in litigation. Any documents and/or materials, including the defenses raised against validity, or against enforceability because of fraud or inequitable conduct, which would be material to the examination of this reissue application are required to be made of record in response hereto. See 37 CFR 1.175(b)."

If the additional details of the litigation appear to be material to examination of the reissue application, the examiner may make such additional inquiries as necessary and appropriate under 37 CFR 1.175(b).

However, any application which indicates the existence of *a question* of "fraud" or "violation of the duty of disclosure" will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P., as soon as the existence of *such question* is appreciated. For example, any reissue application which seeks reexamination in view of material prior art or other information known before issuance of the patent to a person having a duty under 37 CFR 1.56(a) must be forwarded under Section 721.01, M.P.E.P., to the Assistant Commissioner via the Group Director.

The Filing of Protests Under 37 CFR 1.291

The amendments to Section 1.291 reflected the increased value the Office places on appropriate written protests as an aid in avoiding the issuance of invalid patents. The present supplemental guidelines are in addition to those previously published and referred to above.

The nature of the protest, and the timeliness of its submission, are important factors in determining the consideration which is given the protest, and by whom it is considered. Insofar as the question of timeliness is concerned, the original publication of the rules at 955 O.G. 1054, the earlier Guidelines published at 957 O.G. 11, and Section 1309.02, M.P.E.P. adequately treat this question. Protests should obviously be submitted as early in the examination process as possible in order to be of maximum benefit to the Office in its examination of the application involved.

If the protest is being filed with regard to a reissue application, the protest should be filed within the two-month period following announcement of the filing of the reissue application in the Offical Gazette, if it is at all possible to do so. If, for some reason, the protest of the reissue application cannot be filed within the two-month period provided by 37 CFR 1.176, the protest can be submitted at a later time, but protestor must be aware that reissue applications are "special" and a later filed protest may be received after action by the examiner, if submitted later than the two months provided by 37 CFR 1.176. In the event a protest is intended against a reissue application, but cannot be submitted within the two months provided following the O.G. announcement, the protestor can request an additional specified period within which to file the protest, explaining why the additional time is necessary and the nature of the protest intended. A copy of any such request for additional time to protest a reissue application beyond the two months provided must be served on the reissue applicant. The request for additional time should be directed to the appropriate Group Director. The requests for additional time beyond the two months provided will be *critically reviewed as to demonstrated need* before being granted since the delay of examination of a reissue application of another party is being requested. Accordingly, the requests should be made *only where necessary, for the minimum period required* and with a justification establishing the necessity for the extension.

Any protest filed alleging "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13. Protests based on grounds other than "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Director of the particular examining group in which the application is pending. If the protestor is unable to specifically identify the application to which the protest is directed, but, nevertheless, believes such an application to be pending, the protest should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13, along with as much identifying data for the application as is available.

As indicated in the earlier publications, e.g., Section 1309.02, M.P.E.P., every effort should be made by a protestor to effect service of the protest upon the attorney or agent of applicant who is of record or upon the applicant. The protest filed in the Office should reflect that service has been made. Only in those instances where service is not possible should the protest be filed in duplicate in order that the Office can attempt service. Of course, the copy served upon applicant or applicant's attorney or agent should be accompanied by a copy of each prior art or other document relied upon in the same manner as required by Section 1.291(a) for the Office copy.

The Examiner's Consideration of Protests

Protests other than those alleging "fraud" or "violation of the duty of disclosure" will be received by, or forwarded to, the Group Director of the examining group where the application is, or may be, pending and then referred to the appropriate examiner. If it is then, or later, discovered that a question of "fraud" or "violation of the duty of disclosure" exists, the application and the protest, will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P.

If no allegations or questions of "fraud" or "violation of the duty of disclosure" are found to exist, the examiner will consider the protest and report the results of the consideration to the Group Director. If the protest has been timely submitted, i.e., before final rejection or allowance, the examiner will consider each of the prior art or other documents submitted. At least those prior art documents which the examiner relies on in rejecting claims will be made of record by means of form PTO—892. If the examiner does not cite all of the prior art or other documents of form PTO–892, the examiner will place a notation in the protest paper adjacent to the reference to the documents which will include the examiner's initials and the term "checked."

If the protest is filed after final rejection or allowance of the application, the consideration by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not be knowingly ignored. Prosecution of the application will be reopened where necessary. However, protestor must be aware that the likelihood of consideration by the Examiner decreases as the patent issue date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

If the protest is not accompanied by a copy of each prior art or other document relied upon as required by Section 1.291(a), the protestor cannot be assured that the examiner will consider the missing document. However, if the examiner does so, the examiner will either cite the document on form PTO–892 or place a notation in the protest paper adjacent to the reference to the document which will include the examiner's initials and the term "checked."

If, upon considering the protest or any submissions subsequent thereto, the examiner considers it desirable to obtain applicant's comments on the protest before further action, the examiner will offer applicant an opportunity to file comments within a set period, usually two months.

The following suggested format can be used to offer applicant an opportunity to file comments on the protest:

> "A protest against the issuance of a patent based on this application has been filed under 37 CFR 1.291 on . . . . and a copy (has been indicated as having been served on applicant) (is attached hereto). Any comments or response applicant desires to file before consideration of the protest must be filed by . . . ."

Section 1.291(a) indicates that protests are acknowledged and this acknowledgement will normally be made by the particular office to which the protest is ultimately directed for consideration. Protests alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Office of the Assistant Commissioner for Patents. Other protests, i.e., those not alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Group Director of the examining group where the application is, or may be, pending.

If the protest involves an application to which the protestor has access, e.g., a reissue application filed after March 1, 1977, or one in which protestor has been formally granted access, then protestor may monitor the proceedings and file such additional papers as protestor considers appropriate. If protestor has access to the application, protestor may request the Office to supply protestor with copies of Office actions or other documents mailed by the Office. Such a request should be directed to the particular area in which the application is pending, e.g., Office of Assistant Commissioner for Patents, or Director of the particular examining group. The request should explain why protestor needs the copies in question and should indicate an intent on protestor's part to assist the Office in its examination by supplying relevant comments. Normally, the Office will send copies of Office actions to protestors where the protestor indicates an intent to review actions and, if appropriate, comment to the Office on them. However, since protestor has no right to copies of the Office actions or other documents, the granting or denying of such requests will be within the sole discretion of, and for the convenience of the Office.

If the protestor has access to the application, the examiner may communicate with the protestor *in writing* to seek clarification and/or additional information if the examiner considers such clarification and/or additional information necessary to properly consider the protest. The following suggested format can be used by the examiner to seek clarification and/or additional information from a protestor having access to an application:

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> "The protest, as filed_____, has been noted. However, clarification and/or additional information is desired. In particular [Examiner explains] any submission of the requested information should be made within ONE MONTH of the date of this letter and the submission must indicate service on applicant."

While the examiner should not normally need clarification and/or additional information from the protestor where the grounds involve only published prior art, e.g., patents, periodicals, etc., under some circumstances it may be necessary for the examiner to seek such clarification and/or additional information. For example, if the date of a reference is in question, or some question of public use is involved, and the information being sought is within the knowledge or control of the protestor, the examiner may find it necessary to communicate with the protestor to obtain the same.

Where the examiner feels that a protestor with access to an application can contribute significantly to the examination process, the protestor may be given a specific period, normally one month, within which to comment on responses submitted by patent applicants to Office actions. Such a comment period should only be provided where it would appear to be of benefit to the examination process and only with the approval of a Supervisory Primary Examiner. Where an applicant agrees to such participation by a protestor or where a Court has suspended litigation for consideration of a related application by the Patent and Trademark Office with an expression of its desire for such protestor participation, it should be more liberally granted.

Where a protestor requests permission to participate in any interview between an applicant and the examiner or requests on its own behalf to have an interview with the examiner, the request should be referred to the Office of the Assistant Commissioner for Patents for action. Normally, protestor participation in interviews with examiners will not be allowed unless special justifying circumstances exist. Where authorized, participation by the protestor in an interview will be according to conditions set down by the Patent and Trademark Office. Normally, any transcript of the interview, if authorized, will be at the expense of the party or parties requesting it and will be arranged by such party or parties. Where Office actions are being sent to a protestor or where a protestor is present for an interview, a copy of the Interview Summary Form and other records made of the interview will be provided to the protestor. Where protestor's participate in an interview, they may submit their own record of the interview which will be made of record in the file.

Interviews relating to a patent application with a protestor will not be permitted without the applicant present.

A protestor with access to an application appealed to the Board of Appeals who intends to file comments or a brief in opposition to appellant's brief should file an indication of such intention within one month after the notice of appeal is filed and serve a copy of the same upon appellant. The indication of intention should state that protestor agrees to file such comments or brief in triplicate, within one month after appellant's brief is filed, and also agrees to serve a copy of the comments or brief upon appellant. If such an indication is not filed and served, or the protestor's comments or brief is not timely filed in triplicate and served, no assurance is given that the Examiner will consider the protestor's comments or brief during the preparation of the Examiner's Answer.

A protestor who participates by the filing of comments or a brief in opposition to appellant's brief may also request, at the time of filing the comments or brief, to appear at any oral hearing. If a protestor does not file such comments or brief, the protestor cannot be present at any oral hearing. If a protestor does file such a request, the Board of Appeals, in its discretion, will decide whether or not the issues on appeal are such that protestor's participation at the hearing would be helpful. The Board of Appeals will notify protestor whether or not the request to appear at the hearing is granted and, if granted, how much time will be permitted. Of course, if appellant does not request an oral hearing, or provides timely notification to the Board and protestor that appellant will not appear, protestor will not be heard.

A copy of any examiner's letter or communication to a protestor will be mailed to applicant at the same time it is mailed to the protestor. While the examiner may communicate *in writing* with a protestor having access to the application, the examiner will *not* communicate orally and protestor must refrain from oral communications with the examiner except to ask purely procedural questions which have no relation to the substance of the protest or the merits of the application, unless specifically authorized *in writing* by the Assistant Commissioner for Patents.

Where the handling of a protest or the handling of a reissue application involved in related litigation requires an inordinately larger than normal amount of work on the part of an examiner and where otherwise warranted, Supervisory Primary Examiners may authorize the use of non-examining time for handling some or all of the examination.

The above guidelines are intended to make clearer the policies of the Patent and Trademark Office in respect to the handling of reissue applications, protests and "fraud" questions. The Office is especially interested in seeing that the consideration of reissue applications and protests is thorough and fair. It is interested in seeing that protestors have an opportunity to participate in the proceedings in the Office to the extent that such participation is helpful and appropriate in each case. It is also greatly interested in the completeness and accuracy of the file record, including indications whether or not prior art references and information mentioned in the record have been reviewed by the examiner.

The present guidelines which will be incorporated into the M.P.E.P. as soon as possible, when considered in conjunction with those previously issued and the M.P.E.P., should answer many of the questions being raised about the revised rules.

DONALD W. BANNER,
Nov. 13, 1978. *Commissioner of Patents & Trademarks.*

[977 O.G. 11]

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(118) **Expedited Processing of Reissue Applications and Applications Having Issues of Fraud or Failure to Comply With The Duty of Disclosure**

The Patent and Trademark Office has been experiencing increasing delays in the examination of reissue applications and other applications in which charges or questions of fraud or failure to comply with the duty of disclosure have been raised or are apparent on the record. Consideration of these charges involves considerable expenditures of resources and time. They also tend to delay prompt consideration on the merits in view of the prior art, etc. Considerable duplication of effort and expenditures of resources and time also may occur when the Office considers applications in circumstances where the same issues are concurrently being considered in Court.

Deferral of Fraud Issues

Effective immediately, the Office is instituting a policy of delaying consideration of issues of fraud or failure to comply with the duty of disclosure in any application until all other issues are settled.

Accordingly, under this procedure, applications having issues of fraud or failure to comply with the duty of disclosure will continue to be referred to the Office of the Assistant Commissioner for Patents, but will then be promptly returned, along with any appropriate examining instructions, to the Director of the Examining Group for immediate action by the Examiner. Decisions on Petitions to Strike applications pursuant to 37 CFR 1.56(d) will be deferred pending resolution of the patentability issues before the Examiner. Any such Petitions to Strike filed after the Office of the Assistant Commissioner has initially reviewed the application and returned it for immediate action will be acknowledged by the Examining Group Director and action on the Petition will be deferred pending completion of the patentability issues before the Examiner. Examiners will note in their Office actions the existence of issues of fraud or failure to comply with the duty of disclosure without commenting on the substance of such issues and will indicate that the issues will be considered after all other matters have been disposed of. Matters other than fraud or failure to comply with the duty of disclosure raised in a Petition to Strike, e.g., patentability in light of a reference, will be treated by the Examiner or other appropriate official. Petitions relating to procedural matters involving the examination of the applications, e.g., requests for protestor participation in interviews, will be decided by the appropriate Examining Group Director. Applications which have been referred to the Office of the Assistant Commissioner and which are required to be returned thereto before allowance or after abandonment of the application will have a notation placed on the face of the application file by the Office of the Assistant Commissioner requiring such return.

Suspension of Action Where There is Concurrent Litigation

In order to avoid duplication of effort, actions in applications in which there is an indication of concurrent litigation will be suspended automatically unless and until it is evident to the examiner, or the applicant indicates, that: (1) a stay of the litigation is in effect; (2) the litigation has been terminated; (3) there are no significant overlapping issues between the application and the litigation; or (4) it is applicant's desire that the application be examined at that time.

Expedited Examination of Reissues

All reissue applications, except those under suspension because of litigation, will be taken up for action ahead of other "special" applications; this means that all issues not deferred will be treated and responded to *immediately*. Furthermore, reissue applications involved in "stayed litigation" will be taken up for action in advance of other reissue applications.

Insofar as reissue applications for patents in litigation are concerned, the Office is presently considering modifications to the rules to provide for their examination within the two-month waiting period now provided by Section 1.176. Until appropriate modifications are made to the rules, the Office will entertain petitions under 37 CFR 1.183 to waive the delay period of 37 CFR 1.176. In addition, the Office is presently considering requiring the prompt disclosure of the existence of litigation related to a pending application.

Time monitoring systems are being put into effect which will closely monitor the time used by applicants, protestors, and examiners in processing reissue applications of patents involved in litigation in which the court has stayed further action.

Applicants in reissue applications involved in litigation which has been stayed, dismissed, etc. for consideration by the Patent and Trademark Office will normally be given one month to respond to Office actions in those situations where the Office determines that the reissue applicant can readily prepare a response in such time. This one month period may be extended upon a showing of clear justification. Of course, up to three months may be set for response if the Examiner determines such a period is justified.

Applicants and protestors submitting papers for entry in reissue applications of patents involved in litigation are requested to mark the outside envelope and the top right hand portion of the paper with the words *"REISSUE LITIGATION"* and with the unit of the PTO in which the reissue application is located—e.g., Assistant Commissioner for Patents, Board of Appeals or Examining Group. The notations preferably should be written in a bright color with a felt point marker. Papers marked *"REISSUE LITIGATION"* will be given special attention. Also, the PTO will place a prominent notation on the application file to indicate the existence of litigation.

The purpose of these changes is to reduce the time between filing and final action insofar as possible while still giving all parties sufficient time to be heard. This notice is supplemental to, and in some respects modifies, the earlier published notices on this subject and particularly the notice published at 977 O.G. 11 on December 12, 1978.

DONALD W. BANNER,
June 5, 1979. *Commissioner of Patents and Trademarks.*

[983 O.G. 24]

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(119) **Prior Art Cited by Patent Offices in Other Countries**

Section 1.56 of Title 37 of the Code of Federal Regulations requires patent applicants and others associated with the prosecution of a patent application before the U.S. Patent and Trademark Office to call to the Office's attention information which is material to examination. Where related or corresponding patent applications have been filed in other countries, prior art may be cited by the Patent Offices of those other countries in connection with the examination of the applications filed there. Where prior art is cited by those other Patent Offices while the U.S. application is pending, citations which are material to examination in this country and known to any of the individuals covered by Section 1.56 must be called to the attention of this Office. Attorneys and agents are reminded of their obligations in this respect.

It is suggested, of course, that such prior art be cited to the U.S. Patent and Trademark Office in a prior art statement which complies with the provisions of Section 1.97–1.99 of 37 CFR.

DONALD W. BANNER,
Apr. 23, 1979. *Commissioner of Patents and Trademarks.*

[982 O.G. 36]

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(120) **Documents Cited in PCT International Search Report**

This notice is intended to clarify which documents listed on an international search report prepared under the Patent Cooperation Treaty (PCT) should during the national stage before the Patent and Trademark Office (PTO):

(1) be listed and copies thereof submitted by the applicant to the PTO in an information disclosure statement filed under 37 CFR §§1.97–1.99,

(2) be supplied to the applicant with an Office action, and

(3) be listed by the examiner for printing on the front page of any resulting patent.

If the United States is designated in an international (PCT) application a copy of the search report will be mailed to the United States as a Designated Office by the International Bureau about 19 months after the priority date. This search report, without copies of the ci-

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ted documents is placed in the national stage application file

Accordingly, examiners in the PTO who are examining a national stage application will have a copy of the listing of documents cited in the International Search Report but they may not have copies of the documents cited therein and/or they may not have any available English translations of the cited documents. While the PTO is presently receiving copies of documents cited in PCT search reports of the European Patent Office and the Japanese Patent Office in a temporary trial program, the program may be discontinued at any time and applicants cannot rely upon this program to provide the examiner with copies of references or with any available English translation.

Citation of International Search Report Documents in Information Disclosure Statements

Applicants and/or applicant's attorney in PCT national stage applications, to ensure compliance with 37 CFR 1.56, should cite and supply copies of the documents cited in the PCT International Search Report which are "material" as defined in 37 CFR 1.56, preferably by an information disclosure statement under 37 CFR §§1.97–1.99.

A primary concern of the Patent and Trademark Office and the applicant should be that prior art cited in the PCT International Search Report which is material to the examination of the United States national stage application be fully considered during the examination of the United States national stage application. The best manner of ensuring such consideration is through a cooperative effort by all of the persons involved in the prosecution and examination of the United States national stage application. The applicant and his or her foreign patent attorney or agent obviously have access to, and presumably consider, the citations in the PCT International Search Report. With rare exceptions, the International Search Reort is prepared prior to the time at which applicant enters the United States national stage under 35 U.S.C. 371. Thus, applicant and his or her foreign attorney or agent are in a position to have reviewed the citations in the PCT International Search Report and call the attention of the United States patent attorney to those documents which are material. Under present case law, e.g., *Gemveto Jewelry Company, Inc.* v. *Lambert Bros., Inc.*, 216 U.S.P.Q. 976 (S.D. N.Y. 1982), foreign patent attorneys representing applicants for U.S. patents through United States correspondent patent attorneys are held to the same standards of conduct which apply to their United States counterparts. Since foreign applicants and their foreign patent attorneys have presumably considered the citations in the PCT International Search Report, and are under a duty to disclose the material citations contained therein, the preferred practice is to have this disclosure made via an information disclosure statement under 37 CFR §§1.97–1.99.

This will ensure that material citations contained in the PCT International Search Reort are considered by the examiner during the exmination of the United States national stage application. To the extent that the examiner does review the citations without an information disclosure statement having been submitted, the foreign applicant will obviously benefit therefrom. However, the foreign applicant and applicant's attorney cannot rely upon such a review by the examiner being conducted so as to relieve them of their dury to adequately disclose material prior art.

Copies of Documents Supplied With Office Actions

Copies of documents cited by the examiner in U.S. national stage applications will be provided as set forth in Section 707.05(a) of the MPEP. That is, copies of documents cited by the examiner will be provided to applicant except where the documents:

(1) are cited at allowance
(2) have been referred to in applicant's disclosure statement, and
(3) where the documents are cited and have been provided to applicant by the PTO in a parent national or international application.

Listing of Documents Cited in PCT International Search Reports by Examiners for Printing on Patents

The examiner should review all copies of documents cited in the International Search Report and should cite those documents which are material to the subject matter claimed in the national stage application. In those instances where documents are cited in the PCT search report but neither a copy of the documents nor an English translation (or English family member) is provided, the examiner may exercise discretion in deciding whether to take the necessary steps to obtain the copy and/or translation.

Where an information disclosure statement has been filed and copies have been submitted in conformance with 37 CFR 1.98 and section 609 of the Manual of Patent Examining Procedure (MPEP), the examiner must list all citations on form PTO–892 as part of the next regular Office action following receipt thereof unless such citations are listed by applicant on form PTO–1449.

Insofar as the citation by the examiner in an Office action of all of the documents cited in a PCT International Search Report is concerned where 37 CFR 1.98 has not been followed, it is not seen to be appropriate for the examiner to automatically cite, in the national stage application, each document listed in the PCT international search report. It has been the experience of the PTO that many documents listed on the PCT international search report are not relevant to the claims in the U.S. national stage application or that an English language equivalent document is used by the examiner.

May 23, 1986. RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

[1067 OG 32]

(121) **Extensions of Time in Reexamination Proceedings**

This notice is intended to clarify extension of time practice as it relates to reexamination proceedings, and supplement the provisions of Section 2265 of the Manual of Patent Examining Procedure (MPEP).

The provisions of 37 CFR 1.136(a) and (b) are *NOT* applicable to reexamination proceedings under any circumstances. Public Law 97–247 amended 35 U.S.C. 41 to authorize the Commissioner to charge fees for extensions of time to take action in an "application". A reexamination proceeding does not involve an "application". 37 CFR 1.136 authorizes extensions of the time period only in an application in which an applicant must respond or take action. There is neither an "application", nor an "applicant" involved in a reexamination proceeding.

Requests for an extension of time to file a patent owner's statement under 37 CFR 1.530 or respond to any Office action in a reexamination proceeding must be filed under 37 CFR 1.550(c). These requests for an extension of time will be granted only for sufficient cause and must be filed on or before the day on which action by the patent owner is due. In no case will mere filing of a request for extension of time automatically effect any extension. Although the appeal provisions of 37 CFR 1.192(a), 1.197(b), and 1.304(a) set time periods applicable to reexamination as well as application proceedings, they also include a further proviso making these time periods subject to the extension provisions of 37 CFR 1.136. However, for the reasons set forth above, the extension provisions of 37 CFR 1.136 are limited to application proceedings and do not apply to reexamination proceedings. Therefore, any request for an extension of time in a reexamination proceeding to file a brief or reply brief, a request for reconsideration or rehearing, or a notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action, will be considered under the provisions of 37 CFR 1.550(c). The regulations setting a time period in which any of these actions must be taken set a time for reply within the meaning of 37 CFR 1.550(b), which time can be extended under 37 CFR 1.550(c).

The extension-of-time practice in reexamination proceedings in which a final Office action has been mailed continues to be reflected in MPEP Section 2265. That is, the after-final practice in reexamination proceedings did not change Oct. 1, 1982, and the automatic extension of time policy for response to a final rejection and associated practice are still in effect in reexamination proceedings.

Extensions of time for a requester of a reexamination, who is not the patent owner, are available only in rare circumstances. A request for an extension of the time period to file a petition from the denial of a request for reexamination can only be entertained by filing a petition under 37 CFR 1.183 with appropriate fee to waive the time provisions of 37 CFR 1.515(c). No extensions will be permitted to the two-month time for filing a reply by the requester under 37 CFR 1.535. This two-month period is set by statute (35 U.S.C. 304) and cannot be extended.

Feb. 17, 1983. GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1028 OG 18]

(122) **Loss of Patent Rights Due to Failure to Timely Respond During Reexamination**

This notice is intended to remind patent owners and patent practitioners that patent rights can be, and have been, lost as a result of the failure to timely respond to an Office action, or meet a time deadline, in a reexamination proceeding. Failure to timely respond, meet a time deadline, or timely request an extension of time results in termination of a reexamination proceeding under 37 CFR 1.550(d) and issuance of a reexamination certificate under 37 CFR 1.570 in accordance with the last action of the Office. Neither the statute nor the rules provide for reviving the terminated proceeding. A certificate must issue.

Practitioners are reminded that requests for an extension of time in a reexamination proceeding must be filed under 37 CFR 1.550(c) with an appropriate justification and not by payment of an extension of time fee under 37 CFR 1.136(a). Further, such requests must be filed on or before the day on which the response is due.

The statute requires that reexamination be conducted with special dispatch. Accordingly, such proceedings are treated "special" throughout the PTO including the setting of two month shortened statutory periods for response to Office actions wherein extensions of time are controlled by the Office under §1.550(c) and not by the patent owner under §1.136(a). Further, special monitoring of reexamination is regularly conducted *throughout* the Office to insure timeliness. Applications are separately tracked and monitored in the PTO's PALM (Patent Application Locating and Monitoring) system. Particularly attention is given to newly filed requests to insure that the determination on whether or not to order reexamination is mailed within the three month statutory deadline. The reexamination file wrapper is quickly compiled and forwarded to the examining group within one month of the filing of the request for reexamination by a special Reexamination Preprocessing Unit located in the Application Branch. For ease of identification, reexamination files have a special and unique "control number" identification numbering system separate and apart from the regular "serial number" series used for regular patent applications. The reexamination files are bright orange in color to insure that they are not "lost in the crowd" of regular application files. The reexamination files are stored together in each examining group separate and apart from regular applications. A special printing cycle for accelerated publication of the reexamination certificate is utilized.

It has become apparent that many practitioners have not read the rules or if they have read the rules they have been unwilling to appreciate the significance of the special dispatch requirement of the statute and the intent of the regulations implementing that special dispatch. As noted above, appropriate rules have been drafted and extraordinary steps have been taken within the PTO to implement the special dispatch requirement. In contrast, as evidenced by recent petitions in reexamination proceedings, it appears that some practitioners have not adopted appropriate and necessary special docketing and operating procedures to insure proper and timely compliance with the special dispatch requirement and the regulations adopted for its implementation. It is expected that practitioners will take the steps necessary to provide appropriate in-house special docketing and operating procedures which earmark reexamination cases as different and apart from regular applications. These steps should be taken to insure timely response in reexamination proceedings and to prevent the loss of patent rights. The existence or non-existence of such steps and the manner in which any steps are implemented will be a significant consideration in reviewing any petition requesting a waiver of the rules to accept a late response in a reexamination proceeding.

The public is hereby put on notice that the rules relating to timely response and extension of time practice in reexamination proceedings will be *strictly enforced* in the future.

July 10, 1987 DONALD J. QUIGG,
Commissioner of Patents and Trademarks.

[1081 OG 5]

(123) **Clarification of Reexamination Practice and Change in Reexamination Certificate Wording**

I. *Clarification of Reexamination Practice.*

This notice is intended to clarify the options open to the patent owner *in a reexamination proceeding* when an allowable dependent claim depends from a rejected or cancelled *patent* claim.

A. *Leave dependent claim in dependent form.*

It is unnecessary in a reexamination proceeding to rewrite an allowable dependent patent claim in independent form when the dependent patent claim depends from a rejected or cancelled *patent* claim. The allowable dependent patent claim may remain in the printed format as it appears in the patent even though the patent claim upon which it is dependent is cancelled. Since the original patent claim numbers are not changed in a reexamination proceeding the content of the cancelled base patent claim would remain in the printed patent and would be available to be read as a part of the allowed dependent patent claim.

If a new claim (a claim other than a claim appearing in the patent) has been later cancelled, a claim which depends thereon will be rejected as incomplete and must be rewritten. New claims which depend from a rejected or cancelled patent claim do not have to be rewritten.

If the patent owner elects to leave a dependent claim (original or new) in dependent form when the independent patent claim is rejected or cancelled, the reexamination certificate would indicate (1) that the patentability of an allowed unamended dependent patent claim "is confirmed" or (2) that a new dependent claim is "determined to be patentable". The independent patent claim (cancelled or rejected at the time of the issuance of the reexamination certificate) would be indicated as "cancelled". Note that if the dependent patent claim which is left in dependent form is amended (e.g., correction of a misspelled word) the certificate would indicate the claim "to be patentable as amended". The independent patent claim is considered to be incorporated by reference in

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the dependent claim even though the independent claim is cancelled from the patent by the certificate.

B. *Combine claims into independent claim.*

It is also permissible for the patent owner to amend either the dependent or independent patent claim to incorporate the subject matter of the other. If the patent owner elects to rewrite one of the dependent or independent claims to include the subject matter of the other and cancel the other claim, the rewritten claim would be indicated on the certificate as being "patentable as amended". The other claim which was cancelled would be indicated on the certificate as "cancelled".

C. *Present new claim and cancel patent claims.*

It is also permissible for the patent owner to present a new claim incorporating the subject matter of the independent and dependent patent claims and cancel the independent and dependent patent claims. In this case the certificate would indicate "new claim ___ is added and determined to be patentable". The cancelled independent and dependent patent claims would be indicated as "cancelled".

NOTE: This Practice Applies Only to Reexamination and Does Not Change Current Practice Relating to Original and Reissue Applications

II. *Change in Reexamination Certificate Wording.*

The Office is also modifying the language of reexamination certificates directed to claims that are cancelled (for any reason) by dropping the language "having been finally determined to be unpatentable" since the existing language may not be accurate in all cases and since the patent and reexamination files are open to the public and the record speaks for itself. The certificate will merely state such a claim "is cancelled". This change will be effective with the July 17, 1984, Official Gazette issue.

DONALD J. QUIGG,
June 14, 1984. *Deputy Commissioner of Patent and Trademarks.*

[1044 O.G. 11]

(124) **Priority Claims Based on Inventors Certificates**

Pursuant to the provisions of 35 U.S.C. 119, last paragraph (as amended July 28, 1972), 37 CFR 1.55(c) requires that when an applicant wishes to claim a right of priority on the basis of an application for an inventor's certificate, ". . . the applicant or his attorney or agent, when submitting a claim for such right . . . shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or for an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority."

As such, it has been and remains the position of the Patent and Trademark Office that, in accordance with 35 U.S.C. 119, application for inventors' certificates shall give rise to a right of priority only when the country in which they are filed gives to applicants, at their discretion, the right to apply, on the same invention, either for a patent or for an inventor's certificate. The affidavit or declaration specified under 37 CFR 1.55(c) is only required for the purpose of ascertaining whether, in the country where the application for an inventor's certificate originated, this option generally existed for applicants with respect to the particular subject matter of the invention involved. The requirements of 35 U.S.C. 119 and 37 CFR 1.55(c) are not intended, however, to probe into the eligibility of the particular applicant to exercise the option in the particular priority application involved.

It is recognized that certain countries that grant inventors' certificates also provide by law that their own nationals who are employed in state enterprises may only receive inventors' certificates and not patents on inventions made in connection with their employment. This will not impair their right to be granted priority in the United States based on the filing of the inventor's certificate.

Accordingly, affidavits or declarations filed pursuant to 37 CFR 1.55(c) need only show that in the country in which the original inventor's certificate was filed, applicants generally have the right to apply at their own option either for a patent or an inventor's certificate as to the particular subject matter of the invention.

C. MARSHALL DANN,
Aug. 17, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 14]

(125) **Requirements for Priority Documents, Priority Based on Application for Industrial Design**

In the Federal Republic of Germany, an application for protection of an industrial design may be accompanied by either a model or a drawing. It is understood that German residents file such applications with their local judicial authority ("Amtsgericht") rather than with the German Patent Office in Munich.

Questions have been raised in this connection as to:

(1) What sort of priority document under 35 U.S.C. 119 is required when the original filing has comprised a model rather than a drawing, and

(2) Whether it is necessary where the original filing was with a local judicial authority to obtain also a certificate from the national patent office.

As to the first question, the Patent and Trademark Office will receive under 35 U.S.C. 119, as evidence of an earlier filed design application which included the deposit of a model, drawings or acceptable photographs of the deposited model faithfully reproducing the design embodied therein together with other required information, certified by an official of the court or office with which the application was originally filed.

No additional certification by the national patent office will be required. Article 4D(3) of the Paris Convention refers to certification ". . . by the authority which received such application . . ." so the reference in 35 U.S.C. 119 to "patent office" will be construed to extend also to the authority in charge of the design register.

C. MARSHALL DANN,
Aug. 15, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 14]

(126) **Right of Priority (35 U.S.C. 119) Based on a Foreign Application Filed Under a Bilateral or Multilateral Treaty**

Under Article 4A of the Paris Convention for the Protection of Industrial Property (21 UST 1583; 24 UST 2140; TIAS 6923, 7727; 852 O.G. 511) a right of priority may be based either on an application filed under the national law of a foreign country adhering to the Convention or on a foreign application filed under a bilateral or multilateral treaty concluded between two or more such countries. Examples of such treaties are the Hague Agreement Concerning the International Deposit of Industrial Designs, the Benelux Designs Convention, and the Libreville Agreement of September 13, 1962, relating to the creation of an African and Malagasy Industrial Property Office. The Convention on the Grant of European Patents and the Patent Cooperation Treaty will be further examples of such treaties once they enter into force.

The Priority Claim

In claiming priority of a foreign application previously filed under such a treaty, certain information must be supplied to the Patent and Trademark Office. In addition to the application number and the date of the filing of the application, the following information is required: (1) the name of the treaty under which the application was filed, (2) the name of at least one country other than the United States in which the application has the effect of, or is equivalent to, a regular national application, and (3) the name and location of the national or intergovernmental authority which received such application.

Certification of the Priority Papers

Section 119 of Title 35 of the United States Code requires the applicant to furnish a certified copy of priority papers. Certification by the authority empowered under a bilateral or multilateral treaty to receive applications which give rise to a right of priority under Article 4A(2) of the Paris Convention will be deemed to satisfy the certification requirement.

C. MARSHALL DANN,
Aug. 9, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 2]

(127) **Using Certificate of Correction to Perfect Claim for Priority Under 35 USC 119**

Under 35 USC 119, an applicant may assert a right of priority and claim the benefit of an earlier filing date in a foreign country. In this regard, 35 USC 119 states:

> No application for patent shall be entitled to this right or priority unless a claim therefor and a certified copy of the original foreign application, specification and drawings upon which it is based are filed in the Patent and Trademark Office before the patent is granted. . . .

The failure to perfect a claim to foreign priority benefits prior to issuance of the patent may be cured by filing a reissue application; *Brenner* v. *State of Israel*, 158 USPQ 584 (CA DC 1968).

However, under certain conditions, this failure may also be cured by filing a Certificate of Correction request under 35 USC 255 and 37 CFR 1.323. For example, in the case of *In re Van Esdonk*, 187 USPQ 671 (Comr. 1975), the Commissioner granted a request to issue a Certificate of Correction in order to perfect a claim to foreign priority benefits. In that case, a claim to foreign priority benefits had not been filed in the application prior to issuance of the patent. However, the application was a continuation of an earlier application in which the requirements of 35 USC 119 had been satisfied. Accordingly, the Commissioner held that the "applicants' perfection of a priority claim under 35 USC 119 in the parent application will satisfy the statute with respect to their continuation application."

Although *In re Van Esdonk* involved the patent of a continuation application filed under 37 CFR 1.60, it is proper to apply the holding of that case in similar factual circumstances to any patented application having benefits under 35 USC 120. This is primarily because a claim to foreign priority benefits in a continuing application, where the claim has been perfected in the parent application, constitutes in essence a mere affirmation of the applicant's previously expressed desire to receive benefits under 35 USC 119 for subject matter common to the foreign, parent, and continuing applications.

In summary, a Certificate of Correction under 35 USC 255 and 37 CFR 1.323 may be requested and issued in order to perfect a claim to foreign priority benefits in a patented continuing application if the requirements of 35 USC 119 had been satisfied in the parent application prior to issuance of the patent and the requirements of 37 CFR 1.55(a) are met.

However, a claim to foreign priority benefits cannot be perfected via a Certificate of Correction if the requirements of 35 USC 119 had not been satisfied in the patented application, or its parent, prior to issuance and the requirements 37 CFR 155(a) are not met. In this latter circumstance, the claim to foreign priority benefits can be perfected only by way of a reissue application in accordance with the rationale set forth in *Brenner* v. *State of Israel, supra.*

RENE D. TEGTMEYER,
July 25, 1986. *Assistant Commissioner for Patents.*

[1069 OG 38]

(128) **Abstract of the Disclosure**

This notice is intended to announce a change in the examining practice concerning review of the abstract for compliance with the guidelines set forth in MPEP 608.01(b).

At present, the examiner is instructed to review the abstract for compliance with the guidelines when passing the case to issue, making any necessary revisions by examiner's amendment. This policy has led to the necessity for many changes by the examiner which could have and should have been made at an earlier point in the prosecution. For example, abstracts in excess of the 250 word limit require cancellation and/or rewriting of portions thereof. This 250 word limit is strictly enforced since it represents a requirement of the printing process and the printed patent format designed to present a maximum amount of information concerning a patent on a single page.

Effective immediately, examiners are to require correction of the abstract at the earliest point in the prosecution that non-compliance with the guidelines is detected. Applicants are expected to observe the guidelines in drafting the abstract and correct any defect that is identified in an Office action. Applicants are encouraged to make the necessary corrections not only to relieve the examiner of this burden, but also to help avoid any potential conflict with respect to altering the scope of the enabling disclosure. In this regard, it should be noted that the abstract of the disclosure has been interpreted to be a part of the specification for the purposes of compliance with paragraph 1 of 35 USC 112. *In re Armbruster*, 512 F2d 676, 185 USPQ 152 (CCPA 1975). However, although it is preferable for applicant to make any necessary changes, the examiner will retain the authority and responsibility for reviewing, editing and revising the abstract of the disclosure at the time of allowance of the application to assure compliance with the guidelines.

Section 608.01(b) of the Manual of Patent Examining Procedures will be amended appropriately.

WILLIAM FELDMAN,
Dec. 30, 1977. *Deputy Assistant Commissioner for Patents.*

[967 O.G. 2]

(129) **Supplemental Guidelines for The Implementation of 37 CFR 1.109— Reasons for Allowance**

A recent review of recorded statements of reasons for allowance indicates the need for a better understanding regarding implementation of new Rule 109 (37 CFR 1.109).

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These guidelines are supplemental to those published in the **Official Gazette** at 957 O.G. 11 on April 12, 1977 and amplified in Section 1302.14 MPEP, Rev. 52, April 1977.

In determining whether reasons for allowance should be recorded the primary consideration lies in the first sentence of the Rule.

> "If the examiner believes that the record of the prosecution *as a whole* does not make clear his reasons for allowing a claim or claims, the examiner may set forth such reasoning." (Emphasis added.)

In most cases the examiner's actions and the applicant's response make evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule. This is particularly true when applicant fully complies with 37 CFR 1.111(b) and (c), 37 CFR 1.119 and 37 CFR 1.133(b). Thus where the examiner's actions clearly point out the reasons for rejection and the applicant's response explicitly represents reasons why claims are patentable over the reference, the reasons for allowance are in all probability evident from the record and no statement should be necessary. Conversely, where the record is not explicit as to reasons, but allowance is in order, then a logical extension of 37 CFR 1.111, 1.119 and 1.133 would dictate that the examiner should make reasons of record and such reasons should be specific.

Where specific reasons are recorded by the examiner, care must be taken to insure that such reasons are accurate, precise and do not place unwarranted interpretations, whether broad or narrow, upon the claims. The examiner should keep in mind the possible misinterpretations of his statement that may be made and its possible estoppel effects. Each statement should include at least: (1) the major difference in the claims not found in the prior art of record, and (2) the reasons why that difference is considered to define patentably over the prior art if either of these reasons for allowance is not clear in the record. The statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed and should not be written to specifically or impliedly state that all the reasons for allowance are set forth.

Under the rule, the examiner must make a judgement of the individual record to determine whether or not reasons for allowance should be set out in that record. These guidelines, then, are intended to aid the examiner in making that judgement. They comprise illustrative examples as to applicability and appropriate content. They are not intended to be exhaustive.

Examples of When It Is Likely That a Statement Should Be Added to the Record

1. Claims are allowed on the basis of one (or some) of a number of arguments and/or affidavits presented and a statement is necessary to identify which of these were persuasive, for example:

   a. When the arguments are presented in an appeal brief.
   b. When the arguments are presented in an ordinary response with or without amendment of claims.
   c. When both an affidavit under 37 CFR 1.131 and arguments under 102 and 103 are presented.
2. First action issue:

   a. Of non-continuing application wherein claims are very close to cited prior art and differences have not been discussed elsewhere.
   b. Of continuing applications wherein reasons for allowance are not apparent from the record in the parent case or clear from preliminary filled matters.
3. Withdrawal of a rejection for reasons not suggested by applicant, for example:

   a. As a result of an appeal conference.
   b. When applicant's arguments have been misdirected or are not persuasive alone and the Examiner comes to realize that more cogent argument is available.
   c. When claims are amended to avoid a rejection under 35 USC 102 but arguments (if any) fail to address the question of obviousness.

4. Allowance after remand from the Board of Appeals.
5. Allowance coincident with the citation of newly found references that are very close to the claims, but claims are considered patentable thereover:

   a. When reference is found and cited (but not argued) by applicant.
   b. When reference is found and cited by Examiner.

6. Where the reasons for allowance *are* of record but in the Examiner's judgement, are unclear (e.g. spread throughout the file history) so that an unreasonable effort would be required to collect them.
7. Allowance based on claim interpretation which might not be readily apparent, for example:

   a. Article claims in which method limitations impart patentability.
   b. Method claims in which article limitations impart patentability.
   c. Claim is so drafted that "non-analogous" art is not applicable.
   d. Preamble or functional language "breathes life" into claim.

Examples of Statements of Suitable Content

1. The primary reason for allowance of the claims is the inclusion of .03 to .05 percent nickel in all the claims. Applicant's second affidavit, in example 5 shows unexpected results from this restricted range.
2. During two telephonic interviews with applicant's attorney, Mr.—on 5/6 and 5/10/77, the Examiner stated that Applicant's remarks about the placement of the primary teaching's grid member were persuasive, but he pointed out that applicant did not claim the member as being within the reactor. Thus, an amendment doing such was agreed to.
3. The instant application is deemed to be directed to an unobvious improvement over the invention patented in Pat. No. 3,953.224. The improvement comprises baffle means *12* whose effective length in the extraction tower may be varied so as to optimize and to control the extraction process.
4. Upon reconsideration, this application has been awarded the effective filing date of S.N. _____ Thus the rejection under 35 USC 102(d) and 103 over Belgian Patent No. 757,246 is withdrawn.
5. The specific limitation as to the pressure used during compression was agreed to during the telephone interview with applicant's attorney. During said interview, it was noted that applicants contended in their amendment that a process of the combined applied teachings could not result in a successful article within the amended pressure range. The Examiner agreed to rely on this statement (see page 3, bottom, of applicant's amendment), and the case was allowed.
6. In the Examiner's opinion, it would not be obvious to a person of ordinary skill in the art first to eliminate one of top members 4, second, to eliminate plate 3, third to attach remaining member 4 directly to tube 2 and finally to substitute this modified handle for the handle 20 of Nania (see Fig. 1) especially in view of applicant's use of term "consisting."

Examples of Statements That Are Not Suitable as to Content

1. The 3 roll press couple has an upper roll 36 which is swingably adjustable to vary the pressure selectively against either of the two lower rolls. (Note: The significance of this statement may not be clear if no further explanation is given.)
2. The main reasons for allowance of these claims are applicant's remarks in the appeal brief and an agreement reached in the appeals conference.
3. The instant composition is a precursor in the manufacture of melamine resins. A thorough search of the prior art did not bring forth any compositions which corresponds to the instant compositions. The Examiner in the art also did not know of any art which could be used against the instant composition.
4. Claims 1–6 have been allowed because they are believed to be both novel and unobvious.

The examiner should *not* include in his statement any matter which does not relate directly to the reasons for allowance. For example:

5. Claims 1 and 2 are allowed because they are patentable over the prior art. If applicants are aware of better art than that which has been cited, they are required to call such to the attention of the Examiner.
6. The reference Jones discloses and claims an invention similar to applicant's. However, a comparison of the claims, as set forth below, demonstrates the conclusion that the inventions are non-interfering.

WILLIAM FELDMAN,
Jan. 24, 1978. *Deputy Assistant Commissioner for Patents.*

[968 O.G. 6]

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(130) **Practice/Re: New Grounds of Rejection After Appeal Brief Has Been Filed**

A new practice has been implemented in the Patent Examining Corps to promote uniformity and adherence to guidelines in situations where a new ground of rejection is made in an Office action after an appeal brief has been filed. Under this practice Supervisory Patent Examiner approval is required for any new ground of rejection made after the filing of an Appeal Brief. This requirement extends to new grounds of rejection made either in an examiner's answer or in an Office action reopening prosecution. Evidence of that approval should appear on applicant's copy of the Office action or answer as well as the record copy. Consultation with or approval by the Group Director is no longer required in these situations.

This new practice does not alter the existing guidelines for reopening prosecution (MPEP) 706.7(e) or for making a new ground of rejection in an examiner's answer (MPEP 1208.01). Appropriate modification will be made to applicable Sections of the Manual of Patent Examining Procedure in a future revision.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[970 O.G. 94 (5–23–78)]

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(131) **Commercial Success and Other Considerations Bearing on Obviousness**

In order to clarify Office practice relative to considerations of commercial success and other items bearing on obviousness, the following changes are made in the Manual of Patent Examing Procedure.

In section 716, subsection 4, change the sub-title and first paragraph to read as follows:

4. Commercial Success and Other Considerations Bearing on Obviousness

Affidavits or declarations submitting evidence of commercial success, long-felt but unsolved needs, failure of others, etc., must be considered by the Examiner in determining the issue of obviousness of claims for patent-ability under 35 U.S.C. 103. Such evidence might be utilized to give light to circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or unobviousness, such evidence may have relevancy, *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966) ; *In re Palmer.* 172 USPQ 126, 451 F.2d 1100 (CCPA 1971) ; *In re Fielder and Underwood,* 176 USPQ 300, 471 F.2d 640 (CCPA 1973). The *Graham* v. *John Deere* pronouncements on the relevance of commercial success, etc. to a determination of obviousness were not negated in *Sakraida* v. *Ag Pro,*425 U.S. 273, 189 USPQ 449 (1976) or *Andersons Black Rock, Inc.* v. *Pavement Salvage Co., Inc.*, 396 U.S. 57, 163 USPQ 673 (1969), where reliance was placed upon *A & P Tea Co.* v. *Supermarket Corp.*, 340 U.S. 147 87 USPQ 303 (1950). See *Dann* v. *Johnston,* 425 U.S. 219, 189 USPQ 257 (1976), at 261, footnote 4.

The weight attached to evidence of commercial success, etc. by the Examiner will depend upon its materiality to the issue of obviousness and the amount and nature of the evidence. Note the great reliance apparently placed on this type of evidence by the Supreme Court in upholding the patent in *United States* v. *Adams,* 383 U.S. 39, 148 USPQ 479 (1966).

Evidence of commercial success, etc. must be commensurate in scope with the scope of the claims [*In re Tiffin,* 448 F.2d. 791. 171 USPQ 294 (1971)]. Further in considering evidence of commercial success, care should be taken to evaluate to the extent possible from the evidence submitted, whether the commercial success alleged is directly derived from the invention claimed, in a marketplace where the consumer is free to choose on the basis of objective principles, and that such success is *not* the result of heavy promotion or advertising, shift in advertising consumption by purchasers normally tied to applicant or assignee, or other business events extraneous to the merits of the claimed invention, etc. [*In re Mageli, et al.* 176 USPQ 305, (CCPA 1973)]; [*In re Noznick, et al,* 178 USPQ 43, (CCPA 1973)].

Similarly in considering evidence of longfelt but unsolved needs and failure of others, care should be taken to determine whether such failures were due to lack of interest or appreciation of an invention's potential or marketability rather than want of technical know-how [*Scully Signal Co.* v. *Electronics Corp. of America,* 196 USPQ 657 (1st Cir. 1977)].

In section 716, subsection 4, add the following as the last paragraph:

If, after evaluating the evidence, the examiner is still not convinced that the claimed invention is patentable, his action should include a simple statement to that effect, identifying the reason(s) (e.g., evidence of commercial success not convincing, the commercial success not related to the technology, etc.).

RENE D. TEGTMEYER,
July 10, 1978. *Assistant Commissioner for Patents.*

[973 O.G. 34]

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(132) **Handling of Dependent Claims by the Examiner**

Effective immediately, the following practice will be followed by patent examiners when making reference to a dependent claim—either singular or multiple. The new practice is intended to simplify and streamline our current practice (MPEP 608.01(n), Revision 55, January 1978) which experience indicates was unnecessarily burdensome in many cases.

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1. When identifying a singular dependent claim which does not include a reference to a multiple dependent claim, either directly or indirectly, reference should be made only to the number of the dependent claim.
2. When identifying the embodiments included within a multiple dependent claim, or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, each embodiment should be identified by using the number of the claims involved, starting with the highest, *to the extent necessary* to specifically identify each embodiment.
3. When all embodiments included within a multiple dependent claim or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, are subject to a common rejection, objection or requirement, reference may be made only to the number of the dependent claim.

The following table illustrates the intended differences between current and the revised practice where each embodiment of each claim must be treated on an individual basis:

Claim Number	Claim Dependency	Identification: Current Practice	Identification: Revised Practice
1	Independent	1	1
2	Depends from 1	2/1	2
3	Depends from 2	3/2/1	3
4	Depends from 2 or 3	4/2/1	4/2
		4/3/2/1	4/3
5	Depends from 3	5/3/2/1	5
6	Depends from 2, 3 or 5	6/2/1	6/2
		6/3/2/1	6/3
		6/5/3/2/1	6/5
7	Depends from 6	7/6/2/1	7/6/2
		7/6/3/2/1	7/6/3
		7/6/5/3/2/1	7/6/5

When all embodiments in a multiple dependent claim situation (claims 4, 6 and 7 above) are subject to a common rejection, objection or requirement, reference may be made only to the number of the individual dependent claim. For example, if 4/2 and 4/3 were subject to a common ground of rejection, reference should be made only to claim 4 in the statement of that rejection.

The provisions of 35 USC 132 require that each Office action make it explicitly clear what rejection, objection and/or requirement is applied to each claim embodiment.

WILLIAM FELDMAN,
Oct. 17, 1978. *Deputy Assistant Commissioner.*

[976 O.G. 128]

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(133) **Microorganisms—Patentable Subject Matter**

The decision of the Supreme Court in *Diamond* v. *Chakrabarty* (206 U.S.P.Q. 193) held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. §101. It is clear from the Supreme Court decision that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability.

Accordingly, the Patent and Trademark Office is now examining patent applications including claims to microorganisms which had been under suspension. Assuming that the products involved were the result of human intervention and were not products of nature, such claims will not be rejected under 35 U.S.C. §101 as directed to unpatentable subject matter.

SIDNEY A. DIAMOND,
July 29, 1980. *Commissioner of Patents and Trademarks.*

[997 O.G. 24]

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(134) **Department of Commerce**
Patent and Trademark Office

Designation of International Depository Authorities under the Budapest Treaty

The Budapest Treaty and the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary, and Japan. A copy of the Treaty was published in the *Official Gazette* on Aug. 23, 1977 (961 O.G. 21–26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depository on its territory to serve as an international depository authority. More than one depository may be designated. Each such depository will be authorized to receive and store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depository authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depository's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depository to assume the cost of transferring deposits made under the Treaty to another international depository authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depository promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557–3065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depository authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depository authority.

MEMORANDUM

For the purposes of prospective international depositary authorities under the Budapest Treaty

Introduction

1. This memorandum contains informations for the benefit of any depositary institutions (culture collections) that may wish to become "international depositary authorities" under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depositary institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depositary authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of intergovernmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 3(1)(a) and 9(1)(a)).

General Remarks on International Depositary Authorities

3. "International depositary authorities" are depositary institutions that have acquired the status of international depositary authorities. To obtain this status, a depositary institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depositary institution acquire such status: it is therefore possible for there to be several international depositary authorities located on the territory of one and the same State.

4. An international depositary authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depositary authority, or again by virtue of a decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depositary Authorities

5. The requirements referred to in paragraph 3 above which a depositary institution has to meet in order to become a depositary authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

(i) accepting for deposit any or certain kinds of microorganisms;

(ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms,

(v) complying with respect to the microorganisms deposited under the Treaty with the requirement of secrecy which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph 10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. *Reception of the microorganism.* The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b)(v)). When it receives the microorganism, the international depository authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. *Viability test.* The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1).

8. *Viability statement.* The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. *Storage of the microorganism.* The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indi-

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cating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. *Furnishing of samples.* The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure wherey the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. *Communication of the scientific description and/or proposed taxonomic designation.* If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. *Fees.* For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

SIDNEY A. DIAMOND,
July 14, 1978. *Commissioner of Patents and Trademarks.*

[999 O.G. 2]

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(135) **Entry Into Force of the Budapest Treaty**

The Patent and Trademark Office announces the entry into force on Aug. 19, 1980 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure with respect to the United States, Hungary, Bulgaria, France and Japan. A copy of the Treaty was published in the Official Gazette on Aug. 23, 1977 (961 O.G. 21–36).

Following entry into force of the Treaty, each state adhering or acceding thereto will be authorized to nominate depositories on its territory to serve as international depository authorities. Upon compliance with certain procedural steps set forth in the Treaty, each such depository will be designated an international depository authority.

No depository in the United States or elsewhere has yet been nominated or designated to serve as an international depository authority. It is expected, however, that some depositories will shortly be designated both in the United States and other States adhering to the Treaty. Public notice will be provided of the designation of each international depository authority and its requirements for patent deposits.

An application for a patent in any adhering States involving the action of a microorganism, for which a deposit is required, may make the required deposit in any international depository authority. The fact and date of making the deposit will be recognized for all patent purposes in each State adhering to the Treaty. No further deposit will be required for national patent processing or enforcement, provided a deposit is properly made under the provisions of the Treaty.

An application for a United States patent will not be required to proceed under the provisions of the Budapest Treaty, however. Such an applicant may rely instead on a deposit made in any depository meeting the requirements set forth in *In re Argoudelis, et al.*, 168 USPQ 99 (CCPA, 1970) and reprinted in section 608.01(p), Manual of Patent Examining Procedure.

Questions or information regarding the Budapest Treaty may be directed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557–3065.

SIDNEY A. DIAMOND,
July 14, 1980. *Commissioner of Patents and Trademarks.*

JORDAN J. BARUCH,
July 16, 1980. *Assistant Secretary for Productivity, Technology and Innovation.*

[997 O.G. 10]

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(136) **Department of Commerce**
Patent and Trademark Office
Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the American Type Culture Collection, Rockville, Md., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents and Trademarks.*

BUDAPEST Notification No. 11

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the American Type Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments

the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Nov. 17, 1980, of a written communication from the Government of the United States of America, relating to the American Type Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The American Type Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 3, 1980.

[1002 O.G. 116]

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(137) **Department of Commerce**
Patent and Trademark Office
Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the Agricultural Research Culture Collection, Peoria, Ill., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents and Tradmarks.*

BUDAPEST Notification No. 12

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the Agricultural Research Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Dec. 2, 1980, of a written communication from the Government of the United States of America, relating to the Agricultural Research Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The Agricultural Research Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 8, 1980.

[1002 O.G. 116]

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(138) **Request for Certification of Deposits Made Under the Budapest Treaty**

Deposits of microorganisms made in International Depositary Authorities are subject to the regulations of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure. Rule 11.3(a) of the Treaty regulations establishes a procedure by which an industrial property office shall assure the depositary that release of a sample is proper. Pursuant to the Treaty, the United States Patent and Trademark Office receives requests for certification that release of a sample of a deposited microorganism is proper under United States law. Effective immediately, all such requests for certification shall be directed to the Director, Patent Examining Group 120, United States Patent and Trademark Office, who has been delegated the authority to act on requests for certification under Rule 11.3(a) of the Budapest Treaty regulations.

DONALD J. QUIGG,
Sept. 4, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1083 OG 5]

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(139) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1

[Docket No. 70635-8153]

Deposit of Biological Materials for Patent Purposes

Agency: Patent and Trademark Office, Commerce
Action: Notice of Proposed Rulemaking
Summary: This notice sets forth rules that the Patent and Trademark Office (Office) is proposing to govern the deposit of biological materials for patent purposes. The proposals are directed to the procedural requirements for making a deposit of a biological material for patent purposes in the United States when it is determined that a deposit is necessary. In addition to the examining procedures, the proposals address the conditions which are required for an acceptable deposit, replacement of a deposit, and conditions which may be placed on access to the deposit once the patent is granted. Interested parties are invited to comment on the proposed rules.
Dates: Comments must be received on or before Jan. 9, 1989 to insure consideration. A public hearing will be held on Jan. 11, 1989, beginning at 9:30 a.m. Requests to present oral testimony at the hearing should be received on or before Jan. 9, 1989.
Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Charles E. Van Horn.

The hearing will be held in the Commissioner's Conference Room in Crystal Park 2, Room 912. Written comments and a transcript of the public hearing will be available for public inspection in Crystal Plaza Bldg. 2-5C15.
For Further Information: Charles E. Van Horn or Harris A. Pitlick by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

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Supplementary Information: Every patent must contain a written description of the invention sufficient to enable a person skilled in the art to which the invention pertains to make and use the invention. Where the invention involves a biological material and words alone cannot sufficiently describe how to make and use the invention in a reproducible or repeatable manner, the required biological material must either be known and readily available and likely to continue to be available or be deposited in a suitable depository to obtain a patent. Access to a deposit during the pendency of a patent application relying upon it will be governed by the same criteria used to consider access to the patent application. Samples of the deposited material must become publicly available upon issuance of the patent. The deposit will be considered part of the patent disclosure.

A draft policy statement on the deposit of biological materials for patent purposes was circulated among interested bar and industry groups and published in the BNA-Patent, Trademark and Copyright Journal on May 22, 1986. After reviewing written comments on the statement, an advance notice of proposed rulemaking setting forth rules being considered for deposits of biological materials for patent purposes was published on Sept. 9, 1987 in the Federal Register, 52 FR 34080, and on Sept. 29, 1987 in the *Official Gazette*, 1082 O.G. 47. Numerous organizations and individuals filed comments in response to the advance notice.

The rules being proposed by the Office prescribe the conditions under which a deposit may be made, the kinds of materials that may be deposited, the type of depository which is acceptable to the Office, the time for making an original deposit, the procedures and obligations applicable to the making and maintaining of a deposit and its possible replacement, the term of a deposit and other matters relating to the deposit of a biological material for patent purposes. In general, the rules being proposed by the Office would continue and clarify both long-standing practices of the Office and judicially developed principles of patent law. The explanations associated with the rules that are ultimately adopted along with the substantive content of the comments and responses concerning the draft policy statement, the advance notice of proposed rulemaking and this notice of proposed rulemaking will be incorporated into a set of guidelines that will be published in the Manual of Patent Examining Procedure.

Familiarity with the advance notice is assumed. Changes in the text of the rules proposed in this notice from the text of the rules published for comment in the advance notice are discussed.

The comments received in response to the advance notice are analyzed.

Changes in Text of Advance Notice

Several changes have been made in the text of the rules being proposed from the text of the rules which were published for comment in the advance notice. Those changes are discussed below.

Section 1.200 as published in the advance notice has been revised by replacing the term "after insertion in a host" in the first sentence with "indirectly." The former term was too narrow in scope. Indirect replication is meant to include those situations where the biological material is only capable of replication when another self-replicating biological material is present. Self-replication after insertion in a host is one example of indirect self-replication. Examples of indirect replicating biological materials include viruses, phages, plasmids, symbiants, and replication defective cells.

Section 1.200 has been further changed by modifying the list of representative examples in the second sentence to include at least one material listed in the third sentence to indicate the lists are not intended to be mutually exclusive.

Section 1.200 has been further changed by deleting the last sentence thereof so that no materials are explicitly excluded from the definition of biological material.

Section 1.201(a) as published in the advance notice has been completely rewritten so as not to refer to specific requirements of 35 U.S.C. 112. The rule as proposed states that where a claimed invention is or relies on a biological material which is not known and readily available to the public and which cannot be described in writing alone, the disclosure may include a deposit of a biological material deposited in a depository and under conditions complying with these regulations.

Section 1.201(b) as published in the advance notice has been revised by replacing the term "in a reproducible manner" with the term "without undue experimentation" to assure the same standard for enablement regardless of whether biological materials are involved.

Section 1.201(b) has been further changed by deleting the second sentence thereof. The definition of "known and readily available" is not intended to be limited by rule. In the third sentence thereof (now the second sentence thereof), the term "accessible" has been replaced with "readily available" for consistency in terminology. Section 1.201(c) as published in the advance notice has been revised by deleting the term "one or more requirements of" as redundant and to avoid any suggestion of limitation as to the number of requirements of 35 U.S.C. 112 which can be met with the filing of a deposit.

Sections 1.202(a) and (b) as published in the advance notice have been changed to §§1.202(a)(i) and 1.202(a)(ii), respectively, and revised to indicate that a deposit "shall" be made in an acceptable depository under paragraph (a)(i) or (a)(ii). The Office will not accept for patent purposes any deposit not made in a depository under §1.202(a).

Upon publication of final rules on the deposit of biological materials for patent purposes, the Office will publish a list of International Depositary Authorities (IDAs). Any other depository seeking status under paragraph (a)(ii) of §1.202 would be required to comply with the applicable rule as adopted.

Section 1.202(b) as published in the advance notice has been changed in proposed §1.202(a)(ii) by including governmental agencies among the impartial consultants and by simplifying the language in subparagraph (3).

Section 1.202(c) as published in the advance notice has been changed to §1.202(b). It has been revised to refer to a depository under paragraph (a) of this section and to indicate that the substitute deposit must be viable when the biological material is of a kind capable of self-replication.

Section 1.202(d) as published in the advance notice has been changed to §1.202(c). It has been revised to refer to a depository seeking or acquiring status under paragraph (a)(ii) of this section. The word "said" in subparagraph (5) has been deleted and appropriate commas inserted in subparagraphs (4) and (5).

A new paragraph (d) is proposed to be added which would prescribe how an acceptable depository limited to certain kinds of biological material may extend the kinds of such material for which it wishes to be recognized by the Office.

Section 1.203(a) as published in the advance notice has been rearranged to clarify that a requirement for a deposit by the examiner will be made no later than the date the Notice of Allowance and Issue Fee Due is mailed.

Section 1.203(b) as published in the advance notice has been revised by deleting the terms "in a depository defined in §§1.202(a) and (b)" and "in the depository defined in §§1.202(a) or (b)." These terms are now redundant in view of the proposed change to §§1.202(a) and (b) as published in the advance notice. Section 1.203(b) has been further revised by adding that the applicant shall promptly submit the verified statement but that when the person corroborating the fact that the biological material which is deposited is the same as the biological material described in the application as filed is an attorney or agent registered to practice before the Office, the statement need not be verified. The language for the content of the statement has been rearranged to require that the biological material which is deposited is the same biological material described in the application as filed.

Section 1.204 as published in the advance notice has been changed to indicate changes in the conditions under which a replacement deposit may be made.

Section 1.204(a) has been changed to indicate that the rule prescribing the time for making a replacement deposit is subject to proposed paragraphs (e), (f) and (g) of the rule and that this time is extendable upon petition, only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action is due, but in no case will the mere filing of the request effect any extension. The word "new" has been replaced with "replacement" to provide antecedent basis for "replacement" later on in the paragraph.

Section 1.204(a) has been further changed to indicate that a replacement deposit shall be made in any acceptable depository under §1.202(a). The Office believes that where a replacement is necessary, the depositor should be free to make a replacement in any acceptable depository even though a new depository may consider it to be a new deposit.

Section 1.204(b) has been changed by adding the term "if applicable" after "viability test." Where the biological material deposited is of a material not capable of self-replication, a viability test clearly would not apply. It is the current position of the Office that a material that cannot be replicated directly or indirectly cannot form a proper basis for a deposit of biological material, but that is an issue of substantive patent law not addressed by these proposed rules.

Section 1.204(b) has been further changed by rearranging the first sentence thereof to clarify that notification to the Office of a replacement deposit is to be made in each affected application or patent. The penultimate sentence of §1.204(b) has been changed by replacing the term "the original deposit" with "that originally deposited" to make it clear that the replacement deposit is to be the same as the original deposit, as deposited.

Section 1.204(b) has been further changed to distinguish between the type of statement which must be furnished in connection with a replacement deposit in a pending application vis-a-vis a patent. If in a pending application, the statement shall state that the biological material which is deposited as a replacement is the same biological material described in the application as filed. If in a patent, the statement shall state that the replacement deposit is identical to that originally deposited. The statement must be verified by a person in a position to corroborate the facts listed in the statement except where the person is an attorney or agent registered to practice before the Office, in which case the statement need not be verified.

Section 1.204(c) has been changed by replacing the term "three months after learning or after receiving written notice from a depository that a replacement deposit is needed" with "the time required in this section."

Section 1.204(d) has been clarified by changing "replaced sample" to "replacement deposit." Also, the term "application or" has been deleted since its continued presence would be inconsistent with other changes in § 1.204 as published in the advance notice.

A new paragraph (e) to §1.204 as published in the advance notice is proposed to be added to indicate that in a pending application, the time for making a replacement deposit is the same as the time for making an original deposit, that the applicant shall promptly notify the Office after receiving notice that the depository possessing the original deposit cannot furnish samples for any reason, and that a replacement deposit can be made for any reason.

A new paragraph (f) to §1.204 as published in the advance notice is proposed to be added to indicate that a replacement deposit is unnecessary where the biological material, in accordance with proposed §1.201(b), need not be deposited.

A new paragraph (g) to §1.204 as published in the advance notice is proposed to be added to indicate that no replacement deposit of the biological material is necessary where a viable deposit is in the depository but the depository, for national security, health or environmental safety reasons, is unable to provide samples to requesters outside of the jurisdiction where the depository is located.

A new paragraph (h) to §1.204 as published in the advance notice is proposed to be added to indicate that a viable deposit may not be replaced in a patent where the depository can furnish samples but that nothing in the regulations is intended to prohibit a patentee from making an additional deposit of a biological material where an earlier deposit, otherwise viable, has become contaminated or has lost its capability to function as described in the specification. A viable deposit, relied on for patent purposes, even though contaminated or no longer capable of functioning as described in the specification, would provide the best evidence of whatever it was that was originally deposited and should be preserved.

Section 1.206 as published in the advance notice has been changed to indicate that viability is only relevant to biological materials that are capable of self-replication either directly or indirectly.

Paragraph (a) of §1.206 has been changed by inserting, after the term "biological material," the term "that is capable of self-replication either directly or indirectly." The term "relative to" in the last sentence of paragraph (a) has been changed to "regarding."

Paragraph (b) of §1.206 has been changed by inserting, after the term "for each deposit," the term "of a biological material defined in paragraph (a) of this section." In both paragraphs (b)(1) and (b)(2), an editorial change has been made by changing "Name" to "The name."

Paragraph (c) of §1.206 has been changed by replacing "§§1.202(a) or (b)" with "§1.202(a)" to be consistent with proposed §1.202.

Section 1.207 as published in the advance notice has been changed by indicating that certain requirements which a depositor may impose before samples of a deposited biological material shall be furnished by a depository are permissible under the rules.

Paragraphs (a) and (b) of §1.207 as published in the advance notice, with modification, are now subparagraphs (1) and (2), respectively, under paragraph (a). Subparagraph (2) states that removal of restrictions on the availability of the deposited material upon the granting of the patent are subject to paragraphs (b) and (c). Paragraph (c) as it appeared in the advance notice is now new paragraph (d).

A new paragraph (b) to §1.207 is proposed to be added which is patterned after Rules 11.4(c), (e) and (g) of the Budapest Treaty. Paragraph (b) permits the depositor to contract with the depository to require that samples of a deposited biological material shall be furnished only if a request for a sample, made during the term of the patent, is in writing, signed and dated; contains the name and address of the requesting party and the accession number of the deposit; and is communicated in writing by the depository to the depositor along with a copy of the request, the date on which the sample was furnished, and the name and address of the party to whom the sample was furnished.

A new paragraph (c) to §1.207 is proposed to be added which permits the depositor to require that samples of a deposited biological material shall be furnished only if the requesting party has agreed in writing, not to make the deposited biological material or any biological material derived therefrom available during the term of the patent to any third party without the written permission of the depositor, and to asume the burden of proof concerning compliance with the agreement. With the exception of the Commissioner and an acceptable depository under §1.202 in which the requesting party has made a new deposit for patent purposes of the deposited biological material or any biological material derived therefrom, any person or entity other than the requesting

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party and the depositor shall be deemed to be a third party under this paragraph. For the purposes of this paragraph, any biological material shall be deemed to be derived from the deposited biological material if it is replicated from, or would not have been produced but for access to, the deposited biological material, provided that the derived matter still exhibits the essential characteristics of the deposited biological material.

Both the Commissioner and an acceptable depository under §1.202 in which the requester has made a deposit for patent purposes are excepted from the scope of the term "third party" in order not to discourage innovation. Without the exception, a requesting party could not obtain a patent on some inventions without either written permission of the depositor or violating the agreement under which the deposit was obtained.

The term "essential characteristics" in the proviso is intended to mean those characteristics of the deposited biological material which are necessary to the practical utility of the deposited materials for any purpose - not simply those that may be necessary to the utility of the invention defined in one or more patents relying on the deposit for patent purposes. This definition has been adopted to provide some measure of protection to the depositor beyond the specific structure, utilities, properties, or functions that are described in the patent(s), yet are nevertheless inherently characteristic of the deposited material. The definition would include mutations and biological fragments that would be embraced by the doctrine of equivalents - performing substantially the same function in substantially the same way to produce substantially the same result. The definition would also include both obvious and nonobvious modifications of the deposited material so long as they possessed the essential characteristics of the deposited material, even if not known to the depositor. While the discovery of unrecognized functions and properties is to be encouraged, the discovery would not have taken place but for access to the deposited material. Nevertheless, without the proviso as part of the rule, the search for new discoveries based on the deposited material may be discouraged. The Office is seeking to maintain some balance between the interests of the patentee in monitoring the names of those who have gained access to the deposited material during the life of the patent, on the one hand, and the interest in promoting progress in the useful arts, on the other hand. It is recognized that this effort to define an appropriate scope for this undertaking may not meet with unanimous approval. Alternative approaches and suggestions for an appropriate definition are solicited and will be considered.

As an illustration of the scope of proposed §1.207(c), consider the following hypothetical:

> Gene A and gene B are genes located near to one another on the same chromosome in a eukaryote. Genes A and B do not overlap one another. Gene A is molecularly cloned and is the subject of a deposit for patent purposes as a DNA insert in vector V, a plasmid. The hybrid vector is designated as pVA. Vector V is a well-known and publicly available vector.

In each of the situations 1-3 (but not situation 4), it has been assumed that each of the derived materials will possess the essential characteristics of the deposited plasmid.

Situation 1: Requestor R receives from a depository the plasmid pVA. R must receive written permission from the patentee to distribute pVA to a third party.

Situation 2: Requestor R receives from a depository the plasmid pVA and modifies pVA in region A (the insert) in an obvious (within the meaning of 35 U.S.C. 103) manner to produce pVAO. R must receive written permission from the patentee to distribute pVAO to a third party.

Situation 3: Requestor R receives from a depository the plasmid pVA and modifies pVA in an unobvious (within the meaning of 35 U.S.C. 103) manner to produce pVAU. R must receive written permission from the patentee to distribute the plasmid pVAU to a third party, except that R could file a patent application on pVAU and deposit pVAU in a depository for patent purposes without written permission from the patentee.

Situation 4: Requestor R receives from a depository the plasmid pVA and uses the insert A in pVA as a hybridization probe to isolate genomic DNA from the same eukaryotic species from which gene A was isolated. Insert A is the original probe used to "walk" down the chromosome on which gene B is discovered. Gene B is unrelated, except by chromosomal linkage, to gene A. Gene B when inserted into a vector is patentable. Gene B could not have been isolated any other way than that described here. Gene B is then inserted into vector V to create the patentable plasmid pVB. R need not receive written permission from patentee to distribute pVB to a third party, and R could file a patent application on pVB and deposit pVB in a depository for patent purposes without written permission from the patentee.

This proposed constraint on access to the deposited material after the patent issues does not restrict access to the material to any person to whom the patent disclosure is addressed, and provides an undertaking by one requesting access which is an appropriate aid, given the nature of biological material, to assist the patent owner in the protection of property rights under the patent grant. To comply with the provision as proposed, the requesting party could present a written request for a sample to the depository containing the information and agreement required by proposed paragraphs (b) and (c) of §1.207.

The Office solicited comments in the advance notice of proposed rulemaking on the advisability of and rationale for seeking a provision in the law that would permit the type of restrictions on access to a deposit after the patent issues that were recommended in the Apr. 8, 1987, World Intellectual Property Organization (WIPO) report on the Industrial Property Protection of Biotechnological Inventions. Most comments received were in favor of the recommended restrictions, but very few provided any thoughtful analysis of why such restrictions are advisable or appropriate. Accordingly, except as noted in proposed §§1.207(b) and (c), the recommendations made in the WIPO report are not being incorporated into the text of the rules proposed at this time.

The recommendations in the WIPO report which are not being incorporated at this time are those (1) to use the biological material only for experimental purposes concerning the invention, and (2) not to export the biological material except to a country for which a relevant patent has been granted. Although these recommendations are not being included in the proposed rules, the Office may include them in the final rules if the public response provides a justification and rationale for departing from present policy and practice.

It is not clear precisely what the scope of permissible use is of a patented invention during the term of the patent. Mere use of a patented product or process, even for purposes of personal convenience, ordinarily constitutes infringement. *Aro Mfg. Co.* v. *Convertible Top Co.*, 377 U.S. 476 (1964). There is a line of authority which indicates that a person who makes and uses a patented product does not infringe if the use is for purposes of research or experimentation and not for profit. *Chesterfield* v. *U.S.*, 159 F.Supp. 371, 116 USPQ 445 (Ct. Cl. 1958). The so-called experimental use exception is discussed in detail in *Roche Products, Inc.* v. *Bolar Pharmaceutical Co.*, 733 F.2d 858, 221 USPQ 937 (Fed. Cir. 1984). If the recommendation was intended to define the limits of permissible use which are consistent with the right to exclude others under the patent law (35 U.S.C. 154), then there would be no need for the requester to undertake not to do anything other than that which is permitted by law, for the requester would already be bound by the law. It can also be argued that under existing law a person could infringe and challenge the validity of the patent, but the sample could not be used if the person independently undertook not to use the deposited material for other than experimental purposes. If the recommendation was designed to regulate a broader scope of activity than is permitted by law, the Commissioner is without legal authority to propose such a regulation (35 U.S.C. 6). Moreover, it is not clear that the Commissioner has the legal authority to regulate a requester's own use of deposited biological material which is not patented. For example, it is not clear that the Commissioner could propose a rule regulating a requester's own use of an unpatented hybridoma which was deposited for patent purposes to comply with 35 U.S.C. 112 to support claims to a monoclonal antibody produced therefrom. Nor does the Commissioner have the legal authority to regulate activity which may occur outside the territorial limits of the United States.

Further comment is solicited on the advisability of and necessity for adopting a regulation to limit a requester's use to experimental purposes. Specific suggestions are requested as to how to draft a regulation which both accomplishes the intended purpose and is not inconsistent with law.

The recommendation relating to the prohibition of exporting the biological material raises issues of international comity and requires consideration of a broader spectrum of international harmonization issues. The Budapest Treaty (Article 5) provides that restrictions on exports and imports of microorganisms should apply only where the restriction is necessary in view of national security or the dangers to health or the environment. A concern is what the over-all economic effect would be on the United States if other countries adopted regulations on prohibition of exports similar to the WIPO recommendation. The Office is well aware of the probability that samples of a deposited biological material could be exported from the United States to a country where the invention could be practiced without infringement or compensation to the patent owner, with the possibility of supplying a significant portion of the world market. While such an event would be manifestly unfair to the patent owner, the question remains as to the most effective way to prevent this inequity while preserving a role of the patent system in disseminating information on how to make and use an invention once the patent is granted.

Another issue that is raised by the export constraint is the authority of the Commissioner to implement such a change by regulation. A deposit is, after all, an integral part of the enabling disclosure of the patent grant with which it is associated yet there is no restriction placed on the sale or export of any other patent document or the enabling disclosure contained therein to countries foreign to the United States. While it is recognized that there may be much more technical know-how associated with a sample of a deposited biological material than with a typical patent disclosure, the amount of information required to practice any invention on a commercial scale is partly dependent on the technical simplicity of the invention. Further, if the United States now thinks that such a restriction is in its best interest, it would provide encouragement to other countries to adopt similar restrictions and retain exclusions from patentable subject matter, for example, that the United States has been encouraging other countries to remove. To unilaterally adopt such a policy may not be in the long term interests of the United States.

Further comment is solicited, with particular consideration of international implications, on the advisability of adopting a regulation to limit a requester's ability to export the biological material and whether such a regulation could be promulgated under existing law. Specific suggestions are requested as to how to draft a regulation which both accomplishes the intended purpose and is not inconsistent with law.

Section 1.208(a) as published in the advance notice has been changed by inserting the term "pursuant to 37 CFR 1.104" after "determine" in the first sentence thereof to make it clear that the examiner's determination regarding any deposit issues is part of, and not separate from, the examination process. The second sentence of paragraph (a) has been changed to indicate that a deposit in any acceptable depository under §1.202(a) shall be accepted for patent purposes if made under conditions complying with §1.207(a). The sentence as published in the advance notice limited the applicable depositories to International Depositary Authorities (IDAs). The third sentence of paragraph (a) has been changed by inserting the term "or replaced" after the term "has not been made" to be consistent with the changes made in proposed§1.204 on replacement deposits.

Section 1.208(b)(1) has been changed by inserting the term "original or replacement" after the first appearance of the term "acceptable" to be consistent with the changes made in proposed §1.204 on replacement deposits.

Response to and Analysis of Comments

Written comments from twenty (20) sources were timely received in response to the advance notice. Some suggestions made in comments have been adopted as presented or in modified form and others have not been adopted. A detailed analysis of the comments follows.

Comment:

Three comments questioned the wisdom of rules on deposit requirements at this time in view of the ongoing evolution in the biotechnology arts, changing ideas about deposit requirements, and a dearth of case law on the subject. Suggestions were made that the proposed rules instead be incorporated as guidelines in M.P.E.P. 608.01(p)C.

Response:

Issues surrounding deposits of biological materials vis-a-vis patent applications have existed for a long time. See, e.g., *Ex parte Kropp*, 143 USPQ 148 (Bd. Pat. App. 1959). The Office believes that a sufficient number of issues have been decided to warrant the promulgation of regulations at this time so that applicants for patent will have more certainty about what the Office will require in the area of deposits. The proposed rules are designed to address procedural requirements for the deposit of biological materials for patent purposes while preserving flexibility to accommodate changes in substantive law in relation to deposits.

Comment:

The proposed rules would trap Americans into losing Paris Convention rights in Japan. The reforms incorporated by the rules should be introduced in the context of discussions on the Budapest Treaty or on a bilateral basis with Japan.

Response:

The promulgation of rules to administer deposit practice in the United States will not have any necessary extraterritorial effect outside the United States. Applicants for patents in foreign countries seeking priority based on an earlier filed United States application need to be aware, however, that failure to make a deposit as of the U.S. filing date may preclude the sought after priority.

Comment:

The deposit requirement should not be limited to biotechnological inventions but include other arts which require the use of materials which are not known and readily available.

Response:

The suggestion is not being adopted. No other arts are known, nor were any suggested, where words alone may be incapable of describing an invention sufficiently to enable one skilled in the art to make and use it in a reproducible manner. Notwithstanding the proposed rules on deposits, 35 U.S.C. 114 provides that an applicant may be required to furnish a model to exhibit the

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invention or, in the case of a composition of matter, specimens or ingredients for the purpose of inspection or experiment.

Comment:

More experience and judicial decisions are needed to determine what should be deposited. The limitation in § 1.200 to materials that are capable of self-replication is too narrow. It should include material that is essential for replication, such as sperm cells, eggs and pollen. It should also include other materials, such as monoclonal antibodies, so long as the material deposited results in satisfaction of the "how to make" requirement of 35 U.S.C. 112. For example, suppose an inventor invents and claims a novel monoclonal antibody, places the source hybridoma at an accepted depository with the condition that the depository will make the monoclonal antibody readily available upon issuance of the patent but that the hybridoma will remain secret, except to both the Commissioner of Patents and Trademarks at any time and the public once the patent expires. This situation is analogous to *In re Metcalfe*, 410 F.2d 1378, 161 USFQ 789 (CCPA 1969). In the above example, the proposed enablement scheme should be sufficient to comply with the "how to make" requirement of 35 U.S.C. 112. Another comment suggested that proteins and enzymes, where their structures have not been characterized, should not be excluded from materials deposited by deposit of the "host cell capable of reproducing the nonliving material."

Response:

Biological material continues to be defined in proposed §1.200 in terms of a non-exhaustive list of what it includes. The last sentence of §1.200 has been deleted so that the definition of biological material for purposes of these regulations no longer explicitly excludes certain materials. 35 U.S.C. 112 requires that a person skilled in the art be enabled to make and use a claimed invention. The Office does not contemplate that there would be many situations where a material that is not capable of self-replication either directly or indirectly would be acceptable as a deposit under these regulations. An applicant is not precluded, however, in any given case from attempting to show why such a material should be acceptable. Although the Office is of the view that the deposit scheme outlined in the comment does not satisfy the "how to make" requirement of 35 U.S.C. 112, the proposed rules are flexible enough to accommodate either decision on this substantive issue. The proposed rules are intended to address procedural requirements rather than substantive issues relating to deposits.

Comment:

Viruses should be included in the second sentence of § 1.200 as well as in the third sentenoe.

Response:

This section has been modified. Viruses are now listed among representative examples of biological materials which may be deposited either directly or indirectly. This is being done to make it clear that the examples of biological materials listed in the second and third sentences of §1.200 are not necessarily mutually exclusive.

Comment:

In response to a solicitation for comments on the question of whether the Office should consider requiring a deposit of plants in appropriate circumstances where it is clear that a deposit is possible and is necessary to complete the description of an invention under 35 U.S.C. 162, first paragraph, it was suggested that a deposit requirement not be extended to plant patents because it has not been shown that the absence of a requirement has been unsatisfactory. Others suggested such an extension is appropriate provided depositories existed for the particular plant material or depositories were available at a price which small breeders could afford.

Response:

The Office does not intend to propose rules on deposits under the Plant Patent Act (35 U.S.C. 161-164) at this time, nor will the Office take the position that a deposit is required under the present provisions of 35 U.S.C. 162.

Comment:

In response to a solicitation for comments on the setting of an appropriate minimum number of seeds to ensure availability of the seed through the enforceable life of the patent, it was suggested that the Office not try to set a minimum requirement for number of seeds because it will vary with the nature of the invention. The same comment went on to suggest that the Department of Agriculture participate in resolving questions concerning plant material and seed deposits.

Response:

The Office does not intend to propose rules quantifying a minimum number of seeds. However, the Department of Agriculture requires a deposit of 2500 seeds for the grant of a Plant Variety Protection certificate. The Office will consider 2500 to be a minimum number in the normal case, but will provide an applicant an opportunity to provide justification why a lesser number would be suitable under the circumstances of a particular case. As the reproduction of seeds will often take a substantial period of time, the Office will require a number that is likely to satisfy a reasonable demand for samples.

Comment:

The advance notice stated that if a hybrid variety is claimed, the Office will take a position that applicant must deposit the parent lines of the hybrid variety unless applicant is able to establish that propagation of the variety can be achieved by micropropagation or other techniques from the hybridized seed or plants grown from such seed, in which case, deposit of the hybrid seed itself would make an adequate deposit. In response, it was suggested that if the hybrid plant is claimed, deposit of the hybrid seed should be all that is required because it will produce a hybrid plant. The comment goes on to suggest that if the hybrid seed is claimed, the "how to make" requirement is satisfied by depositing the parental or inbred seed under conditions that this seed will become available once the patent expires. The hybrid seed would be publicly available from the depository during the enforceable life of the patent under this arrangement.

Response:

The proposed rules are intended to address procedural requirements rather than substantive issues relating to deposits. Whether conditions of deposit as suggested by the comment would be acceptable will have to be determined on a case-by-case basis.

Comment:

A comment from Japan was concerned about delay due to quarantine and inspection procedures in depositing seeds in the United States because there are no Japanese depositories for seeds. It asked for publication of procedures governing the deposit of seeds in a U.S. depository by foreign depositors.

Response:

The proposed regulations are intended to apply equally to all applicants regardless of country of origin. Where delay is a problem, the regulations provide for extensions of time under 37 CFR 1.136 in appropriate cases. Where a depository does not exist to accept a biological material that would need to be deposited before a patent was granted, the Office would take the position that the requirements of 35 U.S.C. 112 were not satisfied for such an invention.

Comment:

Several comments suggest that the rules misinterpret the law, such as the *Lundak* decision (723 F.2d 1216, 227 USPQ 90 (Fed. Cir. 1985)), in stating that the written description requirement of 35 U.S.C. 112, not otherwise satisfied at the time of filing, may be satisfied by an appropriate deposit after the filing date. Nor may a post-filing deposit satisfy the best mode requirement under the principles of the *Gay* decision (309 F.2d 768, 135 USPQ 311 (CCPA 1962)). It is suggested that a post-filing deposit may only be used to satisfy the enablement requirement of 35 U.S.C. 112.

Response:

Section 1.20l(a) as published in the advance notice has been completely rewritten to indicate that where a claimed invention is, or relies on, a biological material which is not known and readily available to the public and which cannot be described in writng alone, the disclosure may include a deposit of a biological material deposited in a depository and under conditions complying with these regulations. The proposed rules are intended to address procedural requirements rather than substantive issues relating to deposits. Thus, where a deposit may be capable of meeting some requirement of 35 U.S.C. 112, the rules are intended to prescribe conditions under which the deposit would be suitable. The rules are not intended to address which requirements of 35 U.S.C. 112 may be met by the making of deposits. If the substantive law is that, for example, the written description requirement of 35 U.S.C. 112, not otherwise satisfied at the time of filing, may not be satisfied by a post-filing date deposit of a biological material, such a deposit, even if made in accordance with these rules, would not satisfy the statute.

Comment:

Several comments questioned the "known and readily available" exception to the requirement for a deposit. One comment would delete the "known" requirement since it is not clear how one would establish that a biological material is known. On the other hand, another comment suggested that the "readily available" requirement be deleted because it is not required by 35 U.S.C. 112 and the meaning of "readily" is uncertain and would be subject to litigation.

Response:

The suggestion to change the term "known and readily available" is not being adopted. The meaning and intent behind the use of the term was discussed in the advance notice. The term has been a part of Office policy and practice since at least July 1971. See M.P.E.P. §608.01(p)C (3rd ed., rev. 29). Whether a biological material is "known and readily available" will continue to be decided on a case-by-case basis.

Comment:

The term "in a reproducible manner" in §1.201(b) should be replaced with —without undue experimentation— to assure the same standard for enablement regardless of whether biological materials are involved.

Response:

The suggestion is being adopted. If invention-dependent biological material cannot be made or isolated in a reproducible manner, then the invention necessarily cannot be practiced without undue experimentation.

Comment:

The term "and test" in §1.201(b) should be deleted since it contradicts the premise that the biological material be available without restriction.

Response:

The suggestion has been rendered moot by the deletion of the second sentence of §1.20(b) as published in the advance notice.

Comment:

One comment suggested that if the Office intends that the applicant be independent of the depository, then the term "depositor" in §1.202(b)(2) as published in the advance notice is unclear because it does not exclude the situation where depositor and depository are the same, such as a university in the case of an academic inventor. Another comment suggested a "rule of reason" approach with respect to suitability requirements for depositories under §1.202. For example, in some cases, such as with universities, there may be no available depository other than one which is not independent of the applicant yet the depository may meet all the other suitability criteria. That comment suggests the use of the word "should" in place of "must" in §1.202(b). The comment suggests, alternatively, to amend the rule to include a presumption of suitability.

Response:

None of the suggestions are being adopted. The term "depositor" is intended to include the party on whose behalf the deposit is made. The rationale of the Office in requiring that a depository, if not an International Depositary Authority (IDA), be independent of the depositor was adequately discussed in the advance notice. While the intent of the Office is that once the patent issues, the deposit be beyond the control of any party having rights in the patent, the Office believes that the term "depositor" in §1.202(b)(2) as published in the advance notice does exclude the situation where depositor and depository are the same. Section 1.202(b)(2) as published in the advance notice is now proposed § 1.202(a)(ii)(2).

Comment:

The meaning of "an expeditious and proper manner" in §1.202(b)(6) is unclear.

Response:

The quoted term is considered to be the international norm. Compare Rule 2.3 of the Budapest Treaty. Section 1.202(b)(6) as published in the advance notice is now proposed §1.202(a)(ii)(6).

Comment:

A procedure should be established for a recognized depository under §1.202(b) to extend the list of kinds of biological materials accepted, analogous to Rule 3.3 of the Budapest Treaty.

Response:

The suggestion has essentially been adopted in new proposed §1.202(d).

Comment:

One comment suggested that §1.203(a) should be revised to permit depositing up until the time the Notice of Allowance and Issue Fee is paid. Another comment suggested that a sentence be added at the end of § 1.203(a) indicating that the mailing date of the Notice of Allowance and Issue Fee Due will be brought to the applicant's attention at the time the request for deposit is made.

Response:

The comments appear to misconstrue §1.203(a) as published in the advance notice, which stated that a requirement for a deposit by the examiner will be made no later than the date the Notice of Allowance and Issue Fee Due is mailed. The language in §1.203(a) has been rearranged to clarify this statement. The due date for making a deposit is governed by §1.208. Paragraph (c) thereof permits depositing up until the time the issue fee is paid and beyond if an appropriate extension of time is obtained. Notwithstanding the rules on time of making a deposit, the rules are not intended to supersede existing Office practice for withdrawing allowed applications from issue when warranted.

Comment:

One comment questioned why an original post-filing deposit requires a *verified* statement under §1.203(b) while a replacement deposit under §1.204(b) requires only a statement.

Response:

The rules as proposed require a verified statement when either an original or a replacement deposit is made, except if the person making the statement is an attorney or agent registered to practice before the Office, in which case the statement need not be verified.

Comment:

A number of comments suggested that if a biological material subsequent to filing becomes known and readily available to the public, there should no longer be a requirement to make, maintain or replace a deposit of it.

Response:

The suggestion has been adopted with respect to replacement deposits in new proposed §1.204(f). The rules as published in the advance notice and as proposed do not require an original deposit when the biological material is known and readily available to the public.

Comment:

Since even an original deposit may be made at any time up to the time specified in §1.208(c), it can be made regardless of whether an earlier, same or different, deposit was made and became nonviable. The strict time conditions for replacement and the consequences that follow therefrom should thus not apply while the application is still pending.

Response:

The suggestion has been essentially adopted in new proposed §1.204(e). Paragraph (e) prescribes the time for

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making a replacement deposit while a patent application is still pending as the same time for making an original deposit. The applicant is required to promptly notify the Office after receiving notice that the depository cannot furnish samples of the deposit for any reason. A replacement deposit may be made during this time for any reason, including where the original deposit has become contaminated or lost its disclosed function. Section 1.204(b) is proposed to be revised to require corroboration that the replacement deposit is the same as the biological material described in the specification.

Comment:

The time for replacing a deposit under §1.204 should be extendable depending upon the situation, such as where there is a need for a new growing season to replace plant material.

Response:

The previous comment and response addressed the question of replacement deposits in pending applications. The suggestion has been essentially adopted for replacement deposits after the patent has issued in §1.204(a). Paragraph (a) is proposed to be revised by allowing for an extension of time and by subjecting the time requirement for making a replacement deposit to paragraphs (e), (f) and (g) of §1.204. Requests for extension of time shall be by petition, only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action is due, but in no case will the mere filing of the request effect any extension.

Comment:

Where there are generic claims, the requirement of the "same" biological material in §1.203(b) and the "identical" biological material in §1.204(b) should be broadened to include biological materials falling within the scope of the claims.

Response:

While an application is still pending, the rules as proposed require that an original or replacement deposit be the same as the biological material described in the application as filed. In cases where there is more than one biological material described, a number less than all of them may be required to be deposited depending upon the facts of the case. The question of whether a post-filing date deposit of a species described generically in the application as filed is the "same" under the rules will have to be decided on a case-by-case basis. There may be cases where a post-filing date deposit, while the same as a biological material described in the application as filed, is of a material different from that of the original deposit due to the circumstances of prosecution. So long as the material(s) deposited and ultimately relied on for purposes of satisfying 35 U.S.C. 112 are described in the application as filed, this requirement of the rules is satisfied.

Comment:

Where an original, functional, uncontaminated deposit loses its functionality or becomes contaminated, replacement should be permitted even if the depository could still furnish samples.

Response:

Proposed §1.204(e) permits replacement deposits during pendency of an application for any reason. The suggestion is not being adopted for already issued patents. As stated in the advance notice, the best evidence of what was originally deposited should not be lost through destruction or replacement if made in association with an existing patent. New paragraph (h) of § 1.204 is proposed to be added to indicate that while a patentee may not replace a viable deposit where the depository can furnish samples, nothing in these regulations is intended to prohibit a patentee from making an additional deposit of a biological material where an earlier deposit has become contaminated or has lost its capability to function as described in the specification.

Comment:

It should be explicitly stated in §1.204(a) that the term "for any reason" includes loss of viability.

Response:

The suggestion is not being adopted. While the term "for any reason" includes loss of viability, the Office does not believe it needs further explication in the rule.

Comment:

Under §1.204(a)(2), if a deposit is available within the jurisdiction of the depository, no replacement deposit should be necessary. This is so since if the depositor and a second depository are in the same jurisdiction as the original depository, they would also be unable to provide samples outside of the jurisdiction.

Response:

The suggestion is being essentially adopted. § 1.204(a)(2) has been deleted and new §1.204(g) is proposed.

Comment:

The terms "after learning" and "from a depository" should be deleted from §1.204(c) since the first term is ambiguous and unnecessary and since written notice from anyone should be sufficient that a replacement deposit is needed.

Response:

The language objected to does not appear in proposed §1.204(c).

Comment:

Many comments questioned the statutory authority to regulate a patentee's conduct after expiration of the patent under §1.205, even under the guise of a condition precedent. A similar comment suggested that "beyond" in §1.205 be replaced with "during." One comment suggested that it is not clear in §1.205 whether the conditions of the first sentence are to be taken as fulfilling the requirements of the second sentence, or whether the second sentence is an additional requirement. The comment further suggested that it is unclear from the commentary whether there are different requirements according to whether a deposit is made under the Budapest Treaty or not.

Response:

These issues were addressed in the advance notice. The Office believes it is appropriate through rulemaking to assure that a deposited biological material necessary for practice of a patented invention be available without significant restriction after expiration of the patent for which the deposit was made by putting the burden on the depositor. The term of the deposit must comply with the requirements of each sentence of §1.205, whether or not the deposit is made under the Budapest Treaty.

Comment:

If a depository were permitted to maintain a deposit as it saw fit, based on demand and scientific interest, it would meet the public interest of having the deposit available after the patent expires and at the same time, avoid placing an excessive cost burden on the shoulders of patentees.

Response:

As the *quid pro quo* for receiving a patent, the statute requires a patentee to provide disclosure sufficient to enable one skilled in the art to make or use the invention. The statute does not provide for an expiration date for enablement. Section 1.205 as proposed is considered to be a reasonable compromise between a patentee's obligation to provide an enabling disclosure in reasonably permanent form and the loss of exclusivity upon the expiration of the patent. It is the statute which governs what the public interest is. A depository is not responsible for the public interest nor would a depository want this responsibility. Moreover, a depository's control over a deposit is limited by the contractual obligations between it and the depositor. The Office cannot compel a depository to make samples of a deposited material available beyond the term of deposit if the depositor has not contracted with the depository to do so.

Comment:

There should be a provision for extending the term of deposit under §1.205 by petition to the Commissioner in extraordinary situations and specifying under what conditions such a petition will be granted.

Response:

It is assumed that this comment intended for a third party to be able to extend the term of deposit. The term of deposit is a contractual matter between the depositor and the depository. The only concern of the Office thereover is that the term of deposit complies with the rule.

Comment:

In response to a solicitation for comments in the advance notice on the advisability of and rationale for seeking a provision in the law that would permit the type of restrictions on access to a deposit after the patent issues that are recommended in the Apr. 8, 1987 WIPO report on the Industrial Property Protection of Biotechnological Inventions, every comment which took a position on the WIPO recommendations was in favor of their adoption. Additionally, it was suggested, for deposits whether or not under the Budapest Treaty, that requests for samples be in writing, signed and dated, contain the name and address of the requestor and the accession number of the deposit, and that this information be communicated in writing, along with a copy of the request, to the owner of the patent by the depository, as specified in Rules 11.4(c), (e) and (g) of the Budapest Treaty. Other comments were that requestors hold depositories and patent owners harmless regarding any damage caused by the deposited material, make a full accounting to patent owners of their uses of the deposited material, and provide proof that they have complied with all restrictions on access to deposited material.

Response:

The Office has concluded that its position expressed in the advance notice that samples of a deposited biological material be available without restriction upon the granting of a patent did not have the flexibility permitted by law and did not adequately protect the patent owner. Given the unique nature of deposit requirements in patent jurisprudence and their value in practicing the invention, it is not unreasonable to allow a depositor to impose some minimal conditions on the requesting party in the obtaining of samples from a depository during the patent term so long as the conditions do not interfere with making the patent disclosure public and do not effectively restrict the requesting party's access. New proposed §1.207(b) essentially incorporates the provisions of Rules 11.4(c), (e) and (g) of the Budapest Treaty. New proposed §1.207(c) incorporates some of the recommendations in the April 8, 1987 WIPO report. Recommendations concerning restrictions to experimental purposes and limiting exports need further study and thus are not being incorporated into the text of the proposed rules at this time. Suggestions that requesting parties hold depositories and patent owners harmless regarding any damage caused by the deposited material, make a full accounting to patent owners of their uses of the deposited material, and provide proof that they have complied with all restrictions on access to deposited material are not being adopted. The Office believes such additional requirements are not justified and would also be excessively burdensome to administer.

Comment:

Where all that remains to comply with 35 U.S.C. 112 is a deposit, §1.208(a) should specify that a *provisional* rejection be made under 35 U.S.C. 112.

Response:

The suggestion is not being adopted. So long as the applicant has not made an acceptable deposit or assured the Office that an acceptable deposit will be made within the required time, the claims are properly rejected without provision. It bears emphasizing that an applicant's assurance that an acceptable deposit will be made within the required time must include a statement as to precisely what will be deposited and under what specific conditions so that an examiner can readily determine whether there are any outstanding issues. A general statement tracking the rule that an "acceptable" deposit will be made, without further description, will not be accepted as an appropriate assurance that an acceptable deposit will be made.

Comment:

The requirement in §1.208(d)(3) of a taxonomic description of a deposit may be unduly burdensome in some situations, such as where taxonomy has no real bearing upon the claims, or unnecessary in others, such as where the species is not novel or the strain is novel but does not differ significantly from the rest of the species. The same comment suggests that where required by an examiner and where a satisfactory deposit has been made, a taxonomic description should be permitted to be added after filing without it being considered to be new matter, since it is inherent in the deposited material.

Response:

The extent to which a taxonomic description of the deposited material is required will depend on the facts of the case. It must be sufficient for purposes of 35 U.S.C. 112. It must be sufficient to permit verification that deposited biological material is in fact that disclosed (see, for example, proposed §1.203(b).) It must be sufficient to allow for a reasonable examination of the patent application so that prior art may be properly distinguished. Once the patent issues, it must be sufficient to aid in the resolution of questions of infringement. Whether the addition of taxonomic description information after filing is permissible will also depend on the facts of the case.

Comment:

Several comments from foreign sources appear to have interpreted a response in the commentary in the advance notice to the effect that applicants may not be granted *foreign* priority in applications filed in *the United States* if they fail to make a deposit in a permanent depository acceptable to that foreign country before the U.S. filing date. These comments suggest that foreign priority should be granted so long as a deposit is made according to U.S. rules.

Response:

The response in the advance notice correctly stated that applicants may not be granted priority in applications filed in countries foreign to the United States if they fail to make a deposit in a permanent depository acceptable to that foreign country before the filing date of the application in the United States. The response in the advance notice did not state that applicants in the United States could not obtain the benefit of the filing date of an earlier foreign-filed application under 35 U.S.C. 119 if a suitable deposit were not made before the U.S. filing date.

Comment:

Another comment along the same lines as the previous comment appeared to suggest that it is not clear if foreign priority will be granted in view of the proscriptions in 35 U.S.C. 104 regarding acts in a foreign country. As a corollary, clarification was requested as to what effect 35 U.S.C. 104 will have on the proof of a U.S. invention where the deposit was made in a foreign depository, such as in an interference situation.

Response:

The proposed rules are intended to address procedural requirements rather than substantive issues relating to deposits. The effects of 35 U.S.C. 104 vis-a-vis deposits in foreign countries are deemed to be substantive.

Comment:

The Office has been inconsistent in its deposit requirement practice. For example, submission of a copy of a contract for deposit of a sample has typically been considered insufficient proof of existence of deposit. The commentary should discuss elements of proving that a deposit has been made or assuring that it will be made.

Response:

Since the comment did not provide any examples, it is unknown to the Office to what extent, if any, it has been inconsistent with respect to the quantum of proof it will accept of the existence of a suitable deposit. A copy of a contract should always be accepted as evidence that a deposit existed, but the contract may not specify all the conditions necessary to accept the deposit for patent purposes. The existing guidelines as they appear in M.P.E.P. 608.01(p)C state that a copy of the contract with the depository may be required. Once the require-

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ments for deposits are finalized and rules are in place, the Office intends to create a form with which any necessary proof of a suitable deposit may be submitted.

Comment:

One comment recognizes that the examiner has the initial burden of giving reasons why a deposit is required and suggests that an applicant's assertions as to why a deposit is not required should be taken at face value absent evidence to the contrary. The comment then goes on to suggest that certain presumptions should be made explicit. For example, an examiner's opinion about "unpredictability" should not be sufficient to sustain the examiner's burden that a deposit is required. The mere fact that a selection technique was used in the process of making a biological material should not create a presumption that the process is not reproducible. An opinion of an expert or that experiments have confirmed reproducibility should suffice to overcome a deposit requirement.

Response:

The Office does not believe that it is feasible to set rules or guidelines as to the type or character of proof which an examiner or applicant must present to meet the evidentiary burden on the issue of the necessity of a deposit. This is a substantive law issue which is highly dependent on the facts in each case. It is clear that the initial burden is on the Office, and that burden is not satisfied by a mere conclusionary statement.

Comment:

The requirement that inventors bear both the cost of a deposit in a depository and the cost of maintaining the material privately in case replacement is needed is burdensome and legal support is inadequate. An inventor should be able to choose which cost to bear. If an inventor chooses the depository and the deposit loses its viability, the public has not been any better protected than if the patentee held the deposit all along. If the patentee chooses to maintain the deposit, the patentee runs the risk that the patent will be held invalid if reasonable access is not granted, or the deposit is tampered with, or lost. There is no reason to believe that this would be common but if it did happen, there is little public harm. The public will have had the public disclosure in the patent. If the patent is invalidated, the patentee loses exclusivity. If the patent is not invalidated, it means that no deposit was necessary in the first place.

Response:

While clearly the cost of making and maintaining a deposit in a depository is a burden which applicants and patentees in other fields do not have, the requirement of a deposit in a depository independent of the depositor is the only way to assure that the public interest is served. It is no answer to say that if the depositor, serving as the depository, fails to make samples available, the public is not harmed because the patent may be invalidated. The public may be denied the right to practice the invention after the patent has expired. On balance, public and patent owner interests are better served by independent depositories having the capability of storing and maintaining biological material.

Comment:

The rules should require that deposit information be included in the abstract of the disclosure.

Response:

The Office does not intend at this time to propose a rule requiring where deposit information should appear in a patent. There is no apparent compelling public interest to adopt a specific location for deposit information nor would the administrative burden of enforcing such a rule appear to be justified.

Comment:

There should be some provision which would allow payment to the patentee of a fee every time a request was made by a requestor for a sample of a deposit in an amount insufficient to be a restraint on the availability of the deposited material but enough to alleviate some of the financial burden on the patentee.

Response:

If the patentee is required to make a deposit to meet a statutory requirement for obtaining a patent, there is no good reason why the public should pay any fee beyond that for administrative handling.

Comment:

It was suggested that §1.207(c) (now §1.207(d)) be deleted. This provision appears to be unnecessary since a requestor could obtain this information from the depository or by reviewing the file history.

Response:

The suggestion is not being adopted. Certification is a service to depositories and requestors since the mere disclosure of a deposited material in a patent does not necessarily mean that it is available or accessible.

Other Considerations

The proposed rules are in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel has Certified to the Chief Counsel for Advocacy, Small Business Administration that this proposed rule change is not expected to have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The proposed deposit practice will not impose extra work on patent applicants (whether small or large businesses or individuals).

The Patent and Trademark Office has determined that this rule change being proposed is not a major rule under Executive Order 12991. The annual effect on the economy will be less than $100 million. There will be no major increases in costs or prices for consumers, individual industries, Federal, State or local government agencies, or geographic regions. There will be no adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no federalism implications affecting the relationship between the national government and the States as outlined in Executive Order 12612.

This proposed rule contains a collection of information requirement subject to the Paperwork Reduction Act. A request to collect this information has been submitted to OMB for approval. Public reporting burden for this collection of information is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed to make a deposit or request a sample, and completing and reviewing the collection of information. It is further estimated that a respondent depository would spend about five hours collecting and submitting the necessary information to be recognized as a suitable depository by the Office. Send comments regarding this burden estimate or an other aspect of this collection of information, including suggestions for reducing this burden, to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Reporting and recordkeeping requirements, Small business.

For the reasons set out in the preamble, 37 CFR Part 1 is being proposed for amendment as follows:

PART 1-RULES OF PRACTICE IN PATENT CASE

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. Centered heading and new §§1.200 to 1.208 are proposed to be added as set forth below:

• • • • •

Deposit of Biological Material

Sec.

1.200 Biological Material.
1.201 Need to make a deposit.
1.202 Acceptable Depository.
1.203 Time of making an original deposit.
1.204 Replacement of deposit.
1.205 Term of deposit.
1.206 Viability of deposit.
1.207 Furnishing of samples.
1.208 Examination Procedures.

Deposit of Biological Material

§1.200 Biological material

For the purposes of these regulations pertaining to the deposit of biological material for patent purposes, the term biological material shall include material that is capable of self-replication either directly or indirectly. Representative examples include bacteria, fungi including yeast, algae, protozoa, eukaryotic cells, cell lines, hybridomas, plasmids, viruses, plant tissue cells, lichens and seeds. Viruses, vectors, cell organelles and other non-living material existing in and reproducible from a living cell may be deposited by deposit of the host cell capable of reproducing the non-living material.

§1.201 Need to make a deposit

(a) Where a claimed invention is, or relies on, a biological material which is not known and readily available to the public and which cannot be described in writing alone, the disclosure may include a deposit of a biological material deposited in a depository and under conditions complying with these regulations.

(b) Biological material need not be deposited if it is known and readily available to the public or can be made or isolated without undue experimentation from known and readily available material. Samples will be considered to be readily available even though some requirement of law or regulation of the United States or of the country in which the depository institution is located permits access to the material only under conditions imposed for safety, public health or similar reasons.

(c) The reference to a specific organism or other biological material in a specification disclosure does not create any presumption that the specific material is necessary to satisfy 35 U.S.C. 112 or that a deposit in accordance with these regulations is required.

§1.202 Acceptable depository

(a) A deposit shall be made in

(1) any International Depositary Authority (IDA) as established under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, or

(2) any other depository recognized to be suitable by the Office. Suitability will be determined by the Commissioner on the basis of the administrative and technical competence, and agreement of the depository to comply with the terms and conditions applicable to deposits for patent purposes. The Commissioner may seek the advice of impartial consultants from the biotechnology industry or governmental agencies on the suitability of a depository. The depository must:

(i) Have a continuous existence;
(ii) Exist independent of the control of the depositor;
(iii) Possess the staff and facilities sufficient to examine the viability of a deposit and store the deposit in a manner which ensures that it is kept viable and uncontaminated;
(iv) Provide for sufficient safety measures to minimize the risk of losing biological material deposited with it;
(v) Be impartial and objective; and
(vi) Furnish samples of the deposited material in an expeditious and proper manner.

(b) If any depository under paragraph (a) of this section defaults or discontinues the performance of any of the tasks it should perform, the Office will recognize as a substitute in any pending application or patent a deposit, which must be viable if the biological material is of a kind capable of self-replication, made with an IDA or depository recognized to be suitable by the Office which is transferred to said depository from the defaulting depository in the manner required for replacing a deposit under §1.204.

(c) A depository seeking status under paragraph (a)(2) of this section must direct a communication to the Commissioner which shall:

(1) Indicate the name and address of the depository to which the communication relates
(2) Contain detailed information as to the capacity of the depository to comply with the requirements of paragraph (b) of this section, including information on its legal status, scientific standing, staff and facilities;
(3) Indicate that the depository intends to be available, for the purposes of deposit, to any depositor under these same conditions;
(4) Where the depository intends to accept for deposit only certain kinds of biological material, specify such kinds;
(5) Indicate the amount of any fees that the depository will, upon acquiring the status of suitable depository under paragraph (a)(2) of this section, charge for storage, viability statements and furnishings of samples of the deposit.

(d) A depository having status under paragraph (a) of this section limited to certain kinds of biological material may extend such status to additional kinds of biological material by directing a communication to the Commissioner in accordance with paragraph (c) of this section. If a previous communication under paragraph (c) of this section is of record, items in common with the previous communication may be incorporated by reference.

(e) Once a depository is recognized to be suitable by the Commissioner or has defaulted or discontinued its performance under this section, notice thereof will be published in the Official Gazette of the Patent and Trademark Office.

§1.203 Time of making an original deposit

(a) An original deposit may be made at any time before filing an application for patent or, pursuant to a requirement that will be made by the examiner no later than the date the Notice of Allowance and Issue Fee Due is mailed, during pendency of the application for patent.

(b) When the original deposit is made after the effective filing date of an application for patent, the applicant shall promptly submit a verified statement from a person in a position to corroborate the fact, and shall state, that the biological material which is deposited is the same biological material described in the application as filed, except if the person is an attorney or agent registered to practice before the Office, in which case the statement need not be verified.

§1.204 Replacement of deposit

(a) Where a depository possessing the original deposit cannot furnish samples of the deposit for any reason, the depository shall, promptly after having noted its inability to furnish samples, notify the depositor of such inability, indicating the cause thereof. Subject to paragraphs (e), (f) and (g) of this section, the depositor shall be required to make a replacement deposit of the biological material which was originally deposited within three months of receiving notification that the depository cannot furnish samples. The period for satisfying this requirement is extendable upon petition, only for sufficient

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cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action is due, but in no case will the mer filing of the request effect any extension. The replacement shall be made in any acceptable depository under §1.202(a).

(b) An applicant or patent owner shall notify the Office in writing, in each application or patent affected, as soon as reasonably possible after a replacement deposit is made. This notification shall state the name and address of the depository, the accession number for the deposit, the date of making the deposit, the results of a viability test if applicable (as provided for in §1.206), the reason for making the replacement deposit, and include a verified statement, except that if made by an attorney or agent registered to practice before the Office, the statement need not be verified. If the replacement deposit relates to a pending application, the statement shall be by a person in a position to corroborate the fact, and shall state, that the biological material which is deposited as a replacement is the same biological material described in the application as filed. If the replacement deposit relates to a patent, the statement shall be by a person in a position to corroborate the fact, and shall state, that the replacement deposit is identical to that originally deposited. The notification shall be placed in the relevant application or patent file.

(c) A depositor's failure to replace a deposit within the time required by this section may cause the application or patent involved to be treated in any Office proceeding as if no deposit were made.

(d) In the event a deposit is replaced, the Office will apply a rebuttable presumption of identity between the original and the replacement deposit where the patent making reference to the deposit is relied upon during any Office proceeding.

(e) Where an application is still pending, the time for making a replacement deposit shall be the same as the time for making an original deposit under §1.203(a). The applicant shall promptly notify the Office after receiving notice that the depository possessing the original deposit cannot furnish samples of the deposit for any reason. A replacement deposit may be made during this time for any reason, including where the depository can furnish samples but the original deposit has become contaminated or has lost its capability to function as described in the specification.

(f) In no case is a replacement deposit of a biological material necessary where the biological material, in accordance with §1.201(b), need not be deposited.

(g) No replacement deposit of the biological material is necessary where a viable deposit is in the depository but the depository for national security, health or environmental safety reasons is unable to provide samples to requesters outside of the jurisdiction where the depository is located.

(h) A patentee may not replace a viable deposit where the depository can furnish samples. Nothing in these regulations is intended to prohibit a patentee from making an additional deposit of a biological material where an earlier deposit, otherwise viable, has become contaminated or has lost its capability to function as described in the specification.

§1.205 Term of deposit

A deposit shall be made for a term of at least thirty (30) years after the date of a viable deposit and at least five (5) years after the most recent request for the furnishing of a sample of the deposited biological material was received by the.depository. In any case, samples must be stored under agreements that would make them available beyond the enforceable life of the patent for which the deposit was made.

§1.206 Viability of deposit

(a) A deposit of biological material that is capable of self-replication either directly or indirectly must be viable at the time of deposit and during the term of deposit. Viability may be tested by the depository. The test must conclude only that the deposited material is capable of reproduction. No evidence is necessarily required regarding the ability of the deposited material to perform any function described in the patent application.

(b) A viability statement for each deposit of a biological material defined in paragraph (a) of this section not made under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure must be filed in the application and must contain:

(1) The name and address of the depository;
(2) The name and address of the depositor;
(3) The date of deposit;
(4) The identity of the deposit and the accession number given by the depository;
(5) The date of the viability test;
(6) The procedures used to obtain a sample if the test is not done by the depository; and
(7) A statement that the deposit is capable of reproduction.

(c) If viability test indicates that the deposit is not viable upon receipt, or the examiner cannot, for scientific or other valid reasons, accept the statement of viability received from the applicant, the examiner shall proceed as if no deposit has been made. The examiner will accept the conclusion set forth in a viability statement issued by a depository recognized under §1.202(a).

§1.207 Furnishing of samples

(a) The deposit must be made under conditions that assure that:

(1) Access to the deposit will be available during pendency of the patent application making reference to the deposit to one determined by the Commissioner to be entitled thereto under §1 14 and 35 U.S.C. 122, and
(2) Subject to paragraphs (b) and (c) of this section, all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of the patent.

(b) The depositor may contract with the depository to require that samples of a deposited biological material shall be furnished only if a request for a sample, during the term of the patent:

(1) is in writing, signed and dated:
(2) contains the name and address of the requesting party and the accession number of the deposit; and
(3) is communicated in writing by the depository to the depositor along with a copy of the request, the date on which the sample was furnished, and the name and address of the party to whom the sample was furnished.

(c) The depositor may require that samples of a deposited biological material shall be furnished only if the requesting party has agreed in writing, not to make the deposited biological material or any biological material derived therefrom available during the term of the patent to any third party without the written permission of the depositor, and to assume the burden of proof concerning compliance with the agreement. With the exception of the Commissioner and an acceptable depository under §1.202 in which the requesting party has made a new deposit for patent purposes of the deposited biological material or any biological material derived therefrom, any person or entity other than the requesting party and the depositor shall be deemed to be a third party under this paragraph. For the purposes of this paragraph, any biological material shall be deemed to be derived from the deposited biological material if it is replicated from, or would not have been produced but for access to, the deposited biological material, provided

that the derived matter still exhibits the essential characteristics of the deposited biological material.

(d) Upon request, the Office will certify whether a deposit has been stated to have been made under conditions which make it available to the public as of the issue date of the patent grant provided the request contains:

(1) The name and address of the depository;
(2) The accession number given to the deposit;
(3) The patent number and issue date of the patent referring to the deposit; and
(4) The name and address of the requesting party.

§1.208 Examination procedures

(a) The examiner shall determine pursuant to §1.104 in each application if a deposit is needed, in case one has not been made, or if a deposit actually made is acceptable for patent purposes. A deposit accepted in any acceptable depository under §1.202(a) shall be accepted for patent purposes if made under conditions complying with §1.207(a). If a deposit is required and has not been made or replaced in accordance with these regulations, the examiner shall in an Office action reject the affected claims in the application under the appropriate provision of 35 U.S.C 112, explaining why a deposit is needed and/or why a deposit actually made cannot be accepted.

(b) The applicant shall respond to a rejection under paragraph (a) of this section by -

(1) Making an acceptable original or repiacement deposit or assuring the Office in writing that an acceptable deposit will be made on or before the date of payment of the issue fee, or
(2) Establishing that the involved biological material is known and readily available to the public, or
(3) Arguing why a deposit is not required under the circumstances of the application considered. Other replies to the examiner's action shall be considered non-responsive. The rejection will be repeated until either paragraph (b)(1) or (b)(2) of this section is satisfied or the examiner is convinced that a deposit is not required.

(c) If an application is otherwise in condition for allowance except for the required deposit and the Office has received a written assurance that an acceptable deposit will be made on or before payment of the issue fee, the Office will mail to the applicant a Notice of Allowance and Issue Fee Due together with a requirement that the required deposit be made within three months. The period for satisfying this requirement is extendable under 37 CFR 1.136. Failure to make the required deposit in accordance with this requirement will result in abandonment of the application for failure to prosecute.

(d) For each deposit made pursuant to these regulations, the specification shall contain:

(1) Accession number for the deposit;
(2) Date of the deposit;
(3) Taxonomic description of the deposit and
(4) Name and address of the depository.

DONALD J. QUIGG,
Sept. 9, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1095 OG 47]

(140) **Plant Life — Patentable Subject Matter**

The decision by the Board of Patent Appeals and Interferences in Ex Parte Hibberd (Sept. 18, 1985) held that the Plant Patent Act (35 USC 161–164) and the Plant Variety Protection Act (7 USC 2321 et seq.) do not represent the exclusive forms of protection for plant life covered by these acts, and that there is no irreconcilable conflict between these plant-specific statutes and 35 USC 101. It is clear from the Board decision that plant life is not excluded from patent protection under 35 USC 101.

Accordingly, the Patent and Trademark Office is now examining applications including claims to plant life — e.g., plants per se, seeds, plant parts. To the extent that the claimed subject matter is directed to a "nonnaturally occurring manufacture or composition of matter — a product of human ingenuity" (*Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980)), such claims will not be rejected under 35 USC 101 as being directed to unpatentable subject matter.

DONALD J. QUIGG,
Oct. 8, 1985. *Commissioner of Patents and Trademarks—Designate.*

[1060 OG 4]

(141) **Petitioning to Make Applications Relating to Biotechnology Special**

This notice is intended to highlight the procedures which are available to applicants and, in particular, to applicants seeking patents on inventions relating to biotechnology, so as to have their applications accorded "special" status. A new interim procedure is also hereby established. Applications which have been made special will be advanced out of turn for examination and, subject alone to diligent prosecution by the applicant, will continue to be treated as special throughout the entire course of prosecution in the Patent and Trademark Office.

The Office accords special status to patent applications by granting petitions to make special on a number of grounds. These grounds include, for example, prospective manufacture of the invention, actual infringement of the invention, that the invention will materially enhance the quality of the environment and for inventions relating to safety of research in the field of recombinant DNA. See 37 CFR 1.102 and Manual of Patent Examining Procedure (MPEP) section 708.02 for details. Applicants seeking patents on inventions relating to biotechnology may petition based on any of the above grounds if they meet the appropriate criteria.

A new application (one which has not received any examination by the examiner) may be granted special status under the accelerated examination program. As set forth in MPEP 708.02, applicants are not subject to any of the above-mentioned criteria under this program but merely must 1) submit a written petition and the fee set forth in 37 CFR 1.17(i) which presently is $72.00; 2) present all claims directed to a single invention; 3) submit a statement that a pre-examination search was made, specifying by whom the search was made and listing the field of search; 4) submit one copy of each of the references deemed most closely related to the subject matter encompassed by the claims; and 5) submit a detailed discussion of the references pointing out how the claimed subject matter is distinguishable over the references. In those instances where the petition for this special status does not meet all the prerequisites set forth above, applicant will be notified of the defects and will be given an opportunity to perfect the petition.

In addition to the above-noted procedures to have biotechnology applications accorded special status, a new interim procedure is hereby established whereby applicants who are small entities may request that their biotechnology applications be granted special status. To take advantage of this interim special status for biotechnology inventions, an applicant must file a petition with the petition fee under 37 CFR 1.17(i) requesting the special status and must (1) state that small entity status has been established or include a verified statement establishing small entity status; (2) state that the subject

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of the patent application is a major asset of the small entity; and (3) state that the development of the technology will be significantly impaired if examination of the patent application is delayed including an explanation of the basis for making the statement. This newly established interim procedure will remain in effect until further notice in the *Official Gazette*. It is intended that a notice discontinuing this procedure will be published as the average pendency approaches the 18 month goal in this area. If the number of requests for making applications special under this procedure is too great, the procedure may have to be limited or discontinued.

The Office is continuing to work to reduce the pendency time for all applications. Special efforts are being made to reduce the pendency of biotechnology applications where filings are increasing rapidly and an already large backlog exists. Meanwhile, applicants who so desire can petition to have their applications made special as noted above. Questions concerning petitions to make special should be directed as follows:

1) to the Office of the Assistant Commissioner for Patents for petitions based on the grounds of prospective manufacture or infringement;
2) to the Board of Patent Appeals and Interferences for petitions on applications within the jurisdiction of the Board; or
3) to the appropriate Examining Group for petitions to make special on all other grounds.

June 22, 1988

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[1092 OG 55]

(142)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 21001–201]

File Wrapper Continuing Application Procedure

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases to provide a new procedure for filing continuation, continuation-in-part, and divisional patent applications. This procedure is being provided to simplify filing and processing of continuation, continuation-in-part and divisional patent applications which have heretofore required a new set of application papers. By using the application which is to be abandoned, the procedure will eliminate many of the problems currently involved in preparing and processsing such continuing patent application papers.
Effective Date: Feb. 27, 1983.
For Further Information Contact: Mr. Louis O. Maassel by telephone at (703) 557–3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: The Patent and Trademark Office is amending the rules of practice for patent cases to permit an applicant to file a continuation or division of a pending patent application by simply filing a request therefor and paying the necessary application filing fee. To file a continuation-in-part application, an amendment adding the additional subject matter and an oath or declaration relating thereto is also required.

The "file wrapper continuing" (FWC) procedure is incorporated in the rules by adding a new §1.62. Under this simplified procedure, any continuing application such as a continuation, continuation-in-part, or divisional application may be filed by using the papers in the copending prior application, which application will become automatically expressly abandoned. Under the FWC procedure, a new serial number is assigned and the specification, drawings and other papers in the parent application file wrapper are used as the papers in the continuing application. Changes in inventorship may be made. The "file wrapper continuing" (FWC) procedure is available for utility, design, plant, and reissue applications to the full extent that continuing applications can now be filed in such applications. Use of the FWC procedure will automatically result in express abandonment of the prior application as of the date that the continuation, continuation-in-part, or divisional application is filed.

The FWC procedure could be used for any continuation, continuation-in-part or divisional application provided the applicant wishes the copending prior application to become abandoned. If a divisional application is desired without abandonment of the parent application, the procedure under §1.60 should be used. Applicant also has the option of filing new application papers with a reexecuted oath or declaration.

Background

The notice of proposed rulemaking was published in the Federal Register on Nov. 7, 1980 at 45 FR 73965 and in the Official Gazette on Dec. 9, 1980 at 1003 O.G. 9. An oral hearing was held on Feb. 4, 1981.

Discussion of Major Issue Involved

A continuation or divisional application is an application in which the disclosure is identical to an earlier application. However, the claims may be changed. Continuation applications are often filed in situations where the applicant feels that the issue of patentability has not been satisfactorily resolved before the examiner and the application is not in condition for an appeal from the final rejection to the Board of Appeals. Divisional applications are filed voluntarily or as a result of a requirement for restriction by the examiner in a prior application. Continuation-in-part applications are filed where additional subject matter is added and claimed in the application. Under 35 U.S.C. 120 of the patent law, a continuation, continuation-in-part or divisional application may be filed during the pendency of the prior application and the benefit of the filing date of the prior application for the subject matter disclosed therein may be obtained.

The practice under §1.60 has resulted in a number of problems, especially difficulties in obtaining good-quality copies of prior applications. In addition, the practice involves unnecessary handling and processing delays.

Under new §1.62, the specification, claims and drawings, and any amendments in the prior application are made available for use in the continuation, continuation-in-part, or divisional application. A new filing fee is required in accordance with 35 U.S.C. 41 and 37 CFR 1.16. The only other statutory requirement under 35 U.S.C. 111 is a signed oath or declaration. Since a continuation or divisional application cannot contain new matter, the oath or declaration filed in the prior application would supply all the information required under the statute and rules to have a complete application and to obtain a filing date. Accordingly, the previously-filed oath or declaration will be considered to be the oath or declaration of the §1.62 continuation or division. However, if a continuation-in-part application is being filed, or a correction of inventorship is being made, then a new oath or declaration must be signed and filed by the applicant.

The original disclosure of an application filed under §1.62 will be the original parent application as executed by the inventor(s). However, the filing fee will be based on the claims in the §1.62 application after entry of any unentered amendments under §1.116 in the prior application and any preliminary amendment which may accompany the FWC request and filing fee. The Certificate of Mailing Procedure under 37 CFR 1.8 will not apply to filing a request for a "File Wrapper Continuing" application since the filing of such a request is considered to

be a filing of application papers for the purpose of obtaining an application filing date (37 CFR 1.8(a)(i)).

The applicant may file a signed FWC request and the regular filing fee under §1.16 and other necessary papers with the Patent and Trademark Office, either by mail addressed to "Box FWC" or in person with the mail room. An individual check or deposit account authorization should accompany each FWC application, since combined checks delay processing.

The Correspondence and Mail Division will sort out all "Box FWC" envelopes upon receipt and deliver them to a reader for prompt special handling. The reader would apply the "Mail Room" date stamp and mark the categories of the fees. The papers for each FWC application would be assigned a regular national serial number and be placed in a "Jumbo" size file wrapper. The Special Handling Branch will review the FWC request for accuracy and completeness and assign the filing date if everything appears to be in order. Problems will be handled, insofar as possible, by calling the applicant or attorney by telephone. There will be no need for any processing of the FWC application by the Classification or Examination Branches of Application Division since there are no papers to be examined and the FWC application will be routed to the group assigned the prior application. When the FWC application file wrapper is received in the examining group, the parent application will be promptly obtained and processed by a clerical staff member.

All of the correspondence from the Office in a FWC application will refer to the FWC application serial number and filing date and will be processed in the same manner as any other continuation, continuation-in-part or divisional application. The first action final rejection procedures set forth in §706.07(b) of the Manual of Patent Examining Procedure will also apply to FWC applications filed under §1.62.

The PALM III system will supply information to authorized persons as to the location of the parent application file wrapper and will tie the parent application number to the FWC application number.

The provisions of §1.62 provide that if any application in the file wrapper is available to the public that all applications in the file wrapper will be available to the public.

Some of the anticipated benefits of the new §1.62 procedure are the following:

For the Applicant

1. Formal requirements will be minimal.
2. A more prompt first action in the continuing application should be received in view of reduced processing time. The Application Division can process promptly all §1.62 applications with minimal effort. In the examining groups, the applications will be given high priority for processing purposes.
3. Amendments made to the specification, drawings and claims of the prior application will carry over into the §1.62 continuing application and will not need to be resubmitted in the continuing application.

For the Public

1. The pendency of a series of applications should be reduced since the time delay before examination and issuance of a continuing application filed under the §1.62 procedure would be reduced.
2. The entire record of prosecution could be in one file wrapper under the §1.62 procedure, even if several continuing applications are filed. This will result in easier access by the public to a series of applications if a patent is later issued.

For the Patent and Trademark Office

1. The workload of reviewing and processing new application papers in the Application Division will be reduced.
2. The examining group clerks will not be required to again enter amendments made in the prior application.
3. Less storage space will be required under §1.62 since there will be fewer papers to store.
4. The prior application file history and references cited therein will be readily available to the examiner under §1.62 and will not need to be ordered from abandoned files.
5. The Office will not be required to prepare a copy of the prior application file under the §1.62 procedure.

Discussion of Comments Received

After careful consideration of the comments which have been received, the proposed rulemaking relating to file wrapper continuing application procedure is being adopted with certain changes. A total of 23 comment letters were received. Six of these letters were received from patent law organizations. Two persons presented oral comments at the hearing. The comments of 6 letters supported the proposed rulemaking without further suggestions for change. Only one letter opposed the proposal.

Seven of the letters urged adoption of a procedure whereby an applicant could pay a fee to have a final rejection withdrawn so that prosecution could be extended in an application rather than filing a continuing application. This suggestion was not adopted for several reasons. Such a procedure could not be used for filing of continuation-in-part applications, the average pendency of applications in the Office would be extended, and significant problems in internal record systems would be created.

A number of comments were received which presented specific suggestions to proposed §1.62. Four letters commented that the requirement of proposed §1.62(a)(4) to supply information as to title, applicant, correspondence address, etc. in order to file under §1.62 could easily lead to filing errors.

In final §1.62(a)(3) only the serial number, filing date and applicant's name of the prior application are required. The filing of information relating to the title, applicant's name, etc. is however urged in paragraph (e) of final §1.62 and is needed to prepare Office records and the filing receipt.

One comment letter was received which indicated that a specific reference should be made to unentered amendments filed under 37 CFR 1.116. Such a reference has been added to paragraph (a)(2) of §1.62.

Two letters objected to the requirement in proposed §1.62(a)(2) that a new set of claims be presented. This requirement has been deleted from final §1.62.

A number of general comments were also presented relating to §1.62. One comment argued that the proposed practice would encourage abuse by examiners of the second action final rejection practice. In response to this argument, it is felt that the proposed procedure would not create any new problems.

One comment indicated that problems involving access to the file wrapper may arise. It is felt, however, that access problems should not arise in view of paragraph (c) of final §1.62 which relates to waiver of secrecy. The current PALM III computer record system is capable of indicating the location of both the prior and continuing applications.

One comment was received relating to proposed §1.138 which indicated that the reference to §1.60 was confusing. The reference to §1.60 has been deleted in final§1.138.

New §1.62 sets forth the requirements of the file wrapper continuing procedure.

Section §1.138 is amended so that a registered attorney or agent could, without being of record, file a §1.62 application and expressly abandon a pending prior application. Such an action would not affect applicant's rights to any great extent since the prior application would only be expressly abandoned if a filing date was granted to a continuing application.

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Other Considerations

Environmental, Energy, and Other Considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980(44 U.S.C. 3501 et seq.).

The rule change will not have a significant adverse economic impact on a substantial number of small entities because it adds no burdens and does simplify filing procedures (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to preparing application papers and amendments, will be reduced.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Lawyers.

(Text of adopted rules appears in 37 CFR, revised July 1, 1983.)

Sept. 30, 1982. GERALD J. MOSSINGHOFF, *Commissioner of Patents and Trademarks.*

[FR Doc. 82-29283 Filed 10-23-82; 8:45 am]
BILLING CODE 3510-16-M

[1024 O.G. 59]

(143) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1

Reissue, Reexamination, Protest and Examination Procedures in Patent Cases

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases (1) to eliminate consideration of the so-called "no defect" reissue applications, (2) to limit the participation by protestors during the examination of patent applications, (3) to reject and permit appeal to the Board of Appeals for failure to comply with the duty of disclosure rather than striking applications without appeal rights, and (4) to clarify the interface between patent application examination and patent reexamination in certain areas. These changes are intended to (1) reduce the prosecution costs of patent applicants, and (2) permit some of the Patent and Trademark Office resources now devoted to consideration of the so-called "no defect" reissue applications, and to extensive participation by protestors during application examination, to be directed toward reduction of the backlog of pending patent applications. The changes are also intended to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. The rule changes are further intended to clarify the interface between the duty of disclosure during patent application examination and the duty of disclosure during patent reexamination, as well as the treatment of concurrent reissue and reexamination proceedings on the same patent.
Effective Date: July 1, 1982.
For Further Information Contact: Mr. R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

Supplementary Information:

Background

A notice of proposed rulemaking was published in the Federal Register on Nov. 10, 1981, at 46 FR 55666–55672 and in the Official Gazette on Dec. 8, 1981, at 1013 O.G. 19-25. An oral hearing was held on Feb. 4, 1982. Forty-two written letters and statements were submitted. Fourteen persons testified at the oral hearing which resulted in 113 peges of testimony. Consideration was also given to the comments presented at the oral hearing on Apr. 16, 1981, relating to the proposed rules for implementing patent reexamination.

Objectives of Rule Change

The rule change is designed to adopt and implement suggestions from members of the public for changes in patent examination practice considered desirable in light of the implementation of statutory patent reexamination, contained in Public Law 96–517. Many of the persons who commented in writing and at the hearing held on Apr. 16, 1981, on the proposed rules for implementing patent reexamination favored modification of patent examination rules as amended herein. This rule change is designed to implement the suggestions received and, in particular, to reduce the prosecution costs of patent applicants by limiting the amount of participation by protestors during the patent application examination process.

The rule change also seeks to reduce the amount of time required by the Patent and Trademark Office to examine protested applications by limiting protestor participation. The technical expertise of the Patent and Trademark Office will continue to be available to make determinations of patentability on the basis of prior art and related facts on an ex parte basis. However, the patent examiners in the Office are not trained as hearing examiners and have no substantial experience in handling inter partes matters. Under the rule change, protestor participation will be limited to the filing of papers in opposition to the grant of a patent with no Office communications to the protestor resulting therefrom beyond an acknowledgment of receipt of a protest or petition to strike in reissue applications. The opportunity to comment on Office actions and applicants' responses is eliminated. The rule change also intends to accomplish these purposes by eliminating the consideration of reissue applications not initially presented to correct defects pursuant to 35 U.S.C. 251.

The rule change is also designed to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. This is accomplished by amending §1.56(d) to provide that the claims in an application be rejected if upon examination pursuant to 35 U.S.C. 131 and 132 it is found that applicant is not "entitled to a patent under the law" because of fraud or a violation of the duty of disclosure. The rejection would be made under the same conditions and circumstances previously used to strike an application, i.e., "clear and convincing evidence" of fraud or any violation of the duty of disclosure through bad faith or gross negligence. The statute, 35 U.S.C. 131, provides for examination of an application "and if on such examination it appears that the applicant is entitled to a patent under the law, the Commissioner shall issue a patent * * *" Section 132 of Title 35, United States Code, makes provision for the rejection of a claim for a patent

as a result of the examination directed by 35 U.S.C. 131. While questions of fraud and violations of the duty of disclosure have historically been dealt with by the Commissioner through the mechanism of striking the affected application, there is no statutory requirement that the Commissioner act in that manner. Clearly the Commissioner can choose how, and by whom, the examination directed by 35 U.S.C. 131 can be made. 35 U.S.C. 132 authorizes a rejection in those circumstances where applicant is not "entitled to a patent under the law." The rule change simply modifies the mechanism and procedures which the Commissioner will use where the applicant is not "entitled to a patent under the law" because of failures to comply with §1.56(d).

The rule change is also designed to clarify the interface between patent application examination and patent reexamination in certain areas. The two areas involved are duty of disclosure and concurrent proceedings involving a patent under reexamination and for which a reissue application has been filed.

Sections 1.56, 1.106, 1.175, 1.193, 1.291, 1.555, 1.565, and 1.570 are amended to accomplish the purpose indicated above.

Discussion of Specific Rules

Access and Publication of Reissue Applications

The changes proposed in §1.11 are not being adopted since only one of the twenty-two comments favored the changes.

The publication of notices of the filing of reissues and provisions for public access to reissues will therefore continue as at present. Such publication eliminates the need for interested members of the public to periodically monitor the patent files to determine if a reissue application has been filed.

Amendments to §1.56

A large majority of the comments supported the amendments to §1.56. A number of comments questioned the advisability of having relatively inexperienced or non-attorney examiners handle questions of fraud or violation of the duty of disclosure. In response thereto, the amendments to the rule do not require that such questions be handled by the examiner who examines the application for questions of obviousness, enablement, etc. The Office presently plans to have questions of possible fraud or violation of the duty of disclosure examined by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Several comments suggested that the provisions for striking an application pursuant to existing paragraph (c) of §1.56 are inconsistent with the rejection for fraud or violation of the duty of disclosure contemplated in the amendment to paragraph (d). In response thereto, it is pointed out that paragraph (c) of §1.56 makes striking of the application discretionary with the Commissioner. It is thus more appropriate to retain this authority to strike the application in appropriate circumstances rather than to make it subject to a rejection. No inconsistency is seen between the different routes under paragraphs (c) and (d) of §1.56. Several comments were received indicating concern about the possible delay of a decision by the Board of Appeals pending consideration of a fraud or duty of disclosure question. In response to these concerns, it is pointed out that less time overall will be required by having the Board of Appeals consider the matter once rather than in a series of separate decisions. Further, expense to the applicant will be minimized by one appeal rather than two. The amendments to §1.56 are adopted as proposed except for some clarifying changes in paragraph (g).

Section 1.56 is amended by revising the title and paragraph (d), and by adding new paragraphs (e) through (i). The revision to the title and paragraph (d) provides for the rejection of claims upon examination pursuant to 35 U.S.C. 131 and 132 on the ground that applicant is not entitled to a patent under the law if it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon which the application relies. Under amended paragraph (d), any rejection which would be made would include all the claims in the application.

The standards to be used in rejecting the claims under paragraph (d) as amended, would be the same as those utilized by the Commissioner in striking applications pursuant to present paragraph (d), i.e., clear and convincing evidence of fraud or any violation of the duty of disclosure through bad faith or gross negligence. Consistent with present practice, the revision of paragraph (d) looks to fraud or a violation of the duty of disclosure through bad faith or gross negligence with relation to the application under consideration or any previous application upon which the application relies.

The phrase "in connection with the application" is construed in the same manner as in the present unamended paragraph (d). For purposes of this section, a reexamination proceeding on a patent would be considered as being "in connection with the application" insofar as consideration of any subsequent reissue application is concerned. The phrase also includes within its scope the mere refiling of the subject matter of an application in another application without relying in the second application upon the first application. Thus, an appropriate rejection upon examination pursuant to 35 U.S.C. 131 and 132 based on conduct or actions proscribed by §1.56(d) could not be avoided merely by refiling the subject matter of the application in a second or subsequent application which did not rely upon the earlier application. The phrase "in connection with any previous application upon which the application relies" is intended to include all applications upon which the application under consideration relies, either directly or indirectly. For example, an application to reissue a patent obviously relies upon the application which resulted in the patent sought to be reissued. Likewise, continuation applications, continuation-in-part applications, and divisional applications also rely upon one or more parent applications.

New paragraph (e) of §1.56 normally delays the examination of an application for compliance with paragraph (d) of §1.56 until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. Present plans are to have this examination on the question of fraud or violation of the duty of disclosure conducted by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Paragraph (e), as added, would thus permit the resolution of issues arising under §1.56(d) to be delayed until consideration of such issues is necessary and appropriate. The practice under new paragraph (e) is generally consistent with present practice under paragraph (d) which normally delays the substantive resolution of fraud and duty of disclosure issues until other issues have been resolved in favor of applicant. Under new paragraph (e) an appeal would be suspended for examination pursuant to amended paragraph (d) of §1.56 once appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals. If no questions of possible violation of §1.56 are raised or evident on the record before the examiner, no examination for compliance with paragraph (d) of §1.56 will be undertaken. New paragraph (e) provides for the reopening of prosecution of the application to the extent necessary to conduct the examination pursuant to amended paragraph (d) of §1.56 including any appeal pursuant to §1.191. New paragraph (e) also indicates that where an appeal has already been filed based on a

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rejection on other grounds, any further rejection under amended paragraph (d) will be treated in accordance with amended §1.193(c).

New paragraph (f) continues the present long standing practice whereby any member of the public can file a petition to strike an application from the files pursuant to paragraph (c) of §1.56. Such petitions are currently being filed without specific mention in §1.56. Under revised§1.56 petitions to strike an application for a violation of §1.56 are limited to violations of paragraph (c), with any violations of paragraph (d) being subject matter for rejection under paragraph (d). New paragraph (f) requires that any such petition alleging a violation of paragraph (c) which is entered in the application file must: (1) Be timely filed, (2) specifically identify the application to which the petition is directed, and (3) be served on the applicant or be filed with the Office in duplicate in the event service is not possible. New paragraph (f) does not specifically limit a "timely petition" to any particular point in the examination of the application. Such petitions will generally be considered "timely" if they are filed before final rejection or allowance of the application by the examiner. Whether or not a petition filed after final rejection or allowance of the application by the examiner is considered "timely" will depend upon the circumstances and the point in the prosecution at which the petition is submitted.

New paragraph (f) requires that the petition specifically identify the application to which the petition is directed. While an identification by application serial number is not essential, the identification must include enough specificity that the Office can determine with certainty the application to which the petition is directed. Paragraph (f) requires service of the petition on the applicant, or a duplicate copy in the event service is not possible, before the petition will be entered. While the Office might, in some circumstances, reproduce and serve a petition on the applicant, a member of the public would have no assurance that this would be done and, under paragraph (f), could not rely upon the Office doing so. Paragraph (f) also requires that any petition filed by an attorney or agent comply with §1.346.

New paragraph (g) of §1.56 assures a member of the public that a petition to strike an application for violation of paragraph (c) of §1.56 which meets the requirements of paragraph (f) will be considered by the Office. Language has been added to conform to additional language in §1.291(c). The Office will send petitioner an acknowledgment of the entry of a petition to strike in a reissue application file. However, the Office will not communicate with the member of the public filing such a petition in non-reissue applications, except for the return of any self-addressed postcard which was enclosed which merely acknowledges receipt of the petition. The member of the public filing the petition will not be permitted to contact the Office as to the disposition, or status, of the petition, or to participate in any Office proceedings relating to the petition. No further papers will be acknowledged or considered unless they raise new issues which could not have been earlier presented and thereby constitute a new proper petition. Mere arguments relating to the Office's decision on the petition or applicant's response to the petition would not qualify as a new proper petition. The disposition of the petition, once one has been filed, will, under paragraph (g), be an ex parte matter between the Office and the applicant. Paragraph (g) provides for communication by the Office with the applicant regarding a petition to strike the application which has been entered in the application file. Under new paragraph (g) the applicant could be required by the Office to respond to the petition. Any such response would be ex parte and would not be served on the member of the public filing the petition.

New paragraph (h) of §1.56 provides that any member of the public may seek to have the claims in an application rejected pursuant to the amended paragraph (d) of §1.56 by filing a timely protest in accordance with §1.291. New paragraph (h) also requires that any such protest filed by an attorney or agent seeking a rejection of claims pursuant to amended paragraph (d) of §1.56 must be in compliance with §1.346. One comment suggested that the last sentence of paragraph (h) is redundant since §1.346 applies without any specific mention. After careful consideration of the comment the sentence is being retained in order to emphasize and remind attorneys and agents of the obligations imposed by §1.346.

New paragraph (i) provides for the Office requiring the applicant to supply information pursuant to paragraph (a) of §1.56 in order for the Office to decide any issues relating to paragraphs (c) and (d) of §1.56, whether or not such issues arise as a result of a petition or a protest, or arise from other sources, e.g., an examiner discovering the issue while studying the application file. Any requirements for information under new paragraph (i) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under new paragraph (i) differs from past practice under which information was required, or requested, from applicant and one or more petitioners or protestors in some cases.

Rejection of Claims

Five comments were submitted relating to new paragraph (c) of §1.106. Two of the comments favored the paragraph as written and three recommended modification or clarification of the paragraph to ensure that it is not inconsistent with *In re Ruff, et al.*, 45 CCPA 1037, 118 USPQ 340 (CCPA 1958), and subsequent decisions. No modification or clarification of the paragraph is considered necessary since the intent of the paragraph was not to change current practice, but was merely to emphasize the importance placed on admissions and to make §1.106 more closely reflect current practice, which includes practice following *In re Ruff, et al.*, and subsequent decisions. The amendments to §1.106 are adopted as proposed.

Section 1.106 is amended to include a new paragraph (c) which emphasizes the importance placed on admissions by the applicant or the patent owner in a reexamination proceeding insofar as matters affecting patentability are concerned. Paragraph (c) includes a reference to the use of rejections based upon facts within the knowledge of the examiner as provided in §1.107. Paragraph (c) does not constitute a change in practice, but does result in §1.106 more closely reflecting current practice.

Reissue Oath or Declaration

Ten persons commented on §1.175. Four comments were received in support of the proposed change. Three of these favorable comments were from patent law groups. Of the six comments received opposing the change, two were from patent law groups. Eleven comments received at the Apr. 16, 1981, hearing on reexamination argued for retraction of the "Dann Amendments" which included §1.175(a)(4). Four comments at the Apr. 16, 1981, hearing favored retaining the "Dann Amendments". The arguments supporting the change were generally that paragraph (a)(4) was not necessary in view of the new reexamination procedure. The arguments opposing the deletion were generally that an inter partes practice before the Office is desirable from the standpoint of the judiciary and for a complete resolution of issues. After careful consideration of all of the arguments and the resources available in the Patent and Trademark Office, it is felt that the practice under paragraph (a)(4) of §1.175 should be discontinued and paragraph (a)(4) should be cancelled.

The numbering of paragraphs (a)(5) and (6) is not being changed. Proposed paragraph 1.175(a)(6) is being adopted as new paragraph 1.175(a)(7). The proposed wording is otherwise being adopted without change.

Amended §1.175 eliminates paragraph (a)(4). Under paragraph (a)(4), the Office gave advisory opinions on patentability over additional prior art without any changes in the patent claims. The courts have generally refused to give preclusive effect to these advisory opinions. See *PIC, Inc.* v. *Prescon Corp.*, 485 F. Supp. 1302, 205 USPQ 228 (D. Del. 1980), and *Rohm and Haas Co.* v. *Mobil Oil Corp.*, 525 F. Supp. 1298, 212 USPQ 354 (D. Del. 1981). Accordingly, in view of the implementation of patent reexamination pursuant to Pub. L. 96–517 it is appropriate to discontinue the advisory opinions provided pursuant to §1.175(a)(4). Under amended §1.175 an applicant for reissue of a patent will be required to file with the reissue application a statement under oath or declaration specifically averring a defect in the patent, e.g., "a defective specification or drawing," or an excess or insufficiency in the claims. Amended §1.175 also requires, in paragraphs (a)(5) and (a)(6), that applicant specify "errors" as opposed to "what might be deemed to be errors." Amended §1.175 effectively eliminates Office consideration of the merits of "no defect" reissue applications since any such "no defect" reissue applications filed after July 1, 1982, the effective date of the changes to §1.175, will not be examined as to questions of patentability. In addition, §1.175(a)(7) has been added to parallel the provisions in §1.65 requiring the same acknowledgment of the duty of disclosure in the oath or declaration of reissue applications as in the case of non-reissue applications.

Delay in Examination of Reissue Applications

Six comments were received relative to the proposed changes in §1.176. One comment supported, and five comments opposed, deleting the two month waiting period before action could be taken by an examiner in a reissue application. The opposing comments favored retaining the two month period to provide an opportunity for interested parties to submit information relating to the examination of a reissue application after notice of the filing thereof has been published in the Official Gazette. Since the notices under §1.11 will continue to be published, no need is seen to change §1.176. The proposed change is therefore not adopted.

Examiner's Answer

Only one comment was made relating to the proposed addition of paragraph (c) to §1.193. It suggested including a minimum time period for response in the rule. This suggestion was not adopted because in some circumstances it may be appropriate to set a shorter or a longer period for the reply brief. The amendments to §1.193 are adopted as proposed.

Paragraph (c) adds to §1.193 a provision that any decision rejecting claims pursuant to §1.56(d) in an application already on appeal from a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e). Prior to entering any such supplemental examiner's answer under paragaph (c), the Office may require information from applicant pursuant to paragraph (i) of §1.56. Under paragraph (c) of §1.193, the appellant may file a reply to the supplemental examiner's answer. Paragraph (c) provides that the appellant's reply to the supplemental examiner's answer will be considered and responded to as necessary with appellant being provided with an additional month, or such other time as may be set, within which to reply to any such response from the Office. After introduction of a supplemental examiner's answer pursuant to paragraph (c) and any replies and response thereto, the application will be forwarded to the Board of Appeals for consideration.

Protests by the Public Against Pending Applications

Fifteen persons commented on the proposed amendment of §1.291. Two persons suggested that protests be acknowledged by more than the return of a self-addressed postcard. The suggestion has been adopted to the extent of providing for an acknowledgment of the entry of a protest in a reissue application file to be sent to the member of the public filing the protest. The suggestion has not been adopted insofar as original applications are concerned since these applications are generally required to be kept in confidence under 35 U.S.C. 122. Further, the use of return postcards is an established method of receiving acknowledgment from the Office that a paper has been filed. By merely returning the postcard to a protestor in an application for an original patent and directing Office initiated communications solely to applicant, the amount of Office resources required will be minimized.

Several persons commented that the protest proceeding should be more inter partes. The weight of the comments received at the hearings held on Apr. 16, 1981, and Feb. 4, 1982, and in writing, favored ex parte proceedings. To ensure that the proceedings are essentially ex parte, a sentence is being added to paragraph (c) of § 1.291, indicating that active participation by a member of public ends with the filing of the protest. To retain the inter partes nature of the protest would be contrary to the majority of the comments received and to one of the major purposes of the rule change, i.e., to reduce the amount of time spent by the Office in examining protested applications. The amendments to paragraphs (a) and (b) of §1.291 are adopted as proposed and paragraph (c) is being revised as indicated above.

Amended §1.291 continues to permit protests by the public against pending original and reissue applications. The protest may include any grounds which the member of the public filing the protest believes to be applicable.

Amended paragraph (a) of §1.291 provides for entry of a protest in the application file if the protest specifically identifies the application, is timely submitted, and is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate, in the event service is not possible. The comments made above in the discussion of new paragraph (f) of §1.56 regarding the timeliness of the filing or submission, specific identification of the application, and service on the applicant, are also applicable to the amendments of paragraph (a) of §1.291. The requirement that the Office acknowledge the filing of a protest is deleted from paragraph (a), but is covered in paragraph (c).

New paragraph (b) of §1.291 assures members of the public that a protest will be considered by the Office if (1) it specifically identifies the application to which it is directed; (2) it is timely submitted; (3) it is properly served upon the applicant in accordance with §1.248, or is filed with the Office the duplicate in the event service is not possible; (4) it includes a listing of the patents, publications or other information relied upon and a concise explanation of the relevance of each listed item; (5) it includes a copy of each listed patent or publication or other item of information in written form, or at least the pertinent portions thereof; and (6) it includes an English language translation of all the necessary and pertinent parts of any non-English language document relied upon. It is considered desirable that §1.291 advise members of the public as to the contents which should be included in any protest since there will be no Office communications directed to the member of the public submitting the protest under paragraph (c). Thus, under paragraph (c) members of the public will not be given an opportunity to complete any protest which is incomplete. Amended paragraph (c) provides for the acknowledgment of the entry of a protest in a reissue application file.

Amended paragraph (c) of §1.291 provides that a member of the public filing a protest in an application for an original patent will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard acknowledging receipt of the protest. Amended paragraph (c) of §1.291 does not permit the member of the public filing the protest, or any other member of the public, to contact the Office as to the disposition, or status, of the protest or to participate in any Office proceedings relating to the protest. The disposition of the protest, once it has been filed will, under paragraph (c), be an ex parte matter between the Office and the applicant. However, applications

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which are open to the public may be inspected pursuant to §1.11.

Amended paragraph (c) provides for the Office to communicate with the applicant regarding any protest entered in the application file. Under paragraph (c), the applicant could be required by the Office to respond to the protest. Any response would be ex parte and would not be served on the member of the public filing the protest. Paragraph (c) provides for the Office to require applicant to supply information pursuant to pargraph (a) of §1.56 in order for the Office to decide any issues raised by the protest. Requirements for information under paragraph (c) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under paragraph (c) differs from past practice under which information could be required, or requested, from applicant and one or more protestors. Under amended paragraph (c), the active participation of the protestor ends with the filing of the protest and no further submission on behalf of the protestor will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new protest. Mere arguments relating to an Office action or an applicant's response would not qualify as a new protest.

Duty of Disclosure in Reexamination Proceedings

Only two comments were received relative to proposed§1.555. One comment argued that the Office should never ignore a violation of the duty of disclosure or leave it hanging. In response thereto, neither the statute nor the presently existing reexamination rules provide for reexamination on grounds other than those based on patents or printed publications. The second comment questioned whether a patent owner has a duty to cite new prior art after a request but prior to an order to reexamine. No further clarification of the section is necessary since §1.555(a) specifies when the patent owner should file a prior art statement in a reexamination proceeding. The amendments to §1.555 are adopted as proposed.

Amended §1.555 makes the duty of disclosure in reexamination proceedings more consistent with the duty of disclosure in patent applications. Paragraph (a) of §1.555 specifies that a duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner or involved employees of the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. This rule is consistent with the duty set forth in §1.56(a) insofar as patent applications are concerned, except that in paragraph (a) of §1.555 the patent owner is specified rather than the inventor as set forth in paragraph (a) of §1.56. This does not, however, impose the responsibility for compliance with the duty of disclosure on a corporate entity or organization but leaves the responsibility with involved individuals in the corporation or other organization. Paragraph (a) of §1.555 places a requirement on the individuals identified to bring to the attention of the Office patents or printed publications material to the reexamination which have not been previously made of record in the patent file and specifies how that should be accomplished.

Amended paragraph (b) of §1.555 essentially parallels existing paragraph (b) of §1.56 and makes similar provisions applicable to disclosures in reexamination proceedings.

Amended paragraph (c) of §1.555 provides that the duties of candor, good faith, and disclosure required in paragraph (a) of §1.555 have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding. The language of paragraph (c) refers to fraud or violation of the duty of disclosure in the reexamination proceeding since such conduct during the pendency of applications is covered by §1.56.

Amended paragraph (d) of §1.555 affirms that the responsibility for compliance with §1.555 rests upon the individuals identified in paragraph (a). Paragraph (d) also provides that no evaluation will be made in the reexamination proceeding by the Office as to compliance with §1.555. Paragraph (d) of §1.555 also provides that questions of compliance with §1.555 which are discovered during a reexamination proceeding will be noted as unresolved questions in accordance with present §1.552(c). Paragraph (d) will not preclude the patent owner from filing a reissue application to have questions of candor, good faith, and duty of disclosure considered and resolved, including such questions which arise during a reexamination proceeding, so long as the requirements of 35 U.S.C. 251 have been met. Paragraph (d) does not preclude suspension or disbarment proceedings under present §1.348 based upon conduct during a reexamination proceeding.

Concurrent Office Proceedings

Four comments were received on §1.565. One comment proposed adding a sentence at the end of paragraph (b) of §1.565 reflecting that reexamination would only be stayed in extraordinary situations. This suggestion has not been adopted since it is considered inappropriate to attempt to further define by rule the circumstances under which a stay of the reexamination may be appropriate. Two comments were received raising questions as to the treatment, during a merged reissue and reexamination proceeding, of broader claims which are present therein because of a reissue application which contained broadened claims. No clarification or change is necessary since the broadened claims are properly in the merged proceeding during the period it is merged. Such broader claims which are present in both the reissue and reexamination files during the pendency of the merged proceeding will be treated in accordance with the reissue statute and case law during the pendency of the merged proceeding. If the merged proceeding ceases to exist because of the abandonment of the reissue application, the claims in the reexamination file, including any broadened claims, will be examined in accordance with the reexamination statute and rules. Finally, one comment did not agree with merging reissue and reexamination proceedings because the merger is not seen to produce cost savings or other salutary results. One of the reasons for the merged proceedings is to ensure that claims of differing scope and inconsistent responses are not presented at the same time in different proceedings in the same patent. Moreover, since the proceedings are concurrent rather than sequential, a significant savings in resources and overall pendency time may be realized by merging in many cases.

The amendment to §1.565 clarifies the proposed language of paragraph (b), eliminates from paragraph (b) the last two sentences relating to the treatment of concurrent reexamination and reissue proceedings, and adds a new paragraph (d) relating to this subject. The clarification in paragraph (b) is intended to avoid misinterpretations relating to stay determinations where concurrent litigation or reissue applications are involved.

Under new paragraph (d), which is consistent with the practice presently in effect under paragraph (b), if a reissue application and a reexamination proceeding on which an order pursuant to present §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the proceedings. New paragraph (d) also provides that where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with present §§1.171–1.179. The examiner, in examining the merged proceeding, will apply the reissue statute and case law, in addition to applicable provisions of §§1.171–1.179, to the merged proceeding. This is appropriate in view of the fact that the statutory provisions for reissue applications and reissue application examination include, *inter alia*, provisions equivalent to 35 U.S.C. 305 relating to the conduct of reexamination proceedings. New paragraph (d) of §1.565 makes clear that the patent owner must place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. Under new paragraph (d) of §1.565 the examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and will be physically entered into both files. New paragraph (d) also provides that any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent. The amendments to §1.565 are adopted with the changes or clarification indicated in paragraph (b).

Reexamination Certificate

Section 1.570, as amended, revises paragraph (e) to refer to new paragraph (d) of §1.565 rather than paragraph (b) in order to reflect the changes in §1.565.

No comments were received concerning the section and it is adopted without change.

Interim Procedures on Applications Pending on Effective Date

On July 1, 1982, the revised procedures of §§1.56(d) and 1.193(c) will apply to any applications then pending which have not been the subject of a final Office decision on questions of fraud or violation of the duty of disclosure. Any petition to strike an application from the files or any protest against a pending application filed prior to July 1, 1982, will be governed by the rules in effect prior to that date. Any applications filed under §1.175(a)(4) prior to July 1, 1982, will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned. For a discussion of the interim practice in effect prior to July 1, 1982, see 1013 O.G. 18–19.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

List of Subjects in 37 CRF Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Lawyers.

Amendment of Regulations

(Text of adopted rules appear in 37 CFR, revised July 1, 1983.)

Apr. 6, 1982. GERALD J. MOSSINGHOFF, *Commissioner of Patents and Trademarks.*

[FR Doc. 82-13613 Filed 5-18-82; 8:45 am]
BILLING CODE 3510-16-M

[1019 O.G. 37]

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(144) Interim Reissue, Reexamination, Protest, And Examination Procedures In Patent Cases Pending Proposed Revision of 37 CFR §§1.11, 1.56, 1.106, 1.175, 1.176, 1.193, 1.291, 1.555, 1.565, and 1.570.

This notice sets forth, in general, the practice the Office intends to follow pending a final determination on the "Notice of proposed rulemaking" published in the Federal Register on November 10, 1981, at 46 F.R. 55666–55672. The "Notice of proposed rulemaking" is also being published in this issue of the Official Gazette.

Practice Relating To §1.11

Any reissue application which is presently open to inspection by the general public pursuant to present §1.11(b), and any reissue application filed before the effective date of a change in the rule, will continue to be open to inspection by the general public. No restriction of access to those reissue applications is contemplated at this time, either during their pendency before the Office, or after an abandonment of the reissue application. The filing of reissue applications will continue to be announced in the Official Gazette pending revision of §1.11(b).

Practice Relating To §1.56

Any issues arising under §1.56(d) prior to the effective date of a change in paragraph (d) will continue to be handled in accordance with paragraph (d) as it presently exists. If paragraph (d) is amended as proposed, the Office presently intends to apply the revised procedures to any applications then pending which have not been the subject of a final Office decision on questions of "fraud" or violation of the duty of disclosure.

Any petitions to strike applications from the files which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure.

Any petition to strike an application from the files which is filed after the date of publication of this Notice will be considered in accordance with the procedure set forth in the "Notice of proposed rulemaking" insofar as participation by the petitioner is concerned. Since the provisions of 37 CFR 1.56 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of petitions to strike applications, it is considered appropriate and proper to restrict participation on behalf of a petitioner as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any petition to strike an application from the files which is filed after the date of publication of this Notice must include a self-addressed postcard specifically identifying the petition and the application to which the petition is directed if an acknowledgement of the filing of the petition is desired. A member of the public filing a petition to strike an application after the date of publication of this Notice will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the petition. All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect.

Practice Relating To §1.106

No interim practice is necessary regarding this proposed revision since it would not constitute a change in practice, but would merely make §1.106 more closely reflect current practice.

Practice Relating To §1.175

Any applications filed under §1.175(a)(4) prior to the effective date of any change in the rule will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned.

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Practice Relating To §1.176

The examination of any applications filed prior to the effective date of any change in the rule will continue to be delayed for two months after the announcement of the filing in the Official Gazette, except where the delay period is waived by a decision on a petition under 37 CFR 1.183.

Practice Relating To §1.193(c)

No interim practice is necessary regarding this proposed revision since the practice of rejecting claims pursuant to §1.56(d) will not be adopted prior to the effective date of a change in paragraph (d).

Practice Relating To §1.291

Any protest against a pending application which is filed after the date of publication of this Notice in the Official Gazette will be treated essentially in accordance with the procedures set forth in the "Notice of proposed rulemaking." Any protests which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure. Since the provisions of 37 CFR 1.291 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of protests filed under §1.291, it is considered appropriate and proper to restrict participation on behalf of a protestor essentially as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any protest filed after the date of publication of this Notice will be acknowledged as set forth in present §1.291 on a self-addressed postcard which protestor is hereby advised to include with the protest. The self-addressed postcard must specifically identify the protest and the application to which the protest is directed, to the extent such identifying data for the application is known. A member of the public filing a protest against a pending application after the date of publication of this Notice will receive no communication from the Office relating to the protest, other than the self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the protest as set forth in present §1.291(a). All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect. Pending adoption of the proposed rulemaking the Office will consider protests which comply with present §1.291(a) even though the protest does not include all the items enumerated in proposed new paragraph (b) of §1.291.

Practice Relating To §1.555

No interim practice is necessary regarding this proposed revision since it merely makes §1.555 more closely parallel §1.56 and more specifically defines the responsibility of a patent owner in a reexamination proceeding.

Practice Relating To §1.565

No interim practice is necessary regarding this proposed revision since it merely clarifies, but does not change, present practice.

Practice Relating To §1.570

No interim practice is necessary since this proposed revision merely reflects the paragraph change proposed in §1.565.

CONCLUSION

The present interim procedures will be in effect until further notice and pending a final determination on the proposed rulemaking.

Nov. 16, 1981. DONALD J. QUIGG,
Deputy Commissioner of Patents & Trademarks.

[1013 O.G. 18]

(145) **Patent and Trademark Office Implementation of 37 CFR 1.56**

The Patent and Trademark Office has been reviewing, and discussing in conjunction with various private sector groups, its implementation of 37 CFR 1.56 which deals with the duty of disclosure and inequitable conduct. Determination of inequitable conduct issues requires an evaluation of the intent of the party involved. While some court decisions have held that intent may be inferred in some circumstances, consideration of the good faith of the party, or lack thereof, is often required. In several recent court decisions, a high level of proof of intent to mislead the Office was required in order to prove inequitable conduct under 37 CFR 1.56. See *In re Harita*, 847 F.2d 801, 6 USPQ 2d 1930 (Fed. Cir. 1988) and *FMC Corp.* v. *Manitowoc Co. Inc.*, 835 F.2d 1411, 5 USPQ 2d 1112 (Fed. Cir. 1988).

The Office is not the best forum in which to determine whether there was an "intent to mislead", such intent is best determined when the trier of facts can observe demeanor of witnesses subjected to cross-examination. The Office is not presently equipped to handle live testimony. Modifying Office procedures to do so would not be an effective utilization of resources. A court, with subpoena power, is presently the best forum to consider duty of disclosure issues under the present evidentiary standard for finding an "intent to mislead". The court proceeding involves two participating adverse parties. This is not the case in the Office, since even "protesting" parties are not permitted to participate under the Rules. Also, it is the courts and not the Office that are in the best position to fashion an equitable remedy to fit the precise facts in those cases where inequitable conduct is established. Furthermore, inequitable conduct is not set by statute as a criteria for patentability but rather is a judicial application of the doctrine of unclean hands which is appropriate to be handled by the courts rather than by an administrative body. Because of the lack of tools in the Office to deal with this issue and because of its sensitive nature and potential impact on a patent, Office determinations generally will not deter subseguent litigation of the same issue in the courts on appeal or in separate litigation. Office determinations significantly add to the expense and time involved in obtaining a patent with little or no benefit to the patent owner or any other parties with an interest.

Accordingly, the Office will no longer investigate and reject original or reissue applications under 37 CFR 1.56 and to the extent 37 CFR 1.56 now requires the Office to do so, it is hereby waived. Likewise, the Office will not comment upon duty of disclosure issues which are brought to the attention of the Office in original or reissue applications except to note in the application, in appropriate circumstances, that such issues are no longer considered by the Office during its examination of patent applications. Examination of lack of deceptive intent in reissue applications will continue but without any investigation of inequitable conduct issues. Applicant's statement of lack of deceptive intent normally will be accepted as dispositive except in special circumstances such as an admission or judicial determination of fraud or inequitable conduct.

The duty of disclosure requirements set forth in 37 CFR 1.56(a) will remain in effect pending modification by rulemaking procedure. The Office plans to propose a change in the standard of the duty of disclosure with respect to information to be submitted which an individual knows or should have known would render unpatentable any pending claim in an application. This would replace the present requirement to submit information which there is a substantial likelihood a reasonable examiner would consider important in deciding whether to allow an application to issue as a patent. The Office also plans to propose that 37 CFR 1.97-1.99 concerning information disclosure statements be modified to clarify the manner and time for submission of information to the Office for consideration in an application. Further, the Office has already indicated its support for legislation proposed by Congressman Kastenmeier in H.R. 4086 with certain clarifying changes.

This change in practice will not reduce incentives to disclose information to the Office promptly. A judicial finding of inequitable conduct or fraud will still render a patent unenforceable or invalid. Therefore, applicants will still be encouraged to comply with the Rule, as applied by the courts. Practitioners found to have participated in inequitable conduct or fraud shall be subject to disciplinary proceedings. 37 CFR Part 10.

Any response due to an outstanding requirement for information regarding the duty of disclosure or rejection under 37 CFR 1.56 may merely make reference to the change in practice set forth in this Notice. Such a response will be considered complete if timely filed. A paper will then be mailed and placed of record merely noting that the Office no longer examines patent applications for compliance with 37 CFR 1.56.

Applications in which there is no outstanding requirement for information regarding the duty of disclosure or outstanding rejection under 37 CFR 1.56, but in which a duty of disclosure issue has been noted on the record, will have a paper placed in the record and mailed to the applicant terminating consideration of the duty of disclosure issue and noting that the Office no longer examines patent applications for compliance with 37 CFR 1.56. Thereafter, no further action will be undertaken by the Office regarding the duty of disclosure issue.

The Board of Patent Appeals and Interferences will henceforth not review any rejection under 37 CFR 1.56 but will treat the rejection as withdrawn and merely note that the Office no longer examines patent applications for compliance with 37 CFR 1.56.

Questions regarding this change of practice may be directed to the Special Program Examination Unit at (703) 557-8384.

Sept. 8, 1988 DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks

[1095 OG 16]

(146) **Further Clarification on Patent and Trademark Office Implementation of 37 CFR 1.56**

This notice is intended to provide further clarification to the O.G. Notice titled "Patent and Trademark Office Implementation of 37 CFR 1.56", published on Oct. 11, 1988 at 1095 O.G. 16.

As indicated in the previous notice, for a number of reasons, the Patent and Trademark Office will no longer investigate and reject original or reissue applications under 37 CFR 1.56 and will not comment upon duty of disclosure issues, which are brought to the attention of the Office, except to note in the application, in appropriate circumstances, that such issues are no longer considered by the Office during its examination of patent applications.

Further, the Office will also not consider duty of disclosure issues in interferences declared pursuant to 35 U.S.C. 135. Duty of disclosure issues which are raised by the parties in an interference will not be commented upon by the Examiner-in-Chief except to note that such issues are no longer considered by the Office. The policy is considered proper for the same reasons previously set forth regarding ex parte cases. Even though interferences are inter partes proceedings, the Office does not take live testimony where the demeanor of witnesses subjected to cross-examination can be observed.

Duty of disclosure issues which exist in pending interferences will not be decided but it merely will be noted that the Office no longer considers such issues.

Oct. 17, 1988 DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[1096 OG 19]

(147) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 40227–18]

Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Parts 1 and 5 of 37 CFR, to establish a streamlined procedure for granting licenses for foreign filing. The changes simplify the obtaining of licenses for filing foreign patent applications and for filing amendments, modifications, and supplements in foreign patent applications. Under the revised rules (1) the export, but not actual filing, of technical data to a foreign country for purposes related to the filing and prosecution of a patent application may be done either under appropriate export agencies' rules or by a license issued by the Commissioner of Patents and Trademarks, (2) certain licenses issued by the Commissioner for filing foreign patent applications include a license to file amendments, modifications, and supplements, containing additional matter in foreign applications, (3) specific contents of a petition for retroactive license are established and (4) fees are set for expedited handling of requests for foreign filing licenses and for certain petitions. These changes will result in reduced work for both patent applicants and the Patent and Trademark Office and at the same time strengthen national security protections.
Effective Date: June 1, 1984.
For Further Information Contact: Kenneth L. Cage by telephone at (703) 557–2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to simplify and expedite the granting of licenses under 35 U.S.C. 184. It contains a number of changes in practice designed to benefit both the Patent and Trademark Office in its handling of its mission and the public the Office serves. Notice of proposed rulemaking was published May 23, 1983, at 48 FR 23144 and corrected June 7, 1983, at 48 FR 26319.

Discussion of Specific Rules

Secton 5.11(a) has been substantially restructured and modified from the proposal. Under §5.11(a), a license from the Commissioner of Patents and Trademarks is always needed for the act of filing a patent application in a foreign patent office unless the six-month period has passed or the invention was not made in the United States.

Amended §5.11 (b) and (c) would clarify in the regulations that the export of technical data to a foreign country may be done under appropriate export agencies' rules controlling the export of technical data—Department of State (22 CFR Parts 121–130); Department of

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Commerce, International Trade Administration Office (15 CFR Part 379); or the Department of Energy (10 CFR Part 810)—or by license from the Commissioner. Compliance with the appropriate export agencies' rules or the license from the Commissioner is required before *exporting* technical data in the form of a patent application or data in any form if related to preparing, filing, and prosecuting a patent application in a foreign country, if the United States application has not been on file for six months at the time of export, or no application has been filed in the United States. It is optional from whom approval for export is obtained. In fact, for certain technical data being exported to certain countries, a specific request for a license or approval from any of the export agencies would not be necessary. However, a single license from the Commissioner would cover both export and filing and avoid any question whether a specific license or approval is required from any of the export agencies. Approval from the appropriate export agencies for export would require a separate additional license from the Commissioner for the filing of the foreign patent application. The rule changes will make the rules more closely conform with the regulations of other agencies which deal with the export of technical data to a foreign country.

The definition of export in these regulations will be controlled by the definition of export in the appropriate regulations of the export agencies having jurisdiction over the export of technical data related to the patent application. (15 CFR 379.1, 22 CFR 125.03 and 10 CFR 810.7).

The requirement of complying with the rules of the export agencies or the Commissioner before exporting an application to a foreign country is not intended to change long-standing Patent and Trademark Office interpretation of 35 U.S.C. 184 or in any way interpret the language in 35 U.S.C. 184 "file or cause or authorize to be filed" as requiring a license before technical data related to the filing or prosecution of an application is exported to a foreign country, such as to a foreign attorney or agent or corporation for review or revision for later filing. It does, however, reflect the delegations the Commissioner has received from other agencies and which are referenced in §§5.18, 5.19 and new §5.20 and clarifies that a patent applicant must be licensed for export of technical data abroad for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application either by appropriate export agencies or by the Commission. The language "related to the preparation, filing or possible filing and prosecution of a foreign patent application" in §5.11(b) is used rather than "support a patent application" as used in §5.18 or "foreign filing" as used in §5.19 to make clearer that the latter two phrases include the export of technical data in the form of explanations or possible claim language or the like sent to a foreign agent or other person in relation to a foreign patent application. However, a license from the Commissioner would not substitute for approvals required by appropriate export agencies if technical data is exported for purposes not related to the filing or possible filing and prosecution of a foreign patent application. For example, a license from the Commissioner would not cover export of technical data in a U.S. patent application to a foreign research laboratory to support a research project.

Further, the rule is intended to reflect that every exportation of technical data related to filing or possible filing or prosecution within six months of a United States filing without a license from the Commissioner is prohibited unless the applicant complies with the rules of the appropriate export agencies. For example, where an application has been exported to a foreign agent with an authorization to file a foreign patent application, the export of the application may be under a general license from the International Trade Administration of the Department of Commerce. A license from the Commissioner is always necessary for the actual filing of the foreign patent application. In another example, where a validated license is needed under 15 CFR Part 379 to export technical data in the form of a patent application, applicants will need to obtain an International Trade Administration license or obtain a Commissioner's license prior to the act of export. Under either example, a license from the Commissioner is required before the application is filed in a foreign patent office. In the latter example, a single license from the Commissioner will permit both export and filing of the application.

This rule is promulgated under the authority of 35 U.S.C. 6 and delegations to the Commissioner by regulation (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7) or otherwise under the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978. Authority for this rule also exists under 35 U.S.C. 188.

The amended rule assures adequate protection of sensitive material under Title 35, United States Code and provides regulatory consistency with the Arms Export Control Act, as amended, the Export Administration Act, as amended, the Atomic Energy Act of 1954, as amended, the Nuclear Non-Proliferation Act of 1978, and their implementing regulations. The sanctions which apply for failure to obtain a license from either the Commissioner or the appropriate export agencies prior to export are the sanctions specified in the export acts. The sanctions which apply for failure to obtain a license from the Commissioner prior to the filing of a foreign application are the sanctions specified in Title 35, United States Code.

Section 5.11(d), proposed as §5.11(b), states that applications under secrecy order under §5.2 cannot be exported to an international agency or filed in a foreign country except in accordance with §5.5.

Section 5.11(e), proposed as §5.11(c), states that a license pursuant to paragraph (a) is not required where the invention was not made in the United States, or the United States application was on file for six months without a secrecy order being issued.

Section 5.11(f), proposed as §5.11(d), states that a license for foreign filing may be revoked at any time upon written notice. Similarly, an authorization for foreign filing resulting from the passage of six months from the filing of a United States patent application may be revoked by the imposition of a secrecy order. The revocation is effective as of the date of the notice and is not intended to be applicable to any prior acts by applicants relying in good faith on the grant of a license.

The language of §§5.12(b), 5.13, and 5.14 have been clarified from the proposal to reflect that the §1.17(h) requirement for a fee is for the expedited handling of a license. No fee is required for a routine, non-expedited request for a foreign filing license.

Section 5.15 has been changed from the form proposed. Amended §5.15 defines licenses for foreign export and filing of two different scopes. The §5.15(a) scope license, the grant of which is indicated on the filing receipt in accordance with §5.12(a) published at 48 FR 2696. (Jan. 20, 1983) and 1027 OG 9 (Feb. 1, 1983), permits the subsequent export and filing of technical data for purposes related to the preparation, filing or possible filing and prosecution of the foreign application and of any amendments or modifications to the application in a foreign country, even if "additional subject matter" were introduced; provided the additional subject matter does not change the general nature of the subject matter disclosed and does not pertain to certain categories of potentially sensitive material which are set forth in §5.15(a)(4).

The phrase "change the general nature of the subject matter disclosed" is intended to cover situations where the additional subject matter so alters the character of the disclosure that national security review is appropriate. This phrase is intended to permit a broad range of amendments, modifications and supplements, including additional subject matter. The following examples are intended to further clarify the meaning of the language "general nature of the subject matter disclosed" in §5.15(a):

Example 1—The physical data on a named compound. If a licensed disclosure gives the name and structure of a compound, the general nature of the subject matter disclosed includes physical data such as boiling point, melting point or specific gravity of the compound. If a name of a compound is disclosed, the structure of the compound is also within the general nature. If the licensed disclosure deals with the hardness of a claimed alloy, the disclosure of tensile strength is within the general nature.

Example 2—A known specie of a known genus. If the genus "lower alkyl" is disclosed, the inclusion of the species "methyl" is within the general nature, as would be homologs and isomers of that genus.

Example 3—Comparison data of the disclosed compound to data on prior art compounds. If the licensed disclosure contains a disclosure of the compounds of a pesticide invention, and pesticidal activities, the comparison of pesticidal data of a known compound representing the closest prior art is within the general nature.

Example 4—A specific optimum temperature within a specified temperature range. If a licensed disclosure has a range of 0°C to 120°C, the disclosure of an optimum temperature of 100°C is within the general nature.

Example 5—Activity data on compounds of the invention. If activity data on 30 of 50 named compounds is disclosed, the disclosure of activity data on other named compounds of the invention is within the general nature.

Example 6—Additional subject matter and utilities. If a licensed disclosure describes a chemical herbicide for weed control, the disclosure of chemical warfare uses or human toxic properties (other than to demonstrate safety or absence of such toxicity) *is not* within the general nature. If a licensed disclosure describes an analog computer for microwave telephone transmission, the addition of a cryptographic encoding or decoding device and utility *is not* within the general nature. If a licensed disclosure describes a battery power source for a satellite, the addition or substitution of a nuclear isotopic power source *is* within the general nature, but would be within the control of §5.15(a)(4)(ii).

A §5.15(b) scope license is limited to the original subject matter disclosed at the time the license was granted and does not cover "additional subject matter" as the phrase is currently interpreted (*In re Gaertner,* 202 USPQ 714 (CCPA 1979)).

Under §5.15(c), a license with the scope of §5.15(a) could also be granted pursuant to a §5.13 or §5.14 petition. If granted, the §5.15(a) scope of license will be indicated on the license grant. For instance, under §5.15(c) an applicant who filed a United States patent application before Feb. 27, 1983, when the filing receipt license practice became effective could request a §5.15(a) scope license which, if granted, will cover the subsequent filing of amendments, modifications or supplements, including additional matter in a corresponding foreign patent application. The licenses under §§5.12(b), 5.13, and 5.14 are normally limited in scope to the original subject matter disclosed at the time the license was granted unless a license of the §5.15(a) scope is indicated on the license grant. If a petition for a license under §5.12(b) is granted prior to the grant of the §5.12(a) filing receipt license, the former would merge into the latter and would be considered a §5.12(a) license for the purpose of §5.15.

A new §5.20, not included in the proposal, sets forth the specific authority of the Commissioner to license foreign filing, possible filing or prosecution of a patent application in a foreign country under 35 U.S.C. 184 regarding unclassified activities in foreign atomic energy programs. This change only reflects the existing relationship between 37 CFR 5.11 and 10 CFR §810.7 and alerts patent applicants in this technology to the Commissioner's authority. The term "sensitive nuclear technology" used in paragraph (b) of §5.20 is defined in 10 CFR §810.3(q).

A new §5.25, proposed initially as §5.20 and modified, sets forth in the regulations the requirements to be met for the granting of a retroactive license. The requirements include (1) a list of the foreign countries in which the patent application material was filed; (2) the date(s) of filing of the foreign application(s); (3) an oath or declaration which (i) states that the subject matter filed is not subject to a secrecy order under 35 U.S.C. 181, (ii) makes a showing of diligence in attempting to obtain the license upon discovery of the error, and (iii) makes a showing of facts which support a conclusion of inadvertence; and (4) includes the required fee. The section also provides in paragraph (b) for review from a denial of a petition for a retroactive license. The section further provides in paragraph (c) that the granting of a retroactive license pursuant to §5.25 does not excuse any violation of regulations of the export agencies which may have occurred because of the failure to obtain an appropriate license prior to export.

Sections 5.21, 5.22 and 5.23 have been redesignated to become §§5.31, 5.32 and 5.33, respectively.

Significant Differences Between Proposed and Final Rules

Section 1.17

Section 1.17(h) is amended to include a specific reference to §5.25 petitions for retroactive licenses for which the petition fee is charged, rather than having the present retroactive license fee under §1.182 petitions. The fee for §5.12(b) licenses is new and applies only where expedited handling of these license requests is sought. This fee for expedited handling is also referred to in §§5.13 and 5.14. Section 5.15(c) provides for a fee for changing the scope of a license.

Section 5.1

The proposed amendment to §5.1 is not being adopted and is withdrawn.

Section 5.11

Section 5.11 is amended to control the *export* of technical data in the form of an application or data in any form if related to preparing, filing, or prosecuting a patent application in a foreign country, if the United States application has not been on file for at least six months prior to the date of transmittal, or if no application has been filed in the United States. Export approvals, if required, may be provided by appropriate export agencies—Department of State; Department of Commerce, International Trade Administration or Department of Energy—or by the Commissioner. This will enable the Patent and Trademark Office and the export agencies to better reflect and exercise the export control functions set forth in the Arms Export Control Act, as amended, the Export Administration Act of 1979, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, respectively.

Under these Acts, the export of technical data is the activity to be controlled. The final rule differs from the proposed rule in that the Patent and Trademark Office will not be the sole export control authority over technical data in the form of an application, or data in any form, if related to preparing, filing, or prosecuting a patent application. Applications will have the option to obtain necessary export approvals either (1) from appropriate export agencies or (2) from the Commissioner. The Commissioner will continue to be the sole licensing authority for the act of filing an application in a foreign patent office.

Paragraphs (a), (b), and (c) of §5.11 control export activity by requiring either an export agency approval or a Commissioner's license for export of technical data in connection with foreign filing of an application and to that extent implement the Arms Export Control Act, the Export Administration Act, the Atomic Energy Act and the Nuclear Non-Proliferation Act. If a license is obtained from the Commissioner under §5.12, §5.13 or §5.14, no separate approval for the export of technical

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data to a foreign country in connection with a patent application is required from the export agencies.

It is emphasized that the scope of the Commissioner's license is limited to exporting and filing technical data in the form of an application, or in any form, if related to preparing, filing and prosecuting a patent application or for consideration of the filing of a patent application in a foreign country. A Commissioner's license does not authorize selling or using technical data in a foreign country or exporting data for other purposes. These latter acts continue to require separate approvals from the appropriate export agencies.

Also, the export of technical data in any form to a foreign country for purposes other than related to filing or supporting the filing of a patent application is not controlled by Title 35, U.S.C. or the regulations in Part 5. The exportation of data to a foreign country in such cases would be subject only to other laws and regulations such as the export and arms control regulations. Approval for the export of such technical data for purposes related to filing, possible filing, or supporting the filing of a patent application will be available from the appropriate export agencies or the Commissioner. On the other hand, the Commissioner will be the sole licensing authority for the act of filing the application in a foreign patent office.

Section 5.11(d), proposed as §5.11(b), states that an application cannot be exported to a foreign country when the corresponding United States application is under secrecy order except under §5.5

Section 5.11(e), proposed as §5.11(c), states that no license is required if the invention was not made in the United States, or the application was on file in the United States at least six months and is not under a secrecy order issued under §5.2

Section 5.11(f), proposed as §5.11(d), states that any license for foreign filing may be revoked at any time by written notification. It has been amended to further clarify that revocation also applies to authorizations resulting from the passage of six months from the filing date of a United States patent application when a secrecy order is imposed.

Section 5.12

Section 5.12(b) is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

Section 5.13

Section 5.13 is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

Section 5.14

Section 5.14(a) is clarified from the proposal to specify that the fee is for expedited handling of a petition under §1.17(h).

The other changes in §5.14 make grammatical corrections and do not alter the intent of the section.

Section 5.15

Section 5.15(a) broadens the scope of licenses granted under §5.12(a). Section 5.15(a), as proposed, is changed to clarify the scope of a §5.15(a) license and delete certain of the exclusions originally proposed. This license permits exporting technical data to and filing corresponding subject matter in an application in any foreign country. The license also permits amendments, modifications, and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application, to be exported and filed in any foreign country. This license includes additional matter which does not change the general nature of subject matter disclosed and does not pertain to certain prohibited subjects or areas listed on various export restriction lists established by the Department of State and the Department of Energy.

These changes also permit an applicant to take action in the prosecution of the foreign or international application and submit supporting data such as affidavits, test data or the like as long as it directly relates to the filing, possible filing or prosecution of the application and does not pertain to the prohibited subjects or areas enumerated in §5.15(a)(4). The changes in §5.15(a) obviate the problems in *In re Gaertner,* supra, by providing a license scope which covers the type of activity involved in that case.

Amended paragraph (b) of §5.15 is the same as proposed paragraph (b) except for changes for consistency.

Amended paragraph (c) of §5.15 differs from §5.15(c) as proposed by including a reference to §5.14 and specifically permitting an applicant to petition for a change of the scope of a license.

New paragraph (d) of §5.15 is similar to proposed paragraph (d) with only changes for consistency.

New paragraph (e) of §5.15 is similar to proposed paragraph (e) with only changes for consistency.

Paragraph (f) of §5.15 is similar to proposed paragraph (f) with only changes for consistency.

Paragraph (g) is adopted essentially as proposed.

Section 5.17

Section 5.17 is similar to proposed §5.17 with only consistency changes.

Section 5.20

Section 5.20, not included in the proposal, is new and clarifies the existing authority of the Commissioner under the unclassified activities in foreign atomic energy programs. Under 10 CFR 810.7, the license of the Commissioner under 37 CFR 5.11 pursuant to 35 U.S.C. 184 constitutes information available to the public and generally authorized activity.

Section 5.25

Section 5.25, proposed initially as §5.20, is new and sets forth the requirements for petitioning for a retroactive license.

Section 5.31 and 5.32

Sections 5.21 and 5.22 are redesignated as §§5.31 and 5.32, respectively.

Section 5.33

Section 5.23 is redesignated as §5.33 and adopted as proposed.

Responses to Comments on the Rules

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony were considered.

Twenty-one letters presenting written comments were received and nine persons testified at the public hearing on July 20, 1983. Comments appear below along with the responses.

Comment:

One comment objected to the amendment of §5.1 to include "transmittal for" filing.

Reply:

This comment has been adopted by deleting the phrase from the final rule.

Comment:

Three comments requested an explanation of the conditions when a license may be revoked under §5.11(d) be clearly set forth and asked whether, if revocation occurs, past acts are valid and whether there will be compensation for damages.

Reply:

The section has been revised to further clarify the conditions under which a license may be revoked. The power to revoke licenses has been expressly included in all issued licenses for a number of years. Section 5.11(d) as proposed, merely recognizes in the rule the fact that licenses can be revoked. With the advent of the filing of a U.S. application becoming a request for a foreign filing license under §5.12(a), a regulatory procedure clarifying the revocation practice was appropriate. Revocation will be effective only as of the date of revocation and prior acts predicated on the license would be in compliance with 37 CFR Part 5. The rule as proposed has been clarified to indicate that revocation may apply either to a license specifically granted by the Commissioner or to an authorization to file a foreign application resulting from the passage of six months from the filing of a United States patent application. No compensation is available for revocation of a license.

Comment:

Eighteen comments requested the amendment of §5.11 to eliminate the license requirement for "transmittal for filing" and substitute the requirement for "filing" only.

Reply:

The proposal has been adopted by eliminating the requirement for a license from the Commissioner prior to transmitting or exporting an application abroad. The regulations have been clarified to emphasize the requirements for the export of technical data in the form of an application. An applicant has a choice of exporting such applications under authority of either (1) the appropriate export agencies controlling the export of technical data —Department of State; Department of Commerce, International Trade Administration; or Department of Energy or (2) a license from the Commissioner. While a license from the Commissioner is required only for filing an application abroad, the provisions of §§5.18, 5.19 and 5.20 reflect the Commissioner's authority to license the export of technical data in the form of an application for purposes related to filing in addition to the foreign filing of the application in a foreign country.

Comment:

Six person objected to the transmittal license requirement and argued that the Patent and Trademark Office lacks authority under 35 U.S.C. 184 to require pre-filing (transmitting) licenses. It was also argued that foreign filing licensing is not the conduct of proceedings under 35 U.S.C. 6.

Reply:

The final rules do not require a license from the Commissioner for export (or transmittal). The export provisions of §5.11 are issued under 35 U.S.C. 6 and pursuant to delegations under the regulations of the export agencies.

Comment:

One comment argued that the constitutional right of freedom of speech would be impaired by requiring a license for published material.

Reply:

A constitutional argument of prior restraint by export licensing of the International Traffic in Arms Regulations was reviewed by the Ninth Circuit in the case of *United States* v. *Edler,* 579 F. 2d 516 (9th Cir. 1978) cert. denied 449 U.S. 1084 (1981). No prior restraint within first amendment protection was found by the Court.

Comment:

One comment stated that the $120 petition license fee under §5.12(b) is too high, and a $60 fee would be more reasonable.

Reply:

The license fee under §5.12(b), §5.13 and §5.14 is not applicable to routine licensing requests. It is only applicable to expedited processing of license requests which require special efforts by the Patent and Trademark Office. The $120 petition fee better reflects the costs to the Patent and Trademark Office for providing expedited handling.

Comment:

One comment proposed the deletion of the last sentence of paragraph §5.14(a) since under §5.12(a) only those cases having interest from a security standpoint are refused a license.

Reply:

This suggestion has not been adopted because the provision may apply to petitions filed prior to receipt of a filing receipt license where expedited handling is requested.

Comment:

One comment stated that §5.15(d) appears to be redundant since it applies only to cases on file for six months and on which no secrecy order has been imposed.

Reply:

Under §5.15(d), a license is not needed for cases in this category if no additional subject matter is added. This section complements §5.15(b) where a license of narrow scope is granted.

Comment:

One comment raised the question whether §5.15(a) as to amendments, supplements, and modifications includes continuation-in-part applications.

Reply:

Continuation-in-part applications are included within the term "amendments, supplements, and modifications." *Beckman Instruments, Inc.* v. *Coleman Instruments,* 143 USPQ 278 (7th Cir. 1964).

Comment:

Two comments requested that the express language in §5.15(a)(3) be amended to state that "Technical Data" relating to articles, materials and supplies be limited to the validated license requirements of §§379.4(c) and 379.4(d) of the Export Administration Regulations and no other sections, or alternatively, that paragraph (a)(3) be deleted in its entirety.

Reply:

The final rules do not include §5.15(a)(3) as proposed.

Comment:

Two comments proposed that the two-tier licensing structure of §5.15(a) and §5.15(b) be amended to reflect a broad one-tier system based on §5.15(a).

Reply:

The two-tier system reflects different treatment for applications within the inspection scope of 35 U.S.C. 181 and those outside of its inspection scope. Security review occurs on all applications with inspection cases having a narrow license grant, and noninspection cases having a broad license grant. This inspection case treatment is necessary for the Patent and Trademark Office to meet its responsibilities under 35 U.S.C. 184 and particularly 37 CFR 5.18, 5.19, and 5.20 where the State, Commerce and Energy Departments accept the Commissioner's licenses in lieu of their own export approval.

Comment:

One comment indicated that proposed §5.15(a)(3) was of such wide scope that licenses will always be needed. The example cited was that this section would require licenses for all amendments filed in North Korea and Cuba.

Reply:

The comment is correct and the provisions of §5.15(a)(3) have been deleted. The country of destination restrictions did not provide a workable mechanism for technology review under the provisions of 35 U.S.C. 181.

Comment:

Three comments recommended making a §5.15(a) scope license available pursuant to a §5.14 petition where an application was filed prior to Feb. 27, 1983, or where an initial automatic §5.12(a) petition was not granted after Feb. 27, 1983 or where the general nature of the invention changed but is still outside of the provisions of §5.15(a)(4).

Reply:

This provision has been adopted to allow the Commissioner to issue broadened licenses upon a §5.14 petition in the above circumstances. New §5.15(c) allows

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the Commissioner to convert the scope of a license from §5.15(b) to a §5.15(a) license.

Comment:

Two comments proposed the extension of a §5.15(a) license upon petition after one or more years after the United States filing date or after grant of a §5.15(b) license.

Reply:

This suggestion has been adopted in §5.15(c) which will provide the mechanism by petition at any time to convert the scope of a license. This is promulgated since errors may occur in the denial of a §5.15(a) license. Also, the initial determination of the sensitive nature of technology may be altered by changes in the security classification guidelines. Procedurally, such petitions will be referred to the appropriate defense agencies for their review of the technology prior to the grant of any license.

Comment:

One comment requested clarification on how and under what circumstances a §5.12(b) license granted under §5.15(c) has the same scope as a license granted under §5.12(a).

Reply:

Licenses granted under §5.12(a) will have the §5.15(a) scope because the applications are not within the inspection scope of a 35 U.S.C. 181 referred to the defense agencies for security review. Under §5.15(c), applications which are not referred to defense agencies pursuant to petitions under §§5.12, 5.13 and 5.14 will have a license of the scope of §5.15(a).

Comment:

Three comments suggested an amendment to proposed§5.20(4) to delete the "inadvertence" standard and substitute "through error without deceptive intent."

Reply:

Inadvertence is a statutory standard which cannot be altered by rulemaking. Further, judge-made law has determined the metes and bounds of this term which further proscribes the rulemaking authority of the Commissioner. In *Barr Rubber Products Co.* v. *Sun Rubber Co.*, 149 USPQ 204, 209 (S.D.N.Y., 1966) inadvertence was defined as "lack of care or attentiveness: inattention" or "an effect of inattention: a result of carelessness; an oversight, mistake, or fault from negligence."

Inadvertence signifies want of attention, and an action which is deliberately taken with full knowledge of the law and facts is not inadvertent. *In re Application of Nov. 22, 1952,* 153 USPQ 410, 411 (Asst. Commr. 1967).

Implementation of Patent Procedure Revisions

The various sections will be implemented by the Commissioner on the effective date of the rules by the acceptance of petitions under the various sections. The broadened license scope of §5.15(a) will apply as of the effective date of these rules to all cases having filing receipt licenses under §5.12(a) which became effective on Feb. 27, 1983. The provisions of this broad license do not apply to acts of export or filing which occurred prior to the effective date of these rules. No other action will be required by an applicant to receive the benefits of this change.

Other Considerations

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The Acting General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354) for several reasons. Under this rulemaking, small entities would be able to obtain licenses without filing separate requests therefor. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, simplifying existing procedures where possible.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in cost or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

Paperwork Reduction Act. The collection of information requirement of this rule is included in a PTO request for approval pending before the OMB. Upon assignment of a control number by OMB, we will publish an appropriate amendment of the affected rules.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Lawyers, Small businesses.

37 CFR Part 5

Classified information, Foreign relations, Inventions and patents.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 41 and 181–188 and by delegations to the Commissioner by regulation (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7) or otherwise under the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, the Patent and Trademark Office is amending Parts 1 and 5 of Title 37 of the Code of Federal Regulations as set forth below:

PART 1—[AMENDED]

1. Section 1.17 is amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of Part 1 or 5 listed below which refers to this paragraph $120.00

—§1.47—for filing by other than all the inventors or a person not the inventor
—§1.48—for correction of inventorship
—§1.182—for decision on questions not specifically provided for
—§1.183—to suspend the rules
—§1.268—for late filing of interference settlement agreement
—§§5.12, 5.13 & 5.14—for expedited handling of foreign filing license
—§5.15—for changing the scope of a license
—§5.25—for retroactive license

2. The table of contents and heading for Part 5 are revised to read as follows:

PART 5—SECRECY OF CERTAIN INVENTIONS AND LICENSES TO EXPORT AND FILE APPLICATIONS IN FOREIGN COUNTRIES

Secrecy Orders

Sec.
5.1 Defense inspection of certain applications.
5.2 Secrecy order.

5.3 Prosecution of application under secrecy orders; withholding patent.
5.4 Petition for rescission of secrecy order.
5.5 Permit to disclose or modification of secrecy order.
5.6 General and group permits.
5.7 Compensation.
5.8 Appeal to Secretary.

Licenses for Foreign Exporting and Filing

5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting international application.
5.12 Petition for license.
5.13 Petition for license; no corresponding application.
5.14 Petition for license; corresponding U.S. application.
5.15 Scope of license.
5.16 Effect of secrecy order.
5.17 Who may use license.
5.18 Arms, ammunition, and implements of war.
5.19 Export of technical data.
5.20 Export of technical data relating to sensitive nuclear technology.
5.25 Petition for retroactive license.

General

5.31 Effect of modification, rescission or license.
5.32 Papers in English language.
5.33 Correspondence.

Authority: 35 U.S.C. 6, 41, 181–188 and the Export Administration Act of 1979, as amended, the Arms Export Control Act, as amended, the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

3. The center heading preceding §5.11 and the text of §5.11 are revised to read as follows:

Licenses for Foreign Exporting and Filing

§5.11 License for filing in a foreign country an application on an invention made in the United States or for transmitting an international application.

(a) A license from the Commissioner of Patents and Trademarks under 35 U.S.C. 184 is required before filing any application for patent or for the registration of a utility model, industrial design, or model, in a foreign patent office or any foreign patent agency or any international agency other than the United States Receiving Office, if:

(1) An application on the invention has been on file in the United States less than six months prior to the date on which the application is to be filed, or

(2) No application on the invention has been filed in the United States.

(b) The license from the Commissioner of Patents and Trademarks referred to in paragraph (a) would also authorize the export of technical data abroad for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application without separately complying with the regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of the Office of Export Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy).

(c) Where technical data in the form of a patent application, or in any form is being exported for purposes related to the preparation, filing or possible filing and prosecution of a foreign patent application, without the license from the Commissioner of Patents and Trademarks referred to in paragraphs (a) or (b) of this section, or on an invention not made in the United States, the export regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of Office of Export Administration, International Trade Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy) must be complied with unless a license is not required because a United States application was on file at the time of export for at least six months without a secrecy order under §5.2 being placed thereon. The term "exported" means export as it is defined in 22 CFR Parts 121–130, 15 CFR Part 379 and 10 CFR Part 810.

(d) If a secrecy order has been issued under §5.2, an application cannot be exported to, or filed in, a foreign country (including an international agency in a foreign country), except in accordance with §5.5.

(e) No license pursuant to paragraph (a) of this section is required if:

(1) The invention was not made in the United States, or

(2) The United States application is not subject to a secrecy order under §5.2, and was filed at least six months prior to the date on which the application is filed in a foreign country.

(f) A license pursuant to paragraph (a) of this section can be revoked at any time upon written notification by the Patent and Trademark Office. An authorization to file a foreign patent application resulting from the passage of six months from the date of filing of a United States patent application may be revoked by the imposition of a secrecy order.

4. Section 5.12 is amended by revising paragraph (b) to read as follows:

§5.12 Petition for license.

* * * * *

(b) Petitions for license should be presented in letter form and must include the required fee (§1.17(h)), if expedited handling of the petition is also sought, the petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

5. Section 5.13 is revised to read as follows:

§5.13 Petition for license; no corresponding application.

If no corresponding national or international application has been filed in the United States, the petition for license under §5.12(b) must be accompanied by the required fee (§1.17(h)), if expedited handling of the petition is also sought, and a legible copy of the material upon which a license is desired. This copy will be retained as a measure of the license granted. For assistance in the identification of the subject matter of each license so issued, it is suggested that the petition be submitted in duplicate and provide a title and other description of the material. The duplicate copy of the petition will be returned with the license or other action on the petition.

6. Section 5.14 is amended by revising paragraphs (a) and (c) to read as follows:

§5.14 Petition for license; corresponding U.S. application.

(a) When there is a corresponding United States application on file, a petition for license under §5.12(b) must include the required fee (§1.17(h)), if expedited handling of the petition is also sought, and must identify this application by serial number, filing date, inventor, and title, but a copy of the material upon which the license is desired is not required. The subject matter licensed will be measured by the disclosure of the United States appli-

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cation. Where the title is not descriptive, and the subject matter is clearly of no interest from a security standpoint, time may be saved by a short statement in the petition as to the nature of the invention.

* * * * *

(c) When the application to be filed or exported abroad contains matter not disclosed in the United States application or applications, including the case where the combining of two or more United States applications introduces subject matter not disclosed in any of them, a copy of the application as it is to be filed in the foreign country or international application which is to be transmitted to a foreign international or national agency for filing in the Receiving Office, must be furnished with the petition. If however, all new matter in the foreign or international application to be filed is readily identifiable, the new matter may be submitted in detail and the remainder by reference to the pertinent United States application or applications.

7. Section 5.15 is revised to read as follows:

§5.15 Scope of license.

(a) Grant of a license under §5.12(a) authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency when the subject matter of the foreign or international application corresponds to that of the domestic application. This license includes authority:

(1) To export and file all duplicate and formal papers to the foreign country or international agencies;

(2) To make amendments, modifications and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification, comparison, or explanation of subject matter disclosed in the application;

(3) To take any action in the prosecution of the foreign or international application; and

(4) To add subject matter or take any action under paragraphs (a) (1)–(3) of this section which does not change the general nature of the subject matter disclosed at the time of filing, unless the subject matter added involves technical data pertaining to:

(i) Defense services or articles designated in the United States Munitions List applicable at the time of foreign filing, the unlicensed exportation of which is prohibited pursuant to the Arms Export Control Act, as amended, and 22 CFR Parts 121–130; or

(ii) Restricted Data, sensitive nuclear technology or technology useful in the production or utilization of special nuclear material or atomic energy, the dissemination of which is subject to restrictions of the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, as implemented by the regulations for Unclassified Activities in Foreign Atomic Energy Programs, 10 CFR Part 810, in effect at the time of foreign filing.

(b) Grant of a license under §5.12(b) authorizes the export and filing of an application in a foreign country or the transmitting of an international application to any foreign patent agency or international patent agency. Further, this license includes authority to forward all duplicate and formal papers to the foreign patent agency or international patent agency and to make amendments, modifications or supplements to and take any action in the prosecution of the foreign or international application, provided subject matter additional to that covered by the license is not involved.

(c) A license granted under §5.12(b) pursuant to §5.13 or §5.14 shall have the scope indicated in paragraph (a) of this section, if it is so specified in the license. A petition, accompanied by the required fee (§1.17(h)), may also be filed to change a license having the scope indicated in paragraph (b) of this section to a license having the scope indicated in paragraph (a) of this section. The change in the scope of a license will be as of the date of the grant of the change in scope.

(d) In those cases in which no license is required to file the foreign application or transmit the international application, no license is required to file papers in connection with the prosecution of the foreign or international application not involving the disclosure of additional subject matter.

(e) Any paper filed abroad or transmitted to an international patent agency following the filing of a foreign or international application which changes the general nature of the subject matter disclosed at the time of filing or which involves the disclosure of subject matter listed in paragraphs (a)(4) (i) or (ii) of this section must be separately licensed in the same manner as a foreign or international application. Further, if no license has been granted under §5.12(a) on filing the corresponding United States application, any paper filed abroad or with an international patent agency which involves the disclosure of additional subject matter must be licensed in the same manner as a foreign or international application.

(f) Licenses separately granted in connection with two or more United States applications may be exercised by combining or dividing the disclosures, as desired, provided:

(1) Subject matter which changes the general nature of the subject matter disclosed at the time of filing or which involves subject matter listed in paragraphs (a)(4) (i) or (ii) of this section is not introduced and,

(2) In the case where at least one of the licenses was obtained under §5.12(b), additional subject matter is not introduced.

(g) A license does not apply to acts done before the license was granted. See §5.25 for petitions for retroactive licenses.

8. Section 5.17 is revised to read as follows:

§5.17 Who may use license.

Licenses may be used by anyone interested in the export, foreign filing, or international transmittal for or on behalf of the inventor or the inventor's assigns.

9. A new §5.20 is added to read as follows:

§5.20 Export of technical data relating to sensitive nuclear technology.

(a) Under regulations (10 CFR 810.7) established by the United States Department of Energy, an application filed in accordance with the regulations (37 CFR 5.11–5.33) of the United States Patent and Trademark Office and eligible for foreign filing under 35 U.S.C. 184, is considered to be information available to the public in published form and a generally authorized activity for the purposes of the Department of Energy regulations.

(b) Inquiries concerning the export of sensitive nuclear technology other than related to the filing or prosecution of a foreign patent application should be made to the Attention: Secretary, United States Department of Energy, Office of International Security Affairs, Washington, D.C. 20858.

§5.21 [Redesignated as §5.31]

10. Section 5.21 is redesignated as §5.31.

§5.22 [Redesignated as §5.32]

11. Section 5.22 is redesignated as §5.32.

12. A new §5.25 is added to read as follows:

§5.25 Petition for retroactive license.

(a) A petition of retroactive license under 35 U.S.C. 184 shall be presented in accordance with §5.13 or §5.14, and shall include:

(1) A listing of the foreign countries in which the patent application material was filed,

(2) The dates on which the material was filed,

(3) A verified statement containing:

(i) An averment that the subject matter in question was not under a secrecy order at the time it was filed abroad, and that it is not currently under a secrecy order.

(ii) A showing that the license has been diligently sought after discovery of the proscribed foreign filing, and

(iii) An explanation of why the material was inadvertently filed abroad without the required license under §5.11 first having been obtained, and

(4) The required fee (§1.17(h)).

The above explanation must include a showing of facts rather than a mere allegation of inadvertence. The showing of facts should include statements by those persons having personal knowledge of the acts regarding filing in a foreign country and should be accompanied by copies of any necessary supporting documents such as letters of transmittal or instructions for filing. The acts which are alleged to constitute inadvertence should cover the period from the time of filing until actual filing of the petition under this section.

(b) If a petition for a retroactive license is denied, a time period of not less than thirty days shall be set, during which the petition may be renewed. Failure to renew the petition within the set time period will result in a final denial of the petition. A final denial of a petition stands unless a petition is filed under §1.181 within two months of the date of the denial. If the petition for a retroactive license is denied with respect to the invention of a pending application and no petition under §1.181 has been filed, a final rejection of the application under 35 U.S.C. §185 will be made.

(c) The granting of a retroactive license does not excuse any violation of the export regulations contained in 22 CFR Parts 121–130 (International Traffic in Arms Regulations of the Department of State), 15 CFR Part 379 (Regulations of Office of Export Administration, International Trade Administration, Department of Commerce) and 10 CFR Part 810 (Foreign Atomic Energy Programs of the Department of Energy) which may have occurred because of the failure to obtain an appropriate license prior to export.

13. Section 5.23 is redesignated as §5.33 and revised to read as follows:

§5.33 Correspondence.

All correspondence in connection with this part, including petitions, should be addressed to "Commissioner of Patents and Trademarks (Attention Licensing and Review), Washington, D.C. 20231."

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Feb. 24, 1984.

[FR Doc. 84-8884 Filed 4-3-84; 8:45 am]
BILLING CODE 3510-16-M

[1042 O.G. 3]

(148) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 40227-18]

Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce
Action: Final rule: Change of effective date
Summary: The Patent and Trademark Office amended the rules of practice in patent cases, Parts 1 and 5 of 37 CFR, to establish a streamlined procedure for granting licenses for foreign filing by publishing a notice in the Federal Register on Apr. 4, 1984, at 49 Fed. Reg. 13456–13463. The notice set an effective date of June 1, 1984. However, title 35, United States Code, section 41(g) provides that "No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register." Since these rules establish fees and the effective date of the rules was slightly less than 60 days after the publication of the final rule change in the Federal Register, it is necessary to set a later effective date.
Date: The effective date of the rule change published at 49 Fed. Reg. 13456–13463 is changed to June 4, 1984.
For further information contact: Kenneth L. Cage by telephone at (703) 557–2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 30, 1984.

[1042 O.G. 58]

(149) **Office of Patents and Trademarks**
Revision of the Scope of the Secrecy Order for Defense Agency Use

The Patent and Trademark Office (PTO) is revising the scope and format of the Secrecy Orders issued under the Invention Secrecy Act of 1951, 35 U.S.C. 181 et seq., 37 CFR Part 5. The present forms of Secrecy Orders are very restrictively worded to control disclosure or use of an invention under Secrecy Order. The PTO previously would only authorize disclosure or use of a Secrecy Order invention by the grant of a special permit. Permits authorize limited disclosure and permissible use of the invention depending upon the nature of the technical data and national security controls. To receive a permit, a patent applicant had to petition the Commissioner, or the defense agency sponsoring the Secrecy Order would issue or could have sua sponte issued a permit with the Order.

The revised Secrecy Orders will permit disclosure and use consistent with the national security controls needed on the technical data in a patent application. The features of existing permits are incorporated into the Orders which will eliminate the need, in many cases, for the applicant to separately petition for a permit to authorize various degrees of disclosure or use.

These revisions to the scope and format of a Secrecy Order are intended to place essentially the same national security controls on the technical data in patent applications as those on other types of technical data. With respect to publication or disclosure of information which would, in the opinion of the sponsoring Agency, be detrimental to the national security, the revised Secrecy Orders will be consistent with existing national security and export control procedures. The revised Secrecy Orders will also clarify the procedures for handling and custody of applications subject to a Secrecy Order.

The three new Secrecy Order formats to be used by the defense agencies of the Department of Defense are as follows:

(1) Secrecy Order and Permit for Foreign Filing in Certain Countries

This Secrecy Order will be used for those patent applications that contain technical data whose export is controlled by the guidelines contained in DOD Directive 5230.25, dated Nov. 6, 1984, (codified as 32 CFR Part 250) which relates to export control under 10 U.S.C. 140(c) and the Militarily Critical Technologies List (MCTL). See 50 U.S.C. App. 2404(d).

This Secrecy Order is intended to permit widest utilization of the technical data while still controlling any publication or disclosure which would result in an unlawful exportation. This type of Secrecy Order sets forth the applicable export controls for technical data in either the Commodity Control List (CCL) 15 CFR Parts 379, 399.1 or the Munitions List of the International

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Traffic in Arms Regulation (ITAR), 22 CFR Part 121.

The countries where corresponding patent applications may be filed will be identified in the Order. The Order specially authorizes use of the invention for legitimate business purposes. The definition of this term in the Order is identical to that found in DOD Directive 5230.25, 32 CFR Part 250. The level of security control requires that the subject matter must be safeguarded under conditions that provide adequate protection and prevent access by unauthorized persons. Additional modifications or permits to the Secrecy Order under 37 CFR 5.1 et seq. will only be needed where the level of disclosure is beyond that specified in the Order.

Following is a sample copy of this type of Secrecy Order.

Serial No.:
Filed:
Applicant:
Title:
Sponsoring Agency & Address:

ECCN[1] Reference

Goods Accompanied by Sophisticated Know-How
Keystone Equipment or Materials

ITAR[2] Reference

Goods Accompanied by Sophisticated Know-How

Secrecy Order and Permit for Foreign Filing in Certain Countries

(Title 35, United States Code, Sections 181–188 (1952))

NOTICE: To the applicant(s) above named; his, her, or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter which discloses critical technology with military or space application. The unauthorized disclosure of such subject matter would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized herein.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified application falls within the scope of this Order. If such other patent application is not under Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter need to be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1952).

The principals may disclose, for legitimate business purposes,[3] the subject matter of the above-identified application to a U.S. citizen or to a person who is both admitted lawfully into the United States for permanent residence and is located in the United States provided the U.S. citizen or person is furnished with a copy of this Secrecy Order and is informed that this Secrecy Order is applicable to the subject matter disclosed.

Legitimate business purposes include both selling or producing products for the commercial domestic marketplace or for the commercial foreign marketplace, providing that any required expert license is obtained. Legitimate business purposes also include selling or otherwise disclosing technical data to foreign contractors or governments overseas after receiving the required export license or approval by the U.S. Government.

The principals shall notify the Commissioner of Patents and Trademarks if a validated license is obtained from the Office of Export Administration or a license is obtained from the Director, Office of Munitions Control under regulations governing the export of technical data (15 CFR 379 of the Export Administration Regulations or 22 CFR 125 of the International Traffic in Arms Regulations).

The subject matter of the above-identified application has been determined not to be encompassed by E.O. 10865, entitled "Safeguarding of Classified Information Within Industry" or E.O. 12356, entitled "National Security Information" and thus is not subject to the "Industrial Security Manual for Safeguarding Classified Information." However, since the disclosure of the subject matter would be detrimental to the national security, the subject matter must be safeguarded under conditions that will provide adequate protection and prevent access by unauthorized persons. When copies of the subject matter are no longer needed, they should be destroyed by any method that will prevent disclosure of the contents or reconstruction of the document.

The principals are permitted, subject to the conditions stated hereinafter, to file and prosecute a corresponding application for patent in each of the following countries: Australia, Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Turkey and the United Kingdom. The papers for each foreign application and its prosecution shall be transmitted to the sponsoring agency, identified herein, for forwarding through diplomatic channels for filing in the foreign country either directly by the principals or through the principals' foreign patent attorney or agent if authorized by the foreign government. Correspondence exclusively relating to payments of taxes and fees need not be sent through the sponsoring agency and diplomatic channels provided that such correspondence contains no information pertaining to the subject matter of the above-identified application.

International reciprocal agreements providing for the filing of patent applications under a Secrecy Order in the above-identified countries require the principals to furnish to the sponsoring agency identified herein (in addition to the papers to be filed in the foreign patent office) a copy of the specification (including any drawings annexed thereto, any resume and the claims included in the patent application) filed in the patent office of the foreign country. This copy will be furnished to the appropriate defense agency of the foreign government *for information only* and without prejudice to any rights of the principals. The filing date and serial number of the patent application should also be furnished to the sponsoring agency.

The principals shall request the foreign patent office to place in secrecy the foreign patent applications corresponding to the above-identified application and shall furnish a copy of this Secrecy Order and permit with the first papers to be filed in the foreign patent office.

The foreign government may require a waiver in writing of any claim to compensation for loss or damage due solely to the imposition of secrecy on the invention. Belgium, France, the Federal Republic of Germany, the Netherlands, Turkey and the United Kingdom normally require such a waiver in writing.

This Order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

[1]Export Control commodity Number (ECCN) on the Commodity Control List (Supplement No. 1 to 15 CFR 399.1).
[2]International Traffic in Arms Regulations (ITAR), 22 CFR 120–130.
[3]The term legitimate business purposes is to interpreted consistent with DOD Directive 5230.25 entitled "Withholding of Unclassified Technical Data From Public Disclosure," issued by the Secretary of Defense on Nov. 6, 1984, 32 CFR Part 250, 49 FR 484040 (Dec. 10, 1984).

Director, Special Laws Administration.

(2) Secrecy Order and Permit for Disclosing Classified Information

This Secrecy Order will be used for those patent applications which contain technical data that is either classified under Executive Order 12356, National Security Information, 47 FR 14874, Aug. 6, 1982, or properly classifiable under a security guideline where the patent application owner has a current DOD Security Agreement, DOD form 441. This Agreement requires the protection of classified technical data as prescribed in the Industrial Security Manual (ISM), DOD 5220.22–M.

The intent of this Secrecy Order is to treat classified technical data in a patent application in the same manner as any other classified material under the Industrial Security Manual (ISM). Accordingly, this Secrecy Order will include a notification of the classification level of the technical data in the application, and provided a level of protection at that classification level. The Order will apply to owners of patent applications who have a current DOD Security agreement (DD Form 441) under the ISM. Additional modifications or permits to the Secrecy Order under 37 CFR 5.1 et seq. will only be needed where the level of disclosure is beyond that specified in the order.

The following is a copy of this second type of Secrecy Order:

Serial No:
Filed:
Applicant:
Title:
To be protected at Classification Level of:
Top Secret, Secret, Confidential, or Special Instructions
Sponsoring Agency & Address:

Secrecy Order and Permit for Disclosing Classified Information

(Title 35, United States Code, sections 181–188 (1952))

NOTICE: To the applicant(s) above named, his, her, or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter which discloses classifiable information. The unauthorized disclosure of such matter would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized herein.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified patent application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter need to be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patent and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, and 186 (1951).

The subject matter of the above-identified application has been determined to be encompassed by E.O. 19865, entitled "Safeguarding of Classified Information Within Industry" or E.O. 12356, entitled "National Security Information" and thus is subject to the "Industrial Security Manual for Safeguarding Classified Information."

The principals shall protect the subject matter as required by the Industrial Security Manual for Safeguarding Classified Information and may disclose the subject matter of the above-identified application to other persons having the requisite clearance on a "need-to-know basis" *provided* the person to whom the subject matter is disclosed is furnished with a copy of this Secrecy Order and is informed that this Secrecy Order is applicable to the subject matter disclosed. The declassification, in whole or in part, of the subject matter of the above-identified application does not modify this Secrecy Order. The requirements of this Secrecy Order remain in effect until the Secrecy Order is rescinded or modified by the Commissioner of Patent and Trademarks. The fact that the subject matter as a whole is declassified should be brought to the attention of the sponsoring agency.

This permission to disclose does not authorize the disclosure of the subject matter of the above-identified application through (1) the filing of any foreign application without specific permission of the Patent and Trademark Office, or (2) the export of any item or data without any export license which may be required.

This Order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration.

(3) Secrecy Order

This Secrecy Order will be used for those patent applications that contain properly classifiable technical data under a security guideline where the patent application owner does not have a DOD Security Agreement under the ISM.

This Secrecy Order is substantially the same as the Secrecy Order in use up to now, and will be used where the other types of Orders do not apply. This Order may be issued by direction of agencies other than the Department of Defense. Unless issued with the initial Order, modifications to the Secrecy Order and/or permits under 37 CFR 5.1 et seq. will be needed for additional disclosure.

The following is a copy of this third type of Secrecy Order:

Serial No:
Filed:
Application:
Title:
Sponsoring Agency & Address:

Secrecy Order

(Title 35, United States Code, sections 181–188 (1952))

NOTICE: To the applicant(s) above named; his, her or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter the unauthorized disclosure of which would be detrimental to the national security, and you areordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized by the Commissioner of Patents and Trademarks.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified patent application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark office, it and the common subject matter need to be

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brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231 as soon as possible.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1952).

Since the disclosure of the subject matter of the above-identified application would be detrimental to the national security, the subject matter must be safeguarded under conditions that will provide adequate protection and prevent access by unauthorized persons. When copies of the subject matter are no longer needed, they should be destroyed by any method that will prevent disclosure of the contents or reconstruction of the document.

This Order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration.

Each Secrecy Order forbids the publication or disclosure of the invention except as specially authorized. By revising these Secrecy Orders to conform with existing export and classification authority, the burden on patent applicants to seek additional permits for disclosure and/or foreign filing under 37 CFR Part 5 will be reduced. The new Secrecy Orders reflect the level of secrecy required by law and regulation for various technologies and will place National Security and export controls on the patent application in harmony with other applicable export and classification controls. Also, this change will reduce the risk of disclosure of the subject matter of the invention by providing greater guidance on the safeguarding of the subject matter invention.

Information regarding the new Secrecy Orders may be obtained by calling Mr. Kenneth L. Cage, Director, Special Laws Administration Group, at (703) 557–2877 or by mail directed to Mr. Kenneth L. Cage, Director, Special Laws Administration, Group 220, Washington, D.C. 20231.

DONALD W. PETERSON,
Sept. 9, 1986. *Deputy Commissioner of Patents and Trademarks.*

[FR Doc. 86–21023 Filed 9–16–86; 8:45 am]
BILLING CODE 3510–16–M

[1071 OG 31]

(150) **Foreign Filing of Secrecy Order Inventions In Japan 37 CFR Part 5**

Under the provisions of 37 CFR Part 5 — Secrecy of Certain Invention and Licenses to File Applications in Foreign Countries — the Patent and Trademark Office may, with the approval of the defense agency sponsoring the secrecy order, permit the filing of secrecy order applications under 37 CFR 5.5 in designated foreign countries. The designated countries are those where the Government of the United States of America has entered into reciprocal patent secrecy arrangements.

Such arrangements between the United States of America and Japan include the transfer of technology and the national security provisions of the Mutual Defense Assistance Agreement, signed at Tokyo on Mar. 8, 1954, and the Agreement between the Government of the United States of America and the Government of Japan to Facilitate Interchange of Patent Rights and Technical Information for Purposes of Defense, signed at Tokyo on Mar. 22, 1956. These agreements became effective for the filing in Japan of patent applications under secrecy order in the United States of America as of Apr. 12, 1988, through an exchange of notes between the Government of the United States of America and the Government of Japan on Apr. 12, 1988. With the exchange of notes, the United States of America may permit transfer to Japan and Japan will protect certain defense-related technical information in patent applications in Japan disclosing inventions which are the subject of patent applications held in secrecy in the United States of America. Japan will accord patent protection to these applications consistent with Japanese patent law.

The 1956 Agreement recognizes that privately owned technology should, to the greatest extent practicable, be exchanged through commercial agreements between owners and users. It also stipulates that rights of private owners of patents and technical information should be fully recognized and protected in accordance with laws applicable to such rights. Other provisions are intended to assure fair treatment of private owners when they deal directly with a foreign government and to prevent private information that is communicated through government channels from being used or disclosed without authorization.

The 1956 Agreement also provides for the establishment of a Technical Property Committee to be composed of representatives from each government. The Technical Property Committee is charged with general responsibility for making recommendations to the two governments on any matters relating to the Agreement which are brought before the Committee by either government, either on its own behalf or on behalf of its nationals. One of the specific functions of the Committee is to make recommendations to the governments concerning disparities in the laws of both countries affecting the compensation of owners of patents and technical information.

Policy guidance for the United States of America representatives on the Technical Property Committee is provided by the Department of Commerce, the Department of Defense, and the Department of State.

The Patent and Trademark Office is providing for the addition of Japan as a country that is available for foreign filing of secrecy order applications in the following manner:

Type 1 secrecy orders entitled "Secrecy Order and Permit for Foreign Filing in Certain Countries" 51 *Federal Register* 32938, (Sept. 17, 1986), 1071 *Official Gazette* 31, (Oct. 21, 1986), list all available countries where foreign filing is authorized. The countries are: Australia, Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Turkey and United Kingdom.

As of Apr. 12, 1988, Japan will be included in all type 1 secrecy orders as one of the authorized countries for foreign filing. All type 1 secrecy orders issued prior to Apr. 12, 1988, will be modified by the Patent and Trademark Office within 30 days of this notice to include Japan as an authorized country. A sample copy of this new type 1 secrecy order appears in Appendix I.

Under all other Patent and Trademark Office secrecy orders, foreign filing in Japan will be considered on a case-by-case basis under 37 CFR 5.5. All principals as defined in 37 CFR 5.2 to be the applicant's successors, assignees and legal representatives who requested, but were denied, Japan as a country for foreign filing under 37 CFR 5.5(c) since Jan. 1, 1982, will have their petitions automatically reviewed within 90 days of the date of notice to determine if the invention may be foreign filed in Japan. In those instances where filing in Japan was requested, these principals will not have to file any petition under 37 CFR 5.5(c) before the Patent and Trademark Office in order to receive this review. If permission for filing in Japan is granted, the principals will be notified by the Patent and Trademark Office, including the identification of appropriately designated attorneys. A sample copy of this special permit for foreign filing in Japan appears in Appendix II.

Any other principals presently having an application under secrecy order desiring to file the secrecy order application in Japan should file a petition under 37 CFR 5.5 naming Japan a designated country.

To the extent possible, principals should designate whether the invention described in the patent application is or has been transferred in a format other than a patent application to Japan under the Mutual Defense Assistance Agreement between the United States of America and Japan, signed in Tokyo on Mar. 8, 1954. This information will be necessary in order to assure both governments that appropriate national security controls as provided for in the specific Mutual Defense Assistance Agreement will be utilized.

For further information contact, Kenneth L. Cage, Director of Group 220, by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington D.C. 20231.

DONALD J. QUIGG,
Apr. 12, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

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Appendix I

Serial No: Filed:
Applicant:
Title:
Sponsoring Agency & Address:

ECCN[1] REFERENCE		ITAR[2] REFERENCE
Goods Accompanied by Sophisticated Know-How	Keystone Equipment or Materials	Goods Accompanied by Sophisticated Know-How

SECRECY ORDER AND PERMIT FOR FOREIGN FILING IN CERTAIN COUNTRIES
(Title 35, United States Code, Sections 181-188 (1952)

NOTICE: To the applicant(s) above named, his, her, or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter which discloses critical technology with military or space application. The unauthorized disclosure of such subject matter would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized herein.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter immediately must be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1952).

The principals may disclose, for legitimate business purposes,[3] the subject matter of the above-identified application to a U.S. citizen or to a person who is both admitted lawfully into the United States for permanent residence and is located in the United States provided the U.S. citizen or person is furnished with a copy of this Secrecy Order and is informed that this Secrecy Order is applicable to the subject matter disclosed.

Legitimate business purposes include selling or producing products for the commercial domestic marketplace, or for the commercial foreign marketplace providing that any required export license is obtained. Legitimate business purposes also include selling or otherwise disclosing technical data to foreign contractors or foreign governments after receiving the required export license or approval by the U.S. Government.

The principals shall notify the Commissioner of Patents and Trademarks if a validated license is obtained from the Office of Export Administration or a license is obtained from the Director, Office of Munitions Control under regulations governing the export of technical data (15 CFR 379 of the Export Administration Regulations or 22 CFR 125 of the International Traffic in Arms Regulations).

The subject matter of the above-identified application has been determined not to be encompassed by E.O. 10865, entitled "Safeguarding of Classified Information Within Industry" or E.O. 12356, entitled "National Security Information" and thus is not subject to the "Industrial Security Manual for Safeguarding Classified Information." However, since the disclosure of the subject matter would be detrimental to the national security, the subject matter must be safeguarded under conditions that will provide adequate protection and prevent access by unauthorized persons. When copies of the subject matter are no longer needed, they should be destroyed by any method that will prevent disclosure of the contents or reconstruction of the document.

The principals are permitted, subject to the conditions stated hereinafter, to file and prosecute a corresponding application for patent in each of the following countries: Australia, Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Sweden, Turkey and United Kingdom. The papers for each foreign application and its prosecution shall be transmitted to the sponsoring agency, identified herein, for forwarding through diplomatic channels for filing in the foreign country either directly by the principals or through the principals' foreign patent attorney or agent if authorized by the foreign government. Correspondence exclusively relating to payments of taxes and fees need not be sent through the sponsoring agency and diplomatic channels provided that such correspondence contains no information pertaining to the subject matter of the above-identified application.

International reciprocal agreements providing for the filing of patent applications under a Secrecy Order in the above-identified countries require the principals to furnish to the sponsoring agency identified herein (in addition to the papers to be filed in the foreign patent office) a copy of the specification (including any drawings annexed thereto, any resume and the claims included in the patent application) filed in the patent office of the foreign country. This copy will be furnished to the appropriate defense agency of the foreign government *for information only* and without prejudice to any rights of the principals. The filing date and serial number of the patent application should also be furnished to the sponsoring agency.

The principals shall request the foreign patent office to place in secrecy the foreign patent applications corre-

[1]Export Control Commodity Number (ECCN) on the Commodity Control List (Supplement No. 1 to 15 CFR 399.1).
[2]International Traffic in Arms Regulation (ITAR), 22 CFR §§120-130

[3]The term legitimate business purposes is to be interpreted consistent with DOD Directive 5230.25 entitled "Withholding of Unclassified Technical Data From Public Disclosure," issued by the Secretary of Defense on Nov 6, 1984, 32 CFR Part 250, 49 FR 484040 (Dec. 10, 1984)

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sponding to the above-identified application and shall furnish a copy of this Secrecy Order and Permit with the first papers to be filed in the foreign patent office.

The use of this permit shall constitute a waiver, unless otherwise required by the international agreements, of any claim to compensation for loss or damage due solely to the imposition of secrecy or similar treatment of the invention. Belgium, France, Federal Republic of Germany, Netherlands, Norway, Turkey and United Kingdom normally require a separate document confirming such a waiver.

In the case of Japan, the applicant shall ensure in its contract with its patent attorney that the patent attorney shall submit to the Japanese Patent Office a certified copy of this Secrecy Order and Permit. The submission of this permit to the Japanese Patent Office is considered notification to the Government of Japan and the Secrecy Order status of the above-mentioned application and a corresponding Japanese application will be considered an Agreement Application referred to in 3(a) of the Protocol to the 1956 United States-Japan Agreement.

This Order should not be construed in any way to mean that the U.S. Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration

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Appendix II

PERMIT FOR FOREIGN FILING IN JAPAN (35 USC 182)

Permit Docket
U.S.Serial No. Petition Filed
Applicant:
Title:

INITIATING AGENCY
Address

The order of secrecy in the above-identified application is modified to permit filing of a corresponding application for patent in Japan on condition that:

(1) the papers for application in Japan be transmitted in a manner approved for information assigned protection at a classification level of _____to the Initiating Agency for forwarding for filing in Japan; (Questions with respect to the handling of such information should be directed to the Initiating Agency);
(2) at the time the papers for the application in Japan are transmitted to the Initiating Agency for forwarding for filing in Japan, an extra copy of the application be included, this extra copy to be transmitted by the Initiating Agency to the authorities of the government of Japan for defense purposes;
(3) the applicant submit to the Initiating Agency as soon as possible the Application Number and filing date of the application in the Japanese Patent Office;
(4) the applicant take all reasonable steps to safeguard the information in the application in the Japanese Patent Office; and
(5) the applicant ensure in its contract with its patent attorney in Japan that the patent attorney shall submit a certified copy of this permit to the Japanese Patent Office with the whole set of documents for the application.

The use of this permit shall constitute a waiver by the applicant of any right to compensation for damage which might arise under the laws of Japan by virtue of the mere fact that the invention is being handled pursuant to 3(a) of the Protocol to the Agreement between the Government of the United States of America and the Government of Japan to Facilitate Interchange of Patent Rights and Technical Information for Purposes of Defense, signed at Tokyo on March 22, 1956 (hereinafter referred to as the 1956 Agreement), or for unauthorized disclosure of the invention, but reserving a right of compensation under Article IV of the 1956 Agreement.

This permit does not lessen the responsibility of the applicant to comply with the provisions of any applicable government contract which may require that approval to disclose information in Japan be obtained from the contracting officer.

This permit constitutes the notification to the Government of Japan, which the Government of the United States of America undertakes to make pursuant to 4(a) of the Protocol to the 1956 agreement, that the patent application mentioned in this permit is held in secrecy in the United States of America.

Further, this permit identifies an application to be filed in the Japanese Patent Office, which corresponds to the patent application mentioned in the Permit For Foreign Filing, as an Agreement Application referred to in 3(a) of the Protocol to the 1956 Agreement.

This permit may be altered or revoked, in whole or in part, by appropriate notice.

Director, Special Laws Administration

[1090 OG 9-17]

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(151) **Foreign Filing of Secrecy Order Inventions in Designated Countries 37 CFR Part 5**

Under the provisions of 37 CFR Part 5, —Secrecy of Certain Inventions and Licenses to File Applications in Foreign Countries — the Patent and Trademark Office may, with the approval of the defense agency sponsoring the secrecy order, permit the filing of secrecy order applications under 37 CFR 5.5 in designated foreign countries with which the Government of the United States of America has entered into reciprocal patent secrecy arrangements.

The United States of America has detailed arrangements with 17 countries, most of whom are members of the Coordinating Committee for Multilateral Export Controls (COCOM). These arrangements provide protection for classified and other sensitive inventions when patent applications are being held in secret. These countries are as follows: Australia, Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Sweden, Spain, Turkey and United Kingdom.

For further information contact Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

DONALD J. QUIGG,
Sept. 29, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1095 OG 63]

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(152) **Foreign Filing of Secrecy Order Inventions In Spain 37 CFR Part 5**

Under the provisions of 37 CFR Part 5 — Secrecy of Certain Invention and Licenses to File Applications in Foreign Countries — the Patent and Trademark Office

may, with the approval of the defense agency sponsoring the secrecy order, permit the filing of secrecy order applications under 37 CFR 5.5 in designated foreign countries. The designated countries are those where the Government of the United States of America has entered into reciprocal patent secrecy arrangements.

Such arrangements include the North Atlantic Treaty Organization (NATO) Agreement for the Mutual Safeguarding of Secrecy of Inventions Relating to Defense and for Which Applications for Patents Have Been Made (12 UST 43; TIAS 4672), which was signed at Paris, France on Sept. 21, 1960, entered into force for the United States on Jan. 12, 1961, with implementing procedures to the agreement entering into force on Sept. 3, 1969.

Spain acceded to this NATO Agreement on Aug. 10, 1987. On July 28, 1988, Spain notified the Secretary General of NATO that the implementing procedures shall be applicable to Spain as of that date.

The other NATO countries which adhere to this agreement are Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Turkey, and United Kingdom. All of the above countries, except Italy, have also entered into force the implementing procedures; however, filing arrangements with Italy are subject to a separate agreement.

With the implementation of the NATO procedures, the United States of America may permit transfer to Spain and Spain will protect certain defense-related technical information in patent applications in Spain disclosing inventions which are the subject of patent applications held in secrecy in the United States of America. Spain will accord patent protection to those applications consistent with Spanish patent law.

The Patent and Trademark Office is providing for the addition of Spain as a country that is available for foreign filing of secrecy order applications in the following manner:

Type 1 secrecy orders entitled "Secrecy Order and Permit for Foreign Filing in Certain Countries" 51 *Federal Register* 32938, (Sept. 17, 1986), 1071 *Official Gazette* 31, (Oct. 21, 1986), revised 1090 *Official Gazette* 9, (May 3, 1988), list all available countries where foreign filing is authorized. The countries are: Australia, Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Sweden, Turkey and United Kingdom.

As of the date of this notice, Spain will be included in all type 1 secrecy orders as one of the authorized countries for foreign filing. All type 1 secrecy orders now in force will be modified by the Patent and Trademark Office upon their renewal anniversary to include Spain as an authorized country. A sample copy of this new type 1 secrecy order appears in the Appendix.

Under all other Patent and Trademark Office secrecy orders, foreign filing in Spain will be considered on a case-by-case basis under 37 CFR 5.5. All principals, as defined in 37 CFR 5.2 to be the applicant, the applicant's successors, assignees and legal representatives who requested, but were denied, Spain as a country for foreign filing under 37 CFR 5.5(c) since Jan. 1, 1982, will have their petitions automatically reviewed within 90 days of the date of notice to determine if the invention may be foreign filed in Spain. In those instances where filing in Spain was requested, these principals will not have to file any petition under 37 CFR 5.5(c) before the Patent and Trademark Office in order to receive this review.

Any principals, including those under a type 1 secrecy order, presently having an application under secrecy order desiring to file the secrecy order application in Spain should file a petition under 37 CFR 5.5 naming Spain a designated country.

The Secretary of the Armed Services Patent Advisory Board, 5611 Columbia Pike, Room 332-A, Falls Church, Va. 22041-5013, (703) 756-2430 will provide names of patent attorneys, and agents or other representatives in Spain authorized by the Government of Spain to have access to such secrecy order applications.

For further information contact, Kenneth L. Cage, Director of Group 220, by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington D.C. 20231.

DONALD J. QUIGG,
Sept. 29, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

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Appendix

Serial No: Filed:
Applicant:
Title:
Sponsoring Agency & Address:

ECCN[1] REFERENCE		ITAR[2] REFERENCE
Goods Accompanied by Sophisticated Know-How	Keystone Equipment or Materials	Goods Accompanied by Sophisticated Know-How

SECRECY ORDER AND PERMIT FOR FOREIGN FILING IN CERTAIN COUNTRIES
(Title 35, United States Code, Sections 181-188 (1952)

NOTICE: To the applicant(s) above named, his, her, or their heirs; and any and all of the assignees, licensees, attorneys and agents, hereinafter designated principals:

You are hereby notified that the above-identified patent application has been found to contain subject matter which discloses critical technology with military or space application. The unauthorized disclosure of such subject matter would be detrimental to the national security, and you are ordered to keep the subject matter secret (as required by 35 U.S.C. 181) and you are further ordered NOT TO PUBLISH OR DISCLOSE the subject matter to any person except as specifically authorized herein.

Any other patent application already filed or hereafter filed in the U.S. or any foreign country which contains any significant part of the subject matter of the above-identified application falls within the scope of this Order. If such other patent application is not under a Secrecy Order imposed by the U.S. Patent and Trademark Office, it and the common subject matter immediately must be brought to the attention of the Director, Group 220, Attn: Licensing and Review, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Publication or disclosure of the subject matter of the above-identified patent application, except as authorized herein or subsequently by the Commissioner of Patents and Trademarks, may subject the person publishing or disclosing the subject matter to the penalties of 35 U.S.C. 182, 185 and 186 (1952).

The principals may disclose, for legitimate business purposes,[3] the subject matter of the above-identified application to a U.S. citizen or to a person who is both admitted lawfully into the United States for permanent residence and is located in the United States provided the U.S. citizen or person is furnished with a copy of

[1]Export Control Commodity Number (ECCN) on the Commodity Control List (Supplement No. 1 to 15 CFR 399.1).
[2]International Traffic in Arms Regulation (ITAR), 22 CFR 120-130.
[3]The term legitimate business purposes is to be interpreted consistent with DOD Directive 5230.25 entitled "Withholding of Unclassified Technical Data From Public Disclosure," issued by the Secretary of Defense on Nov. 6, 1984, 32 CFR Part 250, 49 FR 484040 (Dec. 10, 1984).

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this Secrecy Order and is informed that this Secrecy Order is applicable to the subject matter disclosed.

Legitimate business purposes include selling or producing products for the commercial domestic marketplace, or for the commercial foreign marketplace providing that any required export license is obtained. Legitimate business purposes also include selling or otherwise disclosing technical data to foreign contractors or foreign governments after receiving the required export license or approval by the U.S. Government.

The principals shall notify the Commissioner of Patents and Trademarks if a validated license is obtained from the Office of Export Administration or a license is obtained from the Director, Office of Munitions Control under regulations governing the export of technical data (15 CFR 379 of the Export Administration Regulations or 22 CFR 125 of the International Traffic in Arms Regulations).

The subject matter of the above-identified application has been determined not to be encompassed by E.O. 10865, entitled "Safeguarding of Classified Information Within Industry" or E.O. 12356, entitled "National Security Information" and thus is not subject to the "Industrial Security Manual for Safeguarding Classified Information." However, since the disclosure of the subject matter would be detrimental to the national security, the subject matter must be safeguarded under conditions that will provide adequate protection and prevent access by unauthorized persons. When copies of the subject matter are no longer needed, they should be destroyed by any method that will prevent disclosure of the contents or reconstruction of the document.

The principals are permitted, subject to the conditions stated hereinafter, to file and prosecute a corresponding application for patent in each of the following countries: Australia, Belgium, Canada, Denmark, France, Federal Republic of Germany, Greece, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Sweden, Spain, Turkey and United Kingdom. The papers for each foreign application and its prosecution shall be transmitted to the sponsoring agency, identified herein, for forwarding through diplomatic channels for filing in the foreign country either directly by the principals or through the principals' foreign patent attorney or agent if authorized by the foreign government. Correspondence exclusively relating to payments of taxes and fees need not be sent through the sponsoring agency and diplomatic channels provided that such correspondence contains no information pertaining to the subject matter of the above-identified application.

International reciprocal agreements providing for the filing of patent applications under a Secrecy Order in the above-identified countries require the principals to furnish to the sponsoring agency identified herein (in addition to the papers to be filed in the foreign patent office) a copy of the specification (including any drawings annexed thereto, any resume and the claims included in the patent application) filed in the patent office of the foreign country. This copy will be furnished to the appropriate defense agency of the foreign government *for information only* and without prejudice to any rights of the principals. The filing date and serial number of the patent application should also be furnished to the sponsoring agency.

The principals shall request the foreign patent office to place in secrecy the foreign patent applications corresponding to the above-identified application and shall furnish a copy of this Secrecy Order and Permit with the first papers to be filed in the foreign patent office.

The use of this permit shall constitute a waiver, unless otherwise required by the international agreements, of any claim to compensation for loss or damage due solely to the imposition of secrecy or similar treatment of the invention. Belgium, France, Federal Republic of Germany, Japan, Netherlands, Turkey and United Kingdom normally require a separate document confirming such a waiver.

In the case of Japan, the applicant shall ensure in its contract with its patent attorney that the patent attorney shall submit to the Japanese Patent Office a certified copy of this Secrecy Order and Permit. The submission of this permit to the Japanese Patent Office is considered notification to the Government of Japan and the Secrecy Order status of the above-mentioned application and a corresponding Japanese application will be considered an Agreement Application referred to in 3(a) of the Protocol to the 1956 United States-Japan Agreement.

This Order should not be construed in any way to mean that the U.S. Government has adopted or contemplates adoption of the invention disclosed in this application and it is not any indication of the value of such invention.

Director, Special Laws Administration

[1095 OG 63]

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(153) Guidelines for Extension of Patent Term Under 35 U.S.C. 156

This notice is intended to establish initial guidelines for patent owners who are seeking extensions of patent terms pursuant to newly enacted 35 U.S.C. 156. These guidelines will be effective until further notice. Section 156 of Title 35, United States Code, provides that a patent owner seeking an extension of the term of a patent pursuant to its provisions must submit an application to the Commissioner of Patents and Trademarks (hereinafter Commissioner) within a certain defined period of time. Section 156 specifies certain components the application is to contain, including "such patent or other information as the Commissioner may require." See 35 U.S.C. 156(d) (1) (E). Section 156(d) (4) also provides that "[a] n application for the extension of the term of a patent is subject to the disclosure requirements prescribed by the Commissioner." Section 156(h) provides that the "Commissioner may establish such fees as the Commissioner determines appropriate to cover the costs to the Office of receiving and acting upon applications under this section." The purpose of this notice is to provide the guidelines which a patent owner or its agent should use in deciding whether to submit an application for the extension of the term of a patent to the Patent and Trademark Office and in actually making the submission of such an application. This notice is divided into a number of sections set forth below which treat various determinations which have to be made by a patent owner or its agent prior to submission of an application and further includes guidelines as to the actual content of an application for extension of the term of a patent.

A patent owner or its agent should use the guidelines in the various sections set forth below in determining whether a patent is subject to, and meets the conditions for, extension of its term. If so, the patent owner or its agent should also use the guidelines set forth below in preparing and filing an application for extension of the patent term. If any application for extension of the term of a patent is filed in accordance with 35 U.S.C. 156 before the date on which this notice is published in the Official Gazette and is not in compliance with the requirements of this notice, applicant will be notified of the deficiencies in the application and will be given a period of time within which to correct the deficiencies.

Guidelines

§A. *Patents subject to extension of the patent term.*

(a) Any patent which claims a product as defined in paragraph (b) of this section, or a method of using such a product, or a method of manufacturing such a product, is subject to being extended in accordance with 35 U.S.C. 156.

(b) The term "product" referred to in paragraph (a) of this section means (1) a human drug product or (2) any medical device, food additive, or color additive subject to regulation under the Federal Food, Drug, and Cosmetic Act. The term "human drug product" means the active ingredient of a new drug, antibiotic drug, or human biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient.

§B. *Conditions for extension of term of a patent.*

The term of a patent may be extended if:

(a) the patent claims a product or a method of using or manufacturing a product as defined in §A of this notice;
(b) the term of the patent has never been previously extended except for any interim extension issued pursuant to 35 U.S.C. 156(e) (2);
(c) an application for extension is submitted pursuant to §D of this notice;
(d) the product has been subject to a regulatory review period as defined in 35 U.S.C. 156(g) and by the Secretary of Health and Human Services before its commercial marketing or use;
(e) the product has received permission for commercial marketing or use and (i) the application is submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or used under the provision of law under which the applicable regulatory review period occurred, or (ii) in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the application for extension is submitted within the sixty day period beginning on the date of the first permitted commercial marketing or use of a product manufactured under the process claimed in the patent;
(f) the term of the patent has not expired before the submission of an application pursuant to §D of this notice; and
(g) no other patent has been extended for the same regulatory review period for the product.

§C. *Applicant for extension of patent term.*

Any application for extension of a patent term must be submitted by the owner of record of the patent or its agent and must comply with the requirements of §D of this notice.

§D. *Application for extension of the term of a patent.*

(a) An application for extension of the term of a patent must be made in writing to the Commissioner of Patents and Trademarks. The filing date of an application for extension of the term of a patent is the date on which the complete application for extension and a duplicate of the papers thereof, certified as such, are received in the Patent and Trademark Office or filed pursuant to the provisions of 37 CFR 1.10. The provisions of 37 CFR 1.8 should not be used to file an application for the extension of the term of a patent.
(b) A complete application for the extension of the term of a patent comprises:

(1) a complete identification of the approved product as by appropriate chemical and physical structure or characteristics;
(2) a complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;
(3) an identification of the date on which the product received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred;
(4) a statement that the application is being submitted within the sixty day period permitted for submission and an identification of the date of the last day on which the application could be submitted;
(5) a complete identification of the patent for which an extension is being sought by the name of the inventor, the patent number, and the date of issue;
(6) a copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings, in the form of a cut-up copy of the original patent with only a single column of the printed patent securely mounted or reproduced in permanent form on one side of a separate paper;
(7) a copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;
(8) a statement that the patent claims the approved product or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claims and demonstrates the mannerin which each applicable patent claim reads on the approved product or a method of using or manufacturing the approved product;
(9) the relevant dates and information pursuant to 35 U.S.C. 156(g) in order to enable the Secretary of Health and Human Services to determine the applicable regulatory review period;
(10) a brief description of the activities undertaken by the applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities;
(11) a statement that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined;
(12) a statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any information which is material to any determinations to be made relative to the application for extension; and
(13) the prescribed fee for receiving and acting upon the application for extension (see §F of this notice) and an oath or declaration as set forth in paragraph (c) of this section.

(c) Any application for extension of the term of a patent submitted pursuant to paragraphs (a) and (b) of this section must include an oath or declaration signed by the owner of record of the patent or its agent which specifically identifies the application papers and the patent for which an extension is sought and avers that the person signing the oath or declaration:

(1) has reviewed and understands the contents of the application being submitted pursuant to this section;
(2) believes the patent is subject to extension pursuant to §A of this notice;
(3) believes an extension of the length claimed is fully justified under 35 U.S.C. 156; and
(4) believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in §B of this notice.

(d) If any application for extension of the term of a patent submitted pursuant to this section is held to be incomplete, applicant may seek to have that holding reviewed by filing a petition pursuant to 37 CFR 1.182 within such time as may be set, or if no time is set, within one month of the date on which the application was held incomplete.

§E. *Interim extension of the term of a patent.*

An applicant who has filed an application for extension pursuant to §D of this notice may request one or more interim extensions for periods of up to one year pending a final determination on the application. Any such request should be filed at least three months prior

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to the expiration date of the patent. The Commissioner may issue interim extensions for periods of up to one year until a final determination is made without a request by the applicant. In no event will the interim extensions granted under this section be longer than the maximum period of extension to which the applicant would be eligible.

§F. *Fee for receiving and acting on an application for extension of the term of a patent.*

Pursuant to 35 U.S.C. 156(h) the Commissioner has determined that a fee of $750.00 is appropriate to cover the costs to the Patent and Trademark Office of receiving and acting upon applications for extension of the term of a patent filed pursuant to 35 U.S.C. 156. The fee should accompany the application when filed. If a fee in a different amount is adopted in Title 37 of the Code of Federal Regulations, applicant will be refunded any excess or required to submit any deficiency.

§G. *Address for application for extension of the term of a patent and communications relating thereto.*

All applications for extension of the term of a patent and any communcations relating thereto intended for the Patent and Trademark Office should be addressed to the Commissioner of Patents and Trademarks, Box Patent Ext., Washington, D.C. 20231. When appropriate, the communication should also be marked to the attention of a particular individual.

§H. *For further information contact:*

R. Franklin Burnett by telephone at (703) 557–3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Summary

The initial guidelines set forth above are considered to be appropriate and authorized by 35 U.S.C. 156. They will provide appropriate guidance to patent owners and their agents pending appropriate changes which will be made in Title 37 of the Code of Federal Regulations.

DONALD J. QUIGG,
Sept. 25, 1984. *Acting Commissioner of Patents and Trademarks.*

[1047 O.G. 16]

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(154)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 60594–7007]

Rules for Extension of Patent Term

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: The Patent and Trademark Office (PTO) is amending the rules of practice in patent cases, Part 1 of Title 37, Code of Federal Regulations, to provide the rules and procedures under which extensions in the terms of patents may be sought pursuant to the provisions of 35 U.S.C. 156 which was enacted on Sept. 24, 1984 in Title II of Pub. L. 98–417, the "Drug Price Competition and Patent Term Restoration Act of 1984." The new 35 U.S.C. 156 provides that, upon application to the Commissioner of Patents and Trademarks, the term of a particular patent, which claims a product or a method of using or manufacturing a product as defined in the Public Law, may be extended under certain circumstances and conditions where the product has been subject to a regulatory review as defined in Pub. L. 98–417 and by the Secretary of Health and Human Services, before its commercial marketing or use. The rule changes amending Part 1 of Title 37 would provide specific procedures for the submission of such applications to the Patent and Trademark Office and for the determination and issuance of certificates of patent term extension (PTE) by the Patent and Trademark Office on the applications submitted.
Effective Date: May 26, 1987.
For Further Information Contact: Charles E. Van Horn by telephone at (703) 557–3637 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: A notice of proposed rulemaking was published in the **Federal Register** on July 30, 1986, at 51 FR 27205–27215 and in the Official Gazette on Aug. 19, 1986, at 1069 O.G. 25–34. An oral hearing was held on Sept. 15, 1986. Sixteen written letters and statements were submitted. Two (2) persons testified at the oral hearing which resulted in ten (10) pages of testimony.

Objectives of the Rule Change

The rule change makes some clarifications and additions to the initial operating guidelines which were published as "Guidelines for Extension of Patent Term under 35 U.S.C. 156" in the Official Gazette of the PTO on Oct. 9, 1984. Several of the changes are designed to adopt and implement suggestions from members of the public.

Discussion of Specific Rules

Section 1.1 is amended to indicate that applications for extension of patent terms and any communications relating thereto intended for the Patent and Trademark Office should be directed to "Box Patent Ext."

The filing of an application for an extension of the term of a patent would be considered timely if received in the Patent and Trademark Office on or before the statutory deadline, or if the application is deposited with the U.S. Postal Service in accordance with the provisions of §1.8 or §1.10 of this part before the statutory deadline. The filing of an application for an extension of the term of a patent would be treated in the same manner as the filing of any paper required to be filed in the Patent and Trademark Office within a set period of time and not subject to the exceptions enumerated in 37 CFR 1.8(a).

Section 1.20 is amended to add paragraph (n) to establish a fee of $550.00 for filing an application for extension of the term of a patent pursuant to §1.740. This amount is set to cover the costs to the Patent and Trademark Office of receiving and acting upon applications for extension of patent term as provided in 35 U.S.C. 156(h) based upon PTO experience in processing applications for patent term extension during the first two years of implementation.

Comment:
The reduction in the fee for filing an application for patent term extension from $750.00 to $550.00 has raised the question of how to obtain refunds for those applications filed under the initial operating guidelines.

Reply:
When the final rules are approved, refunds will be made to those who paid the higher fee without any request being filed. Although the final rules do not take effect until 60 days from publication in the **Federal Register**, the fee of $550.00 should be paid with any application filed after the date of this publication of the final rules.

Comment:
It has been suggested that a lower fee be set for the filing of a patent term extension application which would be applicable to small entities.

Reply:
This suggestion has not been adopted since there is no statutory provision for such a fee structure.

A new "Subpart F—Extension of Patent Term" is added to Part 1 to include §§1.710 through 1.785.

Section 1.710 defines the patents subject to extension of the patent term. Paragraph (a) of §1.710 defines the patents subject to extension in terms of the subject matter being claimed therein. Under paragraph (a) of §1.710 a patent to (1) a product, (2) a method of using a product, (3) or a method of manufacturing a product can be extended as long as the product meets the definition contained in paragraph (b) of §1.710, and as long as the other conditions and requirements for extension of patent term are met. Paragraph (b) of §1.710 follows the language of 35 U.S.C. 156 and defines a "product" as meaning (1) a human drug product or (2) any medical device, food additive, or color additive subject to regulation under the Federal Food, Drug, and Cosmetic Act. The term "human drug product" as defined in paragraph (b) of §1.710 means the active ingredient of a new drug, antibiotic drug, or human biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient.
Comment:
It has been proposed that §1.710 be modified to specifically acknowledge that patents claiming pharmaceutical compositions or formulations of the "product" are eligible for extension or alternatively to modify the term "product" to include such compositions or formulations.
Reply:
"Product" is specifically defined in 35 U.S.C. 156(f) as follows. For a human drug product, the term means "the active ingredient of a new drug, antibiotic drug or human biological product (as those terms are used in the Federal Food, Drug and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity, or in combination with another active ingredient." A patent is considered to claim the product where it claims the active ingredient per se, or claims a composition or formulation which contains the active ingredient(s) and reads on the composition or formulation approved for commercial marketing or use.
Comment:
It has been suggested that the language of §1.710(b) be modified to read "(1) a human drug product (i.e., the active ingredient of a new drug, antibiotic drug or human biological product, as those terms are used in the Federal Food, Drug, and Cosmetic Act and/or the Public Health Service Act)", with a similar modification at the bottom of the paragraph.
Reply:
Since the language used in this section of the rule tracks the statutory language on which it is based and to avoid possible confusion or unnecessary ambiguity, the proposed modification has not been adopted.
Comment:
It has been suggested that the definition of the term "product" be broadened to specifically refer to product-by-process claimed products.
Reply:
The term "product" as defined in the statute and rules is considered to encompass any means of defining a product. Product-by-process claims are only an alternative form available to claim a product. Neither the proposed rules nor statute limit the manner of claiming a product.

Section 1.720 defines the conditions under which the term of a patent may be extended. The conditions for extension are:

(1) The patent must claim a product or a method of using or manufacturing a product as defined in §1.710;
(2) The term of the patent must never have been previously extended except for any interim extension issued pursuant to §1.760;
(3) An application for extension must be submitted in compliance with §1.740;
(4) The product must have been subject to a regulatory review period as defined in 35 U.S.C. 156(g) before its commercial marketing or use;
(5) The product must have received permission for commercial marketing or use and (i) the permission for the commercial marketing or use of the product must be the first received permission for commercial marketing or use under the provision of law under which the applicable regulatory review occurred, or (ii) in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the permission for the commercial marketing or use must be the first received permission for the commercial marketing or use of a product manufactured under the process claimed in the patent;
(6) The application must be submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or use under the provisions of law under which the applicable regulatory review period occurred, or in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the application for extension must be submitted within the sixty day period beginning on the date of the first permitted commercial marketing or use of the product manufactured under the process claimed in the patent;
(7) The term of the patent must not have expired before the submission of an application in compliance with §1.741; and
(8) No other patent term must have been extended for the same regulatory review period for the product.

Comment:
It has been suggested that §1.720(e) be modified to avoid combining the two statutory requirements that (1) the product is an approved product, that is, it has received permission for commercial marketing or use and (2) that the application be submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or use.
Reply:
The section has been modified to be more consistent with the underlying statutory language. In addition, subsection (e)(i) has been changed to (f), the term (ii) has been cancelled and subsections (f) and (g) have been relettered as (g) and (h) respectively. Thus, each statutory requirement is separately provided for as suggested.
Comment:
The rule appears to distinguish between the date when commercial marketing or use is "first *permitted*" for products made by DNA method inventions, versus the date a product first "*received* permission" for commercial marketing or use. Since this distinction is not required by the statute which uses the language "first permitted commercial marketing or use" in each case, is there some other policy reason for the apparent distinction?
Reply:
No distinction was intended, simply a different combination of words used to describe the same date—i.e. the date of "first permitted commercial marketing or use."
Comment:
It has been suggested that patent term extension should not be available for a patent in which a terminal disclaimer has been filed and particularly where such a terminal disclaimer was necessary to avoid double patenting.
Reply:
The suggestion has not been adopted since there is no statutory basis for denying an application for patent term extension where the term of the patent sought to be extended is affected by a terminal disclaimer.
Section 1.730 requires that an application for extension of a patent be submitted by the owner of record of the patent or its agent and that the application must comply

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with the requirements of §1.740. The application papers submitted would be required to clearly reflect and establish the authority of the person submitting the application to do so on behalf of the owner. See §1.740(b). For example, if the person submitting the application is the owner of record, the application papers would be required to so reflect. If the person submitting the application is doing so as the agent of the owner of record, the application papers must so reflect and establish the authority of the agent to act on behalf of the owner, e.g., as an officer of a corporate owner.

Comment:

It has been suggested that §1.730 be deleted as being redundant with §§1.720(c) and 1.740(b).

Reply:

This suggestion has not been adopted. Section 1.730 repeats the statutory requirement as to those eligible to file the application for patent term extension. Sections 1.720(c) and 1.740(b) reflect the Commissioner's rule making authority as to what is necessary to demonstrate that the statutory requirement has been met by defining (1) who must sign the oath or declaration which accompanies an application for patent term extension and (2) the contents of the oath and declaration. Thus the sections are not redundant.

Section 1.740 establishes the contents and requirements of an application for extension of patent term. Paragraph (a) of §1.740 requires that the application be made in writing to the Commissioner of Patents and Trademarks. The certified duplicate of the application papers will serve as the copy to be submitted by the Commissioner to the Secretary of Health and Human Services in order that the Secretary may determine the applicable regulatory review period as required by Pub. L. 98–417.

Paragraph (a) of §1.740 further specifies the contents of a formal application for extension of patent. If the application does not meet all formal requirements when submitted, the applicant will be notified of the informalities and may seek to have that holding reviewed under §1.740(c). In accordance with paragraph (a) of §1.740, a formal application for the extension of the term of a patent shall include:

(1) A complete identification of the approved product as by appropriate chemical and generic name, physical structure or characteristics that would permit the Commissioner to make a determination of whether the patent claims the approved product, or a method of making or using the approved product;

(2) A complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;

(3) An identification of the date on which the product received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred;

(4) In the case of a human drug product, an identification of each active ingredient in the product and as to the product and each active ingredient, a statement that they have not been previously approved for commercial marketing or use under the Federal Food Drug and Cosmetic Act, or a statement of when the active ingredient was approved for commercial marketing or use (either alone or in combination with other active ingredients) and the provision of law under which it was approved;

(5) A statement that the application is being submitted within the sixty day period permitted for submission pursuant to proposed §1.720(f) and an identification of the date of the last day on which the application could be submitted;

(6) A complete identification of the patent for which an extension is being sought by the name of the inventor, the patent number, the date of issue, and the date of expiration;

(7) A copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings;

(8) A copy of any disclaimer, certificate of correction, receipt or statement of maintenance fee payment, or reexamination certificate issued in the patent;

(9) A statement beginning on a new page that the patent claims the approved product or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the approved product or a method of using or manufacturing the approved product;

(10) A statement beginning on a new page of the relevant dates and information pursuant to 35 U.S.C. 156(g) in order to enable the Secretary of Health and Human Services to determine the applicable regulatory review period.

(i) For a human drug product, this information will include the effective date of the investigational new drug (IND) application and the IND number; the date on which a new drug application (NDA) was initially submitted and the NDA number; and the date on which the NDA was approved;

(ii) For a food or color additive, this information will include the date a major health or environmental effects test on the additive was initiated and any available substantiation of that date; the date on which a petition for product approval under the Federal Food, Drug and Cosmetic Act was initially submitted and the petition number; and the date on which the application was approved;

(iii) For a medical device, this information will include the effective date of the investigational device exemption (IDE) and the IDE number, if applicable, or the date on which the applicant began the first clinical investigation involving the device if no IDE was submitted and any available substantiation of that date; the date on which an application for product approval under section 515 of the Federal Food, Drug and Cosmetic Act was initially submitted and the number of the application; and the date on which the application was approved.

In the cases where there is no regulatory event to reflect the commencement of the testing or approval phase of the regulatory review period, applicants should include in the application the dates that they claim initiate either the approval or the testing phases and an explanation of their reasonable basis for why they conclude that these dates are the relevant dates. For instance, when the clinical trials are conducted outside the United States, the testing phase for a medical device begins on the date the clinical investigation involving the device was begun. An applicant should include an explanation as to why the date claimed is the date on which such clinical investigations had commenced. If the applicant had any means of substantiating that date, that information should be included in the application.

Finally, on this separate page in the application there should be a statement as to the length of the regulatory review period claimed including an explanation of how the applicant determined the length of the regulatory review period. It should be noted in the application that this particular calculation is made solely with respect to section 156(G)(1) thru (3) of Title 35 of the United States Code and does not take into account any other limitations or restrictions on the length of possible patent extension.

(11) A brief description beginning on a new page of the significant activities undertaken by the marketing applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities. This description should include an identification of significant communications of substance with the Food and Drug Administration (FDA) and the dates related to such communications. For example, these activities would include the dates of the submission of new data to the FDA, communications between FDA and the applicant with respect to the appropriate protocols for testing the product, and communications between FDA and the applicant that are attempts to define the particular requirements for premarketing approval of this particular product.

(12) A statement beginning on a new page that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined and whether the 14 year limit of 35 U.S.C. 156(c)(3), the five year limit of 35 U.S.C. 156(g)(4)(A) or (B) or the two year limit of 35 U.S.C. 156(g)(4)(C) applies.

(13) A statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any information which is material to the determination of entitlement to the extension sought (see §1.765);

(14) The prescribed fee for receiving and acting upon the application for extension (see §1.20(n);

(15) The name, address, and telephone number of the person to whom contacts and correspondence relating to the application for patent term extension are to be directed;

(16) A duplicate of the application papers, certified as such; and

(17) An oath or declaration as set forth in paragraph (b) of this section.

Paragraph (b) of §1.740 requires that an oath or declaration signed by the owner of record of the patent or its agent accompany the application as a part thereof. An application for extension filed without an oath or declaration is not a formal application. The oath or declaration filed as a part of the application must specifically identify the application papers and the patent for which an extension is sought and include averments that the person signing the oath or declaration:

(1) Is the owner, an official of a corporate owner authorized to obligate the corporation, or a patent attorney or agent authorized to practice before the Patent and Trademark Office and who has general authority from the owner to act on behalf of the owner in patent matters.

(2) Has reviewed and understands the contents of the application being submitted pursuant to §1.740;

(3) Believes the patent is subject to extension pursuant to §1.710;

(4) Believes an extension of the length claimed is fully justified under 35 U.S.C. 156 and the applicable regulations; and

(5) Believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in §1.720.

In signing the oath or declaration referred to in paragraph (b) of §1.740 an official of a corporate owner or an attorney or agent acting on behalf of the owner is representing that he or she is the agent of the owner and has authority to act on behalf of the owner in filing the application for patent term extension. Note also §1.730.

Paragraph (c) of §1.740 provides for review of a holding that an application for patent term extension is informal by the filing of a petition with any appropriate fee, if necessary, pursuant to §§1.181, 1.182 or 1.183 of this title. Should an applicant disagree with the holding of informality and wish to have the holding reviewed, a petition under 37 CFR 1.181 would be appropriate. If applicant chooses to provide additional information to correct the informality, a petition under 37 CFR 1.182, accompanied by the required fee, should accompany such a filing.

The failure to timely comply with any requirement of these regulations which is not an explicit requirement of the statute may be waived under the appropriate circumstances in accordance with 37 CFR 1.183. While timely action is expected, relief under 37 CFR 1.183 may be appropriate in view of the tight time deadlines and other circumstances involved in filing an application for extension of the patent term. Any such petition must be filed with the required fee within such time as may be set, or if no time is set, within one month of the holding.

Comment:

It has been suggested that §1.740 be modified in order to permit the obtaining of a filing date for an application should it be found not to meet all of the requirements of § 1.740(a). The suggestion arises from a concern that an application which was filed within the 60 day filing period provided by statute and which was subsequently found to be informal within the meaning of the rules, might lose the filing date for failing to meet all requirements of the rules at the time of filing. Since the period for filing an application for patent term extension is limited by statute, it might not be possible for an applicant to correct such informalities within the statutory period of 60 days and could result in the loss of rights to an extension. In this regard it has also been suggested that the rules be modified to allow a filing date for a "substantially complete application" which might have been determined by the Patent and Trademark Office to be incomplete or informal.

Reply:

This suggestion has been essentially adopted by providing a new section designated 1.741 which specifically defines the requirements which must be met in order for an application to be entitled to a filing date. These requirements are those set forth in 35 U.S.C. 156(d)(1). Section 1.740(b) has been relettered as (a) and defines what constitutes a "formal application". Subparagraph (c) now provides for notice to applicant in the event that the application as filed is found to be informal as well as applicant's recourse to such a holding. If the requirements of §1.741 are met, the filing date will have been established as provided therein even if the application is held to be informal under §1.740.

Comment:

Clarification of the requirements of §§1.740 (a)(1) and 1.740 (a)(4) has been requested with regard to products or methods of making or using them so as not to require the submission of trade secret information unless necessary for a determination of eligibility for patent term extension or at least enable the PTO to maintain the information of this type as a trade secret.

Reply:

There is no provision in the statute or proposed rules for withholding from the public any information that is submitted to the PTO or FDA relating to an application for patent term extension. If proprietary or trade secret information is submitted to the Office, and specifically identified as such, it will be maintained in secret by the PTO until a certificate of patent term extension is issued. Identification should be made by page, line and word as necessary. If such information was necessary to a determination of eligibility or any other PTO responsibility under 35 U.S.C. 156, it will be made public at the time the certificate is issued. Otherwise, the trade secret information will be expunged from the file and returned to the patent term extension applicant, if the information regarded as a trade secret is specifically identified.

Comment:

Section 1.740(a)(4) is confusing because it is unclear whether an applicant for a patented formulation that combines two active agents must submit information as to the regulatory review periods for each active ingredient separately, the combined active agents, or all of the above.

Reply:

All of the above is correct, so that a determination can be made under 35 U.S.C. 156(a)(5).

Comment:

Section 1.740(a)(4) should be modified to include a statement that the applicant is not prejudiced by the rule requirements in obtaining a patent term extension where some, but not all, active ingredients have been approved by the FDA for commercial marketing or use prior to approval of the new chemical entity (NCE) claimed in the patent for which a PTE application has been filed.

Reply:

The basic issue presented by this comment is whether a patent claiming an approved product containing an old active ingredient (approved by FDA in a prior regulatory review) and a new active ingredient is eligible for pa-

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tent term extension. The PTO has a long standing policy of not addressing an issue in advance of receiving an application presenting the issue for determination. However, the concept of patent term restoration appears to be directed to those situations where a new chemical entity is involved as an active ingredient, regardless of the content of the balance of the formulation approved by the FDA.

Comment:

It has been suggested that §1.740(a)(4) be deleted as redundant with §§1.740(a)(1) and 1.740(a)(3) and might be interpreted as requiring information not authorized by statute.

Reply:

Section 1.740(a)(4) requires a statement, by applicant, that each active ingredient present in the approved product has not been previously approved for commercial marketing and use. This is a different requirement from either §1.740(a)(1) or §1.740(a)(3) which require an indentification of the approved product and an identification of the date on which the product received permission for commercial marketing or use. This information is important to a determination of eligibility under 35 U.S.C. 156(a)(5). As to the question of information authorized by statute, 35 U.S.C. 156(d)(1)(E) permits the Commissioner to request any such information required.

Comment:

It has been suggested that §1.740(a)(6) be modified to include a requirement that the application, in identifying the patent for which extension is sought, include the date of expiration and such information should take into account any terminal disclaimer.

Reply:

Section 1.740(a)(6) has been modified to require a statement of the expiration date.

Comment:

It was observed that the proposed rules no longer require a "reissue style" cut-up copy of the original patent.

Reply:

The observation is accurate since the PTO has found that a cut-up copy has not been required and only adds unnecessary work for the applicant and bulk to the application.

Comment:

It has been suggested that §1.740(a)(8) be modified by adding the requirement for a copy of any decision by a court of competent jurisdiction, which decision is adverse to the validity of the patent.

Reply:

This suggestion has not been adopted because the patent owner or agent has a duty of disclosure under §1.765 which would reasonably include the obligation to bring such a decision to the attention of the Office.

Comment:

It has been suggested that the comments in the proposed preamble regarding §1.740(a)(10) be revised to reflect that this subsection does not require a statement of the length of the regulatory review period and how it was determined.

Reply:

This observation concerning the requirements of § 1.740(a)(10) was correct since there was no requirement that a description be provided as to how the regulatory review period is determined. However, since it would be helpful to the FDA in confirming its own calculation to have a statement concerning the length of the regulatory review period, including how the length was determined, these requirements have been made a part of § 1.740(a)(10).

Comment:

It is suggested that the language of §1.740 (a)(11) which calls for a description of the activities carried out by the "applicant" is too restrictive since other parties may be involved in or sponsoring the FDA approval work.

Reply:

The provisions of §1.740(a)(11) have been modified to point out that a description of the activities of the marketing applicant before the FDA is requried.

Comment:

It has been suggested that §1.740(a)(11) should be modified to require a description of "significant" or "material" activities undertaken by the marketing applicant during the applicable review period. It is argued that the section taken in combination with the related discussion in the proposed preamble places too great a burden on an applicant, i.e. submission of summaries of all communications and all dates of any activities regarding the FDA approval process.

Reply:

The section has been modified so as to require a brief description of the significant activities undertaken by the marketing applicant during the applicable regulatory review period and the significant dates applicable thereto. Thus the requirements of this section may be met by an identification of significant communications of substance with the FDA during the regulatory review period and the dates related to such communications. There is no intent on the part of the PTO to broaden the burden of the statute, in regard to the description of the activities to which this section pertains, by requiring submission of insignificant details. The PTO does not read the statute to require an applicant to establish the existence of due diligence during the regulatory review period in order to have a complete application. It is recognized that the regulatory review process may be continuous and protracted. Not all communications are material to that process but certainly all of those which are significant to the regulatory review process should be identified. It is sufficient that the description of the activities briefly identify those significant activities undertaken by the marketing applicant in order to identify significant events in the effort directed toward regulatory approval of the product.

Comment:

It has been suggested that the requirement of § 1.740(b)(1) that the person signing or declaring other than either the patent owner or corporate owner with the authority to obligate the corporation must have "specific" written authority to sign the oath or declaration was confusing and might well work a hardship on applicants since the rule is unclear as to just what type of authorization is required.

Reply:

This section has been modified to include an attorney or agent who has general authority to take action on behalf of the patent owner with respect to patent matters so long as that person is registered to practice before the Patent and Trademark Office.

Comment:

It has been suggested that §1.740(c), which permits an applicant whose application has been found to be informal to file a petition with the required fee pursuant to § §1.181, 1.182 or 1.183, is unduely burdensome for minor informalities. It has been suggested, therefore, that an applicant be given a period in which to resubmit the application in corrected form together with a fee and avoid the filing of the described petition.

Reply:

This suggestion has not been adopted since the PTO expects that the application will be complete and formal as filed. A petition, with the appropriate fee, as necessary is a well recognized mechanism for reviewing a holding that a defect exists or curing a defect in papers that have been submitted and providing an opportunity for applicant to explain how the defect occurred.

Section 1.741 provides that the filing date of an application for patent term extension will be the date on which an application is received in the Patent and Trademark Office or filed pursuant to the "Certificate of Mailing" provisions of 37 CFR 1.8 or "Express Mail" provisions of 37 CFR 1.10 and which includes all of the following:

(1) An identification of the approved product;

(2) An identification of the Federal statute under which regulatory review occurred;

(3) An identification of the patent for which an extension is being sought;

(4) An identification of each claim of the patent which claims the approved product or a method of using or manufacturing the approved product;

(5) Sufficient information to enable the Commissioner to determine under 35 U.S.C. 156 subsection (a) and (b) the eligibility of a patent for extension and the rights that will be derived from the extension and information to enable the Commissioner and the Secretary of Health and Human Services to determine the period of the extension; and

(6) A brief description of the activities undertaken by the marketing applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities.

Section 1.741(b) provides that if an application submitted pursuant to this section is held to be incomplete, applicant may seek to have this holding reviewed under §1.181.

Section 1.741 has been provided in response to concerns presented in many of the written comments received as to the limited statutory time period for filing an application for patent term extension and the possibility of not obtaining a filing date within the 60 day period during which the statute requires such an application to be filed. The rule now provides that the filing date will be that date on which the application is filed with the PTO and meets those requirements specifically set forth. These requirements are those specifically required by the statutory language of 35 U.S.C. 156(d)(1). The PTO will consider each of these statutory requirements to be satisfied in an application which provides sufficient information, directed to each requirement, to act on the application, even though further information may be desired by the PTO or Secretary before a final determination of eligibility and length of patent term extension is made.

Section 1.750 covers the determination of eligibility for extension of the term of a patent which will be made by the Patent and Trademark Office on the application for extension. As provided for by Pub. L. 98–417, and as set forth in this section, it is intended that the determination as to whether a patent is eligible for an extension can be made solely on the representations contained in the application for extension filed in compliance with §1.740 of this part. Section 1.750 does, however, provide that further information may be required of applicant by the Commissioner or other officials or the Commissioner or other officials may make such independent inquiries as desired before a final determination is made on whether a patent is eligible for extension. In circumstances where further information is required by the Office, the applicant will be given a time period within which to respond. The failure to file a response within the period provided may result in a final determination adverse to the granting of an extension of patent term unless the response period is extended. An extension of time to respond may be requested under the provisions of 37 CFR 1.136. Under appropriate circumstances, a request for information may contain a statement that the provisions of 37 CFR 1.136(a) are not available. The intentional failure to provide the information requested also will result in a final adverse determination.

A final determination may be made at any time after an application is filed, but no later than when a certificate of extension is issued. Section 1.750 provides that a single request for reconsideration of a final determination may be filed within one month or within such other time period set in the final determination. Section 1.750 also provides that the determination may be delegated to appropriate Patent and Trademark Office officials. A notice will be mailed to applicant containing the determination as to eligibility of the patent for extension and the period of time of the extension of the term, if any. This notice shall constitute the final determination as to eligibility and any period of extension of the patent term. If no response to the notice of final determination is received, the certificate of patent term extension will be issued in due course.

Comment:

It has been suggested that §1.750 be modified to expressly recognize that the rules being simultaneously promulgated by the FDA (Subpart B) provide for the FDA to give the PTO assistance in making eligibility determinations under the statute and that the PTO may seek such assistance and make such independent inquiries as it deems desirable in determining eligibility.

Reply:

The §1.750 has been modified by adding, immediately following the term "information", the phrase "or make such independent inquiries as desired".

Comment:

It has been suggested that §1.750 be modified to permit applicant to respond to a request for information or a notice under this section under the provisions of 37 CFR 1.136(a) upon payment of the appropriate fee. Applicant could thus extend the time for the required response without meeting the requirements of 37 CFR 1.136(b).

Reply:

Sections 1.740(c) and 1.750 have been modified to permit extensions under 37 CFR 1.136. However, if time is of the essence for a particular reason, applicant should anticipate that a requirement made by the PTO would include a statement that extensions under 37 CFR 1.136(a) were not available.

Comment:

It has been suggested that §1.750 should be modified to provide notice to applicant, 30 days prior to a final determination of eligibility for extension of the identity of all patents or claims eligible for extension in order to permit time to choose which patent to extend and which to withdraw prior to the issuance of the certificate.

Reply:

This proposal has not been adopted since applicant will be given an opportunity to elect in the notice of final determination. See §1.770.

Comment: It has been suggested that the identification of a final route of appeal should be set forth as a second paragraph of §1.750.

Reply:

This proposal has not been adopted since no appeal is provided for by the legislation and the PTO does not determine the jurisdiction of the Federal Courts.

Section 1.760 provides for one or more interim extensions for periods of up to one year each where a complete application in compliance with §1.741 has been filed by an applicant and a final determination pursuant to §1.750 has not been made on the application. Section §1.760 provides that the Commissioner may issue an interim extension with or without a request by the applicant. The section also provides that if an interim extension is granted, a notice will be issued to the applicant for the extension of the patent term, the notice would be recorded in the official file of the patent and will be considered as part of the original patent. Notification of the issuance of the interim extension will be published in the Official Gazette of the Patent and Trademark Office. In order for an interim extension to be granted, the application in compliance with §1.741 must have been filed prior to the expiration date of the patent even though the interim extensions may not actually be granted until after the original expiration date of the patent. In no event will interim extensions be granted under §1.760 for a period of patent term extension longer than that to which the patent would be eligible.

Comment:

It has been suggested that §1.760 be clarified as to whether the one year limitation appearing therein applies to each such extension or all such extensions added together could only be for a period of up to one year.

Reply:

The section has been modified by adding the term "each" following the term "year", to make it clear that multiple extensions of up to one year each can be granted under appropriate circumstances.

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Comment:
It has been suggested that §1.760 be modified to require a shorter filing period than the present 3-months prior to expiration of the patent where appropriate.
Reply:
While §1.760 provides that a request for an interim extension "should" be filed three months prior to the expiration of the patent, this time frame is not mandatory. Note further that the Commissioner may issue such an interim extension without the filing of a request. Any request filed within a shorter period of time will be considered, particularly where it is not possible to make an earlier request. The provisions of the rule state a highly desirable time frame for making a request but not a mandatory time limit.
Comment:
It has been suggested that §1.760 be modified to provide that on issuance of an interim extension that the PTO will notify the patent holder, make the decision a part of the official record of the patent and publish the determination in the **Federal Register** and the Official Gazette of the PTO.
Reply:
The section has been modified as suggested.
Comment:
It has been suggested that §1.760 be modified to provide for a single request for reconsideration of a PTO decision denying a request for an interim extension and that the patent would be granted an interim extension during the time required for reconsideration and any subsequent appeal.
Reply:
While a request for reconsideration which was timely filed would be considered, a determination that an interim extension will not be issued would only occur where the Commissioner is not convinced that the subject patent is eligible for extension under 35 U.S.C. 156. Therefore, an interim extension while applicant sought reconsideration would also be improper.

Section 1.765 defines the duty of disclosure in patent term extension proceedings. Paragraph (a) of §1.765 specifies the individuals on whom the duty rests and the extent of the duty. Paragraph (b) of §1.765 requires that disclosures pursuant to the section be accompanied by a copy of each written document being disclosed and specifies to whom the submission is to be made, i.e., the Patent and Trademark Office or the Secretary, as appropriate. Such disclosures would be able to be made through an attorney or agent.

Paragraph (c) of §1.765 precludes a determination of eligibility for an extension or the issuance of a certificate if clear and convincing evidence of fraud or attempted fraud on the Office or the Secretary is determined to be present or the duty of disclosure is determined to have been violated through bad faith or gross negligence in connection with the patent term extension proceeding. Since the determination as to whether a patent is eligible for extension pursuant to §1.750 may be made solely on the basis of the representations made in the application for extension, a final determination to refuse a patent term extension because of fraud or a violation of the duty of disclosure is expected to be rare.

Paragraph (d) of §1.765 precludes submissions to the Patent and Trademark Office by or on behalf of third parties, thereby making patent term extension proceedings in the Office an *ex parte* matter between the patent owner or its agent and the Commissioner. Under paragraph (d) of §1.765, submissions by third parties to the Office will be returned, or otherwise disposed of, without consideration. Paragraph (d) does not affect submissions authorized by Pub. L. 98–417 to be made to the Secretary during determination of the applicable regulatory review period.
Comment:
It has been suggested that the language of section 1.765(d) is too limited in not permitting information bearing on violations of the duty of disclosure as well as other information relevant to the determination of eligibility of the patent for extension of term to be submitted to the Office by third parties.
Reply:
Although Congress specifically provided for public input into the determination of the length of the regulatory review period, no such provision was made for proceedings before the PTO. Since applicant already has a duty of disclosure to both the PTO and FDA, and Congress expected that it would be an administratively simple proceeding, no input from third parties is considered appropriate.
Comment:
It has been suggested that the definition of the phrase "patent term extension proceeding" should be spelled out.
Reply:
Since the phrase clearly encompasses all phases of the proceeding between the filing of an application for the extension of the term of a patent until either the issuance of an extension certificate or a final denial of eligibility no longer subject to petition, request for reconsideration or appeal, defining the phrase is not deemed a necessary part of the rules.
Comment:
It has been suggested that the phrase "information material to the" in line 12 of §1.765(a) be changed to____ material adverse to a____, in order to avoid unnecessary submission of evidence or information which has no bearing on the proceedings.
Reply:
This suggestion has been adopted since it is not intended to require information or evidence which has either no bearing on the proceeding or is material to a favorable determination by the Office of the Secretary.
Comment:
It has been suggested that §1.765 is unclear in that it applies the duty of disclosure relating to the patent term extension application to "each attorney or agent who represents the patent owner." There was concern of the effect of this broad duty of disclosure, for example, in a large corporation.
Reply:
The language in this section specifically limits the duty of disclosure to those who are substantively involved on behalf of the patent owner in a patent term extension proceeding.
Comment:
It has been suggested that §1.765 should be clarified as to whether the duty of disclosure extends to prior art discovered since issuance of the patent.
Reply:
Section 1.765(b) specifically states that an attorney, agent or patent owner has no duty to transmit information which is not material to the determination of entitlement to the extension sought.

Section 1.770 provides for the express withdrawal of an application for extension of the term of a patent if the written declaration of withdrawal signed by the owner of record or its agent is filed in the Office, in duplicate, before a determination is made pursuant to §1.750. Under §1.770, an application for extension of the term of a patent may not be expressly withdrawn after the date permitted for response to the final determination pursuant to §1.750. Section 1.770 also provides that an express withdrawal is effective when acknowledged in writing by the Office and that the filing and acceptance of an express withdrawal does not entitle applicant to a refund of the filing fee for the application for patent term extension or any portion thereof.
Comment:
It has been suggested that §1.770 be modified to set forth reasons for withdrawal of an application for patent term extension.
Reply:
Section 1.770 permits the withdrawal of an application for patent term extension for any reason prior to the date permitted for response to the final determination pursuant to §1.750. Since reasons may arise at a later date for the withdrawal of such an application for patent term extension which are not contemplated at this time, it is preferable not to limit the reasons for withdrawal of the application under this section, but to deal with each reason on a case-by-case basis.
Comment:
It has been suggested that §1.770 be modified to permit the withdrawal of a patent term extension application within the 30 day period for response provided for in §1.750.
Reply:
This proposal has been adopted.

Section 1.775 provides the procedure for calculating the length of patent term extension for a human drug product.

Paragraph (a) of §1.775 specifies that the extension will run from the original expiration date of the patent or any earlier date set by terminal disclaimer.

Paragraph (b) of §1.775 provides that the patent term would be extended by the length of the regulatory review period for the product as determined by the Secretary of Health and Human Services but reduced, where appropriate, by the time periods provided in paragraph (d).

Paragraph (c) defines the length of the regulatory review period which is determined by the Secretary of Health and Human Services.

For a human drug product, the regulatory review period is defined in 35 U.S.C. 156(g)(1)(B) as the sum of:

(1) The number of days in the period beginning on the date an exemption under section 505 or 507 of the Federal Food, Drug, and Cosmetic Act became effective for the approved human drug product and ending on the date an application was initially submitted for the drug product under section 505 or 507 above or under section 351 of the Public Health Service Act; and

(2) The number of days in the period beginning on the date the application was initially submitted for the approved human drug product under section 351 of the Public Health Service Act or subsection (b) of section 505 or 507 of the Federal Food, Drug, and Cosmetic Act and ending on the date the application was approved under the section.

This period is then reduced, where appropriate, by the time periods described in paragraph (d).

Paragraph (d) of §1.775, defines the term of the patent extension by indicating that

(1) The time period determined from paragraph (c) would be reduced, where appropriate by

(i) The number of days in the periods of paragraph (c)(1) and (c)(2) of §1.775 which were on and before the date on which the patent issued

(ii) The number of days from paragraphs (c)(1) and (c)(2) of §1.775 during which it is determined under 35 U.S.C. 156(d)(2)(B) by the Secretary of Health and Human Services that applicant did not act with due diligence; and

(iii) One-half the number of days remaining in the period defined by paragraph (c)(1) after the period has been reduced in accordance with paragraphs (d)(1)(i) and (d)(1)(ii) of §1.775. Half days will be ignored for purposes of subtraction.

(2) Adding the number of days determined in paragraph (d)(1) to the original term of the patent as shortened by any terminal disclaimer;

(3) Adding 14 years to the date of approval of the application under section 351 of the Public Health Service Act, or subsection (b) of section 505 or section 507 of the Federal Food, Drug, and Cosmetic Act;

(4) Comparing the dates for the ends of the periods obtained from (d)(2) and (d)(3) with each other and selecting the earlier date;

(5) If the original patent issued after Sept. 24, 1984, (i) by adding 5 years to the original expiration date of the patent or any earlier date set by terminal disclaimer; and

(ii) By comparing the dates obtained in paragraphs (d)(4) and (d)(5)(i) with each other and selecting the earlier date.

(6) If the original patent was issued before Sept. 24, 1984

(i) If no request was submitted for an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug, and Cosmetic Act before Sept. 24, 1984, by (A) adding 5 years to the original expiration date of the patent or any earlier date set by terminal disclaimer and (B) by comparing the dates obtained in paragraphs (d)(4) and (d)(6)(i)(A) with each other and selecting the earlier date;

(ii) If a request was submitted for an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug and Cosmetic Act, before Sept. 24, 1984 and the commercial marketing or use of the product was not approved before Sept. 24, 1984, by (A) adding 2 years to the original expiration date of the patent or any earlier date set by terminal disclaimer, and (B) by comparing the dates obtained in paragraph (d)(4) and (d)(6)(ii)(A) with each other and selecting the earlier date.
Comment:
It has been suggested that the PTO publish a form for the use by patent term extension applicants in the calculation of the extension under §§1.775, 1.776 and 1.777.
Reply:
This suggestion has been adopted. Suitable forms will be available from the PTO.
Comment:
It has been suggested that §§1.775(d)(1)(ii); 1.776(d)(1)(ii) and 1.777(d)(1)(ii) be modified so as to avoid the double subtraction of any period for which an applicant has been found to have acted without due diligence where such period occurred prior to the issuance of the patent. This double subtraction would occur since both the period of regulatory review prior to the issuance of the patent and the total period of time in which applicant has been determined to have acted without due diligence is subtracted from the length of the regulatory review period on which the calculation of the period of extension of the patent is based.
Reply:
This suggestion has not been adopted since the statute makes clear that any part of the regulatory review period which occurs before the patent was granted should not be counted toward patent term extension, and makes equally clear that any period in which the marketing applicant failed to exercise due diligence, thereby unnecessarily adding to the length of the regulatory review period after the patent issued, should not be considered in determining the length of the extension period.
Comment:
It has been suggested that the language "half days will be ignored for the purposes of subtraction" which appears in §§1.775(d)(1)(iii), 1.776(d)(1)(iii) and 1.777(d)(1)(iii) should be clarified.
Reply:
The language in question appears in the sections which describe how the length of extension of the patent term to which an applicant is entitled is to be determined. Specifically the above listed sections are directed to the subtraction of one-half of the number of days in the period defined by subsection (c)(1), of the same section, after that period has been reduced in accordance with subsections (d)(1)(i) and (d)(1)(ii) from the regulatory review period as previously determined. Since one-half of an odd number of days will result in a fraction or one-half day, the above language, which appears in all three sections, indicates that the one half-day will be ignored and thus will not be subtracted from the regulatory review period.

Section 1.776 provides the procedure for calculating the patent term extension for a food additive or color additive. The paragraphs correspond to those of §1.775.

Section 1.777 provides the procedure for calculating the patent term extension for a medical device. The paragraphs correspond to those of §1.775 with the major difference being in the calculation of the regulatory review period.

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Comment:
It has been suggested that subsection (c) of §1.777 be modified in order for the definition of the "date a clinical investigation on humans involving the device was begun" to be consistent with the definition provided by FDA(21 CFR 60.22(c)(1).
Reply:
This suggestion has not been adopted since the PTO has used the language of the statute and has left to FDA the determination of the length of the regulatory review period.
Section 1.780 specifies that once a determination is made pursuant to §1.750 that a patent is eligible for extension, a certificate of extension, under seal, will be issued to the applicant for the extension of the term of the patent. Section 1.780 also provides that the certificate will be recorded in the official file of the patent and will be considered as part of the original patent. Section 1.780 also provides for notification of the issuance of the certificate of extension to be published in the *Official Gazette* of the Patent and Trademark Office.
No certificate or extension will be issued if the term of a patent cannot be extended, even though the patent is otherwise determined to be eligible for extension. In such situations the final determination made pursuant to §1.750 would indicate that no certificate will issue.
Comment:
It has been suggested that §1.780 be modified to clarify the situations contemplated where a patent might be eligible for extension but the patent cannot be extended. If the only possible exceptions are those of §§1.765 and 1.785, the rule should so state this fact.
Reply:
It is difficult to contemplate all the situations that might arise, but situations have occurred where the patent and approved product meet all the eligibility requirements of section 720, but the term of the patent cannot be extended because the patent issued less than three years before the product was approved by FDA.
Section 1.785 specifies the procedures to be followed where multiple applications are filed for extension of the same patent or of different patents for the same regulatory review period for a product. Pub. L. 98–417 and §1.785 provide that only one patent may be extended for a regulatory review period for any product. Under §1.785, if more than one application for extension of the same patent is filed, the certificate of extension of the term of the patent, if appropriate, would be issued based upon the first filed application for extension of patent term. If applications are filed by a single applicant for extensions of the terms of different patents based upon the same regulatory review period for a product, the certificate of extension will be issued on the application for extension of the patent having the earliest date of issuance of those for which extension is sought unless all but a single application for the extension of one patent term is voluntarily withdrawn by applicant.
If applications are filed by different applicants for extension of the terms of different patents based upon the same regulatory review period for a product, the certificate of extension will be issued on the application of the holder of the regulatory approval granted with respect to the regulatory review period. If the holder of the regulatory approval granted with respect to the regulatory review period is not an applicant, the certificate of extension will issue to the applicant for extension which holds express and exclusive authorization from the holder of the regulatory approval to rely upon the regulatory review period as the basis for the application for extension. If the holder of the regulatory approval is not an applicant and has not given a prior express and exclusive authorization to seek extension based on the regulatory review period, the certificate of extension will be issued on the application for extension of the patent having the earliest date of issuance of those for which extension is sought.
An application for extension will be considered complete and formal whether it contains the identification of the holder of the regulatory approval granted with respect to the regulatory review period or express and exclusive authorization from the holder of the regulatory approval to rely on the regulatory review period for extension. A request may be made of any applicant to supply such information regarding the authorization on which applicant relies from the holder of the regulatory approval on which the application for extension is based. The failure to provide such information within the period for response shall be regarded as conclusively establishing that the applicant is not the holder of the regulatory approval and is not authorized by the holder of the regulatory approval to seek the extension being sought.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities because patented drugs are generally not commercialized by small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information collection requirement contained in this proposed rule has been submitted by OMB for review under section 3504(h) of the Paperwork Reduction Act.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interest, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Pub. L. 98–417, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

PART 1—[AMENDED]

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.1 is amended by adding a new paragraph (f) before the note to read as follows:

§1.1 All communications to be addressed to the Commissioner of Patents and Trademarks.

* * * * *

(f) All applications for extension of patent term and any communications relating thereto intended for the Patent and Trademark Office should be additionally marked "Box Patent Ext." When appropriate, the communication should also be marked to the attention of a particular individual, as where a decision has been rendered.

3. Section 1.20 is amended by adding a new paragraph (n) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(n) For filing an application for extension of the term of a patent (§1.740) 550.00

* * * * *

4. A new Subpart F—Extension of Patent Term, consisting of §§1.710 through 1.785 is added to read as follows:

Subpart F—Extension of Patent Term

Sec.
1.710 Patents subject to extension of the patent term.
1.720 Conditions for extension of patent term.
1.730 Applicant for extension of patent term.
1.740 Application for extension of patent term.
1.741 Filing date of application.
1.750 Determination of eligibility for extension of patent term.
1.760 Interim extension of patent term.
1.765 Duty of disclosure in patent term extension proceedings.
1.770 Express withdrawal of application for extension of patent term.
1.775 Calculation of patent term extension for a human drug product.
1.776 Calculation of patent term extension for a food additive or color additive.
1.777 Calculation of patent term extension for a medical device.
1.780 Certificate of extension of patent term.
1.785 Multiple applications for extension of term of the same patent or of different patents for the same regulatory review period for a product.

Subpart F—Extension of Patent Term

Authority: 35 U.S.C. 6 and 156.

§1.710 Patents subject to extension of the patent term.

(a) A patent is eligible for extension of the patent term if the patent claims a product as defined in paragraph (b) of this section, or a method of using such a product, or a method of manufacturing such a product, and meets all other conditions and requirements of this subpart.
(b) The term "product" referred to in paragraph (a) of this section means—

(1) A human drug product which means the active ingredient of a new drug, antibiotic drug, or human biological product (as those terms are used in the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act) including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient; or
(2) Any medical device, food additive, or color additive subject to regulation under the Federal Food, Drug, and Cosmetic Act.

§1.720 Conditions for extension of patent term.

The term of a patent may be extended if:
(a) The patent claims a product or a method of using or manufacturing a product as defined in §1.710;
(b) The term of the patent has never been previously extended except for any interim extension issued pursuant to §1.760;
(c) An application for extension is submitted in compliance with §1.740;
(d) The product has been subject to a regulatory review period as defined in 35 U.S.C. 156(g) before its commercial marketing or use;
(e) The product has received permission for commercial marketing or use and—

(i) The permission for the commercial marketing or use of the product is the first received permission for commercial marketing or use under the provision of law under which the applicable regulatory review occurred, or
(ii) In the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the permission for the commercial marketing or use is the first received permission for the commercial marketing or use of a product manufactured under the process claimed in the patent;
(f) The application is submitted within the sixty day period beginning on the date the product first received permission for commercial marketing or use under the provisions of law under which the applicable regulatory review period occurred, or in the case of a patent claiming a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product, the application for extension is submitted within the sixty day period beginning on the date of the first permitted commercial marketing or use of a product manufactured under the process claimed in the patent;
(g) The term of the patent has not expired before the submission of an application in compliance with §1.741; and
(h) No other patent term has been extended for the same regulatory review period for the product.

§1.730 Applicant for extension of patent term.

Any application for extension of a patent term must be submitted by the owner of record of the patent or its agent and must comply with the requirements of §1.740.

§1.740 Application for extension of patent term.

(a) An application for extension of patent term must be made in writing to the Commissioner of Patents and Trademarks. A formal application for the extension of patent term shall include:

(1) A complete identification of the approved product as by appropriate chemical and generic name, physical structure or characteristics;
(2) A complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;
(3) An identification of the date on which the product received permission for commercial marketing or use under the provision of law under which the applicable regulatory review period occurred;
(4) In the case of a human drug product, an identification of each active ingredient in the product and as to each active ingredient, a statement that it has not been previously approved for commercial marketing or use under the Federal Food, Drug and Cosmetic Act, or a statement of when the active ingredient was approved for commercial marketing or use (either alone or in combination with other active ingredients) and the provision of law under which it was approved.
(5) A statement that the application is being submitted within the sixty day period permitted for submission pursuant to §1.720(f) and an identification of the date of the last day on which the application could be submitted;
(6) A complete identification of the patent for which an extension is being sought by the name of the inventor, the patent number, the date of issue, and the date of expiration;
(7) A copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings;
(8) A copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;

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(9) A statement beginning on a new page that the patent claims the approved product or a method of using or manufacturing the approved product, and a showing which lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the approved product or a method of using or manufacturing the approved product;

(10) A statement beginning on a new page of the relevant dates and information pursuant to 35 U.S.C. 156(g) in order to enable the Secretary of Health and Human Services to determine the applicable regulatory review period as follows:

(i) For a patent that claims a human drug product, the effective date of the investigational new drug (IND) application and the IND number, the date on which a new drug application (NDA) was initially submitted and the NDA number, and the date on which the NDA was approved;

(ii) For a patent that claims a food or color additive, the date a major health or environmental effects test on the additive was initiated and any available substantiation of that date; the date on which a petition for product approval under the Federal Food, Drug and Cosmetic Act was initially submitted and the petition number; and the date on which the FDA published a Federal Register notice listing the additive for use;

(iii) For a patent that claims a medical device, the effective date of the investigational device exemption (IDE) and the IDE number, if applicable, or the date on which the applicant began the first clinical investigation involving the device if no IDE was submitted and any available substantiation of that date; the date on which an application for product approval under section 515 of the Federal Food, Drug and Cosmetic Act was initially submitted and the number of the application; and the date on which the application was approved.

(11) A brief description beginning on a new page of the significant activities undertaken by the marketing applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities;

(12) A statement beginning on a new page that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of extension claimed, including how the length of extension was determined;

(13) A statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services any information which is material to the determination of entitlement to the extension sought (see §1.765);

(14) The prescribed fee for receiving and acting upon the application for extension (see §1.20(n));

(15) The name, address, and telephone number of the person to whom inquiries and correspondence relating to the application for patent term extension are to be directed;

(16) A duplicate of the application papers, certified as such; and

(17) An oath or declaration as set forth in paragraph (b) of this section.

(b) Any oath or declaration submitted in compliance with paragraph (a) of this section must be signed by the owner of record of the patent or its agent, specifically identify the papers and the patent for which an extension is sought and aver that the person signing the oath or declaration:

(1) Is the owner, an official of a corporate owner authorized to obligate the corporation, or a patent attorney or agent authorized to practice before the Patent and Trademark Office and who has general authority from the owner to act on behalf of the owner in patent matters.

(2) Has reviewed and understands the contents of the application being submitted pursuant to this section;

(3) Believes the patent is subject to extension pursuant to §1.710;

(4) Believes an extension of the length claimed is justified under 35 U.S.C. 156 and the applicable regulations; and

(5) Believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in §1.720.

(c) If any application for extension of patent term submitted pursuant to this section is held to be informal, applicant may seek to have that holding reviewed by filing a petition with the required fee, as necessary, pursuant to §1.181, §1,182 or §1.183, as appropriate, within such time as may be set in the notice that the application has been held to be informal, or if no time is set, within one month of the date on which the application was held informal. The time periods set forth herein are subject to the provisions of 37 CFR 1.136.

§1.741 Filing date of application.

(a) The filing date of an application for extension of patent term is the date on which a complete application is received in the Patent and Trademark Office or filed pursuant to the "Certificate of Mailing" provisions of 37 CFR 1.8 or "Express Mail" provisions of 37 CFR 1.10.

A complete application shall include:

(1) An identification of the approved product;

(2) An identification of the Federal statute under which regulatory review occurred;

(3) An identification of the patent for which an extension is being sought;

(4) An identification of each claim of the patent which claims the approved product or a method of using or manufacturing the approved product;

(5) Sufficient information to enable the Commissioner to determine under 35 U.S.C. 156 subsections (a) and (b) the eligibility of a patent for extension and the rights that will be derived from the extension and information to enable the Commissioner and the Secretary of Health and Human Services to determine the period of the extension; and

(6) A brief description of the activities undertaken by the marketing applicant during the applicable regulatory review period with respect to the approved product and the significant dates applicable to such activities.

(b) If any application submitted pursuant to this section is held to be incomplete, applicant may seek to have this holding reviewed under §1.181.

§1.750 Determination of eligibility for extension of patent term.

A determination as to whether a patent is eligible for extension may be made by the Commissioner solely on the basis of the representations contained in the application for extension filed in compliance with §1.740. This determination may be delegated to appropriate Patent and Trademark Office officials and may be made at any time before the certificate of extension is issued. The Commissioner or other appropriate officials may require from applicant further information or make such independent inquiries as desired before a final determination is made on whether a patent is eligible for extension. A notice will be mailed to applicant containing the determination as to the eligibility of the patent for extension and the period of time of the extension, if any. This notice shall constitute the final determination as to the eligibility and any period of extension of the patent. A single request for reconsideration of a final determination may be made if filed by the applicant within such time as may be set in the notice of final determination or, if no time is set, within one month from the date of the final determination. The time periods set forth herein are subject to the provisions of 37 CFR 1.136.

§1.760 Interim extension of patent term.

An applicant who has filed a formal application for extension in compliance with §1.740 may request one or more interim extensions for periods of up to one year each pending a final determination on the application pursuant to §1.750. Any such request should be filed at least three months prior to the expiration date of the patent. The Commissioner may issue interim extensions, without a request by the applicant, for periods of up to one year each until a final determination is made. The patent owner or agent will be notified when an interim extension is granted and notice of the extension will be published in the Official Gazette of the Patent and Trademark Office. The notice will be recorded in the official file of the patent and will be considered as part of the original patent. In no event will the interim extensions granted under this section be longer than the maximum period of extension to which the applicant would be eligible.

§1.765 Duty of disclosure in patent term extension proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office and the Secretary of Health and Human Services rests on the patent owner or its agent, on each attorney or agent who represents the patent owner and on every other individual who is substantively involved on behalf of the patent owner in a patent term extension proceeding. All such individuals who are aware, or become aware, of material information adverse to a determination of entitlement to the extension sought, which has not been previously made of record in the patent term extension proceeding must bring such information to the attention of the Office or the Secretary, as appropriate, in accordance with paragraph (b) of this section, as soon as it is practical to do so after the individual becomes aware of the information. Information is material where there is a substantial likelihood that the Office or the Secretary would consider it important in determinations to be made in the patent term extension proceeding.

(b) Disclosures pursuant to this section must be accompanied by a copy of each written document which is being disclosed. The disclosure must be made to the Office or the Secretary, as appropriate, unless the disclosure is material to determinations to be made by both the Office and the Secretary, in which case duplicate copies, certified as such, must be filed in the Office and with the Secretary. Disclosures pursuant to this section may be made to the Office or the Secretary, as appropriate, through an attorney or agent having responsibility on behalf of the patent owner or its agent for the patent term extension proceeding or through a patent owner acting on his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the determination of entitlement to the extension sought.

(c) No patent will be determined eligible for extension and no extension will be issued if it is determined that fraud on the Office or the Secretary was practiced or attempted or the duty of disclosure was violated through bad faith or gross negligence in connection with the patent term extension proceeding. If it is established by clear and convincing evidence that any fraud was practiced or attempted on the Office or the Secretary in connection with the patent term extension proceeding or that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the patent term extension proceeding, a final determination will be made pursuant to §1.750 that the patent is not eligible for extension.

(d) The duty of disclosure pursuant to this section rests on the individuals identified in paragraph (a) of this section and no submission on behalf of third parties, in the form of protests or otherwise, will be considered by the Office. Any such submissions by third parties to the Office will be returned to the party making the submission, or otherwise disposed of, without consideration by the Office.

§1.770 Express withdrawal of application for extension of patent term.

An application for extension of patent term may be expressly withdrawn before a determination is made pursuant to §1.750 by filing in the Office, in duplicate, a written declaration of withdrawal signed by the owner of record of the patent or its agent. An application may not be expressly withdrawn after the date permitted for response to the final determination on the application. An express withdrawal pursuant to this section is effective when acknowledged in writing by the Office. The filing of an express withdrawal pursuant to this section and its acceptance by the Office does not entitle applicant to a refund of the filing fee (§1.20(n)) or any portion thereof.

§1.775 Calculation of patent term extension for a human drug product.

(a) If a determination is made pursuant to §1.750 that a patent for a human drug product is eligible for extension, the term shall be extended by the time as calculated in days in the manner indicated by this section. The patent term extension will run from the original expiration date of the patent or any earlier date set by terminal disclaimer (§1.321).

(b) The term of the patent for a human drug product will be extended by the length of the regulatory review period for the product as determined by the Secretary of Health and Human Services, reduced as appropriate pursuant to paragraphs (d)(1) through (d)(6) of this section.

(c) The length of the regulatory review period for a human drug product will be determined by the Secretary of Health and Human Services. Under 35 U.S.C. 156(g)(1)(B), it is the sum of —

(1) The number of days in the period beginning on the date an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug, and Cosmetic Act became effective for the approved human drug product and ending on the date an application was initially submitted for such drug product under those sections or under section 351 of the Public Health Service Act; and

(2) The number of days in the period beginning on the date the application was initially submitted for the approved human drug product under section 351 of the Public Health Service Act, subsection (b) of section 505 or section 507 of the Federal Food, Drug, and Cosmetic Act and ending on the date such application was approved under such section.

(d) The term of the patent as extended for a human drug product will be determined by—

(1) Subtracting from the number of days determined by the Secretary of Health and Human Services to be in the regulatory review period:

(i) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section which were on and before the date on which the patent issued;

(ii) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section during which it is determined under 35 U.S.C. 156(d)(2)(B) by the Secretary of Health and Human Services that applicant did not act with due diligence;

(iii) One-half the number of days remaining in the period defined by paragraph (c)(1) of this section after that period is reduced in accordance with paragraphs (d)(1)(i) and (ii) of this section; half days will be ignored for purposes of subtraction;

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(2) By adding the number of days determined in paragraph (d)(1) of this section to the original term of the patent as shortened by any terminal disclaimer;
(3) By adding 14 years to the date of approval of the application under section 351 of the Public Health Service Act, or subsection (b) of section 505 or section 507 of the Federal Food, Drug, and Cosmetic Act;
(4) By comparing the dates for the ends of the periods obtained pursuant to paragraphs (d)(2) and (d)(3) of this section with each other and selecting the earlier date;
(5) If the original patent was issued after Sept. 24, 1984,
(i) By adding 5 years to the original expiration date of the patent or any earlier date set by terminal disclaimer; and
(ii) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(5)(i) of this section with each other and selecting the earlier date;
(6) If the original patent was issued before Sept. 24, 1984, and
(i) If no request was submitted for an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug, and Cosmetic Act before Sept. 24, 1984, by—

(A) Adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer; and
(B) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(i)(A) of this section with each other and selecting the earlier date; or
(ii) If a request was submitted for an exemption under subsection (i) of section 505 or subsection (d) of section 507 of the Federal Food, Drug, and Cosmetic Act before Sept. 24, 1984 and the commercial marketing or use of the product was not approved before Sept. 24, 1984, by—

(A) Adding 2 years to the original expiration date of the patent or earlier date set by terminal disclaimer, and
(B) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(ii)(A) of this section with each other and selecting the earlier date.

§1.776 Calculation of patent term extension for a food additive or color additive.

(a) If a determination is made pursuant to §1.750 that a patent for a food additive or color additive is eligible for extension, the term shall be extended by the time as calculated in days in the manner indicated by this section. The patent term extension will run from the original expiration date of the patent or earlier date set by terminal disclaimer (§1.321).
(b) The term of the patent for a food additive or color additive will be extended by the length of the regulatory review period for the product as determined by the Secretary of Health and Human Services, reduced as appropriate pursuant to paragraphs (d)(1) through (d)(6) of this section.
(c) The length of the regulatory review period for a food additive or color additive will be determined by the Secretary of Health and Human Services. Under 35 U.S.C. 156(g)(2)(B), it is the sum of—

(1) The number of days in the period beginning on the date a major health or environmental effects test on the additive was initiated and ending on the date a petition was initially submitted with respect to the approved product under the Federal Food, Drug, and Cosmetic Act requesting the issuance of a regulation for use of the product; and
(2) The number of days in the period beginning on the date a petition was initially submitted with respect to the approved product under the Federal Food, Drug, and Cosmetic Act requesting the issuance of a regulation for use of the product, and ending on the date such regulation became effective or, if objections were filed to such regulation, ending on the date such objections were resolved and commercial marketing was permitted or, if commercial marketing was permitted and later revoked pending further proceedings as a result of such objections, ending on the date such proceedings were finally resolved and commercial marketing was permitted.

(d) The term of the patent as extended for a food additive or color additive will be determined by
(1) Subtracting from the number of days determined by the Secretary of Health and Human Services to be in the regulatory review period:
(i) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section which were on and before the date on which the patent issued;
(ii) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section during which it is determined under 35 U.S.C. 156(d)(2)(B) by the Secretary of Health and Human Services that applicant did not act with due diligence;
(iii) The number of days equal to one-half the number of days remaining in the period defined by paragraph (c)(1) of this section after that period is reduced in accordance with paragraphs (d)(1)(i) and (ii) of this section; half days will be ignored for purposes of subtraction;
(2) By adding the number of days determined in paragraph (d)(1) of this section to the original term of the patent as shortened by any terminal disclaimer;
(3) By adding 14 years to the date a regulation for use of the product became effective or, if objections were filed to such regulation, to the date such objections were resolved and commercial marketing was permitted or, if commercial marketing was permitted and later revoked pending further proceedings as a result of such objections, to the date such proceedings were finally resolved and commercial marketing was permitted;
(4) By comparing the dates for the ends of the periods obtained pursuant to paragraphs (d)(2) and (d)(3) of this section with each other and selecting the earlier date;
(5) If the original patent was issued after Sept. 24, 1984,
(i) By adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer; and
(ii) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(5)(i) of this section with each other and selecting the earlier date;
(6) If the original patent was issued before Sept. 24, 1984, and
(i) If no major health or environmental effects test was initiated and no petition for a regulation or application for registration was submitted before Sept. 24, 1984, by
(A) Adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer, and
(B) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(i)(A) of this section with each other and selecting the earlier date; or
(ii) If a major health or environmental effects test was initiated or a petition for a regulation or application for registration was submitted by Sept. 24, 1984, and the commercial marketing or use of the product was not approved before Sept. 24, 1984, by
(A) Adding 2 years to the original expiration date of the patent or earlier date set by terminal disclaimer, and
(B) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(ii)(A) of this section with each other and selecting the earlier date.

§1.777 Calculation of patent term extension for a medical device.

(a) If a determination is made pursuant to §1.750 that a patent for a medical device is eligible for extension, the term shall be extended by the time as calculated in days in the manner indicated by this section. The patent term extension will run from the original expiration date of the patent or earlier date as set by terminal disclaimer (§1.321).
(b) The term of the patent for a medical device will be extended by the length of the regulatory review period for the product as determined by the Secretary of Health and Human Services, reduced as appropriate pursuant to paragraphs (d)(1) through (d)(6) of this section.

(c) The length of the regulatory review period for a medical device will be determined by the Secretary of Health and Human Services. Under 35 U.S.C. 156(g)(3)(B), it is the sum of

(1) The number of days in the period beginning on the date a clinical investigation on humans involving the device was begun and ending on the date an application was initially submitted with respect to the device under section 515 of the Federal Food, Drug, and Cosmetic Act; and
(2) The number of days in the period beginning on the date the application was initially submitted with respect to the device under section 515 of the Federal Food, Drug, and Cosmetic Act, and ending on the date such application was approved under such Act or the period beginning on the date a notice of completion of a product development protocol was initially submitted under section 515(f)(5) of the Act and ending on the date the protocol was declared completed under section 515(f)(6) of the Act.

(d) The term of the patent as extended for a medical device will be determined by—

(1) Subtracting from the number of days determined by the Secretary of Health and Human Services to be in the regulatory review period pursuant to paragraph (c) of this section:
(i) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section which were on and before the date on which the patent issued;
(ii) The number of days in the periods of paragraphs (c)(1) and (c)(2) of this section during which it is determined under 35 U.S.C. 156(d)(2)(B) by the Secretary of Health and Human Services that applicant did not act with due diligence;
(iii) One-half the number of days remaining in the period defined by paragraph (c)(1) of this section after that period is reduced in accordance with paragraphs (d)(1)(i) and (ii) of this section; half days will be ignored for purposes of subtraction;
(2) By adding the number of days determined in paragraph (d)(1) of this section to the original term of the patent as shortened by any terminal disclaimer;
(3) By adding 14 years to the date of approval of the application under section 515 of the Federal Food, Drug, and Cosmetic Act or the date a product development protocol was declared completed under section 515(f)(6) of the Act;
(4) By comparing the dates for the ends of the periods obtained pursuant to paragraphs (d)(2) and (d)(3) of this section with each other and selecting the earlier date;
(5) If the original patent was issued after Sept. 24, 1984, (i) By adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer; and
(ii) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(5)(i) of this section with each other and selecting the earlier date;
(6) If the original patent was issued before Sept. 24, 1984, and
(i) If no clinical investigation on humans involving the device was begun or no product development protocol was submitted under section 515(f)(5) of the Federal Food, Drug, and Cosmetic Act before Sept. 24, 1984, by
(A) Adding 5 years to the original expiration date of the patent or earlier date set by terminal disclaimer and
(B) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(i)(A) of this section with each other and selecting the earlier date; or
(ii) If a clinical investigation on humans involving the device was begun or a product development protocol was submitted under section 515(f)(5) of the Federal Food, Drug, and Cosmetic Act before Sept. 24, 1984 and the commercial marketing or use of the product was not approved before Sept. 24, 1984, by
(A) Adding 2 years to the original expiration date of the patent or earlier date set by terminal disclaimer, and
(B) By comparing the dates obtained pursuant to paragraphs (d)(4) and (d)(6)(ii)(A) of this section with each other and selecting the earlier date.

§1.780 Certificate of extension of patent term.

If a determination is made pursuant to §1.750 that a patent is eligible for extension and that the term of the patent is to be extended, a certificate of extension, under seal, will be issued to the applicant for the extension of the patent term. Such certificate will be recorded in the official file of the patent and will be considered as part of the original patent. Notification of the issuance of the certificate of extension will be published in the Official Gazette of the Patent and Trademark Office. No certificate of extension will be issued if the term of the patent cannot be extended, even though the patent is otherwise determined to be eligible for extension. In such situations the final determination made pursuant to §1.750 will indicate that no certificate will issue.

§1.785 Multiple applications for extension of term of the same patent or of different patents for the same regulatory review period for a product.

(a) Only one patent may be extended for a regulatory review period for any product (§1.720(g)). If more than one application for extension of the same patent is filed, the certificate of extension of patent term, if appropriate, will be issued based upon the first filed application for extension.
(b) If more than one application for extension is filed by a single applicant which seeks the extension of the term of two or more patents based upon the same regulatory review period, and the applications are otherwise eligible for extension pursuant to the requirement of this subpart, the certificate of extension of patent term, if appropriate, will be issued upon the application for extension of the patent having the earliest date of issuance of those patents for which extension is sought.
(c) If an application for extension is filed which seeks the extension of the term of a patent based upon the same regulatory review period as that relied upon in one or more applications for extension pursuant to the requirements of this subpart, the certificate of extension of patent term will be issued on the application only if—

(1) The applicant for extension is the holder of the regulatory approval granted with respect to the regulatory review period, or
(2) The holder of the regulatory approval granted with respect to the regulatory review period is not an applicant and the applicant for extension holds express and exclusive authorization from the holder of the regulatory approval to rely upon the regulatory review period as the basis for the application for extension, or
(3) The holder of the regulatory approval granted with respect to the regulatory review period is not an applicant and no applicant for extension holds an express and exclusive authorization from the holder of the regulatory approval to rely upon the regulatory review period as the basis for the application for extension and the application is for extension of the patent having the earliest date of issuance of those patents for which extension is sought based upon the same regulatory review period.

(d) An application for extension shall be considered complete and formal regardless of whether it contains the identification of the holder of the regulatory approval granted with respect to the regulatory review period or express and exclusive authorization from the holder of the regulatory approval to rely on the regulatory review period for extension. When an application contains such information, or is amended to contain such information, it will be considered in determining whether an application is eligible for an extension under this section. A request may be made of any applicant to supply such information within a non-extendable period of not less than one (1) month whenever multiple applications for

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extension of more than one patent are received and rely upon the same regulatory review period. Failure to provide such information within the period for response set shall be regarded as conclusively establishing that the applicant is not the holder of the regulatory approval and is not expresly and exclusively authorized by the holder of the regulatory approval to seek the extension being sought.

(e) Determinations made under this section shall be included in the notice of final determination of eligibility for extension of the patent term pursuant to §1.750 and shall be regarded as part of that determination.

DONALD J. QUIGG,
Jan. 9, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[FR Doc. 87-6045 Filed 3-23-87; 8:45 am]
BILLING CODE 3510-16-M

[1079 OG 52]

(155) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 150
[Docket No. 71038-8108]

Requests for Presidential Proclamations Under the Semiconductor Chip Protection Act of 1984, 17 U.S.C. 902(a)(2)

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark Office (PTO) is adding a new Subchapter C, Part 150 to its rules to implement the Presidential proclamation provisions of the Semiconductor Chip Protection Act of 1984, 17 U.S.C. 902(a)(2). The rules establish procedures for the evaluation of requests by foreign governments for the issuance of Presidential proclamations granting protection in the United States to mask works of foreign origin. The rules also permit the Commissioner of Patents and Trademarks independently to initiate an evaluation. The effect of the rules will be to establish a regime of protection for foreign mask works in the United States, provided mask works of U.S. origin are adequately protected in the country requesting a Presidential proclamation.
Effective Date: August 1, 1988
For Further Information Contact: Michael K. Kirk, Assistant Commissioner for External Affairs, by telephone at (703)557-3065, or by mail marked to his attention and addressed to Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.
Supplementary Information: The Semiconductor Chip Protection Act of 1984 (SCPA) established a new form of intellectual property protection for mask works that are fixed in semiconductor chips. Mask works are defined as a "series of related images, however fixed or encoded," that represent the three-dimensional pattern in the layers of a semiconductor chip. Thus, the subject matter of protection under the SCPA are the layout designs of semiconductor chips, known in some countries as "integrated circuit layout designs" or as "semiconductor topographies." The SCPA provides a ten-year term of protection for original mask works measured from their date of registration or first commercial exploitation anywhere in the world. To maintain protection, mask works must be registered in the United States Copyright Office within two years of first commercial exploitation.

Protection for foreign mask works may be granted under both section 902 and section 914 of the SCPA. Section 902 sets out three different ways that foreign mask works may become eligible for protection in the United States. First, on the date the work is registered or is first commercially exploited anywhere in the world, the mask work is protectible if its owner is a national, domiciliary or sovereign authority of a foreign nation that is a party to a treaty that provides protection of mask works and to which the United States is also a party, or if a stateless person, wherever domiciled. Second, foreign mask works may be protected when they are first commercially exploited in the United States. The third way, set forth in section 902(a)(2), is where the foreign mask work comes within the scope of a Presidential proclamation. The President may issue a proclamation upon finding that a foreign nation extends to mask works of owners who are U.S. nationals or domiciliaries, protection (1) on substantially the same basis as that on which the foreign nation extends protection to mask works of its own nationals and domiciliaries and mask works first commercially exploited in that nation, or (2) on substantially the same basis as provided in the SCPA. Pursuant to Executive Order 12504, 50 FR 4849 (Feb. 4, 1985), requests for issuance of Presidential proclamations are to be presented to the President by the Secretary of Commerce.

Section 914 was included in the SCPA as a transitional provision, intended by Congress to encourage other countries to pass laws extending protection to this new form of intellectual property. Once laws were in place, it was reasoned, permanent protection for foreign mask works could be conferred under section 902 or through a multilateral treaty that extended coverage to mask works. Section 914 gives the Secretary of Commerce authority to issue orders extending interim protection to foreign mask work owners upon the satisfaction of certain conditions. First, the Secretary must find that the foreign nation is making good faith efforts and reasonable progress toward entering into a treaty with the United States, or toward enacting legislation that will protect U.S. mask works on the same basis as domestic mask works, or at a level similar to that provided under the SCPA. Second, the Secretary must determine that nationals, domiciliaries and sovereign authorities of the foreign nation are not engaged in the misappropriation, unauthorized distribution, or unauthorized commercial exploitation of mask works. Finally, the Secretary must determine that issuance of an interim order would promote the purposes of the SCPA and international comity with respect to the protection of mask works.

By Amendment 1 to Department Organization Order 10-14, issued Dec. 3, 1984, the Secretary of Commerce delegated to the Assistant Secretary and Commissioner of Patents and Trademarks the authority under section 914 to make pertinent findings and to issue orders for the interim protection of foreign mask works. Amendment 2 to Department Organization Order 10-14, issued Sept. 28, 1987, expanded the earlier delegation to include responsibility for prescribing regulations for the presentation to the President of requests for issuance of proclamations under section 902.

The Commissioner has issued orders granting interim protection under section 914 for mask works produced in Australia, Belgium, Canada, Denmark, Finland, France, the Federal Republic of Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. All of the interim protection orders were recently extended until May 31, 1989. *See Extension of Previously-Granted Interim Orders Under the Semiconductor Chip Protection Act of 1984*, 53 FR 16308 (May 6, 1988).

This proceeding was initiated by a Notice of Proposed Rulemaking published at 53 FR 5588-90 (Feb. 25, 1988). The notice set forth proposed regulations for the submission and evaluation of requests that the Secretary of Commerce recommend the issuance or revocation of a Presidential proclamation granting U.S. protection to foreign mask works under section 902(a)(2) of the SCPA. Comments on the proposed rules were received from the Commission of the European Communities and the U.S. Semiconductor Industry Association.

Discussion of Specific Rules

Section 150.1 of the new rules sets forth relevant definitions. Section 150.2 specifies the conditions under

which an evaluation of recommending the issuance, revision, suspension or revocation of a section 902 proclamation will be initiated by the Commissioner. Section 150.2(a) provides that the Commissioner must initiate an evaluation of the propriety of recommending the issuance of a section 902 proclamation upon receipt of a request from a foreign government. Section 150.2(b) gives the Secretary the discretion to initiate independently an evaluation concerning issuance, revision, suspension or revocation of a proclamation, or as directed by the Secretary of Commerce.

Section 150.3(a) states that requests for the issuance of a section 902 Presidential proclamation shall be made by "foreign governments." The definition of "foreign government" in section 150.1 of the rules makes clear that international intergovernmental organizations may request Presidential proclamations on behalf of their member states.

Section 150.3(b) lists the documentation that must accompany requests for issuance of a proclamation. The laws, legal rulings, regulations, and administrative orders submitted must be in unedited, full-text form. Where possible, the materials submitted should be reproduced from the original document, *e.g.*, from court reports or statutory instruments. Abstracts, summaries and commentaries are not acceptable. If the documents are not in English, a certified English translation must accompany them.

Section 150.4 sets out the procedure the Commissioner will follow after a request for issuance of a proclamation has been submitted, or following a decision independently to initiate an evaluation. If a foreign government requests a section 902 proclamation before a section 914 proceeding has taken place, under section 150.4(a) the Commissioner may initiate such a proceeding to compile a record of necessary information and, where appropriate, to provide interim protection in the United States while the section 902 request is pending. Section 150.4(b) provides that the information obtained during a section 914 proceeding, if one has been held, will be considered by the Commissioner in determining whether to recommend the issuance of a Presidential proclamation.

Section 150.4(c) provides that requests for Presidential proclamations, and notices of the Commissioner's determination independently to initiate section 902 evaluations, will be published in the *Federal Register*. Written comments will be requested. Section 150.4(d) requires the Commissioner to notify the Register of Copyrights and the Committees on the Judiciary of the Senate and the House of Representatives of the initiation of an evaluation. Under section 150.4(e), a hearing may be scheduled if the written comments raise issues that cannot be resolved through informal contacts Section 150.4(f) provides that the record to be considered by the Commissioner in determining whether to recommend a Presidential proclamation will be the request from a foreign government, if any, written comments received, the record of any section 914 proceedings, and the information obtained in a hearing, if one is held.

Sections 150.4(g) and (h) provide that the Commissioner will forward the draft recommendation to the Secretary, who will then forward a recommendation regarding issuance of a proclamation to the President. Section 150.5(a) makes clear that the recommendation for issuance of a proclamation may include terms and conditions regarding the duration of the proclamation. Section 150.5(b) provides that interested parties may request the revision, suspension or revocation of Presidential proclamations.

Comments on the Proposed Rules

Comments on the proposed rules were submitted by the Commission of the European Communities and the U.S. Semiconductor Industry Association (SIA). The Commission of the European Communities noted that any request for a proclamation in favor of mask works produced in the Member States will be made by the Commission. The Commission requested a clarification that the term "foreign governments" as used in section 150.3(a) includes international intergovernmental organizations which have been empowered by their member states to request Presidential proclamations granting U.S. protection to mask works produced in such states.

The PTO adopts the Commission's suggestion. The rules are not intended to preclude foreign governments from having requests for Presidential proclamations presented on their behalf by an international or regional intergovernmental organization. Accordingly, a definition of "foreign government" is added as section 150.l(b) of the rules, making clear that international intergovernmental organizations may request Presidential proclamations on behalf of their member states.

In its comments, the SIA requested that section 150.4(c) be amended to require that the Commissioner hold a public hearing when requested by any interested party after an evaluation has begun. As proposed, section 150.4(e)(2)(ii) gives the Commissioner discretion to hold a hearing to gather additional information if material issues raised in written comments cannot be resolved less formally. SIA also requested that section 150.4(f) be amended to include information obtained in public hearings in the list of materials to be evaluated by the Commissioner. SIA suggested that section 150.4(c) specify a time period of thirty (30) days after publication of a request for comments in the *Federal Register* during which written comments and requests for a hearing may be submitted.

The PTO does not agree that the Commissioner should be required to hold a hearing as part of every section 902 evaluation whenever requested. Section 150.4(b) provides that information obtained during section 914 proceedings will be used in evaluating requests for Presidential proclamations. Moreover, under section 150.4(a) the Commissioner may institute section 914 proceedings if an interim order has not been issued in favor of mask works from such a requesting nation. Given the thoroughness with which section 914 proceedings are generally conducted, the Commissioner is expected to have available a substantial record concerning the degree of protection for U.S. mask works in the subject country. A separate hearing might only serve to cause delay in such cases.

Moreover, effective public participation in the section 902 evaluation process is not dependent on whether the Commissioner holds a hearing. The rules proceed from the assumption that any material issues relating to protection of U.S. mask works in a requesting foreign country can be raised in written comments, and that these issues can be resolved flexibly through informal *inter partes* contacts. Where issues cannot be resolved through such informal contacts, section 150.4(e)(ii) gives the Commissioner discretion to hold a hearing to obtain additional views and to assist in resolving the issues. It is not evident that a mandatory hearing upon request of interested parties would provide an opportunity for exchange of views or information that is not otherwise available under section 150.4(e).

The PTO agrees that, if the Commissioner elects to hold a hearing, the information obtained should be included in the record. Accordingly, section 150.4(f) is amended to make this clarification. It is also proper that the rules specify a time period for the submission of comments following publication in the *Federal Register* of the request for a proclamation or the Commissioner's determination to initiate independently a section 902 evaluation. Thus, to ensure that all interested parties have sufficient time to investigate and prepare complete written comments, section 150.4(c) is amended to specify that comments must be submitted within sixty (60) days of *Federal Register* publication.

Discussion of Principal Changes

A new section 150.l(b) has been added to the rules as proposed to clarify that international or regional intergovernmental organizations may request Presidential

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proclamations on behalf of their member states, provided the member states have empowered the organization to make such requests. Proposed sections 150.l(c)-(g) have been redesignated as sections 150.l(d)-(h). The definition of "mask work" in section 150.l(d) (proposed section 150.l(c)) has been modified slightly to conform to the language in section 901(a)(2) of the SCPA. The definition of "Presidential proclamation" in section 150.l(e) (proposed section 150.l(d)) has been changed slightly by substituting the words "applying for" for the word "making" before the word "registrations." The purpose of this change is to conform the language of the rule to section 908 of the SCPA, which relates to mask work registration. The definition of "request" in section 150.l(f) (proposed section 150.l(e)) has been changed to indicate that the Commissioner is not required to treat requests for the revision, suspension or revocation of a Presidential proclamation in the same way as requests for issuance of such proclamations (*see* discussion of section 150.5(b), *infra*).

Section 150.2(a) has been expanded to make clear that the Commissioner may initiate independently an evaluation of recommending the revision, suspension, or revocation of a Presidential proclamation, as well as an evaluation of recommending the issuance of a proclamation. This change reflects the amendment to section 902(a)(2) made by the Semiconductor Chip Protection Act Extension of 1987, which clarifies that the President has the authority to revise, suspend or revoke, as well as issue, proclamations extending protection to foreign mask works.

Section 150.3(b) has been changed to state that requests for issuance of a Presidential proclamation must be accompanied by "a copy" of laws, legal rulings, regulations or administrative orders, rather than "an official copy" of such materials, as was proposed. This change is made to avoid confusion arising from the fact that the meaning of "official copy" may vary from country to country. Section 150.3(b)(5) has been redesignated as section 150.3(b)(6), and a new section 150.3(b)(5) has been added to specify that the copies submitted to the PTO must be in full text, unedited, and where possible, be reproduced from the original document.

Section 150.4(c) has also been changed. The proposed rule stated that notices of requests by foreign governments for the issuance of Presidential proclamations will be published in the *Federal Register*. Language has been added to make clear that notices of the Commissioner's determination independently to initiate evaluations will also be published in the *Federal Register*. Section 150.4(c) has also been changed to provide that comments shall be submitted to the Commissioner within sixty (60) days of publication of the *Federal Register* notice. Section 150.4(f) has been modified to include information obtained in a public hearing held pursuant to section 150.4(e)(ii), if such a hearing is held, in the list of materials to be evaluated by the Commissioner.

Section 150.5(b) has been changed to reflect the amendment to section 902(a)(2) made by the Semiconductor Chip Protection Act Extension of 1987. The first sentence provides that any interested party may request the "revision, suspension or revocation" of a proclamation. The second sentence has been modified to provide that "requests for revision, suspension or revocation of a proclamation will be considered in substantially the same manner as requests for the issuance of a section 902 proclamation." The word "substantially" has been added to indicate that the Commissioner need not initiate a formal evaluation in every case where a request is made for the revision, suspension or revocation of a Presidential proclamation, in contrast to situations where a foreign government requests the issuance of such a proclamation. While good faith requests for the revision, suspension or revocation of a proclamation will be accorded fair procedural treatment, it is proper that the Commissioner have flexibility at the outset to consider such requests on a case-by-case basis as experience is gained under these rules. If necessary, the PTO may amend the rules at a later time to provide additional procedures for consideration of requests for revision, suspension or revocation of Presidential proclamations.

Stylistic changes have also been made in sections 150.2(a), 150.3(b)(6) (proposed section 150.3(b)(5)) and 150.5(a), but these changes are for purposes of clarity and are not substantive in nature.

Other Considerations

This rule does not have a significant impact on the quality of the human environment or the conservation of natural resources. This rule is in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq*

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the proposed rule will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*) The economic impact of a Presidential proclamation on small entities will be beneficial, since such proclamations may be issued only upon a finding that a foreign nation extends reciprocal protection to U.S. mask works.

The Patent and Trademark Office has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less that $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. By extending protection to foreign mask work owners, the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets will be enhanced.

The Patent and Trademark Office has also determined that this notice has no federalism implications affecting the relationship between the national government and the states as outlined in Executive Order 12612.

The rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3510 *et seq.*, since no record-keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Subchapter C

Administrative practice and procedure, Authority delegations, Semiconductor chips, Mask works.

For the reasons set out in the preamble, Chapter 1 of Title 37 CFR is amended by adding a new Subchapter C, Part 150, as follows:

Subchapter C - PROTECTION OF FOREIGN MASK WORKS

Part 150 - REQUESTS FOR PRESIDENTIAL PROCLAMATIONS PURSUANT TO 17 U.S.C. 902(a)(2)

Sec.
150.1 Definitions.
150.2 Initiation of Evaluation.
150.3 Submission of Requests.
150.4 Evaluation.
150.5 Duration of Proclamation.
150.6 Mailing Address.

Authority: 35 U.S.C. 6; E.O. 12504, 50 FR 4849, 3 CFR, 1985 Comp., p. 335.

Section 150.1 Definitions.

(a) "Commissioner" means Assistant Secretary and Commissioner of Patents and Trademarks.
(b) "Foreign government" means the duly-constituted executive of a foreign nation, or an international or regional intergovernmental organization which has been empowered by its member states to request issuance of Presidential proclamations on their behalf under this part.

(c) "Interim order" means an order issued by the Secretary of Commerce under 17 U.S.C. 914.
(d) "Mask work" means a series of related images, however fixed or encoded -

(1) having or representing the predetermined, threedimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product; and
(2) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.

(e) "Presidential proclamation" means an action by the President extending to foreign nationals, domiciliaries and sovereign authorities the privilege of applying for registrations for mask works pursuant to 17 U.S.C. 902.
(f) "Request" means a request by a foreign government for the issuance of a Presidential proclamation.
(g) "Proceeding" means a proceeding to issue an interim order extending protection to foreign nationals, domiciliaries and sovereign authorities under 17 U.S.C. Chapter 9.
(h) "Secretary" means the Secretary of Commerce.

Section 150.2 Initiation of Evaluation.

(a) The Commissioner independently or as directed by the Secretary, may initiate an evaluation of the propriety of recommending the issuance, revision, suspension or revocation of a section 902 proclamation.
(b) The Commissioner shall initiate an evaluation of the propriety of recommending the issuance of a section 902 proclamation upon receipt of a request from a foreign government.

Section 150.3 Submission of Requests.

(a) Requests for the issuance of a section 902 proclamation shall be submitted by foreign governments for review by the Commissioner.
(b) Requests for issuance of a proclamation shall include:

(1) A copy of the foreign law or legal rulings that provide protection for U.S. mask works which provide a basis for the request.
(2) A copy of any regulations or administrative orders implementing the protection.
(3) A copy of any laws, regulations or administrative orders establishing or regulating the registration (if any) of mask works.
(4) Any other relevant laws, regulations or administrative orders.
(5) All copies of laws, legal rulings, regulations or administrative orders submitted must be in unedited, full-text form, and if possible, must be reproduced from the original document.
(6) All material submitted must be in the original language, and if not in English, must be accompanied by a certified English translation.

Section 150.4 Evaluation.

(a) Upon submission of a request by a foreign government for the issuance of a section 902 proclamation, if an interim order under section 914 has not been issued, the Commissioner may initiate a section 914 proceeding if additional information is required.
(b) If an interim order under section 914 has been issued, the information obtained during the section 914 proceeding will be used in evaluating the request for a section 902 proclamation.
(c) After the Commissioner receives the request of a foreign government for a section 902 proclamation, or after a determination is made by the Commissioner to initiate independently an evaluation pursuant to section 150.2(a) of this part, a notice will be published in the Federal Register to request relevant and material comments on the adequacy and effectiveness of the protection afforded U.S. mask works under the system of law described in the notice. Comments should include detailed explanations of any alleged deficiencies in the foreign law or any alleged deficiencies in its implementation. If the alleged deficiencies include problems in administration such as registration, the respondent should include as specifically as possible full detailed explanations, including dates for and the nature of any alleged problems. Comments shall be submitted to the Commissioner within sixty (60) days of publication of the *Federal Register* notice.
(d) The Commissioner shall notify the Register of Copyrights and the Committees on the Judiciary of the Senate and the House of Representatives of the initiation of an evaluation under these regulations.
(e) If the written comments submitted by any party present relevant and material reasons why a proclamation should not issue, the Commissioner will:

(1) Contact the party raising the issue for verification and any needed additional information;
(2) Contact the requesting foreign government to determine if the issues raised by the party can be resolved; and,

(i) If the issues are resolved, continue with the evaluation; or,
(ii) If the issues cannot be resolved on this basis, hold a public hearing to gather additional information.

(f) The comments, the section 902 request, information obtained from a section 914 proceeding, if any, and information obtained in a hearing held pursuant to subsection (e)(ii) of this section, if any, will be evaluated by the Commissioner.
(g) The Commissioner will forward the information to the Secretary, together with an evaluation and a draft recommendation.
(h) The Secretary will forward a recommendation regarding the issuance of a section 902 proclamation to the President.

Section 150.5 Duration of Proclamation.

(a) The recommendation for the issuance of a proclamation may include terms and conditions regarding the duration of the proclamation.
(b) Requests for the revision, suspension or revocation of a proclamation may be submitted by any interested party. Requests for revision, suspension or revocation of a proclamation will be considered in substantially the same manner as requests for the issuance of a section 902 proclamation.

Section 150.6 Mailing Address.

Requests and all correspondence submitted pursuant to these guidelines shall be addressed to:

Commissioner of Patents and Trademarks
Box 4
Washington, D.C. 20231

June 23, 1988

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[1092 OG 52]

(156) **Errors in Notice of Allowance**

The purpose of this notice is to clarify existing Office practice with respect to providing a new issue fee due

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date. Sometimes errors appear on the Notice of Allowance, such as an incorrect number of claims, the misspelling of an inventor's name, an incorrect inventorship, or an incorrect title. A duplicate Notice of Allowance correcting the errors may be requested from the Group that mailed the Notice. However, a new issue fee due date will not be provided if the information on the original Notice of Allowance is sufficient to allow a reasonable practitioner to timely file a proper issue fee in the correct application. Specifically, the mere filing of a request for a corrected or duplicate Notice of Allowance will not act to stay the period for paying the issue fee.

JAMES E. DENNY,
June 12, 1985. *Deputy Assistant Commissioner for Patents.*

[1056 OG 35]

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(157) **Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120**

The Patent and Trademark Office has established initial guidelines for patent examiners to use in implementing the changes made in 35 U.S.C. 103, 116, and 120 by Public Law 98–622, the Patent Law Amendments Act of 1984. As a service to the public, those guidelines are published below. A copy of Public Law 98–622 is also being published concurrently herewith. Some of the procedural aspects of matters contained in the guidelines will be incorporated into Title 37 of the Code of Federal Regulation through the rule-making process.

RENE D. TEGTMEYER,
Dec. 11, 1984. *Assistant Commissioner for Patents.*

Initial Guidelines As To Implementation Of 35 U.S.C. 103

Public Law 98–622 added a new sentence to 35 U.S.C. 103 which reads as follows:

"Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person."

The significant features resulting from this amendment to §103 are the following:

(1) The only prior art which is disqualified is prior art under §102(f) or (g) where the subject matter, i.e., the prior art, and the invention "were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." (Person includes organization.)
(2) If the subject matter (prior art) qualifies as prior art under any other section, e.g., §102(a), (b), or (e), it is still prior art and can be used.
(3) Amendment applies only to subject matter which qualifies as prior art under §103; it does not affect subject matter which qualifies as prior art under §102, i.e., anticipatory prior art.
(4) Term "another person" means any inventive entity other than the inventor and includes the inventor and any other person.
(5) Term "developed" is to be read broadly and is not limited to any particular manner of development.
(6) Subject matter derived from another under §102(f) is prior art under §103 unless the derived subject matter and the claimed invention are owned by, or subject to an obligation of assignment to, the same person at the time the claimed invention was made.
(7) The disclosure of an earlier filed patent application which issues as a patent continues to be prior art under §102(e) against a later invented and filed application of another inventor even though the patent and the later application are owned by, or subject to an obligation of assignment to, the same person.
(8) Commonly owned applications, i.e., applications owned by the same person, may be refiled as a single application to avoid one or more of them becoming prior art against another under §§102(e) and 103.
(9) The phrase "owned by the same person" requires that the same person, persons, or organization own 100% of the subject matter (prior art) and 100% of the claimed invention.
(10) The phrase "subject to an obligation of assignment to the same person" requires that a legal obligation of assignment exist and not merely a moral or unenforceable obligation.
(11) As long as the same person owns the subject matter and the invention at the time the claimed invention was made, a license to another may be made without the subject matter becoming prior art.
(12) Amended §103 requires actual ownership (or obligation to assign) be in existence at the time the claimed invention is made for the subject matter to be disqualified as prior art; acquiring one or the other later is not sufficient.
(13) Burden of establishing that subject matter is disqualified as prior art is placed on patent applicant and not on the patent examiner once the examiner establishes a prima facie case of obviousness based on the prior art.
(14) Double patenting rejections may now be made in applications based on commonly owned patents of different inventive entities and double patenting rejections of the obviousness type can be overcome by terminal disclaimers.
(15) A double patenting rejection may also be made in a later filed application where the application/patent on which the rejection is based and the later filed application are not commonly owned as long as one of the inventors is common between the later filed application and the application/patent; such a rejection cannot be overcome by terminal disclaimer in view of the lack of common ownership.
(16) The Commissioner's Notice of January 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967) is withdrawn to the extent that it does not authorize a double patenting rejection where different inventive entities are present.
(17) Inventors of subject matter not commonly owned at the time of the invention may file as joint inventors in a single application. However, the claims in such an application are not protected from a §102(f) /103 or §102(g)/103 rejection.

Implementation Steps As To Amended 35 U.S.C. 103

A. *Applications To Be Considered*
(1) Amended §103 does not "affect any final decision made by the court or the Patent and Trademark Office before the date of enactment [November 8, 1984]. . . with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired."
(2) The amendment of §103 will *not* be considered to apply to:

(a) Any application which has been abandoned prior to November 8, 1984, unless such application is revived pursuant to the provisions of 37 CFR 1.137(a) or (b) and is pending on or after November 8, 1984;
(b) Any application in which all the claims have been allowed and in which prosecution has been closed prior to November 8, 1984, e.g., by an *Ex parte Quayle* action, a Notice of allowability, or a Notice of Allowance. However, a continuing application would obtain the benefit of amended §103 if filed prior to the abandonment or issuance of the application; and
(c) Any application in which an appeal has been filed and is no longer pending or in which the time for filing an appeal has expired prior to November 8, 1984. However if the application contains allowed claims on or after November 8, 1984, the allowed claims are subject to amended §103.

(3) The amendment to §103 will be applied to any application (a) which is before the examiner for action and in which all the claims have not been allowed and the prosecution closed or (b) in which prosecution has been closed and is being reopened to reject the allowed claims on grounds other than §102(f) /103 or §102(g)/103.
(4) Applications not before the examiner for action, e.g., an application in which a response from applicant is required, will *not* be considered as to the applicability of amended §103 unless applicant takes timely action which properly requires an action on the merits by the examiner.

B. *Conflicting Co-pending Applications Of Different Inventive Entities With No Indication That They Are Commonly Owned*
(1) If the application files do not establish that they are owned by, or subject to an obligation of assignment to, the same person, the examiner will:

(a) assume that the applications are not commonly owned;
(b) examine the applications on all grounds other than any conflict between the applications;
(c) consider the applicability of §102(f) /103 or §102(g)/103 if one application refers to the other (if there is no cross-reference between the applications it would be inappropriate for the examiner to refer to one application in the other in view of 35 U.S.C. 122);
(d) consider interference if appropriate;
(e) suspend the later filed application if it is otherwise allowable until the earlier filed application is abandoned or issues as a patent and then reject the later filed application under §102(e)/103, if appropriate; and
(f) proceed under item C below if at any time during the examination a statement is made that the applications are commonly owned.

C. *Conflicting Co-pending Applications Of Different Inventive Entities Which Are Commonly Owned*
(1) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (a) the application files refer to assignments recorded in the PTO in accordance with 37 CFR 1.331 which convey the entire rights in the applications to the same person(s) or organization(s); or (b) copies of unrecorded assignments which convey the entire rights in the applications to the same person(s) or organization(s) are filed in each of the applications; or (c) an affidavit or declaration by the common owner is filed which states that there is common ownership and explains why the affiant believes there is common ownership; or (d) other evidence is submitted which establishes common ownership of the applications in question, e.g., a court decision determining the owner. In circumstances where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.
(2) If the application files establish that they are owned by, or subject to an obligation of assignment to, the same person, the examiner will:

(a) examine the applications as to all grounds except §§102(f) and (g) as they apply through §103 if the application files establish common ownership at the time the later invention was made;
(b) examine the applications for double patenting, including double patenting of the obviousness type, and make a provisional rejection, if appropriate, (see *In re Mott,* 190 USPQ 536 (CCPA 1976);
(c) examine the later filed application under §102(e) as it applies through §103 and make a provisional rejection under §102(e)/103 in the later filed application, if appropriate;
(d) permit applicant of the later filed application to file an affidavit under 37 CFR 1.131 to overcome the provisional or actual §102(e)/103 rejection, if appropriate, and a terminal disclaimer to overcome the provisional or actual rejection on double patenting of the obviousness type.

Initial Guidelines As To Implementation Of 35 U.S.C. 116

Public Law 98–622 amended 35 U.S.C. 116 to clarify that each inventor need not "sign the application" in addition to making the required oath and to add a new sentence which reads as follows:

"Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent."

The significant features resulting from these amendments to §116 are the following:

(1) The joint inventors do not have to separately "sign the application," but only need apply for the patent jointly and make the required oath by signing the same; this is a clarification, but not a change in current practice.
(2) Inventors may apply for a patent jointly even though "they did not work together or at the same time," thereby clarifying (a) that it is not necessary that the inventors physically work together on a project, and (b) that one inventor may "take a step at one time, the other an approach at different times." (*Monsanto Co.* v. *Kamp,* 154 USPQ 259 (D.D.C. 1967)).
(3) Inventors may apply for a patent jointly even though "each did not make the same type or amount of contribution," thereby clarifying the "fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another does not detract from the fact that the invention is joint, if each makes some original contribution, though partial, to the final solution of the problem." *Monsanto,* supra.
(4) Inventors may apply for a patent jointly even though "each did not make a contribution to the subject matter of every claim of the patent."
(5) Inventors may apply for a patent jointly as long as each inventor made a contribution, i.e., was an inventor or joint inventor, of the subject matter of at least one claim of the patent; there is no requirement that all the inventors be joint inventors of the subject matter of any one claim.
(6) If an application by joint inventors includes more than one independent and distinct invention, restriction may be required with the possible result of a necessity to change the inventorship named in the

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application if the elected invention was not the invention of all the originally named inventors.

(7) The amendment to §116 increases the likelihood that different claims of an application or patent may have different dates of invention; when necessary the Office or court may inquire of the patent applicant or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Implementation Steps As To Amended 35 U.S.C. 116

(1) See items (1) to (4) above under "Applications To Be Considered" for applications to be considered under amended §116.
(2) Pending applications will be permitted to be amended by complying with 37 CFR 1.48 to add claims to inventions by inventors not named when the application was filed as long as such inventions were disclosed in the application as filed since 37 CFR 1.48 permits correction of inventorship where the "correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors".
(3) Under amended §116 an examiner will reject claims under §102(f) only in circumstances where a named inventor is not the inventor of at least one claim in the application; no rejection under §102(f) is appropriate if a named inventor made a contribution to the invention defined in any claim of the application.
(4) Under amended §116 considered in conjunction with amended §103, a rejection may be appropriate under §102(f)/103 where the subject matter, i.e., prior art, and the claimed invention were not owned by, or subject to an obligation of assignment to, the same person at the time the invention was made.
(5) Applicants are responsible for correcting, and will be required to correct, the inventorship in compliance with 37 CFR 1.48 when the application is amended to change the claims so that one (or more) of the named inventors is no longer an inventor of the subject matter of a claim remaining in the application.
(6) In requiring restriction in an application filed by joint inventors the examiner will remind applicants of the necessity to correct the inventorship pursuant to 37 CFR 1.48 if an invention is elected and the claims to the invention of one or more inventors are cancelled.
(7) The examiner will not inquire of the patent applicant concerning the inventors and the invention dates for the subject matter of the various claims until it becomes necessary to do so in order to properly examine the application.
(8) If an application is filed with joint inventors, the examiner will assume that the subject matter of the various claims was commonly owned at the time the inventions covered therein were made, unless there is evidence to the contrary. If inventors of subject matter, not commonly owned at the time of the later invention, file a joint application, applicants have an obligation pursuant to 37 CFR 1.56 to point out the inventor and invention dates of each claim and the lack of common ownership at the time the later invention was made in order that the examiner may consider the applicability of §102(f)/103 or §102(g)/103. The examiner will assume, unless there is evidence to the contrary, that applicants are complying with their duty of disclosure.

Initial Guidelines As To Implementation Of 35 U.S.C. 120

Public Law 98–622 amended 35 U.S.C. 120 by striking out "by the same inventor" and inserting in its place "which is filed by an inventor or inventors named in the previously filed application."

The amended first paragraph of 35 U.S.C. 120 (the bracketed portion was deleted and the underlined portion added) reads as follows:

§120. Benefit of earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, [by the same inventor] *which is filed by an inventor or inventors named in the previously filed application* shall have the same effect, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application."

The significant features of these amendments to §120 are the following:

(1) A later filed application by an inventor or inventors of a previously filed co-pending application may claim the benefit of the previously filed co-pending application under §120 even though the later filed application does not name all of the same inventors as the previously filed application.
(2) In order for the later filed application to be entitled to claim the benefit of the earlier filed co-pending application under §120 the earlier filed co-pending application must
   (a) have at least one inventor in common with the later filed application; and
   (b) disclose the common inventor's invention in the manner provided by the first paragraph of 35 U.S.C. 112, i.e., fully disclose and support at least one of the common inventor's claims found in the later application.
(3) When necessary the Patent and Trademark Office or a court may inquire of the patent applicant or owner as to who invented, and the date of invention of, the subject matter being claimed in any claims in the later filed application.
(4) Double patenting rejections may be applicable, whether or not the applications and patents are commonly owned as long as the applications/patent(s) have at least one inventor in common.
(5) If the applications and patents are commonly owned, the rejection of the applications on the grounds of double patenting can be overcome by an appropriate terminal disclaimer as long as the identical invention is not being claimed. See *In re Robeson*, 141 USPQ 485 (CCPA 1964), and *In re Kaye*, 141 USPQ 829 (CCPA 1964).
(6) If the applications and patents are not commonly owned, the double patenting rejection is entered in the later filed application and cannot be overcome by a terminal disclaimer since the ownership of the subject matter being claimed belongs to someone other than the owner of the later application.

Implementation Steps As To Amended 35 U.S.C. 120

(1) See items (1) to (4) above under "Applications To Be Considered" for applications to be considered under amended §120.
(2) The examiner will examine any earlier filed co-pending application to which priority is claimed under §120 to determine if
   (a) the earlier filed co-pending application has at least one inventor in common with the later filed application;
   (b) the other requirements for claiming benefit under §120 are met; and
   (c) a rejection on the grounds of double patenting is proper.
(3) As long as the formal requirements for claiming benefit under §120 are met, the examiner will permit the claim to be made without examining the earlier filed co-pending application for disclosure and support of at least one claim of the later filed application under the first paragraph of §112 unless it becomes necessary to do so, e.g. because of an interference or an intervening reference.
(4) The examiner will not inquire of the patent applicant as to who invented, and the date of invention of, the subject matter being claimed in any claims in the later filed application until it becomes necessary to do so in order to properly examine the application.
(5) The examiner will examine the earlier and later filed applications and make actual or provisional rejections for double patenting where appropriate, whether or not the applications are commonly owned.

Example 1 - Single Application - Plural Inventors

Inventors A and B, both employees of Company E with obligation to assign all their inventions to E develop inventions X and Y respectively. An application for patent is properly filed listing A and B as joint inventors and with claims to both X and Y as now possible under §116 as amended by Public Law 98–622.

Situation 1.
The claims to X and Y are not patentably distinct.

Examiner's Action:
If otherwise patentable over the prior art—allows application.

Situation 2.
The claims to X and Y are patentably distinct.

Examiner's Action:
Require restriction and election of claims to either X or Y. The applicant, after election, must correct the inventorship of the application to list only the inventor of the elected invention; for example, inventor A if claims to invention X were elected. A divisional application with B as inventor and claims to Y may claim benefit of the originally filed application under 35 U.S.C. 120 as amended by Public Law 98–622.

Situation 3.
The application contains a Markush-type claim to X and Y and separate species claims to X and Y.

Examiner's Action:
(a) Examine the application to determine if the inventions X and Y are restrictable. If so, the claims to elected invention X (assume X is elected by applicants) and the X portion of the Markush claim to X and Y are examined.
   (i) if the claim to X is allowable, the entire Markush claim and the species claim to Y must also be examined.
   (ii) if the claim to X is *not* allowable, no further action on species claim Y or the Y portion of the Markush claim is required.

The inventorship of the application at the time of allowance must be corrected, if necessary, to correspond to the inventions covered by the claims allowed.

Example 2 - Multiple applications - plural inventions

Inventors A and B, both employees of Company E, with obligation to assign all their inventions to E, develop inventions X and Y with Y being developed by B after knowledge of A's development of X. A files application on X before B's development of Y and B later files application. Both applications establish they are owned by Company E.

Situation 1.
The claims to X and Y are not patentably distinct.

Examiner's Action:
(a) Examine the applications as to all grounds except §102(f) and (g) as they apply through §103;
(b) Make a provisional rejection of the later filed application on the grounds of double patenting of the obviousness type, if appropriate. If a terminal disclaimer is filed in accordance with §1.321(b), the provisional double patenting rejection of the obviousness type will be overcome;
(c) Examine the later filed application under §102(e)/103 and make a provisional rejection based on §102(e)/103, if appropriate. An affidavit under §1.131 can be filed to overcome the rejection based on §102(e)/103.

Situation 2.
After receiving the examiner's action in situation 1, A and B filed a continuation-in-part application with inventor C and claim A's invention, B's invention and an improvement they jointly developed with C. A and B abandon their prior applications.

Examiner's Action:
Examine the application in the normal manner; no double patenting and §102(e)/103 problems now exist.

Example 3 - Two copending applications with no indication in the record of common ownership

Inventor A files an application with claims to invention X. Another copending application is filed by inventor B claiming invention Y. There is no indication of common ownership.

Situation 1.
The claims in the two applications are directed to patentably distinct inventions.

Examiner's Action:
If the claims are otherwise allowable, the applications are both allowed.

Situation 2.
The claims in the two applications are *not* patentably distinct.

Examiner's Action:
The applications are prosecuted until one application is allowable. If the time difference between the two applications is too large to declare an interference, action on the later filed application is suspended until the earlier filed application issues as a patent. At that time the later filed application is rejected over the earlier filed application under §102(e)/103.

If the filing dates of the applications are sufficiently close to declare an interference, claims for an interference should be suggested. If the applications are commonly owned, the common owner must make the ownership known. When such common ownership is made known, a provisional double patenting rejection should be made in the later filed application. If the double patenting rejection is of the obviousness type, a terminal disclaimer under 37 CFR 1.321(b) may be filed. The later filed application should be examined under §102(e)/103 and a provisional rejection based on §102(e)/103 should be made in the later filed application, if appropriate. An affidavit under §1.131 can be filed to overcome a rejection based on §102(e)/103.

Example 4 - Claims in single application by different inventors.

An application for patent is filed in the Patent and Trademark Office in which the owner E sets forth the following information.

"The subject matter of claim 1 was invented by inventor A. The subject matter of claim 2 was invented by inventor B. Inventor B knew of the invention of inventor A at the time he made his invention. Both A and B made their inventions while working for owner E with a duty to assign". The inventions are different but not patentably distinct.

Examiner's Action:
If the claims are patentable over the prior art, the application should be allowed.

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Public Law 98–622
Signed November 8, 1984

Ninety-eighth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Monday, the twenty-third day of January, one thousand nine hundred and eighty-four

An Act

To amend title 35, United States Code, to increase the effectiveness of the patent laws, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Patent Law Amendments Act of 1984".

TITLE I—PATENT IMPROVEMENT PROVISIONS

USE OF PATENTED INVENTIONS OUTSIDE THE UNITED STATES

SEC. 101.(a) Section 271 of title 35, United States Code, is amended by adding at the end thereof the following new subsection:

"(f)(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

"(2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer."

STATUTORY INVENTION REGISTRATION

SEC. 102.(a) Chapter 14 of title 35, United States Code, is amended by adding at the end thereof the following new section:

"§157. Statutory invention registration

"(a) Notwithstanding any other provision of this title, the Commissioner is authorized to publish a statutory invention registration containing the specification and drawings of a regularly filed application for a patent without examination if the applicant:

"(1) meets the requirements of section 112 of this title;

"(2) has complied with the requirements for printing, as set forth in regulations of the Commissioner;

"(3) waives the right to receive a patent on the invention within such period as may be prescribed by the Commissioner; and

"(4) pays application, publication, and other processing fees established by the Commissioner.

If an interference is declared with respect to such an application, a statutory invention registration may not be published unless the issue of priority of invention is finally determined in favor of the applicant.

"(b) The waiver under subsection (a)(3) of this section by an applicant shall take effect upon publication of the statutory invention registration.

"(c) A statutory invention registration published pursuant to this section shall have all of the attributes specified for patents in this title except those specified in section 183 and sections 271 through 289 of this title. A statutory invention registration shall not have any of the attributes specified for patents in any other provision of law other than this title. A statutory invention registration published pursuant to this section shall give appropriate notice to the public, pursuant to regulations which the Commissioner shall issue, of the preceding provisions of this subsection. The invention with respect to which a statutory invention certificate is published is not a patented invention for purposes of section 292 of this title.

"(d) The Secretary of Commerce shall report to the Congress annually on the use of statutory invention registrations. Such report shall include an assessment of the degree to which agencies of the Federal Government are making use of the statutory invention registration system, the degree to which it aids the management of federally developed technology, and an assessment of the cost savings to the Federal Government of the use of such procedures.".

(b) The table of sections at the beginning of chapter 14 of title 35, United States Code, is amended by adding at the end thereof the following:

"157. Statutory invention registration.".

(c) The amendments made by this section shall take effect six months after the date of the enactment of this Act.

PRIOR ART

SEC. 103. Section 103 of title 35, United States Code, is amended by adding at the end thereof the following:

"Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person."

JOINT INVENTORS

SEC. 104. (a) Section 116 of title 35, United States Code, is amended by amending the first paragraph to read as follows:

"When an invention is made by two or more persons jointly, they shall apply for patent jointly and each make the required oath, except as otherwise provided in this title. Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.".

(b) Section 120 of title 35, United States Code, is amended by striking out "by the same inventor" and inserting in lieu thereof "which is filed by an inventor or inventors named in the previously filed application".

ARBITRATION OF INTERFERENCES

SEC. 105. Section 135 of title 35, United States Code, is amended by adding at the end thereof the following new subsection:

"(d) Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.".

EFFECTIVE DATE

SEC. 106. (a) Subject to subsections (b), (c), (d), and (e) of this section, the amendments made by this Act shall apply to all United States patents granted before, on, or after the date of enactment of this Act, and to all applications for United States patents pending on or filed after the date of enactment.

(b) The amendments made by this Act shall not affect any final decision made by the court or the Patent and Trademark Office before the date of enactment of this Act with respect to a patent or application for patent, if no appeal from such decision is pending and the time for filing an appeal has expired.

(c) Section 271(f) of title 35, United States Code, added by section 101 of this Act shall apply only to the supplying, or causing to be supplied, of any component or components of a patented invention after the date of enactment of this Act.

(d) No United States patent granted before the date of enactment of this Act shall abridge or affect the right of any person or his successors in business who made, purchased, or used prior to such effective date anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used, if the patent claims were invalid or otherwise unenforceable on a ground obviated by section 103 or 104 of this Act and the person made, purchased, or used the specific thing in reasonable reliance on such invalidity or unenforceability. If a person reasonably relied on such invalidity or unenforceability, the court before which such matter is in question may provide for the continued manufacture, use, or sale of the thing made, purchased, or used as specified, or for the manufacture, use, or sale of which substantial preparation was made before the date of enactment of this Act, and it may also provide for the continued practice of any process practiced, or for the practice of which substantial preparation was made, prior to the date of enactment, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the date of enactment.

(e) The amendments made by this Act shall not affect the right of any party in any case pending in court on the date of enactment to have their rights determined on the basis of the substantive law in effect prior to the date of enactment.

TITLE II—PATENT AND TRADEMARK OFFICE PROCEDURES

BOARD OF PATENT APPEALS AND INTERFERENCES

SEC. 201. (a) Section 7 of title 35, United States Code, is amended to read as follows:

"§7. Board of Patent Appeals and Interferences

"(a) The examiners-in-chief shall be persons of competent legal knowledge and scientific ability, who shall be appointed to the competitive service. The Commissioner, the Deputy Commissioner, the Assistant Commissioners, and the examiners-in-chief shall constitute the Board of Patent Appeals and Interferences.

"(b) The Board of Patent Appeals and Interferences shall, on written appeal of an applicant, review adverse decisions of examiners upon applications for patents and shall determine priority and patentability of invention in interferences declared under section 135(a) of this title. Each appeal and interference shall be heard by at least three members of the Board of Patent Appeals and Interferences, who shall be designated by the Commissioner. Only the Board of Patent Appeals and Interferences has the authority to grant hearings.

"(c) Whenever the Commissioner considers it necessary, in order to keep current the work of the Board of Patent Apeals and Interferences, the Commissioner may designate any patent examiner of the primary examiner grade or higher, having the requisite ability, to serve as examiner-in-chief for periods not exceeding six months each. An examiner so designated shall be qualified to act as a member of the Board of Patent Appeals and Interferences. Not more than one of the members of the Board of Patent Appeals and Interferences hearing an appeal or determining an interference may be an examiner so designated. The Secretary of Commerce is authorized to fix the pay of each designated examiner-in-chief in the Patent and Trademark Office at not to exceed the maximum rate of basic pay payable for grade GS–16 of the General Schedule under section 5332 of title 5. The rate of basic pay of each individual designated examiner-in-chief shall be adjusted, at the close of the period for which that individual was designated to act as examiner-in-chief, to the rate of basic pay which that individual would have been receiving at the close of such period if such designation had not been made."

(b) The item relating to section 7 in the table of sections at the beginning of chapter 1 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

INTERFERENCES

SEC. 202. Section 135(a) of title 35, United States Code, is amended to read as follows:

"(a) Whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any pending application, or with any unexpired patent, an interference may be declared and the Commissioner shall give notice of such declaration to the applicants, or applicant and patentee, as the case may be. The Board of Patent Appeals and Interferences shall determine questions of priority of the inventions and may determine questions of patentability. Any final decision, if adverse to the claim of an applicant, shall constitute the final refusal by the Patent and Trademark Office of the claims involved, and the Commissioner may issue a patent to the applicant who is adjudged the prior inventor. A final judgment adverse to a patentee from which no appeal or other review has been or can be taken or had shall constitute cancellation of the claims involved in the patent, and notice of such cancellation shall be endorsed on copies of the patent distributed after such cancellation by the Patent and Trademark Office.".

APPEALS AND CIVIL ACTIONS

SEC. 203. (a) Section 141 of title 35, United States Code, is amended—

(1) in the first sentence—

(A) by striking out "of the Board of Patent Appeals may appeal" and inserting in lieu thereof "in an appeal to the Board of Patent Appeals and Interferences under section 134 of this title may appeal the decision"; and

(B) by striking out ", thereby waiving his right" and inserting in lieu thereof ". By filing such an appeal the applicant waives his or her right";

(2) in the second sentence—

(A) by striking out "board of patent interferences on the question of priority may appeal" and inserting in lieu thereof "Board of Patent Appeals

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and Interferences on the interference may appeal the decision";

(B) by striking out "according to" and inserting in lieu thereof " in accordance with"; and

(C) by striking out "he" and inserting in lieu thereof "the party"; and

(3) by amending the last sentence to read as follows: "If the appellant does not, within thirty days after the filing of such notice by the adverse party, file a civil action under section 146, the decision appealed from shall govern the further proceedings in the case."

(b) Section 145 of title 35, United States Code, is amended—

(1) in the first sentence by striking out "Appeals may" and inserting in lieu thereof "Patent Appeals and Interferences in an appeal under section 134 of this title may,"; and

(2) in the second sentence by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(c) Section 146 of title 35, United States Code, is amended by striking out "board of patent intereferences on the question of priority" and inserting in lieu thereof "Board of Patent Appeals and Interferences on the interference".

TECHNICAL AND CONFORMING AMENDMENTS

SEC. 204. (a) Section 41(a)(6) of title 35, United States Code, is amended—

(1) by striking out "Appeals" each place it appears and inserting in lieu thereof "Patent Appeals and Interferences"; and

(2) by inserting "in the appeal" after "oral hearing".

(b)(1) Section 134 of title 35, United States Code, is amended—

(A) in the section caption by striking out "APPEALS" and inserting in lieu thereof "PATENT APPEALS AND INTERFERENCES"; and

(B) by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(2) The item relating to section 134 in the table of sections at the beginning of chapter 12 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

(c) Section 305 of title 35, United States Code, is amended by striking out "Appeals" and inserting in lieu thereof "Patent Appeals and Interferences".

AMENDMENTS TO OTHER PROVISIONS OF LAW

SEC. 205. (a) Section 1295(a)(4)(A) of title 28, United States code, is amended by striking out "Appeals or the Board of Patent" and inserting in lieu thereof "Patent Appeals and".

(b) Section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) is amended in the third paragraph—

(1) by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences"; and

(2) by striking out "the Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

(c)(1) Section 305(d) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457(d)) is amended—

(A) by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences"; and

(B) by striking out "the Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

(2) Section 305(e) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457(e)) is amended by striking out "a Board of Patent Interferences" and inserting in lieu thereof "the Board of Patent Appeals and Interferences".

SAVINGS PROVISION

SEC. 206. Any individual who, on the effective date of this title, is an examiner-in-chief of the Board of Patent Appeals of the Patent and Trademark Office or an examiner of interferences of the Board of Patent Interferences of such office shall be entitled to continue in office as a member of the Board of Patent Appeals and Interferences of the Patent and Trademark Office as of such effective date.

EFFECTIVE DATE

SEC. 207. Section 206 of this Act and the amendments made by this title shall take effect three months after the date of the enactment of this Act.

TITLE III—NATIONAL COMMISSION ON INNOVATION AND PRODUCTIVITY

ESTABLISHMENT

SEC. 301. There is hereby established a National Commission on Innovation and Productivity (hereinafter in this title referred to as the "Commission").

MEMBERSHIP OF COMMISSION

SEC. 302. (a) The Commission shall be composed of —

(1) three Members of the Senate appointed by the President of the Senate;

(2) three Members of the House of Representatives apointed by the Speaker of the House of Representatives; and

(3) three members appointed by the President of the United States, one of whom the President shall designate as Chairman.

Of the members appointed by the President, one member should be an appropriate officer or employee of the United States, one member should be an employer who employs inventors, and one member should be an employed inventor.

(b) At no time shall more than two of the members appointed under paragraph (1), (2), or (3) of subsection (a) be persons who are members of the same political party.

(c) Any vacancy in the Commission shall not affect its powers but shall be filled in the same manner in which the original appointment was made, and subject to the limimtation set forth in subsection (b) with respect to the original appointment.

(d) Six members of the Commission shall constitute a quorum, but a lesser number may conduct hearings.

DUTIES OF THE COMMISSION

SEC. 303. The Commission shall make a full and complete review and study of the level of innovation and producitivity of employed inventors. Such study shall include an analysis of the various methods available to inspire or stimulate individual and corporate innovation and productivity, including an assessment of the techniques used in other countries to achieve this objective. Such study may include an assessment of those aspects of other areas of intellectual property law that inspire or stimulate such innovation and productivity. The Commission shall make recomendations for such revisions of the laws of the United States, including the repeal of unnecessary or undesirable statutes, and such other changes as the Commission considers will better foster innovation and productivity.

COMPENSATION OF MEMBERS OF THE COMMISSION

SEC. 304. (a) A member of the Commission who is a Member of Congress or a full-time officer or employee of the United States shall receive no additional compensation by reason of his or her service on the Commission.

(b) Subject to amounts provided in advance in appropriations Acts, a member of the Commission from private life shall receive the daily equivalent of the annual rate of basic pay payable for level III of the Executive Schedule for each day (including traveltime) during which such member is engaged in the actual performance of duties vested in the Commission, plus reimbursement for travel, subsistence, and other necessary expenses incurred in the performance of such duties, in accordance with subchapter I of chapter 57 of title 5, United States Code.

DIRECTOR AND STAFF

SEC. 305. (a) The Commission shall have a Director who shall be appointed by the Commission and who shall be paid at a rate not to exceed the rate of basic pay payable for level IV of the Executive Schedule. The Director, subject to the direction of the Commission, shall supervise the activities of persons emloyed by the Commission and the preparation of the reports of the Commission and shall perform such other duties as may be assigned to the Director by the Commission.

(b) The Commission may appoint and fix the pay of such additional personnel as it considers appropriate.

(c) The staff of the Commission may be appointed without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and may be paid without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, except that no individual so appointed may receive pay in excess of the maximum annual rate of basic pay payable for GS–16 of the General Schedule.

(d) The Chairman of the Commission may procure temporary and intermittent services under section 3109(b) of title 5, United States Code.

GOVERNMENT AGENCY COOPERATION

SEC. 306. The Commission is authorized to request from any department, agency, or independent instrumentality of the Government any information and assistance it considers necessary to carry out its functions under this title. Each such department, agency, and instrumentality is authorized to cooperate with the Commission and, to the extent permitted by law, to furnish such information and assistance to the Commission.

REPORT OF THE COMMISSION; TERMINATION

SEC. 307. The Commission shall submit interim reports on its activities to the President and the Congress at such times as the Commission considers appropriate, except that at least one such report shall be so submitted within one year after the date of the enactment of this Act. The Commission shall submit its final report on its activities to the President and the Congress within two years after such date of enactment. The Commission shall cease to exist sixty days after the date of the submission of its final report.

ADMINISTRATIVE SERVICES

SEC. 308. The General Services Administration shall provide administrative services for the Commission on a reimbursable basis.

AUTHORIZATION OF APPROPRIATIONS

SEC. 309. There is authorized to be appropriated $250,000 to carry out this title.

EFFECTIVE DATE

SEC. 310. This title shall take effect on January 21, 1985.

TITLE IV—MISCELLANEOUS PROVISIONS

INTERNATIONAL STAGE

SEC. 401. (a) Section 361(d) of title 35, United States Code, is amended in the first sentence by inserting "or within one month after the date of such filing" after "application".

(b) Section 366 of title 35, United States Code, is amended—

(1) in the first sentence—

(A) by inserting "after the date of withdrawal," after "effect"; and

(B) by inserting before the period the following: ", unless a claim for the benefit of a prior filing date under section 365(c) of this part was made in a national application, or an international application designating the United States, filed before the date of such withdrawal"; and

(2) in the second sentence by inserting "withdrawn" after "such".

NATIONAL STAGE

SEC. 402. (a) Section 371(a) of title 35, United States Code, is amended—

(1) by striking out "is" and inserting in lieu thereof "may be"; and

(2) by striking out", except those filed in the Patent Office".

(b) Section 371(b) of title 35, United States Code, is amended to read as follows:

"(b) Subject to subsection (f) of this section, the national stage shall commence with the expiration of the applicable time limit under article 22(1) or (2) of the treaty."

(c) Section 371(c)(2) of title 35, United States Code, is amended—

(1) by striking out "received from" and inserting in lieu thereof "communicated by"; and

(2) by striking out "verified" before "translation".

(d) Section 371(d) of title 35, United States Code, is amended to read as follows:

"(d) The requirements with respect to the national fee referred to in subsection (c)(1), the translation referred to in subsection (c)(2), and the oath or declaration referred to in subsection (c)(4) of this section shall be complied with by the date of the commencement of the national stage or by such later time as may be fixed by the Commissioner. The copy of the international application referred to in subsection (c)(2) shall be submitted by the date of the commencement of the national stage. Failure to comply with these requirements shall be regarded as abandonment of the application by the parties thereof, unless it be shown to the satisfaction of the Commissioner that such failure to comply was unavoidable. The payment of a surcharge may be required as a condition of accepting the national fee referred to in subsection (c)(1) or the oath or declaration referred to in subsection (c)(4) of this section if these requirements are not met by the date of the commencement of the national stage. The requirements of subsection (c)(3) of this section shall be complied with by the date of the commencement of the national stage, and failure to do so shall be regarded as a cancellation of the amendments to the claims in the international application made under article 19 of the treaty.".

(e) Section 372(b) of title 35, United States Code, is amended—

(1) by striking out the period at the end of paragraph (2) and inserting in lieu thereof "; and"; and

(2) by adding at the end thereof the following:

"(3) the Commissioner may require a verification of the translation of the international application or any other document pertaining to the application if the application or other document was filed in a language other than English.".

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(f) Section 372 of title 35, United States Code, is amended by striking out subsection (c).

(g) Section 376(a) of title 35, United States Code, is amended by striking out paragraph (5) and redesignating paragraph (6) as paragraph (5).

TECHNICAL AMENDMENTS

SEC. 403. (a) Title 35, United States Code, is amended by striking out "Patent Office" each place it appears and inserting in lieu thereof "Patent and Trademark Office".

(b) The table of parts at the beginning of title 35, United States Code, is amended by adding at the end thereof the following:

"IV. Patent Cooperation Treaty . . . . . 351".

PATENT FEES

SEC. 404. (a) Notwithstanding section 41 of title 35, United States Code, as in effect before the enactment of Public Law 97–247 (96 Stat. 317), no fee shall be collected for maintaining a plant patent in force.

(b) Notwithstanding section 41(c) of title 35, United States Code, as in effect before the enactment of Public Law 97–247 (96 Stat. 317), the Commissioner of Patents and Trademarks may accept, after the six-month grace period referred to in such section 41(c), the payment of any maintenance fee due on any patent based on an application filed in the Patent and Trademark Office on or after December 12, 1980, and before August 27, 1982, to the same extent as in the case of patents based on applications filed in the Patent and Trademark Office on or after August 27, 1982.

TRADEMARK TRIAL AND APPEAL BOARD

SEC. 405. Section 3 of title 35, United States Code, is amended by adding at the end thereof the following:

"(e) The members of the Trademark Trial and Appeal Board of the Patent and Trademark Office shall each be paid at a rate not to exceed the maximum rate of basic pay payable for GS–16 of the General Schedule under section 5332 of title 5."

EFFECTIVE DATE

SEC. 406. (a) Section 404 of this Act and the amendments made by section 403 of this Act shall take effect on the date of the enactment of this Act.

(b) The amendments made by sections 401, 402, and of this Act shall take effect six months after the date of the enactment of this Act.

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(158)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket no. 41269–5018]

Final Rules for Miscellaneous Patent Provisions

Agency: Patent and Trademark Office, Commerce
Action: Notice of final rulemaking
Summary: The Patent and Trademark Office is amending the rules of practice in patent cases, Part I of Title 37, Code of Federal Regulations, to provide rules and procedures for the miscellaneous patent provisions enacted into law by Public Laws 98–620 and 98–622, on Nov. 8, 1984, in which statutory invention registrations, changes in appeals to the courts, prior art and joint inventor provisions and PCT international application filing and processing procedures were established or amended. The rulemaking provides specific rules and procedures for the new and amended provisions.

Effective Date: May 8, 1985
For Further Information Contact: R. Franklin Burnett by telephone at (703) 557–3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: This rule change is designed primarily to establish a set of rules and procedures for the various requirements of Public Laws 98–620 and 98–622 concerning appeals to the courts, statutory invention registrations, rejections based on prior art and double patenting, and filing of international applications under the Patent Cooperation Treaty. The proposed rules were published on Jan. 25, 1985 in Volume 50 of the Federal Register, pages 3712 through 3725. A public hearing was held on the proposed rule changes on Feb. 8, 1985.
Background Information: Most of the rule changes contained herein are necessary as a result of Public Laws 98–620 or 98–622, both of which were signed by President Reagan on Nov. 8, 1984. The following is a summary of the purposes of the various statutory amendments.

Amended 35 U.S.C. 103 - Unpublished knowledge of prior art.

Public Law 98–622 changes a complex body of case law which discourages communication among members of research teams working in corporations, universities or other organizations. It amended 35 U.S.C. section 103 by adding a new sentence which provides that subject matter developed by another which qualifies as "prior art" only under subsections 102(f) or (g) of 35 U.S.C. is not to be considered when determining whether an invention sought to be patented is obvious under 35 U.S.C. 103, provided the subject matter and the claimed invention were commonly owned at the time the invention was made.

"Prior art" is the existing body of technical information against which the patentability of an invention is judged. Publicly known information is always considered in determining whether an invention would have been obvious. However, under *In re Bass,* 474 F. 2d 1276, 177 USPQ 178 (CCPA 1973), and *In re Clemens,* 622 F.2d 1029, 206 USPQ 289 (CCPA 1980), an earlier invention which is not public could have been treated under 35 U.S.C. 102(g), and possibly under 102(f), as prior art with respect to a later invention made by another employee of the same organization.

New technology often is developed by using background scientific or technical information known within an organization but unknown to the public. Public Law 98–622, by disqualifying such background information from prior art, encourages communication among members of research teams, and leads to more public dissemination through patents of the results of team research.

The subject matter that is disqualified as prior art under 35 U.S.C. 103 is strictly limited to subject matter that qualifies as prior art only under 35 U.S.C. 102(f) or 102(g). If the subject matter qualifies as prior art under any other subsection—e.g., subsection 102(a), 102(b) or 102(e)—it will not be disqualified as prior art under the amendment to section 103.

The contents of a patent of the same or different ownership as an application, continues to be available as prior art against the application under section 103 by virtue of section 102(e) as of the application filing date of the patent. If subject matter becomes potential prior art under section 102 (e) because a patent application is filed on such subject matter before a commonly owned claimed invention is made the subject matter of a later application the two applications may be combined (under amended §§116 and 120) into a single application and such subject matter (with the abandonment of the two applications) would no longer constitute potential prior art under section 102(e) or under section 103 since it would not be "described in a patent granted on an application for patent by another."

It is important to recognize that the amendment to the law applies only to consideration of prior art for purposes of section 103. It does not apply to or affect subject matter which qualifies as prior art under section 102. A patent applicant urging that subject matter is disqualified has the burden of establishing that it was commonly owned at the time the claimed invention was made.

Public Law 98–622 was not intended to permit anyone other than the inventors to be named in a patent application or patent. Also, the amendment was not intended to enable appropriation of the invention of another.

The Patent and Trademark Office has withdrawn the Commissioner's Notice of Jan. 9, 1967, "Double Patenting", 834 O.G. 1615 (Jan. 31, 1967), to the extent that it does not authorize a double patenting rejection where different inventive entities are present. See the Commissioner's Notice of Dec. 11, 1984, "Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120", 1050 O.G. 316 (Jan. 8, 1985). The Office is reinstituting, in appropriate circumstances, the practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. See 130 Cong. Rec. H 10527, column 3 (daily ed. Oct. 1, 1984) (statement of Rep. Kastenmeier); *In re Rogers,* 394 F.2d 566, 567 n. 4, 157 USPQ 569, 570 n. 4 (CCPA 1964). This is in accordance with existing case law and prevents an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. See *In re Zickendraht,* 319 F.2d 225, 138 USPQ 22 (CCPA 1963) ("The doctrine is well established that claims in different applications need be more than merely different in form or content; and that *patentable distinction* must exist to entitle applicants to a second patent") and *In re Christensen,* 330 F.2d 652, 141 USPQ 295 (CCPA 1964) (". . . the correct procedure for double patenting cases is to analyze the claims to determine the inventions defined therein, and then decide whether such inventions, as claimed are *patentably distinct* and therefore qualified to be claimed in separate patents"). In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming, pursuant to the existing provisions of 37 CFR 1.321, the terminal portion of the term of the later patent and including in the disclaimer a provision that the patent shall be enforceable only for and during the period the patent is commonly owned with the application or patent which formed the basis for the rejection, thereby eliminating the problem of extending patent life.

Information learned from or transmitted to persons outside the organization is not disqualified as prior art.

The term "subject matter" will be construed broadly, in the same manner the term is construed in the remainder of §103. The term "another" as used in §103 means any inventive entity other than the inventor and would include the inventor and any other persons. The term "developed" is to be read broadly and is not limited by the manner in which the development occurred. The term "commonly owned" means wholly owned by the same person, persons, or organization at the time the invention was made.

Amended 35 U.S.C. 116 - Joint inventor filing

35 U.S.C. 116 as amended by Public Law 98–622 recognizes the realities of modern team research. A research project may include many inventions. Some inventions may have contributions made by individuals who are not involved in other, related inventions.

Amended 35 U.S.C. 116 allows inventors to apply for a patent jointly even though (i) they did not physically work together or at the same time, (ii) each did not make the same type or amount of contribution, or (iii) each did not make a contribution to the subject matter of every claim of the patent. Items (i) and (ii) adopt the rationale stated in decisions such as *Monsanto* v. *Kamp,* 269 F. Supp. 818, 154 USPQ 259 (D.D.C. 1967). Item (iii) adopts the rationale of cases such as *SAB Industries AB* v. *Bendix Corp.,* 199 USPQ 95 (E.D. Va. 1978).

Like other patent applications, jointly-filed applications are subject to the requirements of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application complying with 35 U.S.C. 120 would be entitled to the benefit of the earlier filing date of the original application.

It is possible that different claims of an application or patent may have different dates of invention even though the patent covers only one independent and distinct invention within the meaning of 35 U.S.C. 121. When necessary, the Patent and Trademark Office or a court may inquire of the patent application or owner concerning the inventors and the invention dates for the subject matter of the various claims.

Amended 35 U.S.C. 120 - Benefit of prior U.S. application

35 U.S.C. 120 was amended by Public Law 98–622 to provide that an application can obtain the benefit of the filing date of an earlier application when not all inventors named in the joint application are the same as those named in the earlier application. This amendment permits greater latitude in filing "divisional" applications. For example, if the previously filed application named inventors A and B as the inventors, a later application by either A or B could be filed during the pendency of the previously filed application and claim benefit of the previously filed application. In order for a claim to be entitled to the benefit of an earlier pending application, the subject matter of the claim of the later application would have to be disclosed in the earlier application.

Similarly, if inventor A filed an application on an invention and during the pendency of that application made an improvement on the subject matter of the application as a joint inventor with inventor B, the joint application filed on behalf of inventors A and B could claim the benefit of A's previously filed sole application to the extent that the later filed joint application contained claims directed solely to A's subject matter which was disclosed in the earlier filed pending application in the manner provided by the first paragraph of section 112 of title 35, U.S.C.

Likewise, an application filed by inventors A and C could claim the benefit of an earlier filed pending application of inventors A and B, to the extent that the requirements of section 120 could be met.

Like other patent applications, jointly-filed applications will continue to be subject to the requirement of 35 U.S.C. 121 that an application be directed to only a single invention. If more than one invention is included in the application, the Patent and Trademark Office may require the application to be restricted to one of the inventions. In such a case, a "divisional" application would be entitled to the benefit of the earlier filing date of the original application.

New 35 U.S.C. 157 - Statutory Invention Registration (SIR)

This section which is effective on May 8, 1985, establishes an optional procedure by which an inventor may secure protection which is strictly defensive in nature.

Under current law, there is no simple, practical method by which an inventor can protect his or her ability to exploit the invention without obtaining a patent. The new procedure confers on an inventor the same defensive rights that a patent provides to prevent others from patenting the invention. However, it does not permit the holder to exclude others from making, using or selling the invention.

Due to the fact that a SIR does not grant an exclusive right to an inventor, it is not necessary to subject a SIR to the lengthy examination process required for the granting of a patent. Such an examination is necessary if

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the SIR is subject to an interference proceeding to determine priority of invention. In all other instances, the Patent and Trademark Office will only review the application for adherence to formal printing and fee payment requirements and to ensure that the requirements of 35 U.S.C. 112 are satisfied.

An applicant desiring to have a SIR published will be required to file a regular complete application for a patent and to execute a request including a waiver of enforcement of patent rights. This waiver of the claimed invention will be effective at the time of publication. The original application can be abandoned in favor of a continuing application for a patent, claiming the filing date of the earlier filed application, by filing an express abandonment of the original application and a timely request or petition to withdraw the request for a SIR prior to publication of the SIR, thereby providing the applicant with flexibility during the pendency period of the application. Until the SIR is published the application remains an application for a patent. However, the holder of a SIR will not be able to file a reissue application to recapture the rights to exclusive use that were waived by the initial publication of the SIR.

The waiver of the right to receive a patent, required of all applicants electing to receive a SIR, applies to those remedies provided for the enforcement of a patent under section 183 and sections 271 through 289 of title 35, United States Code. The waiver also applies to remedies under other titles of the United States Code including sections 1337 and 1337a of title 19, section 2356 of title 22, and section 1498 of title 28. This waiver of enforcement applies only to the claimed subject matter of the SIR and not to any foreign patent arising from an application which might have served as the basis of a priority claim under the Paris Convention for the Protection of Industrial Property. Likewise, the waiver does not prevent the holder of a SIR from asserting any defenses provided in sections 271 through 289 of title 35, U.S.C. with respect to a charge of infringement of any other patent.

The Commissioner of Patents and Trademarks can refuse to accept the waiver in certain cases. For example, the waiver could not be accepted if the waiver is not a waiver of all the previously mentioned rights. The Commissioner also has discretion, which has not been exercised at this time, to set time limits on the waiver. This would allow the Commissioner to limit the ability of an inventor to keep inventions secret through a series of continuing patent applications followed by a conversion to a SIR.

The waiver of patent rights in the SIR to the subject matter claimed therein may affect the patentability of a claim in other related applications, particularly divisional applications, since the waiver of patent rights would be effective for all inventions claimed in the SIR and would be effective as a waiver of the right of the inventor to obtain a patent on the invention claimed in the same application or any other application, but not in any patent issued before the date the SIR is published. Where an application containing generic claims is published as a SIR, the waiver in that application applies to any other related applications, including divisions, continuations, and continuations-in-part, to the extent that the same invention claimed in the SIR is also claimed in the other related application.

The Patent and Trademark Office will apply standards similar to those which it applies in making determinations of "same invention" double patenting for purposes of determining whether or not a waiver by an inventor to claims in a SIR precludes patenting by the same inventor to subject matter in any other related application.

Therefore, the waiver would preclude patenting of an invention claimed by an inventor in a related application which is the same as the invention claimed by the same inventor in the SIR. When making this determination it is the claimed subject matter of the related application. Where the subject matter claimed in the related application is the same as the subject matter waived in the SIR, i.e., the "same invention" in the double patenting sense, the claims of the related application will be rejected as being precluded by the waiver in the SIR and cannot be overcome by a terminal disclaimer. The limitation of the scope of the waiver to the claimed invention would not affect the application of existing §1.658(c) should the SIR become involved in an interference. If a divisional application is filed and published as a SIR claiming only a method, publication thereof will not normally effect a waiver on an application for a patent claiming only an apparatus. The waiver in a SIR would not affect any rights in a patent which issued prior to the date of publication of the SIR, but would preclude an already issued patent from being broadened by reissue if the rights to the subject matter to which broadened claims relate have been waived by publication of the SIR. The waiver applies to any rights of the same inventor in any application pending when the SIR is published even if the inventor is a joint applicant in the pending application and was a sole applicant in the application published as a SIR. The waiver would not affect the rights of any other inventor even though those rights are commonly owned by the same person.

The holder of a SIR containing the required waiver will be left without the offensive rights associated with a patent. In other respects a SIR will be the same as a patent, including the application which is published as a SIR serving as the basis for a priority claim in a foreign application under the Paris Convention. A SIR will be treated the same as a U.S. patent for all defensive purposes. The application, and the SIR published therefrom, could become involved in an interference; the SIR would be a "constructive reduction to practice" under 35 U.S.C. 102(g); it will be "prior art" under all applicable sections of 35 U.S.C. 102 including section 102(e); and it will be classified, cross-referenced and placed in the search files, disseminated to foreign patent offices, stored in the Patent and Trademark Office computer tapes, made available in commercial data bases, and announced in the *Official Gazette* of the Patent and Trademark Office. A published SIR is intended to be a fully viable publication for defensive purposes, usable as a reference as of its filing date in the same manner as a patent. A SIR will also serve as a basis to initiate or participate in an interference or priority proceeding under 35 U.S.C. 291 in a manner similar to a patent and can be used as a reference in defense of an infringement suit.

A SIR is based on a regularly filed application for a patent. Therefore, the filing date of the application will be a sufficient basis for a priority claim in a foreign application. Article 4, section A(3) of the Paris Convention states:

> "By a regular national filing is meant any filing that is adequate to establish the date on which the application was filed in the country concerned, whatever may be the subsequent fate of the application."

After a SIR is published, markings such as "patent pending" are improper under section 292 of title 35 of the United States Code.

The SIR will serve as a replacement for the current "defensive publication program" which was established by regulation under 37 CFR 1.139. Although publication under the "defensive publication program" was intended to provide rights similar to those of the SIR, publication under that program has been held not to be available as evidence of prior knowledge as of its filing date under section 102(a) of title 35, U.S.C. (*Ex parte Osmond,* 191 USPQ 334 (P.T.O. Bd. App. 1976)). The use of a "defensive publication" as a reference to prevent a patent from issuing on a subsequent application is therefore limited. A SIR, on the other hand, will have a clear statutory basis in title 35, U.S.C. The SIR will be "prior art" and a "constructive reduction to practice" under section 102(a) and section 102(g), respectively, as of the filing date of the application on which it is based.

A SIR will not be subject to reexamination under sections 302 to 307 of title 35, United States Code.

The Commissioner is authorized to issue SIRs for defensive purposes, but is not required to do so. The Commissioner has discretion in determining whether or not a SIR should be issued on a particular application. In circumstances where the subject matter is obviously not an invention, is too informal to print, and so forth, the Commissioner has the right to refuse to publish the SIR.

SIRs will be published sooner than patents because no substantive examination will normally be required for SIRs. To the extent that examination is required, it will be conducted in the same manner as in any other patent application. Maintenance fees will not be charged for SIRs.

Since the fees set by the Commissioner for the new SIR procedure under section 157 of title 35, U.S.C. are not established under section 41(a) or (b) of that title, they are not subject to reduction if the applicant has small entity status.

If the fee for requesting publication is not paid at the time of filing of the waiver of the right to receive a patent, the Commissioner may set a period within which the fee must be paid to prevent abandonment of the application. Such a period would be subject to petitions and fees for extensions of time. If abandonment should occur, the application may be revived.

In the final analysis, the SIR procedures set forth in the law should give inventors defensive protection more cheaply than they could get by obtaining a patent. The procedure will allow the government and the private sector to make inventions public knowledge. Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new, less expensive alternative to the traditional patenting of inventions.

Amended 35 U.S.C. 361, 366, 371, 372 and 376 - Miscellaneous provisions relating to the applications under the Patent Cooperation Treaty.

Section 361(d) of title 35, United States Code, was amended effective May 8, 1985, to provide a one-month grace period from the date of filing an international application for payment of the basic international fee and the transmittal and search fees.

Section 366 of title 35, United States Code, was amended, effective May 8, 1985, to clarify the effect of withdrawal of an international application on claims for the benefit of its filing date. The withdrawal of an international application designating the United States will not deprive an applicant of the right to claim the benefit of the filing date of such an international application in a later filed application, provided the claim for benefit is made before that international application is withdrawn. Stated otherwise, this clarifies that withdrawing the designation of the United States in an international application is comparable to abandoning a national application as far as a claim for an earlier filing date is concerned.

National Stage

As a general proposition, the amendments made to 35 U.S.C. 371 set forth a legislative scheme, effective May 8, 1985, to provide greater flexibility in the Patent and Trademark Office for the handling of international applications. In addition, by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, the amendments give international applicants benefits similar to those given national applications by section 111, 35 U.S.C. as amended by Public Law 97–247 with respect to the time for filing the national fee and oath or declaration.

Section 372(b) of title 35, United States Code, is amended, effective May 8, 1985, to authorize the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases is necessary since subsection (c)(2) of section 371 was amended to remove the requirement that the translation be verified in all cases.

Section 372(c) of title 35, United States Code, was deleted thereby discontinuing the requirement for payment of a special fee to maintain claims in an international application which were not searched by an international searching authority. This deletion was made to place international applications processed in the national stage on the same footing as purely national applications.

Section 376(a) of title 35, United States Code, was also amended by Public Law 98–622 to delete mention of the special fee in order to conform with the amendment of section 372(c).

Discussion of Specific Rules

Section 1.11 is amended as proposed to add a reference to published statutory invention registrations in paragraph (a) to indicate that they are available to the public. The portion of present §1.11(a) which deals with interferences is transferred to a new paragraph (e) and rewritten.

The amendment to paragraph (b) deletes reference to §1.139, which is being deleted in favor of the SIR, and inserts language which covers opening to the public defensive publications published under §1.139 as well as other applications laid open to the public such as the previously published abstracts and abbreviatures.

Section 1.11 is amended as proposed to delete the word "general" before public as unnecessary.

New paragraph (e) of §1.11 is added to cover the availability to the public of all interferences. including those which involved a statutory invention registration. This paragraph applies to interferences declared under the new rules which became effective on Feb. 11, 1985, 49 F.R. 48416, (Dec. 12, 1984) as well as the rules formerly in effect. The term "award of priority" is intended to refer to those decisions of the Board of Patent Interferences, or Board of Patent Appeals and Interferences, awarding priority in interferences conducted under the former rules. The term "judgment" refers to judgments entered by the Board of Patent Appeals and Interferences in interferences conducted under the new rules. The language of the proposed rule has been slightly modified for clarity in the final rule.

Section 1.14 is amended as proposed to delete reference to §1.139 since that section is being removed.

Section 1.17 paragraph (h) is amended as proposed to include the petition fee required by new §1.295.

Section 1.17 is amended to add new paragraphs (n) and (o) to establish fees for requesting publication of statutory invention registrations. Paragraph (n) establishes a $400.00 fee for requesting publication of a statutory invention registration where no first examiner's action pursuant to §1.104 has been issued in the application. The amount paid for basic filing fees under §1.16(a), (f) or (g) will be credited against this amount. For example, if a $300.00 filing fee was paid, only $100.00 additional would be required for requesting publication of a statutory invention registration.

The addition of paragraph (o) to §1.17 is similar to the addition of paragraph (n) but establishes a fee for requesting publication of applications, which have received any examiner's action pursuant to §1.104, as a statutory invention registration. The higher fee of $800.00 set in paragraph (o) is necessary in view of the expenditure of additional Office resources in examining the application prior to the filing of the request for a statutory invention registration.

Section 1.19 is amended as proposed to provide in paragraph (a)(1) a reference to the cost of a printed copy of a statutory invention registration and in paragraph (e) to provide reference to statutory invention registrations listed by subclass.

Section 1.20 is amended as proposed to delete the requirement to pay maintenance fees in all plant patents in

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view of the amendment in Public Law 98–622. Paragraph 1.20(m) is amended as proposed to provide that non-timely payment of maintenance fees may be accepted in patents based on applications filed prior to Aug. 27, 1982, in accordance with Public Law 98–622.

Public Law 98–622 provides that no maintenance fees are charged for plant patents, regardless of when filed. Without this provision that no maintenance fees be charged for plant patents, plant patent owners whose applications were filed between the dates of enactment of Public Law 96–517 and Public Law 97–247 (Dec. 12, 1980 to Aug. 27, 1982) would be subject to payment of maintenance fees, while plant patent owners whose applications were filed outside those dates would not be subject to such fees. Public Law 98–622 eliminates that inconsistency.

Section 1.45 is amended as proposed to reflect the change made by Public Law 98–622 in 35 U.S.C. 116. The previously existing paragraph is designated as paragraph (a). New paragraph (b) incorporates the wording added to 35 U.S.C. 116 by Public Law 98–622. New paragraph (c) indicates that each named inventor listed in an application must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and that the application will be considered to be a joint application under 35 U.S.C. 116.

Section 1.48 is amended to add new paragraphs (b) and (c). New paragraph (b) provides for deleting the names of persons originally properly included as inventors, but whose invention is no longer being claimed in the application. Such a situation would arise where claims have been amended or deleted because they are unpatentable or as a result of a requirement for restriction of the application to one invention, or for other reasons. Public Law 98–622 and §1.48(b) change the result reached in *Ex parte Lyon,* 146 USPQ 222, 1965 Dec. Comm'r. Pat. 362 (Bd. App. 1964). The final rule has fewer requirements than the proposed rule for correction of inventorship in this situation. The proposed rule would have required, in addition to the requirements of the final rule, an oath or declaration by each actual inventor or inventors as required by §1.63 and the written consent of any assignee. The final rule requires only a petition and fee with the petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application. The amendment would have to be diligently made under paragraph (b).

The final rule adds a paragraph (c) in response to a comment to provide for the situation where an application discloses unclaimed subject matter by an inventor or inventors not named in the application as filed. In such a situation, the application may be amended pursuant to paragraph (a) of §1.48 to add claims to the subject matter and also to name the correct inventors for the application. The claims would be added by an amendment and, in addition, an amendment pursuant to paragraph (a) of §1.48 would be required to correct the inventors named in the application. Any claims added to the application must be supported by the disclosure as filed and cannot add new matter.

Section 1.60 is amended to include wording which would permit an application to be filed under this section only if it named as inventors the same or less than all the inventors who were named and signed the oath or declaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98–622, which permit continuing applications to be filed by different inventors. Under §1.60 additional inventors are not permitted to be named since the oath or declaration from the prior application is relied upon.

Section 1.61 is amended as proposed to incorporate the ability to file the translation, oath or declaration, and national fee after the 20 month deadline set forth in PCT Article 22(1) for entering the national phase in the United States Patent and Trademark Office.

Public Law 98–622 amended 35 U.S.C. 371(a) to provide greater flexibility for the PTO handling international applications. Also, 35 U.S.C. 371(a), by relaxing the requirements which international applicants must satisfy by the commencement of the national stage, gives international applicants benefits similar to those given national applicants under 35 U.S.C. 111 by P.L. 97–247 with respect to the time for filing the national fee and oath or declaration.

Paragraph (b) of §1.61 is amended to delete the 2 month time period to conform with the decision concerning PCT Article 22(2) adopted by the Assembly of the International Patent Cooperation Union (PCT Union) on Feb. 3, 1984. The amendment to the Article took effect on Jan. 1, 1985.

PCT Article 22(2) as amended, reads as follows:

> "Where the International Searching Authority makes a declaration, under Article 17(2)(a), that no international search report will be established, the time limit for performing the acts referred to in paragraph (1) of this Article shall be the same as that provided in paragraph (1)."

The additional wording to paragraph (b) of §1.61 sets forth the ability to comply with the requirements for entering the national phase before the Patent and Trademark Office as a Designated Office within 22 months of the priority date. If the national fee or oath or declaration is submitted later than 20 months after the priority date, a surcharge as set in §1.445(a) (5) is required to be paid. If a required English translation of the international application is filed later than 20 months after the priority date, a processing fee as set in §1.445(a) (6) is required to be paid.

New paragraph (c) of §1.61 provides that any amendments under PCT Article 19 which are not received along with any necessary English translation by the end of 20 months from the priority date will be considered as cancelled. This change is required in view of amended §371(d) of 35 U.S.C.

Paragraph (d) is added as proposed to §1.61 in view of §372(b) of title 35, United States Code, as amended by Public Law 98–622, which authorizes the Commissioner to require a verification of the translation of an international application or any other document pertaining thereto if the application or other document was filed in a language other than English. An authorization for the Commissioner to require verification in appropriate cases was necessary since subsection (c) (2) of 35 U.S.C. 371 was amended to remove the requirement that the translation be verified in all cases.

Section 1.62 is amended by revising paragraphs (a), (c), and (h) to include wording which would permit a continuing application to be filed under this section by the same or less than all the same inventors who filed and signed the oath or delcaration in the prior application. This addition is necessary in view of the new provisions of 35 U.S.C. 120, as amended by Public Law 98–622, which permit continuing applications to be filed by different inventors. Under §1.62, additional inventors may be added only in applications in which a new oath or declaration is required because additional subject matter is being claimed. Paragraph (h) has been amended to also request applicants to furnish the title of the invention and the names of the applicants in the continuing application to permit the Office to enter this information in its records in the Application Branch.

Section 1.78 is amended to provide in paragraph (a) that the inventorship in the continuing application may be different from the inventorship in the prior copending application and that the prior application must disclose the invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. The requirement that at least one claim be fully supported in the prior application to be entitled to priority benefit is not new, but is included to serve as a reminder that information such as foreign patenting, publication, or public use or sale in the United States which occurred more than one year prior to the filing date of the later application is available as prior art where the claims of the continuation-in-part application are not fully supported by the disclosure

of the parent application so as to be entitled to an earlier effective filing date under 35 U.S.C. 120. See *In re Ruscetta,* 255 F. 2d 687, 118 USPQ 101 (CCPA 1958); *In re van Langenhoven,* 458 F. 2d 132, 173 USPQ 426 (CCPA 1972), and *Chromalloy American Corp.* v. *Alloy Surfaces Co., Inc.,* 339 F. Suppl. 859, 173 USPQ 295 (D. Del. 1972).

Paragraph (c) as amended provides for the reply to an examiner's inquiry as to first inventor of conflicting claims in commonly owned applications or an application and a patent to be either (1) a statement that the inventions were both commonly owned at the time the later invention was made or (2) an indication of the first inventor. Paragraph (c) has been changed from that proposed in response to comments to clarify that common ownership or an obligation of assignment to the same person has to exist at the time the later invention was made. New paragraph (d) provides for making a double patenting rejection where an application claims an invention which is not patentably distinct from an invention claimed in a commonly-owned patent with the same or different inventive entities. An obviousness-type double patenting rejection could be overcome by the assignee by submitting a terminal disclaimer complying with §1.321(b).

Section 1.101 is amended as proposed to delete reference to applications filed under §1.139 since this section is being removed.

Section 1.103 is amended as proposed to refer in paragraph (d) to a request "for a defensive publication" rather than a request "filed under §1.139" since §1.139 is being removed. Paragraph (d) is amended as proposed to also refer to "patent interference proceedings under Subpart E" rather than to "proceedings under §1.201(b)" since §1.201(b) has been removed.

Section 1.104 is amended as proposed to add a new paragraph (e) to specify the nature of the showing necessary before the examiner would consider co-pending applications to be owned by, or subject to an obligation of assignment to, the same person for purposes of 35 U.S.C. 102(f)/103, 102(g)/103, and paragraph (d) of §1.106. The rule permits the necessary showing to be made in different alternative ways. The necessary showing will be considered by the examiner to be present if the application files refer to assignments which are recorded in the Patent and Trademark Office in accordance with §1.331 as long as the assignments conveyed the entire rights in the applications to the same person or organization. A second alternative which can be used, if assignments have not been recorded, permits the examiner to consider copies of unrecorded assignments filed in each of the applications by the applicants as long as the unrecorded assignments convey the entire rights in the applications to the same person or organization. A third alternative permits an affidavit or declaration to be filed by the common owner stating that there is common ownership and stating facts which explain why the affiant or declarant believes there is common ownership. Under this alternative, sufficient facts will have to be presented in order to enable the examiner to conclude that a prima facie case of common ownership exists. The fourth alternative permits other evidence to be used which would establish common ownership of the applications, e.g., a court decision determining the owner. The terms "person" and "organization" in the rule would include circumstances where the ownership resided in more than one person and/or organization as long as the applications are owned jointly by the same owners. Paragraph (e) also provides that where the common owner is a corporation or other organization an affidavit or declaration averring common ownership may be signed by an official of the corporation or organization who is empowered to act on behalf of the corporation or organization. A mere power of attorney to prosecute a patent application will not make an individual an official of the corporation or organization or empower the individual to act on behalf of the corporation or organization.

The wording of §1.106(d) amends the rule to reflect the change in 35 U.S.C. 103 and refers to the "entire" rights to the subject matter and the claimed invention to make it clear that the term "commonly owned" means wholly owned by the same person, persons, or organization.

If the person, persons, or organization owned less than 100 percent of the subject matter which would otherwise be prior art to the claimed invention, or less than 100 percent of the claimed invention, then common ownership would not exist. Common ownership requires that the person, persons, or organization own 100 percent of the subject matter and 100 percent of the claimed invention. As long as principal ownership rights to either the subject matter or the claimed invention reside in different persons or organizations common ownership does not exist. A license of the claimed invention to another by the owner where basic ownership rights are retained would not defeat ownership. The requirement for common ownership at the time the claimed invention was made is intended to preclude obtaining ownership of subject matter after the claimed invention was made in order to disqualify that subject matter as prior art against the claimed invention. The question of whether common ownership exists at the time the claimed invention was made is to be determined on the basis of the evidence presented and the facts of the particular case in question. Actual ownership of the subject matter and the claimed invention by the same individual or organization or a legal obligation to assign both the subject matter and the claimed invention to the same individual or organization must be in existence at the time the claimed invention was made in order for the subject matter to be disqualified as prior art. A moral or unenforceable obligation would not evidence common ownership.

The burden of establishing that subject matter is disqualified as prior art under the section is intended to be placed and reside upon the person or persons urging that the subject matter is disqualified. For example, the examiner would normally make what appears to be a proper 35 U.S.C. 102(f)/103 or 102(g)/103 rejection and the burden would be on the patent applicant to establish that subject matter is disqualified as prior art because it was commonly owned at the time the claimed invention was made. To place the burden upon the patent examiner would not be appropriate since evidence as to common ownership at the time the claimed invention was made might not be available to the patent examiner, but such evidence, if it exists, should be readily available to the patent applicant or the patentee.

The invention is made for purposes of the amendment to §103 when the conception is complete as defined in *Mergenthaler* v. *Scudder,* 11 App. D.C. 264, 1897 C.D. 724 (C.A.D.C. 1897), and in *In re Tansel,* 117 USPQ 188 (CCPA 1958).

> "The conception of the invention consists in the complete performance of the mental part of the inventive act. All that remains to be accomplished in order to perfect the act or instrument belongs to the department of construction, not invention. It is, therefore, the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice that constitutes an available conception within the meaning of the patent law."

Mergenthaler v. *Scudder,* supra, at page 731.

Paragraph (e) of §1.106 has been added in response to a comment that the rulemaking should leave no doubt as to the standard to be applied in determining the effect of a statutory invention registration waiver in one application on a related application. Paragraph (e) of §1.106 provides that the claims in any original application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the same subject matter is claimed in the application and the statutory invention registration. Paragraph (e) of §1.106 also provides that the claims in any reissue application naming an inventor will be rejected as being precluded by a waiver in a

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published statutory invention registration naming that inventor if the reissue application seeks to claim subject matter which was not covered by claims issued in the patent prior to the date of publication of the statutory invention registration and which was the same subject matter waived in the statutory invention registration.

Section 1.108 is amended as proposed to delete the reference to filing a request under §1.139, which is being removed, and insert in its place a reference to a defensive publication.

A new section 1.110 is added as proposed to allow the examiner or other Office official to make inquiry as to the invention date, inventors and ownership at the time the invention was made when necessary for purposes of an Office proceeding.

Section 1.131 is amended to require that affidavits to overcome a rejection of a claim on a cited patent or publication be by the inventor or inventors of the subject matter of that claim. Section 1.131 has also been amended in response to a comment to permit the person qualified under §§1.42, 1.43, or 1.47 to make the required oath or declaration in appropriate circumstances.

Section 1.139 is being removed in view of the new statutory invention registration. The proposed rules made clear the intent to remove this section which established the defensive publication program although the section per se was not published as being removed. The defensive publication program is being replaced by the ability to obtain a statutory invention registration.

Section 1.193 is amended as proposed to change from twenty days to one month the time for filing a reply brief in response to an examiner's answer which raises new points of argument. This amendment is intended to simplify the docketing of this time period and make it consistent with the time period fixed for requesting an oral hearing in §1.194(b).

Section 1.293 is added to provide who may file a request for a statutory invention registration (SIR) and the requirements of such a request in accordance with 35 U.S.C. 157 added by Public Law 98–622. Paragraph (a) of §1.293 indicates that a request for publication of a statutory invention registration in a complete pending patent application for an original patent may be filed and be signed by the applicant, and any assignee of record, or the attorney or agent of record in the application. Paragraph (b) sets forth the requirements for a request for a statutory invention registration. Such a request must include:

(1) a waiver of the applicant's right to receive a patent. This waiver will become effective upon the date of publication. Therefore, it will be possible to petition to withdraw a request for publication of a statutory invention registration until such time that publication can not be terminated;
(2) payment of the fee for requesting publication of a statutory invention registration as set forth in §1.17(n) or (o). The fee is set at two levels to reflect the amount of resources used by the Patent and Trademark Office;
(3) a statement that the application meets the disclosure requirements of 35 U.S.C. 112. This provision is considered desirable in order to prevent publication of defective and insufficient disclosures; and
(4) a statement that the application complies with the formal requirements of the rules of practice relating to printing. This provision is required in order to provide the printer with drawings and specification which are suitable for printing in substantially the same format as a patent.

A suggested format for use in filing a request for a statutory invention registration is as follows:

Request for Statutory Invention Registration

Application Serial No. or [ ] Attached hereto
Filed:
Titled:
Applicants:

A. In the above identified patent application, I hereby
1. request and authorize the Commissioner of Patents and Trademarks to publish the above identified regularly filed patent application as a Statutory Invention Registration. (35 U.S.C. 157)
2. waive the right to receive a United States patent on the same invention claimed in the above identified patent application. These rights, which are waived, include those specified in 35 U.S.C. §183 and §§271 through 289 as well as all attributes specified for patents in any other provision of law other than title 35 United States Code. The waiver includes, but is not limited to, the remedies under 19 U.S.C. 1337 and 1337a, 22 U.S.C. 2356 and 28 U.S.C. 1498. (35 U.S.C. 157(c))
3. understand that the above waiver will be effective pursuant to 37 CFR 1.293 upon publication of the Statutory Invention Registration to waive the inventor's right to receive a United States patent on the invention claimed in the Statutory Invention Registration. (37 CFR 1.293(b) (1))
4. state that, in my opinion, the disclosure and claims of the above identified patent application meet the requirements of 35 U.S.C. 112. (37 CFR 1.293(b) (3))
5. state that, in my opinion, the above identified application complies with the requirements for printing as set forth in the Rules of Practice for Patent Cases, 37 CFR Part 1. (37 CFR 1.293(b) (4))
6. enclose the fee set forth in 37 CFR 1.17(n) or (o) for requesting publication of a Statutory Invention Registration.

[ ] A first examiner's action *has not* been mailed in the above application, 37 CFR 1.17(n) — $400.00 or
[ ] A first examiner's action *has* been mailed in the above application, 37 CFR 1.17(o) — $800.00
$_____

Minus Basic Filing Fee, if previously paid

	Small entity	Large entity
Basic filing fee for utility patent application set forth in 37 CFR 1.16(a)	[ ] $150.00	[ ] $300.00
Basic filing fee for design patent application set forth in 37 CFR 1.16(f)	[ ] $62.50	[ ] $125.00
Basic filing fee for plant patent application set forth in 37 CFR 1.16(g)	[ ] $100.00	[ ] $200.00

MINUS: $_____
Amount Due $_____

[ ] Amount enclosed by check or money order _____.

[ ] Please charge Deposit Account No. _____ in the amount of _____.
[ ] If payment of any additional fee is required for publication of the Statutory Invention Registration, charge such payment to Deposit Account No. _____.

B. For printing on the Statutory Invention Registration front page list below the name(s) of not more than 3 registered patent attorneys or agents OR alternatively, the name of the firm having as a member a registered patent attorney or agent. If no name is listed below, no name will be printed. _____

C. Name of assignee, if any, for printing on the Statutory Invention Registration _____
Address (City and State or Country) _____
State of incorporation, if assignee is a corporation _____

(signature(s) (37 CFR 1.293(a))
[ ] applicant(s) and any assignee
[ ] attorney or agent of record

Paragraph (c) of §1.293 is added to define the effects of a waiver filed with a request for a statutory invention registration. The waiver is effective, upon publication of the SIR, to waive the inventor's right to receive a patent on the invention claimed in the SIR in any application for an original patent which is pending on, or filed after, the date of publication of the SIR. The waiver will affect pending or later applications the inventor filed as a joint inventor with others, but will not affect an application of another person, even if the application and the SIR were commonly owned. The waiver will affect a reissue application of an earlier patent of the inventor only to the extent that the reissue application seeks to enlarge the scope of the claims. Paragraph (c) of §1.293 has been modified from the proposal by inclusion of a reference to §1.106(e).

Section 1.294 is added as proposed to provide in paragraph (a) for a review of the request for publication of a statutory invention registration and the patent application to which it is directed. The request will be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 are met. Under 35 U.S.C. 157, the Commissioner is authorized to publish a statutory invention registration, but is not required to do so. Thus, the Commissioner has discretion in determining whether or not a statutory invention registration should be issued on a particular patent. In circumstances where the subject matter was obviously not a patentable invention, was too informal to print, and so forth, the request to publish the statutory invention registration will be refused.

Paragraph (b) of §1.294 provides for notifying applicant of the results of the examination of the request for publication of the statutory invention registration. Paragraph (c) of §1.294 provides for the issuance of a notice of the intent to publish a statutory invention registration once the request has been examined and approved.

Section 1.295 is added to provide for the review of a final refusal to publish a statutory invention registration. The review would be by petition to the Commissioner for matters other than those arising from a rejection pursuant to 35 U.S.C. 112 and by appeal for a rejection pursuant to 35 U.S.C. 112. The language of the final rule is slightly different from that proposed to emphasize that the Board either affirms or reverses decisions rather than rejections. Paragraph (a) also differs from the proposal by including, in response to a comment, a provision for requesting return of the petition fee if the necessity for the petition resulted from an error by the Patent and Trademark Office.

Section 1.296 has been modified from the proposal to provide a specific period during which a request for a statutory invention registration may be withdrawn. Under §1.296, as modified, a request for a statutory invention registration may be withdrawn, at applicant's option, prior to the date of the notice of intent to publish a statutory invention registraiton issued pursuant to §1.294(c) by filing a request to withdraw the request for publication of a statutory invention registration. An applicant filing such a request to withdraw may also, under §1.296, request a refund of any amount paid in excess of the application filing fee and a handling fee of $100.00 which will be retained by the Office. Any request to withdraw the request for publication of a statutory invention registration filed on or after the date of the notice of intent to publish pursuant to §1.294(c) must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h).

Section 1.297 is added to provide for the publication of the statutory invention registration and of the notice of its publication in the *Official Gazette*. In response to a comment, §1.297 has been modified so that the statement on the statutory invention registration will specifically state that the statutory invention registration is not a patent.

Sections 1.301, 1.302 and 1.304 are amended as proposed to delete the requirement to give reasons for appeal when filing an appeal to the Court of Appeals for the Federal Circuit in accordance with §414(a) of Public Law 98–620 which amended 35 U.S.C. 142, 143 and 144.

Section 1.378 is amended as proposed to delete from paragraph (a) the limitation that only applications filed on or after Aug. 27, 1982 may have the maintenance fee accepted after expiration of the patent. This change follows the change made by §404(b) of Public Law 98–622.

Section 1.431 is amended as proposed to provide for the later payment directly to the Receiving Office of the basic fee portion of the international fee and the transmittal and search fees within one month of the filing of an international application. The rule follows §361(d) of title 35 U.S.C. as amended by Public Law 98–622, to provide a one-month grace period from the date of filing of an international application for the payment of the basic international fee and the transmittal and search fees.

It should be noted that the designation fees continue to be required by 12 months after the priority date and that no subsequent grace period is provided in the Receiving Office for designation fees.

New paragraphs 1.431(d) and (e) incorporate into the regulations the provisions of PCT Rule 16 bis. Under these provisions the Receiving Office will charge any unpaid or insufficient fees to a deposit account maintained by the International Bureau. The applicant will then be notified by the International Bureau and be given one month to reimburse the amount charged plus a surcharge of 50%. The surcharge would not be less than 248 Swiss francs or more than 624 Swiss francs under the current fee schedule.

Section 1.445 is amended as proposed to clarify paragraph (a) (4) to clearly indicate that the national fee is credited by an amount of $250 only one time where a $500 search fee has been paid to the Patent and Trademark Office to act as an international searching authority. This is consistent with current practice. The special fee provisions in paragraph (a) (5) are being deleted in view of §402(g) of Public Law 98–622 which deleted the fee in 35 U.S.C. 376(a)(5). The wording of §1.445(a) (5) sets forth the surcharge required for filing of a national fee or oath or declaration later than 20 months from the priority date. Paragraph (a)(6) of §1.445 is added to require a fee of $20.00 for filing an English translation of an international application later than 20 months after the priority date. This makes the practice in international applications consistent with that in national applications where a fee of $20.00 is charged under §1.17(k) for processing an application filed with a specification in a non-English language.

Section 1.446 is amended as proposed to clarify the refund of a portion of the $500 search fee toward payment of the national fee.

Section 1.451 is amended as proposed to correct a rule citation in paragraph (b) and to amend paragraph (c) to provide for supplying a copy of the priority document to the Receiving Office in conformance with revised PCT Rule 17.1.

Section 1.461 is amended as proposed to delete provisions which relate to the applicant transmitting the record copy to the International Bureau. Provisions for such alternative transmittal were deleted from PCT Rule 22, effective Jan. 1, 1985. Accordingly, since the PCT rules no longer provide for such transmittal, the provisions therefor in the U.S. rules are also being deleted.

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Six letters submitting written comments were received. Oral testimony was presented by four persons at the public hearing conducted on Feb. 8, 1985 and the oral testimony of two of these persons (representing the American Intellectual Property Law Association and Intellectual Property Owners, Inc.) was supplemented by written statements. All of the written and oral comments were considered in adopting the

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changes set forth herein. Comments suggesting modifications to the proposed rules appear below with responses thereto.

Comment:

One Comment suggested that 37 CFR 1.11 be amended to create a waiver of secrecy of an application as of the date of filing of a notice of appeal to the Court of Appeals for the Federal Circuit. The comment suggests that secrecy could be maintained upon request by the appellant in such a situation.

Reply:

The change was not published in the proposed rulemaking and is considered to be too substantial a change to be adopted without publication as a proposal to allow public comment. Further, if the suggestion were adopted appellants might simply include a request for secrecy with every notice of appeal.

Comment:

One comment suggested that the $120.00 petition fee under §1.17(h) for review of a refusal to publish a statutory invention registration under §1.295 be returned to the petitioner if the refusal to publish is found to have occurred only through an administrative error of the PTO.

Reply:

This suggestion has been adopted by an additional sentence being added to §1.295(a).

Comment:

Three comments suggested that the proposed fees for a statutory invention registration were too high. One comment suggested the elimination of the fee proposed in §1.17(o).

Reply:

Although lower fees would certainly be preferred by the public, the Office must recover its costs of processing and publishing statutory invention registrations. The two levels of fees permit an applicant whose application has not had a first Office action mailed to pay a minimum amount while those filing a request for a statutory invention registration later would share the average additional costs. The amounts proposed are the current estimates of expected costs and cannot be reduced. This will become apparent when it is realized that about $250.00 of the $400.00 fee which has been established for requesting publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to §1.104 is the cost of printing the statutory invention registration and does not include in-house publication staff costs. The remainder of the fee is used to cover the administrative processing costs and the limited examination which is required to be given pursuant to 35 U.S.C. 157. The higher fee of $800.00 which has been established is necessary to cover the additional costs to the Office when an applicant requests publication of a statutory invention registration after the office has begun examination of the application on which the applicant is requesting publication of a statutory invention registration. Since the rules permit the request to be filed at any time during the examination process substantial additional examination costs, including possibly appeal costs, may have been incurred in a particular application prior to the date on which the request for publication is made. Accordingly, the additional $400.00 is required to cover the extra costs to the Office where the applicant belatedly requests publication of a statutory invention registration. Applicants can avoid the higher costs to themselves and the Office by requesting publication of the statutory invention registration in a timely fashion prior to the mailing of the first examiner's action pursuant to § 1.104. The possibility of reducing fees below costs to the Office does not exist since the legislative history of 35 U.S.C. 157 does not reflect any intent that other Office fees or appropriations be used to defer the costs of statutory invention registrations. Further, most of the comments received urged that the fees be set as low as possible, but not below the level necessary to recover costs.

Comment:

One comment suggested that the Patent and Trademark Office should investigate less expensive procedures for printing statutory invention registrations to reduce the costs and thereby lower the fees.

Reply:

If the registrations are not printed by a system using computer tape, the subject matter of the registrations would not be easily searchable in paper form and would not be fully available for searching under the planned automated "paperless" system. Further, the "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H. R. 6286 on the floor of the House stated that the statutory invention registration "would be classified and cross-referenced, disseminated to foreign patent offices, stored in the Patent and Trademark Office computer tapes, made available in commercial data bases, and announced in the *Official Gazette* of the PTO." (130 Cong. Rec. H 10526 (1984), column 3). These uses of the statutory invention registrations preclude use of any informal method of printing which would be different from the method used for the printing of patents.

Comment:

A number of comments were received concerning §1.48(b). The comments related to (1) the propriety of the fee required, (2) the incorporation of paragraph (b) into current §1.48, (3) the inclusion in the rules of a fixed and definite time period to correct inventorship, (4) the inclusion in the rules of a provision to add inventors claiming previously disclosed but unclaimed subject matter, and (5) a suggestion that the change in inventorship be simplified and possibly effected by a statement by applicant's attorney.

Reply:

Each comment will be treated separately in order. (1) The fee of $120.00 to accompany a petition for correction of inventorship is considered appropriate since the consideration of such a petition and correction of Office records takes additional resources. Such a fee should also act as a discouragement to grouping marginal inventions and loosely related inventions into the same application. (2) Whether paragraph (b) is made part of §1.48 or established as a separate rule does not appear to be a substantive matter. Paragraph (b) is being made part of §1.48 to place all rules relating to correction of inventorship in applications in a single rule. (3) No specific time period for correction of inventorship was indicated in the proposed rules. The rule requires that the correction must be made diligently. Since the examiner will not normally be aware of when inventorship correction is required, the responsibility of making such a correction diligently must rest with the applicant. The time of the correction will vary from case to case. (4) The addition of claims to previously disclosed but unclaimed subject matter of additional inventors is considered to be an error in the application and is therefore corrected under §1.48(a). A new paragraph (c) has been added to §1.48 to make this clear. Such a correction must always include a new oath or declaration. (5) The correction of inventorship has been simplified from that proposed. Final §1.48(b) does not require a new oath or declaration of each actual inventor or written consent of any assignee as originally proposed. The final rule requires a petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application, and the fee set forth in §1.17(h). The petition could be signed by applicant's attorney who would then take full responsibility for ensuring that the inventor is not being improperly deleted from the application.

Comment:

One comment suggested that proposed §§1.60 and 1.62 should be modified to permit the filing of such continuing applications with different inventive entities from the prior application.

Reply:

The procedures under §§1.60 and 1.62 were developed to allow continuing applications to be filed without the necessity of again obtaining an inventor's signature to a declaration. The proposed rule wording has been modified in the final rule to permit inventors to be deleted in the continuing application. The addition of inventors is now permitted where a new oath or declaration would be required because of claims in the continuing application being drawn to additional subject matter.

Comment:

One comment suggested that §§1.77 and 1.78 be modified to change the placement in a patent application of the information regarding cross-reference to related applications. It was suggested to require this information to be placed immediately after the Abstract, following the claims, so that the cross-reference information could be easily removed when filing the application outside the United States.

Reply:

These changes were not included in the proposed rulemaking and therefore the public has not had an opportunity to comment on the suggestion. Accordingly, the suggestion has not been adopted.

Comment:

One comment suggested that proposed §1.78(c) be modified to permit a statement that the claimed inventions were subject to an obligation of assignment to the same person at the time the inventions were made.

Reply:

The suggestion has been adopted.

Comment:

One comment suggested that the application of double patenting rejections to applications of different inventive entities which are commonly owned as set out in proposed§1.78(d) not be made until the effective date of this rulemaking.

Reply:

The Commissioner's Notice of Dec. 11, 1984, "Initial Guidelines Implementing Changes in 35 U.S.C. 103, 116, and 120", 1050 O.G. 316 (Jan. 8, 1985), changed the practice in accordance with the intention of Congress in enacting Public Law 98–622. See 130 Cong. Rec. H 10527, column 3 (daily ed. Oct. 1, 1984) (statement of Rep. Kastenmeier) wherein the following statement appears:

> "The Committee expects that the Patent and Trademark Office will reinstitute in appropriate circumstances the practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. This will be necessary in order to prevent an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming the terminal portion of the term of the later patent, thereby eliminating the problem of extending patent life."

Since the provisions of Public Law 98–622 became effective on Nov. 8, 1984, it was not appropriate to delay the change in practice.

Comment:

One comment suggested that the policy of rejecting commonly-owned applications of different inventive entities on the grounds of double patenting, as set forth in proposed §1.78(d), was unnecessary in view of 35 U.S.C. 102(e).

Reply:

The provisions of 35 U.S.C. 102(e) will not be effective to preclude double patenting in situations where the applicants of the later filed application can use the provisions of 37 CFR 1.131 to antedate the filing date of the earlier filed application or patent. Accordingly, the application of the prohibitions against double patenting is necessary in order to prevent an organization from obtaining two or more patents with different expiration dates covering nearly identical subject matter. See 130 Cong. Rec. H 10527, supra.

Comment:

One comment suggested that proposed §1.78(c) was broader than required by statute and capable of being construed to conflict with proposed §1.106(d) by referring to common ownership at "the time the inventions were made" rather than at the time the later invention was made.

Reply:

The wording of §1.78(c) has been revised from the proposal to clarify the problem spoken to in the comment.

Comment:

One comment suggested that the proposed amendment to §1.131 not be made so that the "applicant" can make affidavits or declarations to overcome rejections. The comment suggested that the proposed rule provides no remedy in situations where the inventor is dead, insane, legally incapacitated, cannot be reached or refuses to join in the application.

Reply:

The final rule has been changed in response to the comment to permit the person qualified under §§1.42, 1.43, or 1.47 to make the required oath or declaration in appropriate circumstances.

Comment:

Two comments suggested that the scope of the waiver in a statutory invention registration be limited to the subject matter of the claims of the statutory invention registration and not to any obvious modifications thereof. Another comment suggested that the statutory invention registration applicant should be able to waive the right to a patent on all of the subject matter disclosed in the application if he wishes to do so. One comment suggested that the rulemaking should leave no doubt as to the standard to be applied in determining the effect of a statutory invention registration waiver in one application on a related application.

Reply:

A new paragraph (e) has been added to §1.106 to clarify the standard to be applied in determining the effect of a statutory invention registration waiver. The suggestion that the scope of the waiver be limited to the subject matter of the claims of the statutory invention registration and not to any obvious modifications thereof has been adopted.

Comment:

Three comments suggested that since a statutory invention registration is prior art as of its effective filing date, the time permitted between the effective filing date and the publication of the statutory invention registration should be limited. Several different approaches were suggested. One comment suggested that there was no problem in this regard. Another comment suggested that the organization is studying the question and will have recommendations in several months.

Reply:

The statute makes it clear that the Commissioner is not required to publish a statutory invention registration in response to a request therefor. The case-by-case consideration of requests for publication of a statutory invention registration should safeguard the public without unduly placing limits on patent applicants. The Office will await further recommendations on this question and will observe actual experience prior to placing any time limitations on the use of statutory invention registrations.

Comment:

Two comments suggested that §1.293 be modified to eliminate the requirement for a statement in the request for publication of a statutory invention registration that the application meets the requirements of 35 U.S.C. 112. One of these comments also suggested the elimination of the statement that the application meets formal requirements for printing. One comment suggested that if there is a requirement for a statement in the request for publication of a statutory invention registration that the application meets the requirements of 35 U.S.C. 112, there will not be a great necessity for the Office to spend a lot of time examining the application, although there has to be some examination.

Reply:

The reason for the statements in §1.293 regarding compliance with 35 U.S.C. 112 and the formal require-ja

ments for printing as a patent was to reduce the cost of statutory invention registrations to the applicants and to the Office. The level of fees which have been established assumes that applicants will include the statements required by §1.293 in their requests and that the statements will accurately reflect the condition of the applications to which the requests are directed.

Comment:

One comment suggested that the rules should include a fixed and definite time period in which an authorized party can withdraw a statutory invention registration after its approval and before its publication.

Reply:

The suggestion has been adopted. Section 1.296 has been modified to permit a request to withdraw the request for publication of a statutory invention registration to be filed at any time prior to the date of the notice of intent to publish the statutory invention registration. After the date of the notice of intent to publish the statutory invention registration, any request to withdraw the request for publication of the statutory invention registration must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h).

Comment:

One comment suggested that the statement to be printed on statutory invention registrations as set out in proposed §1.297(b) be modified to be easily understood by lay people.

Reply:

The statement has been modified to specifically state that the statutory invention registration is not a patent.

Environmental, Energy, and Other Considerations: The final rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). In fact, the rule change will benefit small entities since the statutory invention registration procedures will provide a new, less expensive alternative to the traditional patenting of inventions in appropriate circumstances. Further, the ability to join multiple inventors in a single application in appropriate circumstances will be of particular benefit to small entities. Other changes, such as the elimination of the reasons for appeal, will also be beneficial to all inventors. See a "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H.R. 6286 on the floor of the House in which the following statement appears (130 Cong. Rec. H 1057 (1984), column 1):

> "Last, the SIR would be particularly useful to those with limited resources such as universities and small businesses, who have a new less expensive alternative to the traditional patenting of inventions."

These rules, therefore, will have no significant adverse economic impact on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information collection requirements contained in these rules were submitted to the Office of Management and Budget (OMB) at the time of the proposed rulemaking for review under Section 3504(h) of the Paperwork Reduction Act. OMB has approved the information collection requirements and has assigned OMB control number 0651–0018 thereto.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Pub. L. 98–620 and 98–622, the Patent and Trademark Office is amending Title 37 of the Code of Federal Regulations as set forth below.

1. Section 1.11 is amended by revising paragraphs (a) and (b) and adding new paragraph (e) to read as follows:

§1.11 Files open to the public.

(a) After a patent has been issued or a statutory invention registration has been published, the specification, drawings and all papers relating to the case in the file of the patent or statutory invention registration are open to inspection by the public, and copies may be obtained upon paying the fee therefor. See § 2.27 for trademark files.

(b) All reissue applications, all applications in which the Office has accepted a request to open the complete application to inspection by the public, and related papers in the application file, are open to inspection by the public, and copies may be furnished upon paying the fee therefor. The filing of reissue applications will be announced in the *Official Gazette*. The announcement shall include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned.

* * * * *

(e) The file of any interference involving a patent, a statutory invention registration, or an application on which a patent has issued or which has been published as a statutory invention registration, is open to inspection by the public, and copies may be obtained upon paying the fee therefor, if: (1) the interference has terminated, or (2) an award of priority or judgment has been entered as to all parties and all counts.

2. Section 1.14 is amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application in which the applicant has filed an authorization to open the complete application to the public, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant.

* * * * *

3. Section 1.17 is amended by revising paragraphs (h) and by adding new paragraphs (n) and (o) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $120.00

§1.47	— for filing by other than all the inventors or a person not the inventor
§1.48	— for correction of inventorship
§1.182	— for decision on questions not specifically provided for
§1.183	— to suspend the rules
§1.295	— for review of refusal to publish a statutory invention registration
§1.377	— for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent
§1.378(e)	— for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent
§1.644(e)	— for petition in an interference
§1.644(f)	— for request for reconsideration of a decision on petition in an interference
§1.666(c)	— for late filing of interference settlement agreement
§§5.12, 5.13, & 5.14	— for expedited handling of foreign filing license
§5.15	— for changing the scope of a license
§5.25	— for retroactive license

* * * * *

(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiner's acton pursuant to §1.104 . . . . . $400.00 reduced by the amount of the application basic filing fee paid

(o) For requesting publication of a statutory invention registration after the mailing of the first examiner's action pursuant to §1.104 . . . . . $800.00 reduced by the amount of the application basic filing fee paid

4. Section 1.19 is amended by revising paragraphs (a) and (e) to read as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:

(1) Printed copy of a patent, including a design patent, statutory invention registration, or defensive publication document, except color plant patent $1.00

* * *

* * * * *

(e) List of patents in subclass:

(1) For list of all United States patents and statutory invention registrations in a subclass, per 100 numbers or fraction thereof 2.00

(2) For list of United States patents and statutory invention registrations in a subclass limited by date or number, per 50 numbers or fraction thereof 2.00

5. Section 1.20 is amended by revising paragraphs (e), (f), (g) and (m) to read as follows:

§1.20 Post-issuance fees.

* * * * *

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant $200.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant 400.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant 600.00

* * * * *

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable 500.00

6. Section 1.45 is revised by labeling the existing paragraph as (a) and by adding new paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

(a) * * * * *

(b) Inventors may apply for a patent jointly even though

(1) they did not physically work together or at the same time,

(2) each inventor did not make the same type or amount of contribution, or

(3) each inventor did not make a contribution to the subject matter of every claim of the application.

(c) If multiple inventors are named in an application, each named inventor must have made a contribution, individually or jointly, to the subject matter of at least one claim of the application and the application will be considered to be a joint application under 35 U.S.C. 116.

7. Section 1.48 is amended by labeling the current paragraph as paragraph (a) and by adding new paragraphs (b) and (c) to read as follows:

§1.48 Correction of inventorship.

(a) * * * * *

(b) If the correct inventors are named in the application when filed and the prosecution of the application results in the amendment or cancellation of claims so that less than all of the originally named inventors are the actual inventors of the invention being claimed in the application, an amendment shall be filed deleting the names of the person or persons who are not inventors of the invention being

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claimed. The amendment must be diligently made and shall be accompanied by:

(1) a petition including a statement identifying each named inventor who is being deleted and acknowledging that the inventor's invention is no longer being claimed in the application, and
(2) the fee set forth in §1.17(h).

(c)If an application discloses unclaimed subject matter by an inventor or inventors not named in the application, the application may be amended pursuant to paragraph (a) of this section to add claims to the subject matter and name the correct inventors for the application. [OMB Control No. 0651–0018].

8. Section 1.60 is revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

(a) A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 and §1.78(a)), naming as inventors the same or less than all the inventors named in a prior application and which discloses and claims only subject matter disclosed in the prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application.

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a), (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration showing the signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application, and (3) the inventors named in the continuation or divisional application are the same or less than all the inventors named in the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date. If the continuation or divisional application is filed by less than all the inventors named in the prior application a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation or divisional application.

9. Section 1.61 is amended by revising the section heading and paragraphs (a) and (b) and adding paragraphs (c) and (d) to read as follows:

§1.61 Filing of applications in the United States of America as a Designated Office.

(a) To maintain the benefit of the international filing date and obtain an examination as to the patentability of the invention in the United States, the applicant shall furnish to the U.S. Patent and Trademark Office not later than the expiration of 20 months from the priority date: (1) a copy of the international application with any amendments under PCT Article 19, unless it has been previously communicated by the International Bureau or unless it was originally filed in the U.S. Patent and Trademark Office; (2) a translation of the international application and a translation of any amendments under PCT Article 19 into the English language, if originally filed in another language; (3) the national fee (see §1.445(a)(4)); and (4) an oath or declaration of the inventor (see §1.70).

(b) If the translation of the international application, oath or declaration, and national fee have not been submitted by the applicant within twenty (20) months from the priority date, such requirements may be met within twenty-two (22) months from the priority date. The payment of the surcharge set forth in §1.445(a)(5) is required as a condition for accepting the national fee or the oath or declaration later than 20 months after the priority date. The payment of the processing fee set forth in §1.445(a)(6) is required for acceptance of an English translation later than 20 months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of §1.136 do not apply to the 22 month period of this section.

(c) If a copy of the amendments under PCT Article 19 is not communicated by the International Bureau or a copy thereof and any necessary English translation thereof is not received by the end of 20 months from the priority date, such failure will be regarded as cancellation of the amendments under PCT Article 19 in the international application.

(d) Verification of the translation of the international application or any other document pertaining to an international application may be required where it is considered necessary, if the international application or other document was filed in a language other than English.

10. Section 1.62 is amended by revising paragraphs (a), (c) and (h) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification, drawings and oath or declaration from a prior complete application (§1.51(a)) which is to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior complete application. If the continuation, continuation-in-part, or divisional application is filed by less than all the inventors named in the prior application a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation, continuation-in-part, or divisional application.

* * * * *

(c) In the case of a continuation-in-part application which adds and claims additional disclosure by amendment, an oath or declaration as required by §1.63 must also be filed. In those situations where a new oath or declaration is required due to additional subject matter being claimed, additional inventors may be named in the continuing application. In a continuation or divisional application which discloses and claims only subject matter dislcosed in a prior application, no additional oath or declaration is required and the application must name as inventors the same or less than all the inventors named in the prior application.

* * * * *

(h) The applicant is urged to furnish the following information relating to the prior and continuing applications to the best of his or her ability:

* * * * *

(5) The title of the invention and names of the applicants to be named in the continuing application.

* * * * *

11. Section 1.78 is amended by revising paragraphs (a) and (c) and by adding a new paragraph (d) to read as follows:

§1.78 Claiming benefit of earlier filing date and cross-references to other applications.

(a) An application may claim an invention disclosed in a prior filed copending national application or international application designating the United States of America. In order for an application to claim the benefit of a prior filed copending national application, the prior application must name as an inventor at least one inventor named in the later filed application and dislcose the named inventor's invention claimed in at least one claim of the later filed application in the manner provided by the first paragraph of 35 U.S.C. 112. In addition, the prior application must be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(1) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

* * * * *

(c) Where two or more applications, or an application and a patent naming different inventors and owned by the same party contain conflicting claims, and there is no statement of record indicating that the claimed inventions were commonly owned or subject to an obligation of assignment to the same person at the time the later invention was made, the assignee may be called upon to state whether the claimed inventions were commonly owned or subject to an obligation of assignment to the same person at the time the later invention was made, and if not, indicate which named inventor is the prior inventor. In addition to making said statement, the assignee may also explain why an interference should or should not be declared.

(d) Where an application claims an invention which is not patentably distinct from an invention claimed in a commonly owned patent with the same or a different inventive entity, a double patenting rejection will be made in the application. An obviousness-type double patenting rejection may be obviated by filing a terminal disclaimer in accordance with §1.321(b).

12. Section 1.101 is amended by revising paragraph (a) to read as follows:

§1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to §1.102. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

* * * * *

13. Section 1.103 is amended by revising paragraph (d) to read as follows:

§1.103 Suspension of action.

* * * * *

(d) Action on applications in which the Office has accepted a request to publish a defensive publication will be suspended for the entire pendency of these applications except for purposes relating to patent interference proceedings under Subpart E.

14. Section 1.104 is amended by adding a new paragraph (e) immediately following the Note to paragraph (d) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

(e) Co-pending applications will be considered by the examiner to be owned by, or subject to an obligation of assignment to, the same person if (1) the application files refer to assignments recorded in the Patent and Trademark Office in accordance with §1.331 which convey the entire rights in the applications to the same person or organization; or (2) copies of unrecorded assignments which convey the entire rights in the applications to the same person or organization are filed in each of the applications; or (3) an affidavit or declaration by the common owner is filed which states that there is common ownership and states facts which explain why the affiant or declarant believes there is common ownership; or (4) other evidence is submitted which establishes common ownership of the applications. In circumstances where the common owner is a corporation or other organization an affidavit or declaration may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization.

15. Section 1.106 is amended by adding new paragraphs (d) and (e) to read as follows:

§1.106 Rejection of claims.

* * * * *

(d) Subject matter which is developed by another person which qualifies as prior art only under 35 U.S.C. 102 (f) or (g) may be used as prior art under 35 U.S.C. 103 against a claimed invention unless the entire rights to the subject matter and the claimed invention were commonly owned by the same person or organization or subject to an obligation of assignment to the same person or organization at the time the claimed invention was made.

(e) The claims in any original application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the same subject matter is claimed in the application and the statutory invention registration. The claims in any reissue application naming an inventor will be rejected as being precluded by a waiver in a published statutory invention registration naming that inventor if the reissue application seeks to claim subject matter (1) which was not covered by claims issued in the pa-

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tent prior to the date of publication of the statutory invention registration and (2) which was the same subject matter waived in the statutory invention registration.

16. Section 1.108 is revised to read as follows:

§1.108 Abandoned applications not cited.

Abandoned applications as such will not be cited as references except those which have been opened to inspection by the public following a defensive publication.

17. Section 1.110 is added to read as follows:

§1.110 Inventorship and date of invention of the subject matter of individual claims.

When more than one inventor is named in an application or patent, the Patent and Trademark Office, when necessary for purposes of an Office proceeding, may require an applicant, patentee, or owner to identify the inventive entity of the subject matter of each claim in the application or patent. Where appropriate, the invention dates of the subject matter of each claim and the ownership of the subject matter on the date of invention may be required of the applicant, patentee or owner. See also §§1.78(c) and (d). [OMB Control No. 0651-0018].

18. Section 1.131 is amended by revising paragraph (a) to read as follows:

§1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the inventor of the subject matter of the rejected claim, the owner of the patent under reexamination, or the person qualified under §§1.42, 1.43 or 1.47, shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the inventor or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the inventor's or patent owner's application was filed in this country.

* * * * *

§1.139 [removed]

19. Section 1.139 is removed.

20. Section 1.193 is amended by revising paragraph (b) to read as follows:

§1.193 Examiner's answer.

* * * * *

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within one month from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within two months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

* * * * *

21. A new section 1.293 is added to read as follows:

§1.293 Statutory invention registration.

(a) An applicant for an original patent may request, at any time during the pendency of applicant's pending complete application, that the specification and drawings be published as a statutory invention registration. Any such request must be signed by (1) the applicant and any assignee of record or (2) an attorneyor agent of record in the application.

(b) Any request for publication of a statutory invention registration must include the following parts:

(1) a waiver of the applicant's right to receive a patent on the invention claimed effective upon the date of publication of the statutory invention registration;

(2) the required fee for filing a request for publication of a statutory invention registration as provided for in §1.17(n) or (o);

(3) a statement that, in the opinion of the requester, the application to which the request is directed meets the requirements of 35 U.S.C. 112; and

(4) a statement that, in the opinion of the requester, the application to which the request is directed complies with the formal requirements of this part for printing as a patent.

(c) A waiver filed with a request for a statutory invention registration will be effective, upon publication of the statutory invention registration, to waive the inventor's right to receive a patent on the invention claimed in the statutory invention registration, in any application for an original patent which is pending on, or filed after, the date of publication of the statutory invention registration. A waiver filed with a request for a statutory invention registration will not affect the rights of any other inventor even if the subject matter of the statutory invention registration and an application of another inventor are commonly owned. A waiver filed with a request for a statutory invention registration will not affect any rights in a patent to the inventor which issued prior to the date of publication of the statutory invention registration unless a reissue application is filed seeking to enlarge the scope of the claims of the patent. See also §1.106(e). [OMB Control No. 0651-0018].

22. A new section 1.294 is added to read as follows:

§1.294 Examination of request for publication of a statutory invention registration and patent application to which the request is directed.

(a) Any request for a statutory invention registration will be examined to determine if the requirements of §1.293 have been met. The application to which the request is directed will be examined to determine (1) if the subject matter of the application is appropriate for publication, (2) if the requirements for publication are met, and (3) if the requirements of 35 U.S.C. 112 and §1.293 of this part are met.

(b) Applicant will be notified of the results of the examination set forth in paragraph (a) of this section. If the requirements of §1.293 and this section are not met by the request filed, the notification to applicant will set a period of time within which to comply with the requirements in order to avoid abandonment of the application. If the application does not meet the requirements of 35 U.S.C. 112, the notification to applicant will include a rejection under the appropriate provisions of 35 U.S.C. 112. The periods for response established pursuant to this section are subject to the extension of time provisions of §1.136. After response by the applicant, the application will again be considered for publication of a statutory invention registration. If the requirements of §1.293 and this section are not timely met, the refusal to publish will be made final. If the requirements of 35 U.S.C. 112 are not met, the rejection pursuant to 35 U.S.C. 112 will be made final.

(c) If the examination pursuant to this section results in approval of the request for a statutory invention registration the applicant will be notified of the intent to publish a statutory invention registration.

23. A new section 1.295 is added to read as follows:

§1.295 Review of decision finally refusing to publish a statutory invention registration.

(a) Any requester who is dissatisfied with the final refusal to publish a statutory invention registration for reasons other than compliance with 35 U.S.C. 112 may obtain review of the refusal to publish the statutory invention registration by filing a petition to the Commissioner accompanied by the fee set forth in §1.17(h) within one month or such other time as is set in the decision refusing publication. Any such petition should comply with the requirements of §1.181(b). The petition may include a request that the petition fee be refunded if the final refusal to publish a statutory invention registration for reasons other than compliance with 35 U.S.C. 112 is determined to result from an error by the Patent and Trademark Office.

(b) Any requester who is dissatisfied with a decision finally rejecting claims pursuant to 35 U.S.C. 112 may obtain review of the decision by filing an appeal to the Board of Patent Appeals and Interferences pursuant to §1.191. If the decision rejecting claims pursuant to 35 U.S.C. 112 is reversed, the request for a statutory invention registration will be approved and the registration published if all of the other provisions of §1.293 and this section are met. [OMB Control No. 0651-0018].

24. A new section 1.296 is added to read as follows:

§1.296 Withdrawal of request for publication of statutory invention registration.

A request for a statutory invention registration, which has been filed, may be withdrawn prior to the date of the notice of the intent to publish a statutory invention registration issued pursuant to §1.294(c) by filing a request to withdraw the request for publication of a statutory invention registration. The request to withdraw may also include a request for a refund of any amount paid in excess of the application filing fee and a handling fee of $100 which will be retained. Any request to withdraw the request for publication of a statutory invention registration filed on or after the date of the notice of intent to publish issued pursuant to §1.294(c) must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h). [OMB Control No. 0651-0018].

25. A new section 1.297 is added to read as follows:

§1.297 Publication of statutory invention registration.

(a) If the request for a statutory invention registration is approved the statutory invention registration will be published. The statutory invention registration will be mailed to the requester at the correspondence address as provided for in §1.33(a). A notice of the publication of each statutory invention registration will be published in the *Official Gazette*.

(b) Each statutory invention registration published will include a statement relating to the attributes of a statutory invention registration. The statement will read as follows:

A statutory invention registration published pursuant to 35 U.S.C. 157 is not a patent but it has all of the attributes specified for patents in title 35, United States Code, except those specified in 35 U.S.C. 183 and sections 271 through 289. A statutory invention registration does not have any of the attributes specified for patents in any other provision of law other than title 35, United States Code. The invention with respect to which a statutory invention registration is published is not a patented invention for purposes of the marking provisions of 35 U.S.C. 292.

26. Section 1.301 is revised to read as follows:

§1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Patent Appeals and Interferences, and any party to an interference dissatisfied with the decision of the Board of Patent Appeals and Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office file a written notice of appeal directed to the Commissioner (see §§1.302 and 1.304); and (b) in the Court, file a copy of the notice of appeal and pay the fee for appeal, as provided by the rules of the Court. The certified list of documents and any original or certified copies of such documents required by the Court will be transmitted to the Court by the Patent and Trademark Office.

27. Section 1.302 is revised to read as follows:

§1.302 Notice of appeal.

(a) When an appeal is taken to the U.S. Court of Appeals for the Federal Circuit, the appellant shall give notice thereof to the Commissioner within the time specified in §1.304.

(b) In interferences, the notice must be served as provided in §1.646.

28. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under §1.197(b) or §1.658(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. Except for an appeal from or commencing a civil action after a decision of the Board of Patent Appeals and Interferences in a reexamination proceeding or an interference proceeding, the time periods set forth herein are subject to the provisions of §1.136. See §1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See §1.645(a) for extensions of time to appeal or commence a civil action in an interference. An examiner-in-chief, upon a showing of excusable neglect, may extend the time for seeking judicial review of a decision of the Board of Patent Appeals and Interferences in an interference case when a request is untimely filed after expiration of the time prescribed by this section.

* * * * *

29. Section 1.378 is amended by revising the section heading and paragraph (a) to read as follows:

§1.378 Acceptance of delayed payment of maintenance fee in expired patent to reinstate patent.

(a) The Commissioner may accept the payment of any maintenance fee due on a patent after expiration of the patent if, upon petition, the delay in payment of the maintenance fee is shown to the satisfaction of the Commissioner to have been unavoidable and if the surcharge required by §1.20(m) is paid as a condition of accepting payment of the maintenance fee.

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If the Commissioner accepts payment of the maintenance fee upon petition, the patent shall be considered as not having expired, but will be subject to the conditions set forth in 35 U.S.C. 41(c)(2).

* * * * *

30. Section 1.431 is amended by revising paragraphs (b)(3)(iii) and (c) and by adding new paragraphs (d) and (e) to read as follows:

§1.431 International application requirements.

* * * * *

(b)(3) * * *

(iii) The name of the applicant, as prescribed (note §§1.421-1.424);

(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fees (§1.445) may be made in full at the time international application papers required by paragraph (b) of this section are deposited or within one month thereafter. Failure to make full payment within one month of the deposit of the international application papers required by paragraph (b) of this section will result in the fees being charged to the International Bureau under the provisions of paragraph (d) of this section and PCT Rule 16 bis.

(d) The United States Receiving Office will charge to the International Bureau in accordance with PCT Rule 16 bis and will consider as having been timely paid:

(1) the transmittal fee, the basic fee portion of the international fee, or the search fee where these fees have not been fully paid by the applicant within one month of the date of deposit of the international application, and

(2) the destination fee, or the amount necessary to cover all the designations made in the request which have not been paid by the applicant within one year from the priority date.

(e) The International Bureau will notify applicant of any amount charged under paragraph (d) of this section and invite the applicant to pay directly to the International Bureau within one month from the date of the notification, the amount charged, augmented by a surcharge of 50%, provided the surcharge will not be less and will not be more, than the amounts indicated in the Schedule of Fees appended to the PCT Rules. If the payment needed to cover the transmittal fees, the basic fee, the search fee, one designation fee and the surcharge is not timely made to the International Bureau, the International Bureau will notify the Receiving Office which will declare the international application withdrawn under PCT Article 14(3)(a). If the applicant makes timely payment of the fees referred to in the previous sentence, but the amount paid is not sufficient to cover all the designation fees, the Receiving Office will declare any designations not paid withdrawn under PCT Article 14(3)(b) in accordance with PCT Rule 16 bis. 2(c).

31. Section 1.445 is amended by revising paragraphs (a)(4) and (5) and adding paragraph (a)(6) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited one time only by an amount of $250 where an international search fee of $500.00 has been paid on the corresponding international application to the United States Patent and Trademark Office as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single $500.00 international search fee.

(5) Surcharge for filing the national fee or oath or declaration later than 20 months from the priority date $100.00

(6) For filing an English translation of an international application later than 20 months after the priority date (§1.61(b)).. $20.00

* * * * *

32. Section 1.446 is amended by revising the section heading and paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee toward payment of the national fee may be made one time to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee provided that a $500 search fee has been paid.

* * * * *

33. Section 1.451 is amended by revising paragraphs (b) and (c) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office or in a separate letter filed in the Receiving Office not later than 16 months after the priority date, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Article 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a)(3) and (b)(1).

(c) If a certified copy of the priority document is not submitted together with the international application on filing, or, if the priority application was filed in the United States and a request and appropriate payment for preparation of such a certified copy do not accompany the international application on filing or are not filed within 16 months of the priority date, the certified copy of the priority document must be furnished by the applicant to the International Bureau or to the United States Receiving Office within the time limit specified in PCT Rule 17.1(a).

34. Section 1.461 is amended by deleting paragraph (b) and by revising paragraph (a) to read as follows:

§1.461 Procedures for transmittal of record copy to the International Bureau.

(a) Transmittal of the record copy of the international application to the International Bureau shall be made by the United States Receiving Office.

(b) (reserved)

* * * * *

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Feb. 14, 1985.

[1053 OG 10]

(159) **Establishing Common Ownership of Patent Applications and/or Patents Owned by a Corporation or Other Organization**

This notice is intended to simplify the practice of establishing common ownership of patent applications and/or patents in circumstances where the common owner is a corporation or other organization. Under 37 CFR 1.104(e), in order to establish common ownership "[i]n circumstances where the common owner is a corporation or other organization an affidavit or declaration may be signed by an official of the corporation or organization empowered to act on behalf of the corporation or organization." A mere power of attorney to prosecute a patent application does not make an individual an official of a corporation or organization or empower the individual to act on behalf of the corporation or organization in making an affidavit or declaration averring to common ownership. However, such an affidavit could be made by a patent attorney, patent agent, or other individual if the attorney, agent, or other individual has been appointed in writing by the corporation or organization as an official of the corporation or organization specifically empowered to make affidavits or declarations on its behalf averring to common ownership. In circumstances where such a written appointment has been given to a patent attorney, patent agent, or other individual, that person could then make affidavits or declarations averring to common ownership as long as the affidavit or declaration referred to an attached copy of the written appointment and averred that the authority is still in effect. Under this practice the original signed copy of the written appointment would be retained by the affiant or declarant unless the Patent and Trademark Office specifically required it to be filed. Unless some question arose as to the authority of the individual to make the averment as to common ownership, the Patent and Trademark Office would ordinarily not need to require the original signed copy of the written appointment. While this practice should simplify the establishing of common ownership by necessitating only one original signed written appointment, corporations and other organizations must exercise care that the written appointment is only given to those persons who are in a position to know that common ownership does in fact exist and can therefore properly make affirmative representations to that effect to the Patent and Trademark Office.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patent and Trademarks.

May 12, 1986.

[1067 OG 11]

(160) **U.S. Department of Commerce**
Patent and Trademark Office
Special Status for Patent Applications Relating to Superconductivity

In his Remarks of July 28, 1987, to the Federal Conference On Commercial Applications of Superconductivity, the President stated that "We need to strengthen patent laws to increase protection for manufacturing processes and speed up the patent process so that it can keep pace with the fast-paced world of high technology." The President also noted that "to most of us laymen, superconductivity was a completely new term, but it wasn't long before we learned of the great promise it held out to alter our world for the better — a quantum leap in energy efficiency that would bring with it a host of benefits, not least among them a reduced dependence on foreign oil, a cleaner environment, and a stronger national economy." The President's Superconductivity Initiative of even date included, as a major administrative component, a proposal "Directing the Patent and Trademark Office to accelerate the processing of patent applications and adjudication of disputes involving superconductivity technologies when requested by the applicants to do so."

In accordance with the President's proposal, the Patent and Trademark Office will, on request, accord "special" status to all patent applications for inventions involving superconductive materials. Examples of such inventions would include those directed to the superconductive materials themselves as well as to their manufacture and application. In order that the Patent and Trademark Office may implement this procedure, we invite all applicants desiring to participate in this program to request that their applications be accorded "special" status. Such requests should be in writing, should identify the application by serial number and filing date, and should be accompanied by a statement under 37 CFR 1.102 that the invention involves superconductive materials. No fee is required. The statement must be verified if made by a person not registered to practice before the Patent and Trademark Office. Decisions whether to accord "special" status on the basis of a request will be made by the appropriate Group Director.

Requests should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

DONALD J. QUIGG,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Aug. 5, 1987.

[1082 TMOG 7]

(161) **Preparation for Processing High Temperature Superconductor Technology**

In response to the President's Superconductivity Initiative announced on July 28, 1987 and with the expectation of the filing of increasing numbers of patent applications relating to higher temperature superconductors, the U.S. Patent and Trademark Office has taken a number of steps to prepare for the effective handling of applications on this subject matter.

These actions include (1) establishing a special Task Force to prepare for the processing of patent applications for higher temperature superconductor technology; (2) making patent applications relating to this technology special on request of the applicant and (3) renewing support for legislation providing for an expanded scope of protection for process patents to cover products made by the patented process.

The responsibilities of the Task Force are to (1) coordinate the development of a Patent and Trademark Office capability to examine the expected large number of patent applications in this area and (2) provide an information resource and sounding board for legal and practice questions and policy development in this area. The Task Force has been assigned a number of specific tasks, such as developing a complete search file on superconductivity technology for the use of Examiners and the public, establishing a training program for examiners on the technology and assuring a uniform and consistent application of the patent law to the technology in the U.S. Patent and Trademark Office.

RENE D. TEGTMEYER, for
DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Sept. 16, 1987.

[1083 OG 16]

(162) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1 and 5
[Docket No. 70754-8056]

Miscellaneous Amendments of Patent Rules

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.

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Summary: The Patent and Trademark Office is amending its rules of practice in patent cases, Parts 1 and 5 of Title 37, Code of Federal Regulations, (1) to bring the rule relating to swearing back of a reference into conformity with current interference practice; (2) to require that the appellant's brief in an *ex parte* appeal contain certain specific items; (3) to reset the time period for requesting an oral hearing in *ex parte* appeals where the examiner's answer states a new ground of rejection; (4) to clarify the procedure following a rejection after a remand to the examiner under §1.196(b)(l); (5) to give the examiner-in-chief the authority to decide certain requests for access by an interference party; (6) to clarify the rule relating to access to pending or abandoned applications; (7) to modify the rules concerning requests for interference with an application or patent; (8) to amplify the rule concerning the requirements of a motion to declare an additional interference; (9) to make more comprehensive the rule concerning the filing of a reissue application by a patentee involved in an interference; and (10) to conform the rule concerning applications under secrecy order to current interference practice.
Effective Date: Sept. 12, 1988. Amended Sections 1.191, 1.192 and 1.193 apply to *ex parte* appeals in which the notice of appeal under §1.191 was filed on or after Sept. 12, 1988.
For Further Information Contact: Saul I. Serota by telephone at (703) 557-4072 or Ian A. Calvert by telephone at (703) 557-4000 or by mail marked to the attention of either and addressed to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information:

Background

A notice of proposed rulemaking was published in the *Federal Register* at 52 Fed. Reg. 36736-36743 (Sept. 30, 1987) and at 1083 *Official Gazette* 19-26 (Oct. 13, 1987).

An oral hearing was held on Dec. 9, 1987. Twenty-nine written comments were received, and four persons testified at the oral hearing. Responses to these comments are incorporated in the following discussion of specific rules.

Discussion of Specific Rules

(1) Swearing Back of a Reference

The Patent and Trademark Office published the final rule amending the rules of practice in patent interference cases in the *Federal Register* at 49 Fed. Reg. 48416-48471 (Dec. 12, 1984) and at 1050 *Official Gazette* 385-440 (Jan. 29, 1985). Included in the rules adopted was §1.601(n), which defines "same patentable invention."

Section 1.131(a), as amended, inserts "the same patentable invention, as defined in §1.601(n), as" before the phrase "the rejected invention." The amendment does not change the present practice where the inventor of the rejected claim, the owner of a patent under reexamination, or the person qualified under §§1.42, 1.43 or 1.47 can swear behind a domestic patent which discloses but does not claim the same invention as the rejected invention, a foreign patent or a printed publication. Rather, the amendment is necessary to define precisely the term "does not claim the rejected invention." See *In re Eickmeyer*, 602 F.2d 974, 979, 202 USPQ 655, 661 (CCPA 1979) where the Court stated:

> . . . we conclude that the phrase "does not claim the rejected invention" should be construed favorably to an applicant, if possible, so that unless the applicant is clearly *claiming the same invention* as the U.S. patent reference, he will not lose his rights under Rule 131. [Emphasis added.]

and also expressed its dissatisfaction with the PTO for

> . . . leaving an applicant in a position where he cannot overcome the reference claims by a 131 affidavit because the PTO has decided that the reference claims his invention, while at the same time, he is denied an interference because the PTO has decided that the claims of his application and those of the reference are not for substantially the same invention.

Possibly because of this decision, some patent practitioners may have been of the opinion that an affidavit under 37 CFR 1.131 can be used to overcome a rejection on a domestic patent so long as there is no verbatim correspondence between the claims of the application or the patent under reexamination rejected on that domestic patent and the claims of the domestic patent.

Such an opinion would not be in accord with the law expressed in cases such as *In re Clark*, 457 F.2d 1004, 173 USPQ 359 (CCPA 1972); *In re Hidy*, 303 F.2d 954, 133 USPQ 650 (CCPA 1962); *In re Teague*, 254 F.2d 145, 117 USPQ 284 (CCPA 1958); and *In re Ward*, 236 F.2d 428, 111 USPQ 101 (CCPA 1956). In *In re Hidy*, *supra*, 303 F.2d at 957, 133 USPQ at 652, the Court stated:

> A Rule 131 affidavit is ineffective to overcome a United States patent, not only where there is a verbatim correspondence between claims of the application and of the patent, but also where there is no patentable distinction between the respective claims. *In re Wagenhorst*, 20 CCPA 829, 62 F.2d 831, 16 USPQ 126; *In re Teague*, 45 CCPA 877 , 254 F.2d 145 , 117 USPQ 284.

If the application (or patent under reexamination) and the domestic patent contain claims which are identical, or which are not patentably distinct, then the application and patent are claiming the "same patentable invention," defined by §1.601(n) as follows:

> Invention "A" is the "same patentable invention" as an invention "B" when invention "A" is the same as (35 U.S.C. 102) or is obvious (35 U.S.C. 103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A".

As provided in §1.601(i), an interference may be declared whenever an examiner is of the opinion that an application and a patent contain claims for the "same patentable invention." The purpose of the amendment to §1.131(a) is to insure that an applicant who is claiming an invention which is identical to, or obvious in view of, i.e., the same patentable invention as claimed in a domestic patent, cannot employ an affidavit under §1.131 as a means for avoiding an interference with the patent. To allow an applicant to do so would result in the issuance of two patents to the same invention.

Two commenters suggested that §1.131 be amended to require that an interference be declared if an affidavit or declaration under the rule cannot be used; another suggested that the examiner be required to consider the §1.131 affidavit or declaration if an interference is not declared. These suggestions are not being adopted. As discussed above, an affidavit or declaration under §1.131 may be used whenever the inventions claimed by the reference patent (not a statutory bar) and the application would not interfere. However, the rule could not properly be amended to require that an interference always be declared if the patent and application claims interfere, because even if the claims interfere an interference will not be declared unless the applicant first meets the requirements of 37 CFR 1.608(a) or (b). Section 1.608(b) requires an applicant whose showing is based on priority of invention to file affidavits by "one or more corroborating witnesses," whereas §1.131 does not. Compare *Kistler* v. *Weber*, 412 F.2d 280, 162 USPQ 214 (CCPA 1969).

One commenter asserted that an applicant should be able to "pursue the swearing back of a reference while not restricting the PTO in declaring an interference." However, the PTO is not restricted from declaring an interference if an affidavit or declaration under §1.131 is filed. The purpose of the rule change is to more clearly define when such an affidavit or declaration can be used.

Section 1.131(b), as amended, inserts in the first sentence thereof the language, "prior to" before the words "said date." This amendment makes clear that the showing of facts under §1.131(b) must establish due diligence from a date prior to the effective date of the reference to affiant's subsequent reduction to practice or to the filing of his application as set forth in *In re Mulder*, 716 F.2d 1542, 219 USPQ 189 (Fed. Cir. 1983).

(2) Appellant's Brief and Reply Brief

A. Limitation on Length

The proposed limitations on briefs and reply briefs to 30 and 15 pages, respectively, together with the proposal that non-complying briefs and reply briefs be returned to the appellant, are not being adopted, in view of the overwhelming opposition of the majority of the commenters. While the PTO is still concerned about the filing of excessively lengthy briefs, it is hoped that the effect of the proposed rules in focusing the attention of the patent bar on this issue, together with the newly-adopted requirements of §1.192(c), will help to alleviate the problem.

B. Contents of the Main Brief

Section 1.192, as amended, adds paragraphs (c) and (d). Paragraph (c) remains as proposed, except that item (5) has been revised and the title of item (7) has been changed. The first sentence of proposed paragraph (d) has been rewritten in response to numerous comments to the effect that dismissal of the appeal for failure to include any of the items required by paragraph (c), in the order specified in paragraph (c), would be too harsh a penalty.

Paragraph (c) requires that the brief contain, in order, seven specific items. This requirement arose from the recommendations of a committee which was appointed by the Commissioner of Patents and Trademarks in 1986 to study and report on alternatives for reducing the backlog of *ex parte* appeals at the Board of Patent Appeals and Interferences (Board). One of the committee's recommendations was that §1.192 be amended to require that the appellant's brief include certain items. Items (3), (4), (5) and (6) of §1.192(c) are based upon the committee's recommendations. The committee indicated that the inclusion of those items in the brief would crystallize the issues involved in the appeal. By eliminating inadequate briefs, the Board will not need to engage in what might be called "*de novo*" examination of a patent application, but rather can confine its activities to review of the appealed rejections.

The committee also recommended that certain items be required to be included in the examiner's answer. The *Manual of Patent Examining Procedure* will be amended to require that the examiner's answer contain these and other items, substantially as indicated in Appendix A.

In addition to the committee's recommendations, some of the items are supported by the evaluation of selected practices conducted as a part of the PTO's Quality Reinforcement Program. A summary of the results of that evaluation is published at 1078 *Official Gazette* 22 (May 19, 1987).

The specific items required by §1.192(c) are:

(1) A statement of the status of all the claims in the application, or patent under reexamination, i.e., for each claim in the case, appellant should state whether it is cancelled, allowed, rejected, etc. Each claim on appeal must be identified.

(2) A statement of the status of any amendment filed subsequent to final rejection, i.e., whether or not the amendment has been acted upon by the examiner, and if so, whether it was entered, denied entry, or entered in part. In response to one comment, it is noted that this statement will of course be of the status of the amendment as understood by the appellant.

Items (1) and (2) are included in §1.192(c) because in the past confusion has sometimes arisen as to which claims are on appeal, and the precise wording of those claims, particularly where the appellant has sought to amend claims after final rejection. The inclusion of items (1) and (2) in the brief will advise the examiner of what the appellant considers the status of the claims and post-final rejection amendments to be, allowing any disagreement on these questions to be resolved before the appeal is taken up for decision by the Board.

(3) A concise explanation of the invention defined in the claims involved in the appeal. This explanation is required to refer to the specification by page and line number, and, if there is a drawing, to the drawing by reference characters. Where applicable, it would be preferable to read the appealed claims on the specification and any drawing.

Two commenters felt that the requirement that the specification be referred to by page and line should be optional; another, that referring to the specification and drawings might limit the claims; and others, that reference to page and line of the specification would make the explanation less concise. Nevertheless, while reference to page and line of the specification may require somewhat more detail than simply summarizing the invention, it is considered important to enable the Board to more quickly determine where the claimed subject matter is described in the application. Since the claims are read in light of the disclosure, it is not apparent how compliance with this requirement would limit the claims.

(4) A concise statement of the issues presented for review. Each stated issue should correspond to a separate ground of rejection which appellant wishes the Board to review. While the statement of the issues must be concise, it should not be so concise as to omit the basis of each issue. For example, the statement of an issue as "Whether claims 1 and 2 are unpatentable" would not comply with §1.192(c)(4). Rather, the basis of the alleged unpatentability must be stated, e.g., "Whether claims 1 and 2 are unpatentable under 35 U.S.C. 103 over Smith in view of Jones," or "Whether claims 1 and 2 are unpatentable under 35 U.S.C. 112, first paragraph, as being based on a non-enabling disclosure." The statement should be limited to the issues presented, and should not include any argument concerning the merits of those issues.

Two commenters suggested that the term "issues" in §1.192 (c)(4) be replaced by "rejections," as being more in agreement with the explanation in the preceding paragraph. However, the term "issues" is considered preferable, because some rejections may encompass multiple issues. For example, a rejection for failure to comply with 35 U.S.C. 112, first paragraph, might include the issues of no written description, nonenabling disclosure, and lack of best mode. Specifying each of these as a separate issue would be more informative than including them all in a single statement of the rejection.

(5) If an appealed ground of rejection applies to more than one claim and appellant considers the rejected claims to be separately patentable, §1.192(c)(5) requires appellant to state that the claims do not stand or fall together, and to present in the appropriate part or parts of the argument under §1.192(c)(6) the reasons why they are considered separately patentable. The absence of such a statement will be taken by the PTO as a concession by the appellant that, if the ground of rejection is sustained as to any one of the rejected claims, it will be equally applicable to all of them. Section 1.192(c)(5) continues the current practice of the Board, and is consistent with the practice of the Court of Appeals for the Federal Circuit indicated in such cases as *In re Sernaker*, 702 F.2d 989, 217 USPQ 1 (Fed. Cir. 1983), and *In re King*, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986).

One commenter recommended that this provision be deleted, because the grouping of claims would be "redundant in view of the arguments presented in the Brief and/or prior prosecution," and such grouping may estop

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the patentee in subsequent litigation from showing the patentable distinctness of claims within a group. Another commenter suggested that the rule be modified to state that appellant can waive arguments for patentability as to claims solely for the purpose of simplifying issues for appeal, without giving rise to any permanent inference therefrom. These recommendations are not adopted. One reason for incorporating §1.192(c)(5) is that it is often not clear whether or not appellant is urging that certain rejected claims are separately patentable. It is not apparent why any estoppel which may result from requiring a clear statement of appellant's position should or would differ from that which may presently result from a failure to argue that claims are separately patentable.

Another commenter asserted that §1.192(c)(5) elevates form over substance, and improperly tries to resolve the patentability of claims on formal grounds, rather than on the merits of the individual claims. What this comment seems to say is that the patentability of each claim should be determined separately, even if not argued separately. This is, however, not the current practice, as discussed above.

Two commenters suggested either that the requirement for "reasons" be deleted from §1.192(c)(5), or that the subsection be deleted entirely. They contended that any such "reasons" should appear in the "Argument" section (§1.192(c)(6)), and their repetition in §1.192(c)(5) is redundant. These suggestions have been adopted in part. Proposed §1.192(c)(5) required the inclusion of "reasons" in order to avoid unsupported assertions of separate patentability. The requirement of "reasons" has therefore been retained, but §1.192(c)(5) now specifies that they be included in the appropriate portion of the "Argument" section of the brief. For example, if claims 1 to 4 are rejected under 35 U.S.C. 102 and appellant considers claim 4 to be separately patentable from claims 1 to 3, he should so state in the "Grouping of claims" section of the brief, and then give the reasons for separate patentability in the 35 U.S.C. 102 portion of the "Argument" section (i.e., under §1.192(c)(6)(iii)).

(6) The appellant's contentions with respect to each of the issues presented for review in §1.192(c)(4), and the basis for those contentions, including citations of authorities, statutes, and parts of the record relied on. Included in this paragraph are five subparagraphs, (i) to (v). Subparagraphs (i) to (iv) concern the grounds of rejection most commonly involved in *ex parte* appeals, namely, 35 U.S.C. 112, first and second paragraphs, 35 U.S.C. 102, and 35 U.S.C. 103. Subparagraph (v) is a general provision concerning grounds of rejection not covered by subparagraphs (i) to (iv).

The purpose of subparagraphs (i) to (iv) is to insure that the appellant's argument concerning each appealed ground of rejection will include a discussion of the questions relevant to that ground. It is believed that compliance with the requirements of the particular subparagraphs which are pertinent to the grounds of rejection involved in an appeal will be beneficial both to the PTO and to appellants. It will not only facilitate a decision by the Board by enabling the Board to determine more quickly and precisely the appellant's position on the relevant issues, but also will help appellants to focus their arguments on those issues.

For each rejection not falling under subparagraphs (i) to (iv), subparagraph (v) provides that the argument should specify the specific limitations in the rejected claims, if appropriate, or other reasons, which cause the rejection to be in error. This language recognizes that for some grounds of rejection, it may not be necessary to specify particular claim limitations; for example, a rejection under 35 U.S.C. 101, as in *Ex parte Hibberd*, 227 USPQ 443 (BPAI 1985), or a rejection for violation of the duty of disclosure under 37 CFR 1.56(d), as in *Ex parte Harita*, 1 USPQ2d 1887 (BPAI 1986).

One commenter proposed that the provisions of parts (i) to (iv) should be optional, rather than mandatory. The PTO does not agree. One of the primary purposes of the present amendment of the rules is to require appellants to come to grips with the fundamental questions involved in determining patentability under 35 U.S.C. 102, 103 and 112. To make these provisions optional would defeat that purpose. Although parts (i) to (v) may, in the words of another commenter, "in essence merely parrot the relevant section of Title 35," experience of the PTO suggests that including them in the requirements for *ex parte* briefs is not "completely unnecessary." For similar reasons, the PTO does not favor the adoption of appropriate portions of Rule 13 of the United States Court of Appeals for the Federal Circuit and Rule 28 of the Federal Rules of Appellate Procedure, as this commenter proposed.

The latter commenter proposed as an alternative that parts (i) to (v) should be amended to, in effect, provide that the appellant must either specify the errors in the rejection or explain how the claims comply with the relevant section of the statute, rather than doing both, which may be unnecessary and create "harmful and unnecessary prosecution history estoppel" by requiring a discussion of issues not raised by the examiner. This proposal has not been adopted. Giving an appellant the option of not explaining how the claims comply with the statute would perpetuate one of the problems the rule is designed to solve.

One commenter contended that §1.192(c)(6)(i) and (ii) improperly place on an appellant the burden of showing how the rejected claims comply with 35 U.S.C. 112. It should be remembered, however, that in the rejection from which the appeal is taken the examiner has already stated why the claims are considered unpatentable. Once this has been done, the appellant must demonstrate to the Board that the rejection is erroneous. The requirements of §1.192(c)(6)(i) and (ii) are therefore not improper or unreasonable.

Another commenter suggested that item (B) of §1.192(c) (6)(i) should be divided into two parts: "how-to-make" and "how-to-use." This is not considered necessary.§1.192(c) (6)(i) states that the argument include, "as appropriate," items (A), (B) and (C). If the rejection were for failure of the disclosure to enable one skilled in the art to make the claimed subject matter, then the argument would not have to specify how the disclosure enabled use of the subject matter, and vice versa.

A commenter suggested that the language of the first sentence of §1.192(c)(6)(iv) is misleading, and that the second and third sentences should be deleted. The commenter asserts that for a valid rejection the subject matter of the invention as a whole must be rendered obvious, in accordance with the test set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), and suggests that §1.192(c)(6)(iv) be modified to require that the argument follow the analysis method of the *Graham* decision. These proposals have not been adopted. The language of §1.192(c)(6)(iv) is based on the statute. Nothing therein is intended to change the law, or to preclude an appellant from basing arguments on the case law. The purpose of the language is to attempt to focus the argument on the specific issues of the particular case at hand, and to avoid arguments based entirely on broad generalities. The third sentence is included because it has been observed that in a number of cases appellants ignore the secondary references applied by the examiner, and argue a rejection under 35 U.S.C. 103 as though it were a rejection under 35 U.S.C. 102.

(7) An appendix containing a copy of the claims involved in the appeal.

Pursuant to one comment, the title of §1.192(c)(7) has been changed to "Appendix."

One commenter urged that the rule should not require that the copy of the claims be located at any particular place in the brief. This proposal is not adopted, as it is considered desirable that the examiner and the Board be able to locate the copy of the claims quickly by placing it in a common position in all briefs.

Two commenters expressed the concern that §1.192(c) does not permit the inclusion in a brief of any items other than the seven items specified. Other commenters suggested that other items be included, such as a list of the references, table of contents, table of cases, etc. It should be emphasized that §1.192(c) merely specifies the minimum requirements for a brief, and does not prohibit the inclusion of any other material which an appellant may consider necessary or desirable. A brief is in compliance with §1.192(c) as long as it includes items (1) to (7) in the order set forth (with the appendix, item (7), at the end).

Paragraph (d) provides that if a brief is filed which does not comply with all the requirements of paragraph (c), the appellant will be notified of the reasons for noncompliance and given a period of one month within which to file an amended brief. The appeal will be dismissed if the appellant does not file an amended brief within the one-month period, or files an amended brief which does not overcome all the reasons for non-compliance of which he or she was notified.

Several commenters proposed that the Board, rather than the examiner, should be the arbiter of whether a brief complies with §1.192(c). These proposals have not been adopted. The question of whether a brief complies with a rule is a matter within the jurisdiction of the examiner. Moreover, adoption of these proposals would require the application file to be sent to the Board to review the brief, then returned to the examiner for the examiner's answer. Such a procedure would not only cause unnecessary delays, but would contravene one of the purposes of §1.192(c) by increasing the workload of the Board. Under §1.192(d), as adopted, the appellant may file an amended brief to correct any deficiencies in the original. Moreover, if appellant disagrees with the examiner's holding of non-compliance, a petition under 37 CFR 1.181 may be filed.

Paragraph (d) also adds the following sentence:

> Any arguments or authorities not included in the brief may be refused consideration by the Board of Patent Appeals and Interferences.

This sentence emphasizes that all arguments and authorities which an appellant wishes the Board to consider should be included in the brief. It should be noted that arguments not presented in the brief and made for the first time at oral hearing are not normally entitled to consideration. *In re Chiddix*, 209 USPQ 78 (Comr. 1980); *Rosenblum* v. *Hiroshima*, 220 USPQ 383 (Comr. 1983). A number of commenters were concerned that this sentence of §1.192(d) would preclude the filing of a supplemental paper if a new argument or authority should become available or relevant after the brief was filed. No such result is intended. The sentence in question uses the word "may" to leave open the possibility that the Board has leeway to consider arguments or authorities not included in the brief under circumstances where the failure to include them can be justified. Examples of such circumstances would be where a pertinent decision of a court or other tribunal was not published until after the brief was filed, or where a particular argument or authority was not applicable to any of the grounds of rejection in the final rejection, but was relevant to a new point of argument raised in the examiner's answer.

C. Contents of Reply Brief

Section 1.193(b), as amended, inserts the following as the second and third sentences:

> The new points of argument shall be specifically identified in the reply brief. If the examiner determines that the reply brief is not directed only to new points of argument raised in the examiner's answer, the examiner may refuse entry of the reply brief and will so notify the appellant.

Since the reply brief must be limited to any new points of argument raised in the examiner's answer, compliance with the requirement of the second sentence should facilitate both preparation of the reply brief by appellant and consideration of the reply brief by the PTO. The reply brief is appropriately limited to new points of argument raised in the examiner's answer because appellants have an obligation to present arguments supporting their positions in their opening briefs. Considering an argument advanced for the first time in a reply brief would not only delay the proceeding, but also would entail the risk of an improvident or ill-advised opinion on the legal issues tendered. *Von Brimer* v. *Whirlpool Corp.*, 536 F.2d 838, 846, 190 USPQ 528, 534 (9th Cir. 1976).

The final sentence of §1.193(b), as amended, provides that the reply may be accompanied by, rather than include, any amendment or material appropriate to the new ground of rejection. This change in the rule makes clear that the amendment or other material must be presented in a separate paper, rather than in the reply itself.

A number of commenters proposed that the Board, not the examiner, should determine whether or not the reply brief is directed only to new points raised in the examiner's answer. In essence they feel that the examiner is not in a position to fairly judge whether a reply brief complies with the rule. These proposals have not been adopted. Section 1.193(b) requires that the appellant be notified if the reply brief is not entered because of non-compliance with the rule, and an appellant who disagrees with that ruling may seek review by way of a petition under 37 CFR 1.181. This is essentially no different than the procedure currently followed (see *Manual of Patent Examining Procedure*, §1208.01, p. 1200-9, 5th Ed., Rev. 7 (Dec. 1987)).

One commenter suggested that the examiner's answer be eliminated; another, that the examiner should have to file the examiner's answer first. These are both beyond the scope of the present proposal, and have not been adopted.

(3) Time Period for Requesting an Oral Hearing

Section 1.194(b), as amended, adds the following sentence after the first sentence:

> If the examiner's answer states a new ground of rejection and if appellant files a reply as provided by §1.193(b), then the written request must be made within three months after the date of the filing of the reply.

The present rule does not provide the appellant with an additional time period for requesting an oral hearing in the event that the examiner's answer states a new ground of rejection. If the answer states a new ground of rejection, §1.193(b) provides that appellant's reply may also include any amendment or material appropriate to the new ground of rejection. However, under §1.194(b) appellant must file the request for oral hearing within one month after the date of the answer whereas the reply thereto must be filed within two months from the date of the answer. Consequently, appellant must file a request for oral hearing before having the benefit of the examiner's views, if any, with respect to the reply.

Although the examiner does not normally issue a supplemental answer in response to a reply, see *Manual of Patent Examining Procedure, supra*, §1208.01, the amendment to §1.194(b) permits the appellant to postpone filing a request for an oral hearing until three months after the date the reply is filed. This will give the appellant time to receive the examiner's response, if any, to the reply before the appellant has to decide whether to request an oral hearing.

One commenter suggested that whenever the examiner makes a new ground of rejection in the examiner's answer and appellant files a reply brief, a supplemental examiner's answer should be required, and appellant then be permitted to file a supplemental reply thereto. This suggestion has not been adopted. Under present practice (see *Manual of Patent Examining Procedure, supra*) the examiner includes a new ground of rejection in the examiner's answer, rather than reopening ex parte prosecution, only under circumstances where the PTO has determined that the appellant will not be unfairly prejudiced, e.g., where the reference is not basic

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and materially better in meeting all the claims, and the requirements for making an action final are met. This sufficiently protects the rights of the appellant, while at the same time preventing the addition of a further round of papers to the file.

(4) Procedure Followinq Final Rejection, Remand Under §1.196(b)

Section 1.196(b)(l), as amended, adds the following sentence as the penultimate sentence of the section:

> Should the examiner repeat the rejection the applicant may again appeal to the Board of Patent Appeals and Interferences.

Under §1.196(b), the Board may, in its decision on an *ex parte* appeal, make a new rejection of one or more appealed claims, in which case the appellant has the option of (1) submitting an appropriate amendment of the rejected claims, and/or a showing of facts, (2) requesting reconsideration, or (3) treating the decision as a final decision. If the appellant elects option (1), the case is remanded to the examiner for consideration. If the examiner does not consider that the amendment and/or showing of facts overcome the rejection, he or she will again reject the claims; if appropriate, the rejection will be made final.

An applicant in whose application such a final rejection has been made by the examiner may mistakenly believe that he or she is entitled to review by the Board of the rejection by virtue of the fact that the application was previously on appeal. The amendment corrects this belief by making clear that after such a rejection, an applicant who desires further review of the matter must file a new appeal to the Board. The language of the amendment is similar to the fourth sentence of §1.196(d).

The proposed amendment to §1.196(b)(l) began "Should the examiner make the rejection final," but as one commenter pointed out, 35 U.S.C 134 permits an appeal to the Board of claims which have been twice rejected. Since the claims referred to in §1.196(b)(1) would have been twice rejected (once by the Board and once by the examiner), the examiner's rejection could be appealed even if not made final. The beginning of the amendment has therefore been changed to "Should the examiner again reject the application."

This commenter also asserted that §1.196(b)(l) is ambiguous, in that it implies that a separate fee would be due for the subsequent appeal, "an interpretation contrary to 35 U.S.C. 134." The PTO considers that the statute requires a separate fee for such an appeal. In the §1.196(b) situation, the appellant has already filed an appeal, paid the fee, and received a decision thereon by the Board. Any rejection under §1.196(b) included in the Board's decision would be, according to the rule, on "any grounds not involved in the appeal." Thus, an appeal from the subsequent rejection by the examiner would be an entirely new appeal involving a different ground and would require a new notice of appeal and the payment of another fee.

(5) Request for Access by Interference Party

Section 1.612(a), as amended, adds the following sentence as the last sentence of the section:

> A party seeking access to any abandoned or pending application referred to in the opposing party's involved application or access to any pending application referred to in the opposing party's patent must file a motion under §1.635. The amendment requires an interference party seeking access either to a pending or abandoned application referred to in an opposing party's involved application or to a pending application referred to in an opposing party's involved patent to file a motion under 37 CFR 1.635. Such a motion is decided by an examiner-in-chief (§1.640(b)).

Under the present practice, access can only be obtained by filing an *ex parte* petition to the Commissioner accompanied by the petition fee set forth in §1.17(i) and normally no decision is rendered on the petition until after the opposing party has had an opportunity to respond to the petition. The amendment expedites the interference proceeding by eliminating the delays inherent in the petition process. By requiring the party seeking access to file a motion under §1.635, that party will first have to confer with the opposing party in an effort to resolve the issue of access as required by §1.637(b). The examiner-in-chief will not have to decide the issue unless it cannot be resolved by the parties.

(6) Access to Applications

Section 1.14(e), as amended, deletes the word "of" from the phrase "or of any papers relating thereto" and adds a reference to §1.612(a) by adding the following sentence as the last sentence thereof:

> See §1.612(a) for access by an interference party to a pending or an abandoned application.

Section 1.14(e) as presently worded appears to limit a request by a member of the public to copies of, but not access to, any papers relating to any pending or abandoned application. Any such limitation was unintentional. The amended language will permit a member of the public to request both access to and copies of those papers.

(7) Request for Interference with an Application or Patent

Sections 1.604(a) and 1.607(a), as amended, provide for the situation in which a patent applicant requests an interference with another application or patent, respectively, on the basis of one or more claims which are already present in his or her application. The present rules require that when an applicant seeks an interference with another application or an unexpired patent, he or she must present a claim corresponding to the proposed count. The amended rules eliminate this requirement if a claim or claims corresponding to the proposed count are already in the application, and the applicant identifies them as such.

(8) Motion to Declare Additional Interference

Section 1.637(e)(1)(vi), as amended, requires that a motion to declare an additional interference under 37 CFR 1.633(e)(1) between an additional application not involved in the interference and owned by a party and an opponent's application or patent involved in the interference either (1) designate the claims of the opponent's application or patent which define the same patentable invention defined by the proposed count, or (2), if the opponent's application does not contain any such claim, the moving party must propose a claim to be added to the opponent's application. The present §1.637(e)(2)(vi) includes requirement (1), but only infers alternative requirement (2). The amended section specifically includes both requirements.

(9) Filinq of Reissue Application Durinq Interference

Section 1.662(b), as amended, inserts a comma after "§1.633(h)" and adds the language "or would not be appropriate" at the end of the last sentence. The present rule contemplates that a reissue application may be filed by a patentee involved in an interference only for one of two reasons: either for the purpose of avoiding the interference, or for some other purpose relating to the interference, e.g., to add claims corresponding to a proposed new count. In the first case, judgment would be entered against the patentee, and in the second case, a motion under §1.633(h) to add the reissue application to the interference would be appropriate.

However, it has been found that a patentee involved in an interference may file a reissue application for some other reason not contemplated by the rule, and for which the entry of judgment or a motion under § 1.633(h) would not be appropriate. For example, the patentee might file a reissue application for the purpose of amending claims of the patent which are directed to an invention which is patentably distinct from the issue of the interference and which is not disclosed by the opposing party. In such a situation, addition of the reissue application to the interference would be unnecessary. The amendment of §1.662(b) accommodates this third possibility by providing that, instead of filing a motion under §1.633(h) to add the reissue application to the interference, a patentee can show good cause why such a motion would not be appropriate under the particular circumstances involved.

(10) Applications Under Secrecy Order

Section 5.3(b), as amended, deletes the language "under secrecy order copies claims from an issued patent" and inserts in its place the language "is under secrecy order seeks to provoke an interference with an issued patent" to make the section's language consistent with that of §1.607(d). In addition, the reference to "§1.205(c)66 is corrected to read "§1.607(d)".

Postponement of Amendment of Interference Estoppel Rule

The notice of proposed rulemaking included proposed amendments of 37 CFR 1.658(c) concerning the effect of a judgment in an interference. In response to requests by a number of commenters for further time to study the effect of the proposed amendments, the proposal will not be implemented at this time. A proposed amendment of §1.658(c) will be published later; in the meantime, interested parties are invited to submit their comments and suggestions.

Accordingly, present §1.658(c) remains in effect.

Environmental, Energy and Other Considerations

This rule change will not have a significant impact on the quality of the human environment or conservation of energy resources.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because it is intended to expedite the disposition of appeals and to simplify by clarification and amplification certain of the rules governing the conduct of an interference. The expedited disposition of appeals will permit the small entity to make earlier business decisions which may be affected by a pending appeal. The effect of the clarification and amplification of the rules relating to interferences will be to red. .e the costs associated with involvement in an interference.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no Federalism implications affecting the relationship between the national government and the states as outlined in Executive Order 12612.

This rule does not contain a collection of information subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

List of Subjects in 37 CFR Parts 1 and 5

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Parts 1 and 5 of Title 37 of the Code of Federal Regulations are amended as set forth below.

Part 1—RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.14 is amended by revising paragraph (e) to read as follows: §1.14 Patent applications preserved in secrecy.

* * * * *

(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in secrecy pursuant to paragraphs (a) and (b) of this section, or any papers relating thereto, must (1) be in the form of a petition and be accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record. See §1.612(a) for access by an interference party to a pending or abandoned application.

Section 1.131 is amended by revising paragraphs (a) and (b) to read as follows:

> §1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the same patentable invention, as defined in §1.601(n), as the rejected invention, or on reference to a foreign patent or to a printed publication, and the inventor of the subject matter of the rejected claim, the owner of the patent under reexamination, or the person qualified under §§1.42, 1.43 or 1.47, shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the inventor or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the inventor's or patent owner's application was filed in this country.

(b) The showing of facts shall be such, in character and weight, as to establish reduction to practice prior to the effective date of the reference, or conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application. Original exhibits of drawings or records, or photocopies thereof, must accompany and form part of the affidavit or declaration or their absence satisfactorily explained.

4. Section 1.192 is amended by revising paragraph (a) and adding new paragraphs (c) and (d) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee

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set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal.

* * * * *

(c) The brief shall contain the following items under appropriate headings and in the order here indicated:

(1) *Status of Claims.* A statement of the status of all the claims, pending or cancelled, and identifying the claims appealed.

(2) *Status of Amendments.* A statement of the status of any amendment filed subsequent to final rejection.

(3) *Summary of Invention.* A concise explanation of the invention defined in the claims involved in the appeal, which shall refer to the specification by page and line number, and to the drawing if any, by reference characters.

(4) *Issues.* A concise statement of the issues presented for review.

(5) *Grouping of Claims.* For each ground of rejection which appellant contests and which applies to more than one claim, it will be presumed that the rejected claims stand or fall together unless a statement is included that the rejected claims do not stand or fall together, and in the appropriate part or parts of the argument under subparagraph (c)(6) of this section appellant presents reasons as to why appellant considers the rejected claims to be separately patentable.

(6) *Argument.* The contentions of the appellant with respect to each of the issues presented for review in subparagraph (c)(4) of this section, and the basis therefor, with citations of the authorities, statutes, and parts of the record relied on. Each issue should be treated under a separate heading.

(i) For each rejection under 35 U.S.C. 112 first paragraph, the argument shall specify the errors in the rejection and how the first paragraph of 35 U.S.C. 112 is complied with, including, as appropriate, how the specification and drawings, if any, (A) describe the subject matter defined by each of the rejected claims, (B) enable any person skilled in the art to make and use the subject matter defined by each of the rejected claims, and (C) set forth the best mode contemplated by the inventor of carrying out his or her invention.

(ii) For each rejection under 35 U.S.C. 112, second paragraph, the argument shall specify the errors in the rejection and how the claims particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(iii) For each rejection under 35 U.S.C. 102, the argument shall specify the errors in the rejection and why the rejected claims are patentable under 35 U.S.C. 102, including any specific limitations in the rejected claims which are not described in the prior art relied upon in the rejection.

(iv) For each rejection under 35 U.S.C. 103, the argument shall specify the errors in the rejection and, if appropriate, the specific limitations in the rejected claims which are not described in the prior art relied on in the rejection, and shall explain how such limitations render the claimed subject matter unobvious over the prior art. If the rejection is based upon a combination of references, the argument shall explain why the references, taken as a whole, do not suggest the claimed subject matter, and shall include, as may be appropriate, an explanation of why features disclosed in one reference may not properly be combined with features disclosed in another reference. A general argument that all the limitations are not described in a single reference does not satisfy the requirements of this paragraph.

(v) For any rejection other than those referred to in paragraphs (i) to (iv) of this section, the argument shall specify the errors in the rejection and the specific limitations in the rejected claims, if appropriate, or other reasons, which cause the rejection to be in error.

(7) *Appendix.* An appendix containing a copy of the claims involved in the appeal.

(d) If a brief is filed which does not comply with all the requirements of paragraph (c) of this section, the appellant will be notified of the reasons for non-compliance and provided with a period of one month within which to file an amended brief. If the appellant does not file an amended brief during the one-month period, or files an amended brief which does not overcome all the reasons for non-compliance stated in the notification, the appeal will be dismissed. Any arguments or authorities not included in the brief may be refused consideration by the Board of Patent Appeals and Interferences.

5. Section 1.193 is amended by revising paragraph (b) to read as follows:

§1.193 Examiner's answer.

* * * * *

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within one month from the date of such answer. The new points of argument shall be specifically identified in the reply brief. If the examiner determines that the reply brief is not directed only to new points of argument raised in the examiner's answer, the examiner may refuse entry of the reply brief and will so notify the appellant. If the examiner's answer states a new ground of rejection appellant may file a reply thereto within two months from the date of such answer; such reply may be accompanied by any amendment or material appropriate to the new ground.

6. Section 1.194 is amended by revising paragraph (b) to read as follows:

§1.194 Oral hearing.

* * * * *

(b) If appellant desires an oral hearing, appellant must file a written request for such hearing accompanied by the fee set forth in §1.17(g) within one month after the date of the examiner's answer. If the examiner's answer states a new ground of rejection and if appellant files a reply as provided for by §1.193(b), then the written request must be made within three months after the date of the filing of the reply. If appellant requests an oral hearing and submits therewith the fee set forth in § 1.17(g), an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board.

* * * * *

7. Section 1.196(b)(1) is revised to read as follows:

§1.196 Decision by the Board of Patent Appeals and Interferences.

* * * * *

(b) * * *

(1) The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the examiner in which event the application will be remanded to the examiner and the decision of the Board of Patent Appeals and Interferences shall not be considered final for the purpose of judicial review. The statement shall be binding upon the examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the examiner, overcomes the new ground for rejection stated in the decision. Should the examiner again reject the application the applicant may again appeal to the Board of Patent Appeals and Interferences. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

* * *

* * * * *

8. Section 1.604(a) is revised to read as follows: §1.604 Request for interference between applications by an applicant.

(a) An applicant may seek to have an interference declared with an application of another by (1) suggesting a proposed count and presenting at least one claim corresponding to the proposed count or identifying at least one claim in his or her application that corresponds to the proposed count, (2) identifying the other application and, if known, a claim in the other application which corresponds to the proposed count, and (3) explaining why an interference should be declared.

* * * * *

9. Section 1.607(a) is revised to read as follows:

§1.607 Request by applicant for interference with patent.

(a) An applicant may seek to have an interference declared between an application and an unexpired patent by (1) identifying the patent, (2) presenting a proposed count, (3) identifying at least one claim in the patent corresponding to the proposed count, (4) presenting at least one claim corresponding to the proposed count or identifying at least one claim already pending in his or her application that corresponds to the proposed count, and, if any claim of the patent or application identified as corresponding to the proposed count does not correspond exactly to the proposed count, explaining why each such claim corresponds to the proposed count, and (5) applying the terms of any application claim (i) identified as corresponding to the count and (ii) not previously in the application to the disclosure of the application.

* * * * *

10. Section 1.612(a) is revised to read as follows:

§1.612 Access to applications.

(a) After an interference is declared, each party shall have access to and may obtain copies of the files of any application set out in the notice declaring the interference, except for affidavits filed under §1.131 and any evidence and explanation under §1.608 filed separate from an amendment. A party seeking access to any abandoned or pending application referred to in the opposing party's involved application or access to any pending application referred to in the opposing party's patent must file a motion under §1.635.

* * * * *

11. Paragraph (vi) of §1.637(e)(1) is revised to read as follows:

§1.637 Content of motions.

* * * * *

(e) * * *

(1) * * *

(vi) Identify all claims in the opponent's application or patent which should be designated to correspond to each proposed count ; if the opponent's application does not contain any such claim, the motion shall propose a claim to be added to the opponent's application.

* * * * *

12. Paragraph (b) of §1.662 is revised to read as follows:

§1.662 Request for entry of adverse judgment; reissue filed by patentee.

* * * * *

(b) If a patentee involved in an interference files an application for reissue during the interference and omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference, judgment may be entered against the patentee. A patentee who files an application for reissue other than for the purpose of avoiding the interference shall timely file a preliminary motion under §1.633(h), or show good cause why the motion could not have been timely filed or would not be appropriate.

* * * * *

Part 5—SECRECY OF CERTAIN INVENTIONS AND LICENSES TO EXPORT AND FILE APPLICATIONS IN FOREIGN COUNTRIES

13. The authority citation for 37 CFR Part 5 is revised to read as follows:

Authority: 35 U.S.C. 6, 41, 181-188, the Export Administration Act of 1979, as amended, 50 U.S.C.App. 2401 *et seq.*, the Arms Export Control Act, as amended, 22 U.S.C. 2751 et seq., the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 *et seq.*, and the Nuclear Non-Proliferation Act of 1978, 22 U.S.C. 3201 *et seq.*, and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

14. Paragraph (b) of §5.3 is revised to read as follows:

§5.3 Prosecution of application under secrecy orders; withholding patent.

* * * * *

(b) An interference will not be declared involving national applications under secrecy order. However, if an applicant whose application is under secrecy order seeks to provoke an interference with an issued patent, a notice of that fact will be placed in the file wrapper of the patent. (See §1.607(d)).

* * * * *

APPENDIX A

Requirements for Examiner's Answer

Chapter 1200 of the Manual of Patent Examining Procedure will be amended to require that the examiner's answer include, in the order indicated, the following items:

(1) *Status of claims.* A statement of whether the examiner disagrees with the statement of the status of claims contained in the brief and a correct statement of the status of all the claims pending or cancelled, if necessary.

(2) *Status of Amendments.* A statement of whether the examiner disagrees with the statement of the status of amendments contained in the brief, and an explanation of any disagreement.

(3) *Summary of invention.* A statement of whether the examiner disagrees with the summary of invention contained in the brief, an explanation of why the examiner disagrees, and a correct summary of invention, if necessary.

(4) *Issues.* A statement of whether the examiner disagrees with the statement of the issues in the brief and an explanation of why the examiner disagrees, including:

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(i) Identification of any issues which are petitionable rather than appealable, and
(ii) Identification of any issues or grounds of rejection on appeal which the examiner no longer considers applicable.

(5) *Grouping of Claims.* A statement of whether the examiner disagrees with any statement in the brief that certain claims do not stand or fall together, and, if the examiner disagrees, an explanation as to why those claims are not separately patentable.
(6) *Claims appealed.* A statement of whether the copy of the appealed claims contained in the appendix to the brief is correct and if not, a correct copy of any incorrect claim.
(7) *References of record.* A listing of the references of record relied on, and in the case of non-patent references, the relevant page or pages.
(8) *New references.* A statement of whether or not any new reference is being applied and a listing of each such reference being cited for a new ground of rejection in the examiner's answer, and in the case of non-patent references, the relevant page or pages.
(9) *Grounds of rejection.* For each ground of rejection applicable to the appealed claims, an explanation of the ground of rejection, or reference to a final rejection or other single prior action for a clear exposition of the rejection.

(i) For each rejection under 35 U.S.C. 112, first paragraph, the examiner's answer, or the single prior action, shall explain how the first paragraph of 35 U.S.C. 112 is not complied with, including, as appropriate, how the specification and drawings, if any, (a) do not describe the subject matter defined by each of the rejected claims, (b) would not enable any person skilled in the art to make and use the subject matter defined by each of the rejected claims, and (c) do not set forth the best mode contemplated by the appellant of carrying out his or her invention.
(ii) For each rejection under 35 U.S.C. 112, second paragraph, the examiner's answer, or single prior action, shall explain how the claims do not particularly point out and distinctly claim the subject matter which applicant regards as the invention.
(iii) For each rejection under 35 U.S.C. 102, the examiner's answer, or single prior action, shall explain why the rejected claims are anticipated or not patentable under 35 U.S.C. 102, pointing out where all of the specific limitations recited in the rejected claims are found in the prior art relied upon in the rejection.
(iv) For each rejection under 35 U.S.C. 103, the examiner's answer, or single prior action, shall state the ground of rejection and point out where each of the specific limitations recited in the rejected claims is found in the prior art relied on in the rejection, shall identify any difference between the rejected claims and the prior art relied on and shall explain how the claimed subject matter is rendered unpatentable over the prior art. If the rejection is based upon a combination of references, the examiner's answer, or single prior action, shall explain the rationale for making the combination.
(v) For each rejection under 35 U.S.C. 102 or 103 where there may be questions as to how limitations in the claims correspond to features in the prior art, the examiner, in addition to the requirements of (9)(iii) and (iv) above, should compare at least one of the rejected claims feature by feature with the prior art relied on in the rejection. The comparison shall align the language of the claim side by side with a reference to the specific page, line number, drawing reference number and quotation from the prior art, as appropriate.
(vi) For each rejection, other than those referred to in paragraphs (i) to (v) of this section, the examiner's answer, or single prior action, shall specifically explain the basis for the particular rejection.

(10) *New ground of rejection.* A statement of whether or not any new ground of rejection is being made in the examiner's answer and a complete statement and explanation of any such new ground. The requirements of paragraph (9) shall be complied with for any new ground of rejection.
(11) *Response to argument.* A statement of whether the examiner disagrees with each of the contentions of appellant in the brief with respect to the issues presented and an explanation of the reasons for disagreement with any such contention. If any ground of rejection is not argued and responded to by appellant, the response shall point out each claim affected.
(12) *Period of response to new ground of rejection.* A statement setting the period for appellant to file a reply to any new ground of rejection, if necessary.

DONALD J. QUIGG,
May 3, 1988 *Assistant Secretary and Commissioner of Patents and trademarks.*

[Billing Code 3510-16]

[1092 OG 26]

(163) Treatment of Objected-to Claims After Appeal

This notice sets out the policy of the U.S. Patent and Trademark Office (PTO) with respect to the treatment of dependent claims that are not subject to rejection in an application in which an appeal to the Board of Patent Appeals and Interferences (Board) has been filed. 37 C.F.R. 1.191.

37 C.F.R. 1.197(c) reads:

> Proceedings are considered terminated by the dismissal of an appeal or the failure to timely file an appeal to the court or a civil action (37 C.F.R. 1.304) except: (1) Where claims stand allowed in an application, or (2) where the nature of the decision requires further action by the examiner. In such cases, the date of termination of proceedings is the date on which the appeal is dismissed or the date on which the time for appeal to the court or review by civil action (37 C.F.R. 1.304) expires. If an appeal to the court or a civil action has been filed, proceedings are similarly considered terminated when the appeal or civil action is terminated.

1. When an Appeal Brief is not filed

Upon failure to file an appeal brief, applications containing both, allowed claims and claims subject to rejection will have the appeal dismissed. The rejected claims will be cancelled and the application will issue with the allowed claims only.

Applicants should note that dependent claims which have been objected to by the examiner as being *allowable* except for their dependence from rejected claims are not claims which *stand allowed*. Accordingly, applicants must take affirmative action to overcome the objection and make the objected-to claims *allowed* claims. This may be done by filing an amendment rewriting objected-to dependent claims into independent form prior to termination of proceedings under 37 C.F.R. 1.197(c).

Upon termination of proceedings, the PTO will hold an application abandoned for failure to take appropriate action if the application contains only rejected and/or objected-to claims.

2. After a Board or Court decision

The approach outlined in (1) above will also apply to applications following an affirmance by the Board or a court of law.

An exception to the approach outlined in (1) above exists when the Board or court affirms a rejection against an independent claim and reverses all rejections against a claim dependent thereon. This type of decision requires further action by the examiner; 37 C.F.R. 1.197(c). Accordingly, upon termination of the time for appeal, the examiner will proceed in one of two ways:

a. Convert the dependent claim into independent form by examiner's amendment, cancel all claims in which the rejection was affirmed, and issue the application; or,
Set a one-month time period in which applicant may rewrite the dependent claim in independent form. Extension of time requests to this time period under 37 C.F.R. 1.136(a) will not be permitted. Failure to take timely action will result in abandonment under 35 U.S.C. 133 unless allowed claims are present in the application. If allowed claims are present, the examiner will cancel all rejected and objected-to claims and issue the application with the allowed claims only. li,0

JAMES E. DENNY,
Sept. 21, 1988 *Deputy Assistant Commissioner for Patents.*

[1095 OG 30]

MISCELLANEOUS

(164) Hearings Before the Board of Appeals

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months. Intensive effort by the Board and greater use of acting examiners-in-chief have been successful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from the appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to *twenty minutes* unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
Mar. 20, 1975. *Commissioner of Patents and Trademarks.*

[933 O.G. 1010]

(165) Hearings Before the Board of Patent Appeals and Interferences

During the past twelve months there has been an increase in the number of *ex parte* appeals pending before the Board of Patent Appeals and Interferences. In order to address the growing backlog of pending appeals, it is necessary to make the most effective use of the time of Examiners-in-Chief hearing appeals. Significant amounts of time are spent by Examiners-in-Chief preparing for the hearings. In an effort to conserve the time spent in the preparation for hearing by Examiners-in-Chief, notice is hereby given that *subsequent* to the confirmation of attendance at oral hearing, requests for postponement of the hearing will not be granted in the absence of a showing of dramatically unusual circumstances.

SAUL I. SEROTA,
June 6, 1985. *Acting Chairman Board of Patent Appeals and Interferences.*

[1056 OG 44]

(166) Hearings Before the Board of Patent Appeals and Interferences

Rule 1.3 (37 CFR 1.3) provides that:

> "[a]pplicants and their attorneys or agents are required to conduct their business with the Patent and Trademark Office with decorum and courtesy."

Notice is hereby given that persons attending hearings before the Board of Patent Appeals and Interferences are advised that the above provision also applies to dress. If an attendee at a hearing is not appropriately dressed, the attendee may be requested to leave the hearing room.

SAUL I. SEROTA,
June 6, 1985. *Acting Chairman Board of Patent Appeals and Interferences.*

[1056 OG 45]

(167) Access to Interference Settlement Agreements by Government Agencies

Under the provisions of 35 U.S.C. §135(c), a party to an interference filing a copy of a settlement agreement may request that the copy be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person on a showing of good cause.

In order to provide the parties with a record of the inspection of such agreements by Government agencies, a representative of an agency will henceforth be required to present a written request, similar to the following, for each interference in which the inspection and/or copying of the agreement(s) is desired:

Date:_____

To: Clerk, Board of Patent Interferences

Pursuant to the provisions of 35 U.S.C. 135(c), please permit .....
the bearer(s) of this letter, to [ ] inspect and/or [ ] copy the settlement agreement(s) filed in Interference No. .....
The information gained from such inspection and/or copying will be kept in confidence and will not be disclosed to any other person except for official investigative or law enforcement purposes.

.....
Name, Title

.....
Agency

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The request will be placed in the folder containing the copy of the agreement, where it may be inspected by the parties or their authorized representatives.

This procedure will be applicable only to inspection or copying by the representatives of Government agencies, since no person other than a representative of a Government agency, or of a party, will be granted access to a copy of an interference settlement agreement which is kept separate from the interference file except by way of a petition for access thereto, see M.P.E.P. §1002.02(k), item 2, and the parties to the interference are normally provided with copies of any such petition.

LUTRELLE F. PARKER,
June 5, 1978. *Acting Commissioner of Patents and Trademarks.*

[972 O.G. 2]

(168) **Accessibility of Non-Final Discovery Opinions and Orders Issued by the Board of Patent Interferences**

A number of inquiries have been received from the patent bar and other interested persons relating to discovery practice under 37 C.F.R. §1.287 before the Board of Patent Interferences. The inquiries indicate a need for making available to the public non-final Board opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of discovery matters before the Board. While non-final opinions need not be made available to the public [5 U.S.C. §552(a)(2)], in order to satisfy the need, copies of non-final opinions issued by the Board will be kept in a file in the Service Branch of the Board in the U.S. Patent and Trademark Office (Crystal Plaza, Building 6, Eleventh Floor, Room 1116, Arlington, Virginia). Opinions in the file may be reviewed by the public during normal business hours (8:30 A.M. to 5:00 P.M.). Copies of opinions may be made by the public on reproducing equipment in the Service Branch with tokens at a cost of $0.15 per page or copies may be ordered at a cost of $0.30 per page [37 C.F.R. 1.21(b)].

In view of the provisions of 35 U.S.C. §122 and 37 C.F.R. §1.11(a), a consent will be obtained by the Office from all parties in an interference before an opinion issued in connection with the interference is placed in the file if the interference file is not otherwise available to the public. Preliminary indications are that the parties and their counsel generally consent.

In order to obtain optimum dissemination of the information contained in the file, opinions placed therein will be indexed according to specific topics. Copies of the index will be updated from time to time as the need occurs. Specific questions relating to the index and file may be directed to the Patent Interference Examiners.

The initial index is as follows:

Index

1.00 Discovery in general [37 C.F.R. §1.287]
- 1.10 Requests and service under §1.287(a)
- 1.20 Requests under §1.287(b)
- 1.30 Motions for additional discovery under §1.287(c)
  - 1.31 Related to derivation
  - 1.32 Related to abandonment, suppression, and concealment
  - 1.33 Related to inequitable conduct
  - 1.34 Other
- 1.40 Motions under §1.287(d)(1)
- 1.50 Action under §1.287(d)(2)
- 1.60 Agreements under §1.287(e)

C. MARSHALL DANN,
Mar. 5, 1976 *Commissioner of Patents and Trademarks.*

[944 O.G. 2098]

(169) **Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)**

Notwithstanding the clear statement in the last sentence of 37 CFR 1.287(c), parties in interference cases continue to seek review by the Commissioner of decisions of the Board of Patent Interferences on motions for additional discovery under 37 CFR 1.287(c). Review of such a decision can be had along with judicial review of a decision on the question of priority. *Cochran* v. *Kresock*, 530 F.2d 385, 188 USPQ 553 (CCPA 1976); *Comstock* v. *Kroekel*, 200 USPQ 548 (Comm'r. Pat. 1978). Accordingly, parties in interference cases are reminded that a petition to the Commissioner should not be filed for the purpose of seeking review of an interlocutory decision of the Board granting or denying a motion for additional discovery under 37 CFR 1.287(c). See also *Fenstermacher* v. *Daugherty*, 189 USPQ 536 (Comm'r. Pat. 1975) and *Sheehan* v. *Doyle*, 202 USPQ 783 (Comm'r. Pat. 1978). The filing of such a petition only serves to delay the ultimate disposition of interferences on the merits. The filing of a paper for the mere purpose of delay is not permitted by the rules. 37 CFR 1.346. The Board of Patent Interferences will no longer grant a stay of proceedings pending disposition of a petition to the Commissioner seeking review of a decision of the Board on a motion for additional discovery under 37 CFR 1.287(c).

SIDNEY A. DIAMOND,
Apr. 17, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 28]

(170) **Commissioner's Notice Practice under 37 CFR §1.225(b)**

When a junior party to an interference is placed under an order to show cause why judgment should not be entered pursuant to 37 CFR §1.225 and requests final hearing to contest an ancillary matter, either the junior or senior party may file a motion for permission to take testimony pursuant to 37 CFR §1.225(b) and the last sentence of 37 CFR §1.251(b). However, some uncertainty has arisen as to when the motion must be filed and what it must contain.

Motion by the Junior Party

When a junior party is placed under an order to show cause and the junior party desired a testimony period, the motion for permission to take testimony should be filed preferably before the time set for responding to the order to show cause. The motion will be considered timely, however, if filed no later than twenty (20) days after the Board of Patent Interferences enters an order setting final hearing.

There are instances where the requested testimony relates to priority. For example, the junior party may occasionally desire to take testimony to establish prior inventive acts alleged in a preliminary statement even though those acts are subsequent to the senior party's effective filing date. This situation arises when (1) the junior party's preliminary statement dates fall between the filing date of the senior party's involved application and the filing date of a prior application accorded to the senior party, (2) the junior party has unsuccessfully contended in a motion under 37 CFR §1.231 that the senior party should not be accorded benefit of the prior application, and (3) the junior party has requested final hearing to review the examiner's adverse decision on the motion.

When the requested testimony includes priority testimony, the motion to take testimony may be *pro forma, viz.*, a simple request that a testimony period be set to obtain priority evidence. Normally, however, when a junior party seeks to take testimony under 37 CFR §1.225(b), the proposed testimony relates solely to ancillary matters, the motion must comply with the provisions of 37 CFR §1.225(b)—a showing of good cause must be submitted and a *pro forma* request would not be sufficient. See generally Rivise & Caesar, *Interference Law and Practice*, Vol. III, §§376–377 (1947).

Motion by the Senior Party

There are occasions when a senior party may desire a testimony period even if the junior party does not request a testimony period. See e.g., *Lorenian* v. *Winstead*, 127 USPQ 501 (Bd.Int. 1959). When a senior party desires a testimony period, the motion for permission to take testimony should be filed promptly after the Board of Patent Interferences enters an order setting final hearing, but in no event later than twenty (20) days after entry of such order. A senior party should take into account the fact that a junior party will begin preparation of a brief for final hearing after receiving notice of the briefing schedule. Therefore, a senior party should not be permitted to let a junior party expend unnecessary energy preparing a brief for final hearing if the senior party plans to move to take testimony.

As in the case of a junior party, a request to take testimony relating to priority may be *pro forma*. A request to take testimony limited to ancillary matters must comply with 37 CFR §1.225(b). See 37 CFR 1.251(b), last sentence.

RENE D. TEGTMEYER,
June 15, 1981. *Acting Commissioner of Patents and Trademarks.*

[1008 O.G. 9]

(171) **Interference Practice: Response to Order to Show Cause Under 37 CFR 1.640**

37 CFR 1.640(e) provides that when an order to show cause under 37 CFR 1.640(d) is issued against an interference party, the Board of Patent Appeals and Interferences will enter judgment against that party "unless, within 20 days after the date of the order, the party against whom the order issued files a paper which shows good cause why judgment should not be entered in accordance with the order." In the application of this rule, some confusion has arisen as to the nature of the "paper" which the party must file when the basis of the order is 37 CFR 1.640(d)(1), i.e., where "[a] decision on a motion is entered which is dispositive of the interference against the party on any count."

Normally, the "paper" filed in response to such an order to show cause should be a simple request that final hearing (see 37 CFR 1.654) be set to review the decision on the motion which was dispositive of the interference against the party, as well as any other decision on motion which the party may wish to have reviewed by the Board.* When such a response is filed, the Examiner-in-Chief will normally set the times for filing briefs under 37 CFR 1.656. The response should be accompanied by a motion requesting a testimony period, if the party desires to take testimony. See 37 CFR 1.640(e), last sentence. Also, an opposing party may request a testimony period, even if the party responding to the order to show cause does not. Such a request should be filed promptly after the Examiner-in-Chief enters an order setting the brief times, but in no event more than twenty (20) days after entry of such order. Cf. the Commissioner's Notice of June 15, 1981, 1008 O.G. 9 (July 14, 1981).

Instead of filing a request that final hearing be set, the party under order to show cause may file a paper containing a full discussion of the reasons why judgment should not be entered. However, before deciding to file such a paper, the following should be taken into consideration:

(1) Such paper will be construed as a request for final hearing if a testimony period is requested;

(2) Such paper will be deemed a waiver of any opportunity to present oral argument concerning the matters discussed therein, and the matter will be decided by the Board based upon the content of the paper and any response thereto;

(3) An opposing party may still request final hearing and/or a testimony period within twenty (20) days of the date of service of the paper, and if either request is granted it will be necessary for the parties to file briefs under 37 CFR 1.656.

It is the policy of the Board of Patent Appeals and Interferences that when final hearing is set pursuant to a request therefor following an order to show cause issued as a result of a decision on preliminary motions under 37 CFR 1.633 or 1.634, the parties must raise at that hearing for consideration by the Board *all* matters specified in 37 CFR 1.655(b) which were decided on the merits by the Examiner-in-Chief and which they wish to have considered. In other words, once the brief times are set for such a final hearing, every matter which was decided by an Examiner-in-Chief in connection with a motion under 37 CFR 1.633 or 1.634 must be raised in the parties' main briefs if the parties wish to have those matters considered by the Board. A party cannot wait to see what the Board's decision on one such matter will be and then, if the decision is unfavorable to the party and the case continues, raise that matter or any other such matter at a subsequent final hearing.

DONALD W. PETERSON,
Dec. 8, 1986. *Deputy Commissioner of Patents and Trademarks.*

[1074 OG 4]

(172) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
Docket No. 40104–4151

Patent Interference Proceedings

Agency: Patent and Trademark Office, Commerce
Action: Final rule.
Summary: The Patent and Trademark Office is amending its rules of practice in patent interference cases. The Patent Law Amendments Act of 1984, Public Law 98–622, §§201–202, abolished the Board of Appeals and Board of Patent Interferences and created in their place a Board of Patent Appeals and Interferences which will decide *ex parte* appeals from adverse decisions of patent examiners and interference cases. The Patent and Trademark Office, through this amendment of its rules, intends to provide guidance on the procedures the Office will be following in conducting interference cases before the Board of Patent Appeals and Interferences.
Date: The effective date of these rules is: Feb. 11, 1985.
For Further Information Contact: Fred E. McKelvey by telephone at (703) 557–4025 (if no answer, message may be left at 703–557–4103) or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: The Patent and Trademark Office (PTO) conducts interference proceedings to determine who as between two or more applicants for patent or one or more applicants and one or more patentees is the first inventor of a patentable invention. Heretofore, the determination was made by a Board of Patent Interferences. The Patent Law Amendments Act of 1984, Public Law 98–622, §§201–202 combines the Board of Appeals and the Board of Patent Interferences into a single Board of Patent Appeals and Interferences (Board) and authorizes the Board to consider priority and patentability in interference cases.

*It should be recognized that the decision of the Board following the final hearing may not terminate the interference. For example, if the order to show cause resulted from an Examiner-in-Chief's decision, the case might then proceed to the taking of priority testimony. The Board's decision would however be final with regard to the basis of the motion for judgement.

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In view of the discretion given the Board under 35 U.S.C. §135(a), as amended by Public Law 98–622 ("The Board . . . . may determine questions of patentability . . . ."), these new rules will apply to all interferences declared on or after Feb. 11, 1985, except in special circumstances, such as: (1) interferences which are declared as a result of a motion made in another interference which was pending before the Board before Feb. 11, 1985, (e.g., an interference declared as a result of a motion under 37 CFR §1.231 to declare an additional interference); (2) an interference related to another interference declared prior to Feb. 11, 1985 (e.g., an interference involving a method of using a compound where an interference involving the same parties and the compound was declared prior to Feb. 11, 1985); and (3) an interference reinstituted after having been dissolved under the old rules (37 CFR §§1.201–1.288)(e.g., an interference reinstituted after having been dissolved as a result of a motion under 37 CFR §1.231 to dissolve on the grounds of unpatentability where the applicant has obtained allowance of the claims held unpatentable in the decision on motions).

Through these new rules the PTO seeks to improve interference procedure so that the rights of parties in interferences are determined at an early date and the overall process of examining patent applications which become involved in interferences is simplified.

In order to obtain maximum input from the public prior to formally proposing revisions to the rules, on Aug. 1, 1983, the PTO published in the *Federal Register* an advance notice of proposed rulemaking for interference rules. 48 F.R. 34836-34855. The advance notice was not published in the *Official Gazette*. Twenty-one written comments were received. All comments are available for public inspection in Rm. 10C01, Crystal Gateway II, 1225 Jefferson Davis Hwy., Arlington, Va.

On Jan. 30, 1984, the PTO published in the *Federal Register* a notice of proposed rulemaking. 49 F.R. 3768-3802. The notice was also published in the *Official Gazette* on Feb. 14, 1984. 1039 O.G. 11; 1039 TMOG 11.The notice also appeared in the Bureau of National Affairs' Patent, Trademark & Copyright Journal, Vol. 27, pp. 312–346 (Feb. 2, 1984), hereinafter 'BNA." Eighteen written comments were received in response to the notice of proposed rulemaking. The comments are analyzed herein. A hearing was held on May 15, 1984. Three individuals appeared at the hearing. Oral comments made at the hearing are also analyzed herein. The eighteen comments and copy of the transcript of the hearing are available for public inspection in Rm. 10C01, Crystal Gateway II, 1225 Jefferson Davis Hwy., Arlington, Va.

The new rules for interferences are set forth herein in §§1.601 through 1.688. The new rules replace entirely the present interference rules (37 CFR §§1.201 through 1.288). A "six hundred" number series is used for the new rules. The use of a six hundred number series for the new rules will permit interested individuals to research published decisions (e.g., F.2d, USPQ) or computerized legal research services (e.g., LEXIS) citing the new rules.

An index of the headings of §§1.601–1.688 and a table correlating 37 CFR §§1.201 through 1.288 (old rules) to §§1.601 through 1.688 (new rules) appears below.

Under the new rules, interferences are decided by the Board. The Board has jurisdiction to determine (1) priority of invention, (2) patentability of any claim corresponding to a count both as to applicants and patentees, (3) any issue of interference-in-fact as to any count, and (4) any other issue necessary to resolve the interference. The rules permit an interference to be declared on the basis of a single count defining one patentable invention in interferences involving patents as well as applications. The Board also has jurisdiction to determine whether counts are patentably distinct.

When an interference is declared, an examiner-in-chief is assigned to handle the interlocutory stages of the interference. An examiner having full signatory authority determines when one or more applications or one or more applications and a patent claim the same patentable invention. When the examiner makes such determination, the examiner will forward any involved applications or patents to the Board. The examiner will designate, at the time the involved applications or patents are sent to the Board, the claims of any application and patent which correspond to each count. The examiner-in-chief can subsequently designate additional claims to correspond to a count. The examiner-in-chief assigned to handle the interference will issue a notice to the parties declaring the interference.

The object of the interference will be to resolve all controversies as to all interfering subject matter defined by one or more counts. A final decision in the interference will determine who, if anyone, is entitled to claims which correspond to a count. Any decision adverse to an applicant by the Board will constitute a final refusal by the PTO to that applicant of the claims involved. Any decision adverse to a patentee constitutes cancellation from the patent of the claims involved.

Any decision by the Board on any issue is binding on the examiner and would govern further proceedings in the PTO.

The designation of a single examiner-in-chief to handle the interlocutory phases of an interference will permit better management of, and control over, interference proceedings. The rules provide that times be set and the examiner-in-chief exercise control over proceedings in the interference such that pendency of the interference before the Board from declaration to final decision will not normally exceed 24 months. The examiner-in-chief should be familiar with the history of the interference and will be accessible to counsel for the parties. For example, an examiner-in-chief, where appropriate, may conduct telephone conference calls to obtain agreement of the parties on the setting of schedules. The rules also permit the examiner-in-chief to hold hearings in the PTO or by conference telephone call in order to expedite or settle interlocutory issues in interferences. Any hearing can be transcribed by a court reporter under such conditions as an examiner-in-chief or the Board deems appropriate. The examiner-in-chief, where appropriate, will be available by phone to rule on the admissibility of evidence in the event parties encounter unusual problems during the taking of depositions. The examiner-in-chief will also be available to rule on requests for production of documents which take place during cross-examination. Oral orders given by phone will be followed by written orders.

At the time an interference is declared, the examiner-in-chief will set a time for filing preliminary motions. The preliminary motions can include:

(1) A motion for judgment on the ground that a claim corresponding to the count is not patentable to an opponent under 35 U.S.C. §§102, 103, 112, or any other provision of law.

(2) A motion for judgment on the ground that there is no interference-in-fact between the claims of the opponents in the interference.

(3) A motion to add or to substitute new counts, to amend a claim corresponding to a count, to designate an application or patent claim to correspond to a count, to designate an application or patent claim as not corresponding to a count, or to require an applicant to present a claim to be designated to correspond to a count.

(4) A motion to substitute another application for the application involved in the interference or to add an application for reissue to the interference.

(5) A motion to declare another interference.

(6) A motion to be accorded the benefit of an earlier application or to attack the benefit of an earlier application which has been accorded to an opponent.

Other motions are permitted as necessary, such as a motion to amend the count and/or a claim corresponding to the count in response to a preliminary motion for judgment.

Oppositions to motions are permitted if filed within a time set by the examiner-in-chief. Replies are also authorized. Papers which are not authorized by the rules or requested by the examiner-in-chief can be returned unfiled.

A preliminary statement will be filed prior to or concurrently with the preliminary motions outlined above.

Motions will be decided by an examiner-in-chief, who may consult with an examiner on questions of patentability which have not previously been decided by the examiner. The examiner-in-chief may grant a motion, deny a motion, defer consideration on the merits of a motion to final hearing, or take such other action with respect to a motion as may be appropriate, e.g., dismiss an entirely inappropriate motion.

At the time preliminary motions are decided, the preliminary statements will be opened. If a decision on a motion or inspection of the preliminary statement results in entry of an order to show cause why a judgment should not be entered, the party against whom judgment might be entered can request a hearing before the examiner-in-chief and two additional examiners-in-chief. The decision will govern further proceedings. If adverse, the decision will constitute a final agency action. If favorable, the interference will proceed before the examiner-in-chief.

After preliminary motions are decided and assuming judgment does not result, a period may be set for the parties to file motions for additional discovery. The scope of the additional discovery would be the same as under current practice.

When a time period is set for filing discovery motions, or after discovery has closed, the examiner-in-chief will set a period for taking testimony. Any party wishing to take the testimony of a witness can elect to have the testimony of the witness taken by deposition or presented by affidavit. A transcript of an *ex parte* deposition can be used as an affidavit. If an affidavit is presented, the opposing party may then cross-examine on oral deposition. Any redirect will take place at the deposition. The party calling the witness is responsible for securing a court reporter and filing the transcript and record associated with cross-examination of its witness.

In the event a party needs testimony from a third-party who will not appear unless a subpoena is issued, including a hostile witness, direct and cross-examination testimony may be taken on oral deposition. The rules provide that prior authorization of an examiner-in-chief is required before a party can take testimony by issuance of a subpoena under 35 U.S.C. §24. The rule thus adopts the policy of *Sheehan* v. *Doyle*, 513 F.2d 895, 898, 185 USPQ 489, 492 (1st Cir.), *cert. denied*, 423 U.S. 874 (1975), and *Sheehan* v. *Doyle*, 529 F.2d 38, 40, 188 USPQ 545, 546 (1st Cir.), *cert. denied*, 429 U.S. 870 (1976), *rehearing denied*, 429 U.S. 987 (1976), and rejects the policy announced in *Brown* v. *Braddick*, 595 F.2d 961, 967, 203 USPQ 95, 101–102 (5th Cir. 1979). Testimony obtained in other proceedings, e.g., another interference or an infringement action, may be used if otherwise admissible.

Under the rules, the Federal Rules of Evidence are made applicable to interferences, except for those portions which relate to criminal actions, juries, and other matters not relevant to interferences. Those portions include:

(1) Rule 103(c).
(2) Rule 104(c), (d), and (e).
(3) The language in Rule 105 which reads "and instruct the jury accordingly."
(4) Rule 201(g).
(5) The language in Rule 403 which reads "or misleading the jury."
(6) Rule 404(a)(1) and (2).
(7) The word "charge" in Rule 405(b).
(8) The language "or criminal" and proviso (ii) in Rule 410.
(9) Rule 412.
(10) Rule 606.
(11) The language "whether by an accused" and "other" in the last sentence of Rule 607.
(12) The provisions of the first sentence of Rule 611 (c) relating to leading questions on direct examination do not apply to statements made in an affidavit authorized to be filed under the rules.
(13) The language "Except as otherwise provided in criminal proceedings by section 3500 of title 18, United States Code" and "except that in criminal cases when the prosecution elects not to comply, the order shall be one striking the testimony or, if the court in its discretion determines that the interests of justice so require, declaring a mistrial" in Rule 612.
(14) Rule 614.
(15) Rule 706.
(16) The language "excluding, however, in criminal cases matters observed by police officers and other law enforcement personnel" and "and against the Government in criminal cases" in Rule 803(8).
(17) The language "but not including, when offered by the Government in a criminal prosecution for purposes other than impeachment, judgments against persons other than the second" in Rule 803(22).
(18) The language "prosecution for homicide or in a" in Rule 804(b)(2).
(19) The language "A statement tending to expose the declarant to criminal liability and offered to exculpate the accused is not admissible unless corroborating circumstances clearly indicate the trustworthiness of the statement" in Rule 804(b)(3).
(20) Rule 1101(a), (b), (d)(2), (d)(3), and (e).

The examiner-in-chief will set a period for filing the record and briefs. Oral hearings normally will be held before a panel consisting of the examiner-in-chief assigned to the interference and two other examiners-in-chief. The panel will render a final decision in the interference. Requests for reconsideration are permitted.

In rendering its decision, the Board will consider only that evidence which can be made available to the public under §1.11(a). Accordingly, the Board will not consider evidence which is submitted under a protective order issued by a court if release of that evidence under §1.11(a) would be inconsistent with the terms of the court's order.

A final decision of the Board is reviewable in the U. S. Court of Appeals for the Federal Circuit or an appropriate U. S. district court. Any reviewing court can review all aspects of the decision including patentability, priority, and all relevant interlocutory orders, such as denials of discovery.

Except as noted above, these new rules are applicable to all interferences declared on or after Feb. 11, 1985. Interferences declared prior to Feb. 11, 1985, continue to be governed by the prior rules (37 CFR §§1.201–1.288 (July 1, 1984)) and will be decided by personnel of the Board of Patent Appeals and Interferences. Actions presently taken by a patent interference examiner or examiners of interferences will be taken by an examiner-in-chief.

An anticipated time schedule for a two-party interference follows.

Sections 1.601 through 1.688 would introduce new concepts in interference practice. Some of the more significant aspects of the rules, as well as some of the new concepts, include the following.

Section 1.1 codifies a practice announced in a Commissioner's Notice of Nov. 28, 1983, "Mailing of Papers to the PTO in Patent Interference Proceedings," 1037 *Official Gazette* 25 (Dec. 27, 1983) and authorizes a party in an interference to direct mail to the PTO intended for the interference to a special box in the Mail Room for interference papers. Amendments copying claims which are filed prior to the time an interference is declared would continue to be addressed in accordance with §1.5(a).

Section 1.5 provides that when a paper filed in the PTO concerns an interference which has been declared, it should state the names of the parties (e.g., *Smith* v.

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Jones) and the number of the interference. The name of the examiner-in-chief assigned to the interference (§1.610) and the name of the party filing the paper should also appear conspicuously on the first page of the paper. Identification of the examiner-in-chief assigned to the interference and the name of the party filing the paper will greatly assist the Board in its administration of interference cases.

Section 1.8 excludes from the certificate of mailing practice any paper in an interference which an examiner-in-chief orders filed by hand or "Express Mail." Papers filed by "Express Mail" in an interference case would be addressed as set forth in §1.1(e).

Section 1.11 sets forth when the interference file would become available to the public without a petition for access.

Section 1.48 provides that when a request is filed to correct inventorship of an application involved in an interference, the request shall comply with the requirements of §1.48 and shall be accompanied by a motion under §1.634. The request will be placed in the file of the application and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.138 permits an attorney or agent to sign and file a paper abandoning an application involved in an interference.

Section 1.196 more clearly sets forth the options open to an applicant when the Board makes a new ground of rejection under §1.196(b). The last sentence of paragraph (b)(1) is intended to clarify practice in certain situations. One situation involves a case where (1) the Board affirms an examiner's rejection of a "first" claim and makes a new ground of rejection under §1.196(b) of a "second" claim, (2) the applicant elects to have further proceedings before the examiner on the new ground of rejection on the second claim, and (3) those proceedings do not result in a further appeal (i.e., the second claim is allowed or is cancelled). The last sentence of §1.196(b)(1) permits the Board to make its decision final on the first claim. By making its decision final on the first claim, the time period under §1.304 for seeking judicial review begins. Another situation involves a case where (1) the Board affirms an examiner's rejection of a claim over reference A, (2) the Board also enters a new ground of rejection of the claim over reference B, (3) the applicant elects to have further proceedings before the examiner on the new ground of rejection, and (4) those proceedings result in applicant overcoming the new ground of rejection based on reference B. The last sentence of §1.196(b)(1) permits the Board to make its decision final as to its affirmance of the rejection over reference A. Entry of an order making its decision final would start the period under §1.304 for seeking judicial review. Thus, an applicant does not forego possible judicial review by electing further prosecution before the examiner when a new ground of rejection is made by the Board. Under paragraph (d), a recommendation by the Board that an allowed claim be rejected is binding on the examiner (rather than being a mere recommendation as was previously the case) in the absence of (1) an amendment, (2) showing of facts by affidavit or other appropriate evidence, or (3) both. The last sentence of paragraph (d) is intended to clarify that the Board may enter a final decision in certain circumstances. When the Board affirms an examiner's rejection of a "first" claim and makes a recommendation under paragraph (d) as to a "second" claim, the application is remanded to the examiner and the Board's decision affirming the rejection of the first claim is not a final decision. If proceedings before the examiner on remand do not result in a further appeal (i.e., the second claim is allowed or is cancelled), the Board may then make its decision final as to the first claim. By making its decision final as to the first claim, the time period under §1.304 for seeking judicial review starts. Thus, an applicant does not forego judicial review on the first claim merely because of the remand proceedings with respect to the second claim.

Most of the current interference rules (§§1.201 through 1.247 and 1.251 through 1.288) are removed, but will continue to govern interferences declared prior to Feb. 11, 1985. Section 1.248 is retained and governs service of papers in all patent cases except interference proceedings. Section 1.646 governs service of papers in interference proceedings.

Under §1.292, it is intended to modify public use proceedings only to the extent that public use and on sale issues which arise during an interference shall be raised by a preliminary motion under §1.633(a). There is no fee for filing the motion in the interference, but a fee would continue to be necessary when a petition is filed for institution of a public use proceeding apart from an interference. When a public use proceeding is instituted apart from an interference, the Commissioner will designate an appropriate official to conduct the proceeding including the setting of times for taking testimony under §§1.671 through 1.685. There will continue to be no "additional discovery" (see §§1.687 and 1.688) in public use proceedings.

Section 1.304 makes clear that the provisions of §1.136 do not apply when judicial review is sought of a decision of the Board of Patent Appeals and Interferences in (1) a reexamination proceeding or (2) an interference. An extension of time to seek judicial review of a decision of the Board in a reexamination proceeding may be obtained under §1.550(c). An extension of time to seek judicial review of a decision of the Board in an interference proceeding may be obtained under §1.645. Section 1.304 also establishes an "excusable neglect" standard for seeking judicial review in interference cases when a notice of appeal is untimely filed or a civil action is not timely commenced. The excusable neglect standard is intended to be the same as the standard under Rule 4(a)(5) of the Federal Rules of Appellate Procedure.

Section 1.322 provides that when a request for a certificate of correction under 35 U.S.C. §254 (PTO mistake) is filed to make a correction of a patent involved in an interference, the request shall comply with the requirements of §1.322 and shall be accompanied by a motion under §1.635. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.323 provides that when a request for a certificate of correction under 35 U.S.C. §255 (patentee's mistake) is filed to make a correction of a patent involved in an interference, the request shall comply with the requirements of §1.323 and shall be accompanied by a motion under §1.635. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.324 provides that when a request is filed to correct inventorship of a patent involved in an interference, the request shall comply with the requirements of §1.324 and shall be accompanied by a motion under proposed §1.634. The request will be placed in the file of the patent and the motion will be placed in the file of the interference. The request will be decided as part of the interference.

Section 1.565 provides that when a patent is involved in an interference proceeding and a reexamination proceeding, both the interference proceeding and the reexamination proceeding *will* continue unless one of the proceedings is stayed. A stay of a reexamination proceeding will be made by the Commissioner. A stay of an interference proceeding will be made by an examiner-in-chief, subject to review by the Commissioner. Section 1.565 continues the present practice of the Commissioner determining in every instance whether to stay a reexamination proceeding when the patent involved in the reexamination proceeding is sought to be reissued or becomes involved in litigation.

Under §1.601, the rules shall be construed to secure the just, speedy, and inexpensive determination of interferences. Section 1.601 defines various terms used in Subpart E including "additional discovery," "affidavit,"

"case-in-chief," "case-in-rebuttal," "count," "effective filing date," "filing date," "interference," "interference-in-fact," "junior party," "lead" attorney, "party," "phantom count," "same patentable invention," "separate patentable invention," "senior party," "sworn," and "United States." "Affidavits" include declarations under 35 U.S.C. §25 and 37 CFR §1.68 as well as statutory declarations under 28 U.S.C. §1746. The definition of "United States" is the same as the definition of United States in 35 U.S.C. §100(c).

The definition of "interference" permits an interference between one or more applications and one or more patents. Thus, these new rules follow the policy of *Wilson* v. *Yakel*, 1876 Dec. Comm'r. Pat. 245 (Comm'r.Pat. 1876) and, to the extent inconsistent therewith, do not follow the policy announced in *Touval* v. *Newcombe*, 194 USPQ 509 (Comm'r.Pat. 1976). However, in view of the statutory requirement for the presence of at least one application in an interference, if an applicant were to concede priority or otherwise be terminated from an interference involving only one application and more than one patent, the interference would have to be terminated for lack of subject matter jurisdiction unless one or more of the patentees filed an application for reissue which could be added to the interference under §1.633(h). A "count" defines interfering subject matter. An interference may have two counts only if the second count defines a "separate patentable invention" from the first count. The reason the second count must define a separate patentable invention is to permit the PTO to lawfully issue separate patents to different parties in an interference when a single party does not prevail as to all counts. A "separate patentable invention" is defined in §1.601(n):

> Invention (A) is a "separate patentable invention" with respect to invention (B) when invention (A) is new (35 U.S.C. §102) and non-obvious (35 U.S.C. §103) in view of invention (B) assuming invention (B) is prior art with respect to invention (A).

Section 1.602(a) continues the present PTO practice (37 CFR §1.201(c)) of not declaring or continuing an interference between (1) two or more applications owned by the same party or (2) an application and a patent owned by a single party unless good cause is shown. A corporation and its wholly-owned subsidiary are considered a "single party" within the meaning of §1.602(a). Under prior rules, when a patent and an application involved in an interference became commonly owned, the interference was not "dissolved." Rather, the PTO required that the interference be terminated with a judgment. *Chillas* v. *Weisberg*, 1928 Dec. Comm'r. Pat. 24 (Comm'r.Pat. 1928); *Malone* v. *Toth*, 202 USPQ 397 (Comm'r.Pat. 1978); and *Morehouse* v. *Armbruster*, 209 USPQ 514 (Comm'r.Pat. 1980). Under these new rules, all interferences, including those involving only applications, will be terminated with a judgment. As noted in *Chillas* v. *Weisberg*, *supra* at 25 "the common owner can allow a judgment against the junior party to be rendered by default or it can file a concession of priority from one party to the other." Paragraphs (b) and (c) of §1.602 continue the present PTO practice (37 CFR §1.201(c)) of requiring a party to notify the PTO of any real party in interest not apparent on the face of the notice declaring the interference (see §1.611) or of any change in the real party in interest after the interference is declared. The PTO needs to know the identity of any real party in interest to properly enforce §1.602(a) and to enable an examiner-in-chief to determine whether recusal is necessary or appropriate. A new requirement in paragraphs (b) and (c), not present in 37 CFR §1.201(c), is a 20-day time period for advising the PTO of the identity of, or any change in, the real party in interest.

Under §§1.601(f), 1.603, and 1.606, the interfering subject matter would be defined by one or more counts. All the claims in an application or a patent which define the same patentable invention as a count would be designated to correspond to the count. An interference would have two counts only if one count defines a separate patentable invention from another count. Under §1.606, at the time an interference is declared between a patent and an application, a count would not be narrower in scope than any patent claim which corresponds to the count. Thus, a patent claim would be presumed, subject to a motion under §1.633(c), not to embrace "separate patentable inventions." Some examples illustrate how the PTO would formulate counts and designate patent and application claims to correspond to counts.

Example 1: Application A contains patentable claim 1 (engine). Application B contains patentable claim 8 (engine). If an interference is declared, there would be one count (engine). Claim 1 of application A and claim 8 of application B would be designated to correspond to the count.

Example 2: Application C contains patentable claims 1 (engine) and 2 (6-cylinder engine). Application D contains patentable claim 8 (engine). An engine and a 6-cylinder engine define the same patentable invention. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application C and claim 8 of application D would be designated to correspond to the count.

Example 3: Application E contains patentable claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application F contains patentable claims 11 (engine) and 12 (8-cylinder engine). Claims 1 and 2 of application E and claims 11 and 12 of application F define the same patentable invention. Claim 3 of application E defines a separate patentable invention from claims 1 and 2 of application E and claims 11 and 12 of application F. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application E and claims 11 and 12 of application F would be designated to correspond to the count. Claim 3 of application E would not be designated to correspond to the count.

Example 4: Application G contains patentable claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application H contains patentable claims 11 (engine) and 15 (engine with a platinum piston). Claims 1 and 2 of application G and claim 11 of application H define the same patentable invention. Claim 3 of application G and claim 15 of application H define a separate patentable invention from claims 1 and 2 of application G and claim 11 of application H. If an interference is declared, there would be two counts: Count 1 (engine) and Count 2 (engine with a platinum piston). Claims 1 and 2 of application G and claim 11 of application H would be designated to correspond to Count 1. Claim 3 of application G and claim 15 of application H would be designated to correspond to Count 2.

Example 5: Application J contains patentable claims 1 (engine), 2 (combination of an engine and a carburetor) and 3 (combination of an engine, a carburetor, and a catalytic converter). Application K contains patentable claims 31 (engine), 32 (combination of an engine and a carburetor), and 33 (combination of an engine, a carburetor, and an air filter). The engine, combination of an engine and carburetor, and combination of an engine, carburetor, and air filter define the same patentable invention. The combination of an engine, carburetor, and catalytic converter define a separate patentable invention from engine. If an interference is declared, there would be one count (engine). Claims 1 and 2 of application J and claims 31, 32, and 33 of application K would be designated to correspond to the count. Claim 3 of application J would not be designated as corresponding to the count.

Example 6: The PTO will continue to follow *Waldeck* v. *Lewis*, 120 USPQ 88 (Comm'r.Pat. 1955). Application L contains patentable claims 1 (Markush group of benzene or toluene), 2 (benzene), and 3 (toluene). Application M contains patentable claim 11 (benzene). Benzene and toluene define the same patentable invention. If an interference is declared, there would be one count (Markush group of benzene or toluene). Claims 1, 2, and 3 of application L and claim 11 of application M would be designated to correspond to the count.

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Example 7: Application N contains patentable claim 1 (benzene). Application P contains patentable claim 11 (xylene). Benzene and xylene define the same patentable invention. If an interference is declared, there would be one count (benzene or xylene). Claim 1 of application N and claim 11 of application P would be designated to correspond to the count.

Example 8: Application Q contains patentable claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application R contains patentable claim 33 (benzene). If benzene and chloroform define the same patentable invention and an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of application Q and claim 33 of application R would be designated to correspond to the count. If chloroform defines a separate patentable invention from benzene and an interference is declared, there would be one count (benzene). Claims 1 and 2 of application Q and claim 33 of application R would be designated to correspond to the count. Claim 3 of application Q would not be designated to correspond to the count.

Example 9: Application S contains patentable claims 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application T contains patentable claims 11 (Markush group of benzene or chloroform), 12 (benzene), and 13 (chloroform). If benzene and chloroform define the same patentable invention and an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of application S and claims 11, 12, and 13 of application T would be designated to correspond to the count. The PTO will continue to adhere to *Becker* v. *Patrick*, 47 USPQ 314 (Comm'r.Pat. 1939). An interference can have two counts only if one count defines a separate patentable invention from another count. If chloroform defines a separate patentable invention from benzene and an interference is declared, there would be two counts: Count 1 (benzene) and Count 2 (chloroform). Claims 1 and 2 of application S and claims 11 and 12 of application T would be designated to correspond to Count 1. Claims 1 and 3 of application S and claims 11 and 13 of application T would be designated to correspond to Count 2.

Example 10: Patent A contains claim 1 (engine). Application U contains patentable claim 11 (engine). If an interference is declared, there would be one count (engine). Claim 1 of patent A and claim 11 of application U would be designated to correspond to the count.

Example 11: Patent B contains claims 1 (engine) and 2 (6-cylinder engine). Application V contains patentable claim 8 (engine). An engine and a 6-cylinder engine define the same patentable invention. If an interference is declared, there would be one count (engine). Claims 1 and 2 of patent B and claim 8 of application V would be designated to correspond to the count.

Example 12: Patent C contains claims 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application W contains patentable claims 11 (engine) and 12 (8 cylinder engine). Claims 1 and 2 of patent C and claims 11 and 12 of application W define the same patentable invention. Claim 3 of patent C defines a separate patentable invention from claims 1 and 2 of patent C and claims 11 and 12 of application W. If an interference is declared, there would be one count (engine). Claims 1 and 2 of patent C and claims 11 and 12 of application W would be designated to correspond to the count. Claim 3 of patent C would not be designated to correspond to the count.

Example 13: Patent D contains claim 1 (engine), 2 (6-cylinder engine), and 3 (engine with a platinum piston). Application X contains patentable claims 11 (engine) and 15 (engine with a platinum piston). Claims 1 and 2 of patent D and claim 11 of application X define the same patentable invention. Claim 3 of patent D and claim 15 of application X define a separate patentable invention from claims 1 and 2 of patent D and claim 11 of application X. If an interference is declared, there would be two counts: Count 1 (engine) and Count 2 (engine with a platinum piston). Claims 1 and 2 of patent D and claim 11 of application X would be designated to correspond to Count 1. Claim 3 of patent D and claim 15 of application X would be designated to correspond to Count 2.

Example 14: Patent E contains claims 1 (Markush group of benzene or toluene), 2 (benzene), and 3 (toluene). Application Y contains patentable claim 11 (benzene). Benzene and toluene define the same patentable invention. If an interference is declared, there would be one count (Markush group of benzene or toluene). Claims 1, 2, and 3 of patent E and claim 11 of application Y would be designated to correspond to the count.

Example 15: In this example, the claims of patent E and application Y in Example 14 are reversed. Patent E contains claim 1 (benzene). Application Y contains patentable claims 11 (Markush group of benzene or toluene), 12 (benzene), and 13 (toluene). If an interference is declared, the count would be the same as the count in Example 14—(Markush group of benzene or toluene). Claim 1 of patent E and claims 11, 12, and 13 of application Y would be designated to correspond to the count.

Example 16: The PTO will continue to follow cases such as *Case* v. *CPC International, Inc.*, 730 F.2d 745, 221 USPQ 196 (Fed. Cir. 1984); *cert. denied*, 105 S.Ct. 233 (1984); *Aelony* v. *Arni*, 547 F.2d 566, 192 USPQ 486 (CCPA 1977); and *Nitz* v. *Ehrenriech*, 537 F.2d 539, 190 USPQ 413 (CCPA 1976), and declare interferences where interfering patent and application claims are mutually exclusive provided the claims define the same patentable invention. Patent F contains claim 1 (benzene). Application Z contains patentable claim 11 (xylene). Benzene and xylene define the same patentable invention. If an interference is declared, there would be one count (benzene or xylene). Claim 1 of patent F and claim 11 of application Z would be designated to correspond to the count.

Example 17: It will be the practice of the PTO under §1.606 to initially declare interferences with counts which are identical to or broader than patent claims which correspond to the counts. A single patent claim would be presumed, subject to a motion under §1.633(c), not to define separate patentable inventions. Patent G contains claim 1 (Markush group of benzene or chloroform), 2 (benzene), and 3 (chloroform). Application AA contains patentable claim 33 (benzene). If an interference is declared, initially it would be presumed by the PTO, subject to a later motion under §1.633(c), that benzene and chloroform define the same patentable invention. There would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of patent G and claim 33 of application AA would be designated to correspond to the count. If a party believes benzene and chloroform define separate patentable inventions, that party could file a motion under §1.633(c) to redefine the count and the claims corresponding to the counts.

Example 18: Patent H contains claims 1 (Markush group of benzene or chloroform), 2, (benzene), and 3 (chloroform). Application AB contains patentable claims 11 (Markush group of benzene or chloroform), 12 (benzene), and 13 (chloroform). Benzene and chloroform initially would be presumed, subject to a motion under §1.633(c), to define the same patentable invention, because they are recited as a Markush group in a single patent claim. If an interference is declared, there would be one count (Markush group of benzene or chloroform). Claims 1, 2, and 3 of patent H and claims 11, 12, and 13 of application AB would be designated to correspond to the count. If a party believes benzene and chloroform define separate patentable inventions, the party could move under §1.633(c) to substitute a count (benzene) for (Markush group of benzene or chloroform) and to add a count (chloroform). See Example 36.

Example 19: Under §1.606, the PTO will continue to follow the practice announced in *Ex parte Card and Card*, 1904 Dec.Comm'r.Pat. 383 (Comm'r.Pat. 1904). Patent J contains claim 1 (method of mixing, grinding, and heating). Application AC contains patentable claim 8 (method of mixing and heating) and does not disclose or claim a grinding step. In the context of the inventions disclosed in patent J and application AC, a method of mixing, grinding, and heating is the same patentable invention as a method of mixing and heating. Under current practice, it would be said that "grinding" is an "immaterial" limitation in claim 1 of patent J. Under §1.606, the fact application AC does not disclose grinding would not preclude an interference. If an interference is declared, there would be one count (method of mixing and heating). Claim 1 of patent J and claim 8 of application AC would be designated to correspond to the count.

Under §1.605, timely filing of an amendment presenting a claim suggested by the examiner for purposes of an interference would stay *ex parte* proceedings in the application in which the claim is presented pending a determination by the examiner of whether an interference will be declared. Also under §1.605(a), when an examiner suggests a claim, the applicant will be required to copy verbatim the suggested claim. At the time the suggested claim is copied, however, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the copied claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared.

Under §1.607(b), when an applicant seeks an interference with a patent, e.g., by copying claims from the patent, examination of the application including any appeal would be handled with special dispatch within the PTO. "Special dispatch" would be construed to be the same as special dispatch in a reexamination proceeding. See 35 U.S.C. §305.

Under §1.608, the PTO will continue current practice (37 CFR §1.204(c)) of requiring an applicant seeking to provoke an interference with a patent to submit evidence which demonstrates that the applicant is *prima facie* entitled to a judgment relative to the patentee. Evidence would be submitted only when the earlier of the filing date or effective filing date of the application is more than three months after the earlier of the filing date or effective filing date under 35 U.S.C. §120 of the patent. The evidence may relate to patentability and need not be restricted to priority. When the evidence (1) consists of prior printed publications and patents and (2) shows that the claims of the application are not patentable, the claims in the application would be rejected and the applicant could file a request for reexamination of the patent.

Section 1.609 sets forth what an examiner shall forward to the Board when an interference is declared. For the most part, §1.609 continues current practice. However, under §1.609(b)(3), the examiner would identify all claims in an application which the examiner believes are patentable over the proposed counts. Thus, a claim in an application would either correspond to a count or would be indicated as being patentable over the count. For instance, in Example 3, *supra*, the examiner would indicate that (1) claims 1 and 2 of application E and claims 11 and 12 of application F correspond to the count and (2) claim 3 of application E defines a separate patentable invention from the count.

Under §1.610, each interference will be declared by an examiner-in-chief. The examiner-in-chief enters all interlocutory orders in the interference. As necessary, another examiner-in-chief may act in place of the examiner-in-chief assigned to the interference. At the discretion of the examiner-in-chief assigned to the interference, a panel of two or more examiners-in-chief may enter an interlocutory order. The examiner-in-chief will set times and control proceedings such that pendency of the interference normally will not exceed 24 months. Under §1.610(d), the examiner-in-chief is authorized to hold conferences. Any conference can be by a telephone conference call. Under §1.610(e), an examiner-in-chief is authorized to determine a proper course of conduct for any situation not specifically covered by the rules.

Under §1.611(a), the PTO will normally notify each party at its correspondence address (37 CFR §1.33(a)) that an interference is declared. This practice will save the PTO the administrative burden of sending multiple notices as is required by the present rules. Under §1.611(a), the PTO could, in an appropriate circumstance, also send a notice to a patentee or an assignee. An appropriate circumstance for sending an additional notice would be a situation where a patent was issued on the basis of an application filed under 37 CFR §1.47. The matters to be specified in a notice declaring an interference are set out in §1.611(c). One item to be set out is the "order of the parties," meaning the order in which the parties will take testimony. If Jones is the junior party and Smith is the senior party, the order of the parties is: *Jones* v. *Smith*. The order of the parties may change as a result of the granting of a motion under §1.633(d), (f), or (g). Under §1.611(d), the notice declaring the interference may also set dates for filing preliminary statements, notices that preliminary statements have been filed, motions under §1.633, oppositions to those motions, and replies to the oppositions. Alternatively, an examiner-in-chief may set those times in a separate order before or after consultation with counsel for the parties. Under §1.611(e), the PTO may place a notice in the *Official Gazette* each time an interference is declared involving a patent. The notice would make it easier for patent practitioners throughout the country to determine whether a given patent is or has been involved in an interference.

Under §1.612, except for affidavits under §1.131 and any evidence and explanation under §1.608(b) filed separate from an amendment, each party shall have access to the file of every other party after an interference is declared. The files of applications and patents involved in an interference will be maintained if the Service Branch of the Board of Patent Appeals and Interferences for inspection and copying. Any explanation which is filed as part of an amendment or an amendment which discusses details contained in an affidavit under §1.131 would not be sealed under §1.612(a). Thus, §1.612(a) continues the practice discussed in *Moorman* v. *Martin*, 103 USPQ 273 (Comm'r.Pat. 1950) and Calvert, *An Overview of Interference Practice*, 62 J. Pat. Off. Soc'y. 290, 293 (1980). Under§1.612(b), each party will have access to an opponent's affidavit under §1.131 or an opponent's evidence and explanation under §1.608(b) when a decision is rendered on motions under §1.633. Under §1.612(c), a party would be required to serve any evidence and explanation under §1.608(b) if an order to show cause is issued under §1.617(a) and the party responds to the order under§1.617(b). Under §1.612(d), the parties may agree to exchange copies of their respective files.

Under §1.613(a), when a party has appointed more than one attorney or agent of record, the party may be required to designate a "lead" attorney or agent. A lead attorney or agent would be a registered attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the individual whom an examiner-in-chief can contact to set times and take other action in the interference. Section 1.613(b) continues the practice of not permitting the same attorney or agent to represent two or more parties in an interference except as permitted by Chapter 1, see e.g., §1.344. Under §1.613(c), an examiner-in-chief can make an appropriate inquiry to determine whether an attorney or agent should be disqualified from representing a party. A final decision to disqualify an attorney or agent is made by the Commissioner under 35 U.S.C. §32.

Section 1.614 specifies when the Board gains jurisdiction over an interference. The section also indicates when an interference becomes a contested case within the meaning of 35 U.S.C. §24. A remand to the examiner is authorized and may be useful in certain situations, such as, when a party moves under §1.633(c) to add a proposed count which is broader than any count in an interference. Alternatively, an examiner-in-chief would be able to obtain informal opinions from examiners during the course of an interference. Nothing in the rules, however, is intended to authorize informal conferences between an examiner-in-chief and an examiner with respect to the merits

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of an application before the Board in an *ex parte* appeal from an adverse decision of the examiner.

Section 1.616 permits an examiner-in-chief or the Board to impose appropriate sanctions against a party who fails to comply with the rules or with an order entered in the interference. Paragraphs (a) through (e) set forth some of the possible sanctions which can be entered. The particular sanction to be entered would depend on the facts of a given case and ordinarily would not be entered prior to giving the affected party an opportunity to present its views. An individual examiner-in-chief could not impose a sanction granting judgment inasmuch as entry of a judgment requires action by the Board. See §1.610(a). A party desiring sanctions imposed against an opponent could move under §1.635 for entry of an order imposing sanctions.

Section 1.617 retains summary judgment proceedings in those cases where a junior party applicant is required to file evidence and an explanation under §1.608(b). To avoid summary judgment, the junior party applicant must establish that it is *prima facie* entitled to judgment relative to the senior party patentee. For the most part, practice under §1.617 will be the same as the current practice under 37 CFR §1.228. The major changes would be the following: (1) A *prima facie* case could be based on patentability as well as priority. (2) A stricter standard would be imposed for presenting additional evidence after entry of an order to show cause. Under current practice (37 CFR §1.228), additional evidence may be submitted with a response to an order to show cause "when a showing in excuse of . . . [its] omission from the original" showing is made. The "good cause" showing required by §1.617(b) imposes a stricter standard than was required under the prior rules. The stricter standard is necessary to encourage applicants copying claims from a patent to better prepare their initial showings under proposed §1.608(b). Under current practice, the Board of Patent Interferences has found that substantial time is lost in issuing orders to show cause based on an inadequate initial showing only to have an adequate showing made with the response to the order to show cause. Under the "good cause" standard, ignorance by a party or counsel of the provisions of the rules or the substantive requirements of the law would not constitute good cause. (3) When an interference involves more than two parties, all opponents would be permitted to participate in summary judgment proceedings. Thus, the new rules overrule *Chan* v. *Akiba* v. *Clayton*, 189 USPQ 621 (Comm'r.Pat. 1975). (4) Currently, an applicant must file two copies of its initial showing under 37 CFR §1.204(c). Under §1.608(b), a party would file only one copy of the showing. However, any party responding to an order to show cause would be required to serve a copy of its initial showing under §1.608(b) with any response to the order to show cause. (5) A single examiner-in-chief may order an interference to proceed after issuance of an order to show cause under §1.608(b) and the filing of a response by an applicant under §1.617(b). Only the Board, however, may enter a summary judgment. See §1.617(b).

Under §1.618, the PTO has authority to return to a party any paper presented in an interference which is not authorized by, or is not in compliance with the requirements of, Subpart E. When an improper paper is filed, a party may be given an opportunity to file a proper paper under such conditions as an examiner-in-chief may deem appropriate. Two examples of improper papers are: (1) replies to replies which are not authorized by the rules and (2) papers presented which have attached thereto a paper previously filed in the interference.

Sections 1.621 through 1.629 govern preliminary statements which continue to be required in interference cases.

Under §1.621, a preliminary statement can be signed by any individual having knowledge of the facts (e.g., the inventor) or by an attorney or agent of record. Permitting an attorney or agent of record to sign a preliminary statement eliminates unnecessary mailing of papers between parties and their attorney or agent.

Under §1.622, the preliminary statement would identify the inventor who made the invention defined by each count. If the inventor identified in the preliminary statement is not an inventor named in the application or patent involved in the interference, a motion under §1.634 must be diligently filed to correct inventorship.

Sections 1.623, 1.624, and 1.625 respectively set out the allegations which should be made in, and the attachments which should accompany, a preliminary statement when (1) the invention was made in the United States, (2) the invention was made abroad and was introduced into the United States, and (3) derivation by an opponent from a party is to be an issue.

Section 1.626 permits a party to file a preliminary statement which states that the party only intends to rely on the filing date of an earlier United States or foreign application. Ordinarily, a junior party who fails to file a preliminary statement is not entitled to access to any other preliminary statement filed (see §1.631(b)). Section 1.626 would permit a junior party who only intends to rely on an earlier application to have access to any opponent's preliminary statement.

Section 1.628 sets out how an error in a preliminary statement may be corrected.

Section 1.629 sets out the effect of a preliminary statement. A party who fails to file a preliminary statement will not be permitted to prove (1) that the party made the invention defined by a count prior to the party's filing date or (2) that an opponent derived the invention from the party.

Under §1.631, preliminary statements normally will be opened for inspection when an examiner-in-chief decides preliminary motions filed under §1.633. A junior party who does not file a preliminary statement is not entitled to access to a preliminary statement of any other party. When an interference is terminated before preliminary statements are opened, any preliminary statement which has been filed will be returned unopened to the party who submitted the statement.

Under §1.632, a notice must be filed by a party who intends to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice. 35 U.S.C. §102(g). A party will not be permitted to brief (§1.656) or argue at final hearing (§1.654) that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless the notice is timely filed. A notice is timely if filed within ten (10) days of the close of the testimony-in-chief period of an opponent. While a party has the burden of proving that an opponent abandoned, suppressed, or concealed, the burden may be discharged on the basis of the opponent's evidence alone. *Shindelar* v. *Holdeman*, 628 F.2d 1337, 207 USPQ 112 (CCPA 1980). See also *Correge* v. *Murphy*, 705 F.2d 1326, 217 USPQ 753 (Fed. Cir. 1983); *Horwath* v. *Lee*, 564 F.2d 948, 195 USPQ 701 (CCPA 1977); and *Peeler* v. *Miller*, 535 F.2d 647, 190 USPQ 117 (CCPA 1976). Under current practice where notice is not required, it is possible that a party may learn for the first time that abandonment, suppression, or concealment is an issue when the party receives an opponent's brief at final hearing. See *Kluq* v. *Wood*, 212 USPQ 767, 771 n. 2 (Bd.Pat.Int. 1981). At that point, it is often too late to reopen proceedings in the interference. The purpose of requiring the notice under §1.632 is to make the parties and the Board aware during the interlocutory stage of an interference that abandonment, suppression, or concealment may be an issue in the interference. Early notice will permit the parties to ask for and the examiner-in-chief to set appropriate testimony periods for a party to present evidence related to abandonment, suppression, and concealment, particularly in those cases where long unexplained delays tend to prove the allegation of suppression or concealment. Early notice will also eliminate the need for the party moving to reopen the testimony period. *Klug* v. *Wood*, *supra*.

Under §1.633, a party may file preliminary motions for judgment, to redefine the interference, to substitute a different application in the interference, to declare an additional interference, to be accorded the benefit of an earlier application, to attack benefit previously accorded an opponent, or to add a reissue application to the interference. The motions are called "preliminary motions" in order to distinguish the motions from other motions which might be filed during the course of an interference. The preliminary motions would replace motions currently authorized by 37 CFR §1.231.

Under §1.633(a), a motion to dissolve would be replaced with a motion for judgment. A party can file a motion for judgment on the ground that an opponent's *claim* corresponding to a count is unpatentable to the opponent. With two exceptions, unpatentability can be based on prior art (35 U.S.C. §§102, 103), insufficiency of disclosure (35 U.S.C. §112, first paragraph), indefiniteness of claims (35 U.S.C. §112, second paragraph), double patenting, estoppel, or any other ground which would support a holding that claims corresponding to a count are not patentable. The two exceptions are (1) priority of invention of the subject matter of a count by the moving party as against any opponent and (2) derivation of the subject matter of a count by the opponent from the moving party. The two exceptions are directed to issues which are traditional "priority" issues, e.g., which inventor made the invention defined by a count first or, when derivation is an issue, who made the invention. Resolution of those "priority" issues almost always requires the taking of testimony. A motion for judgment, however, would be proper when a party believed an individual not involved in the interference made the invention defined by the count prior to an opponent in the interference, but subsequent to the moving party. Thus, a patentability issue, such as that raised under 35 U.S.C. §102(g) in *Sutter Products Co.* v. *Pettibone Mulliken Corp.*, 428 F.2d 639, 166 USPQ 100 (7th Cir. 1970), properly could be raised with a motion for judgment under§1.633(a). Derivation by an opponent from an individual not involved in the interference could also be raised under §1.633(a).

Under §1.633(b), a party could move for a judgment when the party believes there is no interference-in-fact. A motion for judgment on the ground of no interference-in-fact is only proper under one of three conditions: (1) when an interference involves designs, (2) when the interference involves plant applications or a plant application and plant patent, or (3) when no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. An example illustrates when a motion under §1.636(b) is proper.

Example 20: Application AD contains patentable claim 1 (6-cylinder engine). Application AE contains patentable claim 3 (8-cylinder engine). An interference is declared with a single count (6 or 8-cylinder engine). Claim 1 of application AD and claim 3 of application AE are designated to correspond to the count. Applicant AD believes that a 6-cylinder engine is a "separate patentable invention" (see §1.601(n)) from an 8-cylinder engine. Applicant AD would file a motion under §1.633(b) for a judgment on the ground of no interference-in-fact stating why a 6-cylinder engine is patentably distinct from an 8-cylinder engine. If the Board ultimately agrees with applicant AD, a patent could issue to AD containing claim 1 of application AD and a second patent could issue to AE containing claim 3 of application AE.

Under §1.633(c), a party may move to redefine interfering subject matter. One way to redefine interfering subject matter would be to add or substitute a count. When a party seeks to add a count, the party is required to demonstrate that the proposed count to be added is directed to a "separate patentable invention" from every other count in the interference.

A motion may be filed to amend an application claim which has already been designated to correspond to a count. See §1.633(c)(2). Such a motion might be filed when a party believes an application claim designated to correspond to a count is unpatentable and the amended claim is believed to be patentable.

An applicant may move to add a claim to the applicant's application and to designate the claim to be added to correspond to a count. See §1.633(c)(2). Such a motion may be filed when the applicant discloses specific subject matter which is not claimed, would like to claim the subject matter, and wants the subject matter involved in the interference.

Another way to redefine interfering subject matter would be to designate a claim as corresponding or not corresponding to a count. See §1.633(c)(3) and (c)(4). Examples 21 and 22 illustrate this latter point.

Example 21: Application AF contains patentable claim 1 (engine). Patent K contains claims 3 (engine) and 5 (6-cylinder engine). Claim 1 of application AF and claim 3 of patent K are designated to correspond to the count. Applicant AF believes a 6-cylinder engine is the "same patentable invention" (see §1.601(n)) as engine. Applicant AF would file a motion under §1.633(c)(3) to designate claim 5 of patent K as corresponding to the count. If the motion is granted and applicant AF prevails in the interference, judgment would be entered against patentee K and both claims 3 and 5 of patent K would be cancelled under 35 U.S.C. §135(a).

Example 22: Application AG contains patentable claim 1 (engine). Patent L contains claims 3 (engine) and 5 (8-cylinder engine). An interference is declared with one count (engine). Claim 1 of application AG and claims 3 and 5 of patent L are designated to correspond to the count. Patentee L believes that an 8-cylinder engine defines a "separate patentable invention" (see §1.601(n)) from engine. Patentee L should file a motion under §1.633(c)(4) to designate claim 5 of patent L as "not corresponding" to the count. If the motion is granted and an adverse judgment is entered against patentee L, only claim 3 would be cancelled from the patent pursuant to 35 U.S.C. §135(a).

A motion to redefine the interfering subject matter may also request that an opponent who is an applicant be required to add a claim to the opponent's application and to designate the claim to correspond to a count. See §1.633(c)(5). Such a motion might be filed when a party sees that the opponent discloses, but does not claim, subject matter which the party believes should be involved in the interference.

Section 1.633(i) would continue present practice (37 CFR §1.231) of allowing a party to move to redefine the subject matter of the interference or substitute a different application when an opponent moves for judgment (see §1.633(a) and (b)) or to attack benefit (see §1.633(g)).

Paragraph (j) of §1.633 will permit an opponent to move for benefit when a party moves to add or substitute a count. Thus, when a motion to add a count is filed by a party and an opponent wants benefit of an earlier application in the event the motion to add is granted, the opponent should file a motion under §1.633(j) to be accorded benefit. The mere fact that the opponent had been accorded benefit of an earlier application when the interference was declared does not mean the opponent will be accorded benefit as to some other count which may be added on motion of some other party.

Section 1.634 authorizes a motion to correct inventorship in an application (see §1.48) or a patent (see §1.324) involved in an interference.

Section 1.635 authorizes the filing of motions other than those specified in §§1.633 or 1.634. Motions filed under §1.635 would be referred to as "miscellaneous motions" to distinguish from "preliminary motions" under §1.633. Instances where a miscellaneous motion would be filed include motions to correct an error in a preliminary statement, to extend time for taking action or to seek judicial review, to obtain permission to proceed under 35 U.S.C. §24, or to obtain additional discovery.

Section 1.636 sets out the times within which a motion would be filed.

Section 1.637 sets out the content of motions. In prior interference practice, parties and their counsel have had difficulty meeting all the "unwritten" requirements for

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motions under 37 CFR §1.231. Section 1.637 is quite specific in setting out the requirements for each type of motion, particularly the preliminary motions. By setting out with specificity the requirements for each type of motion, it is intended to minimize disposition of motions on technicalities. A vast majority of the comments in response to the advanced notice published in the *Federal Register* on Aug. 1, 1983, commenting on then proposed §1.637 were in favor of the requirements for motions being specifically set out in the regulations.

Section 1.638 authorizes oppositions to motions. Any opposition would have to identify any material fact in dispute. A reply to an opposition would be authorized for all motions. A reply to a reply is not authorized.

Section 1.639 sets forth the evidence which may accompany a motion, opposition, or reply. Every material fact alleged in a motion, opposition, or an reply would have to be supported by proof. Section 1.639(b) authorizes affidavits to be used as proof for any motion. The affidavit may later be used by a party during the testimony period (see §§1.671(e) and 1.672(b)). When a party believes that testimony is necessary to decide a motion under §1.633 or §1.634, the party would have to describe the nature of the testimony needed. If an examiner-in-chief agrees that testimony is needed, appropriate interlocutory relief would be granted and testimony would be ordered.

Example 23: An interference is declared with one count between application AH and application AJ. Applicant AH files a preliminary motion under §1.633(c)(1) to redefine the interference by adding a second count. In order to succeed, applicant AH must show that the proposed count to be added is directed to a "separate patentable invention" (see §1.601(n)) from the count already in the interference. In the motion, applicant AH sets forth in detail the testimony which would be required to prove that the subject matter of the proposed count is to a separate patentable invention from the subject matter of the count in the interference. Applicant AJ opposes the motion on the ground that the proposed and present counts define the "same patentable invention" (see §1.601(n)). An examiner-in-chief determines that a material fact is in dispute and that applicant AH has established testimony is needed to properly rule on the motion. Under the circumstances, the motion would be deferred to final hearing and a testimony period would be ordered. The questions of (1) whether the proposed and present counts define the same patentable invention and (2) priority would be decided at final hearing.

Under §1.640, an examiner-in-chief would decide all motions. A hearing could be held on a motion in the discretion of an examiner-in-chief. Where appropriate, an examiner-in-chief could consult with an examiner on a question of patentability which arises in the first instance in the interference. Consultation would not be necessary where the examiner had already ruled on the patentability question which comes before the examiner-in-chief or the Board. Moreover, nothing in §1.640 authorizes conferences between examiners-in-chief and examiners in *ex parte* appeals under 35 U.S.C. §134 from an adverse decision of an examiner. A party is entitled to request reconsideration of a decision on a motion by a single examiner-in-chief. An opposition to a request for reconsideration could not be filed unless ordered by an examiner-in-chief or the Board, but the decision by the single examiner-in-chief would not normally be modified unless an opposition has been requested. The request for reconsideration would be acted on by a panel of the Board consisting of at least three examiners-in-chief, one of whom would normally be the examiner-in-chief who decided the motion. Several comments were received in response to the advance notice questioning why the examiner-in-chief who decided the motion would form part of the panel deciding the request for reconsideration. The decision to propose, and now adopt, a regulation which would permit the examiner-in-chief who decided the motion to participate in the decision on reconsideration was made after careful balancing of all the factors involved. It could have been proposed to permit the examiner-in-chief to individually decide the request for reconsideration. However, it is believed that parties in interference cases would feel that their requests for reconsideration are being more fully considered if more than one person considers their request. The two additional examiners-in-chief would be able to consult with the examiner-in-chief most familiar with the case, but would be able to control the decision on reconsideration by a majority vote. Use of the examiner-in-chief who decided the motion and two additional examiners-in-chief would (1) minimize delay which would occur if three new examiners-in-chief were used who were unfamiliar with the record and (2) minimize the possibility that reversible error occurred if only the examiner-in-chief who decided the motion also individually decided the request for reconsideration.

Under §1.644, petitions to the Commissioner are authorized in interference cases under certain restricted conditions. Petitions in interferences have been the source of substantial delay. Section 1.644 attempts to minimize those delays. Section 1.644 authorizes a petition to the Commissioner from a decision of an examiner-in-chief or a panel when the examiner-in-chief or the panel shall be of the opinion (1) that the decision involves a controlling question of procedure or an interpretation of a rule as to which there is a substantial ground for a difference of opinion and (2) that an immediate decision on petition would materially advance the ultimate termination of the interference. The standard is intended to be analogous to that of a district court certifying a question to a court of appeals under 28 U.S.C. §1292(b). A petition could be filed seeking to invoke the supervisory authority of the Commissioner. However, the petition could not be filed prior to entry of judgment and could not relate to the merits of priority or patentability or the admissibility of evidence under the Federal Rules of Evidence. A petition could also be filed seeking waiver of a rule. A fee of $120 would be charged for each petition and for each request for reconsideration of a decision on petition. Any petition would be decided on the record made before the examiner-in-chief or the Board and additional evidence could not be submitted with the petition. An opposition could not be filed unless ordered by the Commissioner. Where reasonably possible, service of a petition would have to be such that delivery is accomplished within one day. Service by hand or "Express Mail" would comply with this requirement.

Section 1.645 permits a party to file a motion to seek an extension of time to take action in an interference or to seek judicial review. The motion would have to be filed within sufficient time to actually reach an examiner-in-chief prior to expiration of the time for taking action. Under §1.645, a moving party would not be able to assume that a motion for an extension of time would be granted. Under §1.610(d)(6), a request for an extension of time could be made orally and an appropriate order would then be entered thus eliminating considerable paper work. The order would be the written record of the request and decision. See §1.2. Extensions of time have caused numerous delays in interference cases. Under present interference practice, some delays are caused because attorneys and agents on many occasions unexpectedly receive orders setting times. Under the new practice, attorneys and agents can expect times to be set for filing preliminary statements, preliminary motions, motions for additional discovery, testimony, and briefs after a conference call. It is expected that use of conference calls will permit an examiner-in-chief and attorneys or agents for parties to set a time schedule which is mutually satisfactory. A motion to extend time would not be granted unless a party shows good cause. The use of conference calls would allow schedules to be set before orders setting time are entered and therefore the press of other business which arises after the examiner-in-chief and attorneys and agents agree to times would not normally be considered good cause.

Under §1.647, when a party relies on a document in a foreign language, an English language translation of the document and an affidavit attesting to the accuracy of the translation would be required. The rule would apply to any document, including evidence submitted with motions, foreign applications for which a party seeks benefit, testimony, and exhibits introduced in evidence during testimony.

Under §1.651, after a decision is entered on preliminary motions, an examiner-in-chief would set times for filing motions for additional discovery and for taking testimony. Any motion for additional discovery would be to obtain answers to terrogatories, requests for admissions, and documents and things necessary for a party to prepare its case-in-chief.

Section 1.653 sets out what shall be in the record to be considered by the Board at final hearing. The record would continue to be printed or typed on paper 8-1/2 by 11 inches in size. Accordingly, when a party files an affidavit, the party should use 8-1/2 by 11 inches paper for the affidavit.

Section 1.654 continues the practice of holding a final hearing where oral argument may be presented by all parties. No fee would be charged for appearing at oral argument at final hearing in an interference.

Section 1.655 specifies the matters which can be considered in rendering a final decision. Patentability is an issue which may be raised. The Board can also consider whether any interlocutory order was manifestly erroneous or an abuse of discretion, although any interlocutory order would be presumed to be correct and burden of showing error shall be on the party attacking the order. This last procedural provision permits the Board to correct any manifest error before a party seeks judicial review of an interlocutory order along with judicial review of the Board's final decision.

Section 1.656 sets forth the requirements for briefs for final hearing. In large measure, §1.656 follows the requirements of Rule 28 of the Federal Rules of Appellate Procedure. An original and three copies of a brief is required. Under §1.656(h), if a party wants the Board in rendering its final decision to rule that any evidence is inadmissible, the party must file with its opening brief an original and three copies of a motion to suppress the evidence. Any previous objection to the admissibility of evidence is waived unless the motion to suppress is filed. This procedural provision makes clear that an objection to the admissibility of evidence must be renewed at final hearing and will be considered by the Board in rendering its final decision. When a junior party fails to file a brief, an order can be issued requiring the junior party to show cause why failure to file the brief should not be taken as a concession of priority.

Under §1.658 the Board would enter a final decision. The decision can (1) enter judgment, in whole or in part, (2) remand the interference to an examiner-in-chief, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing claims which correspond to the count. When judgment is entered as to all counts, the decision of the Board is considered final for the purpose of judicial review. Section 1.658(c) defines the doctrine of interference estoppel as it is to be applied in the PTO after an interference is terminated. The definition of interference estoppel is designed to encourage parties in interference cases to settle as many issues as possible in one proceeding. Section 1.658(c) creates an estoppel both as to senior and junior parties unlike the present practice (37 CFR §1.257) which limits estoppel in some instances to junior parties. An estoppel would *not* apply with respect to any claims which correspond, or which properly could have corresponded, to a count as to which the party was awarded a favorable judgment. A few examples illustrate how estoppel would be applied.

Example 24: Junior party applicant AL and senior party applicant AK both disclose separate patentable inventions "A" and "B" and claim only invention A in their respective applications. An interference is declared with a single count to invention A. Neither party files a preliminary motion (see §1.633(c)(1)) to add a count to invention B. Judgment as to all of AL's claims corresponding to the sole count is awarded to junior party applicant AL. Senior party applicant AK would be estopped to thereafter obtain a patent containing claims to invention B, because applicant AK failed to move to add a count to invention B in the interference. Junior party applicant AL would not be estopped to obtain a patent containing claims to invention B.

Example 25: In this example, the facts are the same as in Example 24 except that judgment is awarded as to all AK's claims corresponding to the count to senior party applicant AK. Junior party applicant AL would be estopped to obtain a patent containing claims to invention B in the interference. Senior party applicant AK would not be estopped to obtain a patent containing claims to invention B.

Example 26: Junior party applicant AM and senior party applicant AP both disclose separate patentable inventions "C", "D", and "E" and claim inventions C and D in their respective applications. An interference is declared with two counts. Count 1 is to invention C and Count 2 is to invention D. Neither party files a preliminary motion to add a proposed Count 3 to invention E. Judgment as to all AM's claims corresponding to Counts 1 and 2 is awarded to junior party applicant AM. Senior party applicant AP would be estopped to thereafter obtain a patent containing claims to invention E, because applicant AP failed to move to add a count to invention E in the interference. Junior party applicant AM would not be estopped to obtain a patent containing claim to invention E.

Example 27: In this example, the facts are the same as in Example 26 except that judgment is awarded as to all AP's claims corresponding to Counts 1 and 2 to senior party applicant AP. Junior party applicant AM would be estopped to obtain a patent containing claims to invention E, because applicant AM failed to move to add a count to invention E in the interference. Senior party applicant AP would not be estopped to obtain a patent containing claims to invention E.

Example 28: In this example, the facts are the same as in Example 26 except that judgment is awarded on all of AM's claims corresponding to Count 1 to junior party applicant AM and judgment is awarded on all AP's claims corresponding to Count 2 to senior party applicant AP. Both parties would be estopped to obtain a patent containing claims to invention E, because neither moved to add a count to invention E during the interference. Assume that junior party AM could have properly moved under §1.633(f) to be accorded the benefit of an earlier application, but did not do so during the interference. Junior party AM would not be estopped in subsequent *ex parte* prosecution from asking for benefit of the earlier application as to the invention defined by Count 1. Accordingly, if the examiner were to reject junior party AM's claim corresponding to Count 1 on the basis of some newly discovered prior art, junior party AM could properly antedate the prior art by seeking the benefit under 35 U.S.C. §120 of the earlier application. Thus, even though junior party AM was a "losing party" as to Count 2 (an adverse judgment as to junior party AM's claims corresponding to Count 2 having been entered), junior party AM was awarded a favorable judgment (§1.658(c)) as to Count 1. Junior party AM would be estopped in subsequent *ex parte* prosecution from attempting to be accorded the benefit of the earlier application as to the invention of Count 2.

Example 29: Applicant AQ discloses and claims invention "F." Applicant AR discloses and claims separate patentable inventions "F" and "G." The assignee of applicant AQ also owns an application AS which discloses and claims invention "G." An interference is declared between applicant AQ and applicant AR. The sole count is directed to invention F. No motion is filed by applicant AQ or its assignee to declare an additional interference between applicant AR and applicant AS with a count to invention G. A judgment as to all of AR's claims corresponding to the sole count is awarded to applicant AR. Applicant AS and the assignee would be es-

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topped to obtain a patent containing claims to invention G, because applicant AR and the assignee failed to move to declare an additional interference with a count to invention G.

Example 30: The facts in this example are the same as the facts in Example 29 except that judgment as to all of AQ's claims corresponding the sole count is awarded to applicant AQ. Applicant AS and the assignee would not be estopped, because applicant AQ was not a "losing party" (§1.658(c)).

Example 31: Applicant AT discloses a generic invention to "solvent" and a species to "benzene." Application AT contains a patentable claim 1 (solvent) and no other claims. Applicant AU discloses the generic invention to "solvent" and species to "benzene" and "toluene." Application AU contains patentable claim 3 (solvent) and no other claims. An interference is declared with a single count (solvent). Claims 1 of application AT and claim 3 cf applicatcn AU are designated to correspond to the count. No preliminary motions are filed. A judgment is entered in favor of applicant AT on the claim corresponding to the sole count. Applicant AU would be estopped to obtain a patent containing a claim to benzene, because applicant AU failed to file a preliminary motion under §1.633(c)(1) seeking to add a count to benzene and benzene was disclosed in winning party AT's application. Applicant AU would also be estopped to obtain a patent containing a claim to toluene, unless "toluene" defines a "separate patentable invention" from "solvent ." A basis for interference estoppel (§1.658(c)) exists if "toluene" and "solvent" define the "same patentable invention," because a claim to "toluene" could properly have been added and designated to correspond to the count. See §1.633(c)(2).

Under §1.659, the Board would be able to make recommendations to examiners and the Commissioner, including recommendations that application claims not involved in the interference be rejected and that a patent be reexamined as to patent claims not involved in the interference.

Under §1.660, a party would be required to notify the Board when the party's patent or application becomes involved in other PTO proceedings (reexamination, reissue, or protest) or litigation.

Section 1.661 sets forth when an interference is considered terminated after a judgment is entered in the interference. For the purpose of filing copies of settlement agreements, an interference is considered terminated when the time for all appeals has expired. *Tallent* v. *Lemoine,* 204 USPQ 1058 (Comm'r.Pat. 1979). See also *Nelson* v. *Bowler,* 212 USPQ 760 (Comm'r.Pat. 1981).

Section 1.662 provides that a party may request that an adverse judgment be entered. The section also provides that when a written disclaimer (not a statutory disclaimer), concession of priority or unpatentability, abandonment of the invention, abandonment of an application, or abandonment of the contest is filed, the disclaimer, concession, or abandonment would be treated as a request for entry of an adverse judgment. Section 1.662(b) provides that when a patentee files a reissue application and omits all claims of a patent corresponding to the counts of an interference for the purpose of avoiding the interference, judgment would be entered against the patentee. Under §1.662(c), the filing of a statutory disclaimer would not be treated as a request for entry of an adverse judgment unless all patent claims corresponding to a count are disclaimed. Under §1.662(d), if after entry of a judgment or after filing of a statutory disclaimer no interference exists, the interference would be terminated as to any party against whom judgment has not been entered and any further prosecution of any application involved in the interference would be *ex parte* before the examiner.

Section 1.666 sets out the procedure for filing settlement agreements in interference cases. The PTC is merely a repository for copies of agreements filed under 35 U.S.C. §135(c) and does not undertake to rule on whether the statute requires that a copy of any particular agreement be filed. *Nelson* v. *Bowler,* 212 USPQ 760 (Comm'r.Pat. 1981).

Section 1.671 sets out what would be considered evidence. The Federal Rules of Evidence, with certain exceptions, are made applicable to interference cases. Under§1.671(e), a party cannot rely on a previously filed affidavit unless the affidavit is served and notice is given that the party intends to rely on the affidavit. The purpose for the notice is to permit an opponent to determine whether a deposition for cross-examination is necessary (see §§1.672(b) and 1.673(e)).

Section 1.671(e) is intended to overrule prior construction of PTO rules in *Holmes* v. *Kelly,* 586 F.2d 234, 237 n. 7, 199 USPQ 778, 782 n. 7 (CCPA 1978) and *Brecker* v. *Jennings,* 204 USPQ 663 (Bd.Pat.Int. 1978), which considered a Rule 132 affidavit in the file of an involved application to be part of the "record" in an interference. Under §1.671(e), a party intending to rely on such an affidavit must give notice and serve a copy of the affidavit on the opponent.

Under §1.671(f), the significance of documentary and other exhibits must be discussed with particularity by a witness during oral deposition or in an affidavit. Section 1.671(f) sets out in the regulations an evidentiary requirement imposed by precedent. See *Popoff* v. *Orchin,* 144 USPQ 762 (Bd.Pat.Int. 1963) (unexplained experimental data should not be considered); *Chandler* v. *Mock,* 150 F.2d 563, 66 USPQ 209 (CCPA 1945) (records standing alone were held to be meaningless), and *Smith* v. *Bousquet,* 111 F.2d 157, 45 USPQ 347 (CCPA 1940) (unexplained tests in stipulated testimony are entitled to little weight). See also *In re Borkowski,* 505 F.2d 713, 184 USPQ 29 (CCPA 1974) and *Triplett* v. *Steinmayer,* 129 F.2d 869, 54 USPQ 409 (CCPA 1942). Under §1.671(g), a party is required to obtain permission from an examiner-in-chief prior to proceeding under 35 U.S.C. §24. This requirement insures that a subpoena is necessary (e.g., a subpoena ordinarily should not be necessary where testimony of an opponent is sought) and that testimony sought through a §24 subpoena is relevant before a subpoena is issued. The motion seeking permission to proceed under §24, any opposition thereto, and the order of an examiner-in-chief authorizing the moving party to proceed under §24 will be of assistance to a federal court in the event a party is required to resort to a court to enforce the subpoena or to compel answers to questions propounded at any deposition where a witness is appearing pursuant to a subpoena. See *Sheehan* v. *Doyle,* 529 F.2d 38, 188 USPQ 545 (1st Cir.), *cert. denied,* 429 U.S. 870 (1976), *rehearing denied,* 429 U.S. 987 (1976).

Under §1.671(h), any evidence which is not taken or sought and filed in accordance with the regulations will not admissible.

Section 1.672 sets forth the manner in which testimony shall be taken. Testimony can be taken by deposition or affidavit at the election of the party presenting the testimony. A party presenting testimony by affidavit must file and serve the affidavit. If the party presents testimony by affidavit and an opponent elects to cross-examine the affiant, the party is required to notice a deposition for the purpose of cross-examination. Re-direct and re-cross will take place at the deposition. Where the parties agree, testimony can be presented by affidavit without opportunity for cross-examination (see §1.672(e)) or by an agreed statement of facts (see §1.672(f)).

Section 1.673 sets out how a deposition must be noticed. A deposition can be noticed for any reasonable place in the United States. The extent to which parties, witnesses, and attorneys or agents have to travel may be considered in determining whether a place is reasonable. Prior to serving a notice for a deposition, a party is required to take two procedural steps. Under §1.673(b), a party would be required to serve a copy of the documents and a list of the things in its possession, custody, and control upon which it intended to rely. Under §1.673(g), the party is required to have an oral conference (in person or by telephone) with all opponents to attempt to agree on a mutually acceptable time and place for taking the deposition. An examiner-in-chief may set the time and place if agreement is not reached. A single notice listing all the witnesses and the general nature of their expected testimony is then served. Under §1.673(c) and except as provided, a party can not rely on any witness not mentioned in the notice, any document not served, or any thing not listed. Under §1.673(h), a copy of any notice must be attached to the certified transcript of each deposition filed.

Section 1.674 sets out the persons before whom depositions can be taken.

Section 1.675 sets out how a deposition is to be taken.

Section 1.676 sets out how a court reporter should prepare and file a certified transcript of a deposition. Section 1.676(d) sets out how exhibits are to be marked for identification, used at depositions, and filed. Provisions similar to those of Rule 30(f) (1)(A) and (B) of the Federal Rules of Civil Procedure are applicable to interferences.

Section 1.677 sets out the form of a transcript of a deposition.

Under §1.678, a transcript of a deposition must be filed in the PTO within 45 days of the date of the deposition.

Section 1.682 sets out how a party may introduce in evidence, if otherwise admissible, official records or printed publications. When a notice is served, a party is also required to serve (but not file) copies of the official records and printed publications. Any objection to the notice or to the admissibility of any official record or publication must be filed within 15 days of the date of service of the notice.

Section 1.683 sets out how a party may use testimony from another interference or proceeding.

Section 1.684 sets out how a party may take testimony in a foreign country.

Section 1.685 sets out how objections during the taking of depositions must be raised. Under §1.685(a), an error in a notice of deposition is waived unless a motion to quash the notice is filed as soon as the error is, or could have been, discovered. Under §1.685(b), any objection to the qualifications of an officer is waived unless (1) the objection is noted on the record of the deposition before a witness begins to testify or (2) if discovered after the deposition, a motion to suppress is filed as soon as the objection is, or could have been, discovered. Under §1.685(c), any error in the manner in which testimony is transcribed, the transcript is signed by a witness, or the transcript is prepared or otherwise handled by the court reporter is waived unless a motion to suppress is filed as soon as the error is, or could have been, discovered. Under §1.685(d), any objection on the merits to the admissibility of evidence (e.g., under the Federal Rules of Evidence is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Often objections are cured by subsequent testimony. Accordingly, any objection which a party wants the Board to consider at final hearing must also be made the subject of a motion under §1.656(h).

Section 1.687 sets out how a party could seek and obtain additional discovery. "Additional discovery" is defined in §1.601(a). Section 1.687 does not change the standard ("interest of justice") for obtaining discovery.

Section 1.688 sets out how a party can introduce into evidence admissions and answers to interrogatories obtained as a result of additional discovery.

Changes in Text

Several changes have been made to the text of the proposed rules published in the *Federal Register* on Jan. 30, 1984. The changes are discussed below. Additional rationale for the changes are further discussed under the heading "Analysis of Comments."

All references to the "Board of Appeals and Interferences" have been changed to "Board of Patent Appeals and Interferences" in view of Public Law 98–622.

In §1.11(a) the language "or after termination of an interference without an award of judgment" has been deleted. This change has been made in view cf changes made in paragraphs (c) and (d) of §1.662.

In response to a comment, the fee required for a petition in an interference under §1.644(e) and a request for reconsideration of a decision on petition in an interference under §1.644(f) have been set out as separate items.

Section 1.136 was changed to refer to §1.611 rather than §1.610(a).

The following sentence was inadvertently omitted as the third sentence of §1.138 in the notice of proposed rulemaking: "A registered attorney or agent acting under the provision of §1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application." This sentence presently appears in §1.138.

In §1.196(d), second sentence, "thirty days" has been changed to "one month".

In §1.197(b), "thirty days" has been changed to "one month".

In the last sentence of §1.304, "The Commissioner" has been changed to "An examiner-in-chief" and "of a decision of the Board of Patent Appeals and Interferences in an interference case" has been inserted after "time for seeking judicial review." This change is made to limit the "excusable neglect" standard to interference cases only.

In §1.601(j), the language "all the claims of a party which correspond" has been changed to read "at least one claim of a party which corresponds". The language "all the claims of an opponent which correspond" has been changed to read "at least one claim of an opponent which corresponds".

Section 1.605(a) has been changed by deleting from the third sentence the language "a claim which is the same or substantially the same as" and by adding the following sentence as the fourth sentence: "At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared." In the second sentence, "30 days" has been changed to "one month".

In the last sentence of §1.606, the language "to define one patentable invention" has been changed to read: "not to contain separate patentable inventions."

The word "and" has been inserted in §1.607(a) before "(3)". The word "must" in the first sentence of §1.607(c) has been changed to "shall" in response to a suggestion in a comment.

Pursuant to two separate suggestions, the following is being added after the first sentence in §1.608(b): "Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent. To facilitate preparation of a record (§1.653(g) and (h)) for final hearing, an applicant should file affidavits on paper which is 8-1/2 by 11 inches (21.8 by 27.9 cm.)."

In §1.609(b)(1), the language "count or counts" has been changed to "proposed count or counts". In §1.609(b)(2), each occurrence of "the count" has been changed to "each count".

In §1.613(a), "§1.344" has been changed to "this Chapter." This change is being made to obviate the need to again amend §1.613 in the event new rules relating to practice before the PTO are issued. See the notice of proposed rulemaking published in the *Federal Register* on Aug. 24, 1984. 49 F.R. 33790, proposed §§10.62 and 10.66. The language "or members of the same firm of attorneys or agents" has been added after "agent" in §1.613(b).

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In §1.615(a), second sentence, "which are" has been deleted and "in the interference" has been added after "will not be entered or considered".

Several changes have been made in §1.617. In §1.617(a), the language "the interference shall proceed before the examiner-in-chief" has been changed to read: "the interference shall proceed in the normal manner under the regulations of this part". The second sentence of §1.617(b) ("A response may include a request by the applicant for a hearing before the Board.") has been changed to read: "Any request by the applicant for a hearing before the Board shall be made in the response." This change was made to clarify when and how a hearing must be requested by the applicant. The second sentence of §1.617(d) has been changed to read: "The statement may set forth views as to why summary judgment should be granted against the applicant, but the statement shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause." Section 1.617(e) has been re-written as follows: "Within a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent." The language "examiner-in-chief or the" has been added after "by the applicant is timely filed, the" in the first sentence of §1.617(g). The language "Board decides that" has been deleted from the second sentence of §1.617(g). The language "If the Board decides otherwise" has been replaced with "Otherwise" in the third sentence of §1.617(g). The language "before the examiner-in-chief" in the third sentence of §1.617(g) has been changed to read: "in the normal manner under the regulations of this part." These changes will authorize either an examiner-in-chief or a Board to authorize an interference to proceed under §1.617(g). It will continue to be necessary for the Board to enter an order *granting* summary judgment. In the last sentence of §1.617(h), "patentee" has been changed to "any opponent".

The language "the name of" has been deleted from the first sentence of §1.622(a). The second sentence of §1.622(a) in the notice of proposed rulemaking ("When an inventor identified in the preliminary statement is not identical to the inventor named in the party's application or patent, the party shall file a motion . . . .") has been changed to read: "When an inventor identified in the preliminary statement is not an inventor named in the party's application or patent, the party shall file a motion . . . ." This change is being made in view of §105(a) of Public Law 98-622 which amended 35 U.S.C. §116 to permit joint inventors to be named "even though . . . (3) each did not make a contribution to the subject matter of every claim . . . ."

The following changes have been made in §1.623(c). In the first sentence, "copy of the drawing" has been changed to "copy of the first drawing". In the second sentence, "copy of the written description" has been changed to "copy of the first written description". In the third sentence, "when a drawing or written description" has been changed to "when a copy of the first drawing or first written description".

Several changes have been made to §1.624. The following has been added as a second sentence in §1.624(a)(5): "If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state." The following changes have been made in §1.624(c). Each occurrence of "was made" has been changed to "was introduced into the United States." In the first sentence, "copy of the drawing" has been changed to "copy of that drawing". In the second sentence, "copy of the written description" has been changed to "copy of that written description". In the third sentence, "a drawing or written description" has been changed to "a copy of the first drawing or first written description introduced in the United States".

The following changes have been made in §1.625(c). In the first sentence, "copy of the drawing" has been changed to "copy of the first drawing". In the second sentence, "copy of the written description" has been changed to "copy of the first written description". In the third sentence, "a drawing or written description" has been changed to "a first drawing or first written description".

The language of §1.628(b) which read: "because the drawing or written description is not in the party's possession, custody, or control, the party may file a motion . . . to amend its preliminary statement promptly after it secures possession, custody, or control of a copy of the drawing or written description" has been changed to read as follows: "the party (1) shall show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) shall attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party shall file a motion . . . to amend its preliminary statement promptly after the first drawing, first written description or drawing or written description first introduced into the United States becomes available."

The first sentence ("A preliminary statement should be carefully prepared.") has been deleted from §1.629(a).

In §1.629(b), the language "no earlier than" has been changed to "as early as".

In §1.629(d), the following has been added after "allegation": "unless the party complies with §1.628(b)."

A new §1.632 has been added to require a party to give timely notice of the party's intent to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice. A companion change has been made to §1.654.

Two changes have been made to §1.633(c). Paragraph (c)(2) has been changed by adding thereto the following language: "or adding a claim in the moving party's application to be designated to correspond to a count". In addition, in §1.633(c), the "or" before "(4)" has been deleted and the following has been added to the end of the first sentence: ", or (5) requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count."

Paragraph (j) has been added to §1.633.

In §1.636(b), "(i)" has been changed to "(i) or (j)" in view of the addition of paragraph (j) to §1.633. The language "filed as soon as practical" in §1.636(c) has been changed to "diligently filed" in order to conform §1.636 to §1.48. A party must exercise diligence in correcting inventorship. *Van Otteren* v. *Hafner*, 278 F.2d 738, 126 USPQ 151 (CCPA 1960).

Several changes have been made to §1.637. The language "Where appropriate," has been deleted from the following paragraphs of §1.637: (c)(1)(vi); (c)(2)(iv); (c)(3)(iii); (d)(4); (e)(1)(viii); (e)(2)(vii); and (h)(4). The following has been added in §1.637(c)(2) before "shall": "or adding a claim to be designated to correspond to a count". The language "amended claim" in §1.637(c)(2)(i) has been changed to read: "amended or added claim". The language "Apply the terms of each proposed claim to the disclosure of the application" in §1.637(c)(2)(ii) has been changed to read: "Show that the proposed or added claim defines the same patentable invention as the count." The language "proposed amended claim" in §1.637(c)(2)(iii) has been changed to read "amended or added claim." The language "adding the proposed claim" in §1.637(c)(2)(iii) has been changed to read: "making the amended or added claim".

The word "interferences" in §1.637(c)(4)(ii) has been corrected to read: "interference".

Subparagraph (c)(5) has been added to §1.637.

The following has been added as the last sentence to §1.637(f)(2): "If the earlier application filed abroad is not in English, the requirements of §1.647 must also be met."

In paragraph §1.637(f)(3), the language "discloses an embodiment with the scope" has been changed to read: "constitutes a constructive reduction to practice".

The first sentence, originally proposed in §1.638(b) ("A reply to an opposition shall not be filed unless authorized by this subpart or an examiner-in-chief or the motion was filed under §§1.633 or 1.634"), has been deleted. The language "any authorized reply" in §1.638(b) has been changed to "a reply".

The language "or a motion to correct inventorship under §1.634" has been added to the first sentence of §1.639(c) after "preliminary motion under §1.633."

The following has been added after the first sentence of §1.640(b)(1): "Failure or refusal of a party to timely present an amendment required by an examiner-in-chief shall be taken without further action as a disclaimer by that party of the invention involved." The fourth sentence of §1.640(c) ("A request for reconsideration will ordinarily not be granted unless an opposition has been requested by an examiner-in-chief or the Board") has been changed to read: "A decision of a single examiner-in-chief will not ordinarily be modified unless an opposition has been requested by an examiner-in-chief or the Board." In the last sentence of §1.640(c), the language "shall be decided by a panel" has been changed to read: "shall be acted on by a panel".

The word "application" in the paragraph heading and text of §1.642 has been changed to read: "application or patent".

Three changes have been made in §1.644. The following language has been added after "Commissioner" in §1.644(a)(2): "and is not filed prior to the decision of the Board awarding judgment and does not relate to (i) the merits of priority of invention or patentability or (ii) the admissibility of evidence under the Federal Rules of Evidence". The following language has been deleted from the second sentence of §1.644(b): "and shall not relate to (1) the merits of priority of invention or patentability or (2) the admissibility of evidence under rhe Federal Rules cf Evidence". The language "A request for reconsideration will ordinarily not be granted unless" in the second sentence of §1.644(f) has been changed to read: "The decision will not ordinarily be modified unless such".

Two changes have been made in §1.645. The word "to" has been added before "file a notice of appeal" and "commence a civil action" in the first sentence of paragraph (a). The language ", accompanied by an affidavit," has been deleted from paragraph (b).

Three changes have been made to §1.646. The word "service" has been added after "additional" in the third sentence of paragraph (b). The language "or except as otherwise provided by this part," has been added after "otherwise ordered by an examiner-in-chief," in paragraph (c). The language in paragraph (c) "paper may be made" has been changed to "paper shall be made". The word "time" has been changed to "date" in the last sentence of paragraph (e).

A new paragraph (c) has been added to §1.654 to require that a party give timely notice of the party's intent to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice. Section 1.632 specifies the time within which the notice shall be filed.

Three changes have been made in §1.658. The language "paragraph (a) of the section" in the last sentence of §1.658(b) has been changed to "paragraph (a) of this section". The "(i)" in the first sentence of §1.658(c) has been changed to "(j)" in view of the addition of §1.633(j). In the notice of proposed rulemaking, the second sentence of §1.658(c) read: "A party, other than a party awarded a favorable judgment as to all counts, who could have properly moved, but failed to move, under §§1.633 or 1.634, shall be estopped to take *ex parte* or *inter partes* action in the Patent and Trademark Office after the interference which is inconsistent with the party's failure to properly move." This sentence has been changed to read: "A losing party who could have properly moved, but failed to move, under §1.633 cr 1.634, shall be estopped to take *ex parte* or *inter partes* action in the Patent and Trademark Office after the interference which is inconsistent with that party's failure to properly move, except that a losing party shall not be estopped with respect to any claims which correspond, or properly could have corresponded, to a count as to which that party was awarded a favorable judgment."

Several changes have been made in §1.662. In §1.662(a), the word "construed" has been changed to "treated". The first sentence of §1.662(c) in the notice of proposed rulemaking read: "The filing of a statutory disclaimer under 35 U.S.C. §253 by a patentee will not be treated as a request for entry of an adverse judgment against the patentee, but will delete any statutorily disclaimed claims from being involved in the interference." That first sentence has been changed to read: "The filing of a statutory disclaimer under 35 U.S.C. §253 by a patentee will delete any statutorily disclaimed claims from being involved in the interference." The second sentence of §1.662(c) in the notice of proposed rulemaking read: "A statutory disclaimer of any claim involved in an interference shall in subsequent proceedings have the same effect with respect to the patentee as an adverse judgment." That second sentence has been changed to read: "A statutory disclaimer will not be treated as a request for entry of an adverse judgment against the patentee unless it results in the deletion of all patent claims corresponding to a count." In view of this change, proposed §1.662(d) has been deleted as unnecessary, and a change has also been made in §1.11(a) to delete any reference to a termination of an interference by any means other than judgment.

The last sentence of §1.671(g) has been changed from "The motion shall describe the general nature and show the admissibility in the interference of the testimony, document, or thing" to: "The motion shall describe the general nature and the relevance of the testimony, document, or thing."

Three changes have been made to §1.672(b). In the second sentence after "witness by affidavit shall" the following has been added: ", prior to the close of the party's relevant testimony period". The language "file an affidavit" has been changed to "file and serve an affidavit". The following has been added after the third sentence: "A party shall not be entitled to rely on any document referred to in the affidavit unless a copy of the document is filed with the affidavit. A party shall not be entitled to rely on any thing mentioned in the affidavit unless the opponent is given reasonable access to the thing. A thing is something other than a document."

Several changes have been made in §1.673(b). The introductory sentence of paragraph (b) ("Unless the parties agree otherwise, at least three days prior to the conference required by paragraph (g) of this section, a party shall serve, but not file, the following:") has been changed to read: "Unless the parties agree otherwise, a party shall serve, but not file, at least three days prior to the conference required by paragraph (g) of this section, if service is made by hand or "Express Mail," or at least ten days prior to the conference if service is made by any other means, the following:" In §1.673(b)(1) the word "copy" has been changed to "list and copy".

In the last sentence of §1.675(d), the language "signed by the witness in the presence of any notary" has been changed to read "signed by the witness in the form of (1) an affidavit in the presence of any notary or (2) a declaration". This change conforms §1.675(d) to §1.68.

In §1.682(a)(4), ", where appropriate," has been added prior to "be accompanied" and "(§1.671(d))" has been added after "printed publication".

The word "admissible" in §1.684(a)(4) has been changed to "relevant".

The following sentence has been deleted from §1.687(b): "If the witness refuses to produce a requested document or thing, the party may file a motion (§1.635) for additional discovery under paragraph (c) of this section."

Section 1.688 has been revised to more clearly describe how a party may introduce in evidence an answer to a request for admission or an answer to a written interrogatory.

Analysis of Comments

Eighteen written comments were received. Three individuals testified at a hearing held on May 15, 1984.

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The following is an analysis of the written comments and the oral comments made at the hearing.

One comment suggested that §1.8 not be amended to exclude from the certificate of mailing practice a paper in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail." The comment argues that "[s]ome parties might not have an attorney in the Washington area or they may live in an area not serviced by Express Mail." The suggestion is not being adopted. Experience has shown that there are situations in interferences where it is desirable to have and the parties need a prompt ruling on a written motion. It is difficult for an examiner-in-chief to render a prompt ruling if the motion and any opposition are not promptly served and filed. In those situations where a party has no Washington, D.C. metropolitan area attorney or where a party resides in an area not served by "Express Mail," it may not be possible to hand-file or use "Express Mail." The examiner-in-chief would then exercise discretion by not invoking the exception of new subparagraph (xii) of §1.8(a).

One comment suggested that it would be clearer if the fee for a petition in an interference and the fee for a request for reconsideration of a decision on petition in an interference were set out in §1.17(h) as separate items. This suggestion has been adopted and the two fees have been set out in §1.17(h) as separate items.

A suggestion was made that a reference be made in §1.136 to §1.611 rather than §1.610(a). The suggestion is being adopted, because a reference to §1.611 is believed to be more appropriate. Once an interference is declared involving an application, *ex parte* prosecution of the application is suspended and the applicant need not respond to any PTO action outstanding as of the date the interference is declared.

One comment made the following remark concerning §1.196: "I do not understand the need or desire of the PTO to start the time to appeal to a Court from a PTO *final* decision on one claim, while PTO action is continuing on a second claim." As explained in the notice of proposed rulemaking (49 F.R. 3770, columns 2–3; 1039 O.G. 20–21; 1039 TMOG 20–21), when there are further proceedings before the examiner following a decision by the Board of Patent Appeals and Interferences, judicial review is not appropriate. Hence, under §1.196, the PTO will not start a time for seeking judicial review of a PTO decision on one claim while PTO action is continuing on another claim. The last sentences of §1.196(b)(1) and §1.196(d) authorize the Board to enter an order making its decision final as to one claim when remand proceedings as to another claim result in a favorable decision for the applicant. Section 1.196 is intended to eliminate piecemeal appeals.

With respect to §1.292(c), one commentator said: "[a] party should be able to raise public use and [on] sale issues at any stage [of an interference proceeding] provided the issue is raised in a timely manner after learning of the use or sale." Public use and on sale issues are to be raised in interferences by way of a preliminary motion under §1.633(a). If a motion under §1.633(a) cannot be timely filed, a belated motion may be filed provided the moving party complies with the provisions of §1.645(b). Whether or not a belated motion will be accepted where a public use or sale is discovered after the time for filing §1.633(a) motions which has passed will manifestly depend on the facts of a given case.

One comment suggested that the language "speedy, and inexpensive" be deleted from the second sentence of the preamble of §1.601. This suggestion is not being adopted. The second sentence of the preamble of §1.601 provides that the rules "shall be construed to secure the just, speedy, and inexpensive determination of every interference." The provision is modeled in part after the second sentence of Rule 1 of the Federal Rules of Civil Procedure which states that the Federal Rules "shall be construed to secure the just, speedy, and inexpensive determination of every action." The "just, speedy, and inexpensive determination" provision of §1.601 will prove useful in construing other provisions in the rules.

Two comments were received which suggested a change in language in §1.601(j). One comment correctly noted that "[i] f even one claim of each party defines the same patentable invention, there is an interference-in-fact." The comment went on to correctly note that "[t] he remaining claims can be disposed of by a motion under§1.633(c)(4)." A second comment noted that under the definition proposed, all the claims of both parties corresponding to a count must define the same patentable invention. The comment went on to correctly note the intent of the PTO is, however, that an interference-in-fact exists if at least one of the claims of a party corresponding to a count defines the same patentable invention as one of the corresponding claims of an opponent. In view of the suggestions made in the two comments, §1.601(j) has been changed to state that an interference-in-fact exists when at least one claim of a party which corresponds to a count and at least one claim of an opponent which corresponds to the count defines the same patentable invention.

Two comments were received which suggested that the language "earliest filing date" in §1.601(m) be changed to read "earliest effective filing date." The suggestion is not being adopted. Section 1.601(m) defines "senior party." The definition of "senior party" in §1.601(m) is consistent with current practice and is intended to codify current practice. In an interference where there are no benefit applications, the "senior party" is the party with the earliest "filing date." There are interferences where a party may be "senior" with respect to a first count based on the filing dates of the applications involved in the interference and "junior" with respect to a second count because the opponent is entitled to benefit of an earlier application as to the second count only. Under these circumstances in the past, the PTO has designated the party who is "senior" based on the filing dates of the applications involved as the "senior party." The designation of the party as "senior party" is for procedural purposes only, i.e., setting who takes testimony first, and does not affect which party has the burden of proof. Section 1.601(m) preserves this past practice.

Comments were received regarding §1.601(n) which defines "same patentable invention" and "separate patentable invention." One written comment suggested that §1.601(n) be deleted. The commentator appeared at the hearing and also urged orally that §1.601(n) be deleted. The suggestion is not being adopted. In view of the nature of the comment and the importance of the definitions in §1.601(n), the written comment is reproduced in its entirety:

Comment: The paragraph to be deleted contains an explicit definition of both "same patentable invention" and "separate patentable invention". It requires application of a two-prong test for determining "sameness" or "separateness". Two inventions are considered to be the "same patentable invention" when they are the same under 35 USC 102 or obvious variants under 35 USC 103 when one is considered as "prior art" with respect to the other. Application of this standard may lead to results which are anomalous or in conflict with statutory requirements if, as the proposed rules apparently assume, the award of priority as to counts embodying "separate patentable inventions" will inherently and finally resolve the question of entitlement to a patent as between the parties on involved claims corresponding to those counts. Three specific problems with the definition of Rule 601(n) have been identified as follows:

(1) If the standard of separate patentability as between two counts is applied on a mutual basis (i.e., Invention A must be separately patentable from Invention B considered as prior art and Invention B must be separately patentable from Invention A considered as prior art), then the conduct of interferences with separate counts directed to both a generic invention and an included specific embodiment thereof (i.e., a species) are frustrated. If, however, such mutuality is not applied (i.e., if Invention A is the existing count, then a count directed to Invention B is proper so long as Invention B would be considered patentable over Invention A as prior art), then a number of irreconcilable anomalies in count modification through preliminary motions practice will be manifest.

(2) "Separate patentability" as a non-obviousness issue is in every context *except* interference practice before the PTO determined with finality only when an *affirmative* determination has been reached or the applicant *elects* to discontinue further prosecution of any applications embodying the invention or to admit obviousness. Because in the ex parte context an applicant may continue to marshall additional evidence supportive of non-obviousness until separate patentability over a prior art invention has been established, "separate patentability" is always a fluid concept where ultimate resolution can neither be predicted nor foreclosed. On certain cases interference proceedings under the proposed rules will be conducted and judgment rendered on the assumption of a lack of "separate patentability", which would ordinarily be subject to change or rebuttal as additional argument, evidence or other supportive activity of non-obviousness were marshalled. Thus, simply determining a proposed count is not yet "separately patentable" for the purposes of count formation ought not to foreclose post-interference reconsideration of separate patentability questions when the party proposing the count would not have been foreclosed on priority grounds.

(3) The underlying assumption that "separate patentability" is to be established under the proposed rules for one invention when a second invention is considered as "prior art" does not have any necessary correspondence to the *effect* of an adverse judgment in an interference on the question of priority. While a lost count in interference is not patentable to the loser, the lost count will be considered as "prior art" against the losing party only if the status of prior art for the purposes of 35 USC 103 is established by the record in the interference, (i.e., by representing a prior invention of another made in the United States, not abandoned, suppressed or concealed under 35 USC 102). A party entitled to priority for a count under the benefit provisions of 35 USC 119 creates no "prior art" under 35 USC 102(g)/103 against his opponent. Separate counts ought not to be created or denied in an interference on the basis of a rule which fails to account for whether the interference record will confirm the assumption in the definition that a lost count will become "prior art".

The following examples are provided as indicative of perceived difficulties in the application of the definition embodied in Rule 601(n):

Example A: Rule 601(n) is applied in a mutuality sense to an interference where the existing count (Invention A) is a broad genus over organic compounds. Both parties disclose a species (Invention B) which one of the parties alleges represents a "selection invention", i.e., is neither anticipated by the genus nor obvious therefrom. The party proposing to add a species count to Invention B must demonstrate that the genus was neither the same as nor obvious in view of the species, an impossibility since *disclosure of the species anticipates the genus under 35 USC 102.* In effect, no party could ever propose sub-generic or species counts included within broader generic counts. Since all potential patentability and priority questions with respect to possible sub-generic and species claims are intended to be resolved in the unified patentability/priority proceedings, loss of such a broad generic count might be construed as estopping the losing party from arguing entitlement to a patent for species and sub-genera within the lost count. Since proof of a single species is dispositive of the question of priority as to a genus, no matter how large, this is a more severe result than would appear to be proper or intended.

Example B: Under the facts of Example A, if the standard under which the propriety for including a second sub-generic or species count is merely that the *proposed* count must be non-obvious over the *existing* count considered as prior art, then, an interference could conceivably proceed with both the generic and the species count in the interference. The usual criteria for "selection inventions" could be employed. However, when an interference is declared with a species count embodying Invention A, then utilization of a test requiring that a proposed count be non-obvious over the existing count as prior art leads literally to the conclusion that a proposed count to a generic Invention B is *anticipated* by the existing species count and therefore may not be added to the interference. This artificial distinction can certainly not have been intended, and yet the rules provide no clear indication of which result is the "correct" one or whether another test will be employed, e.g., the narrower count need only be non-obvious over the broader count.

Example C: A party moves to substitute two sub-generic counts to allegedly separately patentable inventions, Invention A and Invention B, in place of a broad generic count to the "Markush" group of Invention A *and* Invention B. The party alleges Invention B has surprising and unexpected properties over Invention A and is separately patentable thereover. Because, however, a consideration of Invention B as "prior art" suggests Invention A would not be non-obvious thereover, the motion is denied. The moving party establishes priority as to Invention B, but loses the sole count of the interference to an opponent who filed a foreign application disclosing a single species from Invention A. The result is that the moving party with clear evidence of priority apparently loses the right to patent an invention on the technicality of "count formation" in interference. The result is substantially more severe than had he been simply faced with a statutory bar!

Example D: The senior party, a foreign applicant, relies on a priority application disclosing Embodiment A. Subsequently the junior party files a United States application directed to an Embodiment B. Thereafter both parties file applications in the United States disclosing a generic invention including both Embodiments A and B. An interference is declared on the generic invention and the junior party moves to substitute two counts, one count to Embodiment A and a second count to Embodiment B on the ground that they represent separate patentable inventions. Since the junior party's invention date for Embodiment B is after the senior party's priority date, the junior party will be obliged to concede priority on the sole count in the interference unless his motion to substitute counts is granted.

Accordingly, the junior party undertakes laboratory tests which indicate that both Embodiments A and B achieve substantially the same result in substantially the same manner without any significant differences in effectiveness. Without evidence of separate patentability to support the motion to substitute, the junior party is unsuccessful and priority is awarded to the senior party.

The junior party abandons his claim to the generic invention of the lost count, but persists in his assertion he is entitled to a patent on Embodiment B since the interference record indicates no actual priority for this embodiment in favor of the senior party. Ultimately, the junior party obtains evidence that Embodiment B is unexpectedly more useful than anticipated in a commercial setting, while Embodiment A is substantially unsuitable for any practical use in a commercial setting.

Is the junior party entitled to a patent notwithstanding the disposition of the issue of its separate patentability in an *inter partes* proceeding? If indeed, the junior party would be entitled to such a patent, must a second interference now be declared with the senior party to again litigate the issue of priority? Had the junior party failed to have made the motion to substitute counts in view of his utter lack of supporting evidence of separate patentability, would the estoppel under 37 CFR 1.658(c) have applied? Finally, would the ends of justice be better served by a standard for count formation which could be finally determined contemporaneously with the filing of the preliminary motions themselves? All of these questions suggest that the utilization

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of a fluid concept such as non-obviousness as the basis for count formation will give unintended and unsupportable results in situations where the lack of separate patentability is prematurely assumed.

Example E: In the scenario of Example D, the non-entitlement to contest Embodiment B as a separate count was premised on a failure to demonstrate that Embodiment B was non-obvious over Embodiment A considered as prior art. However, an award of priority to the senior party based on the disclosure of Embodiment A in a foreign priority application does not render Embodiment A as available prior art (35 USC 102(g)/103) inasmuch as Embodiment A would not have been a prior invention of another made in the United States which had not been abandoned, suppressed or concealed. The junior party's entitlement to a patent on Embodiment B should depend, therefore, solely on his entitlement to priority with respect to Embodiment B. Priority is a necessary condition for entitlement to a patent since both parties disclose the embodiment and a sufficient condition since regardless of the party entitled to priority on Embodiment A, it should not become obviousness-generating prior art. Therefore, any standard or count formation which fails to reach the result of the junior party is entitled to contest priority and a patent on Embodiment B is contrary to current statutory requirements for entitlement to a patent.

The proposed rules attempt to rationally define counts in an interference so that the judgment in the interference settles all questions of entitlement to a patent. This not only cannot be done *prospectively*, but should not be done at all. Judgment should be made on *claims*, not counts and unpatentability determinations made against a party subject to the normal ex parte standard that additional evidence of non-obviousness, or other evidence of patentability wholly independent of priority itself, could compel a reconsideration of the judgment of unpatentability.

With respect to paragraph (1) of the comment, the standard of patentability will *not* be applied "on a mutual basis." Thus, if a species is patentable over a genus, the species is a "separate patentable invention" from the genus. Compare *In re Taub*, 348 F.2d 556, 146 USPQ 384 (CCPA 1965) (fluorine species might be patentable over genus of Markush group of hydrogen and halogen). A first count to a genus and a second count to a species which is patentable over the genus may properly appear in an interference. See e.g., Example 4. The comment suggests that if "such mutuality is not applied . . . then a number of irreconcilable anomalies . . . will be manifest." The urged "irreconcilable anomalies" are not readily apparent to the PTO.

The PTO disagrees with the concept expressed in paragraph (2) of the comment that there should be "post-interference reconsideration of separate patentability." One of the principal objects of Public Law 98–622 and these new rules is to encourage complete determination of all rights between parties in an interference and to avoid post-interference reconsideration in an *ex parte* environment of issues which were or could have been raised *inter partes* in an interference.

The commentator remarks in paragraph (3) of the comment that "[a] party entitled to priority for a count under the benefit of 35 USC 119 creates no 'prior art' under 35 USC 102(g)/103 against his opponent." *In re McKellin*, 529 F.2d 1324, 188 USPQ 428 (CCPA 1976), arguable provides support for the commentator's remark. It should be noted, however, that in defining "same patentable invention" and "separate patentable invention" in §1.601(n), the PTO is not establishing a new definition of "prior art." Rather, the PTO is providing definitions which will determine—both initially and ultimately in an interference—how *claims* in an application or patent will be designated to correspond to counts. See §§1.603 and 1.606. Examples 1-19 illustrate how the PTO proposes to initially designate claims to correspond to counts. The designation of claims to correspond (or not correspond) to a count is significant because, as noted by the plurality opinion in *McKellin*, 529 F.2d at 1327, 188 USPQ at 432: "[a] n applicant [or patentee] who has lost an interference is not entitled to claims which correspond to the subject matter of the counts of the interference." Section 1.658(c) estops a party from obtaining a claim which could have been added and which would have been designated to correspond to the lost count. The definitions of "same patentable invention" and "separate patentable invention" in §1.601(n), the availability of motions to designate or not designate claims as corresponding to a count under §1.633(c), and the estoppel provisions of §1.658(c) provide the basis for accomplishing the PTO's objective of resolving *inter partes* in a single proceeding all issues which are or could have been raised between parties in an interference.

Examples illustrate how §§1.601(n), 1.633(c) and 1.658(c) accomplish the PTO's objective.

Example 32: Application AV discloses engines in general and in particular a 6-cylinder engine. Application AV contains only claim 1 (engine). Application AW discloses engines in general, but does not specifically disclose a 6-cylinder engine. Application AW contains only a single claim 3 (engine). The U.S. "filing date" (§1.601(h)) of the AV application is prior to the U. S. filing date of the AW application, but the AW application claims a foreign priority date under 35 U.S.C. 119 based on an application filed in a foreign country prior to the filing date of the AV application. An interference is declared. The sole count of the interference is to "an engine." Claim 1 of the AV application and claim 3 of the AW application are designated to correspond to the count. During the interference, applicant AV does not move under §1.633(c)(2) to add a claim to a 6-cylinder engine and to designate the claim to correspond to the count. Applicant AW is awarded a judgment in the interference based on the earlier filing date of the foreign patent application. After the interference, applicant AV adds claim 2 (6-cylinder engine) to the AV application. Whether AV would be entitled to a patent containing a claim to a 6-cylinder engine will depend solely on whether a 6-cylinder engine is a "separate patentable invention" from "engine"—the subject matter of the count. If a 6-cylinder engine is a "separate patentable invention" within the meaning of §1.601(n), applicant AV could not have successfully moved under §1.633(c)(2) to add claim 2 and to designate it to correspond to the count. Therefore applicant AV could obtain a patent containing claim 2. If, on the other hand, a 6-cylinder engine is not a "separate patentable invention," claim 2 of the AV application would be rejected on the basis of interference estoppel because claim 2 could have been added by a motion under §1.633(c)(2). See §1.658(c). See also Example 37.

Example 33: This example is basically the same as Example 32, except that application AV initially contains claim 1 (engine) and claim 2 (6-cylinder engine). When the interference is declared, both claims 1 and 2 of application AV are designated to correspond to the count. During the interference, applicant AV does not move under §1.633(c)(4) to designate claim 2 as not corresponding to the count. A judgment in the interference is entered for applicant AW based on the earlier filing date of the foreign patent application. After the interference, applicant AV would not be able to obtain a patent containing claim 2, because that claim was designated to correspond to a count and entry of the judgment constitutes a final decision by the PTO refusing to grant applicant AV a patent containing claim 2.

In the written comment, Examples A through E were set out to illustrate what the commentator believed were "perceived difficulties." These examples are set out above and are analyzed below.

Analysis of Commentator's Example A

Example A does not describe any practice under these rules, because "same patentable invention" and "separate patentable invention" under §1.601(n) are not intended

to be "applied in a mutuality sense." Where a first count is to a genus and a second count is to a species within the scope of the genus, there may be two counts if the species is separately patentable from the genus. The species is "invention A" referred to in §1.601(n); the genus is "invention B" referred to in §1.601(n).

Analysis of Commentator's Example B

Commentator's Example B suggests—incorrectly—that if an interference is declared with a count to a species that no motion under §1.633(c)(1) to add a count to a genus can ever be granted. If the species ("invention A" referred to in §1.601(n)) is not anticipated by or obvious in view of the genus ("invention B" referred to in §1.601(n)), a motion to add a separate count to the genus may be proper. The commentator uses the language "selection inventions" in both Examples A and B. Insofar as the PTO is aware, the language is not a term of art in the patent law. The PTO has not ascribed any particular meaning to the language in analyzing Examples A or B.

Analysis of Commentator's Example C

The result suggested in commentator's Example C can come to pass only if the moving party accepts as final the denial of the motion to substitute two "sub-generic counts" for the "broad generic count." Unlike practice under the rules which have been in effect, under these new rules a decision denying a motion to substitute a count is reviewable by the Board (see §1.640(c) and §1.655(a), second sentence). Additionally, the party could seek judicial review (35 U.S.C. §§141, 146) of any final decision by the Board. However, if the party accepts as final the PTO's determination that inventions A and B are the "same patentable invention," the party would be precluded from obtaining a patent to invention B. After the interference is terminated, the only conceivable way that the moving party could seek to obtain a patent containing claims to invention B would be to first successfully move to reopen the interference for the purpose of presenting additional evidence. If the motion to reopen is granted (and it would be expected that such a motion will rarely be granted), the moving party would then have to successfully establish that invention A and invention B are not the same patentable invention. The PTO will continue to follow the general guidelines of 4 Rivise & Caesar, *Interference Law and Practice*, §821 *et seq.* (Michie Co. 1948), in determining motions to reopen an interference after entry of judgment. It should be additionally noted that interferences in which a judgment has been entered by a district court in an action brought under 35 U.S.C. §146 or a mandate has been entered by the U. S. Court of Appeals for the Federal Circuit (35 U.S.C. §141 or 28 U.S.C. §1295(a)(4)(C)) will not be reopened until the district court vacates its judgment and/or the Federal Circuit withdraws its mandate.

Analvsis of Commentator's Example D

Several questions asked in the commentator's Example D can be answered as follows:

Question: Is the junior party entitled to a patent notwithstanding the disposition of the issue of its separate patentability in an *inter partes* proceeding? *Answer*: No. The junior party should have presented the "evidence that Embodiment B is unexpectedly more useful than anticipated in a commercial setting" during the interference. The PTO expects to resolve issues *inter partes* in the interference. If the PTO was to permit the evidence to be presented after the interference is terminated and after *ex parte* prosecution resumes, a principal purpose of the overall change to interference practice would be defeated. It may be unfortunate that the evidence was not known to the junior party. However, it may also be true that the winning party—had the evidence been presented in the interference—could have produced probative counter-evidence. Why should the winning party be put to the expense of a second interference?

Question: If indeed, the junior party would be entitled to such a patent, must a second interference now be declared with the senior party to again litigate the issue of priority? *Answer*: The premise in the question is not correct. The junior party is not entitled to a patent to Embodiment B and therefore there will not be a second interference.

Question: Had the junior party failed to have made the motion to substitute counts in view of his utter lack of supporting evidence of separate patentability, would the estoppel under 37 CFR 1.658(c) have applied? *Answer*: Yes, unless the junior party can successfully move to reopen the interference.

Question: Would the ends of justice be better served by a standard for count formation which could be finally determined contemporaneously with the filing of the preliminary motions themselves? *Answer*: While the question is not fully understood, it should be recognized that counts will initially be formed when an interference is declared and are subject to being changed by a motion (§1.633(c)) or by the Board (§1.640(c) and §1.655, second sentence). The correctness of the PTO's ultimate decision on what counts should be is subject to judicial review (35 U.S.C. §§141, 146).

Analysis of Commentator's Example E

The PTO, without agreeing or disagreeing with all of the commentator's statements in Example E, disagrees with any ultimate conclusion that the junior party is entitled to a patent on Embodiment B and that such a result "is contrary to current statutory requirements for entitlement to a patent." Interference estoppel precludes granting a patent claiming Embodiment B to the junior party even if Embodiment A is not prior art with respect to Embodiment B.

One comment asked whether "invention A" and "invention B" mentioned in §1.601(n) "refer to the entire scope of subject matter recited in a claim or to the disclosed embodiment(s) supporting the claim (a la *In re Vogel*, [422 F.2d 438,] 164 USPQ 619 (CCPA 1970))?" The question is somewhat difficult, if not impossible, to answer in the abstract. Whether "invention A" refers to the entire scope or to the embodiments which support a claim is not controlling under these new rules. One fundamental change being made under the new rules is that judgments will be in the form of whether an applicant or patentee is or is not entitled to a *claim*. In the past, the Board of Patent Interferences has entered an "award of priority." The use of an "award of priority" does not always accurately express the "judgment" entered in many interferences. See e.g., *Applegate* v. *Scherer*, 332 F.2d 571, 573 n. 1, 141 USPQ 796, 798 n. 1 (CCPA 1964). Whether an applicant or patentee is or is not entitled to a particular claim in any given interference will depend on many factors, some of which include the scope of the claim, the scope of the opponent's claim, and the prior art. An example illustrates the point.

Example 34: Applicant AX discloses an apparatus having fastening means. The specific means disclosed are rivets. Applicant AY discloses a similar apparatus having fastening means. The specific means disclosed are a nut and bolt. The prior art reveals that items have been fastened with numerous fastening means including both rivets and nuts and bolts. In determining whether AX's apparatus with rivet fastening means is the "same patentable invention" as AY's apparatus with nut and bolt fastening means, it would be proper to consider the specific apparatus disclosed by AX, the specific apparatus disclosed by AY, the fact that both AX and AY disclose the use of "fastening means" broadly, and the prior art which shows rivets and nuts and bolts to be known fastening means.

One comment suggested that the last sentence of §1.604(b) and the last sentence of §1.607(c) be deleted in view of a proposed rule (§10.23(c)(7); 49 F.R. 10028; 49 F.R. 33809) which defines "misconduct" as including "[k]nowingly withholding from the Office information identifying a patent or application of another from

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which one or more claims have been copied." The proposed rule is still being considered. In any event, the last sentences of §§1.604(b) and 1.607(c) are instructions to examiners whereas proposed 37 CFR §10.23(c)(7) defines misconduct for those registered to practice before the PTO. Another comment suggested deletion of §1.604(b) because "existing rules [37 CFR §1.56] already provide a duty of disclosure of subject matter *material* to examination." There is no inconsistency between the rule relating to the duty of disclosure and §1.604. The comment also suggested that by identifying another application, an applicant "might be construed as having *admitted* that the claims" of the other application are directed to the same patentable invention as the claims in the applicant's application. The filing of such a paper is a statement by the applicant that the claims presented are "*known* to the applicant to define the same patentable invention" (emphasis added). If an applicant wishes to call another application to the attention of an examiner and the applicant believes that the other application does *not* claim the same patentable invention, but nevertheless may be relevant within the meaning of 37 CFR §1.56, the applicant may identify the other application and at the same time state why the invention claimed in the other application is not the same patentable invention as the invention claimed in the applicant's application. For the reasons given, the suggestions made in the two comments are not being adopted.

Three comments relating to §1.605 were received. One comment suggested that the language "or substantially the same as the suggested claim" be deleted from the third sentence of §1.605. The suggestion is being adopted to the extent that the language "a claim which is the same or substantially the same as" is being deleted. Under §1.605, when the examiner requests an applicant to copy a suggested claim, the applicant will be required to copy verbatim the claim suggested by the examiner. A second comment suggested that the second and third sentences of §1.605 be changed to read as follows:

> The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim, or shall identify in the application one or more pending claims which the applicant regards as being directed to the same or substantially the same invention as the suggested claim, within a time specified by the Examiner, not less than thirty days. Failure or refusal of an applicant to timely present a claim or to timely identify one or more claims which are directed to the same or substantially the same invention as the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim.

A third comment suggested that the second and third sentences of §1.605 fail to take into account the case where an applicant is already claiming the invention. The third comment suggested addition of the following at the end of the third sentence of §1.605(a): ", unless the application already contains claims to the same patentable invention." The suggestions made in the second and third comments are not being adopted as such. However, the following sentence is being added as the fourth sentence of §1.605: "At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared." A major deficiency of the suggestions made in the second and third comments was the inability of the PTO to efficiently and effectively handle situations where the applicant (1) presents a claim which is "substantially the same as" the suggested claim or (2) points to a claim already in the application *and* the examiner is of the opinion that the claim is not to the same patentable invention. Under these circumstances, the examiner could not properly declare an interference. Accordingly, the applicant will be required to present verbatim the suggested claim. The applicant may, however, also present any other claim which the applicant believes is more appropriate. Alternatively, the applicant, in addition to presenting verbatim the suggested claim, may also call the examiner's attention to a claim already in the application which the applicant believes is more appropriate for interference purposes. In either case, the applicant must explain to the examiner why a claim other than the suggested claim is more appropriate for inclusion in the interference. Upon consideration of the suggested claim and the applicant's alternative claims and any explanation, the examiner is in a position to forward the application to the Board for declaration of an interference. If the applicant is dissatisfied with the claims of the application designated to correspond to the count, the applicant may file an appropriate motion under §1.633(c).

Two comments were received which suggested that the last sentence of §1.606 is not entirely clear. One comment suggested that the language in the last sentence which reads: "to define one patentable invention" be changed to read: "not to contain separate patentable invention." This suggestion is being adopted. The use of the language "*one* patentable invention" was unfortunate and rendered the actual intent of the rule unclear. Under §1.606, at the time an interference is declared a *rebuttable* presumption will exist that any patent claim designated to correspond to a count does not embrace separate patentable inventions. Moreover, at the time the interference is declared, no count will be narrower in scope than the broadest patent claim designated to correspond to that count. The presumption is *rebuttable* and may be challenged and overcome by a motion under §1.633(c). Examples 17 and 18 illustrate practice under §1.606.

Two comments were received discussing §1.607. A first comment suggested that the word "must" in the first sentence of §1.607(c) be changed to "shall". The suggestion is being adopted. Use of "shall" makes §1.607(c) consistent with §1.604(b). A second comment asked the following question:

> "If the examiner determines that the applicant's claim is patentable but that there is no interfering subject matter, and the examiner accordingly allows the claim but refuses to declare an interference, is that determination appealable [to the Board of Appeals and Interferences under 35 U.S.C. §1.134]?"

The commentator suggests that "such a determination" is appealable and rationale in support of the commentator's position appears in Gholz, *Board of Appeals Jurisdiction Over Appeals from Decisions by Primary Examiners Refusing to Institute Interferences on Modified or Phantom Counts*, 64 J. Pat. Off. Soc'y 651 (1982). At the hearing, the commentator orally urged that the rules be amended to permit an appeal to the Board when an examiner allows a claim, but refuses to declare an interference involving the allowed claim. The suggestion is not being adopted. A decision by an examiner to allow a claim, but not to declare an interference involving the allowed claim, is petitionable and not appealable. See Gholz, *supra*, at 652 n. 13. The rule being suggested would enlarge the jurisdiction of the Board. Action by Congress would be necessary to accomplish what is embodied in the suggestion.

Several written comments and one oral presentation at the hearing were made concerning §1.608. One comment suggested that §1.608 be expanded to provide for summary judgment in interferences involving applications where the earlier of the filing date or effective filing date of one application was three months earlier than the date of the other application. This suggestion is not being adopted. Ordinarily, interferences are not declared between applications having effective dates more than three months apart. Moreover, expanding summary judgment proceedings to application-application interferences would result in delay in resolving interferences. Currently in application-patent summary judgment proceedings under 37 CFR §1.204(c), very few summary judgments are entered against applicants who are junior to a patentee by more than three months. There is no reason to expect that a significant number of summary judgments would be entered in application-application interferences. As noted in the notice of proposed rulemaking, the PTO has already declined to expand summary judgment proceedings to cases where a patentee is junior to an applicant by more than three months. See 49 F.R. 3775 (paragraph bridging columns 1 and 2); 1039 O.G. 34; 1039 TMOG 34; 27 BNA 319.

Two written comments were received which suggested that §1.608(b) should be more specific in indicating the kind of evidence which should be submitted when an applicant attempts to make out a *prima facie* case based on priority of invention. The suggestions in the comments are being adopted. The following sentence has been added to §1.608(b):

> Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent.

Similar language appears in the current rule: 37 CFR §1.204(c). The PTO agrees entirely with the following discussion made by one commentator:

> The material added to Rule 608(b) currently appears in existing 37 CFR §1.204(c). A comparison of the existing language of 37 CFR §1.204(c) with the proposed rule might be construed as suggesting that the allegations which are now expressly required where priority is an issue will be changed, specifically relaxed in some manner. Since under proposed Rule 617 this clearly is *not* the case, the proposed addition to Rule 608(b) should assist the practitioner in understanding the intent of the PTO.

The commentator has accurately pointed out that the PTO intends to apply a stricter standard for filing additional evidence in summary judgment proceedings after an order to show cause has been issued. See the notice of proposed rulemaking. 49 F.R. 3775 (column 1); 1039 O.G. 34; 1039 TMOG 1039; 27 BNA 319 (column 1).

At the hearing, it was suggested that §1.608 should encourage the use of 8-1/2 by 11 inch paper for affidavits. This suggestion is being adopted and the following sentence has been added to §1.608(b): "To facilitate preparation of a record (§1.653(g) and (h)) for final hearing, an applicant should file affidavits on paper which is 8-1/2 × 11 inches (21.8 by 27.9 cm.)." The commentator at the hearing suggested that "many people submitting a Rule 608(b) showing are going to want to rely upon that showing under Rule 672(b)" in those cases where an interference is allowed to proceed. Use of 8-1/2 by 11 inch paper will facilitate preparation of the ultimate record.

Two comments were received with respect to §1.609. The first comment suggested that the language "count or counts" in §1.609(b)(1) be changed to "proposed count or counts" and that each occurrence of "the count" in §1.609(b)(2) be changed to "each count". The suggestion is being adopted. These changes are editorial in nature and are designed to enhance the clarity of the rule. A second comment indicated that it was not clear to the commentator why it was necessary under §1.609(b)(3) for the examiner to identify the claims in an application or patent which are deemed to be patentable over any count. The commentator went on to say that the examiner "could probably readily identify claims which would clearly be unpatentable over a count and perhaps this would be all that is needed. If the examiner simply said all claims are considered unpatentable over the count, what recourse does the applicant have if he disagrees?" The purpose of having the examiner identify all claims which are patentable over the count or counts is to place the parties on notice that those claims are allowable notwithstanding any decision in the interference. Thus, in an interference between Jones and Smith if the examiner indicates that claim 8 of Jones is patentable over the proposed count or counts, Smith will know that Jones may receive a patent containing claim 8 even if Smith wins the interference. This will permit Smith to move under §1.633(c) to add claim 8 as corresponding to a count if Smith believes claim 8 defines the same patentable invention as one of the counts. Contrary to the suggestion in the comment, an examiner will not indicate that a claim is unpatentable over a count; rather, the examiner will designate the claim to correspond to a count. Each claim in a patent or application which is directed to the same patentable invention as a count will be designated to correspond to the count. Under the new practice, an examiner will no longer have occasion to indicate that a claim will be rejected over a lost count. To fully answer the commentator's question, if a claim is designated to correspond to a count and the applicant believes the claim does not define the same patentable invention as the count, the applicant may move under §1.633(c) to designate the claim as *not* corresponding to the count. If the motion is granted, the examiner would be authorized to issue the applicant a patent containing the claim even if the applicant loses the interference.

Several comments were received which discuss §1.611. One comment suggested addition of a paragraph (f) to permit expanded summary judgment proceedings in application-application interferences. Since expanded summary judgment proceedings are not contemplated, the suggestion is not being adopted. See the discussion above under analysis of comments of §1.608(b). Two comments suggested that §1.611(c)(8), which provides that a notice declaring the interference shall specify among other things the "order of the parties," fails to take into account the fact one party may be "senior" as to one count and "junior" as to another count. As explained above in connection the analysis of the comments concerning §1.601(m), the "order of the parties" is a procedural tool. It indicates the "style" of the case—which practitioners are encouraged to use. If there are two counts and one party is "senior" as to one count and "junior" as to another count, the party has the burden of proof as to that count to which the party is "junior." See §1.657. Appropriate testimony periods will be set (§1.651(b)) to accommodate differing burdens of proof in cases where a party is "senior" on one count and "junior" on another count. The suggestions to change the meaning of "order of the parties" are not being adopted. Another comment suggested that §1.611(e) be changed to indicate that notice "shall" (as opposed to "may") be given in the *Official Gazette* when an interference has been declared involving a patent. No useful purpose would be served by changing "may" to "shall" inasmuch as the rights of parties involved in an interference are not affected by publication or non-publication of the fact that a patent is involved in the interference. By §1.611 the PTO intends to exercise discretion to publish in the *Official Gazette* an identification of patents which become involved in interferences; however, the PTO does not intend to undertake an absolute obligation to do so. The use of "may" better expresses the PTO's intent behind §1.611(e).

No written comments were received relating to §1.612. However, at the hearing two suggestions were made orally. The first suggestion was that where a "party" has obtained a copy of his "opponent's" affidavit under §1.131 or §1.608(b) (see §1.612(b)), the party should be required to notify the opponent. According to the suggestion, if the opponent then intends to rely on the affidavit (§1.671(e)), the opponent would have to "reserve" the affidavit on the party. This suggestion is not being adopted. When the party gains access to the affi-

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davit under §1.612(b), the party may or may not make an accurate copy. On the other hand, the opponent knows exactly those portions of the affidavit upon which the opponent intends to rely. After careful consideration, the PTO believes on balance that it is better for the opponent to serve a copy of the evidence upon which the opponent intends to rely. Service avoids issues as to whether the party obtained under §1.612(b) a complete and/or accurate copy of the evidence upon which the opponent intends to rely.

The second suggestion concerning §1.612 made orally at the hearing was that a party should have access to an opponent's "predecessor application, even though the application may not be relied upon for 35 USC, Section 120 benefit." According to the suggestion, access to a "predecessor application" may be needed to uncover relevant evidence, including violations of 37 CFR §1.56. Specifically, the commentator called attention to *Driscoll* v. *Cebalo*, 731 F.2d 878, 221 USPQ 745 (Fed. Cir. 1984), *rehearing denied mem.*, (Fed. Cir. July 25, 1984). The suggestion is not being adopted. The Patent Statute (35 U.S.C. §122) provides that applications for patent will be preserved in secrecy by the PTO unless special circumstances are shown. Section 1.687(c) provides for "additional discovery" when required in the interest of justice. Additional discovery is believed to provide the necessary procedural vehicle for obtaining access to an opponent's "predecessor application."

One comment was received which suggested that the language "or members of the same firm of attorneys and agents" be added after "agent" in §1.613(b). The suggestion is being adopted, because it is believed to make the rule clearer.

One comment was received which said the following with respect to §1.616: "Sanctions should not be left to the Examiner-in-Chief (EIC) or BAI [Board of Patent Appeals and Interferences] - This Rule is unnecessary and should be deleted. An alternative would be to give sanction power only to the BAI." The suggestion to delete §1.616 is not being adopted. There are cases where sanctions are warranted. See e.g., *Woods* v. *Tsuchiya*, 207 USPQ 228 (Comm'r. Pat. 1979) and *Tezel* v. *Bellantoni*, 188 USPQ 688 (Bd.Pat.Int. 1975). The PTO continues to believe that imposition of a sanction (except judgment) by a single examiner-in-chief is appropriate. In any event, a party may ask a 3-member panel of the Board to reconsider any sanction which may be imposed by a single examiner-in-chief. See §1.640(c).

Several written and oral comments were received regarding §1.617.

One oral comment made at the hearing suggested that "it should be explicitly stated in Rule 617(a) that the decision of the examiner-in-chief to permit the interference to proceed is without prejudice to the right of any other party to attack the sufficiency of the Rule 608(b) showing when offered as Rule 672 testimony." The suggestion is not being adopted. While no explicit statement to that effect will be placed in §1.617(a), it necessarily follows that any opponent may attack the sufficiency of an applicant's showing under §1.608(b) when that showing is presented as evidence under §1.672. In summary judgment proceedings, all an applicant need do is make out a *prima facie* case. If the interference is allowed to proceed in the normal manner, the applicant must prove priority by a preponderance of evidence (when the application and the patent are copending) or beyond a reasonable doubt (when the application was filed after the patent issued). Manifestly, the burden in summary judgment proceedings is not as strict as the burden in proceedings following summary judgment. *Breuer* v. *DeMarinis*, 558 F.2d 22, 28, 194 USPQ 308, 313 (CCPA 1977) and *Schwab* v. *Pittman*, 451 F.2d 637, 640, 172 USPQ 69, 71 (CCPA 1971).

Several comments suggested that an applicant should be permitted as a matter of right to file a reply to any statement filed by any opponent under §1.617(d). The suggestion that a reply be permitted is being adopted. Accordingly, §1.617(e) has been changed to read: "[w]ithin a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent." Some of the comments indicated that the applicant should be able to reply to a statement by a patentee or another opponent. The language "any opponent" in §1.617(e) is intended to include both the patentee and any other opponent. The change in the last sentence of §1.617(h) of "patentee" to "any opponent" is intended to make clear that all parties may appear at a hearing if the applicant requests a hearing.

One comment suggested that the patentee (and presumably any other opponent) should be allowed to present "evidence" during summary judgment proceedings. This suggestion is not being adopted. A change in the second sentence of §1.617(d) is intended to make clear that opponents may file statements in response to an applicant's "response," but the statement "shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause." The PTO does not intend to expand summary judgment proceedings into a "mini-interference." An applicant presents evidence under §1.608(b). If the examiner-in-chief finds that evidence insufficient, an order to show cause stating reasons for the insufficiency is issued. An applicant may respond and, if appropriate, file "additional evidence." The PTO intends to be rather strict in permitting the filing of new evidence. After the applicant responds (with or without additional evidence), any opponent may file a statement. In the statement, the opponent should be free to comment on all the evidence (original and additional) which the applicant presents. Compare *In re Plockinger*, 481 F.2d 1327, 179 USPQ 103 (CCPA 1973). Under §1.617(d) the opponent may not urge a rationale for summary judgment which does not appear in the order to show cause issued by the examiner-in-chief. However, it is not the PTO's intent to interpret §1.617(d) in the narrow manner the Court of Customs and Patent Appeals interpreted 37 CFR §1.204(c) in *Kahl* v. *Scoville*, 609 F.2d 991, 995–996, 203 USPQ 652, 656 [headnote 6] (CCPA 1979). An example will illustrate how the PTO intends to interpret §1.617(d).

Example 35: An applicant copies claims from a patent and is required to submit a showing under §1.608(b). Upon review of the showing under §1.608(b), the examiner-in-chief concludes that the showing fails to make out a *prima facie* case of priority, because applicant has failed to show an actual reduction to practice. Applicant files a response and includes additional evidence which purports to show an actual reduction to practice. The patentee then files a statement in which two arguments are made. *First*, patentee argues that the additional evidence has not been properly authenticated. *Second*, patentee argues that even if applicant has shown an actual reduction to practice, summary judgment is nevertheless appropriate because applicant suppressed and concealed after the actual reduction to practice. The first argument is proper, but the second argument is not. A patentee may comment on the sufficiency of the applicant's evidence. Fairness, however, dictates that summary judgment be granted only after fair notice in the order to show cause. Accordingly, summary judgment will not be based on a rationale raised by a patentee in a statement which does not correspond to the rationale used by the examiner-in-chief in the order to show cause.

A change has been made in §1.617(a) and §1.617(g) to make clear that once summary judgment proceedings have concluded, an interference will proceed "in the normal manner." The change is intended to codify the decisions in *Walsh* v. *Sakai*, 167 USPQ 465 (Comm'r.Pat. 1967) and *Ing* v. *Chiou*, 207 USPQ 321 (Comm'r.Pat. 1979). This change is further discussed in the discussion of the comments received with respect to §1.635.

One comment was received which indicated that §1.618:

> "needs qualification. It may be appropriate to resubmit certain papers (See also §1.644(d) last sentence)."

The precise "qualification" needed was not set forth in the comment. Likewise, no example of "certain papers" was set forth. Under the circumstances, the PTO declines to make any change in §1.618.

Several comments were received which discussed the rules relating to preliminary statements.

Three comments were received which suggested that §1.622(a) be amended to "take into account several court decisions holding that joint inventors need not be joint inventors of [the subject matter of] all claims." Changes have been made in §1.622(a) consistent with the amendment to 35 U.S.C. §116 made by Public Law 98–622.

One comment was critical of §§1.623(c); 1.624(c); and 1.625(c), because §1.628(b) does not cover the possibility that a drawing might not be available, e.g., a drawing destroyed in "a fire." Section 1.628(b) has been amended to permit a party to allege a date when a first drawing or first written description was made in those circumstances where the first drawing or first written description is not available. The party will be required (1) to show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party would also be required to file a motion to amend its preliminary statement promptly after the drawing or written description becomes available. It is the PTO's intent by the amendment to §1.628(b) to overrule the holding of headnote [1] of *Reddy* v. *Davis*, 187 USPQ 386, 388 (Comm'r.Pat. 1975)

Another comment was critical of the language "conceived" in §1.623(a)(4). The current rules do not require a party to allege a conception; rather, they require one to allege the date of the certain acts which, if proved, would establish conception. See 37 CFR §1.216(a)(4). According to the commentator, an allegation of conception is "unprovable and meaningless." The use of "conception" in §1.623(a)(4) is intentional and is designed to permit a party to "plead" the earliest date on which it believes conception occurred. Contrary to the suggestion in the comment, "conception" is not meaningless and may be proved during the the testimony period. See *Gould* v. *Schawlow*, 363 F.2d 908, 150 USPQ 634 (CCPA 1966); *Meitzner* v. *Corte*, 410 F.2d 433, 161 USPQ 599 (CCPA 1969); and *Mergenthaler* v. *Scudder*, 11 App.D.C. 264, 1897 C.D. 724 (D.C.Cir. 1897). There is no need to prove "conception" in the preliminary statement.

A preliminary statement serves several useful purposes in an interference: (1) it serves to limit a party's proofs as to time, (2) it serves as a vehicle for permitting the examiner-in-chief or the Board to issue orders to show cause in those cases where it would be futile to take testimony, and (3) it serves as notice to an opponent of the case which is alleged by a party. Under the rules being announced herein, the issues which will be raised and decided by the Board at final hearing are made known during the interlocutory stage through (a) the preliminary statement, (b) motions under §1.633 and decisions thereon, and (c) notices under §1.632 of a party's intent to argue abandonment, suppression, or concealment. Section 1.632(a)(4) requires a party to allege a date of conception—it does not require proof of conception. The allegation puts the opponent on notice that the party intends to prove conception as of a date no earlier than the date alleged in the preliminary statement.

One comment suggested that the rules relating to preliminary statements are deficient because they do not permit one to allege allegations concerning tapes. Specifically, the commentator said: "What about a taped transcript of an invention, a practice being followed in a number of research departments of corporations?" If making a tape is the last act of conception, a party may allege the date the tape was made as the conception date under §1.623(a)(4).

Several comments were received which suggested that a party should not have to allege derivation in a preliminary statement because the party may not know derivation occurred until the testimony period. Section 1.625 requires a party to file a preliminary statement when derivation is an issue. If derivation is not known or discovered prior to the date the preliminary statement is due, a party may move to amend the preliminary statement and allege derivation promptly after existence of derivation is discovered.

Several comments discussing §1.624 were received. One comment suggested that §1.624(a)(5) should require a party to state, where appropriate, that no actual reduction to practice of an invention made in a foreign country was introduced into the United States. This suggestion is being adopted and a second sentence has been added to §1.624(a)(5) which provides: "If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state." This sentence conforms §1.624(a)(5) to the allegation required in the second sentence of §1.623(a)(5). Another comment suggested that the language "in the United States" be inserted after "reasonable diligence" in §1.624(a)(6) and that all occurrences of the language "was made" in §1.624(c) be changed to "was introduced into the United States". This suggestion is being adopted. As noted in the comment, "[t]he changes . . . are necessary to clarify that for an invention made abroad the only relevant activities are those which occur in the United States." See 35 U.S.C. §104.

One comment asked "how does one introduce 'an actual reduction to practice of the invention' in the United States?" *Breuer* v. *DeMarinis*, 558 F.2d 22, 194 USPQ 308 (CCPA 1971), illustrates a case where an actual reduction to practice abroad was introduced into the United States.

One comment suggested that §1.627(a) be changed to require preliminary statements "be enclosed in an outer envelope addressed to the Commissioner of Patents and Trademarks and be additionally marked Box Interference—Preliminary Statement." According to the comment, the confidentiality of preliminary statements "envisioned under the proposed rules would be further enhanced . . . ." The suggestion is not being adopted. The PTO believes it is sufficient if preliminary statements are enclosed in a sealed envelope as specified in §1.627(a). The Board will not permit access to preliminary statements which have not been ordered opened by an examiner-in-chief.

Several comments discussing §1.629 were received. One comment suggested that the first sentence ("A preliminary statement should be carefully prepared.") should not appear in §1.629(a). This suggestion is being adopted. The PTO agrees with the commentator that the sentence:

> "no longer appears necessary or appropriate in the context of rulemaking. The remainder of the paragraph makes the admonition redundant at best."

Two comments were received which suggested that the word "normally" be deleted from the last sentence of §1.629(d). The suggestions are not being adopted. A preliminary statement is a pleading. The Board does not evaluate or consider the content of a drawing or written description prior to final hearing. At final hearing, in fact, the Board will only consider the drawing or written description if a party places the drawing or written description in evidence. The word "normally" first appeared in 37 CFR §1.223(c), last sentence, in 1978 (see e.g., 973 TMOG 19 (Aug. 1, 1978)). The last sentence of 37 CFR §1.223(c) was intended to codify headnote [2] of *Reddy* v. *Davis*, 187 USPQ 386 (Comm'r.Pat. 1975). The word "normally" appears in the rule to permit the Board to exercise discretion to evaluate or consider the content of a drawing or written description in some unusual and presently unforeseen circumstance.

One comment suggested that "no earlier than" in §1.629(b) be changed to "as early as". The suggestion is being adopted inasmuch as it is believed to more clearly state the intent of the rule.

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One comment suggested that §1.629(d) "is improper because it fails to take into account testimony which can show that a drawing and/or written description were actually made even though the drawing and/or written description are not now available." A change to §1.628(d) and addition of "unless the party complies with §1.628(b)" to the first sentence of §1.629(d) eliminates the problem raised by the commentator.

One comment discussing §1.631(a) was received which expressed the view that a junior party should be required to send a copy of its preliminary statement to the senior party even if the senior party does not file a preliminary statement. According to the commentator, the senior party is *prima facie* the first inventor and at some time it will have to know the earliest dates alleged by the junior party. The rules require all parties to file a preliminary statement. If a junior party does not file a preliminary statement, it will be denied access to any other preliminary statement which is filed. A senior party, however, is always entitled to access to any preliminary statement filed by a junior party. See e.g., §1.631(b). However, a junior party will only be required to serve a senior party who files a statement.

Numerous comments were received discussing §1.633.

One commentator asked: "What sort of a judgment is in order if a count is not patentable over the prior art to an opponent?" Section 1.633(a) authorizes a party to bring a motion for judgment on the ground that the opponent's *claim* corresponding to a count is not patentable. It is important to note that the motion raises the patentability of the opponent's *claim* not the count. Accordingly, by a motion under §1.633(a), a party seeks entry of a judgment that the opponent is not entitled to a patent containing a claim corresponding to a count.

Two comments questioned the nature of the judgment when a motion under §1.633(b) is granted. Section 1.633(b) authorizes the filing of a motion for judgment on the ground that there is no interference-in-fact. If a motion under §1.633(b) is granted, the judgment would provide that each party is entitled to a patent containing that party's claims corresponding to the count. Judgments in interferences under these rules will determine a party's entitlement or lack of entitlement to *claims* corresponding to a count.

One comment expressed the hope that "third party inventorship" would not be made an issue in interferences. Contrary to the hope expressed by the commentator, "third party inventorship" can be made the subject of a motion under §1.633(a). Any ground of unpatentability may be made the subject of a motion under §1.633(a) except (1) priority of invention of the subject matter of a count by the moving party as against any opponent or (2) derivation of the subject matter of a count by an opponent from the moving party. It should be noted that under past practice, third party inventorship has not been considered "ancillary" to priority. *Sheffner* v. *Gallo*, 515 F.2d 1169, 185 USPQ 726 (CCPA 1975). However, under these rules, the question of whether an issue is "ancillary" no longer arises. See 130 Cong. Rec. H10528 (daily ed. Oct. 1, 1984)(statement by Rep. Kastenmeier). Public Law 98–622 gives the Board authority to consider priority and *patentability*. Third party inventorship involves a question of patentability. 35 U.S.C. §102(f). One comment pointed out that §1.633(e) adopts the estoppel rule approved by the Court of Customs and Patent Appeals in *Avery* v. *Chase*, 101 F.2d 205, 40 USPQ 343 (CCPA 1939), *cert. denied*, 307 U.S. 638 (1939), while rejecting the rule announced by the U. S. Court of Appeals for the District of Columbia Circuit in *International Cellucotton Products Co.* v. *Coe*, 35 F.2d 869, 30 USPQ 366 (D.C. Cir. 1936). See also *American Cyanamid Co.* v. *Coe*, 106 F.2d 851, 42 USPQ 302 (D.C. Cir. 1939). The commentator is correct in noting that the rules adopt the estoppel rule approved in *Avery* v. *Chase*. The following comment by the CCPA in its opinion in *In re Shimer*, 69 F.2d 556, 558, 21 USPQ 161, 163 (CCPA 1934), accurately expresses the intent of the PTO in promulgating §§1.633(e) and 1.658(c):

> It may be stated that this rule works no hardship to him who is diligent in pursuit of his rights. When an interference is declared, the files of his contestants are open to him. He has full cognizance of their disclosures and claims. So advised, it becomes his duty to put forward every claim he has. [Rule 1.633(e)] . . . affords him this opportunity. If the rule be not enforced or enforceable, then delays and litigation are greatly increased. It is quite obvious that the doctrine of estoppel, as applied in these cases, results in the better conduct of the business of the Patent[and Trademark] Office and in the public good.

One comment suggested that the following be added to the end of §1.633(c):

> A motion to add or substitute a count shall be construed as an automatic request for the benefit of any earlier application [filing] dates accorded the existing count, and also as encompassed by a contemporaneous motion under §1.633(f) or (g), unless indicated otherwise. Any opposition thereto must be raised in a motion opposition pursuant to §1.638.

The suggestion is not being adopted. A specific reference to §1.637(c) appears in §1.633(c). The provisions of §1.637(c) spell out in detail the steps which a moving party must take in filing a motion under §1.633(c). One of those steps requires the moving party to request benefit of any earlier application. The mere fact that benefit has been accorded for a "first" count does not establish that benefit should be accorded for a "second" count. The PTO believes the burden should be on the moving party to point out where an earlier application supports a count rather than placing the burden on an opponent in the first instance to point out where an earlier application fails to support particular subject matter. There is no compelling reason to force the opponent "to prove a negative." It should be noted that the language "Where appropriate," has been deleted in every instance from §1.637 to make clear that the burden lies on the moving party to request benefit when that party files a motion under §1.633.

At the hearing, one individual commented that §1.633(a) is not clear as to whether a motion for judgment based on "fraudulent appropriation of the moving party's invention by his opponent" excluded. The "fraudulent appropriation of the moving party's invention by his opponent" is derivation. Section 1.633(a)(2) excludes both "innocent" derivation (e.g., through a third party and unknown to either party in an interference) or "fraudulent" derivation (e.g., where one party knowingly takes the invention from an opponent). In either event if derivation by an opponent of a party's invention is proved, the party will be awarded judgment.

One comment made the following statement:

> An opponent faced with a motion for judgment on the ground that a count is unpatentable may not be able to prove patentability in the short time periods. Provision should be made for extensions of time in such cases.

Provisions for extensions of time are made in §1.645.

One comment addressed Example 23 which appeared in the notice of proposed rulemaking. Example 23 also appears in a slightly modified form herein and, as modified, takes into account discussion in the comment. The commentator believed that the motion mentioned in Example 23 should be denied and that a testimony period should be set. Accordingly to the commentator, the granting of the motion would shift the burden to the opponent of the motion. The commentator's point is well taken. Actually, the motion should be deferred to final hearing and a testimony period would be set. In ruling on motions under §1.633, it will not always be possible for the examiner-in-chief to grant or deny outright a motion. When testimony is needed to rule on a motion, the proper course of action is to defer a decision on the motion to final hearing and permit testimony. See §1.639(c). The moving party retains the burden. If testimony is taken on patentability, the parties would also have to take testimony on priority. With all testimony at its disposal, the Board would then be in a position to rule on all issues and award a judgment.

One comment asked how the claims of the parties would be designated to correspond to the counts if in Example 18 a motion to substitute Count 2 (benzene) and add Count 3 (chloroform) was granted. The following Example 36 answers the commentator's question.

Example 36: The facts in this example are the same as Example 18. Assume that applicant AB believes that benzene and chloroform define separate patentable inventions. Applicant AB would file a motion under §1.633(c)(1) to substitute Count 2 (benzene) for Count 1 (Markush group of benzene or chloroform) and add Count 3 (chloroform). If the examiner-in-chief grants the motion, the interference would be redeclared by deleting Count 1 and substituting in its place Counts 2 and 3. Claims 1 and 2 of the patent H and claims 11 and 12 of application AB would be designated to correspond to Count 2. Claims 1 and 3 of patent H and claims 11 and 13 of application AB would be designated to correspond to Count 3. If one party proves priority with respect to both benzene and chloroform, that party would be entitled to all claims in its application or patent corresponding to Counts 2 and 3. The other party would not be entitled to a patent containing any claim corresponding to Counts 2 and 3. If patentee H proves priority with respect to benzene and applicant AB proves priority with respect to chloroform (assuming there was no issue raised at final hearing with respect to the patentable distinctness of benzene and chloroform), the judgment would provide that patentee H is not entitled to a patent with claims 1 and 3, but is entitled to a patent with claim 2 and that applicant AB is not entitled to a patent with claims 11 and 12, but is entitled to a patent with claim 13. If an issue is properly raised at final hearing as to whether benzene and chloroform are the same patentable invention and the Board holds that they are the same patentable invention, the party proving the earliest priority as to either benzene or chloroform would prevail as to all claims. Thus, if patentee H invented benzene before applicant AB invented benzene or chloroform, patentee H would be entitled to a patent containing claims 1 through 3 even if applicant AB invented chloroform before patentee H invented chloroform. Applicant AB would not be entitled to a patent with claims 11 through 13.

An oral comment was received by telephone which raised the question of whether a party is, or could be, required to present in the party's application every claim which the party may ever seek to obtain in a patent based on the party's application. According to the commentator, such a requirement would prevent the party from proceeding *ex parte* after the interference on any claim on which a favorable judgment was not entered. It is not the PTO's intent to require a party who is an applicant to present at the outset all claims which the party may ever seek to obtain in a patent based on his application. Parties in interference cases should recognize, however, that the interference estoppel provisions of §1.658(c) have been expanded with the view to eliminating much of the *ex parte* maneuvering which has taken place in the past after an interference is terminated. Accordingly, a party who fails to move to place a matter in issue runs a considerable risk that the party will not be able to raise the issue *ex parte* after an interference is terminated. Nevertheless, the PTO has determined that it will not, at this time, adopt the requirement suggested by the commentator. The commentator also suggested, contingent on his earlier suggestion being rejected, that the rules provide that a party be authorized to file a motion to require an opponent who is an applicant to add a claim to the opponent's application and to designate the claim as corresponding to a count. This suggestion is being adopted by addition of §1.633(c)(5). Paragraph (c)(5) authorizes the filing of a motion to redefine the interfering subject matter by requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count. A companion addition of paragraph (c)(5) to §1.637 sets out the requirements of a motion under §1.633(c)(5). Those requirements are: the moving party must (1) propose a claim to be added to the opponent's application, (2) show the patentability of the claim to the opponent and apply the terms of the claim to the disclosure of the opponent's application, (3) identify the count to which the proposed claim shall be designated to correspond, and (4) show that the proposed claim defines the same patentable invention as the count to which it will be designated to correspond. The following example illustrates how practice under §§1.633(c)(5) and 1.637(c)(5) is expected to occur.

Example 37: In this example, some of the facts set out in Example 32 will be used. Application AV discloses engines and in particular a 6-cylinder engine. Application AV contains only claim 1 (engine). Application AW discloses engines in general, but does not specifically disclose a 6-cylinder engine. Application AW contains only a single claim 3 (engine). Seeing that application AV specifically discloses a 6-cylinder engine and believing that a 6-cylinder engine is the same patentable invention as "engine," AW could move under §1.633(c)(5) to require applicant AV to add a claim (6-cylinder engine) and to have the claim designated to correspond to the count (engine). Applicant AV could oppose on the ground that a 6-cylinder engine is not the "same patentable invention" as "engine." If the motion is granted, applicant AV would be required to add a claim to 6-cylinder engine and the claim would be designated to correspond to the count. If applicant AV loses the interference, the judgment would preclude applicant AV from obtaining a patent with claims to "engine" or "6-cylinder engine." If the motion is denied on the basis that a 6-cylinder engine is not the same patentable invention, applicant AV would not be required to present a claim to 6-cylinder engine and would be able to pursue such a claim *ex parte* even if applicant AV loses the interference.

If an applicant is ordered by an examiner-in-chief to file an amendment to present a claim and the applicant fails or refuses to timely present the amendment, the failure or refusal will be taken without further action as a disclaimer by the applicant of the subject matter of the claim. See the second sentence of §1.640(b)(1).

At the hearing, one commentator indicated that it is not clear whether §1.635 "would permit a motion for judgment in a situation where a junior party's case-in-chief fails as a matter of law to overcome a senior party's effective filing date." Under the rules, it is not the intent of the PTO to allow a senior party to test the sufficiency of the case-in-chief of a junior party prior to final hearing. Thus, a "motion for a directed verdict" (see Rule 50(a) of the Federal Rules of Civil Procedure) at the conclusion of the junior party's case-in-chief and prior to a senior party's case-in-chief is not authorized under the rules. If a senior party believes the case-in-chief of the junior party is insufficient as a matter of law, the senior party may *elect* to proceed immediately to final hearing. If the senior party is incorrect, however, the senior party will have waived any right to present any case-in-chief or rebuttal. See e.g., *Comstock* v. *Kroekel*, 200 USPQ 548, 550 n. 4 (Comm'r.Pat. 1978); *Lorenian* v. *Winstead*, 127 USPQ 501, 508 (Bd.Pat.Int. 1959); and, more recently, *Burson* v. *Carmichael*, 731 F.2d 849, 221 USPQ 664 (Fed. Cir. 1984) ("There is no support in law for repeated bites at the apple"). This would be true even if the only evidence relied upon by the junior party is a showing under 1.608(b). In this respect, the rules codify the decision in *Walsh* v. *Sakai*, 167 USPQ 465 (Comm'r.Pat. 1970).

Two comments were received which suggested that the twenty-day period in §1.636(b) is too short. It was suggested that a longer time period be set and one comment suggested thirty (30) days. The suggestions are not being adopted. The time period set for filing oppositions will normally be set during a telephone conference call between the examiner-in-chief and the attorneys for the

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parties. The twenty-day period appears in the rule in the event a specific time for filing oppositions is not set by an examiner-in-chief. The twenty-day period is deemed to be sufficient in most cases. Twenty days are currently allowed to respond to a motion. See 37 CFR §1.231(b). It should be noted that the twenty-day period is longer than the minimum period allowed by the Federal Rules of Civil Procedure for responding to motions. See Rule 6(d) and (e).

Two comments were received which discussed §1.637. Both comments suggested that a sentence be added to §1.637(f) (2) to require a translation to be filed when a party moves for benefit of an earlier foreign application which is not in English. The suggestions are being adopted and the following has been added as the last sentence of §1.637(f) (2): "If the earlier application filed abroad is not in English, the requirements of §1.647 must also be met." Section 1.647 requires a translation whenever a party relies on a document in a language other than English. One comment suggested that the language of §1.637(f)(3) ("Show that the earlier application discloses an embodiment within the scope of the each count.") may be "contrary to past decisions of the CCPA which have held a disclosure can be good without a specific embodiment." The critical issue in each benefit situation is whether the earlier application constitutes a constructive reduction to practice of the invention defined by the count. The issue is necessarily resolved on a case-by-case basis and the presence or absence of an embodiment is only one factor to be considered. Accordingly, the language of §1.647(f)(2) has been changed to read: "Show that the earlier application constitutes a constructive reduction to practice of each count." The comment also criticized the use of the word "each" in §1.647(f)(2). The term "each" is used to make clear that when there are two or more counts, the moving party must show that the earlier application constitutes a constructive reduction to practice for each count. There are cases where a disclosure in an earlier application would constitute a constructive reduction to practice for one count but not for another count.

Several changes have been made to §1.637 which were not made as a result of a comment submitted from the public. Each occurrence of the language "Where appropriate," in §1.637 has been deleted as being unnecessary and possibly confusing. Whenever a party wants or believes that it is entitled to benefit of an earlier application, the party must file a motion under §1.633(f) for benefit. The language "Where appropriate" may have given parties the mistaken impression that a motion was not necessary where benefit of the earlier application had been accorded in the papers declaring the interference. See the discussion above of the suggested change to §1.633(c) which was rejected.

The language "or adding a claim to be designated to correspond to a count" has been added to §1.637(c)(2). The change supplements a change made in §1.633(c)(2). Section 1.637(c)(2) sets out the requirements for a preliminary motion to redefine the interfering subject matter by adding a claim in the moving party's application and to designate the claim to correspond to a count.

In §1.637(c)(2)(ii), the language "Apply the terms of each proposed claim to the disclosure of the application" has been changed to "Show that the proposed or added claim defines the same patentable invention as the count". This change was made to add the requirement of showing that the new claim defines the same patentable invention as the count and to eliminate a requirement already contained in §1.637(c)(2)(iii).

Section 1.637(c)(2)(iii) was changed to refer to an "amended or added claim" and thereby conform the language of the section to the language of §1.633(c)(2).

Paragraph (c)(5) was added to set out the requirements of a motion under §1.633(c)(5) which permits a party to move to require an opponent who is an applicant to add a claim to the application and to designate the claim to correspond to a count. See Example 37.

Two comments were made concerning §1.638. One comment suggested that the twenty-day periods of paragraphs (a) and (b) were too short. The PTO has evaluated the time periods of paragraphs (a) and (b) and has decided that no change will be made to those periods. Attention is directed to the discussion above of the comments concerning §1.636(b) which also contains a twenty-day period.

Another comment made at the hearing suggested that a reply to an opposition to a motion should be permitted as a matter of course. Upon consideration of the comment, it has been decided to authorize the filing of replies to opposition to all motions. Presently, replies are permitting as a matter of course only for oppositions to motions under 37 CFR §1.231. Section 1.638(b), as changed, would permit the reply in every instance. The PTO over the years has received complaints concerning the inability of a party to file replies. The change being made in §1.638(b) will be reviewed sometime in the future to determine whether authorizing replies is helpful to the Board and/or whether undue delay in resolving interference occurs because replies are filed. Moreover, the PTO will make a judgment on whether "new issues" are being raised as a matter of course in replies. It can thus be seen that the change in authorizing replies may be considered experimental and could be changed in the future if found to be counter-productive or inconsistent with the objective of resolving interferences in a relatively prompt manner.

One comment discussing §1.639 was received. The comment states:

> The requirement that proofs of alleged material facts *must* be filed may be difficult or impossible to meet in view of the shortened times. [The] rule should make provisions for timely submission of proofs within reasonable times.

To the extent that the comment suggests setting specific times in the rules, the suggestion is not being adopted. It should be noted that if affidavits cannot be timely prepared to be filed with a motion, the moving party may wish to take advantage of paragraph (c) which requires a party to specify any testimony needed to resolve a motion.

One change was made in §1.639(c) to make clear that a moving party or an opponent may describe any testimony needed to resolve a motion under either §1.633 or §1.634. Often, testimony is needed to resolve inventorship disputes. Accordingly, a party may describe testimony needed to resolve motions to correct inventorship under §1.634. It should be noted that if a party relies solely on affidavits in support of a motion (under §1.633 or §1.634) and the issue raised in the motion is to be considered at final hearing, the party must comply with §1.671(e).

Several comments were received which discussed §1.640. One comment asked: "When the final sentence speaks of a panel deciding the request for reconsideration, does this mean that the panel decides whether to reconsider or whether to modify the decision?" It was the PTO's intent that the panel make a decision on whether to modify the decision made by the single examiner-in-chief. Accordingly, the language "shall be decided by a panel" in the last sentence of §1.640(c) has been changed to read: "shall be acted on by a panel". Another change in language to the fourth sentence of §1.640(c) has been made to make clear that a decision of a single examiner-in-chief will not ordinarily be modified by a panel without an opportunity to file an opposition.

Another comment suggested that §1.640(a) be changed to "allow, even encourage, the examiner-in-chief to travel to conferences where more convenient/practical for all concerned." This suggestion is not being adopted. The use of a telephone conference call eliminates the need to adopt the suggestion. The same comment suggested that the "speedy and inexpensive" language of the second sentence of §1.640(b) be deleted. The suggestion is not being adopted. The comment fails to explain why the language should be deleted. It is obvious that a motion cannot always be granted or denied; other action is often appropriate, e.g., deferring consideration of a motion to final hearing. Section 1.640(b) gives the examiner-in-chief discretion to take appropriate action and the "just, speedy, and inexpensive determination" language provides some standard which an examiner-in-chief may follow in those cases where granting or denying a motion is not appropriate.

One comment was received which suggested that §1.640 be changed to provide that an examiner-in-chief hold a hearing to determine whether an interference should proceed in those cases where a junior party fails to allege a date prior to the senior party and remains in an interference only because the junior party is alleging "fraud" by the senior party. The suggestion is not being adopted. If a party believes that an opponent has committed "fraud" or has engaged in "inequitable conduct," the party may file a motion under §1.633(a) for judgment. Obviously, a motion for judgment on the basis of "fraud" or "inequitable conduct" must make out a case by clear and convincing evidence. The examiner-in-chief has sufficient authority under the rules to preclude a party from proceeding in an interference on a baseless charge of "fraud" or "inequitable conduct."

One oral comment was received which suggested that the examiner-in-chief be required to consult with an examiner prior to deciding a preliminary motion for judgment under §1.633(a) based on patentability. The oral comment suggested alternate proposals:

(1) The examiner-in-chief will normally obtain a patentability report when deciding motions involving a question of patentability.

(2) The examiner-in-chief will consult with a primary examiner prior to deciding a motion raising an issue of patentability.

The suggestion of the oral comment is not being adopted. An examiner-in-chief is a person having "competent legal knowledge and scientific ability." 35 U.S.C. §7. Examiners-in-chief review decisions of examiners on questions of patentability. Accordingly, there is no reason to *require* an examiner-in-chief to consult with an examiner on a question of patentability. The PTO recognizes that many examiners possess special expertise in particular arts. It is for this reason that §1.640(b) provides that "[a] n examiner-in-chief *may* consult with an examiner in deciding motions involving a question of patentability" (emphasis added). Thus, an examiner-in-chief is authorized to consult with an examiner on a question of patentability where the examiner-in-chief believes consultation will be beneficial.

One comment suggested that §1.642 be changed to permit an examiner-in-chief to add a newly discovered patent, as well as newly discovered applications, to an interference. Inasmuch as 35 U.S.C. §135(a) authorizes interferences between applications and patents, the suggestion is being adopted. The language "application" in §1.642 has been changed to read: "application or patent".

Several comments discussing §1.644 were received. One commentator made four suggestions, none of which are being adopted. First, the commentator suggested that there should be no fee for a petition under §1.644(a)(1). This suggestion is not being adopted. A decision on a petition is a service performed by the PTO on behalf of a petitioner. The Commissioner is authorized to charge fees for services performed. 35 U.S.C. §41(d). Second, the commentator suggested that the last sentence of §1.644(d) be deleted. This suggestion is not being adopted. In the past when parties have filed petitions, copies of documents already in the interference file have been attached to the petition. The copies tend to increase unnecessarily the size of the file of an interference. Inasmuch as the document submitted with the petition is already in the interference, there is no need to file a "second" copy of the document. Parties can expect that petitions will be returned (§1.618) if the petition is accompanied by documents which are already in the interference file. Third, the commentator argued that the "requirement of service within one (1) day is too onerous and should be deleted" from §1 644(g). No rationale was given in support of the argument. Petitions have caused considerable delay in interference cases in the past. To avoid unnecessary delay and surprise on the part of the opponent, the PTO has decided to require that service of a petition be such that delivery to the opponent is within one (1) working day. Service within one day should not ordinarily be difficult in view of "Express Mail" and numerous commercial one-day delivery services available. Lastly, the commentator suggested that §1.644(i) be changed to provide that decision on a petition would not be delegated to the examiner-in-chief handling the interference. The suggestion to change §1.644(i) is not being adopted. However, when a PTO employee is granted authority to decide a petition in an interference case, the employee would not be the examiner-in-chief handling the interference or an employee on a panel of the Board deciding the petition. It would be expected that an employee deciding a petition by delegation of authority would be one who could exercise independent judgment on the petition bearing in mind that a petition will be decided on the record made before the examiner-in-chief or the panel. In connection with this latter point, findings of fact by an examiner-in-chief or the Board will be presumed to be correct unless shown to be clearly erroneous. Discretionary action by an examiner-in-chief or the Board will not be overturned unless it is shown that an abuse of discretion occurred.

One commentator asked the following: "Is §1.644(g) intended to apply only to 'oppositions' to §1.644 petitions, or is it also applicable to §1.638 oppositions?" The provisions of §1.644(g) apply only to petitions filed under §1.644; those provisions do not apply to oppositions under §1.638.

Two comments suggested that §1.644(a)(2) be changed to include an express statement that a petition under paragraph (a)(2) could not be filed until after the Board has entered judgment and that the petition could not relate to the merits of priority of invention or patentability or a question of whether evidence is admissible under the Federal Rules of Evidence. The suggestions are being adopted and appropriate language has been added to §1.644(a)(2) after the word "Commissioner". The change was suggested by the commentators so that no reasonable person could possibly overlook the fact that a petition to exercise supervisory authority can be filed *only after entry of judgment.* It should be noted that the language "and shall not relate to (1) the merits of priority of invention or patentability or (2) the admissibility of evidence under the Federal Rules of Evidence" has been deleted from §1.644(b) in view of the change to §1.644(a)(2).

One comment suggested that the last sentence of §1.644(f) be changed to make clear that a decision would not ordinarily be modified until the Commissioner had requested an opposition to a request for reconsideration. This suggestion has been adopted and an appropriate change has been made to the last sentence of §1.644(g).

One comment suggested that the word "shall" in the last sentence of §1.644(b) precludes the filing of an opposition beyond the 15-day period specified in the rules. According to the commentator, the opposition should also be considered timely if filed within "any appropriate extension." A party may move to extend the time for filing an opposition. See §1.645.

One comment argued that §1.644(a)(1) cannot "be squared with the statute as interpreted in *Myers* [v. *Feigelman,* 455 F.2d 596, 172 USPQ 580 (CCPA 1972)]." The rationale in support of the comment is the following:

> I presume that the limitation in subparagraph (b) that a petition under subparagraph (a)(2) "shall not relate to . . . the merits of priority of invention or patentability or . . . the admissibility of evidence" is intended to avoid conflict with *Myers* v. *Feigelman,* 172 USPQ 580 (CCPA 1972), and its progeny. However, I read *Myers* as saying that, if the board has statutory authority to make a decision (includ-

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ing all the myriad of ancillary decisions that the panels and/or the single examiner-in-chief will be making under the new procedure), then the Commissioner does not have authority to review the board's or the single examiner-in-chief's decision. Or, to put it the other way around, if the Commissioner reviews an examiner-in-chief's decision, he is stepping into the shoes of the examiner-in-chief, and the Commissioner's decision is in turn reviewable by the panel (which is, of course, the only entity authorized to exercise the *statutory* jurisdiction of the board—see *Knickerbacker Toy Co.* v. *Faultless Starch Co.*, 175 USPQ 417 n.8 (CCPA 1972)). Thus, I don't see how proposed section 1.644(a)(1) can possibly be squared with the statute as interpreted in *Myers*.

It is true that the CCPA has stated that, "in performing his duties, the Commissioner cannot usurp the functions or impinge upon the jurisdiction of the Board . . . established by 35 U.S.C. 135." *In re Dickinson*, 299 F.2d 954, 958, 133 USPQ 39, 43 (CCPA 1962). See also *Myers* v. *Feigelman, supra*, 455 F.2d at 599 n. 8, 172 USPQ at 583 n. 8. However, it is also true that the Commissioner "shall superintend or perform all duties required by law respecting the granting and issuing of patents . . ." 35 U.S.C. §6; *Kingsland* v. *Carter Carburetor Corp.*, 83 U.S.App.D.C. 266, 168 F.2d 565, 77 USPQ 499 (D.C.Cir. 1948); *In re Staeger*, 189 USPQ 284, 285 n. 2 (Comm'r.Pat. 1974). The Commissioner, subject to approval of the Secretary of Commerce, establishes the procedure by which the examiners-in-chief and the Board will consider interference cases. 35 U.S.C. §6. See also 35 U.S.C. §23 relating to affidavits and depositions.

Under the rules, the Commissioner will not determine on petition either "priority of invention" or "patentability." See §1.644(b). Likewise, the Commissioner will not consider whether evidence should have been admitted or excluded under the Federal Rules of Evidence. The PTO believes that the federal courts, which routinely rule on admissibility under the Federal Rules, are in a better position to determine whether the Board properly interpreted the Federal Rules of Evidence.

While the Commissioner will not decide "priority of invention" or "patentability" under 35 U.S.C. §135(a), it does not follow that the Commissioner is precluded from interpreting PTO rules on procedural matters, including procedural matters related to the admissibility of evidence on some basis other than the Federal Rules of Evidence, e.g., whether a party has complied with a PTO rule such as §1.671(e)(procedure for relying on affidavits) or §1.671(g)(permission required for obtaining evidence by subpoena).

Full consideration has been given to the comment. The PTO nevertheless believes that §1.644(a)(1) is not inconsistent with law. Several comments concerning §1.645 were received. One comment suggested that "to" be inserted in the first sentence of paragraph (a) before "file a notice of appeal" and "commence a civil action". According to the comment, "[t] he use of parallel infinitive verb forms provides greater clarity to the rule." The suggestion has been adopted.

Another commentator said the following:

> "No good reason is seen to require a notarized oath from an attorney merely to explain why a paper was filed late, if there is no claim of substantive prejudice by other parties. Attorneys and examiners-in-chief should not be spending unnecessary time and effort on merely procedural formalities. That is contrary to the intent of the new rules."

The PTO agrees with the commentator and has deleted the language "accompanied by an affidavit" from §1.645(b).

One comment suggested that a reference to §1.610(d)(6) which provides for oral requests should be inserted into §1.645 to reflect intent stated in the comments [of the notice of proposed rulemaking] on proposed §1.645." This suggestion is not being adopted. As the commentator notes, §1.610(d) authorizes an examiner-in-chief to hold a conference call to resolve issues and to enter an appropriate order following the conference call. A conference call may be used to obtain an extension of time. If the examiner-in-chief grants the request, an order may be entered—in which case a written motion is not necessary. The order provides the written record required by 37 CFR §1.2. However, it would unduly lengthen the rules to insert a reference to §1.610(d) in each rule to which it may be applicable. Section 1.645(a) specifies the procedure to be used when a written motion is filed. It should be noted that an examiner-in-chief may require a written motion notwithstanding a conference call.

One comment stated that "[t] he 'other business' may be more pressing than the Interference. In order to serve the ends of justice, the PTO should be considerate in this matter." The PTO intends to evaluate each request for an extension of time on a case-by-case basis. However, extensions of time in interference cases have become "routine." A recent survey of a file in one interference revealed the following. The interference was declared on Mar. 30, 1976. Preliminary statements were filed on May 5, 1979. A decision on motions was entered on June 28, 1982. Testimony was filed on Jan. 3, 1984. During the period between declaration and filing of testimony, sixty-four (64) requests or stipulations for extension of time were filed.

When counsel and an examiner-in-chief agree to a schedule and times are set, the parties will be expected to adhere to the schedule unless there are unusual circumstances. Apart from work that counsel may have in an interference, an examiner-in-chief will have a docket and must manage not only the interference involving counsel, but numerous other interferences. The U. S. Court of Appeals for the Federal Circuit recently said the following in *Rosemount, Inc.* v. *Beckman Instruments, Inc.*, 727 F.2d 1540, 1549-1550, 221 USPQ 1, 10 (Fed. Cir. 1984):

> The conduct of a trial, granting of continuances and the like, is not, however, solely or entirely a matter of balancing conveniences of the parties. The Federal Rules of Civil Procedure recognize another consideration—the need for the exercise of discretion by the trial court in carrying out its duty of managing the judicial process, the business of the court, and the administration of justice.

Likewise, these rules also recognize the need for the exercise of discretion by an examiner-in-chief in carrying out his or her duty of managing the interference (§1.610), the business of the PTO (§1.610), and the administration of justice (§1.601).

Several comments were received which discussed §1.646. One comment suggested that it would be clearer if "service" was inserted after "additional" in the last sentence of §1.646(b). This suggestion has been adopted.

Another comment suggested that "or except as otherwise provided in these Rules" be added to §1.646(c) after "otherwise ordered by an examiner-in-chief". The commentator pointed out that the change was needed because certain rules (§§1.644(g) and 1.658(b)) require service by "Express Mail" or by hand. The commentator accurately pointed out that adding the suggested phrase "will call attention to the fact that there are other rules which have their own requirements for service of papers." The suggestion has been adopted, except that "this part" has been used instead of "these Rules."

One comment suggested changing "time" to "date" in the last sentence of §1.646(e). The suggestion has been adopted. The change is necessary to conform with the language of the rule to actual practice and other language in the rule.

Two comments suggested that §1.646(d), which authorizes an examiner-in-chief to order service by hand or "Express Mail," be deleted. This suggestion is not being adopted. The use of "Express Mail" or delivery by hand

is often desirable to expedite matters or to avoid unnecessary delay. One comment argued that delivery by hand may be prohibitive. Commercial couriers may be used to accomplish delivery by hand. The fee charged by most commercial couriers is not "prohibitive." The other comment argued that "there are circumstances when . . . [delivery by hand] is [not] possible." The use of §1.646(d) is discretionary on the part of an examiner-in-chief. If delivery by hand, i.e., personal delivery or delivery by commercial courier, or by "Express Mail" is impossible, it would be expected that the examiner-in-chief would exercise discretion and permit service by first class mail.

One comment suggested that the language "present case," which was said to appear in §1.651(b)(1) and §1.651(c), be changed to "prepare case." The suggestion is not being adopted because the language "present case" does not appear in §1.651. In any event, a testimony period is set for a party to present its testimony—either case-in-chief or case-in-rebuttal.

One comment was received which made two suggestions regarding §1.652. First, the comment suggested that a period longer than 15 days be set for filing a response to a paper answering an order to show cause. This suggestion is not being adopted. The fifteen-day period is believed to be adequate in most cases. If more time is needed, a party may file a motion under §1.645. Second, the comment suggested that the party placed under an order to show cause should be permitted as a matter of course to file a "reply" brief. This suggestion is not being adopted. In those instances where the Board believes a "reply" brief is desirable it may authorize the filing of a "reply."

One comment argued that §1.653(i) "fails to make provision for exhibits which are too big to file or are too dangerous to file." If an "exhibit" cannot be filed, it will not be given consideration. A party will have to rely on testimony and/or pictures or sketches for "exhibits" (e.g., a large machine in a factory) which are too large or too dangerous to be filed in the PTO.

While no comments were received concerning §1.654, it should be noted that a new paragraph (c) has been added and paragraph (c) as set out in the notice of proposed rulemaking has been redesignated as paragraph (d). New paragraph (c) provides that a party shall not be entitled to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless a notice under §1.632 was timely filed.

Two comments discussing §1.655 were received. The first comment made the following statement regarding §1.655(a):

> Last sentence—interlocutory orders are reviewed only for 'manifest error' etc. It is not clear whether this includes show cause orders under §1.640 resulting from unpatentability determined under §1.633(a). However, if so, it precludes proper review of the patentability determination.

Patentability will initially be determined by a single examiner-in-chief. See §§1.610(a) and 1.640(b). If the examiner-in-chief determines that a claim of a party is unpatentable to that party, an order to show cause why judgment should not be entered as to that claim will be issued to that party. See §1.640(d). If a response to the order to show cause is filed, a decision will be entered by the Board. See §§1.610(a) and 1.640(e). If the Board determines that the claim is not patentable to the party, a final decision and judgment will be entered holding the claim to be unpatentable. Review of the final decision and judgment is by judicial review under 35 U.S.C. §§141 or 146. It should be noted, however, that if there are other claims in the party's application or patent which are deemed to be patentable, an interlocutory order would be entered holding only that certain claims are unpatentable. A final order holding those claims unpatentable would be entered after final hearing on other issues. Such a practice will avoid piecemeal judicial review.

Another comment suggested that §1.655 be changed to preclude consideration of patentability at final hearing. Public Law 98–622 authorizes consideration of patentability assuming patentability is properly raised by a party during the interlocutory phase of an interference.

Two comments discussing §1.656 were received. One comment suggested that "[b] riefs should be letter size for consistency." The PTO has no preference for the size of briefs. Briefs may be filed on letter or legal-size paper. Inasmuch as the federal courts now require letter-size paper, parties who intend to use a PTO brief as an exhibit in a federal court should use letter-size paper.

Another comment suggested that §1.656 be amended to preclude a single examiner-in-chief from ruling on admissibility of evidence. The introductory remarks to the notice of proposed rulemaking (and this notice) state that "[t] he examiner-in-chief, *where appropriate, will be available by phone to rule on the admissibility of evidence in the event parties encounter unusual* problems during the taking of depositions" (emphasis added). The commentator states:

> If an examiner-in-chief has ruled certain evidence inadmissible, that evidence would presumably not be before the Board at final hearing. Proposed Rule 1.656(h) provides a means for a party to obtain suppression of evidence to which he has made timely objection, but the Rule does not provide for any means for a party whose proffered evidence has been held inadmissible by the examiner-in-chief, to have that holding considered by the Board.

The change suggested by the comment will not be adopted. However, a brief explanation of how practice is expected to work is in order. The introductory remarks indicate that a single examiner-in-chief may rule on admissibility of evidence "where appropriate" and in "unusual" circumstances. There are times during interferences where a motion *in limine* can be helpful. For example, a junior party during its case-in-chief may wish to examine a witness on a document which was *not* served as required by §1.673(b)(1). The senior party objects and realizes that if the junior party is permitted to examine the witness on the document, extensive cross-examination using numerous documents would be necessary. In order to avoid wasting considerable time, the parties could contact the examiner-in-chief by phone for a determination *in limine* on whether the junior party should be able to examine the witness on the document. Under the circumstances outlined the examiner-in-chief in his or her discretion could enter an order excluding the document from evidence. The order would be subject to a request for reconsideration. See §1.640(c). Ordinarily, however, it would be expected that parties would present evidence subject to objection. See §1.675(c), last sentence. It is not envisioned that a single examiner-in-chief will routinely rule on the admissibility of evidence.

Several comments discussing §1.658 were received. One comment suggested that the 14-day time period in §1.658(b) is too short. Section 1.658(b) provides that a party may file a request for reconsideration with 14 days of a final decision by the Board. The 14-day time period is the same period authorized for filing requests for reconsideration by the U. S. Court of Appeals for the Federal Circuit. See Rule 40(a) of the Federal Rules of Appellate Procedure.

Several individuals suggested that a less restricted "interference estoppel" be set out in §1.658(c). While full consideration has been given to the suggestions, it has been decided to retain in these rules the interference estoppel provisions of §1.658(c) essentially as proposed. "Interference estoppel" under §1.658(c) is designed to implement the PTO's intent to have as many issues resolved as possible in a single *inter partes* proceeding. Numerous examples in this notice illustrate how practice is expected to take place under §1.658(c).

The language in the second sentence of §1.658(c) has been changed to more clearly state the nature of the estoppel and the exception to estoppel. The word "counts"

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in the second sentence of §1.658(c) means the counts as they exist at the time a final decision is entered.

One comment was received concerning §1.658(c) which requires a specific answer. The comment made the following statement:

> You state that an estoppel would not apply against a party awarded a favorable judgment as to *all* counts. However, it seems to me that there will be occasion when it would not be appropriate to have estoppel where there was a split decision. For instance, consider an interference between applicants A and B in which A was awarded priority as to count 1 and B was awarded priority as to count 2. If I understand you correctly, A would be estopped in post-interference *ex parte* practice to present an additional claim X which was patentably indistinct from his claim corresponding to count 1 if B had support for claim X. I think this result would be unfortunate, and that A should be permitted to further refine his claim structure after the interference — that is, after he has been assured that he is entitled to claims to the basic invention recited in count 1. Under the circumstances described by the commentator, inventor A would *not* be estopped to present a claim to X because X is "patentably indistinct" (the proper terminology under the rules would be to say X is the "same patentable invention" as the subject matter of count 1) from the subject matter of count 1. Inventor A would be entitled to claim any disclosed invention which is directed to the "same patentable invention" as count 1. The change in the second sentence of §1.658(c) more clearly reflects the PTO's intent in this regard. Inventor A would *not* be entitled to claim any invention which is the "same patentable invention" as the subject matter of lost count 2. See Examples 26, 27, and 28 for illustrations of interference estoppel practice when a "split" judgment is entered.

Two comments were received discussing §1.659. One comment suggested that the first sentence of §1.659(b) should "reflect" that a reexamination may be based only on patents and printed publications. The suggestion is not being adopted. The basis upon which a reexamination may be instituted are set out elsewhere in the statute and rules. 35 U.S.C. 301-306; 37 CFR 1.501-1.570. There is no further need to set that basis out again in §1.659(b). Another comment suggested that the language "not involved in the judgment of the interference" be deleted from §1.659(b). The rationale in support of the comment was as follows:

> Besides introducing a potential ambiguity as to what claims were 'involved in the judgment,' there does not appear to be any good reasons to draw this distinction, particularly unless it is made more specific. Why should the Board be prevented from recommending reexamination of some (less relevant) patent claims and not other patent claims which are potentially even more relevant to the public, unless *all* of the *same art* has already been fully evaluated against the *same claims* in the Board's decision? (emphasis in original).

When a patent is involved in an interference, each claim of the patent will be designated to (1) correspond to a count *or* (2) not correspond to a count. All claims which are *ultimately* determined to correspond to a count will be "involved in the judgment of the interference." Inasmuch as they are involved in the judgment of the interference, there is no need to recommend reexamination of those claims. The claims involved in the interference are either patentable or unpatentable based on the final decision of the Board. Section 1.659(b) merely authorizes the Board to recommmend reexamination of patent claims which (1) are *not* involved in the judgment and (2) for one reason or another neither party saw fit to move to designate as corresponding to a count.

One comment was received which suggested that the requirements of §1.660 are unnecessary. The PTO disagrees. The requirements of §1.660 are designed to keep the PTO and a party's opponent informed of activity which is relevant to an interference. These rules attempt, to the extent possible, to eliminate procedural surprise. Inasmuch as mail delays occur and the PTO cannot react instantaneously to every paper filed in connection with every application or patent, the provisions of §1.660 are believed helpful in preventing surprise on the part of opponent's and unnecessary work by examiners-in-chief or the Board due to a lack of knowledge of relevant activity which may be taking place in the PTO.

One comment suggested that at the end of §1.661 the following be added: "and the time for any such available appeal or review has expired." The suggestion is not being adopted. Section 1.661 already provides for finality when "no appeal . . . can be taken . . . ." The language finds antecedent basis in 35 U.S.C. §135(a).

Several comments discussing §1.662 were received. Two comments suggested a change be made to provide that when a patentee files a statutory disclaimer under 35 U.S.C. §253 and deletes *all* claims corresponding to a count, the disclaimer will be treated as a request for judgment. As one of the comments pointed out, "[s] ince . . . [the filing of a statutory disclaimer disclaiming all claims corresponding to a count] by the patentee could have no other conceivable effect, the proposed rule should be changed to require judgment when all corresponding claims are disclaimed." The suggestion has been adopted and appropriate changes have been made to §1.662(c). In view of the changes, the following language in §1.662(c), as proposed, is not necessary: "A statutory disclaimer of any claim involved in an interference shall in subsequent proceedings have the same effect with respect to the patentee as an adverse judgment." When a patentee disclaims less than all claims corresponding to a count; the claims which remain in the patent continue to be involved in the interference and any patentability or priority issues involving those remaining claims will be involved in the judgment on the merits in the interference.

Two comments suggested that the word "dissolved" in §1.662(d) be changed to "terminated". This suggestion is being adopted, because §1.662(d) has been deleted. However, all interferences will be terminated with a "judgment." A change has been made in the language of §1.11(a) to delete any reference to terminating an interference other than by judgment.

One comment suggested that the word "construed" in §1.662(a) be changed to "treated". This suggestion has been adopted and more clearly states the intent of the PTO. The filing of the various papers mentioned paragraphs (a) and (c) of §1.662 will result in certain action by the PTO. The word "treated" more appropriately describes the consequences of filing such papers.

One comment suggested that §1.662(a) "is too sweeping." According to the commentator, a patentee may file a disclaimer because it has "become aware of a statutory bar or can not afford the expense of an interference." If the patentee becomes aware of a statutory bar, the patentee should call the "bar" to the attention of the PTO or file an appropriate motion under §1.633(a) for judgment if the "bar" applies to the opponent. If a junior party patentee decides than an interference is too expensive and for that reason files a disclaimer, there is no reason why judgment should not be entered in favor of the opponent. The comment also suggested that §1.662(c) "needs revision" because a patentee may disclaim one claim corresponding to a count, but not another. Section 1.662(c), as revised, takes into account the possibility that less than all claims corresponding to a count may be disclaimed. When some of the patent claims corresponding to a count are disclaimed, the interference proceeds on the basis of the remaining claims which correspond to the count. If all patent claims corresponding to a count are disclaimed, judgment will be entered.

One comment made the following statement regarding the third sentence of §1.662(a):

> What of abandonment in favor of a CIP [continuation-in-part application]? Would this be construed as [a] request to enter [an] adverse judgment? Language should reflect procedural moves of substituting CIP for abandoned application and/or declaring new interference.

The third sentence of §1.662(a) does not apply to an application which is *not* involved in an interference. If an applicant files a continuation-in-part application and successfully moves (§1.633(d)) to substitute the continuation-in-part for the application involved in the interference, abandonment of the application originally involved in the interference would have no bearing on the interference. Accordingly, no additional language is needed in §1.662(a).

Two comments discussing §1.663 were received. One comment suggested that an explanation of the status of patent claims involved in an adverse judgment should be stated in the rule. This suggestion is not being adopted. The status of patent claims involved in an adverse judgment is stated in 35 U.S.C. §135(a). Another comment suggested that the status of "claims which could have been counts . . . should be made of record." Unless a motion (§1.633(c)) to add claims to correspond to counts is filed, no reference will be made in a judgment as to claims "which could have been made counts."

One comment suggested that the language "then owned by either party but" be inserted after "application" in §1.665. This suggestion is not being adopted. The language "same parties" in §1.665 is intended to cover a party and any assignee. The suggested language "then owned" would narrow the scope of the rule in a manner not intended by the PTO.

An oral comment at the hearing suggested that §1.671(e) be changed so that a party would not have to serve copies of affidavits relied upon under §1.608(b) in those cases where an opponent had already obtained copies of the Rule 608(b) affidavits. This suggestion is not being adopted. See the discussion above answering comments related to §1.612(b). Another comment made at the hearing noted that the PTO is "adopting" the Federal Rules of Evidence. The Federal Rules include a "shop book" rule—Rule 803(b)(6). The commentator expressed the view that adopting of a "shop book" rule might make an important change in evidence which is admissible in interferences and suggested that "it would be helpful if the Patent and Trademark Office would publicly comment on this extremely important evidentiary rule . . . " The PTO believes that adoption of Rule 803(b)(6) of the Federal Rules of Evidence does not constitute a change in the admissibility of "shop book" evidence in interference cases. Rule 803(b)(6) is very similar to the former Federal Shop Book Rule (28 U.S.C. §1732) which it replaced. The courts have articulated a rule of law which the PTO will continue to apply in determining admissibility of laboratory note books under the "shop book" Rule 803(b)(6) of the Federal Rules of Evidence. See e.g., *Alpert* v. *Slatin*, 305 F.2d 891, 134 USPQ 296 (CCPA 1962) and *Elliott* v. *Barker*, 481 F.2d 1337, 179 USPQ 100 (CCPA 1973).

One comment suggested that §1.671(f) be eliminated on the ground that a rule should not be used to train attorneys and agents. The suggestion is not being adopted. The problem addressed by §1.671(f) is significant. By providing in the rules that documentary evidence must be explained the PTO hopes to save both parties and the Board considerable difficulty in presenting and evaluating evidence.

One comment suggested that §1.671(g) should be changed to require a party only to show the "relevancy" of expected testimony as opposed to the "admissibility" of the testimony. This suggestion is being adopted and an appropriate change has been made to §1.671(g) to require a moving party to "describe the general nature and the relevance of the testimony, document, or thing."

An oral comment was received which asked whether permission to issue a subpoena would be needed in the event a party seeks to call a witness under the control of an opponent. Ordinarily, the examiner-in-chief can order a party to produce an individual for a deposition as long as the individual is a party or is under the control of the party, e.g., an employee of an assignee. Where so-called "third parties" are concerned, however, issuance of a subpoena may be necessary, because the PTO has no authority to compel attendance of third parties. Several comments concerning §1.672 were received. One comment at the hearing pointed out that use of 8-1/2 by 11 inch paper for affidavits appears to be optional. The commentator is correct in pointing out that the use is optional. By using 8-1/2 by 11 inch paper, however, a party will save considerable time when filing a record (§1.653).

Two comments asked questions concerning §1.672(b), and in particular, the meaning of the word "party" in the phrase "a party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits . . ." Specifically, one commentator stated:

> It is the scope of the words "the party" which leave doubt as to the meaning of the passage. If "the party" refers *only* to the party proffering the affidavit testimony, then the passage is fair since such party had the opportunity to use whatever documents it deemed favorable to its position. But if "the party" also encompasses the opponent, i.e., the cross-examining party not proffering the affidavit testimony, then the passage improperly restricts the scope of cross-examination. Surely, the proponent party cannot, simply by confining the affidavit to favorable documents, insulate the witness from cross-examination on unfavorable documents.

Section 1.672(b) refers to a "party" and an "opponent." The "party" is the party filing the affidavit and not an opponent of that party. Any "opponent" conducting cross-examination of an affiant may properly rely on documents and things not referred to in the affidavit.

One comment suggested that the language "a witness whose testimony will not be compelled under 35 U.S.C. 24" should be deleted or revised. According to the commentator:

> This is often not determinable in advance. Even a "voluntary" witness may develop cold feet and require a subpoena, or demand one for his own protection. Nor will all witnesses agreeable to affidavits be agreeable to depositions.

The suggestion is not being adopted. An affidavit may be used only when a witness agrees to sign the affidavit. If an individual refuses to sign an affidavit or voluntarily appear at a deposition, the party calling the witness will have to compel attendance at a deposition by a subpoena under 35 U.S.C. §24 after receiving permission from an examiner-in-chief.

One comment asked why there is "no express provision . . . [in the rules] for simply taking appropriate testimony of an adverse party by notice . . . rather than requiring a subpoena?" In many cases, notice will be sufficient inasmuch as an examiner-in-chief or the Board may generally order an adverse party to appear and give testimony. Thus, in many cases a subpoena is not needed to require attendance at a deposition of an adverse party.

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Two comments suggested that a time be set out in the rules by which an affidavit should be filed. The suggestion is being adopted and the second sentence of §1.672(b) has been changed to provide that affidavits shall be filed prior to the close of the party's relevant testimony period. The two comments also suggested that the rules specify that documents relied upon in an affidavit be filed with the affidavit. This suggestion is also being adopted by an appropriate change to §1.672(b) which will provide that a party cannot rely on any document referred to in an affidavit unless a copy of the document is filed with the affidavit. Any document filed with an affidavit must also be served (§1.646). Section 1.672(b) will also provide that a party may not rely on any "thing" mentioned in an affidavit unless the opponent is given reasonable access to the "thing." A "thing" is something other than a document. The comments had suggested that the "things" be limited to those under the possession, custody, or control of the party submitting the affidavit. This suggestion is not being adopted. If a "thing" is not under the possession, custody, or control of a party, the party should resort the use of a deposition and compel production of the "thing" by a subpoena under 35 U.S.C. §24.

Four comments were received discussing §1.673. It was suggested that the time for service under §1.673(b) be three days if service is accomplished by hand or "Express Mail" and ten days if service is accomplished by any other means. This suggestion is being adopted. An appropriate change has been made in the introductory sentence of §1.673(b). It was also suggested that the word "copy" in §1.673(b)(1) be changed to read "list and copy". In support of the suggestion, one commentator states:

> In connection with the service of documents, the amendment to the proposed rule would require that a listing of documents accompany the documents themselves. This would permit cross-checking between lists and documents to ascertain whether or not discrepancies exist and reduce the possibility for later controversy.

The suggestion is being adopted. Under §1.673(b)(1) a list of the documents would have to accompany the documents. One comment suggested that documents served should be "Bates numbered." While this suggestion is not being adopted in the sense of changing the language of a rule, it must be remembered that the party serving documents may be required to later prove exactly what was served. Using "Bates" numbers or an equivalent scheme may prove invaluable in later stages of an interference.

One comment discussing §1.682 suggested that the language "not identified on the record during the taking of testimony of a witness" be deleted. This suggestion is not being adopted. If an official record or printed publication is made an exhibit during a deposition or in an affidavit, it need not be submitted under §1.682. Section 1.682 permits a party to make an official record or printed publication part of the evidence being considered at final hearing without calling a witness. The official record or printed publication must, however, be self-authenticating. On the other hand, a party may present the official record or printed publication as an exhibit during testimony. When this latter course is followed, there is no need to take advantage of the provisions of §1.682. The comment also suggested that a change be made in §1.682(a)(4) because the requirement therein for a "certified" copy appeared to be inconsistent with §1.671(d) which provides that a record of the PTO need not be certified. The suggestion is being adopted by adding "where appropriate" at the beginning of §1.682(a)(4) and a reference to §1.671(d) at the end of §1.682(a)(4). If the official record is not a record of the PTO, it will be necessary to submit a certified copy of the official record.

Comments were received discussing §1.684. One comment suggested that language be inserted in §1.684(a) to make clear that the testimony authorized is for a case-in-chief or a case-in-rebuttal. The suggestion is not being adopted. The testimony authorized by §1.684(a) is necessarily testimony for a case-in-chief or a case-in-rebuttal. The commentator correctly notes that the use of written interrogatories under §1.684 "for cross-examination would seem neither appropriate or justified." Section 1.684 does not apply to cross-examination. If a party submits an affidavit under §1.672(b) or intends to rely on an affidavit under §1.617(e), the party must make the affiant available for cross-examination at a deposition. See §1.673(e). A deposition may be noticed only "for a reasonable time and place in the United States." See §1.673(a). Accordingly, it is not expected that §1.684(a) will be used to cross-examine affiants residing in foreign countries. The party filing the affidavit will be required to make the affiant available for cross-examination in the United States.

One comment suggested that the provisions of §1.685(d) are "harsher" than the corresponding provisions of 37 CFR §1.285(c). The comment is not fully understood. Section 1.685(d) requires an objection to be stated on the record. An objection to the admissibility of evidence must be stated on the record *and* a motion under §1.656(h) renewing the objection at final hearing must be filed. No longer will a party be permitted to attend a deposition and fail to enter an objection only to raise the objection at final hearing. The current practice permits a party to delay the objection until it is often too late to permit an opponent to correct the evidentiary basis on which the objection is bottomed.

One comment suggested that the second sentence of §1.687(b) ("If the witness refuses to produce a requested document or thing, the party may file a motion (§1.635) for additional discovery under paragraph (c) of this section.") be deleted. This suggestion is being adopted. The PTO agrees with the following remark by the commentator: "[o]mission of the sentence is recommended since it is clear from [paragraph] (c) [of §1.687] that such a motion could be made in an appropriate case."

One comment at the hearing suggested that the PTO's inability to enter protective orders makes discovery unduly complicated. The commentator suggested that under §1.687(c), as set out in the notice of proposed rulemaking, it is possible to obtain appropriate protective orders. The commentator correctly concedes that the maximum sanction which the PTO can enter upon a proven violation of a PTO entered protective order is judgment. See §1.616. The commentator suggested, however, that additional discovery may be conditioned on the issuance of a subpoena *duces tecum* under 35 U.S.C. §24. Upon issuance of the subpoena, the commentator stated that the opponent could move the district court for entry of a protective order. If a party violates a protective order entered by a district court, the party would be subject to such sanctions as the district court might deem appropriate as well as a sanction by the PTO, including entry of judgment against the party. The PTO, unlike the district court, would not be able to apply a sanction after an interference is terminated.

The commentator's suggestion is believed to be sound. No change in the language of §1.687(b) is believed to be necessary inasmuch as paragraph (b) authorizes the PTO to "specify the terms of conditions of such additional discovery." One of those terms could be requiring a party to issue a subpoena under 35 U.S.C. §24. By making a party proceed in the first instance in the PTO, appropriate PTO orders may be entered suggesting the scope of any protective order and stating the underlying basis for requiring a party to produce documents. The order could be of assistance to the district court in subsequent enforcement or contempt proceedings.

Additional discovery obtained under a protective order issued by either the PTO or a district court will not be admitted in evidence in the PTO in determining the interference. All evidence submitted in an interference must be made available to the public under the provisions of §1.11(a). Accordingly, any protective orders have to be vacated before a document could be admitted in evidence in the PTO which is subject to a protective order.

Example 38 illustrates how the practice would work.

Example 38: An interference involves party X and party Y. During the interference, party X files a motion for additional discovery under §1.687(c) asking that party Y be required to produce certain documents. Party Y opposes on the sole ground that the documents contain trade secret and confidential information. Party Y indicates that it has no objection to producing the documents for inspection by counsel for party X, but insists that party X not be permitted to inspect the documents. Accordingly, party Y asks the examiner-in-chief to authorize the discovery subject to entry of a protective order. Party Y argues, however, that the sanctions of §1.616 are not sufficient in the event of a violation of the protective order. An examiner-in-chief concludes that additional discovery should be ordered, that a protective order is appropriate, and that the sanctions of §1.616 are not sufficient in the event of a violation of the protective order. Under the circumstances, the examiner-in-chief would enter an order directing party Y to produce the documents for inspection by counsel of party X on the condition that party X seek production of the documents by a subpoena *duces tecum* under 35 U.S.C. §24. Upon issuance of any subpoena, party Y could move the district court for entry of a protective order. If the district court enters the protective order, party Y can produce the documents to counsel for party X. If the protective order of the examiner-in-chief is violated, an appropriate sanction up to and including judgment may be entered by the Board. In addition, party Y would be in a position to seek contempt or other sanctions in the district court. The documents produced for inspection by counsel for party X could not be admitted in evidence in the interference (until the protective order is vacated), because those documents are not documents which can be made available to the public under §1.11(a).

The following is an anticipated time schedule for a two-party interference:

Event in Interference	Time from last event in the interference	Total time in interference
Interference declared (1.611)		
Filing of preliminary statements (1.621) and preliminary motions (1.633)	3 months	3 months
Filing oppositions to preliminary motions (1.638(a))	2/3 month	3-2/3 months
Filing replies to oppositions (1.638(b))	2/3 month	4-1/3 months
Decision on preliminary motions (1.640(b)(1)), open preliminary statements (1.631), set times for filing motions for discovery (1.687(c) and testimony (1.651(a))	1 month	5-1/3 months
Filing of motions for discovery (1.635, 1.651(a), 1.687(c))	1 month	6-1/3 months
Filing of opposition to motion for discovery (1.638(a))	2/3 months	7 months
Filing reply to opposition to motion for discovery (1.638(b))	2/3 months	7-2/3 months
Decision on motion for discovery	2/3 months	8-1/3 months
Time for compliance with any discovery	2/3 months	9 months
Junior party testimony (case-in-chief; 1.672(b)):		
Testimony	2 months	11 months
Senior party cross-examination of affiants if needed	1 month	12 months
Senior party testimony (case-in-chief and case-in-rebuttal, 1.672(b)):		
Testimony	2 months	13-2/3 months
Junior party cross-examination of affiants if needed	1 month	14-2/3 months
Junior party testimony (case-in-rebuttal):		
Testimony	2/3 month	16 months
Senior party cross- examination of affiants if needed	2/3 month	16-2/3 months
Filing of record (1.653(c))	1-1/3 months	18 months
Brief for junior party (1.656)	1 month	19 months
Brief for senior party (1.656)	1 month	20 months
Reply brief for junior party (1.656)	2/3 month	20-2/3 months
Final hearing (1.654)	1 month	21-2/3 months
Decision (1.658)	2 months	23-2/3 months

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The following is an index for §§1.601 through 1.688:

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§1.603 Interference between applications; subject matter of the interference
§1.604 Request for interference between applications by an applicant
§1.605 Suggestion of claim to applicant by examiner
§1.606 Interference between an application and a patent; subject matter of the interference
§1.607 Request by applicant for interference with patent
§1.608 Interference between an application and a patent; *prima facie* showing by applicant
§1.609 Preparation of interference papers by examiner
§1.610 Assignment of interference to examiner-in-chief, time period for completing interference
§1.611 Declaration of interference
§1.612 Access to applications
§1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent
§1.614 Jurisdiction over interference
§1.615 Suspension of *ex parte* prosecution
§1.616 Sanctions for failure to comply with rules or order
§1.617 Summary judgment against applicant
§1.618 Return of unauthorized papers
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§1.622 Preliminary statement, who made invention, where invention made
§1.623 Preliminary statement; invention made in United States
§1.624 Preliminary statement; invention made abroad
§1.625 Preliminary statement; derivation by an opponent
§1.626 Preliminary statement; earlier application
§1.627 Preliminary statement, sealing before filing, opening of statement
§1.628 Preliminary statement, correction of error
§1.629 Effect of preliminary statement
§1.630 Reliance on earlier application
§1.631 Access to preliminary statement, service of preliminary statement
§1.632 Notice of intent to argue abandonment, suppression, or concealment by opponent
§1.633 Preliminary motions
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§1.640 Motions, hearing and decision, redeclaration of interference, order to show cause
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§1.675 Examination of witness, reading and signing transcript of deposition
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§1.677 Form of a transcript of deposition
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§1.683 Testimony in another interference, proceeding, or action
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§1.687 Additional Discovery
§1.688 Use of discovery

The following is a table correlating the present rules (37 CFR §1.201 through §1.288) to the rules (37 CFR §§1.601 through 1.688).

Rule Correlation Table

Old	New
1.201(a)	1.601(a)
1.201(b)	1.601(b), (c)
1.201(c)	1.602
1.202	none
1.203(a)	1.603(a), (b)
1.203(b)	1.605(a)
1.203(c)	1.605(b)
new	1.604(a)
1.203(d)	1.604(b)
1.204(a)	none
1.204(b)	1.608(b)
1.204(c)	1.608(c)
1.205(a)	1.606(a), (b)
1.205(b)	1.607(a), (c)
1.205(c)	1.607(d)
new	1.608(a)
1.206(a)	1.607(b)
1.207(a)	1.609
new	1.610
1.207(b)	1.611
1.208	1.613
1.211	1.614
1.212	1.615
new	1.616
1.228	1.617
new	1.618
1.215(a)	1.621(a)
1.215(b)	1.621(b)
1.215(c)	1.629(c)
1.216(a)	1.622(a), (b)
1.216(a)(1)–(6)	1.623(a)
1.216(b)	1.623(b), 1.624(b), 1.625(b)
1.216(c)	1.666
1.217(a)	1.624(a), 1.625(a)
1.217(b)	1.623(a)
1.218	1.621(a)
1.219	1.627
1.222	1.628
1.223	1.629
1.224	1.630
1.225	1.640(d), (e), and 1.651(c)(4)
1.226	1.612
1.227	1.631
new	1.632
1.231	1.633, 1.634
1.237	1.641
1.238	1.642
1.242	1.643
1.243	1.635, 1.636, 1.637(b) 1.638 through 1.640
1.244	1.644
1.245	1.645
1.246	1.645
1.247	1.646
1.248	1.646
new	1.647
1.251	1.651
1.252	1.652
1.253	1.653
1.254	1.656
1.255	1.656(c)
1.256	1.654
1.257(a)	1.657
1.257(b)	1.658(c), (d)
1.258	1.655
1.259	1.659
new	1.660
1.262	1.662(a)
1.263	1.662(a) and (d)
1.264	1.662(b) and (c)
new	1.662(e)
1.265	1.663
1.266	1.664
1.267	1.665
1.268	1.666
1.271	1.671
new	1.671(g)
1.272(a)	1.672(a), (b)
1.272(b)	1.672(c)
1.272(c)	1.672(d), (e)
1.273(a)	1.673(a), (c), (d),
new	1.673(e)
1.273(b)	1.673(f)
1.274	1.674
1.275	1.675
1.276	1.676
1.277	1.677
1.278	1.678
1.279	1.679
1.281	1.645
1.282	1.682
1.283	1.683
1.285	1.685
1.286	eliminated
1.287(a)(1)(i),(ii)	1.673(b)
1.287(a)(1)(iii)	1.673(a)
1.287(a)(2),(3)	eliminated
1.287(b)	eliminated
1.287(c)	1.687
1.287(d)(1)	1.673(c)
1.287(d)(2)	1.616
1.287(e)	1.687(d)
1.288	1.688

Other Considerations: These rules do not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rules are in conformity with the requirements of the (1) Regulatory Flexibility Act (Pub. L. 96–354), (2) Executive Order 12291, and (3) the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Small Business Administration that these rules will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act; Public Law 96–354). The rules govern the conduct of interference cases which arise in the Patent and Trademark Office. In fiscal 1983, the Patent and Trademark Office received 105,704 patent applications. During the same period, 180 interferences were declared. It is expected that the overall cost will be reduced for obtaining a patent based on application which become involved in an interference. See a "section-by-section" analysis submitted for the Record by Representative Kastenmeier during discussion of H. R. 6286 on the floor of the House in which the following statement appears (130 Cong. Rec. H10528, columns 2 and 3):

> it is expected that interferences will become simpler, more expeditious, and less costly. Under the bill, all issues of patentability and priority which arise in an interference can be decided in a single proceeding rather than in a series of complicated *inter partes* and *ex parte* proceedings.

These rules, therefore, will have no significant economic impact on small entities.

The Patent and Trademark Office has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy would be less than $100 million. There would be no major increase in costs or prices for consumers, individual industries, federal state, or local government agencies, or geographic regions. There would be no adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

These rules do not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Lawyers.

PART 1 — RULES OF PRACTICE IN PATENT CASES

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 23, 41, and 135, Part 1 of Title CFR is amended as set forth below.

1. Section 1.1 is amended by adding a new paragraph (e) to read as follows:

§1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

* * * * *

(e) Communications relating to interferences and applications or patents involved in an interference should be additionally marked "BOX INTERFERENCE."

2. Section 1.4 is amended by revising paragraph (a)(2) and reprinting the introductory text of paragraph (a) to read as follows:

§1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises:

* * * * *

(2) correspondence in and relating to a particular application or other proceeding in the Office. See particu-

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larly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§1.31 to 1.352; of international applications in Subpart C, §§1.401 to 1.482; of reexamination of patents in Subpart D, §§1.501 to 1.570; of interferences in Subpart E, §§1.601 to 1.688; and of trademark applications §§2.11 to 2.189.

* * * * *

3. Section 1.5 is amended by adding a new paragraph (e) to read as follows:

§1.5 Identification of application, patent or registration

* * * * *

(e) When a paper concerns an interference, it should state the names of the parties and the number of the interference. The name of the examiner-in-chief assigned to the interference (§1.610) and the name of the party filing the paper should appear conspicuously on the first page of the paper.

4. Section 1.8 is amended by adding to paragraph (a) a new subparagraph (xii) to read as follows:

§1.8 Certificate of mailing.

* * * * *

(xii) The filing of a paper in an interference which an examiner-in-chief orders to be filed by hand or "Express Mail."

* * * * *

5. Section 1.9 is amended by adding a new paragraph (g) to read as follows:

§1.9 Definitions.

* * * * *

(g) For definitions in interferences see §1.601.

6. Section 1.11 is amended by revising paragraph (a) to read as follows:

§1.11 Files open to the public.

(a) After a patent has been issued, the specification, drawings and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies may be obtained upon paying the fee therefor. After entry of a judgment in an interference by the Board of Patent Appeals and Interferences as to all parties, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies. See §2.27 for trademark files.

* * * * *

7. Section 1.14 is amended by removing from paragraph (d) the words "Board of Patent Appeals or the Board of Patent Interferences" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

8. Section 1.17 is amended by revising paragraphs (e), (g), (h), and (l) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity (§1.9(f))	$ 57.50
By other than a small entity	115.00

* * * * *

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in appeal under 35 U.S.C. §134:

By a small entity (§1.9(f))	$ 50.00
By other than a small entity	100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph $120.00

— §1.47 — for filing by other than all the inventors or a person not the inventor
— §1.48 — for correction of inventorship
— §1.182 — for decision on questions not specifically provided for
— §1.183 — to suspend the rules
— §1.377 — for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent
— §1.378(e) — for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent
— §1.644(e) — for petition in an interference
— §1.644(f) — for request for reconsideration of a decision on petition in an interference.
— §1.666(c) — for late filing of interference settlement agreement.
— §§5.12, 5.13 & 5.14 — for expedited handling of foreign filing license
— §5.15 — for changing the scope of a license
— §5.25 — for retroactive license

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph ..... $ 60.00

— §1.12 — for access to an assignment record
— §1.14 — for access to an application
— §1.55 — for entry of late priority papers
— §1.102 — to make application special
— §1.103 — to suspend action in application
— §1.177 — for divisional reissues to issue separately
— §1.312 — for amendment after payment of issue fee
— §1.313 — to withdraw an application from issue
— §1.314 — to defer issuance of a patent
— §1.334 — for patent to issue to assignee, assignment recorded late
— §1.666(b) — for access to interference settlement agreement

* * * * *

9. Section 1.36 is revised as follows:

§1.36 Revocation of power of attorney or authorization; withdrawal of attorney or agent.

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of the power of attorney or authorization, and the applicant or patent owner will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of the assignee's own selection. See §1.613(d) for withdrawal of an attorney or agent of record in an interference.

10. Section 1.48 is revised as follows:

§1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (a) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (b) an oath or declaration by each actual inventor or inventors as required by §1.63; (c) the fee set forth in §1.17(h); and (d) the written consent of any assignee. When the application is involved in an interference, the petition shall comply with the requirements of this section and shall be accompanied by a motion under §1.634.

11. Section 1.55 is amended by removing from paragraph (a) "1.224" and inserting, in its place, "1.630".

12. Section 1.59 is revised as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost of any application in which either the required basic filing fee (§1.16) or the processing and retention fee (§1.21(l)) has been paid. See §1.618 for return of unauthorized and improper papers in interferences.

13. Section 1.68 is revised as follows:

§1.68 Declaration in lieu of oath.

Any document to be filed in the Patent and Trademark Office and which is required by any law, rule, or other regulation to be under oath may be subscribed to by a written declaration. Such declaration may be used in lieu of the oath otherwise required, if, and only if, the declarant is on the same document, warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. The declarant must set forth in the body of the declaration that all statements made of the declarant's own knowledge are true and that all statements made on information and belief are believed to be true.

14. Section 1.103 is amended by revising paragraph (d) as follows:

§1.103 Suspension of action.

* * * * *

(d) Action on applications in which the Office has accepted a request filed under §1.139 will be suspended for the entire pendency of these applications except for purposes relating to interference proceedings under §§1.601 through 1.688.

15. Section 1.122 is amended by revising paragraph (b) as follows:

§1.122 Entry and consideration of amendments.

* * * * *

(b) Ordinarily all amendments presented in a paper filed while the application is open to amendment are entered and considered, subsequent cancellation or correction being required of improper amendments. Untimely amendatory papers may be refused entry and consideration in whole or in part. For amendments presented during an interference see §1.664.

16. Section 1.136 is amended by removing "§1.207" and inserting, in its place, "§1.611" and by removing "§1.245" and inserting, in its place, "§1.645".

17. Section 1.138 is revised as follows:

§1.138 Express Abandonment.

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant and the assignee of record, if any, and identifying the application. An application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. A registered attorney or agent acting under the provision of §1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

18. Section 1.181 is amended by revising paragraph (a) as follows:

§1.181 Petition to the Commissioner.

(a) Petition may be taken to the Commissioner: (1) from any action or requirement of any examiner in the *ex parte* prosecution of an application which is not subject to appeal to the Board of Patent Appeals and Interferences or to the court; (2) in cases in which a statute or the rules specify that the matter is to be determined directly by or reviewed by the Commissioner; and (3) to invoke the supervisory authority of the Commissioner in appropriate circumstances. For petitions in interferences, see §1.644.

* * * * *

19. The center heading preceding §1.191 is revised to read "APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES".

20. Section 1.191 is amended by revising the section heading and paragraphs (a) and (c) as follows:

§1.191 Appeal to Board of Patent Appeals and Interferences.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected or who has been given a final rejection (§1.113), may, upon the payment of the fee set forth in §1.17(e), appeal from the decision of the examiner to the Board of Patent Appeals and Interferences within the time allowed for response.

* * * * *

(c) An appeal when taken must be taken from the rejection of all claims under rejection which the applicant or patent owner proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

* * * * *

21. Section 1.194 is amended by removing the words "Board of Appeals" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

22. Section 1.196 is revised as follows:

§1.196 Decision by the Board of Patent Appeals and Interferences.

(a) The Board of Patent Appeals and Interferences, in its decision, may affirm or reverse the decision of the examiner in whole or in part on the grounds and on the claims specified by the examiner. The affirmance of the rejection of a claim on any of the grounds specified constitutes a general affirmance of the decision of the examiner on that claim, except as to any ground specifically reversed.

(b) Should the Board of Patent Appeals and Interferences have knowledge of any grounds not involved in the appeal for rejecting any appealed claim, it may include in the decision a statement to that effect with its reasons for so holding, which statement shall constitute

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a new rejection of the claims. When the Board of Patent Appeals and Interferences makes a new rejection of an appealed claim, the appellant may exercise any one of the following three options:

(1) The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the examiner in which event the application will be remanded to the examiner and the decision of the Board of Patent Appeals and Interferences shall not be considered final for the purpose of judicial review. The statement shall be binding upon the examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the examiner, overcomes the new ground for rejection stated in the decision. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

(2) The appellant may have the case reconsidered under §1.197(b) by the Board of Patent Appeals and Interferences upon the same record. Where request for such reconsideration is made the Board of Patent Appeals and Interferences shall, if necessary, render a new decision which shall include all grounds upon which a patent is refused.

(3) The appellant may treat the decision, including the new grounds for rejection given by the Board of Patent Appeals and Interferences, as a final decision in the case.

(c) Should the decision of the Board of Patent Appeals and Interferences include an explicit statement that a claim may be allowed in amended form, appellant shall have the right to amend in conformity with such statement which shall be binding on the examiner in the absence of new references or grounds of rejection.

(d) Although the Board of Patent Appeals and Interferences normally will confine its decision to a review of rejections made by the examiner, should it have knowledge of any grounds for rejecting any allowed claim it may include in its decision a recommended rejection of the claim and remand the case to the examiner. In such event, the Board shall set a period, not less than one month, within which the appellant may submit to the examiner an appropriate amendment, a showing of facts or reasons, or both, in order to avoid the grounds set forth in the recommendation of the Board of Patent Appeals and Interferences. The examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection. Should the examiner make the recommended rejection final the applicant may again appeal to the Board of Patent Appeals and Interferences. Whenever a decision of the Board of Patent Appeals and Interferences includes a remand, that decision shall not be considered a final decision. When appropriate, upon conclusion of proceedings on remand before the examiner, the Board of Patent Appeals and Interferences may enter an order otherwise making its decision final.

23. Section 1.197 is amended by revising paragraphs (a) and (b) as follows:

§1.197 Action following decision.

(a) After decision by the Board of Patent Appeals and Interferences, the case shall be returned to the examiner, subject to the appellant's right of appeal or other review, for such further action by the appellant or by the examiner, as the condition of the case may require, to carry into effect the decision.

(b) A single request for reconsideration or modification of the decision may be made if filed within one month from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Patent Appeals and Interferences so states.

* * * * *

24. Section 1.198 is amended by removing the words "Board of Appeals" and inserting, in their place, the words "Board of Patent Appeals and Interferences."

25. The center heading preceding §1.201 is removed.

26. Sections 1.201 through 1.212 are removed.

27. The center heading preceding §1.215 is removed.

28. Sections 1.215 through 1.228 are removed.

29. The center heading preceding §1.231 is removed.

30. Sections 1.231 through 1.238 are removed.

31. The center heading preceding §1.242 is removed.

32. Sections 1.242 through 1.247 are removed.

33. A center heading preceding §1.248 is added which reads "MISCELLANEOUS PROVISIONS".

34. Section 1.248 is amended by adding paragraph (c) and revising the section heading as follows:

§1.248 Service of Papers; manner of service; proof of service in cases other than interferences.

* * * * *

(c) See §1.646 for service of papers in interferences.

35. The center heading preceding §1.251 is removed.

36. Sections 1.251 through 1.259 are removed.

37. The center heading preceding §1.261 is removed.

38. Sections 1.261 through 1.268 are removed.

39. The center heading preceding §1.271 is removed.

40. Sections 1.271 through 1.288 are removed.

41. Section 1.292 is amended by revising paragraph (a) and adding paragraph (c) as follows:

§1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in §1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the examiner, to make a *prima facie* showing that the invention claimed in an application believed to be on file had been in public use or on sale more than one year before the filing of the application, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, the Commissioner may designate an appropriate official to conduct the public use proceeding, including the setting of times for taking testimony, which shall be taken as provided by §§1.671 through 1.685. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

* * * * *

(c) A petition for institution of public use proceedings shall not be filed by a party to an interference as to an application involved in the interference. Public use and on sale issues in an interference shall be raised by a preliminary motion under §1.633(a).

42. Section 1.301 is amended by removing the words "Board of Appeals" and the words "Board of Patent Interferences" and inserting, in each of their places, the words "Board of Patent Appeals and Interferences."

43. Section 1.302 is amended by removing from paragraph (b) "1.248" and inserting, in its place, "1.646" and by removing "and other contested cases".

44. Section 1.303 is amended by removing from paragraph (a) the words "Board of Appeals" and the words "Board of Patent Interferences" and inserting, in each of their places, the words "Board of Patent Appeals and Interferences" and by removing from paragraph (c) "1.248" and inserting, in its place, "1.646". 45. Section 1.304 is amended by revising paragraph (a) as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Patent Appeals and Interferences. If a request for reconsideration or modification of the decision is filed within the time provided under §1.197(b) or §1.658(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. Except for an appeal from or commencing a civil action after a decision of the Board of Patent Appeals and Interferences in a reexamination proceeding or an interference proceeding, the time periods set forth herein are subject to the provisions of §1.136. See §1.550(c) for extensions of time to appeal or commence a civil action in a reexamination proceeding. See §1.645(a) for extensions of time to appeal or commence a civil action in an interference. An examiner-in-chief, upon a showing of excusable neglect, may extend the time for seeking judicial review of a decision of the Board of Patent Appeals and Interferences in an interference case when a request is untimely filed after expiration of the time prescribed by this section.

* * * * *

46. Section 1.322 is amended by revising paragraph (a) as follows:

§1.322 Certificate of correction of Office mistake.

(a) A certificate of correction under 35 U.S.C. 254 may be issued at the request of the patentee or the patentee's assignee. Such certificate will not be issued at the request or suggestion of anyone not owning an interest in the patent, nor on motion of the Office, without first notifying the patentee (including any assignee of record) and affording the patentee an opportunity to be heard. When the request relates to a patent involved in an interference, the request shall comply with the requirements of this section and shall be accompanied by a motion under §1.635.

* * * * *

47. Section 1.323 is revised as follows:

§1.323 Certificate of correction of applicant's mistake.

Whenever a mistake of a clerical or typographical nature or of minor character which was not the fault of the Office, appears in a patent and a showing is made that such mistake occurred in good faith, the Commissioner may, upon payment of the fee set forth in §1.20(a), issue a certificate, if the correction does not involve such changes in the patent as would constitute new matter or would require reexamination. A request for a certificate of correction of a patent involved in an interference shall comply with the requirements of this section and shall be accompanied by a motion under §1.635.

48. Section 1.324 is revised as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or inventors were not named through error without deceptive intention on the part of the actual inventor or inventors, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors. A request to correct inventorship of patent involved in an interference shall comply with the requirements of this section and shall be accompanied by a motion under §1.634.

49. Section 1550 is amended by removing from paragraph (a) "Board of Appeals" and inserting, in its place, "Board of Patent Appeals and Interferences."

50. Section 1.565 is amended by revising paragraph (b) and adding paragraph (e) as follows:

§1.565 Concurrent office proceedings.

* * * * *

(b) If a patent in the process of reexamination is or becomes involved in litigation or a reissue application for the patent is filed or pending, the Commissioner shall determine whether or not to stay the reexamination or reissue proceeding.

* * * * *

(e) If a patent in the process of reexamination is or becomes involved in an interference, the Commissioner may stay reexamination or the interference. The Commissioner will not consider a request to stay an interference unless a motion (§1.635) to stay the interference has been presented to, and denied by, an examiner-in-chief and the request is filed within ten (10) days of a decision by an examiner-in-chief denying the motion for a stay or such other time as the examiner-in-chief may set.

51. A new subpart entitled "Subpart E—Interferences" is added which reads as follows:

SUBPART E—INTERFERENCES

Sec.	
1.601	Scope of rules, definitions
1.602	Interest in applications and patents involved in interference
1.603	Interference between applications; subject matter of the interference
1.604	Request for interference between applications by an applicant
1.605	Suggestion of claim to applicant by examiner
1.606	Interference between an application and a patent; subject matter of the interference
1.607	Request by applicant for interference with patent
1.608	Interference between an application and a patent; *prima facie* showing by applicant
1.609	Preparation of interference papers by examiner
1.610	Assignment of interference to examiner-in-chief, time period for completing interference
1.611	Declaration of interference
1.612	Access to applications
1.613	Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent
1.614	Jurisdiction over interference
1.615	Suspension of ex parte prosecution
1.616	Sanctions for failure to comply with rules or order
1.617	Summary judgment against applicant
1.618	Return of unauthorized papers
1.621	Preliminary statement, time for filing, notice of filing
1.622	Preliminary statement, who made invention, where invention made
1.623	Preliminary statement; invention made in United States
1.624	Preliminary statement; invention made abroad
1.625	Preliminary statement; derivation by an opponent
1.626	Preliminary statement; earlier application
1.627	Preliminary statement, sealing before filing, opening of statement
1.628	Preliminary statement, correction of error
1.629	Effect of preliminary statement
1.630	Reliance on earlier application
1.631	Access to preliminary statement, service of preliminary statement
1.632	Notice of intent to argue abandonment, suppression, or concealment by opponent Preliminary motions
1.634	Motion to correct inventorship
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1.636 Motions, time for filing
1.637 Content of motions
1.638 Opposition and reply, time for filing opposition and reply
1.639 Evidence in support of motion, opposition, or reply
1.640 Motions, hearing and decision, redeclaration of interference, order to show cause
1.641 Unpatentability discovered by examiner-in-chief
1.642 Addition of application or patent to interference
1.643 Prosecution of interference by assignee
1.644 Petitions in interference
1.645 Extension of time, late papers, stay of proceedings
1.646 Service of papers, proof of service
1.647 Translation of document in foreign language
1.651 Setting times for discovery and taking testimony, parties entitled to take testimony
1.652 Judgment for failure to take testimony or file record
1.653 Record and exhibits
1.654 Final hearing
1.655 Matters considered in rendering a final decision
1.656 Briefs for final hearing
1.657 Burden of proof as to date of invention
1.658 Final decision
1.659 Recommendation
1.660 Notice of reexamination, reissue, protest, or litigation
1.661 Termination of interference after judgment
1.662 Request for entry of adverse judgment; reissue filed by patentee
1.663 Status of claim of defeated applicant after interference
1.664 Action after interference
1.665 Second interference
1.666 Filing of interference settlement agreements
1.671 Evidence must comply with rules
1.672 Manner of taking testimony
1.673 Notice of examination of witness
1.674 Persons before whom depositions may be taken
1.675 Examination of witness, reading and signing transcript of deposition
1.676 Certification and filing by officer, marking exhibits
1.677 Form of a transcript of deposition
1.678 Transcript of deposition must be filed
1.679 Inspection of transcript
1.682 Official records and printed publications
1.683 Testimony in another interference, proceeding, or action
1.684 Testimony in a foreign country
1.685 Errors and irregularities in depositions
1.687 Additional Discovery
1.688 Use of discovery

Authority: 35 USC 6, 23, 41, and 135

SUBPART E — Interferences

§1.601 Scope of rules, definitions.

This subpart governs the procedure in patent interferences in the Patent and Trademark Office. This subpart shall be construed to secure the just, speedy, and inexpensive determination of every interference. For the meaning of terms in the Federal Rules of Evidence as applied to interferences, see §1.671(c). Unless otherwise clear from the context, the following definitions apply to this subpart:

(a) "Additional discovery" is discovery to which a party may be entitled under §1.687 in addition to discovery to which the party is entitled as a matter of right under §1.673(a) and (b).

(b) "Affidavit" means affidavit, declaration under §1.68, or statutory declaration under 28 U.S.C. §1746. A transcript of an *ex parte* deposition may be used as an affidavit.

(c) "Board" means the Board of Patent Appeals and Interferences.

(d) "Case-in-chief" means that portion of a party's case where the party has the burden of going forward with evidence.

(e) "Case-in-rebuttal" means that portion of a party's case where the party presents evidence in rebuttal to the case-in-chief of another party.

(f) A "count" defines the interfering subject matter between (1) two or more applications or (2) one or more applications and one or more patents. When there is more than one count, each count shall define a separate patentable invention. Any claim of an application or patent which corresponds to a count is a claim involved in the interference within the meaning of 35 U.S.C. §135(a). A claim of a patent or application which is identical to a count is said to "correspond exactly" to the count. A claim of a patent or application which is not identical to a count, but which defines the same patentable invention as the count, is said to "correspond substantially" to the count. When a count is broader in scope than all claims which correspond to the count, the count is a "phantom count." A phantom count is not patentable to any party.

(g) The "effective filing date" of an application or a patent is the filing date of an earlier application accorded to the application or patent under 35 U.S.C. §§119, 120, or 365.

(h) In the case of an application, "filing date" means the filing date assigned to the application. In the case of a patent, "filing date" means the filing date assigned to the application which issued as the patent.

(i) An "interference" is a proceeding instituted in the Patent and Trademark Office before the Board to determine any question of patentability and priority of invention between two or more parties claiming the same patentable invention. An interference may be declared between two or more pending applications naming different inventors when, in the opinion of an examiner, the applications contain claims for the same patentable invention. An interference may be declared between one or more pending applications and one or more unexpired patents naming different inventors when, in the opinion of an examiner, any application and any unexpired patents contain claims for the same patentable invention.

(j) An "interference-in-fact" exists when at least one claim of a party which corresponds to a count and at least one claim of an opponent which corresponds to the count define the same patentable invention.

(k) A "lead" attorney or agent is a registered attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the attorney or agent whom an examiner-in-chief may contact to set times and take other action in the interference.

(l) A "party" is (1) an applicant or patentee involved in the interference or (2) a legal representative or an assignee of an applicant or patentee involved in an interference. Where acts of a party are normally performed by an attorney or agent, "party" may be construed to mean the attorney or agent. An "inventor" is the individual named as inventor in an application involved in an interference or the individual named as inventor in a patent involved in an interference.

(m) A "senior party" is the party with earliest effective filing date as to all counts or, if there is no party with the earliest effective filing date as to all counts, the party with the earliest filing date. A "junior party" is any other party.

(n) Invention "A" is the "same patentable invention" as a invention "B" when invention "A" is the same as (35 U.S.C. §102) or is obvious (35 U.S.C. §103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A". Invention "A" is a "separate patentable invention" with respect to invention "B" when invention "A" is new (35 U.S.C. §102) and nonobvious (35 U.S.C. §103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A".

(o) "Sworn" means sworn or affirmed.

(p) "United States" means the United States of America, its territories and possessions.

§1.602 Interest in applications and patents involved in an interference.

(a) Unless good cause is shown, an interference shall not be declared or continued between (1) applications owned by a single party or (2) applications and an unexpired patent owned by a single party.

(b) The parties, within 20 days after an interference is declared, shall notify the Board of any and all right, title, and interest in any application or patent involved or relied upon in the interference unless the right, title, and interest is set forth in the notice declaring the interference.

(c) If a change of any right, title, and interest in any application or patent involved or relied upon in the interference occurs after notice is given declaring the interference and before the time expires for seeking judicial review of a final decision of the Board, the parties shall notify the Board of the change within 20 days of the change.

§1.603 Interference between applications; subject matter of the interference.

Before an interference is declared between two or more applications, the examiner must be of the opinion that there is interfering subject matter claimed in the applications which is patentable to each applicant subject to a judgment in the interference. The interfering subject matter shall be defined by one or more counts. Each count shall define a separate patentable invention. Each application must contain, or be amended to contain, at least one claim which corresponds to each count. All claims in the applications which define the same patentable invention as a count shall be designated to correspond to the count.

§1.604 Request for interference between applications by an applicant.

(a) An applicant may seek to have an interference declared with an application of another by (1) suggesting a proposed count and presenting a claim corresponding to the proposed count, (2) identifying the other application and, if known, a claim in the other application which corresponds to the proposed count, and (3) explaining why an interference should be declared.

(b) When an applicant presents a claim known to the applicant to define the same patentable invention claimed in a pending application of another, the applicant shall identify that pending application, unless the claim is presented in response to a suggestion by the examiner. The examiner shall notify the Commissioner of any instance where it appears an applicant may have failed to comply with the provisions of this paragraph.

§1.605 Suggestion of claim to applicant by examiner.

(a) The examiner may suggest that an applicant present a claim in an application for the purpose of an interference with another application or a patent. The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim within a time specified by the examiner, not less than one month. Failure or refusal of an applicant to timely present the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim. At the time the suggested claim is presented, the applicant may also (1) call the examiner's attention to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims would be more appropriate to be included in any interference which may be declared.

(b) The suggestion of a claim by the examiner for the purpose of an interference will not stay the period for response to any outstanding Office action. When a suggested claim is timely presented, *ex parte* proceedings in the application will be stayed pending a determination of whether an interference will be declared.

§1.606 Interference between an application and a patent; subject matter of the interference.

Before an interference is declared between an application and an unexpired patent, an examiner must determine that there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in the interference. The interfering subject matter will be defined by one or more counts. Each count shall define a separate patentable invention. Any application must contain, or be amended to contain, at least one claim which corresponds to each count. All claims in the application and patent which define the same patentable invention as a count shall be designated to correspond to the count. At the time an interference is initially declared (§1.611), a count shall not be narrower in scope than any patent claim which corresponds to the count and any single patent claim will be presumed, subject to a motion under §1.633(c), not to contain separate patentable inventions.

§1.607 Request by applicant for interference with patent.

(a) An applicant may seek to have an interference declared between an application and an unexpired patent by (1) presenting a proposed count and a claim corresponding to the proposed count and, if any claim of the patent or application does not correspond exactly to the proposed count, explaining why an interference should be declared, (2) identifying the patent and indicating which claim in the application and which claim or claims of the patent correspond to the proposed count, and (3) applying the terms of the application claim corresponding to the count to the disclosure of the application.

(b) When an applicant seeks an interference with a patent, examination of the application, including any appeal to the Board, shall be conducted with special dispatch within the Patent and Trademark Office. The examiner shall determine whether there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in an interference. If the examiner determines that there is any interfering subject matter, an interference will be declared. If the examiner determines that there is no interfering subject matter, the examiner shall state the reasons why an interference is not being declared and otherwise act on the application.

(c) When an applicant presents a claim which corresponds exactly or substantially to a claim of a patent, the applicant shall identify the patent and the number of the patent claim, unless the claim is presented in response to a suggestion by the examiner. The examiner shall notify the Commissioner of any instance where an applicant fails to identify the patent.

(d) A notice that an applicant is seeking to provoke an interference with a patent will be placed in the file of the patent and a copy of the notice will be sent to the patentee. The identity of the applicant will not be disclosed unless an interference is declared. If a final decision is made not to declare an interference, a notice to that effect will be placed in the patent file and will be sent to the patentee.

§1.608 Interference between an application and a patent; *prima facie* showing by applicant.

(a) When the earlier of the filing date or effective filing date of an application is three months or less after the earlier of the filing date or effective filing date of a

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patent, the applicant, before an interference will be declared, shall file an affidavit alleging that there is a basis upon which applicant is entitled to a judgment relative to the patentee.

(b) When the earlier of the filing date or the effective filing date of an application is more than three months after the earlier of the filing date or the effective filing date under 35 U.S.C. §120 of a patent, the applicant, before an interference will be declared, shall file (1) evidence which may consist of patents or printed publications, other documents, and one or more affidavits which demonstrate that applicant is *prima facie* entitled to a judgment relative to the patentee and (2) an explanation stating with particularity the basis upon which the applicant is *prima facie* entitled to the judgment. Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the earlier of the filing date or effective filing date of the patent. To facilitate preparation of a record (§1.653(g) and (h)) for final hearing, an applicant should file affidavits on paper which is 8-1/2× 11 inches (21.8 by 27.9 cm.). The significance of any printed publication or other document which is self-authenticating within the meaning of Rule 902 of the Federal Rules of Evidence or §1.671(d) and any patent shall be discussed in an affidavit or the explanation. Any printed publication or other document which is not self-authenticating shall be authenticated and discussed with particularity in an affidavit. Upon a showing of sufficient cause, an affidavit may be based on information and belief. If a examiner finds an application to be in condition for declaration of an interference, the examiner will consider the evidence and explanation only to the extent of determining whether a basis upon which the applicant would be entitled to a judgment relative to the patentee is alleged and, if a basis is alleged, an interference may be declared.

§1.609 Preparation of interference papers by examiner.

When the examiner determines that an interference should be declared, the examiner shall forward to the Board:

(a) All relevant application and patent files and
(b) A statement identifying:
(1) The proposed count or counts;
(2) The claims of any application or patent which correspond to each count, stating whether the claims correspond exactly or substantially to each count;
(3) The claims in any application which are deemed by the examiner to be patentable over any count; and
(4) Whether an applicant or patentee is entitled to the benefit of the filing date of an earlier application and, if so, sufficient information to identify the earlier application.

§1.610 Assignment of interference to examiner-in-chief, time period for completing interference.

(a) Each interference will be declared by an examiner-in-chief who may enter all interlocutory orders in the interference, except that only a panel consisting of at least three members of the Board shall (1) hear oral argument at final hearing, (2) enter a decision under §§1.617, 1.640(c) or (e), 1.652, 1.656(i) or 1.658 or (3) enter any other order which terminates the interference.

(b) As necessary, another examiner-in-chief may act in place of the one who declared the interference. Unless otherwise provided in this section, at the discretion of the examiner-in-chief assigned to the interference, a panel consisting of two or more members of the Board may enter interlocutory orders.

(c) Unless otherwise provided in this subpart, times for taking action by a party in the interference will be set on a case-by-case basis by the examiner-in-chief assigned to the interference. Times for taking action shall be set and the examiner-in-chief shall exercise control over the interference such that the pendency of the interference before the Board does not normally exceed two years.

(d) An examiner-in-chief may hold a conference with the parties to consider: (1) simplification of any issues, (2) the necessity or desirability of amendments to counts, (3) the possibility of obtaining admissions of fact and genuineness of documents which will avoid unnecessary proof, (4) any limitations on the number of expert witnesses, (5) the time and place for conducting a deposition (§1.673(g)), and (6) any other matter as may aid in the disposition of the interference. After a conference, the examiner-in-chief may enter any order which may be appropriate.

(e) The examiner-in-chief may determine a proper course of conduct in an interference for any situation not specifically covered by this part.

§1.611 Declaration of interference.

(a) Notice of declaration of an interference will be sent to each party.

(b) When a notice of declaration is returned to the Patent and Trademark Office undelivered, or in any other circumstance where appropriate, an examiner-in-chief may (1) send a copy of the notice to a patentee named in a patent involved in an interference or the patentee's assignee of record in the Patent and Trademark Office or (2) order publication of an appropriate notice in the *Official Gazette*.

(c) The notice of declaration shall specify:
(1) the name and residence of each party involved in the interference;
(2) the name and address of record of any attorney or agent of record in any application or patent involved in the interference;
(3) the name of any assignee of record in the Patent and Trademark Office;
(4) the identity of any application or patent involved in the interference;
(5) where a party is accorded the benefit of the filing date of an earlier application, the identity of the earlier application;
(6) the count or counts;
(7) the claim or claims of any application or any patent which correspond to each count; and
(8) the order of the parties.

(d) The notice of declaration may also specify the time for: (1) filing a preliminary statement as provided in §1.621(a); (2) serving notice that a preliminary statement has been filed as provided §1.621(b); and (3) filing preliminary motions authorized by §1.633, oppositions to the motions, and replies to the oppositions.

(e) Notice may be given in the *Official Gazette* that an interference has been declared involving a patent.

§1.612 Access to applications.

(a) After an interference is declared, each party shall have access to and may obtain copies of the files of any application set out in the notice declaring the interference, except for affidavits filed under §1.131 and any evidence and explanation under §1.608(b) filed separate from an amendment.

(b) After preliminary motions under §1.633 are decided (§1.640(b)), each party shall have access to and may obtain copies of any affidavit filed under §1.131 and any evidence and explanation filed under §1.608(b) in any application set out in the notice declaring the interference.

(c) Any evidence and explanation filed under §1.608(b) in the file of any application identified in the notice declaring the interference shall be served when required by §1.617(b).

(d) The parties at any time may agree to exchange copies of papers in the files of any application identified in the notice declaring the interference.

§1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent.

(a) Each party may be required to designate one attorney or agent of record as the lead attorney or agent.

(b) The same attorney or agent or members of the same firm of attorneys or agents may not represent two or more parties in an interference except as may be permitted under this Chapter.

(c) An examiner-in-chief may make necessary inquiry to determine whether an attorney or agent should be disqualified from representing a party in an interference. If an examiner-in-chief is of the opinion that an attorney or agent should be disqualified, the examiner-in-chief shall refer the matter to the Commissioner. The Commissioner will make a final decision as to whether any attorney or agent should be disqualified.

(d) No attorney or agent of record in an interference may withdraw as attorney or agent of record except with the approval of an examiner-in-chief and after reasonable notice to the party on whose behalf the attorney or agent has appeared. A request to withdraw as attorney or agent of record in an interference shall be made by motion (§1.635).

§1.614 Jurisdiction over interference.

(a) The Board shall assume jurisdiction over an interference when the interference is declared under §1.611.

(b) When the interference is declared the interference is a contested case within the meaning of 35 U.S.C. §24.

(c) The examiner shall have jurisdiction over any pending application until the interference is declared. An examiner-in-chief, where appropriate, may for a limited purpose restore jurisdiction to the examiner over any application involved in the interference.

§1.615 Suspension of *ex parte* prosecution.

(a) When an interference is declared, *ex parte* prosecution of an application involved in the interference is suspended. Amendments and other papers related to the application received during pendency of the interference to be entered or considered in the interference without the consent of an examiner-in-chief.

(b) *Ex parte* prosecution as to specified matters may be continued concurrently with the interference with the consent of the examiner-in-chief.

§1.616 Sanctions for failure to comply with rules or order.

An examiner-in-chief or the Board may impose an appropriate sanction against a party who fails to comply with the regulations of this part or any order entered by an examiner-in-chief or the Board. An appropriate sanction may include among others entry of an order:

(a) holding certain facts to have been established in the interference;
(b) precluding a party from filing a motion or a preliminary statement;
(c) precluding a party from presenting or contesting a particular issue;
(d) precluding a party from requesting, obtaining, or opposing discovery; or
(e) granting judgment in the interference.

§1.617 Summary judgment against applicant

(a) An examiner-in-chief shall review any evidence filed by an applicant under §1.608(b) to determine if the applicant is *prima facie* entitled to a judgment relative to the patentee. If the examiner-in-chief determines that the evidence shows the applicant is *prima facie* entitled to a judgment relative to the patentee, the interference shall proceed in the normal manner under the regulations of this part. If in the opinion of the examiner-in-chief the evidence fails to show that the applicant is *prima facie* entitled to a judgment relative to the patentee, the examiner-in-chief shall, concurrently with the notice declaring the interference, enter an order stating the reasons for the opinion and directing the applicant, within a time set in the order, to show cause why summary judgment should not be entered against the applicant.

(b) The applicant may file a response to the order and state any reasons why summary judgment should not be entered. Any request by the applicant for a hearing before the Board shall be made in the response. Additional evidence shall not be presented by the applicant or considered by the Board unless the applicant shows good cause why any additional evidence was not initially presented with the evidence filed under §1.608(b). At the time an applicant files a response, the applicant shall serve a copy of any evidence filed under §1.608(b) and this paragraph.

(c) If a response is not timely filed by the applicant, the Board shall enter a final decision granting summary judgment against the applicant.

(d) If a response is timely filed by the applicant, all opponents may file a statement within a time set by the examiner-in-chief. The statement may set forth views as to why summary judgment should be granted against the applicant, but the statement shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the examiner-in-chief for issuing the order to show cause. Evidence shall not be filed by any opponent. An opponent may not request an oral hearing.

(e) Within a time authorized by the examiner-in-chief, an applicant may file a reply to any statement filed by any opponent.

(f) When more than two parties are involved in an interference, all parties may participate in summary judgment proceedings under this section.

(g) If a response by the applicant is timely filed, the examiner-in-chief or the Board shall decide whether the evidence submitted under §1.608(b) and any additional evidence properly submitted under paragraph (b) of this section shows that the applicant is *prima facie* entitled to a judgment relative to the patentee. If the applicant is not *prima facie* entitled to a judgment relative to the patentee, the Board shall enter a final decision granting summary judgment against the applicant. Otherwise, an interlocutory order shall be entered authorizing the interference to proceed in the normal manner under the regulations of this part.

(h) Only an applicant who filed evidence under §1.608(b) may request a hearing. If that applicant requests a hearing, the Board may hold a hearing prior to entry of a decision under paragraph (g) of this section. The examiner-in-chief shall set a date and time for the hearing. Unless otherwise ordered by the examiner-in-chief or the Board, the applicant and any opponent will each be entitled to no more than 30 minutes of oral argument at the hearing.

§1.618 Return of unauthorized papers.

(a) The Patent and Trademark Office shall return to a party any paper presented by the party when the filing of the paper is not authorized by, or is not in compliance with the requirements of, this subpart. Any paper returned will not thereafter be considered by the Patent and Trademark Office in the interference. A party may be permitted to file a corrected paper under such conditions as may be deemed appropriate by an examiner-in-chief.

(b) When presenting a paper in an interference, a party shall not submit with the paper a copy of a paper previously filed in the interference.

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§1.621 Preliminary statement, time for filing, notice of filing.

(a) Within the time set for filing preliminary motions under §1.633, each party may file a preliminary statement. The preliminary statement may be signed by any individual having knowledge of the facts recited therein or an attorney or agent of record.

(b) When a party files a preliminary statement the party shall also simultaneously file and serve on all opponents in the interference a notice stating that a preliminary statement has been filed. A copy of the preliminary statement need not be served until ordered by an examiner-in-chief.

§1.622 Preliminary statement, who made invention, where invention made.

(a) A party's preliminary statement must identify the inventor who made the invention defined by each count and must state on behalf of the inventor the facts required by paragraph (a) of §§1.623, 1.624, and 1.625 as may be appropriate. When an inventor identified in the preliminary statement is not an inventor named in the party's application or patent, the party shall file a motion under §1.634 to correct inventorship.

(b) The preliminary statement shall state whether the invention was made in the United States or abroad. If made abroad, the preliminary statement shall state whether the party is entitled to the benefit of the second sentence of 35 U.S.C. §104.

§1.623 Preliminary statement; invention made in United States.

(a) When the invention was made in the United States or a party is entitled to the benefit of the second sentence of 35 U.S.C. §104, the preliminary statement must state the following facts as to the invention defined by each count:

(1) The date on which the first drawing of the invention was made.

(2) The date on which the first written description of the invention was made.

(3) The date on which the invention was first disclosed by the inventor to another person.

(4) The date on which the invention was first conceived by the inventor.

(5) The date on which the invention was first actually reduced to practice. If the invention was not actually reduced to practice by or on behalf of the inventor prior to the party's filing date, the preliminary statement shall so state.

(6) The date after the inventor's conception of the invention when active exercise of reasonable diligence toward reducing the invention to practice began.

(b) If a party intends to prove derivation, the preliminary statement must also comply with §1.625.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was made, a copy of the first drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was made, a copy of the first written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a copy of the first drawing or written description cannot be filed with the preliminary statement.

§1.624 Preliminary statement; invention made abroad.

(a) When the invention was made abroad and a party intends to rely on introduction of the invention into the United States, the preliminary statement must state the following facts as to the invention defined by each count:

(1) The date on which a drawing of the invention was first introduced into the United States.

(2) The date on which a written description of the invention was first introduced into the United States.

(3) The date on which the invention was first disclosed to another person in the United States.

(4) The date on which the inventor's conception of the invention was first introduced into the United States.

(5) The date on which an actual reduction to practice of the invention was first introduced into the United States. If an actual reduction to practice of the invention was not introduced into the United States, the preliminary statement shall so state.

(6) The date after introduction of the inventor's conception into the United States when active exercise of reasonable diligence in the United States toward reducing the invention to practice began.

(b) If a party intends to prove derivation, the preliminary statement must also comply with §1.625.

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was introduced into the United States a copy of that drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was introduced into the United States a copy of that written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a copy of the first drawing or first written description introduced in the United States cannot be filed with the preliminary statement.

§1.625 Preliminary statement; derivation by an opponent.

(a) When the invention was made in the United States or abroad and a party intends to prove derivation by an opponent from the party, the preliminary statement must state the following as to the invention defined by each count:

(1) The name of the opponent.

(2) The date on which the first drawing of the invention was made.

(3) The date on which the first written description of the invention was made.

(4) The date on which the invention was first disclosed by the inventor to another person.

(5) The date on which the invention was first conceived by the inventor.

(6) The date on which the invention was first communicated to the opponent.

(b) If a party intends to prove priority, the preliminary statement must also comply with §1.623 or §1.624.

(c) When a party alleges under paragraph (a)(2) of this section that a drawing was made, a copy of the first drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(3) of this section that a written description of the invention was made, a copy of the first written description shall be filed with and identified in the preliminary statement. See §1.628(b) when a first drawing or first written description cannot be filed with the preliminary statement.

§1.626 Preliminary statement; earlier application.

When a party does not intend to present evidence to prove a conception or an actual reduction to practice and the party intends to rely solely on the filing date of an earlier application filed in the United States or abroad to prove a constructive reduction to practice, the preliminary statement may so state and identify the earlier application with particularity.

§1.627 Preliminary statement, sealing before filing, opening of statement.

(a) The preliminary statement and copies of any drawing or written description shall be filed in a sealed envelope bearing only the name of the party filing the statement and the style (e.g., *Jones* v. *Smith*) and number of the interference. The sealed envelope should contain only the preliminary statement and copies of any drawing or written description. If the preliminary statement is filed through the mail, the sealed envelope should be enclosed in an outer envelope addressed to the Commissioner of Patents and Trademarks in accordance with §1.1(e).

(b) A preliminary statement may be opened only at the direction of an examiner-in-chief.

§1.628 Preliminary statement, correction of error.

(a) A material error arising through inadvertence or mistake in connection with (1) a preliminary statement or (2) drawings or a written description submitted therewith or omitted therefrom, may be corrected by a motion (§1.635) for leave to file a corrected statement. The motion shall be supported by an affidavit and shall show that the correction is essential to the ends of justice and shall be accompanied by the corrected statement. The motion shall be filed as soon as practical after discovery of the error.

(b) When a party cannot attach a copy of a drawing or a written description to the party's preliminary statement as required by §§1.623(c), 1.624(c), or 1.625(c), the party (1) shall show good cause and explain in the preliminary statement why a copy of the drawing or written description cannot be attached to the preliminary statement and (2) shall attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States which is available. The party shall file a motion (§1.635) to amend its preliminary statement promptly after the first drawing, first written description, or drawing or written description first introduced into the United States becomes available. A copy of the drawing or written description may be obtained, where appropriate, by a motion (§1.635) for additional discovery under §1.687 or during a testimony period.

§1.629 Effect of preliminary statement.

(a) A party shall be strictly held to any date alleged in the preliminary statement. Doubts as to (1) definiteness or sufficiency of any allegation in a preliminary statement or (2) compliance with formal requirements will be resolved against the party filing the statement by restricting the party to the earlier of its filing date or effective filing date or to the latest date of a period alleged in the preliminary statement as may be appropriate. A party may not correct a preliminary statement except as provided by §1.628.

(b) Evidence which shows that an act alleged in the preliminary statement occurred prior to the date alleged in the statement shall establish only that the act occurred as early as the date alleged in the statement.

(c) If a party does not file a preliminary statement, the party:

(1) shall be restricted to the earlier of the party's filing date or effective filing date and

(2) will not be permitted to prove that:

(i) the party made the invention prior to the party's filing date or

(ii) any opponent derived the invention from the party.

(d) If a party files a preliminary statement which contains an allegation of a date of first drawing or first written description and the party does not file a copy of the first drawing or written description with the preliminary statement as required by §1.623(c), §1.624(c), or §1.625(c), the party will be restricted to the earlier of the party's filing date or effective filing date as to that allegation unless the party complies with §1.628(b). The content of any drawing or written description submitted with a preliminary statement will not normally be evaluated or considered by the Board.

(e) A preliminary statement shall not be used as evidence on behalf of the party filing the statement.

§1.630 Reliance on earlier application.

A party shall not be entitled to rely on the filing date of an earlier application filed in the United States or abroad unless (a) the earlier application is identified (§1.611(c)(5)) in the notice declaring the interference or (b) the party files a preliminary motion under §1.633 seeking the benefit of the filing date of the earlier application.

§1.631 Access to preliminary statement, service of preliminary statement.

(a) Unless otherwise ordered by an examiner-in-chief, concurrently with entry of a decision by the examiner-in-chief on preliminary motions filed under §1.633, any preliminary statement filed under §1.621(a) shall be opened to inspection by the senior party and any junior party who filed a preliminary statement. Within a time set by the examiner-in-chief, a party shall serve copies of its preliminary statement on every opponent who served a notice under §1.621(b).

(b) A junior party who does not file a preliminary statement shall not have access to the preliminary statement of any other party.

(c) If an interference is terminated before the preliminary statements have been opened, the preliminary statements will remain sealed and will be returned to the respective parties who submitted the statements.

§1.632 Notice of intent to argue abandonment, suppression or concealment by opponent.

A notice shall be filed by a party who intends to argue that an opponent has abandoned, suppressed, or concealed an actual reduction to practice (35 U.S.C. §102(g)). A party will not be permitted to argue abandonment, suppression, or concealment by an opponent unless the notice is timely filed. Unless authorized otherwise by an examiner-in-chief, a notice is timely when filed within ten (10) days of the close of the testimony-in-chief of the opponent.

§1.633 Preliminary Motions.

A party may file the following preliminary motions:

(a) A motion for judgment on the ground that an opponent's claim corresponding to a count is not patentable to the opponent. In determining a motion filed under this paragraph, a claim may be construed by reference to the prior art of record. A motion under this paragraph shall not be based on: (1) priority of invention of the subject matter of a count by the moving party as against any opponent or (2) derivation of the subject matter of a count by an opponent from the moving party. See §1.637(a)

(b) A motion for judgment on the ground that there is no interference-in-fact. A motion under this paragraph is proper only if: (1) the interference involves a design application or patent or a plant application or patent or (2) no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. See §1.637(a)

(c) A motion to redefine the interfering subject matter by (1) adding or substituting a count, (2) amending an application claim corresponding to a count or adding a claim in the moving party's application to be designated to correspond to a count, (3) designating an application or patent claim to correspond to a count, (4) designating an application or patent claim as not corresponding to a count, or (5) requiring an opponent who is an applicant to add a claim and to designate the claim to correspond to a count. See §1.637(a) and (c).

(d) A motion to substitute a different application owned by a party for an application involved in the interference. See §1.637(a) and (d).

(e) A motion to declare an additional interference (1) between an additional application not involved in the interference and owned by a party and an opponent's ap-

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plication or patent involved in the interference or (2) when an interference involves three or more parties, between less than all applications and any patent involved in the interference. See §1.637(a) and (e).

(f) A motion to be accorded the benefit of the filing date of an earlier application filed in the United States or abroad. See §1.637(a) and (f).

(g) A motion to attack the benefit accorded an opponent in the notice declaring the interference of the filing date of an earlier application filed in the United States or abroad. See §1.637(a) and (g).

(h) When a patent is involved in an interference and the patentee has on file or files an application for reissue under §1.171, a motion to add the application for reissue to the interference. See §1.637(a) and (h).

(i) When a motion is filed under paragraph (a), (b), or (g) of this section, an opponent, in addition to opposing the motion, may file a motion to redefine the interfering subject matter under paragraph (c) of this section or a motion to substitute a different application under paragraph (d) of this section.

(j) When a motion is filed under paragraph (c)(1) of this section an opponent, in addition to opposing the motion, may file a motion for benefit under paragraph (f) of this section as to the count to be added or substituted.

§1.634 Motion to correct inventorship.

A party may file a motion to (a) amend its application involved in an interference to correct inventorship as provided by §1.48 or (b) correct inventorship of its patent involved in an interference as provided in §1.324. See §1.637(a).

§1.635 Miscellaneous motions.

A party seeking entry of an order relating to any matter other than a matter which may be raised under §§1.633 or 1.634 may file a motion requesting entry of the order. See §1.637(a) and (b).

§1.636 Motions, time for filing.

(a) A preliminary motion under §1.633(a) through (h) shall be filed within a time period set by an examiner-in-chief.

(b) A preliminary motion under §1.633(i) or (j) shall be filed within 20 days of the service of the preliminary motion under §1.633(a), (b), or (g) unless otherwise ordered by an examiner-in-chief.

(c) A motion under §1.634 shall be diligently filed after an error is discovered in the inventorship of an application or patent involved in an interference unless otherwise ordered by an examiner-in-chief.

(d) A motion under §1.635 shall be filed as specified in this subpart or when appropriate unless otherwise ordered by an examiner-in-chief.

§1.637 Content of motions.

(a) Every motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, and (3) a full statement of the reasons why the relief requested should be granted.

(b) A motion under §1.635 shall contain a certificate by the moving party stating that the moving party has conferred with all opposing parties in an effort in good faith to resolve by agreement the issues raised by the motion. A moving party shall indicate in the motion whether any other party plans to oppose the motion. The provisions of this paragraph do not apply to a motion to suppress evidence (§1.656(h)).

(c) A preliminary motion under §1.633(c) shall explain why the interfering subject matter should be redefined.

(1) A preliminary motion seeking to add or substitute a count shall:

(i) Propose each count to be added or substituted.

(ii) When the moving party is an applicant, show the patentability to the applicant of all claims in, or proposed to be added to, the party's application which correspond to each proposed count and apply the terms of the claims to the disclosure of the party's application; when necessary a moving party applicant shall file with the motion an amendment adding any proposed claim to the application.

(iii) Identify all claims in an opponent's application which should be designated to correspond to each proposed count; if an opponent's application does not contain such a claim, the moving party shall propose a claim to be added to the opponent's application. The moving party shall show the patentability of any proposed claims to the opponent and apply the terms of the claims to the disclosure of the opponent's application.

(iv) Designate the claims of any patent involved in the interference which define the same patentable invention as each proposed count.

(v) Show that each proposed count defines a separate patentable invention from every other count in the interference.

(vi) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(2) A preliminary motion seeking to amend an application claim corresponding to a count or adding a claim to be designated to correspond to a count shall:

(i) Propose an amended or added claim.

(ii) Show that the proposed or added claim defines the same patentable invention as the count.

(iii) Show the patentability to the applicant of each amended or added claim and apply the terms of the amended or added claim to the disclosure of the application; when necessary a moving party applicant shall file with the motion an amendment making the amended or added claim to the application.

(iv) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(3) A preliminary motion seeking to designate an application or patent claim to correspond to a count shall:

(i) Identify the claim and the count.

(ii) Show the claim defines the same patentable invention as the count.

(iii) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.

(4) A preliminary motion seeking to designate an application or patent claim as not corresponding to a count shall:

(i) Identify the claim and the count.

(ii) Show the claim does not define the same patentable invention as any other claim designated in the notice declaring the interference as corresponding to the count.

(5) A preliminary motion seeking to require an opponent who is an applicant to add a claim and designate the claim as corresponding to a count shall:

(i) Propose a claim to be added by the opponent.

(ii) Show the patentability to the opponent of the claim and apply the terms of the claim to the disclosure of the opponent's application.

(iii) Identify the count to which the claim shall be designated to correspond.

(iv) Show the claim defines the same patentable invention as the count to which it will be designated to correspond.

(d) A preliminary motion under §1.633(d) to substitute a different application shall:

(1) Identify the different application.

(2) Certify that a complete copy of the file of the different application, except for documents filed under §1.131 or §1.608(b), has been served on all opponents.

(3) Show the patentability to the applicant of all claims in, or proposed to be added to, the different application which correspond to each count and apply the terms of the claims to the disclosure of the different application; when necessary the applicant shall file with the motion an amendment adding a claim to the different application.

(4) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(e) A preliminary motion to declare an additional interference under §1.633(e) shall explain why an additional interference is necessary:

(1) When the preliminary motion seeks an additional interference under §1.633(e)(1), the motion shall:

(i) Identify the additional application.

(ii) Certify that a complete copy of the file of the additional application, except for documents filed under §§1.131 or 1.608(b), has been served on all opponents.

(iii) Propose a count for the additional interference.

(iv) Show the patentability to the applicant of all claims in, or proposed to be added to, the additional application which correspond to each proposed count for the additional interference and apply the terms of the claims to the disclosure of the additional application; when necessary the applicant shall file with the motion an amendment adding a claim to the additional application.

(v) When the opponent is an applicant, show the patentability to the opponent of any claims in, or proposed to be added to, the opponent's application which correspond to the proposed count and apply the terms of the claims to the disclosure of the opponent's application.

(vi) When the opponent is a patentee, designate the claims of the patent which define the same patentable invention defined by the proposed count.

(vii) Show that each proposed count for the additional interference defines a separate patentable invention from all counts of the interference in which the motion is filed.

(viii) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(2) When the preliminary motion seeks an additional interference under §1.633(e)(2), the motion shall:

(i) Identify any application or patent to be involved in the additional interference.

(ii) Propose a count for the additional interference.

(iii) When the moving party is an applicant, show the patentability to the applicant of all claims in, or proposed to be added to the party's application which correspond to each proposed count and apply the terms of the claims to the disclosure of the party's application; when necessary a moving party applicant shall file with the motion an amendment adding any proposed claim to the application.

(iv) Identify all claims in any opponent's application which should be designated to correspond to each proposed count; if an opponent's application does not contain such a claim, the moving party shall propose a claim to be added to the opponent's application. The moving party shall show the patentability of any proposed claims to the opponent and apply the terms of the claims to the disclosure of the opponent's application.

(v) Designate the claims of any patent involved in the interference which define the same patentable invention as each proposed count.

(vi) Show that each proposed count for the additional interference defines a separate patentable invention from all counts in the interference in which the motion is filed.

(vii) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

(f) A preliminary motion for benefit under §1.633(f) shall:

(1) Identify the earlier application.

(2) When the earlier application is an application filed in the United States, certify that a complete copy of the file of the earlier application, except for documents filed under §1.131 or §1.608(b), has been served on all opponents. When the earlier application is an application filed abroad, certify that a copy of the application filed abroad has been served on all opponents. If the earlier application filed abroad is not in English, the requirements of §1.647 must also be met.

(3) Show that the earlier application constitutes a constructive reduction to practice of each count.

(g) A preliminary motion to attack benefit under §1.633(g) shall explain, as to each count, why an opponent should not be accorded the benefit of the filing date of the earlier application.

(h) A preliminary motion to add an application for reissue under §1.633(h) shall:

(1) Identify the application for reissue.

(2) Certify that a complete copy of the file of the application for reissue has been served on all opponents.

(3) Show the patentability of all claims in, or proposed to be added to, the application for reissue which correspond to each count and apply the terms of the claims to the disclosure of the application for reissue; when necessary a moving applicant for reissue shall file with the motion an amendment adding a claim to the application for reissue.

(4) Be accompanied by a motion under §1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad.

§1.638 Opposition and reply, time for filing opposition and reply.

(a) Unless otherwise ordered by an examiner-in-chief, any opposition to any motion shall be filed within 20 days after service of the motion. An opposition shall (1) identify any material fact set forth in the motion which is in dispute and (2) include an argument why the relief requested in the motion should be denied.

(b) Unless otherwise ordered by an examiner-in-chief, a reply shall be filed within 15 days after service of the opposition. A reply shall be directed only to new points raised in the opposition.

§1.639 Evidence in support of motion, opposition, or reply.

(a) Proof of any material fact alleged in a motion, opposition, or reply must be filed and served with the motion, opposition, or reply unless the proof relied upon is part of the interference file or the file of any patent or application involved in the interference or any earlier application filed in the United States of which a party has been accorded or seeks to be accorded benefit.

(b) Proof may be in the form of patents, printed publications, and affidavits.

(c) When a party believes that testimony is necessary to support or oppose a preliminary motion under §1.633 or a motion to correct inventorship under §1.634, the party shall describe the nature of the testimony needed. If the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

§1.640 Motions, hearing and decision, redeclaration of interference, order to show cause.

(a) A hearing on a motion may be held in the discretion of the examiner-in-chief. The examiner-in-chief shall set the date and time for any hearing. The length of oral argument at a hearing on a motion is a matter within the discretion of the examiner-in-chief. An examiner-in-chief may direct that a hearing take place by telephone.

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(b) Motions will be decided by an examiner-in-chief. An examiner-in-chief may consult with an examiner in deciding motions involving a question of patentability. An examiner-in-chief may grant or deny any motion or take such other action which will secure the just, speedy, and inexpensive determination of the interference.

(1) When preliminary motions under §1.633 are decided, the examiner-in-chief will, when necessary, set a time for filing any amendment to an application involved in the interference and for filing a supplemental preliminary statement as to any new counts involved in the interference. Failure or refusal of a party to timely present an amendment required by an examiner-in-chief shall be taken without further action as a disclaimer by that party of the invention involved. A supplemental preliminary statement shall meet the requirements specified in §§1.623, 1.624, 1.625, or 1.626, but need not be filed if a party states that it intends to rely on a preliminary statement previously filed under §1.621(a). After the time expires for filing any amendment and supplemental preliminary statement, the examiner-in-chief will, if necessary, redeclare the interference.

(2) After a decision is entered on preliminary motions filed under §1.633, a further motion under §1.633 will not be considered except as provided by §1.655(b).

(c) When a decision on any motion under §§1.633, 1.634, or 1.635 is entered which does not result in the issuance of an order to show cause under paragraph (d) of this section, a party may file a request for reconsideration within 14 days after the date of the decision. The filing of a request for reconsideration will not stay any time period set by the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. No opposition to a request for reconsideration shall be filed unless requested by an examiner-in-chief or the Board. A decision of single examiner-in-chief will not ordinarily be modified unless an opposition has been requested by an examiner-in-chief or the Board. The request for reconsideration shall be acted on by a panel of the Board consisting of at least three examiners-in-chief, one of whom will normally be the examiner-in-chief who decided the motion.

(d) An examiner-in-chief may issue an order to show cause why judgment should not be entered against a party when:

(1) A decision on a motion is entered which is dispositive of the interference against the party as to all counts;

(2) The party is a junior party who fails to file a preliminary statement; or

(3) The party is a junior party whose preliminary statement fails to overcome the earlier of the filing date or effective filing date of another party.

(e) When an order to show cause is issued under paragraph (d) of this section, the Board shall enter a judgment in accordance with the order unless, within 20 days after the date of the order, the party against whom the order issued files a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 20 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party. If a party wishes to take testimony in response to an order to show cause, the party's response should be accompanied by a motion (§1.635) requesting the testimony period. See §1.651(c)(4).

§1.641 Unpatentability discovered by examiner-in-chief.

During the pendency of an interference, if the examiner-in-chief becomes aware of a reason why a claim corresponding to a count may not be patentable, the examiner-in-chief may notify the parties of the reason and set a time within which each party may present its views. After considering any timely filed views, the examiner-in-chief shall decide how the interference shall proceed.

§1.642 Addition of application or patent to interference.

During the pendency of an interference, if the examiner-in-chief becomes aware of an application or a patent not involved in the interference which claims the same patentable invention as a count in the interference, the examiner-in-chief may add the application or patent to the interference on such terms as may be fair to all parties.

§1.643 Prosecution of interference by assignee.

(a) An assignee of record in the Patent and Trademark Office of the entire interest in an application or patent involved in an interference is entitled to conduct prosecution of the interference to the exclusion of the inventor.

(b) An assignee of a part interest in an application or patent involved in an interference may file a motion (§1.635) for entry of an order authorizing it to prosecute the interference. The motion shall show (1) the inability or refusal of the inventor to prosecute the interference or (2) other cause why the ends of justice require that the assignee of a part interest be permitted to prosecute the interference. The examiner-in-chief may allow the assignee of a part interest to prosecute the interference upon such terms as may be appropriate.

§1.644 Petitions in interferences.

(a) There is no appeal to the Commissioner in an interference from a decision of an examiner-in-chief or a panel consisting of more than one examiner-in-chief. The Commissioner will not consider a petition in an interference unless:

(1) The petition is from a decision of an examiner-in-chief or a panel and the examiner-in-chief or the panel shall be of the opinion (i) that the decision involves a controlling question of procedure or an interpretation of a rule as to which there is a substantial ground for a difference of opinion and (ii) that an immediate decision on petition by the Commissioner may materially advance the ultimate termination of the interference;

(2) The petition seeks to invoke the supervisory authority of the Commissioner and is not filed prior to the decision of the Board awarding judgment and does not relate to (i) the merits of priority of invention or patentability or (ii) the admissibility of evidence under the Federal Rules of Evidence; or

(3) The petition seeks relief under §1.183.

(b) A petition under paragraph (a)(1) of this section filed more than 15 days after the date of the decision of the examiner-in-chief or the panel may be dismissed as untimely. A petition under paragraph (a)(2) of this section shall not be filed prior to decision by the Board awarding judgment. Any petition under paragraph (a)(3) of this section shall be timely if it is made as part of, or simultaneously with, a proper motion under §§1.633, 1.634, or 1.635. Any opposition to a petition shall be filed within 15 days of the date of service of the petition.

(c) The filing of a petition shall not stay the proceeding unless a stay is granted in the discretion of the examiner-in-chief, the panel, or the Commissioner.

(d) Any petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested. Briefs or memoranda, if any, in support of the petition or opposition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the examiner-in-chief or the panel and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record in the interference shall not be submitted with the petition or opposition.

(e) Any petition under paragraph (a) of this section shall be accompanied by the petition fee set forth in §1.17(h).

(f) Any request for reconsideration of a decision by the Commissioner shall be filed within 15 days of the decision of the Commissioner and must be accompanied by the fee set forth in §1.17(h). No opposition to a request for reconsideration shall be filed unless requested by the Commissioner. The decision will not ordinarily be modified unless such an opposition has been requested by the Commissioner.

(g) Where reasonably possible, service of any petition, opposition, or request for reconsideration shall be such that delivery is accomplished within one working day. Service by hand or "Express Mail" complies with this paragraph.

(h) An oral hearing on the petition will not be granted except when considered necessary by the Commissioner.

(i) The Commissioner may delegate to appropriate Patent and Trademark Office employees the determination of petitions under this section.

§1.645 Extension of time, late papers, stay of proceedings.

(a) A party may file a motion (§1.635) seeking an extension of time to take action in an interference, to file a notice of appeal (§§1.302, 1.304), or to commence a civil action (§§1.303, 1.304). The motion shall be filed within sufficient time to actually reach the examiner-in-chief before expiration of the time for taking action, filing the notice, or commencing the civil action. A moving party should not assume that the motion will be granted even if there is no objection by any other party. The motion will be denied unless the moving party shows good cause why an extension should be granted. The press of other business arising after an examiner-in-chief sets a time for taking action will not normally constitute good cause. A motion seeking additional time to take testimony because a party has not been able to procure the testimony of a witness shall set forth the name of the witness, any steps taken to procure the testimony of the witness, the dates on which the steps were taken, and the facts expected to be proved through the witness.

(b) Any paper belatedly filed will not be considered except upon motion (§1.635) which shows sufficient cause why the paper was not timely filed.

(c) The provisions of §1.136 do not apply to time periods in interferences.

(d) In an appropriate circumstance, an examiner-in-chief may stay proceedings in an interference.

§1.646 Service of papers, proof of service.

(a) A copy of every paper filed in the Patent and Trademark Office in an interference or an application or patent involved in the interference shall be served upon all other parties except:

(1) Preliminary statements when filed under §1.621; preliminary statements shall be served when service is ordered by an examiner-in-chief.

(2) Certified transcripts and exhibits which accompany the transcripts filed under §§1.676 or 1.684; copies of transcripts shall be served as part of a party's record under §1.653(c).

(b) Service shall be on an attorney or agent for a party. If there is no attorney or agent for the party, service shall be on the party. An examiner-in-chief may order additional service or waive service where appropriate.

(c) Unless otherwise ordered by an examiner-in-chief, or except as otherwise provided by this part, service of a paper shall be made as follows:

(1) By handing a copy of the paper to the person served.

(2) By leaving a copy of the paper with someone employed by the person at the person's usual place of business.

(3) When the person served has no usual place of business, by leaving a copy of the paper at the person's residence with someone of suitable age and discretion then residing therein.

(4) By mailing a copy of the paper by first class mail; when service is by mail the date of mailing is regarded as the date of service.

(5) When it is shown to the satisfaction of an examiner-in-chief that none of the above methods of obtaining or serving the copy of the paper was successful, the examiner-in-chief may order service by publication of an appropriate notice in the *Official Gazette*.

(d) An examiner-in-chief may order that a paper be served by hand or "Express Mail".

(e) Proof of service must be made before a paper will be considered in an interference. Proof of service may appear on or be affixed to the paper. Proof of service shall include the date and manner of service. In the case of personal service under paragraphs (c)(1) through (c)(3) of this section, proof of service shall include the names of any person served and the person who made the service. Proof of service may be made by an acknowledgment of service by or on behalf of the person served or a statement signed by the party or the party's attorney or agent containing the information required by this section. A statement of an attorney or agent attached to, or appearing in, the paper stating the date and manner of service will be accepted as *prima facie* proof of service.

§1.647 Translation of document in foreign language.

When a party relies on a document in a language other than English, a translation of the document into English and an affidavit attesting to the accuracy of the translation shall be filed with the document.

§1.651 Setting times for discovery and taking testimony, parties entitled to take testimony.

(a) At an appropriate stage in an interference, an examiner-in-chief shall set (1) a time for filing motions (§1.635) for additional discovery under §1.687(c) and (2) testimony periods for taking any necessary testimony.

(b) Where appropriate, testimony periods will be set to permit a party to:

(1) present its case-in-chief and/or case-in-rebuttal and/or

(2) cross-examine an opponent's case-in-chief and/or a case-in-rebuttal.

(c) A party is not entitled to take testimony to present a case-in-chief unless:

(1) the examiner-in-chief orders the taking of testimony under §1.639(c);

(2) the party alleges in its preliminary statement a date of invention prior to the earlier of the filing date or effective filing date of the senior party;

(3) a testimony period has been set to permit an opponent to prove a date of invention prior to the earlier of the filing date or effective filing date of the party and the party has filed a preliminary statement alleging a date of invention prior to that date; or

(4) a motion (§1.635) is filed showing good cause why a testimony period should be set.

(d) Testimony shall be taken during the testimony periods set under paragraph (a) of this section.

§1.652 Judgment for failure to take testimony or file record.

If a junior party fails to timely take testimony authorized under §1.651, or file a record under §1.653(c), an examiner-in-chief, with or without a motion (§1.635) by another party, may issue an order to show cause why judgment should not be entered against the junior party. When an order is issued under this section, the Board shall enter judgment in accordance with the order unless, within 15 days after the date of the order, the junior party files a paper which shows good cause why judgment should not be entered in accordance with the

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order. Any other party may file a response to the paper within 15 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party.

§1.653 Record and exhibits.

(a) Testimony shall consist of affidavits under §1.672(b) and (e), transcripts of depositions under §§1.672(b) and (c), agreed statements of fact under §1.672(f), and transcripts of interrogatories, cross-interrogatories, and recorded answers under §1.684(c).

(b) An affidavit shall be filed as set forth in §1.672(b) or (e). A certified transcript of a deposition including a deposition cross-examining an affiant, shall be filed as set forth in §1.676. An original agreed statement shall be filed as set forth in §1.672(f). A transcript of interrogatories, cross-interrogatories, and recorded answers shall be filed as set forth under §1.684(c).

(c) In addition to the items specified in paragraph (b) of this section and within a time set by an examiner-in-chief each party shall file three copies and serve one copy of a record consisting of:

(1) An index of the names of each witness giving the pages of the record where the direct testimony and cross-examination of each witness begins.

(2) An index of exhibits briefly describing the nature of each exhibit and giving the page of the record where each exhibit is first identified and offered into evidence.

(3) The count or counts.

(4) Each (i) affidavit, (ii) transcript, including transcripts of cross-examination of any affiant, (iii) agreed statement relied upon by the party, and (iv) transcript of interrogatories, cross-interrogatories, and recorded answers filed under paragraph (b) of this section.

(5) Each notice, official record, and publication relied upon by the party and filed under §1.682(a).

(6) Any evidence from another interference, proceeding, or action relied upon by the party under §1.683.

(7) Each request for an admission and the admission and each written interrogatory and the answer upon which a party intends to rely under §1.688.

(d) The pages of the record shall be consecutively numbered.

(e) The name of each witness shall appear at the top of each page of each affidavit or transcript.

(f) The record may be typewritten or printed.

(g) When the record is printed, it may be produced by standard typographical printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be 8-1/2 by 11 inches (21.8 by 27.9 cm.) with type matter 6-1/2 by 9-1/2 inches (16.5 by 24.1 cm.). The record shall be bound to lie flat when open.

(h) When the record is typewritten, it must be clearly legible on opaque, unglazed, durable paper approximately 8-1/2 by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1-1/2 inches (3.8 cm.) on the left-hand side of the page. The pages of the record shall be bound with covers at their left edges in such manner to lie flat when open in one or more volumes of convenient size (approximately 100 pages per volume is suggested). Multigraphed or otherwise reproduced copies conforming to the standards specified in this paragraph may be accepted.

(i) Each party shall file its exhibits with the record specified in paragraph (c) of this section. One copy of each documentary exhibit shall be served. Documentary exhibits shall be filed in an envelope or folder and shall not be bound as part of the record. Physical exhibits, if not filed by an officer under §1.676(d), shall be filed with the record. Each exhibit shall contain a label which identifies the party submitting the exhibit and an exhibit number, the style of the interference (e.g., *Jones* v. *Smith*), and the interference number. Where possible, the label should appear at the bottom right-hand corner of each documentary exhibit. Upon termination of an interference, an examiner-in-chief may return an exhibit to the party filing the exhibit. When any exhibit is returned, the examiner-in-chief shall enter an appropriate order indicating that the exhibit has been returned.

(j) Any testimony, record, or exhibit which does not comply with this section may be returned under §1.618(a).

§1.654 Final hearing.

(a) At an appropriate stage of the interference, the parties will be given an opportunity to appear before the Board to present oral argument at a final hearing. An examiner-in-chief shall set a date and time for final hearing. Unless otherwise ordered by an examiner-in-chief or the Board, each party will be entitled to no more than 60 minutes of oral argument at final hearing.

(b) The opening argument of a junior party shall include a fair statement of the junior party's case and the junior party's position with respect to the case presented on behalf of any other party. A junior party may reserve a portion of its time for rebuttal.

(c) A party shall not be entitled to argue that an opponent abandoned, suppressed, or concealed an actual reduction to practice unless a notice under §1.632 was timely filed.

(d) After final hearing, the interference shall be taken under advisement by the Board. No further paper shall be filed except under §1.658(b) or as authorized by an examiner-in-chief or the Board. No additional oral argument shall be had unless ordered by the Board.

§1.655 Matters considered in rendering a final decision.

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under §1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether any interlocutory order was manifestly erroneous or an abuse of discretion. All interlocutory orders shall be presumed to have been correct and the burden of showing manifest error or an abuse of discretion shall be on the party attacking the order.

(b) A party shall not be entitled to raise for consideration at final hearing a matter which properly could have been raised by a motion under §§1.633 or 1.634 unless (1) the motion was properly filed, (2) the matter was properly raised by a party in an opposition to a motion under §§1.633 or 1.634 and the motion was granted over the opposition, or (3) the party shows good cause why the issue was not timely raised by motion or opposition.

(c) To prevent manifest injustice, the Board may consider an issue even though it would not otherwise be entitled to consideration under this section.

§1.656 Briefs for final hearing.

(a) Each party shall be entitled to file briefs for final hearing. The examiner-in-chief shall determine the briefs needed and shall set the time and order for filing briefs.

(b) The opening brief of a junior party shall contain under appropriate headings and in the order indicated:

(1) A table of contents, with page references, and a table of cases (alphabetically arranged), statutes, and other authorities cited, with references to the pages of the brief where they are cited.

(2) A statement of the issues presented for decision in the interference.

(3) A statement of the facts relevant to the issues presented for decision with appropriate references to the record.

(4) An argument, which may be preceded by a summary, which shall contain the contentions of the party with respect to the issues to be decided, and the reasons therefor, with citations to the cases, statutes, other authorities, and parts of the record relied on.

(5) A short conclusion stating the precise relief requested.

(6) An appendix containing a copy of the counts.

(c) The opening brief of the senior party shall conform to the requirements of paragraph (b) of this section except:

(1) a statement of the issues and of the facts need not be made unless the party is dissatisfied with the statement in the opening brief of the junior party and

(2) an appendix containing a copy of the counts need not be included if the copy of the counts in the opening brief of the junior party is correct.

(d) Briefs may be printed or typewritten. If typewritten, legal-size paper may be used. The opening brief of each party in excess of 50 legal-size double-spaced typewritten pages or any other brief in excess of 25 legal-size double-space typewritten pages shall be printed unless a satisfactory reason be given why the brief should not be printed. Any printed brief shall comply with the requirements of §1.653(g). Any typewritten brief shall comply with the requirements of §1.653(h), except legal-size paper may be used and the binding and covers specified are not required.

(e) An original and three copies of each brief must be filed.

(f) Any brief which does not comply with the requirements of this section may be returned under §1.618(a).

(g) Any party, separate from its opening brief, but filed concurrently therewith, may file an original and three copies of concise proposed findings of fact and conclusions of law. Any proposed findings of fact shall be supported by specific references to the record. Any proposed conclusions of law shall be supported by citation of cases, statutes, or other authority. Any opposing party, separate from its opening or reply brief, but filed concurrently therewith, may file a paper accepting or objecting to any proposed findings of fact or conclusions of law; when objecting, a reason must be given. The Board may adopt the proposed findings of fact and conclusions of law in whole or in part.

(h) If a party wants the Board in rendering its final decision to rule on the admissibility of any evidence, the party shall file with its opening brief an original and three copies of a motion (§1.635) to suppress the evidence. The provisions of §1.637(b) do not apply to a motion to suppress under this paragraph. Any objection previously made to the admissibility of an opponent's evidence is waived unless the motion required by this paragraph is filed. An original and three copies of an opposition to the motion may be filed with an opponent's opening brief or reply brief as may be appropriate.

(i) When a junior party fails to timely file an opening brief, an order may issue requiring the junior party to show cause why the Board should not treat failure to file the brief as a concession of priority. If the junior party fails to respond within a time period set in the order, judgment may be entered against the junior party.

§1.657 Burden of proof as to date of invention.

A rebuttable presumption shall exist that, as to each count, the inventors made their invention in the chronological order of the earlier of their filing dates or effective filing dates. The burden of proof shall be upon a party who contends otherwise.

§1.658 Final decision.

(a) After final hearing, the Board shall enter a decision resolving the issues raised at final hearing. The decision may (1) enter judgment, in whole or in part, (2) remand the interference to an examiner-in-chief for further proceedings, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing the claims in the party's patent or application which correspond to the count. When the Board enters a decision awarding judgment as to all counts, the decision shall be regarded as a final decision.

(b) Any request for reconsideration of a decision under paragraph (a) of this section shall be filed within 14 days after the date of the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. Any reply to a request for reconsideration shall be filed within 14 days of the date of service of the request for reconsideration. Where reasonably possible, service of the request for reconsideration shall be such that delivery is accomplished by hand or "Express Mail." The Board shall enter a decision on the request for reconsideration. If the Board shall be of the opinion that the decision on the request for reconsideration significantly modifies its original decision under paragraph (a) of this section, the Board may designate the decision on the request for reconsideration as a new decision.

(c) A judgment in an interference settles all issues which (1) were raised and decided in the interference, (2) could have been properly raised and decided in the interference by a motion under §1.633 (a) through (d) and (f) through (j) or §1.634 and (3) could have been properly raised and decided in an additional interference with a motion under §1.633(e). A losing party who could have properly moved, but failed to move, under §§1.633 or 1.634, shall be estopped to take *ex parte* or *inter partes* action in the Patent and Trademark Office after the interference which is inconsistent with that party's failure to properly move, except that a losing party shall not be estopped with respect to any claims which correspond, or properly could have corresponded, to a count as to which that party was awarded a favorable judgment.

§1.659 Recommendation.

(a) Should the Board have knowledge of any ground for rejecting any application claim not involved in the judgment of the interference, it may include in its decision a recommended rejection of the claim. Upon resumption of *ex parte* prosecution of the application, the examiner shall be bound by the recommendation and shall enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection.

(b) Should the Board have knowledge of any ground for reexamination of a patent involved in the interference as to a patent claim not involved in the judgment of the interference, it may include in its decision a recommendation to the Commissioner that the patent be reexamined. The Commissioner will determine whether reexamination will be ordered.

(c) The Board may make any other recommendation to the examiner or the Commissioner as may be appropriate.

§1.660 Notice of reexamination, reissue, protest, or litigation.

(a) When a request for reexamination of a patent involved in an interference is filed, the patent owner shall notify the Board within 10 days of receiving notice that the request was filed.

(b) When an application for reissue is filed by a patentee involved in an interference, the patentee shall notify the Board within 10 days of the day the application for reissue is filed.

(c) When a protest under §1.291 is filed against an application involved in an interference, the applicant shall notify the Board within 10 days of receiving notice that the protest was filed.

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(d) A party in an interference shall notify the Board promptly of any litigation related to any patent or application involved in an interference, including any civil action commenced under 35 U.S.C. §146.

§1.661 Termination of interference after judgment.

After a final decision is entered by the Board, an interference is considered terminated when no appeal (35 U.S.C. §141) or other review (35 U.S.C. §146) has been or can be taken or had.

§1.662 Request for entry of adverse judgment; reissue filed by patentee.

(a) A party may, at any time during an interference, request and agree to entry of an adverse judgment. The filing by an applicant or patentee of a written disclaimer of the invention defined by a count, concession of priority or unpatentability of the subject matter of a count, abandonment of the invention defined by a count, or abandonment of the contest as to a count will be treated as a request for entry of an adverse judgment against the applicant or patentee as to all claims which correspond to the count. Abandonment of an application by an applicant, other than an applicant for reissue having a claim of the patent sought to be reissued involved in the interference, will be treated as a request for entry of an adverse judgment against the applicant as to all claims corresponding to all counts. Upon the filing by a party of a request for entry of an adverse judgment, the Board may enter judgment against the party.

(b) If a patentee involved in an interference files an application for reissue during the interference and omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference, judgment may be entered against the patentee. A patentee who files an application for reissue other than for the purpose of avoiding the interference shall timely file a preliminary motion under §1.633(h) or show good cause why the motion could not have been timely filed.

(c) The filing of a statutory disclaimer under 35 U.S.C. §253 by a patentee will delete any statutorily disclaimed claims from being involved in the interference. A statutory disclaimer will not be treated as a request for entry of an adverse judgment against the patentee unless it results in the deletion of all patent claims corresponding to a count.

§1.663 Status of claim of defeated applicant after interference.

Whenever an adverse judgment is entered as to a count against an applicant from which no appeal (35 U.S.C. §141) or other review (35 U.S.C. §146) has been or can be taken or had, the claims of the application corresponding to the count stand finally disposed of without further action by the examiner. Such claims are not open to further *ex parte* prosecution.

§1.664 Action after interference.

(a) After termination of an interference, the examiner will promptly take such action in any application previously involved in the interference as may be necessary. Unless entered by order of an examiner-in-chief, amendments presented during the interference shall not be entered, but may be subsequently presented by the applicant subject to the provisions of this part provided prosecution of the application is not otherwise closed.

(b) After judgment, the application of any party may be held subject to further examination, including an interference with another application.

§1.665 Second interference.

A second interference between the same parties will not be declared upon an application not involved in an earlier interference for an invention defined by a count of the earlier interference. See §1.658(c).

§1.666 Filing of interference settlement agreements.

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof must be filed before the termination of the interference (§1.661) as between the parties to the agreement or understanding.

(b) If any party filing the agreement or understanding under paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in §1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding under paragraph (a) of this section will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commissioner may, however, upon petition accompanied by the fee set forth in §1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing of the agreement or understanding during the six month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

§1.671 Evidence must comply with rules.

(a) Evidence consists of testimony and exhibits, official records and publications filed under §1.682, evidence from another interference, proceeding, or action filed under §1.683, and discovery relied upon under §1.688, and the specification (including claims) and drawings of any application or patent:

(1) Involved in the interference.

(2) To which a party has been accorded benefit in the notice declaring the interference or by a preliminary motion granted under §1.633.

(3) For which a party has sought, but has been denied, benefit by a preliminary motion under §1.633.

(4) For which benefit was rescinded by a preliminary motion granted under §1.633.

(b) Except as otherwise provided in this part, the Federal Rules of Evidence shall apply to interference proceedings. Those portions of the Federal Rules of Evidence relating to criminal actions, juries, and other matters not relevant to interferences shall not apply.

(c) Unless the context is otherwise clear, the following terms of the Federal Rules of Evidence shall be construed as follows:

(1) "Courts of the United States," "U.S. Magistrate," "court," "trial court," or "trier of fact" means examiner-in-chief or Board as may be appropriate.

(2) "Judge" means examiner-in-chief.

(3) "Judicial notice" means official notice.

(4) "Civil action," "civil proceeding," "action," or "trial," mean interference.

(5) "Appellate court" means United States Court of Appeals for the Federal Circuit or a United States district court when judicial review is under 35 U.S.C. §146.

(6) "Before the hearing" in Rule 703 means before giving testimony by oral deposition or affidavit.

(7) "The trial or hearing" in Rules 803(24) and 804(5) means the taking of testimony by oral deposition.

(d) Certification is not necessary as a condition to admissibility when the record is a record of the Patent and Trademark Office to which all parties have access.

(e) A party may not rely on an affidavit filed by that party during *ex parte* prosecution of an application, an affidavit under §1.608(b), or an affidavit under §1.639(b) unless (1) a copy of the affidavit is or has been served and (2) a written notice is filed prior to the close of the party's relevant testimony period stating that the party intends to rely on the affidavit. When proper notice is given under this paragraph, the affidavit shall be deemed filed under §1.672(b). A copy of the affidavit shall be included in the record (§1.653).

(f) The significance of documentary and other exhibits shall be discussed with particularity by a witness during oral deposition or in an affidavit.

(g) A party must file a motion (§1.635) seeking permission from an examiner-in-chief prior to taking testimony or seeking documents or things under 35 U.S.C. §24. The motion shall describe the general nature and the relevance of the testimony, document, or thing.

(h) Evidence which is not taken or sought and filed in accordance with this subpart shall not be admissible.

§1.672 Manner of taking testimony.

(a) Testimony of a witness may be taken by oral deposition or affidavit in accordance with this subpart.

(b) A party wishing to take the testimony of a witness whose testimony will not be compelled under 35 U.S.C. §24 may elect to present the testimony of the witness by affidavit or deposition. A party electing to present testimony of a witness by affidavit shall, prior to the close of the party's relevant testimony period, file and serve an affidavit of the witness or, where appropriate, a notice under §1.671(e). To facilitate preparation of the record (§1.653(g) and (h)), a party should file an affidavit on paper which is 8-1/2 by 11 inches (21.8 by 27.9 cm). A party shall not be entitled to rely on any document referred to in the affidavit unless a copy of the document is filed with the affidavit. A party shall not be entitled to rely on any thing mentioned in the affidavit unless the opponent is given reasonable access to the thing. A thing is something other than a document. After the affidavit is filed and within a time set by an examiner-in-chief, any opponent may file a request to cross-examine the witness on oral deposition. If any opponent requests cross-examination of an affiant, the party shall notice a deposition under §1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness whose testimony is presented by affidavit, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. A party electing to present testimony of a witness by deposition shall notice a deposition of the witness under §1.673(a). The party who gives notice of a deposition shall be responsible for obtaining a court reporter and for filing a certified transcript of the deposition as required by §1.676.

(c) A party wishing to take the testimony of a witness whose testimony will be compelled under 35 U.S.C. §24 must first obtain permission from an examiner-in-chief under §1.671(g). If permission is granted, the party shall notice a deposition of the witness under §1.673 and may proceed under 35 U.S.C. §24. The testimony of the witness shall be taken on oral deposition.

(d) Notwithstanding the provisions of this subpart, if the parties agree in writing, a deposition may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions.

(e) If the parties agree in writing, the testimony of any witness may be submitted in the form of an affidavit without opportunity for cross-examination. The affidavit of the witness shall be filed in the Patent and Trademark Office.

(f) If the parties agree in writing, testimony may be submitted in the form of an agreed statement setting forth (1) how a particular witness would testify if called or (2) the facts in the case of one or more of the parties. The agreed statement shall be filed in the Patent and Trademark Office. See §1.653(a).

§1.673 Notice of examination of witness.

(a) A party electing to take testimony of a witness by deposition shall, after complying with paragraphs (b) and (g) of this section, file and serve a single notice of deposition stating the time and place of each deposition to be taken. Depositions may be noticed for a reasonable time and place in the United States. Unless the parties agree in writing, a deposition may not be noticed for any other place without approval of an examiner-in-chief (see §1.684). The notice shall specify the name and address of each witness and the general nature of the testimony to be given by the witness. If the name of a witness is not known, a general description sufficient to identify the witness or a particular class or group to which the witness belongs may be given instead.

(b) Unless the parties agree otherwise, a party shall serve, but not file, at least three days prior to the conference required by paragraph (g) of this section, if service is made by hand or "Express Mail," or at least ten days prior to the conference if service is made by any other means, the following:

(1) A list and copy of each document in the party's possession, custody, or control and upon which the party intends to rely at any deposition and

(2) A list of and a proffer of reasonable access to things in the party's possession, custody, or control and upon which the party intends to rely at any deposition.

(c) A party shall not be permitted to rely at any deposition on any witness not listed in the notice, or any document not served or any thing not listed as required by paragraph (b) of this section, (1) unless all opponents agree in writing or on the record to permit the party to rely on the witness, document, or thing or (2) except upon a motion (§1.635) promptly filed which is accompanied by any proposed notice, additional documents, or lists and which shows sufficient cause why the notice, documents, or lists were not served in accordance with this section.

(d) Each opposing party shall have a full opportunity to attend a deposition and cross-examine. If an opposing party attends a deposition of a witness not named in a notice and cross-examines the witness or fails to object to the taking of the deposition, the opposing party shall be deemed to have waived any right to object to the taking of the deposition for lack of proper notice.

(e) A party electing to present testimony by affidavit and who is required to notice depositions for the purpose of cross-examination under §1.672(b), shall, after complying with paragraph (g) of this section, file and serve a single notice of deposition stating the time and place of each cross-examination deposition to be taken.

(f) The parties shall nor take depositions in more than one place at the same time or so nearly at the same time that reasonable opportunity to travel from one place of deposition to another cannot be had.

(g) Before serving a notice of deposition and after complying with paragraph (b) of this section, a party shall have an oral conference with all opponents to attempt to agree on a mutually acceptable time and place for conducting the deposition. A certificate shall appear in the notice stating that the oral conference took place or explaining why the conference could not be had. If the parties cannot agree to a mutually acceptable place and time for conducting the deposition at the conference, the parties shall contact an examiner-in-chief who shall then designate the time and place for conducting the deposition.

(h) A copy of the notice of deposition shall be attached to the certified transcript of the deposition filed under §1.676(a).

§1.674 Persons before whom depositions may be taken.

(a) Within the United States or a territory or insular possession of the United States a deposition shall be taken before an officer authorized to administer oaths by

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the laws of the United States or of the place where the examination is held.

(b) Unless the parties agree in writing, the following persons shall not be competent to serve as an officer: (1) a relative or employee of a party, (2) a relative or employee of an attorney or agent of a party, or (3) a person interested, directly or indirectly, in the interference either as counsel, attorney, agent, or otherwise.

§1.675 Examination of witness, reading and signing transcript of deposition.

(a) Each witness before giving an oral deposition shall be duly sworn according to law by the officer before whom the deposition is to be taken.

(b) The testimony shall be taken in answer to interrogatories with any questions and answers recorded in their regular order by the officer or by some other person, who shall be subject to the provisions of §1.674(b), in the presence of the officer unless the presence of the officer is waived on the record by agreement of all parties.

(c) All objections made at the time of the deposition to the qualifications of the officer taking the deposition, the manner of taking it, the evidence presented, the conduct of any party, or any other objection to the proceeding shall be noted on the record by the officer. Evidence objected to shall be taken subject to any objection.

(d) Unless the parties agree in writing or waive reading and signature by the witness on the record at the deposition, when the testimony has been transcribed a transcript of the deposition shall be read by the witness and then signed by the witness in the form of (1) an affidavit in the presence of any notary or (2) a declaration.

§1.676 Certification and filing by officer, marking exhibits.

(a) The officer shall prepare a certified transcript of the deposition by attaching to a transcript of the deposition a copy of the notice of deposition, any exhibits to be annexed to the certified transcript, and a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before commencement of testimony by the witness.

(2) The transcript is a true record of the testimony given by the witness.

(3) The name of the person by whom the testimony was recorded and, if not recorded by the officer, whether the testimony was recorded in the presence of the officer.

(4) The presence or absence of any opposing party.

(5) The place where the deposition was taken and the day and hour when the deposition began and ended.

(6) The officer is not disqualified under §1.674.

(b) If the parties waived any of the requirements of paragraph (a) of this section, the certificate shall so state.

(c) The officer shall note on the certificate the circumstances under which a witness refuses to sign a transcript.

(d) Unless the parties agree otherwise in writing or on the record at the deposition, the officer shall securely seal the certified transcript in an envelope endorsed with the style of the interference (e.g., *Smith* v. *Jones*), the interference number, the name of the witness, and the date of sealing and shall promptly forward the envelope to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Documents and things produced for inspection during the examination of a witness, shall, upon request of a party, be marked for identification and annexed to the certified transcript, and may be inspected and copied by any party, except that if the person producing the documents and things desires to retain them, the person may (1) offer copies to be marked for identification and annexed to the certified transcript and to serve thereafter as originals if the person affords to all parties fair opportunity to verify the copies by comparison with the originals or (2) offer the originals to be marked for identification, after giving to each party an opportunity to inspect and copy them, in which event the documents and things may be used in the same manner as if annexed to the certified transcript. The exhibits shall then be filed as specified in §1.653(i). If the weight or bulk of a document or thing shall reasonably prevent the document or thing from being annexed to the certified transcript, it shall, unless waived on the record at the deposition by all parties, be authenticated by the officer and forwarded to the Commissioner in a separate package marked and addressed as provided in this paragraph.

§1.677 Form of a transcript of deposition.

(a) A transcript of a deposition must be typewritten on opaque, unglazed, durable paper approximately 8-1/2 by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1-1/2 inches (3.8 cm.) on the left-hand side of the page. The pages must be consecutively numbered throughout the entire record of each party (§1.653(d)) and the name of the witness must be typed at the top of each page (§1.653(e)). The questions propounded to each witness must be consecutively numbered unless paper with numbered lines is used and each question must be followed by its answer.

(b) Exhibits must be numbered consecutively and each must be marked as required by §1.653(i).

§1.678 Transcript of deposition must be filed.

Unless otherwise ordered by an examiner-in-chief, a certified transcript of a deposition must be filed in the Patent and Trademark Office within 45 days from the date of the deposition. If a party refuses to file a certified transcript, the examiner-in-chief or the Board may take appropriate action under §1.616. If a party refuses to file a certified transcript, any opponent may move for leave to file the certified transcript and include a copy of the transcript as part of the opponent's record.

§1.679 Inspection of transcript.

A certified transcript filed in the Patent and Trademark Office may be inspected by any party. The certified transcript may not be removed from the Patent and Trademark Office for printing (§1.653(g)) unless authorized by an examiner-in-chief upon such terms as may be appropriate.

§1.682 Official records and printed publications.

(a) A party may introduce into evidence, if otherwise admissible, any official record or printed publication not identified on the record during the taking of testimony of a witness, by filing a notice offering the official record or publication into evidence. If the evidence relates to the party's case-in-chief, the notice shall be filed prior to close of testimony of the party's case-in-chief. If the evidence relates to rebuttal, the notice shall be filed prior to the close of testimony of the party's case-in-rebuttal. The notice shall (1) identify the official record or printed publication, (2) identify the portion thereof to be introduced in evidence, (3) indicate generally the relevance of the portion sought to be introduced in evidence, and (4), where appropriate, be accompanied by a certified copy of the official record or a copy of the printed publication (§1.671(d)).

(b) A copy of the notice, official record, and publication shall be served.

(c) Unless otherwise ordered by an examiner-in-chief, any written objection to the notice or to the admissibility of the official record or printed publication shall be filed within 15 days of service of the notice. See also §1.656(h).

§1.683 Testimony in another interference, proceeding, or action.

(a) Prior to close of a party's appropriate testimony period or within such time as may be set by an examiner-in-chief, a party may file a motion (§1.635) for leave to use in an interference testimony of a witness from another interference, proceeding, or action involving the same parties, subject to such conditions as may be deemed appropriate by an examiner-in-chief. The motion shall specify with particularity the exact testimony to be used and shall demonstrate its relevance.

(b) Any objection to the admissibility of the testimony of the witness shall be made in an opposition to the motion. See also §1.656(h).

§1.684 Testimony in a foreign country.

(a) An examiner-in-chief may authorize testimony of a witness to be taken in a foreign country. A party seeking to take testimony in a foreign country shall, prior to the close of the party's appropriate testimony period or within such time as may be set by an examiner-in-chief, file a motion (§1.635):

(1) Naming the witness.

(2) Describing the particular facts to which it is expected that the witness will testify.

(3) Stating the grounds on which the moving party believes that the witness will so testify.

(4) Demonstrating that the expected testimony is relevant.

(5) Demonstrating that the testimony cannot be taken in this country at all or cannot be taken in this country without hardship to the moving party greatly exceeding the hardship to which all opposing parties will be exposed by the taking of the testimony in a foreign country.

(6) Accompanied by an affidavit stating that the motion is made in good faith and not for the purpose of delay or harassing any party.

(7) Accompanied by written interrogatories to be asked of the witness.

(b) Any opposition under §1.638(a) shall state any objection to the written interrogatories and shall include any cross-interrogatories to be asked of the witness. A reply under §1.638(b) may be filed and shall be limited to stating any objection to any cross-interrogatories proposed in the opposition.

(c) If the motion is granted, the moving party shall be responsible for obtaining answers to the interrogatories and cross-interrogatories before an officer qualified to administer oaths in the foreign country under the laws of the United States or the foreign country. The officer shall prepare a transcript of the interrogatories, cross-interrogatories, and recorded answers to the interrogatories and cross-interrogatories and shall transmit the transcript to BOX INTERFERENCE, Commissioner of Patents and Trademarks, Washington, D.C. 20231, with a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before answering the interrogatories and cross-interrogatories.

(2) The recorded answers are a true record of the answers given by the witness to the interrogatories and cross-interrogatories.

(3) The name of the person by whom the answers were recorded and, if not recorded by the officer, whether the answers were recorded in the presence of the officer.

(4) The presence or absence of any party.

(5) The place, day, and hour that the answers were recorded.

(6) A copy of the recorded answers was read by or to the witness before the witness signed the recorded answers and that the witness signed the recorded answers in the presence of the officer. The officer shall state the circumstances under which a witness refuses to read or sign recorded answers.

(7) The officer is not disqualified under §1.674.

(d) If the parties agree in writing, the testimony may be taken before the officer on oral deposition.

(e) A party taking testimony in a foreign country shall have the burden of proving that false swearing in the giving of testimony is punishable as perjury under the laws of the foreign country. Unless false swearing in the giving of testimony before the officer shall be punishable as perjury under the laws of the foreign country where testimony is taken, the testimony shall not be entitled to the same weight as testimony taken in the United States. The weight of the testimony shall be determined in each case.

§1.685 Errors and irregularities in depositions.

(a) An error in a notice for taking a deposition is waived unless a motion (§1.635) to quash the notice is filed as soon as the error is, or could have been, discovered.

(b) An objection to a qualification of an officer taking a deposition is waived unless:

(1) The objection is made on the record of the deposition before a witness begins to testify.

(2) If discovered after the deposition, a motion (§1.635) to suppress the deposition is filed as soon as the objection is, or could have been, discovered.

(c) An error or irregularity in the manner in which testimony is transcribed, a certified transcript is signed by a witness, or a certified transcript is prepared, signed, certified, sealed, indorsed, forwarded, filed, or otherwise handled by the officer is waived unless a motion (§1.635) to suppress the deposition is filed as soon as the error or irregularity is, or could have been, discovered.

(d) An objection to the competency of a witness, admissibility of evidence, manner of taking the deposition, the form of questions and answers, any oath or affirmation, or conduct of any party at the deposition is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Any objection which a party wishes considered by the Board at final hearing shall be included in a motion to suppress under §1.656(h).

(e) Nothing in this section precludes taking notice of plain errors affecting substantial rights although they were not brought to the attention of an examiner-in-chief or the Board.

§1.687 Additional Discovery.

(a) A party is not entitled to discovery except as authorized in this subpart.

(b) Where appropriate, a party may obtain production of documents and things during cross-examination of an opponent's witness or during the testimony period of the party's case-in-rebuttal.

(c) Upon a motion (§1.635) brought by a party within the time set by an examiner-in-chief under §1.651 or thereafter as authorized by §1.645 and upon a showing that the interest of justice so requires, an examiner-in-chief may order additional discovery, as to matters under the control of a party within the scope of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery.

(d) The parties may agree to discovery among themselves at any time. In the absence of an agreement, a motion for additional discovery shall not be filed except as authorized by this subpart.

§1.688 Use of discovery.

(a) If otherwise admissible a party may introduce into evidence, an answer to a written request for an admission or an answer to a written interrogatory obtained by discovery under §1.687 by filing a copy of the request for admission or the written interrogatory and the an-

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swer. If the answer relates to a party's case-in-chief, the answer shall be filed prior to the close of testimony of the party's case-in-chief. If the answer relates to the party's rebuttal, the admission or answer shall be filed prior to the close of testimony of the party's case-in-rebuttal. Unless otherwise ordered by an examiner-in-chief, any written objection to the admissibility of an answer shall be filed within 15 days of service of the answer.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence under this subpart.

DONALD J. QUIGG,
Nov. 8, 1984. *Acting Commissioner of Patents and Trademarks.*

[1050 OG 385]

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(173)

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 40104–4151]

Patent Interference Proceedings

Agency: Patent and Trademark Office, Commerce.
Action: Final rule; correction.
Summary: This document corrects clerical errors and adds material to the Analysis of Comments in the notice of final rule amending the Patent and Trademark rules of practice in patent interference cases, which were published in the Official Gazette of Jan. 29, 1985 (1050 OG 385 through 440).
For Further Information Contact: Fred E. McKelvey by telephone at (703) 557–4035 or by mail marked to his attention and addressed to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information:
Clerical Correction to the Preamble

The following corrections are made to the Official Gazette issue of Jan. 29, 1985:

Page 386

1. In the second column, line 32 (the fifth full paragraph, the second sentence) the word "an" is inserted after the word "or"

Page 387

2. In the second column, line 48 (the fifth full paragraph), after the word "agent", the following words "of record" are inserted.

Page 388

3. In the first column, line 29 (the first full paragraph, the third sentence), the words "of an interference" are removed and the words "in an interference" are inserted in their place; in line 39 (the first full paragraph, the last sentence), the words "Federal Rule" are removed and the words "Federal Rules" are inserted in their place; in line 41 (the second full paragraph, the first sentence), the word "provide" is removed and the word "provides" is inserted in its place.

4. In the second column, line 29 (the second full paragraph, the second sentence), the word "defined" is removed and the word "defines" is inserted in its place; in line 45 (the second full paragraph, the last sentence), the spelling of the word "in" is corrected; in line 48 (the last paragraph, the first sentence), the words "one of" are removed and the words "one or" are inserted in their place.

Page 391

5. In the second column, line 59 (the paragraph bridging the third column, the second sentence), quotation marks are placed around the word "lead".

6. In the third column, line 44 (the second full paragraph, the fourth sentence), the article "a" is inserted before the word "sanction".

Page 392

7. In the first column, line 12 (the second full sentence from the top of the page), the word "proposed" is removed; in line 30 (the seventh full sentence from the top of the page), the words "and applicant" are removed and the words "an applicant" are inserted in their place; in line 55 (the first full paragraph, the second sentence), the colon appearing after the word "appropriate" is deleted and a period is inserted in its place.

8. In the third column, line 5, the first letter of the word "while" is capitalized.

Page 394

9. In the second column, line 13 (the first full paragraph, the fourth sentence), the spelling of the word "Consultation" is corrected.

Page 395

10. In the first column, line 44 (the second full paragraph, the last sentence), the spelling of the word "necessary" is corrected; in line 59 (the last paragraph, the first sentence), the spelling of the word "specifies" is corrected.

11. In the second column, line 1, the word "the" is inserted after the word "and"; in line 14 (the first full paragraph, the third sentence), the words "is required" are removed and the words "are required" are inserted in their place.

Page 396

12. In the first column, line 5, the word "of" is removed.

13. In the second column, line 13 (the first full paragraph, the fourth sentence), the word "Claims" is removed and the word "Claim" inserted in its place.

Page 397

14. In the second column, line 2, the words "would be" are removed and the word "is" is inserted in its place; in line 6, the word "intended" is removed and the word "intends" is inserted in its place.

Page 399

15. In the second column, line 41 (the fifth full paragraph), the word "had" is removed and the word "has" is inserted in its place.

16. In the third column, line 37 (the third full paragraph, the last sentence), the comma after the word "language" is removed; in line 38, the comma after the word "affidavit" is removed.

Page 401

17. In the first column, line 11 (the first full paragraph, the first sentence), the words "of sale" are removed and the words "or sale" are inserted in their place.

Page 402

18. In the first column, line 4, the word "over" is removed and the word "of" is inserted in its place.

Page 403

19. In the first column, line 2, the spelling of the word "arguably" is corrected; in line 9, the spelling of the word "definitions" is corrected.

Page 404

20. In the first column, line 18 (the second full paragraph, the fourth sentence), the words "PTO was" are removed and the words "PTO were" are inserted in their place.

21. In the second column, line 26 (the first full paragraph, the fourth sentence), the spelling of the word "under" is corrected.

Page 406

22. In the third column, line 21 (the first full paragraph, the third sentence), a closing quotation mark is placed after the word "opponents's".

Page 407

23. In the first column, line 4 (the first full paragraph, the first sentence), the spelling of the word "suggested" is corrected.

Page 409

24. In the first column, line 21 (the first full paragraph, the third sentence), the words "do not" are inserted after the word "rules".

25. In the third column, line 33 (the first full paragraph, the first sentence), the word "is" is inserted before the word "excluded".

Page 411

26. In the third column, line 26 (the third full paragraph, the third sentence), the word "permitting " is removed and the word "permitted" is inserted in its place.

Page 413

27. In the second column, line 47 (the second full paragraph, the second sentence), the reference to "1.644(b)" should read "1.644(a)(2)".

28. In the third column, line 59 (the last paragraph, the first sentence), the first letter of the word "Interference" is made lower case.

Page 416

29. In the first column, line 1, the word "opponent's" is removed and the word "opponents" is inserted in its place.

30. In the second column, line 40 (the first full paragraph, the second sentence), the reference to "1662(a)" should read "1.662(a)"; in line 45 (the first full paragraph, the third sentence), the reference to "1633(d)" should read "1.633(d)".

Page 417

31. In the second column, line 49 (the second full paragraph, the third sentence from the end), quotation marks are placed around the word "things"; in line 55 (the second full paragraph, the last sentence), the word "to" is inserted after the words "should resort".

32. In the third column, line 11 (the first full sentence from the top of the page), the colon after the word "controversy" is removed and a period is inserted in its place; in line 54 (the first full paragraph, the penultimate sentence), the spelling of the word "appropriate" is corrected.

Page 418

33. In the second column, line 16 (the first full paragraph, the first sentence), the first letter of the word "Commentator's" is made lower case.

Page 419

34. In the table correlating the old rules 37 CFR 1.201 through 1.288 to the new rules 37 CFR 1.601 through 1.688, the following corrections are made to the entries under the section, designated as new:

RULE CORRELATION TABLE

Old	New
1.201(a)	1.601(i)
1.201(b)	1.601(i)
1.203(a)	1 603
1.204(b)	1.608(a)
1.204(c)	1.608(b)
1.205(a)	1.606
1.208	1.613(b)
1.216(b)	1.623(c), 1.624(c), 1.625(c)
1.245	1.645(a)
1.246	1.645(b)
1.257(b)	1.658(c)
1.263	1.622(c)
1.264	1.662(b)
1.271	1.671(h)
1.272(b)	1.672(d)
1.272(c)	1.672(e), (f)
1.281	1.645(a)
1.287(b)	1.687(b)
1.287(c)	1.687(c)

Additional Analysis of Comments

Page 404

1. In the second column after the last full paragraph, the following paragraph is added:

An oral comment was received by telephone concerning the declaration of an interference under §§1.603 and 1.606 with applications filed under the provisions of 35 U.S.C. 157—Statutory Invention Registration (SIR). Under 35 U.S.C. 157(c), a published SIR has all of the attributes specified for patents except those specified in 35 U.S.C. 183 and 271 to 289. Consequently, interferences will be declared between an application and either an application containing a request for a SIR (37 CFR 1.293) or a published SIR. Until sufficient experience is gained by the PTO, the interference will be conducted by procedure established on a case by case basis.

Page 415

In the second column, after the first full paragraph, the following paragraph is added:

Oral comments have been received by telephone concerning the doctrine of interference estoppel under 37 CFR 1.658(c) with respect to a party's failure to move under 37 CFR 1.633(e) to declare an "additional interference" between an additional application not involved in the interference and owned by the party and an opponent's application or patent involved in the interference on a separate patentable invention. Generally a party will be estopped for failure to move when the separate patentable invention (subject matter) which could have been the subject of the "additional interference" was *claimed* (during the pendency of the interference) (1) in the opponent's involved application or patent or (2) in a non-involved application owned by the party.

The following illustrates the general applicability of interference estoppel in certain situations where a party fails to move under 37 CFR 1.633(e) to declare an "additional interference" on a separate patentable invention.

Party's non-involved application	Opponent's involved application or patent	Estoppel
Claimed	Claimed	Yes
Disclosed	.do	Yes

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Claimed	Disclosed	Yes
Disclosed	.do	No

Clerical Corrections to the Rules

1. On page 420 the second column, the amendment to §1.8, amendatory instruction 4 is corrected by changing "pa ragraph (a)(xii) to read "paragraph (a)(2)(xii)".
2. On page 421, the second column, in the second sentence of §1.59, the spelling of the word "required" is corrected and the reference to "§1.21(1)" is corrected to read "§1.21(*l*)".
3. On page 423, the third column, §1.324 is corrected by inserting in the second sentence the article "a" before the word "patent".
4. On page 424, the first column, in §1.565, in the first sentence of paragraph (b), "in filed" should have read "is filed".
5. On page 425, the first column, the last sentence of §1.601(i) is corrected by removing the last occurrence of the word "patents" and inserting, in its place, the word "patent".
6. On page 425, the first column, §1.601(k) is corrected by removing the words "and interference" and inserting, in their place, the words "an interference".
7. On page 425, the second column the second sentence of §1.601(n) is corrected by removing the words "a invention" and inserting, in their place, the words "an invention".
8. On page 427, the first column, §1.611(d)(2) is corrected by inserting the word "in" after the word "provided".
9. On page 427, the second column, the reference to "1.608(b)" in the first sentence of §§1.612(a), 1.612(b) and 1.612(c) is corrected to read "1.608".
10. On page 427, the third column, the first sentence of §1.615(a) is corrected by placing in italics the words "ex parte".
11. On page 427, the third column, the second sentence of §1.616 is corrected by changing to upper case the first letter of the words "holding", "precluding" and "granting" in paragraphs (a) to (e).
12. On page 428, the first column, the first sentence of §1.617(b) is corrected by removing the first occurrence of the word "any" and inserting, in its place, the word "may".
13. On page 428, the first column, the last sentence of §1.617(b) is corrected by inserting the words "on each opponent" after the words "shall serve".
14. On page 428, the first column, the last sentence of §1.617(d) is corrected by removing the words "an oral" and inserting, in their place, the article "a".
15. On page 428, the first column, the last sentence of §1.617(g) is corrected by removing the word "part" and inserting, in its place, the word "subpart".
16. On page 428, the second column, the second sentence of §1.621(a) is corrected by inserting the word "by" after the first occurrence of the word "or".
17. On page 428, the second column, the first sentence of §1.621(b) is corrected by inserting a comma after the first occurrence of word "statement".
18. On page 428, the third column, the first sentence of §1.624(a) is corrected by removing the semicolon appearing after the word "count" and inserting, in its place, a colon.
19. On page 430, the first column, the last sentence of §1.631(a) is corrected by removing the words "a party shall serve copies of its preliminary statement on every opponent" and inserting, in their place, the words "a party shall serve a copy of its preliminary statement on each opponent".
20. On page 430, the first column, the heading of §1.633 is corrected by changing to lower case the first letter of the word "Motions".
21. On page 430, the third column, in §1.636(b) the reference to "§1.633(a), (b), or (g)" is corrected to read "§1.633(a), (b), (c)(1), or (g)".
22. On page 431, the second column, in §§1.637(d)(2) and 1.637(e)(1)(ii) the reference to "§1.608(b)" is corrected to read "§1.608".
23. On page 431, the second column, §1.637(e)(1)(iv) is corrected by removing the words "a claim" and inserting, in their place, the words "any claim".
24. On page 431, the third column, §1.637(e)(2)(iii) is corrected by removing the first occurrence of the word "party's" and inserting, in its place, the word "party".
25. On page 431, the third column, the second sentence of §1.637(e)(2)(iv) is corrected by removing the two occurrences of the word "claims" and inserting, in their place, the word "claim".
26. On page 431, the third column, in the first sentence of §1.637(f) (2), the reference to "§1.608(b)" is corrected to read "§1.608".
27. On page 432, the first column, §1.637(h)(3) is corrected by removing the words "a claim" and inserting, in their place, the words "any proposed claim".
28. On page 432, the second column, §1.640(b)(2) is corrected by removing the words "entered or" and inserting, in their place, the words "entered on".
29. On page 432, the third column, the penultimate sentence of §1.640(c) is corrected by inserting the article "a" before the words "single examiner-in-chief".
30. On page 432, the third column, §1.640(d)(1) is corrected by removing the words "all counts" and inserting, in their place, the words "any count".
31. On page 432, the third column, the first sentence of §1.640(e) is corrected by removing the word "filed" and inserting, in its place, the word "files".
32. On page 433, the second column, §1.644(i) is corrected by removing the word "petition" and inserting, in its place, "petitions".
33. On page 433, the second column, the first sentence of §1.645(a) is corrected by inserting the word "or" after "§§1.302," and after "§§1.303,".
34. On page 433, the third column, in the first sentence of §1.646(a), the spelling of the word "every" is corrected.
35. On page 433, the third column, §1.646(c) is corrected by removing the word "part" and inserting, in its place, the word "subpart".
36. On page 434, the third column, §1.653(c)(5) is corrected by removing the word "an" and inserting, in its place, the word "and".
37. On page 434, the third column, the last sentence of §1.653(g) is corrected by removing the word "found" and inserting, in its place, the word "bound".
38. On page 435, the first column, the penultimate sentence of §1.653(i) is corrected by removing the words "and exhibit" and inserting, in their place, the words "an exhibit".
39. On page 436, the third column, the second sentence of §1.664(a) is corrected by removing the word "part" and inserting, in its place, the word "subpart".
40. On page 437, the first column, the last sentence of §1.666(c) is corrected by removing the word "Commission" and inserting, in its place, "Commissioner".
41. On page 437, the second column, the first sentence of §1.671(b) is corrected by removing the word "part" and inserting, in its place, the word "subpart".
42. On page 437, the second column, in the first sentence of §1.671(e) the reference to "§1.608(b)" is corrected to read "§1.608".
43. On page 437, the third column, the third sentence of §1.672(b) is corrected by removing the words "a party shall file" and inserting, in their place, the words "a party should file".
44. On page 438, the third column, in §1.676(a), the spelling of the third occurrence of the word "transcript" is corrected.
45. On page 440, the first column, the second sentence of §1.684(c)(6) is corrected by removing the words "a witness refused to read" and inserting, in their place, the words "a witness refuses to read".
46. On page 440, the second column, §1.685(c) is corrected by inserting the word "or" after the first occurrence of the word "error," and by removing the word "indorsed" and inserting, in its place, the word "endorsed".

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 21, 1985.

[FR Doc. 85-13077 Filed 5-30-85; 8:45 am]

Billing Code 3510-16-M

[1059 OG 27]

(174) **Animals — Patentability**

A decision by the Board of Patent Appeals and Interferences in *Ex parte Allen*, 2 USPQ2d 1425 (Bd. App. & Int., Apr. 3, 1987), held that claimed polyploid oysters are nonnaturally occurring manufactures or compositions of matter within the meaning of 35 U.S.C. 101. The Board relied upon the opinion of the Supreme Court in *Diamond* v. *Chakrabarty*, 447 U.S. 303, 208 USPQ 193 (1980) as it had done in *Ex parte Hibbard*, 227 USPQ 443 (Bd. App. & Int., 1985), as controlling authority that Congress intended statutory subject matter to "include anything under the sun that is made by man." The Patent and Trademark Office now considers nonnaturally occurring non-human multicellular living organisms, including animals, to be patentable subject matter within the scope of 35 U.S.C. 101.

The Board's decision does not affect the principle and practice that products found in nature will not be considered to be patentable subject matter under 35 U.S.C. 101 and/or 102. An article of manufacture or composition of matter occurring in nature will not be considered patentable unless given a new form, quality, properties or combination not present in the original article existing in nature in accordance with existing law. See e.g. *Funk Bros. Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127, 76 USPQ 280 (1948); *American Fruit Growers* v. *Brogdex*, 283 U.S. 1, 8 USPQ 131 (1931); *Ex Parte Grayson*, 51 USPQ 413 (Bd. App. 1941).

A claim directed to or including within its scope a human being will not be considered to be patentable subject matter under 35 U.S.C. 101. The grant of a limited, but exclusive property right in a human being is prohibited by the Constitution. Accordingly, it is suggested that any claim directed to a non-plant multicellular organism which would include a human being within its scope include the limitation "non-human" to avoid this ground of rejection. The use of a negative limitation to define the metes and bounds of the claimed subject matter is a permissible form of expression, *In re Wakefield*, 422 F.2d 897, 164 USPQ 636 (CCPA 1970).

Accordingly, the Patent and Trademark Office is now examining claims directed to multicellular living organisms, including animals. To the extent that the claimed subject matter is directed to a non-human "nonnaturally occurring manufacture or composition of matter — a product of human ingenuity" (*Diamond* v. *Chakrabarty*), such claims will not be rejected under 35 U.S.C. 101 as being directed to nonstatutory subject matter.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Apr. 7, 1987.

[1077 OG 24]–

(175) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 1
[Docket No. 50103–7058]

Arbitration of Patent Interference Cases

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.

Summary: The Patent and Trademark Office is amending its rules to implement the arbitration provisions of section 105 of the Patent Law Amendments Act of 1984, Pub. L. 98–622.
Effective Date: May 27, 1987.
For Further Information Contact: Ian A. Calvert or Michael Sofocleous by telephone at (703) 557–4000 or by mail marked to the attention of either and addressed to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Section 105 of the Patent Law Amendments Act of 1984, enacted Nov. 8, 1984, provides for the arbitration of patent interference cases. Section 105, codified as 35 U.S.C. 135(d), provides:

Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.

The Patent and Trademark Office (PTO) conducts interference proceedings to determine any question of patentability and priority of invention between two or more parties claiming the same patentable invention. An interference may be declared between two or more pending applications naming different inventors when, in the opinion of an examiner, the applications contain claims for the same patentable invention. An interference may be declared between one or more pending applications and one or more unexpired patents naming different inventors when, in the opinion of an examiner, any application and any unexpired patent contain claims for the same patentable invention. Patent interference cases can be quite expensive. Arbitration may prove useful to minimize expenses in interference cases. The arbitration rule applies to all pending interferences.

The PTO published an advance notice of rulemaking in the Federal Register of Jan. 16, 1985 (50 FR 2294–2296). The notice was also published in the *Official Gazette* on Feb. 12, 1985 (1051 O.G. 9–10). The notice also appeared in the Bureau of National Affairs' Patent, Trademark and Copyright Journal, Vol. 29, p. 310 (Jan. 24, 1985), hereinafter "BNA." Five written comments were received in response to the advance notice.

A notice of proposed rulemaking was published in the Federal Register on Sept. 15, 1986 (51 FR 32756–32762), in the *Official Gazette* on Oct. 21, 1986 (1071 O.G. 25–31), and in BNA's Patent, Trademark and Copyright Journal, Vol. 32, pp. 552–558 (Sept. 18, 1986). In response to the notice, three comments, two in writing and one by telephone, were received. These comments are discussed herein.

All written comments are available for public inspection in Rm. 10C01, Crystal Gateway 2, 1225 Jefferson Davis Hwy., Arlington, Va.

Discussion of the Rule

Under §1.690 the arbitrator can determine issues of patentability as between the parties but a determination by him or her that the subject matter is patentable would not be binding upon the PTO. If the arbitrator's award holds that a party's claims corresponding to the count are unpatentable over prior art or under 35 U.S.C. 112, that determination would be binding on that party vis-a-vis the party's opponent and would result in a judgment adverse to that party. The judgment, however, would not discharge the duty that each party has under 37 CFR 1.56 to bring to the attention of the examin-

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er in charge of its respective application any prior art and/or reason relied upon by the arbitrator in the determination of unpatentability.

It is the longstanding practice of the PTO to favor the settlement of interferences and the PTO looks with favor on all proper efforts in that direction as being conducive to the termination of the proceeding. See 4 Reise and Caesar, *Interference Law and Practice*, section 861, p. 2956 (Michie Co. 1948) and the Commissioner's Notice of Nov. 9, 1976, titled, "Extensions of Time and Filing of Papers in Interferences," 953 *Official Gazette* 2 (Dec. 7, 1976). In this regard, the notice states that:

> • • • stipulation or motions for extensions of time under 37 CFR 1.245 will not henceforth be approved or granted, respectively, unless accompanied by a detailed showing of facts sufficient to establish that the action for which the extension is sought could not have been or cannot be taken or completed during the time previously set therefor, and that the entire extension appears necessary for the taking or completion of that action. Since the Office favors the amicable settlement of interferences, the foregoing requirement will be liberally applied in the case of a first request for extension of time for the purpose of negotiating settlement.

Consequently, the examiner-in-chief may give favorable consideration to a motion for an extension of time for purposes of settlement; however, a further motion for an extension for that purpose would not be granted unless it is accompanied by a schedule of specific dates showing that the parties will make a good faith effort to promptly terminate the proceeding. If preliminary motions under 37 CFR 1.633 have not been filed, the examiner-in-chief would not normally extend the time for their filing merely for purposes of settlement. In these circumstances, the examiner-in-chief would require that the preliminary motions be filed or that their filing be waived.

If the proceeding is in the testimony stage, the examiner-in-chief could grant the parties' motion to extend all the unexpired testimony times to close concurrently on the date the record is due provided they file a stipulation that any evidence to be submitted will be in one of the forms specified in 37 CFR 1.672(e) and (f), i.e., affidavit testimony or a stipulation either as to what a particular witness would testify to if called or the facts in the case of any party.

Analogously, the aforesaid practice would apply to arbitration. Section 1.690 requires that parties who intend to arbitrate an interference notify the examiner-in-chief in writing of their intention to arbitrate and file a copy of the arbitration agreement within 20 days of its execution. Pursuant to 35 U.S.C. 135(c) an agreement to arbitrate is considered to be one "made in connection with and in contemplation of the termination of the interference". The agreement must be in writing a copy filed in the PTO within 20 days after its execution. The notification of intention to arbitrate must be made in a separate paper. Merely incorporating the notification in the agreement is not sufficient to comply with §1.690(a). The parties also will be required to adhere to a time schedule approved by the examiner-in-chief such that the interference proceeding can be expeditiously resolved so as to prevent the unnecessary postponement of the beginning of the running of the term of any patent resulting from an application involved in the interference. *Pritchard* v. *Loughlin*, 361 F.2d 483, 149 USPQ 841 (CCPA 1966).

If the parties desire to arbitrate an interference prior to the close of the motion period, the examiner-in-chief will not normally grant an extension of time for the purpose. The parties will be required to file their preliminary motions under 37 CFR 1.633. After the motions are filed, the examiner-in-chief could grant an extension only upon compliance with 37 CFR 1.645 which requires a showing of "good cause." Such a "good cause" showing would normally include a schedule, agreed to by the parties, setting forth, *inter alia*, the dates for (1) executing the arbitration agreement, (2) determining priority and (3) terminating the interference.

Section 1.690(a) requires that an arbitration agreement include the following:

(1) The name of the arbitrator or a date certain (not more than 30 days after the execution of the agreement) for his or her selection.
(2) The issues to be decided by the arbitrator.
(3) A provisions that the arbitrator's award is binding on the parties and that the Board can enter a judgment based thereon.

Section 1.690(c) requires that a copy of the arbitration award be filed within 20 days from the date of the award or by a date set by the examiner-in-chief.

If the proceeding is in the testimony stage and the parties desire to arbitrate, the examiner-in-chief could grant a reasonable extension for that purpose. A motion for a further extension for that purpose would not be granted unless it were accompanied by a schedule, agreed to by the parties, setting forth, *inter alia*, the dates for (1) executing the arbitration agreement, (2) determining priority, and (3) terminating the interference. If the parties are to submit the required schedule, a motion for a further extension could be granted. If the parties file a copy of the arbitration agreement and they agree that any evidence submitted in the proceeding will be in one of the forms specified by 37 CFR 1.672(e) or (f), the examiner-in-chief could give favorable consideration to the parties' motion that all the unexpired times be extended to close concurrently on the date the record is due. By that date, the parties would be required to file the arbitrator's award and their records, if necessary for the resolution of any issue not decided by the arbitrator. If the award is not dispositive of all the issues in the interference, the examiner-in-chief would set brief times so that parties could explain their evidence relating to any issues which the arbitrator did not, or was unable to decide. For example, the award might be dispositive of the issue of priority between the parties and leave for the Board's determination the question of substituting a new count raised in a preliminary motion under 37 CFR 1.633.

The arbitration award, filed by the parties, would be in the nature of a final decision and should include the following:

(1) The style (e.g., *Jones* v. *Smith*), the number of the interference and the names of the real parties in interest.
(2) The subject matter in issue, i.e., the counts and a table of counts, if necessary, indicating the relationship of the parties' claims corresponding to each count and those claims not corresponding thereto.
(3) The issues for decision before the arbitrator.
(4) The arbitrator's decision. The decision may also include a statement of the grounds and reasoning in support thereof.
(5) A summary, if appropriate, indicating, inter alia, that judgment should be awarded to one of the parties.

Any party to the arbitration can attack the award only in the manner provided by 9 U.S.C. 10 and 11.

9 U.S.C. 10 reads as follows:

> In either of the following cases the United States court in and for the district wherein the award was made may make an order vacating the award upon the application of any party to the arbitration—
> (a) Where the award was procured by corruption, fraud, or undue means.
> (b) Where there was evident partiality or corruption in the arbitrators, or either of them.
> (c) Where the arbitrators were guilty of misconduct in refusing to postpone the hearing, upon sufficient cause shown, or in refusing to hear evidence pertinent and material to the controversy; or of any other misbehavior by which the rights of any part have been prejudiced.
> (d) Where the arbitrators exceeded their powers, or so imperfectly execute them that a mutual, final, and definite award upon the subject matter submitted was not made.
> (e) Where an award is vacated and the time within which the agreement required the award to be made has not expired the court may, in its discretion, direct a rehearing by the arbitrators.

9 U.S.C. 11 reads as follows:

> In either of the following cases, the United States court in and for the district wherein the award was made may make an order modifying or correcting the award upon the application of any party to the arbitration—
> (a) Where there was an evident material miscalculation of figures or an evident material mistake in the description of any person, thing, or property referred to in the award.
> (b) Where the arbitrators have awarded upon a matter not submitted to them, unless it is a matter not affecting the merits of the decision upon the matter submitted.
> (c) Where the award is imperfect in matter of form not affecting the merits of the controversy.
> The order may modify and correct the award, so as to effect the intent thereof and promote justice between the parties.

See, for example, *Fairchild and Co., Inc.* v. *Richmond, F. and P. R. Co.*, 516 F.Supp. 1305 (D.D.C. 1981). If such an attack were to be made by one of the parties while the interference is pending before the Board, the Board would not stay the interference. Rather, the Board would issue its judgment in accordance with the award. So long as the award is in compliance with §1.690, it would carry the presumption that the arbitrator acted correctly in making his decision and accordingly, the party designated by the award as the prevailing party would be entitled *prima facie* to a judgment in its favor. If the dissatisfied party brings an action in an appropriate United States district court and if the court vacates, modifies or corrects the award, the Board would take action consistent with the court's findings. No action would lie in the PTO to vacate or correct an arbitration award, unless all parties agreed in writing.

The following examples illustrate the practice of the PTO concerning arbitration.

Example 1

Arbitration Practice—Preliminary Stage

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The parties decide to arbitrate the interference in accordance with §1.690 and file a motion for an extension of time so that they can "freely" arbitrate the interference, but do not file a waiver of their right to file motions.

The examiner-in-chief would deny the motion because the parties' intention to arbitrate, in and of itself, does not constitute a showing of "good cause" within the meaning of 37 CFR 1.645(a). Even if the parties file an agreement to arbitrate, the PTO would not grant any extension of time to permit the parties to "freely" arbitrate an interference prior to the expiration of the time for filing preliminary motions.

Example 2

Arbitration Practice—Testimony Stage

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633. The parties file preliminary motions; the examiner-in-chief renders a decision thereon and sets the testimony times. The parties file a notice of intent to arbitrate the interference under §1.690(a) and a motion for a one month extension of the testimony times. The examiner-in-chief could grant the motion, but would indicate that if the parties file another motion for an extension for that purpose, the motion must be accompanied by a schedule, agreed to by the parties, setting forth the dates for (1) executing the arbitration agreement, (2) determining priority and (3) terminating the interference.

The parties file a motion for an additional one month extension of time to permit the parties to arbitrate the interference. Accompanying the motion is a proposed schedule of times and a copy of the arbitration agreement which provides, inter alia, (i) the name of the arbitrator or a date certain for his selection, (ii) that the arbitrator's award will be binding on the parties, (iii) the issues to be decided by the arbitrator and (iv) that the award will be filed by the date the record is due. The parties also indicate that the evidence to be filed in the proceeding will be in one of the forms specified by 37 CFR 1.672(e) or (f). The examiner-in-chief could grant the motion and indicate that he will give favorable consideration to a motion to extend all the unexpired times to close concurrently on the date the record is due should the parties request such.

On the date for filing the record, the parties file the arbitrator's award and their evidentiary records, if necessary. The award states (i) the style and number of the interference and the real parties in interest, (ii) the subject matter in issue and the parties' claims which correspond thereto and which do not correspond thereto, (iii) the issues for decision before the arbitrator, (iv) the arbitrator's decision (which may include a statement of the grounds and reasoning in support thereof) and (v) that judgment should be awarded to one of the parties. The examiner-in-chief examines the award to ensure that it complies with §1.690 and is dispositive of the issues in the interference which can be decided by the arbitrator. If the award is otherwise acceptable, the Board would issue a judgment based on the award. If the award is not dispositive of all the issues in the interference, the examiner-in-chief would determine how the interference will proceed.

Example 3

Arbitration Practice—Award Decides Interference-in-Fact Issue and Junior Party Takes No Testimony

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(b) on the ground that there is no interference-in-fact between his claims corresponding to the count and his opponent's claims corresponding thereto. The examiner-in-chief denies the motion, examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. On the date for filing the record, the junior party files the award together with a motion requesting that the interference be terminated in view of the award. He does not file a record. In his award the arbitrator holds that no interference-in-fact exists between the parties' claims corresponding to the count.

The motion would be denied because the award decides a matter of patentability which would not result in a judgment adverse to one of the parties. Consequently, the junior party would be placed under an order to show cause why judgment under 37 CFR 1.652 should not be entered against him for his failure to file an evidentiary record by the time set therefore. In response to the order, the junior party requests final hearing to review the examiner-in-chief's denial of the motion for judgment and a testimony period to show no interference-in-fact. The examiner-in-chief would grant the junior party's request to the extent that final hearing is set and would deny the request for testimony because the junior party already had the opportunity to take testimony on the matter.

Example 4

Arbitration Practice—Cannot Decide Patentability

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR

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1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(a) on the ground that the claims corresponding to the count are unpatentable over prior art. In his decision on motions, the examiner-in-chief grants the motion and places both parties under an order pursuant to 37 CFR 1.640(d)(1) to show cause why judgment should not be entered against them as to the count. In response to the order, the senior party files a paper in accordance with 37 CFR 1.640(e) purportedly showing good cause why judgment should not be entered in accordance with the order and a motion requesting permission to arbitrate the patentability issue. The examiner-in-chief would deny the motion. The arbitrator is without authority to establish vis-a-vis the public that the subject matter of the court is patentable. Thus, the arbitration will serve no useful purpose. The Board would consider the senior party's paper and enter an appropriate order.

Example 5

Arbitration Practice—Award After Decision on Motions

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion for judgment under 37 CFR 1.633(a) on the ground that the claims corresponding to counts 1 and 2 are unpatentable over prior art. In his decision on motions, the examiner-in-chief grants the motion with respect to count 1, denies the motion with respect to count 2 and places both parties under an order pursuant to 37 CFR 1.640(d)(1) to show cause why judgment should not be entered against them as to count 1. The senior party files a paper in accordance with 37 CFR 1.640(e); the junior party, a response thereto. The Board considers the paper and the response thereto and based on the record enters judgment adverse to both parties as to count 1. Thereafter, the examiner-in-chief examines the preliminary statements and sets dates for taking testimony and filing the record.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. In his award, the arbitrator decides that judgment should be awarded to the junior party. On the date for filing the record, both parties file the award together with a motion requesting that the interference be terminated in view of the award. No record is filed.

The motion would be granted and accordingly it would be held that the senior party is not entitled to a patent containing his claims corresponding to count 2.

Example 6

Arbitration Practice—Award Decides Patentability

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions for judgment under 37 CFR 1.633 are filed and after the examination of the preliminary statements, the examiner-in-chief sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intent to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief. In his award, the arbitrator finds (1) that the evidence is insufficient to establish a prior public use bar under 35 U.S.C. 102(b) against the junior party, (2) that the claims of the junior party corresponding to the count are patentable under 35 U.S.C. 103 over the prior art cited by the senior party to the junior party, and (3) that judgment on priority should be awarded to junior party. On the date for filing together with a motion requesting that the interference be terminated in view of the award.

The motion would be granted and accordingly it would be held that the senior party is not entitled to a patent containing his claims corresponding to the count. After the termination of the proceeding, each party has the duty under 37 CFR 1.56 to bring before the primary examiner the evidence concerning the purported public use bar and the prior art cited by the senior party and/or considered by the arbitrator.

Example 7

Arbitration Practice—Award Grants Priority to Junior Party Contingent Upon Granting of Preliminary Motion Under 1.633(C)

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. The junior party files a motion under 37 CFR 1.633(c)(1) to substitute another count. The examiner-in-chief denies the motion, examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intention to arbitrate and enter into an arbitration agreement which is approved by the examiner-in-chief. The agreement provides that any evidence to be submitted by the parties will be in the form of a stipulation under 37 CFR 1.672(e) and (f). The parties file a motion requesting that all the unexpired testimony times be extended to close concurrently on the date the record is due. The motion would be granted.

On the date for filing the record, the junior party files his record and the award. The award states, inter alia, that if the Board at final hearing should grant the junior party's motion under 37 CFR 1.633(c)(1) to substitute a new count, judgment should be awarded to the junior party based on the evidence. Otherwise, the award states that judgment should be awarded to the senior party.

The examiner-in-chief sets the brief times and after the filing thereof the interference would be set for final hearing so that the Board can review the examinter-in-chief's denial of the junior party's motion under 37 CFR 1.633(c) and issue an appropriate judgment based on the award.

Example 8

Arbitration Practice—Award Attacked

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No preliminary motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference, notify the examiner-in-chief of their intention to arbitrate and file an arbitration agreement which is approved by the examiner-in-chief.

On the date for filing the record, both parties file their records. The junior party files the award which states that judgment should be awarded to him and a motion for judgment based on that award. The senior party files an opposition to the motion for judgment on the grounds (i) that the award contains errors of law, (ii) that the award was procured by "corruption, fraud or undue means" in violation of 9 U.S.C. 10(a), and (iii) that the arbitrator exhibited "evident partiality" in violation of 9 U.S.C. 10(b) and was "guilty of misconduct * * * in refusing to hear evidence pertinent and material" to the interference, citing 9 U.S.C. 10(c).

The Board would grant the judgment based on the award, holding that the senior party is not entitled to a patent containing his claims corresponding to the count. So long as the award is in compliance with the provisions of §1.690, it would carry a presumption that the arbitrator acted properly in all respects. Consequently, before the PTO the award is binding upon the parties and the junior party is *prima facie* entitled to a judgment in its favor. Thus, no action lies in the PTO as regards the matter raised by the senior party. The senior party's action lies in an appropriate United States district court and the PTO would take any action consistent with the court's decision.

Example 9

Arbitration Practice—Award Cannot Modify Board's Final Decision

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference and enter into an arbitration agreement. Neither party notifies the examiner-in-chief of their intent to arbitrate nor do they file a copy of the agreement in the interference. Both parties timely file their records and briefs. Both waive oral argument. The Board enters a final decision after consideration of the evidence in favor of the senior party.

The junior party requests reconsideration of the Board's final decision, submits a copy of the arbitration award and moves that the Board set aside its final decision and enter judgment in his favor based on the award. In support of its request, the junior party cites 9 U.S.C. 9, which provides that "any party to the arbitration may apply to the court so specified for an order confirming the award" and 35 U.S.C. 135(d) which provides that title 9 applies to interference arbitrations.

The Board would deny the motion to set aside. The parties did not comply with §1.690(a), i.e., notify the examiner-in-chief in writing of their intention to arbitrate and file a copy of the arbitration agreement within twenty (20) days of its execution. The denial of the motion is an appropriate sanction under 37 CFR 1.616. Such action by the Board is considered consistent with long-standing interference practice. Cf. *Humphrey* v. *Fickert*, 1904 Dec. Comm'r. Pat. 447 (Comm'r. 1904) wherein the Board, after it had considered the evidence, refused to set aside its award of priority to Fickert and act upon the Fickert's concession of priority in favor of Humphrey, the losing party.

Example 10

Arbitration Award Filed With Record—No Notice to Examiner-In-Chief

An interference is declared on or after Feb. 11, 1985. The examiner-in-chief sets a time in accordance with 37 CFR 1.611 for filing preliminary motions under 37 CFR 1.633 and preliminary statements. No motions are filed. The examiner-in-chief examines the preliminary statements and sets the testimony times.

During the testimony period, the parties decide to arbitrate the interference and enter into an arbitration agreement. Neither party notifies the examiner-in-chief of the agreement. The junior party timely files its record together with a copy of the arbitration award and a motion for judgment based on the award.

The motion would be denied. Under the provisions of 37 CFR 1.616, the examiner-in-chief would place both parties under an order to show cause why judgment should not be rendered against them for their failure to comply with 1.690(a), i.e., failing to notify him of their intent to arbitrate and file a copy of the arbitration agreement.

Discussion of Comments

One commentor suggested that the expression "An interference or any aspect thereof shall be arbitrated" in part (b) of proposed §1.690 might be construed as going beyond the terms of the statute by authorizing an examiner-in-chief to require the parties to arbitrate an interference, and proposed that the quoted language be changed to "An arbitration proceeding under this section shall be conducted." To eliminate any possible misconstruction of the rule, this proposal has been adopted.

A second commentor suggested, by telephone, that a provision be added to proposed §1.690 requiring that the arbitrator be familiar with United States interference practice, and that United States law be applied by the arbitrator in making the determination. He expressed the fear that a foreign arbitrator might reach a result contrary to established domestic law.

This suggestion has not been adopted. It is incumbent upon the parties to select the arbitrator, and to satisfy themselves as to his or her qualifications. Presumably if the arbitrator's decision is contrary to established law, any resulting patent would be subject to attack on that ground by a third party in subsequent litigation.

Another commentor stated that, with the arbitration rule, the PTO was "attempting to apply a band-aid to a system which cannot be cured by application of a band-aid," and that the first-to-file system should be adopted in place of the first-to-invent system. This suggestion is obviously far beyond the scope of the rule change under consideration. The first-to-invent system is mandated by statute and could not be replaced merely by a change in the rules. The purpose of §1.690 is to establish a specific procedure governing the optional arbitration of interferences provided by section 105 of Pub. L. 98–622.

Other Considerations

This rule does not have a significant impact on the quality of the human environment or the conservation of natural resources.

The rule is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) because arbitration intended to minimize expenses in interference cases.

The Patent and Trademark Office has determined that this rule is not a major rule under Executive Order 12291. The annual effects on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflicts of interest, Courts, Inventions and patents, Lawyers.

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and 135, Part 1 of Title 37 CFR is amended as follows:

PART 1—RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

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2. New §1.690 is added to Subpart E to read as follows:

§1.690 Arbitration of Interferences.

(a) Parties to a patent interference may determine the interference or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of Title 9, United States Code. The parties must notify the Board in writing of their intention to arbitrate. An agreement to arbitrate must be in writing, specify the issues to be arbitrated, the name of the arbitrator or a date not more than thrity (30) days after the execution of the agreement for the selection of the arbitrator, and provide that the arbitrator's award shall be binding on the parties and that judgment thereon can be entered by the Board. A copy of the agreement must be filed within twenty (20) days after its execution. The parties shall be solely responsible for the selection of the arbitrator and the rules for conducting proceedings before the arbitrator. Issues not disposed of by arbitration will be resolved in accordance with the procedures established in 37 CFR, Subpart E of Part 1, as determined by the examiner-in-chief.

(b) An arbitration proceeding under this section shall be conducted within such time as may be authorized on a case-by-case basis by an examiner-in-chief.

(c) An arbitration award will be given no consideration unless it is binding on the parties, is in writing and states in a clear and definite manner (1) the issue or issues arbitrated and (2) the disposition of each issue. The award may also include a statement of the grounds and reasoning in support thereof. Unless otherwise ordered by an examiner-in-chief, the parties shall give notice to the Board of an arbitration award by filing within twenty (20) days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue or issues to which it relates.

(d) An arbitration award shall not preclude the Office from determining patentability of any invention involved in the interference.

DONALD J. QUIGG,
Mar. 16, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[FR Doc. 87-9373 Filed 4-24-87; 8:45 am]
BILLING CODE 3510-16-M

[1080 OG 15]

(176) **Disclosure Document Program**

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program. Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

The Program

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

Content of Disclosure Document

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8 1/2 by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

Retention

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

Warning as to Limitations

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner of Patents.*

[883 O.G. 3]

(177) **Suspension of Action Under 37 CFR 1.103 and Under 37 CFR 1.212**

The purpose of this notice is to clarify existing Office practice with respect to suspension of action. "Suspension of action" under 37 CFR 1.103 applies only to the situation where action is to be taken *by the Examiner.* In other words, action cannot be suspended in an application which contains an outstanding Office action awaiting response by the applicant.

Under 37 CFR 1.212, upon declaration of an interference, ex parte prosecution of an application is suspended and any outstanding Office actions are considered as withdrawn by operation of the rule. *Ex parte Peterson,* USPQ 119 (Commissioner of Patents, 1941). Upon termination of the interference, the Examiner will reinstate the action treated as withdrawn by operation of 37 CFR 1.212 and set a statutory period for response. The formats set forth in MPEP 1109.01 and MPEP 1109.02 may be followed.

Careful adherence to the distinction set forth above will prevent any question of abandonment from arising in connection with cases in which suspension of prosecution has occurred.

WILLIAM FELDMAN,
Mar. 7, 1978. *Deputy Assistant Commissioner for Patents.*

[969 O.G. 8]

(178) **POSTAL SERVICE EMERGENCY CONTINGENCY PLAN**

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557-3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766-2386.
ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265-4597.
ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526-6000.
BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962-3560.
BIRMINGHAM, ALA., 35205, Suite 200-201, 908 S. 20th St. (205) 325-3327.
BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223-2312.
BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842-3208.
CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343-6181, Ext. 375.
CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 788-2151.
CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353-4450.
CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (515) 684-2944.
CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522-4750.
COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765-5345.
DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749-1515.
DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837-3246.

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DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284–4222.
DETROIT, 48226, 445 Federal Bldg. (313) 226–3650.
GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St., P.O. Box 1950. (919) 275–9111, Ext. 345.
HARTFORD, CONN., 06103, Room 610-B, Federal Office Bldg., 450 Main St. (203) 244–3530.
HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546–8694.
HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226–4231.
INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269–6214.
KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374–3142.
LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824–7591.
MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534–3213.
MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350–5267.
MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224–3473.
MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725–2133.
NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589–6546.
NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264–0634.
NEWARK, N.J., 07102, Gateway Bldg., (4th Floor) (201) 645–6214.
PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597–2850.
PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261–3285.
PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644–2850.
PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221–3001.
RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784–5203.
RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782–2246.
ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622–4243.
SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524–5116.
SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556–5860.
SAN JUAN, P.R., 00902, Room 100, Post Office Bldg., (809) 723–4640.
SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125–29 Bull St. (912) 232–4204.
SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442–5615.

C. MARSHALL DANN,
July 18, 1975. *Commissioner of Patents and Trademarks.*

[937 O.G. 386]

(179) **Examiner Testimony**

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Majewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works v. Joy Manufacturing Co.*, 167 USPQ 170, 171: ". . . the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the procedure set forth in Section 7.02, Department of Commerce Administrative Order 205–12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (*a*) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (*b*) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. 762]

(180) **No Change in Foreign Filing License Requirements**

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbesing at 703–557–2897, or Mr. Edward Drazdowsky at 703–557–2167.

WILLIAM FELDMAN,
Nov. 24, 1980. *Acting Assistant Commissioner, for Patents.*

[1001 O.G. 28]

(181) **Department of Commerce Patent and Trademark Office**

United States Adherence to the International Union for the Protection of New Varieties of Plants (UPOV)

On Nov. 12, 1980, the United States deposited its instrument of acceptance of the 1978 text of the UPOV Convention. The United States was the second State to adhere to this text, New Zealand having earlier done so.

The UPOV Convention will take effect with respect to the United States and the other adherents to the 1978 text upon a total of five adherences, three of which must be by present member States (States adhering to the text of the Convention). We expect at least three present member States to adhere shortly and the 1978 text to take effect, therefore, during 1981.

The United States deposited its instrument of acceptance on the basis of the legal protection offered for asexually reproduced plants under the plant patent law (35 U.S.C. 161–164). Accordingly, the Convention will apply only to asexually reproduced plants protected under this law. Steps are now being taken, however, by the Plant Variety Protection Office of the Department of Agricuiture to conform the implementation of the Plant Variety Protection Act (7 U.S.C. 2321 et seq.) to the Convention's requirements. When this is done, the United States will notify the UPOV Secretariat that the Convention is also applicable in the United States to sexually reproduced plants protected under that Act.

Questions concerning the UPOV Convention may be directed to the Office of Legislation and International Affairs of the Patent and Trademark Office. This Office may be addressed as follows: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The Office's telephone number is (703) 557–3065.

SIDNEY A. DIAMOND,
Dec. 16, 1980 . *Commissioner of Patents and Trademarks.*

[1002 O.G. 102]

(182) **Taking Effect in the United States of the International Convention for the Protection of New Varieties of Plants**

The International Convention for the Protection of New Varieties of Plants (the UPOV Convention) will take effect in the United States on Nov. 8, 1981. It will apply to all applications for the patenting of plants under the provisions of Title 35, United States Code, which are filed on or after Nov. 8, 1981. The actual filing date will govern in determining whether the Convention will apply to an application, even though the application may be entitled to an earlier effective date under section 119 or 120 of Title 35, United States Code.

In addition to the United States, the UPOV Convention will be in effect as of Nov. 8, 1981, in the following fourteen States: Belgium, Denmark, Federal Republic of Germany, France, Ireland, Israel, Italy, Netherlands, New Zealand, Republic of South Africa, Spain, Sweden, Switzerland, and the United Kingdom.

No changes in the patent law are needed to implement the UPOV Convention in the United States. An applicant for a plant patent will be required, however, to submit for registration a variety name for the plant to be patented. Registration is required by Article 13 of the UPOV Convention.

Registrability shall be determined in accordance with the International Code of Nomenclature for Cultivated Plants (1980). As an interim procedure pending the promulgation of an appropriate rule, inclusion of the variety name in the application will be accepted as a submission of the name for registration. No plant patent as a result of an application filed on or after Nov. 8, 1981, shall be issued without the registration of a variety name. Questions concerning this variety naming requirement or the UPOV Convention may be addressed to:

Mr. Michael K. Kirk, Director
Office of Legislation and
International Affairs
Box 4
U.S. Patent and Trademark Office
Washington, D.C. 20231

Mr. Kirk's telephone number is (703) 557–3065.

GERALD J. MOSSINGHOFF,
Oct. 15, 1981. *Commissioner of Patents and Trademarks.*

[1011 O.G. 27]

(183) **Qualifications for Admission to the Examination for Registration to Practice Before the Patent and Trademark Office**

37 CFR 1.341(c) provides in pertinent part, "No person will be admitted to practice and registered unless he shall . . . establish to the satisfaction of the Commissioner that he is of good moral character and good repute and *** possessed of the legal and scientific and technical qualifications necessary to enable him to render applicants for patents valuable service ***. In order that the Commissioner may determine whether the person *** has the qualifications specified, satisfactory proof of good moral character and repute, and of sufficient basic training in scientific and technical matters must be submitted ***."

All persons requesting application forms are routinely furnished with a circular entitled "General Requirements For Admission To The Examination For Registration To Practice Before The Patent and Trademark Office". The circular contains a list of the subjects in which a person must have a bachelor's degree or the equivalency thereof in scientific and technical training to meet registration qualifications. It is strongly recommended that persons who do not have a bachelor's degree in one of those subjects comply with the instructions in the paragraph following the list to show their scientific and technical qualifications. If it is intended to rely on courses in computer science, no more than 3 semester hours of courses in computer programming will be accepted as providing part of the required basic training in scientific and technical matters. Computer science courses oriented away from the physical sciences or engineering, e.g., toward accounting or business, will not be accepted as providing any of the requisite basic training in scientific and technical matters.

Many applications for admission to an examination are filed on or just prior to the announced closing date for doing so, and these applications are frequently disapproved because the person does not furnish a satis-

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factory showing of his or her qualifications. For instance, persons with a bachelor's degree in a subject other than one of those listed in the circular frequently do not follow instructions in the circular and do not furnish both their transcripts and official course descriptions. Other persons list charges brought against them requiring further showings to overcome doubts raised by the charges about their character and reputation. Still others who failed one section of the examination three times do not furnish a satisfactory showing of sufficient additional legal training to pass the examination.

The Office of Enrollment and Discipline evaluates each application for admission to the examination on an individual basis as soon as practical after receipt in that office. Thereafter, notification is promptly mailed to each person whose application has been disapproved.

The Office of Personnel Management (OPM — formerly Civil Service Commission), which administers the examination, requires that it receive correct data from the Patent and Trademark Office identifying the locale of the examination and the number of persons to be tested well ahead of the examination date. *To afford adequate time to present a satisfactory supplemental showing to gain admission to the examination for which application is being made, it is recommended that all persons file their applications early, preferably at least two months before the closing date.*

All supplemental showings of qualifications and all applications filed after the announced closing date to apply for admission to an examination will be considered only in connection with the person's admission to the next succeeding examination. Admission to an examination given on a particular date is available only to persons who have filed a completed application form, a $75.00 admission fee, and a satisfactory showing of qualifications on or before the closing date for applying for admission to the examination. Examinations are given in Apr. and Oct. each year, and the respective closing dates for applying for admission to the examinations are the preceding Jan. 31 and July 31.

WILLIAM FELDMAN,
Director of Enrollment and Discipline.

Sept. 18, 1984.

[1047 O.G. 35]

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(184) **Department of Commerce**
Patent and Trademark Office
37 CFR Parts 1, 2, and 10
Docket 407 88–4181

Practice before the Patent and Trademark Office

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark Office (PTO) is amending its rules governing practice before the PTO by attorneys and agents. These rules are needed to clarify and modernize the rules relating to admission to practice and the conduct of disciplinary cases. The rules are also needed to set out in the Code of Federal Regulations a PTO Code of Professional Responsibility. By amending the rules, the PTO believes the standards for admission to practice in patent cases will be more easily understood, that those practicing before the PTO will have ready access to a code of professional responsibility, and that procedure in disciplinary cases will be more easily understood. The PTO expects that the conduct of disciplinary proceedings under these rules will be more effective and less costly.
Dates: The effective date of these rules (except §1.21(a)(5) and (6)) is Mar. 8, 1985. Section 1.21(a)(5) and (6) is effective Apr. 8, 1985.
For Further Information Contact: Fred E. McKelvey by telephone at (703) 557–4025 (if no answer, message may be left at 703–557–4103) or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Attorneys and agents practice before the Patent and Trademark Office (PTO) in patent cases. 35 U.S.C. 31. Attorneys also practice before the PTO in trademark and other non-patent cases. 5 U.S.C. 500(b). A few agents also practice before the PTO in trademark cases under rules in force prior to Jan. 1, 1957.

A notice of proposed rulemaking for attorney and agent conduct and disciplinary procedure was published on Aug. 11, 1983 in the *Federal Register*, 48 F.R. 36478, and on Sept. 20, 1983 in the *Official Gazette*, 1034 O.G. 39, 1034 TMOG 33. A notice extending the comment period and setting a second hearing was published on Oct. 5, 1983 in the *Federal Register*, 48 F.R. 45424, and on Oct. 18, 1983, in the *Official Gazette*, 1035 O.G. 19, 1035 TMOG 17. The PTO decided to withdraw, and not adopt, the rules proposed in the *Federal Register* notice of Aug. 11, 1983. There were numerous objections to the proposed rules and the public indicated that a longer period for study and review of a code of conduct and disciplinary procedures was necessary.

An advance notice of proposed rulemaking setting out revised rules being considered for standards of conduct and disciplinary proceedings was published on Mar. 16, 1984, in the *Federal Register*, 49 F.R. 10012, and on Apr. 10, 1984, in the *Official Gazette*, 1041 O.G. 15, 1041 TMOG 13. Numerous organizations and individuals filed comments in response to the advance notice.

On Aug. 24, 1984, the PTO published in the *Federal Register* a notice of proposed rulemaking. 49 F.R. 33790. On Aug. 28, 1984, the notice was also published in the *Official Gazette*. 1045 O.G. 29; 1045 TMOG 25. The notice also appeared in the Bureau of National Affairs, *Patents, Trademark & Copyright Journal*, Vol. 28, No. 694, pp. 485–515 (Aug. 30, 1984). Twenty-two written comments were timely received in response to the notice of proposed rulemaking. The comments are analyzed herein. A hearing was held on Oct. 10, 1984. Five individuals appeared at the hearing. Oral comments made at the hearing are also analyzed herein. The twenty-two written comments and a copy of the transcript of the hearing are available for public inspection in Room 12B10, Crystal Gateway II, 1225 Jefferson Davis Hwy., Arlington, Va.

This notice of rulemaking sets out rules in three areas:

(1) Practice of attorneys and agents before the PTO in patent, trademark, and other non-patent cases (§§10.2 through 10.19);

(2) A PTO Code of Professional Responsibility (§§10.20 through 10.112); and

(3) Rules governing (a) investigation of possible violations of the PTO Code of Professional Responsibility and (b) disciplinary proceedings to reprimand, suspend, or exclude (disbar) individuals from practicing before the PTO who, after notice and opportunity for a hearing, are found to have violated a disciplinary rule of the PTO Code of Professional Responsibility (§§10.130 through 10.170).

Familiarity with the advance notice and notice of proposed rulemaking is assumed. Changes in the text of the rules published for comment in the notice of proposed rulemaking are discussed. Comments received in response to the notice of proposed rulemaking are discussed. Comments not timely received in response to the advance notice are also discussed.

Tables 1, 2, and 3 are included in this notice to assist readers in correlating present rules with the new rules and to find the principal source for the new rules. An indication in Tables 1, 2, or 3 that a section is "new" means that a corresponding section does not currently appear in Tile 37 of the Code of Federal Regulations.

Table 1 shows the principal sources of the new rules which relate to (1) admission to practice of attorneys and agents in patent cases and (2) practice in trademark and other non-patent cases.

Table 2 shows the principal sources of the rules for the new PTO Code of Professional Responsibility.

Table 3 shows the principal sources of the new rules for disciplinary proceedings.

Other sources for, and rationale in support of, the proposed rules are discussed in the Supplementary Information of the advance notice, 49 F.R. 10012–10022, and the Supplementary Information of the notice of proposed rulemaking, 49 F.R. 33790–33803.

In issuing these rules, the PTO has made every effort to minimize preemption of State control over the practice of law. Thus, in §10.1, second sentence, the new rules provide:

> Nothing in . . . [these rules] shall be construed to preempt the authority of each State to maintain control over the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives.

This provision of §10.1 is based on language in *Sperry* v. *Florida ex rel, Florida Bar*, 373 U.S. 379, 402 (1963), and makes clear the PTO's intent to regulate only conduct related or relevant to practice before the PTO.

In an effort to ascertain whether the proposed rules would have any adverse impact on the States, copies of both the advance notice of Mar. 16, 1984, and the notice of proposed rulemaking of Aug. 24, 1984, were sent to Bar Counsel in each State. The PTO received responses from Bar Counsel in Ala., Conn., Fla., Ga., Md., Miss., Nebr., Tex., and Vt. Comments were also received from the National Organization of Bar Counsel, the American Bar Association, and others.

Alaska Bar Counsel, contrary to other bar counsel filing comments, suggested that creation of a PTO Code of Professional Responsibility would be "inherently confusing" to any attorney practicing in a State and also before the PTO. The new rules, however, do not establish for the first time a PTO Code of Professional Responsibility.. The current PTO code appears in 37 CFR §§1.344 and 2.12. Sections 1.344 and 2.12 merely incorporate by reference the Code of Professional Responsibility of the American Bar Association (1970). The new PTO code more appropriately sets out the standards of conduct relevant to the practice of law before the PTO. Alaska Bar Counsel also felt that it would be more appropriate if the PTO brought alleged ethics violations by attorneys to local state enforcement authorities. This view was not shared by other bar counsel who filed comments. The statute (35 U.S.C. 32) authorizes the Commissioner to administer discipline. The PTO has taken disciplinary action in instances where a State has declined to do so. Moreover, there are registered patent agents who are not subject to discipline by State enforcement agencies. Finally, Alaska Bar counsel suggested that "adjudicative agencies" are too closely involved in a disciplinary matter to be impartial. Congress has determined otherwise. 35 U.S.C. 32 and 5 U.S.C. 500(d).

Comments were received from the Statewide Grievance Committee of Connecticut in response to the advance notice. Many helpful suggestions were made in the comments. Most of the suggestions were adopted at the time the notice of proposed rulemaking was published.

The Florida Bar, through its Director of Lawyer Regulation, filed comments in response to the notice of proposed rulemaking. The Florida Bar commented on §§10.1(c) and 10.23(c) (5). The PTO's response to the comment appears later in this notice under a discussion of §10.1.

An Assistant General Counsel of the State Bar of Georgia filed a response to the advance notice. The response stated, among other things: "Although due to the press of business at the present time I am unable to provide a substantive response in this correspondence, I will respond within the appropriate time limits after having an opportunity to study the enclosed . . . [advance notice]." No further response was received.

Bar counsel for the Attorney Grievance Commission of Maryland filed a response to the advance notice. In his response Bar Counsel states in part:

> It does not appear to me that any of the proposed Rules would present any difficulty in the administration of discipline within Md.

Complaint Counsel for Miss. responded to the advance notice. He stated in part:

> I have not reviewed the proposed Code in comparison with the Code of Professional Responsiblity in great detail. In general however I can state that adoption of the proposed Code would not have an adverse effect upon the function of this office.

The General Counsel of the State Bar of Texas responded to the advance notice and did "not perceive that any problem would be created by . . . [the proposed rules] in Tex." The General Counsel did express the thought that the PTO's use of the word "practitioner" instead of "lawyer" would not prevent reciprocal discipline in Tex. based on disciplinary action by the PTO. The PTO sees no reason for disagreeing with the General Counsel. The word "practitioner" is used by the PTO to define registered attorneys, registered agents, *and* other attorneys authorized to practice in trademark and other non-patent cases before the PTO under 5 U.S.C. 500(b).

The Chairman of the Professional Conduct Board of Vermont responded to the advance notice. He states in part:

> I find nothing contained in the proposed rules which would present any difficulty in the administration of disciplinary matters within the State of Vermont. Further, I see no problems created vis-a-vis the Code of Professional Responsibility in this jurisdiction.

The President of the National Organization of Bar Counsel responded to the notice of proposed rulemaking. He expressed a concern as to whether the PTO intended to "provide for notice and information of . . . [each disciplinary violation by an attorney] to each jurisdiction where the attorney is licensed." Two provisions of the rules are designed to insure that States are notified of PTO disciplinary action. Section 10.158(b) (1) requires a disciplined attorney to notify all bars of which he or she is a member and to file a copy of the notice with the Director of Enrollment and Discipline of the PTO. Section 10.159(a) requires the Director to notify known state bars and appropriate bar associations of PTO disciplinary action. In addition, as a matter of policy, the PTO intends to notify the National Discipline Data Bank of the American Bar Association.

Comments were filed in response to the advance notice and the notice of proposed rulemaking by the Standing Committee on Professional Discipline of the American Bar Association. The comments filed in response to the advance notice were analyzed in the notice of proposed rulemaking and are not re-analyzed in this notice. In its comments responding to the notice of proposed rulemaking the Standing Committee made several helpful suggestions, some of which are being adopted. A full discussion of the PTO rationale for adopting or not adopting a particular suggestion appears under analysis of comments later in this notice. The Standing Committee urged adoption of the 1983 ABA Model Rules. The PTO is not now adopting the Model Rules *inter alia* because most States have not adopted those rules. If a significant number of states adopt the Model Rules, the PTO will consider further amendments to its Code of Professional Responsibility. The Standing Committee suggested changes to §10.23(c) (12) which are being adopted in part. The Standing Committee suggested that notice be given to a practitioner prior to any meeting of the Committee on Discipline. This suggestion is not being adopted. In most instances, a

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practitioner will be able to respond to a notice under 5 U.S.C. 558(c). The Committee will have the practitioner's response at the time of its deliberation. The Standing Committee urged that hearings in disciplinary matters should be open to the public. Others opposed this position. The PTO is not adopting this suggestion in view of 35 U.S.C. 122. Further rationale for not adopting the Standing Committee's suggestion appears later in the notice. The Standing Committee urged a change in §10.149 to make the burden for proving a disciplinary violation one of "clear and convincing evidence." This suggestion is being adopted. The Standing Committee urged that more discovery be permitted than was authorized by §10.152 as proposed. This suggestion is being adopted as explained further in this notice. The Standing Committee also thought §10.159 should provide for notice to the ABA National Discipline Data Bank when the PTO administers discipline. While §10.159 will not specifically mention the Data Bank, a change has been made to permit the Director to notify appropriate bar associations. The Data Bank is an appropriate bar association.

Changes in Text: Several changes have been made in the text of the new rules from the text of the proposed rules which were published for comment in the notice of proposed rulemaking. Those changes are discussed below.

In §1.8, the new subparagraph will be (xiii). Subparagraph (xii) was added when the rules relating to patent interference proceedings were amended. See 49 F.R. 48451 (Dec. 12, 1984).

In the first sentence of §1.31, the term "agent" has been changed to "registered agent" to make clear that only registered agents are intended.

Section 1.33(c) is being amended to delete a reference to former §§1.341 and 1.347 and to now refer to §§10 .5 and 10.11.

Section 1.56(f) and (h) is being amended to delete a reference to former §1.346 and to now referred to §10.18.

In the second sentence of §10.1, "subpart shall" has been changed to "part shall" and "maintain control over" has been changed to "regulate." In the same sentence, "within its borders" has been deleted.

In §10.2(b) (1), "maintain the register" has been changed to "maintain the register provided for in §10.5".

In the next-to-the-last sentence of §10.7(b), "examining corps" has been changed to "patent examining corps".

The language "an alien" in §10.9(b) has been changed to read "a resident alien" to make clear that aliens registered under paragraphs (a) or (b) of §10.6 must be resident aliens.

In the first sentence of §10.14(c), "foreigner" has been changed to "foreign attorney or agent", "registered and in good standing" has been changed to "registered or in good standing", "applicants" has been changed to "parties" and "trademark applications" has been changed to "trademark cases".

In §10.18(a) (1), "the paper has been read" has been changed to "the paper has been read by the practitioner".

Several changes have been made in §10.23.

In §10.23(c) (4) (iii), "improperly" has been added before "bestowing."

In §10.23(c) (5), "on ethical grounds" has been added after the first occurrence of "attorney or agent" and "suspension or disbarment as an attorney or agent" (after "10.6(c)") has been deleted.

In §10.23(c) (7), "patent" has been added before "application of another" and the following has been added as a second sentence: "See §§1.604(b) and 1.607(c) of this Subchapter."

In §10.23(c) (8), "Failing to forward" has been changed to "Failing to inform a client or former client"; "inability to forward, to" has been changed to "inability to notify"; "client correspondence" has been changed to "client of correspondence"; "is correspondence which" has been changed to "is correspondence of which"; and "under the circumstances should be forwarded to the client or former client" has been changed to "under the circumstances the client or former client should be notified."

Section 10.23(c) (12) has been changed to read: "Knowingly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility."

In §10.23(c) (15), "including" has been changed to "making a" and "matter" has been changed to "statement".

In §10.36(b) (3), the language "in the locality" has been deleted.

The following language has been deleted from §10.40(c): ", and may not withdraw in other matters,".

In §10.62(b), the language "contemplated or pending litigation or" has been deleted.

In §10.63(a), the language "contemplated or pending litigation or" has been deleted. Both occurrences of "trial or" have been deleted from §10.63(a). The language "contemplated or pending litigation or" has been deleted from §10.63(b).

The following sentence has been added to §10.64(b):

"A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee."

In §10.84(a) (3), "§10.85" has been changed to "this part".

The following sentence has been added to §10.87(a):

"It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions."

Subparagraph (5) of §10.89(c) as it appeared in the notice of proposed rulemaking has been deleted. Subparagraph (6) of §10.89(c) as it appeared in the notice of proposed rulema king has been changed to read: "(5) Engage in undignified or discourteous conduct before the Office (see §1.3 of this Subchapter)." Subparagraph (7) of §10.89(c) has been redesignated as subparagraph (6).

In §10.112(a), the language:

maintained: (1) in the case of a practitioner whose office is located in the United States, the State in which the practitioner's office is situated or (2) in the case of a practitioner having an office in a foreign country or registered under §10.6(c) in the United States or the foreign country has been changed to read:
maintained in the United States or, in the case of a practitioner having an office in a foreign country or registered under §10.6(c), in the United States or the foreign country.

In §10.131(a), the second sentence has been deleted as being unnecessary in view of §10.132(b). The second sentence of §10.131(a) in the notice of proposed rulemaking read: "The investigation shall be such as to determine whether there is probable cause to believe that a violation of a Disciplinary Rule by a practitioner has occurred."

In the first sentence of §10.132(a), the language "that there is probable cuase to believe" has been deleted. The Committee on Discipline, not the Director, shall determine whether there is probable cause to believe that a practitioner has violated a Disciplinary Rule. See §§10.4(b) and 10.132(b).

Several changes have been made in §10.133. In the first sentence of §10.133(b), the language "§§10.132(b) and 10.134" has been replaced with "§10.134". The reference to §10.132(b) is not necessary. The language "his or her resignation by filing" in §10.133(b) has been deleted as unnecessary. The second sentence of §10.133(b) has been modified to become new paragraphs (c) and (d). Paragraph (c) indicates the content of an affidavit of resignation filed prior to the date set by the administrative law judge (ALJ) for hearing. Paragraph (d) indicates the content of an affidavit of resignation filed on or after the date set by the ALJ for hearing. Paragraph (c) has been redesignated as new paragraph (e). In addition, the language "paragraph (b)" therein has been changed to "paragraphs (b) or (c)". Paragraphs (d) and (e) have been redesignated as new paragraphs (f) and (g), respectively.

In §10.135(a) (2) (i), "Committee on Enrollment" has been changed to "Director".

In §10.149, "a preponderance of" has been changed in both instances to "clear and convincing".

Several changes have been made to §10.152 to expand discovery. Paragraphs (a) and (b) of §10.152 as set out in the notice of proposed rulemaking have been redesignated as paragraphs (e) and (f), respectively, and new paragraphs (a) through (d) have been added. New paragraph (a) sets forth discovery which is authorized. New paragraph (b) sets forth matter which *cannot* be discovered. Paragraph (c) sets forth factors which an ALJ can consider in determining whether to authorize discovery. Paragraph (d) requires that a motion be filed which addresses specifically and separately each particular request for discovery. In paragraph (e) (formerly paragraph (a)), a new subparagraph (3) has been added to specify that the ALJ may require the parties to set out in a pre-hearing statement information related to expert witnesses. Old subparagraphs (3) and (4) have been redesignated as new subparagraphs (4) and (5), respectively.

In §10.154(b), a new subparagraph (5) has been added which states: "(5) any extenuating circumstances."

In §10.155(a), both occurrences of "on the respondent" have been deleted.

Several changes have been made to §10.158. In §10.158(b) (1), after "all clients of the practitioner" the following has been added "for whom he or she is handling matters before the Office". In §10.158(b) (2), "client's active case files" has been changed to "client's active Office case files". In §10.158(c), changes have been made to make paragraph (c) applicable to corporate patent departments and to prohibit a suspended or excluded practitioner from meeting in person or in the presence of another practitioner with an official of the PTO in connection with the prosecution of a patent, trademark, or other case.

The following has been added to the end of §10.159(a): "and any appropriate bar associations,"

Several changes have been made in §10.160(c). "A practitioner has been suspended or excluded" has been changed to "An individual who has resigned under §10.133 or who has been suspended or excluded". The language "if the Director is satisfied" has been changed to "when the individual makes a clear and convincing showing". The language "suspended or excluded practitioner" has been changed to "individual".

Response to and Analysis of Comments: Twenty-two (22) written comments where timely received in response to the notice of proposed rulemaking. The comments have been analyzed. Some suggestions made in comments have been adopted and others have been rejected. A detailed analysis of the timely received comments follows. Several comments were not timely received by July 9, 1984, in response to the advance notice of proposed rulemaking of Mar. 16, 1984. These comments have now been considered and are analyzed herein.

Several comments were received which suggested that the rules purport to regulate attorney conduct beyond that necessary or proper for administration of federal programs by the PTO. It is not, and has never been, the intention of the PTO to regulate conduct except to the extent necessary for the accomplishment of federal objectives. Thus, only that conduct which is relevant to the practice of patent, trademark, or other law *before the PTO* is what the PTO seeks to regulate. The preamble of §10.1 indicates that Subpart 10 governs solely the practice of patent, trademark, and other law before the PTO. As noted in the preamble to §10.1, "[n]othing in this subpart shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives." See *Sperry* v. *Florida ex rel. Florida Bar*, 373 U.S. 379, 402 (1963). See also *Michigan Canners and Freezers Ass'n.* v. *Agricultural Marketing and Bargaining Board*, 104 S. Ct. 2518, 2523 (1984) (State Law is preempted when it stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress) and *Fidelity Federal Savings and Loan Ass'n.* v. *de la Cuesta*, 102 S. Ct. 3014, 3022 (1982) (federal regulations have no less preemptive effect than federal statutes).

Several comments were received concerning §10.1. The Florida Bar noted that in the notice of proposed rulemaking the PTO indicated "that failure to pay State bar dues is not a basis for suspension or exclusion before the PTO because failure to pay the dues has no relationship to the federal objectives which the PTO seeks to accomplish." 49 F.R. 33795, column 1, third full paragraph. The Florida Bar suggested that "the loss of good standing [should] be of concern to the PTO." The PTO agrees in part. Suspension from a State bar for failure to pay dues will not be viewed by the PTO as "misconduct." See §10.23(c) (5), which has been changed to define misconduct as suspension or disbarment on ethical grounds. If an attorney is suspended by his or her State bar for failure to pay bar dues, and for that reason is no longer in good standing before the State bar, that attorney is no longer an attorney within the meaning of §10.1(c). An attorney suspended from his or her State bar for failure to pay bar dues would no longer be eligible to represent individuals before the PTO in trademark and other non-patent cases.

One commentator suggested that the second sentence of §10.1 be changed to read: "Nothing in this subpart shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives." The suggestion is being adopted. The commentator noted that as originally proposed in the notice of proposed rulemaking, the phrase "to maintain control over the practice of law within its borders" is unduly restrictive. The commentator correctly pointed out that "[c]ertainly, New York would have the authority to regulate the practice of law by a New York attorney residing in Fla."

Another commentator noted the language "federal objectives" in §10.1 and felt it would be appropriate for the PTO "to set forth what the federal objectives really are." The PTO does not believe it is appropriate to set out in the regulations specific federal objectives. The PTO engages in the examination of applications for patents, reexamination of issued patents, examination of applications for registrations of trademarks, and numerous *inter partes* patent and trademark proceedings. The federal objectives of the PTO center around these activities.

With respect to §10.2(c), one commentator argued that "it is unfair to require the payment of a fee to review a final decision of the Director." The PTO disagrees. The review provided by §10.2(c) is a service preformed by the PTO for which a fee may be charged. There is no compelling reason for not charging a fee.

Several comments were received discussing §10.4. One commentator suggested "that a provision for no discovery or testimony from a member of the Committee on Discipline is unfair and inappropriate." The PTO does not believe that a "mini-trial" should be conducted in a subsequent disciplinary proceeding of how or why the Committee on Discipline reached its decision. The commentator also argued that 10.4(c) "would be in direct conflict with the Federal Rules of Civil Procedure" in any review in the U.S. District Court for the District of Columbia. Again, the PTO disagrees. The Federal Rules of Civil Procedure do not apply to disciplinary cases in the PTO. Moreover, those rules do not apply in cases seeking judicial review of a decision of the Commissioner in a disciplinary matter. Applicable law (35 U.S.C. 32 and Local Rule 1–26 of the district court)

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provides for review on the record made in the PTO. See also *Camp* v. *Pitts*, 411 U.S. 138 (1973). Hence, there is no discovery in a proceeding under 35 U.S.C. 32.

Comments were received which suggest that the associate and assistant solicitors in the Office of the Solicitor cannot be isolated from the Solicitor and the Deputy Solicitor. The associate and assistant solicitors are to be isolated so that (1) the associate and assistant solicitors may act as attorney for the Director in prosecuting a disciplinary proceeding and (2) the Solicitor and Deputy Solicitor may act as legal advisor to the Commissioner in deciding a disciplinary matter. In disciplinary matters, the associate and assistant solicitors will report directly to the Director. Associate and assistant solicitors will not have occasion to discuss disciplinary matters with the Solicitor or Deputy Solicitor.

The following discussion in the *Attorney General's Manual on the Administrative Procedure Act*, pp. 57–58 (1947), commenting on original §5(c) (now 5 U.S.C. 554(d)) is believed particularly relevant to the issues raised in the comments:

> Assuming that an agency will in many cases wish to consult with certain of its staff members, it may proceed in one of two ways. It may in a particular case consult with staff members who in fact have not performed investigative or prosecuting functions in that or a factually related case. In the alternative, the agency may find it feasible so to organize its staff assignments that the staff members whom it most frequently desires to consult will be free of all investigative and prosecuting functions.
>
> * * * * *
>
> [I]f the agency so organizes its staff that the general counsel is not responsible for the investigative and prosecuting functions, he would be regularly available to the agency for consultation on the decision of cases.[8]

Several commentators suggested that members of the public or the PTO bar should be members of the Committee on Discipline. This suggestion is not being adopted. As noted in the notice of proposed rulemaking (49 F.R. 33793, column 2, last paragraph), there are two reasons for not adopting the suggestion. Use of individuals outside the PTO is made difficult by 35 U.S.C. 122. Administrative delays would take place because it would be more difficult to schedule meetings.

One commentator suggested that the language "at least" in the phrase "at least three employees of the Office" should be deleted from the second sentence of §10.4(a). This suggestion is not being adopted. The "at least" language will permit the Commissioner to appoint alternate members to substitute for a member who may be disqualified or who may be unavailable for an extended period.

Section 10.10 provides that only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the PTO. One comment was received which noted that the rules do not address the "status" of (a) "an individual in a training program directed to the preparation and prosecution of applications for patent" or (b) "a long-time employee working within a patent organization in the area of preparation and prosecution of applications for patent, but has never become registered to practice as either a Patent Agent or Patent Attorney." The commentator suggested that the rules should state what such individuals or employees may do. The suggestion is not being adopted. Only registered practitioners (attorneys and agents) may practice patent law before the PTO. The commentator also suggested that the rules should provide that long-time corporate or government employees who have never been registered should be given limited recognition by the PTO. This suggestion is not being adopted. Limited recognition will be given only on a case-by-case basis. See §10.9.

One comment suggested that "applicants" and "trademark applications" in the first sentence of §10.14(c) rendered it unclear whether an individual authorized to practice before the PTO in trademark cases could prosecute post-registration cases, such as a cancellation proceeding. The rule has been clarified by changing "applicants" to "parties" and "trademark applications" to "trademark cases". An individual authorized to represent others under §10.14 is authorized to appear in any trademark case.

Several comments were received discussing §10.18. One comment made at the hearing suggested that the rule should specify who should read the paper being signed. The commentator stated: "I think it would be salutary if what you really mean is that the practitioner who signs it has read it." The suggestion is being adopted and the language of §10.18(a) (1) has been changed from "the paper has been read" to "the paper has been read by the practitioner".

Two individuals commented that requiring the signature of a practitioner would eliminate the "custom" of having an associate sign the name of a principal attorney on a paper which the principal authorizes the associate to file. Section 10.18 requires that the practitioner signing the paper sign his or her own name. The rule would permit associate attorney John Smith to sign on behalf of principal attorney David Jones by signing the paper as follows: "David Jones by John Smith." The rule would not permit Smith to merely sign Jones' name or to sign "David Jones by JS." The rule does not authorize a non-practitioner (e.g., a para-legal or secretary) to sign a paper on behalf of a practitioner.

One comment asked the following:

> Assume an inventor is under Final Rejection and the period for proper response is near at hand. The attorney is now instructed to "keep the case alive" until a CIP [continuation-in-part] is prepared and filed. For reasons outside the control of the attorney, the CIP cannot be filed in time. Assume now the attorney files a Notice of Appeal, *never intending* to prosecute the appeal, intending only to buy time until the CIP can be filed. Would the filing of the Notice of Appeal violate Rule 10.18 and subject the attorney to PTO disciplinary action?

A notice of appeal is a proper response to a final rejection. Accordingly, it would not appear under the circumstances outlined that the notice of appeal was "interposed for delay" within the meaning of §10.18(a) (4).

Three comments were received discussing §10.22. One comment suggested that modifiers, such as "knowingly" and "willfully" be inserted in paragraphs (a) and (b) of §10.22. The suggestion is not being adopted. A "materially false statement," a failure "to disclose a material fact," or furthering the application of another "known . . . to be unqualified" constitute acts which cannot be characterized as innocent. Accordingly, there is no need to insert the "modifiers" in the text of the rule. Another commentator suggested that the provisions of §10.22 are not relevant to the federal objectives of the PTO. The PTO disagrees. Practitioners who (1) fail to tell the truth, (2) fail to reveal material information or (3) knowingly further the application of an unqualified individual to a bar, demonstrate that they are "disreputable" within the meaning of 35 U.S.C. 32. A third commentator suggested that §10.22(b) is too broad because a practitioner could recommend an individual for membership in a bar and the individual might fail to pass the bar examination. Unless a practitioner has good reason to know that the individual will fail to pass a bar examination, it is not apparent how the practitioner's recommendation could amount to a violation of the PTO Code of Professional Responsibility.

[8]The general counsel's participation in rule making and in court litigation would be entirely compatible with his role in advising the agency in the decision of adjudicatory cases subject to section 5(c).

Numerous comments were received discussing §10.23. One comment suggested that §10.23(c) (8) be changed to require notification of a client rather than requiring correspondence to be forwarded. This suggestion has been adopted by making appropriate changes to §10.23(c) (8).

A suggestion was made to delete the reference to $5000 in §10.23(c) (17). This suggestion is not being adopted. See the discussion in the advance notice, 49 F.R. 10016, column 1.

A suggestion was made that §10.23(c) (5) has "a built-in inequity as regards different patent attorneys in different states." According to the commentator, a practitioner suspended for an act by Ohio might not be suspended for the same act by New York. The commentator reasons it would be unfair for the Office to suspend the Ohio practitioner, but not the New York practitioner. The commentator's concern is not warranted in view of the second sentence of §10.1.

Another commentator noted that §10.23(a) (3) "points up the difficulty of superimposing . . . [a] set of rules on of the various local jurisdictions." Here again, the commentator's concern is not believed warranted in view of the second sentence of §10.1. Another commentator noted that "moral turpitude" is hard to define. It was suggested that possession of marijuana is regarded as a crime involving moral turpitude in some states where a 99-year sentence may be received. It was suggested that in other states possession of marijuana might result in "a slap on the wrist." If a practitioner is incarcerated for a crime in a state, it follows that the practitioner is not capable of representing individuals before the Office. This is true even if the same practitioner would not have been incarcerated in another state for the same act.

The Florida Bar raised a question concerning §10.23(c) (5) which is answered under the discussion above of §10.1. Section 10.23(c) (5) has been changed to make suspension or disbarment "on ethical grounds" a basis for suspension or disbarment by the Office. "Ethical grounds" would include incompetence, but would not include failure to pay State bar dues.

One comment suggested that "disreputable" and "gross misconduct" in §10.23(a) be defined. The terms "disreputable" and "gross misconduct" appear in 35 U.S.C. 32 and need no further definition in the rules. For a discussion of "disreputable," see *Poole* v. *United States*, 54 A.F.T.R. 2d (P-H) 84–5536 (D.D.C. June 29, 1984).

Several comments suggested that the Model Rules of Professional Conduct of the American Bar Association (1983) be adopted in place of §10.23. Adoption of the Model Rules was given consideration prior to publication of the advance notice and the notice of proposed rulemaking. The matter has been considered again. However, it has not been demonstrated to the Office that a large number of states have adopted the Model Rules. As noted in the notice of proposed rulemaking, at least Va. has rejected the Model Rules. Accordingly, the PTO will not, at this time, adopt the Model Rules. If a large number of states adopt the Model Rules in the future, the PTO would be willing to reconsider its position.

One comment suggested that "before the Office" be inserted after the word "conduct" in §10.23(b) (4), (5), and (6). This suggestion is not being adopted in view of the second sentence of §10.1.

A suggestion was received that "improperly" be inserted at the beginning of §10.23(c) (4) (iii). This suggestion has been adopted.

A suggestion was received that the word "patent" be inserted before "application" in §10.23(c) (7). This suggestion has been adopted.

A suggestion was received that §10.23(c) (15) be changed so that a trademark practitioner could present potentially scandalous subject matter in order to receive a determination on the merits of registrability. See e.g., *In re McGinley*, 660 F.2d 481, 211 USPQ 668 (CCPA 1981). Section 10.23(c) (15) has been changed to refer only "making a scandalous or indecent statement in a paper filed in the Office."

Several individuals suggested that it may be difficult to determine the identity of tunder §10.23(c)(8), particularly in corporate patent departments. The PTO will presume that practitioners know the identities of their clients and that information conveyed to the client is being conveyed in a manner acceptable to the client.

Section 10.23(c)(12) has been changed in response to comments which suggested that it would be difficult for practitioners to comply with §10.23(c)(12) on the one hand and §§10.24 and 10.131 on the other hand. The purpose of §10.23(c)(12) is to eliminate a frivolous complaint against practitioners. Accordingly, §10.23(c)(12) has been changed to define as misconduct "knowningly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility."

Several individuals criticized §10.24. The provisions of §10.24 are derived from DR 1–103 of the Code of Professional Responsibility of the American Bar Association (1970)—the rule currently applicable to practitioners. See 37 CFR §§1.344 and 2.13. The PTO is not aware that the current rule causes any problems. Accordingly, the numerous suggestions to delete or amend §10.24 are not being adopted.

One comment was received which suggested that charging another person with trademark infringement and requesting that the person withdraw a pending application "might be . . . interpreted as a violation" of §10.31(a). The PTO disagrees. A reasonable interpretation of the rule does not justify the unreasonable construction by the commentator.

At the hearing, an individual discussed §10.32. The individual suggested that three "practices" should be sanctioned under any PTO Code of Professional Responsibility and it was suggested that all three practices might be prohibited by §10.32. *First*, the individual suggested that "the giving of moderately priced presents . . . to established clients on appropriate occasions—Christmas, weddings of their daughters" should not constitute a violation of §10.32. The PTO agrees. The giving of a gift to an "established client" on the occasions suggested is not a gift "to a person for recommending the practitioner's services." *Second*, the individual suggested that a practitioner should not be prohibited from "paying for ordinary client entertainment." The PTO agrees. Again the "client" is not "a person recommending the practitioner's services" in return for being entertained. *Third*, the individual argued that the rules should not preclude an "exchange of cases with foreign practitioners." An "exchange" was said to occur "[w]here a foreign patent practitioner in his country sends cases to an American patent or trademark practitioner to prosecute before the PTO, and you send the foreign firm cases to prosecute before the foreign patent office, on the more or less explicit basis that it's something in the nature of a trade." According to the individual, the "exchange" ordinarily takes place without knowledge of the practitioner's client. The individual expressed the opinion that "exchanges" without knowledge of the client presently occur routinely. The PTO believes that the suggested "exchange" may ethically take place *only* when the practitioner's clients are fully advised of the exchange. Three other witnesses at the hearing expressed the view—correctly the PTO believes—that client knowledge is essential to an ethical exchange of the type contemplated. No change in §10.32 is being made.

A suggestion was received that "in matters before the Office" be inserted after "professional employment" in §10.33. The suggestion is not being adopted in view of the second sentence of §10.1. Another comment suggested that Rule 7.3 of the Model Rules of Professional Conduct (1983) be adopted in place of §10.33. The suggestion is not being adopted. Section 10.33 is based partly on Rule 7.3, but contains the additional language "under circumstances evidencing undue influence, intimidation, or overreaching." Section 10.33 is designed

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to prohibit so-called "ambulance chasing." In *Ohralik* v. *Ohio State Bar Ass'n.*, 436 U.S. 447 (1978), the Supreme Court held that a state could lawfully regulate ambulance chasing. In its opinion, the Supreme Court said:

> We need not discuss or evaluate each of these interests in detail as appellant has conceded that the State has a legitimate and indeed "compelling" interest in preventing those aspects of solicitation that involve fraud, undue influence, intimidation, overreaching, and other forms of 'vexatious conduct.' We agree that protection of the public from these aspects of solicitation is a legitimate and important state interest.

436 U.S. at 462. The additional language appearing in §10.33 is designed to limit the application of §10.33 to those situations in which the PTO has a legitimate interest. See also 35 U.S.C. 32 and §10.31(a).

A suggestion was received that §10.35(b) should be deleted. According to the suggestion, "[r]egulation of the practitioner's business arrangements should be left to state regulation." While the PTO is in general agreement with the rationale suggested, there exist partnerships of agents which are not subject to regulation by any state. Moreover, the commentator has not suggested or shown that §10.35(b) is inconsistent with the policy of any state. Practitioners should not be free to hold themselves out as being associated with a partnership or other organizations when an association does not in fact exist.

One comment suggested that "in the locality" be deleted from §10.36(b)(3). This suggestion is being adopted, because "in the locality" has no particular significance in the practice of patent and trademark law. Clients of patent and trademark practitioners are not necessarily located where counsel are located. Moreover, the practice is national in scope.

An individual at the hearing suggested that the PTO should delete subparagraphs (1) and (2) from §10.37(a). This suggestion is not being adopted. The individual suggested that a client need not know that "employment" has been referred to another practitioner or to a foreign practitioner. The PTO disagrees and so did three other individuals who expressed a view at the hearing. Moreover, the PTO believes that when "farming out" occurs with the consent of a client, that the fee division should be proportional to the services rendered. Under §10.37, "farming out" of work without knowledge and consent of a client will constitute a disciplinary rule violation.

One commentator suggested that §10.39 "may result in numerous claims to the effect that a practitioner brought a proceeding 'merely for the purpose of harassing or maliciously injuring another person.' " Section 10.39 continues existing policy (37 CFR §1.344 and DR 2–109 of the ABA Code (1970)). Under existing policy, the PTO has not experienced "numerous claims." Accordingly, there is no reason to expect such claims under §10.39.

A suggestion was received that the first sentence of §10.40(a) be changed to read: "A practitioner may withdraw from employment in a proceeding before the Office without permission from the Commissioner in those instances in which a substitute has been selected and is willing to serve." This suggestion is not being adopted. If "a substitute has been selected and is willing to serve," presumably with the consent of the client, a new power of attorney may be filed in the PTO. Another commentator suggested that §10.40 should not apply to corporate attorneys. This suggestion likewise is not being adopted. If a corporate atorney changes jobs, the attorney should withdraw from representing the "old" corporation *or* the old corporation should revoke any power of attorney.

One comment suggested that the PTO should be under a burden of deciding requests for permission to withdraw within thirty (30) days. This suggestion is not being adopted, but it is and will continue to be PTO policy to promptly decide requests for permission to withdraw.

One comment suggested that ", and may not withdraw in other matters," be deleted from §10.40(c). This suggestion has been adopted.

One comment asked whether a power of attorney given during prosecution of a patent application continues to be viable after the patent is issued. The answer is "yes." Communications received during reexamination proceedings are sent to the correspondence address established during prosecution of the application which matures into the patent being reexamined. See 37 CFR §1.525. Notices concerning maintenance fees likewise are mailed to the correspondence address. See 37 CFR §1.363, 49 F.R. 34725 (Aug. 31, 1984). The commentator also raised a question of who is the client when a case is filed on behalf of an individual, but the individual's assignee pays the practitioner's bills. Practitioners are expected to know the identities of their clients. If a practitioner is hired by a corporation and wishes to make that fact plain on the record of a patent application, the practitioner may file an assignment and a power of attorney signed by the assignee. If a dispute should then occur between the individual and the assignee, the record would be clear that the assignee is the client.

A comment suggested that §10.40(a) "would appear to be unreasonable" in view of the language "giving due notice to another practitioner." Such language does not appear in §10.40(a).

An oral comment was received by phone which questioned whether the use of para-legals or apprentices by a practitioner constitutes the unauthorized practice of law. If a para-legal or apprentice works under the direction of a practitioner and the practitioner does not allow the para-legal or apprentice to hold themselves out as a practitioner, there is no unauthorized practice of law problem within the meaning of §10.47.

One comment discussing §10.49 made the following statement:

> ". . . if the intent of this section is to prohibit a practitioner from forming a partnership with a lawyer who, while in good standing with his State bar, does not qualify to practice before the Office (either because he has not taken the patent examination or is not qualified to handle trademark matters), then it should be stricken."

As explained in the notice of proposed rulemaking (49 F.R. 33797, column 3), the PTO does not intend to prohibit formation of law firms by members of the Bar of any state.

One comment suggested that "in matters before the Office" should be inserted after "employment" in §10.62(a). This suggestion is not being adopted in view of the second sentence of §10.1.

Another comment suggested that §§10.62 and 10.63 be replaced with Rule 3.7(b) of the Model Rules of Professional Conduct of the ABA (1983). For reasons already discussed, the PTO is not adopting the Model Rules. The comment went on to suggest that practitioners would not be free testify concerning attorney diligence in patent interference cases. The PTO has made it plain twice that it disagrees. See the advance notice (49 F.R. 10016, column 3 (Mar. 16, 1984)) and the notice of proposed rulemaking (49 F.R. 33797, column 3, last paragraph (Aug. 24, 1984)).

A comment suggested that language in §§10.62 and 10.63 is not clear. Specifically, the commentator referred to "solely to an uncontested matter" or "solely to a matter of formality." This language occurs in the current rules and has not caused any known difficulty.

Two comments were received which suggested that §10.64(b) should permit practitioners to pay fees which rightfully should be paid by a practitioner. This suggestion is being adopted and the following sentence has been added to §10.64(b): "A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee." One of the commentators supplied the following rationale with which the PTO agrees:

> It sometimes happens that payment of a fee is necessitated by some act or omission for which the practitioner and not the client is responsible. One example is a fee for an extension of time to respond to an Office Action (see 37 C.F.R. §1.17 and §1.136), where the delay has resulted from the practitioner's workload for other clients, or from the practitioner's absence from his or her office for purposes unrelated to the client's business. Another example is a petition fee for revival of an application unintentionally abandoned through some inadvertent oversight on the practitioner's part. In these circumstances, it would seem unjust to require the client to bear the cost of tne fee.

One comment suggested that §10.65 should be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

Another comment suggested that §10.65(a) "may limit a practitioner serving on the board of directors of a client." The commentator went on to say that practitioners serving on boards of directors is a common practice. Inasmuch as the client consents to practitioner serving on the board, it is believed that §10.65 does not limit a practitioner as suggested by the commentator.

One comment was received which suggested that §10.66(d) be changed to exclude corporate patent departments. According to the comment, "why should an entire corporate patent department have to withdraw if one of its members has to withdraw for disciplinary reasons?" In situations where it would not be appropriate for an entire firm or department to withdraw, §10.66(d) permits the Commissioner or the Director to so order. See e.g., *Sunkist Growers, Inc.* v. *The Benjamin Ansehl Co.*, 221 USPQ 1077 (Comm'r.Pat. 1984). Another comment suggested that §10.66 should be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment was received which suggested that §10.67 be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

A comment was received which suggested that §10.68(c) might be construed to preclude a practitioner from joining a law firm where attorneys who are not registered to practice before the PTO "are in control," i.e., are the "senior" partners. The definition of practitioner (see §10.1(r)) precludes such a construction, because any attorney in good standing in any State is a practitioner. Another comment suggested that §10.68 be amended to indicate that it relates only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment was made at the hearing which suggested that modifiers, such as "knowingly, willfully, intentionally," be inserted in §10.77. This suggestion is not being adopted. The PTO believes §10.77 states clearly the prohibited conduct.

A comment was received which suggested that §§10.77, 10.78, and 10.84 be amended to indicate that they refer only to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that the term "unwarranted" in §10.85(a) (2) is "too vague as to its limits." The PTO disagrees. Contrary to the suggestion by the commentator, it is believed that practitioners can readily determine whether they are advocating a position that is unwarranted under existing law.

A comment was received which suggested that §10.85(b) can place a difficult burden on patent counsel. In support of his position, the commentator gave two examples and commented on both examples as follows:

Example 1:

A client engages a patent attorney in the preparation of a patent application, and the patent attorney goes through the usual routine of advising the client of statutory bars, duty to disclose, etc. The attorney prepares and files the application, and during the course of the prosecution, the client informs the attorney of some activities that occurred a couple of years before filing the application, which activities might constitute an offer for sale. The attorney advises that this must be disclosed to the Patent Examiner, but the applicant refuses to follow this course of action and discharges the patent attorney. The client then engages another attorney to complete the prosecution, without telling the new attorney of the potentially damaging prior art.

Comment:

In accordance with my interpretation of §10.85(b), the first attorney would be required to disclose this situation to the Office, unless the term "prepetrated a fraud" as it appears in that rule does not include the deliberate failure to disclose relevant prior art. My concern is that this could make for some very poor relationships with the client who might not understand the attorney's duty of disclosure before the Office.

Example 2:

A rather poor inventor has managed to drum up enough money for the filing fee for a patent application and then proceeds to prepare and file his own patent application, without the assistance of a patent attorney. After a few months, the inventor obtains some financing from an investor, and the inventor and the investor consult the patent attorney to see if he would continue with the prosecution of the application. The attorney reviews the fact pattern and informs both the inventor and the investor that there is unquestionably some prior art, in the form of an earlier publication by the inventor, which must be disclosed before the Office. When the inventor and the investor find that the attorney intends to disclose this prior art as soon as he is engaged as their attorney, the inventor and the investor tell the attorney that they would rather engage the services of some other patent attorney, and that they will not tell the second attorney of the prior art.

Comment:

As I would interpret §10.85 (b), the first patent attorney would be obliged to inform the Office of the relevant prior art. The first patent attorney would likely have the serial number and filing date of the application, and it would appear to me that the patent attorney would have to disclose not only the prior art, but also disclose the intent of the inventor and the investor not to disclose the same. This is pretty harsh treatment, and I can see where the inventor and the investor would have some very hard feelings against the patent attorney.

The PTO agrees that under the circumstances of Example 1, a "client . . . might not understand the attorney's duty of disclosure . . . " Likewise, the PTO can understand "where the inventor and the investor [in Example 2] would have some very hard feelings against the patent attorney." Nevertheless, the commentator has correctly noted in each case that the practitioner is required to advise the PTO. The practitioner's obligation under §10.85(b) has not been changed by the rules and is mandated by *Kingsland* v. *Dorsey*, 338 U.S. 318 (1949). See also Nahstoll, *The Lawyer's Allegiance: Priorities Regarding Confidentiality*, 41 Wash. & Lee L. Rev. 421 (1984).

A comment was received which suggested that §10.85 be amended to indicate that it pertains only to matters before the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

Two comments were received which suggested that §10.87(a) could be construed to prohibit a practitioner from recommending that a client meet with an opposing party for settlement discussions. Both comments suggested that §10.87(a) be amended to permit a practitioner to recommend that a client engage in settlement

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discussions directly with an opposing party. The suggestion is being adopted and the following sentence has been added to §10.87(a): "It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions."

A suggestion was made that §10.87 be amended to indicate that it pertains only to matters before the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that §10.89(c) (5) be "eliminated on the grounds of vagueness" because one cannot "be expected to comply with apparently unpublished customs of courtesy or practice." The suggestion is being adopted. Subparagraph (6) of §10.89(c) is being redesignated as subparagraph (5) and has also been changed to read: "Engage in undignified or discourteous conduct before the Office (see §1.3 of this Subchapter)." Subparagraph (7) has been redesignated as subparagraph (6).

Another comment discussing §10.89 asked "since when must counsel cite to the Examiner in *ex parte* proceedings cases known to be directly adverse to the position being advocated?" Counsel are expected to advise patent and trademark examiners of known controlling authority which is contrary to a position being advocated. It is important for counsel to do so in *ex parte* cases because there is no *advocate* taking a position contrary to the position being taken by an applicant. See also *Southern Pacific Transportation Co.* v. *Public Utilities Commission of the State of Calif.*, 716 F.2d 1285, 1291 (9th Cir. 1983).

A commentator contended that §10.89(a) "makes no sense" because a decision of the PTO may have been overruled by the Federal Circuit. Section 10.89(a) is limited to "a decision of the Office made in the course of a proceeding." Practitioners are expected to follow interlocutory orders entered in PTO proceedings. Obviously if such an order is ultimately overruled or reversed by a court, it no longer need be followed. The same commentator suggested that §10.89(c) (3) is not appropriate. Specifically, the commentator indicated that practitioners often rely on the specification of a patent application and prior art. The specification and prior art are evidence, not the "practitioner's personal knowledge."

One commentator suggested that §§10.92 and 10.93 be amended to indicate that they relate solely to matters before the PTO. This suggestion is not being adopted in view of the second sentence of §10.1.

A commentator at the hearing suggested that §10.93 be changed to permit practitioners to discuss procedural matters with interlocutory examiners or members of the Board of Patent Interferences or the Trademark Trial and Appeal Board. In view of Public Law 98–622, November 8, 1984, the Board of Patent Interferences will cease to exist on February 8, 1985. All patent interference cases will be transfered to the Board of Patent Appeals and Interferences and will be assigned to an examiner-in-chief. Practitioners may consult an examiner-in-chief orally upon adequate notice to opposing counsel. A telephone conference call may be arranged when opposing counsel desires to participate in the oral consultation. The same is true of the interlocutory examiners or members of the Trademark Trial and Appeal Board. Questions of a purely procedural nature may be asked. However, an examiner-in-chief or the interlocutory examiner or member of the Trademark Trial and Appeal Board may nevertheless decline to answer procedural questions without opposing counsel being present or involved in a conference call.

One commentator suggested that §§10.101, 10.102, 10.103, and 10.111 be amended to indicate that they refer only to proceedings in the PTO. The suggestion is not being adopted in view of the second sentence of §10.1.

One comment suggested that practitioners residing in the United States should be able to maintain trust funds in a bank in any State. This suggestion is being adopted and §10.112(a) has been changed to implement the suggestion. However, if a State bar requires funds to be kept in a bank within the State, a practitioner would be required to keep funds in a bank in the State in order to comply with State rules. Another comment suggested that §10.112(c)(2) is not practical. According to the commentator, "invention samples and invention disclosures and drawings usually are the client's property, but keeping them in a safe deposit box is totally impractical." The commentator overlooks that portion of §10.112(c)(2) which reads "in a safe deposit box or other place of safekeeping . . . ." A client may consent to a practitioner keeping invention samples, invention disclosures, and drawings in the practitioner's office. The practitioner, of course, should see to it that the office is maintained with appropriate security.

An individual testified at the hearing that §10.112 is not clear. According to the individual, "I think the rules should specify that if you get money up front from a client, whether it's called a retainer, pre-payment, or whatever . . . that money has to be put into a trust fund or a trust account . . . and that you can't take the money out and spend it until you have performed the services and sent a bill to the client that says X dollars has come out of your trust account in payment of Y services." The PTO believes that §10.112(b)(2) specifies "that you can't take the money out and spent it until you have performed the services" and that §10.112(c)(3) specifies that you must send "a bill to the client." Accordingly, no change to §10.112 is necessary.

One commentator testified at the hearing that the PTO rules do not address "those individuals who, due to a mental or physical defect, are not able to bring themselves in conformity with the rules of conduct . . . ." On the contrary, §10.130 specifies that any practitioner shown to be "incompetent" may be suspended or excluded. The commentator at the hearing referred to an individual "who has a drinking problem or one who is mentally incapable of representing people before the . . . Office." The statute (35 U.S.C. 32) and the rules address such an individual. As noted in the advance notice, the PTO has declined to adopt the suggestion appearing in Manson, *Helping Lawyers Who Need Help (But Won't Ask for It!)*, 25 Va. Bar News 27 (June 1977). See 49 F.R. 10017, column 1 (Mar. 16, 1984). If an individual is suspended due to a drinking problem, reinstatement (see §10.160) may be conditioned on a clear and convincing showing that the drinking problem has been overcome.

One individual testified at the hearing that a "statute of limitations" should be inserted in §10.131. This suggestion is not being adopted. As the individual noted during testimony, statues of limitations do not apply in disciplinary proceedings.

A suggestion was received that §10.132 be changed to expressly provide that:

> No disposition adverse to the respondent shall be recommended by the Director until the respondent shall have been afforded the opportunity to be heard.

This suggestion is not being adopted. Section 10.132(a) provides that, where necessary, the Director shall comply with 5 U.S.C. 558(c) prior to calling a meeting of the Committee on Discipline. The relevant portion of 5 U.S.C. 558(c) provides:

> Except in cases of willfulness or those in which public health, interest, or safety required otherwise, the withdrawal, suspension, revocation, or annulment of a license is lawful only if, before the institution of agency proceedings therefor, the license has been given;
>
> (1) notice by the agency in writing of the facts or conduct which may warrant the action; and
> (2) opportunity to demonstrate or achieve compliance with all lawful requirements.

Where appropriate, a notice under §588(c) will be issued prior to the time the Director takes a case to the Committee on Discipline. Any reply to the §558 (c) notice will be reviewed by the Director and the Committee on Discipline prior to deciding whether a complaint should be filed.

Another suggestion was received which indicated that §10.132(c) should be changed so that the "accused practitioner . . . [would] have the right to select an administrative law judge from a panel of such judges, such panel including the names of at least two law judges." This suggestion is not being adopted. No rationale was given in support of the suggestion and there is no known reason to permit a respondent to select the particular administrative law judge (ALJ) to be assigned to hear the practitioner's case.

Several changes have been made in §10.133 by the PTO which are not in response to any comment or suggestion. The language "§§10.132(b) and 10.134" in the first sentence of §10.133(b) has been changed to §10.134". This change was made because a reference to §10.132(b) is not necessary. The language "his or her resignation by filing" in the first sentence of §10.133(b) has also been deleted as unnecessary. The second sentence of paragraph (b) of §10.133 has been replaced by new paragraphs (c) and (d). New paragraph (c) specifies the content of an affidavit of resignation filed prior to the date set by the ALJ for a hearing. New paragraph (d) specifies the content of an affidavit of resignation filed on or after the date set by the ALJ for a hearing. Old paragraph (c) has been redesignated as new paragraph (e) and the language "paragraph (b)" therein has been changed to read "paragraphs (b) and (c)". Old paragraphs (d) and (e) have been redesignated as new paragraphs (f) and (g), respectively.

New paragraph (c) of §10.133 has been added to define the conditions under which a practitioner may resign prior to the date set by the ALJ for a hearing. Experience has shown that practitioners do not readily resign prior to hearing if they are required to admit the charges against them and/or are required to admit that they could not have been defended against the charges or the subject of an investigation. Paragraph (c) does not require a practitioner to admit the charges or any lack of defense at the time of resignation. Rather, under §10.133(c)(5), any admission is operative at the time of a request for reinstatement and only for the *limited* purpose of determining the request for reinstatement. By deferring the time when the practitioner makes the admissions, it is believed that settlements are more likely. Once a hearing begins, however, there is no reason to permit a resignation without admission of the facts and a lack of defense. The admissions of paragraph (c)(5) are relevant in determining whether reinstatement should be granted and whether sufficient time has passed between resignation and any application for reinstatement.

One comment was made at the hearing which suggested that "if, in fact there is a real stalemate in a settlement discussion, that there be some avenue so that there be, in essence, binding arbitration" on the part of the respondent and the Director. This suggestion is not being adopted. There is no reason to impose binding arbitration in disciplinary matters. While settlements are to be encouraged, if the parties (the respondent and the Director) cannot reach a mutually agreeable settlement, the proper recourse is to proceed with the disciplinary proceeding.

A suggestion was received that the second sentence of §10.138 be deleted. The suggestion is not being adopted. The second sentence of §10.138 provides that evidence obtained by a subpoena under 35 U.S.C. 24 will not be admitted unless prior approval was obtained from the ALJ to proceed under §24. This provision is necessary to retain control over the proceedings in the ALJ. Moreover, an order authorizing a party to proceed under §24 can be helpful to any district court which is required to determine whether an individual should be compelled to answer counsel's questions. Additional rationale in support of the PTO's decision not to adopt the suggestion appears in the advance notice (49 F.R. 10019, columns 1 and 2) and in the notice of proposed rulemaking (49 F.R. 33800, column 1).

Two individuals testified at the hearing concerning §10.144. Section 10.144 provides that hearings in disciplinary cases will not be open to the public. One individual suggested that hearings in disciplinary matters should be opened to the public. The other individual took the opposite position and supported §10.144 as proposed. The suggestion to open hearings to the public is not being adopted at this time. The PTO believes that a practitioner should not unnecessarily be exposed to charges of alleged wrongdoing until the practitioner is found to have violated the PTO Code of Professional Responsibility. Unnecessary and premature exposure could cause a practitioner's clients to find other counsel based on mere allegations. Additionally, the PTO is required to maintain information concerning patent applications in secrecy. 35 U.S.C. 122. In most disciplinary cases information concerning a patent application is revealed at any hearing. Accordingly, the PTO will not provide for public hearings. However, the PTO intends to further study the possibility of hearings open to the public (e.g., in a disciplinary proceeding involving only trademark matters) and may, in the future, propose to modify §10.144.

Numerous comments were received which suggested that the burden of proof set forth in §10.149 should be changed from "preponderance of evidence" to "clear and convincing evidence." As announced at the hearing, this suggestion is being adopted. The "clear and convincing evidence" standard brings §10.149 in conformance with §10.158(d)(1)(ii) which also requires proof by clear and convincing evidence.

The term "clear and convincing evidence" is not succeptable to a precise definition. The PTO, therefore, deems it appropriate to set forth its views on what constitutes "clear and convincing evidence." "Clear and convincing evidence" falls somewhere between proof beyond a reasonable doubt and proof by a preponderance of evidence.

A reasonable doubt is a doubt based upon reason and common sense—the kind of doubt that would make a reasonable person hesitate to act. Proof beyond a reasonable doubt must, therefore, be proof of such a convincing character that a person would be willing to rely and act upon it unhesitatingly in the most important of his or her affairs. Devitt, *Federal Jury Practice and Instructions* §11.01 (2d ed. 1970).

To establish a fact by a preponderance of evidence means to prove that fact is more likely so than not so. A preponderance of evidence means such evidence as, when considered and compared with that opposed to it, has more convincing force, and produces in the mind of the trier of fact a belief that what is sought to be proved is more likely true than not true. Devitt, *supra* at §7.01.

Clear and convincing evidence is that measure or degree of proof which will produce in the mind of the trier of fact a firm belief or conviction as to an allegation sought to be established; it is more than a preponderance of evidence, but less than that required to establish guilt beyond a reasonable doubt. *Hobson* v. *Eaton*, 399 F.2d 781 (6th Cir. 1968). It does not mean clear and unequivocal." *Fred C. Walker Agency, Inc.* v. *Lucas*, 215 Va. 535, 540–541, 211 S.E.2d 88, 92 (1975).

Several comments were received which suggested that §10.150 be changed to make the Federal Rules of Evidence applicable to disciplinary proceedings. The suggestion is not being adopted. The PTO has explained, in both the advance notice (49 F.R. 10020, column 2) and the notice of proposed rulemaking (49 F.R. 338001, columns 1 and 2) why it cannot adopt the Federal Rules of Evidence in disciplinary cases. The "Federal Rules of Evidence . . . do not apply to administrative proceedings . . . ." Davis, *Administrative Law Treatise*, §14.01 (Supp. 1970). The controlling law is set out in 5 U.S.C. 556(d) which provides in part: "Any oral or documentary evidence may be received, but the agency as a matter of policy shall provide for the exclusion of irrelevant, immaterial, or unduly repetitious evidence. A sanction may not be imposed or rule or order issued except on consideration of the whole record or those parts thereof cited

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by a party and supported by and in accordance with the reliable, probative, and substantial evidence." It appears to be the concern of some of the comments that the Administrative Procedure Act does not articulate an appropriate standard of evidence and that hearsay may be admitted. Suffice it to say that many adjudications occur daily under the Administrative Procedure Act, including disciplinary proceedings. The following language appearing in an opinion of the Eleventh Circuit in *TRW-United Greenfield Division* v. *National Labor Relations Board*, 716 F.2d 1391, 1394 (11th Cir. 1983), may be helpful:

> At the hearing the ALJ refused to allow five additional employees to testify that other employees told them that such a statement had been made. TRW contends it was denied a full and fair hearing by the exclusion of this testimony. The general rule is that administrative tribunals are not bound by the strict rules of evidence governing jury trials. *Opp Cotton Mills, Inc.* v. *Administrator of Wage & Hour Div.*, 312 U.S. 126, 155, 61 S.Ct. 524, 537, 85 L.Ed. 624 (1971). Thus, the admission of testimony which would be deemed incompetent in judicial proceedings would not invalidate the administrative order. *Tagg Bros. & Moorhead* v. *United States*, 280 U.S. 420, 442, 50 S.Ct. 220, 225, 74 L.Ed. 524 (1930). But this assurance of a desirable flexibility in administrative procedure does not go so far as to justify orders without a basis in evidence having rational probative force. Mere uncorroborated hearsay or rumor does not constitute substantial evidence. *Consolidated Edison Co.* v. *N.L.R.B.*, 305 U.S. 197, 230, 59 S.Ct. 206, 217, 83 L.Ed. 126 (1938). Therefore, the hearsay testimony of other employees would not have amounted to substantial evidence sufficient to support a finding for the company. We find that TRW was not denied a full and fair hearing by the judge's refusal to admit hearsay testimony.

See also *Steadman* v. *Securities and Exchange Commission*, 450 U.S. 91, 98 n. 17 (1981); *Richardson* v. *Perales*, 402 U.S. 389, 410–411 (1971); *Brown* v. *Gamage*, 377 F.2d 154, 158 (D.C.Cir.), *cert. denied*, 389 U.S. 858 (1967); Annotation, *Hearsay Evidence In Proceedings Before Federal Administrative Agencies*, 6 ALR Fed 76 (1971); and Davis, *Hearsay in Administrative Proceedings*, 32 Geo. Wash. L. Rev. 689 (1964).

A suggestion was received that §10.151 be changed to make the deposition rules of the Federal Rules of Civil Procedure applicable to disciplinary proceedings. This suggestion is not being adopted. The discovery provisions of the Federal Rules of Civil Procedure are not being adopted by the PTO in disciplinary cases. Except for discovery which the parties agree to make voluntarily, all discovery under these rules will require the prior permission of the ALJ. This prior permission is designed to insure that the ALJ retains control over the proceeding. By requiring prior approval of the ALJ to take a deposition, the rules insure that the deposition will relate to evidence the ALJ deems to be relevant and will afford the ALJ the option of determining whether he or she wishes to observe the witness.

Several comments were received which suggested that §10.152 be changed to permit more discovery. Some commentators urged adoption of the discovery provisions of the Federal Rules of Civil Procedure relating to requests for admissions, interrogatories, and requests for production of documents. Other commentators felt that the discovery proposed in the notice of proposed rulemaking was not sufficient and that more discovery should be authorized. These latter commentators, however, did not urge adoption of the discovery provisions of the Federal Rules of Civil Procedure. As one commentator noted:

> Disciplinary proceedings are not in the nature of civil actions and full discovery within the scope of the Federal Rules of Civil Procedure is probably not needed or desirable.

The PTO agrees that more discovery is appropriate than would have been authorized under §10.152 as proposed. The PTO does not agree, however, that discovery should be commensurate in scope with the discovery provisions of the Federal Rules of Civil Procedure.

One commentator at the hearing who urged adoption of the discovery provisions of the Federal Rules of Civil Procedure, correctly recognized the existence of "concerns of the Patent [and Trademark] Office regarding what are alleged to be general discovery abuses." There is ample basis for the PTO's concern. See e.g., Pollack, *Discovery—Its Abuse and Correction*, 80 F.R.D. 219 (1979) (reproducing remarks made by Judge Pollack at the Fifth Circuit Judicial Conference on April 26, 1978 at New Orleans). The same commentator at the hearing went on to note, however, that if the ALJ "gets on top of a case and monitors a case very actively, then no discovery abuses will occur, and if they do, they will be dealt with swiftly and properly."

Advocates of discovery "reform" seemingly rely on two principles which are claimed to be the cure-all for discovery abuse: (1) active control by the judge and (2) sanctions. See e.g. *Second Report of the Special Committee for the Study of Discovery Abuse*, 92 F.R.D. 137 (1980). The PTO is not in a position to impose the most effective sanction—costs. However, the PTO can invest the ALJ with control over discovery. It is because the PTO can invest the ALJ with control over discovery that the suggestion for more discovery is being adopted. Section 10.152 has been changed to permit discovery which the PTO believes will be effective. The scope of the discovery, however, will not be commensurate in scope with the Federal Rules of Civil Procedure.

Paragraph (a) of §10.152 will permit *limited* discovery an answer is filed. Discovery is not authorized prior to the filing of an answer. A party seeking discovery will have to make out a clear and convincing case to the ALJ that discovery is necessary *and* relevant. If discovery is authorized, the ALJ may set conditions he or she deems appropriate to accomplish the discovery. For example, the ALJ may set the place and time for inspection of documents which are required to be produced or the ALJ can order a party to mail copies of the documents to the other party. Under paragraph (a) of §10.152, discovery is limited to a *reasonable* number of requests for admissions, interrogatories, or requests for production of documents and things. Consideration was given to setting numerical maximums for requests for admission, interrogatories and requests for production of documents and things. See e.g., Local Rule 11.1 of the U.S. District Court for the Eastern District of Virginia. However, numerical maximums are not presently specified. Should discovery become a problem, the PTO will give further consideration to limiting the number of discovery requests which a party may file.

Paragraph (b) of §10.152 specified certain matters which *cannot* be discovered. Matter which will be used by another party solely for impeachment or cross-examination cannot be discovered. Documents which will be used as part of the Director's case-in-chief or the respondent's case-in-rebuttal or affirmative defenses are subject to discovery. Patent applications not available to a respondent under 35 U.S.C. §122 are not subject to discovery. Matter relating to disciplinary proceedings commenced prior to the effective date of these rules is not available. For the most part, the reasons for a particular length of suspension or disbarment have not been stated in the past. Accordingly, disciplinary proceedings commenced prior to these rules are not particularly relevant. See *Poole* v. *United States*, 54 A.F.T.R. 2d (P-H) 84–5536 (D.D.C. June 29, 1984). Prior disciplinary proceedings which resulted in public discipline being imposed will continue to be available in the Office of the Director of Enrollment and Discipline. Respondents will continue to be free to inspect the files of those proceedings. Matters relating to experts, except as may be required by the ALJ under §10.152(e), likewise are not subject to discovery. Privileged matter and attorney work product are excluded from matter which can be discovered.

Paragraph (c) sets forth some factors the ALJ can consider in determining whether to authorize discovery or to limit discovery which is authorized. The factors include delay (which is a major consideration in disciplinary matters), burden on the party required to produce discovery, availability of the discovery sought to the public (in which case, discovery may not be necessary), the extent to which the matter sought to be discovered is equally available to both parties, and the extent to which discovery is available from another source.

Paragraph (d) of §10.152 requires a party desiring discovery to file a motion which explains, in detail, how each request is relevant to an issue raised in the complaint or the answer.

Paragraph (e) of §10.152 sets out matter which the ALJ can require a party to produce in a pre-hearing statement. Subparagraph (4) states the matter the ALJ can require disclosed related to experts.

The PTO has every reason to believe that the discovery authorized by §10.152 will be useful and that sufficient authority has been given to the ALJ to effectively control discovery and prevent abuses. The PTO intends to monitor discovery closely in the future and will consider amending these rules if abuses occur.

One comment suggested that §10.154(b) be modified by adding "any extenuating circumstances" as a matter to be considered in imposing a penalty. This suggestion is being adopted. Another comment suggested that §10.154 should address "probation." This suggestion is not being adopted. Nevertheless, the PTO has authority to place a practitioner on probation for all or a portion of any suspension and to revoke the probation upon a showing of a violation. See *In re Dula*, 1030 *Official Gazette* 20 (May 17, 1983).

One comment suggested that §10.155 be modified to specify that the Director should serve a copy of any appeal "on the respondent or on the attorney for respondent." This suggestion is not being adopted. However, in view of the suggestion the language "on the respondent" (both occurrences) in §10.155(a) is being deleted. Section 10.142(a) specifies how service is made on a respondent who is represented by an attorney.

A suggestion was received that §10.157 be modified to provide that a stay would be entered in every case where a respondent seeks judicial review of a decision of the Commissioner. This suggestion was rejected at the time the notice of proposed rulemaking was published (49 F.R. 33802) and is not being adopted. There are cases where a stay is not appropriate, e.g., when the disbarred practitioner is incarcerated. There are other times when a stay may be appropriate. Accordingly, stays will be granted in the discretion of the Commissioner.

Several comments were received discussing §10.158. Some commentators suggested that §10.158 was "too lenient" and another suggested that it was "too hard" on suspended and excluded practitioners. Section 10.158 is designed to advise suspended practitioners as to what they can and cannot do during any period of suspension. The PTO believes that §10.158 strikes a reasonable balance in a difficult area. See the discussion concerning §10.158 in the advance notice (49 F.R. 10021, columns 2 and 3). One comment suggested that §10.158 should be made applicable to corporations. This suggestion is being adopted by appropriate changes in §10.158(c) to refer to client-employers. Another comment suggested that §10.158(b)(1) and (2) be changed to refer to matters before the PTO. This suggestion is also being adopted.

An oral comment was received asking whether the Director could conduct an investigation in connection with a determination under §10.158(d). The Director may conduct whatever investigation is warranted to determine whether a suspended or excluded practitioner seeking reinstatement has complied with regulations relating to suspended and excluded practitioners.

A comment was received regarding §10.159(a) which suggested that the Director notify the American Bar Association National Discipline Data Bank when a practitioner is suspended or excluded. This suggestion is not being adopted as such. However, §10.159(a) has been changed to authorize the Director to notify "any appropriate bar association." The PTO is not inclined to mention any particular bar association by name in the rules. It will be the practice of the PTO to notify the National Discipline Data Bank, among others, when a practitioner is disciplined. Another comment suggested that the entire file of a disciplinary proceeding should not be open to the public when only some, but not all, charges are sustained. This suggestion is not being adopted. In most disciplinary matters, it would be highly inconvenient to segregate the relevant from the irrelevant. Moreover, once discipline is imposed, the principal rationale for keeping the file secret no longer exists. The disciplined practitioner will suffer whatever public embarassment results from discipline apart from whether part or all of the file is open to the public.

With respect to §10.160, one commentator suggested that the burden on the suspended or excluded practitioner for reinstatment be stated in the rules. This suggestion is being adopted and a "clear and convincing showing" requirement has been added to §10.160(c). Section 10.149 sets out the burden on the Director for proof of allegations in the complaint and upon the respondent for proving affirmative defenses. The showing required by §10.158(d)(1) is by "clear and convincing evidence." One commentator suggested that the 5-year period of §10.160(b) should be changed to a 3-year period. This suggestion is not being adopted. According to the commentator, the PTO has failed to state why a 5-year period was proposed. The commentator believes a 3-year period is more appropriate, although no reason is given in support of the commentator's belief. The PTO, after considering the matter, has concluded that some period must be specified and there is no reason to change the 5-year period proposed. A commentator suggested that a practitioner suspended for less than six months should "automatically" be reinstated. This suggestion is not being adopted, because the Director, as a condition to any reinstatement, must find that the suspended practitioner complied with §10.158. Another commentator questioned whether the rules should provide for application for reinstatement during a period of probation. The PTO believes the rules need not make provision for application for reinstatement during probation. For example, if a practitioner is suspended for a period of three years and it is ordered that the practitioner be actually suspended for at least one year *and* that the last two years the practitioner be placed on probation, the practitioner would be able to apply for reinstatement after serving one year of the three year suspension.

The PTO disagrees with the following comment concerning §10.161(b). "This clause is ex post facto legislation as it seeks retroactively an increase of penalties regarding conduct which occurred prior to the legislation." No legislation is involved. Section 10.161(b) does not "increase penalties."

Table 1
Principal Source of Sections 10.2 through 10.19

Sec.	
10.1 (preamble)	35 USC 31; *Sperry* v. *Florida*, 373 U.S. 379, 402 (1963)
10.1	35 USC 25; 28 USC 1746
10.1(c)	5 USC 500(b)
10.1(q)	1 USC 1
10.1(aa)	35 USC 100(c)
10.2(a)	New
10.2(b) (1)	New, but see 37 CFR 1.341(i) (1983)
10.2(b) (2)	New, but see 37 CFR 1.348(a) (1983)
10.2(c)	New, but see 37 CFR 1.341(i) (1983)
10.3	37 CFR 1.341(i) (1983)

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10.4(a)	New
10.4(b)	New, but see 37 CFR 1.348(a) (1983)
10.4(c)	New
10.5	37 CFR 1.341 (1983)
10.6(a)	37 CFR 1.341(a) (1983)
10.6(b)	37 CFR 1.341(b) (1983)
10.6(c)	37 CFR 1.341(e) (1983)
10.6(d)	37 CFR 1.341(f) (1983)
10.6(e)	37 CFR 1.341(g) (1983)
10.7(a), (b)	37 CFR 1.341(c) (1983)
10.7(c)	New
10.8	37 CFR 1.341(h) (1983)
10.9(a)	37 CFR 1.342 (1983)
10.9(b)	New
10.10	37 CFR 1.343 (1983)
10.11	37 CFR 1.347 (1983)
10.12	[reserved]
10.13	[reserved]
10.14	5 USC 500(b) and 37 CFR 2.12 (1983)
10.15	35 USC 32; 5 USC 500(d) (2); 37 CFR 1.343 (1983); and 37 CFR 2.12(f) (1983)
10.16	[reserved]
10.17	[reserved]
10.18(a)	37 CFR 1.346 (1983) and 37 CFR 2.15 (1983), see also Rule 11, FRCP
10.18(b)	35 USC 32 & Rule 11, FRCP
10.19	[reserved]

Table 2

Principle Source of Sections of 10.20 through 10.112, the PTO Code of Professional Responsibility

Abbreviations:
FRCP means Federal Rules of Civil Procedure
MCPR means Model Code of Professional Responsibility of the ABA (1980)
MRPC means Model Rules of Professional Conduct of the ABA (1983)
VCPR means the Virginia Code of Professional Responsibility (1984)

Sec.	
10.20	Preamble to MCPR (1980)
10.21	MCPR Canon 1 (1980)
10.22	MCPR DR 1–101 (1980)
10.23(a)	35 U.S.C. 32
10.23(b) (1)	35 U.S.C. 32 and MCPR DR 1–102(A) (1) (1980)
10.23(b) (2)–(6)	MCPR DR 1–102(A) (2)–(6) (1980)
10.23(c) (1)–(14)	PTO created
10.23(c) (15)	Rule 11, FRCP
10.23(c) (16)–(18)	PTO created
10.23(d)	*U.S.* v. *Beecroft*, 608 F.2d 753 (9th Cir. 1979)
10.24	MCPR 1–103 (1980)
10.25 through 10.29	(reserved)
10.30	MCPR Canon 2 (1980)
10.31(a)	35 U.S.C. 32
10.31(b)	5 U.S.C. 501
10.31(c)	37 CFR 1.345(c) (1983)
10.31(d)	Newly created
10.32	MRPC Rule 7.2 (1983)
10.33	MRPC Rule 7.3 (1983)
10.34	MRPC Rule 7.4 (1983)
10.35(a)	5 U.S.C. 501 and MRPC Rule 7.5 (1983)
10.35(b)	MRPC Rule 7.5 (1983)
10.36	MCPR DR 2–106 (1980)
10.37	MCPR DR 2–107 (1980)
10.38	MCPR DR 2–108 (1980)
10.39	MCPR DR 2–109 (1980)
10.40	MCPR DR 2–110 (1980)
10.41 through 10.45	(reserved)
10.46	MCPR Canon 3 (1980)
10.47(a), (c)	MCPR DR 3–101 (1980)
10.47(b)	New (but see e.g., *Crawford* v. *State Bar of California*, 7 Cal. Rptr. 746, 355 P.2d 490 (Cal. 1960))
10.48	MCPR DR 3–102 (1980)
10.49	MCPR DR 3–103 (1980)
10.50 through 10.55	(reserved)
10.56	MCPR Canon 4 (1980)
10.57	MCPR DR 4–101 (1980)
10.58 through 10.60	(reserved)
10.61	MCPR Canon 5 (1980)
10.62	MCPR DR 5–101 (1980)
10.63	MCPR DR 5–102 (1980)
10.64	MCPR DR 5–103 (1980)
10.65	MCPR DR 5–104 (1980)
10.66	MCPR DR 5–105 (1980)
10.67	MCPR DR 5–106 (1980)
10.68	MCPR DR 5–107 (1980)
10.69 through 10.75	(reserved)
10.76	MCPR Canon 6 (1980)
10.77	MCPR DR 6–101 (1980)
10.78	MCPR DR 6–102 (1980)
10.79 through 10.82	(reserved)
10.83	MCPR Canon 7 (1980)
10.84	MCPR DR 7–101 (1980)
10.85	MCPR DR 7–102 (1980)
10.86	(reserved)
10.87	MCPR DR 7–104 (1980)
10.88	MCPR DR 7–105 (1980)
10.89	MCPR DR 7–106 (1980)
10.90	(reserved)
10.91	(reserved)
10.92	MCPR DR 7–109 (1980)
10.93	VCPR DR 7–109 (1984)
10.94 through 10.99	(reserved)
10.100	MCPR Canon 8 (1980)
10.101(a)	MCPR DR 8–101 (1980)
10.101(b)	37 CFR 1.341(f) (1983) and 41 Cp. Att'y Gen. 21 (1949), *reprinted in* 1949 Dec. Comm'r Pat. 1
10.102	MCPR DR 8–102 (1980)
10.103	MCPR DR 8–103 (1980)
10.104 through 10.109	(reserved)
10.110	MCPR Canon 9 (1980)
10.111	MCPR DR 9–101 (1980)
10.112	MCPR DR 9–102 (1980)

Table 3
Principal Source of Sections 10.130 through 10.161

Section	*Source*
10.130	35 U.S.C. 32
10.131(a)	New, but see 37 CFR 1.348(a)
10.131(b)	MCPR DR 1–103 (1980)
10.131(c)	New
10.132(a),(c)	New
10.132(b)	New, but see 37 CFR 1.348(b) (1983)
10.133	New
10.134	37 CFR 1.348(b) (1983)
10.135(a)(1)	New
10.135(a)(2)	37 CFR 1.348(b) (1983)
10.135(a)(3)	New
10.135(b)	New
10.135(c)	New
10.135(d)	5 USC 500(f)
10.136(a)	37 CFR 1.348(c) (1983)
10.136(b)	New
10.136(c)	37 CFR 1.348(c) (1983)
10.136(d)	37 CFR 1.348(c) (1983)
10.136(e)	New
10.137	37 CFR 1.348(c)(1983)
10.138	New
10.139(a)	5 USC 3105
10.139(b)	5 USC 556(c)
10.139(c)	New
10.139(d)	New
10.139(e)	New
10.140(a)	5 USC 500(b)
10.140(b)	New
10.141	New
10.142	New
10.143	New
10.144	New
10.145	New
10.146–10.148	[reserved]
10.149	New
10.150(a)	5 USC 556(d)
10.150(b)	37 CFR 1.348 (d) (3) (1983)
10.150(c)	New
10.150(d)	New
10.150(e)	New
10.151	37 CFR 1.348(d) (3) (1983)
10.152	New, see *Silverman* v. *CFTC*, 549 F.2d 28 (7th Cir. 1977)
10.153	New, but see 5 USC 557(c)
10.154	See 5 USC 557(b) and 35 USC 32
10.155	New
10.156	New
10.157	35 USC 32, Local Rule 1–26 (D.D.C.)
10.158	New
10.159	New
10.160	New
10.161	New
10.162–10.169	[reserved]
10.170	New, but see 37 CFR 1.183

Other Considerations: The rules will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rules are in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354) and Executive Order 12291.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the rules will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). The rules regulate the conduct of attorneys and agents who represent individuals and juristic entities before the Patent and Trademark Office and would not be expected to result in an increase of fees charged by attorneys and agents to entities, including small entities.

The Patent and Trademark Office has determined that the rules are not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of the United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The information reporting requirements contained in the rules have been approved by the Office of Management and Budget, OMB Control No. 0651–0012 and OMB Control No. 0651–0017.

List of Subjects in 37 CFR Parts 1, 2 and 10.

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Trademarks, Lawyers.

For the reasons given in the preamble and under the authority granted to the Commissioner of Patents and Trademarks by 5 U.S.C. 500; 15 U.S.C. 1123; and 35 U.S.C. 6, 31, 32, and 41. Parts 1, 2, and 10 of Title 37 of the Code of Federal Regulations are amended as set forth below:

Part 1—Rules of Practice in Patent Cases

1. Section 1.8 is amended by adding to paragraph (a) (12) a new subparagraph (xiii) to read as follows:

§1.8 Certificate of mailing.

(a) • • •
(2) • • •
(xiii) Papers filed in connection with a disciplinary proceeding under Part 10 of this Subchapter.

2. Section 1.21 is amended by adding to paragraph (a) two new subparagraphs (5) and (6) to read as follows:

§1.21 Miscellaneous fees and charges.

(a) • • •
(5) For review of a decision of the Director of Enrollment and Discipline under §10.2(c) 60.00
(6) For requesting regrading of an examination under §10.7(c) 60.00

• • • • •

3. Section 1.31 is revised to read as follows:

§1.31 Applicants may be represented by a registered attorney or agent.

An applicant for patent may file and prosecute his or her own case, or he or she may be represented by a registered attorney, registered agent, or other individual authorized to practice before the Patent and Trademark Office in patent cases. See §§10.6 and 10.9 of this Subchapter. The Patent and Trademark Office cannot aid in the selection of a registered attorney or agent.

4. Section 1.33 is amended by removing from paragraph (c) "1.341 and 1.347" and inserting in its place "10.5 and 10.11".

5. Section 1.34 is amended by revising paragraph (a) as follows:

§1.34 Recognition for representation.

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this Subchapter and the law, he or she is authorized to represent the particular party in whose behalf he or she acts. In filing such a paper, the registered attorney or agent should specify his or her registration number with his or her signature. Further proof of authority to act in a representative capacity may be required.

• • • • •

6. Section 1.56 is amended by removing from paragraphs (f) and (h) "1.346" and inserting in its place "10.18".

7. The center heading preceding §1.341 is removed.

8. Sections 1.341 through 1.348 are removed.

9. Section 1.455 is amended by removing from paragraph (a) "1.341" and inserting in its place "10.10".

Part 2—Rules of Practice in Trademark Cases

10. Section 2.11 is revised to read as follows:

§2.11 Applicants may be represented by an attorney.

The owner of a trademark may file and prosecute his or her own application for registration of such trademark, or he or she may be represented by an attorney or other individual authorized to practice in trademark cases under §10.14 of this Subchapter. The Patent and

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Trademark Office cannot aid in the selection of an attorney or other representative.

11. Sections 2.12 through 2.16 are removed.

12. Section 2.17 is amended by revising paragraph (a) as follows:

§2.17 Recognition for representation.

(a) When an attorney as defined in §10.1(c) of this Subchapter acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a trademark case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that, under the provisions of §10.14 and the law he or she is authorized to represent the particular party in whose behalf he or she acts. Further proof of authority to act in a representative capacity may be required.

• • • • •

13. Section 2.19 is revised to read as follows:

§2.19 Revocation of power of attorney or of other authorization to represent, withdrawal.

(a) Authority to represent an applicant or a party to a proceeding may be revoked at any stage in the proceedings of a case upon notification to the Commissioner; and when it is so revoked, the Office will communicate directly with the applicant or party to the proceeding or with such other qualified person as may be authorized. The Patent and Trademark Office will notify the person affected of the revocation of his or her authorization.

(b) An individual authorized to represent an applicant or party in a trademark case may withdraw upon application to and approval by the Commissioner.

14. The following Part 10 is added:

Part 10–Representation of others before the Patent and Trademark Office

Sec.

10.1 Definitions
10.2 Director of Enrollment and Discipline
10.3 Committee on Enrollment
10.4 Committee on Discipline

Individuals Entitled to Practice Before the Patent and Trademark Office

10.5 Register of attorneys and agents in patent cases
10.6 Registration of attorneys and agents
10.7 Requirements for registration
10.8 Oath and registration fee
10.9 Limited recognition in patent cases
10.10 Individuals not registered or recognized to practice in patent cases
10.11 Removing names from the register
10.12–10.13 [reserved]
10.14 Individuals who may practice before the Office in trademark and other non-patent cases
10.15 Refusal to recognize a practitioner
10.16–10.17 [reserved]
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Patent and Trademark Office Code of Professional Responsibility

10.20 Canons and Disciplinary Rules
10.21 Canon 1
10.22 Maintaining integrity and competence of the legal profession
10.23 Misconduct
10.24 Disclosure of information to authorities
10.25–10.29 [reserved]
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10.41–10.45 [reserved]
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10.49 Forming a partnership with a non-practitioner
10.50–10.55 [reserved]
10.56 Canon 4
10.57 Preservation of confidences and secrets of a client
10.58–10.60 [reserved]
10.61 Canon 5
10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment
10.63 Withdrawal when the practitioner becomes a witness
10.64 Avoiding acquisition of interest in litigation or proceeding before the Office
10.65 Limiting business relations with a client
10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner
10.67 Settling similar claims of clients
10.68 Avoiding influence by others than the client
10.69–10.75 [reserved]
10.76 Canon 6
10.77 Failing to act competently
10.78 Limiting liability to client
10.79–10.82 [reserved]
10.83 Canon 7
10.84 Representing a client zealously
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10.86 [reserved]
10.87 Communicating with one of adverse interest
10.88 Threatening criminal prosecution
10.89 Conduct in proceedings
10.90–10.91 [reserved]
10.92 Contact with witnesses
10.93 Contact with officials
10.94–10.99 [reserved]
10.100 Canon 8
10.101 Action as a public official
10.102 Statements concerning officials
10.103 Practitioner candidate for judicial office
10.104–10.109 [reserved]
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10.111 Avoiding even the appearance of impropriety
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10.113–10.129 [reserved]

Investigations and Disciplinary Procedures

10.130 Reprimand, suspension or exclusion
10.131 Investigations
10.132 Initiating a disciplinary proceeding; reference to an administrative law judge
10.133 Conference between Director and practitioner; resignation
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10.135 Service of complaint
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10.137 Supplemental complaint
10.138 Contested case
10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays
10.140 Representative for Director or respondent
10.141 Filing of papers
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10.145 Proof; variance; amendment of pleadings
10.146–10.148 [reserved]
10.149 Burden of proof
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10.158 Suspended or excluded practitioner
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10.161 Savings clause
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10.170 Suspension of rules

Authority: 5 U.S.C. 500: 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41

Part 10—Representation of others before the Patent and Trademark Office

§10.1 Definitions.

This part governs solely the practice of patent, trademark, and other law before the Patent and Trademark Office. Nothing in this part shall be construed to preempt the authority of each State to regulate the practice of law, except to the extent necessary for the Patent and Trademark Office to accomplish its federal objectives. Unless otherwise clear from the context, the following definitions apply to this part:

(a) "Affidavit" means affidavit, declaration under 35 U.S.C. 25 (see §1.68 and §2.20 of this Subchapter), or statutory declaration under 28 U.S.C. 1746.

(b) "Application" includes an application for a design, plant, or utility patent, an application to reissue any patent, and an application to register a trademark.

(c) "Attorney" or "lawyer" means an individual who is a member in good standing of the bar of any United States court or the highest court of any State. A "non-lawyer" is a person who is not an attorney or lawyer.

(d) "Canon" is defined in §10.20(a).

(e) "Confidence" is defined in §10.57(a).

(f) "Differing interests" include every interest that may adversely affect either the judgment or the loyalty of a practitioner to a client, whether it be a conflicting, inconsistent, diverse, or other interest.

(g) "Director" means the Director of Enrollment and Discipline.

(h) "Disciplinary Rule" is defined in §10.20(b).

(i) "Employee of a tribunal" includes all employees of courts, the Office, and other adjudicatory bodies.

(j) "Giving information" within the meaning of §10.23(c)(2) includes making (1) a written statement or representation or (2) an oral statement or representation.

(k) "Law firm" includes a professional legal corporation or a partnership.

(l) "Legal counsel" means practitioner.

(m) "Legal profession" includes the individuals who are lawfully engaged in practice of patent, trademark, and other law before the Office.

(n) "Legal service" means any legal service which may lawfully be performed by a practitioner before the Office.

(o) "Legal System" includes the Office and courts and adjudicatory bodies which review matters on which the Office has acted.

(p) "Office" means Patent and Trademark Office.

(q) "Person" includes a corporation, an association, a trust, a partnership, and any other organization or legal entity.

(r) "Practitioner" means (1) an attorney or agent registered to practice before the Office in patent cases or (2) an individual authorized under 5 U.S.C. 500(b) or otherwise as provided by this Subchapter, to practice before the Office in trademark cases or other non-patent cases. A "suspended or excluded practitioner" is a practitioner who is suspended or excluded under §10.156. A "non-practitioner" is an individual who is not a practitioner.

(s) A "proceeding before the Office" includes an application, a reexamination, a protest, a public use proceeding, a patent interference, an *inter partes* trademark proceeding, or any other proceeding which is pending before the Office.

(t) "Professional legal corporation" means a corporation authorized by law to practice law for profit.

(u) "Registration" means registration to practice before the Office in patent cases.

(v) "Respondent" is defined in §10.134(a)(1).

(w) "Secret" is defined in §10.57(a).

(x) "Solicit" is defined in §10.33.

(y) "State" includes the District of Columbia, Puerto Rico, and other federal territories and possessions.

(z) "Tribunal" includes courts, the Office, and other adjudicatory bodies.

(aa) "United States" means the United States of America, its territories and possessions.

§10.2 Director of Enrollment and Discipline.

(a) *Appointment.* The Commissioner shall appoint a Director of Enrollment and Discipline. In the event of the absence of the Director or a vacancy in the office of the Director, the Commissioner may designate an employee of the Office to serve as acting Director of Enrollment and Discipline. The Director and any acting Director shall be an active member in good standing of the bar of a State.

(b) *Duties.* The Director shall:

(1) Receive and act upon applications for registration, prepare and grade the examination provided for in §10.7(b), maintain the register provided for in §10.5, and perform such other duties in connection with enrollment and recognition of attorneys and agents as may be necessary.

(2) Conduct investigations into possible violations by practitioners of Disciplinary Rules, with the consent of the Committee on Discipline initiate disciplinary proceedings under §10.132(b), and perform such other duties in connection with investigations and disciplinary proceedings as may be necessary.

(c) *Review of Director's decision.* Any final decision of the Director refusing to register an individual under §10.6, recognize an individual under §§10.9 or 10.14(c), or reinstate a suspended or excluded petitioner under

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§10.160, may be reviewed by petition to the Commissioner upon payment of the fee set forth in §1.21(a)(5). A petition filed more than 30 days after the date of the decision of the Director may be dismissed as untimely. Any petition shall contain (1) a statement of the facts involved and the points to be reviewed and (2) the action requested. Briefs or memoranda, if any, in support of the petition shall accompany or be embodied therein. The petition will be decided on the basis of the record made before the Director and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record before the Director shall not be submitted with the petition. An oral hearing on the petition will not be granted except when considered necessary by the Commissioner.

(OMB Control No. 0651–0012).

§10.3 Committee on Enrollment.

(a) The Commissioner may establish a Committee on Enrollment composed of one or more employees of the Office.

(b) The Committee on Enrollment shall, as necessary, advise the Director in connection with the Director's duties under §10.2(b)(1).

§10.4 Committee on Discipline.

(a) The Commissioner shall appoint a Committee on Discipline. The Committee on Discipline shall consist of the at least three employees of the Office, none of whom reports directly or indirectly to the Director or the Solicitor. Each member of the Committee on Discipline shall be a member in good standing of the bar of a State.

(b) The Committee on Discipline shall meet at the request of the Director and after reviewing evidence presented by the Director shall, by majority vote, determine whether there is probable cause to bring charges under §10.132 against a practitioner. When charges are brought against a practitioner, no member of the Committee on Discipline, employee under the direction of the Director, or associate solicitor or assistant solicitor in the Office of the Solicitor shall participate in rendering a decision on the charges.

(c) No discovery shall be authorized of, and no member of the Committee on Discipline shall be required to testify about, deliberations of the Committee on Discipline.

Individuals Entitled to Practice Before the Patent and Trademark Office

§10.5 Register of attorneys and agents in patent cases.

A register of attorneys and agents is kept in the Office on which are entered the names of all individuals recognized as entitled to represent applicants before the Office in the preparation and prosecution of applications for patent. Registration in the Office under provisions of this part shall only entitle the individuals registered to practice before the Office in patent cases.

§10.6 Registration of attorneys and agents.

(a) *Attorneys.* Any citizen of the United States who is an attorney and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office. When appropriate, any alien who is an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent attorney to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States and *further provided:* the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registation does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

(b) *Agents.* Any citizen of the United States who is not an attorney and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office. When appropriate, any alien who is not an attorney, who lawfully resides in the United States, and who fulfills the requirements of this part may be registered as a patent agent to practice before the Office, *provided:* registration is not inconsistent with the terms upon which the alien was admitted to, and resides in, the United States, and *further provided*: the alien may remain registered only (1) if the alien continues to lawfully reside in the United States and registration does not become inconsistent with the terms upon which the alien continues to lawfully reside in the United States or (2) if the alien ceases to reside in the United States, the alien is qualified to be registered under paragraph (c) of this section. See also §10.9(b).

Note: All individuals registered prior to Nov. 15, 1938, were registered as attorneys, whether they were attorneys or not, and such registrations have not been changed.

(c) *Foreigners.* Any foreigner not a resident of the United States who shall file proof to the satisfaction of the Director that he or she is registered and in good standing before the patent office of the country in which he or she resides and practices and who is possessed of the qualifications stated in §10.7, may be registered as a patent agent to practice before the Office for the limited purpose of presenting and prosecuting patent applications of applicants located in such country, *provided*. the patent office of such country allows substantially reciprocal privileges to those admitted to practice before the United States Patent and Trademark Office. Registration as a patent agent under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) *Government employees.* Any officer or employee of the United States who is disqualified by statute (18 U.S.C. 203, 205) from practicing as an attorney or agent in proceedings or other matters before Government departments or agencies, may not be registered to practice before the Office. If any registered attorney or agent becomes an officer or employee of the United States who is disqualified by statute from practicing as an attorney or agent in proceedings and other matters before Government departments or agencies, his or her name shall be endorsed as inactive on the register during the period of any employment by the United States. An officer or employee of the United States whose official duties require the preparation and prosecution of applications for patent and who fulfills the requirements of this part may be registered to practice before the Office to the extent necessary to carry out his or her official duties. A written statement describing the official duties of the officer or employee and signed on behalf of the agency employing the officer or employee may be required by the Director.

(e) *Former Office employees.* No individual who has served in the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written statement indicating that he or she has read 18 U.S.C. 207. No individual who has served in the patent examining corps of the Office will be registered after termination of his or her services, nor if registered before such service, be reinstated, unless he or she signs a written undertaking (1) not to prosecute or aid in any manner in the prosecution of any patent application pending in any patent examining group during his or her period of service therein and (2) not to prepare or prosecute or to assist in any manner in the preparation or prosecution of any patent application of another (i) assigned to such group for examination and (ii) filed within two years after the date he or she left such group, without written authorization of the Director. Associated and related classes in other patent examining groups may be required to be included in the undertaking or designated classes may be excluded from the undertaking. When an application for registration or reinstatement is made after resignation from the Office, the applicant will not be registered or reinstated if he or she has prepared or prosecuted or assisted in the preparation or prosecution of any patent application as indicated in this paragraph.

(OMB Control No. 0651–0012)

§10.7 Requirements for registration.

(a) No individual will be registered to practice before the Office unless he or she shall:

(1) apply to the Commissioner in writing on a form supplied by the Director and furnish all requested information and material and

(2) establish to the satisfaction of the Director that he or she is:

(i) of good moral character and repute;

(ii) possessed of the legal, scientific, and technical qualifications necessary to enable him or her to render applicants for patents valuable service; and

(iii) is otherwise competent to advise and assist applicants for patents in the presentation and prosecution of their applications before the Office.

(b) In order that the Director may determine whether an individual seeking to have his or her name placed upon the register has the qualifications specified in paragraph (a) of this section, satisfactory proof of good moral character and repute and of sufficient basic training in scientific and technical matters must be submitted to the Director. Except as provided in this paragraph, each applicant for registration must take and pass an examination which is held from time to time. Each application for admission to take the examination for registration must be accompanied by the fee set forth in §1.21(a)(1) of this Subchapter. The taking of an examination may be waived in the case of any individual who has actively served for at least four years in the patent examining corps of the Office. The examination will not be administered as a mere academic exercise.

(c) Within two months from the date an applicant is notified that he or she failed an examination, the applicant may request regrading of the examination upon payment of the fee set forth in §1.21(a)(6). Any applicant requesting regrading shall particularly point out the errors which the applicant believed occurred in the grading of his or her examination.

(OMB Control No. 0651–0012)

§10.8 Oath and registration fee.

Before an individual may have his or her name entered on the register of attorneys and agents, the individual must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner and pay the registration fee set forth in §1.21(a)(2) of this Subchapter.

(OMB Control No. 0651–0012)

§10.9 Limited recognition in patent cases.

(a) Any individual not registered under §10.6 may, upon a showing of circumstances which render it necessary or justifiable, be given limited recognition by the Director to prosecute as attorney or agent a specified application or specified applications, but limited recognition under this paragraph shall not extend further than the application or applications specified.

(b) When registration of a resident alien under paragraphs (a) or (b) of §10.6 is not appropriate, the resident alien may be given limited recognition as may be appropriate under paragraph (a) of this section.

§10.10 Individuals not registered or recognized to practice in patent cases.

Only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the Office.

§10.11 Removing names from the register.

(a) Registered attorneys and agents shall notify the Director of any change of address. Any notification to the Director of any change of address shall be separate from any notice of change of address filed in individual applications.

(b) A letter may be addressed to any individual on the register, at the address of which separate notice was last received by the Director, for the purpose of ascertaining whether such individual desires to remain on the register. The name of any individual failing to reply and give any information requested by the Director within a time limit specified will be removed from the register and the names of individuals so removed will be published in the *Official Gazette.* The name of any individual so removed may be reinstated on the register as may be appropriate and upon payment of the fee set forth in §1.21(a)(3) of this Subchapter.

(OMB Control No. 0651–0012)

§§10.12–10.13 [reserved]

§10.14 Individuals who may practice before the Office in trademark and other non-patent cases.

(a) *Attorneys.* Any individual who is an attorney may represent others before the Office in trademark and other non-patent cases. An attorney is not required to apply for registration or recognition to practice before the Office in trademark and other non-patent cases.

(b) *Non-lawyers.* Individuals who are not attorneys are not recognized to practice before the Office in trademark and other non-patent cases, except that individuals not attorneys who were recognized to practice before the Office in trademark cases under this chapter prior to Jan. 1, 1957, will be recognized as agents to continue practice before the Office in trademark cases.

(c) *Foreigners.* Any foreign attorney or agent not a resident of the United States who shall prove to the satisfaction of the Director that he or she is registered or in good standing before the patent or trademark office of the country in which he or she resides and practices, may be recognized for the limited purpose of representing parties located in such country before the Office in the presentation and prosecution of trademark cases, *provided:* the patent or trademark office of such country allows substantially reciprocal privileges to those permitted to practice in trademark cases before the United States Patent and Trademark Office. Recognition under this paragraph shall continue only during the period that the conditions specified in this paragraph obtain.

(d) Recognition of any individual under this section shall not be construed as sanctioning or authorizing the performance of any act regarded in the jurisdiction where performed as the unauthorized practice of law.

(e) No individual other than those specified in paragraphs (a), (b), and (c) of this section will be permitted to practice before the Office in trademark cases. Any individual may appear in a trademark or other non-patent case in his or her own behalf. Any individual may appear in a trademark case for (1) a firm of which he or she is a member or (2) a corporation or association of which he or she is an officer and which he or she is authorized to represent, if such firm, corporation, or association is a party to a trademark proceeding pending before the Office.

§10.15 Refusal to recognize a practitioner.

Any practitioner authorized to appear before the Office may be suspended or excluded in accordance with the provisions of this part. Any practitioner who is suspended or excluded under this subpart or removed under §10.11(b) shall not be entitled to practice before the Office.

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§§10.16–10.17 [reserved]

§10.18 Signature and certificate of practitioner.

(a) Every paper filed by a practitioner representing an applicant or party to a proceeding in the Office must bear the signature of, and be personally signed by, such practitioner except those papers which are required to be signed by the applicant or party. The signature of practitioner to a paper filed by him or her, constitutes a certificate that:

(1) the paper has been read by the practitioner;
(2) the paper's filing is authorized;
(3) to the best of his or her knowledge, information, and belief, there is good ground to support the paper, including any allegations of improper conduct contained or alleged therein; and
(4) it is not interposed for delay.

(b) Any practitioner knowingly violating the provisions of this section is subject to disciplinary action. See §10.23(c)(15).

§10.19 [reserved]

Patent and Trademark Office Code of Professional Responsibility

§10.20 Canons and Disciplinary Rules.

(a) Canons are set out in §§10.21, 10.30, 10.46, 10.56. 10.61, 10.76, 10.83, 10.100, and 10.110. Canons are statements of axiomatic norms, expressing in general terms the standards of professional conduct expected of practitioners in their relationships with the public, with the legal system, and with the legal profession.

(b) Disciplinary Rules are set out in §§10.22–10.24, 10.31–10.40, 10.47–10.57, 10.62–10.68, 10.77, 10.78, 10.84, 10.85, 10.87–10.89, 10.92, 10.93, 10.101–103, 10.111, and 10.112. Disciplinary Rules are mandatory in character and state the minimum level of conduct below which no practitioner can fall without being subjected to disciplinary action.

§10.21 Canon 1.

A practitioner should assist in maintaining the integrity and competence of the legal profession.

§10.22 Maintaining integrity and competence of the legal profession.

(a) A practitioner is subject to discipline if the practitioner has made a materially false statement in, or if the practitioner has deliberately failed to disclose a material fact requested in connection with, the practitioner's application for registration or membership in the bar of any United States court or any State court or his or her authority to otherwise practice before the Office in trademark and other non-patent cases.

(b) A practitioner shall not further the application for registration or membership in the bar of any United States court, State court, or administrative agency of another person known by the practitioner to be unqualified in respect to character, education, or other relevant attribute.

§10.23 Misconduct.

(a) A practitioner shall not engage in disreputable or gross misconduct.

(b) A practitioner shall not:

(1) Violate a Disciplinary Rule.
(2) Circumvent a Disciplinary Rule through actions of another.
(3) Engage in illegal conduct involving moral turpitude.
(4) Engage in conduct involving dishonesty, fraud, deceit, or misrepresentation.
(5) Engage in conduct that is prejudicial to the administration of justice.
(6) Engage in any other conduct that adversely reflects on the practitioner's fitness to practice before the Office.

(c) Conduct which constitutes a violation of paragraphs (a) and (b) of this section includes, but is not limited to:

(1) Conviction of a criminal offense involving moral turpitude, dishonesty, or breach of trust.
(2) Knowingly giving false or misleading information or knowingly participating in a material way in giving false or misleading information, to:

(i) A client in connection with any immediate, prospective, or pending business before the Office.
(ii) The Office or any employee of the Office.

(3) Misappropriation of, or failure to properly or timely remit, funds received by a practitioner or the practitioner's firm from a client to pay a fee which the client is required by law to pay to the Office.
(4) Directly or indirectly improperly influencing, attempting to improperly influence, offering or agreeing to improperly influence, or attempting to offer or agree to improperly influence an official action of any employee of the Office by:

(i) use of threats, false accusations, duress, or coercion,
(ii) an offer of any special inducement or promise of advantage, or
(iii) improperly bestowing of any gift, favor, or thing of value.

(5) Suspension or disbarment from practice as an attorney or agent on ethical grounds by any duly constituted authority of a State or the United States or, in the case of a practitioner who resides in a foreign country or is registered under §10.6(c), by any duly constituted authority of:

(i) a State,
(ii) the United States, or
(iii) the country in which the practitioner resides.

(6) Knowingly aiding or abetting a practitioner suspended or excluded from practice before the Office in engaging in unauthorized practice before the Office under §10.158.
(7) Knowingly withholding from the Office information identifying a patent or patent application of another from which one or more claims have been copied. See §§1.604(b) and 1.607(c) of this Subchapter.
(8) Failing to inform a client or former client or failing to timely notify the Office of an inability to notify to a client or former client of correspondence received from the Office or the client's or former client's opponent in an *inter partes* proceeding before the Office when the correspondence (i) could have a significant effect on a matter pending before the Office, (ii) is received by the practitioner on behalf of a client or former client and (iii) is correspondence of which a reasonable practitioner would believe under the circumstances the client or former client should be notified.
(9) Knowingly misusing a certificate of mailing under §1.8 of this Subchapter or a certificate of "Express Mail" under §1.10 of this Subchapter.
(10) Violating the duty of candor or good faith requirements of §1.56(a) of this Subchapter.
(11) Knowingly filing, or causing to be filed, an application which is subject to being stricken under §1.56(c) of this Subchapter.
(12) Knowingly filing, or causing to be filed, a frivolous complaint alleging a violation by a practitioner of the Patent and Trademark Office Code of Professional Responsibility.
(13) Knowingly preparing or prosecuting a patent application in violation of an undertaking signed under §10.6(e).

(14) Knowingly failing to advise the Director in writing of any change which would preclude continued registration under §10.6.
(15) Knowingly signing a paper filed in the Office in violation of the provisions of §10.18 or making a scandalous or indecent statement in a paper filed in the Office.
(16) Willfully refusing to reveal or report knowledge or evidence to the Director contrary to §10.24 or paragraph (b) of §10.131.
(17) Representing before the Office in a patent case either a joint venture comprising an inventor and an invention developer or an inventor referred to the registered practitioner by an invention developer when (i) the registered practitioner knows, or has been advised by the Office, that a formal complaint filed by a federal or state agency, based on any violation of any law relating to securities, unfair methods of competition, unfair or deceptive acts or practices, mail fraud, or other civil or criminal conduct, is pending before a federal or state court or federal or state agency, or has been resolved unfavorably by such court or agency, against the invention developer in connection with invention development services and (ii) the registered practitioner fails to fully advise the inventor of the existence of the pending complaint or unfavorable resolution thereof prior to undertaking or continuing representation of the joint venture or inventor. "Invention developer" means any person, and any agent, employee, officer, partner, or independent contractor thereof, who is not a registered practitioner and who advertises invention development services in media of general circulation or who enters into contracts for invention development services with customers as a result of such advertisement. "Invention development services" means acts of invention development required or promised to be performed, or actually performed, or both, by an invention developer for a customer. "Invention development" means the evaluation, perfection, marketing, brokering, or promotion of an invention on behalf of a customer by an invention developer, including a patent search, preparation of a patent application, or any other act done by an invention developer for consideration toward the end of procuring or attempting to procure a license, buyer, or patent for an invention. "Customer" means any individual who has made an invention and who enters into a contract for invention development services with an invention developer with respect to the invention by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention). "Contract for invention development services" means a contract for invention development services with an invention developer with respect to an invention made by a customer by which the inventor becomes obligated to pay the invention developer less than $5,000 (not to include any additional sums which the invention developer is to receive as a result of successful development of the invention).
(18) In the absence of information sufficient to establish a reasonable belief that fraud or inequitable conduct has occurred, alleging before a tribunal that anyone has committed a fraud on the Office or engaged in inequitable conduct in a proceeding before the Office.
(d) A practitioner who acts with reckless indifference to whether a representation is true or false is chargeable with knowledge of its falsity. Deceitful statements of half-truths or concealment of material facts shall be deemed actual fraud within the meaning of this part.

§10.24 Disclosure of information to authorities.

(a) A practitioner possessing unprivileged knowledge of a violation of a Disciplinary Rule shall report such knowledge to the Director.
(b) A practitioner possessing unprivileged knowledge or evidence concerning another practitioner, employee of the Office, or a judge shall reveal fully such knowledge or evidence upon proper request of a tribunal or other authority empowered to investigate or act upon the conduct of practitioners, employees of the Office, or judges.
(OMB Control No. 0651–0017)

§§10.25–10.29 [reserved]

§10.30 Canon 2.

A practitioner should assist the legal profesion in fulfilling its duty to make legal counsel available.

§10.31 Communications concerning a practitioner's services.

(a) No practitioner shall with respect to any prospective business before the Office, by word, circular, letter, or advertising, with intent to defraud in any manner, deceive, mislead, or threaten any prospective applicant or other person having immediate or prospective business before the Office.
(b) A practitioner may not use the name of a Member of either House of Congress or of an individual in the service of the United States in advertising the practitioner's practice before the Office.
(c) Unless authorized under §10.14(b), a non-lawyer practitioner shall not hold himself or herself out as authorized to practice before the Office in trademark cases.
(d) Unless a practitioner is an attorney, the practitioner shall not hold himself or herself out:

(1) to be an attorney or lawyer or
(2) as authorized to practice before the Office in non-patent and trademark cases.

§10.32 Advertising.

(a) Subject to §10.31, a practitioner may advertise services through public media, including a telephone directory, legal directory, newspaper, or other periodical, radio, or television, or through written communications not involving solicitation as defined by §10.33.
(b) A practitioner shall not give anything of value to a person for recommending the practitioner's services, except that a practitioner may pay the reasonable cost of advertising or written communication permitted by this section and may pay the usual charges of a not-for-profit lawyer referreal service or other legal service organization.
(c) Any communication made pursuant to this section shall include the name of at least one practitioner responsible for its content.

§10.33 Direct contact with prospective clients.

A practitioner may not solicit professional employment from a prospective client with whom the practitioner has no family or prior professional relationship, by mail, in-person or otherwise, when a significant motive for the practitioner's doing so is the practitioner's pecuniary gain under circumstances evidencing undue influence, intimidation, or overreaching. The term "solicit" includes contact in person, by telephone or telegraph, by letter or other writing, or by other communication directed to a specific recipient, but does not include letters addressed or advertising circulars distributed generally to persons not specifically known to need legal services of the kind provided by the practitioner in a particular matter, but who are so situated that they might in general find such services useful.

§10.34 Communication of fields of practice.

A registered practitioner may state or imply that the practitioner is a specialist as follows:

(a) A registered practitioner who is an attorney may use the designation "Patents," "Patent Attorney," "Pa-

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tent Lawyer," "Registered Patent Attorney," or a substantially similar designation.

(b) A registered practitioner who is not an attorney may use the designation "Patents," "Patent Agent," "Registered Patent Agent," or a substantially similar designation, except that any practitioner who was registered prior to November 15, 1938, may refer to himself or herself as a "patent attorney."

§10.35 Firm names and letterheads.

(a) A practitioner shall not use a firm name, letterhead, or other professional designation that violates §10.31. A trade name may be used by a practitioner in private practice if it does not imply a current connection with a government agency or with a public or charitable legal services organzation and is not otherwise in violation of §10.31.

(b) Practitioners may state or imply that they practice in a partnership or other organization only when that is the fact.

§10.36 Fees for legal services.

(a) A practitioner shall not enter into an agreement for, charge, or collect an illegal or clearly excessive fee.

(b) A fee is clearly excessive when, after a review of the facts, a practitioner of ordinary prudence would be left with a definite and firm conviction that the fee is in excess of a reasonable fee. Factors to be considered as guides in determining the reasonableness of a fee include the following:

(1) The time and labor required, the novelty and difficulty of the questions involved, and the skill requisite to perform the legal service properly.

(2) The likelihood, if apparent to the client, that the acceptance of the particular employment will preclude other employment by the practitioner.

(3) The fee customarily charged for similar legal services.

(4) The amount involved and the results obtained.

(5) The time limitations imposed by the client or by the circumstances.

(6) The nature and length of the professional relationship with the client.

(7) The experience, reputation, and ability of the practitioner or practitioners performing the services.

(8) Whether the fee is fixed or contingent.

§10.37 Division of fees among practitioners.

(a) A practitioner shall not divide a fee for legal services with another practitioner who is not a partner in or associate of the practitioner's law firm or law office, unless:

(1) The client consents to employment of the other practitioner after a full disclosure that a division of fees will be made.

(2) The division is made in proportion to the services performed and responsibility assumed by each.

(3) The total fee of the practitioners does not clearly exceed reasonable compensation for all legal services rendered to the client.

(b) This section does not prohibit payment to a former partner or associate pursuant to a separation or retirement agreement.

§10.38 Agreements restricting the practice of a practitioner.

(a) A practitioner shall not be a party to or participate in a partnership or employment agreement with another practitioner that restricts the right of a practitioner to practice before the Office after the termination of a relationship created by the agreement, except as a condition to payment of retirement benefits.

(b) In connection with the settlement of a controversy or suit, a practitioner shall not enter into an agreement that restricts the practitioner's right to practice before the Office.

§10.39 Acceptance of employment.

A practitioner shall not accept employment on behalf of a person if the practitioner knows or it is obvious that such person wishes to:

(a) Bring a legal action, commence a proceeding before the Office, conduct a defense, assert a position in any proceeding pending before the Office, or otherwise have steps taken for the person, merely for the purpose of harassing or maliciously injuring any other person.

(b) Present a claim or defense in litigation or any proceeding before the Office that is not warranted under existing law, unless it can be supported by good faith argument for an extension, modification, or reversal of existing law.

§10.40 Withdrawal from employment.

(a) A practitioner shall not withdraw from employment in a proceeding before the Office without permission from the Office (see §§1.36, and 2.19 of this Subchapter). In any event, a practitioner shall not withdraw from employment until the practitioner has taken reasonable steps to avoid foreseeable prejudice to the rights of the client, including giving due notice to his or her client, allowing time for employment of another practitioner, delivering to the client all papers and property to which the client is entitled, and complying with applicable laws and rules. A practitioner who withdraws from employment shall refund promptly any part of a fee paid in advance that has not been earned.

(b) Mandatory withdrawal. A practitioner representing a client before the Office shall withdraw from employment if:

(1) the practitioner knows or it is obvious that the client is bringing a legal action, commencing a proceeding before the Office, conducting a defense, or asserting a position in litigation or any proceeding pending before the Office, or is otherwise having steps taken for the client, merely for the purpose of harassing or maliciously injuring any person;

(2) the practitioner knows or it is obvious that the practitioner's continued employment will result in violation of a Disciplinary Rule;

(3) the practitioner's mental or physical condition renders it unreasonably difficult for the practitioner to carry out the employment effectively; or

(4) the practitioner is discharged by the client.

(c) Permissive withdrawal. If paragraph (b) of this section is not applicable, a practitioner may not request permission to withdraw in matters pending before the Office unless such request or such withdrawal is because:

(1) the petitioner's client:

(i) insists upon presenting a claim or defense that is not warranted under existing law and cannot be supported by good faith argument for an extension, modification, or reversal of existing law;

(ii) personally seeks to pursue an illegal course of conduct;

(iii) insists that the practitioner pursue a course of conduct that is illegal or that is prohibited under a Disciplinary Rule;

(iv) by other conduct renders it unreasonably difficult for the practitioner to carry out the employment effectively;

(v) insists, in a matter not pending before a tribunal, that the practitioner engage in conduct that is contrary to the judgment and advice of the practitioner but not prohibited under the Disciplinary Rule; or

(vi) has failed to pay one or more bills rendered by the practitioner for an unreasonable period of time or has failed to honor an agreement to pay a retainer in advance of the performance of legal services.

(2) the practitioner's continued employment is likely to result in a violation of a Disciplinary Rule;

(3) the practitioner's inability to work with co-counsel indicates that the best interests of the client likely will be served by withdrawal;

(4) the practitioner's mental or physical condition renders it difficult for the practitioner to carry out the employment effectively;

(5) the practitioner's client knowingly and freely assents to termination of the employment; or

(6) the practitioner believes in good faith, in a proceeding pending before the Office, that the Office will find the existence of other good cause for withdrawal.

§§10.41–10.45 [reserved]

§10.46 Canon 3.

A practitioner should assist in preventing the unauthorized practice of law.

§10.47 Aiding unauthorized practice of law.

(a) A practitioner shall not aid a non-practitioner in the unauthorized practice of law before the Office.

(b) A practitioner shall not aid a suspended or excluded practitioner in the practice of law before the Office.

(c) A practitioner shall not aid a non-lawyer in the unauthorized practice of law.

§10.48 Sharing legal fees.

A practitioner or a firm of practitioners shall not share legal fees with a non-practitioner except that:

(a) An agreement by a practitioner with the practitioner's firm, partner, or associate may provide for the payment of money, over a reasonable period of time after the practitioner's death, to the practitioner's estate or to one or more specified persons.

(b) A practitioner who undertakes to complete unfinished legal business of a deceased practitioner may pay to the estate of the deceased practitioner that proportion of the total compensation which fairly represents the services rendered by the deceased practitioner.

(c) A practitioner or firm of practitioners may include non-practitioner employees in a compensation or retirement plan, even though the plan is based in whole or in part on a profit-sharing arrangement, providing such plan does not circumvent another Disciplinary Rule.

§10.49 Forming a partnership with a non-practitioner.

A practitioner shall not form a partnership with a non-practitioner if any of the activities of the partnership consist of the practice of patent, trademark, or other law before the Office.

§§10.50-10.55 [reserved]

§10.56 Canon 4.

A practitioner should preserve the confidences and secrets of a client.

§10.57 Preservation of confidences and secrets of a client.

(a) "Confidence" refers to information protected by the attorney-client or agent-client privilege under applicable law. "Secret" refers to other information gained in the professional relationship that the client has requested be held inviolate or the disclosure of which would be embarrassing or would be likely to be detrimental to the client.

(b) Except when permitted under paragraph (c) of this section, a practitioner shall not knowingly:

(1) Reveal a confidence or secret of a client.

(2) Use a confidence or secret of a client to the disadvantage of the client.

(3) Use a confidence or secret of a client for the advantage of the practitioner or of a third person, unless the client consents after full disclosure.

(c) A practitioner may reveal:

(1) Confidences or secrets with the consent of the client affected but only after a full disclosure to the client.

(2) Confidences or secrets when permitted under Disciplinary Rules or required by law or court order.

(3) The intention of a client to commit a crime and the information necessary to prevent the crime.

(4) Confidences or secrets necessary to establish or collect the practitioner's fee or to defend the practitioner or the practitioner's employees or associates against an accusation of wrongful conduct.

(d) A practitioner shall exercise reasonable care to prevent the practitioner's employees, associates, and others whose services are utilized by the practitioner from disclosing or using confidences or secrets of a client, except that a practitioner may reveal the information allowed by parargraph (c) of this section through an employee.

§§10.58–10.60 [reserved]

§10.61 Canon 5.

A practitioner should exercise independent professional judgment on behalf of a client.

§10.62 Refusing employment when the interest of the practitioner may impair the practitioner's independent professional judgment.

(a) Except with the consent of a client after full disclosure, a practitioner shall not accept employment if the exercise of the practitioner's professional judgment on behalf of the client will be or reasonably may be affected by the practitioner's own financial, business, property, or personal interests.

(b) A practitioner shall not accept employment in a proceeding before the Office if the practitioner knows or it is obvious that the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness, except that the practitioner may undertake the employment and the practitioner or another practitioner in the practitioner's firm may testify:

(1) If the testimony will relate solely to an uncontested matter.

(2) If the testimony will relate solely to a matter of formality and there is no reason to believe that substantial evidence will be offered in opposition to the testimony.

(3) If the testimony will relate solely to the nature and value of legal services rendered in the case by the practitioner or the practitioner's firm to the client.

(4) As to any matter, if refusal would work a substantial hardship on the client because of the distinctive value of the practitioner or the practitioner's firm as counsel in the particular case.

§10.63 Withdrawal when the practitioner becomes a witness.

(a) If, after undertaking employment in a proceeding in the Office, a practitioner learns or it is obvious that

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the practitioner or another practitioner in the practitioner's firm ought to sign an affidavit to be filed in the Office or be called as a witness on behalf of a practitioner's client, the practitioner shall withdraw from the conduct of the proceeding and the practitioner's firm, if any, shall not continue representation in the proceeding, except that the practitioner may continue the representation and the practitioner or another practitioner in the practitioner's firm may testify in the circumstances enumerated in paragraphs (1) through (4) of §10.62(b).

(b) If, after undertaking employment in a proceeding before the Office, a practitioner learns or it is obvious that the practitioner or another practitioner in the practitioner's firm may be asked to sign an affidavit to be filed in the Office or be called as a witness other than on behalf of the practitioner's client, the practitioner may continue the representation until it is apparent that the practitioner's affidavit or testimony is or may be prejudicial to the practitioner's client.

§10.64 Avoiding acquisition of interest in litigation or proceeding before the Office.

(a) A practitioner shall not acquire a proprietary interest in the subject matter of a proceeding before the Office which the practitioner is conducting for a client, except that the practitioner may:

(1) Acquire a lien granted by law to secure the practitioner's fee or expenses; or

(2) Contract with a client for a reasonable contingent fee; or

(3) In a patent case, take an interest in the patent as part or all of his or her fee.

(b) While representing a client in connection with a contemplated or pending proceeding before the Office, a practitioner shall not advance or guarantee financial assistance to a client, except that a practitioner may advance or guarantee the expenses of going forward in a proceeding before the Office including fees required by law to be paid to the Office, expenses of investigation, expenses of medical examination, and costs of obtaining and presenting evidence, provided the client remains ultimately liable for such expenses. A practitioner may, however, advance any fee required to prevent or remedy an abandonment of a client's application by reason of an act or omission attributable to the practitioner and not to the client, whether or not the client is ultimately liable for such fee.

§10.65 Limiting business relations with a client.

A practitioner shall not enter into a business transaction with a client if they have differing interests therein and if the client expects the practitioner to exercise professional judgment therein for the protection of the client, unless the client has consented after full disclosure.

§10.66 Refusing to accept or continue employment if the interests of another client may impair the independent professional judgment of the practitioner.

(a) A practitioner shall decline proffered employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the acceptance of the proffered employment, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(b) A practitioner shall not continue multiple employment if the exercise of the practitioner's independent professional judgment in behalf of a client will be or is likely to be adversely affected by the practitioner's representation of another client, or if it would be likely to involve the practitioner in representing differing interests, except to the extent permitted under paragraph (c) of this section.

(c) In the situations covered by paragraphs (a) and (b) of this section a practitioner may represent multiple clients if it is obvious that the practitioner can adequately represent the interest of each and if each consents to the representation after full disclosure of the possible effect of such representation on the exercise of the practitioner's independent professional judgment on behalf of each.

(d) If a practitioner is required to decline employment or to withdraw from employment under a Disciplinary Rule, no partner, or associate, or any other practitioner affiliated with the practitioner or the practitioner's firm, may accept or continue such employment unless otherwise ordered by the Director or Commissioner.

§10.67 Settling similar claims of clients.

A practitioner who represents two or more clients shall not make or participate in the making of an aggregate settlement of the claims of or against the practitioner's clients, unless each client has consented to the settlement after being advised of the existence and nature of all the claims involved in the proposed settlement, of the total amount of the settlement, and of the participation of each person in the settlement.

§10.68 Avoiding influence by others than the client.

(a) Except with the consent of the practitioner's client after full disclosure, a practitioner shall not:

(1) Accept compensation from one other than the practitioner's client for the practitioner's legal services to or for the client.

(2) Accept from one other than the practitioner's client any thing of value related to the practitioner's representation of or the practitioner's employment by the client.

(b) A practitioner shall not permit a person who recommends, employs, or pays the practitioner to render legal services for another, to direct or regulate the practitioner's professional judgment in rendering such legal services.

(c) A practitioner shall not practice with or in the form of a professional corporation or association authorized to practice law for a profit, if a non-practioner has the right to direct or control the professional judgment of a practitioner.

§§10.69-10.75 [reserved]

§10.76 Canon 6.

A practitioner should represent a client competently.

§10.77 Failing to act competently.

A practitioner shall not:

(a) Handle a legal matter which the practitioner knows or should know that the practitioner is not competent to handle, without associating with the practitioner another practitioner who is competent to handle it.

(b) Handle a legal matter without preparation adequate in the circumstances.

(c) Neglect a legal matter entrusted to the practitioner.

§10.78 Limiting liability to client.

A practitioner shall not attempt to exonerate himself or herself from, or limit his or her liability to, a client for his or her personal malpractice.

§§10.79-10.82 [reserved]

§10.83 Canon 7.

A practitioner should represent a client zealously within the bounds of the law.

§10.84 Representing a client zealously.

(a) A practitioner shall not intentionally:

(1) Fail to seek the lawful objectives of a client through reasonably available means permitted by law and the Disciplinary Rules, except as provided by paragraph (b) of this section. A practitioner does not violate the provisions of this section, however, by acceding to reasonable requests of opposing counsel which do not prejudice the rights of the client, by being punctual in fulfilling all professional commitments, by avoiding offensive tactics, or by treating with courtesy and consideration all persons involved in the legal process.

(2) Fail to carry out a contract of employment entered into with a client for professional services, but a practitioner may withdraw as permitted under §§10.40, 10.63, and 10.66.

(3) Prejudice or damage a client during the course of a professional relationship, except as required under this part.

(b) In representation of a client, a practitioner may:

(1) Where permissible, exercise professional judgment to waive or fail to assert a right or position of the client.

(2) Refuse to aid or participate in conduct that the practitioner believes to be unlawful, even though there is some support for an argument that the conduct is legal.

§10.85 Representing a client within the bounds of the law.

(a) In representation of a client, a practitioner shall not:

(1) Initiate or defend any proceeding before the Office, assert a position, conduct a defense, delay a trial or proceeding before the Office, or take other action on behalf of the practitioner's client when the practitioner knows or when it is obvious that such action would serve merely to harass or maliciously injure another.

(2) Knowingly advance a claim or defense that is unwarranted under existing law, except that a practitioner may advance such claim or defense if it can be supported by good faith argument for an extension, modification, or reversal of existing law.

(3) Conceal or knowingly fail to disclose that which the practitioner is required by law to reveal.

(4) Knowingly use perjured testimony or false evidence.

(5) Knowingly make a false statement of law or fact.

(6) Participate in the creation or preservation of evidence when the practitioner knows or it is obvious that the evidence is false.

(7) Counsel or assist a client in conduct that the practitioner knows to be illegal or fraudulent.

(8) Knowingly engage in other illegal conduct or conduct contrary to a Disciplinary Rule.

(b) A practitioner who receives information clearly establishing that:

(1) A client has, in the course of the representation, perpetrated a fraud upon a person or tribunal shall promptly call upon the client to rectify the same, and if the client refuses or is unable to do so the practitioner shall reveal the fraud to the affected person or tribunal.

(2) A person other than a client has perpetrated a fraud upon a tribunal shall promptly reveal the fraud to the tribunal.

§10.86 [reserved]

§10.87 Communicating with one of adverse interest.

During the course of representation of a client, a practitioner shall not:

(a) Communicate or cause another to communicate on the subject of the representation with a party the practitioner knows to be represented by another practitioner in that matter unless the practitioner has the prior consent of the other practitioner representing such other party or is authorized by law to do so. It is not improper, however, for a practitioner to encourage a client to meet with an opposing party for settlement discussions.

(b) Give advice to a person who is not represented by a practitioner other than the advice to secure counsel, if the interests of such person are or have a reasonable possibility of being in conflict with the interests of the practitioner's client.

§10.88 Threatening criminal prosecution.

A practitioner shall not present, participate in presenting, or threaten to present criminal charges solely to obtain an advantage in any prospective or pending proceeding before the Office.

§10.89 Conduct in proceedings.

(a) A practitioner shall not disregard or advise a client to disregard any provision of this Subchapter or a decision of the Office made in the course of a proceeding before the Office, but the practitioner may take appropriate steps in good faith to test the validity of such provision or decision.

(b) In presenting a matter to the Office, a practitioner shall disclose:

(1) Controlling legal authority known to the practitioner to be directly adverse to the position of the client and which is not disclosed by opposing counsel or an employee of the Office.

(2) Unless privileged or irrelevant, the identities of the client the practitioner represents and of the persons who employed the practitioner.

(c) In appearing in a professional capacity before a tribunal, a practitioner shall not:

(1) State or allude to any matter that the practitioner has no reasonable basis to believe is relevant to the case or that will not be supported by admissible evidence.

(2) Ask any question that the practitioner has no reasonable basis to believe is relevant to the case and that is intended to degrade a witness or other person.

(3) Assert the practitioner's personal knowledge of the facts in issue, except when testifying as a witness.

(4) Assert the practitioner's personal opinion as to the justness of a cause, as to the credibility of a witness, as to the culpability of a civil litigant, or as to the guilt or innocence of an accused; but the practitioner may argue, on the practitioner's analysis of the evidence, for any position or conclusion with respect to the matters stated herein.

(5) Engage in undignified or discourteous conduct before the Office (see §1.3 of the Subchapter).

(6) Intentionally or habitually violate any provision of this Subchapter or established rule of evidence.

§10.90–10.91 [reserved]

§10.92 Contact with witnesses.

(a) A practitioner shall not suppress any evidence that the practitioner or the practitioner's client has a legal obligation to reveal or produce.

(b) A practitioner shall not advise or cause a person to be secreted or to leave the jurisdiction of a tribunal for the purpose of making the person unavailable as a witness therein.

(c) A practitioner shall not pay, offer to pay, or acquiesce in the payment of compensation to a witness contingent upon the content of the witness' affidavit, testimony or the outcome of the case. But a practitioner may advance, guarantee, or acquiesce in the payment of:

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(1) Expenses reasonably incurred by a witness in attending, testifying, or making an affidavit.
(2) Reasonable compensation to a witness for the witness' loss of time in attending, testifying, or making an affidavit.
(3) A reasonable fee for the professional services of an expert witness.

§10.93 Contact with officials.

(a) A practitioner shall not give or lend anything of value to a judge, official, or employee of a tribunal under circumstances which might give the appearance that the gift or loan is made to influence official action.
(b) In an adversary proceeding, including any *inter partes* proceeding before the Office, a practitioner shall not communicate, or cause another to communicate, as to the merits of the cause with a judge, official, or Office employee before whom the proceeding is pending, except:

(1) In the course of official proceedings in the cause.
(2) In writing if the practitioner promptly delivers a copy of the writing to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.
(3) Orally upon adequate notice to opposing counsel or to the adverse party if the adverse party is not represented by a practitioner.
(4) As otherwise authorized by law.

§§10.94–10.99 [reserved]

§10.100 Canon 8.

A practitioner should assist in improving the legal system.

§10.101 Action as a public official.

(a) A practitioner who holds public office shall not:

(1) Use the practitioner's public position to obtain, or attempt to obtain, a special advantage in legislative matters for the practitioner or for a client under circumstances where the practitioner knows or it is obvious that such action is not in the public interest.
(2) Use the practitioner's public position to influence, or attempt to influence, a tribunal to act in favor of the practitioner or of a client.
(3) Accept any thing of value from any person when the practitioner knows or it is obvious that the offer is for the purpose of influencing the practitioner's action as a public official.

(b) A practitioner who is an officer or employee of the United States shall not practice before the Office in patent cases except as provided in §10.6(d).

§10.102 Statements concerning officials.

(a) A practitioner shall not knowingly make false statements of fact concerning the qualifications of a candidate for election or appointment to a judicial office or to a position in the Office.
(b) A practitioner shall not knowingly make false accusations against a judge, other adjudicatory officer, or employee of the Office.

§10.103 Practitioner candidate for judicial office.

A practitioner who is a candidate for judicial office shall comply with applicable provisions of law.

§10.104–10.109 [reserved]

§10.110 Canon 9.

A practitioner should avoid even the appearance of professional impropriety.

§10.111 Avoiding even the appearance of impropriety.

(a) A practitioner shall not accept private employment in a matter upon the merits of which he or she has acted in a judicial capacity.
(b) A practitioner shall not accept private employment in a matter in which he or she had personal responsibility while a public employee.
(c) A practitioner shall not state or imply that the practitioner is able to influence improperly or upon irrelevant grounds any tribunal, legislative body, or public official.

§10.112 Preserving identity of funds and property of client.

(a) All funds of clients paid to a practitioner or a practitioner's firm, other than advances for costs and expenses, shall be deposited in one or more identifiable bank accounts maintained in the United States or, in the case of a practitioner having an office in a foreign country or registered under §10.6(c), in the United States or the foreign country.
(b) No funds belonging to the practitioner or the practitioner's firm shall be deposited in the bank accounts required by paragraph (a) of this section except as follows:

(1) Funds reasonably sufficient to pay bank charges may be deposited therein.
(2) Funds belonging in part to a client and in part presently or potentially to the practitioner or the practitioner's firm must be deposited therein, but the portion belonging to the practitioner or the practitioner's firm may be withdrawn when due unless the right of the practitioner or the practitioner's firm to receive it is disputed by the client, in which event the disputed portion shall not be withdrawn until the dispute is finally resolved.

(c) A practitioner shall:

(1) Promptly notify a client of the receipt of the client's funds, securities, or other properties.
(2) Identify and label securities and properties of a client promptly upon receipt and place them in a safe deposit box or other place of safekeeping as soon as practicable.
(3) Maintain complete records of all funds, securities, and other properties of a client coming into the possession of the practitioner and render appropriate accounts to the client regarding the funds, securities, or other properties.
(4) Promptly pay or deliver to the client as requested by a client the funds, securities, or other properties in the possession of the practitioner which the client is entitled to receive.

(OMB Control No. 0651–0017)

§§10.113–10.129 [reserved]

Investigations and Disciplinary Proceedings

§10.130 Reprimand, suspension or exclusion.

(a) The Commissioner may, after notice and opportunity for a hearing, (a) reprimand or (b) suspend or exclude, either generally or in any particular case, any individual, attorney, or agent shown to be incompetent or disreputable, who is guilty of gross misconduct, or who violates a Disciplinary Rule.
(b) Petitions to disqualify a practitioner in *ex parte* or *inter partes* cases in the Office are not governed by §§10.130 through 10.170 and will be handled on a case-by-case basis under such conditions as the Commissioner deems appropriate.

§10.131 Investigations.

(a) The Director is authorized to investigate possible violations of Disciplinary Rules by practitioners. See §10.2(b) (2).

(b) Practitioners shall report and reveal to the Director any knowledge or evidence required by §10.24. A practitioner shall cooperate with the Director in connection with any investigation under paragraph (a) of this section and with officials of the Office in connection with any disciplinary proceeding instituted under §10.132(b).
(c) Any non-practitioner possessing knowledge or information concerning a violation of a Disciplinary Rule by a practitioner may report the violation to the Director. The Director may require that the report be presented in the form of an affidavit.

§10.132 Initiating a disciplinary proceeding; reference to an administrative law judge.

(a) If after conducting an investigation under §10.131(a) the Director is of the opinion that a practitioner has violated a Disciplinary Rule, the Director shall after complying where necessary with the provisions of 5 U.S.C. 558(c), call a meeting of the Committee on Discipline. The Committee on Discipline shall then determine as specified in §10.4(b) whether a disciplinary proceeding shall be instituted under paragraph (b) of this section.
(b) If the Committee on Discipline determines that probable cause exists to believe that a practitioner has violated a Disciplinary Rule, the Director shall institute a disciplinary proceeding by filing a complaint under §10.134. The complaint shall be filed in the Office of the Director. A disciplinary proceeding may result in:

(1) a reprimand or
(2) suspension or exclusion of a practitioner from practice before the Office.

(c) Upon the filing of a complaint under §10.134, the Commissioner will refer the disciplinary proceeding to an administrative law judge.

§10.133 Conference between Director and practitioner; resignation.

(a) *General.* The Director may confer with a practitioner concerning possible violations by the practitioner of a Disciplinary Rule whether or not a disciplinary proceeding has been instituted.
(b) *Resignation.* Any practitioner who is the subject of an investigation under §10.131 or against whom a complaint has been filed under §10.134 may resign from practice before the Office only by submitting with the Director an affidavit stating his or her desire to resign.
(c) If filed prior to the date set by the administrative law judge for a hearing, the affidavit shall state that:

(1) the resignation is freely and voluntarily proferred;
(2) the practitioner is not acting under duress or coersion from the Office;
(3) the practitioner is fully aware of the implications of filing the resignation;
(4) the practitioner is aware (i) of a pending investigation or (ii) of charges arising from the complaint alleging that he or she is guilty of a violation of the Patent and Trademark Office Code of Professional Responsibility, the nature of which shall be set forth by the practitioner to the satisfaction of the Director;
(5) the practitioner acknowledges that, if and when he or she applies for reinstatement under §10.160, the Director will conclusively presume, for the limited purpose of determining the application for reinstatement, that:

(i) the facts upon which the complaint is based are true and
(ii) the practitioner could not have successfully defended himself or herself against (A) charges predicated on the violation under investigation or (B) charges set out in the complaint filed against the practitioner.

(d) If filed on or after the date set by the administrative law judge for a hearing, the affidavit shall make the statements required by subparagraphs (1) through (4) of paragraph (b) of this section and shall state that:

(1) the practitioner acknowledges the facts upon which the complaint is based are true; and
(2) the resignation is being submitted because the practitioner could not successfully defend himself or herself against (i) charges predicated on the violation under investigation or (ii) charges set out in the complaint.

(e) When an affidavit under paragraph (b) or (c) of this section is received while an investigation is pending, the Commissioner shall enter an order excluding the practitioner "on consent." When an affidavit under paragraphs (b) or (c) of this section is received after a complaint under §10.134 has been filed, the Director shall notify the administrative law judge. The administrative law judge shall enter an order transferring the disciplinary proceeding to the Commissioner and the Commissioner shall enter an order excluding the practitioner "on consent."
(f) Any practitioner who resigns from practice before the Office under this section and who intends to reapply for admission to practice before the Office must comply with the provisions of §10.158.
(g) Settlement. Before or after a complaint is filed under §10.134, a settlement conference may occur between the Director and a practitioner for the purpose of settling any disciplinary matter. If an offer of settlement is made by the Director or the practitioner and is not accepted by the other, no reference to the offer of settlement or its refusal shall be admissible in evidence in the disciplinary proceeding unless both the Director and the practitioner agree in writing.

§10.134 Complaint.

(a) A complaint instituting a disciplinary proceeding shall:

(1) Name the practitioner, who may then be referred to as the "respondent."
(2) Give a plain and concise description of the alleged violations of the Disciplinary Rules by the practitioner.
(3) State the place and time for filing an answer by the respondent.
(4) State that a decision by default may be entered against the respondent if an answer is not timely filed.
(5) Be signed by the Director.

(b) A complaint will be deemed sufficient if it fairly informs the respondent of any violation of the Disciplinary Rules which form the basis for the disciplinary proceeding so that the respondent is able to adequately prepare a defense.

§10.135 Service of complaint.

(a) A complaint may be served on a respondent in any of the following methods:

(1) By handing a copy of the complaint personally to the respondent, in which case the individual handing the complaint to the respondent shall file an affidavit with the Director indicating the time and place the complaint was handed to the respondent.
(2) By mailing a copy of the complaint by "Express Mail" or first-class mail to:

(i) a registered practitioner at the address for which separate notice was last received by the Director or
(ii) a non-registered practitioner at the last address for the respondent known to the Director.

(3) By any method mutually agreeable to the Director and the respondent.

(b) If a complaint served by mail under paragraph (a) (2) of this section is returned by the U.S. Postal Service,

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the Director shall mail a second copy of the complaint to the respondent. If the second copy of the complaint is also returned by the U.S. Postal Service, the Director shall serve the respondent by publishing an appropriate notice in the *Official Gazette* for four consecutive weeks, in which case the time for answer shall be at least thirty days from the fourth publication of the notice.

(c) If a respondent is a registered practitioner, the Director may serve simultaneously with the complaint a letter under §10.11(b). The Director may require the respondent to answer the §10.11(b) letter within a period of not less than 15 days. An answer to the §10.11(b) letter shall constitute proof of service. If the respondent fails to answer the §10.11(b) letter, his or her name will be removed from the register as provided by §10.11(b).

(d) If the respondent is represented by an attorney under §10.140(a), a copy of the complaint shall also be served on the attorney.

§10.136 Answer to complaint.

(a) *Time for answer.* An answer to a complaint shall be filed within a time set in the complaint which shall be not less than thirty days.

(b) *With whom filed.* The answer shall be filed in writing with the administrative law judge. The time for filing an answer may be extended once for a period of no more than thirty days by the administrative law judge upon a showing of good cause provided a motion requesting an extension of time is filed within thirty days after the date the complaint is filed by the Director. A copy of the answer shall be served on the Director.

(c) *Content.* The respondent shall include in the answer a statement of the facts which constitute the grounds of defense and shall specifically admit or deny each allegation set forth in the complaint. The respondent shall not deny a material allegation in the complaint which the respondent knows to be true or state that respondent is without sufficient information to form a belief as to the truth of an allegation when in fact the respondent possesses that information. The respondent shall also state affirmatively special matters of defense.

(d) *Failure to deny allegations in complaint.* Every allegation in the complaint which is not denied by a respondent in the answer is deemed to be admitted and may be considered proven. No further evidence in respect of that allegation need be received by the administrative law judge at any hearing. Failure to timely file an answer will constitute an admission of the allegations in the complaint.

(e) *Reply by Director.* No reply to an answer is required by the Director and any affirmative defense in the answer shall be deemed to be denied. The Director may, however, file a reply if he or she chooses or if ordered by the adminstrative law judge.

§10.137 Supplemental complaint.

False statements in an answer may be made the basis of a supplemental complaint.

§10.138 Contested case.

Upon the filing of an answer by the respondent, a disciplinary proceeding shall be regarded as a contested case within the meaning of 35 U.S.C. 24. Evidence obtained by a subpoena issued under 35 U.S.C. 24 shall not be admitted into the record or considered unless leave to proceed under 35 U.S.C. 24 was previously authorized by the administrative law judge.

§10.139 Administrative law judge; appointment; responsibilities; review of interlocutory orders; stays.

(a) *Appointment.* An administrative law judge, appointed under 5 U.S.C. 3105, shall conduct disciplinary proceedings as provided by this part.

(b) *Responsibilities.* The administrative law judge shall have authority to:

(1) Administer oaths and affirmations;

(2) Make rulings upon motions and other requests;

(3) Rule upon offers of proof, receive relevant evidence, and examine witnesses;

(4) Authorize the taking of a deposition of a witness in lieu of personal appearance of the witness before the adminstrative law judge;

(5) Determine the time and place of any hearing and regulate its course and conduct;

(6) Hold or provide for the holding of conferences to settle or simplify the issues;

(7) Receive and consider oral or written arguments on facts or law;

(8) Adopt procedures and modify procedures from time to time as occasion requires for the orderly disposition of proceedings;

(9) Make initial decisions under §10.154; and

(10) Perform acts and take measures as necessary to promote the efficient and timely conduct of any disciplinary proceeding.

(c) *Time for making initial decision.* The administrative law judge shall set times and exercise control over a disciplinary proceeding such that an initial decision under §10.154 is normally issued within six months of the date a complaint is filed. The administrative law judge may, however, issue an initial decision more than six months after a complaint is filed if in his or her opinion there exist unusual circumstances which preclude issuance of an initial decision within six months of the filing of the complaint.

(d) *Review of interlocutory orders.* An interlocutory order of an administrative law judge will not be reviewed by the Commissioner except:

(1) when the administrative law judge shall be of the opinion (i) that the interlocutory order involves a controlling question of procedure or law as to which there is a substantial ground for a difference of opinion and (ii) that an immediate decision by the Commissioner may materially advance the ultimate termination of the disciplinary proceeding or

(2) in an extraordinary situation where justice requires review.

(e) *Stays pending review of interlocutory order.* If the Director or a respondent seeks review of an interlocutory order of an administrative law judge under paragraph (b)(2) of this section, any time period set for taking action by the administrative law judge shall not be stayed unless ordered by the Commissioner or the administrative law judge.

§10.140 Representative for Director or respondent.

(a) A respondent may be represented before the Office in connection with an investigation or disciplinary proceeding by an attorney. The attorney shall file a written declaration that he or she is an attorney within the meaning of §10.1(c) and shall state:

(1) the address to which the attorney wants correspondence related to the investigation or disciplinary proceeding sent and

(2) a telephone number where the attorney may be reached during normal business hours.

(b) The Commissioner shall designate at least two associate solicitors in the Office of the Solicitor to act as representatives for the Director in disciplinary proceedings. In prosecuting disciplinary proceedings, the designated associate solicitors shall not invoive the Solicitor or the Deputy Solicitor. The Solicitor and the Deputy Solicitor shall remain insulated from the investigation and prosecution of all disciplinary proceedings in order that they shall be available as counsel to the Commissioner in deciding disciplinary proceedings.

§10.141 Filing of papers.

(a) The provisions of §1.8 of this Subchapter do not apply to disciplinary proceedings.

(b) All papers filed after the complaint and prior to entry of an initial decision by the administrative law judge shall be filed with the administrative law judge at an address or place designated by the administrative law judge. All papers filed after entry of an initial decision by the administrative law judge shall be filed with the Director. The Director shall promptly forward to the Commissioner any paper which requires action under this part by the Commissioner.

(c) The administrative law judge or the Director may provide for filing papers and other matter by hand or by "Express Mail."

§10.142 Service of papers.

(a) All papers other than a complaint shall be served on a respondent represented by an attorney by:

(1) delivering a copy of the paper to the office of the attorney; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to the attorney at the address provided by the attorney under §10.140(a) (1); or

(3) any other method mutually agreeable to the attorney and a representative for the Director.

(b) All papers other than a complaint shall be served on a respondent who is not represented by an attorney by:

(1) delivering a copy of the paper to the respondent; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to the respondent at the address to which a complaint may be served or such other address as may be designated in writing by the respondent; or

(3) any other method mutually agreeable to the respondent and a representative of the Director.

(c) A respondent shall serve on the representative for the Director one copy of each paper filed with the administrative law judge or the Director. A paper may be served on the representative for the Director by:

(1) delivering a copy of the paper to the representative; or

(2) mailing a copy of the paper by first-class mail or "Express Mail" to an address designated in writing by the representative; or

(3) any other method mutually agreeable to the respondent and the representative.

(d) Each paper filed in a disciplinary proceeding shall contain therein a certificate of service indicating:

(1) the date on which service was made and

(2) the method by which service was made.

(e) The administrative law judge or the Commissioner may require that a paper be served by hand or by "Express Mail."

(f) Service by mail is completed when the paper mailed in the United States is placed into the custody of the U.S. Postal Service.

§10.143 Motions.

Motions may be filed with the administrative law judge. The adminstrative law judge will determine on a case-by-case basis the time period for response to a motion and whether replies to responses will be authorized. No motion shall be filed with the administrative law judge unless such motion is supported by a written statement by the moving party that the moving party or attorney for the moving party has conferred with the opposing party or attorney for the opposing party in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by a motion are resolved by the parties prior to a decision on the motion by the administrative law judge, the parties shall promptly notify the administrative law judge.

§10.144 Hearings.

(a) The administrative law judge shall preside at hearings in disciplinary proceedings. Hearings will be stenographically recorded and transcribed and the testimony of witnesses will be received under oath or affirmation. The administrative law judge shall conduct hearings in accordance with 5 U.S.C. 556. A copy of the transcript of the hearing shall become part of the record. A copy of the transcript shall be provided to the Director and the respondent at the expense of the Office.

(b) If the respondent to a disciplinary proceeding fails to appear at the hearing after a notice of hearing has been given by the administrative law judge, the administrative law judge may deem the respondent to have waived the right to a hearing and may proceed with the hearing in the absence of the respondent.

(c) A hearing under this section will not be open to the public except that the Director may grant a request by a respondent to open his or her hearing to the public and make the record of the disciplinary proceeding available for public inspection, *provided* agreement is reached in advance to exclude from public disclosure information which is privileged or confidential under applicable laws or regulations. If a disciplinary proceeding results in disciplinary action against a practitioner, and subject to §10.159(c), the record of the entire disciplinary proceeding, including any settlement agreement, will be available for public inspection.

§10.145 Proof; variance; amendment of pleadings.

In case of a variance between the evidence and the allegations in a complaint, answer, or reply, if any, the administrative law judge may order or authorize amendment of the complaint, answer, or reply to conform to the evidence. Any party who would otherwise be prejudiced by the amendment will be given reasonable opportunity to meet the allegations in the complaint, answer, or reply, as amended, and the administrative law judge shall make findings on any issue presented by the complaint, answer, or reply as amended.

§§10.146–10.148 [reserved]

§10.149 Burden of proof.

In a disciplinary proceeding, the Director shall have the burden of proving his or her case by clear and convincing evidence and a respondent shall have the burden of providing any affirmative defense by clear and convincing evidence.

§10.150 Evidence.

(a) *Rules of evidence.* The rules of evidence prevailing in courts of law and equity are not controlling in hearings in disciplinary proceedings. However, the administrative law judge shall exclude evidence which is irrelevant, immaterial, or unduly repetitious.

(b) *Depositions.* Depositions of witnesses taken pursuant to §10.151 may be admitted as evidence.

(c) *Government documents.* Official documents, records, and papers of the Office are admissible without extrinsic evidence of authenticity. These documents, records and papers may be evidenced by a copy certified as correct by an employee of the Office.

(d) *Exhibits.* If any document, record, or other paper is introduced in evidence as an exhibit, the administrative law judge may authorize the withdrawal of the exhibit subject to any conditions the administrative law judge deems appropriate.

(e) *Objections.* Objections to evidence will be in short form, stating the grounds of objection. Objections and rulings on objections will be a part of the record. No exception to the ruling is necessary to preserve the rights of the parties.

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§10.151 Depositions.

(a) Depositions for use at the hearing in lieu of personal appearance of a witness before the administrative law judge may be taken by respondent or the Director upon a showing of good cause and with the approval of, and under such conditions as may be deemed appropriate by, the administrative law judge. Depositions may be taken upon oral or written questions, upon not less than ten days written notice to the other party, before any officer authorized to administer an oath or affirmation in the place where the deposition is to be taken. The requirement of ten days notice may be waived by the parties and depositions may then be taken of a witness and at a time and place mutually agreed to by the parties. When a deposition is taken upon written questions, copies of the written questions will be served upon the other party with the notice and copies of any written cross-questions will be served by hand or "Express Mail" not less then five days before the date of the taking of the deposition unless the parties mutually agree otherwise. A party on whose behalf a deposition is taken shall file a copy of a transcript of the deposition signed by a court reporter with the administrative law judge and shall serve one copy upon the opposing party. Expenses for a court reporter and preparing, serving, and filing depositions shall be borne by the party at whose instance the deposition is taken.

(b) When the Director and the respondent agree in writing, a deposition of any witness who will appear voluntarily may be taken under such terms and conditions as may be mutually agreeable to the Director and the respondent. The deposition shall not be filed with the administrative law judge and may not be admitted in evidence before the administrative law judge unless he or she orders the deposition admitted in evidence. The admissibility of the deposition shall lie within the discretion of the administrative law judge who may reject the deposition on any reasonable basis including the fact that demeanor is involved and that the witness should have been called to appear personally before the administrative law judge.

§10.152 Discovery.

Discovery shall not be authorized except as follows:

(a) After an answer is filed under §10.136 and when a party establishes in a clear and convincing manner that discovery is necessary and relevant, the administrative law judge, under such conditions as he or she deems appropriate, may order an opposing party to:

(1) answer a reasonable number of written requests for admission or interrogatories;
(2) produce for inspection and copying a reasonable number of documents; and
(3) produce for inspection a reasonable number of things other than documents.

(b) Discovery shall not be authorized under paragraph (a) of this section of any matter which:

(1) will be used by another party solely for impeachment or cross-examination;
(2) is not available to the party under 35 U.S.C. §122;
(3) relates to any disciplinary proceeding commenced in the Patent and Trademark Office prior to Mar. 8, 1985;
(4) relates to experts except as the administrative law judge may require under paragraph (e) of this section.
(5) is privileged; or
(6) relates to mental impressions, conclusions, opinions, or legal theories of any attorney or other representative of a party.

(c) the administrative law judge may deny discovery requested under paragraph (a) of this section if the discovery sought:

(1) will unduly delay the disciplinary proceeding;
(2) will place an undue burden on the party required to produce the discovery sought; or
(3) is available (i) generally to the public, (ii) equally to the parties; or (iii) to the party seeking the discovery through another source.

(d) Prior to authorizing discovery under paragraph (a) of this section, the administrative law judge shall require the party seeking discovery to file a motion (§10.143) and explain in detail for each request made how the discovery sought is necessary and relevant to an issue actually raised in the complaint or the answer.

(e) The administrative law judge may require parties to file and serve, prior to any hearing, a pre-hearing statement which contains

(1) A list (together with a copy) of all proposed exhibits to be used in connection with a party's case-in-chief,
(2) a list of proposed witnesses,
(3) as to each proposed expert witness:

(i) an identification of the field in which the individual will be qualified as an expert;
(ii) a statement as to the subject matter on which the expert is expected to testify; and
(iii) a statement of the substance of the facts and opinions to which the expert is expected to tesify,

(4) the identity of government employees who have investigated the case, and
(5) copies of memoranda reflecting respondent's own statements to administrative representatives.

(f) After a witness testifies for a party, if the opposing party requests, the party may be required to produce, prior to cross-examination, any written statement made by the witness.

§10.153 Proposed findings and conclusions; post-hearing memorandum.

Except in cases when the respondent has failed to answer the complaint, the administrative law judge, prior to making an initial decision, shall afford the parties a reasonable opportunity to submit proposed findings and conclusions and a post-hearing memorandum in support of the proposed findings and conclusions.

§10.154 Initial decision of administrative law judge.

(a) The administrative law judge shall make an initial decision in the case. The decision will include (a) a statement of findings and conclusions, as well as the reasons or basis therefore with appropriate references to the record, upon all the material issues of fact, law, or discretion presented on the record, and (b) an order of suspension or exclusion from practice, an order of reprimand, or an order dismissing the complaint. The administrative law judge shall file the decision with the Director and shall transmit a copy to the representative of the Director and to the respondent. In the absence of an appeal to the Commissioner, the decision of the administrative law judge will, without further proceedings, become the decision of the Commissioner of Patents and Trademarks thirty (30) days from the date of the decision of the administrative law judge.

(b) The initial decision of the administrative law judge shall explain the reason for any penalty of reprimand, suspension or exclusion. In determining any penalty, the following should normally be considered:

(1) the public interest;
(2) the seriousness of the violation of the Disciplinary Rule;
(3) the deterrent effects deemed necessary; and
(4) the integrity of the legal profession; and
(5) any extenuating circumstances.

§10.155 Appeal to the Commissioner.

(a) Within thirty (30) days from the date of the initial decision of the administrative law judge under §10.154, either party may appeal to the Commissioner. An appeal by the respondent will be filed with the Director in duplicate and will include exceptions to the decisions of the administrative law judge and supporting reasons for those exceptions. If the Director files the appeal, the Director shall serve a copy of the appeal. Within thirty (30) days after receipt of an appeal or copy thereof, the other party may file a reply brief in duplicate with the Director. If the Director files the reply brief, the Director shall serve a copy of the reply brief. Upon the filing of an appeal and a reply brief, if any, the Director shall transmit the entire record to the Commissioner.

(b) The appeal will be decided by the Commissioner on the record made before the administrative law judge.

(c) The Commissioner may order reopening of a disciplinary proceeding in accordance with the principles which govern the granting of new trials. Any request to reopen a disciplinary proceeding on the basis of newly discovered evidence must demonstrate that the newly discovered evidence could not have been discovered by due diligence.

§10.156 Decision of the Commissioner.

(a) An appeal from an initial decision of the administrative law judge shall be decided by the Commissioner. The Commissioner may affirm, reverse, or modify the initial decision or remand the matter to the administrative law judge for such further proceedings as the Commissioner may deem appropriate. Entry of a decision by the Commissioner is a final agency action in a disciplinary proceeding. In making a final decision, the Commissioner shall review the record or those portions of the record as may be cited by the parties in order to limit the issues. The Comissioner shall tranmit a copy of the final decision to the Director and to the respondent.

(b) A final decision of the Commissioner may dismiss a disciplinary proceeding, reprimand a practitioner, or may suspend or exclude the practitioner from practice before the Office.

§10.157 Review of Commissioner's final decision.

(a) Review of the Commissioner's final decision in a disciplinary case may be had by a petition filed in the United States District Court for the District of Columbia. See 35 U.S.C. 32 and Local Rule 1–26 of the United States District Court for the District of Columbia.

(b) The Commissioner may stay a final decision pending review of the Commissioner's final decision.

§10.158 Suspended or excluded practitioner.

(a) A practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall not engage in unauthorized practice of patent, trademark and other non-patent law before the Office.

(b) Unless otherwise ordered by the Commissioner, any practitioner who is suspended or excluded from practice before the Office under §10.156(b) shall:

(1) Within 30 days of entry of the order of suspension or exclusion, notify all bars of which he or she is a member and all clients of the practitioner for whom he or she is handling matters before the Office in separate written communications of the suspension or exclusion and shall file a copy of each written communication with the Director.

(2) Within 30 days of entry of the order of suspension or exclusion, surrender a client's active Office case files to (i) the client or (ii) another practitioner designated by the client.

(3) Not hold himself or herself out as authorized to practice law before the Office.

(4) Promptly take any necessary and appropriate steps to remove from any telephone, legal, or other directory any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice patent, trademark or other nonpatent law before the Office, and within 30 days of taking those steps, file with the Director an affidavit describing the precise nature of the steps taken.

(5) Not advertise the practitioner's availability or ability to perform or render legal services for any person having immediate, prospective, or pending business before the Office.

(6) Not render legal advice or services to any person having immediate, prospective, or pending business before the Office as to that business.

(7) Promptly take steps to change any sign identifying a practitioner's or the practitioner's firm's office and the practitioner's or the practitioner's firm's stationary to delete therefrom any advertisement, statement, or representation which would reasonably suggest that the practitioner is authorized to practice law before the Office.

(8) Within 30 days, return to any client any unearned funds, including any unearned retainer fee, and any securities and property of the client.

(c) A practitioner who is suspended or excluded from practice before the Office and who aides another practitioner in any way in the other practitioner's practice of law before the Office, may, under the direct supervision of the other practitioner, act as a para-legal for the other practitioner or perform other services for the other practitioner which are normally performed by lay-persons, *provided:*

(1) the practitioner who is suspended or excluded is:
(i) a salaried employee of:
(A) the other practitioner;
(B) the other practitioner's law firm; or
(C) a client-employer who employs the other practitioner as a salaried employee;
(2) the other practitioner assumes full professional responsibility to any client and the Office for any work performed by the suspended or excluded practitioner for the other practitioner;
(3) the suspended or excluded practitioner, in connection with any immediate, prospective, or pending business before the Office, does not:

(i) communicate directly in writing, orally, or otherwise with a client of the other practitioner;
(ii) render any legal services to a client of the other practitioner; or
(iii) meet in person or in the presence of the other practitioner with:
(A) any Office official in connection with the prosecution of any patent, trademark, or other case;
(B) any client of the other practitioner, the other practioner's law firm, or the client-employer of the other practitioner;
(C) any witness or potential witness which the other practitioner, the other practitioner's law firm, or the other practitioner's client-employer may or intends to call as a witness in any proceeding before the Office. The term "witness" includes individuals who will testify orally in a proceeding before, or sign an affidavit or any other document to be filed in, the Office.

(d) When a suspended or excluded practitioner acts as a para-legal or performs services under paragraph (c) of this section, the suspended or excluded practitioner shall not thereafter be reinstated to practice before the Office unless:

(1) the suspended or excluded practitioner shall have filed with the Director an affidavit which (i) explains in detail the precise nature of all para-legal or other services performed by the suspended or excluded practitioner and (ii) shows by clear and convincing evidence that the suspended or excluded practitioner has

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complied with the provisions of this section and all Disciplinary Rules, and

(2) the other practitioner shall have filed with the Director a written statement which (i) shows that the other practitioner has read the affidavit required by subparagraph (d) (1) of this section and that the other practitioner believes every statement in the affidavit to be true and (ii) states why the other practitioner believes that the suspended or excluded practitioner has complied with paragraph (c) of this section.

§10.159 Notice of suspension or exclusion.

(a) Upon issuance of a final decision reprimanding a practitioner or suspending or excluding a practitioner from practice before the Office, the Director shall give notice of the final decision to appropriate employees of the Office and to interested departments, agencies, and courts of the United States. The Director shall also give notice to appropriate authorities of any State in which a practitioner is known to be a member of the bar and any appropriate bar association.

(b) The Director shall cause to be published in the *Official Gazette* the name of any practitioner suspended or excluded from practice. Unless otherwise ordered by the Commissioner, the Director shall publish in the *Official Gazette* the name of any practitioner reprimanded by the Commissioner.

(c) The Director shall maintain records, which shall be available for public inspection, of every disciplinary proceeding where a practitioner is reprimanded, suspended, or excluded unless the Commissioner orders that the proceeding be kept confidential.

§10.160 Petition for reinstatement.

(a) A petition for reinstatement of a practitioner suspended for a period of less than five years will not be considered until the period of suspension has passed.

(b) A petition for reinstatement of a practitioner excluded from practice will not be considered until five years after the effective date of the exclusion.

(c) An individual who has resigned under §10.133 or who has been suspended or excluded may file a petition for reinstatement. The Director may grant a petition for reinstatement when the individual makes a clear and convincing showing that the individual will conduct himself or herself in accordance with the regulations of this part and that granting a petition for reinstatement is not contrary to the public interest. As a condition to reinstatement, the Director may require the individual to:

(1) meet the requirements of §10.7, including taking and passing an examination under §10.7(b) and

(2) pay all or a portion of the costs and expenses, not to exceed $1,500, of the disciplinary proceeding which lead to suspension or exclusion.

(d) Any suspended or excluded practitioner who has violated the provisions of §10.158 during his or her period of suspension or exclusion shall not be entitled to reinstatement until such time as the Director is satisfied that a period of suspension equal in time to that ordered by the Commissioner or exclusion for five years has passed during which the suspended or excluded practitioner has complied with the provisions of §10.158.

(e) Proceedings on any petition for reinstatement shall be open to the public. Before reinstating any suspended or excluded practitioner, the Director shall publish in the *Official Gazette* a notice of the suspended or excluded practitioner's petition for reinstatement and shall permit the public a reasonable opportunity to comment or submit evidence with respect to the petition for reinstatement.

§10.161 Savings clause.

(a) A disciplinary proceeding based on conduct engaged in prior to the effective date of these regulations may be instituted subsequent to such effective date, if such conduct would continue to justify suspension or exclusion under the provisions of this part.

(b) No practitioner shall be subject to a disciplinary proceeding under this part based on conduct engaged in before the effective date hereof if such conduct would not have been subject to disciplinary action before such effective date.

§10.162–10.169 [reserved]

§10.170 Suspension of rules.

(a) In an extraordinary situation, when justice requires, any requirement of the regulations of this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, *sua sponte*, or on petition of any party, including the Director or the Director's representative, subject to such other requirements as may be imposed.

(b) Any petition under this section will not stay a disciplinary proceeding unless ordered by the Commissioner or an administrative law judge.

GERALD J. MOSSINGHOFF
Commissioner of Patents and Trademarks

Dec. 21, 1984.

[1052 OG 4]

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(185) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 10

[Docket No. 40788-8069]

Practice Before the Patent and Trademark Office

Agency: Patent and Trademark Office, Commerce.
Action: Final rule; correction.
Summary: On Feb. 6, 1985, final rules regarding the representation of others before the Patent and Trademark Office were issued. (50 FR 5172, Feb. 6, 1985.) This notice makes a technical correction to the second sentence in §10.157(a) to reflect the Local Rule designation currently used by the U.S. District Court for the District of Columbia.
For Further Information Contact: Nancy C. Slutter by telephone at [703] 557-4035 or by mail marked to her attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Part 10-Representation of Others Before the Patent and Trademark Office

1. The authority citation for 37 CFR Part 10 continues to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

2. Section 10.157(a) [Corrected]

The reference in §10.157, paragraph (a), the second sentence, to "1-26" is corrected to read "213".

DONALD W. PETERSON,
Deputy Assistant Secretary and Deputy Commissioner of Patents and Trademarks.

Apr. 13, 1988.

[1090 OG 41]

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(186) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 10

[Docket No. 80866-8166]

Requests for Reconsideration in Patent and Trademark Office Disciplinary Proceedings

Agency: Patent and Trademark Office, Commerce
Action: Notice of Proposed Rulemaking

Summary: This notice of proposed rulemaking sets forth a proposed amendment to 37 CFR 10.156. The purpose of the amendment is to prescribe a date on which the decision of the Commissioner of Patents and Trademarks in a Patent and Trademark (PTO) disciplinary proceeding becomes final agency action for purposes of judicial review, and to provide for one request for reconsideration or modification of such decision by a party. Interested parties are invited to comment on the proposed amendment.
Dates: Written comments must be received on or before Dec. 1, 1988 to insure consideration. No oral hearing will be conducted.
Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Harris A. Pitlick.
For Further Information Contact: Harris A. Pitlick by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Present rules do not explicitly provide for requests for reconsideration or modification of Commissioner's decisions in appeals from initial decisions of administrative law judges in PTO disciplinary proceedings. 37 CFR 10.156 presently provides that such a Commissioner's decision is a final agency action.

In a recent case, *Klein* v. *Peterson*, 6 USPQ 2d 1556 (D.D.C. 1988), a first decision of the Commissioner was withdrawn and ultimately replaced with a second decision. The respondent sought judicial review of the first decision under 35 U.S.C. 32 after its finality had already been withdrawn and then sought judicial review of the second decision. The authority of the Commissioner to, in effect, reconsider his decision in a disciplinary proceeding was challenged in the cited case. The district court held that since there was no express statutory authority proscribing the Commissioner from reconsidering the first decision, there was implicit authority to do so consistent with long-standing precedent in the area of federal administrative law.

While *Klein* confirmed that the Commissioner has inherent authority to reconsider a decision, at least before an appeal has been noted, the PTO believes that a rule explicitly providing for a time in which requests for reconsideration may be made by a party and a date certain for when Commissioner's decisions in disciplinary proceedings become final will both promote greater certainty in this area of disciplinary proceeding practice and eliminate the possibility of multiple appeals. The rule proposed is not intended to preclude the Commissioner from *sua sponte* reconsidering or modifying a decision in a disciplinary proceeding at any time where conditions warrant and a respondent's due process rights are not violated, consistent with long-standing federal administrative law precedent.

37 CFR 10.156 is proposed to be amended as follows.

Paragraph (a) would be amended to provide that, subject to paragraph (c), the decision of the Commissioner in a disciplinary proceeding becomes final agency action upon the expiration of twenty (20) days after entry thereof.

New paragraph (c) would be added to provide for a single request for reconsideration or modification by the respondent or the Director of Enrollment and Discipline, if made within 20 days of entry of the Commissioner's decision. Such a request would have the effect of staying the effective date of the decision. The decision by the Commissioner on the request would be the final agency action in a disciplinary proceeding and would be effective on the date of entry.

Other Considerations

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel has certified to the Chief Counsel for Advocacy, Small Business Administration that this proposed rule change is not expected to have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354) because in merely codifying the inherent right of the PTO to reconsider its decisions *sua sponte*, the proposed rule extends the right to each party in a PTO disciplinary proceeding to seek reconsideration.

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in costs or prices for consumers, individual industries, Federal, State or local government agencies, or geographic regions. There will be no adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this proposed rule has no federalism implications affecting the relationship between the national government and the States as outlined in Executive Order 12612.

This proposed rule change does not contain a collection of information subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

List of Subjects in 37 CFR Part 10

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Trademarks.

For the reasons set out in the preamble, it is proposed to amend 37 CFR Part 10 as follows wherein removals are indicated by brackets and additions by arrows:

PART 10-REPRESENTATION OF OTHERS BEFORE THE PATENT AND TRADEMARK OFFICE

1. The authority citation for 37 CFR Part 10 would continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

2. Section 10.156 is proposed to be amended by revising paragraph (a) and adding new paragraph (c) to read as follows:

§10.156 Decision of the Commissioner.

(a) An appeal from an initial decision of the administrative law judge shall be decided by the Commissioner. The Commissioner may affirm, reverse or modify the initial decision or remand the matter to the administrative law judge for such further proceedings as the Commissioner may deem appropriate. ▶Subject to paragraph (c) of this section, a decision by the Commissioner does not become a final agency action in a disciplinary proceeding until 20 days after it is entered.◀ [Entry of a decision by the Commissioner is a final agency action in a disciplinary proceeding.] In making a final decision, the Commissioner shall review the record or those portions of the record as may be cited by the parties in order to limit the issues. The Commissioner shall transmit a copy of the final decision to the Director and to the respondent.

* * * * *

▶(c) A single request for reconsideration or modification of the Commissioner's decision may be made by the respondent or the Director if filed within 20 days from the date of entry of the decision. Such a request shall have the effect of staying the effective date of the decision. The decision by the Commissioner on the request

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is a final agency action in a disciplinary proceeding and is effective on its date of entry.◀

DONALD J. QUIGG,
Sept. 7, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1095 OG 44]

(187) **Department of Commerce**
Patent and Trademark Office
37 CFR PART 10

[Docket No. 80340-8188]

Practice Before the Patent and Trademark Office; Government Employees

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule.
Summary: The Patent and Trademark Office (PTO) is amending its rules governing admission of Government employees to practice before the PTO in patent cases, Part 10 of Title 37. Those rules presently permit officers and employees of the Government to be registered only if their official duties include preparation and prosecution of patent applications. A recent decision of the U.S. District Court for the District of Columbia has held that these rules are partially invalid. By these amended rules, the PTO has conformed the rules to the court's decision and has eliminated the "inactive" status designation of registered attorneys and agents who became employed by the Government, but do not engage in the preparation and prosecution of patent applications.
Effective Date: Nov. 4, 1988
For Further Information Contact: Nancy C. Slutter by telephone at (703) 557-4035 or by mail marked to her attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Attorneys and agents must be admitted to practice before the Patent and Trademark Office (PTO) in patent cases. 35 U.S.C. 31; 37 CFR 10.10(a). Part 10 of Title 37 is being amended to allow Federal employees who fulfill the requirements for registration set forth at 37 CFR 10.7 to have their names placed on the PTO register of attorneys and agents.

In the past, the rules provided that an officer or employee of the Government whose official duties include preparation and prosecution of patent applications may be registered. 37 CFR 10.6(d). Under the rule, all other Government employees were not to be registered. If a registered practitioner became a Government employee, the rule required that the petitioner's name be endorsed as "inactive" if the employee's duties did not involve the preparation and prosecution of patent applications.

In a recent decision by the U.S. District Court for the District of Columbia, portions of 37 CFR 10.6(d) were held to be invalid. In that case, an attorney presently employed by a Federal agency petitioned the Commissioner, requesting that his name be placed (with an inactive designation) on the register of attorneys and agents entitled to practice before the PTO in patent cases. His petition was denied in view of 37 CFR 10.6(d). *In re Athridge*, 230 USPQ 470 (Comm'r Pat. 1986). Following the Commissioner's decision, the attorney sought judicial review in the U.S. District Court for the District of Columbia. The court determined that 37 CFR 10.6(d) was invalid to the extent that it precluded registration of an otherwise qualified individual solely on the basis of his status as a Government employee. Based on its determination, the court held that the employee could be registered and designated as "inactive." *Athridge* v. *Quigg*, 655 F. Supp. 779, 3 USPQ 2d 1391 (D.D.C. 1987). See also *Athridge* v. *Quigg*, 4 USPQ 2d 1656 (Comm'r Pat. 1987).

Amendments to 37 CFR §§10.6, 10.10 and 10.23(c) were proposed in a rulemaking notice published in the *Federal Register* at 53 FR 20871-20872 (June 7, 1988) and at 1091 *Official Gazette* 38 (June 28, 1988).

Interested parties were requested to submit written comments on or before Aug. 9, 1988. Written comments were submitted by two individuals and one organization.

Section 10.6, as amended, removes §10.6(d). The effect of removing §10.6(d) will permit otherwise qualified Government employees to be registered to practice before the PTO in patent cases. Registration, however, will not relieve any Government employee from otherwise complying with conflict of interest requirements, e.g., 18 U.S.C. 203, 205, 207, applicable agency regulations and personnel practices, and applicable codes of professional responsibility.

Section 10.10, as amended, refers to restrictions on practice in patent cases imposed on Government employees, Office employees, and former Office employees.

Section 10.23(c), which sets forth specific forms of misconduct, is amended by revising paragraph 10.23(c)(13) to reflect the redesignation of paragraph 10.6(e) as §10.10(b), and by adding new paragraphs (c) and (d), which provide that actions contrary to the restrictions on practice in patent cases set forth in amended paragraphs 10.10(c) and (d) will be treated as misconduct by the Office.

One commenter expressed concern that under §10.10(b) as proposed, a former member of the patent examining corps could be denied registration (or reinstatement) as the result of filing an application that is assigned to his or her former examining group by the Office even though when filing the application, the practitioner sincerely did not believe the application would be assigned to that group. It is noted that §10.10(b) contains the same provisions with respect to applications filed by former patent examiners as former §10.6(e). A former member of the patent examining corps would not be denied registration for filing an application assigned to his or her former group if immediate action is taken to withdraw from further prosecution of the case when he or she finds out that the application has been assigned to his or her former group. Actionable misconduct occurs when the individual *knowingly* acts in violation of the undertaking signed under §10.10(b). *See* §10.23(c)(13).

Two comments were received suggesting an addition to §10.66 that would correspond to newly proposed §10.10(d). However, §10.66 relates to Canon 5 of the Patent and Trademark Office Code of Professional Responsibility (A practitioner should exercise independent judgment on behalf of a client) and is concerned with a practitioner's relationship with clients whereas newly proposed §10.10(d) is concerned with applicable conflict of interest laws, regulations or codes of professional responsibility as they relate to Government employees. Accordingly, it is felt that the suggested addition to §10.66 would be inappropriate.

Two commenters suggested the addition of a new section to be designated as §10.11(c), adapted from a notice in the Official Gazette (1064 O.G. 12) "Reinstatement of Patent Attorneys and Agents to Practice Before the U.S. Patent and Trademark Office." Such a change is not adopted in this rule package but is under consideration for a future rule change.

Two comments were received concerning the differences in the language used in proposed §§10.10(b) and 10.23(c)(13) and the need to avoid inconsistencies in these two sections. In particular, §10.10(b) (last paragraph) included "providing assistance," whereas §10.23(c)(13) did not; and §10.23(c)(13) recited "knowingly," whereas §10.10(b) did not. This suggestion is being adopted. Amended §10.23(c)(13) will include the language "providing assistance" as it appears in §10.10(b) and §10.10(b) will be changed to include the word "knowingly."

It was suggested by two commenters that additional explanatory commentary be provided with respect to newly proposed §§10.10(c) and (d). It is felt that this is unnecessary in connection with the rule change. Government employees with questions concerning applicable conflict of interest laws, regulations or codes of professional responsibility should address these questions to their respective Offices of General Counsel. With respect to further comment by the Office concerning practice by Government employees before the PTO, the last paragraph under Supplementary Information in the Notice of proposed rulemaking provides sufficient clarity on this issue.

Two comments were received concerning the status of individuals who may be affected by this rule change. These individuals should contact the Office of Enrollment and Discipline (OED). In addition, the Office will publish a notice in the Official Gazette listing all individuals registered as inactive and their last known address.

Two commenters correctly observed that proposed §10.10(b) does not require a written statement of official duties for an officer or Government employee whose official duties require the preparation and prosecution of applications for patent.

The citation to the Commissioner's decision indicating that Mr. Athridge's name has been entered on the "active" list of registered attorneys and agents entitled to practice before the PTO in patent cases has been added to the discussion under Supplementary Information as suggested.

The suggestion that the term "contrary to" be changed to "in violation of" in proposed §10.23(c)(20) has not been adopted. The term "contrary to" is considered preferable.

Two comments were received concerning the continued effect of an opinion rendered by the Acting United States Attorney General, 41 *Op. Att. Gen.* 21, 1949 *Dec. Comm'r Pat.* 1 (1949). In response, the Commissioner advises that the PTO maintains the import of that decision is unchanged with respect to practice before the PTO by Government employees. *See In re Athridge*, 230 USPQ 470 (Comm'r Pat. 1986).

Other Considerations

This rule change will not have a significant impact on the quality of the human environment or the conservation of energy resource.

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The rule change allowing Government employees who meet the requirements set forth at 37 CFR 10.7 to have their names placed on the Patent and Trademark Office register of attorneys and agents would not be expected to result in an increase of fees charged by attorneys and agents to entities, including small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect to the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The PTO has also determined that this notice has no federalism implications affecting the relationship between the national government and the state as outlined in Executive Order 12612.

The rule change will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. Office of Management and Budget approval of the registration information reporting requirements contained in the proposed rules was extended until July 31, 1990. [OMB Control No. 0651-0012].

List of Subjects in 37 CFR Part 10

Administrative practice and procedure, Conflicts of interest, Courts, Inventions and patents, Lawyers.

Pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and 31, Part 10 of Title 37 of the Code of the Federal Regulations is amended as set forth below:

PART 10-REPRESENTATION OF OTHERS BEFORE THE PATENT AND TRADEMARK OFFICE

1. The authority citation for 37 CFR Part 10 continues to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

2. Section 10.6 is amended by removing paragraph (d) and redesignating paragraph (e) as §10.10(b).

3. Section 10.10 is amended by revising the title, redesignating the text as paragraph (a), revising newly redesignated paragraph (b) and adding new paragraphs (c) and (d) to read as follows:

§10.10 Restrictions on practice in patent cases.

(a) Only practitioners who are registered under §10.6 or individuals given limited recognition under §10.9 will be permitted to prosecute patent applications of others before the Office.

(b) No individual who has served in the patent examining corps of the Office may practice before the Office after termination of his or her service, unless he or she signs a written undertaking (1) not to prosecute or aid in any manner in the prosecution of any patent application pending in any patent examining group during his or her period of service therein and (2) not to prepare or prosecute or to assist in any manner in the preparation or prosecution of any patent application of another [i] assigned to such group for examination and [ii] filed within two years after the date he or she left such group, without written authorization of the Director. Associated and related classes in other patent examining groups may be required to be included in the undertaking or designated classes may be excluded from the undertaking. When an application for registration is made after resignation from the Office, the applicant will not be registered if he or she has prepared or prosecuted or assisted in the preparation or prosecution of any patent application as indicated in the paragraph. Knowingly preparing or prosecuting or providing assistance in the preparation or prosecution of any patent application contrary to the provisions of this paragraph shall constitute misconduct under §10.23(c)(13) of this part.

(c) A practitioner who is an employee of the Office cannot prosecute or aid in any manner in the prosecution of any patent application before the Office.

(d) Practice before the Office by Government employees is subject to any applicable conflict of interest laws, regulations or codes of professional responsibility. [Approved by the Office of Management and Budget under control number 0651-0012]

4. Section 10.23 is amended by revising paragraph (c)(13) and by adding new paragraphs (c)(19) and (c)(20) to read as follows:

§10.23 MISCONDUCT

* * * * *

(c) * * *

(13) Knowingly preparing or prosecuting or providing assistance in the preparation or prosecution of a patent

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application in violation of an undertaking signed under §10.10(b).

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(19) Action by an employee of the Office contrary to the provisions set forth in §10.10(c).

(20) Knowing practice by a Government employee contrary to applicable Federal conflict of interest laws, or regulations of the Department, agency or commission employing said individual.

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DONALD J. QUIGG,
Sept. 15, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1095 OG 45]

(188) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 100

[Docket No. 80995-8195]

Rights Determinations in Government Employee Inventions

Agency: Patent and Trademark Office, Commerce.
Action: Final rule.
Summary: Executive order 10096 as amended by Executive Order 10930 sets forth the policies and procedures for determining the rights of Government employees and the Government in inventions made by employees. The Delegation of Authority from the Secretary of Commerce, dated Sept. 15, 1988, transferred administration of these provisions from the Commissioner of Patents and Trademarks to the Under Secretary for Economic Affairs in the Department of Commerce. This final rule removes 37 CFR Part 100 in its entirety.
Effective date: This rule is effective Nov. 1, 1988.
For Further Information Contact: John H. Raubitschek by telephone at [703] 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: Executive Order 10096, as amended by Executive Order 10930, sets forth the policies and procedures for determining the rights of Government employees and the Government is inventions made by the employees. The function of reviewing agency rights determinations assigned to the Secretary of Commerce was delegated by the Secretary to the Commissioner of Patents and Trademarks. On Sept. 15, 1988, the Secretary changed the delegation to the Under Secretary for Economic Affairs, who is republishing Part 100 as new Part 501 in 37 CFR.

All rights determinations and appeals relating thereto, which are pending before the Commissioner at the time 37 CFR Part 501 becomes effective, will be acted upon by the Commissioner under the procedures in 37 CFR Part 100.

The Patent and Trademark Office has determined that this notice is not a rule within the meaning of section 1(a) of Executive Order 12291. Therefore, no Regulatory Impact Analysis has to or will be prepared. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given by section 553 of the Administrative Procedure Act (5 U.S.C. 553), or by any other law, no initial or final Regulatory Flexibility Analysis has to or will be prepared for the purposes of the Regulatory Flexibility Act (5 U.S.C. 603(a) and 604(a)).

This final rule does not contain a policy with Federalism implications sufficient to warrant preparation of a Federalism assessment under Executive Order 12612. Nor does this rule contain a collection of information for purposes of the Paperwork Reduction Act of 1980.

For reasons set forth in the preamble, 37 CFR Part 100 is amended as follows:

PART 100—[REMOVED AND RESERVED]

1. Part 100 is removed and reserved.

DONALD J. QUIGG,
Oct. 4, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

[FR Doc. 88-23238 Filed 10-7-88; 8:45 am]
Billing Code 3510-16-M

[1096 OG 15]

(189) **Department of Commerce**
Patent and Trademark Office
37 CFR Part 501

[Docket No. 80627-8127]

Uniform Patent Policy for Domestic Rights in Inventions Made by Government Employees

Agency: Under Secretary for Economic Affairs, Department of Commerce.
Action: Final rule.
Summary: Executive Order 10096, as amended by Executive Order 10930, sets forth the policies and procedures for determining the rights in Federal employee inventions with respect to the Federal employee and the Government employer. The Delegation of Authority from the Secretary of Commerce dated, Sept. 15, 1988 and effective Nov. 1, 1988, transferred administration of the provisions of Executive Order 10096 as amended by Executive Order 10930 from the Commission of Patents and Trademarks to the Under Secretary for Economic Affairs in the Department of Commerce. This final rule establishes 37 CFR Part 501 which sets forth this delegation of authority to the Under Secretary. In addition, each Government agency is authorized to determine whether the results of research, development, or other activity within the agency constitute an invention with the purview of Executive Order 10096, as amended by Executive Order 10930 and to determine initially the rights therein in accordance with the provisions of section 501.6 and 501.7 herein. By separate notice in today's *Federal Register* the Patent and Trademark Office is deleting 37 CFR Part 100.
Effective Date: Nov. 1, 1988.

However, all rights, determinations, and appeals submitted to the Commissioner prior to the effective date, will be reviewed by the Commissioner under the procedures of 37 CFR Part 100.
Address: Comments may be sent to Mr. Joseph P. Allen, Acting Director, Federal Technology Management Division, Office of the Under Secretary for Economic Affairs, United States Department of Commerce, Room 4839, Herbert C. Hoover Bldg., Washington, D.C. 20230.
For Further Information Contact: Mr. Joseph P. Allen, by telephone at (202) 377-8100 or Robert B. Ellert by telephone at (202) 377-5394.
Supplementary Information: Executive Order 10096, as amended by Executive Order 10930, sets forth the policies and procedures for determining the rights in Federal Employee inventions with respect to the Federal employee and the Government employer. The Under Secretary for Economic Affairs of the Department of Commerce was delegated responsibility for oversight of the Executive Order on Sept. 15, 1988. Functions required by the Executive Order were previously performed by the Commissioner of Patents and Trademarks. This final rule is substantially the same as the rule set out in 37 CFR Part 100, except, the Secretary of Commerce is substituted for the Commissioner of Patents and Trademarks, and advance approval is given to agency heads to make final determinations relating to determinations of rights decisions of Government employee inventions, subject to employee appeal to the Secretary.

President Reagan in Executive Order 12591, on Apr. 10, 1987 directed all Government agencies to facilitate the transfer of technology developed at federal laboratories to the private sector and to promote its commercialization. To accomplish the goals of E.O. 12591 it is necessary that rights to inventions made by government employees be determined as expeditiously as possible. Accordingly, the Secretary has reviewed the existing procedures and policies under 37 CFR Part 100 and concluded that administration of the functions thereunder could be performed on a more efficient basis by confining the role of the Department of Commerce to appeals by employees from disputed agency determinations. Accordingly, under 37 CFR Part 501 each Government agency is given the authority to determine whether the results of research, development of other activities within the agency constitute an invention by an employee, and to determine initially the rights relating to ownership within the provisions of Executive Order 10096 as amended by Executive Order 10930. If no appeal is taken to the Secretary by an employee under section 501.8, the initial determination of the agency will be final.

Notwithstanding the fact that this is a final rule, comments are requested.

Because this rule concerns agency management and personnel, it is not a rule or regulation within the meaning of section 1(a) of Executive Order 12291, and it is not subject to the requirements of the Order. Accordingly, no preliminary or final regulatory impact analysis has to be or will be prepared.

Because a notice of proposed rulemaking and an opportunity for public comments are not required to be given for this rule by section 553 of the Administrative Procedure Act (5 U.S.C. 553), or by any other law, no regulatory flexibility analysis has to be or will be prepared for purposes of the Regulatory Flexibility Act (5 U.S.C. 603(a) and 604(a)).

This final rule does not contain policies with Federalism implications sufficient to warrant preparation of a Federalism assessment under Executive Order 12612. This rule does not contain collections of information for purposes of the Paperwork Reduction Act.

The changes in the process of determining employee rights to inventions made by this rule do not have takings implications sufficient to require preparation of a Takings Implications Assessment under Executive Order 12630.

List of Subjects in 37 CFR Part 501

Uniform patent policy. Domestic Rights in inventions, Inventions made by Government employees.

ROBERT ORTNER,
Oct. 3, 1988 *Under Secretary for Economic Affairs.*

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For the reasons set forth in the preamble 37 CFR is amended by adding Chapter V, consisting of Part 501, to read as follows:

CHAPTER V—UNDER SECRETARY FOR ECONOMIC AFFAIRS, DEPARTMENT OF COMMERCE

PART 501—UNIFORM PATENT POLICY FOR DOMESTIC RIGHTS IN INVENTIONS MADE BY GOVERNMENT EMPLOYEES

Sec.

501.1 Purpose.
501.2 Scope.
501.3 Definitions.
501.4 Determination of Inventions and Rights therein.
501.5 Agency Liaison Officier.
501.6 Criteria for The Determination of Rights in and to Inventions.
501.7 Agency Determination.
501.8 Appeals by employees.
501.9 Patent protection.
501.10 Dissemination of this part and of implementing regulations.

Authority: Sec. 4, E.O. 10096, 3 CFR 1949-1953 Comp., p. 292, as amended by E. O. 10930, 3 CFR 1959-1963 Comp., p. 456; and Delegation of Authority by the Secretary of Commerce, Sept. 15, 1988, DOO 10-9.

§501.1 Purpose.

The purpose of this part is to provide for the administration of a uniform patent policy for the Government with respect to the domestic rights in inventions made by Government employees and to prescribe rules and regulations for implementing and effectuating such policy.

§501.2 Scope.

This part applies to any invention made by a Government employee and to any action taken with respect thereto.

§501.3 Definitions.

(a) The term "Secretary," as used in this part, means the Under Secretary of Commerce for Economic Affairs.

(b) The term "Government agency" as used in this part, means and Executive department or independent establishment of the Executive branch of the Government (including any independent regulatory commission or board, any corporation wholly owned by the United States, and the Smithsonian Institution), but does not include the Department of Energy for inventions made or conceived under the provisions of 42 U.S.C. 2182.

(c) The term "Government employee," as used in this part, means any officer or employee, civilian or military, of any Government agency, including any part-time consultant or part-time employee except as may otherwise be provided for by agency regulation approved by the Secretary.

(d) The term "invention," as used in this part, means any art, machine, manufacture, design, or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the patent laws of the United States.

§501.4 Determination of Inventions and rights therein.

Each Government agency has the approval of the Secretary to determine whether the results of research, development, or other activity in the agency constitute an invention within the purview of E.O. 10096, as amended by E.O. 10930 and to determine the rights therein in accordance with the provisions of §501.6 and 501.7 herein.

§501.5 Agency Liaison Officer.

Each Government agency shall designate a liaison officer to represent the agency before the Secretary. Provided, however, that the Departments of the Army, the Navy, and the Air Force may each designate a liaison officer.

§501.6 Criteria for the Determination of Rights In and To Inventions.

(a) The following rules shall be applied in determining the respective rights of the Government and of the inventor in and to any invention that is subject to the provisions of this part:

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(1) The Government shall obtain, except as herein otherwise provided, the entire domestic right, title and interest in and to any invention made by any Government employee:

(i) During working hours, or
(ii) With a contribution by the Government of facilities, equipment, materials, funds or information, or of time or services of other Government employees on official duty, or
(iii) Which bears a direct relation to or is made in consequence of the official duties of the inventor.

Foreign patent rights are governed by the provisions of 37 CFR Part 101.

(2) In any case where the contribution of the Government, as measured by any one or more of the criteria set forth in paragraph (a)(1) of this section, to the invention is insufficient equitably to justify a requirement of assignment to the Government of the entire domestic right, title, and interest in and to such invention, or in any case where the Government has insufficient interest in an invention to obtain the entire domestic right, title, and interest therein (although the Government could obtain same under paragraph (a)(1) of this section), the Government agency concerned shall leave title to such invention in the employee, subject however, to the reservation to the government of a nonexclusive, irrevocable, royalty-free license in the invention with power to grant licenses for all governmental purposes, such reservation, in the terms thereof, to appear, where practicable, in any patent, domestic or foreign, which may issue on such invention. Reference is made to section 15 of the Federal Technology Transfer Act of 1986 (15 U.S.C. 3710d) which requires a Government agency to allow the inventor to retain title to any covered invention when the agency does not intend to file a patent application or otherwise promote commercialization.

(3) In applying the provisions of paragraphs (a)(1) and (2) of this section to the facts and circumstances relating to the making of a particular invention, it shall be presumed that an invention made by an employee who is employed or assigned:

(i) To invent or improve or perfect any art, machine, design, manufacture, or composition of matter,
(ii) To conduct or perform research, development work, or both,
(iii) To supervise, direct, coordinate, or review Government financed or conducted research, development work, or both, or
(iv) To act in a liaison capacity among governmental or non-governmental agencies or individuals engaged in such research or development work,

falls within the provisions of paragraph (a)(1) of this section, and it shall be presumed that any invention made by any other employee falls within the provisions of paragraph (a)(2) of this section. Either presumption may be rebutted by a showing of the facts and circumstances in the case and shall not preclude a determination that these facts and circumstances justify leaving the enire right, title and interest in and to the invention in the Government employee, subject to the law.

(4) In any case wherein the Government neither:

(i) Obtains the entire domestic right, title and interest in and to an invention pursuant to the provisions of paragraph (a)(1) of this section nor
(ii) Reserves a nonexclusive, irrevocable, royalty-free license in the invention, with power to grant licenses for all governmental purposes, pursuant to the provisions of paragraph (a)(2) of this section.

The Government shall leave the entire right, title and interest in and to the invention in the Government employee, subject to law.

§501.7 Agency determination.

(a) If the agency determines that the Government is entitled to obtain title pursuant to §501.6(a)(1) and the employee does not appeal, no further review is required.

(b) In the event that a Government agency determines, pursuant to paragraph (a)(2) or (a)(4) of §501.6, that title to an invention will be left with the employee, the agency shall notify the employee of this determination.

(c) In the case of a determination under either paragraph (a) or (b) of this section, the agency shall promptly prepare, and preserve in appropriate files, accessible to the Secretary, a written, signed, and dated statement concerning the invention including the following:

(1) A description of the invention in sufficient detail to identify the invention and show its relationship to the employee's duties and work assignments;
(2) The name of the employee and employment status, including a detailed statement of official duties and responsibilities at the time the invention was made; and
(3) An explanation of the agency determination and reasons therefor. The agency shall, subject to considerations of national security, or public health, safety, or welfare, submit to the Secretary, if an appeal is taken, a copy of this written statement.

§501.8 Appeals by employees.

(a) Any Government employee who is aggrieved by a Government agency determination pursuant to §501.6(a)(1) or (a)(2), may obtain a review of any agency determination by filing, within 30 days (or such longer period as the Secretary may, for good cause shown in writing, fix in any case) after receiving notice of such determination, two copies of an appeal with the Secretary. The Secretary then shall forward one copy of the appeal to the Government agency.

(b) On receipt of a copy of an appeal filed pursuant to paragraph (a) of this section, the agency official who made the agency determination being appealed shall, subject to considerations of national security, or public health, safety, or welfare, promptly furnish both the Secretary and the inventor with a copy of a report containing the following information about the invention involved in the appeal:

(1) A copy of a statement by the agency containing the information specified in §501.7, and
(2) A detailed statement of the points of dispute or controversy, together with copies of any statements or written arguments filed with the agency, and of any other relevant evidence that the agency considered in making its determination of Government interest. Within 25 days (or such longer period as the Secretary may, for good cause shown, fix in any case) after the transmission of a copy of the agency report to the employee, the employee may file a reply thereto with the Secretary and file one copy thereof with the appropriate agency decision maker.

(c) After the time for the inventor's reply to the Government agency's report has expired and if the inventor has so requested in his or her appeal, a date will be set for hearing of oral arguments before the Secretary, by the employee (or by an attorney whom he or she designates by written power of attorney filed before, or at the hearing) and a representative of the Government agency involved. Unless it shall be otherwise ordered before the hearing begins, oral arguments will be limited to thirty minutes for each side. The employee need not retain an attorney or request an oral hearing to secure full consideration of the facts and his or her arguments. The employee may expedite such consideration by notifying the Secretary when he or she does not intend to file a reply to the agency report.

(d) After a hearing on the appeal, if a hearing was requested, or after expiration of the period for the inventor's reply to the agency report if no hearing is set, the Secretary shall issue a decision on the matter within 120 days, which decision shall be final after a thirty day period for requesting reconsideration expires or on the date that a decision on a petition for reconsideration is finally disposed of. Any request for reconsideration or modification of the decision must be filed within 30 days from the date of the original decision (or within such an extension thereof as may be set by the Secretary before the original period expires). The decision of the Secretary shall be made after consideration of the statements of fact in the employee's appeal, the agency's report, and the employee's reply, but the Secretary at his or her discretion and with due respect to the rights and convenience of the inventor and the Government agency, may call for further statements on specific questions of fact or may request additional evidence in the form of affidavits or depositions on specific facts in dispute.

§501.9 Patent protection.

(a) A Government agency, upon determining that an invention coming within the scope of §501.6(a)(1) or (a)(2) has been made, shall thereupon determine whether patent protection will be sought in the United States by the agency for such invention. A controversy over the respective rights of the Government and of the employee in any case shall not delay the taking of the actions provided for in this section. In cases coming within the scope of §501.6(a)(2), agency action looking toward such patent protection shall be contingent upon the consent of the employee.

(b) Where there is an appealed dispute as to whether §501.6(a)(1) or (a)(2) applies in determining the respective rights of the Government and of an employee in and to any invention, the agency will determine whether patent protection will be sought in the United States pending the Secretary's decision on the dispute and, if it decides that an application for patent should be filed, will take such rights as are specified in §501.6(a)(2), but this shall be without prejudice to acquiring the rights specified in paragraph (a)(1) of that section should the Secretary so decide.

(c) Where an agency has determined to leave title to an invention with an employee under §501.6(a)(2), the agency will, upon the filing of an application for patent take the rights specified in that paragraph without prejudice to the subsequent acquistion by the Government of the rights specified in paragraph (a)(1) of that section should the Secretary so decide.

§501.10 Dissemination of this part and of implementing regulations.

Each Government agency shall disseminate to its employees the provisions of this part, and any appropriate implementing agency regulations and delegations. Copies of any such regulations shall be sent to the Secretary. If the Secretary identifies an inconsistency between this part and the agency regulations or delegations, the agency, upon being informed by the Secretary of the inconsistency, shall take prompt action to correct it.

[FR Doc. 88-23239 Filed 10-7-88; 8:45 am]
Billing Code 3510-EA-M

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(190) **Practitioner's Responsibility to Avoid Prejudice to the Rights of a Client/Patent Applicant**

Under 37 CFR Part 10, a practitioner is responsible for taking reasonable steps to avoid foreseeable prejudice to the rights of a client/patent applicant. This responsibility exists in all circumstances including those where the practitioner is operating through a corporate liaison or foreign agent and has no direct contact with the client/patent applicant, who in most cases is the one being represented.

This notice is intended to clarify the appropriate course of action for a practitioner to follow when the practitioner is operating through such a corporate liaison or foreign agent. In such arrangements, the registered practitioner may rely upon the advice of the corporate liaison or the client/patent applicant's foreign agent as to the action to be taken so long as the practitioner is aware that the client/patent applicant has consented after full disclosure to be represented by the liaison or agent. It will be assumed by the Patent and Trademark Office that the client/patent applicant has an agreement with the liaison or agent, arrived at after full disclosure, to be represented by the liaison or agent. Registered practitioners, if they wish, however, may maintain a copy of the agreement in this regard between the client/patent applicant and the liaison or agent in practitioner's file of the application or other proceeding before the Office. If there is, in fact, no such agreement between the client/patent applicant and the liaison or agent, the registered practitioner must communicate to the client/patent applicant.

In circumstances where the practitioner is aware that there is an agreement between the client/patent applicant and the liaison or agent, the practitioner may fully rely upon the advice of the liaison or agent as to the wishes of the client/patent applicant. For example, if the registered practitioner is instructed by the client/patent applicant's liaison or agent to allow an application to go abandoned rather than to respond to an Office action within a set period for response, the practitioner may properly do so without any further notice to the client/patent applicant.

It is assumed that withdrawal from employment by a practitioner will remain a relatively rare occurrence, particularly in view of this clarification. This notice should not be taken to require or encourage withdrawal. If a practitioner should decide to withdraw, however, the practitioner must take reasonable steps to avoid foreseeable prejudice to the rights of the client/patent applicant including allowing time for employment of another practitioner (37 CFR 10.40). Therefore, at least thirty days would be required between the date of approval by the Office of the withdrawal and the later of the expiration date of the response period or the expiration date of the period which can be obtained by a petition for extension of time and fee under 37 CFR 1.136(a). This is necessary so that the client/patent applicant would have sufficient time to obtain other representation or to take other action. If a period has been set for response and the period may be extended without a showing of cause pursuant to 37 CFR 1.136(a) by filing a petition for extension of time and fee, the practitioner will not be required to seek such extension of time for withdrawal to be approved. In such a situation, however, withdrawal will not be approved unless at least thirty days would remain between the date of approval and the last date on which such a petition for extension of time and fee could properly be filed.

DONALD J. QUIGG,
Dec. 10, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1086 OG 457]

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(191) **Responsibilities of Practitioners Representing Clients in Proceedings Before The Patent and Trademark Office**

This notice is intended to remind practitioners of certain aspects of their responsibilities in representing clients in proceedings before the Office. The Notice is also intended to supplement the discussion set forth in the

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Official Gazette Notice published at 1086 *Official Gazette* 457 (Jan. 12, 1988) entitled "Practitioner's Responsibility to Avoid Prejudice to the Rights of a Client/Patent Applicant" and to amplify and supersede the Helpful Hint published at 1084 *Official Gazette* 34 (Nov. 24, 1987) titled "Correspondence Address and/or Fee Address of Maintenance Fees."

Part 10 of title 37, Code of Federal Regulations, sets forth the Patent and Trademark Office (PTO) Code of Professional Responsibility. Each attorney or agent who practices before the PTO is subject to the rules set forth in Part 10 and should carefully study the rules promulgation originally published at 50 *Federal Register* 5158 (Feb. 6, 1985) and at 1052 *Official Gazette* 4 (Mar. 5, 1985) and reproduced as item number 172 in the Consolidated Listing of Official Gazette Notices, published at 1036 *Trademark Official Gazette* 3 (Jan. 5, 1988).

Practitioner's Client

During the promulgation of Part 10, 37 CFR, several individuals suggested that "it may be difficult to determine the identity of the 'client' . . ., particularly in corporate patent departments." The response to that suggestion was that "[t]he PTO will presume that practitioners know the identities of their clients . . ." 50 *Federal Register* 5163 (Feb. 6, 1985); 1086 *Trademark Official Gazette* 356 (Jan. 5, 1988). For example, in a patent application, practitioner's client is ordinarily the inventor who gives practitioner a power of attorney to prosecute the application (37 CFR 1.31). A practitioner may represent only the assignee of the entire interest in a patent application if the assignee has filed a power of attorney and the assignee is conducting the prosecution of the application to the exclusion of the inventor. (37 CFR 1.32).

In the promulgation of Part 10, 37 CFR, a commenter raised a question of who is the client when an application is filed on behalf of an individual, but the individual's assignee pays practitioner's bill. The question was answered in the following manner:

> "Practitioners are expected to know the identities of their clients. If a practitioner is hired by a corporation and wishes to make that fact plain on the record of a patent application, the practitioner may file an assignment and a power of attorney signed by the assignee. If a dispute should then occur between the individual and the assignee, the record would be clear that the assignee is the client." 50 *Federal Register* 5164 (Feb. 6, 1985); 1086 *Trademark Official Gazette* 357 (Jan. 5, 1988).

In some instances, practitioners deal with a corporate liaison or foreign agent. Such arrangements do not automatically change the person whom practitioner represents, e.g., the inventor or trademark owner. The fact that a U.S. practitioner receives instructions from the inventor or trademark owner through a foreign attorney or agent does not change the fact that the client is still the inventor or trademark owner rather than the foreign attorney or agent. See *Strojirenstvi* v. *Toyoda*, 2 USPQ 2nd 1222 (Comm'r Pat. 1986), which at 1223 cited *Yetter Manufacturing Co.* v. *Hiniker Co.*, 213 USPQ 119, 120 (D. Minn. 1981) for the principle that "when attorney served as local counsel for a law firm representing Hiniker Co., the attorney represented Hiniker and not the law firm" and also cited *Toulmin* v. *Becker*, 105 USPQ 511 (Ohio Ct. App. 1954) for the principle that "foreign patent agents or attorneys were not clients of U.S. patent attorney." The PTO expects practitioners to know the identities of their clients and to take reasonable steps to avoid foreseeable prejudice to the rights of their clients.

Obtaining Instructions Through Persons Other Than The Client

In practice, it is common for instructions relating to the application of an inventor or trademark owner, who is the client of the U.S. practitioner, to be passed to the U.S. practitioner through intermediaries, such as corporate liaisons or foreign agents. Clearly, a client may choose to use a corporate liaison or a foreign agent to convey instructions, etc., to a practitioner. In such an arrangement, the practitioner may rely upon instructions of, and accept compensation from, the corporate liaison or the foreign agent as to the action to be taken in a proceeding before the Office so long as the practitioner is aware that the client has consented to have instructions conveyed through the liaison or agent. See 37 CFR 10.68(a) and (b). An agreement between the client and the liaison or agent establishes an agency relationship between the liaison or agent and the client such that the U.S. practitioner can rely upon the liaison or agent as the representative of the client for the purpose of communicating the client's instructions about the proceeding to the U.S. practitioner. The PTO will assume that the client has an agreement with the liaison or agent to be represented by the liaison or agent. It is the responsibility of the client to notify the practitioner that the agency relationship between the client and the liaison or agent has ceased to exist and that instructions from the liaison or agent should no longer be accepted.

A practitioner could secure evidence that such an agreement exists by having a patent or trademark applicant sign a statement to that effect at the same time that the power of attorney is executed. For example, the following language could be inserted in an oath, declaration, or power of attorney form:

> "The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from _____ as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned."

Without an agency relationship between the liaison or agent and the client, a practitioner would be bound by 37 CFR 10.68(b) to "not permit a person who recommends, employs, or pays the practitioner to render legal services for another, to direct or regulate the practitioner's professional judgment in rendering such legal services."

Practitioner's Responsibility to a Client After the Client's Patent Issues or Trademark is Registered

The Office has received inquiries from practitioners as to their responsibilites to a client (patent or trademark applicant) after the client's patent was issued or trademark has been registered. In response thereto, it is pointed out that a power of attorney given during prosecution of a patent or trademark application is considered to be viable after the patent is issued or the trademark is registered. See 50 *Federal Register* 5164 (Feb. 6, 1985); 1086 *Trademark Official Gazette* 357 (Jan. 5, 1988). While the Office considers such a power of attorney to be viable for purposes of the practitioner taking actions in proceedings before the Office if practitioner and the client so desire, the existence of the power of attorney to file and/or prosecute the application through issuance of the patent or registration of the trademark does not establish whether practitioner has a responsibility, and a dutaffirmatively in a proceeding before the Office on behalf of the client after the patent issues or the trademark is registered.

Practitioner's responsibility to take affirmative action in a proceeding before the Office after the patent issues or the trademark is registered depends upon whether practitioner still has a practitioner-client relationship with the client which has continued after the patent issued or trademark is registered. The mere existence of the power of attorney to file and/or prosecute the application through issuance of the patent or registration of the trademark would not establish such a practitioner-client relationship in the absence of other facts establishing such a relationship since the purpose for which the power of attorney was originally given has been accomplished.

Practitioner's Responsibility to a Former Client

While practitioner may no longer have a practitioner-client relationship with a client and therefore has no duty to represent the client in a proceeding before the Office, a practitioner nevertheless has certain obligations to a former client. These obligations are placed upon practitioner by the Office rules and are necessary for the proper conduct of proceedings before the Office. Under 37 CFR 10.23(c)(8), practitioners have a duty to inform a client or former client or timely notify the Office of an inability to notify a client or former client of certain correspondence received from the Office and also from the client's or former client's opponent in an *inter partes* proceeding before the Office. Practitioners have an obligation whether the client is a present client or a former client. Included among the items of correspondence of which practitioners have the obligation to inform clients or former clients are notices regarding maintenance fees, reexamination proceedings, and institution of *inter partes* patent and trademark proceedings.

Address to Which Correspondence is Sent Regarding Patent Maintenance Fees and Reexamination Proceedings

Under 37 CFR 1.33(d), a "correspondence address" or a change thereto may be filed with the Office during the enforceable life of a patent. This "correspondence address" will be used in any correspondence relating to maintenance fees unless a separate "fee address" has been specified solely for maintenance fee purposes as provided by 37 CFR 1.363. Practitioners who do not wish to receive correspondence relating to maintenance fees must change the correspondence address in the patented file or provide the PTO with a fee address to which the correspondence should be sent. It is not required that a practitioner file a request for permission to withdraw pursuant to 37 CFR 1.36 solely for the purpose of changing the correspondence address in a patent even though a withdrawal of a practitioner would change the correspondence address.

Since 37 CFR 1.33(c) specifies that all notices, official letters and other communications for the patent owner or owners in a reexamination proceeding will be directed to the attorney or agent of record in the patent file, a request for permission to withdraw pursuant to 37 CFR 1.36 must be filed in the patent if the attorney or agent of record does not desire to receive correspondence relating to reexamination. For information on requests to withdraw, see the discussion in the Jan. 12, 1988 *Official Gazette* Notice cited above.

Contact Points For Information

If a practitioner has questions about the conduct of, or requirements relating to a particular proceeding before the Office, those questions should be directed to the particular area of the Office responsible for the proceeding. If practitioners have questions about their responsibilities to their clients, those questions should be directed to the Office of Enrollment and Discipline. The telephone number of that Office is (703) 557-2012.

May 25, 1988.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[1091 OG 26]

(192) **Department of Commerce**
Patent and Trademark Office
37 CFR §1.15
[Docket No. 80515 - 8209]
Requests for Identifiable Records

Agency: Patent and Trademark Office, Commerce
Action: Final Rule.
Summary: This final rule sets forth changes that the Patent and Trademark Office (PTO) is making to the rules governing requests for records not disclosed to the public as part of the regular informational activity of the PTO. The prior rule sets out the PTO Freedom of Information Act (FOIA) procedures. The final rule updates these procedures and specifies that FOIA requests will be processed in accordance with Department of Commerce regulations contained in Part 4 of 15 CFR (Public Information).
Effective Date: Dec. 30, 1988.
For Further Information Contact: Albin F. Drost by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: As presently written, 37 CFR 1.15 describes procedures for obtaining documents under the Freedom of Information Act that have been superseded. The purpose of this rule change is to bring the PTO FOIA procedures into conformity with the Department of Commerce FOIA rules. The final rule directly advises requesters that the PTO will follow the Department of Commerce rules for disclosure of information under FOIA.

A notice of proposed rulemaking was published on July 19, 1988 (53 Fed. Reg. 27 177). Interested parties were requested to submit written comments on or before Sept. 20, 1988. No comments were received.

Other Considerations

This rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. §3501 et seq.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities[Regulatory Flexibility Act, Pub. L. 96-354] because no increase in fees or paperwork should result from this rule change.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12991. The annual effect to the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The PTO has also determined that this notice has no federalism implications affecting the relationship between the National Government and the states as outlined in Executive Order 12612.

The rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. §3501 et seq., since no record keeping or reporting requirement within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Records.

For the reasons set out in the preamble and under the authority granted to the Commissioner of Patents

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and Trademarks by 35 U.S.C. §6, the Patent and Trademark Office amends Title 37 of the Code of Federal Regulations as set forth below:

PART 1 - RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:

AUTHORITY: 35 U.S.C. §6 unless otherwise noted.

2. Section 1.15 is revised as follows:

§1.15 Requests for identifiable records.

(a) Requests for records, not disclosed to the public as part of the regular informational activity of the Patent and Trademark Office and which are not otherwise dealt with in the rules in this part, shall be made in writing, with the envelope and the letter clearly marked "Freedom of Information Request." Each such request, so marked, should be submitted by mail addressed to the "Patent and Trademark Office, Freedom of Information Request Control Desk, Box 8, Washington, D.C. 20231," or hand delivered to the Office of the Solicitor, Patent and Trademark Office, Arlington, Virginia. The request will be processed in accordance with the procedures set forth in Part 4 of Title 15, Code of Federal Regulations.

(b) Any person whose request for records has been initially denied in whole or in part, or has not been timely determined, may submit a written appeal as provided in §4.8 of Title 15, Code of Federal Regulations.

(c) Procedures applicable in the event of service of process or in connection with testimony of employees on official matters and production of official documents of the Patent and Trademark Office in civil legal proceedings not involving the United States shall be those established in parts 15 and 15a of Title 15, Code of Federal Regulations.

DONALD J. QUIGG,
Nov. 21, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1097 OG 15]

(193) **Patent Cooperation Treaty (PCT) Update**
Accession to the Patent Cooperation Treaty (PCT) by Benin

The United States Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) that Benin deposited its instrument of accession to the PCT on 26 Nov. 1986. Therefore, according to PCT Article 63(2), Benin may be designated in international applications filed on and after 26 Feb. 1987.

It should be noted that since Benin is a member of the African Intellectual Property Organization (OAPI), any designation of Benin has the effect of a designation of that country for the purposes of a regional patent issued by OAPI in Yaounde, Cameroon.

See listing of PCT Member Countries on next page.

Listing of PCT Member Countries

	Country	Ratification or Accession	Date of Ratification or Accession	Date from which Country may be Designated
(1)	Central African Republic*	Accession	15 September 1971	01 June 1978
(2)	Senegal*	Ratification	08 March 1972	01 June 1978
(3)	Madagascar	Ratification	27 March 1972	01 June 1978
(4)	Malawi	Accession	16 May 1972	01 June 1978
(5)	Cameroon*	Accession	15 March 1973	01 June 1978
(6)	Chad*	Accession	12 February 1974	01 June 1978
(7)	Togo*	Ratification	28 January 1975	01 June 1978
(8)	Gabon*	Accession	06 March 1975	01 June 1978
(9)	United States of America	Ratification	26 November 1975	01 June 1978
(10)	Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11)	Congo*	Accession	08 August 1977	01 June 1978
(12)	Switzerland**	Ratification	14 September 1977	01 June 1978
(13)	United Kingdom**	Ratification	24 October 1977	01 June 1978
(14)	France**	Ratification	25 November 1977	01 June 1978
(15)	Soviet Union	Ratification	29 December 1977	01 June 1978
(16)	Brazil	Ratification	09 January 1978	01 June 1978
(17)	Luxembourg**	Ratification	31 January 1978	01 June 1978
(18)	Sweden**	Ratification	17 February 1978	01 June 1978
(19)	Japan	Ratification	01 July 1978	01 October 1978
(20)	Denmark	Ratification	01 September 1978	01 December 1978
(21)	Austria**	Ratification	23 January 1979	23 April 1979
(22)	Monaco	Ratification	22 March 1979	22 June 1979
(23)	Netherlands**	Ratification	10 April 1979	10 July 1979
(24)	Romania	Accession	23 April 1979	23 July 1979
(25)	Norway	Ratification	01 October 1979	01 January 1980
(26)	Liechtenstein**	Accession	19 December 1979	19 March 1980
(27)	Australia	Accession	31 December 1979	31 March 1980
(28)	Hungary	Ratification	27 March 1980	27 June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30)	Finland	Ratification	01 July 1980	01 October 1980
(31)	Belgium**	Ratification	14 September 1981	14 December 1981
(32)	Sri Lanka	Accession	26 November 1981	26 February 1982
(33)	Mauritania*	Accession	13 January 1983	13 April 1983
(34)	Sudan	Accession	16 January 1984	16 April 1984
(35)	Bulgaria	Accession	21 February 1984	21 May 1984
(36)	Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37)	Mali*	Accession	19 July 1984	19 October 1984
(38)	Barbados	Accession	12 December 1984	12 March 1985
(39)	Italy**	Ratification	28 December 1984	28 March 1985
(40)	Benin*	Accession	26 November 1986	26 February 1987

* Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.

**Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Belgium and Italy, for which only European patents are available if PCT is used. Note: Only one PCT designation fee is due if European regional patent protection is sought for one, several or all EPC member countries.

Feb. 4, 1987. DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[1076 OG 3]

(194) **Patent Cooperation Treaty (PCT) Information**

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT Fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dol-

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lar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(1) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Aug. 11, 1988.

[1096 OG 26]

(195) **Minimum Requirements for Acceptance of Applications Under 35 U.S.C. 371 (the National Stage of PCT)**

The Patent and Trademark Office is continuing to receive application papers which do not clearly identify whether the papers (1) are being submitted to enter the national stage of the Patent Cooperation Treaty (PCT) under 35 U.S.C. 371 or (2) are being filed as a regular national application under 35 U.S.C. 111.

Attention is directed to the notice in the *Official Gazette* at 1070 O.G. 11 titled "Unity of Invention Practice in International Applications and National Phase Applications Entered Under 35 U.S.C. 371" wherein at item eight it is stated

> "(8) Applicants should clearly indicate on all application papers filed for entry under 35 U.S.C. 371 and 37 CFR 1.61 that the filing is being made under 35 U.S.C. 371. Otherwise, the application papers will be treated as having been filed under 35 U.S.C. 111."

To clearly indicate an international application is being filed under 35 U.S.C. 371 the applicant should use the "Transmittal Letter for United States Designated Office" (Form PTO–1390) as the transmittal letter.

Alternatively, one of the following indications may be used:

> 1) the applicant shall clearly state in the transmittal or cover letter that he or she is filing under 35 U.S.C. 371 or entering the national stage under the PCT; or
>
> 2) the applicant clearly identifies in the oath or declaration the specification to which it is directed by referring to a particular international application by PCT Serial Number and International Filing Date and that he or she is executing the declaration as, and seeking a U.S. Patent as, the inventor of the invention described in the identified international application.

Applicants are cautioned that the identification of the international application, in the oath or declaration or otherwise, as a prior filed application for priority purposes is *not* considered to be an indication of an intention to file under 35 U.S.C. 371.

If there are any conflicting instructions as to which section of the statute (371 or 111) is intended the application will be accepted under 35 U.S.C. 111. It is strongly recommended that applicant use the Form PTO–1390 in all cases where a filing under 35 U.S.C. 371 is intended.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Mar. 16, 1987.

[1077 OG 13]

(196) **Patent Cooperation Treaty: Implementing Legislation and Withdrawal of the Reservation to Chapter II.**

On Oct. 9, 1986, the U.S. Senate gave its advice and consent to withdrawal by the United States of its declaration not to be bound by chapter II of the Patent Cooperation Treaty (PCT). Public Law 99–616, that amends title 35, United States Code, to implement U.S. adherence to PCT chapter II was enacted on Nov. 6, 1986.

On Apr. 1, 1987, the President notified the Director General of the World Intellectual Property Organization of the withdrawal of the declaration by the United States. As the withdrawal takes effect three months after the date of notification, the United States will be bound by the provisions of PCT chapter II on July 1, 1987.

A notice of proposed rulemaking concerning PCT chapter II was published in the *Federal Register* on Mar. 4, 1987 (52 Fed. Reg. 6696) and was reprinted in the *Official Gazette* on Mar. 17, 1987, (1076 OG 29). The text of the President's notification and of Public Law 99–616 are reprinted below.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Apr. 13, 1987.

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NOTIFICATION

RONALD REAGAN

PRESIDENT OF THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETING:

CONSIDERING THAT:

The Patent Cooperation Treaty, with Regulations, done at Washington June 19, 1970, was signed by the United States on that date and ratified by the United States on November 27, 1973, subject to three declarations, in pursuance of the advice and consent of the Senate;

The United States deposited its instrument of ratification with the Director General of the World Intellectual Property Organization on November 26, 1975, and the Treaty entered into force for the United States on January 24, 1978;

At the request of the President, the Senate of the United States of America by its resolution of October 9, 1986, two-thirds of the Senators present concurring therein, gave its advice and consent to withdraw one of the declarations made when the United States deposited its instrument of ratification, to wit, under Article 64(1)(a), the United States would not be bound by the provisions of Chapter II of the Treaty;

NOW, THEREFORE, I, Ronald Reagan, President of the United States of America, hereby give notice and confirm the withdrawal of the declaration by the United States regarding Chapter II of the said Treaty.

IN TESTIMONY WHEREOF, I have signed this instrument withdrawing the said declaration and caused the seal of the United States of America to be affixed.

DONE at the city of Washington this twenty-seventh day of March in the year of our Lord one thousand nine hundred eighty-seven and of the Independence of the United States of America the two hundred eleventh.

By the President: Ronald Reagan

George P. Shultz
Secretary of State

Public Law 99–616
99th Congress

An Act

To amend the patent laws implementing the Patent Cooperation Treaty.

Nov. 6, 1986

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Act to authorize
the United States to participate in chapter II of the Patent Cooperation Treaty".

[S.1230]
35 USC 351 note.

28 UST 7645.

SEC. 2. (a) Section 351(a) of title 35, United States Code, is amended by striking out ", excluding chapter II thereof".

(b) Section 351(b) of title 35, United States Code, is amended by striking out "excluding part C thereof".

(c) Section 351(g) of title 35, United States Code, is amended by—

(1) striking out "term" and inserting in lieu thereof "terms";

(2) inserting "and 'International Preliminary Examining Authority' " after "Authority"; and

(3) striking out "means" and inserting in lieu thereof "mean".

(d) Section 361(d) of title 35, United States Code, is amended to read as follows:

"(d) The international fee, and the transmittal and search fees prescribed under section 376(a) of this part, shall either be paid on filing of an international application or within such later time as may be fixed by the Commissioner.".

SEC. 3. The item relating to section 362 in the analysis for chapter 36 of title 35, United States Code, is amended to read as follows:

"362. International Searching Authority and International Preliminary Examining Authority.".

SEC. 4. Section 362 of title 35, United States Code, is amended to read as follows:

"§362. International Searching Authority and International Preliminary Examining Authority

"(a) The Patent and Trademark Office may act as an International Searching Authority and International Preliminary Examining Authority with respect to international applications in accordance with the terms and conditions of an agreement which may be concluded with the International Bureau, and may discharge all duties required of such Authorities, including the collection of handling fees and their transmittal to the International Bureau.

"(b) The handling fee, preliminary examination fee, and any additional fees due for international preliminary examination shall be paid within such time as may be fixed by the Commissioner.".

SEC. 5. Section 364(a) of title 35, United States Code, is amended by—

(a) striking out "or", first occurrence and inserting in lieu thereof ",";

(b) inserting "International Preliminary Examining Authority" after "Authority, or"; and

(c) striking out "both".

SEC. 6 Section 368(c) of title 35, United States Code, is amended by—

(a) striking out the second occurrence of "or" and inserting in lieu thereof ",", and

(b) striking out "both" and inserting in lieu thereof "International Preliminary Examining Authority".

SEC. 7. (a) Section 371(a) of title 35, United States Code, is amended to read as follows:

"(a) Receipt from the International Bureau of copies of international applications with any amendments to the claims, international search reports, and international preliminary examination reports including any annexes thereto may be required in the case of international applications designating or electing the United States."

(b) Section 371(b) of title 35, United States Code, is amended to read as follows:

"(b) Subject to subsection (f) of this section, the national stage shall commence with the expiration of the applicable time limit under article 22 (1) or (2), or under article 39(1)(a) of the treaty".

(c) Section 371(c)(4) of title 35, United States Code, is amended by striking the "." and inserting in lieu thereof ";".

(d) Section 371(c) of title 35, United States Code, is amended by adding at the end thereof the following new paragraph (5):

"(5) a translation into the English language of any annexes to the international preliminary examination report, if such annexes were made in another language.".

(e) Section 371(d) of title 35, United States Code, is amended by adding at the end thereof the following sentence: "The requirement of subsection (c)(5) shall be complied with at such time as may be fixed by the Commissioner and failure to do so shall be regarded as cancellation of the amendments made under article 34(2)(b) of the treaty"

(f) Section 371(e) of title 35, United States Code, is amended by inserting "or article 41" after "28"

SEC. 8. (a) Section 376(a) of title 35, United States Code, is amended by—

(1) inserting "and the handling fee" after the first occurrence of "fee";

(2) striking "amount is" and inserting in lieu thereof "amounts are",

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(3) redesignating paragraph (5) as paragraph (6); and
(4) inserting the following new paragraph (5):
"(5) A preliminary examination fee and any additional fees (see section 362(b))."
(b) Section 376(b) of title 35, United States Code, is amended by—
(1) inserting "and the handling fee" after the first occurrence of "fee' in the first sentence; and
(2) inserting "the preliminary examination fee and any additional fees," after "fee," in the third sentence.

Effective date.

35 USC note.
28 UST 7645

SEC. 9. Sections 2 through 8 of this Act shall come into force on the same day as the effective date of entry into force of chapter II of the Patent Cooperation Treaty with respect to the United States, by virtue of the withdrawal of the declaration under article 64(1)(a) of the Patent Cooperation Treaty. It shall apply to all international applications pending before or after its effective date.

Approved Nov. 6, 1986.

LEGISLATIVE HISTORY—S. 1230:

SENATE REPORTS: No. 99–275 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 132 (1986):
Oct. 16, considered and passed Senate.
Oct. 17, considered and passed House.

[1078 OG 10–13]

(197) **Implementation of Chapter II of the Patent Cooperation Treaty**

This notice is intended to be a summary of various notices published to implement Chapter II of the Patent Cooperation Treaty (PCT) on July 1, 1987.

1. *Withdrawal of reservation and implementing legislation.*

A copy of the withdrawal of the reservation as to Chapter II of the PCT under PCT Article 64(6)(b) and a copy of Public Law 99–616 implementing Chapter II of the PCT were published in the Official Gazette of May 12, 1987 at 1078 O.G. 10–13.

The proposed rule change relating to the implementation of Chapter II of the PCT was published on Mar. 4, 1987 in the Federal Register at 52 F.R. 6696–6707 and on Mar. 17, 1987 in the Official Gazette at 1076 O.G. 29–40. The final rules were published on May 28, 1987 in the Federal Register 52 F.R. 20038–20052 and on June 16, 1987 in the Official Gazette at 1079 O.G. 32.

A listing of all current member countries of the PCT was published on Mar. 3, 1987 at 1076 O.G. 3. After July 1, 1987 only Denmark, Norway, Liechtenstein, Switzerland and the Republic of Korea (South Korea) retain reservations as to Chapter II of the PCT.

A listing of the level of PCT fees effective July 1, 1987, both because of rulemaking and a change in the exchange rate was published on June 23, 1987 in the Official Gazette at 1079 O.G. 50.

A notice clarifying the requirements for entering the national stage in the United States under 35 U.S.C. 371 was published on Apr. 14, 1987 at 1077 O.G. 13.

2. *International Preliminary Examining Authorities*

The United States has informed the Director General of the World Intellectual Property Organization (WIPO) that the United States Patent and Trademark Office (USPTO) will serve as an International Preliminary Examining Authority for any international application filed in the United States Receiving Office and for any international application for which the USPTO has served as the International Searching Authority.

Applicants who have filed their international applications in the USPTO as a Receiving Office may choose to have the European Patent Office (EPO) serve as their International Preliminary Examining Authority *if* (1) the EPO has served as the International Searching Authority for the international application and (2) the demand filed with the EPO is one of the first 500 demands filed by applicants who have filed their international applications in the United States Receiving Office in one of the 3 years beginning July 1, 1987.

The attention of applicants desiring to use the EPO as an International Preliminary Examining Authority is also directed to the notice titled "Information for PCT applicants concerning the procedure before the EPO as an International Preliminary Examining Authority under Chapter II of the PCT" published in the Official Journal of the European Patent Office in volume 12/1986 at pages 441–445.

A copy of the "Memorandum of Understanding" to monitor the number of demands filed in the EPO by U.S. applicants between the USPTO and EPO appears below.

DONALD J. QUIGG,
June 11, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks United States Patent and Trademark Office.*

Memorandum of Understanding

Procedures for monitoring and processing demands submitted to the European Patent Office by U.S. applicants who filed their international applications with the United States Receiving Office.

Purpose

The purpose of this memorandum is to set forth the procedures to be used to monitor the number of demands for international preliminary examination filed by U.S. applicants in the European Patent Office (EPO) in respect of international applications filed with the United States Receiving Office (hereinafter referred to as "demands filed in the EPO by U.S. applicants"). Such monitoring is important in view of the limit of 500 international preliminary examination reports which the EPO has agreed to establish during each of the first three years that PCT Chapter II is in effect as to the United States of America. The memorandum also sets forth the processing procedures for any demands filed in excess of the agreed to-amount.

Monitoring of Number of Demands

It is essential that U.S. applicants be informed as to the number of demands which have already been filed in the EPO by U.S. applicants, especially where the number of demands filed in the EPO is approaching 500.

In order to provide such numerical information to the U.S. applicants, the EPO will provide to the USPTO, each month during the first three years by telex, the cumulative number of demands filed in the EPO by U.S. applicants during that particular year. The USPTO will then publish a notice which indicates the number of demands filed in the EPO by U.S. applicants as of a particular date, in its Official Gazette. The number of demands filed, based upon the latest known information, will also be supplied by telephone or telex to interested persons by both the EPO and USPTO.

Processing of Demands in Excess of 500

Since the EPO will only accept 500 demands a year from U.S. applicants, the USPTO will accept any demands beyond the 500 limit filed in the EPO by U.S. applicants.

Upon receipt by the EPO of the 501st and subsequent demands from a U.S. applicant, the EPO will promptly notify the applicant that it is not competent under PCT Rule 59.1 to receive the demand. The EPO will also immediately telex or telephone the USPTO and inform it of the international application serial number so that the USPTO may make immediate contact with the applicant.

The EPO will refund any fees paid by the applicant to the EPO and indicate that only the USPTO is competent to receive the demand and establish the international preliminary examination report, and that the demand is being forwarded to the USPTO. The EPO will indicate the date of receipt of the demand on the demand and promptly forward it to the USPTO for further processing. The EPO will be considered to be the agent of the USPTO for purposes of receiving and dating demands. The USPTO will correspond with the applicant concerning the demand and require the payment of fees to the USPTO under PCT Rules 57.4 and 58.2.

For purposes of this procedure, the contact person in the USPTO is Louis O. Maassel (telephone 703–557–3070) and the contact person in the EPO is Mr. Colin Philpott (telephone 2399–2479) for substantive and organizational matters, or Mrs. M. Houyez-Stevens (telephone 2399–2423) for numerical information.

PAUL BRAENDLI
President,
European Patent Office.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks United States Patent and Trademark Office.

[1080 OG 2]

(198) **Patent Cooperation Treaty (PCT) Update**

Number of demands received by the IPEA/EP from US applicants and Guidelines for use of the European Patent Office as International Preliminary Examining Authority.

Number of demands for International Preliminary Examination filed by US applicants with the European Patent Office as International Preliminary Examining Authority (IPEA/EP) as of April 29, 1988

As of April 29, 1988, the European Patent Office acting as International Preliminary Examining Authority (IPEA/EP) had received 257 demands for International Preliminary Examination from US applicants who filed their international applications with the United States Receiving Office.

Guidelines for use of the European Patent Office as International Preliminary Examining Authority

The European Patent Office (EPO) has informed the United States Patent and Trademark Office of a number of problems which have arisen with demands originating from US applicants. These problems can cause serious delays in the handling of demands and, in some cases, may result in a loss of rights or in responses being disregarded.

In particular, attention is drawn to the following points:

1. When a demand for International Preliminary Examination has been properly filed after the expiration of 19 months from the earliest priority date (or filing date when no priority is claimed), it is nevertheless validly submitted. However, the consequence of the *late filing* of the demand is that the applicant has to start the regional/national phase under Article 22 of the Treaty before the expiration of 20 months from the earliest priority date and *will not benefit* from the extension to 30 months from the earliest priority date for starting the regional/national phase under Article 39.
2. A power of attorney when needed — because of a change in the appointment of an agent or common representative under PCT Rule 90.3 — must be filed with the *International Bureau* or with the *Receiving Office.*
   However, it is recommended to file a photocopy thereof with the EPO in Munich for Information.
3. Reply to the first/second opinion (Form PCT/IPEA/408):
   (a) A written reply must contain an *original signature* (i.e. not a photocopy) by an authorized person (PCT Rule 92.1).
   (b) A reply sent by facsimile/telex/telegram must be confirmed in writing *within 14 days* from the date of its receipt; otherwise, it shall be considered not to have been submitted (PCT Rule 92.4(a)).
   (c) A reply filed outside the time limit set may be disregarded.
   Computation of the time limit is effected according to PCT Rule 80.
4. When using facsimile or telex as a means of correspondence, the communication should contain the complete appropriate number (i.e. for the facsimile: State, place, facsimile number) to facilitate a possible reply from the EPO.
5. Withdrawal of the demand for international preliminary examination or the election of any State under PCT Article 37 and Rule 75.1 must be effected by signed notice of the applicant to the *International Bureau.*
   However, it is recommended to file a photocopy thereof with the EPO in Munich for information.
6. Any withdrawal of the international application under PCT Rule 32.1 must be accomplished by signed notice of the applicant to the *International Bureau or Receiving Office,* not to the EPO in Munich.
   However, it is recommended to file a photocopy thereof with the EPO in Munich for information.
7. A notice providing general information for PCT applicants concerning the procedure before the EPO as an IPEA under PCT Chapter II can be found in the Journal EPO No. 12/1986, pages 441 to 445.

RENE D. TEGTMEYER,
May 12, 1988 *Assistant Commissioner for Patents.*

[1091 OG 2-3]

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(199) **Patent Cooperation Treaty (PCT) Update**

Translation of the International Preliminary Examination Report (IPER) into Russian no longer required, Withdrawal by Japan of the reservation concerning filing a translation of the international application by 20 months and Number of Demands received by the IPEA/EP from U.S. applicants.

Translation of the IPER into Russian no longer required

The following information was released by the World Intellectual Property Organization (WIPO) on July 17, 1987.

Pursuant to PCT Rule 72.1 the USSR State Committee for Inventions and Discoveries has informed the International Bureau of a change in the languages into which it requires a translation of the International Preliminary Examination Report (IPER) by the International Bureau.

> As from July 8, 1987, a translation of the IPER into Russian will no longer be required if the IPER has been established in English . . . .

Consequently, as of July 8, 1987, the payment of a multiple of the handling fee under PCT Rule 57.2(a) for a translation into Russian is no longer required if the Soviet Union is elected in demand for International Preliminary Examination filed in English. Nor will the supplement to the handling fee under PCT Rules 57.1(b) and 57.2(b) apply if the Soviet Union is elected in a later election under PCT Rule 56 filed with the International Bureau on or after July 8, 1987.

Withdrawal by Japan of the reservation concerning filing a translation of the International application by 20 months from the priority date

On Sept. 16, 1987, WIPO announced that on Sept. 8, 1987, the Government of Japan notified the withdrawal of the declaration made by it under PCT Article 64(2)(a) concerning the time limit applicable under Chapter II of the PCT for the furnishing of a translation of the international application. Thus, Japan will become bound by the provisions of PCT Chapter II without any reservations on Dec. 8, 1987.

Pursuant to the said declaration, the translation of an international application into Japanese must at present be furnished to the Japanese Patent Office in all cases within 20 months from the priority date.

The withdrawal of the said declaration has the effect that, as from Dec. 8, 1987, the provisions of PCT Article 39 (1)(a) (under which a translation of the international application into Japanese must be furnished within 30 months from the priority date) will apply in respect of the Japanese Patent Office as elected Office.

This 30 month time limit applies also to international applications which have been filed before Dec. 8, 1987, provided that Japan has been elected in a demand for international preliminary examination or in a later election prior to the expiration of the 19th month from the priority date *and* that on Dec. 8, 1987, 20 months from the priority date have not expired.

Number of demands for International Preliminary Examination filed by U.S. applicants with the European Patent Office as International Preliminary Examining Authority (IPEA/EP) as of Oct. 31, 1987

Pursuant to the Memorandum of Understanding between the European Patent Office (EPO) and the USPTO concerning monitoring Demands submitted to the IPEA/EP by U.S. applicants, published at 1080 O.G. 2 on July 7, 1987, the number of Demands filed by U.S. applicants (who filed their international applications with the United States Receiving Office) with the IPEA/EP as of Oct. 31, 1987 was 70.

DONALD J. QUIGG,
Nov. 17, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1085 OG 30]

(200) **Patent Cooperation Treaty (PCT) Update**

Withdrawal of the Declaration under PCT Article 64(1)(a) by Norway and Number of Demands Received by the IPEA/EP from U.S. Applicants

Withdrawal of the Declaration under PCT Article 64(1)(a) by Norway Effective Jan. 1, 1989

The United States Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) of their receipt on Oct. 1, 1988 of the notification of the withdrawal by Norway of the declaration under PCT Article 64(1)(a) that it shall not be bound by Chapter II of the PCT. Thus, Norway will become bound by Chapter II of the PCT on Jan. 1, 1989.

The withdrawal of the said declaration has the effect that, on Jan. 1, 1989:

(a) Norway may be elected in demands for international preliminary examination or in later elections submitted in request of international applications in which Norway is a designated State;
(b) nationals and residents of Norway may submit demands for international preliminary examination of international applications filed by them;
(c) although demands or later elections concerning Norway may be submitted only on or after Jan. 1, 1989, they may be submitted in respect of international applications irrespective of whether such applications were or will be filed before, on or after Jan. 1, 1989.

Number of Demands for International Preliminary Examination filed by U.S. Applicants with the European Patent Office as International Preliminary Examining Authority (IPEA/EP) as of Sept. 30, 1988

As of Sept. 30, 1988 the European Patent Office acting as International Preliminary Examining Authority (IPEA/EP) had received 131 demands for International Preliminary Examination since July 1, 1988 from U.S. applicants who filed their international applications with the United States Receiving Office.

DONALD J. QUIGG,
Oct. 26, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1096 OG 34]

(201) **Patent Cooperation Treaty (PCT) Update**

Withdrawal of the Declaration under PCT Article 64(1)(a) by Denmark Effective Nov. 1, 1988

The United States Patent and Trademark Office has received notification from the World Intellectual Organization (WIPO) of their receipt on Aug. 1, 1988 of the notification of the withdrawal by Denmark of the declaration under PCT Article 64(1)(a) that it shall not be bound by Chapter II of the PCT. Thus, Denmark will become bound by Chapter II of the PCT on Nov. 1, 1988.

The withdrawal of the said declaration has the effect that, on Nov. 1, 1988:

(a) Denmark may be elected in demands for international preliminary examination or in later elections submitted in respect of international applications in which Denmark is a designated State;
(b) nationals and residents of Denmark may submit demands for international preliminary examination of international applications filed by them;
(c) although demands or later elections concerning Denmark may be submitted only on or after Nov. 1, 1988, they may be submitted in respect of international applications irrespective of whether such applications were or will be filed before, on or after Nov. 1, 1988.

DONALD J. QUIGG,
Sept. 7, 1988 *Assistant Secretary and Commissioner of Patents and Trademark.*

[1095 OG 2]

(202) **Request for Comments on the Desirability of Permitting Acceptance of Unintentionally Delayed Payment of Maintenance Fees and Revival Under 35 USC 111 of Unintentionally Abandoned Applications**

The Patent and Trademark Office has received suggestions that it would be desirable for unintentionally delayed payment of maintenance fees to be accepted and for revival of unintentionally abandoned applications to be permitted for applications abandoned for failure to submit the required fee and/or oath within the prescribed period under 35 USC 111. The purpose of this notice is to solicit public comment on draft legislation permitting acceptance of unintentionally delayed payment of maintenance fees and revival of unintentionally abandoned applications under 35 USC 111. The draft legislation follows this notice.

At the present, late payment of a maintenance fee under 35 USC 41(c)(1), and late submission of the filing fee and/or the oath under 35 USC 111 can only be accepted if the delay was unavoidable. The draft amendments provide for reinstatement of a patent to an enforceable status or revival of a patent application to a pending status in the cases of unintentional as well as unavoidable late payment of a maintenance fee and late submission of the filing fee and/or the oath respectively.

The intent of these draft amendments is to be consistent with other sections of Title 35, United States Code, which permit revival of unintentionally or unavoidably abandoned applications. Therefore, these draft amendments would permit the Commissioner to accept a late response under 35 USC 41(c)(1) and 35 USC 111 if the delay in submitting the response is shown to be either unavoidable or unintentional.

Dates: Comments and suggestions should be received by July 1, 1988.

Addresses: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 to the attention of Jeffrey V. Nase, Petitions Examiner, Crystal Plaza 3-11A09. For further information, contact Jeffrey V. Nase at telephone number (703) 557-4282.

DONALD J. QUIGG,
Apr. 1, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

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Proposed amendments to sections 41(c)(1) and 111 of Title 35, United States Code (new language is italic).

(1) Amend 35 USC 41 (c)(1) to read as follows:

(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section *filed* after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable *or unintentional*. The Commissioner may require the payment of *surcharges in different amounts as a condition of accepting an unavoidably or unintentionally delayed* payment of any maintenance fee after the six-month grace period. *The Commissioner may not accept an unintentionally delayed payment of a maintenance fee filed later than six months after the six-month grace period.* If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

(2) Amend 35 USC 111 to read as follows:

§111 Application for Patent

Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawings are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable *or unintentional*. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.

Purpose of the Amendments to Sections 41 and 111:

The amendments being proposed to sections 41 and 111 are intended to provide for an increased opportunity for revival of abandoned applications or reinstatement of expired patents. At the present, under the aforementioned sections of Title 35, late payment of a maintenance fee or filing fee or late filing of an oath can only be accepted by the Commissioner for reasons that the delay was unavoidable while other sections of Title 35 permit revival of applications for unavoidable as well as unintentional reasons. Some members of the public have pointed out that there is no sound policy reason for the inconsistency in the discretion that the Commissioner may exercise in reviving abandoned applications or accepting late payment of a fee in appropriate circumstances. The intent of these draft amendments is to respond to this criticism by providing consistency between the sections of Title 35 regarding the revival of abandoned applications and the reinstatement of expired patents. These draft amendments achieve their objectives by providing for reinstatement of expired patents under 35 USC 41 (c)(1) and revival of abandoned applications under 35 USC 111 for unintentional reasons. By making the reasons regarding revival of abandoned applications and reinstatement of expired patents more consistent throughout Title 35, these draft amendments will provide an increased opportunity for, and make revival of, abandoned applications and reinstatement of expired patents less burdensome and confusing to the public.

Section Analysis:

Section (1) of this bill amends subsection 41(c)(1) of Title 35, United States Code, to give the Commissioner

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the authority to accept payment of any maintenance fee after the six-month grace period if the delay in payment was unintentional and the payment was made not later than six months after the end of the six-month grace period. It is intended that the Commissioner will issue regulations establishing guidelines for acceptance of late payment of the maintenance fee on the basis of unintentional delay.

The Commissioner would establish surcharges as a precondition to acceptance of a late payment of a maintenance fee. The surcharge established for acceptance of a late payment of a maintenance fee based on unintentional delay would be substantially higher than the surcharge established for acceptance of a late payment of a maintenance fee based on unavoidable delay.

Under this section, a late payment of a maintenance fee would not be accepted where the failure to pay the maintenance fee was intentional as opposed to being unintentional or unavoidable. This subsection would permit the Commissioner to have more discretion than present law to accept late payment of the maintenance fee in appropriate circumstances. The intervening rights provided in subsection 41(c)(2) of Title 35, United States Code, would protect the rights of any person or their successors in business who made, purchased or used anything protected by the patent after the six-month grace period but prior to the acceptance of the maintenance fee based on unintentional delay.

Section (2) of this bill would amend section 111 of Title 35, United States Code, to authorize the Commissioner to revive applications unintentionally abandoned under section 111 in the same manner as the Commissioner presently revives applications unintentionally abandoned under 35 USC 41(a)7. It is intended that the fees for filing a petition for the revival of an unavoidably or unintentionally abandoned application pursuant to section 111 be the same as the fees established by the Commissioner for filing a petition for the revival of unintentionally or unavoidably abandoned application pursuant to subsection 41(a)7 of Title 35, United States Code. This amendment would permit the Commissioner to have more discretion than present law to revive applications abandoned pursuant to section 111 in appropriate circumstances.

[1089 OG 55]

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(203) **Requests for Comments on the Desirability of Permitting More Participation by Non-Patent Owner Requesters During Reexamination**

The Patent and Trademark Office has received indications and suggestions that reexamination requesters who are not the patent owner be permitted to participate more fully during reexamination proceedings than is now permitted under the present statute (35 USC 302-307) and rules (37 CFR 1.510-1.570). The purpose of this notice is to solicit public comment on draft legislation permitting more participation by non-patent owner requesters during reexamination proceedings. The draft legislation follows this notice.

The draft amendments to the reexamination statute permit increased requester participation throughout the reexamination proceeding including appeal to the Court of Appeals for the Federal Circuit and permit rejection of patent claims in reexamination for lack of compliance of the claims or the specification of the patent with the requirements of 35 USC 112. The amendments being proposed to sections 303, 305, and 306 are intended to increase the value of the reexamination proceeding to the public, and particularly the person requesting reexamination of another's patent, by providing well-defined, but limited, opportunities for the requester to participate in the examination process after it has begun. At present, the person requesting reexamination, if not the patent owner, is not able to participate in, or comment upon, the examination process after it has begun. The intent of these draft amendments is to provide well-defined, but limited, opportunities for the reexamination requester to comment upon, and participate in, each stage of the examination after it has begun, but to do so in such a manner that the requirement of section 305 of this title that reexamination proceedings "be conducted with special dispatch within the Office" is met.

Presently, issues under 35 USC 112 may only be raised during reexamination with respect to new claims or the amendatory subject matter of original claims. The draft amendment provides for the raising of issues under 35 USC 112 with respect to any claim – new, amended, or original.

Although not specifically provided for in the draft amendments to the statute, this increased requester participation contemplates the Commissioner, under appropriate guidelines, permitting the requester to attend, as an observer, interviews between the examiner and the patent owner. For example, the requester might not be permitted to participate in any manner. The requester might, however, be permitted to file into the reexamination record a summary of the interview or comments on the patent owners or examiner's summary.

The amendment provides a person requesting reexamination, who is not the patent owner, with the opportunity, within the times and conditions established by the Commissioner, to effectively respond to the positions taken by the patent owner during the reexamination proceeding. The amendment provides that a fee or fees for increased requester participation may be established. This could be done, for example, by an increase in the initial reexamination filing fee for all reexaminations, by requiring an individual fee for the right to further participation for each paper filed, or by a combination of such fees.

The amendment also provides the requester with the opportunity, under appropriate conditions, to appeal decisions which are favorable to patentability to the Board of Patent Appeals and Interferences and to the United States Court of Appeals for the Federal Circuit. The amendment is intended to assist the public, including patent owners and alleged or potential infringers, and the Federal courts, by providing a more expeditious and less costly alternative to patent litigation to determine questions of patentability based on patents and printed publications. These amendments will provide the public and the Federal courts with the opportunity in appropriate cases, to obtain a decision as to the patentability of subject matter which may be given preclusive effect. These amendments therefore will make patent litigation less costly and reexamination more attractive and effective.

Dates: Comments and suggestions should be received by March 1, 1988. A public hearing will be held on March 8, 1988, beginning at 9:30 a.m. in Room 11C10 on the 11th floor of Building 3, located at Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va. Requests to make oral presentations at the hearing should be received on or before March 1, 1988.

Addresses: Address written comments and requests to make oral presentation to the Commissioner of Patent and Trademarks, Washington, D.C 20231 to the attention of R. Franklin Burnett, Crystal Plaza 3-11A13. For further information contact R. Franklin Burnett by telephone at (703) 557-3054.

DONALD J. QUIGG,
Nov. 17, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Proposed Amendments to Sections 303, 305, and 306 of title 35, United States Code (New language is italic)

(1) Amend 35 U.S.C. §303(c) to read as follows:

(c) *The Commissioner may refund a portion of the reexamination fee required under section 302 of this title upon a final determination that no substantial new question of patentability has been raised unless an appeal under the provisions of section 306 of this title is filed.*

(2) Amend 35 U.S.C. §305 to read as follows:

§305 Conduct of reexamination proceedings

After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under the provisions of sections 132 and 133 of this title. *The examination will include issues under section 112 of this title relating to the patent undergoing reexamination and to proposed amendments to the patent. The person requesting reexamination may file a single set of comments on each notice of examination pursuant to section 132 of this title or the patent owner's response to each notice of examination pursuant to section 132 of this title, within such time and conditions, and upon payment of such fee or fees, as the Commissioner shall establish. The Commissioner may establish the fee or fees as a part of the reexamination fee under section 302 of this title or require the fee or fees to be paid at another time by the requester.* In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Patent Appeals and Interferences will be conducted with special dispatch within the Office.

(3) Amend 35 U.S.C. §306 to read as follows:

306 Appeal

The patent owner involved in a reexamination proceeding under this chapter may appeal under the provisions of section 134 of this title, and under the provisions of sections 141 to *144* of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent. *Any person requesting reexamination, who is not the patent owner, may appeal to the Board of Patent Appeals and Interferences within such time and conditions and upon the payment of such fee as the Commissioner shall establish, with respect to any decision favorable to patentability or a final order denying reexamination because no substantial new question of patentability has been raised. Any person requesting reexamination, who is not the patent owner, may appeal, under the provisions of sections 141 to 144 of this title, with respect to any decision of the Board of Patent Appeals and Interferences favorable to patentability, or any decision of the Board of Patent Appeals and Interferences upholding a final order denying reexamination because no substantial new question of patentability has been raised.*

Purpose of the Amendments To Sections 303, 305, and 306

The amendments being proposed to sections 303, 305, and 306 are intended to increase the value of the reexamination proceeding to the public, and particularly to the person requesting reexamination of another's patent, by providing well-defined, but limited, opportunities to participate in the examination process after it has begun. At present, the person requesting reexamination, if not the patent owner, is not able to participate in, or comment upon, the examination process after it has begun. Some members of the public view this total lack of the ability to participate in, or comment upon, the examination process after it has begun as a serious drawback to the effectiveness of reexamination. The intent of these amendments is to respond to this criticism by providing well-defined, but limited, opportunities for the reexamination requester to comment upon, and participate in, each stage of the examination after it has begun, but to do so in such a manner that the requirement of section 305 of this title that reexamination proceedings "be conducted with special dispatch within the Office" is met. This amendment achieves its objectives by providing a person requesting reexamination, who is not the patent owner, with the opportunity, within the times and conditions established by the Commissioner, to effectively respond to the positions taken by the patent owner during the reexamination proceeding. Such a person is also provided with the opportunity, under appropriate conditions, to appeal decisions which are favorable to patentability to the Board of Patent Appeals and Interferences and to the United States Court of Appeals for the Federal Circuit. This amendment is intended to assist the public, including patent owners and alleged or potential infringers, and the Federal courts, by providing a more expeditious and less costly alternative to patent litigation to determine questions of patentability based on patents and printed publications. These amendments will provide the public and the Federal courts with the opportunity in appropriate cases, to obtain a decision as to the patentability of subject matter which can be given preclusive effect. These amendments therefore will make patent litigation less costly and reexamination more attractive and effective.

Section Analysis

Section (1) of this bill amends paragraph (c) of section 303 of title 35 to authorize the Commissioner to refund a portion of the reexamination fee required under section 302 of title 35 upon a final determination that no substantial new question of patentability has been raised unless an appeal under the provisions of the amendment to §306 is filed. If an appeal to the Board of Patent Appeals and Interferences is filed, no refund is proper since the additional expense to the Office makes a refund inappropriate. Further, the refusal to refund a portion of the reexamination fee when an appeal is filed will discourage frivolous appeals.

Section (2) of this bill amends section 305 of title 35, United States Code, by adding to the section a new sentence including examination under section 112 of this title of all claims in a reexamination including those in the patent and those in proposed amendments to the patent. This will allow issues under section 112 with regard to the patent claims to be resolved in the reexamination along with such issues as are now being considered as to new claims or amendments to the claims of the patent under reexamination. It is not intended to extend reexamination to other issues such as whether the invention was on public use or sale or whether there was inequitable conduct in obtaining the patent. Such issues may be decided in the courts in view of the evidence presented after discovery and testimony. A new sentence is also added to the section permitting a person requesting reexamination to file either comments on each notice of examination pursuant to section 132 of this title or a reply to the patent owner's response to each notice of examination pursuant to section 132 of this title, within such time and conditions, and upon payment of such fee or fees, as the Commissioner shall establish. This amendment would permit the person requesting reexamination to have one opportunity to comment upon each notice of examination pursuant to section 132 of this title. If the person requesting reexamination is the patent owner, the patent owner's comments under this section would be expected to be incorporated into the patent owner's response to each notice of examination and the Commissioner could so require. If the person requesting reexamination is not the patent owner, this amendment would permit the requester to file a single set of comments on each notice of examination under section 132, i.e., each of the patent examiner's official actions, or the patent

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owner's response to each of the examiner's actions. Under this amendment, although a requester could file a set of comments on an official action by the examiner without waiting for the patent owner's response, it is not anticipated that most requesters will do so. A requester would file a set of comments on the examiner's official action, however, in situations where no response is expected by the patent owner.

The amendment authorizes the Commissioner to establish appropriate times and conditions for the filing of the comments or reply such that the requirement of this section that reexamination proceedings "be conducted with special dispatch within the Office" will be met. The Commissioner may limit the content and/or length of the comments or reply, if appropriate, to ensure that the procedure is orderly and conducted with special dispatch. The Commissioner may also, in the Commissioner's discretion, permit the requester to reply to any petitions or other submissions of the patent owner which the Commissioner may authorize to be filed during the reexamination proceeding. It is contemplated that the Commissioner will set strict times for the filing of the comments or reply in order to ensure that the reexamination proceedings are conducted expeditiously. Further, the Commissioner may, in the Commissioner's discretion, return any unauthorized or untimely comments or replies. The requester may be permitted to be present during interviews with the patent owner, subject to guidelines established by the Commissioner.

The amendment authorizes the Commissioner to establish a fee or fees for the increased requester participation. The Commissioner could do so by establishing the fee or fees as part of the reexamination fee under section 302 of this title or requiring the fee or fees to be paid at another time, e.g., upon filing the first or each comment or reply.

Section (3) of this bill amends section 306 of title 35, United States Code, by providing for an appeal to the Court of Appeals for the Federal Circuit by a patent owner from a decision adverse to patentability rather than providing alternative routes of review under both sections 141 and 145. Section (3) also amends section 306 to provide that any person requesting reexamination, who is not the patent owner, may appeal to the Board of Patent Appeals and Interferences within such time and conditions and upon the payment of such fee as the Commissioner shall establish, with respect to any decision favorable to patentability or a final order denying reexamination because no substantial new question of patentability has been raised. Section (3) also amends section 306 to provide that any person requesting reexamination, who is not the patent owner, may appeal to the Court of Appeals for the Federal Circuit with respect to any decision of the Board of Patent Appeals and Interferences favorable to patentability, or any decision of the Board of Patent Appeals and Interferences upholding a final order denying reexamination because no substantial new question of patentability has been raised.

The amendments to section 306 to require that appeals by either the patent owner or the requester, who is not the patent owner, be directed to the Court of Appeals for the Federal Circuit are designed to eliminate the limited de novo consideration in the District Court which does not appear necessary and to prevent the anomalous situation which would result if the patent owner and the requester, who is not the patent owner, could appeal or seek review in different courts. These amendments will not adversely affect the rights of either the patent owner or the requester, who is not the patent owner, since reexamination proceedings involve decisions based on patents and printed publications or admissions and previous determinations on any grounds by the courts or the Patent and Trademark Office and are suited for consideration by the Court based on the record before the Patent and Trademark Office.

The amendment to section 306 is intended to permit an appeal to the Board of Patent Appeals and Interferences of a final order denying reexamination because no substantial new question of patentability has been raised only in those circumstances where the request is found to contain no substantial new question of patentability and an order for reexamination is denied. If the reexamination request is granted on any basis, this amendment would not permit an appeal on other grounds upon which reexamination was not ordered. In such circumstances where reexamination has been ordered, any appeal would be on the basis that the decision of the examiner was favorable to patentability and not on the basis of an order denying reexamination. This amendment to section 306, provides a route of appeal to the Court of Appeals for the Federal Circuit for any person requesting reexamination, who is not the patent owner, of any decision of the Board of Patent Appeals and Interferences upholding a final order denying reexamination because no substantial new question of patentability has been raised. If reexamination of the patent is ordered as a result of the request for any reason, this route of appeal does not exist. The amendment does not provide for participation by the patent owner in any appeal of a final order denying reexamination because no substantial new question of patentability has been raised since the patent owner will fully participate if reexamination is ordered as a result of the appeal. In this respect, the amendment is consistent with the reexamination procedures in effect prior to the amendment which do not permit participation by the patent owner prior to the determination on the request for reexamination. The amendment also contemplates that precluding the patent owner from participating in any appeal of a final order denying reexamination will be less expensive to the patent owner and will simplify and expedite the appeal. The patent owner will not lose any rights by not having to participate until reexamination is ordered.

[1086 TMOG 445-448]

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(204) **Helpful Hints**

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1. APPEALS

a. *Appeal Fees in Patent Cases*

Appeal fees deficiencies are frequent, causing necesssity for extension fees to cover the additional time consumed in making up the appeal fee deficiency. Ensuring proper payment at time of filing the appeal will save money and time.

b. *Notices of Appeal to the United States Court of Appeals for the Federal Circuit*

Notices of appeal to the United States Court of Appeals for the Federal Circuit should be sent to the Solicitor at the address below:

Solicitor
Box 8

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U.S. Patent and Trademark Office
Washington, DC 20231

Improperly addressing such communications, e.g. to the examining groups, may delay delivery to the Solicitor.

2. **APPLICATION FILES**

a. *Requests for Allowed Patent Application Files*

Applicants or attorneys requesting files from the Publishing Division, Office of Publications, should make their request at least twenty-four hours in advance to ensure file availability. Attention is especially directed to out-of-town requesters who visit the Office, anticipating same day service. Although the Office is usually able to respond promptly, unexpected inconvenience can be avoided if arrangements are made in advance.

Inquiries and requests should be directed to the Correspondence Section at (703) 557-6397 or (703) 557-6398 between the hours of 8:30 AM through 5:00 PM on weekdays.

b. *Returning Files to the File Information Unit (FIU)*

Customers are reminded that file histories obtained through the FIU are official government records which must not be removed from the confines of the Patent Search Room at any time. Such files must be returned to the File Information Unit by 7:45 pm on the same day they are obtained.

FIU personnel will continue to periodically monitor this problem. Should individual patterns of abuse be discerned, administrative sanctions up to termination of access privileges may be applied.

3. **APPLICATION PAPERS – IDENTIFICATION**

a. *Disclosure Statements*

If a disclosure statement is to be filed before an Office action, file it when the application is filed. Some Group Art Units have greatly reduced the pendency to first action. Hence, many examiners are taking up new applications before an information statement is matched with the application.

b. *Docket Numbers – Placement and Length*

If use of a docket number is desired, the docket number should be placed in the upper right corner of the transmittal letter accompanying newly filed patent applications. This will eliminate a time consuming search of the application papers for the docket number or the likelihood of it being overlooked during processing.

The Patent Application Location and Monitoring (PALM) System data base allows a maximum of 12 characters for the attorney's docket number. All characters, including spaces, slashes and hyphens are counted toward the 12-character limit. Docket numbers are entered into the data base starting with the first character at the left. Any characters over 12 cannot be entered.

c. *Information to be Included for Proper Routing of Application Papers*

To improve the accuracy and speed of routing patent application-related papers, all papers must contain, at a minimum, the series code/serial number of the application. Additionally, the word "Patent" should be in the upper right hand corner and the filing date, inventor's names and title of the invention should be included on the paper.

Responses to Notices of Incomplete Application and Notices to File Missing Parts must be accompaied by a copy of the Notice form. Otherwise, the response may not be matched to the appropriate application in a timely manner.

For all papers related to *trademark* applications, the word "Trademark" and the series code/serial number should be placed in the upper right-hand corner of the document. Also, please set forth the applicant's name, filing date, law office, examining attorney, and mark.

d. *License to Foreign File*

Each newly filed patent application is routinely reviewed for security interests during preexamination processing. A code is entered into the data base to indicate the presence or absence of security interests. When no security interests are found, the filing receipt will be generated with the notation "Foreign license granted xx/xx/xx." There is no additional cost for this security screening and license notation.

e. *Papers Filed Prior to Receipt of Serial Number*

After a patent or trademark application is filed, avoid filing additional papers (other than those required by the Office) until the Filing Receipt or return post card identifying the Serial Number and Patent Examining Group Art Unit or Trademark Law Office has been received.

f. *Papers With No Particular Time Requirement*

File patent and trademark documents which have no particular time or sequence requirement with materials submitted in response to the statutory or regulatory requirements. Examples are certified copies of foreign documents to support priority in patent applications, changes of Power of Attorney, or changes in Mailing Address following first action.

g. *Residence of Applicant*

The residence of applicant should be indicated as city and state for United States residents and city and country for residents of foreign countries. The Patent Application Location and Monitoring (PALM) System data base allows a maximum of 15 characters for the city of residence. If the city name is longer than 15 characters, it will be truncated in the data base and appear in the shortened form on the filing receipt. However, the entire city name will be taken from the file and printed on any patent that issues.

Please do not call or write the Office for a corrected filing receipt should the printed city name be cut short due to the 15-character limit.

Often applicants who are residents of foreign countries indicate street address, sections of cities, provinces or other political divisions as part of their cities of residence. This leads to confusion and possible erroneous entries in the data base. Only the foreign city and country should be indicated as the applicant's residence.

h. *Response to Final Rejection In Patent Applications – Expediting Processing*

See section under Mail.

i. *Separation of Various Application Papers*

In *patent* applications, requests for extensions of time, changes of address, proposed drawing corrections, and petitions are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response." In *trademark* applications, change of address and powers of attorney are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response". Please present such items in separate papers, appropriately titled, since they are all handled by different personnel [37 CFR 1.4(c)]. However, please include a statement in the amendment/response describing the paper being filed.

j. *Supplemental or Preliminary Amendments*

Where a supplemental or preliminary amendment is found necessary in patent or trademark applications, please telephone the examiner and request that the examiner delay action for a certain time in order to avoid crossing in the mails of the amendment and the Office action.

k. *Transmittal Letters for Deposit Account Charges*

When statutory fees are to be charged to a deposit account, the processing of the application can be facilitated by submitting the applicant's transmittal letter or other correspondence specifying the account to be charged in triplicate. Submission of these documents in triplicate will eliminate the need for the Mail Room to photocopy the document and thereby reduce the processing time of incoming mail.

4. **ASSIGNMENTS**

a. *Delays in Assignments for New Patent Applications*

The automated patent assignment system is dependent upon bibliographic information that is keyboarded to produce filing receipts and to create records in the PALM system. When assignments are filed before the filing receipt has been produced, their processing is delayed until the bibliographic information is keyed and verified.

b. *Ensuring Correct Printing on Trademark Registration*

To ensure the correct printing of ownership information on a Trademark Registration at issue date, provide the trademark examining attorney with the reel and frame number of the appropriate assignment document as soon as you are notified of it.

c. *Expediting Processing of Assignments*

Many individuals are submitting assignment documents and requests for assignment services, together with application prosecution papers, directly to the examiner. Often, these requests get placed in the file and are not forwarded to the assignment area for handling. Please send all assignment documents and requests through the mailroom in order that they may be properly routed to the assignment area.

Please separate requests for certified copies of assignments from requests for other services including requests for certified copies of other documents. Certification of assignment documents is not performed by the same individuals as certification of other documents.

d. *Expediting Recording*

When requesting correction or updating of a previously recorded patent or trademark assignment document, providing the reel and frame number of that document to the Assignment Branch will greatly expedite the recording process.

e. *Return Addresses*

Some assignment documents are being filed with applications for patents without a transmittal letter attached to the assignments. Therefore, no address is available for return of the original assignment document by the Assignment Branch.

A transmittal letter that contains the firm's name and address must be attached to each assignment document filed to ensure accurate return of assignment documents.

f. *Signature on Assignments*

When signing an original assignment document, BLUE ink pen should be used. When signatures are in black ink, they cannot always be identified as original signatures. In such cases the document must be returned, thus delaying the recording process.

5. **CERTIFICATES OF CORRECTION**

a. *Accurate Requests*

Many requests for "Certificate of Correction" result from a perfunctory comparison of the issued patent with the attorney's application file, without investigating whether the recitation in the issued patent is correct. In many instances, change to the PTO file wrapper has been caused by the examiner prior to printing of the patent in order to make appropriate corrections to the file.

6. **CERTIFICATION SERVICES**

a. *Expedited Service for Patent Applications-As-Filed*

If there is a need for special service, for example to meet a priority date within a short period of time, the order must be marked "RUSH" with the date/time needed and reason for the need. The order should be hand-delivered to the Office of the Director, Office of Patent and Trademark Services, CP2-7D25. Orders may also be mailed to the Commissioner of Patents and Trademarks, Washington, DC 20231, clearly marked to the attention of the Manager, Certification Branch. However, because mail orders must be initially handled by the Mail Room, requesters are cautioned that turnaround time will be several days longer than for hand-delivered orders. Every effort will be made to fill all "RUSH" orders timely, to the extent resources are available.

b. *Methods of Ordering*

Mail Orders –The address for mail orders is:

Box 10
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Hand-carried Orders –Hand-carried requests for certification service should be taken to the Public Service Window in the North Stacks of

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the Patent Search Room where they can be placed in the Certification Order Receipt Box or given to the attendant. For security reasons, the public is not permitted access to the Certification Branch itself.

c. *Processing Time*

The current goal for furnishing certified copies of applications-as-filed is 17 days from receipt in the Mail Room of the Patent and Trademark Office to mailing of the completed order by the Certification Branch. The 17 days includes 4 work days for Mail Room and Finance processing, 9 work days in the Certification Branch and 4 weekend days that accrue over the 13 work days.

The 17-day goal applies to those orders for which microfiche of applications-as-filed are available in the Certification Branch. The microfiche for a small percentage of the total orders for certified copies of applications-as-filed must be retrieved from a remote location, or be replaced due to damage or correction. The 17-day goal does not apply to these orders.

d. *PTO vs Public-Supplied Copies for Certification*

Requests for all certified copies of applications-as-filed and file wrapper/contents of pending patent and trademark applications will be filled with PTO supplied copies of original source documents. No public supplied copies will be accepted.

The public may submit copies of Registered Trademarks, Registered Trademark Files, Patented Files, and Patents for certification by the Certification Branch.

e. *Questions Frequently Asked*

Q. What does "certified" mean?
A. Authentication of copies by ribbon and seal of the PTO with the signature of an officer authorized by the Commissioner of Patents and Trademarks.
Q. What does an application consist of?
A. (1) Specification (2) Claims (3) Oath or Declaration (4) Drawings, when necessary, and (5) Filing Fee.
Q. What does a file wrapper and contents (file history) consist of?
A. The original application papers plus all correspondence between the applicant/attorney of record/assignee and the PTO.
Q. Why are certified copies of application-as-filed required?
A. Since the rights granted by a U.S. patent extend only throughout the territory of the U.S. and have no affect in a foreign county, an inventor who wishes patent protection in other countries must apply for a patent in that country by filing a certified copy of his or her U.S. application.
Q. What regulation govern the filing of a U.S. application in a foreign country?
A. There is a treaty relating to patents which involves 92 countries and is known as the Paris Convention for the Protection of Industrial Property. It provides that each country guarantees to the citizens of other countries the same patent rights that it gives to its own citizens.
Q. Can anyone request a copy of a pending application?
A. No. Pending applications are preserved in secrecy. No information or copies may be obtained without written authority of the applicant, attorney of records, or the assignee, if any. Such written consent must accompany the request for copies.
Q. Can orders for copies be placed by phone?
A. No. All orders must be in writing.
Q. May office copies of my application be sent to the PTO for certification?
A. No. We do not certify copies prepared outside the PTO.
Q. Will the PTO mail certified copies ordered directly to a foreign country?
A. No. With respect to the exportation of technical data, the PTO discontinued the practice of forwarding direct to any foreign country certified copies of U.S. applications order by residents of the United States.
Q. Are cited references in a file automatically furnished when a file wrapper and contents is requested?
A. No. Cited references are not included as papers comprising the file history. References cited are furnished only if specifically requested.
Q. Can cited references, when requested, be certified with the file wrapper and contents under one certificate?
A. No. Each reference must be certified separately.
Q. Are there instances when references are included in a file wrapper and contents?
A. Yes. If the references are submitted as attachments to a response from the applicant and if such response is entered and made a part of the file.
Q. Exclusive of applications-as-filed and file wrappers and contents of patented files, what other types of copies may be obtained from the Certification Branch?
A. The following items may be obtained:

a. Certified copies of issued U.S. patents and designs.
b. Certified copies of foreign patents.
c. Certified copies of publications from the Scientific Library.
d. Certified copies of Office letters.
e. Certified duplicate filing receipts.
f. Certified copies of an assignment and application-as-filed, under one certificate.
g. Copies of disclosure documents.
h. Copies of the following files:

- Defensive publication files.
- Reexamination files.
- Interference files.
- Tradmark Files.
- Opposition files.
- Concurrent use proceedings files.
- Statutory Invention Request
- Certified copies of assignment documents.
- Abstract of title.

f. Status Requests or Problems

For status inquiries, call the Input and Records Control Unit of the Certification Branch at 557-1587. For problem situations call the Manager of the Certification Branch, at 557-1552.

7. DRAWINGS FOR PATENT APPLICATIONS

a. *Proper Identification of Formal or Substitute Drawings*

When the Office receives formal or substitute drawings, a cover letter identifying the application by serial number should accompany them. It is extremely difficult to associate the drawings with the files when this information is missing. The application serial number should be placed on the sheet of drawing in accordance with 37 CFR 1.84(1).

According to 37 CFR 1.84(1), identifying indicia (such as the attorney's docket number, inventor's name, number of sheets, etc.) not to exceed 2¾ inches may be placed in a centered location between the side edges within three-fourths inch of the top edge. Either this marking technique on the front of the drawing or the placement of this information on the back of the drawing is acceptable. However, for identification of the serial number, the PTO prefers that it be placed on the front.

b. *Proper Identification of New Application Drawings*

During pre-examination processing, drawings are temporarily separated from the rest of the application papers. To facilitate the matching of drawings with the application, it would be helpful if the applicant's name, docket number, and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels.

c. *Submission of Copies of Drawings Rather than Originals*

For your convenience and for more effective handling of any drawing corrections which may be necessary, please DO NOT SUBMIT ORIGINAL DRAWINGS WITH PATENT APPLICATIONS. DO SUBMIT A HIGH QUALITY COPY. If the copy submitted passes the formality review and patent examination, no substitute drawings will be necessary. If corrections are necessary, they should be made to the original drawings. Either one good copy of the corrected drawings or the corrected original can then be submitted after the Notice of Allowability is mailed.

d. *Timeliness of Submission of Corrected Drawings in Allowed Cases*

When drawings need to be corrected in an allowed patent application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.

8. EXTENSIONS OF TIME IN PATENT CASES

a. *Appropriateness*

In essence, where applicants' approval is not needed to amend the claims, no extension of time is required. However, if applicants' approval is required and applicants did not file their response within two months of the Final Refjection, the appropriate extension of time must be purchased.

Also, it should be noted that extensions of time may be requested under 37 CFR 1.136(a) for extending the time required to pay for the request for an oral hearing before the Board of Patent Appeals and Interferences. [MPEP §1209(1)]. The time for a request and fee for an oral hearing is one month from the date of the Examiner's Answer or any supplemental Examiner's Answer.

Extensions of time by fee payment under 37 CFR 1.136 (a) are appropriate for filing of the Brief on Appeal in regular applications. No more than four months may be granted under 37 CFR 1.136 (a). Beyond those four months, any further request must show sufficient cause under 37 CFR 1.136 (b), and no additional extension fee is required.

An extension of time is not required in order to hold an interview with the examiner. However, after the period for response has ended, an extension is required for the purpose of filing a follow-up amendment by applicant and/or for the entry of an Examiner's Amendment requiring approval of the applicant.

Extensions of time are appropriate for the purpose of achieving continuity between parent and continuing applications. A separate paper requesting the extension of time must be filed in the *parent* application. It would be useful to file a *copy* of that request or petition with the papers constituting the filing of the continuing application.

b. *Extensions of Time Under 37 CFR 1.136(a)*

Under 35 U.S.C. 41(a) (8) and 37 CFR 1.136(a), a response filed within a statutory period but outside of the period set for response may be rendered timely if accompanied by (1) a petition for an extension of time and (2) the appropriate extension fee. Experience indicates that there have been differing opinions as to the language necessary to constitute an acceptable extension of time petition. This Helpful Hint is intended to clarify the policy of the patent and Trademark Office concerning the language required for such a petition.

An extension of time under §1.136(a) requires a petition therefor and payment of the appropriate fee. The §1.136(a) petition should explicitly request in writing an extension of time for the specific number of months needed as explained in §710.02(e) of the Manual of Patent Examining Procedure. This is the best way to avoid mistakes by the applicant or by the Patent and Trademark Office and assure orderly and efficient processing of the petition.

The following language is an example of a preferred §1.136(a) request:

Applicant petitions the Commissioner of Patent and Trademarks to extend the time for response to the Office action dated _____ for _____ month(s) from _____ to _____ .

[If paying by check:]

Submitted herewith is a check for _____ to cover the cost of the extension. (Optionally, add: Any deficiency or overpayment should be charged or

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credited to deposit account number _____ . A duplicate copy of this sheet is enclosed).

[If paying by charge to deposit account number:]

Please charge my deposit account number_____ in the amount of _____to cover the cost of the extension. Any deficiency or overpayment should be charged or credited to this deposit account.

Applicants are cautioned that, in order to be timely, a response must be accompanied by a *specific* reference to an extension of time. A general authorization under 37 CFR 1.25(b) to charge necessary fees to a deposit account will not be interpreted as a petition for an extension of time. For example, a response accompanied by the statement "Please charge any fees necessary under 37 CFR 1.17 to my deposit account" would not be acceptable, since the statement does not make *specific* reference to an extension of time.

As previously indicated, a proper §1.136(a) petition must be in writing. However, when an extension of time is necessary to make an Examiner's Amendment timely, the extension may be obtained by way of a verbal communication. The verbal communication must be transcribed as a written part of the official application file record. For example, during a telephone interview with an examiner, an attorney for the applicant, in order to render an Examiner's Amendment timely, may verbally request an extension of time under 37 CFR 1.136(a) and authorize a charge of the appropriate fee to his or her deposit account. If this verbal request and authorization are transcribed as a written part of the application file record (e.g., via the Examiner's Amendment or an Examiner Interview Summary Record, PTOL-413), the desired extension of time may be obtained. The filing date of the §1.136(a) petition and fee will be considered the date of the verbal request and authorization if this date is reflected in the written file record.

c. *Instances Not Permitted*

An extension of time under 37 CFR 1.136(a) is not permitted in following instances:

(1) Where an applicant is so notified in an Office action as, for example, in a Reissue application involving a litigated patent.
(2) Where the application is involved in an interference declared pursuant to 37 CFR 1.611. See 37 CFR 1.645 for provisions governing extensions of time in interference proceedings.
(3) In reexamination proceedings. See 37 CFR 1.550(c) for extensions of time in reexamination proceedings.
(4) In PCT international applications. Under PCT Rule 26.2, extensions are permitted for correction of PCT Article 14 defects in international applications before the Receiving Office.

d. *Insufficient Fees*

Many requests for extension of time are being filed with insufficient fees. In those instances where there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning papers to the PTO Finance Branch in order to apply these charges prior to action on the cases.

Please note that effective October 5, 1985, the extension fees in patent cases are as follows:

	Small Entity	*Non-Small Entity*
One Month Extension	$28	$56
Two Month Extension	85	170
Three Month Extension	195	390
Four Month Extension	305	610

If applicants have a deposit account, it is recommended that applicants file, in an individual application, a general authorization to charge any of the fees set forth in 37 CFR §§1.16 to 1.18 to a deposit account for the entire pendency of the application.

e. *Policy*

Where an extension of time is required to file a response in a timely manner, the response is not considered complete until the response, fee, and request or petition for an extension of time are received. The fee and request or petition must be filed before the expiration of the extended period requested. The fee cannot be paid outside the statutory six-month limit for the period of response.

f. *Requirement for Request or Petition for Extension*

Submission of the appropriate extension fee under 37 CFR 1.136(a) is to no avail unless a request for petition for extension is filed. Frequently, the request is omitted, which then requires an additional extension fee to cover the period to the date of the request. Occasionally, the application is held abandoned because the six month maximum statutory peiod has expired before detection of the omission of the request for extension. It is critical that a paper specifically requesting the extension be filed with late responses. It is also wise to use the Certificate of Mailing practice under 37 CFR 1.8 when requesting extensions.

g. *Response to Final Rejection — Avoiding Extension Fees*

In patent applications wherein a three month Shortened Statutory Period (SSP) is set for response to a Final Rejection, the response would best be filed within two months of the date of the Office Action. If filed within two months, any Advisory Action mailed after the SSP expires will reset the SSP to expire on the date of the Advisory Action for extension fee purposes, but never more than six months from the date of the Final Rejection.

h. *Supplemental Amendments*

If a timely and complete response has been filed after a *Non-Final* Office Action, an extension of time *is not required* to permit filing and/or entry of an additional amendment after expiration of the shortened statutory period.

If a timely response has been filed after a *Final* Office Action, an extension of time *is required* to permit filing and/or entry of a Notice of Appeal or filing and/or entry of an additional amendment after expiration of the shortened statutory period unless the timely-filed response placed the application in condition for allowance. Of course, if a Notice of Appeal has been filed within the shortened statutory period, the period has ceased to run.

9. INTERVIEWS WITH PATENT EXAMINERS

a. *Appropriateness*

Prior to filing, no interview is permitted; only search assistance may be given to the attorney, searcher or inventor.

Prior to first action, an interview is ordinarily granted only in continuing or substitute applications; a request for an interview is untimely and will not be granted prior to first action in all other applications.

After final rejection, an interview will not be denied merely because final Office action has been rendered. Normally, one interview after a final rejection is permitted if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal further consideration. In requesting an interview after final rejection, the intended purpose and content of the interview must be presented briefly, either orally or in writing. Interviews merely to restate arguments of record or to discuss new limitations which would require more then nominal reconsideration or new search will be denied.

After a case is sent to issue, it is technically no longer under the jurisdiction of the primary examiner (37 CFR 1.312). Requests for interviews on cases already passed to issue should be granted only with specific approval of the Group Director upon a showing in writing of extraordinary circumstances.

The ideal time for personal interviews, during which time an interview is clearly available, is the "Conference Period", which is the time between the filing of applicant's thorough first response to the examiner's first action on the merits and a concluding action by the examiner.

In reexamination proceedings, an interview with the owner is permitted after first action. Requests that reexamination requesters be permitted to participate in or attend interviews will be denied.

When an interference has been declared, all questions involved are to be determined *inter partes* and will not be discussed *ex parte*.

Following the grant of a United States Patent, an examiner must refuse to express any opinion or view as to the invalidity of the patent, except on the record in the course of examining a reissue application or a reexamination proceeding. Even in the case of search assistance on an invention, if an examiner is aware that the invention has been patented in the United States, the searcher will be referred to the prosecution file history, and the examiner will make no comment on the appropriateness of the search conducted or the references cited.

Should any examiner fail to comply with the above guidelines, the matter would best be brought to the attention of the examiner's Group Director.

Direct questions to:

Al Lawrence Smith
Director, Group 350
(703) 557-3414

b. *Prohibitions*

No interview will be conducted with an attorney who is not registered or who has been suspended or excluded from practice regarding an application unless the attorney is the applicant in the application.

Protestors are not permitted to participate in interviews in applications where the protest was filed after Dec. 8, 1981, and the examiner will not communicate in any manner with such protesters.

10. FILES

a. *Official Searches*

The PTO has had an unusually large number of official search status letters returned by the Postal Service due to insufficient/incomplete addresses. When requesting an official search for a lost patent or trademark file, please ensure that all pertinent information is completely filled out on the PTO Form 1216. In the case of an individual working for a particular firm, the firm's name should be included in block number 5 of the form along with the name of the requestor. If you have any questions in this matter please call the Chief, Support Services Branch on (703) 557-3560.

b. *Requests for Reconstruction*

To request the reconstruction of a file, submit a written request along with a notice from the PTO Official Search unit stating that the file cannot be located.

c. *Requests for Trademark Files*

To eliminate unnecessary delays when ordering Trademark files, requesters should complete all required information blocks on form PTO-1538 (Order and Charge for Trademark Files). Failure to properly complete the form is the primary reason for requests not being quickly processed. Submitting a completed form will reduce the number of requests that have to be returned and thus reduce the overall time required to fill the request.

11. MAIL

a. *Certificate of Mailing AND Return Post Card*

Use of the Certificate of Mailing Procedure is strongly encouraged.

37 CFR 1.8(a) provides for the use of a Certificate of Mailing on most correspondence with the PTO, whereby the correspondence (and/or fee) will be considered as timely filed if desposited with the U.S. Postal Service within the set time period. Consistent use of this procedure is extremely beneficial to practitioners, whether or not the Post Card Receipt provision of MPEP 503 is used.

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In those instances where the PTO never receives the correspondence, no post card receipt will be available to evidence the filing and/or timeliness of the correspondence. However, in those instances where a Certificate of Mailing is properly used, 37 CFR 1.8(b) provides relief, even if the correspondence is *not* received in the PTO at all. Under 37 CFR 1.8(b) the party who forwarded the correspondence need only (1) inform the PTO of the previous mailing of the correspondence, (2) supply a copy of the previously mailed correspondence and Certificate, and (3) include a declaration which adequately attests to the previous timely mailing.

b. *Correspondence with Certificate of Mailing Delivered by Commercial Carrier*

The benefits of 37 CFR 1.8 or 1.10 apply only to documents delivered to the PTO by the U.S. Postal Service.

A number of instances have been uncovered where individuals are certifying that documents were deposited with the U.S. Postal Service when, in fact, the documents were hand-carried or delivered to the PTO via commercial mail service, e.g., "Federal Express," "DHL," "Purolator," "Air Borne," "UPS," etc. In those instances where documents include a certificate of mailing under 37 CFR 1.8 or 1.10, but were delivered to the PTO by other than the U.S. Postal Service, Mail Room personnel are placing a notice indicating that fact on the correspondence involved to alert PTO personnel that the benefits of 37 CFR 1.8 or 1.10 do not apply.

c. *Expediting Handling of Trademark Applications*

To facilitate processing of new trademark applications, place them in a separate envelope apart from all other mail. Identify on the outside of the envelope "TRADEMARK APPLICATION ONLY." More than one new trademark application may be placed in the same envelope. Do not place any papers in the envelope other than those related to the new trademark applications.

d. *Express Mail*

Due to a failure of following proper procedures, many applicants are losing the advantage of receiving the date a paper or fee was deposited at the Post Office when "Express Mail" is used. According to 37 CFR §1.10, any such paper or fee must include a certificate of mailing by "Express Mail," signed by the person mailing the paper or fee.

To ensure papers and fees sent by "Express Mail" are accorded the proper certificate date, the following suggestions and reminders are offered:

(1) Each document must have a certificate of mailing typed on or affixed to the document. The certificate should be placed on the first page of the document or the covering letter to ensure easy accessibility.

Often, the certificate is missing, illegible, inaccurate, incomplete, or difficult to locate. As a result, the paper or fee is considered to have been filed on the date of receipt in the PTO.

(2) The certificate should be legible.

(3) The Express Mail number must be placed on the certificate.

(4) Dates on the certificate must correspond to dates on the Express Mail label.

The PTO continues to receive correspondence filed under the provisions of 37 CFR 1.10 in which the certificate of mailing by "Express Mail" certifies that the correspondence is being mailed on one date while the "Express Mail" label shows a "Date-In" on a different date. This usually occurs when the "Express Mail" package is deposited in a remote "Express Mail" receptacle or mailbox after the last pickup, and accordingly is not being picked-up and processed by the Postal Service until the next business day. The question as to the treatment of such a situation was covered in the final rulemaking published on Jan. 20, 1983, at 48 FR 2696–2714 and on Feb. 10, 1983, at 1027 O.G. 9. The following comments appear therein.

> "Comment: One person questions what treatment will be accorded a paper placed in an 'Express Mail' box receptacle after the box has been cleared for the last time on a given day."
> "Reply: The paper will be considered to be deposited as of the date of receipt indicated on the 'Express Mail' mailing label by the Postal Service clerk"

It is recommended that where the filing date of a paper or fee is critical, e.g., the filing of a patent application, and particularly when the deposit by "Express Mail" is being made late in the business day, the correspondence should be personally delivered to a Post Office. There the date of receipt of the "Express Mail" package can be immediately indicated by the Postal Service Clerk.

(5) Each certificate must have an original signature of the person *actually mailing* the paper or fee; i.e., the person who actually deposits the paper or fee with the U.S. Postal Service.

The PTO has encountered instances in which the certificate of mailing by "Express Mail" was signed by an attorney and the deposit was made by the attorney's secretary or another member of the attorney's staff. This is improper under the provisions of 37 CFR 1.10 This section differs in that regard from 37 CFR 1.8.

(6) The preferred wording and information to be included on the certificate is as follows:

> "Express Mail" Mailing Label No. (*insert B no. from Express Mail label*)
> Date of Deposit (*insert date from Express Mail Label*)
>
> I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office To Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
>
> (*Typed or printed name of person mailing paper or fee*)
> (*Signature of person mailing paper or fee*)

By following these procedures, problems concerning filing dates should be minimized.

e. *Response to Final Rejections In Patent Applications— Expediting Processing and Reply by PTO*

In order to ensure the quickest reply to an amendment or response after Final Rejection in patent applications, the paper must be marked in the upper right portion:

> "RESPONSE UNDER 37 CFR 1.116
> EXPEDITED PROCEDURE
> EXAMINING GROUP (Insert Group Number)"

The marking on the paper preferably should be written in, highlighted by, or encircled with, a bright color felt-point marker.

The envelope in which the response is submitted must include only submissions under 37 CFR 1.116. The envelope must be marked "Box AF" in the lower left corner and must be addressed to:

> BOX AF
> Commissioner of Patents and Trademarks
> Washington, D.C. 20231

If the paper is being hand-carried to the Examining Group (instead of mailing to Box AF), the envelope, if any, and the response should both be marked:

> "RESPONSE UNDER 37 CFR 1.116
> EXPEDITED PROCEDURE
> EXAMINING GROUP (Insert Group Number)"

Use of this procedure should avoid the necessity for extensions of time and the filing of unnecessary notices of appeal in many cases.

f. *Return Post Card*

If a receipt for any paper filed in the Patent and Trademark Office is desired, it may be obtained by enclosing with the paper a self-addressed post card identifying the paper. The Patent and Trademark Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to clearly identify the paper for which receipt is requested. For example, the card should identify the applicant name(s), serial number, filing date, interference number, etc. Also, the paper(s) should be identified by specifying the type thereof, namely affidavit, amendment, appeal, itemized components of applications, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

A post card receipt which itemizes and properly identifies the papers which are being filed serves as prima facie evidence of receipt in the PTO of all the items listed thereon on the date stamped thereon by the PTO unless the post card receipt has been annotated by the PTO to indicate that one or more items were not received. A post card receipt will *not* serve as prima facie evidence of receipt in the PTO if the papers are not itemized in a detailed manner, e.g., number of pages of specification and number of sheets of drawings, or if the post card receipt has been annotated to indicate that one or more items was not received.

When papers for more than one document are filed under a single cover, a return addressed post card should be attached to the paper for each document for which a receipt is desired.

g. *Secrecy — Related Papers (37 CFR 5)*

All correspondence in connection with 37 CFR 5 should be addressed to:

> Commissioner of Patents and Trademarks
> (Attention Licensing and Review)
> Washington, D.C. 20231

Improperly addressing such correspondence may delay delivery and could result in violations of 37 CFR 5. See 37 CFR 5.33 regarding correspondence.

h. *Special Box - Box AF*

Since the establishment of the special box "Box Non Fee Amendment," some questions have been received as to which box should be used for amendments after final rejections. Continue to use Box AF for amendments after final rejections, even it it is a non-fee amendment. Although mail delivery by the Mail Room should be the same in either case, the Patent Examining Group will expedite those labeled Box AF.

i. *Special Box - Box Re-exam*

Requests for re-examination should be clearly marked "Box Reexam" on the outer envelope, and include only requests for re-examination. The goal for processing requests for re-examination is 30 days from receipt in the Mailroom to delivery to the appropriate examining group. Requests for re-examination which are marked on the outside envelope for Box Re-exam are immediately placed in a special box for pick up by re-examination processing clerks twice daily. Properly marked requests for re-examination allow us to meet the 30-day goal and allow the examiner adequate time for considering the request.

If requests for re-examination are included in packages with other mail, the entire package will be placed with the thousands of pieces of mail received on that date to be opened in date order. Re-examination requests are, therefore, delayed for several days making the 30-day goal nearly impossible to meet, and often reducing the time available for the examiner's consideration of the request.

j. *Special Boxes for Mail*

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they were intended.

The following special boxes should be used only for their specified purpose. Address mail as follows:

> Box 3 — Mail for the Office of Personnel from NFC.

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Box 4	—	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	—	"No fee" mail related to trademarks.
Box 6	—	Mail for the Office of Procurement.
Box 7	—	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	—	All papers for the Office of the Solicitor except communications relating to pending litigation.
Box 9	—	Coupon orders for U.S. patent and trademark copies.
Box 10	—	Orders for certified copies of patent and trademark applications.
Box 11	—	Electronic Ordering Service (EOS).
Box 12	—	Contributions to the Examiner Education Program.
Box 13	—	Mail for the Employee and Labor Relations Division.
Box 171	—	Vacancy Announcement Applications.
Box AF	—	Amendments or responses to final rejections in patent applications, submitted under the expedited processing program.
Box EEO	—	Mail for the Office of Equal Employment Programs.
Box FWC	—	Mail related to File Wrapper and Continuations.
Box Interference	—	Communications relating to interferences and applications and patents involved in interferences.
Box Issue Fee	—	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M. Fee	—	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non Fee Amendment	—	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	—	Mail for the Office of Enrollment and Discipline.
Box Pat. Ext.	—	Applications for patent term extension.
Box PCT	—	Mail related to applications filed under
Box Reexam	—	Requests for Reexamination.
Box SN	—	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number.

12. MAINTENANCE FEES

a. *Address to Which Correspondence is Sent Regarding Patent Maintenance Fees*

Under 37 CFR 1.33(d), a "correspondence address" or change thereto may be filed with the Office during the enforceable life of a patent. This "correspondence address" will be used in any correspondence relating to maintenance fees unless a separate "fee address" has been specified solely for maintenance fee purposes as provided by CFR 1.363. Practitioners who do not wish to receive correspondence relating to maintenance fees must change the correspondence address in the patented file or provide the PTO with a fee address to which the correspondence should be sent. It is not required that a practitioner file a request for permission to withdraw pursuant to 37 CFR 1.36 solely for the purpose of changing the correspondence address in a patent, even though a withdrawal of a practitioner would change the correspondence address.

b. *Correspondence Address and/or Fee Address on Maintenance Fees*

Effective Nov. 1, 1984, 37 CFR 1.363 provides for a "fee address" to be entered in the Office patent file records for use in all correspondence relating to maintenance fees. The fee address is in addition to the "correspondence address" under 37 CFR 1.33 which will continue to be used for all reexamination and interference purposes. If no separate fee address is specified, the correspondence address will also be used for maintenance fee correspondence. A similar reminder appears on the Issue Fee Transmittal Form, PTOL-85(b).

Practioners should maintain a current "correspondence address" and, if desired, a separate current "fee address" during the enforceable life of the patent in order to ensure receipt of correspondence regarding maintenance fee.

In the case where a practitioner does not intend to continue representing the patentee, a request for permission to withdraw pursuant to 37 CFR 1.36 must be approved by the Commissioner.

Practictioners are reminded that they should inform a client or former client (or timely notify the Office of an inability to notify a client or former client) of any maintenance fee correspondence received from the PTO. See 37 CFR 10.23(c) (8). This is similar to the practice with respect to interferences and reexamination proceedings.

c. *Delayed Payment of Maintenance Fees*

Payment of any maintenance fee due on a patent after expiration of the patent may be accepted if the conditions set forth in 37 CFR 1.378 are satisfied.

In the past, petitions under 37 CFR 1.378 to accept delayed payment of the maintenance fee in an expired patent have been filed which allege, as a basis for unavoidable delay: (1) lack of knowledge that a maintenance fee was due and/or (2) failure to receive a Maintenance Fee Reminder notice from the PTO.

Practitioners are reminded that a patentee's lack of knowledge of a requirement to pay a maintenance fee does not constitute a showing of unavoidable delay; see 49 F.R. 34716 at page 34720, and 1046 O.G. 28 at page 32.

Maintenance Fee Reminder notices are mailed only as a courtesy after the "grace period" has begun; see 37 CFR 1.362(e). Patentees are expected to maintain their own docket systems to ensure timely payment of maintenance fees, preferably during the "window period"; see 37 CFR 1.362(d). Since patentees are expected to maintain their own docket systems for timely payment of maintenance fees, proof that a Maintenance Fee Reminder notice was not received from the PTO does not constitute a showing of unavoidable delay; see 49 F.R. 34716–34726, and 1046 O.G. 28–37.

Practitioners are cautioned that any petition to accept delayed payment of a maintenance fee under CFR 1.378 must include an enumeration of the steps taken to ensure timely payment of the maintenance fee. In this regard, the petition should include a detailed explanation of the docket system employed to ensure such timely payment. Any petition filed more than six months after the expiration of a patent will also be required to show that the failure to timely pay the maintenance fee was due entirely to circumstances outside the control of the patentee and those acting on behalf of the patentee.

d. *Maintenance Fee Transmittal Form Notice*

Where maintenance fee payments are to be made by authorization to charge a deposit account, the Maintenance Fee Transmittal Form, should reflect *both* the Payer's Name *and* signature in the bottom left corner thereof.

e. *Mandatory Identifiers when Submitting Maintenance Fees*

Practitioners are reminded that a patent maintenance fee payment and any surcharge payment submitted must identify the patent to which it relates by at least *two mandatory identifiers* [see 37 CFR 1.366(c)]:

1. The patent number; and
2. The serial number of the United States application for the patent on which the maintenance fee is being paid.

Reissue patent maintenance fee due dates are based on the issue date of the original, rather than the reissue patent. The payment must identify the reissue patent by reissue patent number and reissue application serial number as the two mandatory identifiers and should also include the original patent number, the original patent issue date and the original United States application filing date. See 37 CFR 1.366(d).

The two mandatory identifiers are required as a minimum to enable a cross-check to be made to avoid errors in crediting payment of maintenance fees.

It is suggested that the payment identify the fee being paid for each patent as to whether it is the 3½, 7½ or 11½ year fee; whether small entity status is being changed or claimed; the amount of the maintenance fee and any surcharge being paid; any assigned payer number; the patent issue date; and the United States application filing date. See 37 CFR 1.366(d).

Failure to provide at least the two above-named mandatory identifiers will likely result in the non-acceptance of the maintenance fee payment. The date the two mandatory identifiers and the required fee are submitted is the date the maintenance fee payment is credited as being made.

f. *Payer Number*

In order to simplify changes in address by patent owners having several patents, and data input by the Patent and Trademark Office, a "payer number" will be assigned to each fee address when a fee address is presented to the Office in a patent or earlier upon request. A request for a payer number before a maintenance fee is paid or due will permit a patent owner to request that the fee address and payer number be recorded in the Office records of the patents owned on which maintenance fees are due so that all notices relating to maintenance fees will be sent to the fee address.

When a fee address has been specified as provided by 37 CFR 1.363, that address is assigned a "payor number". Processing time can be greatly reduced if practitioners cite that "payor number" when submitting a maintenance fee payment.

The Patent and Trademark Office has established a procedure for assigning a payer number upon request by a patent owner or a party responsible for paying maintenance fees. Such a party may be, for example, the finance office of a corporation or of a separate organization specializing in maintenance fee payments.

Under the procedure, a patent owner or other party may request a payer number for a particular fee address by writing to:

Commissioner of Patent and Trademarks
Box M. Fee
Washington, DC 20231

Each request for a payer number should include the:

- fee address to be used by the Office, and
- telephone number of the fee addressee to be used to resolve problems.

After receipt of a payer number, it may be used to indicate to the Patent and Trademark Office the fee address to be used in particular patents on which maintenance fees will become due and in applications in which issue fees have been or are being paid. Any request for entry of a payer number or fee address in the Office records of a patent, however, must be signed by the patent owner or his or her attorney or agent of record.

After a payer number has been assigned, it should be used in all future maintenance fee payments and related correspondence. However, where a payer number has not been previously entered in the Office records for a particular patent, the mere indication of a payer number at the time of payment of the maintenance fee, without the signature of the patent owner or the owner's attorney or agent of record, will not serve to make the payer number of record in the Office for that patent.

The problems which most often arise in connection with attempts to establish a fee address in a particular patent or group of patents is that the request is being signed by an attorney who is not of record in each of the

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patents. This results in the request being entered only in part.

Also, when the request is signed by an owner of the patent, the records of the Assignement Branch do not always reflect such ownership. Where the assignment was recorded prior to Dec. 1980, it would help the Office if the PTO reel and frame number of the assignment recordation were presented in the paper requesting that a fee address be entered, and if the person signing the request would indicate his or her title.

g. *Public Availability of Maintenance Fee Petitions/Decisions*

Maintenance fee petitions and decisions thereon are public records. Copies thereof can be obtained by submitting a written request to the Certification Branch. The request should state the patent number and serial number. The charge for the copies is currently $.50 per page.

13. **NEW PATENT APPLICATIONS**

a. *Attorney Docket Number on Missing Part/Incomplete Notices*

In response to several requests from patent attorneys, the PTO is now entering the attorney docket number on the Notice of Incomplete Application and Notice to File Missing Parts of Application.

The attorney docket number which will be entered on the Notice will be that which was submitted on the transmittal letter as filed with a new patent application. The number must be clearly identified as an "attorney docket number". This number will be entered by the PTO under the Title of Invention on the Notices.

If the Office makes a mistake in recording the attorney docket number on the Notice of Incomplete Application or the Notice to File Missing Parts of Application, such mistake is not to be used by the attorney as cause for delay in response. Nor is the attorney to request that the Office correct the docket number prior to response to the Notice. The attorney can notify the Office in the response, but no change will be made by the Office until the Filing Receipt is issued.

If the attorney wishes to change the attorney docket number from that which was entered on transmittal letter as filed, the request must be submitted through amendment, submitted to the Patent Examining Corp.

b. *Continuation or Divisional — Retaining Original Claim*

When filing under Rule 1.60, retain at least one original claim from the parent application to assure a complete application. Only amendments reducing the number of claims or adding a reference to the prior application [Rule 1.78 (a)] will be entered, upon request, before calculating the filing fee and granting the filing date. *Reminder* : Applicant cannot file a CIP (continuation-in-part) under Rule 1.60.

c. *Continuation or Divisional – Problems*

Applications continue to be filed incorrectly under both 37 CFR 1.60 and 37 CFR 1.62. This causes problems not only for applicants but also for the Patent and Trademark Office. Filing dates are not granted to applications which do not comply with the rules. As a result, petitions with fees are required to be filed in such applications before a filing date will be granted.

Most often, the problems that arise in this area can be characterized as the following:

(1) Applicants continue to fail to comply with the requirements of 37 CFR 1.60 with regard to what must be submitted upon filing under the rule. This is true even after the clarifying amendments (effective April 1, 1984) were made to the rule.

(2) A true copy of the prior application must be filed including the specification (with claims), drawings, oath or declaration showing the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application.

(3) Applicants are using transmittal forms which request filings under one rule when, in fact, they wish to file under another rule. For example, a transmittal form requesting filing under 37 CFR 1.62 may be filed when it was really desired to file a divisional application under 37 CFR 1.60 and not to abandon the parent application.

d. *File Wrapper Continuation - Preliminary Amendment*

Many continuation applications filed under 37 CFR 1.62 contain no preliminary amendment to the claims which were finally rejected in the parent application. The result is a first action final rejection of these claims. Applicants should file any desired amendments at the time the application is filed under 37 CFR 1.62, since the Office is treating these applications as "Special" and an action on the merits will be rendered quite prompty.

To expedite processing under Rule 1.62, make certain that the parent serial number cited in the transmittal letter is the correct serial number.

e. *File Wrapper Continuation - Problems*

Applications continue to be filed incorrectly under both 37 CFR 1.60 and 37 CFR 1.62. This causes problems not only for applicants but also for the Patent and Trademark Office. Filing dates are not granted to applications which do not comply with the rules. As a result, petitions with fees are required to be filed in such applications before a filing date will be granted.

Most often, the problems that arise in this area can be characterized as the following:

(1) Applications have been filed with a transmittal form requesting filing under 37 CFR 1.60 when it was intended to file under 37 CFR 1.62. The confusion in the record of such applications must be clarified by a decision on petition before the applications can be processed for examination.

(2) Some applicants fail to realize that the parent application is abondoned by the filing of a continuing application under 37 CFR 1.62. Paragraph (g) of 37 CFR 1.62 states:

> "The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application."

Correction after such a mistaken filing under 37 CFR 1.62 usually requires a revival of the parent application under 37 CFR 1.137(a) or (b) which expends resources of both the applicant and the PTO.

(3) Some applicants are attempting to file continuing applications under 37 CFR 1.62 after payment of the issue fee in the parent application. Such applications are improper and are not entitled to a filing date. Additionally, such filings will not affect the prior application; i.e., the parent application may issue as a patent. Paragraph (a) of 37 CFR 1.62 specifies that continuing applications may be filed under 37 CFR 1.62 "before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application".

(4) Some applicants are attempting to file continuation-in-part applications under 37 CFR 1.62 with a new specification rather than with the changes made by amendment to the prior application. As stated in 37 CFR 1.62(a), filings under 37 CFR 1.62 use the specification of the prior application.

Paragraph (c) of 37 CFR 1.62 also states:

> "In the case of a continuation-in-part application which *adds and claims additional disclosure by amendment* , an oath or declaration as required by §1.63 must also be filed . . ." (emphasis added)

f. *Information Disclosure Citation - Form PTO 1449*

The Public is encouraged to use Form PTO 1449, "Information Disclosure Citation," when preparing a statement under 37 CFR 1.97–1.99 (see MPEP §609). This form provides the Office with a uniform way of listing the citations and a vehicle from which the information thereon can be printed on the issued patent.

Some citations are being presented on various forms prepared by the public rather than on Form PTO 1449. As a result, delays are cropping up in the printing process because the printer has difficulty in following the various formats and is having to query the examiner each time a non-PTO 1449 form is used.

Note that listing citations on Form PTO 1449 does not raise an irrebuttable presumption that the citation is prior art. A holding by an examiner that any citation on Form PTO 1449 is prior art to claimed subject matter can be rebutted by procedures commonly used to rebut the prior art status of an examiner's citations on Form PTO 1449, "Notice of References Cited".

Among the information that should be provided on Form PTO 1449 is the date of the citation. In addition, it is helpful if the class and subclass of each citation is provided. It is appreciated that classification information may not be known at the time Form PTO 1449 is prepared. When classification information is not known, draw a line in the boxes under the class and subclass heading adjacent to the citation for which classification information is not known.

g. *Petition for License*

Rule 5.12 states that "filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 USC 184 for the subject of the application. The filing receipt will indicate a license is granted." There is no need to request a corrected filing receipt deleting the words "License Granted." Its intent is to provide the necessary acknowledgement for those filing abroad.

h. *Processing and Retention Fees for Abandoned Applications*

An application, which has become abandoned pursuant to 37 CFR 1.53(d) for failure to pay the filing fee, will be disposed of unless the processing and retention fee set forth in §1.21(1) is paid within the 1-year period referred to in §1.53(d). Moreover, the processing and retention fee must be timely paid in order to obtain certified copies of the application (e.g., for convention priority purposes) or to establish in a later filed application the filing date benefit of an earlier copending application under 35 USC 120 and 37 CFR 1.78(a) (3). Therefore, an application which has become abandoned for the reasons set forth above should be immediately reviewed in order to timely determine the advisability of submitting a processing and retention fee payment.

i. *Surcharge for Filing a Patent Application*

Filing dates are accorded to applications filed without the basic filing fee and without the oath or declaration. In such cases, a notice is mailed by Application Branch requiring at least the basic filing fee and the oath or declaration, accompanied by a surcharge [37 CFR 1.16(e)]. In numerous instances, applicants fail to submit the surcharge causing the application to become abandoned. See 37 CFR 1.53(d) and MPEP §506.

14. **PATENT COOPERATION TREATY APPLICATIONS**

a. *Responses Filed in International Applications*

The 18 month publication deadline for international applications filed under the Patent Cooperation Treaty (PCT) is critical. Therefore, it is in applicant's interest to respond timely to an invitation to correct a PCT Article 14 defect. An untimely response can result in the withdrawal of the international application under Article 14 and PCT Rule 26. If an extension to respond is needed, call the person who signed the invitation before the expiration of the time limit. The PTO will strictly comply with PCT Article 14 and Rule 26 in holding international applications withdrawn when responses are untimely or not filed.

b. *Early Notification of Receipt of PCT Designated Office Cases*

If you would like to have early notification that the PTO has received requirements un-

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der 35 U.S.C. 371 to enter the Designated Office phase, you should send two self-addressed, stamped postcards with those requirements. The first postcard will be date stamped and returned to you upon receipt of the requirements by the PCT staff. The second postcard will be sent to you when the case is released to the Mail Room to join the regular flow of national applications. The second postcard will be stamped with the U.S. serial number. If only one postcard is sent, it will be marked with the U.S. serial number but will remain with the application until requirements are completed and the case is released.

When corrections of PCT Rule 91 obvious errors in the description, claims or abstract are submitted together with corrections of deficits under PCT Article 14, the transmittal letter should clearly note the Rule 91 corrections. This is necessary because, under PCT Rule 91.1(e), the Receiving Office can authorize the rectification of obvious errors only in the Request (Form PCT/RO/101), while Searching Authority authorization is needed for obvious errors in the description, claims or abstract. When the transmittal letter clearly notes the Rule 91 corrections, Searching Authority authorization of any obvious errors in the description, claims or abstract can be expedited.

Call 557-2003 if you have questions concerning responses filed during the international stage for international applications under the PCT.

15. PATENT COPIES

a. *Electronic Ordering Service*

Copies may be ordered electronically through the PTO's Electronic Ordering Service (EOS) rather than placing orders through the mail. With EOS, orders are received the same day they are placed, thereby reducing the turnaround time by about seven days. Orders can be placed any day, 24 hours a day.

Our regulations require that we receive payment for services before they are rendered. For this reason, a Patent and Trademark Office (PTO) deposit account is a prerequisite for becoming an EOS user.

There are two types of PTO deposit accounts. One is an unrestricted account which can be used for any service PTO provides. This account requires a minimum balance of $1,000. The second type of account, the restricted deposit account, is available only for EOS and for subscriptions for copies of newly issued patents by subject matter classification. The restricted account requires a minimum balance of $300. If you have any questions about PTO deposit accounts, call (703) 557-3227.

To use EOS you need a standard computer terminal and modem. If you have any questions about equipment or the technical aspects of EOS, call (202) 377-2535.

The cost of EOS orders will be charged to your deposit account. The copy costs are $1.50 for each patent and trademark, and $6.00 for each plant patent. In addition, there will be a communication cost. This has been averaging 10 cents per copy; could range up to 25 centers on single orders.

b. *Subscription Services*

When submitting changes to subscription accounts, allow approximately two months from the date mailed to the Patent and Trademark Office for changes to become effective. The reason for the two month delay is to allow for changes to be recorded, data entered, and the automated system to be updated.

16. PETITIONS TO REVIVE

a. *Request and Fee for Extension Not Required*

Frequently, a petition to revive an abandoned application is accompanied by an unnecessary request and fee for extension of time. Our policy is set forth in MPEP 711.03(c). Specifically, a response does not require a request and fee for extension of time as a condition of revival.

b. *Terminal Disclaimer*

A petition to revive an abandoned application is often accompanied by an unnecessary terminal disclaimer. A terminal disclaimer is required only when a grantable petition based on unavoidable delay is not filed within six months of the date of abandonment [37 CFR 1.137(a) and 1.137(c)]. It follows that a terminal disclaimer should not accompany a petition based on unintentional abandonment[(37 CFR 1.137(b)]. In these respects, analogous reasoning applies to petitions to accept late payment of the issue fee under 37 CFR 1.155 or 1.316.

When a terminal disclaimer is a necessary component of the petition, the period to be disclaimed must equal the number of months between the date of abandonment and the date a grantable petition is filed. The date of abandonment is the date the period for response has expired [see MPEP 711.04(a)]. This is normally the end of the three month shortened statutory period. Moreover, the terminal disclaimer should employ the format shown in Figure 1.

FIGURE 1 — Terminal Disclaimer

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

In re Application of
(NAME)
Serial No.
Filed:
For:

TERMINAL DISCLAIMER

TO THE COMMISIONER OF PATENTS AND TRADEMARKS:

Your petitioner, _____,
residing at _____,
represents that he is the owner of the entire interest in the above-identified application (by virtue of an assignment recorded at Reel _____, and Frame _____, filed on the _____day of _____, 19 _____).

Your petitioner, _____,
hereby disclaims the terminal _____ months of any patent granted on the above-identified application or on any application which is entitled to the benefit of the filing date of this application under 35 USC 120. This agreement is to run with any patent so granted and to be binding upon the grantee, its successors or assigns.

IN WITNESS WHEREOF, I here unto set my and seal this _____day of _____, 19_____.

_____
(Signature)

17. POWER TO INSPECT

a. *Power of Attorney*

The Office receives letters granting power to inspect patent applications. These may only be granted by the attorney of record or inventor. Sometimes the person signing the power is not authorized to do so, causing delay until proper authorization is received. Copies of completed applications cannot be made during the pre-examination process. They can be inspected, but not pulled from the work flow to have copies made.

b. *Withdrawal of Attorney*

To expedite requests for permission to withdraw as attorney under 37 CFR §1.36, submit the request in triplicate (original and two copies) and indicate thereon the present mailing addresses of the attorney who is withdrawing and of the applicant. The examining group number should also appear on all such requests. Because the Office does not recognize law firms, each attorney of record must sign the notice of withdrawal, or the notice of withdrawal must contain a clear indication of one attorney signing on behalf of another.

A request to withdraw is effective when approved rather than when received. This is particularly important when such requests are submitted toward the end of the period for response. There should be at least thirty days between approval of withdrawal and the expiration date of a time response period so that the applicant will have sufficient time to obtain other representation or take other action. If less than 30 days remains in a running response period, a request to withdraw is normally disapproved.

If a period has been set for response and the period may be extended [without a showing of cause pursuant to 37 CFR 1.136(a)] by filing a petition for extension of time and fee, it is not necessary to seek such extension of time for withdrawl to be approved. In such a situation, however, withdrawal will not be approved unless at least 30 days would remain between the date of approval and the last date on which such a petition for extension of time and fee could properly be filed.

18. REISSUES

a. *Amendments*

To avoid unnecessary delays in the issuance of reissue applications, applicants and their attorneys are reminded to exercise caution and give sufficient attention to 37 CFR 1.121(a) and (e) in presenting reissue amendments. The practices and procedures vary somewhat from regular utility application amendments.

MPEP Sec. 1455 provides guidance for proper entry of amendments and claim numbering. Publication of the reissue application(s) may be needlessly postponed while formal irregularities are corrected.

b. *Oaths and/or Declarations*

Since standard oath and declaration forms are not used in reissue applications, applicants are commonly neglecting to include averments required by 37 CFR 1.63 per 37 CFR 1.175(a). The most frequent omissions involve the "duty of disclosure" acknowledgment, and the "reviewed and understands" statement. Such omissions usually necessitate additional handling and correspondence, and cause undue time delays, which result in postponement of publication of the reissue patent.

A frequent problem in reissue practice is the failure of applicants to satisfactorily comply with 37 CFR 1.175 regarding the description of all errors of the original patent in the reissue oath or declaration. Applicants are required to specify errors in the original reissue oath or declaration at the time of filing the reissue application. They must also specify, in a supplemental oath or declaration, any errors brought to their attention during the prosecution, as well as the circumstances surrounding the occurrence or discovery of these errors. Every departure from the original patent represents an "error" and must be particularly and distinctly specified and supported in the original, or a supplemental, reissue oath or declaration under 37 CFR 1.175. See MPEP Sec. 1414 and 1444. Postponement of publication of the reissue patent may result if these requirements are not met at the time of allowance.

19. SMALL ENTITY STATUS

a. *Small Entity Statements*

Verified statements claiming small entity status, where appropriate, would best be signed and submitted at the time the application oath or declaration is signed to permit filing of the statement with the application. This would reduce correspondence between attorney and client, reduce paper handling by the PTO support staff and the PTO Finance Branch, and greatly simplify the processing of subsequent papers involving fees. If small entity status is being claimed for the first time at the time of payment of the issue fee, a verified statement claiming small entity status should be submitted with the fee. See MPEP §509.03.

20. TRADEMARKS

a. *Application Drawings*

To avoid delays in processing new trademark applications, the drawing should have the following information in the upper left hand corner:

- Drawing title.
- Applicant's name and address.
- First use date.
- First use in interstate commerce date.
- Goods, services or both.

b. *File Histories*

When requesting trademark file histories, the "status date" (i.e. date abandoned) must be provided to fill the order if the file is abandoned. If not known, this information can be obtained from TRAM. The request

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will be returned unfilled if this date is not provided.

c. *Post Registration*

Section 8 Affidavit or Declaraction Held Insufficient During Post Registration Examination - The Trademark Act of 1946, Section 8(a) was amended Aug. 27, 1982, Public Law 97-247 (96 Stat. 317), to clarify that the continued use required to be shown in the sixth year under Section 8(a) be use "in commerce." Subsequently the Trademark Rules were amended on Jan. 28, 1983 (48 *Federal Register* 3977), to require that all Section 8(a) affidavits or declarations "state that the registered mark is in use in commerce and specify the nature of such commerce." [37 C.F.R. Section 2.162(e)].

Some applicants under Section 8(a) are not complying with the requirements that the affadivit or declaration state that the mark is in use "in commerce," and "specify the nature of such commerce." The Office cannot accept an affidavit under Section 8(a) which does not comply with the Act and, if the defect is not corrected before the end of the sixth year, the registration in question will be cancelled.

While the Post Registration Division will allow up to six months to respond to a letter from the Office, a supplemental or substitute affidavit or declaration required by Section 8(a) will not be considered unless it is received before the expiration of the six year anniversary of the registration. It is suggested that registrants file Section 8(a) applications as early as possible between the fifth and sixth year following registration to allow time to submit an affidavit or declaration which is correct, if required.

Signatures - The corporate title of the affiant/declarant is often missing. Occasionally, the affidavit/declaration is unsigned.

Assignments - it will speed up the processing of Section 8 affidavits and renewal applications if the affiant/declarant will furnish the reel and frame number and the date(s) of recordation with the USPTO Assignment Section of any relevant assignment, merger, change of name, or other transfer.

Fees - Many of the affidavits and applications for renewal contain insufficient fees. The fee schedule for these transactions done in the Post Registration area is listed below:

(1) For filing an application for renewal of a registration, per class $300.00
(2) For filing an affidavit under Section 8 of the Act, per class $100.00
(3) For filing an affidavit under Section 15 of the Act, per class $100.00
(4) For filing a combined affidavit under Sections 8 and 15 of the Act, per class $200.00

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Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 2
[Docket No. 81024-8224]

Revision of Patent and Trademark Fees

Agency: Patent and Trademark Office, Commerce
Action: Notice of Proposed Rulemaking

Summary: The Patent and Trademark Office proposes to amend the rules of practice in patent and trademark cases, Parts 1 and 2 of Title 37, Code of Federal Regulations, to adjust patent fee amounts and to reduce certain trademark fee amounts. The Office also proposes to amend the rules of practice in patent cases to clarify requirements in the filing of applications and to provide for procedures for applicants to cure certain defects in the filing of applications.

Establishment and adjustment of patent fees is provided for by §6 and §41 of Title 35, United States Code, and section 103(b) of Pub. L. 100-***. Establishment and adjustment of trademark fees is provided for by section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. §1113) and section 103(c) of Pub. L. 100-***.

Dates: Written comments must be submitted on or before Jan. 4, 1989; a public hearing will be held on Jan. 4, 1989, at 9:00 A.M. Requests to present oral testimony should be received on or before Jan. 3, 1989.

Addresses: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Frances Michalkewicz, Suite 904, Crystal Park 2. The hearing will be held in Suite 912 on the 9th floor of Bldg. 2, Crystal Park, located at 2121 Crystal Dr., Arlington, Va. Written comments and a transcript of the public hearing will be available for public inspection in Suite 904 of Bldg. 2, Crystal Park at 2121 Crystal Dr., Arlington, Va.

For Further Information Contact: Frances Michalkewicz by telephone at (703) 557-1610 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Patent fees were set on Oct. 1, 1982, in accordance with the provisions of Title 35, United States Code (Pub. L. 97-247). Patent fees were adjusted effective Oct. 5, 1985, in accordance with the provisions of Title 35, United States Code. Trademark fees were set on Oct. 1, 1982, in accordance with the provisions of §31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. §1113) and adjusted on Oct. 1, 1986, in accordance with the provisions of that Act and Title 35. On Nov. 6, 1986, legislation modifying the way fee adjustments could be made was enacted as Pub. L. 99-607. The fee adjustment provisions of Pub. L. 99-607, §3(a) and §3(b) expired on Sep. 30, 1988. On Nov.**, 1988, legislation extending §3(a) and §3(b) of Pub. L. 99-607 was enacted as Pub. L. 100-***. Therefore, patent and trademark fee adjustments will be guided by the provisions of Title 35, United States Code, and by Pub. L. 100***, and the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. §1113), and by Pub. L. 100-***.

The Patent and Trademark Office is proposing to amend 37 CFR §2.6 to reduce the fee for filing an application for trademark registration from $200 to $175 per class. The Office further proposes to reduce the fee for recording trademark assignments and agreements or other papers relating to the property in a registration or application from $100 to $8 for each mark in the same document.

Effective Oct. 1, 1982, trademark operations within the Office became 100 percent user-fee funded. Experience to date has demonstrated that the fees first established in Oct. 1982, and as later adjusted in Oct. 1986, are more than adequate to meet total trademark function costs. At the end of fiscal year 1988, total trademark function fees exceeded total trademark function costs by approximately $10 million. Left undisturbed, it is projected that the current trademark fee structure will result in an additional $12.7 million in excess fees over the course of the next three-year fee cycle. Thus, by the end of fiscal year 1991, total trademark fees are projected to exceed total trademark costs by almost $23 million if the current fee structure remains in place.

In this light, the Office is proposing to reduce both the trademark application and assignment fees. A reduction of the application fee to $175 would be consistent with the legislative history surrounding passage of Pub. L. 97-247. In its report (H. Rep. No. 97-542, May 17, 1982), the House Committee on the Judiciary stated that, "It is expected that the Commissioner will set the [trademark] fees in a way that the filing fee will be kept as low as possible to foster use of the Federal registration system." The application filing fee from Oct. 1982 to Oct. 1986 was $175. The filing fee was increased in 1986 to $200 in an effort to recover a greater percentage of the actual costs incurred in the processing of trademark applications. While the proposed reduction will increase the discrepancy between the application filing fee and out projected unit cost, the size of the current "surplus," as well as the objective of encouraging filings, supports the proposed action.

A reduction of the fee for recording trademark assignments to $8 for each mark would make such fees consistent with those proposed for the recording of patent assignments.

While the propsed fee reductions still will leave a healthy "surplus," prudence suggests that further reductions be held in abeyance pending implementation of "The Trademark Law Revision Act of 1988" (Pub. L. 100-***). The Act, among other things, would permit applicants to file applications for Federal trademark registrations based upon a bona fide "intent-to-use" the mark in commerce. Implementation of "intent-to-use" legislation will require the Office to incur additional expenditures, such as increased personnel costs and improved computer capabilities. The Office will review its trademark fee structure appoximately 18 months from implementation and propuse further fee adjustments if warranted.

Even absent "intent-to-use," theOffice will probably be required to upgrade its computer capabilities within the near future. Moreover, implementation of an automated trademark assignment system, now scheduled for fiscal year 1990, and other improvements in automated searching, will result in increased demands on trademark resources.

BACKGROUND:

Provisions of Title 35 and Title 15, United States Code, and Pub. L. 100-*** Which Affect This Notice of Proposed Rulemaking

Patent and Trademark Office fees are authorized by 35 U.S.C. §41 and 35 U.S.C. §376. Section 41(a) of Title 35, United States Code, establishes a number of statutory fees. Among the more significant of these are fees for filing a patent application and issuing a patent. Certain other fees, such as appeal fees, the fee for filing a disclaimer, fees for filing petitions seeking to revive an abandoned application and for extensions of time also are set in 35 U.S.C. §41(a). Section 41(b) of Title 35, United States Code, sets forth the statutory fees for maintaining a patent in force if the application was filed on or after Aug. 27, 1982.

The provisions of Pub. L. 96-517 also establish maintenance fees for patents other than design and plant patents issued on applications filed on or after Dec. 12, 1980 and before Aug. 27, 1982. These maintenance fees are to recover 25 percent of the estimated cost to the Office of processing patent applications.

Section 1 of Pub. L. 97-247 authorized the reduction by 50 percent in the fees paid under 35 U.S.C. §41(a) and §41(b) by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions establish. Section 1(a)(2) of Pub. L. 99-607 makes this provision permanent in 35 U.S.C. §41(h).

Section 41(f) of Title 35, United States Code, provides that fees established in 35 U.S.C. §41(a) and 35 U.S.C. §41(b), "may be adjusted by the Commissioner on Oct. 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor." Section 41(f) also provides that changes of less than one percent may be ignored. Pub. L. 100-*** makes no modifications to 35 U.S.C. §41(f).

Section 41(d) of Title 35, United States Code, provides that the "Commissioner will establish fees for all other processing, services, or materials related to patents" which are not covered in 35 U.S.C. §41 (a) and 35 U.S.C. §41(b), "to recover the estimated average cost to the Office of such processing, services or materials."

Section 103(b) of Pub. L. 100-*** changes the way fees established under 35 U.S.C. §41(d) can be adjusted. For fiscal years 1989, 1990, and 1991, the Commissioner cannot increase fees established under §41(d) except for the purposes of making adjustments which in the aggregate do not exceed fluctuations during the previous three years in the Consumer Price Index.

Section 103(b) of Pub. L. 100-*** provides that the Commissioner cannot establish additional fees under 35 U.S.C. §41(d) during fiscal years 1989, 1990, and 1991.

Section 376 of Title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty. The fees under the PatentCooperation Treaty are keyed to full cost recovery of the processing costs under the Treaty. Pub. L. 100-*** makes no modifications to 35 U.S.C. §376.

Section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. §1113) authorizes the Commissioner to establish fees for the filling and processing of an application for the registration of a trademark or other mark, and for all other services and materials relating to trademarks and other marks. No fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. The House Committee on the Judiciary, in a report that accompanied H.R. 6260, which ultimately was enacted as Pub. L. 97-247, recommended a trademark fee schedule to the Commissioner which was established by rule published in the *Federal Register* on July 30, 1982 at 47 FR 33086, effective Oct. 1, 1982.

A final rule to increase the trademark application filing fee per class and the fee for copies of trademarks was published in the *Federal Register* on Aug. 4, 1986 at 51 FR 28052. The increased fees became effective on Oct. 1, 1986.

Section 103(a) of Pub. L. 100-*** changes the way fees established under the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. §113) can be adjusted. For fiscal years 1989, 1990 and 1991, the Commissioner cannot increase fees established under the Act except for the purposes of making adjustments which in the aggregate donot exceed fluctuations during the previous three years in the Consumer Price Index.

Section 103(a) of Pub. L. 100-*** provides that the Commissioner cannot establish additional fees under the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. §1113) during fiscal years 1989, 1990, and 1991.

However, as described above under Supplementary Information, the Office is proposing only to reduce the fee for filing an application, per class, and the fee for recording trademark assignments and agreements or other papers relating to the property in a registration or application.

Proposed Rule Changes

General Procedures

Cost Calculations: The Office calculated unit costs for all fees based on OMB Circular A-25, "User Fees," and OMB Circular A-130, "Management of Federal Information Resources." Costs were determined from the best available records (for example, the 1987 end of fiscal year financial statements for the Office) and included direct and indirect costs to the Office of carrying out the activity, as directed by OMB Circular A-25. To estimate costs for the three-year fee cycle Apr. 1989-Mar. 1992, the 1987 actual costs were then adjusted by a mid-cycle inflation rate of 12.644 percent derived from the Administration's inflation projection.

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Workload Projections

Determination of future year workloads varies by fee code. Principal workload projection techniques are as follows:

Patent and trademark application workloads were projected from statistical regression models using recent application trends. Associated application workloads, for example, patent claims and extensions of time, grow relative to patent applications. Patent issues are projected from an in-house patent productivity model and reflect examiner production achievements and goals. Patent maintenance fee workloads utilize patents issued 3.5, 7.5 and 11.5 years prior to payment and assume payment rates of 80 percent, 50 percent and 25 percent, respectively. Trademark affidavits and renewals are based on prior year registrations and renewal trends. Service fee workloads follow linear trends from prior year activities. All workload estimates are approved by the manager responsible for the fee program.

Policy for applying the Consumer Price Index: The Office of Management and Budget has determined that the Patent and Trademark Office should use Consumer Price Index-U)CPI) to adjust patent fees. The Department of Labor's Consumer Price Index is made public approximately twenty-one days after the end of the month being calculated. The time lag between the initiation and the completion of the rulemaking process dictates that the Aug. 1988 through Mar. 1989 inflation rate be projected. The Administration's projected cumulative CPI for the three-year period Apr. 1986-Mar. 1989 is 10.303 percent. This estimate is included in the cumulative three-year CPI applied to patent fees. Before the final fee schedule is published, the estimate will be recalculated using the additional actual data that will have become available in the interim.

Rounding Procedures: After application of the 10.303 percent projected fluctuation in the CPI to fees, amounts were rounded by applying standard arithmetical rules so that the amounts rounded would be de minimis and convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees between $10 and $99 were rounded to the nearest even number so that the comparable small entity fee would be a whole number. Fees under $2 were rounded for convenience. Since the amounts of the patent fees that went into effect on Oct. 5, 1985 wee rounded after application of the Consumer Price Index, a first step in calculating proposed new fee amounts was to eliminate any effects of rounding prior years' fee adjustments. For example, 35 U.S.C. §41(a), sets the patent application filing fee at $300.00. Applying the 11.8 percent CPI for the period 1983-1985 resulted in an allowable increase to $335.40. This amount was rounded to $340.00. For purposes of this fee adjustment process, the base used to adjust fees for the next fee cycle was the "unrounded" fee amount; i.e., the $335.40 for patent application filing fees. Similarly, the cost for certifying Office records was $2.70. This amount was rounded to $3.00. For purposes of this fee adjustment process, the base was unrounded amount of $2.70.

It should be noted that following routine rounding off practices can result in some fee items being adjusted by more or less than CPI. This divergence from the CPI ceiling will only exist in the short term because of the policy of applying the CPI adjustment factor to the unrounded amount from the previous fee cycle.

Proposed Rule Changes Under Title 35 and Title 15, United States Code and Pub. L. 100-***

Statutory patent fees established under 35 U.S.C. §41(a) and 35 U.S.C. §41(b) will be adjusted in accordance with 35 U.S.C. §41(f) to reflect any fluctuations occurring during the previous three years in the CPI.

Non-statutory patent fees established under 35 U.S.C. §41(d) will be adjusted in accordance with §103(b) of Pub. L. 100-*** to reflect, in the aggregate, any fluctuations occurring during the previous three years (Apr. 1986-Mar. 1989) in the Consumer Price Index, as determined by the Secretary of Labor. Fees established under 35 U.S.C. §376 will be adjusted to recover the full cost of processing under the Patent Cooperation Treaty. International patent fees under 37 CFR §1.492 are related to patent fees established under 35 U.S.C. §41(a) and will be adjusted to reflect fluctuations in the CPI.

For fees established under section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. §1113), the Office is proposing only to reduce the fee for filing an application, per class, and the fee for recording trademark assignments and agreements or other papers relating to the property in a registration or application as fully described above under Supplementary Informtion.

Fee Adjustment Methodology

1. PROJECTED ACTUAL COSTS. The projected actual costs for all fee items wee calculated by applying the principles of OMB Circulars A-25 and A-130.

a. Statutory patent fees were derived by: (1) identifyingthose operational units of the Office involved in, or contributing to, the processing of a patent application through all phases of examination; (2) identifying and certifying actual fiscal year 1987 obligations incurred by the operational units in processing an application; (3) projecting those obligations to the period of Apr. 1989 through Mar. 1992 in accordance with approved budgets and future year budget targets; and (4) increasing the obligations projected for the period of Apr. 1989 through Mar. 1992 by the Administration's estimates for federal pay raise adjustments and projected inflation. Projected actual costs for Apr. 1989-Mar. 1992, $729,810,051 less projected budget authority of $265,834,000, are $463,976,051.

b. For non-statutory patent fees, projected costs for each fee item were established by (1) identifying actual costs for 1987, and (2) projecting actual costs for fiscal years 1988 through Mar. 1992 by applying the Administration's inflation projection of 12.644 percent. This projected actual cost was then multiplied by the projected workload for each fee item. The sum of the projected costs for all fee items is the projected actual cost of operation during the three-year fee cycle. Projected actual costs for Apr. 1989-Mar. 1992 are $64,661,341.

c. The same methodologies as described in paragraphs (a) and (b) above were applied to Patent Cooperation Treaty fees. Projected actual costs for Apr. 1989-Mar. 1992 are $16,531,990.

d. The same methodology as described in paragraph (b) above was applied to Trademark fees. Projected actual costs for Apr. 1989-Mar. 1992 are calculated to be $74,329,783.

2. INCOME PROJECTIONS

a. The maximum amount of statutory fee income that the Office is authorized to recover under 35 U.S.C. §41(f) was calculated as follows.

For each statutory patent fee, the unrounded base (i.e., the 1986 adjusted fee before rounding) was multiplied by the projected CPI fluctuation of 10.303 percent for the three-year period Apr. 1986-Mar. 1989. This amount was then multiplied by the projected workload for Apr. 1989-Mar. 1992 to project the income from that fee item during the Apr. 1989-Mar. 1992 fee cycle. The sum of the projected incomes from all statutory patent fees is the maximum amount that the Office is authorized by 35 U.S.C. §41(f) to recover during the fee cycle and is equal to $464,676,178.

b. The maximum amount of non-statutory fee income that the Office is authorized to recover under §103(b) of Pub. L. 100-*** was calculated as follows.

For each non-statutory patent fee, the unrounded base (i.e., the 1986 adjusted fee before rounding) was multiplied by the projected CPI fluctuation of 10.303 percent for the three-year period Apr. 1986-Mar. 1989. This amount was then multiplied by the projected workload for Apr. 1989-Mar. 1992 to project the income from that fee item during the Apr. 1989-Mar. 1992 fee cycle. The sum of the projected incomes from all non-statutory patent fees is the maximum amount that the Office is authorized by §103(b) of Pub. L. 100-*** to recover during the fee cycle and is equal to $62,101,874.

c. For Patent Cooperation Treaty fees, the Office is authorized by 35 U.S.C. §376 to recover the full cost of processing under the Treaty. Thus, the projected costs identified in paragraph 1(c) for Patent Cooperation Treaty fees of $16,531,990 would be the maximum level of recovery.

d. The maximum amount of trademark fee income that the Office is authorized to recover under §103(a) of Pub. L. 100-*** was calculated as follows.

For each trademark fee, the unrounded base (i.e., the 1986 adjusted fee before rounding) was multiplied by the projected CPI fluctuation of 10.303 percent for the three-year period Apr. 1986-Mar. 1989. This amount was then multiplied by the projected workload for Apr. 1989-Mar. 1992 to project the income from that fee item during the Apr. 1989-Mar. 1992 fee cycle. The sum of the projected incomes from all trademark fees is the maximum amount that the Office is authorized by §103(a) of Pub. L. 100-*** to recover during the fee cycle and is equal to $107,704,135.

e. Each statutory patent fee amount identified in paragraph 2(a), and each PCT amount identified in paragraph 2(c) above was rounded according to the de minimis rounding rules described above.

Sections 103(a) and 103(b) of Pub. L. 100-*** allow the Office to set fees "in the aggregate." The fee amounts proposed for non-statutory patent fees and trademark fees would recover the maximum amount of income determined in paragraph (b) and (d) above.

Each of these fee amounts was multiplied by the projected workload during the fee cycle to project the income from that fee item. The sum of the projected income from all patent fees is $542,281,082, which is the sum of the projected incomes from statutory patent fees, $463,626,421, non-statutory patent fees, $62,047,763, and Patent Cooperation Treaty fees, $16,606,898.

f. The Office reduced two trademark fees, as described above under Supplementary Information. Each trademark fee amount was multiplied by the projected workload during the fee cycle to project the income from that fee item. The sum of the projected income from all trademark fees is projected to be $72,972,690.

Summary:

Fee Category	Projected Cost April - Mar 1992	Maximun Allowable Recovery	Projected Income April 1989 - Mar 1992
Statutory Patent	$463,976,051	$464,676,178	$463,626,421
Non-Statutory Patent	$64,661,341	$62,101,874	$62,047,763
PCT	$16,531,990	$16,531,990	$16,606,898
Total - Patent	$545,169,382	$543,310,042	$542,281,082
Total - Trademarks	$74,329,783	$107,704,135	$72,972,690
Total - All Fees	$619,499,165	$651,014,177	$615,253,772

The unit costs by fee item are summarized in Appendix A. The Office has detailed cost calculation worksheets for each fee item, which are available for public inspection in Suite 904 of Bldg. 2, Crystal Park at 2121 Crystal Dr., Alrington, Va.

It is intended that the amount of any fee due and payable on or after Apr. 1, 1989 is the amount set in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing, where authorized under 37 CFR 1.8, will be considered to be the date of receipt in the Office. A "Certificate of Mailing under Section 1.8" is not "proper" for items which are specifically excluded from the provisions of §1.8. Section 1.8 should be consulted for those items for which a Certificate of Mailing is not "proper." Such items include, inter alia, the filing of national and international applications for patents and the filing of trademark applications. The provisions of 37 CFG §1.10, relating to filing of papers and fees by "Express Mail" with certificate, however, do apply to any paper or fee (including patent and trademark applications) to be filed in the Office. If an application or fee is filed by "Express Mail" with a certificate of express mailing dated on and after the effective data of the rules, the amount of the fee to be paid is the fee established herein if a change is being made in the fee. In order to ensure clarity in the implementation of the fee proposals, a discussion of specific sections is set forth below.

DISCUSSION OF SPECIFIC RULES

37 CFR §1.12 Assignment records open to public inspection.

Section 1.12, paragraph (a), if amended as proposed, would refer to the renumbered §1.19(b)(4). Paragraph (c), if amended as proposed, would refer to the renumbered§1.17(i)(1).

37 CFR §1.14 Patent applications preserved in secrecy.

Section 1.14, paragraph (e), if amended as proposed, would refer to the renumbered §1.17(i)(1).

37 CFR §1.16 National application filing fee.

Section 1.16, if amended as proposed, would adjust patent application filing fees established in 35 U.S.C. §41(a) and set forth in 37 CFR §1.16(a)-(b), (d) and (f)-(i) to reflect fluctuations in the CPI.

Section 1.16, paragraph (e), if amended as proposed, would adjust the patent application surcharge fee authorized by 35 U.S.C. §111 to reflect fluctuations in the CPI.

37 CFR §1.17 Patent application processing fees.

Section 1.17, if amended as proposed, would adjust patent application processing fees established in 35 U.S.C. §41(a) and set forth in 37 CFR §1.17(a)-(g) and (l)-(m) to reflect fluctuations in the CPI.

Section 1.17, if amended as proposed, would adjust the patent application processing fees authorized by 35 U.S.C. §41(d) and set forth in 37 CFR §1.17(h)-(k) to reflect fluctuations in the CPI.

Section 1.17, if amended as proposed, would establish one feeamount for filing a petition to the Commissioner under 37 CFR §§1.12, 1.14, 1.47, 1.48, 1.55, 1.103, 1.177, 1.182, 1.183, 1.295, 1.312, 1.313, 1.314, 1.377, 1378(e), 1.644(e), 1.644(f), 1.666(b), 1.666(c), 5.12, 5.13, 5.14, 5.15, and 5.25. The proposed fee would recover the estimated average cost to the Office of processing all petitions to the Commissioner mentioned above. In addition, the single fee for all petitions is expected to facilitate pre-processing of petition requests.

Section 1.17(i)(1), if further amended as proposed, would establish the fees identified in 37 CFR §§1.53, 1.60 and 1.62 to accord a filing date.

Section 1.17, if amended as proposed, would provide in new paragraph (i)(2) and $80 fee for filing a petition to the Commissioner under 37 CFR §1.102 to make an application special.

37 CFR §1.18 Patent issue fees

Section 1.18, if amended as proposed, would adjust patent issue fees established in 35 U.S.C. §41(a) and set

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forth in 37 CFR §0 1.18(a)-(c) to reflect fluctuations in the CPI.

37 CFR §1.19 Document supply fees.

Section 1.19, if revised as proposed, would adjust the fees authorized by 35 U.S.C. §41(d) for services and materials as set forth in 37 CFR §1.19 to reflect fluctuations in the CPI.

Section 1.19(a)(2), if revised as proposed, would adjust the fees for copies of plant patents and statutory invention registrations to reflect fluctuations in the CPI.

Section 1.19, if revised as proposed, would renumber paragraph (a)(5) as (a)(3) and provide for a flat fee for a certied copy of an Office document, for each 30 pages or fraction thereof.

Section 1.19, if revised as proposed, would revise paragraphs (a)(4)-(a)(6) and (b)(4) to set the fees for the purchase of color copies of color drawings identified in utility patents and for expedited service for fulfillment of orders for patent copies and orders for copies of patent applications as filed. The provision for color drawings in utility patent applications is in §1.84(p). Although color drawings may be permitted in a utility patent application by petition, copies of printed patents will only be provided in black and white. If a copy of the printed patent with copies of the drawings in color is desired, it must be separately ordered and accompanied by the fee proposed in paragraph (a)(4). The fees proposed in paragraphs (a)(5), (a)(6) and (b)(4) are for expedited processing of copy orders.

The Public Service Window (PSW) in the Patent Public Search Room referred to in proposed new paragraph 37 CFR §1.19(a)(5) is located on the lobby level of Crystal Plaza Building 3. The Office rents numbered lock boxes (delivery boxes) to members of the public for copy order delivery purposes. Members of the public may place coupon orders at the PSW and request that the copies be delivered to their boxes at the PSW. PSW staff members receive and process the coupon orders and forward them to the copy fulfillment contractor. Upon receipt of the copies, PSW staff members place them in the appropriate delivery box for pickup by the box holder.

Section 1.19, paragraph (a), if revised as proposed, would remove the charge for a microfiche copy of a microfiche.

Section 1.19, if revised as proposed, would renumber paragraph (a)(3) as (b)(1) and provide for one fee for a certified copy of a patent application as filed.

Section 1.19, if revised as proposed, would renumber paragraph (a)(4) as (b)(2)and provide for a flat fee for a certified copy of a patent file wrapper, with no limitation on the number of pages.

Section 1.19, if revised as proposed, would renumber paragraph (a)(7) as (b)(3) and provide for one fee for a certified copy of a patent assignment record.

Section 1.19, if revised as proposed, would renumber paragraph (b)(1) as (b)(5).

Section 1.19, if revised as proposed, would renumber paragraph (b)(2) as (b)(6) and adjust the fee for a search of assignment records, abstract of title and certification, per patent to reflect fluctuations in CPI.

Section 1.19, if revised as proposed, would remove paragraph (c) as the requirement for a special fee for providing subscription services has been eliminated. The Office will provide subscription services at no cost to the subscriber.

Section 1.19, if revised as proposed, would renumber paragraph (d) as paragraph (c).

Section 1.19, if revised as proposed, would renumber paragraph (e) to paragraph (d) and provide for a list of all United States patents and statutory invention registrations in a subclass, with no limit to the number at the proposed flat fee.

Section 1.19, if revised as proposed, would remove paragraph (f).

Section 1.19, if revised as proposed, would renumber paragraphs (g)-(j) as paragraphs (e)-(h) and adjust the fees to reflect fluctuations in the CPI.

37 CFR §1.20 Post-issuance fees.

Section 1.20, paragraphs (a)-(c), if amended as proposed, would adjust patent post-issuance fees authorized by 35 U.S.C. §41(d) to reflect fluctuations in the CPI.

Section 1.20, if amended as proposed, would clarify the language in paragraph (a) that the fee charged is for a correction of an applicant's mistake.

Section 1.20, paragraphs (d) and (h)-(j), if amended as proposed, would adjust patent post-issuance fees established in 35 U.S.C. §41(a) and 35 U.S.C. §41(b) to reflect fluctuations in the CPI.

Section 1.20, paragraphs (e)-(g), if amended as proposed, would adjust post-issuance fees authorized by §2 of Publ. L. 96-517, as modified by §404 of Pub. L. 98-622. These fees must be set at a level to eventually recover 25 percent of the estimated cost to the Office of processing patent applications. In order to achieve this level of recovery, these maintenance fees are proposed to be adjusted to reflect fluctuations in the CPI.

Section 1.20, paragraph (k), if amended as proposed, would adjust the patent application surcharge fee authorized by §2 of Pub. L. 96-517.

Section 1.20, paragraph (l), if amended as proposed, would adjust the post-issuance fee authorized by 35 U.S.C. §41(b).

Section 1.20, paragraph (m), if amended as proposed, would adjust the post-issuance fee authorized by 35 U.S.C. §41(c)(1).

Section 1.20, paragraph (n), if amended as proposed, would adjust the post-issuance fee authorized by Pub. L. 98-417 and 35 U.S.C. §156.

37 CFR §1.21 Miscellaneous fees and charges.

Section 1.21, if amended as proposed, would adjust the miscellaneous fees and charges authorized by 35 U.S.C. §41(d) and set forth in 37 CFR §1.21(a)-(b), (d)-(j) and (l)-(m) to reflect fluctuations in the CPI.

Section 1.21(f), if further amended as proposed, would establish a flat fee for conducting an inventor search of Office records for a ten-year period.

The CopiShare Card referred to in 37 CFR §1.21(g) relates to the photocopiers and reader/printers for use by members of the public in the Office's search facilities. Each photocopier and reader/printer is connected to an access device which affords access to the equipment through the use of a magnetic card which has been encoded with an amount pre-paid by the customer. The access devices, encoding equipment, and magnetic cards comprise an equipment access system called the CopiShare system. The magnetic CopiShare Cards are purchased by the public and encoded with an amount of funds paid to the Office. The customer places the encoded card in the device connected to the photocopier or reader/printer, and a pre-set amount is deducted for each copy produced.

The Office is proposing to authorize the public to use credit cards for the purchase of CopiShare Cards. This will be a pilot program for accepting credit cards for fees, and if feasible, may be extended to other operations of the Office.

Section 1.21(h), if further amended as proposed, would establish one fee for recording each property in an assignment, agreement or other paper relating to the property in a patent or application. The fee reflects increased costs to enhance the processing of assignments.

Section 1.21, if amended as proposed, would add a new paragraph (n) for handling incomplete or improper applications under §§1.53(c), 1.60 or 1.62.

37 CFR §1.26 Refunds.

Section 1.26, if amended as proposed, would change pharagraph (c) to provide for a refund of $1,500 if the Commissioner decides not to institute reexamination proceedings. The $1,500 refund would apply to those instances where the proposed reexamination fee of $1,980 under 37 CFR 1.20(c) was paid. The current $1,300 refund will be made in those cases where the current $1,770 reexamination fee was paid.

37 CFR §1.53 Serial number, filing date, and completion of application.

Section 1.53, if amended as proposed, would establish a procedure whereby the failure to name all the inventors on filing an application, which results in a filing date not being accorded to the application, could be excused upon the filing of a petition satisfactorily explaining the delay. If the petition is granted, the application would be accorded a filing date as of the date the original papers were deposited. No specific provision allowing this relief is now in the rules. Paragraph (c), if amended as proposed, would set forth the procedure which the Office uses to notify an applicant that the names of the inventors have been omitted and would refer to the handling fee set in §1.21, rather than including the fee amount in the rule so as to be consistent with the other rules which refer to fees.

37 CFR §1.55 Claim for foreign priority.

Section 1.55, paragraph (a), if amended as proposed, would refer to the renumbered §1.17(i)(1).

37 CFR §1.60 Continuation or divisional application for invention disclosed in a prior application.

Section 1.60, if amended as proposed, would require that an applicant, who desires an application under the rule, indicate that the application is being filed pursuant to the rule. Applications which are not specifically designated as being filed under §1.60 or §1.62 are considered as having been filed under §1.53, which does not require an originally executed declaration before a filing date is given. The proposed amendment would also establish a procedure whereby the failure to file a true copy of the prior application or the statement that the papers are a true copy, which results in a filing date not being accorded the application, could be excused upon the filing of a petition satisfactorily explaining the delay in filing these items. If the petition is granted, the application would be accorded a filing date as of the date of deposit of the request for a §1.60 application. No specific provision allowing this relief is now in the rules. Paragraph (c), if added as proposed, would set forth the procedure which the Office uses to notify an applicant that an application filed under paragraph (b) is incomplete and the handling fee which is deducted from the amount refunded if an application is not completed after notice to do so has been given.

37 CFR §1.62 File wrapper continuing procedure.

Section 1.62, if amended as proposed, would specifically state that changes to the prior application must be made by an amendment to the prior application filed in the application under §1.62. An application which includes a copy of the prior application or a new specification is improper under the rule and is not accorded a filing date. This specific statement would hopefully eliminate errors by applicants. The paragraph would also establish a procedure whereby such an error could be excused upon the filing of a petition with instructions to cancel the copy or specification. If the petition is granted, the application would be accorded a filing date as of the date of deposit of the request for a §1.62 application. Paragraph (j), if added as proposed, would set forth the procedure which the Office uses to notify the applicant that an application filed under the section is improper and the handling fee which is deducted from the amount refunded if an application is not corrected after notice to do so has been given.

37 CFR §1.96 Submission of computer program listings.

Section 1.96, if amended as proposed, would include a copy of the microfiche appendix as part of the file wrapper and contents.

37 CFR §1.102 Advancement of examination.

Section 1.102, paragraph (d), if amended as proposed, would refer to the petition fee set forth in proposed new paragraph 1.17(i)(2).

37 CFR §1.103 Suspension of action.

Section 1.103, paragraph (a), if amended as proposed, would refer to the renumbered §1.17(i)(1).

37 CFR §1.171 Application for reissue.

Section 1.171, if amended as proposed, would refer to the renumbered §1.17(i)(1).

37 CFR §1.177 Reissue in divisions.

Section 1.177, if amended as proposed, would refere to the renumbered §1.17(i)(1).

37 CFR §1.296 Withdrawal of request for publication of statutory invention registration.

Section 1.296, if amended as proposed, would adjust the handling fee for withdrawal of a statutory invention registration to reflect fluctuations in the CPI.

37 CFR §1.313 Withdrawal from issue.

Section 1.313, paragraph (a), if amended as proposed, would refer to the renumbered §1.17(i)(1).

37 CFR §1.314 Issuance of patent.

Section 1.314, if amended as proposed, would refer to the renumbered §1.17(i)(1).

37 CFR §1.334 Issue of patent to assignee.

Section 1.334, paragraph (c), if amended as proposed, would refer to the renumbered §1.17(i)(1).

37 CFR §1.445 International application filing and processing fees.

Section 1.445, if amended as proposed, would adjust the fees authorized by 35 U.S.C. §376 for international application processing as set forth in 37 CFR §1.445(a)(2) and (a)(3) to recover the cost to the Office of such processing, as determined by fluctuations in CPI.

37 CFR §1.451 The priority claim and priority document in an international application.

Section 1.451, paragraph (b), if amended as proposed, would refere to the renumbered §1.19(b)(1) and §1.19(b)(6).

37 CFR §1.482 International preliminary examination fees.

Section 1.482, if amended as proposed, would adjust the fees authorized by 35 U.S.C. §376 for international application processing as set forth in 37 CFR §1.482(a) to recover the estimated average cost to the Office of such processing.

37 CFR §1.492 National stage fees.

Section 1.492, if amended as proposed, would adjust the fees authorized by 35 U.S.C. §376 for international application processing as set forth in 37 CFR 1.492(a)-(b) and (d)-(f) to recover the estimated average cost to the Office of such processing as determined by fluctuations in the CPI.

37 CFR §1.666 Filing of interference settlement agreements.

Section 1.666, paragraph (b), if amended as proposed, would refere to the renumbered §1.17(i)(1).

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37 CFR §2.6 Trademark fees.

Section 2.6, if amended as proposed, would adjust trademark fees established pursuant to the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. §1113), as set forth in paragraphs (a) and (q).

OTHER CONSIDERATIONS: The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. §§3501 et seq. There are no information collection requirements relating to patent fee rules.

The Office has determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354). The principal impact of the major patent fees has already been taken into account in Pub. L. 99-607, which provided small entities with a 50 percent reduction in the major patent fees. The proposed rule change will adjust fees to reflect the change in the CPI and cost of processing services as provided by statute (35 U.S.C. §41(d) and §41(f)).

The Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions, because most major fees are being adjusted to reflect changes in the CPI over the past three years. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 1 and Part 2

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers, Trademarks.

For the reasons set forth in the preamble, the Office is proposing to amend Title 37 of the Code of Federal Regulations as set forth below. All proposed additions are printed between arrows (> <) and all deletions are shown between brackets ([ ]).

Part 1 Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. §6 unless otherwise noted.

2. Section 1.12 is proposed to be amended by revising paragraph (a) to read as follows:

§1.12 Assignment records open to public inspection.

(a) The assignment records, relating to original or reissue patents, including digests and indexes, and assignent records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection >,< and copies of any instrument recorded may be obtained upon request[s] and payment of the fee set forth in [§1.19(a)(5)] >§1.19(a)(3)<.

• • • • •

(c) Any request by a member of the public seeking copies of any assignment records of any pending or abandoned patent application preserved in secrecy under §1.14, or any information with respect thereto, must (i) be in the form of a petition accompanied by the petition fee set forth in [§1.17(i)] >§1.17(i)(1),< or (2) include written authority granting access to the member of the public to the particular assignment records from the applicant or applicant's assignee or attorney or agent of record.

• • • • •

3. Section 1.14 is proposed to be amended by revising paragraph (e) to read as follows:

§1.14 Patent applications preserved in secrecy.

• • • • •

(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in secrecy pursuant to paragraphs (a) and (b) of this section, or any papers relating thereto, must (1) be in the form of a petition and be accompanied by the petition fee set forth in]§1.17(i)] >§1.17(i)(1),< or (2) include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record. See §1.612(a) for access by an interference party to a pending or abandoned application.

4. Section 1.16 is proposed to be amended by revising paragraphs (a)-(b) and (d)-(i) to read as follows:

§1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant case:

By a small entity (§1.9(f)) . . . . . [$170.00]>$185.00<
By other than a small entity . . . . . [$340.00]>$370.00<

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§1.9(f)) . . . . . [$17.00]>$18.00<
By other than a small entity . . . . . [$34.00]>$36.00<

• • • • •

(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain a multiple dependent claim(s) per application:

By a small entity (§1.9(f)) . . . . . [$55.00]>$60.00<
By other than a small entity . . . . . [$110.00]>$120.00<

(If the additional fees required by paragraphs (b), (c) >,< and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims canceled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:

By a small entity(§1.19(f)) . . . . . [$55.00]>$60.00<
By other than a small entity . . . . . [$110.00]>$120.00<

(f) For filing each design application:

By a small entity(§1.9(f)) . . . . . [$70.00]>$75.00<
By other than a small entity . . . . . [$140.00]>$150.00<

(g) Basic fee for filing each plant application:

By a small entity(§1.9(f)) . . . . . [$110.00]>$125.00<
By other than a small entity . . . . . [$220.00]>$250.00

(h) Basic fee for filing each reissue application:

By a small entity(§1.9(f)) . . . . . [$170.00]>$185.00<
By other than a small entity . . . . . [$340.00]>$370.00<

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity(§1.9(f)) . . . . . [$17.00]>$18.00<
By other than a small entity . . . . . [$34.00]>$36.00<

• • • • •

(Note, see §1.445 for international application filing and processsing fees[].] >.)<

5. Section 1.17 is proposed to be amended by revising paragraphs (a)-(i)(1) and (j)-(m), and by adding a new paragraph (i)(2), to read as follows:

§§1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to §1.136(a):

By a small entity(§1.9(f)) . . . . . [$28.00]>$31.00<
By other than a small entity . . . . . [$56.00]>$62.00<

(b) Extension fee for response within second month pursuant to §1.136(a):

By a small entity(§1.9(f)) . . . . . [$85.00]>$90.00<
By other than a small entity . . . . . [$170.00]>$180.00<

(c) Extension fee for response within third month pursuant to §1.136(a):

By a small entity(§(f)) . . . . . [$195.00]>$215.00<
By other than a small entity . . . . . [$390.00]>$430.00<

(d) Extension fee for response within fourth month pursuant to §1.136(a):

By a small entity(§1.9(f)) . . . . . [$305.00]>$340.00<
By other than a small entity . . . . . [$610.00]>$680.00<

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity(§1.9(f)) . . . . . [$65.00]>$70.00<
By other than a small entity . . . . . [$130.00]>$140.00<

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity(§1.9(f)) . . . . . [$65.00]>$70.00<
By other than a small entity . . . . . [$130.00]>$140.00<

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in appeal under 35 U.S.C. §134:

By a small entity(§1.9(f)) . . . . . [$55.00]>$60.00<
By other than a small entity . . . . . [$110.00]>$120.00<

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph . . . . . [$140.00]>$120.00<

§1.47 - for filing by other than all the inventors or a person not the inventor.
§1.48 - for correction of inventorship
§1.182 - for decision on questions not specifically provided for.
§1.183 - to suspend rules.
§1.295 - for review of refusal to publish a statutory invention registration.
§1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.
§1.378(e) - for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent.
§1.644(e) - for petition in an interference.
§1.644(f) - for request for reconsideration of a decision on petition in an interference.
§1.666(c) - for late filing of interference settlement agreement.
§§5.12, 5.13, & 5.14 - for expedited handling of foreign filing license.
§5.15 - for changing the scope of a license.
§5.25 - for retroactive license.

(i)>(1)< For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph . . . . . [$72.00]>$120.00<

§1.12 - for access to an assignment record.
§1.14 - for access to an application.
>§1.53 - to accord a filing date.<
§1.55 - for entry of late priority papers.
>§1.60 - to accord a filing date.<
>§1.62 - to accord a filing date.<
[§1.102 - to make application special.]
§1.103 - to suspend action in application.
§1.177 - for divisional reissue to issue separately.
§1.312 - for amendment after payment of issue fee.
§1.313 - to withdraw an application from issue.
§1.314 - to defer issuance of a patent.
§1.334 - for patent to issue to assignee, assignment recorded late.
§1.666(b) - for access to interference settlement agreement.

>(2) For filing a petition to the Commissioner under §1.102 of this part to make application special . . . . . $80.00<

(j) For filing a petition to institute a public use proceeding under §1.292 . . . . . [$860.00]>$1,200.00<

(k) For processing an application filed with a specification in a non-English language (§1.52(d)) . . . . . [$26.00]>$30.00<

(l) For filing a petition (l) for the revival of an abandoned application under 35 U.S.C. §133, or §371 or (2) for delayed payment of the issue fee under 35 U.S.C. §151:

By a small entity(§1.9(f)) . . . . . [$28.00]>$31.00<
By other than a small entity . . . . . [$56.00]>$62.00<

(m) For filing a petition (l) for revival of an unintentionally abandoned application >,< or (2) for the unintentionally delayed payment of the fee for issuing a patent:

By a small entity(§1.9(f)) . . . . . [$280.00]>$310.00<
By other than a small entity . . . . . [$560.00]>$620.00<

• • • • •

6. Section 1.18 is proposed to be amended to read as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity(§1.9(f)) . . . . . [$280.00]>$310.00<
By other than a small entity . . . . . [$560.00]>$620.00<

(b) Issue fee for issuing a design patent:

By a small entity(§1.9(f)) . . . . . [$100.00]>$110.00<
By other than a small entity . . . . . [$200.00]>$220.00<

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(c) Issue fee for issuing a plant patent:

By a small entity(§1.9(f)) . . . . . [$140.00]>$155.00<
By other than a small entity . . . . . [$280.00]>$310.00<

7. Section 1.19 is proposed to be revised to read as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Offices documents:

• • •

(2) Printed copy of a plant patent or statutory invention registration in color . . . . . [$6.00]>$10.00<

[(3) Copy of patent application as filed $9.50

(4) Copy of patent file wrapper and contents, per 200 pages or a fraction thereof . . . . . .$75.00]

[(5)]>(3)< Copy of Office [records] >documents<, except as otherwise provided in this, [per page] >for each 30 pages or a fraction thereof< . . . . . [$.50]>$10.00<

[(6) Microfiche copy of microfiche, per microfiche . . . . . .$.50

(7) Copy of patent assignment record . . . . . $1.50]

>(4) Copy of a utility patent with drawings in color (see §1.84(p)) $20.00

(5) Expedited local service for copy of a patent as in paragraph (a)(1) of this section, fulfilled within one work day for orders delivered to the Public Service Window in the Patent Public Search Room . . . $3.00

(6) Expedited service for copy of a patent as in paragraph (a)(1) of this section, ordered by electronic ordering service and delivered to the customer within two work days . . . . . $25.00<

(b) Certified copies of Office documents:

>(1) Certified copy of patent application as filed. $10.00

(2) Certified copy of patent file wrapper . . . $170.00

(3) Certified copy of patent assignment record . . . $5.00

(4) Expedited service for certified copy of patent application as filed in paragraph (a)(3) of this section, fulfilled within 5 work days, excluding mailing time . . . $20.00<

[(1)] >(5)< For certifying Office records, per certificate $3.00

[(2)] >(6)< For a search of assignment records, abstract of title and certification, per patent . . . . . [$12.00]>$15.00<

[(c) Subscription services:

(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and ten subclasses $7.00

(2) For annual subscription to each additional subclass in addition to the ten covered by the fee under paragraph (c)(1) of this section, per subclass . . . . $2.00]

[(d)] >(c)< Library service (35 U.S.C. §13): For providing to libraries copies of all patents issued annually, per annum $50.00

[(e) List of patents in a subclass:

(1)] >(d)< For list of all United States patents and statutory invention registrations in a subclass [, per 100 numbers or fraction thereof $1.00

(2) For list of United States patents and statutory invention registrations in a subclass limited by date or number, per 50 numbers or fraction thereof . . . . . $1.00]>$2.00<

[(f) Microfiche copy of patent file record . . . . . $6.00]

[(g)] >(e)< Uncertified statement as to status of the payment of maintenance fees due on a patent or expiration of a patent . . . . . [$3.00]>$5.00<

[(h)] >(f)< Uncertified copy of a non-United States patent document, per document $10.00

[(i) >(g)< To compare and certify copies made from Patent and Trademark Office records but not prepared by the Patent and Trademark Office, per copy of document . . . . . [$5.00]>$10.00<

[(j)] >(h)< Additional filing receipts[:

(1) Duplicate $14.00

(2) Corrected due to applicant error . . . . . .$14.00]

>duplicate or corrected due to applicant error $15.00<

8. Section 1.20 is proposed to be amended by revising paragraphs (a)-(n) to read as follows:

§1.20 Post issuance fees.

(a) For providing a certificate of correction [of] >for applicant's< mistake (§1.323) . . . [$29.00]>$60.00<

(b) Petition for correction of inventorship in patent (§1.324) . . . . . .[$140.00]>$120.00<

(c) For filing a request for reexamination (§1.510(a)) . . . . . [$1,770.00]>$2,000.00<

(d) For filing each statutory disclaimer (§1.321):

By a small entity(§1.9(f)) . . . . . [$28.00]>$31.00<
By other than a small entity . . . . . [$56.00]>$62.00<

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond [4] >four< years; the fee is due by three years and six months after the original grant . . . . . .[$225.00]>$245.00<

(f) For maintaining an original or reissue patent, a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond [8] >eight< years; the fee is due by seven years and six months after the original grant . . . . . .[$445.00]>$495.00<

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant . . . . . .[$670.00]>$740.00<

(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond [4] >four

< years; the fee is due by three years and six months after the original grant:

By a small entity(§1.9(f)) . . . . . [$225.00]>$245.00<
By other than a small entity . . . . . [$450.00]>$490.00<

(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application, filed on or after Aug. 27, 1982, in force beyond [8] >eight< years; the fee is due by seven years and six months after the original grant:

By a small entity(§1.9(f)) . . . . . [$445.00]>$495.00<
By other than a small entity . . . . . [$890.00]>$990.00<

(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§1.9(f)) . . . . . [$670.00]>$740.000<
By other than a small entity . . [$1,340.00]>$1,480.00<

(k) Surcharge for paying a maintenance fee during the [6] >six< -month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . .[$110.00]>$120.00<

(l) Surcharge for paying a maintenance fee during the [6] >six< -month grace period following the expiration of three years and six months, seven years and six months and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)) . . . . . [$55.00]>$60.00<
By other than a small entity . . . . . [$110.00]>$120.00<

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . .[$500.00]>$550.00<

(n) For filing an application for extension of the term of a patent (§1.740) . . . . . [$550.00§>$600.00<

9. Section 1.21 is proposed to be amended by revising paragraphs (a), (b), (d)-(j), and (l)-(m) to read as follows:

§1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents:

(1) For admission to examination for registration to practice, fee payable upon application . . . . . .[$250.00]>$270.00<

(2) On registration to practice . . . . . [$81.00]>$90.00<

(3) For reinstatement to practice . . . . [$9.00]>$10.00<

(4) For certificate of good standing as an attorney or agent $10.00
Suitable for framing . . . . . .[$88.00]>$100.00<

(5) For review of a decision of the Director of Enrollment and Discipline under §10.2(c) . . . . . .[$92.00]>$100.00<

(6) For requesting regrading of an examination under §10.7(c) . . . . . .[$92.00]>$100.00<

(b) Deposit accounts:

(1) For establishing or reinstating a deposit account . . . . . [$8.00]>$10.00<

• • • • •

(3) • • •

(d) Delivery box: Local delivery box rental, per annum . . . . . [$43.00]>$50.00<

(e) International type search reports: For preparing an international type search report of an international type search made at the time of the first action on the merits in a national patent application [$28.00]>$30.00<

(f) Search of Office records: For [searching Patent and Trademark] >conducting an inventor search of< Office records for [purposes not otherwise specified, per one half-hour or fraction thereof] >a ten-year period< . . . . . [$14.00]>$10.00<

(g) CopiShare card: Cost per copy . . . .[$0.20]>$.15<

(h) [Recording of documents:

(1)] For recording each assignment, agreement or other paper relating to the property in a patent or application >per property< . . . . . [$7.00]>$8.00<

[(2) Where a document to be recorded under paragraph (h)(1) of this section refers to more than one patent or application, for each additional patent or application . . . . . $2.00]

(i) Publication in Official Gazette: For publication in the Official Gazette of a notice of the availability of an application or a patent for licensing or sale, each application or patent . . . . . [$7.00]>$20.00<

(j) For a duplicate or replacement of a permanent Office user pass (There is no charge for the first permanent user pass) . . . . . .[$5.00]>$10.00<]

• • • • •

(l) For processing and retaining any application abandoned pursuant to section 1.53(d) unless the required basic filing fee has been paid . .[$100.00]>$120.00<

(m) For processing each check returned "unpaid" by a bank . . . . . [$20.00]>$50.00<

>(n) For handling incomplete or improper application under §1.53(c), §1.60 or §1.62 . . . . . $20.00<

10. Section 1.26 is proposed to be amended by revising paragraph (c) to read as follows:

§1.26 Refunds.

• • • • •

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of [$1,300] >$1,500< will be made to the requestor of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

11. Section 1.53 is proposed to be amended by revising paragraph (c) to read as follows:

§1.53 Serial number, filing date, and completion of application.

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(b) The filing date of an application for patent is the date on which: (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a)[,] are filed in the Patent and Trademark Office in the name of the actual inventor or inventors as required by §1.41. No new matter may be introduced into an application after its filing date (§1.118). >If all the names of the actual inventor or inventors are not supplied when the specification and any required drawing are filed, the application will not be given a filing date earlier than the date upon which the names are supplied unless a petition with the fee set forth in §1.17(i)(1) is filed which satisfactorily explains the delay in supplying the names.<

(c) If any application is filed without the specification >,< [or] drawing >or name, or names, or the actual inventor or inventors< required by paragraph (b) of this section, applicant will be so notified and given a time period within which to submit the omitted specification >,< [or] drawing <, name, or names, of the actual inventor, or inventors,< in order to obtain a filing date as of the date of filing of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less [a $15.00] >the < handling set forth in §1.21 (n)<.

• • • • •

12. Section 1.55 is proposed to be amended by revising paragraph (a) to read as follows:

§1.55 Claim for foreign priority.

(a) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. §119 and §172. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by §1.63. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. §119 must be filed in the case of >an< interference (§1.630); when necessary to overcome the date of a reference relied upon the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in [§1.17(i)] >§1.17(i)(1)<.

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13. Section 1.60 is proposed to be amended by revising paragraph (b) and adding new paragraph (c) to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

• • • • •

(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a), (2) applicant >indicates that the application is being filed pursuant to this section and< files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration showing the signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application, and (3) the inventors named in the continuation or divisional application are the same or less than all the inventors named in the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statements must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date. If the continuation or divisional application is filed by less than all the inventors named in the prior application >,< a statement must accompany the application when filed requesting deletion of the names of the person or persons who are not inventors of the invention being claimed in the continuation or divisional application.> If a true copy of the prior application as filed is not filed with the application or if the statement that the application papers are a true copy is omitted, the application will not be given a filing date earlier than the date upon which the copy and statement are filed, unless a petition with the fee set forth in §1.17(i)(1) is filed which satisfactorily explains the delay in filing these items.<

>(c) If an application filed pursuant to paragraph (b) of this section is incomplete, applicant will be given a time period within which to complete the application in order to obtain a filing date as of the date of filing the omitted item provided the omitted item is filed before the patenting or abandonment of or termination of proceedings on the prior application. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less the handling fee set forth in §1.21(n).<

14. Section 1.62 is proposed to be amended by revising paragraph (e) and by adding a new paragraph (j) to read as follows:

§1.62 File wrapper continuing procedure.

• • • • •

(e) An application filed under this section will utilize the file wrapper and contents of the prior application to constitute the new continuation, continuation-in-part, or divisional application but will be assigned a new application serial number. >Changes to the prior application must be made in the form of an amendment to the prior application as it exists at the time of filing the prior application under this section. No copy of the prior application or new specification is required and the filing of such a copy or specification will be considered improper, and a filing date will not be granted to the application unless a petition with the fee set forth in §1.17(i)(1) is filed with instructions to cancel the copy or specification.<

• • • • •

>(j) If any application filed under this section is found to be improper, the applicant will be notified and given a time period within which to correct the filing error in order to obtain a filing date as of the date the filing error is corrected provided the correction is made before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application. If the filing error is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less the handling fee set forth in §1.21(n).<

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15. Section 1.96 is proposed to be amended to read as follows:

§1.96 Submission of computer program listings.

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(b)(1) Availability of appendix. Such computer program listings on microfiche will be available to the public for inspection, and [paper or] microfiche copies thereof will be [separately] available for purchase >with the file wrapper and contents<, after a patent based on such [an] application is granted or the application is otherwise made publicly available.

16. Section 1.102 is proposed to be amended to read as follows:

§1.102 Advancement of examination.

• • • • •

(d) A petition to make an application special on grounds other than those referred to in paragraph (c) of this section must be accompanied by the petition fee set forth in §1.17(i)>(2)<.

17. Section 1.103, paragraph (a) is proposed to be amended to read as follows:

§1.103 Suspension of action.

(a) Suspension of action by the Office will be granted for good and sufficient cause and for a reasonable time specified upon petition by the applicant and, if such cause is not the fault of the Office, the payment of the fee set forth in [§1.17(i)] >§1.17(i)(1)<. Action will not be suspended when a response by the applicant to an Office action is required.

• • • • •

18. Section 1.171 is proposed to be amended to read as follows:

§1.171 Application for reissue.

An application for reissue must contain the same parts required for an application for an original patent, complying with all the rules relating thereto except as otherwise provided, and >,< in addition, must comply with the requirements of the rules relating to reissue applications. The application must be accompanied by a certified copy of an abstract of title or an order for a title report accompanied by the fee set forth in [§1.19(b)(2)] >§1.19(b)(6)<, to be placed in the file, and by an offer to surrender the original patent (§1.178).

19. Section 1.177 is proposed to be amended to read as follows:

§1.177 Reissue in divisions.

The Commissioner may, in his or her discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for each division. Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part of parts, subject to the provisions of §§1.83 and 1.84. On filing divisional reissue applications, they shall be referred to the Commissioner. Unless otherwise ordered by the Commissioner upon petition and payment of the fee set forth in [§1.17(i)] >§1.17(i)(1)<, all the divisions of a reissue will issue simultaneously; if there be any controversy as to one division, the others will be withheld from issue until the controversy is ended, unless the Commissioner shall otherwise order.

20. Section 1.296 is proposed to be amended to read as follows:

§1.296 Withdrawal of request for publication of statutory invention registration.

A request for a statutory invention registration, which has been filed, may be withdrawn prior to the date of the notice of the intent to publish a statutory invention registration issued pursuant to §1.294(c) by filing a request to withdraw the request for publication of a statutory invention registration. The request to withdraw may also include a request for a refund of any amount paid in excess of the application filing fee and a handling fee of [$100] >$120.00< which will be retained. Any request to withdraw the request for publication of a statutory invention registration filed on or after the date of the notice of intent to publish issued pursuant to §1.294(c) must be in the form of a petition pursuant to §1.183 accompanied by the fee set forth in §1.17(h).

21. Section 1.313, paragraph (a), is proposed to be amended to read as follows:

§1.313 Withdrawal from issue.

(a) Applications may be withdrawn from issue for further action at the initiative of the Office or upon petition by the applicant. Any such petition by the applicant must include a showing of good and sufficient reasons why withdrawal of the application is necessary and, if the reason for the withdrawal is not the fault of the Office, must be accompanied by the fee set forth in [§1.17(i)] >§1.17(i)(1)<. If the application is withdrawn from issue, a new notice of allowance will be sent if the application is again allowed. Any amendment accompanying a petition to withdraw an application from issue must comply with the requirement of §1.312.

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22. Section 1.314 is proposed to be amended to read as follows:

§1.314 Issuance of patent.

If payment of the issue fee is timely made, the patent will issue in regular course unless (a) the application is withdrawn from issue (§1.313) >,< or (b) issuance of the patent is deferred. Any petition by the applicant requesting deferral of the issuance of a patent must be accompanied by the fee set forth in [§1.17(i)] >§1.17(i)(1)< and must include a showing of good and sufficient reasons why it is necessary to defer issuance of the patent.

23. Section 1.334, paragraph (c), is proposed to be amended to read as follows:

§1.334 Issue of patent to assignee.

• • • • •

(c) If the assignment is recorded after the date of payment of the issue fee, the assignee may petition that the patent issue to the assignee as recorded. Any such petition must be accompanied by the fee set forth in [§1.17(i)] >§1.17(i)(1)<.

24. Section 1.445 is proposed to be amended by revising paragraph (a) to read as follows:

§1.445 International application filing and processing fees.

(a) The following fees and charges are established by the Patent and Trademark Office under the authority of 35 U.S.C. §376:

• • •

(2) A search fee (see 35 U.S.C. §361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with basic filing fee has been filed . . . . . [$520.00]>$550.00<

(ii) A corresponding prior United States national application with basic filing fee has been filed . . . . . [$350.00]>$380.00<

(3) A suppplemental search fee when required per additional invention . . . . . [$140.00]>$150.00<

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25. Section 1.451 is proposed to be amended by revising paragraph (b) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office or in a separate letter filed in the Receiving Office not later than 16 months after the priority date, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Article 8 and PCT Rule 17). The fee for preparing a certified copy is stated in [§1.19 (a)(3) and (b)(1)] >§1.19 (b)(1) and (b)(5)<.

* * * * *

26. Section 1.482 is proposed to be amended by revising paragraph (a) to read as follows:

§1.482 International preliminary examination fees.

(a) The following fees and charges for international preliminary examination are established by the Commissioner under the authority of 35 U.S.C. §376:

(1) A preliminary examination fee is due on filing the Demand:

(i) Where an international search fee as set forth in §1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, a preliminary examination fee of . [$370.00]>$400.00<

(ii) Where the International Searching Authority for the international application was an authority other than the UnitedStates Patent and Trademark Office, a preliminary examination fee of . . . [$570.00]>$600.00<

(2) An additional preliminary examination fee when required, per additional invention:

(i) Where a supplemental search fee as set forth in §1.445(a)(3) has been paid on the international application to the United States Patent and Trademark Office as an international Searching Authority . . . . . [$125.00]>$130.00<

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office . . . . . [$190.00]>$200.00<

* * * * *

27. Section 1.492 is proposed to be amended by revising paragraphs (a)(1)-(3), (b), and (d)-(f) to read as follows:

§1.492 National stage fees.

The following fees and charges for international applications entering the national stage under 35 U.S.C. §371 are established by the Commissioner under 35 U.S.C. §376:

(a) The basic national fee:

(1) Where an international preliminary examination fee as set forth in §1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity(§1.9(f)) . . . . . [$150.00]>$165.00<
By other than a small entity . . . . . [$300.00]>$330.00<

(2) Where no international preliminary examination fee as set forth in §1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in §1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as in International Searching Authority:

By a small entity(§1.9(f)) . . . . . [$170.00]>$185.00<
By other than a small entity . . . . . [$340.00]>$370.00<

(3) Where no international preliminary examination fee as set forth in §1.482 has been paid and no international search fee as set forth in §1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity(§1.9(f)) . . . . . [$225.00]>$250.00<
By other than a small entity . . . . . [$450.00]>$500.00<

* * *

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:

By a small entity(§1.9(f)) . . [$17.00]>$18.00<By other than a small entity [34.00]>36.00 <

* * * * *

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claims(s), per application:

By a small entity(§1.9(f)) . . . . . [$55.00]>$60.00<
By other than a small entity . . . . . [$110.00]>$120.00<

(If the additional fees required by paragraphs (b),

(c) >,< and (d) are not paid on presentation of the claims for which the additional fees are due, they must be paid or the claims canceled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic national fee or oath or declaration later than 20 months from the priority date pursuant to §1.494(c) or later than 30 months from the priority date pursuant to §1.495(c):

By a small entity(§1.9(f)) . . . . . [$55.00]>$60.000<
By other than a small entity . . . . . [$110.00]>$120.00<

(f) For filing an English translation of an international application later than 20 months after the priority date (§1.494(c)) or filing an English translation of the international application or of any annexes to the international preliminary examination report later than 30 months after the priority date (§1.495(c) and (e)): . . . . . [$26.00]>$30.00<

28. Section 1.666 is proposed to be amended by revising paragraph (b) to read as follows:

§1.666 Filing of interference settlement agreements.

* * * * *

(b) If any party filing the agreement or understanding under paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in [§1.17(i)] >§1.17(i)(1)< and on a showing of good cause.

* * * * *

Part 2 Rules of Practice in Trademark Cases

Revision of Trademark Fees

1. Section 2.6 is proposed to be amended by revising paragraphs (a) and (q)

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

* * * * *

(a) For filing an application, per class [$200.00]>$175.00 <

* * * * *

(q) For recording trademark assignments and agreements or other papers relating to the property in a registration or application, per [document] >mark< . . . . . [$100.00]>$8.00<

[For each mark in addition to one assigned in the same document . . . . . .$20.00]

* * * * *

DONALD J. QUIGG,

Nov. 21, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

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STATUTORY PATENT FEES - LARGE ENTITY

CFR	PTO FEE CODE	DESCRIPTION	PRESENT FEE	PROJECTED COST	PRESENT FEE ADJ. BY C.P.I.	PROPOSED FEE
1.16(a)	101	Basic Filing Fee	340.00	* *	369.96	370.00
1.16(b)	102	Independent Claims	34.00	* *	37.00	36.00
1.16(c)	103	Claims in Excess of 20	12.00	* *	12.33	12.00
1.16(d)	104	Multiple Dependent Claims	110.00	* *	123.32	120.00
1.16(f)	106	Design Filing Fee	140.00	* *	154.15	150.00
1.16(g)	107	Plant Filing Fee	220.00	* *	246.64	250.00
1.16(h)	108	Reissue Filing Fee	340.00	* *	369.96	370.00
1.16(i)	109	Reissue Independent Claims	34.00	* *	37.00	36.00
1.16(j)	110	Reissue Claims in Excess of 20	12.00	* *	12.33	12.00
1.17(a)	115	Extension - First Month	56.00	* *	61.66	62.00
1.17(b)	116	Extension - Second Month	170.00	* *	184.98	180.00
1.17(c)	117	Extension - Third Month	390.00	* *	431.62	430.00
1.17(d)	118	Extension - Fourth Month	610.00	* *	678.25	680.00
1.17(e)	119	Notice of Appeal	130.00	* *	141.82	140.00
1.17(f)	120	Filing A Brief	130.00	* *	141.82	140.00
1.17(g)	121	Request for Oral Hearing	110.00	* *	123.32	120.00
1.17(l)	140	Petition-Revive Abandoned Appl.	56.00	* *	61.66	62.00
1.17(m)	141	Petition-Revive Uninten Aband. App.	560.00	* *	616.59	620.00
1.18(a)	142	Issue Fee	560.00	* *	616.59	620.00
1.18(b)	143	Design Issue Fee	200.00	* *	215.81	220.00
1.18(c)	144	Plant Issue Fee	280.00	* *	308.30	310.00
1.20(d)	148	Statutory Disclaimer	56.00	* *	61.66	62.00
1.20(h)	173	Maintenance Fee - 3.5 -97-247	450.00	* *	493.28	490.00
1.20(i)	174	Maintenance Fee - 7.5 - 97-247	890.00	* *	986.55	990.00
1.20(j)	175	Maintenance Fee - 11.5 - 97-247	1,340.00	* *	1,479.83	1,480,00

* *The 1986 unrounded base fee increased by projected C.P.I. - see explanation under Background, Fee Adjustment Methodology, paragraph 2(a).*

* * *See Background, Fee Adjustment Methodology, paragraph 1(a) for an explanation of cost calculations for statutory patent fees.*

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STATUTORY PATENT FEES - SMALL ENTITY

CFR	PTO FEE CODE	DESCRIPTION	PRESENT FEE	PROJECTED COST	PRESENT FEE ADJ. BY C.P.I.	PROPOSED FEE
1.16(a)	201	Basic Filing Fee	170.00	* *	186.08	185.00
1.16(b)	202	Independent Claims	17.00	* *	18.50	18.00
1.16(c)	203	Claims in Excess of 20	6.00	* *	6.17	6.00
1.16(d)	204	Multiple Dependent Claims	55.00	* *	61.66	60.00
1.16(f)	206	Design Filing Fee	70.00	* *	77.08	75.00
1.16(g)	207	Plant Filing Fee	110.00	* *	123.32	125.00
1.16(h)	208	Reissue Filing Fee	170.00	* *	184.98	185.00
1.16(i)	209	Reissue Independent Claims	17.00	* *	18.50	18.00
1.16(j)	210	Reissue Claims in Excess of 20	6.00	* *	6.17	6.00
1.17(a)	215	Extension - First Month	28.00	* *	30.83	31.00
1.17(b)	216	Extension - Second Month	85.00	* *	92.49	90.00
1.17(c)	217	Extension - Third Month	195.00	* *	215.81	215.00
1.17(d)	218	Extension - Fourth Month	305.00	* *	339.13	340.00
1.17(e)	219	Notice of Appeal	65.00	* *	70.91	70.00
1.17(f)	220	Filing A Brief	65.00	* *	70.91	70.00
1.17(g)	221	Request for Oral Hearing	55.00	* *	61.66	60.00
1.17(l)	240	Petition-Revive Abandoned Appl.	28.00	* *	30.83	31.00
1.17(m)	241	Petition-Revive Uninten Aband. App.	280.00	* *	308.30	310.00
1.18(a)	242	Issue Fee	280.00	* *	308.30	310.00
1.18(b)	243	Design Issue Fee	100.00	* *	107.91	110.00
1.18(c)	244	Plant Issue Fee	140.00	* *	154.15	155.00
1.20(d)	248	Statutory Disclaimer	28.00	* *	30.83	31.00
1.20(h)	273	Maintenance Fee - 3.5 -97-247	225.00	* *	246.64	245.00
1.20(i)	274	Maintenance Fee - 3.5 - 97-247	445.00	* *	493.28	495.00
1.20(j)	275	Maintenance Fee - 11.5 - 97-247	670.00	* *	739.91	740.00

* *The 1986 unrounded base fee increased by projected C.P.I. - see explanation under Background, Fee Adjustment Methodology, paragraph 2(a).*

* * *See Background, Fee Adjustment Methodology, paragraph 1(a) for an explanation of cost calculations for statutory patent fees.*

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NON-STATUTORY PATENT FEES

CFR	PTO FEE CODE	DESCRIPTION	PRESENT FEE	PROJECTED COST	PRESENT FEE ADJ. BY C.P.I.	PROPOSED FEE
1.16(e)	105	Surcharge - Late Filing Fee	110.00	120.00	121.33	120.00
1.16(e)	205	Surcharge - Late Filing Fee	55.00	60.00	60.67	60.00
1.17(h)	122	Petition - Not all Inventors	140.00	119.11	151.08	120.00
1.17(h)	123	Petition - Correction of Inventorship	140.00	119.11	151.08	120.00
1.17(h)	124	Petition - Decision on Questions	140.00	119.11	151.08	120.00
1.17(h)	125	Petition - Suspend Rules	140.00	119.11	151.08	120.00
1.17(h)	160	Petition - Expedited License	140.00	119.11	151.08	120.00
1.17(h)	161	Petition - Scope of License	140.00	119.11	151.08	120.00
1.17(h)	162	Petition - Retroactive License	140.00	119.11	151.08	120.00
1.17(h)	163	Petition - Refusing Maint. Fee	140.00	119.11	151.08	120.00
1.17(h)	164	Petition - Refusing Maint. Fee - Expired Pat	140.00	119.11	151.08	120.00
1.17(h)	165	Petition - Interference	140.00	119.11	151.08	120.00
1.17(h)	166	Petition - Reconsider Interference	140.00	119.11	151.08	120.00
1.17(h)	167	Petition - Late Filing of Interf.	140.00	119.11	151.08	120.00
1.17(h)	168	Petition - Refusal to Pub Sir	140.00	119.11	151.08	120.00
1.17(i)	127	Petition - For Assignment Record	72.00	119.11	78.91	120.00
1.17(i)	128	Petition - For Application	72.00	119.11	78.91	120.00
1.17(i)	129	Petition - Late Priority Papers	72.00	119.11	78.91	120.00
1.17(i)	130	Petition - Make Appl. Special	72.00	78.72	78.91	80.00
1.17(i)	131	Petition - Suspend Action	72.00	119.11	78.91	120.00
1.17(i)	132	Petition - Divisional Reissues	72.00	119.11	78.91	120.00
1.17(i)	133	Petition - For Interference Agree	72.00	119.11	78.91	120.00
1.17(i)	134	Petition - Amendment After Issue	72.00	119.11	78.91	120.00
1.17(i)	135	Petition - Withdrawal From Issue	72.00	119.11	78.91	120.00
1.17(i)	136	Petition - Defer Issue	72.00	119.11	78.91	120.00
1.17(i)	137	Petition - Issue to Assignee	72.00	119.11	78.91	120.00
1.17(j)	138	Petition - Public Use Proceeding	860.00	1,224.44	941.91	1,200.00
1.17(k)	139	Non-English Specification	26.00	28.16	28.45	30.00
1.17(n)	112	Sir - Prior to Examiner's Action*	400.00	400.00	448.23	400.00
1.17(n)	113	Sir - After Examiner's Action*	800.00	800.00	931.89	800.00
1.20(a)	145	Certificate of Correction	29.00	61.42	31.78	60.00
1.20(b)	146	Petition - Correction of Inventorship	140.00	119.11	151.08	120.00
1.20(c)	147	Reexamination	1,770.00	1,967.73	1,950.01	2,000.00
1.20(e)	170	Maintenance Fee - 3.5 - 96-517	225.00	245.00	248.18	245.00
1.20(f)	171	Maintenance Fee - 7.5 - 96-517	445.00	495.00	490.85	495.00
1.20(g)	172	Maintenance Fee - 11.5 - 96-517	670.00	740.00	739.03	740.00
1.20(k)	176	Surcharge - 6 Months - 96-517	110.00	120.00	121.33	120.00
1.20(l)	177	Surcharge - 6 Months - 97-247	110.00	120.00	121.33	120.00
1.20(l)	277	Surcharge - 6 Months - 97-247	55.00	60.00	60.67	60.00
1.20(m)	178	Surcharge After Expiration	500.00	550.00	551.52	550.00
1.20(n)	111	Extension of Term of Patent	550.00	610.33	606.67	600.00

* *Reduced by filing fee.*

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NON-STATUTORY PATENT FEES - SERVICES

CFR	PTO FEE CODE	DESCRIPTION	PRESENT FEE	PROJECTED COST	PRESENT FEE ADJ. BY C.P.I.	PROPOSED FEE
1.19(a-1)	501	Copy of Patent	1.50	2.03	1.53	1.50
1.19(a-2)	503	Copy of Plant Patent	6.00	11.17	6.21	10.00
1.19(a-3)	506	Copy of Office Rec's,(30 PGS/DOC)	0.50	0.30	8.82	10.00
1.19(a-4)	NFC*	Copy of Utility Patent in Color	0.00	20.00	20.00	20.00
1.19(a-5)	NFC	Patent Copy - Expedited Service	0.00	3.00	3.00	3.00
1.19(a-6)	NFC	Patent Copy Expedited Service Via EOS	0.00	25.00	25.00	25.00
1.19(b-1)	504	Copy of Application as filed, Cert.	9.00	9.71	9.75	10.00
1.19(b-2)	505	Copy of File Wrapper, Cert.	75.00	174.17	94.89	170.00
1.19(b-3)	533	Copy of Patent Assignment, Cert.	1.50	4.56	1.52	5.00
1.19(b-4)	NFC	Cert. Copy of Patent Appl. Expedited	0.00	20.00	20.00	20.00
1.19(b-5)	508	Certifying Office Records	3.00	2.61	1.98	3.00
1.19(b-6)	509	Search of Records	12.00	12.99	13.50	15.00
1.19(c)	513	Library Service	50.00	4,470.00	55.15	50.00
1.19(d)	514	List of Patents in Subclass	1.00	2.13	1.47	2.00
1.19(e)	528	Uncertified Statement	3.00	3.67	3.47	5.00
1.19(f)	532	Copy of Non-US Document	10.00	5.64	11.48	10.00
1.19(g)	510	Comparing Copies Per Doc	5.00	6.96	5.96	10.00
1.19(n)	534	Duplicate or Corrected Filing Receipt	14.00	12.95	15.98	15.00
1.21(a-1)	609	Admission to Examination	250.00	273.23	273.89	270.00
1.21(a-2)	610	Registration to Practice	81.00	89.32	89.04	90.00
1.21(a-3)	611	Reinstatement to Practice	9.00	9.97	9.92	10.00
1.21(a-4)	612	Copy of Certificate of Good Standing	10.00	9.98	10.90	10.00
1.21(a-4)	613	Certificate of Good Stand - Framing	88.00	99.69	96.65	100.00
1.21(a-5)	615	Review of Decision of Director, OED	92.00	99.80	101.53	100.00
1.21(a-6)	616	Regrading of Examination	92.00	99.32	101.53	100.00
1.21(b-1)	607	Establish Deposit Account	8.00	9.00	8.98	10.00
1.21(b-2/3)	608	Service Charge for Below Min. Balance	20.00	22.00	22.06	20.00
1.21(c)	516	Filing a Disclosure Doc	6.00	6.00	6.99	6.00
1.21(e)	526	International Type Search Report	28.00	13.89	30.88	30.00
1.21(f)	517	Searching, 10 Years	14.00	10.03	15.82	10.00
1.21(g)	524	Copishare Card Per Page	0.20	0.11	0.17	0.15
1.21(h)	518	Recording Patent Property	7.00	7.51	7.50	8.00
1.21(i)	520	Publication in OG	7.00	16.51	7.67	20.00
1.21(j)	521	Duplicate User Pass	5.00	9.02	5.53	10.00
1.21(k)	522	Box Rental	43.00	49.44	47.07	50.00
1.21(k)	523	Locker Rentals	0.25	0.25	0.28	0.25
1.21(l)	529	Retaining Abandoned Appl.	100.00	112.64	110.30	120.00
1.21(m)	617	Processing Returned Checks	20.00	22.00	22.06	50.00
1.21(n)	530	Handling Fee	15.00	16.90	16.80	20.00
1.296	531	Handling Fee for Withdrawal	100.00	112.64	110.30	120.00

* *NFC - New fee code to be established.*

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PATENT COOPERATION TREATY FEES

CFR	PTO FEE COD E	DESCRIPTION	PRESENT FEE	PROJECTED COST	PRESENT FEE ADJ. BY C.P.I.	PROPOSED FEE
1.445)a-1)	150	Transmittal Fee	170.00	168.36	*	170.00
1.445(a-2)	151	PCT Search Fee - No U.S. Appl.	520.00	554.33	*	550.00
1.445(a-2)	153	PCT Search - Prior U.S. Appl.	350.00	379.04	*	380.00
1.445(a-3)	152	Supplemental Search	140.00	149.85	*	150.00
1.482(a-1)	190	Preliminary Exam Fee	370.00	400.85	*	400.00
1.482(a-1)	191	Preliminary Exam Fee	570.00	600.80	*	600.00
1.482(a-2)	192	Add'l Invention	125.00	129.81	*	130.00
1.482(a-2)	193	Add'l Invention	190.00	199.75	*	200.00
1.492(a-1)	956	IPEA	300.00	* *	330.99	330.00
1.492(a-1)	957	IPEA	150.00	* *	165.50	165.00
1.492(a-2)	958	Searching Authority	340.00	* *	370.05	370.00
1.492(a-2)	959	Searching Authority	170.00	* *	185.02	185.00
1.492(a-3)	960	PTO NOT SA or IPEA	450.00	* *	496.49	500.00
1.492(a-3)	961	PTO NOT SA or IPEA	225.00	* *	248.24	250.00
1.492(a-4)	962	Claims - IPEA	50.00	* *	55.17	50.00
1.492(a-4)	963	Claims - IPEA	25.00	* *	27.58	25.00
1.492(b)	964	Claims - Extra Individual (Over 3)	34.00	* *	37.00	36.00
1.492(b)	965	Claims - Extra Individual (Over 3)	17.00	* *	18.50	18.00
1.492(c)	966	Claims - Extra Total (Over 20)	12.00	* *	12.33	12.00
1.492(c)	967	Claims - Extra Total (Over 20)	6.00	* *	6.17	6.00
1.492(d)	968	Claims - Multiple Dependents	110.00	* *	123.35	120.00
1.492(d)	969	Claims - Multiple Dependents	55.00	* *	61.67	60.00
1.492(e)	154	Surcharge	110.00	120.00	121.36	120.00
1.492(e)	254	Surcharge	55.00	60.00	60.00	60.00
1.492(f)	156	English Translation - After 20 Mos.	26.00	28.08	28.08	30.00

* *Adjustment by C.P.I. is not applicable to these fees.*

** *These fees are set to recover the cost of processing under the Treaty. The cost calculation methodology for statutory patent fees, under Background, Fee Adjustment Methodology, paragraph 1(a), applies to these fees.*

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TRADEMARK FEES

CFR	PTO FEE CODE	DESCRIPTION	PRESENT FEE	PROJECTED CO	PRESENT FEE ADJ. BY C.P.I.	PROPOSED FEE
TRADEMARK PROCESS FEES						
2.6(a)	301	Application for Registration	200.00	242.87	220.66	175.00
2.6(b)	302	Application for Renewal	300.00	42.34	330.99	300.00
2.6(s)	303	Surcharge for Late Renewal	100.00	100.00	110.33	100.00
2.6(c)	304	Publication of Mark Under Sec 12c	100.00	131.93	110.33	100.00
2.6(d)	305	Issuing New Certificate of Registration	100.00	61.32	110.33	100.00
2.6(e)	306	Cert of Correction of Applicant Error	100.00	106.21	110.33	100.00
2.6(f)	307	Filing Disclaimer to Registration	100.00	133.39	110.33	100.00
2.6(g)	308	Filing Amendment to Registration	100.00	67.64	110.33	100.00
2.6(h)	309	Filing Affidavit Under Section 8	100.00	19.70	110.33	100.00
2.6(i)	310	Filing Affidavit Under Section 15	100.00	19.77	110.33	100.00
2.6(j)	311	Filing Affadavit Under Section 8 & 15	200.00	19.77	220.66	200.00
2.6(k)	312	Petitions to the Commissioner	100.00	114.06	110.33	100.00
2.6(l)	313	Petition to Cancel	200.00	393.96	220.66	200.00
2.6(l)	314	Notice of Opposition	200.00	498.49	220.66	200.00
2.6(m)	315	Ex Parte Appeal to the TTAB	100.00	478.62	110.33	100.00
TRADEMARK SERVICE FEES						
2.6(n)	401	Printed Copy of Each Registered Mark	1.50	1.84	1.65	1.50
2.6(o)	403	Certify TM Records, Per Certificate	3.50	4.06	3.86	3.50
2.6(p)	404	Photocopies of TM Records, Per Page	0.30	0.39	0.33	0.30
2.6(q)	405	Recording TM Assignment Documents	100.00	7.51	110.33	8.00
2.6(r)	407	Abstracts of Title, Per Registration	12.00	8.19	13.24	12.00
2.6(n)	408	Copy of Reg Mark With Title or Status	6.50	5.97	7.17	6.50
2.6(o)	410	Make Certification Special	25.00	5.00	27.58	25.00
1.21(g)	424	Farecards for Copy Machines	0.20	0.11	0.22	0.15

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(206) **Guidelines for Extension of Patent Term for New Animal Drugs or Veterinary Biological Products Under 35 U.S.C. 156 as Amended**

This notice establishes initial guidelines for patent owners seeking extensions of patent terms for new animal drugs or veterinary biological products pursuant to 35 U.S.C. §156 as amended. See Pub. L. No. 100-670 enacted Nov. 16, 1988. These guidelines are effective until further notice. This notice does not affect the procedures in place for extensions of patent terms for human drug products, food additives, color additives, or medical devices as described in 52 Federal Register 9386 (Mar. 24, 1987) and 1079 Official Gazette 52 (June 23, 1987); this notice relates solely to procedures for extensions of patent terms for new animal drugs and veterinary biological products. In time, the pertinent regulations (37 C.F.R. Part 1, Subpart F) will be changed to encompass all items for which patent term extension is authorized.

A patent owner or its agent should use the guidelines in the various sections below in determining whether a patent is subject to, and meets the conditions for, extension of its term for a new animal drug or a veterinary biological product. If so, the patent owner or its agent should also use the guidelines below in preparing and filing an application for extension of the patent term. If any application for extension of the term of a patent for a new animal drug or a veterinary biological product is filed in accordance with 35 U.S.C. §156 as amended before the date on which this notice is published in the Official Gazette and the application is not in compliance with the requirements of this notice, applicant will be notified of the deficiencies in the application and will be given a period of time within which to correct those deficiencies.

Guidelines

§A. Patents subject to extension of the patent term

(a) Any patent that claims a product as defined in paragraph (b) of this section, or a method of using such a product, or a method of manufacturing such a product, is now subject to being extended under 35 U.S.C. §156 as amended.

(b) The term "product" referred to in paragraph (a) of this section means a new animal drug or veterinary biological product (as those terms are used in the Federal Food, Drug and Cosmetic Act and the Virus-Serum-Toxin Act) that is not primarily manufactured using recombinant DNA, recombinant RNA, hybridoma technology, or other processes involving site specific genetic manipulation techniques, including any salt or ester of the active ingredient, as a single entity or in combination with another active ingredient.

§B. Conditions for extension of a term of a patent

The term of a patent may be extended if:

(a) the patent claims a product or a method of using or manufacturing a product as defined in §A of this notice;
(b) the term of the patent has never been previously extended;
(c) an application for extension is submitted pursuant to §D of this notice;
(d) the product has been subject to a regulatory review period as defined in 35 U.S.C. §1.56(g) and by the Secretary of Health and Human Services or the Secretary of Agriculture, as appropriate, before its commerical marketing or use;
(e) the product has received permission for commerical marketing or use and the application is submitted within the sixty day period beginning on the date the product first received permission for commerical marketing or use under the provision of law under which the applicable regulatory review period occurred;
(f) the term of the patent has not expired before the submission of the application pursuant to §D of this notice; and
(g) no other patent has been extended for the same regulatory review period for the product.

§C. Applicant for extension of patent term

Any application for extension of a patent term must be submitted by the owner of record of the patent or its agent as defined in 37 C.F.R. §1.740(b)(1) and must comply with the requirements of §D of this notice.

§D. Application for extension of the term of a patent

(a) An application for extension of the term of a patent must be made in writing to the Commissioner of Patents and Trademarks. The filing date of an application for an extension of the term of a patent is the date on which the complete application for extension and a duplicate of the papers, certified as such, are received in the Patent and Trademark Office or filed pursuant to the provisions of 37 C.F.R. §§1.8 or 1.10.
(b) A complete application for the extension of the term of a patent comprises:

(1) a complete identification of the product as by appropriate chemical and generic name, physical structure or characteristics;
(2) a complete identification of the Federal statute including the applicable provision of law under which the regulatory review occurred;
(3) an identification of the date on which the product received permission for commerical marketing or use under the provision of law under which the applicable regulatory review period occurred;
(4) an identification of each active ingredient in the product and as to each active ingredient, a statement that it has not been previously approved for commerical marketing or use under the Federal Food, Drug and Cosmetic Act, the Public Health Services Act, or a statement of when the active ingredient was approved for commerical marketing or use (either alone or in combination with other active ingredients), the use for which it was approved, and the provision of law under which it was approved;
(5) a statement that the application is being submitted within the sixty day period permitted for submission pursuant to 37 C.F.R. §1.720(f) and an identification of the last day on which the application may be submitted;
(6) a complete identification of the patent for which an extension is being sought by the name of the inventor(s), the patent number, the date of issue, and the date of expiration;
(7) a copy of the patent for which an extension is being sought, including the entire specification (including claims) and drawings;
(8) a copy of any disclaimer, certificate of correction, receipt of maintenance fee payment, or reexamination certificate issued in the patent;
(9) a statement beginning on a new page that the patent claims the product or a method of using or manufacturing the product, and a showing that lists each applicable patent claim and demonstrates the manner in which each applicable patent claim reads on the product or a method of using or manufacturing the product;
(10) a statement beginning on a new page of the relevant dates and information pursuant to 35 U.S.C. §156(g) to enable the Secretary of Health and Human Services or the Secretary of Agriculture, as appropriate, to determine the applicable regulatory review period as follows:

(i) for a patent claiming an animal drug product, (a) the date a major health or environmental effects test on the drug was initiated and any available substantiation of that date or the date of an exemption under subsection (j) of section 512 of the Federal Food, Drug, and Cosmetic Act became effective for such animal drug product, (b) the date on which a new drug application was initially submitted, (c) the number of the application, and (d) the date on which the application was approved; and
(ii) for a patent claiming a veterinary biological product, (a) the date the authority to prepare an experimental biological product under the Virus-Serum-Toxin Act became effective, (b) the date an application for a license was submitted under the Virus-Serum-Toxin Act, and (c) the date the license issued;

(11) a brief description beginning on a new page of the significant activities undertaken by the marketing applicant during the applicable regulatory review period with respect to the product and the significant dates applicable to such activities;
(12) a statement beginning on a new page that in the opinion of the applicant the patent is eligible for the extension and a statement as to the length of the extension claimed, including how the length of the extension was determined;
(13) a statement that applicant acknowledges a duty to disclose to the Commissioner of Patents and Trademarks and the Secretary of Health and Human Services or the Secretary of Agriculture, as appropriate, any information that is material to the determination of entitlement to the extension sought;
(14) the prescribed fee for receiving and acting upon the application for extension (see §F of this notice) and an oath or declaration as set forth in paragraph (c) of this section; and
(15) the name, address, and telephone number of the person to whom inquiries and correspondence relating to the application for patent term extension are to be directed.

(c) Any application for extension of the term of a patent submitted pursuant to paragraphs (a) and (b) of this section must include an oath or declaration signed by the owner of record of the patent or its agent that specifically identifies the application papers and the patent for which an extension is sought and avers that the person signing the oath or declaration:

(1) is the owner, an official of a corporate owner authorized to obligate the corporation, or a patent attorney or agent authorized to practice before the Patent and Trademark Office and who has general authority from the owner to act on behalf of the owner in patent matters;
(2) has reviewed and understands the contents of the application being submitted pursuant to this section;
(3) believes the patent is subject to extension pursuant to §A of this notice;
(4) believes an extension of the length claimed is justified under 35 U.S.C. §156 as amended; and
(5) believes the patent for which the extension is being sought meets the conditions for extension of the term of a patent as set forth in §B of this notice.

(d) If any application for extension of term of the patent submitted pursuant to this section is held to be incomplete, applicant may seek to have that holding reviewed by filing a petition pursuant to 37 C.F.R. § 1.182 within such time as may be set, or if no time is set, within one month of the date on which the application was held incomplete. Compliance with the provisions of these guidelines that are not required by statute may be waived in appropriate circumstances. 37 C.F.R. §1.183.

§E. Interim extension of the term of a patent

An applicant who has filed an application for extension pursuant to §D of this notice may request one or more interim extensions for periods of up to one year pending a final determination on the application. Any such request should be filed at least three months prior to the expiration date of the patent. The Commissioner may issue interim extensions for periods up to one year until a final determination is made without a request by the applicant. In no event will the interim extensions granted under this section be longer than the maximum period of extension to which the applicant would be eligible.

§F. Fee for receiving and acting on an application for extension of the term of a patent

Pursuant to 35 U.S.C. §156(h), the Commissioner has determined that a fee as set forth in 37 C.F.R. §1.20(n) (presently $550.00) is appropriate to cover the costs to the Patent and Trademark Office of receiving and acting upon the applications for extension of the term of a patent filed pursuant to 35 U.S.C. §156 as amended. The fee should accompany the application when filed. If a fee in a different amount is adopted in Title 37 of the Code of Federal Regulations, applicant will be refunded any excess of the fee or will be required to submit any deficiency in the fee.

§G. Address for application for extension of the term of a patent and communications relating thereto

All applications for extension of the term of a patent and any communications relating thereto intended for the Patent and Trademark Office should be addressed to Box Patent Ext., Commissioner of Patents and Trademarks, Washington, D.C. 20231.

§H. For further information, contact:

Charles E. Van Horn by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Summary

The initial guidelines set forth above are considered to be appropriate and authorized by 35 U.S.C. §156 as amended. They will provide appropriate guidance to patent owners and their agents pending appropriate changes that will be made in Title 37 of the Code of Federal Regulations.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Nov. 29, 1988

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TRADEMARK APPLICATION EXAMINATION AND CONTENT

(207) Interviews Involving Trademark Application

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner of Patents.*

This supersedes the notice of Feb. 10, 1958. (728 O.G. TM 1)

[804 O.G. TM 147]

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(208) Trademark Examining Procedure for Amended Applications; Reporting Oldest Dates of Amended Trademark Applications

Effective immediately, the order in which amendments to trademark applications are examined is changed. Previously, Examiners have usually acted on amended cases in order of filing date of the application which the amendment concerned, i.e., amended cases with the oldest filing date were examined first. Under the new procedure, amended cases will normally be examined in the order in which the amendment or other response is received, i.e., amendments that are received first will normally be examined first.

Effective with this issue of the *Official Gazette* (Trademark Section) in order to reflect more accurately the condition of division dockets, the column reporting the date of the oldest amended application in each division has been changed to indicate the date of receipt of the oldest filed amendment. Under this new method of reporting the oldest date of receipt of a filed amendment upon which no action has been taken by an Examiner will be indicated for each division of the Trademark Examining Operation.

RENE D. TEGTMEYER,
July 15, 1971. *Assistant Commissioner.*

[889 O.G. TM 6]

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(209) Trademark Office Actions

Effective immediately Applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

ROBERT GOTTSCHALK,
Feb. 7, 1972. *Commissioner of Patents.*

[895 O.G. TM 238]

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(210) Petition to Make Trademark Applications Special

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer* v. *Lewry*, 89 O.G. 1861, 1899 C.D. 230, and *Wilputte* v. *Van Ackeren*, 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. TM 2]

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(211) Title 37—Patents, Trademarks, and Copyrights

Chapter I—Patent Office, Department of Commerce

Parts 2 and 6—Rules of Practice in Trademark Cases

International Trademark Classification

A proposal was published at 37 F.R. 6404 to revise §6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new §6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act of all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the *Official Gazette*, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the *Official Gazette* when the List is available from local sources of the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom.

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ROBERT GOTTSCHALK,
May 14, 1973. *Commissioner of Patents.*

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

Published in 38 F.R. 41681, June 4, 1973

[911 O.G. TM 210]

(Note: Rule 2.85 (Classification schedules) was revised and Rule 6.1 (International schedule of classes of goods and services) was established as of September 1, 1973 by this notice; prior U.S. schedule of classes was redesignated as Rule 6.2.)

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(212) Wording In Verification or Declaration of Trademark Application

Applicants and attorneys are requested to use the following wording in the part of the verification or decla-

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ration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

> —that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto *as to be likely, when applied to the goods of such other person, to cause confusion, or cause mistake, or to deceive:*—

The wording emphasized conforms to the language of both Sections 1(a)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance. Examiners will not require new verifications or declarations. When the obsolete wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

RENE D. TEGTMEYER,
Mar. 25, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 186]

(213) **Standardized Disclaimers**

Beginning with the Nov. 9, 1982 issue of the *Official Gazette*, disclaimers in marks published for opposition and in those registered on the Supplemental Register will be printed in a standardized form, regardless of the text submitted. Certificates of registration for marks issued on the Supplemental Register will also contain the standardized disclaimer as of that date. Certificates of registration for marks issued on the Principal Register will contain the uniform statement beginning Feb. 1, 1983. The disclaimed matter will be taken from the disclaimer of record and inserted into a standardized disclaimer for printing and data base purposes. The new disclaimer text will take the following form:

No claim is made to the exclusive right to use ——, apart from the mark as shown.

MARGARET M. LAURENCE,
Aug. 30, 1982. *Assistant Commissioner for Trademarks.*

[1022 TMOG 44]

(214) **Trademark "Revivals" and "Reinstatements"**

It would be of great assistance to the Office if the heading or caption of "Petitions to Revive" or "Requests for Reinstatement" of abandoned trademark applications carried the following identifying data:

1. Address Paper to the Attention of:
   Office of Director, Trademark Examining Operation
2. Serial Number
3. Mark
4. Applicant's Name
5. A title indicating the nature of the paper

Use of this heading for "Petitions to Revive" or "Requests for Reinstatement" of abandoned trademark applications will help ensure that the papers are promptly routed to the proper Office, which will prevent needless delay in its consideration.

MARK M. NEWMAN,
Aug. 13, 1984. *Director, Trademark Examining Operation.*

[1046 TMOG 13]

(215) **T-Search Printouts as Section 2(d) References**

As part of its ongoing automation program, the PTO is pleased to announce that on or about July 1, 1986, Trademark Examining Attorneys will use the automated Trademark search system (T-Search) exclusively for searching word marks. The Examining Attorneys will use computer printouts to advise applicants about Section 2(d) references. The printouts will include computer-generated facsimiles of the drawing where appropriate. The printouts will be used for word marks, whether the word is depicted in a typed drawing or in stylized form. Photocopies of certificates of registration will continue to be used for design marks.

The Patent and Trademark Office, in consultation with the Public Advisory Committee for Trademark Affairs, has established accuracy standards for the computerized data. Data elements which are not essential for examiner searching are being systematically checked and corrected. The following data elements which are essential for examiner searching purposes are essentially complete:

1. MARK
2. SERIAL NUMBER
3. REGISTRATION NUMBER
4. FILING DATE
5. REGISTRATION DATE
6. GOODS AND SERVICES
7. INTERNATIONAL CLASS
8. U.S. CLASS

Subject to the above caveat, the printouts will contain all the information that appears on the certificate of registration with one exception. If an application for registration was based on Section 44, 15 U.S.C. 1126, the printout will indicate that the registration or application was filed under the provisions of Section 44 (using the notation "SECT 44"). The printout will also show the priority date if the application was filed under the provisions of Section 44(d). However, it will not indicate the country or certificate number of the foreign registration on which the U.S. registration was based.

The printouts will also contain additional registration information which was not provided under the non-automated system, as follows:

A. Change in registration—This will indicate that a registration was changed after registration, such as by an amendment of the mark or identification of goods/services. The current information will be displayed in the printout.

B. Affidavits—This indicates that a Section 8 affidavit of continued use was accepted, that a Section 15 affidavit of incontestability was acknowledged, or that a mark was republished under the provisions of Section 12(c).

C. Renewals—Applicable renewal information, such as "1st Renewal" or "2nd Renewal" will be shown.

D. Owner—In addition to listing the original registrant, the last known owner, as the change of ownership is acknowledged by the Office by virtue of examining an affidavit or renewal, will be included.

The following provides an explanation of the terms/symbols used in the printout:

1. Goods or services appearing in double parentheses "(( ))" were not included in a Section 15 affidavit.
2. Goods or services appearing in brackets "[ ]" were deleted after registration by amendment, correction, restriction or at the time of renewal.
3. Dates will appear as year, month and day. For example, June 20, 1983 will appear as 1983.06.20.
4. Goods and services will be indicated with the international class (IC), the prior U.S. classification (US), the identification, date of first use and date of first use in commerce.
5. Registrants (OWNER) will be listed showing the owner's name, entity designation (e.g., individual, partnership, corporation), country of citizenship or state or country of incorporation, and address.
6. Pseudo mark—This material is merely a search aid and has no bearing on the registration information.
7. Design search code—This is also merely an aid for computerized searching of design marks, by which a number is assigned to describe a particular design element. It has no bearing on the registration information.
8. Mark drawing code—This indicates the appearance of the mark, and again is not part of the registration data. There are six mark drawing codes.

   1—typed drawing
   2—design only
   3—words, letters and/or numbers and design
   4—words, letters and/or number in block form (block letters; not typed drawing)
   5—words, letters and/or numbers in a stylized form
   6—sound marks

An example of a computer printout and a facsimile of a stylized word mark follow.

MARGARET M. LAURENCE,
June 23, 1986. *Assistant Commissioner for Trademarks.*

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Document 1 of 1 for SS 1: FD 1351766/RN,SN
WORD MARK                 LINEA ADRIANO
TRANSLATION               THE WORDS "LINEA ADRIANO" IN THE MARK MAY BE
                          TRANSLATED INTO ENGLISH AS "LINE HADRIAN"
GOODS AND SERVICES        IC 025: US 039: G & S: ARTICLES OF CLOTHING
                          FOR MEN, NAMELY JACKETS, COATS, SUITS,
                          TROUSERS, JUMPERS, SHIRTS AND TIES
MARK DRAWING CODE         (5) WORDS, LETTERS, AND/OR NUMBERS IN
                          STYLIZED FORM
SERIAL NUMBER             73-446850
FILING DATE               1983.10.06
CHANGE IN REGISTRATION    CHANGE IN REGISTRATION HAS OCCURRED
REGISTRATION NUMBER       1351766
REGISTRATION DATE         1985.07.30
OWNER NAME AND ADDRESS    (REGISTRANT) RITEX AG KLEIDERFABRIK ZOFINGEN
                          CORPORATION SWITZERLAND FUNKENSTRASSE 10
                          ZOFINGEN AARGAU SWITZERLAND
SECTION 44 INDICATOR      SECT 44
FOREIGN PRIORITY DATES    1983.06.20
DISCLAIMER                NO CLAIM IS MADE TO THE EXCLUSIVE RIGHT TO
                          USE "LINEA" APART FROM THE MARK AS SHOWN
TYPE OF MARK              TRADEMARK
REGISTER                  PRINCIPAL
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TRADEMARK POST REGISTRATION

(216) Trademark Rule 2.165 Requirement Where A Section 8 Affidavit Or Declaration Is Held Insufficient

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (*a*) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least respond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (*b*) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

BERNARD A. MEANY,
Dec. 12, 1977. *Assistant Commissioner for Trademarks.*

[966 TMOG 80]

(217) Late-Filed Renewal Fees

Sections 9 and 31 of the Lanham Act (15 U.S.C. §§1095 and 1113) require that an additional five dollar ($5.00) fee be submitted by a registrant who files a renewal application during the three-month period following expiration of its registration. The language of the statute requires that this additional fee be submitted within the three-month grace period. A number of registrants who have failed to submit the additional fee within the prescribed period have petitioned the Commissioner to allow their renewal applications. The Commissioner has granted petitions of this kind where the registrant or its attorney maintained a Patent and Trademark Office deposit account which contained, on the date the renewal application was filed, sufficient funds to cover the additional fee. Specifically, the Commissioner has exercised discretion under Trademark Rules 2.146(a)(3) and 2.147 to deem the authorizations to charge the deposit accounts to have taken place at the time the registrants filed their renewal applications, even though the authorizations were not confirmed until a later date. This Office policy was established by the Commissioner's decision in *In re Ralston Purina Co.*, 191 USPQ 154 (Comr. Pats. 1976).

The policy established by the *Ralston Purina* decision is being changed. Henceforth, the Commissioner will no longer exercise discretion to charge deposit accounts *nunc pro tunc* for trademark renewal application fees. To allow an authorization to charge a deposit account to relate back to a date on which no actual authorization existed is, in effect, to allow late payment. It is inequitable to permit those registrants who have deposit accounts (or those whose attorneys have such accounts) to make late payment of renewal fees, while those without deposit accounts may not.

Petitions relying on *Ralston Purina* will, after the date of this notice, be denied, unless the events that gave rise to those petitions occurred before publication of this notice.

MARGARET M. LAURENCE,
Feb. 20, 1981. *Assistant Commissioner for Trademarks.*

[1004 O.G. 29]

(218) Renewal Applications and Section 8 Affidavits

There has been a noticeable increase in the number of petitions requesting provisional acceptance of defectively executed Section 8 Affidavits and Renewal Applications under 35 U.S.C. §26, the most common problem being a lack of notarization or a Rule 2.20 declaration. Often, such petitions are necessitated by the failure of registration owners to file the documents early enough to leave time in which to correct should they prove defective.

Section 8 Affidavits may be filed beginning with the fifth anniversary of the registration. The period for filing expires on the sixth anniversary of the registration. The period for filing Renewal Applications begins six months before the twentieth anniversary of the registration and extends three months beyond the expiration of the twenty year term. While the Post Registration Division may allow up to six months to respond to a notice of defect, it may not allow corrective action beyond the period for filing established by the Trademark Act. It is therefore in the registrant's best interest to file such documents as close to the opening date as possible to allow time for correction, if necessary. Provisional acceptance under 35 U.S.C. §26 has been, and will continue to be, given narrow application. Registrants should not rely on 35 U.S.C. §26 as a means of acquiring an extension of time.

We have also become aware of many delays caused by defects in the chain of title. Registrants are encouraged to keep Patent and Trademark Office assignment records current with regard to ownership of registrations.

The filing of Post Registration documents at the earliest date and maintenance of assignment records will help to avoid the cancellation or expiration of registrations of trademarks currently in use, and will result in a savings of time and expense for both the registrant and the Patent and Trademark Office.

MARGARET M. LAURENCE,
Apr. 19, 1983. *Assistant Commissioner for Trademarks.*

[1030 TMOG 37]

(219) Trademark Examining Operation

Effective Dec. 1, 1983, all requests presented to the Patent and Trademark Office under the provisions of Section 7 of the trademark statute (15 U.S.C. 1057) will be considered by the Post Registration Section of the Trademark Examining Operation.

Necessary telephone inquiries concerning procedure or status should be directed to 703–557–1986.

MARGARET M. LAURENCE,
Dec. 2, 1983. *Assistant Commissioner for Trademarks.*

[1038 TMOG 256]

(220) Expedited Service for Certified Copies of Trademark Registrations

On Oct. 4, 1986, expedited service for obtaining certified copies of trademark registrations will be available to the public. The cost of obtaining a certified copy showing title and/or status will be $10.00 plus $25.00 for the expedited service for a total of $35.00 per copy; a certified copy of the registered mark, not showing title or status, will be $5.00 plus $25.00 for expedited service for a total of $30.00. Requests received in the Post-Registration Section of the Trademark Services Division, Crystal Plz. 2–4C24, before 12:00 noon on U.S. Patent and Trademark Office scheduled work days will be filled within three work days.

Requests for expedited service which are hand carried to the Post-Registration Section located in Crystal Plz. 2–4C24 will be available for pickup at the same location after 12:00 noon three work days later. Requests for expedited service which are mailed to the Patent and Trademark Office will be processed and mailed back to the requester three work days after they are received in the Post-Registration Section from the U.S. Patent and Trademark Office mail room. All requests for expedited service will be machine stamped when received in the Post-Registration Section and machine stamped upon completion by the Post-Registration Section.

Anyone requesting expedited service will be limited to five registration numbers per day. Limits on the number of registrations being certified are needed in order to ensure that service is not disrupted for routine requests for certified copies. The guarantee of service in three work days is based on the ability of the Post-Registration Section to process up to 1,000 expedited copies out of an average of 16,000 copies processed each year.

Inquiries about the service should be addressed to:

Patricia M. Davis
Administrator for Trademark Operations
Trademark Examining Operation
Crystal Plz. 2–3C06
(703) 557–3268

MARGARET M. LAURENCE,
Aug. 19, 1986. *Assistant Commissioner for Trademarks.*

[1070 TMOG 4]

(221) Helpful Hints

• *Trademark Post Registration - Failure to Specify Type of Commerce in Section 8 Affidavits or Declarations* — Section 8(a) of the Trademark Act requires that before the end of the sixth year following registration, an affidavit must be filed showing that the "mark is in use in commerce." [15 U.S.C. 1058a].

The Trademark Rules require that all Section 8(a) affidavits or declarations "state that the registered mark is in use in commerce and specify the nature of such commerce." [37 C.F.R. Section 2.162(e)].

The affidavit or declaration must be filed between the fifth and sixth year following the date of registration and it must contain a statement that the "mark is in use in commerce," with evidence thereof. There may be no extensions of time beyond the sixth year for submission of this statement and evidence of use of the mark in commerce. However, if the timely-filed affidavit or declaration does not set forth the *type* of commerce, the registrant will be given six months to submit that information even though the sixth year may have expired. The rules do not provide for any further extensions of time beyond the six months. (Carlisle Walters, 703-557-3061)

Backlogs in Trademark Renewals and Section 8 Affidavits and Declarations — Registrants are advised that a backlog currently exists in the processing of Trademark Renewals and Section 8 affidavits and declarations. While the Patent and Trademark Office conducts a preliminary review of critical elements in order to notify registrants of statutory deficiencies prior to the expiration of the statutory period for the submission of required documents, the ultimate responsibility for complying with the requirements of the statute and the rules rests with the registrant. (Carlisle Walters, 703-557-3061)

THERESA A. BRELSFORD,
July 1, 1988 *Assistant Commissioner for Administration.*

[1092 TMOG 11]

TRADEMARK INFORMATION AND CORRESPONDENCE

(222) Powers of Attorney in Registered Trademark Files

On and after Feb. 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C.M. WENDT,
Jan. 30, 1967. *Director.*

[835 TMOG 95]–

(223) Initial Processing of Application

On Feb. 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record

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of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under §2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective Feb. 1, 1972.

RICHARD A. WAHL,
Jan. 11, 1972. *Acting Commissioner of Patents.*

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

Published in 37 F.R. 942; Jan. 21, 1972

[895 O.G. TM 193]

(224) **Mail Delays and Petitions to Revive (Trademarks)**

Since applications that become abandoned unintentionally present burdens to both the Patent office and the applicant, a simplified procedure has been devised to alleviate these burdens when the abandonment results from a delay in the mails. This procedure (which is similar to the procedure adopted for patent applications at 910 O.G. 402 and 910 O.G. TM 76) provides for an automatic petition to revive.

When a trademark communication which falls within the circumstances enumerated below is mailed to the Patent Office more than three full days prior to the due date, a conditional petition may be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were either placed in the United States mail as first class or air mail or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office by the due date, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places the application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

A suggested declaration form for the petition is shown below:

Applicant:
Serial No.: Petition to Revive
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited in ( ) the United States mail as first class or air mail, or ( ) the mail outside the United States as air mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on _____, which date is more than three full days prior to the due date, at _____, by _____.
(Location) (Name of individual)

In the event that such communication is not timely filed in the Patent Office, it is requested that this paper be treated as a petition to revive and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. _____ in the name of _____.

The undersigned declares further that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any registration resulting therefrom.

Date: (Signature of applicant or applicant's attorney)
And
Date: (Signature of person mailing, if other than the above)

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

RENE D. TEGTMEYER,
Mar. 21, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 126]

(225) **Dissemination Of Trademark Information**

In order to clarify the policy regarding Trademark Examiners giving out Trademark information to the general public, the following directive has been promulgated:

Trademark Examiners are reminded that they may only be responsive to questions regarding applications pending before them. All other questions regarding Trademark matters must be directed to the Director of the Trademark Examining Operation, 703–557–3268.

BERNARD A. MEANY,
Feb. 15, 1978. *Assistant Commissioner for Trademarks.*

[968 TMOG 9]

(226) **Requests for Information on Status of Trademark Registrations**

The purpose of this notice is to explain the circumstances in which the Trademark Examining Operation can respond to written and telephone requests for information about the status of trademark registrations. Only limited information can be provided by telephone.

I. Orders for "Status" Copies

The most reliable means of obtaining status information concerning a registration is a written order for a "status" copy of the registration. Status copies show whether affidavits have been filed under Sections 8 and 15, whether the registration has been renewed or cancelled, and whether certain other actions have been taken with respect to the registration. The charge for copies of registrations showing status and/or title, if not certified, is $6.50, effective Oct. 1, 1982. The charge for a certified copy showing status and/or title is $10.00 effective the same date.

II. Telephone Information Available from the Search Library

If the caller has the registration number, he or she may leave a request for status information on an automatic answering machine in the Trademark Search Library (Search Room) at 703–557–3282. The Search Library staff will call back with the information requested within one working day. Callers are asked to limit their requests to two registration numbers per day.

The Search Library staff is not permitted to make "searches" to determine if particular marks are in the Office's search files. Neither is the staff able to supply information as to the ownership or assignment of registrations, or to read over the telephone lengthy passages of a registration, such as the identification of goods or services.

III. Telephone Information on Receipt of Section 8 and 15 Affidavits and Renewal Applications

The Post Registration Section can be reached by calling 703–557–2923. The staff of this section can advise only on whether an affidavit or a renewal application has or has not been received. Inquiries as to whether affidavits and renewals have been accepted should be directed to the Search Library.

MARGARET M. LAURENCE,
Sept. 15, 1982. *Assistant Commissioner for Trademarks.*

[1023 TMOG 15]

(227) **Transmittals for Use of Deposit Accounts**

When statutory fees are to be charged to a deposit account, the processing of the application can be facilitated by submitting the applicant's transmittal letter or other correspondence specifying the account to be charged in triplicate. Submission of these documents in triplicate will eliminate the need for the Mail Room to photocopy the document and thereby reduce the processing time of incoming mail.

THERESA A. BRELSFORD,
Nov. 21, 1983. Assistant Commissioner for Administration.

[1037 TMOG 15]

(228) **Helpful Hints From The PTO**

Data To Be Included on Patent and Trademark Papers Filed In The PTO In Response To Office Actions—Perhaps the greatest cause of delay and wasted time in the support sections of the PTO is in trying to match papers bearing incorrect or incomplete data with applications. Because some Trademark Papers are not clearly identified as pertaining to Trademark applications, they are frequently misrouted to the Patent Examining Groups.

On all papers related to *Patent* applications, type the word "PATENT" in the upper right-hand corner of the document. Also, please include the correct serial number, filing date, inventor's name, and title of the invention. Additionally, include the examiner's name, and group art unit number or other identifying data found on the most recent letter from the PTO. (37 CFR 1.1(a)).

However, please note that an organizational restructuring of the Patent Examining Corps has resulted in many applications being reassigned to new Groups and Art Units. Your attention is directed to the NOTICE OF CHANGES IN THE PATENT EXAMINING CORPS that appeared in the OFFICIAL GAZETTE on June 26, 1984, (1043 OG 23), which identifies the Group Art Unit of each examiner (1043 OG 40 through 1043 OG 67). Letters mailed from the Groups after Apr. 15, 1984, should reflect the current identifying data.

For all papers related to *Trademark* applications, type the word "TRADEMARK" in the upper right-hand corner of the document. Also, please set forth the applicatant's name, correct serial number (including the series number which currently is "73"), filing date, law office, examining attorney and mark.

Documents for which no fee is required at the time of filing (e.g., amendments to applications and requests for extensions of time to file an opposition) continue to be addressed:

Box 5
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Mail directed to the Trademark Trial and Appeal Board should have mark "Attention: TTAB" on the envelope in additon to "Box 5."

- *Mailing Responses To The PTO*—In general, it would eliminate or greatly reduce processing steps by the

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PTO support staff, and will avoid interruption of the examiner's work, if a few simple, general rules were followed in regard to mailing of the responses to the PTO:

1. After a Patent or Trademark application is filed, please avoid filing additional papers (other than those requesting a filing receipt or those required by the Office) until the filing receipt or return post card identifying the Serial Number and Patent Examining Group Art Unit or Trademark Law Office has been received.
2. In *Patent* applications, requests for extensions of time, changes of address, proposed drawing corrections, and petitions are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response." In *Trademark* applications, change of address and powers of attorney are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response". Please present such items in separate papers, appropriately titled, since they are all handled by different personnel (37 CFR 1.4(c)). However, please include a statement in the amendment/response describing the paper being filed.
3. Where a supplemental or preliminary amendment is found necessary in *Patent* or *Trademark* applications, please telephone the examiner and request that the examiner delay action for a certain time in order to avoid crossing in the mails of the amendment and the Office action.
4. File *Patent* and *Trademark* documents which have no particular time or sequence requirement, with materials submitted in response to the statutory or regulatory requirements. Examples are certified copies of foreign documents to support priority and formal drawings in Patent applications or changes in Power of Attorney or Mailing Address following first action.
5. If a disclosure statement is to be filed before an Office action, file it when the application is filed. Some Group Art Units have greatly reduced the pendency to first action. Hence, many examiners are taking up new applications before an information statement is matched with the application.

THERESA A. BRELSFORD,
July 10, 1984. *Assistant Commissioner for Administration.*

[1044 TMOG 44]

(229) **Published Trademark Applications**

Papers which are filed in the Patent and Trademark Office in connection with published trademark application files should be captioned to the attention of the Trademark Quality Review Clerk and addressed as follows:

Commissioner of Patents and Trademarks
Attention Box 5, Trademark Quality Review Clerk
Washington, D.C. 20231

This mailing should be used only for papers filed after publication but before issuance of the registration. This could include corrections to information which appears to have been inadvertently or incorrectly published in the Trademark Official Gazette, as well as changes of attorney or address papers or notification of filing an assignment. Corrections to information published in the TMOG must be received in the Office before the registration is issued.

Use of this mailing address for corrections will help ensure that such papers are properly routed within the Office. Telephone inquiries concerning corrections or other matters in relation to published trademark applications should be directed to (703) 557–4249.

MARGARET M. LAURENCE
Dec. 10, 1984. *Assistant Commissioner for Trademarks.*

[1050 TMOG 316]

(230) **Notices of Abandonment**

The Trademark Operation has begun notifying trademark applicants when their pending applications have been abandoned by the Office. Under this new procedure, a computer-generated post card bearing the notice, serial number, applicant name and abandonment date will be sent to the correspondence address designated by the applicant. The post cards will be mailed within 2 to 4 weeks after the application is declared abandoned.

MARGARET M. LAURENCE
Jan. 13, 1986. *Assistant Commissioner for Trademarks.*

[1063 TMOG 4]

(231) **Change of Correspondence Address in Trademark Applications**

Applicants are reminded that when an application is filed and a correspondence address is entered in the Official record, correspondence will continue to be sent to such address until the applicant or party, or the attorney-at-law or other authorized representative of the applicant or party, indicates *in writing* that correspondence is to be sent to another address. 37 CFR Section 2.18. The filing of a response to an Office action on letterhead stationery that indicates a different address from the correspondence address of record is insufficient notice that correspondence is to be sent to another address. Specific language is needed which can reasonably be interpreted to be a request to change the address. See TMEP Section 603.

If a power of attorney has been filed in an application, a subsequently filed power of attorney will be regarded as a written request to change the correspondence address, even if there is no specific language changing the address or revoking the prior power of attorney. See TMEP Section 603.

MARGARET M. LAURENCE,
May 15, 1986. *Assistant Commissioner for Trademarks.*

[1067 TMOG 7]

(232) **Use of Restricted Deposit Account for Electronic Ordering of Patent and Trademark Copies**

Effective July 1, 1986, the restricted deposit account will be made available to those members of the public who wish to use it for electronic ordering of patent and trademark copies. The restricted deposit account requires maintenance of a minimum balance of $300.00 at the end of each month, as compared to the unrestricted account which requires a minimum balance of $1,000.00

In FY 1986, the Office established the restricted deposit account for use in charging subscriptions for copies of newly issued patents by subject matter classification. Establishment of a PTO deposit account is a prerequisite for subscription service.

Recently, the Office established an electronic ordering service (EOS), a method of ordering copies of patents and trademarks through the use of a computer terminal and modem. EOS is available only to PTO deposit account holders.

Many people who are interested in using EOS to order copies of patents and trademarks and who do not have PTO deposit accounts find the $1,000.00 balance required for the unrestricted account prohibitive. Therefore, the use of restricted account is being expanded to incorporate EOS ordering. Subscriptions and EOS ordering are the only two services for which restricted accounts may be used. If you have any questions on subscriptions or EOS, please call Mary Brown on (703) 557–3236. If you have questions on deposit accounts, please call Delores Riley on (703) 557–3227.

THERESA A. BRELSFORD,
June 23, 1986. *Assistant Commissioner, for Administration.*

[1068 TMOG 4]

(233) **New Trademark Fees**

Effective Oct. 4, 1986, the trademark fee schedule (Rule 2.6, 37 CFR §2.6), is as follows:

(a)	For filing an application, per class	$200.00
(b)	For filing an appliclation for renewal of a registration, per class	300.00
(c)	For filing to publish a mark under section 12(c), per class	100.00
(d)	For issuing a new certificate of registration upon request of assignee	100.00
(e)	For a certificate of correction of registrant's error	100.00
(f)	For filing a disclaimer to a registration	100.00
(g)	For filing an amendment to a registration	100.00
(h)	For filing an affidavit under §8 of the Act, per class	100.00
(i)	For filing an affidavit under §15 of the Act, per class	100.00
(j)	For filing a combined affidavit under §§8 and 15 of the Act, per class	200.00
(k)	For petitions to the Commissioner	100.00
(l)	For filing petition to cancel or notice of opposition, per class	200.00
(m)	For ex parte appeal to the Trademark Trial and Appeal Board, per class	100.00
(n)	For printed copy of registered mark Copy only Copy showing title and/or status	1.50 6.50
(o)	For certifying trademark records, per certificate For expedited handling of such certification, per record requested	3.50 25.00
(p)	For photocopies or other reproductions of records, drawing, or printed material, per page of the material copied	0.30
(q)	For recording trademark assignments and agreements or other papers relating to the property in a registration or application, per document For each mark in addition to one assigned in the same document	100.00 20.00
(r)	For abstracts of title to each registration or application, including the search	12.00
(s)	For special service handling of late filed fees in connection with a renewal	100.00
(t)	For items and services that the Commissioner finds may be supplied, for which fees are not specified, such charges as may be determined by the Commissioner with respect to each such item or service	actual cost.

MARGARET M. LAURENCE,
Aug. 15, 1986. *Assistant Commissioner, for Trademarks.*

[1070 TMOG 10]

(234) **Filing of a Notice of Appeal to the Federal Circuit and Service of Court Papers on the Commissioner of Patents and Trademarks**

1. *Service of court papers*

This notice supersedes the Solicitor's Notice of Sept. 10, 1982 [1023 *Official Gazette* 3 (Oct. 5, 1982)].

Court papers may be served on the Solicitor in the following manner:

A. By hand between 8:30 A.M. and 5:00 P.M. at the Office of the Solicitor located in Crystal Plz., Bldg. No. 2, 2011 Jefferson Davis Hwy., 5th Fl., Rm. 5–C–15, Arlington, Va.

B. By mail in an envelope addressed as follows:

Office of the Solicitor
P.O. Box 15667
Arlington, Va. 22215.

Court papers mailed to an address other than the Solicitor's service address above, or hand-delivered to the Office of the Solicitor, are deemed to be served when actually received in the Office of the Solicitor.

Papers which are not court papers and are intended to be filed in the Patent and Trademark Office in connection with an application or other proceeding pending in the Office should not be mailed to the Solicitor's mail service address. Any such papers which are mailed to the Solicitor's mail service address will not be filed in the Office and will be returned. No exceptions will be made to this policy.

2. *Filing of a notice of appeal to the Federal Circuit*

A notice of appeal from a decision of the Board of Patent Appeals and Interferences in an *ex parte* or *inter partes* patent matter or a decision of the Trademark Trial and Appeal Board in an *ex parte* or *inter partes* trademark matter must be timely filed.

A certificate of mailing under 37 CFR §1.8 *cannot* be used for the purpose of effecting "filing" of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit. *In re Thrifty*, 231 USPQ 560 (Comm'r. Pat. 1986), *mandamus denied mem.*, Misc. No. 137 (Fed. Cir. Nov. 21, 1986) (unpublished). Thus, a notice of appeal which reaches the Patent and Trademark Office after the due date, is not considered to be timely filed, even though mailed prior to the due date with a certificate of mailing under 37 CFR §1.8.

A notice of appeal to the U.S. Court of Appeals for the Federal Circuit may be filed in the Patent and Trademark Office in any of the following ways:

A. By mail addressed as follows, in which case the notice of appeal must actually reach the Patent and Trademark Office by the due date:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

B. By "Express Mail" (U.S. Postal Service *only*) under 37 CFR §1.10 addressed as follows, in which case the notice of appeal is deemed filed on the date of the Express Mail certificate:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of the Solicitor

C. By hand to the Office of the Solicitor.

A notice of appeal to the U.S. Court of Appeals for the Federal Circuit should *not* be mailed to the Solicitor's mail service address.

JOSEPH F. NAKAMURA,
June 8, 1987. *Solicitor.*

[1079 TMOG 5]

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(235) **HELPFUL HINTS**

• *Correspondence with Certificate of Mailing Delivered by Commerical Carrier* — The benefits of 37 CFR 1.8 or 1.10 apply only to documents delivered to the PTO by the U.S. Postal Service.

A number of instances have been uncovered where individuals are certifying that documents were deposited with the U.S. Postal Service when, in fact, the documents were hand carried or delivered to the PTO via commerical mail service, e.g., "Federal Express," "DHL," "Purolator," "Air Borne," "UPS'," etc. In those instances where documents include a certificate of mailing under 37 CFR 1.8 or 1.10, but were delivered to the PTO by other than U.S. Postal Service, Mail Room personnel are placing a notice indicating that fact on the correspondence involved to alert PTO personnel that the benefits of 37 CFR 1.8 or 1.10 do not apply.

[1080 TMOG 6]

(236) **Appeals to CAFC**

In every case of an appeal to the CAFC from a decision of the Board of Patent Appeals and Interferences or the Trademark Trial and Appeal Board, a copy of the notice of appeal should be separately transmitted to the Office of the Solicitor at the time the original notice is filed with the Commissioner. The Solicitor's copy should be sent in an envelope addressed as follows:

Box 8
Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attn: Office of the Solicitor

In lieu of mailing, the copy for the Solicitor may be hand-delivered to the Office of the Solicitor. Sending a copy of the notice of appeal to the Solicitor's Office will prevent or reduce delays in docketing appeals in the CAFC.

July 17, 1987. DONALD W. PETERSON,
Deputy Commissioner of Patents and Trademarks.

[1081 TMOG 5]

(237) **HELPFUL HINTS**

• *Certificate of Mailing AND Return Post Card* — Use of the Certificate of Mailing Procedure is strongly encouraged.

37 CFR 1.8(a) provides for the use of a Certificate of Mailing on most correspondence with the PTO, whereby the correspondence (and/or fee) will be considered as timely filed if deposited with the U.S. Postal Service within the set time period. Consistent use of this procedure is extremely beneficial to practitioners, whether or not the Post Card Receipt provision of MPEP 503 is used.

In those instances where the PTO never receives the correspondence, no post card receipt will be available to evidence the filing and/or timeliness of the correspondence. However, in those instances where a Certificate of Mailing is properly used, 37 CFR 1.8(b) provides relief, even if the correspondence is *not* received in the PTO at all. Under 37 CFR 1.8(b) the party who forwarded the correspondence need only (1) inform the PTO of the previous mailing of the correspondence, (2) supply a copy of the previously mailed correspondence and Certificate, and (3) include a declaration which adequately attests to the previous timely mailing.

[1082 TMOG 8]

(238) **Unpaid Fee Checks**

Beginning Dec. 1, 1987, the Office will change the procedure for handling fee checks of attorneys and agents that are returned to the Office unpaid. Presently, when a check submitted as payment for an application, a processing, an issue or any other fee is returned to the Office unpaid, the Office of Finance sends a letter to the attorney or agent who represents the applicant, or to the applicant if unrepresented by an attorney or agent, enclosing the check and calling attention to the fact that the check was returned unpaid. Beginning Dec. 1, 1987, the Office of Finance will send a copy of its letter to the applicant if the letter is addressed to an attorney or agent. The prohibition of 37 CFR §§1.33 and 2.18 against double correspondence is waived in view of the submission of a check that is returned unpaid to the Office.

A registered patent attorney or agent who repeatedly submits checks that are returned unpaid through no fault of the bank may expect to have the matter referred to the Office of Enrollment and Discipline.

Oct. 5, 1987. DONALD W. PETERSON,
Deputy Commissioner.

[1083 TMOG 7]

(239) **Service of Court Papers on the Commissioner of Patents and Trademarks**

The procedure set forth in M.P.E.P. §1216 (5th ed., revs. 1 to 6) under the heading "Service of Court Papers on Commissioner of Patents and Trademarks" was superceded by the procedure set forth in the Solicitor's Notice of June 8, 1987 [1079 OG 72], which remains in effect and which also describes the procedure for filing a notice of a appeal to the Federal Circuit. The portion of that notice concerning service of court papers on the Commissioner is repeated below, as modified to include additional guidelines about supplementation of the mail service address.

Court papers may be served on the Commissioner in either of the following ways:

A. By *hand* between 8:30 A.M. and 5:00 P.M. at the Office of the Solicitor, located in Crystal Plaza Bldg. No. 2, 2011 Jefferson Davis Hwy., 5th Floor, Room 5-C-15, Arlington, Va.

B. By *mail* in an envelope addressed as follows:

Office of the Solicitor
P.O. Box 15667
Arlington, Va. 22215

While the above mail service address may be supplemented to include the name of the particular attorney assigned to the court case, it must *not* be supplemented to refer to either the Commissioner of Patents and Trademarks or the U.S. Patent and Trademark Office (PTO).

Court papers mailed to an address other than the above mail service address and court papers delivered by hand are deemed to have been served on the Commissioner when actually received in the Office of the Solicitor.

Papers which are not court papers and are intended to be filed in the PTO in connection with an application or other proceeding pending in the Office should not be mailed to the solicitor's mail service address. Any such papers which are mailed to the Solicitor's mail service address will not be considered to have been filed in the PTO. Instead, all such papers will be returned. No exceptions will be made to this policy.

Feb. 22, 1988 JOSEPH F. NAKAMURA,
Solicitor.

[1088 TMOG 5]

(240) **HELPFUL HINTS**

• *Expediting Processing Trademark Assignments* — As noted in our statistics we are currently running behind in processing trademark assignment documents. We are working to eliminate the backlog in this area. We have recently eliminated a backlog in patent assignment processing. The following helpful hints are offered to aid us in eliminating backlogs and to allow us to provide better service for all assignment processing:

> Many individuals are submitting assignment documents and requests for assignment services, together with application prosecution papers, directly to the examiner. Often, these requests get placed in the file and are not forwarded to the assignment area for handling. Please send all assignment documents and requests through the mailroom in order that they may be properly routed to the assignment area.
>
> Please separate requests for certified copies of assignments from requests for other services including requests for certified copies of other documents. Certification of assignment documents is not performed by the same individuals as certification of other documents.

• *Expediting Handling of Trademark Applications* — To facilitate processing of new trademark applications, place them in a separate envelope apart from all other mail. Identify on the outside of the envelope "TRADEMARK APPLICATION ONLY." More than one new trademark application may be placed in the same envelope. Do not place any papers in the envelope other than those related to the new trademark applications.

Mar. 7, 1988. THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

[1088 TMOG 8]

(241) **Weekly Summaries of Trademark Trial and Appeal Board Final Decisions**

The Patent and Trademark Office will begin publishing, in each issue of the Trademark Official Gazette, a weekly summary of final decisions issued by the Trademark Trial and Appeal Board. Publication of the summary is being undertaken on a discretionary basis, as a courtesy to interested members of the public.

Mar. 21, 1988. JEFFREY M. SAMUELS,
Assistant Commissioner for Trademarks.

[1091 TMOG 6]

(242) **Filing Receipt for Trademark Applications**

Effective immediately, the Trademark Examining Operation will replace its existing "FILING RECEIPT FOR TRADEMARK APPLICATIONS," PTO Form 100 (Rev. 8/78), with a filing receipt using a new format. The revised filing receipt will be printed on a single sheet of 8½" x 11" paper and will contain information regarding the mark, applicant, International and U.S. classes, goods and/or services, and dates of use. If all of the information relating to a new application cannot be printed on the 8½" x 11" filing receipt, it will be noted that additional information was contained in the application but was not printed. The addressee's name and address will be printed on the back of the filing receipt.

Sept. 6, 1988 JEFFREY M. SAMUELS,
Assistant Commissioner for Trademarks.

[1095 TMOG 6]

TRADEMARK PUBLICATIONS

(243) **Separation of the Patent and Trademark Sections of the Official Gazette**

Effective February 2, 1971, the *Official Gazette* will be separated into two parts to be known as the *Patent Official Gazette and the Trademark Official Gazette.*

• • • • •

Orders for subscriptions should be addressed to Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Also effective February 2, 1971, the *Official Gazette* will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the *Official Gazette* will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the *Patent Official Gazette* and the *Trademark Official Gazette* will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the Gazette decision leaflet and Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

Dec. 29, 1970. WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

[882 O.G. TM 33]

(244) **Changes in Format for Publishing Trademarks for Opposition**

Because of the adoption of the International classification of goods and services by the United States as of September 1, 1973 (see *Official Gazette* of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the *Official Gazette* of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section of the *Official Gazette* entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see *Official Gazette* of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 31, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The repro-

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duction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

> The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.
>
> A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification—Application in more than one class
Section 2. International classification—Application in one class
Section 3. Prior United States classification—Application in more than one class
Section 4. Prior United States classification—Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

RENE D. TEGTMEYER,
Mar. 22, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 122]

(245) **Change in Official Gazette Entry to Show Cancellation of Fewer Than All Classes in a Multiple Class Registration**

Effective with the *Official Gazette* issue of December 16, 1980, there will be a change in the *Official Gazette* listing entitled "Trademark Registrations Cancelled." Beginning with that issue, "Trademark Registrations Cancelled" will list:

(1) single class registrations cancelled;
(2) multiple class registrations cancelled in all classes;
(3) multiple class registrations cancelled in fewer than all classes.

For every entry in the listing, the specific classes cancelled will be included in parentheses, next to the registration number and mark.

For a single class registration and for a multiple class registration in which every class has been cancelled, the class number(s) shown in parentheses will represent every class to which the registration applied.

For a multiple class registration in which fewer than all classes have been cancelled, the *Official Gazette* entry will include the word "only" following the notation of classes in parentheses, for example: (Int. Cls. 12 and 20, only). In this example, the addition of the word "only" would indicate that there are classes in the registration in addition to Classes 12 and 20, but only Classes 12 and 20 have been cancelled.

MARGARET M. LAURENCE,
Oct. 29, 1980. *Assistant Commissioner, for Trademarks.*

[1000 TM 21]

(246) **Single Copies of the Trademark Official Gazette**

Members of the public ordering single copies of the Trademark Official Gazette from the Superintendent of Documents are reminded they must specify the date of the issue being ordered.

The date of the issue in which a mark will be published for opposition is shown on The Notice of Publication form mailed to applicants approximately two weeks before the publication date. This date must be included on each single copy order.

Orders received without an issue date may be filled from current weekly stock. The Superintendent of Documents cannot check on whether a particular mark is published in the issue then in stock. If the stock is exhausted at the time the order is received, the order will be returned unfilled.

MARGARET M. LAURENCE,
Mar. 3, 1981. *Assistant Commissioner for Trademarks.*

[1004 O.G. 36]

(247) **Inadvertently Issued Registration Numbers**

Effective Jan. 3, 1984, a new sub-section identified as "Inadvertently Issued Registration Numbers" will exist as the last category of cancellations listed under the "Trademark Registrations Canceled" section of the *Official Gazette.*

This new sub-section will provide public notice of the cancellation of registration numbers which have been inadvertently issued by the Patent and Trademark Office.

MARGARET M. LAURENCE,
Nov. 15, 1983. *Assistant Commissioner for Trademarks.*

[1037 TMOG 16]

(248) **Availability of Patents and Trademarks Style Manual**

The latest edition of Patents and Trademarks Style Manual will be available to the patent and trademark community soon. This edition will be published as a separate supplement to the GPO Style Manual. It is the first revision since 1973, and will be available in looseleaf form. The cover of this supplement is illustrated below:

PATENTS AND TRADEMARKS STYLE MANUAL



A Supplement to the
UNITED STATES GOVERNMENT PRINTING OFFICE
Style Manual

1984
UNITED STATES PATENT AND TRADEMARK OFFICE

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THERESA A. BRELSFORD,
June 29, 1984. *Assistant Commissioner for Administration.*

[1045 TMOG 3]

(249) **USTA Publications of Looseleaf Rules of Practice**

The United States Trademark Association has published *US Trademark Law; Rules of Practice, Forms and Federal Statutes.* The book, in looseleaf format to allow for supplements, includes the trademark Rules of Practice, sample forms, the Lanham Act and applicable provisions and cites of other statutes that deal with trademarks and the Patent and Trademark Office. In content and format, the USTA publication generally replaces the Government Printing Office looseleaf edition of the Rules of Practice which has been discontinued.

Information on ordering copies of *US Trademark Law: Rules of Practice, Forms and Federal Statutes* may be obtained from:

The United States Trademark Association
6 East 45th St.
New York, N.Y. 10017
(212) 986–5880

The Government Printing Office continues to publish the Rules of Practice as Title 37, Code of Federal Regulations, every July. Effective July 1, 1983, however, the CFR edition no longer includes forms.

MARGARET M. LAURENCE,
Apr. 30, 1984. *Assistant Commissioner for Trademark.*

[1042 TMOG 58]

(250) **Notice to Subscribers**

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the Official Gazette, Manual of Patent Examining Procedures Revisions, Annual Indices, or other patent and trademark publications. All correspondence and inquiries concerning subscription services including requests for reinstatement or renewal of subscriptions should be directed to:

Mr. Michael F. DiMario
Assistant Public Printer
Superintendent ofDocuments (SD)
U.S. Government Printing Office
Washington, D.C. 20401

Furthermore, the Superintendent of Documents advises that expiration notices are sent out approximately three months before the expiration date. However, subscribers should not rely on this schedule. If a notice is not received within two months of the expiration date, the subscriber should renew the subscription with the Superintendent of Documents. Attach a label from the envelope in which the publication is received, together with a check covering the amount of the subscription. if a deposit account with the Superintendent of Documents is to be used, include the deposit account number with the renewal.

This notice is effective with the publication date and supersedes the notice published on this subject in 969 O.G. 2, dated Mar. 14, 1978.

THERESA A. BRELSFORD,
Aug. 3, 1984. *Assistant Commissioner for Administration.*

[1045 TMOG 24]

(251) **Notification of Errors in Trademark Official Gazette**

In view of the establishment of in-house photocomposition of the Trademark Official Gazette, it is important that errors noted by the public be directed to a single office within the Trademark Examining Operation for verification and correction.

Written notification of errors in the publication of marks in the Trademark Official Gazette should include the correspondent's telephone number and should be addressed to the Paralegal Specialist, Office of the Deputy Assistant Commissioner for Trademarks, United States Department of Commerce, Patent and Trademark Office, Washington, D.C. 20231. Error notification may also be done by telephone to the Paralegal Specialist in the Office of the Deputy Assistant Commissioner for Trademarks, at 202–557–3268.

Applicants may use this procedure to notify the Office of errors in relation to marks published in the Official Gazette if the error is purely clerical (e.g. typographical error, drawing printed upside down, or incorrectly stated data). This procedure should not be used to dispute

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information that is actually of record in the application file. The Paralegal Specialist will review the notification of error and verify the existence of the clerical error, determine whether the error can be corrected without jurisdiction being restored to the Examining Attorney or republication being required, and coordinate the appropriate correction procedure.

Notification must be received by the Office within one week after the Official Gazette publication date to permit processing by the Office.

Apr. 11, 1985. MARGARET M. LAURENCE
Assistant Commissioner for Trademarks.

[1054 TMOG 4]

(252) **Subscription Pricing Information**

The subscription prices on the following publications have been changed as indicated below:

Title: Official Gazette, Patent Section	
First-class domesitc mailing	$384.00
Fourth-class domestic mailing	270.00
Fourth-class foreign mailing	337.50
Single copies each, domestic	18.00
Single copies each foreign	22.00
Title: Official Gazette, Trademark Section	
First-class domestic mailing	246.00
Surface mailing, foreign	307.50
Single copies each, domestic	7.00
Single copies, foreign	8.75

This change is effective with Government periodicals and Subscription Services Price List 36, dated Summer, 1986.

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order. Subscriptions can also be charged to your Master Charge or VISA, include your Account Number and expiration date.

This notice supersedes the notice published June 10, 1986, at 1067 OG 12, and 1067 TMOG 13.

June 25, 1986. THERESA A. BRELSFORD,
Assistant Commissioner, for Administration.

[1068 TMOG 5]

(253) **Printing of Use in Another Form Claims**

Effective immediately, all claims of prior use of the subject mark in another form contained in applications for Trademark registrations will be printed in the *Official Gazette* and on the registration certificates according to the following formats:

First used in another form on _____
First used in commerce in another form on _____.

July 15, 1986. MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

[1069 TMOG 4]

TRADEMARK MISCELLANEOUS

(254) **Recording of Documents Affecting Title**

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

June 16, 1971. WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Published in 36 F.R. 13231; July 16, 1971

[889 O.G. TM 2]

(255) **International Protection of Government Emblems and Seals**

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one department seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of Dec. 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by Sept. 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1 1/2 inches in diameter.

These seals will then be forwarded to WIPO for protection under Article 6*ter* of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Aug. 18, 1976. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Published in 41 F.R. 35741

[950 O.G. TM 114]

(256) **Recording of "Territorial Assignments" in the Assignment Division of the Patent and Trademark Office**

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and therefore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

Oct. 7, 1977. BERNARD A. MEANY,
Assistant Commissioner for Trademarks.

[964 TMOG 8]

(257) **Flexible Working Hours**

On Jan. 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:30 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

Dec. 13, 1978. DONALD W. BANNER,
Commissioner of Patents and Trademarks.

[978 TMOG 141]

(258) **THE RETENTION SCHEDULE FOR TRADEMARK RECORDS**

As with most government agencies, the Patent and Trademark Office disposes of old files, papers and records pursuant to a specific schedule. In an effort to clarify any questions concerning the procedures for disposing of Trademark records and in response to public inquiries, the present Retention Schedule for Trademark Records and other records including trademark matters which may be of interest to the public is set forth as follows:

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports, records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interests of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Trademark Adversary Proceedings Files. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.	The past schedule to destroy after 10 years is in the process of being changed. At this time, these records are not being disposed of pending the new amendment to this section.
Canceled Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after the date of cancellation.
Expired Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after expiration of registration.
Abandoned Trademark Application Files. Consists of original application and all related correspondence.	Destroy 2 years after date of abandonment.
Trademark Renewal Index. Index to trademark registration that are renewed.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Indexes to Trademark Applications. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.	
A. Applicant's Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
B. Serial Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.

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Proceedings Index to Trademark Adversary Proceedings. Index arranged by type of proceeding. Shows status of proceeding prior to and immediately after a decision by the Board.	Destroy 3 years after termination of the proceeding.
Trademark Adversary Proceeding Records. Card file showing records of Trademark Adversary Proceedings.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Trademarks Published in Official Gazette. Clippings of marks from *Official Gazette.*	
a. Those which have been opposed.	*Retain in agency until no longer needed for reference.*
b. All others.	*Destroy when mark is registered.*
Trademark Registrant's Index. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Class of Goods Index. Card index used to indicate into what class any conceivable goods may fall.	Destroy after information transferred to magnetic media.
Index to Trademark Trial and Appeal Board Cases. Record of trademark trial and appeal board cases.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Public Advisory Committee for Trademark Affairs Files.	
a. Agenda, minutes, correspondence, reports and related supporting files.	*PERMANENT.* Transfer to Federal Records when 10 years old. Offer to National Archives when 25 years old.
b. Paper and reference materials.	Destroy when 10 years old or no longer needed for reference, whichever is sooner.
Seminar in Trademark Practice and Procedure Files. Record set of training materials used in training trademark examiners.	*PERMANENT.* Transfer to Federal Records Center when 10 years old. Offer to National Archives when 25 years old.
Trademark Petitions Files. Petitions to the Commissioner relating to trademarks with related materials.	
a. Original Petitions in trademark case file.	Dispose of with related case file.
b. Other copies.	Destroy when 2 years old.
Trademark Protest Letters. Letters of protest to the Commissioner related to trademarks.	Destroy when no longer needed or when three years old, whichever is earlier.
International Patent and Trademark Activities Case Files. Project case files showing Patent and Trademark Office activity relating to international patent and trademark programs.	
a. Records that supplement the International Property Activities Case Files (Item 103).	*PERMANENT.* Transfer to office responsible for international affairs after case is closed.
b. Other materials.	Destroy 5 years after close of case or sooner if no longer needed.
International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents, trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts or legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.

Bulky Trademark Specimens. Trademark applications specimens which do not strictly meet the basic requirements for physical form of specimens which state:

1. That they be made of material suitable for being placed inside a manila file wrapper.
2. That they be capable of being arranged flat, such as being folded.
3. That they be of a size not to exceed 8½ inches wide by 13 inches long. (Rule 2.56).

These requirements provide for specimens which will fit inside the application file wrapper, which is 9 × 14 inches in size and which will conveniently expand to about one inch thickness.

Specimens which do not meet the above requirements are referred to as "bulky" specimens and the Examiner must require that they be replaced by specimens of acceptable size and shape.

Destroy 30 days after applicant is notified that the specimens are unacceptable, unless picked up sooner by the applicant.

February 28, 1979.

SAUL LEFKOWITZ,
Acting Assistant Commissioner for Trademarks.

[980 TMOG 16]

(259) **Public Advisory Committee for Trademark Affairs**

Reestablishment

In accordance with the provisions of the Federal Advisory Committee Act 5 U.S.C. App. (1976) and Office of Management and Budget Circular A-63 of Mar. 1974, and after consultation with GSA, it has been determined that the reestablishment of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law.

The Committee was first established in Sept., 1970, and its present charter expired on Jan. 10, 1979. Since its inception the purpose of the Committee has been to advise the Patent and Trademark Office concerning steps which can be taken to increase the efficiency and effectiveness of administration of the Trademark Act and to provide a continuing flow of knowledge from the private sector to the government in the field of trademarks. Approximately seventy-five per cent of the over one hundred twenty-five specific recommendations have been implemented at least in part. There is no question that the Committee has contributed greatly to the efficiency and effectiveness of the administration of the statute. In reviewing the Committee, the Secretary has sought continued effort towards this objective. The Committee's function cannot be accomplished by any organizational element or other committee of the Department.

As it was initially established, the Committee will continue to comprise the members of the Advisory Committee for Trademark Affairs of the United States Trademark Association. The membership is balanced and is under the control of the President of the Association. The Committee will continue to operate in compliance with the provisions of the Federal Advisory Committee Act.

Copies of the Committee's revised charter will be filed with appropriate committees of Congress.

Any inquiries or comments may be addressed to Patricia M. Davis, Committee Control Officer, Office of Trademark Program Control, U.S. Patent & Trademark Office; Washington, D.C. 20231; telephone (703) 557–3881.

GUY W. CHAMBERLIN,
Mar. 15, 1979. *Assistant Secretary for Administration.*

[FR Doc. 79–8929; Filed 3–22–79; 8:45 am]

[982 TMOG 14]

(260) **Certified Copies of Trademark Applications/Registrations**

The Trademark Operation is in the process of microfilming its records and, as this proceeds, requests for certified copies of applications and, eventually, registrations, will be furnished from the microfilmed records. Such certified copies will not contain copies of the file jacket.

MARGARET M. LAURENCE,
Jan. 17, 1984. *Assistant Commissioner for Trademarks.*

[1039 TMOG 140]

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(261) **TABLE OF OFFICIAL GAZETTE VOLUME NUMBERS: 1872–1990**

A table which relates volume numbers of the Official Gazette comprising collections of weekly issues of that publication to the month of their publication has found good use in the Patent and Trademark Office and Patent Depository Libraries in a variety of applications. The need for such a table arises, in part, from the fact that Official Gazette volumes have not been uniformly numbered on a monthly basis over the 110 year history of that publication. From Jan. 1872 through June 1883, they were numbered on a semi-annual basis; from July 1883 through Dec. 1902, quarterly; from Jan. 1902 through Dec. 1908, bi-monthly; and since Jan. 1909, the volume of issues for each month has been separately numbered. To fulfill the interest which has been expressed in this table, it is published below:

Calendar Table of Official Gazette Volume Numbers
Month-by-Month Volume Numbers: Jan. 1872 to Present

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1872*	1	1	1	1	1	1	2	2	2	2	2	2
1873	3	3	3	3	3	3	4	[illegible]	[illegible]	[illegible]	[illegible]	4
1874	5	5	5	5	5	5	6	6	6	6	[illegible]	[illegible]
1875	7	7	7	7	7	7	7	[illegible]	8	8	8	8
1876	9	9	9	[illegible]	[illegible]	9	10	10	10	10	10	10
1877	11	11	11	11	11	11	12	12	12	12	12	12
1878	13	13	13	13	13	13	14	14	14	14	14	14
1879	15	15	15	15	15	15	16	16	16	16	16	16
1880	17	17	17	17	17	17	18	18	18	18	18	18
1881	19	19	19	19	19	19	20	20	20	20	20	20
1882	21	21	21	21	21	21	22	22	22	22	22	22
1883*	23	23	23	23	23	23	24	24	24	25	25	25
1884	26	26	26	27	27	27	28	28	28	29	29	29
1885	30	30	30	31	31	31	32	32	32	33	33	33
1886	34	34	34	35	35	35	36	36	36	37	37	37
1887	38	38	38	39	39	39	40	40	40	41	41	41
1888	42	42	42	43	43	43	[illegible]	44	[illegible]	45	45	45
1889	46	46	46	47	47	47	48	48	48	49	49	49
1890	50	50	50	51	51	51	52	52	52	53	53	53
1891	54	54	54	55	55	55	56	56	56	57	57	57
1892	58	58	58	59	59	59	60	[illegible]	[illegible]	61	61	61
1893	62	62	62	63	63	63	64	[illegible]	[illegible]	65	65	65
1894	66	66	66	67	67	67	68	68	[illegible]	69	69	69
1895	70	70	70	71	71	71	72	72	72	73	73	73
1896	74	74	74	75	75	75	76	76	76	77	77	77
1897	78	78	78	79	79	79	80	80	80	81	81	81
1898	82	82	82	83	83	83	84	84	84	85	85	85
1899	86	86	86	87	87	87	88	88	88	89	89	89
1900	90	90	90	91	91	91	92	92	92	93	93	93
1901	94	94	94	95	95	95	96	96	96	97	97	97
1902	98	98	98	99	[illegible]	99	100	100	100	101	101	101
1903*	102	102	103	103	104	104	105	105	106	106	107	108
1904	108	108	109	109	110	110	111	111	112	112	113	113
1905	114	114	115	115	116	116	117	117	118	118	119	119
1906	120	120	121	121	122	122	123	123	124	124	125	125
1907	126	126	127	127	128	128	129	129	130	130	313	131
1908	132	132	133	133	134	134	135	135	136	136	137	137
1909*	138	139	140	141	142	143	144	145	146	147	148	149
1910	150	151	152	153	154	155	156	157	158	159	160	161
1911	162	163	164	165	166	167	168	169	170	171	172	173
1912	174	175	176	177	178	179	[illegible]	181	182	183	184	185
1913	186	187	[illegible]	189	190	191	192	193	194	195	196	197
1914	198	199	200	201	202	203	204	205	206	207	208	209
1915	210	211	212	213	214	215	216	217	218	219	220	221
1916	222	223	224	225	226	227	228	229	230	231	232	233
1917	234	235	236	237	238	239	240	241	242	243	244	245
1918	246	247	248	249	250	251	252	253	254	255	256	257
1919	258	259	260	261	262	263	264	265	266	267	268	269
1920	270	271	272	273	274	275	276	277	278	279	280	281
1921	282	283	284	285	286	287	288	289	290	291	292	293
1922	294	295	296	297	298	299	[illegible]	301	302	303	304	305
1923	306	307	308	309	310	311	312	313	314	315	316	317
1924	318	319	320	321	322	323	324	325	326	327	328	329
1925	330	331	332	333	334	335	336	337	338	339	340	341

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Month-by-Month Volume Numbers: Jan. 1872 to Present—Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1926	342	343	344	345	346	347	348	349	350	351	352	353
1927	354	355	356	357	358	359	360	361	362	363	364	365
1928	366	367	368	369	370	371	372	373	374	375	376	377
1929	378	379	380	381	382	383	384	385	386	387	388	389
1930	390	391	392	393	394	395	396	397	398	399	400	401
1931	402	403	[illegible]	405	406	407	408	409	410	411	412	413
1932	414	415	416	417	418	419	420	421	422	423	424	425
1933	426	427	428	429	430	431	432	433	434	435	436	437
1934	438	439	440	441	442	443	444	445	446	447	448	449
1935	450	451	452	453	454	455	456	457	458	459	460	461
1936	462	463	464	465	466	467	468	469	470	471	472	473
1937	474	475	476	477	478	479	480	481	482	483	484	485
1938	486	487	488	489	490	491	492	493	494	495	496	497
1939	498	499	500	501	502	503	504	505	506	507	508	509
1940	510	511	512	513	514	515	516	517	518	519	520	521
1941	522	523	524	525	526	527	528	529	530	531	532	533
1942	534	535	536	537	538	539	540	541	542	543	544	545
1943	546	547	548	549	550	551	552	553	554	555	556	557
1944	553	559	560	561	562	563	564	565	566	567	568	569
1945	570	571	572	573	574	575	576	577	578	579	580	581
1946	582	583	584	585	586	587	[illegible]	589	590	591	592	593
1947	594	595	596	597	598	599	600	601	602	603	604	605
1948	606	607	608	[illegible]	610	611	612	613	614	615	616	617
1949	618	619	620	621	622	623	624	625	626	627	628	629
1950	630	631	632	633	634	635	636	637	638	639	640	641
1951	642	643	644	645	646	647	648	649	650	651	652	653
1952	654	655	656	657	658	659	660	661	662	663	664	665
1953	[illegible]	667	[illegible]	669	670	671	672	673	674	675	676	677
1954	678	679	680	681	682	683	684	685	686	687	688	689
1955	[illegible]	691	692	693	694	695	696	697	698	699	700	701
1956	702	703	704	705	706	707	708	709	710	711	712	713
1957	714	715	716	717	718	719	720	721	722	723	724	725
1958	726	727	728	729	730	731	732	733	734	735	736	737
1959	738	739	740	741	742	743	744	745	746	747	748	749
1960	750	751	752	753	754	755	756	757	587	759	760	761
1961	762	763	764	765	766	767	768	769	770	771	772	773
1962	774	775	776	777	778	779	780	781	782	783	784	785
1963	786	787	788	789	790	791	792	793	794	795	796	797
1964	798	799	[illegible]	801	802	803	804	805	806	807	[illegible]	809
1965	810	811	812	813	814	815	816	817	818	819	820	821
1966	822	823	824	825	826	827	828	829	830	831	832	833
1967	834	835	836	837	[illegible]	839	840	841	842	843	844	845
1968	[illegible]	847	[illegible]	849	[illegible]	851	852	853	854	855	856	857
1969	858	859	860	861	[illegible]	863	864	865	866	867	868	869
1970	870	871	872	873	874	875	876	877	[illegible]	879	[illegible]	881
1971	[illegible]	883	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	889	890	891	892	893
1972	[illegible]	895	[illegible]	897	[illegible]	[illegible]	900	901	902	903	904	905
1973	[illegible]	907	[illegible]	909	910	911	912	913	914	915	916	917
1974	918	919	920	921	922	923	924	925	926	927	928	929
1975	930	931	932	933	934	935	936	937	938	939	940	941
1976	942	943	944	945	946	947	948	949	950	951	952	953
1977	954	955	956	957	958	959	960	961	962	963	964	965
1978	966	967	[illegible]	969	970	971	972	973	974	975	976	977
1979	978	979	980	981	982	983	984	985	986	987	988	989
1980	[illegible]	991	992	993	994	995	996	997	998	[illegible]	1000	1001
1981	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013
1982	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025
1983	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037
1984	[illegible]	1039	1040	1041	1042	1043	1044	1045	1046	1047	[illegible]	1049
1985	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061
1986	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073
1987	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085
1988	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097
1989	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109
1990	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121

* SUMMARY OF CHANGES IN VOLUME NUMBERING

Semi-annual:	*Jan. 1872 through Jun. 1883*
Quarterly:	*Jul. 1883 through Dec. 1902*
Bi-monthly:	*Jan. 1903 through Dec. 1908*
Monthly:	*Jan. 1909 to the present*

The *Official Gazette* was published on successive Wednesdays from 3 Jan. 1872 through 17 Jan. 1872. From 23 Jan. 1872 to the present, it has been published weekly on Tuesday

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(262) **Proposed Records Control Schedule**

As with most government agencies, the Patent and Trademark Office periodically updates the schedule it uses to dispose of old files, papers and records. Set forth below is a recent update of the Patent and Trademark Office's Records Control Schedule. The schedule is currently being reviewed by the National Archives and Records Administration and, following its approval, will constitute the basis for disposing of Patent and Trademark Office records.

Any comments or questions related to the proposed schedule should be directed to John Hassett, (703) 557–0183. Written comments should be mailed to:

John Hassett, Director
Patent and Trademark Office
Crystal Plz. 1, Lobby
Washington, D.C. 20231

June 17, 1986.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Commissioner's and Deputy Commissioner's Records

1. *Commissioner's Correspondence and Subject Files.* Correspondence to and from other public officials, members of the public, and the Patent and Tradmark Office staff; reports; special investigations and survey reports; and related materials. (See index under Item 3).
   PERMANENT. Transfer to Federal Records Center when 5 years old. Offer to National Archives when 25 years old.
2. *Reports to the Commissioner.* Reports received by the Commissioner from the Patent and Trademark Office staff and maintained as separate series.
   PERMANENT. Transfer to Federal Records Center when 5 years old. Offer to National Archives when 25 years old.
3. *Index to Commissioner's Correspondence and Subject Files.* Card index to records described under Item 1.
   PERMANENT. Transfer to Federal Records Center with related files. Offer to National Archives with related files.
4. *Deputy Commissioner's Correspondence and Subject Files.* Correspondence to and from other public officials, members of the public, and the Patent and Trademark Office staff, with related materials (exclusive of records retained in Item 1).
   PERMANENT. Transfer to Federal Records Center when 5 years old. Offer to National Archives when 25 years old.
5. *Policy Documentation Files.* Formal policy and procedural issuances, current and obsolete, such as organizational charts, regulations, orders, circulars, manuals, and other types of directives, with related forms, recommendations, endorsements, clearances and comments.
   PERMANENT. Transfer to FRC when obsolete. Offer to National Archives when 25 years old.
6. *Work-Flow Control and/or Statistical Reports Files.* Various periodic statistical reports used to show the flow of work through the Patent and Trademark Office and the printers, such as PALM, TRAM, PMS Statistical Reports on Patents to printers, and similar reports.
   Destroy when 5 years old or sooner if no longer needed.
7. *Production and Pendency Reports Files.* Quarterly, monthly, and biweekly statistical reports prepared to show the production and quality output of examiners and clerks and the status of the assigned projects. Reports are mainly used to evaluate the efficiency of personnel for promotion purposes.
   a. Office of Assistant Commissioners or equivalent.
      Transfer to FRC when 5 years old. Destroy when 10 years.
   b. Other Offices.
      Destroy when updated report is received.
8. *Special Studies Files.* Report on special studies surveys, and inspections of operations, management and systems with related papers showing their inception, scope, procedure and results.
   PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 25 years old.
9. *Narrative and Statistical Reports Files.* Annual or other periodic narrative and statistical reports.
   a. Reports to the Office of the Commissioner and the Offices of the Assistant Commissioners.
      PERMANENT. Transfer to FRC when 10 years old. Offer to the National Archives when 25 years old.
   b. Other Offices.
      Destroy when 5 years old.
10. *Internal Administrative Files.* Administrative operations files of organizational offices, consisting of:
    a. Correspondence concerning routine or temporary internal administrative matters.
       Destroy when 2 years old.
    b. Office personnel files.
       Destroy after separation of employee.
    c. Completed requisitions for services, supplies and equipment, and travel documents.
       Destroy 1 year after action is completed.
    d. Records pertaining to charity drives, bond campaigns, blood donations, and other voluntary activities.
       Destroy on completion of program.
    e. Hand receipt files.
       Destroy when property is accounted for.
    f. Suspense files.
       Destroy when purpose is served.
    g. Chronological files.
       Destroy when 2 years old.
11. *Program Planning and Evaluation Files.* Files showing the overall development of Patent and Trademark Office plans and the evaluation of their effectiveness. Included are one copy of each staff study, evaluation report, system study, and related correspondence and background materials.
    PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 30 years old.
12. *Surplus Property Case Files.* Case files on disposal of surplus real and related personal property.
    Transfer to FRC 3 years after close of file. Destroy 10 years after close of file.
13. *Excess Real Property Reports.* Reports of real property with related papers.
    Destroy when 10 years old.
14. *Budget Policy and Procedure Correspondence Files.* Correspondence files showing Patent and Trademark Office policy and procedure governing budget administration, and reflecting expenditures for Patent and Trademark Office programs.
    PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 25 years old.
15. *Budget Estimates Files.* File copies of budget estimated comprising appropriation language sheets, narrative statements, and related schedules and data.
    PERMANENT. Transfer to FRC after 10 years. Offer to National Archives when 25 years old.
16. *Records Disposition Files.* Descriptive inventories, disposal authorizations, schedules for retirement of records and correspondence or memoranda relating to revisions.
    PERMANENT. Offer to National Archives when 25 years old or when no longer needed, whichever is longer.
17. *Forms Files.* One copy of each form with data showing the inception and scope of the form, the program or administrative purpose of the form, and the related procedure instituted, revised, superseded, or canceled.
    PERMANENT. Offer to National Archives when 25 years old or when no longer needed, whichever is longer.

18. *Systems Development Program Files.* Program documents, schedules, and correspondence pertaining to the execution, review, and analysis of Patent Office research and development programs, and relating to the general planning and supervision of the programs.
    PERMANENT. Transfer to FRC 5 years after completion to program. Offer to National Archives 20 years later or when 25 years old, whichever is sooner.
19. *Systems Development Task Force, Committee, and Board Files.* Agendas, directives, minutes of meetings, and related papers, of Task Forces, Committees, Board, etc. of which the Patent Office serves as Secretary, or Chairman thereof.
    PERMANENT. Transfer to FRC 5 years after close of file. Offer to National Archives 20 years later or after 25 years old, whichever is sooner.
20. *Technical Report Files.* One copy of each technical report of unpublished manuscript or report prepared in connection with a project, terminal narratives, statistical and graphic complications, summarizations, analyses, and related papers.
    PERMANENT. Transfer to FRC when 5 years old. Offer to National Archives when 25 years old.
21. *Systems Development Project Case Files.* Project case files reflecting a complete history of each project from initiation through research, development, design, and testing to completion.
    PERMANENT. Transfer to FRC 5 years after completion or termination of project. Offer to National Archives when 25 years old.

ADP Records
(also in GRS 20)

22. *ADP Planning Documents Files.* Planning documents consisting of master plan, feasibility studies with associated charts and diagrams, and supporting data that reflect on characteristics of the data automation activity.
    PERMANENT. When no longer needed or used offer to National Archives with related materials.
23. *ADP Program Management Files.* Program management documents consisting of the development of plans, policy, and procedures governing the conversion of electrical machine operations and the supervision, control, coordination, and operation of the mechanization program.
    PERMANENT. Offer to National Archives with related materials.
24. *ADP Standardizations Files.* Standardization files consisting of data elements and codes, standardization requests, and jusification for all data systems developed by or for the Patent Office.
    PERMANENT. Offer to National Archives with related materials.
25. *ADP Data Systems Planning Files.* Documents containing defin ition of the system.
    PERMANENT. Offer to National Archives with related materials.
26. *ADP Information Retrieval System Master Reference File.* Magnetic media containing an index to patents and trademarks and publications.
    PERMANENT. Offer to National Archives on termination of Patent and Trademark Office.
27. *Publication Tape File.* Magnetic media which are reproduced and disseminated as publication or used for reproducing a printed publication.
    PERMANENT. Offer to National Archives when publication needs cease.

Patent Records

28. *Advertising Files.* Copies of proposed advertising matter, circulars, letters, cards, and related correspondence intended to solicit patent business and submitted by registrants as required by regulations.
    Destroy when 25 years old.
29. *Complaint Files.* Case files relating to complaints made against attorneys registered to practice before the Patent Office.
    Destroy on death of attorney.
30. *Board of Appeals Decisions Files.* Copies of Board of Appeals decisions with related background materials.
    a. Cases patented.
       Destroy 10 years after patent issued.
    b. All others.
       Destroy 10 years after appeal is decided.
31. *Indexes to Appeal Cases.* Indexes, arranged in various ways, to the appeal cases.
    Destroy 30 years after date of appeal.
32. *Declaration of Assistance Received Files.* Form received from applicants showing assistance received, if any, in the preparation of application for patent (PTOL–284).
33. *Academy Lecture Files.* Lectures prepared by the Staff for presentation at the Academy. (These lectures are updated periodically to reflect the changing views of the Patent and Trademark Office)
    a. Historical Sample
       PERMANENT. Retain 1 copy of each basic lecture and of any major changes made to it. Offer to NARS when 25 years old.
    b. All other copies.
       Destroy when obsolete.
34. *Academy Training Sessions Files.* Background materials relating to each session of the Patent Office Academy, including names of attendees and instructors, schedule of classes, evaluation sheets, and related materials.
    PERMANENT. Offer to National Archives when 25 years old.
35. *Academy Examinations Files.* Completed examinations of persons attending the Academy.
    Destroy when 1 year old.
36. *Academy Application Files.* Applications for training in the Academy, including memoranda of agreement and personal history statements.
    Destroy when 2 years old.
37. *Academy Correspondence File.* Correspondence relating to the courses offered by the Patent Office Academy.
    Destroy when 5 years old.
38. *Disclosure Document File.* Documents submitted by inventors as evidence of the date of conception of an invention.
    a. Disclosure Documents referred to in a separate letter in a related patent application filed within two years.
       Dispose of with related patent application.
    b. Disclosure Documents *not* referred to.
       Destroy when 2 years old.
39. *Disclosure Documents Index.* Cross-reference index to Disclosure Documents maintained by inventor's name and includes DD number and date of receipt.
    Destroy with related DD's.
40. *Index to Patents Available for License or Sale.* Index created when a patent is made available for license or sale, issued to the U.S. Government or dedicated to the Public.
    Destroy when no longer needed for reference.
41. *General Correspondence File.* Consists mainly of inquiries and requests for information and publications. Also includes correspondence regarding the "Register of Patents Available for License or Sale."
    Destroy when 3 years old.
42. *Foreign Filing Licensing Documents.* Petitions to the Commissioner of Patents and Trademarks for license to file applications for patents in foreign countries.
    Destroy 25 years after date of issue.
43. *Indexes to Foreign Filing Licensing Documents.* Indexes to licensing documents described in Item 43.
    Destroy 25 years after issue.
44. *Transmittals to Other Agencies Files.* Copies of transmittal letters to other agencies enclosing correspondence and related enclosures sent to the Pa-

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tent and Trademark Office for services rendered by other agencies, such as copyright information and requests for publications from the Government Printing Office.
Destroy when 1 year old.

45. *D-1 Files.* Files relating to patent applications which may have a bearing on national security. Files usually consist of form listing serial number of application filing date, examining unit, title of invention, attorney assignee, and the concurrences listing the recommendation, signature, agency, and date; a memorandum summary indicating whether a secrecy order is required; the defense agency's request for a secrecy order; the secrecy order issued; and related materials.
Destroy 35 years after date of receipt for review.
46. *Drawing Correction Slips.* Index arranged by serial number of application and used to locate orders for correction of drawings.
Destroy when 2 years old.
47. *Inventor's Index to Patent Applications.* Index arranged alphabetically by name of the inventor. Each slip shows the inventor's name and residence, title of the invention, name and address of the attorney, application serial number and the filing date of the application.
PERMANENT. Offer to National Archives when no longer needed for reference.
48. *Numerical (serial) Index to Patent Applications.* Index arranged by the serial number assigned to the application.
PERMANENT. Offer to National Archives when no longer needed for reference.
49. *Assignment Document Files and Index.* Copies of documents assigning and transferring from one party to another the rights, title, and interest to trademarks and inventions and the letters patent obtained therefrom with related indexes.
PERMANENT. Offer to the National Archives when no longer needed for current business.
50. *Indexes to Government Interests.* Indexes to patents in which the Federal government has an interest by virtue of either of ownership of the application or resulting patent, thru assignment, or receipt of a license.
a. Government Agency Index.
PERMANENT. Offer to National Archives when no longer needed for reference.
b. Patent Number Index.
Destroy when no longer needed for reference.
c. Assignor Index.
Destroy when no longer needed for reference.
51. *Petitions to the Commissioner.* Petitions to the Commissioner concerning patent applications.
a. Original petitions in patent case file.
Dispose of with related case file.
b. Other copies.
Destroy when 2 years old.
52. *Patent Protest Letters.* Protest to the grant of a patent (Rule 291).
a. Letters filed in patent case file.
Dispose of with related case file.
b. Others.
Destroy when 5 years old.
53. *Patent Docket Cards.* Cards used to control patent applications.
Destroy when 6 months old.
54. *Classifications Definitions Files.* One copy of each issuance of *Classifications Definitions,* with related background papers.
PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 30 years old.
55. *Canceled Drawings.* Drawings that were canceled because they did not meet Patent and Trademark Office specifications. Copy of drawing is filed with application.
Destroy 5 years after filing date.
56. *Abandoned Patent Application Files.* Patent applications that did not result in a patent.
a. Those that are retained because they are referred to in another application that may have become patented.
Dispose of with patent file in which cited.
b. All others.
Destroy when 20 years old.
57. *Patent Files.* Case files showing the prosecution of application for, and the granting of, a patent. Includes the original application, copy of drawing, and all material relating to the prosecution of the application and subsequent actions by the Patent and Trademark Office.
a. Files selected by the Commissioner of Patents and Trademarks or the Archivist of the U.S.
PERMANENT. Transfer to Federal Records Center when 10 years old. Offer to National Archives when 40 years old.
b. All others.
Destroy when 35 years old.
58. *Patent File Charge-out Records.* Record showing name of person charging out a patent file.
Destroy after file is returned and all papers are determined to be in file.
59. *Statistical Reports on Patents to Printers Files.* Weekly statistical report to management concerning the number of patents sent to the printers and the amount of backlog.
a. Original Report.
Destroy when 5 years old.
b. Operating Unit Copy.
Destroy when 2 years old.
60. *Quality Review of Sample of Allowed Applications.* Records relating to the examination of allowed applications sampled for quality review, includes query to the examining group and their reply.
Destroy 1 year after ultimate disposition of related case.
61. *Sample Pull-Rate Files.* Form showing which of the allowed applications are to be selected for the quality review sample, includes the pull rate and list of applications by serial number.
Destroy when 1 year old.
62. *Printer-Waiting Register Files.* Register showing status of Query Disposition Records return to a group for reply.
Destroy when 1 year old.
63. *Query Disposition Record Files.* Form used to return printer-waiting cases to a group for answer to a specific query.
Destroy 6 months after query is returned.
64. *Batch Control Sheet for Allowed Cases Files.* Form uses as input to PALM System showing routing control and batch contents, such as PTO Form 1238–1.
Destroy when 1 year old.
65. *Checklist for Applications Allowed by Examiner File.* Form used in completing a final review of allowed applications before sending to the printer, such as PTO Form 1167.
Destroy when 1 year old.
66. *Patent Interference Files.* Case files produced in the process of resolving of adjudicating conflicts arising between parties in this matter of priority of invention.
a. Cases that reach the hearing stage.
PERMANENT. Transfer to Federal Records Center when 10 years old. Offer to National Archives when 40 years old.
b. Cases that are abandoned before reaching a hearing.
Destroy when 40 years old.
67. *Board of Interference Decisions.* Copies of Board of Interference Decisions.
PERMANENT. Offer to the National Archives when 40 years old.
68. *Index to Patent Interferences.* Arranged numerically by interference number. Shows names of parties involved, application serial number and/or patent numbers involved, subject of interference, sections, date of hearings, decisions rendered, and other remarks.
PERMANENT. Offer to National Archives when 40 years old.
69. *Index to Interference Exhibits.* Describes exhibits in each interference.
Destroy when 40 years old.
70. *Proceedings Under AEC and NASA Acts.* Separate series of interference files relating to the SEC and NASA Acts.
Dispose of with related patent files.
71. *Settlement Agreements.* Files relating to the settlement agreed to by parties in the interference.
Dispose of with related interference case file.
72. *Court Cases.* Proceedings in cases where the Commissioner is a party of a civil suit.
a. Cases selected by the Solicitor as being precedent setting or of historical or political significance.
PERMANENT. Offer to the National Archives when 30 years old.
b. All other cases.
Destroy when 30 years old.
73. *Index to Court Cases.* Card index to cases described under Item 72.
Retain in agency until no longer needed for reference.
74. *Roster of Registered Patent Attorneys and Agents.* Printout listing registered patent attorneys and agents.
Destroy after undated listing is received.
75. *Case Folders of Registered Attorneys and Agents.* Application folders of the attorneys, agents, or firms registered to practice before the Patent and Trademark Office.
Destroy on death of attorney or agent.
76. *Unsuccessful Application for Registration to Practice before the Patent and Trademark Office.* Application folders of those applicants who failed to be registered.
Destroy 5 years after date of examination.
77. *Examination Papers of Applicants for Registration.* Examination answer papers to applications for registration to practice before the Patent and Trademark Office.
Destroy after grades are recorded.

Trademark Records

78. *Trademark Examiners Work Reports.* Records showing amount of work processed by examiners in a given time. Used to evaluate examiners work and progress.
Destroy when 5 years old.
79. *Trademark Adversary Proceedings Files.* Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.
Destroy when 25 years old. Check with the Chairman of the Trademark Trial and Appeal Board before destruction. General Services should generate a list of files to be destroyed and send to the Search Room to destroy matching cards in Adversary Proceeding file.
80. *Canceled Trademark Registration Files.* Consists of original application and all related correspondence.
Destroy 2 years after the date of cancellation.
81. *Expired Trademark Registration Files.* Consists of original application and all related correspondence.
Destroy 2 years after expiration of registration.
82. *Abandoned Trademark Application Files.* Consists of original application and all related correspondence.
Destroy 2 years after date of abandonment.
83. *Trademark Renewal Index.* Index to trademark registrations that are renewed.
PERMANENT. Offer to National Archives when no longer needed for reference.
84. *Indexes to Trademark Applications.* Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.
a. Applicant's Index.
PERMANENT. Offer to National Archives when no longer needed for reference.
b. Serial Index.
PERMANENT. Offer to National Archives when no longer needed for reference.
85. *Proceedings Index to Trademark Adversary Proceedings.* Index in the Trademark Public Search Library arranged by type of proceeding.
Destroy card from list sent by the Warehouse after matching Adversary Proceeding file is destroyed.
86. *Trademark Adversary Proceedings Records.* Card file maintained at the Trademark Trial and Appeal Board, showing records of Trademark Adversary Proceedings, with information on mark, parties, disposition, termination date, etc.
PERMANENT. Offer to National Archives when no longer needed for reference.
87. *Trademark Registrant's Index.* Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.
PERMANENT. Offer to National Archives when no longer needed for reference.
88. *Index to Trademark Trial and Appeal Board Ex Parte Cases.* Record of Trademark Trial and Appeal Board cases in ex parte appeals.
PERMANENT. Offer to National Archives when no longer needed for references.
89. *Public Advisory Committee for Trademark Affairs Files.* Agenda, minutes, correspondence, reports, working papers, reference materials, and related supporting files.
Destroy when 10 years old or no longer needed for reference.
90. *Trademark Petitions Files.* Petitions and decisions to the Commissioner relating to trademarks, with related materials.
a. Original Petitions in trademark case file.
Dispose of with related case file.
b. Copies of petition decisions in petition number order and in subject order in the Assistant Commissioner's Office.
PERMANENT. Offer to the National Archives when no longer needed for references.
c. Other copies.
Destroy when 2 years old.
91. *Trademark Protest Letters.* Letters of protest to the Commissioner related to trademarks.
Destroy when no longer needed or when three years old, whichever is earlier.

Public Information and Service Records

92. *International Intellectual Property Activities Case Files.* Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.
PERMANENT. Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
93. *Proposed Intellectual Property Legislation Files.* Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.
PERMANENT. Transfer to FRC after 5 years. Offer to National Archives when 25 years old.

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94. *Printed Articles Files.* Articles submitted for clearance and printed in magazines, journals, and other information media, including related background materials.
Destroy when 10 years old.
95. *Public Affairs Report.* Weekly, monthly, and quarterly reports relating to public affairs activities prepared for the Department of Commerce.
Destroy when 6 months old.
96. *Speakers Files.* Correspondence, schedules, travel material and related records concerning the scheduling of Patent and Trademark Office speakers.
Destroy when 3 years old.
97. *Exhibit Files.* Correspondence, photographs, reports and related materials concerning major exhibits developed by the Patent and Trademark Office, such as the 175th anniversary exhibit.
PERMANENT. Transfer to FRC when 10 years old. Offer to the National Archives when 30 years old.
98. *Photograph Files.* Photographs of key Patent and Trademark Office officials, major exhibits and other subjects that related to the functioning of the Patent and Trademark Office. Includes the negative and one positive print.
PERMANENT. Offer for transfer to the National Archives when 20 years old.
99. *Publications Files.* Official record copy of each publication that contributes to an understanding of the organization and functioning of the Patent and Trademark Office.
PERMANENT. Transfer to FRC when 10 years old. Offer to National Archives when 30 years old.
100. *Speech Files.* Official records copy of each speech given by the Commissioner and other Patent and Trademark Office executives.
PERMANENT. Transfer to FRC when 10 years old. Offer to the National Archives when 30 years old.
101. *News Release Files.* Official records copy of each new release.
PERMANENT. Transfer to Federal Records Center when 10 years old. Offer to National Archives when 30 years old.
102. *Patents Received and Files Register.* Register showing date and number of patent cases received in search room and date filed.
Destroy 2 years after date of last entry in volume.
103. *Reports on Search Room Activities Files.* Weekly, monthly and other periodic reports showing production and general activities of the public search room, with related background papers.
a. Original Report.
Destroy when 1 year old.
b. Operating Office Copy.
Destroy when 2 years old.
104. *Patent and Trademark Reproduction Copy Files.* The master copy of patents and trademarks used for the photoreproduction of sales copies, includes original drawings and specifications.
Transfer to FRC when 10 years old. Destroy when 20 years old.
105. *Reprint Requisition File.* Requisitions, such as PTO Form 228, used for ordering the reprint or printed patents or trademarks after current stock is depleted.
Destroy when 1 year old.
106. *Sales Journal.* Shows statistical information on sales of copies of patents and trademarks.
Destroy when 5 years old.
107. *Correspondence and Sale Control Records.* Records used to control the flow of correspondence and sale of printed materials.
Destroy when 1 year old.
108. *Requests for Publications.* Correspondence requesting copies of certain publications and other printed materials.
Return requests with ordered materials.
109. *Microform Files.* Microform copies of applications as filed, printed patent files and printed trademark files.
a. Master microfilm files. (Certified as processed under 41 CFR 101–11.504)
PERMANENT. Transfer to classified site. Offer to National Archives when 25 years old.
b. All other microform copies
Non-Records
110. *Charged-Out Slips File.* Slips recording the charge-out of records to Patent and Trademark Office employees and the public, such as PTO Forms 124, 125, and 271.
Destroy when records are returned.
111. *Binding Instructions.* Cards showing instructions on how the various publications received by the library are to be bound.
Destroy when no longer needed.
112. *Charge-out Files of Library Materials.* Sets of 3" × 5" cards showing records of library materials on temporary or indefinite loan to researchers or Patent and Trademark Office staff.
Destroy when obsolete or on return of book.
113. *Interlibrary Loans Files.* Records of books borrowed from other libraries.
Destroy 2 years after return of book.
114. *Library Serial Order Cards.* 3" × 5" cards used to record purchase of journals, magazines, etc.
Destroy when no longer needed for reference.
115. *Library Book Order Cards.* 3" × 5" cards showing book purchases.
Destroy when no longer needed for reference.
116. *Foreign Patent Accession Register.* Bound volumes arranged by country. Each shows the patent number and the date that copy was received in the Patent and Trademark Office.
Destroy when no longer needed for reference.
117. *Inventor's Index.* Arranged alphabetically by name of inventor. Shows name and address of inventor, title of invention, serial number of application, patent number, date of issuance, attorney, and assignee.
PERMANENT. Offer to National Archives when no longer needed for reference.
118. *PTO Procurement Files.* Contract, requisition, purchase order, lease, and bond and surety records, including correspondence and related papers pertaining to award, administration, receipt, inspection and payment (other than those covered in Items 1, 2, 13, and 15).
a. Procurement or purchase organization copy, and related papers.
1. Transactions of more than $10,000 and all construction contracts exceeding $2,000.
Destroy 6 years and 3 months after final payment.
2. Transactions of $10,000 or less and construction contracts under $2,000.
Destroy 3 years after final payment. (Close file at the end of the fiscal year, retain 3 years and destroy, except that files on which actions are pending shall be brought forward to the next fiscal years's files for destruction therewith.)
b. Obligation copy.
Destroy when funds are obligated.
c. Other copies of record described above used by component elements of a procurement office for administrative purposes.
Destroy upon termination or completion.
119. *Solicited and Unsolicited Bids and Proposals Files.*
a. Successful bids and proposals.
Destroy with related contract case files (see item 118 of this schedule.)
b. Solicited and unsolicited unsuccessful bids and proposals.
1. When filed separately from contract case files.
Destroy when related contract is completed.
2. When filed with contract case files.
Destroy with related contract case files (see item 118 of this schedule.)

c. Cancelled Solicitations Files.
1. Formal solicitations of offers to provide products or services (e.g., Invitations for Bids, Requests for Proposals, Requests for Quotations) which were cancelled prior to award of a contract. The files include presolicitation documentation on the requirement, any offers which were opened prior to the cancellation, documentation on any government action up to the time of cancellation, and evidence of the cancellation.
Destroy 5 years after date of cancellation.
2. Unopened Bids.
Return to bidder.
d. Lists or Card Files of Acceptable Bidders.
Destroy when superseded or obsolete.
120. *Public Printer Files.* Records relating to requisitions on the Printer, and all supporting papers.
a. Printing procurement unit copy of requisition, invoice, specifications, and related papers.
Destroy 3 years after completion or cancellation of requisition.
b. Accounting copy of requisition.
Destroy 3 years after period covered by related account.

Non Record Materials

The Records Disposal Act of 1943, as amended, states that "library and museum material made or acquired and preserved solely for reference or exhibition purposes, extra copies of documents preserved only for convenience of reference, and stocks of publications and of processed documents are not included within the definition of the word 'records' as used in this Act." Non-record material is disposed of as soon as its purpose is served. The following list consists of those non-record materials that are unique to the Patent and Trademark Office.

121. *Foreign Patents.* Copies of patents issued by foreign countries.
122. *Translation of Foreign Patents and Publications and Related Indexes.* Typewritten copies of translations and related indexes.
123. *Card Catalogs.* 3" × 5" cards used as finding aids to the library.
124. *Patent Examiner's Search Files.* Reference file used by examiners in processing applications. Arranged by class and subclass and consist of U.S. patents, foreign patents, extracts from publications, and other materials relating to a certain class or subclass.
125. *Printed Trademark Registrations Reference Files.* Digest of Registered marks consisting of a set of registered work marks arranged alphabetically and secondarily by trademark registration number; a set of registrations comprising symbols, arranged according to the classification of the goods or services with which they are used; of registration arranged by registration number.
126. *Numerical Index to Patent Classification.* Arranged numerically by patent number and shows the class and subclass assignment of each patent.
127. *Shelf List of Classified Patents.* Listing of all U.S. Patent numbers comprising, respectively, the "original" and "cross reference" classification of patents according to the official classification of the Patent and Trademark Office.
128. *Public Search Files of U.S. Patents.* Printed or microfilm copies of U.S. Patents arranged in two series: 1) numerically by class and subclass assignment, and secondarily by patent number and 2) numerically by patent number.
129. *Legislative History Files.* Consist mainly of copies of published materials relating to legislation that is of interest to the Patent and Trademark Office. Includes copies of bills, public laws, Federal Register, Congressional Record, and similar materials.

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[1068 TMOG 5]

(263) **Change in Legal Holidays**

The Commissioner's Notice of Sept. 25, 1979, "Change in Legal Holidays," is hereby rescinded in view of Public Law 98-144, enacted Nov. 2, 1983, which amended the listing of legal public holidays in 5 USC §6103. That amendment took effect in 1986 and added a new legal holiday relating to the birthday of Martin Luther King, Jr. This new holiday is designated for the third Mon. in Jan.

Section 6103, as amended, reads as follows:
New Year's Day, Jan. 1
Birthday of Martin Luther King, Jr., the third Mon. in Jan.
Washington's Birthday, the third Mon. in Feb.
Memorial Day, the last Mon. in May
Independence Day, July 4
Labor Day, the first Mon. in Sept.
Columbus Day, the second Mon. in Oct.
Veterans Day, Nov. 11
Thanksgiving Day, the fourth Thurs. in Nov.
Christmas Day, Dec. 25.

Each of the holidays enumerated will constitute a "Federal holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code. In accordance with 37 CFR 1.6(a) and 1.10(a), the Patent and Trademark Office will not receive papers on these holidays. Actions required to be taken on such days may be taken on the next succeeding day that the Office is open for business in accordance with 37 CFR 1.7.

July 15, 1986. DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[1069 TMOG 5]

(264) **Advisory Committee for Patents and Trademarks; Establishment**

In accordance with the provisions of the Federal Advisory Committee Act (5 U.S.C. App. 2.) and General Services Administration Interim Rule on Federal Advisory Committee Management, 41 CFR Part 101-6, as amended, and after consultation with GSA, the Secretary of Commerce has determined that the establishment of the Advisory Committee for Patents and Trademarks is in the public interest in connection with the performance of duties imposed on the Department by law.

1. The Committee will advise the Patent and Trademark Office on broad policy issues involving both patents and trademarks, and the overall operation of the Office including matters concerning office-wide Automation programs.

2. The Committee will consist of at least 10 but no more than 18 members to be appointed by the Assistant Secretary and Commissioner of Patents and Trademarks to assure a balanced representation among patent and trademark attorneys, corporate executives, technical research directors, inventors, the judiciary, professional patent and trademark searchers, information specialists and publishers, automation experts, consumer groups, entrepreneurs, and educators. The Committee will function solely as an advisory body and in compliance with the provisions of the Federal Advisory Committee Act. Its charter will be filed under the Act, 15 days from the date of the publication of this notice.

Interested persons are invited to submit comments regarding the establishment of the Advisory Committee for Patents and Trademarks. Such comments, as well as any inquiries, may be addressed to the Executive Assistant to the Assistant Secretary and Commissioner of Patents and Trademarks, U.S. Department of Commerce, Washington, D.C. 20231, phone: 703-557-3071, or the Department's Committee Management Analyst, phone: 202-377-4217.

Nov. 14, 1986. DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

[FR Doc. 86-26451 Filed 11-21-86; 8:45 am]
BILLING CODE 3510-16-M

[1073 TMOG 5]

(265) **Closing of Patent and Trademark Office on Monday, Jan. 26, 1987**

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on Jan. 26, 1987, the Patent and Trademark Office will consider Jan. 26, 1987, a "federal holiday within the District of Columbia" under 35 U.S.C. §21. Any action or fee due that day will be considered as timely for the purpose of, e.g., 35 U.S.C. §§119, 133 and 151, if the action is taken, or fee paid, on Jan. 27, 1987.

Jan. 28, 1987. DONALD W. PETERSON,
Acting Assistant Secretary and Commissioner of Patents and Trademarks.

[1075 TMOG 4]

(266). **Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated Jan. 6, 1987**

Copies of the Trademark Official Gazette dated Jan. 6, 1987 were not mailed until Jan. 14, 1987. Therefore, for marks published in the Trademark Official Gazette dated Jan. 6, 1987, Notices of Opposition filed by Feb. 13, 1987 will be considered timely.

Feb. 4, 1987. MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

[1076 TMOG 8]

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(267) **Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated Jan. 20, 1987**

Copies of the Trademark Official Gazette dated Jan. 20, 1987 were not mailed until Jan. 27, 1987. Therefore, for marks published in the Trademark Official Gazette dated Jan. 20, 1987, Notices of Opposition filed by Feb. 26, 1987 will be considered timely.

MARGARET M. LAURENCE,
Feb. 4, 1987. *Assistant Commissioner for Trademarks.*

[1076 TMOG 8]

(268) **Filing of Papers During Unscheduled Closings of the Patent and Trademark Office**

When the Patent and Trademark Office is officially closed by Executive Order of the President or by the Office of Personnel Management for an entire day because of some unscheduled event, such as adverse weather conditions, the Patent and Trademark Office will consider that day as a "federal holiday within the District of Columbia" under 35 U.S.C. §21. Any action or fee due that day will be considered as timely for the purposes of, e.g., 35 U.S.C. §§119, 133 and 151, if the action is taken, or fee paid, on the next succeeding business day on which the Patent and Trademark Office is open. When the Patent and Trademark Office is open for business during any part of a business day between 8:30 a.m. and 5:00 p.m., papers are due on that day even though the Office may be officially closed for some period of time during the business day because of an unscheduled event. The procedures of 37 CFR 1.8 or 1.10 may be used, as appropriate, for the filing of papers. On any day the Office is open for at least part of the day, papers may also be deposited up to midnight in any boxes which are provided by the Patent and Trademark Office under 37 CFR 1.6(c).

DONALD W. PETERSON,
Feb. 11, 1987. *Acting Assistant Secretary and Commissioner of Patents and Trademarks.*

[1076 TMOG 6]

(269) **Closing of Patent and Trademark Office on Monday, Feb. 23, 1987**

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on Feb. 23, 1987, the Patent and Trademark Office will consider Feb. 23, 1987, a "federal holiday within the District of Columbia" under 35 U.S.C. § 21. Any action or fee due that day will be considered as timely for the purposes of, e.g., 35 U.S.C. §§119, 133 and 151, if the action is taken, or fee paid, on Feb. 24, 1987.

DONALD J. QUIGG,
Feb. 27, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1076 TMOG 4]

(270) **Public Evaluation of Automated Trademark Search System (T-Search)**

A limited public evaluation of the automated trademark search system (T-Search) will be conducted beginning in June 1988 for a period of three (3) to six (6) months. Selected participants will be given access to the T-Search system at Patent and Trademark Office facilities in Arlington, Va. Twenty participants will be selected to participate in the evaluation based on the following factors: (1) experience in the use of the PTO's Trademark Public Search Library paper files; (2) types of searches performed in the paper files (e.g., registrability, right-to-use, validity, infringement, collection, comprehensive, dilution, and design searches); (3) familiarity with automated, commercial trademark search systems; (4) ability to participate in a four (4) hour training course covering use of the T-Search system and basic search techniques; (5) willingness to provide feedback regarding system capabilities after each search session on the system and to participate in a debriefing interviews after the program ends; (6) willingness to use T-Search in the normal course of day-to-day work; and, (7) the type of work performed by the participant. The goal is to include professional searchers and parties from law firms and corporate law departments in the evaluation.

Persons who wish to be considered for participation in this evaluation of T-Search should complete a "Nomination Form" available from the Manager of the Trademark Public Search Library in Arlington, Va., or from the address given below. Completed nomination forms should be sent to the following address, and must be postmarked within two calendar weeks of the date of this publication or by May 31, 1988, which ever is later. If possible, all participants will be notified of their selection by June 3, 1988. T-Search training classes are scheduled to begin on-or-about June 7, 1988. To accommodate the schedules of participants, training will be given as follows: (1) one Saturday session; (2) one session during normal PTO business hours; and, (3) one session in the evening. Each session will last four hours. Interested parties should indicate which training time best suits their needs. Specific dates and times for the training will be established after selections are made.

Requests for additional information and/or Nomination Forms should be directed to:

Ms. Betty Andrews,
Office Trademark Program Control
U.S. Patent and Trademark Office
Crystal Plaza 2, Room 3C06
Washington, D.C. 20231

[1090 TMOG 7]

(271) **Department of Commerce**
Patent and Trademark Office
Docket No. 80743-8143

Notice of Inquiry

Agency: Patent and Trademark Office, Department of Commerce
Action: Notice of Inquiry and Request for Comments
Summary: The Patent and Trademark Office solicits written comments concerning the applicability of the Trademark Act of 1946, and in particular section 43(a) of the Act, to new technologies for the alteration of existing motion pictures, including colorization, time compression, and panning and scanning.
Date: Written comments should be submitted to the Patent and Trademark Office by Sept. 23, 1988.
Address: Comments should be sent to: Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.
For Further Information Contact: Richard Owens, Office of Legislation and International Affairs, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231. Telephone: (703)557-3065.
Supplementary Information: The Subcommittee on Courts, Civil Liberties and the Administration of Justice of the House Committee on the Judiciary has asked the Patent and Trademark Office to study the extent to which the Trademark Act of 1946 (Lanham Act), 15 U.S.C. 1051 *et seq.*, may be utilized to address potential problems relating to the use of new technologies for the alteration of existing motion pictures, including colorization, time compression, and panning and scanning. In particular, the Subcommittee has asked the Patent and Trademark Office to examine the applicability of section 43(a) of the Lanham Act, 15 U.S.C. 1125(a), to such technologies.

The Subcommittee has asked the U.S. Copyright Office to prepare a related, more comprehensive study. In a Request for Information published at 53 FR 18937 (May 25, 1988), the Copyright Office announced that it would conduct an inquiry concerning the nature, extent and effect of the new technologies on the creators and users of audiovisual works, including motion pictures and television programming. The Copyright Office stated that it will also examine the impact of the new technologies on the integrity of our national film heritage and the creative freedom of filmmakers.

The scope of the Patent and Trademark Office's inquiry is narrower. The Office seeks specific, thorough comment on the extent to which the Lanham Act may be applied to address potential problems relating to the use of new technologies for the alteration of existing motion pictures. The Office solicits information on whether legal arguments have been or are likely to be made for the application of the Lanham Act, and particularly section 43(a), to such technologies. Discussion of relevant case law, including unreported cases, is requested. The Office also seeks comment on whether the Lanham Act should be amended to provide expanded protection against such alteration, and, if so, on the proper scope of such amendments. Recommendations for amending the Act should be precise and detailed.

Questions

(1) To what extent is it contemplated that the Lanham Act, 15 U.S.C. 1051 *et seq.*, and particularly section 43(a) of the Act, 15 U.S.C. 1125(a), may be used to address potential problems relating to the use of new technologies for the alteration of existing motion pictures, including but not limited to colorization, time compression, and panning and scanning?

(2) Should the Lanham Act be amended to provide more or different protection than is currently available? If so, what form should new legislation take? Who should be protected?

Copies of all comments received will be available for public inspection after Sept. 26, 1988, in Suite 902, Crystal Park Bldg. 2, 2121 Crystal Dr., Arlington, Va. 22202.

DONALD J. QUIGG,
July 20, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

[1093 TMOG 6]

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SPECIAL GRANT COVERS COMMEMORATING THE BICENNTENNIAL OF THE UNITED STATES CONSTITUTION

The Patent and Trademark Office will use special grant covers depicting a United States Constitution motif on patents issued and trademarks registered beginning June 2, 1987, and continuing through the last seven months of 1987.

The patent covers will be printed in black and blue on off-white paper with a shadow print of the U.S. Constitution document, sealed with a red ribbon and gold seal.

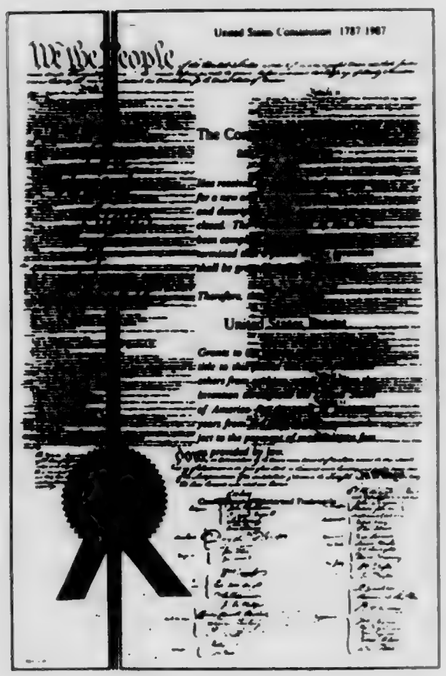
The trademark certificate of registration on the Principal Register covers will be printed in black on off-white paper with a gold eagle and gold seal, and with a shadow print of the U.S. Constitution document. The trademark certificate of registration on the Supplemental Register will be printed in black on yellow paper with a red eagle and red seal, and with a shadow print of the U.S. Constitution document. The trademark certificate of renewal will not be changed.

Reduced size samples of these special covers are illustrated below.

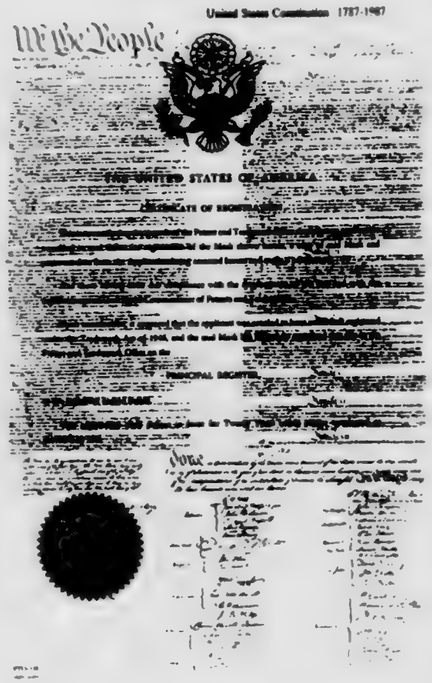
May 13, 1987.

DONALD J. QUIGG,
Assistant Secretary and Commission of Patents and Trademarks.

(patent cover)



(trademark cover)



BEST COPY AVAILABLE

(273) Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities and Enforcement Procedures

Agency: Patent and Trademark Office, Department of Commerce
Action : Notice
Summary: The Patent and Trademark Office is revising its regulations relating to use of Patent and Trademark Office records or search facilities and procedures for enforcing these regulations. These regulations and their enforcement are necessary to promote an atmosphere conducive to research and to maintain the integrity of the files and records in the Patent and Trademark Office.
Effective Date: July 1, 1987
For Further Information Contact: Theresa A. Brelsford, Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557–2290.
Supplementary Information: The procedures will apply to all visitors to the Patent and Trademark Office.

Visitors are reminded that unauthorized removal of government material or property may be prosecuted as a criminal felony under the provisions of 18 U.S.C. 2071, in addition to the imposition of administrative sanctions contained in these procedures.

Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities

These regulations are established for all persons using the facilities of the Patent and Trademark Office (PTO), and will be appropriately enforced as specified herein.

Smoking within PTO is prohibited except in designated areas (41 CFR 101–20.109–10).

All persons using the facilities of the PTO are subject to regulations governing conduct on property under the charge of the General Services Administration which appear in 41 CFR Subpart 101–20.3 (41 CFR §§101–20.300 through 101–20.315).

Packages, briefcases and other personal effects brought into the PTO, as well as storage lockers provided for general use, are subject to search by authorized personnel for reasonable cause under the provisions of 41 CFR 101–20.301.

Unauthorized removal of PTO files, documents, reference materials, or any government property is prohibited. In addition to the administrative sanctions specified in these regulations, violators may also be subject to arrest and prosecution under the provisions of 18 U.S.C. 2071 which carries a possible "fine of $2,000 or imprisonment for not more than three years, or both", and/or the violator may be subject to discipline under the PTO Code of Professional Responsibility if he or she is a practitioner as defined in 37 CFR 10.1(r).

All persons must comply with posted Official Notices and with verbal requests made by PTO personnel for compliance with these regulations.

1. User Passes
   a. Individuals visiting any area of the PTO must obtain a valid, non-transferable user pass and wear it visibly displayed at all times while on the premises.
   b. Permanent User Passes may be obtained from the Manager of the Patent Public Search Room. The first Permanent User Pass is issued at no charge. Permanent User Passes subsequently issued as replacements will be provided at a charge of $5.00 per Pass. The holder of a Permanent User Pass may be issued one (1) Temporary User Pass, within a ninety (90) day period at no charge. A request for a second Temporary User Pass during the same ninety day period will require the purchase of a Permanent User Pass at the required replacement fee.
   c. Temporary User Passes may be obtained by visitors at no charge from the managers of the Patent or Trademark Public Search Rooms and are valid through the expiration date stamped thereon.
   d. Permanent and Temporary User Passes must be surrendered to the PTO upon request for cause.

2. Use of Search Areas
   a. The Patent and Trademark Office facilities may be used by visitors only during the hours specified, Monday through Friday, and are closed to the public on Saturdays, Sundays and Legal Holidays:

Patent Public Search Rm., Mezzanine and Microfilm Center	8:00 a.m.—8:00 p.m.*
Trademark Public Search Rm.	8:00 a.m.—5:30 p.m.*
Assignment Search Rm., Public Service Center, and Scientific Library	8:30 a.m.—5:00 p.m.*
Patent Examining Organizations, Trademark Examining Law Offices and all other public access areas of the PTO	8:30 a.m.—5:00 p.m.*

* Clearing of these areas would begin prior to this time to ensure all visitors are out of the building by the time designated.

   b. Materials available for search purposes in the Patent and Assignment Search Rooms and patent application file histories shall not be removed from those areas.
   c. Trademark registrations in the Trademark Search Library shall not be removed from the secured bundles in the registered file. Photocopying from bound volumes of trademarks is prohibited.
   d. Trademark files shall not be removed from PTO space in Crystal Plz. Bldg. 2.
   e. Use of Patent Examining Group search areas is strictly limited to searching materials unavailable in the Patent Public Search Room or the Scientific Library. Examining Group search areas may be used only when such use does not conflict with the regular business of the organization.
   f. Visitors to a Patent Examining Group Search Area must register with the designated Group Search Area representative indicating the times entering and leaving the area, User Pass number, and the class(es) and subclass(es) to be searched.
   g. Documents removed from the files of Patent Examining Group search areas must be immediately returned to their proper location after use. Documents shall not be removed from the area in which they were obtained without specific written authorization from a Group Director or Supervisory Patent Examiner in the Examining Group where the material(s) reside. Such authorization will not be given for U.S. Patents and other material readily available through the Scientific Library.

3. PROHIBITIONS
   The following are prohibited:
   a. Conduct which is rude or abusive to PTO employees or others.
   b. Smoking and consumption of food or beverages in other than designated areas.
   c. Loud talking or any conduct which may be disruptive to others.
   d. Use of radios, televisions, typewriters, photographic equipment, dictation equipment and other mechanical, electrical or electronic items without specific authorization from an Assistant Commissioner of the PTO.

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e. Improper use, mutilation, destruction or unauthorized removal of PTO records, documents or government property.
f. Reserving seats or work areas.
g. Affixing messages to walls, telephone booths or other government property, except designated message boards.
h. Use of the PTO as a mailing address, use of PTO stationery, and use of PTO emblem or seal.
i. Use of PTO telephones and other office equipment, such as copiers, etc., except where specifically provided for public use. This includes the use of PTO telephones to receive incoming calls.
j. Use of any computer terminal other than the TRAM terminals provided for public use in the Trademark Search Library, and the CASPIR and FOUR-PHASE terminals (or CASSIS terminal if the FOUR-PHASE terminals are not operating) provided in the Patent Public Search Room for public use.
k. Placing PTO files or documents, government property or government owned reference materials in rental storage lockers.
l. Use of rental storage lockers without depositing the required fee or holding the key to a storage locker beyond the specified maximum period of use.

[1079 TMOG 7]

(274) **Procedures for Enforcement of the Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities**

Under applicable statutes and regulations, including 40 U.S.C. 486(c), 41 CFR 101–20.3, and appropriate sections of Department Organization Orders 10–14 and 30–3 of the Department of Commerce, the procedures appearing below are established.

1. Violations involving unauthorized removal of PTO files, documents, records or government property.
a. Each observed or reported violation will be investigated.
b. Persons found in possession of PTO material or government property, other than in areas or under circumstances where possession is specifically authorized, shall be required to immediately surrender the material or property and if appropriate, their User Pass. An oral explanation for the possession of such material or property will be requested by the PTO.
c. Each incident involving unauthorized possession of PTO material or government property shall be immediately reported by telephone or in person to the Office or Group Director of the area from which the material or property was taken.
d. If it appears to the Office or Group Director that possession of the materials was inadvertent or otherwise unintentional, no further action will be taken. The materials will be replaced appropriately and the person's User Pass will be returned.
e. If it appears to the Office or Group Director that possession of the materials was intentional, all persons involved shall be required to submit written statements detailing the circumstances and, in the case of a PTO User/visitor, show cause why the User Pass and visitor privileges should not be suspended or revoked. Statements will also be obtained from other witnesses where appropriate. The material or property shall be secured for possible use as evidence by the Office or Group Director, if appropriate.
f. If the involved person possesses a Permanent User Pass, it shall be retained and forwarded with the written statements to the Assistant Commissioner for Administration. A Temporary User Pass may be issued as replacement by the Assistant Commissioner for Administration, pending action on an alleged violation.
g. If the involved person possesses only a Temporary User Pass it shall be retained and forwarded with the written statements to the Assistant Commissioner for Administration within two weeks of the incident. No replacement will be provided pending action by the Assistant Commissioner for Administration.

2. Other violations of public use regulations.
a. Each observed or reported violation will be investigated. The persons involved shall be informed of the nature of the violation and requested to comply with regulations.
b. If it appears that the violation was inadvertent or otherwise unintentional and the involved person immediately conforms to the regulations, no further action will be taken.
c. If the violation appears to be intentional or if the person involved refuses to comply with a verbal request from a PTO employee or continues to violate the regulations after being requested to comply, the person shall be required to surrender his or her User Pass to the PTO. A written report of each violation and the User Pass will be submitted to the Assistant Commissioner for Administration for a final decision. User Pass replacement procedures shall be as specified in paragraphs 1.f. or 1.g.
d. If the Assistant Commissioner for Administration determines that a reported violation was inadvertent or otherwise not intentional, the User Pass will be returned and no further action will be taken. In all other cases, the Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass and visitor privileges should not be suspended or revoked.
e. A written decision will be rendered by the Assistant Commissioner for Administration after consideration of any timely submitted response.
f. In the case of a written decision by the Assistant Commissioner for Administration adverse to a practitioner as defined by 37 CFR 10.1(r), a copy of the written decision will be forwarded to the Director of the Office of Enrollment and Discipline for whatever further action, including sanctions, as may be appropriate under the PTO Code of Professional Responsibility.

3. Factors to be Considered in Assessing Penalties.
a. Penalties will be determined on a case by case basis.
b. Prior violations of regulations will be considered when assessing whether any violation is willful, deliberate or intentional, and when determining the penalty to be imposed.
c. Penalties may be assessed as follows, depending on circumstances:

(1) For a first offense: from a written warning to a 30 day suspension of the User Pass and visitor privileges.
(2) For a second offense: a suspension of the User Pass and visitor privileges from 5 days to one year.
(3) For a third or subsequent offense: from a suspension of 30 days to permanent revocation of the User Pass and visitor privileges.
(4) For any single serious or aggravated violation: suspension of the User Pass and visitor privileges for up to one year or permanent revocation of the User Pass and visitor privileges. A serious or aggravated violation is defined as *any instance involving multiple violations of regulations during a single event or acts which also constitute a violation of Federal or local criminal law.*

4. Record of Penalties Imposed.
A record of penalties imposed for given violations will be maintained by the Assistant Commissioner for Administration. These records will be made available to the public upon request.

5. Use of Public Facilities During Suspension or After Revocation of User Pass.
No individual will be permitted to use the facilities specified in these regulations while his or her User Pass is suspended or revoked.

6. Absence of Assistant Commissioner for Administration.
In the absence of the Assistant Commissioner for Administration, the Deputy Assistant Commissioner for Administration will carry out the responsibilities assigned by these regulations.

7. Absence of Designated PTO Officials.
In the absence of any Designated PTO Official, a Deputy or Acting Official will carry out the responsibilities assigned by these regulations.

8. Assistance.
PTO employees may, when necessary, request the Security Officer of the Patent and Trademark Office or the Federal Protective Service or their contractors to provide assistance in carrying out their assigned responsibilities in paragraphs 1. and 2.

9. Appeals.
Decisions rendered by the Assistant Commissioner for Administration may be reviewed on petition to the Commissioner.

THERESA A. BRELSFORD,
May 11, 1987. *Assistant Commissioner for Administration.*

[1079 TMOG 8]

(275) **IMPROVEMENTS TO SERVICES**

• *Trademark Drawings* — Effective July 1, 1987. the rule requiring that trademark drawings be limited in size to 4 inches by 4 inches will not be insisted upon for the purpose of assigning a filing date. This change is being made based on a recommendation by the Public Advisory Committee for Trademark Affairs and after consideration of the effect on Office practice.

Drawings must still meet the other requirements of CFR §2.52 to receive a filing date. Further, the size limitation to 4 inches by 4 inches of CFR §2.52(c) must be met before the application may be approved for publication or, if the application is on the Supplemental Register, for registration. It is strongly recommended that applicants attempt to comply with the size requirements at the time of filing to expedite the examination and registration process.

[1079 TMOG 12]

(276) **IMPROVEMENTS TO SERVICES**

Until recently, trademark assignments containing more than 99 properties were pulled from the normal processing pipeline and handled separately. This was being done since the automatic typewriters used to record the information must be reset to accommodate for more than 99 properties. However, this procedure has resulted in delays in recording such assignments, and in their being processed well after other assignments with earlier receipt dates. This backlog is now being addressed and will be processed by the end of July. All trademark assignments, regardless of the number of properties, are now being processed in date order.

[1080 TMOG 6]

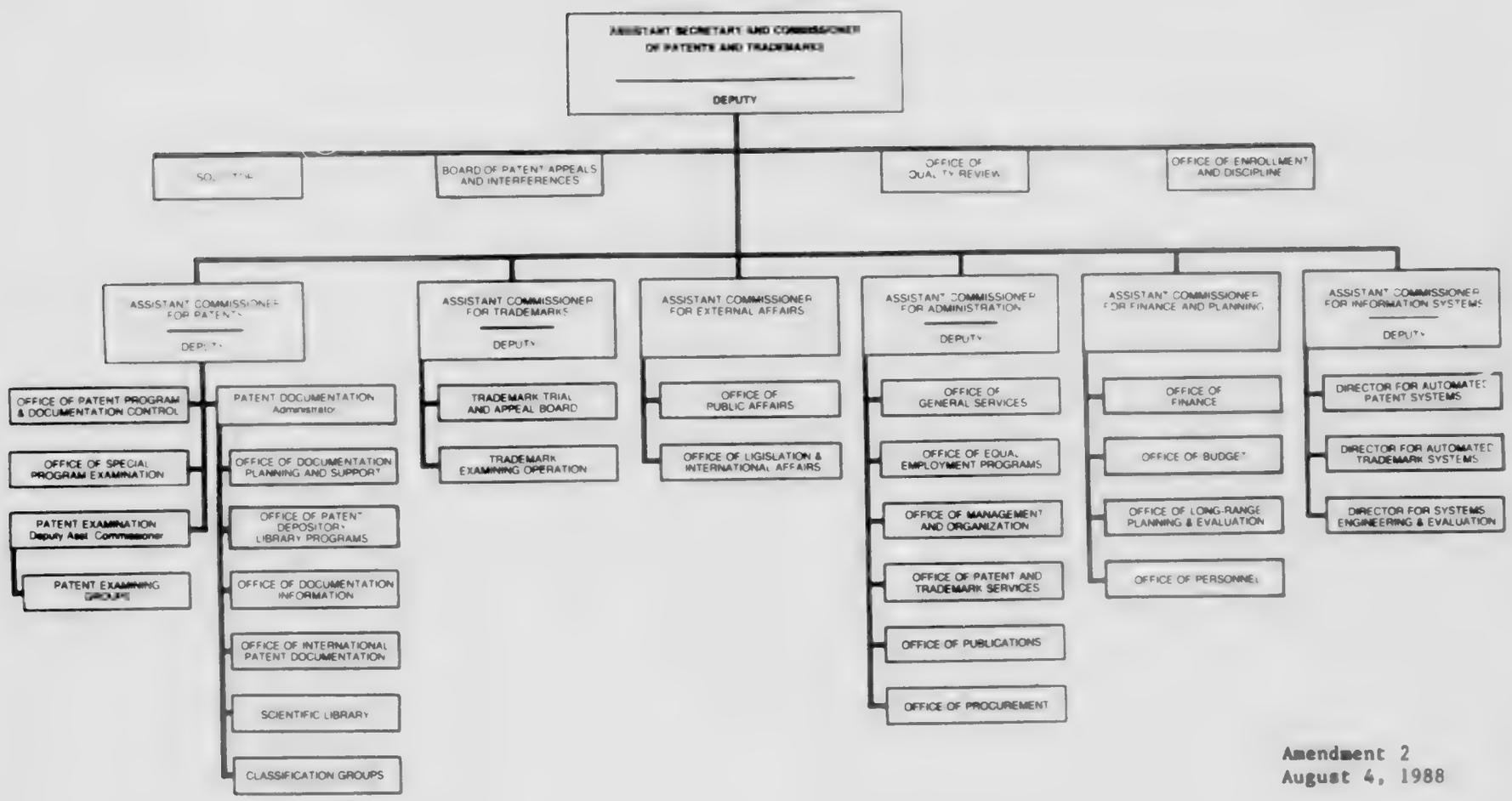
(277) **IMPROVEMENTS TO SERVICES**

Until June 1987, trademark assignments containing more than 99 properties were pulled from the normal processing pipeline and handled separately. This was being done since the automatic typewriters used to record the information must be reset to accommodate for more than 99 properties. However, this procedure had resulted in delays in recording such assignments, and in their being processed well after other assignments with earlier receipt dates. An intensive effort has been underway to record all those assignments and the backlog has now been completed. All trademark assignments, regardless of the number of properties, are now being processed in date order and we are planning to be back on schedule by the end of Sept.

Similarly, patent assignments involving several properties had also been delayed. The increase in the days to process assignments reflects the working off of this backlog. It is expected to be completed by the end of Sept. and all patent assignments should be back on target in Oct.

[1082 TMOG 8]

U.S DEPARTMENT OF COMMERCE
PATENT and TRADEMARK OFFICE



Amendment 2
August 4, 1988

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Oct. 26, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct.

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5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on December 31, 1985 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,561,121 through 4,562,595
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued September 1, 1981 through December 29, 1981 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges: ;li,12

Utility Patents 4,286,377 through 4,308,621
Reissue Patents based on the above identified oatents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED OCTOBER 16, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,476,589	06/321,813	10/16/84
4,476,597	06/424,917	10/16/84
4,476,603	06/504,858	10/16/84
4,476,605	06/455,625	10/16/84
4,476,610	06/420,795	10/16/84
4,476,612	06/379,317	10/16/84
4,476,614	06/540,095	10/16/84
4,476,615	06/395,626	10/16/84
4,476,617	06/394,826	10/16/84
4,476,626	06/449,037	10/16/84
4,476,635	06/352,466	10/16/84
4,476,638	06/474,327	10/16/84
4,476,640	06/324,370	10/16/84
4,476,645	06/434,954	10/16/84
4,476,646	06/502,507	10/16/84
4,476,649	06/451,174	10/16/84
4,476,651	06/461,513	10/16/84
4,476,660	06/417,110	10/16/84
4,476,664	06/322,563	10/16/84
4,476,670	06/502,935	10/16/84
4,476,672	06/446,381	10/16/84
4,476,673	06/474,507	10/16/84
4,476,678	06/229,149	10/16/84
4,476,682	06/342,983	10/16/84
4,476,687	06/585,616	10/16/84
4,476,695	06/561,688	10/16/84
4,476,698	06/473,706	10/16/84
4,476,700	06/407,653	10/16/84
4,476,710	06/469,369	10/16/84
4,476,715	06/474,387	10/16/84
4,476,723	06/475,045	10/16/84
4,476,727	06/408,940	10/16/84
4,476,730	06/429,621	10/16/84
4,476,735	06/431,480	10/16/84
4,476,736	06/487,923	10/16/84
4,476,743	06/438,434	10/16/84
4,476,744	06/252,959	10/16/84
4,476,755	06/446,872	10/16/84
4,476,759	06/318,432	10/16/84
4,476,768	06/419,985	10/16/84
4,476,770	06/402,413	10/16/84
4,476,774	06/365,506	10/16/84
4,476,776	06/391,820	10/16/84
4,476,790	06/383,857	10/16/84
4,476,792	06/502,842	10/16/84
4,476,819	06/473,269	10/16/84
4,476,834	06/382,457	10/16/84
4,476,838	06/526,299	10/16/84
4,476,839	06/347,348	10/16/84
4,476,840	06/385,071	10/16/84
4,476,842	06/419,930	10/16/84
4,476,843	06/476,066	10/16/84
4,476,851	06/337,526	10/16/84
4,476,852	06/447,271	10/16/84
4,476,855	06/368,902	10/16/84
4,476,856	06/566,568	10/16/84
4,476,859	06/364,057	10/16/84
4,476,864	06/428,139	10/16/84
4,476,869	06/413,402	10/16/84
4,476,874	06/383,568	10/16/84
4,476,879	06/314,776	10/16/84

Patent Number	Serial Number	Issue Date
4,476,880	06/446,475	10/16/84
4,476,885	06/432,093	10/16/84
4,476,891	06/351,358	10/16/84
4,476,898	06/359,940	10/16/84
4,476,900	06/343,051	10/16/84
4,476,922	06/314,628	10/16/84
4,476,928	06/401,312	10/16/84
4,476,933	06/484,090	10/16/84
4,476,937	06/433,571	10/16/84
4,476,939	06/505,890	10/16/84
4,476,943	06/335,469	10/16/84
4,476,949	06/372,964	10/16/84
4,476,955	06/276,307	10/16/84
4,476,961	06/447,648	10/16/84
4,476,964	06/357,054	10/16/84
4,476,984	06/467,822	10/16/84
4,476,986	06/307,429	10/16/84
4,476,987	06/370,041	10/16/84
4,476,989	06/335,166	10/16/84
4,476,993	06/539,414	10/16/84
4,477,004	06/440,746	10/16/84
4,477,005	06/387,593	10/16/84
4,477,006	06/471,763	10/16/84
4,477,009	06/356,104	10/16/84
4,477,010	06/375,192	10/16/84
4,477,015	06/496,051	10/16/84
4,477,023	06/465,515	10/16/84
4,477,024	06/482,375	10/16/84
4,477,037	06/480,099	10/16/84
4,477,042	06/458,736	10/16/84
4,477,047	06/421,639	10/16/84
4,477,052	06/476,683	10/16/84
4,477,064	06/386,900	10/16/84
4,477,069	06/424,560	10/16/84
4,477,070	06/402,912	10/16/84
4,477,074	06/397,126	10/16/84
4,477,083	06/518,639	10/16/84
4,477,092	06/469,357	10/16/84
4,477,101	06/368,061	10/16/84
4,477,105	06/611,374	10/16/84
4,477,110	06/459,963	10/16/84
4,477,115	06/346,633	10/16/84
4,477,130	06/465,555	10/16/84
4,477,135	06/450,572	10/16/84
4,477,137	06/410,678	10/16/84
4,477,152	06/382,068	10/16/84
4,477,173	06/393,871	10/16/84
4,477,181	06/447,214	10/16/84
4,477,185	06/369,117	10/16/84
4,477,201	06/246,854	10/16/84
4,477,214	06/382,327	10/16/84
4,477,217	06/269,108	10/16/84
4,477,219	06/424,377	10/16/84
4,477,242	06/459,060	10/16/84
4,477,247	06/388,884	10/16/84
4,477,251	06/425,294	10/16/84
4,477,252	06/413,021	10/16/84
4,477,253	06/392,000	10/16/84
4,477,255	06/445,691	10/16/84
4,477,256	06/585,838	10/16/84
4,477,270	06/432,347	10/16/84
4,477,272	06/395,679	10/16/84
4,477,278	06/456,113	10/16/84
4,477,323	06/549,740	10/16/84
4,477,330	06/426,178	10/16/84
4,477,331	06/495,423	10/16/84
4,477,335	06/378,578	10/16/84
4,477,337	06/522,651	10/16/84
4,477,338	06/356,319	10/16/84
4,477,344	06/438,921	10/16/84
4,477,347	06/506,449	10/16/84
4,477,348	06/358,392	10/16/84
4,477,358	06/474,525	10/16/84
4,477,361	06/468,346	10/16/84
4,477,368	06/431,326	10/16/84
4,477,389	06/436,542	10/16/84
4,477,402	06/528,228	10/16/84
4,477,410	06/362,823	10/16/84
4,477,416	06/424,641	10/16/84
4,477,426	06/490,078	10/16/84
4,477,427	06/440,260	10/16/84
4,477,439	06/253,602	10/16/84
4,477,443	06/395,463	10/16/84
4,477,447	06/351,858	10/16/84
4,477,448	06/390,323	10/16/84
4,477,454	06/492,909	10/16/84
4,477,457	06/437,324	10/16/84
4,477,458	06/374,776	10/16/84
4,477,460	06/435,195	10/16/84
4,477,467	06/342,404	10/16/84
4,477,477	06/364,779	10/16/84
4,477,494	06/397,154	10/16/84
4,477,504	06/408,792	10/16/84
4,477,507	06/411,234	10/16/84
4,477,533	06/432,856	10/16/84
4,477,542	06/560,374	10/16/84
4,477,557	06/324,733	10/16/84
4,477,559	06/468,399	10/16/84
4,477,574	06/406,228	10/16/84
4,477,577	06/303,440	10/16/84
4,477,590	06/525,778	10/16/84
4,477,626	06/587,330	10/16/84
4,477,627	06/545,885	10/16/84
4,477,636	06/392,699	10/16/84
4,477,647	06/527,743	10/16/84
4,477,662	06/345,484	10/16/84
4,477,672	06/405,853	10/16/84
4,477,676	06/395,276	10/16/84
4,477,683	06/374,368	10/16/84
4,477,684	06/391,098	10/16/84
4,477,692	06/285,646	10/16/84
4,477,695	06/429,476	10/16/84
4,477,700	06/551,470	10/16/84
4,477,709	06/498,062	10/16/84
4,477,711	06/316,396	10/16/84
4,477,722	06/328,394	10/16/84
4,477,727	06/423,773	10/16/84
4,477,735	06/330,749	10/16/84
4,477,743	06/387,889	10/16/84
4,477,771	06/390,406	10/16/84
4,477,788	06/463,348	10/16/84
4,477,789	06/515,827	10/16/84
4,477,790	06/351,255	10/16/84
4,477,797	06/328,986	10/16/84
4,477,798	06/372,069	10/16/84
4,477,809	06/389,533	10/16/84
4,477,810	06/413,898	10/16/84
4,477,811	06/292,775	10/16/84
4,477,814	06/404,096	10/16/84
4,477,829	06/295,133	10/16/84
4,477,834	06/380,610	10/16/84
4,477,838	06/331,880	10/16/84
4,477,839	06/341,637	10/16/84
4,477,841	06/309,192	10/16/84
4,477,843	06/326,700	10/16/84
4,477,864	06/398,671	10/16/84
4,477,870	06/382,436	10/16/84
4,477,888	06/318,500	10/16/84
4,477,889	06/458,801	10/16/84
4,477,896	06/307,786	10/16/84
4,477,918	06/310,854	10/16/84

Notification of Acceptance of Delayed Payment of Maintenance Fee (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below is considered as not having expired but is subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

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Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,382,567	06/227,380	5/10/83	1/22/81	11/30/88
4,439,182	06/357,854	3/27/84	3/15/82	11/29/88
4,462,471	06/437,118	7/31/84	10/27/82	11/30/88

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,556,568, Re. S.N. 267,490, Filed Oct. 31, 1988, Cl. 71/94, PYRIDYL(OXY/THIO) PHENOXY COMPOUNDS, HERBICIDAL COMPOSITIONS AND METHODS, Howard Johnston, et al., Owner of Record: *The Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Craig E. Mixan, Ex. Gp.: 129

4,567,721, Re. S.N. 266,945, Filed Nov. 3, 1988, Cl. 57/284, METHOD FOR PRODUCING TEXTURED YARN, Toshimasa Kuroda, et al., Owner of Record: *Teijin Ltd., Osaka, Japan,* Attorney or Agent: Milton J. Wayne, Ex. Gp.: 245

4,588,364, Re. S.N. 270,816, Filed Nov. 14, 1988, Cl. 425/135, CLAMP MECHANISM, Robert D. Schad, Owner of Record: *Husky Injection Molding Systems Ltd., Ontario, Canada,* Attorney or Agent: Gregory P. Lapointe, Ex. Gp.: 135

4,620,261, Re. S.N. 229,583, Filed Aug. 8, 1988, Cl. 361/154, APPARATUS AND METHOD FOR CONTROLLING ELECTROMAGNETIC CLUTCHES AND THE LIKE, James P. Thorton, Owner of Record: *Fairchild Weston Systems Inc., Archbald, Pa.,* Attorney or Agent: Benjamin J. Hauptman, Ex. Gp.: 214

4,623,570, Re. S.N. 265,906, Filed Nov. 2, 1988, Cl. 428/65, STABLE STRETCHED SURFACE RECORDING MEDIUM, Jerry L. Alexander, et al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Douglas B. Little, Ex. Gp.: 158

4,644,544, Re. S.N. 270,051, Filed Nov. 14, 1988, Cl. 371/37, APPARATUS FOR CORRECTING ERRORS, Tsuneo Furuya, et al., Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Jay H. Maioli, Ex. Gp.: 236

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 32,201, Reexam. No. 90/001,645, Requested: Nov. 23, 1988, Cl. 340/747, APPARATUS AND METHOD FOR READING AND WRITING TEXT CHARACTERS IN A GRAPHICS DISPLAY, David J. Bradley, Owner of Record: *IBM Corp., Boca Raton, Fla.,* Attorney or Agent: Sughrue, Mion, et al., Ex. Gp.: 230, Requester: Owner

4,240,173, Reexam. No. 90/001,644, Requested: Nov. 22, 1988, Cl. 15/1.700, POOL VACUUM, John C. Sherrill, Owner of Record: *Innovative Products Corp., Phoenix, Ariz.,* Attorney or Agent: L. D. Ptak, Ex. Gp.: 240, Requester: Poolmaster Inc., Menlo Park, Calif.

4,253,737, Reexam. No. 90/001,648, Requested: Nov. 29, 1988, Cl. 350/276, ANTI-GLARE DEVICE FOR A COMPUTER TERMINAL DISPLAY TUBE, Erik J. Thomsen et al., Owner of Record: *Sun-Flex Co., San Rafael, Calif.,* Attorney or Agent: Unknown, Ex. Gp.: 250, Requester: Kerkam, Stowell, et al., Falls Church, Va.

4,301,163, Reexam. No. 90/001,646, Requested: Nov. 23, 1988, Cl. 424/263, AMINO-ETHER OXIDES AND USE THEREOF IN THERAPY, Dieran R. Torossian, et al., Owner of Record: *Societe Industrielle de Produits de Synthese, Avrille, France,* Attorney or Agent: Cushman, Darby, et al., Ex. Gp.: 120, Requester: Owner

4,762,129, Reexam. No. 90/001,647, Requested: Nov. 25, 1988, Cl. 128/344, DILATATION CATHETER, Tassilo Bonzel, Owner of Record: *Inventer, Freiburg, Germany,* Attorney or Agent: C. J. Knuth, Ex. Gp.: 330, Requester: A. Z. Bookstein, Boston, Mass.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Volam, Inc., Fairfax, Va., Reg. No. 1,383,436, for the mark "JEROME'S LINE" and design, Canc. No. 17,306.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Patent and Trademark Office Implementation of 37 CFR 1.28(d) and 1.56(c), (f) and (g)

This notice supplements the Official Gazette Notices relating to the implementation of 37 CFR 1.56 published at 1095 *Official Gazette* 16 (Oct. 11, 1988) and 1096 *Official Gazette* 19 (Nov. 8, 1988) which announced that the Office will no longer investigate and reject original or reissue applications under 37 CFR 1.56.

With regard to 37 CFR 1.28(d), it will still be considered as fraud attempted or practiced on the Office either to attempt to fraudulently (1) establish status as a small entity or (2) pay fees as a small entity or to improperly and through gross negligence (1) establish status as a small entity or (2) pay fees as a small entity. The rule, however, makes reference to 37 CFR 1.56(d) but the Office no longer investigates or rejects original or reissue applications under 37 CFR 1.56(d). Therefore, the Office will accept payment of fee deficiencies under 37 CFR 1.28 but will just note in such cases that the Office no longer investigates and rejects applications under 37 CFR 1.56.

With regard to 37 CFR 1.56(c), (f) and (g), after further review of Office practice, it has been determined that the same reasons set forth in the Official Gazette Notices cited above also apply to the investigating and striking of applications for defects in the manner in which the application was executed by the signing of an oath or declaration pursuant to 37 CFR 1.63. It is no longer considered appropriate for the Office to expend the resources required to investigate such issues and to consider striking the applications involved. The resolution of such issues involves the difficult process of determining the intent of the parties and the facts surrounding the execution of the applications. Since Feb. 27, 1983, an application may be filed without an executed oath or declaration and still be granted a filing date as to the subject matter disclosed and claimed. Therefore, while the defects in execution described in 37 CFR 1.56(c) are not condoned, it is appropriate to allow the filing of a new oath or declaration pursuant to 37 CFR 1.63 and the payment of the surcharge under 37 CFR 1.16(e) for filing an oath or declaration later than the filing date of the application without action under 37 CFR 1.56(c), (f) or (g) by the Office.

Accordingly, the Patent and Trademark Office will not consider striking an application for the type of conduct described in 37 CFR 1.56(c) and will not entertain a petition directed to such matter submitted pursuant to 37 CFR 1.56(f) and (g). Any such petition submitted will merely be placed in the application file and will not be commented upon by the Patent and Trademark Office. The provisions of 37 CFR 1.56(c), (f) and (g) are hereby waived. The regulation will be modified through the rulemaking procedure.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.
Dec. 8, 1988

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PATENT NOTICES

Certificates of Correction for the Week of Jan. 3, 1988

B1 4,367,060	4,723,826	4,749,650	4,760,391
Re. 32,496	4,725,683	4,749,957	4,760,438
D. 296,065	4,725,876	4,750,027	4,760,453
D. 296,582	4,726,236	4,750,043	4,760,672
4,282,584	4,728,863	4,750,067	4,760,978
4,392,710	4,728,950	4,750,150	4,761,269
4,463,068	4,730,003	4,750,438	4,761,660
4,510,597	4,730,651	4,750,478	4,761,725
4,571,593	4,731,441	4,751,004	4,761,764
4,577,624	4,731,537	4,751,500	4,761,778
4,603,318	4,731,673	4,752,228	4,761,916
4,623,354	4,732,567	4,752,604	4,761,974
4,634,589	4,732,604	4,753,030	4,761,993
4,647,245	4,734,804	4,753,597	4,762,202
4,660,769	4,735,326	4,753,636	4,762,387
4,668,395	4,735,399	4,753,686	4,762,582
4,670,555	4,735,654	4,753,711	4,763,004
4,675,315	4,735,877	4,753,727	4,763,517
4,680,405	4,736,786	4,753,742	4,763,673
4,681,340	4,737,287	4,753,843	4,763,796
4,693,946	4,737,408	4,753,971	4,763,990
4,694,025	4,741,638	4,754,435	4,764,135
4,695,757	4,743,269	4,754,450	4,764,239
4,701,523	4,744,328	4,754,638	4,764,671
4,705,829	4,744,639	4,754,895	4,764,715
4,707,053	4,744,834	4,755,001	4,764,781
4,707,271	4,744,857	4,755,304	4,764,945
4,709,004	4,746,370	4,755,409	4,764,989
4,710,391	4,747,044	4,755,601	4,765,209
4,712,243	4,747,153	4,755,957	4,765,734
4,713,467	4,747,340	4,756,683	4,765,744
4,715,797	4,747,419	4,756,863	4,766,114
4,717,377	4,748,493	4,757,266	4,766,298
4,717,575	4,748,513	4,758,117	4,766,986
4,718,942	4,748,530	4,758,310	4,767,318
4,719,301	4,748,619	4,758,656	4,767,409
4,721,081	4,749,079	4,758,996	4,767,426
4,721,822	4,749,122	4,759,002	4,768,517
4,722,366	4,749,564	4,759,065	4,770,769
4,722,906	4,749,629	4,759,932	

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PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 3, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-17-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-15-85
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-28-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-3-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	11-10-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	6-19-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-7-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during December 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,624,839 to 3,631,538, inclusive

Plant Patents . . . . . None

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REEXAMINATIONS

JANUARY 3, 1989

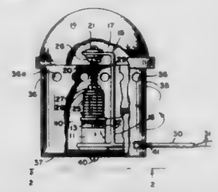
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,808,385 (976th)

MOISTURE RESPONSIVE SWITCH ACTUATOR

Glenn B. Klinefelter, 1399 Chapel Hill, Mountainside, N.J. 08109

Reexamination Request No. 90/001,484, Apr. 7, 1988.
Reexamination Certificate for Patent No. 3,808,385, issued Apr. 30, 1974, Ser. No. 279,948, Aug. 11, 1972.
Int. Cl.[4] H01H *35/42*
U.S. Cl. 200—61.04



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5, 6,** and **8–11** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2–4** and **7**, dependent on an amended claim, are determined to be patentable.

1. A moisture responsive actuator which comprises:

a housing *including first and second members each having openings therein, said members being concentrically arranged to permit relative movement one to the other to vary the effective size of said openings,*

a switch located within the housing,

means for electrically connecting said switch into a fluid sprinkling system, and

moisture absorptive means cooperatively associated with said switch, said moisture absorptive means including at least one absorptive member capable of expanding in response to a predetermined amount of moisture in contact therewith to activate said switch so as to deenergize said sprinkling system, said absorptive member being further capable of retracting upon a drying thereof to deactivate said switch so as to energize said sprinkling system.

B1 3,995,610 (977th)

FOUR CYLINDER STRAIGHT-TYPE ENGINE WITH SECONDARY BALANCER SYSTEM

Hirokazu Nakamura; Mitsutaka Kinoshita, both of Kyoto; Tadahiko Ito, Nagaokakyo, and Kazumasa Kawata, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Reexamination Request No. 90/001,074, Aug. 25, 1986.
Reexamination Certificate for Patent No. 3,995,610, issued Dec. 7, 1976, Ser. No. 527,780, Nov. 27, 1974.
Claims priority, application Japan, Nov. 27, 1973, 48-133873; Apr. 5, 1974, 49-38665
Int. Cl.[4] F22B *5/00*
U.S. Cl. 123—192 B

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

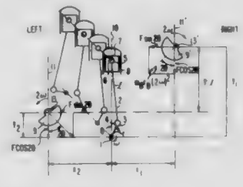
Claims **1–4** are cancelled.

Claim **5** is determined to be patentable as amended.

Claims **6–14**, dependent on an amended claim, are determined to be patentable.

5. In [an] *a four cycle* internal combustion engine of the reciprocating piston type having four cylinders wherein a piston reciprocates in each cylinder, each of the pistons being connected to a rotatable crankshaft by way of a connecting rod such that the reciprocating movement of said pistons causes rotation of said crankshaft, an improved balancer system to dampen the secondary vibromotive force due to reciprocating masses and the secondary vibromotive moments due to the reciprocating masses and the combustion forces comprising:

a. at least one pair of balancer elements rotatably supported on said engine, an upper balancer element of each pair being disposed laterally of an upper portion of said engine and a lower balancer element of each pair being disposed laterally of a lower portion of said engine such that the balancer elements are located on opposite sides of the cylinders and the axis of rotation of the balancer elements are parallel to the axis of rotation of the crankshaft and are located in a first plane which is disposed obliquely to a second plane containing the longitudinal axes of said cylinders and the axis of rotation of said crankshaft wherein the difference between the distance of said upper and lower balancer elements from said second plane is in the range of $-0.51 \leqq X_3 - X_1 \leqq +0.51$



where:

l=length of the connecting rod;

X_3=distance between the lower balancer element and said second plane; and

X_1=distance between the upper balancer element and said second plane,

and wherein the distance between the axes of rotation of the balancer elements measured in a direction parallel to the second plane is in the range of from 15% to 135% of the length between the points at which the connecting rods are connected to the pistons and the crankshaft; and

b. means driven by said engine to rotate said upper and lower balancer elements in opposite directions at twice the angular velocity of the crankshaft such that said lower balancer element is rotated in a direction opposite that of the crankshaft.

13. The improved vibration dampening system of claim **5** wherein one of the balancer elements is divided into halves having equal masses and these halves are disposed along the axis of rotation of said balancer element equidistantly from the undivided, balancer element.

B2 4,140,387 (979th)

APPARATUS FOR PRODUCING COLLATED COPIES FROM TWO SIDED ORIGINALS

Gary B. Gustafson, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Reexamination Request No. 90/001,490, Apr. 8, 1988.
Reexamination Certificate for Patent No. 4,140,387, issued Feb. 20, 1979, Ser. No. 867,842, Jan. 9, 1978.
Reexamination Certificate B1 4,140,387, issued Apr. 8, 1986.
Continuation of Ser. No. 691,938, Jun. 1, 1976, abandoned.
Int. Cl.[4] G03B *27/32;* **G03G** *15/00;* **B65H** *5/00, 29/00*
U.S. Cl. 355—14 SH

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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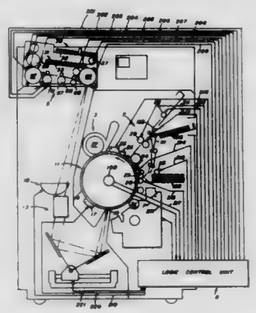
The patentability of claims **2, 7, 16, 17** and **19–24** is confirmed.

Claims **1, 3–6, 8–15** and **18** were previously cancelled.

20. Recirculating feeder apparatus for use with a copier to produce multiple copies of an original, the original including sheets of support material having first and second faces, said apparatus comprising:

(a) an exposure position;

(b) a storage facility for holding the original sheets; and



(c) means for circulating said original sheets successively a plurality of times from said storage facility to said exposure position and back to said storage facility for presenting the first and second faces of the original sheets to said exposure position, said circulating means inverting each individual sheet an odd number of times between each of its presentations.

B1 4,236,078 (978th)

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING A RADIATION IMAGE

Noboru Kotera; Syusaku Eguchi, both of Odawara; Junji Miyahara, Minami-ashigara; Seiji Matsumoto, Minami-ashigara, and Hisatoyo Kato, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

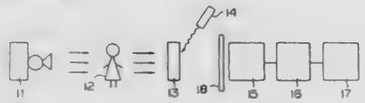
Reexamination Request No. 90/001,117, Oct. 16, 1986.

Reexamination Certificate for Patent No. 4,236,078, issued Nov. 25, 1980, Ser. No. 57,092, Jul. 12, 1979.

Claims priority, application Japan, Jul. 12, 1978, 53-84740; Jul. 12, 1978, 53-84743

Int. Cl.⁴ G01F *1/20;* **G01N** *23/04*

U.S. Cl. 250—363 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **4, 5, 8, 9, 15, 16, 19** and **20** are cancelled.

Claims **1** and **12** are determined to be patentable as amended.

Claims **2, 3, 6, 7, 10, 11, 13, 14, 17, 18, 21** and **22**, dependent on an amended claim, is determined to be patentable.

New claims **23–46** are added and determined to be patentable.

1. A method for recording and reproducing a radiation image comprising the steps of (i) causing a visible ray- or infrared ray-stimulable phosphor to absorb a radiation passing through an object, (ii) stimulating said phosphor with stimulation rays selected from visible rays **[**and infrared rays**]** to release the energy of the radiation stored therein as fluorescent light, and (iii) detecting said fluorescent light characterized in that said phosphor is at least one phosphor selected from the group consisting of

[(a) a copper and lead activated zinc sulfide phosphor (ZnS:Cu,Pb),

(b)**]** *(a)* a phosphor included in a group of europium activated barium aluminate phosphors represented by the formula

$$BaO.xAl_2O_3:Eu$$

wherein x is a number satisfying the condition of $0.8 \leqq x \leqq 10$,

[(c) a phosphor included in a group of divalent metal silicate phosphors represented by the formula

$$M^{II}O.ySiO_2:A$$

wherein M^{II} is at least one divalent metal selected from the group consisting of Mg, Ca, Sr, Zn and Ba, A is at least one element selected from the group consisting of Ce, Tb, Eu, Tm, Pb, Tl, Bi and Mn, and y is a number satisfying the condition of $0.5 \leqq y \leqq 2.5$,**]** and

[(d)**]** *(b)* a phosphor included in a group of oxyhalide phosphors represented by the formula

$$LnOX:zA'$$

wherein Ln is at least one element selected from the group consisting of La, Y, Gd and Lu, X is Cl and/or Br, A' is Ce and/or Tb, and z is a number satisfying the condition of $0 < z < 0.1$, and that the wavelength of said stimulation rays is not less than 500 nm.

B1 4,252,576 (980th)

EPITAXIAL WAFER FOR USE IN PRODUCTION OF LIGHT EMITTING DIODE

Shinichi Hasegawa, and Hisanori Fujita, both of Tsuchiura, Japan, assignors to Mitsubishi Monsanto Chemical Co., Tokyo, Japan

Reexamination Request No. 90/001,306, Aug. 10, 1987.

Reexamination Certificate for Patent No. 4,252,576, issued Feb. 24, 1981, Ser. No. 55,377, Jul. 6, 1979.

Claims priority, application Japan, Jul. 7, 1978, 53-82739

Int. Cl.⁴ H01L *29/12, 21/20*

U.S. Cl. 148—33.4

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **6** is cancelled.

Claims **1** and **7** are determined to be patentable as amended.

Claims **2–5** and **8**, dependent on an amended claim, are determined to be patentable.

New claims **9** and **10** are added and determined to be patentable.

1. In an epitaxial wafer for use in the production of a light emitting diode, comprising:

a single crystalline semiconductor substrate *having a lattice constant* l_1, and;

an epitaxial layer of a **[**compound semiconductor**]** *gallium arsenide phosphide having a lattice constant* l_2, *said epitaxial layer* being doped with nitrogen and having a general formula of $GaAs_{1-x}P_x$, wherein the mixed crystal ratio x ranges from 0.5 to *less than* 1.0, **[**an**]** *the* improvement comprising *(i)* providing said epitaxial layer with a concentration of carriers having one conductivity type in the range of **[**of**]** from 3.5×10^{15} to $8.8 \times 10^{15}/cm^3$ *and (ii) providing an intermediate layer between said substrate and said epitaxial layer, said intermediate layer being a compound semiconductor having a formula* $GaAs_{1-y}P_y$, *wherein the lattice constant of said intermediate layer gradually increases in value within the range of from approximately the lattice constant* l_1 *of the semiconductor substrate to approximately the lattice constant* l_2 *of the epitaxial layer.*

B1 4,456,590 (981st)

HEAT TREATMENT OF LYOPHILIZED BLOOD CLOTTING FACTOR VIII CONCENTRATE

Alan Rubinstein, Houston, Tex., assignor to Cedars Sinai Medical Center, Los Angeles, Calif.

Reexamination Request Nos. 90/001,296, Jul. 31, 1987 and 90/001,352, Oct. 16, 1987 and 90/001,473, Mar. 18, 1988.

Reexamination Certificate for Patent No. 4,456,590, issued Jun. 26, 1984, Ser. No. 377,863, May 13, 1982.

Continuation-in-part of Ser. No. 317,513, Nov. 2, 1981, which is a continuation of Ser. No. 205,913, Nov. 12, 1980, abandoned.

Int. Cl.⁴ A61K *37/00, 35/14*

U.S. Cl. 514—2

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

1. A method for treating blood clotting Factor VIII concentrate in order to minimize the effect of any hepatitis virus present in the blood clotting Factor VIII concentrate, said method comprising the steps of:

lyophilizing the blood clotting Factor VIII concentrate, followed by;

heating the lyophilized blood clotting Factor VIII concentrate at a predetermined temperature of at least about 60° C. for a period of time sufficient to render hepatitis virus present in the blood clotting Factor VIII concentrate non-infectious, said heating generally decreasing as said predetermined temperature is increased.

B1 4,474,612 (982nd)

VERTICALLY EXTENDING PLATE ELECTRODE FOR GAS-FORMING ELECTROLYZERS

Karl Lohrberg, Hessenstamm, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Reexamination Request No. 90/001,282, Jul. 7, 1987.

Reexamination Certificate for Patent No. 4,474,612, issued Oct. 2, 1984, Ser. No. 520,068, Aug. 3, 1983.

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228884

Int. Cl.⁴ C25B *9/00, 11/03*

U.S. Cl. 204—252

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 6, 7, 10** and **11** are determined to be patentable as amended.

Claims **2–5, 8** and **9**, dependent on an amended claim, are determined to be patentable.

1. In a gas-generating electrolysis cell having a vertically oriented passage-forming electrode juxtaposed with **[**a planar member**]** *an ion-selective membrane* participating with the electrode in a gas-generating electrolysis **[**action**]** *of alkali chloride* and wherein said passages are horizontal slit-like gaps formed in said electrode, the improvement wherein in combination:

each of said gaps is defined by an upper boundary and said electrode has a forward planar surface juxtaposed with and parallel to said **[**member**]** *membrane;*

a lower limb of each of said gaps is defined by a rearwardly extending portion having a break-away edge at the top thereof located rearwardly of said surface, said rearwardly extending portion having a width less than that of said surface in vertical direction,

said upper boundary being defined by a downwardly and forwardly extending bevel *on the rearward surface of said electrode* terminating forwardly of said break-away edge and having a gas-dividing line separating gas rising forwardly of said surfacefrom gas deflected rearwardly of said electrode; and

the ratio between the horizontal distance G between said gas-dividing line and said **[**member**]** *membrane* and the horizontal distance E between said break-away edge and said **[**member**]** *membrane* is less than 0.6.

B1 4,537,912 (983rd)

PROCESS FOR RAPID CURING OF POLYETHER POLYURETHANE FOAM

Azel A. Griswold, Charlotte, N.C., assignor to Reeves Brothers, Inc., Spartanburg, S.C.

Reexamination Request No. 90/001,522, Jun. 13, 1988.

Reexamination Certificate for Patent No. 4,537,912, issued Aug. 27, 1985, Ser. No. 647,583, Sep. 5, 1984.

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—53

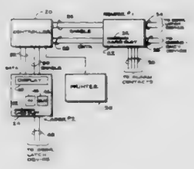
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

1. A process for the rapid post curing of polyether polyurethane foam blocks without adversely affecting the compression set of said foam which process comprises subjecting said polyether polyurethane foam having a porosity of greater than about 3 cubic feet per minute to a mixture of air and gaseous ammonia, primary or secondary amine at a temperature of above about 50° F., wherein the amount of ammonia, primary or secondary amine is present at a concentration of at least 0.5% by volume of the air, the air has a relative humidity above about 50% and the air/ammonia or primary amine mixture reacts with the foam for a period of at least one minute.

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B1 4,538,056 (984th)
CARD READER FOR TIME AND ATTENDANCE
Jorge A. Young, and Bhupendra J. Khandwala, both of Claremont, Calif., assignors to Figgie International, Inc., Richmond, Va.
Reexamination Request No. 90/001,428, Feb. 1, 1988.
Reexamination Certificate for Patent No. 4,538,056, issued Aug. 27, 1985, Ser. No. 698,742, Feb. 6, 1985.
Continuation of Ser. No. 412,302, Aug. 27, 1982, abandoned.
Int. Cl.[4] G06C *15/10*
U.S. Cl. 235—377



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–20 are cancelled.

[1. 1. A card reader for use in a security system having a central controller and a plurality of said card readers, which controller keeps the time of day, and wherein the central controller and each card reader are electrically connected so as to each define an electrical communication system, each said card reader comprising:
means for reading data stored permanently on a card;
means for determining the time of day;
storage means for said data in said card reader and said time of day;
operative means in said reader for authorizing or refusing authorization independent of the central controller, based upon the data on said card and for causing said data read from said card and said time of day to be stored in said storage means at a first time; and
means for sending said data read from said card and said stored time of day data from said storage means to said central controller at a second time controlled by said electrical communication system.]

B1 4,581,794 (985th)
AUTOMATIC SEAMING MACHINE FOR FABRIC BELTS
Malcolm Oldroyd, Appleton; Dominique G. Rateau, Weyauwega; Merlin A. Luebke, and Larry D. Anderson, both of Appleton, all of Wis., assignors to Asten Group Inc., Devon, Pa.
Reexamination Request No. 90/001,503, Apr. 29, 1988.
Reexamination Certificate for Patent No. 4,581,794, issued Apr. 15, 1986, Ser. No. 770,352, Aug. 27, 1985.
Continuation of Ser. No. 587,045, Mar. 7, 1984, abandoned.
Int. Cl.[4] D03J *1/14*
U.S. Cl. 28—141

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **14–24**, **31–33**, **36** and **38–41** is confirmed.

Claims **5**, **26** and **27** are cancelled.

Claims **1**, **2**, **6**, **7**, **9**, **10**, **25**, **28**, **29**, **34**, **35** and **37** are determined to be patentable as amended.

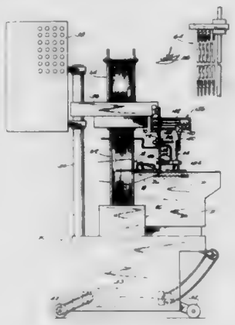
Claims **3**, **4**, **8**, **11–13**, and **30**, dependent on an amended claim, are determined to be patentable.

New claims **42–46** are added and determined to be patentable.

1. Apparatus for forming a seam in a length of woven fabric having opposite ends to join together the opposite ends of the fabric by means of a woven seam and to thereby form an endless woven fabric belt, and for use with means for supporting a strip of weft threads in parallel relation and for supporting the opposite ends of the fabric in closely spaced relation on opposite sides of the strip of weft threads, the opposite ends of the fabric each including a fringe of warp threads, the warp threads of the opposite ends of the woven fabric being supported such that they can be interweaved with the weft threads supported between the opposite ends to thereby form a woven seam, the apparatus comprising,

means for causing the weft threads to form a shed opening,

means for gripping successive ones of the warp threads of the fringe one at a time and for pulling these successive ones of the warp threads through the shed opening, said means for gripping the warp threads including a first arm having opposite ends, the first arm being supported for



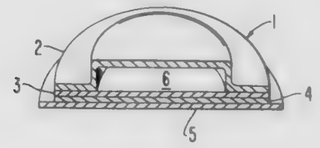
movement from a first position wherein one end of said first arm extends through said shed opening and a second position wherein said one end of said first arm is retracted from said shed opening, and said one end of said first arm including means for selectively gripping a warp thread, and

means for transferring successive ones of the warp threads one at a time to said end of said first arm where said means for selectively gripping can grip the successive ones of the warp threads, said means for transferring successive ones of the warp threads including a transfer arm having opposite ends, one of said ends including means for selectively gripping a warp thread separated from the fringe, said transfer arm being supported for movement between a first position wherein said one of said ends of said transfer arm is adjacent the fringe and can grip a warp thread and a second position wherein said one of said ends of said transfer arm carries said warp thread to a position wherein said warp thread can be gripped by said one end of said first arm when said one end of said first arm extends through said shed opening, and

means for separating successive ones of said warp threads from the fringe, said means for separating *being mounted for reciprocal horizontal movement toward and away from said fringe and* including means for moving said successive ones of said warp threads to said one of said ends of said transfer arm when said transfer arm is in said first position

such that said one of said ends of said transfer arm can grip said successive ones of said warp threads.

B1 4,588,580 (986th)
TRANSDERMAL ADMINISTRATION OF FENTANYL AND DEVICE THEREFOR
Robert M. Gale, Los Altos; Victor Goetz, Palo Alto; Eun S. Lee, Redwood City; Lina T. Taskovich, Palo Alto, and Su I. Yum, Los Altos, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.
Reexamination Request Nos. 90/001,245, May 26, 1987 and 90/001,271, Jul. 6, 1987.
Reexamination Certificate for Patent No. 4,588,580, issued May 13, 1986, Ser. No. 633,762, Jul. 23, 1984.
Int. Cl.[4] A01N *25/24;* A61K *9/70*
U.S. Cl. 424—21



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–7**, **9**, **16**, **22–29**, **31**, **32**, **34–38**, **40**, **41**, **44**, **47** and **49–58** are determined to be patentable as amended.

Claims **8**, **10–15**, **17–21**, **30**, **33**, **39**, **42**, **43**, **45**, **46** and **48**, dependent on an amended claim, arre determined to be patentable.

New claims **59–110** are added and determined to be patentable.

1. A process for inducing and maintaining analgesia *in a human being by the transdermal administration of a material selected from the group consisting of fentanyl and its analgetically effective derivatives* which comprises *transdermally* administering *to said human being* through an area of intact skin, a skin permeable form of **[**a**]** *said* material **[**selected from the group consisting of fentanyl and its analgetically effective derivatives**]** at an analgetically effective rate and continuing the administration of said material *to said human being* at said rate for an extended period of time at least sufficient to induce analgesia.

B1 4,624,068 (987th)
SPEARPOINT ASSEMBLY
Harland V. Howard, III, Largo, Fla., assignor to Panama Breakaway, Inc., Bethel Park, Pa.
Reexamination Request No. 90/001,379, Nov. 18, 1987.
Reexamination Certificate for Patent No. 4,624,068, issued Nov. 25, 1986, Ser. No. 804,568, Dec. 4, 1985.
Int. Cl.[4] A01K *81/04*
U.S. Cl. 43—6



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2**, **3** and **8** is confirmed.

Claims **1** and **4–7** are cancelled.

2. In a spearpoint according to claim **1**, wherein the improvement further comprises a spearpoint with a substantially circular midpoint cross-section that tapes to a point at its distal end and said cable connector means which comprises a first loop in said cable which engages through said which is transverse and aperture located proximate to said spearpoint midpoint and a second loop which constrains movement of a substantially circular connector element along said cable, said connector element having an internal diameter which is larger than the diameter of the spearpoint at its distal end and smaller than the diameter of the spearpoint at its midpoint.

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STATUTORY INVENTION REGISTRATIONS

PUBLISHED JANUARY 3, 1989

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

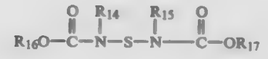
H563

USE OF SULFUR-CONTAINING COMPOUNDS FOR CONTROLLING PLANT PARASITIC NEMATODES

Terrence L. Kirkpatrick, R.R. 2, Box 247A, Hope, Ark. 71801, and Henry S. Yang, 1118 Queensferry Rd., Cary, N.C. 27511

Filed Dec. 12, 1985, Ser. No. 808,199
Int. Cl.[4] A01C *1/06, 21/00*
U.S. Cl. 47—57.6 **35 Claims**

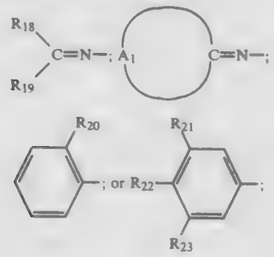
1. A method of protecting plants from plant parasitic nematodes comprising applying to the locus of nematode infestation a plant protectant amount of a compound having the formula:



wherein:

R_{14} and R_{15} are independently alkyl radicals having from 1 to 4 carbon atoms;

R_{16} is tetrahydronaphthyl, naphthyl, benzothienyl, dihydrobenzofuranyl, benzofuranyl or:



R_{17} is other than R_{16} and is a substituted or unsubstituted alkyl, cycloalkyl, phenylalkyl, naphthylalkyl or a heterocycloalkyl group, wherein the heterocyclic moiety is a five-or six-member ring which includes in any combination, one or two oxygen, sulfur, sulfinyl or sulfonyl groups and which may also include one divalent, amino, alkylamino or carbonyl group; wherein the permissible substituents on said groups are one or more halogen, nitrile, nitro, alkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, alkoxycarbonylamino, or alkylcarbonylamino groups in any combination, or R_{17} is alkoxyalkyleneoxyalkyl, alkoxy(dialkyleneoxy)alkyl or alkoxy-(trialkyleneoxy)alkyl;

R_{18} is hydrogen, alkyl, alkylthio or cyano;

R_{19} is alkyl, alkylthio, alkoxy, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, aminocarbonyl, alkylaminocarbonyl, or dialkylaminocarbonyl groups; or

R_{19} is phenyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl or a R_{24} CONH— or R_{24}CON(alkyl)— group, where R_{24} is hydrogen, alkyl, alkoxy or alkylthio; and

A_1 is a divalent aliphatic chain, completing a five or six member ring, which includes in any combination, one or two oxygen, sulfur, sulfinyl or sulfonyl groups and which may also include one divalent amino, alkylamino or carbonyl group;

R_{20} is alkoxy, alkylthio, alkyl, alkylthioalkyl 2-dioxalanyl, 2-dithioanyl, 2-oxathioanyl, substituted alkoxy in which the permissible substituents are alkoxy and haloalkyl in any combination, or halogen;

R_{21} is alkyl;

R_{22} is hydrogen, alkyl, halogen, alkylthio, alkysulfinyl, alkylsulfonyl, alkoxy, dialkylamino, formylamino, alkylcarbonylamino, alkoxycarbonylamino or dialkylaminomethyleneimino; and

R_{23} is hydrogen or alkyl.

H564

PIGMENT MILLING PROCESS

Arthur H. Allen, III, Charlotte, N.C.; Arthur R. Heuser, Rock Hill, S.C.; Richard J. Meyer, Rock Hill, S.C., and Judy B. Payne, Clover, S.C., assignors to BASF Corporation, Clifton, N.J.

Filed Apr. 28, 1986, Ser. No. 856,268
Int. Cl.[4] C09B *48/00*
U.S. Cl. 106—497 **3 Claims**

1. A method of converting pigment crude to an aqueous dispersed form, said method comprising

A. premixing a crude with from about 12 to about 48% by weight of surfactant, based on pigment, and an amount of water sufficient to reduce the crude concentration to 10 to 50% by weight, based on the total mixture, and

B. continuously pumping the blend of

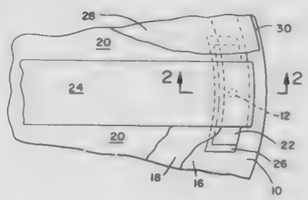
A. through at least two shot mills in series containing between 50 and 90% by volume of grinding media that has a size in the range of from about 0.1 to 1.5 mm diameter and then grinding until the particle size has been reduced to where the pigment dispersion has suitable tinctorial strength for use in inks and coatings.

H565

METHOD FOR MANUFACTURING THICK GLASS PHENOLIC LAMINATES

Edward J. Ford, Capertino; Louis H. Dick, San Jose, and Jose L. Camahort, Mountain View, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 515,076, Jul. 18, 1983, abandoned. This application Apr. 3, 1985, Ser. No. 719,193
Int. Cl.[4] B32B *31/00;* **B29C** *45/00, 47/00*
U.S. Cl. 156—286 **9 Claims**



1. A vacuum bag autoclave process for manufacturing thick laminated structural parts, said-parts having 60 or more layers making said part 0.5 inch or greater in thickness, said parts being formed entirely from layers of phenolic resin impregnated fibrous material, said process allowing the formation of parts of up to 100 layers in thickness which are capable of withstanding a post cure temperature of 450° F. without delamination, said process allowing the formation of said struc-

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tural parts from phenolic resin impregnated fibrous material having a wide range of resin advancement, which process comprises:

(a) stacking layers of said resin impregnated fibrous material to a desired thickness on a layup surface providing the contour for the part;

(b) curing said stacked layers into a unitary structure by heating said stacked layers at 1° F. per minute or greater until the maximum cure temperature for a prescribed period while simultaneously

(1) maintaining said stacked layers under a vacuum;

(2) providing means for absorbing excess resin released from said stacked layers during said step of curing; and

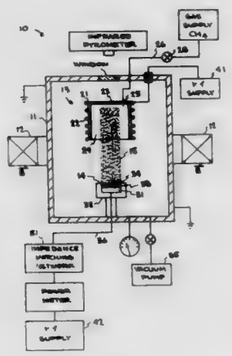
(3) providing means for evacuating volatiles generated by said stacked layers during said step of curing; and

(c) cooling the cured structure to at least 150° F. while maintaining the vacuum.

H566
APPARATUS AND PROCESS FOR DEPOSITION OF HARD CARBON FILMS

Ali R. Nyaiesh, Menlo Park, and Edward L. Garwin, Los Altos, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 4, 1985, Ser. No. 804,680
Int. Cl.[4] B05D 3/06; C23C 14/00, 16/00
U.S. Cl. 427—38 7 Claims



1. An apparatus for depositing hard carbon films on a substrate comprising:

a chamber for producing a pressure less than atmospheric;

a cavity contained within the chamber, said cavity having an opening communicating with the chamber;

an RF coil, surrounding the cavity;

a first RF source for exciting the RF coil;

a substrate support located within the chamber, said support located opposite the opening in the cavity and oriented such that the surface of the substrate is generally parallel to the opening in the cavity;

means for electrically biasing the substrate support;

means for introducing gases into the cavity;

means for producing a magnetic field having a direction of maximum field intensity which is generally perpendicular to the surface of the substrate; and

means for evacuating the chamber.

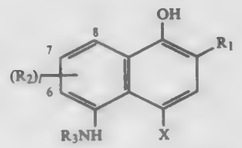
H567
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS CONTAINING CYAN COUPLER AND SPECIFIC COMPOUND

Satoshi Nagaoka, and Hidetoshi Kobayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Nov. 20, 1986, Ser. No. 932,875
Claims priority, application Japan, Nov. 21, 1985, 60-259809; Nov. 21, 1985, 60-259810
Int. Cl.[4] G03C 7/32, 7/34, 7/42
U.S. Cl. 430—372 20 Claims

1. A silver halide color photographic light-sensitive material having at least one light-sensitive silver halide emulsion layer on a support, wherein said silver halide color photographic light-sensitive material contains (i) at least one cyan dye-forming coupler selected from the group consisting of compounds represented by formula (I) and a compound having at least two coupler residues derived from the compound represented by formula (I) and ii) at least one compound selected from the group consisting of compounds represented by formulas (II), (III), (IV), (V), (VI), (VII), (VIII) and a compound having at least two residues derived from at least one compound selected from the group consisting of compounds represented by formulas (VI), (VII) and (VIII);

(I)

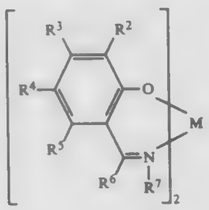


wherein R_1 represents $—CONR_6R_7$, $—NHCOR_8$, $—NHCOOR_8$, $—NHSO_2R_8$, $—NHCONR_6R_7$, or $—NHSO_2NR_6R_7$, wherein R_6 and R_7 each represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group and R_8 represents an aliphatic group, an aromatic group, or a heterocyclic group, or R_6 and R_7 in



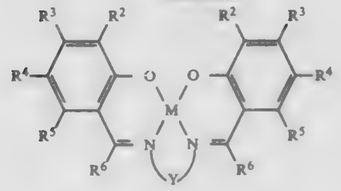
combine with each other to form a nitrogen-containing heterocyclic ring, R_2 represents a group capable of being substituted to a naphthalene ring; l represents an integer of from 0 to 3; R_3 represents a mono-valent organic group; and X represents a hydrogen atom or a group capable of releasing by a coupling reaction with the oxidation product of an aromatic primary amine developing agent, when l is 2 or 3, the R_2 groups are the same or different, or they combine with each other to form a ring when they are adjacent to each other, or R_2 and R_3 groups when R_2 is present at 6-position or R_3 and X groups combine with each other to form a ring

(II)

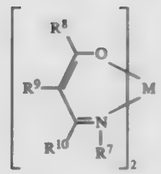


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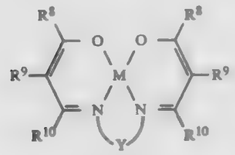
(III)



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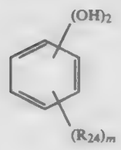


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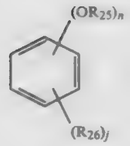


wherein M represents Cu, Co, Ni, Pd, or Pt; R^2, R^3, R^4, and R^5 each represents a hydrogen atom, a halogen atom, a hydroxy group, a cyano group; a substituted or unsubstituted alkyl group, aryl group, cycloalkyl group, or heterocyclic group bonded to the carbon atom of the benzene ring directly or through a divalent linkage group; or non-metallic atomic group necessary for forming a 6-membered ring by the combination of said R^2 and R^3, said R^3 and R^4, or said R^4 and R^5 with each other, R^6, R^9, and R^{10} each represents a hydrogen atom, a substituted or unsubstituted alkyl group or aryl group; R^7 represents a hydrogen atom, a substituted or unsubstituted alkyl group or aryl group, or a hydroxy group; R^8 represents a substituted or unsubstituted alkyl group, or aryl group, or a non-metallic atomic group necessary for forming a 5-membered to 8-membered ring by the combination of said R^8 and R^9 or R^9 and R^{10} with each other; and Y represents a non-metallic atomic group necessary for forming a 5-membered ring or a 6-membered ring:

(VI)



(VII)



(VIII)



wherein R_{24} represents an aliphatic group, an aromatic group, a heterocyclic group, an aliphatic oxy group, an aromatic oxy group, an aliphatic thio group, an aromatic thio group, an aliphatic carbonamido group, an aromatic carbonamido group, an aliphatic sulfonamido group, an aromatic sulfonamido group, a mono-substituted or disubstituted amino group with aliphatic or aromatic groups, and m represents an integer of 1 to 4 when m is plural, R_{24} groups are the same or different or combine with each other to form a ring when they are adjacent to each other, the two hydroxy groups are para-position or ortho-position relative to each other, R_{25} represents an aliphatic group, an aromatic group, a heterocyclic group, or a substituted silyl group, R_{26} has the same significance as defined above for R_{24} in formula (VI); n represents an integer of 1 to 3; and j represents an integer of 0 to 5, the sum of n and j being 6 or less; when n is plural, said OR_{25} groups are the same or different; when said j is plural, said R_{26} groups are the same or different, or when two OR_{25} groups, said two R_{26} groups, or said OR_{25} and R_{26} are in an ortho-position relative to each other, they are not combined or combined with each other to form a ring; R_{27}, R_{28}, R_{29}, and R_{30} each represents a hydrogen atom or an aliphatic group; Y represents a hydrogen atom, an aliphatic group, an acyl group, an aliphatic sulfonyl group, an aromatic sulfonyl group, an aliphatic sulfinyl group, an aromatic sulfinyl group, an aliphatic oxycarbonyl group, an aromatic oxycarbonyl group, an oxyradical group, or a hydroxy group; and Z represents a non-metallic group necessary for forming a 5-membered to 7-membered ring with



H568
OLEFIN POLYMER COMPOSITION AND LAMINATED STRUCTURE INCLUDING SAID COMPOSITION AS ADHESIVE LAYER

Haruhiko Tasaka, and Katutoshi Kaneko, both of Hiroshima, Japan, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 13, 1986, Ser. No. 839,253
Claims priority, application Japan, Mar. 19, 1985, 60-53430; Mar. 19, 1985, 60-53431
Int. Cl.[4] C08L 51/04, 53/04; B32B 27/00
U.S. Cl. 525—71 20 Claims

1. An olefin polymer composition comprising

(A) 100 parts by weight of a member of the group consisting of a homopolymer of 1-butene composed substantially of 1-butene units, and a copolymer of 1-butene and another alpha-olefin containing at least 60 mole % of units derived from 1-butene,

(B) 10 to 600 parts by weight of a member of the group cosisting of a homopolymer of propylene a block copolymer of propylene and an alpha-olefin having 4–8 carbon atoms and at least 50 mole % of units derived from propylene, and a random copolymer of propylene and an alpha-olefin having 4–8 carbon atoms and containing at least 90 mole % of units derived from propylene, and

(C) 10 to 600 parts by weight of a member of the group consisting of crystalline random copolymer of propylene and another alpha-olefin containing 50 to 87 mole % of units derived from propylene,

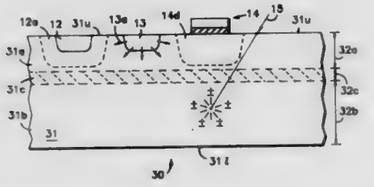
at least one of components (A), (B) and (C) being partly modified with (D) an unsaturated carboxylic acid or its derivative.

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H569
CHARGE STORAGE DEPLETION REGION DISCHARGE PROTECTION

Charles J. Varker, Scottsdale, and Syd R. Wilson, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 656,112, Sep. 28, 1984, abandoned. This application Dec. 4, 1986, Ser. No. 938,355
Int. Cl.[4] H01L 29/167
U.S. Cl. 357—64 5 Claims

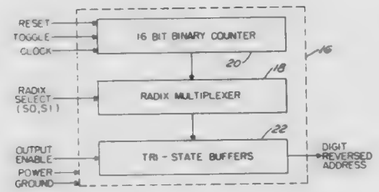


1. A semiconductor device comprising:
a single crystal silicon substrate having first and second major surfaces separated by a first distance;
a first semiconducting region located in said substrate adjacent said first surface and having a first thickness and a first lifetime for charge storage devices; and
a second region in said substrate underlying said first region and having a second lifetime lower than said first lifetime, wherein said second region has been implanted with oxygen to provide in said second region an oxygen concentration higher than adjacent regions and having a peak value exceeding a solid solubility limit of oxygen in silicon but less than a value for forming an insulating layer of silicon oxide, and wherein said second oxygen containing region has a second thickness that is small compared to said first distance.

H570
FAST FOURIER TRANSFORM DATA ADDRESS PRE-SCRAMBLER CIRCUIT

Theodore T. Tylaska, Mystic, and Thomas C. Choinski, East Lyme, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1986, Ser. No. 880,861
Int. Cl.[4] G06F 7/38, 15/32
U.S. Cl. 364—715.01 5 Claims



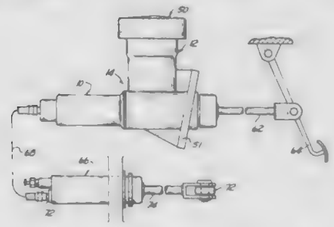
1. An apparatus, used in conjunction with an FFT processing system, for selectively re-ordering the memory address digits of pre-stored data samples, comprising:
binary counter means for generating a contiguous sequence of multi-digit memory addresses;
radix multiplexing means, connected to said binary counter means, for receiving said sequence of multi-digit memory addresses and re-ordering said digits of said sequence of memory addresses based on a pre-selected radix such that said re-ordered memory addresses facilitate FFT calculations using said pre-stored data samples; and
output means, connected to said multiplexing means, for receiving said re-ordered memory addresses from said multiplexing means and transmitting said addresses over the address bus of said system during said FFT calculations.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,814
HYDRAULIC CYLINDER MODULAR STRUCTURE

Keith V. Leigh-Monstevens, Troy, Mich., assignor to Automotive Products, plc, Warwickshire, England

Original No. 4,590,765, dated May 27, 1986, Ser. No. 633,462, Jul. 23, 1984. Application for reissue Jun. 4, 1987, Ser. No. 58,261
Int. Cl.[4] B60T 11/26
U.S. Cl. 60—585 8 Claims



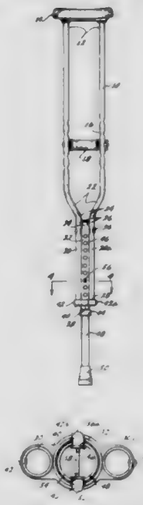
1. A hydraulic cylinder assembly for a hydraulic apparatus, said hydraulic cylinder assembly consisting of a hydraulic cylinder having a circularly cylindrical housing and a separate detachable and interchangeable tubular member open at both ends and fitted over said cylindrical housing, said cylindrical housing comprising a peripherally recessed portion defining a first annular groove, a peripherally threaded portion disposed on one side of said first groove, an outwardly extending annular abutment shoulder on the other side of said first groove, a first annular seal disposed in a second peripheral groove between said one side of said first groove and said peripherally threaded portion, a second annular seal disposed in a third peripheral groove between said other side of said first groove and said annular abutment shoulder, and at least one portion through the wall of said cylindrical housing leading in said first groove, and said detachable and interchangeable tubular member having a bore comprising a smooth portion engaged with said first and second annular seals, an internally threaded portion mating said externally threaded portion of said cylindrical housing and an end defining an annular face engaged with said abutment shoulder of said cylindrical housing when said tubular member is threaded over said cylindrical housing, said tubular member having an orifice in its bore for supplying fluid to said first groove and to the interior of said cylinder housing through said port through the wall of said cylindrical housing.

Re. 32,815
HEIGHT ADJUSTABLE CRUTCH

Alfred A. Smith, Seattle, Wash., assignor to Guardian Products, Inc., Arleta, Calif.

Original No. 4,509,741, dated Apr. 9, 1985, Ser. No. 454,985, Jan. 3, 1983. Application for reissue Sep. 3, 1985, Ser. No. 772,481
Int. Cl.[4] A61H 3/02
U.S. Cl. 135—69 7 Claims

6. A height adjustable crutch comprising:
(a) a bow having a transverse arm crutch support and a pair of vertical hollow tubular members extending downwardly from said support, said members being brought into closer but spaced apart parallel alignment for a predetermined distance from their lower extremities and maintained in their hollow tubular condition;
(b) a hollow tubular carrier, said carrier being disposed in the space between the lower extremities of said hollow tubular vertical members and in abutment therewith, said carrier being orificed at spaced intervals along at least one of its sides not in abutment with said lower extremities of said hollow tubular vertical members;
(c) first means securing the upper end of said carrier to each of said vertical members;
(d) second means securing the lower end of said carrier to each of said vertical members, said second means comprising an element encompassing externally each of said lower extremities of said vertical members and the carrier therebetween and means secured to each of said extremities to prevent axial movement of said element relative to each said extremity; and
(e) a telescoping foot member disposed for axial displacement within and relative to said carrier, said foot member being



provided with at least one laterally projecting detent, said detent being spring-biased radially outwardly for projection through any of the orifices at spaced interals along said carrier whereby, when said detent is so projected through any such orifice, the foot member is locked against telescoping movement relative to said carrier, but such movement may be effected by pressing the spring-biased detent radially inwardly thereby to change the disposition of the foot member relative to the carrier, for locking engagement at such changed disposition by projection of the detent outwardly through a different orifice in said carrier.

Re. 32,816
DRAWER APPARATUS

Robert R. Plank, 8426 Vine Valley Dr., Sun Valley, Calif. 91352

Original No. 4,589,711, dated May 20, 1986, Ser. No. 686,093, Dec. 24, 1984. Application for reissue Feb. 1, 1988, Ser. No. 151,275
Int. Cl.[4] A47B 88/00
U.S. Cl. 312—330 R 21 Claims

1. A drawer apparatus comprising:
a drawer housing adapted to be fixedly mounted within an enclosed space defined in part by an exterior planar wall, said drawer housing having an open front wall providing access into an interior compartment;
a drawer housing face connected to said drawer housing by first connecting means, said drawer housing face to butt

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against said exterior planar wall, said first connecting means permitting pivoting of said drawer housing face about a first pivot axis relative to said drawer housing, said drawer housing face to be initially pivoted about said first pivot axis until said drawer housing face assumes a desired position butting against said exterior planar wall, said drawer housing face being then fixed in said desired position by first fixing means;

a drawer located within said interior compartment, said drawer slideably movable relative to said drawer housing between a retracted position and an extended position, said retracted position defined when said drawer is substantially totally confined within said interior compartment, said extended position defined when said drawer is substantially located exteriorly of said interior compartment, said drawer having an article containing compartment; and

a drawer face mounted by second connecting means to said drawer, said second connecting means permitting pivoting of said drawer face about a second pivot axis relative to said drawer, said drawer face being pivotally adjusted to a particular position and then permanently fixed in said particular position by second fixing means, with said drawer in said retracted position said drawer face to be in juxtaposition with said drawer housing face and to also abut against said exterior planar wall.

2. The drawer apparatus as defined in claim 1 wherein:

said drawer housing composed of two separate identical parts secured together in a facing relationship.

Re. 32,817

SHEET PROCESSING APPARATUS

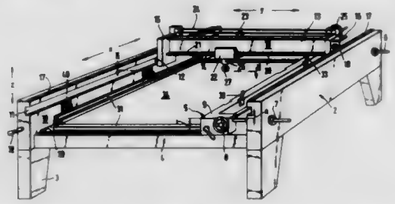
Franz Vossen, Radolfzell, Fed. Rep. of Germany, assignor to Meurer Nonfood Product GmbH, Radolfzell, Fed. Rep. of Germany

Original No. 4,544,367, dated Oct. 1, 1985, Ser. No. 426,904, Sep. 29, 1982. Application for reissue Sep. 24, 1987, Ser. No. 100,934

Claims priority, application Fed. Rep. of Germany, May 4, 1982, 3216593

Int. Cl.[4] B31B *1/25*

U.S. Cl. 493—1 **17 Claims**



1. Apparatus for processing a sheet of material, comprising: a table plate adapted to receive a stamping plate for receiving a said sheet of material thereon; a stamping tool operatively associated with the stamping plate; a form means; tool holding means for releasably carrying the form means substantially parallel to the table plate; guide track means extending over the table plate at a spacing therefrom and disposed movably thereabove; carriage means carried on the guide track means and movable in a direction transverse with respect to the direction of movement of the guide track means; at least one vertically movable pressure member carried on the carriage means and operatively directed towards said table plate; and at least one lateral defining member which is arranged on the table plate in such a way as to be movable and fixable in a steplessly variable manner thereon wherein said lateral defining member carries holding means for said form means.

Re. 32,818

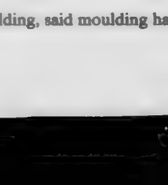
CAST DETERGENT-CONTAINING ARTICLE AND METHOD OF USING

Peter J. Fernholz; James L. Copeland, both of Burnsville, and Richard C. Penttila, East Bethel, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Original No. 4,569,781, dated Feb. 11, 1986, Ser. No. 234,940, Feb. 17, 1981. Continuation-in-part of Ser. No. 123,956, Feb. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 875,784, Feb. 7, 1978, abandoned. Application for reissue Aug. 27, 1986, Ser. No. 901,250

Int. Cl.[4] B08B *3/04*; C11D *7/06, 17/00, 17/04*

U.S. Cl. 252—90 **22 Claims**



1. A detergent-containing article of commerce comprising:

(a) a three-dimensional, solid, cast, hydrated, substantially uniform alkaline detergent *for ware and hard surface washing* comprising:

(1) at least *about* 30% by weight of an alkaline hydratable chemical consisting essentially of alkali metal hydroxide:

(2) *an effective amount of* a hardness-sequestering agent;

(3) [more than 15 parts by weight, per 100 parts by weight of said alkaline hydratable chemical, of] water of hydration, at least a portion of said water of hydration being associated with said alkali metal hydroxide, *wherein the alkali metal hydroxide and the hardness sequestering agent are present in an amount sufficient to render the cast detergent a solid at room temperature by virtue of the water of hydration*; and

(b) a receptacle-shaped disposble container surrounding and in contact with said solid, cast, hydrated alkaline detergent composition on all but one surface thereof.

Re. 32,819

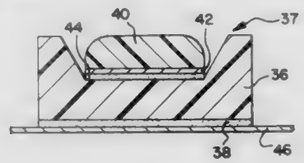
TRIM STRIP FOR AUTOMOBILE BODIES

Robert E. Waugh, Sun City Center, Fla., assignor to The D. L. Auld Company, Columbus, Ohio

Original No. 4,446,179, dated May 1, 1984, Ser. No. 468,721, Feb. 28, 1983. Continuation-in-part of Ser. No. 380,783, May 21, 1982, abandoned. Application for reissue Apr. 7, 1986, Ser. No. 848,572

Int. Cl.[4] B60R *13/04*

U.S. Cl. 428—31 **8 Claims**



1. A trim strip *suitable for application to the body of a vehicle* comprising:

an elongate moulding, said moulding having a lower surface for [receiving adhesive or otherwise] attaching said trim strip to the body of a vehicle,

an elongate channel formed in the upper surface of said moulding having a floor and two side walls or shoulders, *and*

an elongate [decorative surface] *precast flexible trim strip* in said channel, [and]

[a weather-resistant and impact-resistant clear plastic cap cast over said decorative surface and having radiused edges providing a lens effect to said decorative surface beneath and thereby optically enhancing the appearance of said decorative surface as viewed through said clear plastic cap]

said flexible pre-cast trim strip consisting essentially of a flexible elongate member having an upper surface and a lower surface and sharply defined peripheral edges but no upstanding side walls and a flexible weather-resistant clear plastic cap, formed by over-coating said upper surface of said elongate member with a fluent clear plastic material which flows to said sharply defined peripheral edges and forms a positive meniscus and curing said plastic material to provide a lens effect to said elongate member and thereby optically enhance the appearance of said upper surface of said elongate member as viewed through said clear plastic cap.

Re. 32,820

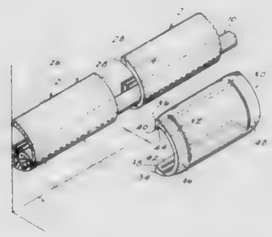
ELECTRIC CORD HOLDER ASSEMBLY

Ronald M. Pollack, 73-19 37th Rd., Jackson Heights, N.Y. 11372

Original No. 4,563,542, dated Jan. 7, 1986, Ser. No. 557,241, Dec. 2, 1983. Continuation-in-part of Ser. No. 443,037, Nov. 19, 1982, Pat. No. 4,454,374, which is a continuation-in-part of Ser. No. 323,651, Nov. 20, 1981, abandoned. Application for reissue Sep. 21, 1987, Ser. No. 98,927

Int. Cl.[4] H02G *3/04*

U.S. Cl. 174—68.3 **10 Claims**



1. An electric cord holder assembly, comprising:

at least two electric cord holder sections attachable to a surface and having ends disposable adjacent one another, each section comprising a *one-piece* sheath made of an elongated plastic extrusion having [a slotted tubular cross-section so as to define] a cord-receiving channel therein, said sheath having an arcuate dome-shaped resilient front wall having two ends [and an overhang on one end thereof] and a planar rear wall [extending from the other end of said front wall towards said one end of said front wall, said rear wall having a free end leaving a slot adapted for insertion of an electrical cord into said cordreceiving channel between said free end of said rear wall and said one end of said front wall], said rear wall having an inner face which partially defines said cord-receiving channel and an outer face, and securing means composed of an adhesive strip of predetermined width having a generally planar outer surface connected to said outer face of said rear wall and adapted to be attached to a surface, and

a plastic connecting element for interconnecting adjacent ends of said sections and covering the space therebetween comprising an elongated segment having an arcuate dome-shaped resilient wall which substantially corresponds with the arcuate dome-shaped front [wall] *walls* of said sheaths so as to fit thereover and having at least two ends each of which is provided with bosses extending towards each other, said bosses defining therebetween a space smaller than the width of said arcuate dome-shaped front walls of said sheaths, said bosses being adapted to engage underneath said ends of said arcuate dome-shaped front walls of said sheaths, said bosses including camming surfaces disposed on their inner sides, and said camming surfaces providing a releasable locking engagement between said connecting element and said sections when said connecting element is pressed thereover so that no discontinuity occurs between the adjacent ends of said electric cord holder sections.

Re. 32,821

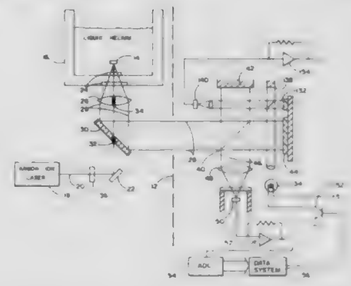
APPARATUS AND METHOD FOR PHOTOLUMINESCENCE ANALYSIS

Gerald L. Auth, 2858 Chillon Way, Laguna Beach, Calif. 92651

Original No. 4,562,356, dated Dec. 31, 1985, Ser. No. 641,835, Aug. 17, 1984. Continuation-in-part of Ser. No. 555,607, Nov. 28, 1983, abandoned. Application for reissue Jan. 12, 1987, Ser. No. 9,253

Int. Cl.[4] G01J *3/00*

U.S. Cl. 250—458.1 **46 Claims**



1. An apparatus, for photo-luminescent analysis of [impurities in] a sample, comprising:

means for applying *laser* radiation to the surface of the sample to cause emission of photons by the sample;

the sample having significant photon emissivity within the radiation wavelength range of 0.8 to 1.4 microns;

means for collecting the sample-emitted photons and providing a photon beam for interferometer input;

an interferometer which receives the input photon beam and outputs a spectrally encoded photon beam; and

a detector which receives the interferometer output beam and converts it into electronic signals.

* * * * *

The questions raised in reexamination request No. 90/001,324, filed Sep. 9, 1987, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CFR 1.570(e).

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PLANT PATENTS

GRANTED JANUARY 3, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,501

LILY PLANT NAMED SYLPHIDE

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 18, 1987, Ser. No. 27,621
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. The new and distinctive variety of Oriental hybrid lily plant and parts thereof, substantially as herein shown and described, characterized by the pure white unspotted coloration of the flowers and the excellence of the flower form, size, and substance; by the unique upright to semi-upright orientation of the flowers; and by its versatility both as a garden plant and as a cut flower producer.

6,502

LILY PLANT NAMED GISELLE

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 18, 1987, Ser. No. 27,622
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. The new and distinctive variety of Oriental hybrid lily plant and parts thereof, substantially as herein shown and described, characterized by its unique side facing to semi-upright orientation, and its pure white flowers of exceptionally large size; its high resistance to diseases, its vigorous growth habit, and excellence of its flower form and substance.

6,503

HYBRID ORIENTAL LILY NAMED MARKOVA

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Apr. 15, 1987, Ser. No. 38,761
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. The new and distinct variety of hybrid Oriental lily plant and parts thereof, substantially as herein shown and described, and particularly characterized by its semi-upright to upright flowers of pure white, unspotted coloration; by the excellence of its flower form, and by its versatility as a garden plant and as a cut flower producer from precooled bulbs forced under glass out-of-season.

6,504

HYBRID ORIENTAL LILY NAMED SYLVIA

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Apr. 15, 1987, Ser. No. 38,762
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. The new and distinctive variety of hybrid Oriental lily plant and parts thereof, substantially as herein shown and described, characterized by its unique upright to semi-upright flowers having a clear pink coloration with deeper magenta-rose midribs and by their complete lack of spotting; and by its versatility both as a garden plant and as a cut flower producer when forced under glass out-of-season from precooled bulbs.

6,505

HYBRID ORIENTAL LILY NAMED ISADORA

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Apr. 15, 1987, Ser. No. 38,763
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. The new and distinctive variety of hybrid Oriental lily plant and parts thereof, substantially as herein shown and described, characterized by its unique upright to semi-upright flowers having a clear pink coloration extending along each tepal midrib between broad white margins, the excellence of its flower form, size and substance, and its versatility both as a garden plant and as a cut flower producer from precooled bulbs forced under glass out-of-season, its vigorous growth and rapid natural propagation, and its resistance to disease and tolerance of virus.

6,506

ROSE PLANT NAMED SAVALUCK

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Mar. 16, 1987, Ser. No. 26,280
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by attractive bright orange and yellow bicolored flowers which are long lasting on the plant and as cut flowers.

6,507

ROSE PLANT NAMED SAVAMIST

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Mar. 16, 1987, Ser. No. 26,527
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by attractive flowers beginning as Brick Red blooms of good exhibition form which mature into fully open Apricot blossoms and which are long lasting on the plant and after cutting.

6,508

ROSE PLANT NAMED BENAROS

Frank A. Benardella, Old Tappan, N.J., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Mar. 26, 1987, Ser. No. 30,430
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by pink and cream blend flowers of excellent exhibition form which are long lasting on the plant and as cut flowers.

6,509

ROSE PLANT NAMED BURYELLOW

Joe Burks, P.O. Box 4400, Tyler, Tex. 75712

Filed May 15, 1987, Ser. No. 50,145
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—3 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class which is a climbing sport of the rose known as "Sunflare", substantially as shown and described, characterized particularly by its climbing habit of growth and shinier foliage which is also darker and denser than "Sunflare".

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6,510
PHALAENOPSIS PLANT NAMED VELMER
Maurice Lecoufle, Boissy-st-Leger, and Michel Vacherot, Roquebrune-Sur-Argens, both of France, assignors to Orchidees les Petits Fils et Fils de Vacherot & Lecoufle, Boissy-st-Leger, France
Filed Dec. 8, 1986, Ser. No. 938,959
Claims priority, application France, Aug. 4, 1986, 06212
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct Phalaenopsis plant named Velmer, as described and illustrated, and particularly characterized by its round flower shape, heavy substance, superior lasting quality of the flower when cut, superior vigor and growth habit, and by its white to yellow labellum, yellow-orange callus and generally brown streaking on the callus parts of the labellum.

6,511
STERLING SILVER LINDEN
Willet N. Wandell, Rte. #1, Box 286, Oquawka, Ill. 61469
Filed Dec. 24, 1986, Ser. No. 945,941
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—51 1 Claim

1. A new and distinctive variety of *Tilia tomentosa*, named 'Sterling' is described herein that differs from other varieties by the unique combination of: (1) moderately-pyramidal, very symmetrical, tight, dense crown instead of the variable, pendulous, hemispherical or broadly-domed crown of the species; (2) the consistently tight ascending multiple branching in the upper one-half of the trunk; (3) the leaves that are completely silvery-tomentose when young, becoming dark green and lustrous above at maturity; (4) the smooth beech-like bark; (5) the sparse production of flowers and fruit; and (6) the overall neatness of the tree with healthy foliage throughout the growing season and general lack of messy fruit.

6,512
CHRYSANTHEMUM NAMED 'HELLO DOLLY'
Jerry van Wingerden, Carpinteria, Calif., assignor to California Plant Company, Carpinteria, Calif.
Filed Apr. 24, 1987, Ser. No. 42,031
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—76 1 Claim

1. A new and distinct variety of Chrysanthemum and parts thereof, substantially as herein shown and described, particularly characterized by the darker color of the ray and disc florets of the flower as compared to the color of the parent plant, the physiological characteristics of the new plant being substantially the same as those of the parent.

6,513
ROSE PLANT KORTEXUNG
Reimer Kordes, Klein Offenseth, Fed. Rep. of Germany, assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Mar. 18, 1987, Ser. No. 27,619
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—26 1 Claim

1. A new and distinct variety of rose plant and parts thereof of the floribunda class substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its extremely long vase life, short to medium length cutting stems, high resistance to powdery mildew, excellent flower production, and long-lasting light pink color.

6,514
ROSE PLANT JACWHIM
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Mar. 19, 1987, Ser. No. 27,685
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—8 1 Claim

1. A new and distinct variety of rose plant and parts thereof of the miniature class substantially as herein shown and described, characterized particularly as to novelty by the attractive high-centered white flowers, compact dwarf growth habit, rapid rooting and plant growth in pot culture, resistance to powdery mildew and presence of numerous flower clusters.

6,515
ROSE PLANT JACARE
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Mar. 19, 1987, Ser. No. 27,816
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—23 1 Claim

1. A new and distinct variety of rose plant and parts thereof of the floribunda class substantially as herein shown and described, characterized particularly as to novelty by the numerous clusters of white flowers contrasted by dark green glossy foliage, vigorous upright yet compact growth habit, bright orange hip production late in the Fall, large yellow anthers attractively displayed in open flowers and resistance to powdery mildew.

6,516
ZOYSIA GRASS PLANT (ZT-4)
Hubert F. Whiting, 28252 Faircrest Way, Escondido, Calif. 92026
Filed Mar. 16, 1987, Ser. No. 26,140
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of Zoysia grass plant herein shown and described by a deep yellowish green color, as defined by the ISCC-NBS centroid color chart; this new claimed variety of Zoysia grass plant ZT-4 produced an excellent uniform turfgrass surface, which held complete green color throughout two randomized replicated trial winter periods, when compared to the closest known variety of Zoysia grass plant ZT-26, which lost 25% to 30% of green color throughout those two trial periods; this new claimed variety of Zoysia grass plant ZT-4 also produced a 40% to 50% greater stolon and rhizome growth rate at low winter temperatures, when compared to the closest known variety of Zoysia grass plant ZT-26; the anthers of the new claimed variety of Zoysia grass plant are pale yellow color, as defined by the ISCC-NBS centroid color chart; the stigmas are yellowish white color, as defined by the ISCC-NBS color chart; the stolon internodes of the new claimed variety of Zoysia grass plant are closer together and thinner in width than the closest known variety of Zoysia grass plant ZT-26; the entire plant of the new claimed variety is glabrous except on the upper leaf surface which is sparsely pubescent and on the inside of the collar, just above the ligule, where several long hairs are present; and the new claimed variety of Zoysia grass plant ZT-4 shows distinct uniqueness with the electrophoresis isoenzyme banding pattern methods, when compared to the closest known variety of Zoysia grass plant ZT-26.

PATENTS

GRANTED JAN. 3, 1989

ERRATA

For CLASS	See PATENT NO.
407-058	4,794,665
135-065	4,794,743
065-135	4,794,860
600-018	4,794,910
137-614	4,794,937
297-465	4,795,176
384-420	4,795,220
356-401	4,795,244
272-023	4,795,405
060-313	4,795,420
428-635	4,795,654
570-203	4,795,737
528-370	4,795,810
585-809	4,795,835
346-076	4,795,999
341-095	4,796,003
341-143	4,796,004
341-011	4,796,005
341-144	4,796,006
354-145	4,796,034
358-058	4,796,291

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PATENTS

GRANTED JANUARY 3, 1989

GENERAL AND MECHANICAL

4,794,652

SAFETY HELMET

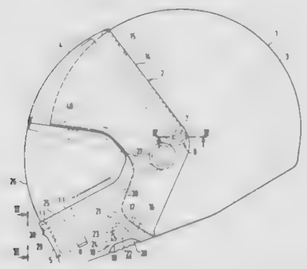
Corina Piech von Plants, Gähkopf 30, 7000 Stuttgart 1, and Wolfram Schleicher, Stuttgart, both of Fed. Rep. of Germany, assignors to Corina Piech von Plants, Stuttgart, Fed. Rep. of Germany

Filed Mar. 4, 1987, Ser. No. 21,774

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1986, 3607483

Int. Cl.[4] A42B *3/02;* A61F *9/04*

U.S. Cl. 2—414 20 Claims



1. A safety helmet, comprising a helmet shell which defines an opening in the area of the chin of the user of the helmet, the inner surface of the helmet shell having a shock-absorbing inner lining, a folding portion placed in front of and suitably and removably connected to the helmet shell, the folding portion forming a chin protector, the chin protector including an outer shell and an inner lining and a visor connected to the folding portion, a lower part of the folding portion resting against corresponding end faces of the helmet shell when the folding portion is in the operative position, holding means for holding the folding portion in contact with the helmet shell, the holding means being displaceable against a spring load, the folding portion extending at least essentially over the forward half of the helmet, wherein the folding portion is connected to the helmet shell so as to be releaseable therefrom in a predetermined swivel position.

4,794,653

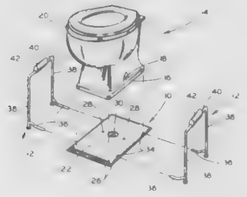
BASE FOR ELEVATING A TOILET

Thaddeus B. Strasser, 613 Pierce St., Sandusky, Ohio 44870

Continuation of Ser. No. 633,628, Jul. 23, 1984, Pat. No. 4,631,759. This application Dec. 24, 1986, Ser. No. 947,038

Int. Cl.[4] E03D *11/00*

U.S. Cl. 4—252 R 3 Claims



1. For use with a toilet having a bottom portion and a seat portion, the bottom portion being adapted to normally engage a floor having a drain, the seat portion being disposed a standard distance above the floor when the bottom portion is engaged with the floor, a base adapted to be disposed between the toilet and the floor to elevate the seat portion of the toilet above the floor by greater than the standard distance comprising:

plate-like means having parallel, flat top and bottom surfaces and a lateral dimension sufficiently large such that the bottom portion of said toilet would entirely rest on said top surface;

said bottom surface portion adapted to engage the floor;

said flat top surface spaced apart from said bottom surface a sufficient distance to elevate the seat portion of the toilet above the floor by greater than the standard distance of the respective toilet; and

an aperture formed through said plate-like means from said top to said bottom surfaces for connecting the toilet to the drain in the floor, said plate-like means including an annular recess formed around said aperture at said top surface to mate with an existing plumbing fitting in the toilet and including a fitting secured within said aperture to mate with existing plumbing fitting in the floor.

4,794,654

DRAIN PLUG

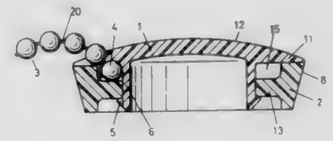
Alois Diethelm, Tuggen, Switzerland, assignor to Geberit AG, Jona, Switzerland

Filed Sep. 17, 1987, Ser. No. 97,889

Claims priority, application Switzerland, Mar. 17, 1987, 1005/87

Int. Cl.[4] A47K *1/14*

U.S. Cl. 4—295 5 Claims



1. Sealing stopper for a drain valve, comprising:

(a) a first member comprising an annular sealing body having an outer sealing surface and an inwardly extending, annular flange;

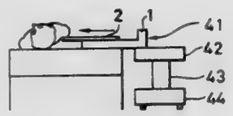
(b) a second member comprising a lid having a rim and an integral, downwardly extending annular neck portion for assembly into abutting relation with said flange;

(c) an annular space being defined by said rim, said neck portion and said sealing body, said space being adapted to receive an end segment of a chain means prior to assembly of said lid with said sealing body;

(d) whereby said chain means is removably attached to said sealing stopper without the use of tools.

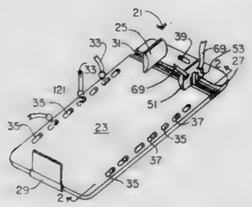
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4,794,655
TRUCK TYPE PATIENT-MOVING DEVICE
Akihiro Ooka, Saita; Kenji Okamoto, Kobe, and Koji Yamada, Saita, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan
Filed Mar. 30, 1987, Ser. No. 31,668
Claims priority, application Japan, Apr. 25, 1986, 61-94642; Jan. 19, 1986, 61-141309; Aug. 1, 1986, 61-179863
Int. Cl.[4] A61G *7/08*
U.S. Cl. 5—81 R **7 Claims**



1. A patient-moving device comprising:
(a) a movable truck having a longitudinal axis and a lateral width;
(b) a horizontal base plate mounted on said movable truck for movement laterally thereof, said horizontal base plate having a lateral width at least approximately equal to the lateral width of said movable truck;
(c) first means for moving said horizontal base plate back and forth between a first position in which it is at least generally above said movable truck and a second position in which said horizontal base plate projects cantilever fashion to a first side of said movable truck;
(d) an insertion plate mounted on said horizontal base plate for movement laterally thereof, said insertion plate having a lateral width at least approximately equal to the lateral width of said movable truck and being sized and shaped to be inserted under a patient lying in bed; and
(e) second means for moving said insertion plate back and forth between a first position in which it is at least generally above said horizontal base plate and a second position in which said insertion plate projects cantilever fashion to the first side of said horizontal base plate, said second means being mounted on and movable with said horizontal base plate,
(f) the combined cantilever projections of said horizontal base plate and said insertion plate when in their second positions exceeding the lateral width of said movable truck.

4,794,656
EMERGENCY BACKBOARD
Albert F. Henley, Jr., 213 Crabb Ave., Rockville, Md. 20850
Continuation of Ser. No. 642,495, Aug. 20, 1984, abandoned. This application Dec. 24, 1986, Ser. No. 946,053
Int. Cl.[4] A61G *1/00*
U.S. Cl. 5—82 R **36 Claims**



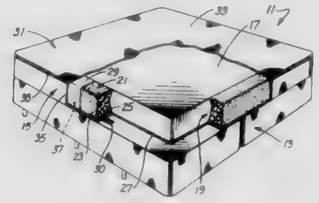
1. A backboard for transporting an injured person comprising:
a rigid support board of a size sufficient to lay a person thereon,
means for strapping said person said board, and
means for supporting the head and neck of said person, said head and neck supporting means includes a track which is connected to said board and two substantially opposing head engaging devices which are slidably received by said track,
said head engaging devices including head supporting means and support guide where by said supporting means is attached to said guide, projects above said board, and is adapted to directly abut an immobilize the person's head, and said guide having a first and second leg fixedly attached to one another at an angle where said head supporting means is attached to said second leg and said first leg interfaces with said track, and means for latching said head engaging devices in a number of positions relative to said track, wherein each of said latching means includes a latch member having at least two positions, a latch position and a free position, and
said latching means being designed and arranged such that said second legs are free to move relative to said track when the latch members are in the free position and such that said second legs are stopped from moving relative to the track when the latch members are in the latch position.

4,794,657
TUMMY HUGGER PILLOW COMBINATION
Linda S. Avery, 8802 Chambers Pl., N.E., Albuquerque, N. Mex. 87111
Filed Jun. 25, 1987, Ser. No. 66,353
Int. Cl.[4] A47C *20/00, 20/02*
U.S. Cl. 5—431 **4 Claims**



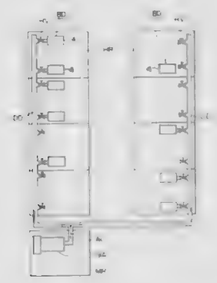
1. A pillow assembly comprising a head pillow, a trunk pillow and a leg pillow; attachment means by which the head pillow, trunk pillow, and leg pillow are connected together in series relationship whereby the pillow assembly may be simultaneously received under a user's head, against the stomach and between the legs;
said head pillow having a first end attached to said trunk pillow; and a second end which forms an upper terminal end of the pillow assembly;
said leg pillow having a first end attached to said trunk pillow and a second end which forms a lower terminal end of the pillow assembly;
said trunk pillow having one end which is attached to the first end of said head pillow and a second end which is attached to the first end of said leg pillow;
each said attachment means includes a single axially symmetrical male and female socket member having fastener material formed thereon which enables the male socket member to be removably connected within said female socket member;
said head and leg pillows each have one of said male and female socket members formed thereon, and said trunk pillow has the other of said male and female socket members formed thereon.

4,794,658
MATTRESS COVER HAVING COLORED BACKING
Clark W. Goodale, Simi Valley, Calif., assignor to American National Watermattress Corporation, Anaheim, Calif.
Filed Feb. 17, 1987, Ser. No. 15,361
Int. Cl.[4] A47C *27/00, 31/02*
U.S. Cl. 5—448 **16 Claims**



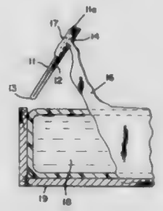
1. A mattress construction including:
interior means having characteristics for enhancing the comfort of a person lying on the mattress;
exterior means for enclosing the interior means, the exterior means providing a surface adapted to contact the person lying on the mattress;
a ticking included in the exterior means in the form of a loosely woven fabric having indicia thereon;
a foam backing material included in the exterior means between the ticking and the interior means, said backing material being visible through the loosely woven fabric;
a color pigment included in the backing material and providing a colored background for the ticking and the indicia thereon; whereby
the colored background provides an increase in the color quality of the ticking and the indicia on the fabric.

4,794,659
FLUID BED SYSTEM
Masaya Kurita, and Katsuya Kanzaki, both of Kanagawa, Japan, assignors to Fuji Electric Company Ltd., Kanagawa, Japan
Filed Dec. 18, 1985, Ser. No. 810,202
Claims priority, application Japan, Dec. 19, 1984, 59-267645
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—453 **7 Claims**



1. A fluid bed system comprising:
a plurality of fluid beds, each comprising a plurality of bead-like members adapted to be suspended in pressurized air and a bead confining membrane;
distribution means for supplying each of said fluid beds with pressurized air;
pressurized-air supplying means in flow communication with said distribution means, said pressurized air supplying means being located remote from said fluid beds and being operable between off and on conditions;
a plurality of openable and closeable electrically actuated valves disposed in said distribution means for controlling the flow of pressurized air each of said fluid beds; and
system control means for automatically opening and closing said actuated valves in cycles such that at least half of said valves are closed at all times and such that during each of said cycles each of said fluid beds is supplied with pressurized air, for controlling the pressurized-air supply means for continuously supplying pressurized air from said pressurized-air supplying means to said distribution means throughout each of said cycles, and for automatically turning said pressurized-air supplying means on and off.

4,794,660
SHEET ANCHORING DEVICE
William G. Hawkrigg, 47395 Monroe St. #140, Indio, Calif. 93302
Filed Nov. 13, 1987, Ser. No. 120,386
Int. Cl.[4] A47C *21/02*
U.S. Cl. 5—498 **9 Claims**



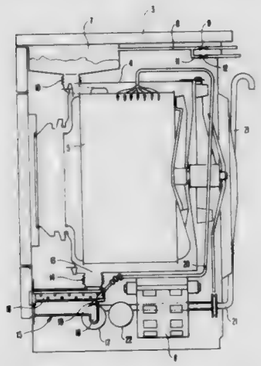
1. In combination with a sheet material which overlies a base member such as a mattress, a retainer for said sheet material which comprises an anchoring member in the form of an elongated flat panel which is at least semi-rigid and which is foldable along a transverse intermediate hinge line formed therein to provide a pair of superimposed segments, the first of said segments having a slot formed therethrough adjacent to the end thereof which is opposite to said hinge line, the second of said segments having a length sufficient to overlap said slot when folded thereover, said slot providing an opening through which a portion of said sheet material is inserted and retained between said segments in superimposed folded position, said segments in said superimposed folded position with said sheet material portion retained therebetween being adapted for insertion beneath said base member to ensure anchoring of said sheet material.

4,794,661
PROCESS FOR THE TREATMENT OF LAUNDRY IN A WASHING MACHINE
Piero Durazzani, Pordenone, Italy, assignor to Zanussi Elettrodomestici S.p.A., Pordenone, Italy
Filed Mar. 6, 1987, Ser. No. 22,871
Claims priority, application Italy, Mar. 11, 1986, 45708 A/86
Int. Cl.[4] D06F *21/04*
U.S. Cl. 8—158 **10 Claims**

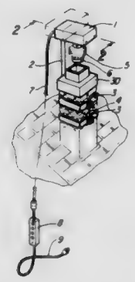
1. A process for treatment of laundry in a basket rotatably mounted in a tub of a washing machine prior to the start of a washing program comprising:
introducing water into the tub from a hot water supply

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located externally from and connected to the washing machine until the tub is partially filled with the water so as to soak the laundry contained in the basket;
rotating the basket; and
recirculating the water in the washing machine to preheat the laundry in the basket, the basket and the tub of the washer, said steps of introducing water into the tub, rotating the basket and recirculating the water being performed without introducing detergent into the tub and being performed prior to the start of a washing program whereby the temperature of the water used in a subsequent washing program can be maintained at a desired temperature since the water introduced for the selected washing program will not be cooled to an undesirable temperature by contact with the laundry contained in the basket, the basket and the tub.

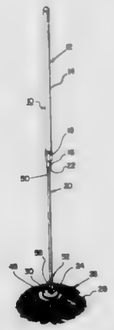


4,794,662
REMOTELY OPERATED CHIMNEY CLEANING APPARATUS
Randy B. Parcher, 2588 Carlson Rd., Sidney, Mich. 48885
Filed Sep. 16, 1987, Ser. No. 97,102
Int. Cl.[4] B66D *3/24*
U.S. Cl. 15—163 6 Claims



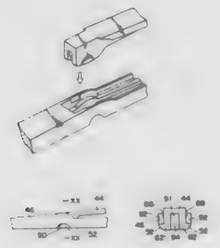
1. An apparatus for cleaning chimney and flue openings, comprising a pivot support, means to attach said pivot support to the exterior of a chimney or stovepipe, an enclosure pivotably mounted on one end of said support, said enclosure further comprising:
(A) a hemispherical gear attached to said pivotal support within said enclosure;
(B) a worm gear engageable with said hemispherical gear;
(C) a first reversible electric motor mounted within said enclosure;
(D) means for attachment of said worm gear to the output shaft of said first electric motor;
(E) a second reversible electric motor mounted within said enclosure;
(F) a winch mounted within said enclosure;
(G) means for the operating of said winch by said second electric motor;
(H) a cable;
(I) means for attachment of one end of said cable to said winch;
(J) a brush;
(K) means to removably attach said brush to the opposite end of said cable from its point of attachment to said winch;
(L) a weight attached to said brush;
(M) means for remotely controlling the operation of said first and second electric motor; and
(N) means for limiting the operation of said first reversible electric motor.

4,794,663
FLEXIBLE DUST MOP
Peter S. Vosbikian, Moorestown, N.J., assignor to Quickie Manufacturing Company, Inc., Cinnaminson, N.J.
Filed Mar. 2, 1987, Ser. No. 20,580
Int. Cl.[4] A47L *13/24*
U.S. Cl. 15—229.6 6 Claims



1. A dust mop comprising:
an elongated handle, the handle comprising a non-flexible upper portion and a flexible lower portion;
a pivotal connector bottomly secured to the flexible portion of the handle, the pivotal connector comprising a first arcuate ratchet,
the pivotal connector comprising a pivot pin extending laterally outwardly from first arcuate ratchet,
the first arcuate ratchet comprising a plurality of first shallow teeth defined by shallow valleys;
a mop head pivotally connected to the handle at the said bottom connector,
the mop head comprising a body and a plurality of dust gathering fibers depending from the body; and
a connector bracket affixed to the mop head to secure the mop head to the handle connector, the connector bracket comprising a second arcuate ratchet, the connector bracker receiving the pivotal connector therein with the first arcuate ratchet in arcuate contact with the second arcuate ratchet,
the second arcuate ratchet comprising a plurality of second shallow teeth defined by second shallow valleys,
the first shallow teeth being positioned in the second shallow valleys and the second shallow teeth being positioned in the first shallow valleys to form a detent sufficiently strong to prevent flopping and sufficiently weak to permit movement of the mop head relative to the handle upon the application of relatively small pivoting forces;
whereby the interconnection between the mop head and the handle serves as a detent to restrain the angularity of the mop head relative to the handle in any one of a plurality of angularly adjusted positions.

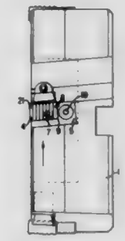
4,794,664
WIPERBLADE OF WINDSHIELD WIPER
Masaru Arai, Saitama, Japan, assignor to Nippon Wiper Blade Co., Ltd., Saitama, Japan
Filed Mar. 2, 1988, Ser. No. 163,107
Claims priority, application Japan, Mar. 23, 1987, 62-42171
Int. Cl.[4] B60S *1/04*
U.S. Cl. 15—250.42 6 Claims



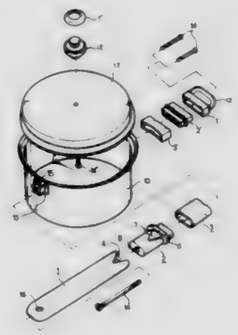
1. A wiperblade comprising at least two yokes with one end of one of the yokes being connected pivotally to a lengthwise intermediate portion of the other of said yokes; the one end of said one yoke being formed to have a pair of walls defining therebetween a recess, and on the outer side surfaces projections of semi-circular configuration respectively with the thickness of the projections decreasing from the upper side to the lower side; and said intermediate portion of the other yoke being formed to have a circular projecting portion, opposite side walls, a pair of longitudinally extending and spaced apart grooves formed in the upper surface of said the other yoke and extending through the circular projecting portion, and recessed portions formed in the lower portions of the side walls respectively for engaging respectively with the projections of said one yoke; whereby, by pressing said one end of the one yoke against said intermediate portion of the other yoke, the circular projecting portion is received—in the recess of said one yoke with the inside surfaces of the side walls of said one yoke engaging respectively with the outside surfaces of the projecting portion of said the other yoke in face to face relationship.

4,794,665
ROTARY CUTTER WITH SERRATED EDGES AND POSITIVE/NEGATIVE AXIAL RAKE
Robert W. Peters, Saegertown, Pa., assignor to Greenleaf Corporation, Saegertown, Pa.
Continuation-in-part of Ser. No. 717,360, Aug. 24, 1976, abandoned, and Ser. No. 813,539, Jul. 7, 1977, abandoned, and Ser. No. 882,993, Mar. 3, 1978, abandoned, and Ser. No. 186,262, Sep. 11, 1980, and Ser. No. 260,349, May 4, 1981, abandoned. This application Jul. 9, 1982, Ser. No. 396,818
Int. Cl.[4] B26D *1/12*
U.S. Cl. 407—58 21 Claims

1. An indexable cutting insert with cutting faces adapted to be oriented at axial rake angles which are either negative or positive and with cutting edges formed by the intersection with said cutting faces of the leading ends of sinusoidal serrations, said serrations being inclined axially relative to said cutting faces at an angle which provides cutting clearance for the trailing sides of said serrations.



4,794,666
HANDLE ASSEMBLY FOR A COOKING CONTAINER
Myeong S. Kim, 247 Abgujeong-dong, Kangnam-ku, Hyundae Apt., 112-Block No. 603, Seoul, Rep. of Korea
Continuation of Ser. No. 770,199, Aug. 28, 1985, abandoned. This application Sep. 2, 1987, Ser. No. 93,169
Claims priority, application Rep. of Korea, Jul. 1, 1985, 85-8062[U]
Int. Cl.[4] A47J *45/07, 45/08*
U.S. Cl. 16—114 A 5 Claims



1. A handle assembly for a cooking container which comprises:
a hollow metal handle member containing a recessed portion disposed in one end thereof,
a hollow metal coupler,
an insulated connecting member disposed between said hollow metal handle member and said hollow metal coupler, said insulated connecting member including a corresponding projection configured to tightly engage said recessed portion for providing a thumb-engaging surface for the user and a raised shoulder portion, said insulated connecting member being slidably inserted at one end into said hollow metal handle and at the other end into said hollow metal coupler, said raised shoulder portion extending peripherally above the surface of the hollow metal handle member for insulating the hollow metal handle member to the hollow metal coupler and for preventing the hand of the user from touching the hollow metal coupler, and
screw means extending through said insulated connecting member and through said hollow metal coupler for screw engagement with the cooking container.

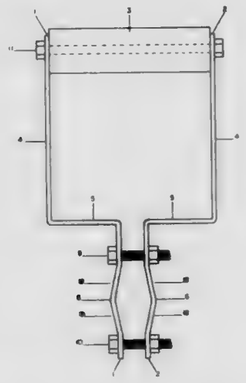
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4,794,667

DETACHABLE AUXILIARY HANDLE

Stanley E. Nelson, and Richard S. Nelson, both of Rte. 3, Box 136 K, Buffalo, Minn. 55313

Continuation of Ser. No. 880,658, Jul. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 732,912, May 13, 1985, abandoned. This application Nov. 4, 1987, Ser. No. 120,200
Int. Cl.[4] B25G *3/24*
U.S. Cl. 16—114 R 2 Claims



1. A detachable auxiliary handle assembly for attachment to an implement shaft comprising:

a handle, having a length and a center and having opposing ends, two flexible brackets of a rigid and resilient consistency, one attached to each end of the handle, each bracket consists of a vertical arm portion, being disposed vertically, perpendicular to the handle, extending downward from the handle, and running to a horizontal portion, which is disposed perpendicular to the vertical arm portion, running inward toward the center of the handle, each said horizontal portion having a length less than one half the length of the said handle and running to a flat vertical portion having a length and a center, disposed perpendicular to said horizontal portion, extending downward and having a shaft engaging portion in the center of its length, said shaft engaging portion having a curve in the center of its length with a straight section on either side thereof leading back to the vertical portion, and having holes above and below said shaft engaging portion,

a pair of bolts and nuts for insertion through said holes to tighten the curved shaft engaging portion around an implement shaft,

the brackets being composed of resilient, flexible, thin strips of strap steel, approximately 2 millimeters thick, which will bend to allow the shaft engaging portion to be spread apart or compressed together to fit various sized implement shafts

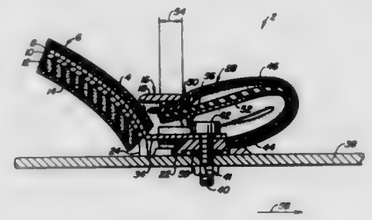
said handle being cylindrical and having a central axis and a hole through the handle along said central axis, the brackets having holes therein so that said handle is attached to the brackets by a bolt passing through the holes, the curved shaft engaging portion having ridges thereon for gripping the implement shaft more securely, the length of the brackets from the handle to the shaft engaging portion is used as a spring to adjust the gap between the shaft engaging portions, the flat vertical portions being about three fourths of an inch apart in its initial unattached condition, the shaft engaging portion being indented approximately one fourth of an inch over approximately a one and one half inch length, the shaft engaging portions having a diamond shape in their assembled state, the diamond shaped shaft engaging portions being able to be compressed down to about five eighths of an inch before opposing said flat vertical portions touch each other.

4,794,668

ASSIST STRAP TERMINATION STRUCTURE

Brian S. Lorence, Warren, and Richard A. Phelps, Ferndale, both of Mich., assignors to Chivas Products Limited, Sterling Heights, Mich.

Filed Jun. 23, 1987, Ser. No. 65,485
Int. Cl.[4] A47B *95/02*
U.S. Cl. 16—125 12 Claims



1. An improved termination structure of the type for use with an assist strap having ends, each end secured to a bracket for securing the bracket and the assist strap end therewith to a base, the bracket having a bottom and a top with a first open end, from which the assist strap extends, and a second open end, an edge of the top bounding a portion of the second open end, the improvement comprising:

a generally U-shaped termination piece having first and second legs, the first leg secured to the bracket with the distal end of the second leg positioned within the bracket, the first and second legs having opposed interior surfaces, the termination piece extending in a first direction away from the assist strap;

a first fastening element secured to the second leg; and

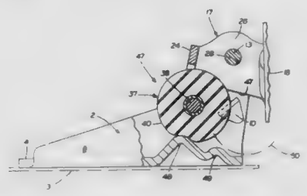
a second fastening element secured to the bracket and positioned to engage the first fastening element at a chosen position to maintain the distal end of the second leg in position within the bracket.

4,794,669

ELASTOMERIC HINGE SPRING

Myron D. Sanders, Noblesville, Ind., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 938,475, Dec. 5, 1986, abandoned. This application Apr. 19, 1988, Ser. No. 183,662
Int. Cl.[4] E05D *11/10*
U.S. Cl. 16—341 6 Claims



1. A hinge spring construction for a swinging door including:

(a) a first bracket adapted to be mounted on a frame of a doorway, said first bracket having a generally flat metal base and a pair of spaced upstanding side flanges formed integrally with the base and projecting generally perpendicularly therefrom, said flat base having a longitudinal axis;

(b) a second bracket adapted to be mounted on the door and moveable between open and closed positions; said second bracket having a pair of outwardly projecting spaced legs with a first pin extending therebetween and with an elastomeric roller rotatably mounted on said first pin, said second bracket being pivotally mounted on and between the side flanges by a second pin extending parallel to the base, with said roller being located between the spaced side flanges; and

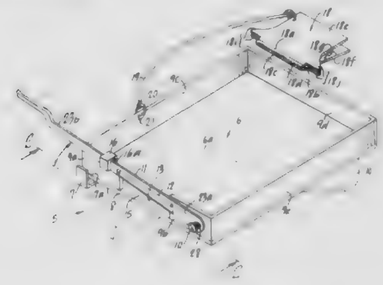
(c) detent means including at least one generally inverted V-shaped projection formed integrally on the base of the first bracket by displacing metal from said base, said detent means projecting outwardly from the base between the spaced side flanges and a plane between the detent means and the second pin being substantially perpendicular to the longitudinal axis of the flat base and projecting into the path of movement followed by the roller upon pivotal movement of the second bracket on the second pin between the open and closed positions so that the roller moves into the plane between the second pin and detent means and through the plane therebetween when moving between the open and closed positions for retaining the second bracket in the open position and for requiring temporary compression of the roller upon movement of the second bracket from the open position toward the closed position.

4,794,670

FISH CHUNK-CUTTING DEVICE

Thomas A. Savastano, Jr., 9 Dalley St., Whitehouse Station, N.J. 08889

Filed Feb. 29, 1988, Ser. No. 162,273
Int. Cl.[4] A22B *25/18*
U.S. Cl. 17—61 25 Claims



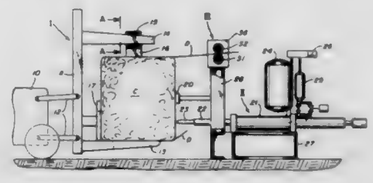
1. A fish-cutting device for cutting-off chunks of fish for use as chum or fish bait, comprising in combination: a platform structure having an upper face and having one end formed with a linear side-edge of the platform structure; at-least one upright wall structure forming first and second opposite end-portions and forming a gap defined between said first and second opposite end-portions, mounted at said one end, said gap being upwardly open to free-space; a lever means including a lever having proximal and distal ends thereof and having an elongated lower lever-edge, said upright wall structure having a substantially flat side-surface extending substantially uprightly relative to said upper face of the platform structure; said lever means further including an elongated blade having a lower elongated cutting-edge, positioned for the cutting-edge to face downwardly from said elongated lower lever-edge; the proximal end of said lever being mounted on at-least one of said platform structure and said first end-portion, positioned for movement of said distal end and said lower elongated cutting-edge along said flat side-surface and parallel to and in close proximity to said linear side-edge and transverse to and in close proximity to said gap such that during downward movement of the lever, said lower elongated cutting-edge transverses space adjacent said gap whereby an item resting on said platform and extending beyond said gap, will be severed, at said linear side-edge; said lever having a predetermined length between said proximal and distal ends sufficiently large to accommodate positioning of a bait item to be cut, under said lower elongated cutting-edge extending through said gap; and said gap having a predetermined limited length-dimension along said linear side-edge between said first and second opposite end-portions, sufficiently less than said lever predetermined length, to a minimal length required for insertion of a bait item to be cut such that limited length of the gap serves to limit exposure of space susceptible to an item being severed by said lower elongated cutting-edge when said lever is moved pivotably downwardly whereby possibilities of accidental cutting of a person by said lower elongated cutting-edge is minimized.

4,794,671

METHOD OF OPENING BALES OF COTTON AND OTHER FIBERS

Giora Goldman, 15 Hakibuzzim Street, Kiriat Haim, Israel

Filed Sep. 10, 1987, Ser. No. 95,563
Claims priority, application Israel, Sep. 14, 1986, 80024
Int. Cl.[4] D01B *3/04*; D01G *7/04*
U.S. Cl. 19—65 R 17 Claims



5. Equipment for removing straps or ties from a bale of cotton, hay or other fibers, comprising:

impact cutting means for cutting said straps, said impact cutting means including a horizontally positioned cutter blade of a length greater than the distance between outermost ones of said straps holding said bale;

mechanical lifting and transporting means for lifting said bale with said said straps in vertical alignment, said mechanical lifting and transporting means including means for pressing down on a top surface of said bale to hold said bale in a set position on said mechancial lifting and transporting means; and

strap removing means located above said cutter blade for engaging free upper ends of said cut straps and for causing said straps to be pulled off said bale.

4,794,672

QUICKLY ATTACHABLE BUTTON ARRANGEMENT

Gudmar Olovsson, 64 rue Saint Charles, 75015 Paris, France

PCT No. PCT/SE87/00190, § 371 Date Nov. 18, 1987, § 102(e) Date Nov. 18, 1987, PCT Pub. No. WO87/06109, PCT Pub. Date Oct. 22, 1987
PCT Filed Apr. 15, 1987, Ser. No. 126,938
Claims priority, application Sweden, Apr. 18, 1986, 8601767
Int. Cl.[4] A44B *1/18*
U.S. Cl. 24—112 10 Claims

1. A quickly attachable button arrangement, comprising:

a button head;

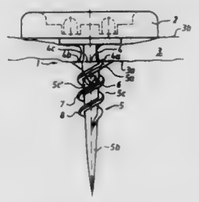
means for attaching and holding said button head to a material, said attaching and holding means being formed integrally with said button head and connected thereto by a shaft;

said attaching and holding means including a needle-like part

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having a point at a first end thereof for piercing the material and a helical thread formed about a portion of said needle-like part for screwing the attaching and holding means through the material;

one end of said helical thread forming a surface at a second end of the needle-like part, said surface located at a predetermined distance from said button head and facing there-



towards so as to engage the material between the button head and said surface; and

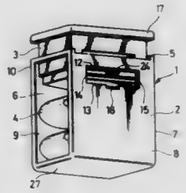
a weakening provided in the needle-like part so that the first end thereof can be readily separated from the second end thereof, said weakening and helical thread arranged so that at least a portion of said helical thread is provided on the needle-like part between the second end thereof and the weakening.

4,794,673

CORD FASTENER AND METHOD FOR MANUFACTURE THEREOF

Mitsuhiro Yamaguchi, Nishinomiya, Japan, assignor to Morito Co., Ltd., Osaka, Japan

Filed Sep. 8, 1987, Ser. No. 94,153
Claims priority, application Japan, Apr. 30, 1987, 62-107998
Int. Cl.⁴ F16G *11/00*
U.S. Cl. 24—115 G **4 Claims**



1. A cord fastener comprising:

a substantially hollow housing having front and back walls and a bottom, and having openings at the top and lateral sides and further having a pair of opposed bridging members which extend between and interconnect said front and back walls at spaced apart positions defining boundaries between opposed sides of said top opening and opposed top sides of said lateral openings, respectively, said front and back walls being spaced apart from the bottom for providing additional structural rigidity for said housing, said front and back walls being formed with cord holes for passing a cord therethrough substantially perpendicular to the planes of said front and back walls,

a slider slidably fitting into the housing through the top opening thereof and having a cord hole positioned to be selectively alignable with said cord holes in said front and back walls, said slider being provided with a stopper means which controls the range of its movement within the housing, and

a zig zag-shaped spring member for driving the slider within the housing,

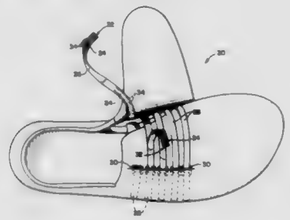
said housing, slider and spring member being a one-piece synthetic molding with said zig-zag shaped spring member being integrally connected adjacent the bottom thereof to said housing.

4,794,674

RIB LOCK DEVICE

Thomas E. Mintel, Somerset, and Kenneth W. Misevich, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 3, 1987, Ser. No. 81,053
Int. Cl.⁴ A43C *9/00*
U.S. Cl. 24—143 R **4 Claims**



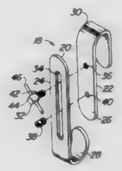
1. Fastener means for preventing relative longitudinal movement of a pair of strap structures in one direction comprising a plurality of identical ribs on each of said strap structures, each of said ribs extending across said strap structures from side to side thereof, said ribs each having a flat front face extending at an angle of about 45° to 75° with respect to said strap structures, each of said ribs having an arcuate rear face, the spacing between said ribs being such that when said ribs are interlocked with their flat front faces in locking engagement the respective rear faces are spaced apart to facilitate engagement and disengagement of said ribs.

4,794,675

ADJUSTABLE CLAMP WITH SLOT AND GUIDE

Edward M. Bisconti, 686 Bluff St., #202, Carol Stream, Ill. 60188

Filed Apr. 1, 1988, Ser. No. 176,471
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 24—455 **1 Claim**



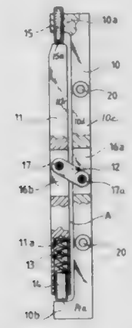
1. A clamp of the class described, comprising first and second members, each of rigid flat, strap-like material and of J shape, each having an elongated straight leg including a free terminal end and having its opposite end portion bent back upon itself to provide a hook, said members being juxtaposed to each other with the legs in flat-wise and lengthwise engagement with each other and with the hooks opening toward and facing each other at the same side of the juxtaposed legs, the first member leg having an elongated slot therein lengthwise thereof and the second member leg having first and second tapped bores normal to said second member leg and spaced apart lengthwise of said second member leg by a distance less than the length of the slot, said bores being in register with the slot, a guide stud carried by the second member leg and having a threaded portion threaded into the first bore and a coaxial head portion slidably received in the slot, and screw means having a threaded part threaded into the second bore and passing through the slot and having a coaxial shoulder outwardly of and larger than the slot for clamping the legs together.

4,794,676

CLAMPING DEVICE, ESPECIALLY FOR PRINTED CIRCUIT BOARDS

Hans Rose, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 22, 1987, Ser. No. 136,654
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644173
Int. Cl.⁴ A44B *19/18*
U.S. Cl. 24—495 **7 Claims**



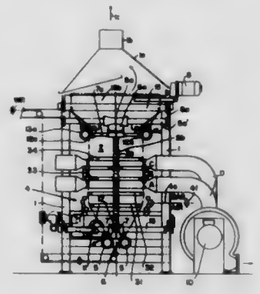
1. A clamping device, especially for printed circuit boards, comprising a mounting member having a section with a first clamping surface and a bracing section at each end of said first section, said bracing sections extending away from said first section to form two supports facing toward each other, a clamping member having a second clamping surface for forming with said first clamping surface a clamping gap, pivoting link means for connecting said clamping member to said mounting member so that said first and second clamping surfaces face each other, biasing spring means operatively arranged between one end of said clamping member and one of said bracing sections for biasing said first and second clamping surfaces toward each other, and adjustment means arranged between the other end of said clamping member and the other bracing section for adjusting said clamping gap for receiving a printed circuit board in said clamping gap, and wherein said mounting member and said clamping member each have a longitudinal hole, said pivoting link means comprising a link and journal members pivotally connecting said link to said mounting member and to said clamping member in said longitudinal holes, whereby said link is guided in said longitudinal holes.

4,794,677

APPARATUS FOR SINGEING TUBULAR TEXTILE FABRIC

Werner Strudel, Friedrichshafen, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau/Bodensee, Fed. Rep. of Germany

Filed Jun. 15, 1987, Ser. No. 63,157
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1986, 3621643
Int. Cl.⁴ D06C *9/02*, *5/00*
U.S. Cl. 26—3 **21 Claims**



1. An apparatus for singeing tubular textile fabric, comprising a machine frame having a central longitudinal axis, a guide path including a circular spreader for said fabric in said machine frame, singeing means including singeing nozzles mounted in said machine frame to surround said circular spreader for singeing said tubular textile fabric as it is spread by said spreader, said circular spreader comprising a number of fabric guide rings spaced from each other along said longitudinal axis for forming at least first and second spreader zones (I, II), said fabric guide rings including first and second neighboring fabric guide rings hving different diameters for forming said first spreader zone as a conical zone (I) of said circular spreader, adjustable mounting means for mounting said singeing nozzles in said first conical spreader zone for a three-dimensional position adjustment of said singeing nozzles relative to said first conical spreader zone, a third fabric guide ring for forming said second spreader zone, and cooling means arranged downstream of said first conical spreader zone as viewed in a travel direction of said tubular textile fabric, for cooling said tubular textile fabric after it has been singed.

4,794,678

METHOD FOR THE DETERMINATION AND ELIMINATION OF VISIBLE DEFECTS IN NON WOVEN TEXTILE WEBS

Ingeborg Reim, Cottbus; Gerhard Pohl, Forst/Lausitz; Wolfgang Götzke, Forst/Lausitz; Dieter Wahnberger, Forst/Lausitz; Lothar Postel, Forst/Lausitz; Irmgard Kindlein, Forst-/Lausitz; Rudolf Vetter, and Manfred Greschke, both of Cottbus, all of German Democratic Rep., assignors to VEB Forster Tuchfabriken, Forst/Lausitz, German Democratic Rep.

Filed Nov. 9, 1983, Ser. No. 550,269
Int. Cl.⁴ D04H *18/00*
U.S. Cl. 28—107 **4 Claims**

1. In the method for the determination and elimination of visible defects in textile webs, wherein the web is moved as a defective web of fabric in the longitudinal direction over a defect seeking and registering area, the improvement comprising locating the surface position of visible defective areas of at least one of the types consisting of material deficiencies and excesses with regard to fiber components of the web during the movement of the web, as compared to the adjacent areas of the

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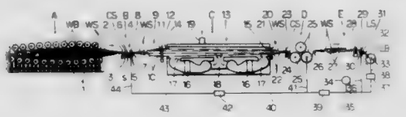
web, registering said defective areas as a deviation from the reference condition, stopping the defective web with the defect being above a needle base into which felting needles are sunk, subsequently supplying the defective areas of material deficiencies, with donor material from a reserve, whereby the donor material is pushed into the web and is stitched together with the fiber component of the defective areas with at least two felting needles at 50 to 100 perforations per cm^2, pushing the excess fiber component of the defective areas of material excesses into the web by means of at least two felting needles at 50 to 200 perforations per cm^2, and following the last perforation in the defective area, freeing the defective web for further movement at a pace relatively faster than the movement of the non-aligned donor material, and disjoining the defective web from the reserve.

4,794,679

METHOD OF AND APPARATUS FOR SIZING AND DRYING WARPS OF FILAMENT YARNS

Toshitsuyo Hiraki, Nagoya, Japan, assignor to Kawamoto Industrial Co., Ltd., Nagoya, Japan

Filed Feb. 27, 1987, Ser. No. 19,615
Claims priority, application Japan, Mar. 11, 1986, 61-53326
Int. Cl.[4] D02H *5/02*
U.S. Cl. 28—181 **6 Claims**



1. A method of sizing and drying warps of filament yarns, comprising the steps of:

drawing a complete number of warps of filament yarns required for the weaving of cloth from a number of warper's beams;

collecting warp sheets drawn from each warper's beam into one warp sheet having a width of the warper's beam on a guide roller by passing yarns of each warp sheet one by one between needles of a first slant reed, and of sizing by passing the collected warp sheet through a sizing solution and squeezing it at high pressure;

dividing the sized and collected warp sheet vertically into warp sheets of a number between 2 and 4 times the number of warper's beams by dividing each warp sheet of the warper's beam vertically into a number between 2 and 4, and of passing yarns of each warper's beam by a number between 2 and 4 at a time between needles of a second upright reed having a needle pitch between 2 and 4 times of that of the first slant reed and separating the sized yarns in vertical and lateral directions;

preparatory drying the sized yarns in separated state by hot air;

dividing the predried yarns vertically into warp sheets per the number of warper's beams by passing yarns of each warper's beam one by one between needles of a third upright reed having a needle pitch equal to that of the first slant reed;

collecting the warp sheets of each warper's beam into one warp sheet having a width of the warper's beam on a guide roller by passing yarns of each warp sheet one by one between needles of a fourth slant reed having a needle pitch equal to that of the first slant reed, and of finish-drying the collected warp sheet by heated cylinders; and

dividing the finish-dried and collected warp sheet vertically into warp sheets per the number of warper's beams, and of collecting warp sheets of each warper's beam into one warp sheet having a width of a loom beam on a roller by passing yarns of each warp sheet one by one between needles of a fifth reed, and of winding the collected warp sheet onto the loom beam.

4. An apparatus for sizing and drying warps of filament yarns, comprising: a beam stand section; a sizing section; a preparatory drying section; a finishing drying section and a winding section; arranged in sequence in the travelling direction of warp yarns,

wherein said beam stand section comprises beam stands for setting warper's beams of a number necessary to draw a complete number of warps of filament yarns required for the weaving of cloth,

wherein said sizing section comprises a first slant reed having a needle pitch equal to the yarn pitch of the yarns on the warper's beams, a guide roller, and sizing device provided with a size box, an immersion roller and high pressure squeezing rollers, all installed in front of the beam stand section in sequence,

wherein said preparatory drying section comprises an inlet dividing part provided with dividing rods having a number necessary to divide the sized warp sheet vertically into warp sheets of a number between 2 and 4 times the number of the warper's beams and a second upright reed having a needle pitch between 2 and 4 times that of the first slant reed, a hot air drying chamber through which the sized yarns pass in separate state, and an outlet dividing part provided with a third upright reed having a needle pitch equal to that of the first slant reed and dividing rods having a number necessary to divide the hot-air dried yarns vertically into warp sheets per the number of warper's beams, all installed in front of the sizing device in sequence,

wherein said finishing drying section comprises a fourth slant reed having a needle pitch equal to that of the first slant reed, a guide roller, and a cylinder drying device, all installed in front of the outlet dividing part in sequence, and

wherein said winding section comprises dividing rods having a number necessary to divide the finish-dried warp sheets vertically into warp sheets per the number of warper's beams, a fifth reed to adjust the warp sheets to the width of a loom beam, a roller, and a winding device to set the loom beam, all installed in front of the cylinder drying device in sequence.

4,794,680

NOVEL WEAR-RESISTANT LASER-ENGRAVED CERAMIC OR METALLIC CARBIDE SURFACES FOR FRICTION ROLLS FOR WORKING ELONGATE MEMBERS, METHOD FOR PRODUCING SAME AND METHOD FOR WORKING ELONGATE MEMBERS USING THE NOVEL FRICTION ROLL

Robert W. Meyerhoff, Zionsville, Ind., and Richard C. Hill, Charlotte, N.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 20, 1985, Ser. No. 811,334
Int. Cl.[4] B21B *27/00*
U.S. Cl. 29—132 **26 Claims**



1. A friction roll for performing work on an elongate solid material by frictional contact therewith comprising a roll having an external surface defining a working surface and a ceramic or metallic carbide coating bonded to said working surface, said coating having a plurality of laser-formed depressions having a pattern providing a substantially uniform, wear-resistant recast surface to said working surface, said recast surface providing a different morphological structure than the coating and providing a consistent coefficient of friction over a roughness range from about 20 to 1000 Ra, said coefficient of friction measured with a Shirley frictometer using a 150 denier nylon yarn at 10 grams tension and a surface speed of 260 yards per minute.

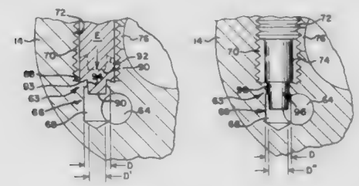
13. Method of forming a friction roll for performing work on an elongate solid material by frictional contact with said elongate solid material, said roll having an external surface defining a working surface comprising the steps of bonding a ceramic or metallic carbide coating to said working surface and laser-engraving the coating on said working surface with a plurality of depressions having a pattern covering substantially the entire said working surface and said laser-engraving step providing a uniform, wear-resistant surface texture of recast coating formed by said laser-engraving step over substantially the entire said working surface, said recast surface providing a different morphological structure than the coating and providing a consistent coefficient of friction as measured with a Shirley frictometer using a 150 denier nylon yarn at 10 grams tension and a surface speed of 260 yards per minute.

4,794,681

FLUID CYLINDER CUSHIONING SYSTEM

Peter W. Boyer, Manteno, and Roger W. Haczynski, Beecher, both of Ill., assignors to Bimba Manufacturing Company, Monee, Ill.

Filed Aug. 27, 1987, Ser. No. 89,869
Int. Cl.[4] B21K *1/24*
U.S. Cl. 29—156.7 A **10 Claims**



1. A method of forming a valve seat of substantially zero clearance with a valve, comprising:

forming a passage having a first width in material of a given hardness;

deforming at least a portion of said passage to decrease the width of said passage at said portion; and

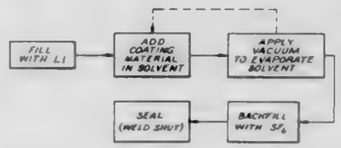
inserting a valve having a given shape and width and a hardness greater than said given hardness into said portion of said passage to form said decreased width portion of said passage to conform substantially identically to said given shape and width of said valve, whereby the clearance between said valve and said portion of said passage formed by said valve is substantially zero.

4,794,682

MAKING A POWER SOURCE UTILIZING ENCAPSULATED LITHIUM PELLETS

John T. Buford, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 733,049, May 13, 1985, Pat. No. 4,671,211, which is a continuation-in-part of Ser. No. 618,893, Jun. 8, 1984, Pat. No. 4,634,479. This application Jul. 11, 1986, Ser. No. 884,514
Int. Cl.[4] B23P *15/26*; C06B *45/32*
U.S. Cl. 29—157.4 **3 Claims**



1. A method of making a thermal power source comprising the steps of

(a) introducing a plurality of lithium pellets having predetermined, substantially differing sizes into a boiler to form part of the power source to result in a predetermined void volume within said boiler defined by the voids between the pellets;

(b) introducing a predominately flourine substituted hydrocarbon in a solvent into the boiler;

(c) thereafter evaporating the solvent to provide lithium pellets, coated in situ, with said predominately fluorine substituted hydrocarbon and voids within said boiler;

(d) backfilling the voids with sulfur hexafluoride; and

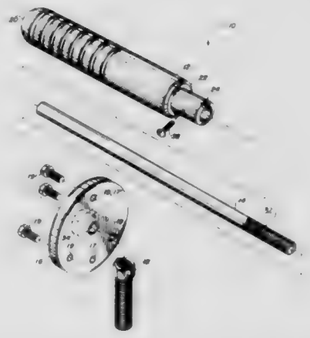
(e) sealing the boiler.

4,794,683

CAM SHAFT MANIPULATING TOOL

Orlando D. Pacheco, 2884 Trades W. Rd., Santa Fe, N. Mex. 87501

Filed Oct. 1, 1987, Ser. No. 103,539
Int. Cl.[4] B25B *27/14*
U.S. Cl. 29—278 **15 Claims**



1. A cam shaft manipulating tool for removing and installing a cam shaft within an engine block;

said tool has a centrally located longitudinally extending tool shaft, a handle affixed at one end of said tool shaft, a flange affixed at the other end of said tool shaft;

said flange has opposed faces with one face being directed towards the handle and the opposed face being directed towards a cam shaft that may be attached thereto;

an adaptor axially aligned with and attached to said tool

shaft, and extending from the cam shaft face of said flange, said adaptor being removably received at the cam shaft face of the flange; said adaptor has an externally threaded surface for threadedly mating with a counterbore of a cam shaft;

said flange has a plurality of apertures through which a bolt can be extended into attached relationship respective to the end face of a cam shaft.

4,794,684

METHOD OF AND APPARATUS FOR CUTTING TUBES

Pierre Vanlaeye, Sens, France, assignor to Lhomme, SA, Pont sur Yonne, France

Filed Sep. 30, 1985, Ser. No. 781,899
Claims priority, application France, Oct. 2, 1984, 84 15107
Int. Cl.[4] B24B 5/04; B26D 1/14
U.S. Cl. 29—33 T **8 Claims**



1. An apparatus for cutting a cylinder positioned on a mandrel having a longitudinal axis into tubular pieces, comprising:

(a) a framework including a platform for supporting said apparatus located to one side of said mandrel;

(b) a jack journalled at one end to said platform and at another end to an arm, said arm being pivotally mounted on a support connected to said platform and having an end to which a grindstone is rotatably mounted, said grindstone being adapted to move transversely with respect to said longitudinal axis for making contact with said cylinder to form a groove having a bottom in said cylinder; and

(c) another jack journalled at one end to said platform and at another end to a second arm pivotally mounted on a second support connected to said platform and having an end to which knife is mounted, said knife being adapted to move transversely with respect to said longitudinal axis to contact said bottom of the groove and to slice said cylinder into pieces having ends which are essentially planar and perpendicular to said longitudinal axis wherein said grindstone and knife are positioned laterally on the same side with respect to said cylinder.

4,794,685

PROCESS FOR FORMING METALLIC ARTICLES

Raymond G. Hillier, Runaway Bay, Australia, assignor to Delibes Pty. Ltd., Australia

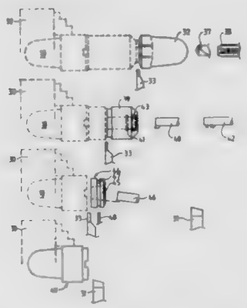
Division of Ser. No. 784,246, Oct. 4, 1985, Pat. No. 4,683,174.
This application Jul. 27, 1987, Ser. No. 78,222
Claims priority, application Australia, Oct. 5, 1984, PG7524; Nov. 13, 1984, PG8094; Jun. 14, 1985, PH1034
Int. Cl.[4] B23P 17/00
U.S. Cl. 29—416 **9 Claims**

1. A process for forming a metallic article from a raw casting which includes the steps of:

(1) producing a raw casting from a mold optionally having an internal bore; and

(2) performing one or more transverse parting operations to said casting so as to form components of the article, and wherein

the raw casting is subjected to one or more machining operations before step (2), and prior to said machining operations the raw casting is mounted in a drilling tapping stand and drilled and tapped so as to form transverse passages in



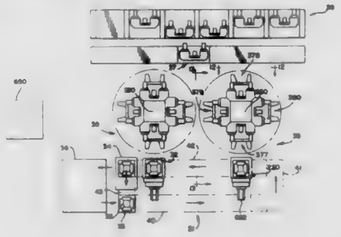
each end of the casting corresponding to end clevises of a hydraulically actuated ram assembly and one or more fluid ports.

4,794,686

FLEXIBLE MACHINING SYSTEM

L. Bruce Moore, Moline, Ill., assignor to Machine Research Company, Inc., Rock Island, Ill.

Filed Mar. 26, 1987, Ser. No. 31,426
Int. Cl.[4] B23Q 3/157, 41/02
U.S. Cl. 29—568 **8 Claims**



1. In machining system comprising:

a track;

a pallet loading station juxtaposed to said track;

a pallet unloading station juxtaposed to said track;

at least one machining station juxtaposed to said track at a location intermediate to said loading and unloading stations;

a plurality of pallets supported for movement along said track between said loading and unloading stations and past said machining station;

means on each pallet for mounting at least one work piece in predetermined positions thereon;

means for moving said pallets on said track in a non-synchronous manner;

each said machining station including a means for locating and securing said pallets in a predetermined location at said at least one said machining station and a machining cell;

means for orienting at least one each of said pallets when located and secured in said predetermined position at said machining station in a plurality of positions whereby different surfaces of said work piece or pieces mounted thereon are selectively presented to tools on said machining cell for machining thereof; and

means at each machining station for producing relative movement between said pallet and said machining cell;

wherein said locating and securing means comprises:

a base at each machining station adapted to receive said pallets one at a time;

means providing a pair of rigid locating surfaces on said base;

means providing a pair of rigid locating surfaces on said pallet; pallet;

two alignment sockets located on said pallet;

two matingly-shaped alignment pins located on said base which slidably engage said sockets;

two securing pins located on said base;

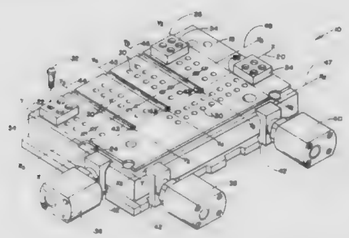
said pallet being aligned through engagement of said alignment pins and sockets respectively and being subsequently secured by the engagement of said securing pins with said pallet forcing said first rigid locating surfaces into contact with said second rigid locating surfaces.

4,794,687

FIXTURE SYSTEM FOR WORKPIECE MACHINING

Jerry W. Peters, Mulvane, and John L. Burnett, Derby, both of Kans., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 16, 1985, Ser. No. 788,039
Int. Cl.[4] B23Q 3/06
U.S. Cl. 29—559 **8 Claims**



1. A method of holding a workpiece for numerically controlled rough and finish machining thereof, said method comprising the steps of:

defining on the workpiece first and second spaced, predetermined reference points;

fixing said workpiece on a first fixture with said first and second reference points in registration, respectively, with a fixed index point and an index axis numerically defined on the surface of said first fixture;

boring hold-down holes in said workpiece at said first and second reference points;

after rough machining, removing said workpiece from said first fixture and placing said workpiece on a second fixture with the hold-down bores at said first and second reference points in registration with threaded bores in the surface of said second fixture; and

placing attachment means through said hold-down bores for threadable engagement of said threaded bores to fix said workpiece to said second fixture for finish machining.

2. A fixture system for holding a workpiece during numerically controlled rough and finish machining of said workpiece, said system comprising:

a first fixture including a generally planar surface having a fixed index point and an index axis numerically defined thereon, means for adjustably engaging the periphery of a workpiece to fix said workpiece to said surface for rough machining thereof, said engaging means fixedly registering first and second predetermined reference points on said workpiece with said fixed index point and index axis, respectively, and recess means in said surface for permitting drilling of hold-down bores in said workpiece at said first and second reference points without damaging said surface; and

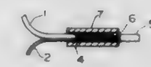
a second fixture including a generally planar surface and hold-down means disposed in said surface for registration with said hold-down bores and for fixedly receiving means removeably disposed through said hold-down bores for attaching said rough machined workpiece to said second fixture for finish machining.

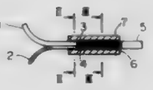
4,794,688

METHOD OF CONNECTING SUPERCONDUCTING WIRES

Takeshi Wada; Hisano Kita, both of Hitachi; Yoshinori Karatsu, Takahagi, and Yoji Akutsu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1987, Ser. No. 35,033
Claims priority, application Japan, Apr. 4, 1986, 61-77753
Int. Cl.[4] H01L 39/29
U.S. Cl. 29—599 **9 Claims**





1. A method of connecting superconducting wires each of which has a plurality of filaments covered by a coating layer, comprising the steps of:

causing exposed filaments of a connecting superconducting wire piece to cross and surround the exposed filaments of said superconducting wires to be connected;

covering the region where said filaments cross each other by a metallic connecting pipe; and

crimping said metallic connecting pipe by a pressure thereby firmly connecting said filaments of said superconducting wires to each other.

4,794,689

METHOD OF AND APPARATUS FOR MOUNTING ELECTRIC COMPONENTS

Makio Seno, Hirakata; Yoshihiko Misawa, Katano, and Tsutomu Inukai, Kofu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1986, Ser. No. 929,807
Claims priority, application Japan, Nov. 14, 1985, 60-255356
Int. Cl.[4] H05K 13/04
U.S. Cl. 29—740 **7 Claims**

1. In a method of feeding components for mounting on a circuit board and having contacts along opposite ends and sides between said opposite ends, the steps of:

causing a plurality of successive suction nozzles to move intermittently along a predetermined path in synchronism with each other and successively pick up components at a component receiving station and then move through a succession of stations toward a component mounting station where the components are to be mounted on a circuit board;

holding the successive suction nozzles still at one of the stations between the receiving station and the component mounting station;

effecting both the rectification of the position of each component in two directions perpendicular to each other and electrically testing the component by bringing rectifying fingers having electric contact members on the ends

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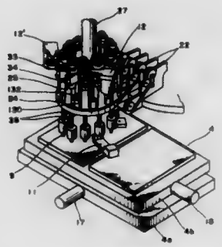
thereof which are at least as long as the component contacts are wide and with contact surfaces corresponding to the side surfaces of the components into face-to-face contact with the sides of the components in a second direction perpendicular to the first direction; and

passing a test current through the thus held component for testing the electrical characteristics thereof.

4. In an apparatus for feeding components for mounting on a circuit board and having contacts along opposite ends and sides between said opposite ends, the combination of:

means carrying a plurality of successive suction nozzles and movable along a predetermined path in synchronism with each other, and moving means for moving said carrying means intermittently past a component receiving station and a succession of stations toward a component mounting station where components are to be mounted on a circuit board and for stopping said carrying means for positioning a nozzle at said stations;

rectification and electrical testing means at one of said stations between said component receiving station and said



component mounting station and having a pair of spaced opposed rectifying and testing fingers movable toward and away from each other in a first direction, said rectifying and testing fingers having electric contact members on the opposed ends thereof which are at least as long as the component contacts are wide and with contact surfaces corresponding to the surface of the component contact surfaces, and having a pair of spaced opposed rectifying fingers movable toward and away from each other in a second direction perpendicular to said first direction along a line midway between said rectifying and testing fingers and with contact surfaces corresponding to the side surfaces of the components, the position where said line intersects a further line between said rectifying and said testing fingers corresponding to a position along said predetermined path where said nozzles are stopped, and means for moving the respective fingers toward and away from each other; and

means for supplying a test current through said electric contact members.

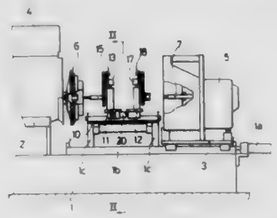
4,794,690

PHASE ADJUSTING APPARATUS IN ASSEMBLING MACHINE

Junichi Yamasaga; Keiichiro Gunji; Yousuke Narita; Toshiaki Nagasawa, and Yoshifumi Kawabata, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1987, Ser. No. 100,860
Int. Cl.[4] **B23P** *21/00;* **B23Q** *15/00;* **B23K** *37/00*
U.S. Cl. 29—709 4 Claims

1. A phase adjusting apparatus in an assembling machine for assembling a first workpiece on which a rotary body is rotatably mounted and a second workpiece on which a rotary shaft is rotatably mounted, said first and second workpieces being positioned to face each other such that the axis of the rotary body and the axis of the rotary shaft are in alignment with each other on the same axis, said rotary body having an engaging opening therein, wherein said engaging opening has first engaging means on the periphery thereof and said rotary shaft having second engaging means on the periphery thereof, wherein said first and second engaging means are engaged with each other when said workpieces are assembled with each other, said phase adjusting apparatus comprising a movable frame means movable into and out of the space formed between the first workpiece and the second workpiece, a first movable table means mounted on said movable frame means, said first movable table means being operable to advance toward and retract from said rotary body and a second mov-



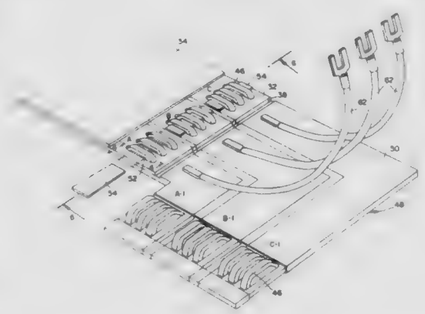
able table means mounted on said movable frame means, said second movable table means being operable to advance toward and retract from said rotary shaft, a master shaft mounted on said first movable table means having an engaging part corresponding with said engaging means of said rotary shaft, first rotation means for rotating said master shaft, and a first detecting means for detecting the phase of said master shaft, a master sleeve mounted on said second movable table means, having an engaging opening corresponding with said second engaging means of said rotary body, second rotation means for rotating said master sleeve, and a second detecting means for detecting the phase of said master sleeve.

4,794,691

METHOD AND APPARATUS FOR TERMINATING THIN, FLAT POWER CABLE, PARTICULARLY FOR UNDER CARPET USE

Edward P. Brandeau, 505 Sturbridge Ct., Flemington, N.J. 08822

Filed Oct. 2, 1986, Ser. No. 914,375
Int. Cl.[4] **H01R** *9/07*
U.S. Cl. 29—861 12 Claims



1. A method of field terminating flat power cable having one or more wide, thin conductors, each conductor being insulated comprising the steps of: punching a slot or slots through the conductor and insulation, inserting a narrow upstanding rib or ribs of a connecting device through said slot or slots, holding the rib or ribs and the conductor together, and crimping or

flattening the rib or ribs and conductor tightly together to wedge the conductor and connecting device together and establish a high residual radial force giving a gas-tight electrical joint, the conductor and connecting device being mechanically secured together by the residual force.

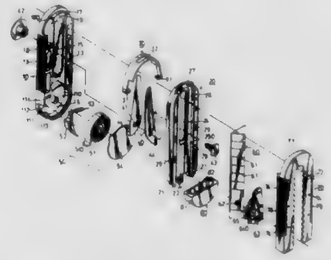
7. An undercarpet power wiring sytem comprising: a thin flat multi-conductor power cable, each conductor being insulated by a polymer bonded to the conductor which prevents corrosionn and wicking of water into the cable, a top shield of a tough puncture resistant metal such as steel, output connecting means for said conductors including ribs and slots, the slots being punched through one of a mating deivce and said conductors, the ribs being precisely formed in the other of said device and conductors, the ribs and slots being crimped in-situ to give a gas-tight electrical joint between said device and conductors, the volume of metal crimped into said slots slightly exceeding the volume of the slots, whereby a high-force contact is effected, a bandage layer of insulation covering said joint, and a shield and connected to said shield, said shield and corner having mating slots and ribs wedged into each other.

4,794,692

EXTENDABLE AND RETRACTABLE MULTIPURPOSE MINIATURE HAND TOOL FOR USE IN MEASUREMENT, SNIPPING, AND CUTTING

Reid Wang, Taichung Hsien, Taiwan, assignor to Tair Chen Co., Ltd., Taichung Hsien, Taiwan

Filed Nov. 2, 1987, Ser. No. 115,827
Int. Cl.[4] **B26B** *11/00*
U.S. Cl. 30—123 5 Claims



1. A multipurpose hand tool comprising:

two elongated casings collectively defining an outer housing in which a generally cylindrical chamber is formed, said cylindrical chamber having an opening for being communicated with exterior of said outer housing, one of said casings including a casing body and a cover between which a cutter slot is formed, said cutter slot being open at an end of said outer housing, each of said casings formed therein with a lengthwise extending slide slot and a lengthwise extending guide slot, said slide slots opposing each other;

two opposed scissor blades, mounted slidably within said outer housing between said casings, abutting against each other, each of said scissor blades including a lug projecting therefrom to insert into said guide slot of one of said casings for sliding along the length of said corresponding casing to extend partially out of said outer housing, each of said scissor blades having a pivot hole formed therein, said pivot holes opposing each other;

an elongated pivot member having an intermediate portion extending through said slide slots of said casings and said pivot holes of said scissor blades, and two enlarged ends fastening tightly said casings therebetween, so as to interconnect pivotally said scissor blades, one of said enlarged ends being movable relative to the other of said enlarged ends so that said pivot member can be released to slide along said slide slots, thereby permitting said scissor blades to extend partially out of said outer housing through said scissors slot;

a spring member, interconnecting adjacent ends of said casing for biasing free ends of said casings to separate from each other to a predetermined extent when said scissor blades extend partially out of said outer housing, having a scissors slot for extension of said scissor blades from said outer housing therethroug\;

a roll of measuring steel tape mounted rotatably within said cylindrical chamber, having an inner end mounted pivotally on said outer housing, and an outer end extendable out of said outer housing through said opening;

a spring biased abutment member, mounted movably on said outer housing, pressing against said tape for preventing said tape from movement, actuatable to release said tape therefrom; and

an elongated flat-blade cutter, mounted slidably within said outer housing between said casing body and said cover, having a beveled long edge, pushable to extend partially out of said outer housing through said cutter slot;

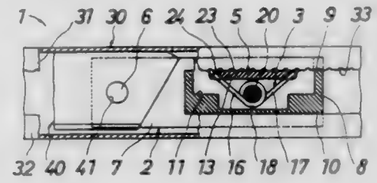
whereby, when said scissor blades extend partially out of said outer housing, said casings are connected rigidly to respective said scissor blades thereby forming two movable handles; when said abutment member is actuated, said tape can be pulled partially out of said outer housing.

4,794,693

SLIDER FOR A CUTTER KNIFE

Tatsushige Mayama; Masanobu Ihata, and Yoshihiko Yoshimoto, all of Osaka, Japan, assignors to Nippon Tenshashi Kabushiki Kaisha, Osaka, Japan

Filed Jul. 29, 1987, Ser. No. 79,079
Int. Cl.[4] **B26B** *1/08*
U.S. Cl. 30—162 19 Claims



1. A slider for a cutter knife comprising:

a slider main body which has a connecting protrusion capable of engaging with a cutter blade and is inserted together with said cutter blade into a holder for longitudinal movement therein;

a resilient stopper provided in said slider main body, said resilient stopper having a forwardly slanted resilient flap and a backwardly slanted resilient flap both provided with respective free ends which respectively engage with two spaced-apart stopper dents of a plurality of stopper dents formed in said holder so as to prevent said slider main body from longitudinally moving relative to said holder;

a slider knob provided on said slider main body, said slider knob being movable longitudinally to a neutral, forward movement or backward movement position, with the neutral position being located between the forward and backward movement positions; and,

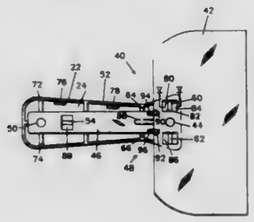
a release protrusion attached to said slider knob, said release protrusion allowing both said resilient flaps to engage with said stopper dents when said slider knob is located at the neutral position while allowing said forwardly slanted resilient flap alone to disengage from said stopper dents when said slider knob is located at the forward movement position and further allowing said backwardly slanted resilient flap to disengage from said stopper dents when

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said slider knob is located at the backward movement position.

4,794,694
BROAD PUTTY KNIFE WITH SNAP-ON TANG
Podlesny B. Daniel, 1050 George St., New Brunswick, N.J. 08901; Ralph Lopez, 219 Brookside Ave., Irvington, N.J. 07111, and Kurt Waldner, 219 Gates Ave., Gillette, N.J. 07933

Filed Feb. 1, 1988, Ser. No. 150,831
Int. Cl.[4] B26B *3/00*
U.S. Cl. 30—169 **7 Claims**



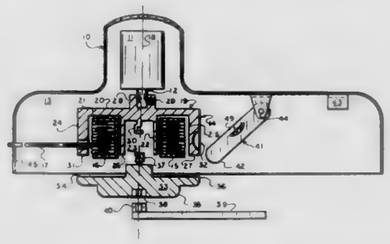
1. A knife comprising:
a blade;
a tang;
means for affixing said tang to said blade;
a first handle half;
a second handle half;
means for mating said first and second handle halves together upon said tang;
said means for affixing including first means for preventing relative translation between said blade and said tang, and second means for preventing relative rotation between said blade and said tang; and
said means for affixing including means permitting at least one of said first and second means to snap into engagement with each other.

7. A knife comprising:
a blade;
a tang affixed to said blade;
first and second handle halves;
first and second butterfly clips spaced apart on said blade;
said first butterfly clip having first and second wings deformed out of the plane of said blade in a direction of a plane of said tang;
said second butterfly clip having third and fourth wings deformed out of the plane of said blade in a direction of a plane of said tang;
at least one web in said first handle half;
said first and second butterfly clips being capable of clamping onto said at least one web;
first and second edges of said tang passing between said first and third wings; and
said first and third wings being spaced to contact said first and second edges, whereby transverse engagement between said tang and said blade is attained.

4,794,695
EASY LOADING HERBAGE TRIMMER
Hubert L. Hurst, 6908 Greenway Dr. N., Mobile, Ala. 36608-4215

Filed Jan. 4, 1988, Ser. No. 140,497
Int. Cl.[4] A01G *3/06*
U.S. Cl. 30—276 **2 Claims**

1. In a rotary cord herbage trimmer comprising a head member having a housing which defines a downwardly opening enclosure, a motor mounted adjacent the upper extremity of the housing, and a drive spindle emergent from said motor and directed downwardly into said enclosure, the improvement comprising:
(a) a spool-accommodating receptacle symmetrically configured about a center axis of rotation and comprised of a circular cylindrical inner sidewall axially centered upon said axis and defining a central space, a circular cylindrical outer sidewall coaxially aligned with said inner sidewall and defining therewith an annular space adapted to confine a cord-carrying spool, a top portion having an upper surface, and a lower surface from which said sidewalls are perpendicularly emergent, said sidewalls terminating in circular perimeter edges lying in substantially coplanar disposition, first coupling means disposed within said central space, a channel penetrating said outer sidewall in a direction substantially perpendicular to said axis, a recess located in said outer sidewall and elongated in a direction parallel to said axis, and means associated with said upper surface for attaching the receptacle to said spindle in coaxial alignment therewith and within said enclosure,



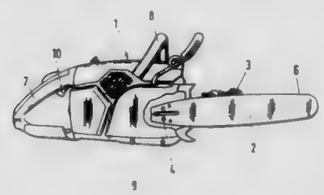
(b) a closure member symmetrically configured about a center axis, having a bottom surface, and a top surface laterally bounded by a circular periphery having a diameter substantially equal to the diameter of said outer sidewall, second coupling means associated with said top surface and configured to rotationally engage said first coupling means, causing said closure member to interlock with said receptacle in coaxial alignment with said axis of rotation while rendering said spool immobile with respect to said receptacle, and means associated with said bottom surface to facilitate manual rotation of said closure member with respect to said receptacle to achieve said interlocking, and
(c) holding means pivotably attached to said housing and adapted to releasibly engage said recess for the purpose of preventing rotation of said receptacle while said closure member is manually rotated to achieve or release said interlocking.

4,794,696
GUIDE BAR FOR A MOTOR-DRIVEN CHAIN SAW
Norbert Apfel; Hans-Peter Stehle, both of Waiblingen, and Ralf-Rainer Kemmler, Althütte, all of Fed. Rep. of Germany, assignors to Stihl Andreas, Waiblingen, Fed. Rep. of Germany

Filed Apr. 9, 1987, Ser. No. 36,348
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, 3612024
Int. Cl.[4] B27B *17/02*
U.S. Cl. 30—387 **10 Claims**

1. A guide bar for guiding the saw chain of a chain saw comprising:
a main member having two flat sides and an outer peripheral edge region defining a guide groove for guiding the saw chain in its movement around the guide bar;
said main member having a predetermined thickness between said flat sides and having a clear-through opening

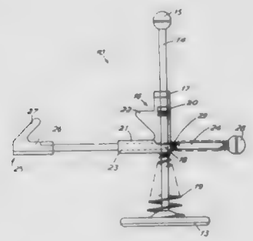
formed therein; said main member having an inner peripheral edge defining said opening;
two cover plates for covering respective ones of said flat sides so as to be mutually adjacent and said cover plates having a combined thickness less than said predetermined thickness; and,



protrusion means formed on said inner peripheral edge to define first and second seating means for receiving respective ones of said cover plates thereon, said first and second seating means being recessed relative to corresponding ones of said flat sides so as to cause the flat outer sides of said plates to be flush with corresponding ones of said flat sides of said main member to conjointly define a hollow space therebetween.

4,794,697
VOID/LIFT METER
Andrew S. Carey-Yard, Surrey, England, assignor to Kango Wolf Power Tools Limited, London, England

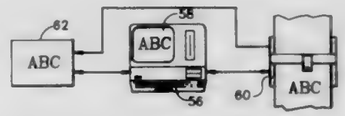
Filed Sep. 9, 1987, Ser. No. 94,590
Claims priority, application United Kingdom, Sep. 10, 1986, 8621826
Int. Cl.[4] G01B *5/18*
U.S. Cl. 33—1 Q **10 Claims**



1. A void/lift meter for determining the void beneath a sleeper supporting a rail comprising a substantially vertical shaft extending from a base member characterized in that there is provided an arm for extending under the rail said arm being adapted for releasable attachment to the rail and being mounted on a bracket disposed on said shaft for movement lengthwise thereof, which bracket has an upper portion and a lower portion spaced below said upper portion, and a slider member slidably mounted on the shaft between said two portions, which slider member is self retaining due to friction in any position along the length of the shaft, said upper and lower portions being adapted and arranged to engage the slider member from above and below respectively, said bracket being capable of lost motion with respect to the slider member and said two portions being spaced apart so that the sum of the lengths of shaft exposed between said two portions and the slider member has a predetermined value.

4,794,698
GRAPHICS CUTTING SYSTEM AND METHOD FOR SHEET MATERIALS
James M. Fassett, II, 7835 Quebrada Cir., Carlsbad, Calif. 92008

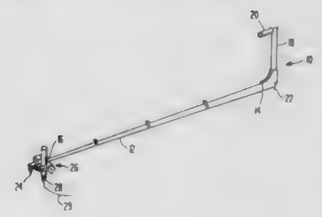
Filed Dec. 18, 1986, Ser. No. 943,170
Int. Cl.[4] B26D *3/08*
U.S. Cl. 33—18.1 **12 Claims**



8. A pattern cutting system for cutting selected patterns in sheet material, said system comprising:
a microprocessor having graphics capabilities;
graphics program means for said microprocessor;
input means for inputting a selected pattern into said microprocessor;
a graphics plotter connected to said microprocessor and including means for generating selected graphic patterns on sheet material therein;
cutting means comprising a holder having a generally cylindrical configuration with an axial bore for mounting on said plotter for cutting said sheet material in said graphic patterns;
an elongated shaft adjustably mounted in said axial bore for positioning in selected fixed positions in said bore;
an omni-directional cutting tip having a generally conical configuration mounted on an end of said shaft, said cutting tip means has an angle of between about thirty and forty-five degrees; and
said cutting tip means has an angle of between about thirty and one-hundred twenty degrees.

4,794,699
MARKER HOLDING DEVICE FOR AN ICE SCRIBE
Nicolas A. Perna, 13976 New Braddock Rd., Centreville, Va. 22020

Continuation of Ser. No. 27,460, Mar. 18, 1987, Pat. No. 4,744,149. This application Apr. 11, 1988, Ser. No. 179,993
Int. Cl.[4] B43L *9/04*
U.S. Cl. 33—27.03 **11 Claims**

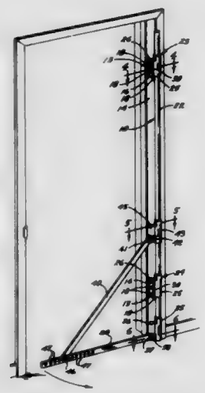


1. An ice scribe with an adjustable marker holding device comprising:
an ice scribe including a horizontally disposed shaft;
scribe tip means disposed at a first end of said shaft to scribe a mark on an ice surface;
pivotable means disposed at said first end of said shaft for removably receiving an ink type marker; and,
means to fix the position of said pivotable means in at least a first and a second position wherein a marking tip on a received marker will be positioned up and away from an ice surface to be scribed in said first position when the scribe is positioned for use, and, in said second position, a

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tip on a received marker will be positioned downwardly from the scribe shaft so that it will contact the ice when the scribe is positioned for use.

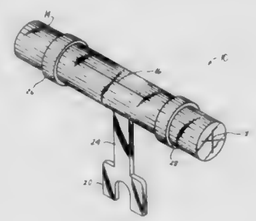
4,794,700
CAGE FOR MARKING THE BOTTOMS OF DOORS PREPARATORY TO CUTTING THE SAME
Donald E. Kessel, 620 N. Brinton Ave., Dixon, Ill. 61021
Filed Sep. 17, 1987, Ser. No. 97,675
Int. Cl.[4] G01B *3/14*
U.S. Cl. 33—194 **8 Claims**



1. A marking gage for facilitating the cutting of a hinged door to a predetermined length, said gage comprising an elongated rod, a fixturing member supported by said rod, said fixturing member having a generally cylindrical part assimilating a pivot connection of a door hinge, an elongated marking guide supported by said rod in spaced relation from said fixturing member and extending generally perpendicular to said rod, means for enabling selective adjustment of the spacing between said fixturing member and said marking guide and for releasably locking said fixturing member and said marking guide in predetermined spaced relation following such adjustment, means supporting said marking guide for up and down pivoting relative to said rod about a generally horizontal axis and in a plane containing the rod and means for releasably locking said guide in any of several selected pivoted positions in said plane.

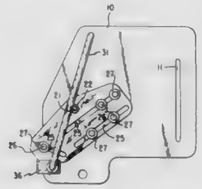
4,794,701
LEVEL DEVICE FOR A CHAINSAW
Kevin J. Clark, P.O. Box 1038, Harts Village Rd., Millbrook, N.Y. 12545
Filed Dec. 30, 1987, Ser. No. 139,818
Int. Cl.[4] G01C *9/28*
U.S. Cl. 33—334 **2 Claims**

1. A new and improved level device for attachment to a threaded fastener on a housing of a chainsaw, comprising:
a closed hollow cylindrical tube formed from a transparent plastic material and having flat, circular opposite end faces connected by a cylindrical sidewall;
alignment indicia on each of said opposite end faces and on said cylindrical side wall of said tube;
each of said alignment indicia comprising perpendicular intersecting lines;
an aluminum mounting bracket on said tube for attaching said tube to a chainsaw;
said mounting bracket comprising a pair of spaced cylindrical rings frictionally engaged around said tube;
a connecting strut extending between said rings;
a mounting standard transversely connected to said connecting strut at a point equidistant from each of said rings;
a slotted prong formed at a free end of said standard for engagement with a threaded fastener on a housing of said chainsaw;



said tube divided into three fluid compartments by two spaced partitioned walls extending transversely to a longitudinal axis of said tube; and,
each of said compartments being filled with a colored fluid containing a trapped air bubble.

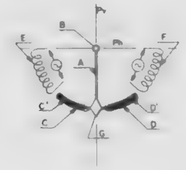
4,794,702
COMBINATION BOW SIGHT
Paul D. Martin, 1216 Eighth St. SW, Mason City, Iowa 50401
Filed Jan. 11, 1988, Ser. No. 142,783
Int. Cl.[4] F41G *1/46*
U.S. Cl. 33—265 **3 Claims**



1. For attachment to a bow, a bow sight comprising mounting means adapted to be attached to said bow, an axle threadably mounted relative to said mounting means, sight plate means pivotally mounted on said axle, said threadable mounting being adjustable relative to said mounting means whereby the distance between said mounting means and said sight plate can be threadably adjusted, sighting points mounted on said sight plate, guard means fastened to said mounting means and extending over said sighting points, said sight plate being engageable with said guard means and clamping means on said guard means adapted to engage said sight plate to hold said sight plate in fixed position relative to said mounting means.

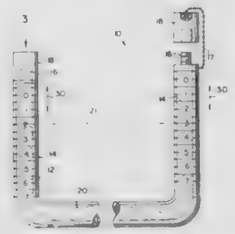
4,794,703
NAVIGATIONAL INSTRUMENT FOR CONTROLLING THE STABILITY OF A MOBILE DEVICE
Jean-Louis Siband, 12 Place Charles de Gaulle, 86000-Poitiers, France
Filed Feb. 20, 1987, Ser. No. 16,735
Claims priority, application France, Feb. 20, 1986, 86 02469
Int. Cl.[4] G01C *9/06*
U.S. Cl. 33—366 **6 Claims**

1. A navigational instrument for automatically controlling stability of a mobile device moving in a medium subject to gravity, or locating the position of the mobile device with respect to at least one reference plane, said navigational instrument comprising:
a moving part having a base weighted to form an anchor and an opposite end pivotally mounted about an axis, an arm extending from each side of said moving part, each arm being provided with an electrically conductive solenoid first winding having a first diameter,
a fixed part secured to said reference plane and including an element arranged on each side of said moving part, each element having an electrically conductive solenoid second winding having a second diameter and connected to AC current source, each second winding overlapping at least a portion of a corresponding one of the first windings



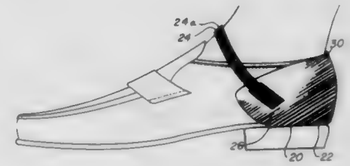
upon movement of the moving part relative to the fixed part for selectively directly inducing current in a corresponding one of the first windings on a corresponding one the arms of said moving part; and
said moving part having a rest position which permits a preset threshold of induced current in one of the first windings, and a tilted position in which a tilt angle is defined between said moving part and said reference plane, said tilt angle being proportional to the change in the current induced between the first and second windings relative to the preset threshold of current.

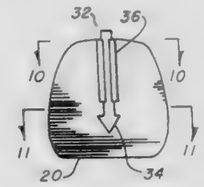
4,794,704
HEIGHT LEVEL MEASURING DEVICE
Loreto Calcagni, 1094 Ferngate Dr., Franklin Square, N.Y. 11010, and Daniel Joyce, 28 Ross Rd., Babylon, N.Y. 11702
Filed Dec. 14, 1987, Ser. No. 132,593
Int. Cl.[4] G01C *5/04*
U.S. Cl. 33—367 **4 Claims**



1. A height level measuring device which comprises:
(a) an elongated transparent flexible hollow tube having an opening at each end;
(b) a pair of matching scales, each disposed onto said tube near one end thereof;
(c) a predetermined amount of liquid placed within said tube so that because the law of physics said liquid will seek same height level at both ends of said tube no matter what height the ends are raised to thus allowing height of two objects to be vertically measured by said scales with respect to said liquid when there is an obstacle between the two objects;
(d) a pair of male couplings, each affixed to one end of said tube; and
(e) a pair of flexible air valves having mating flap members, each of said air valves removably disposed onto one of said male couplings to be manually squeezed between two fingers so that the flap members of said air valve will open to allow air to enter said tube to level out said liquid therein.

4,794,705
HEEL PROTECTOR FOR MEANS SHOES
Clarence C. Sanders, P.O. Box 84127, Los Angeles, Calif. 90073
Filed Oct. 8, 1987, Ser. No. 105,821
Int. Cl.[4] A43B *13/22*
U.S. Cl. 36—72 B **1 Claim**





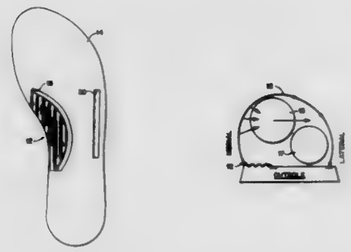
1. A heel protector for men's shoes used while driving a motor vehicle comprising:
(a) a body in generally a U-shape having a front and a rear portion, with a top and bottom composed of a relatively resilient material characterized by a shape conforming to a man's shoes in the area of the upper heel and counter, said body juxtapositioned thereupon creating a shield protecting the shoe from wear and scuffing when resting upon a vehicle floorboard;
(b) a penetrating lip integral with said body on the bottom converging inwardly creating a shelf configured in such a manner as to rest within the space between the heel and counter of a man's shoe, such that a gripping surface created holding the protector in place resisting movement in a vertical direction when the protector ismounted on a shoe; and
(c) a tab affixed to the upper portion of said body and cofigured in such a manner as to be folded downward to define a hook over the counter of one's shoe when worn, said tab is comprised of a sliding hook tab having a rigid hook member in an inverted J-shape with an elongate opposed end, and a resilient slide track permanently affixed to the body, where hook member is moveably retained within the slide track and the track has sufficient resiliency to hold the hook member in place by friction, creating an adjustable retaining member to assure attachment of the heel protector to the wearer's shoe.

4,794,706
DYNAMIC TRANSVERSE GIRTH
John H. Puckhaber, Green Brook; Kenneth W. Misevich, Piscataway, and Thomas E. Mintel, Somerset, all of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.
Filed Aug. 3, 1987, Ser. No. 80,950
Int. Cl.[4] A43B *07/14*
U.S. Cl. 36—91 **28 Claims**

1. A shoe construction for providing girthing support to the

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midfoot region of the foot wherein said midfoot region includes that portion of the foot posterior to the first metatarsal head and anterior to the calcaneus, comprising: a shoe member having a medial side and a lateral side; at least one girthing strap for securing the foot to said shoe member, said girthing strap having an effective length along the longitudinal axis



thereof and being attached to said shoe member at a position below the midfoot region of the foot; and means for providing an undulating surface for engagement by said strap so that said strap is forced to conform to the undulating surface upon loading of the midfoot region of the foot, whereby the effective length of said girthing strap is reduced.

4,794,707

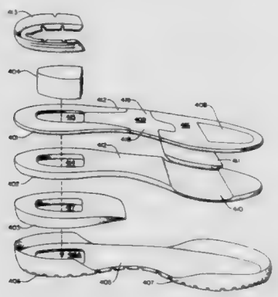
SHOE WITH INTERNAL DYNAMIC ROCKER ELEMENT

Craig A. Franklin, Lynn; Raj M. Parracho, Peabody; Lloyd S. Smith, Newton Center; Richard P. Bunch, Reading; Jack A. Boys, II, Haverhill; Alexander L. Gross, Boston, and Robert W. Pagnino, Methuen, all of Mass., assignors to Converse Inc., North Reading, Mass.

Continuation-in-part of Ser. No. 879,897, Jun. 30, 1986. This application Jun. 30, 1987, Ser. No. 68,903

Int. Cl.[4] A43B *13/12, 13/18, 13/00*

U.S. Cl. 36—107 **12 Claims**



1. A shoe comprising:

(i) a substantially planar outsole including a sole portion and a heel portion;

(ii) a flexible midsole attached to the top of the outsole, and having a forefoot area; and

(iii) an internal rocker element disposed in the forefoot area of the midsole, the internal rocker element having a substantially planar upper surface and a convexly curved lower surface disposed so as to form a geometrical solid and fabricated out of a material which renders the internal rocker element less flexible and substantially more rigid than adjacent portions of the midsole, so as to assist in thrusting the forefoot downward and the heel upward in the course of the wearer's gait, when the region of the shoe portion proximate to such element is in contact with the ground.

4,794,708

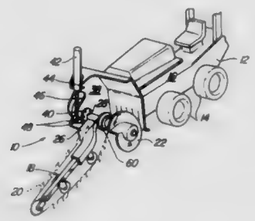
TRENCHING MACHINE BOOM ASSEMBLY

Philip W. Schroeder, Derby; Marvin L. Morris, Wichita, and Stephen A. Youngers, Clearwater, all of Kans., assignors to J. I. Case Company, Racine, Wis.

Filed Feb. 11, 1988, Ser. No. 154,704

Int. Cl.[4] E02F *5/06*

U.S. Cl. 37—86 **1 Claim**



1. In a trenching machine having a frame and including a digging boom and a digging chain rotatably mounted on said boom, the improvement comprising;

a boom pivot means rigidly mounted to said trencher frame, means for pivotally mounting a boom attaching means to said boom pivot means, said boom connected to said boom attaching means, lift means connected between said frame and boom attaching means for lifting and lowering said boom on said boom pivot means, motor means mounted to one end of said boom pivot means and a gear assembly mounted to the opposite end of said boom pivot means, drive means connecting said motor means to said gear assembly, said boom attaching means pivotally mounted on said boom pivot means between said motor means and said gear assembly, and said boom attaching means being removable from said boom pivot means to permit access to said pivotal mounted means, and said boom attaching means pivotally mounted on said boom pivot means to prevent the transfer of torque reactions from said motor means and gear assembly to said lift means

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4,794,709

DEVICE FOR DIGGING TRENCHES

Daniel Rivard, Daumeray, France, assignor to ETS. Rivard S. A., Daumeray, France

Filed Jul. 15, 1987, Ser. No. 73,716

Claims priority, application France, Oct. 8, 1986, 86 14021

Int. Cl.[4] E02F *5/08*

U.S. Cl. 37—94 **9 Claims**

1. A device for digging trenches, comprising:

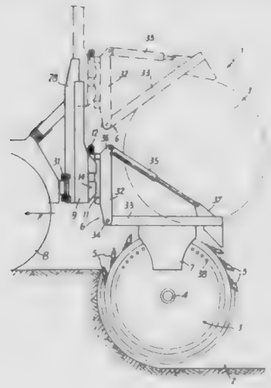
a vehicle,

at least one digging wheel, rotating in a wheel framework,

an erected, non-tiltable mast assembly, supported by said vehicle and supporting said wheel framework by means of a mobile carriage, for lowering or raising said digging wheel,

first means for causing said wheel framework to pivot in a limited way about a first pivoting axis orthogonal to the plane defined by the direction of movement of the vehicle and the axis of rotation of said wheel, and

second means capable of causing said wheel framework to pivot in a limited way about a second pivoting axis orthogonal to the plane defined by said first pivoting axis and an axis parallel to the rotational axis of the wheel said



wheel framework being connected to said carriage by an intermediate piece hinged, on the one hand, to said wheel framework about said first pivoting axis and fixed, on the other hand, with respect to said carriage, about said second pivoting axis.

4,794,710

SNOWPLOW BLADE WITH SPRING-LOADED EDGE FLAPS

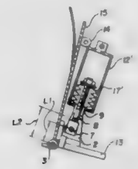
Theodor Häring, Industriestrasse 4, 7891 Dettighofen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 621,514, Jun. 18, 1984, Pat. No. 4,635,387. This application Jan. 12, 1987, Ser. No. 2,127

The portion of the term of this patent subsequent to Jan. 13, 2004, has been disclaimed.

Int. Cl.[4] E01H *5/04*

U.S. Cl. 37—232 **5 Claims**



1. A snowplow comprising a blade having a face and a bottom, a spring flap at the bottom of said blade having a pivot with an axis disposed in approximately the face of the said blade, a wear bar depending from said spring flap and retained in a working position by a pretensioned compressible reset spring included within a housing, said housing being displaceable with respect to said blade, and means interconnecting said spring flap and said reset spring responsive to the pivoting of said spring flap to simultaneously compress said reset spring and displace said spring housing;

characterized in that a tappet (**11'**) for said reset spring (**17'**) has a pivot position (**7**) which has a shorter length with respect to said hinge (**3**) that the length to the pivot position (**8**) of a support (**9**) for said spring housing (**12'**).

4,794,711

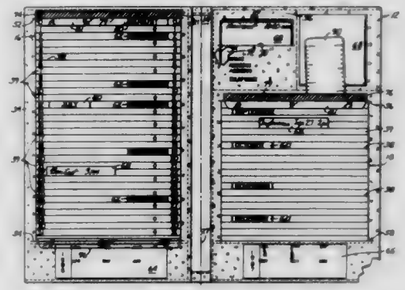
PERPETUAL ENGAGEMENT CALENDER AND WALLET

Richard A. Christensen, 828 Spring St. NE., Minneapolis, Minn. 55413

Filed Nov. 6, 1987, Ser. No. 117,301

Int. Cl.[4] G09D *3/02*

U.S. Cl. 40—122 **14 Claims**



1. A perpetual engagement calendar for use with a calendar system which divides years into months, months into days, and weeks into days, the calendar including:

(a) a daily calendar first panel including a day pocket for at least each day in the longest month of a year, one such day pocket being visually associated with each day within a month by the presence of indicia adjacent to said day pockets, said pockets being assembled in serial relation running from the first day of the month to the last day of the month;

(b) a plurality of memo cards, each of configuration to fit within any day pocket, said cards being adapted to receive, and retain and display information identifying an engagement scheduled for a particular day in a particular month;

(c) a plurality of month indicating cards, each carrying indicia identifying a particular month and each such month card being of configuration to fit adjacent to day pocket indicia so as to display the month identifying indicia; and

(d) a plurality of week-indicating cards carrying indicia for visually distinguishing a particular day of the week in one month from the same day of the week in an immediately preceding or succeeding month and each such week-indicating card being of configuration to fit adjacent to day pocket indicia so as to display said week-indicating card indicia.

4,794,712

PORTABLE DISPLAY DEVICE

Donald L. Wood, Riverview, Fla., assignor to Showboard, Inc., Tampa, Fla.

Continuation of Ser. No. 800,663, Nov. 12, 1985, abandoned. This application Nov. 10, 1987, Ser. No. 118,980

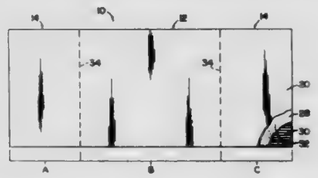
Int. Cl.[4] G09F *7/00*

U.S. Cl. 40—605 **2 Claims**

1. A portable display device for displaying educational or informational material comprising a plurality of panels including a center panel having a side panel hingedly attached to opposite ends thereof, each said panel separated from the next adjacent panel by a score line to permit relative movement between adjacent panels, each said panel comprises a first and second corrugated substantially parallel rigid section separated by a substantially rigid member, each said first and second corrugated substantially parallel rigid section comprises an outer rigid surface and an inner corrugated portion, each said score line extends through said outer rigid surface of said second corrugated rigid section and both said inner corrugated

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portions whereby said outer substantially rigid surface of said first corrugated rigid section forms a hinge between said adjacent panels along said score lines, said outer substantially rigid surface of said first corrugated rigid section forming a display surface, each said inner corrugated portions comprises a plurality of ridges, the longitudinal centerline of said plurality of ridges being inclined relative to the longitudinal centerline of each said score line, the width of each said side panel being less than one-half the width of said center panel to permit folding



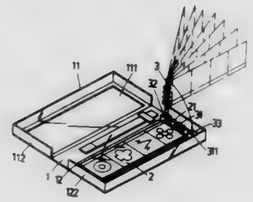
of said side panels in substantially coplanar relationship relative to each other and in substantially parallel relationship to said center panel such that said adjacent panels may be folded relative to each other for storage and transport and the width of said side panels is between one-eighth to one-third the height of said portable display device to provide stability when said panels are extended from said parallel, coplanar relationship selectively from 0 degrees to 90 degrees relative to said adjacent panel for display.

4,794,713

COMBINATION OF ALBUM AND PICTURE FRAME

Ming F. Yang, 4, Alley 15, Lane 526, Section 2, Chung-Shan Road, Chung-Ho, Taipei Hsien, Taiwan

Filed Aug. 5, 1987, Ser. No. 81,775
Int. Cl.[4] A47G *1/06*; G09F *1/12*
U.S. Cl. 40—152.1 2 Claims



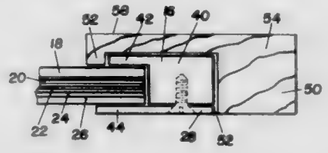
1. A combination album and picture frame comprising:
a rear wall having end and side walls;
a front wall having a transparent window therein, said front wall having end and side walls, and being pivotable over said rear wall for forming a case defining an interior space;
a socket joint connected to said rear wall in said case;
a column having a ball end pivotally mounted in said socket joint, said column having an opposite end;
a support connected to said rear wall in said case and spaced away from said socket joint, said column being pivotally connected to said socket joint for movement between a first position with said opposite end of said column engaged with said support and said column extending between said socket joint and said support, and a second position extending away from said rear wall with said front wall pivoted away from said rear wall to open said case;
a plurality of loose-leaves, each for receiving at least one picture and being of a size so as to fit within said case; and
a plurality of wire rings binding said plurality of loose-leaves together, said wire rings being engaged onto said column with said column in its first and second positions, whereby with said column in its first position, said plurality of loose-leaves lie flat inside said case with one of said loose-leaves being uppermost and being visible through said window and with said column in its second position, said loose-leaves being pivotable about said wire rings and said column for changing the uppermost loose-leaf.

4,794,714

FRAME ASSEMBLY FOR A DISPLAY ITEM

Robert G. Weingerber, R.D. #6, Box 2732, Mount Pleasant, Pa. 15666

Filed Mar. 7, 1985, Ser. No. 709,384
Int. Cl.[4] G09F *1/12*
U.S. Cl. 40—152 2 Claims



1. A frame assembly for displaying an item, such as a picture, photograph or the like, comprising:
a frame structure having window means for displacing said item, and
at least one integral frame unit containing said displayed item and having a window cooperating with said window means on said frame structure for said displaying of said item, and further constructed and arranged in a manner to be received by and carried as a unit by said frame structure,
said frame unit comprising ledge means arranged substantially around an inner peripheral surface encircling said displayed item,
wherein said frame unit comprises several layers of material including a relatively flat transparent layer protecting said displayed item and having another surface area adjacent said ledge means of said frame unit,
said frame structure comprising lip means constructed and arranged in a manner to substantially encase said ledge means of said frame unit and to limit the movement of said frame unit when inserted into and carried by said frame structure,
wherein said lip means of said frame structure forms an "L" configuration with surfaces running inwardly toward and parallel to said surface of said transparent layer and said ledge means of said frame unit.

4,794,715

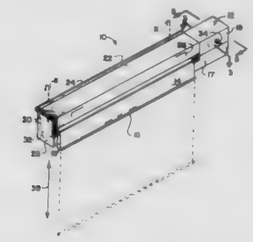
MOTOR-DRIVEN MAP HOLDER

Charles Cherwin, 1027 Leneve Pl., El Cerrito, Calif. 94530

Filed Feb. 26, 1985, Ser. No. 705,673
Int. Cl.[4] G09F *11/18*
U.S. Cl. 40—514 6 Claims

1. A self-contained motor-driven housing for mounting and rotating a map or other sheet-like article, comprising:
a roller for mounting the article;
a substantially enclosed housing supporting the roller within the housing for rotation about the longitudinal axis thereof, said housing having an axial opening for permitting unwinding and rewinding of the article therethrough; and

a motor, powered by use of a battery mounted within the housing and being operatively coupled to the roller for



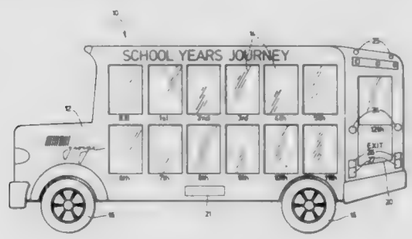
reversibly rotating the roller about said longitudinal axis to wind and unwind the article.

4,794,716

DISPLAY MOUNT DEVICE

Max A. George, and Janet L. George, both of 1615 E. Sycamore, Kokomo, Ind. 46901

Filed Apr. 10, 1987, Ser. No. 36,993
Int. Cl.[4] B44C *5/02*
U.S. Cl. 40—158.1 4 Claims



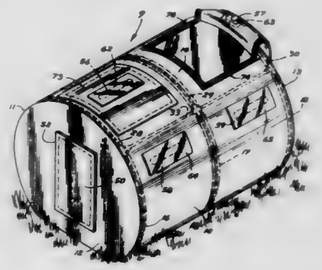
1. A display mount device, comprising:
a pair of body members connected by connection means and providing an outer panel and an inner panel, at least one of the panels being shaped and presented so as to provide a charactery of a school bus,
the connection of the panels providing a connection means permitting them to be moved into and between an assembled or display condition in which they are juxtaposed, and an open or access condition in which they are separate for manual access to the inner face of the inner panel,
the outer panel being provided with a series of openings resembling windows of the school bus, through which pictures carried on the inner face of the inner panel show through,
a transparent sheet body means carried between the outer panel and the inner panel, providing, as viewed from outwardly of the outer panel, what appears to be window glass for all the openings,
the inner face of the inner panel being provided with locators which respectively are in registry with the openings of the outer panel when the panels are in their assembled or display condition,
the arrangement providing that when a series of photographs are mounted onto the inner face of the inner panel, in locations as indicated by the locators, and the panels are moved to their assembled or display condition, whatever are the pictures then so mounted will appear as respectively visible through what appear to be glass windows of the school bus, the relative movability of the panels providing that they may be readily moved to open or access condition from time to time, to mount, sequentially, individual ones of a series of photographs of a child as the child matures.

4,794,717

HUNTING BLIND STRUCTURE

Edward O. Horsmann, 608 1st Ave. NW., Grand Rapids, Minn. 55744

Filed Feb. 22, 1988, Ser. No. 158,725
Int. Cl.[4] A01M *31/02*
U.S. Cl. 43—1 2 Claims



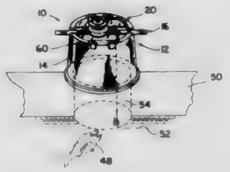
1. A game bird hunting blind, having in combination
a shell of flexible material colored and sized to simulate a bale of hay,
said shell having side and end walls and a top wall,
spaced sleeves formed on the inner wall surface of said shell transversely thereof,
rods removably disposed into said sleeves providing a supporting frame for said shell,
a plurality of spaced game sighting openings in said walls of said shell, and
removably secured flaps overlying said openings.

4,794,718

ICE FISHING ASSEMBLY

Duane E. Tillman, P.O. Box 51, Three Lakes, Wis. 54562

Filed Mar. 30, 1988, Ser. No. 175,327
Int. Cl.[4] A01K *97/01*
U.S. Cl. 43—4 18 Claims



1. Ice fishing assembly for retarding the freezing of ice in a fishing hole while simultaneously allowing the hole to be fished comprising, in combination, a substantially frusto-conical ring member having upper and lower peripheral edges, displaceably connected substantial semi-circular sections on said upper edge, said sections provided with an arcuate edge joined by a transverse edge, a fishing rod assembly displaceably insertable between said transverse edges, said ring member adapted to be disposed around an ice fishing hole with said lower edge in contact with the ice surface and said upper edge in contact with the atmosphere.

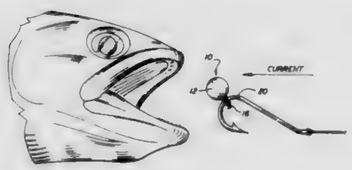
VOL 1098 ISS 1 JA 3 1989 UMI

4,794,719
FISHING ROD ALARM DEVICE
Villarosal A. Rabino, 3015 Harrison St., San Francisco, Calif. 94110
Filed Apr. 11, 1988, Ser. No. 179,713
Int. Cl.[4] A01K *97/12*
U.S. Cl. 43—17 5 Claims



1. A fishing alarm, for use with a fishing rod and reel combination of the type having a reel holding a supply of line, a rod and a guide mounted to the rod for guiding the line along a taut line path from the reel to a position on the rod, the alarm comprising:
a case mountable to the rod adjacent the line path;
an alarm circuit mounted to the case, the alarm circuit including a source of electricity, a signal element and first and second signal contacts movable along a contact path between open and closed conditions;
means for biasing the signal contacts towards one another to a closed condition so to complete the alarm circuit when in the closed condition;
the first signal contact including a recessed contact element and a support surface laterally adjacent the recessed contact element but spaced apart along the contact path from the recessed contact element towards the second signal contact;
the second signal contact including a protruding contact element sized and positioned for engagement with the recessed contact element when in the closed condition;
the second signal contact and the support surface configured and positioned to engage a portion of the line which is laterally deflected from the taut line path into the contact path so to prevent the recessed and protruding contact elements from touching one another; and
the biasing means sized to permit the line portion to return to the line path when the tension on the line exceeds a chosen level so to allow the recessed and protruding contact elements to touch one another to complete said alarm circuit causing the signal element to alert the user.

4,794,720
INFLATED ARTIFICIAL FISH BAITS AND METHODS OF FABRICATION
Frank V. Robertaccio, Box 4, Dutch Hill Rd., Forestport, N.Y. 13338
Filed Mar. 25, 1988, Ser. No. 173,568
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42 27 Claims



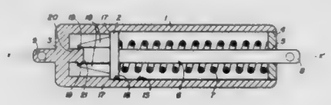
1. An artificial fish bait comprising:
a. a body portion of elastomeric material;
b. a pressurized fluid within said body portion;
c. an end portion closing said body portion and essentially preventing escape therefrom of said pressurized fluid; and
d. means attaching said artificial bait to an end portion of terminal fishing tackle.

4,794,721
FISHING LURE ATTACHMENT
Robert R. Rowe, Jr., and Sherry Rowe, both of 3668 Moorland Ave., Santa Rosa, Calif. 95407
Filed Aug. 21, 1987, Ser. No. 88,399
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.14 3 Claims



1. A fishing lure attachment comprising:
a semi-rigid one piece central segment portion having a first end and a second end, said first end conditioned for releasable engagement to a fishing line, and said second end conditioned for releasable engagement to a fishing hook;
a plurality of independent central light-reflecting spinner members colinearly spaced along the length of said central segment portion;
a pair of opposed arm portions secured to said central segment portion first end, said arm portions being coplanar with said cer. al segment portion and with each other, and projecting outwards from said central segment portion first end at an acute angle towards said second end, said arm portions each having a remote end; and
an offset light-reflecting spinner member attached to each of said arm portion remote ends; wherein when said first end is attached to a fishing line, said second end is attached to a fishing hook, and said attachment is pulled through the water, said spinner members collectively define a planar body of spaced, light-reflecting surfaces, generally wider proximate said first end than said second end.

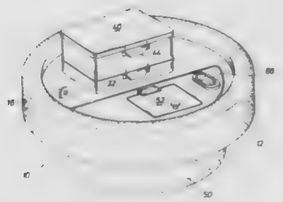
4,794,722
FISHING DEVICE
Rene Crevoisier, 2714 Les Genevez, Switzerland
Filed Apr. 6, 1988, Ser. No. 178,138
Claims priority, application Switzerland, Apr. 8, 1987, 1345/87
Int. Cl.[4] A01K *91/00*
U.S. Cl. 43—42.72 11 Claims



1. A fishing device which comprises:
a first body having first means for securing one end of a first portion of a line having two portions;

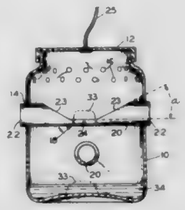
a second body having second means for securing one end of the second of said two line portions, the other end of one line portion carrying a hook;
guide means enabling the two bodies to move relative to one another;
releasable holding means between the two bodies, exerting on said bodies a retaining force that maintains one body relative to the other body in a set initial position; and
return means between the two bodies exerting on said bodies an elastic return force tending to return the two bodies to their initial position, when they are free to move after having left said initial position under the action of a force exerted on the line greater than the retaining force.

4,794,723
FLOATING BAIT BUCKET
Clande M. Arnold, 11 St. Peter's Walk, Sugarland, Tex. 77479, and Clem H. Cook, 2612 Eastgrove La., Houston, Tex. 77027
Filed Jul. 13, 1987, Ser. No. 72,632
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—55 3 Claims



1. A floatable bait bucket comprising:
(a) a surrounding outer ring of foamed material floatable on water;
(b) a circular deck member within said outer ring providing an exposed surface;
(c) a bait bucket supported within said ring by said deck member wherein said bait bucket has
(1) a downwardly extending encircling wall closed by a transverse bottom portion for containing live bait;
(2) a lid over said bait bucket wherein said lid is hingedly mounted enabling said lid to open and close to permit access to the interior of said bait bucket;
(3) perforations in said wall to interchange water for keeping the bait alive wherein said bait bucket extends below said deck member and into water supporting the floating bait bucket;
(d) fishing tackle storage means supported by said deck member for receiving and storing fishing tackle therein, whreein said storage means also includes
(1) a closable tackle lid thereover hingedly mounted for opening to expose fishing tackle within said storage means; and
(2) latch means for securing said tackle lid, and wherein said latch means permits unlatched opening and latched closure;
(e) a closed thermal insulated chamber means supported by said deck member wherein said chamber means extends below said deck member for receiving hot or cold materials therein and wherein said chamber means is formed by a wall and transverse bottom portion formed of heat insulated material;
(f) a lid over said insulated chamber means wherein said lid is measured along a hinge at the edge of said lid and said lid is formed of thermal insulated material;
(g) a supportive frame member connecting from said deck member to said bait bucket for holding said bait bucket in alignment wherein the bottom portion of said bait bucket is held below water and said bait bucket stands upright relative to said deck member;
(h) upstanding connective tabs suitable for anchoring lines thereto for convenience of the fisherman wherein said tabs extend from said deck member, and said tabs enable anchoring lines to be connected thereto to assure that the floatable bait bucket does not float away from a fisherman using the floatable bait bucket;
(i) an upstanding open ended receptacle in said deck member and extending downwardly therebelow and having a open upper end for receiving the handle end of a fishing rod or pole to support without the use of hands such a rod or pole to enable a fisherman to have both hands free;
(j) wherein said outer ring is formed of closed cell foam material having a density sufficiently light to float the bait bucket on a water surface and wherein the water level causes water to enter said bait bucket through said perforations and said bait bucket floats at a level in the water determined by said ring; and
(k) wherein said deck member is plastic and terminates at a circular surrounding downwardly extending skirt thereabout and said skirt has a conforming face for contacting against said ring and conforming thereagainst wherein the ring is joined to said skirt.

4,794,724
CONTAINMENT TYPE INSECT TRAP
Charles W. Peters, Eugene, Oreg., assignor to Oak Stump Farm, Inc., Eugene, Oreg.
Filed Apr. 27, 1988, Ser. No. 186,917
Int. Cl.[4] A01M *1/10*
U.S. Cl. 43—122 11 Claims



1. An insect trap comprising:
(a) a container having at least one wall opening and providing an insect containment chamber;
(b) insect entry means comprising an entryway segment and a bait tray segment; and
(c) mounting means for mounting the entry means in the opening with its entryway segment communicating with the opening and its bait tray segment projecting inwardly into the interior of the container.

4,794,725
INSECT TRAP
Allen Numerick, 5261 Harvard, Detroit, Mich. 48224
Filed Mar. 28, 1988, Ser. No. 172,756
Int. Cl.[4] A01M *5/08*
U.S. Cl. 43—139 10 Claims

1. An insect trap comprising:
a hollow housing having first and second open ends;
means, mounted within the housing, for generating an airstream through the housing drawing air into the first end and exhausting air from the second end of the housing;
switch means mounted on the housing for energizing the air stream generating means;
a closure member pivotally mounted adjacent the first end of the housing for movement between a first position closing off the first end of the housing to air flow to a second

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position opening the first end of the housing to air flow therepast; and

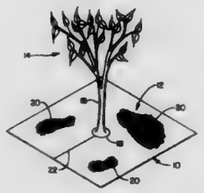


a hollow trap receptacle removably insertable into the housing between the closure member and the airstream generating means; the trap receptacle including a screen for trapping insects drawn into the trap receptacle.

4,794,726
ALUMINUM FLAKE MULCH

Sherwood L. Fawcett; Martha S. Fawcett, both of Columbus, and Donald L. Cullen, Worthington, all of Ohio, assignors to Transmet Corporation, Columbus, Ohio

Filed Sep. 8, 1987, Ser. No. 94,297
Int. Cl.[4] A01G *13/00*; A01C *1/04*
U.S. Cl. 47—9 **15 Claims**



1. A sheet mulch comprising,

fibers bonded together and pressed together to form a thin sheet of finite width and indefinite length, said sheet having an upper surface and a lower surface,

a plurality of aluminum flakes adhered to the fibers of the sheet and oriented to reflect sunlight upward from the upper surface of the sheet, the combination of fibers and flakes providing a rough upper surface to said sheet which will inhibit the passage of crawling plant pests,

said sheet of fibers and flakes having the property of allowing water to penetrate between the fibers from its upper to its lower surface by gravity and allowing only a minimum of sunlight to penetrate from its upper to its lower surface.

4,794,727
WHEEL-ABOUT GREENHOUSE

Kevin J. Smith, 47 Highfields Rd., Abington, Mass. 02351

Filed Jul. 10, 1987, Ser. No. 72,005
Int. Cl.[4] A01G *9/16*; B62B *1/20*
U.S. Cl. 47—17 **7 Claims**

1. A mobile greenhouse comprising,

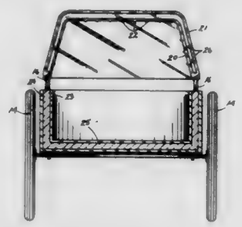
a. a base portion formed with plural double walls defining an insulative barrier between the double walls, and

b. a cover member for overlying securement to said base portion, said cover member formed with plural double walls defining an insulative barrier between the double walls, and

c. wheel means of a first diameter secured to said base portion for mobility of said mobile greenhouse, and

d. handle means including a support portion secured to said base portion for enabling manual motive force to be applied to said mobile greenhouse, and

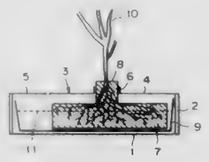
wherein said cover member is formed with a series of individual equally spaced downwardly projecting drip means along an interior surface of said cover member for enhancing condensation of water vapor thereon for equally spaced deposit of condensed water vapor therebelow.



4,794,728
APPARATUS FOR HYDROPONICS

Keiichi Tsukada; Hirotaka Demura, and Tokushi Yamada, all of Sapporo, Japan, assignors to 501 Hokkai Giken Kogyo Ltd., Sapporo, Japan

Filed Jul. 10, 1987, Ser. No. 87,544
Claims priority, application Japan, Mar. 31, 1987, 62-046887[U]
Int. Cl.[4] A01G *31/02*
U.S. Cl. 47—64 **7 Claims**



1. An apparatus for hydroponics comprising

(a) a box made of cardboard comprising a bottom wall, a surrounding wall and a cover, wherein the surrounding wall comprises at least two sheets and a space is formed between the two sheets, and the cover consists of at least two parts which can be separately opened and closed, and at least one of the parts has at least one opening defined within the perimeter of the respective part and extending therethrough;

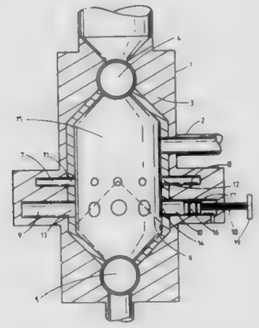
(b) a container made of water-impermeable material contained in the box; and

(c) a porous medium comprising said material for plant culture comprising a shaped culture bed contained in the water-impermeable container and at least one plant support extending from the culture bed, wherein the plant support protrudes through said opening of the cover part of the apparatus, beyond said cover part, and an upper surface of the culture bed and an inner surface of the cover define a space therebetween.

4,794,729
GAS REACTANT RESERVOIRS FOR CYCLIC GAS WITH SOLID REACTORS

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514

Continuation-in-part of Ser. No. 856,808, Apr. 28, 1986, Pat. No. 4,698,069. This application Jul. 16, 1987, Ser. No. 74,155
The portion of the term of this patent subsequent to Oct. 6, 2004, has been disclaimed.
Int. Cl.[4] C10J *3/00, 3/22*
U.S. Cl. 48—61 **5 Claims**



1. In a cyclic gas with solid reaction plant for reacting gases with solid reactants and comprising: at least two reaction chambers; said at least two reaction chambers being connected to one another; at least one of said at least two reaction chambers containing at least one solid reactant; at least one other of said at least two reaction chambers being free of said at least one solid reactant combined; means for cyclically compressing all of said at least two reaction chambers concurrently with at least one reactant gas, followed by concurrently expanding primary product reacted gases, formed by reaction of said at least one solid reactant with said at least one reactant gas, and unreacted gas reactant, said combined means for cyclically compressing and expanding comprising a chamber and means for cyclically varying the volume of said chamber; wherein one of said at least one other of said at least two reaction chambers which are free of said at least one solid reactant comprises said variable volume chamber portion of said combined means for cyclically compressing and expanding;

wherein the improvement comprises including in said cyclic gas with solid reaction plant a reactant gas reservoir system comprising:

at least one reactant gas reservoir;

means for connecting each of said at least one reactant gas reservoir to at least one of said at least two reaction chambers so that at all times each said at least one reactant gas reservoir has an open gas flow connection to at least one of said at least two reaction chambers.

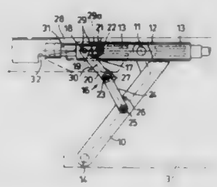
4,794,730
HARDWARE FOR CLOSURE

Karl H. Fischbach, Freudenberg, Fed. Rep. of Germany, assignor to Siegenia-Frank KG, Siegen, Fed. Rep. of Germany

Filed Nov. 10, 1987, Ser. No. 119,144
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1986, 3638356; Dec. 22, 1986, 3643964
Int. Cl.[4] E05D *15/20*
U.S. Cl. 49—130 **11 Claims**

1. Hardware for a movable closure 3 of a window or door, which closure can be locked in a spaced, parallel position and in this position is horizontally shiftable, which closure has lower swing arms 10 and upper swing arms, wherein the swing arms 10 are in each case pivotally connected to the closure, on the one hand, and pivotally connected to a traveling carriage 12 with a releasable locking device 16 for each swing arm 10 when the closure is located in parallel-stop position, which locking device 16 consists of a bell crank 17 mounted in the vicinity of the traveling carriage 12 and the swing arm 10, which locking device can be moved in or out of working connection by means of a control lug 22 engaging an abutment 28 mounted on a stationary frame 1 by the closing slide movement of the closure 3, characterized by the fact that,

the bell crank 17 has two arms and is pivotally mounted on the traveling carriage 12 which carries the control lug 22 at the end of the arm 19 directed toward the stationary frame 1, that the arm 20 directed towards the swing arm 10 is pivotally connected 23 to a connecting rod 24 which is pivoted to the swing arm 10, that the connecting rod 24

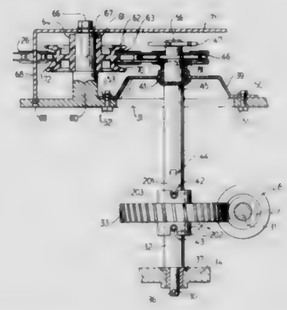


and the arm 20 of the bell crank 17 connected with it form a toggle joint 27 which can be automatically reversed by means of the control lug 22 on the bell crank 17 and the frame abutment 28 during the closing slide movement of the closure 3 from an extended position locking the parallel-stop position of the swing arm 10 between the traveling carriage 12 and the swing arm 10 into a folded position which releases the closure, and that the bell crank arm 19 carrying the control lug 22 in the extended position of the toggle joint 27 is provided relative to the closing slide movement of the closure 3 of the support pivot 18 of the bell crank 17 at the traveling carriage 12 in an over-center manner.

4,794,731
TWIN SPROCKET GARAGE DOOR OPENER

Colin B. Willmott, Buffalo Grove, and James S. Chang, Arlington Heights, both of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.

Filed Jun. 15, 1987, Ser. No. 61,975
Int. Cl.[4] E05F *15/00*
U.S. Cl. 49—199 **2 Claims**



1. An adjustable speed garage door operator for a garage door comprising, a frame member, a motor mounted on said frame member, an output shaft coupled to said motor and rotatably mounted on said frame member, a plurality of sprockets with different number of teeth mounted on said output shaft, a longitudinal rail member with one end attached to said frame member, a trolley movably mounted on said rail

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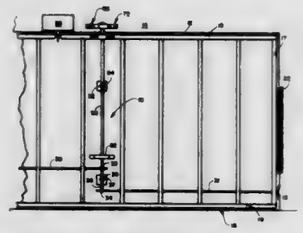
and connected to said garage door, an endless chain, a front sprocket rotatably mounted to said rail and said chain mounted thereon, and said chain selectively mountable on one of said plurality of sprockets so as to select a particular operating speed for said garage door operator, including an idler pulley rotatably and adjustably mounted to said frame member adjacent to said plurality of sprockets and said chain engageable with said idler pulley so as to guide said chain over a selected one of said plurality of sprockets, and wherein said idler pulley is mounted on a vertical pulley shaft which is connected to said frame member and said idler pulley is formed with a collar on one side such that by inverting it on said pulley shaft the height of said idler pulley can be adjusted so as to align it with different ones of said plurality of sprockets.

4,794,732

GARAGE DOOR SECURITY SYSTEM

Salvador C. Elardi, 7001 Lemonwood La., Lemon Grove, Calif. 92045

Filed Jan. 11, 1988, Ser. No. 142,702
Int. Cl.⁴ E05F *15/00*
U.S. Cl. 49—280 **4 Claims**



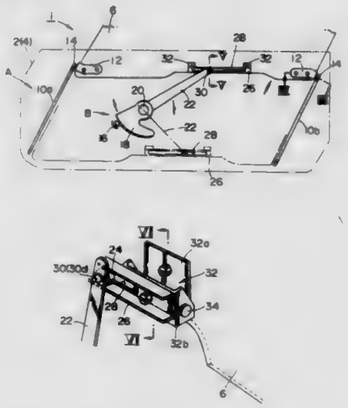
1. A garage door security system comprising:
a house having a garage door opening formed with a top beam and laterally spaced side walls;
a garage door having a top frame member,a bottom frame member, laterally spaced frame members and a front wall panel;
means pivotally securing said garage door to the side walls of said garage door opening;
an automatic garage door opener secured to said garage door;
rod locking assembly means for securing the bottom lateral sides of said garage door to the side walls of said garage opening comprising: an elongated upper horizontal locking rod having an inner and an outer end, an elongated lower horizontal locking rod having an inner end and an outer end, and a normally vertically oriented secondary bar having a top end and a bottom end, a first pivot pin passing through the central area of said secondary bar and said first pivot pin being fixedly secured to said garage door adjacent its bottom end, a first pivot assembly passing through the top end of said secondary bar and the inner end of said upper horizontal locking rod, a second pivot assembly passing through the bottom end of said secondary bar and the inner end of said lower horizontal locking rod, and bore holes in the side members of said garage door adjacent its bottom end through which said respective upper and lower horizontal locking rods pass;
horizontally oriented bore holes in the respective side walls of the garage door opening adjacent their bottom ends for receiving the outer ends of the respective upper and lower horizontal locking rods when the garage door is in its locked state; and
means for automatically locking and unlocking said rod locking assembly in response to said garage door being opened and closed by said automatic garage door opener comprising: a vertically oriented elongated primary bar having a top end and a bottom end, said bottom end being pivotally secured to said first pivot assembly, a roller mounted on the top end of said primary bar, a second pivot pin passing through the central area of said primary bar and said second pivot pin being fixedly secured to said garage door, and a guide bar attached to the top beam of said garage opening for engaging the roller on said primary bar thereby causing the top end of said guide bar to be directed laterally which in turn causes the rod locking assembly means to be actuated.

4,794,733

VEHICLE DOOR APPARATUS

Yukihiro Kanemaru, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 2, 1986, Ser. No. 902,521
Claims priority, application Japan, Sep. 5, 1985, 60-194770
Int. Cl.⁴ E05F *11/38*
U.S. Cl. 49—348 **9 Claims**



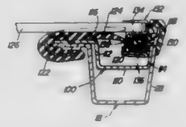
1. A vehicle door apparatus comprising:
a window glass arranged so as to be slidably lifted or pulled down in a window glass accommodating space inside a door, said window glass having a front end surface and a rear end surface;
first and second guide rails for guiding the upward and downward movement of the window glass, said guide rails being mounted so as to face the front and rear end surfaces of said window glass at a space therefrom and each having a restricted length within the window glass accommodating space;
a first window glass transferring member and a second window glass transferring member arranged so as to support lower portions of the front and rear end surfaces and move slidably and vertically along inner surfaces of the first and second guide rails respectively while lifting or pulling down the window glass, said first window glass transferring member being mounted on the lower end portion of said window glass which projects from the front end surface thereof and said second window glass transferring member being mounted on the lower end portion of said window glass which projects from the rear end surface thereof;
a window regulator for lifting or pulling down said window glass, comprising an arm rotatably movable within said window glass accommodating space, a top end portion of said arm being connected to a bottom end portion of the window glass so as to be movable in a lengthwise direction of the window glass; and
a hinge member having a rotation axis extending in the lengthwise direction of the window glass, said hinge member being positioned between the top end portion of said arm and the bottom end portion of the window glass.

4,794,734

WINDOW TRACK ASSEMBLY FOR MODULAR VEHICLE DOOR

Vincent M. Stempien, Livonia, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Aug. 25, 1987, Ser. No. 89,349
Int. Cl.⁴ B60J *1/16*
U.S. Cl. 49—374 **11 Claims**



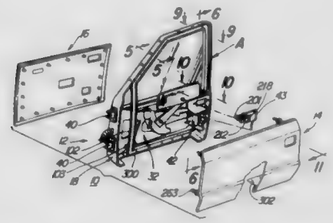
1. A vehicle door comprising a door frame having an inner side and an outer side, a window track member carried by the door frame and a window slideably carried by the window track member, said window being located adjacent the outer side of said door frame whereby said window is generally flush with the skin of a vehicle to which the door frame is installed, said window track having a pair of generally vertical extending front and rear leg members, said leg members having a generally flexible seal member secured thereto adjacent said window so that said seal member engages said window, a first guiding member carried by said window track member and extending toward said window and a second guiding member carried by said window and extending toward the inner side of said door frame, said first and second guide members cooperating for guiding the movement of said window, door frame having front and rear leg members into which the front and rear leg members of said window track are received, said seal member having an extending portion that covers an outer portion of the front and rear leg portions of said door frame.

4,794,735

INTRUSION BEAM ASSEMBLY FOR MODULAR VEHICLE DOOR

Paul J. Batchelder, Jackson, and Francisco X. Brentar, Ann Arbor, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Aug. 25, 1987, Ser. No. 89,348
Int. Cl.⁴ E06B *3/00*
U.S. Cl. 49—503 **12 Claims**



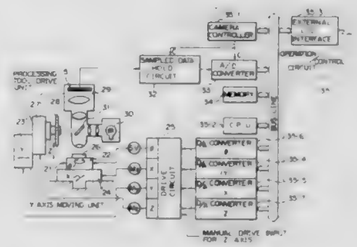
1. A vehicle door comprising an inner panel made up of leg portions defining a peripheral frame adapted to fit a door opening in a vehicle, a first leg portion having hinge parts secured to its outer surface for cooperating with mating hinge parts associated with the vehicle, a second leg portion opposite said first leg portion, an intrusion beam for reinforcing said door and absorbing impact loads, said intrusion beam comprising a web extending between said first and second leg portions, a first flange integrally formed on one end of said web and a second flange integrally formed at the opposite end of said web, said second flange having a door latch portion associated therewith for cooperating with a mating latch part associated with the vehicle, said first flange being secured to said first leg portion adjacent said hinge parts and second flange being secured to said second leg portion adjacent said door latch portion for transmitting impact loads from said intrusion beam through said hinge and door latch parts to the vehicle and wherein said web extends between said first and second leg portions adjacent the inner side of said door relative to the outer side of said door, and operating hardware carried by said intrusion beam for operating components associated with the door.

4,794,736

ARRANGEMENT FOR MECHANICALLY AND ACCURATELY PROCESSING A WORKPIECE WITH A POSITION DETECTING PATTERN OR PATTERNS

Shigehiro Fuwa; Naoki Fujii; Toshikazu Hatsuse, all of Tokorozawa; Masaru Ito, Tokyo; Toshiaki Wada, and Junichi Nakaoka, both of Osaka, all of Japan, assignors to Citizen Watch Co., Ltd., Japan

Continuation of Ser. No. 945,561, Dec. 23, 1986, abandoned. This application Mar. 8, 1988, Ser. No. 168,540
Claims priority, application Japan, Dec. 27, 1985, 60-295914; Dec. 27, 1985, 60-295915; Dec. 27, 1985, 60-295916
Int. Cl.⁴ B24B *49/12*
U.S. Cl. 51—165.72 **16 Claims**



1. An arrangement for mechanically processing a workpiece having at least one optically sensible position detection pattern formed thereon against which a desired position of the workpiece to be mechanically processed is established, comprising:
a worktable for mounting a workpiece thereon, arranged to be linearly movable in at least one axial direction of X- and Yperpendicular coordinate axes extending in a plane;
drive means including a table drive means for linearly moving said worktable in accordance with drive control information;
a machining tool for effecting a mechanical processing of the workpiece mounted on said worktable when the desired position of the workpiece is moved to and positioned at a predetermined position suitable for engagement with said machining tool;
a tool carrier carrying said machining tool and provided with a tool feed means for engaging said machine tool with said workpiece when carrying out the mechanical processing of said workpiece;
a position aligning system responsive to at least one position detecting pattern having a latent reference line and at least one side line inclined relative to one of the X and Y coordinate axis at a predetermined angle for carrying out a

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position alignment of said desired position of said workpiece with said predetermined position suitable for engagement with said machine tool, said position aligning system including:

a position detector arranged at a fixed position with respect to said machining tool, and having an opto-electric line sensor including means for issuing an electrical signal indicating a linear amount of displacement of said position detecting pattern of said workpiece in at least one axial direction of said X- and Y-coordinate axes by scanning said position detecting pattern in a predetermined single axial direction of said X- and Y-coordinate axes when said workpiece mounted on said worktable is positioned beneath said position detector, and;

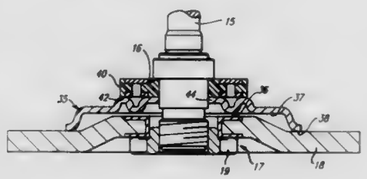
operation and control means connected to said position detector for carrying out a mathematical operation to detect the latent reference line of said position detecting pattern and said desired position of said workpiece to be mechanically processed in accordance with said electrical signal from said position detector, said operation and control means being further connected to said table drive means for providing said table drive means with said drive control information for moving said worktable until said desired position of said workpiece to be mechanically processed is aligned with said predetermined position suitable for engagement with said machine tool.

4,794,737

UNIVERSAL BACKING FLANGE

Russell M. Timmons, Latherville, and Robert W. Bailey, Parkton, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 6, 1987, Ser. No. 22,889
Int. Cl.[4] B24B *23/00*; B24D *9/08*
U.S. Cl. 51—168 22 Claims



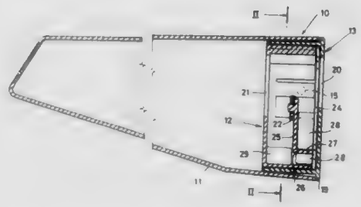
1. For use with an abrading tool, a polishing tool, or other power tool of the type having a motor-driven spindle and a tool element subassembly comprised either of a first type including a generally planar tool element and a collar for threadably fastening the tool element to the spindle or a second type further including a hub or backing flange, having a pair of raised radially-spaced annular contact surfaces, that is adapted to be attached to the tool element for supporting the backside of the tool element; coupling means including a coupling flange for drivingly coupling either of said first or said second types of tool element subassemblies to the spindle of the power tool, comprising a first portion adapted to be coupled to the spindle so that said coupling flange is rotated by the spindle, a first drive surface adapted to drivingly engage the backside of the tool element of said first type of tool element subassembly when installed on the spindle, and second and third radially-spaced drive surfaces adapted to drivingly engage said pair of annular contact surfaces on said hub or backing flange of said second type of tool element subassembly when installed on the spindle.

4,794,738

KNIFE SHEATH INCORPORATING SHARPENING MEANS FOR THE BLADE

Giovanni Brignoli, Via L. da Vinci, 11, 24046 OSIO SOTTO (Bergamo), Italy

Filed Mar. 30, 1987, Ser. No. 31,605
Int. Cl.[4] B24B *3/54*
U.S. Cl. 51—214 4 Claims



1. A knife sheath of the type open at one end and containing sharpening means for a knife's blade, said means acting to sharpen said blade at the introduction of the knife into and extraction of the knife from said sheath, said sharpening means being part of a separate subassembly removably inserted into said one end of the knife sheath and comprising

a first, generally shell-shaped member having a closed end releasably positioned across and substantially closing said one end of said sheath, and having an open end projecting axially toward the opposite end of said sheath,

a second, generally shell-shaped member having a closed end spaced from the closed end of said first member and positioned across and substantially closing the open end of said first member, and having an open and extending axially toward said first member,

said closed ends of said members having therein registering slots for guiding the blade of a knife into said sheath, and

means on said members removably supporting said sharpening means in the path of travel of said blade during the introduction and retraction thereof relative to said sheath,

said open ends of said shell-shaped members being nested one within the other, and

said sub-assembly further including means releasably coupling the open, nested ends of said members to each other and to said knife sheath.

4,794,739

SANDPAPER CLEANING TOOL

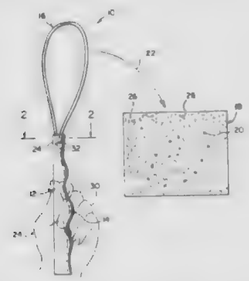
Joseph Ivanditto, 593 Old Country Rd., Deer Park, N.Y. 11729

Filed Aug. 7, 1987, Ser. No. 82,494
Int. Cl.[4] B24B *23/00*
U.S. Cl. 51—262 A 1 Claim

1. A sandpaper cleaning tool for use by a hand of a person, comprising:

(a) an elongated handle having a distal end and finger grips lying in a plane so that said handle will not rotate in the hand of the person and can be more better gripped by the hand of the person using the tool; and

(b) a rigid one piece inflexible wire loop extending from said distal end of said handle, said rigid one piece wire loop having a pair of ends with a diameter and said distal end of said handle having a pair of holes with a diameter smaller than said diameter of said pair of ends of said rigid one piece wire loop so that when said pair of ends of said rigid one piece wire loop is imbedded into said pair of holes in said distal end of said handle said pair of holes will elastically compress tightly around said pair of ends of said rigid one piece wire and provide a tight fit, said rigid one piece wire loop lying in a plane that is coplanar with said plane that said finger grips of said handle lie in so that by merely flicking the wrist of the person said wire loop is hit against backing of a piece of used sandpaper and dirt from



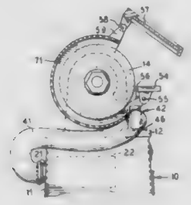
abrasive coating of the sandpaper will be dislodged and extend the operating life of the sandpaper.

4,794,740

COMBINATION PEDESTAL AND VACUUM SYSTEM

Malcolm E. Keith, West Chicago, and Michael P. Cayley, South Barrington, both of Ill., assignors to Midaco Corporation, Elk Grove Village, Ill.

Filed Aug. 24, 1987, Ser. No. 88,700
Int. Cl.[4] B24B *55/06*
U.S. Cl. 51—273 3 Claims



1. A combination stand and vacuum cleaning system for a power tool comprising, a stand upon which said power tool is mounted and formed with first and second compartments, a suction conduit extending from said power tool into said first compartment, a vacuum bag mounted over said suction conduit in said first compartment, a motor-blower mounted in said second compartment and with an air inlet in communication with said first compartment so as to create a vacuum therein, and an outlet for said motor-blower mounted in said second compartment, and including a bracket mounted adjacent said power tool and supporting an inlet end of said suction conduit adjacent said power tool.

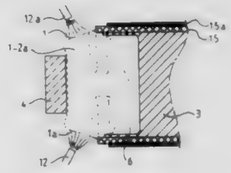
4,794,741

APPARATUS FOR MACHINING TRANSVERSE ELEMENTS OF A METAL DRIVING BELT

Johannes A. van Dijk, Eindhoven, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Apr. 7, 1986, Ser. No. 848,480
Claims priority, application Netherlands, Apr. 12, 1985, 8501087
Int. Cl.[4] B24B *19/00*; B24C *3/32*
U.S. Cl. 51—419 9 Claims

1. Apparatus for roughening the smaller side faces of substantially flat transverse elements of trapezoidal form for a composite driving belt for use with V-shaped pulleys, said apparatus comprising a rotary disc having a diameter which is large relative to the dimensions of the elements to be roughened provided at the circumference with a continuous circumferential groove which is capable of accommodating those parts of the elements which need not be machined and which is also capable of supporting the elements; a substantially tangential supply line for the delivery of elements to be machined in a predetermined position into the groove of the disc, in which supply line the elements are held in contact resting with their flat faces against one another; a belt which covers said



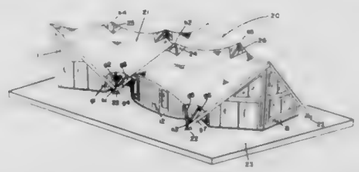
elements while in contact with one another delivered into the groove of the disc and radially embraces the contacting elements so confined over part of the circumference of the disc while standing clear of side faces of the elements which have to be machined; a roughening station, including means for roughening said side faces of the elements, wherein the elements are confined under the belt and within the groove of the disc as they pass through the roughening station; and means for releasing roughened elements outside the range of the belt from the groove of the disc and discharging the released elements.

4,794,742

MULTI-CONIC SHELL AND METHOD OF FORMING SAME

Charles E. Henderson, P.O. Box 4550, Berkeley, Calif. 94704

Filed Mar. 19, 1986, Ser. No. 841,501
Int. Cl.[4] E04B *1/38, 7/00*
U.S. Cl. 52—80 22 Claims



1. A shell congruent to a surface, said surface comprising:

a first convex region of a first cone; and

a second concave region of a second cone;

said first region and said second region each having positive area, said first cone being oppositely oriented to said second cone, said first cone being tangent to said second cone along a line segment, said line segment being common to a generator line of said first cone and a generator line of said second cone, said line segment being a portion of the perimeter of said first and said second regions, said shell, by virtue of being congruent to said surface, therefore comprising a first convex portion congruent to said first region and a second concave portion congruent to said second region, said first and said second portions including a common linear portion congruent to said line segment, said first and said second portions together forming a portion of said shell congruent to the union of said first and said second regions.

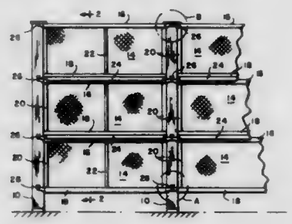
VOL 1098 ISS 1 JA 3 1989 UMI

4,794,743
CANE SUPPORTING APPARATUS
Hans R. Lehnein, 13 Landing Rd., Roslyn, N.Y. 11576
Filed Nov. 12, 1987, Ser. No. 119,537
Int. Cl.[4] A42B *7/00*
U.S. Cl. 135—65 12 Claims



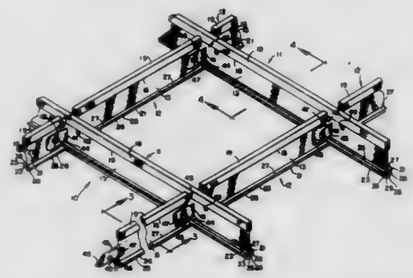
1. An apparatus for supporting in a substantially upright position a cane including a handle portion and a shaft member having a predetermined diameter, said apparatus including a main body member comprising:
a substantially planar, high friction first contacting surface;
means defining a relatively resilient aperture shaped and dimensioned to receive said cane shaft member, said aperture being generally perpendicular to said first contacting surface; and
a substantially planar upright contacting surface generally perpendicular to said first contacting surface.

4,794,744
WALL CONSTRUCTION FOR MODULAR WOVEN WIRE PARTITION
Ronald A. Young, and Gregory C. Young, both of Denver, N.C., assignors to Young Holdings Ltd. Corp., Sterling, Mass.
Filed Feb. 1, 1988, Ser. No. 151,163
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—282 12 Claims



1. A wall construction for a modular woven wire partition, comprising:
a plurality of lateraly spaced vertically disposed fixed support posts, each support post having a mounting surface with a plurality of vertically spaced openings therein;
a plurality of panels arranged vertically in a coplanar relationship between said support posts, each panel having a rectangular configuration bordered by top, bottom and side frame members, at least the top and bottom frame members of each panel having open ends; and
a plurality of connector elements received in the open ends of at least the top frame members of said panels, said connector elements being engageable with the openings in the mounting surfacesof said support posts to thereby connect said panels to said support posts.

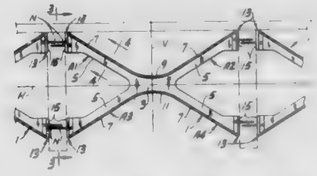
4,794,745
TIER DROP GRID SYSTEM
William J. Platt, Collingdale, and Paul C. Gilleswater, Glenmoore, both of Pa., assignors to National Rolling Mills Inc., Malvern, Pa.
Filed Dec. 15, 1986, Ser. No. 941,805
The portion of the term of this patent subsequent to Nov. 22, 2005, has been disclaimed.
Int. Cl.[4] E04B *5/55*
U.S. Cl. 52—484 12 Claims



1. A roll formed suspended ceiling grid member, comprising
an inverted T-grid member having a web portion roll formed from a sheet of metal,
a hollow rolled metal sheet upper bulb extending along the top of the web portion,
means for supporting ceiling tiles and strengthening the ceiling grid member comprising a pair of metal sheet flanges extending outwardly from each side of the web portion at the bottom of the web portion for supporting ceiling tiles and for strengthening the grid member and adding to its appearance,
each flange including a top leg portion and a bottom leg portion,
the top leg portion being flat,
the bottom leg portion of the flanges including a single hollow elongate lower bulb extending downwardly all along the length of the flanges and open to view so as to be seen by a viewer from below,
the bottom leg portion of the flanges also including a flat portion extending outwardly from each side of the lower bulb at the top of the lower bulb,
said flat portions of the bottom leg portions of the flanges being flattened against the top leg portions of the flanges,
the lower bulb being centrally disposed with respect to the web portion and the upper bulb with both flanges extending outwardly from the top of the lower bulb so that the lower bulb does not prevent the flanges from being fully inserted into a slot in the side of a ceiling tile to support the ceiling tile,
whereby the lower bulb provides greater strength to the suspended ceiling grid member and also enhances the appearance thereof and provides different types of ceiling tiles with different appearances including a bold look, a shadowy look, or a semi-concealed look and the lower bulb and flanges are interchangeable with ceiling tile having a square edge portion, a recessed bottom edge, or an edge portion with a slot that receives the flanges.

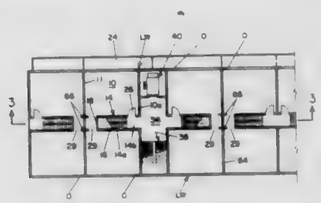
4,794,746
JOIST BRIDGING
James L. Ramer, Rte. One, Box 50AA, Fortuna, Mo. 65034
Filed Feb. 27, 1987, Ser. No. 19,925
Int. Cl.[4] E04C *3/02*
U.S. Cl. 52—695 10 Claims

1. A floor comprising joists extending in spaced side-by-side relation and a bridging system therefore comprising joist bridging components between adjacent joists, each joist bridging component comprising a one-piece member generally of X-shape having a horizontal axis and a vertical axis and being generally symmetrical about the horizontal axis and generally symmetrical about the vertical axis, said member having a plate portion at the center of the X generally in the plane of the X, first and second arms integral with said center plate portion radiating from the center plate portion on one side of the horizontal axis and third and fourth arms integral with said center plate portion radiating from the center plate portion on the other side of the horizontal axis, the first and second arms being generally symmetrical with the third and fourth arms about the horizontal axis and the first and third arms being generally symmetrical with the second and fourth arms about the vertical axis, each arm having a web generally of the same



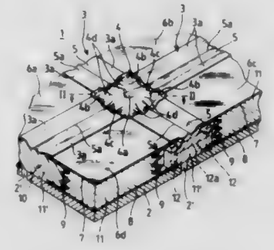
thickness as the center plate portion and coplanar with the center plate portion and said webs being coplanar with each other, each arm having a flange along the outside edge of the web, the center plate portion having a first flange at the edge thereof on the said one side of the horizontal axis continuous with the flanges of the first and second arms and a second flange at the edge thereof on the said other side of the horizontal axis continuous with the flanges of the third and fourth arms, the first and third arms having at their outer ends integral heads having outside faces in a first plane generally perpendicular to the horizontal axis in facewise engagement with a side of a joist and nailed thereto, and the second and fourth arms having at their outer ends integral heads having outside faces in a second plane perpendicular to the horizontal axis in facewise engagement with a side of the adjacent joist and nailed adjacent joist, said planes being spaced a fixed distance for establishing the joist spacing.

4,794,747
MULTI-STORIED MULTIPLE-UNIT DWELLING
Masayoshi Yendo, 5-6 Ginza 8-chome, Chuo-ku, Tokyo, Japan
Filed Aug. 11, 1987, Ser. No. 84,373
Int. Cl.[4] E04H *1/00, 1/04*
U.S. Cl. 52—236.3 12 Claims



1. A multi-storied multiple-unit dwelling comprising at least three floors, at least four dwelling units on each floor, each of which is exposed to light and air by openings on both of the longer external walls of the dwelling, and a stairway-hallway unit within each dwelling unit bounded by a pair of walls extending lengthwise along generally the center of the building and located in spaced-apart relation to the longer external walls to define living spaces in each dwelling unit between the corresponding stairway-hallway unit and the longer external walls, each stairway-hallway unit having a lower landing on one floor and an upper landing on the next upper floor joined by a stairway, and the walls defining each stairway-hallway unit having openings providing a passageway below the upper landing linking said living spaces of said one unit.

4,794,748
SEALING DEVICE FOR EXPANSION GAPS BETWEEN EVACUATED HEAT INSULATING WALL COMPONENTS
Lothar Schilf, Kirchlinteln, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany
Filed Sep. 29, 1987, Ser. No. 102,388
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1986, 3634347
Int. Cl.[4] E04B *1/62;* B65D *87/24*
U.S. Cl. 52—393 16 Claims



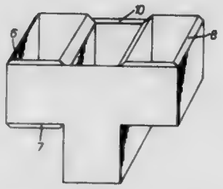
1. An enclosure construction for holding fluids, comprising individual enclosure wall components each having side walls and edge walls interconnected in a pressure-tight manner to form first vacuum-tight spaces, pressure resistant heat insulation material in said first vacuum-tight spaces, said edge walls of neighboring enclosure wall components facing each other across an expansion gap formed between two neighboring edge walls, a gas-tight pressure resistant wall, means securing said enclosure wall components to said gas-tight pressure resistant wall to form said expansion gaps, expansion gap sealing means comprising an elastically deformable sheet metal strip covering said expansion gap opposite said pressure resistant wall, said sheet metal strip having lateral edges secured in a vacuum-tight to said enclosure wall components opposite said pressure resistant wall for forming second vacuum-tight spaces in said expansion gaps for maintaining a low pressure or vacuum in said gap, pressure resistant heat insulating material in said gap, and means (2') for establishing said low pressure or vacuum inside said first spaces in said enclosure wall components and inside said second spaces in said expansion gaps to keep said enclosure wall components and said expansion gaps under said low pressure or vacuum.

4,794,749
BUILDING SYSTEM
Antoine-Adel Marcel, P.O. Box 35005, Baghdad, Iraq
Continuation of Ser. No. 673,377, Nov. 20, 1984, abandoned.
This application Jan. 16, 1987, Ser. No. 4,185
Int. Cl.[4] E04C *2/04*
U.S. Cl. 52—611 12 Claims

1. A planar wall comprising: a plurality of basically T-shaped, unitary, building blocks each having front and rear faces and two limbs which are a stem limb having a free end face and two lateral faces on opposite sides of the stem limb and an elongate cross limb having two end faces and also having an outermost face opposite the stem limb, and two innermost faces nearer the stem limb and on opposite sides of the stem limb, the stem limb extending in a direction in a plane

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of the wall substantially perpendicular from a central portion of the cross limb between the two end faces of the cross limb, the longitudinal axis of the cross limb extending in the plane of the wall, and wherein inverted such blocks alternate with upright such blocks proceeding along a row of blocks, the free end faces of the stem limbs of the inverted blocks and the upright such blocks being substantially co-planar with such outermost faces of the cross limbs of the outermost blocks and the inverted blocks, respectively, and further comprising com-



plementary keys formed on the blocks and interengaging one another, the interengagement having taken place in said direction, and the keys comprising surface portions which are inclined to the normal to said plane and which bear against each other to obstruct displacement of the blocks relative to one another normally to said plane, said keys being on first, second and third faces parallel to each other and selected from said free end face, said two lateral faces, said two end faces, said two outermost faces and said two innermost faces of each block.

4,794,750

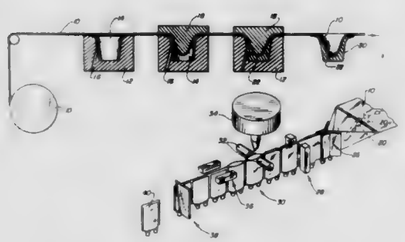
METHOD FOR MAKING CONTAINERS HAVING PORTS

Josef Schmidt, Libertyville, and David A. Winchell, Spring Grove, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 536,608, Sep. 28, 1983, abandoned. This application Jan. 27, 1985, Ser. No. 750,042

Int. Cl.[4] B29C *45/16*

U.S. Cl. 53—410 **13 Claims**



9. A method for making sterile containers with ports comprising the steps of:

introducing into a mold cavity a continuous sheet of material adapted to be formed into a container;

injecting into the mold cavity a molding compound;

permitting the molding compound to be bonded with the sheet inside the mold cavity to form an interior port and port membrane in situ;

removing the sheet and bonded molding compound from the mold cavity, whereby the molding compound forms a port; and

processing the sheet carrying the port to form a sterile container.

4,794,751

SEALING OF APPARATUS WITH CONTINUOUS PRODUCT TRANSPORT

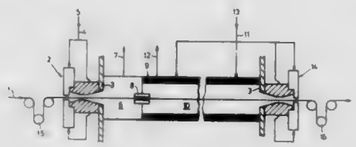
Wolfram Wagner; Peter R. Nyssen; Dieter Paulini, all of Dormagen; Dirk Berkenhaus, Cologne, and Siegfried Kulisch, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 10, 1987, Ser. No. 24,015

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1986, 3609858

Int. Cl.[4] D01H *13/28*; **D02J** *1/08*

U.S. Cl. 57—308 **14 Claims**



1. A method for sealing passage of a continuous endless product such as fibers, webs, or tapes into a treatment chamber in which the endless product if treated under excess pressure relevant to ambient pressure, the endless product being transported through a sealing channel connected to the treatment chamber, the method comprising introducing a gas at the entry of the sealing channel, maintaining therein a gas flow parallel with the endless product at a pressure differential, the pressure prevailing at the exit of the sealing channel substantially corresponding to the excess pressure in the chamber, discharging the gas at the exit of the channel, and adjusting the streaming velocity of the gas at the entry of the channel in such a manner that the pressure at the entry is nearly equal to ambient pressure.

4,794,752

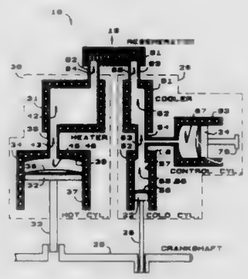
VAPOR STIRLING HEAT MACHINE

Roy H. Redderson, 100 Winchester Way, Statesboro, Ga. 30458

Filed May 14, 1987, Ser. No. 49,698

Int. Cl.[4] F03C *5/00*

U.S. Cl. 60—531 **34 Claims**



1. A heat machine, comprising:

a hot chamber having a fixed volume and a variable hot volume;

a cold chamber having a fixed volume and a variable cold volume;

a heat regenerator chamber in fluid communication between said hot chamber and said cold chamber, said regenerator chamber including heat retaining means;

means for coupling said variable hot volume and said variable cold volume to provide a predetermined maximum pressure and a predetermined minimum pressure within said hot chamber, said cold chamber, and said regenerator chamber, at different portions of a cycle;

means for supplying heat to said hot chamber to maintain a predetermined high temperature;

means for removing heat from said cold chamber to maintain a predetermined low temperature;

a predetermined mass of working fluid in said hot chamber, said cold chamber, and said regenerator chamber, said working fluid being selected to enter or be near a wet liquid vapor state at a said predetermined high temperature and said maximum pressure and to enter or be near a wet liquid vapor state at said predetermined low temperature and said minimum pressure; and

working fluid mass control means for varying the effective quantity of mass present in said cold chamber to provide for output control.

4,794,753

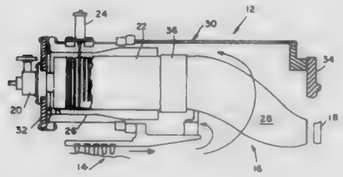
PRESSURIZED AIR SUPPORT FOR CATALYTIC REACTOR

Kenneth W. Beebe, Galway, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 6, 1987, Ser. No. 702

Int. Cl.[4] F02C *7/20*, *1/00*

U.S. Cl. 60—39.32 **7 Claims**



1. A support for a catalytic reactor bed comprising:

an outer support liner surrounding the catalytic reactor bed;

a compliant inner liner, within the outer support liner, surrounding the catalytic reactor bed wherein the compliant inner liner is porous high temperature resistant cloth; and,

an air inlet through the outer liner for pressurizing the inner liner against the catalytic reactor bed.

4,794,754

LOW COST ANNULAR COMBUSTOR

Jack R. Shekleton; Douglas C. Johnson, and Melvin K. Lafferty, all of San Diego, Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jun. 22, 1987, Ser. No. 65,258

Int. Cl.[4] F02C *3/14*

U.S. Cl. 60—39.36 **19 Claims**

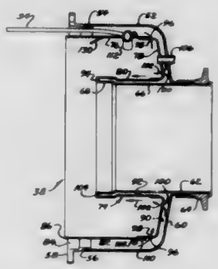
1. An annular combustor for a gas turbine comprising:

a bell-shaped housing defining an axis:

an annular liner having inner and outer annular walls within said housing and spaced therefrom to define a radially outer compressed air inlet between said housing and said liner, an axially elongated compressed air annulus between said housing and said outer wall and a radially extending compressed air annulus in fluid communication with said axially elongated annulus oppositely of said inlet, said liner further including a generally axially facing annular outlet between said walls and just radially inward of said inlet;

a typically circular fuel injection manifold in said axially elongated annulus and having a plurality of angularly spaced, generally axially directed openings through which fuel may flow; and

a plurality of typically tubular nozzles extending through said outer wall to enter the space between said walls generally tangentially thereto, each said nozzle including



an air inlet within said axially elongated annulus and a fuel inlet aligned with an associated one of said openings.

4,794,755

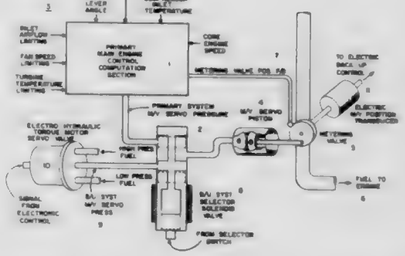
BACK-UP CONTROL SYSTEM FOR F101 ENGINE AND ITS DERIVATIVES

Walter D. Hutto, Jr., and William W. Stockton, both of Cincinnati, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 14, 1987, Ser. No. 49,351

Int. Cl.[4] F02C *9/28*

U.S. Cl. 60—39.281 **1 Claim**



1. A back-up control system for use with a single engine aircraft powered by a gas turbine engine, said aircraft being controlled by a main control system which activates a servo-piston that adjusts a fuel metering valve which controls a flow of fuel to the gas turbine engine, said back-up control system being capable of deactivating the main control system when deteacted faults indicate inadequate control of the gas turbine engine by the main control system, said detected faults including an engine temperature which exceeds a maximum allowable temperature of said gas turbine engine, said back-up control system receiving signals that serve as indications of detected faults from engine sensors which serve as a means for detecting performance characteristics of said gas turbine engine, said performance characteristics including the core engine speed, the gas turbine engine's temperature, an actual power lever angle, and an acceleration signal which indicates if the gas turbine engine's core engine speed is accelerating, said back up control system comprising:

a comparator which is electrically connected with said engine sensors to receive signals therefrom, said signals including a reading of said engine temperature, a reading of said gas turbine engines actual power lever angle, said

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gas turbine engine's core engine speed, and said acceleration signal which indicates when said gas turbine engine's core engine speed is accelerating in response to acceleration signals commanded by a pilot, said comparator also having a stored set of ideal values including a maximum allowable temperature of said gas turbine engine, power lever angles which are associated with said acceleration signals commanded by the pilot, and target core engine speeds associated with said acceleration signals commanded by the pilot, said comparator outputting a first output signal when said actual power lever angle compares unfavorably with said target power lever angle, said comparator outputting a second output signal when said gas turbine engine's temperature exceeds said maximum allowable temperature, said comparator outputting a third output signal when the actual core engine speed compares unfavorably with the target core engine speed, and said comparator outputting a fourth output signal when said core engine speed is accelerating;

an AND gate having a first, second, third and fourth input terminal which are connected with said comparator to respectively receive said first, second, third and fourth output signals, said fourth input terminal of said AND gate being an inverting input terminal, said AND gate having an output terminal which outputs a fault indication signal;

a delay circuit which is electrically connected with said AND gate and receives said fault indication signal therefrom, said delay circuit outputting said fault output signal when said fault indication signal is continuously reproduced by said AND gate for a duration of about three seconds, said delay circuit thereby reporting an actual condition of faults in said gas turbine engine and avoiding a false report based upon transient conditions;

a back-up computer which receives said inputs from said engine sensors of said gas turbine engine, said inputs including said gas turbine engines actual core engine speed, compressor discharge pressures and turbine temperature, and said measure of the gas turbine engine's power lever angle, said back-up computer having a memory loaded with a plurality of correlation schedules including a deceleration schedule which correlates the compressor discharge pressure with a deceleration fuel schedule for the gas turbine engine to indicate a first recommended fuel rate which the back-up computer outputs as a first output signal, said memory having an acceleration schedule which correlates said actual engine core speed with an acceleration fuel schedule to indicate a second recommended fuel rate which said back-up computer outputs as a second output signal, said memory having a fuel metering valve schedule which correlates said gas turbine engine's actual fuel rate with a position required on its fuel metering valve which said back-up computer uses to produce a rate which it outputs as a third output signal, said memory having a core governing schedule which correlates the power lever angle with the core engine speed, which the computer outputs as a fourth output signal;

a control logic circuit which is electrically connected with said computer and to a torque motor amplifier which drives said gas turbine engine's fuel metering valve, said control logic circuit receiving said first, second, third, and fourth output signals form said computer and producing therefrom an electrical signal which is used by said torque motor amplifier to drive the gas turbine engine's fuel metering valve, said control logic circuit receiving said first, second, third, and fourth output signals from said computer and producing therefrom an electrical signal which is used by said torque motor amplifier to drive the gas turbine engine's fuel metering valve and thereby provide control of said gas turbine engine;

a switch which is electrically connected with said AND gate and said control logic circuit, said switch having a standby setting in which it automatically activates said control logic circuit and deactivates said main control system when said switch receives said fault output signal from said AND gate, and wherein said switch comprises a three-position switch which has a normal position, a standby position, and an on position, said switch electrically connecting said main control system with said gas turbine engine such that said back-up control system is inactive when said switch is in the normal position, said switch electrically connecting the back-up system with the gas turbine engine and deactivating the main control system when said switch is in the on position, said switch automatically disconnecting the main control system and connecting in its place the back-up control system when it is in the standby position and when it receives said fault output signal from said AND gate;

a means for indicating to a pilot that said detected faults are unacceptable, said indicating means being electrically from said AND gate; and

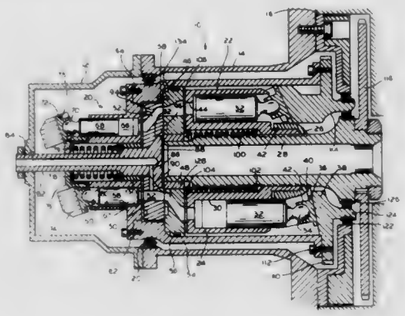
a back-up system selector solenoid operated valve which is activated by said switch, and which connects said control logic circuit to said servopiston which adjusts said fuel metering valve so that said back-up computer controls said flow of fuel to said gas turbine engine when said detected faults indicate inadequate control of the gas turbine engine by the main control system.

4,794,756

HYDRAULIC DIFFERENTIAL

Walter J. Iseman, Monroe Center, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 18, 1987, Ser. No. 134,752
Int. Cl.[4] F16D *39/00*
U.S. Cl. 60—489 11 Claims



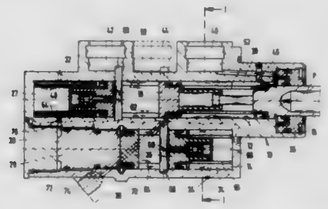
1. A hydraulic differential comprising, a pair of hydraulic axial piston units each having a cylinder block with a circular array of cylinders each having an axially-movable piston with one unit being of fixed displacement and the other of variable displacement and the latter unit having an adjustable angle wobbler for controlling the displacement of the axially-movable pistons associated therewith, drive input means for rotating a fixed angle wobbler of the fixed displacement unit and the cylinder block of the variable displacement unit, drive output means connected to the cylinder block of the fixed displacement unit, a valve plate and a port plate interposed between the axial piston units, said port plate being connected for rotation with the variable displacement cylinder block and floating relative to the cylinder block of the fixed displacement unit and the valve plate being fixed against rotation, and spring means acting between the cylinder block of the fixed displacement unit and the floating port plate for urging the floating port plate against the valve plate.

4,794,757

MASTER BRAKE CYLINDER FOR A HYDRAULIC THREE-CIRCUIT BRAKE SYSTEM

Peter Schlüter, Kammerforst, Fed. Rep. of Germany, assignor to Lucas Industries public limited company, Birmingham, England

Filed Sep. 9, 1987, Ser. No. 94,420
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1986, 8624906[U]; May 7, 1987, 3715209
Int. Cl.[4] B60T *11/20*
U.S. Cl. 60—562 5 Claims



1. Master brake cylinder for a hydraulic three-circuit brake system comprising

a housing (10) containing two cylinder bores (12, 14),

first and second pistons (16, 18) arranged one behind the other in one of the cylinder bores (12), means for displacing one only of said pistons by an external force (P) for subjecting a first or second pressure chamber (20, 22) to pressure,

two additional pistons (26, 28) which are arranged one behind the other in the other cylinder bore (14), each being displaceable by the pressure in one of said first and second pressure chambers (20, 22) for subjecting a third pressure chamber (24) to pressure,

three brake circuit connections (30, 32, 34) each connected to one of the pressure chambers (20, 22, 24) and

three reservoir connections (40, 42, 44) which are controlled by piston movements, each being connected to one of the pressure chambers (20, 22, 24) as long as it is pressureless, characterized in that

the third pressure chamber (24) is bordered by only one (26) of the two additional pistons (26, 28),

the connection between the third pressure chamber (24) and the associated reservoir connection (44) being controlled by the said one (26) of said two additional pistons (26, 28) and

the other (28) of the two additional pistons (26, 28) separating from each other chambers (70, 72) which are connected to the first and second pressure chambers (20, 22) respectively.

4,794,758

METHOD OF CONTROLLING A TURBOCHARGER

Norio Nakazawa; Yoshimasa Matsura; Tetsuo Takemoto, and Susumu Kohketsu, all of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 801,698, Nov. 12, 1985, Pat. No. 4,719,757.
This application Jul. 27, 1987, Ser. No. 79,121
Claims priority, application Japan, Mar. 15, 1984, 59-37187[U]; Mar. 15, 1984, 59-37192[U]; Jul. 31, 1984, 59-117813[U]; Jul. 31, 1984, 59-117815[U]; Jul. 31, 1984, 117816[U]; Jul. 31, 1984, 59-161158; Nov. 15, 1984, 59-173540[U]; Mar. 13, 1985, 60-48194; Mar. 13, 1985, 60-34624[U]
Int. Cl.[4] F02B *37/12*
U.S. Cl. 60—602 8 Claims

1. A method for controlling a variable-volume turbocharger device for use with an engine comprising:

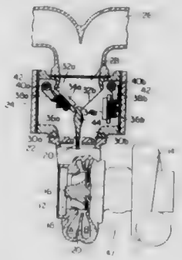
an exhaust gas turbine including a turbine rotor having an axis, said exhaust gas turbine being formed with a discharge end and with two scrolls divided in the direction of the axis of the turbine rotor by a partition wall provided in a turbine housing at its discharge end thereof, one of said scrolls forming a first exhaust gas passage having a large exhaust gas flow area, the other scroll forming a second exhaust gas passage having a small exhaust gas flow area;

an exhaust manifold connected to said engine and the exhaust gas inlet side of said turbine housing;

a first valve means pivotally and rockingly mounted at the exhaust manifold side so as to open and close said first exhaust gas passage;

a second valve means pivotally and rockingly mounted at the exhaust manifold side so as to open and close said second exhaust gas passage;

a first actuator operative to open and close said first valve means;



a second actuator operative to open and close said second valve means, and

a valve control means for operating said first and second actuators in response to the speed and load state of said engine, said method being such that said first valve means is actuated to be closed and said second valve means is actuated to be opened by said valve control means when said engine speed is low and said load is high, and that said first valve menas is actuated to be opened and said second valve means is actuated to be closed when said engine speed is medium and said load is high, and that both said first and second valve means are actuated to be opened when said load is low irrespective of the engine speed or when the load is high and the engine speed is high, whereby three different turbine flow characteristics can be obtained.

4,794,759

TURBOCHARGER CONTROL

Kim M. Lyon, Bloomfield Hills, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Aug. 21, 1987, Ser. No. 87,730
Int. Cl.[4] F02B *37/12*
U.S. Cl. 60—602 6 Claims

1. In association with an internal combustion engine having an intake manifold and including a turbocharger with an exhaust gas driven turbine portion and with an air compressor portion, the air compressor portion having an outlet for supplying pressurized air to the intake manifold and the turbine portion having a variable sized inlet assembly, exhaust gas flow through the variable inlet assembly being selectively regulated by a plurality of pivotally mounted vanes movable between open and closed operative positions to control gas flow to the turbine, an inlet vane control for positioning the movable vanes in accord with vehicle add engine characteristics, comprising:

a vane positioning means including a member movable in response to the balance of opposing forces imposed thereon by first and second pressurized fluids;

means operatively connecting the movable member and the

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pivotal vanes, whereby movement of the movable member is transmitted to the vanes so that they are pivoted simultaneously between closed and open operative positions, characterized by a substantially inhibited exhaust gas flow to the turbine and a relatively uninhibited gas flow to the turbine, respectively;

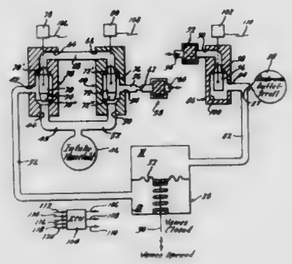
first fluid transmission means for regulating the passage of the first pressurized fluid from the intake manifold to the pressure responsive positioning device;

second fluid transmission means for regulating the passage of the second pressurized fluid from the compressor outlet to the pressure responsive positioning device;

the first fluid transmission means including a pair of selectively controlled valves, the first valve connecting the intake manifold directly to the positioning device when in a deactivated operative mode, the second valve connecting the intake manifold to a restrictive atmospheric bleed when in a deactivated mode, the first and second valves connecting the positioning device to the restrictive atmospheric bleed when both are in an activated operational mode, the valves combining to disconnect the positioning device from both the intake manifold and the atmospheric bleed when the first valve is activated and the second valve is deactivated, the valves combining to without communication with the atmospheric bleed when the first valve is deactivated and the second valve is activated;

the second fluid transmission means including a third valve which connects the compressor outlet and the positioning device when in a deactivated operative mode and which connects the compressor outlet and the positioning device to a flow restricted atmospheric bleed when in an activated operative mode, whereby the compressor outlet pressure may be modified by a continuous activation of the valve or by a cycled activation/deactivation of the valve;

means for selectively activating and deactivating the three valves in accordance with vehicle and engine manifold pressure, throttle movement and vehicle speed, the means selectively controlling the three valves to produce desired first and second fluid pressures for activating the positioning device and thus positioning the vanes, whereby the vanes are pivoted between open and closed positions and are maintained near a midposition during a large portion of the vehicle and engine operation by either activating or deactivating the valves without any activate/deactivate cycling which is reserved only for infrequent vehicle and engine operations.

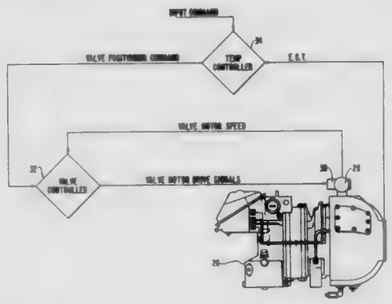


4,794,760

DIRECT DRIVE MOTORIZED ACUTATOR CONTROL FOR BLEED VALVES

Robert C. White, La Mesa, Calif., assignor to Sunstrand Corporation, Rockford, Ill.

Filed Oct. 14, 1987, Ser. No. 108,082
Int. Cl.[4] F02C *9/18*
U.S. Cl. 60—39.07 5 Claims



1. A system for controlling a bleed valve driven by a direct drive actuator in a gas turbine comprising:

(a) means for generating a valve positioning command for causing the valve to move to a desired position;

(b) means for controlling the operation of a direct drive actuator which opens and closes the bleed valve in response to a control signal applied thereto, the means for controlling causing the bleed valve to open when the control signal has a first sign and to close when the control signal has a second sign;

(c) means for producing a velocity signal proportional to a sensed velocity of a movable element of the direct drive actuator which moves in opening or closing the bleed valve;

(d) means, responsive to the velocity signal and to the control signal, for generating a synthetic position signal having a level proportional to the position of the movable element; and

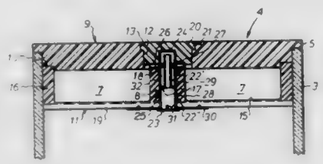
(e) means, responsive to the synthetic position signal and the valve positioning command, for generating the control signal, the control signal being proportional to the difference between the valve positioning command and the synthetic position signal and having a positive or negative sign.

4,794,761

TOP STRUCTURE FOR COLD OR FREEZE TRANSPORT CONTAINER

Benny Fredrixon, S-103 91 Lidingö, Sweden

Filed Aug. 11, 1987, Ser. No. 83,817
Int. Cl.[4] F17C *7/02*
U.S. Cl. 62—50 24 Claims



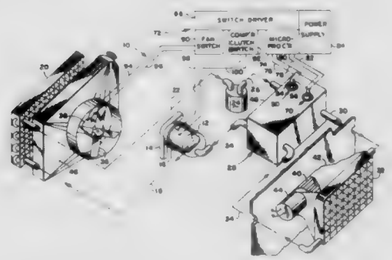
1. A top structure made as a block-like unit of foamed or cellular plastic for closing the top of an upwardly open transport container and for cooling goods contained in the transport container, said top structure having means for supporting the same at the top of said container in a position for closing the top of said container, internal cavity means formed directly in the foamed or cellular plastic for receiving an unpressurized liquid cooling medium that evaporates to a gaseous state, filling means including openings with removable plug means for filling said cavity means with liquid cooling medium, and liquid trap means connected by pipe means to the cavity means and communicating with permanently open output channel means for permitting cooling medium only in the gaseous state to flow downwardly into said container, said liquid trap means comprising outer upwardly closed sleeve means connected via permanently open pipe means to said cavity means, upwardly and downwardly open inner sleeve means, and flange means connecting a lower end of said inner sleeve means to an inside wall of said outer sleeve means, said pipe means opening to a trap chamber defined by said inner sleeve means, said flange means and said inside wall of said outer sleeve means below an upper end of said inner sleeve means, which upper end is spaced from a closed upper end of said outer sleeve means.

4,794,762

REFRIGERANT FLOW CONTROL SYSTEM

Charles D. Orth, Cedarburg, Wis.; Richard C. Barthel, Harwood Heights, and Peter J. Malone, Rosemont, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 27, 1987, Ser. No. 7,861
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—203 5 Claims



1. A control system for air cooling a vehicle compartment comprising:

(a) compressor means operative upon connection to a source of power to provide a flow of compressed refrigerant;

(b) an exothermic heat exchanger disposed for ambient cooling and having the inlet thereof operatively connected to receive said flow of compressed refrigerant from said compressor means, said heat exchanger operative to cool said compressed refrigerant and effect condensation thereof;

(c) expansion means operative to receive said condensed refrigerant and to discharge said refrigerant at a substantially reduced pressure;

(d) an enodthermic heat exchanger operatively connected to receive the discharge of said expansion means and operative to absorb heat from the air in a compartment to be cooled;

(e) a first temperature sensing means disposed to sense directly the temperature of said condensed refrigerant discharged from said condenser and entering said expansion means;

(f) a second temperature sensing means disposed to sense directly the temperature of said flow of reduced pressure refrigerant discharging from said expansion means;

(g) clutch means operative upon actuation and deactuation to drivingly connect and disconnect said compressor with a source of power;

(h) fan means operative upon actuation to direct a flow of ambient air over said exothermic heat exchanger;

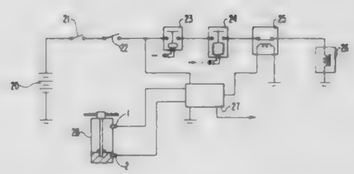
(i) circuit means including switch means operative, in response to said first sensor means sensing a first predetermined upper limit temperature, deactuate said clutch means and upon said sensed temperature falling a predetermined amount below said first upper limit operative to actuate said clutch means, said second sensor means sensing a predetermined second upper limit and in response thereto during normal operation operative to actuate said clutch and operative at a first predetermined lower limit temperature to deactuate said clutch means and operative upon cold startup to deactuate said clutch means in response to sensing a second lower limit temperature lower than said first lower limit temperature, upon said first sensor means sensing a third predetermined upper limit temperature operative to actuate said fan means, and upon said first sensor means sensing a third predetermined lower limit temperature, lower than said second upper limit, operative to deactuate said fan.

4,794,763

DEVICE FOR PROTECTING A COMPRESSOR FROM DAMAGE

Yasuo Kikuchi, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 832,667, Feb. 25, 1986, abandoned.
This application Aug. 10, 1987, Ser. No. 82,910
Claims priority, application Japan, Feb. 25, 1985, 60-24684[U]
Int. Cl.[4] F16K *21/18;* F25B *1/00*
U.S. Cl. 62—228.1 5 Claims



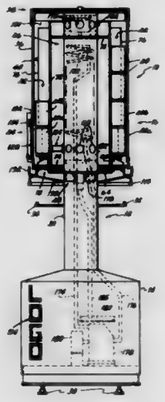
1. In an air conditioning system having a refrigerant circuit which includes a compressor, a receiver dryer for storing liquid refrigerant and refrigerant within said refrigerant circuit, said receiver dryer having an inlet for receiving refrigerant and an outlet for discharging refrigerant, said outlet being coupled to an outlet extension which extends within said receiver dryer, the improvement comprising a protection device for controlling the operation of said compressor, said protection device compriaing:

first detector means for detecting the amount of refrigerant in said receiver dryer, said detector means being formed of float means for floating within said receiver dryer in accordance with the level of said refrigerant and first sensor means for providing a first refrigerant level signal, said float means being movably disposed about said outlet extension for movement along a substantial portion of substantially the entire length of said extension in accordance with the level of refrigerant in said receiver dryer, said sensor means being fixedly disposed relative to said float means and includes means for detecting the presence of said float means, said sensor means producing said first refrigerant level signal when said sensor means detects the presence of said float means; and

control means coupled to said detector for receivng said first refrigerant level signal and controlling the operation of said compressor in response to said first refrigerant level signal, wherein said control means prevents the operation of said compressor when said first refrigerant level signal is received.

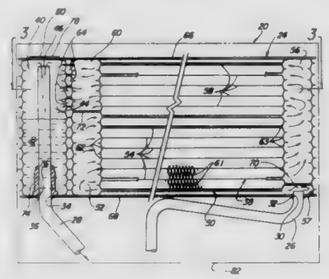
VOL 1098 ISS 1 JA 3 1989 UMI

4,794,764
ARTICLE DISPLAY APPARATUS
James A. Dyment, New Richmond; Harvey W. Benison, Cincinnati; Karl E. Haschart, Cincinnati, and John S. Veach, Cincinnati, all of Ohio, assignors to Dyment Limited, Ontario, Canada
Continuation-in-part of Ser. No. 764,989, Aug. 12, 1985, Pat. No. 4,663,943. This application Feb. 5, 1987, Ser. No. 11,206
Int. Cl.[4] A47F *3/04*
U.S. Cl. 62—250 16 Claims



1. An article display apparatus comprising:
a base support;
a housing mounted to said base support, said housing having a hollow interior defined by transparent outer wall means formed with an article access opening;
an article support carriage mounted to said base support beneath said housing, said article support carriage having a plurality of spaced article supports each adapted to support articles in vertical columns within said hollow interior of said housing, said article supports being pivotal between an article support position and an article removable position;
a door assembly mounted to said outer wall means of said housing at said article access opening therein, said door assembly comprising:
(i) a door panel movable between an open position for permitting removal of articles from said housing through said article access opening therein, and a closed position in which said article access opening is closed, said door panel being formed with a cam surface;
(ii) a column support arm having a gripper element, said column support arm being movable between a retracted position spaced from said vertical columns of articles and a support position in which said gripper element contacts the article immediately above the lowermost article in said vertical column to retain the remaining articles in position in said vertical column;
(iii) pivot means mounted in operative engagement with said column support arm and said cam surface of said door panel, said pivot means being movable relative to said cam surface in a first direction to urge said column support arm into said support position in response to opening of said door panel, said pivot means being movable relative to said cam surface in a second direction to urge said column support arm into said retracted position in response to closing of said door panel;
(iv) pusher means operatively connected to said door panel for pivoting said article supports to said article support position upon closing said door panel and for pivoting said article supports to said article removal position upon opening said door panel; and
cooling means for cooling said hollow interior of said housing.

4,794,765
INTEGRAL EVAPORATOR AND ACCUMULATOR FOR AIR CONDITIONING SYSTEM
Thomas J. Carella, 2923 North Ave., Niagara Falls, N.Y. 14305, and John N. Bannan, 5674 Wendy Circle, Lockport, N.Y. 14094
Filed Mar. 27, 1987, Ser. No. 31,022
Int. Cl.[4] F25B *43/00*
U.S. Cl. 62—512 1 Claim

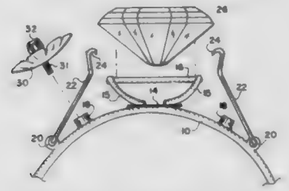


1. An integral evaporator and accumulator assembly comprising: a housing including a fluid inlet and a fluid outlet; and heat exchange core in direct fluid communication with said fluid inlet for interchanging heat between refrigerant and a fluid passing over said core; an accumulator chamber within said housing in direct fluid communication with said fluid outlet and said heat exchange core for collecting vaporized and unvaporized refrigerant directly from said heat exchange core and for providing an environment of vaporized refrigerant about said fluid outlet, said housing including a stack of plates having a first opening at one end and second and third openings at a second end and corrugations extending traverse to and being in contact with the corrugations in an adjacent plate and its periphery joined to the periphery of said adjacent plate to form one series of said stacked flow chambers, said first openings being aligned to form a first header, said second openings being aligned to form a second header and said third openings being aligned to form said accumulator chamber, one of said plates having a first opening closed to define a first closing in said first header, one of said plates having said second opening closed to define a second closing in said second header, and several of said top plates including embossments extending between said second and third openings and between said first and second openings and said corrugations to define said passageways to and from said headers and flow chambers and said accumulator chamber, said lower plates including embosses extending from said first and second openings to said corrugations defining passageways for fluid flow in said lower stacked plates only between said headers and said flow chambers.

4,794,766
FINGER RING WITH INTERCHANGEABLE STONE
Shane P. Schunk, 5858 Folkstone La., Orlando, Fla. 32822, and Jackson E. Schunk, Shi-Sul (La60 Sul), OI-15 Chacara 62, Brasilia, D.F., Brazil
Filed Apr. 28, 1988, Ser. No. 187,313
Int. Cl.[4] A44C *9/00*
U.S. Cl. 63—15 7 Claims

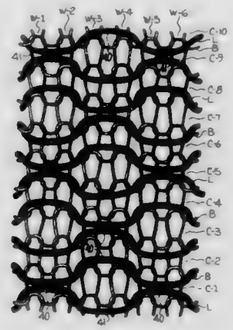
1. A ring having an interchangeable stone comprising:
a finger encircling ring;
a setting for a stone attached to said ring;

a pair of pivot eyes, one of said pivot eyes attached to said ring on either side of said setting and circumferentially spaced therefrom;
a pair of radially projecting bosses having internal threads therein, one of said bosses attached to said ring on either side of said setting and between said pivot eye and said setting;
a pair of approximately V-shaped stone clamps, each having an apex portion pivotally engaging one of said pivot eyes,



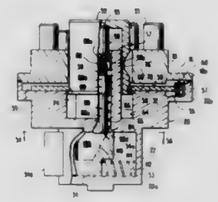
and a pair of distal ends forming stone engaging hooks; and
a pair of clamping screws, each of said screws for threadedly engaging one of said bosses and one of said stone clamps;
whereby a selected stone is removably disposed in said mounting, each of said stone clamps disposed to cause said hooks to engage facets of said stone, and each of said clamping screws threaded into one of said bosses for compressing said stone clamp for holding said stone in said setting.

4,794,767
CIRCULAR KNIT TWO-LAYER UPHOLSTERY FABRIC AND METHOD
Victor J. Lombardi, 2715 Charlotte La., Burlington, N.C. 27215
Filed Aug. 14, 1987, Ser. No. 85,139
Int. Cl.[4] D04B *9/16, 1/04*
U.S. Cl. 66—190 19 Claims



1. A circular knit two-layer fabric having stability and limited stretchability in both course wise and walewise directions and being particularly adapted for use as upholstery and the like, said fabric comprising
a first layer knit of thermoplastic base yarn and forming stitch loops in wales of successive courses to provide a technical face side of said fabric, and
a second layer formed of lay-in yarn extending generally coursewise and in a sinuous manner along the juncture of the stitch loops of certain courses of said first layer and providing a technical back side constituting the exposed wear surface of the fabric, said lay-in yarn alternately forming tuck floats and welt floats extending across pairs of adjacent wales and along the juncture of the stitch loops of successive courses of said first layer, said tuck floats and said welt floats in adjacent pairs of courses being staggered relative to the corresponding tuck floats and welt floats in adjacent pairs of courses, and said lay-in yarn being in the range of two to ten times larger than said base yarn so that said lay-in yarn substantially covers said base yarn and provides the tactile characteristics and hand or said lay-in constituting the exposed wear surface of the fabric.

4,794,768
PUSH BUTTON COMBINATION LOCK TYPE GAS CAP AND ACTUATOR EMPLOYED THEREIN
Douglas J. Moser, 371 Lynn Dr., Ventura, Calif. 93003; Damian Sysclair, 3958 W. Sweetwater Dr., Tucson, Ariz. 85745, and Alan R. Friedman, 3400 W. Gorst Rd., Tucson, Ariz. 85745
Filed Sep. 21, 1987, Ser. No. 98,658
Int. Cl.[4] B65D *55/14*
U.S. Cl. 70—165 16 Claims



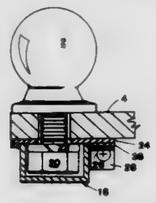
1. A push button combination lock type gas cap comprising:
a casing mountable to an open end of the fuel tank filling neck,
a stopper mounted within said casing for movement between a first position in which the cap is removable from the filler neck, and a second position where the cap is locked thereto, a first push button mounted on said casing for movement in the direction of its axis between projected and depressed positions,
means responsive to depression of said first push button for shifting said stopper to said first position for locking said cap to said filler tube,
means for holding said first push button in depressed position in response to depression thereof,
shiftable pawl means carried by said casing for normally preventing retraction of said first push button, upon depression thereof,
a plurality of second push buttons mounted to said casing for shifting in the direction of their axes between retracted and depressed positions,
means for holding said second push buttons in depressed position after depression thereof, and
means responsive to depression of selected ones of said second push buttons for effecting release of said pawl means thereby permitting movement of said first push button from depressed to retracted position and for effecting stopper movement from cap lock to cap unlock position.

4,794,769
BALL HITCH LOCK
Thomas H. Persons, 3200 Quarles Rd., Brooklyn Center, Minn. 55429
Filed Nov. 20, 1987, Ser. No. 123,202
Int. Cl.[4] F16B *41/00*
U.S. Cl. 70—232 4 Claims

1. Locking apparatus comprising:
(a) a washer member having a bore, a recess surrounding said bore and an apertured tang portion, mounting about a threaded fastener member;
(b) a cap member having an open end mounting in said recess and including a mating apertured tang portion mounting to said washer member hasp and wherein one of said tank portions forms a channelway for receiving the other tang portion; and

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(c) means insertable through said tang portions when mounted to one another for securing said cap member in



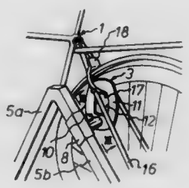
protective covering relation to said threaded fastener member.

4,794,770

DEVICE FOR LOCKING A BICYCLE

Kenneth Andersson, Grönegatan 8; Bruno Andersson, Furugatan 21, both of S-333 00 Smålandsstenar, and Lars Olofsson, Kraggatan 9 C, S-411 19 Göteborg, all of Sweden

Continuation of Ser. No. 826,484, filed as PCT SE85/00202, May 13, 1985, published as WO85/05338, Dec. 5, 1985, abandoned. This application Apr. 29, 1988, Ser. No. 186,767
Claims priority, application Sweden, May 14, 1984, 8402586
Int. Cl.[4] F05B *71/00*
U.S. Cl. 70—234 **9 Claims**



1. A device for securing a bicycle, comprising:
a lock rigidly mounted on the bicycle, the lock having a locking element movable along a predetermined locking path to a locked position where the locking element immovably blocks a movable operative part of the bicycle;
a stand having a vertical part defining a first plane, the stand being immovable;
a first member movable vertically on the stand, said first member having a rigid element transversely projecting from said first plane and having a plate-like member attached to a terminal end of said rigid element remote from said first member, said plate-like member defining a second plane that is substantially parallel to said first plane, said plate-like member having an opening therethrough substantially transverse to said first and second planes, said opening adapted to intercept the predetermined locking path, the plate-like member being shaped to capture the movable locking element of the lock and thereby to attach the bicycle to the stand, the plate-like member becoming captive with the rigidly mounted lock.

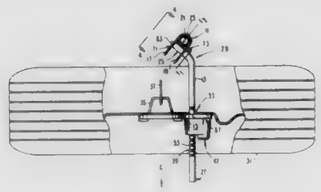
4,794,771

SPARE TIRE LOCK

William E. Princell, 8212 Halyard Way, Indianapolis, Ind. 46236

Filed Aug. 25, 1987, Ser. No. 89,316
Int. Cl.[4] B62D *43/04*
U.S. Cl. 70—259 **20 Claims**

1. A spare tire lock suspended from a support member comprising:
means for mounting to the support member supported by the support member, said means for mounting to the support member having a noncircular hole located therein;
a shaft adapted to receive a spare tire and having an upper end, said upper end having an axis and including a tab portion, said tab portion having a radially outward projection, said tab portion having a shape which, when said



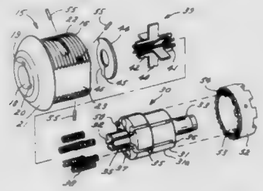
upper end is moved axially, fits through said noncircular hole of said means for mounting to the support member, wherein said projection of said tab portion bears against said means for mounting upon insertion of said tab portion through said noncircular hole and rotation of the upper end of said shaft about said axis; and
means for locking around said shaft.

4,794,772

AXIAL WAFER TUMBLER LOCK AND KEY

Sidney Falk, and James M. Alex, both of River Grove, Ill., assignors to K.X.L. Manufacturing, Inc., River Grove, Ill.

Filed Mar. 10, 1988, Ser. No. 166,204
Int. Cl.[4] E05B *27/08*
U.S. Cl. 70—491 **12 Claims**



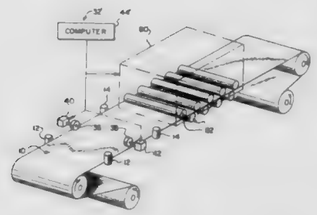
1. In a tubular lock having axial wafer tumblers operable by a tubular key, the combination comprising:
a cylindrical shell having a central bore extending longitudinally from front to rear,
a rotatable spindle plug disposed within the shell bore,
said spindle plug including a cylindrical portion intermediate its ends,
a key receiving shaft projecting forwardly from said cylindrical portion, an actuating member projecting rearwardly from said cylindrical portion, and a plurality of radial slots disposed about the periphery of the key receiving shaft and extending into said cylindrical portion with the cylindrical portion having the same plurality of radial slots disposed about its periphery, each of the cylindrical portion slots having a spring bore extending longitudinally from its front and terminating adjacent the rearward end of said cylindrical portion,
a tumbler spring disposed in each of said bores,
a plurality of generally T-shaped wafer tumblers having a radially outwardly extending blade portion, a forwardly extending combination leg and a rearwardly extending tail slidably disposed in said slots such that the tail rides in the slots radially inwardly of said springs, and the rearward ends of said blade portions engage said springs,
means including a first plurality of notches disposed about the periphery of the shell cylindrical bore at the forward end of the shell positioned to be slidably engaged by forward ends of the tumbler blade portions in the lock-up positions of said tumblers,
a second plurality of notches in the front face of a rear sleeve member adapted to be positioned at the rear of said shell bore and fixed to said shell such that slidable movement of the tumblers rearwardly can result in rearward portions of the blade members engaging with the rear notches to maintain lockup,
said key shaft being adapted to receive the tubular key having internal radial fins that are combinated longitudinally to engage with the combination legs of the tumblers when the key is positioned around the shaft and inserted to slidably move the tumbler blade portions to an intermediate position free of the front or rear end notches thereby allowing the spindle plug to be rotated within the shell.

4,794,773

METHOD OF MEASURING CAMBER

Charles R. Bradlee, Sidney, Ohio, assignor to Monarch Machine Tool Company, New Bremen, Ohio

Filed Jul. 29, 1987, Ser. No. 79,305
Int. Cl.[4] B21C *51/00*; B26D *5/00*; G01B *3/12, 7/28*
U.S. Cl. 72—12 **4 Claims**



1. A method of measuring camber in a sheet of metallic material having upper and lower surfaces and first and second longitudinal edges and a width W comprising the steps of:
(a) displacing said sheet in a path between fixed guides in a plane of said sheet perpendicular to said width such that a point on a center of said sheet travels a predetermined distance past a datum line perpendicular to said path, said sheet being directed by engaging said edges against said guides;
(b) measuring a length of said sheet adjacent to said first longitudinal edge thereof which moves past said datum line when said sheet is displaced said predetermined distance by bringing a first measuring wheel into contact with said sheet on one of said surfaces adjacent to but spaced from said first longitudinal edge and generating a first number of pulses proportional to an amount of rotation of said first wheel, said first number of pulses having a value A proportional to said first edge length;
(c) measuring a length of said sheet adjacent to said second, opposite longitudinal edge whereof which moves past said datum line when sheet when sheet is displaced said predetermined distance by bringing a second measuring wheel into contact with said sheet on one of said surfaces adjacent to but spaced from said second longitudinal edge and generating a second number of pulses proportional to an amount of rotation of said second wheel, said second number of pulses having a value B proportional to said second edge length; and
(d) calculating camber at a centerline of said sheet, expressed as a radius of curvature R_C of said sheet, by the equation

$$R_C = W\left(\frac{A}{A-B}\right).$$

4,794,774

METHOD OF PREPARING A DENTAL RESTORATION

Danny R. Clark, Weatherford, Tex., and Asami Tanaka, Skokie, Ill., assignors to Tanaka Dental Enterprises, Skokie, Ill.

Filed Jul. 29, 1987, Ser. No. 79,475
Int. Cl.[4] B21D *22/10*
U.S. Cl. 72—63 **9 Claims**



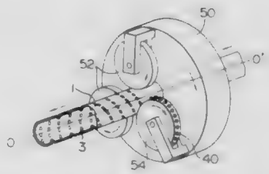
6. A method of preparing a mold of a die comprising
providing an isostatic press having a chamber containing fluid;
covering said die with a heat reformable material;
placing said covered die in a flexible fluid-impermeable sack;
placing said sack in said chamber of said isostatic press;
applying pressure to said fluid; and
applying heat to said fluid, whereby said heat and pressure are transmitted through said sack to said heat reformable material to isostatically press said material against said die to make a mold thereof.

4,794,775

METHOD OF PRODUCING A HEAT TRANSFER TUBE FOR SINGLE-PHASE FLOW

Heikichi Kuwahara, Ibaraki; Kenji Takahashi, Abiko; Takehiko Yanagida, Tsuchiura; Wataru Nakayama, Kashiwa; Shigeo Sugimoto, Ibaraki, and Kiyoshi Oizumi, Tsuchiura, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., Tokyo, Japan

Division of Ser. No. 746,798, Jun. 20, 1985, Pat. No. 4,690,211. This application Dec. 23, 1986, Ser. No. 945,564
Claims priority, application Japan, Jun. 20, 1984, 59-125224
Int. Cl.[4] B21D *53/06*
U.S. Cl. 72—78 **4 Claims**



1. A method of producing a heat transfer tube for single-phase flow having one or more rows of projections plastically

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formed on the tube inner surface along a spiral curve or curves, each row including a multiplicity of discontinuous projections such that the portions of the tube inner surface between adjacent rows present surfaces parallel to the tube axis, said method comprising: depressing the outer surface of a tube blank by a tool having at least one row of discontinuous gear-like projections on its outer peripheral surface such as to form correspondingly radially inward projections on the inner surface of said tube blank, wherein said tool further includes at least one fixing tool for fixing said tube blank, said fixing tool and said gear-like tool rolling on the outer surface of said tube blank about a longitudinal axis of said tube blank to form at least one row of projections on the inner surface of said tube blank, and wherein said fixing tool and gear-like tool are arranged so as to coaxially surround said tube blank.

4,794,776

LOAD-BEARING STRUCTURE FOR A CONTINUOUS ROLLING MILL FOR SEAMLESS TUBE MAKING

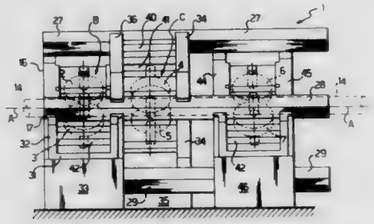
Cesare Galletti, San Felice di Segrate; Emanuele Guccia, Milan, and Giorgio Quecchia, Corsico, all of Italy, assignors to INNSE Innocenti Santeustacchio S.p.A., Brescia, Italy

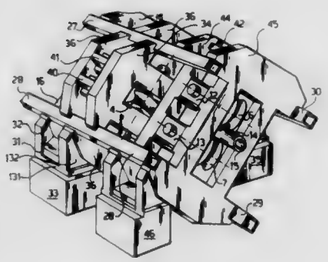
Filed Feb. 4, 1987, Ser. No. 10,823

Claims priority, application Italy, Feb. 6, 1986, 19310 A/86

Int. Cl.[4] B21B *17/04, 31/08*

U.S. Cl. 72—235 **5 Claims**





1. A continuous rolling mill for producing seamless tubes from axially bored blanks fitted over respective mandrels and operating on a restrained mandrel technique, comprising:

a plurality of working roll pairs and their respective chocks, said plurality of working roll pairs being aligned and alternately inclined at a set angle to a rolling axis;

a substantially box-shape, self-supporting framework extending in the same direction as said rolling axis and being stiffened both in said rolling axis direction and perpendicular thereto;

a plurality of seats for accommodating and supporting said plurality of working roll pairs and respective chocks, said plurality of seats being formed transversely in said framework and arranged adjacent to each other in a parallel alignment with said rolling axis; and

a plurality of planar subframes supported and secured transversely on said framework in a mutually spaced relationship along said rolling axis, wherein a number n of said plurality of planar subframes define a number n-1 of said seats for accommodating and supporting working roll pairs;

each said plurality of planar subframes including a plate carried on said framework perpendicular to said rolling axis and being centrally penetrated by an opening of a size to admit a tube blank and its corresponding mandrel through the opening.

4,794,777

CONTINUOUS EXTRUSION OF METALS

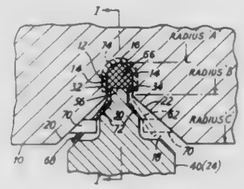
John East, Wantage, and Ian Maxwell, Reading, both of England, assignors to Metal Box Public Limited Company, United Kingdom

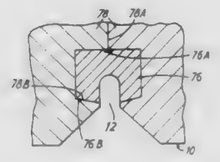
Continuation-in-part of Ser. No. 574,511, Jan. 27, 1984, Pat. No. 4,610,725. This application Jun. 6, 1986, Ser. No. 871,380

Claims priority, application United Kingdom, Feb. 3, 1983, 8302951; Apr. 12, 1983, 8309836

Int. Cl.[4] B21C *23/00, 29/00*

U.S. Cl. 73—262 **13 Claims**





1. A method of producing a rotary wheel member adapted for use in a rotary, friction type, continuous extrusion apparatus having an abutment member, which method comprises the steps of:

(a) producing a rotary wheel having formed in its cylindrical peripheral portion a continuous, radially-extending groove, and secured in that groove for movement with said peripheral portion of said wheel a solid annular metal mass;

(b) rotating said wheel about its rotary axis; and

(c) applying to the periphery of said annular metal mass secured in said wheel a tool of predetermined end shape, and progressively advancing said tool in a radial direction as said wheel continues to rotate whereby to machine in the peripheral portion of said annular metal mass a working groove of predetermined desired transverse cross sectional shape;

said peripheral portion of said annular metal mass which defines said working groove being of a composition which is substantially the same as that of a predetermined feedstock metal that is to be extruded in a said apparatus when equipped with the wheel member so produced; and said predetermined end shape of said tool being substantially the same as that of the abutment member which is to be used in that apparatus to close the end of an arcuate passageway which is formed in said working groove by a

shoe member which when the apparatus is in operation co-operates with said cylindrical peripheral portion of said wheel member.

4,794,778

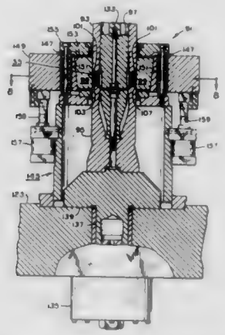
CORE SIZING APPARATUS

Harold L. Fritzsche, Rapid City, S. Dak., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 904,140, Sep. 4, 1986, which is a division of Ser. No. 660,211, Oct. 12, 1984, Pat. No. 4,613,780. This application Nov. 25, 1986, Ser. No. 934,889

Int. Cl.[4] B21D *22/00*

U.S. Cl. 72—354 **16 Claims**



1. Apparatus for predeterminately sizing an inner circumferential surface and an outer circumferential surface of an edge wise wound core, the core including a lanced strip of generally thin ferromagnetic material having a pair of generally opposite edges and edgewise wound into a plurality of helical convolutions arranged in a generally annular stack having a pair of generally opposite end faces thereby to comprise the core with the opposite edges on the helical convolutions arranged generally axially between the opposite end faces thereby to define the inner and outer circumferential surfaces of the core, a generally tapered part on one of the opposite edges on the helical convolutions at least generally adjacent the outer circumferential surface, and a plurality of spaced apart tooth tips at least generally adjacent the outer circumferential surface, and a plurality of spaced apart tooth tips at least generally adjacent the other of the opposite edges on the helical convolutions and arranged generally in a plurality of rows thereof between the opposite end faces of the core thereby to comprise the inner circumferential surface thereof, respectively, the apparatus comprising:

a first die movable between an at-rest position and another position disposed against further movement, the core being disposed in a preselected located position on said first die in its at-rest position with one of the opposite end faces of the core being supported on at least a part of said first die;

a second die arranged generally in opposed relation with said first die and movable between a retracted position and a pair of protracted positions and including a generally annular beveled die surface having a generally circular leading edge thereon, said leading edge of said beveled die surface being engaged with the tapered part of one of the helical convolutions at the other of the opposite end faces of the core at least generally adjacent the outer circumferential surface thereof upon the movement of said second die from the retracted position toward one of the protracted positions thereof when said first die is in its at-rest position thereby to contain the core in its preselected located position between said first and second dies;

a generally cylindric sizing arbor arranged at least in part generally concentrically with said second die and said beveled die surface thereof and movable between a retracted position and a pair of protracted positions, said sizing arbor being movable from the retracted position toward one of the protracted positions thereof so as to be disposed in predetermined radially spaced relation with the tooth tip rows of the core at least when said first die is in its one protracted position with the core contained in its preselected location position between said first and second dies, said first die being movable form the at-rest position toward the another position thereof and said second die and said sizing arbor being movable from the one protracted positions toward the other of the protracted positions thereof conjointly with the movement of said first die toward its another position with the core being contained in its preselected located position between said first and second dies and said sizing arbor being in its predetermined radially spaced relation with the tooth tip rows of the core, respectively;

a set of sizing jaws movable between open positions and closed mating positions, said sizing jaws in the open position thereof being generally circumferentially arranged in confronting radially spaced relation about the outer circumferential surface of the core contained in its preselected located position between said first and second dies when said first die is in its another position and said second die and said arbor are in their other protracted positions, respectively;

means operable generally for camming said sizing jaws to effect the movement of said sizing jaws from the open positions toward the closed mating positions thereof, said sizing jaws in the closed mating positions thereof being disposed in predetermined radially spaced relation with the outer circumferential surface of the core when said first die is in its another position and said second die and said arbor are in their other protracted positions with the core contained in its preselected located position between said first and second dies, respectively; and

means associated with said second die and operable generally for exerting a force on said second die at least when said second die is in its other protracted position urging said second die toward said first die in its another position, said beveled die surface on said second die being engaged only with the tapered part on the one helical convolution at the other opposite end face of the core thereby to effect deformation of at least some of the tapered parts generally axially between said beveled die surface and said at least part of said first die and to effect compression of axially adjacent ones of the tapered parts into engagement with each other in response to the force exerted by said force exerting means on said second die, and the outer circumferential surface of the core being displaced generally radially outwardly thereof into sizing engagement with said sizing jaws in the closed mating positions thereof so as to predeterminately size the outer circumferential surfaces of the core and the tooth tip rows of the core being displaced generally radially inwardly thereof into sizing engagement with the sizing arbor so as to predeterminately size the inner circumferential surface of the core in response to the compression of the axially adjacent ones of the tapered parts into engagement with each other between said beveled die surface on said second die and said at least part of said first die, respectively.

4,794,779

BENDING MACHINE

Leonard J. Schweitzer, 3272 Sailless Dr., Reno, Nev. 89509

Filed Jun. 8, 1987, Ser. No. 59,704

Int. Cl.[4] B21D *7/00*

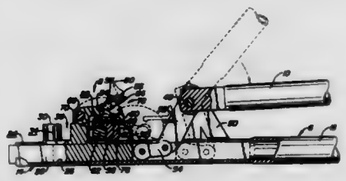
U.S. Cl. 72—389 **17 Claims**

1. Apparatus for bending a metal bar in a generally horizontal plane comprising a base;

first and second spaced apart forming posts projecting generally upwardly from the base; and

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a bar bending mechanism comprising a linearly reciprocating slide mounted to the base and movable relative thereto in a direction substantially perpendicular to a line interconnecting centers of the forming posts, the base including means defining a linear guideway for the slide, the mechanism including first and second, spaced apart bending means each adapted to engage a bar to be bent when the bar simultaneously contacts a periphery of each forming post so that movement of the mechanism deforms the bar, said first bending means comprising first and second, upwardly directed lugs attached to the slide and being spaced apart so as to form a first groove for accepting the bar for bending, said second bending means comprising means defining a second groove which is spaced from said first groove by a spacing, the second groove defining means being connected with the slide for linear movement therewith, and means for moving the mechanism, and



thereby the first and second bending means over a predetermined distance selected so that the first bending means moves from a first position at which it is located, in the direction of movement, on one side of the forming posts to a second position at which it is located on another side of the forming posts, said spacing between the first and second bending means being selected so that during such movement the second bending means moves from a first location at which it is proximate a straight line interconnecting the peripheries of the forming posts on said another side thereof to a second location at said another side of the forming post at which it is remote from said forming posts, whereby bent bar can be straightened by placing it in the second bending means so that portions of the bent bar engage the peripheries of the forming posts and moving the second bending means from the second location to the first location thereof.

4,794,780

CRIMPER FOR CRIMPING CABLE TERMINALS, CABLE CONNECTORS, AND SIMILAR MATERIALS TO ELECTRIC CONDUCTORS, OPTICAL CONDUCTORS, ETC.

Kurt Battenfeld, Ebsdorfergrund, Fed. Rep. of Germany, assignor to WEZAG GmbH Werkzeugfabrik, Stadtallendorf, Fed. Rep. of Germany

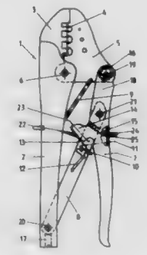
Filed Apr. 1, 1987, Ser. No. 33,509

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1986, 3611861; Mar. 18, 1987, 3708727

Int. Cl.[4] B21D *7/06*

U.S. Cl. 72—410 **7 Claims**

1. A crimper for crimping cable terminals, cable connectors, and similar materials to electric conductors, optical conductors, comprising: two handles displaceable toward each other; two crimping jaws on said handles for providing a crimping contour; one of said handles being stationary, one stationary crimping jaw being rigidly fastened to said stationary handle; said stationary crimping jaw and said stationary handle comprising a stationary crimper component, the other crimping jaw pivoting on said stationary crimper component; a first articulated support securing the other handle to said other pivoting crimping jaw; a second articulated support on said stationary handle, a pressure-application arm that unites the two handles by being connected at the second articulated support and at a toggle within said other handle, said pressure-application arm having a predetermined length and being part of a moving crimper component; toggle-lever drive means comprising said pressure-application arm and a toggle-lever section on said other handle having a predetermined length extending between said toggle and first articulated support, said other handle being a movable handle, said toggle being part of said toggle-lever drive means, the length of the pressure-application arm to the length of the toggle-lever section comprising a transmission ratio of substantially 2:1, stops limiting closing motion between the moving and the stationary crimper components just before said toggle-lever drive means attains an extended state, said crimper opening out of the position in which the crimping jaws are closed subject to the force of a spring alone, a line between said first articulated



support and the toggle on the moving handle coinciding substantially with the longitudinal axis of the moving handle, at least one of said articulated supports comprising pressure adjustment means by being displaceable to vary pressure; automatic locking means having a resiliently movable but stationary latch for preventing the crimper from opening before the crimping jaws have closed; said latch of said automatic locking means being positioned on said pressure-application arm; said automatic locking means having a toothed section with a plurality of teeth secured to said moving handle; said locking means being separate from said pressure adjustment means; said locking means opening always in an identical position of said movable handle and said pressure-application arm so that the transmission ratio remains unchanged independent of said pressure adjustment means.

4,794,781

DEFORMATION RESISTANT FRAME FOR A PRESS

Masakatsu Shiga, Machida, and Yuichi Nakamura, Sagamihara, both of Japan, assignors to Aida Engineering, Ltd., Sagamihara, Japan

Filed Sep. 28, 1987, Ser. No. 101,933

Claims priority, application Japan, Sep. 29, 1986, 61-149167[U]; Apr. 10, 1987, 62-88487

Int. Cl.[4] B21J *13/04*

U.S. Cl. 72—455 **9 Claims**

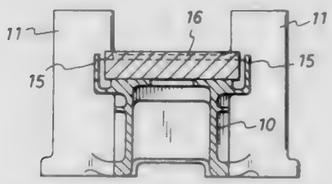
1. A frame for a press, comprising:

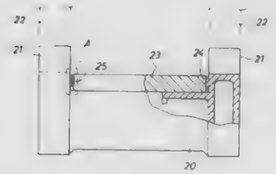
a horizontal bed having four corners in a plane; and

means for supporting said bed, said supporting means including

four vertically upstanding support members formed integrally with said bed at said four corners, and

rib members formed integrally with said bed and horizontally extending between, and being connected to said upstanding members, said rib members each having a vertical plate-shaped first portion having a greater vertical height than a horizontal thickness and being connected to said upstanding members and a second portion connecting said first portion to said bed, said first portion projecting





vertically with respect to said second portion and substantially surrounds said bed.

4,794,782

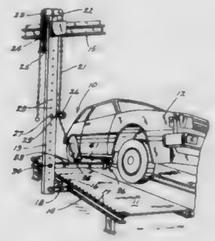
PIVOTING HOIST

Carl R. Field, 1013 SE. Peterson, and Pichai Saichaie, 1717 NW. 9th St., both of Ankeny, Iowa 50021

Filed Aug. 10, 1987, Ser. No. 83,220

Int. Cl.[4] B21D *1/12*

U.S. Cl. 72—457 **5 Claims**



1. Apparatus comprising:

vehicle supporting means for receivingly supporting the wheels of a vehicle, said vehicle supporting means having a front end, a rear end, sides connected to and between said front and rear ends, a top, and a bottom;

tower means attached to said vehicle supporting means for pulling on a part of a vehicle disposed on said vehicle supporting means;

an arm;

pivoting means for pivotally attaching one end of said arm to said tower means;

engagement means operably disposed on the other end of said arm for abutment with the underside of a vehicle;

means operably attached to said tower means and to said arm between said one end and the other end thereof for pivoting said arm about the pivoting means; and, means for allowing said engagement means to slide in a laterally translatable manner with respect to said arm.

4,794,783

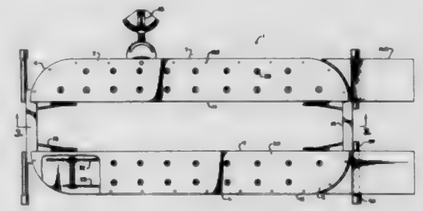
VEHICLE REPAIR AND ALIGNMENT RACK

Leonard F. Eck, McPherson, Kans., assignor to Hein-Werner Corporation, Waukesha, Wis.

Filed Mar. 5, 1987, Ser. No. 22,281

Int. Cl.[4] B21D *1/12*

U.S. Cl. 72—447 **12 Claims**



1. A work rack for vehicles comprising:

(a) spaced, parallel beam members having a vehicle supportive upper surface and opposite end portions, said beam members having an opening therebetween located at least at one of said end portions;

(b) a pull tower unit mounted to said beam members and including a carriage with movable mounting means for translatory movements about a periphery of said beam members for exerting pulls on selected parts of a vehicle situated thereon; and

(c) a bridge member extending across said opening at said end portions and having track means for translation of said pull tower unit thereon, said bridge member including means for removal and replacement from said beam members.

4,794,784

LEAK DETECTOR CALIBRATING DEVICE

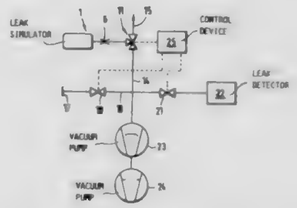
Werner G. Bley, Bonn, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 23, 1987, Ser. No. 41,416

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613694

Int. Cl.[4] G01M *3/02;* **G01D** *18/00*

U.S. Cl. 73—1 G **6 Claims**



1. In a leak detecting apparatus including a detector arranged for sensing a gas emanating through a specimen to be tested for leaks; a leak simulator having an outlet emitting a gas of a known flow rate; and valve means for selectively connecting said outlet to said detector during a calibration thereof and disconnecting said outlet from said detector during a leak detecting operation thereof; the improvement wherein said valve means comprises a fast-switching 3/2-way valve including

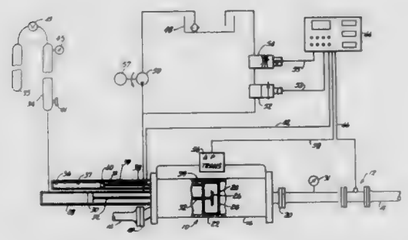
(a) a first valve port connected to the atmosphere;

(b) a second valve port connected to said detector;

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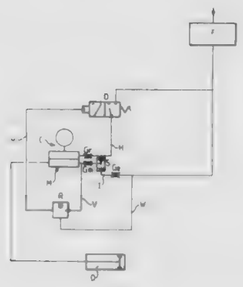
(c) third valve port connected to said outlet of said leak simulator;
(d) a movable valve member having first and second positions; in said first position said movable valve member allowing communication through the valve solely between said second and third valve ports to operatively connect the outlet of said leak simulator with said detector and in said second position allowing communication through said valve solely between said first and third valve ports to connect the outlet of said leak simulator with the atmosphere; and
(e) means for moving said movable valve member into said first or second position.

4,794,785
APPARATUS FOR DETERMINING THE CHARACTERISTIC OF A FLOWMETER
Gary D. Cohrs, Tempe; Ronald J. Jackson, Phoenix, and Edward E. Francisco, Jr., Paradise Valley, all of Ariz., assignors to Flow Technology, Inc., Phoenix, Ariz.
Continuation-in-part of Ser. No. 644,650, Aug. 27, 1984, abandoned, which is a continuation of Ser. No. 287,187, Jul. 27, 1981, abandoned, and a continuation-in-part of Ser. No. 644,651, Aug. 27, 1984, abandoned, which is a continuation of Ser. No. 288,338, Jul. 30, 1981, abandoned. This application Aug. 14, 1986, Ser. No. 898,763
Int. Cl.[4] G01F *25/00*
U.S. Cl. 73—3 **34 Claims**



1. Apparatus for proving a flowmeter in an operating fluid line through which fluid at a given static pressure flows, the apparatus comprising:
a fluid displacement measuring cylinder having near its ends, respectively, an inlet and an outlet connected in the fluid line;
a fluid displacement measuring piston adapted to travel through the measuring cylinder;
valve means in the fluid line for bypassing the measuring piston when open;
a control cylinder;
a movable rod having one end lying within the control cylinder and the other end connected to the side of the measuring piston facing toward one end of the measuring cylinder;
means for closing the valve means to drive the measuring piston through the measuring cylinder as a fluid barrier in synchronism with fluid flow through the fluid line in a test run from an upstream position to a downstream position;
means for sensing the movement of the measuring piston through the measuring cylinder during the test run;
means during the entire test run from the upstream position to the downstream position for exerting an approximately constant force on the one end of the rod; and
means for adjusting the approximately constant force to accommodate changes in static pressure from test run to test run.

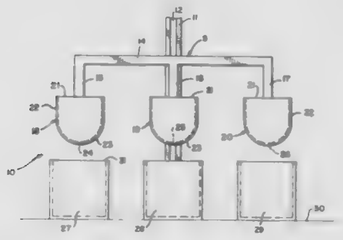
4,794,786
AUTOMATIC COMPRESSED AIR ECONOMIZER DEVICE INTENDED TO BE MOUNTED ON A PNEUMATIC COMPARATOR
Jean C. Lethiais, Le Neubourg, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France
Continuation of Ser. No. 29,381, Mar. 23, 1987, abandoned. This application Mar. 18, 1988, Ser. No. 166,412
Claims priority, application France, Apr. 5, 1985, 85 05231
Int. Cl.[4] G01B *13/10*
U.S. Cl. 73—37.9 **3 Claims**



1. An automatic compressed air economizer mounted on a pneumatic comparator having a measuring capsule, a measuring element pneumatically connected to the measuring capsule and a source of filtered gas, said economizer comprising:
a distribution unit having a lower cover and an upper cover, distribution unit being mounted to said measuring capsule;
a valve distributor mounted to said distribution unit and comprising means for permitting selective flow of filtered gas from said source of filtered gas;
a regulating jet positioned in an upper pipe within said distribution unit and pneumatically connected between the measuring capsule and the valve distributor;
a measuring jet positioned in a lower pipe within said distribution unit and pneumatically connected to the measuring capsule;
an economizer jet positioned within said distribution unit and pneumatically connected between said measuring jet and the source of filtered gas;
a circuit selector positioned within said distribution unit and comprising means for selectively and alternatively pneumatically connecting said measuring jet to each said economizer jet and said valve distributor, said circuit selector pneumatically connecting said measuring jet to said valve distributor when said valve distributor is activated to permit flow of filtered gas; and
a manostatic relay mounted to said distribution unit, said manostatic relay having pneumatic inputs pneumatically connected to the lower pipe at a position between the measuring capsule and the measuring jet and to said source of filtered air, and having an ouput pneumatically connected to the valve distributor and comprising means for actuating the valve distributor, whereby a pressure change in the measuring capsule due to a measuring operation causes said monostatic relay to actuate the valve distributor.

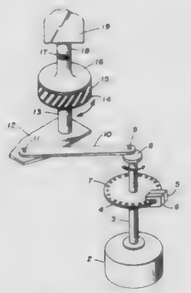
4,794,787
HIGH-LOW VISCOSITY COMPARATOR
Myron S. Gordon, 1700 Cleveland Rd., Miami Beach, Fla. 33141
Filed Jun. 5, 1987, Ser. No. 58,846
Int. Cl.[4] G01N *11/06*
U.S. Cl. 73—56 **14 Claims**

1. In a high-low viscosity comparator, first, second, and third containers having a quantity of used fluid, new fluid, and used fluid therein, first, second, and third cups mounted for movement into and out of engagement with the containers,



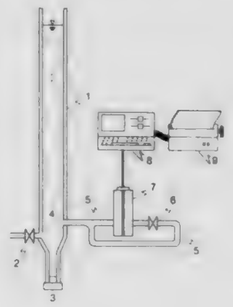
there being openings in the bottoms of said cups, the opening in the second cup being of greater size than the opening in the first cup and the opening in the third cup being of greater size than the opening in the second cup.

4,794,788
METHOD AND APPARATUS FOR RHEOLOGICAL TESTING
Thomas D. Masters, Woodmere, and Henry A. Pawlowski, Seville, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 5, 1987, Ser. No. 104,611
Int. Cl.[4] G01N *11/00*
U.S. Cl. 73—59 **14 Claims**



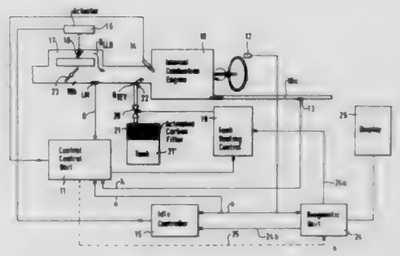
1. The method of testing a viscoelastic material comprising the steps of
(A) separately subjecting both a sample of the material and a standard to sinusoidal excitation,
(B) separately measuring a material response and a standard response at at least three displacement data points equally spaced throughout a cycle of excitation,
(C) separately applying a calculation operation to the data points to
(i) convert the material data points into values representing either a storage modulus or a loss modulus of the material; and to (ii) convert the standard data points into values representing a standard torque and a standard phase angle, and
(D) correcting the values representing the storage modulus or loss modulus for the material

4,794,789
RAPID SEDIMENT ANALYZER
Tatsuaki Natako, Coralville, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa
Continuation-in-part of Ser. No. 944,177, Dec. 22, 1986, abandoned. This application Dec. 7, 1987, Ser. No. 129,294
Int. Cl.[4] G01N *15/04*
U.S. Cl. 73—61.4 **4 Claims**



2. In an apparatus for measuring the sedimentation characteristics of solid particles suspended in a liquid which comprises a settling tube having a bottom and an open top, a valved drain in the bottom of the settling tube, a port between the top and the bottom, and a first pipe fluidly connecting the port in the settling tube to a first sensing port on a differential pressure transducer, the improvement comprising
a second pipe connecting the first pipe to a second sensing port on the differential pressure transducer; and,
a shut-off valve in the second pipe.

4,794,790
DIAGNOSTIC METHOD AND ARRANGEMENT FOR QUANTITATIVELY CHECKING ACTUATORS IN INTERNAL COMBUSTION ENGINES
Florin Margarit-Metaxa, Hamburg, and Helmut Denz, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Boesch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 17, 1987, Ser. No. 74,897
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1986, 3624441
Int. Cl.[4] G01M *19/00*
U.S. Cl. 73—117.3 **3 Claims**



1. A diagnostic method for quantitatively checking actuators in the open-loop and closed loop control of operating parameters of an internal combustion engine which includes: a fuel metering apparatus; an air-flow sensor; and, a central control unit including computer units; and, an exhaust system accommodating a lambda control, the actuators including the idle actuator and tank-venting valve (TEV) for effecting a tank

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ventilation, said actuators having respective hardware chains, the method comprising the steps of:

supplying increased or reduced air quantities (ΔQ_{TEV}, ΔQ_{LLR}) by means of a corresponding control of one of the tank-venting valve (TEV) and the idle actuator (LLS) during the operation of the engine; and,

observing feedback of rotational speed changes which occur (rotational speed n=constant; $n_{Diagn} > n_{alt}$; and, $n_{Diagn} < n_{alt}$) to provide an indication as to the functioning capability of the hardware chains of said actuators wherein:

n_{Diagn} is the diagnosed speed of the engine; and,

n_{alt} is the engine prior to starting the diagnosis.

4,794,791

METHOD AND DEVICE FOR MAKING MEASUREMENTS CHARACTERIZING GEOLOGICAL FORMATIONS, IN A HORIZONTAL BOREHOLE FORMED FROM AN UNDERGROUND WAY

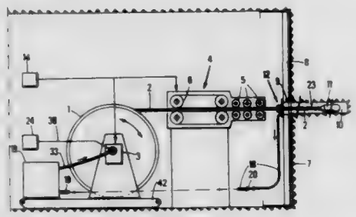
Christian Wittrisch, Rueil-Malmaison, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 26, 1987, Ser. No. 30,351

Claims priority, application France, Apr. 4, 1986, 8604960

Int. Cl.[4] E21B *49/00*

U.S. Cl. 73—151 **12 Claims**



1. A device for making measurements in geological formations from a horizontal borehole or a borehole with limited slant with respect to the horizontal made in the wall of an underground way including a probe containing measurement instruments adapted to be introduced into the borehole, which device further comprises an elongate element adapted to be wound on a storage reel, the probe being secured to said elongate element, feed means disposed between the circular support and the orifice of the borehole for moving the elongate element as it unwinds from the storage reel and the associated probe linearly therethrough, sealing means engageable on the orifice of the borehole for isolating the inside of the borehole from the underground way and a fluid pumping system for filling the borehole.

4,794,792

METHOD FOR DETERMINING FORMATION CHARACTERISTICS WITH ENHANCED VERTICAL RESOLUTION

Charles Flaum, Houston; James E. Galford, Sugarland, both of Tex., and Steven W. Ducket, Palo Alto, Calif., assignors to Schlumberger Technology Corporation, Houston, Tex.

Division of Ser. No. 915,439, Oct. 3, 1986. This application Mar. 3, 1988, Ser. No. 164,367

Int. Cl.[4] E21B *49/00*

U.S. Cl. 73—152 **24 Claims**

1. A method for determining the density of a subsurface geological formation traversed by a borehole, comprising the steps of:

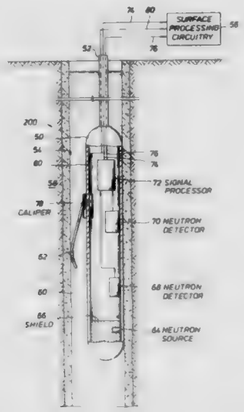
(a) passing a logging tool through the borehole, the logging tool having associated therewith a signal source and at least two signal sensors spaced from the signal source by different distances;

(b) transmitting a signal from the signal source into the subsurface geological formation;

(c) generating sensor signals from the at least two signal sensors in response to the signal from the signal source received by the at least two signal sensors;

(d) generating the individual density responses from the at least two sensor signals;

(e) matching the vertical resolution of the generated densities from the at least two signals;



(f) determining an environmentally compensated density from the at least two resolution matched individual densities;

(g) determining the differences between the compensated density of step (f) and the resolution matched density from the sensor spaced the least distance from the signal source; and,

(h) combining the result of step (g) with the unmatched density response, from step (d), of the sensor placed nearest the source to determine the density wherein the vertical resolution of the density is enhanced.

4,794,793

METHOD AND APPARATUS FOR MEASURING THE AIRSPEED OF A HELICOPTER AT LOW SPEED

Hélène Favre, Massy, and Jean T. Audren, Orsay, both of France, assignors to Societe De Fabrication D'Instruments De Mesure, France

Filed Feb. 1, 1988, Ser. No. 150,544

Claims priority, application France, Feb. 4, 1987, 87 01367

Int. Cl.[4] G01C *21/10*

U.S. Cl. 73—178 H **14 Claims**

7. Apparatus for measuring speed with respect to the air of a helicopter, particularly in the region of stationary flight, said helicopter comprising a lift rotor, a tail rotor, first control means for cyclic pitch (Pc) and for collective pitch (Pcol) of said lift rotor and second control means of pitch (Pac) of said tail rotor, said device comprising:

means for measurement of longitudinal cyclic pitch (Pcx) of blades of said lift rotor, and delivering a measurement signal of said longitudinal cyclic pitch (Pcx),

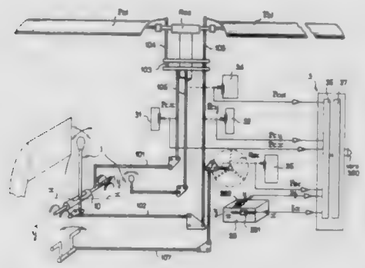
means for measuring lateral cyclic pitch (Pcy) of said blades of said lift rotor and delivering a measurement signal of said lateral cyclic pitch (Pcy),

means for measurement of longitudinal (γx) and lateral (γy) acceleration of said helicopter with respect to the ground and delivering a measurement signal of said longitudinal acceleration (γx) and a measurement signal of said lateral acceleration (γy) respectively,

means for measurement of said collective pitch (Pcol) imposed on said blades of said lift rotor and delivering a measurement signal of said collective pitch (Pcol),

means for measurement of said pitch (Pac) of said tail rotor and delivering a measurement signal of said pitch (Pac) of said tail rotor,

means for calculation of longitudinal (Vax) and transverse



(Vay) speed of said helicopter with respect to the air, said speeds (Vax, Vay) being expressed from a biunivocal function of measurement parameters of said longitudinal cyclic pitch (Pcx), of said lateral cyclic pitch (Pcy), of said longitudinal acceleration (γx), of said lateral acceleration (γy), of said collective pitch (Pcol) and of said pitch (Pac) of said tail rotor.

4,794,794

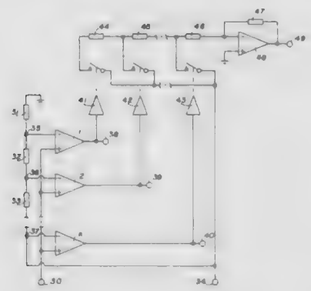
THERMAL ANEMOMETER

Robert S. Djorup, 20 Lovewell Rd., Wellesley, Mass. 02181

Filed Oct. 30, 1986, Ser. No. 924,893

Int. Cl.[4] G01F *1/68*

U.S. Cl. 73—204 **6 Claims**



1. A constant temperature thermal anemometer comprising:

(a) an electrical feedback controlled anemometer transducer bridge;

(b) said transducer bridge electrical signal output operatively connected to parallel, plural, dual input, signal level comparator means;

(c) said plural comparator means second input is operatively connected consecutively to a tapped resistance voltage divider reference level network;

(d) wherein said voltage divider network is operatively connected between two different voltage potential;

(e) said comparators provide compared input analog signal level versus reference level induced dual-state outputs as a digital representation of the non-linear constant temperature transducer sensed physical input to said transducer; the transducer further including,

(f) an output amplifier with selectable non-linearly tapped input signal attenuator means controlled by aforesaid comparator outputs with said attenuator connected through switch means to a fixed reference voltage potential;

(g) wherein said comparator outputs consecutively actuate said switch means thereby connecting taps of said input signal attenuator to said fixed reference voltage potential as each aforesaid successive comparator changes its operating state sequentially from a digitally represented minima to a digitally represented maxima, and the reverse, in accordance with and tracking said non-linear transducer bridge electrical output signal; and

(h) thereby producing a linearized analog signal representation of the transducer bridge output signal at the output of said output amplifier.

4,794,795

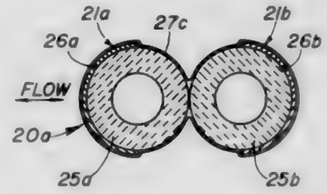
DIRECTIONAL THERMAL ANEMOMETER TRANSDUCER

Robert S. Djorup, 20 Lovewell Rd., Wellesley, Mass. 02181

Filed May 23, 1986, Ser. No. 866,604

Int. Cl.[4] G01F *1/68; G01P 5/12*

U.S. Cl. 73—189 **5 Claims**



1. A directional thermal anemometer transducer comprising: electrically non-conducting oblong substrate having a longitudinal axis and having at least two closely spaced opposing areas substantially thermally and electrically isolated from one another, each area covered with a non-zero temperature coefficient resistive sensing conductor, the conductor in each area extending only within the region of direct exposure to unseparated connected flow over the transducer substrate for flow in the plane defined by the longitudinal axis and the centers of the opposing areas, further including at least one cylindrical bar positioned in close proximity to and parallel with the resistive sensing conductor sensing elements to create aerodynamic turbulence to improve performance for shallow angles between incident flow and the transducer longitudinal axis.

4,794,796

BALANCING-VESSEL TRANSDUCER WITH INTER-COMMUNICATING CHAMBERS FOR THE CONVERSION OF A PNEUMATIC SIGNAL, LOW STRENGTH NOTWITHSTANDING, INTO A QUANTIFIABLE OUTPUT OF WHATEVER NATURE

Randolph N. Mitchell, Via Vincenzo Renieri, 14-00142 Roma, Italy

Filed Feb. 20, 1987, Ser. No. 17,773

Claims priority, application Italy, Mar. 7, 1986, 47741 A/86

Int. Cl.[4] G01L *7/24*

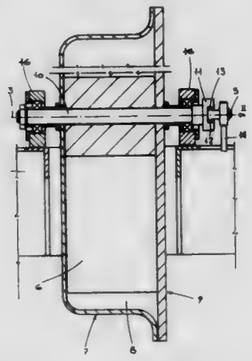
U.S. Cl. 73—751 **7 Claims**

1. A balancing-vessel transducer with intercommunicating chambers for the conversion of a pneumatic signal, low strength notwithstanding, comprising a cylindrical housing provided internally with a substantially diametric baffle disposed either vertically or on the rake, said housing being freely rotatable about a horizontal axis that coincides substantially with its center of mass, said baffle defining two chambers that intercommunicate by one or more openings at bottom and are part-filled with a liquid, one chamber connect connecting

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uppermost with an external source of fluid supplied at constant pressure, and the other chamber connect connecting with a line carrying the pneumatic signal to be converted;

a coaxially disposed shaft attached to the housing which rotates when the housing is rotated about its axis in response to ingress of the pneumatic signal into said other



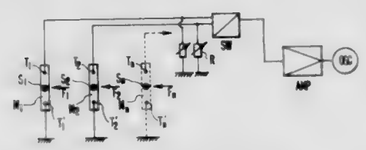
chamber; one end of said shafts having a butt exhibiting a longitudinal slot for the accommodation of a slide fixedly attached to a pin, and wherein the pin is the embodiment of a mechanical take-off, and the slide is adjustable for position along the length of the slot in the butt end of the shaft.

4,794,797

METHOD OF DETECTING STRUCTURAL ABNORMALITY OF SUBSTANCE

Hiroshi Ogawa, 6-2, Iwakura-muramatsu-cho, Sakyo-ku, Kyoto-shi, Japan

Filed May 4, 1987, Ser. No. 46,033
Claims priority, application Japan, May 2, 1986, 61-102832
Int. Cl.[4] G01M *5/00*
U.S. Cl. 73—786 **5 Claims**



1. A method of detecting structural abnormality in a structure composed of an electrically conducting crystalline or non-crystalline substance with no band gap, said method comprising:

detecting piezoelectricity and/or pyroelectricity generated in said substance; and

analyzing the piezoelectricity and/or pyroelectricity detected; and

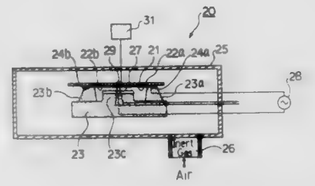
identifying the structural abnormality in the structure based on the analysis of the piezoelectricity and/or pyroelectricity detected.

4,794,798

DEVICE FOR MEASURING YOUNG'S MODULUS AND INTERNAL FRICTION OF SPECIMEN

Ken-ichi Matsushita; Taira Okamoto, both of Osaka; Masahiko Shimada, Miyagi, and Hisao Takeuchi, Hyogo, all of Japan, assignors to Sumitomo Electric Industried Limited, Osaka, Japan

Filed Apr. 2, 1987, Ser. No. 33,187
Int. Cl.[4] G01N *3/00*
U.S. Cl. 73—789 **16 Claims**



1. A transverse resonance measurement device for measuring the Young's modulus and/or internal friction of a plate specimen of a material over a wide temperature range even if the material is inconductive, comprising:

a vessel having a chamber for confining an inert atmosphere therein;

temperature regulating means for regulating the temperature of the inert atmosphere in the chamber of said vessel;

a first electrode applied to one side of said specimen;

a refractory jig placed in the chamber of said vessel and having two end ridges for supporting opposite end portions of said electrode on their tops;

two conductive wires fitted on the tops of the two end ridges of said jig, and adapted to be in contact with the first electrode when said specimen is supported by said jig;

a second electrode extended on the center of said jig between said two end ridges;

means for applying an alternating voltage between one of said wires and said second electrode to resonate said specimen relative to said jig; and

a detector for detecting the Young's modulus and/or internal friction of said specimen while the latter is being resonated.

4,794,799

METHOD OF AND AN APPARATUS FOR MEASURING THE PROPERTIES, PARTICULARLY THE COMPACTIBILITY OF A STIFF MASS TO BE CAST

Ilmari Paakkinen, Moinsalmi, SF-57320 Savonlinna, Finland

PCT No. PCT/FI86/00033, § 371 Date Aug. 3, 1987, § 102(e) Date Aug. 3, 1987, PCT Pub. No. WO86/05883, PCT Pub. Date Oct. 9, 1986
PCT Filed Mar. 27, 1986, Ser. No. 12,057
Claims priority, application Finland, Apr. 3, 1985, 851340
Int. Cl.[4] G01N *3/32*
U.S. Cl. 73—803 **10 Claims**

1. Method of measuring the properties, in particular the compactibility of a stiff mass to be cast, such as a fresh concrete mass, wherein

a sample (20) having a pre-determined weight is taken from the mass,

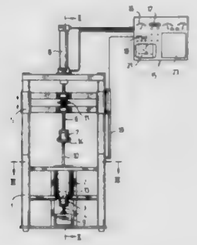
the sample is exposed to a compaction effect, and

the magnitude of a compression (S) of the sample and the work used therefore is determined, characterized in that

the sample (20) is compressed in two opposite directions with a constant force (P),

the sample is subjected to shearing compaction under a constant compression between two slanting planes (13,14)

which extend in parallel with each other and alter their position through rotation, and



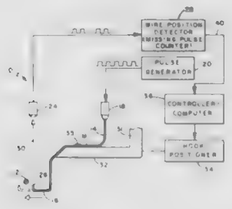
the volume (V and V_i) of the sample is measured at the beginning of the compaction and after certain compaction impulses (n).

4,794,800

WIRE SENSING AND MEASUREMENT APPARATUS

Bobby Atkinson, Fontana, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Oct. 1, 1987, Ser. No. 103,461
Int. Cl.[4] G01N *3/08*
U.S. Cl. 73—827 **6 Claims**



1. A wire pull test machine for testing the bond strength of connecting wires in an electrical circuit, comprising:

an optical fiber formed into a hook at one end;

an optical pulse generator coupled to the opposite end of the fiber for transmitting a continuous stream of pulses through the fiber;

an optical detector positioned opposite the hooked end of the fiber for detecting optical pulses emitted from said hooked end;

a missing pulse monitor connected to the optical detector for detecting any missing pulses in the pulse stream detected by the detector and for producing an output control pulse in response to each missing pulse detected;

drive means linked to the optical fiber for moving the hooked end of the fiber beneath a wire positioned on the electrical circuit and for pulling on a wire held in the hooked end; and

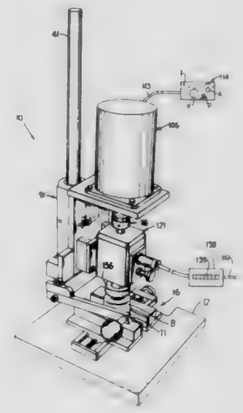
control means linked to the missing pulse monitor and to the drive means for controlling movement of the fiber comprising means for scanning with the hooked end of the fiber to detect the position of each wire on the electrical circuit in response to a control pulse from the missing pulse monitor, and for applying a pulling force to a wire located in the hook in response to detection of a wire.

4,794,801

BOTTLE CAP REMOVAL TORQUE TESTER

Thomas M. Andrews, Parchment; Carl L. Kuder, Vicksburg, and Frederic H. Schadewald, Richland, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 16, 1987, Ser. No. 62,913
Int. Cl.[4] G01L *5/00*
U.S. Cl. 73—862.23 **11 Claims**



1. A bottle cap removal torque tester comprising:

vertical guide means;

means for fixedly holding a bottle to be tested with respect to said vertical guide means;

a chuck engageable with the cap of said bottle for rotating said cap with respect to said bottle; and

a chuck rotating means for rotatably driving said chuck and for axially pressing said chuck against said cap on said bottle, said chuck rotating means comprising a power driven rotate motor for rotating said chuck in a direction to loosen said cap from said bottle and a torque sensor for sensing the torque applied by said rotate motor to said bottle cap;

a support unit alternatively fixed on and vertically slidable on said vertical guide means;

a carriage vertically slidable on said vertical guide means above said support unit, said carriage carrying said chuck rotating means;

means interposed between said support unit and carriage and manually actuable to raise and lower the carriage with respect to said support unit, said means to raise and lower said carriage comprising an arm pivoted on said support unit, a cam fixed on one of said arm and carriage, a cam follower roller on the other of said arm and carriage, said roller opposing said cam for riding thereon to support said carriage except when a bottle cap supports said chuck and therewith said carriage, said arm having means urgeable for pivoting said arm in a direction to interengage said roller and cam and therewith raise said carriage with respect to said support units, and means for holding said carriage stable in a raised position without further urging of said arm.

VOL 1098 ISS 1 JA 3 1989 UMI

4,794,802

PROCESS AND APPARATUS FOR MEASURING THE WARP TENSION IN LOOMS AND THE LIKE

Ernst Feltz, Uster, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

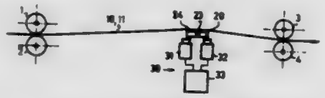
PCT No. PCT/CH85/00125, § 371 Date Mar. 24, 1987, § 102(e) Date Mar. 24, 1987, PCT Pub. No. WO87/00562, PCT Pub. Date Jan. 29, 1987

PCT Filed Aug. 27, 1985, Ser. No. 44,365

Claims priority, application Switzerland, Jul. 26, 1985, 03255/85

Int. Cl.[4] G01L *5/10*; G01B *17/00*

U.S. Cl. 73—862.41 23 Claims



Claim 1. Process for measuring the tension of a web of textile material such as a group of threads or a fabric, characterized in that a vibrating device (20) is provided in the region of and on one side only of the web of textile material whose tension is to be measured and the said web of textile material is moved over this vibrating device (20), in that the vibrating device (20) is set into vibrations by the web of textile material gliding over it, which vibrations are converted into electric signals of a frequency (f_e) by means of a sensor (34) and transducer (35), and in that the tension (P) of the web of textile material is determined from the resonance frequency (f_e) of the vibrating device (20).

4,794,803

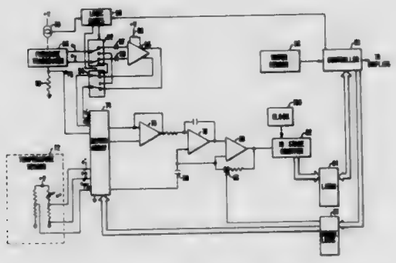
DECOMPRESSION AND AIR CONSUMPTION COMPUTER

Ralph Osterhout, San Francisco; Richard Kash, Los Altos, and Gregory Cedarlind, Redwood City, Greta L. Gleason, Belmont, Calif., assignor to Teknar, Belmont, all of Calif.

This application Jun. 9, 1987, Ser. No. 60,124

Int. Cl.[4] G01F *23/18*; G01D *21/02, 7/04*; H03F *7/00*

U.S. Cl. 73—865.1 16 Claims



10. An apparatus for amplifying a differential signal comprising:

first and second input terminals for receiving said differential signal;

an amplifier having a reference input, a signal input and a single ended output;

a capacitor having first and second leads, said second lead being coupled to said reference input of said amplifier;

first switch means for coupling said first input terminal to said first lead of said capacitor;

second switch means for coupling said second lead of said capacitor to said amplifier output; and

third switch means for coupling said second input terminal to said signal input of said amplifier.

4,794,804

SALT DAMAGE ENVIRONMENTAL TESTING CHAMBER FOR SELF-PROPELLED VEHICLES

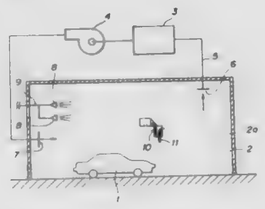
Masanobu Ishii, Yokohama, Japan, assignor to Kabushiki-Kaisha Toyo Seisakusho, Tokyo, Japan

Filed Mar. 9, 1987, Ser. No. 23,460

Claims priority, application Japan, Feb. 19, 1987, 62-36677

Int. Cl.[4] G01N *17/00*

U.S. Cl. 73—865.6 4 Claims



1. A salt-damage environmental testing chamber comprising:

a chamber;

means within the chamber and coupled thereto for spraying salt water into the interior of the chamber;

a humidity sensor within the chamber and coupled thereto;

an enclosure surrounding said humidity sensor and including a base fixed to the chamber and a cover movable relative to said base between a closed position enclosing said humidity sensor within the enclosure and an open position exposing said humidity sensor; and

means for moving said cover between its open and closed positions;

wherein said base is fixed to a wall of said chamber, and said moving means comprises a shaft rotatably journalled in said wall and having a first portion extending into said chamber and a second portion extending outside of said chamber, said cover being attached to said first portion of the shaft.

4,794,805

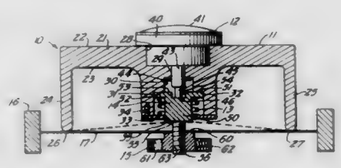
TENNIS RACKET STRING TENSION TESTER

William P. Carney, and Donald P. Carney, both of 4 High Ridge Rd., Oyster Bay, N.Y. 11771

Filed May 4, 1987, Ser. No. 45,574

Int. Cl.[4] G01L *5/06, 5/10*

U.S. Cl. 73—862.47 7 Claims



3. An improved tennis racket string tension tester comprising: a main frame element having a lower surface adapted to contact the strings of a tennis racket on a first side thereof, a resilient element carried by said main frame element having indicator means and a elongated plunger element communicating with said indicator means, said plunger element having a principal axis, and a radially oriented cylindrical member extending outwardly of said main frame element, said cylindrical member having a transversely extending string-engaging surface at an outer end thereof; a threaded shank carried by said cylindrical member and adapted to be projected through an interstice in the strings of a racket being tested, a thumb wheel threadedly engageable upon said threaded shank and serving to contact said strings on a second side thereof to urge the same out of the normal plane a predetermined distance into contact with said transversely extending surface; and resilient element of predetermined spring modulus connected to said plunger element and movable therewith in response to the applied tension of said strings, for measuring the degree of movement of said stud element in terms of observed string tension.

4,794,806

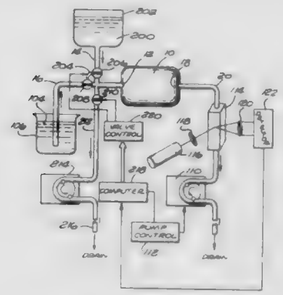
AUTOMATIC DILUTION SYSTEM

David F. Nicoli, 448 Mills Way, Goleta, Calif. 93117, and Virgil B. Elings, 1155 Via Tranquilla, Santa Barbara, Calif. 93110

Filed Feb. 13, 1987, Ser. No. 14,637

Int. Cl.[4] G01N *1/28, 35/00, 1/14, 21/49*

U.S. Cl. 73—863.01 39 Claims



1. An automatic dilution system for providing a variable dilution of an unknown sample material, including

a mixing chamber having at least one input and output, sample material and diluent,

means for providing a single injection of a quantity of the sample material into the input of the mixing chamber,

means for providing a flow of the diluent into the input of the mixing chamber to mix with the sample material and to continuously dilute the concentration of the sample material within the mixing chamber and flowing out of the mixing chamber to provide a variable dilution,

means coupled to the output of the mixing chamber and responsive to the diluted sample material for providing a measurement of a particular characteristic of the continuously variable diluted sample material, and

means coupled to the means for providing a flow of the diluent into the mixing chamber for controlling the flow of diluent in accordance with an optimal measurement of the particular characteristic.

4,794,807

TRACTOR TRANSMISSION

Yasuyuki Horii, and Takashi Yoshii, both of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Mar. 19, 1987, Ser. No. 27,905

Claims priority, application Japan, Jun. 12, 1986, 61-137150; Jul. 11, 1986, 61-163982; Jul. 11, 1986, 61-163984

Int. Cl.[4] B60K *17/28, 25/00*

U.S. Cl. 74—15.84 7 Claims

1. A transmission comprising:

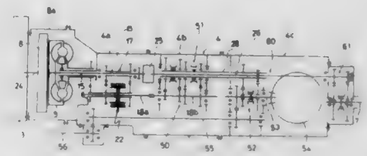
a torque converter,

said torque converter including a casing directly connected to a power output of an engine for providing a power input for said torque converter, a stator fixed to a stationary portion of said transmission, and a turbine liner functioning as an output portion of said torque converter;

a propelling transmission mechanism,

said propelling transmission mechanism having an input shaft secured to said torque converter casing and to said engine output; and

a power take-off transmission mechanism,



said power take-off transmission mechanism including an input shaft connected to said torque converter liner.

4,794,808

TRANSMISSION CONTROL

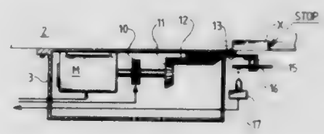
Willy Hausermann, Sandbackweg 5, CH-8157 Dielsdorf, Switzerland

Continuation of Ser. No. 690,746, Jan. 11, 1985, abandoned. This application Aug. 18, 1987, Ser. No. 88,023

Claims priority, application Switzerland, Jun. 5, 1984, 2727/84

Int. Cl.[4] B60K *20/10, 20/00*

U.S. Cl. 74—335 3 Claims



1. In a motor vehicle, the combination of a transmission having a plurality of gear ranges; means for selecting the ranges of said transmission including a lever movable between a plurality of positions each corresponding to a different gear ranges of said transmission; means for correctly positioning the lever in each of said positions; and means for moving said lever between said positions including a motor, disengageable coupling means interposed between said lever and said motor, and means for disengaging said coupling means upon completed movement of said lever to a selected position so that said positioning means can correctly position the lever in the selected position.

4,794,809

STEERING GEAR MECHANISM

Kazuyoshi Kobayashi; Teruo Koyama, and Takitaro Fukuda, all of Okazaki, Japan, assignors to Mitsubishi Jidoshs Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1985, Ser. No. 753,614

Claims priority, application Japan, Jul. 9, 1984, 59-102532[U]; Jul. 14, 1984, 59-106736[U]; Jun. 7, 1985, 60-85298[U]

Int. Cl.[4] B62D *3/12*

U.S. Cl. 74—422 1 Claim

1. A steering gear mechanism comprising:

a housing;

a shaft rotatably mounted within said housing and having a pinion fixed thereon;

a rack bar slidably mounted within said housing and having a rack on one side thereof engaging said pinion and driven by said pinion for sliding said rack bar within said housing, said rack being driven by said pinion to slide said rack bar over a steering range defined by two steering operation areas and a neutral steering area between said two steering

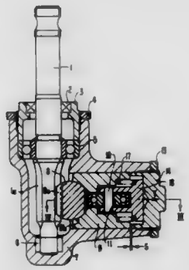
VOL 1098 ISS 1 JA 3 1989 UMI

operation areas, and said rack bar having a recess in the surface thereof opposite said rack;

first support means within said housing and abutting said rack bar when at said neutral steering area for supporting said rack bar when at said neutral steering area and for imparting a first force to said rack bar when said rack bar slides at said neutral steering area, said first force acting on said rack bar in a direction opposite to that in which said rack bar slides when at said neutral steering area for establishing a first resistance to the sliding of said rack bar when at said neutral steering area; and

second support means within said housing and abutting said rack bar when at either of said two steering operation areas for supporting said rack bar when at either of said two steering operation areas and for imparting a second force to said rack bar when said rack bar slides at either of said two steering operation areas, said second force acting on said rack bar in a direction opposite to that in which said rack bar slides when at either of said two steering operation areas for establishing a second resistance to the sliding of said rack bar when at either of said two steering operation areas,

said first support means and said second support means comprising a rack support within said housing, said rack



support slidable in a direction perpendicular to the direction in which said rack bar extends and biased against said rack bar for slidably guiding said rack bar when at said neutral steering area and when at said two steering operation areas, a spring within said housing for biasing said rack support against said rack bar, and a rotatable bearing having a shaft extending parallel to said pinion shaft and fixed relative to said housing and having a rotatable bearing member rotatably mounted to said shaft of said rotatable bearing and extending into said recess by an amount that is less than the depth of the recess such that when said rack bar is at said neutral steering area only said rack support supports said rack bar and when said rack bar is at either of said two steering operation areas said rack bar engages said rotatable bearing member and is urged toward said pinion thereby and said rack support slides under the influence of said spring to remain in a supporting relationship with said rack bar, and

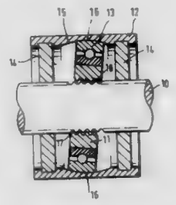
said first force being of such a magnitude that shimmy-vibrations imparted to the rack bar when at said neutral steering area are inhibited, and said first force being greater than said second force whereby a driving force exerted by said pinion that is required to slide said rack bar when at either of said two steering operation areas is less than that when said rack bar is at said neutral steering area.

4,794,810

LINEAR ACTUATOR

Bryan N. V. Parsons, Stoney Stanton, England, assignor to Jaguar Cars Limited, United Kingdom

Filed Apr. 3, 1987, Ser. No. 34,336
Claims priority, application United Kingdom, Apr. 12, 1986, 8608967
Int. Cl.[4] F16H *25/20*
U.S. Cl. 74—424.8 R 15 Claims



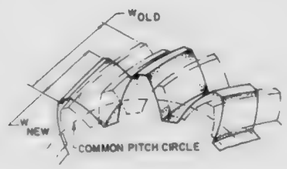
1. The linear actuator comprising a screw threaded shaft member and an internally screw threaded member, the threadform of the shaft member corresponding to that of the internally threaded member but of smaller diameter, drive means being provided for rotation of one of the members, the other member being mounted so that it is freely rotatable and will rotate with the driven member, means being provided to skew the axis of one member relative to the axis of the other member, so that the screw threads of the members engage at diametrically opposed positions.

4,794,811

HELICAL GEARSETS

Erwin R. Carrigan, Manchester; Harold R. Johnson, III, Brown County, both of Ohio, and Ailyn E. Phillips, Mason County, Ky., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 30, 1986, Ser. No. 891,860
Int. Cl.[4] F16H *55/08*
U.S. Cl. 74—458 7 Claims



5. A helical gearset comprising a pinion and a gear wherein the pinion has a normal operational rotation speed of up to 2400 rpm or greater, said pinion and said gear each having a plurality of teeth, said pinion and said gear each having a face width and a whole depth, said pinion having 13 or fewer teeth, and said pinion and said gear each having a face width to whole depth ratio of 4.5 or less.

4,794,812

GEAR-SHIFT LEVER HAVING VARIABLE THICKNESS WALLS

Takeru Tanaka, 1-3-18, Minami-shimizu-cho, Sakai, Japan

Division of Ser. No. 875,270, Jun. 17, 1986, Pat. No. 4,732,030.
This application Nov. 23, 1987, Ser. No. 123,945
Int. Cl.[4] B60K *20/04*
U.S. Cl. 74—473 P 1 Claim

1. A one-piece elongated tubular transmission gear shift lever, said gear shift lever comprising

a tubular connector part at a first end of said gear shift lever, whereby said tubular connector part is adapted to be secured to a pivot means;

a spherical part extending from said connector part, said connector part and said spherical part having a first wall thickness;

a cylindrical part extending from said spherical part in a



direction opposite said tubular connector part, said cylindrical part having a second wall thickness less than said first wall thickness;

a tapered part extending from said cylindrical part; and

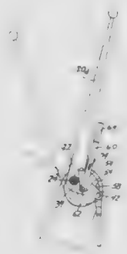
a threaded part extending from said tapered part, said threaded part formed at a second end of said gear shift lever opposite said fist end, whereby a gear shift knob may be attached.

4,794,813

ADJUSTABLE HYDRAULIC CONTROLS FOR EARTH-MOVING EQUIPMENT

Thomas R. Brown, Plainfield, Ill.; Ronald C. Natzke, Burlington, and Richard H. Logan, West Burlington, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 25, 1987, Ser. No. 66,743
Int. Cl.[4] G05G *1/04, 5/18*
U.S. Cl. 74—491 14 Claims



1. In an earth-moving equipment control device of the type with a plurality of levers having upper ends movable fore and aft for control and lower ends secured to upright links extending to valves, each lever pivotably mounted along a horizontal axis by a pivot mount near its lower end, the improvement comprising:

a pair of spaced upright supports;

a pair of axially aligned end members each movably mounted on one of the supports;

a main shaft secured to and extending between the end members, the levers attached thereto by their pivot mounts;

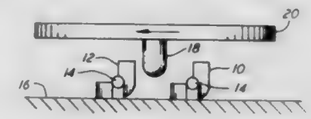
means to adjust the end members on the supports, their mountings and the main shaft arranged and positioned such that end member adjustment means moves the main shaft vertically, the adjustment means including: an adjustment arm affixed to and extending from one of the end members upwardly adjacent to one of the upright supports to a distal; interengaging means on the upright support and arm, between the end member and distal end, to interengage the arm and upright support in fixed relative positions; and the adjustment arm distal end being biased toward the upright support for engagement of the interengaging means and movable laterally away from the upright support to disengage the interengaging means, whereby adjustment moves the range of motion of the lever upper ends fore or aft to adjust for particular operators.

4,794,814

MECHANICAL STOP

Milton T. Ferguson, Jr., Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 18, 1987, Ser. No. 50,804
Int. Cl.[4] G05G *1/04*
U.S. Cl. 74—526 9 Claims



1. A mechanical stop for limiting rotation after more than one, but less than two revolutions comprising:

a rotatable member;

a pin extending from said rotatable member;

a base;

first flip-flop means, attached to said base in a position to contact said pin upon rotation of said rotatable member, for flipping into a stop position when struck by said pin when said rotatable member is rotated in a first direction and for flopping into a pass position when struck by said pin when said rotatable member is rotated in a second direction; and

second flip-flop means, attached to said base in a position to contact said pin upon rotation of said rotatable member and separated from said first flip-flop means by an angular distance as measured from the center of said rotatable member equal to the angular rotation desired greater than one revolution, for flipping into a stop position when struck by said pin when said rotatable member is rotated in the first direction and for flopping into a pass position when struck by said pin when said rotatable member is rotated in the second direction.

4,794,815

ATTACHMENT DEVICE FOR ELEMENTS OF BICYCLE HANDLEBARS, WITH GRIPPING PARTS INCLUDING TWO JAW MEMBERS HINGED TOGETHER

Lucio Borromeo, Turin, Italy, assignor to 3T S.P.A., Turin, Italy

Filed Mar. 24, 1987, Ser. No. 29,563
Claims priority, application Italy, Mar. 24, 1986, 53180/86[U]
Int. Cl.[4] B62K *21/12, 21/24*
U.S. Cl. 74—551.1 2 Claims

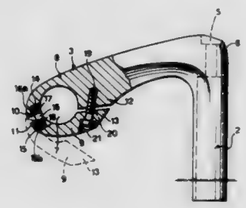
1. A handlebar gripping device comprising

two opposed jaw members each having a substantially semi-cylindrical recess defining a substantially cylindrical aperture for receiving and gripping a tubular handlebar, said jaws having respective first substantially flat ends disposed in spaced apart, opposed relation to each other and respective second substantially flat ends disposed in spaced apart, opposed relation to each other, each of said first ends having at least one groove intersecting only said semi-cylindrical recess and said flat end,

hinge means pivotally interconnecting said first ends, said hinge means being comprised of an elongated plate mem-

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ber having opposite ends disposed in said grooves and a pin pivotally connecting each of said opposite ends of said plate member to a respective first end of each jaw member, and



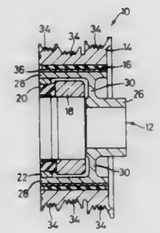
clamping means engaging said second ends of said jaw members for drawing said second ends towards each other to clamp said jaw members on a tubular handlebar.

4,794,816

DUAL-TYPE DAMPER DEVICE

Minoru Serizawa, Komaki, and Yutaka Tazake, Kasugai, both of Japan, assignors to Tokai Rubber Industries, Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Oct. 10, 1986, Ser. No. 917,543
Claims priority, application Japan, Oct. 15, 1985, 60-157477[U]; Dec. 25, 1985, 60-200984[U]
Int. Cl.⁴ F16F *15/10*
U.S. Cl. 74—574 **7 Claims**



1. A dual-type damper device for damping vibration of a rotation axle, comprising:

a damper pulley including a boss portion joined to said rotation axle, a cylindrical portion located radially outwardly of said boss portion, and a connection portion connecting said boss portion and said cylindrical portion;

a first damper-mass member disposed radially outwardly of said cylindrical portion of said damper pulley, such that said first damper-mass member is spaced apart from, and concentric with, said cylindrical portion;

a first resilient member interposed between said cylindrical portion of said damper pulley and said first dampermass member;

an annular member made of a metallic material and press-fitted onto an inside surface of said cylindrical portion of said damper pulley, said annular member having at least one through hole;

a second damper-mass member having a cylindrical shape and disposed between said connection portion of said damper pulley and said annular member, in an inner space of said cylindrical portion of said damper pulley, such that said second damper-mass member and said cylindrical portion are concentric with each other; and

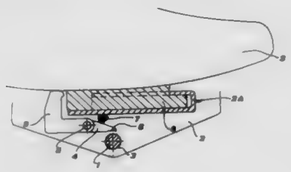
a second resilient member supported by the annular member in the at least one through hole to be disposed between said annular member and one of axial ends of said second dampermass member which is opposed to said annular member, so as to secure said second damper-mass member to said annular member, said second resilient member being subjected to shear deformation thereof due to relative radial displacement between said annular member and said second damper-mass member.

4,794,817

DEVICE ALLOWING BICYCLE PEDALS TO TAKE UP A STEADY POSITION WHEN THEY ARE NOT ENGAGED BY THE CYCLIST'S SHOE

Antonio Romano, Padova, Italy, assignor to Campagnolo S.p.A., Vicenza, Italy

Filed Jul. 6, 1987, Ser. No. 70,116
Claims priority, application Italy, Jul. 8, 1986, 2247/86[U]
Int. Cl.⁴ G05G *1/14*
U.S. Cl. 74—594.6 **1 Claim**



1. In a bicycle pedal comprising a pedal frame, a pedal spindle on which said pedal frame is rotatably mounted, and means for receiving a cyclist's shoe on said pedal frame, the improvement comprising: a knurled segment borne by said pedal spindle; a lever means pivotally mounted on a pin means having a fixed axis on said pedal frame for pivotal movement relative to said pedal frame and said pedal spindle, said lever means having a first end comprising a knurled portion for engaging said knurled segment and a second end adapted to be contacted by a said cyclist's shoe received in said receiving means; and means urging said knurled portion into engagement with said knurled segment; whereby a said cyclist's shoe when received in said receiving means pivots said lever means against the action of said urging means to disengage said knurled portion and said knurled segment, said urging means engaging said knurled portion into engagement with said knurled segment when a said cyclist's shoe is not acting on said second end of said lever means.

4,794,818

TRANSMISSION MECHANISM, FOR WINDSCREEN WIPERS IN PARTICULAR, AND A WINDSCREEN WIPER DEVICE FITTED WITH SUCH A MECHANISM

Jean-Pierre Eustache, Antony, and Daniel Maubray, Issy-les-Moulineaux, both of France, assignors to Equipements Automobiles Marchal, Issy-les-Moulineaux, France

PCT No. PCT/FR86/00103, § 371 Date Nov. 5, 1986, § 102(e) Date Nov. 5, 1986, PCT Pub. No. WO86/05751, PCT Pub. Date Oct. 9, 1986
PCT Filed Mar. 26, 1986, Ser. No. 932,501
Int. Cl.⁴ B60S *1/24*
U.S. Cl. 74—600 **8 Claims**

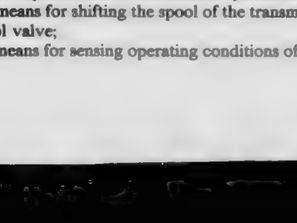
1. A transmission mechanism, for windscreen wipers in particular, between a rotary drive shaft (3), fixed in relation to a support (4) and a crank arm (5), for actuating an alternating oscillating motion, it being possible to reverse the direction of rotation of the rotary shaft (3), this transmission mechanism comprising:

a crank (6) of a variable effective length (L), this length (L) having a first value in normal operation for a given direction of rotation of the shaft, whilst an increase in the effective length of the crank is actuated when the operation is stopped by reversal of the direction of rotation of the shaft (3);

an eccentric (9), secured for rotation with the drive shaft (3), the said eccentric (9) being mounted in a bore (13) provided in the crank (6);

means (V) for locking the rotation between the eccentric (9) and the crank (6), provided at the periphery of the eccentric for ensuring a linkage in rotation between the eccentric and the crank in the normal direction of rotation of the shaft and for releasing the eccentric in rotation in relation to the crank in the opposite direction of rotation of the shaft;

and means (D) for locking the crank (6) for rotation in relation to the support (4) when the shaft (3) turns in the reverse direction to the normal direction, as well as at the start of the rotation of the shaft in the normal direction,



whilst the crank (6) is free to turn in relation to the support (4) during the subsequent operation in the normal direction, the means (D) for locking the crank (6) for rotation in relation to the support (4) comprising:

a sleeve (24, 24*a*) or similar, fixed to the support (4) and centred on the shaft (3), this sleeve comprising a central recess (H);

at least one bush (27, 27*a*) freely traversed in rotation by the shaft (3) and mounted in the central recess (H) of the sleeve (24, 24*a*), this bush (27, 27*a*) being linked in rotation to the crank (6),

and means (37; 42, 44, 49) for locking the bush (27, 27*a*) for rotation in relation to the sleeve (24, 24*a*) when the shaft turns in the reverse direction to the normal direction of operation, the bush (27, 27*a*) being free to rotate in relation to the sleeve (24, 24*a*) in the normal direction

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4,794,819

CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Hiroshi Tanaka, Tokyo, and Yoshihiko Morimoto, Mitaka, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1987, Ser. No. 29,854
Claims priority, application Japan, Mar. 28, 1986, 61-70225
Int. Cl.⁴ B60K *41/12*
U.S. Cl. 74—866 **13 Claims**

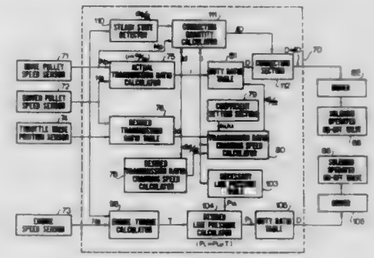
1. In a control system for a continuously variable transmission for transmitting the power of an internal combustion engine for driving a motor vehicle, the transmission having a drive pulley having a hydraulically shiftable disc and a hydraulic cylinder for operating the disc, a driven pulley including a hydraulically shiftable disc and a hydraulic cylinder for operating the latter disc, and a belt engaged with both pulleys, the control system including a first hydraulic circuit having a pump for supplying oil to both the hydraulic cylinders, and a transmission ratio control valve having a shiftable spool for controlling the oil supplied to at least one of the cylinders, wherein the improvement in the control system comprises:

shifting means for shifting the spool of the transmission ratio control valve;

sensing means for sensing operating conditions of the engine and transmission and for producing a first signal dependent on the conditions;

first means responsive to the first signal for producing a desired transmission ratio value;

control means responsive to the desired transmission ratio value for producing a control signal for operating the shifting means to shift the spool to control the transmission ratio of the transmission to the desired transmission ratio value;



detector means for detecting a steady state driving condition and for producing a steady state signal;

second means responsive to the steady state signal for detecting deviation between the desired transmission ratio value and an actual transmission ratio value of the transmission and for producing a deviation signal;

third means responsive to the deviation signal for correcting the control signal so as to reduce the deviation.

4,794,820

MARINE DRIVE TWIN LEVER REMOTE CONTROL WITH INTERLOCK OVERRIDE

Larry A. Floeter, Campbellsport, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 7, 1987, Ser. No. 35,482
Int. Cl.⁴ G05G *5/08*; F16H *57/06*
U.S. Cl. 74—878 **11 Claims**



1. A marine drive remote throttle and shift control comprising:

a dual lever actuator assembly for moving a pair of cables, one lever and its cable providing remote throttle control, the other lever and its cable providing remote shift control between forward, neutral and reverse;

interlock means normally preventing movement of the shift lever and its cable when the throttle lever and its cable are

in a high speed position and with the operator applying normal force to said shift lever;

override means permitting movement of said shift lever and its cable with said throttle lever in said high speed position when the operator applies an abnormally high force to said shift lever, to enable emergency high speed shifting including from forward to reverse to facilitate rapid deceleration;

said interlock means comprising a pair of parallel link rods having facing notches, each rod coupled to a respective one of said cables;

guide means having a pair of axial passages, each guiding a respective one of said link rods for axial movement therethrough;

shuttle means in said guide means between said link rods for controlling the relative movement of said link rods and said levers, said shuttle means having a length extending transversely to said axial movement of said link rods, said length of said shuttle means being such that both said link rods cannot move freely at all times and such that one of said rods must be positioned so that said shuttle means is in one of said notches before the other rod can be moved freely, such that said other link rod coupled to said remote shift control cable cannot be moved from one shift position to another unless said notch in said one link rod coupled to said remote throttle control cable is transversely aligned with said shuttle means allowing said shuttle means to move transversely and make room for said other link rod to move, such that shifting is constrained to low engine speed or idle range as defined by the length of said notch in said one link rod;

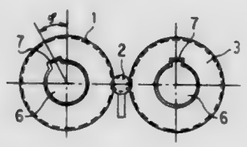
said override means comprising biasing means normally holding said link rods in position such that said shuttle means is in one of said notches, said override means also comprising one of said axial passages having an extended transverse dimension to enable transverse movement of the respective said link rod therein in an override mode, said override mode being provided by said biasing means being overcome by an abnormally high force applied to said remote shift control lever such that said biasing means is flexed and permits transverse movement of said respective link rod through said extended transverse dimension of said one axial passage due to transverse movement of said shuttle means as the other respective link rod moves axially to a position with no notch aligned with said shuttle means, permitting movement of said remote shift control lever even through said shuttle means is not in any of said notches.

4,794,821

METHOD OF ROLL FORMING A SKIP THREADING TAP

Jiang Y. Geng, Shanghai, China, assignor to Shanghai Bicycle Factory, Shanghai, China

Filed Jul. 21, 1987, Ser. No. 76,103
Claims priority, application China, Jul. 21, 1986, 86 101528
Int. Cl.[4] B21K *1/56*
U.S. Cl. 76—101 B **8 Claims**



1. A method for roll forming a skip threading tap, comprising the steps of:

mounting a pair of tapping wheels having thread forming elements formed thereon for rotation about parallel axes spaced such that a gap is provided between confronting surfaces of said tapping wheels;

disposing a tap block in said gap;

rotating said tapping wheels in the same direction toward said tap block, and feeding said tap block along the gap, extruding the tap block, so that threads are formed on said block resulting from its plastic deformation, and

slotting and grooving said skip threading tap;

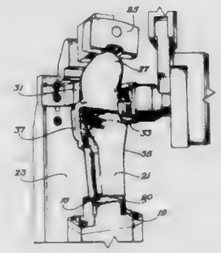
wherein the thread elevation angle (β) and thread pitch (2S) of said thread forming elements formed on said tapping wheels equal the thread elevation angle and thread pitch of the thread formed on the tap.

4,794,822

ROCK BIT MANUFACTURING METHOD

John D. Parrish, Houston, and Rodney A. Bellamy, Fort Worth, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Dec. 14, 1987, Ser. No. 133,101
Int. Cl.[4] B21K *5/02*
U.S. Cl. 76—108 A **6 Claims**



1. The method of manufacturing an earth boring bit having a body of welded lugs, each with a shank end and an opposite bearing end to support a rotatable cutter on a cantilevered bearing shaft, the method comprising the steps of:

forming a lug;

forming a shank end positioner means on the lug;

positioning the lug by means of the positioner means on a mating receiver in a fixture;

clamping the lug with the exterior of its bearing end against a locator;

milling at least one flat surface along the lug from the shank end toward the bearing end while clamped on the receiver and against the locator;

whereby each lug may be assembled with at least one similarly formed lug to have accurate vertical alignment and a precise outer diameter.

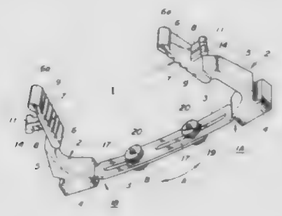
4,794,823

TIRE CHAIN MOUNT

Akiko Nakajima, No. 47-15, Matsugaoka 3-chome, Funabashi-shi, Chiba-ken, Japan

Filed Oct. 22, 1987, Ser. No. 112,097
Int. Cl.[4] B60C *27/06*
U.S. Cl. 81—15.8 **8 Claims**

1. A tire chain mounting device, comprising: a pair of spacedly opposite arms, each arm having a lug and a clamping surface, the lug capable of engaging a tire chain and the clamping surface being provided on one end of the arm and capable of being contact with a side of a tire; a plurality of resilient bars connecting the arms, the bars sliding along one another so as to adjust a spacing between the clamping surfaces; and means for preventing the bars from sliding along one another; wherein each arm has one end which is free and includes the clamping surface, the other end of each arm being connected to one end of each bar, and wherein the bars are arc-shaped so as to project in a direction far from the clamping surface; wherein the bars consist of two bars each including an axially extending slot, the slots in the bars overlapping each other when the bars



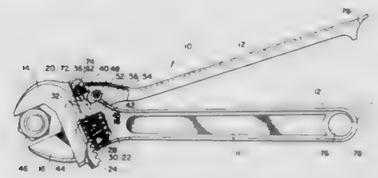
overlap each other, and wherein said preventing means includes a unit of a bolt and a nut, the bolt passing through at least one slot.

4,794,824

ADJUSTABLE VICE-LOCKING END WRENCH

William C. Chapman, 26451 Anchorage Ln., P.O. Box 402, Helendale, Calif. 92342

Filed Jun. 5, 1987, Ser. No. 58,860
Int. Cl.[4] B25B *13/16*
U.S. Cl. 81—165 **6 Claims**



1. In combination in an adjustable end wrench of the character described comprising a first primary handle means and integral first jaw means and a second jaw means disposed below said first jaw means, worm gear means operatively connected to said second jaw means for imparting opening and closing movement to the jaws, pin means for rotatable operative mounting of the worm gear means, operative means for combining said worm gear means with said pin means for limited axial movement to carry with them said second jaw means, and the improvement comprising:

a primary handle means for said wrench having a normally leading lower edge portion and a normally following upper edge portion, the latter for receiving the major wrench-turning load;

an elongate clamping handle means along the following primary load-bearing edge of the primary handle means for initiating gripping movement of the jaws relative to said primary handle means and for initially receiving a wrench-turning load and for turning movement cooperatively therewith, said clamping handle having an end proximate the jaws and distal end;

articulate means for the clamping handle proximate the jaw means to connect the proximate end of the clamping handle to the second jaw means for pulling the second jaws upward into desired gripping and allowing downward movement into releasing engagement upon respective closing and opening movement of the handles relative to one another, said articulate means comprising:

a cam and cam follower positioned in spaced relationship on the proximal end of the clamping handle adjacent to the first jaw means to close the jaws through the initial limited clamping movement accompanying said radial movement of the pin means, and

a transverse pin means and means for controlling the distance of gripping movement of the jaws defined by the initial clamping movement of the handles relative to one another; and said operative means includes an abutment on the pin

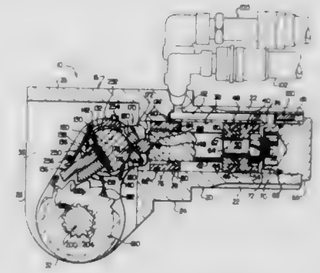
means bearing against the worm gear means; said first named pin means making threaded connection with nut means, said nut means having face-making slidable engagement with the first jaw means for preventing rotation of the nut, and means associated with said pin for moving the worm gear and the lower jaw means for a pre-selected distance defining the initial clamping distance of the gripping distance of the jaws which is less than the fully-closed and fully-opened positions of the primary handle and clamping handle relative to one another.

4,794,825

HYDRAULIC POWER WRENCH

Harold J. Schmoyer, Spring, Tex., assignor to Atlantic-Caribbean Products, Inc.

Continuation of Ser. No. 926,457, Nov. 3, 1986, abandoned. This application Jan. 5, 1988, Ser. No. 140,978
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—57.39 **27 Claims**



1. Power wrench apparatus comprising:

(a) housing means having a chamber therein;

(b) piston means disposed in said chamber for reciprocating motion therein between first and second positions;

(c) means for utilizing fluid power to selectively cause reciprocating motion of said piston means in said chamber;

(d) drive pin means spaced from said piston means;

(e) roller means interposed between and engaging facing surface portions of said piston means and said drive pin means, said roller means comprising:

roller bracket means;

a first roller member captively retained in said roller bracket means for rotation relative thereto and having a side surface portion which engages a surface portion of said piston means; and

second and third roller members captively retained in said roller bracket means for rotation relative thereto and having side surface portions which engage said drive pin means on circumferentially spaced side surface portions thereof;

(f) return link means pivotally interconnected between said piston means and said drive pin means and captively retaining said roller means between said piston means and said drive pin means;

(g) drive shaft means, associated with said housing means for driven rotation relative thereto, for transmitting rotational power;

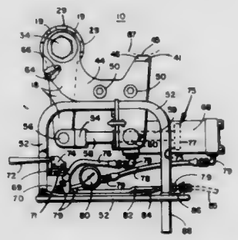
(h) drive ratchet means rotationally locked to said drive shaft means and positioned within said housing means;

(i) drive bracket means pivotally interconnected between said drive pin means and said drive shaft means;

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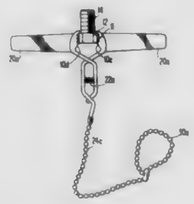
(j) drive pawl means, carried by said drive pin means, for engaging and incrementally driving said drive ratchet means in a first rotational direction during motion of said piston means toward said first position thereof;
(k) means for biasing said drive pawl means into engagement with said drive ratchet means; and
(l) safety pawl and ratchet means for preventing rotation of said drive shaft means relative to said housing means in a second rotational direction opposite from said first rotational direction during motion of said piston means toward said second position thereof.

4,794,826
HYDRAULIC POWERED WRENCH
Neal S. Franks, 18342 Hartland, Huntington Beach, Calif. 92646
Filed Jan. 27, 1986, Ser. No. 822,393
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—57.39 3 Claims



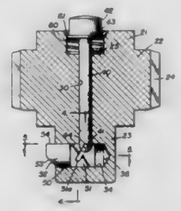
1. A two ended socket reversible powered wrench capable of coupling to a reaction surface and receiving power from an outside source and comprising:
means to receive power from an outside power source;
means to convert power to torque;
means to apply torque to a double headed unidirectional socket driven by a positive drive wherein the driven socket is rotated about its axis and opposite ends of the socket rotate the workpiece clockwise or counter-clockwise depending on which end of the double headed socket is engaged with the workpiece;
wherein the power from the outside source is hydraulic power, the means to receive hydraulic power includes an inlet conduit coupled to a three way valve having the positions of neutral, applying torque, and ratcheting;
venting means venting hydraulic pressure when the valve is in the neutral position;
the means to convert power to torque comprises a hydraulic cylinder having a hydraulic piston therein, one end of the cylinder coupled to the means to receive hydraulic power on one end of the piston when the valve is in the applying torque position and power from the valve forcing the piston away from the end of the cylinder receiving power;
coupling means coupling the piston to linear-to-rotational-motion converting means which in turn is coupled to the socket to rotate the socket;
wherein the socket includes an interior surface defining on each end of the socket a mating female hex capable of coupling to a hex bolt head, the valve including an articulated control handle which is spring loaded to return to the neutral position when not moved to either of the other two positions and which control handle controls the position of the valve;
the piston is coupled to and linearly moves a piston rod which in turn is pivotally connected to a rotational drive arm via a female clevis coupled to the drive arm by a clevis pin to form the linear-to-rotational motion converting means to rotate the socket;
the drive arm has an exterior surface defining drive teeth which rotate about an axis and the drive teeth are coupled in a ratchet arrangement to driven teeth coupled to the socket which is disposed to rotate about the same axis the driving teeth rotate about;
an interior surface of the drive arm on an end opposite to the drive teeth defines a clevis pin hole which mates with and is controlled by an outer surface of the clevis pin and;
the angle between a longitudinal axis about which the drive arm is generally disposed and the direction of linear motion of the piston is between 70 and 110 degrees;
wherein there are two reaction arms, including an upper reaction arm used in loosening a bolt and a lower reaction arm used in tightening a bolt and each reaction arm defines a reaction arm groove, the socket including a surface defining an upper socket groove adjacent to the upper reaction arm groove and a lower socket groove adjacent to the lower reaction arm groove, a coiled cable extending within the grooves of the socket and the reaction arms to prevent axial movement relative to the socket.

4,794,827
DRAIN PLUG REMOVING DEVICE
Denzil C. Poling, Rte. 6, Box 80, Hagerstown, Md. 21740
Filed Mar. 24, 1987, Ser. No. 29,537
Int. Cl.[4] B25B *13/02*
U.S. Cl. 81—125 7 Claims



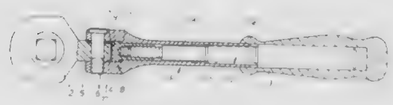
1. A drain plug removing device comprising:
(a) a rotatable socket comprised of openable jaws each having a separate jaw arm associated therewith with a separate spring means between the jaw arms for urging the jaws together for engaging and selectively holding a head of a threaded drain plug, the jaw arms being engageable by a user's fingers to bias the jaws into and out of engagement with said head, said jaws including means for extending underneath the head of at least a partially loosened drain plug to grip said head and prevent said head from disengaging with said jaws when the jaws are urged together, the socket including a plurality of winglets extending outwardly of said jaws for rotating the socket and the drain plug by twirling with a user's finger;
(b) a flexible line attached at a first end thereof to the socket to permit engagement of the socket with the head of a drain plug and rotation of the socket when engaged with the head of a plug; and
(c) the other end of said line including means for selectively securing the line to a user's finger to prevent the socket and drain plug from falling further than the length of the line if dropped and to support the line and the socket holding the drain plug.

4,794,828
QUICK RELEASE MECHANISM FOR RATCHET WRENCH
Gene E. Olson, Kenosha, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.
Filed Dec. 19, 1983, Ser. No. 563,194
Int. Cl.[4] B25B *13/00*
U.S. Cl. 81—177.85 5 Claims



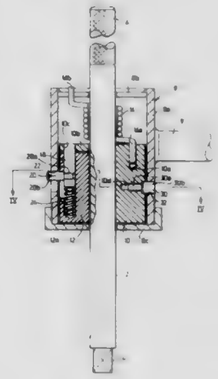
1. Mechanism for locking and releasing an elongated socket or other fitting having a laterally extending side hole, comprising a generally cylindrical body, a non-annular stud extending from said body and being coaxial therewith, said body and said stud having an axially extending first bore therein, a rod slidable in said first bore, one end of said rod being oriented so as to be movable by a person's finger and the other end being bifurcated to define a pair of legs, said stud having a second bore therein extending substantially normal to said first bore and communicating therewith, a linking pin extending between said legs, a locking pin slidably located in said second bore and movable between locking and release positions, means biasing said locking pin to its locking position, said locking pin including a flat portion slidably located between said legs, said flat portion having an inclined slot therein slidably receiving said linking pin, said slot being oriented to cause said locking pin to move to its release position when said one end is depressed and to its locking position when said one end is released, said locking pin having a portion transversely protruding from said stud in said locking position, said protuding portion having locking and camming surfaces, a socket being applied to said mechanism by pushing the socket against said camming surface to move said locking pin to its release position and then pushing the socket until said locking pin snaps to its locking position and into the socket side hole with said locking surface disposed for cooperation with the socket to prevent removal thereof, the socket being removed from said mechanism by depressing said one end to place said locking pin in its release position thereby withdrawing said locking pin from the socket side hole to enable the socket to slip off of said stud.

4,794,829
RATCHET-TYPE WRENCH
Hans Meisenhoeller, Hastener Str. 94, 5630 Remscheid, Fed. Rep. of Germany
Filed Mar. 10, 1983, Ser. No. 474,046
Int. Cl.[4] B25G *1/00*
U.S. Cl. 81—177.8 3 Claims



1. A ratchet-type wrench comprising:
a non-rotating tubular lever arm having a bifurcated joint means at a front end thereof;
a working head having a substantially flat portion at a rear end thereof;
means for pivotally mounting said flat portion at said bifurcated joint means;
a catch member axially displaceably non-rotatably supported in said lever arm, said catch member being provided at a front portion thereof with at least one wedge-shaped ridge adapted to be brought into engagement with a wedge-shaped serration provided at a rear end of said flat portion of said working head;
a spindle axially arranged in said lever arm, said spindle having a front end portion thereof in engagement with said catch member and a rear end portion in engagement with said lever arm by counter running threads;
a handle rotatably mounted at a rear end of said lever arm and attached to said spindle for common rotation therewith;
central axes of a cross-sectional area of the handle have differing lengths, with the cross-sectional area of the handle being a rectangle which is rounded or beveled at the corners, and wherein a longer cross-sectional central axis of the handle, when the working head is locked, lies within the pivot plane and in an unlocked position is at an angle with respect to the pivot plane of the wrench, with said angle being a right angle.

4,794,830
TOOL FOR LOOSENING FASTENERS
Joseph Gross, Moshav Mazor; David Lowenstein, Nethanya; Menachem Tilman, Hofit; Etan Rosenberg, Kiryat Ono, and Amelia Oriaa, Tel-Aviv, all of Israel, assignors to General Ideas & Products Ltd., Tel Aviv, Israel
Filed Jan. 28, 1988, Ser. No. 149,257
Int. Cl.[4] B25B *19/00*
U.S. Cl. 81—466 18 Claims



1. A tool for loosening fasteners, comprising:
an applicator bar carrying a fastener engaging member for engaging the fastener to be loosened;
an operating handle manually rotatable about the longitudinal axis of the applicator bar;
a housing fixed to said operating handle so as to be rotated therewith;
a hammer within said housing and movable relative thereto;
a spring connecting said hammer to the housing so as to be loaded by the relative movement of the housing with respect to the hammer;
an anvil carried by said applicator bar normally spaced from the hammer in the initial position of the hammer;
coupling means between said hammer and anvil coupling the anvil to the hammer in the initial position of the hammer and effective to prevent relative movement therebetween,

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and thereby to produce relative movement between the hammer and housing to load the spring during the rotation of the operating handle in one direction;

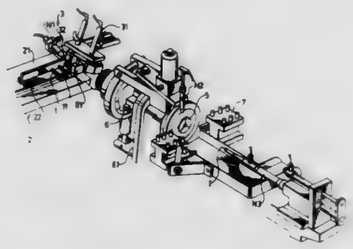
and a releasing device effective, after the operating handle has been rotated a predetermined distance in said one direction, to release said coupling means, whereby the loaded spring causes the hammer to impact against the anvil to thereby loosen the fastener received in the socket of the applicator bar.

4,794,831

METHOD AND APPARATUS FOR AUTOMATICALLY CUTTING WORKPIECES ON A PORTABLE LATHE

Fu Chang, 2nd Fl., No. 48-6, Lane 103, Sec. 2, Nei-Hu Rd., Taipei, Taiwan

Filed Jul. 29, 1987, Ser. No. 79,260
Int. Cl.[4] B23B *13/00*
U.S. Cl. 82—1 C **8 Claims**



2. An apparatus for automatically cutting workpieces on a portable lathe comprising:

a chuck having a plurality of circumferentially spaced adjustable jaws movable radially inwardly to clamp one of said workpieces tightly therebetween;

a sliding way to said chuck, said sliding way having an inlet and an outlet, said inlet being situated between said chuck and said outlet;

a pneumatic control valve installed immediately above said inlet of said sliding way;

a feeder for automatically feeding said workpieces to said pneumatic control valve one by one in such a manner that all of said workpieces reach said pneumatic control valve with the same orientation;

a first air nozzle directed toward said inlet of said sliding way for moving said workpiece along said sliding way into said chuck;

means for obstructing said workpiece within said chuck from forward movement out of said chuck and holding said workpiece to prevent said workpiece from revolving relative to said chuck;

a cutting tool movable relative to said workpiece held in said chuck to cut said workpiece, thereby forming chips from said workpiece;

a second air nozzle directed radially of said workpiece when said workpiece is held within said chuck for removing said chips from said workpiece by blowing compressed air from said second air nozzle toward said workpiece after said workpiece has been cut;

a third air nozzle directed toward said workpiece positioned loosely within said chuck for moving said workpiece to said outlet of said the sliding way; and

a timer for timing control of the starting and stopping operation of said first, second, and third air nozzles, said pneumatic control valve, and said chuck;

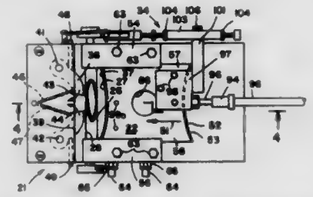
whereby, said workpieces can be automatically charged into said chuck, automatically held in said chuck, automatically cut by said cutting tool, automatically loosened from said chuck, and automatically discharged from said chuck to said outlet of said sliding way under the timing control of said timer.

4,794,832

METHOD AND APPARATUS FOR CUTTING AND UNBONDING ELASTIC BANDS

Don K. Trimble, Orinda, Calif., assignor to Rubber Band Technology, Ltd., Yakima, Wash.

Filed Apr. 11, 1988, Ser. No. 180,213
Int. Cl.[4] B26D *7/06, 7/27*
U.S. Cl. 83—23 **22 Claims**



1. A method of cutting an elastic band from tubular elastic band stock and unbonding the bonded-together opposite abutting side edges of the cut band including the steps of, cutting an individual band from said stock while opposite sides of said stock are held together by a cut across said stock with movable blade means, engaging opposite sides of said band after said cutting step with band engaging means, and shifting said band engaging means to produce displacement of at least one of said opposite sides relative to the other side in a direction along said cut over a distance sufficient to break any bonds between said opposite abutting side edges of said band, wherein the improvement in said method comprises:

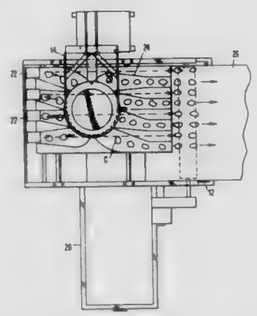
during said shifting step, shifting said band engaging means to produce displacement of said band at two spaced apart locations along said band in opposite directions along said cut.

4,794,833

METHOD AND APPARATUS FOR MONOLAYERING OF WAFERS

David P. Fowler, Irving; Daniel A. Asquino, Lewisville, and Ramon Canta, Dallas, all of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 544,971, Oct. 24, 1983, abandoned. This application Mar. 20, 1985, Ser. No. 713,896
Int. Cl.[4] B26D *7/18, 7/32*
U.S. Cl. 83—24 **20 Claims**



1. A method of monolayering slices having large, generally parallel and generally planar faces exiting from a rotary centrifugal slicing machine, comprising:

(a) providing a slice catcher having first and second end portions, the first end portion including a generally vertically stop surface, over which is flowing a downwardly moving stream of liquid, in position so that individual slices exiting the periphery of the slicing machine immediately impinge on said vertical surface in said downwardly moving stream of liquid;

(b) separately catching each individual slice at said stop surface in said downwardly moving stream of liquid immediately upon each slice exiting form the periphery of the rotary slicing machine;

(c) directing each individual cut slice downwardly in the moving stream of liquid on said slice catcher, with each individual slice separate from the other;

(d) maintaining the downwardly moving slices separated and positioned in a plurality of separate rows from the first end portion past the second end portion to a moving take-out conveyor belt; and

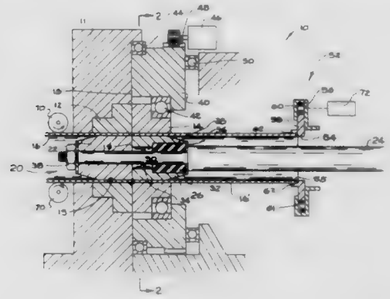
(e) depositing the separate rows of separated slices on the moving take-out conveyor belt so that the individual slices are monolayered on the belt and the planar faces of the slices do not overlap one another.

4,794,834

TUBE SHEARING APPARATUS

John A. Werner, Wauwatosa, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 15, 1987, Ser. No. 49,854
Int. Cl.[4] B23D *21/04*
U.S. Cl. 83—185 **6 Claims**



1. A tube cutting apparatus for shearing tube stock at uniform lengths comprising:

a base;

a stationary die attached to the base with an aperture therein corresponding with the size of the tube stock being cut, and a lateral face which defines the shear plane of the apparatus;

an orbiting die with a similar aperture and lateral face concentrically positioned adjacent the stationary die;

an eccentric die holder rotatably mounted to the base with an axis of rotation offset from the stationary die, the orbiting die being rotatably mounted in the die holder;

drive means for turning the die holder and causing the orbiting die to move in an orbiting path relative to the stationary die;

an extendable ram attached to the base;

a two section fixed diameter mandrel die means with lateral contacting surfaces between the two sections, said sections having a close tolerance with the inside diameter of the tube and being carried on said extendable ram which is removably insertable within the tube being cut, with the contacting surfaces located in the shear plane;

the first section being fixed to the ram while the second section is laterally movable relative to the first section during orbital movement of the orbiting die, the second section having an inside diameter portion greater than an outside diameter of the ram;

a tube stop means mounted on the base member having a bracket and a stop member attached to the bracket which allows the stop member limited lateral movement; and

a resilient ring means positioned between the inside diameter portion of the second section and the said outside diameter of the ram whereby the resilient ring maintains the two mandrels section in concentric relation in the absence of outside forces from the orbiting die.

4,794,835

PLATE-LIKE ROTARY BODY WITH VIBRATION-SUPPRESSING CHARACTERISTICS AND METHOD OF MANUFACTURING SAME

Yoshihisa Fujiyoshi, Gifu, Japan, assignor to Kanefusa Hamono Kogyo Company Limited, Nagoya, Japan

Filed Dec. 9, 1986, Ser. No. 939,753
Claims priority, application Japan, Dec. 20, 1985, 60-288973; Oct. 11, 1986, 61-241807
Int. Cl.[4] B27B *33/08;* B23D *63/00*
U.S. Cl. 83—835 **19 Claims**



1. In an approximately circular plate-like rotary body, the improvement wherein a plurality of zigzag slits are formed in said body in the plane thereof, said zigzag slits each forming two mutually engaging comb-like formations on both sides thereof, each of said comb-like formations having a plurality of tonque-like elongated protruding sections alternating with recesses such that said protruding sections from one of said sides protrude toward and are received by said recesses from the other of said sides, said protruding sections touching adjacent ones of said protruding sections from opposite side whereby friction between said protruding sections from opposite sides suppresses vibrations of said rotary body.

4,794,836

HONEYCOMB CORE CUTTING TOOL

Vincent Villani, Sepulveda, Calif., assignor to Lockheed Corporation, Calabasas, Calif.

Filed Jul. 17, 1987, Ser. No. 74,740
Int. Cl.[4] B23P *15/28*
U.S. Cl. 83—853 **9 Claims**

1. A honeycomb core cutting tool comprising:

a shank having a longitudinal axis;

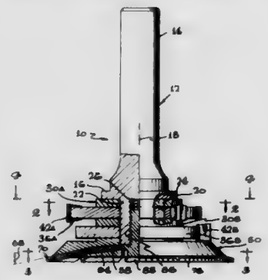
a flat circular cutter detachably mounted to one end of said shank, said primary cutter including a plurality of slots spaced about the periphery thereof and extending radially inward dividing said primary cutter into an inner solid portion and an outer slotted portion; and

means mounted to said shank for forming said primary cutter into a substantially concave shape, said means comprising;

a flange mounted to said shank, said flange concentric with and perpendicular to the shank longitudinal axis and having an upwardly facing substantially concave surface; and

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a retainer detachably mounted to said shank for causing said primary cutter to substantially conform to said concave



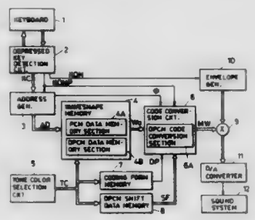
surface of said flange when said retainer is mounted to said shank.

4,794,837

TONE SIGNAL GENERATOR WITH CODE CONVERTER FOR CONVERTING STORED WAVESHAPES OF DIFFERENT CODING FORMS INTO A COMMON CODING FORM

Mitsumi Katoh, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 16, 1985, Ser. No. 787,651
Claims priority, application Japan, Oct. 17, 1984, 59-216088; Nov. 6, 1984, 59-232299
Int. Cl.[4] G10H *1/06, 1/46, 7/00*
U.S. Cl. 84—1.01 18 Claims



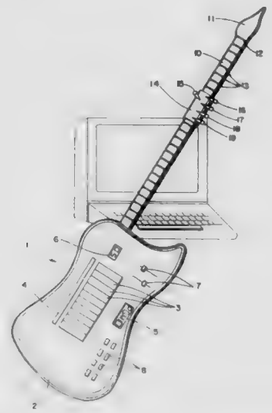
1. A tone signal generation device comprising:
waveshape memory means storing a plurality of different waveshapes among which at least one waveshape is coded according to a coding system which is different from one used for the other waveshapes;
waveshape selection means for selecting a waveshape of a tone to be generated from among the waveshapes stored in said waveshape memory means;
reading means for reading out data of the selected waveshape selected by said waveshape selection means from said waveshape memory means; and
code conversion means for converting the data of the read out waveshape to data of a predetermined common coding system when the read out waveshape data is coded according to a coding system which is different from the predetermined common coding system.

4,794,838

CONSTANTLY CHANGING POLYPHONIC PITCH CONTROLLER

James F. Corrigau, III, 114 Lakewood Cir., Smyrna, Tenn. 37167

Filed Jul. 17, 1986, Ser. No. 886,554
Int. Cl.[4] G09B *15/04*; G10H *1/055, 1/46*
U.S. Cl. 84—1.01 53 Claims



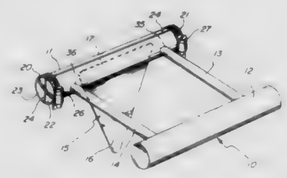
21. In an electronic musical instrument of the type having a body with a plurality of key controller switches each of which activates a predetermined electronically synthesized note, and in which translucent key controller switches resembling "white" piano keys are illuminated from behind by a light source such that each key controller switch may be easily seen in the dark, an improved key controller wherein each key controller switch is illuminated according to a spectral color scheme such that the key controller switch activating the lowest frequency note is illuminated by a color closest to the red end of the optical spectrum, and each other key controller switch activating successively higher frequency notes is illuminated by a proportionally higher frequency optical light, thereby allowing the user to determine, at a glance, the relative pitch of each predetermined electronically synthesized note activated by the key controller switches.

4,794,839

MUSICAL INSTRUMENT PICK FOR SIMULTANEOUS TWO PERSON USE

Roberta S. Adler, 13171 Coleman Pl., Garden Grove, Calif. 92643

Filed Mar. 18, 1988, Ser. No. 169,816
Int. Cl.[4] G10D *3/16*
U.S. Cl. 84—322 12 Claims



1. For use in strumming a stringed instrument, a musical instrument pick comprising:
a pair of handles;

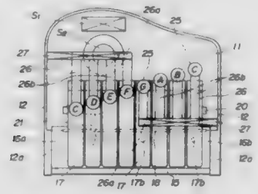
a pair of supports, joined to said handles and maintaining them in a generally spaced parallel relationship;
a generally planar pick having a strumming end; and
means for securing said generally planar pick to one of said handles.

4,794,840

PIANO TYPE MUSICAL INSTRUMENT

Hiroyuki Isashi, Shizuoka, Japan, assignor to Kawai Gakki Seisakusho Co., Ltd., Shizuoka, Japan

Filed Mar. 17, 1987, Ser. No. 26,449
Claims priority, application Japan, Mar. 28, 1986, 61-44870[U]
Int. Cl.[4] G09B *15/04*
U.S. Cl. 84—467 1 Claim



1. A piano type musical instrument comprising:
a case having a base plate, side walls enclosing sides and a rear of said case, and a top plate;
an electrically operated sound making means provided in said case;
a plurality of manually playable keys arranged in a front part of said case, said keys when pressed closing switch means for operating said sound making means to sound a musical note corresponding to the key pressed;
a musical note scale on a surface of said top plate;
holes provided in said top plate at locations corresponding to each note of said musical scale; and
a music note rod inserted in each said hole in said top plate, top ends of said music note rods being normally level with said top plate, said music note rods moving up through their respective holes when a corresponding key is pressed down, for identifying on said musical note scale a corresponding musical note played and sounded, said music note rods moving down in their respective holes when said keys corresponding thereto are released, a lower end of each said music note rod being attached to one end of a corresponding pliable tongue, said corresponding pliable tongues each having a different length, the other ends of said pliable tongues being fixed between said top plate and said keys by a support plate, a tail end of each said key extending beneath a corresponding one of said pliable tongues to which a corresponding one of said music note rods is attached.

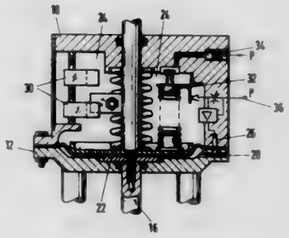
4,794,841

PNEUMATIC DRIVE MECHANISM FOR POSITIONING APPARATUS

Lothar Kemmler, Mozartstr. 4, D6082 Moerfelden, Fed. Rep. of Germany, and Norbert Jeschke, Breslauer Strasse 3, D6057 Dietzenbach-Hexenberg, Fed. Rep. of Germany

Filed Apr. 8, 1987, Ser. No. 36,665
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1986, 3611712; Oct. 31, 1986, 3637068
Int. Cl.[4] F01B *25/26, 31/12*
U.S. Cl. 91—1 18 Claims

1. Pneumatic drive mechanism for positioning apparatus comprising:
drive housing having at least one accommodation space;
drive element movably seated in said drive housing;
drive rod rigidly connected to said drive element;
means for supplying compressed air to at least one side of said drive element;
at least one spring arranged within said drive housing and operatively connected to said drive element to apply a force on said drive element opposite to a force on said drive element from said compressed air;



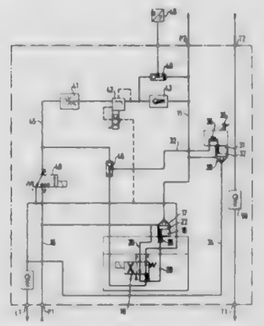
at least one means for signal processing integrated within said drive housing in said accommodation space, said accommodation space lying between said spring and an inside wall of said drive housing aligning essentially with an outside circumference of said drive element in an axial direction of said drive rod, said accommodation space in an axial direction being not substantially greater than an entire length of said spring.

4,794,842

VALVE MEANS FOR CONNECTING AT LEAST ONE CONSUMER TO A HYDRAULIC PRESSURE LINE

Hermann Elden, Lohr, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Aug. 6, 1987, Ser. No. 82,428
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1986, 3626722
Int. Cl.[4] F16B *13/043*
U.S. Cl. 91—31 11 Claims



1. Valve means for connecting at least one consumer to a hydraulic pressure line or a tank line, characterized by a first pressure operated shutoff valve for shutting off in leakage-free manner said consumer from said pressure line, a pressure-regulating valve and a directional seat valve in series with each other and operating as second shutoff valve parallel to said first shutoff valve and a control valve having two switch positions, in a first switch position of which a control line from the pressure lines is connected to operate said first shutoff valve for shutting off said first shutoff valve and the consumer is connected to the tank and in a second switch position of which the control line is shut off and the said first shutoff valve is connected to the tank for opening said first shutoff valve,

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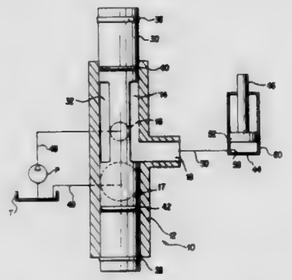
means for operating said second shutoff valve, means for operating said shutoff valves in such a manner that only one shutoff valve can be switched to the on position at any time, and a pressure operated directional seat valve provided as relief valve, said pressure operated directional seat valve in the first switch position of said control valve being connected to the tank and in the second switch position being connected to said control line.

4,794,843

HYDRAULIC VALVE FOR CONTROLLING SINGLE-ACTING CYLINDER

Denzil C. Poling, Rte. 6, P.O. Box 80, Hagerstown, Md. 21740

Filed Sep. 24, 1986, Ser. No. 911,065
Int. Cl.[4] F15B *13/02*; F01L *31/00*
U.S. Cl. 91—47 **21 Claims**



1. A hydraulic control valve comprising:

(a) a valve housing including a cylindrical valve bore, the valve housing further including a supply port in communication with the valve bore, a discharge port in communication with the valve bore, and a delivery port in communication with the valve bore;

the hydraulic control valve further comprising:

(b) a valve pin slidable within the valve bore between first and second pin positions, the valve pin including a pin groove, which pin groove is positionable to establish communication at the first pin position between the supply port and the delivery port to the exclusion of the discharge port, the pin being slidable from said first position to the second position to establish, through said pin groove, simultaneous communication between the supply port, the discharge port and the delivery port.

4,794,844

PNEUMATICALLY OPERATED SERVO-BOOSTER

Philip A. Taft, West Midlands, England, assignor to Lucas Industries, Public Limited Company, Birmingham, England

Filed Feb. 4, 1987, Ser. No. 10,622
Claims priority, application United Kingdom, Feb. 6, 1986, 8602947
Int. Cl.[4] F15B *9/10*
U.S. Cl. 91—376 R **19 Claims**

1. A pneumatic servo-booster comprising:

a hollow housing;

a movable partition in said housing forming two chambers in said housing separated by said partition;

a hub member movable with said partition;

a first valve seat on said hub member;

a valve element movable relative to said hub member and engaged with a force input member for movement thereby;

a second valve seat on said valve element and having relative axial positions with respect to said first valve seat;

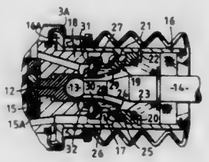
a valve member yieldably urged toward an operative position in cooperative engagement with said valve seats, cooperation of said valve seats with said valve member being dependent upon said relative axial positions of said valve seats for controlling pressures in said two chambers;

a hollow member separate from and substantially co-axial with and movable relative to said hub;

an abutment member movable with said hollow member;

an abutment surface on said abutment member directly engageable with said valve element for determining an extreme position of movement of said second valve seat relative to said valve member;

so that when said valve element is engaged against said abutment surface, movement of said hub by pressure in one of said chambers causes said first valve seat to move said valve member relative to said second valve seat for maintaining said second valve seat in a balanced condition of readiness for actuation by said force input member.

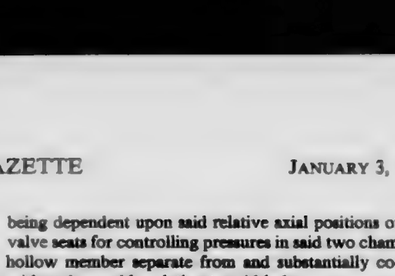


4,794,845

DIRECT DRIVE ROTARY SERVO VALVE

Ralph L. Vick, Granada Hills, Calif., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Aug. 31, 1987, Ser. No. 90,886
Int. Cl.[4] F15B *13/044*
U.S. Cl. 91—387 **22 Claims**



1. A direct drive rotary servo valve for controlling a hydraulic actuator comprising a housing including conduits connected to a source of operating fluid under high pressure and to said controlled actuator, a sleeve in said housing including a plurality of passageways therein connected to said conduits, a spool member including channels to direct operating fluid as desired among said passageways and a rotatable torque motor connected to rotate said spool member over a limited range of movement;

characterized in that said torque motor includes a housing, a rotor in said housing in communication with the return side of said high fluid pressure source, a stator in said housing and a tubular member in said housing sealing said stator from said high fluid pressure source, and a torque rod having a splined connection to at least one of said spool and a coupling member operatively connected to said housing, said operative connection including a helical screw member threadedly engaged with said coupling member and a mating helical nut member;

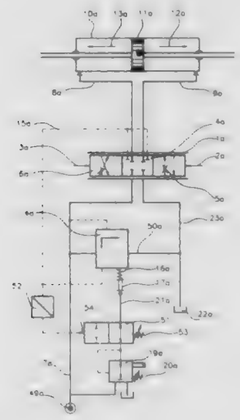
said spool including generally rectangular openings communicating with said channels, some of said openings including arcuate edges, said sleeves being formed of endpieces and a plurality of annular disks having axially directed passages therethrough which cooperate to define said passageways including some disks having edge openings communicating with said conduits and internal openings communicating with said openings of said spool member, said disks and endcaps being brazed together to form a unitary manifold structure and wherein said sleeve includes a first passageway connected to said high fluid pressure source, a second passageway connected to the return side of said high fluid pressure source, and third and fourth passageways connected to said controlled actuator.

4,794,846

PROPORTIONAL ACTION VALVE WITH A BIASED SPRING UNPROPORTIONATELY VARIABLE TO THE LOAD PRESSURE

Heinz-Joachim Von Der Ley; Reiner Schulz, and Bernd Henchoz, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany

PCT No. PCT/DE86/00066, § 371 Date Oct. 22, 1986, § 102(e) Date Oct. 22, 1986, PCT Pub. No. WO86/04963, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 21, 1986, Ser. No. 931,686
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1985, 3506432
Int. Cl.[4] F15B *13/04*
U.S. Cl. 91—451 **4 Claims**



1. Proportional action valve apparatus for a hydraulic power system having a pump and a load and a tank comprising:

adjustable throttle valve means connected directly to said pump for controlling hydraulic fluid flow from said pump to said load and to said tank;

pressure balance means for controlling the pressure difference at said throttle valve means between the pump pressure and the load pressure, said pressure balance means having a passage interconnecting said pump and said tank, said pressure balance means including a piston biased on one side thereof by said pump pressure in a direction increasing the flow area of said passage, and biased on the other side thereof by said load pressure in a direction decreasing the flow area of said passage;

a supporting assembly for imposing additional hydraulic pressure on said other side of said piston;

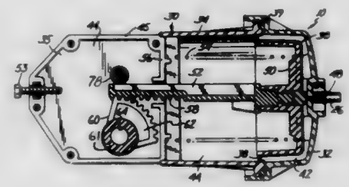
and adjustable control means for selectively controlling the magnitude of said additional pressure, said control means including hydraulic fluid circuit means extending between a source of pressurized fluid and said supporting assembly, an adjustable pressure regulating valve located within said circuit means between said source and said supporting assembly, and a second valve in series with said pressure regulating valve and operable by changes in said load pressure.

4,794,847

ROTARY ACTUATOR

Paul E. Kreuter, and Larry G. Odegaard, both of Thief River Falls, Minn., assignors to Kreuter Mfg. Co., Inc., New Paris, Ind.

Filed Nov. 30, 1986, Ser. No. 126,621
Int. Cl.[4] F01B *9/00*
U.S. Cl. 92—136 **9 Claims**



1. A fluid pressure to mechanical transducer for controlling the angular position of an actuator shaft rotatably mounted with respect to a base as a function of variations in fluid pressure in the transducer, said transducer including:

(a) a housing;

(b) a diaphragm within the housing separating the housing into a fluid-tight first compartment and a second compartment open to ambient pressures;

(c) the housing being provided with a fluid pressure receiving port open to said fluid-tight first compartment from a control source of variable pressure;

(d) a piston and piston rod slidably mounted within the second comparment of the housing with the piston being in operative contact with the diaphragm;

(e) said diaphragm, piston and piston rod being movable between a first position wherein said first comparment of the housing has a minimum volume and a second position wherein the first compartment has a maximum volume;

(f) bias means within the housing operative to tend to move the diaphragm, piston and rod toward their first positions against the action of fluid pressure in the first compartment tending to move these parts toward their second positions;

(g) said piston rod including a longitudinally extending rack;

(h) a crank arm rotatably mounted on a first axis within the second compartment of the housing, said crank arm including a gear segment concentric with the crank arm first axis and in operative, meshing engagement with the piston rod rack;

(i) said housing and crank arm being provided with openings therein to receive the actuator shaft, said openings being concentric with the first axis of rotation of the crank arm;

(j) first means to key the actuator shaft to rotate with the crank arm on its first axis when the actuator shaft is installed in the crank arm within the housing;

(k) second means including said crank arm and said first means for supporting said transducer on the actuator shaft; and

(l) third means for fixing the position of the transducer housing with respect to the base to limit rotary movement of the transducer housing on the first axis, said third means including a prositioning finger extending integrally outwardly from the housing in spaced relation to the first axis of rotation of the crank arm and the actuator shaft, and a positioning clip fixedly mounted with respect to the base and in encompassing relationship with respect to the positioning finger.

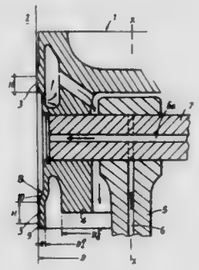
VOL 1098 ISS 1 JA 3 1989 UMI

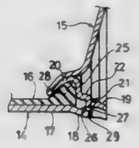
4,794,848

ANTI-SEIZING DESIGN FOR CIRCUMFERENTIALLY CONTINUOUS PISTON RING

Jean F. Melchior, 126 Bld du Montparnasse, 75 014 Paris, France

Filed Jul. 10, 1987, Ser. No. 71,915
Claims priority, application France, Aug. 18, 1986, 86 11801
Int. Cl.[4] F16J *1/02, 1/08, 9/12, 9/26*
U.S. Cl. 92—159 **19 Claims**





1. A piston for a reciprocating machine employing a compression of gaseous fluid, such as an internal or external combustion engine or a compressor, which piston comprises a body, has an axis, is adapted to slide in a cylinder of said machine and carries at least one continuous solid ring of revolution—i.e. with no split—having an outer surface which is cylindrical at least in a portion H of the height of the ring and has a generatrix parallel to said axis of the piston defining a cylindrical bearing portion, the ring having an inside diameter which is greater than an outside diameter of said body at least at every point of said height H of the cylindrical bearing portion confronting it, irrespective of the conditions of operation of said piston, and which includes means for supplying lubricating oil, wherein:

(a) the ring has, when it is not mounted in said cylinder and has the same temperature as said cylinder, an outside diameter equal to at least the inside diameter of the cylinder in a ratio substantially equal to 1.001;

(b) the ratio t/D of the maximum thickness t of the ring relative to the diameter D of the ring is, at every point of said height H, at the most equal to a limit $k=P_{lim}/2\sigma_{el}$ in which P_{lim} is the minimum pressure of contact of the ring on the cylinder above which pressure seizing may occur, and σ_{el} is the elastic limit of the material of said ring;

(c) means are provided for connecting said ring to said piston body which are so adapted that said means can in no case result in creation, in operation, between said ring and said cylinder, of a pressure of contact higher than P_{lim}; and

(d) the height H is sufficiently great to enable, in operation, the establishment between said ring and said cylinder of a hydrodynamic pressure permitting the creation of a sufficiently thick film of oil.

4,794,849

COUPLING STRUCTURE FOR SHELLS OF BOOSTER

Michio Kobayashi, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1981, Ser. No. 252,553
Claims priority, application Japan, Apr. 28, 1980, 55-58530[U]
Int. Cl.[4] F16J *11/02, 3/02;* **F01B** *19/00*
U.S. Cl. 92—98 D **10 Claims**

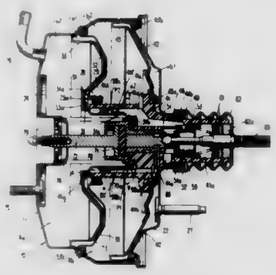
1. In a booster enclosure including: a first shell which is pan-shaped and has a closed end, an open end, a cylindrical portion adjoining said open end, and a plurality of circumferentially spaced, radially-inwardly extending pawls formed along the periphery of said open end of said first shell; a second shell having a rim portion comprising a radially outermost peripheral edge portion fitted into said open end of said first shell, a radially extending portion and an annular groove defining portion contiguous with said radially extending portion at a radially innermost end of said radially extending portion, which annular groove defining portion extends into said open end of said first shell and also extends radially outwardly from said radially innermost end of said radially extending portion so as to define in combination with said radially extending portion a radially outwardly opening annular groove, said second shell being adapted to be locked with said first shell by means of said pawls which extend over said rim portion of said second shell when said shells are locked together; and a diaphragm having a circumferential enlarged edge, which enlarged edge is adapted to be clamped between an inner face of said cylindrical portion of said first shell and said annular groove of said second shell, the improvement comprising wherein said rim portion further includes a reinforcing portion intermediate said radially extending portion and said peripheral edge portion, which reinforcing portion extends from a radially outermost end of said radially extending portion away from the closed end of said first shell and is located radially outwardly of and axially offset from said annular groove, and said reinforcing portion is in close proximity to ends of said pawls which are in contact with said rim portion when said shells are locked together, such that said reinforcing portion reinforces said rim portion against stress caused by contact of said rim portion with said pawls.

4,794,850

FLUID PRESSURE SERVOMOTOR

Michiharu Nishii, Toyota, and Yuzuru Sugiura, Anjo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 23, 1987, Ser. No. 6,106
Claims priority, application Japan, Jan. 24, 1986, 61-009317[U]
Int. Cl.[4] F15B *9/10*
U.S. Cl. 92—168 **9 Claims**



1. A fluid pressure servomotor comprising:
a housing;
a partition wall arranged in said housing;

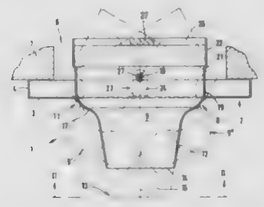
a center opening formed in said partition wall;
a hub member having a cylindrical portion;
a ring bearing axially slidably guiding said cylindrical portion of said hub member and received in said opening of said partition wall;
a sealing member received in said opening and including a sealing portion hermetically engaged with said partition wall and a lip portion hermetically engaged with said cylindrical portion of said hub member;
a retainer for retaining said sealing member and said ring bearing between said partition wall and said cylindrical portion of said hub member; and
engaging means for engaging said sealing member with said ring bearing, said engaging means including a groove in one of said sealing member and said ring bearing and a projection for engaging said groove formed on the other of said sealing member and said ring bearing, the sealing member being movable with the ring bearing by the engaging means engaging said sealing member and said ring bearing, said cylindrical portion and said sealing member being maintained in a co-axial relationship.

4,794,851

NOZZLE MEANS FOR AN AIR CONDITIONING INSTALLATION

Hermann Kurrle, Kolbingen, Fed. Rep. of Germany, assignor to Schako Metallwarenfabrik Ferdinand Schad KG, Tuttlingen, Fed. Rep. of Germany

Filed May 11, 1987, Ser. No. 48,589
Claims priority, application Fed. Rep. of Germany, May 14, 1986, 8613078[U]
Int. Cl.[4] F24F *13/065*
U.S. Cl. 98—40 18 **4 Claims**



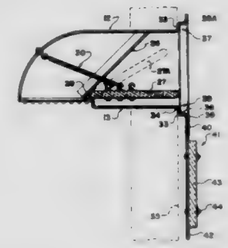
1. A nozzle means for an air conditioning installation or the like for ventilating rooms, the nozzle means comprising:
a circular mounting frame including a cover plate having a ring flange on an outer circumference thereof;
a circular opening provided in the cover plate of the circular mounting frame;
a nozzle extending through the circular opening, with the nozzle including a nozzle jacket, said nozzle jacket having a conical nozzle portion tapering toward an outer end thereof and being adapted to be cut-off;
a shoulder-like region connected to the conical nozzle portion, said shoulder-like region beginning with respect to the conical nozzle portion at a distance from the cover plate of the mounting frame roughly corresponding to a vertical spacing of a pivot point of the nozzle relative to the mounting frame, a diameter of the shoulder-like region in a plane of the cover plate slightly less than a diameter of the opening of the mounting frame;
a substantially cylindrical extension region of the nozzle casing is connected to the shoulder region, with a diameter of a substantially cylindrical extension region substantially corresponding to a diameter of the circular opening of the cover plate;
pivot holding means are fixed to an inside of the cover plate and are formed as legs extending in the same direction as the nozzle in the extension region of the nozzle casing, with diagonally facing holes being provided in the pivot holder means for accommodating pivot means for enabling the nozzle to be pivotably mounted to the mounting frame about the pivot point defined by the pivot means.

4,794,852

INLET DEVICE

Dirk V. Ee, Saskatchewan, Canada, assignor to Del Air Systems Ltd., Humboldt, Canada

Filed Jan. 27, 1988, Ser. No. 148,887
Int. Cl.[4] F24F *13/18*
U.S. Cl. 98—118 **18 Claims**



1. An air inlet for mounting in a wall of a building comprising an integrally moulded plastics body defining a sleeve portion of rectangular cross-section having an upper wall, a lower wall and two side walls, one end of the sleeve portion defining a planar open mouth lying in a plane at right angle to the length of the sleeve portion, a hooded inlet portion connected to an opposed end of the sleeve portion and having an upper cover surface extending through an angle of the order of 90 degrees, two sides and a lower open inlet surface arranged at right angles to said open mouth and covered by said sides and said cover surface, an abutment surface at said one end of the sleeve portion extending outwardly therefrom for engaging an inner surface of the wall with the sleeve portion extending through an opening in the wall, a door support flange extending outwardly from said sleeve portion at said open mouth, a door hingedly mounted on said door support flange for movement between a closed position closing said open mouth and an open position exposing said open mouth for passage of air through said inlet, air leakage sealing means coacting between said door and said sleeve portion at said open mouth in said closed position of the door, a pivotal shutter mounted within said sleeve portion comprising a planar rigid rectangular sheet member having a lower edge arranged adjacent one side of said inlet surface and inclined upwardly and longitudinally of said sleeve portion to an upper edge thereof adjacent said open mouth, means mounting said shutter for pivotal movement about said lower edge from the closed position extending across said sleeve portion to prevent the flow of air through said sleeve portion to an open position in which said shutter lies substantially flat along said lower wall of the sleeve portion, and spring means applying a biassing force to said shutter to maintain it in said closed position, each of said upper, lower and side walls of said sleeve portion having at said open mouth integrally moulded therewith a first outwardly extending flange wall and a recess wall generally parallel to the respective wall of the sleeve portion to define a recess surrounding the open mouth, an outer surface of said flange wall defining said abutment surface, an inner surface of said door having extending therefrom a sealing member arrangement to cooperate with an inner surface of said recess wall to define said air leakage sealing means.

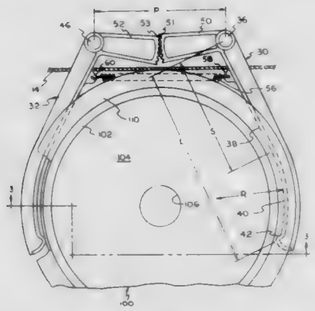
VOL 1098 ISS 1 JA 3 1989 UMI

4,794,853

UNIVERSAL BREW BASKET SUPPORT ARMS

Robert L. Weber, New Canaan, Conn., assignor to Grindmaster Corporation, Louisville, Ky.

Filed Sep. 18, 1987, Ser. No. 98,539
Int. Cl.[4] A47J *31/02, 31/06*
U.S. Cl. 99—295 **15 Claims**



1. Support apparatus for coffee maker brew baskets of the type having an upper generally cylindrical side wall and a lip extending radially outwardly therefrom, the support apparatus comprising:

(A) a base and a support plate spaced apart thereabove, said support plate having an opening through which the output of a coffee grinder discharges;

(B) a pair of brew basket support arms pivotally mounted at spaced apart points to extend horizontally outwardly subadjacent the support plate, the support arms having associated interconnecting means establishing co-pivoting separational movement therebetween and further having associated means biasing the support arms together, said support arms flanking the coffee grinder outlet; and

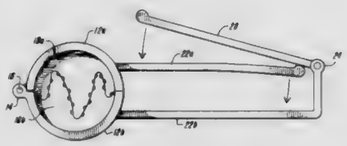
(C) said brew basket support arms each having a substantially straight portion extending from its pivot point and a concave facing curved portion extending to the distal end of the brew basket support arm, wherein the support arms are shaped to receive and hold brew baskets of various sizes with the lip of the supported brew basket confined between the support arms and the support plate.

4,794,854

FOOD PRESS WITH SEPARATING BOWL SECTIONS FOR CLEANING

C. Hall Swaim, 133 Rawson Rd., Brookline, Mass. 02146

Filed Nov. 27, 1987, Ser. No. 125,880
Int. Cl.[4] B30B *1/04, 9/06*
U.S. Cl. 100—112 **12 Claims**



1. A press for crushing and forcing a pressable substance through a plurality of openings in the press, said press comprising:

a bowl comprised of two bowl sections with each of said sections having a mating surface complementing the mating surface of the other bowl section, each of said mating surfaces having a plurality of grooves along its complementing mating surface;

means for securing said two bowl sections in a mated position with the grooved complementing mating surfaces of said two sections lying adjacent one another in a contacting relationship;

means for urging the pressable substance inserted in said bowl toward openings formed by said grooves and said complementing surfaces;

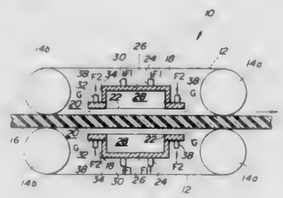
whereby a pressable substance placed in said bowl is minced when said means for urging is depressed in said bowl and said bowl is cleaned by separating said bowl sections.

4,794,855

CONTINUOUS PRESS MACHINE

Kiyonori Okajima; Jugoro Saito, both of Tokyo, and Hiroshi Fujiwara, Koshigaya, all of Japan, assignors to Mitsubishi Rayon Engineering Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1987, Ser. No. 61,287
Claims priority, application Japan, Aug. 5, 1986, 61-183907; Aug. 5, 1986, 61-183909; Aug. 25, 1986, 61-198757
Int. Cl.[4] B30B *5/04;* **F16J** *15/40*
U.S. Cl. 100—154 **13 Claims**



1. A continuous press machine comprising:

(a) a pair of opposed endless belts each operable to move along a looped path, said pair of opposed endless belt having respective inner sides disposed in parallel opposed relation to each other, said inner sides of said endless belts being adapted to hold a sheet-like material therebetween so as to compress and advance it when said pair of opposed endless belts move;

(b) pressure applying means for urging each of said pair of opposed endless belts towards the material, each of said pressure applying means comprising:

(i) a stationary housing mounted within said looped path of the corresponding one of said pair of opposed endless belts, said stationary housing defining a pressure chamber and having a peripheral edge facing and spaced slightly from a back side surface of the inner side of the corresponding one of said pair of opposed endless belts, said peripheral edge defining an opening of said pressure chamber disposed in opposed relation to the back side surface of the inner side of the corresponding one of said pair of opposed endless belts, and

(ii) means for supplying a pressurized urging fluid to said pressure chamber, so that the pressure in said pressure chamber is applied to the back side surface of the inner side of the corresponding one of said pair of opposed endless belts so as to urge the inner side of the corresponding one of said pair of opposed endless belts against the material; and

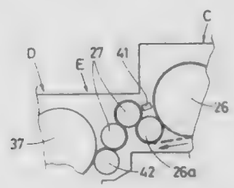
(c) seal means for sealing a gap between said peripheral edge of each one of said stationary housings and the back side surface of the inner side of the corresponding one of said pair of opposed endless belts so as to prevent the pressurized urging fluid in the corresponding one of said pressure chambers from flowing through said gap, said seal means being provided on said peripheral edge of each one of said stationary housing and being spaced from the back side surface of the inner side of the corresponding one of said pair of opposed endless belts by a gap of 0.1 μm to 0.3 mm, said seal means comprising fluid seal means for continuously applying a pressurized sealing fluid from at least part of said peripheral edge toward the back side surface of the inner side of the corresponding one of said pair of opposed endless belts so as to provide a fluid seal therebetween.

4,794,856

COMBINED ROTARY MULTICOLOR PERFECTING PRESS

Gualtiero Giori, Lonay, Switzerland, assignor to De La Rue Giori S.A., Switzerland

Continuation-in-part of Ser. No. 622,988, Jun. 21, 1984, Pat. No. 4,584,939. This application Jan. 28, 1986, Ser. No. 823,322
Claims priority, application Switzerland, Jul. 26, 1983, 4086/83
The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.
Int. Cl.[4] B41F *5/16, 9/02, 11/00*
U.S. Cl. 101—152 **14 Claims**



1. Combined rotary printing machine, comprising a multicolor indirect printing device, an intaglio printing machine incorporating a plate cylinder inked in several colors and an impression cylinder, and a paper transfer system adapted to feed the paper printed in said indirect printing device to said intaglio printing machine, wherein:

said indirect printing device is a simultaneous recto-verso printing machine comprising a first blanket cylinder engaging a plurality of offset plate cylinders each inked by an inking unit in a different color, the number of said offset plate cylinders corresponding to the number of colors and designs of the first image to be printed on one of the paper sides, said first image being an image with superposed colors and designs, and a second blanket cylinder operating as a color collecting cylinder engaging a plurality of selective color inking cylinders and a typographic plate cylinder representing the complete design of the second image to be printed on the other side of the paper, said selective color inking cylinders being each inked by an inking device in a different color and applying an image with juxtaposed colors to said color collecting cylinder, said collecting cylinder inking, in turn, said typographic plate, a third blanket cylinder engaging said typographic plate cylinder and receiving therefrom the image with juxtaposed colors, being adapted to be pressed against said first blanket cylinder, said paper passing between said first and third blanket cylinders so as to be printed simultaneously on both sides with said first and second images, respectively;

a drying device incorporated in said transfer system, and

a sheet transfer and turning device incorporated in said transfer system between said drying device and said intaglio printing machine for turning said paper as required according as the paper side printed with an image with superposed colors and designs or the paper side printed with juxtaposed colors is to receive an image printed in said intaglio printing machine;

wherein a register control and correction device is incorporated in the conveyor system between the paper transfer and turning device and the intaglio printing machine comprising a register reading head and a register cylinder which is controlled by this head for correcting the register, the register cylinder being separate from the printing unit, correction being effected by adapting the register cylinder to respond to an electric signal which temporarily changes the rotational speed thereof; and

wherein at least one of said offset plate cylinders of the indirect printing device carries a wet offset printing plate with which a dampening device is associated, whereas the other offset plate cylinders carry dry offset printing plates; and wherein the indirect printing device further comprises a wet offset printing unit of which the plate cylinder contacts the third blanket cylinder, said wet offset printing unit contacting said third blanket cylinder is movably mounted so that it can be moved out of contact with the third blanket cylinder

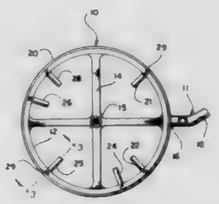
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4,794,857

VARIABLE MARKING APPARATUS

David E. Waters, Sr., Beech Island, S.C., assignor to C. W. Hock, Jr., Augusta, Ga., a part interest

Filed Dec. 14, 1987, Ser. No. 132,891
Int. Cl.[4] B41F *17/00*
U.S. Cl. 101—328 **5 Claims**



1. A marking apparatus for marking a work piece into increments, said marking apparatus including a wheel for rolling along said work piece, and a handle for controlling said wheel, said wheel comprising a rim having a circumference, a hub centrally of said rim, an axle at the center of said hub, said axle rotatably connecting said handle to said wheel, and a plurality of marking means distributed along said circumference of said rim, said plurality of marking means being so spaced as to divide said circumference into equal increments, each marking means of said plurality of marking means being selectively usable so that said equal increments are selectively variable, each marking means of said plurality of marking means including a marker holder fixed to said rim and extending generally radially thereof, said marker holder defining a bore for selectively receiving a marker, said marker including a marking tip for marking said work piece, said rim defining a hole aligned with said bore, means for urging said marking tip through said hole in said rim and against said work piece, said means for urging said marking tip through said hole including a spring within said bore, and further including a shoulder for limiting radial motion of said marker, said plurality of marking means comprising a first marking means located at zero degrees on said circumference, a first group of said marking means uniformly distributed around said circumference at a first spacing from said first marking means, and a second group of said marking means uniformly distributed around said circumference at a second spacing from said first marking means.

4,794,858

PNEUMATIC RELEASE MANDREL

Sidney Katz, 6 Hedgerow La., Spring Valley, N.Y. 10977

Filed Oct. 19, 1987, Ser. No. 110,223
Int. Cl.[4] B41F *13/10, 13/20*
U.S. Cl. 101—375 **4 Claims**

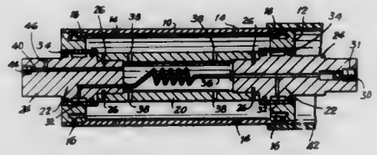
1. A mandrel for use in conjunction with a printing cylinder

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adapted to receive a resilient sheath on the external surface thereof on which printing plates are mounted, the printing cylinder being perforated to permit the passage therethrough of compressed air for the purpose of expanding the sheath out of frictional contact with the cylinder, said mandrel comprising:

a hollow cylindrical shell having radial perforations extending through the wall thereof;

a trunnion and an expansion head assembly supported by said hollow cylindrical shell at each axial end of said



hollow cylindrical shell each expansion head having a gallery closed by a radially outwardly expandable diaphragm; and,

at least one hydraulic pump connected to the gallery of each said expansion head for the supply of hydraulic fluid under pressure to said galleries to expand said radially expandable diaphragms radially outwardly;

one of said trunnions having a compressed air supply passage extending therethrough and communicating the interior of said hollow cylindrical shell with a connector for a compressed air supply hose.

4,794,859

ACTIVE PAPER DROP FOR PRINTERS

William R. Hussby; Kevin L. Moon; Steve O. Rasmussen, and Larry A. Jackson, all of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 23, 1987, Ser. No. 113,041

Int. Cl.[4] B41F *21/00*

U.S. Cl. 101—485 **26 Claims**



26. An improved method for stacking printed sheets of a print medium in a substantially horizontally-disposed output collection means during printing by an ink-jet printer, comprising (a) suspending a single sheet above said output collection means during said printing of said sheet by retractable means in a sheet-supporting position, (b) causing said retractable means to retract at the termination of printing of said sheet to permit said sheet to drop onto said output collection means, thereby avoiding smearing of ink on a previously-printed sheet of said print medium, and (c) causing said retracting means to return to said sheet-supporting position.

4,794,860

FOAM CONTROL METHOD FOR VACUUM REFINING OF GLASSY MATERIALS

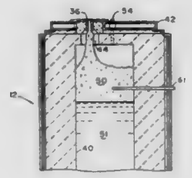
Wright M. Welton, Oldtown, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 882,647, Jul. 7, 1986, abandoned. This application Sep. 29, 1987, Ser. No. 102,227

Int. Cl.[4] C03B *5/225*

U.S. Cl. 65—135 **25 Claims**

1. A method of refining glassy materials or the like wherein a volume of the material in a molten state is retained in a vessel, subatmospheric pressure is maintained in the vessel above the molten material so as to assist refining of the material, whereby foam is present above the material in the vessel, characterized



by depositing onto the foam substances that accelerate collapse of the foam selected from the group consisting of water, alkali metal compounds, and solutions thereof.

4,794,861

TIE EXCHANGE METHOD

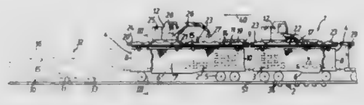
Josef Theurer, Vienna; Johann Hansmann, Klosterneuburg, and Friedrich Oellerer, Linz, all of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Sep. 17, 1987, Ser. No. 97,759

Claims priority, application Austria, Oct. 13, 1986, 2720/86; Feb. 6, 1987, 247/87

Int. Cl.[4] E01B *29/05, 27/11*

U.S. Cl. 104—2 **12 Claims**



1. A method for sequentially exchanging selected consecutive groups of old ties for groups of new ties while retaining groups of old ties between the selected old ties in a railroad track consisting of two rails fastened to the ties supported on ballast, which comprises the steps of

(a) continuously advancing at least one elongated bridge-like work vehicle along the track in an operating direction while supporting respective opposite ends of the work vehicle on the track on respective undercarriages,

(b) sequentially operating a succession of different individual devices mounted on the work vehicle between the undercarriages while advancing the work vehicle to

(1) remove elements fastening the rails to the selected old ties whereby the selected old ties are detached from the rails,

(2) remove tie plates positioned between the detached old ties and the rails,

(3) withdraw the detached old ties laterally from the track,

(4) scarify the ballast where the detached old ties have been withdrawn whereby shaped recesses are formed in the ballast under the rails,

(5) insert new ties in the shaped recesses,

(6) place ties plates between the new ties and the rails,

(7) tamp ballast under the new ties, and

(8) fasten the rails to the new ties, and

(c) intermittently displacing the different individual operating devices along the elongated work vehicle for effectuating the sequential operation thereof while the devices are held in place and the work vehicle advances continuously.

4,794,862

TRACK LEVELING AND BALLAST TAMPING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

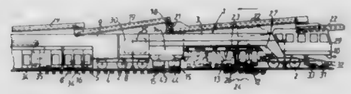
Filed Dec. 22, 1986, Ser. No. 944,365

Claims priority, application Austria, Feb. 12, 1986, 358/86

The portion of the term of this patent subsequent to Sep. 13, 2005, has been disclaimed.

Int. Cl.[4] E01B *27/17, 27/11*

U.S. Cl. 104—7.2 **22 Claims**



1. A track leveling, lining and ballast tamping machine comprising

(a) a standard vehicle capable of being coupled to a train and having

(1) a machine frame,

(2) two undercarriages supporting the frame for movement in an operating direction along a track comprised of two rails fastened to ties defining cribs therebetween, the undercarriages being sufficiently spaced apart in said direction to permit lifting and lining of the track therebetween, and

(3) a drive for moving the frame along the track,

(b) a ballast tamping unit connected to the frame between the undercarriages and comprising pairs of vibratory and reciprocatory tamping tools movable towards each other for tamping ballast under successive ones of the ties,

(c) a track lifting and lining unit connected to the frame between the undercarriages and ahead of the ballast tamping unit in the operating direction at a constant distance from the tamping unit,

(d) a track leveling and lining reference system for controlling the lifting and lining of the track by the track lifting and lining unit,

(e) a ballast receiving and storage container mounted on the frame ahead of the ballast tamping and track lifting and lining units in a forward portion thereof in the operating direction, the container having

(1) adjustable outlet port means for distributing ballast in respective ones of the cribs, and

(f) a ballast conveyor means mounted on the frame and leading from a forward end of the frame, in the operating direction, to the ballast receiving and storage container for conveying ballast thereto.

4,794,863

MOTIVE STRUCTURE FOR TRANSPORTING WORKPIECES

Stephen M. Gates, Ossining; Michael Liehr, Yorktown Heights, both of N.Y.; Michel G. E. G. Renier, Namur, Belgium, and Gary W. Rubloff, Waccabuc, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1988, Ser. No. 171,320

Int. Cl.[4] B61B *13/00*

U.S. Cl. 104—165 **5 Claims**

1. Apparatus for moving at least one transportation means along a predetermined path comprising:

a frame structure including a pair of parallel elongated frame members,

at least one transportation means disposed on said parallel frame members and adapted to move thereon,

at least one drive structure for moving said transportation means disposed proximate to said parallel frame members, said drive structure including first and second rotatable crankshaft elements located a given distance apart parallel to said parallel frame members each of said crankshaft elements including a plurality of crankshaft wheels on a common axis of rotation,

said drive structure further including a plurality of elongated members connected to said crankshaft wheels at each end thereof, said ends of said members being connected to said crankshaft wheels at equally spaced angular positions relative to each other,

said at least one transportation means further including contact elements flexibly mounted below said transportation means,



wherein said elongated frame members supporting said transportation means and said proximately disposed drive structure are spatially oriented so that said elongated members of said drive means are sequentially brought into connection with said contact elements of said transportation means as said crankshaft wheels rotate through each revolution, each one of said elongated member of said drive means moving said transportation means linearly along said predetermined path on said parallel elongated frame members during contact with said contact element.

4,794,864

OVERHEAD CABLE TRANSPORT INSTALLATION, ESPECIALLY AERIAL CABLEWAY

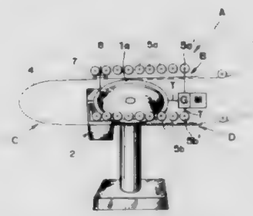
Fritz Feux, Thun, and Ferdinand Hora, Burgdorf, both of Switzerland, assignors to Von Roll Habegger AG, Thun, Switzerland

Filed Jun. 15, 1987, Ser. No. 61,623

Claims priority, application Switzerland, Jun. 17, 1986, 02468/86

Int. Cl.[4] B61B *11/00, 12/02*; B61K *1/00*

U.S. Cl. 104—168 **8 Claims**



4. An overhead cable transport installation, especially an aerial cableway, comprising:

a conveying cable revolvingly travelling between two stations;

travelling vehicles carried by said conveying cable and capable of being decoupled at the stations;

a transfer rail provided at each station;

said transfer rail defining an inbound region for the travelling vehicles travelling in an inbound direction and an outbound region for the travelling vehicles travelling in an outbound direction with respect to an associated one of the stations;

friction wheels provided for both the inbound region and the outbound region;

said friction wheels being successively arranged along the

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transfer rail of each station at the inbound region and at the outbound region;

said friction wheels at the inbound region comprising a series of decelerating friction wheels;

said friction wheels at the outbound region comprising a series of accelerating friction wheels;

each of said friction wheels being operatively coupled with drive means;

each of said travelling vehicles having a friction plate supported upon the transfer rail at the station where each said travelling vehicle is momentarily located;

said friction wheels cooperating with said friction plates of the travelling vehicles supported upon the transfer rail of the associated station in order to control the speed of movement of the travelling vehicle when decoupled from said conveying cable;

said drive means driving each of the friction wheels of said series of decelerating friction wheels at the inbound region and each of the friction wheels of said series of accelerating friction wheels at the outbound region at a different speed with respect to a directly neighboring friction wheel in order to impose decreasing circumferential velocities at directly neighboring friction wheels at the inbound region and considered in the inbound direction and at directly neighboring friction wheels at the outbound region and considered in the outbound direction, in order to respectively stepwise decelerate incoming travelling vehicles and to stepwise accelerate outgoing travelling vehicles;

each of said friction plates possessing a length which is greater than the spacing between two neighboring friction wheels of the series of decelerating friction wheels and of the series of accelerating friction wheels;

free-wheeling clutch means operatively connecting each of the friction wheels of the series of decelerating friction wheels and of the series of accelerating friction wheels with the drive means thereof;

said free-wheeling clutch means enabling trailing of the friction wheels relative to their drive means at the inbound region of each station and enabling leading of the friction wheels relative to their drive means at the outbound region of each station in order to compensate for the different driving speeds of said drive means for any two directly neighboring friction wheels when simultaneously engaging the friction late of one of the travelling vehicles;

each said free-wheeling clutch means comprises means for limiting the rotational movement of the related friction wheel relative to the drive means thereof;

each of said free-wheeling clutch means possessing further means in order to return the friction wheel and drive means into a predetermined position;

said further means comprising restoring spring means;

said friction wheels comprise pneumatic wheels;

the drive means of each of said pneumatic wheels comprise V-belt pulleys;

entrainment means provided for the V-belt pulleys;

each said pneumatic wheel comprising hub means containing pocket means;

said entrainment means engaging with play in said pocket means of the hub means of the related pneumatic wheel to allow for rotation of the related pneumatic wheel relative to the drive means thereof; and

said restoring spring means being clamped between said hub means and said V-belt pulleys.

4,794,865

AMUSEMENT RIDE VEHICLE

Arnold Lindberg, Orlando, Fla., assignor to The Walt Disney Company, Burbank, Calif.

Filed May 18, 1987, Ser. No. 50,325

Int. Cl.[4] B61B *13/12*; B61F *9/00*

U.S. Cl. 104—246 **11 Claims**

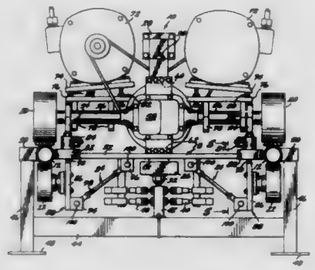
7. A vehicle adapted to travel along a trackway upon a pair of transversely spaced apart track rails each having an upper surface, a side surface and an under surface, the vehicle comprising:

a longitudinally oriented main frame having forward and rearward extremities;

a pair of transverse frames pivotally carried by the main frame adjacent the forward and rearward extremities of the main frame;

drive means including a pair of differential axles fixed to the transverse frames, respectively, further including drive wheels carried at the outer extremities of the axles, respectively, and adapted for driving engagement with the track rail upper surfaces to propel the vehicle along the trackway;

a plurality of up-stop wheel carrier means pivotally mounted to the extremities of the transverse frames, respectively, each wheel carrier means including a pinch wheel adapted to underlie the associated one of the drive wheels, and



each wheel carrier means being pivotable about a longitudinal axis between a pinch position for rolling engagement of the associated pinch wheel with the track rail undersurface, and a retracted position for disengagement of the pinch wheel from the track rail under surface whereby the vehicle can be lifted from the track rails; and

strut means connected between the wheel carrier means and the transverse frames, respectively, and operative to hold the wheel carrier means in their pinch positions in forcible rolling engagement with the track rail under surfaces at all times whereby the track rails are constantly forcibly gripped and pinched between the drive wheels and the pinch wheels, and whereby the pinch wheels provide constant up-stop protection by reason of their constant forcible engagement with the track rail under surfaces, the strut means being disconnectable to enable the wheel carrier means to be pivoted to their retracted positions.

4,794,866

LINEAR MOTOR DRIVEN RAILWAY CAR

Curt Brandis, Bremen; Heinrich Schulze-Buxloh, Werl-Hilbeck, and Siegfried Piragg, Hamm, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Scharf GmbH, Fed. Rep. of Germany

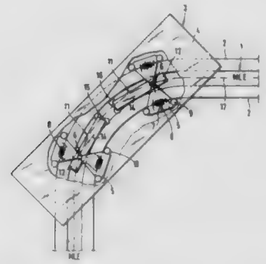
Filed Oct. 13, 1987, Ser. No. 108,268

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1986, 3634838

Int. Cl.[4] B60L *13/02*; B61F *9/00*; B61B *13/04*

U.S. Cl. 104—292 **13 Claims**

8. A transport system particularly for drifts in underground mines, comprising an electrical linear motor drive stator disposed fixedly along a roadway, said stator having a vertical longitudinal central plane, a car for guided movement along the roadway, at least one permanent magnet mounted to said car for movement with said car along the roadway and for transverse relative movement on said car, said permanent magnet having opposite end sections, means for positively guiding both of said opposite end sections of said permanent magnet along the vertical longitudinal central plane of said stator, said means for guiding said end sections of said permanent magnet along said vertical longitudinal central plane of



said stator comprising a truck pivotally mounted about a vertical axis to one end section of said permanent magnet and guide means for positively guiding said truck along said stator.

4,794,867

OMNIBUS SUITABLE FOR TRAIN FORMATION

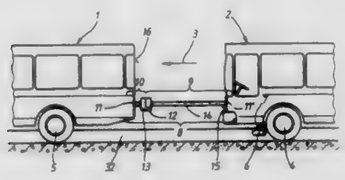
Walter Titz, Auenwald, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

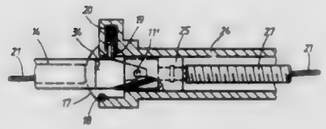
Filed Jan. 4, 1988, Ser. No. 140,636

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1987, 3700464

Int. Cl.[4] B61D *17/00*; B61G *5/06*

U.S. Cl. 105—3 **8 Claims**





1. Omnibus which is suitable for train formation and which can be driven independently and can be selectively freely steered and guided on tracks, said omnibus being selectively connectable via a divisible coupling device to another omnibus of the same type, said coupling device including a front coupling flexibly articulated in the front area and a rear coupling flexibly articulated in the rear area of each respective omnibus intended for train formation, horizontal swivel bearings of the front coupling and of the rear coupling, intended for a horizontal swivelling, being assigned, in plan view of the omnibus, to the latter in each case in defined position, which front coupling and rear coupling are respectively provided with a front coupling head and a rear coupling head corresponding to each other and, upon mutual approach of a front coupling of one omnibus to the rear coupling of another omnibus, of the same type, can positively lock independently with their coupling heads to form an intrinsically rigid pulling/pushing element, characterized by the combination of the following features:

(a) at least the front coupling is designed in the form of a bar which can be exended from the outer contour of the omnibus in travelling direction or retracted into it under remote control, and in the not yet completely extended state, guided such that it can only be moved longitudinally;

(b) the horizontal swivel bearings of the front coupling and of the rear coupling are—in the extended state of the parts of the coupling device prepared for a coupling of omnibuses—in each case arranged in the area of the front or of the rear outer contour, respectively, of the omnibus;

(c) in the at least partially extended state necessary for coupling, the bar is held by buffers, stops or the like with respect to the vertical direction and the horizontal direction in the coupling position necessary for the coupling of the omnibuses standing in line one behind the other in travelling direction;

(d) at least the driving functions such as traction, gear changing and braking of the omnibuses suitable for train formation can be operated in a way known per se in each case from the driver's position under remote control;

(e) as well as the coupling heads, multiple plug-in connectors for compressed air and electric and/or fluid control lines are also provided for the driving functions; and

(f) means for switching the remote-controlled operation of the driving functions are provided, such that the driving functions of the coupled omnibus or omnibuses can be predetermined or controlled simultaneously and uniformly from the driver's position of the first omnibus of the train.

4,794,868

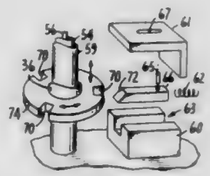
CONCEALABLE ENCLOSURE TABLE

Josef H. Adler, Martinez, Calif., assignor to Nesher Industries, Inc., Martinez, Calif.

Filed Sep. 1, 1987, Ser. No. 91,706

Int. Cl.[4] A47B *51/00*

U.S. Cl. 108—33 **11 Claims**



1. A concealable enclosure table comprising:

a. a base having a bottom, said base further having an upstanding support mounted on said bottom;

b. a rotatable tubular member having and upper end and a lower end, said tubular member slideably mounted over said upstanding support having an upper position and a lower position, said tubular member including a flange having at least one notch, said flange being mounted on the lower end of said tubular member;

c. a top mounted on the upper end of said tubular member;

d. a first spring means journaled about a rod and mounted within said tubular member for predisposing said tubular member and said top into an upper position; and

e. a latch means mounted on said base having a retractable latch pin having an extended position and a retracted position, said latch pin for engaging said flange when said enclosure is in said closed position, said enclosure being released from said latch to said open position by aligning said notch in said flange with said latch pin.

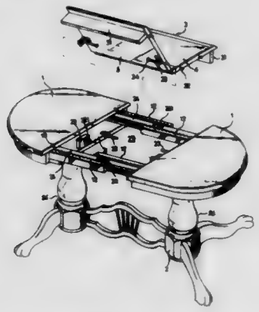
VOL 1098 ISS 1 JA 3 1989 UMI

4,794,869

STRUCTURE OF EXTENDABLE TABLES

Jack Chin, No. 426, Wan Tan Road, Wan Tan Hsiang, Ping-Tung Hsien, Taiwan

Filed Feb. 1, 1988, Ser. No. 150,854
Int. Cl.[4] A47B *1/08*
U.S. Cl. 108—86 1 Claim



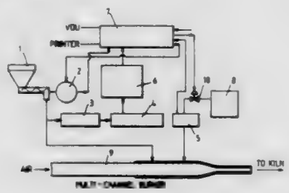
1. An improved extendable table structure comprising two table top plates (1), table legs (2), two posts (26), an engaging plate (3) formed of a first plate (4) and a second plate (5) hinged together, a plurality of protrusions (32) being disposed at both sides of said engaging plate (3), a respective edge plate (31) being disposed at a front and a rear side of said engaging plate (3), a pair of side plates (21) being arranged on said two posts (26) separately, both ends of said side plates 21 being connected with two rails (24), said improved extendable table structure being characterized in that: a rotating space (25) is formed between said side plates (21) and said rails (24), a respective fixing seat (22) and a supporting pin (23) being fixed at central locations on each of the two side plates 21, a hollow protrusion (221) being arranged on said fixing seat (22), said second plate (5) having a pair of L-shaped plates (33) respectively disposed at either side of a bottom surface thereof such that a respective pin (34) is penetrable through a pair of L-shaped plates (33) and said hollow protrusions (221) thereby engaging said table top plates (1) and said engaging plate (3).

4,794,870

MODULATING METHOD AND SYSTEM FOR KILN FIRING

Honagrahar C. Visvesvaraya, M-10 NDSE II, Ring Road, New Delhi 110 049, India

Filed Nov. 18, 1987, Ser. No. 122,225
Int. Cl.[4] F23H *5/00*
U.S. Cl. 110—187 11 Claims



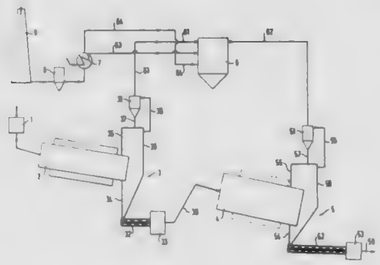
1. A method of modulating the firing of a kiln having a pulverized coal burner comprising the steps of periodically drawing samples of coal from a feed line supplying pulverized coal to the burner; preparing a coal feed sample from said samples for an on-line analyzer; determining the absolute content of one or more inorganic constituents of ash present in the coal feed sample using said analyzer; supplying data corresponding to said content to a process computer along with information related to the temperature in the kiln; determining the total ash content in the coal from the data; and maintaining the temperature in the kiln uniform by controlling, in response to either a variation in the total ash content of the coal supplied to the burner or a variation in the temperature in the kiln, the addition of a sweetener fuel and the flow of coal to the burner.

4,794,871

METHOD AND INSTALLATION FOR THE TREATMENT OF MATERIAL CONTAMINATED WITH TOXIC ORGANIC COMPOUNDS

Rüdiger Schmidt, Munich, and Kurt Kugler, Markt Indersdorf, both of Fed. Rep. of Germany, assignors to Environment Protection Engineers, Inc., Southfield, Mich.

Continuation of Ser. No. 766,707, Aug. 19, 1985, abandoned.
This application Mar. 18, 1988, Ser. No. 170,582
Int. Cl.[4] F23B *7/00*
U.S. Cl. 110—341 11 Claims



1. Method for the thermal treatment of earth, rock, water, waste materials, waste waters, sludges, and mixtures thereof contaminated with polychlorobiphenylenes, dioxines, tetrachlorobenzodioxin, furans, polycyclic aromatic hydrocarbons, and mixtures thereof, wherein the thermal treatment of the contaminated material is conducted in two stages, comprising the steps of heating said contaminated material in a first stage in an indirectly heated rotary drum reactor with substantial exclusion of oxygen to a temperature of not more than 500° C. and simultaneously drying said material, and in a second stage separately heating solid residue remaining after the treatment of the material in the first stage to a temperature of at least 500° C. until the concentration of toxic organic compounds in the residue has reached a value in the parts per billion range, and delivering gaseous reaction products both of the first and of the second stages to a combustion chamber and burning said gaseous reaction products in an oxygen-containing atmosphere at a temperature sufficient to completely destroy all toxic organic compounds contained therein.

4,794,872

APPARATUS AND METHOD FOR DISPOSING OF WASTE MATERIAL

Maurice D. Henery, Evanston, Ill., assignor to Marblehead Lime Company, Chicago, Ill.

Filed Oct. 13, 1987, Ser. No. 107,788
Int. Cl.[4] F23G *7/04*
U.S. Cl. 110—346 14 Claims

1. A method for treating liquid-containing waste material comprising the steps of providing a reaction vessel, introducing material to be reacted to said reaction vessel, said reaction vessel including heating means for heating the vessel and the material therein to achieve a reaction which includes the formation of hot gases, providing a dryer, introducing said waste material to said dryer, introducing at least substantially all of said hot gases from said reaction vessel to said dryer for heating said waste material to a temperature in excess of the boiling point of the liquid in said waste material, circulating said waste material within said dryer to maximize the exposure of the waste material to the heat in said hot gases, withdrawing from



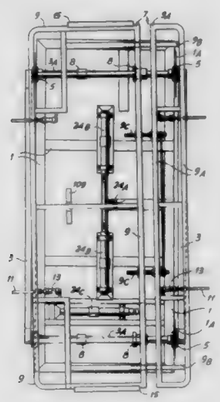
said dryer the waste gas generated by the boiling of said liquid, discharging from said dryer a solid portion of said waste material, and delivering said solid portion to said heating means for said reaction vessel to provide at least some of the fuel value required for operating said heating means.

4,794,873

GUIDE APPARATUS FOR THE BEADING TO CONNECT THE COMPONENTS OF A COVER FOR MATTRESSES OR THE LIKE

GianMaria Dordi, Frosinone, and Gianfranco Florini, Latina, both of Italy, assignors to Permaflex, S.p.A., Italy

Filed Jul. 22, 1987, Ser. No. 76,540
Claims priority, application Italy, Jul. 24, 1986, 9447 A/86
Int. Cl.[4] D05B *11/00*
U.S. Cl. 112—2.1 9 Claims



1. A guide apparatus for use with a beading machine to assemble beading connecting together a front component and a side strip of a mattress sheath supported by a rectangular mattress-shaped template comprising:

a fixed base having a rectangular, perimetrically extending track;

a beading machine mounted to move in one direction along the track during assembly of the beading;

a rectangular frame for supporting the template;

cooperating mounting means on the frame and base for mounting the frame on the base to extend in generally parallel relation thereto and with the sides of the frame diverging in the direction of movement of the beading machine at a small angle from the respective corresponding adjacent sides of the track thereby imparting a corresponding divergence to corresponding sides of a supported template, the respective sides of the frame and template being sequentially progressively urged towards the respective corresponding adjacent sides of the track by the beading machined during its passage of movement along the respective sides of the track;

the mounting means including cooperating guide means on the frame and base, respectively, for limited guided movement of the frame on the base in orthogonal directions parallel to the sides of the track and in a plane parallel to the track;

thrust means extending between the frame and the base operable resiliently to urge the frame in the orthogonal directions:

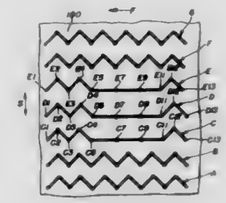
means to operate the thrust means sequentially in synchronism with the position of the beading machine on the track thereby to activate the thrust means to urge the frame successively in respective orthogonal directions which are opposite to the respective directions of movement of the beading machine during its passage along the track thereby to bring the next adjacent corners of the frame, template and track successively into alignment in advance of the beading machine, the operating means being arranged to deactivate the thrust means during the passage of the beading machine through the corner to permit the frame to be freely moved on the guide means by the beading machine.

4,794,874

METHOD OF FORMING TUFTED PILE FABRIC

Ian Slattery, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Dalton, Ga.

Filed Jan. 4, 1988, Ser. No. 140,480
Int. Cl.[4] D05C *15/00, 15/20*
U.S. Cl. 112—266.2 10 Claims



1. A method of tufting loop pile fabric by a tufting machine having at least a pair of laterally spaced apart reciprocably mounted needles and a loop seizing looper cooperating with each needle for seizing and thereafter shedding a loop of yarn received from a respective needle, said method comprising:

a feeding a backing material through the tufting in a longitudinal direction transverse to the laterally extending needles,

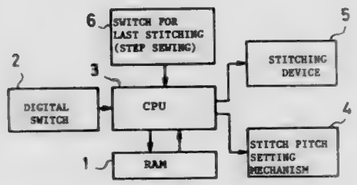
b continuously shifting the backing material laterally relatively to the needles while the needles are outside the backing material,

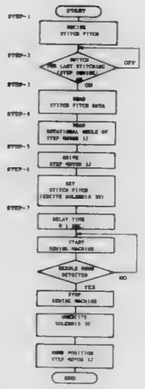
c penetrating the backing material to form a loop by both needles to be seized and shed by the respective looper, and

d subsequently penetrating the backing material to form a loop with one of the needles but not the other, which loop is seized and thereafter shed by the respective looper.

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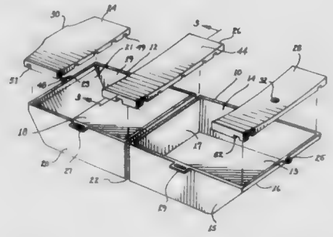
4,794,875
SEWING MACHINE APPARATUS FOR SETTING THE PITCH OF THE LAST ADDITIONAL STITCH
Mitsutoshi Noguchi; Sosuke Goto; Masakazu Nemoto, and Jiro Ishibashi, all of Chofu, Japan, assignors to Juki Corporation, Tokyo, Japan
Filed Nov. 26, 1986, Ser. No. 935,175
Claims priority, application Japan, Nov. 29, 1985, 60-269991
Int. Cl.[4] D05B 27/22, 69/22
U.S. Cl. 112—315 3 Claims





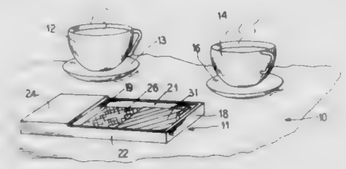
2. An apparatus for setting a last additional stitch with a stitching device in a workpiece at a stitch pitch comprising:
operator controlled means for selecting said additional stitch pitch;
means for adjusting a stitch device to set a stitch at said selected additional stitch pitch;
means for stepping a stitching device to set a single stitch at the selected additional stitch pitch;
means for storing said additional stitch pitch data including a memory device to store said data; and
processing means for retrieving said additional stitch pitch data from the storing means based upon the selected additional stitch pitch wherein the retrieved data is output to the adjusting means, said processing means including a central processing unit for accessing said data from said memory device.

4,794,876
TWO-PIECE COMBINATION BOAT AND LUGGAGE CARRIER
Howard E. Levine, 4401 E. Hearn Rd., Phoenix, Ariz. 85032
Continuation of Ser. No. 788,684, Oct. 16, 1985, abandoned, which is a continuation-in-part of Ser. No. 660,717, Oct. 15, 1984, abandoned. This application Mar. 26, 1987, Ser. No. 31,229
Int. Cl.[4] B63B 7/04
U.S. Cl. 114—352 32 Claims



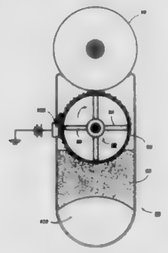
1. A combination boat and automobile luggage carrier which comprises:
a forward boat half and an aft boat half, each having upstanding sides, said two halves releasably hinged together along adjoining upper edges to allow folding along said adjoining edges to enclose a storage volume, or unfolding to form a boat;
a plurality of ribs projecting from and along the length of the bottom of each boat half;
a plurality of seats for said boat, each of said seats having a top surface contoured to adapt to the contour of an automobile roof for mounting said combination on said automobile and a bottom surface grooved to engage the upper edges of the sides of said two halves, and further grooved to engage said projecting ribs when mounted on an automobile roof; and
one of said seats further having a bottom surface contoured to engage said adjoining edges and to thereby lock said halves in an unfolded position as a boat.

4,794,877
INDICATOR DEVICE
Marjorie Pollard-Smith, 3180 N. Lake Shore Dr., Apt. #15H, Chicago, Ill. 60657
Filed Oct. 5, 1987, Ser. No. 104,250
Int. Cl.[4] G09F 9/00
U.S. Cl. 116—323 1 Claim



1. An indicator for indicating beverage preferences comprising a generally flat rectangular box formed with an open bottom that extends about two-thirds of the length of said box and divided into two areas each about one third the length of said box and coated with first indicia representing a particular beverage and second indicia representing a need for two orders, a slidable cover member with a handle being mounted in said box and having a length which is about one third the length of said box and outer surface coated with a third indicia representing a different beverage, said cover member can be moved to be visible or not visible such that when said third indicia of said cover is in a first position where it is not visible said first and second indicia are visible indicating a need for two orders of said particular beverage and said cover moveable to a second position where said second and third indicia are visible indicating a need for two orders of said different beverage and first indicia is not visible and said cover member moveable to a third position where said first and third indicia are visible, indicating a need for one order of both beverages, the orientation of said indicator on a table indicates which customer wants which beverage.

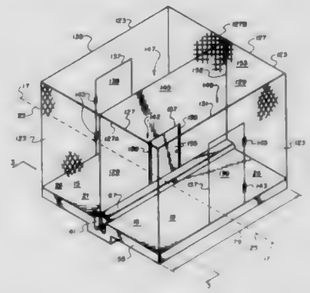
4,794,878
ULTRASONICS TRAVELING WAVE FOR TONER TRANSPORT
Edward W. Connors, Rochester; Paul C. Julien, Webster, and Robert G. Martin, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 3, 1987, Ser. No. 81,272
Int. Cl.[4] G03G 15/08
U.S. Cl. 118—653 2 Claims



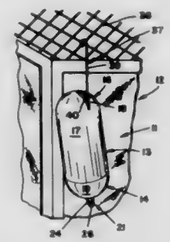
1. In a reproduction machine having an image bearing member supporting a latent image, a single component development system for rendering the latent image visible comprising
a housing located in the vicinity of the image bearing member and having a sump portion,
a source of toner disposed within the sump portion,
an ultrasonic transducer having one segment extending into the source of toner and another segment disposed adjacent the image bearing member,
a current source electrically connected to the ultrasonic transducer for providing a standing wave pattern along the transducer, a surface of the transducer providing a platform for charging the toner and moving the toner from the sump to the image bearing member, the toner contacting the image bearing member to render the latent image visible and including means to generate a traveling ultrasonic wave on the transducer including a stationary sleeve and a rotating transducer with a plurality of blades secured thereto rotating within said sleeve, a segment of the sleeve disposed adjacent the image bearing surface.

4,794,879
KENNEL DRAINAGE SYSTEM
Jerry D. Thom, 773 E. 9630 South, Sandy, Utah 84070, and Vincent P. Schaaf, 2639 S. 1100 East, Salt Lake City, Utah 84106
Filed Apr. 10, 1987, Ser. No. 36,795
Int. Cl.[4] A01K 1/01
U.S. Cl. 119—17 22 Claims

20. A baffle plate adapted for placement within an open drain defined by a floor surface of an animal cage, said baffle plate comprising:
an elongate plate means adapted for upright placement within an elongate open drain, and extending upwardly out of said open drain, defining an upright impact surface for arresting a forward displacement of sewage above and over said open drain;
a cover means mounted atop said plate means for extending over said open drain and substantially covering same, said cover means in association with said floor surface defining an upright opening dimensioned to permit a passage of sewage therethrough into said open drain while simultaneously hindering an animal positioned proximate said cover means from accessing said open drain through said opening.



4,794,880
GNAW RESISTANT ANIMAL WATER BOTTLE
Frank W. Atchley, 461 Walnut St., Napa, Calif. 94558
Filed Nov. 24, 1986, Ser. No. 934,352
Int. Cl.[4] A01K 7/00
U.S. Cl. 119—72.5 13 Claims



1. In a device for dispensing liquids to animals, the combination comprising:
a bottle for containing the liquid and suspension means for suspending said bottle within a cage.
means for preventing the animal climbing on or gnawing on said bottle or said suspension means, including said bottle having upper and lower end portions and an intermediate portion therebetween, said upper, lower, and intermediate portions having a rounded configuration with a smooth outer surface,
a liquid dispensing outlet nipple located at said lower end portion of said bottle,
said means for preventing the animal climbing on or gnawing on said bottle or said suspension means further including a suspension member having a lower end pivotably coupled to an upper end portion of said bottle to eliminate the animal climbing onto the bottle, and means for engaging the upper end of said suspension member on an overhead support.

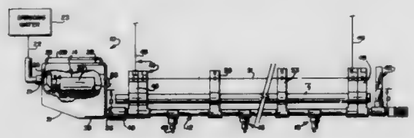
VOL 1098 ISS 1 JA 3 1989 UMI

4,794,881

POULTRY WATERING SYSTEM WITH FLOAT BOX AND ELONGATED LINE

Helmut Rader, McLean, Va., assignor to Monoflo International, Inc., McLean, Va.

Filed Nov. 20, 1986, Ser. No. 932,865
Int. Cl.[4] A01K *39/024*
U.S. Cl. 119—72.5 **17 Claims**



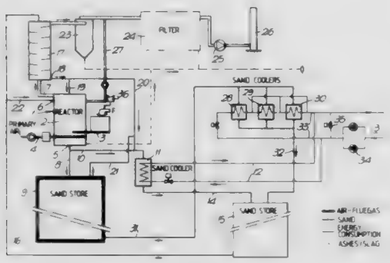
1. An animal watering system consisting essentially of:
a float box having means defining a water inlet opening into one portion thereof, and means defining a water outlet opening from another portion thereof;
a rigid elongated conduit directly connected to said outlet opening and extending away from said float box;
a float operated valve assembly operably connected to said inlet opening and disposed within said float box, and for selectively allowing and preventing the flow of water into said float box through said inlet to establish a predetermined level of water in the float box;
means for mounting said elongated conduit so that it extends generally horizontally; and
a plurality of animal-actuated water dispensing means connected to said conduit, spaced therealong, and for dispensing water therefrom in response to animal-actuation.

4,794,882

METHOD OF OPERATING A COMBUSTION PLANT, AND A PLANT FOR CARRYING OUT THE METHOD

Nils L. Viken, Hamar, Norway, assignor to Santo A/S, Gj vik, Norway

PCT No. PCT/NO87/00031, § 371 Date Feb. 16, 1988, § 102(e) Date Feb. 16, 1988, PCT Pub. No. WO87/06687, PCT Pub. Date Nov. 5, 1987
PCT Filed Apr. 30, 1987, Ser. No. 141,690
Claims priority, application Norway, May 2, 1986, 861762
Int. Cl.[4] F23B *1/00*
U.S. Cl. 122—4 D **8 Claims**



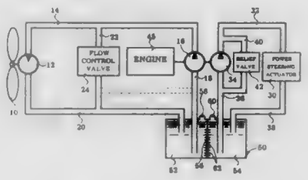
1. A method of operating a combustion plant including a reactor (1) having a combustion chamber (2) wherein heat is transferred from a fuel to a granular medium, and wherein the combustion gas from the reactor (1) is supplied to a flue gas cooler (17), CHARACTERIZED IN that a part of the discharged hot medium, as known per se, is transferred to a separately provided, heat-insulated store (9) for accumulating the heat in the medium, and that hot medium subsequently, and according to requirement, is supplied from the store (9) to at least one heat-producing heat exchanger (11 resp. 28, 29, 30), that a part of the cooled medium from the heat exchanger (11 resp. 28, 29, 30) is supplied to the flue gas cooler (17) to cool the flue gas in that the gas flows through the medium (43) and simultaneously causes heating thereof, and that heated medium from the flue gas cooler is supplied to the heat-accumulating store (9) or, when required, to the combustion reactor (1).

4,794,883

DUAL RESERVOIR TANK FOR PROPELLANT HYDRAULIC FLUID FOR INTERNAL COMBUSTION ENGINE HYDRAULICALLY DRIVEN COOLING FAN AND FOR POWER STEERING ACTUATING FLUID

Kashiron Fukami, Toyota; Masao Isagaki, Okazaki; Seiji Oomura, Toyota, and Tooru Hamamoto, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 4, 1987, Ser. No. 116,339
Claims priority, application Japan, Nov. 12, 1986, 61-173753[U]
Int. Cl.[4] F01P *5/04*
U.S. Cl. 123—41.12 **5 Claims**



1. In an automotive vehicle having a cooling fan for an internal combustion engine, said cooling fan being driven hydraulically by a first flow of a first propellant hydraulic fluid, and a power steering device adapted to be driven hydraulically by a second flow of a second propellant hydraulic fluid,
a reservoir tank comprising a dividing wall between:
(a) a first reservoir tank portion for storing a reserve of said first propellant hydraulic fluid, said first flow being taken from said first reservoir tank portion and being returned to said first reservoir tank portion; and
(b) a second reservoir tank portion directly adjacent said first reservoir tank portion for storing a reserve of said second propellant hydraulic fluid, said second flow being taken from said second reservoir tank portion and being returned to said second reservoir tank portion.

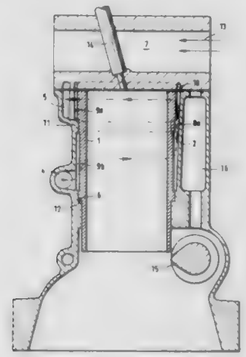
4,794,884

INTERNAL COMBUSTION ENGINE WITH FLUID-COOLED CYLINDER LINER

Dieter Hilker, Cologne, and Horst-Herbert Krause, Landwehr, both of Fed. Rep. of Germany, assignors to Kloeckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Sep. 1, 1987, Ser. No. 91,881
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1986, 3629672
Int. Cl.[4] F02F *1/16*
U.S. Cl. 123—41.79 **18 Claims**

1. An internal combustion engine having a series of cylinders, a crankcase (2), a block cylinder head (7), a fluid-cooled cylinder liner (1) for each cylinder having an upper end facing the cylinder head (7), a cooling chamber between each cylinder liner (1) and the crankcase (2), to which coolant is delivered via an inlet (4) and discharged via an outlet (5) during operation of the internal combustion engine, each said cylinder liner (1) having a collar presenting a support surface supported on a shoulder (6) formed on the crankcase (2), characterized by said cooling chamber associated with each said cylinder liner including first upper partial cooling chamber (9*a*) and a second lower partial cooling chamber (9*b*), said partial chambers being interconnected solely by a vertically extending connecting



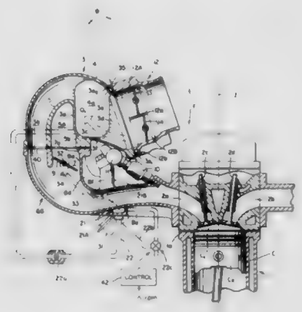
channel, said first partial cooling chamber (9*a*) being open adjacent said cylinder head (7) and extending into a slot-shaped annular chamber (10) formed in the cylinder head (7).

4,794,885

INTAKE APPARATUS FOR INTERNAL COMBUSTION ENGINE

Yasuo Hosda; Takenori Ohtsuka, both of Hiroshima; Tomohiro Sunada, Higashihiroshima, and Yasuhiro Kawasako, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 19, 1987, Ser. No. 86,810
Claims priority, application Japan, Sep. 10, 1986, 61-211477
Int. Cl.[4] F02B *75/18*; F02M *35/10*
U.S. Cl. 123—52 M **11 Claims**



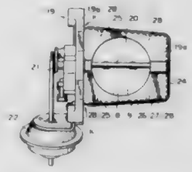
1. An intake apparatus for an internal combustion engine comprising:
(a) an internal combustion engine having a plurality of in-line cylinders,
(b) intake passage means for supplying intake air to the engine cylinders including a surge tank having a side surface with an opening defined therein,
(c) throttle body means having an end surface defining an exit therein,
(d) connecting means for connecting said end surface and said side surface with said exit and said opening in communication and with the joint between said surfaces inclined with respect to the cylinders' axes,
(e) said throttle body means being connected to both upper and lower corners of said surge tank, the lower end of said throttle body means being connected to the lower corner of said surge tank through an elongated bottom portion formed at the bottom of said surge tank, said elongated bottom portion having an inner V-shaped bottom surface.

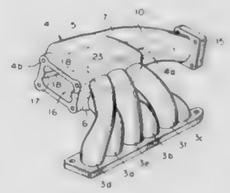
4,794,886

INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE

Minoru Iwamuro, Okazaki; Kazunori Ishii, Toyoake, and Naohito Sarai, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisan Industry Co., Ltd., both of Aichi, Japan

Filed Mar. 31, 1988, Ser. No. 176,350
Claims priority, application Japan, Apr. 1, 1987, 62-047643[U]; Apr. 1, 1987, 62-047642[U]; Apr. 2, 1987, 62-048940[U]
Int. Cl.[4] F02B *75/18*
U.S. Cl. 123—52 M **20 Claims**





1. An intake device of an internal combustion engine comprising first cylinders having intake strokes which do not overlap with each other, and second cylinders having intake strokes which do not overlap with each other, said intake device comprising:
an air cleaner;
a surge tank having a first end and a second end positioned opposite to said first end;
a separating wall extending from said first end to said second end within said surge tank to divide an interior of said surge tank into a first interior chamber connected to said first cylinders and a second interior chamber connected to said second cylinders, the first end of said surge tank having an opening, said separating wall having a cutaway portion formed adjacent to said opening and having an inner circumferential wall;
an air duct connected to the second end of said surge tank to interconnect both said first interior chamber and said second interior chamber to said air cleaner via said air duct;
a valve holder formed separately from said surge tank and comprising a lid portion which covers said opening, and a separating wall portion fitted into said cutaway portion and having an outer circumferential wall facing the inner circumferential wall of said cutaway portion when said valve holder is attached to said surge tank, said separating wall portion having a connecting bore formed therein and interconnecting said first interior chamber and said second

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interior chamber, the outer circumferential wall of said separating wall portion having a groove formed thereon and extending over the entire length thereof;

a control valve arranged in said connecting bore and actuated in response to a change in an operating state of the engine; and

a band-like seal member arranged in said groove and extending approximately the entire length of said groove, said seal member coming into contact with the inner circumferential wall of said cutaway portion to provide a seal between the inner circumferential wall of said cutaway portion and the outer circumferential wall of said separating wall portion.

4,794,887

RECIPROCATORY INTERNAL COMBUSTION ENGINES

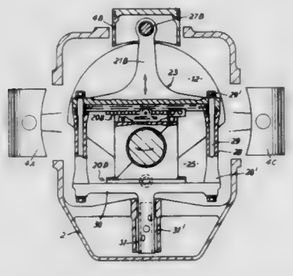
Ronald E. Valentine, Wittersham, England, assignor to Collins Motor Corporation Limited, Perth, Australia

Continuation of Ser. No. 34,257, Apr. 3, 1987, abandoned. This application Mar. 15, 1988, Ser. No. 170,631

Claims priority, application United Kingdom, Apr. 4, 1986, 8608237

Int. Cl.[4] F02B *75/24*

U.S. Cl. 123—56 AC **16 Claims**



1. A four-stroke internal combustion engine having a rotary output shaft and at least one set of three cylinders having a reciprocatory piston in each cylinder, characterised in that the set of three cylinders is associated with one eccentric portion of the output shaft, the first and third cylinders are opposed cylinders on opposite sides of the output shaft and have their axes perpendicular to that of the second cylinder, a reciprocatory counterweight opposite the second piston is guided for reciprocation in the direction of the axis of the second cylinder, drive means interconnect the eccentric portion of the output shaft with the pistons of the three cylinders and with the reciprocatory counterweight, and rotary counterweight means on the shaft substantially counter-balance the rotating mass effectively formed by the first and third pistons oscillating in quadrature with the second piston and reciprocatory counterweight.

4,794,888

FUEL PUDDLE SUCTION SYSTEM FOR FUEL INJECTED ENGINE

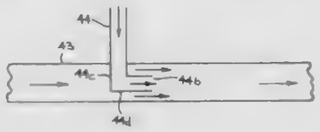
William P. Lang, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jan. 4, 1988, Ser. No. 140,650

Int. Cl.[4] F02B *33/04*

U.S. Cl. 123—73 SC **6 Claims**

1. A marine fuel system for a two cycle crankcase compression internal combustion engine having an induction system for supplying combustion air to the engine and fuel injection means for mixing fuel with the combustion air, and having a fuel tank, said fuel system comprising fuel pump means connected to draw fuel from said fuel tan and supply fuel under pressure to said fuel injection means, pressure regulator means regulating the output pressure of said fuel pump means at said fuel injection means and returning excess fuel through an excess fuel return line to said fuel pump means for recirculation, a puddle removal system comprising a puddled fuel return line having an inlet connected to said crankcase and receiving puddled fuel including heavy fuel ends, and having an outlet connected to said excess fuel return line such that excess fuel flow from said full injection means back to said fuel pump means through said excess fuel return line creates a vacuum at said outlet of said puddled fuel return line to suction puddled fuel therethrough for recirculation to said fuel pump means.



4,794,889

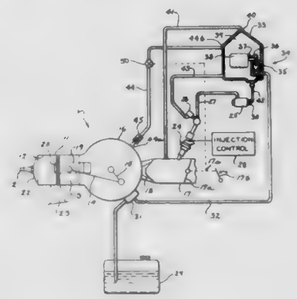
FUEL PUDDLE BLEED SHUT-OFF FOR FUEL INJECTED TWO CYCLE ENGINE

Robert J. Hensel, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 11, 1988, Ser. No. 180,046

Int. Cl.[4] F02B *33/04*

U.S. Cl. 123—73 SC **4 Claims**



1. A marine fuel system for a two cycle crankcase compression internal combustion engine having a piston reciprocal in a cylinder between a combustion chamber and a crankcase, an induction system supplying combustion air to the engine and fuel injection means mixing fuel with the combustion air, and having a fuel tank, said fuel system comprising fuel pump means connected to draw fuel from said fuel tank and supply fuel under pressure to said fuel injection means, pressure regulator means regulating the output pressure of said fuel pump means at said fuel injection means and returning excess fuel through an excess fuel return line to said fuel pump means for recirculation, a puddle removal system comprising a puddled fuel return line having an inlet connected to said crankcase and receiving puddled fuel including heavy fuel ends, and having an outlet connected to return puddled fuel to said fuel pump means for recirculation, wherein substantially all of the fluid flow in said puddled fuel return line from said crankcase is gaseous at high engine speed, and is more liquidic at low engine speed, a shut-off valve in said puddled fuel return line and having a closed condition at said high engine speed blocking said gaseous flow from said crankcase through said puddled fuel return line, and having an open condition at said low engine speed permitting fluid flow from said crankcase through said puddled fuel return line.

4,794,890

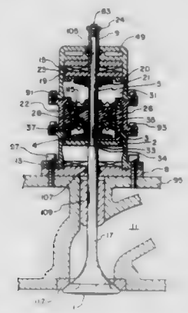
ELECTROMAGNETIC VALVE ACTUATOR

William E. Richeson, Jr., Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Mar. 3, 1987, Ser. No. 21,195

Int. Cl.[4] F01L *9/04;* **F16K** *31/08*

U.S. Cl. 123—90.11 **24 Claims**



1. An electronically controllable valve mechanism for use in an internal combustion engine comprising:

an engine valve having an elongated valve stem;

motive means for causing the valve to move in the direction of stem elongation between valve-open and valve-closed positions;

means for decelerating the valve as the valve nears one of said valve-open and valve-closed positions including at least two separate damping arrangements jointly effective to slow valve motion as the valve gets close to said one position;

a latching arrangement for maintaining the valve in one of said valve-open and valve-closed positions;

the motive means including an electromagnetic repulsion arrangement operable when energized to override the latching arrangement and dislodge the valve from the position in which the valve was maintained.

4,794,891

METHOD FOR OPERATING AN INTERNAL COMBUSTION ENGINE

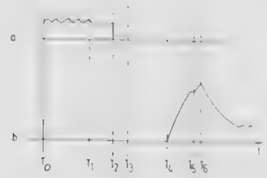
Hans Knobloch, Samhofer Weg 33a, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 8, 1987, Ser. No. 107,030

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1986, 3634832

Int. Cl.[4] F01L *9/04*

U.S. Cl. 123—90.11 **19 Claims**



1. Method for improving the operation of an internal combustion engine having at least one electromagnetically actuated spring-loaded valve positioning system comprising at least a pair of opposed, spaced-apart electromagnets, an anchor plate movable therebetween, and at least one spring disposed to bias said anchor plate away from contact with at least one of said electromagnets, said anchor plate, one of said electromagnets and said spring comprising an electromagnet/anchor plate/spring couple, and a control system therefor, comprising the steps of:

(a) determining the detachment time period lag in release of said anchor plate from an electromagnet/anchor plate/-spring couple, said detachment time period release lag being a function of a compressive force of said spring overcoming the decaying magnetic force of said electromagnet upon deenergization; and

(b) shutting off current to said electromagnet at a point of time to compensate for said detachment time period release lag.

4,794,892

HYDRAULIC CIRCUIT FOR VALVE OPERATION TIMING CHANGING DEVICE FOR INTERNAL COMBUSTION ENGINE

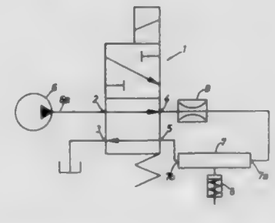
Tsuneo Kouno, Shiki, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1986, Ser. No. 119,554

Claims priority, application Japan, Nov. 12, 1986, 61-269337

Int. Cl.[4] F01L *1/34;* **F01M** *9/10*

U.S. Cl. 123—90.16 **8 Claims**



1. A hydraulic circuit for a valve operation timing control device for supplying oil pressure through an oil passage defined in a rocker shaft to an actuator disposed in rocker arms which are pivotally supported on the rocker shaft for transmitting lifting motion from cams rotating in synchronism with a crankshaft of an engine to valves disposed in intake or exhaust ports of a combustion chamber, comprising means for connecting one end of the oil passage in said rocker arm with a discharge port of an oil pump and the other end of the oil passage with an oil reservoir release when said actuator is not in operation under at least cold condition.

4,794,893

ENGINE VALVE DRIVING APPARATUS

Shunji Masuda; Tatsuya Uesugi, and Hiroyuki Oda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 7, 1987, Ser. No. 82,621

Claims priority, application Japan, Aug. 8, 1986, 61-186246

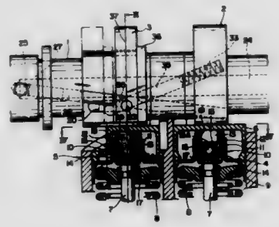
Int. Cl.[4] F01L *1/08, 1/24, 1/34*

U.S. Cl. 123—90.17 **11 Claims**

6. An engine valve driving apparatus for an internal combustion engine having a cam driven engine valve, said apparatus comprising: a camshaft rotatable in synchronism with rotation of a crankshaft of an engine; a movable cam member supported by said camshaft for axial movement and prevented from turning relative to said camshaft; shifting means slidably received in said camshaft for substantially axial movement for axially shifting said movable cam member between an operative position wherein said cam member is cooperative with a member of said engine valve valve so as to cause an operation

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of said engine valve and an inoperative position wherein said cam member is out of cooperation with said member; and



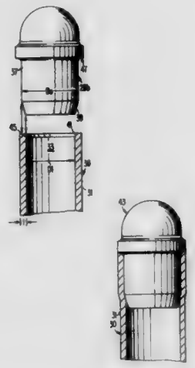
hydraulic means for causing said substantially axial movement of said shifting means according to an engine operating condition.

4,794,894

CERAMIC TIPPED PIVOT ROD AND METHOD FOR ITS MANUFACTURE

Daniel E. Gill, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Mar. 5, 1987, Ser. No. 22,229
Int. Cl.[4] F01L *1/14*
U.S. Cl. 123—90.61 **9 Claims**



1. A pivot rod comprising:

(A) a mounting shaft having an interior receiving space at at least one end thereof;

(b) a pivot insert formed of a ceramic material having a maximum tensile principle stress, said pivot insert being positioned with a first portion thereof disposed within said receiving space and a second portion thereof projecting axially beyond said end of the mounting shaft;

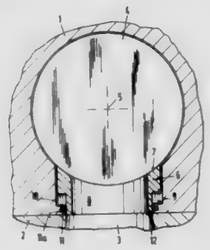
(C) an interference fit securement between said first portion of the pivot insert and a peripheral wall of said mounting shaft circumscribing said receiving space, said interference fit securement being constructed as a means for preventing the maximum tensile principle stress of the ceramic material from being exceeded, despite variations in the degree of diametral interference existing between an internal diameter of the peripheral wall circumscribing said receiving space and an external diameter of said first portion of the pivot insert resulting from manufacturing tolerances of the mounting shaft and pivot insert, via said peripheral wall having been plastically deformed by said first portion of the pivot insert during formation of said interference fit securement through coordination of the thickness and material composition of said peripheral wall with said maximum tensile principle stress.

4,794,895

SEALING ARRANGEMENT FOR A ROTARY SLIDE VALVE

Hermann Krueger, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 19, 1987, Ser. No. 64,766
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1986, 3621203
Int. Cl.[4] F01L *7/16*
U.S. Cl. 123—190 E **13 Claims**



1. A sealing arrangement for a rotary slide valve which is subjected to fluctuating pressures in a pressure chamber adjacent to it, in particular to the combustion chamber of an internal combustion engine, comprising:

a sliding ring, having an axis and at least one peripheral sliding surface under the effect of forces exerted on it by the pressure in the pressure chamber to which it is subjected, which bears in a sealing fashion on the slide valve;

a housing accommodating the sliding ring; and

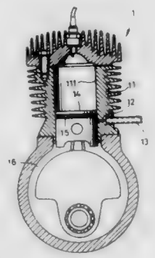
at least one sealing gasket which encloses the sliding ring on the periphery and is axially held in a groove, for sealing of a gap between the sliding ring and the housing, the groove being located within the housing and the sealing gasket being radially inwardly pretensioned in order to provide an effective seal with the sliding ring.

4,794,896

LUBRICATING DEVICE FOR TWO-STROKE ENGINE

Ching-Eeng Tsai, and Guang-Der Tarng, both of Hsin Chu Hsien, Taiwan, assignors to Industrial Technology Research Institute, Hsin Chu Hsien, Taiwan

Filed Nov. 6, 1987, Ser. No. 117,340
Int. Cl.[4] F01M *1/00*
U.S. Cl. 123—193 **4 Claims**



1. A lubrication device for a two-stroke gasoline engine having a cylinder as combustion chamber, a piston with piston rings, said piston disposed to reciprocate within said cylinder between a top and a bottom dead point, a piston rod connecting said piston to a crankshaft which rotates in a crankcase located below said cylinder, said lubrication device comprising:

a pump for providing lubricant;

tube means for delivering the lubricant from said pump to said engine; and

at least one lubricant outlet furnished on the wall of said cylinder, the height position of said lubricant outlet being placed just under the lowest piston ring upon said piston reaching the bottom dead point, the diameter of said outlet and the feeding rate of said pump are suitably determined by the engine speed and the engine load so as to have the cylinder wall lubricated adequately by a first portion of the lubricant, and a second portion of the lubricant flowing into said crankcase without accumulating and being atomized therein by the movement of the crankshaft thereby lubricating the entire two-stroke gasoline engine.

4,794,897

ENGINE CONTROL SYSTEM OF MARINE OUTBOARD ENGINE

Sosuke Kinouchi, Kakogawa, Japan, assignor to Kawasaki Jukogyo Kaisha, Hyogo, Japan

Filed Nov. 9, 1987, Ser. No. 118,042
Claims priority, application Japan, Nov. 12, 1986, 61-173824
Int. Cl.[4] F02B *77/08;* **F01P** *11/16;* **F01M** *1/18;* **F02P** *5/145*
U.S. Cl. 123—198 D **5 Claims**

1. A system for controlling an engine of a marine outboard engine, said system comprising:

an oil level sensor for detecting the state of engine lubricating oil in the engine at a lower limit of a prescribed quantity thereof and for transmitting a corresponding first detection output;

a temperature sensor for detecting overheating of the engine and for transmitting a corresponding second detection output;

a tachometric sensor for detecting the rotational speed of the engine and for transmitting a corresponding third detection output;

an oscillator circuit for, upon receiving as input any one of said first and second detection outputs when said third detection output corresponds to a predetermined value or higher value of the engine speed, operating to transmit as output repeatedly and alternately a normal ignition signal and a retarded ignition signal; and

an ignition timing control circuit for receiving as input said normal and retarded ignition signals and for controlling ignition of the engine to conform to a normal ignition timing when receiving said normal ignition signal and to a retarded ignition timing producing an engine power output lower than that under the normal ignition timing when receiving said retarded ignition signal;

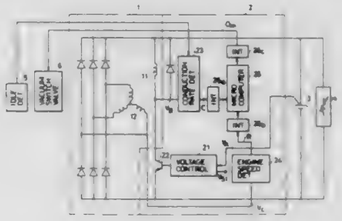
whereby the engine operating at high speed undergoes irregular operation alternately with normal ignition timing and with retarded ignition timing, thereby to emit an abnormal humming sound when lubricating oil deficiency or engine overheating occurs.

4,794,898

APPARATUS AND METHOD FOR ENGINE IDLE SPEED CONTROL

Hidetoshi Kato, Suzuka, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 638,648, Aug. 7, 1984, abandoned. This application Feb. 29, 1988, Ser. No. 165,362
Claims priority, application Japan, Aug. 8, 1983, 58-144743
Int. Cl.[4] F02D *41/16*
U.S. Cl. 123—339 **14 Claims**



1. An engine idle speed control apparatus for use with an engine driven generator of an automobile having at a least a field coil, comprising:

(a) switching means for controlling current flowing through said field coil of said generator;

(b) first means for detecting first data which is a function of conduction rate of said switching means;

(c) second means for detecting second data which is a function of the rotational speed of said engine or said generator;

(d) computing means responsive to the detected first data received from said first means and responsive to the detected second data received from said second means for:

deriving a reference which is determined as a function of a desired conduction rate of said switching means, corresponding to said second data, from said computing means;

comparing said detected first data with the reference;

producing a control signal in accordance with the results of the comparison; and

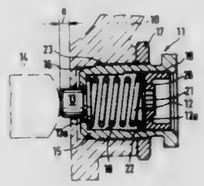
(e) idle speed control means responsive to said control signal for controlling the rotational speed of said engine, so that the detected first data approaches the reference.

4,794,899

CORRECTION SPRING CAPSULE FOR INJECTION DEVICES OF INTERNAL COMBUSTION ENGINES

Werner Brühmann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 29, 1984, Ser. No. 584,951
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321714
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—373 **11 Claims**



1. A correction spring capsule for injection devices of inter-

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nal combustion engines, said capsule includes a housing, a stepped longitudinal bore in said housing, said housing is embodied as a screw sheath having screw threads along a portion of said bore, a stop bolt having a portion thereof protruding beyond said housing, a correction spring which presses said bolt in its outset position against a shoulder in the longitudinal bore, the initial stressing force of the correction spring being adjustable by means of an adjusting screw that includes one end face that forms an infinitely adjustable abutment for the correction spring and that said adjusting screw includes threads on an external surface and is screwed into an internal thread in the housing and positionally secured therein, said adjusting screw takes the form of a cup-shaped adjusting ring provided with a continuous external thread and having a bottom end face abutment, as well as a sheath-like wall, said adjusting ring is formed into an oval shape along a part (b) of its total length, in the vicinity of the sheath-like wall prior to being threaded into said housing whereby said adjusting ring is deformed from said oval shape on being threaded into said housing and thereby exerts a tensional force on the threads along said oval shape that fixes said adjusting ring in said housing.

4,794,900

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

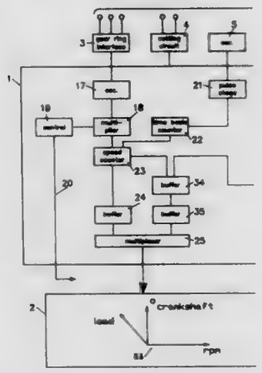
Albert Stilbe, Lüdenscheid, and Klemens Klüppel, Neuenrade, both of Fed. Rep. of Germany, assignors to Atlas Fahrzeugtechnik GmbH, Werdohl, Fed. Rep. of Germany

Filed Dec. 29, 1986, Ser. No. 946,908

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1986, 3601096

Int. Cl.[4] F02P 5/15

U.S. Cl. 123—416 **6 Claims**



1. In an ignition system for an internal combustion engine having a crankshaft and cylinders and wherein angular pulses generated by the crankshaft are utilized to produce a speed pulse signal during each rotation of the engine, with the pulse rate being a function of the speed of the engine, including, a temperature signal that is representative of a temperature in the engine, a load signal representative of the load on the engine, and an octane signal that is representative of the octane value of fuel used with the engine, comprising:

means for storing a basic field of desired characteristic values for the speed pulse signal and the load signal whereby for said respective signal values multiple bit ignition values are stored in the field as representative of the ignition angle related to rotational degrees of the crankshaft;

means for storing a plurality of other correction fields of values characteristic of other engine operating conditions different from engine load and as a function of the speed pulse signal and the engine load signal;

means for generating during each crankshaft rotation a plurality of crankshaft signals successively representative of predetermined angular positions of the crankshaft with respect to a reference position;

means responsive to the crankshaft signals for determining values of the speed pulse signal, engine load and said other engine operating conditions;

means sequentially responsive to the latter values for extracting during each crankshaft rotation from said basic field and the plurality of other correction fields respectively basic ignition angle and ignition correction values; and

means for combining said basic ignition angle and ignition correction values to produce ignition switch signals to activate ignitions within the cylinders of the engine during crankshaft rotations.

4,794,901

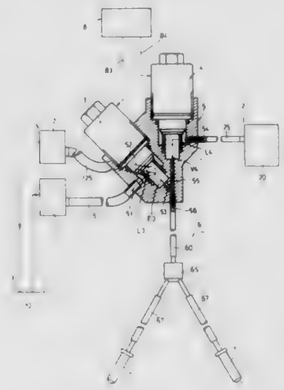
LOW PRESSURE AIR ASSISTED FUEL INJECTION APPARATUS FOR ENGINE

Rong-Fang Hong, and Huei-Huay Huang, both of Hsin Chu Hsien, Taiwan, assignors to Industrial Technology Research Institute, Hsin Chu Hsien, Taiwan

Filed Jun. 16, 1987, Ser. No. 62,601

Int. Cl.[4] F02M 23/00

U.S. Cl. 123—533 **6 Claims**



1. A low pressure compressed air assisted fuel injection apparatus for a gasoline engine comprising:

a compressed air source including an air compressor for providing compressed air at a predetermined pressure; and

a circulating fuel circuit including an electric fuel pump and a pressure regulating valve for providing fuel at a stable pressure therein;

a fuel solenoid valve connected to said fuel circuit and a single air solenoid valve connected to said compressed air source, said fuel solenoid valve and said air solenoid valve being used to control said fuel and said compressed air, respectively, so that said fuel and said compressed air are jetted from orifices of said fuel and air solenoid valves respectively in adequate quantity and timing according to a command generated from an electronic control unit, said fuel and air solenoid valves being fixedly mounted on a fuel-and-air mixing fixture that has an air passage and a fuel passage, the jetted air and the jetted fuel being injected into and mixed with one another in a mixture passage, said fuel and air mixture then passing through an automized-fuel passage and being transferred to a nozzle mounted at a suitable position of the engine, said fuel and air mixture being finally sprayed into said engine.

4,794,902

METERING OF FUEL

Michael L. McKay, Willetton, Australia, assignor to Orbital Engine Company Proprietary Limited, Balcatta, Australia

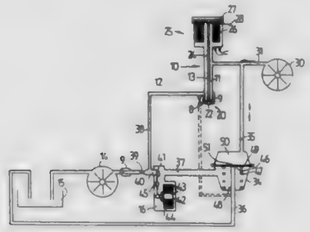
PCT No. PCT/AU86/00301, § 371 Date May 18, 1987, § 102(e) Date May 18, 1987, PCT Pub. No. WO87/02419, PCT Pub. Date Apr. 23, 1987

PCT Filed Oct. 10, 1986, Ser. No. 83,790

Claims priority, application Australia, Oct. 11, 1985, PH2876; Nov. 11, 1985, PH3343

Int. Cl.[4] F02M 23/04, 67/02

U.S. Cl. 123—533 **39 Claims**



1. A method of metering fuel to an engine having a fuel delivery port and a selectively openable valve element to provide communication to the engine through the port when open, and to provide when the port is closed, sealable engagement at two locations spaced in the direction of flow through the port and defining between said locations a cavity, the method comprising supplying fuel and gas independently to the port at respective pressures, one of the fuel and gas being supplied to said cavity and the other being supplied upstream of both sealable engagement locations, cyclicly opening the valve element to communicate said port with the engine to permit delivery of fuel entrained in gas to the engine, and regulating the pressure differential between the fuel and the gas at the cavity to control the rate of fuel flow into the gas at the cavity.

4,794,903

RECIRCULATED EXHAUST GAS QUANTITY CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

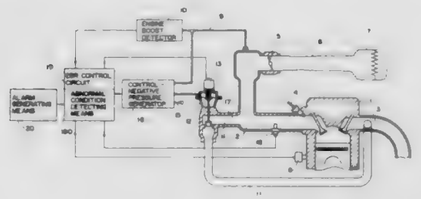
Hiroyoshi Suzaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1987, Ser. No. 6,926

Claims priority, application Japan, Feb. 14, 1986, 61-31315

Int. Cl.[4] F02M 25/06

U.S. Cl. 123—571 **2 Claims**



1. A recirculated exhaust gas quantity control apparatus for an internal combustion engine comprising:

a recirculating passage which connects an exhaust gas passage and an air intake passage of said internal combustion engine and recirculates the exhaust gas of said internal combustion engine to said air intake passage;

a control valve which is installed at an intermediate location of said recirculating passage and controls the recirculated quantity of the exhaust gas;

at least two engine condition sensors for sensing the operating condition of said internal combustion engine, one of said sensors sensing the number of revolutions of said internal combustion engine and the other said sensor sensing one of the negative pressure, the throttle valve opening, and the intake air quantity of the internal combustion engine;

a control circuit for adjusting the opening of said control valve by computing an optimum recirculated quantity of the exhaust gas based on the signals from said at least two engine-condition sensors;

an oxygen sensor for sensing oxygen concentration inside of said air intake passage at the down stream side of the connecting location of said recirculating passage thereto;

detector means for detecting opening of said control valve;

an opening control means for controlling the opening of the control valve to make the deviation zero between the actual recirculated quantity of the exhaust gas based on the actual opening of said control valve and the optimum recirculated quantity of the exhaust gas computed based on said at least two engine-condition sensors;

an abnormal-condition detecting means for judging the occurrence of an abnormal condition when the difference between the recirculated quantity of the exhaust gas computed based on the detected signal of said oxygen sensor and the recirculated quantity of the exhaust gas computed based on one of the signals of said at least two engine-condition sensors exceeds a predetermined valve; and

alarm generating means for generating an alarm when said abnormal-condition detecting means detects said abnormal condition.

4,794,904

INTERNAL COMBUSTION ENGINE HAVING AN INJECTION NOZZLE FOR MIXTURE PREPARATION

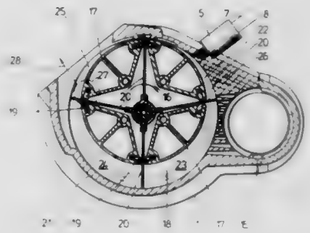
Hans Baumgartner, Viersen; Rainer Südbeck, Wassenberg, and Ulrich Henke, Übach-Palenberg, all of Fed. Rep. of Germany, assignors to Pierburg GmbH

Filed Apr. 14, 1987, Ser. No. 38,009

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613668

Int. Cl.[4] F02D 23/02

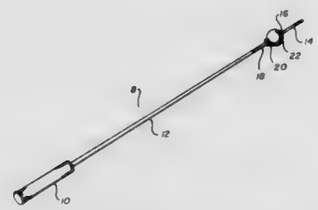
U.S. Cl. 123—564 **6 Claims**



1. An internal combustion engine with a volume-displacement supercharger having a fuel injection nozzle, said injection nozzle is arranged in a fresh air intake passage directly within the supercharger on a suction side thereof, and an air volume meter in an intake line opening into the supercharger.

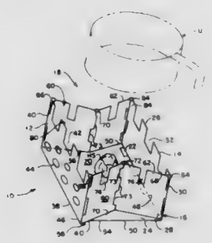
VOL 1098 ISS 1 JA 3 1989 UMI

4,794,905
MAGNETIC HAND HELD BALL THROWING IMPLEMENT
Joseph H. Woolard, 3330 Kellie Ann Ln., Virginia Beach, Va. 23452
Filed May 21, 1987, Ser. No. 52,336
Int. Cl.[4] F41B *3/04*; F41F *7/00*
U.S. Cl. 124—5 **3 Claims**



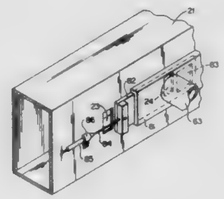
1. A combination ball throwing implement and ball element, wherein said ball-throwing implement comprises:
an elongated flexible shaft having a grip end portion and an opposite end portion;
a sleeve mounted on said opposite end portion;
a magnetic attractive ball shaft secured coaxially to said flexible shaft by said sleeve;
magnetic retaining means including a magnet positioned on said ball shaft at the outer end of said sleeve distal from said opposite end portion; and,
said ball element comprises a ball having a diametrical bore and a magnetic member positioned within said bore, said magnetic member adapted to slidably engage said magnetic attractive ball shaft and to coact with said magnetic retaining means to hold said ball on said shaft, said implement upon application of centrifugal force, releasing said ball with a uniform time of release.

4,794,906
PORTABLE, COLLAPSIBLE FIELD STOVE
James B. Longley, Jr., 48 Robinson Garden, Lewiston, Me. 04240
Filed Aug. 13, 1987, Ser. No. 84,820
Int. Cl.[4] F24C *1/16*
U.S. Cl. 126—9 R **11 Claims**



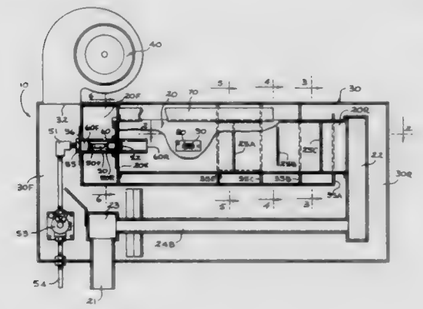
1. A portable field stove which is adapted to assume a collapsed configuration for storage and a set-up configuration for supporting a cooking utensil above a portable heat source comprising:
a front plate and a back plate each having a top edge, a bottom edge and end edges, and a ledge-forming shoulder on the bottom edge of said front plate;
a bottom plate having a top surface and a bottom surface and being pivotably attached to said back plate by a pivot means to pivot toward said back plate to collapse the stove and to pivot toward said front plate to set up the stove, said bottom plate being sized and adapted to abut said front plate and said ledge-forming shoulder in the set-up configuration of the stove;
end means having top and bottom edges and end edges with said end means end edges being pivotally connected to said front and back plates by pivot means, each of said end means further including hinge means located between said end means end edges, said end means being adapted to bend at said hinge means inwardly of the stove when the stove is set up and being sized to position said end means bottom edges adjacent to and above the top surface of said bottom plate for wedging said bottom plate between said end means and said ledge-forming shoulder to securely lock the stove in the set-up configuration; and
air flow control means in said plates and in said end means including first cutouts in said front and back plates located to extend from said front and back plate top edges, second cutouts in said end means located to extend from top edges of said end means, holes in said front plate located adjacent to said ledge-forming shoulder, first openings between said bottom plate and said end means and second openings adjacent to said attachments between said end means and said front and back plates and between said back plate and said bottom plate and adjacent to said end means hinge means, said holes and openings being sized and arranged to cooperate to draw air into the stove.

4,794,907
GASEOUS FUEL RANGE
John M. Corliss, and Earl W. Cox, both of Columbus, Ohio, assignors to Gas Research Institute, Chicago, Ill.
Filed Jul. 31, 1987, Ser. No. 80,419
Int. Cl.[4] F24C *3/00*
U.S. Cl. 126—39 R **6 Claims**



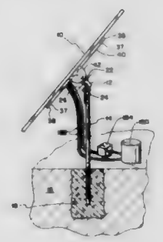
1. A range which utilizes a pre-mixture of gaseous fuel and air, comprising in combination:
a. burner gaseous fuel/air inlet means;
b. plenum means receiving combustion air at a pressure greater than atmospheric pressure;
c. first outlet means in said plenum means and vented to the atmosphere;
d. second outlet means in said plenum means and positioned in registration with said burner gaseous fuel/air inlet means; and
e. valve means cooperating with said first and second outlet means,
said valve means closing said first outlet means and opening said second outlet means when actuated in one direction, and opening said first outlet means and closing said second outlet means when actuated in an oppositee direction whereby air in said plenum means is both vented to the atmosphere through said first outlet means and directed to said gaseous fuel/air inlet means in proportion to the position of said valve means.

4,794,908
GAS-FIRED HEATER MEANS
Donald O. Hall, 2801 Leacott Dr., Louisville, Ky. 40216
Filed Jan. 30, 1987, Ser. No. 8,757
Int. Cl.[4] F24H *3/08*
U.S. Cl. 126—112 **6 Claims**



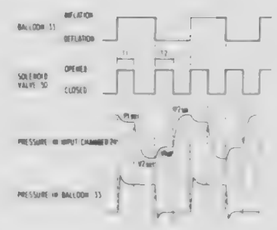
1. Improved gas-fired space heater means, comprising in combination:
(a) a first duct-like member being provided with an interior and an exterior, said member having opposite front and rear ends, said front end being provided with a combustion supporting gas plenum, said plenum having an inlet and an outlet, said outlet being in flow communication with means for receiving, mixing and igniting a mixture of pressurized fuel gas and a combustion supporting gas within said interior, said rear end having an exhaust conduit means in fluid communication with the interior of said first duct and an exhaust outlet located adjacent to said front end, said first duct-like member being provided with first baffle means therein;
(b) a second duct-like member, surrounding said first duct-like member and said exhaust conduit means and having opposite forward and rearward ends, with said forward and rearward ends of said second duct-like member being respectively located adjacent to said front and rear ends of said first duct-like member, said second duct-like member being provided with second baffle plates disposed to deflect the flow of a pressurized fluid into contact with all sides of said exterior of said first duct-like member, said second duct-like member including an aperture for receiving said exhaust outlet;
(c) said second duct-like member having a fluid inlet opening located proximate to one of said opposite front and rear ends of said first duct-like member and a pressurized fluid outlet opening located between said opposite front and rear ends of said first duct-like member;
(d) means for supplying a stream of said pressurized fluid to said inlet opening of said second duct-like member for discharge through said outlet opening of said second duct-like member after having passed over the exterior of and received heat from said first duct-like member and said exhaust conduit means to supply heated fluid to a space via second conduit means connected said outlet opening of said second duct-like member;
(e) combustion supporting gas intake means are provided with an inlet adjacent to said fluid outlet opening of said second duct-like member and positioned adjacent said second baffle plates and between said first and second duct-like members, said combustion supporting gas intake means outlet being in fluid communication with said plenum inlet for diverting a portion of said stream of pressurized fluid into said front end of said first duct-like member for mixing and ignition therein with said fuel gas; and
(f) temperature-responsive control means for controlling the flow of said combustion supporting gas through said combustion supporting gas intake means in inverse proportion to the temperature of said combustion supporting gas, said temperature-responsive control means including a valve means in said plenum outlet, said valve means being operable in response to a temperature sensing means.

4,794,909
SOLAR TRACKING CONTROL SYSTEM
Glenn E. Elden, 302 U.S. 30, E., New Haven, Ind. 46774
Filed Apr. 16, 1987, Ser. No. 40,368
Int. Cl.[4] F24J *3/02*
U.S. Cl. 126—425 **23 Claims**



1. A solar tracking control system for use in controlling the position of a pivotable solar panel connected to a motor by selectively energizing and de-energizing the motor, said control system comprising:
signal programmer means for generating a plurality of time dependent signals;
means connected to said signal programmer means for generating periodic motor energizing signals in response to said time dependent signals;
means for detecting degrees of pivot of the solar panel and for providing a motor de-energizing signal in response to detecting a preselected degree of pivot; and,
latch means connected to said detecting means and said generating means and to the motor for retaining the motor energized in response to a motor energizing signal and retaining the motor de-energized in response to a de-energizing signal.

4,794,910
MEDICAL APPLIANCE DRIVING APPARATUS
Sadahiko Mushika, Tokyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan
Filed Jun. 29, 1987, Ser. No. 67,042
Claims priority, application Japan, Jun. 28, 1986, 61-152177
Int. Cl.[4] A61B *25/00*
U.S. Cl. 600—18 **3 Claims**



1. A medical appliance driving apparatus comprising:
positive pressure supply means for supplying a positive pressure;

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negative pressure supply means for supplying a negative pressure;
isolator means having an input chamber and an output chamber which are defined by a moveable membrane;
positive pressure regulating valve means connected between said positive pressure supply means and said input chamber for selectively connecting said positive pressure supply means to said input chamber;
negative pressure regulating valve means connected between said negative pressure supply means and said input chamber for selectively connecting said negative pressure supply means to said input chamber;
output valve means connected to said output chamber of said isolator means;
pressure detecting means for detecting the pressure in said input chamber of said isolator means;
a medical appliance connected to the output side of said output valve means; and
electronic control means for operating said pressure regulating valve means to selectively connect one of said supply means to said isolator means and for controlling the operation of said output valve means,
wherein said electronic control means operates to open and close said positive pressure regulating valve means in response to the pressure detected in said input chamber by said pressure detecting means to maintain a first predetermined pressure value in said input chamber when said output valve means and said negative pressure regulating valve means are closed, to open said output valve means to supply a positive pressure to said medical appliance and after a predetermined time from the opening of said output valve means closes said output valve means to maintain the positive pressure supplied to said medical appliance, to close said positive pressure regulating valve means, to open and close said negative pressure regulating valve means in response to pressure detected in said input chamber by said pressure detecting means to maintain a second predetermined pressure in said input chamber, to open said output valve means to supply a negative pressure to said medical appliance and after a predetermined time from the opening of said output valve means to close said output valve means, to maintain the negative pressure supplied to said medical appliance and to continuously repeat the foregoing cycle.

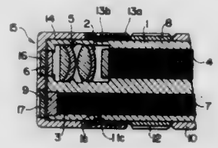
4,794,911

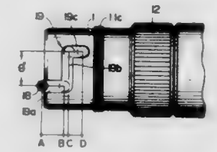
MEANS TO FACILITATE DETACHABLY MOUNTING CAP TO DISTAL END OF ENDOSCOPE

Misoru Okada, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Aug. 13, 1987, Ser. No. 85,512
Claims priority, application Japan, Sep. 20, 1986, 61-144834[U]; Nov. 29, 1986, 61-184462[U]
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 128—4 **8 Claims**

1. An endoscope comprising:
a distal end member thereof;
a cap screw body rotatably disposed on said distal end member and having male threading means for mounting a cap;
a cap adapted to be detachably fitted onto said distal end member and having female threading means for threadably engaging with said male threading means of said cap screw body and a pin projectingly provided therein;
fitting groove means provided on the outer peripheral surface of said distal end member for fitting said pin, said fitting groove means including an axial groove and a peripheral groove; and
cap mounting facilitating means for facilitating operation which detachably mounts said cap onto said distal end member eliminating binding between said male and female threading means of said cap screw body and said cap which would be caused by pushing said pin against the side wall of said peripheral groove by engagement between said male and female threading means while said pin moves within said peripheral groove;





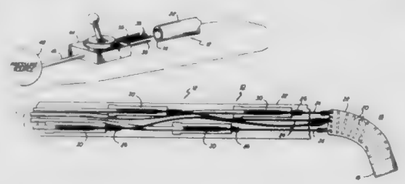
said cap mounting facilitating means releasing engagement between said male and female threading means of said cap screw body and said cap while said pin moves within said peripheral groove.

4,794,912

BORESCOPE OR ENDOSCOPE WITH FLUID DYNAMIC MUSCLE

Raymond A. Lia, Auburn, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Aug. 17, 1987, Ser. No. 85,955
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 128—4 **9 Claims**



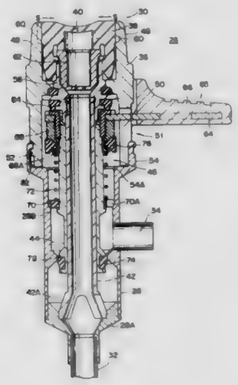
3. A borescope or endoscope that comprises a flexible elongated insertion tube, an articulation section at a distal end of said insertion tube and having at least a first pair of steering cables for bending the articulation section in one place; at least one pair of fluid dynamic muscles each associated with a respective one of said steering cables; each said muscle including
an elongated elastomeric bladder,
a fluid conduit extending from the proximal end of the associated bladder to the proximal end of the insertion tube for supplying a fluid pressure to the bladder,
a tubular braid with proximal and distal ends, disposed over said bladder and formed of a plurality of flexible inextensible filaments, the tubular braid permitting said bladder therewithin to expand laterally when said fluid pressure is applied to it but restraining the bladder such that as said tubular braid increases in diameter it contracts axially,
anchor means for anchoring the proximal end of each said braid to a ground within said insertion tube;
a termination closing the distal end of the associated braid and connecting it to an associated one of the steering cables for applying a tensive force thereto for bending said articulation section when said fluid pressure causes said bladder and braid to expand laterally,
a source of fluid pressure; and
a controller for selectively applying said fluid pressure from said source to one or the other of the fluid conduits of the muscles associated with each pair of steering cables, for actuating the associated fluid dynamic muscles in such fashion as to bend said articulation section a desired degree;
wherein said fluid dynamic muscles are situated within the insertion tube near the distal end thereof to minimize play in the associated steering cables.

4,794,913

SUCTION CONTROL UNIT FOR AN ENDOSCOPE

Hideki Shimonaka; Yosuke Yoshimoto, and Masaaki Nakazawa, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Dec. 2, 1987, Ser. No. 127,379
Claims priority, application Japan, Dec. 4, 1986, 61-289294
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 128—4 **8 Claims**



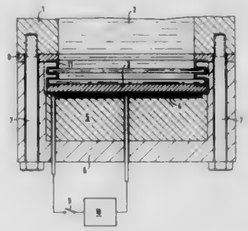
1. A suction control unit for an endoscope having a channel, comprising:
a tubular main body having a suction port in the side wall and a bore;
an inner tube located in the bore and having an internal hole communicating with the channel of the endoscope;
a sliding tube located slidably in the axial direction between said main body and said inner tube;
an operating lever having its proximal end portion secured at an upper position of said sliding tube and its distal end portion extending outward from said main body; and
passage switching means for connecting the suction port with the endoscope channel or the outside of said main body, when said operating lever is operated to move said sliding tube forward or backward in the axial direction.

4,794,914

SHOCK WAVE GENERATOR FOR AN APPARATUS FOR NON-CONTACTING DISINTEGRATION OF CALCULI IN THE BODY OF A LIFE FORM

Matthias Mahler, Erlangen; Sylvester Oppelt, Bamberg, and Manfred Rattner, Buckenhof, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,318
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1986, 3618903
Int. Cl.⁴ A61B *17/22*
U.S. Cl. 128—24 A **2 Claims**



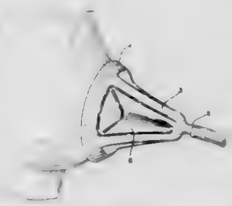
1. A shock wave generator for an apparatus for non-contacting disintegration of calculi in the body of a life form, including a housing containing a volume filled with a liquid as a transmission medium for shock waves, a membrane terminating the volume at one side and having a circumferential edge, and means for pulsingly driving the membrane in a moving direction towards the volume, the improvement comprising, a spring means being resilient in the moving direction of said membrane and attached to said circumferential edge of said membrane for connecting said membrane to said housing in a fashion allowing said membrane to be driven in the direction of movement essentially free of bending stresses exerted on said membrane by said spring means, said spring means comprising a tubular spring including a meander-like cross-section and being arranged between surfaces of said housing and said membrane which lie opposite one another in the moving direction of said membrane.

4,794,915

METHOD FOR INDUCING UTERINE ACTIVITY THROUGH NIPPLE STIMULATION

Karl O. O. A. H. Larsson, Schweiz, Switzerland, assignor to ISG/AG, Zug, Switzerland

Continuation-in-part of Ser. No. 811,002, Dec. 19, 1985, abandoned. This application Jan. 30, 1987, Ser. No. 9,330
Claims priority, application Switzerland, Dec. 24, 1984, 6136/84
Int. Cl.⁴ A61H *23/04, 7/00*; A61M *1/06, 1/00*
U.S. Cl. 128—64 **17 Claims**



1. A method of nipple stimulation for the production of intrauterine contractions, comprising the steps of:

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placing a breast hood over the breast of a pregnant woman, said hood comprising a frame with large passages and a membrane around said large passages;

attaching said hood to an intermittent suction means, said intermittent suction means causing said membrane to retract through said large passages around the nipple, and

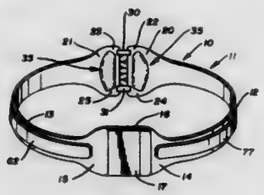
operating said intermittent suction means to gently massage and stimulate the nipple in a manner to elicit normal contraction-inducing hormones without significant expression of milk.

4,794,916

LUMBAR STABILIZER

James A. Porterfield, 2650 Brunswick Ln., Hudson, Ohio 44236, and Marie A. Stringer, 7108 State Rte. 14, Ravenna, Ohio 44266

Filed Nov. 20, 1986, Ser. No. 932,563
Int. Cl.[4] A61F 5/02
U.S. Cl. 128—78 11 Claims



1. A lumbar stabilizer for controlled displacement of tissue in the lumbar spine area of a patient comprising, belt means for encircling the lumbar spine area of a patient having two segments with a first extremity of each segment joined by connecting strip means, a pair of raised pad means mounted in said first extremity of each segment of said belt means in circumferential spaced relation for positioning a distance to either side of the spinous process of the lumbar spine area, fastening means on a second extremity of each segment of said belt means for initially mounting said pair of pad means in engagement with tissue in the lumbar spine area, and means for selectively reducing the distance between said first extremity of said segments and therefore said pair of pad means after said fastening means has initially mounted said pair of pad means to displace the tissue in the lumbar spine area a distance toward the spinous process, thereby compressing and supporting the low back tissues and unloading the lumbar spine, each of said pair of pad means being elongate with an inner side facing the spinous process being substantially linear, said vertically medial portion of said pads being of increased width relative to the width elsewhere along the elongate dimension of said pads to place a force on the erector spine muscles in the mid-lumbar region.

4,794,917

CERVICAL SUPPORT

John O'Leary, 14322 Wallace, Harvey, Ill. 60426

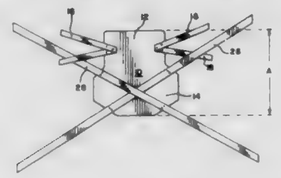
Filed May 29, 1987, Ser. No. 55,365
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—87 B 3 Claims

1. A dual purpose cervical and pelvic support for the upper body and head or pelvis and hip of an injured person comprising:

(a) a planar rigid splint including a rectangular top portion and an octagonal base portion said base portion being of sufficient size to extend from the shoulders to the mid-back of the person to thereby correspond to the outline of the person's trapezious muscle and said top portion extending from said body portion and terminating at the top of the head of the person;

(b) a plurality of straps mounted to the top portion of said splint, selected ones of said straps being of sufficient length to be secured transversely about the forehead or thighs of the person and selected other ones of said straps being arranged to extending along the jawline of the person's chin to hold the head of the person in position against the splint to stabilize the head relative to the chest without applying traction thereto;

(c) a pair of strap members mounted to the base portion of said splint including means for allowing infinite adjustable



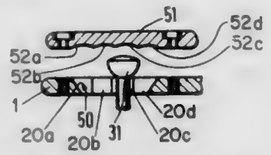
connection with one another, said strap members being of a length sufficient to cross one another in the center of the upper body or pelvic area of the person and extending beyond the edges of the upper body or pelvic area such that said strap members can be secured over a shoulder and under the opposite arm of the person to secure the upper body and shoulders of the person against the splint or can be secured across the hip and pelvic area of the person to the splint.

4,794,918

BONE PLATE ARRANGEMENT

Dietmar Wolter, Lohm/e,nml/u/ hlenstrasse 5, 2000 Hamburg 1, Fed. Rep. of Germany

Filed May 5, 1986, Ser. No. 859,653
Claims priority, application Fed. Rep. of Germany, May 6, 1985, 8513288[U]
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—92 VP 12 Claims



1. A bone plate arrangement comprising:

a bone plate including at least one bone screw hole having a center line and a seat on the upper side of the bone plate opposite the lower side adapted to face the bone, said seat having an acutely narrowing profile in the direction from the upper toward the lower side;

a bone screw having a longitudinal axis, said bone screw adapted to pass through the bone screw hole into the bone and including a bone screw head having a generally convex seating surface which is contoured such that when the bone screw is fully inserted into the bone through the hole with the axis along a selected one of a range of angular orientations relative to said center line, the seating surface of the head is supported in said seat;

a cover plate including means for engaging the bone plate so that the underside of the cover plate tightly engages the screw head; and

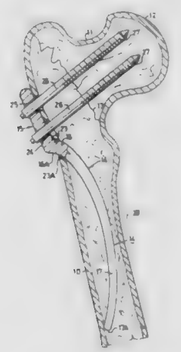
said bone screw head and the underside of the cover plate having raises and recesses which mutually engage when the cover plate tightly engages the screw head so as to hold the head in fixed lateral relation to the bone plate and prevent pivoting thereof, whereby the bone screw axis is fixed in said selected angular orientation relative to the hole centerline.

4,794,919

FIXATING DEVICE

John S. Nilsson, Brötvägen 18, S-161 39 Bromma, Sweden

PCT No. PCT/SE87/00043, § 371 Date Aug. 25, 1987, § 102(e) Date Aug. 25, 1987, PCT Pub. No. WO87/04612, PCT Pub. Date Aug. 13, 1987
PCT Filed Jan. 30, 1987, Ser. No. 99,320
Claims priority, application Sweden, Jan. 31, 1986, 8600437
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—92 YK 3 Claims



1. A fixating device for fixating a femur fracture in the proximity of the hip joint, comprising an arcuate anchoring arm (17) which is intended to be inserted through an aperture formed in the wall of the femur and down in the femur and brought to an anchoring position therein, said arm merging at one end thereof with a guide part (15), said guide part being provided with at least one guide hole (24, 25), with a fixating screw received in said guide hole, said screw being adapted to be screwed into the neck of the femur, said anchoring arm (17) terminating in a free end (17A) opposite to said one end; said guide part (15) forming an extension of the anchoring arm; said guide part (15) being provided with an inwardly facing surface (15B) and an outwardly facing surface, said inwardly facing surface touching an inner plane, said outwardly facing surface touching an outer plane which is parallel with the inner plane, a center plane lying approximately midway between the inner and outer planes and extending substantially parallel with the main longitudinal direction of the guide part; said anchoring arm being provided with an outer surface which is convex and which is tangential to a further plane (32) which is parallel with said inner and outer planes; said anchoring arm being provided with a center part between said one end and said free end which lies on one side of the inner plane (30), said free end (17A) of the anchoring arm lying on the other side of said inner plane a distance less then the distance (33) between the inner plane (30) and the further plane (32), the distance (33) between the inner plane (30) and the further plane (32) of the anchoring arm being greater than the distance (34) between said inner plane and the outer plane (29) of the guide part, whereby said convex outer surface and said free end of the anchoring arm are adapted to bear against opposite sides of the interior of a femur at regions spaced along the length of the femur.

4,794,920

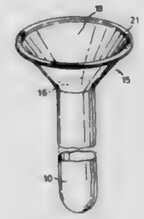
BIRTH CONTROL DEVICE

David M. Robichaud, 15 Edgehill Road, Islington, Ontario, Canada (M9A 4N1)

Filed Jul. 14, 1987, Ser. No. 74,300
Int. Cl.[4] A61F 13/00
U.S. Cl. 128—844 4 Claims

1. A birth control device, comprising:

a sheath defining a closed end and an open end of a thin flexible impermeable material being sized to fit loosely about the erect male organ thereby enabling movement of the male organ relative to the sheath during coitus, said sheath being conformable to the shape of the vagina upon insertion therein; and



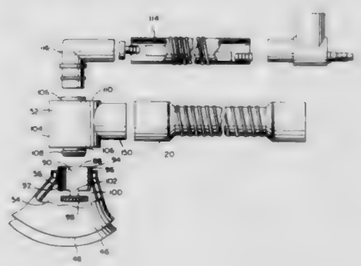
flange means about the entire open end of the sheath for retaining the open end of the device outside the woman's body during coitus, the flange means being a generally frustoconical widening of the sheath toward its open end having at least an outer peripheral portion of a semi-rigid, compliant material.

4,794,921

METHOD AND APPARATUS FOR ADMINISTERING ANESTHETICS

Erik A. Lindkvist, Korpralsvägen 38, S-902 53 Umea, Sweden

Continuation-in-part of Ser. No. 414,357, Aug. 17, 1982, abandoned. This application May 31, 1985, Ser. No. 739,812
Claims priority, application Sweden, Dec. 18, 1980, 8008962-6
Int. Cl.[4] A61M 16/00
U.S. Cl. 128—203.29 23 Claims



1. A mask for administering anesthetic gas, said mask comprising:

(a) an inner, cup-shaped mask body defining a cup-shaped cavity, said inner mask body including an inner opening having a central axis, an outer opening spaced from said inner opening along said central axis, and a continuous sidewall extending from said inner opening to said outer opening, said sidewall having a flexible edge defining the outer opening, said outer opening having a larger area than said inner opening and a shape adapted to engage the face of a patient in substantially gas-tight sealing relationship outwardly of the patient's nose and mouth;

(b) an outer, cup-shaped body including an inner opening having a central axis, an outer opening larger than and spaced from said inner opening along said central axis and a second continuous sidewall having a shape corresponding with the shape of said inner body extending from said inner opening to said outer opening, said continuous sidewall having an outer edge defining the outer opening of the outer body;

(c) said outer body and said inner body being arranged with said outer body surrounding but spaced from said inner

body to define an extraction passageway therebetween bounded by the sidewalls of said inner and outer bodies, the outer opening of said outer body positioned relative to said central axis between the outer and inner openings of said inner body to thereby define an annular extraction slot between the edge of said inner body and the edge of said outer body, said inner opening of said outer body surrounding said inner opening of said inner body and communicating with said extraction slot through said extraction passageway;

(d) deflecting means supported in said cup-shaped cavity opposite said inner opening for deflecting incoming fluid passing through said inner opening of said inner body outwardly at an angle to said central axis; and

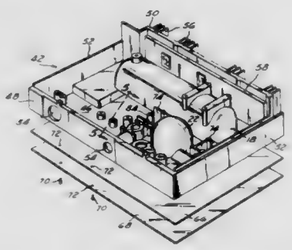
(e) coupling means for connection to said inner opening of said outer body to provide communication with an exhaust system and for connection to said inner opening of said inner body to provide communication with a source of pressurized anesthetic gas and with an exhaust system to withdraw gas exhaled by the patient.

4,794,922

VENTILATOR MANIFOLD

Douglas F. DeVries, Redlands, Calif., assignor to Bird Products Corporation, Riverside, Calif.

Filed Nov. 4, 1986, Ser. No. 927,250
Int. Cl.[4] A61M *16/00*; A62B *7/00*
U.S. Cl. 128—204.18 **22 Claims**



1. A ventilator which provides artificial respiration to a patient from a source of pressurized gas, said ventilator comprising:

a flow control valve means for controlling the flow of inspiratory gas to said patient from said source of pressurized gas;

means for establishing gas flow into and out of said patient's airway, said flow establishing means being in fluid communication with said flow control valve means;

an exhalation valve means for controlling the flow of gas from said patient to the atmosphere, said exhalation valve means in fluid communication with said flow establishing means;

a manifold having a top side and an underside, said flow control valve means and said exhalation valve means mounted on said top side of said manifold;

mounting surfaces formed on said top side of said manifold, said flow control and exhalation valve means being supported by said mounting surfaces when mounted on said manifold;

a plurality of integral ducts formed in said manifold, said ducts permitting fluid communication between said source of pressurized gas and said patient through said manifold;

a plurality of access ports extending through said top side of said manifold and into said ducts, said access ports positioned on said manifold so as to permit fluid communication between said flow control and exhalation valve means and said ducts when said flow control and exhalation valve means are mounted on said manifold;

an inlet fitting mounted on said manifold, said inlet fitting in fluid communication with said source of pressurized gas, a first one of said ducts establishing fluid communication between said inlet fitting and said flow control valve means, wherein substantially the entire length of said duct is exposed to the atmosphere along the underside of said manifold;

a patient fitting mounted on said manifold, said patient fitting establishing fluid communication between said flow establishing means and a second duct extending between said flow control valve means and said patient fitting, wherein substantially the entire length of said second duct is exposed to the atmosphere along the underside of said manifold;

a gasket which sealingly engages the underside of said manifold so as to seal said ducts from the atmosphere;

a sealing plate which forces said gasket into sealing engagement with said manifold, said gasket being sandwiched between said sealing plate and said manifold, said gasket and said sealing plate combining to form a wall enclosing said ducts; and

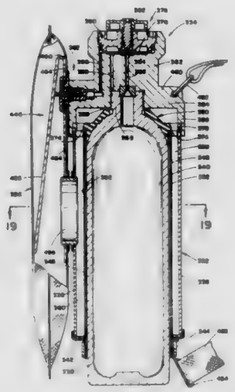
wherein the exposed structure of said ducts permits the formation of said manifold, complete with said integral ducts, through a molding or casting process.

4,794,923

PORTABLE EMERGENCY BREATHING APPARATUS

Josef A. Bartos, Diamond Bar, Calif., assignor to Respirator research, ltd., Willoughby, Ohio

Division of Ser. No. 762,253, Aug. 5, 1985, abandoned. This application Oct. 23, 1986, Ser. No. 922,397
Int. Cl.[4] A62B *9/02*
U.S. Cl. 128—205.24 **18 Claims**



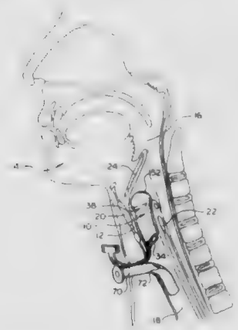
1. A fluid flow control valve for portable emergency breathing apparatus including a compressed breathing gas container having an open end, said valve comprising valve body means mountable on the open end of said compressed breathing gas container, said valve body means having gas flow passageway means therethrough, said passageway means having inlet and outlet ends, said inlet end being in flow communication with gas under pressure in said breathing gas container, said passageway means including diaphragm chamber means, flexible diaphragm means dividing said chamber means into upstream and downstream chambers relative to said inlet and outlet ends of said passageway means, said diaphragm means having an axis and upstream and downstream sides respectively facing said upstream and downstream chambers, said upstream chamber including annular means coaxial with said axis and sealingly engaging said upstream side of said diaphragm means, the surface of said upstream side of said diaphragm means within said annular means having an area smaller than the area of said downstream side of said diaphragm means, said passageway means including port means in communication with said inlet end and opening into said upstream chamber coaxial with said axis of said diaphragm means and radially within said annular means, said downstream chamber being in flow communication with said outlet end of said passageway means, said surface of said upstream side of said diaphragm means including a central portion coaxial with said axis for opening and closing said port means, said diaphragm means being axially displaceable between first and second positions in which said central portion respectively opens and closes said port means, manually operable means supported by said valve body means for displacing said diaphragm means from said first to said second position to releasably hold said diaphragm means in said second position, said diaphragm means having at least one aperture therethrough between said upstream and downstream sides thereof, and said aperture being radially outwardly of said central portion and radially inwardly of said annular means, whereby the flow of gas from said port means through said aperture to said downstream chamber is precluded when said diaphragm means is in said second position and occurs when said diaphragm means is in said first position.

4,794,924

LARYNGEAL STENT

Isaac Eliachar, Pepper Pike, Ohio, assignor to The Cleveland Clinic Foundation, Cleveland, Ohio

Filed Jan. 20, 1987, Ser. No. 5,143
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—207.16 **23 Claims**



1. In a device for supporting the structure of a larynx in a living being when implanted in the internal space defined thereby, said device having an enlarged, upper portion dimensioned to conform to and be positioned in the glottic and supraglottic region of the larynx, and a tapered lower portion dimensioned to conform to and be positioned in the subglottic region of the larynx and the improvement comprising:

an internal cavity within said device extending from said lower portion into said upper portion and communicating with the tracheal airway; and,

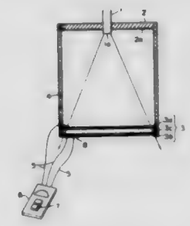
valve means in said upper portion for rendering the pharyngeal region in communication with said cavity, said valve means being operable to open upon exhalation of air from the lungs and having a normally closed position to effect sealing of said cavity and tracheal airway from deleterious liquid or solid matter in the pharynx about the larynx.

4,794,925

SOLAR RAY ENERGY RADIATING DEVICE FOR USE IN MEDICAL TREATMENT

Kei Mori, 3-16-3-501, Kamiooga, Setagaya-ku, Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,484
Claims priority, application Japan, Jul. 10, 1986, 61-162376
Int. Cl.[4] A61N *3/00*; F21V *9/00*; G02F *1/13*
U.S. Cl. 128—397 **4 Claims**



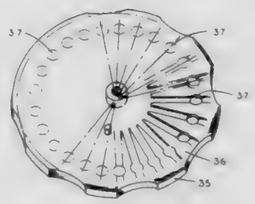
1. A solar ray energy radiating device for use in medical treatment, said device comprising an upper plate having a hole through which the light-emitting end of an optical conductor cable is inserted at the approximate central portion of said upper plate, said optical conductor cable carrying light ray energy, a diffused reflecting type liquid-crystal plate being disposed so as to oppose said light-emitting end of said optical conductor cable, a frame body for unitarily mounting thereon said upper plate and said diffused reflecting type liquid-crystal plate, a light sensor for detecting the light ray energy radiated from said optical conductor cable, said light sensor being installed at the outside of said diffused reflecting type liquid-crystal plate, and a variable voltage source connected to said liquid-crystal plate for controlling the diffusivity of said liquid-crystal plate thereby controlling the amount of the light ray energy passing through said liquid-crystal plate, the voltage applied by said variable voltage source to said liquid-crystal plate being changed in accordance with the output signal generated by said light sensor.

4,794,926

LANCET CARTRIDGE

John M. Munsch, Libertyville; Mark D. Raby, Lake Zurich; William J. Schnell, Libertyville, and Jimmy L. Miller, Waukegan, all of Ill., assignors to Invictus, Inc., Libertyville, Ill.

Filed Nov. 24, 1986, Ser. No. 933,843
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—314 **12 Claims**



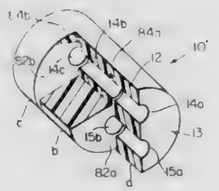
7. A lancet cartridge for drawing blood samples from the finger of a patient comprising a first housing member for receiving a lancet disk defining a plurality of radially extending lancets, each lancet defining a free, flexible end, said end defining a tooth projecting in transverse relation to the axis of said lancet, said lancet disk being carried with said first housing member in rotationally immovable relation;

a second housing member engaging said first housing mem-

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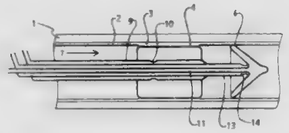
ber and enclosing said lancet disk, said second housing member being rotatable relative to said first housing member and lancet disk, said second housing member defining aperture means positioned to permit the free end and tooth of at least one lancet to pass into said aperture means by flex motion, means for retaining said lancet in a position spaced from said aperture within said first and second housing members, and means for releasing said lancet from said position to cause it to drive forward, acting as its own spring, into said aperture, whereby blood may be drawn from a patient having a finger positioned at said aperture.

4,794,927
ELASTIC LIGATING RING CLIP
Isbae Yoon, 2213 Forest Ridge Rd., Timonium, Md. 21093
Division of Ser. No. 370,170, Apr. 20, 1982, Pat. No. 4,548,201. This application Oct. 21, 1985, Ser. No. 789,663
Int. Cl.[4] A61B *17/12*
U.S. Cl. 128—326 **27 Claims**



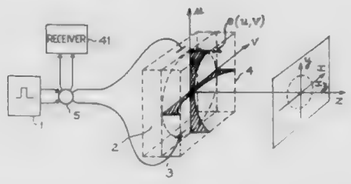
8. A ligating device, comprising:
first, second and third masses of elastic material, each of said first, second and third masses providing discrete expansible first and second lumina; and
a plurality of interconnecting elements made of said elastic material joining said first, second and third masses together in a serial array with said first lumina in said first, second and third masses being axially aligned;
whereby one of said masses may be laterally displaced relative to the other ones of said masses and substantially within a plane transverse to an axis of a first one of said lumina in said one of said masses to provide axial alignment between said first one of said lumina in said one of said masses and the second ones of said lumina in said other ones of said masses.

4,794,928
ANGIOPLASTY DEVICE AND METHOD OF USING THE SAME
Harold D. Kletschka, 1925 Noble Dr., Minneapolis, Minn. 55422
Filed Jun. 10, 1987, Ser. No. 61,104
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—344 **28 Claims**



16. An angioplasty device for removing an obstruction from a vessel or vessel-like structure comprising:
a. a catheter bundle for insertion into said vessel;
b. a trap/barrier connected to said catheter bundle;
c. expansion means, connected to said trap/barrier, for expanding and/or retracting said trap/barrier; and
d. at least one particle removal aperture situated within said trap/barrier for removal of particles.

4,794,929
ECHOGRAPHY PROBE AND ECHOGRAPH FITTED, WITH A PROBE OF THIS TYPE
Charles Maerfeld, Constance, France, assignor to C G R Ultrasonic, Villenoy Les Meaux, France
PCT No. PCT/FR86/00189, § 371 Date Feb. 3, 1987, § 102(e) Date Feb. 3, 1987, PCT Pub. No. WO86/07466, PCT Pub. Date Dec. 18, 1986
PCT Filed Jun. 3, 1986, Ser. No. 19,976
Claims priority, application France, Jun. 7, 1985, 85 08643
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660.07 **16 Claims**

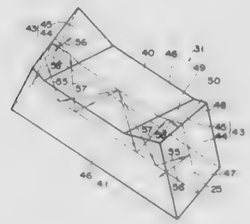


1. Echography probe comprising a radiating element having at least a radiating face to radiate, through said radiating face, a sound wave in response to an electrical excitation to which said element is subjected and/or to receive a sound wave through said radiating face and to produce an electrical signal corresponding to the reception of this sound wave, said probe and said radiating element having a directivity dependent from a frequency utilized, wherein the probe comprises means to modify the pass-band of the different parts of the face of the element according to the coordinates of these parts, in such a way as to make the directivity of the probe independent of said frequency, wherein said means for modifying the band pass comprise an absorbent strip interposed between the radiating face and a body subjected to the sound wave, said absorbent strip having a sound absorption coefficient which is a function of said frequency and a thickness which is greater than the wavelength of the sound wave through said strip.

4,794,930
ATTACHMENT FOR DIAGNOSTIC ULTRASOUND PROBE
Kaoru Machida, Ootawara; Akifumi Suzuki; Yushichi Kikuchi, both of Nishinasunomachi, and Masayuki Takano, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 2, 1987, Ser. No. 103,813
Claims priority, application Japan, Oct. 3, 1986, 61-235771; Nov. 6, 1986, 61-264775
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—662.03 **8 Claims**

1. An attachment to an ultrasound probe having transducer means for radiating an organic body with an ultrasound beam in a scanning plane, comprising:
a housing means, having first and second transmission sections and at least one side wall, for containing an acoustic medium which transmits the ultrasound beam;
wherein said first transmission section faces the transducer means when said attachment is connected to said probe and is permeable to the ultrasound beam;
wherein said second transmission section faces the first transmission section and is permeable to the ultrasound beam,

said second transmission section being adapted for contact with the organic body; and
wherein said at least one side wall extends between the first and second transmission sections; said side wall including a planar surface portion adapted for contact with the acoustic medium contained in the housing means, and said planar surface portion lying in a plane which obliquely intersects the scanning plane for transferring to any other



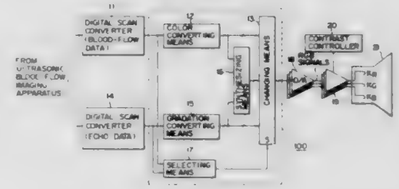
than the scanning plane, a major part of the ultrasound beam reflected by the second transmission section, transferred to the surface portion in the scanning plane and reflected by the surface portion, and for substantially preventing an ultrasound beam component reflected by the surface portion from being reflected by the second transmission section and from returning to the transducer means.

4,794,931
CATHETER APPARATUS, SYSTEM AND METHOD FOR INTRAVASCULAR TWO-DIMENSIONAL ULTRASONOGRAPHY
Paul G. Yock, Menlo Park, Calif., assignor to Cardiovascular Imaging Systems, Inc., Mountain View, Calif.
Filed Feb. 28, 1986, Ser. No. 834,893
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660.03 **28 Claims**



1. A catheter apparatus for obtaining an image of a patient's vessel having a wall comprising:
a flexible tubular element adapted for insertion into the body lumen, the tubular element having distal and proximal extremities;
a housing having distal and proximal ends and a longitudinal axis, the proximal end of the housing being secured to the distal extremity of the tubular element, the housing having a portion thereof that is substantially transparent to ultrasonic energy;
ultrasonic means for generating ultrasonic signals and directing the ultrasonic signals in a direction that is substantially perpendicular to the longitudinal axis of the housing and for receiving reflections of the signals generated, the ultrasonic means including a rotatable member that is movable longitudinally and rotatably relative to the housing during scanning to permit scanning a discrete length of the vessel wall;
drive means extending through the tubular element and connected to the rotatable member for causing both longitudinal and rotational movement of the rotatable member with respect to the housing about the longitudinal axis of the housing whereby the ultrasonic signals generated by the ultrasonic means are directed onto the vessel wall and the ultrasonic signals reflected by the vessel wall are received by the ultrasonic means;
and a cutting element secured to said rotatable member for longitudinal movement relative to the housing, said cutting element having a circular cutting edge lying in a plane which is substantially perpendicular to the longitudinal axis of the housing.

4,794,932
CONVERSION CONTROL CIRCUIT FOR IMAGE DISPLAY APPARATUS
Tatsuro Baba, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 26, 1987, Ser. No. 30,688
Claims priority, application Japan, Mar. 31, 1986, 61-70790; Mar. 31, 1986, 61-70791
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—661.09 **10 Claims**



1. A gradation converting control circuit for an image display apparatus wherein color display data and black/white display data of an object under examination are utilized to display the object with a superimposed combination of color and black/white images on a single monitor screen, comprising:
color-converting means for converting said color display data into RGB-color mode converted data;
gradation converting means for converting said black/white display data having an original maximum gradation W into a converted black/white display data having a converted maximum gradation βW lower than the original maximum gradation, so that a brightness of said black/white display data is substantially equal to a brightness of said color display data, said converted maximum gradation being determined by βW;
where β is a coefficient defined by $0<\beta<1$; and
means for superimposing and displaying said converted black/white display data and said color display data.

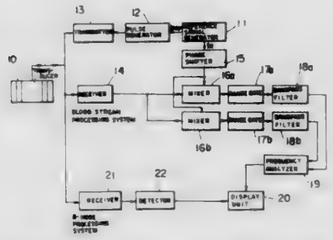
4,794,933
ULTRASONIC BLOOD STREAM OBSERVING APPARATUS
Nobuo Yamazaki, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Sep. 16, 1987, Ser. No. 97,181
Claims priority, application Japan, Sep. 29, 1986, 61-230607
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—661.09 **8 Claims**

1. An ultrasonic blood flow stream observing apparatus comprising:
a transducer for transmitting and receiving an ultrasonic wave to and from a body under examination;
oscillator means for generating a predetemined frequency signal;
means for frequency dividing said predetermined frequency signal for converting the output of said oscillator means into a transmission pulse repetition signal for driving said transducer;
means coupled to said oscillator means for frequency multiplying said predetermined frequency signal by a selectable

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integer value n for converting said predetermined frequency signal into a reference signal synchronized to said transmission pulse repetition signal and variable with respect to said pulse repetition signal for a different selected n

phase difference detecting means, coupled to receive a signal representative of said received ultrasonic wave from said



transducer and to receive said reference signal, for extracting a phase difference between said signal from said transducer and said reference frequency signal and to provide an output thereof; and

frequency analyzer means for frequency-analyzing the output of said phase difference detecting means to produce a frequency spectrum representative of said blood steam flow.

4,794,934

APPARATUS FOR DIAGNOSING THE FUNCTIONS OF THE INTERNAL ORGANS AND AUTONOMIC NERVOUS SYSTEM OF THE LIVING BODY

Hiroshi Motoyama, 11-1, Inogashira 4-chome, Mitaka-shi, Tokyo, 181, Japan, and Fumiaki Nukada, 9-7, Yahatacho 4-chome, Musashino-shi, Tokyo, 180, Japan

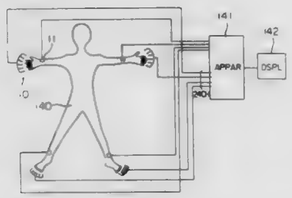
PCT No. PCT/JP86/00122, § 371 Date Feb. 24, 1987, § 102(e) Date Feb. 24, 1987, PCT Pub. No. WO87/00024, PCT Pub. Date Jan. 15, 1987

PCT Filed Mar. 10, 1986, Ser. No. 32,517

Claims priority, application Japan, Jun. 27, 1985, 60-138999

Int. Cl.⁴ A61B *5/05*

U.S. Cl. 128—734 **10 Claims**



1. An apparatus for diagnosing the functions of the internal organs and the autonomic nervous system of the living body which diagnoses the functional condition of the internal organs and the balance condition of the autonomic nervous system of the living body by applying a voltage to particular minute portions of the living body and measuring current flowing in the particular minute portions, and characterized in that

an electrode group consisting of two or more electrodes (1) securely attachable to the living body,

an electrode scanning means (2) for scanning said electrode groups,

a constant voltage generating means (3) for generating a constant voltage to be applied across said electrodes via said electrode scanning means,

a detecting means (4) for detecting at high speed a current i (t) that flows across said electrode pairs and changes from time to time, and

a recording means (5) for recording as the information on the living body the data on the instantaneous values of the current detected by said detecting means are provided, calculating means (6) for calculating at least one parameter as the information on the living body from the data on the instantaneous values of the current recorded in said recording means is provided,

said at least one parameter being any of:

(1) the peak value I_p,

(2) the settled value I_S

(3) the fluctuation time $T=t_s-t_p$ elapsed from the time T_p at which the peak value is reached to the time t_s at which the settled value is reached,

(4) the integrated surface area values during fluctuation time

$$S = \int_{t_p}^{t_s} i(t)dt - I_s \times T$$

(5) the slope of tangent at a given time with respect to the current waveform

$$\tan\theta = \frac{d}{dt} i(t)$$

of the wave form of a current i (t) that changes from time to time.

4,794,935

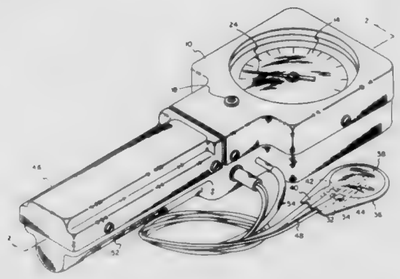
INSTRUMENT FOR MEASURING PRESSURE

Eric Viesturs, Southbury, Conn., assignor to Connecticut Artcraft Corp., Naugatuck, Conn.

Filed Aug. 24, 1987, Ser. No. 88,403

Int. Cl.⁴ A61B *5/10*

U.S. Cl. 128—774 **5 Claims**



1. An instrument for measuring the pressure exerted upon a portion of the body of a bed ridden individual lying on a mattress by that section of the mattress which is engaged by this body portion, said instrument comprising:

a small flexible hollow member having a first air inlet and adapted to be positioned for use between the body portion and the mattress section;

a normally closed switch disposed in the member with connecting leads extending out of the member, the switch being opened when the air pressure in the member is at least equal to the pressure exerted upon the body portion by the mattress section and being closed when air pressure in the member is less than the exerted pressure;

a circuit including a lamp and an electric power source, the circuit being connected to the switch to cause the lamp to be energized and lit when the switch is closed, the lamp being deenergized and dark when the switch is open;

an air pressure meter having a meter face and a second air inlet and calibrated to display on the face air pressure readings measured in pressures above atmospheric pressure; and

a manually operated air pump connected to the first and second air inlets whereby when the member is positioned for use with the switch closed and the pump is actuated, the air pressure in the member is increased until the lamp is deenergized, and the meter at the instant the lamp is deenergized displays the exerted pressure.

4,794,936

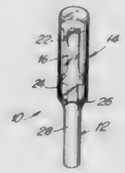
COSMETIC SAMPLER

Linda Zango, Suite 610, 1160 Fifth Avenue, New York, N.Y. 10029

Filed Jun. 15, 1987, Ser. No. 62,709

Int. Cl.⁴ A45D *40/30*

U.S. Cl. 132—320 **14 Claims**



1. A cosmetic sampler comprising a cosmetic applicator and a removable cover for said applicator, said applicator comprising an axially extending rounded rod-like section having a first end and a second end with said section having a smooth surface axially extending first part extending from the first end and being spaced from the second end and said first part arranged to receive a cosmetic preparation deposited directly thereon, means on said rod-like section at the second end forming a seat for said cover so that the cover encloses and is spaced outwardly from said rod-like section, and a holder extending in the axial direction of said rod-like section away from the second end thereof, and said rod-like section being formed of styrene acrylinitrile.

4,794,937

PLUG COUPLING

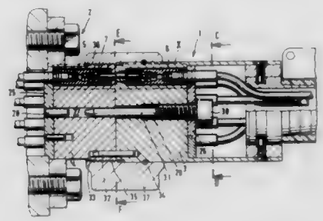
Manfred Hofmann, Altendiez, Fed. Rep. of Germany, assignor to Hydrotechnik GmbH, Fed. Rep. of Germany

Filed Feb. 17, 1987, Ser. No. 15,652

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1986, 86101979

Int. Cl.⁴ F16L *37/28*

U.S. Cl. 137—614.05 **11 Claims**



1. A manually operated high and reduced pressure multiple hose measuring control and regulating line connection plug coupling comprising:

a plug and a socket piece each exhibiting a housing with a plurality of axially parallel bores, coupling bushings arranged in said parallel bores with a radial clearance, a spring loaded and mechanically actuated check valve with a cylindrical valve body located within each coupling bushing wherein each valve body has a closed position where a sealing shoulder disposed on said body contacts a gasket or sealing bushing sealing surface disposed within said coupling bushing and defining a sealable flow channel;

a captive flying piston axially displaceable over a limited range exhibiting a longitudinal passage bore, arranged in each parallel bore of said plug piece, said pistons exhibiting a protruding outlet nipple of sufficient length to mechanically actuate a corresponding socket piece check valve upon insertion and an opposing inlet nipple of sufficient length to mechanically actuate an associated plug piece check valve;

a second flow channel seal arranged in each mechanically actuated check valve of the socket and the plug pieces between said cylindrical valve body and said sealing bushing wherein said second flow channel seal is elongated so that during joining of said plug and socket pieces the second flow channel seal opening is delayed from said cylindrical body sealing shoulder release.

4,794,938

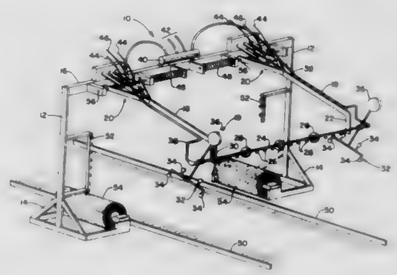
VEHICLE WASHING DEVICE

Thomas J. Petit, 6170 S. Oval Dr., Clinton, Ohio 44216

Filed Apr. 10, 1987, Ser. No. 37,248

Int. Cl.⁴ B60S *3/04*

U.S. Cl. 134—57 R **7 Claims**



1. A vehicle washing device comprising in combination:

lateral vehicle profile detection means;

a horizontal spray bar adapted to distribute wash liquids;

spray bar vertical positioning means;

spray bar rotation means;

supporting structure for the preceding, and

a logic control unit, wherein said profile detection means comprises at least two photoelectric cells, the components of which are mounted on, and at opposite ends of said spray bar, and which are adapted to detect the presence of an intervening, lateral vehicle surface, wherein when such presence is detected, electronic signals are sent from said cells to said logic control unit which is adapted to receive said input signals and to process them based upon instructional logic contained in said unit, and based upon such processing, to generate and transmit output signals to said spray bar vertical positioning means which includes moveable spray bar supporting structure adapted to be activated thereby, and raised or lowered according to such logic, and wherein said spray bar has a plurality of spray nozzles attached thereto and is connected to drive

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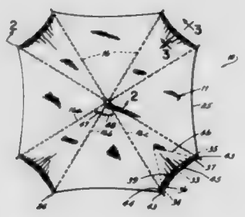
means for rotating said spray bar in a plane at right angles to the longitudinal axis of said spray bar relative to said spray bar's moveable supporting structure, said drive means also being controlled by output signals received from said logic control unit, thereby positioning the direction of said spray bar, and therefore of the nozzles attached thereto, at a predetermined, substantially constant perpendicular angle relative to the exposed upper vehicle surfaces that are substantially perpendicular to the sides of said vehicle, and wherein further, said cells are spaced apart laterally from the longitudinal axis of said spray bar, and from each other.

4,794,939

UMBRELLA WITH SHIRRED EDGE COVER

Toshio Okuda, Hirakata, Japan, assignor to 'totes', incorporated, Loveland, Ohio

Filed May 12, 1987, Ser. No. 49,723
Claims priority, application Japan, Jun. 3, 1986, 61-58154[U]
Int. Cl.[4] A45B *25/18*
U.S. Cl. 135—33 R **12 Claims**



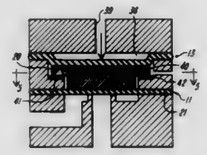
1. An umbrella comprising:
a centerpost.
a rib linkage system connected to said centerpost, said rib linkage system having a series of dome ribs radially oriented relative to said centerpost when said umbrella is open, and
a cover iece connected to said rib linkage system, and
at least a portion of other peripheral edge of said cover piece being shirred, the shirred edge portion of said cover piece being stretchable circumferentially to a greater peripheral length when said umbrella is opened, and contractable circumferentially to a lesser peripheral length when said umbrella is collapsed, and said cover piece being flat when spread out on a flat surface prior to shirring of said cover's edge portion.

4,794,940

PLURAL DIAPHRAGM VALVE

Robert J. Albert, Salem, N.H., and Paul P. Martyn, Beverly, Mass., assignors to COE Corporation, Salem, N.H.

Filed Jan. 6, 1987, Ser. No. 727
Int. Cl.[4] F16K *31/128*
U.S. Cl. 137—1 **12 Claims**



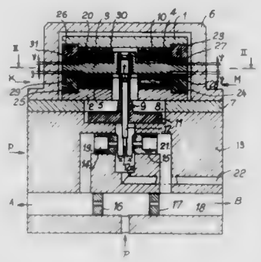
11. In a method of controlling fluid flow the steps comprising providing a valve having a double diameter piston having a diaphragm on either side thereof with a valve chamber defined below one of said diaphragms,
providing a stop between said diaphragms for one diameter of said piston with said stop located in a path of travel of said piston from an opened to a closed position of said valve chamber, reciprocating said piston by means of a control fluid to open and close said valve chamber, with said piston providing a solid support whereby said diaphragms are flexed about the edge of said piston with an area of each diaphragm adjacent said piston being supported by said piston, and said stop acting to limit force on one of said diaphragms when said valve is in a fully closed position to prevent unwanted pressure being applied to said one diaphragm when said one diaphragm seats on a port to close said valve.

4,794,941

TORQUE MOTOR WITH HYDRAULIC POTENTIOMETER FOR SERVO-DISTRIBUTOR

Gerárd Godon, Ruell Malmaison, France, assignor to Societe D'Applications Des Machines Motrices, France

Continuation of Ser. No. 903,180, Sep. 3, 1986, abandoned. This application Apr. 26, 1988, Ser. No. 186,402
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—82 **3 Claims**



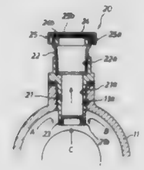
1. A torque motor (M) for a hydraulic potentiometer (P) of a servo-distributor intended in particular for the control of jacks and hydraulic motors, comprising magnets fixed to fixed members (1, 2) in which an armature (3) is arranged whose ends are separated from the fixed members (1, 2) by air-gaps (y) and around which armature are mounted two induction coils (4, 5) which are capable of being supplied with electrical current, and a blade (12) which is fixed by one of its ends to a flexion tube (9) which is connected to the armature (3) by its corresponding end, characterized in that said motor comprises four parallelepipedal or cylindrical magnets (23, 24, 25, 26), which are made of a suitable alloy with a strong coercive field, one pair of which are placed at each end of the armature (3);
wherein each magnet (23, 24, 25, 26) is fixed to a shim (27, 28, 29, 31) whose thickness determines the width of the corresponding air-gap (y); and
wherein the magnets (23, 24, 25, 26) are fixed to the fixed members by gluing, and the shims (27, 28, 29, 31) are also fixed to the magnets by gluing.

4,794,942

AIR BREATHER PLUG ASSEMBLY FOR USE IN POWER TRANSMISSION UNIT

Mitsuyoshi Yasuda; Junichi Matsuura; Kazuhito Ikemoto, and Nobuaki Katayama, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 24, 1987, Ser. No. 77,218
Claims priority, application Japan, Jul. 25, 1986, 61-114861[U]
Int. Cl.[4] F16K *24/04*
U.S. Cl. 137—197 **4 Claims**



1. An air breather plug assembly adapted for use in a casing of a power transmission unit, comprising:
a cylindrical plug body detachably threaded into upper portion of said casing and having an inner end portion which extends into an interior of said casing by a predetermined length;
a cup-shaped baffle-plate fixedly coupled within the inner end portion of said plug body, said baffle-plate having a head portion formed with a slot for permitting the flow of air passing therethrough and being positioned in an interior of said plug body;
a cup-shaped seal member of elastic material fixedly coupled within an outer end portion of said plug body and having a head portion positioned within the outer end portion of said plug body and being spaced from the head portion of said baffle-plate by a predetermined distance to form a cavity therebetween, the head portion of said seal member being formed with a slit to be opened by an internal pressure applied thereto from the interior of said casing through said baffle-plate; and
a cap fixedly coupled over the outer end portion of said plug body and being engaged with the head portion of said seal member in such a manner as to allow the air to flow from said cavity to the exterior through the slit of said seal member.

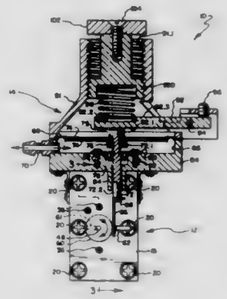
4,794,943

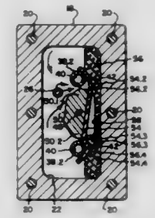
FLUID CONTROL VALVE ASSEMBLY

Reno L. Viceazi, Moreno Valley, Calif., assignor to Figgie International Inc., Richmond, Va.

Filed May 27, 1988, Ser. No. 199,807
Int. Cl.[4] F16K *11/02, 31/165*
U.S. Cl. 137—625.44 **16 Claims**

1. A fluid control valve assembly operable in response to very small changes in pressure, said valve assembly comprising:
a valve housing having an enclosed cavity therein capable of containing fluid under pressure;
inlet and outlet ports, each extending through a sidewall of the valve housing between an exterior surface of the valve housing and the cavity;
a first tubular member having first and second portions, the first portion being connected to the outlet port and the second portion being disposed within the cavity, said second portion having a closed end and an aperture in a sidewall;
a wobble bar disposed within the cavity and movable between a normal position and a first operative position, the wobble bar having a first end disposed adjacent the second portion of the first tubular member;
a rubber-like sheet of material disposed within the cavity, a first portion of the sheet being disposed adjacent the first end of the wobble bar, and a second portion of the sheet being adapted to overlie the aperture within the second portion of the first tubular member;
resilient means disposed within the cavity, a first portion of the resilient means being disposed adjacent the first portion of the rubber-like sheet and a second portion of the resilient means being disposed adjacent the second portion of the rubber-like sheet, the resilient means bearing against the rubber-like sheet when the wobble bar is in its normal position to force the first and second portions of the sheet of rubber-like material into respective contact with the





first end of the wobble bar and the second portion of the first tubular member about the aperture to cause the aperture to be closed; and
actuating means capable of causing the wobble bar to be moved from its normal position to its first operative position, the wobble bar bearing down upon the rubber-like sheet of material when in its first operative position to cause the second portion of the resilient means to be compressed and to shift the second portion of the sheet of rubber-like material away from the aperture in the tubular member to cause the aperture to be uncovered whereby fluid can flow from the inlet port to the outlet port.

4,794,944

PLASTIC VALVE

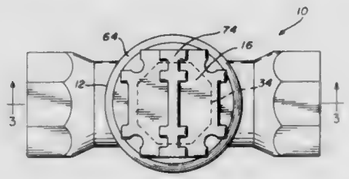
Ralph E. Henry, Rixford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 108,824, Oct. 14, 1987, Pat. No. 4,744,390. This application Apr. 27, 1988, Ser. No. 186,883
Int. Cl.[4] F16K *43/00, 13/06, 17/40*
U.S. Cl. 137—312 **12 Claims**

4. A service valve comprising:
a valve body having an upper chamber and a lower chamber;
said upper chamber having a larger internal diameter than said lower chamber;

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said valve body having an open top end and an open bottom end;
said lower chamber having an inlet opening and an outlet opening;
a seat formed in said upper chamber between said open top end and said inlet and outlet openings in said lower chamber;
a valve member having an external perimeter inserted into said valve body through said open bottom end and positioned against said seat;
said valve member being molded of plastic material to form a unitary body including a plug portion and an actuator portion;
said plug portion having a flow passage therethrough;
said plug portion being rotatable in said seat between an open position where said flow passage is aligned with said inlet and outlet openings and a closed position where said flow passage is out of alignment with said inlet and outlet openings;



said actuator portion extending outwardly from said plug portion through one of said chambers;
an operating nut for engaging said actuator portion for imparting rotational motion to said plug portion;
first and second seal means acting between said plug portion and said valve body for sealing against leakage from said inlet opening and said outlet opening;
third seal means disposed between said valve body and second actuator portion for sealing against leakage into one of said chambers;
locking means disposed on said valve member and adjacent said seat between said third seal means and one of said first and second seal means for locking said valve member within said valve body and said third seal means being insertable into place after insertion of said locking means to permit pressure testing of said valve for leaks between said valve member and said valve body during either of said open and close positions independently of said third seal means.

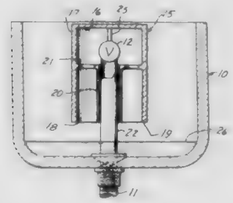
4,794,945
VALVE HANDLE ADAPTOR KIT
Richard L. Reback, 5649 Sorrento Dr., Long Beach, Calif. 90803
Filed Mar. 14, 1988, Ser. No. 167,502
Int. Cl.[4] F16K *43/00, 31/60*
U.S. Cl. 137—315 **10 Claims**

1. A valve handle adaptor kit for mounting a handle on selected ones of a plurality of faucet stems, each formed with broaches of selected different configurations, such handle being of the type including a central, axially projecting boss formed with an open ended multisided handle pocket and a central axial bore leading to such handle pocket, such kit comprising:
an elongated handle adaptor formed at one extremity with an elongated multisided shank shaped to be complementally received in such handle pocket and formed at its opposite extremity with an axially opening multisided spud-receiving adaptor socket configured to correspond with such handle pocket, said adaptor being further formed with an axial fastener-receiving bore;
a plurality of interchangeable spuds, forming a set of spuds formed with common exterior multisided cross sectional configurations for being complementally and selectively received in such handle pocket or, alternatively in said adaptor socket, each spud being formed with respective open ended broach sockets of selected different cross sectional configurations formed for complemental receipt on selected ones of such valve stem broaches, said spuds further being formed with through axial bores arranged and disposed to be aligned with said fastener-receiving bore;
a plurality of fastener screws, one sized for receipt through said central axial bore in such handle boss to be screwed into said threaded bore in one of said broaches and another being sized for receipt through said central axial bore in said handle boss and through said fastener-receiving bore in said adaptor to be screwed into the threaded bore of another of such broaches whereby, said spuds may be inserted interchangeably in either such handle pocket or said adaptor socket so that such handle may be mounted directly from a first selected valve stem broach by inserting a selected spud of such set of spuds in such handle pocket and fitting it directly on such selected valve stem broach or, in the alternative, such handle may be mounted in spaced relation to a second selected valve stem broach by inserting said shank of said adaptor in said handle pocket, inserting a desired spud or such selected spud of such set of spuds in said adaptor socket and then fitting such desired or selected spud over such second valve stem broach.

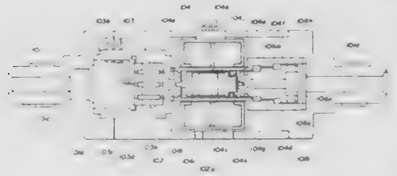


4,794,946
INHERENTLY ADJUSTABLE INVERTED CUP FLOAT FOR A BALLCOCK VALVE
Bruce A. Antunez, 1143 Indian Springs, Glendora, Calif. 91740
Filed Feb. 9, 1988, Ser. No. 153,876
Int. Cl.[4] F16K *31/18, 33/00*
U.S. Cl. 137—426 **1 Claim**

1. A float for a ballcock valve which is inherently adjustable to select a water level to be established in a tank, said float comprising:
an organic plastic molded inverted cup having a closed top wall and a peripheral sidewall, said sidewall being adapted to provide a vent port therethrough at a plurality of selective elevations along said sidewall, said sidewall has a plurality of different thicknesses, one of said thicknesses defining a plurality of weakened areas which can be easily and selectively pushed out to provide said vents for selecting a desired water level.

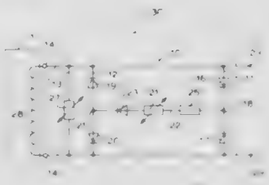


4,794,947
MASS FLOW CONTROLLER
Atsuo Kuramochi, Tokyo, Japan, assignor to Kabushiki Kaisha Nippon IC (also trading as Nippon IC, Inc.), Tokyo, Japan
Filed Jun. 30, 1987, Ser. No. 68,186
Claims priority, application Japan, Nov. 29, 1986, 61-183896[U]; May 11, 1987, 62-69968[U]
Int. Cl.[4] G05D *7/06*
U.S. Cl. 137—486 **2 Claims**



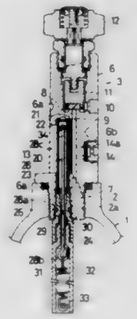
1. An apparatus for controlling the mass flow of a gas through a conduit, said apparatus comprising:
a housing having therethrough a longitudinal passage and to be connected to a conduit such that an inlet end of said passage receives gas from the conduit and an outlet end of said passage discharges gas to the conduit;
at least one by-pass within said passage adjacent said inlet end thereof for passing therethrough the gas;
a mass flow sensor positioned within said passage adjacent the outlet of said by-pass for sensing the mass flow of the gas passing through said by-pass and for generating a signal representative thereof;
a flow regulating valve positioned within said passage adjacent said outlet end thereof, said valve comprising a member defining an orifice communicating with said outlet end, and an armature positioned between said sensor and said orifice defining member and having a seal member directed toward said orifice, said armature being movable longitudinally within said passage between a closed position whereat said seal member blocks said orifice and opened positions whereat said seal member is spaced from said orifice;
an electromagnetic coil within said housing at a position surrounding said armature;
automatic control circuit means, connected to said sensor for receiving said signal therefrom and connected to said electromagnetic coil, for energizing said electromagnetic coil to generate a field to move said armature between said closed and open positions thereof, and thereby for controlling the flow of gas through said orifice as a function of the mass flow of gas detected by said sensor; and
means for selectively adjusting the respective longitudinal positions of said orifice defining member and said electromagnetic coil within said housing.

4,794,948
DIRECTIONAL CONTROL VALVE HAVING AN OPTICAL POSITION INDICATOR
Roland Schempp, Vaihingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 10, 1987, Ser. No. 133,282
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1987, 8700256
Int. Cl.[4] F16K *37/00*
U.S. Cl. 137—554 **9 Claims**



1. A solenoid controlled directional control valve having a visual indicator of its switching position, comprising four rectifying elements connected in a rectifying bridge circuit having input terminals for a power source and direct current output terminals; and a series connection of an electrooptical indicating element with a temperature-dependent resistor connected across said output terminals.

4,794,949
VALVE WITH RESIDUAL PRESSURE INDICATOR FOR PORTABLE OXYGEN INHALANT CYLINDER
Mitsunori Sakai, Amagasakishi, Japan, assignor to Kabushiki Kaisha Neriki, Hyogoken, Japan
Filed Sep. 29, 1987, Ser. No. 102,488
Claims priority, application Japan, Oct. 14, 1986, 61-243497
Int. Cl.[4] F16K *37/00*
U.S. Cl. 137—557 **12 Claims**



1. A valve with a residual pressure indicator for a portable oxygen inhalant cylinder comprising: a valve chamber in a valve casing, an inlet port of the valve chamber opened at a bottom surface of the valve casing as well as an outlet port thereof opened at another surface thereof, a valve body in the valve chamber, a handle in the valve casing for opening and closing the valve body, and a residual pressure indicator for the cylinder in the valve casing, a residual pressure measuring chamber vertically located beside the inlet port in the valve casing, a through hole for a pressure actuator bar opening downwardly from a lower end portion of the residual pressure

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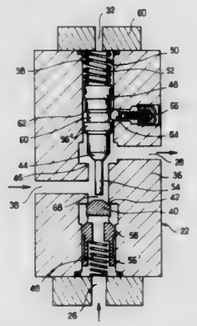
measuring chamber, a sealing means at the through hole so as to make contact with an intermediate portion of the pressure actuator bar and permitting vertical sliding movement thereof, a balancing spring connected to the lower portion of the pressure actuator bar so as to elastically force the bar downwardly, and a residual pressure indicating means on an upper portion of the pressure actuator bar so as to move vertically within the residual pressure measuring chamber.

4,794,950

THREE-WAY HYDRAULIC VALVE

Claude A. Gratzmuller, 30, avenue georges Mandel, 75116 Paris, France

Filed Apr. 22, 1988, Ser. No. 184,938
Claims priority, application France, Apr. 29, 1987, 87 06077
Int. Cl.⁴ F15B *13/042*
U.S. Cl. 137—596.18 **6 Claims**



1. An open-center three-way hydraulic valve in particular for the hydraulic control circuit of an electric circuit-breaker in which the moving contact is actuated by a differential jack, comprising an admission valve-head and a drain valve-head which are physically independent but interact with each other in a movement of thrust, said admission valve-head being urged toward the closed position by a spring and said drain valve-head being actuated toward the closed position by pressurization of a hydraulic pilot jack, wherein said valve has a second spring which produces action on the drain valve-head so as to urge said valve-head to the closed position, wherein said second spring is more powerful than the first spring and wherein provision is made on the drain valve-head for a resilient semi-locking mechanism having limited resistance which is adapted to retain the drain valve-head in the open position in opposition to the action of the second spring in the absence of hydraulic pressure within the pilot jack and which is adapted to release said valve-head up to its closed position when said valve-head is subjected both to the action of said second spring and to the action of the pressurized pilot jack.

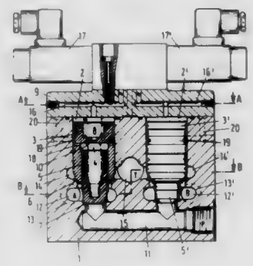
4,794,951

BUILT-IN TWO-WAY DIRECTIONAL CONTROL VALVE

Clemens Ryzner, Sprockhovel, Fed. Rep. of Germany, assignor to Paul Pleiger Maschinenfabric GmbH & Co. KG, Witten, Fed. Rep. of Germany

Filed Jul. 22, 1987, Ser. No. 76,361
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3625058
Int. Cl.⁴ F15B *13/043*
U.S. Cl. 137—596.15 **8 Claims**

1. A valve comprising:
a block having at least one bore in the block;
an outer valve seat within the bore;
an outer piston displaceably arranged in the bore, having an upper side and a lower side, wherein pressure is supplied to the upper side, said outer piston being operable to open and close pressure lines in the block;
an outer spring means, adjacent to the outer piston, to press the outer piston into engagement with the outer valve seat;
at least one inner valve seat, having a smaller diameter than the outer valve seat, formed at an indentation in the bore;
at least one inner piston, displaceably arranged within a blind bore that is coaxially aligned and within the outer



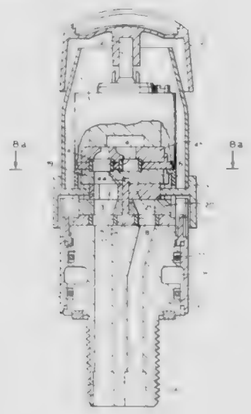
piston, having a front end that projects beyond the outer piston, said inner piston being operable to open or close pressure lines in the block;
at least one inner spring means, adjacent to the inner piston and within the blind bore to press the inner piston into engagement with the inner valve seat; and
at least one pressure-medium line, connected to a pressure supply means and a radial bore in the outer piston, for supplying pressure between the outer piston and the inner piston.

4,794,952

COMBINATION MIXING VALVE AND APPLIANCE VALVE ASSEMBLY

Bernhard Burkard, Bremm, Fed. Rep. of Germany, assignor to American Standard, New York, N.Y.

Filed Jan. 29, 1988, Ser. No. 150,177
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1987, 3703239; Feb. 4, 1987, 8701712[U]
Int. Cl.⁴ F16K *11/06*
U.S. Cl. 137—597 **9 Claims**



1. In combination comprising:

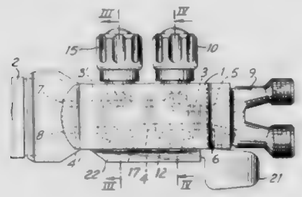
a mixing valve assembly of the single handle type and an appliance valve assembly;
a housing mounted to a manifold;
said manifold including hot and cold water passages to connect to a source of hot and cold water, a mixed water passage to discharge hot and/or cold water through said mixing valve assembly, and at least one passage to connect to an appliance;
said mixing valve and appliance valve assembly is axially positioned in said housing and mounted to said manifold in watertight connection;
said mixing valve assembly having hot and cold water inlets and a mixed water outlet operably coupled in watertight connection to corresponding passages in said appliance valve assembly;
said appliance valve assembly including top and bottom stationary discs having hot and cold water ports and a mixed water port formed therein, said bottom stationary disc including an appliance outlet port coupled in watertight connection to said appliance outlet passage in said manifold, and a rotatable disc disposed between said top and bottom stationary discs in sealing relation therewith, and including hot and cold water ports and a mixed water port; and
an actuating means mounted on said housing and operably coupled to said rotatable disc so that when rotated, said disc is shifted between its opened and closed positions for delivering water to said appliance.

4,794,953

TORCH DEVICE WITH OXYGEN AND COMBUSTION GAS SUPPLY

Philippe Delaplace, Lausanne, and Hans-Theo Steine, Chavannes, both of Switzerland, assignors to Castolin S.A., Saint-Sulpice, Switzerland

Filed Oct. 9, 1986, Ser. No. 917,017
Claims priority, application Switzerland, Oct. 9, 1985, 04371/85
Int. Cl.⁴ F16K *7/00*
U.S. Cl. 137—630.19 **4 Claims**



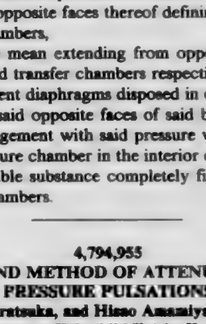
1. A torch device with a torch body having separate gas ducts for oxygen and a combustion gas, wherein these gas ducts each extend between a respective inlet opening adapted for connection to a corresponding gas source and an outlet opening adapted for connection to a mixing and guiding device which can be exchangeably coupled with the torch body, and wherein in each of the gas ducts are provided a regulating valve for controlling the respective gas flow rate as well as a shut-off valve for switching the respective gas flow on and off, wherein these regulating valves are arranged contiguously on one side of the torch body, a corresponding shut-off valve being arranged on the opposite side of the torch body substantially opposite each of the regulating valves, the outlet of each of the regulating valves being connected with the inlet of the corresponding shut-off valve and the inlets of the regulating valves and the outlets of the shut-off valves communicating respectively with the inlet and outlet openings of the corresponding gas ducts, said gas ducts being formed by bores in the torch body extending substantially parallel to each other and passages for connection and communication with the regulating valves and the shut-off valves being formed by bores in the torch body extending substantially orthogonal with respect to said gas ducts, and wherein a common actuating device for the oxygen and the combustion gas shut-off valves is provided and arranged in such a way that, when switching-off, the shut-off valve for the combustion gas in completely closed before the closing of the shut-off valve for oxygen starts.

4,794,954

APPARATUS AND METHOD FOR PREVENTION OF PULSATING FLOW IN LIQUID CHROMATOGRAPH

Toshio Tokuda, Kamakura; Tsunemi Tokieda, Yokohama, and Norio Ishida, Kawasaki, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP86/00242, § 371 Date Jan. 13, 1987, § 102(e) Date Jan. 13, 1987, PCT Pub. No. WO86/06815, PCT Pub. Date Nov. 20, 1986
PCT Filed May 13, 1986, Ser. No. 22,447
Claims priority, application Japan, May 13, 1985, 60-99640
Int. Cl.⁴ F16L *55/04*
U.S. Cl. 138—30 **2 Claims**



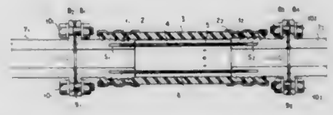
1. Apparatus for the prevention of pulsating flow in a liquid chromatograph comprising:
a pair of pressure vessels each having an open side and a hollow interior,
a liquid flow block disposed between said vessels and having a recess in opposite faces thereof defining a pair of liquid transfer chambers,
liquid passage mean extending from opposite ends of said block to said transfer chambers respectively,
a pair of resilient diaphragms disposed in overlying engagement with said opposite faces of said block respectively and in engagement with said pressure vessels to define a sealed pressure chamber in the interior of each vessel and a compressible substance completely filling each of said pressure chambers.

4,794,955

HOSE FOR AND METHOD OF ATTENUATING FLUID PRESSURE PULSATIONS

Kikuo Ejima, Hiratsuka, and Hisao Amanuya, Yokohama, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 15, 1987, Ser. No. 61,519
Claims priority, application Japan, Jun. 16, 1986, 61-138333
Int. Cl.⁴ F16L *55/04;* **F15D** *1/02;* **F17D** *1/20*
U.S. Cl. 138—30 **6 Claims**



1. A fluid pressure wave motion attenuating device for transmitting a fluid under pressure between a pair of oppositely

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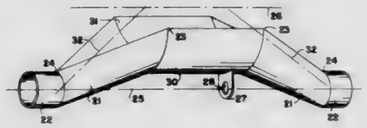
disposed fluid ducts comprising: a pair of couplings, a hose adapted to be fixed at its opposite end portions to said ducts through said pair of couplings with each of said couplings fixed to one of said end portions of said hose by means of a crimp hose-fitting, a flexible inner tube coaxially mounted in said hose to form a main conduit internally of said inner tube and an annular space between said hose and said inner tube, said inner tube being fixed at its opposite end portions to said pair of couplings and an aperture through said flexible inner tube in the vicinity of an end portion of one of said couplings and providing fluid communication between said main conduit and said annular space between said hose and said inner tube, whereby said annular space serves as a fluid pulsation-absorption side-branch of said device.

4,794,956

AIR CONDUIT FOR MANHOLE

Russell B. Gordon; Jimmy A. Gordon, both of Atlantic Beach, Fla., and Marion W. Smith, Daphne, Ala., assignors to Saddle Vent Inc., Atlantic Beach, Fla.

Filed Jul. 10, 1987, Ser. No. 71,886
Int. Cl.[4] F15D *1/04*
U.S. Cl. 138—39 **25 Claims**



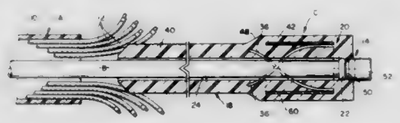
1. A conduit for supplying air to an enclosure through a manhole with minimum obstruction to a person passing through the manhole, the conduit comprising an elongated, substantially straight central section having a cross section in the general shape of a thin crescent or a thin segment of a circle so as to minimize obstruction within the manhole through which said central section is adapted to be received, two intermediate sections, attached respectively to each end of said central section and having cross sectional shapes varying from the shape of said central section at the juncture with said central section tapering to a circular shape at the outer end of said intermediate section, and two outer cylindrical sections, respectively attached to the outer end of each of said intermediate sections, said intermediate sections being angularly disposed with respect to said substantially straight central section such that said outer cylindrical sections are directed away from the manhole when said central section is disposed in place within the manhole.

4,794,957

BENDING STRAIN RELIEF FOR HOSE BUNDLE

Allan R. Metzler, Jr., Houston, Tex., assignor to PMI Industries, Inc., Cleveland, Ohio

Filed Feb. 20, 1987, Ser. No. 17,070
Int. Cl.[4] F16L *11/00*
U.S. Cl. 138—109 **10 Claims**



1. In combination, a cable structure having a generally constant first diametrical dimension along its axial length and an enlarged diametrical dimension coupling area at an outer terminal end and an apparatus for limiting flexural fatigue and kinking of said cable structure, said apparatus comprising:

an elongated flexible member having a central opening extending between first and second ends, said opening having a constant, predetermined diametrical dimension greater than the first diametrical dimension and less than the enlarged diametrical dimension of the cable structure to define a generally annular space with the cable structure along the first diametrical dimension and a secure interference engagement with the coupling area; and,

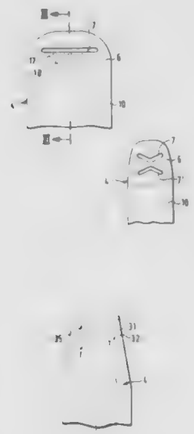
means for reinforcing said flexible member along a generally axial dimension thereof, said reinforcing means encapsulated within said flexible member and extending partially along said flexible member axial dimension for varying the flexural strength thereof.

4,794,958

AUXILIARY NOZZLE FOR AIR JET LOOM

Dirk Maes, Zonnebeke; Patrick Nuytten, Ieper; Marnick Cardoen, Zonnebeke; Philippe Van Bogaert, Schaarbeek; Jozef Verhulst, Zillebeke; Gilbert Dejonghe, Beselare, and Jozef Trioen, Dikkebus, all of Belgium, assignors to Picanol N.V., Belgium

Filed Nov. 17, 1987, Ser. No. 121,861
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1986, 3639867; Dec. 17, 1986, 3643058
Int. Cl.[4] D03D *47/28*
U.S. Cl. 139—435 **17 Claims**



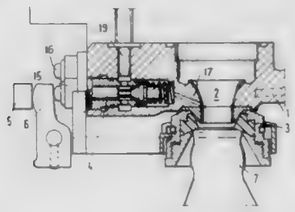
1. In an auxiliary nozzle for an air-jet loom, wherein the nozzle is arranged to be mounted on the loom batten for movement therewith into and out of the sheds formed by the loom, and is configured as a tubule closed and tapered blade-like at its free end so as to present at least one plane lateral surface through which at least one blow aperture extends for expelling a weft conveying jet of air in the direction of weft conveyance, the improvement wherein the blow aperture is in the shape of a slot having a length essentially extending transversely of the longitudinal tubule axis and having a width not exceeding 0.8 mm, said aperture including sidewalls contoured such that the minimum cross-section is bounded on at least one side of the slot by an edge having a thickness not exceeding 0.2 mm.

4,794,959

FILLING VALVE FOR COUNTERPRESSURE FILLING MACHINES

Heinrich Jordan, and Rolf Süshardt, both of Dortmund, Fed. Rep. of Germany, assignors to Holstein und Kappert GmbH

Continuation of Ser. No. 704,747, Feb. 25, 1985, abandoned.
This application Oct. 30, 1986, Ser. No. 926,805
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1984, 3406922
Int. Cl.[4] B65B *31/04*
U.S. Cl. 141—141 **4 Claims**



1. In a filling valve for a counterpressure filling machine for filling containers, such as bottles, cans and the like, comprising a filling valve body including a filling channel, a centering tulip for positioning a container below the filling channel in sealed connection therewith, second channels in said valve body coacting with said filling channel for at least one of evacuating, pressurizing and relieving a container located in said centering tulip, and auxiliary valves located within said second channels, wherein the improvement comprises each said auxiliary valve includes an axially elongated control bolt located in said filling valve body for opening one of said second channels, said control bolt having a first end located within said filling valve body and a second end located on the outside of said filling valve body, a cam plate located opposite the second end of said control bolt outside of said filling valve body and selectively engageable by the second end of said control bolt, and means associated with said centering tulip for cooperating with said control bolt and said cam plate when a container is present in the centering tulip for properly axially displacing said control bolt and opening the respective said second channel by axial displacement of said second end of said control bolt by said cam plate.

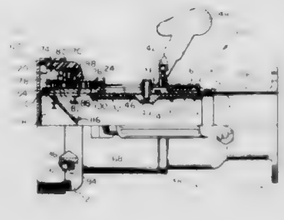
4. In a filling valve for a counterpressure filling machine for filling containers, such as bottles, cans and the like, comprising a filling valve body including a filling channel, a centering tulip for positioning a container below the filling channel in sealed connection therewith, second channels in said valve body coacting with said filling channel for at least one of evacuating, pressurizing and relieving a container located in said centering tulip, and auxiliary valves located within said second channels, wherein the improvement comprises each said auxiliary valve includes an axially elongated control bolt located in said filling valve body for opening one of said second channels, said control bolt having a first end located within said filling valve body and a second end located on the outside of said filling valve body, a cam plate located opposite the second end of said control bolt outside of said filling valve body, and means associated with said centering tulip for cooperating with said control bolt and said cam plate when a container is present in the centering tulip for properly displacing said control bolt and opening the respective said second channel, said control bolt comprises a first section for opening one of said second channels and a second section forming the second end of said control bolt and spaced in the axial direction of said control bolt from said first section, means selectively positionable between said first and second sections of said control bolt for effecting the opening of the one of said second channels, and said means associated with said centering tulip being engageable with said means selectively positionable between said first and second sections of said control bolt for opening said second channel, said means selectively positionable between said control bolt sections comprises a spherical member, and said means associated with said centering tulip comprises a bolt engageable with said spherical member and arranged to position said spherical member between the first and second sections of said control bolt when said centering tulip positions a container below the filling channel in sealed connection therewith.

4,794,960

PRESSURE FUEL NOZZLE

Frank D. Hawley, Mt. Clemens; Russell L. Rogers, Mundy; Alan R. Allread, and Paul J. E. Fournier, both of Jackson, all of Mich., assignors to Aeroquip Corporation, Jackson, Mich.

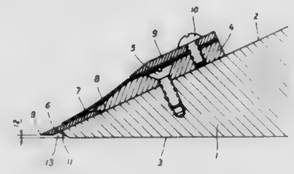
Filed Apr. 9, 1987, Ser. No. 36,895
Int. Cl.[4] B65C *3/00*
U.S. Cl. 141—384 **5 Claims**



1. A fueling nozzle for use with a pressurized fuel conduit and a valved tank inlet comprising, in combination, a tubular body having an inlet end and an outlet end and a passage defined therethrough having a longitudinal axis and in communication with said ends, conduit attachment means defined on said inlet end, a tubular cylindrical valve axially displaceable within said passage between a retracted position sealing said passage and an extended position extending said valve from said body outlet end and opening said passage for fluid flow therethrough, a cam sleeve circumscribing said valve and rotatably mounted on said body, a first operating handle mounted on said cam sleeve for rotating said cam sleeve, a cam slot defined in said cam sleeve having a portion obliquely related to said passage axis, a cam follower mounted on said valve located within said cam slot whereby rotation of said cam sleeve axially displaces said valve between said retracted and extended positions, a connection sleeve rotatably mounted on said body substantially concentric to said passage axis rotatable between inlet connection and disconnection positions and having a connection end adjacent said body outlet end, a second operating handle defined on said connection sleeve for handling said body and rotating said connection sleeve, tank inlet connection means defined on said connection sleeve connection end, tank inlet sensing means defined on said body adjacent to said body outlet end sensing mounting of said outlet end upon a tank inlet and movable between a first tank inlet mounted position and a second tank inlet dismounted position, and first interlock means interposed between said sensing means and said connection sleeve permitting rotation of said connection sleeve relative to said body at said sensing means first position and preventing such relative rotation at said second position and second interlock means interposed between said connection sleeve and said cam sleeve preventing rotation of said connection sleeve on said body from said connection position to said disconnection position unless said valve is in said retracted position.

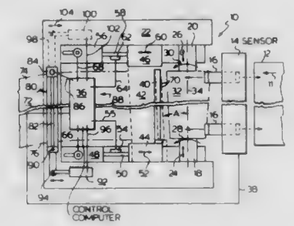
VOL 1098 ISS 1 JA 3 1989 UMI

4,794,961
VENEER KNIFE
Tremo Bonac, 3636 30th Avenue, Vancouver, British Columbia, Canada (V6S 1W8)
Filed May 2, 1986, Ser. No. 859,439
Int. Cl.[4] B27L 5/00
U.S. Cl. 144—212 15 Claims



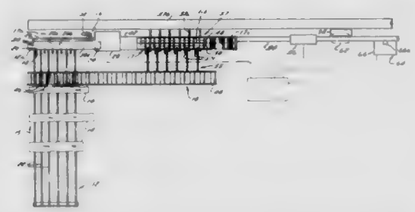
1. A veneer knife assembly which tapers towards one end thereof and comprising:
a blade holder;
a blade having opposite first and second flat sides, a first edge at the one end of the assembly and being sharp for cutting, and a second edge opposite the first edge;
first means connected to the blade holder for contacting and supporting the first side of the blade;
second means connected to the blade holder and engaging the blade adjacent the second edge for inhibiting movement of said second edge away from the first means and away from said one end of the assembly; and
third means for resiliently biasing the blade towards the first means, the blade being slidably received between said third means and said first means.

4,794,962
VENEER CLIPPER
Robert M. Knudson, Coquitlam, Canada, assignor to MacMillan Bloedel Limited
Filed Apr. 7, 1988, Ser. No. 178,930
Int. Cl.[4] B27L 5/00
U.S. Cl. 144—357 7 Claims



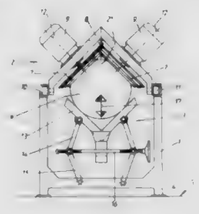
1. A method of trimming veneer peeled on a taper so that said peeler veneer has a longer side edge and an opposed shorter side edge into discrete full or partial veneer panels, each said veneer panel defined on two sides by said longer and shorter side edges and by a leading and a trailing edge formed by clipping with a clipping knife comprising adjusting the angle of the clipping knife to the normal path of travel of said veneer to clip said veneer into full pacls each having its respective leading and trailing edges substantially parallel and into partial panels each having its trailing edge at an acute angle to its respective leading edge and flowing from said its shorter side to its longer side to tend to reduce the accumulated difference in length between said shorter and said longer sides.

4,794,963
METHOD AND APPARATUS FOR OPTIMIZING THE CUTTING OF RAW BOARDS INTO PRODUCT BOARDS
Steven J. Oppeneer, Hingham, Wis., assignor to Nemschoff Chairs, Inc., Sheboygan, Wis.
Filed Oct. 5, 1987, Ser. No. 104,769
Int. Cl.[4] B27B 1/00, 27/00; B27M 1/00
U.S. Cl. 144—358 15 Claims



1. A method for optimizing the yield of a generally rectangular raw board, having defects randomly located therein, into a number of product boards not having defects according to predetermined specifications, said number and specifications being stored in a manifest in an electronic computer means, and for minimizing waste in the operation of cutting said raw board, said manifest including a product board width which is the largest product board width and a product board width which is the smallest product board width of said manifest, said method comprising the steps of:
determining a first clear width as near as possible to a near edge of said raw board;
determining a full width on said raw board;
transmitting said first clear width and said full width to said electronic computer means;
cutting off that portion of said raw board between said near edge and said first clear width as waste, while calculating an optimum solution for said product boards to be cut, so as to result in the least amount of waste of said raw board;
marking all defects within said largest product board with;
cutting a first sub-board from said raw board lengthwise, with the width thereof being determined according to the solution provided by said electronic computer means, leaving a remainder board; and
thereafter cutting said first sub-board transversely into at least one product board, thereby removing any waste therefrom, according to said solution.

4,794,964
METHOD AND APPARATUS FOR EDGING BOLES
Johann Wolf, Muhldorf 86, A-4644 Scharnstein, Austria
Filed Sep. 18, 1986, Ser. No. 908,819
Claims priority, application Austria, Sep. 30, 1985, 2828/85
Int. Cl.[4] B27B 1/00
U.S. Cl. 144—378 8 Claims

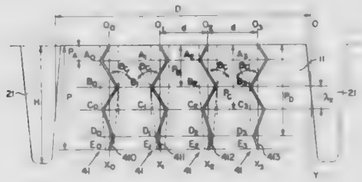


1. A three-step method for the manufacture of beams of

truncated pyramidal cross section enclosed by four flat sides that are perpendicular to each other but spaced apart, comprising positioning a bole on a support, forming two said sides at right angles to each other simultaneously, turning the bole 180° on the support, and forming the other two sides simultaneously.

4. Apparatus for the manufacture of beams from boles, comprising a holder on which a said bole rests stationary, said holder having stationary bole-supporting surfaces disposed at right angles to each other, a pair of tools having working faces for forming on a bole flat surfaces disposed at right angles to each other, said working faces being respectively parallel to said supporting surfaces, means for moving said tools and said holder toward and away from each other, means mounting said pair of tools on a common support, and means mounting said support for horizontal movement relative to said holder in a direction parallel to the length of a said bole on said holder.

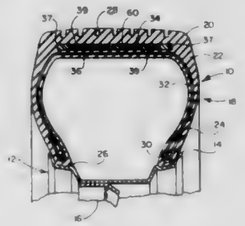
4,794,965
TREAD FOR RADIAL TIRE THE ELEMENTS IN RELIEF OF WHICH ARE PROVIDED WITH INCISIONS HAVING BROKEN LINE OR UNDULATED LINE TRACES IN THE DIRECTION OF THEIR DEPTH
Alain Laguier, Romagnat, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand Cedex, France
Filed Mar. 1, 1988, Ser. No. 162,664
Claims priority, application France, Mar. 10, 1987, 87 03371
Int. Cl.[4] B60C 11/12
U.S. Cl. 152—209 R 9 Claims



1. A tread for tires with radial carcass reinforcement, comprising at least elements in relief or blocks, separated by circumferential grooves and transverse grooves and provided with incisions of a width between about 0.1 mm and 2 mm, the incisions having on the surface of the tread rectilinear traces which form with the axial direction angles at most equal in absolute value to 30° and which are parallel to each other and to the traces of the transverse grooves, two adjacent incisions defining a strip of rubber the axial dimension of which is at least equal to 30% of the corresponding axial width of the element in relief, characterized by the fact that each element in relief comprises an even number of incisions of equal depth and having in cross-section over the entire depth broken line or undulated line traces with mean axes perpendicular to the surface of the tread and formed of segments forming angles defining crests, said segments forming angles which are other than zero and at most equal to 40° with the normal to said surface, the trace of an incision being a mirror image of the trace of a circumferentially adjacent incision.

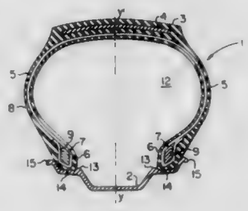
4,794,966
RUN-FLAT TIRE INCORPORATING BAND SEGMENT AND COIL MEMBERS
Edward G. Markow, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Apr. 21, 1987, Ser. No. 40,891
Int. Cl.[4] B60C 17/00
U.S. Cl. 152—516 7 Claims

1. In a run-flat pneumatic tire including an elastomeric casing with a tread formed in a crown portion thereof and sidewalls extending from the crown portion to generally circular beads adapted to normally seat themselves in air tight secured relationship with a wheel, a combined structure for resisting compressive forces on the tire when deflated, the structure comprising:
a prestressed helical coil having adjacently positioned windings embedded in said crown portion;
a strip of material wrapped around the exterior of the coil



and bonded thereto for ensuring permanent retention of the coil in a prestressed condition;
a plurality of resilient coaxially spaced band segments located within the crown portion and laterally adjacent the coil wherein the segments reduce the interlinear shear stresses exerted by the coil when the tire is deflated; and
a plurality of radial means embedded within the casing for transmitting compressive load forces to the combined resistive structure when the tire is deflated.

4,794,967
PNEUMATIC TIRE HAVING BEAD RINGS EACH FORMED BY A STACK OF RIBBONS OF CURVED SHAPE
Jean L. Charvet, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Mar. 1, 1988, Ser. No. 162,605
Claims priority, application France, Mar. 12, 1987, 87 03526
Int. Cl.[4] B60C 15/04
U.S. Cl. 152—539 3 Claims



1. A pneumatic tire mountable on a rim, the tire having beads each of which is reinforced b at least one bead ring formed of a stack of ribbons of curved shape, the bead ring being characterized by the following features when the tire is mounted on the rim:
(a) the concavity of the ribbons faces the axis of rotation of the tire;
(b) in radial section, a straight line connecting the ends of any and all ribbon forms with the axis of rotation of the tire an acute angle α such that $\alpha \geqq \beta + 5$ if β is positive and $\alpha \geqq 5$ if β is negative, β being the angle of the bead seat of the rim, α and β being expressed in degrees, the end of the ribbon arranged towards the inside of the tire being closer

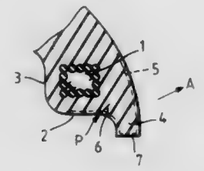
VOL 1098 ISS 1 JAN 3 1989 UMI

to the axis of rotation of the tire than the end of the ribbon arranged towards the outside of the tire.

4,794,968
TIRES

Phillip N. Griffiths, and Thomas Holmes, both of Sutton Coldfield, England, assignors to S P Tyres U K Limited, Birmingham, England

Filed Jul. 16, 1987, Ser. No. 74,057
Claims priority, application United Kingdom, Jul. 16, 1986, 8617412
Int. Cl.[4] B60C *15/02, 5/16*
U.S. Cl. 152—544 **10 Claims**



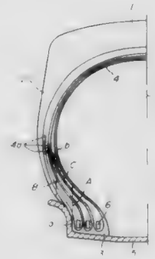
1. A tire, comprising:
a tread portion having respective sidewalls;
a pair of beads formed on said sidewalls, each of said beads including:
a substantially inextensible annular bead core,
a bead seat,
an extended toe portion of elastomeric material extending lengthwise from said bead core in a direction radially and axially inwards thereof, and having a rigidity in the direction of its length such that, during use of said tire on a wheel rim having a groove complementary to said toe and engaging said toe, when an axially inward force is applied to said tread portion, a radially axially outwardly directed force is generated at said bead core for retaining said bead, said toe portion having a substantially continuous, circumferentially extending toe decoupling means provided in the form of a cut, groove, or notch and located at a junction of said tire bead seat and said toe portion, for decoupling said toe portion from said bead during bending of said toe portion axially inwards of said tire.

4,794,969
HEAVY DUTY PNEUMATIC BIAS TIRE

Tetsuhiko Sato, and Osamu Inoue, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 18, 1986, Ser. No. 943,005
Claims priority, application Japan, Dec. 20, 1985, 60-285823
Int. Cl.[4] B60C *15/05, 9/06*
U.S. Cl. 152—545 **10 Claims**

1. A heavy duty pneumatic bias tire comprising; a carcass of bias structure composed of a plurality of carcass plies each containing organic fiber cords and a plurality of bead rings spaced from each other in each of bead portions of the tire, both end portions of a plurality of the carcass plies being turned-back around each of the bead rings from the inside to the outside of the tire, an axial distance "L" measured between a plane "A" parallel with the equational plane at each of the opposite ends "a" of the width "W" between the bead heels of said tire when mounted, and a plane "B" parallel with the equational plane at the axial outermost point "b" on the inner surface of each of sidewalls of the tire being at least 0.02 times the width "W", wherein the ends of the carcass plies turned-back around the bead rings except the axial innermost bead ring in each of the bead portions are positioned outside of a region "C" which includes all positions of the tire sidewalls

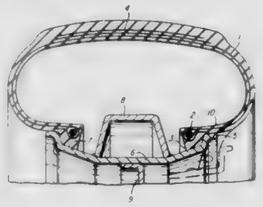


located between the planes "A" and "B" in each of the sidewalls.

4,794,970
VEHICLE WHEEL

Heinrich Huinink, Garbsen; Udo Frerichs, Langenhagen, and Dionysius Poque, Aachen, all of Fed. Rep. of Germany, assignors to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 665,305, Oct. 26, 1984, abandoned. This application Sep. 4, 1986, Ser. No. 904,791
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 3338971
Int. Cl.[4] B60C *17/04*
U.S. Cl. 152—158 **13 Claims**

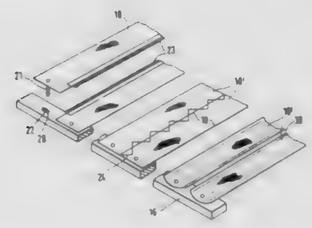


1. A vehicle wheel on which can be mounted a pneumatic tire including an axis of rotation and bead regions as well as being made essentially of rubber or rubber-like synthetic material and having a carcass with load-carrying cords which are anchored in the bead regions of said tire by means of inextensible core rings; said wheel having a rigid rim with laterally outwardly disposed rim flanges extending axially away from each other; and in a location disposed axially inwardly of said rim flanges on the radially outer side of said rim including respective seating surfaces for said bead regions of said tire;
the improvement in combination therewith which comprises
a support member that is disposed axially inwardly of said seating surfaces on the radially outer side of said rim; said support member having a diameter which is greater than the diameter formed by said rim flanges and which is sufficient for emergency operating capability without damage to the tire supported thereby with homogenous uniform pressure distribution along a substantially flat tire support surface for emergency operation capability; said tire having respective side walls, adjoining said bead regions, with each of said tire side walls, in the region of a given rim flange, extending laterally outwardly from a given core ring in a substantially flat manner when said tire is inflated and not under load, and in particular extending in an angular range of from 0° to 20° relative to said axis of rotation of said tire so that said tire side walls adjoining said bead regions are substantially flat against said rim flanges and extending axially away from each other and located radially inwardly relative to said support member diameter for emergency operating capability; said carcass having a neutral line which passes through the same region of a given rim flange in such a way as to avoid a turning point; said bead regions being pivotable, with said core rings having a predetermined diameter and being eccentrically disposed in bead regions thereof in such a way that when said tire is considered as tot he seating surface of said rim flange during installation, the bead region has an innermost diameter that lessens as a result of movement thereof during a change from a mounting position into an operating position of said tire relative to the seating surface of said rim flange although said core rings remain at the predetermined diameter, said tire side walls extending substantially flat outwardly from said bead regions and also extend substantially flat axially beyond said rim flanges in a parallel relationship spaced radially inwardly although extending spaced substantially horizontally axially of the tire support member during emergency operating capability.

4,794,971
AWNING

Viktor Lohausen, Goldmühlestrasse 99/2, D-7032 Sindelfingen, Fed. Rep. of Germany

Continuation of Ser. No. 685,327, Dec. 24, 1984, abandoned. This application Feb. 6, 1987, Ser. No. 11,458
Claims priority, application Switzerland, Dec. 30, 1983, 6993/83
Int. Cl.[4] E04F *10/06*
U.S. Cl. 160—66 **8 Claims**

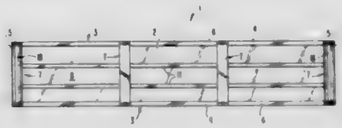


1. In an awning construction which blocks light and wind, while permitting passage therethrough of wind pressure above a predetermined level to prevent damage to said awning;
canopy means having a first end and a second end;
roller means for coiling-up said canopy means; the first end of said canopy means being connected to said roller means;
spanning means connected to said second end of said canopy means and movable relative to said roller means;
said canopy means including
a plurality of strip means forming a canopy and extending parallel to each other and substantially retained in a single plane between said roller means and said spanning means; each of said strip means being substantially impervious to air; said strip means each having lateral edges extending in a longitudinal direction of said strip means, said lateral edges of adjacent ones of said strip means being near enough to one another, while substantially not overlapping each other, to form a substantially continuous appearance for said canopy; said strip means having sufficient flexibility, when subjected to said wind pressure, to be deflected by said wind pressure above a predetermined level to individually form an arch to create a space between adjacent said lateral edges to permit the wind to pass through said canopy means; and
further comprising releasable fastening means on said lateral edges of said strip means for interconnecting the latter and for being automatically released under a predetermined tension.

4,794,972
DOOR LEAF MEMBER

Michael Hormann, Steinhagen, Fed. Rep. of Germany, assignor to Hormann KG Brockhagen, Steinhagen, Fed. Rep. of Germany

Filed Jan. 27, 1987, Ser. No. 7,106
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1986, 8601984[U]
Int. Cl.[4] F06B *3/12*
U.S. Cl. 160—236 **7 Claims**



1. Laminate door leaf member of a sectional multi-leaf overhead door adapted to be moved vertically or horizontally into a closed position, the door leaf member comprising a laminate sheet-metal portion and substantially C-shaped angled portions provided along longitudinal edges thereof and disposed so as to open towards each other and located on the side of the sheet-metal portion which faces an interior of an area to be closed, reinforcing strut means extending in a direction perpendicular to a direction of the longitudinal edges and in a direction of movement of the door provided at least at one of marginal zones of the door leaf member and also between the marginal zones for stabilizing the door leaf member, said reinforcing strut means being in contact with said laminate sheet-metal panel of the door leaf member, adhesive means securing said reinforcing strut means in a contact zone of the reinforcing strut means to an inside surface of the laminate sheet-metal panel, connection means providing a shape mating connection between the C-shaped angled portions and said reinforcing strut means including lug-shaped projections provided in one of the respective end sections of each reinforcing strut means or inner side walls of the C-shaped angled portions, and corresponding openings in the other of said end sections and inner side walls, said lug-shaped projections extending through and over the edges of said openings and being adapted to engage without any substantial play one of of openings provided in either the inner side walls of the C-shaped angled portions or said end sections of the reinforcing strut means, as viewed in a longitudinal direction of the reinforcing strut means.

4,794,973
DOOR SAFETY BAR

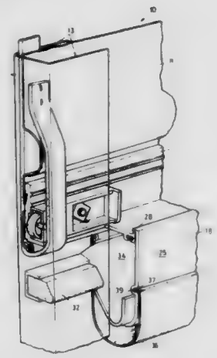
Milan Perisic, Holden Hill, Australia, assignor to Automatic Roller Doors Australia Pty. Ltd., Holden Hill, Australia

PCT No. PCT/AU86/00338, § 371 Date Jul. 2, 1987, § 102(e) Date Jul. 2, 1987, PCT Pub. No. WO87/03035, PCT Pub. Date May 21, 1987
PCT Filed Nov. 5, 1986, Ser. No. 87,229
Claims priority, application Australia, Nov. 6, 1985, PH3276
Int. Cl.[4] E06B *9/208*
U.S. Cl. 160—291 **11 Claims**

1. In a door of the roller or sliding type comprising a door curtain or panel having a leading edge which is guided for movement along guide channels engaging its lateral edges, a safety braking device comprising:
mounting means hingedly connected to the leading edge of

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said door curtain or panel for tilting movement about an axis parallel to the plane of the door curtain or panel, and resistance means carried on said mounting means, and arranged, upon appreciable tilting movement of said mounting means, to engage said guide channels for braking the movement of the door,



the arrangement being such that when the leading edge of the door encounters an obstruction in its path during closing thereof, said mounting means will tilt about its said hinge axis which in turn results in the door movement being braked by virtue of the interengagement of said resistance means and the guide channels.

4,794,974

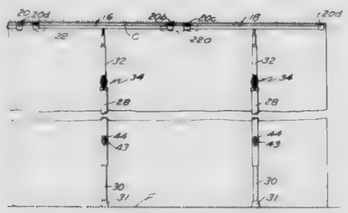
INTERIOR CURTAIN WALL

Charles E. Melino, 246 Welfare Ave., Warwick, R.I. 02888

Continuation-in-part of Ser. No. 836,814, Mar. 6, 1986, abandoned. This application Jan. 25, 1987, Ser. No. 66,219

Int. Cl.⁴ A47H *1/00*

U.S. Cl. 160—330 **3 Claims**



1. An interior curtain wall assembly disposed between a floor and a ceiling comprising a plurality of header elements having terminal ends, the ends of each header element connected to the end of an adjacent element by a flexible strap hinge and having a resilient tip thereon for engagement with said ceiling, said hinge spacing the ends of adjacent headers to allow folding of the assembly, a continuous flexible curtain fastened to each header throughout its length, and a plurality of support legs each being adjustable in length with a spring loaded foot at the lower end to maintain an upward force on each header, each leg engaging at least one header at its upper end and having a resilient foot at the lower end, said resilient tip preventing lateral displacement of the header elements on said ceiling and said resilient foot insuring positive engagement with the floor.

4,794,975

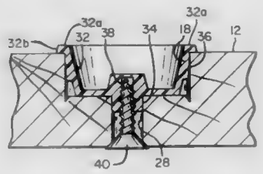
ANTI-SHIFT INSERT STRUCTURE FOR MATCHING COMPONENTS

Adolf P. E. Volkmann, 425 NE. 80th Ave., Portland, Oreg. 97213

Continuation-in-part of Ser. No. 891,667, Aug. 1, 1986, abandoned. This application Aug. 27, 1987, Ser. No. 90,049

Int. Cl.⁴ B22C *7/00, 9/02*

U.S. Cl. 164—29 **7 Claims**



1. A method of providing anti-shift function to a mold having horizontal wall means with cooperating surfaces and arranged to receive deposits of impression material which are used to form castings comprising

providing first and second separate insert means in mounted relation in a common bore made in opposite ones of said cooperating surfaces for making recessed and projecting contours in the impression material,

and then engaging projecting and recessed contours made in the impression material by said first and second insert means, respectively, to provide said anti-shift function.

2. Anti-shift structure for a mold having wall means with cooperating surfaces and arranged to receive deposits of impression material which are used to form castings, said structure comprising:

first insert means arranged to be secured to one of the cooperating surfaces of the mold wall means in projecting relation relative to said surface,

and second insert means separate from said first insert means arranged to be secured in inset relation in the other of the cooperating surfaces of the mold wall means,

said first and second insert means having impression forming portions arranged to make recessed and projecting contours respectively in the impression material,

said first insert means including a stem portion projecting in a direction opposite from its impression forming portion and arranged to project into a bore in the mold wall means,

said second insert means also including a projecting stem portion projecting in a direction opposite from its impression forming portion and also arranged to project into the bore in the mold wall means from the opposite side of said first insert means for accomplishing precise alignment of said first and second insert means,

and screw means securing said first and second insert means together in the mold wall means,

said first and second insert means being dimensioned and shaped such that said recessed and projecting contours in the impression material are arranged to have a close tolerance interfitting engagement when in facing relation to provide anti-shifting connection to opposed portions of the impression material.

4,794,976

MOLDING SAND LOADING AND INJECTING HEAD, IN PARTICULAR FOR MOLDED CORE FORMING MACHINES

Guido Peterle, Via Novara 37, 28021 Borgomanero (Prov. of Novara), Italy

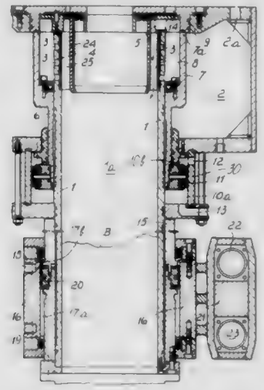
Filed Jun. 29, 1987, Ser. No. 68,516

Claims priority, application Italy, May 13, 1986, 20405 A/86

The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.

Int. Cl.⁴ B22C *15/24*

U.S. Cl. 164—201 **1 Claim**



1. A molding sand, loading and injecting head, in particular for molded core forming machines, comprising a supporting framework which supports a vertical cylindrical wall defining an inner chamber for injecting molding sand into a core box placed under said chamber, an external cylindrical chamber arranged around a top portion of said cylindrical wall containing compressed air adapted to be sent, both axially and transversely, to said inner chamber, a movable shutter device arranged coaxially and externally to said inner chamber for selectively allowing and preventing said compressing air to flow into said inner chamber, support and guiding means rigidly connected to said supporting framework, hydraulic operating means, including a hydraulically operated distributing valve, arranged coaxially to said inner chamber for vertically translating said inner chamber together with said shutter device, a cylindrical tubular body coaxially extending in said inner chamber at said top portion of said cylindrical wall, said cylindrical tubular body and said cylindrical wall defining, between each other, an annular interspace axially deviating compressed air injected at said top portion and compressed air radially injected into said inner chamber, wherein said support and guiding means comprises first and second coaxial cylindrical bodies, said first cylindrical body being rigidly connected to said cylindrical wall and said second cylindrical body being rigidly connected to said supporting framework, said coaxial cylindrical bodies forming between each other an annular interspace for an operating fluid, said interspace being divided in two separated interspace chambers by a hydraulical piston rigidly externally connected to said first cylindrical body and sealingly mounted against said second cylindrical body, said second cylindrical body having two separate inlets, selectively connected to a respective one of said interspace chambers and selectively fed with said operating fluid.

4,794,977

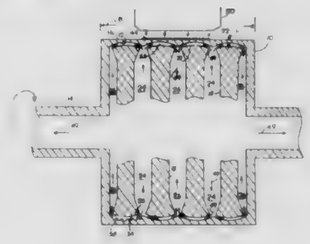
MELT SPIN CHILL CASTING APPARATUS

Arthur H. Iverson, 15315 Sobey Rd., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 716,815, Mar. 27, 1985, abandoned. This application Dec. 5, 1986, Ser. No. 938,281

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—423 **39 Claims**



1. In a chill block melt spinning apparatus of the type including a rotatable substrate wheel having a chill surface disposed to surface cooperating with said chill surface, and means for providing a flow of coolant liquid to remove heat from said heat exchange surface by formation of nucleate vapor bubbles on said heat exchange surface, the improvement wherein said apparatus includes:

means, disposed on said heat exchange surface for forming pressure gradients in said liquid having a component perpendicular to said heat exchange surface without substantially impeding the relative velocity between said heat exchange surface and said liquid, said component having a magnitude directly proportional to the square of the relative velocity between said heat exchange surface and said liquid, to facilitate removal of said nucleate bubbles.

4,794,978

SIDE DAM FOR A CONTINUOUS CASTING MACHINE

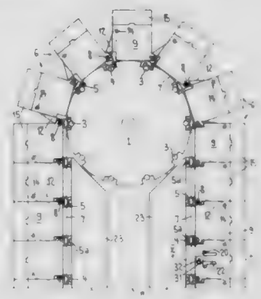
Wilhelm F. Lassener, Geriaflingen, Switzerland, assignor to Larex AG, Recherswil, Switzerland

Filed Jun. 22, 1987, Ser. No. 64,697

Claims priority, application Switzerland, Jul. 1, 1986, 2643/86; Aug. 25, 1986, 3410/86

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—431 **15 Claims**



1. A side dam for the lateral closing off of the casting mold of a continuous casting machine with travelling molds, said side dam comprising; elements which are linked to each other in a chain-like manner, and which join in the area of the casting cavity and travel along with the cast, whereby the path of motion of the side dam lies in a plane that is parallel to the planes of the mold walls in the area of the casting cavity,

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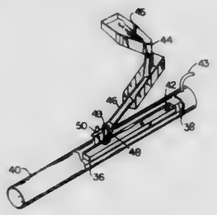
wherein each element has a swivel mounted foot pivotally connected to a first side of said element and a pivot mounted connection rod connected to a second side, wherein said connection rod is connected to the foot of an adjacent element.

4,794,979

METHOD FOR MELTING METAL, PARTICULARLY SCRAP, AND FORMING METAL BILLETS

Robert H. Gassner, Fullerton, and John J. Shaw, Westminster, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 15, 1984, Ser. No. 620,959
Int. Cl.[4] B22D *27/02*
U.S. Cl. 164—495 **26 Claims**



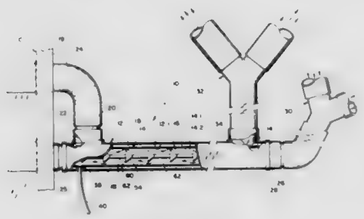
1. The process for producing a metal billet or slab which is substantially homogeneous, fine grained and free of freezing segregation, which comprises fusing said metal by an intense local heat source in the form of a plasma torch to provide a localized shallow molten pool of metal within a mold and traversing said mold substantially horizontally with respect to said heat source, at a controlled rate while maintaining said localized molten pool of metal within said mold adjacent to said local heat source, the rate of traverse being such that the rate of melting equals the rate of freezing and the size of said molten pool remains substantially constant, whereby freezing of said localized molten pool of metal occurs rapidly as the mold traverses with respect to said heat source.

4,794,980

AIR TO AIR HEAT EXCHANGER

Niilo A. A. Raisanen, Cokato, Minn., assignor to Raydot Incorporated, Cokato, Minn.

Filed Nov. 16, 1987, Ser. No. 121,129
Int. Cl.[4] F24H *3/02*; F24F *7/10*
U.S. Cl. 165—54 **10 Claims**



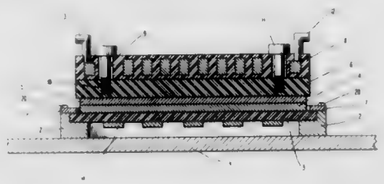
1. An air to air heat exchanger, comprising:
an elongate tubular outer housing for fresh intake air and having an exterior end and an interior end;
an elongate tubular exhaust air duct for providing exhaust air flow therethrough having a discharge end and an intake end, and the exhaust duct having a heat-exchanging perimeter surface and extending longitudinally through the outer housing, the intake end of the duct being located adjacent the interior end of the outer housing, and the outer housing and exhaust air duct defining an annular fresh air flow passage therebetween, for providing fresh air flow therethrough,
means for supporting the exhaust duct within the outer housing and isolating the interior of the duct from the annular flow passage,
a plurality of elongate annular turbulators spaced from each other along and within the elongate exhaust duct, each of the turbulators having a convergent end and a base end and a smooth geometric exterior surface therebetween, the turbulators increasing in cross sectional area in a direcion from the convergent ends to the base ends thereof, the turbulators being regularly spaced along a longitudinal axis of the exhaust duct and the convergent end of each turbulator facing the base end of the next succeeding turbulator, and the turbulators being positioned within the exhaust duct so that the convergent ends thereof are oriented in a direction to extend toward said intake end of the duct, and
means for supporting the turbulators within the exhaust chamber, the turbulator support means including a rod, a pair of support grids, and a plurality of tubes, the rod extending centrally through the exhaust duct, turbulators and tubes, the grids traversing the ends of the duct and being secured to the rod, the tubes separating the turbulators and insulating the rod.

4,794,981

COOLING SYSTEM

Tsukasa Mizuno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 9, 1987, Ser. No. 36,437
Claims priority, application Japan, Apr. 9, 1986, 61-82724
Int. Cl.[4] F28F *7/00*; H05K *7/20*
U.S. Cl. 165—80.4 **8 Claims**



1. A cooling arrangement for electronic components comprising:
a substrate having first and second surfaces,
at least one electronic component mounted on the first surface of said substrate,
a first layer of adhesive material provided on said second surface of said substrate,
a second layer of a material having a low melting point relative to said first layer, said second layer of material being provided on said first layer, and
heat-radiating means on said second layer to outwardly radiate heat transmitted from said components through said substrate, said first layer and said second layer.

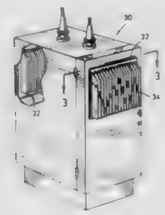
4,794,982

HEAT TRANSFER ENCLOSURE

Archibald Corkigian, Hamilton, Canada, assignor to Westinghouse Canada Inc., Hamilton, Canada

Filed Dec. 28, 1987, Ser. No. 138,707
Claims priority, application Canada, Jul. 9, 1987, 541741
Int. Cl.[4] H01F *27/08*; F28F *19/00*
U.S. Cl. 165—104.33 **4 Claims**

1. An enclosure for housing electrical apparatus comprising a ferrous metal housing which is capable of operation in a damp corrosive atmosphere, said electrical apparatus being capable of generating heat, said enclosure being sealed to prevent the ingress of water to the interior thereof, heat dissipation means comprising an air to air heat exchanger being located in at least one of the sidewalls of said enclosure, said



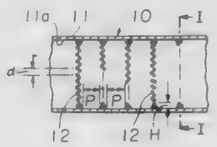
heat exchanger having a series of raised fins on opposing surfaces thereof to enhance the heat exchange capability thereof, said heat exchanger being formed from a cast ferrous material which is resistive to corrosion.

4,794,983

HEAT EXCHANGER TUBE FOR EVAPORATION OR CONDENSATION

Takayuki Yoshida, Shizuoka; Masao Fujii, Amagasaki, and Kiyoshi Sakuma, Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1988, Ser. No. 141,509
Claims priority, application Japan, Feb. 2, 1987, 62-22113
Int. Cl.[4] F28F *13/00*
U.S. Cl. 165—133 **2 Claims**



1. A heat exchanger tube for evaporation or condensation, said heat exchanger tube comprising:
(a) projected parts having cavities in which bubble nuclei form, said projected parts being provided on at least one of the inner wall surface and the outer wall surface of a tubular body, and
(b) plain parts formed on the same surface as the projected parts so that the projected parts and the plain parts are interspersed,
(c) wherein the projected parts are provided on the wall surface so that the intervals P between the projected parts and the height H of the projected parts satisfy the following expressions:

$$P \leqq 4d,\ 10 \leqq P/H \leqq 20$$

wherein d represents the diameter of a bubble nucleus.

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ARRANGEMENT FOR INCREASING HEAT TRANSFER COEFFICIENT BETWEEN A HEATING SURFACE AND A BOILING LIQUID

Pang-Yien Liu, No. 16-4, Fu-Ho St., Taichung City, Taiwan

Continuation-in-part of Ser. No. 932,522, Nov. 10, 1986, abandoned. This application Nov. 5, 1987, Ser. No. 116,974
Int. Cl.[4] F28F *13/18*
U.S. Cl. 165—133 **29 Claims**



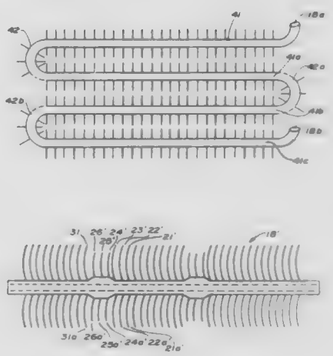
1. An apparatus for enhancing the transfer of heat in nucleate boiling comprising:
a heating wall having a heating surface;
cover means which is of a single layer and separate from said heating wall, being disposed over and spaced apart from said heating surface for diverting vapor to flow along said heating surface, said cover means having opening means to permit vapor to flow out therethrough, said opening means having an effective diameter greater than an average distance between said heating surface and said cover means; and
spacer means disposed between said heating surface and said cover means.

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FINNED HEAT EXCHANGER TUBING WITH VARYING WALL THICKNESS

Roger Paulman, Barrington, and Franz X. Wohrstein, Park Ridge, both of Ill., assignors to Peerless of America Incorporated, Chicago, Ill.

Filed Apr. 29, 1987, Ser. No. 43,942
Int. Cl.[4] F28D *1/00*, *1/32*; F28F *1/30*
U.S. Cl. 165—150 **7 Claims**



1. A heat exchanger unit comprising:
an elongated one-piece tubular member generally rectangular in shape and having an upper wall, a lower wall, and first and second side walls,
at least one passageway through said tubular member between first and second ends thereof;
said one-piece tubular member being bent to define a plural-

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ity of pass portions and a plurality of return bend portions integral with said pass portions, with each return bend portion interconnecting a pair of adjacent pass portions at the ends thereof,

at least two groups of fins formed integrally with said tubular member, said groups of fins being spaced from each other longitudinally along at least said upper wall on the outer surface thereof and projecting outwardly from said tubular member;

said first group of fine being provided at said return bend portions and said second group of fins being provided at said pass portions; and

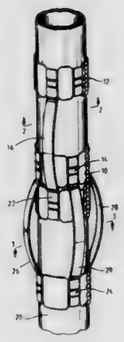
the thickness of at least said upper wall at said return bend portions being greater than the thickness of said upper wall portions at said pass portions, and the fins in the return bend portion being shorter than the fins in the pass portions.

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RETICULATED CENTRALIZING APPARATUS

Friedrich H. Langer, Houston, Tex., assignor to Weatherford U.S., Inc., Houston, Tex.

Filed Nov. 27, 1987, Ser. No. 126,193
Int. Cl.[4] E21B *17/10*
U.S. Cl. 166—241 **11 Claims**



1. A reticulated centralizing apparatus for a tubular to assist in centering the tubular in an annular space in a bore into which the tubular is inserted, the centralizing apparatus comprising

two or more pairs of spaced apart and aligned collars adapted to encircle the tubular,

a plurality of spring bows extending between and secured to the collars, each bow having two ends and an outwardly convex mid-portion,

each pair of collars having emplaced therebetween only one collar of one of the other pair or pairs of collars.

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SOLVENT FLOODING WITH A HORIZONTAL INJECTION WELL AND DRIVE FLUID IN GAS FLOODED RESERVOIRS

George P. Kokolis, Houston, Tex., and Kevin P. McCoy, Calgary, Canada, assignors to Texaco Inc., White Plains, N.Y. and Texaco Canada Resources, Calgary, Canada

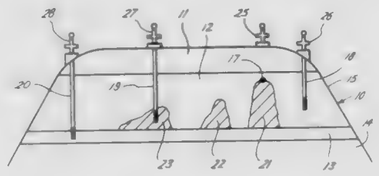
Filed Jan. 4, 1988, Ser. No. 140,708
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—274 **17 Claims**

1. A method for recovering residual hydrocarbons from a reservoir having a substantial vertical thickness and an oil saturation relatively near residual oil saturation to gas, which comprises:

drilling and completing at least one horizontal injection well relatively near the top of the reservoir and relatively near a substantially vertically oriented boundary of the reservoir, said boundary being relatively impermeable to fluid flow;

drilling and completing a second injection well between the horizontal injection well and said vertical boundary of the reservoir;

injecting a miscible solvent into the reservoir through the



horizontal injection well to create a curtain of solvent falling through the reservoir;

injecting a drive fluid into the reservoir through the second injection well in a quantity sufficient to drive the curtain of falling solvent horizontally through the reservoir; and

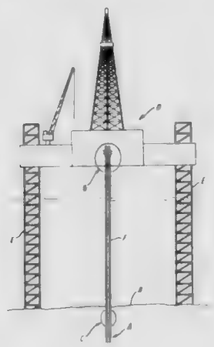
producing through at least one production well hydrocarbons and other fluids that have been banked in front of the horizontally driven falling solvent curtain.

4,794,988

SURFACE WELLHEAD

Bernard H. van Bilderbeek, Aberdeen, Scotland, assignor to Plexus Ocean Systems Limited, Aberdeen, Scotland, Scotland

Filed Jun. 22, 1987, Ser. No. 65,299
Claims priority, application United Kingdom, Jun. 21, 1986, 8615200
Int. Cl.[4] F21B *7/12*
U.S. Cl. 166—345 **10 Claims**



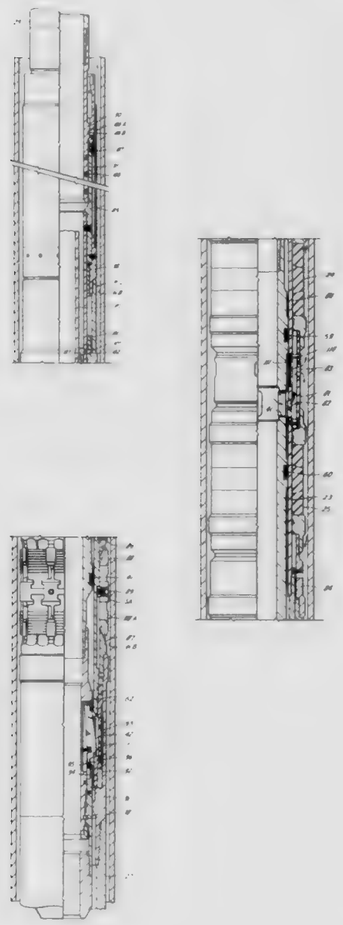
1. Wellhead casing tie-back apparatus usable with tubular casing having an upper end and a lower end for anchoring the upper end of the tubular casing at a wellhead, said wellhead being fixedly supported on a structure at a constant height above a mudline and fixedly positioned over a well, and tubular casing extending upwardly to the wellhead from a below-mudline location in said well at which location the lower end of said tubular casing is anchor, said wellhead casing tie-back apparatus comprising a lock member and a support surface disposed one on the tubular casing and the other on said structure, pretensioning means actuable prior to completion of anchoring of the upper end of the tubular casing at the wellhead to pretension the tubular casing between the upper end and the anchored lower end of the tubular casing, the lock member then being engaged with the support surface to anchor the upper end of the tubular casing at the wellhead and to retain the pretension in the tubular casing.

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WELL COMPLETION METHOD AND APPARATUS

Aubrey C. Mills, Houston, Tex., assignor to AVA International Corporation, Houston, Tex.

Filed Nov. 8, 1985, Ser. No. 796,153
Int. Cl.[4] F21B *33/124*
U.S. Cl. 166—387 **6 Claims**



1. A well packer for use in closing off the annular space between a tubing string and well bore intermediate perforated production zones in the bore, comprising

a tubular body including a mandrel having a bore therethrough,

normally retracted packing elements disposed about the mandrel in vertically spaced relation,

means carried about the mandrel for expanding the packing elements into and locking them in sealing engagement with the well bore intermediate said zones, and

means in the body including a test port in the mandrel connecting the mandrel bore with the outside of the body intermediate the expanded packing elements,

the mandrel bore having a receptacle in its upper end to receive the lower end of a tubing section,

locking elements which are carried by the mandrel for movement in and out of locking engagement with the tubing section, when so received, and

means for holding the locking elements in locking position, as the packer is lowered with the tubing section into the well bore, and then releasing them to move out of locking position and thus free the tubing section to be lifted from the receptacle in response to expansion of the packing elements.

2. In a method of completing a well, the steps of

installing as part of a tubing string a packer which includes a mandrel having a bore therethrough forming a continuation of the tubing string, vertically spaced, normally retacted packing elements about the mandrel, and a port in the mandrel connecting its bore with the outside of the mendrel intermediate the packing elements,

lowering the tubing string into the bore of the well with the packing elements retracted to dispose the packing elements and the mandrel between them opposite and unperforated section of the well bore intermediate perforated zones in the well bore,

expanding the packing elements into and locking them in sealing engagement with the unperforated section of the well bore, and

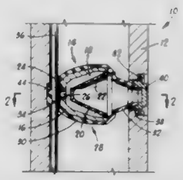
conducting test fluid through the tubing string and into the port for testing the packing elements.

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CORROSION PROTECTED SHAPED CHARGE AND METHOD

Robert S. Rigga, Grand Prairie, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed Jan. 6, 1987, Ser. No. 787
Int. Cl.[4] E21B *41/02, 43/16*
U.S. Cl. 166—902 **17 Claims**



1. In a shaped charge comprised of a bell-shaped casing, an explosive material disposed within said casing having a cavity formed therein and a liner disposed within the cavity formed of compressed powdered metal, the improvement comprising including a coating of an unsaturated organic compound con-

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sisting essentially of linseed oil on said compressed powdered metal liner whereby said liner is protected from corrosion attack without adversely affecting the performance of said charge.

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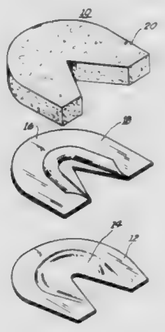
APPARATUS FOR THE TREATMENT OF LAMINITIS

James P. Houderich, 2988 Ribbon Ct., Ft. Meyers, Fla. 33905

Continuation of Ser. No. 738,988, May 29, 1985, abandoned. This application Dec. 24, 1986, Ser. No. 946,317

Int. Cl.[4] A01L *5/00*

U.S. Cl. 168—26 **17 Claims**



1. An apparatus for the treatment of laminitis in a horse, comprising:

a plate member sized, shaped and adapted for fastening to the hoof of a horse,

said plate member including an upwardly projecting portion for rotating the out of position coffin bone of the horse into the normal position and maintaining the coffin bone in the normal position for healing; and

support means, extending from the top of said upwardly projecting portion and being of sufficient thickness in the area substantially below the anterior-posterior dorsal edge of of the coffin bone to further position the coffin bone while minimizing the pressure being applied to the anterior-posterior dorsal edge of the coffin bone, said support means being substantially laterally immovable with respect to the horse's foot.

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HIGH CENTER SHOVEL

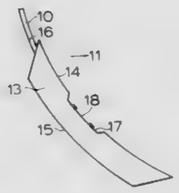
George Loch, Box 14, Glendon, Alberta, Canada T0A 1P0

Filed Feb. 19, 1987, Ser. No. 16,588

Claims priority, application Canada, Feb. 20, 1986, 502354

Int. Cl.[4] A01B *23/00, 35/24*

U.S. Cl. 172—721 **16 Claims**



1. A high centre shovel for use with ground working implements which include shanks or the like for supporting said shovels; said shovel comprising two elongated flanges diverging rearwardly from a common longitudinal apex and defining a V-shaped cross section with an unconstricted open rear side, the shovel being engageable upon the lower end of a shank, and means to detachably secure said shovel upon said shank, said means including a recessed bearing section located along the apex, intermediate the ends of said shovel and symmetrically located between the long edges thereof, said bearing section having a substantially flat bearing surface on the back side thereof, engageable upon said shank, and bolt means extending through said shovel and said shank, the width of said bearing surface being substantially equal to the width of said shank.

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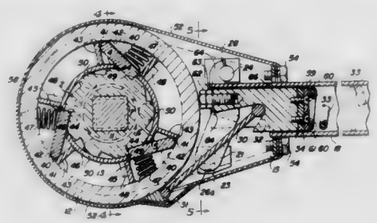
MANUAL TORQUE MAGNIFYING IMPACT TOOL

Oscar Swenson, 7315 E. Wikieup, Tucson, Ariz. 85715

Filed Apr. 29, 1988, Ser. No. 188,044

Int. Cl.[4] B25D *15/02*

U.S. Cl. 173—93.5 **12 Claims**



1. A manually operable torque magnifying impact tool comprising: a rotary toolhead, an annular inertia member surrounding said tool head, bearing means for supporting said inertia member direct on said tool head for relative angular rotation therewith on a common axis, a frame member transverse to said axis at opposite ends of said inertia member, a torque handle extending transversely of said said axis and connected to said frame member, bearing means coaxial with said axis and attached to said frame member guiding said tool head, said inertia member, said frame member and handle adapted for relative angular movement about said axis, an elongated power spring within said handle, coupling means between said inertia member and said power spring for storing and releasing energy, said tool head including a cylindrical portion having a series of circumferentially equally spaced elongated ratchet teeth around its cylindrical surface parallel to said axis, a pawl pivotally seated at one edge in a seat on said inertia member, said pawl biased by spring means for engagement of the unseated edge thereof with said ratchet teeth, cam means rigid with said frame member around said axis operationally contacting said pawl for its disengagement from and reengagement with said ratchet teeth to impart torque producing impact to said tool head on movement of said handle angularly in a predetermined direction about said axis relative to said tool head, a stop member on said member at times contacted forcibly by said unseated edge of said pawl following said disengagement of said pawl to stop rotation of said inertia member, a pivotal connection between said handle and said frame member to allow limited angular movement of said handle in one direction about said pivotal connection relative to said frame member about an axis parallel to axis of said inertia member and remote from the longitudinal axis of said handle, said coupling means between said inertia member and said power spring including a spring stop member on said handle to limit decompressive movement of said power spring and including a pitman acting pivotally on said inertial member near the peripheral surface thereof and connected pivotally to a crosshead member in contact with said power spring, the combination of said pitman, said spring stop, and said crosshead member providing for compression and decompression of said power spring on said movement of said handle about said axis relative to said tool head in said predetermined direction, for interaction between said crosshead member and said handle on movement of the handle about said axis relative to said tool head in the direction opposite to the said predetermined direction to preclude forcible contact of said unseated end of said pawl with said stop on said frame, and for said interaction responsive to said pivotal movement of the handle relative to said frame member following forcible engagement of said unseated edge of said pawl with said stop on said frame member to compress said power spring to stop rotation of said inertia member by absorbing kinetic energy of rotation therefrom.

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DRAG DRILL BIT HAVING IMPROVED FLOW OF DRILLING FLUID

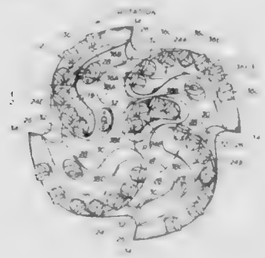
John D. Dease, and Percy W. Schumacher, both of Houston, Tex., assignors to Reed Tool Company, Houston, Tex.

Filed Mar. 26, 1987, Ser. No. 30,123

The portion of the term of this patent subsequent to Jul. 28, 2004, has been disclaimed.

Int. Cl.[4] E21B *10/46, 10/60*

U.S. Cl. 175—329 **15 Claims**



1. A drag type drill bit for use in drilling well bore comprising:

a generally cylindrical bit body having a threaded pin at its upper end adapted to be detachably secured to a drill string for rotating the drill bit and for providing fluid under pressure to the bit, a cutter head at the lower end of the bit body, and a fluid passage therein extending from the pin down to the cutter head for delivery of the fluid under pressure from the drill string to the bottom of the bit;

cutting elements mounted on the cutter head, each having a planar cutter face and projecting downwardly from the head to a cutting edge engageable with the well bore bottom, with the cutting edge extending generally in a radial direction from the axis of rotation of the drill bit, said elements being positioned on the cutter head in a plurality of rows;

a plurality of nozzles on the head in flow communication with the fluid passage, with at least one nozzle being associated with each row of cutting elements and positioned ahead of the respective row in the direction of rotation of the bit, each nozzle for a respective row directing the fluid under pressure to flow opposite the direction of rotation of the bit and in a downward, conical flow pattern stream to an area of impingement on the well bore bottom ahead of the respective row of cutting elements, with the fluid flowing from the area of impingement in a lateral divergent stream generally normal to the cutting faces of the cutting elements and impinging substantially all of the cutting elements of the row, whereby the portion of the well bore bottom immediately in the path of the cutting elements is cleaned of cuttings, and the cutting elements are thereafter washed clean of cuttings and adequately cooled by the stream of drilling fluid as the cuttings are formed, for enhanced drill bit rates of drilling penetration.

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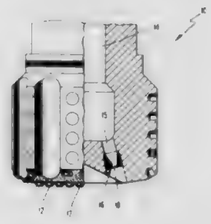
ORIENTABLE FLUID NOZZLE FOR DRILL BITS

Lawrence W. Matson, League City; Stephen G. Southland, Houston, and Roy T. Jackson, Missouri City, all of Tex., assignors to Diamant Boart-Stratabit (USA) Inc., Houston, Tex.

Filed Oct. 23, 1987, Ser. No. 111,580

Int. Cl.[4] E21B *10/60*

U.S. Cl. 175—393 **7 Claims**



1. A nozzle for a drill bit, comprising:

a nozzle body formed of a wear-resistant material and defining a front-to-rear extending longitudinal axis, said body having a front-to-rear extending outer periphery and a front-to-rear extending fluid passage disposed therein, said outer periphery including a first abutment surface disposed rearwardly of a front end of said outer periphery, and

a securing ring for securing said nozzle body in an internally threaded hole of a drill bit, comprising:

an externally threaded sleeve formed of a softer material than said nozzle body and having a front-to-rear extending inner periphery mounted on said outer periphery for rotation about said longitudinal axis, said inner periphery including a second abutment surface disposed rearwardly of a forwardly facing forwardmost end of said sleeve and engageable with said first abutment surface, said forwardly facing forwardmost end of said sleeve disposed rearwardly of a forwardmost end of said body outer periphery when said first and second abutment surfaces are in mutual engagement, and

an annular cap formed of a material harder than said sleeve and including a front-to-rear extending inner periphery and a rearwardly facing rearwardmost end which is bonded to said forwardmost end of said sleeve, the smallest inner diameter of said rearwardmost end being no smaller than the greatest diameter of said front end of said body outer periphery, such that when said first and second abutment surfaces are in mutual engagement said rearwardmost end of said cap is disposed rearwardly of said front end of said body outer periphery and said inner periphery of said cap is rotatable on said body outer periphery, said cap including a front end surface having means engageable by a tool for enabling said securing ring to be rotated relative to said nozzle body about said longitudinal axis such that said second abutment surface engages said first abutment surface for displacing said nozzle body longitudinally as said securing ring is threaded into a hole of a drill bit.

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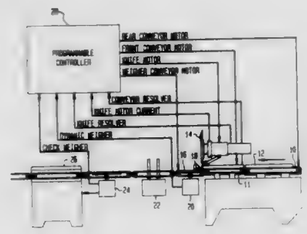
CONTROL FOR AN AUTOMATIC SLICING MACHINE

Gary L. Wallace, Jeffersontown, and Robert K. Moore, Louisville, both of Ky., assignors to AMCA International Group, Hanover, N.H.

Filed Feb. 26, 1988, Ser. No. 160,840

Int. Cl.[4] G01G *19/40, 19/52;* **B26D** *7/00*

U.S. Cl. 177—25 **10 Claims**



1. A method for controlling the slicing of a product, comprising the steps of:

cutting slices of the product;

dynamically weighing the slices as they are being cut;

calculating a desired thickness for slices in accordance with the dynamically measured weight and a target weight;

controlling the thickness of slices in accordance with the calculated thickness;

grouping a number of consecutive slices into a draft;

weighing the draft;

averaging the weights of a predetermined number of drafts;

determining the difference between the average weight and said target weight; and

adjusting said target weight by an amount proportional to said difference.

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ROAD VEHICLE POWER ASSISTED STEERING SYSTEM

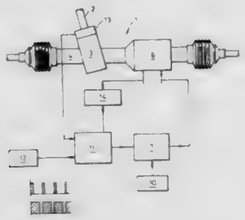
Bernard G. North, Yatton, Great Britain, assignor to TRW Cam Gears Limited, Clevedon, Great Britain

Filed Feb. 9, 1987, Ser. No. 12,256

Claims priority, application United Kingdom, Feb. 7, 1986, 8603084

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—79.1 **8 Claims**



1. A vehicle power steering system comprising:

a steering gear having a steering output member displaceable to effect steering of steerable wheels in response to rotation of a steering wheel of the vehicle;

an electric motor for providing power assistance to displacement of said steering output member in response to electric current applied to said electric motor;

a source of electrical current;

control means for providing a control signal having a value responsive to applied steering torque and vehicle speed; and

logic control means for connecting a load having a fixed resistive value across said electric motor when said control signal falls below a predetermined value to dissipate electrical energy and thereby brake the electric motor.

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STRUCTURE FOR SECURELY CONNECTING A DRIVEN SPROCKET TO THE DRIVEN AXLE OF A MOTORCYCLE

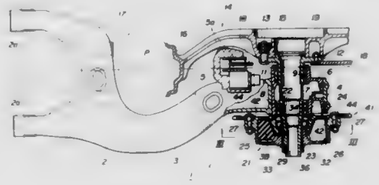
Toshiyuki Iwai, and Yoshimi Ishikawa, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

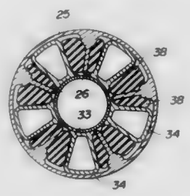
Filed Sep. 18, 1987, Ser. No. 98,418

Claims priority, application Japan, Sep. 25, 1986, 61-146763[U]

Int. Cl.[4] B62M *21/00*

U.S. Cl. 180—219 **7 Claims**





6. A driven sprocket fixing structure for a motorcycle including a swing arm which is swingably joined at one end thereof to a vehicle body and a free end of which an axle having at one end thereof a drive wheel fixed thereto is rotatably supported substantially at a central part thereof in a cantilever manner, and a torque damping mechanism fixed to the other end of said axle, said fixing structure fixing a driven sprocket to a transversely inner part of an outside constituting member of said torque damping mechanism, said fixing structure comprising:

a plurality of fixing lugs projectingly formed at predetermined intervals on an outer circumference of an outside constituting member of a torque damping mechanism; and

a plurality of fixing lugs projectingly formed with a predetermined width on an inner circumference of a driven sprocket and securely connected in a detachable manner to transversely inner sides of the fixing lugs of the outside constituting member, respectively;

an inside diameter of each of said fixing lugs of said driven sprocket being larger than an outside diameter of said outside constituting member itself, an inside diameter of said driven sprocket itself being larger than an outside diameter of each of said fixing lugs of said outside constituting member, and said predetermined width being smaller than said predetermined intervals;

said outside constituting member of said torque damping mechanism being rotatably fitted on said axle; and

said torque damping mechanism further including an inside constituting member fixed to said axle, and a rubber member interposed between said outside constituting member and said inside constituting member to transmit drive power, as transmitted to said driven sprocket, from said outside constituting member to said inside constituting member in a slightly elastic manner.

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WHEELCHAIR AND METHOD OF OPERATING SAME

Robert Hester, "Gretwyn" Haughton Drive, Shifnal, Shropshire, United Kingdom (TF11 8HF)

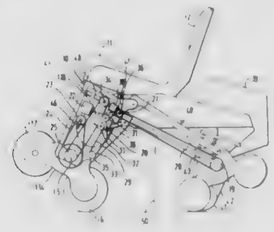
PCT No. PCT/GB86/00367, § 371 Date Feb. 20, 1987, § 102(e) Date Feb. 20, 1987, PCT Pub. No. WO87/00040, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 25, 1986, Ser. No. 25,289

Claims priority, application United Kingdom, Jun. 25, 1985, 8515992

Int. Cl.[4] B62B *9/06*

U.S. Cl. 180—8.2 **8 Claims**



1. A wheelchair comprising a seat, front and rear parts of laterally spaced carriers, a plurality of wheels on each carrier, drive means for driving the carriers and at least some of said wheels, and control means for operating the drive means, wherein the front carriers are mounted for turning relative to the seat about a front axis, the rear carriers are mounted for turning relative to the seat about a rear axis, the wheels on each front carrier are spaced apart around the front axis, the wheels on each rear carrier are spaced apart around the rear axis, the rear axis is movable upwardly and downwardly relative to the front axis and to the seat, the drive means is arranged for driving said carriers about respective ones of the front and rear axes, the drive means includes means defining a plurality of alternative predetermined configurations of the wheelchair and is arranged for setting the carriers automatically in any selected one of said predetermined configurations, one of said configurations is a compact configuration, another of said predetermined configurations is an extended configuration, in the compact configuration with the wheelchair resting on a horizontal floor, at least one of said wheels on each of said front carriers engages the floor and intersects a vertical plane containing the centre of gravity of the wheelchair and, in the extended configuration of the wheelchair, with the wheelchair resting on the horizontal floor, the centre of gravity lies in a vertical plane spaced from all of said wheels on the front and rear carriers, and the control means includes a microprocessor, means for feeding instructions to said microprocessor for controlling the front and rear carriers and wheels, and the configuration of the wheelchair, and a plurality of transducers for providing electrical signals to the microprocessor to enable the microprocessor to determine the angular positions of the front and rear carriers.

4,795,000

CRUISE CONTROL DEVICE FOR AUTOMOTIVE VEHICLES

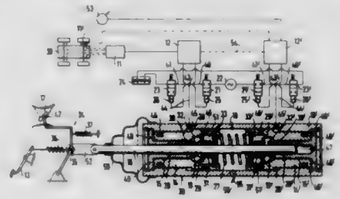
Norbert Ocvirk, Offenbach; Holger V. Haya, Frankfurt am Main, and Joachim Mass, Darmstadt, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1987, Ser. No. 54,403

Claims priority, application Fed. Rep. of Germany, May 26, 1986, 3617630

Int. Cl.[4] B60K *31/10*

U.S. Cl. 180—176 **21 Claims**



1. A cruise control device for automotive vehicles, comprising an actual speed sensor for determining the actual speed of the vehicle, a target speed regulator which can be set to the target speed of the vehicle, a speed control circuit connected to the actual speed sensor and to the target speed regulator, said speed control circuit actuates an accelerator pedal-operated throttle valve associated with a vehicle engine in a manner for keeping the vehicle speed constant, said accelerator pedal adapted to increase the vehicle speed to speeds greater than the set target speed, a piston rod connected in parallel to the accelerator pedal, said piston arranged inside a first stepped piston in an axial through bore in the stepped piston, said piston rod axially releasably coupled with the first stepped piston through an axial ball-type locking mechanism which is released in the rest position of the first stepped piston wherein the piston rod moves freely in the bore in the stepped piston said stepped piston pressurized by fluid pressure through the speed control circuit, said piston rod being driven by the first stepped piston and displacing the throttle valve in an opening direction when the actual speed sensor senses a decrease of vehicle speed below the target speed.

4,795,001

TWO-CYCLE FUEL-INJECTION ENGINE

Ryoji Nakahama, and Tatsuki Uchida, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 008,562, Jan. 29, 1987, abandoned. This application Mar. 31, 1988, Ser. No. 178,877

Claims priority, application Japan, Feb. 14, 1986, 61-28976

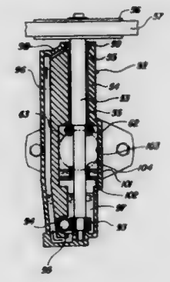
Int. Cl.[4] F01M *9/06*

U.S. Cl. 184—6.18 **14 Claims**

1. A lubricating arrangement for an externally positioned engine component driven from the crankshaft of an internal combustion engine, said crankshaft being journaled for rotation within a crankcase of said engine, said engine having a lubricating system for lubricating said crankshaft, said externally positioned engine component comprising a housing positioned externally of said engine crankcase, a shaft journaled within said housing, means for driving said shaft from said engine crankshaft, a first gear fixed for rotation with said shaft, a second gear meshing with said first gear for establishing a driving relationship between said second gear and said shaft, a cavity defined in said housing surrounding said gears and

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adapted to contain a lubricant, and a lubricant passage having an inlet opening disposed to receive lubricant thrown by the



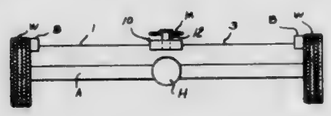
rotation of one of said gears and directing said lubricant to said shaft for lubricating said shaft.

4,795,002

ELECTRICALLY OPERATED ACTUATOR FOR REAR PARKING BRAKE CABLES INCLUDING DRIVER AND DRIVEN MEMBERS ROTATABLY MOUNTED ABOUT SAME PIVOT PIN

Russel J. Burgei, and William W. Schap, both of Jackson, Mich., assignors to ITT Corporation, New York, N.Y.

Filed Jan. 21, 1988, Ser. No. 146,469
Int. Cl.[4] B60T *13/74, 1/00*
U.S. Cl. 188—2 D **14 Claims**



1. An electrically operated parking brake actuator comprising driver means including an electric motor, driven means operatively associated with the driver means, each of said driver means and said driven means being mounted for rotation about a pivot pin, first mounting means carried on said driver means for attaching a first cable thereto so that it extends along a first axis and second mounting means carried on said driven means for attaching a second cable thereto so that it extends along a second axis, said first and second mounting means being located so that in a first position of said driver and driven means cables attached to said mounting means are tensioned and so that in a second position of said driver and driven means cables attached thereto are relaxed.

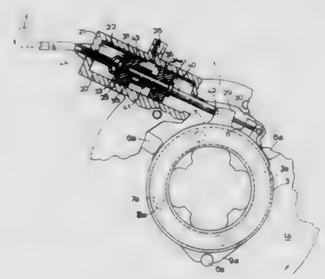
4,795,003

SELF-ENERGIZING DISC BRAKES

Brian M. Colgate, Gloucestershire, England, assignor to Lucas Industries, Ltd., Birmingham, England

Filed Sep. 11, 1987, Ser. No. 96,370
Claims priority, application United Kingdom, Sep. 11, 1986, 8621944
Int. Cl.[4] F16D *55/04*
U.S. Cl. 188—71.4 **8 Claims**

1. A self-energising disc brake comprising a housing, first and second axially spaced braking surfaces in said housing, radial pilot lugs and a drag-taking stop abutment in said housing, first and second pressure plates centred on said pilot lugs, first and second actuator lugs provided respectively on said first and second pressure plates, adjacent faces of said pressure plates being provided with co-operating oppositely inclined angularly spaced recesses, rolling bodies located in complementary pairs of said recesses, a rotatable friction member disposed between each said pressure plate and an adjacent said braking surface, each said member comprising a disc, and first and second linings of friction material for engagement with said pressure plates and said braking surfaces carried by opposite faces of said discs, and brake-applying means for moving said pressure plates angularly relative to said housing to initiate application of said brake with said pressure plates also moving axially to urge the friction members into engagement with said braking surfaces due to a tendency for said rolling bodies to ride up ramps defined by said adjacent faces and constituting camming means, said plates being carried round with said discs until one of said plates is arrested by the engagement of a lug



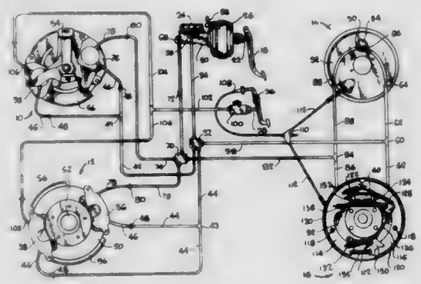
on that plate with said drag-taking stop abutment, whereafter continued angular movement of the other of said plates provides a servo action, said brake-applying mechanism comprising a pair of oppositely acting first and second pistons, each of which acts on a respective pressure plate in order to urge said plates angularly in opposite directions to initiate application of said brake, wherein said pistons are co-axially arranged with their axes tangential to the axis of said brake, and said first piston co-operates with an adjacent radial lug on one of said plates with said second piston acting on a radial lug on the other of said plates through a transmission member which, in turn, passes through said first piston and through said radial lug with which said first piston co-operates.

4,795,004

SAFETY BRAKE SYSTEM FOR A MOTOR VEHICLE

John K. Bauer, 510 Lenox Ave., Miami Beach, Fla. 33139

Filed Jul. 16, 1987, Ser. No. 74,230
Int. Cl.[4] F16D *65/14*
U.S. Cl. 188—106 P **10 Claims**



1. A brake system for a vehicle having a plurality of hydraulic wheel brakes, each hydraulic wheel brake having a rotating member and at least one hydraulic response unit for retarding the motion of the rotating member, comprising,

first and second manually operated brake actuators,

a first master cylinder having first and second hydraulic means for affecting pressure upon a fluid working medium, said first master cylinder being operatively connected to said first manually operated brake actuator,

a first set of hydraulic lines in fluid communication with said first means for affecting pressure,

a second set of hydraulic lines in fluid communication with said second means for affecting pressure,

a second maser cylinder having third means for affecting pressure upon a fluid working medium, said second master cylinder being operatively connected to said second manually operated brake actuator,

a third set of hydraulic lines in fluid communication with said second master cylinder, each of said first, second and third sets of hydraulic lines being mutually independent,

a plurality of hydraulic response units, said first second and third sets of hydraulic lines each being in fluid communication with at least some of said hydraulic response units,

a pair of front wheel brakes and a pair of rear wheel brakes, each of said wheel brakes having a rotation member and including at least one of said hydraulic response units in fluid communication with said first and second sets of hydraulic lines, at least two wheel brakes being disc brakes having first and second hydraulic response units, said hydraulic response units being floating calipers, each floating caliper having first and second pistons coaxially aligned on opposed sides of the associated rotating member, each first piston being in fluid communication with said first set of hydraulic lines, each second piston of a second caliper being in fluid communication with said third set of hydraulic lines, and each second piston of a first caliper being in fluid communication with said second set of hydraulic lines, whereby fluid pressure variation communicated through any one of said sets of hydraulic lines provides displacement of both pistons of at least one floating caliper of each disc brake, and

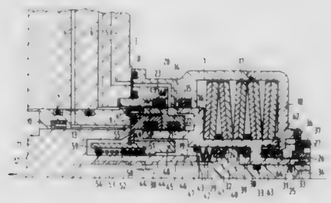
mechanical means operatively connected to said second manually operated brake actuator for restarting the motion of the rotating members of at least one of said pairs of front and rear wheel brakes, the other of said pair of wheel brakes having hydraulic response units in fluid communication with said third set of hydraulic lines.

4,795,005

COMBINED SERVICE AND SPRING-LOADED BRAKE CYLINDER

Xaver Wirth, Ismaning, Fed. Rep. of Germany, assignor to Knorr-Bremse AG, Munich, Fed. Rep. of Germany

Filed Jun. 15, 1987, Ser. No. 61,610
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1986, 3619948
Int. Cl.[4] B60T *11/10*
U.S. Cl. 188—153 R **6 Claims**



1. A combined service and spring-loaded brake cylinder for vehicles, in particular for rail vehicles, having a service brake piston (11) sealed and displaceable in a cylinder housing (1), acted upon by a service brake pressure and putting out braking force, having a tension piston (16), which can be loaded by the service brake pressure and acted upon by a first release pressure and reset axially and coaxially with the service brake piston, the tension piston for tensing a storage spring (17), and automatic stroke readjusting device for wear, exhibiting a non-self-locking screwing (44), between the tension piston (16) and the service brake piston (11), and a mechanical auxiliary release device, which exhibits self-locking screwing (26) and can be actuated manually from the floor (18) of the cylinder housing (1), wherein

(a) between the service brake piston (11) and the tension piston (16), there is an annular piston (20) comprising a seal that is sealingly engaged with the cylinder housing (1) and with a first flanged socket (19) of the tension piston (16), which annular piston is movable by a second release pressure against the front surface of the tension piston (16) and against the spring force of the storage spring and which separates a pressure chamber (22) that includes the first release pressure acting upon the tension piston (16) and a second pressure chamber (60) that includes the second release pressure, the second release pressure is independent of the first release pressure;

(b) the tension piston (16) is acted upon from the front by the service brake pressure;

(c) a threaded spindle (29) extends radially inward with respect to a second flanged socket (24) of the tension piston and into the storage spring (17), said threaded spindle (29) being forced by a spring means (42) toward the rear of the cylinder housing and engaged with the tension piston (16) through a combined stop and rotating coupling (40), said threaded spindle screwed together with the service brake piston (11) by means of a non-self-locking threading (44), exhibiting an axial play (44') therebetween that corresponds to a rated stroke;

(d) the service brake piston (11) has a third flanged socket (45), which encompasses the threaded spindle (29) and which extends to the rear of the cylinder housing, and on whose outer circumference (46) sits a friction element (50), which can be moved axially only against a friction force between the friction element and the third flanged socket and which is braced at its rear by a stop (51) which is stationary in the cylinder housing, and which toward the front abuts a spring (53), which is pre-stressed and has a spring stroke that corresponds to the rated stroke, and which spring encompasses the third flanged socket (45) with clearance wherein the force of the spring (53) is less than the friction force;

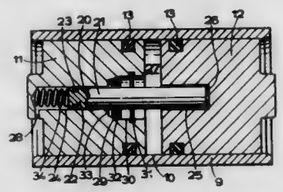
(e) the second flanged socket (24) is screwed with a manually rotatable nut (27) via the self-locking threading (26) on an end section (25) of the second flanged socket, projecting toward the rear from the floor section (18) of the cylinder housing (1), in a state of rest the nut (27) being behind the floor section (18) at a distance (28) corresponding at least to the rated stroke;

(f) the surfaces (34) of the rearward end of the threaded spindle (29) includes a shape such that the rearward end can be rotated manually; and

(g) Wherein the stop (51) for the friction element (50) and a frontal support (54) for the spring (53) are on a sleeve section (48) that is located in an annular gap (47) between the first and the third flanged socket (19,45); the sleeve portion is held axially stationary on an annular flange (55) of an intermediate portion (56), which is anchored on the cylinder housing (1) between pressure chambers (59,60) that include the service brake pressure and the second release pressure, respectively, and seals the two pressure chambers; the annular flange extending radially inwardly.

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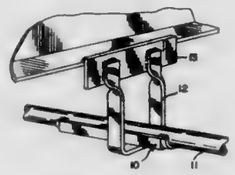
4,795,006
HYDRAULICALLY-OPERATED ACTUATOR ASSEMBLIES FOR VEHICLE BRAKES
Andrew P. Green, Gwent, Wales, assignor to Lucas Industries, Ltd., Birmingham, England
Filed Nov. 6, 1987, Ser. No. 118,748
Claims priority, application United Kingdom, Nov. 5, 1986, 8625483; Nov. 29, 1986, 8628592
Int. Cl.[4] F16D 65/54
U.S. Cl. 188—196 P 16 Claims



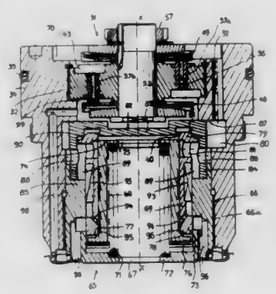
1. An hydraulically-operated actuator assembly for a vehicle brake comprising a piston and cylinder assembly which includes a pair of first and second components, means defining a pressure space between said components, said components being movable relatively away from each other to initiate application of the brake upon pressurisation of said pressure space, and an automatic adjuster assembly adapted to co-operate with said components to determine the relative retracted positions of said components, whereby to establish and maintain braking clearances within predetermined limits, wherein said automatic adjuster assembly comprises an axially extending member co-operating with said first and second components and including an end portion, one of said components having a bore in which said end portion is received, means for preventing relative axial movement between said axially extending member and the other of said components at least until said braking clearances have been taken up, axially spaced first and second stops provided on said one component, a ring co-operating with said member and also coupled to the said one component for relative movement through a limited distance corresponding to said braking clearances and determined by movement between said first and second stops, and biasing means urging said member away from said one component, upon release of the brake said ring co-operating with the said one component to determine an adjusted release position for said components, relative movement between said components through a distance greater than the said limited distance when said pressure space is pressurized to a pressure less than a predetermined pressure causing said ring to slide on said member due to the engagement of said ring with one of said stops, and relative movement between said components through a distance greater than the said limited distance when said pressure space is pressurised to a pressure above said pre-determined pressure causing said member to move relative to said one component, against the action of said biasing means, wherein said release position of said components is only adjusted when said pressure space is pressurised at a pressure less than said predetermined pressure.

4,795,007
BRAKE ROD PROTECTOR
Richard F. Murphy, Batavia, and Michael K. Burke, Wheaton, both of Ill., assignors to Zeftek, Inc., Batavia, Ill.
Filed Jul. 24, 1987, Ser. No. 77,695
Int. Cl.[4] F16D 15/07
U.S. Cl. 188—207 12 Claims

1. In a vehicle having a movable rod engaging a part of the vehicle where the rod is subjeted to wear, a wear member attachable to the rod to eliminate wear between the rod and part, said wear member comprising an elongated channel-shaped metal base plate and a body of plastic material bonded to one side of the plate, the length of said member being at least equal to the length of maximum movement expected between the rod and said vehicle port, means directly attaching the side of the base plate opposite the side to which the plastic material is bonded to said rod, and said plastic body having a bearing surface defining a broad support for engaging the vehicle port and which conforms to the geometrical shape of the engaging surface of the vehicle.

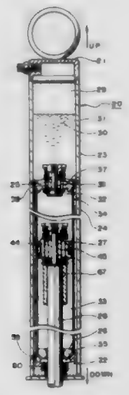


4,795,008
BIDIRECTIONAL QUICK-OPENING PEAK-LIMITING VALVE FOR A HYDROPNEUMATIC SUSPENSION ELEMENT
Philippe Joseph, Carpentras, and Jean-Michel Perrochat, Montrouge, both of France, assignors to Societe D'Applications Des Machines Motrices, France
Filed Dec. 22, 1987, Ser. No. 136,887
Claims priority, application France, Dec. 26, 1986, 86 18207
Int. Cl.[4] F16F 9/348
U.S. Cl. 188—280 8 Claims



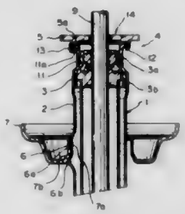
1. Bidirectional quick-opening peak-limiting valve (65) for a hydropneumatic suspension element of a vehicle (1, 12), comprising a tubular body (66) having a central orifice (67) for the passage of the hydraulic fluid, a hollow slide (68) mounted slideably within a sleeve (69), itself mounted slideably in the body (66) and being coaxial relative to the slide (68) along the general axis (X—X) of the valve (65), an elastic member (71) bearing of the body (66) and pushing the slide up against a first annular end (73) of the sleeve (69) by means of an annular seat (77) of the said slide (68), a second annular end (79) of the sleeve (69) having radial orifices (81) shut off by the slide (68) as long as the latter is held up against tee sleeve (69) by the elastic member (71), and means for causing the slide to slide in the sleeve in the opposite direction to the restoring force of the elastic member (11) and for allowing the hydraulic fluid to pass through these radial orifices (81) when the pressure at these exceeds a specific value, characterized in that it comprises a cover (82) which is intended for closing the tubular body (66) on the side of the latter opposite its central orifice (67) and which is coaxial relative to the said body (66), in that this cover (82) has radial ports (88) communicating with the radial orifices (81) in the slide (68) to allow the passage of the hydraulic fluid, and the end part (79) of the sleeve (69) adjacent to the cover (82) is stressed up against the said cover by the slide (68), itself stressed by its elastic restoring member (71).

4,795,009
TWIN-TUBE TYPE SHOCK ABSORBER
Haruhiko Tanahashi, Toyota, and Makoto Hayashi, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Jun. 23, 1987, Ser. No. 65,342
Claims priority, application Japan, Jul. 3, 1986, 61-101383
Int. Cl.[4] F16F 5/00, 9/36, 9/14
U.S. Cl. 188—315 9 Claims



1. A twin-tube type shock absorber comprising:
an outer shell disposed so as to extend in a substantially vertical direction, said outer shell having an end plate at an upper end portion thereof and a seal retainer at a lower end portion thereof;
a cylinder disposed co-axially with said outer shell and within said outer shell, said cylinder being radially spaced from said outer shell, said cylinder extending downward from a vertically intermediate portion of said outer shell to an area proximate said seal retainer;
a base valve connected to an upper end portion of said cylinder, said base valve comprising a first damping port, a first return port and a first communication path formed therein;
a rod guide connected to a lower end portion of said cylinder and positioned on an upper side of said seal retainer, said rod guide comprising a second communication path formed therein;
a piston slidably housed in said cylinder, said piston comprising a second damping port and a second return port formed therein;
a piston-rod connected to said piston, said piston-rod extending downward from said piston and slidably penetrating said rod guide and said seal retainer; and
a seal supported by said seal retainer, said seal being disposed between said piston-rod and said seal retainer;
said outer shell and said base valve defining a first chamber, an upper portion of said first chamber being filled with gas and a lower portion of said first chamber being filled with liquid, said first chamber constituting a main chamber of a reservoir chamber,
said cylinder, said base valve and said piston defining a second chamber, which is filled with liquid, said second chamber being fluidly connected to said first chamber via said first damping port and said first return port,
said cylinder, said piston and said rod guide defining a third chamber which is filled with liquid, said third chamber being fluidly connected to said second chamber via said second damping port and said second return port,
said outer shell, said cylinder, said base valve and said rod guide defining a fourth chamber which is filled with liquid, said fourth chamber being fluidly connected to said first chamber via said first communication path, said fourth chamber constituting a sub-chamber of said reservoir chamber, said cylinder separating said fourth chamber from said second and third chambers,
said rod guide and said seal retainer defining a fifth chamber which is filled with liquid, said fifth chamber being fluidly connected to said first chamber via said first communication path, said fifth chamber further being fluidly connected to said fourth chamber via said second communication path, said rod guide separating said fifth chamber from said third chamber and said seal is exposed to said fifth chamber.

4,795,010
HYDRAULIC DAMPER
Shinji Kaneko, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan
Filed Apr. 8, 1987, Ser. No. 35,723
Claims priority, application Japan, Apr. 10, 1986, 61-53758[U]; Apr. 12, 1986, 61-55027[U]
Int. Cl.[4] F16F 9/00
U.S. Cl. 188—322.19 11 Claims



1. A hydraulic damper for use in a suspension device of a vehicle such as an automobile including a chassis having a bump rubber intended to bump against said damper upon contraction thereof, said damper comprising:
a main body forming a cylinder;
a packing cap fitted on and fixedly secured to one end of said main body;
a piston rod connected to a piston movably received in said cylinder and extending through said packing cap to the outside of said cylinder;
a spring seat for receiving and supporting one end of a suspension spring, said spring seat having a tubular portion fitted on the outer periphery of said main body;
stop means for preventing said spring seat from being displaced axially of said main body;
a bump stop mounted on said packing cap for abutment with the bump rubber of the chassis of the vehicle upon contraction of said damper, said bump stop comprising a bump cap fitted on and fixedly secured to said packing cap, and a bump plate assembly including a bump plate for directly abutting the bump rubber and a plate cap integrally connected to said bump plate;
said bump plate having an outer diameter that is larger than the inner diameter of said tubular portion of said spring seat;
said bump cap including a tubular portion and a flange that extends radially outwardly from an upper end of said tubular portion, and said plate cap including a tubular portion sized to receive therein said flange of said bump cap; and
means for connecting said plate cap to said bump cap in a

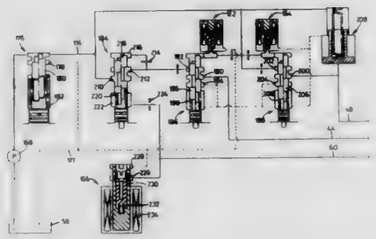
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manner to prevent unintentional disengagement therefrom, said connecting means comprising lower portions of said tubular portion of said plate cap being deformed radially inwardly and hooked over said flange of said bump cap.

4,795,011
HYDRAULIC CONTROL DEVICE FOR HYDRAULICALLY OPERATED FRICTION CLUTCH HAVING DRAG PREVENTIVE MEANS

Fumihiro Ushijima, Okazaki, and Kiyohito Murata, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 15, 1987, Ser. No. 61,657
Claims priority, application Japan, Jun. 19, 1986, 61-143827
Int. Cl.[4] F16D *25/11;* B60K *41/02*
U.S. Cl. 192—0.032 7 Claims



1. A hydraulic control device for a hydraulically operated friction clutch device for an automotive vehicle, the clutch device having at least one friction clutch each of which includes a driving rotary member, a driven rotary member, an actuator piston operable for frictional engagement between the driving and driven rotary members, a pressure chamber supplied with a controlled pressurized fluid to move the actuator piston, and a proximity shut-off valve disposed in the actuator piston, for permitting the pressurized fluid to be discharged from the pressure chamber through a discharge passage when the actuator piston has reached a ready-to-operate position from which the actuator piston is moved to start the frictional engagement between the driving and driven rotary members, said hydraulic control device comprising:

a hydraulic pressure source for generating a pressurized fluid having a predetermined line pressure;

a pressure adjusting device for adjusting said line pressure to a controlled clutch pressure to be applied to said pressure chamber;

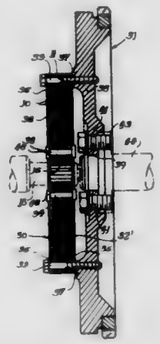
a clutch control valve for applying said controlled clutch pressure through a fluid passage to said pressure chamber to advance said actuator piston for effecting said frictional engagement of said driving and driven rotary members, said clutch control valve permitting the fluid to be discharged from said pressure chamber through said fluid passage, to permit said actuator piston to be retracted; and

control means for commanding said pressure adjusting device to adjust said line pressure to a predetermined lower level, when said clutch control valve is commanded by said control means to supply the pressurized fluid to said pressure chamber for moving said actuator piston to said ready-to-operate position, said predetermined lower level being lower than said controlled clutch pressure applied to said pressure chamber for effecting said frictional engagement.

4,795,012
SPIRAL SPRING DISC TORSIONAL COUPLING

Metin M. Duran, Elmhurst, Ill., assignor to Borg-Warner Automotive, Inc., Troy, Mich.

Filed May 26, 1987, Ser. No. 53,940
Int. Cl.[4] F16D *3/79*
U.S. Cl. 192—55 23 Claims

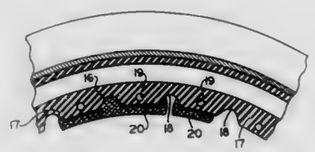


1. A spring disc resilient coupling adapted for use in a torsional coupling or clutch assembly between driving and driven members, comprising a plurality of spring discs secured together to operate as a unit, each disc including an outer peripheral ring having a plurality of circumferentially spaced openings therein, an inner peripheral ring having a plurality of circumferentially spaced openings therein and at least one smooth continuously curved slot extending through said disc between said outer ring and said inner ring to define a curved resilient member joining the inner and outer rings and resisting relative rotation therebetween, each said curved slot intersecting an outer opening and an inner opening, said outer rings being secured to one of said driving or driven members and said inner rings being operatively connected to the other of said driving or driven member.

4,795,013
COUPLING ASSEMBLY AND FRICTION SHOE THEREFOR

James M. Latsko, North Royalton, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 20, 1987, Ser. No. 40,507
Int. Cl.[4] F16D *25/04, 13/10, 69/04*
U.S. Cl. 192—88 B 6 Claims

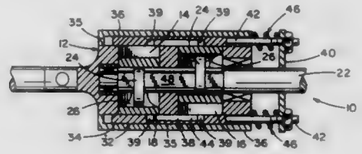


1. In a friction coupling assembly, the combination of an inflatable fluid extensible annular tube; a plurality of friction shoes; means for removably attaching said shoes to a circumferential surface of said tube so that said shoes move radially with the tube as the tube is inflated and deflated; said tube having a plurality of circumferentially spaced transversely extending grooves; each of said friction shoes comprising a backing plate, a pad made of friction material secured to one side of said backing plate, and a driving bar also made of said friction material extending transversely of said plate, said friction material extending through at least one hole in said backing plate and secured to the side of said backing plate opposite from said pad whereby the driving bar of each friction shoe is positioned in a groove of said tube, said bars and grooves having cross sectional shapes which precisely fit each other, said backing plate, pad and driving bar being integrally joined together into a unitary structure by the friction material forming said pad and bar to improve the torque transfer between the shoes and said tube.

4,795,014
POWER TRANSMISSION APPARATUS

Lawrence M. Rheingold, 3181 Ann St., Baldwin, N.Y. 11510

Filed Nov. 3, 1986, Ser. No. 927,043
Int. Cl.[4] F16D *31/02*
U.S. Cl. 192—60 5 Claims



1. Transmission apparatus comprising:

a cylinder block defining a pair of hollow cylinders;

a pair of double-acting pistons disposed for reciprocation in said cylinders, each piston having a non-circular transverse bore extending therethrough;

a camshaft assembly comprising a shaft extending through the bores of said pistons and a pair of eccentric cams, each cam being fixed to said shaft and engaging a respective one of said bores;

valve means connecting said cylinders with one another to permit reciprocating flow therebetween in response to reciprocation of said pistons, and enabling variable control of flow between said cylinders;

said cams being disposed on said shaft so as to drive said pistons in reciprocating motion 180° out of phase with each other during rotation of said camshaft relative to said cylinder block;

a slurry disposed within said cylinders so as to be pumped between the respective cylinders by reciprocation of the pistons, said slurry comprising a plurality of solid spheres of relatively small diameter and a lubricating fluid.

4,795,015
CLUTCH OPERATION CONTROL SYSTEM FOR FLUID TORQUE CONVERTER OF VEHICULAR TRANSMISSION

Yoshitaka Hibino, and Hiroshi Ikura, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1987, Ser. No. 62,893
Claims priority, application Japan, Jun. 16, 1986, 61-138400
Int. Cl.[4] F16H *45/02;* B60K *41/02*
U.S. Cl. 192—0.076 5 Claims

1. In a clutch operation system for a fluid torque converter of a transmission for a vehicle in which the fluid torque converter is connected to an engine and is equipped with a clutch for mechanically connecting an input side thereof to an output side thereof, wherein said clutch normally is operated in a clutch operating region which is predetermined in accordance with a travelling conditions of the vehicle, an improvement characterized in that the operation of said clutch is partially or entirely discontinued when the outside atmospheric pressure is

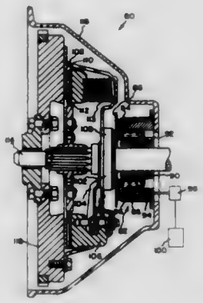


lower than a predetermined value as determined by means for detecting an outside atmospheric pressure.

4,795,016
FLUID ACTUATOR

Robert C. Schisler, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 6, 1987, Ser. No. 23,014
Int. Cl.[4] F16D *25/04;* F01B *19/04*
U.S. Cl. 192—88 A 9 Claims



1. A fluid actuator which moves through a predetermined stroke along an axis having a concentric pair of rolling lobes with an open passageway through said actuator coaxial with said axis comprising:

(a) a closed toroidal diaphragm of a tough flexible elastomer having an inside diameter and an outside diameter, said outside diameter being restrained only by reinforcing fabric embedded in said elastomer, said reinforcing fabric comprising at least two layers of bias-angled plies of cord fabric, said diaphragm enclosing a fluid working cavity;

(b) an annular piston with inner and outer walls having an average diameter less than the outside diameter and greater than the inside diameter of said diaphragm, said piston and diaphragm being axially movable relative to each other through said predetermined stroke, the diaphragm being deformed upon the inner and outer walls of said piston to form a concentric pair of rolling lobes;

(c) an annular cylinder with an outside diameter substantially equal to said inside diameter of said closed toroidal diaphragm and positioned within said passageway through said toroidal diaphragm and forming an inner restraint on the radially innermost rolling lobe of said concentric pair of rolling lobes; and

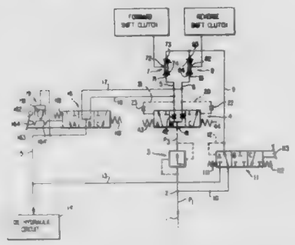
(d) a fluid port passing through said closed toroidal diaphragm in connection with said fluid working cavity such that fluid may pass into and out of said fluid working cavity.

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8. A power transmission device compriaing:
(a) a housing;
(b) a driving member positioned in said housing and transmitting rotational power into said housing;
(c) a driven member positioned adjacent said driving member and transmitting rotational power out of said housing;
(d) a means for frictionally engaging and disengaging said driving member and said driven member;
(e) a fluid actuator positioned in said housing with an open passageway through said actuator coaxial with an axis of actuation and having
a closed toroidal diaphragm of a tough flexible elastomer having an inside diameter and an outside diameter, said outside diameter being restrained only by reinforcing fabric embedded in said elastomer, said reinforcing fabric comprising at least two layers of bias-angled plies of cord fabric, said diaphragm enclosing a fluid working cavity,
an annular piston with inner and outer walls having an average diameter less than the outside diameter and greater than the inside diameter of said diaphragm, said piston being axially movable relative to said diaphragm through a predetermined stroke thereby deforming the diaphragm upon the inner and outer walls to form a concentric pair of rolling lobes from the diaphragm rolling over said inner and outer walls,
an annular cylinder with an outside diameter substantially equal to said inside diameter of said closed toroidal diaphragm and positioned within said passageway through said toroidal diaphragm and forming an inner restraint on the radially innermost rolling lobe of said concentric pair of rolling lobes, and
a fluid port passing through said closed toroidal diaphragm in connection with said fluid working cavity such that a pressurized fluid may pass into and out of said fluid working cavity,
said actuator having a first position and a second position, said first position being achieved when a pressurized fluid is injected through said fluid port into said working cavity to expand said rubber diaphragm to an expanded position, thereby disengaging said driving member from said driven member, said second position being achieved when said pressurized fluid is expelled from said work cavity through said fluid port thereby reducing said diaphragm to a dimension less than said expanded size thereby engaging said driving member and said driven member.

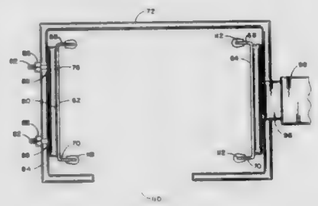
4,795,017
HYDRAULIC CIRCUIT FOR THE CONTROL OF FORWARD AND REVERSE SHIFT CLUTCHES
Ludwig Muncke, Lohr/Main, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany
Filed Sep. 10, 1986, Ser. No. 905,499
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, 3532473
Int. Cl.[4] B60K *20/14*; F16D *25/11*
U.S. Cl. 192—3.57 **13 Claims**

1. A hydraulic circuit for the control of forward and reverse shift clutches, said hydraulic circuit comprising:
(a) a pressure control device for the controlled build-up of a shift clutch pressure, said shift clutch pressure being for use to actuate either a forward shift clutch or a reverse shift clutch;
(b) a foot clutch valve operatively connected to each of the shift clutches via a respective inverted shuttle valve; and
(c) a manually operable shift valve for clutch or said reverse clutch,
wherein:
(d) said foot clutch valve is connected in parallel to said pressure control device;
(e) said pressure control device comprises a changeover valve that has a neutral position, a position in which shift clutch pressure is connected to said forward shift clutch, and a position in which shift clutch pressure is connected to said reverse shift clutch and that can be shifted to any one of its positions by said manually operable shift valve via two shift control lines;
(f) said changeover valve feeds the pressure in a supply pressure line to one or the other or to both of two shift pressure lines, one of which leads to said forward shift clutch and one of which leads to said reverse shift clutch;
(g) each of said two shift pressure lines is connected to a respective one of said inverted shuttle valves, each one of said inverted shuttle valves being controlled by said foot clutch valve;
(h) a pressure reducing valve is connected upstream of said changeover valve; and



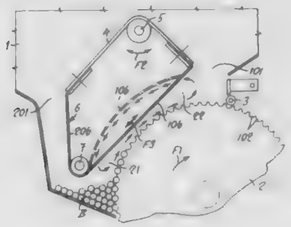
(i) each one of said inverted shuttle valves having two inputs and one output, a first input connection of each one of said pair of inverted shuttle valves being connected to a control line of said foot clutch valve, a second input connection of each one of said pair of inverted shuttle valves being connected to a respective one of said two shift pressure lines, and the output connection of one of said pair of inverted shuttle valves being connected to said forward shift clutch and the output connection of the other one of said pair of inverted shuttle valves being connected to said reverse shift clutch.

4,795,018
CONTAINED TRACKWORK FOR CAN CONVEYING
Jon V. Anderson, P.O. Box 116, Ocoee, Fla. 32761
Filed Apr. 22, 1987, Ser. No. 41,701
Int. Cl.[4] B65G *11/00*
U.S. Cl. 193—2 C **7 Claims**



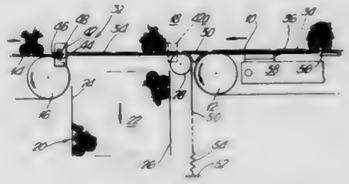
1. Contained trackwork for a high speed gravity feed rolling can conveyor comprising:
a first elongate "C" shaped guide having a first inside surface, a first outside surface and upper and lower first angled edges, the upper and lower edges being parallel to one another and extending inwardly of the conveyor;
a second elongate "C" shaped guide having a second inside surface, a second outside surface and upper and lower second angled edges, the upper and lower second edges being parallel to one another and extending inwardly of the conveyor, said second guide being in parallel spaced apart relation to the first guide, the first and second inside surfaces facing one another, said guides forming at least a lower slot between the first and second lower guide edges, said guides being adapted to contain rolling cans transversely aligned with said guides, with the first and second lower guide edges adapted to support a rolling can edge; and
open collar means for securing said first and second guides in spaced apart relation and for permitting misaligned cans to freely drop between the first and second lower guide edges, said open collar means comprising a plurality of support collars positioned along said first and second guides, each collar comprising first and second connected sidewalls, each of said collars being "C" shaped and having an open end positioned below the first and second lower guide edges to permit misaligned cans to freely drop out of said trackwork, said first guide being secured along its first outside surface to the first collar sidewall; and
means for adjustably securing said second guide along its second outside surface to the second collar sidewall.

4,795,019
APPARATUS FOR WITHDRAWING ROD-LIKE ARTICLES FROM A HOPPER
Valter Spada, and Luigi Mangiarotti, both of Bologna, Italy, assignors to SASIB S.p.A., Bologna, Italy
Filed Feb. 18, 1987, Ser. No. 16,089
Claims priority, application Italy, Feb. 26, 1986, 12435 A/86
Int. Cl.[4] B65G *1/00*; A24C *5/32, 5/33*
U.S. Cl. 198—347 **21 Claims**



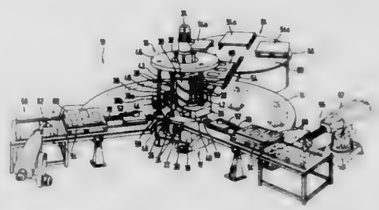
1. An apparatus for individually withdrawing rod-like articles, comprising:
a feeding hopper having a bottom;
a rotary drum having a plurality of flutes, said rotary drum including an ascending portion and a descending portion, said drum being disposed in at least part of said bottom of said feeding hopper and adapted to receive one of the rod-like articles in each one of said flutes and carry the collected articles to a location disposed outside of said feeding hopper;
a guiding device being located above the ascending portion of said rotary drum at a distance that corresponds to a multiple of the diameter of the rod-like articles, said guiding device extending in an inclined direction substantially tangential to said rotary drum, said guiding device and said rotary drum forming a duct therebetween with at least one convergently shaped inlet end; and
means for specifically imparting an oscillatory motion to said guiding device.

4,795,020
APPARATUS FOR HANDLING ROD-LIKE ARTICLES
David C. M. Carter, Blakelands; Ian Dunckley, High Wycombe, and Leonard G. Lait, Bletchley, all of England, assignors to Molins PLC, London, England
Filed Apr. 9, 1985, Ser. No. 721,414
Claims priority, application United Kingdom, Apr. 9, 1984, 8409097
Int. Cl.[4] B65G *47/52*
U.S. Cl. 198—370 **28 Claims**



1. Apparatus for handling rod-like articles, comprising means defining a path for rod-like articles in multi-layer stack formation, a separating device movable relative to articles on said path, and means for advancing said separating device through said stack formation so as to at least partly separate a multi-layer stream on said path, wherein the separating device has a leading part and a following part which is advanced with said leading part through said stack formation and means for supporting said leading part so that it is capable of reversible movement relative to said following part in a direction generally transverse to the direction in which the device is advanced and so that said transverse movement and the path of said leading part are determined by contact of said leading part with articles in said stack formation as the device is advanced, thereby facilitating advancement of the leading and following parts of the device between articles of the stream.

4,795,021
TURNTABLE APPARATUS COMBINING VERTICAL WITH ROTARY MOTION
Reinfried Möller, Weinheim, Fed. Rep. of Germany, assignor to EXPERT Maschinenbau GmbH, Lorsch, Fed. Rep. of Germany
PCT No. PCT/EP86/00676, § 371 Date Jul. 21, 1987, § 102(e) Date Jul. 21, 1987, PCT Pub. No. WO87/03236, PCT Pub. Date Jun. 4, 1987
PCT Filed Nov. 24, 1986, Ser. No. 86,632
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1985, 3542373
Int. Cl.[4] B65G *47/00*
U.S. Cl. 198—346.1 **3 Claims**



1. A turntable apparatus combining vertical with rotary motion, comprising: a turntable having a table plate; means for rotating the table plate according to a given program of movement; at least one vertically ascending and descending lifting

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means having at least a portion which is non-rotatable with respect to the table plate; a vertically disposed rotatable cylinder projecting centrally upward from the turntable, arranged radially inwardly of the lifting means, and having incorporated into a circumferential surface thereof a cam groove; at least one cam follower pin engaging the respective cam groove and being coupled to the non-rotatable portion of the respective lifting means, said pin upon rotation of the cylinder relative to the lifting means performing a vertical displacement and transmitting the same to the lifting means; at least one threaded first spindle arranged at a distance from and parallel to the cylinder, each spindle having a non-self-locking thread pitch, being in threaded engagement respectively with a complementary threaded bore in the lifting means, and having a bottom end at the table plate; an angle drive coupling the first threaded spindle to a second threaded spindle which is rotatably mounted radially and parallel to the table plate and which is in threaded engagement with a driver for a workpiece carriage mounted for travel radially of the table plate; the ratio of movement of the lifting means relative to the workpiece mounting carriage associated therewith being such that maximum vertical downward movement of the lifting means moves the workpiece mounting carriage to a station radially outside the table plate.

4,795,022

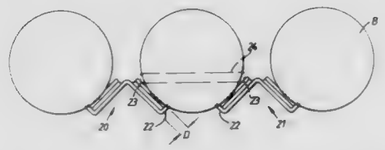
BISCUIT CONVEYOR

Robert J. Simmons, Llanyravon, Wales, assignor to Burtons Gold Metal Biscuits Limited, Cymbran, Wales

Filed Jan. 27, 1987, Ser. No. 6,861

Int. Cl.⁴ B65G *47/31*

U.S. Cl. 198—462 **9 Claims**



1. A method of conveying generally planar articles which comprises positioning each article between upwardly divergent opposing faces of a pair of driven endless belt conveyors having a lateral spacing at their upper edges of a size that said articles cannot bridge said upper edges, an article, when positioned horizontally, being pivotable from that position on its points of contact with the respective conveyor runs, and placing an obstruction in the path of movement of said article on said belt conveyors to cause the article to pivot about said points of contact until the trailing lowermost region of said article is moved into contact with a support positioned below the path of the articles and the article is thereby freed substantially from the pressure of said conveyor belts thereon.

4,795,023

BLOW MOLDING APPARATUS

Joseph F. Gibbemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 869,499, Jun. 2, 1986, Pat. No. 4,723,906. This application Jun. 12, 1987, Ser. No. 60,808

Int. Cl.⁴ B65G *47/34*

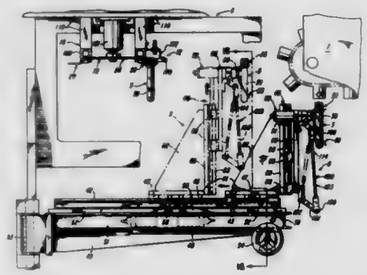
U.S. Cl. 198—468.6 **7 Claims**

1. A carriage assembly parts conveyor machine for transferring a plurality of vertically depending parts, each such part being of generally cylindrical shape and near its uppermost end having a support ring with a superjacent handling groove and a body portion depending from the support ring, from a receiving station to a transfer station at a different elevation and clearing itself of any parts accidentally retained when moving between said transfer station and said receiving station and comprising:

a conveyor base;

horizontal carriage means for moving generally horizontally back and forth between said stations;

vertical carriage means supported on said horizontal carriage means for moving vertically sufficiently to elevate a plurality of said parts from a first level at said receiving station where it receives said parts to a second level of said transfer station where said parts are removed in time relation to horizontal motion between said respective stations;



a support plate assembly mounted at the upper end of said vertical carriage means and having a trailing edge and an upper surface;

a plurality of parts receiving notches in said trailing edge each being shaped and sized to admit and pass vertically and horizontally the depending portion of the part beneath said support ring but not said support ring itself;

locating means on said upper surface disposed about each said notch to receive, support and locate said support ring; and

a fail safe means mounted on one of said carriage means for removing accidentally retained parts from said support plate assembly before said plate assembly is positioned at said receiving station.

4,795,024

CONVEYOR BELT SCRAPER UNITS

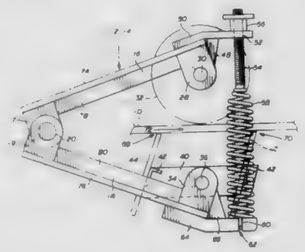
Neville A. W. Eatwell, Pretoria, South Africa, assignor to L.B.C. Services (Proprietary) Limited, Pretoria, South Africa

Filed Mar. 6, 1986, Ser. No. 836,963

Claims priority, application South Africa, Jul. 3, 1985, 85/1727

Int. Cl.⁴ B65G *45/00*

U.S. Cl. 198—499 **10 Claims**



1. A conveyor belt scraper unit for scraping the underside of the return run of a conveyor belt having a top and bottom side, and a first and second end, said unit comprising:

a first pair of inclined arms positioned on the top side of said belt and connected about a pivot means to a second pair of inclined arms positioned on the bottom side of said belt, the pivot means allowing the first and second arms to pivot relative to one another about an axis traverse to the direction of movement of said belt;

a reaction roller rotatably carried between said first arms so as to bear upon the top side of said belt;

two scraper blades carried between said second arms so as to bear upon the bottom side of said belt, one scraper blade being situated upstream of the reaction roller, and the second blade being situated downstream of said roller;

said scraper blades having scraping edges, the scraping edge of the upstream blade being of a harder material than the scraping edge of the downstream blade; and

a resilient tension means coupled between the first and second arms so as to urge said arms in contacting relation with said belt.

4,795,025

PARTS FEEDING APPARATUS OF THE PIEZOELECTRIC DRIVE TYPE

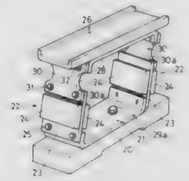
Hiroshi Doke; Naruyoshi Tabei; Yoshihisa Sasaki, and Shigeo Ozawa, all of Mie, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 6, 1986, Ser. No. 871,491

Claims priority, application Japan, Jun. 28, 1985, 60-143109; Jun. 28, 1985, 60-143110; Jun. 28, 1985, 60-143111; Jun. 29, 1985, 60-142848

Int. Cl.⁴ B65G *27/08*

U.S. Cl. 198—763 **12 Claims**



1. In a parts feeding apparatus of the piezoelectric drive type wherein a conveying means is vibrated by a plurality of vibration generators each consisting of an elastic plate and at least a piezoelectric element fixed on either side of the elastic plate to feed articles placed on the conveying means, the improvement comprising a plurality of connecting members each made of an elastic material for connecting between the elastic plate of each vibration generator and the conveying means, said each connecting member having lower stiffness than the elastic plate of each vibration generator.

4,795,026

CONVEYOR DRIVE SYSTEM UTILIZING DRIVEN AND IDLER DOG CHAINS

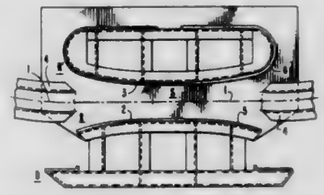
Jacob I. Nevo-Hacohen, Brookline, Mass., assignor to Auto-Veyor, Inc., Brookline, Mass.

Filed Jun. 5, 1986, Ser. No. 870,846

Int. Cl.⁴ B65G *23/14*

U.S. Cl. 198—833 **7 Claims**

1. In combination with a long-pitch link-roller main chain having a substantially straight-line section located at an interruption in a track that supports rollers of the main chain at opposite ends of the straight-line section, apparatus for driving said main chain comprising a dog-roller drive chain extending along said straight-line section of said main chain at one side thereof and a dog-roller idler chain extending along said straight-line section of said main chain at the opposite side thereof, dogs of said drive chain engaging corresponding rollers of said main chain to move said main chain along said straight-line section, and dogs of said idler chain engaging corresponding rollers of said main chain to move said idler chain along said straight-line section, each of said drive and idler chains having, along said straight-line section, a track supporting the rollers of the drive chain or the idler chain, said



dogs of said drive and idler chains being shaped at regions of engagement with said rollers of said main chain so that the longitudinal driving of said main chain along said straight-line section creates transverse reactive force components against said tracks of said drive and idler chains via the rollers thereof.

4,795,027

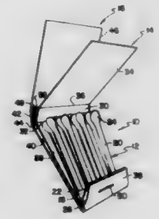
SAFETY BOOK MATCHES

Manuel G. Benavides, 410 Shawnee, Corpus Christi, Tex. 78405

Filed Jan. 25, 1988, Ser. No. 147,881

Int. Cl.⁴ A24F *27/04, 27/12*

U.S. Cl. 206—106 **3 Claims**



1. A match book comprising

a deck of cardboard matches including a base having a perforate line thereon and a multiplicity of parallel equal length matches extending away from the perforate line;

an inner cover having an inside surface and an outside surface, an inner upturned lip receiving the match deck base, a inner back portion adjoining the inner upturned lip, an inner top flap adjoining the inner back portion and an inner front flap adjoining the inner top flap;

an outer cover of substantially the same size as the inner cover and superposed relative thereto, the second cover having an inside surface and an outside surface, an outer upturned lip receiving the inner upturned lip, an outer back portion adjoining the inner upturned lip, an outer top flap adjoining the outer back portion and an outer front flap adjoining the outer top flap, the inside surface of the outer cover facing the outer surface of the inner cover;

a staple extending through the inner and outer upturned lips, the match deck base and the inner and outer back portions and securing the match deck, inner and outer covers together into a match book, the front flaps of the inner and outer covers being removably received between the upturned lips and the match deck base; and

a striking abrasive strip located between the inside surface of the outer top flap and the outside surface of the inner top flap.

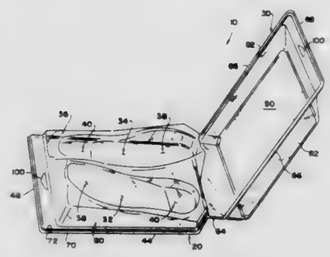
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,028
COMBINATION BEVERAGE PACKAGE
Norman P. Wittig, and David Grob, both of Corry, Pa., assignors to Erie Plastics Corp., Corry, Pa. and Mike Schecter Associates, Inc., Tampa, Fla.
Filed Nov. 25, 1987, Ser. No. 125,326
Int. Cl.[4] B65D *77/00*
U.S. Cl. 206—217 14 Claims



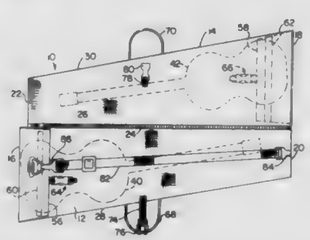
1. A two compartment container comprising:
a primary container comprising a perimeter side wall containment, a planar bottom closure member, and a circular member with at least one locking rib, said circular member extending from said planar member in a substantially longitudinally opposite direction from said side wall;
a secondary container comprising a perimeter side wall containment and a planar bottom closure member;
means for securing said secondary container to said primary container at a lower end thereof; and
a handle including a gripping member, said handle formed integrally with said secondary container, attached thereto by at least one severable portion and extending upward from an upper edge of the perimeter sidewall containment of the secondary container;
whereby said handle can be partially separated from said secondary container, thus enabling said secondary container to be disengaged from said primary container.

4,795,029
SHOE DISPLAY AND STORAGE DEVICE
Robert B. Campbell, 420 E. 54th St., New York, N.Y. 10022, and Paul Landau, 55 E. 9th St., New York, N.Y. 10003
Filed Jul. 29, 1987, Ser. No. 79,180
Int. Cl.[4] B65D *85/18, 65/16*
U.S. Cl. 206—278 12 Claims



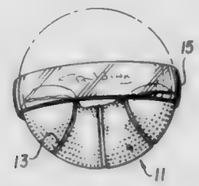
1. A shoe storage device for storing at least one shoe of predetermined size and shape, comprising:
(a) base means having a lower recess at an underside thereof;
(b) cover means hingedly secured to said base means, said cover means having dimensions for fitting within the lower recess in the base means of another shoe storage device to provide stacking of a plurality of shoe storage devices;
(c) cavity means formed between said cover means and said base means when said cover means is in a closed position, for receiving at least one shoe therein for storage;
(d) shape means disposed on said beam means and within said cavity means for positioning at least one shoe with a predetermined orientation in said cavity means, said shape means including at least one depression means, each depression means having a size and shape corresponding to said predetermined size and shape of a shoe for receiving the same therein; and
(e) releasable lock means on said base means and said cover means for releasably locking said base means to said cover means so that at least one shoe can repeatedly be stored and retrieved from said device.

4,795,030
CARRYING CASE FOR MUSICAL INSTRUMENTS
Timothy Boyce, Sea Bright, N.J., assignor to Kramer Music Products, Inc., Neptune, N.J.
Filed Dec. 24, 1987, Ser. No. 137,956
Int. Cl.[4] A45C *11/00*
U.S. Cl. 206—314 15 Claims



10. A carrying case for musical instruments, said case comprising a pair of generally trapezoidally-shaped pouch members made of a soft flexible material, each of said pouch members being longitudinally elongate and including a generally transversely extending wide end, a generally transversely extending narrow end, and first and second generally longitudinally extending side edges, said pouch members each being adapted to receive and enclose a musical instrument therein, and each including first means thereon engageable with the other of said pouch members for releasably fastening one of said pouch members to the other of said pouch members with said first side edge of said one pouch member positioned adjacent to said first side edge of said other pouch member and with the narrow end of said one pouch member positioned adjacent to the wide end of said other pouch member, whereby said pouch members may be pivoted relative to one another about an axis generally parallel to and adjacent to said first side edges to a condition wherein the wide end of each of said pouch members is positioned generally parallel to, facing and adjacent to the narrow end of the other of said pouch members, each of said pouch members including second means positioned thereon and engageable with the second means of the other of said pouch members for releasably fastening a portion of each of the pouch members to a portion of the other of the pouch members adjacent the second side edges thereof.

4,795,031
METHOD FOR PACKAGING PLAYING BALLS
Timothy R. Voss, Feeding Hills, and John L. Doleva, Amherst, both of Mass., assignors to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Jun. 30, 1987, Ser. No. 68,004
Int. Cl.[4] B65D *85/58*
U.S. Cl. 206—315.9 11 Claims



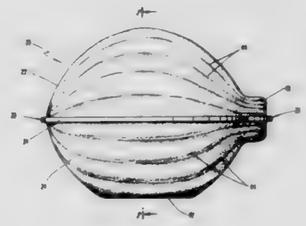
1. An article of manufacture comprising
a substantially spherical playing ball;
a substantially flat plastic loop non-adheaively heat shrunk about a circumferential section of said ball so that the entire surface of said loop is retained against said ball, the width of said plastic loop being substantially less than the circumference of said ball; and
permanent indicia including pricing information imprinted on said plastic loop;
said loop being non-removable without destruction of

4,795,032
WASH-ADDED, RINSE-ACTIVATED FABRIC CONDITIONER AND PACKAGE
Thomas V. Kandathil, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Dec. 4, 1987, Ser. No. 129,130
Int. Cl.[4] B65D *33/36*
U.S. Cl. 206—634 18 Claims



1. A fabric-conditioning article for use in a washing machine having a wash cycle, a spin cycle and a rinse cycle, said spin cycle producing centrifugal forces, comprising
(a) a water-permeable, water-insoluble package having at least one area which will open upon application of internal pressure to said at least one area; and
(b) a fabric-conditioner formulation within said package, said formulation including a water-absorbent material which will swell in the presence of water to create an internal pressure, and an effective amount of a fabric-conditioning composition within said package,
said water-absorbent material being present in an amount sufficient whereby said material upon exposure to water will swell to create internal pressure within said package and when said package is subsequently exposed to centrifugal force said package will open at said at least one area.

4,795,033
PACKAGING AND STORAGE CONTAINER
John F. Duffy, 8625 Bracburn, Beaumont, Tex. 77707
Filed Jul. 10, 1987, Ser. No. 72,016
Int. Cl.[4] B65D *85/34*
U.S. Cl. 206—457 17 Claims



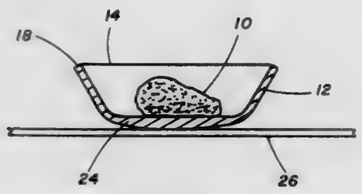


1. A container for a piece of predetermined edible material comprising:
a first container portion having a peripheral flange and an external texture resembling the texture of the predetermined edible material;
a second container portion having a peripheral lip and an external texture resembling the texture of the predetermined edible material, the first and second container portions cooperating to define a cavity sized to accommodate the predetermined edible material; and
a connection joint between the first container portion and the second container portion defined by cooperation between the peripheral flange and the peripheral lip, at least one of the peripheral flange and the peripheral lip being roughened to increase the frictional resistance to separation at the joint;
wherein said container is resealable by means of said connection joint.

14. A container for a predetermined edible material comprising:
a first container portion having a peripheral flange;
a second container portion having a peripheral lip;
one of the first and second container portions having an exterior surface at least a portion of which has a texture resembling the texture of the predetermined edible material;
the first and second container portions cooperating to define a cavity sized to accommodate the predetermined edible material; and
a connection joint between the first container portion and the second container portion defined by cooperation between the peripheral flange and the peripheral lip, at least one of the peripheral flange and the peripheral lip being roughened to increase the frictional resistance to separation at the joint;
wherein said container is resealable by means of said connection joint.

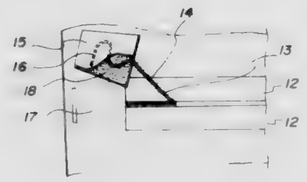
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,034
NON-SMEAR FOOD PACKAGE
Robert E. Jahn, Greer, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Division of Ser. No. 928,938, Nov. 10, 1986, Pat. No. 4,722,167.
This application Sep. 25, 1987, Ser. No. 101,237
Int. Cl.[4] B65D *1/34*
U.S. Cl. 206—557 1 Claim



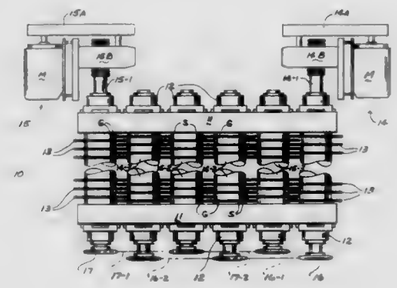
1. In a tray for carrying a fat-containing food product made of a flexible material, said tray having raised side walls around the periphery thereof, and a bottom wall extending between said side walls having a top interior surface and a bottom exterior surface, the improvement comprising said surfaces being non-parallel, wherein said top surface has a flat profile, and said bottom surface has a convex profile extending from one side wall to the other side wall in the tray's non-deformed state such that upon downward pressure on said side walls, said bottom surface flattens and said top surface becomes convex.

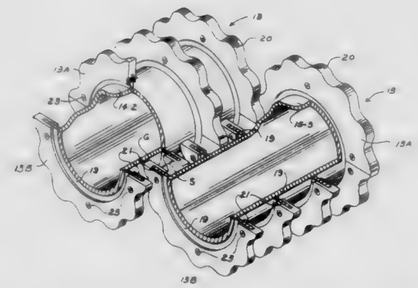
4,795,035
TEAR STRIP OPENING DEVICE
Myun H. Kim, 37-57 80 St., #D37, Jackson Height, N.Y. 11373
Filed Aug. 29, 1986, Ser. No. 901,744
Int. Cl.[4] B65D *27/38*
U.S. Cl. 206—616 13 Claims



1. An envelope formed of a tearable substrate having an inside surface and an outside and provided with an opening device which comprises:
- a pair of non-tearable straight bands adhesively attached to the outside surface of the tearable substrate, said pair of non-tearable straight bands being adhesively disposed in a pair of substantially straight lines, and
- a thread containing a plurality of hairs and adhesively disposed as a straight line along the inside surface of the tearable substrate, said thread and said pair of non-tearable bands being disposed substantially parallel to each other such that the thread is disposed between said pair of non-tearable straight bands on the opposite side of the tearable substrate so that, when said thread is freed and pulled away from the envelope, the envelope is opened with a tear line which extends along the tearable substrate of the envelope in a straight line defined by said pair of non-tearable bands.

4,795,036
ROTARY DISC SCREEN CONVEYOR APPARATUS
Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.
Filed Jun. 15, 1987, Ser. No. 61,456
Int. Cl.[4] B07B *13/04*
U.S. Cl. 209—667 1 Claim

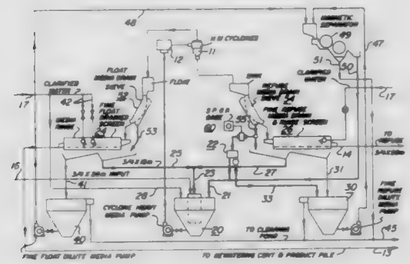




1. A rotary disc screen apparatus consisting of a material screening frame having a series of co-rotating and spaced parallel and axially elongated shafts, each of which shaft has thereon an axially spaced apart series of discs which interleave between spaced parallel shafts, and comprising:
- each of said shafts having a series of axially spaced supports thereon encircling the shafts and extending radially outwardly from the shafts;
- a series of discs carried one on each said shaft encircling support, each one of said discs being divided into complementary parts, each complementary part being formed with a recessed surface to abut a shaft support and form a complete disc that encircle the shafts; and
- means for securing said complementary parts of each disc in position on a common shaft support with the discs relying upon said supports for establishing the axial spacing of said discs, and wherein said securing means detachably connects said complementary parts of said discs to said supports independently of adjacent discs.

4,795,037
PROCESS FOR SEPARATING HIGH ASH COAL FROM REFUSE
John W. Rich, Jr., Box 211, Auburn, Pa. 17922
Filed May 7, 1986, Ser. No. 860,464
Int. Cl.[4] B03B *5/34, 7/00*; C10L *5/00*
U.S. Cl. 209—3 3 Claims

1. A process for separating from raw input which includes coal and refuse a high ash coal having at least about 20 percent by weight of ash, comprising the steps of:
- admixing magnetite ore with water to form a magnetite enriched heavy medium having a predetermined specific gravity;
- mixing said raw input with said magnetite ore enriched medium to form a feedstock slurry;
- cyclonically separating said feedstock slurry to produce a coal rich slurry containing said at least 20 percent by weight ash coal product and a refuse rich slurry;
- said cyclonic separating step including the steps of:
  - admitting said feedstock slurry tangentially into a substantially cylindrical chamber for subjecting said feedstock slurry to substantially constant acceleration through a first axial extent,
  - immediately thereafter admitting said feedstock slurry into a tapered chamber in fluid communication with said cylindrical chamber to subject said feedstock slurry to increasing acceleration through a second axial extent,

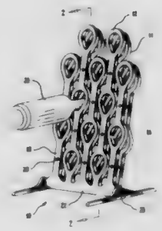


  - exhausting said coal rich slurry having said at least about 20 percent by weight ash content upwardly in one direction from said cylindrical chamber through a vortex finder extending down into said cylindrical chamber, and
  - discharging said refuse rich slurry downwardly in the opposite direction through an orifice in said tapered chamber aligned axially with said vortex finder;
- dewatering the coal rich slurry to produce a coal product having a specific gravity of at least about 1.85;
- maintaining said specific gravity of said magnetite enriched heavy medium at least about 0.4 units below said specific gravity of said coal product;
- dewatering said refuse rich slurry to produce a refuse product; and
- separating any remaining magnetite ore from the coal and refuse products;

whereby high ash coal can be separated in a continuous process.

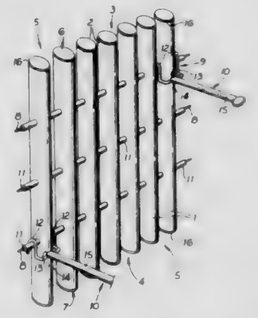
4,795,038
BOTTLE RACK
W. Grady Johnson, 196 Wykoff Dr., Vacaville, Calif. 95688
Filed Jun. 13, 1988, Ser. No. 205,994
Int. Cl.[4] B01D *33/00*
U.S. Cl. 211—74 10 Claims

1. A bottle rack for the storage and display of long-necked bottles comprising:
- a plurality of bilaterally symmetrical tapered ring members, each having a tapered end and having internal cross sectional dimensions greater than the largest portion of the cap or cork of said bottles and having, at the tapered end, an effective inner radius less than the radius of the narrowest portion of the necks of said bottles;
- said ring members being arranged in generally vertical pairs, each pair consisting of one front ring member and one rear ring member lying in spaced apart parallel planes and having coplanar axes of symmetry, the tapered end of said front ring member being downward and the tapered end of said rear ring member being upward;
- said spaced apart parallel planes having a distance between them such that the horizontal distance between the front face of a given front ring member and the rear face of the corresponding rear ring member is less than the length of the narrow portion of the necks of said bottles;
- said rear ring members being vertically offset from said front ring members a distance whereby the neck of a bottle, when inserted therethrough, engages the tapered end of the front ring member at two points and the tapered end of the rear ring member at two additional points while in the near horizontal position and is supported thereby;



- a plurality of stalk members connecting said front ring members and said rear ring members respectively in columns or rows and holding said ring members rigidly in the generally vertical plane;
- a plurality of spacing members rigidly connecting the columns or rows of front ring members with the columns or rows of corresponding rear ring members; and
- support structure providing means for rigidly supporting the stalk members and thereby the ring members from a surface, regardless of whether the rack or bottles therein are full, partially full, or empty.

4,795,039
DISPLAY APPARATUS
John W. T. K. Thornborrow, Woodley, England, assignor to J R Group PLC, Reading, England
Filed Apr. 16, 1987, Ser. No. 41,822
Claims priority, application United Kingdom, Apr. 17, 1986, 8609419; Jun. 25, 1986, 8615505
Int. Cl.[4] A47H *1/02*
U.S. Cl. 211—105.1 10 Claims



1. Display apparatus comprising a display panel characterised in having in its position of use a series of parallel, vertical, closely spaced elongate portions and supporting means extending transversely of the elongate portions, with the elongate portions being hollow and more closely spaced and more

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substantial in cross-section than the supporting means, and at least one bracket member having engaging means for connecting said bracket member to said supporting means, said engaging means comprising a pair of connectors inserted between adjacent elongate portions and attach to the supporting means on opposite sides of at least one of said elongate portions.

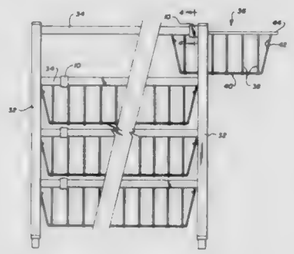
4,795,040
TOTE BOX CARRIER
David A. Lopez, Newark, Del., assignor to Metal Masters Foodservice Equipment Co., Smyrna, Del.
Filed Dec. 23, 1987, Ser. No. 137,183
Int. Cl.[4] A47F *3/14*
U.S. Cl. 211—126 5 Claims



1. A tote box carrier comprising a framework, at least one pair of opposed spaced apart side rails, each a mirror image duplicate of the other, means connecting the pair of side rails to the framework, each side rail having a C-shaped cross-section and including upper and lower horizontally disposed surfaces with an outer portion interconnecting those surfaces, a tote box supported by the opposed side rails and having outwardly extending side flanges resting upon the lower surfaces of the side rails, a pair of generally aligned openings in the upper and lower surfaces of each side rail adjacent each end thereof, and a clip stop element associated with each pair of generally aligned openings, each clip stop element having a closed loop-shaped end extending through the opening in the lower surface of the side rail for attaching the element to the side rail and an open hook-shaped end releasably extending through the opening in the upper surface of the side rail in blocking relationship with the side flange of the tote box when removal prevention of the tote box is desired, each hook-shaped end being removable from the opening in the upper surface of the side rail whereby the clip stop element swings about its closed loop-shaped end to a non-blocking position out of contact with the side flange of the tote box when removal thereof is desired.

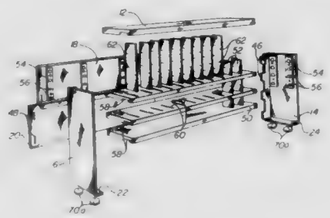
4,795,041
CHANNEL BASKET STOP
Lee Remmers, Ocala, Fla., assignor to Clairson International, Ocala, Fla.
Filed Nov. 13, 1986, Ser. No. 929,777
Int. Cl.[4] A47F *3/14*
U.S. Cl. 211—133 10 Claims

1. A channel shelving system including at least one sliding basket, comprising:
- at least four vertical support members disposed in a rectangular array, including a forward most pair of vertical support members and a rearward most pair of vertical support members;
- at least one pair of horizontal bar members, each horizontal bar member of said pair being coupled to a forward vertical support member and a rearward support so as to be horizontally disposed on opposite sides of said rectilinear array;
- at least one basket means, each said basket means being slidably received on and disposed between a pair of horizontal bar members; and
- means for limiting the movement of said basket means in a forward direction relatively to said forward most pair of support members, said means for limiting being C-shaped, being longitudinally slidably disposed on at least one horizontal bar member of each said pair, and comprising an upper arm member, a lower arm member, and a vertical



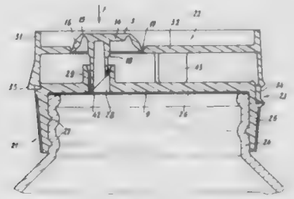
base member, at least one of said upper and lower arm members having a length extending from a vertical plane of said at least one horizontal bar member to a plane of a side of said basket means when said limiting means is disposed on said at least one horizontal bar member.

4,795,042
SPLIT BACK MAIL SORTER
Harold S. Klein, Wayzata, and Marcus S. Lehman, Lake City, both of Minn., assignors to Liberty Diversified Industries, New Hope, Minn.
Filed Jul. 13, 1987, Ser. No. 72,800
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—186 15 Claims



1. A mail sorting apparatus comprising:
- a pair of opposing side panels, each said side panel having a top edge and a back edge and being oriented in a generally vertical position;
- a top panel extending generally horizontally between and connected to each of said opposing side panels along the top edges thereof;
- a first back panel and a second back panel, each said back panel extending between and connected to the opposing side panels along the back edges thereof;
- a plurality of shelving members, said shelving members extending generally horizontally between and being mounted to the opposing side panels;
- a plurality of generally vertical dividers, each said divider being mountable on at least one said shelving member and extending between said shelving member to which said divider is mounted and an adjacent shelving member or said top panel so as to divide said shelving members into a plurality of compartments, each said divider having a pair of opposing front and back edges and a plurality of notches extending inwardly from at least one of said front or back edges of said divider, the shelving members further defining a plurality of slots extending entirely through the surface of the shelving members, said slots having a width greater than the thickness of said dividers and said notches further having a width greater than the thickness of the shelving members, such that a portion of said dividers may be slidably and removably received within said slots of the shelving members in a generally vertical position, and further such that a portion of each of the shelving members receiving said dividers may be slidably and removably received within said notches of said dividers; and
- means for fastening the dividers to the shelving members.

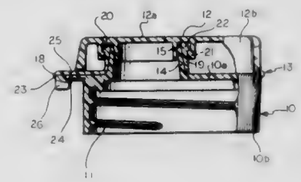
4,795,043
CAP FOR CONTAINER INITIALLY CLOSED BY A FRANGIBLE LID
Philippe Odet, Chasselay, and Jean P. Agati, Lyon, both of France, assignors to Astra Plastique, Saint-Georges-de-Reneins, France
Filed Nov. 6, 1987, Ser. No. 117,266
Claims priority, application France, Nov. 6, 1986, 86 16028; Aug. 4, 1987, 87 11235
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—235 12 Claims



1. A cap for a container closed by a frangible lid sealed on the edge of the opening of the container,
- the cap having a bottom having a first portion and a second portion, said first portion comprising a deformable part comprising a relatively rigid plate;
- said deformable part provided with a perforation means directed toward the container;
- said deformable part initially occupies a stable position raised relative to said bottom;
- said perforation means being maintained at a distance from said lid when the cap is in a closed position;
- said perforation means during use of the container being brought to a position wherein the deformable part is sunk lower than the second portion of said bottom, and when the perforation means is lowered, the perforation means penetrates the plane of the lid;
- a thin web forming a hinge fastens an edge of said plate to one edge of a relatively thick inclined wall;
- a thin web forming a hinge fastens a second edge of said wall to the second portion of said bottom;
- wherein said perforation means is formed under said plate which initially is raised relative to the remainder of the bottom and which, after being lowered, is located below the second position of the bottom.

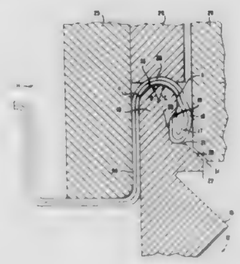
4,795,044
TAMPER EVIDENT CLOSURE WITH SNAP-TYPE HINGE CAP
James M. Beck, Carol Stream, Ill., assignor to Owens-Illinois Closure Inc., Toledo, Ohio
Filed Apr. 21, 1988, Ser. No. 184,306
Int. Cl.[4] B65D *47/06*
U.S. Cl. 215—237 16 Claims

1. A tamper evident closure with a snap-type hinge cap comprising
- a first part adapted to interengage with the open neck of a container,
- a second part forming a cap connected to the first part by an integral hinge,
- said first part including a dispensing spout that is adapted to be closed by a portion of the second part,



- a tamper indicating ring connected by an integral hinge to one of the two parts and adapted to be interposed between the two parts and engage said spout when the closure is closed with a portion extending beyond the periphery of the closure providing evidence that the closure has not been tampered with.

4,795,045
CLOSURE FOR CONTAINERS
Charles S. Radtke, 37 Beech St., Little Ferry, N.J. 07643
Filed Feb. 5, 1988, Ser. No. 152,535
Int. Cl.[4] B65D *41/12*
U.S. Cl. 215—325 11 Claims



1. A closure for a container having a top comprising in combination:
- (a) a neck for said container having;
  - (1) an annular rounded shoulder surrounding said top;
  - (2) an annular tuck support member located below said annular rounded shoulder; and
  - (3) a tuck pocket formed between said annular rounded shoulder and said tuck support member; and
- (b) a cup fitted over said container top and neck having;
  - (1) a rounded top portion sealed on said annular rounded shoulder; and
  - (2) an inwardly curled peripheral tuck fitted within said pocket;

the cross-section radius of said annular rounded shoulder being greater than the cross-section radius of said rounded top cup portion, said top portion thereby contacting said rounded shoulder at at least two points on each of said radii.

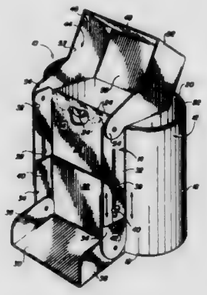
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,046

DUST CHUTE AND COMBINATION DUST CHUTE AND WASTEBASKET DEVICE

Gary Rath, 1226 Santa Barbara St., Santa Barbara, Calif. 93101

Filed Feb. 2, 1987, Ser. No. 9,460
Int. Cl.[4] B65D *67/12*
U.S. Cl. 220—1 T 12 Claims



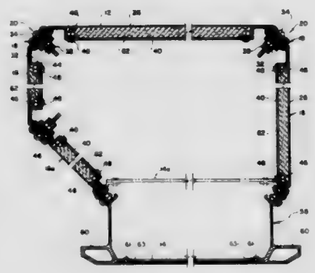
1. An improved dust chute and wastebasket device, said device comprising, in combination:
(a) an upstanding wastebasket having an open upper end and closed bottom and sidewalls defining a central storage space; and
(b) an upstanding dust chute releasably connected to said wastebasket at said upper end and extending down the outside of said wastebasket to about the bottom thereof, said chute including:
i. upper and lower vertically telescoping walls, said upper telescoping wall including curved gripping means lapping over and releasably gripping the upper edge of said upper end of said wastebasket and,
ii. an inclined ramp connected to and sloped downwardly and outwardly from the lower end of said lower telescoping wall,
said telescoping walls and ramp including side rims angled outwardly therefrom to confine dust and debris in said chute during sweeping thereof by a broom from a floor upon which said wastebasket rests to said central storage space.

4,795,047

CONTAINER AND CONSTRUCTION THEREFOR

Edward H. Dunwoodie, Long Beach, Calif., assignor to Century Aero Products International, Inc., Compton, Calif.

Continuation-in-part of Ser. No. 874,387, Jun. 16, 1986, Continuation-in-part of Ser. No. 813,898, Dec. 27, 1985, abandoned. This application Sep. 2, 1986, Ser. No. 902,668
Int. Cl.[4] B65D *87/00*
U.S. Cl. 220—1.5 12 Claims



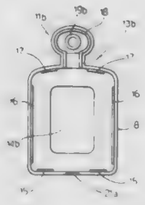
1. A construction for a cargo container having a top, a bottom and a plurality of side walls defining an enclosed interior comprising:
(a) means defining peripheral corners of the cargo container, the means comprising:
(i) an outer corner channel strip defining a longitudinally extending groove means opening inwardly toward the container interior and including a longitudinally extending edge; and,
(ii) an inner molding strip defining a longitudinally extending groove means opening outwardly away from the container interior and including a longitudinally extending projecting lip;
(b) a wall of the container comprising a continuous, unperforated semi-rigid panel with peripheral edges having parallel ridges formed thereon; and,
(c) attaching means to removably attach the outer corner channel strip to the inner molding strip such that a ridge of the semi-rigid panel and the projecting lip of the inner molding strip extend into the inwardly opening groove means defined by the outer corner channel strip, and a ridge of the semi-rigid panel and the edge of the outer corner channel strip extend into the outwardly opening groove means defined by the inner molding strip so as to clamp the peripheral edge of the semi-rigid panel between the outer corner channel strip and the inner molding strip, the attaching means comprising:
(i) nut retaining means on the inner molding strip;
(ii) nut means non-rotatably retained in the nut retaining means; and,
(iii) threaded means extending through the outer corner channel strip and the inner molding strip, and threadingly engaging the nut means.

4,795,048

FLATTENED CONTAINER CAPABLE OF WITHSTANDING CRUSHING

Nicola Trussardi, Milan, Italy, assignor to Trussardi S.p.A., Milan, Italy

Filed Jul. 21, 1987, Ser. No. 76,161
Claims priority, application Italy, Jul. 28, 1986, 22663B/86
Int. Cl.[4] B65D *6/02*
U.S. Cl. 220—4 B 2 Claims



1. A container in the form of a flattened body comprised by two slightly convex half shells that can be locked together to form an inner cavity holding a small amount of a product, the flattened body having a projection that extends from an edge of the flattened body and is comprised by two half projections one on an edge of each of said half shells, one of the two half projections having a peripheral fastening means adapted to releasably adhere to an inner side of a peripheral portion of the other half projection, each of said half projections having a central engaging means surrounded by said peripheral fastening means, said central engaging means of the two half projections being adapted to releasably adhere to each other when pressed together.

4,795,049

SIDE WALL AND TOP RAIL CONSTRUCTION FOR OPEN TOP CONTAINERS

John W. Alcorn, 3897 Eunice Rd., Jacksonville, Fla. 32250

Filed May 29, 1987, Ser. No. 56,384
Int. Cl.[4] B62D *33/00*
U.S. Cl. 220—71 8 Claims



1. An improved side wall construction for use in an open top container wherein side walls of said container comprises vertical panels having horizontally disposed means resisting compressive forces placed on said side walls by a load within said container, said horizontally disposed means in said panels being formed by a plurality of generally longitudinally extending corrugated ribs in said panels to provide beam and column strength, the lower portion of said corrugated panel of each said side wall being a single panel member, the upper portion of each said side wall being vertically spaced separate panel members with a slip joint attachment therebetween permitting limited horizontal movement between said panel members to relieve the unit compressive and buckling forces imposed by the load on the upper portion of each said side wall, said slip joint attachment including a plurality of spaced fasteners carried in respective oversized openings in in said upper panel members to permit said upper panel members to be attached to each other and another plurality of fasteners carried in proper sized openings attaching said upper panel members to said lower panel member and allow limited horizontal movement between said upper panel members to relieve unit compressive forces of a load on said panel members, said side wall construction being operable to resist the outward forces of the load on each said side wall without the use of side posts and to relieve portions of the compressive buckling forces on a top rail of said container to distribute the compressive and buckling forces to larger cross-sectional areas of the corruaged vertical panel members.

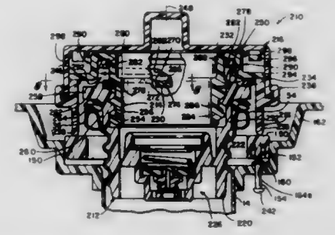
4,795,050

TWO-STAGE FUEL CAP

Dwight Smith, and Robert S. Harris, both of Connersville, Ind., assignors to Stant Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 846,081, Mar. 31, 1986. This application Jan. 12, 1987, Ser. No. 2,214
Int. Cl.[4] B65D *6/12, 51/16;* B01D *53/02*
U.S. Cl. 220—85 VR 22 Claims

1. A two-stage fuel cap for use in a filler neck of a vehicle fuel system, the system including a sensor positioned in close proximity to the filler neck, the cap comprising
closure means rotatably engaging the filler neck for closing the filler neck, the closure means including seal means for establishing a seal with the filler neck to prevent the escape of fuel vapors in the filler neck to the atmosphere, and
shell means for providing a hand grip, the shell means including first stage means for activating the sensor in response to rotation of the shell means through a first predetermined angle relative to the filler neck prior to breaking the seal established by the seal means and second stage means for subsequently breaking the seal established by the seal means in response to continued rotation of the shell means through a second predetermined angle relative to the filler neck.

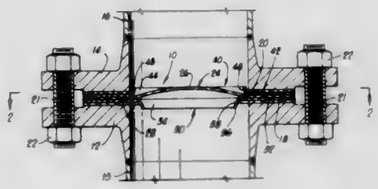


4,795,051

RUPTURABLE FLUID PRESSURE RELIEF APPARATUS AND MANUFACTURING METHOD

Sam A. Ou, Stanton, Calif., assignor to RS&B Safety Systems, Inc., Tulsa, Okla.

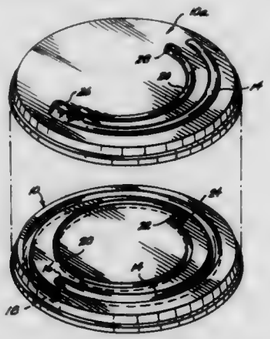
Continuation-in-part of Ser. No. 381,634, May 24, 1982, abandoned. This application Apr. 10, 1984, Ser. No. 598,807
Int. Cl.[4] B21D *53/00;* F16K *17/40*
U.S. Cl. 220—89 A 22 Claims



1. A rupturable fluid pressure relief apparatus capable of rupturing in either the normal or reverse rupture modes at predetermined rupture pressures and adapted to be clamped between a pair of annular support members comprising:
a circular rupture disk;
a first annular rupture pressure control member positioned adjacent said rupture disk, said first control member including a centrally positioned opening therein of a size smaller than the sizes of the openings in said support members but of a particular size such that said rupture disk ruptures at a predetermined rupture pressure exerted on the side of said rupture disk opposite said control member; and
a second annular rupture pressure control member positioned adjacent said rupture disk on the opposite side thereof from said first rupture pressure control member, said second control member including a centrally positioned opening therein of a size smaller than the sizes of the openings in said support members but of a particular size such that said rupture disk ruptures at a predetermined rupture pressure exerted on the side of said rupture disk opposite said second control member.

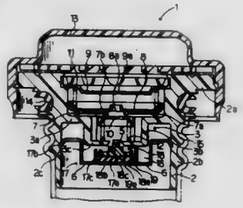
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,052
SPILL-PROOF LID
George W. Hayes, Jr., P.O. Box 764, Snoqualmie, Wash. 98392
Filed Aug. 24, 1987, Ser. No. 88,860
Int. Cl.[4] A47H *12/22*; B65D *21/02*
U.S. Cl. 220—90.4 17 Claims



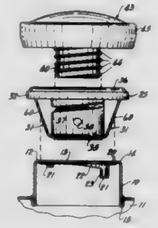
1. A spill-proof lid for sealingly engaging the open end of a container, said lid including:
a cover plate for covering the open end of the container, said cover plate having a peripheral edge and the area of the plate including a first half and a second half;
a liquid chamber formed in said plate, having an inlet at a first end thereof and an outlet at the second end thereof, said inlet and outlet constructed and arranged such that when said lid is on said container, said inlet communicates with the interior of said container and said outlet communicates with the space outside said container, said inlet and said outlet both located in said first half of said plate, and said chamber extending from said inlet to a point in said second half of said plate and then to said outlet; and
a vent chamber formed in said plate, said vent chamber having an inlet at a first end thereof and an outlet at a second end thereof, said inlet and outlet constructed and arranged such that when said lid is on said container said inlet communicates with the space outside said container and said outlet communicates with the interior of said container, said inlet and said outlet both located in said second half of said plate and said vent chamber extending from said inlet to a point in said first half of said plate and then to said outlet.

4,795,053
CAP WITH VALVE FOR POSITIVE PRESSURE
Joji Kasugai, Ichinomiya; Tsuiyoshi Ohashi, Aichi, and Satoshi Toki, Inazawa, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan
Filed Apr. 27, 1988, Ser. No. 187,003
Claims priority, application Japan, May 29, 1987, 62-085117[U]
Int. Cl.[4] B65D *51/16*
U.S. Cl. 220—203 9 Claims



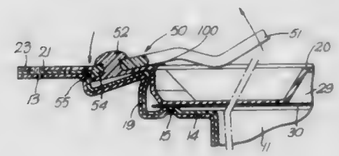
1. A cap with valve comprising:
(a) a cylindrical cap body installed to an aperture of a container;
(b) a partition wall extending from an inner circumferential surface of said cap body in radial direction and having a first fluid flowing hole;
(c) a valve for positive pressure disposed at upper side of said partition wall within said cap body;
(d) a support plate disposed at lower side of said partition wall within the cap body and having a second fluid flowing hole and forming an auxiliary valve chamber to said partition wall;
(e) a stopper valve disposed within said auxiliary valve chamber at lower side of said first fluid flowing hole and being movable up and down and having specific gravity larger than that of liquid within said container for closing said first fluid flowing hole by own weight at reversing state of said container in upper and lower positions; and
(f) a float disposed within said auxiliary valve chamber at lower side of said stopper valve and having specific gravity of the combined body with said stopper valve smaller than that of the liquid within said container.

4,795,054
INSERT FOR FUEL TANK FILLER CAP
William H. Brown, Menomonee Falls, Wis., assignor to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Jul. 31, 1987, Ser. No. 80,100
Int. Cl.[4] B65D *55/16*
U.S. Cl. 220—254 5 Claims



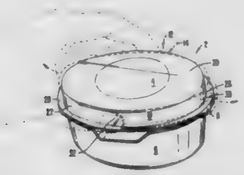
1. An insert retainer assembly for a stationary fuel filler cap retainer having a hollow filler tube with a coextensive bore, one end of said tube secured to a marginal edge portion of the entrance opening of a fuel tank and the bore of said tube communicating at one end with said fuel tank and the opposite end of the bore terminating at a radially, inwardly extending flanged tube portion having at least one notched area at its inner margin defining a detent portion therein; wherein the improvement comprises:
an insert retainer having a tubular insert stem portion defining a thru bore and depending from a radially outwardly extending insert flange, the insert stem being adapted to be received within the bore of said filler tube;
a continuous or semi-interrupted thread formed inwardly of the bore of said tubular insert stem;
spring bias indent means comprising a flat spring clip having a central portion secured to said insert stem and including at least one spring leg extending radially outwardly and angularly towards the insert flange and slidably received by the notched area of the inwardly extending insert flange, and being formed at its distal end to provide an over-center latching engagement with the marginal undersurface defining the said notched area for retention of said insert assembly within the stationary filler cap retainer.

4,795,055
CONTAINER HAVING A PULL RING FOR SEPARATION AND REMOVAL OF A LID
Ole Ingemann, Ryslinge, Denmark, assignor to PLM AB, Malmo, Sweden
PCT No. PCT/SE86/00373, § 371 Date Apr. 16, 1987, § 102(e) Date Apr. 16, 1987, PCT Pub. No. WO87/01095, PCT Pub. Date Feb. 26, 1987
PCT Filed Aug. 18, 1986, Ser. No. 46,048
Claims priority, application Sweden, Aug. 16, 1985, 8503830
Int. Cl.[4] B65D *17/34*
U.S. Cl. 220—270 13 Claims



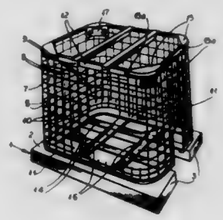
1. An easily-opened container comprising a container body having an opening portion and a sealed bottom portion, a lid with a central lid portion and a peripheral portion located outside said central lid portion, one or more connection means which sealingly fix said lid to said container body to close said container and opening means, said opening means including a weakened portion located in said lid and formed by a material zone of reduced strength, wherein said weakened portion is located inside said connecting means and extends in the circumferential direction of said opening portion, and at least partly thereabout, said central portion being separable, at said weakened portion, from adjacent regions of said peripheral portion, said opening portion being in a restricted region, provided with a recess located beneath said weakened portion, and wherein said opening means includes a pull unit with fulcrum-effect journaled in a support region, said pull unit comprising a pull member and a pressure member, the latter abutting against the outer surface of said lid in the region of or adjacent to said weakened portion, said weakened portion being located above said recess in order, on lifting of said pull member, to realize, by pressure against said region, material rupture in said weakened portion.

4,795,056
MICROWAVE DISH COVER
Kenneth A. Meyers, Reedsburg, Wis., assignor to Gerber Products Company, Fremont, Mich.
Filed Mar. 31, 1988, Ser. No. 175,475
Int. Cl.[4] B65D *41/16*, *41/18*
U.S. Cl. 220—306 19 Claims



1. A closure device for a container including an elongated cover comprising:
a pair of narrow ends, a pair of elongated ends and latching means attached to said cover at each of said narrow ends;
said latching means being adapted to be received by said container for attaching said cover to said container; and
a set of side surfaces formed at said elongated ends including pressure points whereby pressure applied to said pressure points releases said latching means.

4,795,057
TRANSPORT AND/OR STORAGE CONTAINER, PARTICULARLY FOR A FLUID AND/OR A FINE GRAINED LOOSE MATERIAL
Erwin Jungels; Pierre Pfeiffer, both of Drulingen; Benoit Cheval, Saverne, and Paul Sigwalt, Drulingen, all of France, assignors to Sotralentz S.A., Drulingen, France
Filed Apr. 1, 1987, Ser. No. 33,979
Claims priority, application France, Apr. 1, 1986, 86 04740
Int. Cl.[4] B65N *19/00*
U.S. Cl. 220—401 10 Claims



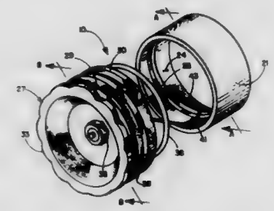
1. In a transport and/or storage container for a flowable material, comprising a container base in the form of a pallet with a plurality of planks positioned parallel to each other having a plurality of supporting surfaces, an inner container in the form of a substantially rectangular parallelepiped plastic tank with a plurality of rounded edges and corners and a support structure which at least peripherally surrounds said inner container, said support structure having a support cage comprising a plurality of vertical and horizontal steel rods which are welded together at crossing points and are connected to a lower and an upper steel frame by welding, said lower steel frame having an L-shape cross section and being mounted with a horizontal flange thereof on said supporting surfaces, the improvement which comprises
a plurality of flat steel bars generally transverse to said planks and welded to opposite sides of said lower steel frame, said flat steel bars simultaneously stabilizing said lower steel frame, said pallet and said support structure, and
a plurality of corner reinforcing members mounted on said upper steel frame for further stabilizing said support structure.

4,795,058
SHIPPING CONTAINER PORT ASSEMBLY
Farley T. Hinds, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jan. 11, 1988, Ser. No. 142,899
Int. Cl.[4] F02B *5/00*
U.S. Cl. 220—465 2 Claims

1. An access port assembly for a metallic shipping container comprising:
(a) a hollow cylindrical segment of preselected size for welding at a first end thereof into a wall of a metallic shipping container;
(b) a single thread formed on the inner surface of said hollow cylindrical segment, said single thread extending less than the full circumference of said inner surface of said hollow cylindrical segment;
(c) a hub member including thread means sized for engaging said single thread and providing sealing engagement of said hub member with said hollow cylindrical segment with less than a single rotation of said hub member;

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(d) said hub member having on the periphery thereof means for gripping said hub member for attachment and removal by hand of said hub member to and from said hollow cylindrical segment;
(e) an annular gasket between said hub member and said hollow cylindrical member, said gasket sized for providing said sealing engagement of said hub member with said hollow cylindrical segment; and
(f) a cable attached at respective ends thereof to said hollow cylindrical segment and hub member, said cable extending through the interior of said gasket for securing said gasket and hub member to said hollow cylindrical segment.

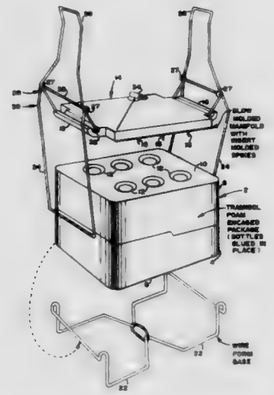


4,795,059

METHOD AND APPARATUS FOR SIMULTANEOUS AND CONTINUOUS DELIVERY OF LIQUIDS FROM A PLURALITY OF INDIVIDUAL CONTAINERS TO A DISPENSING DEVICE

Charles B. Sanders, Cedar Grove; Clark Bow, Newton; Ralph DeVito, Stanhope, and Louis S. Hoffman, Morristown, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 17, 1987, Ser. No. 121,680
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—1 **20 Claims**



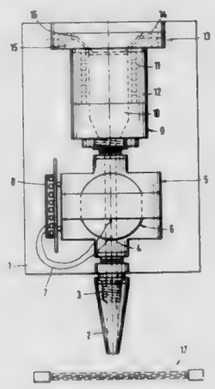
19. A method of simultaneously and continuously delivering a liquid from a plurality of different containers, said method comprising the steps of:
providing a housing for accommodating a plurality of containers holding liquids in an upright position,
providing openings in said housing for exposing each of the tops of said plurality of containers,
mounting, on top of said housing, a lid having downwardly extending hollow means for puncturing in fluid communication with a hollow chamber defined in said lid,
driving said. lid into said housing to cause said hollow means for puncturing to puncture the tops of said plurality of containers,
securing said lid to said housing, and
inverting said lid and said housing to cause liquid from each of said plurality of containers to flow through said hollow means for puncturing and into said hollow chamber in said lid.

4,795,060

DEVICE FOR THE METERED DISPENSATION AND REGISTRATION OF LIQUIDS

Peter Albrecht, Klosterweg 5, D-3300 Braunschweig, Fed. Rep. of Germany

Filed Mar. 13, 1986, Ser. No. 839,266
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1985, 3509189
Int. Cl.[4] B67D *5/30*
U.S. Cl. 222—17 **9 Claims**



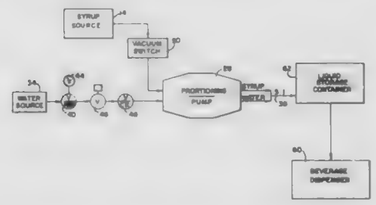
1. A device for the metered dispensation and registration of liquids from a bottle, comprising:
(a) a solenoid valve attachable to the neck of a bottle and magnetically operable between an opened position and a closed, rest position, said valve comprising a housing which includes coded information;
(b) a fixedly-installed operating head which comprises
(i) a receiving part which includes:
a receiving opening extending substantially vertically for receiving the bottle with said solenoid valve,
a coil about the receiving opening for operating said solenoid valve,
a reading facility for reading said coded information,
an injection opening for injecting a predetermined quantity of rinsing fluid into said liquid channel after metering, said injection opening being located in the region of said operating head near the said bottle receiving opening,
(ii) a flowmeter connected to said receiving part, said flowmeter being disposed downstream of said solenoid valve for controlling the opening time of said solenoid valve in response to passage of a predetermined quantity of liquid, and
(iii) a liquid channel extending longitudinally through said receiving part and said flowmeter; and
(c) a stationary registration facility connected to said operating head.

4,795,061

APPARATUS FOR PROVIDING WATER AND SYRUP IN A PREDETERMINED RATIO TO A BEVERAGE DISPENSER

Bryan M. Peckjian, Philadelphia, Pa., assignor to Chilly-Willee Products Div. of Grose-Given Manufacturing Company, Philadelphia, Pa.

Filed Sep. 23, 1987, Ser. No. 99,942
Int. Cl.[4] B67D *5/56*
U.S. Cl. 222—66 **10 Claims**



1. An apparatus for providing water and syrup in a predetermined ratio to a beverage dispenser comprising:
(a) a housing;
(b) a source of syrup in a flexible container;
(c) a source of water under pressure;
(d) proportioning pump means in fluid communication with the syrup source and the water source for receiving syrup and water and for discharging the syrup and water in a predetermined ratio;
(e) water valve means, movable between an open and a closed condition, connected between the water source and the pump means for controlling the flow of water from the water source to the pump means, the water valve means being normally closed, but being opened upon activation of the beverage dispenser, permitting water to flow from the water source to the pump means, the pump means, when receiving the water, drawing syrup from the syrup source and discharging the water and syrup in the predetermined ratio to the beverage dispenser; and
(f) vacuum switch means connected between the syrup container and the pump means, the vacuum switch means including sensor means for sensing the presence of a vacuum in the syrup container indicating that the syrup in the syrup container has been depleted below a predetermined syrup limit and for disabling the water valve means to prevent water from flowing to the pump means when the sensed vacuum exceeds a predetermined limit.

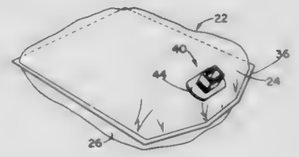
4,795,062

BAG-LIKE CONTAINER

Hubert A. Bedwell, Sycamore Township, and Ronald C. Dreyer, Cheviot, both of Ohio, assignors to Fibre Glass-Evercoat Company, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 903,970, Sep. 5, 1986, Pat. No. 4,722,457, and a continuation-in-part of Ser. No. 913,971, Oct. 1, 1986, Pat. No. 4,739,903. This application Aug. 31, 1987, Ser. No. 91,079
Int. Cl.[4] B65D *47/10*
U.S. Cl. 222—92 **5 Claims**

1. A bag-like container which comprises a first flexible wall member, a second flexible wall member, means for attaching edge portions of the flexible wall members together to form a container, a spout having an annular body and an outstanding annular flange at an end of the body, the flange being attached to one of the wall members with the flanged end of the spout closed by the wall member, there being slot means in the annular body parallel to the annular flange and spaced therefrom, a closure plate member slideably mounted in the slot means, and a tongue mounted on the closure plate member, the tongue moving in openings in opposed sides of the spout body between a closed position in which the tongue closes the spout body and an open position whereby when an aperture is provided in the wall member through which the interior of the container is in communication with the interior of the spout, the tongue can be positioned to regulate discharge of contents of the container.

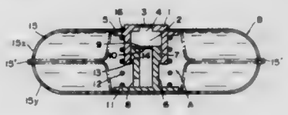


4,795,063

FLUID DISCHARGING DEVICE

Tomozo Sekiguchi, Kawaguchi, and Kazuya Noguchi, Tokyo, both of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1986, Ser. No. 935,302
Claims priority, application Japan, Nov. 29, 1985, 60-184182; Jan. 31, 1986, 61-12927; Feb. 28, 1986, 61-28331
Int. Cl.[4] B67D *5/00*
U.S. Cl. 222—105 **9 Claims**



1. A fluid discharging device comprising:
a collapsible fluid container comprised of flexible material for containing fluid, said container having an opening therein; and
a double one-way valve mechanism mounted to said container within said opening for discharging a predetermined quantity of the fluid from said container,
said double one-way valve mechanism comprising a cylinder in which a suction chamber is defined, a cylindrical piston slidably mounted to said cylinder, and a resilient member disposed between said cylinder and said piston for resiliently biasing said cylinder and said piston in respective opposite directions,
said cylinder having one open end thereof in communication with the suction chamber and disposed at a location adjacent the outer peripheral surface of said container, and a first one-way valve comprising a resilient flap integral with the cylinder and extending over said one open end, said integral flap movable in a direction extending away from said suction chamber between a first position at which said open end is covered by said resilient flap and a second position at which said open end and said suction chamber in communication therewith are exposed to the environment outside said container, said resilient flap self-biased toward said first position whereby said open end is normally covered,
said piston having a sliding portion extending within said cylinder for sliding therein, a suction opening extending between the interior of said container and said suction chamber, and a second one way valve located between said suction opening and said suction chamber for selectively placing the interior of said container in communication with said suction chamber via said suction opening, said second one-way valve comprising a second resilient flap integral with said sliding portion, said second resilient

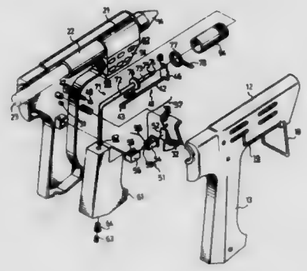
VOL 1098 ISS 1 JA 3 1989 UMI

flap movable in a direction extending toward said suction chamber between a first position at which said second resilient flap closes said suction chamber to the interior of said container and a second position at which said second resilient flap places the interior of said container in open communication with said suction chamber.

4,795,064
GAS HEATED GLUE GUN

Sea M. Shen, No. 24-2, Ho Chuan Lane, Chien Hsing Road, Chien Min Village, Ta Li Hsiang, Taichung Hsien, Taiwan

Filed Feb. 16, 1988, Ser. No. 156,470
Int. Cl.[4] B67D *5/62*
U.S. Cl. 222—113 7 Claims

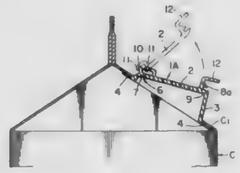


1. A gas heated glue gun (11) comprising:
a body portion (12), a handle portion (13), a gluing member (14) projecting from said body portion (12); a window (19) on one side of said body portion (12);
a melt cartridge (21) provided within said body portion (12) proximate to said gluing member (14); a guiding conduit (22) being provided within said body portion (12) immediately adjacent to said melt cartridge (21) for receiving a glue stick (23);
a trigger (32) pivotably mounted within said body portion (12);
a drawing means (41) located for communication with said trigger (32); said drawing means (41) being generally a shaft (42) having a laterally extending end part (43) for engaging with said trigger (32), and an integrally perpendicularly formed pulling plate (46) at an end remote from said laterally extending end part (43); said pulling plate (46) being a flat plate having a hole (49) thereon;
a sparking means (51) located for communication with said trigger (32); said sparking means (51) including a stop plate (52) in contact with said trigger (32), a crystal (55) encircled by a coil (53), and two distinct wires extending from said coil (53); a first said extending wire (57) extending to a location proximate to an end of a gas control means; a second said extending wire (58) being electrically connected to said gas control means at another end;
a gas supply means (61) being a gas chamber having an opening (62) at an upper side thereof; said gas supply means (61) further including a gas nozzle (63) and a gas valve (64) at a bottom side thereof for filling gas thereinto;
said gas control means (71) including a first hose (72) having an end connected to said opening (62) of said gas chamber (61), and a second hose (73) receivable by said drawing means (41); said second hose (73) having an end part provided with a nozzle (74); said second hose (73) being receivable by said drawing means (41); said gas control means (71) further including an adjustable dial (76) covered with a ring (77) having a protruder (78); said protruder (78) being manually operable and projecting from said body portion (12) through said window (19); said second hose (73) being provided with an inlet (79) near an interconnection part with said first hose (72); a sleeve (80) partially covered with said adjustable dial (76) and ring (77) being rotatably mounted on said second hose (73) and covering said inlet (79); said sleeve (80) having a helical flange (81) on the inner wall thereof and being provided with a plug 82 and an aperture (82) on an outer face thereof; said helical flange (81) being slidable around said second hose (73) so as to cover said inlet (79) to different extents; said first hose (72) being partially mounted on said sleeve (80); said first hose (72) being internally provided with a plate (83) having an opening (84); said opening (84) being insertable by said plug (82); said plug (82) being detachable from said opening (84) to form a passage for gas; and
a combustion chamber (91) including a plurality of vents (92), an end part of said combustion chamber (91) being provided with a bore (93) for receiving a cylindrical tube (94).

4,795,065
SPOUT FOR PACKAGING CONTAINERS

Kenji Ashizawa, and Hiroshi Uematsu, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP86/00267, § 371 Date Jan. 27, 1987, § 102(e) Date Jan. 27, 1987, PCT Pub. No. WO86/07032, PCT Pub. Date Dec. 4, 1986
PCT Filed May 27, 1986, Ser. No. 21,010
Claims priority, application Japan, May 27, 1985, 60-78987
Int. Cl.[4] B65D *17/32, 43/24*
U.S. Cl. 222—541 9 Claims



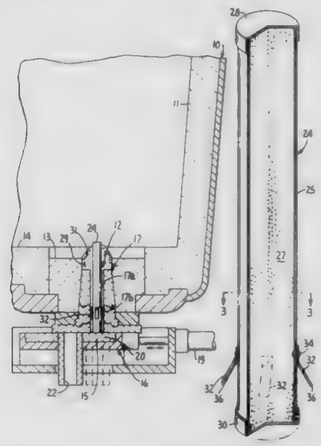
1. A sealed gable top carton for containing liquid product, comprising:
a box-shaped body having a closed bottom;
a gable top closing a top end of the box-shaped body and having a pair of oppositely inclined top walls, one of which has a hole therethrough;
a spout attached to said one top wall and having a main body which is sealingly passed through said hole and has an opening, said spout having a cover integrally joined to said main body so as to close said opening of the main body, said cover having one side integrally connected to the main body through a reduced-thickness portion which defines a hinge portion, the remaining portion except said hinge portion of said cover being integrally connected to the main body through a reduced-thickness separable portion;
a first engaging element in the form of a straight wall of an elastic material, projecting upright from and integrally with an outer surface of the main body outside of and adjacent to said hinge portion in parallel relation thereto; and
a second engaging element in the form of a straight wall of the same elastic material as said first engaging element, and projecting upright and integrally with an outer surface of said cover at a position inside of said hinge portion in parallel relation thereto, said first engaging element having a hook-shaped distal end extending away from the second engaging element, the second engaging element having a hook-shaped distal end extending toward the first engaging element, the hook-shaped distal end of said second engaging element engaging the hook-shaped distal

end of the first engaging element when said cover is swung in an opening direction about said hinge portion after the reduced-thickness separable portion is severed, to maintain the cover in an opened state.

4,795,066
LADLE NOZZLE INSERT

Richard A. Worrell, Apple Valley, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

Filed Sep. 23, 1982, Ser. No. 422,022
Int. Cl.[4] B22D *41/00*
U.S. Cl. 222—590 1 Claim



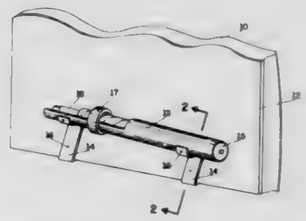
1. A method for improving flow of molten steel from a bottom pouring steel ladle nozzle upon opening of a slide gate closing said nozzle which comprises the steps of forming a nozzle insert of a tubular member with a lower cap, filling the insert with granular material which is free flowing at temperatures in excess of the temperature of the molten steel in said ladle, said tubular member having a thickness to permit melting thereof upon contact with said molten steel in said ladle, inserting said nozzle insert into a ladle nozzle so that the upper end of said insert extends beyond the nozzle into the ladle, removing said lower cap and promptly closing said gate to retain said sand in said nozzle insert, filling the annular space between said tubular member and said nozzle with additional sand and packing additional sand around said tubular member above said nozzle but below the upper portion of said tubular extending member into said ladle, filling the ladle with molten metal, having the molten metal in said ladle liquify said extended portion of said tubular member, then opening said gate to release said sand in said tubular member with the pour of molten metal from said ladle and thereby permit the remainder of said tubular member to melt into the flowing metal and the balance of the sand in said nozzle to flow out with said flowing metal and thereby leave a clean nozzle at the end of said pour.

4,795,067
UMBRELLA STORAGE DEVICE

Reed D. Hamilton, 12122 Broken Bough Dr., Houston, Tex. 77024

Filed May 29, 1987, Ser. No. 55,344
Int. Cl.[4] B60R *7/00*; A47G *25/12*
U.S. Cl. 224—42.42 2 Claims

1. An umbrella storage device for use in vehicles comprising:
(a) a cylindrical member enclosed on the first end for storing a closed umbrella, said cylindrical member slotted open for one-half its length on the second end with said slot wide enough to receive a closed umbrella,
(b) a removable end closing device which closes the first end of the cylindrical member, said device to have two positions of open and closed to permit water drainage from the cylindrical storage device,
(c) mounting means U-shaped at the first end attached to the

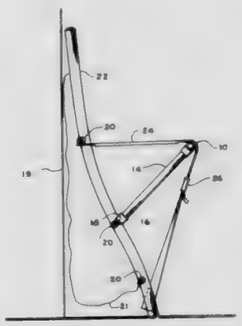


vehicle door and semi-circular shaped at the second end clamping and cradling the cylindrical storage member, said mounting means sized to position the storage component in a sloped attitude.

4,795,068
BACKPACK SEAT

Harold P. Blean, 225-19th St., NE. #5, East Wenatchee, Wash. 98802

Filed Sep. 21, 1987, Ser. No. 98,570
Int. Cl.[4] A45F *4/02*
U.S. Cl. 224—155 3 Claims



1. A convertible pack frame for use as a seat, the frame including a main frame for supporting a pack and including shoulder straps to support the main frame and pack, the shoulder straps being attached at their ends on the main frame, and a U-shaped secondary frame attached to the main frame when it is desired to convert the device to a seat, said secondary frame being attached to the main frame at a location between the ends of the shoulder straps such that when the secondary frame is attached, the shoulder straps can be positioned thereon to form a horizontal seat member with the tension of the shoulder straps aiding to hold the secondary frame in position on the main frame.

4,795,069
CLIP-COLLAR FOR SECURITY BADGES

Howard M. Ferrill, 16010 Torry Pines, Houston, Tex. 77062

Filed Jul. 1, 1985, Ser. No. 749,983
Int. Cl.[4] A45F *3/02*
U.S. Cl. 224—202 1 Claim

1. A collar for comfortably carrying around the neck an identification member to enhance its visibility, said member having a clasp which includes a pair of spring-biased jaws, said collar comprising:

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a limp band made of a flexible tubular plastic material having a bore whose opposite ends form sockets;

a generally U-shaped clip made of spring-type resilient wire and having a substantially straight strap portion for removably accepting and supporting said jaws, and a pair of



legs whose outer ends are bent to form outwardly-extending, L-shaped hooks, said legs being shaped so as to act as bias springs for said hooks which are adapted to become forcibly inserted into said sockets in laterally-opposite directions for hookingly engaging without rupturing the wall of said tube

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4,795,070

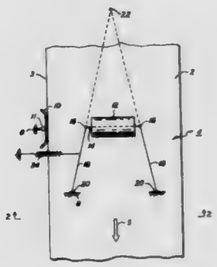
WEB TRACKING APPARATUS

Douglass L. Blanding, Rochester, and Terry N. Morganti, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1986, Ser. No. 900,654

Int. Cl.[4] B65H *23/02*

U.S. Cl. 226—15 **8 Claims**



1. Apparatus for maintaining a moving web of material in a predetermined path of travel on a platen and along an edge guide relative to a stationary frame, said apparatus including:

a compliant roller mounted on a roller shaft for rolling contact on top of said web, said roller shaft being pivotally connected at one end thereof to a first pivot arm and at the other end thereof to a second pivot arm, said pivot arms in turn being pivotally connected to said frame at frame pivot points above said platen, said pivot arms substantially overlying said platen and so disposed that their center lines meet at a point spaced from said roller in the direction from which said web passes under said roller, said roller shaft being perpendicular to said predetermined path of travel when said web is in said predetermined path of travel, and

a tension spring operatively connected to said frame and to one of said pivot arms, said spring imparting a restraining force on said pivot arms toward said edge guide to impede lateral movement of said roller in the direction away from said edge guide, said restraining force being smaller than the opposed lateral frictional force between said roller and said web to avoid lateral sliding contact of said roller on said web.

4,795,071

COPYING MACHINE HAVING A SHEET STAPLING DEVICE

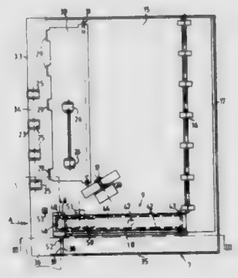
Gerardus M. H. M. Jacobs, Velden, and Ronald P. H. in't Zandt, Venlo, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed May 9, 1986, Ser. No. 861,518

Claims priority, application Netherlands, May 10, 1985, 8501337

Int. Cl.[4] B27F *7/17*; **B42B** *5/08*; **B21J** *15/28*

U.S. Cl. 227—7 **14 Claims**



1. A copying machine having a sheet stapling device comprising a support for collecting sheets printed in the copying machine into a bundle; a stapling means for fastening together a bundle of collected sheets at an edge; a means for discharging the bundle of collected sheets from the support through an elongated opening; and an externally accessible opening in the sheet stapling device through which a bundle of sheets can be manually inserted such that only a small portion of the bundle needs to be inserted before it is aligned with the stapling means and wherein both the stapling means and the opening have been provided at the same part of the support on which a corner area of the bundle of collected sheets is situated.

4,795,072

BUTTON ORIENTING AND PLACING APPARATUS

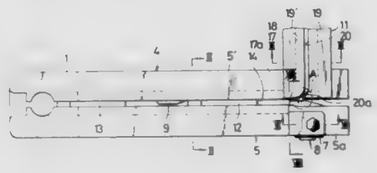
Toshiaki Sodeno, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Oct. 24, 1986, Ser. No. 923,101

Claims priority, application Japan, Oct. 26, 1985, 60-164846[U]

Int. Cl.[4] A41H *37/10*

U.S. Cl. 227—18 **1 Claim**



1. An apparatus for placing a button on a die in a predetermined orientation for attachment to a garment, the button having a disk-like head and a pair of radially spaced claws projecting centrally from a rear surface of the head, said apparatus comprising:

(a) an elongate guide table defining a substantially horizontal first guide channel having one end adapted to be disposed continuous to the die for guiding the button therethrough onto the die, said first guide channel including a first claw guide passageway for guiding therethrough the two claws of the button so as to prevent the latter from turning with respect to said first claw guide passageway, and a first button-head guide passageway for guiding therethrough the head of the button;

(b) a chute defining a slanting second guide channel communicating at its lower end with the other end of said first guide channel for guiding the button therethrough into said first guide channel, said second guide channel including a second claw guide passageway for guiding therethrough the two claws of the button so as to prevent the latter from turning with respect to said second claw guide passageway for guiding therethrough the head of the button, said second claw guide passageway having an arcuate lower end portion curved toward said one end of said first guide channel, said chute having in its die-side wall at the lower end thereof a cut-out communicating with said first and second button-head guide passageways, a line tangential to a lower end of an arcuate end of said arcuate lower end portion of said second claw guide passageway being disposed at an angle of 45° to 65° with respect to said first claw guide passageway; and

(c) a pusher mechanism mounted within said guide table below said first guide channel and reciprocable therealong for pushing the button through said first guide channel onto the die.

4,795,073

STAPLER WITH DETACHABLE STAPLE HOLDER

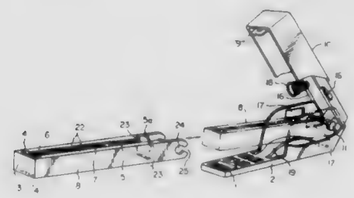
Ken Yamamoto, and Shubei Kageyam, both of Saitama, Japan, assignors to Kotobuki & Co., Ltd., Japan

Filed Aug. 14, 1986, Ser. No. 896,676

Claims priority, application Japan, Aug. 23, 1985, 60-129353[U]

Int. Cl.[4] B25C *5/11*

U.S. Cl. 227—120 **6 Claims**



1. A stapling device having a detachable staple holding means comprising; a base body having an anvil at one end of said base body; a pushing body having staple pushing plate means mating with said anvil on one end of said pushing body; hinge means hingedly connecting said base body and said pushing body together at the ends opposite said anvil end and pushing plate end; at least one pushing spring holding said anvil end and said staple pushing plate in a spaced apart relationship; detachable staple holding means having an end wall, side walls and a bottom; a narrow slot in said bottom adjacent said end wall; a plurality of staples in said staple holding means; a resilient staple pushing spring holding said plurality of staples against said end wall adjacent to said slot so that an end of said pusher plate can force a staple through said narrow slot against said anvil when a force is applied to press said pushing body down toward said base body; means on the end of said detachable staple holding means opposite the end having said narrow slot for detachably mounting said detachable staple holding means between said pushing body and said base body; said detachable mounting means including means on the end of said detachable staple holding means opposite the end having said narrow slot for detachably coupling said staple holding means to said hinge means; said detachable coupling means comprising bore means on the end of said staple holding means opposite said end having said narrow slot; deformable slot means accessing said bore means; said hinge means including shaft means for engaging said bore means so that said shaft means may be pushed into said bore means through said deformable slot means to detachably secure said detachable staple holding means on said base body and said pushing body; whereby said detachable staple holding means may be completely removed from between said pushing body and said base body for refilling with staples and then reattached to said hinge means with said narrow slot properly positioned to dispense staples.

4,795,074

AUTOMATIC NAILER SYSTEM

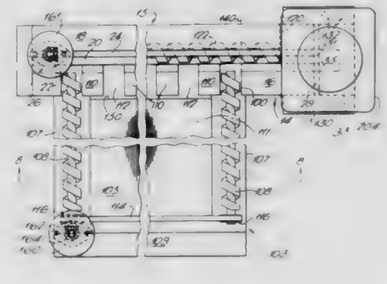
Terry E. Francis, Poplar Court, Cae Hopkin, Abercrave, Powys SA9 1TP, Wales

Continuation-in-part of Ser. No. 766,107, Aug. 15, 1985, abandoned. This application Sep. 15, 1987, Ser. No. 97,512

Claims priority, application United Kingdom, Aug. 15, 1984, 8420747; May 14, 1985, 8512208

Int. Cl.[4] B25C *1/00*

U.S. Cl. 227—136 **19 Claims**



1. An automatic nailer, for receiving a strip, each strip including a plurality of plastic ferrules, arranged in a longitudinal row, carrying a complementary plurality of nails selected from the group consisting essentially of panel pins, tacks, oval head nails, T-head nails, masonry pins, expansion bolts and expanding nails, each ferrule being attached to adjacent ferrules by at least one severable plastic web, and said nailer having means for fixing a ferrule severed from the strip to a substrate, the automatic nailer comprising:

a track for supporting the strip;

means for moving the strip along the track;

a guide plate defining a generally T-shaped slot located at the end of the track towards which the strips is adapted to be urged, the slot being arranged to allow passage therethrough of a ferrule and its associated nail;

a stop block defining an elongate recess having a cross-sectional shape which snugly receives and aligns a ferrule, the stop block being located adjacent the guide plate with its recess parallel to the leg of the T-shaped slot so that only one ferrule and its associated nail can, in use, extend beyond the guide plate; and

a reciprocable hammer having means for driving the one of said ferrules carrying a nail which is located in the recess towards the substrate and causing said one ferrule to be severed from the next adjacent ferrule.

9. A cartridge for feeding a plurality of strips into an automatic nailer, each strip including a plurality of plastic ferrules arranged in a longitudinal row, carrying a complementary plurality of nails selected from the group consisting essentially of panel pins, tacks, over head nails, T-head nails, masonry

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pins, expansion bolts and expanding nails, each ferrule being attached to adjacent ferrules by at least one severable plastic web, said cartridge comprising:

a housing having a plurality of spaced parallel ribs for receiving thereon said plurality of strips with the strips arranged transverse to the ribs and the nails depending into the spaces between the ribs, and an edge of the cartridge housing having apertures for passage therethrough of said ferrules carrying said complementary plurality of nails into said nailer.

4,795,075

HOLDING APPARATUS FOR A VEHICLE ASSEMBLY LINE

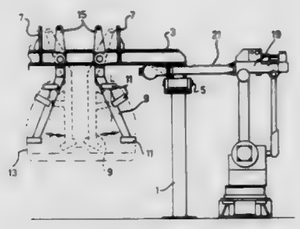
Norman B. Pigott, Bishop's Stortford, and George A. Roberts, Luton, both of United Kingdom, assignors to Litton U.K. Limited, Buckinghamshire, England

Filed Jul. 18, 1987, Ser. No. 79,799

Claims priority, application United Kingdom, Mar. 28, 1987, 8707478

Int. Cl.⁴ B23K *37/04*

U.S. Cl. 228—45 13 Claims



1. Apparatus for holding a partly assembled vehicle body having at least one aperture in the body for access to the interior thereof, comprising a main holding structure, vehicle holding means mounted on said main structure, and moving means to effect relative movement between said body and said holding means so that said holding means passes into said interior of the body through said aperture to enable it to clamp the body from the inside thereof by engagement with the respective insides of the body.

4,795,076

SOLDERING IRON TIP

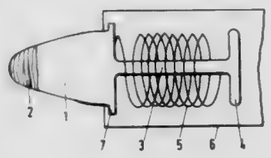
Wilfried Gottschild, Casper-Merian-Str. 19, D-6980 Wertheim, Fed. Rep. of Germany

Filed Dec. 7, 1987, Ser. No. 129,479

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1966, 3641873

Int. Cl.⁴ B23K *3/02*

U.S. Cl. 228—54 4 Claims



1. A soldering iron tip comprising a material containing at least about 50% by weight of an aluminum nitride ceramic which is both a good heat conductor, as well as a good electrical insulator.

4,795,077

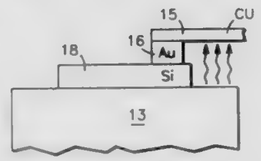
BONDING METHOD AND APPARATUS

Harry J. Geyer, Phoenix; James H. Knapp, Gilbert, and Setsuko J. Cole, Phoenix, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed May 23, 1988, Ser. No. 197,137

Int. Cl.⁴ B23K *31/00*

U.S. Cl. 228—106 13 Claims



1. A method of bonding a lead frame to contacts of a semiconductor die comprising;

depositing a first surface of said semiconductor die on a blade of a lower thermode;

aligning a lead frame over a second surface of said semiconductor die, said second surface being opposite said first surface and containing said contacts of said semiconductor die;

ramping the temperature of said blade of said lower thermode from approximately 150° C. to approximately 350° C.;

lowering an upper thermode onto said lead frame;

contacting said lead frame to said contacts of said semiconductor die; and

ramping the temperature of said blade of said lower thermode from approximately 350° C. to approximately 150° C.

4,795,078

METHOD FOR PRODUCING A CLAD STEEL PIPE

Takanori Kuroki, Fukuoka, and Toshio Yoshida, Koube, both of Japan, assignors to Kuroki Kogyosho Co., Ltd., Fukuoka, Japan

Continuation-in-part of Ser. No. 472,370, Mar. 4, 1983, abandoned. This application May 13, 1986, Ser. No. 863,820

Int. Cl.⁴ B23K *1/00*

U.S. Cl. 228—131 27 Claims



20. A method of producing corrosion and wear resistant clad pipes for use in the oil industry to transport oil and the like comprising assembling a plurality of cylindrical tubular blanks of dissimilar metals having different ductibility and different deforming resistance, seal welding the longitudinal ends of said blanks, placing the entire assembled blanks within a hot isostatic press enclosure, simultaneously heating for about one hour the entire assembled blanks to a temperature of at least 750° C. in said enclosure, simultaneously with said heating, pressurizing for about one hour the entire assembled blanks including the inside and outside of the assembled blank to a pressure of at least 200 kg/cm² in said enclosure, providing a one hundred percent metallurgical bond between said blanks and a thick diffusion layer of coarse grains at the matrix of said assembled blanks during said steps of simultaneously heating and pressurizing said assembled blanks in said enclosure, removing said metallurgically bonded blanks form said enclosure, elongating said metallurgically bonded blanks such that the cross-section area of the metallurgically bonded blanks is reduced to one-third or less of its pre-elongated cross-section area, said step of elongating said metallurgically bonded blanks comprising simultaneously elongating said diffusion layer, reducing the thickness of said diffusion layer, and refining said coarse grain in said diffusion layer, thereby producing a strong, corrosion resistant and wear resistant clad pipe suitable for use in the oil industry.

4,795,079

STRUCTURE OF JOINING PRINTED CIRCUIT BOARDS AND PROCESS FOR PRODUCING THE SAME

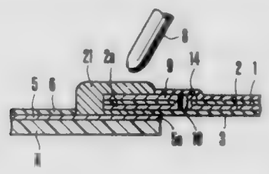
Akira Yamada, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1986, Ser. No. 844,822

Claims priority, application Japan, Mar. 29, 1985, 60-065451; Mar. 29, 1985, 60-046106[U]; Jul. 3, 1985, 60-102433[U]

Int. Cl.⁴ H05K *3/24*

U.S. Cl. 228—179 11 Claims



1. A structure for joining printed circuit boards through a thermal welding electrically conductive material at joint pattern portions thereof, comprising:

(a) a first printed circuit board having a first joint pattern formed on a base plate, whereby said thermal welding electrically conductive material is applied on said first joint pattern of said first printed circuit board; and

(b) a second printed circuit board having a second joint pattern formed on a base plate, said second printed circuit board having a pattern for improving thermal conductivity formed on a surface of said base plate opposite to that on which said second joint pattern is formed and in an area almost coincident to at least said second joint pattern area.

7. A process for joining two printed circuit boards at joint pattern portions thereof with a thermal welding electrically conductive material therebetween by applying heat from an exterior thereof to melt said conductive material, comprising the steps of:

(a) using a first printed circuit board previously coated with said thermal welding electrically conductive material in a first joint pattern portion of a base plate and a second printed circuit board having a pattern for improving thermal conductivity formed on a back surface of a base plate having a front surface with a second joint pattern portion, said pattern for improving thermal conductivity being formed in at least an area on said back surface substantially superposed to said second joint pattern portion;

(b) putting said first joint pattern portion of said first printed circuit board on said second joint pattern portion of said second printed circuit board; and

(c) applying heat to said pattern for improving thermal conductivity of said second printed circuit board to melt said thermal welding electrically conductive material, whereby said first joint pattern portion and said second joint pattern portion are joined with each other.

4,795,080

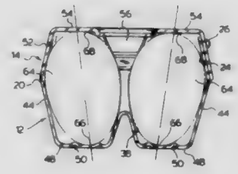
PLASTIC EGG CARTON

David A. McIntyre, Bellwood, Canada, assignor to Cascades Dominion Inc., Brantford, Canada

Filed Sep. 8, 1987, Ser. No. 94,348

Int. Cl.⁴ B65D *85/32*

U.S. Cl. 229—2.5 EC 6 Claims



1. An egg carton of synthetic plastic material comprising a bottom portion and cover portion positionable on the top of the bottom portion to close the carton, the bottom portion having two side-by-side rows of compartments each dimensioned to contain the bottom portion of an egg in spaced relationship to an adjacent egg, and the cover being dimensioned to receive the top portion of an egg when the egg is located in one of the compartments and the carton is closed, and the bottom portion having a series of longitudinally-shaped integral upstanding rectangular posts, each post having side walls which form egg-support surfaces of different adjacent compartments, each compartment other than a compartment at the end of the row comprising a side wall of each of two adjacent posts, and each compartment also having egg-supporting side wall portions opposite said post side walls, the side walls of the posts and the opposite side wall portions of each compartment being inclined to cause an an egg positioned therein to tilt in an upward direction away from a corresponding egg in an adjacent row with an inclination to the vertical in the range of from about 4 and about 6 degrees.

4,795,081

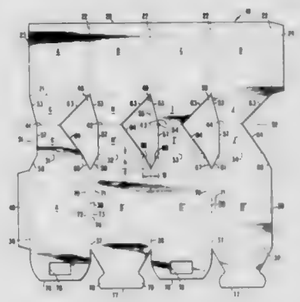
ONE-PIECE PAPERBOARD CARTON AND TELESCOPING CLOSURE MEMBER

Richard N. Miller, Evansville, Ind., assignor to Keller-Crescent Co., Inc., Evansville, Ind.

Filed Sep. 30, 1987, Ser. No. 103,112

Int. Cl.⁴ B65D *5/36*

U.S. Cl. 229—19 19 Claims



1. A single blank having a top and a bottom and for forming a one-piece paperboard container with telescopically openable and closable closure member, comprising:

a first set of four serially connected, identically shaped, substantially rectangular panels defined at the bottom of

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the blank, each panel having a top and a bottom, said first set having opposing ends hingedly joinable to form a tubular body portion;

a second set of four serially connected, identically shaped, rectangular panels defined at the top of the blank, each panel of said second set having a bottom and a height, said second set having opposing ends hingedly joinable to form a portion of a tubular closure member, each panel of said second set vertically corresponding to and aligned with a panel of said first set;

a third set of four connecting strips connecting vertically corresponding panels of said first and second sets, adapted to cooperatively form a closure member, and to cooperate with said first and second sets to provide telescopic movement of the closure member relative to the body portion, said strips adapted to fold within one another to form a top for the closure member;

a series of V-cuts between adjacent panels of the first set of panels and at the tops thereof; and

two pairs of converging cut score lines, one score line of each pair beginning just outside of one side of a corresponding V-cut and the other score line of each pair beginning just outside of the opposite side of the corresponding V-cut, both score lines of each pair beginning just below said third set and extending convergingly downward a distance less than the height of said second set.

4,795,082

CONTAINER WITH SEALABLE BAND

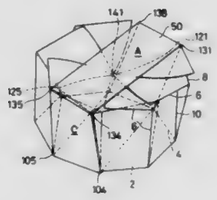
Takeo Fujihara, Takatsuki; Akira Yamatani, Misoo; Masanori Yamamoto, Kaizuka, and Takako Kubo, Nara, all of Japan, assignors to House Food Industrial Company Limited, Higashiosaka, Japan

Filed Sep. 8, 1986, Ser. No. 904,275

Claims priority, application Japan, Sep. 10, 1985, 60-138625[U]; Oct. 4, 1985, 60-152360[U]

Int. Cl.⁴ B65D 5/24

U.S. Cl. 229—109 **1 Claim**



1. A container with a sealing band being composed of a single foldable plate member and a sealing band member, the plate member being provided with:

concave fold lines forming a bottom plate portion in the shape of a substantially equilateral polygon in the center of the plate member,

radial concave fold lines radially extending from respective vertexes of the bottom plate portion,

intermediate fold lines each consisting of a concave segment and a convex segment connecting intermediate points of adjacent ones of said radial concave lines;

first convex fold lines inclined by an angle α with respect to the radial concave fold lines and connected between the respective vertexes of the bottom plate portion and the junctions of the concave and convex segments of the intermediate fold lines, and

second convex fold lines inclined in the same direction as the first convex fold lines by an angle greater than the angle α with respect to the radial fold lines and connected between the respective junctions of the concave and convex segments of the intermediate concave fold lines and the outer edge of the plate member;

the sealing band member including

a bottom belt portion formed in the shape of a rectangle having four vertexes which positionally correspond to two pairs of said vertexes on opposite sides of the bottom plate portion,

two side belt portions formed in the shape of rectangles, four vertexes of each side belt portion positionally corresponding to one pair of said vertexes on the bottom plate portion and neighboring intermediate points of the radial concave fold lines of the folded foldable plate member,

a top belt portion in the shape of a rectangle having four vertexes which positionally correspond to the two pairs of neighboring intermediate points of the radial concave fold lines on opposite sides of the folded foldable plate member,

wherein the intermediate concave folded lines and the second convex fold lines are perforated, wherein said side belt portions are inclined by an angle γ with respect to said top and bottom belt portions, and wherein said side belt portions are each connected to at least one of said bottom and top belt portions along lines connecting respective pairs of said vertexes, and wherein the lines connecting respective pairs of said vertexes at a joinder of each of said side belt portions with said bottom portion are non-parallel with the lines connecting respective pairs of said vertexes at a joinder of said side belt portions with said top portion.

4,795,083

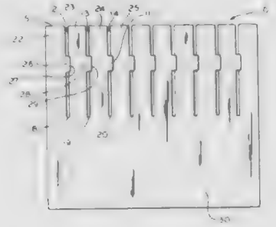
SLOTTED PARTITION APPARATUS FOR PACKAGING

David A. Johnske, Bolingbrook, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Aug. 6, 1987, Ser. No. 82,731

Int. Cl.⁴ B65D 5/48

U.S. Cl. 229—120.36 **8 Claims**



1. An assembled slotted articulate partition apparatus for repeated use within three-dimensional packing containers towards describing containment and cushioning regions therewithin, which apparatus further precludes against its own inadvertent disassembly between and during said repeated uses, said apparatus comprising:

one or more primary interlocking panel means for positioning in said packing container along a substantially first and second of said three-dimensions,

at least one of said one or more primary interlocking panel means including a substantially flat primary panel member having at least one primary panel slot arranged therewithin, together with at least one primary locking element;

said at least one primary locking element being respectively positioned along said at least one primary panel slot arranged within said primary panel member,

one or more secondary interlocking panel means for operable attachment to and articulation with primary panel members, for positioning of said one or more secondary interlocking panel means, in said packing container along a substantially second and third of said three-dimensions,

said at least one primary panel slot in said primary panel member comprising a substantially vertically oriented, rectilinearly shaped slot configured to a width substantially equal to the thickness and shape of said one or more secondary interlocking panel means,

said at least one primary panel slot being arranged within said primary panel member to form a plurality of adjacent primary panel blade elements, at least one of said plurality of primary panel blade elements extending from said primary panel member, on each side of said at least one primary panel slot,

said at least one primary locking element in said primary panel member comprising a substantially protruding, rigid male tab element extending from at least one of said plurality of adjacent panel blade elements, into and past the width of said respective adjacent primary panel slot, so as to enable said protruding male tab element to cross said adjacent respective primary panel slot to ultimately nest in a notch region formed in the back of said adjacent primary panel blade element,

said protruding male tab element extending in restrained orientation from at least one of said plurality of primary panel blade elements, in a direction substantially perpendicular to the longitudinal position of said at least one primary panel slot positioned immediately adjacent thereto,

said one or more secondary interlocking panel means operably and telescopically received by and restrainably affixed within said at least one primary panel slot respectively, upon transverse displacement of the plurality of primary panel blade elements immediately adjacent said at least one primary panel slot,

said one or more secondary interlocking panel means further comprising a substantially flat secondary spacer member having a spacer locking element capable of operable alignment and interlocking engagement with a respective one of said at least one primary locking element in said primary panel member, upon said telescopic receipt and restrained affixation of said respective secondary spacer member within one of said at least one primary panel slot upon said articulation of the slotted partition apparatus,

said spacer locking element on said one or more secondary interlocking panel means comprising a locking aperture in operable interlockable alignment with said protruding male tab element extending from said respective primary panel blade element, upon said articulation of the slotted partition apparatus,

said protruding male tab element protruding through said respective locking aperture to fixedly restrain the position of said one or more secondary interlocking panel means relative to said one or more primary interlocking panel means,

said locking aperture in said one or more secondary interlocking panel means being substantially vertically oriented, rectilinearly shaped, and configured to a width substantially equal to the thickness and shape of said respective protruding male tab element protruding therethrough,

said one or more secondary interlocking panel means further including at least one secondary panel slot for operable positioning in interlocked fashion with a respective primary panel slot in said primary panel member,

said at least one primary panel slot co-operating with said at least one secondary panel slot to slide past one another, upon articulation of said slotted partition apparatus, with the bottoms of said respective primary and secondary panel slots being substantially juxtaposed adjacent one another, upon alignment of said respective primary locking element with said respective spacer locking element,

said at least one secondary panel slot in said one or more secondary interlocking panel means being substantially vertically oriented, rectilinearly shaped, and configured to a width substantially equal to the thickness and shape of said primary panel member juxtaposed thereto upon said articulation,

the juxtapositioning and shape of said at least one primary panel slot relative to said one or more secondary interlocking panel means, of said locking aperture relative to said respective protruding male tab element protruding therethrough, and of said at least one secondary panel slot relative to said respective primary panel member, upon articulation, respectively prompting and maintaining said one or more primary and secondary interlocking panel means at right angles relative to one another, so as to, in turn, facilitate the deployment and description of said containment and cushioning regions therewithin said packing container,

said interlocking of said one or more secondary interlocking panel means along said one or more primary interlocking panel means forming, upon articulation, an intersecting three-dimensional array of fixedly positioned, geometrically-shaped compartments within said packing container, to in turn accommodate said containment as well as the cushioning of said articles therewithin said container,

the interlocked positioning of said intersecting secondary spacer members fixedly attached along said one or more primary interlocking panel means enabling the removal of said slotted partition apparatus from said packing container, intact and in a fully assembled fashion, and further enabling the replacement and reuse of the apparatus, intact, in a completely assembled fashion, within said and other packing containers, without reassembly and reattachment of the one or more primary and secondary interlocking panel means thereof.

4,795,084

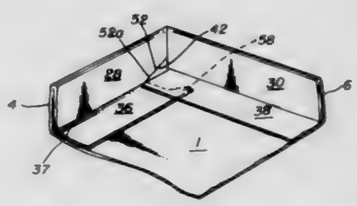
CORNER STRUCTURE AND BLANK FOR A TRAY OR TRAY COVER

Andrew F. Hartman, Raleigh, N.C., assignor to Timothy A. Canning, Raleigh, N.C.

Filed Nov. 20, 1987, Ser. No. 123,601

Int. Cl.⁴ B65D 5/24

U.S. Cl. 229—175 **6 Claims**



1. Corner structure for a tray or tray cover formed from a unitary blank, said corner structure comprising a quadrilateral main panel with right angle corners and a pair of outer side panels each having opposite side edges and inner surfaces and said outer side panels having adjacent end edges and being foldably joined along one of said side edges respectively to edges of said main panel along fold lines which intersect at a corner of the tray, said outer side panels being perpendicular to said main panel, collapsed web structure foldably joined to the adjacent end edges of said outer side panels, a pair of inner side panels having opposite edges and foldably joined respectively along one of said edges to the other of said edges of said outer side panels which are remote from said main panel, said inner side panels having adjacent end edges and one of said inner side panels having a lower corner, each of said inner side panels being disposed in flat face contacting relation with the inner surface of its associated outer side panel, one of said inner side panels being of rectangular configuration and the end edge of the other of said inner side panels being configured to define

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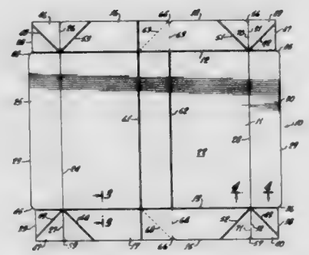
the shorter parallel side of a trapezoid and another diagonal intersecting locking edge of said trapezoid, a base flap foldably joined respectively to each of said inner side panels along a fold line at the other edge thereof which is adjacent said main panel, said base flaps having adjacent ends and being disposed in flat face contacting relation with said main panel and an end edge of the base flap which is foldably joined to said other inner side panel intersecting an end of said shorter parallel side of said trapezoid, and a locking tab of trapezoidal configuration foldably joined along a fold line having a memory to the adjacent end of the one of said base flaps which is foldably joined to said one of said inner side walls, said locking tab having a lower edge and a locking edge and being disposed in perpendicular relation to its associated base flap and with its locking edge in engagement with said locking edge of said other inner side panel, an extending tab integral with and projecting longitudinally from said adjacent end of the one of said base flaps which is foldably joined to said other inner side panel, said extending tab defining a cutaway end portion of its associated base flap which affords space into which the lower edge of the adjacent locking tab is disposed so that the memory along the tab fold line causes the tab to press against the inner surface of the adjacent outer side panel and also causes said locking edge of said locking tab securely to engage said locking edge of said other inner side panel.

4,795,085

FOLDING BOX CONSTRUCTION

Sam Wein, P.O. Box 1085, La Mirada, Calif. 90637

Filed Apr. 29, 1987, Ser. No. 43,883
Int. Cl.[4] B65D *5/36*
U.S. Cl. 229—41 B 11 Claims



1. A folding box unit formed from an initially flat sheet of bendable material comprising

a central panel,

integral edge panels connected to said central panel, and integral end flaps projecting from certain of said edge panels and being connected to others of said edge panels, said end flaps having free bottom edges,

means at the juncture of each of said edge panels and said central panel for causing a straight line bend,

said sheet having a first position in which it is bent about said means for causing a straight line bend so that said edge panels overlie said central panel on one surface of said sheet and said end flaps are beneath the ones of said edge panels from which they project, with said free bottom edges of said end flaps adjacent said means for causing a straight line bend, said sheet having a second position in which it is unfolded about said means for causing a straight line bend so that said edge panels are upstanding relative to said central panel and said bottom edges of said end flaps engage said central panel for supporting said edge panels in said upstanding positions thereof,

said means for causing a straight line bend at locations which are adjacent said end flaps when said sheet is in said first position being defined by a reverse score which, when said sheet was so initially flat, provided a groove in said one surface of said sheet and a corresponding ridge on the opposite surface thereof,

whereby there is no protrusion from said reverse score at the base of the bend at said locations,

said free bottom edges of said end flaps being in juxtaposition with said reverse score at said locations with substantially no space therebetween,

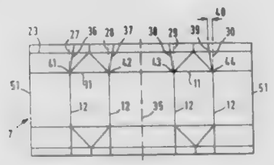
whereby when said sheet is in said second position said end flaps support said edge panels in relatively close to a perpendicular relationship relative to said central panel.

4,795,086

GABLE-TOPPED CONTAINER

Jürgen Färber, Kaarst, Fed. Rep. of Germany, assignor to PKL Verpackungssysteme GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 5, 1987, Ser. No. 58,455
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1986, 3619407
Int. Cl.[4] B65D *5/06, 5/08*
U.S. Cl. 229—137 9 Claims



1. A multilayer plastic laminate blank for folding into a parallelepipedal container having a top, a bottom and side walls, comprising a rectangular body with a top edge disposed at the top of the container when folded, a bottom edge opposite the top edge and disposed at the bottom of the container when folded, a first score line spaced apart from and parallel to the top edge and corresponding to an edge of the top of the container when folded, a second score line disposed between the first score line and the bottom edge and parallel thereto and corresponding to an edge of the bottom of the container when folded;

two pairs of spaced apart third score lines extending between the first and second score lines and perpendicular thereto, each pair of third score lines corresponding to edges of the side walls of the container when folded and each pair of the two pair of third score lines having a collinear imaginary extension above the first score line to define two given areas bounded by the imaginary extensions, the first score line and the top edge;

a fourth score line disposed between the first score line and the top edge and parallel thereto for forming a seam closure at the top of the container;

a fifth score line disposed between the second score line and the top edge and parallel thereto for forming a seam closure at the bottom of the container;

triangular tab forming score lines disposed in the two given areas;

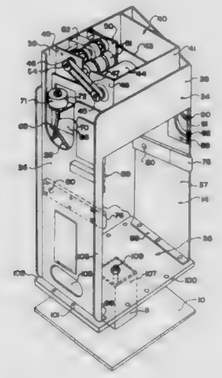
two pair of auxiliary score lines associated with the two pair of third score lines and solely disposed above the first score line, wherein each pair of auxiliary score lines is parallel to each other and offset from said imaginary extensions of the third score lines such that one of the auxiliary score lines of each pair is within one of the given areas and the other of the auxiliary score lines of each pair is outside the given areas.

4,795,087

FARE BOX

Kenneth A. Procak, 167 Linden Ave., Winnipeg, Manitoba R2K 0M9, Canada

Filed Nov. 13, 1987, Ser. No. 120,357
Int. Cl.[4] G07B *15/00*
U.S. Cl. 232—7 20 Claims



1. A fare box comprising a housing, means defining a slot in the housing for receiving fares therethrough for collecting in the housing, an inspection zone in the housing having a transparent zone wall through which an operator can view a fare deposited in the housing, dump means for temporarily retaining the fare in the inspection zone and operable to release the fare therefrom, a vault arranged to receive and retain said fare from said dump means and comprising a container separate from the housing and including means co-operable with the housing such that the container can be inserted into and removed from the housing, and a fare forwarding drive assembly mounted in said housing rearwardly of said slot for grasping and feeding said fare to said inspection zone, said drive assembly comprising a first roller means, a second roller means co-operable with the first roller means to form a nip therebetween, means for driving said roller means in a direction such that the fare is grasped in the nip and forwarded through the nip, and means providing a release action at said nip such that at least a portion of the nip can define a space between said first and second roller means so as to allow therethrough fares in coin and token form as well as fares in paper form.

4,795,088

AIR CONDITIONING SYSTEM

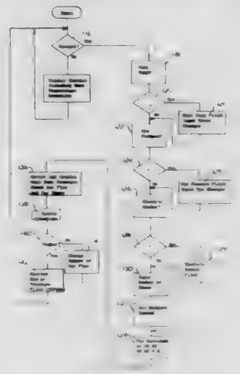
Toyohiro Kobayashi, Shizuoka; Nobuo Otsuka, Kamakura, both of Japan; Peter Thompson, and Larry J. Stratton, both of Cypress, Calif., assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1987, Ser. No. 60,496
Int. Cl.[4] F24F *7/00*; F25B *49/00*
U.S. Cl. 236—49 33 Claims

1. An air conditioning system comprising:

a warm or cool air generating heat source unit, a capacity variable blower connected to the heat source unit, ducts in fluid communication with the blower to distribute warm or cool air, means for measuring air flow volume outputted by the air, generating heat source unit, means for measuring air flow noise of the air as it exits the ducts, a central thermostat having a plurality of operator controlled operational switches, and a control system which is operatively connected to the heat source unit, blower and central thermostat, the control system comprising:

a blower capacity setting means having an alpha-numeric display which, at initialization of the system, establishes an optimum capacity value by the operator actively interacting with the system by a question and answer dialog in native language format and entering signals through the operational switches on the central thermostat corresponding to a desired input to vary the capacity of the blower, the operator measuring the air flow volume and air flow noise until the optimum capacity value is reached and inputting said optimum capacity value through the operational switches on the thermostat;



a capacity memory means for storing the optimum capacity value which has been input by the capacity setting means as maximum value; and

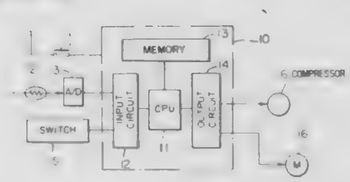
a capacity control means which variably controls the operating capacity of the fan so as not to exceed the optimum value saved by the capacity memory means.

4,795,089

ROOM AIR CONDITIONER

Tomofumi Tezuka, and Kazuaki Isono, both of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 20, 1987, Ser. No. 51,712
Claims priority, application Japan, May 21, 1986, 61-116938; Aug. 22, 1986, 61-196677
Int. Cl.[4] F24F *7/00*
U.S. Cl. 236—49 3 Claims



1. A room air conditioner comprising:

air-circulating means including a blower operatively connected to rotate at a speed for circulating air into and out of a room being air-conditioned;

room temperature sensing means for sensing temperature of the room;

control means operatively responsive to the room temperature sensed by said room temperature sensing means for determining a set temperature to activate said circulating means on and off based on a difference between the room temperature sensed by said room temperature sensing means and the set temperature determined by said control means;

user-operated discomfort-indicating means for producing an output signal indicative of a hot or cold room condition felt by a user;

temperature-changing means including means for temporarily changing the rotational speed of said blower so as to

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temporarily change temperature of the circulated air from said air-circulating means to correct the hot or cold room condition so as to alleviate the user's sense of discomfort on the basis of the output signal from said discomfort-indicating means.

4,795,090

AIR-CONDITIONING INSTALLATION FOR VEHICLES

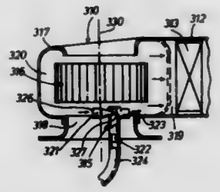
Heinz Koukal; Klaus Arold, both of Sindelfingen, and Hermann Grimm, deceased, late of Ostelsheim, all of Fed. Rep. of Germany (by Christel Grimm, heir), assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 24, 1986, Ser. No. 933,937

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1985, 3541263

Int. Cl.[4] F24F 7/06

U.S. Cl. 236—49 **9 Claims**



1. An air-conditioning installation for vehicles, comprising blower means having a blower housing for producing a blower stream for supplying fresh air to a vehicle interior space, temperature sensor means for detecting the interior space temperature, air jet pump means for producing an air stream over the temperature sensor means including venturi pipe means acted upon by the blower stream and air suction connection means coordinated to the venturi pipe means and operatively connected with the interior space, the air jet pump means being mounted at least partly in the blower housing in such a manner that its air outlet opening lies within the blower stream, and the temperature sensor means being so arranged that it is acted upon by the interior-space-air sucked in by way of the air suction connection means.

4,795,091

ADJUSTABLE RAILWAY FASTENING

Gar W. N. Burwell, Madison, N.J., assignor to Rails Company, Maplewood, N.J.

Continuation-in-part of Ser. No. 845,486, Mar. 28, 1986, Pat. No. 4,687,134, which is a continuation of Ser. No. 314,557, Oct. 26, 1981, abandoned. This application Jun. 10, 1987, Ser. No. 61,101

The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.

Int. Cl.[4] E01D 19/12; E01B 9/30

U.S. Cl. 238—349 **14 Claims**

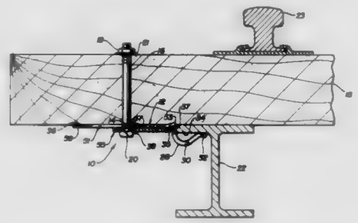
1. A railway fastening for use in combination with a cross-tie and a supporting girder having a flange comprising:

a resilient clip including a longitudinal substantially planar body portion having an elongated opening to receive a bolt extending through the cross-tie, an end spaced from said opening and engageable with the flange of the supporting girder and another end engageable with the cross-tie;

a compression arch in said end spaced from said opening for resiliently engaging said flange, said arch includes a shoulder portion adapted to engage a side of said flange, to laterally restrain said cross-tie;

a pair of ears in the tie engaging end to laterally restrain the cross-tie;

means to tension said bolt to resiliently secure said clip to said cross-tie and said flange; and



means adjustably coupled to said body to locate said bolt at different points in said elongated opening.

4,795,092

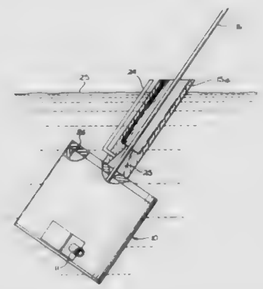
LAMINAR FLOW NOZZLE

Mark Fuller, Studio City, Calif., assignor to Wet Enterprises, Inc., Burbank, Calif.

Continuation of Ser. No. 800,224, Nov. 25, 1985, abandoned. This application Jul. 2, 1987, Ser. No. 69,300

Int. Cl.[4] B05B 17/04, 17/08

U.S. Cl. 239—12 **11 Claims**



11. A method of producing a laminar stream comprising the steps of

(a) providing an enclosure means having an inlet port and an outlet orifice and defining a flow path between said inlet port and said outlet orifice, said outlet orifice having a flow area which is no more than a small fraction of the area of the flow path within said enclosure means and being a substantially sharp edge orifice constituting a step reduction in flow area from the area of the flow path within said enclosure means, said enclosure means being a means for containing a volume of fluid under pressure for producing the output stream;

(b) providing turbulence reducing means disposed within the holding means between the inlet port and the outlet orifice, the turbulence reducing means being a means for defining a large plurality of small area flow paths across the flow area between the inlet port and the outlet orifice for reducing rotational flow and turbulence in the enclosure means for developing laminar flow in the enclosure means by reducing the Reynolds number of the flow of the fluid within the enclosure means;

(c) removing all air from the enclosure means and the turbulence reducing means; and

(d) pressurizing the enclosure means by introducing fluid through an inlet port to the enclosure means substantially

tangentially to the enclosure means for subsequent passage through the enclosure means and out the outlet orifice.

4,795,093

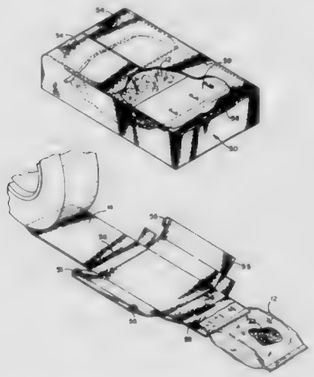
TRACTION/SANDING DEVICE FOR WHEELED VEHICLES

Edward D. Kozelnicky, P.O. Box 298, R.D. #2, Center Valley, Pa. 18034

Continuation-in-part of Ser. No. 25,104, Mar. 12, 1987, abandoned. This application Dec. 15, 1987, Ser. No. 132,972

Int. Cl.[4] E01B 23/00; B60C 27/20

U.S. Cl. 238—14 **14 Claims**



14. A traction/sanding device for a motorized wheeled vehicle comprising:

(a) an elongated generally rectangular traction strip to provide a tongue of a width predetermined to approximate that of a vehicle tire tread, said strip being attached along its width at one narrow edge to a container and said strip being attached along its length at least on one side to means defining, with said strip, a box foldable around the container; and

(b) an inflated, breakable container partially filled with a granular abrasive substance and sealed so that a quantity of air is also sealed therein,

whereby when box is unfolded and the said strip is placed at the intersection of a vehicle tire and the ground, tire movement over said strip and onto said container breaks said container, spilling said granular substance on the ground under the tire to produce an area of improved traction.

4,795,094

APPARATUS FOR SPRAYING A POWDER COATING WITH ENCLOSURE SURROUNDING A VIBRATING HOSE

Jean-Yves Correard, Saint Martin D'Heres, France, assignor to SAMES S.A., Meylan, France

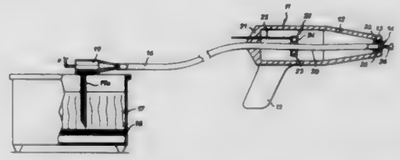
Filed Aug. 25, 1986, Ser. No. 899,802

Claims priority, application France, Sep. 4, 1985, 85 13123

Int. Cl.[4] B05B 7/04

U.S. Cl. 239—229 **16 Claims**

1. An apparatus for spraying a powder coating comprising a closed flexible hose, means for circulating a mixture of said powder and a gas in said hose, said hose residing on a longitudinal axis between a storage tank and a spray orifice, an enclosure surrounding a section of said hose, and oscillating means for imparting a substantial orbital circular motion to said section of said hose around said longitudinal axis, upstream of and adjacent to said orifice, said oscillating means comprising a



vibrator fixed to said section of hose and free to move inside said enclosure.

4,795,095

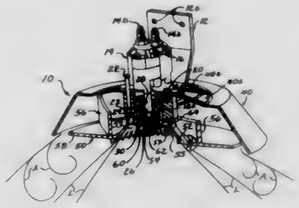
ROTARY ATOMIZER

Ray M. Shepard, Monticello, Ind., assignor to Shepard Industries, Inc., Monticello, Ind.

Filed Sep. 8, 1986, Ser. No. 904,930

Int. Cl.[4] B05B 3/02, 3/10, 1/28

U.S. Cl. 239—214.17 **18 Claims**



1. A rotary atomizer comprising:

rotational drive means;

air displacement means coupled to said rotational drive means and rotated about a central axis for directing air radially outward therefrom;

a hollow cone positioned beneath said air displacement means and aligned along said central axis, wherein said cone is coupled to and rotationally displaced by said rotational drive means for forming a fluid provided to an upper, inner portion of said cone into a plurality of uniform sized drip lets and for discharging the thus formed droplets in an outward radial direction from a lower, peripheral edge thereof;

isolation means positioned between said air displacement means and the lower, peripheral edge of said cone for separating the radially directed air from the fluid droplets as they are discharged from said cone, wherein said isolation means includes a generally flat disc having a center aperture defined by said cone and wherein said air displacement means is positioned on an upper surface of said disc;

an extension lip disposed on said cone and positioned between the lower edge of said cone and said isolation means for providing displacement therebetween and reducing any turbulence generated by said isolation means to which the newly formed droplets may be subject; and

fixed deflector means for directing the radially outward flowing air onto the radially outward directed fluid droplets in forming a uniform, continuous circular spray pattern.

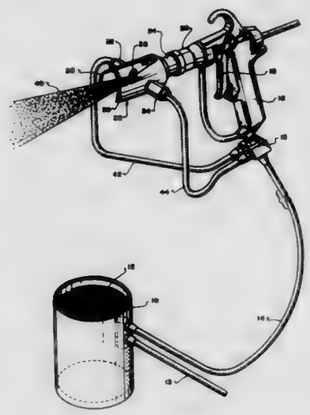
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,096

DRY MEDIA INJECTION SYSTEM AND DEVICE

David H. Smith, Redwood City, Calif., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Jun. 3, 1987, Ser. No. 57,621
Int. Cl.[4] B05B *1/28, 7/28*
U.S. Cl. 239—288.3 5 Claims



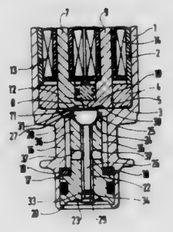
1. A system for injecting and containing dry media in a liquid stream emitted from a nozzle tip on a spray gun comprising; a nozzle guard secured to said spray gun by attachment of said nozzle tip; said nozzle guard having wringlike appendages extending outward from and substantially surrounding said nozzle tip, opposing dry media injection jets mounted on said nozzle guard winglike appendages on opposite sides of said liquid stream; and dry media supply means supplying dry media to said dry media injection jets; whereby said winglike appendages contain and assist in entraining dry media injected into said liquid stream through said opposing injection jets.

4,795,097

ELECTROMAGNETICALLY ACTUATABLE FUEL INJECTION VALVE

Max Greiner, Gerlingen; Udo Hafner, Lorch; Waldemar Hans, Bamberg; Heinrich Knapp, Leonberg; Wolfgang Kramer, Kernnern; Rudolf Krauss, Stuttgart; Ferdinand Reiter, Markgroningen; Peter Romann, Stuttgart, and Rudolf Sauer, Benningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 30, 1987, Ser. No. 114,946
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1986, 3642310
Int. Cl.[4] F16K *31/02;* B05B *1/32*
U.S. Cl. 239—585 11 Claims



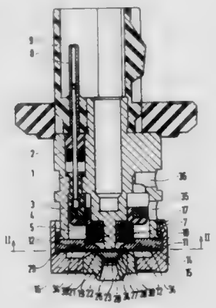
1. An electromagnetically actuable fuel injection valve having a valve housing, a valve seat body disposed in the valve housing, at least one magnet coil, a core and an armature interposed between said housing and said valve seat body, said armature forming a portion of a guide section which carries a valve needle, said armature and said guide section having a shape of a portion of a sphere, the circumference of which is slidably supported in a guide bore of said valve seat body and a stroke movement of said guide section in a direction away from said core can be limited by means of a stop opening (24) including a wall which adjoins said guide bore and is arranged to taper progressively from said guide bore to a flow bore (22) and depressions (40) machined into said wall of said stop opening (24).

4,795,098

ELECTROMAGNETICALLY ACTUATABLE VALVE

Marcel Kirchner, Stuttgart; Hans Kubach, Korntal-Munchingen, and Asta Hascher-Reichl, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 16, 1987, Ser. No. 74,218
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1986, 3630092
Int. Cl.[4] F02M *51/08;* F16K *31/02*
U.S. Cl. 239—585 21 Claims



1. An electromagnetically actuatable fuel injection valve for fuel injection systems of internal combustion engines, comprising a valve housing, a core of ferromagnetic material, a magnetic coil mounted on said core, a valve seat, a valve closing element 22, an armature firmly secured to said valve closing element and having a flat bearing face, said valve closing element cooperating with said fixed valve seat, a guide diaphragm that urges said valve closing element toward said valve seat, said guide diaphragm having an outer circumferential facial surface by which said guide diaphragm is secured in place within said housing, said guide diaphragm extends in a plane between said core and said armature (22, 27) and has a central portion that rests loosely, without any fastening means, on said flat bearing face (28) of said armature (22, 27) and said valve closing element is guided relative to said valve seat by a frictional contact between said central portion of said guide diaphragm and said flat bearing face of said armature.

4,795,099

CORRECTION STEERING FOR A LINEARLY MOVABLE IRRIGATION SYSTEM

Wilhelm Wolfbauer, Feruitz, and Vinzenz Stadler, Stallhofen, both of Austria, assignors to Rohren - Und Pumpenwerk Rudolf Bauer Aktiengesellschaft, Voitsburg, Austria

PCT No. PCT/AT86/00073, § 371 Date Jun. 19, 1987, § 102(e) Date Jun. 19, 1987, PCT Pub. No. WO87/02862, PCT Pub. Date May 21, 1987
PCT Filed Nov. 10, 1986, Ser. No. 75,813
Claims priority, application Austria, Nov. 11, 1985, 3277/85
Int. Cl.[4] A01G *25/09;* B05B *3/18*
U.S. Cl. 239—733 8 Claims



1. An apparatus which comprises the combination of a steering correction device for a linearly moving irrigator, said linearly moving irrigator comprising:

a first motorized tower provided with the steering correction device and movable in a displacement direction along a guideway;

another motorized tower remote from the steering correction device; and

means including a pipe interconnecting said towers, said steering correction device comprising:

a horizontal sensor arm pivotally mounted on said first motorized tower to swing about a substantially vertical axis and generally extending parallel to said guideway;

a sensor on said arm responsive to angular displacement of said arm about said axis in operative connection with said guideway; and

flexible cable means connected to said arm and engaged with a support connected to said pipe at a location remote from said first motorized tower for swinging said arm about said axis upon a displacement of said pipe relative to said first motorized tower representing an angular disorientation of said irrigator to enable correction of said disorientation by said sensor on said arm.

4,795,100

CONSERVATION IRRIGATION

Rufus J. Purtell, and Forest M. Hoch, both of P.O. Box 1152, Brownfield, Tex. 79316

Filed Sep. 16, 1987, Ser. No. 97,460
Int. Cl.[4] A01G *25/09;* B05B *15/08*
U.S. Cl. 239—734 18 Claims

18. In an irrigation system including the following equipment:

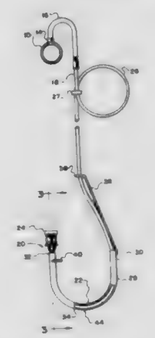
a. an elevated horizontal elongated pipe adapted to carry water under pressure,

b. a plurality of vehicles forming means attached to said horizontal pipe for supporting said pipe above growing crops and for moving said horizontal pipe transversely of its length, and

c. a plurality of sprinklers which vibrate excessively causing shock;

d. the improved method for structurally and fluidly connecting each of the sprinklers to said horizontal pipe comprising:

e. suspending the sprinkler in an upright position below the horizontal pipe by a flexible tension member,



f. supplying water under pressure from the elongated pipe to the sprinkler by a conduit, at least a major portion of which is flexible, thus

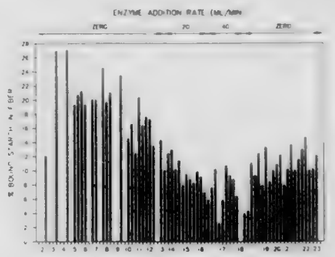
g. protecting all of the equipment from vibration and shock.

4,795,101

USE OF CELLULASE IN A METHOD OF WET MILLING A STARCH-CONTAINING GRAIN

Scott C. Silver, Belmont, Calif., assignor to Genencor, Inc., South San Francisco, Calif.

Filed May 13, 1987, Ser. No. 49,750
Int. Cl.[4] B02L *9/00, 9/04*
U.S. Cl. 241—12 3 Claims



1. A method for wet milling a starch-containing grain comprising:

(a) selecting a starch-containing grain;

(b) steeping the grain in water until the desired:

(1) amount of water absorbed;

(2) amount of dry substance released into the steep water; and/or

(3) softness of the grain is achieved;

(c) removing the steep water from the grain;

(d) adding a cellulose enzyme to the grain of step (c) in the amount of from at least about 5,000 FPU/ton of grain; and

(e) milling the grain of step (c) or (d).

4,795,102

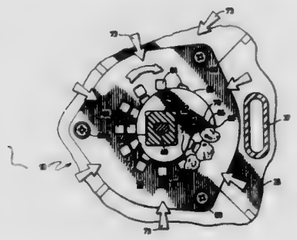
DISHWASHER PUMP WITH PARTICLE CUTTER

Lawrence J. Jordan, and Charles W. Pille, both of Newton, Iowa, assignors to Maytag Corporation, Newton, Iowa

Filed Dec. 4, 1987, Ser. No. 128,938
Int. Cl.[4] B02C *18/42*
U.S. Cl. 241—46 R 10 Claims

1. A dishwasher pump having a drive shaft, a drive motor

for rotating the drive shaft in first and second directions, a pump housing associated with the drive shaft including a sump, a pumping chamber within the housing and substantially coaxial with the drive shaft and having fluid ingress and egress openings, an impeller rotatably attached to the drive shaft for moving fluid between the ingress and egress openings when rotated in one of the first or second directions, strainer means secured to the housing upstream from the pumping chamber,



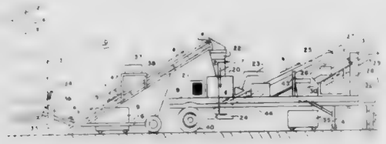
wherein the improvement comprises: cutter means mounted on said drive shaft for rotation therewith in spaced juxtaposition to said ingress opening and including a body having a first portion for effecting a first degree of particle comminution when said cutter means is rotated in said first direction, said body further including a second portion for effecting a relatively lesser second degree of particle comminution when said cutter mean is rotated in said second direction.

4,795,103

PULVERIZING APPARATUS

Stanley J. Lech, Box 56, Quakake, Pa. 18245

Filed May 21, 1987, Ser. No. 52,278
Int. Cl.[4] B02C *23/14*
U.S. Cl. 241—77 13 Claims



1. Apparatus for producing pulverized glass which is free from nonglass particles, consisting essentially of:

feed means for providing a supply of glass objects which includes caps and other metallic objects therewith;

first conveyor means positioned to receive said supply of said glass objects and transfer said objects to an impactor means;

first magnetic means for removing metallic objects being moved on said first conveyor means;

impactor means positioned adjacent said first conveyor means in operating relationship to receive said glass objects from said first conveyor means after said magnetic means and adapted to propel said objects against a striker plate to shatter said glass and free said caps and other metallic objects from said glass, said impactor means including separator means located within to separate shattered glass from said caps and other metallic objects;

said impactor means comprising a pulverizing mill having a plurality of rotating hammers and a stricker plate positioned to directly intercept the pass of glass entering said impactor means, said plurality of rotating hammers rotating about an axis of rotation within said impactor means located in a predetermined horizontal plane,

a hopper means having an opening positioned offset from a vertical plane passing through said axis of rotation to thereby position said glass objects in contacting relationship with at least one of said hammers, said striker plate being aligned to receive said glass objects after said objects have been contacted by said hammers,

said separator means within said impactor means including an arcuate plate mounted within said impactor means to cooperate with a side wall of said impactor means to define an exit chamber for said caps and other metal objects, the opening to said exit chamber being located above said horizontal plane through the axis of rotation of said hammers,

second conveyor means positioned to receive said shattered glass from said impactor means and transfer said glass to a sizing means; and

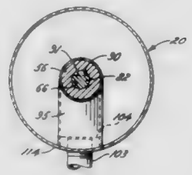
sizing means having an inlet and an outlet and positioned to receive said shattered glass directly into said inlet from said second conveyor means separate those pieces of shattered glass which are within a predetermined size,and transfer said separated pieces through said outlet to a collection means.

4,795,104

MULTI-STATION MEAT GRINDER WITH BONE CHIP REMOVAL MEANS

C. Richard Rudibaugh, Chicago, Ill., assignor to Cozzini Manufacturing Corp., Ill.

Continuation of Ser. No. 871,712, Jun. 6, 1986, abandoned. This application Sep. 24, 1987, Ser. No. 102,800
Int. Cl.[4] B02C *18/30*
U.S. Cl. 241—78 21 Claims



1. A bone chip removal and ground meat separating unit for use with a meat grinding apparatus having at least one of a further meat grinder, meat mixer and meat packaging device downstream thereof and wherein said grinding apparatus includes a casing and a die plate mounted adjacent a discharge end of the casing, said die plate having a plurality of perforations through which ground meat is extruded and an integral hub with at least one bone chip discharge channel extending therethrough comprising in combination, a ground meat discharge conduit having an entrance end coupled to the discharge end of said casing for receiving ground meat extruded through said perforations and a discharge end connected to one of said further meat grinder, meat mixer, and meat packaging device, and a bone chip removal tube within said conduit having one end secured to said hub for receiving bone chips discharged through said channel and another end communicating with an opening in a side of said conduit downstream of said entrance end thereof and upstream of the discharge end thereof for discharging bone chips out of the stream of ground meat being conveyed through said conduit.

4,795,105

PACKAGE SUPPORT DEVICE FOR THE INTERMEDIATE STORAGE OF WOUND-UP PRINTED PRODUCTS, SUCH AS NEWSPAPERS, PERIODICALS AND THE LIKE

Hans Frei, Oetwil am See, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Mar. 2, 1988, Ser. No. 162,949
Claims priority, application Switzerland, Mar. 4, 1987, 00807/87
Int. Cl.[4] B65H *75/18;* B65B *63/00*
U.S. Cl. 242—59 21 Claims



1. A package support device for the intermediate storage of wound-up printed products, especially newspapers inserts, periodicals, magazines and the like, comprising:

a rotatable winding core member provided with a substantially cylindrical support surface bearing thereon wound-up printed products;

a winding band provided for said rotatable winding core member and capable of being wound in convolutions between convolutions of the wound-up printed products;

said winding band being connected at one end with the rotatable winding core member;

said rotatable winding core member comprising a substantially ring-shaped recess defining an opening;

said substantially ring-shaped recess being open in the direction of said substantially cylindrical support surface of said rotatable winding core member;

said substantially ring-shaped recess extending in circumferential direction of said rotatable winding core member and serving to accommodate therein at least a predeterminate portion of said winding band; and

a cover member for covering the opening of said substantially ring-shaped recess and enabling winding-up of the winding band into the substantially ring-shaped recess of the rotatable winding core member and unwinding of the winding band from said substantially ring-shaped recess of the rotatable winding core member.

4,795,106

CLAMPING HEAD FOR WINDING CORES

Hans Weiss; Hans-Joachim Flassnass, and Hans-Albrecht Ruff, all of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,478
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1986, 3641255
Int. Cl.[4] B65H *75/24;* B23B *5/22*
U.S. Cl. 242—72 R 5 Claims

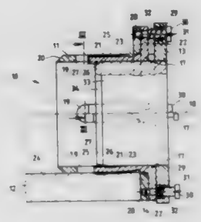
1. A clamping head for a winding core on which web type material is wound, said winding core having an end face and an inner circumference, said clamping head comprising:

a cylindrical clamping head core having a conic bevel;

a sleeve-shaped part disposed on and fixed relative to said clamping head core and having a peripheral contact surface for engaging and centering said winding core, said sleeve-shaped part having a plurality of longitudinally extending slots distributed circumferentially at least approximately uniformly;

a plurality of spreading bodies, each having a first shank in a respective slot of said sleeve-shaped part and a second shank extending radially outwardly, the first shank having an inwardly protruding projection; and

a stop ring disposed on said sleeve-shaped part and arranged coaxially with the clamping head axis and connected to the second shank of each of said plurality of spreading bodies, said stop ring being movable against spring force;



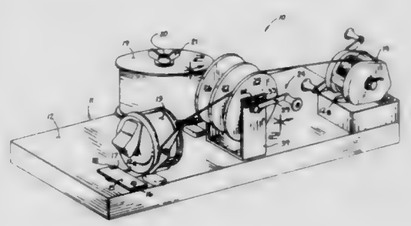
the spreading bodies being movable longitudinally by impingement of the end face of said winding core on said stop ring, the first shanks thereof being spreadable as to move beyond the peripheral contact surface of said sleeve-shaped part and make contact with the inside circumference of said winding core by the run-on action of the inwardly protruding projection of each spreading body onto the conic bevel of said clamping head core.

4,795,107

FISHING LINE TRANSFER APPARATUS

Wardell Williams, 8581 Lyford, Detroit, Mich. 48234

Filed Mar. 10, 1988, Ser. No. 166,400
Int. Cl.[4] A01K *89/00*
U.S. Cl. 242—106 8 Claims



1. A fishing line transfer apparatus for use in combination with a first fishing reel and a second fishing reel comprising, a platform defining an upper surface;

said first and second reels releasably secured and facing each other on said upper surface,

and a central spool means secured to said upper surface aligned between said first and second reels for selectively accepting or feeding fishing line to said first and second reels simultaneously or individually with respect to said reels,

and a supply spool means removably secured to said upper surface for supplying fishing line to either of said first or second reels.

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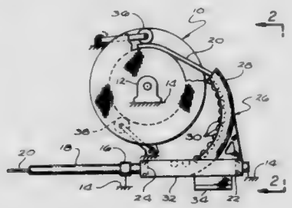
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,108

LEVEL WIND SYSTEM

James Appling, Canoga Park, Calif., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Sep. 17, 1987, Ser. No. 97,991
Int. Cl.[4] B65H 57/28
U.S. Cl. 242—157.1 4 Claims



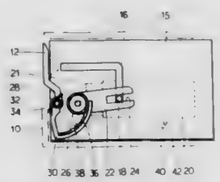
1. A level wind system for winding multiple layers of an elongated acoustic array on and off a drum in an orderly manner such that space available on said drum is utilized to the maximum extent and the forces applied are not such as to damage the array, said system comprising a drum of sufficient radius that said array is not subjected to excessive bending stresses when wound on said drum and achored to a suitable base and means driving said drum around its axis, a roller assembly fastened to said base and spring loaded to exert force against said layers on said drum, and a hollow free pivoting counterbalanced arm including an arcuate section having a bend radius not substantially smaller than that of said drum terminating substantially in tangential relationship to said drum having a plurality of rollers attached to its interior curved surface such that said array is directed over said rollers as it is wound on or off said drum, a stationary guide tube located along the axis of said counterbalanced arm for directing said array into said arm, said counterbalanced arm pivoting on bearings around an axis in a plane normal to the axis of said drum and responding to array tension to constantly reposition said arm to align its end point with the previous wrap on said drum.

4,795,109

TAPE CASSETTE LOADING DEVICE

Hyun T Chung, Seoul, and Sung C. Hong, Suwon, both of Rep. of Korea, assignors to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 23, 1986, Ser. No. 2,433
Claims priority, application Rep. of Korea, Dec. 23, 1985, 17401[U]; Dec. 24, 1985, 17487[U]; Dec. 24, 1985, 17505[U]
Int. Cl.[4] G11B 15/66
U.S. Cl. 242—198 3 Claims



1. A tape cassette loading device for a cassette type video tape recorder comprising:

a housing,

brackets formed on both sides of said housing, said brackets having guiding grooves disposed on both interior sides of said brackets,

a movable cassette holder adapted to contain a video tape cassette, said movable cassette holder having pins attached thereto which are slidably engaged in said guiding grooves,

actuating levers operatively associated with said brackets, said actuating levers having a recess disposed at one end thereof for slidably receiving said pin, and gear means disposed at the other end thereof, and

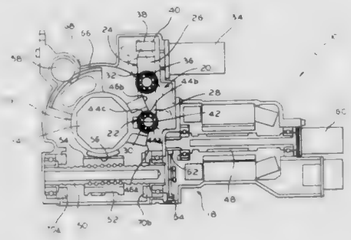
driving members pivotally mounted on said brackets for engagement with said gear means, said driving members having arms which form a substantially V-shaped configuration, one of said arms defining an arcuate shaped gearing surface for receiving said gear means and the other of said arms extending to form a door member, whereby, upon the closing of the door member, said door member engages the video tape cassette disposed in the movable cassette holder and the gear means rotates to move along the gearing surface of said driving member and said pin moves in said guiding grooves by the action of said actuating levers whereby said actuating levers transfer the cassette holder from a cassette take-up position to a cassette operation position.

4,795,110

FLIGHT CONTROL SURFACE ACTUATION LOCK SYSTEM

David J. Lang, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 30, 1986, Ser. No. 947,701
Int. Cl.[4] F42B 15/027
U.S. Cl. 244—3.24 26 Claims



1. A flight control system, comprising:

a control surface carried by a shaft disposed within a shaft-receiving socket, said shaft being operatively associated with said shaft-receiving socket for rotational movement therewith;

means for imparting rotational movement to said shaft through said shaft-receiving socket for moving said control surface; and

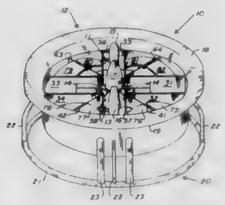
means for releasably locking said control surface in a selected position including a detent integral with said shaft-receiving socket, said detent being rotatably movable with said shaft-receiving socket from said selected position corresponding to a null position for said control surface to an actuated position for said control surface, said releasable locking means also including latch means mounted for pivotal movement into and out of locked engagement with said integral detent when said control surface is in said null position.

4,795,111

ROBOTIC OR REMOTELY CONTROLLED FLYING PLATFORM

Paul S. Moller, Dixon, Calif., assignor to Moller International, Inc., Davis, Calif.

Filed Feb. 17, 1987, Ser. No. 15,100
Int. Cl.[4] B64C 29/02
U.S. Cl. 244—23 C 19 Claims



1. A flying platform, including in combination:

at least one ducted fan comprising power means, a horizontally mounted propeller having blades and connected to and driven by said power means for causing a vertically downwardly directed airstream, and a cylindrical duct having an outer rim extending around and beneath said propeller for confining said airstream, and

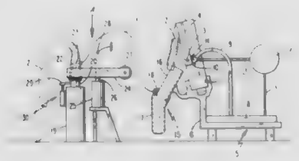
a vane system in said duct comprising four pairs of first vanes, the vanes of each pair being parallel to each other and to a diametral line across the duct end extending in from said rim toward the center of the duct, each said pair of first vanes providing a pair of generally vertical walls defining generally rectangularly shaped duct passages and the walls of adjacent pairs defining quadrant shaped duct passages, each said first vane having an upper, fixed, rigid portion and a variable camber flap depending therefrom, and first servomotor and linkage means for varying the camber of each of said flaps, so that the camber of the flaps associated with a particular pair of said first vanes is at all times the same amount said flaps being positioned along the vertical axis of said duct so that the center of gravity of said platform lies within the limits of the upper and lower extremities of said flaps whereby said flaps may be used to provide yaw and translational forces to said platform without imparting significant pitch and roll moments about said center of gravity.

4,795,112

METHOD AND DEVICE FOR EMERGENCY TRANSPORTATION

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Nov. 5, 1987, Ser. No. 116,858
Claims priority, application Japan, Nov. 5, 1986, 61-263203
Int. Cl.[4] B64B 1/58
U.S. Cl. 244—33 6 Claims



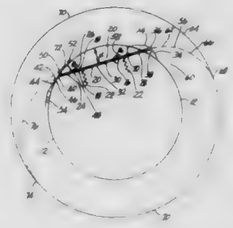
1. A method of an article, comprising emergency transportation for causing the article to escape from a housing wherein said article is inserted, in response to mechanical shock due to an earthquake or temperature change due to fire, sending said article into the atmosphere by suspending it from a balloon that can float with buoyancy when filled with gas, and collecting said article on the ground by shooting said balloon.

4,795,113

ELECTROMAGNETIC TRANSPORTATION SYSTEM FOR MANNED SPACE TRAVEL

Michael A. Minovitch, 2832 St. George St., Los Angeles, Calif. 90027

Continuation-in-part of Ser. No. 577,592, Feb. 6, 1984, abandoned. This application Oct. 14, 1986, Ser. No. 919,252
Int. Cl.[4] B64G 5/00; B64F 1/04
U.S. Cl. 244—63 43 Claims



1. A method for transporting passengers and/or freight from the Earth's surface into space by electromagnetic accelerator having an accelerating tube comprising the steps of:

introducing an air-tight piston into said accelerating tube;

closing an air-tight door behind said piston after introducing said piston into said tube;

evacuating the space between said piston and said door;

driving said piston through said tube by electromagnetic forces generated by said accelerator thereby forcing atmospheric air out of said tube;

withdrawing said piston from said tube after said tube is evacuated; and

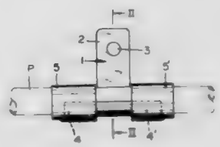
accelerating a space vehicle by means of an electromagneetic forces generated by said accelerator by passing said vehicle through said evacuated accelerating tube.

4,795,114

STATIONARY CLAMPING DEVICE

Masayoshi Usui, Numazu, and Katsushi Washiza, Nagasawa, both of Japan, assignors to Usui Kokusai Sangyo Kabushiki Kaisha, Nagasawa, Japan

Filed Jul. 27, 1987, Ser. No. 78,234
Claims priority, application Japan, Aug. 19, 1986, 61-126279[U]; Nov. 17, 1986, 61-176540[U]
Int. Cl.[4] E21F 17/02
U.S. Cl. 248—62 9 Claims



1. A stationary clamping device, comprising a clamp proper formed of a platelike fitting wall possessing a fitting hole intended for union of said clamp proper and a given basal surface and at least one engaging wall having an incomplete circular cross section and projected at least in one way in the direction

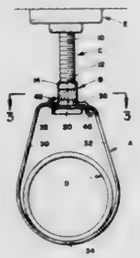
VOL 1098 ISS 1 JA 3 1989 UMI

of width of said fitting wall; a member for attachment to said engaging wall, said member having an outer peripheral surface which is in face contact with an inner peripheral surface of said engaging wall; and at least one socket member of a small length and a width wider than that of said engaging wall and made of a thermally shrinking resin or synthetic rubber material and adapted to tack said engaging wall and said end part jointly in an enclosed state, which clamping device effects fast attachment of said member for attachment to said engaging wall by heating said socket member.

4,795,115
PIPE HANGER

Winston H. Breeden, Jr., Westlake; Edward S. Kennedy, and Phillip A. Wright, both of Strongsville, all of Ohio, assignors to Wire Products Co., Inc., Cleveland, Ohio

Filed May 22, 1986, Ser. No. 865,678
Int. Cl.[4] F16L *3/00*
U.S. Cl. 248—59 **3 Claims**



1. A hanger assembly adapted for suspension from an associated support structure having a spacing member, said hanger assembly comprising:

(a) an interconnecting member having an outwardly extending shoulder and means for operatively engaging an associated spacing member;

(b) a loop member having first and second leg portions extending from a central bight portion for supporting an associated pipe, said leg portions having outer ends spaced from one another in a normal, unflexed position and lockingly engaging the other leg portion in a flexed position, each leg portion having:

(i) a first arcuate region cooperating to define means for receiving said interconnecting member; and

(ii) a second arcuate region adjacent said first arcuate region, said second arcuate region adapted to engage the other leg portion in said flexed, locked position;

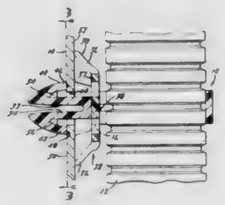
said receiving means adapted to rotatably receive said interconnecting member therein and abuttingly engage said interconnecting member shoulder.

4,795,116
FASTENER FOR CABLE STRAP

James K. Kohut, Northville, and Richard A. Tabor, Sterling Heights, both of Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Filed Feb. 8, 1988, Ser. No. 153,691
Int. Cl.[4] F16L *3/08*
U.S. Cl. 248—73 **2 Claims**

1. In a cable strap for securing a cable to a panel, the cable strap comprising a flexible strap portion, a buckle on one end of the strap portion, the buckle having a slot for insertion and retention of the other end of the strap portion with the strap wrapped around a cable, a fastener on the outer surface of the strap portion having a section insertable through an opening in a panel for securing of the strap to the panel, the fastener being located adjacent to the buckle, the fastener including a cup-shaped base from within which projects a pair of spaced apart prongs, each prong having a rearwardly extending barb, the fastener being fabricated of a flexible material whereby the prongs and barbs may be flexed towards each other permitting insertion thereof through an opening in the panel of a smaller size than the unflexed size of the prong and barb structure with subsequent outward flexing of the prong and barb structure to prevent removal from the panel with the outer ends of the barbs pressing against one surface of the panel and the cup-shaped base pressing against the opposite surface of the panel, the improvement comprising the provision of a flexible web portion between each of the barbs and its prong, the webs also

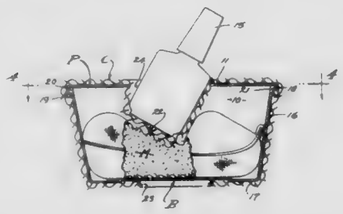


flexing during insertion of the prong and barb structure through an opening in a panel to permit such insertion, the webs preventing outward splaying of the barbs as a consequence of a force tending to pull the prong and the barb structure back through the opening in a panel after insertion to thereby maintain the integrity of the position of the fastener structure with respect to the panel surfaces, each of said webs being located adjacent to the juncture of its respective prong and barb structure and terminating a short distance therefrom leaving a substantial outer portion of the barb structure unconnected to the prong structure by the web thereby permitting unrestrained flexure of the outer portion of the barb structure.

4,795,117
BOTTLE STEADYING PLATFORM

Phyllis Siteman, 1262 S. Barrington Ave., Los Angeles, Calif. 90025

Filed Dec. 28, 1987, Ser. No. 138,719
Int. Cl.[4] A47G *23/02*
U.S. Cl. 248—146 **19 Claims**



1. Steadying platform for a bottle and receiving and securing the bottle in a selected position, and including;

a base member with an upwardly open chamber,

a body of formable material carried within the chamber to conform with and support a bottom end portion of the bottle,

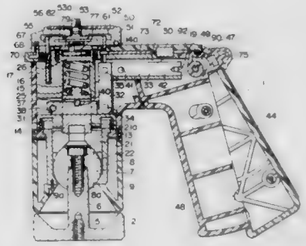
a platform member closing the upwardly open chamber and confining the body of formable material within the chamber,

the platform member having an opening therethough to receive and pass the bottom end portion of the bottle into the chamber, and said opening being larger than the bottom end portion of the bottle, whereby said bottle can be conveniently positioned and held by the body of formable material as limited by the size of said opening through the platform member.

4,795,118
CAMERA SUPPORTING DEVICE

Yoshinobu Kosugi, and Tadashi Idota, both of Sayama, Japan, assignors to Slik Tripod Co., Ltd., Saitama, Japan

Filed Oct. 2, 1987, Ser. No. 103,929
Claims priority, application Japan, Feb. 24, 1987, 62-40942; Jun. 3, 1987, 62-139403
Int. Cl.[4] F16M *11/04*; G03B *17/56*
U.S. Cl. 248—181 **22 Claims**



1. A camera supporting device adapted to be mounted on a tripod, comprising:

a base mountable on a tripod;

a post provided on said base, said post having a top end;

a ball mounted on said top end of said post;

a cylindrical ball case for rotatably holding said ball, said ball case having a pair of open ends, one of said open ends having an edge on the inside thereof in contact with said ball, said ball case having a longitudinal axis;

a ball retainer located at the other of said open ends of said ball case and being movable along said axis of said ball case, said ball retainer having a surface in contact with said ball;

a body connected to said ball case and having a shoe-mounting surface;

spring means located inside said body for urging said ball retainer toward said ball;

a link mechanism coupled to said body for driving said ball retainer in a direction such that said ball retainer moves away from said ball, against the urging force of said spring means;

a grip coupled to said body and shaped so as to permit a one-handed hold thereof;

a trigger rockably coupled to said grip, and being coupled to said link mechanism for moving said link mechanism in a direction such that said ball retainer moves away from said ball when said trigger is squeezed;

a shoe fitted with a camera screw, said camera screw having an extreme end projecting from an upper surface of said shoe; and

shoe fixing/releasing means for detachably fixing said shoe to said shoe-mounting surface of said body;

said shoe-fixing/releasing means including:

an inward circular flange formed on a bottom side of said shoe, said flange extending along a circumference of a circle surrounding said camera screw;

at least one notch in said inward flange;

a lock member mounted on said body for vertical movement, said lock member having, at an upper end thereof, a hook means for engaging said flange and adapted to enter said notch when said shoe is rotated to a predetermined release position, said flange being clamped between said hook means and said shoe-mounting surface when said lock member is lowered;

a sliding plate mounted on said body and being movable back and forth relative to said body;

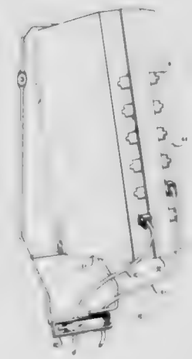
link means connecting one end of said sliding plate to said lock member for raising said lock member when said sliding plate is moved from a first position to a second position, and for lowering said lock member when said sliding plate is moved from said second position to said first position; and

an operating member attached to said grip, said operating member being coupled to the other end of said sliding plate for reciprocating said sliding plate between said first and second positions thereof.

4,795,119
MOUNTING BRACKET

John O. Cauri, Middletown; Bernard A. DeSiena, Parlin, both of N.J.; Chris G. Johnson, New York, N.Y., and David L. Kisenwether, Belford, N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Sep. 15, 1986, Ser. No. 907,522
Int. Cl.[4] A47H *1/16*
U.S. Cl. 248—222.2 **9 Claims**



1. A mounting bracket in combination with a housing for a cross-connect unit, comprising

first and second L-shaped sections disposed in spaced-apart parallel relationship including a first retaining clip bridging the free ends at one end of respective vertical members of said first and second sections,

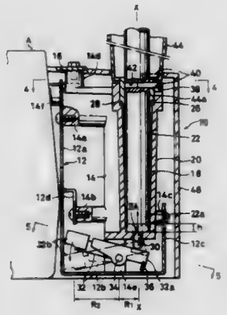
a second retaining clip bridging respective horizontal members of said first and second sections, said housing comprising,

a first groove formed between a rear and a top surface of said housing engaging said first retaining clip, and

a second groove formed in a bottom surface of said housing for engaging said second retaining clip when said housing is inserted in said bracket

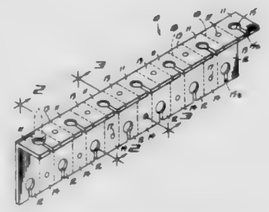
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4,795,120
SUPPORTING APPARATUS FOR MOVABLY SUPPORTING AN ATTACHMENT APPARATUS RELATIVE TO A BASIC APPARATUS
Susumu Kazuya, Gifu; Misoru Sakamobe, Komaki; Yukihito Takagi, Nagoya; Nobuaki Oka, Nagoya; Toyonori Sasaki, Nagoya, and Kazuyoshi Sagawa, Ogaki, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 14, 1987, Ser. No. 73,262
Claims priority, application Japan, Jul. 15, 1986, 61-165772
Int. Cl.[4] A47F *5/00*
U.S. Cl. 248—289.1 5 Claims



1. A supporting apparatus for movably supporting an attachment apparatus relative to a basic apparatus, said supporting apparatus comprising:
a vertical shaft for swivelably supporting said attachment apparatus around the axis of said vertical shaft, said shaft having a bottom portion;
holder means, mounted on said basic apparatus, for holding said vertical shaft in such a manner that said vertical shaft is vertically movable along said axis thereof;
an operation member for vertically shifting said vertical shaft between an engaging position and a release position;
a pivot pin provided at the bottom portion of the vertical shaft and having and engaging end to be engaged with said operation member, said engaging end being formed in a hemispheric shape to provide substantially a pin contact with the operation member; and
swivel positioning means for positioning said attachment apparatus to a desired position around said axis of said vertical shaft;
said swivel positioning means including an engaging pin member which is fixed to said vertical shaft and extends along the radial direction of said axis of the vertical shaft, and a plurality of engaging recess portions which are formed on a top edge of said holder means and are arranged in a circular form around said axis of said vertical shaft so as to face said engaging pin member in such a manner that said engaging pin member is selectively engageable with said engaging recess portions when said vertical shaft is held in the engaging position, thereby enabling the swivel positioning means to lock the vertical shaft to positively prevent the attachment apparatus from swiveling; and
said swivel positioning means being disabled when said vertical shaft is shifted by said operation member to the release position from the engaging position, thereby allowing the vertical shaft to freely rotate around the axis of the vertical shaft to swivel the attachment apparatus.

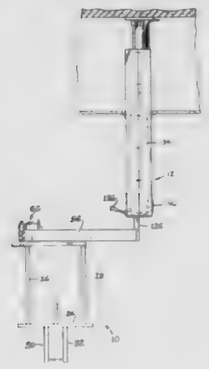
4,795,121
WINDOW FRAME LIGHT HANGER
Charles Comito, 31459 Meadows, Madison Hgts., Mich. 48071
Filed Sep. 4, 1987, Ser. No. 93,590
Int. Cl.[4] A47F *5/00*
U.S. Cl. 248—314 5 Claims



1. A window frame light hanger device for use in association with tapered sockets, miniature-type lights comprising,
a generally "L" shaped elongate strip including an elongate leg portion of a finite length orthogonal to and coextensively formed to a second elongate leg portion of equal finite length, and
a series of keyhole shaped openings formed in said first and second leg portions for acceptance of said light, and
a series of securement means formed in said light hanger in alternating relationship to said keyhole shaped openings, and
said keyhole shaped openings are formed with tapered bores inwardly directed of said "L" shaped elongate strip for complementary acceptance of said sockets, and said securement means and key hole shaped openings formed in said first leg are in an aligned orthogonal relationship to said key hole shaped openings and securement means formed in said second leg.

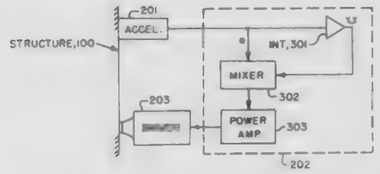
4,795,122
PATIENT EQUIPMENT TRANSPORT AND SUPPORT SYSTEM
John H. Petre, Cleveland Heights, Ohio, assignor to Cleveland Clinic Foundation, Cleveland, Ohio
Filed Jul. 15, 1986, Ser. No. 886,207
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—317 11 Claims

1. A selectively transportable equipment support system for operative association with a hospital bed comprising:
a transport bracket including a pivot post, means for support of patient care items and means for selective secured association with the hospital bed; and,



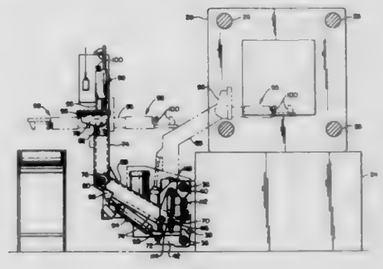
a recovery room service column having a pivotable support arm which includes first means selectively secured to said pivot post.

4,795,123
WIDEBAND ELECTROMAGNETIC DAMPING OF VIBRATING STRUCTURES
Robert L. Forward, Oxnard, and William S. Griffin, Manhattan Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed May 14, 1987, Ser. No. 49,358
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—550 1 Claim



1. A vibration damping system which damps motion-induced vibration in a mechanical structure using a plurality of vibration damping elements, each of which forms an axis by being fixed to said mechanical structure at a contact point, each of said vibration damping elements producing a mechanical force to dampen vibration along said axis at said point of contact, said plurality of vibration damping elements thereby collectively damping said motion-induced vibration in said mechanical structure, each of said vibration damping elements comprising:
an accelerometer which is housed in said vibration damping element and which produces an acceleration measurement signal by measuring acceleration along said axis of its vibration damping element;
an integrator which produces a velocity measurement signal by integrating said acceleration measurement signal received from said accelerometer;
a mixer which produces a combined motion signal by mixing said velocity measurement signal received from said integrator with said acceleration measurement signal received from said accelerometer;
a power amplifier which produces a composite motion signal by amplifying and adjusting the phase of said combined motion signal received from said mixer;
a means for attaching said vibration damping element to said mechanical structure; and
a force actuator which contains said accelerometer and is attached to said structure by said attaching means at one end, and which is electrically attached to said power amplifier at its other end, said force actuator receiving and translating said composite motion signal into mechanical force to dampen vibration.

4,795,124
EXTRACTOR APPARATUS FOR REMOVING ARTICLES FROM ARTICLE FORMING MACHINES
Masashi Nagai, Gahanna, Ohio, assignor to The Seatr Company, Hilliard, Ohio
Filed Sep. 18, 1986, Ser. No. 908,792
Int. Cl.[4] B29C *39/36, 43/50, 45/42*
U.S. Cl. 249—66.1 7 Claims



1. In combination an article forming machine having two members movable relative to one another to form an article therebetween and an apparatus for removing the article so formed, said removal apparatus including: a frame means fixedly mounted to said article forming machine; an extractor arm means mounted on said frame means for movement through a vertical plane toward and away from said article forming machine, said extractor arm means including a single lower lever arm portion pivotally mounted on said frame means about a horizontal axis and an upper article extracting lever arm portion mounted to an upper end of said lower lever arm portion for movement with said lower lever arm portion upon pivoting of said lower lever arm and for selective rotation independent of said lower arm portion in a plane parallel to the plane of rotation of said lower lever arm portion between at least a first horizontal position disposed between said movable members of said article forming machine and a second horizontal position rotated 180 degrees relative to said first position and away from said article forming machine; an article gripping means disposed on the outer end of said upper lever arm portion; first drive means operatively connected to said lower arm portion for pivoting said lower portion and said upper arm portion; and second drive means operatively connected to said upper arm portion for pivoting said upper arm portion independent of said lower arm portion; and control means operatively connected to said first and second drive means for coordinating the pivotal movement of said lower and upper arm portions of said extractor arm means between said first and second horizontal positions.

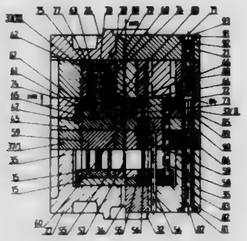
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,125

MOLD OR DIE ASSEMBLY

György Boros; Róbert Galácsy; György László, and Pál Naraszlik, all of Budapest, Hungary, assignors to Központi Váltó-es Hitelbank Rt., Innovációs Alap, Hungary

Continuation-in-part of Ser. No. 678,555, Nov. 20, 1984, abandoned. This application Sep. 12, 1986, Ser. No. 906,425
Claims priority, application Hungary, Mar. 25, 1983, 1022/83
Int. Cl.[4] B29C *33/02, 45/32, 45/40, 45/72*
U.S. Cl. 249—78 11 Claims



1. A mold or die assembly for manufacturing articles, said mold or die assembly comprising at least two cooperative halves adapted respectively to be fixedly attached to a bed and a movable head of a forming machine where the movable half can be pushed closed against a fixed half while forming the article, and can be withdrawn open again so that the formed article can be removed, said mold or die assembly comprising fastening and guide means for securing together respective component parts of the assembly and for guiding the halves against each other, the improvement in combination therewith comprising said mold or die base assembly being formed of repetitive modular standard elements consisting of "ready to use" interchangeable prefabricated and prehardened base plates, said prefabricated and prehardened base plates being provided, in their peripheral areas, with predetermined and prefabricated holes for receiving the fastening and guide means for guiding and holding together subassemblies of said mold or die assembly, said plates being prefabricated by a high precision noncutting method of manufacture, said base plates being hardened by a suitable tempering process during prefabrication, and at least two of said plates defining plural apertures of non-circular cross-section for receiving cavity-defining mold elements and surfaces defining said apertures also defining grooves for receiving heat transfer means therein said grooves being generally transverse to a central axis of said apertures each of said apertures being formed by said non-cutting method of manufacture and being preformed to be sized and shaped according to the size and shape of the article to be manufactured each of said mold elements being interchangeable and each carrying an individually shaped forming surface for use in forming an article.

4,795,126

ELECTRICALLY HEATED NOZZLES AND NOZZLE SYSTEMS

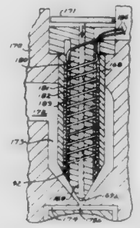
Walter R. Crandell, Addison, Ill., assignor to Fast Heat Element Manufacturing Co., Inc., Oaklawn, Ill.

Division of Ser. No. 611,141, May 17, 1984, Pat. No. 4,641,423, which is a division of Ser. No. 328,747, Dec. 8, 1981, Pat. No. 4,492,556, which is a continuation of Ser. No. 951,609, Oct. 16, 1978, Pat. No. 4,304,544. This application Jul. 17, 1986, Ser. No. 886,397
Int. Cl.[4] B22D *27/02*
U.S. Cl. 249—78 12 Claims

9. In a plastic molding system for delivering under pressure a melt stream of moldable material through a flow passageway and into a mold cavity having an entry gate, a torpedo heater fixedly mounted in said passageway,

said torpedo heater including an electrically conductive torpedo body having an end located in close relation to said gate such that a melt stream directed through said passageway and gate into said mold cavity passes over an exposed outer surface of said end,

said body having a central longitudinal bore and an annular bore disposed in concentric relation to said central longitudinal bore,



electrical heating means within said annular bore of said torpedo body for heating to a predetermined elevated temperature said exposed outer surface of said torpedo body end and the melt stream passing over said surface,

a valve pin disposed in said central longitudinal bore of said torpedo body, and

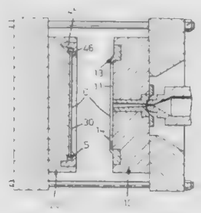
said valve pin being movable relative to said torpedo body between an extended position in which said valve pin closes said gate and interrupts the flow of said melt stream into said mold cavity and a retracted position that opens said gate and permits the flow of said melt stream into said mold cavity.

4,795,127

MOLD ASSEMBLY OF INJECTION-MOLDING MACHINE

Ikuo Asai, Nagoya, Japan, assignor to Kabushikik Kaisha Meiki Seisakusho, Aichi, Japan

Filed Sep. 18, 1987, Ser. No. 98,361
Claims priority, application Japan, Sep. 27, 1986, 61-228978; Mar. 13, 1987, 62-59850
Int. Cl.[4] B29C *33/30, 45/34*
U.S. Cl. 249—103 13 Claims



1. A mold assembly for an injection-molding machine for molding a disc, including a stationary die, a movable die movable relative to said stationary die, a stamper which is retained at least at an outer peripheral portion thereof on said movable die and which has information signals recorded thereon, and an outer retainer ring for retaining said stamper on said movable die at said outer peripheral portion, said stationary die, said stamper and said outer retainer ring cooperating to define a mold cavity, so that said disc is molded of a resin material injected into said mold cavity, such that said information signals are reproduced on one surface of the molded disc, wherein the improvement comprises:

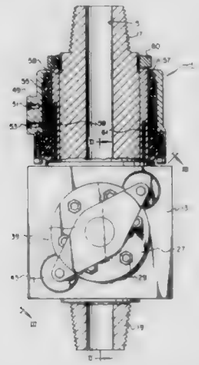
portions defining an annular void in which an outer peripheral edge of said outer peripheral portion of said stamper is accommodated without contact with said movable die and said outer retainer ring.

4,795,128

GATE TYPE KELLY COCK VALVE

Igor Krasnov, Houston; Henry D. Calk, Jr., Richmond; Taylor L. Jones, Houston, and Billy L. McDougal, Missouri City, all of Tex., assignors to Vetco Gray Inc., Houston, Tex.

Filed Mar. 1, 1988, Ser. No. 162,707
Int. Cl.[4] F16K *31/122*
U.S. Cl. 251—62 3 Claims



3. A valve for controlling fluid flow through a string of drill pipe, comprising in combination:

a body having a longitudinal flow passage therethrough and threaded upper and lower ends for connection into the string of drill pipe for rotation with the drill pipe;

upper and lower valve seats mounted in the body vertically spaced apart from each other, each having a port aligned with the flow passage;

a gate having ends on opposite sides and carried in the body perpendicular to the flow passage in sliding engagement with the seats, the gate having an aperture therethrough and being slidable transverse to the flow passage between an open position with the aperture in alignment with the seats for allowing fluid flow through the flow passage, and a closed position blocking flow through the flow passage;

a pair of openings, each on an opposite side of the body from the ends of the gate;

a bonnet releaseably secured to each opening;

a pair of pushrods, each having an inner end connected to one end of the gate and an outer end extending laterally outward from the gate in opposite directions and sealingly through the bonnet;

a pair of fluid cylinders, each mounted to the body perpendicular to the flow passage and with the gate located therebetween, one of the fluid cylinders being located above a plane containing the gate, and the other of the fluid cylinders being located below a plane containing the gate;

a piston reciprocally carried in each of the fluid cylinders, each piston having a pair of piston rods, each with an outer end extending outward from the piston in opposite directions, each piston rod being parallel to each of the pushrods, each of the pushrods being located between two of the piston rods;

a pair of beams, each externally connected between the outer ends of the pushrods and the piston rods on each side of the gate to cause the pushrods to move in unison with the piston rods, each beam extending diagonally relative to the flow passage;

operating fluid passage means extending to the cylinders on each side of the pistons for stroking the pistons to selectively open and close the gate; and

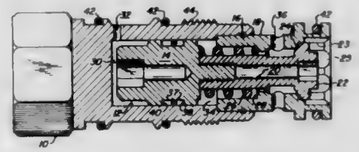
swivel means mounted to the body, connected to a fluid line for receiving pressurized operating fluid, and for delivering the operating fluid to the operating fluid passage means, the body being rotatable relative to the swivel means for allowing the body to rotate in unison with the drill pipe.

4,795,129

NORMALLY CLOSED FLUID SWITCHING LOGIC ELEMENT

Richard J. Clark, 2719 Fort Worth St., Sarasota, Fla. 33581

Continuation of Ser. No. 696,097, Jan. 29, 1985. This application Jul. 6, 1987, Ser. No. 70,198
Int. Cl.[4] F16K *31/143*
U.S. Cl. 251—62 20 Claims



1. A normally closed fluid switching logic element having open and closed positions for controlling flow of fluid therethrough, said logic element requiring the presence of a pilot pressure in a pilot pressure chamber for fluid flow and said logic element having a body adapted for receiving different piston assemblies for providing the pilot pressure by different modes, comprising:

a body having a longitudinally extending bore therein, said bore open at one end and closed at the other end;

a poppet seat at said open end of said bore;

a shoulder extending radially inwardly from said body into said bore;

a piston assembly having:

a piston slideably and sealingly supported in said bore;

said piston having first and second ends;

a stem extending from said second end of said piston to a distal end;

said stem having a poppet disposed at said distal end;

said poppet having a closed position when it is positioned against said poppet seat, said closed position defining said logic element closed position;

said poppet having an open position when it is displaced from said poppet seat, said open position defining said logic element open position;

a spring having one end positioned against said second end of said piston;

said spring having a second end positioned against said shoulder, whereby said spring biases said poppet against said poppet seat;

a first primary fluid port formed by said poppet and said poppet seat when said poppet is displaced from said poppet seat;

a first variable volume chamber defined by said second end of said piston, said body, said stem and said poppet;

a second primary fluid port extending from said first variable volume chamber through said body;

a second variable volume pilot pressure chamber defined by said closed end of said bore, said body and said first end of said piston; and

a third pilot pressure regulating fluid port extending from

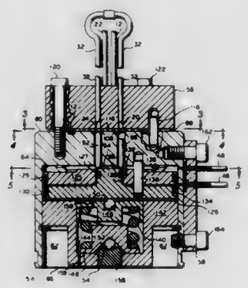
VOL 1098 ISS 1 JA 3 1989 UMI

said second variable volume pilot pressure chamber through said body for regulating the pilot pressure in said second variable volume pilot pressure chamber.

4,795,130
PISTON BIASING MEANS

Glen E. Price, Caney, Kans.; Marvin E. Reinecke, Dewey, and James N. Hilderbrand, Tulsa, both of Okla., assignors to Applied Automation, Inc., Bartlesville, Okla.

Filed Sep. 24, 1982, Ser. No. 422,781
Int. Cl.⁴ F16K *31/122, 7/00*
U.S. Cl. 251—62 **22 Claims**



1. In a piston means, having a generally flat biasing surface, the improved biasing means, comprising:

(a) coil spring means mounted within an elongated chamber adjacent said flat surface of said piston and adapted to exert pressure against said flat surface of said piston to bias said piston in a preselected direction;

(b) spring retaining means, adapted to retain said spring means within said elongated chamber, including first end cap means mounted, on the end of said spring adjacent said piston and freely mounted within said elongated chamber, to move longitudinally within said elongated chamber, and stationary support means adjacent the end of said spring opposite said piston; and

(c) centering means, adapted to maintain said retaining means and said spring axially aligned with said piston, including first pivot ball means, freely resting within a cavity in the end of said first and cap adjacent said piston, to roll freely within said cavity and make rolling, point contact with said flat surface of said piston.

4,795,131
VACUUM CONTROLLER

Robert V. Scarano, Glens Falls, and Joseph A. Bolton, Queensbury, both of N.Y., assignors to Albany International Corp., Menands, N.Y.

Filed Oct. 24, 1986, Ser. No. 922,521
Int. Cl.⁴ F16K *31/122*
U.S. Cl. 251—63 **11 Claims**

1. A vacuum controller for controlling the amount of vacuum at a location, said controller comprising:

a housing;

means for connecting said housing to a source of vacuum;

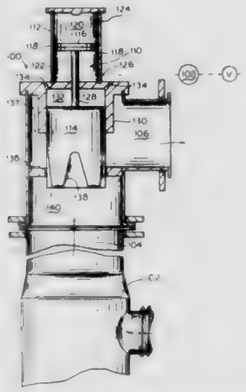
means for connecting said housing to a control vacuum;

balance piston means disposed in said housing and reciprocal therein, said piston means including first piston means reciprocal in a chamber and responsive to a control pressure in said chamber regulating the movement of said balance piston means therein;

value piston coupled to the balance piston means so as to provide a concentric unbiased loading of said valve piston wherein movement of said balance piston means causes a corresponding movement of the valve piston;

valve seat means positioned between the source vacuum and the controlled vacuum;

said valve seat means adapted to receive said valve piston which is reciprocal with respect thereto between a fully open position and a fully closed position so as to regulate the amount of vacuum provided by the source vacuum to the controlled vacuum; and

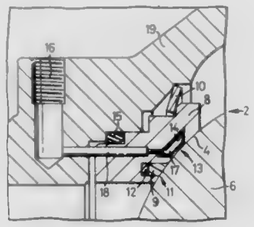


wherein a throttling of the source vacuum with respect to the controlled vacuum occurs between said valve piston and said valve seat such that the source vacuum does not influence the movement of the valve piston between said positions for throttling purposes and the valve piston remains balanced throughout its movement.

4,795,132
SEALS

John W. Ells, Bexleyheath, England, assignor to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 663,753, Oct. 19, 1984, abandoned, which is a continuation of Ser. No. 370,080, Apr. 20, 1982, abandoned. This application Jan. 20, 1987, Ser. No. 6,281
Claims priority, application United Kingdom, Apr. 28, 1981, 8113026
Int. Cl.⁴ F16K *25/00*
U.S. Cl. 251—159 **4 Claims**

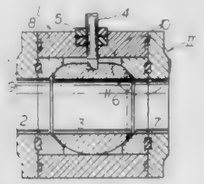


1. A ball valve sealing assembly comprising a ball valve element and a relatively moveable housing having a sealing element located between them, the sealing element defining a cavity and being inflatable by the introduction of hydraulic fluid into sealing engagement between the ball valve and the housing, the sealing element being located in a recess in the housing so that when the pressure of the hydraulic fluid on the sealing element is applied, the element expands out of the recess and when the pressure of the hydraulic fluid on the sealing element is released the element retracts completely into the recess to release the sealing engagement and facilitate the relative movement of the ball valve element and the housing, the sealing assembly comprising a line for the supply of hydraulic fluid to force the housing against the ball valve element, and biasing means to bias the housing away from the ball valve element to facilitate further the relative movement of the ball valve element and housing when the pressure of the hydraulic fluid on the housing is released.

4,795,133
BALL VALVE WITH A CERAMIC VALVE BALL AND CERAMIC SEAT RINGS

Rütger Berchem, Gelsenkirchen; Georg Prokscha, Recklinghausen, and Herbert Heidemeyer, Hagen, all of Fed. Rep. of Germany, assignors to B + S Metalpraecis Gesellschaft fur Metallformgebung m.b.H., Gelsenkirchen, Fed. Rep. of Germany

Filed Dec. 4, 1987, Ser. No. 128,819
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1986, 3641741
Int. Cl.⁴ F16K *5/20*
U.S. Cl. 251—171 **5 Claims**



1. A ball valve for a flowable mixture having abrasive particles or containing a solvent, having a generally cylindrical housing, said housing comprising:

a pressure-sustaining valve-housing sleeve with a cylindrical inner wall centered upon a longitudinal axis of said housing;

a pair of flange members coaxial with said valve-housing sleeve along said longitudinal axis and abutting said valve-housing sleeve at opposite ends of said valve-housing sleeve for connecting said valve-housing sleeve in a pipeline traversed by the mixture, said flange members extending inwardly of said wall and having respective axially extending wear surfaces at an inlet and outlet side of a passage extending through the valve, said wear surfaces of said flange members forming walls of said passage;

a pair of annular sintered-ceramic valve seat rings in said valve-housing sleeve axially juxtaposed with said flange members and being coaxial with said valve-housing sleeve, each of said seat rings being in contact with said inner wall and provided with:

an axially extending wear surface aligned with said wear surfaces of said flange members and forming another wall of said passage,

an outer peripheral surface surrounded by and in contact with said inner wall,

an outer annular face axially juxtaposed with the respective flange member, and

an inner frustoconical surface opposite said outer annular face;

a sintered-ceramic valve ball having a bore registering with said passage, said ball being rotatable about an axis of rotation in said valve-housing sleeve perpendicular to said longitudinal axis for controlling flow through the ball valve, said bore having an axially extending wear surface lined up with said wear surfaces of the seat ring and the flange members, said ball being further formed with an outer curved surface, tangentially contacted by the respective inner frustoconical surface of the respective seat ring along a respective single circumferential sealing line for each ring;

sealing means between each of said rings and the valve-housing sleeve;

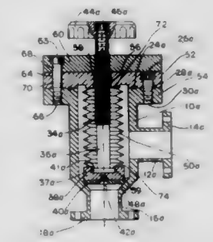
an actuating shaft connecting to said valve ball for rotating same, said valve-housing sleeve being formed with a transverse bore along said axis of rotation perpendicular to said longitudinal axis traversed by said shaft, said shaft being guided through a shaft seal in said valve-housing sleeve; and

pressing means between said flange members and the respective outer annular faces of said seat rings for urging the seat rings against the respective curved surface of the valve ball, so that said seat rings engage directly on said ball, free from any elastic seal between the valve ball and the respective inner frustoconical surfaces of said seat rings, with a pressing force only along the respective single circumferential sealing lines.

4,795,134
VALVE WITH IMPROVED SEALING PROPERTIES

James A. Lanfri, Campbell, Calif., assignor to Huntington Mechanical Laboratories, Inc., Mountain View, Calif.

Filed May 27, 1987, Ser. No. 54,797
Int. Cl.⁴ F16K *31/00*
U.S. Cl. 251—335.3 **8 Claims**



1. A valve with improved sealing properties, comprising:

a housing open from one side and having an inlet opening, an outlet opening, a flange on said open side, and a valve chamber with a valve seat in said housing;

a first cover which rests on the surfac of said flange and has a central opening;

a first sealing means on an interface between the mating surfaces of said first cover and said flange of said housing;

a plurality of first through recessed holes in said cover and a plurality of first threaded holes in said flanges which are aligned with said first through recessed holes;

a plurality of bolts which pass through said first recessed holes and are screwed into said first threaded holes of said flange, respectively, so that said first cover is rigidly attached to said flange;

a second cover placed onto said first cover and having a central threaded opening; a plurality of second through recessed holes in said second cover, a plurality of third through holes in said first cover, and second threaded holes in said flange, said second through recessed holes, said third through holes and said second threaded holes being aligned with each other;

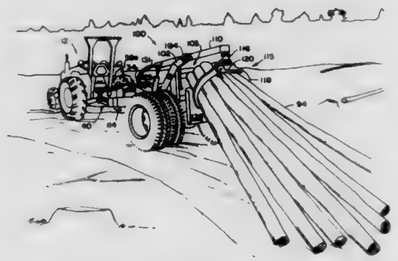
a plurality of second bolts which pass through said second through recessed openings and said third through openings and are threaded into said second threaded openings of said flange so that said first cover, said second cover and said flange are clamped together, a gap formed between said second bolts and the inner walls of said third through holes, said first and said second bolts being located in an alternating order;

a threaded element which is screwed into said central threaded opening of said second cover and passes through

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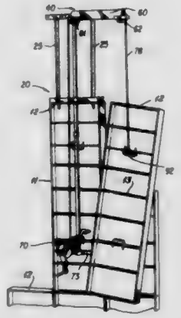
said central opening of said first cover so that its one end protrudes into said valve chamber;
an actuator element removably attached to the part of said threaded element which is located outside of said valve housing;
a valve head on said end of the threaded element which protrudes into said valve chamber, said head engaging said valve seat and being rotatably connected to said threaded element and fixed against axial displacement with respect thereto;
and second sealing means which seals the threaded connection between said threaded element and said central threaded hole of said second cover.

4,795,135
POWER DRIVEN TRAILED SKIDDER VEHICLE
Francis G. Scott, Mountain View Dr., R.R. 1, Box 2040, Woodland, Me. 04694
Filed Jul. 17, 1986, Ser. No. 887,026
Int. Cl.[4] B66C *23/36*
U.S. Cl. 254—327 18 Claims



1. A wood skidder machine for skidding, dragging, or towing down timber from the woods comprising;
a trailed skidder vehicle constructed without its own power drive source for operation and use with a separate power driving vehicle, said trailed skidder vehicle comprising an elongate structural frame having a forward end and a rear end;
axle means supporting the frame at a location adjacent to the rear end of the frame, said axle means comprising a set of wheels distributed on either side of the frame for transport of the frame over the ground surface, said axle means further comprising differential means for coordinated drive of the set of wheels;
a load bearing superstructure extending above the frame adjacent to the rear end of the frame, said superstructure being constructed and arranged with braces on the frame for transmitting forces from a load applied on the superstructure to the axle means, said superstructure comprising superstructure cable bearing means arranged on the superstructure;
a winch mounted on the frame, for extending and retracting a timer skidding cable over the superstructure cable bearing means;
trail hitch means formed at the front end of the frame for coupling to the power driving vehicle;
first drive coupling means formed at the front end of the frame for coupling to a first power take-off of the power driving vehicle, said first drive coupling means comprising a first universal joint, first drive shaft and second universal joint in sequence;
trailed skidder vehicle transmission means mounted on the frame, said first drive coupling means being operatively coupled to said transmission means through bearing means, said transmission means comprising at least one drive position, one neutral or idle position and a second power take-off;
second drive coupling means operatively coupled between the second power take-off of the transmission means and the winch;
and third drive coupling means operatively coupled between the transmission means and the differential means of the axle means for indepeadent drive of the axle means and set of wheels;
and, a self supporting independently operable farm tractor power driving vehicle having a four point stable where base, said farm tractor power driving vehicle comprising a trailer hitch coupling and a first power take-off for coupling to the trailed skidder vehicle;
whereby the trailed skidder vehicle wheels are power driven by said farm tractor power driving vehicle for independent traction and drive by the trailed skidder vehicle, whereby the winch is power driven by said farm tractor power driving vehicle for cable skidding, pulling, or dragging down timber, and whereby the timber butt ends may be lifted above the ground from the superstructure for skidding, towing, or hauling down timber and for bearing the load on the trailed skidder vehicle rather than the farm tractor power driving vehicle.

4,795,136
APPARATUS FOR ERECTING FORMS
Joseph F. Haefner, 370 Iroquois Ave., Pittsburgh, Pa. 15237
Filed Jan. 21, 1987, Ser. No. 5,847
Int. Cl.[4] B66D *1/36*
U.S. Cl. 254—336 10 Claims



1. A form erection hoist for use with concrete building forms wherein the forms having a main body of sheet material, side and end flanges, and spaced lateral reinforcing ribs, said hoist comprising a first support assembly having means for engaging an end flange of an erected form, column means rigidly connected to said first support assembly and having an upper end extending above and having a lower end extending below said first support assembly, sheave support means connected to said column means adjacent said upper end thereof and in spaced relation from said first support assembly, said sheave support means extending perpendicularly to said column means and substantially parallel to said first support assembly, second support means rigidly connected to said column means adjacent said lower end thereof, means for selectively mounting said second support means between the side flanges of an erected form in a selected position, cable supply means mounted on said second support means, said sheave support means having inner and outer portions, a first sheave mounted to said inner portion of said sheave support means in vertical alignment with said cable supply means, a second sheave mounted to said outer portion of said sheave support means and horizontally spaced from said first sheave, said cable supply means having a cable extending upwardly around said first and outwardly around said second sheaves to an end portion

and form engaging means carried by said end portion of said cable.

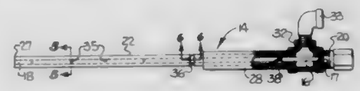
4,795,137
FLANGED FENCE POST
Samuel Witt, P.O. Box 265, Fishersville, Va. 22939
Filed Aug. 4, 1987, Ser. No. 81,365
Int. Cl.[4] E04H *17/00*
U.S. Cl. 256—1 1 Claim



1. A fence post comprising;
a tubular post; said tubular post having a plurality of triangular diametrically opposed flanges rigidly affixed to the lower portion thereof; said triangular flanges being equally spaced about a longitudinal axis of said post; said triangular flanges radially disposed from point of attachment with said post;
said triangular flanges each having an upper edge; said upper edge horizontally disposed with the surface of earth as said post is installed therein; said upper flange edges visible as said tubular post is installed to a proper depth in the earth;
said triangular flanges having a substantive common length with a longitudinal axis parallel to said tubular fence post; said triangular flanges having a substantive ratio to the longitudinal axis of said tubular fence post of 2:5 as measured along said common length of said triangular flange to said tubular fence post whereby an installer is aided in installation thereof by said triangular flanges as the upper edges thereof are visible as said post is installed to a proper depth, and further as said triangular flanges allow said post to be driven easily;
said tubular post having a lowermost planar terminal end;
said diametrically opposed triangular flanges each having a lowermost terminal tip extension spaced dimensionally by one outside diameter of the fence post from the lower terminal tip extension of the opposed flange; said triangular flange lowermost terminal tip extensions being substantially disposed horizontally below said lowermost planar terminal end of said tubular fence post whereby said triangular flange tip extensions penetrate into said earth as said tubular fence post is set prior to installation of said tubular fence post; and whereby said tubular fence post is selfstabilized prior to final installation of said tubular fence post.

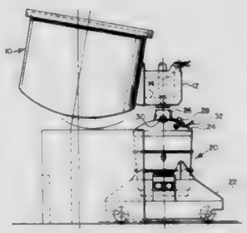
4,795,138
METALLURGICAL TUYERE AND METHOD OF CALIBRATING SAME
Ronald E. Fuhrhop, Belle Mead, and Allan R. Wandelt, Warren, both of N.J., assignors to L-TEC Company, Florence, S.C.
Filed Nov. 18, 1987, Ser. No. 121,931
Int. Cl.[4] C21C *5/48*
U.S. Cl. 266—44 17 Claims

1. A tuyere for the injection of gases into metallurgical vessel and which is capable of producing a predetermined gas flow rate therethrough when in use, and comprising
an elongated metal inner tube which defines a gas inlet end and an outlet end,
first gas connection means communicating with said inlet end for admitting a first gas to the interior of said inner tube and so that the first gas flows therethrough and discharges from said outlet end,
an elongate metal outer tube concentrically surrounding said inner tube and so as to form an annular gap therebetween,
second gas connection means communicating with said annular gap for admitting a second gas thereinto and so that the second gas flows along said gap and discharges at said outlet end,



means disposed in said annular gap for maintaining the separation of said inner and outer tubes across said gap, and
restriction means including a deformation of predetermined extent in the wall of one or both of said inner and outer tubes and forming a restriction in said annular gap for providing a predetermined flow rate of the second gas through said annular gap.

4,795,139
APPARATUS FOR TAPPING SLAG-FREE STEEL FROM A CONTINUOUS MELTING FURNACE
John A. Vallomy, Charlotte, N.C., assignor to Intersteel Technology, Inc., Charlotte, N.C.
Filed Jul. 13, 1987, Ser. No. 72,388
Int. Cl.[4] C21C *5/42*
U.S. Cl. 266—236 21 Claims



1. Apparatus for tapping a steelmaking furnace, which furnace is tiltable about a horizontal axis, comprising:
an external refractory-lined chamber mounted on a sidewall of the steelmaking furnace, said chamber communicating with the interior of the furnace, said chamber being inclined upwardly from the furnace at about 8 to about 15 degrees, the furnace having an upright melting and refining position and a tilted pouring position;
a nozzle having an orifice therein situated in the bottom wall of said external chamber, wherein the centerline of the nozzle orifice is vertical when in the pouring position;
means associated with said chamber for closing said nozzle opening; and
means associated with said chamber for directly heating the interior of said chamber.

4,795,140
VIBRATION ISOLATING APPARATUS
Michihiro Orikawa, and Tatsuro Ishiyama, both of Yokohama, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 30, 1986, Ser. No. 947,899
Int. Cl.[4] F16F *9/14*
U.S. Cl. 267—140.1 16 Claims

1. A vibration isolating apparatus having a liquid chamber

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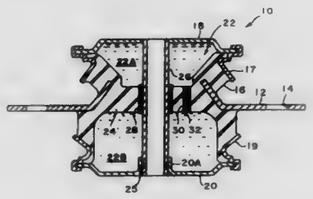
capable of being expanded and contracted between a vibration generating portion and a vibration receiving portion, comprising:

(a) upper and lower unitary wall means;

(b) partition means having a resilient membrane unitarily formed with said upper and lower wall means for partitioning said liquid chamber into first and second small liquid chambers;

(c) top and bottom wall means respectively sealingly mounted on said upper and lower wall means;

(d) at least one orifice formed in said resilient membrane for providing communication between said small liquid chambers;



(e) openings coaxially provided in said top and bottom wall means and said resilient partition means;

(f) a transmission shaft, ends of which are fixed to said openings of said top and bottom wall means, slidably extending through said opening of the partition means to transmit vibrations of one small liquid chamber to the other small liquid chamber; and

(g) guide means interposed between said transmission shaft and said partition means to enable both of them to move relative to each other, whereby, when said transmission shaft reciprocally moves in a direction in which one of said small liquid chambers is contracted, the other small liquid chamber is expanded.

4,795,141

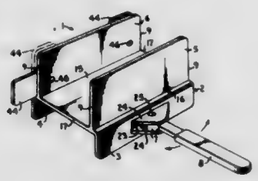
CAM LOCKED STUD NAILING FIXTURE

Thomas W. Mulvaney, Kansas City, Mo., assignor to Spectrum Innovations, Inc., Kansas City, Mo.

Filed Sep. 28, 1987, Ser. No. 101,741

Int. Cl.[4] B25B *5/14*

U.S. Cl. 269—41 **18 Claims**



1. A removable framing member fixture for facilitating the fastening of a branch framing member to a main framing member, said fixture comprising:

(a) a fixture base having opposite ends;

(b) clamp means connected to said fixture base and operable to removably attach said fixture base to a main framing member; and

(c) an abutment positioned on said fixture base for engagement by a branch framing member during the fastening of said branch member to said main member, said abutment including:

(1) a pair of abutment flanges projecting from said fixture base and having opposite flange ends;

(2) said abutment flanges extending along said fixtures base such that said flange ends are substantially flush respectively with said opposite ends of said fixture base and define an abutment surface engageable by said branch framing member.

4,795,142

PATIENT SUPPORTING TABLE

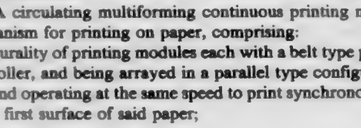
Willi Schaefer, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 25,656, Mar. 13, 1987, abandoned. This application Apr. 1, 1988, Ser. No. 175,586

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1986, 8607769[U]

Int. Cl.[4] A61G *13/00*

U.S. Cl. 269—322 **2 Claims**



1. A patient supporting table comprising a pedestal, a table top with a first end and a second end, and means for detachably securing the table top at said first end to the pedestal with the second end of the table top being unsupported, said means for detachably securing comprising a plug-type connection being disconnectible by upwardly tilting the unsupported second end of the table top and then shifting the table top in a direction towards the unsupported second end of the table top and away from said pedestal; said plug-type connection including at least two first pegs projecting from the first end of the table top and at least two second pegs projecting at substantially right angles to the first pegs from a bottom surface of the table top at a given distance from the first end of the table top, said pedestal having a plate with a projection extending at substantially a right angle, thereto, surface extending substantially perpendicular to an upper surface of the plate, said shoulder surface having annular edges forming a first hole for each of the first pegs, said upper surface of said plate having annular edges forming a second group of second holes for receiving each of the second pegs; said first holes having a width greater than the width of the first pegs and said second holes having a width greater than the width of the second pegs; said annular edges of the shoulder surface having upper portions remote from said upper surface and said annular edges in said upper surface of the plate having neighboring portions proximate said shoulder surface; and the first pegs engaging said upper portions of said first holes and the second pegs engaging said neighboring portions of said second holes, when the table top is secured to said pedestal.

4,795,143

CIRCULATING MULTI-FORMING CONTINUOUS PRINTING MACHINE

Chein M. Tsai, No. 21-1, Lane 58, Chien Mei Road, Hsin Chu City, Taiwan

Filed Jul. 21, 1987, Ser. No. 75,894

Int. Cl.[4] B42B *1/02*

U.S. Cl. 270—53 **3 Claims**

1. A circulating multiforming continuous printing machine mechanism for printing on paper, comprising:

a plurality of printing modules each with a belt type printing roller, and being arrayed in a parallel type configuration, and operating at the same speed to print synchronously on a first surface of said paper;

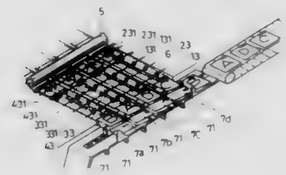
a rolling cutter for cutting said paper subsequent said synchronous printing;

a paper feeding table adjacent said rolling cutter, said paper feeding table having a surface forming an inclined plane which inclines at a predetermined angle;

a plurality of aluminum sheets being disposed on said inclined feeding table;

a plurality of pairs of roller wheels where each of said pairs is mounted on opposing sides of one of said plurality of aluminum sheets at a predetermined distance along a length dimension of said aluminum sheets, said pairs of roller wheels each having one roller wheel whose diameter is larger than the other;

a plurality of collecting plates being inclined at a predetermined angle to form a plurality of inclined planes, each of said collecting plates having a slot formed therethrough, said collecting plates being inclined at an angle substantially equal to said predetermined angle of said inclined feeding table; and,



a plurality of movable collecting rods wherein each extends at least partially through a respective one of said slots in said collecting plates;

whereby said paper goes through said printing rollers of said plurality of printing modules for printing thereon; subsequent to said printing said paper is cut into a multiplicity of independent pieces of paper by said rolling cutter; said independent pieces of paper each being captured on said paper feeding table by one of said aluminum sheets, said pieces of paper being subsequently moved to a respective collecting plate by said plurality of roller wheels; said collecting rod causing the transfer of said pieces of paper from one of said collecting plates to another of said collecting plates sequentially until the last of said collecting plates in said sequence is filled by an accumulation of said pieces of paper equaling a total number of said plurality of collecting plates; said accumulation of said pieces of paper being subsequently moved to a binding operation.

4,795,144

SHEET MATERIAL HANDLING APPARATUS

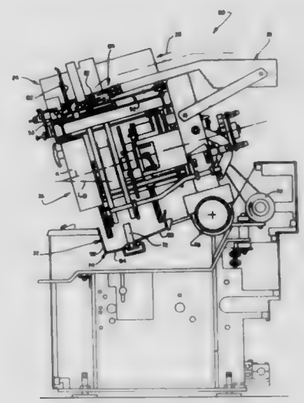
Edwin H. Yeoman, West Chazy, N.Y., assignor to AM International Incorporated, Chicago, Ill.

Filed May 4, 1987, Ser. No. 46,049

Int. Cl.[4] B65H *39/02, 3/44*

U.S. Cl. 270—58 **13 Claims**

1. A sheet material handling apparatus comprising a conveyor for transporting sheet material, a plurality of hopper means disposed along said conveyor for receiving sheet material, each of said plurality of hopper means including a sheet material support surface which slopes downwardly at an acute angle to a horizontal plane and in a direction transverse to a direction in which sheet material is transported by said conveyor and register surface means dispose adjacent to a lower end portion of said support surface for registering edge portions of sheet material supported by said support surface, a plurality of drum means for transferring sheet material from said hopper means to said conveyor, and a plurality of support means for supporting said plurality of drum means for rotation about axes which are spaced apart along said conveyor, each of said plurality of support means supporting each of said drum means with its axis of rotation sloping downwardly at an acute angle to a horizontal plane and in a direction transverse to the



direction in which sheet material is transported by said conveyor.

4,795,145

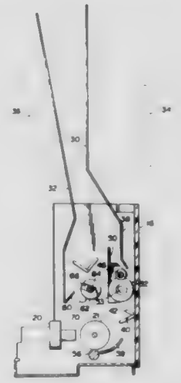
CUT SHEET PAPER MECHANISM

Douglas D. Fuller, Contoocook, N.H., assignor to Centronics Data Computer Corporation, Hudson, N.H.

Filed Sep. 22, 1986, Ser. No. 910,420

Int. Cl.[4] B65H *5/00*

U.S. Cl. 271—10 **10 Claims**



10. In a printer, a cut sheet paper feed mechanism for feeding individual sheets from a paper pack to a printing mechanism, said feed mechanism comprising:

a drive shaft;

a swing member journaled on said drive shaft to such that mounting of said swing member on said drive shaft is facilitated;

a pick roller including a peripheral surface, said pick roller journaled on said swing member for engagement with a peripheral surface of said drive shaft, the peripheral surface of the pick roller being in frictional engagement with said drive shaft;

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means for holding a pack of cut sheet paper adjacent said pick roller; and

means for rotating said drive shaft, such that said swing member, in response to rotation of said drive shaft, causes said pick roller to swing into engagement wiht a front sheet of paper in said pack, said engagement providing progressively wedging engagement of the pick roller between said drive shaft and said front sheet which causes said front sheet to advance and separate from the pack.

4,795,146

TRAINING DEVICE FOR CROSS-COUNTRY SKIERS AND ICE SKATERS

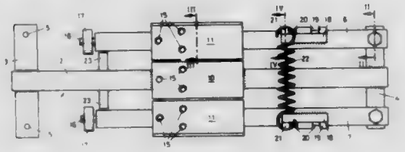
Heinz Donnersteg, Trottenstrasse 22, CH-8037 Zurich, and Hans-Ueli Kreuzer, CH-3984, Fiesch, both of Switzerland

Filed May 26, 1987, Ser. No. 53,628

Claims priority, application Switzerland, Jun. 27, 1986, 2615/86

Int. Cl.[4] A63B *69/18, 21/02*

U.S. Cl. 272—97 6 Claims



1. A training apparatus for cross-country skiers and ice skaters comprising; a frame for setting up on the floor, two elongated bars pivotably supported on the frame at their rear ends with respect to a trainee's orientation, to allow each bar to pivot about a vertical axis, each bar having a standing surface for a trainee, an axle parallel to the longitudinal direction of the respective bar and a wheel supporting the bar at its front end and rotatable about said axle, spring biasing means biasing the two bars toward each other, and stop means on the frame for retaining one of the bars while the other bar is swung away from the retained bar against the action of the spring means, wherein each standing surface is pivotable about an axis parallel to the longitudinal direction of the respective bar.

4,795,147

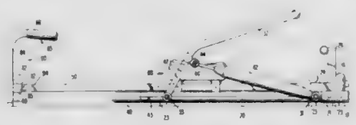
CONVERTIBLE EXERCISE DEVICE

John Seal, Auburn, Ala., assignor to Diversified Products Corporation, Opelika, Ala.

Continuation of Ser. No. 819,013, Jan. 15, 1986, abandoned. This application Feb. 23, 1988, Ser. No. 161,409

Int. Cl.[4] A63B *69/06*

U.S. Cl. 272—72 14 Claims



1. A multi-functional physical exercising apparatus capable of use in any of a plurality of orientations and configurations comprising:

a longitudinal seat rail;

a frame assembly coupled to one end of said seat rail, said frame assembly comprising a support assembly for supporting one end of said seat rail, longitudinally extending lever support members for supporting user-engagable levers fixed to said lever support members, and resistance means for providing exercise resistance fixed between said lever support members and said levers;

coplanar attaching means fixed to said frame assembly for selectively attaching said frame assembly to said longitudinal seat rail so that said longitudinally extending lever support members and said seat rail are substantially coplanar; and

non-coplanar attaching means fixed to said frame assembly for selectively attaching said frame assembly to said longitudinal seat rail so that said longitudinally extending lever support members and said seat rail are substantially non-coplanar;

wherein said frame assembly including said lever support members are reorientable and reconfigurable with respect to said longitudinal seat rail to be substantially coplanar with said longitudinal seat rail when said frame assembly is attached to said longitudinal seat rail through said coplanar attaching means and to be substantially non-coplanar with said longitudinal seat rail when said frame assembly is attached to said longitudinal seat rail through said non-coplanar attaching means.

4,795,148

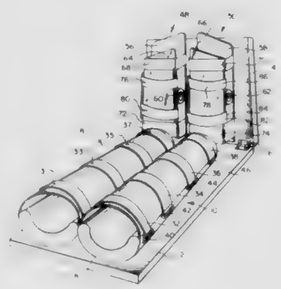
COMBINATION OF ANTISTASIS DEVICES

Avvari Rangaswamy, P.O. Box 426, Littleton, N.C. 27850

Continuation-in-part of Ser. No. 632,896, Jun. 20, 1984, Pat. No. 4,669,722, which is a continuation-in-part of Ser. No. 468,971, Feb. 23, 1983, abandoned. This application Apr. 3, 1987, Ser. No. 33,800

Int. Cl.[4] A63B *23/04*

U.S. Cl. 272—96 13 Claims



1. An antistasis device for use in the supine position comprising:

(a) a horizontal panel and a vertical panel and a vertical panel attached to each other to form a frame apparatus;

(b) means for squeezing the user's calf including resilient means conforming to the calf of the user and means for securing the calf of the user against the resilient means, said means for squeezing the user's calf being removably attached to said horizontal panel; and,

(c) means for flexing the user's foot including a base plate removably secured to said vertical panel, a metal tube secured to said base plate, and a foot folding plate, formed of a non-magnetic material, held in pivotable relationship about said tube.

4,795,149

LUNGE TRAINING MACHINE FOR BODY BUILDERS

Bruce E. Pearson, 409 W. Woodruff, Apt. 1, Searcy, Ark. 72143

Filed Jan. 13, 1988, Ser. No. 143,563

Int. Cl.[4] A63B *21/06, 21/00*

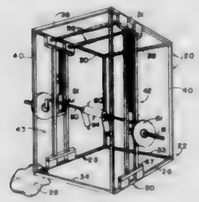
U.S. Cl. 272—117 14 Claims

8. A machine for use by a body builder, weight trainee, or other exerciser for body building, muscle conditioning, and the like, said machine comprising:

a rigid, substantially upright frame adapted to be disposed upon a supporting surface such as the floor of a gymnasium or the like, said frame comprising a lower pair of parallel spaced apart rails resting upon said surface, an upper pair of parallel, spaced-apart rails disposed above said lower pair, a plurality of supportive stanchions extending between said upper and lower pairs of rails, and a front and a back;

a carriage assembly coupled to said frame for selective horizontal movement relative thereto, said carriage assembly comprising:

a pair of rigid, spaced apart, wheeled side members extending between said upper and lower pairs of rails and adapted to roll generally axially with respect thereto;



weight bar means operatively extending between said side members for supporting a desired load of weights to be manipulated by said exerciser, said weight bar means comprising collar means for harnessing said exerciser to the weight load;

mounting means for coupling said weight bar means to said side members to permit up-and-down movement of said weight bar means and thus movement of said collar means relative to said carriage assembly and said frame;

whereby said carriage means may move horizontally relative to said frame concurrently with up and/or down vertical movement of said weight bar means to facilitate the practice of weighted lunges and the like by said exerciser.

4,795,150

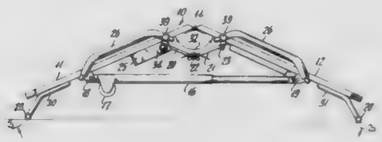
STRETCHING APPARATUS

Sven Harlan, Norwalk, Conn., assignor to Ballet Design, Inc., Norwalk, Conn.

Filed Oct. 22, 1987, Ser. No. 112,262

Int. Cl.[4] A63B *23/04*

U.S. Cl. 272—144 8 Claims



1. A muscle stretching apparatus for stretching the lower body muscles of a user when in a straddling or lying position, said apparatus comprising:

(a) two body-support platforms connected end-to-end at an angle and arranged such that a user lies or sits on top sides of both platforms;

(b) a motor-driven extension tube connected at each end to undersides of the respective body-support platforms and adapted to contract or expand the angle between the platforms with respect to each other while being occupied by a user;

(c) control means for causing contraction or expansion of the motor-driven extension tube; and

(d) angle measurement means connected to the respective body-support platforms for permitting the user to determine the angle between the respective platforms before and after expansion or contraction thereof, whereby upon expansion or contraction of the angle between the platforms, the user's muscles are stretched or relaxed.

4,795,151

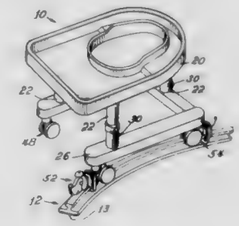
BABY WALKER WITH SAFETY TRACK FEATURE

Donald L. Mulcaster, 359 Dennie Avenue, Newmarket, Ontario, Canada L3Y 4M8

Filed Sep. 30, 1987, Ser. No. 103,178

Int. Cl.[4] A61H *3/00*

U.S. Cl. 272—70.3 27 Claims



1. An exercise device for the contained movement of an infant comprising a baby walker and cooperating single-track floor-mounted track means, said track means having securement means thereon and said baby walker having rolling means on both sides thereof and complementary securement means thereon on at least one side thereof, whereby rolling means on the one side of said baby walker can be movably but removably secured to said track means for circumscribing the area of operation thereof, wherein said track means comprises an upwardly-extending shaped protuberance and a relatively flat outwardly-extending portion and said walker securement means comprises locking means for complementary but movable securement to the upwardly-extending shaped protuberance of said track means, rolling means on the same side of said walker as said locking means being adapted for rollable engagement with said flat portion of said track means, wherein said locking means comprises hand-operable lock-on levers and means for urging said lock-on levers into locked-on movable but removable securement of said walker to said track means, and including hand-operable means for counteracting said urging means for assisting with attachment of said walker to and removal of said walker from said track.

4,795,152

BOWLING LANE WITH TRANSPARENT PLASTIC FILM FINISHING LAYER

James R. Suiter, 2030 N. 104th St., Omaha, Nebr. 68134

Continuation-in-part of Ser. No. 871,318, Jun. 6, 1986. This application Dec. 11, 1986, Ser. No. 940,428

Int. Cl.[4] A63D *1/04*

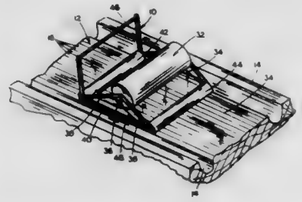
U.S. Cl. 273—51 5 Claims

1. In a complete bowling lane formed by a plurality of interconnected wood lane boards and having a substantially flat wood top surface, said lane including an approach, header section, pine section and pin deck, and an improved material for finishing the wood top surface of the bowling lane, the improvement comprising:

a uniform flexible film of transparent plastic material having a thickness of approximately 3 to 20 mils and covering the

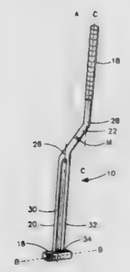
VOL 1098 ISS 1 JA 3 1989 UMI

wood top surface of the bowling lane for at least a substantial portion of the length of the bowling lane, and



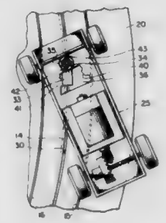
a continuous layer of adhesive material disposed between said lane and flexible film, the adhesive material securely adhering said flexible film onto the wood top surface of the lane.

4,795,153
GOLF CLUB
Joseph B. Thomas, 1489 Turner Rd., Colorado Springs, Colo. 80918
Filed Jun. 15, 1987, Ser. No. 62,610
Int. Cl.[4] A63B *53/04, 53/02*
U.S. Cl. 273—81.3 **23 Claims**



1. A golf club having a selected length and adapted for use by a golfer in playing the game of golf, wherein the golfer swings the club in an attack plane parallel to the golfer's body to strike and propel a golf ball, comprising:
a club head located at a first end of the golf club and oriented transversely to the length of the golf club along a head axis;
a handle portion located at a second end of the golf club opposite the first end and adapted to be grasped by the golfer's hands;
a lower shaft portion formed of first and second lower shaft sections having first and second shaft section axes, said first and second lower shaft sections positioned in spaced apart side-by-side relation substantially perpendicular to the club head such that said first and second lower shaft section axes are on either side of a lower shaft axis and define a lower shaft plane transverse to the attack plane when the golfer holds the golf club in a position that addresses the golf ball; and
an intermediate shaft portion interconnecting said lower shaft portion and said handle portion such that said handle portion has a handle axis and is offset from said lower shaft axis.

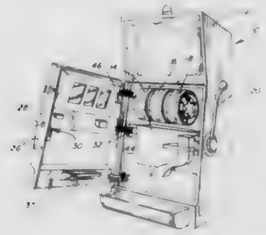
4,795,154
CONTINUOUS SLOT RACING SYSTEM
Robert G. Lahr, Las Vegas, Nev., assignor to Ideal Loisirs, Le Blanc Mesnil, France
Filed Jun. 25, 1987, Ser. No. 66,114
Int. Cl.[4] A63F *9/14;* **A63H** *18/08*
U.S. Cl. 273—86 B **7 Claims**



1. In a continuous slot car racing system having a slotted track including curved sections of track about which a toy vehicle traverses, the improvement which comprises:
said slot of each track curved section having an entrance leading into said slot defined by opposing parallel apart wall surfaces of said curved section;
said slot entrance narrowed by a shoulder projecting into said slot entrance wherein said shoulder includes an undersurface communicating with said slot immediately below said slot entrance;
guide means downwardly depending from said toy vehicle slidably disposed within said slot and being of greater mass than the spacing between opposing wall surfaces of said slot beneath said shoulder;
said shoulder cooperating with said guide means to slidably maintain and retain said toy vehicle on said track curved sections;
said guide means includes a pivot post and said toy vehicle includes a receptacle for insertably receiving and coupling with said pivot post;
said guide means comprises a body having an enlarged portion carried on its underside with said pivot post carried on its topside;
said enlarged portion substantially occupying the width of said slot beneath said slot entrance and said shoulder;
a rotational control means carried on the underside of said toy vehicle cooperating with said guide means to restrict rotation of said toy vehicle within a predetermined range; and
said rotational control means includes at least one limit means and said guide means includes an upright projection disposed to cooperate with said limit stop means and adapted to engage in response to rotation of said toy vehicle.

4,795,155
POWDER DOWN DOOR OPEN MEMORY LATCH FOR A GAMING DEVICE
Fulvio R. Grande, 2249 N. Kedvale, Chicago, Ill. 60639
Filed Jun. 30, 1986, Ser. No. 880,125
Int. Cl.[4] A63F *5/04*
U.S. Cl. 273—143 R **7 Claims**

1. In a gaming device having a cabinet housing controls for the gaming device, the cabinet having a door through which access to the controls may be had, a system for detecting whether the door has been opened during a power failure comprising:
switch means secured to said door and operable during a power failure for sensing whether said door is open or closed to provide a signal indicative thereof;
memory means operable during a power failure and responsive to a door open signal from said switch means for storing information indicating that said door has been opened; and

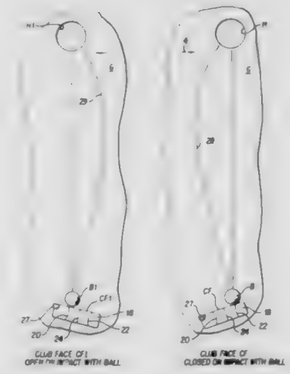


game control means for reading the information stored in said memory means upon the restoration of power after a power failure to determine whether said door was opened during the power failure.

4,795,156
SQUARE BINGO DOBBER APPARATUS
Carol Paulish, 25-27 Diane Pl., Port Jervis, N.Y. 12771
Filed Sep. 10, 1987, Ser. No. 94,849
Int. Cl.[4] B43K *27/00*
U.S. Cl. 273—148 R **1 Claim**

1. A new and improved square bingo dobber comprising,
a container including an outlet; said outlet defining a central square porous applicator formed with a first fluid porous surface for imparting a first transparent indicating liquid onto a desired surface, and
a second porous applicator formed with a second surrounding fluid porous surface of square configuration in surrounding relationship to said first central applicator surface for imparting an opaque second coloration onto a desired surface simultaneously with said central applicator, and
said first outer surface and said second surrounding surface are fixedly secured to relative to each other and said container and positioned in essentially the same plane, and
said central applicator and said second applicator are provided with indicating fluid from a first and a second reservoir formed in communication with said central applicator and said second applicator respectively, and
wherein a central housing defines said first reservoir and a second housing defines said second reservoir wherein said second housing is formed in surrounding relationship to said first housing, and
wherein said outlet includes a central porous applicator secured by a central support head and said second outer applicator being secured by an outer support head wherein said outer support head is in surrounding relationship to said central support head, and
wherein said central support head is in fluid communication with said central reservoir and said outer support head is in fluid communication with said outer reservoir.

4,795,157
GOLF CLUB PUTTER
Michael Bencriscutto, 6121 Golf Ridge Dr., Racine, Wis. 53402
Filed Dec. 22, 1986, Ser. No. 945,010
Int. Cl.[4] A63B *69/36, 53/04*
U.S. Cl. 273—164 **1 Claim**



1. A golf club putter having means for aiding a golfer to putt a golf ball on an inclined green where the point of aim for the path of travel of the golf ball must be toward the uphill side of the hole, said putter including a head having a longitudinally extending top surface visible to the golfer when in use, a ball contacting face generally vertical when in use, an inner end and an outer end and a handle extending upwardly from said inner end of said head wherein the improvement comprises:
ball position striking markers spaced apart longitudinally from each other on said top surface of the club for indicating to the golfer where on said face the ball is to be hit depending on whether the uphill side of said green is to the right or left of the hole relative to said golfer when in a putting position at said ball;
said markers including a first curved line on said top surface identifying one ball striking location adjacent said club handle at said inner end of said head including opposite ends which curve inwardly toward said inner end and toward the golfer to indicate to the golfer that the ball, when struck at said one location, will travel either toward
a right target point the golfer has selected to aim at on said right uphill side of said hole and curve in the direction shown by said first curved line or,
another point on said right uphill side of said green that is even slightly more uphill of said right target point if the golfer instinctively opens the face of said club on impact to increase the possibility that said golf ball will not follow a path of travel on said right uphill side that will take said ball below said hole;
said markers also including a second curved line on said top surface located adjacent said outer end of said head including opposite ends which curve outwardly toward said outer end and away from the golfer, said second curved line being longitudinally spaced from said first curved line and identifying another ball striking location to indicate to the golfer that the ball, when struck at said another ball striking location, will either travel toward
a left target point the golfer has selected to aim at on said

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left uphill side of said hole and curve in the direction shown by said second curved line, or

another point on said left uphill side of said green that is even slightly more uphill than said left target point if the golfer instinctively closes the face of said club on impact to increase the possibility that said golf ball will not follow a path of travel on said left uphill side that will take said ball below said hole.

4,795,158
GOLF PUTTER
Jacob E. Kaykendall, Hoffman Estates, Ill., assignor to Right Way Golf, Hoffman Estates, Ill.
Filed Mar. 20, 1987, Ser. No. 28,492
Int. Cl.[4] A63B *53/04, 53/14*
U.S. Cl. 273—164 **4 Claims**



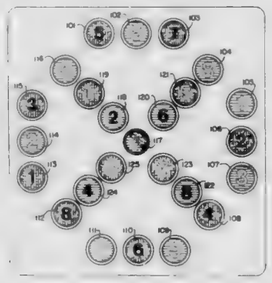
1. A golf putter for putting a golf ball comprising in combination a generally rectangular putter head, a shaft and a grip, said shaft being affixed to the center of said head and having at least one striking face, said striking face being forwardly inclined with its upper edge forwardmost to form a continuous flat acute angle for engaging the ball above its center to produce overspin, said head having a flat planar lower surface, said grip formed adjacent the opposite end of said shaft, and said grip being substantially square and having four surfaces that are less than 1.75 inches in width, said grip having opposed surfaces extending generally parallel with said striking face, said opposed surfaces being respectively engaged by the palms of a user's hands to thereby aid in the alignment of the palm of one hand and the back of the other hand with said striking face to be substantially normal to the projected line of travel of the golf ball.

4,795,159
WOOD-TYPE GOLF CLUB HEAD
Itsushi Nagamoto, Shizuoka, Japan, assignor to Yamaha Corporation, Japan
Filed Jul. 8, 1987, Ser. No. 70,958
Claims priority, application Japan, Jul. 11, 1986, 61-106338
Int. Cl.[4] A63B *53/06, 53/08*
U.S. Cl. 273—171 **18 Claims**



1. A golf club head comprising a fiber reinforced plastic shell, said shell including a front wall forming an impact face, and a bottom surface including a recess, and a sole plate attached to said bottom surface of said shell, said sole plate comprising an outer metallic substrate having top and bottom surfaces and an inner resin block substrate having top and bottom surfaces, said bottom surface of said inner resin block substrate being attached to said top surface of said outer metallic substrate, and said top surface of said inner substrate resin block including an integral projection snugly fitting into said recess in said bottom surface of said shell so as to firmly anchor said sole plate in said shell.

4,795,160
STRATEGY GAME UTILIZING BOARDS AND CARDS
Willard C. Sterling, 252 Denbigh Blvd., Newport News, Va. 23602
Filed Apr. 3, 1987, Ser. No. 33,670
Int. Cl.[4] A63F *3/06*
U.S. Cl. 273—269 **7 Claims**



1. Apparatus for a game comprised of at least one round, each round comprised of at least one turn; comprising;

a plurality of playing boards,

a continuous pattern of uniquely identifiable spaces on each of said boards,

a first deck of playing cards, including cards having indicia thereon corresponding to at least one of said spaces, and further including cards having indicia corresponding to the indicia on a plurality of adjacent spaces, said indicia on said first deck of cards directing the covering of the spaces on the boards having corresponding indicia,

a second deck of playing cards including "continue" cards having indicia thereon corresponding to at least one of said spaces, and "continue" cards having indicia corresponding to the indicia on a plurality of adjacent spaces, said indicia on said "continue" cards directing the uncovering of spaces having corresponding indicia,

said second deck further including at least one "win" card having indicia indicative of round termination, and

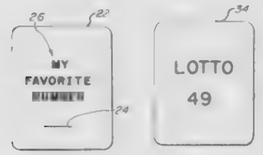
means for selectively covering individual spaces of said boards.

4,795,161
CARD GAME
Dwight W. Chao, 17220 Newhope St., Ste. 101-102, Fountain Valley, Calif. 92708
Filed Dec. 7, 1987, Ser. No. 129,607
Int. Cl.[4] A63F *1/04*
U.S. Cl. 273—292 **12 Claims**

1. A card game to aid in the selection of numbers to correspond to a particular game of chance, comprising:

a deck of cards having indicia printed on the back of each card;

a number printed on the face of each card wherein the numbers printed thereon run in consecutive order to correspond to the numbers used in the associated game of chance to allow the player of said card game to randomly select one or more cards from said deck of cards, hoping
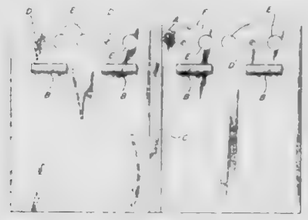


that the selection thereof matches the winning numbers of said game of chance; and

wherein said deck of cards includes:

a first set of cards having said numbers printed thereon; and

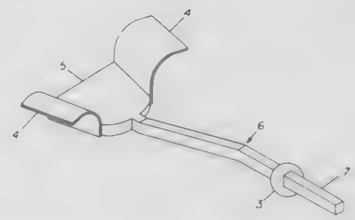
a second set of cards defining blank cards on each of which the player thereof inserts a favorite number.

4,795,162
FOLDABLE BINGO SHEET HOLDER
Carl Rhetts, P.O. Box 1015, H. Beach, Calif. 92647
Filed Oct. 8, 1987, Ser. No. 85,387
Int. Cl.[4] A63F *3/06*
U.S. Cl. 273—309 **6 Claims**



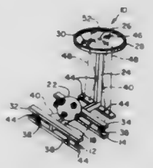
1. A bingo sheet holder comprising two panels hingedly attached at adjoining edges for movement between an open operative position wherein the panels are coplanar for supporting a plurality of bingo sheets and a closed storage position wherein the panels are superimposed, a plurality of generally spherical foot elements attached to each of said panels adjacent edges thereof which are colinear when the panels are in their open position, at least a corresponding plurality of apertures in each of said panels selected ones of which are sized and positioned to receive correspondingly positioned foot elements of the other of said panels when the panels are in their closed position hereby enabling said holder to be folded to a compact condition.

4,795,163
VOLLEYBALL PASSING TRAINER
Gerald S. Szabo, 806 Broadfield Dr., Newark, Del. 19713
Filed May 19, 1987, Ser. No. 29,064
Int. Cl.[4] A63B *67/00, 67/18, 69/00*
U.S. Cl. 273—411 **1 Claim**



1. A volleyball bump pass training device comprising a substantially horizontal end plate, said end plate having a pair of opposite laterally extending means to engage and rest upon the biceps of a player; a center shaft with a proximal end connected to said end plate and extending longitudinally and upwards therefrom; a member extending substantially horizontally from the distal end of said shaft and ball grasp means longitudinally slidably connected to said member.

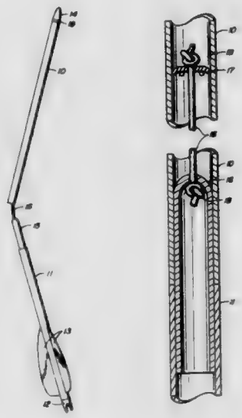
4,795,164
DRIBBLE PRACTICE DEVICE FOR SOCCER PLAYERS AND THE LIKE
William A. Morpeau, 216-14 113th Dr., Queens Village, N.Y. 11429
Filed Feb. 4, 1988, Ser. No. 152,370
Int. Cl.[4] A63B *69/00*
U.S. Cl. 273—411 **6 Claims**



1. A dribble practice device, comprising, a frame composed of three parallel spaced base bars, a longitudinal bar and a vertical bar secured to said base bars for cooperating with a pivotal first control lever and a spaced and pivotal second control lever mounted to said longitudinal bar, for controlling said device, and a pivotal tray mounted to said vertical bar and removably receiving a mini ball that is provided for indicating coordination of foot movements of an operator of said device.

4,795,165
FOLDING ARROW
Frank V. Tchan, 1801 Eastshore Hwy., Berkeley, Calif. 94710
Filed Feb. 24, 1986, Ser. No. 832,741
Int. Cl.[4] F41B 5/02
U.S. Cl. 273—416 6 Claims

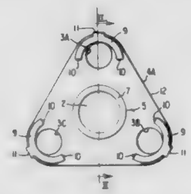
1. An arrow comprising:
(a) a tubular shaft comprised of a front section and a rear section,
(b) means enabling said sections to be assembled to form a continuous, substantially rigid shaft and to be disassembled so that said sections can be positioned side by side in an approximately parallel relationship,
(c) an elastic cord internal to and connecting said front and rear sections, said cord having each of its ends connected to one of said sections, and being under sufficient tension so as to pull together said sections into a continuous shaft, and



(d) a retaining device in the shape of a circumferentially toothed disk for connecting one of the cord ends to its section, said disk being held by press fit against the inner wall of said tubular shaft, said disk having a centrally located hole through which extends said elastic cord.

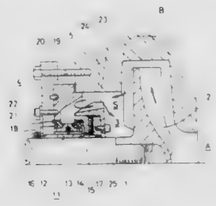
4,795,166
SEALING GASKET
Josef Irmler, Münsing, Fed. Rep. of Germany, assignor to Feodor Burgmann Dichtungswerke GmbH & Co., Wolfratshausen, Fed. Rep. of Germany
Filed Apr. 3, 1986, Ser. No. 847,922
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1985, 3512842
Int. Cl.[4] F16J 15/10
U.S. Cl. 277—1 10 Claims

1. A method of providing a high-temperature resistant seal between end-to-end arranged flanged pipes, comprising the steps of clamping, between flanged pipe ends, a high-temperature resistant sealing gasket having opposite surfaces; the gasket comprising a flat mica mat including, in a superposed relationship, a great number of mica scales, each formed of a plurality of stacked, extremely thin mica platelets held together by natural cohesion; said scales being oriented, with their largest opposite faces, essentially parallel to the opposite gasket surfaces; said mica mat further including a binder situated between overlapping zones of immediately superposed scales; particular materials for said scales and said bineer being selected such that the mica mat, in a non-installed state, has the



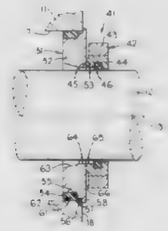
property of undergoing, when heated, a thickness increase in a direction perpendicular to the largest scale faces; said thickness increase starting at a temperature of about 500° C. and reaching, at 800° C., at least 100% relative to the thickness at 20° C.; and causing the sealing gasket to undergo a thickness increase by heating while said sealing gasket is in an installed state clamped between said flanged pipe ends.

4,795,167
MECHANICAL SEAL
Junji Otsuka, Sakaso, Japan, assignor to Eagle Industry Co., Ltd., Tokyo, Japan
Filed Sep. 4, 1987, Ser. No. 93,841
Claims priority, application Japan, Jun. 26, 1987, 62-97313[U]
Int. Cl.[4] F16J 15/34, 15/54
U.S. Cl. 277—25 3 Claims



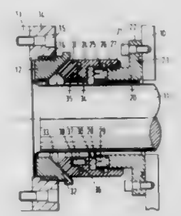
1. A mechanical seal apparatus comprising a housing, a shaft rotatably mounted in said housing, an impeller fixed to said shaft and operable to pump a fluid containing a slurry, said housing having an impeller chamber in which said impeller rotates, said housing having an axial-extending section having one axial end which extends axially from said impeller chamber, seal-support means mounted on the other axial end of said axial-extending section, said axial-extending section having an inner diameter greater than the diameter of said shaft to thereby define an axial-annular passage between said shaft and said axial-extending section of said housing, said seal-support means extending radially inwardly of said axial-extending section of said housing to thereby define one axial end of said axial-annular passage, non-rotating seal means which includes a non-rotating seal ring mounted on said seal-support means and disposed in said axial-annular passage, rotating seal means which includes a rotating seal ring mounted on said shaft and disposed in said axial-annular passage between said non-rotating seal means and said impeller, said non-rotating and said rotating seal rings having opposed sealing faces generally perpendicular to the axis of said shaft, said rotating seal means comprising annular seal-mounting means secured to said shaft and mounting said rotating seal ring, said seal-mounting means having an outer first diameter less than the inner diameter of said axial-annular passage, said rotating and non-rotating seal rings having a substantially equal second diameter which is less than said first diameter such that an annular space is located radially outwardly of said rotating and non-rotating seal rings and extending axially between said seal-mounting means and said seal-support means, and fin means extending from the outer periphery of said seal-mounting means for causing an axial flow of said fluid, said fin means having an outer diameter less than the outer diameter of said axial-annular passage to thereby define an outer annular axial flow passage between the outer diameter of said fin means and the outer diameter of said axial-annular passage such that said fluid flows axially from said impeller chamber through said outer annular axial flow passage to said annular space along a first flow path portion, said fin means being operable to cause said fluid to flow axially in an opposite direction from said annular space to said impeller chamber along a second flow path portion which is disposed radially inwardly of said first flow path portion, said first and second flow path portions being portions of a circulating flow path which circulates said fluid between said annular space and said impeller chamber such that slurry in the fluid being pumped is precluded from being accumulated in said annular space.

4,795,168
MAGNETIC SEAL ASSEMBLY
William V. Adams, Scotts; Duane A. Avard, Schoolcraft, and Leroy A. Waling, Parchment, all of Mich., assignors to Durametallic Corporation, Kalamazoo, Mich.
Continuation of Ser. No. 95,557, Sep. 10, 1987, abandoned. This application Feb. 23, 1988, Ser. No. 161,413
Int. Cl.[4] F16J 15/54
U.S. Cl. 277—80 16 Claims



1. A magnetic-type end face seal assembly for creating a sealed relationship between a housing and a rotatable shaft which projects coaxially outwardly from a bore which opens inwardly from an end wall of the housing, said seal assembly comprising:
annular insert means stationarily positioned within said bore in surrounding relationship to said shaft, said insert means comprising a one-piece insert ring of magnetically attractable material, said insert ring having bore means extending axially therethrough and of a diameter larger than said shaft so that said shaft can project through said bore means free of contact with said insert ring;
said insert ring defining a substantially planar annular first seal face on an outer axial end surface thereof;
said insert means including a seat member formed as a one-piece ring disposed in external encircling relationship to said insert ring, said seat member being stationarily and fixedly mounted on said insert ring and having a noncircular cross section;
said seat member being of a hard synthetic resin material having only little elasticity, said seat member when in a nondeformed condition having a maximum outer diameter which slightly exceeds the diameter of said housing bore so that the seat member undergoes a very small radial deformation when inserted into said bore to create a stationary and sealed engagement with the wall defining the housing bore;
rotating ring means disposed in surrounding relationship to and nonrotatably coupled to said shaft for rotation therewith, said rotating ring means being positioned axially adjacent said insert means;
said rotating ring means including a first ring member comprising a magnet, said first ring member being radially spaced in its entirety from said shaft and being positioned closely axially adjacent but separated from said insert ring by a small axial gap, said magnet cooperating with said insert ring to create a magnetic attracting force which tends to urge said rotating ring means and said insert means axially toward one another;
said rotating ring means also including a second ring member concentrically and stationarily mounted on said magnet, said second ring member having a substantially planar annular second seal face formed on an inner axial end surface thereof, said second seal face being disposed in a plane which is substantially perpendicular to the axis of said shaft, said second seal face being positioned directly opposite and maintained in engagement with said first seal face due to the magnetic attracting force between said magnet and said insert ring.

4,795,169
RADIALLY STABLE MECHANICAL FACE SEALS
David J. Lowe, Maidenhead, and John Kemp, Farnham Common, both of England, assignors to Crane Packing Limited, England
Filed Jul. 1, 1987, Ser. No. 68,661
Claims priority, application United Kingdom, Jul. 5, 1986, 8616439
Int. Cl.[4] F16J 15/38
U.S. Cl. 277—87 17 Claims



1. A mechanical face seal for providing a fluid tight seal between a pair of relatively rotatable components comprising; a first seal face member mounted in fixed rotational and radial relationship to one of said components and is sealed with respect thereto; abutment means mounted in fixed rotational and radial relationship to the other component and sealed with respect thereto; a second seal face member interposed between the first seal face member and the abutment means; and spring means arranged to apply an axial load between the first and second seal face members; said second seal face member having opposed faces, one of said faces being inclined to the axis of the seal and being maintained in sealing engagement with an oppositely inclined face on the first seal face member under the axial load applied by the spring means so as to impose a radial load on the second seal face member; and the other face being sealed with respect to a corresponding face on said abutment means, means being provided to interconnect said second seal face member rotationally with respect to said abutment means while permitting limited radial movement of the second seal face member relative to the abutment means.

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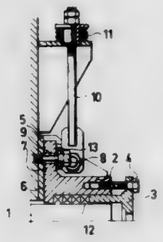
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,170

PACKING ARRANGEMENT FOR SEALING THE SURFACE OF A ROTARY DRUM LIKE OBJECT

Seppo Kokkonen; Harri Qvintus, and Erkki Ruuskanen, all of Savonlinna, Finland, assignors to Enso-Gutzeit OY, Helsinki, Finland

Filed Oct. 15, 1986, Ser. No. 919,884
Int. Cl.[4] F16J *15/18*
U.S. Cl. 277—106 **5 Claims**



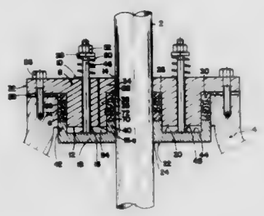
1. A packing arrangement for sealing the outer surface of a washer drum, used in manufacturing cellulose, with a non-rotating annular packing, which is composed of side-by-side packing fillets, said arrangement comprising a circular packing body which, together with the rotating drum surface, defines a space in which the packings are installed, wherein the packing body is elastically supported so that, as the drum rotates, the packings yield to the movements of the drum surface arising from radial displacements of the drum, and wherein elastic centering members are mounted on the packing body for centering the packing body radially, and an elastic fixing member is also mounted on the packing body for taking up the weight of the packing body so that friction forces are maintained.

4,795,171

SELF-PRESSURIZED SHAFT OR CLOSURE SEAL

Federico Quevedo Del Rio, Joaquin Cayon No. 6, Santander, Spain

Continuation-in-part of Ser. No. 902,866, Sep. 2, 1986, abandoned. This application Oct. 13, 1987, Ser. No. 107,595
Int. Cl.[4] F16J *15/26*
U.S. Cl. 277—106 **61 Claims**



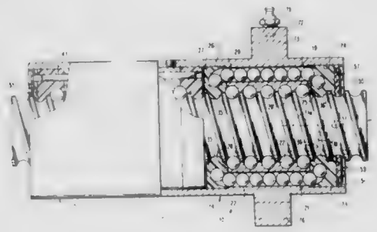
1. An arrangement for sealing the penetration of a shaft into a pressure housing comprising:
a pressure housing having an opening;
a shaft passing through the opening into the housing;
a bonnet assembly rigidly supported by the housing and covering the opening, the bonnet assembly having upper and lower surfaces and further including,
means defining a first aperture through which the shaft enters the housing, and
means for communicating ambient pressure from the upper to the lower surface of the bonnet assembly;
a gland assembly within the housing coaxially disposed below the bonnet assembly and further including,
an upper surface having a portion thereof spaced from the bonnet lower surface and in pressure communication with said means for communicating ambient pressure, and a lower surface exposed to the interior of the housing,
means defining a second aperture penetrated by the shaft, and
means for preloading the gland assembly toward the bonnet assembly;
packing means between the bonnet assembly and the gland assembly for axial compression therebetween, including
a first packing ring encapsulated by said shaft and portions of said bonnet assembly and said gland assembly, and
a second packing ring encapsulated at least in part by portions of at least said bonnet assembly and said gland assembly,
said first and second packing rings providing a seal against intrusion of system pressure onto said upper surface portion of the gland;
such that upon pressurization of the housing, a pressure difference develops between the lower surface of the gland exposed to the housing pressure and the upper portion of the gland in communication with said means for communicating ambient pressure, whereby the gland assembly is urged toward the bonnet assembly and the packing rings are thereby deformed to prevent leakage of fluid from said bonnet assembly along said shaft.

4,795,172

GREASE SEAL FOR A POWER SCREW SYSTEM

David Brande, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 7, 1987, Ser. No. 129,492
Int. Cl.[4] F16J *15/16*; F16H *55/22*
U.S. Cl. 277—165 **20 Claims**



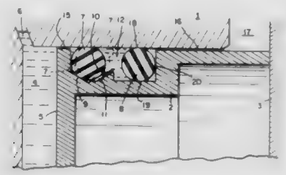
1. A grease seal for use in a power screw system including a screw having a substantially constant outer diameter about its axial centerline and at least one smooth helical groove formed in said outer diameter with a lead along said axial centerline; a nut cooperating with said screw to provide axial advancement of one of said screw and said nut with respect to the other during relative rotation between said screw and said nut, said nut having an end face substantially normal to said axial centerline; the improvement comprising:
means for introducing grease interiorly to said nut;
a distortable diaphragm seal assuming the shape of a flat sheet in an unstressed state;
said diaphragm seal having an opening approximating the cross-sectional shape of said screw normal to said axial centerline but smaller than the cross-sectional shape except where the cross-sectional shape of said screw is an arc of a circle with its center at said axial centerline to define a crossover to permit a portion of said diaphragm seal to extend into said helical groove in said screw;
and means for claming said diaphragm seal to said end face of said nut whereby said diaphragm seal is clamped to said nut in assembly with said screw, said diaphragm seal being distorted along said axial centerline during relative rotation between said screw and said nut to smoothly conform in a stressed state to said helical groove in said screw to seal said helical groove in said screw and prevent leakage of grease exteriorly of said nut.

4,795,173

DOUBLE O-RING SEALING ARRANGEMENT

Lyle E. Osborne, 1506 Stanmore Ct., South Bend, Ind. 46614

Filed Apr. 13, 1988, Ser. No. 181,059
Int. Cl.[4] B61F *15/22*; F16J *9/00*
U.S. Cl. 277—168 **21 Claims**



1. A plural seal arrangement for a pressure actuated means moveable in a housing, wherein:
said pressure actuated means comprises a pressure responsive member having a pressure responsive face against which is applied a fluid pressure, alternately having at least a high pressure mode and a low pressure mode; said pressure responsive member being moveable in said housing;
plural seal means, each located between said pressure responsive member and said housing;
a fluid pressure chamber means containing said pressure responsive face;
a storage-buffer chamber means connected between said plural seal means;
a first of said plural seal means being located closer to said pressure face than a second of said plural seal means which is spaced away from said pressure face and said first seal means;
said first seal means being responsive to said high pressure mode for causing a passageway leading from said fluid pressure chamber to said storage-buffer chamber means to allow high pressure from said fluid pressure chamber means to flow into said storage-buffer chamber means and in response to said low pressure mode to cause said passageway to prohibit flow between the storage-buffer chamber means and said fluid pressure chamber; and
wherein high pressure in said storage-buffer chamber means assists said second seal means in preventing pressure outside of said second seal means from entering into said storage-buffer chamber means.

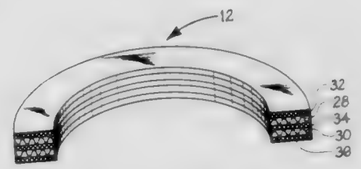
4,795,174

HIGH TEMPERATURE-HIGH PRESSURE GASKET ASSEMBLY

Gary L. Whitlow, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 352,278, Feb. 25, 1982, abandoned. This application Oct. 31, 1983, Ser. No. 547,182
Int. Cl.[4] F16J *15/12*
U.S. Cl. 277—213 **20 Claims**

1. A substantially flat gasket assembly having two seating surfaces, which gasket assembly is situated between vessel flange joints which are lined with a non-metallic lining, which is operated at high temperatures and pressures, and which gasket assembly is comprised of:
a plurality of corrugated metal reinforcing sheets interleaved between alternating layers of gasket filler material in such a fashion so that the two seating surfaces of the gasket device are layers of the gasket filler material instead of corrugated metal sheets;
said corrugations of said metal reinforcing sheets being annularly concentric as opposed to being radially concentric;
said corrugated metal reinforcing sheets having a modulus of elasticity of less than about 33,000,000 pounds per square inch;



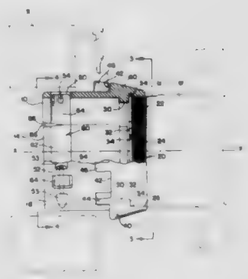
said gasket filler material being non-metallic but sufficiently hard so that each layer of it has a pressure-temperature coefficient which is greater than about 75,000 pounds per square inch gauge degrees Fahrenheit (psig °F.), and a temperature rating greater than about 375° F.; and
said gasket assembly not employing an envelope.

4,795,175

NIPPLE CHUCK

Larry F. Babb, LaGrange, and Michael J. Rutkowski, Brunswick, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 20, 1987, Ser. No. 87,523
Int. Cl.[4] B25B *1/20*
U.S. Cl. 279—1 A **21 Claims**

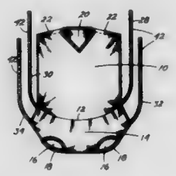


1. A nipple chuck for supporting a nipple blank having a threaded end and an unthreaded end for rotation relative to tool means of a power driven thread cutting machine having a plurality of workpiece gripping jaw means rotatable about a machine axis, said nipple chuck having an axis and being mountable between said jaw means for coaxial rotation therewith, said chuck comprising a plurality of arcuate chuck segments forming an open ended sleeve extending about said chuck axis, said segments having corresponding first and second ends and corresponding interior and exterior sides, means axially inwardly adjacent said first ends of said segments supporting each of said segments for pivotal displacement such that said second ends are radially displaceable between open and closed positions relative to said chuck axis, thread means on the interior sides of said segments at said second ends thereof, said thread means engaging said threaded end of a nipple blank when said second ends of said segments are in said closed positions, and said exterior sides of said segments being radially engaged by said gripping jaw means axially between said first and second ends to maintain said second ends in said

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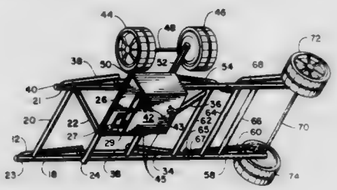
closed positions about said threaded end of said nipple blank during rotation of said nipple chuck with said jaw means.

4,795,176
MODESTY RESTRAINT FOR TOILET CHAIRS
Linda M. Harrigan, 1201 Eric Ct., Rohnert Park, Calif. 94928, and Marlene H. Jaworski, 906 Smith, Alturas, Calif. 96101
Filed Feb. 1, 1988, Ser. No. 150,838
Int. Cl.[4] A47C *31/00*
U.S. Cl. 297—465 4 Claims



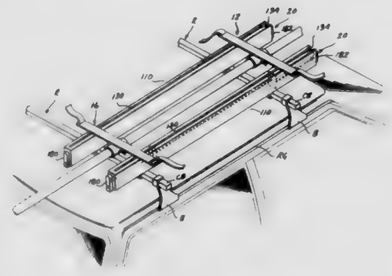
1. A support and restraint device for the purpose of retaining a human patient in a seated position while using portable commode chairs, comprising:
a two piece durable cloth garment structured to encompass multiple sizes and variations in body shapes and arranged for concealing the pelvic area, front body portion and shoulders of a human patient;
said garment having a first section, being a substantially rectangular fabric front panel, which is attached to a second section, being a smaller rectangular pelvic panel, with said garment having means for attachment to said human patient and for attachment to said commode chair;
said attachment means comprising four elongated straps permanently attached to the edges of said panels, two of the said straps being attached to the lower portion of said front panel and two of said straps being attached to the upper portion of said pelvic panel,
said front panel having a fold over shoulder flap extension, a rib-knit V-neck opening in the top, and two darts on either side of said V-neck opening with said front panel attached to said pelvic panel by a gathered seam;
said pelvic panel having two horizontal aligned, downwardly positioned half circular openings attached to circular ribbon of rib-knit fabric to produce round leg openings.

4,795,177
BOAT DOLLY
Loy N. Selvey, 1261 Acera St., Livermore, Calif. 94550
Filed Mar. 7, 1988, Ser. No. 164,956
Int. Cl.[4] B62B *3/02, 3/04*
U.S. Cl. 280—47.13 B 8 Claims



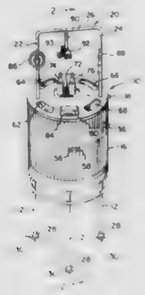
1. A new and improved boat dolly, comprising:
frame means;
a first pair of wheels rotatably mounted on a side of said frame means;
a second pair of wheels rotatably mounted on an end of said frame means;
axes of rotation of said first and second pairs of wheels extending generally transversely;
and
means for selectively alternatively connecting said second pair of wheels to opposite ends of said frame means.

4,795,178
SAILBOARD CARRIER SYSTEM
Lance Nabarrete, 1750 Pilkea St., Honolulu, Hi. 96818
Filed Feb. 6, 1987, Ser. No. 12,145
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—47.13 B 18 Claims



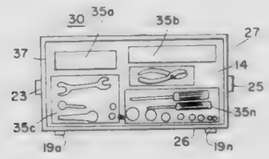
1. A sailboard carrier system, comprising:
a. a first sailboard supporting crossmember to support the underside of the sailboard;
b. support legs extendible downwardly from said first crossmember;
c. means for detachably attaching the upper portions of said support legs to said first crossmember;
d. ground-engaging wheels mounted on said support legs;
e. a first attachment assembly carried by said first crossmember to detachably attach said first crossmember to a sailboard mast at selected locations along the length of the mast, said first attachment assembly configured to singularly retain said first crossmember from rotating about or sliding along the mast;
f. first retaining means associated with said first crossmember for detachably retaining said first crossmember on a vehicle rooftop carrier with the sailboard attached to said first crossmember and the sailboard mast attached to said first crossmember by said first attachment assembly;
g. a second sailboard supporting crossmember;
h. a second attachment assembly carried by said second crossmember for detachably attaching said second crossmember to the sailboard mast at selected locations along the length of the mast relative to the location of said first crossmember, said second attachment assembly configured to singularly retain said second crossmember from rotating about or sliding along the mast;
i. said first and second attachment assemblies detachably attaching said first and second crossmembers, respectively, to the mast without attachment of said first and second crossmembers directly to each other; and,
j. second retaining means associated with said second crossmember for detachably retaining said second crossmember on the vehicle rooftop carrier with the sailboard attached to said second crossmember and the sailboard mast attached to said second crossmember by said second attachment assembly.

4,795,179
MOVABLE HAIRDRESSING CART
Sherry A. M. Liner, 200 Southland Cir., Apt. 208B, Houma, La. 70364
Filed Sep. 10, 1987, Ser. No. 94,841
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—47.35 7 Claims



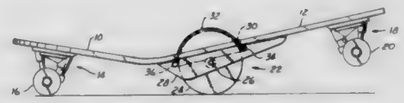
1. A hairdressing cart comprising:
a base shelf,
a top shelf,
a central post interconnecting said base shelf and said top shelf,
wheel means for supporting said base shelf and for providing mobility to the cart,
a plurality of sets of perm rod storage prongs radially projecting from said central post and located between said base shelf and said top shelf, the perm rod storage prongs of each set of perm rod storage prongs being spaced from each other to avoid contacting a band of a perm rod while supporting a head of the perm rod, and
cover means located between said top shelf and said bottom shelf and surrounding said central post and said perm rod storage prongs for providing a protected storage area between said top shelf and said bottom shelf.

4,795,180
TOOL CADDY
Jeffrey Polcyn, P.O. Box 250 – Rte. #4, Gallipolis, Ohio 45631
Filed Mar. 13, 1987, Ser. No. 25,643
Int. Cl.[4] B65D *85/00*
U.S. Cl. 280—79.1 A 8 Claims



1. A tool caddy for use by a workman with a conventional creeper of the like for working in upright inaccessable work places, comprising:
a rectangular box-like structure comprised of complimentary halves, each having a bottom panel, a pair of side panels, and a pair of end walls,
the width and depth dimension of said complimentary bottom panels being substantially greater that the maximum height dimension of said complimentary side walls and said complimentary end walls,
said complimentary pair of said walls further comprising a front and rear wall and wherein each of said rear side walls having a greater height dimension than that of said complimentary side walls, and wherein each of said pair of end walls have a front to rear height matching the height of said front and rear end walls, and
wherein said front and rear end walls of each of said complimentary half structures are substantially identical in height;
a tool tray positioned in one of said complimentary half structures at an angle from the flat horizontal to that of the front and rear heights of said end walls,
a plurality of wheels spatially positioned on the outside of said bottom panel of said half structure having said tool tray positioned therein; and
wherein said complimentary half of said rectangular box-like structure not having said tray positioned therein is fixedly secured over said half having said tray positioned therein.

4,795,181
SKATEBOARD
Robert B. Armstrong, 2624 Hounds Chase, Troy, Mich. 49098
Filed Apr. 4, 1988, Ser. No. 177,263
Int. Cl.[4] A63C *17/04*
U.S. Cl. 280—87.04 A 5 Claims



1. A skateboard comprising:
a longitudinally extending platform having a front end, a rear end, and a central portion intermediate said ends, said platform providing a surface upon which a rider may stand;
a steerable front axle assembly mounted on said front end of said platform and including a pair of laterally spaced front wheels rotatably mounted on a front axle;
a steerable rear axle assembly mounted on said rear end of said platform and including a pair of laterally spaced rear wheels rotatably mounted on a rear axle;
a single central wheel rotatably mounted on a substantially fixed center axle secured to said central portion of said platform, said center wheel having a substantially larger diameter than said front and rear wheels, the placement and diameter of said center wheel being such that it is possible to ride solely on said center wheel, with said front and rear pairs of wheels out of contact with the skatboard-supporting ground surface on which said center wheel is rolling;
the ground-contacting portions of said pair of front wheels and said center wheel defining a first platform-supporting plane upon which the platform can roll when the center of gravity of a rider is positioned generally forwardly of said center axle, in which condition said pair of rear wheels is spaced above said first support plane and out of contact with the ground;
the ground-contacting portions of said pair of rear wheels and said center wheel defining a second platform-supporting plane upon which the platform can roll when the center of gravity of a rider is positioned generally rearwardly of said center axle, in which condition said pair of front wheels is spaced above said second support plane and out of contact with the ground;
the platform being steerable by the conventional steering method of lateral shifting of the weight of the rider while the skateboard is rolling forwardly or rearwardly and on either the first or second plane.

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4,795,182

WHEELCHAIR WITH PIVOTED BASKET

Larry B. Dyess, and Kenneth R. Ball, both of P.O. Box 99, Geneva, Ala. 36340

Filed Sep. 17, 1987, Ser. No. 98,192
Int. Cl.[4] A61G 5/02
U.S. Cl. 280—289 WC **7 Claims**



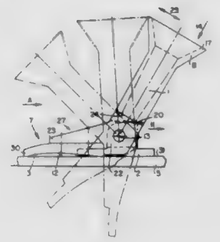
1. In combination with a wheelchair having a frame supported on a plurality of wheels and incorporating a central seat portion and a pair of opposite side forward frame portions adjacent a forward portion of said seat portion and between which the legs of a person seated on said seat portion extend, a horizontally elongated transverse support extending transversely of said wheelchair and including first and second ends equipped with first and second support means, respectively, said first support means and one of said forward frame portions including first coacting means supporting said first end from said one forward frame portion for oscillation relative to the latter about an upstanding axis and swinging of said support between a first "closed" position extending transversely of said wheelchair and between said forward frame portions and a second "open" position with said second end of said support swung forwardly from the other forward frame portion to a position extending forwardly from said one forward frame portion, said second support means and said other forward frame portion including second coacting support means operative to releasably latch said second end relative to said other forward frame portion with said support in said first position, said first support means including a depending support member carried by said first end of said transverse support and comprising a part of said first coacting means, said first coacting means also including a pair of vertically spaced bracket portions supported from said one forward frame portion and defining vertically registered and aligned openings formed therethrough, said support member being snuggly slidably and rotatably received through said openings, said depending support member and one of said bracket portions including coacting abutment means limiting downward sliding movement of said support member through said openings while allowing unrestricted upward sliding withdrawal of said depending support member through said openings, said second support means including a second support member depending from said second end of said transverse support and comprising a part of said second coacting means, said second coacting means also including a pair of upper and lower vertically spaced bracket portions supported from said other forward frame portion, said second support member including upper and lower portions horizontally registered with said upper and lower bracket portions of said other forward frame portion when said support is in said "closed position", at least said lower bracket portion supported from said other forward frame portion and said lower portion of said second support member including abuttingly engaged portions preventing further swinging of said lower portion of said second support member past said "closed position", said upper portion of said second support member and said upper bracket portion supported from said other forward frame portion including releasably relatively hook engaged portions thereof preventing downward movement of said upper portion of said second support member relative to said upper bracket portion supported from said other forward frame portion and swinging movement of said upper portion of said second support member relative to said upper bracket portion of said other forward frame portion from said "closed position" toward said "open position".

4,795,183

BRAKE FOR INSTALLATION ON A SNOW SKI

Karl-Josef Reuters, Hans-Böckler-Str. 9, 5180 Eschweiler, Fed. Rep. of Germany

Filed Dec. 9, 1986, Ser. No. 939,638
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1985, 3543829; European Pat. Off., Nov. 27, 1986, 86116472
Int. Cl.[4] A63C 7/10
U.S. Cl. 280—605 **19 Claims**



1. A brake mechanism for installation on a snow ski having a top surface and a bottom surface interconnected by two side surfaces, comprising mounting carrier means for securing said brake mechanism to said top surface, a fulcrum formed by said carrier means, lever means having two arms for transmitting a braking force to a level below said bottom surface, said fulcrum including journal means having a journal shaft for mounting said lever means intermediate said two arms to said carrier means for tilting about said journal shaft said two arms of said lever means including an operating lever arm and at least one brake lever arm having a brake end arranged for engaging the ground in a brake operated position and for assuming a resting position at a level at least above said bottom surface, said operating lever arm extending approximately radially relative to said journal axis and upwardly in a forward direction as viewed by a skier, said operating lever arm having an insertion opening means for inserting a brake operating member so that a skier can pull said brake operating member substantially in a horizontal direction opposite to said forward direction for rotating said operating lever arm about said journal shaft in an upward direction while simultaneously rotating said brake lever arm about said journal shaft in a downward direction for applying a braking force.

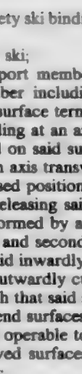
4,795,184

SKI WITH DISSYMMETRICAL LATERAL SURFACES

Jean-Luc Diard, Annecy, and Roger Pascal, Annecy le Vieux, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed May 15, 1987, Ser. No. 49,931
Claims priority, application France, May 23, 1986, 86 07852
Int. Cl.[4] A63C 5/04
U.S. Cl. 280—609 **28 Claims**

1. A ski for use on ice or snow comprising:
a lower sliding surface connected to an upper surface by a first lateral surface and a second lateral surface along opposed sides of the ski, said ski having a central zone and two ends which together comprise a useful zone of said ski, each of said lateral surfaces being inclined relative to said lower surface and forms at least along said ski ends an inclination angle, with said lower surface, wherein the average inclination angles of each lateral surface is less



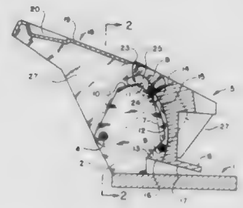
than 90°, wherein said first average inclination angle is less than said second average inclination angle over the useful zone of the ski.

4,795,185

HEEL PIECE FOR SAFETY SKI BINDING

Heinz Hörnschemeyer, Oberammergau, Fed. Rep. of Germany, assignor to Marker Deutschland GmbH, Garmisch-Partenkirchen, Fed. Rep. of Germany

Filed Feb. 2, 1988, Ser. No. 151,442
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1987, 3703008
Int. Cl.[4] A63C 9/08
U.S. Cl. 280—632 **6 Claims**



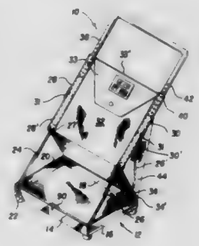
1. A heelpiece of a safety ski binding, said heelpiece comprising:
a base attachable to a ski;
opposed vertical support members mounted on said base, each support member including a track formed by an outwardly curved surface terminating in first and second end surfaces extending at an angle thereto;
a soleholder mounted on said support members for pivotal movement about an axis transverse to said support members between a closed position for securing a ski boot an open position for releasing said ski boot, said soleholder including a track formed by an inwardly curved surface terminating in first and second end surfaces extending at an angle thereto, said inwardly curved surface being contiguous with said outwardly curved surface and movable relative thereto such that said soleholder end surfaces are movable past said end surfaces of said support members;
a first movable roller operable to engage said first end surfaces and said curved surfaces of said support members and said soleholder;
a second movable roller operable to engage said second end surfaces and said curved surfaces of said support members and said soleholder;
tension means disposed between and connected to said first and second rollers for biasing said rollers toward each other, said rollers being maintained in a spaced apart location by said respective surfaces of said support members and said soleholder wherein said first roller is movable between engagement with said first end surface of said soleholder and said first end surface of said support members as said soleholder moves between said closed position and said open position, said tension means exerting a biasing force on said soleholder to maintain said soleholder in said closed position when said first roller is in engagement with said first end surface of said soleholder, and
lever means pivotally mounted on said support members said lever means including a cam slot for receiving and guiding the ends of said first roller, said lever means being operable to move said first roller from engagement with said first end surface of said soleholder when said soleholder is in the closed position to engagement with said first end surfaces of said support members when said soleholder is in the open position wherein said second roller engages said second end surface of said support member when said soleholder is in said closed position, and wherein said second roller engages said second end surface of said soleholder when said soleholder is in said open position.

4,795,186

PORTABLE STORAGE APPARATUS

Ruby M. Tyus, 5871 Division St., San Diego, Calif. 92114

Filed Jul. 17, 1987, Ser. No. 74,710
Int. Cl.[4] B62B 3/08, 3/02
U.S. Cl. 280—651 **5 Claims**

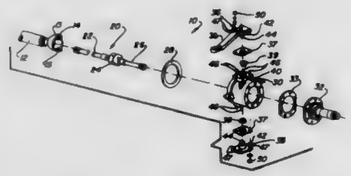


1. A portable storage apparatus, comprising;
a base assembly forming a first interior compartment;
roller means fixedly mounted beneath said base assembly;
a base assembly cover pivotally attached to said base assembly by primary hinge means, said primary hinge means allowing said base assembly cover to be folded onto said base assembly;
a pair of foldable support members having opposite ends attached to said base assembly and said base assembly cover, said foldable support members adapted to releasably support said base assembly cover in a raised position;
a front planar surface deployed between a pair of primary foldable structural supports, each of said primary foldable structural supports pivotally attached to said base assembly cover by secondary hinge means;
said primary foldable structural supports including tertiary hinge means, each of said primary foldable structural supports being foldable upon itself;
a pair of pliable triangular side panels; each of said pliable side panels attached to and extending between said primary foldable structural supports and said base assembly cover;

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a back planar surface disposed between said pliable triangular side panels;
a second interior compartment formed by said front planar surface, said pliable said panels, and said back planar surface;
means for access to said second interior compartment; and
a handle mounted on said structural supports.

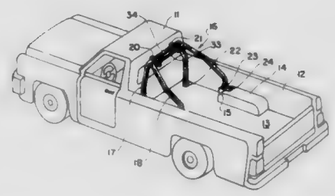
4,795,187
KING PIN MEMBER FOR ADJUSTING CAMBER, AND METHOD
William E. Ingalls, Longmont, Colo., assignor to Thomas W. O'Rourke, Boulder, Colo., a part interest
Filed Oct. 20, 1987, Ser. No. 110,929
Int. Cl.[4] B62D *17/00*
U.S. Cl. 280—661 5 Claims



1. In an axle assembly including a driven and steerable wheel, the axle assembly comprising:
an axle;
a yoke structure defined at an end of the axle, the yoke including upper and lower king pin locating means;
a steering knuckle having upper and lower pilot openings defined therein;
upper and lower first king pin means, each having indexing means adapted to fit the corresponding pilot opening, and each having a king pin stub in the form of a cylindrical shaft with an axis nominally positioned relative to the indexing means, each king pin stub being positioned in one of the yoke king pin locating means to secure the steering knuckle to the yoke with the yoke being rotatably movable at the king pin stub; and
a spindle defining an axis and extending from the steering knuckle, the spindle being adapted to support a wheel for rotation around the spindle axis;
the improvement comprising:
an asymmetric king pin means with an asymmetric king pin stub positioned on the indexing means with the asymmetric king pin stub axis displaced from the nominal axis of the first king pin stub in a direction parallel to the spindle axis;
whereby the asymmetric king pin means will rotate the steering knuckle and spindle relative to the yoke to change the camber relationship of the spindle relative to the yoke when positioned in place of the first king pin means.

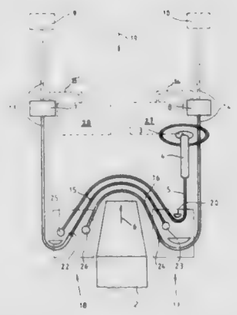
4,795,188
ROLL BAR
Robert E. Dueker, 6701 Whitaker Ave., Van Nuys, Calif. 91406
Filed Sep. 18, 1987, Ser. No. 98,088
Int. Cl.[4] B60R *21/02*
U.S. Cl. 280—756 6 Claims

1. An ornamental roll bar for installation across the width of a truck bed comprising the combination of:
first and second U-shaped members composed of tubular stock having a smooth and continuous surface with their respective free ends anchored to the floor of the truck bed;
each member is arched upwardly having respective cross pieces joined together by clamping elements in fixed spaced-apart relationship;
each member comprising several lengths of preformed segments having their opposing ends joined together in an end-to-end relationship;
insert means cooperatively coupling said segment opposing ends together to provide a unitary member composed of said segments;
said first U-shaped member is in a vertical upright orientation with respect to said truck bed floor;
said second U-shaped member is a brace for said first member having its free ends non-movably anchored to said truck bed floor a substantial distance behind said free ends of said first member in fixed spaced-apart relationship;



said clamping elements comprise a pair of spaced-apart clamps overlapping abutting joined ends of associated segments joining both first and second members together in a fixed, non-movable relationship;
each clamping element includes a pair of clamp yokes having semicircular openings forming a pair of circular openings when joined together about said cross pieces of said first and said second members; and
a cup having a circular socket for receiving said free ends of said members respectively and having a reinforced center in each cup socket for receiving a fastening means securing said free end to said truck bed floor.

4,795,189
SAFETY SYSTEM FOR AUTOMOTIVE VEHICLES
Elmar Vollmer, Wettstetten; Helmut Adam, Ingolstadt, and Werner Wilhelm, Altmannstein-Pondorf, all of Fed. Rep. of Germany, assignors to Audi AG., Ingolstadt, Fed. Rep. of Germany
Filed Aug. 6, 1987, Ser. No. 83,256
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1986, 3627558
Int. Cl.[4] B60R *22/46*
U.S. Cl. 280—801 17 Claims



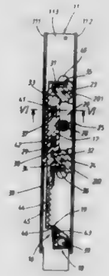
1. A safety system for automotive vehicles of the kind having a chassis and, in a forward section thereof, a drive unit having a rear portion and being displaceable rearwardly relative to said chassis when impacted by a frontal collision exceeding a predetermined force, comprising:
first and second guiding and anchoring means mounted on substantially non-collapsible sections of said chassis at opposite sides and forwardly of said rear end portion of said drive unit, each of said guiding and anchoring means comprising a mounting bracket and motion reversal means;
a plurality of safety means actuated by a pulling force;
guide means mounted on said drive unit substantially rearwardly of said rear end portion;
a plurality of flexible and substantially inextensible elongate means for transmitting rearward displacement of said drive unit as said pulling force to said safety means, each of said elongate means having a first end connected to said bracket of one of said first and second guiding and anchoring means, a second end connected to one of said plurality of safety means, and an intermediate section engaged by the motion reversal means of the guiding and anchoring means opposite the guiding and anchoring means of the bracket to which said first end is connected;
said plurality of elongate means, for generating a mechanical advantage during rearward movement of said drive unit, extending substantially in parallel to each other around said rear end portion of said drive unit and being slideably supported by said guide means.

4,795,190
SHOULDER BELT MINICOVER AND CUSHION
Judy M. Weightman, and Andrew K. Mirtkitani, both of 1717 Mott-Smith Dr., No. 1501, Honolulu, Hi. 96822
Filed Jul. 4, 1987, Ser. No. 57,637
Int. Cl.[4] B60R *22/00*
U.S. Cl. 280—808 3 Claims



2. A shoulder belt attachment comprising,
an elliptically shaped body having opposite side fabric layers and an intermediate layer of padding material,
wherein the body is folded in half about a medial transverse axis of the elliptical body and wherein overlying edges of the two halves are sewn together to form a semi-elliptically shaped body.
complementary fastener means provided on opposite sides of the semi-elliptically shaped body on an interior surface thereof, wherein the semi-elliptically shaped body is folded in half about a longitudinal axis of the semi-elliptically shaped body, wherein the longitudinal axis is perpendicular to the transverse axis, to provide a quarter-elliptically shaped body and
wherein a shoulder belt passes through the interior of the quarter-elliptically shaped body between the complementary fastener means and the longitudinal axis about which the semi-elliptically shaped body is folded.

4,795,191
DEVICE FOR AUTOMATICALLY ADJUSTING AND LOCKING THE HEIGHT OF A DEFLECTION FITTING OF A SAFETY BELT IN VEHICLES
Klaus Pfeiffer, Aidlingen; Andreas Pieper, Bodenheim; Hans-Jürgen Scholz, Waldenbuch; Walter Jaka, Ehningen, and Jürgen Gimbel, Gechingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Feb. 26, 1988, Ser. No. 161,106
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1987, 3706367
Int. Cl.[4] B60R *21/10*
U.S. Cl. 280—808 11 Claims



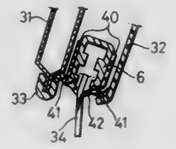
1. An adjustment and locking mechanism for the deflection fitting of a safety belt in vehicles comprising:
a vertical guide rail attached to a vehicle body;
an anchoring means carrying a deflection fitting and being guided in a vertically displaceable manner at said guide rail;
an adjusting means for displacing and holding said anchoring means in a set vertical position;
a locking means effective in the case of extreme vehicle deceleration for locking said anchoring means at said guide rail;
a locking element means displaceable transversely to the displacement direction of the anchoring means and being coupled to the anchoring means;
said locking element having locking teeth cooperating with holes in the guide rail in response to a vertical downward movement relative thereto of the anchoring means;
wherein the adjusting means acts directly on the anchoring means to position the anchoring means in a set position; and wherein
a vehicle deceleration sensor acts on the locking element means when a predetermined vehicle deceleration value is exceeded for blocking a downward movement of the locking means at least temporarily.

4,795,192
LIP SUITABLE FOR USE WITH GUIDE RAIL OF PASSIVE SEAT BELT SYSTEM
Shunichi Kiyono, Kanagawa, Japan, assignor to NSK-Warner KK, Tokyo, Japan
Filed Oct. 26, 1987, Ser. No. 112,454
Claims priority, application Japan, Oct. 30, 1986, 61-165657[U]
Int. Cl.[4] B60R *22/06*
U.S. Cl. 280—804 12 Claims

1. A passive seat belt system comprising:
a guide rail having a substantially turned U-shaped transverse cross-section and defining an elongated slot through a lower wall thereof, said guide rail being adapted to be mounted on a vehicle body;

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a movable member in the slot, capable of movement along the length of the guide rail;
a webbing having one end fastened to the movable member, displaceable between an occupant-releasing position and an occupant-restraining position;
a lip comprising:
a lip main body having a free edge;
a gill having a tip,



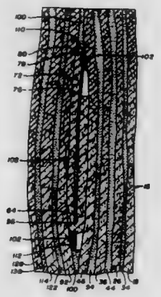
said lip main body extending along the outer surface of a side wall of the guide rail toward the slot, the gill branching out from a part of the lip main body located in the vicinity of the free edge of the lip main body, the tip of the gill being adapted to contact the vehicle body so as to conceal a gap between the guide rail and the vehicle body on the side of the lower wall of the guide rail.

4,795,193

BOOKLET WITH RETURN ENVELOPE

Edvard R. Schaltz; Gerald J. Loehlein; Dennis P. Travers, all of Green Bay; Calvin J. McGregor, DePere, and Robert H. Johnstone, Green Bay, all of Wis., assignors to Moore Business Forms, Inc., Glenview, Ill.

Filed Dec. 9, 1986, Ser. No. 939,890
Int. Cl.[4] B42D *1/00*
U.S. Cl. 281—15 R **9 Claims**



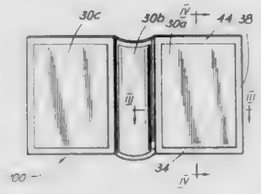
1. A booklet having:
a spine of predetermined length, said spine being constituted by serial adhesion by means of respective interfacial lines of adhesive, of like first marginal regions of a plurality of pages, each said page being of predetermined length and width; said booklet having a pasting gap provided in a respective one of said lines of adhesive at an intermediate site along said spine between said first marginal regions of two adjacent ones of said pages, said pasting gap being shorter than the length of said spine;
an envelope of predetermined length and width, said envelope being removably received in said booklet between said two adjacent pages, with an end margin thereof removably lodged in said pasting gap;
said booklet having a first edge running along said spine, a second opposite edge parallel thereto and a pair of third and fourth edges running perpendicular to said spine, and said envelope, while lodged in said spine having one end disposed substantially flush with said first edge of said booklet and a second end disposed substantially flush with said second edge of said booklet;
said end margin of said envelope, in a direction parallel to the length of said spine, being shorter than said spine.

4,795,194

COVER AND JACKET WITH POCKET AND METHOD OF MANUFACTURE THEREOF

Nancy Etheredge, 145 E. 16th St., New York, N.Y. 10003

Filed May 20, 1987, Ser. No. 52,456
Int. Cl.[4] B42D *3/04, 3/00;* **B41L** *1/20*
U.S. Cl. 281—34 **12 Claims**



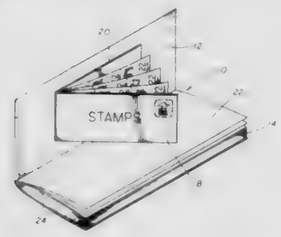
1. A cover jacket for a book having a pocket for receiving and containing an object to create a visual impression, comprising:
a jacket member including a front member to form a front piece for a book cover, and a rear member to form a back piece for the book cover;
means joining said front and said rear members; and
pocket means including a pocket element positioned on said jacket member for forming said pocket for receiving said object to create the visual impression and means joining said pocket element to said jacket member and closing said pocket after said object has been inserted thereinto to prevent egress of said object.

4,795,195

DISCOUNT COUPON AND STAMP HOLDER

Brad A. McClain, Jr., 3714 Durness Way, Houston, Tex. 77025

Filed Dec. 31, 1987, Ser. No. 140,297
Int. Cl.[4] G09F *3/00;* **B42D** *15/00, 1/00, 3/00*
U.S. Cl. 283—56 **3 Claims**



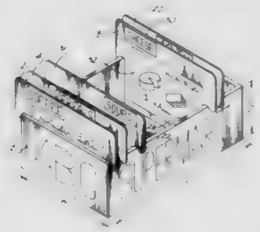
1. An article of manufacture for use in retail establishments which honor discount coupons from marketers, said article of manufacture including in combination
cover means including a front page and a back page,
a plurality of pages perforated along a line near the top of each page with each page having a discount coupon affixed thereto and fixedly attached to said cover means, and
booklet means positioned in said cover means.

4,795,196

METHOD FOR ORGANIZING MERCHANDISING COUPONS AND COUPON STORAGE DEVICE

David K. Hyun, Pasadena; Clifford A. Higgins, II, Altadena, and William H. Morgan, Pasadena, all of Calif., assignors to Value Savers Unlimited, Pasadena, Calif.

Filed Jul. 30, 1987, Ser. No. 79,674
Int. Cl.[4] B42D *15/00;* **B42F** *21/00, 17/00*
U.S. Cl. 283—67 **6 Claims**



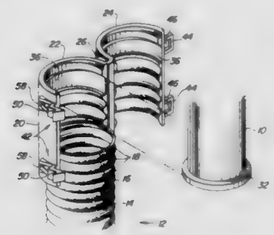
1. A method of organizing merchandising coupons comprising the steps of:
printing on an area of a plurality of file dividers different generic product descriptors;
printing on another area of the dividers different brand-name product advertisements, the brandname product belonging to the class of the generic product, the descriptor of which is printed on the same divider as the advertisement of said brand-name product;
inserting the dividers in a container to form separate compartments corresponding to the different generic products; and
placing the coupons in the compartments sorted by generic product.

4,795,197

COUPLING FOR SEED AND FERTILIZER HOSES

Earl W. Kaminski, Des Moines, and David J. Brown, Altoona, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 29, 1987, Ser. No. 66,927
Int. Cl.[4] F16L *21/06*
U.S. Cl. 285—12 **6 Claims**



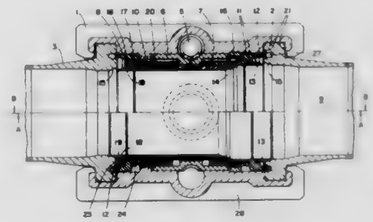
1. A hose coupling for selectively connecting one end of a corrugated flexible hose to the output flange of a material distributing device on an implement or to another flexible hose, said hose coupling comprising: a cylindrical member having a central axis and including first and second generally semi-cylindrical portions, means hingedly connecting the semi-cylindrical portions together for rocking with respect to each other about an axis generally parallel to the central axis between open and closed positions, said portions including inner surfaces conforming to the shape of the corrugated hoses to axially secure the hoses within the cylindrical member when said another corrugated hose is selected and the portions are rocked to the closed position, said portions also including a groove extending circumferentially around the inner surface for receiving the flange therein, when said output flange is selected, for securing the cylindrical member to the device output as the cylindrical portions are rocked to the closed position;
means releasably securing the hinged portions in the closed position; and
wherein the inner surfaces conforming to the shape of the corrugated hose extend substantially the length of the cylindrical member but are interrupted by the groove.

4,795,198

CONNECTOR DEVICE FOR AN UNDERWATER PIPE SYSTEM

Kurt J. Hjelset, Alesund, Norway, assignor to Den norske stats Oljeselskap A/S and Linaea Engineering A/S, Norway

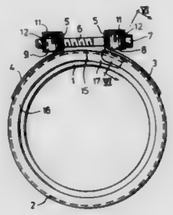
Filed Aug. 26, 1987, Ser. No. 89,412
Claims priority, application Norway, Aug. 27, 1986, 863431
Int. Cl.[4] F16L *21/04*
U.S. Cl. 285—32 **12 Claims**



1. A device for connecting a pipe section to an associated device in an underwater pipe system, wherein the pipe section is of the type having an end flange, a peripheral seat and a passageway therethrough, which device comprises:
(a) a longitudinal housing having at least one transverse groove formed therein, the groove including an engagement surface, wherein an end flange of a pipe section may be introduced into the groove through mutual movement of the pipe section and the housing in a direction perpendicular to their respective longitudinal axes;
(b) at least one shiftable sleeve unit disposed within the housing and provided with external threading and a duct for a passageway of the pipe section;
(c) a main sealing ring disposable in engagement against a peripheral seat of the end flange;
(d) a socket disposed within the housing, the socket at least partly surrounding the sleeve unit and including internal threading engagable with the external threading of the sleeve unit;
(e) means for locking the sleeve unit against rotation within the housing;
(f) means for locking the socket against axial movement within the housing; and
(g) worm shaft journaled in the housing and operably coupled to the socket, the worm shaft being controllable from the exterior of the housing to rotate the socket for moving the sleeve unit and main sealing ring toward the end flange of the pipe section and biasing the end flange against the engagement surface of the groove.

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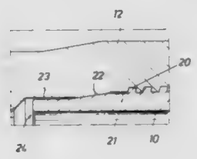
4,795,199
CLAMPING SLEEVE FOR PIPES
Manfred Gehring, Frondenstadt, Fed. Rep. of Germany, and Heinz Pliss, Courtaman, Switzerland, assignors to NAGE AG, Switzerland
Filed Oct. 4, 1985, Ser. No. 784,166
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1984, 3445807; European Pat. Off., Jul. 3, 1985, 85108204
Int. Cl.[4] F16L *21/06*
U.S. Cl. 285—236 **11 Claims**



1. A clamping sleeve for pipes comprising an elastomeric sealing ring having radially disposed end faces, an elongated sheet-metal strip having a substantially uniform width and a generally circular shape, said strip defining a clamping ring for encircling said sealing ring and including radially inwardly directed outer edges extending along the entire length of said strip for engaging and gripping said end faces when said strip is disposed in encircling relation to said sealing ring, said strip having one end portion terminating at one end of said strip and an opposite end portion terminating at the opposite end of said strip, means for allowing reduction in the width of said one end portion to permit said one end portion to be received within said other end portion between the radially inwardly directed outer edges of said other end portion when said strip is in encircling relation to said sealing ring and including at least one slot through said one end portion extending longitudinally of said strip and opening outwardly through said one end of said strip, said opposite end portion overlapping said one end portion when said strip is disposed in encircling relation to said sealing ring, opposing clamping plates attached to said clamping ring, one of said clamping plates being attached to said clamping ring near said opposite end, the other of said clamping plates being attached to said clamping ring in spaced relation to said one end, said one end portion projecting beyond said other clamping plate, and means for drawing said clamping plates toward each other including at least one clamping screw penetrating said clamping plates.

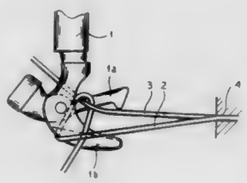
4,795,200
LENGTHENED TUBULAR PIN MEMBER NOSE FOR IMPROVING SEALING INTEGRITY AND BEARING FORCES
Lawrence Y. Tung, Houston, Tex., assignor to Hydril Company, Houston, Tex.
Continuation of Ser. No. 937,750, Dec. 4, 1986, abandoned. This application Mar. 9, 1988, Ser. No. 168,544
Int. Cl.[4] F16L *25/00*
U.S. Cl. 285—334 **2 Claims**

1. A threaded connection comprising a box having internal threads and a pin having internal threads for mating with the threads on the box when the connection is made up, a conical surface on the pin between the threads and the end of the pin and a conical surface on the box for engaging the conical surface on the pin and forming a metal-to-metal seal when the connection is made up, said pin further having an end portion spaced from the box and extending beyond the conical surface a distance at least equal to the projected length of the conical sealing surface along the longitudinal axis of the connection to



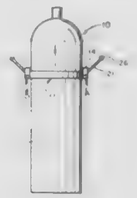
stiffen the pin and increase the area of the conical sealing surfaces that are in sealing engagement.

4,795,201
KNOTTING METHOD FOR BALER
Hubert Prellwitz, Polenz; Günter John, Neustadt; Christian Steglich, Grimmen, and Astrid Krüger, Nyast, all of German Democratic Rep., assignors to Veb Kombinat Frotschritt Landmaschinen, Neustadt/Sachsen, German Democratic Rep.
Filed Dec. 11, 1987, Ser. No. 131,777
Claims priority, application German Democratic Rep., Dec. 15, 1986, 29554
Int. Cl.[4] B65H *69/04*
U.S. Cl. 289—1.5 **3 Claims**



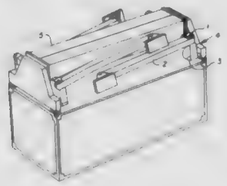
1. A method of knotting with a clamp adjacent an axis and a two-jaw knotting head rotatable about the axis, the method comprising the steps of sequentially:
(a) wrapping a strand around an object to be trussed with the strand ends together;
gripping and retaining the strand ends together in the clamp with
one of the strand end portions passing under the jaws of the knotting head and then upward to the object,
the other strand end portion passing over the knotting head between the one end portion and the axis and then downward to the object, and
the strand end portions crossing between the knotting head and the object being trussed,
(b) rotating the knotting head through less than one full revolution with the jaws closed together to bring the crossing point of the strands onto the jaws and loop the one end portion around the jaws;
(c) opening the jaws and rotating the knotting head through the balance of the revolution to engage both end portions between the jaws between the clamp and the axis;
(d) closing the jaws; and
(e) pulling the strand end portions off the ends of the jaws and thereby knotting the strand end portions together.

4,795,202
LIFTING HANDLE FOR PRESSURIZED GAS CONTAINERS
Stephen M. Mader, 1011 2nd St., Crawford, Nebr. 69339
Filed Mar. 22, 1988, Ser. No. 171,646
Int. Cl.[4] B65D *63/18*; B65G *7/12*
U.S. Cl. 294—16 **3 Claims**



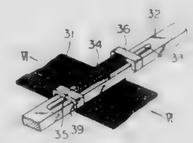
1. A lifting handle for elongate, cylindrical, pressurized gas containers, comprising:
a circular band or ring for placement about a container, said band having a pair of diametrically opposite cut-outs therein, defining spaced apart ends on the band with an opening therebetween;
a generally inverted U-shaped pivot mount on the band at each cut-out, spanning the opening between said ends; and
a pivoted wedging member carried by said pivot mount in a position to be swung into and out of engagement with an adjacent surface of the container to grip the container and enable it to be lifted and carried with the lifting handle, said wedging members each being shaped as a right cylinder and being supported for swinging movement by a pivot pin carried on the pivot mount and extending through a pivot bore formed longitudinaly through the wedging member in an offset position from the longitudinal axis of the wedging member.

4,795,203
CONTAINER AND TRAILER HANDLING COMBINATION YOKE DEVICE WITH IMPROVED ELEVATED STORAGE FOR LIFTING ARMS
Gösta Karlsson, Skogsgatan 6, S-280 72 Killeberg, Sweden
Filed Sep. 29, 1987, Ser. No. 102,568
Claims priority, application Sweden, Sep. 30, 1986, 8604144
Int. Cl.[4] B66F *9/18*
U.S. Cl. 294—81.51 **4 Claims**



1. A container and trailer-handling combination yoke device, comprising:
a frame having a generally horizontal longitudinal axis and two opposite ends;
a pair of transversally extending yokes supported at opposite ends of said frame, each yoke having two transversally-opposite ends having transversally outer extents from said longitudinal axis;
each yoke including means for engaging a container or trailer for handling the container or trailer;
four lifting arms each having two opposite ends;
respective means pivotally securing each said lifting arm, by a respective one end thereof, to a respective said yoke end for pivotal movement between:
a lowered, operating position in which such lifting arm is disposed generally vertically with said one end thereof disposed above the opposite end thereof, and
an elevated position in which such lifting arm is disposed generally horizontally and extends generally parallel to said longitudinal axis of said frame;
each said pivotal securing means including:
an intermediate piece;
a first rotary joint pivotally securing a respective said lifting arm to said intermediate piece, for rotation about an axis which extends generally horizontally and generally transversally of said device when the respective said lifting arm is in said lowered, operating position; and
a second rotary joint pivotally securing said intermediate piece to a respective said end of a respective said yoke, for rotation about an axis which extends generally horizontally and generally longitudinally of said device,
whereby, after said lifting arms have been swung-up about said first rotary joints from said operating positions to said elevated positions thereof, said lifting arms and said intermediate pieces may be swung inwards about said second rotary joints to respective stored positions in which said lifting arms remain generally horizontal and generally parallel to said longitudinal axis of said device but said lifting arms are located further inboard, in relation to said longitudinal axis, than when said lifting arms are disposed in said elevated position;
said lifting arms when disposed in said stored positions thereof being disposed axially between said yokes and transversally closer to said longitudinal axis than are said transversally outer extents of said ends of said yokes.

4,795,204
BAND CLAMPING DEVICE FOR LUGGAGE CARRIER
Hiroshi Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Sankodo, Japan
Division of Ser. No. 723,460, Apr. 15, 1985, Pat. No. 4,679,691. This application Mar. 23, 1987, Ser. No. 29,046
Claims priority, application Japan, Jul. 5, 1984, 59-100698; Aug. 31, 1984, 59-131483; Dec. 28, 1984, 59-196865
Int. Cl.[4] A44B *11/00*
U.S. Cl. 294—156 **3 Claims**



1. A band clamping assembly for adjustably clamping a carrying band on a carrying device comprising:
a base portion fixed on said carrying device;
said base portion including an elongated opening for receiving a folded portion of said carrying band;
an elongated bar being received within said folded portion of said carrying band;
said elongated bar cooperating with said base portion to prevent said folded portion of said carrying band from being withdrawn through said elongated opening; and
the lateral position of said carrying band in relation to said base portion being adjustable when the elongated bar is displaced along the elongated opening of the base portion.

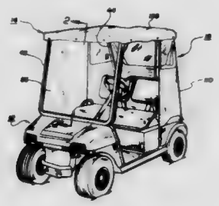
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,205

WINDSHIELD FOR GOLF CART

Curtis E. Gerber, Tampa, Fla., assignor to Tampa G Manufacturing Co., Tampa, Fla.

Filed Dec. 11, 1987, Ser. No. 131,961
Int. Cl.[4] D62J *17/00*
U.S. Cl. 296—77.1 **4 Claims**



1. An improved windshield assembly for a golf cart comprising:
generally horizontal upper tracks located in the upper portion of a golf cart
generally vertical lower tracks extending downwardly from the upper tracks and supported by the lower portion of the golf cart at the front thereof with junctions being formed at the area where the upper and lower tracks are joined;
a windshield having an upper pair of rollers slidable in the upper tracks and a lower pair of rollers slidable in the lower tracks,
wall means, downwardly extending from the upper tracks to retain the rollers within the tracks;
pin means spring urged into the tracks to preclude movement of the rollers therepast, the pin means being retractable to allow movement of the rollers therepast, and
brackets for supporting the upper and lower tracks in operative contact with each outer, each bracket including a vertical base plate and inwardly projecting supports to maintain the tracks in contact with each other at an angle slightly greater than forty-five (45) degrees with the tracks themselves constituting uninterrupted entire riding surfaces for the rollers moving within the track, each bracket further including a plate parallel with the direction of movement of the rollers and having a notch formed therein for receiving a bent portion of a pin to thereby hold the pin in its retracted position, the pin being movable into the tracks adjacent to the junction.

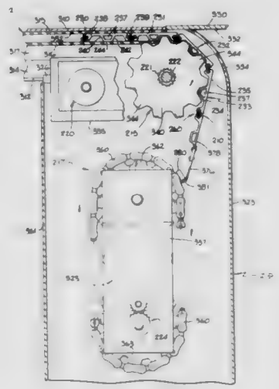
4,795,206

PICKUP TRUCK BED COVER SYSTEM

James P. Adams, Greeley, Colo., assignor to Adelco, Inc., Greeley, Colo.

Continuation-in-part of Ser. No. 884,490, Jul. 11, 1986. This application Jun. 8, 1987, Ser. No. 55,922
Int. Cl.[4] B60J *7/10*
U.S. Cl. 296—98 **30 Claims**

1. A cover system for a pickup-type truck or the like having an elongated truck bed with a horizontal truck bed floor portion, a pair of laterally spaced parallel vertically extending side wall portions, and a front end vertical wall portion defining a cargo space therebetween with an open top portion and an openable rear end portion, the system comprising:
cover means for covering the open top portion of the truck bed and being movable from an open storage position whereat the opening is uncovered and a closed covering position whereat the opening is closed by the cover means;
laterally spaced parallel cover guide and support track means mounted along a top portion of both of said truck bed side wall portions for slidably guiding and supporting said cover means during movement between said open storage position and said closed covering position;
said cover means comprising:
a plurality of separate elongated rigid panel members having a length such as to extend transversely across the entire width of the cargo space between said track means and having side edge portions located in side by side relationship and having opposite end portions mounted on and supported by said track means;
separate flexible resilient pivotal panel connecting and sealing means having side edge portions for continuously connecting adjacent side edge portions of adjacent ones of said separate panel members to one another along the entire length of said panel members between said track mean and for preventing fluid flow through the space between adjacent panel members across the cargo space;
housing means located within said cargo space beneath said open top portion at the front end of the truck bed for holding said cover means in the open storage position;



cover drive means mounted in said housing means for driving engagement with said panel members intermediate said track means and for moving said cover means between said open storage position and said closed covering position;
reel means in said housing means for supporting said cover means and enabling said cover means to be wound thereabout during movement from the closed covering position to the open storage position and to be unwound therefrom during movement from the open storage position to the closed covering position; and
motor means mounted in said housing means and being operably connected to said cover drive means and said reel means for selectively causing synchronized movement of said cover means between said open storage position and said closed covering position by positive direct synchronized driving engagement between said cover means and each of said cover drive means and said reel means.

4,795,207

VEHICLE COVER

Edwin B. Clarke, Bala Cynwyd, Pa., assignor to Budge Manufacturing Co., Inc., N.J.

Filed Jul. 23, 1987, Ser. No. 76,758
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—136 **1 Claim**

1. A vehicle cover useful for a pickup truck comprising:
a central rectangular panel having a width of about the width of said truck and a length slightly longer than the side elevational profile taken along the front, top and back of the truck;
a pair of side panels each formed from a lower rectangular panel and an upper trapazoidal panel and attached to one another by double stitching to provide a shape generally corresponding to the side elevational profile of said truck;
said side panels being attached to said central panel by double stitching along the length thereof to form junction seams which define a pair of parallel vertical planes spaced apart by the width of said truck; and
an elastic band member having a relaxed state slightly less

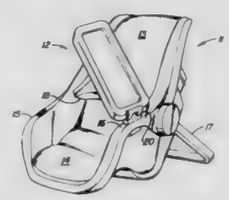
ing means maintaining said net in a folded open position when said curtained door is in a folded open position.

4,795,209

PIVOTING REMOVABLE TRAY/RESTRAINT FOR BABY CARRIER

Robert L. Quinlan, Jr., Stow, and Mark D. Jankowski, Akron, both of Ohio, assignors to Gerber Products Company, Inc., Fremont, Mich.

Continuation of Ser. No. 3,887, Jan. 16, 1987, abandoned. This application Apr. 8, 1988, Ser. No. 183,253
Int. Cl.[4] A47B *83/02*
U.S. Cl. 297—153 **9 Claims**



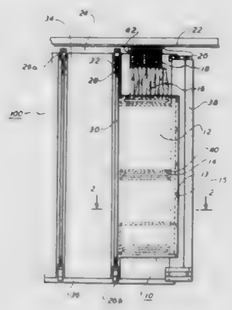
1. In a baby carrier including a seat, a pair of spaced-apart side arms, and a removable tray having opposite side edges of sufficient width to span said side arms, said tray having a pair of tabs, each extending downwardly from an opposite side edge of said tray, for releasable engagement with openings in respective of said side arms, the improvement comprising one of said pair of tabs defining a pivotal member by being formed of first and second sections joined by a hinged connection whose axis is parallel to said opposite side edges, said first and second sections together permitting rotation of said tray through an arc exceeding 180 degrees.

4,795,208

NET RESTRAINT SYSTEM

Paul L. Whiteman, Morgantown, Pa., assignor to Morgan Corporation, Morgantown, Pa.

Filed Aug. 19, 1987, Ser. No. 86,881
Int. Cl.[4] B60T *5/06*
U.S. Cl. 296—181 **9 Claims**



1. A curtain-sided van body comprising:
a curtained door for at least one side of said van body;
a net for said at least one side;
means for movably supporting said curtained door and said net whereby said curtained door and said net may be moved between a closed position for closing said at least one side of said van body and a folded open position for opening said at least one side of said van body;
attaching means for attaching said net to said curtained door, said attaching means attaching said net to said curtained door for movement with said curtained door, said attach-

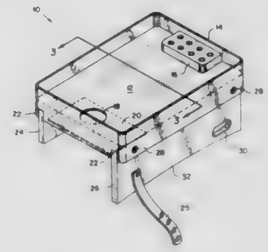
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4,795,210

PORTABLE TABLE FOR USE IN VEHICLES

Lloyd E. Milat, 8422 Forest Point Dr., Humble, Tex. 77338

Filed Nov. 20, 1987, Ser. No. 123,365
Int. Cl.[4] A47C *7/62*
U.S. Cl. 297—194 **5 Claims**

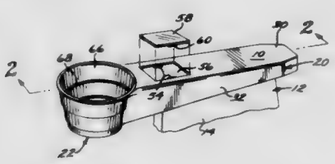


1. A new and improved portable table for use in vehicles, comprising:
a flat rectangular planar table top;
a raised block having a plurality of holes for holding crayons adjacent an upper top edge portion of said table top;
four upstanding sidewalls surrounding said table top;
a cup receiving aperture formed through said table top;
a pair of opposed spaced slots formed beneath said table top;
a pair of legs received in said slots;
means for removably securing said legs in said slots;
each of said legs having a bottom edge contour matching a car seat contour or having a straight bottom edge;

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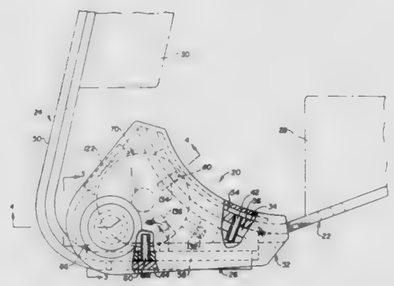
a slot for receiving a vehicle seatbelt formed in each of said legs;
a cup supporting shelf positioned beneath said cup receiving aperture; and
means for removably securing opposite ends of said shelf to said table.

4,795,211
UNIVERSAL CONTAINER HOLDER
Jon L. Stern, Beverly Hill; Richard S. Katz, Jr., Los Angeles, and Keith A. Hippely, Manhattan Beach, all of Calif., assignors to Cine Coasters, Inc., Los Angeles, Calif.
Filed Dec. 11, 1987, Ser. No. 131,658
Int. Cl.[4] A47C 7/62
U.S. Cl. 297—194 10 Claims



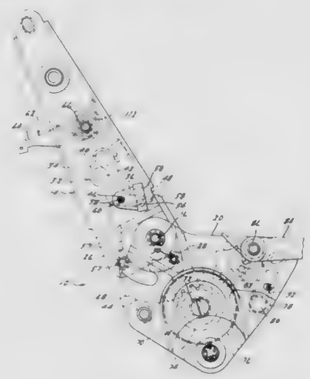
7. In combination with the armrest of a stadium or theater seat in which the armrest is characterized by a vertical section surmounted by a horizontal section extending laterally on either side of the vertical section, an improved universal container holder comprising:
an armrest portion including a generally flat upper wall having an undersurface engaged upon the upper surface of the armrest horizontal section, and having an upper surface for use as an armrest surface, and having centrally apertured vertical posts, the armrest portion further including a pair of side walls and an end wall depending from the upper wall and overlying the sides and inner end of the armrest, the side walls including vertical supports which each have an inner web extending from the associated side wall and terminating in oppositely directed flanges;
a pair of angle brackets each characterized by a horizontal leg engaging the underside of the armrest horizontal section, and by a vertical leg having vertical slots which receive, respectively, the inner webs of the vertical supports, with the webs and the oppositely directed flanges constraining the angle brackets against longitudinal and lateral movement;
a plurality of fasteners passing through the horizontal legs and into the apertured vertical posts and clamping the angle brackets against the armrest and preventing separation of the armrest portion from the armrest; and
a container holder portion integral with the armrest portion and having cylindrical walls forming a smoothly rounded outward continuation of the armrest portion projecting beyond the front of the armrest, the cylindrical walls defining a relatively large diameter first recess for supporting a container, the first recess having inner edge margins defined by the outward terminus of the upper wall of the armrest portion, the cylindrical walls further defining successively lesser diameter recesses below the first recess for supporting lesser diameter containers, the lowermost cylindrical wall terminating in a base having drainage apertures.

4,795,212
CHAIR BACK ADJUSTMENT
Charles E. Bailey, Zeeland, and George A. Miles, West Olive, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Jan. 29, 1988, Ser. No. 149,858
Int. Cl.[4] A47C 9/00
U.S. Cl. 297—362 13 Claims



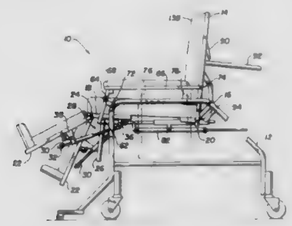
1. A seat back adjustment unit comprising a seat attaching plate, a back mounting plate, and an adjustment unit, said adjustment unit including first adjusting means for moving said adjustment unit on and relative to said seat attaching plate to change the angular relation between said seat attaching plate and said back mounting plate to tilt a seat back relative to an associated seat, and second adjusting means for shifting said back mounting plate relative to said adjustment unit in a direction towards and away from said seat mounting plate to adjust the distance of a seat back from an associated seat.

4,795,213
GEAR OPERATED SEAT RECLINER WITH REDUNDANT POSITIONING
Robert L. Bell, Oxford, Mich., assignor to Fisher Dynamics Corporation, St. Clair Shores, Mich.
Continuation of Ser. No. 701,078, Feb. 13, 1985, abandoned. This application Mar. 11, 1987, Ser. No. 24,885
Int. Cl.[4] B60N 1/02
U.S. Cl. 297—367 33 Claims



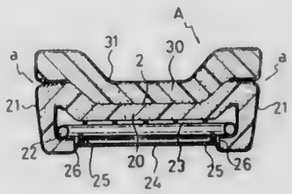
26. A seat recliner mechanism for supporting a seat back and seat bottom which permits the reclining angle therebetween to be adjusted, comprising:
a first recliner structure for supporting said seat bottom,
a second recliner structure for supporting said seat back, said second recliner structure pivotally carried by said first recliner structure;
a toothed rack coupled to and movable with one of said recliner structures;
an actuator carried by the other of said recliner structures;
a recliner gear rotatably carried by the other of said recliner structures and having a first toothed portion meshing with said toothed rack and a second toothed portion,
locking means operatively connected to said actuator for movement from an engaged position with said second toothed portion of said recliner gear thereby restraining said toothed rack and fixing said reclining angle, to a released position wherein said toothed rack is disengaged thereby permitting said reclining angle to be adjusted, and
a restraint pawl operatively connected to said actuator and operating in parallel with said locking means for movement from an engaging position with said second recliner structure to limit pivoting movement of said second recliner structure once said locking means is in said engaged position whereby said restraint pawl will limit said pivoting movement in the event of a malfunction of said locking means, and said restraint pawl is moveable to a released position permitting said reclining angle to be adjusted.

4,795,214
CONVERTIBLE WHEELCHAIR/LITTER
Donald H. Holdt, Cambridge, Md., assignor to Cambridge Technologies, Inc., Cambridge, Md.
Continuation-in-part of Ser. No. 673,850, Nov. 21, 1984, Pat. No. 4,632,450, and Ser. No. 886,008, Jul. 16, 1986, which is a division of Ser. No. 673,850. This application Aug. 17, 1987, Ser. No. 685,710
Int. Cl.[4] A47C 1/02; A44C 7/00
U.S. Cl. 297—443 9 Claims



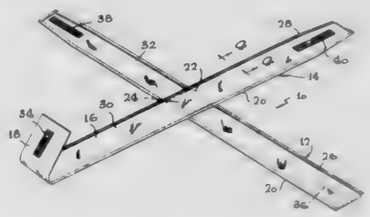
1. In seating equipment, the combination comprising upholstered cushion means and toilet seat means, said upholstered cushion means including a seat cushion, and said seat cushion and said toilet seat means being optionally usable alternately as needed on said seating equipment, said seating equipment also comprising means to permit rapid assembly and disassembly of either said seat cushion or said toilet seat means from said seating equipment without the use of tools, said seating equipment comprising frame portions cooperable with both said seat cushion and said toilet seat alternatively, and said means to permit rapid assembly and disassembly comprising cooperating means between said seat cushion and said toilet seat means and said frame portions, said cooperating means comprising pin means on said upholstered cushion and said toilet means and tab means formed with openings adapted to receive said pin means, means to mount said tab means on said cooperating frame portions, and manually removable locking means to removably secure said pin means in said openings and said tab means, whereby said assembly and disassembly means comprises quick release holding means between said upholstered cushion and said toilet seats means and said cooperating frame portions.

4,795,215
AUTOMOTIVE SEAT
Makoto Shimada, Akishima, Japan, assignor to Tachi-S Co., Ltd., Akishima, Japan
Filed Dec. 29, 1987, Ser. No. 139,002
Int. Cl.[4] A47C 7/02
U.S. Cl. 297—452 4 Claims



1. An automotive seat comprising:
a main cushion body formed in a predetermined shape by use of a mold, the main cushion body being bonded at its upper peripheral and lateral surfaces with a covering member;
a sub cushion body made of a slab material, said sub cushion body being bonded at its upper surface, its lateral surfaces and a peripheral portion of its bottom surface, with a covering member;
said sub cushion body being bonded to an upper surface of said main cushion body; and
a recessed groove defined in a boundary between the lateral surfaces of said main cushion body and the lateral surfaces of said sub cushion body.

4,795,216
CHILD RETAINING BELT
Robert A. Culver, and Cindy L. Culver, both of 22324 Hackney St., West Hills, Calif. 91304
Filed Dec. 22, 1987, Ser. No. 137,521
Int. Cl.[4] A47C 31/00
U.S. Cl. 297—467 5 Claims



1. A child-retaining belt consisting of:
a first flexible fabric band of substantially rectangular shape, said first band having ends and said ends being first and fourth arms, said first band having a mid-point between its ends, said first band having first and second sides;
a second flexible fabric band of substantially rectangular shape, said second band having ends, said ends being second and third arms, said second band having a mid-point between its ends, said second band having first and second sides;
said first and second bands lying with their midpoints together with said first side of said first band lying against said second side of said second band with an open angle between said arms, with their mid-points being secured together;

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hook and loop attachment means wherein resilient hooks can engage in loops for attachment and for detachment, said hook attachment means being secured to a first arm of said first band on said second side thereof and said loop attachment means being secured to said fourth arm of said first band on said first side thereof so that said arms of said first band may be detachably attached to each other;

hook attachment means being secured to said second band on the second arm thereof on the first side thereof and said loop attachment means is secured to said third arm of said second band on said second side thereof so that said arms of said second band can be detachably secured together so that said belt can be placed on a chair having a back with said mid-point of said first and second bands on the seat of the chair with the fourth arm of said first band and third arm of said second band extending around the back of the chair and attached together by means of said detachable hook and loop attachment means and said first arm of said first band and second arm of said second band each extend over one of the legs of the child retained by said belt and said arms extend back around the back of the chair and are attached to each other by means of said detachable hook and loop attachment means so as to engage a child and detachably retain a child with respect to the chair.

4,795,217

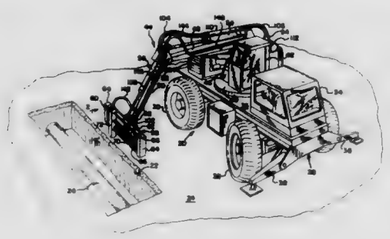
SYSTEM FOR REMOVING MATERIAL WITH A HIGH VELOCITY JET OF WORKING FLUID

John A. Hilaris, Elmhurst, Ill., assignor to Hydro-Ergon Corporation, Chicago, Ill.

Division of Ser. No. 837,279, Mar. 7, 1986, abandoned. This application Jul. 21, 1987, Ser. No. 76,186

Int. Cl.⁴ E21C *25/60*; F04B *1/04*

U.S. Cl. 299—36 **8 Claims**



1. A system for removal of workpiece material with a high velocity jet of working fluid, comprising:

an ultra-high pressure pump including;

an odd numbered plurality of low pressure fluid cylinders disposed radially outwardly of the axis of rotation of an eccentric crankshaft, said low pressure cylinders having longitudinal axes spaced equilaterally around said crankshaft axis in a common radial plane;

a low pressure piston mounted for reciprocation between an inner end and an outer end of each of said low pressure cylinders and means interconnecting each low pressure piston and said crankshaft to reciprocate said low pressure piston back and forth in a respective low pressure cylinder on sequential pressure and exhaust strokes for each revolution of said crankshaft;

a high pressure cylinder longitudinally aligned with and adjacent the outer end of each low pressure fluid cylinder having a high pressure piston reciprocally mounted therein and interconnected to reciprocate with the lower pressure piston in the adjacent low pressure cylinder;

high pressure valve means for each high pressure cylinder including an inlet check valve for introducing working fluid into said high pressure cylinder upon an intake stroke of said low pressure piston and an outlet check valve for expelling said working fluid under high pressure from said high pressure cylinder upon an exhaust stroke of said low pressure piston;

means for rotating said crankshaft about said axis to pressurize said working fluid in said high pressure cylinder;

a high pressure manifold interconnecting the outlet check valves of each high pressure cylinder for providing a supply of high pressure working fluid;

conduit means for carrying said high pressure working fluid to a high velocity jet forming nozzle,

said nozzle including a body having an inlet in communication with said conduit means and an outlet for discharging a thin jet stream of high velocity working fluid against said material of said workpiece;

suction hood means around said nozzle for carrying away material debris removed from said workpiece by the action of said high velocity jet stream of working fluid impinging thereof; and

liquid spray means adjacent said hood means for wetting said debris to confine the material for pick-up by said suction hood means.

4,795,218

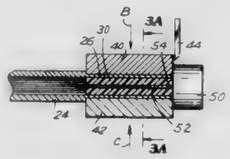
METHOD OF FORMING BRUSH WITH INTEGRAL HOLDER

David Seidler, 69-10 108th St., Forest Hills, N.Y. 11375

Filed Sep. 29, 1986, Ser. No. 912,295

Int. Cl.⁴ A46D *3/00*

U.S. Cl. 300—21 **16 Claims**



1. A method of forming a brush with an integral holder capable of being held from a plurality of thermoplastic bristle filaments comprising the steps of inserting said plurality of thermoplastic bristle filaments into a hollow mold tube, moving a hole former pin into a first end of said bristle filaments, heating said mold tubee adjacent said first end of said bristle filaments to melt said first end of said thermoplastic bristle filaments around said pin to form said integral holder, cooling said mold tube, extracting said first end of said bristle filaments out of said mold tube and extracting said pin out of said first end of said bristle filaments, whereby a brush having a hollow brush holder integrally formed therewith and capable of being held is formed for use.

4,795,219

VEHICLE BRAKING SYSTEM

Malcolm Brearley, Solihull, and Richard B. Moseley, Birmingham, both of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed May 18, 1987, Ser. No. 56,626

Claims priority, application United Kingdom, May 17, 1986, 8612066

Int. Cl.⁴ B60T *8/30, 8/58*

U.S. Cl. 303—9.69 **4 Claims**

1. A vehicle braking system of the electronically compensated type, comprising:

(a) a brake pedal transducer for providing an electrical demand signal representative of a driver's braking requirement;

(b) front and rear axle brake actuator means;

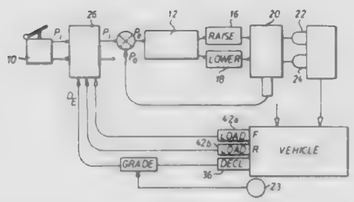
(c) front and rear pressure control channels receiving the driver's demand signal and adapted to actuate said front and rear axle brake actuator means for decelerating the vehicle in accordance with the driver's braking requirement;

(d) first sensor means providing dynamic load signals representative of front and rear axle loads, said load axle signals having a long time constant so as to provide an average load figure which has been established during a period of recent non-braking running of the vehicle;

(e) second sensor means forming a signal representative of vehicle deceleration;

(f) adaptive means disposed between said brake pedal transducer and said front and rear pressure control channels and coupled to said first sensor means for modifying the driver's braking demands applied to the front and rear pressure control channels in dependence upon the vehicle axle load signals;

(g) means for storing electrical signals representative of the height of the vehicle centre of gravity and vehicle wheelbase;



(h) means for detecting when a braking operation is initiated;

(i) means responsive to said braking operation detection means for storing the prevailing load signals from said first sensor means when a braking operation is detected;

(j) means for determining the gross vehicle weight of the vehicle; and

(k) means for modifying both front and rear load signals applied to said adaptive means to take account of the weight transfer effect from the rear axle to the front axle which occurs during braking, said load signal modifying means including means which performs electronically a calculation of weight transfer quantity using an expression involving the actual deceleration of said vehicle occurring during braking, the height of the centre of gravity of the vehicle, the vehicle wheel base and the gross vehicle weight as determined by said stored load signals measured over said period of recent non-braking operation of the vehicle, in the following relationship:

$$\text{Weight transfer} = \text{Vehicle Deceleration} \times \frac{\text{Gross Vehicle Weight} \times \text{Height of centre of gravity}}{\text{Wheel base}}$$

4,795,220

THRUST BEARING

Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Filed Oct. 15, 1987, Ser. No. 110,049

Claims priority, application Japan, Dec. 19, 1986, 61-303436

Int. Cl.⁴ F16C *17/04, 33/10*

U.S. Cl. 384—420 **2 Claims**

1. A ring-shaped thrust bearing formed by stamping a plate made of a bearing alloy material or a plate having a bearing alloy layer, comprising:

an upper surface and a lower surface, said upper surface and lower surface having circumferentially arranged, alternating and adjacent projections and recesses, said projections along said upper surface having tops defining sliding surfaces and bottoms defining recesses in said lower surface of said ring, said recesses along said upper surface having tops defining a bottom of an oil groove, and bottoms defining an opposing contact surface, whereby said stamped plate has an undulating transverse cross-section, said recesses and projections having been formed by deforming said plate in the direction of the thickness thereof.





4,795,221

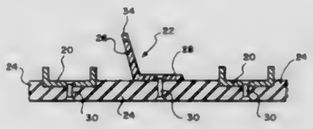
CLEATS FOR SNOWMOBILE TRACK

Verlin M. Simmons, 495 S. Main, Providence, Utah 84332

Filed Mar. 27, 1987, Ser. No. 31,696

Int. Cl.⁴ B62D *55/205*

U.S. Cl. 305—35 EB **8 Claims**



1. A track used to drive a snowmobile over a terrain, said track comprising in combination:

an endless drive belt having an outer surface which engages the terrain;

a plurality of longitudinally spaced cleats securely mounted on the outer surface of said drive belt, each of said cleats comprising a relatively narrow, elongate, essentially planar fin, each of said cleats extending transversely across at least a portion of the endless belt with said planar fin thereof angled rearward of the rotation of the track as the track is driven in its normal operation of propelling the snowmobile forward over the terrain, such that said planar fin makes an acute, include angle with the surface of the track of between substantially 30 and 75 degrees;

whereby the track and the fins of said cleats cooperate to provide forward traction for said snowmobile while simultaneously providing lift to the track and the snowmobile to avoid the tendency of the snowmobile to dig into the terrain and bog down in the terrain.

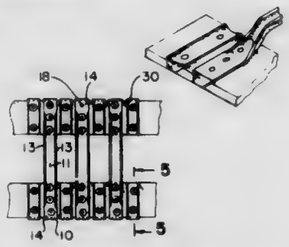
VOL 1098 ISS 1 JAN 3 1989 UMI

4,795,222

METAL FACED SOFT TRACKS

Francis L. Smith, Calgary, Canada, assignor to Central Mine Equipment Company, St. Louis, Mo.

Filed May 26, 1987, Ser. No. 53,954
Int. Cl.[4] B62D 55/28, 55/24
U.S. Cl. 305—35 EB 6 Claims



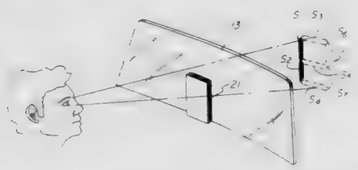
1. In a soft track for off-the-road vehicles, said track having two loops of belting spaced laterally and joined by grouser bars mounted on an outer surface of said loops, extending parallel to one another laterally across said belting loops and spaced from one another in a direction lengthwise of said belting loops, said track being driven by and extending around a drive sprocket, the improvement comprising heat treated steel facing plates mounted on each belting loop on said outer surface between said grouser bars and spaced in the direction lengthwise of said belting loop from said grouser bars only sufficiently to accommodate ground and object induced undulation and to permit the track to traverse said drive sprocket, and extending laterally across said belting loop.

4,795,223

SEGMENTED 3-D HOLOGRAM DISPLAY

Gaylord E. Moss, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 6, 1987, Ser. No. 795
Int. Cl.[4] G03H 1/26
U.S. Cl. 350—3.75 33 Claims



1. A substantially transparent display comprising:
a plurality of holographically recorded segments attached to an automobile windshield and coordinately positioned such that selective illumination thereof provides a composite display, the composite varying in accordance with the selective illumination; and
means for selectively illuminating said segments to provide a variable holographic display.

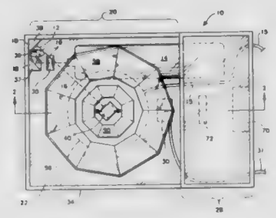
4,795,224

OPTICAL SCANNING PATTERN GENERATOR

Katsuchika Goto, 1-8-18 Komazawa, Setagaya-Ku, Tokyo 158, Japan

Filed Oct. 6, 1986, Ser. No. 915,400
Int. Cl.[4] G02B 26/10; G06K 7/10
U.S. Cl. 350—6.3 27 Claims

1. An optical pattern generation device comprising:
optical beam creation means to create an electromagnetic beam;
beam direction alteration means for shaping said electromagnetic beam and modifying the direction of said electromagnetic beam at various locations within said device;
rotating mirror means receiving said beam from said beam direction alteration means for causing said electromagnetic beam to be directed through a complete circle as the rotating mirror means rotates;
a plurality of fixed mirrors arrayed circumferentially about the rotating mirror means, each of said fixed mirrors being inclined so as to direct said electromagnetic beam within a cone perpendicular to the rotation plane of the rotating mirror means;



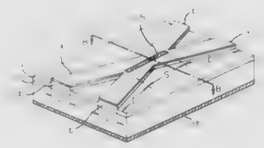
rotating prism means situated circumferentially intermediate the rotating mirror means and the fixed mirrors such that said electromagnetic beam passes through the rotating prism means and is refracted thereby, the rotating prism means including a plurality of circumferentially arrayed prism elements, each of said prism elements having a different refraction effect upon said electromagnetic beam; and
motor means for causing the rotating mirror means and the rotating prism means to continually rotate in the same direction but at different speeds.

4,795,225

SEMICONDUCTOR OPTICAL SWITCH

Kazuo Sakai, Tokyo; Yuichi Matsushima, Tanashi, and Katsuyuki Utaka, Musashino, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1988, Ser. No. 143,816
Claims priority, application Japan, Jan. 19, 1987, 62-8199
Int. Cl.[4] G02F 1/015
U.S. Cl. 350—96.13 4 Claims



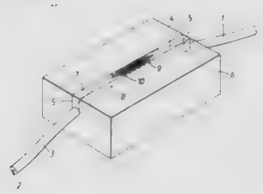
1. An optical switch in which a switching section for switching the optical path of an incident light is formed in a region where two semiconductor optical waveguides cross each other, characterized in:
that the switching section is composed of n-, i-, p-, i- and n-type semiconductor layers laminated in that order, each i-type layer being formed by a superlattice layer composed of a plurality of semi-conductor thin films so that the i-type layer is higher in the effective refractive index and smaller in the effective energy gap than each n-type layer; and
that the impurity concentrations of the n-, i-, p-, i-and n-type layers and the thicknesses of the i-, p- and i-type layers are determined so that the i-, p- and i-type layers are depleted in a thermal equilibrium state.

4,795,226

OPTICAL FIBRE REFLECTIVE DIFFRACTION GRATING DEVICES

Ian Bennion; Christopher J. Rowe, both of Northampton, and Douglas C. J. Reid, Warwickshire, all of Great Britain, assignors to Plessey Overseas Limited, Ilford, England

Filed Sep. 9, 1986, Ser. No. 905,722
Claims priority, application United Kingdom, Sep. 10, 1985, 8522428; Sep. 28, 1985, 8523981
Int. Cl.[4] G02B 6/26, 6/34, 5/18; G03G 13/06
U.S. Cl. 350—96.15 2 Claims



1. An optical system for sensing variable deformation of an optical fibre, said system comprising means for producing coherent light signals for propagation along the optical fibre, reflective means located at distributed points along the optical fibre for partially reflecting said propagating coherent light signals back along the optical fibre so that the partially reflected light combines with the light propagating along the fibre to produce interference signals and demodulation means for receiving said interference signals to provide an output indicative of deformation forces acting on the optical fibre at the distributed points therealong, in which the distributed reflective means are formed along an optical fibre wound around a grooved mounting block having curved grooves formed thereon which receive spaced apart relatively short lengths of the optical fibre which are secured in the curved grooves, the grooved surface of the mounting block being pared away so that parts of the outer convex surfaces of the short lengths of the optical fibre are removed thereby to provide flat surfaces at least closely adjacent the core of the optical fibre, in which a diffraction grating is formed on each of said flat surfaces of the optical fibre to provide reflective means along the fibre and in which the mounting block is divisible into a plurality of parts each of which includes a portion of the optical fibre having a diffraction grating associated with it to define one of the said distributed reflective means along the optical fibre.

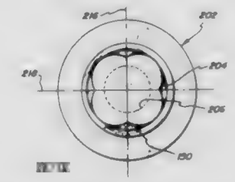
4,795,227

BEAM SPLITTING FIBER OPTIC COUPLER

Tushar S. Chande, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 28, 1987, Ser. No. 101,902
Int. Cl.[4] G02B 6/32
U.S. Cl. 350—96.18 21 Claims

1. Apparatus for splitting a beam of light, comprising:
a plurality of focusing lens portions each having a respective focal point, each said lens portion being fashioned from a focusing lens;
means for mounting said lens portions so that the light beam to be split can be directed toward a first side of said mounting means and simultaneously onto said plurality of lens portions so that at least part of said light beam is directed onto each said lens portion, the respective focal point of said lens portions being adjacent a second side of said mounting means opposite said first mounting means side; and
said lens portions being positioned to achieve a predetermined spatial relationship between the respective focal points of said lens portions;



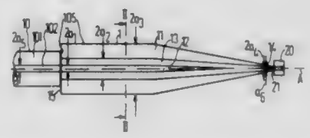
whereby said light beam, upon being directed toward said first mounting means side and onto said lens portions, is simultaneously focussed onto the respective focal points of said plurality of lens portions.

4,795,228

FIBER TAPER PARTICULARLY USEFUL FOR COUPLING A MONOMODE FIBER TO A SEMICONDUCTOR LASER

Hartmut Schneider, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 24, 1986, Ser. No. 934,338
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544136
Int. Cl.[4] G02B 6/32
U.S. Cl. 350—96.18 4 Claims



1. In a fiber taper in the form of a fiber conically tapering at one end and useful for coupling a single-mode fiber disposed at a second end of the tape to a semiconductor laser located at the one end, said fiber taper having a step-shaped refractive index profile and having a core with a high refractive index surrounded by a cladding with a lower refractive index, said core and cladding tapering at the one end, the improvements comprising an intermediate core layer being interposed between the core and the cladding and immediately surrounding the core, said intermediate core layer having a refractive index lower by a defined refractive index difference Δn_1 than the refractive index of the core and being higher by a defined refractive index difference Δn_2 than a refractive index of the cladding.

4,795,229

STRAIN RELIEF ASSEMBLY FOR OPTICAL FIBER CONNECTOR

Frederic H. Abendschein, Columbia; Paul B. Derr, Middletown, and John H. Huber, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 7, 1987, Ser. No. 47,227
Int. Cl.[4] G02B 6/36
U.S. Cl. 350—96.20 7 Claims

1. In a connector for optical fiber cable having an outer jacket encircling a strengthening layer, in turn, encircling optical fibers,
the connector comprising, a connector body portion and a strain relief portion for connection to the connector body portion, the strain relief portion including, a first retention member, a second retention member and sleeve means for

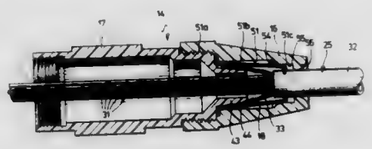
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retention of the strengthening layer of the cable between the sleeve means and the second retention member, the sleeve means being urged by the first retention member against the outer jacket of the cable for retention of the outer jacket,

the improvement comprising;

the second retention member includes axially extending bearing surface means for entering radially under a strengthening layer of an optical cable,

the sleeve means includes integral first internal retention means for advancement axially over the bearing surface means and for radially overlying and retaining a portion of a strengthening layer of an optical fiber cable extending through the sleeve means and for radially compressing the strengthening layer between the first internal retention means and the bearing surface means,



the first retention member being constructed for advancement axially over the sleeve means during advancement of the first internal retention means axially over the bearing surface means,

connecting means on the first and the second retention members for advancing the first retention member axially over the sleeve means during connection of the first retention member to the second retention member and during advancement of the first internal retention means axially over the bearing surface means,

the sleeve means includes integral second internal retention means for overlying and retaining an outer jacket of an optical fiber cable, and

the first retention member includes urging means responsive to advancing of the first retention member axially over the sleeve means for urging the second internal retention means into engagement with an outer jacket of an optical cable extending through the sleeve means.

4,795,230

DEVICE AND PROCESS FOR SPREADING OPTICAL FIBERS EMERGING FROM A CABLE TO BE CONNECTED

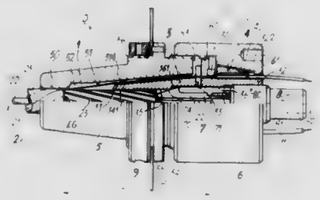
Marcel Garcia, and Didier Saillerot, both of Paris, France, assignors to SAT (Societe Anonyme De Telecommunications and SILEC (Societe Industrielle De Liaisons Electriques), both of Paris, France

Filed Apr. 14, 1987, Ser. No. 38,005

Claims priority, application France, Apr. 17, 1986, 86 05523

Int. Cl.⁴ G02B *6/36;* **B65H** *59/00, 57/28;* **D01H** *1/12*

U.S. Cl. 350—96.20 **29 Claims**



1. A device for spreading optical fibers emerging from an end of an optical fiber cable and freely incoming in the ends of protective jackets respectively, said device comprising

a distributing member securable coaxially to said cable end and having a revolution portion having first longitudinal external grooves, in each of said first grooves being housed an end of one of said protective jackets containing, with play, the one of said optical fiber and extending beyond said cable, said first grooves having a depth substantially less than the diameter of said protective jackets,

a split ring having a longitudinal slot and surrounding said revolution portion, and

means for contracting said split ring by narrowing of said slot thereby forcing in and jamming said ends of said protective jackets in said first grooves.

21. A process designed to spread optical fibers emerging from an end of an optical fiber cable, said process including

fastening of a hollow distributing member to said cable end,

stringing of a split ring around a revolution portion of said hollow member having first longitudinal external grooves, and

for each fiber,

superposition of a slot of said split ring on a first respective groove,

entry of an input end of a protective jacket of said fiber into the first respective groove through said slot, and

forcing of said protective jacket into said first respective groove after partially rotating said split ring to superpose said slot on another first groove,

and

after entrying and forcing said input ends of all said protective jackets into said first grooves respectively, clamping of said split ring around said revolution portion of said hollow member by narrowing of said slot thereby jamming said protective jackets in said first grooves.

4,795,231

OPTICAL FIBER CONNECTOR

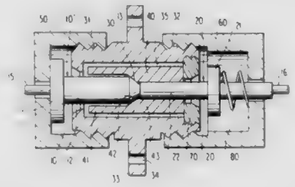
Takashi Tanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 20, 1988, Ser. No. 145,995

Claims priority, application Japan, Jan. 20, 1987, 62-9091

Int. Cl.⁴ G02B *6/38*

U.S. Cl. 350—96.21 **8 Claims**



1. An optical fiber connector assembly for connecting, within a socket, first and second optical connector plugs terminating first and second optical fiber cables, comprising:

said first connector plug including first connector body means having a frustum-shaped mating portion at an end thereof, and securing a first optical fiber along the center axis thereof;

said second connector plug including second connector body means having an axially extending cylindrical portion and receiving a second optical fiber along the center axis thereof;

sleeve means for aligning said first and second plugs, and sleeve means including a frustum-shaped hollow receiving portion for receiving said first connector body means and for abutting against said frustum portion of said first connector body, and a cylindrical portion for receiving and clamping said second connector body means, the apex of the frustum of said receiving portion being positioned on the center axis of said cylindrical portion;

socket means having a bore into which said sleeve means is inserted;

first means for urging said first connector body means in a first direction; and

second means for urging said second connector body means in an opposite direction with a pressure smaller than the pressure exerted on said first connector body means.

4,795,232

FIBRE OPTIC CABLE RESPONSIVE TO MICROBENDING FORCES

Sven A. R. Persson, Higersten, Sweden, assignor to Telefonsktiebolaget LM Ericsson, Stockholm, Sweden

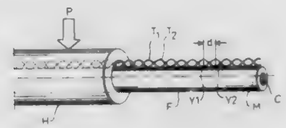
PCT No. PCT/SE85/00265, § 371 Date Mar. 5, 1986, § 102(e) Date Mar. 5, 1986, PCT Pub. No. WO86/00988, PCT Pub. Date Feb. 13, 1986

PCT Filed Jun. 27, 1985, Ser. No. 847,660

Claims priority, application Sweden, Jul. 20, 1984, 8403811

Int. Cl.⁴ G02B *6/44*

U.S. Cl. 350—96.23 **12 Claims**



1. A fibre-optic cable responsive to microbending forces comprising at least one fibre which forms part of a pressure responsive device, in which a radiation source located at one end of the cable introduces light into the fibre and a sensor measures the intensity of the light transmitted through the fibre, a casing on said fibre, and at least one longitudinally extending element between the casing and the fibre for introducing a periodic disturbance along at least a part of the fibre in response to application of pressure to the cable, said periodic disturbance having a critical periodic length which corresponds to maximum attenuation of the light introduced in said fibre, said element extending longitudinally along the fibre in abutment therewith and being deformed so as to provide isolated contact regions along the surface of the fibre at a determined spacing substantially coinciding with said critical periodic length for the periodic disturbance.

4,795,233

FIBER OPTIC POLARIZER

Chin L. Chang, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 9, 1987, Ser. No. 23,588

Int. Cl.⁴ G02B *5/30*

U.S. Cl. 350—96.29 **24 Claims**

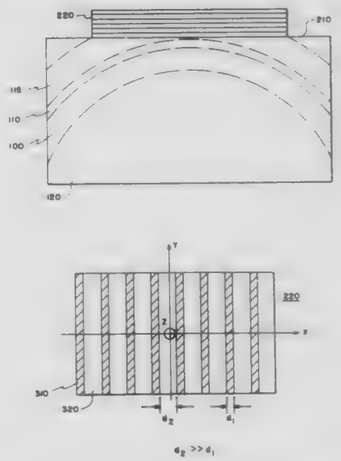
1. A fiber optic polarizer comprising:

a substrate;

an optical fiber bound in said substrate, said fiber having a selected portion thereof coplanar with a first surface of said substrate;

a multilayer stack of at least two alternating first and second layers in which said first layer is of a first material and said second layer is of a second material, and in which said alternating layers have a selected thickness, and in which said stack is in optical contact with said selected portion of said fiber to permit waves passing through said fiber to interact with said multilayer stack; and

said first and second materials are comprised of a dielectric material and a metal, respectively, and said first and second layer materials and thickness are selected to permit



differential attenuation for two orthogonal polarizations of light passing through said fiber.

4,795,234

REINFORCED OPTICAL FIBER

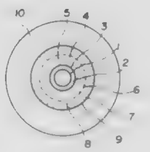
Takayoshi Nakasone, Gifu; Yoji Ida, Motosu, and Kenji Kozaka, Ichinomiya, all of Japan, assignors to Ube-Nitto Kasei Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 809,878, Dec. 17, 1985, Pat. No. 4,725,453. This application Sep. 1, 1987, Ser. No. 91,954

Claims priority, application Japan, Dec. 19, 1984, 59-266395

Int. Cl.⁴ G02B *6/16*

U.S. Cl. 350—96.30 **4 Claims**



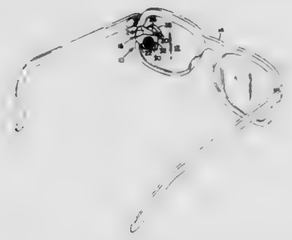
1. A single-core cord of reinforced optical fiber comprising:

an optical fiber element including an optical fiber and a primary coating formed of silicone rubber and covering said optical fiber; and

a secondary coating covering said optical fiber element and having a three-layer structure, said three-layer structure comprising a reinforcing inner layer formed of longitudinally arranged reinforcing fibers and cured non-styrene resin binder comprising an unsaturated polyester resin containing a non-styrene monomer as a cross-linking agent, a reinforcing outer layer formed of fiber-reinforced cured styrene resin, and a surface layer formed of thermoplastic resin, said reinforcing outer layer and said surface layer being intimately bonded together with an anchoring effect therebetween.

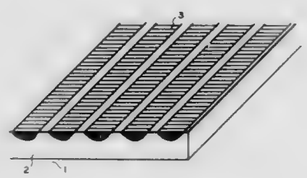
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,235
BIOPTIC PERISCOPE AND METHOD
Larry A. Spitzberg, 14441 Memorial Dr., Houston, Tex. 77079
Filed Dec. 12, 1986, Ser. No. 940,854
Int. Cl.[4] G02B *27/02, 7/02, 23/02;* G02C *1/00*
U.S. Cl. 350—145 **23 Claims**



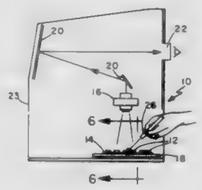
1. An apparatus for increasing visual acuity while viewing an image comprising:
- a roof prism having an apex with apex faces adjacent thereto;
- an eye piece lens mounted to a first apex face of said roof prism; and
- an objective lens mounted to a second apex face of said roof prism and to the lens of a pair of eyeglasses, said objective lens being positioned between the lens of the eyeglasses and the eye of a patient wearing the eyeglasses at a point at which the patient can view an object through said objective lens by rotating the eye through an angle of between about 25° to about 50° relative to the visual axis of the patient's eye when looking straight ahead.

4,795,236
OPTICAL LOW PASS FILTER UTILIZING A PHASE GRATING
Koichi Ise, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 20, 1985, Ser. No. 811,817
Claims priority, application Japan, Dec. 25, 1984, 59-272018
Int. Cl.[4] G02B *5/18;* H04N *9/07*
U.S. Cl. 350—162.2 **7 Claims**
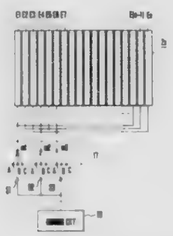


1. An optical low pass filter provided between an image source and an image pickup device including:
- a substrate having a pair of major surfaces,
- a grating implanted within said substrate and having a surface flush with one of said major surfaces, said grating having a uniform repetitive period and having a refractive index different from that of said substrate, one of said major surfaces receiving image light from said image source and said optical low pass filter deriving image light with a suppressed spatial frequency component higher than a predetermined spatial frequency to be supplied to said image pickup device.

4,795,237
OPTICAL INSPECTION METHOD WITH SIDE-VIEWING MIRROR
Paul S. Kempf, P.O. Box 690, San Diego, Calif. 92075-0690, assignor to Paul Stuart Kempf and Pilar Moreno Kempf Family Trust
Filed May 26, 1987, Ser. No. 53,813
Int. Cl.[4] G02B *5/08*
U.S. Cl. 350—320 **4 Claims**



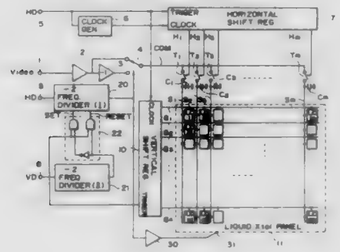
1. A method of viewing the side of an object mounted on a flat plane surface defining an object plane, comprising the steps of:
- viewing the object from above with a magnifying optical instrument having a vertical optical path;
- holding a side-viewing mirror in the optical path of the instrument via a remote handle with a shaft extending from the handle and secured to the mirror;
- manipulating the handle to place the mirror so that it faces a side edge of the object with a straight bottom edge of the mirror contiguous with the object plane and the mirrored surface extending down to the level of the object plane with the handle and shaft out of the plane of the optical path including the mirror and
- tilting the mirror via the handle to an angle up to about 45 degrees to the optical path to deflect light from the side of the object by at least 90 degrees to present a side view of the object down to the level of the object plane to an observer.

4,795,238
LIQUID CRYSTAL FOCUSING SCREEN HAVING DIFFERENT GROUPS OF ELECTRODES
Kiyoshi Iizuka, and Takashi Suzuki, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 898,754, Aug. 13, 1986, abandoned, which is a continuation of Ser. No. 617,795, Jun. 6, 1984, abandoned. This application Jul. 27, 1987, Ser. No. 80,237
Claims priority, application Japan, Jun. 13, 1983, 58-105589
Int. Cl.[4] G02F *1/133;* G09G *3/00*
U.S. Cl. 350—332 **4 Claims**



1. A focusing screen for observing an image formed by an objective lens, comprising:
- a liquid crystal layer;
- first and second transparent electrodes formed on opposite sides of said liquid crystal layer, said first transparent electrode being divided into a plurality of sections each electrically insulated one from the other, said plurality of sections being divided into at least two groups in which the sections in one of said groups are alternately arranged with the sections in the other of said groups and each of the sections is electrically connected in common to the other sections of that group but not to the other groups;
- a driving circuit for applying a constant voltage to said liquid crystal layer, said driving circuit having a first and a second output terminal, and said second output terminal being coupled to said second transparent electrode; and
- means for selectively coupling said first output terminal of said driving circuit to a varying number of said plurality of sections of said first transparent electrode in response to an F value of said objective lens, wherein said coupling means selects which of said groups are activated whereby a varying percentage of said liquid crystal layer corresponding to said varying number of said plurality of sections of said first transparent electrode is subjected to said constant voltage thereby resulting in a corresponding varying diffusion of said liquid crystal layer.

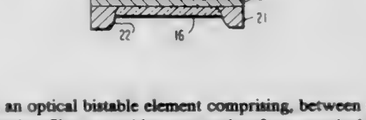
4,795,239
METHOD OF DRIVING A DISPLAY PANEL
Shinichi Yamashita, Atsugi; Hideo Kanno, Kawasaki; Atsushi Mizutome, Kanagawa, and Hiroshi Inoue, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 21, 1986, Ser. No. 898,482
Claims priority, application Japan, Aug. 29, 1985, 60-188488
Int. Cl.[4] G02F *1/13;* G09G *3/36*
U.S. Cl. 350—333 **14 Claims**



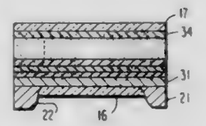
1. A method of driving a display panel of an active matrix type using source lines and gate lines, and an opposite common electrode common to said panel and opposite thereto, comprising the steps of:
- generating an inversion control signal which is inverted every time a horizontal sync signal is applied on the input side of the source line; and
- driving the common opposite electrode synchronously with said inversion control signal.

4,795,240
HIGH SPEED INFRARED SHUTTER
Jacob Y. Wong, Santa Barbara, and Lawrence J. Schoennauer, San Luis Obispo, both of Calif., assignors to Hibshman Corporation, San Luis Obispo, Calif.
Filed Aug. 18, 1987, Ser. No. 86,596
Int. Cl.[4] G02F *1/01, 1/03*
U.S. Cl. 350—353 **9 Claims**

1. A high speed shutter for selectively transmitting incident radiation, comprising in combination:
- a substrate in the form of a sheet of semiconductive material that has two sides and that is transmissive to the incident radiation;
- an electrically insulative film that is transmissive to the incident radiation and that is applied to one side of said substrate;
- a film of a thermochromic material applied to said electrically insulative film and thin enough to transmit a substantial portion of the incident radiation when said film is in its semiconductive state;
- first means electricaly connected to said film of a thermochromic material for sensing its electrical resistance R and producing a signal representative of the sensed resistance; and,
- second means electrically connected to said substrate and electrically connected to said first means for receiving said signal, for producing a spatially substantially uniform flow of current across said substrate for heating it in relation to the resistance sensed by said first means.



4,795,241
DEVICE AND METHOD FOR PROVIDING OPTICAL BISTABILITY WITH FREE CARRIER RECOMBINATION CENTERS INTRODUCED INTO AN OPTICAL GUIDE SURROUNDING SEMICONDUCTOR LAYER PORTION
Keiro Komatsu, and Masahiko Fujiwara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Nov. 25, 1987, Ser. No. 125,083
Claims priority, application Japan, Nov. 25, 1986, 61-280988
Int. Cl.[4] G02B *5/23*
U.S. Cl. 350—354 **6 Claims**



1. In an optical bistable element comprising, between a pair of reflecting films operable as an etalon for an optical beam propagated between said reflecting films, a semiconductor layer having a refractive index variable with an intensity of said optical beam as a result of absorption by excitons, the improvement wherein said semiconductor layer comprises a columnar portion for said optical beam and a surrounding portion surrounding said columnar portion and including atoms which reduce the refractive index in said surrounding portion relative to the refractive index in said columnar portion and serve as recombination centers for free carriers produced by decomposition of said excitons.

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4,795,242

CONDUCTING SUBSTITUTED POLYISOTHIANAPHTHENES

Wudl; Fred; Alan Heeger, both of Santa Barbara; Yoshiaki Ikenoue, Goleta, all of Calif., and Masao Kobayashi, Kanagawa, Japan, assignors to University of California, Alameda, Calif.

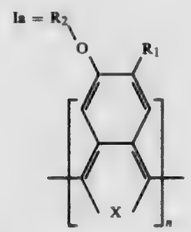
Continuation-in-part of Ser. No. 736,984, May 22, 1985, Pat. No. 4,640,748, which is a continuation-in-part of Ser. No. 634,805, Jul. 26, 1984, abandoned. This application Dec. 18, 1986, Ser. No. 944,138

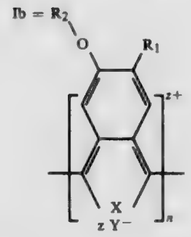
The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.

Int. Cl.[4] G02F *1/01*; C25C *1/00*

U.S. Cl. 350—357 **39 Claims**

1. A polymer having a structural formula selected from the group consisting of Ia and Ib wherein:





R_1 is hydrogen or $—OR_3$;

R_2 and R_3 are selected independently from the group consisting of hydrogen and C_1 to C_8 hydrocarbons, with the proviso that R_2 and R_3 may be linked together to form, with both oxygens, a dioxyalkylene substituent on the benzene ring with the formula:



wherein R_4 and R_5 are selected independently from the group consisting of hydrogen and C_1 to C_4 hydrocarbons;

X is selected from the group consisting of sulfur, selenium and tellurium;

Y^- represents an anion of an electrolyte;

z represents a number from 0.01 to 1 showing a ratio of the anion per mol of a monomer; and

n represents a number of from 5 to 500 showing the degree of polymerization.

4,795,243

GRANULAR MEMBER MOVING METHOD AND APPARATUS

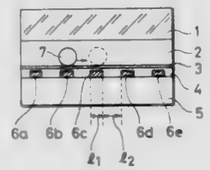
Masayuki Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,182

Claims priority, application Japan, Jun. 10, 1983, 58-103728; Aug. 6, 1983, 58-144125; Apr. 6, 1984, 59-67361; Apr. 6, 1984, 59-67362; Apr. 6, 1984, 59-67363; Apr. 6, 1984, 59-67364; Apr. 6, 1984, 59-67365; Apr. 6, 1984, 59-67366; Apr. 6, 1984, 59-67368; Apr. 6, 1984, 59-67369; Apr. 6, 1984, 59-67370; Apr. 6, 1984, 59-67371; Apr. 6, 1984, 59-67367

Int. Cl.[4] G02F *1/01*

U.S. Cl. 350—362 **21 Claims**



1. A light control apparatus for controlling an emerging condition of light incident on a light-receiving surface thereof, said apparatus comprising:

an optical layer provided along the light-receiving surface, said optical layer being composed of liquid;

a granular member provided in said optical layer, said granular member being adapted to change an optical property of part of said optical layer;

heating means provided in the vicinity of a predetermined part of said optical layer, the optical property of which is to be changed; and

means for controlling said heating means, said controlling means controlling said heating means in such a manner that the temperature of said predetermined part is made higher than that of another part of said optical layer so as to move said granular member from said another part to said predetermined part when the optical property of said predetermined part is to be changed, whereby the emerging condition of light incident on said predetermined part is changed due to the change of the optical property thereof.

4,795,244

PROJECTION TYPE EXPOSURE APPARATUS

Makoto Uehara, Tokyo; Koichi Matsumoto, Kita; Yutaka Suenaga, Kawasaki, and Kiyoyuki Muramatsu, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 15, 1986, Ser. No. 906,986

Claims priority, application Japan, Sep. 20, 1985, 60-208396; Mar. 17, 1986, 61-58624

Int. Cl.[4] G01B *11/00*

U.S. Cl. 356—401 **19 Claims**

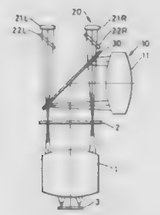
1. Apparatus for holding a wafer and a reticle having a pattern formed thereon, exposing said wafer to first light and carrying out alignment between reticle and wafer by second light having a wavelength different from that of the first light, said apparatus comprising:

(a) an illumination optical system for illuminating the pattern on said reticle by the first light;

(b) an alignment optical system for detecting the state of the alignment between reticle and wafer by the second light;

(c) a projection optical system for projecting an image of the illuminated reticle pattern onto the wafer, said projection optical system being disposed on the opposite side to said illumination optical system relative to the reticle in such a manner that the optical axes of the projection optical system and the alignment optical system are in parallel to each other and being so formed as to correct the chromatic aberration on axis to the wavelengths of said first light and said second light;

(d) an optical member disposed between the alignment optical system and the projection optical system for reflecting the first light and transmitting the second light, said optical member intersecting the optical axis of the alignment



optical system and the optical axis of the illumination optical system; and

(e) optical correction means for correcting aberrations generated by said optical member with respect to the second light transmitted through the alignment optical system, said optical correction means including a first correction plane parallel plate for correcting coma and second and third correction plane parallel plates for correcting astigmatism.

4,795,245

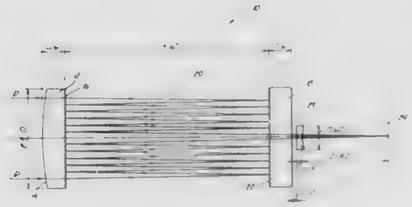
IN-LINE MULTIPASS TELESCOPE

Sidney C. Argyle, deceased, late of Glendora, Calif. (by Jeanne Argyle, heir), assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 421,296, Sep. 22, 1982, abandoned. This application Jul. 10, 1987, Ser. No. 71,572

Int. Cl.[4] G02B *17/00*

U.S. Cl. 350—442 **13 Claims**



1. An in-line multipass telescope for receiving laser beam energy from a transmitter and the like to permit evaluation of field energy distribution, said telescope comprising:

means disposed to receive said beam on axis for converging said beam toward said axis; and

first and second surfaces disposed in the path of said converging beam, each said surface being partially reflective and partially transmissive throughout its area for permitting passage of a predetermined part of energy incident thereon and for reflecting a predetermined part of the energy incident thereon, said surfaces being spaced to reciprocally reflect and to progressively attenuate said beam to a convergence at a focal plane.

4,795,246

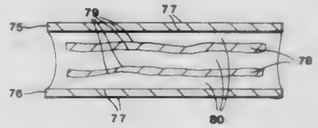
DIFFERENTIAL INTERFERENCE CONTRAST MICROSCOPE USING NON-UNIFORMLY DEFORMED PLASTIC BIREFRINGENT COMPONENTS

Albert Lord, 943 Foul Bay Road, Victoria, British Columbia, Canada (V8S 4H9)

Filed Jul. 30, 1987, Ser. No. 79,495

Int. Cl.[4] G02B *21/06, 21/14, 5/30*

U.S. Cl. 350—510 **21 Claims**



1. A differential interference contrast microscope including a beam splitter and a compensator, each of said beam splitter and said compensator comprising at least one non-uniformly deformed plastic birefringent component exhibiting linearly graded optical retardation between the ordinary and the extraordinary transmitted rays in one direction across its aperture and constant retardation in the orthogonal direction, said beam splitter being positioned adjacent to and after the objective.

4,795,247

PROCESS FOR FITTING A SPECTACLE FRAME AND DEVICE AND ADAPTIVE END PIECE FOR PERFORMING THE PROCESS

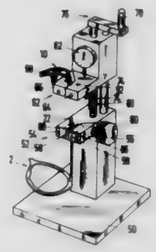
Stephan Volk, Miesbach, and Joachim Baum, Radersberg, both of Fed. Rep. of Germany, assignors to Eyemetrics-Systems AG, Chur, Switzerland

Filed Aug. 24, 1987, Ser. No. 88,868

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1987, 3711248

Int. Cl.[4] G02C *13/00*

U.S. Cl. 351—118 **25 Claims**



1. A method of fitting a spectacle frame, said frame comprising a center portion and two temples connected to the center portion with hinges, each temple comprised of a temple shaft having an end and a longitudinal axis, and a temple end piece at the end of said shaft, said temple end piece having a borehole therein which receives the end of said shaft, and in which each temple end piece is brought into a desired rotational position relative to the axis of the shaft, characterized by the steps of, prior to connecting each temple end piece to the associated shaft, attaching an adaptive end piece to said associated temple shaft in a position to conform to geometry of an ear and head of a spectacle wearer, fixing said adaptive end piece in said position, trimming off the ends of said temple shafts at length which correspond with intended final positions of the adaptive end pieces, retaining said temple end piece to be installed in a rotational position relative to its associated temple shaft while said adaptive end piece is still fixed on the shaft such that the

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temple end piece to be installed and the associated adaptive end piece are disposed in parallel planes each aligned with the axis of the shaft to which said end piece is to be affixed and inserting the ends of the shafts into the boreholes of the associated temple end pieces after the adaptive end pieces have been removed from the temple shafts.

4,795,248

LIQUID CRYSTAL EYEGLASS

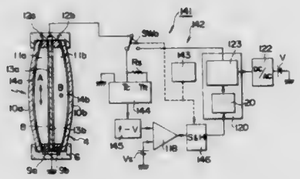
Takao Okada, Hachioji; Takeaki Nakamura, Hino; Kazuo Nakamura; Kunihiko Nishioka, both of Hachioji; Toshihito Kuochi, Tama; Hiroyuki Yamamoto, Hachioji, and Hideo Tomabechi, Higashiyamato, all of Japan, assignors to Olympus Optical Company Ltd., Japan

Filed Aug. 27, 1985, Ser. No. 770,051

Claims priority, application Japan, Aug. 31, 1984, 59-183087; Aug. 31, 1984, 59-183088; Aug. 31, 1984, 59-183091; Oct. 19, 1984, 59-219839

Int. Cl.[4] G02C *7/04*; G02F *1/133*

U.S. Cl. 351—158 **14 Claims**



1. A liquid crystal eyeglass including:

a frame;

a liquid crystal mounted on said frame and having control electrodes and exhibiting a varying refractive index as a result of a change in the orientation of molecules of the liquid crystal in response to the application of an external voltage from a source mounted on said frame and coupled to said control electrodes;

means for detecting a physical quantity which varies with a change in the orientation of molecules of the liquid crystal;

voltage control means for controlling the voltage applied to the liquid crystal in response to a detection output from the detecting means, thereby allowing a compensation of a change in the refractive index of the liquid crystal which occurs in response to a temperature change;

pulse generator means;

analogue switch means for alternately coupling said detecting means and said voltage control means to said liquid crystal at a repetition rate determined by said pulse generator means, whereby said liquid crystal is alternately powered and monitored in a continuing, repetitive manner.

4,795,249

CONTACT LENS FOR ORIENTED OPTICAL CORRECTIONS

Gerard Muller, Route de Bloxay 28, 1800 Vevey, Switzerland, assignor to Gerard Muller, Vevey, Switzerland

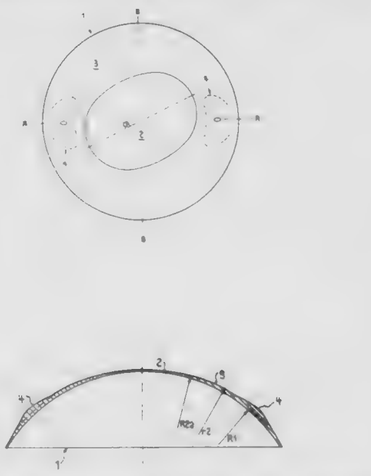
Continuation of Ser. No. 268,135, May 29, 1981, abandoned. This application Aug. 28, 1987, Ser. No. 90,468

Claims priority, application European Pat. Off., Jun. 12, 1980, 80810194.3

Int. Cl.[4] G02C *7/04, 7/06*

U.S. Cl. 351—161 **10 Claims**

1. A contact lens for oriented optical correction having a horizontal axis of stabilization, a central optical zone and a peripheral zone, wherein said lens comprises in its peripheral zone means adapted for cooperative engagement with at least one eyelid of a wearer for orientation of said lens about said horizontal axis of stabilization, said means including at least two stabilizing bosses protruding from said lens surface, said



bosses being disposed on or symmetrically to said horizontal axis of stabilization.

4,795,250

OPHTHALMIC APPARATUS

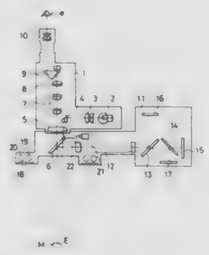
Yukitsugu Nakamura, Sagamihara, and Kohichi Yano, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1987, Ser. No. 47,474

Claims priority, application Japan, May 17, 1986, 61-112989

Int. Cl.[4] A61B *3/10*

U.S. Cl. 351—212 **10 Claims**



1. An ophthalmic apparatus comprising:

an illuminating observation light source for providing light for observing the front eye part of an eye to be examined:

an observation system for observing the front eye part of the eye to be examined wherein said observation system is positioned directly in front of the front eye part of the eye;

a measurement light source, separate from said observation light source, for providing light for effecting predetermined measurement of the eye to be examined;

a light-receiving optical system for receiving the corneal reflection image of the cornea of the eye illuminated with light produced by said measurement light source;

a light position detector provided on the image surface of said light-receiving optical system for effecting said predetermined measurement of the eye by detecting the position of the corneal reflection image produced by light from said measurement light source; and

means for substantially preventing the corneal reflection image of the cornea of the eye produced by light from said illuminating observation light source from being incident upon said light position detector when the position of the corneal reflection image produced by light from said measurement light source is measured by said light position detector.

4,795,251

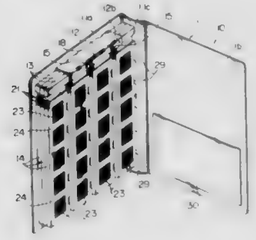
ALBUM TYPE SLIDE SUSPENSION DEVICE

Hiroshi Hara, 1-8-2 Hacchobori, Chuo-ku, Tokyo, Japan

Filed May 22, 1987, Ser. No. 53,749

Int. Cl.[4] G03B *23/08*

U.S. Cl. 353—120 **7 Claims**



1. An album type slide suspension device for use with a slide projector comprising:

an album body including first and second album body portions movable towards and away from each other;

a horizontal suspension bar fixedly secured to the inner surface of said album first body portion and extending transversely of said album first body portion;

a plurality of hangers suspended from said suspension bar in spaced side by said relationship in the longitudinal direction of the suspension bar, each of said hangers including a plurality of laterally spaced resilient flaps depending from the hanger, and each of said resilient flaps having anchoring bulges at the lower edges thereof; and

a plurality of slide cases hung from each of said anchoring bulges of said hangers for receiving a plurality of framed slides in vertically spaced relationship.

4,795,252

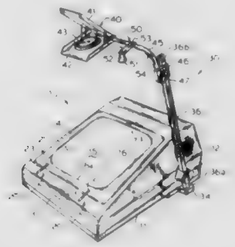
OVERHEAD PROJECTOR

Henry Kyhl, Englewood, N.J., assignor to buhl Industries, Inc., Fair Lawn, N.J.

Filed May 26, 1987, Ser. No. 53,715

Int. Cl.[4] G03B *21/00*

U.S. Cl. 353—122 **4 Claims**



1. In an overhead projector having a housing having a light source therein and including a base for resting on a horizontal surface, a rear wall, a front wall and a top surface having a projection area on which a transparency maybe disposed and through which light passes from the light source, the improvement wherein the top surface slopes downwardly from the rear wall to the front wall and further comprising rotatable and infinitely variable stop means on the top surface adjacent the front wall engageable with the edge of a transparency in a selected one of said infinitely variable positions for aligning the transparency with said projection area, said stop means including adjustable stop means for presetting the distance of a leading edge of transparency from the front wall, said adjustable stop means comprising two spaced apart rods each rotatably mounted on said top surface about an axis disposed perpendicular to the top surface and the longitudinal axis of the rod and intermediate the ends thereof.

4,795,253

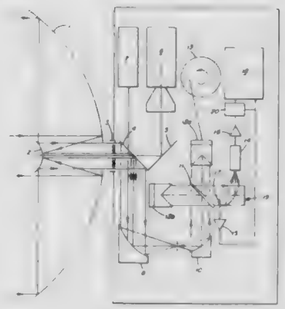
REMOTE SENSING GAS ANALYZER

Robert L. Sandridge, Proctor, and Robert N. Hunt, Wheeling, both of W. Va., assignors to Mobay Corporation, Pittsburgh, Pa.

Filed Apr. 24, 1987, Ser. No. 42,121

Int. Cl.[4] G01J *3/45*

U.S. Cl. 356—51 **43 Claims**



1. A process for detecting gaseous materials present in the atmosphere of a selected area comprising

(a) collecting background radiation from the selected area,

(b) analyzing the collected radiation having infrared wavelengths in a selected region with a spectrometer to detect any gaseous material present in the atmosphere which has a characteristic infrared spectrum in a selected wavelength region,

(c) providing the results of the analysis of step (b) in a form understandable to a monitoring device or a human observer and

(d) displaying as an image the visible radiation collected from the selected area.

4,795,254

DURABLE WORKING MATTE/GLOSSY COLOR STANDARD AND METHOD OF MAKING SAME

Alan G. Kravetz, New Windsor, N.Y., assignor to Kollmorgen Corporation, Simsbury, Conn.

Filed Jun. 25, 1987, Ser. No. 66,859

Int. Cl.[4] G01J *3/46, 3/52*

U.S. Cl. 356—243 **21 Claims**

1. A working color reference standard comprising:

a transparent film substrate having a first, matte surface and a second surface;

a glossy pigmented coating covering at least a portion of said second surface, said glossy pigmented coating providing a matte reference standard when viewed through said trans-

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parent film from the first, matte surface side of said transparent film and a glossy reference standard when said



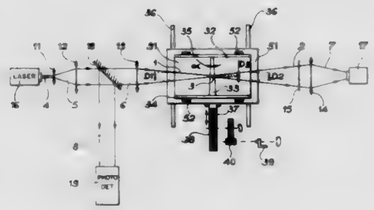
second side of said transparent file covered with said glossy pigmented coating is viewed directly.

4,795,255

APPARATUS AND PROCESS FOR MEASURING NON-LINEAR ORDER THREE OPTICAL CHARACTERISTICS IN AN ISOTROPIC PHASE

Francois Kajzar, Voisins Le Bretonneux, and Jean Messier, Gif Sur Yvette, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Sep. 25, 1987, Ser. No. 100,977
Claims priority, application France, Oct. 3, 1986, 86 13838
Int. Cl.⁴ G01N *21/63*
U.S. Cl. 356—318 **6 Claims**



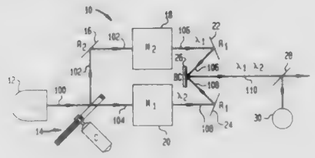
1. An apparatus for measuring third order non-linear optical characteristics in an isotropic phase incorporating means for producing a convergent-divergent monochromatic light beam of pulsation ω and having a focusing point, two prisms, traversed by the beam and separated by a prismatic gap filled by the isotropic phase, the prisms and the isotropic phase being formed from materials transparent to the light of the beam and to the third harmonic of said light, a means for displacing the beam with respect to the prisms, so as to vary the distance covered by the beam in the isotropic phase and a means for measuring the third harmonic intensity of the light emitted by the passage of the beam in the prisms and the isotropic phase, wherein the focusing point of the beam is located in the gap between the prisms and wherein the diameters of the convergent beam at the entrance into the first prism and of the divergent beam at the exit from the second prism are much larger than the diameter of the beam at the focusing point.

4,795,256

DUAL-WAVELENGTH SPECTROPHOTOMETRY SYSTEM

Andrew W. Krause, Baltimore, Md.; Charles G. Marianik, Plainsboro, N.J., and Ronald J. Kovach, Langhorne, Pa., assignors to Photon Technology International, Inc., Princeton, N.J.

Filed Mar. 9, 1987, Ser. No. 23,567
Int. Cl.⁴ G01J *3/08, 3/427*; G01N *21/64*
U.S. Cl. 356—320 **9 Claims**



9. A method for producing a high duty cycle, small cross-section dual-wavelength columated spectrophotometry beam comprising the steps of:

providing a multi-chromatic light source beam from a multi-chromatic light source;

chopping said multi-chromatic light source beam to produce a first and a second multi-chromatic light beam by reflecting a portion of said multi-chromatic source light beam off of a mirrored segment of a rotating wheel to form said first multi-chromatic light beam, transmitting a portion of said multi-chromatic source light beam in one direction only through a transparent segment of a rotating wheel to form said second multi-chromatic light beam;

monochromatically separating a second substantially monochromatic light beam having a second wavelength different from said first wavelength from second multi-chromatic light beam; and,

combining said first and second substantially monochromatic light beams into a single dual-wavelength columated light beam that varies alternatively between said first and second wavelengths

wherein the chopping of said multi-chromatic light source beam between said multi-chromatic light source and the monochromatic separation of said first and second substantially monochromatic light beams substantially minimizes the divergence of said multi-chromatic light source beam as it impinges on said rotating wheel and maximizes its intensity.

4,795,257

POLYCHROMATOR FOR MULTI-ELEMENT ANALYSIS

David H. Tracy, Norwalk, and Stephen A. Myers, Old Greenwich, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 10, 1987, Ser. No. 24,237
Int. Cl.⁴ G01J *3/20, 3/36*
U.S. Cl. 356—328 **6 Claims**

1. A polychromator for multi-element analysis comprising:

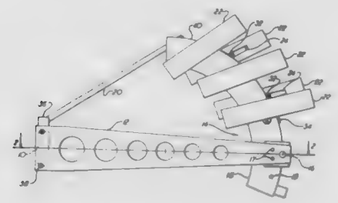
a pair of straps;

a concave grating mounted between said pair of straps at one end;

an arc pivotally mounted to the other end of said pair of straps at the radius of curvature of said concave grating, said arc having a radius of curvature equal to one-half said radius of curvature of said concave grating;

a tie rod connected between said one end of said pair of straps and the free end of said arc;

means for adjusting the length of said tie rod; and



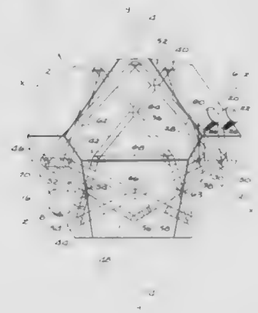
a plurality of detectors predeterminedly spaced along said arc whereby a plurality of spectral lines can be detected for analyzing multiple elements in a sample.

4,795,258

NONPLANAR THREE-AXIS RING LASER GYRO WITH SHARED MIRROR FACES

Graham J. Martin, Canoga Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 6, 1987, Ser. No. 34,731
Int. Cl.⁴ G01C *19/64*
U.S. Cl. 356—350 **7 Claims**



1. A ring laser gyroscope for measuring rotation about three mutually orthogonal axes comprising, in combination:

(a) a three dimensional frame including a plurality of planar surfaces;

(b) said frame comprising a block having three intersecting, closed non-planar cavities;

(c) each of said cavities comprising four straight segments of equal lengths

(d) a plurality of mirrors mounted upon predetermined surfaces of said frame for directing light about said cavities; and

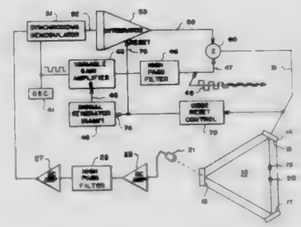
(e) said cavities and the surfaces of said frame are arranged so that said frame includes at least one mirror mounting surface for affixing one or more mirrors to direct light about at least two of said cavities.

4,795,259

PATH LENGTH CONTROL MECHANIZATION FOR A RING LASER ANGULAR RATE SENSOR

Werner H. Egli, Minneapolis, and Mark W. Weber, Elk River, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 31, 1986, Ser. No. 925,762
Int. Cl.⁴ G01C *19/64*
U.S. Cl. 356—350 **13 Claims**



1. A ring laser angular rate sensor comprising:

ring laser means for generating a pair of counter-propagating laser beams about a closed-loop path;

dithering means for variably dithering the length of said closed-loop path between a minimum and maximum path length in which the difference between the maximum and the minimum path length gradually changes from a first difference value to a smaller second difference value; and

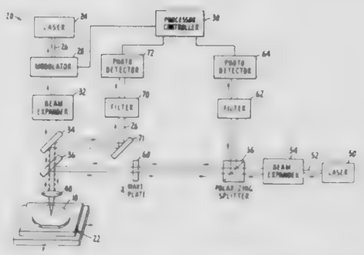
path length control means for controlling the average of said minimum and maximum path lengths to be a value in which a selected function of the intensity of at least one of said laser beams is at a maximum, said path length control means being responsive to the variation in value of said function resulting from said dithering.

4,795,260

APPARATUS FOR LOCATING AND TESTING AREAS OF INTEREST ON A WORKPIECE

John Schuur, San Jose; David L. Willenborg, Dublin; Michael W. Taylor, Oakland, and Allan Rosencwaig, Danville, all of Calif., assignors to Therma-Wave, Inc., Fremont, Calif.

Filed May 15, 1987, Ser. No. 50,911
Int. Cl.⁴ G01N *21/00*
U.S. Cl. 356—400 **23 Claims**



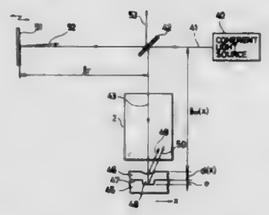
1. A method of testing an area of interest on a workpiece where the area of interest has an optical reflectivity different from all other areas on the workpiece and where the location of the area of interest is unknown, said method comprising the steps of:

scanning the surface of the workpiece with a pair of search beams in a manner such that said search beams are reflected, with each search beam having a different wavelength;

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measuring the power of each of the reflected search beams as they are scanned;
processing the measured power of the reflected search beams to identify the location of the area of interest; and
testing the identified area of interest.

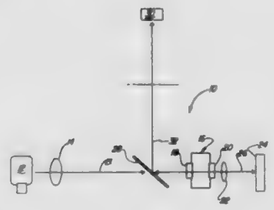
4,795,261
REDUCTION PROJECTION TYPE ALIGNER
Toshihiko Nakata, Yokoyama; Yoshitada Oshida, Fujisawa, and Masatoshi Shiba, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 22, 1986, Ser. No. 944,524
Claims priority, application Japan, Dec. 24, 1985, 60-289209; Nov. 19, 1986, 61-273996
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—401 **8 Claims**



1. A reduction projection type aligner in a reduction projection exposing device for exposing a circuit pattern on a mask through a reduction projection lens onto a wafer by the step and repeat of the wafer, which comprises:
light source means for irradiating coherent irradiation light,
reflection mirror means for reflecting the coherent irradiation light irradiated from said light source means,
a detection optical system for detecting an interference pattern by optically causing interference between reflection light reflected at said reflection mirror means and an alignment pattern irradiating light obtained by entering said coherent irradiation light irradiated from said light source means through the reduction projection lens to an alignment pattern portion of the wafer, which is then reflected at said alignment pattern portion and then passed through said reduction projection lens, and
means for aligning the mask and the wafer relatively by detecting the position of the wafer by a video image of the interference pattern detected by said detection optical system.

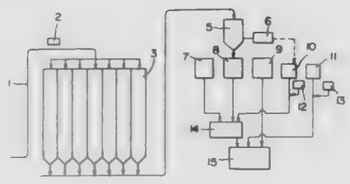
4,795,262
LIQUID CHROMATOGRAPHY ABSORBANCE DETECTOR
Michael D. Morris, Ann Arbor, Mich.; Teng-Ke J. Pang, Palo Alto, and Konan Peck, San Leandro, both of Calif., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Jul. 29, 1987, Ser. No. 79,026
Int. Cl.⁴ G01N *21/01, 21/85*
U.S. Cl. 356—436 **20 Claims**

1. An absorbance detector, comprising:
a light source,
a sample cell adapted to contain a substance to be characterized,
first lens means for focusing source light from said light source in said sample cell while said source light becomes distorted within said sample cell and exits said sample cell defining a primary light beam,
second lens means for collimating said primary light beam,
a retroreflective array for redirecting said collimated primary light beam in a reverse direction defining a secondary light beam which travels along the path of said primary light beam such that said secondary light beam is distorted in a reverse sense from the distortion of said primary light beam such that said distortion is compensated for,



a beam splitter for separating source light from said secondary light beam, and
a detector for evaluating said secondary light beam.

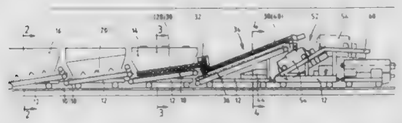
4,795,263
METHOD OF PRODUCING CONCRETE
Kikuo Kaga, Tokyo, Japan, assignor to Sumitomo Corporation, Osaka, Japan and Soba Ready Mix Concrete Co., Ltd., Sagamihara, Japan
Filed Feb. 12, 1985, Ser. No. 700,957
Int. Cl.⁴ B28C *7/04*
U.S. Cl. 366—8 **7 Claims**



1. In a method of producing mixed concrete including a first mixing step for preparing mortar by mixing cement, a fine aggregate and primary water; and a second mixing step for mixing said mortar with a coarse aggregate and secondary water to produce mixed concrete, the improvement which comprises providing a fine aggregate wetted with water for use in said first mixing step and controlling the surface water content of said fine aggregate prior to its use in said first mixing step so that the variation in water content is kept within ±1% by weight, adding an air entraining agent during said first mixing step, and adding a water reducing agent during said second mixing step.

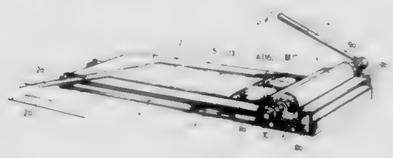
4,795,264
ARRANGEMENT FOR CONCRETE PRODUCTION IN TUNNELS
Rudolf Riker, Memmingen, Fed. Rep. of Germany, assignor to Messrs. Stetter GmbH, Memmingen, Fed. Rep. of Germany
Filed Nov. 17, 1987, Ser. No. 121,627
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1986, 3640916
Int. Cl.⁴ B28C *7/04*
U.S. Cl. 366—18 **15 Claims**

1. A rail mounted concreting train comprising:
a weighing wagon;
a weighing frame on said weighing wagon;
rail track means having a first section supported on said weighing frame and a second section connected to and supported on said weighing wagon, said second section being higher than said first section;
a mixer housing mounted for movement on said rail track means between a weighing position on said first section and a discharge position on said second section, said mixer housing being positioned for receiving aggregate binding agent and water in said weighing position, and for discharging a mixture in said discharge position;
weighing means operatively connected between said weighing frame and said weighing wagon for weighing said weighing frame and said mixer housing with said mixer housing in said weighing position;
mixing means operatively connected to said mixer housing for mixing contents of said mixer housing;



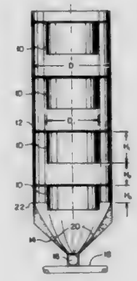
lifting means operatively connected to said mixer housing for lifting said mixer housing from said weighing position to said discharge position;
a leading wagon connected to said weighing wagon;
a binding agent container mounted on said leading wagon for containing a binding agent;
a plurality of trailing wagons connected to said leading wagon;
an aggregate container mounted on each of said trailing wagons; and
conveying means extending centrally below said aggregate containers and said binding agent container, and to said mixer housing in said weighing position thereof for conveying aggregate and binding agent to said mixer housing in said weighing position.

4,795,265
METHOD AND DEVICE FOR INTIMATE MIXING OF TWO COMPONENTS IN A PACKAGE
Anders Dahlberg, and Leif Dahlberg, both of Täby, Sweden, assignors to Tatis Plasttatmingar AB, Taby, Sweden
PCT No. PCT/SE86/00142, § 371 Date Nov. 24, 1986, § 102(e) Date Nov. 24, 1986, PCT Pub. No. WO86/05713, PCT Pub. Date Oct. 9, 1986
PCT Filed Mar. 26, 1986, Ser. No. 940,814
Claims priority, application Sweden, Mar. 29, 1985, 8501583
Int. Cl.⁴ B01F *3/10*; B65D *81/32*
U.S. Cl. 366—69 **13 Claims**



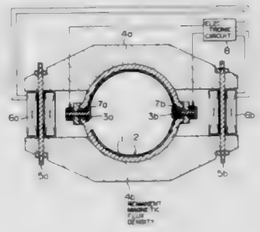
1. A method for intimately mixing at least two mutually barely miscible or paste-like components (A,B) with each other, wherein, initially, the different components are kept in separate storage compartments (**16,17**; **29,30**; **31***a,b*;**33**;**34**;**35**) in a flexible package (**2**), said method comprising the steps of (a) applying external pressure to the package and causing the components to flow into a common compartment (**20***a–d*; **37***a–***37***c*; **41***a–c*; **44***a–c*) while being mixed together,
(b) applying an external pressure to the common compartment and building up an increased internal pressure in the common compartment; and (c) causing the components (A,B) to flow explosively together into an adjacent compartment while being intimately mixed with each other.

4,795,266
SOLIDS BLENDER WITH CYLINDRICAL INSERTS
Jerry R. Johnson, San Luis Obispo, Calif., assignor to J R Johnson, Inc., San Luis Obispo, Calif.
Filed Jun. 24, 1986, Ser. No. 878,051
Int. Cl.⁴ B01F *13/00*
U.S. Cl. 366—341 **3 Claims**



1. In a solids blender that includes a hollow conical hopper that opens upwardly into an upwardly extending hollow cylindrical bin coaxial with the hopper, the improvement comprising:
a series of hollow open-ended cylinders located within the solids blender, coaxial with and spaced along the axis of the hollow cylindrical bin, and wherein the uppermost cylinder in said series extends upward to within a distance H_2 of the top of the bin, where H_2 is also the spacing between the cylinders.

4,795,267
CALORIMETER USING REMANENCE TYPE ELECTROMAGNETIC FLOWMETER
Yoshitaka Amata, Yokkaichi, Japan, assignor to Aichi Tokei Denki, Co., Ltd., Nagoya, Japan
Filed Jan. 29, 1987, Ser. No. 8,232
Claims priority, application Japan, Jan. 31, 1986, 61-20915
Int. Cl.⁴ G01K *17/06*
U.S. Cl. 374—41 **6 Claims**



1. A calorimeter using a remanence type electro-magnetic flowmeter comprising:
a metallic pipe forming a path for heat transferring fluid;
a closed magnetic circuit including:
a core made of a semi-hard or hard magnetic material, said core material having a property in which a remanent magnetic flux density is varied in proportion to a temperature change;

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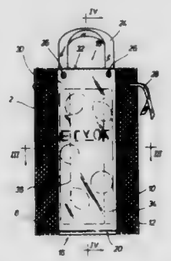
a coil excited intermittently to magnetize said core;
a yoke fixed to the outer surface of said metallic pipe in close contact therewith without forming an air gap therebetween, said yoke conducting remanent magnetic flux of said core to said pipe and a heat of said fluid to said core for varying said remanent magnetic flux density in proportion to the temperature of said fluid; and
a pair of electrodes attached to the inner surface of said metallic pipe through insulators for detecting an induced voltage proportional to the amount of said heat.

4,795,268

EXTRUDED PLASTICS NET BAG

José M. Jordá, Cardedeu, Spain, assignor to Intermas, S.A., Cardedeu, Spain

Filed Nov. 9, 1987, Ser. No. 118,254
Claims priority, application Spain, Apr. 3, 1987, 8701106; May 25, 1987, 8701724
Int. Cl.[4] B65D *30/06*
U.S. Cl. 383—40 6 Claims



1. In an extruded plastics net bag formed by a tubular net body defining, in flattened state, two superimposable sheets and which comprises: a mouth, longitudinal web portions on each of said sheets, which are reinforced by having a denser mesh than the rest of the bag body; two handles of a plastics material capable of being welded to the plastics material of the bag body, each handle having the ends thereof attached to regions of the reinforced longitudinal web portions by way of weld portions; and a bottom formed by a weld line connecting said sheets together, the improvement comprising a flattened tubular strip extending lengthwise on one of said sheets, from said bottom to said mouth and being attached to the bag body, on the one hand, by said weld line forming the bag bottom which, in turn, closes the bottom end of the said strip and, on the other hand, by two of said weld portions, between which there is defined an opening providing access to the interior of the strip which is thus configured as a small bag adapted to contain labels means.

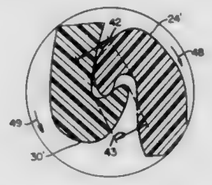
4,795,269

CONTROLLED SEPARATION CHARACTERISTICS OF INTERLOCKING CLOSURE FASTENING DEVICES

Gerald H. Schelbner, Downers Grove, Ill., assignor to First Brands Corporation, Danbury, Conn.

Filed Jun. 30, 1983, Ser. No. 509,708
Int. Cl.[4] B65D *33/16*
U.S. Cl. 383—63 46 Claims

1. In an interlocking closure fastening device having controlled separation characteristics, said interlocking closure fastening device including a pair of outside hooks and a pair of inside hooks, and comprising u-shaped channel elements; said channel elements comprising
a male closure element formed to engage a female closure element in interlocking relationship wherein said male closure element includes a profile portion comprising a base portion having a pair of spaced-apart, parallelly disposed webs integrally attached to said base portion and extending therefrom, said webs terminating in a pair of hooks extending away from each other, one of said pair of hooks of said male closure element forming one of the hooks of said pair of outside hooks of said fastening device, and one of said pair of hooks of said male closure element forming one of the hooks of said pair of inside hooks of said fastening device; and
a female closure element including a profile portion comprising a base portion having a pair of spaced-apart, parallelly disposed webs integrally attached to said base portion and spaced to straddle said webs on said male closure element



wherein said webs on said female closure element terminate in a pair of hooks extending toward each other to engage said hooks on said male closure element, one of said pair of hooks of said female closure element forming one of the hooks of said pair of outside hooks of said fastening device, and one of said pair of hooks of said female closure element forming one of the hooks of said pair of inside hooks of said fastening device;
the improvement comprising said profile portion of said male closure element comprises a stiffer resin material than the resin material of said female closure element.

4,795,270

RECLOSABLE BAG WITH A FOLDED PORTION ENGAGED BY A UNITARY MATERIAL SEPARATION ARRANGEMENT

Eugene L. Heyden, S. 627 Bernard, #8, Spokane, Wash. 99204

Filed Feb. 2, 1987, Ser. No. 10,189
Int. Cl.[4] B65D *33/16*
U.S. Cl. 383—77 16 Claims



1. A package of flexible packaging material comprising opposing front and rear panels, opposing side margins, opposing top and bottom margins, and a commodity-confining compartment formed by said panels and situated between the top, bottom, and side margins of said package, said package further comprising:
an upper marginal region defined across the width of said package and located between said commodity-confining compartment and said top margin;
a material separation arrangement defined by the packaging material within said upper marginal region, said material separation arrangement arranged and defined across a substantial amount of the width of said upper marginal region;
a first closure field effected across said commodity-confining compartment a substantial distance below said material separation arrangement;
a second closure fold effected across said package between said top and bottom margins, said second closure fold residing between said first closure fold and said material separation arrangement; and
a folded portion of said package located in the vicinity of said first closure fold and received within said material separation arrangement.

9. A method of reclosing an elongated package including opposing panels and an elongated material separation arrangement effected across a substantial amount of the width of said package, and wherein said material separation arrangement resides in the vicinity of a top margin and between said top margin and a commodity-confining compartment, said method comprising the steps of:
effecting a first closure fold across the width of said commodity-confining compartment at a location a substantial distance below said material separation arrangement by folding over portions of said panels;
effecting a second closure fold across the width of said package between said first closure fold and said material separation arrangement; and
inserting said first closure fold within said material separation arrangement.

10. In combination:
a package of flexible packaging material including opposing panels, opposing top and bottom margins, opposing side margins and a commodity-confining compartment formed by said panels and situated between said top, bottom and side margins of said package;
a transverse seal means sealingly joining said panel members and located between said top margin and said commodity-confining compartment, said transverse seal means extending across the width of said package whereby an upper marginal region is defined between said top margin and said commodity confining compartment and extends across the width of said package above said commodity-confining compartment; and
a material separation arrangement defining a substantially rectangular absence of packaging material in each said opposing panel within said upper marginal region, said material separation arrangement extending substantially the width of said package, but leaving a transverse seal means portion on each side of said material separation arrangement between said side margins and said material separation arrangement, said material separation arrangement being separated from said commodity-confining compartment means by at least a portion of said transverse seal means;
whereby said material separation arrangement is provided and adpated to receive and retain a folded-over portion of said package which has been folded across said commodity-confining compartment in order to effect package reclosure after an opening of said package occurring in the vicinity of said material separation arrangement.

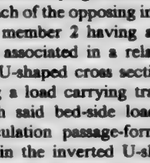
4,795,271

FREE STANDING PRODUCT POUCH

William A. Lane, Jr., Lake Arrowhead, and Steven D. Davis, Yucaipa, both of Calif., assignors to W. A. Lane, Inc., San Bernardino, Calif.

Filed Dec. 11, 1987, Ser. No. 131,446
Int. Cl.[4] B65D *30/16*
U.S. Cl. 383—104 20 Claims

1. A container which comprises:
an essentially quadrilateral shaped pouch containing a quantity of a product;
said pouch including a top edge, said top edge including a first top edge corner and a second top edge corner, said first and second top edge corners located at opposite ends of said top edge;
said pouch folded about an essentially center point in said top edge to bring a first portion of said top edge located between said center point and said first corner and a second portion of said top edge located between said center point and said second corner essentially parallel to one another and to locate said two top edge corners of said pouch together in proximity with one another;



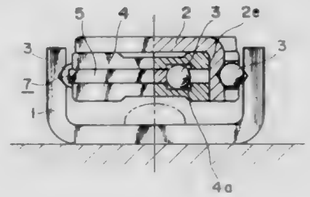
means directly connecting said first and second corners together to maintain said pouch folded about said center point.

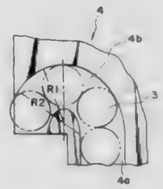
4,795,272

SHEET METAL-TYPE ENDLESS RECTILINEAR MOTION ROLLING GUIDE UNIT

Tatsuo Mottate, Mitaka, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1988, Ser. No. 152,030
Int. Cl.[4] F16C *29/06*
U.S. Cl. 384—45 2 Claims





1. A sheet metal-type endless rectilinear motion rolling guide unit comprising an elongated bed member 1 having a U-shaped cross section and a load carrying trackway groove 1*a* horizontally extending on each of the opposing inner sidewalls thereof, a rectangular table member 2 having an inverted U-shaped cross section to be associated in a relatively freely slidable relation within the U-shaped cross sectional bore of the bed member and having a load carrying trackway groove 2*a* in facing relation with said bed-side load carrying trackway groove, a ball circulation passage-forming spacer member securely fitted within the inverted U-shaped cross sectional bore of said table member wherein a pair of ball circulation passage loops are provided in horizontally parallel relation therewithin with their straight passage portions extending longitudinally in the ball circulation passage-forming spacer member, a plurality of rolling members freely rotatably interposed not only within said pair of ball circulation passage loops

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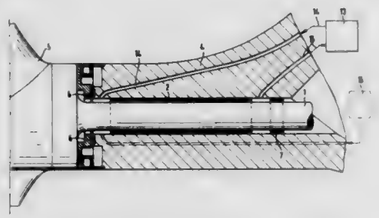
but also between said bed-side load carrying trackway grooves and said table side load carrying trackway grooves, said ball circulation-forming spacer member consisting of three parts including a pair of outer members each having the same configuration and a thin-walled intermediate guide member adapted to be vertically sandwiched by said pair of outer members and preferably made of a synthetic resin material having wear-resistance greater than that of the material from which the outer member is made from, and said outer members and said intermediate guide member, upon having been assembled together, form the endless circulation passage loops for the balls.

4,795,273

PROPELLER SHAFT BEARING ARRANGEMENT

Torbjörn Henriksson, Helsinki; Kari Laukia, Espoo; Heikki Sipilä, Turku, and Markus Hjerppe, Vaasa, all of Finland, assignors to Oy Wärtsilä Ab, Helsinki, Finland

Division of Ser. No. 22,257, Mar. 3, 1987, Pat. No. 4,733,976.
This application Nov. 19, 1987, Ser. No. 122,894
Int. Cl.⁴ F10C *3/00*; F16C *33/72*; F01M *9/00*; B63H *1/15*
U.S. Cl. 384—97 **4 Claims**



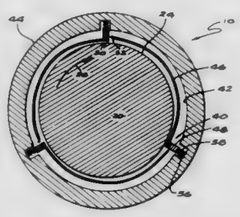
1. A propeller shaft bearing arrangement comprising a hull body formed with an elongate passage, a propeller shaft extending through the elongate passage, a plain bearing which supports the propeller shaft, packing members for preventing liquid from entering or leaving the passage by way of the ends thereof, and means for delivering liquid lubricant to the passage for lubricating the plain bearing, the means for delivering liquid lubricant being operative to suspend gas bubbles in the liquid lubricant.

4,795,274

FOIL BEARING

Alston L. Gu, Rancho Palos Verdes, Calif., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Aug. 10, 1987, Ser. No. 83,762
Int. Cl.⁴ F16C *17/04*
U.S. Cl. 384—106 **2 Claims**



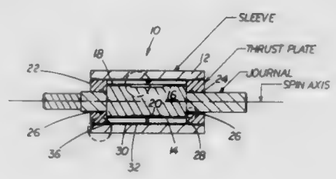
1. A fluid bearing comprising:
a first member having an axially extending bore therein;
a second member rotatably supported within the axially extending bore of said first member; and
a plurality of spaced compliant foils operably disposed within the axially extending bore of said first member around said second member, said compliant foils including a mounting base at the trailing edge of said foils, the axially extending bore of said first member including a plurality of axially extending slots for receiving said mounting base of said spaced compliant foils; and
coil springs for providing resilient support of said mounting base of said plurality of compliant foils, said coil springs disposed within the axially extending slots between the base thereof and said mounting base to bias the trailing edge of said foils towards said second member.

4,795,275

HYDRODYNAMIC BEARING

Forrest Titcomb, and Jackie Cordova, both of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 12, 1987, Ser. No. 84,985
Int. Cl.⁴ F16C *32/06, 33/74*; F16J *15/40*
U.S. Cl. 384—107 **10 Claims**



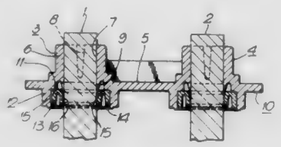
1. Hydrodynamic bearing comprising:
a rotatable shaft/thrust plate combination disposed within a sleeve forming a first clearance space between the shaft and the sleeve and a second clearance space between the thrust plate and the sleeve, the clearance spaces being filled with a liquid lubricant, the external faces of the thrust plates being exposed to air;
the thrust plate and sleeve having axially extending surfaces which diverge toward the ends of the bearing in a straight taper of approximately 2° to form surface tension dynamic seals;
the sleeve including pressure equalization ports connecting the first clearance space and the second clearance space.

4,795,276

SEALED BEARINGS

Dhirendra Damji, Biggleswade, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 1, 1988, Ser. No. 151,144
Claims priority, application United Kingdom, Mar. 27, 1987, 8707382
Int. Cl.⁴ F16C *33/74*
U.S. Cl. 384—138 **11 Claims**



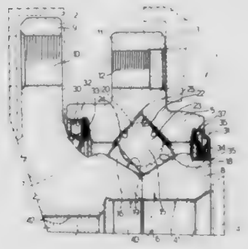
1. A sealed bearing assembly for a rotating shaft, including:
a bearing member having formed integrally therewith a lip adapted to engage the shaft so as to form a first seal, and an integral collar on the bearing member defining a recess into which is fitted an annular member adapted to engage the shaft so as to form a second seal adjacent said first seal.

4,795,277

SUPPORT ELEMENT OF IMPROVED TYPE FOR A VEHICLE WHEEL

Franco Colanzi, Turin, Italy, assignor to Riv-Skf Officine di Villar Perosa S.p.A., Turin, Italy

Filed Sep. 29, 1987, Ser. No. 102,420
Claims priority, application Italy, Oct. 3, 1986, 53907/86[U]
Int. Cl.⁴ F16C *19/16*
U.S. Cl. 384—447 **5 Claims**



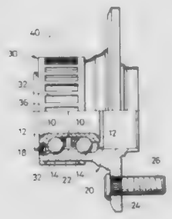
1. A support element (1) for a vehicle wheel, comprising a radially outer cylindrical ring (5), a radially inner cylindrical ring (6) coaxial with the outer ring (5) and a plurality of rolling bodies disposed between the said inner and outer rings (5, 6) in such a way as to make them relatively rotatable, characterised by the fact that the inner ring (5) and the outer ring (6) are each provided with a respective radially outer fixed flange (9, 11) provided with attachment holes (10, 12) and, in combination, the said rolling bodies are constituted by respective..conical rollers (15, 66) disposed adjacent one another in the form of a single ring with their axes alternately disposed at 90° to one another.

4,795,278

BEARING ASSEMBLY

Yoshitaka Hayashi, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1987, Ser. No. 123,205
Claims priority, application Japan, Nov. 28, 1986, 61-182040[U]; Apr. 1, 1987, 62-77450; Jul. 28, 1987, 62-186665
Int. Cl.⁴ F16C *19/52*; G01P *3/487*; H02K *21/38*
U.S. Cl. 384—448 **16 Claims**



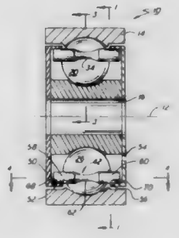
1. A bearing assembly having an inner ring and an outer ring positioned outside of and concentrically with said inner ring, with rotatable members therebetween, in which said outer ring is integrally fixed to a rotating member and is rendered rotatable relative to said inner ring, characterized in that:
a pulser gear is fitted on said outer ring, said pulser gear comprises a cylindrical member of magnetic plate material having a plurality of through holes mutually separated along the circumferential direction of a main portion thereof, and said pulser gear is fitted on an outer periphery of said outer ring such that portions of said outer periphery of said outer ring constitute respective bottom faces of said through holes,
whereby revolution of said rotating member can be detected by a sensor positioned close to said pulser gear.

4,795,279

ROLLING BALL SEPARATOR

Dennis W. Smith, and Peter E. Jacobson, both of Phoenix, Ariz., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Aug. 14, 1987, Ser. No. 85,671
Int. Cl.⁴ F16C *33/372*
U.S. Cl. 384—450 **4 Claims**



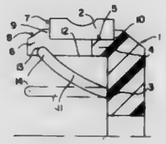
1. A bearing comprising:
an outer ring having an axis;
an inner ring for rotation relative to the outer ring about the axis;
a plurality of bearing balls radially disposed between the outer ring and the inner ring;
a plurality of rollers peripherally disposed beteween the bearing balls and radially disposed between the outer ring and the inner ring;
a pair of axially spaced tracks for supporting the plurality of rollers, said pair of tracks including a first track fixedly connected to the inner ring and a second track fixedly connected to the inner ring;
said pair of tracks having respective side plates disposed axially outwardly and on opposite sides of said bearing balls, said plates being fixedly connected to said inner ring, and said tracks having respective bearing surfaces;
each said roller having a left cylindrical portion and a right cylindrical portion and a recessed center portion;
said left cylindrical portion being arranged to bear against the first track bearing surface;
said right cylindrical portion being arranged to bear against the second track bearing surface;
said recessed center portion being arranged to bear against an adjacent pair of the bearing balls disposed at opposite sides thereof; and
said center portion having a ring shaped recess having an arcuate section with a radius which is slightly larger than the radius of the bearing ball; wherein
the center portion radius measures between 52 percent to 55 percent of the diameter of the bearing ball.

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4,795,280
LOCKING MECHANISM

Herbert Dobhan, Bergrheinfeld; Bruno Schommel, Geldersheim; Hilmar Lesner, Ochsenhausen, and Walter Hahn, Schonungen, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 13, 1987, Ser. No. 14,806
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1986, P3605837[U]
Int. Cl.[4] F16C *35/06, 43/00;* **F16D** *1/06;* **A44B** *21/00*
U.S. Cl. 384—539 **7 Claims**

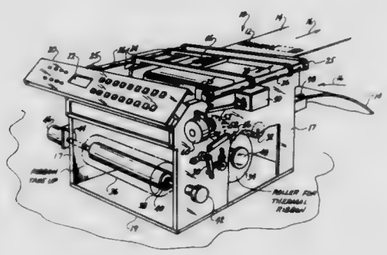


1. A locking means for the form-locking connection of machine parts, such as a ring (2) on a support (1), at least one radially elastic snapping element (6) formed on the support (1), engageable behind the ring (2) by contact with essentially radial partial surface (7), and which can be positively form-locked in their effective position, and at least one locking element (11) formed on the support (1) adjacent the snapping elements (6) cooperable therewith to support these elements in a form-locking manner, said snapping element (6) and the locking element (11) being formed on an essentially common end surface (3) of the support (1) and designed as radially elastic tongues.

4,795,281
SELF-CORRECTING PRINTER-VERIFIER

Richard J. Ulinski, Sr., Monrovia; Hugh C. Clarke, Arcadia; Richard A. Evers, and Richard N. Stevens, both of Monrovia, all of Calif., assignors to Tohoku Ricoh Co., Ltd., Shibatamachi, Japan

Division of Ser. No. 919,541, Oct. 14, 1986, Pat. No. 4,699,531, which is a continuation of Ser. No. 676,571, Nov. 30, 1984, abandoned. This application Oct. 6, 1987, Ser. No. 106,230
Int. Cl.[4] B41J *3/10, 3/20*
U.S. Cl. 400—74 **22 Claims**

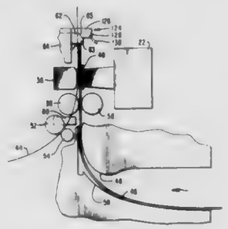


1. A self-correcting printer-verifier to imprint indicia on a longitudinally extended sheet comprising:
a. printing means having a print head responsive to applied drive signals for printing indicia on the sheet;
b. scanning means operable for scanning the indicia printed on the sheet for producing a scanner output signal representative of the printed indicia;
c. control means connected to said scanning means and to said printing means, said control means being operable for generating print drive signals and applying said drive signals to said print head to actuate printing by said print head;
d. said control means including print characteristic adjusting means responsive to said scanner output signal for altering said drive signals to correspondingly alter the physical characteristics of subsequently imprinted indicia; and
e. said scanning means including means for scanning in one direction across the sheet to produce scanner output signals indicating maximum and minimum reflectance values, and for scanning in the opposite direction across the sheet for producing scanner output signals representing the physical dimensions, of the printed indicia.

4,795,282
PAPER GUIDE AND STOP FOR MULTI-FUNCTION PRINTER

William R. Bradam, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 8, 1987, Ser. No. 106,307
Int. Cl.[4] B41J *11/50, 13/28;* **B65H** *9/04*
U.S. Cl. 400—605 **12 Claims**

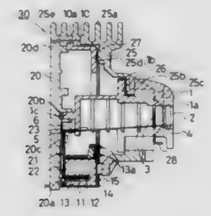


1. Guide mechanism for a multi-function printer for guiding a journal tape and a slip to be printed upon in paths which avoid interference with a printhead which moves in reciprocating motion in a direction perpendicular to the paths of movement of said journal tape and said slip to print on both the journal tape and the slip, comprising:
first and second adjacent printing stations for printing on said slip and said journal tape respectively;
a moveable printhead operable to traverse both of said printing stations in reciprocating movement;
a platen in said first printing station arranged to cooperate with said printhead for printing on a slip positioned between said platen and said printhead, said platen being movable between a retracted position which enables placement of a slip between said printhead and said platen, and a forward position for a printing operation;
a stop member in said first printing station and adjacent to said second printing station, movable between an extended position in which it is operable to limit movement of a slip introduced for printing and a retracted position;
means to move both the platen and the stop member so that when said platen is in said forward position, said stop member is in said retracted position, and vice versa; and
a paper guide member fixed to said stop member and extending outwardly therefrom and movable with said stop member, said guide member including a projecting portion extending outwardly from the stop member; a support member at the end of said projecting portion and perpendicular thereto, spaced from said stop member and parallel to the path of movement of said printhead, extending in both directions from said projecting portion to overhand both printing stations; and a guide extending downwardly from said support member and adapted to extend over the slip and the journal tape when the stop member is in its extended position and to carry the slip and the journal tape backward as the stop member is moved toward its retracted position, thus eliminating possible interference by the slip and the journal tape with movement of the printhead.

4,795,283
PRINT HEAD FOR A DOT-PRINTER

Takashi Moriya, Tokyo; Masao Kunita, Saitama, and Toshihiro Endo, Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1987, Ser. No. 107,361
Claims priority, application Japan, Oct. 14, 1986, 61-156076[U], Oct. 25, 1986, 61-163884[U]
Int. Cl.[4] B41J *3/12*
U.S. Cl. 400—124 **3 Claims**



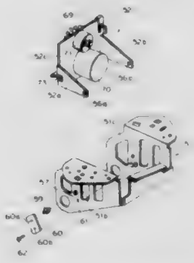
1. A print head for a dot-type printer, comprising:
a nose having a wire point guide thereon and a plurality of print wires slidably guided in said wire point guide, said nose having a nose base contacting surface thereon;
a solenoid base having magnetic means for moving the respective print wires selectively for causing the point ends of the wires to move outwardly from said wire point guide for printing on paper on a platen;
a nose base having a nose contacting surface in opposed relation to said nose base contacting surface on said nose, and having a solenoid base contacting surface in opposed relation to said solenoid base and having mounting means for mounting the print head on a carriage;
a spacer engaged between said nose base contacting surface and said nose contacting surface for adjusting the distance the wire ends extend from the front of said wire point guide;
a further spacer engaged between said solenoid base and said solenoid base contacting surface for adjusting the distance of the wire ends from the carriage; and
a leaf spring removably engaged between said nose and said nose base for holding said nose and said nose base together.

4,795,284
PRINTING DEVICE WITH CARRIAGE AND CARRIER THEREFOR EACH INTEGRALLY PRESS-FORMED FROM A RESPECTIVE METAL SHEET

Makoto Yumoto; Shoji Yanagida, both of Yokohama; Tomoyuki Moriya, Hiratsuka; Mamoru Takezawa, Yokohama; Shingo Kato, Yokohama; Osamu Kuramochi, Yokohama; Shunichi Ogawa, Hatano; Takashi Kimura, Yokohama; Takeshi Motohashi, Yokohama; Hideto Miyazaki, Yokohama, and Eiji Hashimoto, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 31, 1986, Ser. No. 925,155
Claims priority, application Japan, Nov. 1, 1985, 60-245960; Dec. 10, 1985, 60-276064
Int. Cl.[4] B41J *25/30*
U.S. Cl. 400—352 **8 Claims**

1. A printing device comprising a carrier (51), a carriage (52) which is supported on said carrier (51) and in turn supports a printing device (69, 70, 71), wherein said carriage (52) is movable relative to said carrier (51) between a printing position and a print wheel changing position, a support shaft (41) on which said carrier (51) is slidably supported to move laterally along said shaft (41) and thereby permit said printing device to print out information along a print line on a record medium, and said carrier (51) is provided with bearings (53*a*, 53*b*) engaging said shaft (41) to facilitate said sliding movement of the carrier (51) relative to said shaft (41), wherein each of said carriage (52)

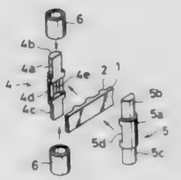


and carrier (51) is integrally press-formed from a respective single and continuous metal sheet, and wherein said single metal sheet from which said carriage (52) is formed includes portions which rest on and abut said bearings (53*a*, 53*b*) when said carriage (52) is in said printing position to thereby fix the vertical position of said printing device (69, 70, 71) relative to said printing line.

4,795,285
TOOTHED BELT AND SPLIT PIN CARRIAGE DRIVE

Mikio Moriya, Tokorosawa; Junichi Furukawa, Tokyo; Makoto Kawasaki, Tokorosawa, and Tsutomu Iizuka, Sayama, all of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Nov. 17, 1987, Ser. No. 122,236
Claims priority, application Japan, Nov. 17, 1986, 61-175340[U]; Jun. 16, 1987, 62-91382[U]; Jun. 16, 1987, 62-91383[U]
Int. Cl.[4] B41J *19/20*
U.S. Cl. 400—320 **4 Claims**



1. A toothed belt and pin assembly for a printer in which the pin is engaged with a guide hole of a carriage for reciprocally driving the carriage during movement of the belt, said assembly comprising an endless belt having a pitch line, and a pin mounted on said belt with the axis of the pin coinciding with the pitch line of the belt, said pin being in two abutting longitudinal halves engaged with the opposite side surfaces of said belt.

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4,795,286

PEN TIP STRUCTURE

Tetsuo Shimoishi; Yasuhiro Aoki, both of Shizuoka, and Katsumi Otsuka, Chiba, all of Japan, assignors to Taibow Co., Ltd., Shizuoka, Japan

PCT No. PCT/JP85/00577, § 371 Date Jan. 24, 1986, § 102(e) Date Jan. 24, 1986, PCT Pub. No. WO87/02312, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 17, 1985, Ser. No. 823,497
Int. Cl.[4] B43K 7/10
U.S. Cl. 401—209 16 Claims



1. A pen tip structure which comprises

an elongated stem defining a cylindrical outer surface and a flat end surface,

a tube positioned around said elongated stem, said tube defining an inner surface and an end portion located beyond said flat end surface of said elongated stem, said inner surface including a plurality of inwardly-extending protrusions that contact the cylindrical outer surface of said elongated stem to form a plurality of straight, longitudinal ink flow channels between the cylindrical outer surface of said elongated stem and the inner surface of said tube, said longitudinal ink flow channels functioning to convey ink from an ink reservoir to said flat end surface of said elongated stem, said end portion of said tube forming a mouth for retaining a rotatable member between said mouth and the flat end surface of said elongated stem, and

a rotatable member positioned between said mouth of said tube and the flat end surface of said elongated stem, said rotatable member having a surface, a first portion of said surface extending beyond said mouth of said tube and an opposite, second portion of said surface being located adjacent a center point of the flat end surface of said elongated stem and in rubbing contact with said flat end surface of said elongated stem,

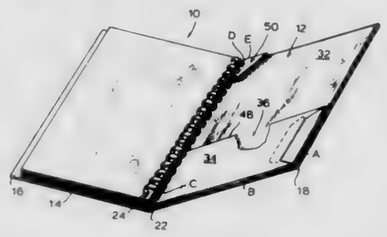
and wherein said flat end surface of said elongated stem has an elongated groove therein which extends from said cylindrical outer surface radially inwardly toward and proximate to said center point of said flat end surface, said elongated groove communicating with at least one of said longitudinal ink flow channels and extending generally perpendicularly to said straight ink flow channels to define an additional ink flow channel for conveying ink from said longitudinal ink flow channels towards said center point of said flat end surface of said elongated stem, said longitudinal ink flow channels and said elongated groove being dimensioned such that, when said pen tip structure is oriented such that said rotatable member is positioned beneath said elongated stem, ink is conveyed from an ink reservoir by capillary action along said longitudinal ink flow channels and said elongated groove in said flat end surface of said elongated stem without inadvertent escape therefrom, whereas when said pen tip structure is oriented such that said rotatable member is positioned above said elongated stem, capillary action will cause ink to remain within said elongated groove and said longitudinal ink flow channels and in contact with said second portion of said surface of said rotatable member.

4,795,287

LOOSE LEAF HOLDER FOR USE WITH RING BINDERS

Michael N. Friedman, 7 Harbor Ct., Centerport, N.Y. 11721

Filed Jan. 20, 1987, Ser. No. 4,634
Int. Cl.[4] B42F 13/00, 13/22, 5/00; B65D 33/24
U.S. Cl. 402—79 11 Claims



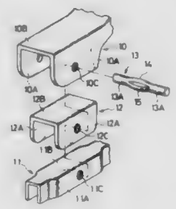
1. An accessory holder for holding loose papers and sheet like materials in combination with a looseleaf binder having a ring-type fastener comprising an elongated unitary blank of sheet material having ring fastener holes relatively spaced along one lateral edge in conformity in number with the relative spacing of the rings of said ring-type fastener, said blank being divided along a first transverse hinge line into a rectangular back panel and a cover panel, said back panel being formed with a second transverse hinge line spaced from and parallel to said first hinge line and being foldable over said back panel with the ring fastener holes in said cover and back panels aligned in registry with a connecting wall having a depth corresponding to the distance between said first and second hinge lines to form a pocket open along its upper edge and being closed at one lateral end by inserting the rings of said fastener into said aligned holes of said cover and back panels, and at its other lateral end by a flap extending integrally from the other lateral edge of said blank and foldable perpendicularly to said transverse hinge lines into interlocking engagement with a selected one of said cover and back panels, whereby said pocket is coextensive with the transverse dimension of said back panel, closed on three sides, and having a depth accommodating a plurality of loose sheets.

4,795,288

YOKE MEMBER CONNECTING DEVICE IN WINDSHIELD WIPER

Masao Sakai, Yono, Japan, assignor to Nippon Wiperblade Co., Ltd., Saitama, Japan

Filed Jul. 29, 1987, Ser. No. 79,160
Claims priority, application Japan, Jul. 31, 1986, 61-116841[U]
Int. Cl.[4] F16D 1/00
U.S. Cl. 403—24 5 Claims



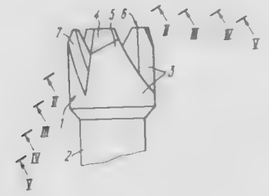
1. In combination, first and second yoke members of a windshield wiper, each yoke member having a cross-section including generally vertically extending side walls and a generally horizontally extending top wall connecting the upper ends of the side walls, with the side walls of said second yoke member being located inside the side walls of said first yoke member and the respective side walls having holes therein aligned with corresponding holes in the other side walls, and a device for pivotally connecting said first and second yoke members and being constituted by a pivot pin extending through the aligned openings in the side walls of said first and second yoke members, said pivot pin having the cross-section extending between the side walls of the second yoke member divided into a plurality of portions which are separated from one another in the radially outward direction for forming a large diameter portion which tightly engages with the inner circumference of said aligned openings in the side walls of said second yoke member, thereby preventing movement of said pivot pin in the axial directions, and the opposite ends of said pivot pin being substantially flush with the outer surfaces of the side walls of said first yoke member.

4,795,289

REAMER

Gennady Y. Potemkin, Orekhovy proezd, 19, kv. 19., Moscow, U.S.S.R.

PCT No. PCT/SU85/00023, § 371 Date Oct. 17, 1986, § 102(e) Date Oct. 17, 1986, PCT Pub. No. WO86/05728, PCT Pub. Date Oct. 9, 1986
PCT Filed Mar. 27, 1986, Ser. No. 934,559
Int. Cl.[4] B23D 77/00
U.S. Cl. 408—80 2 Claims



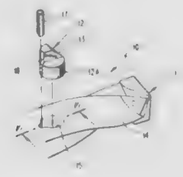
1. A reamer having a body comprising a cylindrical working portion (1) and a shank portion (2), the working portion (1) has a headportion (6) including teeth (3) having a cutting portion (4) and a smoothing portion (5) conjugated with each other, the teeth have a front surface (7) having a rake angle (γ) which smoothly decreases in a direction away from the headportion (6) and a rear surface which diverges in the direction away from the headportion.

4,795,290

DRILL WITH SECONDARY CUTTER

Hans E. Lindberg, Sandviken, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed May 28, 1987, Ser. No. 55,153
Claims priority, application Sweden, Jun. 3, 1986, 8602499
Int. Cl.[4] B23B 51/10
U.S. Cl. 408—224 10 Claims



1. A drill comprising:

a drill body defining a longitudinal axis of rotation and including:

a front cutting tip,

lands extending rearwardly from said cutting tip to form chip flutes,

a mounting shank at a rear end of said body,

a first recess formed in one of said lands at a location spaced longitudinally rearwardly of said cutting tip, said first recess being cylindrical and extending radially relative to said longitudinal axis, and

a second recess formed in said one land extending substantially radially of said longitudinal axis in overlapping relationship to said first recess,

a removable cutting tooth for making a secondary cut, said cutting tooth comprising:

a mounting portion having a cylindrical outer surface disposed in said first recess,

a cutting edge disposed radially beyond said first recess for making a secondary cut, and

a longitudinal groove formed in said outer surface of said tooth, said groove facing said second recess to form therewith a hole, said groove occupying substantially less than 180 degrees of said outer surface such that said outer suface extends substantially more than 180 degrees, and

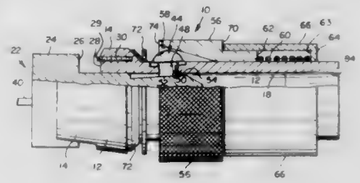
a retaining pin disposed in said hole and exerting clamping forces against said tooth for pressing said outer surface against a wall of said first recess to resist removal of said tooth from said first recess, a radially outer end of said pin projecting from said hole to be accessible for being gripped by a pin-removal tool.

4,795,291

METHOD FOR ACHIEVING INTERCHANGEABILITY OF TOOL INSERTS

Kenneth L. March, York, Pa., assignor to Etteo Tool & Machine Co., Inc., York, Pa.

Division of Ser. No. 899,884, Aug. 25, 1986. This application Mar. 31, 1987, Ser. No. 32,776
Int. Cl.[4] B23B 31/04; B23C 5/26
U.S. Cl. 409—131 2 Claims



1. A method of achieving interchangeability of tool inserts in a quick release chuck mechanism amounted on a drive spindle, the chuck mechanism having a body member with an axial bore extending therethrough and an adjustable end surface transverse to the bore; the tool insert having an end portion insertable in the axial bore, an axial opening in the insert for receiving the tool, and an adjusting screw in the axial opening for adjusting the tool relative to the insert, the tool insert further having an opposite end portion provided with a shoulder facing the adjustable end surface and engageable therewith; adjusting means on the body member for axial movement for axially varying the position of the end surface relative to the shoulder for achieving a predetermined end surface position; and means for releasably holding the tool insert in the body member with a shoulder in engagement with the adjustable end surface; the method comprising the steps of:

adjusting the adjusting means on the end surface of the body member mounted on a complementary spindle to achieve

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a predetermined end surface position of the body member relative to a reference plane;

adjusting the adjusting screws on a plurality of tool inserts to obtain sharpened tool inserts in identical length from the tip of each tool to each shoulder; and

mounting a sharpened tool insert on the body member to obtain a fixed distance from the reference plane to the tip of the tool, such tool insert adapted, when the tool is dull, to be quickly released by the holding means and replaced by a sharpened tool insert without the necessity of further adjustment of the adjusting means or adjusting screw to maintain the fixed distance between the reference plane and tip of the tool.

4,795,292

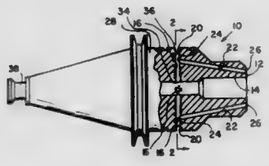
CHUCK FOR ROTARY METAL CUTTING TOOL

Leonard Dye, 11640 Davis St., Moreno Valley, Calif. 92388

Continuation-in-part of Ser. No. 773,028, Sep. 6, 1985, Pat. No. 4,669,933. This application May 27, 1987, Ser. No. 54,761

Int. Cl.⁴ B23B *27/10;* **B23C** *5/28*

U.S. Cl. 409—136 **10 Claims**



1. An improved chuck for a cylindrical rotary tool for cutting away metal comprised of cylindrical, annular rotatable tool holder having a transverse end face in which an axial bore is defined to receive said cylindrical tool, a plurality of radial liquid distribution bores defined in said tool holder and tapped to receive plugs threadably engaged therein, a plurality of arcuate transverse, concave grooves defined in the outer surface of said tool holder, one at each of said radial bores and located remote from said end face, thereby defining a plurality of discontinuous, arcuate cooling liquid distribution troughs, a plurality of cooling liquid distribution ducts defined in said tool holder so as to intersect said radial liquid distribution bores proximate to said liquid distribution troughs at an inclination toward the axis of said tool holder so as to terminate in outlet ports in said end face, and wherein said outlet ports are located closer to the axis of said tool holder than are the intersections of said cooling liquid distribution ducts with said radial liquid distribution bores, and a central axial passageway remote from said transverse end face and intersecting said radial liquid distribution bores, and further characterized in that said radial bores are internally threaded between their intersections with said liquid distribution ducts and their intersections with said liquid distribution ducts and their intersections with said central, axial passageway, and further comprising plugs threadably engaged with said radial bores between their intersections with said liquid distribution ducts and their intersections with said central, axial passageway, and an annular cooling liquid distribution collar having a cooling liquid inlet and positioned about said tool holder and in sliding, contact therewith in communication with said cooling liquid distribution troughs, whereby said tool holder is rotatable within said annular collar, thereby defining a cooling liquid path of travel from said cooling liquid inlet, through said annular collar into said distribution troughs, radially inwardly into said radial bores and through said liquid distribution ducts to emerge from said end face.

4,795,293

UNIT FOR MOUNTING A CUTTING TOOL

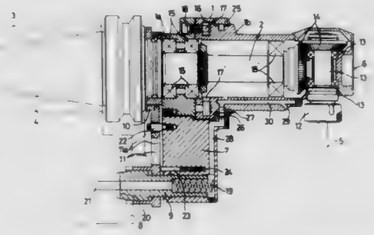
Haruki Mizoguchi, Ikoma, Japan, assignor to Mizoguchi Iron Works & Co., Ltd., Nara, Japan

Filed Sep. 4, 1987, Ser. No. 93,002

Claims priority, application Japan, Sep. 5, 1986, 61-137088[U]; Sep. 5, 1986, 61-137089[U]; Mar. 20, 1987, 62-41066[U]

Int. Cl.⁴ B23C *9/00;* **B23B** *27/10*

U.S. Cl. 409—136 **3 Claims**



1. In a unit for mounting a cutting tool comprising a unit case; a shank rotatably mounted in said unit case so as to extend through said unit case, said shank being formed at one end thereof with a joint for cnnnection with the spindle of a machine tool and at the other end thereof with a chuck unit for mounting the cutting tool at an angle with respect to said shank; said unit case being provided with a pin holder into which is removably inserted a pin for locking said unit case to the frame of the machine tool; and a stopper mounted into and out of engagement with an engaging portion integral with said shank; the improvement which said unit case is divided into a first portion having said pin holder and a second portion having said chuck unit so as to allow said second portion to be rotatable around said shank with respect to said first portion, one of said portions being formed with an annular groove to hold a plurality of nuts so as to receive bolts passed through the other of said portions to hold said two portions together.

4,795,294

FIXING DEVICE FOR BRITTLE BOARD SUCH AS PLASTERBOARD

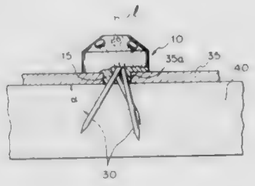
Tetsuo Takada, Kosugimachi; Mikio Kita, Tokyo, and Kenzo Yonemochi, Nagareyama, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 918,089

Claims priority, application Japan, Oct. 14, 1985, 60-156796

Int. Cl.⁴ F16B *15/00*

U.S. Cl. 411—457 **15 Claims**



1. Fixing device comprising:

(a) a body adapted to be secured directly onto a brittle wall portion or secured to said brittle wall portion with a member to be attached to said wall portion interposed between said body and said wall portion, said body being formed with at least two guide holes passing therethrough from the top to the bottom thereof each for receiving therein a fixing member such as a set screw or a nail so that, in use, it is extended into said wall portion to thereby fixedly secure said body to said wall portion, each of said guide holes being oriented in such an inclined direction with respect to the normal to said wall portion that said fixing members do not intersect with each other and such that some of said fixing members do not extend in parallel to the remaining fixing members; and

(b) an engageable member adapted to be detachably engaged with said body over the same, said engageable member having formed integrally therewith a supporting portion such as a hook or a hanger,

wherein:

(c) said body is cylindrical in shape and said guide holes form a plurality of pairs with ones extending in parallel to each other at an angle with respect to the normal to said wall portion while the others extend in parallel to each other at said angle with respect to the normal to said wall portion but in the direction opposite to the direction of said ones of said guide holes;

(d) said body is formed at its outer periphery with a threaded portion; and

(e) said engageable member has an inner space for receiving said body and is formed with a mating threaded portion for engaging with said threaded portion of said body so as to detachably mount said engageable member on said body.

4,795,295

RUPTURABLE CAN MEMBER AS WELL AS METHOD AND APPARATUS FOR ITS PRODUCTION

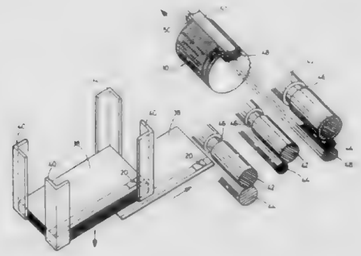
Paul Opprecht, Bergdietikon, and Werner Urech, Kaiserstuhl, both of Switzerland, assignors to Elpatronic AG, Switzerland

Continuation of Ser. No. 896,610, Aug. 14, 1986, abandoned, which is a division of Ser. No. 779,885, Sep. 25, 1985, Pat. No. 4,662,534. This application Oct. 16, 1987, Ser. No. 110,533

Claims priority, application Switzerland, Sep. 25, 1984, 4582/84

Int. Cl.⁴ B21D *51/26*

U.S. Cl. 413—1 **4 Claims**



1. A method of producing a rupturable can member comprising the steps of rolling up a plain sheet-metal blank (3) provided with scorings (16) defining a tearing strip to form a cylinder with overlapping longitudinal edges (12,14) and subsequently welding the longitudinal edges of the blank to one another to form the can member, characterized by the steps of: providing a tongue with a thickened portion and a thin portion, welding said tongue (20) through said thickened portion onto the tearing strip (18) at a position wholly within said tearing strip with said thickened portion adjacent to one of said longitudinal edges and remote from the edges to be overlapped prior to the steps of rolling up and welding the blank, the remote position of the tongue from the edges being selected to avoid having the tongue interfere with the step of welding the longitudinal edges to one another.

4,795,296

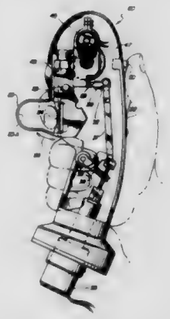
HAND-HELD ROBOT END EFFECTOR CONTROLLER HAVING MOVEMENT AND FORCE CONTROL

Bruno M. Jau, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Nov. 17, 1986, Ser. No. 931,269

Int. Cl.⁴ B25J *3/00, 3/04*

U.S. Cl. 414—5 **6 Claims**



1. A hand-held controller of the pistol-grip type with a trigger element in a trigger guard housing adapted for contact with a single finger of an operator's controlling hand, said trigger element in said housing being capable of two-degrees-of-freedom movement in response to feedback control signals applied thereto, wherein feedback-induced movement at said trigger element reflects at least a pair of controlled parameters at a unit that is being controlled by said hand-held controller, said controller comprising:

a finger-sized opening in said housing adapted to receive an operator's finger with the inner surface of the finger in contact with said trigger element and the outer surface of the finger in contact with a trigger guard portion of said housing so that inward or outward movement of that finger develops an inward or an outward force on said housing;

means responsive to the inward or outward force developed by the operator's finger on said trigger element or on said guard portion, respectively, for creating control signals to be emitted from said controller;

means responsive to a first electrical feedback signal for controlling one degree of movement of said trigger element, which movement can be sensed by said single finger of said operator's hand, said one degree of movement comprising movement in unison of said housing and trigger element; and

means responsive to a second feedback signal for controlling the other degree of movement of said trigger element within said housing, which other movement can also be sensed separately from said first-degree-of-freedom movement by the same finger of said operator's hand, said other degree of movement comprising rotation or pivoting of the trigger element independent of the housing.

4,795,297

APPARATUS FOR FEEDING BOARDS

Masateru Tokuno, Hyogo; Tetsuya Sawada, Kyoto; Sadaaki Gotou, Osaka, and Toshihiro Fukuya, Hyogo, all of Japan, assignors to Rengo Co., Ltd., Osaka and S.K. Engineering Co., Ltd., Shizuoka, both of, Japan

Filed Jun. 26, 1987, Ser. No. 67,376

Claims priority, application Japan, Jul. 10, 1986, 61-163198

Int. Cl.⁴ B65G *59/08*

U.S. Cl. 414—795.4 **11 Claims**

1. An apparatus for feeding boards such as cardboards,

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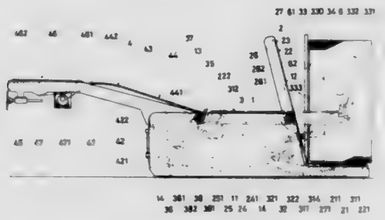
corrugated fiberboards, and the like in a shingled fashion to a following machine, comprising

a table for receiving a stack of horizontal boards,

the table having a front end portion and a rear end portion,

a conveyance surface mounted on and extending upwardly from the rear end portion of the table forming an obtuse angle between the conveyance surface and the table,

means for rotating the table and conveyance surface to orient the boards so that the boards rest on their edges on



the conveyance surface and are backwardly inclined against the table,

first conveyor means located at the conveyance surface for conveying the boards forwardly,

fork means pivotally connected to the first conveyor means for orienting the boards on the first conveyor means from a backwardly inclined posture to a forwardly inclined posture, and

second conveyor means for conveying the boards to the following machine in a shingled fashion.

4,795,298

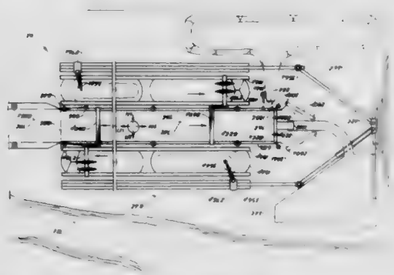
MARINE TRANSPORTATION OF BULK CARGO

Arthur J. Nelson, c/o The Olympic Club, Lakeside 20, 524 Post St., San Francisco, Calif. 94012

Filed Nov. 24, 1986, Ser. No. 934,603

Int. Cl.[4] B65G *67/62;* **B63B** *25/02;* **B63C** *1/06*

U.S. Cl. 414—140.8 **3 Claims**



1. For a voyage arrangement wherein there is made passages to transport cargo from a loading terminal by a self-discharging vessel to a discharge terminal and a return with the vessel in ballast condition, including vessel ore loading and discharging means, the combination comprising:

(a) a fleet of feeders having one or more (LT) carrier vessel than the number of tugs each with an (LT) vessel;

(b) (LT) vessels, having a junction effecting its raked transom stern, a free deck aft of an elevated forecastle superstructure, a hold unencumbered by propelling and engine powered steering means, and said transom, being a vertical plane surface extended above the design water line;

(c) longitudinal bulkheads divide said hold into abreast segmental holds, and thwardwise bulkheads establish a forepeak and afterpeak between which cargo is contained in an arrangement of individual watertight holds;

(d) trunks, disposed in said segmental holds, extend between the fore and aft said thwartwise bulkheads, have conventional guillotine type enclosing means fitted to thwartwise bulkheads, where pierced, to maintain watertight integrity of the LT at sea; said pierced bulkheads to provide for the continuous extension of the belt means contained in trunks;

(e) individual holds, having sloping surfaces for self-clearing of said ore, provide for gravity ore flow to conventional gate controlled openings to said trunks;

(f) said loading terminal having conventional stackers to replenish stockpiles of ore supplied during the interim of vessel arrivals and reclaimers to recover ore from stockpiles upon arrival of said ballast conditioned vessel;

(g) said discharge terminal having conventional shoreside cargo means to convey ore from said self-discharging vessel;

(h) a singular belt means, within each trunk and positioned beneath said gates, extend parallel with the keel from the foremost bulkhead to emerge into the afterpeak for form change to a concave vertical curvature, approximately paralleling said raked stern, for outboard extended ends through doorways in said transom;

(i) pivotal means, disposed within said afterpeak, affords a jackknife end portion of said singular belt means to be pivotally swung inboard, enabling doorways to be closed watertight for the vessel at sea;

(j) cylindrical hatches, penetrating said deck and disposed aligned above belt means, effect aligned abreast means to load segmental holds simultaneously;

the improvement for said loading terminal comprising:

(a) a graded area, having a lock means with top of its walls level with the graded area, a dredged passageway affording a vessel approach to the open end of the lock, a lock door when closed contains the vessel and buoyant supporting water to levels disposing the vessel deck level with the graded area during loading ore to the vessel;

(b) towers at open end walls of the lock, with hoisting means to raise said door to clear the superstructure of the ballast conditioned vessel's arrival with tide at higher high water;

(c) a jamb means to brace said door is disposed out of the lock, effective when lock contained water is higher than a tidal level;

(d) a depressed reservoir, receptive of said lock contained water, and a flap valve controlled conduit for gravity flood water flow from the lock to the reservoir, serves to establish a prescribed lock contained residual water level for a said deck made level with the graded area;

(e) a pumping system, in manifold arrangement with the lock and reservoir, when operable to selectively elevate said contained water level, effects draft increases with loading the vessel to maintain the same level with the grade area and is used to prolong draining the reservoir of water during interims of vessel arrivals to the terminal;

(f) stockpiles, spaced from and parallel with both sides of the lock, with bulwarks extending the length of the lock for containing ore and mounting said reclaimers, are divided into fore and aft segmental stockpiles, each segment containing a half vessel load;

(g) a shuttle conveyor assembly (B), slidingly supported by an appendage to the reclaimer and arranged to discharge from either end, is disposed to receive discharge of ore from a conveyor assembly (A), which spans between said bulwarks, to convey ore discharged by bucket wheels of the reclaimer;

(h) duplicate bridges, structurally extending with end stiff-legs having wheel mounting means for engagement with rails secured atop walls of the lock, include: a cantilevered structural appendage from one end of the bridge providing a pivotal mounting means, a conveyor assembly (C), formed to a concave vertical curvature supported by the pivotal mounting means, and having a bin disposed adjacent with said one end and receptive of ore discharge from conveyor assembly (C);

(i) bin means having bottoms with gate controlling chutes, conveying and telescopic funneling means, to provide ore discharge from bin to abreast hatches simultaneously;

(j) tractive means and cable means to power bridges with a fore and after travel above vessels contained in locks, and including means to have bridges alternately establish a reversed position above successive vessel arrivals, suiting its reclaimers occupation with a segmental stockpile;

(k) link means connecting the conveyor assembly (C) distal lower other end beneath and to one discharge end of shuttle conveyor assembly (B);

(l) pivotal mounting of conveyor assembly (C) accommodates linking said distal end alternately to opposite discharge ends of conveyor assembly (B), arranged reversible, to afford ore recovery from alternate segmental stockpiles and a bridge working subsequently arriving vessels; and,

(m) said door is fitted with a valve means to flood release waters to equalize water levels to sides of the door to be opened, whereupon said jamb is disposed prone to clear passage of loaded vessels.

4,795,299

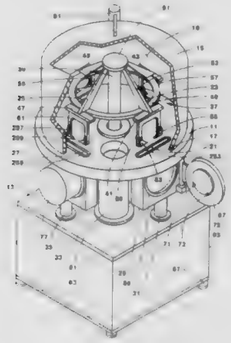
DIAL DEPOSITION AND PROCESSING APPARATUS

Donald R. Boys, Cupertino, and Walter E. Graves, San Jose, both of Calif., assignors to Genus, Inc., Mountain View, Calif.

Filed Apr. 15, 1987, Ser. No. 38,540

Int. Cl.[4] C23C *13/08*

U.S. Cl. 414—217 **33 Claims**



1. A system for moving and processing workpieces comprising:

a main baseplate forming a fixed horizontal framing element of said system, having a central hole therethrough and two or more vertical passages therethrough, said vertical passages arranged at repeating angular intervals on the circumference of a circle with its center located within said central hole, said main baseplate having a substantially flat upper surface in proximity of said vertical passages;

a plurality of individual stations equal in number to the number of said vertical passages, with one of each of said stations sealed to a bottom surface of said main baseplate at each of said vertical passages, each individual station having an opening with each opening aligned with a different one of said vertical passages, one of said individual stations being an air-lock, the others being processing stations;

a vertical centerpost passing through said central hole of said main baseplate;

a turret of substantially the diameter of the locus of said vertical passages through said main baseplate, said turret fixedly attached to the center post and concentric with it;

a plurality of carrier assemblies, equal in number to the number of individual stations, said carrier assemblies configured to hold a workpiece vertically in a plane with the aid of gravity, each of said carrier assemblies attached to said turret and extending therebelow in a circular pattern congruent with the pattern of said vertical passages through said main baseplate;

means for moving said center post vertically between a lowermost position at which workpieces on said carrier assemblies are fully inserted through said vertical passages and into said individual stations, and an uppermost position at which workpieces on said carrier assemblies are fully withdrawn from said vertical passages and above the upper surface of said main baseplate;

means for indexing said center post rotationally at said upperemost position by an angular increment equal to the angular increment between said vertical passages through said main baseplate relative to said centerpost;

a sealable door opening from said one of said individual stations used as an air-lock;

a workpiece cradle attached to an inside surface of said air-lock door, said cradle being configured to hold a workpiece vertically with the aid of gravity and in the same plane as a workpiece held by one of said carrier assemblies, such that a workpiece entering said air-lock through said vertical passage will transfer from said carrier assembly to said door cradle, and a workpiece in said door cradle will transfer to said carrier assembly as said carrier leaves said air-lock through said vertical passage;

a plurality of pedestals, equal in number to the number of individual stations used as process stations, one said pedestal attached to an inner wall of each said process station, each pedestal configured to hold a workpiece substantially vertically with the aid of gravity and in substantially the same plane as a workpiece held by one of said carrier assemblies, such that a workpiece entering one of said process stations through one of said vertical passages will transfer from said carrier assembly to said process pedestal, and a workpiece on said process pedestal will transfer to said carrier assembly as said carrier leaves said process station through said vertical passage, the workpiece being supported on said pedestals during processing; and

an hermetic dome sealed to said main baseplate, said baseplate and said dome forming a main chamber enclosing said center post, turret and carrier assemblies;

said turret with said carrier assemblies being lifted, indexed and lowered by said center post moving means and indexing means, said lifting, indexing, and lowering for engaging and lifting workpieces from said door cradle and process pedestals and for transferring said workpieces through said main chamber and into the next individual chamber in the direction of indexing, the workpieces being lifted simultaneously from all said pedestals and cradles and indexed and placed simultaneously.

4,795,300

LOADING APPARATUS FOR A WORK CHAMBER

Dominick Tomaselli, Huntington Station, N.Y., and Hans-Michael Hoehle, Ladenburg, Fed. Rep. of Germany, assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 20, 1988, Ser. No. 145,939

Int. Cl.[4] B65G *65/00;* **F16C** *32/06*

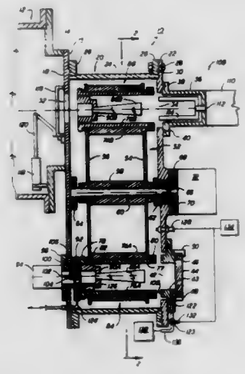
U.S. Cl. 414—217 **13 Claims**

1. A loading apparatus for loading workpieces into and out of a work chamber without exposure of the work chamber to the atmosphere, comprising:

a transfer chamber formed in part by an inner plate section adapted as a cover plate for a work chamber and having an inner port therethrough to the work chamber, and by a entry plate section having an entry port therethrough to

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the atmosphere, the entry port being spaced laterally from the inner port;
door means for selectively closing the entry port to seal the transfer chamber from the atmosphere;
at least one tubular member located in the transfer chamber, each having an open loading end and an inner end;
transport means for relocating each loading member laterally so as to align each loading member alternatively with the entry port at a loading site or with the inner port at an unloading site, each loading member being held loosely with respect to the transport means such as to be displaceable at the loading site between a normal position in which each loading member is relocatable laterally by the transport means and a sealed position proximate the entry port;



retaining means for normally retaining each loading member in its normal position;
displacement means for displacing a loading member at the loading site between its normal position and its sealed position;
closure means for sealing closed the inner end of each loading member at least while each loading member is in its sealed position; and
sealing means for sealing between the entry plate section and the loading end of the loading member in its sealed position, such as to allow access of a workpiece to the loading cylinder in its sealed position through the entry port with the door open without exposing the remainder of the transfer chamber to ambient atmosphere.

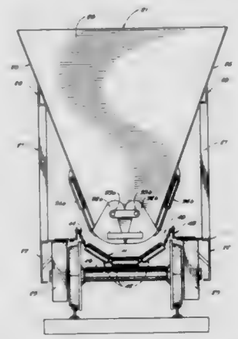
4,795,301

LOW-CENTER-OF-GRAVITY SELF-UNLOADING TRAIN FOR BULK COMMODITIES

Edwin deS Snead, and William B. Snead, both of P.O. Box 1000, Georgetown, Tex. 78626

Filed Sep. 11, 1986, Ser. No. 905,662
Int. Cl.[4] B65G *21/00*
U.S. Cl. 419—339 **13 Claims**

1. A self-unloading train for the transport of bulk commodities comprising:
a plurality of hopper cars coupled together, each of said hopper cars comprising:
a frame;
a plurality of wheels rotatably connected to said frame; and
first and second side sills for carrying the load of said hopper cars, said first and second side sills affixed to said frame on opposite sides of said frame, said first and second side sills extending for the length of a hopper car, said first and second sills being joined to said frame exterior of said wheels of said hopper car, said frame arranged beneath the top of said wheels of said hopper car, said frame and said wheels defining an unobstructed longitudinal channel between said wheels and above the axles of said wheels; and
train conveyor means connected to said first and second side sills, said train conveyor means positioned within said channel below the top of said wheels, said train conveyor means for transferring material along said plurality of hopper cars, said train conveyor means traversing said channel for the length of said plurality of hopper cars, said train conveyor means comprising:
a conveyor belt having a supply run and a return run:



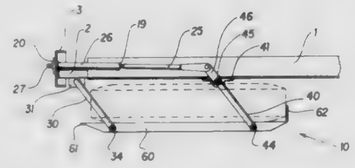
a plurality of troughing idlers positioned within said channel, said troughing idlers located between said supply run and said return run of said conveyor belt, said supply run abutting the upper surface of said troughing idlers, said troughing idlers connected to said side sills, said return run of said conveyor belt being adjacent and above said axles; and
tensioning means for taking up the slack in said conveyor belt during operation of said train conveyor means, said tensioning means engaging the interior of said conveyor belt between said supply run and said return run.

4,795,302

UNDERSLUNG TIRE CARRIER FOR VEHICLES

Thomas H. Dalton, Box 4482 Belfast Rd., Glen Allen, Va. 23060

Filed Jun. 5, 1987, Ser. No. 58,493
Int. Cl.[4] B62D *43/04*
U.S. Cl. 414—466 **17 Claims**



1. A tire carrier for mounting below a vehicle chassis and comprising:
first and second double-crank-shaped suspension members, each of unitary structure and spaced from each other such that said second double-crank-shaped suspension member is located farther from the front of said vehicle than said first double-crank-shaped suspension member, each having crank-arm portions, an elongated crank-throw portion, and pivot portions;
pivot means for pivotally suspending [the]said pivot portions of said first and second double-crank-shaped suspension members about an axis so that said crank-arm portions extend below the chassis of said vehicle;

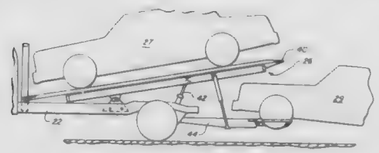
link means for connecting said elongated crank-throw portions of said first and second double-crank-shaped suspension members and adapted to have said tire selectively carried thereabove;
lever means rigidly fastened to said first double-crank-shaped suspension member in a location disposed between said pivot portions and with an angular orientation of the length thereof that is generally opposite to the extent of said crank-arm portion with respect to said axis of said pivot portions of said first double-crank-shaped suspension member so that arcuate motion of said lever means causes said first and second double-crank-shaped suspension members to pivot about said pivot means;
actuating means connected to said lever means and extending therefrom generally in a direction toward the rear of said vehicle, said actuating means being comprised of a rotary portion and a linear portion and operative to convert rotary motion of said rotary portion to linear motion of said linear portion so that said rotary motion of said rotary portion causes said arcuate motion of said lever means which, in turn, causes said first and second double-crank-shaped suspension members and thereby a tire mounted thereon to selectively undergo joint horizontal and vertical motion.

4,795,303

VEHICLE TRANSPORTING APPARATUS

Leslie Bubik, Toronto, Canada, assignor to Vulcan Equipment Company, Ontario, Canada

Filed May 29, 1987, Ser. No. 55,378
Int. Cl.[4] B60J *9/00*
U.S. Cl. 414—478 **8 Claims**



1. An apparatus for transporting one or more vehicles, comprising:
a chassis;
a platform pivotally mounted to said chassis and including an extensible and retractable deck for carrying a first vehicle; said platform being pivotable through an arc so that said platform may be selectively inclined either rearwardly or forwardly;
an extensible and retractable boom pivotally mounted to said chassis below said platform and having a free end for engaging a pair of wheels of a second vehicle;
power operated means for pivotally moving said platform and said boom on said chassis; and
an extensible and retractable retainer means for selectively maintaining said boom and platform in variable spaced relation;
whereby upon forwardly inclining said platform and retracting said boom, said platform is spaced a sufficient distance above said boom to permit said second vehicle when carried by said boom to be positioned partially beneath said platform.

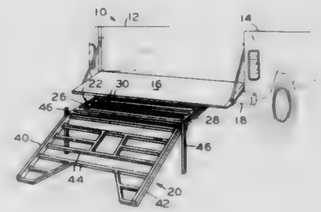
4,795,304

PICKUP TRUCK LOADING RAMP

James D. Dudley, Rte. 1, Box 13, Bennington, Okla. 74723

Filed Mar. 11, 1988, Ser. No. 167,208
Int. Cl.[4] B60P *1/00;* **B65G** *67/02*
U.S. Cl. 414—537 **4 Claims**

1. A loading ramp for a pickup truck having a horizontally hinged vertically pivotal end gate and having a rear bumper disposed below the horizontal axis of the end gate hinge, comprising:
a pair of hingedly connected foldable panels comprising a forward panel and a rearward panel movably connected together by a first hinge means to permit vertical pivoting movement of said panels relative to each other about a horizontal axis,
each of said panels having elongated beam means at its respective sides and having a plurality of cross braces interconnecting the side beam means,
said panels extending, when in loading ramp position, rearwardly and downwardly to the surface of the earth from



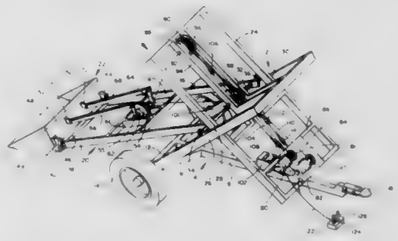
the rearward limit of the truck end gate when the latter is in opened position;
second hinge means joining the ends of the forward said panel beam means to said bumper for vertical pivoting movement of said forward panel about a horizontal axis; and,
sleeve means slidably joining the respective forward panel beam means to the rearward top edge portion of said end gate to permit vertical pivoting movement of said forward and rearward panels about said horizontal axes associated with said first and second hinge means toward and away from the surface of the earth when said end gate is opened and closed.

4,795,305

CABLE OPERATED LOADER APPARATUS

Russell P. Friend, P.O. Box 3326, North Las Vegas, Nev. 89030

Filed Nov. 27, 1987, Ser. No. 126,210
Int. Cl.[4] E02F *3/42*
U.S. Cl. 414—709 **12 Claims**



1. Portable loading apparatus comprising a base, a frame mounted on the base and extending upwardly therefrom,
boom means pivotally mounted on the frame and extending forwardly therefrom, said boom means being movable between a lowered loading position and an elevated dumping position,
scoop means pivotally mounted at a forward end portion of the boom means,
scoop control means for selectively controlling the rotational position of the scoop means comprising control

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sheave means rotatably mounted on the boom means at a forward location thereon,

first cable actuating means for releasing and retracting cable means, second cable actuating means for releasing and retracting cable means, said first and second cable actuating means being independently operable,

first cable means operatively connected to the scoop control means and the first cable actuating means such that retraction of said first cable means by the first cable actuating means acts simultaneously to rotate the scoop control means in a first rotational direction and to raise the boom means toward the elevated dumping position,

second cable means operatively connected to the scoop control means and the second cable actuating means such that retraction of said second cable means by the second cable actuating means acts to rotate the scoop control means in a second rotational direction opposite said first rotational direction.

4,795,306

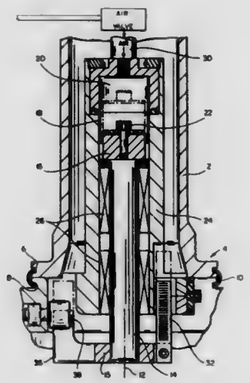
PORCE SENSOR

Donald R. Allan, Menlo Park, and Bruce E. Shimano, Hacienda Heights, both of Calif., assignors to Adept Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 741,251, Jun. 4, 1985, abandoned. This application Nov. 24, 1986, Ser. No. 931,960

Int. Cl.[4] B66C *23/00*

U.S. Cl. 414—744.8 **3 Claims**



1. An end effector at the end of a robot quill capable of movement vertically along an axis defined by the centerline of the quill for handling parts under program, control including an improved force sensor comprising a cylinder supported by said quill having a piston movable in the cylinder along the axis of vertical movement of said quill, a shaft mounted for sliding movement along said vertical axis carrying at one end an output flange, means on the output flange which cooperate with means carried on the quill to cause the flange and the quill to rotate together while permitting sliding movement of said flange along the vertical axis in response to contacting said parts,

pressure means for controlling the force applied to said piston and said shaft by altering the air pressure in said cylinder,

sensor means comprising a shaft position detector for detecting movement of said shaft and said output flange relative to said quill, and

computing means for altering the pressure applied through said cylinder in response to movement of said output flange detected by said sensor means.

4,795,307

METHOD AND APPARATUS FOR OPTIMIZING THE VANE CLEARANCE IN A MULTI-STAGE AXIAL FLOW COMPRESSOR OF A GAS TURBINE

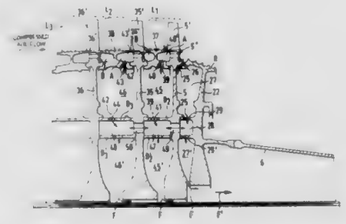
Josef Liebl, Dachau, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 27, 1987, Ser. No. 20,028

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1986, 3606397

Int. Cl.[4] F02C *7/16*

U.S. Cl. 415—115 **22 Claims**



1. Apparatus for optimizing the clearance between the vanes and adjoining structure in a multi-stage axial flow compressor of a gas turbine power plant by thermally controlling the disks of the rotor of the compressor by compressed air vented from the compressor, said compressor having a flow channel in which compressed air passes through the successive stages of rotor and stator vanes, the flow channel having an inner bounding surface which is provided with an opening in at least one stage of the compressor for flow of vented compressed air from said flow channel, said rotor including spaced adjacent disks comprising outer rim portions including said rotor vanes and inner hub portions and further defining annular spaces into at least one of which the vented compressed air flows from said opening, said means defining a path for discharge of the vented compressed air from said at least one annular space after the compressed air has contacted the disks at said inner hub portions for effecting thermal control thereof so that the local temperature at said inner hub portions is adapted to the local temperature at said respective outer rim portions of said disks.

4,795,308

OBSTACLE IN FRONT OF A PROPELLER

Hans-Otto Fischer, Willich, and Siegfried Hosemann, Xanten-Wardt, both of Fed. Rep. of Germany, assignors to Rhein-Flugzeugbau GmbH, Moenchengladbach, Fed. Rep. of Germany

Filed Feb. 18, 1987, Ser. No. 16,069

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1986, 3605086

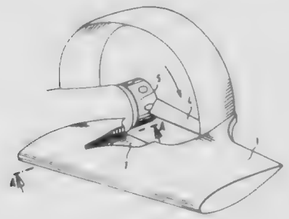
Int. Cl.[4] F01D *5/10*

U.S. Cl. 415—119 **9 Claims**

1. In combination with a propeller disposed in an aircraft aft from the nose portion of the craft, the improvement of reducing noise as well as mechanical load on the propeller blade, comprising:

a construction part situated upstream from the propeller and exposed to the oncoming air flow prior to reaching the propeller thus being an obstacle, having a contour in a plane, transversely to an axis of rotation of the propeller so that at least the rear edge as seen in peripheral direction of rotation of the propeller, forms an angle (beta) that is not zero in relation to a leading edge of the propeller, when the propeller as a whole is in a horizontal disposition; and

a NACA inlet in said obstacle ending at a trailing edge of said obstacle, outside of the propeller, and being arranged in relation to the propeller, as far as its rotation is concerned, that it is opposite to the sense of rotation of said propeller.



4,795,309

TURBINE HOUSING FOR TURBOCHARGER

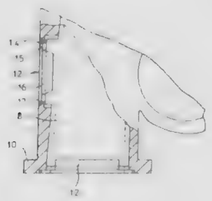
Kinshi Takagi, Tokyo, and Nobuhiro Kondo, Chiba, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1987, Ser. No. 130,551

Claims priority, application Japan, Dec. 16, 1986, 61-193251[U]

Int. Cl.[4] F01D *25/26*

U.S. Cl. 415—138 **4 Claims**



1. A turbine housing for a turbocharger comprising housing segments into which a turbine housing is divided in an axial direction and which define together a first groove along an inner periphery of an abutment therebetween; partition plate means independent of said turbine housing and fitted into said first groove such that a clearance is defined between a bottom of said first groove and an outer periphery of said partition plate; arcuate recess means on flanged surfaces of the housing segments at a gas inlet of the housing at a position corresponding to said abutment; and a partition-plate receiving member including lugs or extensions at opposite ends thereof, each with a notch leaving a space between the respective lug or extension and said arcuate recess means, to permit deformations of said receiving member while maintaining air-tight engagements thereof with said recess means for sectioning the gas inlet in correspondence with said partition plate means, said receiving member having a second groove formed at one major surface thereof to receive an end face of said partition plate means such that a clearance is defined between said end face of the partition plate means and a bottom of said second groove, said receiving member further having another major surface coplanar with said flanged surfaces of the housing segments.

4,795,310

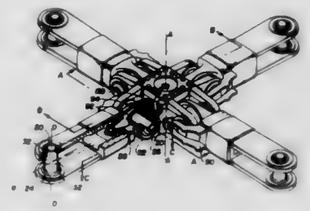
HELICOPTER ROTOR SYSTEM AND METHOD

Francis H. McArdle, Norristown; Earl Schneider, Havertown, and Richard T. DeRosa, Brookhaven, all of Pa., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 429,365, Sep. 30, 1982, Pat. No. 4,543,040. This application Sep. 23, 1985, Ser. No. 779,353

Int. Cl.[4] B64C *27/48*, *27/40*

U.S. Cl. 416—134 A **6 Claims**



1. A pitch housing assembly for the rotor system of a helicopter, comprising:

a composite pitch housing;

a composite pitch shaft mounted at each end to an elastomeric bearing supported by the housing and capable of reacting both axial and radial loads; and

a composite flap motion stop means mounted to the pitch shaft and supported by the housing.

4,795,311

CENTRIFUGAL COMPRESSOR IMPELLER

Vladimir V. Arkhipov; Gennady F. Velikanov; Yakov S. Levin; Vadim S. Maglychansky; Gennady I. Petrov; Gilya A. Raer, and Kir B. Sarmatsev, all of Leningrad, U.S.S.R., assignors to Proizvodstvennoe Obiedinenie "Nevsky Zavod" Imeni V.I. Lenina, Leningrad, U.S.S.R.

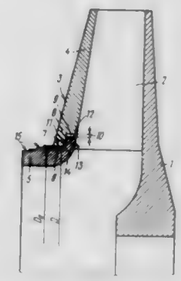
PCT No. PCT/SU86/00060, § 371 Date Sep. 1, 1987, § 102(e) Date Sep. 1, 1987, PCT Pub. No. WO87/04500, PCT Pub. Date Jul. 30, 1987

PCT Filed Jun. 20, 1986, Ser. No. 134,787

Claims priority, application U.S.S.R., Jan. 17, 1986, 4001923

Int. Cl.[4] F04D *29/22*

U.S. Cl. 416—186 R **1 Claim**



1. A centrifugal compressor impeller, comprising a main disc, blades and a covering disc rigidly connected to one another, said covering disc including an interconnected web to effect gas flow in the impeller and a ring to accommodate seals, characterized in that:

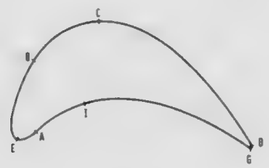
the joint between the web and ring is detachable to form mated surfaces in the web and ring, respectively,

an annular shoulder is formed on the mated surface of the ring as viewed from the blades,

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an annular groove is provided on the mated surface of the web and receives the annular shoulder, and
the internal diameter (Do) of the web along its mated surface is less than the diameter of the ring along its mated surface by an amount in the range of 1 to 1.5×10^{-3} Do.

4,795,312
TURBO-MACHINE BLADE
Bebe-Titu Parcaru, Aktienstr. 200 - 204, 4330 Mülheim/Ruhr, Fed. Rep. of Germany
Filed Jan. 10, 1983, Ser. No. 456,547
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1982, 3201436
Int. Cl.[4] B63H *1/26*
U.S. Cl. 416—223 A **7 Claims**



1. Turbo-machine blade, comprising:
a continuously curved profile contour having convex curved leading edge, suction side and trailing edge regions, and a concave curved pressure side region;
said leading edge region being formed of a first ellipse section and a second ellipse section adjacent said first ellipse section;
said suction side region being formed of a first circle section adjacent said second ellipse section and a first parabola section of a first second-order parabola being adjacent said first circle section;
said trailing edge region being formed of a second circle section adjacent said first parabola suction and
said pressure side region being formed of a third circle section adjacent said first ellipse section and a second parabola section of a second second-order parabola being disposed between said second circle section and said third circle section.

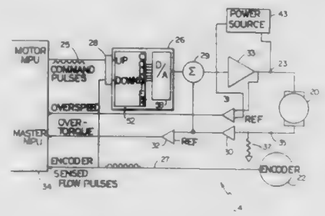
4,795,313
PROTECTIVE TIP FOR A TITANIUM BLADE AND A METHOD OF BRAZING SUCH A TIP
André Coulon, Beaucourt, France, assignor to Alsthom, Paris, France
Filed May 28, 1987, Ser. No. 54,926
Claims priority, application France, May 28, 1986, 86 07661
Int. Cl.[4] F01D *5/28;* **C23C** *7/00*
U.S. Cl. 416—224 **3 Claims**

1. A protective tip for a titanium turbine blade, said tip comprising the following constituents:
TiC: 28% to 40%
Cr+Co: 12% to 26%
Mo: 1% to 6%
Ni: 3% to 8%



Cu: 0.3% to 1.5%
Fe: balance

4,795,314
CONDITION RESPONSIVE PUMP CONTROL UTILIZING INTEGRATED, COMMANDED, AND SENSED FLOWRATE SIGNALS
John R. Prybella, Lakewood, and Terry D. Boucher, Littleton, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.
Filed Aug. 24, 1987, Ser. No. 88,685
Int. Cl.[4] F04B *49/06;* **A61M** *37/00;* **B04B** *13/00*
U.S. Cl. 417—43 **20 Claims**

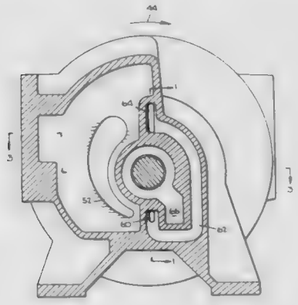


1. Pump control apparatus comprising
a variable flowrate pump including an electric motor controllable in response to a pump drive signal,
a signal generator generating a commanded flowrate signal indicating desired flowrate of said pump,
a flowrate sensor providing a sensed flowrate signal indicating sensed flowrate of said pump, and
an integrator connected to said sensor and generator to receive and integrate said commanded flowrate signal and said sensed flowrate signal, said integrator maintaining an electrical signal representing the difference over time in volume commanded to be pumped and the volume pumped, said integrator providing said pump drive signal based on said electrical signal, said pump drive signal being increased based on said commanded flowrate signal, thereby increasing the speed of said motor, and being decreased based on said sensed flowrate signal, thereby decreasing the speed of said motor, so as to achieve desired commanded volume over time.

20. Blood centrifuge apparatus comprising

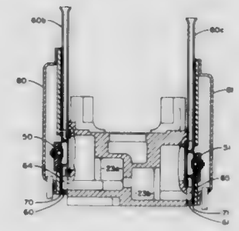
a centrifuge having a blood inflow line and a plurality of output lines for separated fractions of blood,
a plurality of variable flowrate peristaltic pumps acting upon at least some of said lines,
each said pump including an electric motor controllable in response to a pump drive signal, said apparatus further comprising, for each said pump,
a signal generator generating a commanded flowrate signal indicating desired flowrate of said pump,
a flowrate sensor providing a sensed flowrate signal indicating sensed flowrate of said pump, and
an integrator connected to said sensor and generator to receive and integrate said commanded flowrate signal and said sensed flowrate signal, said integrator maintaining an electrical signal representing the difference over time in volume commanded to be pumped and the volume pumped, said integrator providing said pump drive signal based on said electrical signal, said pump drive signal being increased based on said commanded flowrate signal, thereby increasing the speed of said motor, and being decreased based on said sensed flowrate signal, thereby decreasing the speed of said motor, so as to achieve desired commanded volume over time.

4,795,315
TWO-STAGE LIQUID RING PUMP
Walter J. Schultze, Gainesville, Fla., assignor to The Nash Engineering Company, Norwalk, Conn.
Continuation of Ser. No. 1,416, Jan. 8, 1987, abandoned. This application Mar. 24, 1988, Ser. No. 175,666
Int. Cl.[4] F04C *19/00*
U.S. Cl. 417—68 **3 Claims**



1. A two-stage liquid ring pump having axially adjacent first and second stages comprising:
a stationary housing;
a first stage rotor rotatably mounted in the housing;
a first port plate mounted on the housing at the axial end of the first stage rotor remote from the second stage;
a first stage gas inlet opening through said first port plate, said first stage inlet being the sole means by which gas can enter the pump;
a first stage gas outlet opening at the axial end of the first stage rotor adjacent to the second stage, said first stage outlet being the sole means by which gas can flow from said first stage to the second stage;
a residual gas outlet opening through said first port plate for allowing compressed gas not discharged via the first stage outlet to exit from the first stage;
a residual gas inlet opening through said first port plate for admitting to the first stage gas supplied to the residual gas inlet, the residual gas inlet being located after the first stage inlet but before the first stage outlet in the direction of rotor rotation; and
means for conveying gas from the residual gas outlet to the residual gas inlet, said means comprising:
a first head member mounted against the surface of said first port plate which faces away from said rotor, the surface of said first head member which abuts said surface of said first port plate being recessed to define a channel extending from said residual gas outlet to said residual gas inlet, said channel cooperating with said surface of said first port plate to define a conduit for conveying gas from said residual gas outlet to said residual gas inlet.

4,795,316
COMPRESSOR SUCTION PULSE ATTENUATOR
Tadek M. Kropiwnicki; Joseph E. Braymer, both of Syracuse, and Nelik I. Dreiman, Manlius, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 3, 1984, Ser. No. 637,644
Int. Cl.[4] F04B *39/16*
U.S. Cl. 417—312 **3 Claims**



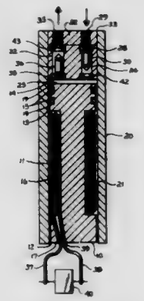
1. A hermetic compressor suction pulse attenuator comprising:
a cylinder block defining a plurality of suction plenums;
each suction plenum having a piston chamber in fluid communication therewith;
each suction plenum having a corresponding suction supply means for supplying suction gas thereto;
restricted fluid communication means connecting each of said suction plenums for establishing fluid communication between each of said suction plenums whereby each of said piston chambers is additionally in restricted fluid communication with each of said suction supply means for each of the other plenums so that there is a continuous fluid flow in each of said suction supply means.

4,795,317
MAGNETOSTRICTIVE PUMP WITH REVERSIBLE VALVES
Robert F. Cusack, Grosse Pointe Park, Mich., assignor to GTE Valeron Corporation, Troy, Mich.
Continuation-in-part of Ser. No. 759,556, Jul. 26, 1985, abandoned, and Ser. No. 759,553, Jul. 26, 1985, abandoned. This application Sep. 8, 1986, Ser. No. 905,007
The portion of the term of this patent subsequent to Feb. 23, 2005, has been disclaimed.
Int. Cl.[4] F04B *17/00, 35/00*
U.S. Cl. 417—322 **14 Claims**

1. A fluid pump assembly for step control machine tool applications comprising:
a cylinder having a first and a second end,
an elongate piston of a length shorter than said cylinder and having a first and second end,
said piston formed of a positive magneto-strictive material, said first end of said piston secured to said first end of said cylinder,
a cylinder head secured to said cylinder second end and having inlet and outlet passages to the exterior,

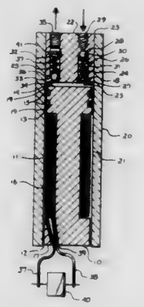
VOL 1098 ISS 1 JAN 3 1989 UMI

each said passage including an elongate chamber having a magnetic valve seat,
a valve member located in each said chamber, said valve members including permanent magnet means,
said magnet means positioned in said chamber such that the comparable ends of said valves and said seats have opposite magnetic poles,



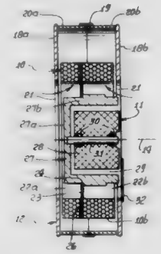
means to interruptedly apply a magnetic field to said assembly of a first polarity,
said means comprises a magnetic coil wound around the exterior of said cylinder,
said piston operated responsive to said magnetic field to expand and expel any fluid located between said piston and head via an outlet passage.

4,795,318
MAGNETOSTRICTIVE PUMP
Robert F. Cusack, Grosse Pointe Park, Mich., assignor to GTE Valeron Corporation, Troy, Mich.
Continuation-in-part of Ser. No. 759,557, Jul. 26, 1985, abandoned, and a continuation-in-part of Ser. No. 759,558, Jul. 26, 1985, abandoned, and a continuation-in-part of Ser. No. 759,552, Jul. 26, 1985, abandoned. This application Sep. 8, 1986, Ser. No. 905,006
The portion of the term of this patent subsequent to Feb. 23, 2005, has been disclaimed.
Int. Cl.[4] F04B *17/00, 35/00*
U.S. Cl. 417—322 **18 Claims**



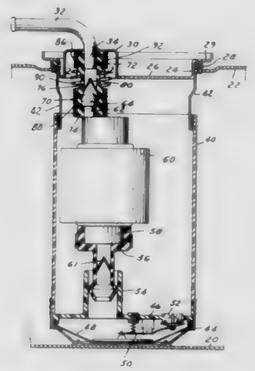
1. A fluid pump assembly comprising:
a cylinder having a first and a second end, an elongate piston of a length shorter than said cylinder and having a first and second end, said piston formed of a positive magnetostrictive material, said first end of said piston secured to said first end of said cylinder.
a cylinder head securd to said cylinder second end and having an inlet and an outlet passage, with valve means located in each said passage,
and a means to interruptedly apply a magnetic field to said assembly,
said piston operated responsive to said magnetic field to expand and expel any fluid located between said piston and head via said outlet passage and past said valve.

4,795,319
QUIET HAIR DRYER
John M. Popovich, 2742 S. La Cienega, Los Angeles, Calif. 90034, and Roc V. Fleishman, 432 ½ Alatair Pl., Venice, Calif. 90291
Filed Nov. 17, 1986, Ser. No. 931,255
Int. Cl.[4] F04B *39/00, 35/04*
U.S. Cl. 417—354 **4 Claims**



1. In a quiet hair dryer, the combination comprising:
(a) an air blowing rotor comprising open cell foam, which is cured, the foam consisting of air expanded polyurethane,
(b) an electric motor connected in driving relation with the rotor, the motor including a cup-shaped rotor having an annular outer wall and an end wall, and a stator located in the cup-shaped motor rotor and defining an axis, said cup-shaped rotor outer wall spaced radially inwardly of said foam rotor,
(c) means including a housing to confine the foam rotor and forming air inlet and discharge passages to pass air to the foam rotor for passage through the rotor open cell foam as the rotor rotates, and for delivering said air from the foam rotor in a hair drying stream,
(d) said open cell foam being in annular form, and having a circular outer surface, and a circular inner surface, said means defining an air inlet structure in communication with the inner surface of the open cell foam,
(e) there being an open annular air plenum radially inwardly of the open cell foam rotor and said air inlet structure including two air inlets respectively at axially opposite sides of said annular plenum to flow air into said plenum from opposite sides thereof, for flow into the open cell foam via said circular inner surface thereof,
(f) and a thin disc mounted on said outer wall to extend normal to said axis, and extending in said plenum and transmitting rotary drive from the motor rotor to said open cell foam rotor, the disc having opposite outer faces to which said open cell foam is connected, said outer faces of the disc being solely connected by bonding of the disc to the open cell foam rotor, said disc dividing said plenum into two sub-plenums at opposite sides of the disc, the sub-plenums respectively in communication with said two inlets, and said disc consisting of aluminum alloy to transmit heat from the motor to air flowing in said sub-plenums, the disc having opposite side portions in direct axial registration with said two air inlets so that air flowing through said inlets contacts said disc opposite side portions to receive heat transfer therefrom,
(g) and wherein the motor rotor extends about the rotor stator, said two inlets defining two substantially parallel planes between which said foam, disc motor rotor and motor stator are confined.

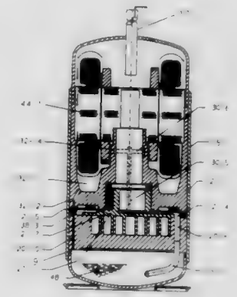
4,795,320
QUICK DISCONNECT PULSE MODULATION SLEEVE
Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.
Filed May 14, 1987, Ser. No. 49,536
Int. Cl.[4] F04B *21/00*
U.S. Cl. 417—360 **2 Claims**



1. A quick disconnect assembly for connecting a pump outlet nipple to the end of a fuel line which comprises:
(a) a connector tube of flexible material having an axial passage to receive in a relatively snug fit said pump outlet nipple at one end and said receiving end of said fuel line,
(b) an elongate coil spring positioned on said tube having relatively tight coils at each end to embrace the respective ends of said tube and spaced intermediate coils between said ends, said tight coils tightly embracing said tube ends when compressed axially and being shiftable axially into said spaced coils to release said tube ends for removal from said tube ends, and
(c) means at each end of said tube to provide abutments for the ends of said spring to maintain the tightly coiled ends in compressed condition,
(d) said tube having an intermediate portion between said ends with a thin wall section to provide a radially expansible wall section to absorb and modulate the pulsing effect of a fuel pump,
(e) said intermediate coils of said spring having a larger diameter than said end coils to provide an expansion space for said intermediate portion of said tube and to provide a limiting cage for said intermediate portion of said tube.

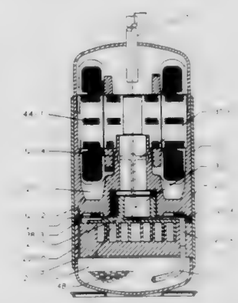
4,795,321
METHOD OF LUBRICATING A SCROLL COMPRESSOR
Shahrokh Etemad, Syracuse; Donald Yannascoli, Fayetteville, both of N.Y., and Michael Hatzikazakis, Greenville, S.C., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 27, 1987, Ser. No. 125,893
Int. Cl.[4] F04C *18/04, 29/02*
U.S. Cl. 418—1 **6 Claims**

1. A method for lubricating a high side hermetic scroll compressor comprising the steps of:
maintaining an oil sump at compressor discharge pressure;
establishing a pressure differential in a first fluid path which has an inlet beneath the surface of the oil in the oil sump and an outlet fluidly connected to the inlet of a centrifugal pump whereby oil flows from the sump to the pump;
delivering oil supplied to the centrifugal pump to first and second crankshaft lubricating paths at a pressure higher than compressor discharge pressure;
passing oil from the first crankshaft lubricating path into the interior of the shell of the scroll compressor;
passing oil from the second crankshaft lubricating path



serially over and thereby lubricating first thrust surfaces, through a first chamber and into a second chamber and thereby lubricating an anti-rotation means located in the second chamber; and
returning oil to the sump after the oil has performed its lubricating function.

4,795,322
SCROLL COMPRESSOR WITH OIL THRUST FORCE ON ORBITING SCROLL
Shahrokh Etemad, Syracuse; Donald Yannascoli, Fayetteville, both of N.Y., and Michael Hatzikazakis, Greenville, S.C., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 27, 1987, Ser. No. 125,974
Int. Cl.[4] F04C *18/04, 29/02*
U.S. Cl. 418—55 **5 Claims**



1. A high side hermetic scroll compressor comprising:
casing means having an inlet and a discharge line extending therethrough;
a fixed scroll means within said casing means having a wrap formed therein with said wrap being in fluid communication with said inlet at its outer portions;
an orbiting scroll means within said casing means having a wrap on one side coacting with said wrap of said fixed scroll means to define a plurality of trapped volumes and a boss on the other side with an axial bore therein;
crankshaft means having two ends with an eccentric located at one end and received in said axial bore of said boss for causing movement of said orbiting scroll means;
bearing head means supporting said crankshaft means with

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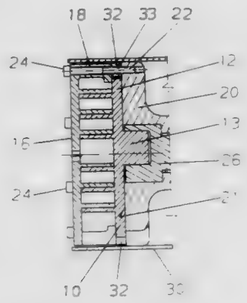
the other end of said crankshaft means extending therethrough;
motor means operatively connected to the other end of said crankshaft means for causing rotation thereof;
said fixed scroll means and said bearing head means coacting to define a chamber in which said orbiting scroll means is movable;
said chamber including upper and lower intermediate pressure chambers which are in restricted fluid communications;
anti-rotation means in one of said intermediate pressure chambers coacting with said orbiting scroll means to limit said orbiting scroll means to orbiting motion with respect to said fixed scroll means;
an oil sump in said casing means having oil therein which is at compressor discharge pressure; and
means for supplying oil from said sump to said axial bore and to said intermediate pressure chambers in said boss so as to provide a thrust force tending to keep said fixed and orbiting scroll means together in opposition to the forces acting thereon due to compressing gas between said wraps.

4,795,323

SCROLL MACHINE WITH ANTI-ROTATION MECHANISM

Stephen L. Lessie, Jamesville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 2, 1987, Ser. No. 115,327
Int. Cl.[4] F01C *1/04, 21/00*
U.S. Cl. 418—55 **5 Claims**



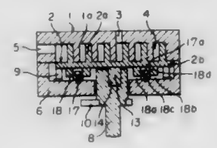
1. A scroll machine comprising:
a fixed scroll, an orbiting scroll, a crankcase and means for driving said orbiting scroll in a circular orbit all located within a housing with said fixed scroll secured to said crankcase with said orbiting scroll therebetween;
a plurality of spacer means located between said fixed scroll and said crankcase at a spaced angular distance on a circle centered on the axis of said scroll machine with each of said plurality of spacer means including a cylindrical portion;
a plurality of recesses formed in the periphery of said orbiting scroll corresponding in number and angular location to said plurality of spacer means to permit said orbiting scroll to fit between said plurality of spacer means;
each of said recesses being a portion of a circle centered on the periphery of said orbiting scroll and having a radius equal to the combined radius of said circular orbit and the radius of said cylindrical portion;
during motion of said orbiting scroll, at least two of said plurality of recesses always contacting the cylindrical portion of a corresponding number of said spacer means whereby said orbiting scroll moves in a circular orbit when driven by said means for driving.

4,795,324

SCROLL-TYPE FLUID TRANSFERRING MACHINE WITH DEFORMABLE THRUST BEARING

Tetsuzo Matsugi; Tsutomu Inaba, and Norihide Kobayashi, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 935,295, Nov. 26, 1986, Pat. No. 4,761,122. This application Aug. 25, 1987, Ser. No. 89,336
Claims priority, application Japan, Nov. 27, 1985, 60-268434; Nov. 27, 1985, 60-268433
Int. Cl.[4] F01C *1/04, 21/02;* **F16C** *17/04, 27/02*
U.S. Cl. 418—55 **1 Claim**



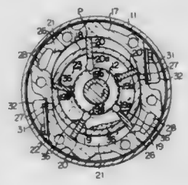
1. A scroll-type fluid transferring machine provided with a stationary scroll member and an orbiting scroll member, each being in the shape of a wrap formed by an involute curve or the like and being projectively attached onto a base plate to define a compression chamber by combining them in a manner to mutually offset said wrap; a main shaft for transmitting drive force from a prime mover such as an electric motor to said orbiting scroll member; a bearing frame to hold said orbiting scroll member and said main shaft for sharing a thrust load to be imparted to each of them; a thrust bearing mounted on said bearing frame for supporting said base plate of said orbiting scroll member; and a rotation-preventing mechanism to prevent said orbiting scroll member from rotation around its axis and to cause it to revolve around said main shaft, said fluid transferring machine being characterized in that an axial projection, which is integral with and concentric with said thrust bearing and has a narrow width in the radial direction is fixed to said bearing frame and is provided between the opposed surfaces of said thrust bearing and said bearing frame in the vicinity of the center part in the radial direction between the inner peripheral side and the outer peripheral side of said thrust bearing, said axial projection being annular and extending in an axial direction from a bottom surface of said thrust bearing and that space gaps are provided between said mutually opposed surfaces at the inner peripheral side and the outer peripheral side of the projection.

4,795,325

COMPRESSOR OF ROTARY VANE TYPE

Atsuo Kishi, and Masao Mizukami, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,673
Claims priority, application Japan, Oct. 30, 1981, 56-172731
Int. Cl.[4] F02C *21/04*
U.S. Cl. 418—87 **4 Claims**



1. A compressor of a rotary type comprising:
a cam cylinder;

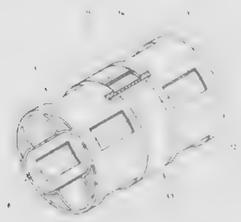
a pair of side covers;
a rotor located in a space defined by said cam cylinder and said pair of side covers;
a plurality of radially extending vane slots formed in said rotor;
a plurality of vanes each inserted in one of said plurality of vane slots for reciprocatory sliding movement, said vanes being maintained in a sliding contact with an inner peripheral surface of said cam cylinder to define between the vanes, cam cylinder, rotor and side vanes a plurality of compression chambers, said plurality of compression chambers receiving a fluid drawn therein by suction for compression as the volumes of said compression chamber undergo changes during a rotation of said rotor;
a high pressure chamber located on one side of one of said pair of side covers for storing therein lubricant separated from a compressed refrigerant;
an annular space formed inside said rotor for maintaining said vane slots in communication with one another such that said slots are positioned perpendicular to said annular space whereby said annular space is in contact with the bottom openings of said vane slots, said annular space containing a lubricant for lubricating surfaces of said vanes;
lubricating supply passage means formed in said one side cover for communicating said high pressure chamber with said annular space; and
means provided in said lubricant supply passage means for enabling an unloading of the compressor during a start-up so as to reduce the starting torque of the compressor.

4,795,326

ROTARY PISTON MACHINE HAVING INNER AND OUTER ROTORS AND A REINFORCING BELT

Hans Baumgartner, Viersen; Klaus Heikrodt, Krefeld, and Werner Seifert, Korschenbroich, all of Fed. Rep. of Germany, assignors to Pierburg GmbH, Neuss, Fed. Rep. of Germany

Filed Jan. 15, 1988, Ser. No. 144,518
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1987, 3700954
Int. Cl.[4] F01C *1/10, 21/00;* **F04C** *18/10*
U.S. Cl. 418—152 **7 Claims**



1. In a rotary piston machine having inner and outer rotors rotating at unequal speeds around eccentric axes, the rotors being provided with angularly spaced profiled teeth and gaps which cooperate during rotation to define working chambers of varying volume which move between an inlet and an outlet for a fluid medium to be pumped, the improvement wherein said outer rotor has openings therein to provide communication between the working chambers and the inlet and outlet during rotation of the rotors, said openings being spaced axially of said outer rotor to define a solid band of material between the openings, said solid band being provided with a circumferential groove, and a reinforcing belt mounted in said groove and having greater strength than the material of the outer rotor.

4,795,327

CONTROLLED RELEASE SOLID DRUG DOSAGE FORMS BASED ON MIXTURES OF WATER SOLUBLE NONIONIC CELLULOSE ETHERS AND ANIONIC SURFACTANTS

Norman G. Gaylord, New Providence, N.J., and Joseph M. Schor, Locust Valley, N.Y., assignors to Forest Laboratories, Inc., New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 592,570
Int. Cl.[4] A61K *9/22*
U.S. Cl. 424—468 **10 Claims**

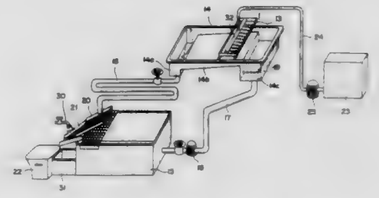
1. A therapeutically active solid unit dosage form having a controlled and prolonged release pattern upon administration, comprising a mixture of one or more water-soluble nonionic cellulose ethers, an anionic surfactant and a therapeutically active medicament, wherein the cellulose ether/surfactant weight ratio is 1/0.005–3, and wherein at least one of the cellulose ethers is methylcellulose or hydroxypropylmethylcellulose having a number average molecular weight of at least 50,000 and a methoxyl content of 16.5–31.5 weight-%.

4,795,328

ENCAPSULATION APPARATUS

Motoharu Takano, Tokyo, Japan, assignor to Q.P. Corporation, Japan

Filed Aug. 24, 1987, Ser. No. 88,955
Claims priority, application Japan, May 6, 1987, 62-108860
Int. Cl.[4] B01J *2/06, 2/08;* **B29C** *67/00*
U.S. Cl. 425—5 **7 Claims**



1. An encapsulating apparatus wherein capsules are produced by circulating a coagulating solution in a coagulation tank and dropping a material solution into said coagulating solution, said coagulating solution causing said material solution to coagulate, said apparatus comprising a dropping tank provided with a small hole defining means on its bottom surface, said dropping tank being further provided with a material solution supply pipe disposed along the longitudinal direction of said dropping tank to supply said material solution to said dropping tank, said material solution supply pipe having a plurality of nozzles with flow control valves, said coagulation tank comprising a first section disposed directly beneath said dropping tank and other sections deeper than said first section disposed at the upstream and downstream of said shallow-bottomed section.

4,795,329

APPARATUS FOR INJECTION MOLDING TIRE TREADS

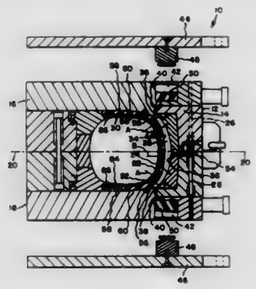
Norbert Majerus, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 13, 1987, Ser. No. 37,509
Int. Cl.[4] B29C *45/27*
U.S. Cl. 425—573 **16 Claims**

1. A tread mold for injection molding a tread on a radially outer surface of an inflated, flexible annular body of a predetermined size inflated to a relatively low pressure and positioned in said mold with said radially outer surface spaced from a tread molding surface of said mold to form a tire tread cavity, a plurality of circumferentially spacedapart inlet gates in said mold in communication with said tire tread cavity providing

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inlet gate portions around said cavity, means for injecting a viscoelastic fluid molding material into said inlet gate portions of said tread cavity through said inlet gates and into remote portions of said tire tread cavity spaced axially of said flexible annular body from said inlet gates, means to regulate the flow of said fluid molding material to said inlet gate portions and said remote portions of said tire tread cavity including mold surfaces spaced from said radially outer surface of said inflated, flexible annular body to provide clearance distances adjacent



at least some of said inlet gate portions which are less than clearance distances at all said portions of said tread cavity remote from said inlet gate portions, means to inflate said flexible annular body at said relatively low pressure during the injection of said fluid molding material to permit the distribution of predetermined amounts of said fluid molding material around said cavity and means to increase the pressure in said flexible annular body to a high pressure on said radially outer surface of said flexible annular body in said tire tread cavity during curing of said fluid molding material.

4,795,330

APPARATUS FOR PARTICLES

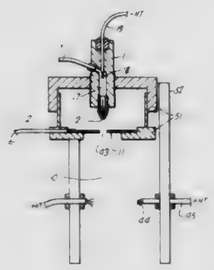
Timothy J. Noakes, Nr Alton; Ian D. Pavey, Haslemere, and Stuart C. Ord, Westminster Park, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Feb. 24, 1987, Ser. No. 17,423

Claims priority, application United Kingdom, Feb. 21, 1986, 8604328

Int. Cl.[4] B22D *11/01*

U.S. Cl. 425—6 **6 Claims**



1. An apparatus for the production of solid particles by producing an electrically charged spray of fluid droplets of a narrow particle size distribution, by at least partial discharge of the spray, and by the solidifidation in flight of the droplets, the apparatus comprising:

a sprayhead with a channel for the fluid communicating with an outlet through which the fluid leaves the sprayhead in use;

an electrode, mounted on the sprayhead such that in use the electrode contacts the fluid before it leaves the sprayhead, and electrically connected with means for applying a first potential via the electrode to the fluid;

and a shield electrode mounted spaced from but adjacent to the sprayhead, having an orifice and electrically connected with means for applying a second potential to that electrode,

a sharp discharge electrode, mounted spaced from but adjacent to the shield electrode such that the shield electrode lies between the sprayhead and the discharge electrode, and electrically connected with means for applying a third potential of opposite polarity to the first potential to the discharge electrode, such that in use the fluid is subjected to an electric field and moves from the sprayhead outlet under the influence of the field to produce a charged spray of the fluid, which issues through the orifice in the shield electrode towards the discharge electrode, the discharge electrode being so positioned that it can produce a corona discharge to discharge the spray,

and the shield electrode and the orifice being so positioned and dimensioned as to shield the sprayhead from the [DOCUM]

4,795,331

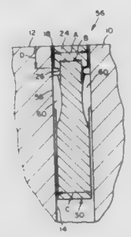
MOLD VENT PLUG

Don A. Cain, Gadsden, Ala., and Michael F. Dewaele, Parma, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 907,334, Sep. 15, 1986, abandoned. This application Oct. 6, 1987, Ser. No. 104,916

Int. Cl.[4] B29C *35/00, 39/26*

U.S. Cl. 425—28.1 **16 Claims**



1. A mold defining a cavity having walls surrounding the cavity and venting apparatus in a bore in the walls between the cavity and the outside atmosphere, comprising: a vent plug with a head of lateral area less than the area of the bore forming the opening to receive the plug which plug is located adjacent the cavity, the head defining a gap, between said head and said walls defining said bore, of generally annular form and generally uninterrupted; a plug portion having an indented annulus adjacent said head; an engaging portion for engaging the walls defining said bore; a body portion for guiding said plug into the bore and means for passing fluid past the engaging portion from the mold cavity, the passages formed by the gap, forming a labyrinth with the indented annulus and said means for passing fluid.

4,795,332

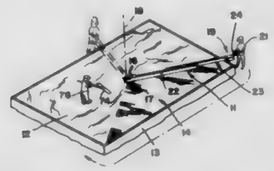
TELESCOPIC PIVOTING SCREED

Donald E. Davis, Stockton, Calif., assignor to Telescreed, Inc., Stockton, Calif.

Filed Aug. 17, 1987, Ser. No. 85,945

Int. Cl.[4] E04F *21/24; E01C 19/30*

U.S. Cl. 425—60 **13 Claims**



1. A screed for forming the surface of cementitious material, the screed comprising:

first and second linear screed blade segments disposed in parallel relationship and having coplanar undersurfaces,

a pair of spaced apart linear rails extending along said first screed blade segment in parallel relationship therewith and being secured thereto,

a plurality of spaced apart linear bearing members secured to said second screed blade segment and being engaged on said rails for sliding movement therealong,

a pivot element located at one end of said first screed blade segment,

hinge means for coupling said first screed blade segment to said pivot element while enabling tilting of said screed relative to said pivot element, and

an expendable bearing member suitable for permanent emplacement at the site where said cementitious material is to be formed, said being member having means for enabling temporary engagement of said pivot element therewith to enable pivoting of said screed about a fixed vertical axis defined by said bearing member.

4,795,333

ROTARY FORGING

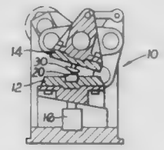
Peter M. Standring, West Bridgford, England, assignor to National Research Development Corporation, London, England

Filed Feb. 12, 1987, Ser. No. 13,784

Claims priority, application United Kingdom, Feb. 14, 1986, 8603686

Int. Cl.[4] B22F *3/00*

U.S. Cl. 425—78 **10 Claims**



1. Apparatus for directly producing a component from loose powder by rotary forging including:

first die means for holding a quantity of loose powder to be made into the component,

second die means for pressing the quantity of loose powder in a closed die situation to produce an initial comprssed form, and

means for tilting the second die means relative to the first die means to automatically sequentially subject the initial compressed form, while it is still held within said first die means to a rotary forging process which includes progressively tilting the axis of the first die means with respect to the axis of the second die means to produce a final component.

4,795,334

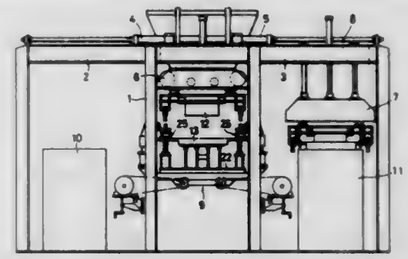
CONCRETE BLOCK MOLDING MACHINE

Tetsugoro Kitahara, Okayama, Japan, assignor to Kabushiki Kaisha Tiger Machine Seisakusho, Takahashi, Japan

Filed Oct. 29, 1987, Ser. No. 114,676

Int. Cl.[4] B28B *15/00*

U.S. Cl. 425—88 **2 Claims**



1. A concrete block molding machine comprising:

a centrally located gate-type frame and a concrete block molding apparatus located in said gate-type frame, said concrete block molding apparatus including a vertically movable lower table;

a pair of elongated rail frames extending horizontally from said gate-type frame close to the upper end thereof, said rail frames extending over mold-changing zones, respectively;

a carriage movably mounted on said rail frames for reciprocable movement therealong;

a pair of presses suspended from said carriage for reciprocable movement therewith between a first position in which a first of said presses is located in said gate-type frame and a second of said presses is in one of said mold-changing zones, and a second position in which said second press is in said gate-type frame and said first press is in one of said mold changing zones, each of said presses including an upper, horizontal, pressing-mold, mounting plate;

a pair of mold assemblies, each mold assembly being associated with one of said presses, each mold assembly comprising an upper pressing member and a lower molding box, said upper pressing member and said mounting plate having first releasable securing means for securing said upper pressing member to said mounting plate; said mounting plate and said lower molding box having second releasable securing means for securing said lower molding box to said mounting plate;

said vertically movable lower table and said lower molding box having locating means for locating said molding box on said vertically movable lower table; and clamping means for releasably clamping said lower molding box to said vertically movable lower table.

4,795,335

MULTI-HEADED DUCTLESS WEBBER

Allan P. Farrington, Englishtown, and Gerald M. Marshall, Somerville, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 20, 1987, Ser. No. 75,702

Int. Cl.[4] B29C *43/22*

U.S. Cl. 425—82.1 **24 Claims**

1. Web forming apparatus comprising:

feeding means for feeding a long fiber material stock to a fiberizing station;

a lickerin mounted such that a portion of its outer periphery is adjacent said feeding means at the fiberizing station and

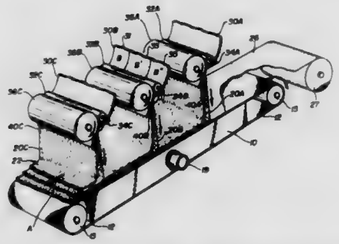
VOL 1098 ISS 1 JA 3 1989 UMI

said lickerin is engagable with the long fiber material stock fed to the fiberizing station;

means for rotating said lickerin with respect to the stock fed to said fiberizing station so as to open the stock and produce individual long fibers moving with the lickerin;

deflector means for deflecting the individual long fibers as a fiber stream from the lickerin at a preselected location along the periphery of the lickerin, said deflector means being free of air streams for doffing fibers from the lickerin and being in the form of a plate positioned such that it is parallel to the axis of the lickerin and adjacent to, but out of contact with, the lickerin periphery, said plate being at a location spaced from the fiberizing station in the direction of rotation of the lickerin; and

fiber collecting means for intercepting the stream of individual long fibers and accumulating the fibers to form a web, said fiber collecting means being free of structural members for confining the stream of individual long fibers.

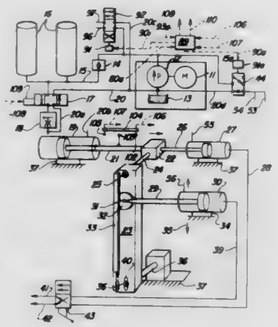


4,795,336

LABORATORY SCALE REACTION INJECTION MOLDING

David M. Shannon, Midland; Michael R. Savina, Auburn, and Ira M. Thamma, Shepherd, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 22, 1988, Ser. No. 146,946
Int. Cl.[4] B29C 45/18
U.S. Cl. 425—145 18 Claims



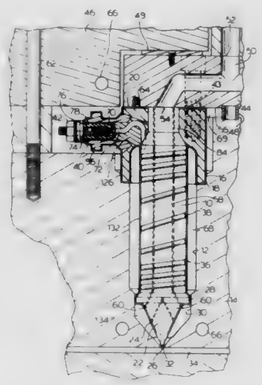
1. In an apparatus for dispensing a plurality of fluids at selected variable rates, the combination of a separate delivery cylinder and associated fluid actuated delivery piston for each fluid and operative for discharging fluid from each cylinder at a rate proportional to the rate of movement of the associated piston within the cylinder, means for supporting the axis of each cylinder at a selected position spaced radially from a reference axis including means for supporting at least one of said cylinders at a selected position adjustable radially with respect to said reference axis and the axis of another of said cylinders, separate connector means connected with each piston for moving therewith, and operating means in driving engagement with each connector means for effecting said movement of the connected piston at a rate proportional to the radial distance from said reference axis to said driving engagement.

4,795,337

COATED INJECTION MOLDING NOZZLE

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Division of Ser. No. 86,621, Aug. 18, 1987. This application Feb. 1, 1988, Ser. No. 150,747
Claims priority, application Canada, Jul. 15, 1987, 542185
Int. Cl.[4] A23P 1/00
U.S. Cl. 425—549 6 Claims



1. An integral injection molding heating nozzle comprising:

(a) an elongated steel body having a forward end, a rear end, and a melt bore extending therethrough, the melt bore extending centrally from the rear end to adjacent the front end, the body having a neck portion adjacent the rear end and a generally cylindrical outer surface extending from the neck to adjacent the forward end,

(b) a steel collar portion integrally brazed to the body with the neck portion of the body extending through a central opening through the collar portion, the collar portion also having an opening therethrough extending radially from the central opening,

(c) a hollow steel sleeve portion integrally brazed to the body with one end in alignment with the radial opening through the body,

(d) an electrically insulated heating element integrally brazed in position wound in a spiral channel in the cylindrical outer surface of the body with one end extending from the channel through the radial opening in the collar portion into the sleeve portion and having a cold terminal which projects from the sleeve portion, and

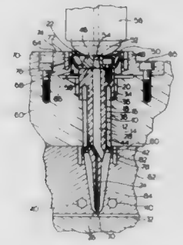
(e) a protective nickel coating of substantially uniform thickness which covers the surfaces of the body, collar portion and sleeve portion, as well as the heating element brazed in the spiral channel in the outer surface of the body.

4,795,338

MOUNTING FOR INJECTION MOLDING NOZZLE

Jobst U. Gellert, 7A Prince St., Georgetown, Ontario, Canada L7G 2X1

Filed Feb. 16, 1988, Ser. No. 155,988
Int. Cl.[4] B29C 45/20
U.S. Cl. 425—549 8 Claims



1. In an injection molding system having an elongated heated nozzle seated in a well in a cooled mold with minimal contact bridging an insulative air space provided between the heated nozzle and the surrounding cooled mold, the nozzle having a forward end, a rear end and a melt bore extending from a central inlet at the rear end to convey pressurized melt from a molding machine nozzle towards at least one gate extending from the well to a cavity, and a retaining collar having a forward and a rear face and a central opening therethrough secured to the mold to hold the nozzle securely in place, the improvement wherein a backplate having a bore therethrough is mounted on the rear end of the nozzle with the bore of the back plate extending into alignment with the central inlet to the melt bore of the nozzle to receive pressurized melt from an outlet from the molding machine nozzle, the backplate and the rear end of the nozzle are located in the central opening through the retaining collar with an insulative air space provided between the nozzle and the surrounding retaining collar, the backplate having a relatively thin flanged portion which extends outwardly and rearwardly across the insulative air space to engage the retaining collar, whereby the retaining collar holds the backplate and the nozzle securely in place.

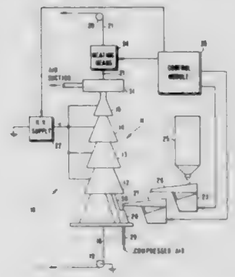
4,795,339

METHOD AND APPARATUS FOR DEPOSITING NONCONDUCTIVE MATERIAL ONTO CONDUCTIVE FILAMENTS

Eduardo C. Escallon, Elwood, Ind., assignor to Terronics Development Corp., Elwood, Ind.

Continuation-in-part of Ser. No. 773,777, Sep. 9, 1985, Pat. No. 4,582,718. This application Apr. 15, 1986, Ser. No. 852,352
The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.
Int. Cl.[4] B05D 1/06
U.S. Cl. 427—32 19 Claims

1. A method of coating a conductive filament comprising the steps of passing a filament through a cloud of particulate coating material suspended in gas, surrounding said filament with a plurality of spaced apart electrodes, said filament being trained to pass through each of said electrodes, thereby defining an annular space between said electrodes and said filaments, said cloud being trained to pass through said annular space in the direction of said filament, imposing a near arc-over potential to said electrodes, whereby said particulate coating material is electrostaticaly deposited on said filament, said filament being supported between a filament supply and a filament take-up, said take-up being spaced from said supply, said electrodes being supported on a plurality of coating chambers arranged coaxially of said filament in a spaced apart serial relation between said supply and said take-up, said coating chambers being of electrically non-conductive material, each of said coating chambers having a base and an apex and being generally frusto-conical in shape with an exit opening at said apex and an entrance opening at said base, said apex of said coating chambers remote from said take-up being positioned within the base of said next adjacent coating chamber, said cloud being introduced into said coating chamber most adjacent said filament supply and exhausted from said coating chamber most adjacent to said filament take-up.

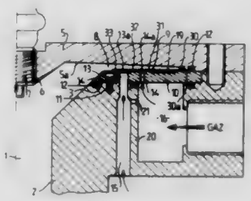


4,795,340

SINGLE-LEAF VALVE FOR GAS-FIRED BOILERS

Jean-Marc Bader, Talnyers, France, assignor to Societe Nationale Elf Aquitaine, Courbevoie, France

PCT No. PCT/FR87/00105, § 371 Date Dec. 1, 1987, § 102(e) Date Dec. 1, 1987, PCT Pub. No. WO87/05967, PCT Pub. Date Oct. 8, 1987
PCT Filed Apr. 1, 1987, Ser. No. 141,601
Claims priority, application France, Apr. 4, 1986, 86 04834
Int. Cl.[4] F23C 11/04
U.S. Cl. 431—1 14 Claims



8. A leaf valve for a gas-fired boiler that comprises a combustion chamber in which a mixture of constituents such as air and gas is burned, a body which is fixed to the top of the combustion chamber, ignition means suitable for producing the explosion of the air/gas mixture in said combustion chamber, a valve leaf seat which has at least one anti-stick groove and a valve leaf which is located within the chamber, between said body and said valve leaf seat, the single valve leaf for the two constituents being flexible and deformable, and being pressed flat against the valve leaf seat when the boiler is not operating, wherein the valve leaf seat has, in addition to the first, anti-stick groove, a second groove, into which emerge means wherein at least one of the constituents of the mixture is supplied.

VOL 1098 ISS 1 JA 3 1989 UMI

4,795,341

METHOD AND TUNNEL FURNACE FOR SINTERING BLANKS

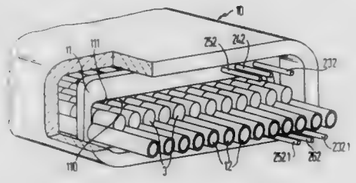
Helmut Assmann, Dormitz; Wolfgang Dörr; Georg Maier, both of Herzogenaurach, and Martin Pochs, Bubenreuth, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Division of Ser. No. 592,869, Mar. 23, 1984, Pat. No. 4,655,978. This application Jan. 15, 1987, Ser. No. 3,574

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310789

Int. Cl.[4] F27D *3/04*

U.S. Cl. 432—126 **7 Claims**



1. Tunnel furnace, comprising a muffle with input and exit openings for sintering oxidic fuel blanks into oxidic nuclear fuel pellets; a guiding device passing through the muffle and protruding at least from the input opening for pushing the blanks in the form of a single layer column of abutting blanks through the muffle; two partitions each having one passage opening formed therein and each being disposed in said muffle at a distance from each other; said guiding device including prismatic support rods disposed mutually parallel and side by side at a lower edge of the passage openings in said partitions, said guiding device passing through said muffle having n+1 prismatic support rods for n columns of blanks; the passage openings being dimensioned so that the smallest distance between a blank supported between two support rods and adjacent edges of the passage opening is smaller than one to two-times the diameter of the blank, said muffle having a section in which an oxidizing atmosphere is maintained constituting a sintering zone; another section of said muffle in which a reducing atmosphere is maintained constituting a reduction zone; and a gas lock disposed between the sintering zone and the reduction zone, said gas lock having said two partitions enclosing between them a decoupling zone, through which a flushing gas flows transversely to the longitudinal axis of said muffle; one of said partitions facing the input opening of said muffle having an outside, first distributor tubes disposed at the outside of said partition facing the input opening of said muffle for feeding an oxidizing gas into the oxidizing atmosphere, said first distributor tubes having injection openings for injecting the oxidizing gas toward the input opening to said muffle; another of said partitions facing the exit opening of said muffle having an outside, and second distributor tubes disposed at the outside of said partition facing the exit opening of said muffle for feeding a reducing gas into the reducing atmosphere, said second distributor tubes having injection openings for injecting the reducing gas toward the exit opening of the muffle.

4,795,342

CALIBRATED SPRING MODULE

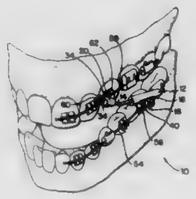
Marston Jones, Rainbow Farm, Rte. 1, Box 115C, Salisbury, Md. 21801

Continuation-in-part of Ser. No. 597,602, Apr. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 439,213, Nov. 4, 1982, Pat. No. 4,462,800. This application Feb. 24, 1986, Ser. No. 832,240

Int. Cl.[4] A61C *3/00*

U.S. Cl. 433—19 **11 Claims**

1. An orthodontic device for attachment to teeth of the upper and/or lower jaw of a patient for the purpose of moving teeth with a constant calibrated force, comprising: a telescope mechanism having a telescope outer tube portion and a telescope inner plunger portion; said plunger portion being in the form of a piston rod having an outer end portion bent to form an angle of approximately 45 to 60 degrees with an extension of the remainder of said plunger; attachment means for securing each of the two opposite end portions of said telescope mechanism to at least one tooth of the patient; resilient means in said tube engaging and biasing said telescoping tube portion and



plunger portion toward a contracted telescope position with respect to each other; said attachment means comprising, on said outer end portion of said plunger portion, a bifurcated yoke including a pair of lug portions adapted to receive between them an arch wire of orthodontic means affixed to the teeth of said patient, and each lug has a bore therein for receiving a tie wire which, together with said lug portions and the remainder of said yoke, provides an enclosure around said arch wire, and maintains said yoke on said arch wire.

4,795,343

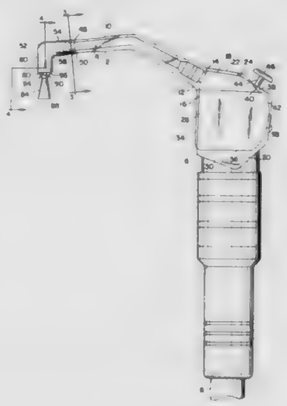
DISPOSABLE ROTARY TOOL ASSEMBLY FOR CLEANING TEETH

George P. Choinser, 14130 Michael, Orland Park, Ill. 60462

Filed Sep. 17, 1987, Ser. No. 97,906

Int. Cl.[4] A61C *1/16*

U.S. Cl. 433—116 **20 Claims**



1. A rotary tool for cleaning teeth, comprising a portable disposable structure to support a turbine therein for rotation, said rotary tool being a single patient tool for personal use on a single individual patient and disposable upon completion of use on such single individual patient, a turbine rotatably mounted therein, positioning means to position said turbine for operating contact by a source of pressurized air, a rotary tooth cleaning tool connected to rotate with said turbine when so contacted by said soruce of pressurized air, said portable disposable structure including elongated disposable protective means having an elongated passageway joined at one end to said positioning means and open at its other end to receive a pressurized air dispensing tool in position to direct said source of pressurized air into operating contact with said turbine and to protect said dispensing tool while received therein from contact by external substances.

4,795,344

PLAQUE AND CALCULUS REMOVER FOR TISSUE INTEGRATED DENTAL PROSTHESIS

Charles A. Brewer, Jr., 105 Via Wazier, Newport Beach, Calif. 92660

Filed Jan. 15, 1987, Ser. No. 3,483

Int. Cl.[4] A61C *17/00*

U.S. Cl. 433—143 **15 Claims**



1. A plaque remover for a tissue integrated dental prosthesis of the type which includes titanium anchor cylinders anchored into the jawbone to support artificial teeth, the plaque remover comprising:

an elongated handle, and

a cleaning member located substantially at one end of the handle, the cleaning member being subtantially crescent-shaped, having a hollow substantially circular interior, the internal diameter of which is substantially the same as the external diameter of the anchor cylinders of the prosthesis, the cleaning member extending more than one-half but less than fully about the circumference of other interior whereby the cleaning member extends more than one-half about the circumference of the anchor cylinders, the interior wall of the cleaning member having a rough surface, said crescent-shaped cleaning member being elastic whereby the cleaning member is capable of spreading and snapping on the anchor cylinders of the prosthesis, and because of the abrasive action of its rough surface, it is capable of removing plaque and calculus deposits as the plaque remover is rocked back and forth while held onto the anchor cylinders.

4,795,345

ARTIFICIAL TEETH

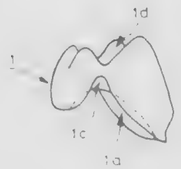
Minoru Ai, Tokyo; Kenji Hiranuma, Nagoya; Jinichi Obana, Tokyo, and Toshio Ito, Kasugai, all of Japan, assignors to G-C Toshi Kogyo Corporation, Kasugai, Japan

Filed Oct. 7, 1987, Ser. No. 105,723

Claims priority, application Japan, Oct. 31, 1986, 61-258478

Int. Cl.[4] A61C *13/08*

U.S. Cl. 433—202.1 **4 Claims**



1. An artificial tooth having:

(a) the length of its buccal side substantially equal to that of a natural tooth;

(b) the length of its lingual side in the range of 4.0 mm to a length shorter than the length of its buccal side by at least 2.5 mm;

(c) a basal surface that is of a concave shape in engagement with a more convex shape than the shape in cross-section of the alveolar ridge;

(d) one or two proximal surfaces of the basal surface provided at the substantial center with an occluasally inclined smooth groove having a width of 1.5 to 5.0 mm, a maximum depth of 0.5 to 3.0 mm, and a proximal upper end located away from the highest position; and

(e) an occlusal surface that has a mesiodistal length substantially equal to that of a natural tooth and a W_2/W_1 ratio falling in the range of 55 to 95% of that of a natural tooth, wherein W_1 is the mesiodistal length and W_2 is the buccolingual length.

4,795,346

VISUAL MEASUREMENT METHOD FOR READING OCCULUSAL CLEARANCE

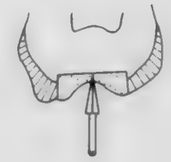
Toshio Takatsu, No. 7-2-504, Tsudanuma 2-chome, Narashino-shi, Chiba-ken, Japan, assignor to Toshio Takatsu, Narashino and G-C Dental Industrial Corp., Tokyo, both of, Japan

Filed Jun. 22, 1987, Ser. No. 64,394

Claims priority, application Japan, Jul. 16, 1986, 61-165594

Int. Cl.[4] A61C *5/00*

U.S. Cl. 433—215 **2 Claims**



1. A visual measurement process for reading the occulusal clearance between the pulpal cavity wall and the opposing tooth, comprising the steps of:

casting a heat softened thermoplastic material having transparent properties for occulusal registration in a pulpal cavity wall at the time of the primary preparation of a cavity,

putting the thermoplastic material in the pulpal cavity wall into occulusal closure engagement with an opposing tooth to register the opposing tooth surface thereon,

inserting the head of an explorer into selected regions of said thermoplastic material, said head having a shape such that a width dimension thereof increases proportionally to a distance of said width dimension from a tip of said head, thereby to produce indentations which are of various sizes and shapes similar to those of the head of said explorer, and which have widths proportional to the indented depth, and

visually observing the sizes of said indentations to read the clearance between the pulpal cavity wall and the opposing tooth.

4,795,347

PROCESS AND DEVICE FOR THE CLEANING OF TEETH

Wilhelm Maurer, Talacherring 15, 8103 Untereagstringen, Switzerland

Filed Sep. 3, 1985, Ser. No. 771,713

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3431991

Int. Cl.[4] A61K *5/00*

U.S. Cl. 433—216 **49 Claims**

1. A tooth cleaning device with at least one cleaning means mounted to a base arrangement, the device comprising:

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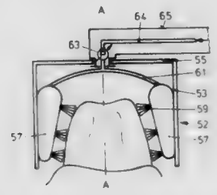
a first driving means for automatically driving said cleaning means in an oscillating manner in a first direction; and

a second driving means controllable independently from said first driving means, for driving said cleaning means in a second direction substantially perpendicular to said first direction whereby said first and second driving means form a composite drive adapted to drive the at least one cleaning means relative to a handle supporting said cleaning means.

36. A method for cleaning teeth comprising the steps of:

applying at least one cleaning means to a tooth to be cleaned;

driving said cleaning means relative to said tooth to be cleaned;



generating a first drive for automatically oscillating substantially along a first axis extending substantially parallel to a longitudinal axis of the tooth;

generating a second drive for automatically oscillating substantially along a second axis perpendicular to said first axis, said first and second drive being controllable independent from each other;

superimposing said two oscillating drives along said first and second axis to form a predetermined composite resultant drive for the cleaning means; and

applying said composite drive to said cleaning means,

whereby said composite drive is relative to a handle means supporting said at least one cleaning means.

4,795,348

COMMUNICATION AID METHOD AND APPARATUS FOR THE HANDICAPPED

Patricia J. Garthwaite, 2964 Tincup Cir., Boulder, Colo. 80303

Filed Nov. 2, 1987, Ser. No. 115,740

Int. Cl.[4] G09B *21/00*

U.S. Cl. 434—112 11 Claims



1. A communication aid for use by handicapped individuals who are unable to effectively speak or write, comprising:

display means having a plurality of visually interpretable symbols thereon, groupings of multiple ones of said symbols being selectively capable of association in a manner to communicate thoughts that are composed by the mind of the handicapped individual,

a plurality of manually placeable tokens each having respective indicia of a sequence thereon, and

means for removably retaining said tokens on said display means for placement on said display means to select multiple symbols in a sequence indicated by the indicia of sequence carried by said tokens with observation of said symbols in the sequence established by said placed tokens providing a visual message corresponding to the thought composed by the handicapped individual,

thereby communicating the thought composed by the handicapped individual to the observer.

4,795,349

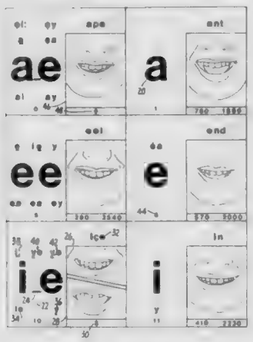
CODED FONT KEYBOARD APPARATUS

Robert Sprague, and Joan Sprague, both of 448 La Prenda, Los Altos, Calif. 94022

Continuation-in-part of Ser. No. 664,227, Oct. 24, 1984, Pat. No. 4,650,423, and Ser. No. 923,422, Oct. 27, 1986. This application Mar. 16, 1987, Ser. No. 25,968

Int. Cl.[4] G09B *19/00*

U.S. Cl. 434—156 2 Claims



1. The combination of a keyboard for use with microcomputer word processing equipment, having its keys arranged in qwerty format, with a chart displaying the periodic table of language elements in 9 rows and 5 columns as follows:

a_e	a	b	ch	d
ae	e	f	g	h
i_e	i	j	k	l
le	m	n	ng	n
o_e	o	p	qu	r
er	er	sh	si	s
ee	th	th	th	t
u_e	u	v	w	x
oy	ow	x	y	z

and with an alternate language element character set operatively accessible through said qwerty format keyboard, for coding textual materials in the language elements displayed on the chart.

4,795,350

EDUCATIONAL TOY

Maria L. Rubio, 3902 Middle St., Lake Wales, Fla. 33853

Filed Dec. 8, 1987, Ser. No. 130,197

Int. Cl.[4] A63B *55/04*; G09B *1/04*; A45C *13/04*

U.S. Cl. 434—159 5 Claims

1. A new and improved educational toy, comprising:

an oval tubular base ring;

four tubular upstanding support rods circumferentially spaced around said base ring;

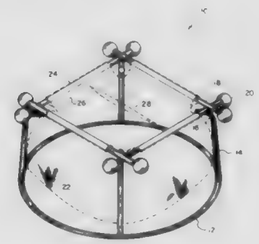
each of said support rods having one end connected to said base ring and an opposite end curved inwardly toward a center of said base ring;

said support rods inclined upwardly inwardly toward a center of said base ring;

four generally horizontal tubular mounting rods intersecting to form a generally rectangular central opening;

ends of adjacent mounting rods being in overlying relation at each corner of said rectangular central opening;

means securing said overlying mounting rod ends to said curved support rod ends;



a closed canvas pouch suspended from said mounting rods;

said pouch having stitched tubular loop means received around said mounting rods;

a spherical ball secured to each end of said mounting rods; and

said pouch having a slit opening in a top surface thereof.

4,795,351

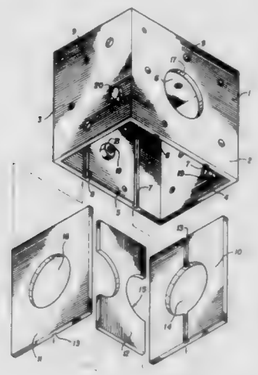
DEVICE AND METHOD FOR REHABILITATION AND EVALUATION

John E. Vermette, Baltimore, Md., assignor to Baltimore Therapeutic Equipment Co., Hanover, Md.

Filed Oct. 28, 1987, Ser. No. 113,657

Int. Cl.[4] G09B *19/00*

U.S. Cl. 434—258 13 Claims



1. A device for rehabilitative therapy and devaluation which comprises an enclosed structure having a visually obscured interior with at least one aperture in the exterior walls thereof to permit insertion of a human hand, said interior being provided with partition means and means for performing or simulating the mating of bolts and nuts and the insertion of bolts into holes provided in said device.

4,795,352

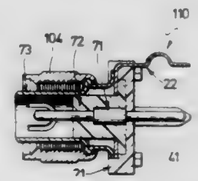
MICROCOAXIAL CONNECTOR FAMILY

Randolph E. Capp; Ronald C. Landig, both of Mechanicsburg, and George W. Michael, III, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 1, 1988, Ser. No. 150,820

Int. Cl.[4] H01R *17/04*

U.S. Cl. 439—63 20 Claims



6. A coaxial electrical connector for printed circuit boards, said connector being assembled from component parts which include:

a dielectric base adapted to rest upon the circuit of a printed surface board;

an electrically conductive ground leg supported by said base, said ground leg having a plurality of downwardly extending legs which are adapted to extend through apertures in the printed circuit board to be electrically connected to conductive paths on the board;

a center contact having a first contact portion which is adapted to extend through an aperture in the printed circuit board to be electrically connected to a conductive path on the board, and a second contact portion which is adapted to mate with the center contact of a complimentary coaxial connector;

a dielectric insulating member substantially surrounding said second contact portion; and

an electrically conductive outer shell substantially surrounding said second contact portion for providing shielding for said connector.

4,795,353

LOCKING CLIP

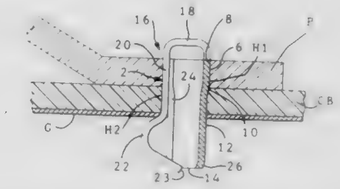
Robert W. Baker, Harrow, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 16, 1987, Ser. No. 121,002

Claims priority, application United Kingdom, Dec. 8, 1986, 8629775

Int. Cl.[4] H01R *13/652*

U.S. Cl. 439—92 17 Claims



1. A stamped and formed one-piece locking clip, comprising an elongate body which is of substantially C-shaped cross section and thereby defines a slot extending longitudinally of the body, the body having a resilient and compliant first portion of major diameter and having a first peripheral edge at one end of the body, the first portion merging with a second portion of the body, of smaller diameter than, but of greater length than, the first portion thereof, and having a second peripheral

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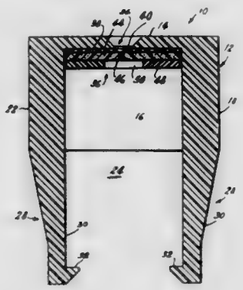
edge at the other end of the body, a locking spring having a first part extending from said first peripheral edge at a position opposite to the slot, to a position beyond the slot, an intermediate part extending lengthwise of the slot and an end part which is bowed away from the body at a position proximate to said second peripheral edge, and having a free edge projecting in the inward direction of the slot.

4,795,354

DUST COVER FOR PRINTED CIRCUIT BOARD CARD CONNECTOR

Alex F. Owen, Spring Creek, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 3, 1987, Ser. No. 91,417
Int. Cl.[4] H01R *13/44*
U.S. Cl. 439—137 **5 Claims**



1. A dust cover for a printed circuit board card connector, said dust cover comprising:
an elongated body having a top surface;
four depending walls attached to said top surface and defining a hollow space formed to receive a printed circuit board card connector;
engaging means attached to at least one of said walls and formed to cooperate with said printed circuit board card connector for retaining said dust cover in position thereon;
an elongated, printed circuit board receiving slot substantially centrally formed in said top surface; and
a sealing gasket attached to the underside of said top surface within said hollow space, said sealing gasket being formed from a flexible material and having a longitudinal slit formed therein, said slit being substantially aligned with the center of said slot, said gasket comprising a laminated member of first and second dissimilar, flexible materials each having a slit.

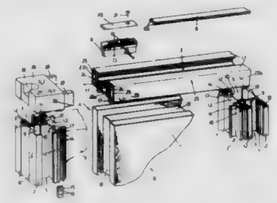
4,795,355

MOVABLE PANEL MEMBER INCORPORATING AN INTEGRATED ELECTRICAL CURRENT DISTRIBUTING BUSBAR

Uwe Dorn, Detmold; Horst Meyer, Dörentrup-Humfeld; Hans-Georg Piorek, Wiesbaden, and Rudolf Miller, Feuchtwangen, all of Fed. Rep. of Germany, assignors to E C O GmbH Elektric Concept for Offices Produktion + Marketing, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 30, 1987, Ser. No. 67,952
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1986, 3628672
Int. Cl.[4] H01R *25/14*
U.S. Cl. 439—215 **22 Claims**

1. A movable panel member with an integrated electrical current busbar which, for the electrification of work stations in particular, forms a screen, partition, table top, table frame, shelf, or cupboard, adapters being detachably insertable into said current distributing busbar for supply and distribution of current, wherein said panel member comprises, at least at one edge, a channel member formed with a current duct having said current distributing busbar inserted therein, and a communication duct, which is separated from said current duct by means of a partition, for the accommodation of communication cables, inlet ends of both said ducts being open in opposite directions on opposite sides of the panel, and capable of being closed off by means of detachable covers.

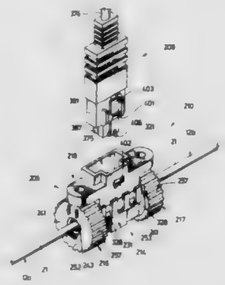


4,795,356

ELECTRICAL TAP CONNECTOR ASSEMBLY

William V. Pauza, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 4,512, Jan. 20, 1987, Pat. No. 4,744,774, and a continuation-in-part of Ser. No. 13,748, Feb. 12, 1987, Pat. No. 4,744,775. This application Mar. 10, 1988, Ser. No. 166,292
Int. Cl.[4] H01R *17/04*
U.S. Cl. 439—225 **15 Claims**



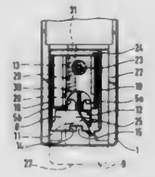
1. A tap connector for coaxial cable networks, comprising:
a connector housing;
first and second signal carrying contacts carried by said connector housing and adapted to be electrically connected to first and second conductors, respectively;
normally closed switch means for electrically connecting said first and second signal carrying contacts for providing a first signal path between said first and second signal carrying contacts, said normally closed switch means including a movable switch arm attached to each of said first and second signal carrying contacts and adapted to normally engage the other of said signal carrying contacts for normally providing said first signal path between said first and second signal carrying contacts;
a third grounding contact carried by said housing and adapted to be connected to conductive sheaths of one or both of said first and second conductors; and
receiving means on said housing for receiving a mating connector, whereby said first, second and third contacts are engaged by terminals on said mating connector when said mating connector is received by said receiving means for providing electrical connection of said first and second signal carrying contacts and of said third grounding contact with said terminals on said mating connector, and for establishing a second signal path between said first and second signal carrying contacts through said mating connector, said movable switch arms being adapted to be displaced from the other of said signal carrying contacts in a direction generally parallel to the direction of movement of said mating connector by cam surfaces on said mating connector during mating of said mating connector with said tap connector to open said normally closed switch means for interrupting said first signal path whereby only said second signal path through said mating connector is provided between said first and second signal carrying contacts when said mating connector is received by said receiving means.

4,795,357

LAMP HOLDER FOR FLUORESCENT LAMPS

Joachim Kosmol, Wendelstein, and Thomas Krummer, Weissenburg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 917,166, Oct. 9, 1986. This application Dec. 29, 1987, Ser. No. 139,182
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1985, 3537601
Int. Cl.[4] H01R *39/00*
U.S. Cl. 439—232 **5 Claims**



1. A lamp holder incorporating a latching device for retaining fluorescent lamps possessing a pair of projecting contact pins at the ends thereof in said holder, especially for utilization of said holder in the passenger cabin of airplanes, said lamp holder comprising two adjacently located inserting slots each for the receipt of respectively one of the contact pins of the fluorescent lamp; said latching device including a latching plate supporting retaining pins in said inserting slots for displacement opposite a spring force so as to retain the contact pins in said slots; an unlatching pushbutton movably mounted on said holder and including means for laterally displacing said retaining pins in said slots responsive to depression of said pushbutton for releasing said contact pins; a guiding channel in said holder extending in parallel with the inserting slots for the guidance of the fluorescent lamp; and resilient elements in said guiding channel engaging the fluorescent lamp in the released position thereof to inhibit said lamp from dropping out of said holder.

4,795,358

MOTION ACTUATED CONNECTOR APPARATUS

John C. Lyles, Fort Mill, S.C., assignor to Multi-Shifter, Inc., Charlotte, N.C.

Filed Aug. 7, 1987, Ser. No. 83,598
Int. Cl.[4] H01R *13/629, 13/64*
U.S. Cl. 439—247 **4 Claims**

1. Apparatus for moving at least first and second portions of an electrical connector with respect to each other such that the parts of the connector are selectively aligned, mated and unmated as a result of motion between the parts of the connector, comprising in combination:
(a) first means operatively associated with said connector for supporting at least said first portion of said connector;
(b) second means operatively associated with said connector for supporting at least said second portion of said connector;
(c) third push-pull means adapted to move said first and second portions of said connector between mated and unmated positions;
(d) fourth alignment means cooperating with said first, second and third means to at least selectively move said first and second means operatively associated with said first and second portions of said connector such that said first and second portions of said connector move, as required, with respect to each other along at least first, second, and third, angularly displaced axes to align said first and second portions of said connector as said push-pull means moves said first and second portions of said connector with respect to each other such that said first and second portions of said connector move between the unmated position and the mated positions as a result of such motion;



(e) wherein said second means includes a first bracket having a surface adapted to support said first portion of said connector, first and second substantially parallel jaws adapted to cooperate with said push-pull means to provide a first knuckle joint permitting said bracket to selectively rotate with respect to said push-pull means;
(f) wherein said push-pull means includes a second bracket adapted to be affixed to said means operatively associated with said first portion of said connector, said second bracket including at least a pair of opposed jaws cooperating with an eye in the end of a leaf spring an a pin to form a second knuckle joint with said second bracket, said first knuckle joint being joined to the other end of said leaf spring by means of a pin, whereby moving said means operatively associated with said first and second portions of said connector causes said first and second portions of said connector to move into alignment and into the mated position or into the unmated position, as desired, as a result of such motion.

4,795,359

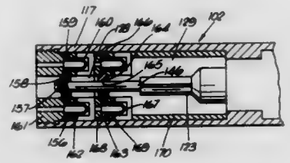
ELECTRICAL CONNECTOR

John M. Alcock, Ulverston, and Joseph A. Nicholson, Broughton-in-Furness, both of Great Britain, assignors to Tronic Electronic Services Limited, Ulverston, England

Filed Jun. 23, 1987, Ser. No. 65,833
Claims priority, application United Kingdom, Jun. 23, 1986, 8615272; Nov. 11, 1986, 8626901
Int. Cl.[4] H01R *13/52*
U.S. Cl. 439—271 **9 Claims**

1. An underwater electrical connector comprising male and female parts, the male part having a contact pin and the female part having contact means within a chamber containing electrically insulating media, the chamber being provided with an

opening normally closed in sealing manner by a resiliently biased shuttle piston which extends through the opening and is arranged to be engaged and axially urged back by the contact pin during insertion thereof to cause an electrical connection to be made with the contact means of the female part, the female part having first and second closed and separate chambers containing electrically insulating media and each provided with a respective opening, the openings being axially aligned and normally sealed by the shuttle piston extending therethrough, the second chamber being located within the first



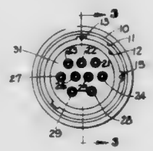
chamber and the contact means being located within the second chamber, wherein the normally sealed openings of the chambers are formed in respective front walls thereof, and wherein each chamber is provided in a side wall thereof with a flexible membrane arranged to permit variation of the respective chamber volume for effecting balancing of the media pressure in the respective chambers relative to the pressure outside the connector, the membrane of the second chamber being laterally inwardly spaced from the side wall of the first chamber.

4,795,360

ELECTRICAL CABLE CONNECTOR FOR USE IN A NUCLEAR ENVIRONMENT

Albert P. Newman, and David C. Kamp, both of Cincinnati, Ohio, assignors to Empire Products, Inc., Cincinnati, Ohio

Filed May 31, 1985, Ser. No. 740,192
Int. Cl.[4] H01R *13/52*
U.S. Cl. 439—278 **19 Claims**



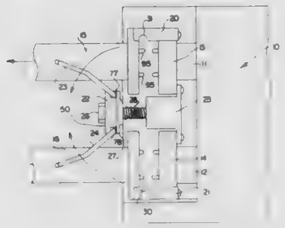
1. A cable connector for use in a nuclear environment comprising mateable male receptacle and female plug assemblies, said male receptacle assembly comprising a metallic shell surrounding at least one cable end terminating in a male contact said female plug assembly comprising a metallic shell surrounding at least one cable end terminating in a female contact, said metallic shells having mateable forward ends and said contacts also having mateable forward ends, the space between each of said metallic shells and its respective cable end and contact being filled by at least one body of heat, steam and radiation resistant insulative material bonded to the inside surface of said shell and the exterior surface of said contact, annular ribs on said inside surface of said shell and annular ribs on said exterior surface of said contact to enhance said bonds and to provide baffles creating pressure drops should said bonds fail, and O-rings mounted on one of said female plug shell and said male receptacle shell to form compression and butt seals therebetween to prevent leakage of steam or moisture through said mateable forward ends thereof.

4,795,361

CLAMPING APPARATUS FOR COUPLING WAVEGUIDES TO ONE ANOTHER

Norbert T. Trojanowski, Glen Ridge, N.J., assignor to ITT Avionics, A Division of ITT Corporation, Nutley, N.J.

Filed Apr. 17, 1987, Ser. No. 39,398
Int. Cl.[4] H01R *13/62*
U.S. Cl. 439—368 **20 Claims**



1. A waveguide clamping apparatus for clamping a first waveguide flange to a second waveguide flange, comprising:
- a housing having an aperture adapted to receive a rotatable threaded member, with said housing secured to the backside of said first waveguide flange and said housing extending along said flanges when said flanges are abutting one another;
- a spring retainer clamp assembly having a spring accommodating cavity and having an aperture aligned with said housing aperture;
- a rotatable threaded member positioned in said aligned apertures and operative when rotated to move said clamp assembly towards or away from said housing;
- a U-shaped spring member having a base positioned in said spring accommodating cavity to allow said member to pivot, with the arms of said member directed towards the top and bottom back surfaces of said second waveguide flange; and
- a U-shaped retainer clip having the base secured to the back surface of said first waveguide flange with the arms directed above and below said abutting flanges and having a first means adapted to coact with the arms of said associated spring member for clamping said guides in abutment when said clamp assembly is moved towards said housing and to allow said guides to be separated when said clamp assembly is moved away from said housing.

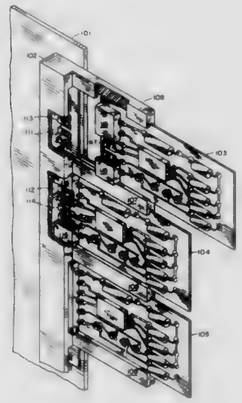
4,795,362

CIRCUIT CONNECTOR FOR USE WITH PRINTED WIRING BOARD

David L. Vonder, Addison, and William A. Reimer, Wheaton, both of Ill., assignors to GTE Communication Systems, Inc., Northlake, Ill.

Filed Mar. 3, 1988, Ser. No. 163,574
Int. Cl.[4] H01R *9/09*
U.S. Cl. 439—377 **12 Claims**

1. A connector arranged to support and retain in electrical connection therewith a printed wiring board, said board including first and second side surfaces, said connector comprising:
- a connector receptacle body;
- at least one receptacle recess formed in said connector receptacle body, said cavity receiving therein via a first mating direction a front edge of said printed wiring board;
- at least a lower guide connected to said connector receptacle body, said lower guide engaging a lower edge of said printed wiring board to support said printed wiring board;
- at least one connector receptacle contact positioned within said connector cavity;
- at least one connector plug contact attached to said printed wiring board adjacent to said front edge, said plug contact adapted to mate with said receptacle contact;
- an engagement retaining means formed on said receptacle contact; and



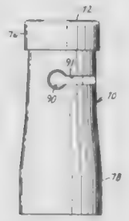
- an engagement retaining means formed on said plug contact, said plug contact retaining means engaging said receptacle contact retaining means in response to the mating of said contacts to retain said plug and receptacle contacts in mated engagement.

4,795,363

INSULATED TERMINAL AND MODULE

Richard J. Scherer, Austin, and William G. Witt, Georgetown, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 14, 1987, Ser. No. 132,270
Int. Cl.[4] H01R *4/24*
U.S. Cl. 439—395 **3 Claims**



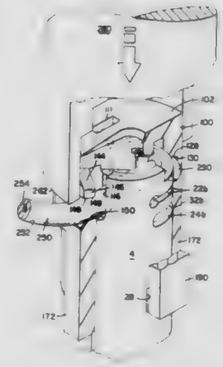
1. An electrical terminal comprising:
- a cylindrical contact member having an open longitudinal seam, transversely slotted from one side of said seam to form and isolate an open mouthed bifurcate insulation displacing contact element, and having a perforation opposite said seam to form a wire exit passage; and a cap member rotatably associated with and positioned about said cylindrical member, said cap having an entrance opening in line with said open mouthed bifurcate contact element for receiving a wire and forcing said wire into said contact element and a slot aligned with and adjacent said perforation to allow passage of a said wire from said perforation.

4,795,364

INSULATION DISPLACING BARREL TERMINAL

Albert W. Frantum, Jr., Elizabethtown; Jack W. Lawhead, Harrisburg, and Winfield W. Loose, Lingelstown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 20, 1987, Ser. No. 52,517
Int. Cl.[4] H01R *4/24*
U.S. Cl. 439—407 **16 Claims**



1. An electrical connector of the type including a cylindrical terminal having a wire receiving opening in communication with a wire receiving slot, and a rotatable cap disposed over the terminal having a front face and an upper face, and an opening means aligned with the opening in the terminal, the opening means in the cap being profiled to admit an insulated conductor therein and through the opening in the terminal, the rotation of the cap causing a termination of the conductor in the wire receiving slot of the terminal, the connector being characterized in that,
- the terminal includes an L-shaped slot including a vertical slot which extends downwardly from an upper edge of the terminal, the vertical slot being in transition with a horizontal slot which extends radially partially around the terminal, the opening in the terminal being diametrically opposed from the vertical slot portion and the wire receiving slot being diametrically opposed from the horizontal slot portion, and in that
- the cap opening means includes a diagonal opening which extends partially within the front face and within the upper face of the cap, the cap including guide means to guide an end of an insulated wire through the wire receiving opening in the terminal and dispose an intermediate portion of the wire above the vertical slot portion.

4,795,365

CABLE/WIRE SPLICE DEVICE

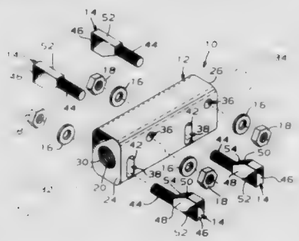
Gordon R. Johnston, Philadelphia, and Walter M. Werner, Downingtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 64,153, Jun. 18, 1987, abandoned. This application Jan. 20, 1988, Ser. No. 146,071
Int. Cl.[4] H01R *4/24*
U.S. Cl. 439—411 **13 Claims**

1. A splice device for in-line splicing and two cables or the like, comprising:
- an elongated body means having a pair of axial aperture means in respective ends for receiving cables therein and transverse passage means intersecting each axial aperture means, said transverse passage means including a first segment opening on a side of said body means;
- wedge means having threaded first ends, beveled surfaces and compressible spring means, said wedge means being

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disposed in said transverse passage means with said threaded first ends extending outwardly from said body means through said first segment openings of said transverse passage means and said beveled surfaces in said axial aperture means; and



threaded means for being threaded onto said threaded first ends and against said body means to draw said beveled surfaces on said wedge means against cables which may be in said axial aperture means to thereby compress and secure such therein and further to compress said spring means to provide a continuous securing force against the cables.

4,795,366

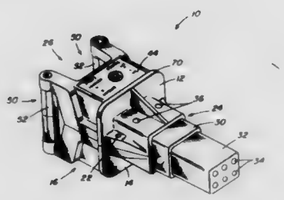
ELECTRICAL CONNECTOR HANDLE

Joseph E. Tetreault, Norwell, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Continuation of Ser. No. 779,705, Sep. 24, 1985, abandoned. This application Nov. 2, 1987, Ser. No. 117,447

Int. Cl.[4] H01R *13/516*

U.S. Cl. 439—476 **5 Claims**



1. An electrical connector handle for use with a plural contact electrical connector having a plurality of electrical cables connected at one end thereof, said electrical connetor handle comprising:

1. A housing having a front end, a back end, means defining a bore extending longitudinally through said housing, said bore defining means including a portion that forms an electrical connector receiving socket and, a pair of D-shaped, spade handles located at the back end of the housing with one D-shaped spade handle positioned on each side of said longitudinally extending bore defining means, said D-shaped, spade handles lying in planes that are substantially parallel to each other and substantially parallel to the longitudinal axis of the longitudinally extending bore of said housing;
2. a generally rectangular flange means extending around and outwardly from the housing, said flange means being located transversely of an axis extending longitudinally between the front end and the back end of the housing;
3. means for removably retaining said electrical connector in said electrical connector receiving socket; and,
4. electrical cable clamp means adapted to cooperate with said housing to releasably clamp the plurality of electrical cables with respect to the housing.

4,795,367

WAND CONTROL FOR ELECTRONIC CIRCUITS

Stanley D. Wilber, Rte. 1, Box 1283, Foley, Ala. 36535

Filed Nov. 9, 1987, Ser. No. 118,072

Int. Cl.[4] H01R *13/00*; **H01H** *35/00*

U.S. Cl. 439—481 **6 Claims**



1. A control system for use with an electronic apparatus, comprising a nonconductor base having a planar surface, a plurality of electrical conductors adapted for connection to the apparatus and carried by the base surface in a planar geometric pattern including a plurality of incomplete corners in which each conductor is closely spaced from its neighbor at each corner of the pattern so that the corners provide a plurality of normally open switches, and a wand relatively freely movable manually relative to the base and adapted for electrical connection to the apparatus, the wand including a conductor end portion manually selectively operative to electrically contact any one of the conductors and also so dimensioned as to be capable of bridging the space between selected neighboring conductors and thus to close the switch at the selected corner.

4,795,368

CONNECTOR ASSEMBLY FOR WIDE BAND COMMUNICATIONS CABLES

Siegfried Müller, Hagen, Fed. Rep. of Germany, assignor to Walter Rose GmbH & Co. KG., Hagen, Fed. Rep. of Germany

Continuation of Ser. No. 777,594, Sep. 19, 1985, abandoned. This application Jun. 23, 1987, Ser. No. 65,621

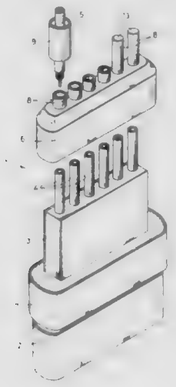
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1984, 3434826

Int. Cl.[4] H01R *13/52*

U.S. Cl. 439—523 **5 Claims**

1. A connection assembly for wide band communication coaxial cables comprising: a multi-sided metallic housing comprising an electroplate and having a first side with a plurality of connecting sockets in said first side for receiving therein selected ends of a plurality of coaxial cables extending outwardly from said first side, said housing arranged to interconnect said cables inserted therein; said coaxial cables having ends to be installed into said sockets; and means for enclosing said housing, said means for enclosing said housing includes a shrinkable plastic material; said first side of said housing containing said

connecting sockets being arranged to face upwardly with said connecting sockets extending upwardly so that cable ends can



be inserted downwardly into said connecting sockets in said first side of said housing.

4,795,369

ELECTRICAL CONNECTOR APPARATUS FOR A LOUDSPEAKER MOTOR

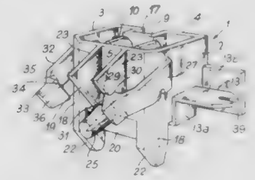
Bertrand Vandame, Villepreux, France, assignor to Precision Mecanique Labinal, Bois D'Arcy, France

Filed Jul. 21, 1987, Ser. No. 75,950

Claims priority, application France, Jul. 28, 1986, 86 10887

Int. Cl.[4] H01R *13/62*

U.S. Cl. 439—544 **53 Claims**



1. An apparatus for electrical connection with a motor of an audio speaker, composed of a speaker bowl having a side provided with apertures and supporting a diaphragm, said apparatus comprising:

(a) a body including a side wall made of an insulating material and moulded into a shape of a socket adapted to receive a male element, said socket containing at least two contact bars adapted to be connected to the motor of said speaker;
(b) at least one projection from said side wall providing a bearing surface adapted to abut against a side of said speaker bowl; and
(c) at least two elastic clamps including a shoulder attached to said body adapted to interact with edges of corresponding openings of said speaker bowl.

4,795,370

ELECTRICAL PLUG CONNECTOR FOR CO-AXIAL LEADS

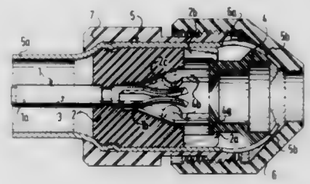
Wolfgang Freitag, Arndtstrasse 9-11, 2351 Trappenkamp, Fed. Rep. of Germany

Filed Jan. 27, 1987, Ser. No. 6,996

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1986, 3604093

Int. Cl.[4] H01R *17/18*

U.S. Cl. 439—584 **4 Claims**



1. An electrical plug connector for coaxial leads comprising:
an inner contact having at one end thereof resilient tongues to receive a core wire of a coaxial lead inserted axially therebetween;
a first insulating member coaxial with said inner contact and having a radially inwardly tapering cam surface located around said tongues of said inner contact;
a second insulating member coaxial with the first insulating method and having thrust arms projecting between said cam surface and said tongues, interengaging means on said first insulating member and said second insulating member for maintaining both of said members in engagement, said first and second insulating members being movable axially towards and away from one another;
an outer contact comprising two connected shells surrounding said inner contact and said insulating members and having radially deformable claws to contact a sheath of said coaxial lead;
an outer sleeve of insulating material surrounding said outer contact;
a screw element threadedly connected to said outer sleeve and arranged, when rotated in one direction relative thereto, to bend said claws inwardly and to push said first and second insulating members axially towards one another whereby said thrust arms are displaced radially inwardly by said cam surface to push said tongues together to grip the core wire;
said interengaging means comprising detents engageable with tongues for holding said first and second insulating members together and allowing a relative axial displacement of the insulating members and including a stop to limit the maximum displacement path of the one insulating member with respect to the other insulating member, in one direction;
said stop being formed as an enlargement extending circumferentially on one of said insulating members behind which engage detent projections of resiliently deflectible tongues situated on the other insulating member.

4,795,371

CONNECTOR

Ryuetsu Oikawa, Kosai, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jun. 3, 1987, Ser. No. 57,102

Claims priority, application Japan, Jun. 12, 1986, 61-088493[U]

Int. Cl.[4] H01R *13/44*, *13/428*

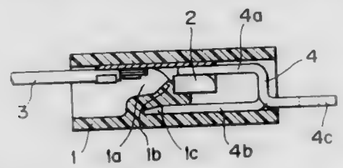
U.S. Cl. 439—595 **1 Claim**

1. A connector consisting of
at least one contacting terminal;
at least one unitarily constructed termi. al comprising con-

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tacting pieces and a spacer which are integrally constructed in parallel to each other and extend in the same direction, said contacting pieces being contactable with a respective said at least one contacting terminal;

a housing defining at least one terminal-containing chamber, each said terminal-containing chamber receivable of a respective contacting terminal and a respective terminal, said terminal-containing chamber having an inner wall and a resilient connection arm extending into said terminal-containing chamber for resiliently engaging and securing said contacting terminal in said terminal-containing chamber, said resilient connection arm defining a space between a back surface of said resilient connection arm and said inner wall, said resilient connection arm deformable into said space, said contacting pieces of said terminal contacting said contacting terminal and said spacer being received within said space to prevent deformation of said resilient connection arm when said respective contacting terminal and said respective terminal are received within said terminal-containing chamber.



4,795,372

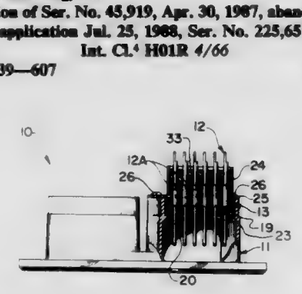
INSERT MEANS FOR EFFECTIVE SEAL OF ELECTRICAL CONNECTOR AND METHOD OF ASSEMBLY THEREFOR

Robert J. Kobler, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 45,919, Apr. 30, 1987, abandoned. This application Jul. 25, 1988, Ser. No. 225,651

Int. Cl.[4] H01R *4/66*

U.S. Cl. 439—607 **20 Claims**



1. An electrical connector comprising:

a housing having a plurality of spaced-apart substantially-parallel terminals mounted therein;

an insert disposed within the housing, the insert having a base portion provided with a plurality of spaced-apart openings to receive the terminals, respectively, the base portion having first and second sides, the insert further having a peripheral skirt portion extending from the first side of the base portion thereof;

a potting compound encapsulating the terminals within the skirt portion of the insert and substantially against the first side of the base portion thereof, said potting compound being retained within said skirt portion and spaced from said housing by said peripheral skirt portion; and

an interfacial seal having a plurality of spaced-apart openings formed therein for the terminals, the interfacial seal being disposed substantially flat against the second side of the base portion of the insert, thereby providing an effective seal when the connector is mated with a complementary connector and to preclude moisture from accumulating within the potting compound.

4,795,373

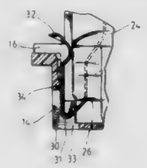
LAMP WITH PLASTIC BASE

James J. Fitzgerald, Boonton, and Nickolas P. Demas, Cranford, both of N.J., assignors to Cooper Industries, Inc., Houston, Tex.

Filed May 15, 1987, Ser. No. 50,180

Int. Cl.[4] H01R *17/00*

U.S. Cl. 439—619 **3 Claims**



1. In a mounting system for a baseless electrical lamp utilizing an insulator having a hollow lower portion around the press portion of said baseless electrical lamp through which upturned lead wires from the lamp pass, said lower portion further including an integral flange portion beneath a bulbuous portion of the said baseless electrical lamp and having provisions for electrical contact extending above flange portion, the improvement comprising:

employing an elongated integral electrical connector extending downwardly from the provisions for electrical contact between the insulator and the press portion of the baseless electrical lamp,

said elongated electrical connector having a lower U-shaped portion for frictionally engaging the lead wires from the lamp against inner surfaces within the lower portion of the insulator,

said inner surfaces including an outer wall of the hollow lower portion of the insulator and a boss formed on the inside of a bottom surface of the insulator.

4,795,374

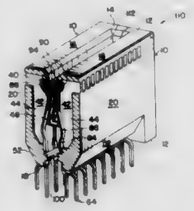
DOUBLE SIDED EDGE CONNECTOR

Paul L. Rishworth, Chicago, and Alan S. Walse, LaGrange, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 46,375, May 4, 1987, abandoned. This application Jul. 12, 1988, Ser. No. 218,418

Int. Cl.[4] H01R *9/09*

U.S. Cl. 439—634 **6 Claims**



1. A double-sided edge connector for connecting closely-spaced circuits on a double-sided printed circuit card to another circuit member, said edge connector including:

an integral dielectric housing including a pair of substantially identical housing halves secured together and defining an elongate card-receiving slot therebetween, each housing half having a generally rectangular open-sided configuration including a pair of opposed end walls, a top wall, an opposed bottom wall and an outer sidewall extending between and connecting the end walls and top and bottom walls, each housing half including a plurality of parallel spaced contact guides extending orthogonally from the top, bottom and outer side walls, defining a plurality of contact receptacles therebetween;

a plurality of elongate metallic strip terminals, each terminal having an intermediate mounting portion, an elongate resilient contact beam extending from the mounting portion to a free end with a contact surface defined between the mounting portion and the free end for electrically engaging a conductive region on an edge card and a second contact portion extending from the mounting portion for electrically engaging said another circuit member, each terminal disposed in a contact receptacle such that when said pair of housing halves are secured together said contact surfaces are disposed within the card-receiving slot; and

means for securing said housing halves together;

the contact position improvement comprising:

each housing half further including a contact-retaining wall extending between said end walls disposed adjacent the top wall and spaced from and parallel to said outer side wall;

the free end of each contact beam engaging said contact-retaining wall with a pre-load directed away from said outer sidewall for positioning the contact surface of said contact beam at a location spaced from the outer sidewall;

first cooperating means in each contact receptacle and on the mounting portion of each terminal for controlling movement of the contact surface away from the top wall;

second cooperating means in each housing half and on the mounting portion of each terminal for controlling movement of the contact surface toward the top wall; and

retention means for positively retaining each of said terminal mounting portions in each of said housing halves.

4,795,375

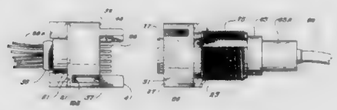
COMPRESSION AND TORQUE LOAD BEARING CONNECTOR

Robert A. Williams, 2721 White Settlement Rd., Fort Worth, Tex. 76107

Continuation of Ser. No. 484,586, Apr. 13, 1983, abandoned, which is a continuation of Ser. No. 244,296, Mar. 16, 1981, abandoned. This application Jul. 16, 1987, Ser. No. 74,336

Int. Cl.[4] H01R *13/64*

U.S. Cl. 439—680 **10 Claims**



1. A connector comprising:

a first body having a central opening formed therethrough,

said first body having a forward end and a rear end and being cylindrical in shape between said forward and rear ends,

said first body having a forward surface formed at its forward end,

means carrying a first set of a plurality of electrical contacts located in said opening of said first body,

said first set of electrical contacts being located at said forward end of said first body,

a second body having a central opening formed therethrough,

said second body having a forward portion with a forward end and a rearward portion with a rear end,

said second body having a forward surface formed at its forward end,

means carrying a second set of a plurality of electrical contacts located in said opening of said second body,

said second set of electrical contacts being located at said forward end of said second body,

said first body having tongue means extending forward from its forward surface,

said second body having groove means extending rearward from its forward surface,

said groove means being formed in the exterior surface of said second body,

said first and second bodies being adapted to be coupled together with said forward surfaces engaging each other and with said tongue means located in said groove means to withstand a large amount of axial compression and a large amount of torque,

said first and second set of contacts engaging each other when said first and second bodies are coupled together,

means formed in said rearward portion of second body for connecting said second body to a tubular member, and

at least one slot formed in the outer surface of said first body and extending rearward from its forward end toward its rear end to a wall having a forward facing surface,

an opening extending through said wall between said forward facing surface and said rear end of said first body wherein said slot and said opening extending through said wall may be used as means for connecting said first body to a tubular member.

4,795,376

INITIATOR TERMINAL BLOCK

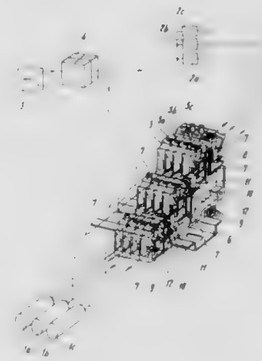
Heinrich Franke; Horst Conrad, both of Detmold, and Wolfgang Schild, Herford, all of Fed. Rep. of Germany, assignors to C. A. Weidmueller GmbH & Co., Detmold, Fed. Rep. of Germany

Continuation of Ser. No. 928,844, Nov. 7, 1986, abandoned. This application Feb. 29, 1988, Ser. No. 165,343

Claims priority, application European Pat. Off., Nov. 9, 1985, 85114287.7

Int. Cl.[4] H01R *9/26*

U.S. Cl. 439—715 **5 Claims**



1. An initiator circuit arrangement comprising, in combination

a plurality of initiators;

an electric power source;

a plurality of signal receivers;

a multitude of first supply conductors and a multitude of second supply conductors, a different supply conductor of each of said multitudes being connected to each of said initiators and to said power source;

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a plurality of first control conductors and a plurality of second control conductors, a different control conductor of one of said pluralities being connected to each of said initiators and a different control conductor of the other of said pluralities being connected to each of said signal receivers; and

a terminal block including a multitude of terminal units,

each of said terminal units having a plurality of connecting locations arranged in three tiers situated above one another,

each of the lower two tiers of each of said terminal units having only a single one of said connecting locations,

each of said connecting locations of one of said lower two tiers being connected to a different one of said supply lines of one of said multitudes, and each of said connecting locations of the other of said lower two tiers being connected to a different one of said supply lines of the other of said multitudes,

the uppermost one of said tiers of each of said terminal units having two of said connecting locations that are electrically interconnected,

each of said first control conductors being connected to one and the associated one of said second conductors being connected to the other of said two connecting locations of the respective one of said terminal units; and

connecting means including a separate transverse connector arrangement at each of said two lower tiers for distributing the electric power supplied from said electric power source to one of said connecting locations of the respective lower tier to all remaining ones of said connecting locations of said terminal units that are arranged in the same tier.

4,795,377

CLAMPING ARRANGEMENT FOR ELECTRIC CONDUCTORS

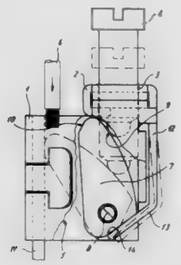
Hartmut Schmode, Blomberg; Peter Krüger, and Manfred Wilmes, both of Detmold, all of Fed. Rep. of Germany, assignors to C. A. Weidmueller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Dec. 3, 1987, Ser. No. 128,071

Claims priority, application European Pat. Off., Dec. 16, 1986, 86117489.4

Int. Cl.[4] H01R *9/10*

U.S. Cl. 439—727 **4 Claims**



1. An arrangement for clamping an electric conductor, comprising

a clamping cage having a threaded bore centered on a central axis;

a clamping screw received in said threaded bore for threading in and out along a predetermined path centered on said central axis;

an insertion receptacle for the electric conductor, extending substantially parallel to said central axis;

a pressure member mounted in said clamping cage for pivoting about a pivot axis out of and back into an open position thereof and extending into said predetermined path; and

a spring urging said pressure member toward said open position thereof, said spring being an integral unitary portion of said clamping cage and extending from an outer contour of said clamping cage towards said pressure member.

4,795,378

TERMINAL PIN

Motoyuki Tomizu, Kyoto, and Yasuhiro Okada, Takatsuki, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 14, 1987, Ser. No. 95,627

Claims priority, application Japan, Sep. 26, 1986, 61-147393

Int. Cl.[4] H01R *13/428*

U.S. Cl. 439—751 **8 Claims**



1. A terminal pin comprising:

(a) a post portion;

(b) a compressible portion extending from said post portion;

(c) said compressible portion being generally V-shaped and formed by a pair of arms and a bottom;

(d) said bottom having a cross-sectional thickness greater than said arms and having a pair of convex contact edges on an outer surface thereof;

(e) said arms being elastically inwardly deformable when the pin is pressed into a through hole, whereby ends of said arms and said convex contact edges contact the through hole.

4,795,379

FOUR LEAF RECEPTACLE CONTACT

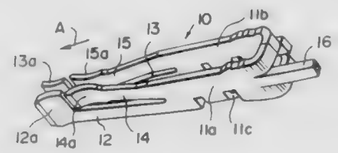
Takinori Sasaki, and Noriaki Takenaka, both of Tokyo, Japan, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 12, 1987, Ser. No. 84,647

Claims priority, application Japan, Aug. 27, 1986, 61-201209

Int. Cl.[4] H01R *13/54*

U.S. Cl. 439—856 **14 Claims**



1. An electrical contact for electrical connection with a tab contact, comprising:

a leaf spring in the form of unitary plate having a long spring arm with an outer contact member, and a short spring arm extending beside said long spring arm with inner contact member, said long spring arm and said short spring arm being freely movable relative to one another, said outer contact member having a contact surface of width about twice that of said contact surface of said inner contact member so as to extend across the inner contact member and is in axial alignment with said inner contact member so that said outer contact member initially engages a major surface of the tab contact during relative movement of the tab contact and the electrical contact, thereby cleaning said major surface and said inner contact member next engages the said cleaned major surface.

4,795,380

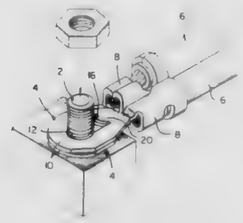
SELF-LOCKING RING TERMINAL

Richard P. Frantz, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 22, 1987, Ser. No. 136,674

Int. Cl.[4] H01R *4/48, 13/28*

U.S. Cl. 439—860 **5 Claims**



1. An improved stamped and formed ring tongue terminal, individual terminals being suited for use in connecting a wire to an upstanding stud to which a plurality of terminals can be attached in stacked relationship, each terminal comprising:

a crimp barrel for terminating the wire to the terminal; and

a stud contact comprising a flat plate having a hole offset from the crimp barrel;

the improvement comprising a latch stamped from the stud contact flat plate and offset from the wire in the crimp barrel, the latch extending into the hole, the latch being initially in the plane of the flat plate and being deflectable both upwardly and downwardly out of the plane of the flat plate, whereby upon inserting the terminal on the stud, the latch in deflected from the plane of the flat plate and engages the stud to retain the terminal on the stud, adjacent terminals in stacked relationship being reversely oriented with latches on adjacent terminals being deflected in opposite directions relative to the stud contact flat plate, latches on adjacent terminals being adapted to nest in overlapping relationship, crimp barrels in reversely oriented adjacent terminals in stacked relationship being mutually offset whereby the height of the plurality of terminals in stacked relationship can be reduced.

4,795,381

VESSEL AND DRIVING MEANS

Karel Willems, Oranje Nassaustraat 1a, 2271 SJ Voorburg, Netherlands

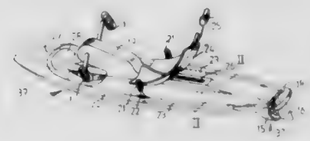
Continuation of Ser. No. 767,026, Aug. 19, 1985, abandoned. This application Aug. 24, 1987, Ser. No. 89,047

Claims priority, application Netherlands, Feb. 27, 1985, 8500522

Int. Cl.[4] B63H *16/20*

U.S. Cl. 440—26 **3 Claims**

1. A high speed watercycling sport device comprising the combination of an elongate and shallow draft body of generally surf board form having a bottom surface, a top surface, a bow and a stern, the bottom surface being generally flat so as to facilitate planing of the body at high speeds, operator supporting means comprising a seat portion disposed adjacent said top surface and a back rest portion inclined upwardly and toward said stern so that an operator of the device is supported in a reclining position to provide a low center of gravity of the operator and inherent stability, driving means for propelling the boat including fore-and-aft movable foot pedals mounted forwardly of the operator supporting means and engageable by the feet of an operator supported in said operator supporting means, said driving means including a screw propeller means located beneath the bottom surface of the device at the stern thereof with the propeller completely submerged in water when an operator is propelling the device, means drivingly connecting said pedals with said propeller, steering means including a member adjacent said propeller means and mounted for turning movement relative to said body, and



steering control means connected with said member and including manually operated control members supported by said body at opposite sides of said operator supporting means for fore-and-aft movement and engageable by the hands of an operator supported in said operator supporting means whereby the driving movement of an operator's legs and feet and the steering movement of an operator's arms and hands affords maximum efficiency and the device may be effectively operated at high speeds.

4,795,382

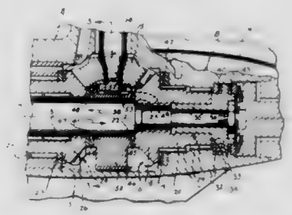
MARINE DRIVE LOWER UNIT WITH THRUST BEARING ROTATION CONTROL

Daniel F. McCormick, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 29, 1988, Ser. No. 162,191

Int. Cl.[4] B63H *5/10*

U.S. Cl. 440—81 **8 Claims**



1. In a marine drive, the combination comprising:

(a) a generally vertical gear case (**7, 8**) terminating in a lower torpedo housing (**9**),

(b) a first propeller shaft (**21**) disposed within said housing and extending longitudinally in a fore-to-aft direction and rotatable on a longitudinal drive axis (**17**),

(c) a second propeller shaft (**25**) concentric with said first shaft and adapted for contra-rotation relative to the latter,

(d) propeller means (**10, 11**) mounted respectively to said shafts (**21, 25**),

(e) drive means for connecting said propeller shafts to a marine engine and with said drive means including:

(1) an engine rotatable pinion (**15**),

(2) a rearwardly positioned driving gear (**24**) meshing with said pinion and disposed for rotation with said second shaft (**25**),

(3) and a forward driving gear (**16**) spaced forwardly from said rearward driving gear and meshing with said pin-

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ion, said forward driving gear being disposed for rotation with said first shaft (21),

(4) said rearward and forward driving gears (24, 16) having respective opposed inner faces (28, 22),

(f) forward thrust bearing means (44, 45) mounted adjacent each said respective inner face (28, 22),

(g) forward thrust transmitting spacer means (46) coaxial with said propeller shafts and sandwiched between said forward thrust bearing means,

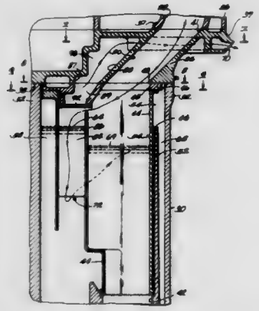
(h) and means (50, 51) fixing said spacer means against rotation about said axis while permitting floating longitudinal spacer movement.

4,795,383

MARINE PROPULSION DEVICE LOW-SPEED EXHAUST SYSTEM

Gregory J. Blaversic, Grayslake; Robert W. Gerdes, Winthrop Harbor, and James E. Macier, Zion, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 4, 1987, Ser. No. 58,365
Int. Cl.[4] B63H *21/38*
U.S. Cl. 440—89 **24 Claims**



1. A marine propulsion device comprising an engine including an exhaust gas discharge port, a lower unit including a rotatably mounted propeller driven by said engine, means defining an annular chamber having a circumferential length and including a lower portion filled with water, said annular chamber also including an exhaust gas inlet located below the level of the water and communicating with said engine exhaust gas discharge port, and an exhaust gas outlet located above the level of the water, and means for directing exhaust gas flow from said exhaust gas inlet of said chamber to said exhaust gas outlet of said chamber through a distance which extends in and around said chamber and which is substantially greater than 50% of the circumferential length of said chamber.

4,795,384

BAND MOUNTING APPARATUS FOR A DIVING FIN

Seiji Hattori, 5-18, Hadori 4-chome, Fujisawa-shi, Kanagawa, Japan

Filed Jun. 12, 1987, Ser. No. 60,852
Claims priority, application Japan, Nov. 12, 1986, 61-173691
Int. Cl.[4] A63B *31/11*
U.S. Cl. 441—64 **4 Claims**

1. A band mounting apparatus for securing the foot of a person to a diving fin or the like having a foot inserting portion, comprising:

a body frame;

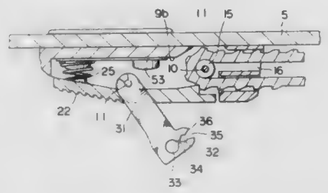
band means for securing the foot of a person in the foot inserting portion;

first pin means supported by said body frame for supporting said band means for rotation thereabout and having a groove defined therein;

a second pin supported by said body frame;

a locking member rotatably supported with respect to said frame by said second pin, said lock member having means thereon for engaging said band means for preventing said band means from slipping in a loosening direction;

means for biasing said band engaging means against said band means; and



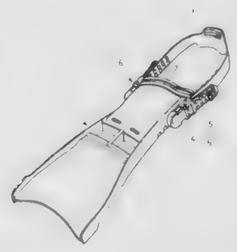
a pin stopper plate rotatably supported by said second pin and having means thereon for engaging said groove in said first pin means so as to secure said first pin means to said body frame, whereby the first pin means may be easily removed by disengaging the pin stopper plate therefrom.

4,795,385

DIVING FIN

Mitsushiro Matsuoka, Tokyo, Japan, assignor to Tabata Co Ltd, Tokyo, Japan

Filed Jan. 14, 1988, Ser. No. 143,754
Claims priority, application Japan, Jan. 14, 1987, 62-7716
Int. Cl.[4] A63B *31/08*
U.S. Cl. 441—64 **5 Claims**



1. Diving fin including a heel strap coupled to opposite sides of a foot pocket wherein coupling of at least one end of said strap to at least one of said opposite sides of the foot pocket as well as adjustment of fastening effect of said strap on the diver's heel can be achieved by a buckle, said diving fin being characterized by:

said strap carrying on one side a plurality of first latch teeth arranged to be spaced from one another longitudinally of said strap;

said buckle comprising a first coupling member of sheath-like configuration and a second coupling member having a plug portion adapted to be releasably engaged into said first coupling member and a retaining frame movably supporting therearound said strap;

said retaining frame including a movable latching piece swingably supported therein by suitable support means so that said movable latching piece is normally biased by a spring and thereby the inner surface at one end is urged against any one of said first latch teeth; and

said movable latching piece including a second latch tooth on said inner surface at the one end adapted to be engaged with any one of said first latch teeth in order to prevent said strap from moving in the direction in which said strap

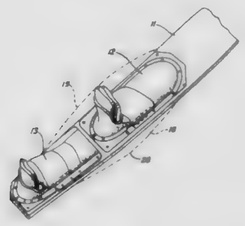
is loosened and adapted to swing off from said one of said first latch teeth around said support means against action of said spring, allowing said strap to move in said fastening direction.

4,795,386

ASSYMETRICAL WATER SKI

Kris LaPoint, Fair Oaks, Calif., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Jun. 9, 1987, Ser. No. 59,918
Int. Cl.[4] A63C *5/00*
U.S. Cl. 441—68 **13 Claims**



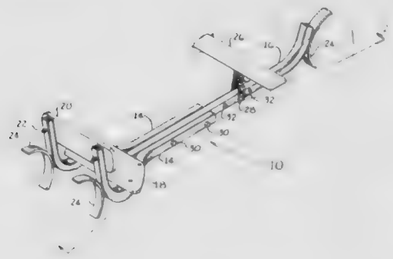
1. A slalom water ski comprising an elongated ski body having top and bottom surfaces, a forward end, a tail end, and a pair of sides extending between the forward end and the tail end, front and rear foot bindings mounted on the ski body along a longitudinal line extending from the forward end to the tail end, one of said sides curving smoothly from the forward end to the tail end, said one side extending away from said longitudinal line in the forward portion of the ski body and extending toward said longitudinal line in the rear portion of the ski body, the other side having a pair of relatively straight side portions which meet to provide a point in a middle portion of the ski body and which extend inwardly from said point toward said longitudinal line in the forward and rearward portions of the ski body.

4,795,387

COLLAPSIBLE INNER TUBE SEAT INSERT

James E. Morgan, P.O. Box 441, New Braunfels, Tex. 78130

Continuation of Ser. No. 806,674, Dec. 9, 1985, abandoned. This application Jul. 28, 1987, Ser. No. 80,191
Int. Cl.[4] A49B *19/00*
U.S. Cl. 441—130 **15 Claims**



1. A method for constructing an elongate canoe-shaped boat from an inner tube and an insert frame comprising:

pivoting elongate frame bars to each other with a first bolt to form an insert frame;

positioning tube engaging means mounted to the ends of the elongate frame bars inside the inner portion of an inner tube, the elongate frame bars of the insert frame extending upwardly out of the horizontal plane of the inner tube at an angle to one another;

exerting downward pressure on the insert frame so as to align the frame bars in a horizontal plane substantially parallel to the horizontal plane of the inner tube, thus stretching the inner tube into a deformed position along the axis of the aligned elongate frame bars; and

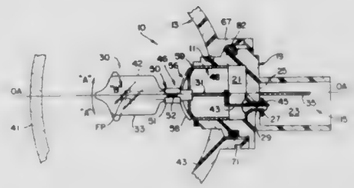
inserting a second bolt into the elongate frame bars to releasably lock the insert frame into the inner tube.

4,795,388

METHOD OF MAKING REPLACEABLE LAMP UNIT FOR USE IN AUTOMOBILE HEADLIGHT

Chris Collandris, Hillsboro; Paul F. Belliveau, Peterborough, and Sadhir Parikh, Goffstown, all of N.H., assignors to GTE Products Corporation, Danvers, Mass.

Filed Feb. 6, 1987, Ser. No. 11,959
The portion of the term of this patent subsequent to Jan. 19, 2005, has been disclaimed.
Int. Cl.[4] H01J *9/34*; H01K *3/08*
U.S. Cl. 445—22 **11 Claims**



1. A method of making a replaceable lamp unit for use in an automobile headlight wherein said lamp unit includes a lamp, a plastic holder and a metallic insert, said method comprising:

providing a roughened texture within the exterior surface of said metallic insert and thereafter inserting said metallic insert a predetermined distance within said plastic holder;

applying induction heating to said metallic insert to heat said metallic insert sufficiently to cause deformation of said plastic holder and bonding thereof to said metallic insert at said predetermined distance within said plastic holder, said roughened exterior surface of said metallic insert reaching a greater temperature in substantially less time than the remainder of said metallic insert during said induction heating to thereby facilitate said bonding between said holder and metallic insert;

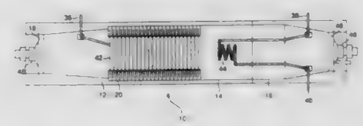
attaching said lamp directly or indirectly to said metallic insert in a preestablished manner of alignment therewith.

4,795,389

METHOD OF MAKING AN ION LASER TUBE

Joseph F. Rando, Los Altos Hills, and Eric W. Blumer, Sunnyvale, both of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Sep. 29, 1986, Ser. No. 913,163
Int. Cl.[4] H01J *9/18*
U.S. Cl. 445—28 **19 Claims**

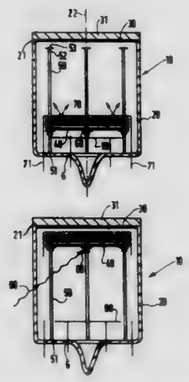


1. A method of constructing bore structure for an ion laser tube, comprising:

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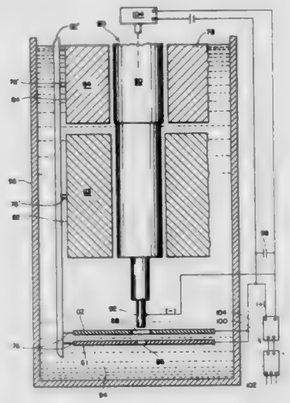
forming ceramic powder into a substantially solid longitudinal tube defining a longitudinal axis for a gas discharge between an anode and a cathode;
forming an annulus of ceramic around a periphery of a bore disk creating a disk member, said disk member including a central aperture permitting flow of said gas discharge and a plurality of apertures disposed substantially adjacent to said annulus of ceramic;
stacking a plurality of said bore disk members in an interior of said longitudinal tube substantially perpendicular to said longitudinal axis; and
firing said bore disk members and tube in one furnace operation step at a sufficient temperature and duration to form a unitary structure with said bore disks being embedded in said tube.

4,795,390
METHOD OF MANUFACTURING A PHOTOMULTIPLIER TUBE HAVING A PROXIMITY MULTIPLIER ELEMENT
Eschard Gilbert, Brive la Gaillarde, France, assignor to U.S. Philips Corp., New York, N.Y.
Continuation of Ser. No. 932,057, Nov. 18, 1986, abandoned. This application Aug. 14, 1987, Ser. No. 87,066
Claims priority, application France, Jun. 3, 1986, 86 07967
Int. Cl.[4] H01J *9/18*
U.S. Cl. 445—29 **7 Claims**



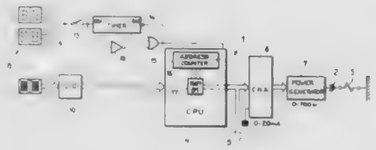
1. A method of manufacturing a photomultiplier tube (10) having a proximity multiplier element, the said tube comprising a tube body (20), a photocathode (30) deposited on a window (31) sealed at a first extremity (21) of the tube body, and an electron multiplier element (40) placed at a small distance from the photocathode (30), characterized in that the tube (10) is provided with sliding means (50) of the electron multiplier (40) parallel to the axis (22) of the tube body (20), the said sliding means (50) being formed integral with the tube (10) and comprising abutting means (53) situated in the proximity of the said window (31) and in that the electron multiplier (40) is provided with means (60) for the remote soldering of the electron multiplier to the said sliding means (50), and in that in a first step the tube (10) is sealed and exhausted and the electron multiplier (40) is placed at a distance from the window (31) of the order of the diameter of the said window, and in that in a second step the constituents of the photocathode are evaporated by means of evaporators (70) placed at a distance from the window and that in a third step the electron multiplier is moved by sliding along the sliding means (50) against the said abutting means (53), while in a fourth step the electron multiplier (40) is maintained in position in the proximity of the photocathode (30) by remote soldering to the sliding means (50) with the aid of remote soldering means (60).

4,795,391
MEANS AND METHOD OF FORMING ALIGNED APERTURES IN ELECTRON GUNS
Allen P. Blacker, Jr., and Khem K. S. Garewal, both of Hoffman Estates, Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Jun. 26, 1987, Ser. No. 67,676
Int. Cl.[4] H01J *9/02*
U.S. Cl. 445—36 **27 Claims**



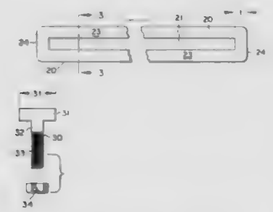
18. In a method of forming aligned apertures in the electrode plates of an electron gun which includes a plurality of electrode plates at least one of which is preapertured and at least another is unapertured, comprising the steps of:
permanently anchoring the preapertured electrode plate to a support means on the electron gun;
providing a boring tool sized to fit snugly within the aperture in the preapertured electrode plate;
inserting the boring tool through the aperture in the preapertured electrode plate whereby the plate aligns the tool in a position of concentricity; and
activating the boring tool to form a precision concentric aperture in the unapertured electrode plate.

4,795,392
METHOD FOR SEALING VACUUM TUBE TIPS ESPECIALLY CATHODE TUBE TIPS, AND MACHINE FOR APPLYING THIS METHOD
Clemente Ferragni, Frosinone, and Enzo Micciantti, Carpineto, both of Italy, assignors to Videocolor, Montrou, France
Filed Jun. 15, 1987, Ser. No. 61,471
Claims priority, application France, Jun. 16, 1986, 86 08650
Int. Cl.[4] H01J *9/40*
U.S. Cl. 445—43 **5 Claims**



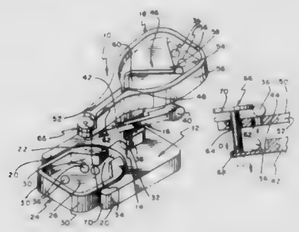
1. Method for sealing the evacuation tips of vacuum tubes, especially cathode tubes, comprising several successive heating stages at heating stations which are laid out on the path of a production line, method wherein, for each heating stage, the heating power sent to the tip-heating device is regulated at a constant set value.

4,795,393
RECTANGULAR LINK CONSTRUCTION TOY
Dennis Moe, 2344 State Hwy. 16, La Crosse, Wis. 54601
Filed Jan. 23, 1987, Ser. No. 6,218
Int. Cl.[4] A63H *33/12*
U.S. Cl. 446—123 **20 Claims**



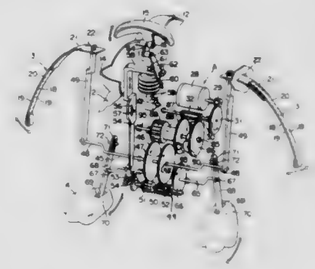
1. A construction toy comprising:
a plurality of generally rectangular slotted links of thickness, "t";
a connector having a head, the center of which is connected at a right angle to a threaded shank, said head having a square cross section, the side of which is equal in dimension to "t"; and
a nut with threads matching those on the connector shank, said connector head being inserted into the slots on two of the links to engage the slots and to hold the links in place when the nut is threaded onto the shank and tightened.

4,795,394
MARBLE TOY
James W. Thompson, 1513 Park La., Augusta, Kans. 67010
Filed May 14, 1987, Ser. No. 49,599
Int. Cl.[4] A63H *29/08*
U.S. Cl. 446—168 **11 Claims**



1. A toy comprising a base means; a support means bound to said base means; a lever means pivotally secured to said support means; a trough means connected to the support means and having a structure defining a generally zig-zag channel terminating into a generally straight channel; and a plunger means slidably disposed through the trough means at the end of the generally straight channel;
said plunger means comprises a plunger head and a plunger shaft integrally secured to said plunger head;
said trough means comprises a plunger aperture wherethrough said plunger shaft passes to extend outwardly therefrom and a spherical object aperture in close proximity to said plunger aperture such that as said plunger shaft is slidably disposed in said plunger aperture said plunger head extends partially over and intermittently obstructing said spherical object aperture; and
said lever means intermittently contacting said plunger shaft to elevate said plunger head for removal of said obstruction
said support means has a structure defining a support recess generally immediately below said trough means and said lever means is pivotally secured to said support means in said support recess below said trough means.

4,795,395
ANIMAL MOTION TOY HAVING AN AUTOMATIC ACTION SWITCHING DRIVE MECHANISM
Shingo Oishi, and Toshihiro Kikuchi, both of Tokyo, Japan, assignors to Iwaya Corporation, Tokyo, Japan
Filed Feb. 6, 1987, Ser. No. 11,885
Claims priority, application Japan, Jul. 1, 1986, 61-154662
Int. Cl.[4] A63H *3/28*
U.S. Cl. 446—175 **3 Claims**



1. An animal motion toy comprising:
a toy body (1) modeled in the form of an animal having upper and lower portions, with each of said portions presenting left and right sides;
movable arm frame (3) mounted on said toy body at said right and left sides of said upper portions for up and down movement;
a leg frame (4), each having a leg lever 68, mounted on said toy body at said right and left sides of said lower portion for back and forth movement;
a mouth portion (15) mounted on said toy body for movement between open and closed positions;
a sounding member (60) mounted on said toy body having means to generate a sound when actuated;
a power source (B);
a drive mechanism (A) mounted on said toy body including,
first crankshaft (45) rotatably mounted on said toy body and having a crank arms (48) at both ends thereof, lifting and lowering levers (49) each having an upper end and a lower end, each of said lower ends connected to one of said crank arms (48) of said first crankshaft, each of said upper ends connected to said arm frames (3) for moving said arm frame up and down at said left and right sides substantially at the same time in response to rotation of said first crankshaft;
a second crankshaft (50) rotatably mounted on said toy body and having a crank arm (53) at one end thereof, an interlinking lever (54) having a bottom end and a top end, said bottom end connected to said second crankshaft crank arm (53) and said top end connected to said mouth portion (15) for moving said mouth portion between said mouth open and closed position in response to rotation of said second crankshaft;
a third crankshaft (65) rotatably mounted on said toy body and having crank arms (67) at each end thereof, each of said third crankshaft crank arms connected to one of said leg levers of said leg frames for moving said leg frames back and forth in response to rotation of said third crankshaft (65);
a motor (28) having a rotating power output shaft (29),
a single gear changeover mechanism (30–44 or 31, 32, 85–95) mounted on said toy body and operatively con-

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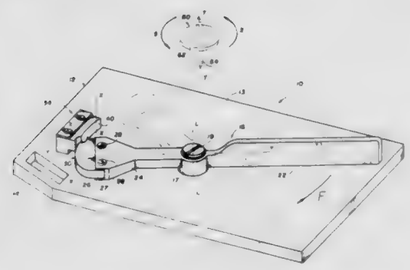
nected between said motor output shaft and said first, second and third crankshafts, said single gear changeover mechanism being operable in response to rotation of said motor output shaft to effect

rotation of one of said first, second or third crankshafts but not the other two of said crankshafts, and subsequent

rotation of said other two of said crankshafts but not said one crankshaft; and

a control unit (77) mounted on said toy body, said control unit including a microphone (10) for receiving an external sound signal, and means (78-82) responsive to said sound signal to connect said power source to turn on said motor and operate said gear changeover mechanism for a preselected period of time and then disconnect said power source to turn off said motor and inactivate said gear changeover mechanism.

4,795,396
SPIN TOY LAUNCHER
Oscar F. Lindstrom, 658 Santa Margarita, Goleta, Calif. 93117
Filed Oct. 27, 1987, Ser. No. 113,637
Int. Cl.[4] A63H *1/06;* A63B *71/00*
U.S. Cl. 446—259 14 Claims



1. A spinning assembly for a top having a spindle about which the top spins, comprising:

a base;

a post means fixed to said base having a concave face;

a lever means pivotally fixed to said base having an actuating arm and an impeller arm;

said impeller arm including an impeller head having a convex face at least a portion of which is spaced radially apart a predetermined distance from said concave face for gripping said spindle, said faced including an adjustment means for varying said distance, said concave face having an initial contact corner and said convex face having a leading edge; and,

a top connector means for disposing said top adjacent said faces prior to spinning selected from the group consisting of fastener, clip, pin, fabric tie, adhesive coating, cloth fastener, magnetic grip and corresponding notches in said contact corner and leading edge.

4,795,397
TWIN
Betty B. Stevens, 108 N. Creek, Bartlesville, Okla. 74003
Filed Feb. 2, 1987, Ser. No. 9,933
Int. Cl.[4] A63H *3/02, 3/36*
U.S. Cl. 446—320 4 Claims

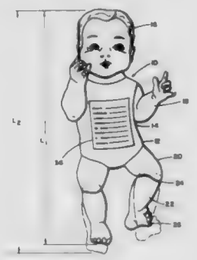
1. A method of making a twin doll for a particular newborn child having vital statistics including name, date of birth, weight, length handprints and footprints which comprises:

constructing a doll having a trunk, a pair of arms attached to said trunk and including means to adjust the length of said arms;

a pair of legs attached to said trunk including means for adjusting the length of said legs;

feet with soles; each of said feet is attached to one of said legs; each of said arms is attached to a hand which has a palm;

permanently adjusting the weight of said trunk so that the weight of said doll equals the weight of said particular newborn child;

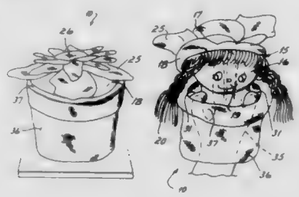




permanently adjusting the length of said legs so that the length of the doll equals the length of the particular newborn child;

applying the imprint of the footprint and handprint of the newborn child to the soles of the feet and to the palm of the hand respectively of the doll so that the doll just adjusted is a duplicate of the weight, length and handprints and footprints of the particular newborn child.

4,795,398
FLOWER POT DOLL
Howard Wexler, New York, N.Y., assignor to Cap Toys Inc., Solon, Ohio
Filed Jul. 20, 1987, Ser. No. 75,610
Int. Cl.[4] A63H *3/14, 00/00*
U.S. Cl. 446—327 20 Claims



20. A toy interchangeable between first and second toy configurations, the first and second toy configurations having decorative appearances which are separate and distinct from one another, said interchangeable toy comprising:

a doll head having front and back portions, the front portion having a doll face formed thereon;

concealing means located on said doll head divides said doll head into the front and back portions;

decorative means located on the back portion of said doll head;

a doll body connected to said doll head; and

a receptacle for receiving said doll body and the front portion of said doll head, said receptacle being interchangeable between a closed position thereby presenting the first toy configuration and an opened position thereby presenting the second toy configuration whereby, when said receptacle is in the closed position, said concealing means engages said receptacle and conceals the face of said doll head and said doll body received within said receptacle and said exposed decorative means constitutes an integral decorative part of the decorative appearance of the first toy configuration, and when said receptacle is in the opened position, the face of said doll head and said doll body are exposed and said exposed decorative means constitutes an integral decorative part of the decorative appearance of the second toy configuration which, namely, is a toy doll.

4,795,399
BRASSIERE SHOULDER STRAP BEARING PAD
Walter W. Davis, Rte. 1, Box 1, Peachtree Hills, Murphy, N.C. 28906
Filed Sep. 8, 1987, Ser. No. 93,650
Int. Cl.[4] A41D *27/26;* A41C *3/00, 3/12*
U.S. Cl. 450—86 3 Claims



1. A bearing pad for brassiere shoulder straps to alleviate irritating indentations to the skin of a wearer, said pad comprising a composite elongated member having two plies of material fastened together, one of said plies defining an upper ply adapted to engage one of the shoulder straps to act as a bearing surface therefore, the other ply defining a lower ply for contacting the skin of the wearer, said upper ply comprising a rigid stiff high density polyethylene synthetic plastic material so as not to indent when forcibly engaged by the brassiere strap and of a thickness such that it may be resiliently urged to conform to the shoulder of the wearer when the brassiere strap is taut, said lower ply comprising a low density soft non-woven cushion material comprising polyester fibers, and attaching means formed in the upper ply for entrapping the brassiere strap while permitting the pad to adjustably slide along the strap for positioning on the shoulder of the wearer, said attaching means comprising two pairs of tabs, one pair being spaced from the other pair in the direction of elongation of said pad, each pair of tabs comprising first and second spaced apart slits formed in the upper ply transverse to the direction of elongation of the pad and interconnected by a third slit extending in the direction of elongation to separate the tabs and permit the tabs to be lifted from the remainder of the upper ply for receiving the brassiere strap beneath the tabs while the tabs rest on the surface of the upper ply intermediate the two pairs.

4,795,400
BRASSIERE STRAP
Bert Greenberg, 1201 S. Ocean Dr., Hollywood, Fla. 33019
Filed Sep. 30, 1987, Ser. No. 103,423
Int. Cl.[4] A41D *27/26*
U.S. Cl. 450—86 9 Claims



1. In a brassiere strap having a front end, a front portion, a shoulder portion, a back portion and a back end, wherein the improvement comprises:

an elongate elastic band having a front end and a back end, said back end of said elastic band constituting the back end of the brassiere strap and being adapted to be connected to the back of a brassiere, and

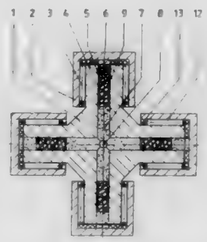
an elongate, non-elastic, non-extensible, flexible laminate band having a front end and a back end, said front end of said laminate band constituting the front end of the brassiere strap and being adapted to be connected to the front of the brassiere,

said elastic and laminate bands longitudinally overlapping and adhered to one another to provide the back portion of the brassiere strap which is solely a portion of said elastic band, and to provide the shoulder portion and the front portion of the brassiere strap which is composed of both said elastic band and said laminate band,

said laminate band including a foam laminae between a fabric outer laminae and a fabric inner laminae, and also including first and second cold adhesive layers sealing said foam laminae to said outer and inner laminaes,

whereby said combined laminate band and elastic band provide sufficient rigidity to prevent substantial bowing in response to longitudinal stresses in the brassiere strap, and also provide sufficient flexibility to permit the strap to conform to the configuration of the shoulder of a wearer of the brassiere.

4,795,401
TRUNNION CROSS
Eberhard Ende, Essen, Fed. Rep. of Germany, assignor to Gelenkwellenbau GmbH, Essen, Fed. Rep. of Germany
Filed May 6, 1987, Ser. No. 47,940
Claims priority, application Fed. Rep. of Germany, May 12, 1986, 3615929
Int. Cl.[4] F16D *3/41*
U.S. Cl. 464—14 6 Claims



1. A trunnion cross for connecting two yokes, each yoke defining a pair of eyes receiving a roller bearing, the trunnion cross comprising two pairs of trunnions, the trunnions of each pair of trunnions located diametrically opposite each other and each pair of trunnions defining an axis, the two axes of the

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trunnions extending perpendicularly to each other, each trunnion adapted for mounting in one of the roller bearings, the trunnion cross defining two throughbores extending in the directions of the two axes, cylindrical throttle inserts inserted with a press fit in the throughbores for pressure reduction, and a thread formed on the outer circumference of each throttle insert defining a throttle passage.

4,795,402

RESILIENT SHAFT COUPLING

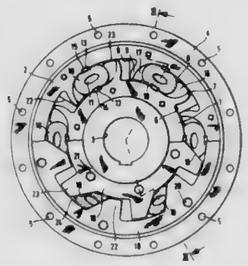
Peter Reichardt, Ludwigsburg, Fed. Rep. of Germany, assignor to Hackforth GmbH & Co. KG, Herne, Fed. Rep. of Germany

Filed Jun. 25, 1987, Ser. No. 66,827

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1986, 3621187

Int. Cl.[4] F16D *3/68*

U.S. Cl. 464—74 **7 Claims**



stiffness is very reduced at low torques, that it retains this low torsional stiffness at zero average useful torque until a predetermined shear stress level is reached accompanied by free deformation of the resilient coupling members as far as to an angular rotation of the pair of cams permitted and made possible by the free spaces relative to the respective resilient coupling member as far as to a predetermined point where the free spaces are substantially eliminated due to deformation of said resilient coupling member, at which point a change from shear to presure loading occurs so that said resilient coupling members nearly simultaneously come into contact with facing ones of said concave sides of said cams that delimit said chambers within closed confines thereof so that the resilient coupling members of the positive type resilient shaft coupling operate under load in this condition without clearance and without any impairment of torsional stiffness at full load.

4,795,403

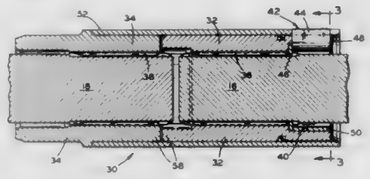
TORSIONAL SLEEVE COUPLING

Charles F. Heine, New Haven; Mark C. Barnholt, Ft. Wayne; Donald E. Hobson, Leo, and Richard L. Pifer, Ft. Wayne, all of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Aug. 25, 1986, Ser. No. 900,021

Int. Cl.[4] F16D *3/10*

U.S. Cl. 464—77 **6 Claims**



1. In a resilient shaft coupling having two metal parts, one of which can be connected to an input, the other to an output, with torque being adapted to be transmitted between these metal coupling parts via a number of resilient coupling members, of rubber material, that are consecutively disposed in the circumferential direction, whereby said two metal coupling parts include an inner coupling ring and, coaxial thereto, an outer coupling ring, with those generated surfaces of said coupling rings that face one another having formed thereon a number of essentially radially extending cams that alternately interengage one another in the circumferential direction, and that extend over the axial length of said coupling rings, with said cams of one of said coupling rings extending nearly to the facing generated surface of the other of said coupling rings, whereby one side of each of said cams is concave and faces a concave side of a circumferentially adjacent one of said cams, with those cams that have their concave sides facing one another forming respective pairs of cams, each pair delimiting a chamber in which is disposed one of said resilient coupling members, with the longitudinal axis of said chamber extending parallel to the axis of rotation of said coupling, whereby prior to installation, each of said resilient coupling members essentially has the shape of a circular rod with a length that corresponds approximately to the axial length of said coupling rings, and whereby in the installed state, said coupling members are subjected to a predetermined radial loading, the improvement in combination therewith wherein:

each of said resilient coupling members is secured to both of said facing generated surfaces of said coupling rings, whereby when said coupling is in an inoperative and relatively non-loaded state, respective free spaces are provided remaining in said chambers at locations between each of said coupling members before and after each respective resilient coupling member adjacent to each cam of a pair of cams; said free spaces, in response to an initial shear stress on said resilient coupling members extending over the entire radial height of the chambers enable the resilient coupling members to deform freely as a positive type resilient shaft coupling in such a way that its torsional

1. In combination: (1) a driveline coupling apparatus comprising a driving shaft, a driven shaft coaxially and matingly aligned therewith, both shafts containing splines at the mating ends thereof, a first sleeve splined to said driving shaft, a second sleeve splined to said driven shaft, said first and second sleeves comprising axially extending lost motion coupling means between said driving and driven shafts, said second sleeve comprising a third sleeve fixed to said second sleeve and extending circumferentially about said first sleeve, and (2) means for dampening torsional vibration between said driving and driven shafts comprising a counterbore in said first sleeve, a slotted aperture defining aligned sides in said first and third sleeves, wherein said aligned sides comprise interacting detents on said first and third sleeves, a C-spring positioned within said counterbore, said C-spring extending circumferentially about said driving shaft, said C-spring defining a pair of radial ears extending through said slotted aperture, said ears adapted for selective contact with said detents of said first and third sleeves, whereby in a first rotational mode of said driveline, said axially extending lost motion coupling means is positively engaged, and said ears of said C-spring are constantly urged together by said detents of said first and third sleeves, during which mode there is no lost motion between said driving and driven shafts, and whereby in a second rotational mode of said driveline, said coupling means is subject to lost motion, and said C-spring ears are disposed for absorbing torsional vibration between said driven and driving shafts.

4,795,404

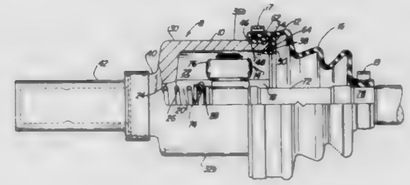
TRIPOD CONSTANT VELOCITY JOINT AND SEALING RETAINER THEREFOR

Noel W. Sutton, Northville, and Glenn F. Gehrke, Brighton, both of Mich., assignors to GKN Automotive Components Inc., Auburn Heights, Mich.

Continuation-in-part of Ser. No. 589,994, Mar. 14, 1984, Pat. No. 4,605,384. This application Aug. 7, 1986, Ser. No. 894,283

Int. Cl.[4] F16D *3/30*

U.S. Cl. 464—111 **10 Claims**



1. A self-aligning tulip cover for interconnecting and aligning a spider assembly, an irregularly shaped non-circular tulip body, and a boot; said irregularly shaped non-circular tulip body having an open cavity therein, an irregularly shaped non-circular outer circumferential surface disposed about said open cavity, and a first surface extending between said irregularly shaped non-circular outer circumferential surface and said open cavity; said spider assembly having a portion selectively insertable in said open cavity; said boot further having an inner surface with a cylindrical end portion; said self-aligning tulip cover further comprising:

a cylindrical flange portion selectively engageable with said irregularly shaped non-circular outer circumferential surface of said irregularly shaped non-circular tulip body, said cylindrical flange portion further being adapted to sealingly engage said cylindrical end portion of said boot;

a radial flange portion, said radial flange portion extending radially inwardly from said cylindrical flange portion and being formed integrally therewith, said radial flange portion further being juxtaposed said flat surface of said irregularly shaped non-circular tulip body, said radial flange portion further having longitudinally extending projection means for selectively engaging said spider assembly, such as to retain said spider assembly in a preselected aligned orientation in said open cavity when said cylindrical flange portion is interconnected with said irregularly shaped non-circular outer circumferential surface of said irregularly shaped non-circular tulip body;

a seal member sealingly mounted between said radial flange portion of said self-aligning tulip cover and said flat surface of said irregularly shaped non-circular tulip body;

interconnection means formed integrally with said cylindrical flange portion for selectively interconnecting said cylindrical flange portion with said irregularly shaped non-circular outer circumferential surface of said irregularly shaped non-circular tulip body, such that said radial flange portion engages said seal member to provide a seal with said flat surface extending between said irregularly shaped non-circular outer circumferential surface and said open cavity when said cylindrical flange portion is interconnected with said irregularly shaped non-circular outer circumferential surface of said irregularly shaped non-circular tulip body;

said tulip body further having a plurality of circumferentially spaced apart longitudinal tracks extending radially outwardly from said open cavity; and

said longitudinally extending projection means further having a plurality of circumferentially spaced apart longitudinally extending projections extending from and integrally formed with said radial flange portion, each one of said plurality of circumferentially spaced apart projections extending into a respective one of each of said plurality of circumferentially spaced apart longitudinal tracks in said tulip cover to prevent relative circumferential movement between said tulip cover and said tulip body.

4,795,405

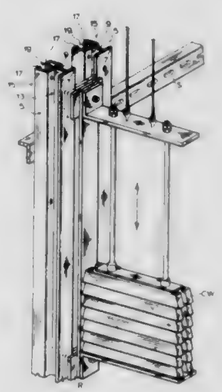
STRUCTURAL MEMBER WITH FORWARD GUIDE AND REARWARD MOUNTING COMPONENTS

Leonard L. Davis, 1956 Shannon Dr., Mississauga, Ontario, Canada (L5H 3W2)

Filed Aug. 17, 1987, Ser. No. 85,777

Int. Cl.[4] A63J *1/02*; F16C *11/10*

U.S. Cl. 272—23 **2 Claims**



1. A theatrical rigging set up comprising a counterweight for a theatrical backdrop, said counterweight having a runner and said set up including a pair of side by side structural members in an upright position and between which said runner is slideably trapped, each of said structural members comprising a rearward hollow mounting component with an axially extending undercut slot for receiving securing means for securing said structural members in said upright position and said structural members each having a centrally located stem extending forwardly from and supporting a sideways extending flange outwardly off of said mounting component to define a pair of spaced apart facing channels one on each structural member, said spaced apart facing channels and the sideways extending flanges on both of said structural members cooperatively forming a guide for said runner.

4,795,406

ASYMMETRICAL INFINITELY VARIABLE TRANSMISSION SYSTEM

Otto Dittrich, and Manfred Rattunde, both of Bad Homburg, Fed. Rep. of Germany, assignors to Reimers Getriebe AG, Zug, Switzerland

Filed Aug. 31, 1987, Ser. No. 91,583

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1986, 3631213

Int. Cl.[4] F16G *1/24*

U.S. Cl. 474—8 **10 Claims**

1. Continuously variable transmission comprising the combination of

a drive shaft (**1**);

a driven shaft (**2**) radially spaced from the drive shaft;

a pair of friction disks (**3–7, 5–8; 4–7, 6–8**);

a first pair (**3–7, 4–7**), each being secured to the drive shaft for rotation therewith;

a second pair (**5–8, 6–8**) being secured to the driven shaft for rotation therewith,

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one disk (7,8) of each pair being essentially flat and defining an essentially flat engagement surface (13) substantially located in a plane essentially perpendicular to the respective shafts (1,2) to which said one disk is secured,

another disk (3,4; 5,6) of each pair defining a divergent engagement surface (14) which is substantially conical with the apex of the cone angle located concentrically with respect to the axis of rotation of the respective shaft (1,2) to which the another disk is secured,

said disks being located with axially facing engagement surfaces (13,14),

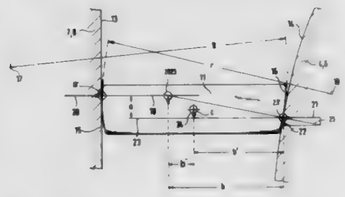
one disk of each pair being axially movable on the associated shaft,

said essentially flat engagement surface (13) and said divergent engagement surface (14) defining therebetween an asymmetrical wedge zone; with

a link chain (9, 10) connecting the pairs of disks, positioned in said wedge zone, and, in operation, generating a pulling force, said drive chain engaging the disks and defining spaced contact points (19', 23') with said disks and, upon transfer of power through the transmission, generating engagement force components (20, 22) between the chain and said disks, and consequent equal and opposite reaction force components within said pressure elements (11, 12),

said link chain including

essentially cylindrical pressure elements (11, 12) extending perpendicularly to the running direction of the chain and having friction surfaces (15, 16) in frictional engagement with the respective engagement surfaces (13, 14) of the disks of the pairs connected by the chain,



said friction surfaces (15, 16) being essentially circularly curved and having different radii (R, r) and centers (17, 18) of curvature on or outside, in radial direction of the respectively engaged disk, a theoretical line (19, 13) parallel to the respective shaft (1, 2) and passing through the contact points (19', 23') of the respective friction surfaces (15, 16) with the engagement surfaces (13, 14) of the respective disks, and

an arrangement to balance torques about the running direction of the chain and applied to said pressure elements (11, 12) during operation of the transmission,

wherein the radii (R, r) of curvature of the friction surfaces (15, 16) are greater than half the length of the pressure elements (11, 12), measured transversely to the running direction of the chain (9, 10); and

wherein the centers (17, 18) of curvature of the friction surfaces are so positioned that, at any axial spacing of the disks of the pair and corresponding to a transmission ratio of the transmission,

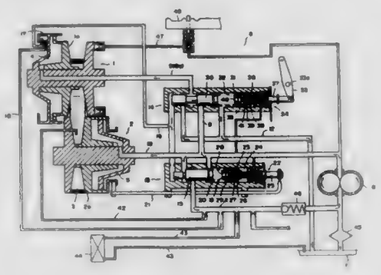
the vectorial product of the engagement force components (20, 21) acting parallel to the axes of the respective shafts, and the radial spacing (a) of the contact points (19', 23') of such force components acting on the pressure elements (11, 12) is essentially equal to the vectorial product of the radially directed component (24) of the pulling force of the chain, when in operation, and the spacing (b'), measured in a direction parallel to the respective shaft, of the contact point (23') of the pressure element (11, 12) with the disk (3, 4; 5, 6) having the substantially conical divergent engagement surface (14) from the center (C) of the length dimension of the pressure element.

4,795,407

STEPLESS TRANSMISSION CONTROL DEVICE

Kohei Ohsono, Saitama, and Yoshikisa Iwatsuka, Sizuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1987, Ser. No. 75,732
Claims priority, application Japan, Jul. 18, 1986, 61-169218
Int. Cl.[4] F16H *11/02*
U.S. Cl. 474—28 4 Claims



1. A stepless transmission system for use with an engine comprising:

first and second pulleys, each including a pair of laterally spaced, oppositely facing, rotatable discs;

and endless belt drivingly connecting said pulleys and disposed in the space between said discs;

hydraulically operated means for varying the spacing between said discs for changing the position of said belt on said pulleys and, thereby, the transmission ratio of said system;

a hydraulic control circuit for controlling the lateral spacing between said discs including a control valve operatively connecting the movable disc on each of said pulleys, said control valves each having a movable sleeve for controlling the flow of operating fluid therethrough;

means for imposing a fluid pressure on one end of each of said sleeves corresponding to the primary speed of said system;

a spring including a movable spring holder for biasing the other end of each of said sleeves in opposition to said fluid pressure; and

servo mechanism means for moving each of said spring holders in response to a system operating condition, each said servo mechanism means including a piston engaging said spring holder and a control rod slidably received in said piston, and means forming ports through said spring holder, said controlpiston and said control rod for controlling the passage of operating fluid therethrough in response to said system operating condition.

4,795,408

ROLLER CHAIN

Katsumi Kotegawa, and Makoto Kanehira, both of Osaka, Japan, assignors to Tsubakimoto Chain Co., Japan

Filed Jul. 30, 1987, Ser. No. 79,399
Claims priority, application Japan, Aug. 4, 1986, 61-120014[U]
Int. Cl.[4] F16G *13/06*
U.S. Cl. 474—209 4 Claims

1. A roller chain assembly for a roller chain comprising:

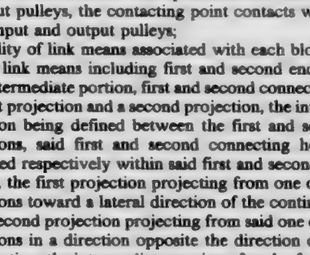
a pair of inner link plates arranged generally parallel to each other and an elongated bush interconnecting said inner link plates;

a roller rotatably mounted on said bush by means of an opening through said roller;

at least a portion of said opening having a cross-sectional area greater than the cross-section area of said bush passing therethrough so as to define a lubricant reservoir within said roller;

a pair of thrust rings fixed on said bush between the axial ends of the roller and an inner surface of the inner link plates so as to define at least one small gap;

said thrust rings being made of bearing material and having



a cylinder shaped axially projecting portion on an inner face thereof facing said roller so as to be receivable into said opening;

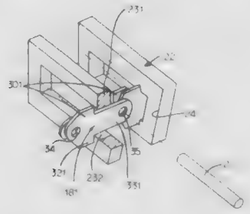
said projecting portion being longer than the sum total length of said small gaps and having a sealing part which can prevent lubricant flow through a clearance between said sealing part and inner periphery of said opening.

4,795,409

CONTINUOUS BELT OF A CONTINUOUSLY VARIABLE TRANSMISSION

Shigeru Okuwaki, Susono; Susumu Ohkawa, Aichi; Yasunobu Jufuku, Gotenba, and Yasdai Tatara, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 30, 1987, Ser. No. 126,720
Claims priority, application Japan, Dec. 11, 1986, 61-293509
Int. Cl.[4] F16G *1/24*
U.S. Cl. 474—245 20 Claims



1. A continuous belt of a continuously variable transmission for transmitting a driving torque from an input pulley to an output pulley, comprising:

a plurality of block means, each block means including an opening, a contacting point and at least a beam, whereby when the continuous belt spans between the input and output pulleys, the contacting point contacts with one of the input and output pulleys;

a plurality of link means associated with each block means, each link means including first and second end portions, an intermediate portion, first and second connecting holes, a first projection and a second projection, the intermediate portion being defined between the first and second end portions, said first and second connecting holes being defined respectively within said first and second end portions, the first projection projecting from one of said end portions toward a lateral direction of the continuous belt, the second projection projecting from said one of said end portions in a direction opposite the direction of the first projection, the intermediate portion of each of said plurality of links being inserted into the opening of the associated block means, at least one of the first and second projections engaging with the beam of the block means, each link means having a pitch line of the link means passing through center points of said first and second connecting holes, and a center line of the link means passing equidistant from the first and second projections, the pitch line being parallel to and spaced apart from the center line, wherein some of said block means and plurality of link means are configured such that said first projections of said link means and link means are directed inside the continuous belt, and the remainder of said block means and link means are configured such that said second projections of said link means are directed inside of the continuous belt; and

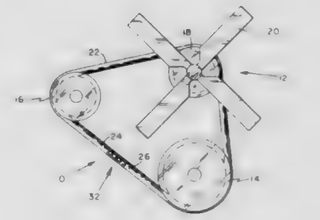
pin menas cooperating with said first and second connecting holes to rotatably connect adjacent ones of said plurality of link means, thereby connecting adjacent block means to define the continuous belt, said block means being arranged at random such that the block means having inward facing first and second projections, respectively, vary randomly.

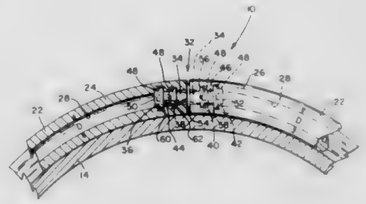
4,795,410

EMERGENCY BELT KIT AND CONNECTOR

Earl L. Alderfer, 3629 Logan Ave., Ft. Wayne, Ind. 46803

Filed Oct. 17, 1983, Ser. No. 542,348
Int. Cl.[4] F16G *3/07*
U.S. Cl. 474—256 27 Claims





1. A continuous belt assembly comprising:

a belt having a pair of tubular ends made of an elastomeric material,

a connector member comprising an elongate rigid body member having opposite end portions, and

a plurality of individual rigid barb members circumferentially disposed on said end portions, said barb members being separate and axially spaced-apart on their respective said end portions and having respective maximum outer transverse dimensions greater than respective inner diameters of said tubular ends, the respective maximum outer transverse dimensions of said barb members on each said end portion decreasing in dimension from axially outermost one of said barb members to the axially innermost

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one of said barb members to facilitate insertion of said portions into respective said tubular ends,

each said end portion being forcibly received into a respective said tubular end with said barb members frictionally engaging the inner surfaces of said tubular ends, thereby securely coupling said tubular ends together.

4,795,411

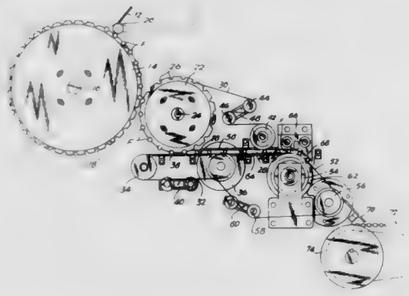
APPARATUS FOR FORMING ANNULAR GROOVES OR SLITS IN ROD-SHAPED ARTICLES

Grier S. Fleischhauer, Midlothian, and Ronald D. Honaker, Powhatan, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 1, 1984, Ser. No. 585,167

Int. Cl.[4] A24C *5/50*; B23B *3/04*; B26D *3/06*

U.S. Cl. 493—43 **11 Claims**



1. An apparatus for forming an annular groove or slit in a rod-shaped article such as a cigarette filter plug, said apparatus comprising:

first belt means;

means spaced apart from said first belt means and defining therewith a channel of substantially uniform width for transporting a rod-shaped article, said channel having a center-line defined by the path followed by the longitudinal axis of a rod-shaped article with a diameter equal to the width of said channel rolling along said channel;

means for driving said first belt means for transporting a rod-shaped article in engagement with both said first belt means and said spaced-apart means along said channel and simultaneously rotating the article about the longitudinal axis of the article; and

former means at least a portion of which is disposed in said channel, for forming a groove or slit in an article being transported along said channel by said first belt means and said spaced-apart means.

4,795,412

APPARATUS FOR FORMING A HEM IN A MOVING WEB OF FILM

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 938,893, Dec. 8, 1986, abandoned. This application Dec. 14, 1987, Ser. No. 132,693

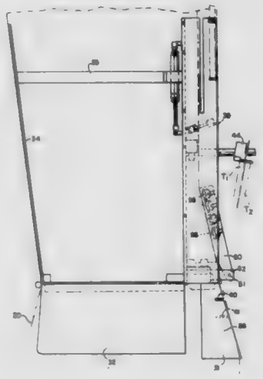
Int. Cl.[4] B31B *1/90*

U.S. Cl. 493—225 **5 Claims**

1. In a machine for making draw tape bags from a moving web of folded thermoplastic film having two folded opposing faces, each having a split edge to be folded into a hem to receive a draw tape, the improved apparatus for forming a pair of hems in the moving web of film comprising:

a pair of spaced folding surfaces on which the respective folded faces of the web impinge, said surfaces being in spaced planes and each having a final width corresponding to the final bag length, one folded face of the web passing over one side of each of said surfaces; and

means for tucking each split edge of the web between said spaced surfaces onto the other side of each surface to produce a hem in each split edge of the web, said last named means comprising a pair of tucker bars positioned



between said folding surfaces for engaging the film and a plurality of friction wheels rotatably mounted in tandem on each of said tucker bars for engaging the film and arranged to pull the film diagonally so it is tight against the edges of said folding surfaces whereby the web with the pair of hems therein is at the final bag length prior to sealing the hems.

4,795,413

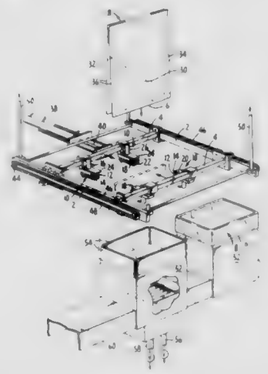
METHOD AND APPARATUS FOR AUTOMATICALLY OPENING BAGS

Robert B. Johnson, Santa Clara, and Robert P. Smith, Santa Cruz, both of Calif., assignors to K & R Equipment Incorporated, San Jose, Calif.

Filed Apr. 29, 1987, Ser. No. 44,005

Int. Cl.[4] B31B *1/78, 7/80*

U.S. Cl. 493—309 **18 Claims**



1. An apparatus for pulling apart two layers of flexible film each layer of film having four edges, comprising:

two jaw assemblies facing each other and mounted for relative movement toward and away from each other, with each said jaw assembly having a first jaw member, a second jaw member, and a tongue, the first and second jaw members having a gripping surface which provides a higher coefficient of friction with the film than the coefficient of friction between the two layers of film and being movably mounted to open and close, such that when the jaw members are open, the gripping surface of the first jaw member is spaced away from the gripping surface of the second jaw member and such that when the jaw members are closed the gripping surface of the first jaw member is in contact with and exerts pressure against the gripping surface of the second jaw member;

a means for supporting two layers of flexing film between said jaw assemblies with each of the layers facing one said jaw assembly; and

a means for moving said jaw assemblies toward and away from each other such that when the two jaw assemblies are moved toward each other the jaw members open and the tongue on each jaw assembly contacts the film and pushes the film between the open jaw members of the opposite jaw assembly, and such that after the jaw members are closed and said jaw assemblies are moved apart, each jaw assembly retains one of the two layers of flexible film.

4,795,414

APPARATUS FOR PRODUCING GROOVES

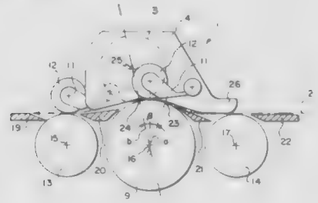
Martin Blumle, Horhausen, Fed. Rep. of Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Apr. 6, 1987, Ser. No. 34,595

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1986, 3614458

Int. Cl.[4] B31B *1/25*

U.S. Cl. 493—403 **3 Claims**



1. In an apparatus for grooving or producing partial cuts extending parallel to the direction of transport in thin paper blanks, particularly envelope blanks, having at least one grooving disc rotatably mounted in a machine frame and an associated opposing tool in the shape of a roller, the axes of said disc and roller being arranged transverse to the direction of transport and the roller surface of said opposing tool interrupting the direction of transport of said blanks, the improvement comprising:

means for guiding and feeding said blanks along a first straight path to said opposing tool;

means for discharging said blanks from said opposing tool along a second straight path coplanar with said first straight path; and

the grooving disc being spatially arranged behind the tangential loading point of the blanks on said opposing tool in the direction of transport thereof, said tangential loading point being the point at which said blanks contact the surface of the opposing tool, said grooving disc and said opposing tool having axes lying in a plane disposed obliquely with respect to the planes of said first and second paths, so that said blanks are bent around the opposing tool when contacting said grooving disc but are guided along said straight paths prior to and following contact with said opposing tool.

4,795,415

GREENHOUSE PLASTIC FILM INSTALLATION

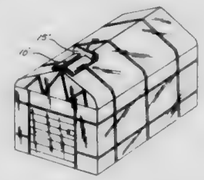
Michael A. Francis, Mechanicsville, Va., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 735,655, May 20, 1985, Pat. No. 4,674,999, which is a continuation of Ser. No. 423,955, Sep. 27, 1982, abandoned. This application Dec. 29, 1986, Ser. No. 946,938

The portion of the term of this patent subsequent to Jan. 23, 2004, has been disclaimed.

Int. Cl.[4] B31F *1/00*

U.S. Cl. 493—409 **5 Claims**



1. A method of installing a sheet of thermoplastic film on a greenhouse, which sheet of thermoplastic film has previously been folded over along its longitudinal edges about 180° to an imaginary line drawn through the center of a surface of the sheet of thermoplastic film and rolled into a cylindrically shaped object or roll, comprising the steps of placing said so-folded roll of thermoplastic film on the apex of a roof of a greenhouse, unrolling the roll of thermoplastic film the full length of the greenhouse and then unfolding the thermoplastic film to its full width down each side of the greenhouse.

4,795,416

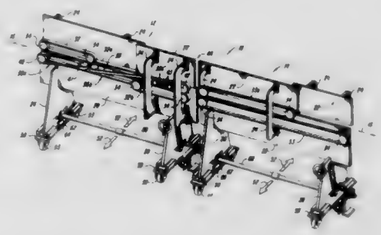
APPARATUS FOR C-FOLDING PAPER WITH VARIABLE SPACING

John Cogswell, Maynard, and Robert Fokos, Wayland, both of Mass., assignors to Sequa Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 835,956, Mar. 4, 1986, Pat. No. 4,721,504, which is a continuation of Ser. No. 497,642, May 24, 1983, Pat. No. 4,588,393. This application Oct. 26, 1987, Ser. No. 112,293

Int. Cl.[4] B65H *45/22*

U.S. Cl. 493—423 **7 Claims**



1. An apparatus for folding a non-creased sheet-like paper product having at least one ply along at least two generally parallel lines that extend along a first direction defined by a straight line path of the product through the apparatus, the improvement comprising means for adjusting the spacing between the fold lines including:

a first station for folding the product along a first one of the fold lines and having a support, a frame and means mounted on the frame for (i) propelling the product through the station along said path and (ii) folding a first laterally projecting portion of the product along said first one of the fold lines;

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a second station for folding the product along a second one of the fold lines, said second station being aligned along said first direction with said first station and having a support, a frame, and means mounted on the frame for (i) propelling the product through the station along said path and (ii) folding a second laterally projecting portion of the product along said second one of the fold lines; and

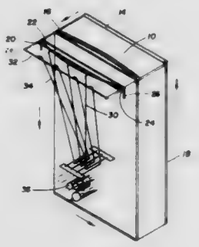
means for translating said first and second stations relative to one another along a second direction perpendicular to said first direction.

4,795,417

APPARATUS AND METHOD FOR PLEATING FILM

David M. O'Connell, Tewksbury, Mass., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Mar. 5, 1987, Ser. No. 22,196
Int. Cl.[4] B31F *1/00*
U.S. Cl. 493—439 6 Claims



1. An apparatus for feeding film from a roll and folding said film to a desired width, comprising:

(a) a rigid frame;

(b) a vertically curved member mounted on said frame;

(c) a horizontally curved member mounted on said frame and substantially coplanar with said vertically curved member;

(d) a first linear member mounted on said frame below said horizontally curved member;

(e) a second linear member mounted on said frame downstream of and substantially coplanar with said horizontally curved member;

(f) a first series of rigid guides affixed at their upper ends to the first linear member at spaced intervals along said member, and at their lower ends to a first series of horizontal guides;

(g) a second series of rigid guides affixed at their upper ends to the second linear member at spaced intervals along said member and horizonally offset from said first series of guides at their respective lower ends, said second series of rigid guides affixed at their lower ends to a second series of horizontal guides parallel to and spaced apart from said first series of horizontal guides; and

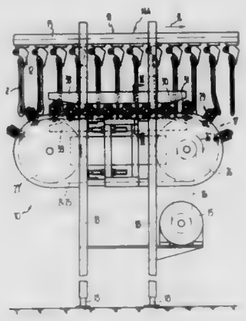
(h) said rigid guides disposed so as to contact film feeding from the horizontally curved member and causing folding of the film, said guides disposed closer together at their lower end than at their upper end.

4,795,418

APPARATUS FOR PRESSING THE FOLDED EDGES OF FOLDED PAPER PRODUCTS WHICH ARE CONVEYED BY A CONVEYOR

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 25, 1986, Ser. No. 878,437
Claims priority, application Switzerland, Jun. 28, 1985, 2787/85
Int. Cl.[4] B31F *1/00*
U.S. Cl. 493—422 16 Claims



1. An apparatus for pressing a folded edge of folded paper products, especially of printed products, comprising:

a conveyor for conveying the folded paper products having a folded edge of a predeterminate length;

a plurality of mutually spaced clamping means provided for the conveyor;

the conveyor having a predeterminate conveying path and a conveying speed and conveying said folded paper products along a conveying path extending in a predetermined conveying direction and defining a predetermined section of said conveying path;

said plurality of mutually spaced clamping means serving for gripping an edge of each folded paper product opposite to the folded edge in order to transport each folded paper product in a suspended fashion substantially transversely to the predeterminate length of its folded edge through said predetermined section of said conveying path;

a plurality of pairs of press elements operatively associated with said predetermined section of said conveying path;

each pair of said press elements extending substantially transversely to said predetermined conveying direction and over a length at least equal to said predeterminate length of said folded edge of said suspended folded paper products and being operable to press said folded edge of one of said suspended folded paper products along substantially the entire predeterminate length of said folded edge;

drive means for circulatingly driving said plurality of pairs of press elements at a predeterminate driving speed in a predetermined driving direction;

each pair of said plurality of pairs of press elements being located in the region of said predetermined section of said conveying path at a predetermined distance below the conveyor;

said predeterminate driving speed of said drive means being substantially equal to said predeterminate conveying speed of said conveyor;

said drive means driving each one of said plurality of pairs of press elements through said predetermined section of said conveying path substantially parallel to the predeterminate conveying path of said conveyor whereby each of said plurality of pairs of press elements remain at said predetermined distance below the conveyor throughout the region of said predetermined section of said conveying path; and

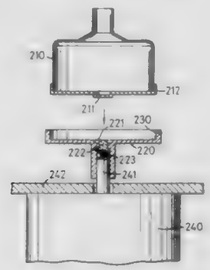
said folded edge of said suspended folded paper product is pressed by an associated one of said pairs of press elements and said opposite edge of said suspended folded paper product is gripped by an associated one of said clamping means, substantially throughout passage of said pair of press elements and said associated clamping means conjointly with said suspended folded paper product through said predetermined section of said conveying path.

4,795,419

CENTRIFUGE

Yawn David H., and Louis W. Feldman, both of Houston, Tex., assignors to Kardiothor, Inc., The Woodlands, Tex.

Continuation of Ser. No. 833,940, Feb. 25, 1986, Pat. No. 4,692,136, which is a continuation-in-part of Ser. No. 786,780, Oct. 11, 1985, Pat. No. 4,684,361. This application Jun. 1, 1987, Ser. No. 57,016
Int. Cl.[4] B04B *9/00*
U.S. Cl. 494—84 7 Claims



1. A bowl for a centrifuge, the centrifuge having a mount, the mount having inwardly projecting pins, the bowl comprising

a generally cylindrical member having a side wall, a top wall connected to the side wall, and a bottom wall connected to the side wall thereby forming the bowl,

a plurality of pin recesses in the side wall one pin recess for and corresponding to each of the inwardly projecting pins of the mount, each pin recess for receiving and holding its corresponding pin to secure the bowl to the mount,

the pin recesses having an inverted "L" shape, the perpendicular portion of the "L" for initially receiving the pin and the horizontal portion of the "L" for receiving the pin upon rotation of the bowl,

each pin recess having a downwardly-extending recess in communication with the horizontal portion of the "L" shaped recess for receiving and holding the corresponding pin,

a spring coacting with the bowl for urging the bowl upwardly on the mount so that once a pin is received in a downwardly extending recess it is held there and prevented from moving back into the horizontal portion of the "L" shaped recess.

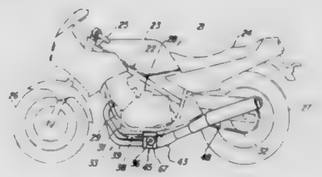
4,795,420

EXHAUST GAS CONTROL MEANS FOR ENGINE

Tadashi Sakurai; Wataru Fuchigami, and Hideaki Kitta, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 6, 1987, Ser. No. 22,732
Claims priority, application Japan, Mar. 7, 1986, 61-48489; Sep. 19, 1986, 61-219702
Int. Cl.[4] F02B *27/02*
U.S. Cl. 60—313 13 Claims

1. A valve for controlling the flow of exhaust gases simultaneously through a plurality of exhaust pipes comprising a valve body adapted to be affixed to said exhaust pipes for receiving exhaust gases therefrom, exhaust passage means formed in said valve body comprising a plurality of discrete exhaust passages each communicating with a respective exhaust pipe for receiving exhaust gases therefrom, said passage being placed in horizontally extending rows with some above the others, a valve



shaft journaled in said valve body for rotation about an axis that extends transversely across said exhaust passage means and a valve element affixed to said valve shaft and having spaced portions cooperable with said exhaust passage means for controlling the reflective area for each of said exhaust pipes simultaneously upon rotation of said valve shaft.

4,795,421

ORAL HYGIENE SWAB

William G. Blanton, Jr., Higganum, and Joseph F. Zygmont, Jr., Clinton, both of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Apr. 25, 1986, Ser. No. 855,670
Int. Cl.[4] A61F *13/00*
U.S. Cl. 604—1 8 Claims

1. A mouth swab comprising a support stick having a swab mounted on at least one end thereof, the swab being impregnated with an oral solution and being encapsulated with a dry, saliva-soluble polymeric coating.

4,795,422

SYSTEM FOR CONTAINMENT AND DIGITAL INSERTION OF SUPPOSITORIES AND OTHER OBJECTS

James M. Conner, Old Greenwich, Conn.; Daniel K. Harden, Brooklyn, N.Y., and Donald M. Genaro, Haworth, N.J., assignors to Henry Dreyfuss Associates, New York, N.Y.

Filed Aug. 3, 1987, Ser. No. 80,908
The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.
Int. Cl.[4] A61F *13/20*
U.S. Cl. 604—14 19 Claims

1. A containment and digital insertion system comprising:

an object to be inserted into an opening;

an impermeable sheath which surrounds the object and is open at one end, said sheath being unattached to said object; and

a broad-collared ring which has an unobstructed opening therein for passage and withdrawal of a finger and the sheath and to which the open end of the sheath is affixed such that the opening in the sheath registers with the

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opening in the ring, the above elements being arranged such that

(a) the portion of the sheath which contacts the opening is shielded from external conditions,

(b) the object, the sheath, and a finger can pass through the opening for digital insertion and location of the object,

(c) while inserting the object, the finger is protected by the impermeable sheath from soiling, and

(d) the sheath can be retracted through the opening to provide for clean disposal of the used sheath.

17. A method of inserting an object comprising the steps of:

placing the object inside an impermeable sheath which is capable of surrounding the object, is not attached to the object, and is open at one end;



affixing at the open end of the sheath a broad-collared ring which has an unobstructed opening therein that permits unobstructed passage and withdrawal of a finger and the sheath to its original position;

removably securing a sealing closure over the opening in the ring;

removing the removable closure;

placing the broad-collared ring adjacent an opening;

inserting the object into the opening by means of digital pressure on the sheath and passage of a finger free from soiling and the sheath through the opening in the broad-collared ring;

contacting the opening only with sanitary portions of the sheath;

withdrawing the sheath from the opening; and

removing the finger from the broad-collared ring.

4,795,423

OXYGENATED PERFLUORINATED PERFUSION OF THE OCULAR GLOBE TO TREAT ISCHEMIC RETINOPATHY

Jewell L. Osterholm, Radnor, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 757,015, Jul. 19, 1985, Pat. No. 4,657,532, and Ser. No. 755,427, Jul. 16, 1985, and Ser. No. 582,961, Feb. 23, 1984, Pat. No. 4,686,085, and Ser. No. 428,900, Sep. 30, 1982, abandoned, which is a division of Ser. No. 139,886, Apr. 14, 1980, Pat. No. 4,378,797, said Ser. No. 582,961, is a division of Ser. No. 428,850, Sep. 30, 1982, Pat. No. 4,445,500, which is a division of Ser. No. 354,346, Mar. 3, 1982, Pat. No. 4,445,886, which is a continuation-in-part of Ser. No. 139,886,.

This application Aug. 28, 1986, Ser. No. 901,640

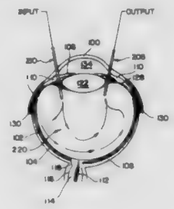
Int. Cl.[4] A61M *37/00*

U.S. Cl. 604—24 **37 Claims**

1. A method of treating retinal ischemia, comprising the steps of:

a. removing at least a portion of the vitreous body to create an intra-ocular perfusion space; and

b. establising a circulation of a physiologically compatible oxygenated liquid through said perfusion space by injecting said liquid into and withdrawing said liquid from said space.



4,795,424

APPARATUS FOR CONTROLLED IRRIGATION OF THE NATURAL CAVITIES AND TUBES OF THE HUMAN BODY

Robert Burner, 6, rue de la Sinne, 68100, Mulhouse, France

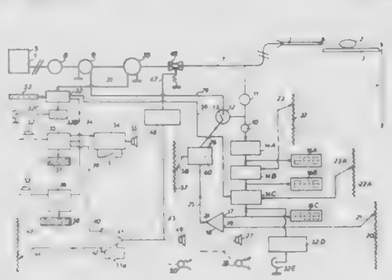
Continuation of Ser. No. 865,205, filed as PCT FR85/00233 on Aug. 29, 1985, published as WO86/01390 on Mar. 13, 1986 abandoned.

This application Dec. 30, 1987, Ser. No. 142,319

Claims priority, application France, Aug. 31, 1984, 84 13550; Aug. 31, 1984, 84 13551

Int. Cl.[4] A61M *1/03*

U.S. Cl. 604—30 **19 Claims**



1. Apparatus for controlled irrigation of the natural cavities and tubes of the human body by endoscopy, wherein an urological endoscope having at least one duct is provided to inject an irrigation fluid intermittently or continuously in a corporeal cavity and/or a corporeal intervention area whereby to permit interventions both with intermittent and continuous irrigations, said apparatus comprising:

an urological endoscope having at least one duct;

a tank containing irrigation fluid;

a joining conduit connecting said tank to said at least one duct;

a supply pump mounted on said joining conduit supply said duct with irrigation fluid;

first means sensitive to pressure, connected below said pump to said joining conduit, for measuring the instant pressure in said conduit at the level of said first means for emitting a measuring signal representing this pressure;

second means, communicating with said first means, for defining an acceptable maximum pressure in said intervention area;

correcting means receiving said measuring signal for equalizing said measuring signal which represents the pressure which is a resultant of pressure losses and of the difference

in level existing between said first means and said intervention area, whereby to determine the value of said instant pressure at the level of said intervention area; and

means connecting said pump, said second means and said correcting means including a control unit in a supply conduit to said pump for controlling the injection of irrigation fluid in such manner that said pressure in said intervention area is at all times not greater than said acceptable maximum pressure.

4,795,425

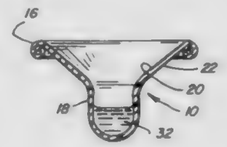
SPERMICIDAL CONDOM

Bradley L. Pugh, Midland City, Ala., assignor to Ansell Incorporated, Dothan, Ala.

Continuation-in-part of Ser. No. 741,202, Jun. 4, 1985, abandoned, which is a continuation of Ser. No. 595,639, Apr. 2, 1984, abandoned, which is a continuation of Ser. No. 318,773, Nov. 6, 1981, abandoned. This application Dec. 2, 1985, Ser. No. 803,413

Int. Cl.[4] A61F *5/44*

U.S. Cl. 128—844 **17 Claims**



1. A spermicidal contraceptive sheath, comprising

a contraceptive sheath having a closed end and an open end, said sheath having an outside surface and an inside surface,

a first spermicide-containing composition provided on said inside surface of the closed end of said sheath, said first composition being in use retained at the closed end of the sheath by virtue of said composition having the properties of (1) high interfacial surface tension with the inside surface of the sheath and (2) a melting point in the range 113°–127° F. interfacial surface tension to retain said first composition in use at its position at the closed end of the sheath, and

a spermicide-containing lubricant provided on said outside surface of said sheath,

whereby a first dosage of spermicide is available within said sheath and a second dosage of spermicide is available outside said sheath.

4,795,426

CATHETER INTRODUCING DEVICE AND METHOD OF PLACING CATHETER

Jeffrey S. Jones, Salem, Va., assignor to Solutech, Inc., Roanoke, Va.

Filed Apr. 2, 1987, Ser. No. 34,281

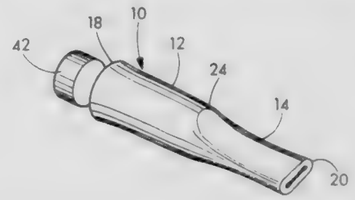
Int. Cl.[4] A61M *31/00*

U.S. Cl. 604—51 **7 Claims**

1. A cannula for placing a catheter or the like in an animal comprising:

(a) a substantially tubular body portion having sufficient rigidity for placement in the animal, the body portion having a passageway therethrough, the body portion being made of a material of sufficient rigidity to receive the catheter and, the body portion further having a flared proximal end for easily receiving the catheter; and

(b) a self-sealing substantially straight tip portion made of pliable material of sufficient rigidity to receive the catheter, the tip portion being connected to the body portion, the tip portion being formed of opposing flaps, wherein



the tip portion has a shape retaining memory to form a seal.

4,795,427

TWO-COMPARTMENT CATHETER

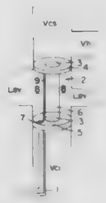
Manfred W. Helzel, Frankenstrasse 29, Würzburg, Fed. Rep. of Germany

Filed Oct. 3, 1986, Ser. No. 915,050

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1985, 3535641

Int. Cl.[4] A61M *25/00*

U.S. Cl. 604—53 **3 Claims**



3. A method for separating hepatic blood from blood from the vena cava, comprising:

inserting into the vena cava an occluding catheter connected to one end of a catheter tube, said catheter comprising an elongaged at least partially inflatable body having a central portion and two end portions, the diameter of said end portions being greater than the diameter of the central portion, said catheter further comprising an axial through-flow channel and a side orifice formed through one of the end portions of the elongated inflatable body;

placing the catheter within the vena cava so that the two end portions are located on either side of the openings of the hepatic veins into the vena cava;

inflating the elongated inflatable body so that the two end portions occlude the vena cava above and below the openings of the hepatic veins into the vena cava so that only blood from the vena cava flows through the through-flow channel, and blood from the hepatic veins is separated from the blood of the vena cava and is diverted into the side orifice.

4,795,428

THERAPEUTIC SUCTION DEVICE

Shyh-Chyi Hwang, No. 427-9, Fu-Hsing Rd., Fu-Hsing Tsun, Yung-Kang Hsiang, Tainan Hsien, Taiwan

Filed Mar. 30, 1987, Ser. No. 32,363

Int. Cl.[4] A61M *1/06*

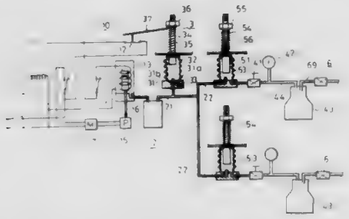
U.S. Cl. 604—73 **7 Claims**

1. A therapeutic suction device for suctioning a patient's body cavity and comprising:

means defining a vacuum chamber,

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a vacuum pressure source, a solenoid valve between said vacuum chamber and said source,
electrically controlled means for said vacuum pressure source and including a control circuit, means for detecting the pressure in said vacuum chamber,
limit switch means in said control circuit and responsive to said vacuum pressure detecting means,
tube means for insertion into a patient's body cavity and including inlet valve means,



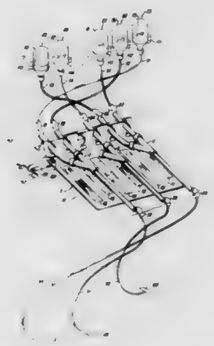
container means for receiving liquid suctioned by said tube means,
a chamber of variable volume communicating with said vacuum chamber, said variable volume chamber having a fixed end and a movable end, said detecting means including means for operating said limit switch as a result of movement by said movable end of said variable volume chamber.

4,795,429

METHOD AND APPARATUS FOR USE IN THE CONTROL OF INTRAVENOUS MEDICATION INTRODUCTION

Marvin A. Feldstein, 10235 Wisner Rd., Kirtland, Ohio 44094

Filed Oct. 28, 1987, Ser. No. 114,243
Int. Cl.[4] A61M *5/14*
U.S. Cl. 604—80 **19 Claims**



1. A device for controlling the administration of intravenous fluids comprising:
a matrix member,
a plurality of spaced tube aligning means on said matrix member for orienting a plurality of intravenous fluid tubes in a particular spaced alignment relative to said matrix member
recording means positioned on said matrix member relative to said tube aligning means to provide for the handwritten recording of data relative to said tubes in visual alignment with said tube aligning means whereby said data in correlation with the tube positions facilitates the determination of the accuracy of injection of new intravenous fluids into an existing line of flow.

4,795,430

DEVICE FOR INTUBATION OF PERCUTANEOUS ENDOSCOPIC OSTOMY

David G. Quinn, Grayslake; Robert B. Edwards, II, Libertyville, and Erik Andersen, Vernon Hills, all of Ill., assignors to Corpak, Inc., Wheeling, Ill.

Filed Jan. 15, 1988, Ser. No. 144,527
Int. Cl.[4] A61M *29/02*
U.S. Cl. 604—97 **15 Claims**



1. A device for intubating an ostomy, such as a gastrostomy, formed by a percutaneous endoscopic technique, comprising:
a tube having at least a fluid lumen and an inflation lumen, the tube having a port near one end to dispose the inflation lumen to ambient air and an outlet at an other end to convey fluid from within the fluid lumen into the patient;
a retention member joined near the other end of the tube, the member being inflatable through the inflation lumen, the member in a deflated state having a generally edge-free outer configuration to facilitate intubation, the member in an inflated state defining at least one edged and generally flat retention and anchoring surface;
an elongated sleeve joined to and enclosing the one end of the tube, the sleeve being edge-free to define an edge-free outer configuration for gently parting gastroenteral tissues during intubation;
means for sealing selectively the ambient air port of the tube, the sealing means permitting escape of air from the inflation lumen through the port but preventing ingress of air into the inflation lumen;
wherein prior to intubation of the device into a patient the retention member is compressed to deflate the member by expelling air out of the inflation lumen through the port, the sealing means seals the port to prevent re-inflation of the member, the one end of the tube is drawn through the patient in a retrograde manner until the deflated retention member abuts against inner tissue surfaces of the gastrostomy, air is introduced into the inflation lumen to re-inflate the member and anchor the device against the inner tissue surfaces of the gastrostomy, and the inflation lumen is sealed to prevent deflation of the retention member.

4,795,431

SYRINGE AND CATHETER APPARATUS

Peter T. Walling, 14126 Brookridge Circle, Dallas, Tex. 75240

Filed Jan. 14, 1987, Ser. No. 3,075
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—97 **18 Claims**



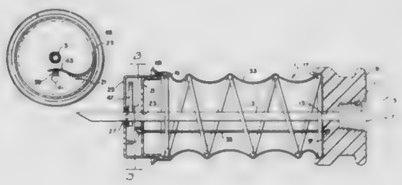
1. Improved syringe and catheter apparatus comprising:
catheter means for internally blocking a body passage, said catheter means being adapted to internally receive a predetermined maximum volume of pressurized gas from a source thereof and having an inflatable portion insertable into the body passage for inflation therein by the pressurized gas received within said catheter means;
syringe means operable to discharge up to said predetermined maximum volume of pressurized gas into the interior of said catheter means; and
pressure reducing means positioned within said syringe means for defining an essentially inextensible enlargement of the gas-receiving interior of said catheter means, said enlargement functioning as a pressure absorption zone which reduces to a predetermined magnitude the maximum internal pressure within the gas receiving interior of said catheter means caused by receipt therein of said predetermined maximum volume of pressurized gas from said syringe means so that said predetermined maximum volume of pressurized gas may be forced into and retained within the gas-receiving interior of said catheter means without creating therein a pressure exceeding said predetermined magnitude thereof,
said syringe means including a hollow syringe body and said pressure absorption zone being disposed within said body and bounded by an interior surface portion thereof,
said syringe means further including a plunger disposed in said hollow syringe body and operative to force gas therein outwardly through an outlet thereof,
said pressure reducing means including stop means, positioned within said hollow syringe body between said plunger and said outlet, for engaging and stopping said plunger in a spaced relationship with said outlet during movement of said plunger toward said outlet,
said stop means defining an internal enlargement of said hollow syringe body.

4,795,432

SHIELD ASSEMBLY FOR HYPODERMIC INJECTION DEVICES

Claude M. Karczmer, 182-25 Tudor Rd., Jamaica Estates, N.Y.

Filed Feb. 19, 1987, Ser. No. 16,343
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—110 **14 Claims**



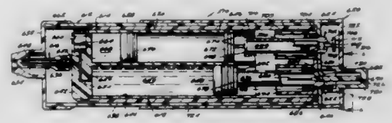
1. A shield assembly for preventing reuse of a hypodermic needle and injury or contamination from contact by the sharp end of the needle, which assembly comprises:
(a) a shield member for surrounding the needle and enclosing the sharp end thereof, the shield member including an aperture through which the needle is disposed;
(b) means for biasing the shield member outwardly toward the sharp end of the needle;
(c) retainer means for retaining the shield member at a fixed position relative to the needle against the bias imparted by the biasing means;
(d) the retainer means being releasable upon application of the needle to a patient during which the shield member is urged inwardly away from the sharp end of the needle against the bias imparted by the biasing means;
(e) the shield member being biased outwardly by the biasing means for enclosing the sharp end of the needle during removal of the neelde from the patient; and
(f) locking means carried by the shield member, which locking means is automatically engaged upon enclosing of the sharp point of the needle by the shield member for preventing access to the sharp point of the needle after the shield member has enclosed same.

4,795,433

AUTOMATIC INJECTOR FOR EMERGENCY TREATMENT

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology, Inc., Bethesda, Md.

Division of Ser. No. 735,311, May 20, 1985, and a continuation-in-part of Ser. No. 638,695, Jul. 19, 1984, Pat. No. 4,658,830, and a continuation-in-part of Ser. No. 708,845, Mar. 6, 1985, Pat. No. 4,661,469. This application Mar. 31, 1988, Ser. No. 176,224
Int. Cl.[4] A61M *5/20*
U.S. Cl. 604—134 **39 Claims**



1. Apparatus for treating a patient with a liquid medicament for purposes of establishing reperfusion under circumstances where intravenous injection is not practical but the fast response time of an intravenous injection is desirable comprising
an automatic injector assembly including
outer housing means,
medicament cartridge means mounted within said outer housing means in a storage position, said medicament cartridge means including a hypodermic needle, a plurality of medicament containers, and a plurality of medicament ingredients in said medicament containers,
moving means within said outer housing means for effecting movement of said medicament cartridge means out of said storage position,
mixing means within said outer housing means operable when said medicament cartridge means is moved out of said storage position for mixing the medicament ingredients to form a liquid medicament,
said moving means including stressed spring means releasable for effecting movement of said hypodermic needle outwardly of said outer housing means into the muscle tissue of the patient and said mixed liquid medicament outwardly through said needle into the muscle tissue of the patient,
said mixed liquid medicament including a clot selective coronary thrombolytic agent and a blood absorption enhancing agent.

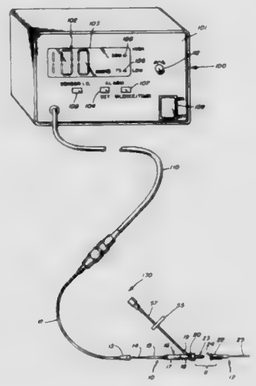
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4,795,434

APPARATUS FOR POSITIONING A SENSOR IN VIVO

Dennis Kujawski, Nashua, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Sep. 10, 1987, Ser. No. 95,308
Int. Cl.[4] A61M 5/18
U.S. Cl. 604—159 **11 Claims**



1. Apparatus for axially moving probe, having proximal and distal ends, within a catheter of selected length, having proximal and distal ends, so as to position the distal end of the probe a predetermined distance from the distal end of the catheter, said apparatus comprising:

telescopic advancement means having proximal and distal ends and engaging the probe for moving the probe axially within the catheter, said telescopic advancement means comprising:

means for connecting the distal end of said telescopic advancement means to the proximal end of the catheter so as to permit axial movement of the probe within the catheter;

a plurality of elements connected in telescoping relationship to one another for advancing the probe into the catheter when said telescoping elements are collapsed and for retracting the probe from the catheter when said telescoping elements are expanded and thereby changing the axial length of the advancement means;

stop means for limiting the relative telescoping movement of said elements so as to position the distal end of the probe a predetermined distance from the distal end of the catheter when the probe is advanced; and

shielding means for protecting the probe from breakage when the probe is retracted within said telescopic advancement means.

4,795,435

DEVICE FOR PROTECTING A WOUND

Peter L. Steer, Surrey, England, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 8, 1984, Ser. No. 578,163
Claims priority, application United Kingdom, Feb. 25, 1983, 8305234; Mar. 18, 1983, 8307529; May 5, 1983, 8312335
Int. Cl.[4] A61F 5/44
U.S. Cl. 604—355 **4 Claims**

1. A device for protecting a wound comprising a paid of skin-protective and skin-curative adhesive material having secured thereto a foldable sheet of liquid impermeable material of larger area than the pad, marginal portions of said foldable sheet provided with a layer of pressure-sensitive adhesive, and said sheet folded over itself and sealed in liquid-tight fashion



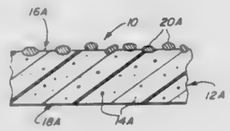
around its edges to define a compartment whereby the marginal portions can be manually pulled apart if desired.

4,795,436

BIOADHESIVE COMPOSITION AND METHOD OF TREATMENT THEREWITH

Joseph R. Robinson, Madison, Wis., assignor to Bio-Mimetics, Inc., Lexington, Mass.

Continuation of Ser. No. 690,483, Dec. 20, 1984, Pat. No. 4,615,697, which is a continuation-in-part of Ser. No. 551,295, Nov. 14, 1983, abandoned. This application Sep. 22, 1986, Ser. No. 909,960
The portion of the term of this patent subsequent to Oct. 7, 2003, has been disclaimed.
Int. Cl.[4] A61K 9/22, 9/52, 9/24
U.S. Cl. 424—422 **6 Claims**



1. A controlled release treatment composition including a bioadhesive and an effective amount of fluorometholone, said bioadhesive comprising a water-swellable, but water-insoluble, fibrous, cross-linked carboxy-functional polymer, said polymer sized to pass through a 100 mesh sieve screen, U.S. Standard Sieve Series, and containing (a) a plurality of repeating units of which at least about 80 percent contain at least one carboxyl functionality, provided by polymerized acrylic acid or methacrylic acid and (b) about 0.05 to about 1.5 percent cross-linking agent substantially free from polyalkenyl polyether, said percentages being based upon the weights of unpolymerized repeating unit and cross-linking agent, respectively.

4,795,437

SIPHON CONTROL DEVICE

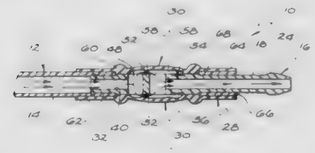
Rudolf R. Schulte, Santa Barbara; Stephen W. Laguette, Goleta, and Gary P. East, Santa Barbara, all of Calif., assignors to Pudenz-Schulte Medical Research Corporation, Santa Barbara, Calif.

Filed Jan. 29, 1987, Ser. No. 8,650
Int. Cl.[4] A61M 27/00
U.S. Cl. 604—10 **17 Claims**

1. A siphon control device for use in a physiological shunt system, comprising:

a base including an inlet, an outlet, an inner wall which separates the inlet from the outlet, and an outer wall spaced from the inner wall and extending from the inlet to the outlet, wherein the inner wall has substantially parallel upper and lower seating surfaces;

a housing for the base which, in connection with the base, defines a fluid flow pathway between the inlet and the outlet, the housing including diaphragm means fixed about its periphery adjacent the outer wall, wherein the diaphragm means includes a pair of spaced, substantially parallel, flexible diaphragms situated on opposite sides of the wall to position a portion of each diaphragm such that said portion is normally in contact with an adjacent one of the seating surfaces, each diaphragm having an outer surface forming an exterior surface of the siphon control device, and an inner surface having a portion positioned adjacent an edge of the inner wall to normally form a seal therebetween which prevents fluid flow between the inlet



and the outlet, wherein at least one of the inner surfaces will move away from the adjacent edge of the inner wall in response to positive fluid pressure within the inlet to permit passage of fluid from the inlet to the outlet, but will form a seal with the inner wall to prevent such fluid flow in response to negative hydrostatic pressure in the outlet; and

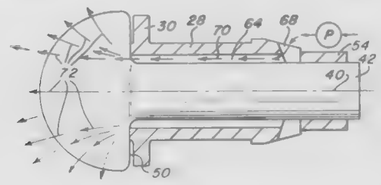
means for inhibiting tissue overlying the diaphragm means for occluding the device, wherein the inhibiting means includes top and bottom offset rings, each of which surrounds a respective diaphragm by extending outwardly from the device to form a recess in which a diaphragm is positioned.

4,795,438

METHOD AND APPARATUS FOR FORMING A RESTRICTION IN A VESSEL, DUCT OR LUMEN

Kenneth Kensey, Hinsdale, Ill., and John Nash, Downingtown, Pa., assignors to Intravascular Surgical Instruments, Inc., Frazer, Pa.

Filed May 13, 1987, Ser. No. 50,185
Int. Cl.[4] A61B 17/00
U.S. Cl. 604—22 **26 Claims**



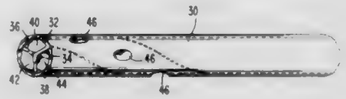
14. Apparatus for producing a restriction at a predetermined location within a vessel, duct or lumen in a living being, said apparatus comprising a elongated member having a longitudinal axis and a distal end at which a rotatable working head is located, said apparatus being adapted to be inserted longitudinally in said vessel, duct or lumen so that said working head is located adjacent the situs of the restriction to be formed, said apparatus including drive means for causing said working head to rotate with respect to said axis at a high rate of speed for creating rotary energy which is employed to produce a restriction at said predetermined location in said vessel, duct or lumen.

4,795,439

SPIRAL MULTI-LUMEN CATHETER

Robert L. Guest, Athens, Tex., assignor to Edward Weck Incorporated, Princeton, N.J.

Continuation of Ser. No. 871,354, Jun. 6, 1986, abandoned. This application Apr. 8, 1988, Ser. No. 177,820
Int. Cl.[4] A61M 5/00
U.S. Cl. 604—43 **1 Claim**



1. An improved multi-lumen catheter of the type comprising a plastic tube having an outer cylindrical surface and a longitudinal axis, which plastic tube has been divided into a plurality of lumens by generally radially extending interior walls which intersect said outer cylindrical surface, each lumen rotating only at its distal end along a portion of its length about the longitudinal axis of the tube in a spiral-like manner, there being side holes which enter into at least one of the lumens formed thereby at the rotated distal end only

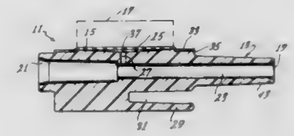
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4,795,440

LOW-VOLUME NON-BUBBLE COLLECTING PRESSURE DOME

Joe W. Young, Laguna Hills; Michael V. North, Garden Grove, and Kenneth W. Rake, Laguna Niguel, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Feb. 24, 1987, Ser. No. 17,790
Int. Cl.[4] A61M 5/00; G01L 7/08
U.S. Cl. 604—122 **15 Claims**



1. A pressure sensor comprising:

a main body having an inlet connectable to a source of liquid under pressure which is subject to having bubbles therein, an outlet and a passage extending through the main body from the inlet to the outlet so that liquid can flow through the passage;

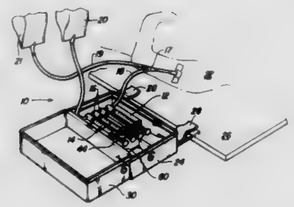
a flexible diaphragm coupled to the main body and confronting a conical surface for defining a low-volume surface sensing chamber on the main body;

a port defined in the main body extending from said passage to said sensing chamber to provide communication between liquid under pressure in the passage and the sensing chamber; and

said port having at the juncture of the port and the passage, a transverse cross-section with at least one dimension sufficiently small to enable surface tension to substantially exclude bubbles in the liquid flowing through the passage from passing through the port into the sensing chamber, said port having a sharp edge with essentially no radius at said juncture which further serves to exclude bubbles in the liquid from passing through the port into the sensing chamber.

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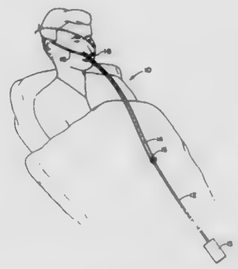
4,795,441
MEDICATION ADMINISTRATION SYSTEM
Kanjlata M. Bhatt, 4789 Hedgewood, Birmingham, Mich. 48010
Filed Apr. 16, 1987, Ser. No. 39,120
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—124 **13 Claims**



1. An administration system for administering selected medications to a patient, said system comprising:
an intravenous line having one end adapted to be fluidly connected to a vein of the patient and another end adapted to be connected to a source of intravenous fluid;
at least one syringe, having a barrel, a nozzle at one end of said barrel, a plunger and a longitudinal axis, and containing a selected medication;
at least one valve means, having an inlet, an outlet and means for preventing flow from said outlet to said inlet, said valve means being arranged so that said outlet is in fluid communication with said intravenous line, and the nozzle of said at least one syringe is in fluid communication with the inlet of a corresponding one of said at least one valve means;
securing means for releasably securing the barrel of said at least one syringe against axial and lateral movement;
mounting means for removably mounting said means for selectively restraining at a convenient location near a patient;
said securing means comprising a tray having at least one semi-cylindrical, longitudinal groove, dimensioned to receive and frictionally engage the barrel of said at least one syringe;
said tray further comprising an outer box having an open top, a bottom and two parallel sides wherein said box supports said tray such that said at least one longitudinal groove is arranged parallel to the two sides and a space is provided between the tray and one end of the box for operation of the plunger;
said mounting means comprising at least one clamp secured to said outer box and adapted for clamping onto a table supporting the patient; and
said box further comprising track means disposed on an upper surface of said bottom, said clamp being slidably disposed on said track means and wherein said one side includes openings aligned with said track means so that said clamp can slide into the box for storage and out of the box through said openings for mounting the box.

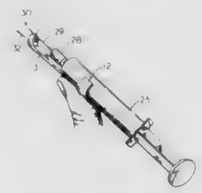
4,795,442
MEDICAL TREATMENT TUBE CONSTRUCTION
Robert F. Trafiet, 602 Washington Square S., #2207, Philadelphia, Pa. 19106
Filed Sep. 11, 1987, Ser. No. 96,117
Int. Cl.[4] A61M *25/02*
U.S. Cl. 604—179 **20 Claims**

1. A tube construction for patient treatment comprising:
an elongated generally flexible tube of a selected diameter to permit insertion of one end into a body orifice of a patient and of a selected length to extend from the body orifice to a remote connection;
a tube sheath for covering a predetermined portion of the tube adjacent said body orifice, the tube sheath having one end to be positioned adjacent the body orifice of the patient and a sufficient length to extend from the body orifice to a position along the tube generally beyond the normal reach of the patient, the tube sheath having retention means to prevent the sheath from being retractable over the portion of the tube covered by the sheath to deny patient access to the tube; and



sheath holder means for anchoring the tube sheath to the patient so that the end of the tube sheath is held in position adjacent the body orifice to prevent patient access to the tube covered by said sheath, said holder means being inextensible so that when the holder is in position on the patient, it prevents the patient from pulling the tube sheath away from the orifice and gaining access to the portion of the tube proximate the orifice in order to prevent dislodgement of the tube by the patient.

4,795,443
SYRINGE SEALING DEVICE AND METHOD
L. Michael Permenter, Acworth, and Richard W. Beckham, Martinez, both of Ga., assignors to Peachtree Medical, Inc., Marietta, Ga.
Filed Apr. 16, 1987, Ser. No. 39,460
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—198 **18 Claims**



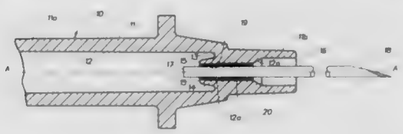
1. A device for sealing a syringe of the type having a tubular needle formed with an orifice adjacent a needle tip that is mounted to an elongated syringe barrel with the interior of the tubular needle in fluid communication with an interior portion of the barrel in which a plunger is movably positioned, and with the device comprising an elongated shank slidably mounted at one end to said barrel by a mounting means, said shank at the other end having a cup-shaped means fixed thereon to slidably receive the needle tip in a sealing engagement of said needle tip orifice.

4,795,444
SYRINGE
Kenji Hasegawa, Ibaraki; Kyaji Matsui, Kusatsu; Seiji Kita, Takatsuki; Seiichiro Kubo, Otsu, and Seiichi Iida, Takatsuki, all of Japan, assignors to Sunstar Kabushiki Kaisha, Osaka, Japan
Filed Apr. 23, 1987, Ser. No. 41,488
Claims priority, application Japan, May 2, 1986, 61-67318[U]; Mar. 16, 1987, 62-38627[U]
Int. Cl.[4] A61M *5/315*
U.S. Cl. 604—218 **2 Claims**



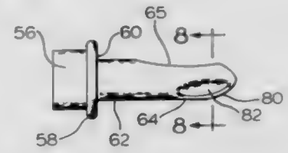
1. A dentist's syringe, comprising:
(A) a barrel, said barrel comprising:
(1) a hollow cylindrical portion having a first and a second end and an inner and an outer diameter, wherein a part of said cylindrical portion extending from said first end has an inner diameter which is larger than the inner diameter of the remainder of the cylindrical portion, and wherein the outer diameter of the cylindrical portion is essentially constant; and
(2) a tubular portion of smaller diameter than said cylindrical portion, said tubular portion being connected to the second end of said cylindrical portion;
(B) a nozzle connected to said tubular portion; and
(C) a plunger which is insertable into said cylindrical portion so that air trapped between the plunger and medicament within said barrel can vent through a space formed between the plunger and the part of said cylindrical portion having a larger inner diameter.

4,795,445
HUB CONFIGURATION
Billy M. Jensen, Sandy, Utah, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Mar. 27, 1987, Ser. No. 41,011
Int. Cl.[4] A61M *5/325*
U.S. Cl. 604—240 **15 Claims**



1. An apparatus arranged to hold the relative coaxial relationship between a first and second member during an assembly operation while permitting controlled axial movement along the common axis of the first and second members comprising:
a first member elongated along the axis thereof and being hollow internally;
a web disposed within said first member and having a central opening in alignment with the axis of said first member;
resilient cantilever means supported by said web and having a distal portion being capable of deflection in a radial direction generally normal to the axis;
a second member which, when positioned along the common axis of said first and second members and within said central opening of said web, passes through said distal portion; and
contact means positioned on said distal portion to frictionally engage a surface of said second member and resist axial movement of said second member relative to said first member during an assembly operation.

4,795,446
MEDICAL TUBE DEVICE
David C. Fecht, Manchester, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.
Filed Jan. 30, 1986, Ser. No. 823,918
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—264 **3 Claims**



1. An aortic cannula for insertion into an incision made in an aorta of a patient for connecting the aorta into an extra corporeal blood circulation system comprising a plastic tube having a lumen extending therethrough and proximal and distal ends, means for connecting the proximal end of said tube intot he extracorporeal blood circulation system, and a generally tubular plastic tip having a proximal end connected to the distal end of said tube, said tip having a lumen connected with said tube lumen and an opening through the sidewall thereof for the flow of blood therethrough, said tip lumen having a distal end wall closing the distal end thereof and smoothly curving from the sidewall of said tip lumen to the distal end of said opening, said tip having a pair of elongate recesses in the outer surface thereof adjacent the distal end thereof defining a generally external axially extending ridge between said recesses for moving the walls of the aorta apart at the incision, said ridge having smoothly rounded generally axially extending edges smoothly blending into the outer surface of the distal end of said tip, said opening being the only opening in the sidewall of said tip, said ridge being located on the side of said tip opposite the side that includes said opening and is the only ridge on said tip, said tip having a generally cylindrical portion proximally of the proximal end of said opening, the radially outermost surfaces of said cylindrical portion and of said ridge being substantially radially equidistant from the longitudinal axis of said tip, said tip being of a relatively hard material such that the material maintains said tip in a fixed shape during use, the distal end of said tip having an outer smoohtly curving surface between the distal end of said opening and the distal end of said ridge, and a flange connected to said cylindrical portion extending radially outwardly therefrom and located a predetermined distance from the distal end surface of said tip to limit the distance of insertion of said tip into the aorta wherein said recesses are inwardly concave.

4,795,447
ENDOTRACHEAL SUCTION CATHETER
Marian L. Dodson, 4500 15th St., Gulfport, Miss. 39501
Filed Jul. 6, 1987, Ser. No. 70,079
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—268 **2 Claims**

1. An endotracheal suction catheter comprising:
a. an elongate, hollow, flexible tube having a substantially

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uniform cross-section, having a first closed and second open end connected to a suction source;

b. at least two substantially rigid non-cutting blade means, (proximate said first closed end), radially extending an outer distance from said tube extending lengthwise along said tube from a point proximate said closed end;

c. said blade means being symmetrically, radially disposed



about said tube maintaining said tube in a spaced distance relationship to tracheal mucosal structure;

d. (a plurality of) at least one suction openings through the wall of said tube, (proximate) between said blade means, distal said closed end;

e. said tube, said blade means and said suction openings thereby forming an open non-sealing passage along said tracheal structure for continued flow of air.

4,795,448

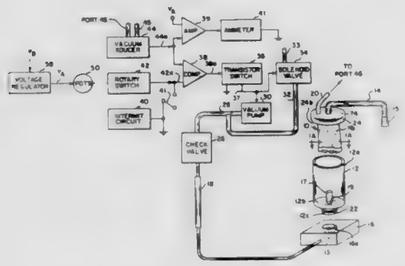
SUCTION COLLECTION SYSTEM

Gary R. Stacey, Randolph; Wesley H. Verkaart, Duxbury; Thomas D. Headley, Wellesley, and Edward T. Powers, Medfield, all of Mass., assignors to Haemonetics Corporation, Braintree, Mass.

Division of Ser. No. 894,731, Aug. 8, 1986, Pat. No. 4,740,202, which is a continuation of Ser. No. 660,472, Oct. 12, 1984, abandoned. This application Dec. 30, 1987, Ser. No. 139,461

Int. Cl.[4] A61M *1/00*

U.S. Cl. 604—319 **6 Claims**



1. A flexible bag for collecting fluids which is adapted to be disposed in a vacuum chamber; said bag being formed of two sheets of flexible plastic material sealed at the peripheral edges forming two planar surfaces, at least one such surface having a porous portion forming an air permeable/fluid impermeable path to the interior of said bag, such that when introduced into said chamber, an air suction path for collecting fluids is established, the portion having sufficient surface area in two directions to provide an air pathway to the chamber above a predetermined level of fluid collection in any orientation of the chamber.

4,795,449

FEMALE URINARY INCONTINENCE DEVICE

Barry L. Schneider, Deerfield, and Joseph S. Tokarz, Palatine, both of Ill., assignors to Hollister Incorporated, Libertyville, Ill.

Filed Aug. 4, 1986, Ser. No. 892,795

Int. Cl.[4] A61F *5/44*

U.S. Cl. 604—329 **26 Claims**



10. A female urinary incontinence device comprising a periurethral cup formed of soft elastomeric material having an upwardly-opening urine-receiving cavity and a continuous rim extending about the opening of such cavity; said cup also including front and rear portions and an integral downwardly-extending neck portion of reduced width having a passage communicating with said cavity, said neck portion being provided with connecting means for connection to a drainage tube; first resilient adhesive pad means externally affixed to said neck portion; said first pad means comprising at least one strip of pressure-sensitive adhesive material having a pair of side sections providing enlarged laterally-facing adhesive surfaces extending longitudinally along opposite sides of said neck portion for adhesively engaging the inwardly-facing side surfaces of the labia minora of a patient; and second resilient adhesive pad means of annular shape affixed to said rim along the full extent thereof for sealing engagement with a patient about the urethral orifice.

4,795,450

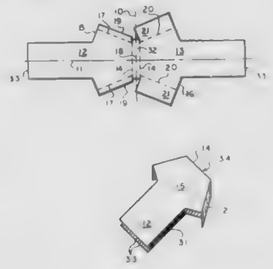
NON-SPATTERING HYGIENIC NAPKIN FOR MEN

Juan R. Tovar, and Maria Tovar, both of 405 Broadway, Bayonne, N.J. 07002

Filed Jul. 27, 1987, Ser. No. 77,745

Int. Cl.[4] A61F *5/44*

U.S. Cl. 604—349 **2 Claims**



1. A napkin of thin water-absorbent dissolving-type paper

amenable to storage as a multitude of napkins in a stacked array for easy dispensing, said napkin comprised of an integral piece of pre-folded paper having a flat storage configuration and being deployable to a functional state by folding about a lateral axis, said functional state being characterized in having an enclosure region, two opposed elongated strips emergent from said enclosure region, and a side boundary.

4,795,451

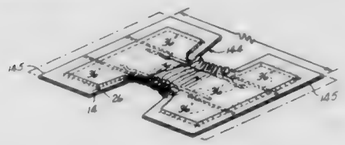
ABSORBENT PAD

Mary E. Buckley, Wheeling, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Dec. 18, 1986, Ser. No. 944,056

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385.2 **5 Claims**



1. A disposable absorbent pad for human body fluids comprising:

a fluid impervious backing sheet;

a top sheet of fluid pervious material;

an arrangement of absorbent material layered between said backing sheet and said top sheet for the absorption of human waste fluids received through said top sheet;

a pair of continuous bands of adhesive disposed onto said backing sheet, said pair of bands of adhesive having a generally stepped configuration on said backing sheet, where portions of said bands are parallel to one another, and portions of said bands are skewed with respect to one another; and

an elastic band disposed onto one portion of each of said continuous bands of adhesive between skewed portions thereof.

4,795,452

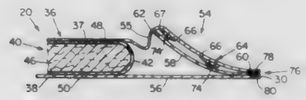
ABSORBENT ARTICLE HAVING CANTILEVERED CUFF MEMBERS

Ted L. Blaney, West Chester; Mary E. Freeland, Norwood, and Alvin D. Martin, Jr., Madeira, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 23, 1987, Ser. No. 99,972

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385.1 **20 Claims**



1. A disposable absorbent article having a front waist region, a back waist region and a crotch region, said absorbent article comprising:

an outer covering layer;

an absorbent core having side edges that is encased in said outer covering layer;

a cuff member extending outwardly from and along each side edge of said absorbent core in at least the crotch region, each of said cuff members comprising

(i) an upper layer,

(ii) a base layer underlaying said upper layer,

(iii) an integral cantilever flap interposed between said upper layer and said base layer, said cantilever flap having a fixed edge and a distal edge, said fixed edge being secured to at least said base layer adjacent the longitudinal edge of the absorbent article, said distal edge being disposed inboard of said fixed edge and outboard of said side edges of said absorbent core in at least the crotch region and having at least a portion free from securement to the base layer in at least the crotch region, and

(iv) gathering means operatively associated with said cantilever flap for gathering said cantilever flap so that said distal edge is deflected away from said base layer.

4,795,453

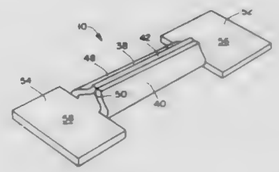
DOG BONE SHAPE INSERT FOR CHANNELING FLOW TO ENDS OF FEMININE NAPKIN

Dexter L. Wolfe, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 20, 1987, Ser. No. 123,499

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385.1 **20 Claims**



1. A pad for absorption of human exudate comprising a bodyside permeable member, a liquid impermeable backing member and an absorbent between said cover and said backing member wherein said absorbent comprises a reservoir absorbent and a dog bone shape fluid transfer absorbent, said dog bone shape absorbent comprising planar end pieces and a bridging portion of said dog bone that extends between said planar end pieces and is thicker than said planar end pieces of said dog bone shape fluid transfer absorbent and wherein said bridging portion extends in said pad from adjacent said backing member upward to an area immediately below said permeable member.

4,795,454

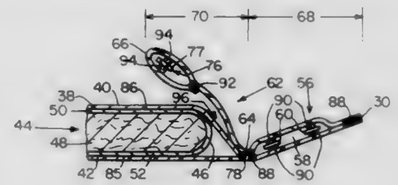
ABSORBENT ARTICLE HAVING LEAKAGE-RESISTANT DUAL CUFFS

Jerry L. Dragoo, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 917,450, Oct. 10, 1986, abandoned. This application Oct. 30, 1987, Ser. No. 117,379

Int. Cl.[4] A61F *13/16*

U.S. Cl. 604—385.2 **21 Claims**



1. A unitary disposable absorbent article comprising:

an absorbent core have a garment surface and a body surface;

a liquid impervious backsheet positioned adjacent said garment surface of said absorbent core;

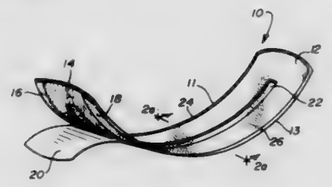
VOL 1098 ISS 1 JA 3 1989 UMI

an elastically contractible gasketing cuff disposed adjacent to an edge of the absorbent article;
a hydrophobic barrier cuff having a proximal edge and a distal edge, said barrier cuff disposed adjacent said gasketing cuff;
spacing means operatively associated with said barrier cuffs for spacing said distal edge away from the liquid-receivig surface of the absorbent article so as to cause said barrier cuff to stand up;
seal means positioned along said proximal edge for adjoining said proximal edge to the absorbent article so as to provide a leakage-resistant seal along said proximal edge; and
a liquid pervious topsheet positioned adjacent said body surface of said absorbent core, said topsheet extending outwardly toward and terminating inwardly of said proximal edge,
whereby liquids are generally prevented from wicking underneath and beyond said barrier cuff to the edge of the absorbent article.

4,795,455
SANITARY NAPKIN PAD LINER

Thomas J. Lacori, Bridgewater, and John Lukjanczuk, Milltown, both of N.J., assignors to Personal Products Company, Milltown, N.J.

Filed Aug. 31, 1987, Ser. No. 91,248
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—386 **16 Claims**



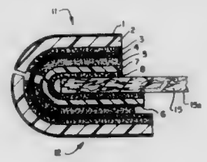
1. A napkin liner for use in conjunction with a sanitary protection product comprising:
a substantially non-wettable, fluid permeable cover of hydrophobic material located on the body-facing side of the liner;
a thin layer of absorbent material for transmitting body fluids which have passed through the cover material to an underlying sanitary protection product;
adhesive means, located on the sanitary protection product facing side of said liner, for attaching said liner to an underlying sanitary protection product, said adhesive means posing a relatively insubstantial barrier to the transmission of body fluids through said liner to an underlying absorbent product; and
release strip means for covering said adhesive means to prevent inadvertent adhesion of said liner prior to use.

4,795,456
STRETCHABLE DIAPER TAB

Leo Borgers, Kasterlee, and Paul J. Dhondt, Vosselaar, both of Belgium, assignors to Avery International Corporation, Pasadena, Calif.

Continuation of Ser. No. 840,429, Mar. 14, 1986, abandoned. This application Oct. 8, 1987, Ser. No. 106,937
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—390 **8 Claims**

1. A tab fastener for disposable diapers or other tab-fastened articles, said tab fastener having length, width, and thickness directions, the tab fastener comprising, with respect to its lengthwise direction, terminal segments and a central segment between the terminal segments, the tab fastener comprising, with respect to its thickness direction, inner layer means and outer layer means, said inner layer means at said terminal segments being permanently adhered to opposite sides of a side margin of the article by pressure-sensitive adhesive, said outer layer means permanently adhered to said inner layer means at a first of said terminal segments and being releasably adhered thereto at the second of said terminal segments, said inner layer means being nonextensible at least at said central segment, said nonextensibility of said inner layer means being imparted to said outer layer means when said inner and outer layer means are adhered at said second terminal segment, said outer layer means being extensible at least at said central segment upon release from said inner layer means at said second terminal

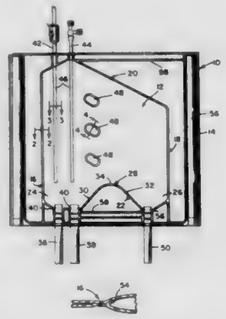


segment, whereby prior to said release said inner layer means contributes to stabilizing said tab fastener against premature elongation, the outer layer means presenting a uniform outer face that is of the same material and is substantially uniformly supported by underlying layers throughout the terminal and central segments, the uniformity of the material and support of the face being substantially uninterrupted by the presence of a slit of negligible width in the lengthwise direction in a portion of the outer layer means, the face being provided with a release surface that is releasable from the pressuresensitive adhesive whereby the tab is adapted to be formed of stock material that is capable of being self-wound without significant voids.

4,795,457
VENOUS RESERVOIR

Catherine M. Cooney, Woburn, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed May 8, 1987, Ser. No. 47,137
Int. Cl.[4] A61B *19/00*
U.S. Cl. 604—408 **26 Claims**

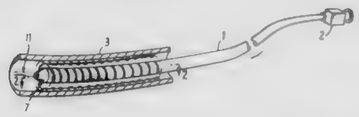


1. A venous reservoir with an air removal enhancing means; said reservoir comprising two flexible sheets, a plurality of seams securing said sheets together peripherally thereabout and defining a closed blood storage chamber, said chamber, in a vertical orientation of said reservoir, having a top and a bottom, air venting means communicating with the top of said chamber, blood inlet means and blood outlet means communicating with said chamber below said air venting means, said blood outlet means being laterally spaced from said blood inlet means, each of said chamber-defining seams defining an angle between said sheets inwardly directed toward said chamber, said sheets, in the defined angle, diverging from a joinder point forming an angle apex, and a solid fillet means having a relatively wide generally planar surface without restrictive narrowing, said fillet means filling said angle between said sheets immediately inward of said joinder point and coextensive with the seam to define a flow-enhancing surface, eliminate the tendency for air bubbles to form, and reduce entrapment of bubbles along said seam.

4,795,458
STENT FOR USE FOLLOWING BALLOON ANGIOPLASTY

Barrie F. Regan, 2260 Redington Rd., Hillsborough, Calif. 94010

Filed Jul. 2, 1987, Ser. No. 69,364
Int. Cl.[4] A61F *2/06, 2/04*
U.S. Cl. 623—1 **5 Claims**



1. A stent for implanting in a blood vessel following balloon angioplasty to prevent restonosis, said stent consisting of a helical coil of marmem alloy tape or wire having a diameter less than that of the blood vessel in which it is to be implanted, said tape or wire having earlier been wound to form a helical coil having a diameter equal to or greater than the inside diameter of said blood vessel and heated to an elevated temperature for a time to fix the shape of the second mentioned helical coil in the memory of the alloy and then covered with a thin surface coating of tin.

4,795,459
IMPLANTABLE PROSTHETIC DEVICE WITH LECTIN LINKED ENDOTHELIAL CELLS

Hugo O. Jauregui, Providence, R.I., assignor to Rhode Island Hospital, Providence, R.I.

Filed May 18, 1987, Ser. No. 51,500
Int. Cl.[4] A61F *2/06*
U.S. Cl. 623—1 **11 Claims**

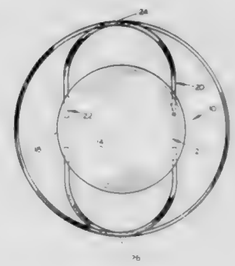


1. An implantable prosthetic device comprising
a member that has a shape to perform a cardiovascular prosthetic function when implanted, is made of biocompatible polymer, and has a surface to which a substantially continuous layer of autologous living endothelial cells has been attached via oligosaccharide-lectin recognition linkages.

4,795,460
FLEXIBLE THREE-PIECE POSTERIOR CHAMBER LENS

Aziz Y. Anis, 7531 N. Hampton, Lincoln, Nebr. 68506

Filed May 21, 1987, Ser. No. 52,400
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **4 Claims**



1. A lens implant, comprising:
a lens body; and
a pair of elongated flexible loop members secured to said lens body in an opposing relationship with respect to each other, whereby said flexible loop members may be compressed toward said lens body to permit insertion into the capsular sac;
said loop members cooperating together to extend around said lens body for at least 360 degrees;
said lens body being disc-shaped;
one of said loop members having one end secured to said lens body at approximately the three o'clock position extending around the lens body in a spaced-apart relationship with respect thereto and having its other end secured to said lens body at approximately the three o'clock position;
the other of said loop members having one end secured to said lens body at approximately the nine o'clock position extending around the lens body in a spaced-apart relationship with respect thereto and having its other end secured to said lens body at approximately the nine o'clock position, wherein said lens body is held centrally by said flexible loop members, said loop members together defining a generally continuous circular periphery which is adapted to engage the periphery of the capsular sac over substantially 360 degrees.

4,795,461
UV ABSORBING LENS MATERIAL

Bengt Lindqvist, Upsala; Bjarne Högström, Sjövde; Martin Sandberg, Upsala, and Per L. Nilsson, Tidaholm, all of Sweden, assignors to Pharmacia AB, Upsala, Sweden

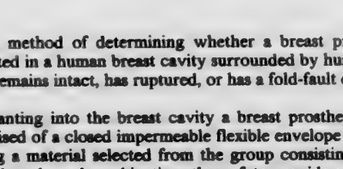
Filed Jun. 12, 1986, Ser. No. 873,354
Claims priority, application Sweden, Jul. 19, 1985, 8503522
Int. Cl.[4] A61F *2/16; G02B 5/22; F21V 9/06*
U.S. Cl. 623—6 **6 Claims**

1. A composition for manufacturing intraocular lenses that absorb UV and short-wave visible light, characterized in that a light absorption active amount of (I) 2-(5-chloro-2H-benzotriazol-2-yl)-6-(1,1-dimethylethyl)-4and (II) methyl-2-hydroxy-5-((4-hydroxy-phenyl)azo)benzoate are added to a monomer mixture suitable for preparing intraocular lenses prior to the polymerization thereof, so that a polished disc of the polymerized composition having a thickness of 1 mm has the following transmission characteristics: the transmittance (T)
is less than 1% below 380 nm, and
is less than 10% at 400 nm, and

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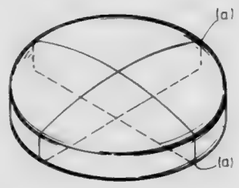
is equal to 50% at a point within the range of 420 to 460 nm, and
is at least 85% above 500 nm, and
is at least 90% above 550 nm.

4,795,462
CYLINDRICALLY SEGMENTED ZONE OF FOCUS ARTIFICIAL LENS
Dennis T. Grendahl, 2070 Shoreline Dr., Orono, Minn. 55422
Filed Aug. 24, 1987, Ser. No. 88,413
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **19 Claims**



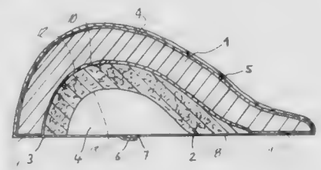
1. A zone of focus lens for use with an eye comprising:
a. a cylindrical optical element;
b. at least one annular optical element joined and concentric with said cylindrical element to form a unitary lens structure having a front surface, a rear surface and a circular periphery;
c. each of said elements serving to create an image on distinct portions of the retina;
d. at least two of said elements having different powers whereby objects at different distances from the eye are simultaneously brought to a focus on distinct portions of the retina; and,
e. at least two of said lens elements are different colors.

4,795,463
LABELED BREAST PROSTHESIS AND METHODS FOR DETECTING AND PREDICTING RUPTURE OF THE PROSTHESIS
Frank J. Gerow, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.
Continuation-in-part of Ser. No. 657,301, Oct. 3, 1984. This application Apr. 23, 1987, Ser. No. 41,886
Int. Cl.[4] A61F *2/12*
U.S. Cl. 623—8 **19 Claims**



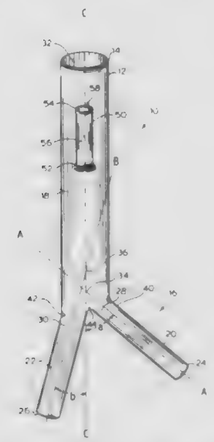
1. A method of determining whether a breast prosthesis implanted in a human breast cavity surrounded by human soft tissue remains intact, has ruptured, or has a fold-fault comprising,
implanting into the breast cavity a breast prosthesis comprised of a closed impermeable flexible envelope containing a material selected from the group consisting of liquids, gels, and combinations thereof, to provide and maintain a human breast shape when implanted, the envelope having a radioopaque label on its surface absorbing electromagnetic energy to an extent different from the human soft tissue, the envelope and its contents, the label being in a configuration to indicate a change or no change in the envelope's shape so that, when the breast prosthesis is implanted, no change in the label's configuration indicates that the envelope's shape has not changed and therefore the envelope is intact, and a change in the label's configuration indicates that the shape of the envelope has changed by rupturing or fold-faulting so that,
upon obtaining an X-ray image by electromagnetic imaging of the implanted breast prosthesis showing the configuration of the radioopaque label, the envelope is indicated as intact, has ruptured, or has a fold-fault.

4,795,464
ARTIFICIAL BREAST
Tertulin Eberl, Nonnenwaldstrasse 25, D-8122 Penzberg, Fed. Rep. of Germany, and Georg Weber-Unger, Kufstein, Austria, assignors to Tertulin Eberl, Penzberg, Fed. Rep. of Germany and Anita-Spezialmiederfabrik Dr. Helbig Gesellschaft m.b.H. & Co. KG, Kufstein, Austria
Continuation-in-part of Ser. No. 794,702, Nov. 4, 1985, Pat. No. 4,681,587, which is a continuation of Ser. No. 600,483, Apr. 16, 1984, abandoned. This application Mar. 2, 1987, Ser. No. 20,485
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1987, 8701925[U]
The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.
Int. Cl.[4] A61F *2/12*
U.S. Cl. 623—8 **12 Claims**



1. Artificial breast to be worn on the body of a person who has had a mastectomy, said artificial breast comprising a dish-shaped prosthetic body of silicone rubber resembling in its consistency and specific weight the natural breast tissue and which is covered with a polyurethane sheet, a front side adapted to the form of the natural breast and a rear side which forms a depression and which follows the contour of the front side, and a cushion body which is disposed in the depression, has a front side following the contour of the rear side of the prosthetic body and is detachably held in the depression by a fabric pocket which surrounds the prosthetic body on the front side and the cushion body on the rear side and which on its rear side has a slit-like opening which is closable by two overlapping ends of the rear side of the fabric pocket and through which the cushion body can be introduced into the depression of the prosthetic body and removed therefrom, characterized in that the rear side of the cushion body (2) forms a depression (4) which substantially follows the contour of the front side of the cushion body and that the rear side of the fabric pocket (3) comprises an elastic textile fabric, extends spaced from the bottom of the depression (4) of the cushion body (2) and can be pressed with elastic deformation into the depression (4) of the cushion body (2), the cushion body (2) being comprised of a foam plastic and having a specific weight which is lighter in specific weight than the prosthetic body (1), the foam plastic of cushion body (2) having the characteristic of providing less irritation to the wearer's body than the silicone rubber of the prosthetic body (1).

4,795,465
TRACHEOBRONCHIAL STENT
Lewis H. Marten, Quincy, Mass., assignor to Hood Laboratories, Pembroke, Mass.
Filed May 14, 1987, Ser. No. 49,399
Int. Cl.[4] A61F *2/04*
U.S. Cl. 623—9 **7 Claims**



1. In a tracheobronchial stent, which comprises;
a flexible tube of a synthetic, polymeric resin, including
(A) an open tracheal end;
(B) a bifurcated bronchial end comprising
(i) a left bronchial branch extending along a substantially straight axial line and having an end and a terminal, open end and
(ii) a right bronchial branch having an end and a terminal, open end
(C) a tube wall extending continuously from the tracheal end to each of the left and right bronchial branch terminal ends, and defining a continuous lumen providing open fluid communication between the open tracheal end and the open terminal ends, said tube wall having
(i) a tracheal zone extending from the tracheal end to the bifurcated branched end, along a substantially straight axial line;
(ii) an opening through the wall in the tracheal zone; and
(iii) a bronchial zone which comprises the left and the right branches together; and
(D) a tracheotomy tube mounted on the wall of the flexible tube and having
(i) a first open end integrally joined to the flexible tube wall in the tracheal zone so as to enclose the opening in the tracheal zone;
(ii) a second open end distal to the flexible tube juncture; and
(iii) a tracheotomy tube wall between the first and second open ends and defining a tracheotomy tube lumen providing open fluid communication between the second open end and the lumen of the flexible tube through the opening in the tracheal zone of the flexible tube wall;
the improvement, which comprises;
(E) an angle of from 40° to 60° formed by the intersection of the axial line of the flexible tube and the axial line of the left bronchial branch as measured on the left bronchial branch side of the intersection;
(F) an angle of from 5° to 25° formed by the intersection of the axial line of the flexible tube and the axial line of the right bronchial branch as measured on the right bronchial branch side of the intersection;
(G) a ratio of the outer diameter of the tracheal zone to the outer diameter of the left bronchial branch of 1.0:0.4–0.6;
(H) a ratio of the outer diameter of the tracheal zone to the outer diameter of the right bronchial branch of 1.0:0.4–0.6; and
(I) an arc between the left and the right bronchial branches, said arc being part of a circle having a radius of from 2 to 10 mm.

4,795,466
ARTIFICIAL CRUCIAL LIGAMENT FOR A KNEE JOINT
Karl-Gerhart Stuhmer, Ravensburg, Fed. Rep. of Germany; Otto Frey, Winterthur, and Rudolf Koch, Berlingen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Mar. 2, 1987, Ser. No. 20,456
Claims priority, application Switzerland, Mar. 7, 1986, 954/86
Int. Cl.[4] A61F *2/08*
U.S. Cl. 623—13 **13 Claims**



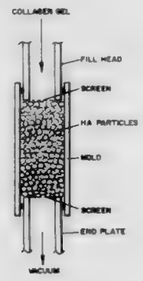
1. An artificial crucial ligament for a knee joint, said ligament having a at least three layers of tubular textile structures disposed in concentric relation to define a stem with said layers extending from said stem to define a pair of branches.

4,795,467
XENOGENEIC COLLAGEN/MINERAL PREPARATIONS IN BONE REPAIR
Karl A. Piez, Menlo Park; Bruce B. Pharriss, Palo Alto; George H. Chu, Sunnyvale; Thomas L. Smestad, and Diana Hendricks, Palo Alto, all of Calif., assignors to Collagen Corporation, Palo Alti, Calif.
Continuation-in-part of Ser. No. 717,072, Mar. 28, 1985, abandoned. This application Apr. 4, 1986, Ser. No. 848,443
Int. Cl.[4] A61F *2/28*
U.S. Cl. 623—16 **27 Claims**

1. A composition for use in bone repair, which composition

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comprises a mixture consisting essentially of 60–98% by weight of a calcium phosphate mineral component obtained



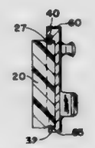
from mineral particles of non-biological origin in admixture with 2–40% of an atelopeptide reconstituted fibrillar collagen.

4,795,468

MECHANISM AND METHOD FOR LOCKING A BEARING INSERT TO THE BASE OF A PROSTHETIC IMPLANT

Robert A. Hodorek, and Terry D. Schlotterback, both of Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Dec. 23, 1987, Ser. No. 137,128
Int. Cl.[4] A61F *2/30, 2/38*
U.S. Cl. 623—18 **26 Claims**



24. A prosthetic implant for replacement of a portion of natural bone at a point of articulation, the implant comprising a first component of a base support and a second component of a removable bearing insert which may be positioned on the base support and a resilient locking clip, the implant includes a first side in which the clip is predisposed within a first side of one of these two components and wherein the clip is located in a first position in engagement with the base support and the bearing insert to cause an interference between the two components to securely lock the bearing insert to the base support, and wherein the clip has a second position in which the clip is deflected to enable the bearing insert to be inserted onto and potentially removed from the base support and wherein the implant further includes an oppositely located second side, the second side including a lip protruding from one of the two components and a corresponding cavity aligned with the lip in the other of the two components, the lip extending into the cavity for locating engagement therebetween.

4,795,469

THREADED ACETABULAR CUP AND METHOD

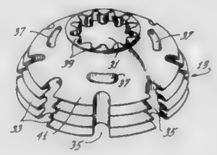
Indong Oh, 851 Lyndon St., South Pasadena, Calif. 91030

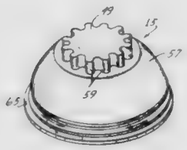
Filed Jul. 23, 1986, Ser. No. 889,187
Int. Cl.[4] A61F *2/34*
U.S. Cl. 623—22 **16 Claims**

1. An acetabular cup which can be implanted in the acetabulum comprising:

a shell having inner and outer ends, a cavity having an outer opening at said outer end and a surface defining an inner opening at said inner end and at a polar region of the shell, external screw threads for threading the shell into the acetabulum by rotation of the shell generally about a rotational axis which extends between said innner and outer ends;

an insert having an external polar cap and a concave bearing surface of generally part spherical configuration opening at a mouth, said bearing surface being adapted to receive a femoral head and slidably cooperate therewith, said





insert being receivable in the cavity of the shell with the polar cap being received in the inner opening of the shell said insert ahving an overhang which projects beyond the shell when the insert is received in the shell to reduce the likelihood of dislocation of the femoral head; and

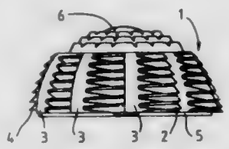
interlocking means on said surface of the shell at said inner opening and on the polar cap of the insert for holding the insert in any of a plurality of different angular positions relative to the shell whereby a desired angular orientation of the overhang can be selected.

4,795,470

TWO-PART SOCKET FOR HIP-JOINT PROSTHESIS

Volkmar Goymann, Forstmannstr. 62, D-4300 Essen 16, and Emmanuel Anapliotis, Tollensestr. 16, D-1000 Berlin 37, both of Fed. Rep. of Germany

Filed Apr. 21, 1983, Ser. No. 487,185
Int. Cl.[4] A61F *2/32*
U.S. Cl. 623—22 **19 Claims**



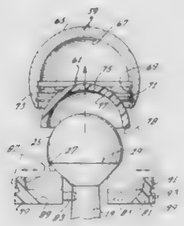
1. A support member for a prosthetic hip joint socket for mounting in a cavity of at least approximately hemispherical form in a hip bone, said support member having an outer surface which has the shape of a spherical segment having a radius of curvature originating from a single point so that said segment lies on the surface of an imaginary sphere having a center at said single point, said support member being formed with a self-tapping screw thread which is composed of a succession of thread-cutting teeth projecting from said outer surface so that said outer surface constitutes the root of said teeth, said thread being centered on an axis about which said support member is rotatable for screwing said thread into the cavity, said outer surface having a radius of curvature substantially corresponding to that of the cavity, whereby said support member is positionable within the cavity in any one of a plurality of different orientation positions, said support member being formed to receive an inner part complimentarily fittable into said support member.

4,795,471

CONVERSION FEMORAL ENDOPROSTHESIS

Indong Oh, 851 Lyndon St., South Pasadena, Calif. 91030

Continuation-in-part of Ser. No. 340,027, Jan. 18, 1982. This application Mar. 1, 1988, Ser. No. 162,647
Int. Cl.[4] A61F *2/32*
U.S. Cl. 623—23 **5 Claims**



1. A femoral prosthesis comprising:

a head having an exterior surface, at least a portion of said exterior surface being generally spherical;

an elongated stem having a curved portion and a generally linear portion with the linear portion terminating in a distal end, said stem having a lateral edge which is curved along the curved portion of the stem;

a neck joining said head to said stem;

first and second fins protruding outwardly from anterior and posterior surfaces of the stem and extending distally along the lateral edge of the curved portion of the stem from a location adjacent the neck to an intermediate location along the curved portion of the stem; each of said fins having a lateral end surface which extends distally of said intermediate location to a distal end and which is generally parallel to the axis of the linear portion of the stem, each of said lateral end surfaces lying medially of said lateral edge of the stem distally of the intermediate location; and

a portion of each of the fins adjacent the distal end thereof tapering toward such distal end of the associated fin as viewed in the frontal plane.

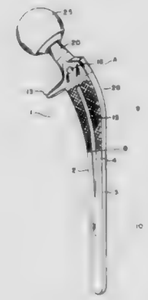
4,795,472

PROSTHESIS WITH ENHANCED SURFACE FINISH

Roy D. Crowninshield, and Arden R. Zolman, both of Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Jan. 28, 1987, Ser. No. 7,538
Int. Cl.[4] A61F *2/32*
U.S. Cl. 623—23 **5 Claims**

1. An orthopaedic prosthesis comprising a base material, the prosthesis having a polymer coating about an area of the prosthesis, the coating being substantially completely polymerized, and the prosthesis further including a textured surface over a portion of the base material underneath at least a portion of the polymer coating, wherein the textured surface is a macrotextured surface which includes a plurality of indentations in the base material that are readily visible without magnification and wherein the polymer coating is uniform in thickness about the prosthesis, thus providing an indented, nonsmooth polymer surface wherein the polymer coating does not completely fill



up the indentations, but wherein the polymer surface has indentations therein.

4,795,473

EXTRAMEDULLARY FEMORAL HEAD-NECK PROSTHESIS AND METHOD OF IMPLANTING SAME

James B. Grimes, 15301 Vista Grande Dr., Bakersfield, Calif. 93306

Filed Jan. 9, 1987, Ser. No. 1,827
Int. Cl.[4] A61F *2/36, 5/09*
U.S. Cl. 623—23 **9 Claims**



1. An extramedullary femoral head-neck prosthesis for implantation in a femur having a shaft and a neck at the medial side of the femur, comprising:

a sideplate;

means for securing the sideplate to the femur shaft at the lateral side of the femur;

a barrel extending obliquely upwardly from the sideplate and having an open upper end, said barrel being adapted to be inserted in a bore extending obliquely upwardly through the shaft of the femur from the lateral side of the shaft to the neck of the femur;

a ball assembly comprising a ball stem having a central longitudinal axis adapted to be inserted coaxially into the barrel through the open upper end of the barrel and to be slideably received therein, said ball stem being sized for a relatively closed clearance fit in said barrel, a collar at one end of the stem, constituting its upper end, adapted for face-to-face engagement with the neck of the femur, a

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neck on the collar, and a ball on the neck, said neck having a central longitudinal axis which is skewed relative to the central longitudinal axis of the stem so that the center of the ball is offset medially from the longitudinal axis of the stem; and

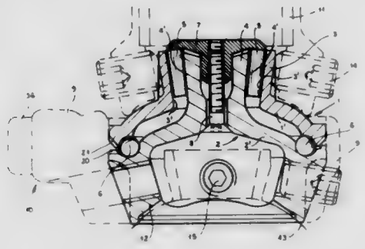
retainer means for holding the ball stem against upward movement of the stem in the barrel.

4,795,474

ROTARY JOINT ESPECIALLY FOR A KNEE PROSTHESIS

Eduard Horvath, Vienna, Austria, assignor to Otto Bock Orthopaedische Industrie Besitz - und Verwaltungs-KG, Duderstadt, Fed. Rep. of Germany

Filed Nov. 5, 1986, Ser. No. 927,729
Claims priority, application Austria, Nov. 6, 1985, 3204/85
Int. Cl.[4] A61F *2/74*
U.S. Cl. 623—27 **17 Claims**



1. A rotary joint, especially for a prosthesis, adapted to withstand high tilting forces transverse to an axis of relative rotation of two members to be connected by the joint, said rotatable joint comprising:

an outer part formed with a disk portion and a central boss connected to said disk portion at a transition region between said boss and said disk portion;

an inner part formed with a disk portion juxtaposed with said disk portion of said outer part, and a central boss coaxial with said central boss of said outer part along said axis and received therein, said central boss of said inner part being connected to said disk portion of said inner part at a respective transition region between said boss and said disk portion of said inner part;

an array of tapered bearing rollers received between said bosses and defining therewith a tapered-roller bearing having a small diameter end substantially at said transition regions;

means for bracing outer peripheries of said disk portions rotatably against one another;

means for connecting each of said parts to a respective member so that said members have an axis of relative rotation and are connected to said joint, and a locking device for locking said inner and outer parts against rotation relative to said locking device including a locking element movable relative to said inner and outer parts radially thereof, said inner and outer parts being formed with recesses adapted to receive said locking element for immobilizing said parts against relative rotation, said parts being relatively rotatable upon retraction of said element radially from said recesses.

4,795,475

PROSTHESIS UTILIZING SALT-FORMING OXYACIDS FOR BONE FIXATION

Michael M. Walker, 5100 DuPont Boulevard, Ft. Lauderdale, Fla. 33308

Filed Aug. 9, 1985, Ser. No. 764,102
Int. Cl.[4] A61F *2/54*
U.S. Cl. 623—66 **29 Claims**

1. A method for promoting deposition and adhesion of developing bone tissue onto a surface of an implanted prosthesis and for promoting growth of developing bone tissue into any pores in said prosthesis surface as small as 2 microns in diameter which method comprises selecting the prosthesis so that at least the prosthesis surface intended for contact with developing bone tissue comprises a biocompatible organic polymer substituted with salt-forming oxyacid groups selected from the group consisting of the oxyacids of carbon, sulfur and phosphorus, and implanting said prosthesis so that said surface is accessible to developing bone tissue whereby the deposition and adhesion of developing bone tissue to the surface of the implanted prosthesis operates to secure the implanted prosthesis in a fixed position relative to adjacent bone tissue.

14. In a prosthesis having a porous surface adapted for prosthesis-securing engagement with ingrowing bone tissue, the improvement consisting essentially of forming said porous surface to comprise a biocompatible organic polymer substituted with salt-forming oxyacid groups selected from the group consisting of $—SO_3H$, $—OSO_3H$, and $—SO_2H$.

4,795,476

METHOD FOR PERMANGANATE BLEACHING OF FABRIC AND GARMENTS

Samuel L. Bean, Wilmington, Del.; Mark D. Dulik, West Chester, Pa., and Peter A. Monopoli, Wilmington, Del., assignors to General Chemical Corporation, Parsippany, N.J.

Filed Jan. 27, 1988, Ser. No. 149,217
Int. Cl.[4] D06L *3/00*; **B01D** *19/00*
U.S. Cl. 8—107 **5 Claims**

1. In a process for preparing bleached fabrics wherein the fabric is treated with a permanganate oxidizing agent which is subsequently reduced, the improvement comprising reducing the permanganate with a reducing composition comprising sodium metabisulfite and sodium sulfite in amounts wherein the metabisulfite and sulfite are present in a mole ratio of between about 0.6 and about 3.2 such that substantially no sulfur dioxide odor is detectable during the reduction step.

4,795,477

PRINTABLE POLYACETAL COMPOSITIONS

Rajal Kusumgar, Livingston; K. M. Natarajan, N. Brunswick, and Carl A. Amoud, Berkeley Heights, all of N.J., assignors to Celanese Corporation, Bridgewater, N.J.

Filed Jul. 16, 1986, Ser. No. 886,275
Int. Cl.[4] D06P *1/16*
U.S. Cl. 8—471 **19 Claims**

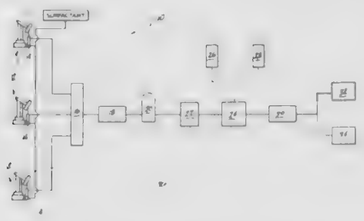
1. A process for transferring a dye from a intermediate transfer surface to an article molded from an oxymethylene polymer, comprising; intimately contacting said intermediate transfer surface with said molded article and applying sufficient heat and pressure to transfer the dye from said transfer surface to said molded article, said molded article being formed from a blend of about 50 to 90 wt. % of an oxymethylene polymer and from about 10 to 50 wt. % of an amorphous or partially crystalline polymer additive.

4,795,478

VISCOUS HYDROCARBON-IN-WATER EMULSIONS

Ignacio A. Layrisse R., Estado Miranda; Domingo R. Polanco, Edo. Miranda; Hercilio Rivas; Euler Jimenez G., both of Caracas; Lirio Quintero; Jose Salazar P., both of Edo. Miranda; Mayela Rivero, Edo. Mérida; Antonio Cardenas, Caracas; Maria L. Chirinos, Caracas; Daysi Rojas, Caracas, and Humberto Marquez, Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Continuation-in-part of Ser. No. 14,871, Feb. 17, 1987, which is a continuation-in-part of Ser. No. 875,450, Jun. 17, 1986. This application Sep. 11, 1987, Ser. No. 96,643
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 **45 Claims**



1. A process for the preparation of a naturally occurring viscous hydrocarbon material for further processing comprising the steps of:

(a) forming a first hydrocarbon-in-water emulsion from said naturally occurring viscous hydrocarbon material using an emulsifier wherein said hydrocarbon-in-water emulsion has a water content of at least 15 wt. %, a viscosity of no more than 5000 centipoise at 122° F. and an oil droplet size of no more than 300 microns;

(b) degassing said first hydrocarbon-in-water emulsion at a temperature of as low as 95° F. at a pressure of at least 20 psi so as to obtain a degassing efficiency of said hydrocarbon-in-water emulsion of greater than or equal to 90% so as to produce a degassed hydrocarbon-in-water emulsion having a gas content of less than 5 cubic ft. of gas per barrel of emulsion;

(c) adjusting the density difference between the hydrocarbon-in-water phases of said degassed hydrocarbon-in-water emulsion such that the density difference between the phases is greater than or equal to 2×10^{-3} g/cm^3 at a temperature T wherein the temperature T is greater than or equal to 15° C. below the cloud point of said emulsifier used in the formation of the first hydrocarbon-in-water emulsion;

(d) breaking said density adjusted hydrocarbon-in-water emulsion in a separator at said temperature T and recovering said naturally occurring hydrocarbon material separated;

(e) re-emulsifying said separated naturally occurring hydrocarbon material using an emulsifier and conditioning same for further processing so as to form a stable second hydrocarbon-in-water emulsion suitable for transportation; and

(f) transporting said second hydrocarbon-in-water emulsion.

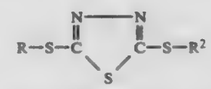
4,795,479

FUEL COMPOSITIONS CONTAINING TERPENE DERIVATIVES OF 2,5-DIMERCAPTO-1,3,4-THIADIAZOLE

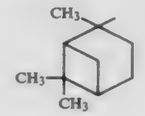
Thomas J. Karol, Norwalk, Conn., assignor to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed May 2, 1988, Ser. No. 188,921
Int. Cl.[4] C10L *1/22, 1/24*
U.S. Cl. 44—63 **4 Claims**

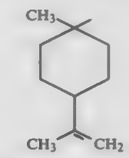
1. A diesel fuel composition characterized by improved wear properties and comprising a major portion of middle distillates boiling in the range of about 163° C. to 400° C. and a minor wear improving amount of a reaction product of a terpene and 2,5-dimercapto-1,3,4-thiadiazole selected from the group of compounds having the structural formula



wherein R represents pinene residue of the formula



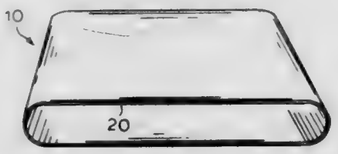
and limonene residue of the formula



and R^2 may be the same as R or hydrogen, alkyl, hydroxyalkyl, alkylthio, phenylalkyl and alkylated phenylalkyl groups.

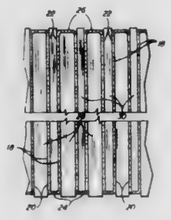
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,480
PAPERMAKERS FELT WITH A RESIN MATRIX SURFACE
Donald R. Boyer, Cowansville, Canada, and Robert L. Crook, Starkville, Miss., assignors to Albany International Corp., Menands, N.Y.
Filed Dec. 10, 1986, Ser. No. 939,868
Int. Cl.[4] B24B *1/00*
U.S. Cl. 51—296 **2 Claims**



1. A method of manufacturing a woven press felt base having at least one woven layer which comprises:
providing a woven base;
coating said woven base with fluid resin containing a network of textile fibers;
curing said resin on said woven felt base; and
grinding said resin coated woven felt base to open sealed voids said channels and to impact a smooth, highly uniform finished surface to said felt.

4,795,481
AIR FILTER WITH HIGH DUST-HOLDING CAPACITY
Jerry R. Ellis, Visalia, Calif., assignor to Cambridge Filter Corporation, Syracuse, N.Y.
Filed Mar. 25, 1988, Ser. No. 173,567
Int. Cl.[4] B01D *46/12*
U.S. Cl. 55—500 **5 Claims**



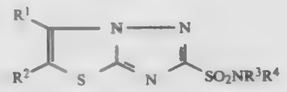
1. A HEPA air filter comprising:
(a) a four sided, box-like frame;
(b) a continuous sheet of filter media folded back and forth in an accordion fashion to provide a plurality of pleats formed by substantially parallel, spaced walls of media with zig-zag edges on two opposite sides in parallel planes and terminating media walls on two other opposite sides in parallel planes;
(c) means sealing said zig-zag edges and said terminating walls to inner surfaces of said frame for flow of air into the pleates facing in an upstream direction of air flow, through the media, and out of the pleats facing in the downstream direction;
(d) upstream corrugated spacers having a length and width corresponding substantially to the length and width of said media walls and a first, constant amplitude, one of said upstream spacers being placed between the opposing walls of each of said pleats facing in the upstream direction; and
(e) downstream corrugated spacers having a length and width corresponding substantially to the length and width of said media walls and a second, constant amplitude, one of said downstream spacers being placed between the opposing walls of each of said pleats facing in said downstream direction;
(f) said first amplitude being in the range of 2 to 2½ times said second amplitude, whereby the walls of said upstream pleats are spaced from one another by a distance 2 to 2½ times greater than the distance by which the walls of said downstream pleats are spaced from one another.

4,795,482
PROCESS FOR ELIMINATING ORGANIC ODORS AND COMPOSITIONS FOR USE THEREIN
Anthony J. Gioffre, Ridgefield, Conn., and Bonita K. Marcus, Rye, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.
Filed Jun. 30, 1987, Ser. No. 67,977
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—75 **18 Claims**

1. Process for removing odors from an environment attributable to an organic molecular species which comprises contacting and adsorbing at a temperature of from −25° C. to 100° C. the molecules of the organic molecular species with a crystalline siliceous molecular sieve adsorbent which has been at least partially activated, in which at least about 90 percent of the framework tetrahedral oxide units are SiO_2 tetrahedra, which has pore diameters of at least 5.5 Angstroms and has a capacity for adsorbed water of not greater than 10 weight percent when measured at 25° C. and at a water vapor pressure of 4.6 torr, said contacting and adsorbing of the organic molecular species being to such a degree that residual concentrations thereof over the adsorbent are below the detection threshold of the human sense of smell.

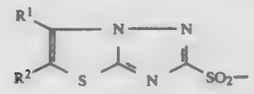
4,795,483
HERBICIDES
Peter S. Gates, Cambridge, England, assignor to Schering Agrochemicals, England
Filed Apr. 28, 1987, Ser. No. 43,370
Claims priority, application United Kingdom, Apr. 30, 1986, 8610530
Int. Cl.[4] C07D *513/04*; A01N *43/90*
U.S. Cl. 71—90 **19 Claims**

1. A thiazolotriazole sulphonamide of the formula:



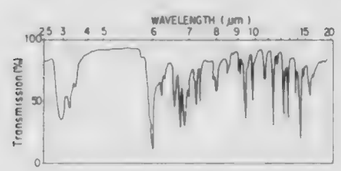
where:
R^1 and R^2, which may be the same or different, each represent hydrogen; hydroxy; halo; cyano; halo, carboxy, cyano or alkoxycarbonyl of 1 to 4 carbon atoms substituted or unsubstituted alkyl or alkoxy of 1 to 6 carbon atoms; alkenyloxy or alkynyloxy of 2 to 6 carbon atoms, fluoro or chloro and methyl substituted or unsubstituted phenyl or benzyl; a 5- or 6-membered single ring nitrogen containing heteraryl group, or carbamoyl; or a group $—COR^a$ or $—CO_2R^a$ where R^a is hydrogen or alkyl of 1 to 6 carbon atoms; or R^1 and R^2 together represent an alkylene chain of 3 or 4 carbon atoms;
R^3 represents unsubstituted phenyl or phenyl substituted by one or more alkyl, alkoxy, alkoxycarbonyl or alkylthio groups of 1 to 4 carbon atoms (which may themselves be further substituted by cyano or halogen), cyano groups, aminosulphonyl groups, halogen atoms or nitro groups, a 5- or 6-membered heterocyclic group which contains nitrogen, oxygen or sulfur or benzheterocyclyl group; and
R^4 represents hydrogen, an alkali-metal atom, an ammonium group, a halo, carboxy, cyano or alkoxycarbonyl of 1 to 4 carbon atoms, alkenyl or alkynyl of 2–6 carbon atoms,

acyl, alkoxycarbonyl of 2 to 6 carbon atoms, benzyl or a 5- or 6-membered single ring nitrogen containing heterocyclic group, or a group of the formula:

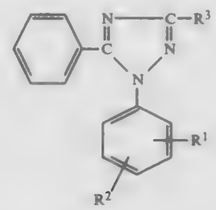


where R^1 and R^2 are as defined hereinbefore.

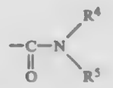
4,795,484
HERBICIDAL COMPOSITION CONTAINING A DERIVATIVE OF 1,2,4-TRIAZOLE AS AN ACTIVE INGREDIENT
Katsumichi Aoki; Takafumi Shida; Takeo Watanabe; Keigo Satake; Hiroyasu Shinkawa, and Shiro Yamazaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 487,742, Apr. 22, 1983, abandoned. This application Apr. 24, 1986, Ser. No. 858,531
Claims priority, application Japan, May 7, 1982, 57-77010; Nov. 25, 1982, 57-206486
The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.
Int. Cl.[4] A01D *43/64*; C07D *249/10*
U.S. Cl. 71—92 **15 Claims**



1. A herbicidal composition comprising a derivative of 1,2,4-triazole represented by the general formula (I):


(I)

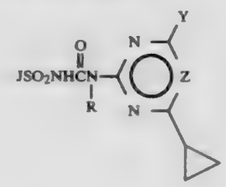
wherein R^1 represents a hydrogen atom, halogen atom or (C_1–C_2) alkyl group; R^2, represents a hydrogen atom, halogen atom, (C_1–C_2) alkyl group, fluoromethyl group ($—CH_2F$), 3,3,3-trifluoropropyl group, methoxy group, cyano group, methoxymethyl group, methylthio group, methoxycarbonyl group or isopropoxycarbonyl group and R^3 represents a thiocarbamoyl group or a group represented by the general formula (II):


(II)

wherein R^4 represents a hydrogen atom, (C_1–C_2) alkyl group or hydroxy (C_1–C_2) alkyl group and R^5 represents a hydrogen atom, (C_1–C_2) alkyl group, halogeno (C_1–C_2) alkyl group, hydroxy (C_1–C_2) alkyl group, cyanomethyl group, acetyl group, halogenoacetyl group, methoxyacetyl group, amino group, phenyl group, methoxy group, hydroxyl group, (C_2–C_3) alkenyl group, halogeno (C_2–C_3) alkenyl group, isopropylcarbonyl group, methylthiocarbamoyl group or 2-methoxyethyl group, with the proviso that R^2 is not a hydrogen atom, halogen atom or (C_1–C_2) alkyl group when both of R^4 and R^5 represent hydrogen atoms, and a herbicidally acceptable carrier or diluent therefor.

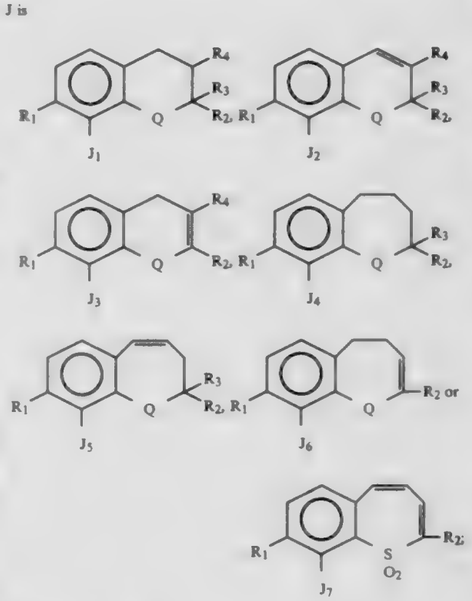
4,795,485
PHENYL-SUBSTITUTED SULPONAMIDES
Robert J. Pasteris, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 705,832, Mar. 1, 1985, abandoned, which is a continuation-in-part of Ser. No. 612,659, May 21, 1984, abandoned. This application Apr. 8, 1987, Ser. No. 35,931
Int. Cl.[4] C07D *409/12*, *407/12*; A01N *43/66*
U.S. Cl. 71—90 **15 Claims**

1. A compound of the formula:



wherein

J is



Q is O, S or SO_2;
R is H or CH_3;
R_1 is H, CH_3, OCH_3, Cl, Br, CO_2R_5, SO_2R_6, OSO_2R_7 or $SO_2NR_8R_9$;
R_4 is H or CH_3;
R_2 and R_3 are independently H or C_1–C_3 alkyl;

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R_5 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl;
R_6 is C_1–C_3 alkyl;
R_7 is C_1–C_3 alkyl or CF_3;
R_8 and R_9 are independently C_1–C_2 alkyl;
Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, $NHCH_3$ or $N(CH_3)_2$; and
Z is N;
and their agriculturally suitable salts; provided that:
(1) the total number of carbon atoms in R_2 and R_3 is less than or equal to 3;
(2) in Formula J_2, when R_2 and R_3 are other than H, then R_4 is H;
(3) in Formula J_3, when R_2 is other than H, then R_4 is H;
(4) when Q is S, then R_1 is not $SO_2NR_8R_9$;
(5) in Formulae J_3 and J_6, Q may not be O; and
(6) in Formula J_7, R_1 is not CH_3.

11. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

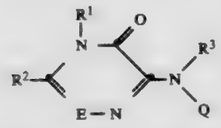
4,795,486

AMINOPYRAZINONES AND AMINOTRIAZINONES

Beat Böhner, Hügelweg 3, 4102 Binningen, and Willy Meyer, Talweg 49, 4125 Riehen, both of Switzerland

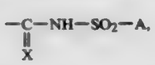
Filed Sep. 21, 1987, Ser. No. 99,036
Claims priority, application Switzerland, Sep. 26, 1986, 3871/86
Int. Cl.[4] C07D *401/12, 253/06, 409/12*; A01N *43/707*
U.S. Cl. 71—93 **14 Claims**

1. An aminotriazinone of the formula I



(I)

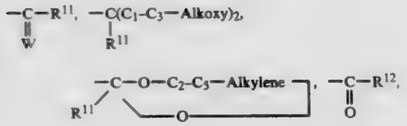
in which E is nitrogen, R^1 is C_1–C_4-alkyl, R^2 is hydrogen, C_1–C_3-alkyl, C_1–C_3-halogenoalkyl, C_1–C_3-alkoxy, C_1–C_3-halogenoalkoxy, C_1–C_3-alkylthio, C_1–C_3-alkylsulfinyl, C_1–C_2-alkoxyethoxy, C_1–C_3-alkylsulfonyl, halogen or $—NR^5R^6$, R^3 is hydrogen or C_1–C_3-alkyl and Q is a group



in which R^5 and R^6 independently of one another are hydrogen or C_1–C_3-alkyl, X is oxygen or sulfur and A is a group



in which Y is oxygen, sulfur, —CH=CH—, $—NR^9—$ or $—CR^{10}{=}N—$, R^7 is hydrogen, halogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, nitro or trifluoromethyl, R^8 is hydrogen, halogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, nitro, —C≡CH, or one of the groups



-continued



R^9 and R^{10} independently of one another are hydrogen, C_1–C_3-alkyl or C_2–C_4-alkenyl, R^{11} is hydrogen, C_1–C_3-alkyl, C_1–C_3-halogenoalkyl, C_3–C_6-cycloalkyl or C_2–C_4-alkoxyalkyl, R^{12} is C_1–C_6-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkinyloxy, C_2–C_6-halogenoalkoxy, C_1–C_4-cyanoalkoxy, C_1–C_6-alkylthio, C_3–C_6-alkenylthio, C_3–C_6-alkinylthio, C_5–C_6-cycloalkoxy, C_2–C_6-alkoxyalkoxy or $—NR^{16}R^{17}$, R^{13} is hydrogen, C_1–C_3-alkyl or C_3–C_4-alkenyl, R^{14} is hydrogen, C_1–C_3-alkyl, C_1–C_3-cyanoalkyl or C_1–C_3-alkoxy, R^{15} is C_3–C_6-alkinyl, C_2–C_6-alkenyl, C_1–C_6-alkyl, C_1–C_4-halogenoalkyl, C_2–C_4-halogenoalkyl or C_1–C_4-alkyl, substituted by cyano, methoxy, ethoxy, nitro, C_1–C_4-alkoxycarbonyl, methylthio, ethylthio, methylsulfonyl or ethylsulfonyl; or C_3–C_4-alkenyl substituted by nitro, cyano, methoxy or ethoxy, R^{16} is hydrogen, C_1–C_3-alkyl or C_3–C_4-alkenyl, R^{17} is hydrogen, C_1–C_3-alkyl, C_1–C_3-cyanoalkyl or C_1–C_3-alkoxy, R^{18} is C_1–C_3-alkyl and C_1–C_3-halogenoalkyl, W is oxygen or sulfur, Z is oxygen, sulfur, —SO— or $—SO_2—$ and m is the number zero or one, or a salt of one of these compounds.

10. A method of controlling undesirable plant growth, which comprises applying an effective amount of an active substance of the formula I according to claim 1 or of a composition containing this active substance to the plants or their environment.

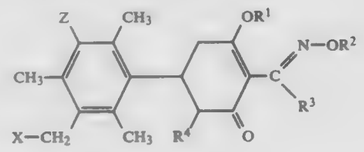
4,795,487

HERBICIDAL CYCLOHEXANE-1,3-DIONE DERIVATIVES

Keith G. Watson, and Craig G. Lovel, both of Melbourne, Australia, assignors to ICI Australia Limited, Victoria, Australia

Filed Jul. 16, 1986, Ser. No. 886,263
Claims priority, application Australia, Aug. 8, 1985, PH1857
Int. Cl.[4] A01N *33/16, 37/34*; C07C *81/00, 121/52*
U.S. Cl. 71—100 **9 Claims**

1. A compound of formula I



I

wherein:
X is cyano or



in which R^5 and R^6 are each independently hydrogen or C_1 to C_4 alkyl and
Y is oxygen or sulfur;
Z is selected from the group consisting of: hydrogen, halogen, C_1 to C_4 alkyl and C_2 to C_4 alkanoyl;
R^1 is selected from the group consisting of: hydrogen; C_2 to C_6 alkanoyl and the alkali metal cations;
R^2 is selected from the group consisting of: C_1 to C_6 alkyl; C_2 to C_6 alkenyl and C_3 to C_6 alkynyl;
R^3 is selected from the group consisting of: C_1 to C_6 alkyl;
R^4 is hydrogen.

7. A process for severely damaging or killing unwanted plants which process comprises applying to said plants, or to the growth medium of said plants, an effective amount of a compound as defined according to claim 1.

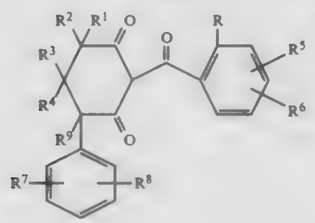
4,795,488

2-(SUBSTITUTED BENZOYL)-4-(SUBSTITUTED OR UNSUBSTITUTED) PHENYL-1,3-CYCLOHEXANEDIONES AS HERBICIDES

David L. Lee, Martinez, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

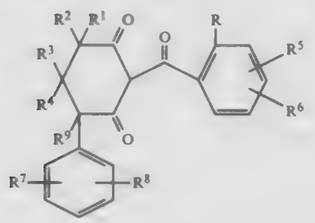
Filed Sep. 12, 1986, Ser. No. 906,462
Int. Cl.[4] A01N *41/04*; C07C *147/06*
U.S. Cl. 71—103 **37 Claims**

1. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein
R is chlorine, bromine, methyl, methoxy, nitro, trifluoromethyl, or methylsulfonyl;
R^1, R^2, R^3 and R^4 are hydrogen or methyl;
R^5, R^6, R^7 and R^8 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) $R^bSO_n—$ wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) $—NR^cR^d$ wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)—$ wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) $SO_2NR^cR^d$ wherein R^c and R^d are as defined; or (13) $—N—(R^c)C(O)R^d$ wherein R^c and R^d are as defined; and
R^9 is hydrogen or methyl and their salts.

14. Compounds of the formula



wherein
R is chlorine, bromine, methyl, methoxy, nitro, trifluoromethyl or methylsulfonyl;
R^1, R^2, R^3 and R^4 are hydrogen or methyl;
R^5, R^6, R^7 and R^8 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) $R^bSO_n—$ wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) $—NR^cR^d$ wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)—$ wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) $SO_2NR^cR^d$ wherein R^c and R^d are as defined; or (13) $—N—(R^c)C(O)R^d$ wherein R^c and R^d are as defined; and
R^9 is hydrogen or methyl and their salts.

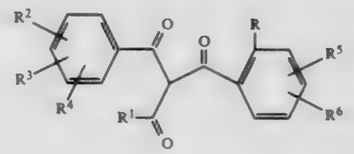
4,795,489

CERTAIN 1,3-DIPHENYL-1,3-PROPANEDIONES

David L. Lee, Martinez, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 872,347, Jun. 9, 1986. This application Mar. 28, 1988, Ser. No. 173,900
Int. Cl.[4] A01N *31/04*
U.S. Cl. 71—123 **25 Claims**

1. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



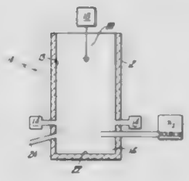
wherein
R is hydrogen; halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; nitro; cyano; C_1–C_2 haloalkyl; or $R^aSO_n—$ wherein n is 0 or 2 and R^a is C_1–C_2 alkyl;
R^1 is C_1–C_4 alkyl or C_1–C_4 alkoxy;
R^2, R^3, R^4, R^5 and R^6 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) $R^bSO_n—$ wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) $—NR^cR^d$ wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)—$ wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) $—SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) $—N(R^c)C(O)R^d$ wherein R^c and R^d are as defined and their salts.

4,795,490

INERT GAS PURGING DURING SHAFT FURNACE SHUT DOWN

James H. Leckie, Huntington, and Horace Pops, Fort Wayne, both of Ind., assignors to Essex Group, Inc., Ft. Wayne, Ind.

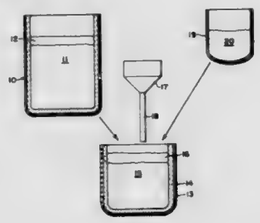
Filed Dec. 22, 1987, Ser. No. 136,799
Int. Cl.[4] C22B *15/00*
U.S. Cl. 75—76 **6 Claims**



1. A method for minimizing oxidation of copper in a copper melting shaft furnace during a furnace shut down period, comprising the steps of:
(a) terminating combustion in the furnace;
(b) introducing liquid nitrogen into the furnace at a primary rate sufficient to produce, per minute, an amount of gaseous nitrogen which is at least about three times the furnace interior volume; and then
(c) introducing liquid nitrogen into the furnace at a secondary rate sufficient to produce, per minute, an amount of gaseous nitrogen which is about one quarter to one times the furnace interior volume.

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4,795,491
PREMELTED SYNTHETIC SLAG FOR LADLE DESULFURIZING MOLTEN STEEL
Joseph R. Quigley, 7425 Ben Hur St., Pittsburgh, Pa. 15206
Filed Apr. 13, 1987, Ser. No. 37,942
Int. Cl.[4] C21B 5/04
U.S. Cl. 75—257 3 Claims



1. A premelted synthetic slag having a low melting temperature for desulfurizing molten steel comprising:

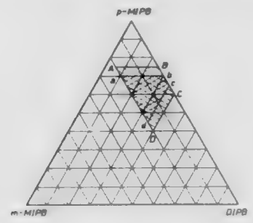
Al_2O_3	44–85% by weight
CaO	3–35% by weight
MgO	9–20% by weight
SiO_2	0.1–3.0% by weight
Iron oxides	0.05–1.0% by weight
Metals, oxides and inerts	<3% by weight

4,795,492
CORROSION INHIBITING COATING COMPOSITION
David G. Othen, Sunbury-on-Thames, England, assignor to The British Petroleum Company p.l.c., London, England
Filed Sep. 15, 1987, Ser. No. 96,900
Claims priority, application United Kingdom, Sep. 18, 1986, 8622465
Int. Cl.[4] C09D 5/08; C23F 11/08; C09K 15/02
U.S. Cl. 106—14.21 7 Claims

1. An aqueous-based coating composition having a water content of 30 to 80% by weight suitable for application to a metal surface to inhibit corrosion comprises:
(i) from 50 to 90% by weight of elemental zinc in particulate form based on the weight of the dry coating composition,
(ii) an effective amount of inorganic oxide particles having corrosion inhibiting ions chemically bound to the surface thereof by ion exchange.

4,795,493
SOLVENT FOR CHROMOGENIC DYE-PRECURSOR MATERIAL FOR PRESSURE-SENSITIVE RECORDING PAPER SHEET AND PRESSURE-SENSITIVE RECORDING PAPER SHEET PREPARED BY USING THE SOLVENT
Yoshio Okada, Matsudo; Tadashi Nakamura, and Youichi Ohhira, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 26, 1987, Ser. No. 29,927
Claims priority, application Japan, Feb. 19, 1987, 62-36686
The portion of the term of this patent subsequent to Oct. 13, 2004, has been disclaimed.
Int. Cl.[4] C08K 5/01
U.S. Cl. 106—311 4 Claims

1. A solvent for the chromogenic dye-precursor material for a pressure-sensitive recording paper sheet, which comprises from 0 to 20% by weight of m-isopropylbinphenyl, from 40 to



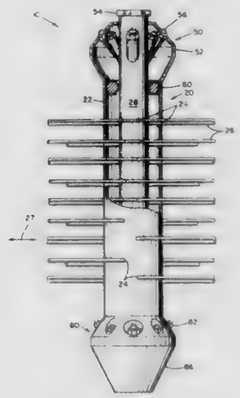
75% by weight of p-isopropylbiphenyl and from 5 to 40% by weight of diisopropylbiphenyl.

4,795,494
BEET JUICE PURIFICATION SYSTEM
Laszlo Toth, Thornton, and Michael R. Conway, Evergreen Highlands, both of Colo., assignors to The Western Sugar Company, Denver, Colo.
Filed Mar. 14, 1988, Ser. No. 167,845
Int. Cl.[4] C07C 53/00, 55/00; C13D 3/12
U.S. Cl. 127—48 10 Claims

1. A process for the removal of non-sugar impurities from beet diffusion juice having essentially no beet tissue particles therein and comprising water, sugar, and dissolved and colloidal non-sugar impurities, said process comprising the steps of:
(a) subjecting the diffusion juice to a progressive preliming procedure wherein lime and carbonation sludge are added to gradually increase the pH of the juice to about 11.6 to thereby produce a limed first juice fraction containing non-sugar flocs produced from non-sugar impurities which so flocculate and a limed second juice fraction which is floc-free;
(b) separating the first juice fraction containing the non-sugar flocs from the second juice fraction;
(c) subjecting the second juice fraction to a main liming procedure wherein lime is added to the second juice fraction and continuously intimately mixed therewith at ambient temperature to increase the pH thereof to above about 12.6 and wherein the resultant mixture is maintained for a period of time sufficient to degrade non-sugar impurities which are degradable at said temperature;
(d) heating with continuous intimate mixing thereof the mixture of (c) to about 80°–90° C. and maintaining said mixture for a period time sufficient to degrade non-sugar impurities which are degradable at said temperature;
(e) uniting without substantial mechanical or chemical degradation at least a portion of the first juice fraction containing at least a portion of the non-sugar flocs with the resulting second juice fraction of (d) in a first carbonation procedure wherein carbon dioxide gas is introduced in a quantity sufficient to react with at least about 95% of lime present in the first and second juice fractions to thereby produce a single juice fraction and calcium carbonate precipitate which adsorbs certain remaining disolved non-sugar impurities which are so adsorbable and which insulates the non-sugar flocs by creating permanent calcium carbonate scales around each floc particle;
(f) separating the single juice fraction of (e) and further treating said juice fraction in a second carbonation procedure wherein the juice is heated to a temperature immediately below the boiling point of the juice and carbon dioxide gas is introduced in a quantity sufficient to react with substantially all lime there present to thereby produce calcium carbonate precipitate and a final juice fraction; and

(g) separating the final juice fraction of (f) from the calcium carbonate precipitate.

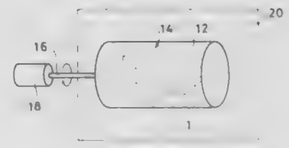
4,795,495
SEWER CLEANING DEVICE
Michael K. Dobson, Sr., Streamwood, Ill., assignor to Village of Streamwood, Streamwood, Ill., a part interest
Filed Oct. 11, 1985, Ser. No. 786,626
Int. Cl.[4] B08B 9/04
U.S. Cl. 134—8 20 Claims



1. A device for cleaning a sewer capable of being attached to a sewer jet wherein:
a. a housing having a water conveying tube and a central perforated cylinder is provided for said device;
b. an inlet nozzle assembly is secured to a first end of said housing;
c. a sealed nozzle assembly is secured to a second end of said housing and oppositely disposed from said inlet nozzle assembly;
d. said inlet nozzle assembly and said sealed nozzle assembly each include a plurality of high pressure nozzles;
e. said water conveying tube connects said high pressure nozzles of said inlet nozzle assembly and said sealed nozzle assembly to provide for water flow through said high pressure nozzles;
f. said housing further includes said central perforated cylinder for said housing between said inlet nozzle assembly and said sealed nozzle assembly surrounding said water conveying tube; and
g. a plurality of stiffened cables are mounted in said central perforated cylinder.

19. A method for cleaning a sewer comprising forming a device using high pressure water and a scraping means, securing said device to a sewer jet, running water through said sewer jet into said device and out through high-pressure nozzles, wherein:
a. a housing is provided for said device;
b. an inlet nozzle assembly is secured to a first end of said housing;
c. a sealed nozzle assembly is secured to a second end of said housing and oppositely disposed from said inlet nozzle assembly;
d. said inlet nozzle assembly and said sealed nozzle assembly each include a plurality of high pressure nozzles;
e. a water conveying tube connects said high pressure nozzles of said inlet nozzle assembly and said sealed nozzle assembly to provide for water flow through said high pressure nozzles;
f. said housing further includes a central perforated cylinder for said housing between said inlet nozzle assembly and said sealed nozzle assembly surrounding said water conveying tube; and
g. said perforated cylinder has a plurality of perforations through which a stiffened cables are mounted;
h. said stiffened cables form a plurality of X-shaped cable patterns above the surface of said perforated cylinders;
i. said water conveying tube and said central perforated cylinder are substantially concentric with water conveying tube being interior to said central perforated cylinder;
j. said inlet nozzle assembly includes an inlet nozzle housing, an inlet nozzle head, and a plurality of rear nozzles;
k. said inlet nozzle housing is secured to said perforated cylinder and to said water conveying tube;
l. a securing means for attaching said device to said sewer jet is centrally located in said inlet nozzle housing;
m. eight of said high pressure nozzles are mounted in said inlet nozzle housing and in water-flow communication with water conveying tube;
n. eight of said high pressure nozzles are mounted in said nozzle housing and in water-flow communication with water conveying tube;
o. said water-flow through said high-pressure nozzles propels said device through said sewer;
p. a female threaded assembly is centrally located in said inlet nozzle for securing said device to said sewer jet;
q. said high-pressure nozzles are aimed toward said securing means at an angle of about 25° to about 35° from a cylindrical axis of said water conveying tube; and
r. each coplanar set of X-shaped cable pattern have intersection points of each X said set spaced 90° degrees apart.

4,795,496
METHOD OF REMOVING ADHERENT FOREIGN MATTER FROM WORK PIECES
Shintaro Karaki; Yoshikazu Chigodo; Masaaki Okane, and Yukio Tanaka, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Jan. 29, 1986, Ser. No. 823,587
Claims priority, application Japan, Jan. 31, 1985, 60-18338
Int. Cl.[4] B08B 9/04
U.S. Cl. 134—8 10 Claims



1. A method of removing adherent foreign matter from work pieces, comprising the steps of:
(a) preparing a heat-resisting container,
(b) preparing granules composed of a heat-resisting inorganic substance,
(c) putting said work pieces to which foreign matter is adhered, together with said granules, into said container,
(d) applying external heat to at least the inside of said container to raise the temperature thereof and the temperature of said work pieces at least to a softening temperature of said adhering foreign matter,
(e) applying an external force to said container to move said work pieces and said granules within said container,
(f) taking said work pieces out of said container, and
(g) taking said granules, to which said foreign matter removed from said work pieces is adhered, out of said container.

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4,795,497

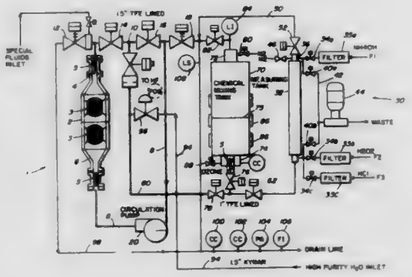
METHOD AND SYSTEM FOR FLUID TREATMENT OF SEMICONDUCTOR WAFERS

Christopher F. McConnell, 978 S. Gulph Rd., Gulph Mills, Pa. 19406, and Alan E. Walter, 606 Brecknock Dr., Exton, Pa. 19341

Continuation-in-part of Ser. No. 765,294, Aug. 13, 1985, Pat. No. 4,577,650, which is a continuation-in-part of Ser. No. 747,894, Jun. 24, 1985, Pat. No. 4,633,893, which is a continuation-in-part of Ser. No. 612,355, May 21, 1984, Pat. No. 4,577,650. This application Dec. 4, 1985, Ser. No. 805,203

Int. Cl.[4] B08B *5/04*

U.S. Cl. 134—18 **12 Claims**



1. A method for the fluid treatment of semiconductor wafers, such method comprising the steps of

providing a treatment vessel having first and second fluid-scalable ports and means defining a flow path within said vessel between said ports,

supporting the wafers in the flow path,

providing a flow segment outside the vessel extending between said first and second ports, the flow segment comprising, in sequence, a first vent, a first valve, an inlet, a second valve and a second vent, and

circulating a homogeneous stream of treatment fluid in a flow loop defined by said vessel and said flow segment, while maintaining said flow loop full of said fluid thereby treating the wafers by contacting them with circulating fluid.

7. A method for the fluid treatment of semiconductor wafers, such method comprising the steps of

supporting a wafer in a fluid-receiving treatment vessel,

metering a charge of treatment fluid by withdrawing a metered amount of a fluid from a closed hydraulically full system which communicates with a reservoir of treatment fluid thereby simultaneously drawing an inflow of treatment fluid from the reservoir of treatment fluid into the hydraulically full system, and causing said metered amount of the treatment fluid to enter into the system, and

delivering a charge of fluid thus metered from the system to the treatment vessel and circulating the charge of fluid past the wafer supported in the vessel for treating the wafer.

4,795,498

LOW COST THERMOCOUPLE APPARATUS AND METHODS FOR FABRICATING THE SAME

Damon Germanton, 7 Alberta Dr., Kenmelon, N.J. 07405, and Donald Weiss, Cliffside Park, Englewood, N.J. 07631

Division of Ser. No. 567,377, Dec. 30, 1983, Pat. No. 4,631,350. This application Aug. 29, 1986, Ser. No. 901,687

Int. Cl.[4] H01L *35/28*

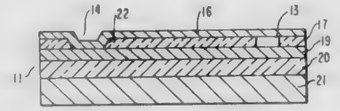
U.S. Cl. 136—225 **13 Claims**

1. A method for mass producing a thermocouple device comprising the steps of:

transporting a length of a thin Mylar sheet of material from a first to a second location within a vacuum chamber,

vapor evaporating a thin metal layer of a first thermoelectric metal on a first surface of said Mylar sheet to coat said sheet during transport,

printing said coated surface of said sheet with an insulative varnish to form rows of staggered aperture pairs, with one aperture of each pair located on the same line and with another aperture in each pair spaced therefrom and located along a different line parallel to the first line,



transporting said varnished sheet in said vacuum chamber from said first to said second location and,

vapor evaporating a series of second thin layers of a second thermocouple metal in line patterns along said varnished sheet with said line patterns covering all of said apertures in one of said lines to form a hot junction with said first metal layer via said covered aperture, and with said apertures in said another line being uncovered to form a reference location.

4,795,499

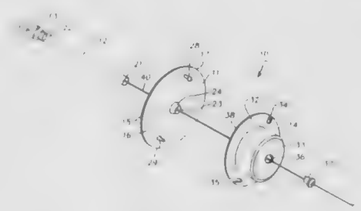
DUCT MOUNT SENSOR ASSEMBLY

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Filed Mar. 28, 1988, Ser. No. 174,157

Int. Cl.[4] H01L *35/02*

U.S. Cl. 136—230 **15 Claims**



1. A duct mount sensor assembly comprising in combination:

a mounting plate having first and second surfaces and a central opening;

a duct sensor tube having a proximal end secured to said mounting plate at said central opening and extending from said first surface;

a condition sensor in a distal end of said duct sensor tube;

conductors extending from said sensor through said tube and central opening to a position beyond said second surface of said mounting plate;

said mounting plate first surface adapted to be secured to a duct wall with said sensor tube extending through an opening in the duct wall to sense a condition within the duct;

a readily removable cover on said second surface of said mounting plate to receive any external conductor connections to said sensor conductors; and

first and second threaded fasteners each securing said cover and said mounting plate together and each adapted to secure both to a duct wall.

4,795,500

PHOTOVOLTAIC DEVICE

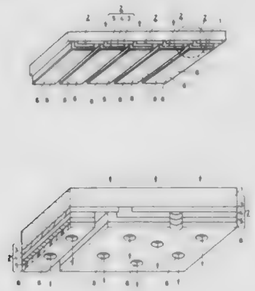
Yasuo Kishi, Osaka; Hiroshi Inoue, Hyogo, and Hiroyuki Tanaka, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 878,118, Jun. 25, 1986, Pat. No. 4,686,321. This application Jun. 1, 1987, Ser. No. 57,021

Claims priority, application Japan, Feb. 9, 1986, 62-17334[U]; Jun. 9, 1986, 61-87352 [U]; Feb. 9, 1987, 62-17335[U]; Apr. 23, 1987, 62-61949[U]

Int. Cl.[4] H01L *27/14, 31/04*

U.S. Cl. 136—244 **24 Claims**



17. A photovoltaic device comprising a plurality of photovoltaic cells in series connection on a transparent insulating substrate, each cell including

a respective transparent front electrode layer region on said substrate,

a respective semiconductor layer region for photoelectric conversion on said respective front electrode layer region, and

a respective metallic back electrode layer region on said respective semiconductor layer region,

wherein each of said back electrode layer regions is not only separated by a narrow spacing from neighboring ones for electrical isolation but is also electrically connected to the front electrode layer region of a neighboring one of said cells for making said series connection, and at least each of said back electrode layer regions has a plurality of holes for transmission of light.

4,795,501

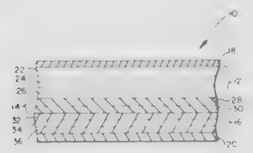
SINGLE CRYSTAL, HETEROEPITAXIAL, GAALAS/CUINSE$_2$ TANDEM SOLAR CELL AND METHOD OF MANUFACTURE

Billy J. Stanbery, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 792,942, Oct. 30, 1985, Pat. No. 4,680,422. This application Jul. 13, 1987, Ser. No. 72,316

Int. Cl.[4] H01L *31/06, 31/18*

U.S. Cl. 136—249 **54 Claims**



1. A high efficiency tandem solar cell, comprising:

(a) an $Ga_aAl_{1-a}As$ upper cell;

(b) a transition zone attached to the upper cell to match the lattice structure of $Ga_aAl_{1-a}As$ to $CuInSe_2$; and

(c) a $CuInSe_2$ lower cell.

4,795,502

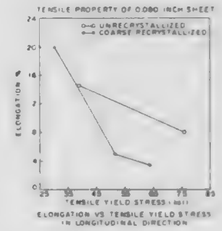
ALUMINUM-LITHIUM ALLOY PRODUCTS AND METHOD OF MAKING THE SAME

Chul W. Cho, Monroeville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 927,054, Nov. 4, 1986, which is a continuation-in-part of Ser. No. 793,260, Oct. 31, 1985. This application Apr. 13, 1987, Ser. No. 37,776

Int. Cl.[4] C22F *1/04*

U.S. Cl. 148—2 **33 Claims**



1. A method of producing an unrecrystallized wrought aluminum-lithium sheet product having improved levels of strength and fracture toughness, the method comprising the steps of:

(a) providing a body of a lithium containing aluminum base alloy consisting essentially of 1.5 to 2.5 wt. % Li, 1.6 to 2.8 wt. % Cu, 0.7 to 2.5 wt. % Mg, 0.03 to 0.20 wt. % Zr, 0.5 wt. % max. Fe, 5 wt. % max. Si, the balance essentially aluminum and incidental elements and impurities;

(b) heating the body to a hot working temperature;

(c) hot working the body to a first product:

(d) reheating said first wrought product while avoiding substantial recrystallization thereof, the reheating adapted to relieve stored energy capable of causing recrystallization during a subsequent heat treating step; and

(e) solution heat treating, quenching and aging said reheated product to provide a substantially unrecrystallized product having improved levels of strength and fracture toughness.

4,795,503

SEAM WELDED STEEL PIPE PROOFED AGAINST CORROSION AND PROVIDED WITH COATING FOR PREVENTING FLUID FROM OXIDATION AND METHOD FOR PRODUCTION THEREOF

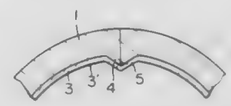
Teruhisa Takahashi, and Toshihiko Mizuhashi, both of Mishima, Japan, assignors to Usui Kokusai Sangyo Kabushiki Kaisha, Shizuoka, Japan

Filed Oct. 20, 1987, Ser. No. 110,322

Claims priority, application Japan, Oct. 23, 1986, 61-252651

Int. Cl.[4] C21D *1/00*

U.S. Cl. 148—127 **5 Claims**



1. A method for the production of a seam welded steel pipe, comprising forming an Ni layer by electroplating on at least

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one of the opposite surfaces of a steel strip, abutting the opposite edges of said steel strip in the direction of width with said Ni layer on the inside and fusing the abutted edges, subjecting the resultant steel pipe to a heat treatment in an oxidizing atmosphere thereby forming an oxide coating on the surface of said Ni layer, acid dipping the resultant steel pipe thereby removing said oxide coating from the portion of the skin of steel exposed in the neighborhood of a bead part in consequence of said fusion, and introducing a chemical Ni plating liquid through the interior of said steel pipe thereby coating the inner surface in the neighborhood of said bead part with a Ni alloy layer by chemical plating.

4,795,504

NICKEL-COBALT BASE ALLOYS

John S. Slaney, Greensburg, Pa., assignor to Latrobe Steel Company, Latrobe, Pa.

Continuation of Ser. No. 638,985, Aug. 8, 1984, abandoned. This application Aug. 6, 1986, Ser. No. 893,634

Int. Cl.⁴ C22C *19/05*

U.S. Cl. 148—410 **15 Claims**

1. A nickel-cobalt alloy having high strength and ductility at service temperatures of about 1300° F. consisting essentially of the following elements by weight percent:

Carbon	about 0.05 max
Cobalt	about 20–40
Molybdenum	about 6–11
Chromium	about 15–23
Iron	about 1.0 max
Boron	about 0.0005–0.020
Titanium	about 0–6
Columbium	about 1.1–10
Nickel	Bal.

and having a maximum electron vacancy number (N_v) of 2.80, said alloy having been cold worked at a temperature below the lower temperature limit of the HCP-FCC phase transformation zone to a reduction in cross-section between 5% and 50%.

3. A nickel-cobalt alloy as claimed in claim 1 or 2 having been aged at a temperature of about 800° F. to 1350° F. for about 4 hours after cold working.

4,795,505

CORROSION INHIBITING AQUEOUS, ACIDIC COMPOSITIONS COMPRISING METAL-CHELATING O-HYDROXYBENZYLAMINE COMPOUND

Walter O. Siegl, Dearborn, and Mohinder S. Chattha, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

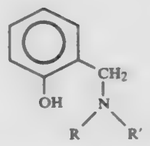
Division of Ser. No. 5,181, Jan. 20, 1987. This application Dec. 7, 1987, Ser. No. 129,815

Int. Cl.⁴ C23C *22/00;* **C04B** *9/02;* **C23F** *11/04*

U.S. Cl. 148—6.14 R **9 Claims**

1. A method for inhibiting corrosion of a corrodible metal substrate, said method comprising:

contacting said metal substrate with an acidic, aqueous composition (1) having a pH between about 2 and about 6, (2) comprising at least about 0.01 weight percent of water-soluble or water-dispersible metal-chelating compound, and (3) for a time sufficient to deposit a corrosion preventative coating comprising water-insoluble metal-chelate compound, wherein said metal-chelating compound is selected from compounds having the general chemical formula:



wherein R is an alkanol moiety selected from ethanol and propanol moieties and R′ is H, alkyl, aryl or hydroxy alkyl.

4,795,506

PROCESS FOR AFTER-TREATMENT OF METALS USING 2,2-BIS(4-HYDROXYPHENYL)ALKYL POLY DERIVATIVES

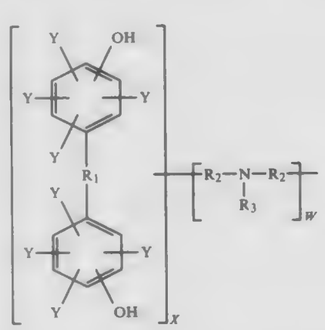
Stanley M. Sokalski, Southfield, Mich., assignor to Detrex Corporation, Southfield, Mich.

Division of Ser. No. 890,916, Jul. 26, 1986, Pat. No. 4,714,752. This application Aug. 17, 1987, Ser. No. 86,280

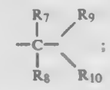
Int. Cl.⁴ C23C *22/48*

U.S. Cl. 148—6.14 R **12 Claims**

1. A process for the treatment of metals to enhance the corrosion resistance and paint adhesion characteristics thereof comprising contacting the surface of the metal with an aqueous composition containing up to about 10% by weight of a polymer which has been polymerized under basic conditions and having the general formula:



wherein W and X are each 2 or more up to a number at which the polymer is not soluble or dispersible in water; and in which R_1 is an alkyl group having from 1 to about 5 carbon atoms; R_2 is an alkyl group having from 1 to about 5 carbon atoms; R_3 is an alkyl or hydroxyalkyl group having from 1 to about 5 carbon atoms; each Y is hydrogen or Z or $CR_4R_5OR_6$ or CH_2Cl or an alkyl group having from 1 to 18 carbon atoms, or an aryl group, wherein Z is represented by the formula:



wherein R_4 through R_{10} are hydrogen, or an alkyl, aryl, hydroxyalkyl, amino-alkyl, mercapto-alkyl, or phosphoalkyl moiety, said R_4 through R_{10} being of carbon chain lengths up to a length at which the polymer is not soluble or dispersible in water.

4,795,507

PROCESS FOR INCREASING THE ROOM-TEMPERATURE DUCTILITY OF A WORKPIECE COMPOSED OF AN OXIDE-DISPERSION-HARDENED NICKEL BASED SUPERALLOY AND EXISTING AS COARSE, LONGITUDINALLY ORIENTED COLUMNAR CRYSTALLITES

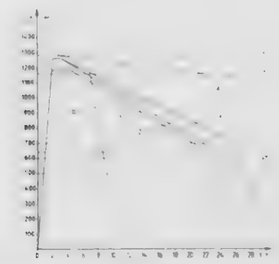
Mohamed Y. Nazmy, Fislisbach, Switzerland, assignor to BBC Brown Boveri AG, Baden, Switzerland

Filed Dec. 10, 1987, Ser. No. 131,361

Claims priority, application Switzerland, Dec. 19, 1986, 5111/86

Int. Cl.⁴ B22F *5/04*

U.S. Cl. 148—11.5 N **4 Claims**



1. A process for increasing the room-temperature ductility of a workpiece composed of oxide-dispersion-hardened nickel-base superalloy and existing as coarse, longitudinally oriented columnar crystallites, the workpiece having been produced by powder metallurgy, extruded or forged or hot isostatically pressed and then zone-annealed, which comprises subjecting the workpiece after the zone annealing to a solution anneal at a temperature between 1,160° C. and 1,280° C. for ½ to 5 h under argon atmosphere and then cooling down to a temperature of 500° to 700° C. at a rate between 0.1° C./min and 5° C./min and thereafter cooling down in air to room temperature.

4,795,508

SOLDERING COMPOSITIONS

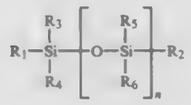
Petrus W. N. M. van Leeuwen, Amsterdam, Netherlands, assignor to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Filed Feb. 5, 1987, Ser. No. 11,474

Int. Cl.⁴ B23K *35/34;* **H01B** *1/06;* **B32B** *15/00, 9/00*

U.S. Cl. 148—23 **5 Claims**

1. Soldering composition comprising a lead-tin alloy employed with a fluxing effective amount of at least one compound with the general formula



in which n is a number from 0 to 6, all groups R_1 to R_6 are identical or different aryl groups, of which at least one carries a $COOR_7$ substituent, in which R_7 represents hydrogen, an alkyl or aryl group with a maximum of 12 carbon atoms, and in which R_1 and R_2 can be one and the same aryl group, thus forming a cyclic compound.

4,795,509

INDICATOR FOR DIMENSIONALLY-RECOVERABLE SLEEVES

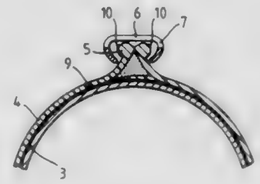
Erwin De Bruycker, Linden, Belgium, assignor to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 17, 1987, Ser. No. 27,295

Claims priority, application United Kingdom, Mar. 19, 1986, 8606730

Int. Cl.⁴ H01B *13/10*

U.S. Cl. 156—49 **15 Claims**



1. A dimensionally-recoverable wrap-around sleeve having a closure member by means of which opposing edge portions of the sleeve can be held together to maintain the sleeve in a wrapped-around configuration, and having means comprising localized coloring of the closure member by which an extent of a configurational change of the closure member is rendered visible.

14. A method of environmentally protecting a supply line, which comprises installing around it a sleeve according to claim 1, securing the sleeve in a wrapped-around configuration, and causing dimensional recovery of the sleeve, the method comprising subjecting the sleeve to an agency to an extent indicated by said configurational change.

4,795,510

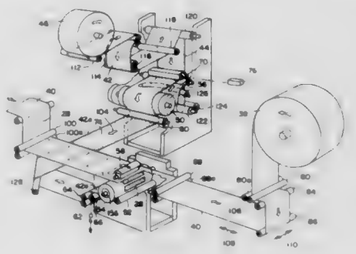
PROCESS FOR APPLYING REINFORCING MATERIAL TO A DIAPER COVER MATERIAL

Marvin E. Wittrock, Appleton, and Perry T. Handziak, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 11, 1987, Ser. No. 96,411

Int. Cl.⁴ B31B *1/82*

U.S. Cl. 156—64 **20 Claims**



1. A method for adhering individual patches of substrate material to spaced-apart regions of a moving web layer, comprising the steps of:

a. moving a selected web layer;

b. providing a selected substrate material;

c. depositing a selected coating of hotmelt adhesive onto said substrate material;

d. automatically maintaining a selected cross-directional registry between said substrate material and said deposited coating of adhesive;

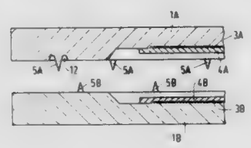
VOL 1098 ISS 1 JA 3 1989 UMI

e. selectively cooling said coated substrate material;
f. engaging said coated substrate material to feed it at a selected rate to a segmenting step;
g. segmenting said coated substrate material into individual patches;
h. spatially segregating said patches by a selected amount,
i adhesively securing said segregated patches onto selected spaced-apart regions of said moving web layer; and
j. selectively retracting said coated substrate material by a selected amount to draw said coat substrate material away from a striking point of said segmenting step when said feeding of the coated substrate material is disengaged and stopped, thereby substantially preventing undesired segmenting of said coated substrate material.

4,795,511
METHOD OF MANUFACTURING AN OPTICALLY READABLE DISC RECORD AND DISC RECORD MANUFACTURED IN ACCORDANCE WITH THE METHOD

Henricus H. B. Wouters, and Joannes H. J. van Dommelen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1987, Ser. No. 51,968
Claims priority, application Netherlands, May 26, 1986, 8601330
Int. Cl.[4] B29C *59/02, 65/08*
U.S. Cl. 156—73.1 **3 Claims**

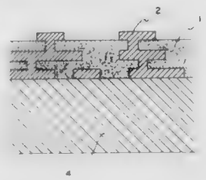


1. A method of manufacturing an optically readable disc record comprising two discs which are injection molded from a plastics material and which are concentrically affixed to each other by welding, which method comprises:
(a) manufacturing a thin disc-shaped matrix,
(b) making local recesses in the matrix,
(c) injection-molding discs from said matrix, said discs having projections corresponding to said recesses,
(d) arranging two of said discs on each other in a manner such that projection-free areas in one disc contact projections in an opposing disc,
(e) and applying energy to at least partly melt said projections to weld the discs to each other, characterized in that for forming said recesses use is made of an indenter pin having a sharp end which is impressed into a surface of said matrix, thereby locally forming a pit-shaped recess surrounded by a ridge of displaced material whose volume is substantially equal to the volume of the pit-shaped recess, and that during injection-moulding each disc is formed with corresponding pin-shaped projections each surrounded by a groove whose volume is substantially equal to the volume of that portion of the projection which protrudes from the disc surface.

4,795,512
METHOD OF MANUFACTURING A MULTILAYER CERAMIC BODY

Seiichi Nakatani, Neyagawa; Tsutomu Nishimura, Uji; Satoru Yuhaku, Ikuno, and Toru Ishida, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 25, 1987, Ser. No. 18,579
Claims priority, application Japan, Feb. 26, 1986, 61-41205; Mar. 6, 1986, 61-48822; Apr. 1, 1986, 61-74739
Int. Cl.[4] B32B *18/00;* **H01B** *1/06*
U.S. Cl. 156—89 **12 Claims**

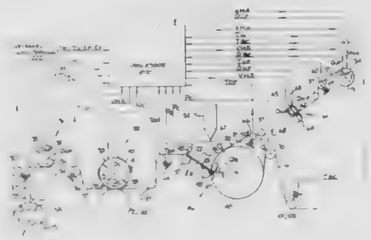


1. A method of manufacturing a multilayer ceramic substrate comprising the steps of:
producing a multilayer laminate by preparing a plurality of green tapes each being made of a mixed composition of ceramic and glass containing lead oxide with addition of at least an organic binder and a plasticizer, forming on each of the plurality of green tapes a pattern of a paste containing cupric oxide (CuO) as its main component, and laminating the thus obtained green tapes;
removing the organic binder in the multilayer laminate by heating the multilayer laminate in air at a temperature at which the organic binder is decomposed and scattered;
reducing cupric oxide (CuO) to copper (Cu) by heating the multilayer laminate in a mixed gas atmosphere of hydrogen and nitrogen at a temperature within the range at which cupric oxide is reduced but lead oxide is not reduced; and
sintering the multilayer laminate in a nitrogen atmosphere.

4,795,513
METHOD AND APPARATUS FOR PRODUCING A LAMINATED COMPOSITE MATERIAL HAVING PERFORATED INNER LAYER

James W. Jensen, Jr., Boulder, Colo., assignor to Adolph Coors Company, Golden, Colo.

Continuation-in-part of Ser. No. 462,917, Feb. 1, 1983, Pat. No. 4,549,917, and Ser. No. 751,941, Jul. 5, 1985, abandoned. This application Oct. 27, 1986, Ser. No. 923,421
Int. Cl.[4] B32B *31/18*
U.S. Cl. 156—108 **20 Claims**



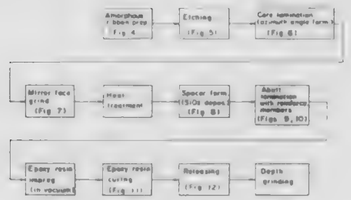
1. A device for forming a moving web of laminated composite material having weakened zones therein from a moving continuous web of relatively extensible plastic film material

having identical sets graphics printed on nominally constant length repeat length portions thereof which are subject to length variation from a constant design repeat length distance and a moving continuous web of relatively nonextensible paper material, said film material and said paper material each having a lamination surface to be laminated to an opposed surface of the other material and an exposed surface for forming an exterior surface of the laminated composite, said device comprising:
(a) paper supply means for providing a continuous web of paper to be laminated, said paper supply means defining the upstream end of said paper web;
(b) film supply means for providing a continuous web of film to be laminated, said film supply means defining the upstream end of said film web;
(c) cutter means defining a cutter nip for repeatingly cutting spaced apart perforated patterns in said paper web at one design repeat length distance intervals;
(d) adhesive supply means for applying adhesive material to at least one of said film web lamination surface and said paper web lamination surface;
(e) laminating nip means for engaging and moving said paper web and said film web in parallel aligned relationship at equal speeds and for laminating said paper web to said film web for forming a laminated composite;
(f) registration means for providing accurate registry of said perforated pattern portions of said paper web with predetermined, spaced apart, repeating target areas on said film web located at an identical position within each said set of film graphics, at said laminating nip means;
(g) composite transport means for continuously moving said composite web from said laminating nip means;
(h) whereby a continuous composite web comprising a paper web portion and a film web portion and having weakened zones therein associated with said spaced apart perforated patterns in the paper web portion thereof is provided.

4,795,514
METHOD OF MANUFACTURING AN AMORPHOUS MAGNETIC HEAD

Kotaro Matsuura, Kyoto, and Kenji Oyamada, Yahata, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Division of Ser. No. 541,809, Oct. 13, 1983, Pat. No. 4,697,217. This application Apr. 9, 1987, Ser. No. 36,522
Claims priority, application Japan, Oct. 13, 1982, 57-180476; Nov. 12, 1982, 57-199266
Int. Cl.[4] B32B *31/00*
U.S. Cl. 156—153 **7 Claims**

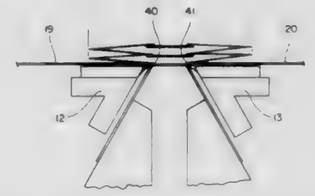


1. A method of manufacturing an amorphous magnetic head, comprising the steps of:
a first step of processing a sheet of amorphous magnetic material to form a sheet having a plurality of interconnected core halves in which each core half has a coil winding opening and a head gap face extending along an edge of said core half from one side of said coil winding opening;
a second step of forming individual core halves by appropriately cutting said sheet of core halves after the completion of said first step and stacking a plurality of said core halves;
a third step of grinding opposing faces, including said head gap faces, of said plurality of said plurality of core halves to have a predetermined azimuth angle after the completion of said second step, thereby forming a head gap, between opposing head gap faces, and having said predetermined azimuth angle and thereafter applying a nonmagnetic spacer into said head gap and arranging at least a pair of said stacked core halves to that said opposing faces are butted against each other; and
a fourth step of applying reinforcing members under pressure onto opposite side faces of said core halves, with the opposing head gap faces of the pair of core halves facing each other through said non-magnetic spacer after the completion of said third step, and then impregnating a resinous bonding agent between the pair of core halves and the reinforcing members, thereby to integrate the pair of core halves and said reinforcing members into one unit such that a magnetic gap is formed therein at said head gap.

4,795,515
PROCESS AND EQUIPMENT FOR MAKING HEXAGON INSULATING SHADE

Jamee Kao, 2400 S. Whitehall Dr., #206Q, Mundelein, Ill. 60060, and Joseph Hsu, 35 Lane 461 Chung-Shan N. Rd., Sec. 5, Taipei, Taiwan 111

Filed Mar. 11, 1987, Ser. No. 24,695
Int. Cl.[4] B32B *3/12*
U.S. Cl. 156—197 **11 Claims**



1. A method of making a series of expandable tubular polygons, comprising: intermittently feeding a first sheet of material toward a reciprocating holding knife with a forming knife to form a plurality of pleats in the first sheet, intermittently feeding a second sheet of material toward a second reciprocating holding knife adjacent the first holding knife to form a plurality of pleats in the second sheets immediately adjacent pleats in the first sheet, and immediately after forming each adjacent pleat attaching the adjacent pleats in the first and second sheets together to form the series of expandable tubular polygons.

4,795,516
METHOD OF CONTINUOUS PRODUCTION OF A BIOMEDICAL ELECTRODE

Jerome E. Strand, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

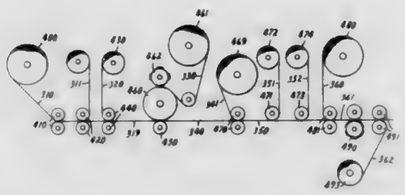
Division of Ser. No. 865,521, May 21, 1986, Pat. No. 4,694,835. This application Jul. 2, 1987, Ser. No. 69,490
Int. Cl.[4] A61B *5/04;* **B32B** *31/06, 31/18*
U.S. Cl. 156—235 **4 Claims**

1. A method of manufacturing biomedical electrodes comprising the steps of:
(a) providing a continuous strip of backing web having a continuous coating of a biocompatible pressure-sensitive adhesive on one surface thereof;
(b) laminating to the biocompatible pressure-sensitive adhesive coated surface a continuous strip of bonding sheet web which is narrower than the backing web;
(c) periodically placing electrical conductors at predeter-

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mined intervals transversely along the length of the continuous strips of backing and bonding sheet webs such that a first surface of each electrical conductor spans the bonding sheet web and a second surface of each of the electrical conductors adheres to the biocompatible pressure-sensitive adhesive;

(d) laminating to the composite formed in steps a, b, and c, a continuous strip of an electrolyte composition which



electrolyte strip is aligned with the strip of bonding sheet web such that the electrolyte strip overlaps at least a portion of each electrical conductor and contacts the strip of bonding sheet web; and

(e) die cutting individual electrodes from the composite comprising the strip of backing web, the biocompatible pressure-sensitive adhesive, the strip of bonding sheet web, the electrical conductors, and the electrolyte strip.

4,795,517

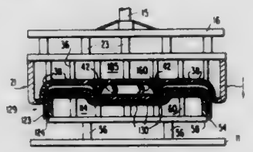
PROCESS FOR SHAPING AND COVERING CUSHION FOAM

George M. Elliott, Alpharetta, and Michael L. Avery, Cumming, both of Ga., assignors to Astechnologies, Inc., Roswell, Ga.

Filed Jun. 5, 1986, Ser. No. 870,971

Int. Cl.[4] B31F *1/00*; B68G *7/00*; B29C *65/00*

U.S. Cl. 156—221 **21 Claims**



1. A process of forming one or more permanent indentations in a piece of open cell, thermoplastic, cushion foam and simultaneouly laminating steam-permeable fabric thereto, comprising the following steps:

(a) placing the fabric over one side of the foam with a layer of hot melt fabric adhesive in between the fabric and the foam, the adhesive having a lower melting point than that of the foam,

(b) preheating a die that has one or more protruding sections and one or more land areas and which is perforated across substantially its entire contact surface, the preheating being conducted so as to bring the land area(s) to a temperature that is elevated but is below the melt point of the adhesive, and to bring the die's protruding section(s) to a higher temperature than the die's land area(s),

(c) pressing the preheated die against the fabric-covered side of the foam, causing the die's protrusion(s) to create one or more indentations in the foam,

(d) ejecting a shot of steam that has been superheated to a temperature substantially higher than the die's protruding section(s) through the perforations in the die at a pressure sufficient to drive the steam through the fabric at least part way into the interior of the foam, the temperature of the steam being high enough to melt the adhesive across substantially the entire contact surface and to cause the foam to become molten and reshaped in the indentation(s), substantially without becoming molten in the land area(s),

(e) passing a cooling gas through the foam, until the adhesive and the molten areas of the foam have resolidified, thereby laminating the fabric to the foam and permanently fixing the indentation(s) in the foam, and

(f) disengaging the die and the resultant laminated, shaped composition.

4,795,518

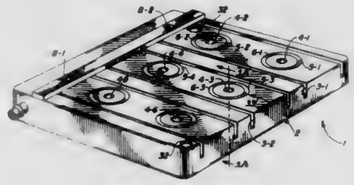
METHOD USING A MULTIPLE DEVICE VACUUM CHUCK FOR AN AUTOMATIC MICROELECTRONIC BONDING APPARATUS

Walter B. Meinel, and Hubert J. Bingl, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Continuation of Ser. No. 581,280, Feb. 17, 1984, abandoned. This application May 23, 1986, Ser. No. 868,875

Int. Cl.[4] B25D *11/00*

U.S. Cl. 156—285 **7 Claims**



1. A method for supporting a plurality of flat bottom integrated circuit devices each having a large number of bonding pads during a large number of wire bonding operations thereon, each of the integrated circuit devices having a plurality of leads extending downward from its flat bottom, the method comprising the steps of:

(a) providing a plurality of closed loop grooves in a flat upper surface of a chuck, and providing means extending through portions of the chuck for communicating a vacuum to regions surrounded by the closed loop grooves;

(b) positioning a plurality of closed resilient loops in the closed loop grooves, respectively, so that opposed inner and outer surface side portions of the resilient loops tightly contact adjacent surfaces of the respective closed loop grooves, the depths of the closed loop grooves and the diameters of the cross-sections of the resilient loops begin such that an upper portion of each resilient loop extends a predetermined distance above the flat upper surface of the chuck;

(c) sliding a plurality of the intergated circuit devices in end-to-end fashion onto the chuck from a carrier, the plurality of grooves being positioned so that when one of the integrated circuit devices is positioned over one of the closed loop grooves and the flat bottom of that integrated circuit device rests on the corresponding resilient loop, the adjacent integrated circuit device is aligned over the adjacent closed loop groove with its flat bottom resting on the resilient loop therein;

(d) producing a vacuum in the vacuum communicating means and hence in the regions enclosed by the flat bottom surfaces of the respective integrated circuit devices, the upper portions of the resilient loops, and the flat upper surface of the chuck, drawing the flat bottom surfaces of the integrated circuit device toward the flat upper surface of the chuck, compressing the loops of resilient material to produce a vacuum seal and to increase the contact area and friction between the resilient loops and the flat bottom surfaces of the integrated circuit devices, and also compressing the resilient loops more tightly into the closed loop grooves to nearly completely fill the closed loop grooves to resist rolling of the resilient loops in the closed loop grooves; and

(e) operating a computer controlled high speed wire bonding machine to rapidly apply a large number of large magnitude lateral acceleration and deceleration forces to the chuck while the vacuum remains uninterrupted to sequentially move all of the bonding pads of all of the integrated circuit devices into alignment with a wire bonding head, performing a wire bonding operation at each bonding pad in rapid succession as that bonding pad comes into alignment with the wire bonding head,

each of the bonding pads being approximately four mils in diameter, there being at least approximately a hundred such bonding pads on each of the integrated circuit devices,

the resiliency of the resilient loop material, the predetermined distance, the tightness of the fit of resilient loops in the respective closed loop grooves, and the amount of the vacuum having values selected to prevent cumulative lateral displacement of any of the integrated circuit devices, which cumulative lateral displacement is appreciable compared to the size of the bonding pads, from occurring between the first and last of the wire bonding operations, by causing the compressing of the resilient loops to be sufficient to cause the upper portions of the resilient loops to be pressed entirely into and nearly completely fill the upper portions of the respective closed loop grooves, thereby further resisting rolling of the resilient loops,

wherein the large magnitudes of the lateral acceration and deceleration forces are so great that cumulative lateral shifting of the integrated circuit devices on the chuck, which cumulative lateral shifting is appreciable compared to the size of the bonding pads, would occur during the wire bonding operations it there were substantially less compressing of the resilient loops.

4,795,519

DEVICE FOR TESTING AND REPROCESSING OF OBJECTS

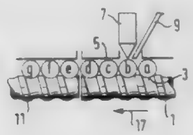
Siegfried Bullinger, Ilshofen; Walter Busch, Frankenhardt-Gründelhardt, and Willi Sperrle, Satteldorf, all of Fed. Rep. of Germany, assignors to Busch & Strobel Maschinenfabrik GmbH & Co., Ilshofen, Fed. Rep. of Germany

Continuation of Ser. No. 486,339, Apr. 19, 1983, abandoned. This application Mar. 10, 1986, Ser. No. 838,417

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3215297

Int. Cl.[4] B65C *9/02, 9/06, 9/26, 9/44*

U.S. Cl. 156—363 **1 Claim**



1. A mechanism for testing and reprocessing objects (25,59) conveyed through and processed at a processing station (27,69) comprising:

a first conveying means (21,55) having pickups (23,57) holding a plurality of the objects (25,59) for advancing the objects in a substantially regular movement reversibly, serially through the processing station (27,69);

a feeding means (33,63) for directing the objects (25,59) one after the other to the first conveying means (21,55);

said objects moved by the feeding means (33,63) and first conveyor means (21,55) operating in a forward direction along a first path;

a testing station (31,73) for checking the results of processing at the processing station (27,69);

control means for stopping the feeding means (33,63) and first conveying means (21,55) before a subsequent object (25,59) is fed to the processing station (27,69) upon said testing means (31,73) detecting an unsuitably processed object (25,59), reversing the first conveyor means (21,55) from a forward movement to resituate the unsuitably processed object (25,59) upstream to the processing station (27,69), restarting the first conveying means (21,55) to thereby reprocess a previously unsuitably processed object (25,59) at the processing station, and restarting the feeding means (33,63) after the first conveying means (21,55) is restarted;

object storing means outside of said first path for temporarily storing at least one of the objects;

means for directing at least one of the objects out of said first path from a first location in said first path to said storing means after said control means has reversed said first conveyor means to reprocess said unsuitably processed object; and

means for reintroducing the at least one temporarily stored object into the conveying means at the first location.

4,795,520

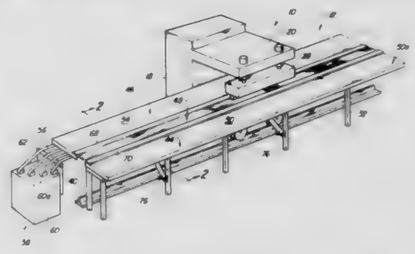
HEAT SEALING TABLE ASSEMBLY

James J. Kiabins, Sterling Heights, and John K. Givens, Bloomfield Hills, both of Mich., assignors to Seal-Dry/USA, Inc., Pontiac, Mich.

Filed Oct. 9, 1987, Ser. No. 106,403

Int. Cl.[4] B29C *65/04*; B30B *15/04*

U.S. Cl. 156—380.4 **13 Claims**



5. A table assembly for use with a heat sealing press of the type including a C-frame mounted for movement along a predetermined lengthwise path and including a base portion, a rear pillar portion, and an upper cantilever portion extending forwardly from the rear pillar portion; a lower platen mounted on the frame base portion; a die mounted on the free forward end of the upper cantilever frame portion in vertically spaced overlying relation to the lower platen; means for moving the die and platen vertically together; and means for passing a sealing current from the die through lapped fabric positioned between the die and the platen to effect a longitudinal seal along the lapped fabric, said table assembly comprising:

(A) a compliant elongated dielectric membrane extending along and parallel to said path at a level passing between the die and platen so as to underlie the lapped fabrics; and

(B) means supporting said membrane in a manner to allow the press frame to move freely along said path without interference from said membrane.

10. A heat sealing apparatus including:

(A) a heat sealing press including:

(1) a C-frame mounted for movement along a predetermined lengthwise path and including a base portion, a rear pillar portion and an upper cantilever portion extending forwardly from the rear pillar portion;

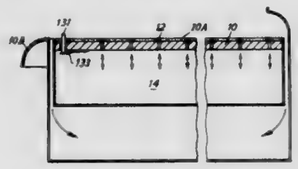
(2) a lower platen mounted on the frame base portion;

(3) a die mounted on the free forward end of the upper

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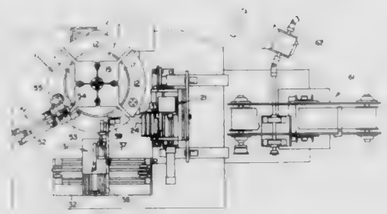
cantilever frame portion in vertically spaced overlying relation to the lower platen;
(4) means for moving the die and platen vertically together; and
(5) means for passing a sealing current from the die through lapped fabric position between the die and the platen to effect a longitudinal heat seal along the lapped fabric; and
(B) a table assembly comprising:
(1) a fixed elongated forward table surface extending along and parallel to said lengthwise path;
(2) an elongated rearward table defining a rearward table surface extending along said lengthwise path parallel and rearwardly of said forward table surface; and
(3) means supporting said rearward table at longitudinal locations spaced longitudinally from the respective opposite ends of said path so as to allow the press frame to move freely along said path without interference from said rearward table.

4,795,521
APPARATUS FOR MAKING MIRROR LAMINATES
Roger J. Leach, East Molesey, United Kingdom, assignor to Chelsea Artisans Limited, Surrey, United Kingdom
Division of Ser. No. 799,117, Nov. 4, 1985, Pat. No. 4,726,860. This application Jan. 13, 1988, Ser. No. 143,380
Claims priority, application United Kingdom, Mar. 12, 1984, 8406377; Sep. 21, 1984, 8424008
Int. Cl.[4] B32B *31/14*
U.S. Cl. 156—382 **7 Claims**



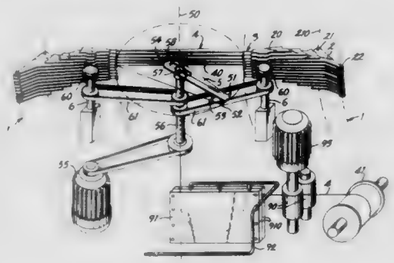
1. Apparatus for the production of laminates using adhesive and comprising
(a) first and second work stations each having a respective support means including a flat horizontal surface for supporting a substantially rigid sheet of material.
(b) a third work station between said first and second stations, and,
(c) means for advancing said substantially rigid sheet from said first station through said third station to said second station, and wherein
(d) said third station includes means for dispensing a liquid adhesive on to the top surface of a sheet being advanced through said third station,
(e) the horizontal support surface of said second station is gas permeable and the station also includes a lid adapted to extend over said support surface, said lid comprising a substantially gas impermeable flexible cover movable between a first position in which said horizontal support surface is exposed and a second position in which said cover covers the support surface and means for withdrawing gas through the support surface from the space between said cover and the support surface when the cover is in said second position whereby to evacuate the space, and optionally
(f) the horizontal support surface of the first work station is also gas permeable and said first and second stations are each provided with means for supplying gas under pressure through their respective support surfaces from below.

4,795,522
BEAD FILLER APPLICATOR
Daniel C. Orendorf, Hartville; Andrew R. Green, Doylestown, and Robert E. Bosick, Mogadore, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Apr. 2, 1985, Ser. No. 718,906
Int. Cl.[4] B29D *30/06*
U.S. Cl. 156—398 **10 Claims**



1. An apparatus for applying a filler to a bead comprising:
(a) bead holding means adapted to hold said bead and to selectively rotate said bead;
(b) transfer means adapted to grasp a leading end of said filler and place it adjacent said bead at a position offset from the bead holding means radial centerline and to grasp a trailing end of said filler and place it in abutting relationship with the leading end of said filler to form an aligned joint;
(c) retention means for retaining an outer portion of the leading end of the filler on the bead holding means radially outwardly of the bead to reduce slippage of said outer portion on the bead holding means as the filler is wrapped about the bead; and
(d) means for pressing the filler to said bead as said filler is wrapped about the bead.

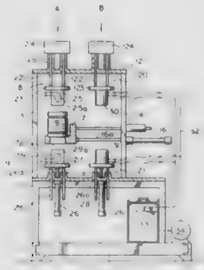
4,795,523
APPARATUS FOR THE MANUFACTURE OF REINFORCEMENTS FOR TIRES
Daniel Laurent, Meylan, and Jean C. Mayet, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Cerimont-Ferrand Cedex, Fed. Rep. of Germany
Division of Ser. No. 40,360, Apr. 20, 1987. This application Jan. 26, 1988, Ser. No. 148,496
Claims priority, application France, Apr. 25, 1986, 86 06159
Int. Cl.[4] B29D *30/38, 30/20*
U.S. Cl. 156—397 **12 Claims**



1. An apparatus for the manufacture of a tire having at least one reinforcement formed from a continuous cord, comprising:
(a) two rings of support arms the axially inner end of which can be displaced axially and radially

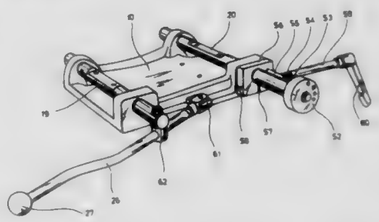
bears retention means for the cord;
(b) a rotary arm
whose axis of rotation is
substantially perpendicular to the axis of the rings
located substantially axially midway between the retention means
which bears delivery means making it possible to hook the cord to the retention means upon each passage of the rotary arm, the two rings turning through an angle corresponding to the distance between two adjacent retention means, upon each turn of the rotary arm;
(c) means for permitting insertion of a rigid core radially within a cylinder formed by the retention means.

4,795,524
APPARATUS FOR FIXING CAP ON END OF FILTER ELEMENT
Atsushi Sakaida, Nagoya; Masanori Suzuki, and Yoshihiro Naito, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Feb. 4, 1987, Ser. No. 10,857
Claims priority, application Japan, Feb. 7, 1986, 61-24178; Jul. 29, 1986, 61-178088
Int. Cl.[4] B32B *31/04*
U.S. Cl. 156—498 **6 Claims**



1. An apparatus for fixing a cap coated with a hot-melt adhesive onto an end surface of a filter element, comprising
a transporter (17) displaceable between a first position (A) and a second position (B) remote from the first position (A) at a predetermined distance in a horizontal direction;
a pair of vertically arranged heating units (18, 19), the axis of which passes by the first position (A); and
a pair of vertically arranged cooling units (20, 21), axis of which passes by the second position (B);
the transporter (17) being provided with a vertical through-hole (17*a*) for holding in a fixed position a pot assembly (9) for accommodating a filter element (6) to be treated; the through-hole (17*a*) being designed to be in a alignment with the axes of the pairs of heating and cooling units (18, 19; 20, 21), respectively, when the transporter (17) occupies the first and second positions (A, B); the pot assembly (9) comprising a cylindrical tubular member (9*b*) for closely accommodating a midportion of a filter element (6) therein and a pair of disc-like lids (9*a*) made of a heat-conductive material for covering the respective end surfaces of the filter element (6) including an end cap (8) having an hot-melt adhesive applied inside thereof, the lids (9*a*) being in contact with the heaters (25, 29) and the coolers (30, 31) during the heating and cooling operation of the apparatus;
the heating units (18, 19) comprising a pair of heaters (25, 29) held in such a manner that each heater (25, 29) is vertically reciprocatable while having free end surfaces thereof opposing each other; and
the cooling units (20, 21) comprising a pair of coolers (30, 31) held in such a manner that each cooler (30, 31) is vertically reciprocatable while having free end surface thereof opposing each other; wherein
the pot assembly (9) deposited on the transporter (17) occupying the first position (A) is nipped between the upper and lower heaters (25, 29) in such a manner that the upper and lower surfaces of the pot assembly (9) are brought into contact with the lower surface of the upper heater (25) and the upper surface of the lower heater (29), respectively, by the upward movement of the lower heater (29) through the through-hole (17*a*), whereby the hot-melt adhesive on the end caps of the filter element (6) accommodated in the pot assembly (9) is melted by heat-transmission from the heaters (25, 29) through the lid (9*a*) of the pot assembly (9), and after the transporter (17) is displaced to the second position (B), the upper and lower surfaces of the pot assembly (9) are brought into contact with the lower surface of the upper cooler (30) and the upper surface of the lower cooler (31), respectively, by the upward movement of the lower cooler (31) through the through-hole (17*a*), whereby the hot-melt adhesive in a molten state on the end caps of the filter element (9) is solidified by heat-transmission to the coolers (30, 31) through the lid (9*a*) of the pot assembly (9).

4,795,525
LEVER-ACTUATED COMPOUND SLIDE SUPPORT FOR A LABELING MACHINE
Hermann Kronseder, Wörth, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany
Filed Mar. 31, 1987, Ser. No. 33,014
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1986, 8609267[U]; Feb. 27, 1987, 8703016[U]
Int. Cl.[4] B65C *9/08, 9/30*
U.S. Cl. 156—567 **2 Claims**



1. An adjustable device for adapting a labeling machine to apply labels to containers of various types, said device comprising:
a compound slide including a lower carriage fixed to said machine and an upper carriage mounted on said lower carriage for moving thereon and for supporting at least one element involved in applying labels to said containers,
lever means mounted for pivoting relative to said machine and operatively connected to said upper carriage and swingable to facilitate shifting said upper carriage to accommodate application of labels to containers of different types,
guide rods for said upper carriage to move on said lower carriage, said guide rods being fastened in parallelism to said upper carriage,
bearing means in said lower carriage through which said guide rods extend and slide,
adjustable stop means arranged to set the limit to which said upper carriage is permitted to move toward said containers in response to pivoting said lever means,
said stop means including a member mounted on a free end of one of said guide rods for rotation about the axis of said

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one of said guide rods, and a stop element mounted fixedly to said lower carriage, and

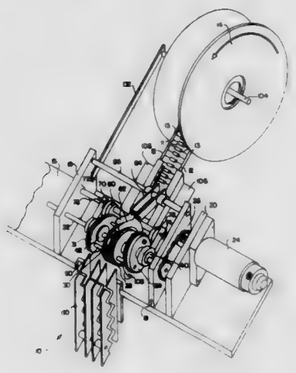
a plurality of rod-like elements arranged in an arc on said member around the axis of said one of said guide rods, said rod-like elements being adjustable axially and rotatable with said member selectively into alignment with said fixedly mounted stop element.

4,795,526

DETAPING APPARATUS

John J. Lightner, Lake Zurich, and Nassim A. Samaan, Zion, both of Ill., assignors to Lightner Associates Inc., Rolling Meadows, Ill.

Filed Apr. 16, 1987, Ser. No. 40,192
Int. Cl.⁴ B32B *31/10*
U.S. Cl. 156—584 **9 Claims**



1. Detaping apparatus, including means for operating upon tape components, said components having a body and at least one lead, the leads of the respective components being adhered, at substantially regular intervals, to at least one strip of tape, said apparatus comprising:

first and second rotatable index wheels;

means for disposing said first index wheel for rotation about a first axis of rotation;

means for disposing said second index wheel for rotation about a second axis of rotation, said second axis of rotation being at a predetermined angle with respect to said first axis;

means for rotating said first and second index wheels in synchronism, such that, as said index wheels rotate through a cycle about their respective axes, the distance between corresponding points along the perimeter of each of said index wheels varies; and

means for disposing said first and second rotatable index wheels to engage each said lead in sequence at a predetermined position in their cycle, engaging said lead between said tape and said component body, the distance between the points at which said first and second index wheels engage said lead thereafter increasing to strip said tape from said lead.

4,795,527

TOOTH ETCHING

Howard Cohen, 339 Forest Ave., Woodmere, N.Y. 11598

Filed Dec. 7, 1987, Ser. No. 129,592
Int. Cl.⁴ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—629 **22 Claims**

19. A method of applying an etchant to a tooth surface comprising the steps of: forming an absorbent matrix dimensioned to approximate the size of a tooth face; impregnating the matrix with an etchant; positioning the matrix in contact with the tooth surface to be etched; applying sufficient pressure to



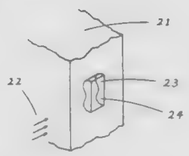
the matrix against the tooth surface to release the etchant; and removing the matrix.

4,795,528

METHOD OF MAKING MEMORY DEVICES

Jiun-Tsong Wu, 446 Manzanita Ave., Sierra Madre, Calif. 91024

Division of Ser. No. 750,733, Jul. 1, 1985, abandoned. This application Jun. 22, 1987, Ser. No. 64,753
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 156—633 **2 Claims**



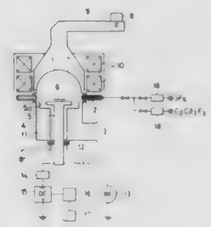
1. The method of making an optical memory device comprising a light-transparent substrate having a plurality of void cells and a preselected amount of ablative material in each void cell only partly filling each cell such that the ablative material can be redeposited at a plurality of locations in each cell, said method comprising the steps of applying a masking layer of coating on the surface of a base plate; ablating the masking layer with a light beam having sufficient intensity and width to uncover preselected areas of the surface; etching the uncovered areas of the base plate to form individual pits at preselected areas in the base plate; depositing ablative material as a coating on the surface of the masking layer and on the base plate in the pits such that said ablative material fills only a portion of the volume of each of said pits; removing the masking layer and ablative layer outside of the pits by dissolving the masking coating and carrying with it the overlaying ablative material; and then laminating the base plate with a cover plate to form void memory cells at the pitted areas with the ablative material sealed in the void cells to thereby form said optical memory device wherein the cover plate and base plate together function as said substrate, wherein said ablative material is opaque to radiant energy and is vaporizable in response to a high intensity radiant energy beam, and the amount of ablative material supplied to each pit is limited such that the ablative material can be redeposited at a plurality of locations in said cells.

4,795,529

PLASMA TREATING METHOD AND APPARATUS THEREFOR

Yoshinao Kawasaki, Yamaguchi; Hironobu Kawahara, Kudamatsu; Yutaka Kakehi, Hikari; Kado Hirobe, Koganei, and Katsuyoshi Kudo, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1987, Ser. No. 109,318
Claims priority, application Japan, Oct. 17, 1986, 61-245261
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; B05D *3/06*; C23C *14/00*
U.S. Cl. 156—643 **32 Claims**



1. A plasma treating method comprising the steps of:

rendering a gas having a critical potential plasmic under a reduced pressure, said critical potential being a potential at which an etching action and a deposition action are in equilibrium with each other when a sample is treated with the plasma which is generated by rendering a certain kind of gas plasmic under a predetermined plasma condition and applying an acceleration voltage to ions in said plasma so as to let them be incident to said sample; and

changing said acceleration voltage for accelerating said ions in said plasma towards said sample interposing said critical potential.

4,795,530

PROCESS FOR MAKING SOFT, STRONG CELLULOSIC SHEET AND PRODUCTS MADE THEREBY

Dave A. Soerens, Winnebago County; Linda K. H. Sauer, Calumet County, and Gregory A. Wendt, Winnebago County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 795,122, Nov. 5, 1985, abandoned. This application Mar. 5, 1987, Ser. No. 22,168
Int. Cl.⁴ D21H *5/24*
U.S. Cl. 162—111 **10 Claims**

1. In a process for making a soft, strong cellulosic tissue sheet wherein a web of cellulosic fibers is formed on a forming wire and thereafter adhered to the surface of a drying means and creped, the improvement comprising treating one face surface of the web with a dilute aqueous solution of a chemical debonding agent in an amount effective to soften a surface zone of said web proximate said treated face surface and thereafter, prior to being adhered to the surface of the drying means, subjecting the web to vacuum suction whereby a composite strong zone/soft surface zone structure results, with said soft surface zone thereof including said treated face surface and being from about 10 to about 40% of the total thickness of said web, and with said strong zone being effectively untreated by said agent.

4,795,531

METHOD FOR DEWATERING PAPER

Samuel C. Sofia, Saint Charles; Kerrie A. Johnson, Aurora; Maria S. Crill, Oak Park; Martin J. Roop, Saint Charles, all of Ill.; Steven R. Gotberg, Mobile, Ala.; Anthony S. Nigrelli, Portage, Mich., and Laurence S. Hutchinson, Waterville, Me., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Sep. 22, 1987, Ser. No. 99,585
Int. Cl.⁴ D21H *3/36*
U.S. Cl. 162—164.6 **5 Claims**

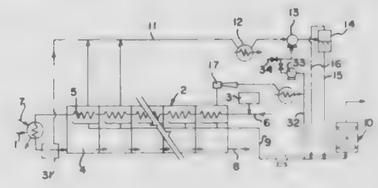
1. A method for dewatering paper comprising steps of adding to paper furnish, from 0.1 to 25 pounds per ton on a dry basis, based on furnish of a low molecular weight cationic organic polymer having Mw within the range of 2000 to 200,000, said low molecular weight cationic organic polymer being selected from the group consisting of diallyldimethylammonium chloride polymer, epichlorohydrin/dimethylamine copolymer, ethylene dichloride/ammonia copolymer and acrylamido N,N-dimethyl-piperazine quaternary/acrylamide co-polymer: and then from 0.001 to 25 pounds per ton on a dry basis based on furnish of a colloidal silica with an average particle size within the range of from 1 to 100 nm; and from 0.1 to 5 pounds per ton on a dry basis, based on furnish of a high molecular weight charged acrylamide copolymer having a molecular weight of at least 500,000.

4,795,532

AFTERTREATMENT METHOD AND APPARATUS FOR DISTILLED WATER

Junji Mizutani, Saita, and Kozo Fujita, Nishinomiya, both of Japan, assignors to Sasakura Engineering Co. Ltd., Kobe, Japan

Continuation of Ser. No. 702,913, Feb. 19, 1985, abandoned. This application Feb. 13, 1987, Ser. No. 15,524
Int. Cl.⁴ B01D *3/10*; C02F *1/20*
U.S. Cl. 203—11 **2 Claims**



1. A method of treating water distilled from sea water by a distillation system having a plurality of evaporation stages, each of which is adapted to produce water vapor and carbon dioxide gas by evaporating sea water and produce distillate by condensing water vapor, said method comprising the steps of:

removing said distillate from said system,

removing said gas from at least one of said stages, the temperature of which exceeds 60° C.,

compressing said removed gas in a water-sealed compressor, thereby creating a mixture of sealing water and carbon dioxide,

separating said mixture in a separator into carbon dioxide gas and sealing water in which carbon dioxide is dissolved,

adding said gas from said separator to said removed distillate, and

adding said sealing water from said separator to said distillate after said step of adding said gas.

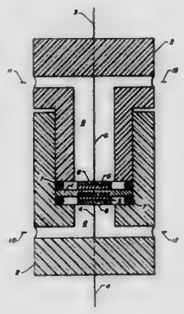
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,533

GAS DETECTION APPARATUS AND METHOD WITH NOVEL THREE-COMPONENT MEMBRANE

Ping Young, Hoffman Estates, and Anthony J. Polak, Lake Zurich, both of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 753,494, Jul. 10, 1985, abandoned. This application Jul. 6, 1987, Ser. No. 71,557
Int. Cl.[4] G01N *27/58*
U.S. Cl. 204—1 T **18 Claims**



1. Apparatus for detection, in a gas sample, of a gaseous component which is capable, in the presence of a catalytic agent, of dissociating to yield hydrogen ions or of combining with hydrogen ions comprising:

(a) a thin film polymer blend membrane possessing a high protonic conductivity and which is formed by removing the solvent from a solution of a blend of three components, which components are a phosphoric acid, an organic polymer, and a poly organic acid wherein said phosphoric acid is present in the blend in an amount in the range of about 10 to about 50 mol% and is selected from a group consisting of hypophosphoric acid, metaphosphoric acid, orthophosphoric acid, pyrophosphoric acid, and polyphosphoric acid, wherein said organic polymer is present in the blend in an amount in the range of about 80% to about 40 mol% and is selected from a group consisting of poly(vinyl alcohol), poly(vinyl fluoride), polyethylenimine, poly(ethylene glycol), cellulose acetate, and copolymers having as repeat units the monomer units used in the polymers of said group, and wherein said poly organic acid is present in the blend in an amount in the range of about 10 to 40 mol.% and is selected from a group consisting of poly(acrylic acid), poly(methacrylic acid), poly(styrene sulfonic acid), and copolymers having as repeat units the monomer units used in the poly organic acids of said group;

(b) a membrane housing comprising a sample gas chamber and a reference substance chamber separated by a partition comprising said membrane, said membrane having a first surface in common with the sample gas chamber and a second surface in common with the reference substance chamber;

(c) two separate portions of catalytic agent effective to promote dissociation and combination, a first portion in contact with said first surface and a second portion in contact with said second surface of said membrane;

(d) means for forming electrical connection in operative contact with said catalytic agent at said first surface and with said catalytic agent at said second surface; and,

(e) means for measuring EMF between said means for forming electrical connection, the existence of said EMF being indicative of the presence of said gaseous component in said gas sample and the magnitude of said EMF being proportional to the concentration of said gaseous component in said gas sample.

4,795,534

ELECTROLYTE SOLUTION AND PROCESS FOR GOLD ELECTROPLATING

Jean A. Lochet, Metuchen, N.J., assignor to Vanguard Research Associates, Inc., South Plainfield, N.J.

Continuation-in-part of Ser. No. 912,171, Sep. 25, 1986, Pat. No. 4,670,107, which is a continuation of Ser. No. 836,240, Mar. 5, 1986, abandoned. This application Jan. 1, 1987, Ser. No. 57,011
The portion of the term of this patent subsequent to Jun. 2, 2004, has been disclaimed.
Int. Cl.[4] C25D *3/62*
U.S. Cl. 204—44.3 **13 Claims**

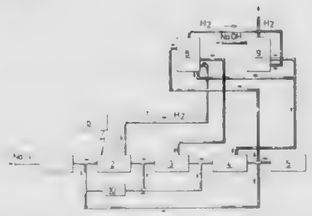
1. A bath for producing deposits of gold by electrodeposition, comprising: an aqueous solution containing at least one soluble gold cyanide compound; formic acid in a concentration of at least 20 ml/l to about 150 ml/l of said bath solution, said formic acid concentrations being calculated on a 90% by weight grade of formic acid; a cobalt compound; sufficient alkali to bring the pH to within the range of 3.5 to 4.4; and as conductivity salts and inhibitors, malic acid or a combination thereof with gluconic acid or with a water soluble organophosphorous chelating agent, said conductivity chelating agent, said conductivity salts and inhibitors being present in at least sufficient quantity to provide a specific gravity of at least 13 Baume' in said bath.

4,795,535

PROCESS FOR THE PRODUCTION OF ALKALI METAL CHLORATE

Ghislain Bolduc, Magog, Canada, and Karl J. F. Waangard, Sundsvall, Sweden, assignors to Eka Nobel AB, Surte, Sweden

Filed Dec. 2, 1987, Ser. No. 127,480
Claims priority, application Sweden, Dec. 4, 1986, 8605222
Int. Cl.[4] C25B *1/24*
U.S. Cl. 204—95 **9 Claims**



1. A process for the production of alkali metal chlorate by electrolysis of an electrolyte containing alkali metal chloride in an electrolyser, whereby a part of the liquid phase is brought from the electrolyser to a crystallizer for precipitation of crystals of alkali metal chlorate, characterized in that hydrogen gas formed in the electrolyser is purified from contamination of chlorine gas by contacting it with 30–100 per cent by weight of the mother liquor leaving the crystallizer, which mother liquor has a pH in the interval of from 7.5 to 14, whereafter the mother liquor is recycled to the electrolysis system.

4,795,536

HYDROGEN SEPARATION AND ELECTRICITY GENERATION USING NOVEL THREE-COMPONENT MEMBRANE

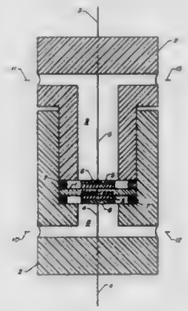
Ping Young, Hoffman Estates, and Anthony J. Polak, Lake Zurich, both of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 753,495, Jul. 10, 1985, abandoned. This application Jul. 6, 1987, Ser. No. 70,622
Int. Cl.[4] C25B *1/02, 9/00*
U.S. Cl. 204—129 **17 Claims**

1. Apparatus for performing an electrochemical process

involving a gaseous mixture having a component which is capable, in the presence of a catalytic agent, of dissociating to yield hydrogen ions or of combining with hydrogen ions, comprising:

(a) a thin film polymer blend membrane possessing a high protonic conductivity and which is formed by removing the solvent from a solution of a blend of three components, which components are a phosphoric acid, an organic polymer, and a poly organic acid wherein said phosphoric acid is present in the blend in an amount in the range of about 10 to about 50 mol % and is selected from a group consisting of hypophosphoric acid, metaphosphoric acid, orthophosphoric acid, pyrophosphoric acid, and polyphosphoric acid, wherein said organic polymer is present in the blend in an amount in the range of about 80% to about 40 mol % and is selected from a group consisting of poly(vinyl alcohol), poly(vinyl fluoride), polyethylenimine, poly(ethylene glycol), cellulose acetate, and copolymers having as repeat units the monomer



units used in the polymers of said group, and wherein said poly organic acid is present in the blend in an amount in the range of about 10 to 40 mol. % and is selected from a group consisting of poly(acrylic acid), poly(methacrylic acid), poly(styrene sulfonic acid), and copolymers having as repeat units the monomer units used in the poly organic acids of said group;

(b) a membrane housing comprising a first gas chamber and a second gas chamber separated by a partition comprising said membrane, said membrane having a first surface in common with the first gas chamber and a second surface in common with the second gas chamber;

(c) two separate portions of catalytic agent effective to promote dissociation and combination, a first portion in contact with said first surface and a second portion in contact with said second surface of said membrane; and,

(d) means for forming electrical connection in operative contact with said catalytic agent at said first surface and with said catalytic agent at said second surface.

4,795,537

ELECTRICAL CONDITIONING SYSTEM FOR ELECTRODES IN AN ELECTROLYSIS CELL

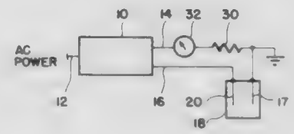
Richard R. Timewell, Vancouver, Canada, assignor to H.P.G. Research Ltd., Vancouver, Canada

Filed Apr. 10, 1987, Ser. No. 34,554
Int. Cl.[4] C25B *1/04*; C25F *1/00*
U.S. Cl. 204—129 **20 Claims**

1. An apparatus for electrically conditioning electrodes which are positioned in an electrolyte, comprising:

electrode means, including at least one metal electrode, wherein the electrode means is positioned in an electrolyte and includes cathodic and anodic portions;

means for generating a pulsating DC voltage signal, wherein particular characteristics of the signal have values selected such that when the pulsating DC voltage signal is applied to the electrode means, hydrogen is produced off the cathodic portion of said electrode means and such that the anodic portion of said electrode means is maintained substantially in a state of depassivation wherein substantially



no oxygen is produced off the anodic portion and the anodic portion is consumed in operation of the apparatus; and

means connecting the DC voltage signal to said electrode means.

4,795,538

ELECTROCHEMICAL PROCESS FOR RECOVERING METALLIC RHODIUM FROM AQUEOUS SOLUTIONS OF SPENT CATALYSTS

Marie-Celine Caude, Villiers Sur Orge; Didier Morel, Neris Les Bains, and Jean-Pierre Pulicani, Antony, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Mar. 21, 1988, Ser. No. 171,258
Claims priority, application France, Mar. 25, 1987, 87 04129
Int. Cl.[4] C25C *1/20*
U.S. Cl. 204—111 **10 Claims**

1. A process for recovering rhodium in metallic form from an aqueous solution containing an organic rhodium complex, which comprises

(a) treating the aqueous solution with an oxidizing agent and a strong acid, (b) electrolysing the solution thus obtained between an anode and a cathode, and

(c) recovering the metallic rhodium deposited on said cathode.

4,795,539

SYSTEM AND USE THEREOF FOR COLLECTING CHEMICAL-PHYSICAL, ELECTROCHEMICAL AND MECHANICAL PARAMETERS FOR DESIGNING AND/OR OPERATING CATHODIC PROTECTION PLANTS

Giuseppe Bianchi, Milan; Gian L. Mussinelli, Lomazzo, and Bruno Bazzoni, Milan, all of Italy, assignors to Oronzio de Nora S.A., Lugano, Switzerland

Filed Mar. 13, 1986, Ser. No. 839,414
Claims priority, application Italy, Mar. 13, 1985, 19877 A/85
Int. Cl.[4] C23F *13/00*
U.S. Cl. 204—147 **2 Claims**

1. A device for measuring current density corresponding to the limiting oxygen diffusion rate towards the surface of a metal structure to be cathodically protected comprising:

a test electrode, an auxiliary electrode, and a reference electrode, all inserted onto a multipolar electric cable and spaced along said cable length;

said test electrode including a valve metal sleeve, said sleeve being electrically connected (A1) to a wire of said multipolar cable,

said auxiliary electrode including a valve metal sleeve, said sleeve being electrically connected (D1) to a wire of said multipolar cable;

said reference electrode being positioned in close proximity to the edge of said test electrode and including a valve metal sleeve inserted onto said multipolar electric cable and a silver or zinc ring applied onto said sleeve, said

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sleeve being electrically connected (A2) to a wire of said multipolar cable, wherein two non-conductive shields are



positioned in close proximity to both edges of said test electrode to exactly define the electric and diffusing fields.

4,795,540

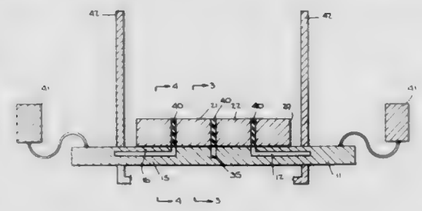
SLOTTED CATHODE COLLECTOR BAR FOR ELECTROLYTE REDUCTION CELL.

Douglas W. Townsend, Glen Burnie, Md., assignor to Comalco Aluminum, Ltd., Melbourne, Australia

Continuation of Ser. No. 51,913, May 19, 1987, abandoned. This application Nov. 25, 1987, Ser. No. 125,760

Int. Cl.[4] C25C *3/08, 3/16*

U.S. Cl. 204—243 R **25 Claims**



1. An electrolytic reduction cell for the production of aluminum comprising:

a first cell wall and an opposite second cell wall with a cell center therebetween, a first external bus bar adjacent said first cell wall and a second external bus bar adjacent said second cell wall;

at least one anode;

means supporting said anode in said cell between said cell walls;

a carbonaceous cathode block disposed below said anode and extending between said cell walls;

a cathode collector bar having a top side, a bottom side, and a longitudinal axis disposed in electrically conductive contact with said cathode block and extending from said first cell wall to at least near to said cell center and electrically connected to said first external bus bar;

said cathode collector bar having a slot disposed therein, said slot having a first portion extending from near said first cell wall toward said cell center approximately parallel to said cathode collector bar longitudinal axis and terminating at a first interior end between said first cell wall and said cell center, and said slot having a second portion extending downwardly from said top of said cathode collector bar at a location between said first cell wall and said cell center and intersecting said first slot portion; and

insulating material disposed in said first and said second slot portions.

4,795,541

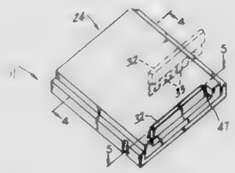
METHOD AND APPARATUS FOR MOLDING THIN GEL SLABS HORIZONTALLY WITH INTEGRALLY MOLDED LARGE VOLUME SAMPLE WELLS

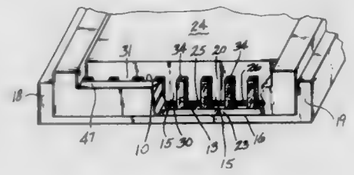
Stanley M. Hurd, Hamden, and Richard E. Kouri, New Haven, both of Conn., assignors to Bios Corporation, New Haven, Conn.

Filed May 20, 1987, Ser. No. 51,761

Int. Cl.[4] G01N *27/28, 27/26*

U.S. Cl. 204—299 R **12 Claims**





1. A mold assembly for casting thin electrophoretic gel slabs in horizontal orientation comprising:

a bottom tray means defining a first mold surface;

a top tray means having a second mold surface keyed to said bottom tray means;

a base plane surrounding a portion of said first mold surface;

skirt means on said top tray means engagable with said base plane for spacing said mold surfaces, the spacing of said mold surfaces ranging from 0.1 mm. to 3.0 mm.

4,795,542

ELECTROCHEMICAL CONCENTRATION DETECTOR DEVICE

Pepi Ross, Berkely; Marc J. Madou, Palo Alto; Zoila Reyes, Menlo Park; Joel F. Jensen, Palo Alto; Sharon W. Wing, Cupertino, and Virginia G. Rimer, Mountain View, all of Calif., assignors to St. Jude Medical, Inc., St. Paul, Minn.

Filed Apr. 24, 1986, Ser. No. 855,902

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—403 **30 Claims**

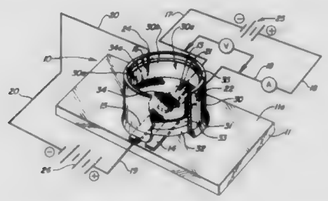
1. An electrochemical detector device for determining the concentration of a substrate in an aqueous sample which comprises:

(a) a base surface;

(b) a set of planar electrodes affixed to said base surface;

(c) a resilient permeable inner membrane in substantially interfacial contact with said planar electrodes, said inner membrane being comprised of a polyvinyl acetate and polyethylene glycol modified poly(styrene-maleic anhydride) polymer and having an enzyme specific to said substrate distributed and immobilized therein by covalently bonding the anhydride group of a poly(styrene-maleic anhydride) copolymer to amine groups of the said enzyme, the enzyme being adapted to catalytically convert the substrate to a electrochemically measurable derivative;

(d) a permeable biocompatible, blood compatible aliphatic polyurethane/butadiene resin polymeric outer membrane having a top and bottom surface, the bottom surface in substantially interfacial contact with said inner membrane,



said outer membrane being adapted to restrict the passage of electrochemically interfering substances to said inner membrane but permeable to the substrate to be attached;

(e) a housing affixed to said base surface, containing the inner and outer membranes and underlying electrodes, said housing adapted to contain an aqueous sample of the substrate to be measured;

(f) a means for measuring current generated by a redox reaction of the electrochemically measurable derivative formed by action of the enzyme on the substrate to be measured.

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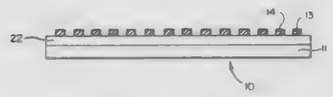
SPIN COATING OF ELECTROLYTES

Joseph R. Stetter, Naperville, and G. Jordan Maclay, Maywood, both of Ill., assignors to Transducer Research, Inc., Naperville, Ill.

Filed May 26, 1987, Ser. No. 53,722

Int. Cl.[4] G01N *27/30*

U.S. Cl. 204—412 **26 Claims**



1. A method for the production of a structurally stable, solid electrolyte for use in the fabrication of electrochemical sensors comprising the steps of

spin coating a solution of an ion-conducting material onto the surface of an insulating substrate, the ion-conducting material being of sufficient viscosity to provide a substantially uniform coating of a solid, structurally stable ion-conducting layer on the substrate, and

drying the spin coated solution of ion-conducting material to form a substantially uniform coating of a solid, structurally stable ion-conducting layer on the substrate.

9. A method for the production of an electrochemical sensor comprising the steps of:

spin coating an ion-conducting material onto the surface of an insulating substrate, the ion-conducting material being of sufficient viscosity to provide a substantially uniform coating of a solid, structurally stable ion-conducting layer on the substrate,

depositing a working electrode and at least one other electrode onto the layer of ion-conducting material, and

connecting an electrical power source to the working electrode and the at least one other electrode to thereby complete a circuit in which current is capable of flowing through both of the electrodes as a result of at least one electrochemical reaction occurring at the working electrode.

4,795,544

ELECTROCHEMICAL GAS SENSOR

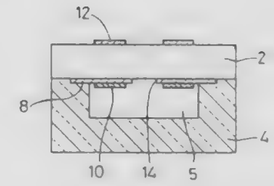
Hitoshi Nishizawa, Iwakura, and Kazuyoshi Shibata, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Sep. 23, 1987, Ser. No. 100,229

Claims priority, application Japan, Sep. 27, 1986, 61-228979

Int. Cl.[4] G01N *27/58*

U.S. Cl. 204—425 **10 Claims**



1. A gas sensor for dealing with a measurement gas in an external space comprising:

an electrochemical pumping cell including a porous solid electrolyte body, and a first and a second electrode which are disposed on opposite sides of said porous solid electrolyte body;

a gas-tight ceramic body cooperating with said porous solid electrolyte body of the electrochemical pumping cell, to define therebetween an internal space, such that said first electrode substantially communicates with said internal space;

a gas-tight solid electrolyte layer formed on or within said porous solid electrolyte body such that said first electrode is substantially entirely overlapped by said gas-tight solid electrolyte layer, as viewed in a direction perpendicular to a plane of said first electrode, said gas-tight solid electrolyte layer permitting a portion of said porous solid electrolyte body to communicate with said internal space in said direction.

4,795,545

PROCESS FOR PRETREATMENT OF LIGHT HYDROCARBONS TO REMOVE SULFUR, WATER, AND OXYGEN-CONTAINING COMPOUNDS

Robert J. Schmidt, Rolling Meadows, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 17, 1987, Ser. No. 97,972

Int. Cl.[4] C10G *25/05*

U.S. Cl. 208—91 **1 Claim**

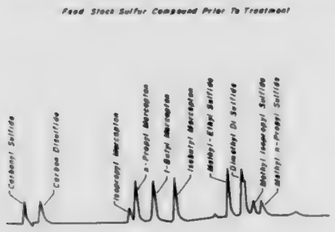
1. A catalytic isomerization process in which a feed stream comprising paraffins having from 4 to 6 carbon atoms per molecule and substantially free of sulfur compounds, oxygenates and water is isomerized in a reaction zone in the presence of an isomerization catalyst at isomerization conditions to produce a product having increased octane value compared to the feed, said feed stream having previously been subjected to a pretreatment process which comprises:

(a) passing a hydrocarbon stream comprising paraffins having 4 to 6 carbon atoms per molecule, mercaptans, carbon disulfide, carbonyl sulfide, oxygenates and water through a first adsorption zone comprising 13X zeolite maintained at a temperature of 25° to 100° C., a pressure less than 3448

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kPa (ga), and a space velocity of from 1 to 5 volumes per hour per volume of first adsorption zone;

(b) thereafter passing the effluent from the first adsorption zone through a second adsorption zone comprising activated alumina maintained at a temperature of from 25° to



100° C., a pressure less than 3448 kPa (ga), and a space velocity of from 1 to 5 volumes of feedstock per hour per volume of second adsorption zone; and

(c) recovering the effluent from the second adsorption zone with the effluent containing less than 1 wt. ppm carbon disulfide.

4,795,546

PROCESS FOR STABILIZING LUBE BASE STOCKS DERIVED FROM NEUTRAL OILS

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 782,260, Sep. 30, 1985, abandoned. This application Jul. 28, 1987, Ser. No. 78,614

Int. Cl.⁴ C10G *67/00*

U.S. Cl. 208—97 **12 Claims**

1. A process for improving the storage stability of a lubricating oil base stock prepared from a neutral oil hydrocrackate, comprising:

(a) contacting said neutral oil hydrocrackate with a catalyst comprising an intermediate pore size zeolite, said zeolite being in the hydrogen form, to produce a dewaxed effluent,

(b) contacting said dewaxed effluent, with hydrogen in the presence of a hydrogenation catalyst under mild hydrogenation conditions to produce a hydrofinished effluent, and

(c) contacting said hydrofinished effluent with a heterogeneous acidic catalyst in the presence of a minor amount of an olefinic stabilizing agent.

4,795,547

PROCESS FOR CONTACTING PARTICULATE SOLIDS WITH A FLUID

Peter H. Barnes, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 9, 1987, Ser. No. 23,322

Claims priority, application United Kingdom, Mar. 27, 1986, 8607698

Int. Cl.⁴ C10G *47/00*

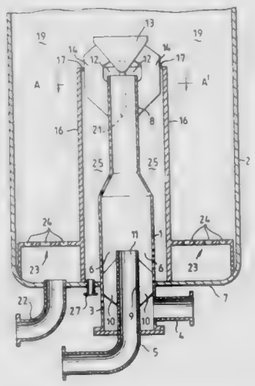
U.S. Cl. 208—113 **3 Claims**

1. A process for fluid catalytic cracking of a hydrocarbonaceous feed using an apparatus comprising:

(i) an outer vessel having exterior walls, a lower portion and an upper portion and defining a mixing zone, said mixing zone having a fluidization gas inlet and a solids inlet in said lower portion of said vessel;

(ii) a concentrically situated fluid supply means located within said vessel communicating with a hereinafter defined cooling zone comprising a lower portion and an upper portion, said lower portion having discreet hydrocarbonaceous feed inlet means and steam inlet means, said upper portion having outlet means concentrically disposed therein and a means for directing a mixture of fluids from said supply means to a hereinafter defined cooling zone; and

(iii) an intermediate cooling zone in said vessel concentrically located exteriorly with respect to said supply means, said cooling zone having an upper portion having an outlet means and a lower portion having gas inlet means and comprising an annular communication with said mixing zone to provide for thermal insulation of said mixture of fluids from said supply means and means for subsequently deflecting and thereby directing said mixture of fluids into said outer vessel to be contacted with solids including a rotational– symmetrical body having an increasing diameter as said body extends away from said supply means and into said outer vessel, wherein said process comprises:



(a) contacting said hydrocarbonaceous feed with steam in said concentrically situated fluid supply means to form a mixture of feed and steam;

(b) passing said mixture of feed and steam into said intermediate cooling zone;

(c) passing said mixture of feed and steam from step (b) into said outer vessel and contacting said mixture in said outer vessel with fluidized solid cracking catalyst particles obtained by passing said solid catalyst particles into said outer vessel through said solids inlet and introducing fluidization gas into said outer vessel through said fluidization gas inlet, at a temperature in the range of from 0°–800° C. and a pressure in the range of from 1–100 bar abs. to form a cracked product; and

(d) removing said cracked product from said outer vessel.

4,795,548

PROCESS FOR MAKING ANODE GRADE COKE

Leon E. Velasco R; Rafael O. Hidalgo, both of Miranda; Joaquin Rodriguez, Caracas, and Wolfgang Garcia, Miranda, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

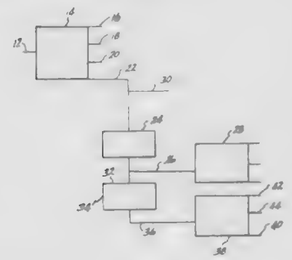
Filed Oct. 27, 1986, Ser. No. 923,190

Int. Cl.⁴ C10G *37/06, 37/02*

U.S. Cl. 208—131 **10 Claims**

1. A process for the production of anode grade coke from a hydrocarbon feed characterized by high levels of sulfur and metals comprising:

(a) providing a vacuum resid characterized by the following composition and properties:



Gravity, °API	−1.0 to 10.0
Conradson Carbon, wt. %	10.0 to 30.0
Sulfur, wt. %	1.0 to 5.0
Nitrogen, wt. %	0.1 to 1.5
Vanadium, ppm	75 to 1000
Nickel, ppm	30 to 250

(b) subjecting said vacuum resid to a fluidized bed coking process under the following conditions:

Reactor Bed Temperature, °F.	950 to 1000
Reactor overhead temperature, °F.	700 to 800
Reactor Dense Bed Pressure, psig	16 to 20
Reactor Diluted Bed Pressure, psig	12 to 16

so as to produce gas, distillates, coke and a residual bottom stream characterized by the following composition and properties:

Gravity, °API	−1.0 to 8.0
Conradson Carbon, wt. %	10.0 to 25.0
Sulfur, wt. %	1.0 to 5.0
Nitrogen, wt. %	0.1 to 1.5
Vanadium, ppm	50 to 500
Nickel, ppm	20 to 80
Aromatics, wt. %	40 to 80
Asphaltenes, wt. %	3.0 to 12.0
Solids, wt. %	0.5 to 3.0
Cut Point, °F.+	800 to 1000

(c) filtering said residual stream so as to remove undesirable solids of high metal content and produce a filtered clean stream characterized by the following composition and properties:

Gravity, °API	−1.0 to 8.0
Conradson Carbon, wt. %	10 to 25
Sulfur, wt. %	1 to 5
Nitrogen, wt. %	0.1 to 1.5
Vanadium, ppm	5 to 200
Nickel, ppm	2 to 50
Aromatics, wt. %	40 to 80
Asphaltenes, wt. %	2.0 to 10.0
Solids, wt. %	0 to 0.5
Cut Point, °F.+	800 to 1000

(d) feeding said filtered clean stream to a coking drum wherein it decomposes leaving a mass of anode grade coke.

4,795,549

UHP-Y-CONTAINING REFORMING CATALYSTS AND PROCESSES

Peter K. Coughlin, Yorktown, and Jule A. Rabo, Armonk, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 16, 1986, Ser. No. 874,488

Int. Cl.⁴ C10G *35/06*

U.S. Cl. 208—139 **29 Claims**

1. The process for reforming or dehydrocyclization of a hydrocarbon reforming feedstock comprising contacting said hydrocarbon feedstock under effective reforming or dehydrocyclization conditions with a catalyst comprising:

(a) the zeolite UHP-Y; and

(b) at least one Group VIII metal.

4,795,550

REMOVAL OF TRACE OLEFINS FROM AROMATIC HYDROCARBONS

J. W. Adriaan Sachtler, Des Plaines, and Paul T. Barger, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 3, 1987, Ser. No. 34,811

Int. Cl.⁴ C10G *25/03*

U.S. Cl. 208—307 **7 Claims**

1. A process for treating a hydrocarbon process stream by converting trace quantities of olefinic impurities to nonolefinic hydrocarbons, which process comprises contacting the process stream, which contains trace olefins in an amount of from about 50 to about 2000 as measured by Bromine Index and at least 80% by weight of aromatic and naphthenic hydrocarbons having from 6 to 20 carbon atoms per molecule, at reaction conditions which ensure liquid phase operation with a solid catalyst composite comprising a crystalline aluminosilicate zeolite and a refractory inorganic oxide to produce by a catalytic olefin-consuming alkylation reaction an essentially olefin-free product stream with approximately the same quantity and distribution of aromatic and naphthenic hydrocarbons as contained in the process stream.

4,795,551

SOLVENT REFINING OF RESIDUES

Gary L. Hamilton, Little Silver; Andrei Rhoe, Wyckoff, and Donald P. Satchell, Princeton Junction, all of N.J., assignors to Lummus Crest, Inc., Bloomfield, N.J.

Filed Jul. 15, 1985, Ser. No. 754,776

Int. Cl.⁴ C10C *3/00*

U.S. Cl. 208—309 **19 Claims**

1. A process for solvent refining of a residual oil, comprising: contacting a residual oil in a solvent refining zone with a refining solvent; recovering from the solvent refining zone a first mixture comprising solvent refined oil and refining solvent, and a second mixture comprising refining solvent and impurities separated from the residue, said impurities comprising pitch; introducing the first mixture into a first zone of a combination tower to separate refining solvent from solvent refined oil; introducing the second mixture into a second zone of the combination tower to separate refining solvent from impurities, said combination tower being operated at a pressure of no greater than 100 PSIG; recovering solvent refined oil having a reduced quantity of refining solvent from the combination tower; recovering impurities having a reduced quantity of refining solvent from the combination tower; and recovering refining solvent from the combination tower for recycle to the solvent refining zone.

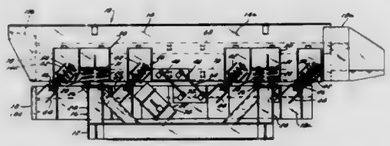
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4,795,552

NATURAL FREQUENCY VIBRATING SCREEN

Jen Yun, Simpsonville, S.C., and Edward H. Brelling, West Allis, Wis., assignors to Telsmith, Inc., Mequon, Wis.

Filed Apr. 24, 1987, Ser. No. 41,971
Int. Cl.[4] B07B *1/40*
U.S. Cl. 209—319 8 Claims



1. A vibratory screen apparatus comprising a first upper screening basket and a second lower screening basket, each basket having a deck that comprises a screen through which particles can pass that are smaller than a predetermined size, said first upper screening basket having a greater mass than said second screening basket, a normally stationary support frame on which the screening baskets are mounted in superimposed vertically spaced apart relationship with said first screening basket above said second screening basket and with their decks substantially parallel and relative to which each screening basket is oscillatingly movable for inducing material on its deck to advance therecross in one direction, and exciter means for imparting oscillatory motion to both of said screening baskets, said apparatus being characterized by:

A. resilient supporting means at all times providing an elastic connection between said support frame and said first upper screening basket, said resilient supporting means being substantially symmetrically disposed in relation to the center of mass of said first upper screening basket and being arranged for

(1) supporting said first upper screening basket from said support frame,

(2) substantially confining said first upper screening basket to oscillatory motion relative to said support frame, and

(3) constantly exchanging energy with said first upper screening basket during oscillatory motion thereof and thereby tending to maintain such motion;

B. coupling means at all times providing an elastic connection between said first upper screening basket and said second lower screening basket whereby said second lower screening basket is supported from and located below said first upper screening basket and is thus indirectly supported from said support frame and whereby said second lower screening basket is substantially confined to oscillatory motion relative to said support frame that is in phase opposition to the oscillation of said first upper screening basket,

(1) said coupling means being disposed in substantially symmetrical relation to the center of mass of each of said screening baskets and

(2) said coupling means comprising

(a) a plurality of coiled coupling springs, each having an axis,

(i) said coupling springs being connected between said screening baskets and

(ii) all of said coupling springs having their axes inclined in one direction to planes in which said decks extend and at an angle thereto that is the same for all of the coupling spring axes, and

(b) a plurality of resilient bars, each having at opposite ends thereof respective connections to said first upper screening basket and to said second lower screening basket, for constraining the screening baskets to oscillate counter to one another

so that said coupling springs constantly exchange energy with both of said screening baskets during their oscillatory motions and thereby cause a system comprising the screening baskets, the resilient supporting means, said coupling means and the resilient bars to have a natural frequency of vibration;

C. said exciter means comprising

(1) driver which defines a rotation axis and

(2) a gyratory mass which is rotated eccentrically about said rotation axis at a rate to effect vibration of said system at a frequency which is near to but below said natural frequency of vibration; and

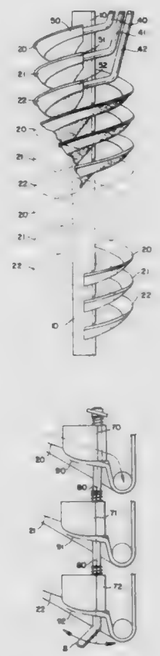
D. said exciter means being rigidly fixed to said second lower screening basket in substantially symmetrical relation to the center of mass thereof.

4,795,553

SPIRAL SEPARATOR

Philip J. Giffard, Nerang, Australia, assignor to Mineral Deposits Limited, Australia

PCT No. PCT/AU82/00040, § 371 Date Nov. 17, 1982, § 102(e) Date Nov. 17, 1982, PCT Pub. No. WO82/03343, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 25, 1982, Ser. No. 444,896
Claims priority, application Australia, Mar. 26, 1981, PE8165
Int. Cl.[4] B03B *5/52*
U.S. Cl. 209—439 8 Claims



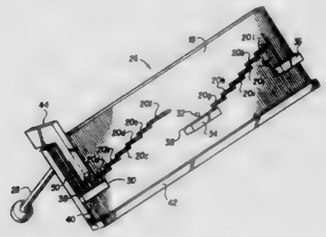
1. A spiral separator of the kind used for wet gravity separation and comprising at least two troughs in generally vertical alignment, means to introduce pulp to each trough at a location of one trough in substantially vertical register with the location of another, each trough having a splitter therein which is mounted for pivotal movement about a generally vertical axis and linkage means for operatively connecting the splitter of one trough with the splitter of another trough, said linkage means extending through at least one of said troughs.

4,795,554

PLCC CO-PLANARITY MEASUREMENT METHOD AND APPARATUS

Carl Bernardi, 21680 Stillingsburg Ave., San Jose, Calif. 95120

Filed May 15, 1987, Ser. No. 50,613
Int. Cl.[4] B07C *5/00, 5/34*
U.S. Cl. 209—546 28 Claims



1. A method for determining if the lengths of all of the leads on all four sides of a PLCC packaged device are within a selected tolerance of each other wherein each lead on each side of the device is substantially in alignment with another lead on the adjacent parallel side of the device and on each side of the device each lead is spaced-apart from each adjacent other lead by substantially the same distance, said method comprising the steps of:

a. providing a relatively smooth surface across which the device is to be advanced;

b. affixing a plurality of fingers in over-lapping alignment to the surface of step a. with each finger protruding from said surface by an amount equivalent to the selected tolerance, said plurality of fingers being in number at least equivalent to the number of leads on the longest side of the device;

c. supporting the surface of step a. at a selected angle to horizontal;

d. defining a position on the surface so as to place each of the leads on two of the sides of the device closest to the fingers opposite a different one of the fingers when the device is placed on the surface in the defined position;

e. advancing the device from the position of step d. across the surface in the direction of, and across the space spanned by, the fingers;

f. differentiating devices that have undergone step e. wherein the length of all of the leads traversing the fingers are within said tolerance from those wherein the length of at least one of the leads on either one of the two sides is not within said tolerance by identifying the devices that traverse a number of fingers equivalent to the number of leads on one of said sides as those that have leads that are within tolerance and any devices that fall from the fingers before having traversed a number of fingers equivalent to the number of leads on one of said sides as rejects;

g. rotating the devices identified in step f. as being within tolerance through 90 degrees; and

h. repeating steps d. through f.

4,795,555

MOLDED BLOCK ARRANGEMENT FOR A GROUND COVERING FOR COMPOSTING WASTE PURIFICATION

Hermann Wurster, Hofratshalde 43, 7183 Langenburg, Fed. Rep. of Germany

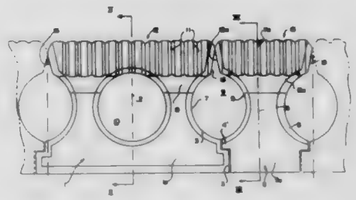
Filed Sep. 11, 1987, Ser. No. 95,236
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1986, 3631010
Int. Cl.[4] B01D *29/08*
U.S. Cl. 210—150 19 Claims

1. A molded block arrangement for use in forming a ground covering composed of a plurality of molded blocks, which ground covering is designed for the production of humus by composting, for making soil from sewage sludge in a sludge basin, for purification of waste water and waste gas, for product storage, or the like, said arrangement including at least one molded block comprising:

an upper side, a lower side, a pair of longitudinal sides connecting the upper and lower sides, and a pair of lateral sides extending transverse to the longitudinal sides and connecting the upper and lower sides,

interengageable block connecting means for interengageably connecting said block with an adjacent block when in an in-use position with a plurality of said blocks connected together to form a ground covering,

longitudinal passage opening means extending longitudinally through the block between the lateral sides, and



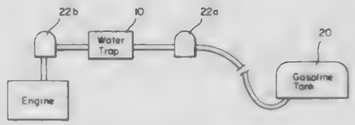
lateral side recess means communicating a front lateral side with the upper side, said lateral side recess means including longitudinally extending groves on the upper side which extend also along an upper portion of the front lateral side, wherein the longitudinal passage opening means in said at least one block includes a circumferentially closed central through passage opening and longitudinal side passage opening means extending along at least one longitudinal side and being configured to form a longitudinal passage opening together with a facing longitudinal side of an adjacent block when in an in-use position.

4,795,556

WATER REMOVAL DEVICE FOR FUEL SYSTEMS

Paul A. Brotea, 1091 Gilliard La., Ventura, Calif. 93001, and Robert J. Tufts, 728 Colina Vista, Ventura, Calif. 93003

Filed Jun. 15, 1987, Ser. No. 61,495
Int. Cl.[4] B01D *17/02*
U.S. Cl. 210—172 16 Claims



1. A device for filtering and drying hydrocarbon liquid fuels, comprising:

a housing;

an inlet attached to one end of said housing, said inlet being in liquid-tight communication with a source of hydrocarbon liquid fuel;

an outlet attached to another end of said housing, said outlet being in liquid-tight communication with the fuel intake of an internal combustion engine;

a quantity of hygroscopic material packed within said housing; and

a screen affixed within the interior of said housing adjacent said outlet to prevent the passage of any particulate matter such as said hygroscopic material to said fuel intake of said internal combustion engine.

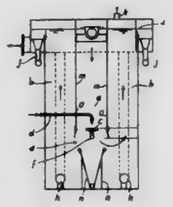
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4,795,557

APPARATUS FOR GAS TRANSFER AND FLOTATION FOR TREATING WATER TO BE PURIFIED

Marie-Marguerite Bourbigot, Garches, and Michel Faivre, Achers, both of France, assignors to OTV (Omnium de Traitements et de Valorisation), Courbevoie, France

Filed Jan. 10, 1987, Ser. No. 61,827
Claims priority, application France, Jan. 18, 1986, 86 00780
Int. Cl.⁴ B01D *19/04*
U.S. Cl. 210—221.2 **23 Claims**



1. Apparatus for combining the processes of gas transfer and flotation in one unit for pretreatment of water to be purified, said apparatus employing the diffusion of gas through a porous material and segregation of gas bubbles by entraining speed of the water to be purified, said apparatus comprising:

a reactor which is separated by at least one partition into at least two adjacent communicating compartments, said at least two compartments comprising at least one gas transfer compartment and at least one flotation compartment;

said gas transfer compartment provided with at least one pressurized gas diffuser generating bubbles with a diameter less than 2 mm, flushing means for flushing the surface of said gas diffuser by a liquid current in a liquid/gas flow ratio greater than 0.5 and an inlet in said gas transfer compartment, above said flushing means, for introducing water to be treated downwardly into said gas transfer compartment;

at least one orifice located in said at least one partition between said compartments, the sections and opening orientation of said orifice being such that the speed Vs of the passage of a current of water between said gas transfer and said flotation compartments is greater than the rising speed Va of the gas bubbles in said transfer compartment.

4,795,558

SHOWER PIPES FOR ROTARY DRUM FILTER

Richard W. LaValley, Vancouver, Wash., assignor to LaValley Industrial Plastics, Inc., Vancouver, Wash.

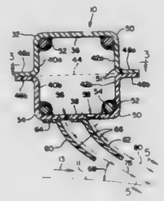
Continuation of Ser. No. 709,450, Mar. 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 464,023, Feb. 4, 1983, Pat. No. 4,522,716. This application Jul. 17, 1987, Ser. No. 80,252
Int. Cl.⁴ B01D *33/38*
U.S. Cl. 210—217 **30 Claims**

1. A rotary drum filter comprising:

a shower pipe spanning the length of said filter drum;

means defining first and second parallel rows of spray holes extending along the length of said pipe, the holes in one row being staggered with respect to the holes in the other row, both rows being positioned circumferentially in the same quadrant of the pipe;

a separate fan-shaped spray diffusion flange projecting from said pipe adjacent each spray hole; and each diffusion flange in a row being spaced axially of the adjacent diffusion flange of said same row such that the



sprays dispersed by each flange do not meet before impinging a mat on said drum filter.

4,795,559

SEMIPERMEABLE MEMBRANE SUPPORT

Ietsugu Shinjou, Shiga, and Rikuo Shoji, Moriyama, both of Japan, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Division of Ser. No. 841,244, Mar. 19, 1986, Pat. No. 4,728,394. This application Jul. 30, 1987, Ser. No. 79,651
Claims priority, application Japan, Mar. 29, 1985, 60-67420
Int. Cl.⁴ B01D *13/00*; **C02F** *1/44*
U.S. Cl. 210—490 **13 Claims**

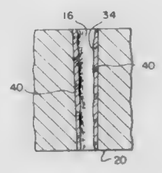
5. A semipermeable membrane having a support, said support comprising a non-woven fabric of a laminated structure having a low density layer with an air permeability of 5 to 50 $cc/cm^2/sec$ and a high density layer with an air permeability of 0.1 $cc/cm^2/sec$ to 5 $cc/cm^2/sec$, said non-woven fabric having an overall air permeability of 01 to 4.5 $cc/cm^2/sec$.

4,795,560

SCREEN PLATES

David E. Chupka, Middletown, Ohio, and Carl C. Landegger, New York, N.Y., assignors to The Black Clawson Company, Middletown, Ohio

Continuation-in-part of Ser. No. 039,391, Apr. 16, 1987, abandoned. This application Aug. 5, 1987, Ser. No. 81,771
Int. Cl.⁴ B01D *39/10*
U.S. Cl. 210—497.01 **16 Claims**



1. An improved metal screen plate for use in the pressure screening of papermaking stock, for removing contaminant particles therefrom in pressure screening apparatus, in which said plate has an inlet surface and an outlet surface, and a plurality of laser cut screening openings in said plate extending from said inlet surface to said outlet surface, in closely spaced relation to each other, the improvement comprising:

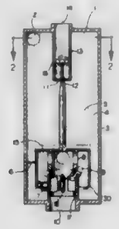
said openings defined by walls extending generally along straight lines from said inlet surface to said outlet surface, said walls being formed of a thin layer of recast metal material from the laser cutting at the exposed surface thereof presenting a very hard interface to the flow of stock therethrough, said exposed wall surface being free of machine and tool marks.

4,795,561

SELF REGULATING CYCLONIC SEPARATOR

David J. Aslin, Norristown, Pa., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 23, 1987, Ser. No. 9,664
Int. Cl.⁴ B01D *45/12*
U.S. Cl. 210—512.1 **18 Claims**



1. In a fluid system, a cyclonic separator for separating a lighter fluid from a fluid mixture comprising:

(a) a housing containing a longitudinally movably mounted shroud and having at least one inlet and at least two outlets for permitting discharge from the separator of separated fluids; and with one of the outlets having means proximate thereto for adjusting the volume of discharge through said outlet; and

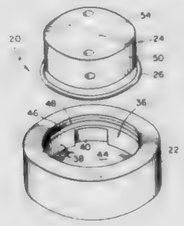
(b) means for allowing self-movement of said longitudinally movably mounted shroud which movement serves as the means for adjusting the volume of discharge between the shroud and one outlet, which adjusts the volume of discharge, and through which a separated fluid passes.

4,795,562

MEMBRANE BATCH-PROCESSING APPARATUS

James W. Walsh, 3823 Beech Ave., Baltimore, Md. 21211

Filed Sep. 13, 1985, Ser. No. 776,050
Int. Cl.⁴ B01C *13/00*
U.S. Cl. 210—232 **30 Claims**



1. An apparatus for subjecting molecules and molecule fragments supported upon sheet-like membranes to a fluid treatment, said apparatus comprising:

a container including at least first and second components cooperating with one another to define a fluid treatment cavity, the components having first and second substantially parallel, opposed planar surfaces defining the cavity, at least one surface thereof moveable toward and away from the other to vary the size of the cavity;

at least first and second flow definers having a membrane to be treated therebetween and positioned within the cavity, said membrane having molecular specimens placed thereon, said flow definers defining multiple fluid pathways across the opposite surfaces of the membrane, said flow definers and said opposed planar surfaces of said first and second components having surface areas at least coextensive with that of the membrane to be treated;

inlet port means for introducing a fluid into the cavity along a portion of the periphery of said first and second flow definers and the membrane to be treated; and

outlet port means for removing a fluid from the cavity along another portion of the periphery of said first and second flow definers and the membranes to be treated;

said multiple fluid pathways conducting treatment fluid uniformly in the same direction across the opposite surfaces of the membrane from said inlet port means to said outlet port means, wherein;

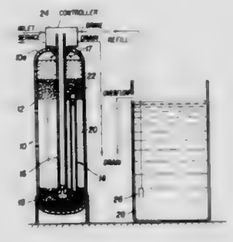
said molecular specimens are treated by said treatment fluid.

4,795,563

NITRATE ADSORPTION UNIT

Peter E. Auchincloss, Timonium, Md., assignor to Hydroflo, Inc., Timonium, Md.

Continuation of Ser. No. 21,347, Mar. 3, 1987, abandoned. This application Jan. 13, 1988, Ser. No. 144,675
Int. Cl.⁴ C02F *1/28*
U.S. Cl. 210—662 **13 Claims**



1. A method for removing nitrates from a household well water stream, comprising the steps of:

providing a generally cylindrical, vertical mineral tank assembly, said assembly comprising a tank, containing a quantity of a nitrate-adsorbing resin, a dip tube in said tank having an inlet opening at its upper end and a first water distributor at its lower end, a backflush tube in said tank having an inlet opening at a lower end and a second water distributor at an upper end, said second water distributor being disposed beneath the upper level of said quantity of said nitrate-adsorbing resin in said tank, and means for causing water to flow between the lower end of said dip tube and said backflush tube;

providing control means for defining a first normal water flow path and a second backflush flow path;

said first normal water flow path extending from an inlet source of water to be treated, through at least one opening in the upper portion of said tank outside said dip tube, downwardly through said nitrate-adsorbing resin, into said first water distributor, up said dip tube, and out through a service outlet; and

said second backflush flow path extending downwardly through said dip tube, and simultaneously out through said first water distributor and up through said nitrate-adsorbing resin and upwardly through said backflush tube and out through said second water distributor, and out through said at least one opening in the upper portion of said tank outside said dip tube;

passing a nitrate-containing water stream through said first normal water flow path; and

monitoring the flow of said water through said mineral tank;

operating said control means to switch the flow of said nitrate-containing water stream from said first normal water flow path to said second backflush flow path when said monitoring step indicates that the capacity of said

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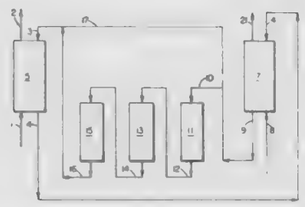
nitrate-adsorbing resin to adsorb nitrates is substantially exhausted;
constraining water flow down said dip tube during backflush of said resin to pass through an orifice of smaller diameter than the inner diameter of said dip tube;
injecting a portion of the water flowing through said orifice into the lower end of said backflush tube; and
dispersing the remaining portion of said water flowing through said orifice throughout said resin.

4,795,564
PROCESS FOR IMPROVING THE SEDIMENTATION AND FILTERING PROPERTIES OF WASTE WATERS CONTAINING CLAY MINERALS
Sándor Bauer, Nagykanizsa; Sándor Doleschall; András Gál, both of Budapest; Gyula Milley, Nagykanizsa; Gyula Nagy, Nagykanizsa, and Tibor Pásl, Nagykanizsa, all of Hungary, assignors to Magyar Szénhidrogénipari Kutató-Fejlesztő Intézet, Szénhidrogénkutatás, Hungary
Filed Jun. 11, 1987, Ser. No. 61,784
Claims priority, application Hungary, Jun. 24, 1986, 2641/86
Int. Cl.[4] C02F *1/52*
U.S. Cl. 210—665 **10 Claims**

1. A method of treating a solids-containing waste water having swellable clay minerals containing calcium, magnesium, or sodium ions forming part of the solids content thereof, said method consisting essentially of the steps of:
(a) adding to said waste water having swellable clay minerals forming part of the solids content thereof an effective quantity of at least one compound dissociatable into ions having a hydrated ionic diameter of 0.12 to 0.15 nanometers and a coordination number of 12, said compound selected from the group consisting of the salts of potassium, ammonium, cesium and zirconium, formed with an inorganic or organic anion to replace by ion exchange the ions in the swellable clay material with the cations of said compound in an irreversibile manner, to decrease hydration as well as ability to be dispersed and to simultaneously increase density and stability of particles of said swellable clay minerals, thus increasing sedimentability and filterability of said waste water;
(b) controlling said quantity of said compound so that a concentration of 0.0005 to 500 kg of said compound is maintained per metric ton of solids in said waste water; and
(c) thereafter separating solids from liquid of said waste water.

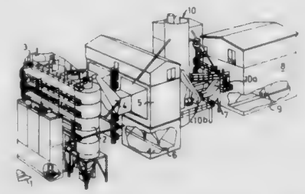
4,795,565
CLEAN UP OF ETHANOLAMINE TO IMPROVE PERFORMANCE AND CONTROL CORROSION OF ETHANOLAMINE UNITS
Truong Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 28, 1987, Ser. No. 113,316
Int. Cl.[4] B01J *47/02*
U.S. Cl. 210—669 **13 Claims**

1. A process for removing salts from an ethanolamine-water solution comprising the steps of:
(a) filtering said ethanolamine-water solution to remove suspended particulates,
(b) contacting said filtered ethanolamine-water solution with an anionic ion-exchange resin, and



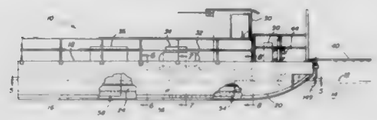
(c) contacting said ethanolamine-water solution with a cationic exchange resin.

4,795,566
METHOD FOR CLEANSING A CONTAMINATED MEDIUM IN A CONTACT REACTOR
Kurt Carlsson, Växjö , Sweden, assignor to Fläkt AB, Nacka, Sweden
Filed Nov. 15, 1985, Ser. No. 798,635
Claims priority, application Sweden, Nov. 29, 1984, 8406033
Int. Cl.[4] B01D *53/14*
U.S. Cl. 210—675 **3 Claims**



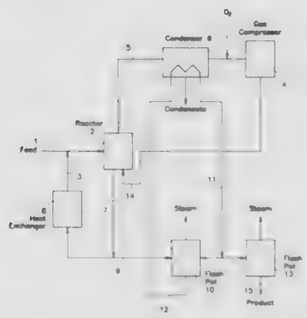
1. A method for enabling a contaminated medium to be cleansed in a contact reactor, by introducing thereinto a pulverulent absorption material capable of reacting with the contaminants carried by the medium, and in which the medium and the absorption material are caused to mix with one another in the contact reactor over a period of time in which contaminants react with the material, so that contaminants absorb on and react with discrete particles in the pulverulent absorption material, including the steps of:
(a) removing downstream of the contact reactor part of the absorption material which is discharged from the reactor;
(b) storing said removed part over a given length of time in excess of 20 hours and at a predetermined temperature;
(c) causing the contaminants to diffuse into the discrete particles over the storage period while at the predetermined temperature, so as to impart to the surfaces of the particles an increased ability to absorb further contaminants; and
(d) charging to the contact reactor a mixture of unused absorption material capable of reacting with the contaminants carried by the medium and stored absorption material which has previously reacted with contaminants and which has a reduced but effective capacity to react with the contaminants carried by the medium.

4,795,567
OIL SPILL SEPARATING AND RECOVERY SYSTEM
Scott O. Simpson, and Ellis O. Simpson, both of Port Neches, Tex., assignors to Tricil Environmental Response, Inc., Port Neches, Tex.
Filed Jun. 1, 1983, Ser. No. 500,132
Int. Cl.[4] C02F *1/40*; E02B *15/04*
U.S. Cl. 210—744 **20 Claims**



1. In a method of recovering floating material on a surface of a flow stream of liquid by exposure of said surface to a hydrostatic zone for separating the floating material from the liquid and collecting the separated floating material within a container, the improvement including the steps of: establishing fluid communication between the surface of the flow stream and the hydrostatic zone through a liquid column terminating at an upper end within said zone; applying a vacuum pressure to said zone causing liquid from the flow stream to rise within the column and the floating material to stack thereabove; adjusting said vacuum pressure to establish an equilibrium level of the liquid within the column causing overflow of the stacked floating material from said upper end of the column; and conducting said overflow into the container.

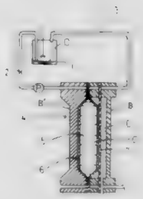
4,795,568
OXIDATIVE EVAPORATION PROCESS AND APPARATUS
Philip T. Chen, 28 Fairview Ave., Montvale, N.J. 07645
Filed Jun. 3, 1987, Ser. No. 57,491
Int. Cl.[4] B01D *12/00*
U.S. Cl. 210—761 **18 Claims**



1. A liquid waste treatment process, which comprises:
a. heating the liquid waste;
b. circulating a pressurized inert gas through the liquid waste to increase the rate of evaporation;
c. applying the latent heat of the vapor produced thereby to further heat and evaporate the liquid waste to provide a substantially dry solid salt from the liquid waste.

2. A process for treating a feed stream of an aqueous solution containing organic compounds and/or reduced forms of inorganic compounds to produce crystallized, oxidized salts, which comprises:
providing substantially dry solid salts by
(1) heating the feed stream;
(2) passing excessive amounts of pressurized oxygen gas through the heated feed stream to oxidize at least some of the compounds and to remove at least some of the water, as vapor, from the solution;
(3) further removing water from the oxidized solution to form a salt saturated solution; and
(4) cooling the salt saturated solution to produce crystallized oxidized salts.

4,795,569
METHOD FOR DRY FRACTIONATION OF FATTY MATERIAL
Kiyoyuki Higuchi, Seanan; Hirokazu Maeda; Hiroshi Hidaka, both of Sakai; Hiroshi Iwasa, Seanan; Yoshitaka Ebihara, Yao; Kazuhito Asahara, Seanan, and Hayato Kubota, Izumi, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan
Filed Jul. 22, 1987, Ser. No. 76,548
Claims priority, application Japan, Aug. 4, 1986, 61-183670
Int. Cl.[4] E01D *17/00*
U.S. Cl. 210—770 **4 Claims**



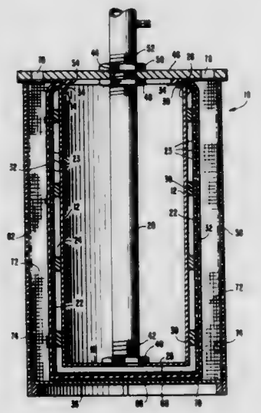
1. A method for dry fractionation of a fatty material which comprises cooling the fatty material and then fractionating the material into a solid fraction and a liquid fraction, said cooling being carried out by introducing the fatty material in a fluid state into a filter chamber of a filter apparatus having pressing function and maintaining the fatty material therein at a crystal deposition temperature until a predetermined amount of crystals are formed, and pressing the filter chamber to fractionate said fatty material into the solid fraction and the liquid fraction.

4,795,570
TWO-STAGE BATCH FILTER APPARATUS AND FILTRATION PROCESS
Edward G. Young, Lisbon, Me., assignor to Andy River Inc., Lisbon, Me.
Filed Jul. 7, 1987, Ser. No. 70,548
Int. Cl.[4] B01D *37/00*
U.S. Cl. 210—770 **20 Claims**

17. A process for removing liquid from a liquid-solid mixture comprising:
introducing a liquid-solid feed mixture into an annular space under low pressure forcing said mixture through a filter means attached to perforated filter support doors which allows the liquid to penetrate but collects the solids, thereby forming a substantially solid filter cake;
introducing said mixture into said annular space until said filter cake obstructs the flow of said mixture through said filter means;
supplying compressed air into an expandable annular space to cause deformation of an elastomeric bladder which

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presses against said solid filter cake thereby forcing additional liquid out of said cake;



moving said perforated filter support doors, attached by hinges, to an open position discharging said filter cake from said filter means.

4,795,571

PURIFICATION OF FROZEN CRYSTAL LAYERS

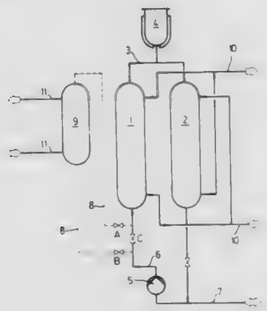
Bernhard Holzknecht, Ellerstadt; Hugo Fuchs, Ludwigshafen; Eckhard Hetsel, Bobenheim-Roxheim; Klaus Wintermantel, Weinheim, and Peter Thoma, Frankenthal, all of Fed. Rep. of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 10, 1988, Ser. No. 154,227

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1987, 3705388

Int. Cl.[4] B01D *9/04*

U.S. Cl. 210—774 **8 Claims**



1. A process comprising: purifying frozen crystal layers after they have been frozen out from a melt or solution on a cooling surface, in a single crystallization by contacting with a purifying liquid and thus purifying over their entire thickness, thereafter separating said layers at a flow rate of 0.2 to 6 M/s from the purifying liquid and then melting, while providing matched process variables including a temperature of the crystal layers and of the purifying liquid is close to the melting point or solubility temperature, and a crystallization time of from 1 to 60 minutes on layer thicknesses of from 0.2 to 10 mm.

4,795,572

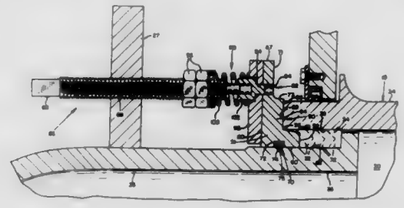
REPLACEABLE TRUNNION SEAL

Richard W. LaValley, Vancouver, Wash., assignor to LaValley Industrial Plastics, Inc., Vancouver, Wash.

Filed Feb. 2, 1987, Ser. No. 9,770

Int. Cl.[4] B01D *33/06*

U.S. Cl. 210—784 **31 Claims**



9. A method for the effective fluid-tight sealing of means defining channels in a rotary vacuum filter, while minimizing trunnion wear, which comprises:

providing said rotary vacuum filter including a cylindrical filter drum with trunnions at opposite ends, said filter drum being mounted for rotation about a central axis, one of said trunnions being hollow and rotatably connected to an end portion of a stationary discharge pipe in communication with a source of vacuum to drain filtrate material from said drum during its rotation, said vacuum filter further including a vat insert assembly extending radially about said hollow trunnion which comprises a radially-extending vat wall joined to a vat insert member, said vat insert member including concentrically-disposed respective inner and outer axially-extending annularly-shaped vat insert elements; said channel means comprising means defining an annularly-shaped, axially-extending channel formed between the respective outer surface of said discharge pipe and the inner surface of said hollow trunnion, and means defining an annularly-shaped, radially-extending channel formed between the respective inner surface of said inner vat insert element and said outer surface of said hollow trunnion; and

inserting a replaceable, annular-shaped sealing device, fabricated of a nonabrasive material, having an L-shaped radial cross-sectional configuration in fluid-tight sealing engagement within an entry passageway formed at the entrance to said channel means,

said L-shaped radial cross section of said sealing device comprising an axially-extending base section extending within said entry passageway for effectively sealing off said entry passageway, without requiring the use of conventional abrasive packing material, by the securing engagement of the lower axial surface of said base section with the outer surface of either of said respective stationary discharge pipe and said trunnion, and a radially-extending leg section which effectively maintains said sealing device in a substantially fixed position within said entry passageway by the securing engagement of the inner radial surface of said leg section with the respective outer end of either of said respective trunnion and said inner vat insert element.

22. A rotary drum filter comprising:

a cylindrical filter drum with trunnions at opposite ends, said rotary drum filter being mounted for rotation about a central axis, one of said trunnions being hollow and rotatably connected to an end portion of a stationary discharge pipe in communication with a means defining a source of vacuum to drain filtrate material from said drum during its rotation, said vacuum filter further including a vat insert assembly extending radially about said hollow trunnion which includes a radially-extending vat wall joined to a vat insert member, said vat insert member including concentrically-disposed respective inner and outer axially-extending, annularly-shaped vat insert elements;

means defining an annularly-shaped, axially-extending channel formed between the respective outer surface of said discharge pipe and the inner wall of said hollow trunnion;

means defining an annularly-shaped, radially-extending channel formed between the respective inner surface of said inner vat insert element and said outer surface of said hollow trunnion;

a replaceable sealing device fabricated of a non-abrasive material for providing more effective fluid-tight sealing of either of said channel means and for maintaining the vacuum within said filter drum at an effective and efficient level, while at the same time substantially minimizing trunnion wear; and

means for applying axially-directed forces to said replaceable sealing device, which comprises a plurality of axially-extending retaining means engaging said replaceable sealing device adapted for imparting axially-directed forces to the outer radially-extending surface of said replaceable sealing device to provide fluid-tight sealing thereof, without requiring the use of conventional abrasive packing material.

4,795,573

FABRIC SOFTENER OF MIXED QUATERNARY AMMONIUM SALTS: COMBINATION OF LINEAR ALKYL AND METHYL-BRANCHED ALKYL QUATERNARY AMMONIUM SALTS

Masaki Tsumadori, and Junichi Inokoshi, both of Utsunomiya, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Dec. 8, 1986, Ser. No. 938,953

Claims priority, application Japan, Dec. 16, 1985, 60-282677

Int. Cl.[4] C11D *1/64;* **D06M** *13/46*

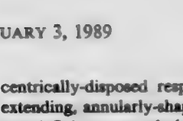
U.S. Cl. 252—8.8 **6 Claims**

1. A softener comprising:

(A) a linear alkyl quaternary ammonium salt represented by the formulas (I) or (II):



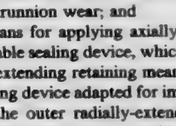
(I)



(II)

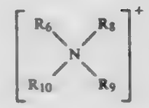
wherein R_1 and R_2 independently represent an alkyl group, alkenyl group, or β-hydroxyalkyl group having 10 to 24 carbon atoms; R_3, R_4, and R_5 independently represent an alkyl group or hydroxyalkyl group having 1 to 3 carbon atoms, a benzyl group, or $-(C_2H_4O)_{n1}H$ in which n_1 is 1 to 3; and X represents a halogen atom or monoalkyl sulfate group having an alkyl group having 1 to 3 carbon atoms; and

(B) a methyl-branched alkyl quaternary ammonium salt represented by the formulas (III) or (IV):



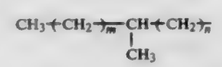
(III)

-continued



(IV)

wherein R_6 and R_7 independently represent



in which m is an integer of 2 to 14, n is an integer of 3 to 11, and the sum of m and n is an integer of 9 to 20; R_8, R_9, and R_{10} independently represent an alkyl group or hydroxyalkyl group having 1 to 3 carbon atoms, a benzyl group, $-(C_2H_4O)_kH$, or $-(C_3H_6O)_lH$ in which k and l independently represent an integer of 1 to 3; and X represents a counter anion, the ratio of (A) to (B) being 70/30 to 10/90 by weight.

4,795,574

LOW TEMPERATURE BREAKERS FOR GELLED FRACTURING FLUIDS

Allen R. Syrinek, Richmond, and Lawrence B. Lyon, Pearland, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 13, 1987, Ser. No. 119,931

Int. Cl.[4] E21B *43/26*

U.S. Cl. 252—8.551 **6 Claims**

1. A method of breaking gelled viscosities of oil-based gelled fracturing fluids containing a gellant comprising aluminum complexes of alkyl phosphate esters and a proppant, which fracturing fluids are used in low-temperature formations having operating temperatures ranging between 60°–120° F. which comprises treating said oil-based gelled fracturing fluids with an effective viscosity breaking amount of a chemical breaker consisting essentially of an admixture of hydrated lime and sodium bicarbonate containing a weight ratio ranging between 100/0 to about 20/80 hydrated lime to sodium bicarbonate.

4,795,575

STABILIZING POLYMER-THICKENED AQUEOUS ALKALINE SOLUTIONS WITH A MERCAPTOBENZOTHIAZOLE

Jeffrey G. Southwick, Lexington, Mass., and Richard C. Nelson, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 861,372, May 9, 1986, abandoned, which is a continuation-in-part of Ser. No. 673,080, Nov. 19, 1984, abandoned. This application Jul. 20, 1987, Ser. No. 75,381

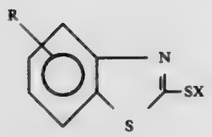
Int. Cl.[4] E21B *43/22*

U.S. Cl. 252—8.554 **17 Claims**

1. In an oil recovery process in which oil is displaced within a subterranean reservoir by injecting an aqueous alkaline solution which is substantially free of dissolved oxygen, has a pH above about 10, is thickened with a partially hydrolyzed polyacrylamide polymer which has molecular weight exceeding about 5 million and, at least soon after entering the reservoir, contains significantly more than about 50 mole percent of acrylate groups, an improved procedure for maintaining the solution viscosity which comprises:

including within said aqueous alkaline solution effective amounts of each of a water-soluble, sulfur-containing oxygen scavenger, and a 2-mercaptobenzothiazole of the formula:

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where R represents one or more hydrogen atoms or lower hydrocarbon radicals and X represents a hydrogen atom or other monovalent cation.

4,795,576

POLYSULFIDED OLEFIN COMPOSITIONS, THEIR PREPARATION AND USE AS ADDITIVES FOR LUBRICANTS

Maurice Born, Nanterre; Lucienne Briquet, Rueil-Malmaison; Guy Parc, Rueil-Malmaison, and Daniel Paquer, Minerve, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Oct. 17, 1986, Ser. No. 920,340

Claims priority, application France, Oct. 18, 1985, 85 15499

The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.

Int. Cl.[4] C10M *135/00*; C07C *149/00*

U.S. Cl. 252—45 **11 Claims**

1. A polysulfided olefin composition, obtained by a process comprising the steps of: (1) reacting at least one compound selected from sulfur monochloride and sulfur dichloride with at least one monoolefin having 2 to 5 carbon atoms, in a proportion of 1.5 to 2.5 mole of monoolefin per mole of at least one of sulfur monochloride, sulfur didichloride, thus forming an addition product or "adduct", (2) contacting said "adduct" and at least one unsaturated monohalogenated hydrocarbon compound, the proportion of said unsaturated monohalogenated hydrocarbon compound corresponding to 1–70% of halogen gram-atoms in proportion to the total number of halogen gram-atoms of the assembly formed by said "adduct" and said unsaturated monohalogenated hydrocarbon compound, with at least one sulfur compound selected from sulfides, halogenosulfides and polysulfides of alkali metals, ammonium or alkaline-earth metals, used in a proportion of about 0.4 to 0.8 mole per halogen gram-atom contained in the assembly formed by said "adduct" and said unsaturated monohalogenated hydrocarbon, and a proportion of element sulfur from 0 to 7 gram-atoms per mole of said sulfur compound, within a mixture consisting of water or a mixture of water with aliphatic monoalcohol, and (3) heating the resultant mixture and, after separating it in two phases, recovering the polysulfided olefin from the organic phase.

10. A gear oil composition, comprising a major proportion of mineral or synthetic lubricating oil and, as an additive, from 0.5 to 7% by weight of at least one polysulfided olefin composition according to claim 1.

4,795,577

LUBRICATING OIL CONTAINING DISPERSANT VISCOSITY INDEX IMPROVER

William P. Hart, Freehold, N.J.; Maria M. Kapuscinski, Carmel, and Christopher S. Liu, Poughkeepsie, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1986, Ser. No. 947,121

Int. Cl.[4] C10M *107/40*

U.S. Cl. 252—51.5 R **7 Claims**

1. A functionalized polymer comprising moieties derived from (i) first monomer containing a copolymerizable ethylenically unsaturated carbon-carbon double bond and an isocyanate moiety and (ii) second monomer containing a copolymerizable ethylenically unsaturated carbon-carbon double bond and which is free of isocyanate moieties, said polymer backbone bearing pendant side chains containing isocyanate moieties, having been functionalized with first functionalizing agent containing at least one sulfur atom and at least one hetero nitrogen atom, and second functionalizing agent, a primary or secondary functionalizing polyamine.

7. A lubricating oil composition comprising a major portion of a lubrication oil and 0.2–10 wt. % of a functionalized polymer containing moieties derived from isocyanatoethyl methacrylate and lauryl methacrylate and stearyl methacrylate, said polymer having been functionalized with phenothiazine as a first functionalizing agent and 3-dimethylaminopropylamine, or N-hydroxyethylpiperazine as a second functionalizing agent.

4,795,578

PROCESS AND COMPOSITION FOR THE FROTH FLOTATION BENEFICIATION OF IRON MINERALS FROM IRON ORES

Martin Hellsten, Ödsmål; Marie Ernstsson, Göteborg, and Bo Idström, Stenungsund, all of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Division of Ser. No. 888,186, Jul. 22, 1986, abandoned, which is a division of Ser. No. 703,241, Feb. 20, 1985, Pat. No. 4,732,667.

This application Dec. 21, 1987, Ser. No. 135,820

Int. Cl.[4] B03D *1/14*

U.S. Cl. 252—61 **17 Claims**

1. A flotation agent composition comprising a primary amine having the formula:

$$R_1—[OC_{n1}H_{2n1}]m_1—[NHC_{n2}H_{2n2}]m_2—NH_2 \quad \text{I}$$

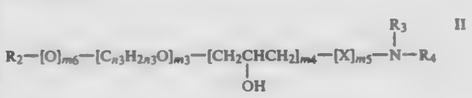
in which:

R_1 is a hydrocarbon group having from about six to about eighteen carbon atoms;

n_1 and n_2 are 2 or 3; and

m_1 is from 0 to 4, and m_2 is from 0 to 2,;

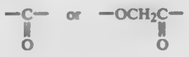
and a nitrogen compound containing an anionic group having the formula:



in which:

R_2 is a hydrocarbon group having from about one to about twentyfour carbon atoms;

X is a group



n_3 is a number from 2 to 4;

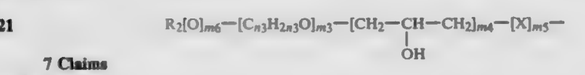
m_3 is a number from 0 to 4, and can be an average number;

m_4 is 0 or 1;

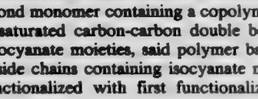
m_5 is 0 or 1;

m_6 is 0 or 1;

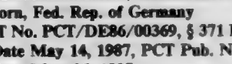
R_3 is selected from the group consisting of hydrogen; hydrocarbon groups having from one to about eighteen carbon atoms; and



R_4 is selected from the group consisting of methylene carboxylic acid—CH_2COOH; methylene phosphonic acid



and ethylene phosphoric acid



and salts thereof with an inorganic or organic cation.

4,795,579

2,2'-DIFLUORO-4-ALKOXY-4'-HYDROXYDIPHENYLS AND THEIR DERIVATIVES, THEIR PRODUCTION PROCESS AND THEIR USE IN LIQUID CRYSTAL DISPLAY DEVICES

Claude Vauchier, Goncelin, and Francoise Vinet, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

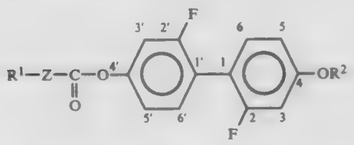
Filed Feb. 26, 1987, Ser. No. 19,058

Claims priority, application France, Feb. 28, 1986, 86 02858

Int. Cl.[4] G02F *1/13*; C09K *19/32, 19/30, 19/12*; C07C *69/74, 69/76*

U.S. Cl. 252—299.62 **8 Claims**

1. A 2,2'-difluoro-4-alkoxy-4'-hydroxydiphenyl derivative according to formula:



(I)

in which R^1 represents a straight or branched alkoxy or alkyl radical with 1 to 12 carbon atoms, Z represents a radical chosen from among:

and R^2 represents a straight or branched alkyl radical with 1 to 12 carbon atoms.

4,795,580

LATENT HEAT STORAGE MATERIAL AND USE THEREOF

Gerd Hormansdorfer, Kastanieneck 6 A, 3167 Burgdorf-Beinhorn, Fed. Rep. of Germany

PCT No. PCT/DE86/00369, § 371 Date May 14, 1987, § 102(e) Date May 14, 1987, PCT Pub. No. WO87/01716, PCT Pub. Date Mar. 26, 1987

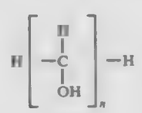
PCT Filed Sep. 17, 1986, Ser. No. 54,597

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1985, 3533279

Int. Cl.[4] C09K *5/06*

U.S. Cl. 252—70 **12 Claims**

1. In a heat protection system for borehole probes having a latent heat sink in the form of a cartridge filled with latent heat storage material, the improvement comprising a latent heat storage material comprising a multivalent aliphatic alcohol having the formula:



wherein n is 4, 6 or 8 and wherein the isomeric configuration is symmetric with reference to the chain center.

4,795,581

AQUEOUS FLUIDS THICKENED WITH FATTY ACID MODIFIED POLYOXYALKYLENE DIAMINES

Edward C. Y. Nieh, Austin; Jiang-Jen Lin, Round Rock, and George P. Speranza, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 10, 1987, Ser. No. 36,650

Int. Cl.[4] C01M *173/02*

U.S. Cl. 252—77 **20 Claims**

1. An aqueous fluid comprising an effective thickening amount of a thickener comprising the reaction product of:

a. a polyoxyalkylene diamine of the formula:

$$H_2NCH(CH_3)CH_2O(CH_2CH(R)O)_xCH_2CH(CH_3)NH_2$$

wherein: from 1% to 30% of R is methyl and the remaining R is hydrogen, and x is a number such that the molecular weight of the polyoxyalkylene diamine ranges from 3000 to 9000; with

b. a hydrophobic fatty acid of from 12 to 36 carbon atoms wherein: the ratio amine equivalent:acid ranges from 1:0.5 to 1:1.

4,795,582

SURFACE TREATING COMPOSITION FOR MICRO PROCESSING

Tadahiro Ohmi, Sendai; Nobuhiro Miki, Osaka, and Hirohisa Kikuyama, Nara, all of Japan, assignors to Hashimoto Chemical Industries Co., Ltd., Osaka, Japan

Filed Sep. 21, 1987, Ser. No. 99,463

Claims priority, application Japan, Sep. 29, 1986, 61-230439

Int. Cl.[4] C09K *13/08*

U.S. Cl. 252—79.3 **6 Claims**

1. A surface treating composition for micro processing comprising a mixture of hydrofluoric acid, ammonium fluoride solution and water, and at least one compound selected from the group of surfactants consisting of an aliphatic carboxylic acid, a salt of aliphatic carboxylic acid, an aliphatic amine and an aliphatic alcohol represented by the formula $C_nH_{2n+1}OH$ where n is an integer of from 6 to 12.

4,795,583

SHIFT-FEEL DURABILITY ENHANCEMENT

Andrew G. Papay, Manchester, Mo., assignor to Ethyl Petroleum Additives, Inc., St. Louis, Mo.

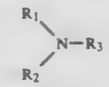
Filed Dec. 28, 1987, Ser. No. 138,332

Int. Cl.[4] C10M *133/36, 133/54*

U.S. Cl. 252—77 **40 Claims**

1. An automatic transmission fluid composition comprising a major amount of an oil of lubricating viscosity and a friction modifying amount of:

(a) an oil-soluble aliphatic tertiary amine of the formula



wherein R_1 and R_2 are, independently, alkyl or alkenyl groups of up to 4 carbon atoms each, and R_3 is a long chain substantially linear aliphatic group containing at least 10 carbon atoms; and either

(b) an oil-soluble aliphatic diamine of the formula

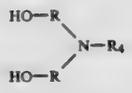
$$R_4NH—R—NH_2$$

wherein R is an alkylene group of 2 to 5 carbon atoms, and R_4

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is a long chain substantially linear aliphatic group containing at least 10 carbon atoms; or

(c) an oil-soluble N-substituted dialkanolamine of the formula



wherein R and R_4 are as defined above; or

(d) a combination of said oil-soluble aliphatic diamine and said oil-soluble N-substituted dialkanolamine.

4,795,584

LAUNDRY COMPOSITIONS

Anne M. Ross, and David F. Kirkwood, both of New Castle upon Tyne, Great Britain, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 7, 1987, Ser. No. 70,472

Claims priority, application United Kingdom, Jul. 15, 1986, 8617255

Int. Cl.⁴ C11D *1/62, 1/65, 3/37*

U.S. Cl. 252—174.23 **19 Claims**

1. A laundry detergent composition comprising:

(a) from about 0.1% to about 25% by weight of soil-release polymer comprising ethyleneoxy terephthalate (EO-T) units and polyethyeneoxy terephthalate (PEO-T) units at a molar ratio (EO-T/PEO-T) of from about 0.5 to about 1.5, the PEO-T units containing polyethylene oxide (PEO) linking units having a molecular weight of from about 300 to about 3000, the molecular weight of the polymer being in the range from about 900 to about 9,000;

(b) from about 0.1% to about 20% of water-soluble quaternary ammonium surfactant;

(c) from about 1% to about 40% of detergent surfactant selected from the group consisting of anionic and nonionic surfactants; and

(d) from about 15% to about 90% of detergent builder salt selected from the group consisting of polyvalent inorganic builder salts, polyvalent organic builder salts, and mixtures thereof.

4,795,585

POLYVINYL ALCOHOL CONTAINING POLYALUMINUM CHLORIDE FLOCCULANTS

Larry W. Becker, Marcellus, N.Y., assignor to General Chemical Corporation, Morristown, N.J.

Filed Apr. 24, 1987, Ser. No. 42,439

Int. Cl.⁴ C02F *5/10*

U.S. Cl. 252—181 **10 Claims**

1. A water treatment composition consisting essentially of a flocculating component and water soluble polyvinyl alcohol, wherein the flocculating component comprises a polyaluminum salt and the polyvinyl alcohol is present in an amount effective to enhance floc formation.

4,795,586

METHOD AND COMPOSITION FOR UTILIZING LIME-UREA HYDRATES TO SIMULTANEOUSLY REDUCE NO_x AND SO_x IN COMBUSTION EFFLUENTS

Richard E. Thompson, 27121 Puerta del Oro, Mission Viejo, Calif. 92691, and Lawrence J. Muzio, 29541 Vista Piz., Laguna Niguel, Calif. 92677

Division of Ser. No. 817,319, Jan. 9, 1986, Pat. No. 4,731,233. This application Nov. 19, 1987, Ser. No. 122,393

Int. Cl.⁴ C09K *3/00;* **B01J** *8/00;* **C01B** *21/00;* **B01D** *53/34*

U.S. Cl. 252—188.1 **3 Claims**

1. A composition comprising particles containing a hydrated lime and a carbonic acid amide, said particles having a size in the range of about 0.5 to 20μ and having a weight ratio of lime to carbonic acid amide in the range of about 2–25:1, wherein said composition is prepared by hydrating lime in an aqueous medium containing said carbonic acid amide.

4,795,587

2-(4'-ALKOXYPHENYL)-5-ALKYLPYRIDINES

Kouji Ohno; Hiromichi Inoue; Takashi Inukai; Shinichi Saito, and Kazutoshi Miyazawa, all of Kanagawa, Japan, assignors to Chisso Corporation, Ohsaka, Japan

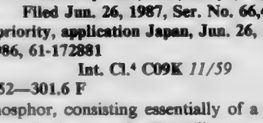
Filed Mar. 20, 1987, Ser. No. 28,689

Claims priority, application Japan, Mar. 26, 1986, 61-67961

Int. Cl.⁴ G02F *1/13;* **C09K** *19/34;* **C07D** *213/30, 309/06*

U.S. Cl. 252—299.61 **7 Claims**

1. A liquid crystal compound expressed by the formula



(I)

wherein R^1 represents an alkyl group of 7 to 12 carbon atoms and R^2 represents an alkyl group of 5 to 12 carbon atoms, excluding the compound wherein R^1 is octyl and R^2 is heptyl.

4,795,588

METHOD OF PREPARING A LUMINESCENT EU^2 + ACTIVATED STRONTIUM ALUMINATE

Robert J. Pet; Martin M. C. I. van den Nieuwenhof, and Josephus P. H. M. Duisters, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1988, Ser. No. 174,554

Claims priority, application Netherlands, Apr. 7, 1987, 8700806

Int. Cl.⁴ C09K *11/64*

U.S. Cl. 252—301.4 R **2 Claims**

1. A method of preparing a luminescent Eu^{2+} activated strontium aluminate defined by the formula $Sr_4Al_{14}O_{25}:Eu^{2+}$, in which a mixture comprising SrO, Al_2O_3, Eu_2O_3 or compounds yielding these oxides at the heating temperature employed and a flux is heated in a weakly reducing atmosphere at a temperature of 1100° to 1500° C.,

characterized in that: per mol of the Al present, a combination of between 0.1 and 5 mol % of B_2O_3 or compounds yielding B_2O_3 at said heating temperature and between 0.1 and 10 mol % of at least one of the fluorides and/or chlorides of Ba, Sr, Cs and/or Al and/or RbCl is present as the flux; whereafter; per mol of the Al present, between 0.1 and 10 mol % of at least one ammonium halide is added as a flux to the so heated mixture; and the mixture thus obtained is subsequently heated at a temperature of 700° to 1200° C. to effect at least partial removal of flux residues present.

4,795,589

SILICATE PHOSPHOR

Tomoki Mikami; Yukio Tokunaga; Mitsuharu Natsugari; Susumi Omatoi, and Shinji Yokota, all of Odawara, Japan, assignors to Ksaei Optonix, Ltd., Tokyo, Japan

Filed Jun. 26, 1987, Ser. No. 66,495

Claims priority, application Japan, Jun. 26, 1986, 61-148035; Jul. 24, 1986, 61-172881

Int. Cl.⁴ C09K *11/59*

U.S. Cl. 252—301.6 F **11 Claims**

1. A phosphor, consisting essentially of a manganese activated ainc or bivalent metal cation silicate, a trivalent element and a pentavalent element, wherein said trivalent element is at least one element selected from the group consisting of boron and indium, said pentavalent element is at least one element selected from the group of consiting of arsenic, antimony and bismuth, the content of the trivalent element is from 1×10^{-4} to 2×10^{-2} gram-atom/mol, the content of the pentavalent element is from 5×10^{-5} to not more than 3×10^{-3} gram-atom/mol, and the molar ratio of the trivalent element to the pentavalent element is at least 1.5, the phosphor exhibiting a lower initial-afterglow degradation under excitation by electron beams than said phosphor where said ratio is less the 1.5.

4,795,590

TREATMENT OF HAZARDOUS MATERIAL WITH VAPOR SUPPRESSING, PERSISTENT, WATER-CONTAINING, POLYMERIC AIR FOAM

Dale W. Kent, Maplewood, and Thomas W. Berger, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 737,938, May 28, 1985, abandoned. This application Apr. 24, 1986, Ser. No. 855,461

Int. Cl.⁴ C08G *18/08, 18/30*

U.S. Cl. 252—307 **50 Claims**

1. An aqueous, fluid air foam the liquid phase of which comprises surfactant, poly(oxylkylene) polyisocyanate polymer the oxyalkylene portion of which contains sufficient oxyethylene units to render the polymer hydrophilic and water-soluble, and water as the major component of said foam by weight.

4,795,591

PROCESS FOR THE PREPARATION OF GRAPHITE INTERCALATION COMPOUND AND NOVEL GRAPHITE INTERCALATION COMPOUND

Kenichi Fujimoto; Maki Sato, and Tsutomu Sugiura, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Japan

Continuation of Ser. No. 42,279, Apr. 24, 1987, abandoned. This application Mar. 18, 1988, Ser. No. 171,188

Claims priority, application Japan, May 13, 1986, 61-107632

Int. Cl.⁴ C01B *31/02;* **H01B** *1/06*

U.S. Cl. 252—506 **6 Claims**

4. A novel graphite intercalation compound having calcium chloride intercalated in the graphite layer thereof.

4,795,592

FILLED POLYMER COMPOSITIONS

Jacqueline R. Lander, and John A. Griffiths, both of Alnwick, England, assignors to Carbon Research Limited, Newcastle-upon-Tyne, England

Filed Jun. 17, 1987, Ser. No. 63,212

Claims priority, application United Kingdom, Jun. 18, 1986, 8614784

Int. Cl.⁴ H01B *1/06*

U.S. Cl. 252—511 **8 Claims**

1. An electrically resistive filled polymer composition comprising:

(a) an insulating polymeric base, and

(b) a particulate filler dispersed in said base the proportion of the filler to the base being between 1:1000 and 1:1 by weight, the filler being of material capable of conducting electricity and comprising between 0.5% and 100% by weight of char carbon, said char carbon being carbonised non-woody plant material of average particle size less than 100 μm and constituting at least 0.05% by weight of the total composition.

8. A method of making an electrically resistive filled polymer composition, comprising the steps of:

(a) heating herbaceous plant material to form a char carbon;

(b) subdividing said char carbon to form a particulate material of average particle size less than 100 μm, and

(c) dispersing a conductive particulate filler material, comprising at least 0.5% by weight of said particulate char carbon, in an insulating polymeric base to form the composition, the proportion of the filler to the base being between 1:1000 and 1:1 by weight.

4,795,593

4-AZIDO-4,4-DINITRO-1-BUTANOL AND DERIVATIVES THEREOF

Milton B. Frankel, Tarzana, and James F. Weber, Moorpark, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 5, 1987, Ser. No. 82,775

Int. Cl.⁴ C07C *117/00;* **C06B** *25/00*

U.S. Cl. 260—349 **5 Claims**

1. 4-azido-4,4-dinitro-1-butanol.

4,795,594

PROCESS FOR THE PRODUCTION OF WATER INSOLUBLE PEROXYCARBOXYLIC ACIDS

Manfred Dankowski, Karlstein, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 30, 1984, Ser. No. 615,303

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320497

Int. Cl.⁴ C07C *179/10*

U.S. Cl. 260—502 R **38 Claims**

1. In a process for the production of a water insoluble peroxycarboxylic acid containing 6 to 16 carbon atoms by reaction of the corresponding aliphatic carboxylic acid having 6 to 16 carbon atoms or aromatic carboxylic acid having 7 to 9 carbon atoms with hydrogen peroxide in the presence of water and sulfuric acid, the improvement comprising carrying out the reaction in the presence of a phosphane oxide of the formula



where R_1, R_2, and R_3 are alkyl, cycloalky, aralkyl, or aryl, the phosphane oxide being used in an amount of 0.01 to 10 wt. % based on the active oxygen employed.

4,795,595

TAURINE DERIVATIVES

Giovanni Agnes, and Maria Altamura, both of Novara, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milano, Italy

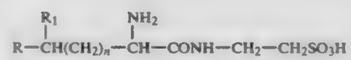
Filed Jul. 24, 1987, Ser. No. 77,238

Claims priority, application United Kingdom, Jul. 31, 1986, 8618765

Int. Cl.⁴ C07C *143/56, 143/64, 143/02*

U.S. Cl. 260—508 **3 Claims**

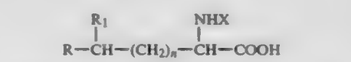
1. A process for preparing taurine containing peptides of formula I:



(I)

where R is a hydrogen atom, a C_1–C_6 alkyl, phenyl p-hydroxyphenyl or 1-H-indol-3-yl group; R_1 is a hydrogen atom, an amino group or a C_1–C_6 alkyl group; n is 0 or an integer from 1 to 6 and their pharmaceutically acceptable addition salts, which process comprises

reacting an N-protected amino acid of the general formula II:



(II)

wherein R, R_1 have the meanings given above, X is an aromatic urethane, aralkyl or acyl protecting group which also protects the amino group when R_1 is amino, dissolved

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in tetrahydrofuran, at a temperature of between −30° C. and room temperature under an inert gas atmosphere, with an alkyl or aryl chloroformate in the presence of a tertiary amine, to form a mixed anhydride of the protected amino acid,

condensing said mixed anhydride with an aqueous solution of cystamine, at a temperature of from −30° C. to room temperature to obtain a condensation product,

oxidizing the disulfide bond of the condensation product to sulfonic groups by means of hydrogen peroxide, an organic peroxyacid, chlorine or bromine or a mixture of two or more thereof in formic or acetic acid at a temperature of from the freezing point of the mixture to 20° C., and

removing the protecting group or groups by hydrogenolysis under hydrogen, at a pressure of from 1 to 10 atmospheres in the presence of a Group VIII metal catalyst at a temperature of from −30° C. to 50° C., or by treatment with a mineral acid at a temperature of from −30° C. to 30° C., to obtain the desired peptides of formula I.

4,795,596

1-AMINOMETHYLNAPHTHALENE-6-SULPHONIC ACID, ITS PREPARATION AND ITS USE

Erich Hammerschmidt, Bergisch, and Heinz U. Blank, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

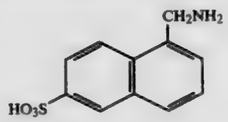
Filed Oct. 15, 1987, Ser. No. 108,525

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3637138

Int. Cl.⁴ C07C *143/60*

U.S. Cl. 260—508 1 Claim

1. 1-Aminomethylnaphthalene-6-sulphonic acid



4,795,597

MANUFACTURE OF MOULDED PLASTICS ARTICLES

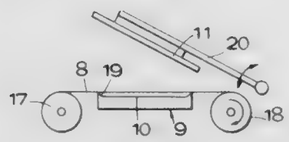
Norman Whiteley, Walsall; Paul J. H. Bagnall, Admaston, Near Rugeley, and Karl Longbottom, Burton-on-Trent, all of England, assignors to Peerless Plastics Packaging Limited, Coton Farm Industrial Estate, United Kingdom

Filed Jan. 2, 1987, Ser. No. 57,384

Claims priority, application United Kingdom, Jun. 11, 1986, 8614164; Oct. 23, 1986, 8625384

Int. Cl.⁴ B29C *45/14, 31/08, 45/40*; B06B *1/00*

U.S. Cl. 264—22 10 Claims



1. A method of manufacturing a moulded plastics article having a blank of a flimsy plastic film material applied at a surface thereof as said article is moulded in a mould, including the steps of feeding a strip of said plastics film material to cutting means and cutting said blank from said strip, said cutting means comprising a die component having a cutting edge defining the required shape of said blank and a flat pad component of larger size than said blank, which said components are relatively movable to bear on opposite side surfaces of said strip and cause said die component to cut out said blank from said strip, supporting said blank by one of said components and moving said one of said components and said blank to a positive spaced from said strip, collecting said blank from said one component at said position and feeding it to said mould by transfer means comprising a carrier having a flat surface larger than said blank at which suction is applied to pick up said blank from said one component and hold it flat against said surface, moving said carrier into a position between separated relatively movable halves of said mould, removing said suction from said surface when said carrier is in said position and simultaneously causing said blank to be urged perpendicularly away from said surface and located on an adjacent surface of one of said mould halves, withdrawing said carrier from said position, subsequently closing said mould halves together for the respective moulding operation to be performed, and moulding plastic in said plastics article.

4,795,598

METHOD OF MAKING ARTICLES FROM SINTERABLE MATERIALS

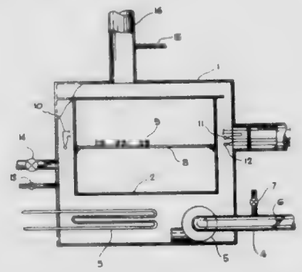
Romain L. Billiet, Singapore, Singapore, assignor to Solid Micron Materials, Pte, Ltd., Singapore, Singapore

Filed Jan. 13, 1987, Ser. No. 2,782

Claims priority, application United Kingdom, Dec. 5, 1986, 8629185

Int. Cl.⁴ B29C *71/02*; C04B *35/64*; B22F *1/00*; G01N *25/20*

U.S. Cl. 264—40.6 19 Claims



1. A method of producing an article from sinterable particulates whereby binder material is removed from a molded configuration prior to firing, comprising the steps of:

(1) mixing together predetermined amounts of sinterable particulates and an organic binder at a temperature above the melting point of the binder whereby a mixture is formed wherein said binder covers substantially all of the surface of said sinterable particulates,

(2) forming said mixture into a desired configuration,

(3) rapidly increasing the temperature of said configuration in an oxygen bearing atmosphere to a temperature where said binder will enter into a reaction to cause exothermic degradation,

(4) detecting and then limiting said exothermic degradation by controlling the amount of heat and oxygen furnished to the reaction whenever exothermic degradation is initiated,

(5) continuing heating until substantially all of said binder is removed from said configuration, and

(6) sintering said configuration.

12. A method of removing fugitive organic binders from a molded or compacted green body of sinterable particulates comprising,

(a) heating a green body article in an oxygen bearing atmosphere, the green body article having sinterable particulates in an organic binder, said heating progressing at a rate for the purpose of initiating exothermic degradation of said organic binder, then, detecting the attainment of exothermic degradation of said organic binder, then

(b) cooling said green body after attaining the exotherm of said organic binder, said cooling halting said exothermic degradations,

(c) repeating steps (a) and (b) until exothermic reactions no longer occur in said green body article.

4,795,599

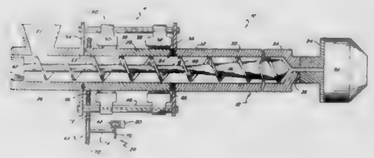
SCREW EXTRUDER AND A METHOD OF OPERATION THEREOF

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 871,332, Jun. 6, 1986, Pat. No. 4,708,617. This application Aug. 3, 1987, Ser. No. 80,926

Int. Cl.⁴ B29C *47/36*

U.S. Cl. 264—68 2 Claims



1. A method of operating a screw extruder of the type including an extruder barrel having a feed section, a rotatable section forward of said feed section, a discharge section forward of said rotatable section, said sections being in coaxial alignment and an extruder screw rotatably disposed in the extruder barrel, the method comprising the steps of:

feeding a supply of powder plastic into the feed section;

rotating the extruder screw to advance the plastic through and to discharge the plastic from the extruder barrel;

transmitting torque from the extruder screw to said rotatable section of the extruder barrel; and

rotating the rotable section around the extruder screw at a speed of rotation less than the rotational speed of said extruder screw so as to determine the relative rates at which the plastic is mixed, heated and pressurized as the plastic advances through the extruder barrel.

4,795,600

METHOD FOR MOLDING ARTICLES USING BARRIER COATINGS

Robert V. Kromrey, Campbell, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 14, 1986, Ser. No. 930,621

Int. Cl.⁴ B29C *43/10, 43/18*

U.S. Cl. 264—130 9 Claims

1. A method for molding a composite precursor to form a composite comprising

(a) encapsulating said composite precursor with a chemically dissolvable metal foil coating that

(i) is substantially capable of separating said composite precursor from particulate silicone at elevated temperatures; and

(ii) is capable of being chemically removed from said composite without damaging said composite;

(b) curing said precursor by causing said particulate silicone to apply pressure through said foil to said precursor and exposing said precursor to elevated temperatures; and

(c) chemically removing said coating from said composite; whereby said composite precursor is protected from silicone contamination during curing.

4,795,601

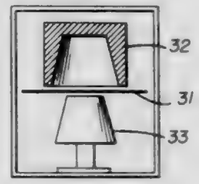
METHOD OF MANUFACTURING METALLIZED THERMOPLASTIC FLOWER POT COVER

Sheng-Chi Cheng, 6th Floor-5, No. 61, Chung Cheng Third Road, Kaohsiung 80027, Taiwan, assignor to Sheng-Chi Cheng; Robert Mann and Robert Mann Packaging, Inc., Gilroy, Calif.

Filed Aug. 19, 1987, Ser. No. 87,461

Int. Cl.⁴ B29C *43/04*

U.S. Cl. 264—138 8 Claims



1. An improved method for rapidly forming a metallized thermoplastic polyvinyl chloride decorative container for use as a covering for a similarly shaped object, which method comprises:

(a) providing a thin sheet of between about 0.01 and 0.001 inches of metallized thermoplastic polyvinyl chloride;

(b) imprinting or embossing a design or other matter upon the sheet of metallized polyvinyl chloride;

(c) cutting said sheet to the dimensions approximating the dimensions of the base and side walls of said object;

(d) placing the sheet over a heated form having a temperature of between about 85° and 90° C.;

(e) placing a complementary heated form also having a temperature of between about 85° and 90° C. above the sheet;

(f) fitting the heated form and the heated complementary form of substep (d) and (e) together having a space for the thermoplastic sheet therebetween;

(g) maintaining the temperature of between about 85° and 90° C. between the forms for between about 3 to 5 seconds until said sheet folds under the influence of the heat within the space between the form and the complementary form;

(h) removing the formed container from the heated form; and

(i) cooling the formed container which retains its shape without chemical adhesive or mechanical support.

4,795,602

TWO PIN SHUNT AND MOLDING METHOD

David A. Pretchel, 8549 Plank Rd., Montville, Ohio 44064; Howard J. Venaleck, 232 Wintergreen Hill, Painesville, Ohio 44077, and John T. Venaleck, 2132 Chimney Ridge, Madison, Ohio 44057

Continuation-in-part of Ser. No. 841,669, Mar. 19, 1986, abandoned. This application Apr. 14, 1987, Ser. No. 38,228

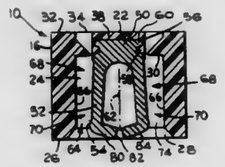
Int. Cl.⁴ H01R *31/08*

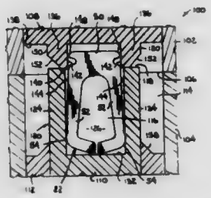
U.S. Cl. 264—272.15 15 Claims

1. A method of making an electrical device including an electrically conductive member supported in a molded body of electrically non-conductive material, the molded body including therein an open chamber in which a compliant portion of the conductive member is movable and exposed for electrically connecting with an external member inserted into the chamber through an open end of the chamber, the conductive member also having a base portion to which the body is molded to anchor the conductive member in the body, the method comprising the steps of placing the conductive member in a mold, molding the body using the mold while using a mold core within the cavity of the mold to form the chamber in the body, and removing the molded body from the mold with the conductive member supported therein, said placing step including

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inserting the compliant portion of the conductive member into a cavity space in the mold core with the conductive member extending through an open end of the cavity space to locate the base portion of the conductive member outside the cavity





space, and said molding step including closing the mold with a part thereof cooperating with the mold core and conductive member to close off the open end of the cavity space to prevent the material of the body from flowing into the cavity space.

4,795,603

METHOD FOR PRODUCING COMPOSITE MATERIAL OF PLASTIC AND RUBBER

Nobuhiko Nagayasu, No. 1527, Orisaki, Oaza, Nagasu-machi, Tamana-gun, Kumamoto-ken, Japan

Filed Oct. 8, 1987, Ser. No. 105,743

Claims priority, application Japan, Oct. 16, 1986, 61-246247

Int. Cl.[4] B29C *45/00*

U.S. Cl. 264—328.18 **1 Claim**

1. A method for producing a composite material of plastics and rubber, the method comprising the steps of mixing rubber waste fine particles and rugged rough particles of plastics waste which have a grain size within the range of 3 to 5 mm and which are obtained by crushing molded polyethylene or polypropylene waste, said fine particles and rugged rough particles being uniformly combined because of absence of surface slide therebetween, then heating said mixture to melt only said rough particles, pressing and injecting the mixture to mold it, said rubber waste fine particles being in the range of 30 to 10 weight %, and said plastics waste rugged rough particles being in the range of 70 to 90 weight %.

4,795,604

METHOD FOR MOLDING 1,4,4A,9A-TETRAHYDROANTHRAQUINONE

Katsumi Matsuzaki; Kenji Usui, and Seishi Ikemoto, all of Kawasaki, Japan, assignors to Kawasaki Kasei Chemicals Ltd., Tokyo, Japan

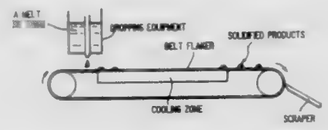
Filed Jun. 10, 1987, Ser. No. 60,161

Claims priority, application Japan, Jun. 24, 1986, 61-146088

Int. Cl.[4] B29B *9/04, 9/10*

U.S. Cl. 264—144 **15 Claims**

1. A method for molding 1,4,4a,9a-tetrahydroanthraquinone by cooling and solidifying a melt of 1,4,4a,9a-tetrahydroanthraquinone, which comprises contacting the melt with a cooling surface at a temperature of from about 50° to about 80° C. for solidification, and peeling off the solidified product.



4,795,605

NUCLEAR FUSION APPARATUS

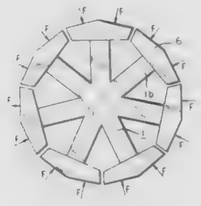
Tokio Fukunaga; Fukutaro Kishimoto; Mitsuru Sato; Kazuyoshi Yabuuchi, all of Amagasaki; Haruhiko Tomita, Tokyo, and Kazuo Maeno, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 7, 1986, Ser. No. 860,487

Claims priority, application Japan, May 9, 1985, 60-98621; Feb. 27, 1986, 61-40480; Feb. 27, 1986, 61-40481

Int. Cl.[4] G21B *1/00*

U.S. Cl. 376—142 **18 Claims**



1. A nuclear fusion apparatus comprising:

central support stay means;

a plurality of poloidal coils disposed in the circumferential direction of said central support stay means; and

a plurality of toroidal coils radially disposed around and adjacent to the central support stay means, said central support stay means including a central support stay portion and radial means for supporting said poloidal coils and for withstanding the centripetal force of said toroidal coils, said radial means comprising a plurality of radial portions extending radially from said central support stay portion and spaced circumferentially from each other at predetermined angles, each of said radial portions including a radial member radially extending from said central support stay portion and a force transmission member disposed at the radial outer end of said radial member for transmitting forces from at least two toroidal coils to each radial member.

4,795,606

INSPECTION SYSTEMS

Peter Fenemore, Preston, and Reginald L. Boak, Warrington, both of England, assignors to National Nuclear Corporation Limited Booths Hall, Knutsford, England

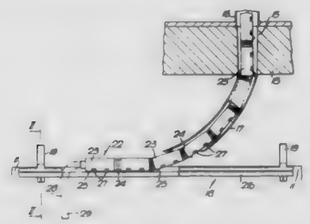
Filed Jan. 27, 1986, Ser. No. 823,087

Claims priority, application United Kingdom, Feb. 7, 1985, 8503148

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—248 **10 Claims**

1. Apparatus for inspecting the surface of a structure comprising a track extending around an upper region of the structure, an elongated flexible carrier engageable along its length with the track and movable lengthwise along the track, means for leading the flexible carrier insertably into engagement with the track, and retractably out of engagement with the track, at



at least one position along the length of the track, and inspection means carried by the carrier for selective downward extension and upward retraction relative to the carrier and relative to the track.

4,795,607

HIGH-TEMPERATURE REACTOR

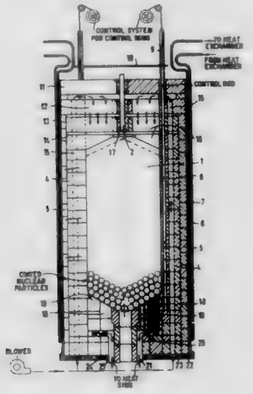
Herbert Reutler, Köln; Günter Lohnert, and Johannes Lukaszewicz, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to GHT, Gesellschaft für Hochtemperatur-reaktor-Technik mbH, Bergisch-Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 526,212, Aug. 24, 1983, which is a continuation of Ser. No. 241,923, Mar. 9, 1981, abandoned. This application Apr. 29, 1987, Ser. No. 43,844

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009390

Int. Cl.[4] G21C *9/00, 15/18*

U.S. Cl. 376—299 **2 Claims**



1. Gas-cooled high-temperature nuclear reactor having a reactor core comprising a multiplicity of individual particulate fuel elements received in a containment structure, said fuel elements being disposed laterally adjacent and on top of one another, each of said fuel elements being provided with means for forming a barrier against the release of fission products producible therein during reactor operation, said containment structure including a cylindrical barrel formed of an inner graphite layer functioning as a reflector, an outer layer of carbon bricks as insulating material surrounding said inner layer, and a metallic receptacle, said inner and outer layers being formed of respective side, bottom and cover portions, said cover portion being nonmetallic, said containment structure directly supporting said cover portion at the top of the cylindrical barrel exclusively by the side portions thereof, said side and cover portions of said inner layer being formed with first channels into which means for controlling a chain reaction in the reactor are insertible, said means being the sole insertion means for controlling the chain reaction in said reactor, said bottom, side and cover portions of said inner layer being further formed with second channels, means for circulating cooling gas during reactor operation through said second channels under pressure from the bottom to the top of said receptacle, and through the reactor core said bottom portion of said inner layer having first openings for introducing cooling gas into said second channels during reactor operation and second openings for withdrawing during reactor operation cooling gas heated by passage through the reactor core; said inner and outer layers and said metallic receptacle having a heat conductivity and a thermal capacity and the reactor core having such a size, shape, power density and moderation ratio that a first temperature at which said core becomes subcritical for all possible accident conditions is below a second temperature at which said barrier means are destroyed, and, when loss of pressure of said cooling gas down to about 10 bar or less is experienced, after-heat generated in said core is removable solely by heat conduction and radiation through said inner and outer layers and said core barrel to a passive heat removal system located outside said receptacle, so that said fuel elements remain at a temperature below said second temperature, said barrier being effective against the release of fission products up to a second temperature on the order of 1400° C., and said cooling gas being helium, the reactor having a maximum power output of up to substantially 200 MW thermal, an average power density of substantially 3 MW/m^3 of core volume and a maximum local power density of substantially 4 MW/m^2 of core volume, a power production of substantially 20 MW/m of core height, a core diameter of substantially 3 m, and a heat transfer, for fuel elements having attained said second temperature and with said cooling gas at atmospheric pressure, of substantially 3 to 6 KW/m of the outer surface of said receptacle, said graphite reflector and said carbon insulation, respectively, being formed of blocks disposed in the form of concentric rings, and said metallic receptacle comprising a cylindrical steel jacket surrounding said rings of blocks and holding them together, the after-heat from said nuclear core being removable solely through said side portion and said metallic receptable, when the pressure in said cylindrical barrel drops to about 10 bar or less, said passive heat removal system including a multiplicity of U-shaped tubes having coolant therein, said tubes being vertically disposed and uniformly distributed around the circumference of said cylindrical steel jacket, said tubes having a first leg in heat-transferring contact with said steel jacket and a second leg spaced from said steel jacket, a natural circulation of the coolant in said U-shaped tubes being produced due to a temperature difference in said first and said second legs thereof, and means for connecting said tubes with a heat exchanger located outside said metallic receptacle.

4,795,608

NUCLEAR FUEL ASSEMBLY

Olov Nylund, Västerås, Sweden, assignor to AB Asea-Atom, Västerås, Sweden

Filed Apr. 27, 1987, Ser. No. 42,727

Claims priority, application Sweden, Apr. 29, 1986, 8601982

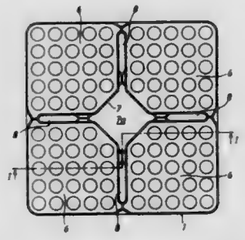
Int. Cl.[4] G21C *3/32*

U.S. Cl. 376—444 **10 Claims**

1. A nuclear fuel assembly for a nuclear reactor of the boiling reactor type comprising a fuel channel of substantially square cross-section, a plurality of vertical fuel rods arranged in sub-bundles of substantially square cross-section, a vertical channel-formed support member of cruciform cross section with a central channel for the passage of liquid coolant through the fuel assembly, said sub-bundles of fuel rods being surrounded by said fuel channel and spaced apart by wing parts of said channel-formed support member fixedly connected to each side of said fuel channel, the central channel of said sup-

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port member being limited by the channel-formed support member, which conforms to the corner portions of said sub-bundles, in the region between the corner portions of the sub-bundles directed towards the centre, characterised in that the cross-centre of the channel-formed support has been enlarged for increased water through-flow by moving apart the



walls of the centre of the cross by a distance corresponding to at least one fuel rod diameter in each quadrant from the intersectional line between adjacent outer limits of the wings of the cross, and that in each sub-bundle of fuel rods in the fuel assembly, at least one fuel rod is missing from the corner portions of the sub-bundles directed towards the centre of the fuel assembly.

4,795,609

HIGH-STRENGTH STEEL FOR VALVE SPRINGS, PROCESS FOR PRODUCING THE STEEL, AND VALVE SPRINGS MADE OF THE SAME

Tsutomu Saka, Kawagoe; Tomohito Iikubo, Nagoya, and Yukio Ito, Yokkaichi, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Aichi and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jan. 20, 1987, Ser. No. 5,118

Claims priority, application Japan, Jan. 21, 1986, 61-11326

Int. Cl.[4] C22C *38/34, 38/44*

U.S. Cl. 420—109 **6 Claims**

1. A high-strength steel for valve springs, consisting essentially of 0.50–0.70 wt. % of carbon, 1.50–2.50 wt. % of silicon, 0.50–1.20 wt. % of manganese, 1.50–2.50 wt. % of nickel, 0.50–1.00 wt. % of chromium, 0.20–0.50 wt. % of molybdenum, 0.15–0.25 wt. % of vanadium, and the balance being iron and inevitably included inclusions, said inclusions containing at least one of Al_2O_3—CaO, SiO_2—CaO, and CaO—Al_2O_3—2-SiO_2 wherein the surface percentage of the inevitably included inclusions is 0 to 0.1%

4,795,610

CORROSION RESISTANT ALLOY

John H. Calling, St. Louis, Mo., assignor to Carondelet Foundry Company, St. Louis, Mo.

Filed Apr. 23, 1987, Ser. No. 41,411

Int. Cl.[4] C22C *30/02*

U.S. Cl. 420—582 **7 Claims**

1. An air-meltable, castable, weldable, non-magnetic alloy having a single phase austenitic structure and resistant to corrosion in chloride containing fluids, consisting essentially of between about 20.7% and about 27.2% by weight nickel, between about 19.3% and about 22.7% by weight chromium, between about 0.94% and about 2% by weight molybdenum, between about 2.6% and about 3.2% by weight copper, between about 3.2% and about 4.2% by weight manganese, between about 0.27% and about 2.02% by weight niobium, between about 0.10% and about 0.25% by weight nitrogen, up to about 0.08% by weight carbon, up to about 0.9% by weight silicon, up to about 0.7% by weight titanium, up to about 1% by weight vanadium, up to about 0.6% by weight of a rare earth component selected from the group consisting of cerium, lanthanum, and misch metal, up to about 1% by weight cobalt, and the balance essentially iron, the sum of the nickel content and cobalt content being between about 21.7% and about 27.2% by weight.

4,795,611

INDICATOR FOR THE DETERMINATION OF CHLORINE GAS

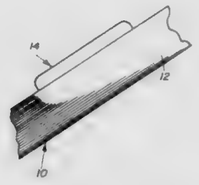
Carl-Ernst van der Smissen, Lübeck, Fed. Rep. of Germany, assignor to Dragerwerk AG, Fed. Rep. of Germany

Filed Apr. 21, 1987, Ser. No. 40,921

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1986, 3614723

Int. Cl.[4] G01N *31/22*

U.S. Cl. 422—56 **6 Claims**



1. An indicator for a chlorine gas consisting essentially of a support and a colorimetric reagent of potassium iodide and manganese chloride coated on said support.

4,795,612

APPARATUS FOR THE DETECTION OF FILTERABLE GAS CONTAMINANTS

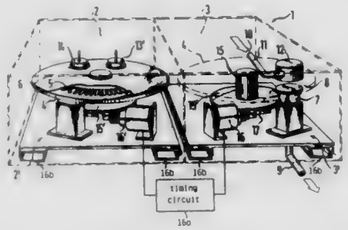
Manfred Keller, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Continuation of Ser. No. 781,110, Sep. 27, 1985, abandoned. This application Jul. 17, 1987, Ser. No. 75,209

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1984, 3436800

Int. Cl.[4] G01N *1/22, 35/02;* G01T *1/167*

U.S. Cl. 422—64 **23 Claims**



1. Apparatus for collection of a specimen for measurement of at least one filterable component and for determination of at least one parameter of said at least one filterable component, said apparatus comprising:

a substantially rigid rotatable plate having formed thereon a circular track of throughgoing apertures;

a base for rotatably supporting said rotatable plate;

a suction head disposed on a first side of said rotatable plate to draw a gas through a predetermined number of said apertures, the opposed contact surfaces of said suction head and said circular track being substantially flat and smooth to thereby minimize frictional forces between said contact surfaces;

means for filtering disposed in contact with said circular track of apertures on a second side of said rotatable plate opposite to said first side to filter said gas drawn through said predetermined number of apertures by said suction head, said filtering means comprimising a removable continuous mat of filter material independently supported by said rotatable plate and overlaying at least said circular track of apertures;

means for rotating said rotatable plate with respect to said base;

means for determining at least one parameter of said at least one filterable component; and

means for biasing said suction head against said rotatable plate, said biasing means having spring means for continuously aligning said suction head against said rotatable plate, said plate defining a first substantially flat planar surface and said head defining a second substantially flat planar surface disposed against said first surface;

said suction head having a lip, said lip having a width for substantially preventing binding between said head and said rotatable plate and also for providing sealing contact between said first surface on said plate and said second surface on said head, whereby leakage of gas between said suction head and said rotatable plate is minimized

said head having a longitudinal axis being substantially aligned with an axis substantially perpendicular to said first surface;

said head being angularly displaceable with respect to said axis perpendicular to said first surface; and

said spring means including alignment means for aligning said second surface with respect to said first surface and for providing substantially sealing contact therebetween.

4,795,613

BIOCHEMICAL ANALYZER

Masashi Azuma, Hino; Tuneo Narushima, Akishima, and Takashi Ishihara, Tachikawa, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 755,363, Jul. 16, 1985, abandoned. This application May 26, 1987, Ser. No. 53,548

Claims priority, application Japan, Jul. 17, 1984, 59-148456

Int. Cl.[4] G01N *35/04*

U.S. Cl. 422—64 **6 Claims**



1. A biochemical analyzer comprising:

a plurality of measuring elements, each containing a respective sample to be tested and information relating to the test to be conducted on said respective sample;

conveying means for selectively conveying each of said measuring elements to a measurement position, said conveying means including indications specifying the address positions of the measuring elements and a support with a plurality of engagement slot means for holding the measuring elements, said engagement slot means being provided with exposure hole means for exposing said information on the measuring elements, and said support including through hole means for permitting pipetting of said respective samples;

measuring means for testing each respective sample at said measurement position;

detecting and reading means for detecting and reading said information relating to the test to be conducted on said respective samples when said detecting and reading means is aligned with said information relating to the test to be conducted and for detecting and reading the corresponding address positions of said respective samples when said detecting and reading means is aligned with said corresponding address positions;

storage means for receiving and storing said information detected and read by the detecting and reading means relating to the test to be conducted on said respective samples and the corresponding address positions of said respective samples; and

processing and control means for processing the stored information and responsively controlling said conveying means to selectively convey each measuring element to said measurement position for testing at an appropriate timing and sequence determined based on said stored address positions of said respective sample and based on said stored detected information relating to the test to be conducted on said respective samples.

4,795,614

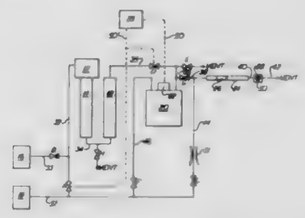
APPARATUS FOR ANALYSIS OF ORGANIC MATERIAL

Stanley D. Noren, Bayside, N.Y.; Richard T. Ferranti, Huntington, and Robert F. Calmo, Woodbridge, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 27, 1987, Ser. No. 19,905

Int. Cl.[4] G01N *31//12*

U.S. Cl. 422—94 **1 Claim**



1. Apparatus for quantitatively analyzing a gaseous mixture for its components, comprising:

volume means for collecting a predetermined volume of a gaseous mixture of a base component and at least one additional component;

pressurized fluid means connected to force a gaseous mixture into the volume means up to a preselected pressure;

a tubular column having an input end and an output end, the input end being in fluid flow relationship with the volume means;

a sample chamber in fluid flow relationship with the output end of the tubular column;

discharge means for discharging a portion of the mixture from the volume means successively through the tubular column and the sample chamber for a predetermined time period with the mixture being initially at the preselected pressure in the volume means;

extracting means disposed in the tubular column for extracting a predetermined amount of an additional component from the mixture during the predetermined time period;

a component detector communicating with the sample chamber for detecting the amount of the additional component in the gaseous mixture in the sample chamber during the predetermined time period; and

means for sequentially combusting each of a plurality of test samples to produce as combustion products at least one component of the gaseous mixture and introducing the gaseous mixture into said volume means, the combusting means including a furnace, a magazine for holding a plurality of test samples, transfer means connected to the

VOL 1098 ISS 1 JA 3 1989 UMI

furnace for sequentially transferring a successive sample from the magazine to the furnace, furnace sealing means integral with the transfer means for temporal sealing of the furnace from ambient atmosphere after a test sample is transferred to the furnace until subsequent transferral, and means for introducing oxygen into the furnace; wherein the transfer means comprises:

a body with a piston end, a body chamber in the body extending horizontally to the piston end, a body aperture extending from the body chamber upwardly through the body so as to be receptive of the sample, and a drop port extending downwardly as an egress through the body from a point in the body chamber vertically and horizontally offset from the body aperture;

a piston member slidingly situated in the body chamber such as to have a first position and a second position, the second position defining a central chamber portion of the body chamber incorporating said point in the body chamber;

guide means for guiding the sample coacting with the piston member so as to be receptive of the sample from the body aperture when the piston member is at the first position and vertically aligned with the drop port when the piston is at the second position;

retaining means for temporarily retaining a sample in the guide means;

releasing means for releasing the sample from the guide means through the drop port when the piston is at the second position; and

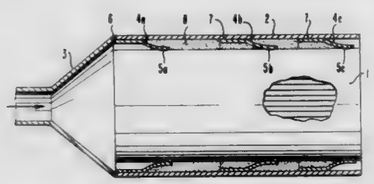
piston seal means for initiating a seal between the piston member and the central chamber portion when the piston member is at the second portion.

4,795,615

MOUNTING FOR A METALLIC EXHAUST GAS CATALYST CARRIER BODY AND METHOD FOR MANUFACTURING THE SAME

Theodor Cyron, and Wolfgang Maus, both of Bergisch-Gladbach, Fed. Rep. of Germany, assignors to Interatom GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 888,827, Jul. 22, 1986, abandoned. This application Jul. 6, 1987, Ser. No. 70,034
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1985, 3526681
Int. Cl.[4] F01N *3/15*
U.S. Cl. 422—179 31 Claims



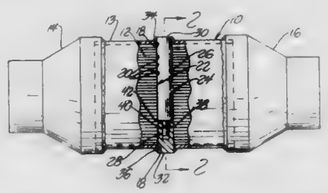
1. Mounting assembly for an exhaust gas catalyst, comprising a metallic exhaust gas catalyst carrier body formed of a multiplicity of layers, at least one first brazed joint interconnecting said layers, a metallic tubular jacket in which said catalyst carrier body is disposed, and one second brazed joint fastening said catalyst carrier body to said tubular jacket while permitting lengthwise expansion of said catalyst carrier body relative to said tubular jacket, said first and second brazed joints being axially spaced apart from each other.

4,795,616

CATALYTIC CONVERTER MONOLITHIC SUBSTRATE RETENTION

James R. Mondt, Pontiac, and Ricky P. Schacher, Flint, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1987, Ser. No. 63,676
Int. Cl.[4] F01N *3/10, 3/28;* B01D *53/36;* B01J *8/02*
U.S. Cl. 422—179 7 Claims



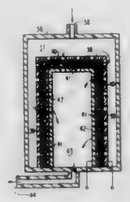
1. A catalytic converter comprising a housing with an inlet and an outlet, a monolithic substrate arranged in said housing between said inlet and outlet, aligned perforations in said housing and said substrate forming a hole extending laterally through and across said substrate and through opposite sides of said housing, and slip pin means comprising at least two relatively freely movable parts extending through said hole and fixed at opposite ends to said housing for retaining said monolithic substrate in said housing while freely permitting relative thermal expansion between said pin means and said housing by free relative movement between said at least two parts of said slip pin means.

4,795,617

ELECTROLUMINESCENT CHEMICAL ACTIVATION SYSTEM

Louis R. O'Hare, 6101 Sequoia Rd., NW., Apt. A-20, Albuquerque, N. Mex. 87120

Filed Jan. 16, 1984, Ser. No. 571,349
Int. Cl.[4] B01J *19/08*
U.S. Cl. 422—186.15 17 Claims



1. A gas phase chemical reaction system comprising:

(1) phosphor-catalyst electric excitation means capable of placing an electric field across excited state compounds selected from the group of electroluminescent phosphors and phosphor-like compounds into which catalytic properties are induced and enhanced directly by the application of said field, said electric excitation means being in the form of at least two electrodes located on opposite sides of a layer of said compounds with the electrodes having surfaces of significant area located opposite each-other and being connected across a source of electric current in such a way that each electrode has a polarity opposite to the other during each period of current application and,

(2) gas particle activation means in the form of a catalytic bed which forms said layer of said excited state compounds located between the electrodes and being capable of providing surface contact between reactant gas particles and said excited state compounds for the purpose of transferring excitation energy from the compounds to the reactant gas species to react the species and,

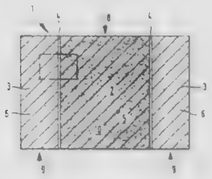
(3) reactant and product transport means in the form of inlet and exit ports, inlet and exit plenum chambers and gas permeable perforations in the electrodes on either side of the electrically excited compounds, said reactant transfer means being in the form of ducting and sealed connections providing series fluid flow communication between the inlet port, the inlet plenum chamber, perforations in one electrode and the electrically excited catalytic material, and said product transfer means being in the form of ducting and sealed connections providing series fluid flow communication between said electrically excited compounds, perforations in the opposite electrode, the exit plenum and the exit port.

4,795,618

HEAT EXCHANGER

Michael Laumen, Am Brustert 47, D-4150 Krefeld, Fed. Rep. of Germany

PCT No. PCT/DE85/00337, § 371 Date Jul. 25, 1986, § 102(e) Date Jul. 25, 1986, PCT Pub. No. WO86/02016, PCT Pub. Date Apr. 10, 1986
PCT Filed Sep. 26, 1985, Ser. No. 879,128
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1984, 3435319
Int. Cl.[4] F28D *21/00*
U.S. Cl. 422—202 16 Claims



1. A heat exchanger comprising a reactor section which is connected to supply lines for a flowable composition and through which a flowable composition is passed for effecting a chemical reaction and which comprises a metal structure having a large internal surface comprising a catalytic substance, and

a heat transfer section including at least one gas-tight flow passage for a separate heat transfer fluid of the type having a selected phase transition temperature wherein:

said metal structure comprises porous, sintered metal, said sintered metal being directly heat conductivity joined to a gastight boundary layer which has a high heat transfer coefficient,

the flow passage of said heat transfer section comprising in cross-section, at least in part of its length, porous sintered metal which is directly heat conductively joined to said boundary layer on that side of the reactor section which is opposite to the sintered metal, and

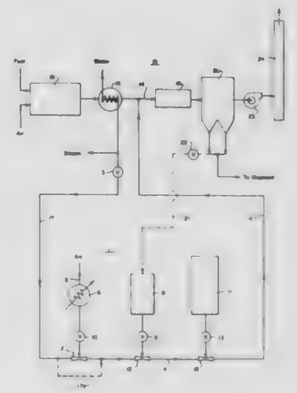
means to conduct said separate heat transfer fluid through said flow passage of said heat transfer section in correlation to the chemical reaction so that the heat transfer fluid will undergo a phase transition at said phase transition temperature thereof in response to said flowable composition undergoing the chemical reaction.

4,795,619

REMOVAL OF ACID GASES IN DRY SCRUBBING OF HOT GASES

Bernard J. Lerner, 727 Orchard Hill Dr., Pittsburgh, Pa. 15238

Filed Mar. 20, 1987, Ser. No. 28,572
Int. Cl.[4] C01B *17/56, 17/36, 17/90, 17/027*
U.S. Cl. 423—244 9 Claims



1. A method for the removal of acid gases from waste gas comprising: dispersing a particulate alkaline reactant in a humid inert gas and retaining the reactant in contact with the inert gas for a time sufficient to adsorb on the reactant at least a monomolecular layer of water, the said inert gas having a partial pressure of water vapor higher than the fugacity of a minimum layer of water thereby adsorbed on the reactant; conveying the so-treated dispersed reactant in a stream of the humid gas into contact with substantially the entire flow of waste gas thereby effecting absorption of the acid gases from the waste gas and reaction of the acid gases with the so-treated alkaline reactant; and separating so-reacted alkaline reactant from so-treated waste gas while permitting the latter to escape to atmosphere.

4,795,620

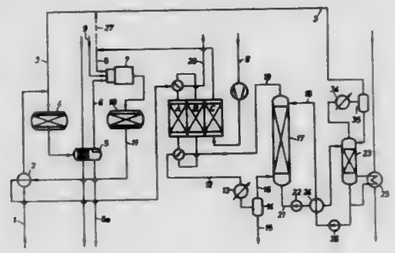
CLAUS RESIDUAL GAS CLEANUP USING TETRAETHYLENE GLYCOL DIMETHYL ETHERS AS SO_2 SCRUBBING AGENT

Michael Heisel, Munich, and Gerhard Linde, Gruenwald, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 861,127, May 7, 1986, abandoned, which is a continuation of Ser. No. 652,538, Sep. 20, 1984, abandoned. This application Feb. 27, 1987, Ser. No. 20,182
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333933
Int. Cl.[4] C01B *17/00*
U.S. Cl. 423—243 11 Claims

1. In a process for purifying a Claus tail gas stream discharged from a Claus plant containing H_2S, SO_2, CO_2 and water; said process comprising oxidizing said Claus tail gas to convert the H_2S to SO_2; cooling resultant oxidized gas, and subjecting cooled oxidized gas to a scrubbing stage comprising scrubbing and regeneration steps to separate SO_2 which is later recycled to said Claus plant, the scrubbing being conducted in a scrubbing column; the improvement which comprises cooling the oxidized gas to 60°–120° C., further cooling said oxidized gas to about 15°–40° C., and employing as the scrubbing agent a physical solvent at about 0°–40° C. on a dry basis,

consisting essentially of 60–80% of tetraethylene glycol dimethyl ether; 15–25% of triethylene glycol dimethyl ether;



2.5–7.5% of pentaethylene glycol dimethyl ether; and 2.5–7.5% of mono ethers.

4,795,621

PROCESS FOR THE PREPARATION OF PHOSPHONITRILE CHLORIDE OLIGOMER

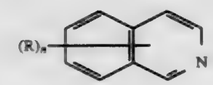
Tetsuhiko Okamoto; Shinichiro Ueyama, and Kazuhiko Fujikawa, all of Tokyo, Japan, assignors to Shin Nisso Kako Co., Ltd., Japan

Filed Aug. 13, 1986, Ser. No. 896,338
Claims priority, application Japan, Aug. 14, 1985, 60-177478
Int. Cl.⁴ C01B *25/10*
U.S. Cl. 423—300 **12 Claims**

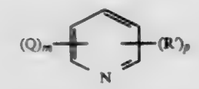
1. A process for the preparation of phosphonitrile chloride oligomer in which the yield of cyclic phosphonitrile chloride trimer is increased and the yield of cyclic phosphonitrile chloride tetramer is decreased, comprising reacting phosphorus pentachloride with ammonium chloride in an inert organic solvent, and in the presence in the reaction system of a catalytic amount of a basic organic compound selected from the group consisting of quinoline, isoquinoline and their derivatives represented by the formulae:



and



wherein R stands for an alkyl group or a halogen atom and n stands for zero or an integer of 1 to 7,
and pyridine derivatives represented by the general formula:



wherein Q stands for a halogen atom or a hydroxyl group; R' stands for an alkyl group; m stands for an integer of 1 to 5 and p stands for zero or an integer of 1 to 4 with the proviso that the total number of m and p is 1 to 5,
and a catalyst amount of a polyvalent metal compound.

4,795,622

METHOD FOR PRODUCING SILICON-IMIDE

Takeshi Isoda, Nitta, and Mikiro Arai, Iruma, both of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Japan

Filed Apr. 24, 1986, Ser. No. 855,453
Int. Cl.⁴ C01B *21/082, 21/068*
U.S. Cl. 423—324 **6 Claims**

1. A method for producing silicon-imide suitable for use as a precursor of sintered silicon nitride, comprising the steps of contacting a halosilane selected from the group consisting of compounds expressed by the formula:

$$SiHmX_{4-m}$$

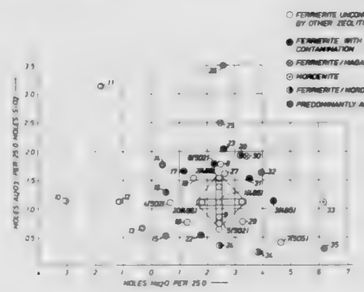
(wherein X is at least one halogen selected from the group consisting of F,Cl,Br and I: m is 0–3), with an organic base to form a halosilane adduct; and then reacting the obtained adduct with ammonia in a solvent; said organic base being selected from the group consisting of pyridine and picoline.

4,795,623

TIME EFFECTIVE METHOD FOR PREPARING FERRIERITE

Wayne E. Evans, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 5, 1986, Ser. No. 893,430
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—328 **15 Claims**



1. A time effective method of manufacture of sodium ferrierite which comprises crystallizing an aqueous mixture at hydrothermal crystallizing conditions of from about 100° to about 400° C. over a period of time greater than 10 hours and less than 20 hours to form a crystalline sodium ferrierite, said aqueous mixture comprising a sodium compound, one or more aluminum compounds, a silicon compound and one nitrogen compound selected from the group consisting of piperidine, piperazine, pyridine, 4-picoline-N-oxide and 4-picoline, wherein the mole ratios of both the sodium compound and aluminum compound, in relation to the silicon compound, calculated on the basis of the oxide forms of said sodium compound, aluminum compound and silicon compound, are equal to the presence of 1.6 to 3.4 moles of sodium oxide per 25 moles of said silicon oxide and 0.7 to 1.6 moles of said aluminum oxide per 25 moles of said silicon oxide, and wherein water is present in a molar ratio of 5–500 moles of water per mole of said silicon oxide and said nitrogen compound is present in a molar ratio of 0.05 to 1.0 moles of said nitrogen compound per mole of said silicon oxide and where the mole ratio of sodium oxide to aluminum oxide is greater than 1, and calcining said crystalline sodium ferrierite.

4,795,624

LOW TEMPERATURE SYNTHESIS OF GRAPHITE BASED CARBON FLUORIDE AND CARBON FLUORIDE CHLORIDE

David Nalewajek, West Seneca, N.Y., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Apr. 28, 1988, Ser. No. 187,118
Int. Cl.⁴ C01B *31/00, 9/08, 7/24*
U.S. Cl. 423—439 **21 Claims**

1. A method of preparing graphite based carbon fluoride or carbon fluoride chloride comprising:
(a) heating graphitic carbon intercalated with a Group V-A metal pentahalide in a gaseous fluorine or fluorine/chlorine atmosphere to a temperature range from about 250° to about 500° C.; and
(b) maintaining the temperature in step (a) for a sufficient time to allow formation of carbon fluoride or carbon fluoride chloride.

4,795,625

METHOD OF MANUFACTURING BARIUM SULPHIDE

Marian Starczewski, Warsaw; Maria Switoaska-Oskedra, Chorzów; Tadeusz Grzywaczewski, Tarnowskie Góry; Hubert Pisarski, Tarnowskie Góry; Stanislaw Gazda, Tarnowskie Góry, and Genowefa Sybilska, Gliwice, all of Poland, assignors to Politechnika Slaska im. Wincentego Pstrowskiego, Poland

Filed Jun. 9, 1987, Ser. No. 59,954
Claims priority, application Poland, Jun. 23, 1986, 260218
Int. Cl.⁴ C01B *17/44*
U.S. Cl. 423—566 **3 Claims**

1. A method of manufacturing barium sulfide by reducing barites or barium sulfate ores wherein finely divided calcium carbide is used as the reduction agent for said barites or barium sulfate ores by heating a mixture of said ores and said agent to a temperature above 873° K.

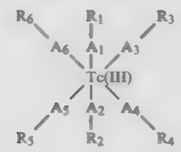
4,795,626

^{99m}TC$^{(III)}$ MYOCARDIAL IMAGING AGENTS WHICH ARE NON-REDUCABLE IN VIVO

Edward A. Deutsch, Cincinnati, Ohio, and Jean-Luc Vanderheyden, Seattle, Wash., assignors to University of Cincinnati, Cincinnati, Ohio

Continuation of Ser. No. 733,680, May 10, 1985, abandoned. This application Mar. 11, 1988, Ser. No. 172,969
Int. Cl.⁴ A61K *49/02*; C07F *13/00*
U.S. Cl. 424—1.1 **25 Claims**

1. A complex comprising a cationic ^{99m}Tc(III) complex having a reduction potential for the Tc(III)/(II) couple sufficiently negative to prevent in vivo reduction from Tc(III) to Tc(II) in humans having a Tc(III/II) reduction potential electrode at least about as negative as −0.3 volts relative to a Ag/AgCl reference in N,N' dimethyl formamide with 0.5 M tetraethylammonium perchlorate wherein said cationic ^{99m}Tc(III) complex has the following general formula:



wherein
A_1–A_6 represent atoms coordinatively bonded to said Tc and at least 3 and no more than 4 of said A_1–A_6 represent an atom selected from the group consisting of N, O, Cl, S, Br, and the remaining of A_1–A_6 represent an atom selected from the group consisting of P, As, Te; and
R_1–R_6 combined with said A_1–A_6 represent ligands complexed to said Tc, and wherein when A represents Cl^- or Br^-, A—R represents only one atom.

4,795,627

TRITIUM LABELLED N-MUSTARD TYPE COMPOUNDS AND A PROCESS FOR THEIR PRODUCTION

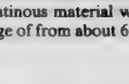
Abraham Fisher, Holon, Israel; Israel Hanin, Pittsburgh, and Donald J. Abraham, Murrysville, both of Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Oct. 18, 1984, Ser. No. 662,276
Int. Cl.⁴ A61K *43/00*; C07D *203/10, 203/14, 203/18*
U.S. Cl. 424—1.1 **15 Claims**

1. A tritium labeled nitrogen mustard type compound of the structural formula:

$$R_1R_2Q$$

wherein Q is



wherein R_1 and R_2 individually are from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, 2-acetoxyethyl, 2-halogenoethyl, 2-acetoxypropyl, hydroxyethyl, 2-hydroxypropyl, 1-methyl-2-acetoxyethyl, γ-carboxypropyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, 2-hydroxycyclopropyl, 2-acetoxycyclopropyl, 3-hydroxycyclopentyl, 4-hydroxycyclohexyl, phenyl, napthyl, pyrenyl, 1-pyrenebutyryl, mono-, di and trihydroxy-β-phenyl-α-hydroxyethyl, o-methylbenzyl, o-bromobenzyl, γ-substituted-n-butyric acid, and 2-substituted-1-(3,4-dihydroxyphenyl)ethanol, wherein the term "substituted", where used, designates the cite of attachment of R_1 or R_2 to Q wherein
T is tritium
X is halogen, and
X'— is an anion.

4,795,628

COMPOSITION FOR ORAL HYGIENE

John Afseth, Oslo, Norway, assignor to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Filed Dec. 30, 1986, Ser. No. 947,811
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1986, 3600165
Int. Cl.⁴ A61K *7/16, 7/22, 33/34*
U.S. Cl. 424—54 **17 Claims**

1. An oral hygiene composition for inhibiting the formation of dental plaque which comprises a mixture of:
a component for supplying copper ions to the composition such that Cu is present in an amount of about 0.001 to about 1.5% by weight, and
a hexetidine component in an amount such that hexetidine is present in an amount of 0.025 to 0.5% by weight, wherein the weights are calculated based on the total composition.

4,795,629

CROSSLINKING OF HAIR THIOLS USING CYSTAMINE

Patricia Sluta-Mangano, Valley Cottage, N.Y., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 069,929, Jul. 6, 1987. This application Jul. 16, 1987, Ser. No. 74,206
Int. Cl.⁴ A61K *7/00, 7/06*
U.S. Cl. 424—70 **7 Claims**

1. A process for treating keratinous material in which disulfide linkages have been ruptured to form sulfhydryl groups by the action of a reducing agent which comprises contacting said keratinous material with cystamine in a carrier at a pH in the range of from about 6 to about 9 to crosslink sulfhydryl groups.

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4,795,630

METHOD FOR MANUFACTURING TOOTHPASTE

Haruo Okouchi, and Shoji Konishi, both of Chiba, Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Jun. 19, 1986, Ser. No. 876,169
Int. Cl.[4] A61K *7/16*
U.S. Cl. 424—49 **13 Claims**

1. A method for manufacturing a toothpaste containing an abrasive, a humectant, a binder, a surfactant and water comprising the steps of:

(a) mixing said binder, a glycol selected from the group consisting of propylene glycol, polyethylene glycol and polypropylene glycol as a component of said humectant, and a portion of said water in an amount of 5 to 40% by weight of the binder to prepare a liquid dispersion where the binder is slightly swollen,

(b) mixing the thus prepared liquid containing the slightly swollen binder with an abrasive, said surfactant, the remaining humectant and the remaining portion of said water, and

(c) performing a final stage wherein the binder is completely swollen and dissolved to prepare a toothpaste.

4,795,631

WATER BASED LIP COLOR COMPRISING AN ALKALI SOLUBLE FILM-FORMING AGENT

Kathleen Sheehan, Branford, Conn., assignor to Chesebrough-Pond's, Inc., Greenwich, Conn.

Filed Mar. 26, 1986, Ser. No. 844,474
Int. Cl.[4] A61K *7/025*
U.S. Cl. 424—64 **7 Claims**

1. A lip-film composition comprising:

(a) water;

(b) an alkali-dispersible, water-insoluble thermoplastic film-forming resin;

(c) a volatile base in sufficient quantity to solubilize the film-forming resin; and

(d) a water insoluble plasticizer,

said lip-film composition forming a flexible, long-wearing, water-resistant film when applied to the lips and allowed to dry.

4,795,632

PREPARATIONS FOR WASHING AND RINSING HAIR

Karl Glede, Hilden, and Horst Hoeffkes, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 628,926, Jul. 9, 1984, abandoned. This application Jun. 16, 1986, Ser. No. 874,874
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326230
Int. Cl.[4] A61K *7/06, 7/08;* **C08F** *16/34*
U.S. Cl. 424—70 **10 Claims**

1. An aqueous composition for washing or rinsing hair consisting essentially of:

(A) an amount effective to reduce the smoothness of dry hair of at least one polyaldehydocarboxylic acid having an average molecular weight of from about 600 to about 10,000, containing from 5 to 9 carboxyl groups and correspondingly from 5 to 1 aldehyde groups per 10 monomer units, wherein the monomer units have the configuration

$$-(CH_2-\underset{\displaystyle CHO}{\underset{|}{CH}}-)- \quad \text{and} \quad -(CH_2-\underset{\displaystyle COOH}{\underset{|}{CH}})-$$

and non-toxic water-soluble addition salts thereof; and

(B) from about 0.1 to about 10% by weight based on the total composition weight of an anionic hair-conditioning material which is at least one compound of the following formulae:

$RO(CH_2-CH_2-O)_nPO_3A_2$

$[RO(CH_2-CH_2-O)_n]_2PO_2A$

RPO_3A_2

$R-CH(OH)PO_3A_2$

$R-CX(PO_3A_2)_2$

in which R is a linear alkyl group containing from 8 to 18 carbon atoms; X is hydrogen, an —OH group or an $-NH_2$ group; A is an alkali metal, ammonium, mono-, di- or triethanolammonium cation; and n is 0 or an integer of from 1 to 12.

4,795,633

VACCINE FOR SWINE TRICHINOSIS

Kenneth D. Murrell, Rockville; Howard R. Gamble, Bowie, both of Md., and Hanspeter Marti, Basel, Switzerland, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 7, 1987, Ser. No. 68,499
Int. Cl.[4] A61K *39/002, 39/00*
U.S. Cl. 424—88 **8 Claims**

1. A vaccine for immunizing swing against *Trichinella spiralis* comprising an effective immunizing amount of inert newborn larvae of *Trichinella spiralis* emulsified with an adjuvant.

4,795,634

METHOD FOR CONTRACEPTION BY IMMUNIZATION AGAINST THE ZONA PELLUCIDA

Stephen Grimes; Elizer Benjamini, both of Davis, Calif., and Philip Gevas, Honolulu, Hi., assignors to Ashton Corporation, Woodland, Calif.

Filed Mar. 14, 1986, Ser. No. 839,894
Int. Cl.[4] C07K *15/14;* **A61K** *39/395*
U.S. Cl. 424—85.9 **10 Claims**

1. A method of contraception comprising the step of administering to a female mammal a composition comprising a contraceptive effective amount of anti-idiotypic antibodies formed against anti-zona pellucida antibodies, which anti-idiotypic antibodies express internal images of zona pellucida antigenic determinants capable of eliciting a contraceptive response.

4,795,635

VACCINE SYSTEM

Ben-Ami Peleg, 3 Harimon Street, Rehovot; Karol Hornstein, 2 Hildesheimer Street, Tel-Aviv, and Hagay Yadin, 18 Sderot Chen, Rehovot, all of Israel

Continuation of Ser. No. 827,622, Feb. 10, 1986, abandoned. This application Sep. 23, 1987, Ser. No. 102,794
Claims priority, application Israel, Feb. 10, 1985, 74289
Int. Cl.[4] A61K *39/17*
U.S. Cl. 424—89 **1 Claim**

1. In the art of vaccinating fowl against Newcastle Disease with emulsion adjuvanted live Newcastle Disease virus vaccines the improvement consisting of the step of vaccinating the fowl with live Newcastle Disease virus vaccines in a water-in-oil emulsion prepared by mixing a short time before the injection and injecting the mixture within a short period of time after such admixture.

4,795,636

METHOD FOR TREATING GENITAL AND ORAL HERPES

Julia J. Tsuei, 935 Kaluanui, Honolulu, Hi. 96825

Filed Nov. 20, 1985, Ser. No. 799,956
Int. Cl.[4] A61K *35/78*
U.S. Cl. 424—195.1 **10 Claims**

1. A method of treating viral infections caused by Herpes Simplex virus that comprises the step of administering to a subject infected with said virus garlic or a garlic preparation in an effective amount for controlling said virus and reducing the extent of the infection caused by said virus.

4,795,637

RODENT REPELLENT POWDERS

Norman T. Harding, Jr., 2320 Laketon Rd., Pittsburgh, Pa. 15221

Filed May 21, 1987, Ser. No. 52,076
Int. Cl.[4] A01N *25/08, 59/14, 65/00*
U.S. Cl. 424—195.1 **4 Claims**

1. A rodent repellent powder comprised of thujone oil and at least one powder selected from the group consisting of lime powder, borax powder, pyrethrum powder, silica gel, sulphur powder, sabadilla, pepper powder, and tobacco dust, wherein said rodent repellent powder contains at least one-half (½) ounce of said thujone oil for every ten (10) ounces of said powder material.

4,795,638

THERMO SLIMMING COSMETIC COMPOSITION

Liliane Ayache, Paris, and Jean-Pierre Laugier, Antony, both of France, assignors to L'Oreal, Paris, France

Filed Nov. 15, 1985, Ser. No. 798,415
Claims priority, application Luxembourg, Nov. 16, 1984, 85643
Int. Cl.[4] A61K *35/78*
U.S. Cl. 424—195.1 **8 Claims**

1. A thermo slimming cosmetic composition comprising in an oil base:

at least one rubefacient substance;

at least one oil soluble plant extract; and

at least one volatile polysiloxane,

said oil soluble plant extract being extracted from a plant selected from the group consisting of climbing ivy, arnica, rosemary, marigold, sage, ginseng, Saint Johns wort, ruscus, ulmaria, orthosiphon and algae, said oil soluble plant extract being present in a concentration ranging from 5 to 50% by weight of the total weight of the composition, said oil base constituting 10 to 40% by weight of the total weight of the composition, said rubefacient substance being present in a concentration ranging from approximately 0.05 to 5% by weight of the composition, said rubefacient substance being selected from the group consisting of capsicum, nicotinic acid salt, nicotinic acid ester, nicotinyl alcohol and an ester of nicotinyl alcohol, said polysiloxane being present in a concentration ranging from approximately 10 to 85% by weight, said polysiloxane being a dimethyl polysiloxane having 4 to 5 silicon atoms.

4,795,639

POTENTIATING FORMULATIONS

James J. Burchall; Stanley R. M. Bushby, both of Research Triangle Park, N.C.; Robert Cullen, Langton; Michael J. W. Dunkley, Crowborough, both of England, and Robert Ferone, Research Triangle Park, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 277,885, Aug. 4, 1972, abandoned. This application Mar. 16, 1977, Ser. No. 778,264
Claims priority, application United Kingdom, Aug. 5, 1971, 71/36774
Int. Cl.[4] A61K *31/505, 31/63, 31/625*
U.S. Cl. 514—249 **4 Claims**

1. The method of treating a host suffering from a protozoa infection which comprises administering to said host an effective anti-protozoa treatment amount of the combination of a dihydrofolic reductase inhibitor and an effective potentiation amount of a potentiator of said inhibitor which itself also inhibits the enzyme hydroxymethyldihydropteridine pyrophosphokinase, said combination containing 1 to 30 parts of the potentiator and one part of an inhibitor or an equivalent amount of salt thereof.

4,795,640

OIL IN WATER EMULSION CONTAINING PROPETAMPHOS

Hans Helfenberger, Reinach, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Filed Jun. 8, 1987, Ser. No. 58,967
Claims priority, application United Kingdom, Jun. 16, 1986, 8614647
Int. Cl.[4] A61K *9/10*
U.S. Cl. 424—405 **11 Claims**

1. A solvent-free oil-in-water emulsion of propetamphos comprising

(a) 5 to 50% by weight of technical propetamphos in the form of droplets having a particle size of below 5 micron,

(b) 1 to 8% by weight of a polyvinyl alcohol,

(c) 1 to 3% by weight of a buffer, buffering the pH of the formulation to pH 6 to 7,

(d) 1 to 2% by weight of a vegetable oil,

(e) 0.5 to 2% by weight of an emulsifier

(f) 0 to 8% by weight of an antifreezing agent

(g) 0 to 0.1% by weight of an antifoaming agent

(h) 0 to 0.1% by weight of a perfume,

the balance being water.

4,795,641

POLYMER BLENDS HAVING REVERSE PHASE MORPHOLOGY FOR CONTROLLED DELIVERY OF BIOACTIVE AGENTS

David S. Kashdan, Kingsport, Tenn. 37663, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 20, 1987, Ser. No. 87,566
Int. Cl.[4] A61K *9/26;* **C08L** *1/08;* **C09S** *3/04*
U.S. Cl. 424—438 **40 Claims**



1. A polymer blend of a soluble and insoluble polymer having reverse phase morphology wherein a soluble polymer phase comprises regions dispersed in a continuous insoluble polymer phase,

said polymer blend comprising

(a) up to about 40 percent by weight of an insoluble polymer of cellulose acetate containing greater than about 20 percent but less than 44 percent by weight of acetyl, and

(b) greater than about 60 percent by weight of a soluble polymer selected from the group consisting of cellulose acetate phthalate, cellulose acetate trimellitate, and cellulose acetate succinate.

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4,795,642

GELATIN-ENCAPSULATED CONTROLLED-RELEASE COMPOSITION

Jonathan M. Cohen, Matawan; Ira R. Berry, Westfield, and Lionel Borkan, New Vernon, all of N.J., assignors to Pharmacaps, Inc., Elizabeth, N.J.

Division of Ser. No. 858,969, May 1, 1986, Pat. No. 4,708,834. This application Aug. 17, 1987, Ser. No. 85,795

Int. Cl.[4] A61K *9/52, 9/66;* **B01J** *13/02*

U.S. Cl. 424—455 **19 Claims**

1. A pharmaceutical unit dosage form comprising a gelatin shell enclosing a gelled polymeric matrix, characterized by having been prepared by the process consisting essentially of:

(a) forming a liquid fill comprising an aqueous solution or dispersion of a polysaccharide gum and pharmaceutically-active compound;

(b) encapsulating said liquid fill in a gelatin shell wherein the gelatin shell comprises gelatin, an effective amount of a plasticizer, water and an amount of cationic gelling agent effective to gel said liquid fill; and

(c) gelling said liquid fill with the cationic gelling agent.

6. A pharmaceutical unit dosage form comprising a gelatin shell including an effective amount of a gelling agent comprising metal cations or ammonium ions, wherein said shell encloses a water-soluble or water-dispersable gelled polymeric matrix and a pharmaceutically-active compound dispersed throughout said matrix, wherein said matrix is formed in situ by the gellation of a liquid fill comprising an aqueous solution or dispersion of the pharmaceutically-active compound and a polysaccharide gum, by means of said gelling agent, following the encapsulation of the liquid fill, so that the phramaceutically-active compound is released from said gelled polymeric matrix over a prolonged period when said capsule is ruptured in an aqueous medium.

4,795,643

MEDICAMENT WITH A DELAYED RELEASE OF ACTIVE INGREDIENT

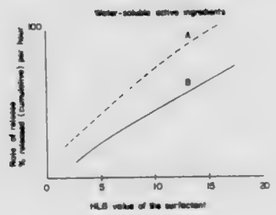
Pavan Seth, Oberwil, Switzerland, assignor to Mepha AG Dornacherstrasse 114, Aesch, Switzerland

Filed Jun. 29, 1987, Ser. No. 67,148

Claims priority, application Switzerland, Feb. 2, 1987, 355/87

Int. Cl.[4] A61K *9/64*

U.S. Cl. 424—456 **22 Claims**



1. A medicament exhibiting a delayed release of active ingredient in the form of hard gelatin capsules which comprises:

an active ingredient;

a surfactant ingredient which comprises polyglycol ethers, esters of mixtures thereof, which has both hydrophilic and lipophilic portions and is chosen based on the relative water

solubility or water insolubility of said active ingredient, wherein said solubility or insolubility is defined as follows:

Solubility	Parts of Solvent Required for 1 Part of Solution
very readily soluble	less than 1
readily soluble	from 1 to 10

-continued

Solubility	Parts of Solvent Required for 1 Part of Solution
soluble	from 10 to 30
sparingly soluble	from 30 to 100
slightly soluble	from 100 to 1000
very slightly soluble	from 1000 to 10,000
practically insoluble or insoluble	10,000 and more,

said surfactant ingredient having the following hydrophilipophilic balance (HLB) value,

above 16 for an active ingredient which is insoluble or slightly soluble in water,

between 16 and 10 for an active ingredient which is sparingly soluble in water, and

less than 10 for an active ingredient which is soluble in water; and

an organic polymer or polymers which form a homogeneous solution or suspension with said active ingredient and said surfactant ingredient, the solution or suspension being in free-flowing form below about 70° C.,

wherein said active ingredient is in an amount of about 1 to 60%, said surfactant ingredient is in an amount of about 30 to 90% and said organic polymer is in an amount of about 1 to 45% of the weight of the contents of the capsule.

4,795,644

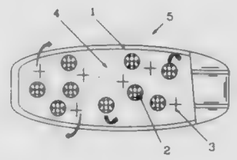
DEVICE FOR PH INDEPENDENT RELEASE OF DRUGS THROUGH THE DONNAN-LIKE INFLUENCE OF CHARGED INSOLUBLE RESINS

Gaylen M. Zentner, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 3, 1987, Ser. No. 81,090

Int. Cl.[4] A61K *9/52*

U.S. Cl. 424—468 **21 Claims**



1. A drug-delivery device for the controlled release of a therapeutically active ingredient into an environment of use which comprises:

(A) a core composition comprising

(a) a water insoluble, non-diffusible charged resin entity, and

(b) a diffusible water soluble ionizable therapeutically active ingredient carrying the same charge as said resin entity; and

(B) a water insoluble wall surrounding said core composition and prepared from

(i) a polymer material that is permeable to water but substantially impermeable to solute and

(ii) 0.1 to 75% by weight, based on the total weight of (i) and (ii), of at least one water leachable pore forming additive dispersed throughout said wall.

4,795,645

SUSTAINED RELEASE TABLETS OF THEOPHYLLINE

Michael Friedman; Meir Bialer, both of Jerusalem, and Hussein Ziad, Galil Tahton, all of Israel, assignors to Yissum Research and Development, Israel

Filed Nov. 25, 1986, Ser. No. 938,265

Claims priority, application Israel, Nov. 3, 1986, 78017

Int. Cl.[4] A61K *9/22, 9/30*

U.S. Cl. 424—468 **13 Claims**

1. A sustained release tablet comprising an admixture of theophylline and denaturated egg-albumin.

4,795,646

PROCESS FOR THE PREPARATION OF BINDER-FREE, TABLETTABLE GRANULES OF CELIPROLOL HYDROCHLORIDE

Heinrich Schlinkes, Linz, Austria, assignor to CL Pharma Aktiengesellschaft, Linz, Austria

Filed Oct. 21, 1987, Ser. No. 110,810

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1985, 3636209

Int. Cl.[4] A61K *9/14, 31/17*

U.S. Cl. 424—489 **8 Claims**

1. Process for the preparation of binder-free granules of celiprolol hydrochloride which can be compressed to give solid medicament forms, characterized in that a predetermined amount of celiprolol hydrochloride, over 50% of which have a particle size below 40 μm and not more than 10% have a particle size above 100 μm is initially placed in fluidized bed granulator, a fluidized bed is formed by passing in additional air at a temperature not higher than 30° C. and, by spraying distilled water into the fluidized bed, free-flowing granules having a water content of 20–40% by weight and less than 10% of which have a particle size below 63 μm are prepared and these granules are dried at temperatures from 30° to 60° C. after they have been discharged.

4,795,647

CONTINUOUS PRODUCTION OF SHELF-STABLE MULTI-TEXTURED SHREDDED CEREAL BISCUITS HAVING A PASTE FILLING

Kevin J. Leibfred, Oakland, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Continuation of Ser. No. 695,059, Jan. 25, 1985. This application Apr. 16, 1987, Ser. No. 40,479

Int. Cl.[4] A21D *13/00*

U.S. Cl. 426—94 **24 Claims**

1. A ready-to-eat paste-filled shredded cereal biscuit having a shelf stable plurality of textures comprising:

(a) a filling

(b) a plurality of shredded cereal layers providing a region of dense texture enrobing said filling,

(c) a plurality of shredded cereal layers providing a region of light texture enrobing said region of dense texture,

each of the layers having a plurality of generally parallel longitudinal strands and a plurality of crosshatchings generally perpendicular to said strands, said crosshatchings and said longitudinal strands forming an integral net-like sheet, the number of crosshatchings of the integral net-like sheets which provide the region of dense texture being greater than the number of crosshatchings of the net-like sheets which provide the region of light texture, substantial penetration of the filling through the net-like sheets being prevented by the crosshatchings of the net-like sheets of the region of dense texture.

4,795,648

SANDWICH WRAPPER AND METHOD OF WRAPPING

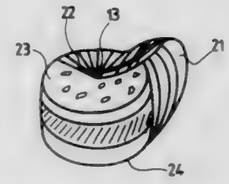
Gilbert Cagy, La-Botte Jarsioux, F-69640 Denice; Jean-Luc Allain, 35, Rue Ferrandiere, F-69002 Lyon, and Jacques Benarroech, Residence "Le Mercure", 15, Cours Aristide-Briand, F-69300 Caluire, all of France

Filed Mar. 16, 1987, Ser. No. 26,125

Claims priority, application France, Mar. 17, 1986, 86 03956

Int. Cl.[4] B65D *65/12*

U.S. Cl. 426—111 **36 Claims**



1. A wrapper adapted to be positioned about and wrap a solid article having a convex shape, said article having a central axis passing through the geometric center of said solid, wherein two intersecting planes extend through said article and include said axis, wherein said wrapper comprises a thin, flexible substantially rectangular sheet having a predetermined width and a predetermined length, said sheet comprising two lengthwise-extending opposing side edges and first and second opposing ends, said sheet further being folded into a plurality of folds which extend substantially parallel to said width, wherein adjacent folds are positioned on top of and overlap each other in a lengthwise, staggered manner and are adhesively attached to each other along two lengthwise-extending narrow strip areas located, respectively, proximate said two side edges of said sheet, said wrapper, including said strip areas, being dimensioned and configured relative to said article such that upon holding one of said ends of said wrapper against said article and pulling the opposite one of said ends of said wrapper about the periphery of said article, said plurality of folds between said strip areas at least partially unfold to allow said wrapper to encompass the periphery of said article, whereas portions of said wrapper adjacent said strip areas and said side edges tend to move together, respectively, to cause said portions to fold over and under said article to substantially enclose said article.

4,795,649

MICROWAVE COOKING

Joyce M. Kearns, New City, N.Y., and Richard Scarpellino, Ramsey, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 9, 1988, Ser. No. 166,062

Int. Cl.[4] A23L *1/01;* **H05B** *6/64*

U.S. Cl. 426—243 **13 Claims**



1. A method of cooking or reheating a comestible with microwave energy which comprises:

(a) placing a double-boiler cooking utensil in a microwave

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oven, said utensil containing a microwave susceptible liquid in an outer vessel and a cooking oil or fat within an inner vessel wherein the walls of the inner vessel provide conductive heat transfer between the liquid and cooking oil or fat;

(b) inserting a comestible which is to be cooked or reheated into the cooking oil or fat within the inner vessel; and

(c) irradiating the comestible with microwave energy for a period of time which is effective to cook or reheat the comestible, said microwave susceptible liquid being effective to transfer sufficient heat to said cooking oil or fat to maintain a temperature on the surface of the comestible in the range of from 125° C. to 225° C. during irradiation with microwave energy.

4,795,650

METHOD OF MAKING EXTRUDED FROZEN CHEESECAKE PRODUCT

Daniel Groobert, Boca Raton, Fla., assignor to Food Trends, Inc., Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 892,329, Aug. 4, 1986, abandoned. This application Jul. 1, 1987, Ser. No. 68,361

Int. Cl.⁴ A23C *19/00*; A23G *9/00*

U.S. Cl. 426—306 **20 Claims**

1. A method of making a frozen cheesecake product which is edible when its temperature ranges about from −10° F. to 30° F., the method comprising:

(a) forming a first mixture of sour cream 17.2%, cream 20.5%, corn syrup 9.9%, sugar 4.5%, cinnamon 0.21%, flavor 3%, water 11.52%, lemon juice 1.7%, and egg yolk 4.1% all by volume of a later combined mixture;

(b) forming a second mixture of cream cheese 27.1% and a stabilizer 0.27%, also by volume of the later combined mixture in a rapid mixer at about 110° F. to form a slurry;

(c) combining both the first mixture and the second mixture slurry to form a combined mixture that is then pasturized and homogenized at a temperature with the range from about 165° F. to 185° F. for a time period within a range from about 145 second to 165 seconds to obtain a thick viscous batter;

(d) pre-cooling the batter to establiah a base for aeration;

(e) crystalization freezing and aerating of the precooled batter having a temperature range of about 21° F.–23.5° F. to freeze water therein and obtain a semi-frozen product with a shortening-like appearance to achieve viscosity for forming an extrudible composition; and

(f) extruding the semi-frozen product having a temperature range from about 21° F. to 23° F. to form a self-supporting composition for thoroughly freezing to −45° F.

4,795,651

FLOTATION SEPARATION OF AFLATOXIN-CONTAMINATED GRAIN OR NUTS

James C. Henderson; Stanley H. Kreutzer; Arthur A. Schmidt; Charles A. Smith, and William R. Hagen, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

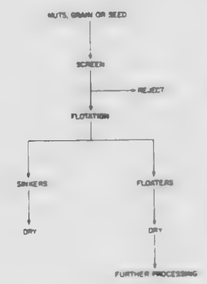
Filed May 4, 1987, Ser. No. 46,592

Int. Cl.⁴ A23L *1/10*

U.S. Cl. 426—456 **24 Claims**

1. A process for separating an aflatoxin-contaminated food material into fractions which are, respectively, aflatoxin-contaminated and substantially aflatoxin-free wherein said food material is selected from the group consisting of grains, kernels, seeds and nuts, the said process comprising:

(a) contacting the aflatoxin-contaminated food material with a flotation medium having a specific gravity of from about 0.9 to about 1.2 thereby separating the food material into two fractions, that with a specific gravity less than the medium and that with a specific gravity equal or greater than that of the medium;



(b) drying both fractions of the food material to their initial moisture content.

4,795,652

METHOD FOR FORMING AN EDIBLE FOOD CONTAINER

Ian A. Cooper, Cherry Hill, N.J., assignor to Cooper Concepts, Inc., Philadelphia, Pa.

Filed Dec. 15, 1986, Ser. No. 941,448

Int. Cl.⁴ A21D *8/02*

U.S. Cl. 426—549 **9 Claims**

1. A method of forming an edible food container from viscous dough which comprises the steps of:

(a) mixing ingredients to form the dough;

(b) forming the dough in a generally continuous sheet;

(c) cutting the sheet of dough into generally parallelogram shaped pieces of a predetermined length and width having generally parallel sides and first and second generally parallel ends;

(d) wrapping each piece of dough around a shaping surface of a shaping mandrel having a first end and a second opposite end, so that the first and second ends of each piece of dough engage each other to form a generally continuous covering of dough around the shaping mandrel, thereby forming an edible food container;

(e) trimming away any excess of the shaped dough which extends beyond the ends of the shaping surface of the shaping mandrel;

(f) showering the dough on the mandrel with caustic soda solution;

(g) baking the dough on the mandrel;

(h) cooling the dough on the mandrel; and

(i) twisting the baked dough with respect to the mandrel to remove the edible container from the mandrel.

4,795,653

DIETARY FIBER AND METHOD OF MAKING

Alexander A. Bommarito, 12555 W. Freeland Rd., Freeland, Mich. 48623

Continuation-in-part of Ser. No. 875,054, Jun. 16, 1986, abandoned. This application Aug. 31, 1987, Ser. No. 90,919

Int. Cl.⁴ A23L *1/214, 1/2165, 1/29*

U.S. Cl. 426—615 **6 Claims**

1. A process for the production of natural caloric dietary fiber having the effect of at least maintaining resting energy expenditure upon decreased caloric intake, said fiber containing pectic substances, cellulose, hemicellulose, lignin, carbohydrates, nitrogenous compounds, and mineral matter and having a coefficient of expansion of at least about 4 when dried to a water content of 7 to 10% by weight from the bulbs, roots or tubers of members of the chenopodiaceae family said process consisting essentially of washing said bulds, roots or tubers with alcohol-free water, removing the outer skin, shredding said bulbs, roots or tubers to a thickness of less than about ¼ inch, washing in non-alcoholic water at a temperature above about 35° F. and below about 140° F. and drying at a fiber temperature below 300° F.

4,795,654

STRUCTURE FOR SHIELDING X-RAY AND GAMMA RADIATION

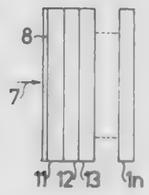
Péter Teleki, Dunaujváros, Hungary, assignor to INNOFINANCE Altalanos Innovacios Penzintezet, Budapest, Hungary

Filed Oct. 2, 1986, Ser. No. 914,406

Claims priority, application Hungary, Oct. 22, 1985, 4087/84; Apr. 30, 1986, 1828/85

Int. Cl.⁴ G21F *1/12*

U.S. Cl. 428—635 **14 Claims**



1. A structure for shielding X-ray and gamma radiation, said structure having first and second sides, said X-ray and gamma radiation striking said structure on said first side, said structure comprising three layers of materials different from each other, and wherein each of the first two layers, taken in sequence from said first side toward said second side, comprises an element which converts at least a part of the X-ray or gamma radiation to be shielded or of a secondary radiation emitted by a preceding layer closer to said first side, respectively, into secondary X-ray or gamma radiation, and each of the last two layers comprises an element having a K-edge which is in an energy range between first and second energy levels, said first energy level corresponding to an L_I-edge of an element in an immediately preceding layer closer to said first side, and said second energy level being higher than said first energy level but lower than an energy level of secondary X-ray or gamma radiation emitted by said immediately preceding layer, wherein said layers comprise, in order from said first side:

a first layer comprising at least one element selected from the group consisting of uranium, lead, osmium, rhenium, tungsten and tantalum,

a second layer comprising at least one element selected from the group consisting of tin, indium, palladium, rhodium, ruthenium, molybdenum and niobium, and

a third layer comprising at least one element selected from the group consisting of zinc, copper, nickel, cobalt, iron, manganese, chromium, vanadium and titanium.

4,795,655

SIMULATED EGG TREATS FOR PETS

Albert A. Spiel, Yonkers, N.Y.; James Roe, Wayne, and Henry C. Spanier, West Milford, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 578,040, Feb. 2, 1984, Pat. No. 4,634,597. This application Jan. 5, 1987, Ser. No. 431

The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.

Int. Cl.⁴ A23K *1/20*

U.S. Cl. 426—635 **16 Claims**

1. A method of making a baked product having a base portion and an upper portion or filling bonded thereto, comprising the steps of:

(a) preblending the dry ingredients of said base portion comprising 40 to 50 percent by weight of flour, 10 to 20 percent by weight of meal, and 0 to 15 percent by weight of egg solids;

(b) adding water to the blended ingredients of said base portion and mixing same to form a base portion dough;

(c) separately preblending dry components of said filling or upper portion including from 15 to 25 weight percent of flour, from 4 to 8 weight percent of meal, from 2 to 18 weight percent of a sugar and 15 to 20 percent by weight of a heat-coagulable protein or gelatinizing component, adding 30 to 40 percent by weight of water to the resulting mixture and mixing same to form a filling or upper portion dough;

(d) forming said base portion dough into a predetermined shape having a substantially planar upper surface therein containing at least one groove for receiving said filling or upper portion dough;

(e) depositing said filling or upper portion dough into said at least one groove to form a dough piece having two portions; and

(f) baking said dough piece at a temperature of 200° to 600° F. to form a baked product in which said base portion and said filling or upper portion adhere and bond together; and

(g) subsequently drying said baked product until the final moisture content of said baked product is less than 15 weight percent.

4,795,656

CLUSTER ION PLATING METHOD FOR PRODUCING ELECTRICALLY CONDUCTIVE CARBON FILM

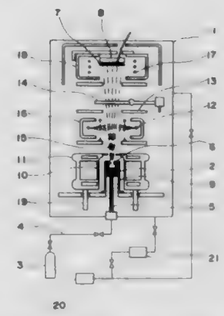
Akira Mizogachi; Jun Shioya; Yoichi Yamaguchi; Yoshinobu Ueba, and Hironaga Matsubara, all of Osaka, Japan, assignors to Kozo Iizuka, Director-General, Agency of Industrial Science and Technology, Tokyo, Japan

Continuation of Ser. No. 25,589, Mar. 13, 1987, abandoned. This application Apr. 14, 1988, Ser. No. 183,526

Claims priority, application Japan, Aug. 26, 1986, 61-198052; Jan. 27, 1987, 62-15296

Int. Cl.⁴ B05D *3/06*; C23C *14/00*

U.S. Cl. 427—38 **9 Claims**



1. A method for producing an electrically conductive carbon film on a substrate comprising

(a) ionizing a solid or liquid hydrocarbon to form a cluster ion beam which is being jetted towards a substrate by discharged electrons,

(b) accelerating generated hydrocarbon ions in an electric field, and

(c) depositing the hydrocarbon ions on a substrate which is heated at a temperture of 400 ° C. to 1,200 ° C.

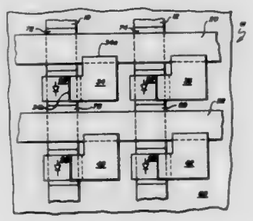
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,657

METHOD OF FABRICATING A PROGRAMMABLE ARRAY

Napoleon P. Formigoni, Birmingham, and Zvi Yaniv, Southfield, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 600,304, Apr. 13, 1984, abandoned. This application Apr. 8, 1985, Ser. No. 721,108
Int. Cl.[4] B05D *5/12*; G11C *17/00, 11/00*
U.S. Cl. 427—96 5 Claims



1. A method of forming a memory array comprising the steps of:
providing a substrate;
depositing a first set of spaced apart, substantially parallel address lines on said substrate;
insulating a plurality of spaced cross-over regions on said first set of address lines;
depositing a second set of spaced apart, substantially parallel address lines on said substrate at an angle to said first set of address lines so as to lie atop said insulated cross-over regions of said first set;
depositing a plurality of spaced apart electrical isolation elements in electrical communication with a first one of said first and second sets of address lines, said isolation elements disposed between the cross-over regions thereof; and
depositing a plurality of settable, substantially planar memory elements having a length dimension substantially greater than the thickness dimension thereof, said memory elements operatively disposed so as to establish series electrical communication through the length dimension thereof between a corresponding isolation element and the second one of said first and second sets of address lines; said memory elements made of a material capable of having the electrical conductivity thereof set from one conductivity state to another conductivity state by the application of programming energy.

4,795,658

METHOD OF METALLIZING CERAMIC MATERIAL

Osamu Kano, and Atsuo Senda, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 25, 1987, Ser. No. 18,591
Claims priority, application Japan, Mar. 5, 1986, 61-49063
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—98 11 Claims

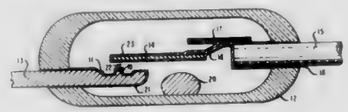
1. A method of metallizing a ceramic material comprising:
(a) forming a metal thin film on the surface of said ceramic material by electroless plating;
(b) performing heat treatment in a temperature range of substantially 900° to 1200° C. on said ceramic surface having said metal thin film formed thereon;
(c) chemically etching to remove said metal thin film; and
(d) metallizing said ceramic surface by electroless plating after said etching.

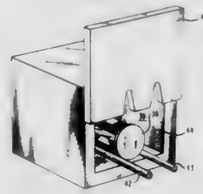
4,795,659

FABRICATION OF MERCURY SWITCHES

Timothy M. Kellis, Blacksburg, Va., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1987, Ser. No. 80,925
Int. Cl.[4] B05D *5/12*; H01H *11/02*
U.S. Cl. 427—123 7 Claims





1. A method of fabricating mercury switches which include a source of mercury and metallic members within a glass tube, the method comprising the steps of:
loading a plurality of switches into a single common housing of a fixture element and
rotating the fixture element while heating for a time and temperature sufficient to cause the mercury to wet the surface of the metallic members.

4,795,660

METALLIZED POLYMER COMPOSITIONS, PROCESSES FOR THEIR PREPARATION AND THEIR USES

Boyd Cooray, Bamford, United Kingdom; Peter Hope, MK Twello, Netherlands; Jan Vleggaar, HB Doetinchem, Netherlands; Kees Helle, JS Bennekom, Netherlands, and Arie Roos, ET Velp, Netherlands, assignors to Akzo N.V., Netherlands

Filed May 8, 1986, Ser. No. 861,231
Claims priority, application United Kingdom, May 10, 1985, 8511905
Int. Cl.[4] B05D *5/12*; H01B *1/02*; C23C *14/00*
U.S. Cl. 427—123 18 Claims

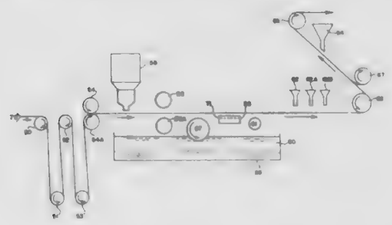
1. A process for preparing a metallized polymer composition comprising reacting a compound or mixture of compounds containing a positive valent metal element A selected from the group consisting of tin, arsenic, antimony and bismuth with a metallic source of a metal element B selected from the group consisting of iron, cobalt, nickel, copper, zinc, gallium, ruthenium, rhodium, palladium, silver, cadmium, and indium at the surface of said polymer composition at a temperature and pressure appropriate for obtaining a surface layer on the polymer composition comprising an intermetallic combination containing both the metal element A and the metal element B.

4,795,661

PROCESS FOR THE MANUFACTURE OF ASPHALT SHINGLES

Alfredo A. Bondoc, So. Bound Brook; Duane A. Davis, Plainfield; Stanley P. Frankoski, West Milford, and Bruno E. Magnus, Middlesex, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Division of Ser. No. 829,586, Feb. 14, 1986, Pat. No. 4,717,614.
This application Sep. 3, 1987, Ser. No. 92,865
Int. Cl.[4] B05D *5/00, 1/28, 1/30, 3/12*
U.S. Cl. 427—187 2 Claims



1. The process which comprises topcoating a fibrous shingle substrate, having a shingle upper headlap portion and an adjoining lower butt portion, with an asphaltic material in a thickness of from about 15 to about 60 mils; partially embedding decorative, weather resistant granules on the exposed surface of said topcoating; undercoating the entire butt portion and between about 1/7th and about 3/7ths of the adjoining headlap portion with an asphaltic material in a thickness of from about 20 to about 100 mils, undercoating the remaining headlap portion with asphaltic material in a thickness of from about 5 to about 15 mils and contacting said thicker undercoating with a bar which hydroplanes on the surface of the thicker undercoating to smooth said surface.

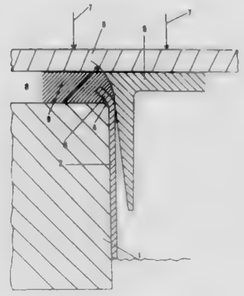
4,795,662

PROCESS FOR COATING TUBE PLATES AND SIMILAR PARTS OF CONDENSER, COOLERS, HEAT EXCHANGERS OR THE LIKE WITH AN ANTI-CORROSION MEDIUM

Richard Kreiselmaier, Mollens, Switzerland, assignor to Dipl.-ing. Ernst Kreiselmaier GmbH & Co Wasser, Gladbeck, Fed. Rep. of Germany

PCT No. PCT/EP86/00496, § 371 Date Apr. 30, 1987, § 102(e) Date Apr. 30, 1987, PCT Pub. No. WO87/01437, PCT Pub. Date Mar. 12, 1987
PCT Filed Aug. 23, 1986, Ser. No. 47,436
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1985, 3531150
Int. Cl.[4] B05D *7/22*; F28F *13/18, 19/02*
U.S. Cl. 427—230 5 Claims

1. Process for coating tube plates and similar structures of condensers, coolers, heat exchangers and similar equipment, with an anti-corrosion medium, comprising the steps of:
(a) inserting plugs into one or more ends of one or more tubes constituting a tube plate, said plugs protruding outwardly;
(b) placing a single- or multiple-element shuttering in front of said tube plate by firmly applying said shutterring to the outside of said plugs thereby forming an enclosed intermediate space between the tube plate and the shuttering;
(c) filling said intermediate space with an anti-corrosion medium to form a coating of the tube plate; and



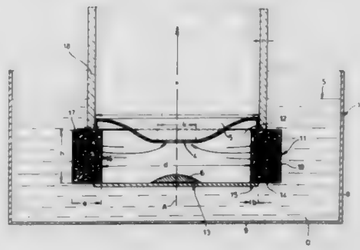
(d) removing the shuttering and pulling out the plugs from the ends of the tubes.

4,795,663

FELT MEMBER AS A TECHNICAL ACCESSORY AND PROCESS AND APPARATUS FOR THE MANUFACTURE THEREOF

Jack Brand, 33 Harbour Square, Toronto, Ontario, Canada

Division of Ser. No. 786,838, Oct. 11, 1985, Pat. No. 4,675,244.
This application Mar. 23, 1987, Ser. No. 29,135
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1984, 3438381
Int. Cl.[4] B05D *1/18, 3/02*; C23C *14/00*
U.S. Cl. 427—296 17 Claims



1. A process for the manufacture of a felt member, in particular a felt ring as a technical accessory for polishing and grinding operations, which comprises providing a felt blank with at least 35% wool or the like hair elements and with a stiffening or bracing means added thereto, including abrasive grains introduced into water at a level of concentration of up to 500 grams per liter of water to provide a working fluid, dipping the blank into the working fluid, connecting the blank to a vacuum and subjecting the blank to said vacuum at one side thereof and pressing the working fluid into the blank, and drying the blank.

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4,795,664

SIDE CHAIN LIQUID CRYSTALLINE CONDENSATION POLYMERS EXHIBITING NONLINEAR OPTICAL RESPONSE

Ronald N. DeMartino, Wayne, N.J., assignor to Hoechst Celanese Corp., Somnervale, N.J.

Continuation-in-part of Ser. No. 822,090, Jan. 24, 1986. This application Aug. 22, 1986, Ser. No. 898,982
Int. Cl.[4] C09K *19/52, 19/06, 19/12;* G02F *1/13*
U.S. Cl. 428—1 6 Claims

1. An optical light switch or light modulator device with a polymeric nonlinear optical component comprising a transparent solid medium of a thermotropic liquid crystalline polymer which is characterized by a recurring monomeric unit corresponding to the formula:



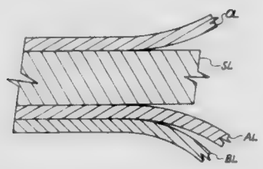
where P is a polyester or polyamide condensation polymer main chain unit, S is a flexible spacer group having a linear chain length of between about 0-20 atoms, M is a pendant mesogen which exhibits a second order nonlinear optical susceptibility β of at least about 5×10^{-30} esu as measured at 1.91 μm excitation wavelength, and where the pendant mesogens comprise at least about 10 weight percent of the polymer, and the polymer has a glass transition temperature above about 40° C.

4,795,665

CONTAINERS HAVING INTERNAL BARRIER LAYERS

Gerald M. Lancaster, Surfside, and Morris S. Edmondson, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 797,271, Nov. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 738,007, May 28, 1985, Pat. No. 4,678,713, and a continuation-in-part of Ser. No. 738,009, May 28, 1985, Pat. No. 4,640,865, which is a continuation-in-part of Ser. No. 654,990, Aug. 31, 1984, Pat. No. 4,601,948, which is a continuation-in-part of Ser. No. 531,110, Sep. 12, 1983, Pat. No. 4,600,614. This application Jun. 17, 1987, Ser. No. 65,080
Int. Cl.[4] B65D *65/40;* B32B *27/06*
U.S. Cl. 428—34.2 51 Claims



1. A container for enclosing foods, juices or beverages which contain essential oils and/or flavorings,

said container being constructed of a multi-ply structure comprising a substrate, an inner-wall barrier layer, and an adhesive layer between, and binding, said substrate and said barrier layer,

said adhesive layer consisting essentially of a RF-heatable polymer of ethylene having carbon monoxide polymerized into the polymer chain, including those containing a minor amount of another copolymerizable olefin or vinyl compound EVACO, such adhesive layer having a solubility parameter in the range of about 8 to about 14, and

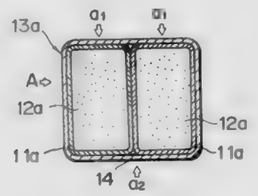
said barrier layer comprising a chloropolymer which restricts or substantially retards the passage or migration of the essential oils and/or flavorings from foods, juices or beverages enclosed therein.

4,795,666

FIBER REINFORCED STRUCTURAL MEMBER

Yukio Okada, Amagasaki; Akira Iwamura, and Shuji Akashi, both of Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed May 12, 1987, Ser. No. 49,054
Claims priority, application Japan, May 12, 1986, 61-109308
Int. Cl.[4] B32B *3/12, 3/26*
U.S. Cl. 428—71 26 Claims



1. A structural member, comprising:

a shell element having a closed cross-section;

a plurality of core elements disposed internally within said shell element, each of said core elements having a closed cross-section with at least one side surface thereof united to said shell element and at least one side surface thereof united to another one of said core elements whereby load and impact forces impressed upon said structural member can be distributed throughout said shell and core elements; and

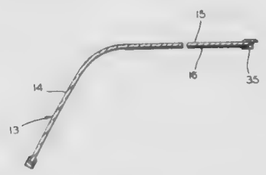
filling material disposed internally within said core elements.

4,795,667

VEHICLE WINDOW ASSEMBLY HAVING A RETENTION SHIELD AND METHOD AND APPARATUS FOR PRODUCING SAME

George H. Armstrong, Holland, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed May 1, 1986, Ser. No. 858,127
Int. Cl.[4] B32B *17/10, 27/40;* B29C *45/16, 45/37*
U.S. Cl. 428—77 9 Claims



1. A window assembly adapted to be mounted in an opening provided in a vehicle comprising:

a sheet of transparent material, said sheet being formed to include a generally horizontal first major portion adapted to extend over a passenger compartment of the vehicle, and a second major portion extending downwardly from said first portion;

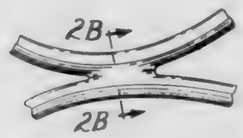
a retention shield provided on and adhered over a predetermined large area on only the inboard surface of said first major portion of said sheet, said retention shield composed of a synthetic polymer and having been polymerized in situ on the inboard surface of the sheet.

4,795,668

BICOMPONENT FIBERS AND WEBS MADE THEREFROM

Dennis L. Krueger, and Daniel E. Meyer, both of St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 774,570, Sep. 10, 1985, abandoned, which is a division of Ser. No. 540,544, Oct. 11, 1983, Pat. No. 4,547,420. This application Jul. 31, 1987, Ser. No. 88,511
Int. Cl.[4] B32B *3/00, 5/16;* B03D *3/00;* D02G *3/00*
U.S. Cl. 428—174 17 Claims



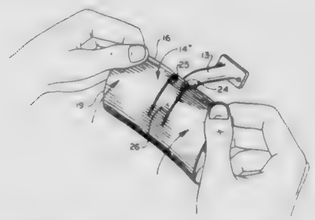
1. A fibrous web having a non-planar shape and comprising blown bicomponent fibers that individually comprise a first polymeric material extending longitudinally along the fiber through a first portion of the cross-sectional area of the fiber and a second polymeric material extending longitudinally along the fiber through a second portion of the cross-sectional area of the fiber; the web being given its non-planar shape by first preparing the web with the first polymeric material in an amorphous form from which it undergoes a crystallization at a temperature less than the melting temperature of the second polymeric material; placing the web in a mold which conforms the web to the stated non-planar shape; and subjecting the web to an elevated temperature at which the first polymeric material undergoes crystallization and holds the web in the non-planar shape but which is below the melting temperature of the second polymeric material.

4,795,669

DISPOSABLE PROTECTIVE SHIELD FOR HANDLE OF ILLUMINATION DEVICE

Mary J. Bowskill, 3721 Dupont St., Anderson, Calif. 96007, and Norman V. McDonald, 4860 Alta Mesa Dr., Redding, Calif. 96001

Continuation-in-part of Ser. No. 7,591, Jan. 28, 1987, Pat. No. 4,722,296. This application Nov. 9, 1987, Ser. No. 117,953
The portion of the term of this patent subsequent to Feb. 2, 2005, has been disclaimed.
Int. Cl.[4] B25G *1/02*
U.S. Cl. 428—194 7 Claims



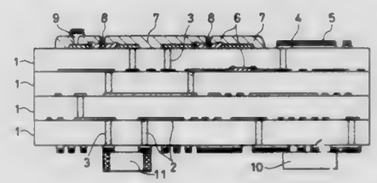
1. In combination with a light intended for use in medical and/or dental offices, the light including a handle having a stem, a disposable protective shield for the handle, said shield comprising a substantially planar flexible sheet having a generally rectangular plan outline including top and bottom sides and further including a perimeter having forward and rear edges and substantially parallel side edges, the sheet having a pair of substantially parallel slits formed therein and extending from the forward edge towards the rear edge, thereby forming a flap, and adhesive carried on the bottom side of the sheet and extending at least around the perimeter thereof and on the flap along the respective slits, whereby the rear edge of the sheet may be adhesively secured to the handle, temporarily becoming an integral part thereof, and whereby the sheet may then be manually rolled around the handle of the light in substantially close fitting relationship thereto and removably secured thereto, so that the sheet will not unravel from the handle of the light during repeated manipulation thereof during examination of a patient, and so that the flap will be removably secured on top of the stem of the handle, thereby protecting contamination from contact with the stem, whereby each patient is protected against inadvertent contamination from a previous patient, and whereby the sheet may be easily removed from the handle of the light and its stem and thereafter discarded following examination and treatment of a particular patient in the medical or dental office.

4,795,670

MULTILAYER CERAMIC SUBSTRATE WITH CIRCUIT PATTERNS

Susumu Nishigaki; Junzo Fukuda; Shinsuke Yano, and Hiroshi Kawabe, all of Nagoya, Japan, assignors to Narumi China Corporation, Nagoya, Japan

Filed May 8, 1987, Ser. No. 47,746
Claims priority, application Japan, May 14, 1986, 61-108627
Int. Cl.[4] B32B *7/00;* H05K *1/00*
U.S. Cl. 428—209 14 Claims



1. In a multilayer ceramic substrate comprising ceramic electrical insulating layers having internal electrical conductors between said layers and external electrical conductor means electrically connected with said internal electrical conductors, said conductors forming multiplayered circuit patterns, the improvement which comprises: said internal electricla conductors are formed of an Ag or Ag alloy, electrically conductive material capable of being co-fired with multilayered green ceramic substrate sheets in an oxidizing atmosphere and said external electrical conductor means are formed of a Cu or Cu alloy, electrically conductive material, said external electrical conductor means being formed in such a way that a liquid phase of Cu-Ag is not formed at the interface of said external electrical conductor means with a said internal electrical conductor.

4,795,671

PARA-PHENYLENE SULFIDE BLOCK COPOLYMERS, PROCESS FOR THE PRODUCTION OF THE SAME AND USE THEREOF

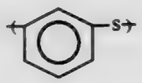
Zenya Shiiki; Takayuki Katto; Yo Iizuka; Takao Iwasaki, and Toshitaka Kouyama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 858,851, Apr. 30, 1986, which is a continuation-in-part of Ser. No. 748,464, Jun. 25, 1985, abandoned. This application Dec. 16, 1987, Ser. No. 133,905
Claims priority, application Japan, Jun. 29, 1984, 59-134633; Aug. 27, 1984, 59-178016; Aug. 27, 1984, 59-178017
Int. Cl.[4] B05D *1/00*
U.S. Cl. 428—209 9 Claims

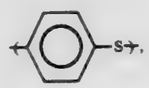
1. A printed circuit board comprising an insulating base

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board made of a composite of 50 to 95 vol. % of a polymer comprising mainly a phenylene sulfide block copolymer and 5 to 50 vol. % of a fibrous reinforcing material and a metal layer of a circuit pattern formed on the insulating base board, said block copolymer being produced by a process comprising a first step of heating an aprotic polar organic solvent containing a dihaloaromatic compound consisting essentially of a m-dihalobenzene and an alkali metal sulfide to form a reaction liquid (E) containing a m-phenylene sulfide polymer consisting essentially of recurring units (B)



and a second step of adding a p-dihalobenzene to the reaction liquid (E) and heating the mixture in the presence of an alkali metal sulfide and an aprotic polar organic solvent to form a block copolymer consisting essentially of the recurring units (B) and recurring units (A)



the reaction in the first step being carried out until the average degree of polymerization of at least 2 and in the range of

$$\left(20 \times \frac{1-X}{X}\right) \text{ to } \left(5{,}000 \times \frac{1-X}{X}\right)$$

wherein X represents a mol fraction of the recurring units (A) in the resulting block copolymer which is in the range of 0.50 to 0.98 has been obtained; the reaction in the second step being carried out until the mol fraction (X) of the recurring units (A) in the resulting block copolymer has become 0.50 to 0.98; and the reactions in these steps being carried out so that the resulting p-phenylene sulfide block copolymer will have a melt viscosity (η^*) measured under conditions of 310° C./200 sec^{-1} of 300 to 50,000 poise and have:

(a) a glass transition temperature (Tg) of 20° to 80° C.,
(b) a crystalline melting point (Tm) of 200° to 350° C., and
(c) a crystallization index (Ci) of 15 to 45, this value being that of the heat-treated, but not stretch-oriented copolymer.

4,795,672

MAGNETIC RECORDING MEDIUM

Naohiro Takeda, Yokohama; Yuzo Otani, Tokyo; Masahiro Kita, Machida, and Nariaki Okajima, Yokohama, all of Japan, assignors to Diafoil Company, Limited, Tokyo, Japan

Filed Mar. 5, 1987, Ser. No. 22,088
Claims priority, application Japan, Mar. 31, 1986, 61-73943
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—216 **7 Claims**

1. A magnetic recording medium comprising a polyester film having on both sides or one side thereof a coating layer having a thickness of 0.01 to 1μ comprising a polyurethane having anionic group or a mixture of a polyurethane having anionic group and a polyester having sulfonic group, and an electron radiation cured magnetic layer formed on said coating layer, wherein the content of said anionic group is 0.05 to 8% by weight based on the amount of said polyurethane having anionic group, the content of said sulfonic group is 2 to 40% by mole based on the number of moles of constitutional repeating units of said polyester having sulfonic group, and the mixing ratio of said polyurethane having anionic group to said polyester having sulfonic group is 30:70 to 100:0 by weight.

4,795,673

COMPOSITE MATERIAL OF DISCONTINUOUS SILICON CARBIDE PARTICLES AND CONTINUOUS SILICON MATRIX AND METHOD OF PRODUCING SAME

Francis J. Frechette, Tonawanda; Martin R. Kasprzyk, Buffalo; Douglas J. McDowell, Niagara Falls, and Joseph S. Zanghi, Buffalo, all of N.Y., assignors to Stemcor Corporation, Cleveland, Ohio

Continuation of Ser. No. 671,800, Nov. 15, 1984, abandoned, which is a continuation of Ser. No. 169,687, Jul. 17, 1980, abandoned, Continuation-in-part of Ser. No. 093,718, Nov. 13, 1979, abandoned, which is a continuation of Ser. No. 867,860, Jan. 9, 1978, abandoned. This application Oct. 28, 1986, Ser. No. 924,174
Int. Cl.⁴ B32B *5/16, 904*; C04B *33/34, 33/36*
U.S. Cl. 428—331 **12 Claims**

1. A deformable silicon/silicon carbide composite body consisting essentially of from about 40 to 60 percent by volume discontinuous particles of silicon carbide in a substantially continuous matrix of silicon, the discontinuous particles of silicon carbide having a maximum size of less than 5 microns and an average size between about 0.10 and about 2.50 microns; said body having an elastic modulus of 38,000,000 or less pounds per square inch at room temperature and having been formed by a process comprising

(a) mixing from about 75 to about 99 percent by weight of silicon carbide particles with from about 1 to about 25 percent by weight of thermoplastic temporary binder;
(b) forming the silicon carbide particles and thermoplastic temporary binder into a desired shape; and
(c) impregnating the shape with from about 40 to about 60 percent by volume of free silicon, in the absence of any substantial amount of carbon and without in situ formation of silicon carbide.

4,795,674

METHOD FOR TREATING A FABRIC AND FABRIC TREATED THEREBY

Tadao Sasakura, Saitama; Otohiko Yamazoe, Sanda; Sachio Othuka; Tetsuro Ikeda, both of Itami; Masaru Daimon, Takarazuka, and Shinjuro Tamura, Itami, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Jun. 12, 1987, Ser. No. 62,173
Claims priority, application Japan, Jun. 13, 1986, 61-137695; Dec. 11, 1986, 61-295168; Apr. 15, 1987, 62-92554
Int. Cl.⁴ D04H *1/58*
U.S. Cl. 428—254 **11 Claims**

1. A method for treating a fabric containing cellulosic fibers to reduce shrinkage which comprises applying an aqueous solution containing an amido-phosphazene compound and an acid catalyst to said fabric so that the amount of the amido-phosphazene compound adhering to the fabric is from 2 to 7% by weight of the fabric and then subjecting the fabric to drying, curing and soaping.

4,795,675

ENHANCED TRANSFER PRINTABILITY TREATMENT METHOD AND COMPOSITION

Larson B. Dunn, Jr.; Kenneth B. Moser, both of Decatur, Ill., and Panemangalore S. Pai, Charlotte, N.C., assignors to Staley Continental, Decatur, Ill.

Division of Ser. No. 908,495, Sep. 17, 1986. This application Feb. 12, 1988, Ser. No. 155,388
Int. Cl.⁴ D06M *13/16*
U.S. Cl. 428—260 **13 Claims**

13. A treated fabric material which is composed at least in part of cellulosic or natural proteinaceous fibers and which has distributed therein, on a dry fabric substrate weight basis, from about 0.5 to about 20 weight percent of a glycoside reagent of the formula:

$$RO(R'O)_y(Z)_x \qquad A$$

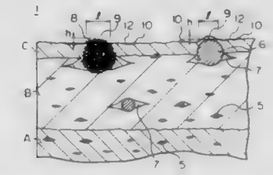
wherein R is a monovalent organic radical containing from 2 to about 8 carbon atoms; O is an oxygen atom; R' is a divalent hydrocarbon radical containing from 2 to about 4 carbon atoms; y is a number having an average value of from 0 to about 12; Z represents a moiety derived from a reducing saccharide containing 5 or 6 carbon atoms; and x is a number having an average value of from 1 to about 5.

4,795,676

ELECTROSTATIC RECORDING MATERIAL

Toshio Maekawa; Hiroshige Yamauchi, both of Kanagawa; Takashi Toyota, Chiba; Akeo Sawayama, Tokyo, and Masaaki Yamasaka, Chiba, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1986, Ser. No. 943,944
Claims priority, application Japan, Dec. 18, 1985, 60-285116
Int. Cl.⁴ G05D *5/12*; B32B *5/16, 23/08*; D21F *11/00*
U.S. Cl. 428—328 **8 Claims**



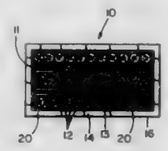
1. An electrostatic recording material which is composed of a support that is formed of a multi-layered sheet of synthetic paper and which has an electroconductive layer an a dielectric layer formed successively thereon, said support being a multi-layered film formed from a base layer of a stretched film, paper-like layers which are made from a thermoplastic resin film containing 8 to 65% by weight of inorganic fine powder formed on both sides of said base layer and surface layers which are formed from a thermoplastic resin film containing 0–3 wt % of inorganic fine powder and formed on each of said paper-like layers, said support containing no more than 50 elevations per 0.1 m^2 that project by a height of 10 μm or more from the flat side of said surface layer.

4,795,677

OXIDATION-INHIBITED CARBON-CARBON COMPOSITES

Paul B. Gray, Bonita, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 798,994, Nov. 18, 1985, which is a continuation-in-part of Ser. No. 676,985, Nov. 30, 1984, abandoned. This application Aug. 3, 1987, Ser. No. 81,126
Int. Cl.⁴ B32B *9/00, 31/00*
U.S. Cl. 428—246 **14 Claims**



2. An oxygen-resistant, high-temperature composite comprising a structure which includes a carbonous matrix formed with interstices throughout and reinforcing, high-temperature fibers disposed within said matrix, a metal or metalloid, in elemental form and/or as an oxidizable moiety, dispersed throughout said structure, said metal or metalloid comprising between about 5 and about 200 weight percent of said matrix, and boron, in elemental form and/or as an oxidizable moiety, dispersed throughout said structure, said boron comprising between about 3 and about 300 weight percent of said matrix; said boron and said metal or metalloid oxidizing when exposed to a high-temperature, oxidizing environment to form boron oxide and a metal oxide or a metalloid oxide within the interstices and at the surface of said matrix; at high temperatures the metal oxide or metalloid oxide which forms stabilizing the viscosity of the molten phase of the boron oxide which forms.

4,795,678

CHEMICALLY TREATED GLASS FIBERS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 750,959, Jul. 2, 1985, abandoned. This application Mar. 14, 1988, Ser. No. 170,588
Int. Cl.⁴ B32B *9/00, 25/20*; D02G *3/00*
U.S. Cl. 428—391 **15 Claims**

1. Glass fibers having a non-homogeneous, moisture-reduced residue, where the residue results from an aqueous chemical treating composition, consisting essentially of:

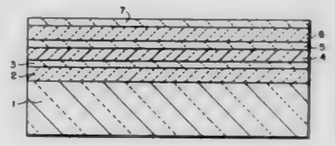
a. a lubricating system in a predominant amount of the solids of the aqueous chemical treating composition, having:
   1. one or more polyols selected from the group of a polyoxyalkylene polyol and a polyalkylene polyol with effective high molecular weights wherein the blend is present in a predominant amount of the solids of the lubricating system to form a lubricious phase,
   2. one or more cationic lubricants,
   3. one or more external nonionic lubricants,
   4. one or more lubricant-modified organo silane coupling agents,
b. an aqueous soluble, dispersible, emulsifiable film forming polymer that produces a non-rigid film and that is present in an effective film forming amount,
c. water in an amount to give a viscosity for the chemical treating composition to treat the glass fibers.

4,795,679

MONOCRYSTALLINE SILICON LAYERS ON SUBSTRATES

Subramanian Ramesh, Ossining, and André M. Martinez, Wappingers Falls, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 736,922, May 22, 1985, abandoned. This application Apr. 23, 1987, Ser. No. 42,542
Int. Cl.⁴ B32B *9/04*
U.S. Cl. 428—428 **19 Claims**



1. A laminated structure particularly adapted for fabrication into a semiconductor device, said structure comprising a substrate, a sublayer of silicon dioxide or of a material thermally matching said substrate and contacting a surface of said substrate, a first thin buffer layer selected from the group coexisting of silicon nitride, aluminum nitride, and aluminum oxide contacting the surface of said sublayer, a monocrystalline silicon layer superimposed on the surface of said first thin buffer, a second thin buffer layer selected from the group

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consisting of silicon nitride, aluminum nitride, and aluminum oxide contacting a surface of said monocrystalline silicon layer, a first capping insulating layer contacting a surface of said second thin buffer layer and including an additional capping insulating layer selected from the group consisting of silicon nitride, aluminum nitride and aluminum oxide superimposed on a surface of said first capping insulating layer.

4,795,680

POLYIMIDE-SILOXANES, METHOD OF MAKING AND USE

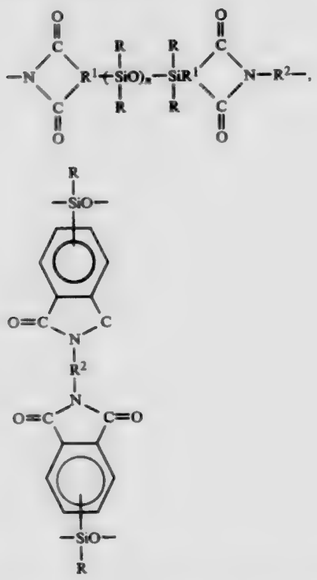
Jonathan D. Rich, Rexford; Peter P. Policastro, Niskayuna, and Pramoda K. Hernandez, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 861,162, May 9, 1986, abandoned, which is a continuation-in-part of Ser. No. 678,725, Dec. 5, 1984, abandoned. This application Feb. 5, 1987, Ser. No. 11,185

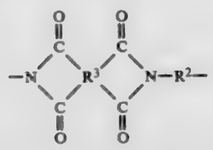
Int. Cl.⁴ B32B *7/00*

U.S. Cl. 428—450 **34 Claims**

1. Polyimide-siloxane comprising repeat groups selected from the class consisting of,



a mixture thereof, and mixtures of such groups with imide groups of the formula



wherein R is selected from the class consisting of $C_{(1-14)}$ monovalent hydrocarbon radicals and $C_{(1-14)}$ monovalent hydrocarbon radicals substituted with radicals neutral during intercondensation, R^1 is a $C_{(6-14)}$ trivalent aromatic organic radical, R^2 is a member selected from the class consisting of a $C_{(2-20)}$ divalent organic radical and a $C_{(2-8)}$ organoterminated polydiorganosiloxane, R^3 is a tetravalent $C_{(1-14)}$ aromatic organic radical, and n is an integer equal to 5 to about 2000 inclusive.

4,795,681

STEEL SHEETS FOR PAINTING AND A METHOD OF PRODUCING THE SAME

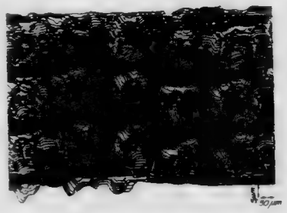
Kusuo Furukawa, Tokyo, and Terno Fujiwara, Kawachi, both of Japan, assignors to Kawasaki Steel Corporation, Kobe and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Mar. 23, 1987, Ser. No. 29,083

Claims priority, application Japan, Mar. 31, 1986, 61-73850

Int. Cl.⁴ B21D *53/00*

U.S. Cl. 428—600 **5 Claims**



1. A steel sheet for painting, characterized in that the surface of the steel sheet has a microscopic form comprised of mountain portions, groove-like valley portions formed so as to surround a whole or a part of the mountain portion, and middle flat portions formed between the mountain portions outside of the valley portion so as to be higher than the bottom of the valley portion and lower than or equal to the top surface of the mountain portion, and satisfies the following relations:

$$(d+D)/2 \leqq 400\ \mu m$$

$$Sm \leqq 800\ \mu m$$

wherein d is a mean diameter in an inner peripheral edge of the valley portion, D is a mean diameter in an outer peripheral edge of the valley portion and Sm is a mean center distance between the adjoining mountain portions.

4,795,682

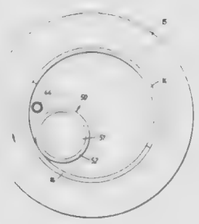
TIN-COBALT BEARING OVERLAY ALLOYS

Michael Turner, Hengelo Ov, Netherlands; John K. Dennis, Birmingham, and David R. Eastham, Hemel Hempstead, both of England, assignors to AE PLC, Rugby, England

Filed Jul. 13, 1987, Ser. No. 72,532

Int. Cl.⁴ B32B *15/01*

U.S. Cl. 428—646 **4 Claims**



1. An overlay alloy on a bearing, the overlay consisting of tin and between 0.5 and 15 wt% cobalt, apart from incidental impurities.

4,795,683

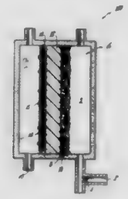
HIGH POWER DENSITY EVAPORATIVELY COOLED ION EXCHANGE MEMBRANE FUEL CELL

James F. McElroy, Suffield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 23, 1987, Ser. No. 76,970

Int. Cl.⁴ H01M *8/04*

U.S. Cl. 429—13 **8 Claims**



1. A fuel cell comprising an anode containing a catalyst, an ion exchange membrane electrolyte, a cathode and wet proofing means wherein the improvement comprises:

(a) aspirator means to form a liquid water mist from supplied liquid water;

(b) means for controlling the amount of liquid water supplied to the anode; and

(c) a desiccant material within the anode to transport the liquid water mist to the ion exchange membrane and to prevent local area flooding; wherein fuel cell cooling is effectuated by the evaporation of sufficient liquid water from the cathode through the wet proofing means so as to eliminate the need for a separate cooling compartment.

4,795,684

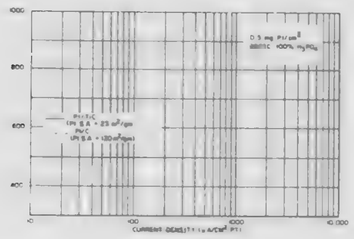
FUEL CELL ELECTROCATALYST SUPPORT COMPRISING AN ULTRA-FINE CHAINY-STRUCTURED TITANIUM CARBIDE

Vinod Jalan, Concord, and David G. Frost, Franklin, both of Mass., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 754,018, Jul. 11, 1985, abandoned, which is a division of Ser. No. 592,526, Mar. 23, 1984, abandoned. This application Mar. 6, 1987, Ser. No. 22,461

Int. Cl.⁴ H01M *4/86*

U.S. Cl. 429—44 **3 Claims**



1. In an electrochemical fuel cell, the improvement comprising an oxygen-reducing cathode comprising a catalyst on titanium carbide support, said support characterized by a particle size of 50–400 Angstroms with open porosity and chain-like structure formed by contacting titanium tetrachloride in the vapor phase with gaseous unsaturated hydrocarbon and hydrogen at a temperature in the range of 500°–1100° C., a surface area of at least 25 m^2/g, and by improved electrochemical corrosion resistance over carbon black supports, and by improved catalytic activity over a cathode consisting of the same amount of said catalyst supported on carbon black.

4,795,685

ELECTROCHEMICAL CELL

Roger J. Bones, Abington, England; Roy C. Galloway; Johan Coetzer, both of Pretoria, South Africa, and David A. Teagle, Swindon, England, assignors to Lilliwyte Societe Anonyme, Luxembourg

Division of Ser. No. 765,122, Aug. 13, 1985, Pat. No. 4,612,266, which is a division of Ser. No. 631,905, Jul. 18, 1984, Pat. No. 4,560,627. This application Jun. 11, 1986, Ser. No. 873,168

Claims priority, application United Kingdom, Jul. 22, 1983, 8319749

Int. Cl.⁴ H01M *10/39*

U.S. Cl. 429—104 **9 Claims**

1. An electrochemical cell which comprises a sodium anode which is molten at the operating temperature of the cell, a sodium aluminum halide molten salt electrolyte which contains chloride ions and is molten at the operating temperature of the cell, a cathode which comprises, as the electrochemically active cathode substance of the cell, $Fe/FeCl_2$, said active cathode substance being metallic iron in the fully discharged state of the cell and $FeCl_2$ in the fully charged state of the cell, the active cathode substance being in contact with the electrolyte, and, between the anode and the electrolyte and isolating the anode from the electrolyte, a solid conductor of sodium ions, the iron which forms the active cathode substance, upon sufficient overcharging of the cell, being oxidizable at least in part to $FeCl_3$ which is soluble in the electrolyte, the cell containing a protective cathode substance coupled via the electrolyte with the anode, which protective cathode substance oxidizes by chlorination thereof at a voltage less than the open circuit voltage of the $Fe/FeCl_3//Na$ plateau of the cell, and greater than the open circuit voltage of the $Fe/FeCl_2//Na$ plateau of the cell, in its fully charged state, of the cell, a layer of the protective cathode substance separating the cathode of the cell from the solid conductor of sodium ions.

4,795,686

SODIUM-SULFUR ELECTRIC CELL AND PROCESS FOR MANUFACTURING THE SAME

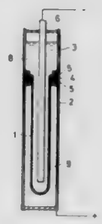
Kazuaki Yokoi; Toshihiro Yamada, and Hiroyuki Kawamoto, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 24, 1987, Ser. No. 88,222

Claims priority, application Japan, Aug. 29, 1986, 61-201462

Int. Cl.⁴ H01M *10/38, 10/39*

U.S. Cl. 429—104 **7 Claims**



1. A sodium-sulfur electric cell comprising an anode tube closed at one end; a cathode tube closed at one end, an open end of said anode tube being joined to an open end of said cathode tube with a medium of an aluminum alloy insert and a ring insulating member; a solid electrolyte tube extending towards said cathode tube, an open end of said solid electrolyte tube being joined to an inside of said ring insulating member; sulfur contained in a compartment defined by said cathode tube and said solid electrolyte tube; an anode and sodium each

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contained in a compartment defined by said anode tube and said solid electrolyte tube; and conductive materials respectively connected to said cathode tube and said anode, wherein said anode tube and said cathode tube are each made of an iron-nickel base alloy, wherein a chromium layer or a chromium-rich layer is provided at a boundary between said each iron-nickel base alloy and said insert, wherein said insulating member is a ceramic ring, and wherein said aluminum alloy insert is a three-layered structure having a core layer of an aluminum alloy and two outer layers each made of an aluminum-silicaon-magnesium alloy.

4,795,687

ELECTRICALLY CONDUCTIVE MATERIAL AND A PROCESS FOR THE PREPARATION OF SAME AND SECONDARY BATTERY USING THE ELECTRICALLY CONDUCTIVE MATERIAL

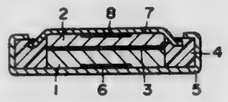
Tetsumi Suzuki, Isehara; Kazumi Hasegawa, Yokohama; Osamu Ando, Kawasaki; Nobuhiro Furukawa, and Koji Nishio, both of Hiraksta, all of Japan, assignors to Mitsubishi Kasei Corp., Tokyo, Japan

Filed Sep. 4, 1987, Ser. No. 93,032

Claims priority, application Japan, Sep. 12, 1986, 61-215295; Sep. 12, 1986, 61-215296; Sep. 12, 1986, 61-215297; Sep. 12, 1986, 61-215298; Oct. 14, 1986, 61-243797

Int. Cl.[4] H01M *4/60*

U.S. Cl. 429—213 **15 Claims**



1. A process for the preparation of an electrically conductive material comprising a polymer having conjugated double bonds which comprises reacting a compound having conjugated double bonds with an oxidizing agent comprising a cupric compound and a nitrile compound.

4,795,688

LAYERED PHOTOCONDUCTIVE MEMBER COMPRISING AMORPHOUS SILICON

Teruo Misumi, Kawasaki; Kyosuke Ogawa, Tokyo; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo; Yoichi Osato, Yokohama, and Shigeru Shirai, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 837,558, Mar. 3, 1986, abandoned, which is a continuation of Ser. No. 700,078, Feb. 11, 1985, abandoned, which is a continuation of Ser. No. 475,372, Mar. 14, 1983, abandoned. This application Apr. 17, 1987, Ser. No. 39,448

Int. Cl.[4] G03G *5/14*

U.S. Cl. 430—65 **21 Claims**

1. A photoconductive member which comprises a support for a photoconductive member and an amorphous layer having photoconductivity and containing an amorphous material comprising silicon atom as a matrix, said amorphous layer having a first layer region containing oxygen atoms, a second layer region containing Group III atoms of the Periodic Table such that said Group III atoms are continuously distributed in the direction of the layer thickness and enriched at the support side, and wherein oxygen is absent from said amorphous layer exclusive of the first layer region, said first layer region being present internally in the support side portion of the amorphous layer, and there being the following relationship:

$$To/T \leq 1$$

where T_0 is the layer thickness of the first layer region and T results from subtracting To from the layer thickness of the amorphous layer; To is 50 microns or less; T is 0.5 micron or more and the sum of (To+T) is 1 to 100 microns.

4,795,689

ELECTROSTATIC IMAGE DEVELOPING TONER FOR USE IN HEAT-ROLLER FIXING

Akitoshi Matsubara; Satoru Ikeuchi; Kunio Akimoto, and Yoshio Takizawa, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

Filed Aug. 21, 1987, Ser. No. 88,053

Claims priority, application Japan, Aug. 30, 1986, 61-202730

Int. Cl.[4] G03G *9/08, 13/20*

U.S. Cl. 430—99 **24 Claims**

23. A method of fixing a toner image formed on a recording sheet in electrophotography comprising a step of bringing said toner image into contact with a heated roller under pressure, said toner comprising a nonlinear polymer, a low-melting polymer which has a melting point of from 50° to 130° C. and which is incompatible with said nonlinear polymer, a copolymer composed of a segment polymer which is at least compatible with the above nonlinear polymer and a segment polymer which is at least compatible with said low-melting polymer and a coloring agent.

4,795,690

TONERS FOR ELECTROPHOTOGRAPHIC PROCESS CONTAINING A PHENOLIC COMPOUND

Seizin Shindo, Yono; Hiroomi Hosoi, Urawa, and Masaki Shinmoto, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

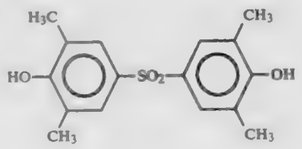
Filed Jul. 30, 1987, Ser. No. 79,758

Claims priority, application Japan, Aug. 4, 1986, 61-181862

Int. Cl.[4] G03G *9/08*

U.S. Cl. 430—109 **4 Claims**

1. A toner for electrophotographic process which comprises the compound represented by the following formula (1).



(1)

4,795,691

LAYERED AMORPHOUS SILICON PHOTOCONDUCTOR WITH SURFACE LAYER HAVING SPECIFIC REFRACTIVE INDEX PROPERTIES

Tetsuya Takei; Tatsuyuki Aoike; Minoru Kato, and Keishi Saito, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1987, Ser. No. 38,885

Claims priority, application Japan, Apr. 17, 1986, 61-88952; Apr. 22, 1986, 61-92519; Apr. 22, 1986, 61-92520

Int. Cl.[4] G03G *5/082*

U.S. Cl. 430—67 **31 Claims**

1. A light receiving member suitable for use in a high-speed image-making system which comprises at least a substrate and a light receiving layer, said light receiving layer comprising from the substrate side:

(i) a photoconductive layer from 3 to 100 microns in thickness of a material selected from (a) an amorphous material containing silicon atoms as a matrix and at least one kind selected from hydrogen atoms and halogen atoms and (b) an amorphous material containing silicon atoms as a matrix, at least one kind selected from germanium atoms and tin atoms, and at least one kind selected from hydrogen atoms and halogen atoms, and

(ii) a surface layer from 0.003 to 30 microns in thickness having a free surface and formed of an amorphous material containing silicon atoms and at least one kind selected from the group consisting of carbon atoms, oxygen atoms and nitrogen atoms (C,O,N) in a total amount of 0.5 to 95 atomic percent; said atoms (C,O,N) being present in a concentration sufficient to provide a refractive index value for the portion of the surface layer at the interface between the photoconductive layer and the surface layer such that the difference in refractive index (Δn) between the refractive index of the photoconductive layer and the refractive index of the portion of the surface layer at the interface is no greater that 0.62 and wherein the difference ΔE_{gopt} between the optical band gap of the portion of the surface layer at said interface and the optical band gap of the photoconductive layer is no less than 0.01, wherein the atoms (C,N,O) are present in a low concentration at the interface side of the surface layer and are present in a high concentration at the free surface side of the surface layer and whereby said Δn and said ΔE_{gopt} values tending to inhibit formation of interference fringe and ghost images, without compromising spectral sensitivity of said light receiving member.

4,795,692

NEGATIVE-WORKING POLYMERS USEFUL AS X-RAY OR E-BEAM RESISTS

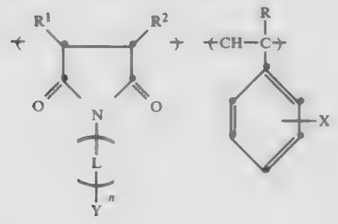
Charles C. Anderson; Kristine M. Kolterman, both of Rochester, and Sam R. Turner, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1987, Ser. No. 10,103

Int. Cl.[4] G03C *5/00, 1/68*; C08F *22/40*

U.S. Cl. 430—283 **9 Claims**

1. An alternating copolymer having a number average molecular weight between 10,000 and 100,000 which is sensitive to X-ray radiation and capable of being coated and developed to form a negative-working resist, said polymer having therein recurring units having the structural formula:



wherein:

R is H or methyl,

R^1 and R^2 are independently H, halo or alkyl;

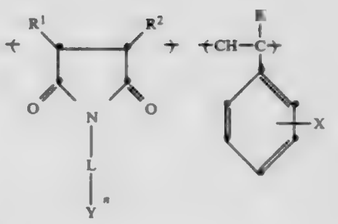
L is a linking group;

n is 0 or 1;

X is selected from the group consisting of Br I, $Si(CH_3)_3$, $Sn(CH_3)_3$, CH_2Br, CH_2Cl, CH_2I, $CH_2Si(CH_3)_3$, $CH_2Sn(CH_3)_3$ and OH, and

Y is selected from the group consisting of $—C{=}CR^5$ and $—CR^6{=}CHR^7$ where R^5, R^6 and R^7 are independently H, halo or alkyl.

2. A negative-working photoresist element comprising a substrate and having thereon a coating of an X-ray radiation sensitive alternating copolymer having a number average molecular weight between 10,000 and 100,000, said polymer having therein recurring units having the structural formula:



wherein:

R is H or methyl,

R^1 and R^2 are independently H, halo or alkyl;

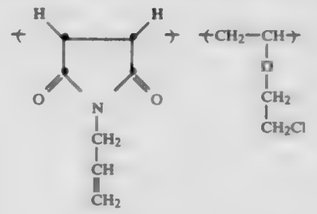
L is a linking group;

n is 0 or 1;

X is selected from the group consisting of Br I, $Si(CH_3)_3$, $Sn(CH_3)_3$, CH_2Br, CH_2Cl, CH_2I, $CH_2Si(CH_3)_3$, $CH_2Sn(CH_3)_3$ and OH, and

Y is selected from the group consisting of $—C{=}CR^5$ and $—CR^6{=}CHR^7$ where R^5, R^6 and R^7 are independently H, halo or alkyl.

3. An alternating copolymer having a number average molecular weight between 10,000 and 100,000 which is sensitive to X-ray radiation and capable of being coated and developed to form a negative-working resist, said polymer having therein recurring units having the structural formula:



4,795,693

MULTILAYER CIRCUIT BOARD FABRICATION PROCESS

Jose A. Ors, Solebury Township, Bucks County, Pa., and Richard D. Small, Jr., West Windsor Township, Mercer County, N.J., assignors to American Telephone and Telegraph Company, AT&T Technologies, Inc., Berkeley Heights, N.J.

Division of Ser. No. 707,596, Mar. 4, 1985, Pat. No. 4,628,022, which is a division of Ser. No. 513,485, Jul. 13, 1983, Pat. No. 4,511,757. This application Nov. 21, 1986, Ser. No. 933,445

Int. Cl.[4] G03C *5/00*

U.S. Cl. 430—312 **2 Claims**



1. A process comprising the steps of covering a first pattern of an electrical conductor with an electrically insulating material wherein an electrically conductive via is provided through said insulating material, and forming a second pattern of an electrical conductor such that said first and second pattern are separated by said insulating material but are electrically connected through said conductive via wherein said conductive via and said insulating material are produced by forming a

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layer of an energy-sensitive material, selectively exposing said energy-sensitive material to electromagnetic radiation, developing said energy-sensitive material to form said via, and to produce said insulating material, forming an electrical conductor on said insulating material to produce said conductive via and a conductive layer, and processing said conductive layer to form said second pattern, wherein said energy-sensitive material comprises an acylated rubber modified epoxy resin having the rubber in the backbone of the resin molecule, an acylated epoxy and a viscosity modifier, and wherein said rubber modified epoxy is formed from reacting a diglycidyl ether of bisphenol-A with a carboxy terminated butadiene/acrylonitrile rubber until a low acid value is attained.

4,795,694

MANUFACTURE OF FINE STRUCTURES FOR SEMICONDUCTOR CONTACTING

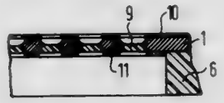
Alfred Grosser, Gauting; Hans Haderbeck, Munich; Fritz Mueller, Munich; Hubert Zakler, Munich, and Hans J. Hacke, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich

Filed May 21, 1987, Ser. No. 52,272

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620628

Int. Cl.[4] G03L *5/00*

U.S. Cl. 430—314 **11 Claims**



1. A method for manufacturing fine structures for semiconductor contacting which comprises:

providing a smooth, non-stressed metal tape,

coating both sides of said tape with a photoresist,

exposing both sides photographically in a predetermined pattern,

developing said photoresist after exposure to provide a mask,

electrodepositing a metal coating on the upper side of said tape by a floatation electroplating process,

selectively etching the underside structure of said tape to about one half its thickness,

de-coating the photoresist from both sides of said tape,

applying a plastic stabilizer film to said underside, and

finish etching the metal tape from the upper side of said tape.

4,795,695

RECORDING ELEMENTS COMPRISING WRITE-ONCE THIN FILM ALLOY LAYERS

Kee-Chuan Pan; Yuan-Sheng Tyan, both of Webster, and Salvatore J. Marino, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

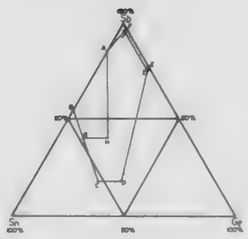
Filed Feb. 13, 1987, Ser. No. 14,337

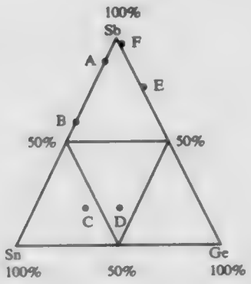
Int. Cl.[4] G03C *1/72*; G01D *15/34*

U.S. Cl. 430—495 **8 Claims**

1. A recording element comprising a write-once amorphous thin-film optical recording layer of an alloy having a composition within a polygon in a ternary composition diagram of antimony, germanium and tin; wherein

(a) the composition diagram is





and

(b) the polygon has the following vertices and corresponding coordinates in atom percent:

Vertices	Coordinates		
	Sb	Sn	Ge
A	86	13.99	0.01
B	55	44.99	0.01
C	18	52	30
D	18	42	40
E	78	0	22
F	98	0	2

4,795,696

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Masao Sasaki, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 860,549, May 7, 1986, abandoned. This application Apr. 19, 1988, Ser. No. 185,293

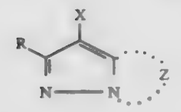
Claims priority, application Japan, May 11, 1985, 60-100176; May 30, 1985, 60-117493

Int. Cl.[4] G03C *1/34, 7/38*

U.S. Cl. 430—512 **22 Claims**

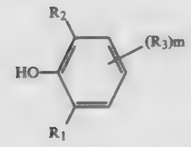
1. A light-sensitive silver halide photographic material, comprising a plural number of photographic constituent layers on a support, wherein at least one of said layers is a silver halide emulsion layer containing a magenta coupler represented by Formula (I) shown below, and at least one of the photographic constituent layers excludinb at least the above silver halide emulsion layer being provided at a position more distant from the support than that of the silver halide emulsion layer containing the magenta coupler and containing at least one of the compounds represented by Formula (a) and Formula (b) shown below:

Formula (I):



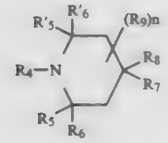
wherein Z represents a group of nonmetal atoms necessary for formation of a nitrogen-containing heterocyclic ring; said ring formed by Z may have a substituent; X represents a hydrogen atom or a substituent eluminable through the reaction with an oxidized product of a color developing agent; and R represents a hydrogen atom or a substituent.

Formula (a)



wherein R^1 and R^2 each represent an alkyl group; R^3 represents an alkyl group, an —NR′R″ group, an —SR′ group (R′ represents a monovalent organic group), or a —COOR″ group (R″ represents a hydrogen atom or a monovalent organic group); and m represents an integer of 0 to 3.

Formula (b)



wherein R^4 represents a hydrogen atom, a hydroxyl group, an oxyradical group, an —SOR′ group, an —SO_2R′ group (R′ represents a monovalent organic group), an alkyl group, an alkenyl group, an alkynyl group or a —COR″ group (R″ represents a hydrogen atom or a monovalent organic group); R^5, R^6, R'^5, R'^6, and R^9 each represent an alkyl group; R^7 and R^8 each represent an hydrogen atom or an —OCOR^{10} group (R^{10} represents a monovalent organic group), or R^7 and R^8 may be associated to form a heterocyclic group; and n represents an integer of 0 to 4.

4,795,697

STABILIZATION OF KETAZINE DYES

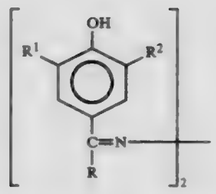
Kim M. Vogel; David C. Weigel, and Roger A. Mader, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 29, 1986, Ser. No. 946,970

Int. Cl.[4] G03C *1/40*

U.S. Cl. 430—619 **20 Claims**

1. A photothermographic emulsion capable of producing an image having visible color therein upon exposure to actinic radiation and thermal development said emulsion comprising a binder, an organic silver salt, silver halide in catalytic proximity to said organic silver salt, and a dye forming developer in reactive association with said organic silver salt, said emulsion being characterized by the fact that said developer comprises a compound of the formula



wherein R is an alkyl of at least 2 carbon atoms, alkylaryl or alkylcycloalkyl group, and

R^1 and R^2 are independently selected from H (with no more than 1 of R^1 and R^2 equal to H), alkyl, alkoxy, aryl, and heterocyclic groups,

and wherein said binder contains a dye stabilizing amount of a resin selected from the class of poly(vinyl chloride), poly(vinylidene chloride), and copolymers thereof.

4,795,698

MAGNETIC-POLYMER PARTICLES

Charles S. Owen, Swarthmore; John C. Silvia, Warminster, both of Pa.; Louis D'Angelo, Berlin, N.J., and Paul A. Liberti, Churchville, Pa., assignors to Immunicon Corporation, Huntingdon Valley, Pa.

Continuation-in-part of Ser. No. 784,863, Oct. 4, 1985, abandoned. This application Sep. 16, 1986, Ser. No. 906,521

Int. Cl.[4] G01N *33/553, 33/544*

U.S. Cl. 435—4 **44 Claims**

32. A process for the assay of a predetermined species comprising the steps of:

(a) preparing an aqueous solution of transition metal ions capable of reacting to form a magnetic precipitate and a polymer having available coordinate sites in proportions adapted to produce resuspendable particles;

(b) reacting said metal ions in the presence of said polymer to form a magnetic precipitate comprising magnetic-polymer particles;

(c) recovering said magnetic-polymer particles;

(d) resuspending said magnetic-polymer particles in an aqueous solution;

(e) reacting said magnetic-polymer particles with both a bifunctional compound adapted to form primarily extra-particulate bonds, and a biofunctional ligand, said biofunctional ligand being specific in its ability to bond with said predetermined species;

(f) exposing a mixture containing an unknown quantity of said predetermined species to a suspension of said magnetic-polymer particles containing said biofunctional ligand, thereby causing said biofunctional ligand to bond to said predetermined species;

(g) passing said mixture through a magnetic filter having a magnetic field, said filter adapted to retain said magnetic-polymer particles;

(h) removing said magnetic field from said filter and eluting said retained magnetic-polymer particles;

(i) analyzing said eluted magnetic-polymer particles to provide desired data relative to said predetermined species.

4,795,699

T7 DNA POLYMERASE

Stanley Tabor, Cambridge, and Charles C. Richardson, Chestnut Hill, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Jan. 14, 1987, Ser. No. 3,227

Int. Cl.[4] C12Q *1/70, 1/68*; C12N *15/00*; C12P *19/34*

U.S. Cl. 435—5 **32 Claims**

1. A method for determining the nucleotide base sequence of a DNA molecule, comprising:

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annealing said DNA molecule with a primer molecule able to hybridize to said DNA molecule;

incubating separate portions of the annealed mixture in at least four vessels, each vessel containing four different deoxynucleoside triphosphates, a processive T7-type DNA polymerase, wherein said polymerase remains bound to said DNA molecule for at least 500 bases before dissociating in an environmental condition used in the extension reaction of a DNA sequencing reaction, said polymerse having less than 500 units of exonuclease activity per mg of said polymerase, and one of four DNA synthesis terminating agents which terminate DNA synthesis at a specific nucleotide base, wherein each said agent terminates DNA synthesis at a different nucleotide base, and

separating the DNA products of each incubating reaction according to their size, whereby at least a part of the nucleotide base sequence of said DNA molecule can be determined.

4,795,700

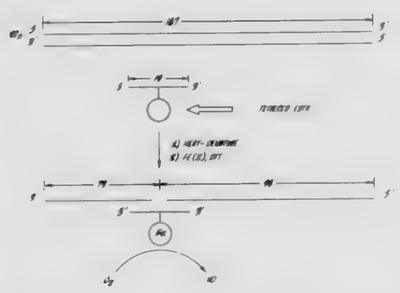
NUCLEIC ACID PROBES AND METHODS OF USING SAME

Peter B. Dervan, and Geoffrey B. Dreyer, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 25, 1985, Ser. No. 695,082

Int. Cl.[4] C12Q *1/70, 1/68;* C07H *21/00*

U.S. Cl. 435—5 **39 Claims**



23. A process for cleaving nucleic acid in the major groove, comprising the steps of:

(a) hybridizing nucleic acid to be cleaved with a complementary sequence of polynucleotides containing at least one nucleoside to which is attached a metal chelator; and

(b) adding to said nucleic acid and complementary sequence of polynucleotides a metal ion capable of binding to said chelator, said metal ion being capable of reducing dioxygen; and

(c) cleaving said nucleic acid.

4,795,701

HOMOGENEOUS POLYNUCLEOTIDE DISPLACEMENT ASSAY METHOD KIT AND REAGENT COMPLEX

Calvin P. H. Vary, Califon, N.J., assignor to Allied Corporation, Morris Township, N.J.

Filed Jul. 17, 1985, Ser. No. 755,996

The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.

Int. Cl.[4] C12Q *1/68, 1/34, 1/42*

U.S. Cl. 435—6 **31 Claims**

1. A method for determining the presence of a predetermined target nucleotide sequence in the DNA of a biological sample which comprises the steps:

(a) providing a reagent complex of (i) a probe polynucleotide which is capable of base pair binding via hydrogen bonds of purine/pyrimidine bases to the DNA target nucleotide sequence, and (ii) an RNA signal strand polynucleotide which is bound by base pair binding via hydrogen bonds of purine/pyrimidine base pairs to the probe polynucleotide in a region of the probe polynucleotide at least partially coextensive with the region in which the probe polynucleotide is capable of binding to the DNA target nucleotide sequence;

(b) contacting the reagent complex with a sample under conditions in which the DNA target nucleotide sequence, if present, binds to the probe polynucleotide and displaces the RNA signal strand polynucleotide from the reagent complex;

(c) without separation, digesting the displaced RNA signal strand polynucleotide selectively with respect to RNA signal strand polynucleotide remaining in reagent complex; and

(d) detecting the presence of the digestion products of digesting the displaced RNA signal strand polynucleotide.

4,795,702

DIAGNOSTIC METHOD FOR GONORRHEA BY ASSAY OF IGA1 FRAGMENTS

Milan S. Blake, New York, N.Y., assignor to Immunogon Associates, Great Neck, N.Y.

Filed Feb. 5, 1986, Ser. No. 826,227

Int. Cl.[4] G01N *33/53*

U.S. Cl. 435—7 **23 Claims**

1. Method for determining fragments of immunoglobulin A, sub-class 1 (IgA1) produced by enzymatic digestion of immunoglobulin A, sub-class 1 (IgA1) by immunoglobulin A protease (IgAP) comprising immunoassay of said fragments with antibody capable of reacting specifically with neo-epitope on said fragments, but incapable of reacting with intact IgA1, and relating the presence or absence of said neo-epitopes to the presence or absence of said fragments.

4,795,703

HEPARIN ASSAY

Moses J. Folkman; Robert L. Hannan; Robert W. Thompson, all of Brookline, and Robert S. Langer, Somerville, all of Mass., assignors to The Children's Medical Center Corporation, Boston, Mass.

Filed Mar. 7, 1986, Ser. No. 837,517

Int. Cl.[4] C12Q *1/56, 1/00*

U.S. Cl. 435—13 **4 Claims**

1. A method for the specific measurement of heparin in a blood sample comprising:

dividing said sample into at least two aliquots, adding heparinase to a first said aliquot, measuring the clotting time of said first aliquot and of a second aliquot free from heparinase and determining the difference between the clotting time of said first and second aliquot as a measure of the amount of heparin in said blood sample.

4,795,704

MULTIPHASE ASYMMETRIC MEMBRANE REACTOR SYSTEMS

Stephen L. Matson, Harvard, Mass., assignor to Separacor, Inc., Marlborough, Mass.

Filed Oct. 11, 1985, Ser. No. 786,764

Int. Cl.[4] C12P *1/00;* C12N *11/08, 11/04;* C12M *1/40*

U.S. Cl. 435—41 **5 Claims**

1. A method for containing a catlayst within an asymmetric membrane between two immiscible liquid streams comprising:

(a) Providing an asymmetric membrane having

(i) a first surface having a skin having pores that are large enough to allow permeation by reactants or products but small enough to substantially prevent catalyst leakage; and

(ii) a second surface having pores that are large enough to allow permeation by reactants, products and catalyst;

(b) charging a catalyst into said asymmetric membrane by adding said catalyst to a first liquid stream and contacting the second surface of said asymmetric membrane with said first liquid stream containing said catalyst, said first liquid stream wetting said asymmetric membrane and thereby providing said catalyst and said first liquid stream into said asymmetric membrane;

(c) proviidng said first liquid stream without said catalyst to the first surface of said asymmetric membrane;

(d) replacing said first liquid stream containing said catalyst used in charging said asymmetric membrane at the second surface with a second liquid stream in which said catalyst is not appreciably soluble, which second liquid stream is substantially immiscible with said first liquid stream present at said first surface of said asymmetric membrane; and

(e) providing said second liquid stream under a greater pressure than said first liquid stream so as to maintain a interface between said first and second liquid streams at said second surface

thereby containing said catalyst within said asymmetric membrane between said first and second liquid streams which are immiscible.

4,795,706

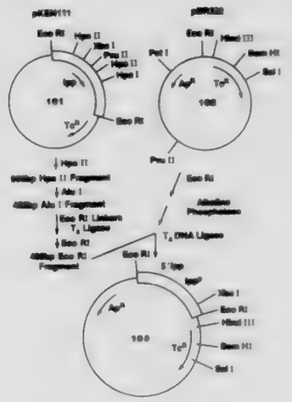
NOVEL EXPRESSION CONTROL SEQUENCES

Hassen M. Hsiung, and Dennis P. Smith, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 31, 1985, Ser. No. 697,093

Int. Cl.[4] C12N *15/00, 1/20;* C12P *21/00;* C07H *15/12*

U.S. Cl. 435—172.3 **20 Claims**

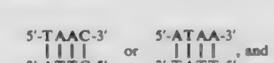


1. The expression control sequence:



wherein A is deoxyadenyl, G is deoxyguanyl, G is deoxycytidyl, T is thymidyl,

R can independently be



R^1 can independently be



4,795,705

METHODS OF PRODUCING HERBICIDE RESISTANT PLANT VARIETIES AND PLANTS PRODUCED THEREBY

Jonathan Gressel; Dvora Aviv, both of Rehovot, and Avihai Perl, Rishon-Le-Zion, all of Israel, assignors to Development Co., Ltd., Rehovot, Israel

Filed Feb. 22, 1985, Ser. No. 704,416

Int. Cl.[4] C12N *15/00, 5/00, 5/02;* A01H *1/04*

U.S. Cl. 435—172.2 **11 Claims**

1. A method of introducing chloroplast genome inherited traits from a donor plant into a receptor plant of the Solanaceae family and thereby producing plantlets which contain chloroplast genome inherited traits from the donor plant which comprises:

(a) preparing protoplasts from the donor and receptor plants,

(b) treating the donor protoplasts with more than 5000 rad of X-ray irradiation so as to prevent more than two nuclear divisions of the donor protoplasts thereby preventing inheritance of traits encoded in the donor nucleus after protoplast fusion,

(c) removing toxic free radicals resulting from the X-ray treatment of the donor protoplasts,

(d) fusing the treated donor protoplasts with receptor protoplasts,

(e) regenerating plantlets from the resulting fused protoplasts, and

(f) selecting and rooting plantlets which contain chloroplast genome inherited traits from the donor plant.

4,795,707

ELECTROCHEMICAL SENSOR HAVING THREE LAYER MEMBRANE CONTAINING IMMOBILIZED ENZYMES

Yasuo Niiyama, and Kenshi Sagahara, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1985, Ser. No. 802,193

Claims priority, application Japan, Nov. 27, 1984, 59-249917

Int. Cl.[4] C12M *1/40;* C12N *11/02, 11/14;* G01N *27/26*

U.S. Cl. 435—288 **5 Claims**

1. An electrochemical sensor which comprises a working electrode for detecting hydrogen peroxide surrounded by a cylinder portion, a membrane located at the tip of the working electrode, the membrane having first, second and third layers; the first layer being a porous layer permeable to hydrogen peroxide, the second layer being a layer containing an immobilized enzyme capable of decomposing hydrogen peroxide, and the third layer being a layer containing an immobilized enzyme

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capable of decomposing a substrate in a sample to form hydrogen peroxide, the first layer being located between the second and third layers; the cylinder portion being embedded in the second layer and surrounding the working electrode such that the working electrode is in substantial contact with the first layer but is not in substantial contact with the second layer and the third layer being located on a side of the first layer opposite to the working electrode so that the third layer does not contact the working electrode but is in substantial contact with said sample wherein the enzyme activity of the enzyme capable of decomposing hydrogen peroxide in the second layer is no more than one-fourth of the enzyme activity of the enzyme capable of forming hydrogen peroxide in the third layer.

4,795,708

NOVEL BACTERIA AND SINGLE CELL PROTEIN PRODUCTION THEREWITH

George T. Sperl, Grayslake, Ill., and John A. Cruse, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 10, 1986, Ser. No. 838,064
Int. Cl.[4] C12N *1/32, 1/34, 1/20*
U.S. Cl. 435—246 18 Claims

1. A continuous fermentation process for producing bacterial cells which comprises culturing *Methylomonas sp.* 31A (NRRL B-15740) or a mutant thereof under aerobic aqueous fermentation conditions, in an aqueous ferment comprising a cellular phase and an aqueous extracellular phase, employing effective amounts of assimilable carbon energy substrate, assimilable nitrogen source, water, molecular oxygen, and mineral salts.

4,795,709

SOLVENT-INDUCED AUTOLYSIS OF CELLS

Thomas R. Hopkins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 10, 1985, Ser. No. 742,836
Int. Cl.[4] C12N *1/06, 9/02*
U.S. Cl. 435—259 4 Claims

1. A process for the recovery of alcohol oxidase from whole cells of *Pichia pastoris* grown on methanol which comprises

(a) forming an aqueous mixture of said whole cells, wherein said cells are present in an amount of from 85 to 150 grams per liter of aqueous mixture and from 0.8 to 6 volume percent of a treating agent selected from the group consisting of chloroform, 1,1,1-trichloroethane and methylene chloride or mixtures thereof, and wherein, said aqueous mixture has a pH of about 6.5 to about 8.5;

(b) incubating said aqueous mixture at a temperature of about 20° to 35° C. for a time of about 16 to 90 hours whereby at least a portion of said alcohol oxidase is released from said cells thereby forming a alcohol oxidase-containing aqueous liquor; and

(c) separating alcohol oxidase-containing liquor liquid from solid cell material.

4,795,710

MOUNTING OF ANALYZER SAMPLE TRAY

Martin F. Muszak, Rochester, and James D. Shaw, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

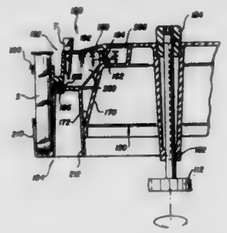
Filed Feb. 26, 1988, Ser. No. 160,626
Int. Cl.[4] C12M *1/00*; A47G *29/00*
U.S. Cl. 435—287 4 Claims

1. A tray-hanging device for trays holding containers of liquid in an analyzer, the device comprising:

a rotatable platform having a raised annular lip configured to engage a first part of a tray along a first side of the lip,

and a depending skirt portion positioned above said platform, configured to receive the weight of a second part of a tray pressing on a side of said skirt portion opposite to said engaged first side of said lip,

said lip further including centering notches shaped to cooperate with ribs on a tray to prevent relative respective



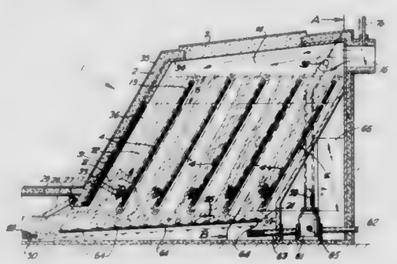
rotation of tray and device, and to properly locate a tray on said platform.

4,795,711

FERMENTATION OF ORGANIC MATERIALS FOR PRODUCING HEAT AND FERTILIZER

Otto Nockemann, Homertskamp 10, D-5270 Gummersbach 1, Fed. Rep. of Germany

Division of Ser. No. 465,046, Feb. 9, 1983. This application Nov. 7, 1986, Ser. No. 928,845
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1982, 3204471
Int. Cl.[4] C12M *1/00*; C05F *7/00*
U.S. Cl. 435—316 12 Claims



1. A method for the aerobic fermentation of solid organic materials, such as agricultural and foodstuff waste products, including excrement, and the simultaneous production of heat and high-grade, hygienically acceptable fertilizer, comprising feeding the material to be fermented into at least one shaft and conducting the material through the at least one shaft, the at least one shaft comprising heat exchanging means, the material conducted through the at least one shaft forming a layer adjacent the heat exchanging means and a layer away from the heat exchanging means, mixing the layer adjacent the heat exchanging means into the layer away from the heat exchanging means, the shafts being mounted in an enclosed, thermally insulated housing, the housing having a top portion and a bottom portion, withdrawing hot air produced by the fermentation process from the top portion of the housing, adding fresh air to the hot air and introducing the hot air into the bottom portion of the housing underneath the material to be fermented, and removing the fermented material from the housing.

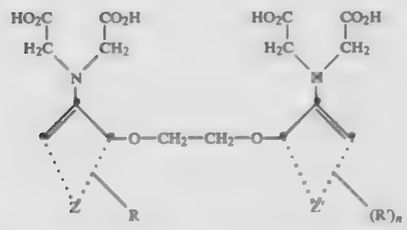
4,795,712

CALCIUM COMPLEXING DYES AND THEIR USE IN ANALYTICAL COMPOSITIONS, ELEMENTS AND METHODS

John L. Toner, Webster; Bruce J. Murray, Walworth; Bruce E. Babb, Rochester, and Michael W. Sundberg, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

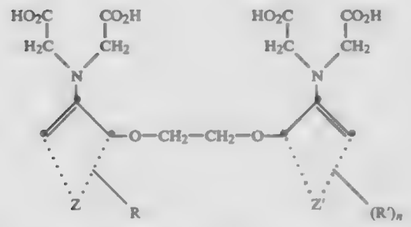
Filed Apr. 10, 1987, Ser. No. 37,303
Int. Cl.[4] G01N *31/22*
U.S. Cl. 436—74 16 Claims

1. A substituted or unsubstituted compound of the structure



wherein Z and Z' independently represent the carbon, oxygen, nitrogen, sulfur, selenium and tellerium atoms necessary to complete a 5- to 10-membered aromatic, unsaturated carbocyclic or unsaturated heterocyclic ring, R is a dye moiety which is directly conjugated through said ring to the nitrogen atom, each R' is independently formyl, substituted or unsubstituted alkyl, substituted or unsubstituted acyl or halo and n is 0, 1 or 2, provided that said compound exhibits a maximum electromagnetic absorption greater than about 400 nm in the absence of calcium ions.

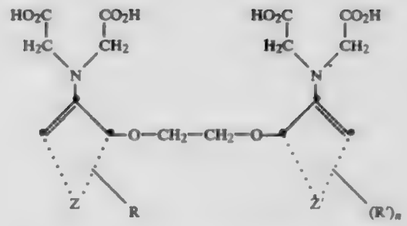
8. An analytical element for the determination of calcium ions comprising an absorbent carrier material containing a substituted or unsubstituted compound of the structure



wherein Z and Z' independently represent the carbon, oxygen, nitrogen, sulfur, selenium and tellerium atoms necessary to complete a 5- to 10-membered aromatic, unsaturated carbocyclic or unsaturated heterocyclic ring, R is a dye moiety which is directly conjugated through said ring to the nitrogen atom, each R' is independently formyl, substituted or unsubstituted alkyl, substituted or unsubstituted acyl or halo and n is 0, 1 or 2, provided that said compound exhibits a maximum electromagnetic absorption greater than about 400 nm in the absence of calcium ions.

14. A method for the determination of calcium ions comprising the steps of:

A. contacting a sample of a liquid suspected of containing calcium ions with a substituted or unsubstituted compound of the structure



wherein Z and Z' independently represent the carbon, oxygen, nitrogen, sulfur, selenium and tellerium atoms necessary to complete a 5- to 10-membered aromatic, unsaturated carbocyclic or unsaturated heterocyclic ring, R is a dye moiety which is directly conjugated through said ring to the nitrogen atom, each R' is independently formyl, substituted or unsubstituted alkyl, substituted or unsubstituted acyl or halo and n is 0, 1 or 2, provided that said compound exhibits a maximum electromagnetic absorption greater than about 400 nm in the absence of calcium ions, and

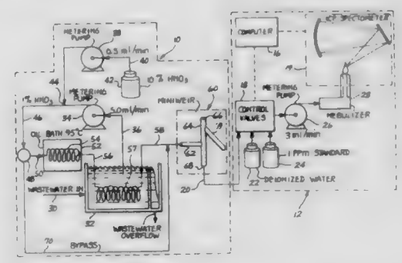
B. determining the optical density change resulting from the complexation of calcium ions with said compound.

4,795,713

AUTO-DIGESTOR

Rodney D. Koop, Mercer Island; Thomas A. Lobb, Maple Valley, and Richard L. Martin, Jr., Enumclaw, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 871,282, Jun. 6, 1986, abandoned. This application Aug. 31, 1987, Ser. No. 94,033
Int. Cl.[4] G01N *1/00*
U.S. Cl. 436—175 1 Claim



1. A method for automatically digesting a stream of wastewater prior to analysis of said wastewater, such analysis being of a type conducted for the purpose of determining the amount of certain waste products contained in said wastewater, said digestion method comprising:

drawing a continuous stream of wastewater at a preselected flow rate from a wastewater source;

acidifying said wastewater stream by continuously adding another continuous stream of only diluted nitric acid (HNO_3) to said wastewater stream, in an amount such that said wastewater stream has a one percent concentration of said nitric acid after addition thereof; followed by

heating said wastewater stream to a temperature of 95° for 20 minutes, wherein said acidification and said heating digest said waste products in said wastewater stream.

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4,795,714

COMPOSITIONS FOR CONTROLLABLY RELEASING ALCOHOLS OR AMINES

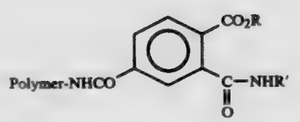
Jules A. Shafer, 1038 Baldwin, Ann Arbor, Mich. 48104

Continuation of Ser. No. 581,981, Feb. 21, 1984, Pat. No. 4,533,640. This application Jul. 22, 1985, Ser. No. 757,649

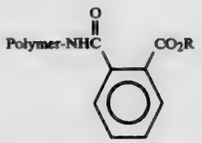
Int. Cl.[4] A01N *25/10*; **A61K** *7/32*; **C09K** *3/00*; **G01N** *33/00*

U.S. Cl. 436—183 **2 Claims**

1. A composition that is responsive to accumulated thermal exposure, for controllably releasing an immobilized alcohol or an immobilized amine, comprising an aqueous buffer having a predetermined pH and a polymeric derivative selected from the group consisting of members derivable from an alcohol ROH and having the formulas IX and X,

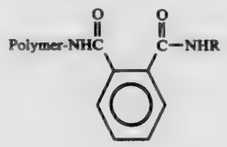


IX

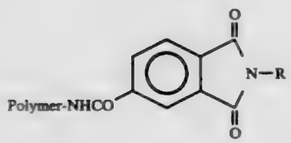


X

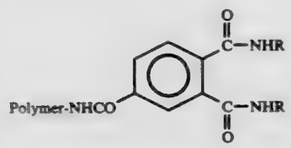
and members derivable from an amine RNH_2 and having the formulas XI, XII and XIII:



XI



XII



XIII

where R' is an alkyl group and where ROH or RNH_2 respectively is a pharmaceutical, analytical reagent, flavor, fragrance, insecticide, animal attractant or animal repellent, the polymeric derivative being hydrolyzable to provide the alcohol or amine respectively at a rate that is dependent on pH, time and temperature.

4,795,715

AMINOALKOXY OR CARBOXYALKOXY DERIVATIVES OF PROPRANOLOL FOR IMMUNOASSAY APPLICATIONS

Thomas D. Eller, Mount Pleasant, and Daniel R. Knapp, Charleston, both of S.C., assignors to Drug Science Foundation, Charleston, S.C.

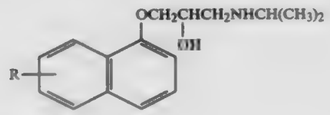
Division of Ser. No. 368,672, Apr. 15, 1982, Pat. No. 4,652,681. This application Oct. 3, 1986, Ser. No. 901,772

Int. Cl.[4] G01N *33/53*

U.S. Cl. 436—542 **19 Claims**

1. A method of determining the concentration of propranolol in a liquid sample comprising the following steps:

a. preparing antigen by conjugating a derivative of propranolol with the following structure



wherein

R is $X—(CH_2)_n—O$;

$X=NH_2$ or COOH;

n=1, 2, 3, 4 or 5, provided that when n=1, X must=COOH; and

R is attached in the 4', 5', 6', 7' or 8' position to a protein carrier through said R group; and

b. injecting the antigen into a host animal in order to generate antiserum to propranolol;

c. isolating said anti-serum from said animal;

d. adding a known amount of tagged propranolol to the liquid sample containing an unknown amount of propranolol;

e. incubating the mixture of step d with the antiserum of step c;

f. separating the antibody-bound tagged propranolol and the antibody-free tagged propranolol;

g. determining either the amount of antibody-bound tagged propranolol or the amount of antibody-free tagged propranolol; and

h. comparing the determination of step g with a standard to obtain an indication of the amount of propranolol present in the liquid sample.

4,795,716

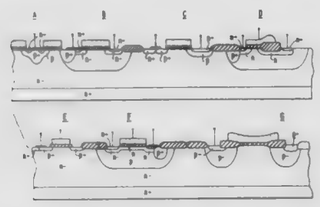
METHOD OF MAKING A POWER IC STRUCTURE WITH ENHANCEMENT AND/OR CMOS LOGIC

Hamza Yilmaz, Raleigh; Robert S. Wrathall, Durham; Mike F. Chang, Cary, and Robert G. Hodgins, Raleigh, all of N.C., assignors to General Electric Company, Fairfield, Conn.

Filed Jan. 19, 1987, Ser. No. 64,133

Int. Cl.[4] H01L *21/22, 21/306, 21/265*

U.S. Cl. 437—27 **25 Claims**



1. A process of fabricating a power integrated circuit device including a vertical DMOS, a high voltage CMOS and MOSFETs having high and low thresholds and depletion mode

characteristics on a wafer of semiconductor material, said wafer comprising a substrate and a wafer layer thereon containing a dopant of first conductivity type, said process comprising sequentially performing the steps of:

(a) forming a first photoresist layer on said wafer layer;

opening one or more windows in said first photoresist layer to selectively expose said wafer layer;

introducing a dopant of second conductivity type through said one or more windows in said first photoresist layer to form one or more first regions of predetermined depth in said wafer layer;

removing said first photoresist layer from said wafer layer;

(b) forming a second photoresist layer on said wafer layer;

opening one or more windows in said second photoresist layer to selectively expose said wafer layer;

introducing a dopant of first conductivity type through said one or more windows in said second photoresist layer to form one or more second regions of predetermined depth in said wafer layer;

removing said second photoresist layer from said wafer layer;

(c) forming a silicon nitride layer on said wafer layer;

opening one or more windows in said silicon nitride layer to selectively expose said wafer layer;

forming an oxide layer on said wafer layer in the regions exposed by said one or more first windows in said silicon nitride layer;

(d) opening one or more second windows in said silicon nitride layer to selectively expose said wafer layer;

introducing a dopant of second conductivity type through said one or more second windows in said silicon nitride layer to form one or more third regions of predetermined depth in said wafer layer;

removing said silicon nitride layer from said wafer layer;

(e) forming a polysilicon layer on said wafer layer;

introducing a dopant of first conductivity type into said polysilicon layer;

removing selected portions of said polysilicon layer from said wafer layer;

(f) forming a third photoresist layer on at least a portion of said wafer layer;

opening one or more windows in said third photoresist layer to selectively expose said wafer layer;

introducing a dopant of second conductivity type through said one or more windows in said third photoresist layer to form one or more fourth regions of predetermined depth in said wafer layer;

(g) forming a layer of silicon oxide on at least a portion of said wafer layer;

opening one or more windows in said layer of silicon oxide to selectively expose said wafer layer;

introducing a dopant of first conductivity type through said one or more windows in said silicon oxide layer to form one or more fifth regions of predetermined depth in said wafer layer.

4,795,717

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE

Shigeru Okamura, Ebina, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 618,668, Jun. 8, 1984, abandoned. This application Sep. 8, 1987, Ser. No. 94,079

Claims priority, application Japan, Jun. 9, 1983, 58-101767

Int. Cl.[4] H01L *21/265, 21/44, 21/48*

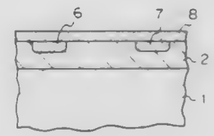
U.S. Cl. 437—40 **30 Claims**

1. A method of producing a semiconductor device having a heterojunction and utilizing a two-dimensional electron gas, comprising, in sequence, the steps of:

forming a first semiconductor layer on a substrate;

forming impurity doped regions by doping impurities into the first semiconductor layer;

forming a second semiconductor layer over the first semiconductor layer including the impurity doped regions, the second semiconductor layer being an electron-supply layer having a smaller electron affinity than that of the first semiconductor layer;



forming a source electrode and a drain electrode on the second semiconductor layer above respective ones of the impurity doped regions; and

forming a gate electrode on the second semiconductor layer.

4,795,718

SELF-ALIGNED CONTACT FOR MOS PROCESSING

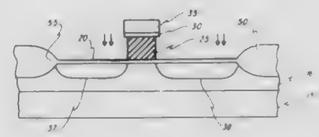
Bruce A. Beitman, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

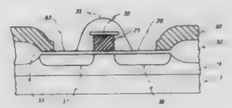
Filed May 12, 1987, Ser. No. 57,398

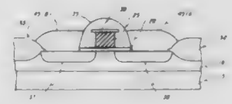
The portion of the term of this patent subsequent to Jun. 21, 2005. has been disclaimed.

Int. Cl.[4] H01L *21/302*

U.S. Cl. 437—41 **21 Claims**







1. A process of manufacturing a semiconductor device comprising:

(a) providing a substrate having a first surface;

(b) providing a first dielectric layer over said first surface of said substrate;

(c) providing a first conductive layer over said first dielectric layer;

(d) providing a second dielectric layer over said first conductive layer;

(e) patterning said second dielectric layer, and using said second dielectric layer as a mask for patterning said first conductive layer;

(f) patterning said first conductive layer and exposing side surfaces of said first conductive layer;

(g) heating said semiconductor device to a predetermined temperature such that said second dielectric layer flows

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and covers said side surfaces of said first conducting layer, said second dielectric layer forming means for aligning a contact area;

(h) removing said first dielectric layer from said contact area;

(i) providing a second conductive layer to said contact area.

4,795,719

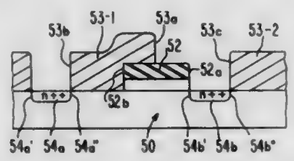
SELF-ALIGNED SPLIT GATE EPROM PROCESS

Boaz Eitan, Sunnyvale, Calif., assignor to WaferScale Integration, Inc., Fremont, Calif.

Division of Ser. No. 610,369, May 15, 1984, Pat. No. 4,639,893. This application Aug. 22, 1986, Ser. No. 900,065

Int. Cl.⁴ H01L *27/10*

U.S. Cl. 437—43 **8 Claims**



1. A method of manufacturing a memory cell containing a split gate transistor comprising:

forming first polycrystalline silicon on, but separated from a semiconductor substrate by first insulation, said first polycrystalline silicon defining a floating gate having a first edge and a second edge opposite said first edge;

forming a photoresist pattern over said substrate and over a surface of said first polycrystalline silicon, said surface extending laterally between the first and second edges, a first opening being formed in said photoresist pattern to expose both the first edge of said floating gate and a first portion of the semiconductor substrate extending laterally from said first edge and a second opening being formed in said photoresist pattern to expose a second portion of the semiconductor substrate laterally spaced apart from said floating gate;

implanting selected impurities into those portions of the semiconductor substrate exposed by the openings of said photoresist thereby to form a source region laterally spaced apart from said floating gate and a drain region extending from but self-aligned to the first edge of said floating gate.

4,795,720

METHOD FOR PRODUCING SEMICONDUCTOR DEVICES AND CUTTING FUSES

Takao Kawanabe, Tokorozawa; Morio Inoue, Koganei, and Mikio Hongo, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 753,851, Jul. 11, 1985, abandoned. This application Sep. 14, 1987, Ser. No. 96,778

Claims priority, application Japan, Jul. 11, 1984, 59-142330

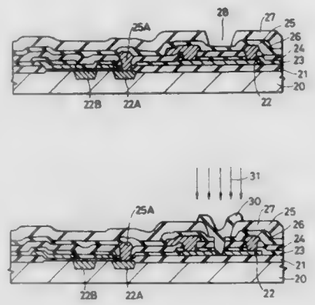
Int. Cl.⁴ H01L *21/465, 21/473*

U.S. Cl. 437—52 **44 Claims**

1. A method of producing a semiconductor device comprising the steps of:

forming a first protection film over a semiconductor device having a main circuit and a fuse with a redundant circuit, the first protection film having an opening above said fuse, the fuse being formed on a surface;

cutting said fuse to replace a defective main circuit by said redundant circuit, whereby in cutting said fuse said surface is exposed in said opening; and



forming a second protection film selectively so as to completely cover the surface exposed in said opening.

4,795,721

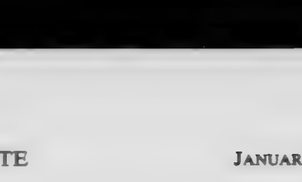
WALLED SLOT DEVICES AND METHOD OF MAKING SAME

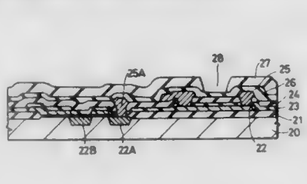
Robert W. Bower, Maui, Hi., and Christopher O. Schmidt, San Antonio, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 576,659, Feb. 3, 1984, abandoned. This application Aug. 18, 1986, Ser. No. 897,685

Int. Cl.⁴ H01L *29/06*

U.S. Cl. 437—67 **16 Claims**





1. A method of making a compact integrated circuit structure comprising an active device in one or more slots in a substrate characterized by reduced end effects which comprises:

(a) forming one or more active device slots in a substrate;

(b) forming an active device in said one or more active device slots;

(c) forming an isolation slot in said substrate surrounding said one or more active device slots and having one wall thereof contiguous with the portion of the wall of said one or more active device slots facing said isolation slot.

4,795,722

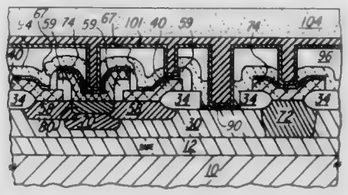
METHOD FOR PLANARIZATION OF A SEMICONDUCTOR DEVICE PRIOR TO METALLIZATION

Michael T. Welch, Sugar Land; Ronald E. McMann, Rosenberg; Manuel L. Torreno, Jr., Houston; Evaristo Garcia, Jr., Rosenberg, and Jeffrey E. Brighton, Katy, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 5, 1987, Ser. No. 10,937

Int. Cl.⁴ H01L *21/90, 23/48, 29/46*

U.S. Cl. 437—192 **9 Claims**



1. A method for metallization of a semiconductor chip comprising:

doping a first area of a semiconductor substrate with an impurity of a first semiconductor type;

doping a second area of the semiconductor substrate with an impurity of a second conductivity type;

depositing a first conductive film onto said surface of said semiconductor substrate after said step of doping said first area, said first conductive film doped with an impurity of said first conductivity type and contacting said first doped area;

removing selected portions of said first conductive film;

depositing a second conductive film onto said surface of said semiconductor substrate after said step of doping said second area, said second conductive film doped with an impurity of said second conductivity type and contacting said second doped area;

removing selected portions of said second conductive films;

then, forming a metal silicide film onto said first and said second conductive films and exposed portions of said semiconductor substrate prior to said step of depositing said dielectric films;

depositing a film of dielectric material onto said semiconductor substrate;

depositing a conformal material on the surface of said semiconductor substrate after said step of depositing said dielectric film;

exposing said semiconductor substrate to a reagent capable of etching both said conformal material and said dielectric film until said conformal material is removed;

etching vias in selected locations of said dielectric film so that selected locations of said first and said second conductive films and said metal silicide film are exposed;

depositing a refractory metal film onto said surface of said semiconductor substrate after said via-etching step, said metal film making contact to exposed locations of said first and said second conductive films and of said metal silicide film;

depositing a metal layer onto a surface of said refractory metal film; and,

removing selected portions of said metal layer and said refractory metal film so that the remaining portions constitute an interconnection pattern.

4,795,723

ELECTRICALLY CONDUCTIVE CERAMIC PRODUCT AND PROCESS FOR ITS PRODUCTION

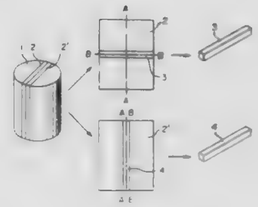
Hiroaki Nishikawa; Koichi Matsuda, and Masami Nakashima, all of Omuta, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1987, Ser. No. 16,366

Claims priority, application Japan, Feb. 27, 1986, 61-40317

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—98 **9 Claims**



1. An electrically conductive hot press sintered ceramic product comprising from 20 to 50% by weight of boron nitride, from 35 to 79% by weight of titanium diboride and from 1 to 15% by weight of aluminum nitride, said ceramic product having a flexural strength of at least 900 kg/cm², a specific resistance of from 300 to less than 2,500 μΩcm, and a reduced anisotropy such that the ratio of the specific resistance in the hot-pressed direction to the specific resistance in the direction perpendicular to the hot-pressed direction is less than 1.4.

4,795,724

SILICON NITRIDE SINTERED BODIES AND PROCESS FOR MANUFACTURING THE SAME

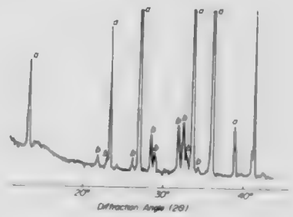
Takao Soma, Nagoya, and Tomosori Takahashi, Chita, both of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Filed Jun. 4, 1987, Ser. No. 58,115

Claims priority, application Japan, Jun. 12, 1986, 61-135013; Feb. 13, 1987, 62-29919

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—98 **5 Claims**



1. A silicon nitride sintered body having a four point bending strength of at least 500 MPa at 1,400° C. and consisting essentially of Si, O, N and at least two rare earth elements selected from the group consisting of Y, Er, Tm, Yb, and Lu, Si_3N_4 comprising not less than 70% by weight of said body wherein (1) the ratio of the molar amount of all the rare earth elements contained in said sintered body calculated as moles of Ln_2O_3, Ln being a rare earth element selected from the group consisting of Y, Er, Tm, Yb, and Lu divided by the molar amount of oxygen calculated as moles of SiO_2 is within the range of from 0.4 to 1.3, said amount of oxygen calculated as moles of SiO_2 being obtained by subtracting the amount of oxygen contained in the Ln_2O_3, all the rare earth elements contained in said sintered body being considered as molecules of Ln_2O_3, from

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the amount of oxygen contained in said sintered body and considering the remaining amount of oxygen as moles of SiO_2; (2) none of the rare earth elements contained in said sintered body accounts for more than 95 mol% of all the rare earth elements contained in the sintered body; and (3) an intergranular phase of Si_3N_4 grains contained in said sintered body is substantially of a crystalline phase, at least 50% of which is of an apatite structure.

4,795,725

METHOD FOR THE MANUFACTURE OF REFRACTORY BRICKS CONTAINING CAO

Jaap H. Addink, Heemskerk; Christiaan M. J. M. Beelen, Alkmaar; Adam Steen, Heemskerk; Hendrik M. Verhoog, Bennebroek, and Jurrie De Boer, Castricum, all of Netherlands, assignors to Hoogovens Groep B.V., Netherlands

Filed Apr. 9, 1985, Ser. No. 721,542

Claims priority, application Netherlands, Apr. 26, 1984, NL8401337

Int. Cl.⁴ C04B *35/04*

U.S. Cl. 501—101 **3 Claims**

1. Method for the manufacture of refractory bricks containing CaO, comprising the steps of

(a) mixing a refractory composition consisting essentially of a material containing CaO selected from the group consisting of burned lime, burned dolomite and a mixture thereof, 4 to 25% by weight of carbon and a binder composition, the binder composition being present in an amount in the range 1 to 10% by weight based on the weight of the mixture and consisting mainly of a thermosetting novolak type phenol resin composition and an anhydrous solvent for said resin composition consisting of at least one organic solvent present in an amount of less than 40% by weight based on the weight of the binder composition, wherein the solvent composition is of a chemical nature such that, at least during mixing of the refractory composition and the binder composition, it substantially does not react with the CaO; and

(b) molding bricks from the mixture said solvent composition consisting of at least one polyglycol or at least one nonhydric or monohydric solvent.

4,795,726

METHOD FOR THE REGENERATION OF SPENT ALUMINA-BASED CATALYSTS

Hennie Schaper, and Herman W. Kouwenhoven, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 27, 1987, Ser. No. 42,908

Claims priority, application United Kingdom, Apr. 29, 1986, 8610452

Int. Cl.⁴ B01J *20/20, 23/94, 38/66*

U.S. Cl. 502—26 **14 Claims**

1. A method for regeneration of a spent alumina-based catalyst used in treating metal contaminated hydrocarbon feedstocks, consisting essentially of an alumina support and containing one or more metals with hydrogenating activity selected from the group consisting of vanadium, nickel, cobalt, molybdenum and tungsten by the removal of at least carbonaceous matter and contaminating vanadium and nickel metal(s), under controlled conditions comprising:

(a) contacting said catalyst with steam at an elevated temperature above 200° C. to remove at least part of the sulphur present in said catalyst,

(b) thereafter, burning carbonaceous matter from the catalyst in the presence of an oxygen-containing gas at a temperature in the range from 300°–750° C., and

(c) subsequently treating the catalyst with a basic medium comprising a buffered aqueous solution of ammonia and ammonium salt of a weak acid having a pH of 9–12 at a temperature in the range of 5°–100° C.

4,795,727

RHODIUM CATALYSTS AND METHODS OF PREPARATION AND USE THEREOF

Hanswilhelm Bach, Duisburg; Helmut Bahrmann, Hamminkeln-Brünen; Boy Cornils, Hofheim; Werner Konkol, and Ernst Wiebus, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed May 8, 1987, Ser. No. 47,663

Claims priority, application Fed. Rep. of Germany, May 13, 1986, 3616057

Int. Cl.⁴ B01J *31/22*

U.S. Cl. 502—161 **10 Claims**

1. A process for the preparation of a rhodium catalyst for use in a hydroformylation reaction comprising dissolving a carboxylic acid salt of rhodium in a solvent taken from the class consisting of aliphatic, cycloaliphatic, aromatic hydrocarbons, and mixtures thereof to form an organic phase, said carboxylic acid having 2 to 18 carbon atoms, reacting said salt with carbon monoxide and hydrogen at a pressure of 0.1 to 1.8 MPa and a temperature of 50° to 100° C. to form a rhodium hydridocarbonyl, reacting said hydridocarbonyl with an aqueous solution of a triarylphosphine.

4,795,728

MOTOR FUEL ALKYLATION PROCESS UTILIZING A SURFACTANT CONTAINING CATALYST TO REDUCE HYDROFLUORIC ACID REQUIREMENTS

Joseph A. Kocal, Gurnee, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 1, 1987, Ser. No. 68,513

Int. Cl.⁴ B01J *31/02*

U.S. Cl. 502—162 **2 Claims**

1. An anhydrous acid catalyst composition for the liquid phase alkylation of an isoparaffin with an olefin acting agent consisting essentially of from 95.0 to 99.5 wt.% hydrofluoric acid and from 0.5 to 5.0 wt.% of an anionic surfactant characterized as comprising a sulfur component in the form of sulfates and sulfated compounds selected from the group of sulfated esters, sulfated alkanolamides, alkyl sulfates and sulfonates, or a phosphorus-containing component selected from the group alkylphosphates, alkylpolyphosphates, monoesterphosphates, and diesterphosphates wherein the surfactant contains no aliphatic or aromatic groups having more than 7 carbon atoms.

4,795,729

STEREOSPECIFIC CATALYST FOR THE PREPARATION OF POLY (1,2-BUTYLENE OXIDE)

Nicholas M. Irving, Guatemala, Guatemala, assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 853,101, Apr. 17, 1986, Pat. No. 4,701,520. This application Sep. 14, 1987, Ser. No. 80,089

Int. Cl.⁴ B01J *31/02*

U.S. Cl. 502—169 **6 Claims**

1. A method of making a material used as a catalyst for sterospecific polymerization of 1,2-butylene oxide comprising the steps of:

(a) stirring ferric chloride into an organic solvent;

(b) slowly adding dried 1,2-butylene oxide to the stirred organic solvent;

(c) heating the stirred mixture until the ferric chloride is digested;

(d) slowly adding water in tetrahydrofuran to the digested mixture;

(e) precipitating the mixture over a period of time; and

(f) recovering a precipitant from the mixture.

4,795,730

DEHYDRATION OF ALCOHOLS

Charles A. Drake, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 604,712, Apr. 27, 1984, Pat. No. 4,602,119. This application Jan. 29, 1986, Ser. No. 823,854

Int. Cl.⁴ B01J *31/00, 23/00*

U.S. Cl. 502—170 **14 Claims**

1. A method for activating a dehydration catalyst consisting essentially of treating by (1) contacting alumina with an activating amount of organic carboxylic acid in liquid phase, (2) decanting said liquid phase and (3) drying said alumina at a temperature of up to about 100° C. until substantially constant weight is attained.

4,795,731

TRANSITION METAL SULFIDE PROMOTED MOLYBDENUM OR TUNGSTEN SULFIDE CATALYSTS AND THEIR USES FOR HYDROPROCESSING

Theresa A. Pecoraro, Danville, Calif.; Allan Jacobson, Princeton, and Russell R. Chianelli, Somerville, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 902,480, Sep. 2, 1986, abandoned, which is a continuation of Ser. No. 687,535, Dec. 28, 1984, Pat. No. 4,650,563, which is a continuation-in-part of Ser. No. 595,908, Apr. 2, 1984, abandoned, which is a continuation of Ser. No. 454,383, Dec. 29, 1982, abandoned. This application Nov. 19, 1987, Ser. No. 123,565

Int. Cl.⁴ B01J *27/051, 27/049, 27/047, 31/18*

U.S. Cl. 502—221 **15 Claims**

1. As a composition of matter, a bulk, unsupported hydroprocessing catalyst obtained by heating one or more sulfur-containing salts at elevated temperature of at least about 200° C. up to about 600° C. and under oxygen-free conditions for a time sufficient to form said catalyst, wherein said sulfur-containing salt is of the general formula (ML) $(Mo_yW_{1-y}S_4)$ wherein M is one or more promoter metals selected from the group consisting of Ni, Co, Zn, Cu and mixture thereof, wherein y is any value ranging from 0 to 1 and wherein L is one or more neutral, nitrogen-containing ligands, at least one of which is a chelating polydentate ligand.

4,795,732

SULPHIDED PLATINUM GROUP METAL-SILICALITE DEHYDROGENATION CATALYSTS

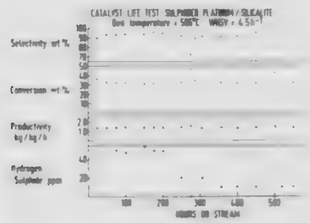
Sami A. I. Barri, South Ascot, England, assignor to The British Petroleum Company p.l.c., London, England

Division of Ser. No. 886,560, Jul. 17, 1986, Pat. No. 4,665,267. This application Dec. 19, 1986, Ser. No. 943,905

Claims priority, application United Kingdom, Jul. 25, 1985, 8518820

Int. Cl.⁴ B01J *27/045, 23/40, 21/08*

U.S. Cl. 502—223 **6 Claims**



1. A catalyst suitable for the dehydrogenation of C_2 to C_{10} paraffins to alkenes which catalyst is substantially free of alkali and alkaline earth metals and comprises a platinum group metal on a silicalite support and from 0.01% to 1% by weight of sulphur.

4,795,733

HYDROGENATION CATALYST AND PROCESS FOR ITS PREPARATION

Waldo De Thomas, Parsippany, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Nov. 27, 1987, Ser. No. 125,955

Int. Cl.⁴ B01J *21/04, 23/64, 23/89*

U.S. Cl. 502—327 **13 Claims**

1. A supported hydrogenation catalyst comprising:

(a) between about 10 and about 90 wt % of metallic nickel;

(b) between about 0.05 and about 5 wt % of palladuim or rhodium or mixtures thereof and

(c) between about 0.03 and about 10 wt % of metallic rhenium.

4,795,734

RHENIUM-CONTAINING CATALYST FOR THE PRODUCTION OF OLEFINS BY METATHESIS

Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; Francois Hugues, Nanterre, and Lucien Saussine, Croissy Sur Seine, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Nov. 17, 1987, Ser. No. 121,836

Claims priority, application France, Nov. 18, 1986, 86 16129

Int. Cl.⁴ B01J *21/04, 23/36*

U.S. Cl. 502—355 **9 Claims**

1. A rhenium-containing catalyst obtained by dry-impregnating an alumina-containing porous carrier with a solution of a rhenium compound in a solvent, maintaining the impregnated carrier for at least 10 hours at a temperature of 0°–80° C. under substantially non-evaporating conditions after the end of the addition of the rhenium compound solution, heating the resultant material to 85°–250° C. for sufficient time to remove at least the major part of the impregnation solvent, and finally heating to 400°–1000° C. for activating the catalyst, said alumina containing carrier being alumina or a mixture of at least 20% by weight alumina with another refractory oxide, said carrier having a porosity of at least 0.1 cc/g and a surface of at least 10 m^2/g.

4,795,735

ACTIVATED CARBON/ALUMINA COMPOSITE

Paul K. T. Liu, Pittsburgh; Robin K. Bergstrom, Natrona Heights, and David G. Gatty, Tarentum, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 25, 1986, Ser. No. 911,317

Int. Cl.⁴ B01J *20/08, 20/20*

U.S. Cl. 502—415 **18 Claims**

13. An activated carbon/alumina composite suitable for use as an adsorbent, the composite comprised of a mixture of activated carbon having a pore volume of at least 0.1 cc/gm and rehydration bondable alumina present in an amount of 10 to 90 wt. % of said mixture, the composite resulting from a mixture of activated carbon powder and activated alumina with water added thereto, formed into a green body and heated for a time sufficient to increases the strength thereof and form the activated carbon/alumina composite, the composite having a crush strength of at least 1.7 lbs for a one-inch diameter extrudate, said carbon dispersed in said composite.

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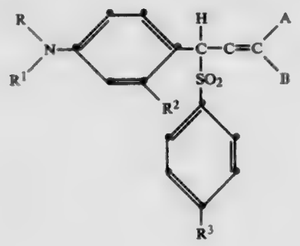
4,795,736

NOVEL COMPOUNDS, PROCESS AND MARKING SYSTEMS

William M. Hung, Cincinnati, Ohio, and James E. Kaesner, Maplewood, N.J., assignors to Hilton Davis Co., Cincinnati, Ohio

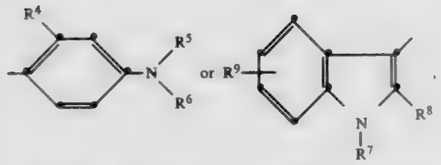
Filed Jan. 1, 1987, Ser. No. 56,169
Int. Cl.[4] B41M 5/16, 5/18, 5/22
U.S. Cl. 503—218 10 Claims

1. A substrate for use in transfer imaging comprising a support sheet coated with a layer containing as a color-forming substance a 1-A-1-B-3-(2-R^2-4-N-R-N-R^1-aminophenyl)-3-(4-R^3-phenylsulfonyl)-prop-1-ene having the formula

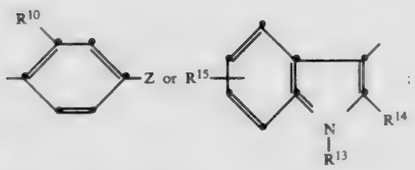


wherein:

A represents a moiety selected from the group consisting of



B represents a moiety selected from the group cossisting of



in which:

Z, represents—$NR^{11}R^{12}$;

R, R^5 and R^{11} independently represent hydrogen; non-tertiary C_1 to C_{16} alkyl; phenyl; phenyl substituted by one or two of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, nitro or halo; benzyl; or benzyl substituted in the benzene ring by one or two of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, nitro or halo;

R^1, R^6 and R^{12} independently represent non-tertiary C_1 to C_{16} alkyl;

R^2, R^4 and R^{10} independently represent hydrogen, nontertiary C_1 to C_{16} alkyl, non-tertiary C_1 to C_8 alkoxy, nitro or halo;

R^3, represents hydrogen, non-tertiary C_1 to C_{16} alkyl, non-tertiary C_1 to C_4 alkoxy, nitro or halo;

R^7 and R^{13} independently represent hydrogen; or nontertiary C_1 to C_{16} alkyl unsubstituted or substituted by non-tertiary C_1 to C_{16} alkoxy, phenoxy, phenyl, phenyl substituted by one or two of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, nitro or halo;

R^8 and R^{14} independently represent hydrogen, non-tertiary C_1 to C_4 alkyl or phenyl;

R^9 and R^{15} independently represent one or two of hydrogen, non-tertiary C_1 to C_4 alky, nontertiary C_1 to C_4 alkoxy, nitro of halo; and

wherein

R and R^1 together with the nitrogen represent piperdinyl or pyrrolindinyl.

4,795,737

PROCESS FOR THE IODINATION OF AROMATIC COMPOUNDS OVER SOLID CATALYSTS

Mark Rule, and Gerald C. Tustin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 25, 1987, Ser. No. 29,959
Int. Cl.[4] C07C 17/15
U.S. Cl. 570—203 13 Claims

1. A process for mono- or di-iodinating an aromatic compound selected from the group consisting of benene, naphthalene, anthracene, pyridine, benzopyridine, thiophene and benzothiophene, which comprises reacting iodine with the aromatic compound in the presence of oxygen at a temperature between 100°-500° C. over a solid iodinating catalyst containing alkaline or alkaline earth cations.

4,795,738

ARBOZOL CONTAINING PERFUME OR FRAGRANCE COMPOSITIONS

Robert H. Bedoukian, West Redding, Conn., assignor to Bedoukian Research Inc., Danbury, Conn.

Filed Nov. 3, 1987, Ser. No. 116,027
Int. Cl.[4] A61K 7/46
U.S. Cl. 512—25 14 Claims

1. A perfume or fragrance composition containing a fragrance effective amount of arbozol.

4,795,739

METHOD OF INHIBITING HIV

Jeffrey D. Lifson, Menlo Park; Michael S. McGrath, Burlingame, both of Calif.; Hin-Wing Yeung, Kowloon, Hong Kong, and Kou M. Hwang, Danville, Calif., assignors to Gene Labs, Inc., Redwood City and Regents of University of California, Berkeley, both of, Calif.

Filed May 29, 1987, Ser. No. 56,558
Int. Cl.[4] A61K 37/02, 35/78, 35/80; C07G 7/00
U.S. Cl. 514—8 13 Claims

1. A method of inhibiting expression of HIV antigens in human T lymphocytes and monocyte/macrophage cells infected with HIV, comprising

exposing the infected cells to an anti-HIV protein selected from the group consisting of trichosanthin or momorcharin, at a protein concentration which is effective to produce a substantial reduction in viral antigen expression in HIV-infected cells.

4,795,740

ANTIVIRAL PEPTIDES AND MEANS FOR TREATING HERPES INFECTIONS

Eric A. Cohen, 2175 Stevens, St. Laurent, Quebec, Canada H4M 1G6; Pierrette Gaudreau, 776 Audrien, Greenfield Park, Quebec, Canada J4V 3L4; Jacques Michaud, 115 Ste. Catherine, O., Apt. #302, Montreal, Quebec, Canada H2V 4R3; Paul Brazeau, 406 Ave. des Pins, Apt. #11, Montreal, Quebec, Canada H2W 1S2, and Yves Langelier, 4671 Christophe Colomb, Montreal, Quebec, Canada H2J 3G7

Filed May 7, 1987, Ser. No. 46,707
Claims priority, application Canada, May 20, 1986, 509527; Feb. 20, 1987, 530250
int. Cl.[4] A61K 37/02; C07K 7/06, 7/08
U.S. Cl. 514—14 20 Claims

1. A pharmaceutical composition for treating herpes infection in a mammal, comprising an effective amount of a peptide represented by the formula:

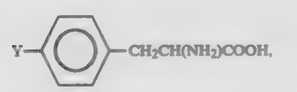
$$A\text{-}R^8\text{-}R^9\text{-}R^{10}\text{-}R^{11}\text{-}R^{12}\text{-}R^{13}\text{-}R^{14}\text{-}R^{15}\text{-}B, \quad (I)$$

or a therapeutically acceptable salt of said peptide, and a pharmaceutically or veterinarily acceptable carrier,

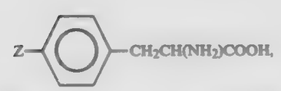
wherein

A denotes

(1) L-$(aa)_{0\text{-}6}R^7$, wherein L is hydrogen or lower acyl, aa is an amino acid residue derived from an amino acid selected from the group consisting of

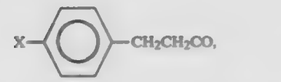


norleucine, norvaline, β-alanine, the natural amino acids excluding cystine, and any of the enantiomorphic forms thereof, where (i) Y denotes lower alkyl, lower alkoxy, amino, nitro, azido or halo, (ii) each of the aa in the radical $aa_{2\text{-}6}$ is the same or a different amino acid residue in relation to aa1, and (iii) R7 is an amino acid residue derived from an amino acid selected from the group consisting of



His and Trp, and any of enantiomorphic forms thereof, Z being hydrogen, lower alkyl, lower alkoxy, amino, nitro, azido, halo or hydroxy, or

(2)



wherein X is hydrogen, lower alkyl, lower alkoxy, amino, nitro, azido, halo or hydroxy; and

R^8, R^9, R^{10}, R^{13}, R^{14} and R^{15} are independently an amino acid residue (aa) as defined hereinabove;

R^{11} and R^{12} are independently Val, D-Val, Nva, D-Nva, Leu, D-Leu, Nle, D-Nle, Ile or D-Ile; and

B is hydroxy, amino or lower alkyl amino, provided that when A is L-$(aa)_O$-R^7, L, aa and R^7 being defined as above, then one or more of R^7, R^8, R^9 and R^{10} may be deleted, but when the deletion is only one of R^8, R^9 or R^{10}, then R^7, R^{11}, R^{12}, R^{13}, R^{14} and R^{15} are not Tyr, Val, VAl, Asn, Asp and Leu, respectively, and the remaining two amino acid residues of R^8, R^9 and R^{10} are not Gly and Ala, respectively.

4,795,741

COMPOSITIONS FOR THERAPEUTIC PERCUTANEOUS EMBOLIZATION AND THE USE THEREOF

Adolf Leshchiner, Fairview, N.J.; Nancy E. Larsen, Southfield, N.Y.; Endre A. Balazs, Ft. Lee, and Sadek K. Hilal, Englewood Cliffs, both of N.J., assignors to Biomatrix, Inc., Ridgefield, N.J.

Filed May 6, 1987, Ser. No. 47,419
Int. Cl.[4] C08F 8/00; C08G 79/08
U.S. Cl. 514—21 29 Claims

1. A composition for effecting embolization in blood vessels which comprises a physical mixture of

(a) a first component which is a cross-linked gel of hyaluronic acid, a cross-linked gel of hylan, or a mixed gel of hyaluronic acid or hylan co-cross-linked with at least one other hydrophilic polymer copolymerizable therewith;

(b) a cationic organic substance containing quaternary ammonium groups; and

(c) thrombin.

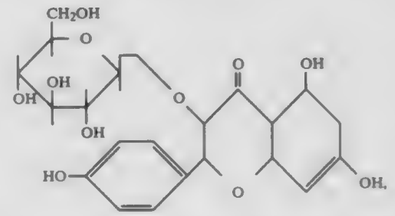
4,795,742

THERAPEUTIC COMPOSITION FROM PLANT EXTRACTS

Yaguang Liu, 30 Seaman Ave., New York, N.Y. 10034

Division of Ser. No. 779,437, Sep. 24, 1985, Pat. No. 4,708,949.
This application Oct. 14, 1986, Ser. No. 917,842
The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.
Int. Cl.[4] A61K 31/705, 31/70, 31/495
U.S. Cl. 514—26 14 Claims

1. A pharmaceutical dosage unit for bolstering immunfunction in healthy and diseased patients, said dosage unit comprising a mixture of about 5 to 15% ginsenoside extracted from the root of *Panax ginseng* C. A. Mey, about 30 to 50% tetramethyl pyrazine, about 30 to 50% astragalan extracted from *Astragalus membranaceous* and having the structural formula



and about 5 to 15% atractylol by weight in a pharmaceutically acceptable dosage form.

4,795,743

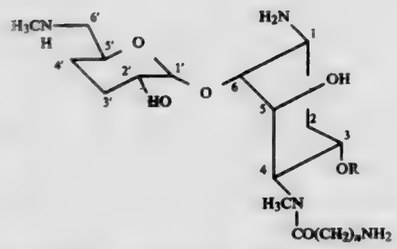
2'-DEAMINO-2'-HYDROXYISTAMYCIN B_o DERIVATIVES OF LOW TOXICITY

Yoshiro Okami, Tokyo; Shinichi Kondo, Kanagawa; Daishiro Ikeda, Tokyo, and Hamao Umezawa, deceased, late of Tokyo, all of Japan (by Mieko Umezawa, Kazuo Umezawa, Yoji Umezawa, heirs), assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

Filed Mar. 4, 1987, Ser. No. 21,781
Claims priority, application Japan, Mar. 11, 1986, 61-51557
Int. Cl.[4] A61K 31/70; C07H 15/22
U.S. Cl. 514—36 8 Claims

1. A 2'-deamino-2'-hydroxyistamycin B_o derivative represented by the formula (I)

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(I)

wherein R is a methyl group or a hydrogen atom and n is an integer of 1 or 2, and a pharmaceutically acceptable acid addition salt thereof.

7. A method of treating bacterial growth in an animal or human which comprises administering a bactericidally effective amount of the compound of the formula (I) as defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof to an animal infected with or susceptible to bacteria.

4,795,744

MODULATION OF AIDS VIRUS-RELATED EVENTS BY DOUBLE-STRANDED RNAS

William A. Carter, Birchrunville, Pa., assignor to HEM Research, Inc., Rockville, Md.

Continuation-in-part of Ser. No. 886,363, Jul. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 769,494, Aug. 26, 1985, abandoned. This application Aug. 26, 1986, Ser. No. 900,614

Int. Cl.[4] A61K *31/70, 39/00*

U.S. Cl. 514—44 **32 Claims**

1. A method of treating retrovirus-induced conditions or HIV-induced conditions including AIDS in a person infected with the virus comprising administering to that person a therapeutically effective amount of dsRNA.

4,795,745

MACROPHAGE-ACTIVATING COMPOSITION AND A PROCESS FOR ITS MANUFACTURE

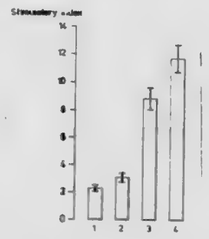
Karl O. P. Larm, Medicarb AB, 113 47 Stockholm; James Hoffman, Sveriges Lantbruksuniversitet, Inst. Kemi, 750 07 Uppsala, both of Sweden; Rolf Seljelid, and Jarl Bogwald, both of Institutt for Medisinsk Biologi, Post Boks 977, 9001 Tromso, Norway

Filed Sep. 19, 1985, Ser. No. 777,527

Claims priority, application Sweden, Sep. 19, 1984, 8404699

Int. Cl.[4] A61K *37/715*

U.S. Cl. 514—54 **8 Claims**



1. Macrophage-stimulatory composition containing a water-soluble β-1.3-bound glucan and a water-insoluble carrier to which the glucan has been immobilized.

3. A process for the manufacture of a composition according to claim 1, said process comprising degrading and thereby dissolving an insoluble β-1.3-bound glucan in an acid, treating said glucan with 2-chloracetaldehydedimethylacetal to achieve substitution with the O-(2,2'-dimethoxyethyl) group, treating said substituted glucan with acid to form an aldehyde substitution, and contacting said aldehyde-substituted glucan with a carrier containing amino groups in the presence of cyanoborohydride to achieve covalent coupling to the carrier.

4,795,746

SUBSTITUTED N-PHENYL-N'BENZOYL UREAS AND THEIR USE AS INSECTICIDES AND ACARICIDES

Michael J. Burgess; David P. Clifford, both of King's Lynn, England, and Robert A. Sewell, Paulus Potterpad, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

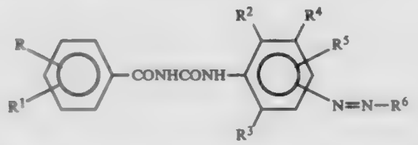
Division of Ser. No. 541,768, Oct. 13, 1983. This application Mar. 4, 1988, Ser. No. 164,142

Claims priority, application United Kingdom, Oct. 19, 1982, 8229874

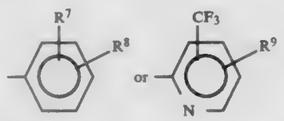
Int. Cl.[4] C07C *127/22;* A01N *47/34*

U.S. Cl. 514—150 **1 Claim**

1. A method for killing and controlling insects which comprises applying to the insect and/or its habitat an insecticidal amount of a compound of the general formula



wherein R and R^1 are each independently a hydrogen or halogen atom, a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group; R^2 and R^3 are each independently a hydrogen or halogen atom or a C_1–C_4 alkyl group; R^4 and R^5 are each independently a hydrogen or halogen atom, or C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_2–C_4 alkenyloxy, C_2–C_4 haloalkenyloxy or a C_2–C_4 alkynyl group; R^6 is



wherein R^7 and R^8 are each independently a hydrogen or halogen atom, or a nitro, C_1–C_4 alkyl, C_1–C_4 haloalkyl or cyano group and R^9 is a halogen atom or a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group in intimate admixture with an inert carrier therefor.

4,795,747

16-EPIESTRIOL TO PREVENT, INHIBIT OR REDUCE INFLAMMATION

Neal S. Latman, 513 Bowie St., Borger, Tex. 79007; Vimal Kishore, 4632 Nottingham Dr., New Orleans, La. 70127, and Brent C. Braot, 620 Woodside Dr., Kent, Ohio 44240

Continuation of Ser. No. 812,790, Dec. 23, 1985, abandoned. This application Jun. 16, 1987, Ser. No. 62,412

Int. Cl.[4] A61K *31/56*

U.S. Cl. 514—182 **4 Claims**

1. A method for the treatment of inflammation in a mammal which comprises administration of an anti-inflammatory effective amount of 16-epiestriol to said mammal.

4,795,748

ANTIBACTERIAL 7-OXO-4-THIA-1-AZABICYCLO[3,2,0]HEPT-2-ENE DERIVATIVES

Barry C. Ross, Luton; Michael D. Cooke, Newport Pagnell; Nicholas I. Carruthers, and Andrew J. Barker, both of Milton Keynes, all of Great Britain, assignors to Hoechst UK Limited, Hounslow, Great Britain

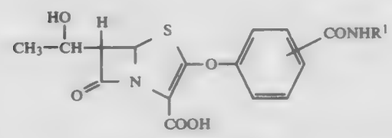
Filed Jun. 27, 1985, Ser. No. 749,384

Claims priority, application United Kingdom, Jun. 29, 1984, 8416565

Int. Cl.[4] C07D *499/00;* A61K *31/425*

U.S. Cl. 514—192 **26 Claims**

1. A compound of formula I



(I)

and esters thereof at the 2-carboxylic acid group and/or at the 8-hydroxy group, and physiologically tolerable salts thereof, in which R^1 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms, the $CONHR^1$ group being present on the 3- or 4-position of the phenyl ring.

4,795,749

IMIDAZOPYRROLOQUINOXALINE COMPOUNDS

Frank Wätjen, and Mogens Engelstoft, both of Vaerloese, Denmark, assignors to A/S Ferrosan, Soborg, Denmark

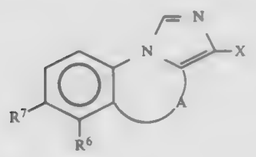
Division of Ser. No. 912,776, Sep. 26, 1986. This application Oct. 13, 1987, Ser. No. 108,272

Claims priority, application Denmark, Oct. 17, 1985, 4768/85

Int. Cl.[4] A61K *31/495;* C07D *487/04, 487/14*

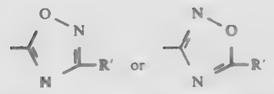
U.S. Cl. 514—250 **10 Claims**

1. Heterocyclic quinoxaline compounds having formula I

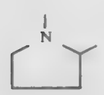


(I)

wherein
X is



wherein R' is C_{1-6}-alkyl, C_{3-7}-cycloalkyl, phenyl, thienyl, or C_{1-3}-alkoxymethyl,
R^6 and R^7 independently are hydrogen or halogen, and
—A— is



3. A pharmaceutical composition suitable for use in the treatment of a central nervous system ailment selected from convulsion and anxiety comprising an amount of a compound of a compound of claim 1 which is effective for the alleviation of such disorder together with a pharmaceutically-acceptable carrier or diluent.

4,795,750

QUINAZOLINE COMPOUNDS

Ludwig H. Schlager, Nottebohmstrasse, Austria, assignor to Gerot-Pharmazeutika Gesellschaft, Vienna, Austria

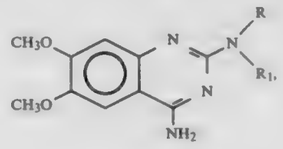
Filed Dec. 4, 1986, Ser. No. 937,863

Claims priority, application Austria, Dec. 4, 1985, 3522/85

Int. Cl.[4] A61K *31/505;* C07D *403/04, 403/14*

U.S. Cl. 514—260 **3 Claims**

1. A quinazoline compound of the general formula (I)



(I)

in which

(a) R is a hydrogen atom and R_1 is an ω-(2-pyrrolidinon-1-yl)-alkyl group,

(b) R is a methyl group and R_1 is an ω-(mono- or di-alkoxyphenyl)-alkyl group.

(c) R together with R_1 forms a piperidine ring substituted with a 2-keto-1-benzimidazolinyl radical in the 4-position of the piperidine ring; or

(d) R together with R_1 forms a piperazine ring substituted with a hydroxyacyl radical in the 4-position of said piperazine ring, or a physiologically acceptable salt thereof.

2. A antihypertensive composition comprising a therapeutically effective amount of a quinazoline compound or the physiologically acceptable salt thereof as defined in claim 1 to lower the blood pressure and a pharmaceutically acceptable carrier or diluent.

4,795,751

5-SUBSTITUTED-6,8-DIFLUOROQUINOLINES USEFUL AS ANTIBACTERIAL AGENTS

Jun-ichi Matsumoto, Ikoma; Teruyuki Miyamoto, Sakai; Hiroshi Egawa, Toyonaka, and Shinichi Nakamura, Takatsuki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 28, 1986, Ser. No. 928,297

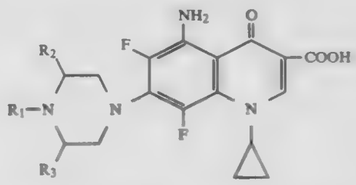
Claims priority, application Japan, Oct. 29, 1985, 60-242257; Dec. 17, 1985, 60-285323; Feb. 17, 1986, 61-32627

Int. Cl.[4] A61K *31/47, 31/53;* C07D *215/56, 401/04*

U.S. Cl. 514—254 **11 Claims**

1. A member selected from the group consisting of

(1) a compound of the formula



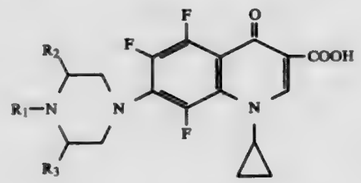
wherein
R_1 is a hydrogen atom or a methyl group, R_2 is a methyl or fluoromethyl group, and R_3 is a hydrogen atom or a methyl group,

(2) a pharmaceutically acceptable ester thereof, and

(3) a pharmaceutically acceptable salt of said compound (1) or said ester (2).

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6. A member selected from the group consisting of (1) a compound of the formula



wherein

R_1 is a hydrogen atom or a methyl group, R_2 is a hydrogen atom or a methyl or fluoromethyl group, and R_3 is a hydrogen atom or a methyl group,

(2) a pharmaceutically acceptale ester thereof, and

(3) a pharmaceutically acceptable salt of said compound (1) or said ester (2).

11. A method for the treatment of a bacterial infectious disease which comprises administering an antibacterially effective amount of a compound, ester or salt thereof as defined in claim 6 to a warm-blooded animal.

4,795,752

AMIDE DERIVATIVES AND ANTIALLERGIC AGENTS CONTAINING THE SAME

Shin Hattori, Yokohama; Makoto Takai, Hachioji; Kazuhiro Onori, Kawasaki; Shinji Ozawa, Houmachi, and Toshio Wakabayashi, Tama, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

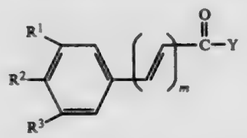
Filed Dec. 8, 1986, Ser. No. 939,135

Claims priority, application Japan, Dec. 13, 1985, 60-280696

Int. Cl.[4] C07D *211/46*; A61K *31/445*

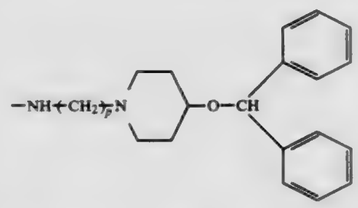
U.S. Cl. 514—327 9 Claims

1. An amide derivative represented by the formula (I)



(I)

wherein R^1 represents a lower alkoxyl group or a lower alkoxycarbonyloxy group, R^2 represents a lower alkoxycarbonyloxy group, R^3 represents a hydrogen atom, m represents an integer of 1 or 2 and Y represents a group represented by the formula (II)



(II)

wherein p represents an integer of from 2 to 4.

4. A method for the therapy of allergic conditions which comprises administering to animals an effective dose of an amide derivative of claim 1 to treat allergic conditions.

4,795,753

CERTAIN PYRIDYL OR IMIDAZOL-1-YL-ALKYLENEOXY-(OR AMINO)PHENOXY-ALKANOATES HAVING LIPID LOWERING ACTIVITY

Tadao Kojima, Saitama; Shinji Kageyama; Minoru Okada, both of Tokyo; Isao Ohata, and Noboru Sato, both of Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

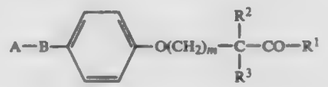
Division of Ser. No. 623,174, Jun. 21, 1984, abandoned. This application Sep. 30, 1986, Ser. No. 913,513

Claims priority, application Japan, Jun. 24, 1983, 58-113988; Oct. 27, 1983, 58-201639; Dec. 26, 1983, 58-248928

Int. Cl.[4] C07D *213/65, 233/60*; A61K *31/44, 31/415*

U.S. Cl. 514—345 15 Claims

1. A phenoxy compound of the formula:



wherein A is an imidazolyl group or a pyridyloxyl group; B is a group of the formula:

$$-(CH_2)_n-O- \text{ or } -(CH_2)_n-N(R^4)-$$

wherein n is an integer of 1 to 6, and R^4 is a hydrogen atom or a lower alkyl group; m is 0 or an integer of 1 to 6; R^1 is a hydroxyl or a lower alkoxy group; and R^2 and R^3, which may be the same or different, each is a hydrogen atom or a C_{1-3} alkyl group; and a pharmaceutically acceptable salt thereof.

4,795,754

3-(1H-TETRAZOL-5-Y1)OXANILIC ACID AND SALTS THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Shohei Sawaki, Kanagawa; Yasuhiro Ootake, Sagamihara; Terumasa Hashimoto, Hatano; Tooru Abe, Sagamihara, and Yoshihiro Horio, Matano, all of Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1987, Ser. No. 82,640

Claims priority, application Japan, Aug. 12, 1986, 61-187683

Int. Cl.[4] C07D *257/04*; A61K *31/41*

U.S. Cl. 514—381 6 Claims

1. 3-(1H-tetrazol-5-yl)oxanilic acid and pharmaceutically acceptable salt thereof.

3. A pharmaceutical composition for treating or preventing allergic diseases comprising 3-(1H-tetrazol-5-yl)oxanilic acid or a pharmaceutically acceptable salt thereof as an effective component.

4,795,755

HETEROCYCLIC DERIVATIVES

Derrick F. Jones, Macclesfield, and Keith Oldham, Cheadle, both of England, assignors to Imperial Chemical Industries PLC, London, Great Britain

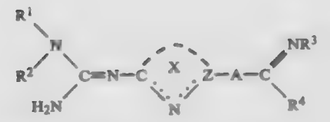
Filed Mar. 1, 1982, Ser. No. 353,384

Claims priority, application United Kingdom, Mar. 18, 1981, 8108407; Oct. 29, 1981, 8132680

Int. Cl.[4] A61K *31/495*; C07D *403/04*

U.S. Cl. 514—383 10 Claims

1. A guanidine derivative of the formula I:



in which

R^1 and R^2, which may be the same or different, are hydrogens or branched or unbranched 1–10C alkyls, 3–8C cycloalkyls or 4–14C cycloalkylalkyls, each alkyl, cycloalkyl or cycloalkylalkyl being optionally substituted by one or more halogens selected from fluorine, chlorine and bromine, provided that at least one of R^1 and R^2 is a halogen-substituted alkyl, cycloalkyl or cycloalkylskyl and provided there is no halogen on the carbon of the alkyl, cycloalkyl or cycloalkylalkyl which is directly attached to the nitrogen atom;

in ring X the dotted line is a double bond on one side of the nitrogen and Z is a carbon or nitrogen such that ring X is a 5-membered aromatic heterocyclic ring selected from the group consisting of oxazole, thiazole, imidazole, 1,2,4-thiadiazole, 1,2,4-oxadiazole, 1,2,3-triazole, 1,2,4-triazole and pyrazole, which heterocyclic ring may, where possible, carry one or two optional substituents, the optional substituents on ring X being selected from fluorine, chlorine, bromine, 1–6C alkyl, 1–6C alkoxy, trifluoromethyl, hydroxy and amino;

—A— is phenylene or 5–7C cycloalkylene or a 1–8C alkylene chain which is optionally substituted by one or two 1–3C alkyls and into which is optionally inserted, as part of the backbone of the chain, one or two groups selected from oxygen, sulphur, NH, 1–6C N-alkyl, cis and trans vinylene, ethynylene, phenylene and 5–7C cycloalkylene, provided that the shortest link between ring X and $C(R^4)=NR^3$ is of at least 3 atoms, provided that when an optional insertion is made in chain A which results in the inserted group being directly attached to $C(R^4)=NR^3$ the inserted group is other than NH or N-alkyl, and provided that no two insertions selected from oxygen, sulphur, NH and N-alkyl are directly attached one to the other;

R^4 is of the formula NHR^7 and R^3 and R^7 are joined to form, together with the N-C=N chain to which they are attached, a monocyclic heterocyclic ring system composed of a 5-membered ring selected from the group consisting imidazole, imidazoline, triazole, oxadiazole and thiadiazole, which ring may, where possible, carry one or two or three optional substituents selected from fluorine, chlorine, bromine, 1–6C alkyl, 1–6C alkoxyl, 1–6C alkylthio, trifluoromethyl, hydroxy, amino, phenyl, 7–11C phenylalkyl, carboxy, 2–6C carboxyalkyl, 2–6C alkoxycarbonyl, 3–10C alkoxycarbonylalkyl, 1–6C hydroxyalkyl, furyl, thienyl, pyrrolyl, thiazolyl, oxazolyl, imidazolyl, thiadiazolyl, oxadiazolyl, triazolyl, pyrazolyl and heteroaryl(1–6C)alkyl in which the heteroaryl group is selected from the group consisting of furyl, thienyl, pyrrolyl, thiazolyl, oxazolyl, imidazolyl, thiadiazolyl, oxadiazolyl, triazolyl and pyrazolyl and in which the heteroaryl may be optionally substituted by one or two substituents selected from methyl and amino;

and the pharmaceutically-acceptable acid-addition salts thereof.

10. A method of inhibiting gastric acid secretion in a warm-blooded animal which comprises administering to the animal an effective amount of a compound of claim 1.

4,795,756

3-(2-AMINOETHYL)INDOLE DERIVATIVES

Alexander W. Oxford, Royston, and Michael D. Dowle, Ware, both of England, assignors to Glaxo Group Limited, London, England

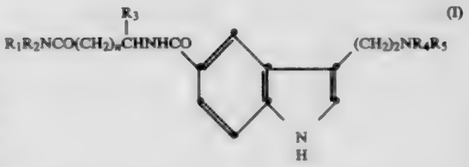
Filed Mar. 27, 1987, Ser. No. 30,625

Claims priority, application United Kingdom, Mar. 27, 1986, 8607824

Int. Cl.[4] A61K *31/40*; C07D *209/16*

U.S. Cl. 514—415 11 Claims

1. A compound selected from compoun s of the formula (I):



(I)

wherein

R_1 represents a hydrogen atom, a C_{1-6} alkyl group, a C_{3-7} cycloalkyl group, a phenyl group which may be unsubstituted or substituted by a C_{1-3} alkoxy group or a phen(C_{1-4}) alkyl group in which the phenyl ring may be unsubstituted or substituted by a C_{1-3} alkoxy group;

R_2 represents a hydrogen atom or a C_{1-6} alkyl group;

R_3 represents a hydrogen atom or a C_{1-3} alkyl group;

R_4 and R_5 which may be the same or different each represents a hydrogen atom, a C_{1-3} alkyl group or 2-propenyl; and

n represents zero or 1;

and physiologically acceptable salts and solvates thereof.

4,795,757

BISARYLAMINES

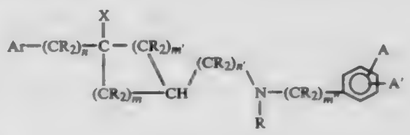
John R. Regan, Princeton, N.J.; Jeffrey N. Barton, Philadelphia; John T. Suh, Maple Glen, both of Pa., and Jerry W. Skiles, Tuckahoe, N.Y., assignors to Rorer Pharmaceutical Corporation, Fort Washington, Pa.

Continuation-in-part of Ser. No. 646,735, Sep. 4, 1984, abandoned. This application Nov. 20, 1986, Ser. No. 932,557

Int. Cl.[4] A61K *31/40*; C07D *209/04*

U.S. Cl. 514—415 3 Claims

2. A pharmaceutical composition for the treatment of cardiovascular diseases comprising as an active ingredient a member of the formula:



wherein:

Ar is phenyl, naphthyl, or indole optionally substituted with hydroxy, halo, CF_3, NO_2, C_{1-6} alkyl, or C_{1-6} alkoxy;

A and A' are each hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, or hydroxy;

X is cyano, nitro, SR, SOR or SOOR;

R is H, or C_{1-6} alkyl;

n and n' are each 1 to 4; and m, m' and m'' are each 1 to 4 or pharmaceutically acceptable salts thereof in a pharmaceutically acceptable carrier.

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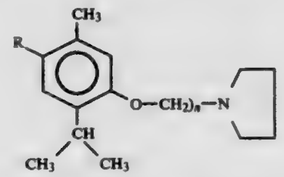
4,795,758

5-[2-(PYRROLIDIN-1-YL)ETHOXY]-P-CYMENE DERIVATIVES, THE PROCESS FOR THE PREPARATION OF THE SAID DERIVATIVES AND DRUGS IN WHICH THE SAID DERIVATIVES ARE PRESENT

Bernard Dearee, Pulsay; Patrick Heusinaux, Maule, and Jean-Yves Lacolle, Saint-nom-la-Bretoche, all of France, assignors to Societe a Responsabilite Limitee: Institut de Recherches Chimiques et Biologiques Appliquees (I.R.C.E.B.A.), France

Filed May 15, 1987, Ser. No. 50,616
Int. Cl.[4] A61K *31/40*; C07D *295/08*
U.S. Cl. 514—428 5 Claims

3. A pharmaceutical composition for blocking alpha-receptors, which comprises a compound of the formula



in which R is selected from the group consisting of H, OH, —OCOCH$_3$, and —O—CO—(CH$_2$)$_n$—CH$_3$, in which n is from 1 to 8, and pharmaceutically acceptable acid addition salts thereof, together with a pharmaceutically acceptable carrier.

4,795,759

USE OF DIBENZ(CD,F)INDOLES

Jean-Marie Vigouret, Alle, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Jul. 23, 1986, Ser. No. 888,920
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1985, 3527045; Jul. 27, 1985, 3527044
Int. Cl.[4] A61K *31/40*
U.S. Cl. 514—429 10 Claims

1. A method of preventing alcohol abuse which comprises administering to a subject in need of such treatment a therapeutically effective amount of a 4,5,5a,6-tetrahydro-dibenz[cd,f]indole derivative having at least one oxy substituent in one or both of the fused benzene rings, or a pharmaceutically acceptable acid addition salt thereof.

4,795,760

SINGLE COMPONENT POLYURETHANE-MODIFIED BITUMEN COMPOSITIONS

Heinz Lacke, Heidelberg, Fed. Rep. of Germany, assignor to Teroson GmbH, Heidelberg, Fed. Rep. of Germany

Filed Dec. 17, 1987, Ser. No. 134,408
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1987, 3700100
Int. Cl.[4] C08J *9/00*
U.S. Cl. 521—83 9 Claims

1. A liquid, foamable, hardenable polyurethane-modified bitumen composition, comprising

(a) a polyether and/or polyester urethane prepolymer,
(b) bitumen,
(c) butylurethane-formaldehyde-carbamate resin,
(d) 2,3-dibenzyltoluene, and
(e) stabilizer,

the weight ratio of (a) to (b) being in the range of 70:30 to 30:70, the weight ratio of (a)+(b) to (c)+(d) being in the range of 40:60 to 90:10, the weight ratio of (a) to (c) being in the range of 40:60 to 85:15 and the weight ratio of (b) to (d) being in the range of 40:60 to 90:10

(f) up to 15% by weight of a foaming agent comprising propylene glycol, surfactant and triethylenediamine.

4,795,761

CONTRACEPTIVE COMPOSITION

Peter B. Curtis-Prior, Histon; Stewart T. Leslie, Cambridge, both of United Kingdom; Ronald B. Miller, Basel, Switzerland, and Alison L. Shill, Histon, United Kingdom, assignors to Euroceltique S.A., Luxembourg, Luxembourg

Filed Mar. 6, 1987, Ser. No. 22,670
Claims priority, application United Kingdom, Mar. 12, 1986, 8606132; Mar. 26, 1986, 8607569
Int. Cl.[4] A61K *31/135*
U.S. Cl. 514—652 10 Claims

1. A contraceptive composition for application to the vagina of a female mammal comprising a contraceptive effective amount of a contraceptive combination, the combination comprising at least one spermacidal or sperm-immobilising polyethoxyethanol selected from the group consisting of octoxynol and nonoxynol in a spermacially effective concentration that gives up to and including about 50% of inhibition of sperm motility when used alone and at least one beta adrenergic blocker selected from the group consisting of acebutolol, alprenolol, bufuralol, penbutolol, metoprolol, pindolol, propanolol and timolol in a concentration of about 0.1 to 25 mmoles.

4,795,762

WATER-SWELLABLE COMPOSITION, SYNTHESIS AND USE THEREOF

Michael Diamantoglou; Christoph Joseflak, both of Erlenbach, and Helmut Magerlein, Oberaburg, all of Fed. Rep. of Germany, assignors to Akzo NV, Netherlands

Filed Apr. 16, 1987, Ser. No. 38,977
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613207
Int. Cl.[4] C08K *3/22*; C08L *33/00*; B01J *19/06*; C08J *3/06*
U.S. Cl. 521—84.1 26 Claims

1. A water-swellable composition of a gelling agent comprising non-crosslinked hydrolyzed homo-or copolymers of acrylonitrile and of a inert metal oxide, wherein 1 to 22% of the nitrile groups are saponified to amide groups and the remaining 99 to 78% to alkali-metal salts.

4,795,763

CARBON BLACK-FILLED FOAM

David G. Gluck, St. Petersburg; Thomas G. Soukup, Clearwater, and William J. Moore, Seminole, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Apr. 18, 1988, Ser. No. 182,600
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—99 26 Claims

1. A closed cell, rigid, polymer foam prepared from a polymer foam-forming composition containing a foaming agent, the foam containing as filler at leat about 2 percent by weight of carbon black, based on the weight of the polymer in the foam, the carbon black being uniformly dispersed throughout the foam so that there is present in the cell walls of the foam an amount of carbon black which reduces the aged k-factor of the foam to below the aged k-factor of the corresponding unfilled foam having the same density and prepared from the same foam-forming composition as the filled foam except that the carbon black is omitted and the amount of foaming agent is decreased to equalize the densities of the filled and unfilled foams.

4,795,764

POLY(OXYALKYLENE) POLY(ALIPHATIC ISOCYANATE) PREPOLYMER AND POLYUREA POLYMER DERIVED THEREFROM BY REACTION WITH POLYAMINE

Roger R. Alm, Lake Elmo; Irvin F. Dunsmore, Ham Lake, and Richard M. Stern, Woodbury, all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jun. 1, 1987, Ser. No. 56,593
Int. Cl.[4] C08G *18/10*
U.S. Cl. 521—107 39 Claims

1. A solution comprising polyamine reactant, low moisture sensitive poly(oxyalkylene) poly(aliphatic isocyanate) prepolymer the oxyalkylene portion of which contains sufficient oxyethylene units to render the prepolymer hydrophilic and water-soluble, and a water-soluble or -dispersible organic solvent which is free of active hydrogen atoms and in which said prepolymer is dissolved, the isocyanate moieties of said prepolymer being reactive with said polyamine.

4,795,765

PROCESS FOR THE PRODUCTION OF EPOXY SILICATE PRODUCTS

David H. Blount, 6728 Del Cerro Blvd., San Diego, Calif. 92120

Continuation-in-part of Ser. No. 892,834, Aug. 4, 1986, Pat. No. 4,663,363. This application Dec. 4, 1986, Ser. No. 19,184
Int. Cl.[4] C08J *9/02*; C08K *3/34*; C08G *59/00*
U.S. Cl. 521—154 9 Claims

1. The foamed product produced by the process which consist of mixing and reacting the following components:

(A) Epihalohalohydrin; 1 to 100 parts by weight;

(B) an alkali oxidated silicon compound; selected from the group consisting of alkali metal silicates, alkaline earth metal silicates, water-binding silicate compounds containing an alkaline earth radical and mixtures thereof; 100 parts by weight;

(C) a free-radical initiator; selected from the group consisting of inorganic peroxides, organic peroxides, alkali metal persulfates and mixtures thereof; 0.1 to 10 parts by weight.

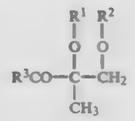
4,795,766

PROPIOPHENONE DERIVATIVES AS PHOTOINITIATORS FOR PHOTOPOLYMERIZATION

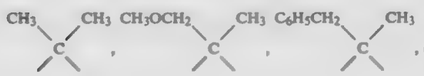
Werner Rutsch, Fribourg; Rudolf Kirchmayr, Aesch; Rinaldo Hüsler, Basel, and Kurt Dietliker, Fribourg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 756,912, Jul. 17, 1985, abandoned, which is a continuation of Ser. No. 534,954, Sep. 22, 1983, abandoned. This application Jun. 30, 1986, Ser. No. 880,654
Claims priority, application Switzerland, Oct. 1, 1982, 5607/82
Int. Cl.[4] C07D *317/26*, *317/72*; C08F *2/50*, *4/00*
U.S. Cl. 522—44 4 Claims

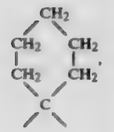
1. A photopolymerizable composition comprising (a) at least one ethylenically unsaturated photopolymerizable compounds, and (b) a dioxolane of the formula:



wherein R^1 and R^2 together are



-continued



and R^3 is phenyl, p-tolyl or p-anisyl.

4,795,767

CAN CARRIER COMPOSITION

Michael J. Turczyk, Yonkers, N.Y., and George M. Harlan, Bridgewater, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1987, Ser. No. 102,736
Int. Cl.[4] C08K *9/00*, *5/49*; C08L *23/06*
U.S. Cl. 523—200 8 Claims

1. A can carrier composition comprising the following components wherein all parts are by weight based on 100 parts by weight of component (i):

(i) a high pressure polyethylene having a density in the range of about 0.918 to about 0.930 gram per cubic centimeter and a melt index in the range of about 0.2 to about 2.0 grams per 10 minutes;

(ii) a linear polyethylene having a density of less than about 0.925 gram per cubic centimeter and a melt index in the range of about 0.1 to 2.0 grams per 10 minutes in an amount of about 2 to about 35 parts;

(iii) polyethylene wax in an amount of about 0.5 to about 5 parts;

(iv) a mineral filler coated with a metal salt of a fatty acid in an amount of about 0.05 to about 0.50 parts;

(v) a secondary amide in an amount of about 0.02 to about 0.15 part;

(vi) an antioxidant in an amount of about 0.02 to about 0.10 part; and

(vii) an organic phosphorus compound in an amount of about 0.005 to about 0.05 part.

4,795,768

IMPACT PROMOTERS FOR MINERAL-FILLED THERMOPLASTICS

Fred H. Ancker, Warren, and Arnold C. Ashcraft, Jr., Millstone Township, Monmouth County, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 753,976, Jul. 11, 1985, Pat. No. 4,661,537. This application Dec. 3, 1986, Ser. No. 937,420
Int. Cl.[4] C08K *9/00*
U.S. Cl. 523—200 20 Claims

1. A mineral-filled thermoplastic composition comprising polyethylene and a mineral filler selected from the group consisting of calcium carbonate and calcium/magnesium carbonates, said mineral filler being pretreated with a sufficient amount of dodecylpyridinium salts as an impact promoter to increase the impact strength of the composition when compared to the same composition without said promoter being present.

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4,795,769

ELECTRIC INSULATION WITH A SILICIC ACID ADDITIVE MADE BY A MELT PROCESS

Hans-Joachim Henkel, Erlangen, and Norbert Müller, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 21, 1987, Ser. No. 76,053

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1986, 3626408

Int. Cl.[4] C08K *3/34*; H01B *7/00, 3/42, 3/44*

U.S. Cl. 523—219 **9 Claims**

1. An electric insulation which is suitable for use with cables and wires carrying medium and high voltage from about 10 kV, and which is formed of a polyolefin base and an additive of 0.05 to 10% by weight silicic acid having a particle size of up to 50 microns or an agglomerate size of up to 100 microns for retarding water trees, wherein the silicic acid is prepared by a process comprising:

(a) melting mineral substances containing SiO_2 with additives of aluminum oxide, boron oxide or carbonates and/or oxides of alkali and earth alkali metals, to form a homogenous glass melt,

(b) preparing particulate glass bodies from the glass melt, the glass bodies being finely divided and as a composite having a large surface area,

(c) leaching the glass bodies with mineral acid, and

(d) washing and drying the porous SiO_2 bodies formed.

4,795,770

CEMENT COMPOSITION FOR OIL WELL DRILLING HOLES CONTAINING HIGH MOLECULAR WEIGHT POLY (VINYLAMINES)

Ta-Wang Lai, Allentown, and Bheema R. Vijayendran, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 914,046, Oct. 1, 1986. This application Mar. 4, 1988, Ser. No. 164,147

Int. Cl.[4] C08K *3/34*

U.S. Cl. 524—5 **11 Claims**

1. A cementing composition consisting essentially of 35 to 55 parts by weight water, 90 to 100 parts by weight type H or G cement, 0.5 to 2 parts by weight dispersant and 0.1 to 2 parts by weight poly(vinylamide) of at least 10^6 average molecular weight and greater than 10% hydrolyzed to vinylamine units.

4,795,771

POLYESTER COMPOSITION

Nori Yoshihara, Otsu, Japan, assignor to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1987, Ser. No. 17,944

Claims priority, application Japan, Feb. 26, 1986, 61-40731

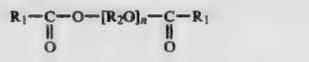
Int. Cl.[4] C08L *67/02*

U.S. Cl. 524—114 **6 Claims**

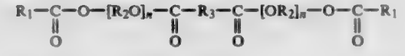
1. A polyester composition which comprises

(a) 100 parts by weight of a polyester containing at least 80 mol % of ethylene terephthalate repeating unit;

(b) 1 to 15 parts by weight of a carboxylic acid ester of a polyalkylene glycol or its derivative having the formula:

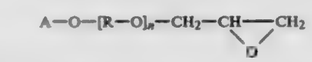


or



wherein n is an integer from 2 to 30; R_1 is aliphatic or aromatic hydrocarbon group having 1 to 18 carbon atoms; R_2 is an aliphatic hydrocarbon group having 2 to 6 carbon atoms; and R_3 is an aliphatic or aromatic hydrocarbon group having 1 to 10 carbon atoms;

(c) 0.01 to 10 parts by weight of a diepoxy or polyepoxy compound having a polyoxyalkylene chain which is



wherein A is a glycidyl group, R is an aliphatic hydrocarbon group having 1 to 5 carbon atoms, and n is an integer of not less than 2, or polyglycidyl ether of glycerin-alkylene oxide adduct, neopentyl glycol-alkylene oxide adduct, or pentaerythritol-alkylene oxide adduct;

(d) 0.1 to 50 parts by weight of an inorganic filler selected from the group consisting of talc and mica; and

(e) a reinforcing amount of glass fiber.

4,795,772

ENHANCED OIL RECOVERY COMPOSITION

Wen-Ching Hsieh, Chino Hills, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 751,570, Jun. 27, 1985, Pat. No. 4,753,973, which is a continuation-in-part of Ser. No. 673,421, Nov. 20, 1984. This application Sep. 8, 1987, Ser. No. 95,519

Int. Cl.[4] C08L *0/00*

U.S. Cl. 524—159 **22 Claims**

1. A viscous polymer solution comprising:

water;

at least one polymer comprising from about 45 to about 65 weight percent ethylacrylate monomer residue, from about 10 to about 45 weight percent methylacrylic acid residue, and from about 10 to about 30 weight percent acrylic acid monomer residue;

from about 2 to about 10 parts per 100 part of monomer of a co-surfactant system comprising:

(a) at least one nonylphenol polyethylene oxide ether sulfate, wherein the polyethylene oxide adduct of the nonylphenol polyethylene oxide ether sulfate is comprised of at least about 20 moles of ethylene oxide monomer residue; and

(b) at least one propoxylated, ethoxylated propylene glycol nonionic surfactant block polymer, wherein the ratio of said ether sulfate to said block polymer is from about 1:2 to about 10:1.

4,795,773

PLASTICIZED COMPOSITION AND METHOD OF PRODUCTION

Edgar J. Smutny, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 22, 1987, Ser. No. 99,857

Int. Cl.[4] C08K *5/41*

U.S. Cl. 524—170 **7 Claims**

1. A plasticized composition comprising:

(a) a linear, alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon of from 2 to 20 carbon atoms inclusive, and intimately mixed therewith,

(b) from about 5% by weight to about 50% by weight based on total composition of an organic sulfone of from 2 to 20 carbon atoms inclusive wherein the substituents of the —SO_2— linkage of said sulfone are hydrocarbyl or substituted hydrocarbyl in which the substituents are non-reactive toward the components of the plasticized composition.

4,795,774

POLYKETONE STABILIZATION

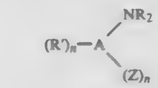
Robert Q. Kluttz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 5, 1987, Ser. No. 104,466

Int. Cl.[4] C08K *5/18*

U.S. Cl. 524—246 **23 Claims**

1. The method of stabilizing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by incorporating therein a stabilizing quantity of an aromatic amine of from 1 to 2 aromatic rings, from 6 to 50 carbon atoms and at least one amino group represented by the formula



wherein A is an aromatic ring system derived from benzene, naphthalene or biphenyl, Z is selected from the group —NR_2 and —OR, R is selected from hydrogen, alkyl and aryl, R' is alkyl and n independently is an integer of from 0 to 2 inclusive.

4,795,775

PRIMER COMPOSITIONS

Madhu Baile; Joseph T. Braun, and Joseph N. Clark, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 25, 1988, Ser. No. 160,459

Int. Cl.[4] C08K *5/05*

U.S. Cl. 524—379 **5 Claims**

1. In a primer composition comprising

A. an organosilicon compound of the formula $(R^1O)_n(R^2O)_{(3-n)}SIR^3Si(OR^1)_r(OR^2)_{(3-r)}$, where R^1 represents $CH_2{=}CHR^4OR^5$—; R^2 represents an alkyl radical containing from 1 to 4 carbon atoms; R^3 represents an alkylene radical containing at least 2 carbon atoms; R^4 represents an alkylene radical; R^5 represents an alkylene or substituted alkylene radical, where R^5 contains at least two carbon atoms and the substituent is a hydroxy, alkoxy or $CH_2{=}CHR^4O$— group, n is 1 or 2, and n is 0 or 1;

B. a copolymer derived from (1) at least one ester of an ethylenically unsaturated aliphatic carboxylic acid and (2) at least one silane of the formula $R^7COOR^6SiX_3$ where R^6 represents an alkylene radical, R^7 represents a terminally unsaturated alkenyl radical and X represents a hydrolyzable group;

C. an organohydrogensiloxane containing an average of at least two silicon-bonded hydrogen atoms per molecule; and

D. an amount of solvent sufficient to dissolve said composition;

the improvement comprising the presence in said solvent of at least 50 weight percent, based on the weight of said solvent, of an ethylenically unsaturated alcohol containing 4, 5 or 6 carbon atoms or a mixture of said alcohols.

4,795,776

FIRE-RESISTANT COMPOSITION

Bruce A. Milner, Sawston, England, assignor to Dixon International Limited, Pampisford, England

Filed May 8, 1987, Ser. No. 47,647

Claims priority, application United Kingdom, Jan. 29, 1987, 8702011

Int. Cl.[4] C08K *3/34*

U.S. Cl. 524—386 **20 Claims**

1. A composition which is initially plastic and sticky and at least when hardened resistant to fire, comprising: a binder comprising a flexible film-forming adhesive polymer in a non-flammable volatile solvent, the binder having dispersed therein aluminum trihydrate as a fire retardant and an exfoliatable mineral.

4,795,777

SINGLE COAT FLUOROCARBON PROTECTIVE COATINGS PROVIDING THE APPEARANCE OF ANODIZED ALUMINUM

Clark A. Higginbotham, Crystal Lake, and Paul T. West, Roselle, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jan. 23, 1987, Ser. No. 6,148

Int. Cl.[4] C08K *3/08*

U.S. Cl. 524—441 **19 Claims**

1. A thermosetting solvent solution coating composition which cures to provide the appearance of anodized aluminum comprising a dispersion of a fluorocarbon polymer in volatile organic solvent, said fluorocarbon polymer being selected from the group consisting of polyvinylidene fluoride and polyvinyl fluoride, said dispersion being pigmented with a finely divided mica and an aluminum flake to provide a combination of whiteness and transparancy providing an anodized aluminum appearance, said pigmented dispersion containing a hydroxy-functional acrylic copolymer and a curing agent therefor to provide a thermosetting cure which enhances the hardness and abrasion resistance of the coating, and enough additional pigment to provide sufficient coloration to allow production control without providing enough opacity to hide the whiteness and metallic appearance provided by the combination of mica and aluminum flake.

4,795,778

ADHESIVE HALOGENATED CYCLIC CONJUGATED DIENE AND 1,2 POLYBUTADIENE

Karen M. Boad, 4951 General McClane Dr., Edinboro, Pa. 16412; Mark A. Welh, R.D. #2, Waterhouse Rd., Box 222A, Cambridge Spgs., Pa. 16403, and Robert A. Auerbach, 126 Anderson Dr., Erie, Pa. 16509

Continuation of Ser. No. 919,519, Oct. 16, 1986, abandoned. This application Mar. 10, 1988, Ser. No. 169,147

Int. Cl.[4] C08L *47/00*; C08K *5/07*

U.S. Cl. 524—551 **2 Claims**

1. An adhesive composition suitable for bonding elastomeric materials consisting essentially of

(a) at least one Diels-Alder adduct of a chlorinated cyclic conjugated diene and 1,2 polybutadiene homopolymer having a vinyl content in the range from 88 to 98 percent, based on total unsaturation, and a molecular weight in the range from 500 to 200,000, and said Diels-Alder adduct has a halogen content in the range from 26 to 35 weight percent, based on total weight of said Diels-Alkder adduct; and

(b) An inert solvent, said solvent being present in an amount to provide a lacquer composition suitable for use as an adhesive suitable for bonding elastomeric materials, said lacquer having a total solids content in the range from 5 to 40 percent.

4,795,779

PROCESS FOR PRODUCING INORGANIC COMPOUND-CONTAINING UREA RESIN

Shunsuke Tazawa, Tokyo; Katsuhiko Kurihara, Yokohama; Keaji Takeuchi, Nagoya, and Mitsuaki Abe, Hachinohe, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 29, 1987, Ser. No. 55,261

Claims priority, application Japan, May 30, 1986, 61-123424; Jun. 11, 1986, 61-133892; Jun. 30, 1986, 61-151711

Int. Cl.[4] C08L *61/22*; C08K *3/20*

U.S. Cl. 524—598 **8 Claims**

1. A process for producing an inorganic compound-containing urea resin, which comprises adding an acidic gelling agent to an aqueous urea-formaldehyde precondensate solution in an effetive amount with an acidic gelling agent capable of de-

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creasing the pH of the aqueous urea-formaldehyde precondensate solution to 4 or less to prepare a urea resin-containing product, and mixing the product with a reactant which reacts with the acidic gelling agent to form inorganic particles substantially insoluble in water.

4,795,780

PROCESS FOR THE PREPARATION OF BINARY α-METHYLSTYRENE/ACRYLONITRILE RESINS BY MULTI-STAGE BULK POLYMERIZATION

Frank Wingler, Leverkusen; Klaus Sümmermann, Cologne; Gerd Wassmuth, Leverkusen; Alfred Plachtschen, Krefeld, and Joachim Döring, Langenfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 20, 1987, Ser. No. 75,775

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1986, 3626319

Int. Cl.[4] C08F 2/02, 220/44

U.S. Cl. 525—53 **3 Claims**

1. A process for the production of a thermoplastic copolymer of α-methylstyrene and acrylonitrile by continuous bulk copolymerization at a polymerization temperature of 60° to 130° C. with a residence time of 4 to 12 hours in the presence of an initiator which supplies free radicals carried out in at least two continuously operated mixed tank reactors, the second tank reactor being equipped with a vapor condenser, in which 100 molar parts of 34 to 52 mol % of α-methylstyrene and 66 to 48 mol % of acrylonitrile are fed continuously into the first tank reactor per unit time and, with back-mixing, are copolymerized up to a conversion of 5 to 30 molar parts to give a copolymer of the composition 49 to 53 mol % of α-methylstyrene and 51 to 47 mol % of acrylonitrile, and the resulting mixture of the copolymer and the unreacted α-methylstyrene and acrylonitrile monomers is transferred continuously to the second tank reactor and is polymerized there an additional 5–50 molar parts resulting in a total conversion of 20 to 60 molar parts to give further copolymer of the composition 49 to 53 mol % of α-methylstyrene and 51 to 47 mol % of acrylonitrile, 0.5 to 11.5 molar parts of acrylonitrile being removed from the vapor condenser of the second tank reactor and recycled to the first tank reactor per unit time.

4,795,781

RESIN COMPOSITION OF A SAPONIFIED ETHYLENE VINYL ACETATE COPOLYMER AND A POLYAMIDE RESIN

Masaaki Miyamoto; Eiichi Kamoshida, both of Kitakyushu, and Hiroshi Takida, Osaka, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo and Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, both of, Japan

Filed Jul. 10, 1986, Ser. No. 884,068

Claims priority, application Japan, Jul. 22, 1985, 60-161591

Int. Cl.[4] C08L 29/04, 77/00

U.S. Cl. 525—58 **11 Claims**

1. A resin composition, comprising:

(1) a saponified ethylene/vinyl acetate copolymer having an ethylene content ranging from 20 to 80 mole % and a saponification degree of not less than 90%, and

(2) a polyamide resin containing terminal carboxyl (—COOH) and terminal amide (—CONRR') groups, wherein the number (A) of the terminal carboxyl groups and the number (B) of terminal amide groups satisifies the relationship:

$$\frac{(B)}{(A)+(B)} \times 100 \geq 5$$

wherein R is a hydrocarbyl group of 1 to 22 carbon atoms and R, is hydrogen atom or a hydrocarbyl group of 1 to 22 carbon atoms.

4,795,782

IMPACT RESISTANT BLENDS OF THERMOPLASTIC POLYAMIDES, FUNCTIONALIZED POLYOLEFINS AND FUNCTIONALIZED ELASTOMERS

Robert G. Lutz, Spring; Richard Gelles, and William P. Gergen, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 25, 1986, Ser. No. 911,555

Int. Cl.[4] C08L 77/00

U.S. Cl. 525—66 **25 Claims**

1. Impact resistant polymeric compositions comprising

(a) from 1 to 95 percent by weight of a polyamide having a number average molecular weight of at least 5000; and

(b) from 1 to 95 percent by weight of a poly-α-olefin to which has been grafted an unsaturated monocarboxylic or polycarboxylic acid compound or its derivative;

(c) from 1–50 percent by weight of a selectively hydrogenated block copolymer of conjugated dienes and vinyl aromatic hydrocarbons to which has been grafted an unsaturated monocarboxylic or polycarboxylic acid compound or its derivative.

4,795,783

ORGANOPOLYSILOXANE CONTAINING COATING COMPOSITIONS

Robin L. Hunt, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 19, 1987, Ser. No. 63,931

Int. Cl.[4] C08F 8/00

U.S. Cl. 525—101 **11 Claims**

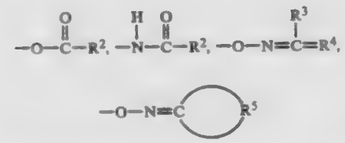
1. A coating composition comprising a blend of:

(a) from about 5 percent by weight to about 35 percent by weight of a hydroxyl functional vinyl polymer having at least 2 percent by weight of hydroxyl groups based on the total weight of the vinyl polymer; and

(b) from about 65 percent by weight to about 95 percent by weight of an organopolysiloxane containing hydrolyzable groups which is prepared by the partial hydrolysis of a compound or mixture of compounds selected form the group consisting of silanes represented by the structural formula $R_aSiX_{(4-a)}$ wherein:

R is hydrogen, alkyl, aryl, alkylaryl, arylalkyl, aryloxyalkyl or haloalkyl;

X is halogen, OR^1,



or the monohydroxy or cyclic C_2 to C_3 residue of a 1,2- or 1,3-glycol, wherein:

R^1 is C_1–C_3 alkyl,

R^2 is hydrogen or C_1–C_4 alkyl,

R^3 and R^4 independently are hydrogen, C_1–C_4 alkyl or C_6–C_8 aryl,

R^5 is C_4–C_7 alkylene, and

a is an integer ranging from 1 to 2, the percentage of (a) and (b) being based on the total weight of (a) and (b).

4,795,784

BRINE TOLERANT POLYMER AND OIL RECOVERY APPLICATIONS

James E. Tackett, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 813,181, Dec. 24, 1985, Pat. No. 4,708,205. This application Sep. 2, 1987, Ser. No. 92,748

Int. Cl.[4] C08F 8/30

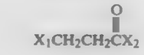
U.S. Cl. 525—244 **15 Claims**

1. A process for preparing a branched partially hydrolyzed polyacrylamide comprising the steps of:

(a) polymerizing acrylamide monomer in solution substantially to completion to form a polyacrylamide solution;

(b) admixing a base and additional acrylamide monomer with said polyacrylamide solution such that the weight ratio of said polyacrylamide to said additional acrylamide monomer in said solution is about 20:1 to about 6:1;

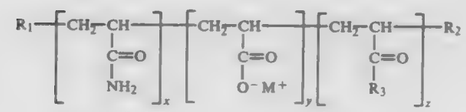
(c) reacting a first portion of said base with said additional acrylamide monomer to form at least one branching compound having the general formula



wherein X_1 is NH_2, OH, or an amide group and X_2 is NH_2 or O^-M^+, M^+ being a cation of a hydrolyzing salt;

(d) partially hydrolyzing said polyacrylamide solution with a second portion of said base to form partially hydrolyzed polyacrylamide; and

(e) reacting said branching compound with said partially hydrolyzed polyacrylamide to form said branched partially hydrolyzed polyacrylamide having the general formula:



where:

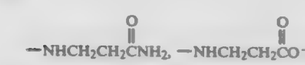
x is a fraction of amide groups in the branched polymer and has a value between about 0.9 and 0.5;

y is a fraction of carboxylate groups in the branched polymer and has a value between about 0.1 and 0.5;

z is a fraction of branched groups in the branched polymer and has a value greater than 0 and less than about 0.01;

R_1 and R_2 are either repeating amide, carboxylate, or branched groups in the stated fractions of x, y and z or a chain terminating hydrogen ion;

R_3 is a branching constituent selected from the group consisting of



and dimers and trimers thereof; and

M^+ is a cation of a hydrolyzing salt.

4,795,785

COATING RESIN COMPOSITION

Toshihiko Ito; Masayuki Mogami, both of Ibaraki, and Kengo Kobayashi, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 3, 1986, Ser. No. 937,392

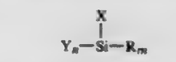
Claims priority, application Japan, Dec. 3, 1985, 60-272250

Int. Cl.[4] C08F 255/02, 255/00

U.S. Cl. 525—288 **8 Claims**

1. A coating resin composition comprising a chlorinated olefin polymer obtained by polymerizing, in the presence of 0.5–15% by weight of a chlorinated olefin polymer resin having a chlorine content of 50% by weight or less, 99.5–85% by weight of a polymerizable monomer blend containing

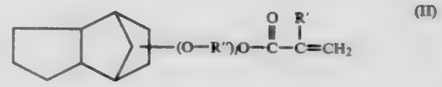
(a) 0.01–5% by weight of an unsaturated organic silane compound represented by the formula:



(I)

wherein X is a group having a copolymerizable double bond; Y is a hydrolyzable group; R is an inert monovalent organic group; n is an integer of 1–3; m is zero or an integer of 1 or 2; and m+n is 3;

(b) 10–99.99% by weight of at least one monomer selected from the group consisting of monomers represented by the formula:



(II)

wherein R' is hydrogen or a lower alkyl group; R'' is a divalent organic group; and l means a repetition number of (O—R'') and is 0 or 1; alkyl acrylates and alkyl methacrylates; and

(c) 0–89.99% by weight of at least one other polymerizable monomer, the total being 100% by weight.

4,795,786

POLYMER COMPOSITION

Jeffrey D. Umpleby, Ferney-Voltaire, France, assignor to BP Chemicals Limited, London, England

Continuation of Ser. No. 890,879, Jul. 25, 1986, abandoned, which is a continuation of Ser. No. 775,190, Jul. 15, 1985, abandoned. This application Dec. 24, 1987, Ser. No. 140,943

Claims priority, application France, Jul. 20, 1984, 84 18592

Int. Cl.[4] C08F 30/08

U.S. Cl. 525—326.5 **16 Claims**

1. A crosslinkable composition comprising:

(A) a silyl copolymer prepared by copolymerising monomers comprising ethylene or ethylene and one or more additional monomers of vinyl esters, alkyl acrylates, alkyl methacrylates, olefinically unsaturated carboxylic acids or derivatives of olefinically unsaturated carboxylic acids or vinyl ethers, with an unsaturated silane compound having one or more hydrolysable groups, said silyl copolymer containing 0.1 to 10 weight % of copolymerised units of the unsaturated silane compound and not more than 25 weight % of any copolymerised additional monomer, and a silanol condensation catalyst comprising a dihydrocarbyl tin (IV) carboxylate compound characterised in that the carboxylate units in the tin compound are provided by a dicarboxylic acid.

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4,795,787

CURING COMPONENT FOR SYNTHETIC RESINS WHICH CONTAIN GROUPS CAPABLE OF AMIDE FORMATION OR ESTER FORMATION WITH CARBOXYLIC ACIDS

Gerd Walz, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 732,493, May 9, 1985, abandoned. This application Oct. 5, 1987, Ser. No. 105,652
Claims priority, application Fed. Rep. of Germany, May 11, 1984, 3417441
The portion of the term of this patent subsequent to Feb. 17, 2004, has been disclaimed.
Int. Cl.[4] C08G 59/14; C09D 5/44; C08F 8/14
U.S. Cl. 525—328.2 18 Claims

1. In a process for curing synthetic resins containing groups capable of ester formation and/or amide formation with carboxylic acids, the improvement comprising using as the curing agent a compound composed of the Michael addition product of (a) a monocarboxylic or dicarboxylic acid ester capable of undergoing Michael addition with (b) a compound containing at least two double bonds capable of undergoing Michael addition selected from the group consisting of (i) an ester of an α,β-unsaturated monocarboxylic or dicarboxylic acid with a polyol, (ii) an amide of the formula $R_n(A—Ac)_n$(III) in which R_n is the radical of a polyamine, A is an amino group and Ac is the acyl radical of an α,β-unsaturated monocarboxylic or dicarboxylic acid and n is an integer of at least 2 and (III) an urea or urethane derivative of an α,β-unsaturated monocarboxylic or dicarboxylic acid, and which, on average, contains per molecule, at least one polymerizable double bond and at least one ester group capable of transesterification and/or transamidation.

4,795,788

PROCESS FOR THE SELECTIVE HYDROGENATION OF UNSATURATED POLYMERS CONTAINING NITRILE GROUPS

Thomas Hinmüler; Paul Fiedler, both of Cologne; Rudolf Braden, Odenthal, and Hartmuth Buding, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1986, Ser. No. 930,671
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1985, 3541689
Int. Cl.[4] C08F 8/04
U.S. Cl. 525—338 6 Claims

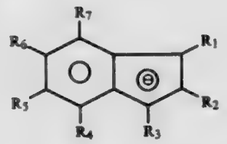
1. A process for the selective hydrogenation of unsaturated polymers containing nitrile groups in a homogeneous phase with the preservation of the nitrile groups, characterised in that a compound of the formula

$$RuX[(L_1)(L_2)_n]$$

is used as a catalyst, in which

X represents, $SnCl_3$,

L_1 represents an optionally substituted indenyl of the formula



L_2 represents a phosphane, bisphosphane or arsane,

R_1 to R_7 can be the same or different, and stand for hydrogen, alkyl residues, cycloalkyl residues, aryl residues or aralkyl residues, in which every two adjacent residues from the R^1 to R^7 group can also together represent condensed cyclic systems, which optionally contain inert substituents under reaction conditions,

n signifies 1 or 2

and a low-molecular ketone is used as the solvent.

4,795,789

PROCESS FOR MAKING ACRYLAMIDO METHANE SULFONIC ACID POLYMERS

Dodd W. Fong, Naperville, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Oct. 26, 1987, Ser. No. 112,643
The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.
Int. Cl.[4] C08F 8/36
U.S. Cl. 525—344 5 Claims

1. A method of introducing acrylamino methane sulfonic acid groups into acrylic acid or methacrylic acid polymers are in the form of a water-in-oil emulsion which contain at least 5 mole % of acrylic or methacrylic acid which comprises reacting the carboxylic acid groups in such polymers with from 2–100 mole % of an ammonia, formaldehyde and a water-soluble bisulfite mixture whereby from about 1 to about 60 moles of the carboxylic acid groups in such polymers are converted to amido methane sulfonic acid groups.

4,795,790

THERMOPLASTIC POLYETHERIMIDE ESTER POLYMERS EXHIBITING IMPROVED FLEXIBILITY

Russell J. McCready, and John A. Tyrell, both of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 2, 1986, Ser. No. 936,699
Int. Cl.[4] C08G 8/00
U.S. Cl. 525—437 32 Claims

1. A polyetherimide ester polymer comprising the reaction products of:

(i) a diol component comprising at least one low molecular weight diol and at least one high molecular weight diol;

(ii) at least one dicarboxylic acid or an ester forming reactive derivative thereof; and

(iii) a set of reactants selected from

(a) (1) at least one high molecular weight poly(oxy alkylene)diamine, and (2) at least one tricarboxylic acid or a derivative thereof, or

(b) at least one high molecular weight polyoxyalkylene diimide diacid.

4,795,791

METHOD FOR INCREASING THE FUNCTIONALITY OF AN EPOXY RESIN

Raymond A. Koenig, Vendenheim, France, and Günter H. Hiertel, Buchl, Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 766,035, Aug. 15, 1985, Pat. No. 4,722,990. This application Nov. 27, 1987, Ser. No. 125,907
Claims priority, application United Kingdom, Aug. 16, 1984, 8420817
The portion of the term of this patent subsequent to Feb. 2, 2005, has been disclaimed.
Int. Cl.[4] C08G 59/14
U.S. Cl. 525—523 9 Claims

1. A method for increasing the functionality of an epoxy resin which comprises branching the epoxy resin in the presence of an amount of lithium or cesium compound sufficient to catalyze the branching reaction, continuing the branching reaction until desired functionality is obtained and thereafter terminating the branching reaction, said epoxy resin having been advanced from one molecular weight to a higher molecular weight by reaction with a coreactive chain extender in the presence of an advancement catalyst, prior to branching the epoxy resin.

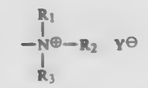
4,795,792

PROCESS FOR PREPARING PARTICLES OF OLEFIN-MALEIC ANHYDRIDE COPOLYER

Shoji Ohtani, Funabashi; Yoshiyaki Murol, and Rikio Tsushima, both of Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 187,261
Claims priority, application Japan, May 25, 1987, 62-127641
Int. Cl.[4] C08F 2/08
U.S. Cl. 526—201 3 Claims

1. A process for preparing a copolymer of an olefin and maleic anhydride in the form of particles, which comprises co-polymerizing an olefin having 2 to 8 carbon atoms with maleic anhydride in a solvent capable of dissolving both co-monomers, but incapable of dissolving the copolymer in the presence of a dispersant of an oil-soluble, cationic copolymer comprising (a) ethylenically unsaturated monomer units having cationic groups of the formula (I):



(I)

in which R1, R2 and R3 each are an alkyl having 1 to 22 carbon atoms or a substituted alkyl having 1 to 22 carbon atoms or two of R1, R2 and R3 form a cyclic structure in combination with the nitrogen atom and Y is a halogen or an acid residue, and (b) lipophilic, ethylenically unsaturated monomer units.

4,795,793

FLUORINE-CONTAINING COPOLYMER AND OIL AND WATER REPELLENT COMPOSITION CONTAINING THE SAME

Yoshio Amimoto, Takatsuki; Masayoshi Shinjo, Settsu; Kazunori Hayashi, Settsu, and Takashi Enomoto, Settsu, all of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

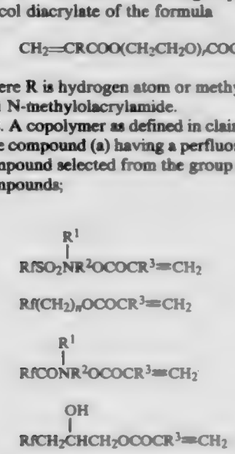
Filed Dec. 2, 1987, Ser. No. 127,367
Claims priority, application Japan, Dec. 5, 1986, 61-290783
Int. Cl.[4] C08F 12/30; C08J 3/02; C08K 3/20
U.S. Cl. 526—243 6 Claims

1. A copolymer comprising 50 to 90% by weight of the constituting unit derived from (a) a polymerizable compound having a perfluoroalkyl group of 4 to 20 carbon atoms, 10 to 50% by weight of the constituting unit derived from (b) cyclohexyl or benzyl ester of acrylic acid or methacrylic acid and 0.1 to 10% by weight of the constituting unit derived from (c) at least one selected from the group consisting of polyethylene glycol diacrylate of the formula

$$CH_2{=}CRCOO(CH_2CH_2O)_rCOCR{=}CH_2$$

where R is hydrogen atom or methyl, r is an integer of 1 to 50, and N-methylolacrylamide.

2. A copolymer as defined in claim 1 wherein the polymerizable compound (a) having a perfluoroalkyl group is at least one compound selected from the group consisting of the following compounds;



(1)

$$Rf(CH_2)_mOCOCR^3{=}CH_2 \quad (2)$$

(3)

(4)

-continued



(5)

$$Rf(CH_2)_mCOOCH{=}CH_2 \quad (6)$$

$$RfCH{=}CH(CH_2)_nOCOCR^3{=}CH_2 \quad (7)$$

wherein Rf is perfluoroalkyl group of 4 to 20 carbon atoms, R^1 is hydrogen atom or alkyl group of 1 to 10 carbon atoms, R^2 is alkylene grup of 1 to 10 carbon atoms, R^3 is hydrogen atom or methyl group, R^4 is alkyl group of 1 to 17 carbon atoms, n is 1 to 10, m is 0 to 10.

4,795,794

PROCESSES FOR COLORED PARTICLES FROM POLYMERIZABLE DYES

Francoise M. Winnik, Toronto; Christopher K. Ober, and Melvin D. Croucher, both of Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1985, Ser. No. 783,729
Int. Cl.[4] C08F 32/08, 26/06; G03C 9/08
U.S. Cl. 526—259 26 Claims

1. A dispersion polymerization process for affecting the preparation of colored particles which comprises dissolving in a solvent selected from the group consisting of aliphatic alcohols, aliphatic hydrocarbons, and mixtures thereof a mixture of at least two first monomer components including at least one second monomer having covalently attached thereto a dye moiety, wherein the second monomer is present in an amount of from about 0.5 to about 10 percent by weight and the other monomer components are present in an amount of from about 90 to about 99.5 percent by weight, subsequently adding to the resulting reaction mixture a free radical polymerization initiator, thereafter affecting polymerization of the reaction mixture by heating, and separating the product particles therefrom, thereby resulting in said colored particles with an average diameter of from about 0.1 to about 20 microns.

4,795,795

CATALYTIC PREPARATION OF POLYAMIDE OR POLYAMIDE-POLYMIDE WITH N,N'-DIMETHYL ALKYLENE UREA SOLVENT

Masahiro Kouno, Masazaru; Kazumi Mizutani; Masanori Onuwa, both of Yokohama; Kohei Shizuka, Fujisawa; Toshihiro Toyoda, Tokai, and Hiromi Nakano, Zushi, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Feb. 12, 1986, Ser. No. 828,530
Claims priority, application Japan, Feb. 20, 1985, 60-030529; Feb. 21, 1985, 60-031489; Feb. 21, 1985, 60-031490; Feb. 21, 1985, 60-031491; Mar. 8, 1985, 60-044756
Int. Cl.[4] C08G 18/34
U.S. Cl. 528—53 21 Claims

1. In a process for preparing a polyamide or a polyamide containing polyimide units by subjecting a polycarboxylic acid represented by the following formula (I):

$$R_q^1(COOH)_n \quad (I)$$

wherein q is 0 or 1, n is 2, 3 or 4, R^1 is an organic qroup having a valency of 2–4, when n is 3, two of the three carboxyl groups are bonded at positions to permit formation of an acid anhydride, and when n is 4, the four carboxyl groups are bonded at positions to permit formation of 2 sets of acid anhydrides, and a diisocyanate represented by the following formula (II):

$$OCN—R^2—NCO \quad (II)$$

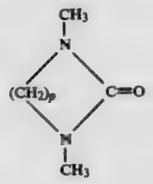
wherein R_2 is a divalent organic group, to polycondesnation at a temperature above 100° C. in the presence of an alkali metal

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carbonate, alkali metal hydrogencarbonate, alkali metal hydroxide or an alkali metal salt of a polyycarboxylic acid, said alkali metal salt being represented by the following formula (III):

$$R_q^1(COOH)_l(COOM)_m \quad (III)$$

wherein R^1 and q have the same meanings as defined in the formula (I), M denotes an alkali metal, l is an integer of 0–3, m stands for an integer of 1–4 and l+m is 2–4, the improvement wherein an N,N'-dimethylalkyleneurea compound represented by the following formula (IV):



(IV)

wherein p stands for 2 or 3 is used as a solvent.

4,795,796

ADDITION COMPOUNDS SUITABLE FOR USE AS DISPERSING AGENTS AND DISPERSION STABILIZERS, PROCESS FOR THEIR PRODUCTION, THEIR USE AND SOLIDS COATED THEREWITH

Karlheinz Hamboenoetel, and Wolfgang Pritschins, both of Wesel, Fed. Rep. of Germany, assignors to BYK-Chemie GmbH, Wesel, Fed. Rep. of Germany

Filed Dec. 4, 1987, Ser. No. 129,104

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1986, 3641581

Int. Cl.⁴ C08G *18/10*

U.S. Cl. 528—28 **43 Claims**

1. An addition compound or salt thereof suitable for use as a dispersing aid or dispersion stabilizer obtained by reacting a polyisocyanate having an average functionality of from 2.5 to 10

(a) with at least one monohydroxycompound of Formula I

$$Y—OH \quad I$$

wherein Y represents:

(i) an aliphatic or cycloaliphatic hydrocarbon group with 8 to 30 carbon atoms, the hydrogen atoms of which may be partially replaced by halogens or aryl residues, or

(ii) an aliphatic, cycloaliphatic or aromatic group containing at least one —O—, —NHCOO— or —COO— group, having an average molecular weight M_n from 200 to 10,000, the hydrogen atoms of which may be partially replaced by halogens,

in such an amount that 10 to 70% of the NCO— groups are reacted;

(b) reacting the product of stage (a) with at least one compound of Formula II

$$G—(E)_n \quad II$$

wherein

E represents —OH, $—NH_2$, or —NHR (in which R represents an alkyl group having 1 to 4 carbon atoms),

n represents 2 or 3, and

G represents an aliphatic, cycloaliphatic or aromatic group containing at least 2 carbon atoms having an average molecular weight M_n of at most 3000, which may contain —O—, —COO—, —CONH—, —NHCOO—, —S—, $—Si(CH_3)_2O—$ or $—SO_2—$ group,

in such an amount that a further 1 to 50% of the NCO— groups of the originally provided polyisocyanate are reacted,

whereby in stages (a) and (b) all total from 20 to 85% of the NCO— groups of the originally provided polyisocyanate are reacted, and

(c) reacting the product of stage (b) with at least one compound of Formula III

$$Z—Q \quad III$$

of IV

$$Z—NH—Z \quad IV$$

wherein

Q represents —OH, $—NH_2$, —NHR (wherein R represents an alkyl group having 1 to 4 carbons atoms) or —SH, and

Z may be the same or different and represents an aliphatic, cycloaliphatic or aromatic residue having at least one acidic functional group, OH— group or $—Si(OR)_m(R')_{3-m}$— group (wherein R and R' represent alkyl groups with 1 to 10 carbon atoms and m=1–3),

in such an amount that at least 0.8 molecule of the compound Z—Q or Z—NH—Z is provided for each remaining isocyanate group not reacted in stages (a) and (b).

4,795,797

BRANCHED POLYCARBONATE FROM ALIPHATIC POLYICARBOXYLIC ACIDS OR DERIVATIVES THEREOF, AND PROCESS FOR THEIR PREPARATION

Alberto Petri, Milan, Italy, assignor to Enichem Tecnoresine S.p.A., Milan, Italy

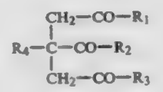
Filed Jul. 17, 1987, Ser. No. 74,559

Claims priority, application Italy, Jul. 23, 1986, 21230 A/86

Int. Cl.⁴ C08G *63/62*

U.S. Cl. 528—176 **17 Claims**

1. Thermoplastic, blow moldable, branched polycarbonate derived from at least one aromatic dihydroxy compound, phosgene, and aliphatic polyfunctional acid branching agent compound having the formula:



(I)

wherein

R_1, R_2, and R_3 are the same or different from each other, and represent —OH or halogen;

R_4 represents H, OH or halogen.

4,795,798

HIGH-TEMPERATURE ADHESIVE POLYIMIDE FROM 2,2-BIS[4-(3-AMINO PHENOXY)PHENYL]1,1,1,3,3,3-HEXAFLUORO PROPANE

Shoji Tamai, Yokohama; Saburo Kawashima, Yokosuka; Masahiro Ohta; Hideaki Oikawa, both of Yokohama; Kouji Ohkoshi, Zushi, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

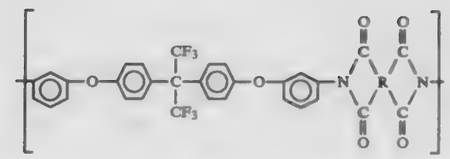
Filed Feb. 25, 1987, Ser. No. 18,496

Claims priority, application Japan, Feb. 25, 1986, 61-038390; Apr. 15, 1986, 61-084945

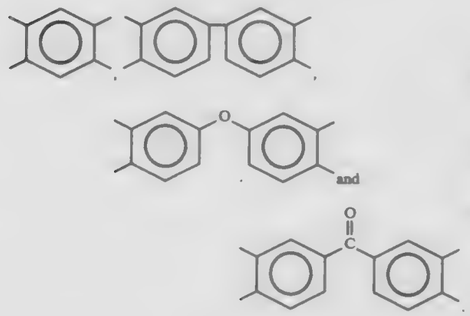
Int. Cl.⁴ C08G *73/10*

U.S. Cl. 528—185 **5 Claims**

1. A high-temperature resistance adhesive consisting of polyimide, which consists of recurring units of the formula:



where R is a tetra-valent aromatic radical selected from the group consisting of:



4,795,799

PRODUCTION OF AROMATIC SULFIDE/KETONE POLYMERS WITH ALKALI METAL CARBONATE

James W. Cleary, Augusta, Ga., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 8, 1987, Ser. No. 94,189

Int. Cl.⁴ C08G *65/38*

U.S. Cl. 528—222 **10 Claims**

1. A process for the production of an aromatic sulfide/ketone polymer which comprises contacting compounds comprising:

(1) at least one dihaloaromatic ketone,

(2) at least one organic amide,

(3) at least one alkali metal hydrosulfide,

(4) water, and

(5) at least one member selected from the group consisting of (a) alkali metal carbonates and (b) mixtures of at least one alkali metal carbonate with at least one alkali metal hydroxide,

under polymerization conditions of temperature and time sufficient to form said polymer.

4,795,800

SCALE DEPOSITION PREVENTING AGENT

Hiroaki Yamauchi, Kakogawa; Toragoro Mitani, and Takamichi Komabeshiri, both of Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

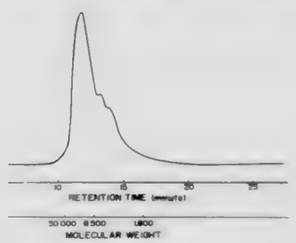
Filed May 21, 1987, Ser. No. 52,392

Claims priority, application Japan, May 21, 1986, 61-116881

Int. Cl.⁴ C08G *12/00*

U.S. Cl. 528—229 **16 Claims**

1. A process for preparing a scale deposition preventing agent of a quinone-amine compound suitable for use in a polymerization of acrylic or methacrylic acid ester monomers, which comprises (A) subjecting an aromatic quinone and an aromatic diamine to addition reaction in a solvent having a solubility parameter of 8.5 to 24.0 to give an addition product, and (B) subjecting to a reaction for converting the addition product into a high molecular weight compound within 24 hours after beginning the addition reaction (A) by subjecting



the addition reaction mixture to oxidation reaction to give a quinone-amine compound.

4,795,801

CHEMICAL GRAFTING PROCESS USED TO PRODUCE A COMPOSITION, AND COMPOSITION PRODUCED THEREBY

Herve M. J. Farge, B36 Les Nouveaux Horizons, F 78990 Elancourt, and Jean M. L. Farge, 152 rue de La Gare, 95120 Ermont, both of France

Filed Feb. 9, 1987, Ser. No. 12,701

Claims priority, application France, Feb. 10, 1986, 86 01759

Int. Cl.⁴ C08J *3/00;* **C08K** *9/04*

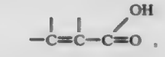
U.S. Cl. 528—392 **7 Claims**

1. A process for making a moldable, composition comprising a suspension of particles in a liquid, said process comprising:

I. mixing together:

(a) an inorganic filler comprising at least one hydroxylated group;

(b) a polymerizable organic acid comprising a group having the formula



(c) a liquid which is a solvent for said organic acid and is capable of suspending said inorganic filler; and

(d) a consumable, radical-forming catalyst, said catalyst, upon decomposition, forming at least one radical for reacting with said organic acid to form an excited acid radical, the amount of said catalyst in said mixture being restricted so as to be substantially entirely consumed during said acid radical-forming reaction; and,

II. heating the resulting mixture to a temperature at which said catalyst decomposes to form said radicals for reaction with said organic acid and thereby induce a reaction in which said organic acid and said inorganic filler chemically combine and produce a decrease in viscosity of said mixture.

4,795,802

REMOVAL OF VINYLPYRROLIDONE FROM VINYLPYRROLIDONE POLYMERS

Adolf Nuber, Boehl-Iggelheim; Axel Sanner, Frankenthal, and Dieter Urban, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 6, 1987, Ser. No. 82,140

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1986, 3629933

Int. Cl.⁴ C08F *6/10*

U.S. Cl. 528—482 **4 Claims**

1. A process for removing vinylpyrrolidone from its polymers, wherein an aqueous or alcoholic solution of the polymer

is treated with an adsorbent selected from the group consisting of active carbon, a zeolite and an acidic ion exchanger.

4,795,803

ADHESIN ANTIGENS, ANTIBODIES AND DNA FRAGMENT ENCODING THE ANTIGEN, METHODS AND MEANS FOR DIAGNOSIS AND IMMUNIZATION ETC.

Frederick C. Lindberg, Sundsvikon; Bjorn O. Lund, Umea; Britt M. Bega, Umea; Mari E. Norgren, Umea; Mikael Goransson, Umea; Bernt E. Uhlin, Umea; Jan S. Normark, Holmsund, and David L. Lark, Umea, all of Sweden, assignors to Syn-Tek AB, Umea, Sweden

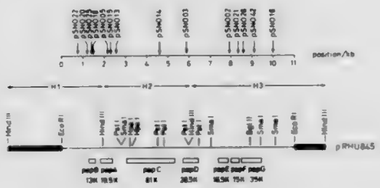
PCT No. PCT/DK85/00045, § 371 Date Feb. 19, 1986, § 102(e) Date Feb. 19, 1986, PCT Pub. No. WO85/05037, PCT Pub. Date Nov. 21, 1985

PCT Filed May 2, 1985, Ser. No. 817,849

Claims priority, application Denmark, May 2, 1984, 2190/84

Int. Cl.[4] A61K *39/02*; C07K *15/00, 15/04*

U.S. Cl. 530—324 **10 Claims**



1. An isolated antigen which comprises a pilus component distinct from pilin and substantially free from other components of the pilus, an immunogenically active subsequence of said component or a precursor for said component which is convertible to an immunologically active form, said antigen being one which elicits antibodies inhibiting the adhesion of pathogenic adhesin-forming bacteria to mammalian tissue.

4,795,804

BONE MORPHOGENETIC AGENTS

Marshall R. Urist, Pacific Palisades, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 523,606, Aug. 16, 1983, Pat. No. 4,619,989, which is a continuation-in-part of Ser. No. 260,726, May 5, 1981, Pat. No. 4,455,256, which is a continuation of Ser. No. 174,906, Aug. 4, 1980, Pat. No. 4,294,753. This application Aug. 7, 1985, Ser. No. 763,479

Int. Cl.[4] C07G *7/00*; C09H *1/00*; A23J *1/00*

U.S. Cl. 530—350 **21 Claims**

1. A bone morphogenetic peptide having an amino acid sequence, said sequence selected from the group consisting of amino acid sequences of peptide fragments (BMP-p) having a relative molecular weight (M_r) of about 4K to about 7K and derived from proteolysis of bone morphogenetic protein (BMP), said peptide fragments being osteoinductive and immunoreactive with anti-BMP antibody.

4,795,805

DERIVATIVE OF ADULT T CELL LEUKEMIA VIRUS ANTIGEN PEPTIDE

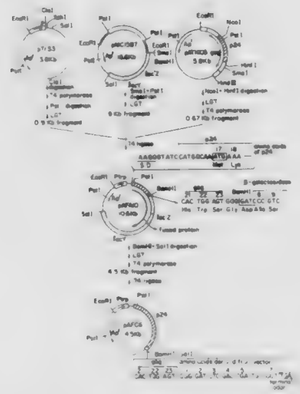
Seiga Itoh, Sagamihara; Susumu Sekine, Machida; Tadatsugu Taniguchi, Ibaraki; Mitsuaki Yoshida, and Haruo Sugano, both of Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd. and Juridical Foundation, Japanese Foundation for Cancer Research, both of Tokyo, Japan

Continuation of Ser. No. 696,586, Jan. 31, 1985, abandoned. This application Oct. 2, 1987, Ser. No. 104,578

Claims priority, application Japan, Feb. 10, 1984, 59-24187

Int. Cl.[4] C07K *13/00*; C12D *21/02*

U.S. Cl. 530—350 **1 Claim**



1. A fused protean of an adult T cell leukemia virus antigen peptide and β-galactosidase, said antigen peptide consisting of 198 amino acids starting from the 17th amino acid (Met) of the N-terminal of p24 and 23 amino acids which are the product of gag gene other than p24 at the C-terminal and said β-galactosidase lacking 7 amino acids from the N-terminal, wherein said fused protein or part thereof evidences immune agglutination with anti-ATLA antibody.

4,795,806

PHOSPHOLIPID AFFINITY PURIFICATION OF FACTOR VIII:C

James E. Brown, Lafayette, and Cynthia A. Cowgill, Berkeley, both of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jul. 16, 1987, Ser. No. 74,123

Int. Cl.[4] C07K *3/18, 3/20, 15/14*

U.S. Cl. 530—383 **11 Claims**

1. A method for preparing high purity protein having Factor VIII:C procoagulant activity comprising the steps of

(a) adsorbing Factor VIII:C onto a rigid support to which has been coupled phospholipids selected from the group consisting of phosphatidylserine, phosphotidylcholine, and phosphotidylethanolamine, said phosphotidylethanolamine or phosphotidylcholine being present in amounts between 10% and 20% of said phospholipid, and

(b) eluting the adsobed Factor VIII:C or fusion products thereof with a non-denaturing salt solution, said non-denaturing salt solution being of a sufficient concentration to elute Factor VIII:C while maintaining the activity of Factor VIII:C.

4,795,807

PREPARATION OF AZO DYESTUFFS BY DIAZOTIZATION AND COUPLING IN THE PRESENCE OF AN ESTER

Ulrich Bühler, Aizenau; Friedrich Schophoff, and Wolf Weidemüller, both of Frankfurt, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 30, 1987, Ser. No. 31,530

Int. Cl.[4] C09B *41/00, 67/48, 67/54*

U.S. Cl. 534—58 **8 Claims**

1. Process for the preparation of azo disperse dyestuffs by diazotization and coupling in an aqueous phase, characterized in that the coupling is carried out in the presence of 0.03 to 15% by weight, relative to the total amount of water present in the reaction mixture when coupling is complete, of an ester of the formula

$$R—CO—OR^1$$

wherein

R denotes H; $—(CH_2)_n—CO—OR^2$; alkyl having 1 to 5 carbon atoms; or alkyl having 1 to 5 carbon atoms and substituted by OR^3, $—COOR^2$, $O—CO—R^3$, $—C_6H_5$, $—OC_6H_5$ or —OH;

R^1 and R^2 denote

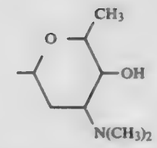
$$—C(=CH_2)—R^4;$$

alkyl having 1 to 8 carbon atoms; or alkyl having 1 to 8 carbon atoms and substituted by $—OR^4$ $—COOR^4$, $—O—CO—R^4$, $—C_6H_5$, $—OC_6H_5$, $—O—(CH_2)_m—OR^4$ or —OH;

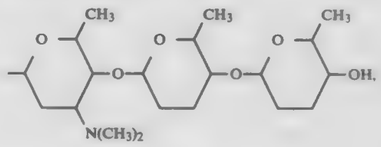
R^3 and R^4 denote alkyl which has 1 to 8 carbon atoms;

n denotes 0 to 4, and

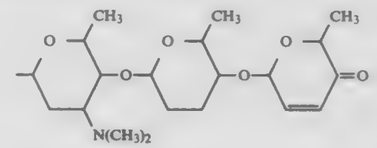
m denotes 1 to 4.



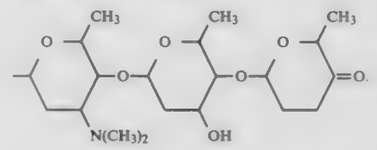
while the other radical represents the sugar combination —Roa—Rod—Rod of the formula



—Roa—Rod—Acu of the formula



—Rod—dF—CinA of the formula



4,795,808

ANTHRACYCLINE TETRASACCHARIDES

Hans G. Berscheid, Schwalbach am Taunus; Dirk Böttger, Liederbach, and Hans P. Kraemer, Marburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

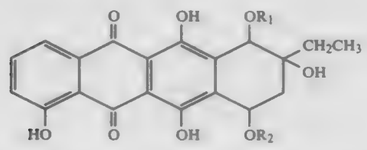
Continuation-in-part of Ser. No. 881,662, Jul. 3, 1986, abandoned. This application Nov. 24, 1986, Ser. No. 933,885

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1985, 3524117

Int. Cl.[4] C07H *15/24*

U.S. Cl. 536—6.4 **7 Claims**

1. A compound of the formula I



in which R_1 and R_2 are different and one of the radicals represents the sugar residue Roa of the formula

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4,795,809

NOVEL CLAVAM DERIVATIVES AND METHODS OF MAKING SAME

Stefan R. Woroniecki; Stephen W. Elson, and Keith H. Baggaley, all of Betchworth, England, assignors to Beecham Group plc, Middlesex, England

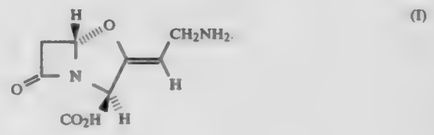
Filed Aug. 27, 1986, Ser. No. 900,744

Claims priority, application United Kingdom, Aug. 29, 1985, 8521516

Int. Cl.[4] C07D *498/04, 205/08*; C12P *17/18, 1/465*

U.S. Cl. 540—348 **2 Claims**

1. A compound of the formula (I) or a salt or protected form thereof:



(I)

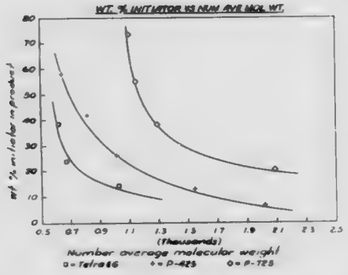
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,810

MODIFIED POLY(ALKYLENE CARBONATE) POLYAHLS

Robert F. Harris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 799,211, Nov. 18, 1985, Pat. No. 4,686,273, and Ser. No. 809,675, Dec. 16, 1985, Pat. No. 4,686,274. This application Nov. 17, 1986, Ser. No. 931,597
The portion of the term of this patent subsequent to Aug. 11, 2004, has been disclaimed.
Int. Cl.[4] C08G 63/62
U.S. Cl. 528—370 **36 Claims**



1. A modified poly(alkylene carbonate) polyahl which is a polymer comprising (1) a backbone having (a) the residue of at least one polyahl initiator, (b) a plurality of poly(alkyleneoxy) moieties, and (c) a plurality of poly(alkylene carbonate) moieties: (2) a plurality of active hydrogen end groups; and (3) the residue of at least one modifier which resides in the polymer in the backbone and/or as an end group; wherein the modifier is selected from the group consisting of alkylene, aralkylene and cycloalkylene polyahls and alkylene, aralkylene and cycloalkylene polyahls containing one or more oxygen, sulfur or nitrogen atoms, said modified poly(alkylene carbonate) polyahls having a number average molecular weight higher than the number average molecular weight of any known poly(alkylene carbonate) polyahl comprising the same monomeric components in the same proportions, said modified poly(alkylene carbonate) polyahls containing at least about 5 weight percent carbon dioxide and at least about 5 weight percent modifier.

4,795,811

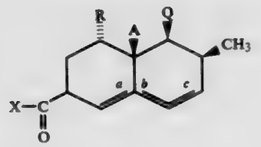
INTERMEDIATES FOR PREPARING HMG-COA REDUCTASE INHIBITORS

Samuel L. Graham, Harleysville, and Thomas H. Scholz, Souderton, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

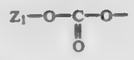
Filed Jun. 22, 1987, Ser. No. 65,223
Int. Cl.[4] C07D 309/30, 295/18
U.S. Cl. 544—6 **5 Claims**

1. A compound represented by the structural formula (II),

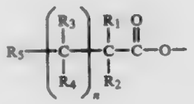
II



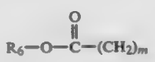
wherein
X is



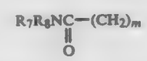
wherein Z_1 is C_{1-5}alkyl;
wherein
R is



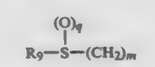
wherein:
n is 0 to 5
R_1 and R_2 independently are hydrogen, C_{1-5} alkyl, or R_1 and R_2 together with the carbon atom to which they are attached form a carbocyclic ring of 3 to 8 carbon atoms;
R_3 and R_4 are independently hydrogen, C_{1-3} alkyl, C_{3-7} cycloalkyl, C_{1-3} alkylthio, phenyl, phenylthio or substituted phenyl in which the substituents are V and W and when n is 2 to 5, each of the R_3s and R_4s are independently hydrogen, C_{1-3} alkyl, C_{3-7} cycloalkyl or only one of the R_3s and R_4s is phenyl or substituted phenyl;
R_5 is hydrogen, halogen, hydroxy, C_{1-5} alkyl, phenyl or substituted phenyl in which the substituents are V and W, or R_5 is a group selected from:
(a) C_{1-5} alkylthio or phenylthio or substituted phenylthio in which the substituents are V and W;
(b) C_{1-5}-alkanoyloxy-C_{1-4}-alkyl;
(c)



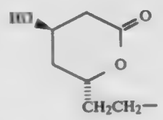
in which m is 0 to 3 and R_6 is C_{1-5} alkyl;
(d)



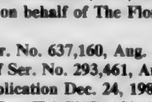
in which R_7 and R_8 are independently C_{1-5}alkyl or R_7 and R_8 together with the nitrogen atom to which they are attached form a heterocycle selected from piperidinyl, morpholinyl, pyrrolidinyl, piperazinyl or thiomorpholinyl;
(e)



in which q is 0 to 2 and R_9 is C_{1-5} alkyl or phenyl or substituted phenyl in which the substituents are V and W; 'V and W independently are hydrogen, halogen, hydroxy, trifluoromethyl, C_{1-3} alkyl, C_{1-3}alkyloxy and hydroxy-C_{1-3} alkyl; and
Q is selected from:
(a)



(b) $—CH_2CH_2CN$;
(c)



z is 0 to 2 and P_2 and P_1 are lower alkyl or P_2 and P_1 together with the oxygens and carbon to which they are attached form a ring of 5 to 8 atoms;
A is H or OH; and a, b and c represent single bonds or one of a, b or c represents a double bond or a and c are both double bonds.

4,795,812

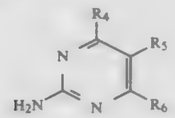
4-SUBSTITUTED-6-ARYL-PYRIMIDINE COMPOUNDS

Wendell Wieremga, and Harvey I. Skulnick, both of Oshtemo Township, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

PCT No. PCT US86/00074, § 371 Date Sep. 22, 1986, § 102(e) Date Sep. 22, 1986, PCT Pub. No. WO86/04583, PCT Pub. Date Aug. 14, 1986
Continuation-in-part of Ser. No. 698,309, Feb. 5, 1985, abandoned. This PCT application Jan. 23, 1986 Ser. No. 913,882
Int. Cl.[4] C07D 239/42, 239/48
U.S. Cl. 544—323 **9 Claims**

1. A compound of the formula

I



wherein
R_4 is chloro, bromo, aziridyl or 2-(1-aziridyl)ethylamino;
R_5 is hydrogen, fluoro, chloro, bromo, or iodo; and
R_6 is phenyl, with the proviso that when R_4 is chloro, R_5 is not hydrogen;
or where R_4 is chloro or bromo, a pharmacologically acceptable acid addition salt thereof.

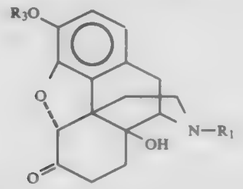
4,795,813

SYNTHESIS OF DERIVATIVES OF CODEINE AND OTHER 3-O-ALKYLMORPHINES

Martin A. Schwartz, Tallahassee, Fla., assignor to The Florida Board of Regents on behalf of The Florida State University, Tallahassee, Fla.

Continuation of Ser. No. 637,160, Aug. 2, 1984, abandoned, which is a division of Ser. No. 293,461, Aug. 17, 1981, Pat. No. 4,472,253. This application Dec. 24, 1986, Ser. No. 946,540
Int. Cl.[4] C07D 489/08
U.S. Cl. 546—45 **32 Claims**

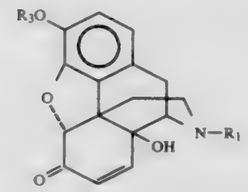
1. A process for producing an N-substituted 3-O-alkylnoroxymorphone derivative having the structural formula



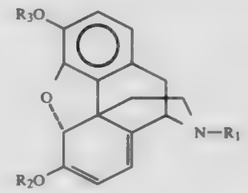
where R_1 is selected from the group consisting of



and cyano, R_{11} being selected from the group consisting of aliphatic, aryl, oxyaliphatic and aryloxy, and R_3 is lower alkyl, the process comprising catalytic hydrogenation of an N-substituted 3-O-alkyl-14-hydroxynormorphinone derivative having the structural formula

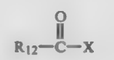


where R_1 and R_3 are as defined above, and wherein said N-substituted 3-O-alkyl-14-hydroxynormorphinone derivative is prepared by contacting and reacting an N-substituted 3-O-alkylnormorphinone enolate substrate with singlet oxygen, said enolate substrate having the structural formula:

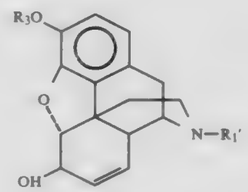


where R_1 and R_3 are as defined above and R_2 is an acyl group, whereby singlet oxygen reacts with the enolate substrate to substitute a hydroxyl group in the 14 position and the enolate structure is oxidized to a normorphinone structure.

21. A process for producting noroxymorphone comprising the steps of:
reacting a 3-O-alkylmorphine with a cyanogen halide or a compound having the formula



where R_{12} is oxyaliphatic or aryloxy and X is halogen, in the presence of a weak base, to product an N-substituted 3-O-alkylnormorphine having the formula



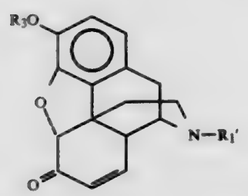
where R_3 is lower alkyl, R1 is selected from the group consisting of



and cyano, and R_{12} is as defined above;
oxidizing said N-substituted 3-O-alkylnormorphine to pro-

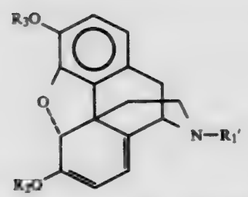
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duce an N-substituted 3-O-alkylnormorphinone derivative having the structural formula



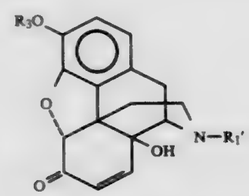
where R_1 and R_3 is are as defined above;

reacting said N-substituted 3-O-alkylnormorphinone derivative, in the presence of a base, with an acid anhydride having the formula $(R_2)_2O$ or an acyl halide having the formula R_2—X where X is a halogen and R_2 is a acyl group, to produce an N-substituted 3-O-alkylnormorphinone enolate having the structural formula



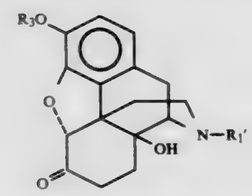
where R_1', R_2 and R_3 are as defined above;

contacting and reacting said N-substituted 3-O-alkylnormorphinone enolate with singlet oxygen to substitute a hydroxyl group in the 14 position and oxidize the enolate structure to produce an N-substituted 3-O-alkyl-14-hydroxynormorphinone derivative having the structural formula



where R_1' and R_3 are as defined above;

catalytically hydrogenating said N-substituted 3-O-alkyl-14-hydroxynormorphinone derivative to product an N-substituted 3-O-alkylnoroxymorphone derivative having the structural formula



where R_1' and R_3 are ad defined above

O-dealkylating to remove R_3 and hydrolyzing the amine group to remove R_1', thereby producing noroxymorphone.

4,795,814

PROCESS FOR PREPARING NOVEL DIHYDROPYRIDINE DERIVATIVES

Shinji Nishitani, Tokushima; Junichi Minamikawa, Naruto, both of Japan; Masanobu Kano, Gainesville, Fla.; Junichiro Otsubo, and Yoshiaki Manabe, both of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

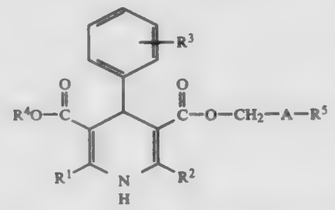
Continuation of Ser. No. 761,702, Aug. 2, 1985, abandoned. This application Dec. 18, 1986, Ser. No. 942,915

Claims priority, application Japan, Aug. 7, 1984, 59-165797

Int. Cl.[4] C07D *211/02*

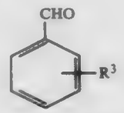
U.S. Cl. 546—249 **2 Claims**

1. A process for preparing dihydropyridine derivatives and salts and esters thereof represented by the formula:

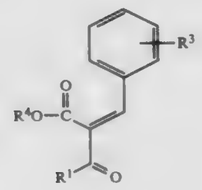


wherein R^1, R^2 and R^4 are each a lower alkyl group; R^3 is a nitro group or a lower alkyl group which may have from 1 to 3 halogen atoms as substituents; R^5 is a phenyl group which may have from 1 to 3 substituents selected from the group consisting of a lower alkoxy group, a halogen atom, a lower alkylthio group, a hydroxyl group, a lower alkanoyloxy group, a tetrahydropyranyloxy group and a lower alkoxy-lower alkoxy group; and A is an unsaturated straight- or branched-chain hydrocarbon residue, by reacting a compound of the formula

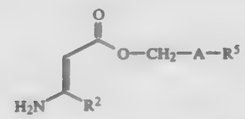
wherein R^1 and R^4 are the same as defined above, with a compound of the formula,



wherein R^3 is the same as defined above, in the presence of an aromatic amine selected from the group consisting of, o-anisidine, p-anisidine, m-anisidine, m-toluidine p-toluidine, p-chloroaniline, aniline and o-phenetidine, to obtain a phenyl derivative represented by the formula,



and then reacting the phenyl derivative with an enamine derivative represented by the formula,



wherein R^2 and R^5 and A are each of the same as defined above.

4,795,815

1,2,4-TRISUBSTITUTED DIAZOLIDINONES

Robert J. Ternansky, Noblesville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

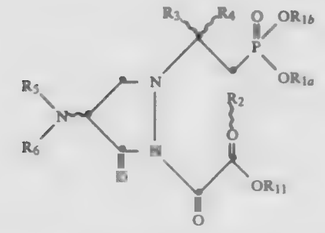
Continuation-in-part of Ser. No. 42,196, Apr. 23, 1987, abandoned, which is a continuation of Ser. No. 862,916, May 14, 1986, abandoned. This application Oct. 29, 1987, Ser. No. 114,897

Claims priority, application European Pat. Off., Apr. 28, 1986, 86303174.6

Int. Cl.[4] C07F *9/65*

U.S. Cl. 548—112 **22 Claims**

1. A compound of the formula:



wherein:

R_{1a} and R_{1b} are the same or different and are C_1 to C_6 alkyl or phenyl;

R_2 is hydrogen, halo, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, perfluoro C_2 to C_4 alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, a heterocyclic ring, nitro or cyano;

a group of the formula



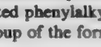
wherein X is fluoro, chloro, bromo or iodo;

a group of the formula



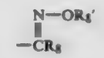
wherein Z is 0, 1 or 2 and R_7 is C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_2 to C_7 alkenyl, C_2 to C_7 alkynyl, phenyl, substituted phenyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl or a heterocyclic ring;

a group of the formula



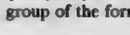
wherein R_8 is hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, perfluoro C_2 to C_4 alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, amino, (monosubstituted)amino, or (disubstituted)amino;

a group of the formula



wherein R_8 is as defined above and R_8' is hydrogen, C_1 to C_6 alkyl, C_2 to C_7 alkenyl, C_2 to C_7 alkynyl, phenyl, substituted phenyl, C_7 to C_{12} phenylalkyl, or C_7 to C_{12} substituted phenylalkyl;

a group of the formula



wherein R_9 is C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, a carboxy-protecting group, or a non-toxic, metabolically-labile, ester-forming group;

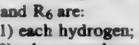
a group of the formula



wherein R_{10} is C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, or substituted phenyl; or

a group of the formula

R_3 and R_4 are the same or different and are hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl or a group of the formula



wherein R_{12} has the same definition as R_9;

R_5 and R_6 are:

(1) each hydrogen;

(2) taken together and form a phthalimido group; or

(3) different and are either hydrogen or an amino-protecting group; and

R_{11} is a carboxy-protecting group or a non-toxic, metabolically-labile, ester-forming group;

or a pharmaceutically-acceptable salt thereof.

4,795,816

2-METHYL-4-BENZYL-5-OXAZOLIDINONE

Alan P. Croft, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 827,854, Feb. 10, 1986, Pat. No. 4,698,433. This application Jul. 31, 1987, Ser. No. 80,330

Int. Cl.[4] C07D *263/08*

U.S. Cl. 548—228 **1 Claim**

1. A method of preparation of 2-Methyl-4-benzyl-5-oxazolidinone comprising the steps of:

(a) combining primarily solely ethyl acetate and the azlactone of α-acetoaminocinnamic acid in the presence of a Raney nickel catalyst and hydrogen gas;

(b) maintaining a temperature between about 30° C. and about 150° and pressure between about 100 and about 1500 psi for an effective time up to about 24 hours; and

(c) recovering the product.

4,795,817

8-SUBSTITUTED PYRAZOLOPENTATHIEPINS AND RELATED COMPOUNDS

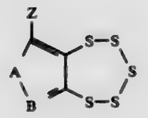
Bertrand L. Chenard, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 543,195, Oct. 18, 1983, abandoned. This application Feb. 21, 1986, Ser. No. 831,542

Int. Cl.[4] C07D *495/04*

U.S. Cl. 548—370 **6 Claims**

1. Hetero-ring fused pentathiepins of the formula:



A is R^1N,
B is N,
Z is halogen, CN, OR^4, SR^4, NR^5R^4, $COOR^4$, $COSR^4$, or $CONR^5R^4$, and
R^1, R^4, and R^5 are the same or different and are selected from the group H, except that R^1 is not H, C_1 to C_6 straight or branched alkyl, C_3 to C_6 cycloalkyl, phenyl, naphthyl and substituted phenyl and naphthyl with 1 to 5 hydrogen atoms of phenyl and 1 to 7 hydrogen atoms of naphthyl substituted with substituents selected from the group R^6, halogen, OR^6, NR_2^6 with R^6=C_1 to C_6 straight or branched alkyl.

4,795,818

OPTIMIZING THE YIELD OF MALEIC ANHYDRIDE CATALYST

Mitchell Becker, Teaneck, and John Walden, Hightstown, both of N.J., assignors to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 647,302, Sep. 4, 1984, abandoned. This application Apr. 11, 1988, Ser. No. 183,372
Int. Cl.[4] C07D *307/60*
U.S. Cl. 549—260 2 Claims

1. In the process for the gas phase partial oxidation of butane for the production of maleic anhydride in the presence of a vanadium/phosphorus catalyst at temperatures in the range of 340° to 450° C., pressures in the range of 1 to 5 bars, and gas hourly sace velocities in the range of 500 to 5000 hr^{-1}, said catalyst having an initial atomic ratio of P/V in the range of 0.9 to 1.8/1 and vanadium having an initial valence of 3.9 to 4.5, wherein the improvement comprises operating the process in the absence of added volatile phosphorus compound at a preselected conversion which gives a specific yield of maleic anhydride, determining the temperature of said reaction at said conversion and yield and thereafter maintaining said temperature substantially constant by the controlled continuous addition of a volatile phosphorus compound to said process, whereby the yield of maleic anhydride is maintained substantially constant.

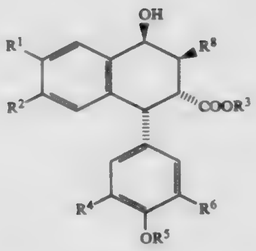
4,795,819

INTERMEDIATES FOR THE PRODUCTION OF EPIPODOPHYLLOTOXIN AND RELATED COMPOUNDS AND PROCESSES FOR THE PREPARATION AND USE THEREOF

Dolatrai M. Vyas, Fayetteville, and Paul M. Skonezny, Clay, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 907,442, Sep. 15, 1986, Pat. No. 4,728,740, which is a division of Ser. No. 722,932, Apr. 12, 1985, Pat. No. 4,644,072. This application Jul. 22, 1987, Ser. No. 76,513
Int. Cl.[4] C07D *317/44*; C07C *69/26*
U.S. Cl. 549—433 9 Claims

1. A compound of the formula



XI

wherein
R^1 and R^2 each are independently hydrogen or (lower)alkoxy, or R^1 and R^2, taken together, is methylenedioxy;
R^3 is hydrogen or a carboxyl-protecting group;
R^4 and R^6 each are independently hydrogen or (lower)alkoxy; and R^5 is hydrogen or a phenol-protecting group; and
R^8 is cyano, aminomethyl, formyl or carbamoyl; or a salt thereof.

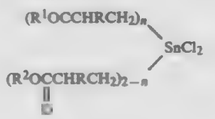
4,795,820

METHOD OF MANUFACTURING TINORGANIC COMPOUNDS AND STABILIZERS

Ludwik Synoradzki; Jacek Lasota; Bogusław Zieliński; Andrzej Kasprzak; Maciej Uniński; Bogdan Sławnowicz; Tomasz Diuzniewski; Andrzej Gieysztor; Roman Zadrozny; Andrzej Smyk; Andrzej Pazgan, all of Warsaw; Irena Dobosz, Sochaczew; Teresa Brzozowska-Janiak, Sochaczew; Zdzisław Szawiowski, Sochaczew, and Ireneusz Dusinski, Sochaczew, all of Poland, assignors to Politchnika Warszawska and Zaklady Tworzyw Sztucznych "Boryszew-Erg", both of Warsaw, Poland

Filed Sep. 12, 1986, Ser. No. 907,095
Claims priority, application Poland, Sep. 25, 1985, 255511
Int. Cl.[4] C07F *7/22*
U.S. Cl. 556—105 15 Claims

1. A process for manufacturing tinorganic compounds selected from the group consisting of



Formula 1



Formula 2

and



Formula 3

or mixtures thereof, wherein R is a hydrogen atom or an alkyl group with 1–18 carbon atoms, R^1 is an alkyl group with 1–4 carbon atoms, R^2 is an alkyl group with 1–18 carbon atoms and "n" is 0, 1 or 2, and wherein alkyl R^1 and R^2 groups may be the same or different comprising simultaneously reacting an alkyl ester of an α-unsaturated carboxylic acid of the formula R^1O-$COCR{=}CH_2$, wherein R and R^1 have the above specified meaning, with metallic tin and an alcohol of the formula R^2OH wherein R^2 has the above specified means, and hydrogen chloride.

4,795,821

OPTICALLY ACTIVE BORINIC ESTERS AND KETONES

Herbert C. Brown, West Lafayette, Ind., assignor to Aldrich-Boranes, Inc., Milwaukee, Wis.

Filed Aug. 29, 1986, Ser. No. 902,177
Int. Cl.[4] C07F *5/00, 5/04*
U.S. Cl. 558—298 9 Claims

1. A process for synthesizing an optically pure borinic ester represented by the formula:

$R^*R^1BOR^2$

wherein R^* is a chiral organyl moiety, R^1 is an aliphatic, alicyclic, aromatic, heterocyclic or alkynyl achiral moiety, and R^2 is an acyclic or cyclic organyl group having up to 10 carbon atoms, comprising the steps of treating an optically pure boronic ester of the formula $R^*B(OR^2)_2$ wherein R^* and R^2 are as defined above, with an organyllithium compound represented by the formula R^1Li to form a complex, decomposing said complex with a compound selected from the group consisting of ethereal hydrogen chloride, acetyl chloride and chlorotrimethylsilane, and separating said optically pure boronic ester therefrom.

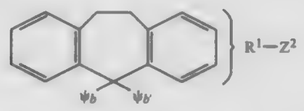
4,795,822

NORTRIPTYLINE CONJUGATES TO ANTIGENIC PROTEINS AND ENZYMES

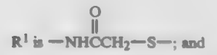
Mae W. Hu, Los Altos Hills, and Prithipal Singh, Sunnyvale, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 23, 1984, Ser. No. 613,709
Int. Cl.[4] C07C *149/40, 149/23*
U.S. Cl. 560—10 2 Claims

1. A compound of the formula



wherein:
Ψ_b and $\Psi_{b'}$ may be taken together to form a double bond to carbon substituted with G, wherein G is an aliphatic group having from 4 to 8 atoms other than hydrogen which are carbon and nitrogen wherein nitrogen is amino;



R^1 is $-NHCCH_2-S-$; and

Z^2 is hydrogen or thio substituted with alkyl of from about 1 to 6 carbon atoms.

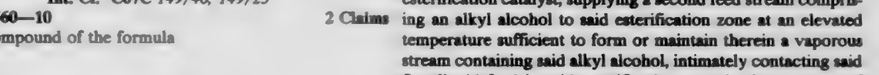
4,795,823

(METH)ACRYLIC ACID ESTERS AND THE USE THEREOF FOR PREPARING DENTAL COMPOSITIONS

Werner Schmitt, Staraberg; Peter Jochum, Seefeld; Wolf-Dietrich Zahler, Seefeld-Hechendorf; Heijo Hübner, Wörthsee/-Steinebach; Manfred Holmpirek, Grafrath; Oswald Gasser, Seefeld, and Christian Herzig, Burghausen, all of Fed. Rep. of Germany, assignors to ESPE Stiftung & Co. Produktions, Seefeld, Fed. Rep. of Germany

Filed Mar. 2, 1987, Ser. No. 20,902
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1986, 3607331
Int. Cl.[4] C07C *69/66*
U.S. Cl. 560—182 14 Claims

1. (Meth)acrylic acid esters of the formula:



$(MO)_n$—[—A—O—CO—CH_2—O—CH_2—CH-$_2$—O—CH_2—CO—O—]$_x$—A—$(OM)_n$

wherein,
A is an alcohol radical having at least 4 chain atoms between two junction sites,
M represents $CH_2{=}C(R^1)$—CO—, wherein R^1 is hydrogen or methyl,
n is 1 or 2, and
x is 0.3 to 3.

4,795,824

PROCESS FOR THE PRODUCTION OF DIALKYL MALEATES

John W. Kippax, Bedale, and Colin Rathmell, Yarm, both of England, assignors to Davy McKee (London) Limited, London, England

Filed Jul. 31, 1987, Ser. No. 80,060
Claims priority, application United Kingdom, Aug. 1, 1986, 8618888
Int. Cl.[4] C07C *67/03*
U.S. Cl. 560—204 34 Claims

1. A process for the production of a dialkyl maleate which comprises supplying a first liquid feed comprising a monoalkyl maleate to an esterification zone containing a charge of a solid esterification catalyst, supplying a second feed stream comprising an alkyl alcohol to said esterification zone at an elevated temperature sufficient to form or maintain therein a vaporous stream containing said alkyl alcohol, intimately contacting said first liquid feed in said esterification zone in the presence of said catalyst with said vaporous stream, recovering from said esterification zone a vaporous effluent stream containing in addition to alkyl alcohol vapor, also water in vapor form, said water being produced in said esterification zone by esterification of said monoalkyl maleate with said alkyl alcohol, and recovering from said esterification zone a liquid product containing dialkyl maleate.

4,795,825

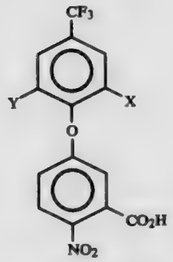
HERBICIDAL 4-TRIFLUORO-METHYL-4 ONITRODIPHENYL ETHERS

Horst O. Bayer, Levittown, and Colin Swithenbank, Perkasie, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 302,895, Sep. 16, 1981, which is a division of Ser. No. 111,560, Jan. 14, 1980, Pat. No. 4,330,324, which is a division of Ser. No. 881,227, Feb. 27, 1978, Pat. No. 4,220,468, which is a division of Ser. No. 719,484, Aug. 31, 1976, Pat. No. 4,093,446, which is a continuation-in-part of Ser. No. 617,560, Sep. 29, 1975, Pat. No. 4,063,929, and a continuation-in-part of Ser. No. 617,562, Sep. 29, 1975, Pat. No. 4,046,798, which is a division of Ser. No. 331,719, Feb. 12, 1973, Pat. No. 3,928,416, said Ser. No. 617,560, is a continuation-in-part of Ser. No. 331,719, Feb. 12, 1973, Pat. No. 3,928,416, which is a continuation-in-part of Ser. No. 234,651, Mar. 14, 1972, Pat. No. 3,798,276. This application Dec. 2, 1983, Ser. No. 557,580
Int. Cl.[4] C07C *101/54*
U.S. Cl. 562—435 6 Claims

1. An agronomically-acceptable salt of a compound of the formula

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wherein X is a fluoro atom or a chlorine atom, and Y is a fluorine atom or a chlorine atom.

4,795,826

ORTHO-PHENYLENEDIAMINE COMPOUNDS

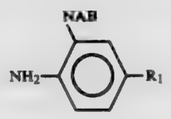
Graham J. Atwell, 37 Hawkins Street, Meadowbank, Auckland 5; Bruce C. Baguley, 36a Olsen Avenue, Hillsborough, Auckland 4; William A. Denny, 165 Gonsenner Drive, Pakuranga, Auckland, and Gordon W. Rewcastle, 24 Rothery Road, Manurewa, Auckland, all of New Zealand

Division of Ser. No. 551,329, Nov. 14, 1983, and a continuation-in-part of Ser. No. 496,621, May 20, 1983, abandoned. This application Jun. 27, 1986, Ser. No. 879,765

Int. Cl.[4] C07C *143/74*

U.S. Cl. 564—99 **3 Claims**

1. A compound of the general formula (VIII)



VIII

in which R_1 represents



A and B each represent H or a lower alkane optionally substituted with amino and/or hydroxl groups, except that A and B are not both H; R_6 represents lower alkyl; R_9 represents H, $NHCOCH_3$, NH_2, or $N{=}CHN(CH_3)_2$.

4,795,827

CYCLOBUTARENE KETOANILINE MONOMERIC AND POLYMERIC COMPOSITIONS

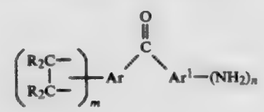
Kenneth J. Bruza, and Robert A. Kirchhoff, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 16, 1987, Ser. No. 109,136

Int. Cl.[4] C08F *132/08, 232/08*

U.S. Cl. 564—329 **11 Claims**

1. A process for preparing the monomer of the formula



wherein

Ar is an aromatic moiety having one valence on each of two adjacent carbon atoms of an aromatic ring;

Ar^1 is substituted or unsubstituted arylene provided Ar^1 is not a cyclobutarene;

each R is independently hydrogen, a monovalent electron donating moiety or a monovalent electron withdrawing moiety; and

each m and n is independently an integer of 1 or 2 comprising the steps of reacting a cyclobutarene with a nitro-substituted aromatic acid halide in the presence of a reaction catalyst capable of either accepting a pair of electrons or donating a proton during the reaction and then contacting the resulting cyclobutarene intermediate with a reducing agent at conditions sufficient to selectively reduce the nitro groups to amino groups.

4,795,828

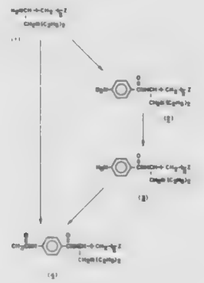
FUNCTIONALIZED INTERMEDIATE FOR THE SYNTHESIS OF ALPHA-FUNCTIONALIZED DERIVATIVES AND LABELED CONJUGATES OF PROCAIMAMIDE AND NAPA

Robert T. Buckler, Edwardsburg, and Frederick E. Ward, Elkhart, both of Ill., assignors to Miles Inc., Elkhart, Ind.

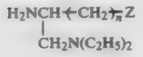
Division of Ser. No. 713,041, Mar. 18, 1985, Pat. No. 4,673,763, which is a division of Ser. No. 455,223, Jan. 3, 1983, abandoned. This application Sep. 25, 1986, Ser. No. 911,524

Int. Cl.[4] C07C *87/20, 101/24*

U.S. Cl. 564—512 **3 Claims**



1. A compound of the formula:



wherein n is an integer from 1 through 6 and Z is carboxyl or amino.

4,795,829

PROCESS FOR SEPARATING HIGHER MOLECULAR WEIGHT CONSTITUENTS FROM PHENOL POLYMERS

Arnold Schneller, Mainz-Finthen, and Gabriele Lambert, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 16, 1987, Ser. No. 25,976

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1986, 3608492

Int. Cl.[4] C07C *37/68*

U.S. Cl. 568—750 **21 Claims**

1. A process for treating a phenol polymer mixture that comprises lower and higher molecular weight fractions to obtain a sediment that is substantially free of phenol polymer

fractions having a molecular weight of less than 500, said process compriaing the steps of:

(a) providing a first solution comprised of said phenol polymer mixture and an organic solvent in which said phenol polymer mixture is soluble;

(b) mixing said solution with ammonia or an amine in an amount sufficient to provide a stoichiometric deficiency of said ammonia or said amine, respectively, so as to form a precipitate;



(c) separating said precipitate from said solution;

(d) dissolving said precipitate in an organic solvent to form a second solution;

(e) adding an aqueous acid to said second solution so as to form a sediment; and

(f) separating said sediment from said second solution to obtain a sediment that is substantially free of phenol polymer fractions having a molecular weight of less than 500.

4,795,830

USE OF WATER TO INHIBIT DECOMPOSITION OF MONOALKYLFORMAMIDES

Terence A. Renzi, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 2, 1986, Ser. No. 902,599

The portion of the term of this patent subsequent to Jul. 28, 2004, has been disclaimed.

Int. Cl.[4] C07C *85/26*

U.S. Cl. 564—4 **18 Claims**

1. A method for inhibiting thermal decomposition, during heating, to a temperature of 180° C. or above N-alkylformamide to the corresponding N-alkylamines and carbon monoxide, comprising contacting the N-alkylformamide with water in an amount up to about 5 percent by weight of the formamide.

4,795,831

CYCLOPENTANE DERIVATIVES

Takayoshi Yamauchi; Kaneaki Hattori; Shunichi Ikeda, and Kentaro Tamaki, all of Sakai, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

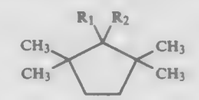
Division of Ser. No. 834,945, Feb. 28, 1986, Pat. No. 4,716,241. This application Oct. 1, 1987, Ser. No. 103,305

Claims priority, application Japan, Mar. 1, 1985, 60-40946; Jul. 5, 1985, 60-147821

Int. Cl.[4] C07C *147/14, 149/26*

U.S. Cl. 568—27 **3 Claims**

1. A compound represented by the formula



wherein R_1 and R_2 are combined to be methylsulfinylmethylene.

4,795,832

SALICYLIC ACID AMIDES, THEIR USE, AND A PROCESS FOR THEIR PRODUCTION

Hans T. Leinen, Duesseldorf; Rudolf Lehmann, Leichlingen, and Hans-Juergen Klueppel, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

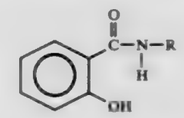
Filed Oct. 2, 1987, Ser. No. 104,625

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1986, 3633501

Int. Cl.[4] C07C *103/26, 102/06*

U.S. Cl. 564—134 **17 Claims**

1. A salicylic acid amide of the formula:



(I)

wherein R is $n\text{-}C_8H_{17}$, or mixtures thereof $n\text{-}C_{10}H_{21}$.

4,795,833

PROCESS FOR PREPARING A MIXTURE OF METHYL-SUBSTITUTED PRIMARY ANILINES

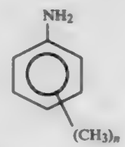
Richard S. Mitchell, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 4, 1987, Ser. No. 10,843

Int. Cl.[4] C07C *85/24*

U.S. Cl. 564—409 **16 Claims**

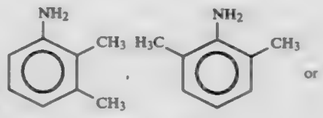
1. A process for preparing an isomeric mixture of methyl-substituted anilines having the formula:



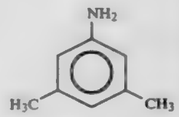
(I)

wherein n is 2 or 3, said process comprising

(A) contacting at least one compound of the formula



(II_a) (II_b)

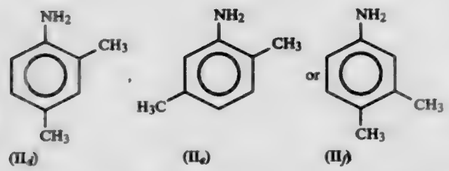


(II_c)

with an acidic zeolite catalyst at a temperature of from about 240° C. to about 550° C. and at a pressure of from about 10 kPa to about 10 MPa, said zeolite catalyst being selected from the group consisting of zeolites omega, beta, L and mixtures thereof, or

(B) contacting at least one compound of the formula

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(II$_d$) (II$_e$) (II$_f$)

with an acidic zeolite catalyst at a temperature of from about 240° C. to about 550° C. and at a pressure of from about 10 kPa to about 10 MPa, said zeolite catalyst being selected from the group consisting of zeolites omega, beta, L and mixtures thereof, and isolating from said isomeric mixture a portion of said mixture which comprises at least one compound of formula IIa, IIb or IIc.

4,795,834

CATALYTIC ALKYLATION OF PRIMARY AND SECONDARY AMINO GROUPS IN LINEAR POLYAMINES

Zdzislaw Dudzinski, Clifton, and Phillip Adams, Murray Hill, both of N.J., assignors to Stepan Company, Northfield, Ill.

Filed Mar. 2, 1987, Ser. No. 20,394
Int. Cl.[4] C07C *85/06*
U.S. Cl. 564—479 9 Claims

1. A method of catalytically aminating at least one alcohol with at least one linear polyamine, comprising:

activating a catalyst system comprised of a mixture of copper oxide and at least one Group II metal hydroxide by dispersing said catalyst system in said alcohol and heating the resulting dispersion at a temperature between about 200° to 220° C. while passing a gas stream comprised of hydrogen therethrough;

adding a select amount of said linear polyamine to said alcohol containing the activated catalyst system therein so that a reaction occurs; and

purifying the resultant reaction product.

4,795,835

SOLVENTLESS PROCESS FOR DECONTAMINATION OF POLYACETYLENE

Robert Schenfele, Caldwell, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Mar. 3, 1988, Ser. No. 163,500
Int. Cl.[4] C07C *7/00*
U.S. Cl. 585—809 11 Claims

1. A solventless process for the purification of a crude normally solid polyacetylene containing up to 30 weight % of a copper impurity in the form of a copper compound or copper ion which comprises: melting the solid polyacetylene and contacting said melt with aqueous hydrogen halide in a concentration of from about 10 weight % to about 40 weight % acid and in a mole ratio of polyacetylene to hydrogen halide of from about 2:1 to about 10:1; agitating the resulting liquid mixture at melt temperature until an oil phase and an aqueous acid phase is formed; separating said oil phase and agitating said oil phase with between about 1 and about 10 times its volume of water at a temperature at least sufficient to maintain the polyacetylene in the liquid state; maintaining said agitation until a subsequent oil phase and a water phase is formed, separating the upper oil phase and adding an additional volume of water and cooling the subsequent mixture while agitating to form solid discrete particles of purified polyacetylene product in uniform size, isolating and drying said polyacetylene particles.

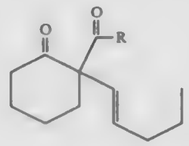
4,795,836

2-ALKANOYL-2-(1-PENTEN-1-YL)CYCLOHEXANONES, PROCESS FOR PREPARING SAME, AND ORGANOLEPTIC USES THEREOF AND INTERMEDIATES USEFUL IN SAID PROCESS

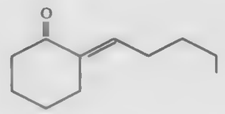
Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 149,657, Jan. 28, 1988. This application Jun. 3, 1988, Ser. No. 201,937
Int. Cl.[4] C07C *45/54*
U.S. Cl. 568—356 4 Claims

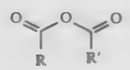
1. A process for preparing a compound having the structure:



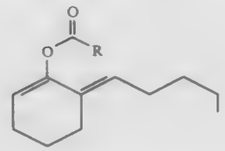
comprising the step of reacting the compound having the structure:



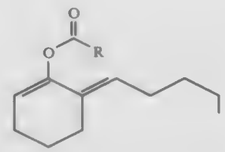
with an acyl anhydride having the structure:



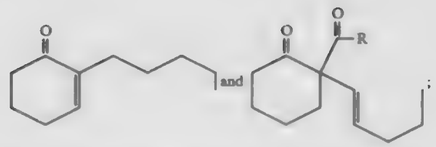
in order to form an enol ester having the structure:



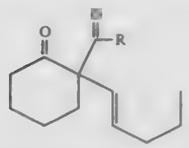
and then heating the enol ester having the structure:



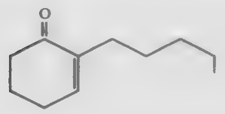
in the presence of an acid in order to form a mixture of compounds having the structures:



and then separating the compounds having the structures:



from the compound having the structure:



wherein R and R′ are the same or different methyl or ethyl.

4,795,837

STABILIZED COMPOSITIONS OF 1,1,1-TRICHLOROETHANE

Michel Servais, Kraainem, and Roger Crochet, Brussels, both of Belgium, assignors to Solvay & Cie (Société Anonyme), Brussels, Belgium

Continuation of Ser. No. 367,909, Apr. 13, 1982, abandoned. This application Mar. 6, 1984, Ser. No. 586,871
Claims priority, application France, Apr. 13, 1981, 81 07528
Int. Cl.[4] C07C *17/42, 19/05*
U.S. Cl. 570—110 17 Claims

1. A stabilised composition of 1,1,1-trichloroethane and water comprising an epoxide compound, a nitro derivative and an internal ether, wherein the internal ether is a furan compound.

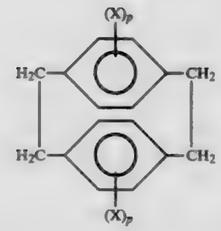
4,795,838

PROCESS FOR THE PREPARATION OF (2,2)-PARACYCLOPHANE AND DERIVATIVES THEREOF

Giorgio Bornengo, Novara; Alessandro Malacrida, Sovico; Stefano Campolmi, Novara, and Maurizio A. Beretta, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

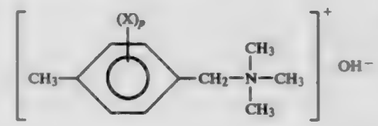
Filed Jun. 26, 1987, Ser. No. 66,507
Claims priority, application Italy, Jun. 27, 1986, 20938 A/86
Int. Cl.[4] C07C *21/24, 25/18*
U.S. Cl. 570—184 10 Claims

1. A process for preparing (2,2)-paracyclophane and derivatives thereof of the formula:



(II)

wherein X is a halogen atom, an alkyl radical, an aralkyl radical, or a halo-aralkyl radical having up to 20 carbon atoms, and p is zero or an integer from 1 to 4, by the Hofmann elimination of p-methylbenzyl trimethyl-ammonium hydroxide or derivatives thereof of the formula:



(III)

wherein X and p are the same as defined above, in an aqueous solution of an alkali metal hydroxide, characterized in that said Hofmann elimination is carried out in the presence of at least one di-alkylether of mono- and poly-ethylene glycols having the formula:

$$R—O—CH_2CH_2O—_nR' \quad (I)$$

wherein R and R′, which may be the same or different, represent alkyl radicals having from 1 to 5 carbon atoms, and n is an integer from 1 to 5.

4,795,839

PROCESS FOR SEPARATING MIXED MONOCHLOROTOLUENE ISOMERS, A PLANT FOR CARRYING OUT THE PROCESS, AND THE ISOMERS SEPARATED IN THIS MANNER

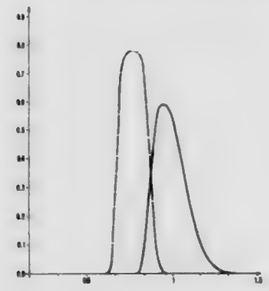
Guido Niederjaufner; Achille Pontoglio, both of Brescia; Giuseppe Storti, Lodi; Massimo Morbidelli, and Sergio Carra', both of Milan, all of Italy, assignors to CAFFARO S.p.A. Societa per l'Industria Chimica ed Elettrochimica, Milan, Italy

Filed Jul. 15, 1983, Ser. No. 514,264
Claims priority, application Italy, Jul. 15, 1982, 22405 A/82
Int. Cl.[4] C07C *17/38*
U.S. Cl. 570—211 3 Claims

1. A process for separating mixed monochlorotoluene isomers, comprising a first stage of adsorption carried out by passing said mixture through at least one column filled with a zeolite, characterized by comprising a second stage of desorption from said zeolite carried out by passing two desorb-

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ents in succession in the vapour phase through the column, equilibrium constants of the deadsorbents, measured from the



break-through curves, lying within ±40% of the equilibrium constants of the isomers to be separated.

4,795,840

METHOD FOR PREPARING HYDROCARBON MIXTURE SOLVENT

Michiaki Torii, and Seiji Hirooka, both of Tokyo, Japan, assignors to Nippon Petrochemicals Co., Ltd., Japan

Filed Jul. 2, 1987, Ser. No. 69,510
Claims priority, application Japan, Jul. 4, 1986, 61-157591; Jul. 8, 1986, 61-160566
Int. Cl.[4] C07C 9/00
U.S. Cl. 585—16 9 Claims

1. A method for preparing a hydrocarbon mixture solvent of high dissolving power comprising 1 to 15 wt % of alkyl tetralins and 0 to 10 wt % of aromatic hydrocarbons, 30 to 80 wt % of naphthenes, 15 to 40 wt % of isoparaffins and 0 to 20 wt % of n-paraffins, and having a boiling point of 160° to 300° C., said solvent being substantially free from naphthalene and biphenyl; said method being characterized by comprising the steps of subjecting a kerosene fraction having a boiling point of 150° to 300° C. to a nucleus hydrogenation treatment at a temperature of 100° to 300° C. at a pressure of 30 to 100 kg/cm^2 in the presence of a metallic catalyst for nucleus hydrogenation of aromatic nuclei; separating and removing at least a part of n-paraffins in said kerosene therefrom by the use of a molecular sieve made from a synthesized zeolite having average pores of 5 Å in diameter in order to obtain a residual oil; and subjecting the latter to a rectification.

6. A hydrocarbon mixture solvent of high dissolving power comprising 1 to 15 weight % alkyl tetralin, 0 to 15 weight % of aromatic hydrocarbons, 30 to 80 weight % of naphthenes, 15 to 40 weight % of isoparaffins and 0 to 20 weight % of n-paraffins and having a boiling point of 160° to 300° C., said solvent being substantially free from naphthalene and biphenyl, produced by the process of claim 1.

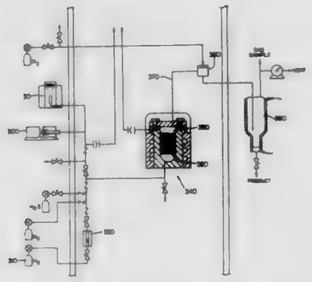
4,795,841

PROCESS FOR UPGRADING BIOMASS PYROLYZATES

Douglas C. Elliott, 1130 Catskill, and Eddie G. Baker, 514 Shaw, both of Richland, Wash. 99352

Filed Apr. 2, 1987, Ser. No. 33,281
Int. Cl.[4] C10B 51/00; B09B 3/00
U.S. Cl. 585—240 7 Claims

1. A method for treating biomass pyrolyzates produced by flash pyrolysis, which pyrolyzates have a certain coke polymerization temperature, in order to reduce the tendency toward coke formation, comprising the step of:



hydrogenating said pyrolyzates at a temperature below said coke polymerization temperature.

4,795,842

METHANE CONVERSION PROCESS

Anne M. Gaffney, West Chester; C. Andrew Jones, Newtown Square, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 4, 1987, Ser. No. 81,400
Int. Cl.[4] C07C 2/00
U.S. Cl. 585—400 9 Claims

1. In a process for the conversion of methane to higher hydrocarbons by contact at reactive conditions of gases comprised of methane and molecular oxygen, separately or together, with a bed of particulate solid oxidative synthesizing agent in an oxidative synthesis zone, said solid oxidative synthesizing agent containing at least one component from the group consisting of alkali metal and boron, said component being gradually depleted from said solid oxidative synthesizing agent during said methane conversion, the improvement which comprises separately adding said component to the said reaction zone with said gases at a rate sufficient to substantially maintain the activity of said solid oxidative synthesizing agent, and contacting said solid oxidative synthesis agent in said reaction zone with said separately added component.

4,795,843

CONVERSION OF METHANE INTO LARGER ORGANIC HYDROCARBONS

Tamotsu Imai, Mt. Prospect; Paul T. Barger, Arlington Heights, and Anthony H. Eck, Chicago, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 768,983, Aug. 26, 1985, abandoned. This application Oct. 8, 1987, Ser. No. 105,930
Int. Cl.[4] C07C 11/20, 11/32, 1/00
U.S. Cl. 585—408 12 Claims

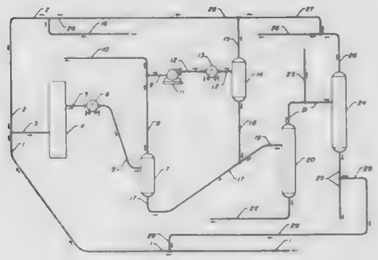
1. A process for the production of aliphatic and aromatic hydrocarbons containing more than one carbon atom which comprises contacting at conversion conditions a feedstock containing methyl halide with a catalyst comprising a silica polymorph consisting of crystalline silica, said silica polymorph after calcination in air at 600° C. for one hour having a mean refractory index of 1.39±0.01 and a specific gravity at 25° C. of 1.70±0.05 g/cc, and recovering the resultant aliphatic and aromatic hydrocarbons.

4,795,844

PROCESS FOR CONVERSION OF LIGHT OLEFINS TO LPG AND AROMATICS

David C. Martindale, Roselle; Ronald E. Andermann, Arlington Heights, and John R. Mowry, Des Plaines, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 20, 1987, Ser. No. 75,383
Int. Cl.[4] C07C 12/02
U.S. Cl. 585—415 7 Claims



1. A hydrocarbon conversion process which comprises passing a hydrocarbon feed stream comprising at least 30 mole percent olefins having 3 to 4 carbon atoms per molecule and also comprising at least 50 mole percent paraffins having 3 to 4 carbon atoms per molecule and containing less than 10 mole percent C_5-plus hydrocarbons into a catalytic reaction zone operated at low severity conditions and contacting the feed stream with a solid catalyst comprising gallium, and producing a reaction zone effluent stream comprising C_6–C_8 aromatic hydrocarbons and C_3–C_4 paraffins, with the reaction zone effluent stream containing less than 10 mole percent olefinic hydrocarbons; with said low severity conditions including a combination of pressure, feed space velocity and temperature, including a temperature below 425° C., which result in a partial conversion of the feed hydrocarbons into aromatic hydrocarbons and whereby (i) when the effluent is separated there are produced a first product stream, which first product stream is rich in C_6–C_8 aromatic hydrocarbons and is withdrawn from the process, and a second product stream, which second product stream is rich in C_3–C_4 paraffins and is withdrawn from the process, with the second product stream having a flow rate equal to at least 30 wt. percent of the flow rate of the feed stream; and (ii) the mass flow rate of paraffinic hydrocarbons out of the reaction zone exceeds the mass flow rate of paraffinic hydrocarbons into the reaction zone.

4,795,845

REGENERATION OF DEHYDROCYCLODIMERIZATION CATALYST

David C. Martindale, Roselle; Joseph A. Kocal, Gurnee, and Tai-Hsiang Chao, Mt. Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 33,136, Mar. 31, 1987, Pat. No. 4,724,271, which is a continuation-in-part of Ser. No. 871,968, Jun. 9, 1986, Pat. No. 4,654,455, which is a division of Ser. No. 806,984, Dec. 9, 1985, Pat. No. 4,636,483. This application Dec. 28, 1987, Ser. No. 138,187
The portion of the term of this patent subsequent to Mar. 31, 2004, has been disclaimed.
Int. Cl.[4] C07C 12/02
U.S. Cl. 585—415 8 Claims

1. A process for the dehydrocyclodimerization of hydrocarbons which comprises contacting a feed stream containing aliphatic hydrocarbons with a catalyst, under dehydrocyclodimerization conditions, where said catalyst is comprised of phosphorus-containing alumina, gallium, and a crystalline aluminosilicate having a silica to alumina ratio of at least 12, where said catalyst becomes deactivated as a result of the dehydrocyclodimerization reaction, and where the deactivated catalyst is regenerated by contacting the deactivated catalyst with an oxygen-containing regeneration gas at catalyst regeneration conditions.

4,795,846

PROCESS FOR THE DEHYDROCYCLIZATION OF ALIPHATIC HYDROCARBONS

Joseph Zmich, Westmont; Michael B. Russ, Elmhurst, and Vinnja A. Gembicki, Clarendon Hills, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 1, 1987, Ser. No. 103,554
Int. Cl.[4] C10G 35/06; C07C 2/52
U.S. Cl. 585—417 8 Claims

1. An improved process for the dehydrocyclization of aliphatic hydrocarbons which comprises contacting a C_6–C_{10} hydrocarbon feedstock in a reaction zone at dehydrocyclization conditions with a catalyst comprising nonacidic L-zeolite, a Group VIII metal component, and an inorganic oxide support matrix, and removing aromatic products from the reaction zone, wherein the improvement comprises adding water, water precursors, or mixtures thereof to the reaction zone.

4,795,847

PREPARATION OF 2,6-DIALKYL-NAPHTHALENES

Jens Weitkamp, Oldenburg; Marita Neuber, Karlsruhe; Wilhelm Höltmann, Munster; Gerd Collin, Duisburg, and Hans Spengler, Olfen, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 2, 1988, Ser. No. 151,697
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1987, 3703291
Int. Cl.[4] C07C 2/68
U.S. Cl. 585—467 8 Claims

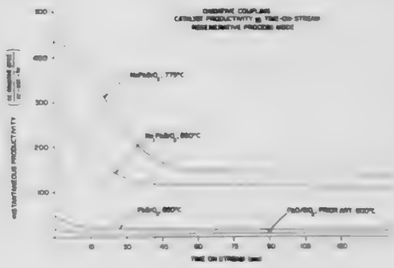
1. A process for the preparation of 2,6-dialkyl-naphthalenes comprising selectively alkylating naphthalene or 2-alkyl-naphthalene with a lower alcohol, dialkyl ether or alkyl halide as alkylating agent in the presence of a zeolite catalyst at 300° to 320° C.

4,795,848

METHOD FOR UPGRADING A LOW MOLECULAR WEIGHT ALKANE WITH A LEAD-ZIRCONATE CATALYST

Raymond G. Teller, Aurora; James F. Brazdil, Jr., Mayfield Village; Joseph P. Bartek, Highland Heights, and Ann M. Brussee, Wickliffe, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 28, 1986, Ser. No. 901,106
Int. Cl.[4] C07C 2/00, 2/76
U.S. Cl. 585—500 16 Claims



1. A process for the conversion of a low molecular weight alkane to a higher order hydrocarbon comprising contacting

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said low molecular weight alkane at a reaction temperature of about 500° C. to about 1500° C. with a catalyst of the formula

$$Pb\ Zr_z\ A_a\ B_b\ O_x$$

wherein
A is Mg, Ca, Sr, Ba, Zn, Ce, Sc, Y, Ti, Hf or mixtures thereof;
B is Li, Na, K, Rb, Cs or mixtures thereof; and wherein
z is about 1 to about 100;
a is 0.0 to about 100;
b is 0.0 to about 100;
x is the number of oxygens needed to fulfill the valence requirements of the other elements; and
wherein the catalyst is substantially free of PbO and uncombined Pb, and wherein said low molecular weight alkane comprises predominantly methane.

4,795,849
METHANE CONVERSION PROCESS

Ann M. Gaffney, West Chester; C. Andrew Jones, Newtown Square, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 81,508, Aug. 4, 1987, abandoned. This application Aug. 23, 1988, Ser. No. 236,294
Int. Cl.[4] C07C *2/00*
U.S. Cl. 585—500 **11 Claims**

1. In a process for the conversion of methane to higher hydrocarbons and coproduct water wherein methane is contacted at reactive conditions with a conversion catalyst comprised of a reducible metal oxide selected from the group consisting of an xoide of manganese, tin, indium, germanium, antimony, leads, bismuth, cerium, praseodymium, terbium, iron, and rutheium, the improvement which comprises pretreating the catalyst before use in the conversion of methane to higher hydrocarbons and coproduct water with a reducing agent at 650° C. to 1200° C. for a time sufficient to improve the bulk density and attrition resistance of the said catalyst and thereafter contacting the pretreated catalyst with methane at methane conversion conditions effective to form higher hydrocarbons and coproduct water.

4,795,850
PROCESS FOR THE PRODUCTION OF A SYNTHESIS GAS CONVERSION CATALYST

Andrew F. Dyke, Cheam, England, assignor to The British Petroleum Company p.l.c., London, England

Division of Ser. No. 888,797, Jul. 23, 1986, Pat. No. 4,740,492. This application Nov. 24, 1987, Ser. No. 124,919
Claims priority, application United Kingdom, Jul. 31, 1985, 85/19321
Int. Cl.[4] C07C *1/04*
U.S. Cl. 585—500 **5 Claims**

1. A process for the production of hydrocarbons having a carbon number greater than one from synthesis gas which process comprises contacting synthesis gas with a catalyst at a temperature in the range from 190° to 400° C. and a pressure in the range from 0 to 100 bar,
said catalyst comprising a reductively activated composition, which composition before reductive activation has the formula:

$$Ru_aA_bXO_x \quad (I)$$

wherein
A is an alkali metal,
X is a rare earth metal,
a is greater than zero and up to 5% w/w, based on the total weight of the composition,
b is in the range from zero to 5% w/w based on the total weight of the composition,
x is a number such that the valence requirements of the other elements for oxygen is satisfied, and subject to the requirements of x, X constitutes the remainder of the composition.

4,795,851
PROCESS FOR THE OLIGOMERIZATION OF OLEFINS AND A CATALYST THEREOF

Robert R. Frame, Glenview, and Tamotsu Imai, Mount Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 25,136, Mar. 12, 1987, Pat. No. 4,737,480, which is a continuation-in-part of Ser. No. 843,540, Mar. 25, 1986, abandoned. This application Dec. 14, 1987, Ser. No. 132,450
Int. Cl.[4] C07C *2/20*
U.S. Cl. 585—512 **16 Claims**

1. In an oligomerization process wherein an olefinic hydrocarbon is treated in the presence of a catalytic composite to form an oligomer, the improvement comprising a catalytic composite prepared by the process of impregnating a porous support with an aqueous solution of an iron group metal salt and a Group IVA metal salt, calcining said impregnated support at a temperature in the range of from about 300° to about 450° C., and contacting said calcined support with a solution containing an alkyl aluminum compound.

4,795,852
PROCESS FOR THE OLIGOMERIZATION OF OLEFINS AND A CATALYST THEREOF

Robert R. Frame, Glenview, and Paul T. Barger, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 25,535, Mar. 13, 1987, Pat. No. 4,737,479, which is a continuation-in-part of Ser. No. 842,689, Mar. 21, 1986, abandoned. This application Dec. 14, 1987, Ser. No. 132,455
Int. Cl.[4] C07C *2/20*
U.S. Cl. 585—512 **9 Claims**

1. In an oligomerization process wherein an olefinic hydrocarbon is treated in the presence of a catalytic composite to form an oligomer, the improvement comprising a catalytic composite prepared by the process of impregnating a porous support with an aqueous solution of an iron group metal salt, calcining said impregnated support at a temperature in the range of from about 300° to 450° C., and contacting said calcined support with a solution comprised of an alkyl aluminum compound and an aluminum alkoxy compound.

4,795,853
ISOPARAFFIN SYNTHESIS OVER CADMIUM CATALYSTS

Jeffrey T. Miller, Naperville, Ill., and Thomas D. Nevitt, Albuquerque, N. Mex., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 925,721, Oct. 30, 1986, abandoned, which is a continuation of Ser. No. 536,680, Sep. 28, 1985, abandoned. This application Aug. 3, 1987, Ser. No. 81,657
Int. Cl.[4] C07C *1/04*
U.S. Cl. 585—733 **9 Claims**

1. A process for producing isoparaffins from synthesis gas which comprises contacting the synthesis gas with a catalyst comprising a cadmium component and an acidic support component wherein the iso/normal paraffin ratio of butane in the product is greater than about five, and the iso/normal paraffin ratio of pentane in the product is greater than about eight when the catalyst is tested at reaction pressures above 20 atm, temperatures from 315° to 400° C., synthesis gas rates between 1400 and 2800 cc/h/g catalyst, and hydrogen to carbon monoxide ratios from 2/1 to 1/1.

4,795,854
HIGH PRESSURE SEPARATION PROCESS

Bernard Levresse, Lillebonne, France, assignor to Societe Chimique des Charbonnages - CdF Chimie, France

Continuation of Ser. No. 262,641, May 11, 1981, abandoned, which is a division of Ser. No. 973,940, Dec. 28, 1978, Pat. No. 4,289,512. This application Aug. 15, 1983, Ser. No. 523,030
Claims priority, application France, Dec. 28, 1977, 77 39506
Int. Cl.[4] C07C *7/00*
U.S. Cl. 585—800 **8 Claims**

1. A process for separating a polyphase effluent from an ethylene polymerization reactor operating at a pressure between 500 and 3,000 bars, at a temperature between 160° C. and 350° C., and in the presence of a catalyst, into a gaseous monomer and a liquid polymer, comprising the steps of:
(a) feeding said polyphase effluent to an ejector comprising a nozzle through which said polyphase mixture is fed to increase its speed, a mixing zone for entraining recycled liquid polyethylene, and a diffuser section for reducing the speed of a resultant separation mixture;
(b) introducing recycled liquid polyethylene into said mixing zone thereby forming said separation mixture;
(c) separating said separation mixture by reducing said mixture to a pressure between 50 and 500 bars, thereby forming said liquid polymer and a partially purified gas, and removing said liquid polymer;
(d) purifying said partially purified gas in a cyclone, thereby forming said gaseous monomer and said recycled liquid polyethylene; and
(e) recycling said liquid polyethylene to step (b).
2. The process of claim 1, further comprising the step of adding fresh ethylene to said recycled liquid polyethylene before introducing said recycled liquid polyethylene into said mixing zone.

4,795,855
TRANSFORMATION AND FOREIGN GENE EXPRESSION WITH WOODY SPECIES

Joanne Pillatti, 1225 Aspen Pl., and Luca Comai, 1892 Sharon Ave., both of Davis, Calif. 95616

Continuation-in-part of Ser. No. 798,050, Nov. 14, 1985, abandoned. This application Feb. 24, 1986, Ser. No. 832,928
Int. Cl.[4] A01H *1/04*; C12N *15/00, 5/00*; C12P *21/00*
U.S. Cl. 800—1 **12 Claims**

1. A transformed poplar plant comprising transformed cells, said cells comprising a DNA construct as a result of transforming of poplar cells with said DNA construct, which construct comprises in the 5'-3' direction (1) a transcription-initiation region; (2) an open reading frame other than T-DNA expressing a peptide downstream from said transcription-initiation region, and under the transcriptional regulation of said transcription-initiation region; and (3) a transcription-termination region to provide an expression cassette capable of expression in said cells, wherein at least one of said open reading frame, transcription initiation region, and transcription termination region is from a plant other than poplar, and wherein said expression cassette is bordered by at least the right T-DNA border, and wherein said construct is a result of joining in vitro at least two of (1), (2), and (3) and said right T-DNA border.

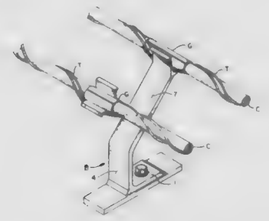
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,856

APPARATUS FOR SUPPORTING FIBER OPTIC OR RELATED CABLE

Marion R. Farmer, Shelby County, Tenn., assignor to Alumaform, Inc., Memphis, Tenn.

Filed Mar. 4, 1987, Ser. No. 21,716
Int. Cl.[4] F16L *3/22*
U.S. Cl. 174—40 R 12 Claims



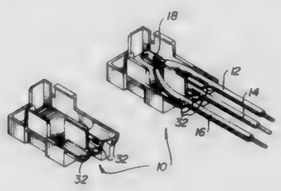
1. Apparatus for supporting fiber optic or related cable upon a utility pole or the like, comprising, a fully integral bracket having a base means disposed for attachment with a pole or the like, a shank means integrally connected with said base means and provided for extension away therefrom, cable supporting means bifurcating from said shank means, each cable supporting means including an arm, each arm at one end connecting with the shank means, and each arm extending to an outer end away from said shank means, and cradle means provided at the outer end of each arm and disposed for supporting a cable therewith, said arms together being V-shaped in their extension from the shank means, each cradle means including members for embracing a cable during installation, and said members comprising a pair of integral walls, said walls having an angular relationship with respect to each other, and disposed for holding a cable therein during installation.

4,795,857

WATERPROOF HOUSING FOR THE SPLICED ENDS OF ELECTRICAL CABLES

Patrick M. McInnis, Gardnerville, Nev., assignor to GardenAmerica Corporation, Carson City, Nev.

Filed Jan. 29, 1988, Ser. No. 150,241
Int. Cl.[4] H01R *4/22, 13/506, 13/52*
U.S. Cl. 174—138 F 1 Claim



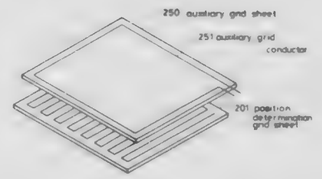
1. A housing for protecting the spliced ends of two or more electric cables, said housing being formed of two identical half-sections engaging one another in a snap-fit relationship, with said half-sections being configured to form entries therebetween for the cables, each of said half-sections being prefilled with a silicone-based gel material, each of said half-sections having the shape of an open-topped rectangular container having side walls, end walls, and a bottom, one of the end walls having a plurality of troughs extending therethrough to provide said entries for the cables, one of said side walls having a lip formed at the outer edge thereof and the other of said side walls having a shoulder formed thereon to enable the lip of one of the half-sections to engage the shoulder of the other of the half-sections to provide the snap-fit relationship between the half-sections, in which the other of said side walls includes an inwardly displaced intermediate section extending upwardly beyond the edge thereof to form a blade which extends into the gel in the other of the half-sections to displace the gel towards the spliced ends of the electric cables when supported in the housing.

4,795,858

DEVICE FOR DETERMINING POSITION COORDINATES OF POINTS ON A SURFACE

Daizou Yamazaki, Tokyo, Japan, assignor to Graphtec Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1988, Ser. No. 178,533
Claims priority, application Japan, May 29, 1987, 62-135937
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—19 4 Claims



1. A device for determining position coordinates of points on a surface; comprising a cursor structure which generates an electro-magnetic field of a signal frequency, a grid structure which is coupled to the electromagnetic field generated by said cursor structure, and a signal processor where the voltages induced in said grid structure being processed to determine a relative position of said cursor on a surface of said grid structure; characterized in that:

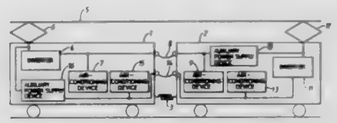
said cursor structure including a signal generator to generate a voltage of said signal frequency together with a battery type power supply, said voltage of said signal frequency being impressed on a cursor coil of said cursor structure; and said grid structure including an auxiliary grid sheet besides position determination grid sheets, only one auxiliary grid conductor being provided in said auxiliary grid sheet, at any operating position of said cursor coil on said auxiliary grid sheet, said only one grid conductor generating an induced voltage of sufficient amplitude and in phase with said voltage impressed on said cursor coil; and said signal voltage induced in said auxiliary grid conductor being used as a reference phase signal in said signal processor.

4,795,859

CONTROL DEVICE FOR ELECTRIC TRAIN

Akira Kato, Hachioji, and Junichiro Yamada, Mitaka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 14, 1988, Ser. No. 143,676
Claims priority, application Japan, Jan. 14, 1987, 62-4917
Int. Cl.[4] B60L *1/00*
U.S. Cl. 191—4 2 Claims



1. A control device for an electric train having plural coupled carriages each of which receives power for driving re-

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spective loads within each carriage via a collector from an overhead power line, comprising:

each carriage having a power converter coupled to said power line via a respective collector for converting power from said power line to a level suitable for at least one load within the respective carriage; and

each carriage having an auxiliary power supply device having an input coupled to a power output of a power converter of another carriage and an output coupled to an input of the power converter of the same carriage so that when the power supplied via said overhead power line to one of said carriages falls below a predetermined value, the power converter of said one of said carriages receives via the auxiliary power supply device of the same carriage power from the power converter of said another carriage.

4,795,860

PUSH SWITCH

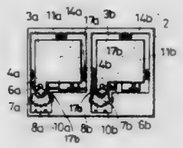
Soetsu Kamada, and Akinori Ito, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Aug. 25, 1987, Ser. No. 89,687

Claims priority, application Japan, Sep. 19, 1986, 61-142710[U]

Int. Cl.⁴ H01H *9/26*

U.S. Cl. 200—5 B **3 Claims**



1. A push switch having first and second switch units equipped with respective first and second push/lock mechanisms having an interlocking function, comprising:

first and second operating members for said first and second switch units respectively, provided slidably in a frame, each of said operating members being slidable from an initial position to a locking position when depressed in one direction in opposition to a return spring and returned by the returning force of the return spring when it is released in a return direction;

first and second operating rods supported by and movable along with a respective one of said first and second operating members in said one and return directions when the respective operating member is depressed and released;

first and second cam members provided independently of each other in the frame, each cam member being formed with an individual heart-shaped cam groove in which a respective one of said first and second operating rods is engaged and along which it moves so as to lock the respective operating member in the locking position when the operating member is depressed in the one direction and release the respective operating member back to the initial position when the operating member is released in the return direction;

first and second biasing springs for urging said first and second cam members, respectively, toward the respective operating members so that the operating rods are biasingly engaged in the heart-shaped cam grooves, wherein each of said cam members can be pushed against the urging force of its biasing spring to allow the operating rod to move along the heart-shaped cam groove to the locking position and back to the initial position;

a first driving pin having one end secured to the first switch unit and its other end disposed engagingly with said second cam member, said first driving pin being moved by the movement of said first operating member when depressed in said one direction so as to push said second cam member against the urging force of its biasing spring and release said second operating rod of said second operating member back to the initial position if it is in the locking position in the cam groove thereof; and

a second driving pin having one end secured to the second switch unit and its other end disposed engagingly with said first cam member, said second driving pin being moved by the movement of said second operating member when depressed in said one direction so as to push said first cam member against the urging force of its biasing spring and release said first operating rod of said first operating member back to the initial position if it is in the locking position in the cam groove thereof.

4,795,861

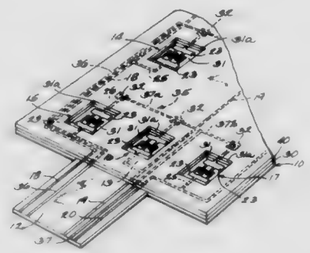
MEMBRANE SWITCH ELEMENT WITH COATED SPACER LAYER

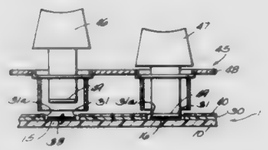
James P. O'Rourke, Milwaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Nov. 17, 1987, Ser. No. 121,545

Int. Cl.⁴ H01H *13/70*; H05K *1/00, 3/00*

U.S. Cl. 200—5 A **6 Claims**





1. In a membrane switch element of the open-contact type adapted for combination with a keyboard having keys with a contact at their inboard end, the switch element including first and second conductive circuits spaced from one another,

the improvement comprising:

(1) a flexible plastic film substrate having a circuit panel carrying the first conductive circuit and a tail extending from the panel, the first conductive circuit including (i) a plurality of conductive contacts each having a first contact section and a second contact section electrically separated from each other, and (ii) a plurality of first conductive tracks extending along the circuit panel of the substrate and across the tail to the end thereof, each first contact section being connected to a first conductive track;

(2) a first dielectric coating printed over the circuit panel of the film substrate in liquid form and cured to a solid coating in a pattern defining (i) a first uncoated zone surrounding each contact of the first conductive circuit, (ii) a second uncoated zone associated with each first uncoated zone, and (iii) a coated zone over the balance of the first conductive circuit;

(3) a second conductive circuit on the surface of the first dielectric coating opposite from the film substrate and including a plurality of second conductive tracks extending across the dielectric coating and along the tail of the film substrate to the end thereof, each second contact section of the contacts of the first conductive circuit being electrically interconnected to a second conductive track within a second uncoated zone defined by the first dielectric coating; and

(4) a second dielectric coating printed over the first dielectric coating in liquid form and cured to a solid coating in a pattern covering the second conductive circuit on the first dielectric coating and having uncoated zones in registry with the first uncoated zones.

4,795,862

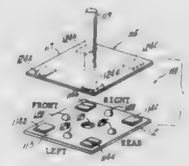
METHOD AND APPARATUS FOR OPERATING VEHICLE WINDOWS WITH A SWITCH

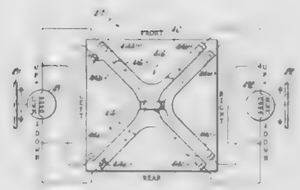
Gerald E. Linden, Tolland, Conn., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Continuation of Ser. No. 941,905, Dec. 12, 1986, abandoned. This application Feb. 10, 1988, Ser. No. 157,105

Int. Cl.⁴ H01H *25/04*; H02P *1/00*

U.S. Cl. 200—6 A **12 Claims**





7. A switch arrangement for a vehicle for operating a "left" and a "right" electrically-operated window in the vehicle, the "left" window being relatively leftward of the "right" window, in a spatial reference system in the vehicle, each said window including a respective reversible electric drive motor for driving the window "up" and "down" and wherein the switch arrangement comprises;

a switch housing mounted in a particular orientation in the vehicle;

four normally-open electrical contact pairs, each being individually and selectably actuatable to a closed condition for eletrical conduction and being fixedly located within said switch housing at a respective different one of four locations;

actuator means movable mounted in said switch housing for manipulation from a neutral position to respective ones of a "left front", "right front", a "left rear", and a "right rear" position in said vehicle spatial reference system when said switch housing is mounted therein in said particular orientation, a respective one of said four contact pairs being closed by manipulation of said actuator means to each of said "left front", "right front", "left rear" and "right rear" positions; and

electrical circuit means for connecting said contact pairs with said window drive motors such that manipulation of said actuator means to said "left front" position and said "left rear" position causes said "left" window to go "up" and "down", respectively, and manipulation to said "right front" position and said "right rear" position causes said "right" window to go "up" and "down", respectively.

4,795,863

ELECTRICAL SWITCH

Motoyuki Tomizu, and Kunio Nagata, both of Otokuni, Japan, assignors to Omron Tateisi Electronics Co., Japan

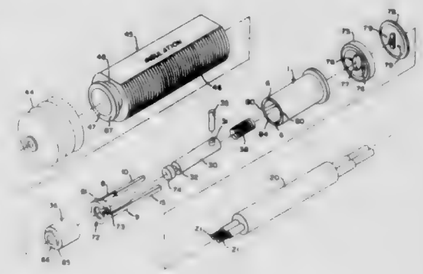
Continuation-in-part of Ser. No. 641,560, Aug. 16, 1984, Pat. No. 4,564,730. This application Jan. 13, 1986, Ser. No. 818,237

Claims priority, application Japan, Aug. 16, 1983, 58-127136[U]; Aug. 23, 1983, 58-130721[U]; Sep. 16, 1983, 58-143772[U]; Sep. 22, 1983, 58-146776[U]

The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.

Int. Cl.⁴ H01H *15/00, 3/16, 13/10*

U.S. Cl. 200—16 B **3 Claims**



1. An electrical switch comprising:

a casing having a central bore formed therein;

a pair of fixed contacts disposed longitudinally within said central bore, adjacent the periphery of said casing;

a plunger slideably accommodated in said central bore for movement in an axial direction, said plunger having a continuously conical or wedge shaped hole formed in an intermediate portion thereof;

a bearing member disposed concentric to said plunger and slideably supporting said plunger therein;

a moveable contact fitted within said hole so as to intersect with said fixed contacts, said movable contact being formed by a predetermined length rod member, said hole for receiving said movable contact still having a clearance with respect to the movable contact even after having received the movable contact therein; and

a restoring means disposed around the outer periphery of said plunger, said restoring means biasing said movable contact against said fixed contacts, when said switch is in its nonactuated position, so as to prevent said movable contact from pulling out of said hole.

4,795,864

CONTROL BY SWITCH UNDER FORCE OF A DECLUTCHING SYSTEM AT STOP FOR AUTOMATIC TRANSMISSION

Francois Leorat, Versailles, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Jun. 24, 1987, Ser. No. 65,893

Claims priority, application France, Jun. 24, 1986, 86 09073

Int. Cl.⁴ H01H *3/16*; B60K *41/00*

U.S. Cl. 200—61.91 **5 Claims**

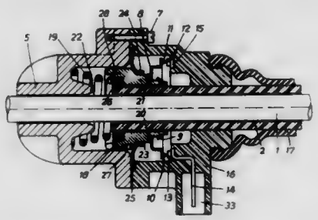
1. In an automatic transmission having an electrically operated stop declutching system and a fuel metering system normally biased in an idling position by fuel metering system biasing means, and a fuel system cable control means including a cable slidable in a sheath, said cable having one end operatively connected to said fuel metering system for operating said

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fuel metering system upon movement of said cable in a first direction, a device for controlling said stop declutching system, comprising:

means for biasing said sheath in said first direction;

stop means for permitting a limited degree of movement of said sheath in a second direction opposite said first direction, wherein said sheath biasing means normally maintains said sheath spaced from said stop means and wherein said sheath biasing means has a force less than that of said



fuel metering system biasing means, whereby a force for moving said cable in said first direction will move said sheath in said second direction by said limited degree of movement to engage said stop means before said cable begins to move in said first direction to operate said fuel metering system; and

electrical means for changing an operating state of said stop declutching system upon movement of said sheath within said limited degree of movement.

4,795,865

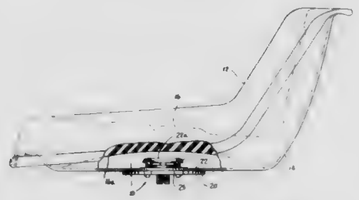
SAFETY SWITCH FOR AUTOMATIC DE-ACTIVATION OF A MOTOR VEHICLE

William A. Howard, Burton, Ohio, assignor to Delta Systems, Inc., Streetsboro, Ohio

Filed Dec. 10, 1987, Ser. No. 130,984

Int. Cl.[4] H01H *3/02, 13/52*

U.S. Cl. 200—85 A **4 Claims**



1. A vehicle seat switch assembly comprising:

(a) switch means for opening and closing a vehicle ignition circuit including (i) two spaced switch contacts forming part of the ignition circuit; (ii) a switch housing to support the two spaced switch contacts; (iii) a switch actuator located within said switch housing and including a plunger extending through an opening in said switch housing for opening and closing said switch contacts, said switch actuator including a metallic switch member inside the switch housing for bridging a gap between the two spaced switch contacts; and (iv) a spring positioned within the housing to bias the switch actuator to extend the plunger through the opening in said housing;

(b) cover means having a first inner surface for engaging the switch actuator plunger and a second outer surface for engagement with a seat cushion, said cover means further comprises a plurality of resilient legs coupled to said cover and having flanged ends; and

(c) base means for coupling said switch means to the vehicle seat with the plunger facing upward away from the seat, said base means defining openings to receive the flanged ends of the resilient legs of said base whereby the legs are deflected to pass through the openings and then released to a configuration allowing the cover means to move relative to the base and engage said switch plunger in response to engagement with the seat cushion.

4,795,866

VACUUM TUBE SWITCH WHICH USES LOW TEMPERATURE SOLDER

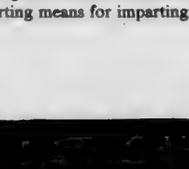
Ernst L. Hoene; Roman Renz, and Klaus Gessner, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 26, 1988, Ser. No. 148,719

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1987, 3703326

Int. Cl.[4] H01H *33/66*

U.S. Cl. 200—144 B **15 Claims**



1. A vacuum switch tube which has a housing formed of electrically insulator and metal parts, characterized in that at least one part of the vacuum switch tube that separates the interior of the tube from the environment is soldered so as to be vacuum-tight using a soft solder which has a melting point which is below 400° C.

4,795,867

MOTOR ACTUATOR FOR AIR CONDITIONING SYSTEM

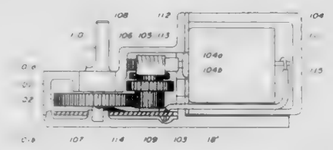
Shinichi Ohi, and Shinichiro Yoshida, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1987, Ser. No. 22,939

Claims priority, application Japan, Mar. 11, 1986, 61-034962[U]; Apr. 1, 1986, 61-04832[U]; Apr. 22, 1986, 61-092522[U]; Dec. 4, 1986, 61-186215[U]

Int. Cl.[4] H01H *7/00*

U.S. Cl. 200—37 R **17 Claims**



15. A motor actuator for an air conditioning system, comprising:

a driving motor;

an output shaft rotated by a driving force from said driving motor;

an output gear mounted on said output shaft;

a switch disc arranged in concentric relation to said output shaft and rotatable together with said output shaft;

a circuit board interposed between said output gear and said switch disc;

switch means provided on said circuit board and at least one of said output gear and said switch disc; and

hysteresis imparting means for imparting a hysteresis to the rotation of said switch disc with respect to the rotation of said output shaft.

4,795,868

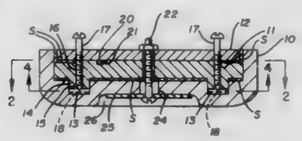
TILT SWITCH

Harry Benjamin, 8167 Anderson NE., Warren, Ohio 44484

Filed Feb. 8, 1988, Ser. No. 152,963

Int. Cl.[4] H01H *29/22*

U.S. Cl. 200—220 **7 Claims**



1. An improvement in a tilt switch for use in sensing and signaling tilting of an article to which the tilt switch is affixed, the improvement comprising defining an annular shallow channel in a generally flat member, means registering with said flat member and said annular shallow channel partially filling, sealing and enclosing said annular shallow channel, electrically conductive fluid partially filling said annular shallow channel, and a plurality of circumferentially spaced vertically positioned first contact members having lower ends closely spaced with respect to said electrically conductive fluid in said shallow channel, a plurality of circumferentially spaced secondary contact members arranged alternately between said first contact members, said secondary contact members being vertically arranged and having their lower ends positioned in a cavity formed inwardly of said means registering with said annular shallow channel so as to space the lower ends of said secondary contact members with respect to said electrically conductive fluid, electrical conductors in said means registering with said flat member interconnecting said secondary contact members and a center post conductor, and means fastening said flat member and said means registering therewith to one another.

4,795,869

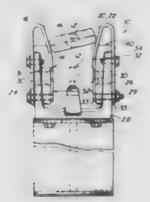
CONTACT ASSEMBLY FOR HIGH-VOLTAGE SWITCH

Christopher D. Roman, Glenview, and Dean M. Czuma, Chicago, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Sep. 1, 1987, Ser. No. 92,026

Int. Cl.[4] H01H *1/50, 9/00*

U.S. Cl. 200—255 **8 Claims**



1. A contact assembly comprising:

a first contact;

second contact means comprising at least two displaceable, spaced-apart contact members;

means for resiliently biasing said at least two contact members; and

filling means for at least substantially filling the volume corresponding to that volume occupied during displacement of each of said at least two contact members in response to engagement by said first contact, said filling means being deformable and/or compressible, said filling means also being essentially impervious to moisture.

4,795,870

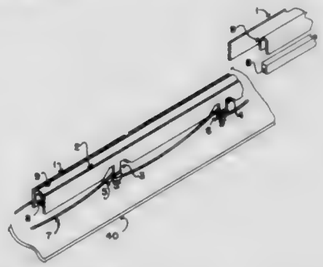
CONDUCTIVE MEMBER HAVING INTEGRATED SELF-REGULATING HEATERS

John F. Krumme, Woodside, and Mark J. Cowell, San Carlos, both of Calif., assignors to Metcal, Inc., Menlo Park, Calif.

Filed Jun. 18, 1985, Ser. No. 745,936

Int. Cl.[4] H05B *6/44*

U.S. Cl. 219—9.5 **21 Claims**



1. A bus bar comprising:

an elongated conductive frame,

a multiplicity of temperature self regulating heating elements arrayed along an elongated dimension of said frame,

each heating element having a base portion with an insulated current carrier forming a coil thereabout,

means adapted to apply a high frequency alternating current through said coils to energize said heating elements.

4,795,871

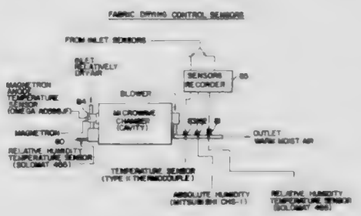
METHOD AND APPARATUS FOR HEATING AND DRYING FABRICS IN A DRYING CHAMBER HAVING DRYNESS SENSING DEVICES

Robert D. Strattan; Mary E. O'Connor, and James R. Sorem, Jr., all of Tulsa, Okla., assignors to Micro Dry, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 920,605, Oct. 20, 1986. This application Sep. 3, 1987, Ser. No. 92,621

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 M **37 Claims**



1. A method of sensing the end point of a dry condition in a moist fabric disposed in a microwave heating and drying chamber, comprising the steps of:

(a) substantially continuously measuring relative humidity at an outlet of said heating and drying chamber;

(b) comparing the relative humidity at said outlet with a relative humidity reading at an inlet of said chamber; and

(c) determining said end point of the dry condition when said outlet relative humidity falls to within a given percentage of said inlet reading.

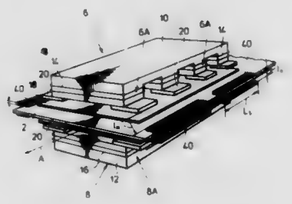
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,872

ELECTROMAGNETIC INDUCTION HEATING APPARATUS INCLUDING A MAGNETIC FLUX DIVERTING ASSEMBLY

Nobuyasu Haginawa, Shizuoka Prefecture, and Hiroshi Ikeda, Aichi Prefecture, both of Japan, assignors to Nippon Light Metal Company Limited, Tokyo, Japan

Filed Oct. 8, 1986, Ser. No. 917,093
Claims priority, application Japan, Oct. 25, 1985, 60-238703
Int. Cl.[4] H05B 5/06
U.S. Cl. 219—10.61 R 11 Claims



1. An electromagnetic induction heating apparatus for heating a strip which has a predetermined width, as measured between opposed strip edges, and which is moved at a predetermined speed in a predetermined direction, said apparatus comprising:

(a) a pair of electromagnetic assemblies positioned in spaced relationship from each other so to define a passageway along which said strip is adapted to be moved in said predetermined direction, said electromagnetic assemblies forming an alternating magnetic field, each of said assemblies comprising a plurality of electromagnets, each of said electromagents having a width in a direction transverse to said predetermined direction which is less than the width of said strip;

(b) means for adjusting magnetic flux generated by said electromagnetic assemblies, said adjusting means comprising a plurality of flux modifiers, each of said electromagnets having opposed ends between which said electromagnet width is defined, said flux modifiers being slidably positioned on opposite ends of said electromagnets, said flux modifiers being mounted adjustably with respect to the width of said strip, said flux modifiers thereby comprising means for moving a portion of the magnetic flux generated by said electromagnetic assemblies towards said opposed edges of said strip; and

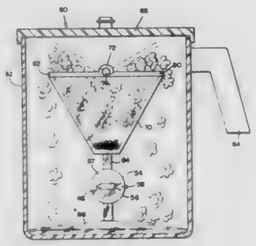
(c) means for diverting said magnetic flux which traverses an area adjacent to said strip edges, said diverting means comprising a laminated ferromagnetic sheet which is positioned adjacent said opposed strip edges, said magnetic flux diverting means comprising a plurality of magnetic flux diverting members which are independent from said electromagnetic assemblies and said magnetic flux adjusting means, each of said magnetic flux diverting members having one surface which faces a top surface of said strip and one surface facing a bottom surface of said strip, said magnetic flux diverting members extending in a direction which intersect said predetermined direction along which said strip is adapted to be moved, said magnetic flux diverting members thereby comprising means for diverting a portion of said magnetic flux in order to uniformly heat said strip across the width of said strip.

4,795,873

LIGHT ENHANCING MEANS FOR MICROWAVE UTENSILS

George Freedman, Wayland; Robert F. Bowen, Burlington, and Wesley W. Teich, Wayland, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 80,872, Oct. 1, 1979, abandoned. This application Aug. 3, 1981, Ser. No. 291,643
Int. Cl.[4] H05B 6/80
U.S. Cl. 219—10.55 E 8 Claims



1. A microwave utensil comprising:

food supporting means insertable into a microwave oven for supporting food to be processed by microwave radiation in said oven, the food supporting means including container means having side walls disposed for confining said food; and

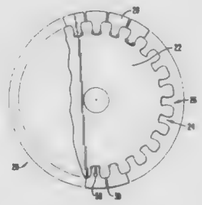
means attached to the supporting means for producing light in response to said microwave radiation, the light producing means including antenna means dimensioned for producing flashing operation of said light producing means while exposed to said microwave radiation in said oven.

4,795,874

SAW BLADE WITH NON-MAGNETIC INSERTS FOR ELECTRIC ARC SAW AND METHOD OF MAKING SAME

Max P. Schlienger, Ikiah, Calif., assignor to Retech, Inc., Ikiah, Calif.

Filed Jan. 15, 1987, Ser. No. 3,515
Int. Cl.[4] B23H 7/12
U.S. Cl. 219—69 V 23 Claims



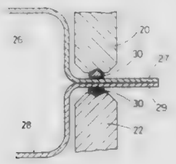
1. An electric arc saw blade comprising a central disk made of a first, relatively high strength, electrically conductive material, a plurality of discrete inserts made of a second, relatively low strength, electrically conductive and non-magnetic material, and means for locking the inserts to the disk.

4,795,875

CONTACT WIRE FOR A ROLLER SEAM WELDING MACHINE

Werner Urech, Kaiserstuhl, Switzerland, assignor to Elpatronic AG, Switzerland

Filed Jun. 23, 1986, Ser. No. 877,262
Claims priority, application Switzerland, Jul. 1, 1985, 2802/85
Int. Cl.[4] B23K 11/06
U.S. Cl. 219—84 18 Claims



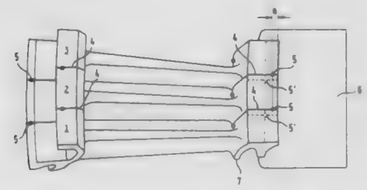
1. A contact wire having a front and back for a roller seam welding machine, wherein said front is adjacent to a work to be welded and said back is adjacent to a roller electrode, at least the front is characterized by grooves (32) extending parallel to a longitudinal direction of movement of the wire.

4,795,876

METHOD AND APPARATUS FOR PRELIMINARILY TACKING STRUCTURAL COMPONENTS TO EACH OTHER

Fritz Nustede, Karlsfeld; Josef Hanninger, Sixtsattgern, and Josef Schallinger, Vachendorf, all of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 9, 1987, Ser. No. 94,829
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1986, 3631154
Int. Cl.[4] B23K 11/30
U.S. Cl. 219—86.1 6 Claims



1. A method for performing a preliminary tacking operation to connect structural components to each other prior to a final joining, comprising the following steps,

(a) connecting a hollow suction welding electrode to a source of reduced pressure, said hollow suction welding electrode having a suction channel with a dimension at least at one end smaller than that of a piece of welding material,

(b) picking-up a piece of welding material with said one end of said hollow suction welding electrode by attracting said piece of welding material to said one end of said hollow suction welding electrode by suction,

(c) holding said piece of welding material by suction while transporting said piece of welding material to a tacking location, and maintaining said piece of welding material in place in said tacking location by said one end of said hollow suction welding electrode for said tacking operation, and

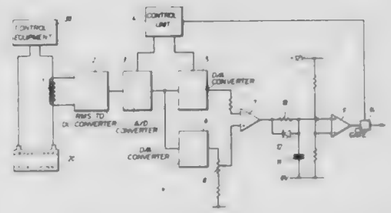
(d) performing said tacking operation by a localized welding operation with said hollow suction welding electrode.

4,795,877

FAULT DETECTING DEVICE FOR WELDED PIPE JOINTS

Eric Bridgstock, Hope; Brian Glaves, Sheffield; David M. A. Kenworthy, Barnsley, and David A. Bilton, Chesterfield, all of England, assignors to Fusion Plastics Limited, Chesterfield and Vecstar Limited, Sheffield, both of, England

Filed Sep. 10, 1986, Ser. No. 905,500
Claims priority, application United Kingdom, Sep. 12, 1985, 8522633
Int. Cl.[4] H05B 1/02
U.S. Cl. 219—109 17 Claims



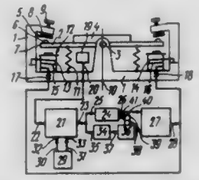
1. A method of detecting a fault in an electrofusion welding process, comprising the steps of sensing the welding current flowing through an electrofusion fitting and generating a signal dependent upon the current sensed, monitoring said current-dependent signal and producing a fault indicative output signal in response to a change in the current-dependent signal due to an increase in the welding current, after a short initial welding period during which the welding current should reach a maximum for the welding process, said current dependent signal being compared with a set reference signal corresponding to a current-dependent signal representative of a welding current higher than expected after said initial period, and said output signal being produced if the current dependent signal becomes greater than said reference signal.

4,795,878

SCANNER FOR INDUSTRIAL LASER MACHINES

Vladimir I. Babitsky; Mikhail E. Gerts, both of Moscow; Jury A. Ivanov, Ivanovo; Vladimir S. Maiorov; Nikolai S. Makarov, and Alexander N. Tresvyatsky, all of Moscow, U.S.S.R., assignors to Institute Mashinovedenia im.A.A. Blagonravova an SSSR, Moscow and Nauchno-Issledovatelsky Tsentr Po Tekhnologicheskim Laseram an SSSR, Troitsk, both of, U.S.S.R.

PCT No. PCT/SU86/00111, § 371 Date Jul. 2, 1987, § 102(e) Date Jul. 2, 1987, PCT Pub. No. WO87/02786, PCT Pub. Date May 7, 1987
PCT Filed Nov. 4, 1986, Ser. No. 105,381
Int. Cl.[4] B23K 26/08
U.S. Cl. 219—121.8 33 Claims



1. A scanner for industrial laser machines, comprising a housing accomodating a movable scanning element, a means for inducing mechanical oscillations of the scanning element, which is mechanically connected with the housing, at least two collision pairs, each pair having two components secured so

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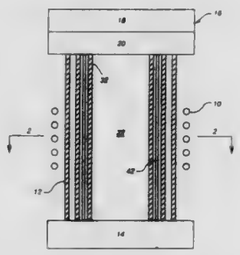
that they can interact with each other during the movement of the scanning element, one component being secured on the scanning element and the other in the housing, characterized in that it additionally comprises a measuring transducer (19) which responds to mechanical oscillations of the scanning element (4), a phase shift unit (21) whose input (22) is connected to the measuring transducer (19), a saturation unit (24) whose input (25) is connected to an output (23) of the phase shift unit (21), and a power amplifier (27) whose input is connected to the saturation unit (24) and whose output (28) is connected to the means (1,2) for inducing mechanical oscillations of the scanning element (4).

4,795,879

METHOD OF PROCESSING MATERIALS USING AN INDUCTIVELY COUPLED PLASMA

Donald E. Hull, and Thomas M. Bieniewski, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 13, 1987, Ser. No. 37,898
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121.59 **3 Claims**



1. A method of coating a surface in a gas-free environment using an electrically conductive ceramic or metal coating material which is initially in solid form comprising:

a. providing inductively coupled plasma apparatus comprising:

(1) an electrical induction coil having a central longitudinal axis;

(2) a dielectric tubular enclosure centered coaxially on said axis and located inside said coil;

(3) a segmented metal radiation shield which is grounded and centered coaxially on said axis inside said enclosure, said shield consisting of a plurality of elongate fluid-cooled metal shield segments extending parallel to said axis, said segments being disposed in a circular arrangement adjacent the interior surface of said enclosure and being substantially equally spaced apart circumferentially such that said shield has a generally tubular configuration, and said shield segments being shaped in cross section so as to occlude line-of-sight transmission of light through said radiation shield; and

(4) an outlet for said coating material;

b. placing said coating material within said radiation shield;

c. evacuating said tubular enclosure;

d. heating said coating material by use of said induction coil to vaporize said coating material and to form a plasma from the resulting vapor; and

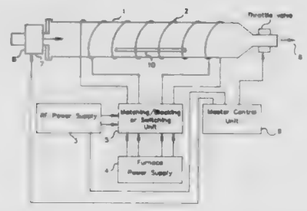
e. providing said surface adjacent to said outlet of said plasma apparatus, in order that material emanating from the outlet is deposited on said surface.

4,795,880

LOW PRESSURE CHEMICAL VAPOR DEPOSITION FURNACE PLASMA CLEAN APPARATUS

James A. Hayes, 7530 Hilm Rd., Ben Lomond, Calif. 95005, and John T. Davies, 5610 Circle Dr., El Sobrante, Calif. 94803

Continuation of Ser. No. 906,343, Sep. 11, 1986, abandoned. This application Mar. 7, 1988, Ser. No. 166,775
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121.52 **17 Claims**



1. An apparatus for cleaning a low pressure chemical vapor deposition furnace by plasma etching without the use of auxiliary heating comprising:

a furnace tube;

means for supplying operating power to said tube;

a coil for inductively coupling radio frequency energy to said tube;

means for supplying a purging gas through the interior of said tube;

a radio frequency power supply couplied to said coil for creating a gas plasma within said tube; and

means for effectively isolating said radio frequency power supply from said operating power supplying means;

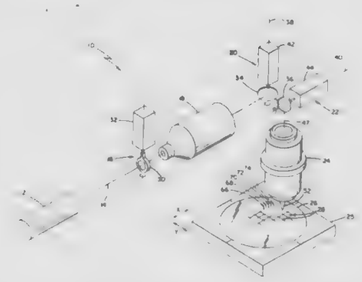
whereby low pressure chemical vapor deposited films that have accumulated on the surfaces of said tube are removed.

4,795,881

CURVED ELECTRICAL COMPONENTS AND LASER TRIMMING THEREOF

Bernard E. Lejeune, and Philippe G. Lejeune, both of Les Granges le Roi, France, assignors to Teradyne, Inc., Boston, Mass.

Filed Jun. 2, 1987, Ser. No. 57,334
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.69 **7 Claims**



1. A method of laser trimming an electrical resistor component comprising

providing material supported on a substrate, said material having two ends and a curved portion therebetween defined by inner and outer curved boundaries,

measuring resistance of said material, and

cutting said material by a cut that enters said material at one said boundary in a first leg, has a curved second leg that is between and follows said inner and outer boundaries, and leaves said material at the same said boundary in a third leg,

the length of said first leg being a function of said measured resistance, said length being selected to achieve desired resistance,

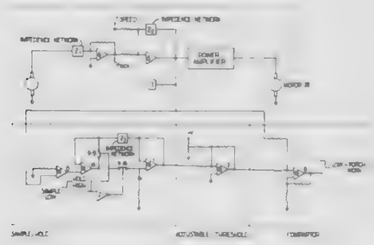
the value of the length of said first leg of said cut being determined by reference to information based upon cuts of legs of different lengths of a component of the same geometry as the component being trimmed.

4,795,882

TORCH POSITIONING APPARATUS

Steven F. Hardwick, 55 Fort Royal Ave., and Joseph V. Warren, Jr., 1721 Sulgrave Rd., both of Charleston, S.C. 29407

Filed Feb. 9, 1987, Ser. No. 12,436
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—124.02 **11 Claims**



3. A torch positioning apparatus, comprising:

a. a torch means;

b. an electrically powered means of moving said torch toward a work piece;

c. a proximity switch means which detects when said torch has reached a predetermined height above said work piece and which controls said electrically powered means so as to slow the rate of movement of said torch toward said work piece;

d. means for detecting an increase in the level of power required by said electrically powered means upon said torch impinging said work piece, which causes said power means to reverse the direction of said torch and to retract said torch to a predetermined height above said work piece in response to said increase in the level of power required by said electrically powered means; and

e. a safety counter which slows the travel of said torch toward said work piece after a predetermined time has elapsed so as to prevent said torch from striking said work piece at a rapid rate of speed should such proximity switch means fail.

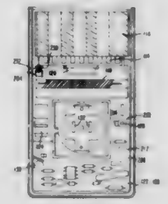
4,795,883

AROMA GENERATING APPARATUS AND DRIVER CIRCUIT

Dov Z. Glucksman, Brookline, and Constantine D. Pezaris, Nahant, both of Mass., assignors to Environmental Fragrance Technologies, Ltd., New York, N.Y.

Continuation-in-part of Ser. No. 70,977, Jul. 8, 1987. This application Oct. 13, 1987, Ser. No. 108,098
Int. Cl.[4] A61L *9/03*
U.S. Cl. 219—272 **25 Claims**

1. An apparatus for generating an aroma from an aroma containing material, said apparatus comprising producing means operative for intermittently producing an aroma from said material over a time period, and circuit means for providing a signal in response to the total accumulated time of intermittent operation of said producing means over said time period.



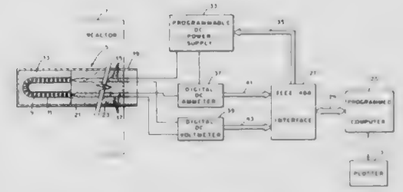
iod and substantially unresponsive to the time of intermittent inoperation of said producing means over said time period.

4,795,884

METHOD FOR IN-SITU RESTORATION OF PLANTINUM RESISTANCE THERMOMETER CALIBRATION

Radford M. Carroll, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 23, 1987, Ser. No. 111,489
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—497 **4 Claims**



1. A method for the in situ restoration of a platinum resistance thermometer, which has become decalibrated due to oxide surface film formation and/or strain-related damage, to a stress-free calibration condition wherein said thermometer includes a platinum resistor sensing element whose resistance varies with the temperature of said element in accordance with a known relationship comprising the step of:

passing a controlled dc current through said platinum resistor sensing element, said current having a magnitude sufficient to raise the temperature of said element to its oxide decomposition and annealing temperature and said current being maintained for a heating period sufficient to restore said element to an oxide free surface and stress-free calibration condition.

4,795,885

FLEXIBLE RADIANT TUBE HEATER

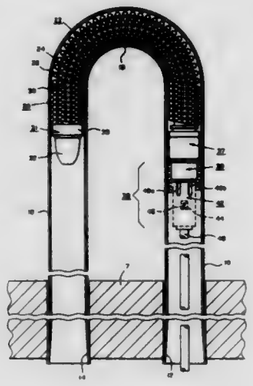
John M. Driggers, Pittsburgh; Thomas J. Saska, Lower Burrell, and Bruce W. Bevilacqua, Penn Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 864,619, May 16, 1986, abandoned. This application Mar. 21, 1988, Ser. No. 171,198
Int. Cl.[4] H05B *3/40*
U.S. Cl. 219—534 **21 Claims**

1. A radiant heating apparatus particularly adapted for applying heat to a curved section of a metallic conduit, comprising an elongated flexible mandrel insertable within said conduit, an elongated, flexible electrical resistance heating element coiled around said mandrel for applying radiant heat to the

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inner walls of a portion of said conduit, and a sleeve of flexible material enveloping said electrical resistance heating element, said sleeve being electrically insulative but thermally conductive for preventing short-circuiting from occuring both between adjacent coils of said heating element, and between said coils of said heating element and said conduit, and further for maintaining substantially uniform spacing between adjacent coils of said element to avoid nonuniformities in the heat gradient generated by the heating element.



4,795,887

THERMAL PRINTHEAD WITH COMMON ELECTRODE FORMED DIRECTLY OVER GLAZING LAYER

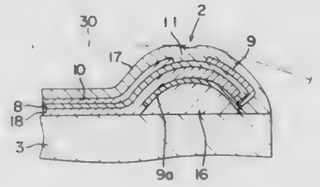
Isao Myokan, Hamura, Japan, assignor to Koishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 846,563, Mar. 31, 1986, abandoned. This application Apr. 21, 1988, Ser. No. 186,697

Claims priority, application Japan, Apr. 13, 1985, 60-78708; Apr. 13, 1985, 60-78709

Int. Cl.[4] G01D *15/10*; B41J *3/20*

U.S. Cl. 219—543 6 Claims



1. A integrated circuit device comprising signal electrodes, a common electrode, and a heating layer over a glazing layer, wherein said common electrode has an extension extending directly over said glazing layer, and an insulating layer is formed between said extension and said signal electrodes and/or said heating layer.

4,795,886

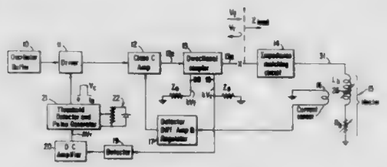
TEMPERATURE CONTROL IN WHICH THE CONTROL PARAMETER IS THE DEGREE OF IMPERFECTION IN THE IMPEDANCE MATCHING

Phillip S. Carter, Jr., Palo Alto, Calif., assignor to Metcal, Inc., Menlo Park, Calif.

Filed Dec. 19, 1986, Ser. No. 943,755

Int. Cl.[4] H05B *1/02*

U.S. Cl. 219—505 21 Claims



1. In a temperature regulator:

a device having an electrical impedance which varies as the temperature of the device varies over a specified region of its temperature range,

means for applying pulsating current to said device to heat the same, said means having an impedance which is mismatched with the impedance of said device over at least part of the range over which the impedance of said device varies as a result of temperature change, whereby as the temperature of said device varies over said region the extent of mismatch of the impedances also changes,

said means further comprising means for producing a signal indicative of reflected power that varies as a function of the impedance mismatch, and

control means responsive to said signal for varying said pulsating current in order to regulate the temperature of said device.

4,795,888

VARIABLE KEYSTROKE PRESSURE APPARATUS

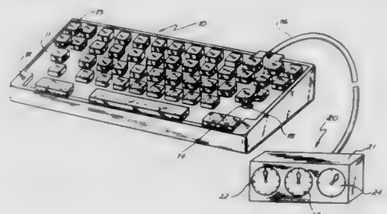
Andrew R. MacFarlane, North Sydney, Australia, assignor to A & K MacFarlane Pty. Ltd., North Sydney, Australia

Continuation of Ser. No. 856,292, Apr. 25, 1986, abandoned. This application Jul. 13, 1987, Ser. No. 73,351

Claims priority, application Australia, Apr. 29, 1985, PH0346; Aug. 26, 1985, PH2129

Int. Cl.[4] G06C *7/02*; B41J *5/00, 29/00*

U.S. Cl. 235—145 R 8 Claims



6. In a keyboard including a base, key shafts upstanding from said base, and keys on said shafts manually depressible with respect to said base, the improvement of automatic variation of resistance to key depression during operation comprising a flexible fluid containing bag positioned between said base and said keys and having sealed apertures through which said key shafts extend, fluid pump means connected to said bag, and means on said pump means for selective adjustment of the pressure of said fluid and of the time intervals during which said pressure is "ON" and "OFF" to effect automatic variation over a period of time of the pressure of fluid in said bag to cause changes in said resistance to key depression.

4,795,889

AUTOMATIC BILL REFILLING METHOD FOR BILL RECYCLE MODULE USING CUSTOMER SENSOR

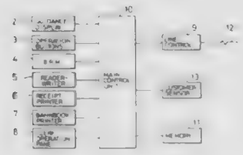
Nobuhiko Matsuura, Asahi; Kunio Ushijima, Seto, and Tetsuo Goto, Asahi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 18, 1986, Ser. No. 897,405

Claims priority, application Japan, Aug. 30, 1985, 60-189700

Int. Cl.[4] G06F *15/30, 15/24*

U.S. Cl. 235—379 7 Claims



1. An automatic bill refilling method for an automatic teller machine including at least a bill handling module having a plurality of first bill boxes for respective bill denominations, a second bill box containing bills for refilling, deficiency detecting means for detecting deficiency of bills in each of said first bill boxes, and customer sensor means for detecting existence of a customer in front of said machine, said method comprising the steps of:

detecting deficiency of bills in one of said first bill boxes; and

supplying bills successively from said second bill box to said one of said first bill boxes after detecting said deficiency, only when said customer sensor means detects that no customer exists in front of said machine.

4,795,890

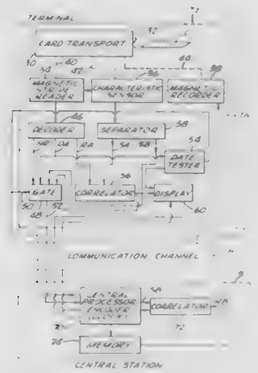
DEVICE AUTHENTICATION SYSTEM FOR ON AND OFF LINE USE

Robert N. Goldman, Honolulu, Hi., assignor to Light Signatures, Inc., Los Angeles, Calif.

Filed Feb. 2, 1987, Ser. No. 9,867

Int. Cl.[4] G06K *5/00*

U.S. Cl. 235—380 11 Claims



1. A system for authenticating a device, as a credit card, alternately involving a location terminal alone and such a terminal in association with a central station, wherein said card includes a machine-readable uniqueness characteristic with first and second aspects and a memory means, said system comprising:

card sensing means at said location terminal to provide sensed signals representative of said first and second aspects of said uniqueness characteristic;

decoding means, for use in off-line and on-line authentication of said device, at said location terminal for decoding said memory to provide reference signals representative of said first aspect of said uniqueness characteristic;

correlator means at said location terminal for correlating said sensed signals representative of said first aspect with said reference signals representative of said first aspect to provide first approval signals;

means at said location terminal for completing a communication channel to said central station;

means, for use in on-line authentication of said device, at said central station for receiving said sensed signals representative of said second aspect of said uniqueness characteristic, correlating such signals to reference values and providing second approval signals; and

means at said location terminal controlled by said first and second approval signals to manifest authenticity of said card.

4,795,891

CARD GUIDE DEVICE

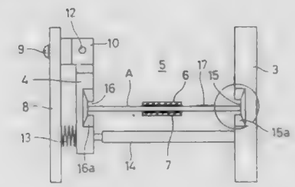
Masamichi Morigaki, Kusatsu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 12, 1987, Ser. No. 24,970

Claims priority, application Japan, Mar. 14, 1986, 61-38110[U]

Int. Cl.[4] G06F *15/30*

U.S. Cl. 235—380 7 Claims



1. A card guide device comprising a stationary guide and a movable guide for transport, said movable guide being movable toward and away from said stationary guide, a pair of card guide grooves respectively formed on each of opposed surfaces of said stationary guide and said movable guide, each groove having an inside dimension larger than the thickness of the card to be transported therethrough, means for pivotably supporting said movable guide and means for biasing said movable guide so that it pivots toward said stationary guide.

4,795,892

PRE-PAID COMMODITY SYSTEM

Kevin J. Gilmore, Wheeling; Andrew H. Marrinson, Arlington Heights, and William A. Jahnke, Schaumburg, all of Ill., assignors to CIC Systems, Inc., Brentwood, Tenn.

Filed Dec. 9, 1987, Ser. No. 130,548

Int. Cl.[4] G06F *7/08*

U.S. Cl. 235—381 25 Claims

1. A system for the prepayment, metering and auditing of a utility service available from a service source and supplied to consumers, said system comprising:

central means for auditing all system transactions;

means for transmitting distributor service credit information from said central means to a remote distributor;

portable authorizing means unique for each consumer for retaining information enterable in said authorizing means relating to a purchase of a service credit by a consumer;

a distributor terminal located at said remote distributor and

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including means for receiving said distributor service credit information from said means for transmitting and means for entering said information relating to a purchase of a service credit by a consumer in said authorizing means;

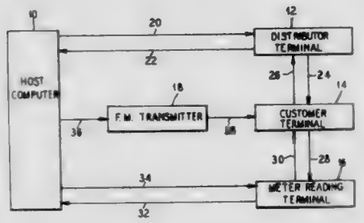
a consumer terminal located at said consumer and connected to said service source, said consumer terminal including means for reading said service credit information from said authorizing means, means for storing said service credit information, and means responsive to selected inputs for enabling transmission to said consumer from said service source of an amount of said service equal in value to said service credit;

an external meter means located at said consumer for monitoring usage of said service by said consumer, said meter means connected to said consumer terminal and having an information output;

a meter reader inluding means non-invasively interfacing with said information output of said meter means for reading through said meter means, said usage of service by said consumer and the information stored in said means for storing in said consumer terminal, and means for storing the information read;

means for transmitting the information read through said meter in said means for storing in said meter reader to said central means; and

means for transmitting said selected inputs from said central means to said consumer terminal to alter the operation of said means for enabling.

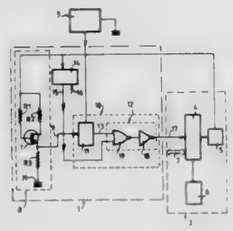


4,795,893

SECURITY DEVICE PROHIBITING THE FUNCTION OF AN ELECTRONIC DATA PROCESSING UNIT AFTER A FIRST CUTOFF OF ITS ELECTRICAL POWER

Michel Ugon, Maurepas, France, assignor to Bull, CP8, Paris, France

Filed Jul. 10, 1987, Ser. No. 71,882
Claims priority, application France, Jul. 11, 1986, 86 10208
Int. Cl.[4] G06K *3/00*
U.S. Cl. 235—382 **13 Claims**



1. A security device adapted to be connected to a power supply and being operative connected for (1) prohibiting execution of at least one function of an electronic data processing unit (2) after a first cutoff of its supply voltage even in the case of a resumption of supply voltage, comprising:

first circuit means (8) connected for operatively functioning only once in the course of a period beginning at the instant (T_0) of a first connection to voltage by the power supply (3), and ceasing its functioning prior to the instant (T_2) of a first cutoff of this power supply, first means having an output (9) and furnishing at said output (9) in the course of this period, a signal characteristic of the functioning of said first means;

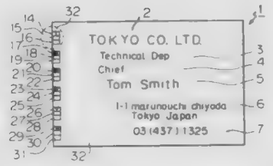
second circuit having at least one input and at least one output (17), said means (10) one input being connected to the output (9) of the first means (8), said second input means being operatively connected for memorizing a characteristic signal from the instant (T_0) of first connection to said voltage until the instant (T_2) of a first cutoff, said second means (10) being connected via one output (17) to an electronic data processing unit (2) and furnishing at said output (17) an inhibiting signal having a first level that authorizes the function of the unit, from the instant (T_0) of the first connection to voltage until the instant (T_2) of the first cutoff, said inhibiting signal having a second level that prohibits said execution of said function beginning at the instant (T_3) of the first cutoff, this inhibiting signal maintaining this second level even in the case of a resumption of voltage of the power supply.

4,795,894

VISITING CARD MARKED WITH DISCRIMINATING SYMBOLS AND A METHOD OF AND AN APPARATUS FOR READING WHAT IS PRINTED ON SAID VISITING CARD

Harue Sugimoto, 4-10-18, Shintakane, Funabashi-shi, Chiba, and Akira Sugimoto, Funabashi, both of Japan, assignors to Harue Sugimoto, Chiba, Japan

Filed Aug. 29, 1986, Ser. No. 901,578
Claims priority, application Japan, Sep. 2, 1985, 60-133149; May 13, 1986, 61-107629
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—468 **8 Claims**



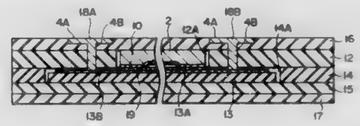
1. A visiting card with symbols for discriminating a bearer's preprinted identification items, each of said discriminating symbols being printed in alignment with one of said identification items by an ink invisible to the human eye and recognizable by an optical means for reading the items, the symbols for discriminating the identification items being adapted for use by an automatic card reading apparatus in discriminating and classifying the identification items.

4,795,895

MULTI-LAYERED ELECTRONIC CARD CARRYING INTEGRATED CIRCUIT PELLET AND HAVING TWO-PAD LAYERED STRUCTURE FOR ELECTRICAL CONNECTION THERETO

Kazuya Hara, and Kenji Rikuna, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1986, Ser. No. 881,221
Claims priority, application Japan, Jul. 10, 1985, 60-151779
Int. Cl.[4] G06K *19/06*; B42D *15/00*
U.S. Cl. 235—492 **5 Claims**



1. An electronic apparatus, comprising:

an integrated circuit pellet which includes:

a substrate having a surface in which at least one semiconductor element is formed;

a two-pad layered structure on said at least one semiconductor element, said two-pad layered structure comprising:

a first insulating layer formed on said substrate over said at least one semiconductor element and having a plurality of through holes therein;

a plurality of first electrode pads at least partly disposed in said through holes of said first insulating layer;

a second insulating layer on said first electrode pads; and

a plurality of second electrode pads formed on said second insulating layer and being electrically connected to said first electrode pads each of said second electrode pads having an area larger than that of any of said first electrode pads;

carrier means for carrying said integrated circuit pellet, said carrier means including an insulating substrate and a plurality of conductive leads formed on said insulating substrate; and

connecting means for electrically connecting said second electrode pads to said conductive leads respectively.

4,795,896

WEATHER RESISTANT CARD READER

Edward T. Prell, Sausalito, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Jan. 11, 1988, Ser. No. 142,002
Int. Cl.[4] G06K *13/00*
U.S. Cl. 235—482 **3 Claims**

1. A weather resistant card reader comprising: a card reader frame; a means for reading a card containing pertinent information mounted to said frame; means associated with said base for receiving and guiding said card in a prescribed path relative to said frame; and a protective spring means forming a closure of said means for receiving and guiding said card guide means.

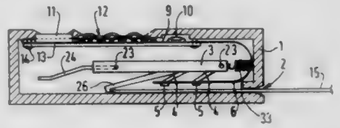


4,795,897

APPARATUS FOR ESTABLISHING DATA TRANSFERS WITH A PORTABLE ELECTRONIC CARD

Hervé Chalendard, Bry sur Marne, France, assignor to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 16,170, Feb. 19, 1987, abandoned. This application Apr. 18, 1988, Ser. No. 185,357
Claims priority, application France, Feb. 21, 1986, 86 02401
Int. Cl.[4] G06K *13/00*
U.S. Cl. 235—482 **16 Claims**



1. Apparatus for receiving a portable electronic card which includes at least one integrated circuit with a memory and at least one internal contact element coupled with the memory, the apparatus comprising:

a. a housing defining an opening for introducing the card;

b. a slide within the housing, the slide serving as an intermediary for establishing an electrical connection between the card and a circuit outside the card;

c. a slope within the housing, the slope being disposed so that the slide is taken along the slope by insertion of the card;

d. at least one spring carried by the slide; and

e. a flexible insulating foil, carried by the spring, which flexible insulating foil carries at least one external contact element, so that the at least one spring presses the at least one external contact against the at least one internal contact element, after the card is inserted, to establish data transfer between the circuit outside the card and the memory of the card, the same at least one spring being biased between the slide and the flexible insulating foil during said data transfer.

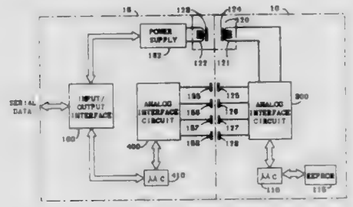
VOL 1098 ISS 1 JAN 3 1989 UMI

4,795,898

PERSONAL MEMORY CARD HAVING A CONTACTLESS INTERFACE USING DIFFERENTIAL DATA TRANSFER

Howard L. Bernstein, Freehold; Thomas M. Grill, Perth Amboy, both of N.J., and Ronald Silver, Philadelphia, Pa., assignors to American Telephone and Telegraph Company, New York, N.Y.; AT&T Bell Laboratories, Murray Hill and AT&T Information Systems Inc., Morristown, both of, N.J.

Filed Apr. 28, 1986, Ser. No. 856,171
Int. Cl.[4] G06K 7/08, 19/06
U.S. Cl. 235—487 19 Claims



1. A portable data card including memory means for storing data and processor means for processing data, the data card comprising:

input/output means operably connected to the processor means for communicating with at least one reader/writer station, the processor means interpreting commands and processing data from the reader/writer station, the processor means being operably connected to and communicating with the memory means and formatting data for transfer both to the reader/writer station and to the memory means, the input/output means including capacitive coupling means for differentially transferring data from the reader/writer station to the data card and from the data card to the reader/writer station;

energy coupling means for receiving magnetic energy transmitted from the reader/writer station and for converting the magnetic energy into electric energy for energizing the memory means and the processor means; and

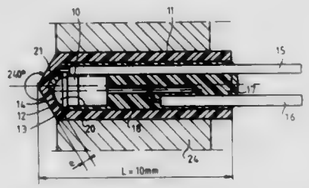
the capacitive coupling means and the energy coupling means providing in combination a complete communication interface between the data card and the reader/writer station.

4,795,899

ILLUMINATION SENSOR WITH ATTENUATING DIFFUSER

Alain Pilot, Bretonneux, and Marcel Grasset, Bois D'Arcy, both of France, assignors to Societe Francaise d'Equipements pour la Navigation Aerienne (S.F.E.N.A.), France

Filed Mar. 26, 1987, Ser. No. 30,314
Claims priority, application France, Mar. 28, 1986, 86 04526
Int. Cl.[4] H01J 3/14
U.S. Cl. 250—216 13 Claims



1. An illumination sensor adapted for delivering electric information proportional to an illumination provided by an incident light, over a wide illumination range, said sensor including:

i. a sleeve made from a translucent material having diffusing properties, this sleeve having a tubular wall and a bottom wall having an internal surface and an external surface which is intended to be exposed to the incident light, said bottom wall serving to transform this incident light into a diffused light which is emitted inside the sleeve, with an attenuation depending on the thickness of the bottom wall;

ii. an optoelectronic component positioned inside the sleeve and having a sensitive face located in front of said internal surface so as to detect the diffused light and to deliver said electric information;

iii. means for joining said component and said sleeve together,

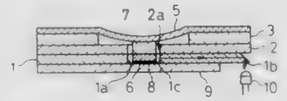
the thickness of the bottom wall having a value corresponding to a required attenuation.

4,795,900

OPTICAL SWITCH DEVICE EMPLOYING A FLUORESCENT SUBSTANCE WITH A RADIOACTIVE ELEMENT AS A LIGHT SOURCE

Sadao Kokubo, 131, Aigigaoka 3-chome, Kani-shi, Gifu-ken, Japan

Filed Mar. 26, 1987, Ser. No. 31,089
Claims priority, application Japan, Mar. 27, 1986, 61-45738[U]; Mar. 31, 1986, 61-47611[U]; Mar. 31, 1986, 61-47610[U]
Int. Cl.[4] G01V 9/04; G01D 5/34
U.S. Cl. 250—221 5 Claims



1. An optical switch device comprising:

(a) a fluorescent substance constantly emitting a fluorescence in combination with a radioactive element;

(b) a light detector detecting the fluorescence emitted from said fluorescent substance, said light detector generating a switching signal when detecting the fluorescence emitted from said fluorescent substance; and

(c) a displaceable operating member provided to move the fluorescent substance relative to the light detector so that the fluorescence emitted from said fluorescent substance is allowed to impinge on said light detector when said operating member is displaced.

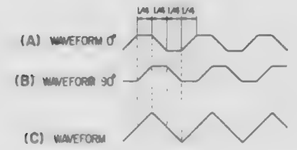
4,795,901

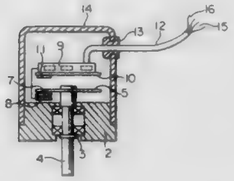
ANALOG TRIANGULAR WAVE OUTPUT ENCODER

Hisasi Kitazawa, Toyookamura, Japan, assignor to Tamagawa Seiki Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1987, Ser. No. 51,923
Claims priority, application Japan, May 28, 1986, 61-120963
Int. Cl.[4] G01D 5/34
U.S. Cl. 250—231 SE 4 Claims

1. An analog triangular wave output encoder comprising a rotary disk attached to a rotary shaft mounted for rotation in a base block, said rotary disk being provided with a circumferential array of spaced apart light transparent slits, a light emitting element on one side of said rotary disk facing said disk a fixed slit plate on the other side of said rotary disk having a fixed slit part, a light receiving element facing said fixed slit plate on the opposite side of said fixed slit plate from said rotary disk, a first and second series of fixed slits formed in said fixed slit part, said series of first and second fixed slits in said fixed slit part being in alignment with said slits in said rotary disk and related thereto for modulating light passing from said light emitting element through said rotary disk slits and said fixed slits of said fixed slit plate to said light receiving element to produce, respectively, first and second trapezoidal wave signal components, said first series of fixed slits being displaced from said second series of fixed slits in the rotational direction of said rotary disk such that said first and second trapezoidal wave signal components are produced by said slits with an electrical phase shift of 90° from each other and are combined at said light receiving element into a continuous substantially triangular output signal.



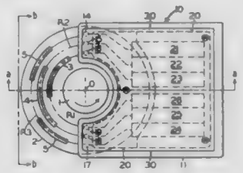


4,795,902

OPTICAL MASTER CONTROLLER HAVING PLURAL TRACKS EACH WITH PLURAL EMITTER DETECTOR PAIRS

Masaaki Kitaue, Kobe, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Nov. 16, 1987, Ser. No. 121,366
Claims priority, application Japan, Nov. 21, 1986, 61-180307[U]
Int. Cl.[4] G01D 5/34
U.S. Cl. 250—231 SE 9 Claims



1. A controller device comprising;

(a) a light blocking plate having optical transmitting areas circumferentially arranged on several different radii thereof;

(b) an operating shaft on which said light blocking plate is rotatably mounted, the center of said different radii coinciding with the centerline of said shaft;

(c) a sensor unit having upper and lower support plates between which said light blocking plate is interposed, said upper and lower plates being symmetrical in shape on opposite sides of a specific centerline that is substantially perpendicular to said centerline of said shaft;

(d) a first and second group of light emitting elements mounted on at least one of said upper and lower support plates on opposite sides of said specific centerline, the number of said light emitting elements in each said first and second group corresponding to the number of said different radii of said optical transmitting areas; and

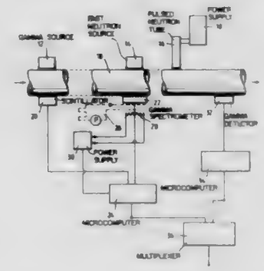
(e) a plurality of light receiving elements mounted on at least one of said upper and lower plates opposite respective ones of said light emitting elements and corresponding in number thereto to sense the presence and absence of a beam of light emitted by said light emitting elements.

4,795,903

ANALYSIS OF FLUIDS

Colin G. Clayton, Tregaron, Wales, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 22, 1986, Ser. No. 921,498
Claims priority, application United Kingdom, Oct. 25, 1985, 8526413
Int. Cl.[4] G01N 23/222; G01F 1/00
U.S. Cl. 250—301 7 Claims



1. An apparatus for determining the composition of a fluid which comprises one or more of the constituents oil, water and gas, the apparatus comprising means for measuring the density of the fluid and for generating first electrical signals representative thereof; and means for irradiating the fluid simultaneously with fast and thermal neutrons so as to excite atoms of carbon, oxygen and hydrogen in the fluid, and a gamma spectrometer arranged to detect prompt gamma rays emitted by the excited atoms, to determine the intensities of gamma rays of energy 2.2, 4.4, and 6.2 MeV, and to provide second electrical signals representative of those intensities; means responsive to the said first and second electrical signals for determining, from the said signals and from the stoichiometry of the constituents, the proportions of oil, water and gas in the fluid.

4,795,904

ELECTRICAL DETECTOR ARRANGEMENTS

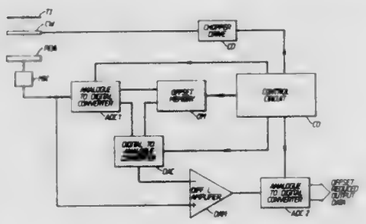
Lawrence J. Richards, Hampshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Aug. 3, 1987, Ser. No. 81,047
Claims priority, application United Kingdom, Aug. 6, 1986, 8619190
Int. Cl.[4] H01L 25/00
U.S. Cl. 250—332 4 Claims

1. An electrical detector arrangement comprising an electrical detector array for producing a multiplicity of small electrical output signals in response to the detection of an ambient energy pattern in which energy pattern interruptor means are provided for alternately exposing to and obscuring from the detector array an energy pattern to be detected and imaged, in which the electrical outputs from the electrical detector array are applied to a multiplexer the outputs from which include relatively large d.c. offset levels and are digitised by means of an analogue-to-digital converter, in which the digital output from the converter during obscuration of the detector array from the energy pattern is stored in memory means, in which

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the stored digital data is converted to an analogue signal by a digital-to-analogue converter and subtracted from the analogue outputs of the multiplexer during exposure to and obscuration from the energy pattern of the detector array by means



of a differential amplifier and in which the output from the differential amplifier which substantially reduces the offset levels of the multiplexer outputs is then fed to a further analogue-to-digital converter which provides short word-length data corresponding to the detected energy pattern.

4,795,905

CIRCUIT LAYOUT FOR AN INFRARED ROOM SURVEILLANCE DETECTOR

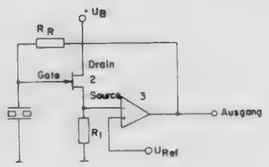
Hermann Zierhut, Munich, Fed. Rep. of Germany, assignor to Richard Hirschmann Radiotechnisches Werk, Fed. Rep. of Germany

Filed Aug. 11, 1986, Ser. No. 895,442

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1985, 3528646

Int. Cl.[4] G01J *1/44*

U.S. Cl. 250—338.1 **9 Claims**



1. An infrared space surveillance detector circuit comprising:

means for sensing wherein said means for sensing is a pyroelement;

a detector stage with a high impedance operational amplifier configured as a current amplifier directly responsive to said means for sensing;

means for performing a threshold value comparison responsive to an output of said operational amplifier.

4,795,906

APPARATUS AND SYSTEM FOR THERMOGRAPHIC IDENTIFICATION OF PARTS

Mark J. Adams, Kennesaw, Ga.; Elton M. Crisman, Jr., St. Cloud, Fla., and Asrar A. Khan, Marietta, Ga., assignors to Lockheed Corporation, Calabasas, Calif.

Continuation of Ser. No. 808,761, Dec. 13, 1985, Pat. No. 4,733,079. This application Sep. 2, 1987, Ser. No. 92,112

Int. Cl.[4] G01J *1/22*; **G06K** *19/06*

U.S. Cl. 250—341 **14 Claims**

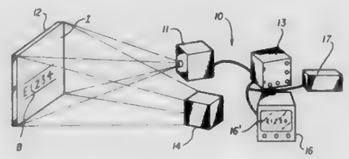
1. An apparatus for thermographically identifying at least one object to be protectively coated having at least one surface with an infrared reflectance, said apparatus comprising:

(a) means for providing the surface of the object with a substantially constant infrared reflectance;

(b) treating means for treating the surface of the object to alter the infrared reflectance of a portion of the surface of the object in an identifiable pattern;

(c) coating means for applying a coating to the surface of the object so as to cover at least a portion of the surface;

(d) infrared radiation directing means for directing infrared



radiation of a given wavelength onto the surface of the surface of the object.

(e) infrared sensing means for scanning the surface of the object to detect infrared radiation reflected from the object and for generating a signal representative of such reflected radiation; and

(f) imaging means for creating a video image from said signal whereby an optically discernible image visible to the unaided eye is generated.

4,795,907

INFRARED DETECTOR

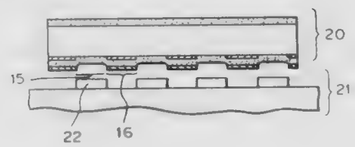
Tohru Maekawa, Kawasaki; Satoshi Ueda, Atsugi; Hiroshi Takigawa, Kawasaki; Tetsuya Kochi, Isehara, and Junjiro Goto, Takasago, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 6, 1987, Ser. No. 11,536

Claims priority, application Japan, Feb. 7, 1986, 61-025019

Int. Cl.[4] G02B *5/28*; **G01J** *5/06*

U.S. Cl. 250—352 **9 Claims**



1. An infrared detector comprising:

a cold shield including

a light shielding portion comprising an infrared transmissive material substrate, an infrared absorbing layer formed on a first surface of the substrate, a first dielectric layer formed on the infrared absorbing layer and an infrared reflecting layer formed on the first dielectric layer, and

opening portions comprising portions of said substrate and said first dielectric layer and

an infrared detector array having detective areas arranged just below said opening portions of said cold shield,

said infrared absorbing layer and said first dielectric layer being positioned so that infrared radiation reflected at a surface of the infrared absorbing layer and infrared radiation reflected at the infrared reflecting layer being mutually eliminated by optical interference effect.

4,795,908

INFRARED DETECTOR

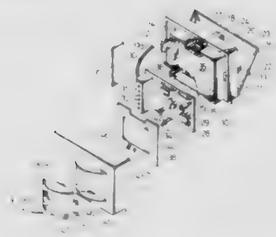
Makoto Morimoto, Hisai, and Mikio Kondo, Tsu, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Oct. 30, 1986, Ser. No. 924,758

Claims priority, application Japan, Feb. 25, 1986, 61-39968; Feb. 25, 1986, 61-39969

Int. Cl.[4] G01J *5/06*

U.S. Cl. 250—353 **12 Claims**



1. An infrared detector comprising a casing including a base and a cover fittable over said base, a condenser mounted to an opening formed in said cover, a circuit board mounted on said base and comprising a first part carrying a detection-input processing circuit including an infrared sensor positioned at the focal point of said condenser and a seocnd part carrying a terminal block for connection thereto of external lead wires, separating means allowing infrared rays condensed by the condenser to pass therethrough and mounted to the base for separating said first part of said circuit board from said second part of the board and from the ambient air by inhibiting its inflow, and screening means mounted on at least one of said cover and said separating means for screening visible rays from the rays passing through said cover and said separating means, said base comprising a body defining an opening at one part and closed at the other remaining part by a partition plate part, and a partition wall part projecting from said body toward said cover in surrounding relationship to said partition plate part except at an edge adjacent said opening of the body for defining a chamber in which said first part carrying said detection-input processing circuit of said circuit board is housed; and said separating means comprises said partition plate and wall parts of the base, a separation plate provided at an open edge of the partition wall part and extending toward said cover for separating said first and second parts of the circuit board when the board is mounted on the base with said second part overlying said opening of the body, and a front plate joined to front edges of said partition wall part and separation plate to close a front side of the chamber and having a window covered by said screening means and positioned in front of said infrared sensor on the first part of the circuit board.

4,795,909

HIGH PERFORMANCE FRONT WINDOW FOR A KINESTATIC CHARGE DETECTOR

Frank A. Dibianca, Chapel Hill, N.C., assignor to University of North Carolina, N.C.

Filed Oct. 9, 1987, Ser. No. 106,497

Int. Cl.[4] H01J *47/02*

U.S. Cl. 250—385.1 **18 Claims**

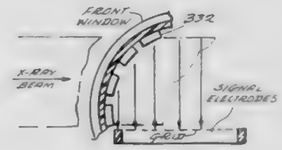
1. A kinetic charge detector apparatus for detecting propagating energy comprising:

a gas ionization chamber comprising a veseel having a window on which said propagating energy is incident, said window being angled between top and bottom surfaces of said chamber;

medium means, disposed within said chamber, for interacting with said incident energy to produce secondary energy;

first position-changing means for non-randomly changing the position of the secondary energy within said chamber relative to said medium means;

second position-changing means for changing the position of



said medium means synchronously with the change of position of said secondary energy; and

said chamber further comprising detecting means for detecting the secondary energy in said chamber.

4,795,910

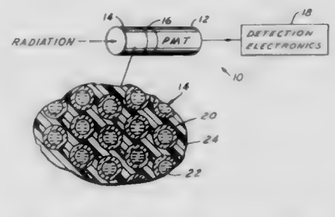
RADIATION-DETECTION/SCINTILLATOR COMPOSITE AND METHOD OF MANUFACTURE

Timothy M. Henderson, and Glenn F. Knoll, both of Ann Arbor, Mich., assignors to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Oct. 24, 1986, Ser. No. 923,021

Int. Cl.[4] G01N *3/06*, *1/203*

U.S. Cl. 250—483.1 **34 Claims**



1. A radiation-detection/scintillation composite comprising a scintillation matrix responsive to absorption of energetic particles for release of light energy, and a multiplicity of particulate carriers suspended as a separate solid phase within said matrix and having an index of refraction to light energy which closely matches that of said matrix, said carriers containing target nuclei responsive to absorption of radiation for release of energetic particles.

4,795,911

SURFACE EXAMINING APPARATUS FOR DETECTING THE PRESENCE OF FOREIGN PARTICLES ON THE SURFACE

Michio Kohno, Tokyo; Eiichi Murakami, Yokohama, and Akiyoshi Suzaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1987, Ser. No. 14,033

Claims priority, application Japan, Feb. 14, 1986, 61-30360; Feb. 14, 1986, 30361; Feb. 14, 1986, 30363

Int. Cl.[4] G01N *21/88*

U.S. Cl. 250—572 **2 Claims**

1. An apparatus for examining a surface of an object, the surface having a pattern formed thereon, and the object having a side extending in one direction, said apparatus comprising:

a light source;

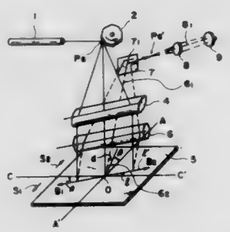
an optical scanning system for scanning the surface of the object along a scan line with light from said light source;

a single photosensor; and

a light guiding optical system, having an optical axis, for directing to said photosensor in uniform amounts a por-

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tion of light omnidirectionally scattered from each point on the surface of the object scanned along the scan line;
said light guiding optical system being disposed so that the optical axis thereof is inclined with respect to the surface of the object and is inclined with respect to the one direction in which the side of the object extends, such that a portion of the light omnidirectinally scattered from the



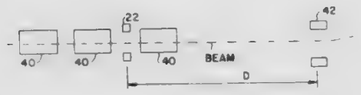
surface of the object is directed by said light guiding optical system to said photosensor but light reflected from the surface of the object in a specific direction is not directed to said photosensor,
whereby any foreign particle on each point on the surface of the object scanned along the scan line that omnidirectionally scatters light from the surface of the object can be discriminated by said photosensor.

4,795,912

METHOD AND APPARATUS FOR CORRECTING CHROMATIC ABERRATION IN CHARGED PARTICLE BEAMS

Alfred W. Maschke, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 17, 1987, Ser. No. 15,193
Int. Cl.⁴ H01J *3/14*; G21K *1/08*
U.S. Cl. 250—356 R **7 Claims**



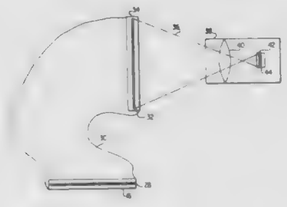
1. A method for compensating for chromatic aberration in a particle beam, occurring at a point of deflection of the beam in a selected transverse direction, because of energy differences of the particles, the method comprising the steps of:
determining a compensation point spaced upstream of the point of deflection by a distance that exceeds zero or an integral number of longitudinal phase space cycles by one-fourth of a cycle, and is equal to an integral number of half-cycles of the transverse phase space cycle;
applying a compensating deflection force to the beam particles at the compensation point and in the selected transverse direction, such that the deflection force applied to each particle is proportional to its relative phase in longitudinal phase space, and is proportional to the deflection force to be applied to the beam at the point of deflection, whereby, one-fourth of a cycle downstream, with respect to longitudinal phase space, and every full cycle thereafter, the effect of the compensating deflection force will be proportional to particle energy; and
applying a desired deflection force at the point of deflection of the beam, whereby the desired deflection force will affect the particles in accordance with their respective energy levels, and the effect of the compensating deflection, which is also proportional to particle energy, will balance the chromatic aberration effect of the desired deflection force.

4,795,913

HIGH RESOLUTION OPTICAL FIBER ARRAY AND ARTICLE POSITION DETERMINING SYSTEM

Hubert Blessing, Dallas, and Gene F. Croyle, Plano, both of Tex., assignors to Levi Strauss & Co., San Francisco, Calif.

Continuation of Ser. No. 805,271, Dec. 5, 1985. This application Aug. 6, 1987, Ser. No. 83,902
Int. Cl.⁴ G01N *21/86*
U.S. Cl. 250—561 **30 Claims**



1. An apparatus for vision detecting the location and orientation of an individual object having multiple offset edges on a lighted surface, the apparatus comprising:
a plurality of spaced apart light receiving arrays disposed on said surface and operatively cooperative to provide simultaneous light signals indicative of a positional orientation of said object thereover, said arrays being arranged in a predetermined pattern to receive light in the portions of each array uninterrupted by respective edges of said object for which location and orientation on said surface is to be determined;
light transmission means responsive to the light receiving portions of said light receiving arrays for conducting received light irradiated upon said light receiving arrays to a relatively remote location at which the patterns of transmission are emitted optically symmetrical with respect to the patterns of light received by said receiving array portions;
optical sensor means at said remote location in communication with the emitted light of said light transmission means for producing electrical signals responsive to the patterns of light received by said light receiving means and directly corresponding to dimensions of said portions of said arrays which receive light; and
projecting means at said remote location optically intervening between said light transmission means and said optical sensor means for optically communicating the pattern of transmission emitted from said light transmission means to said optical sensor means.

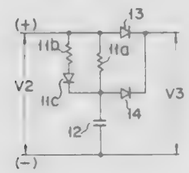
4,795,914

POWER SUPPLY CIRCUIT WITH BACKUP FUNCTION

Osamu Higa, and Syunichi Hirose, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 18, 1987, Ser. No. 134,693
Claims priority, application Japan, Dec. 26, 1986, 61-308635
Int. Cl.⁴ H02J *7/00*
U.S. Cl. 307—64 **20 Claims**

1. A power supply circuit having a backup function, comprising:
charge storage means for storing charges obtained from a power supply source;
current feeding means, having two terminals, one of which is coupled to the power supply source and the other of which is coupled to said charge storage means, for feeding the charges from said power supply source to said charge storage means, said current feeding means includes a first resistor, one end of which is connected to the one terminal of said current feeding means, and the other end of which is connected to the other terminal thereof, said current feeding means further includes a series circuit made up of a second resistor and a current blocking diode, coupled in parallel to said first resistor;



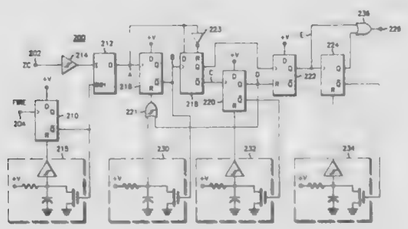
first current conductor means, coupled to the one terminal of said current feeding means, for unidirectionally feeding a first current from the power supply source to a load; and
second current conductor means, coupled to the other terminal of said current feeding means, for unidirectionally feeding a second current from said charge storage means to the load.

4,795,915

ZERO CROSSING NOISE-REJECTING DIGITAL FILTER

Koushun Sun, Elgin, and Sam Albanese, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1987, Ser. No. 133,765
Int. Cl.⁴ H03K *5/153*
U.S. Cl. 307—234 **11 Claims**



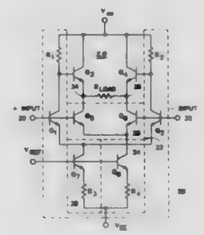
1. A detector for indicating a zero crossing transition, having a positive going edge and a negative going edge, in a sensor signal provided by a reluctance sensor, comprising:
first detection means, responsive to the sensor signal, for sensing a positive going edge in the sensor signal;
second detection means, for sensing, when enabled, a negative going edge in the sensor signal; and
first delay means, responsive to the first detection means detecting the positive going edge, for providing a predetermined time period during which the second detection means is prevented from being enabled to sense a negative going edge in the sensor signal, and for indicating the zero crossing transition in the sensor signal in response to the second detection means sensing a negative going edge in the sensor signal.

4,795,916

LOW POWER DIFFERENTIAL ECL LINE DRIVER

John E. Liron, Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Jan. 23, 1987, Ser. No. 6,183
Int. Cl.⁴ H03K *5/22, 19/086*
U.S. Cl. 307—270 **6 Claims**



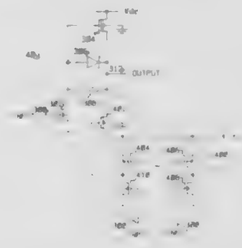
1. A low power differential line driver comprising:
a pair of output transistors having a load connected between their outputs so that one of the output transistors provides a load current for the load and other transistor maintains a "keep alive" current;
means coupled to the output transistors for controlling the operation of the output transistors in response to a differential input signal;
a constant current source coupled to the output transistors as a common emitter load; and
means coupled between the constant current source and the output transistors for switching the constant current source to the emitter of the other output transistor, the constant current source providing both the load current and the "keep alive" current.

4,795,917

LOW POWER HIGH VOLTAGE DRIVER CIRCUIT

Robert S. Scott, and James E. Kohl, both of Schenectady, N.Y., assignors to Pacific Bell, San Francisco, Calif.

Filed Nov. 2, 1987, Ser. No. 116,243
Int. Cl.⁴ H03K *17/56, 3/01*
U.S. Cl. 307—270 **29 Claims**



1. A circuit for selectively connecting an output terminal to one of first and second sources of potential in response to an input signal on a circuit input terminal, said first and second sources of potential being at first and second voltages, respectively, with respect to a third source of potential, said circuit comprising:
a first switching means including first and second control terminals, said first switching means for providing a conductive path from said first source of potential to said output terminal when the potential difference between said control terminals is less than a first predetermined threshold value and for substantially electrically isolating

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said first source of potential from said output terminal when the potential difference between said control terminals is greater than said first predetermined threshold value;

second switching means for providing a conductive path between said second source of potential and said output terminal when said first switching means substantially electrically isolates said first source of potential from said output terminal and for substantially electrically isolating said output terminal from said second source of potential when said first switching means provides a conductive path from said first source of potential to said output terminal; and

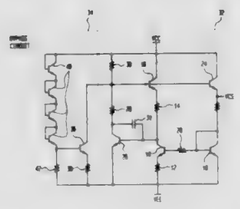
control means for causing the potential difference between said first and second control terminals of said first switching means to be greater than said first threshold value in response to a predetermined signal on said circuit input terminal and for causing the potential difference between said first and second control terminals of said first switching means to be less than said first threshold value when said predetermined signal is not present on said circuit input terminal.

4,795,918

BANDGAP VOLTAGE REFERENCE CIRCUIT WITH AN NPN CURRENT BYPASS CIRCUIT

Sarah M. Mason, Mountain View, Calif., and Jay L. Cohan, Cambridge, Mass., assignors to Fairchild Semiconductor Corporation, Cupertino, Calif.

Filed May 1, 1987, Ser. No. 45,950
Int. Cl.[4] G05F 3/20
U.S. Cl. 307—297 **17 Claims**



7. In a temperature compensated voltage reference circuit of the type which produces an output voltage related to the current flowing in an npn sensing transistor, a bypass circuit for maintaining the current in said transistor substantially independent of changes in a supply voltage applied to said transistor, said bypass circuit including an npn bypass transistor connected in shunt across said sensing transistor to draw current away from said sensing transistor, and a bias circuit for controlling said bypass transistor in accordance with changes in said supply voltage, said bias circuit including a plurality of diodes and a resistor connected in series across a source of said supply voltage, a junction of said diodes and said resistor being connected to a base of said bypass transistor.

4,795,919

ZERO SIGNAL STATE DETECTING CIRCUIT

Sadao Tamkoshi, Tokyo; Hiroyuki Ibe, Yokohama, and Taro Shibagaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

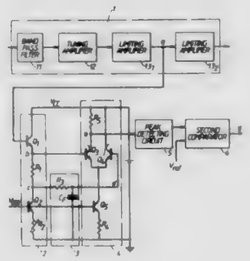
Filed Jun. 1, 1987, Ser. No. 55,798
Claims priority, application Japan, Jun. 2, 1986, 61-127612
Int. Cl.[4] H03K 5/153
U.S. Cl. 307—354 **5 Claims**

1. A discriminator circuit for generating a zero signal level for a signal detected below a threshold level, comprising:

level shifting means responsive to said detected signal for producing first and second output signals, the d.c. level of said second output signal being shifted respective to said first output signal by a shifting voltage V_s,

wherein said level shifting circuit comprises a bipolar transistor with a base for receiving said signal, a resistor for level shifting connected to the emitter thereof and a constant current generator connected to the resistor;

a smoothing circuit responsive to the second output signal of the level shifting means for generating a smoothed output signal;



first comparator means for comparing the smoothed output signal of said smoothing circuit and the first output signal of the level shifting means to produce an output signal;

a peak detecting circuit responsive to said first comparator means for generating an output signal responsive to the peak level of the output signal of the first comparator means; and

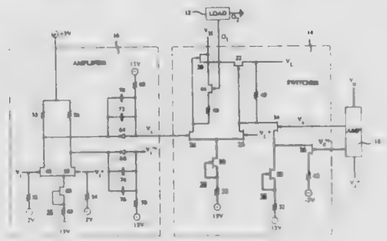
second comparator means for producing a zero level signal when the output signal of said peak detecting circuit is less than $2V_s$.

4,795,920

METHOD AND APPARATUS FOR SOURCING AND SINKING CURRENT

Charles D. Hechtman, Hopewell, N.J., and Ilyoung Kim, Holland, Pa., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Aug. 3, 1987, Ser. No. 79,575
Int. Cl.[4] H03K 3/353; H03F 3/45
U.S. Cl. 307—270 **7 Claims**



1. A method for alternately sourcing current to, and for sinking current from a load comprising the steps of:

generating first and second electrical signals which alternately shift from a first to a second level so as to be 180° out of phase with each other, and

alternately providing a current path from a first voltage source, at a first potential, to a load and from the load to a second voltage source at a potential less than the first voltage source, when the first and second electrical signals

alternately shift in amplitude, CHARACTERIZED IN THAT:

the first electrical signal is applied to a gate of a first field effect transistor having its drain-to-source portion coupled between a current sink which passes a continuous current and a gate of a second field effect transistor having its drain-to-source portion coupled between the first voltage source and the load, the second field effect transistor, while conductive, providing a path across its drain-to-source portion for current to pass from the first voltage source to the load;

the second electrical signal is applied to a gate of a third field effect transistor having its drain-to-source portion coupled between the current sink and a gate of a fourth field effect transistor which has its drain-to-source portion coupled between the second voltage source and the load, the fourth field effect transistor, while conductive, providing a path across its drain-to-source portion for current to pass from the load to the second voltage source; and

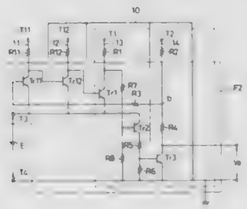
the first and third field effect transistors are alternately rendered nonconductive in response to the first and second electrical signals alternately shifting in amplitude from the first to the second level, thereby causing the second and fourth field effect transistors to be alternately rendered conductive.

4,795,921

LOGIC OPERATION-OSCILLATION CIRCUIT

Masakazu Kato, and Koichi Futsuhara, both of Osaiya, Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1985, Ser. No. 725,571
Claims priority, application Japan, Apr. 23, 1984, 59-59556[U]; Mar. 12, 1985, 60-34123[U]
Int. Cl.[4] H03K 19/007, 17/08
U.S. Cl. 307—442 **16 Claims**



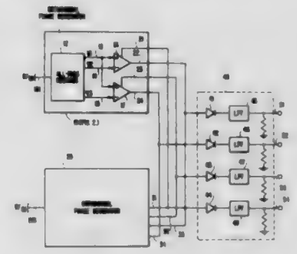
1. An "AND" logic operation-oscillation circuit which comprises a circuit power source providing a voltage, a plurality of signal input lines to which a signal of a voltage higher than the voltage of the circuit power source is applied, circuit elements including at least one diffused resistor, at least one non-diffused resistor connected to the signal input lines and a plurality of semiconductors, and oscillating circuit means which oscillates and produces an oscillating output when a plurality of voltage signals including a voltage signal higher than the voltage of the circuit power source are applied to said signal input lines and which connects said circuit elements so that a voltage lower than the voltage of the circuit power source is applied to the diffused resistor and a voltage higher than the voltage of the circuit power source is applied to the non-diffused resistor, and a conductor, said conductor being situated between two adjoining non-diffused resistors and having a voltage level thereon lower than a threshold value for initiation of oscillation of said oscillating circuit means.

4,795,922

AMPLITUDE AND PHASE DISCRIMINATOR USING ALL-PASS NETWORKS

Christopher W. Rice, and Seward T. Salvage, both of Palm Bay, Fla., assignors to Harris Corp., Melbourne, Fla.

Filed Apr. 9, 1987, Ser. No. 36,470
Int. Cl.[4] H03L 7/00; H03K 9/06
U.S. Cl. 307—511 **9 Claims**



1. A signal coupling network comprising:

a first signal coupling stage having

first means for receiving a first input signal and for producing at a plurality of outputs thereof a plurality of first respective output signals, shifted in phase with respect to each other, and

second means, coupled to the plurality of outputs of said first means, for selectively differentially combining said plurality of first output signals and producing therefrom a plurality of second output signals shifted in phase with respect to each other, at respective outputs thereof such that each of said second output signals is effectively phase-orthogonal with respect to another second output signal;

a second signal coupling stage having

third means for receiving a second input signal producing at a plurality of outputs thereof a plurality of respective third output signals, shifted in phase with respect to each other, and

fourth means, coupled to the plurality of outputs of said third means, for selectively differentially combining said plurality of third output signals and producing therefrom a plurality of fourth output signals shifted in phase with respect to each other, at respective outputs thereof such that each of said fourth output signals is effectively phase-orthogonal with respect to another fourth signal; and

a third signal coupling stage having

fifth means, coupled to said second and fourth means, for selectively combining said pluralities of second and fourth output signals and producing therefrom a plurality of fifth output signals each of which has a magnitude component representative of the magnitude of said first and second input signals, and a phase component representative of a prescribed relationship between the phases of said first and second input signals.

4,795,923

ADJUSTABLE DELAY CIRCUIT

Laszlo J. Dobos, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 25, 1987, Ser. No. 125,022
Int. Cl.[4] H03K 17/28, 5/13
U.S. Cl. 307—605 **11 Claims**

1. A method of producing an output signal that changes state in adjustably delayed response to a state change in an input signal, the method comprising the steps of:

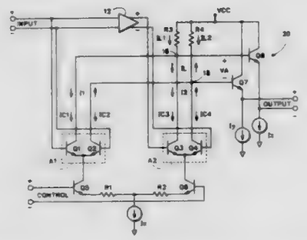
delaying the input signal to provide a delayed signal;

applying the input signal as input to a first amplifier having

VOL 1098 ISS 1 JA 3 1989 UMI

an adjustable gain to provide a first signal in response to said input signal;

applying the delayed signal as input to a second amplifier having an adjustable gain to provide a second signal in response to said delayed signal; and



combining the first and second signals to produce said output signal; and

adjusting a delay between said change in state of said output signal and said change in state of said input signal by adjusting the gain of at least one of said first and second amplifiers.

4,795,524

MAGNETO BOWL-SHAPED ROTOR

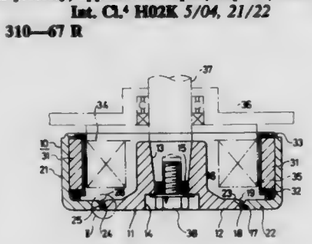
Akira Kamiyama, Gunma, and Tokio Maki, Kiryu, both of Japan, assignors to Mitsuba Electric Manufacturing Co. Ltd., Gunma, Japan

Filed Sep. 23, 1987, Ser. No. 100,105

Claims priority, application Japan, Sep. 24, 1986, 61-225337

Int. Cl.[4] H02K *5/04, 21/22*

U.S. Cl. 310—67 R **4 Claims**



1. A rotor in a magnetogenerator wherein a boss member includes an outer peripheral flange and is coupled onto a rotary shaft, the boss member being partially inserted and fixed into an opening formed in the bottom wall of a generally bowl-shaped yoke, the opening in the yoke having a brim portion with an axially outer side and an axially inner side characterized in that:

a first serration is formed on the outer periphery of said flange of said boss member, said first serration extending in an axial direction of the rotor, said boss member including a collar portion extending radially beyond the first serration on said flange,

said first serration is coupled into the opening of said yoke,

a first recess is formed in the axially outer side of the brim of the opening of the yoke and a second recess is formed in the axially inner side of said brim portion, said collar portion is brought into said first recess in abutting contact with said yoke and,

said flange has an axially inner surface opposite said collar portion, said axially inner surface is clinched to form a finished portion that is received in the second recess provided on the axially inner side of the brim portion of the opening of the yoke, whereby the brim portion of the opening of said yoke is clamped between said collar portion and said clinched finished portion.

4,795,925

ENCODER MOTOR HAVING CODE WHEEL INTEGRAL WITH ROTOR

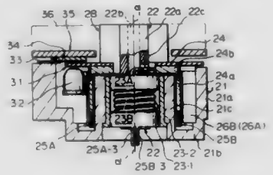
Takahisa Mihara, Sagamihara, and Shoji Sanma, Yokohama, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 19, 1987, Ser. No. 16,606

Claims priority, application Japan, Feb. 20, 1986, 61-33753; Feb. 20, 1986, 61-33749; Feb. 20, 1986, 61-22048[U]; Jul. 18, 1986, 61-109460[U]

Int. Cl.[4] H02K *11/00*; **G11B** *21/08*

U.S. Cl. 310—68 B **20 Claims**



12. An encoder motor including:

a rotor;

a stator;

means for generating a rotational force comprising a coil and a magnet disposed on a rotor side and a stator side, respectively;

an encoder code wheel disposed on said rotor side and substantially integral with the rotor; and

a capstan for transmitting the rotational force to the outside, the capstan being disposed at an end of the rotor;

said encoder code wheel being disposed between one end of said rotor and said capstan, in direct contact with both said rotor and said capstan, in direct contact with both said rotor and said capstan and secured directly to said rotor.

4,795,926

MOTOR END BEARINGS ACCOMMODATING INCREASED SHAFT LENGTHS

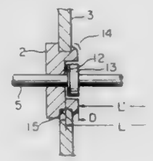
Ryoichi Someya, and Masakazu Ikegami, both of Matsudo, Japan, assignors to Mabuchi Motor Co. Ltd., Japan

Filed Jul. 20, 1987, Ser. No. 75,604

Claims priority, application Japan, Aug. 5, 1986, 61-120215[U]

Int. Cl.[4] H02K *5/16*

U.S. Cl. 310—90 **4 Claims**



1. A motor, comprising a closed case housing having spaced apart end walls with respective shaft receiving openings, a shaft bearing having a large diameter portion engaged against the exterior of each of said walls, a small diameter portion extending through said opening of a diameter smaller than the diameter of said large diameter portion and with an inner end forming a collar engaged against the associated interior of a

respective end wall, a recess defined on the interior of said small diameter portion extending around said shaft, and adjusting washer and bushing means secured to said shaft and accommodated within said recess.

4,795,927

CONTROL SYSTEM FOR A MAGNETIC TYPE BEARING

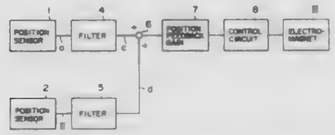
Shigeki Morii, and Keiichi Katayama, both of Kanonshin, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1987, Ser. No. 42,212

Claims priority, application Japan, May 2, 1986, 61-102255; Jun. 16, 1986, 61-139824

Int. Cl.[4] F16C *39/00*

U.S. Cl. 310—90.5 **8 Claims**



1. A control system for a magnetic bearing having an electromagnet for positioning a floating member at a predetermined frequency comprising:

position sensor means for measuring the position of the floating member along a sensor axis colinear with a potential axis of movement of said floating member and developing a sensor output indicative thereof;

control means, responsive to a position feedback signal, for controlling the current to the electromagnet to control the position of the floating member, said electromagnet attracting the floating member along said sensor axis in response to the current supplied by said control means; and

stabilizing means, responsive to said sensor output of said position sensor means, for developing said position feedback signal, said stabilizing means inverting the polarity of the output of said position sensor means when said predetermined frequency is within a frequency range where destabilization normally occurs to stabilize said bearing within said frequency range.

4,795,928

LINEAR ACTUATOR ASSEMBLY FOR ACCESSING A MAGNETIC MEMORY DISC

Masami Suzuki, Odawara; Hiroshi Nishida, Kanagawa; Jun Naruse; Tsuyoshi Takahashi, both of Odawara, and Tomio Suzuki, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 29, 1987, Ser. No. 8,324

Claims priority, application Japan, Jan. 29, 1986, 61-15651

Int. Cl.[4] H02K *41/02*

U.S. Cl. 310—13 **5 Claims**

1. A linear actuator assembly mounting at least one magnetic head for accessing a magnetic memory disc, comprising:

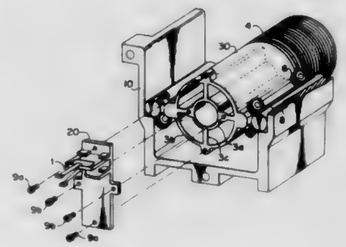
a head support block for supporting said at least one magnetic head;

a carriage for mounting said head support block at one end of said carriage;

guide means for supporting and linearly guiding said carriage; and

driving means for linearly moving said carriage along said guide means in opposite directions, said driving means including a voice coil mounted on said carriage at another end of said carriage and a stationary tubular magnet secured to a stationary yoke and arranged around said voice coil for applying a magnetic flux to said voice coil;

said carriage including a first tubular portion and a second tubular portion said second tubular portion having a cross-section similar in shape and smaller in size than that of said first tubular portion and being concentrically connected with said first tubular portion through radially extending ribs, said first tubular portion having two oppositely extending integral projections at the outer surface thereof at



positions opposite two of said radially extending ribs said voice coil having a cross-section substantially equivalent in shape and size to that of said first tubular portion; and said head support block being fastened to both said first and second tubular portions.

4,795,929

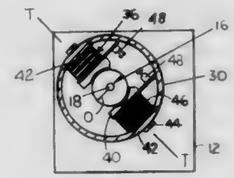
ROTARY ACTUATOR

Manfred Elgass, Kings Park, and Vincent A. Colucci, Middle Island, both of N.Y., assignors to Logus Manufacturing Corp., Deer Park, N.Y.

Filed Aug. 1, 1986, Ser. No. 892,032

Int. Cl.[4] H02K *33/12*

U.S. Cl. 310—36 **21 Claims**



1. In an actuator having a cylindrical permanent magnet armature provided with diametrically opposed poles of opposite polarity mounted between a pair of diametrically opposed stators to be reciprocably pivotal about the central axis between said stators on creation of a selected magnetic flux pattern in at least one of said stators the improvement comprising forming said at least one of said stators as a electromagnet having a core extending parallel to the central axis along the length of said armature, and having a longitudinal surface facing said armature a winding wound about said core to provide said one surface with a selected polarity, said one surface being shaped to increase the magnetic flux field along the longitudinal edge of said one surface in the vicinity of the correspondingly located one of the opposed poles of said armature and reduce the magnetic flux field along the longitudinal edge of the one surface in the vicinity of the other one of the opposed poles of said armature, to provide a greater flux field with a polarity coacting with the polarity of the correspondingly located pole of said armature to cause pivoting of said armature, between said stators.

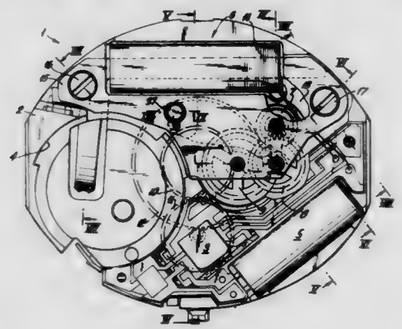
VOL 1098 ISS 1 JAN 3 1989 UMI

4,795,930

STEPPING MOTOR COIL CORE AND STATOR ASSEMBLY FOR A TIMEPIECE

Herbert Schwartz, Wurmberg, and Gerhard Stotz, Niefern-Öschelbronn, both of Fed. Rep. of Germany, assignors to Timex Corporation, Middlebury, Conn.

Filed Dec. 3, 1987, Ser. No. 128,139
Int. Cl.[4] H02K 37/00; G04F 5/00
U.S. Cl. 310—49 R 7 Claims



1. In a timepiece movement having a plastic frame, a plurality of meshing gear members rotatably disposed in said frame to provide a gear train, a stepping motor, and an electronic circuit adapted to supply periodic electrical pulses to said stepping motor, the improvement in said stepping motor comprising:

a rotor having a permanent magnet and a gear pinion connected to drive said gear train;

a stator adapted to cooperate with said rotor and comprising a flat stator plate of magnetically permeable material disposed in said frame and defining a plurality of stator locating holes;

a coil core assembly comprising a substantially hook-shaped flat core plate of magnetically permeable material having a straight core portion of substantially uniform width and a coil having an axial length shorter than said core portion threaded over the end of said core portion, said core plate defining a plurality of coil core locating holes, opposite ends of said core plate being disposed on and overlapping opposite ends of said stator plate;

at least one plastic stud integral with and extending from said frame through a said stator locating hole and at least partially into a coil core locating hole;

insulating clamping means comprising a bridge which rotatably journals one end of said rotor, said insulated clamping means having portions bearing upon overlapped portions of said core plate and said stator near one of said studs to hold them in the frame; and

at least one bolt extending into one of said plastic studs and securing said clamping means to said frame.

4,795,931

ASYMMETRICAL SHADED-POLE MOTOR

Gerhard Sturm, Mulfingen, Fed. Rep. of Germany, assignor to ebm Elektrobau Mulfingen GmbH & Co., Fed. Rep. of Germany

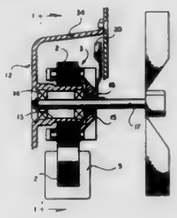
Filed May 27, 1987, Ser. No. 54,689
Claims priority, application Fed. Rep. of Germany, May 28, 1986, 3617989; European Pat. Off., Mar. 10, 1987, 87103420.3
Int. Cl.[4] H02K 5/16
U.S. Cl. 310—90 8 Claims

1. An asymmetrical shaded-pole motor comprising a stator of a laminated core formed from a C-shaped yoke between whose free yoke prongs a yoke stay is pressed in, a main winding being situated on said yoke stay, a short-circuited auxiliary windings being provided in a leg of said core joining said yoke pronga, a laminated squirrel-cage rotor being rotatably mounted by means of a motor shaft in a recess of said leg with a small air gap to said stator, wherein:

said squirrel-cage rotor is cup-shaped to comprise a hollow cylinder having a bottom at one end and beign open at the other end;

said motor shaft extending in an axialy direction through a central opening in said bottom and being coupled with said rotor in the area of said central opening;

a hot air fan wheel mounted on the extended end of said shaft projecting outside of said bottom;



a motor flange to which said stator is secured;

said flange being in one piece with a bearing support tube;

said bearing support tube extending from the open end of the rotor into the inside of said hollow cylinder rotor, so that said rotor directly and coaxially surrounds said bearing support tube;

bearing guiding the other end of said motor shaft opposite said hot air fan wheel; and

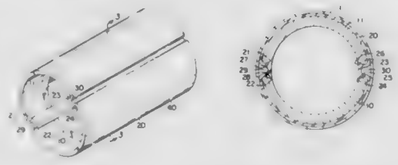
said bearings being located within said bearing support tube, whereby the rotor serves as a heat sink for transferring heat from the shaft to the rotor and away from the bearings, and the air stream from the fan dissipates the heat.

4,795,932

DOUBLE INSULATED MOTOR INCLUDING A MAGNET RETAINER

Benjamin E. Long, Columbus, Miss., assignor to United Technologies Electro Systems, Inc., Columbus, Miss.

Filed Jul. 31, 1987, Ser. No. 81,263
Int. Cl.[4] H02K 5/08, 21/26
U.S. Cl. 310—154 14 Claims



1. An insulating retainer for securing permanent magnets of an electric motor having a generally cylindrical housing and end cap means at each end of the housing while providing secondary insulation for the motor which comprises:

a dielectric tubular body sized to fit within the motor housing and extend the length of the housing between the end cap means;

magnet retainer means affixed to the tubular body for securing the permanent magnets of the motor in a preselected position; and

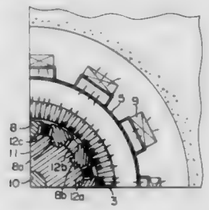
means for orienting the tubular body relative to the orientation of the housing.

4,795,933

SALIENT-POLE ROTARY ELECTRIC MACHINE

Koichi Sakai, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 518,108
Claims priority, application Japan, Aug. 6, 1982, 59-136267
Int. Cl.[4] H02K 1/24
U.S. Cl. 310—269 2 Claims



1. A rotary electric machine of a salient pole type comprising a stator including a stator core and a stator winding wound around said stator core, said stator core being formed with a plurality of ventilation ducts spaced apart by a predetermined distance in its axial direction and extending in its radial direction, and a rotor including a rotor shaft, a rotor rim rotatable together with said rotor shaft, a plurality of salient field poles disposed on the outer periphery of said rotor rim in circumferentially spaced apart relationship and extending in the axial direction of said rotor rim, and cooling gas passages defined between every adjacent salient field pole, wherein a closure member having a total length about one-half that of the salient field pole is buried in each of said cooling gas passages between said salient field poles to extend from one of the axial ends to the center of said cooling gas passage, said closure members are being disposed between the adjacent salient field poles in an alternate relationship with each other in the axial direction of said salient field poles, and said closure members have a radial width such that each closure member extends from approximately an outer peripheral surface of the field poles to an outer peripheral surface of the rotor rim whereby cooling gas is prevented from flowing in an axial direction of the respective closure members.

4,795,934

MOUNTING OF SAW DEVICES

Stephen P. Rogerson, Woodbridge, and Brian M. MacDonald, Felixstowe, both of England, assignors to British Telecommunication, plc, London, England

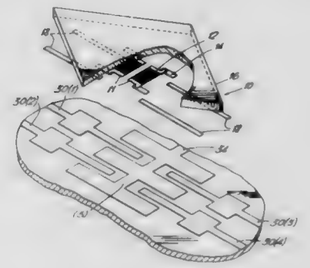
Division of Ser. No. 795,496, Oct. 18, 1985. This application Jul. 22, 1986, Ser. No. 896,092
Claims priority, application United Kingdom, Feb. 20, 1984, 8404398; Sep. 20, 1984, 8423857
Int. Cl.[4] H01L 41/08
U.S. Cl. 310—313 R 8 Claims

1. A SAW device comprising:

a diamond-shaped electroacoustic substrate having metallized transducer and connection areas thereon; and

conductive lead attached to said metallized connection areas;

said metallized transducer areas including a plurality of parallel conductive lines disposed orthogonally to a diagonal between apexes of said diamond-shaped substrate such that, in operation, a SAW propagates substantially along



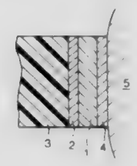
said diagonal and undesirable edge reflections are attenuated.

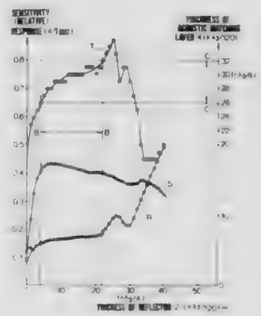
4,795,935

ULTRASONIC TRANSDUCER

Tadashi Fujii, and Hiroyuki Yagami, both of Fujinomiya, Japan, assignors to Terumo Corporation, Tokyo, Japan

Continuation of Ser. No. 829,830, Feb. 14, 1986, abandoned. This application Jun. 2, 1988, Ser. No. 203,591
Claims priority, application Japan, Feb. 23, 1985, 60-33693
Int. Cl.[4] G01K 11/02; H01L 41/04
U.S. Cl. 310—336 4 Claims





1. An ultrasonic transducer comprising

a piezoelectric body having opposing first and second surfaces, a reflector deposited on the first surface and an acoustic matching layer deposited on the second surface;

said piezoelectric body including a polymeric piezoelectirc member exhibiting an acoustic impedance (Z_T) smaller than 4×10^6 kg/m^2 s;

said reflector having a thickness (T_R) of between 0 and $11\lambda_2/120$, where λ_2 represents a sonic wavelength inter-

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rally of said reflector at a frequency which is one half the free resonance frequency of said piezoelectric body;

said acoustic matching layer including a material exhibiting an acoustic impedance (Z_M) of from 1.6×10^6 to 4×10^6 kg/m^2 s and having a thickness (T_M) of from $20\lambda_3/120$ to $29\lambda_3/120$, where λ_3 represents a sonic wavelength internally of said acoustic matching layer at a frequency which is one half the free resonance frequency of said piezoelectric body, and the relation $Z_O \leq Z_M \leq Z_T$ holds wherein Z_O is the acoustic impedance of an object under measurement;

the transducer having thicknesses (Tr and Tm) selected according to a relationship between T_R and T_M such that as T_R becomes thinner by $\lambda_3/120$, TM becomes thinner by a value in a range of between 0 and $3\lambda_3/120$.

4,795,936

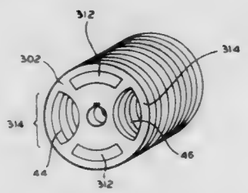
DRIVEN ROTARY SHAFT SYSTEM USING PERMANENT MAGNETS

John J. Crosetto, Orland Park; Kent L. Earls, Woodridge, and Anthony D. Jordan, Barrington Hills, all of Ill., assignors to Midwest Dynamometer & Engineering Co., River Grove, Ill.

Continuation-in-part of Ser. No. 900,398, Aug. 26, 1986. This application Oct. 2, 1987, Ser. No. 104,337

Int. Cl.[4] H02K *21/14*

U.S. Cl. 310—156 **9 Claims**



1. A brushless rotor device having a driven shaft and comprising a rotor including a core with a generally cylindrical surface, at least a pair of concave air gaps formed on diametrically opposed sides of said core, whereby the portions of said cylindrical surface which are between said air gaps form pole pieces for said rotor, said core being formed to receive permanent magnets in each of a pair of arcuate windows in said laminates, said windows being adjacent each of said pole pieces for providing at least a pair of magnetic fields in positions which interact with magnetic fields of an adjacent stator, and said concave air gaps having contours which generally follow and conform to the contours of flux lines appearing in said pair of windows.

4,795,937

SPARK PLUG WITH COMBINED SURFACE AND AIR SPARK PATHS

Eberhard P. Wagner, Stuttgart; Rudolf Maly, Sindelfingen; Otto Löffler, Stuttgart, and Werner Niessner, Steinheim, all of Fed. Rep. of Germany, assignors to Bera Ruprecht GmbH & Co. KG, Ludwigsburg, Fed. Rep. of Germany

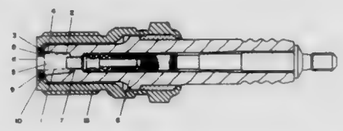
Filed Dec. 9, 1986, Ser. No. 939,863

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544176

Int. Cl.[4] H01T *13/20, 13/32, 13/46*

U.S. Cl. 313—130 **22 Claims**

1. A spark plug with combined surface and air spark paths, comprising a spark plug body, a centre electrode having an end portion, an insulator surrounding the centre electrode, and a ground electrode which, together with said spark plug body, surrounds the insulator, said insulator maintaining a gap at least with respect to said end portion of said centre electrode and extending beyond said centre electrode in an axial direction of said spark plug for forming a discharge chamber surrounding said end portion of said centre electrode; said ground electrode surrounding the insulator around an end portion thereof with



an annular gap therebetween and having an annular extension extending parallel to the longitudinal axis of said spark plug into the discharge chamber in a manner such that the extension is spaced from and surrounds a tip of the insulator.

4,795,938

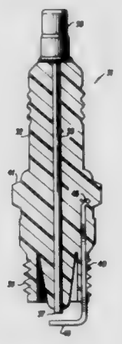
INJECTION MOLDED AUTOMOTIVE SPARK PLUG

Jerry R. Meredith, Knoxville, Tenn., assignor to Sur-Fire, Inc., Clawson, Mich.

Filed Dec. 11, 1986, Ser. No. 940,376

Int. Cl.[4] H01T *13/20, 13/38*

U.S. Cl. 313—143 **2 Claims**



1. A spark plug comprising

a molded non-conductive acrylonitrile butodiene styrene body, said body comprising

an upper section;

a lower section;

a central section having a nut configuration; and

an exterior threaded portion on said lower section;

said acrylonitrile butodiene styrene being an injection-molding, blow-molding, or extruding grade non-conductive heat resistant copolymer having high dimensional stability at temperatures exceeding 500° Fahrenheit;

a central electrode extending substantially the length of said body and terminating in a sparking tip extending outwardly from said lower section;

a connector cap secured to said electrode and extending outwardly of said upper body;

a ground electrode extending from within said lower body and terminating a predetermined fixed distance from the terminal end of said central electrode; and

means for exposing said ground electrode to the exterior of said lower section.

4,795,939

ELECTRIC LAMP BULB ATTACHMENT ARRANGEMENT

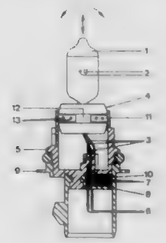
Fritz Eckhardt, Dettingen; Peter Helbig, Southeim, and Walter Schönherr, Glenges-Hürben, all of Fed. Rep. of Germany, assignors to Patent Treuhand Gesellschaft für elektrische Glühlampen GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 21, 1987, Ser. No. 5,684

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1986, 3603753

Int. Cl.[4] H01J *5/48*

U.S. Cl. 313—318 **17 Claims**



1. Electric lamp bulb attachment arrangement, for attachment of a bulb (1, 14, 19) to a plastic base structure (5, 16) with the aid of a bulb holder element (4, 15, 20) in which lamp electrode leads (3, 24) are provided, connected to at least two terminals,

said base structure (5, 16) comprising a hollow, at least part-tubular, structure, of an arbitrarily selected plastic material, defining an internal opening;

wherein

a bulb holder element (4, 15, 20), of high-temperature-resistant plastic material, is provided, holding the bulb in position and fitting directly into said opening of the hollow base structure, said holder element retaining the bulb (1, 14, 19) thereon; and

a coupling means (11), of material exhibiting a ferro-magnetic response to high-frequency welding fields, is provided, located between the bulb holder element and the hollow base structure, at least in said region of seating engagement, said bulb holder element and said base structure being plastic-welded together with said coupling means (11) at least partially interposed.

4,795,940

LARGE AREA DIRECTLY HEATED LANTHANUM HEXABORIDE CATHODE STRUCTURE HAVING PREDETERMINED EMISSION PROFILE

Ka-Ngo Leung, Hercules; Keith C. Gordon, Berkeley; Dean O. Kippenham, Castro Valley; Peter Purgalis; David Mousa, both of San Francisco; Malcom D. Williams, Danville; Stephen B. Wilde, Pleasant Hill, and Mark W. West, Albany, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 14, 1987, Ser. No. 108,327

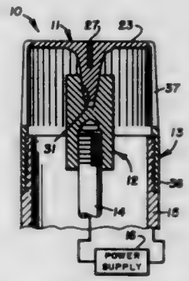
Int. Cl.[4] H01J *1/14, 1/16, 19/10*

U.S. Cl. 313—346 R **14 Claims**

1. A directly heated lanthanum hexaboride cathode system comprising:

a lanthanum hexaboride cathode element generally circular in shape about a central axis and having a head and base at opposite ends of a said central axis, said head end having a generally planar emission surface extending radially from said axis and an outer peripheral contact surface, said cathode element having an integral, axially-elongated, tapered, intermediate body extending along said central axis between said head to said base, said intermediate body having a progressively diminishing cross-section from said head towards said base,

a first electrical connector in conducting engagement with and peripherally around said contact surface on said head of said cathode element,



a second electrical connector in conducting engagement with said base of said cathode element,

means for establishing a flow of electrical current from one of said electrical connectors through said cathode element to the other of said electrical connectors.

4,795,941

ELECTROMAGNETIC WAVE SHIELDING, TRANSPARENT PANEL FOR A DISPLAY DEVICE

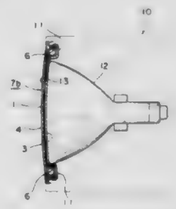
Kenaichi Noda, Aichi, Japan, assignor to Riken EMC Co., Ltd., Japan

Continuation-in-part of Ser. No. 641,971, Aug. 17, 1984, abandoned. This application Jan. 20, 1986, Ser. No. 876,938

Claims priority, application Japan, Aug. 20, 1983, 152281; Jun. 29, 1984, 135789

Int. Cl.[4] H01J *9/14, 29/89*

U.S. Cl. 313—479 **2 Claims**



1. A method of forming an electromagnetic shielding web for a display device, the web including a metal base plate of electromagnetic shielding material, the method including the step of laser boring a multiplicity of apertures in the metal base plate by an apparatus, the apparatus comprising

a laser, the laser emitting a pulsed laser beam of a designated pulse frequency;

a condenser lens, the lens being disposed in the path of the laser beam to allow the beam to pass therethrough, the lens acting to condense the laser beam; and

a mask interposed between the laser and the condenser lens and in the path of the laser beam, the mask having a pattern hole formed through the thickness thereof, the hole having a shape which is similar to the shape of each aperture formed in the base plate, wherein the base plate is positioned relative to the condenser lens so that the laser beam from the condenser lens strikes the base plate to form an aperture therein.

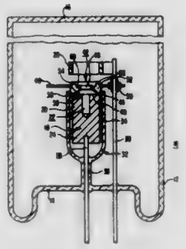
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,942

HOLLOW CATHODE DISCHARGE DEVICE WITH FRONT SHIELD

George K. Yamauki, Horseheads, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1987, Ser. No. 43,575
Int. Cl.[4] H01J 17/06
U.S. Cl. 313—618 7 Claims



1. In a hollow-cathode spectral light source of the type having a hermetically-sealed, generally cylindrical outer envelope, a hollow cathode electrical lead-in extending through a wall of the envelope, anode structure including an anode ring and anode lead-in means, the ring being spaced from the hollowed end of the cathode and supported by the anode lead-in means extending through a wall of the envelope, the improvement comprising:

an interior glass sleeve having an open-ended, diametrically larger part loosely encasing said cylindrical cathode, and a necked down, diametrically smaller part tightly encasing said cathode lead-in so that said cathode is supported in said larger part, the rim of the larger part projecting beyond the face of said hollowed end of the cathode;

a ceramic shield in the general form of a circular disc received in the open end of said sleeve and having at least one part thereof having an outer diameter slightly less than the inside diameter of said larger part of said sleeve, with said one part of said shield being received in the projecting rim part of said sleeve, said shield having a central opening generally aligned with the hollow of said cathode;

holding means fixed to said anode structure and contacting said shield to hold said shield in its position in said sleeve; and

the surface of said shield extending in a radial direction between the front face of said central opening and the extreme outer periphery of said shield includes portions at abrupt angles to each other to promote a gap in material depositing on said shield and tending to bridge toward said anode structure.

4,795,943

HIGH-PRESSURE SODIUM VAPOR DISCHARGE LAMP

Petrus H. Antonis; Lodewijk H. M. Meessen, and Ralf Schäfer, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

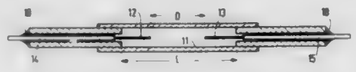
Filed Apr. 28, 1987, Ser. No. 43,504
Claims priority, application Netherlands, May 7, 1986, 8601162
Int. Cl.[4] H01J 61/073, 61/38
U.S. Cl. 313—620 6 Claims

1. A high-pressure sodium vapor discharge lamp, comprising:

a sealed ceramic discharge vessel, which has over a length L an at least substantially constant inner diameter,

discharge electrodes arranged in said discharge vessel opposite to each other at a relative distance D, said electrodes being connected to a respective current-supply conductor which extends to the exterior through the wall of the discharge vessel,

a filling comprising sodium and rare gas in said discharge vessel,



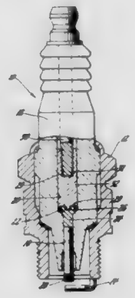
said lamp consuming during operation a power of at most 50 W and emitting light having a color temperature of at least 2250 K, and the ratio D/L having a value D/L≦0.5.

4,795,944

METALLIZED GLASS SEAL RESISTOR COMPOSITION

G. Larry Stimson, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1987, Ser. No. 83,341
Int. Cl.[4] H01J 7/44, 13/46
U.S. Cl. 315—71 1 Claim



1. A metal-glass seal resistor composition for use between a terminal member and an electrode member in a resistor spark plug, such composition being adapted to provide an electrical resistance in the range of 4,000 to 7,000 ohms upon glass sealing in the spark plug and to provide resistance stability thereafter during spark plug use, the composition consisting essentially by weight of 24 to 33 percent glass, 18 to 25 percent mullite, 36 to 49 percent zirconia, 1.2 to 1.6 percent carbon black, 0 to 2.0 percent bentonite, 0.6 to 0.8 percent sucrose, 0.8 to 1.2 percent lithium carbonate, 0.5 to 1.3 percent antimony and 0.5 to 1.3 percent silicon, the glass content of the seal initially consisting essentially by weight of about 25 to 50 percent borosilicate glass and about 50 to 75 percent barium borate glass.

4,795,945

STARTING CIRCUIT FOR HIGH INTENSITY GASEOUS DISCHARGE LAMPS

Thomas J. Mayer, Hoffman Estates, Ill., assignor to The Forest Electric Company, Melrose Park, Ill.

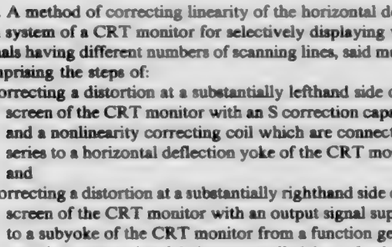
Filed May 7, 1987, Ser. No. 47,903
Int. Cl.[4] H05B 41/16
U.S. Cl. 315—276 5 Claims

1. A starting and operating circuit for a high intensity gaseous discharge lamp including:

a ballast transformer having its primary winding connected to a source of AC power, with the secondary winding thereof being connected in series with a high intensity gaseous discharge lamp,

an ignition transformer having its primary winding connected in circuit with the secondary winding of said ballast transformer, a voltage sensitive, rapid rise time, symmetrical switch and a capacitor connected to the secondary winding of said ignition transformer,

a pulse transformer having the primary winding thereof connected in circuit with said voltage sensitive switch and capacitor which provide high frequency, high energy pulses to said pulse transformer primary winding in accordance with conduction of said voltage sensitive switch,



the secondary winding of said pulse transformer being in series circuit with said ballast transformer secondary winding and the lamp whereby a high energy pulse in the primary winding of said pulse transformer provides a lamp starting voltage in the secondary thereof, and

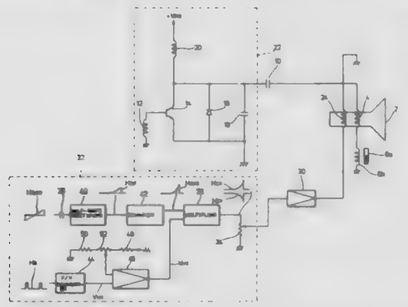
a current limiting circuit breaker connected on one side to the lamp and on the other side to the primary winding of said ignition transformer.

4,795,946

METHOD OF AND CIRCUIT FOR CORRECTING LINEARITY OF HORIZONTAL DEFLECTION SYSTEM

Mikio Nishiyama, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1988, Ser. No. 141,733
Int. Cl.[4] H01J 29/56; H04N 7/01
U.S. Cl. 315—370 5 Claims



1. A method of correcting linearity of the horizontal deflection system of a CRT monitor for selectively displaying video signals having different numbers of scanning lines, said method comprising the steps of:

correcting a distortion at a substantially lefthand side of the screen of the CRT monitor with an S correction capacitor and a nonlinearity correcting coil which are connected in series to a horizontal deflection yoke of the CRT monitor; and

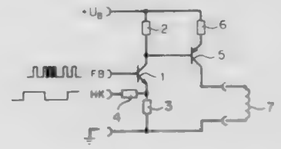
correcting a distortion at a substantially righthand side of the screen of the CRT monitor with an output signal supplied to a subyoke of the CRT monitor from a function generator, the output signal being controlled by a horizontal frequency of an applied video signal.

4,795,947

DEVICE FOR ELIMINATING THE INTERLINE FLICKER

Günter Glass, VS-Marbach; Uwe Hartmann, Villingen-Schwenningen; Udo Mai, VS-Villingen, and Fritz Ohnemus, Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Continuation of Ser. No. 888,325, filed as PCT EP85/00264, Nov. 16, 1985, published as WO86/03046, May 22, 1986, abandoned. This application Jan. 28, 1988, Ser. No. 149,504
Claims priority, application PCT Int'l Appl., Nov. 16, 1985, PCT/EP15/00264
Int. Cl.[4] H01J 29/52
U.S. Cl. 315—384 9 Claims



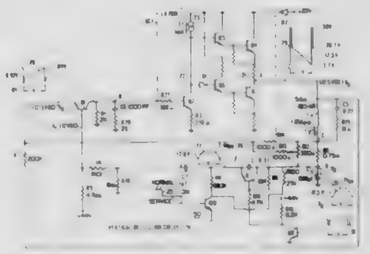
1. Apparatus for eliminating interline flicker display of graphics on a playback screen of a television picture tube, comprising: a supplemental deflection winding shifting an electron beam by substantially the width of one line over the duration of graphics reproduction; a supplemental deflection amplifier supplying said supplement deflection winding with current while the graphics are displayed; said supplemental deflection amplifier having transistors and an operating point set to prevent said transistors from becoming saturated; said supplemental deflection winding deflecting in vertical direction only during appearance of a videotext graphics within a line to retain line interlacing between graphics for reproducing a simultaneously moved television picture to be viewed.

4,795,948

VERTICAL DEFLECTION CIRCUIT WITH SERVICE MODE OPERATION

James A. Wilbert, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Apr. 8, 1988, Ser. No. 179,355
Int. Cl.[4] H01J 29/70, 29/76
U.S. Cl. 315—397 9 Claims



1. A vertical deflection circuit of a video display apparatus having normal and service modes of operation, comprising:

a vertical deflection winding;

an amplifier responsive to a sawtooth signal and having a driver stage that is coupled to said deflection winding for generating, during normal operation, a sawtooth deflection current in said deflection winding; and

a sawtooth signal generator for generating said sawtooth signal, said sawtooth signal generator including:

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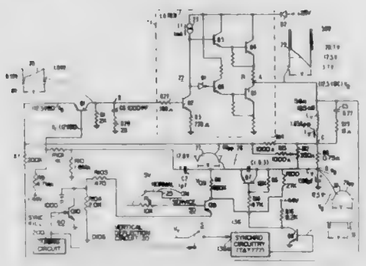
a source of a first voltage developed during said normal and during said service modes of operation;
a first capacitance coupled to said source of said first voltage;
a source of a first control signal at a frequency that is related to a deflection frequency;
a first switch responsive to said first control signal and coupled to said first capacitance, said first switch operating at a frequency that is related to that of said first control signal during both said normal mode of operation and said service mode operation, for discharging, in said normal mode of operation, said first capacitance via said first switch during a first portion of a given period of said first control signal;
a source of a second control signal having a first state that is indicative when said normal mode of operation is required and a second state when said service mode of operation is required; and
a controllable impedance responsive to said second control signal and coupled via said first capacitance to said source of said first voltage for providing, in said normal mode of operation, a current path to a current that charges said first capacitance during a second portion of said given period to produce said sawtooth signal at a second terminal of said first capacitance, and for decoupling said current path from said second terminal of said first capacitance when said second control signal is at said second, service mode operation state to prevent the charging of said first capacitance for preventing the generation of said sawtooth signal and said deflection current.

4,795,949

DEFLECTION CURRENT CORRECTION CIRCUIT

James A. Wilber, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Apr. 8, 1988, Ser. No. 179,371
Int. Cl.[4] H01J *29/70, 29/76*
U.S. Cl. 315—397 **15 Claims**



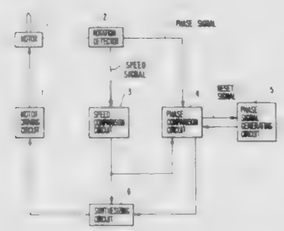
1. A vertical deflection circuit of a video display apparatus, comprising:
a vertical deflection winding;
an amplifier responsive to a sawtooth signal, having trace and retrace portions in a given period thereof, and coupled to said deflection winding for generating a deflection current in said deflection winding at an amplitude that is determined in accordance with an amplitude of said sawtooth signal;
a source of a synchronizing input signal at a frequency that is related to a vertical deflection frequency;
a source of a first control signal;
means responsive to said input signal and to said first control signal for generating a second control signal that is synchronized to said input signal when said first control signal is at a first state thereof and that is free running when said first control signal changes to a second state thereof; and
a sawtooth signal generator responsive to said second control signal for generating said sawtooth signal that is synchronized to said second control signal, said sawtooth signal generator being responsive to said first control signal to vary the amplitude of said sawtooth signal in accordance with the state of said first control signal for preventing the frequency change of said second control signal from substantially changing the amplitude of said sawtooth signal, thereby preventing a substantial change in the amplitude of said deflection current.

4,795,950

PHASE CONTROLLER FOR MOTOR

Kiyoshi Ota, Neyagawa, and Kazuo Arai, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 19, 1987, Ser. No. 64,121
Claims priority, application Japan, Jun. 30, 1986, 61-153157; Jul. 18, 1986, 61-170053
Int. Cl.[4] H02P *5/16*
U.S. Cl. 318—314 **10 Claims**



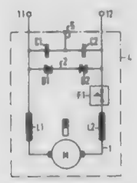
2. A phase controller for applying phase control to a motor, comprising:
a rotation detector for producing a speed signal and a phase signal which represent rotating condition of the motor;
a speed comparison circuit for producing a speed difference signal between the speed signal from the rotation detector and a speed target value;
a resettable phase signal generating circuit for generating a phase reference signal;
a phase difference output circuit which outputs a phase difference signal between the phase signal from the rotation detector and phase reference signal from the phase signal generating circuit;
a reset signal output circuit which outputs a reset signal to the phase signal generating circuit according to the speed difference signal from the speed comparison circuit so as to cause said phase reference signal to be in phase with said phase signal;
a synthesizing circuit for synthesizing the speed difference signal from the speed comparison circuit and the phase difference signal from the phase difference output circuit; and
a motor driving circuit for driving the motor according to an output of the synthesizing circuit.

4,795,951

D-C COMMUTATOR MOTOR WITH MEANS FOR INTERFERENCE SUPPRESSION

Heinz-Ulrich Gaebel; Heinrich Kirchner; Vladimir Maxa, all of Wurzburg, and Udo Winter, Karnach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 14, 1987, Ser. No. 96,692
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633254
Int. Cl.[4] H04B *15/02*
U.S. Cl. 318—293 **7 Claims**



1. In a d-c commutator motor having interference suppression means and wherein reversal of the direction of rotation is effected by polarity reversal of the operating voltage of an armature winding supplied from a d-c network, the improvement in interference suppression means comprising
(a) a protective circuit branch electrically connected in parallel to the armature winding, including at least two zener diodes (D1; D2) connected in anti-series; the breakthrough voltage of said at least two zener diodes in each direction of current being higher than the operating voltage;
(b) a plurality of interference suppression inductances each electrically connected in series with each lead of the armature winding;
(c) at least two interference suppression capacitors connected in series to one another and then electrically connected in parallel to the armature winding; and
(d) said protective circuit branch being connected between the series-connected capacitors (C1; C2) and the terminals of the interference suppression inductance (L1; L2) on the side of the operating voltage.

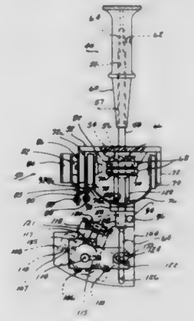
4,795,952

JOYSTICK FOR THREE AXIS CONTROL OF A POWERED ELEMENT

Robert W. Brandstetter, Fairborn, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Continuation of Ser. No. 868,858, May 12, 1986, abandoned. This application Feb. 23, 1988, Ser. No. 161,313
Int. Cl.[4] G05G *13/00*
U.S. Cl. 318—560 **19 Claims**

1. A joystick controller for three axis control of a powered element including a joystick handle assembly (40) mounted for tilting movement in any direction in a plane defined by two orthogonal X and Y axis from a null position with respective X and Y axis rotary potentiometers (84, 134) producing X-Y plane control signals corresponding to the extent of tilting movement of said handle assembly along either axis, characterized by said joystick handle assembly (40) including a handle member (60) mounted for up-and-down movement along a Z-axis from a centered null position and a Z-axis rotary potentiometer (106) having an input wiper member (14) drivingly connected to said handle member (60,) to produce a control signal corresponding to said up-and-down movement of said handle member (60,);
a hollow joystick shaft (58) fixed against up-and-down movement into the X-Y plane but pivotable in any direction in said X-Y plane; means (76, 128) drivingly engaging each of said X and Y axis rotary potentiometers (84, 134) with said hollow joystick shaft (58) to produce said X-Y plane control signals;
said joystick handle assembly (40) handle member 60 having a bore (59) received over said hollow joystick shaft (58) to be slidably fit thereto enabling up and down sliding movement of said handle member (60) on said hollow joystick shaft (58), said handle member (60) extending along the length of said hollow joystick shaft (58);
means (94, 150) mounting said Z-axis potentiometer to the lower end of said hollow joystick shaft (58) so as to be carried therewith upon tilting of said hollow joystick shaft (58);
a plunger (64) slidably fit within said hollow joystick shaft (58) to be movable in and out of the X-Y plane independently of said tilting movement of said handle assembly,



the lower end of said plunger (64) passing out of the lower end of said hollow joystick shaft (58), and the upper end of said plunger (64) protuding above the upper end of said hollow joystick shaft (58) and received within and fixed to said handle member (60), and means (112, 146) drivingly engaging said input wiper member (114) of said Z-axis potentiometer (106) with said lower end of said plunger (64) to cause corresponding movement of said wiper member (114) to an extent corresponding to the extent of movement of said plunger 64 from said centered null position; and, nulling spring means (88, 142, 120) associated with each of said X, Y and Z axes potentiometers (84, 134, 106) acting to bias said hollow joystick shaft (58) to said X and Y axis null position and said plunger (64) to said up-and-down centered null position.

4,795,953

METHOD OF AND ELECTRONIC CIRCUIT FOR STARTING A RELUCTANCE MOTOR AND RELUCTANCE MOTOR PROVIDED WITH SUCH AN ELECTRONIC CIRCUIT

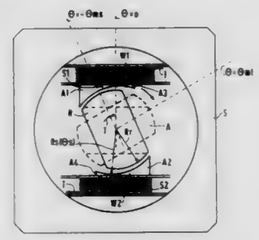
Johan C. Compter, Hoogeveen, and Peter M. S. M. Heijmans, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 2, 1987, Ser. No. 69,451
Claims priority, application Netherlands, Jul. 10, 1986, 8601801
Int. Cl.[4] H02P *8/00*
U.S. Cl. 318—696 **14 Claims**

1. A method of starting a reluctance motor, having a rotor and a stator, by means of a suitable energising current, the rotor and/or the stator being constructed in such a way that the rotor has pairs of positions of stable equilibrium, each constituted by a first and a second position of stable equilibrium and corresponding pairs of position of unstable equilibrium, each constituted by a first and a second position of unstable equilibrium, comprising the steps of:
(a) bringing the rotor to or near one of the two positions of

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stable equilibrium of one of the said pairs by means of a first energising current of a certain value; and



(b) subsequently applying such a torque to the rotor by means of a second energising current of another value that the rotor rotates towards the other of said two positions of stable equilibrium.

4,795,954

RESOLVER CONTROLLING METHOD AND APPARATUS

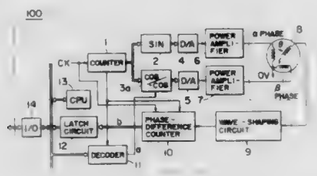
Shigeru Sakurai, Iruma; Akiho Hasuo, Kawagoe, and Kazuo Tanabe, Ibaragi, all of Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Fukuoka, Japan

Filed Dec. 22, 1986, Ser. No. 944,070

Claims priority, application Japan, Jan. 23, 1986, 61-12888

Int. Cl.[4] G05B *1/06*

U.S. Cl. 318—661 **8 Claims**



1. A method for controlling a two-phase excitation and one-phase detection type resolver to eliminate an erroneous component in the output of the resolver, said method comprising the steps of:

causing the resolver to generate a rotating magnetic field; and

periodically reversing the direction of rotation of the rotating magnetic field.

8. An apparatus for controlling a resolver having two exciting windings and one detecting winding, said apparatus comprising:

means for generating a sine wave;

means for applying said sine wave to one of said exciting windings;

means for generating a cosine wave;

means for applying said cosine wave to the other of said exciting windings, said sine and cosine waves causing generation of a rotating magnetic field in the resolver;

means for periodically changing the polarity of either said sine wave or said cosine wave to thereby reverse the direction of rotation of said rotating magnetic field;

means for obtaining first and second outputs having different phase angles from said detecting winding of the resolver and for detecting phase angles of said first and second outputs, and

means for calculating one half of the difference of the detected phase angles and thereby determining a rotated angle of the resolver.

4,795,955

POSITION CONTROL APPARATUS

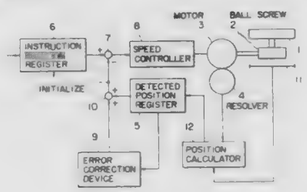
Kazutaka Yamashita, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1986, Ser. No. 920,062

Claims priority, application Japan, Oct. 17, 1985, 60-232107

Int. Cl.[4] G05D *23/275*

U.S. Cl. 318—632 **5 Claims**



1. A position control apparatus comprising:

a source of drive for moving a driven member;

absolute position detecting means provided for either one of said source of drive and said driven member for detecting an absolute position thereof;

an instruction position register for storing a supplied instructed position; and

speed control means for said source of drive;

the improvement wherein said absolute position detecting means comprises a resolver provided for said motor, a linear type position detector provided for said driven member, and means for obtaining an absolute position of said member in accordance with outputs of said resolver and said linear type position detector; and said apparatus further comprising error correcting means for producing a correction signal corresponding to a detecting position; means for adding said correction signal to a position signal detected by the said absolute position detecting means to produce a sum signal; and subtracting means for subtracting said sum signal from an instruction position signal delivered from said instruction position register, for producing a difference therebetween.

4,795,956

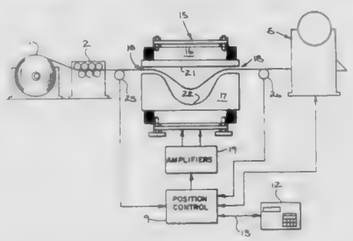
WEB MOTION CONVERTER

Thomas L. Beck, Union Grove, Wis., assignor to Unico, Inc., Franksville, Wis.

Filed Sep. 10, 1987, Ser. No. 94,985

Int. Cl.[4] G05B *11/01*

U.S. Cl. 318—628 **6 Claims**



1. A motion converter for sheet material which comprises:

a pair of actuators which are spaced apart to define a feed-path therebetween through which the sheet material passes, one of said actuators having a contoured surface which enables the sheet material to follow a serpentine path through the motion converter;

an electromagnet disposed in said one actuator to produce a magnetic field when energized which attracts the sheet material towards the contoured surface; and

a position control which cyclically energizes the electromagnet to thereby cyclically accumulate sheet material in the motion converter and to thereby convert the motion of the sheet material fed into the motion converter into a different motion.

4,795,957

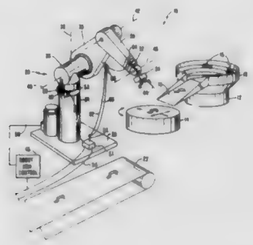
ROBOT ARM HAVING MOTION-LIMITING TETHER

Edward H. MacNeal, Jr., Quincy, and Kenneth W. Stadtmas, Framingham, both of Mass., assignors to Polaroid Corporation, Patent Department, Cambridge, Mass.

Filed Sep. 3, 1987, Ser. No. 92,637

Int. Cl.[4] G08B *19/42*

U.S. Cl. 318—568 **12 Claims**



1. Apparatus for limiting the extent of movement of a robot arm to within a predetermined special zone, comprising:

an energizeable robot arm having a first member mounted for rotation about a first axis and a second member mounted for rotation about a second axis forming an angle with respect to said first axis;

means for coupling said robot arm to a suitable source of electrical power, said power coupling means including a power-controlling actuator actuatable between a first position where it couples said electrical power to said robot arm and a second position where it interrupts electrical power to said robot arm until subsequently reset to its said electrical power coupling position;

means coupled to said power-coupling means, responsive to the rotation of said first member about said first axis to first and second rotational positions, for interrupting said electrical power to said robot arm when said first member is rotated to either said first or second rotational positions; and

means attaching said power-controlling actuator to said second robot arm member wherein rotational movement of said second robot arm member beyond a predetermined angle is coupled to said power-controlling actuator to thereby actuate said electrical power controlling means from its said first position to its said second position and thereby interrupt electrical power to said robot arm.

4,795,958

SERVOMECHANISM FOR RECORDING DISK REPRODUCING SYSTEM

Hiroshi Nakamura, and Satoshi Kusano, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 21, 1987, Ser. No. 98,823

Claims priority, application Japan, Sep. 20, 1986, 61-222734; Sep. 20, 1986, 61-222735; Sep. 20, 1986, 61-222736; Sep. 20, 1986, 61-222737

Int. Cl.[4] G05B *5/00*

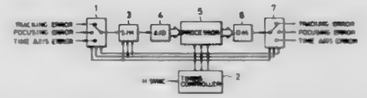
U.S. Cl. 318—625 **4 Claims**

1. A servo mechanism for a digitally recorded disk reproducing system, said servomechanism including a plurality of servo systems each providing analog error signals, including at least a tracking servo system for providing a tracking error signal and a focusing servo system for providing a focusing error signal, said system further comprising:

switching means receptive of analog error signals of said plurality of servo systems for outputting the same analog error signals sequentially in a time division manner in response to sampling signals of a predetermined frequency;

means for converting the analog error signals passed through said switching means into digital error signals;

arithmetic processing means for subjecting said digital error signals to predetermined processing;



means for reconverting the digital error signals processed by said arithmetic processing means into analog error signals; and

means for feeding the reconverted analog signals to respective controlled portions of said various servo systems in synchronism with said sampling signals,

wherein the frequency of said sampling period of the tracking error signal is shorter than that of the focusing error signal.

4,795,959

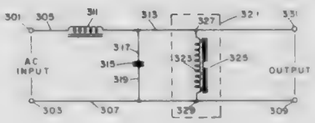
HARMONIC INDUCTOR FOR GENERATION OF AN ENERGY CONSERVING POWER WAVE

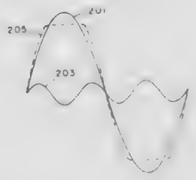
Edward Cooper, San Diego, Calif., assignor to Leaco Development

Continuation of Ser. No. 725,383, Apr. 22, 1985, abandoned. This application Nov. 4, 1987, Ser. No. 120,196

Int. Cl.[4] G05F *3/06*

U.S. Cl. 323—308 **13 Claims**





1. An energy converter for converting AC-power to an output having a desired power waveform comprising,

circuit means for receiving an AC-power waveform,

said circuit means having output means for solely enhancing the fundamental and third harmonic of the AC-power waveform into a composit power output waveform,

and reactor means for current limiting the AC power waveform to said output means and for providing buffer impedance to said output means.

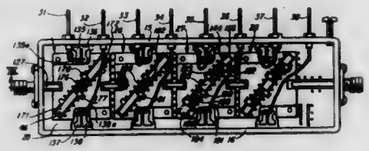
VOL 1098 ISS 1 JA 3 1989 UMI

4,795,960

PROGRAMMABLE ATTENUATORS

Bruce Malcolm, 6940 Winston Dr., Indianapolis, Ind. 46236

Filed Dec. 2, 1986, Ser. No. 937,180
Int. Cl.[4] H01P 1/10, 1/22
U.S. Cl. 333—105 **14 Claims**



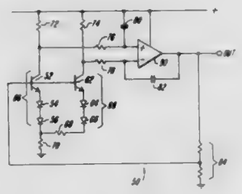
1. A high frequency energy receiving and propagation structure for use with switch means which are operative between first and second states and which include a conductive ground structure, first, second, third, fourth, fifth and sixth ungrounded terminals and movable switching conductors operable in said first state to respectively connect said first and second terminals to said third and fourth terminals and operable in said second state to respectively connect said first and second terminals to said fifth and sixth terminals, said energy receiving and propagation structure comprising: first and second interconnection means respectively including first and second propagation means each having connection portions at opposite ends thereof, said first interconnection means further including means connecting said connection portions of said first propagation means to said third and fourth terminals of said switch means, said second interconnection means further including means connecting said connection portions of said second propagation means to said fifth and sixth terminals of said switch means, and isolation means of conductive material connected to said conductive ground structure of said switch means and so disposed in relation to said first and second interconnection means as to effectively provide high frequency electrical isolation between said first and second interconnection means said switch means being of such that said third and fourth terminals thereof are on opposite sides of an imaginary plane which extends through said first and second terminals and also being such that said fifth and sixth terminals thereof are also on opposite sides of said imaginary plane, said first and second interconnection means and said first and second propagation means thereof extending in paths which cross each other in a certain region in the vicinity of said plane, and said isolation means being disposed in said region and between said first and second interconnection means and said first and second propagation means thereof.

4,795,961

LOW-NOISE VOLTAGE REFERENCE

Robert A. Neidorff, Bedford, N.H., assignor to Unitrode Corporation, Lexington, Mass.

Filed Jan. 10, 1987, Ser. No. 60,622
Int. Cl.[4] G05F 3/30
U.S. Cl. 323—314 **8 Claims**



1. A low noise voltage reference comprising:

a first and a second transistor having a common base, and each having a collector and an emitter;

base drive means for providing a voltage to said common base;

collector load means connected to a power source providing a voltage thereacross in response to the conductance of the respective transistor;

a first resistor connected to the emitter of said first and said second transistor;

a second resistor connected to the emitter of said first transistor and to said power source, wherein

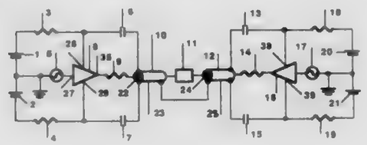
said first and second transistors produce current densities according to their respective areas, the ratio between said first and second transistor current densities being selected to produce a ratio of current density provided by the second and first transistors substantially greater than the range of 8 to 1 to at least 1000 to 1, and the output reference voltage comprising the base drive voltage which provides equal collector voltages.

4,795,962

FLOATING DRIVER CIRCUIT AND A DEVICE FOR MEASURING IMPEDANCES OF ELECTRICAL COMPONENTS

Kouichi Yanagawa, and Kazuyuki Yagi, both of Hachiojishi, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 4, 1987, Ser. No. 93,845
Claims priority, application Japan, Sep. 4, 1986, 61-208668
Int. Cl.[4] G01R 27/00
U.S. Cl. 324—57 R **17 Claims**



12. A component measuring device comprising:

component means to be measured,

a pair of identical floating driver circuits, each having power supply means,

a signal source connected to said power supply means,

an amplifier provided with an input terminal connected to said signal source and therethrough to said power supply means, a pair of power supply terminal means, and a signal output terminal,

a pair of resistors through each of which direct current flows from said power supply means into one said power supply terminal means,

a pair of capacitors each connected to a said power supply terminal, and

a coaxial cable comprising first and second conductors, one end of said first conductor being connected to said signal output terminal, said second conductor having one end connected to each said power supply terminal means through one said capacitor,

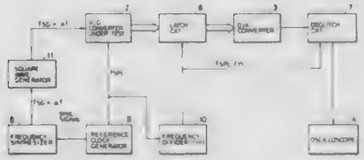
said coaxial cables' conductors each having a second end, the second conductor of each said floating driver circuit being connected to each other at their second ends, the second end of each said first conductor being connectable to opposite ends of said component means.

4,795,963

TEST METHOD OF A/D CONVERTER

Toshiaki Ueno; Fumio Ikeuchi, both of Yokohama, and Fumihito Inoue, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 1, 1986, Ser. No. 858,793
Claims priority, application Japan, May 2, 1985, 60-93656
Int. Cl.[4] G01R 29/02; G01D 21/00
U.S. Cl. 324—57 R **9 Claims**



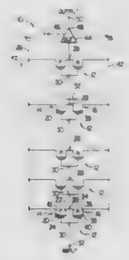
1. A method of testing an A/D converter including the steps of generating a test signal, supplying the generated test signal to said A/D converter, converting said test signal into a digital signal by said A/D converter, and reconstructing the waveform of said test signal from the digital signal outputted from said A/D converter, said method comprising the steps of: generating a square wave pulse as said test signal, supplying said square wave pulse to said A/D converter, reconstructing the waveform of said square wave pulse from the digital signal generated from said A/D converter, measuring the rise time characteristic of said A/D converter from the reconstructed waveform of said square wave pulse, and determining the dynamic characteristics of said A/D converter from the measured rise time.

4,795,964

METHOD AND APPARATUS FOR MEASURING THE CAPACITANCE OF COMPLEMENTARY FIELD-EFFECT TRANSISTOR DEVICES

Shivaling S. Mahant-Shetti, Richardson, Tex., and Aki Nishimura, Sakura, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 1, 1986, Ser. No. 893,054
Int. Cl.[4] G01R 27/26
U.S. Cl. 324—60 C **27 Claims**



1. Apparatus for measuring the capacitance inside a complementary field-effect transistor circuit, comprising:

a plurality of first complementary field-effect transistor devices connected in series, said plurality of first devices including an input and an output;

a signal source coupled to said input for providing a signal;

a plurality of second complementary field-effect transistor devices, including an input and an output, connected in series, each differing from said first field-effect transistor devices in that each second device is connected to at least one additional load element;

a supply voltage source connected to said devices, said supply voltage enabling said devices to propagate said signal;

a meter for measuring a current required to propagate said signal through said devices from said input to said output;

a first capacitance of said transistor circuit derived from a measurement of a current drawn by said plurality of first transistor devices in propagating a signal therethrough; and

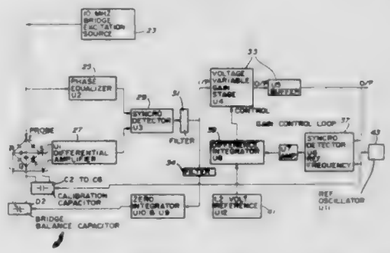
a second capacitance of said circuit derived from a current drawn by said plurality of second devices in propagating a signal therethrough, the contribution of said additional element to said second device capacitance calculated by using the first capacitance and the second capacitance.

4,795,965

CAPACITANCE TO VOLTAGE CONVERSION CIRCUIT INCLUDING A CAPACITIVE BRIDGE AND A CAPACITIVE OFFSET

Kevin A. Dooley, Georgetown, Canada, assignor to Pratt & Whitney Canada Inc., Longueuil, Canada

Filed Oct. 14, 1987, Ser. No. 108,124
Int. Cl.[4] G01R 17/02, 17/10, 27/26
U.S. Cl. 324—60 C **7 Claims**



1. A capacitance to voltage conversion circuit for converting changes in capacitance of a capacitive bridge-type probe to voltage, the probe having a bridge with a sensitive arm and excitation means for providing an excitation signal to said capacitive bridge, said excitation means having output means; said circuit comprising:

detector means for detecting changes in said excitation signal across said sensitive arm due to changes in capacitance of said sensitive arm;

said detector means having input means and output means, the input means of said detector means being connected to said sensitive arm;

variable gain amplifier means having signal input means, gain control input means and output means, the signal input means of said variable gain amplifier means being connected to the output means of said detector means;

reference oscillator means having output means;

first synchronous detector means having input means, output means and a clock terminal;

the output means of said variable gain amplifier means being connected to the input means of said first synchronous detector means and the output means of said reference oscillator means being connected to the clock terminal of said first synchronous detector means;

comparator means having first input means and second input means and output means;

a source of reference voltage having output means;

the first input means of said comparator means being connected to the output means of said synchronous detector means;

the second input means of said comparator means being connected to the output means of said source of reference voltage;

the output means of said comparator means being connected

to the gain control means of said variable gain amplifier means;

offset means for providing a predetermined imbalance to said bridge;

means for switching said offset means in circuit in said sensitive arm, said means for switching having a control terminal;

the output means of said reference oscillator means being connected to said control terminal of said means for switching;

whereby, when said offset means is in circuit, said first synchronous detector means is clocked, so that the output of the variable gain amplifier due to the offset is compared, in the comparator means, with the output of said source of reference voltage, and the gain of the variable gain amplifier means is controlled to drive the output of said first synchronous detector means to be equal to the output of said source of reference voltage.

4,795,966

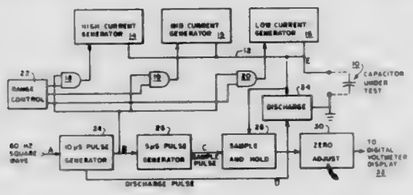
METHOD AND APPARATUS FOR MEASURING THE EQUIVALENT SERIES RESISTANCES OF A CAPACITOR

Terry D. Cook, Sioux Falls, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Filed May 2, 1986, Ser. No. 858,715

Int. Cl.⁴ G01R *27/08, 31/12*

U.S. Cl. 324—60 R **9 Claims**



1. Apparatus for measuring and displaying the equivalent series resistance of a capacitor comprising in combination

current generator means for applying to said capacitor a constant charging current for a first predetermined period of time to cause the voltage across said capacitor to increase initially to a first level which is proportional to said equivalent series resistance of said capacitor and thereafter to increase at a rate proportional to said charging current,

timer means for timing out a second period beginning with the initial application of said charging current to said capacitor and ending when said voltage across said capacitor is substantially at said first level,

voltage measuring means responsive to said timer means for measuring said voltage across said capacitor at the end of said second period, and

means responsive to the value of said voltage measured by said voltage measuring means for displaying a visual representation of the equivalent series resistance of said capacitor.

4,795,967

LEVEL MEASURING DEVICE FOR ELECTRICALLY NON-CONDUCTIVE LIQUIDS

George E. Fredericks, Graz, Austria, assignor to A V L Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof. Dr.Dr.h.c. Hans List, Graz, Austria

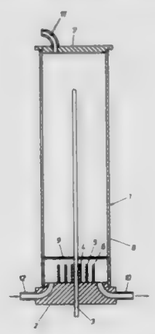
Filed Sep. 11, 1987, Ser. No. 95,426

Claims priority, application Austria, Sep. 17, 1986, 2492/86

Int. Cl.⁴ G01R *27/26*

U.S. Cl. 324—61 P **5 Claims**

1. A level measuring device to measure the level of an electrically non-conductive liquid in a vessel comprising a sensor electrode which is coaxially positioned in said vessel and is partly immersed in said non-conductive liquid, forming together with the wall of said vessel a capacitor that is connected to an evaluation circuit measuring the capacitance of said capacitor, said capacitance providing a measure for said liquid level in said vessel to be determined, taking into account a compensating electrode also located in said vessel, wherein a



driver electrode is placed in the lower area of said vessel at a position essentially coaxial to said sensor electrode, and wherein said compensating electrode is positioned between said driver electrode and said wall of said vessel, the two electrodes constituting further capacitors in conjunction with each other, and with said sensor electrode, and with said wall of said vessel.

4,795,968

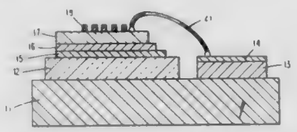
GAS DETECTION METHOD AND APPARATUS USING CHEMISORPTION AND/OR PHYSISORPTION

Marc Madou, Palo Alto; Arden Sher, Foster, and Christopher J. Spindt, Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jun. 30, 1986, Ser. No. 880,555

Int. Cl.⁴ G01R *27/26, 27/02*

U.S. Cl. 324—61 R **94 Claims**



1. In a method of detecting the presence of a predetermined gas in an ambient gaseous environment with a capacitor having a solid gas adsorbing electrolyte dielectric, said predetermined gas and gases of the ambient environment interacting so there is a change in the adsorbtion of the ambient gases by the dielectric when the ambient gases and the predetermined gas are incident on the dielectric compared to the adsorbtion of the ambient gases when the predetermined gas is not incident on the dielectric and/or the predetermined gas is adsorbed by the dielectric when it is incident on the dielectric, the degree of adsorbtion being related to the amount of the predetermined gas incident on the dielectric, comprising the steps of: while said electrolyte dielectric is exposed to said predetermined gas to adsorb molecules of the gases of the ambient environment and/or the predetermined gas, energizing said capacitor to measure a physisorption process at said dielectric and molecules of the gases incident on and adsorbed by the dielectric, the capacitive impedance of said capacitor being affected by an interaction of the physisorption process and the gas molecules adsorbed by the dielectric; and deriving a response indicative of the value of the capacitive impedance of said capacitor as affected by the interaction of the physisorption process and the gas molecules adsorbed the dielectric, the derived response providing an indication of the presence of the predetermined gas.

4,795,969

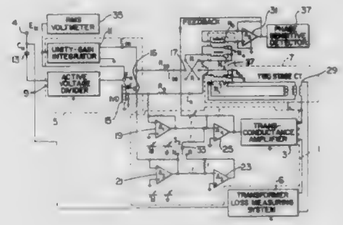
LOAD LOSS STANDARD FOR TESTING AND CALIBRATING HIGH VOLTAGE POWER MEASURING SYSTEMS

Eddy So, Gloucester, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Dec. 11, 1987, Ser. No. 131,916

Int. Cl.⁴ C01R *11/32;* **H01F** *40/14*

U.S. Cl. 324—74 **17 Claims**



1. A load loss standard for testing and calibrating a transformer loss measuring system by generating a standard load current when connected to a high voltage source and the said transformer measuring loss system, comprising:

voltage divider means, to be connected to the said high voltage source, for generating reference signals indicative of a reference load current flowing therethrough,

current comparator means including first current comparator and having at least first, second, third and detection winding circuits,

the said first winding circuit to be connected to the said transformer loss measuring system,

amplifier means connected to the said voltage divider means for generating the said standard load current having a preset loss tangent, in response to the said reference signals and for applying the said standard load current to the said first winding circuit and to the said transformer loss measuring system,

connecting means connected to the said voltage divider means for applying the said reference signals to the said second and third winding circuits, and

detection means connected to the said detection winding circuit for generating and applying a feedback signal to the said amplifier means to fine adjust the said standard load current.

4,795,970

ELECTRICAL APPARATUS

David P. Owen, Dunstable, United Kingdom, assignor to Marconi Instruments Limited, Essex, England

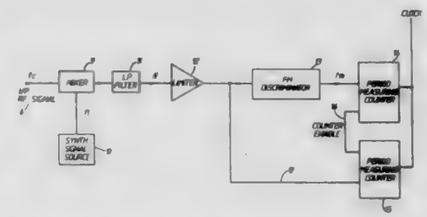
Filed May 27, 1987, Ser. No. 54,763

Claims priority, application United Kingdom, May 28, 1986, 8612904

Int. Cl.⁴ G01R *23/16*

U.S. Cl. 324—77 R **11 Claims**

1. Electrical Apparatus for measuring a frequency modulated signal and including means for demodulating a frequency modulated input signal to obtain a signal varying at the modulation frequency, a counter enable signal generator adapted to generate a counter enable signal of duration substantially equal to an integer number of cycles of the modulation frequency, and a first period measuring counter adapted to measure the



carrier frequency of the input signal over a gate period given by the counter enable signal duration.

4,795,971

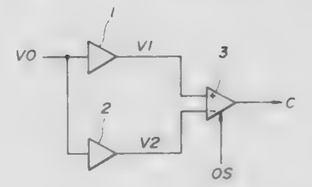
DEVICE FOR DETECTING VOLTAGE FLUCTUATION

Eiji Murao, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1985, Ser. No. 734,572

Int. Cl.⁴ G01R *19/00;* **H03K** *5/153*

U.S. Cl. 324—102 **3 Claims**



1. A device for detecting voltage fluctuation in a substantially D.C. input voltage signal comprising a first amplifier for amplifying said D.C. input voltage signal, a second amplifier for amplifying the same D.C. input voltage signal with a fixed delay time relative to the first amplifier, said first and second amplifiers having the same gain with respect to each other to produce two respective amplified output voltages, a voltage comparator for comparing the respective amplified output voltages, thereby producing a high-level output at the time of increase or decrease of said D.C. input voltage signal, and means for providing an offset voltage to the voltage comparator.

4,795,972

DIGITAL MEASURING METHOD AND APPARATUS FOR A QUASI-ANALOG MEASURED VALUE DISPLAY

Günter Roppelt, Nürnberg, and Herbert Schick, Fürth, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie A.G., Mannheim, Fed. Rep. of Germany

Filed Apr. 3, 1987, Ser. No. 34,851

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1986, 3611681

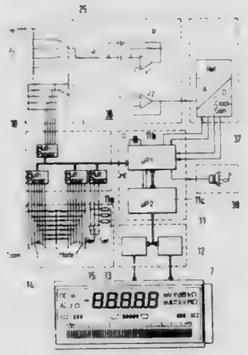
Int. Cl.⁴ G01R *15/08, 17/06*

U.S. Cl. 324—115 **6 Claims**

1. Digital measuring method for displaying quasi-analog measured values through a hysteresis function, which comprises displaying a measurement scale and a plurality of interconnected triggerable indicator segments disposed in a row on a display, the segments having a given indicator center distance, representing a measured value to be indicated by the position of the indicator segments, controlling the resolution of the quasi-analog measured value display in dependence on the number of the indicator segments within a measurement range to be represented, setting the resolution substantially lower

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than a resolution with which an A/D converter connected to the display operates, and activating a control command for triggering an actual indicator segment through said hysteresis function, which assures that a switchover from a previous



indicator segment to a new indicator segment does not take place until the actual measured value has increased or decreased by substantially more than one-half the given indicator center distance.

4,795,973

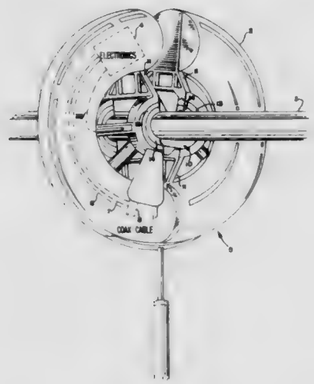
LINE MOUNTED APPARATUS FOR MEASURING LINE POTENTIAL

William R. Smith-Vaniz, Darien, and John R. Montgomery, Fairfield, both of Conn., assignors to Niagara Mohawk Power Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 669,589, Nov. 8, 1984, abandoned, Ser. No. 564,924, Dec. 23, 1983, Pat. No. 4,635,055, and Ser. No. 484,681, Apr. 13, 1983, Pat. No. 4,689,752. This application Mar. 29, 1988, Ser. No. 174,965

Int. Cl.[4] G01R *1/04*

U.S. Cl. 324—126 **10 Claims**



1. Apparatus for measuring voltage on an above ground power line conductor comprising:

an electrically conductive housing attached to said above ground conductor,

mounting means for attaching said housing to said conductor,

said mounting means including a first conductive portion in electrical contact with said conductor, a second conductive portion in electrical contact with said housing, and electrical insulating means separating said first and second portions,

and low impedance current measuring means, said measuring means electrically connected to said first conductive portion and to said housing whereby said housing acts as a charge collecting plate and said measuring means measures current flowing from said conductor to said housing, said current being proportional to the voltage on said power line conductor.

4,795,974

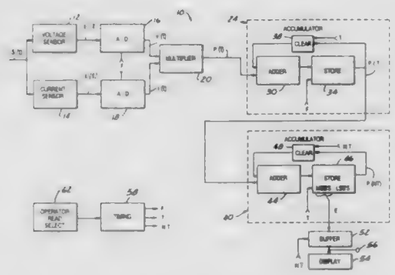
DIGITAL ENERGY METER

Ronald G. Landman, Ypsilanti; Harold G. Spring, Garden City, and Joseph C. Burba, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 24, 1987, Ser. No. 77,579

Int. Cl.[4] G01R *21/00, 21/133, 22/00*

U.S. Cl. 324—142 **9 Claims**



1. An apparatus for measuring the energy of an electrical signal over a preselected time period, comprising:

converting means for converting a sampled voltage component and related sampled current component of said electrical signal into respective digital words by sampling a pair of analog to digital converters at a predetermined sampling frequency;

multiplying means for multiplying said respective digital words together each sampling time to form a digital product representativ of instantaneous power;

first accumulating menns for accumulating said products over a predetermined time period to form a first digital sum representative of total power during said predetermined time period, said first accumulating means comprising a series interconnection of a first adder and a first shift register wherein said first adder has inputs connected to said multiplier means and the output of said fist shift register, said first shift register being clocked at said predetermined sampling freqency;

second accumulating means for accumulating said first digital sums over a preselected time period to form a second digital sum representative of total power during said preselected time period, said second accumulating means comprising a series interconnection of a second adder and a second shift register wherein said second adder has inputs connected to said second accumulating means and the output of said second shift register, said second shift register being clocked at said predetermined sampling frequency;

dividing means for dividing said second digital sum by a predetermined scaling number times said predetermined sampling frequency to form a measurement of energy during the preselected time period, said dividing means deleting a predetermined number of least significant bits, said scaling number converting the energy units formed by dividing said second digital sum by said predetermined sampling frequency is equal to the number two taken to the power of said predetermined number of least significant bits.

4,795,975

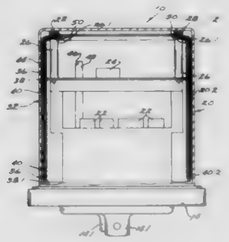
THERMAL AND ELECTROMAGNETIC SHIELD FOR POWER METEH

Ned Cox, Jonesborough, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 26, 1986, Ser. No. 912,449

Int. Cl.[4] G01R *1/04*

U.S. Cl. 324—156 **6 Claims**



1. A power meter having a base, an electronic meter mechanism mounted on the base to be connected in an electrical circuit for metering power used in the circuit, a transparent housing part having a top and having an open bottom fitted over the meter mechanism cooperating with the base for enclosing the meter mechanism, and mounting means adapted to be electrically grounded extending up from the base into the transparent housing part, characterized in that a thermal and electromagentic interference shield is secured to the mounting means to extend around the meter mechanism within the transparent housing part for shielding the power meter from ambient environmental conditions, the shield comprising a length of a composite metal-organic laminate having layers of white and black organic materials bonded to respective opposite outer side surfaces of an electrically conductive metal foil, the shield being arranged to extend around the meter mechanism with the black and white organic materials of the laminate facing respectively toward and away from the meter mechanism for thermally shielding the power meter, the laminate having portions of the metal foil free of the organic material in the laminate electrically connected to the mounting means extending up from the base for electrically grounding the metal foil of the laminate to electromagnetically shield the power meter , the layer of black organic material in the laminate being less than fully coextensive with the metal foil leaving a portion of the metal foil exposed adjacent a top edge of the laminate, the layers of white and black organic materials extending from the metal foil and being bonded to each other along a bottom edge of the laminate for electrically insulating an edge of the foil at the bottom of the laminate, ground and mounting tabs integral with the laminate are provided in the exposed portion of the metal foil, the length of the laminate is formed into a generally cylindrical configuration with white organic material disposed on the outer surface of the cylinder and opposite ends of the laminate length are secured together, and the tabs are secured in electrically conductive engagement with the mounting means for disposing and electrically grounding the shield around the meter mechanism within the transparent housing part.

4,795,976

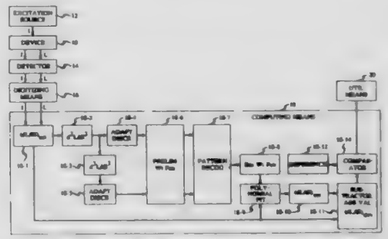
APPARATUS AND DERIVATIVE TECHNIQUE FOR TESTING DEVICES

Jonathan R. Pawlik, New Providence, N.J., assignor to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 15, 1987, Ser. No. 4,166

Int. Cl.[4] G01R *31/26*

U.S. Cl. 324—158 D **14 Claims**



8. In the manufacture of devices, apparatus for screening the devices to determine which ones meet a predetermined criterion, comprising:

(a) means for supplying input excitation to a device,

(b) means for measuring the output of the device in response to the excitation, the device tending to include a nonlinearity in its output versus excitation characteristic,

(c) means for generating the first derivative of the measured output characteristic,

(d) means for generating an estimated first derivative of the output characteristic which would be obtained if the device had no nonlinearity,

(e) means for comparing the first derivative of the measured output with the estimated first derivative to identify whether the device actually has a nonlinearity, and

(f) means for comparing one or more parameters of the nonlinearity with the predetermined criterion to determine whether the device satisfies the criterion.

4,795,977

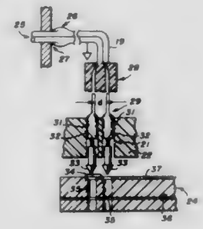
INTERFACE SYSTEM FOR INTERFACING A DEVICE TESTER TO A DEVICE UNDER TEST

Keith A. Frost, Redding; Timothy Harns, Palo Cedro, and Ronald D. Simmons, Redding, all of Calif., assignors to Pacific Western Systems, Inc., Mountain View, Calif.

Filed Mar. 19, 1987, Ser. No. 27,721

Int. Cl.[4] G01R *31/02, 1/06*

U.S. Cl. 324—158 F **5 Claims**



1. In an interface system for electrically interfacing tester circuits of a device tester to a device under test for sending test signals to and receiving response test signals from the device under test:

an array of coaxial cables, each having an inner center con-

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ductor and an outer conductor, for connection at a first end to the tester circuits of the device tester for communicating test and test response signals between the tester and the device under test;

an array of two pin conductor slidable connectors each fixedly secured to each of the second ends of said coaxial cables and having a signal terminal pin connected to said inner conductor of the coaxial cable and a ground terminal pin connected to said outer conductor of each of said coaxial cables;

a mother board for mounting proximate the device under test;

an array of spring loaded two pin conductor feedthrough connectors fixedly mounted to said mother board for feeding electrical signals through said mother board from one major face to an opposed major face;

said two pin conductor feedthrough connectors each having a pair of spaced apart movable spring loaded conductive pins protruding from one major face of said mother board and each movable pin being electrically connected to and slidably mating with a fixed conductive pin at the opposed major face, said fixed conductive pins of each of said two pin conductor feedthrough connectors being disposed for slidably mating with said pin terminals of said two pin conductor slidable connectors affixed to said second ends of said coaxial cables;

a daughter circuit board having electrical circuits formed thereon for communicating electrical test and response test signals between the tester and the device under test; and

said spring loaded two pin feedthrough connectors of said mother board being disposed in a pattern to register with the electrical circuits on said daughter board for making spring loaded electrical connections between said spring loaded connectors and said electrical circuits on said daughter board.

4,795,978

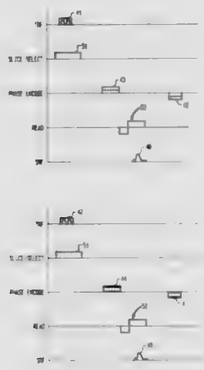
PREVENTION OF STEADY STATE TRANSVERSE MAGNETIZATION IN FAST IMAGING SEQUENCES

Yuval Zur, Herzalia, and Peter Bendel, Rishon Le Zion, both of Israel, assignors to Fiscint Ltd., Haifa, Israel

Filed Jul. 29, 1987, Ser. No. 78,888

Int. Cl.[4] G01R *33/08*

U.S. Cl. 324—309 **14 Claims**



1. A magnetic resonance imaging system for preventing steady state transverse magnetization in a transverse plane when using fast imaging sequences, said system including: means for applying fast imaging sequences including transmitter means for transmitting a radio frequency (RF) pulse having a certain phase relationship with spins that are in the rotating frame to tip said spins to a first position in said transverse plane, and varying means for causing the phase relationship between a subsequent RF pulse and spins that are in the rotating frame at the time the subsequent RF pulse is applied to be different than said certain phase relationship to tip said spins to a second position in said transverse plane removed from said first position by less than 180 degrees.

4,795,979

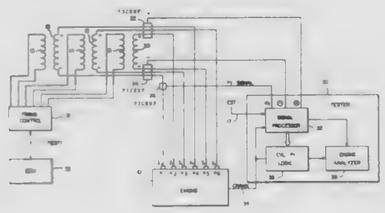
METHOD AND APPARATUS FOR DETERMINING CYLINDER #1 POWER FIRING EVENT IN WASTED SPARK IGNITION SYSTEMS

Keith A. Kreft, Arlington Heights; Michael Dikopf, Palatine, and Thomas D. Loewe, Wonder Lake, all of Ill., assignors to Sun Electric Corporation, Crystal Lake, Ill.

Filed Dec. 15, 1986, Ser. No. 941,630

Int. Cl.[4] F02P *17/00*

U.S. Cl. 324—379 **9 Claims**



1. A method of determining a #1 cylinder power firing event in an engine having a wasted spark ignition system wherein each cylinder is subjected to a power firing event and a wasted firing event and wherein an event of a firing of a #1 cylinder is accompanied by a #1 signal, the firing order of the engine is known and the polarity of each cylinder's spark voltage is known, comprising the steps of:

developing first and second groups of data, representing power firing events and wasted firing events based upon the firing order and polarity of cylinder spark voltages;

comparing said first and said second groups of data to determine which represents the power firing events; and

correlating said #1 signal with said power firing events to determine the #1 cylinder power firing event.

4,795,980

DEVICE FOR MONITORING SHORT CIRCUITS AND OVERLOADS IN ELECTRONIC PROXIMITY SWITCHES

Manfred Schmitt, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

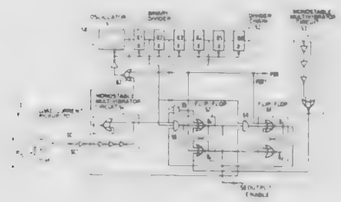
Filed Dec. 10, 1985, Ser. No. 807,357

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1984, 3446958

Int. Cl.[4] G01R *31/02*

U.S. Cl. 324—423 **12 Claims**

1. A device for monitoring short circuits and overloads in a switching element in a transmission line, comprising (a) means for measuring the current in the output circuit of the switching element (b) circuit means for providing a testing cycle for a current measurement carried out by said means for measuring the current with first and second delay times, the first delay time having a length chosen with respect to the time constant of the transmission line to be connected, and a time interval between the starting points of two successive delay times, which is substantially longer than the first delay time; and (c) means for controlling the current in the output circuit during a short circuit and an overload in response to the first and second delay times.



4,795,981

METHOD FOR MONITORING THE PERFORMANCE OF THE HEAD-DISK-INTERFACE AND DEVICE FOR PREVENTING DATA LOSSES DUE TO MAGNETIC HEAD-DISK-INTERFERENCES

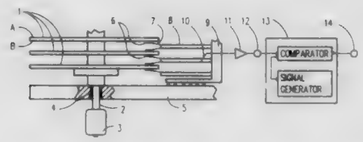
Friedrich Ertingshausen, Nieder-Olm, and Jens D. Mehrens, Ober-Olm, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1987, Ser. No. 33,384

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1986, 86104599

Int. Cl.[4] G01N *27/60*

U.S. Cl. 324—454 **16 Claims**



9. An apparatus for monitoring the performance of the interface between a magnetic head/slider combination and a magnetic disk in a magnetic disk storage system, in which a triboelectric current is generated due to rubbing contact between the slider and the disk surface, said apparatus comprising:

a magnetic head slider and means for electrically isolating said slider from the remainder of said magnetic disk storage system;

means for measuring the triboelectric current generated due to rubbing contact between said magnetic head slider and the surface of a magnetic disk;

means for comparing the measured triboelectric current with a preset triboelectric current condition; and

means for generating a saving signal in response to a signal from said means for comparing which indicates that the measured triboelectric current is outside the preset triboelectric current condition so that a data saving action can be initiated before data stored on said magnetic disk is irreversibly destroyed.

4,795,982

FAULT INDICATOR HAVING DELAYED TRIP CIRCUIT

Edmund O. Schweitzer, Jr., 2433 Center St., Northbrook, Ill. 60062

Filed Apr. 24, 1987, Ser. No. 42,282

Int. Cl.[4] G01R *31/02*

U.S. Cl. 324—508 **19 Claims**

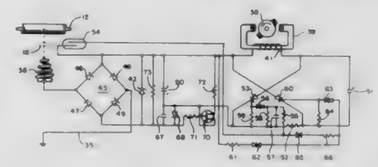
1. A fault indicator for indicating the occurrence of a fault current in a monitored electrical conductor of an alternating current power distribution system, comprising:

status indicating means having a reset-indicating state and a fault-indicating state;

trip circuit means for conditioning said status indicating means to said fault-indicating state in response to the occurrence of a fault current in the conductor;

reset circuit means periodically operable for a predetermined reset period for conditioning said status indicating means to said reset-indicating state, and inoperable for a predetermined recovery period following each such reset period; and

said trip circuit means rendering said reset circuit means initially operable upon occurrence of a fault, and conditioning said status indicating means to said fault-indicating state during said recovery period following a trip delay per greater than said predetermined reset period to preclude simultaneous operation of said trip and reset circuits.



4,795,983

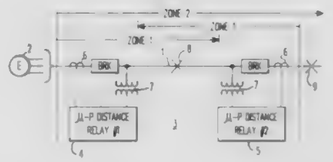
METHOD AND APPARATUS FOR IDENTIFYING A FAULTED PHASE

John M. Crockett, Hamilton, Canada, and Deborah K. Mort, Wilkins Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 7, 1988, Ser. No. 164,949

Int. Cl.[4] G01R *31/08;* **H02H** *3/34, 3/36*

U.S. Cl. 324—521 **13 Claims**



1. A method of identifying the type of fault in a three-phase electric power line comprising the steps of:

monitoring the power line currents,

generating phasor representations of said monitored currents,

continually retaining the most recent phasor representations prior to a fault as prefault current phasor representations,

detecting the presence of a fault, and

upon detection of a fault, generating resultant current phasor representations from said prefault current phasor representations and from postfault current phasor representations generated after detection of said fault,

comparing magnitudes of said resultant current phasor representations, and

identifying the type of fault as a function of the comparisons.

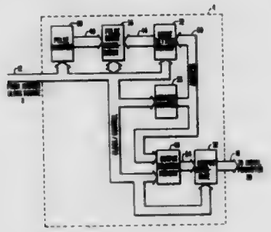
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4,795,984

MULTI-MARKER, MULTI-DESTINATION TIMING SIGNAL GENERATOR

James R. Jansson, San Jose, Calif., assignor to Schlumberger Systems & Services, Inc., Palo Alto, Calif.

Filed Nov. 19, 1986, Ser. No. 932,762
Int. Cl.[4] H03K *17/296*; H03M *7/00*
U.S. Cl. 328—75 19 Claims



1. An apparatus for generating a sequence of timing signals comprising:

counting means, connected to a source of clock pulses, for counting the pulses and for providing a pulse count value which is a sum of clock pulses counted;

storing means for storing a plurality of pulse count values each pulse count value corresponding to a sum of clock pulses to be counted by the counting means;

selecting means, connected to the storing means, for selecting a pulse count value in the storing means;

determining means, connected to the counting means, to the storing means, and to the selecting means, for supplying a match signal when the counting means has counted a number of pulses which is the same as the selected pulse count value;

generating means, connected to the determining means, for generating a first timing signal in response to the match signal; and

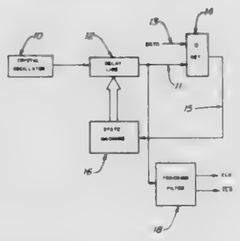
wherein the selecting means selects a different pulse count value in the storing means in response to the match signal.

4,795,985

DIGITAL PHASE LOCK LOOP

Samuel H. Gailbreath, Jr., Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 847,399, Apr. 1, 1986, abandoned. This application Dec. 23, 1987, Ser. No. 140,891
Int. Cl.[4] H03K *5/13*, *5/22*
U.S. Cl. 328—155 1 Claim



1. A digital phase-locked loop for providing an output signal which is phase-locked to an input signal wherein said input signal comprises a plurality of successive data bits having a nominal frequency, said phase-locked loop comprising:

input means for receiving said input signals;

signal generator means for generating a reference signal comprising a plurality of successive bits, said reference signal having a predetermined frequency;

a programmable delay line coupled to said signal generator for shifting the phase of said reference signal on a bit-by-bit basis with respect to the phase of said input signal to provide said output signal, said delay line divided into a plurality of equal and discrete time steps, said delay line programmed to delay a bit of said reference signal an integer number of said discrete time steps with respect to a corresponding bit of said input signal;

phase detector means coupled to said input means and to said programmable delay line for detecting a phase difference on a bit-by-bit basis between said input signal and said output signal and for generating a control signal indicative of whether a bit of said output signal is leading or lagging a corresponding bit of said input signal; and

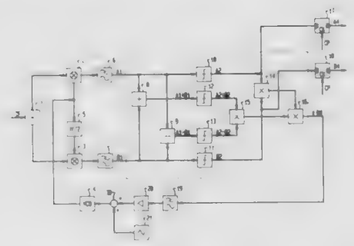
control means coupled to said programmable delay line and to said phase detector means responsive to said control signal incrementing or decrementing said integer number of discrete time steps by one of said discrete time steps for each said phase comparison between a bit of said output signal and a corresponding bit of said input signal to shift the phase of a successive bit of said reference signal by one said discrete time step with respect to said bit of said output signal thereby reducing the phase difference between a successive bit of said output signal and a corresponding successive bit of said input signal.

4,795,986

METHOD AND CIRCUIT FOR CARRIER SYNCHRONISM RECOVERY IN PSK COHERENT DEMODULATORS

Ettore Cerosi, Bergamo, and Michelangelo Lo Carto, Milan, both of Italy, assignors to GTE Telecommunicazioni, S.p.A., Milan, Italy

Filed Nov. 16, 1987, Ser. No. 121,562
Claims priority, application Italy, Dec. 5, 1986, 22584 A/86
Int. Cl.[4] H03D *3/00*
U.S. Cl. 329—124 11 Claims



1. A method for acquisition of carrier synchronism in coherent demodulators which receive at their input a modulated signal which is divided into two signals which are multiplied by two signals in quadrature respectively, the resulting signals being then added together and subtracted from each other to obtain a plurality of multiplied signals, including the steps of:

sampling at least a first (A2) and a second (B2) signal among said plurality of multiplied signals with a first frequency (fc); and

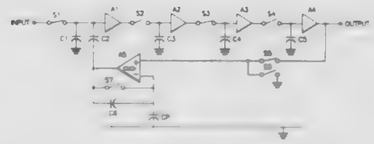
sampline at least a third (A2+B2) and a fourth signal (A2−B2) among said plurality of multiplied signals with a second frequency (2fc) which is an even multiple of the first frequency (fc), wherein said second sampling frequency (2fc) is double said first sampling frequency, (fc).

4,795,987

PARASITIC INSENSITIVE SWITCHED CAPACITOR FILTER

Michael J. Gay, Coppet, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1987, Ser. No. 69,921
Claims priority, application United Kingdom, Sep. 10, 1986, 8621729
Int. Cl.[4] H03F *1/36*
U.S. Cl. 330—107 7 Claims



1. A switched capacitor filter including feedback means provided in a feedback path thereof, said switched capacitor filter having a plurality of series connected single input amplifiers incluing at least a first amplifier and a final amplifier, said feedback path coupled between an output of the final amplifier and an input of the first amplifier, said input of the first amplifier having both a first capacitor and a parasitic capacitance coupled between the input and a reference voltage terminal which provides an error in filter characteristics of the filter, and having a feedback capacitor coupled between the input and the feedback means, said feedback means further comprising:

an amplifier coupled between the output of the final amplifier and the input of the first amplifier, said amplifier having a compensating gain to cancel error resulting from the parasitic capacitance coupled to the input of the first amplifier.

4,795,988

LOW DISTORTION OSCILLATOR

William J. Britz, 21032 107th Ave. SE., Snohomish, Wash. 98290

Filed Nov. 18, 1986, Ser. No. 932,791
Int. Cl.[4] H03B *5/20*
U.S. Cl. 331—135 19 Claims



1. In an amplitude regulated oscillator circuit generating an output signal at a predetermined fundamental frequency, the improvement comprising:

first means for synthesizing a DC voltage from N phases of the output signal of the oscillator circuit, where N is an integer, and

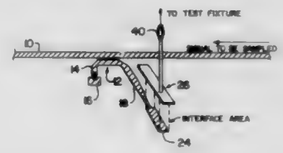
second means for substantially eliminating from the DC voltage synthesized from the output signal of the oscillator harmonic distortion at frequencies below a 2Nth harmonic of the fundamental frequency of the oscillator circuit.

4,795,989

MMW MICROSTRIP COUPLER HAVING MOVABLE TEST PROBE

Rebecca A. Hart, Plymouth, and Michael J. Gawronski, Minneapolis, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Feb. 11, 1988, Ser. No. 154,748
Int. Cl.[4] H01P *5/19*; G01R *27/04*
U.S. Cl. 333—116 7 Claims



1. A microwave and millimeter wave hybrid or monolithic microstrip test probe assembly for providing a noninvasive radio frequency test point in a microstrip circuit comprising:

microstrip coupler means adjacent a microstrip line in said circuit for sampling a small amount of microwave energy propagating along said microstrip line; and

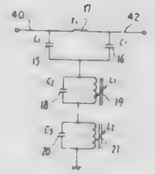
a stripline circuit connected to said microstrip coupler means, said stripline circuit including a pad area and a probe moveable to overlay said pad area, said probe forming a ground plane with respect to said pad area, and a coaxial line having an outer conductor electrically connected to said ground plane and an inner conductor projecting through said ground plane to said pad area.

4,795,990

TRAP CIRCUIT WITH TWO VARIABLE INDUCTORS

Takayoshi Ishikawa, and Yasuhiko Yoshida, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 17, 1986, Ser. No. 856,784
Claims priority, application Japan, Apr. 18, 1985, 60-82803; Dec. 10, 1985, 60-277127
Int. Cl.[4] H03H *7/00*
U.S. Cl. 333—176 9 Claims



1. A trap circuit comprising:

(a) a delta connection circuit having a resistor and first and second capacitors connected to said resistor, said delta connection circuit having an input terminal at a first junction, between said resistor and said first capacitor, and an output terminal at a second junction, between said resistor and said second capacitor.

(b) a first LC tank circuit having a first inductor and a third capacitor, one junction between said first inductor and said third capacitor being grounded, and

(c) a second LC tank circuit having a second inductor and a fourth capacitor, said second LC tank circuit being interposed in a series connection between a junction of said first and second capacitors of said delta connection circuit

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and the other junction between said first inductor and said third capacitor of said first LC tank circuit,

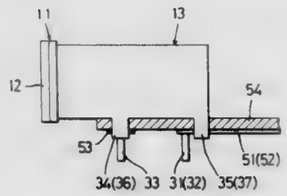
said series connection comprising a connection of a first junction of said second LC tank circuit to said junction of said delta connection circuit and connection of a second junction of said second LC tank circuit to said other junction of said first LC tank circuit.

4,795,991

INLET TYPE NOISE FILTER DIRECTLY MOUNTED TO A PC BOARD

Yasuaki Saito, and Tooru Harada, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jan. 12, 1987, Ser. No. 2,483
Claims priority, application Japan, Jan. 13, 1986, 61-3692[U]
Int. Cl.⁴ H05K *7/10*; **H03H** *7/00*; **H01R** *4/54*
U.S. Cl. 333—181 **4 Claims**



1. An inlet type noise filter device comprising:

a casing having an open end and a surface extending perpendicular to said open end, said casing comprising an insulating resin portion and a metal portion extending over said insulating resin portion and in which said insulating resin portion is disposed;

an inlet socket disposed over the open end of said casing and including a bayonet portion;

a ground terminal and output terminals projecting from and extending perpendicular to said surface of said casing;

a filter circuit means for filtering noise, said circuit disposed within said casing and operatively electrically connected to said socket and said terminals;

a printed substrate on which said casing is mounted, said ground terminals and said output terminal secured directly to said printed substrate; and

the metal portion of said casing including retaining portions extending in the same direction as do said terminals, said retaining portions engaging said printed substrate for securing said casing in which the filter circuit is disposed to said printed substrate.

4,795,992

MOUNT FOR DIELECTRIC COAXIAL RESONATORS

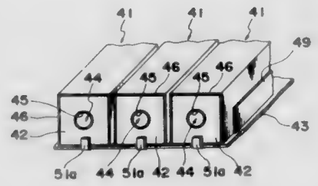
Koji Saito; Tadakiro Yorita, and Hiroshi Okawa, all of Kanazawa, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 12, 1986, Ser. No. 940,975
Claims priority, application Japan, Dec. 16, 1985, 60-283954
Int. Cl.⁴ H01P *1/205, 7/04*
U.S. Cl. 333—206 **11 Claims**

1. An assembly which comprises, in combination:

a plurality of dielectric coaxial reaonators each comprising a generally elongated, dielectric body having a polygonal cross-section and a hollow space coaxially defined therein so as to extend through the length of the dielectric body, and also having inner and outer conductors formed respectively on inner and outer peripheral surfaces thereof; and

a mount for the support thereon of the coaxial resonators substantially parallel to one another, said mount comprising a conductive main plate having a plurality of upstanding conductive side plates, each of which projects from the main plate, parallel to said length of said resonators, and engages with a respective lengthwise side of one coaxial resonator, and restricts the position of said respective coaxial resonator relative to the mount by the locations of the corresponding side plates;



wherein the side plates are integral with the main plate and are spaced from each other an equal distance sufficient to accommodate each respective coaxial resonator in between its corresponding neighboring side plates; and

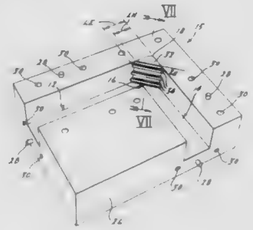
wherein each of the side plates presents a generally corrugated contact surface for said engagement with said respective resonator.

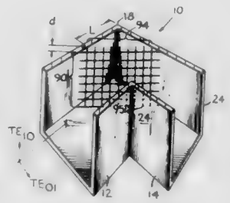
4,795,993

MATCHED DUAL MODE WAVEGUIDE CORNER

Pyong K. Park, Canoga Park, and Robert L. Eisenhart, Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 26, 1987, Ser. No. 30,767
Int. Cl.⁴ H01P *1/02*
U.S. Cl. 333—249 **19 Claims**





11. A matched dual mode waveguide comprising:

a waveguide having a bend for supporting at least two orthogonal modes of electromagnetic energy propagation and for defining a common energy propagation path therefor;

a reflecting means positioned in said waveguide proximate said bend for redirecting said common energy propagation path;

said reflecting means defining a backplane and having at least one ridge means extending outwardly from said backplane; and

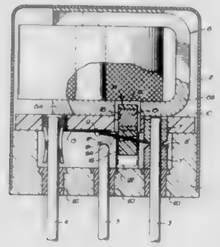
said backplane providing a first reflecting surface for one of said orthogaonl modes and said ridge means providing a second reflecting surface for another of said orthogonal modes.

4,795,994

ELECTROMECHANICAL DC-RF RELAY

Jerzy Hoffman, Marina Del Rey, Calif., assignor to F L Industries Inc., San Jose, Calif.

Filed Jun. 4, 1987, Ser. No. 58,168
Int. Cl.⁴ H01H *51/22*
U.S. Cl. 335—82 **13 Claims**



1. An electromagnetic relay comprising:

(a) an electromagnet;

(b) an input terminal;

(c) at least one output terminal;

(d) a slider including a permanent magnet, the slider being normally in a first position and being positioned relative to the electromagnet so that the slider move linearly to a second position when the electromagnet is activated; and

(e) a contact reed electrically coupled to the input terminal and coupled to the slider so as to move when the slider moves, such that the contact reed is in electrical contact with at least one output terminal when the slider is in one of its first or second positions.

4,795,995

METHOD AND APPARATUS FOR PRODUCING ELECTROMAGNETIC SURVEILLANCE FIELDS

Larry Eccleston; James C. Cook, II, both of Marshall, and Earl R. Goodrich, II, East Lansing, all of Mich., assignors to Progressive Dynamics, Inc., Marshall, Mich.

Division of Ser. No. 651,576, Sep. 17, 1984, Pat. No. 4,634,975.
This application Sep. 22, 1986, Ser. No. 909,560
Int. Cl.⁴ H01H *47/00*; **H01F** *27/30*; **G08B** *13/24*
U.S. Cl. 336—199 **17 Claims**



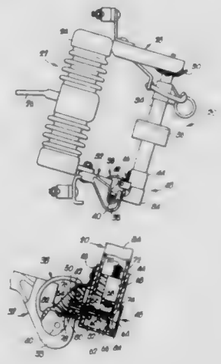
1. A method of producing an alternating electromagnetic surveillance field for a detection system, comprising the steps: using both an upper and a lower coil on opposite sides of a passage to generate different components of a composite alternating electromagnetic surveillance field within such passage; selectively energizing particular combinations of said upper and lower coils differently from others thereof by applying electrical drive excitation signals of different characteristics to said selected combinations of said coils and sequentially changing characteristics of the said electrical drive excitation signals applied to said selected combinations of coils, including the step of changing the characteristics of electrical drive signals applied to at least one of said upper coils with respect to the lower coil on the same side of said passage, to thereby sequentially vary the direction of the resultant flux vector of the electromagnetic field within said passage.

4,795,996

ELECTRONIC SECTIONALIZER WITH RESETTABLE ACTUATOR

Robert A. Brown, and Daren A. Clark, both of Centralia, Mo., assignors to A.B. Chance Company, Centralia, Mo.

Filed Dec. 4, 1987, Ser. No. 128,688
Int. Cl.⁴ H01H *71/10, 71/20*
U.S. Cl. 337—169 **12 Claims**



1. A sectionalizer for use with upper and lower mounting structure comprising:

an elongated sectionalizer element having an upper end region for releasable contact with upper mounting structure;

a member for pivotal engagement with lo ver mounting structure;

means pivotally coupling said member to said element for swinging movement of said member relative to said element;

first latch means releasably retaining said member in stationary disposition relative to said element;

means for sensing current conditions through said element; and

a resettable actuator assembly including an elongated plunger movable in a substantially longitudinal direction between a loaded position and a released position,

means biasing said plunger toward said released position,

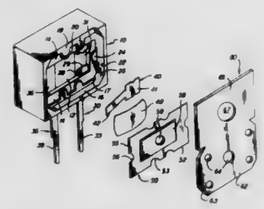
second latch means normally retaining said plunger in said loaded position, and

means coupled to said sensing means for releasing said second latch means and for thereby releasing said plunger from said loaded position,

said plunger during movement toward said released position being operable to exert a force on said member of sufficient strength to overcome said first latch means and release said member for swinging movement relative to said element.

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4,795,997
THERMOSTAT FOR BOARD MOUNTING
David F. Fisher, Martinsburg, W. Va., and David A. Sprankle, Hagerstown, Md., assignors to North American Philips Corporation, New York, N.Y.
Filed Nov. 2, 1987, Ser. No. 116,602
Int. Cl.[4] H01H *37/04*
U.S. Cl. 337—380 6 Claims

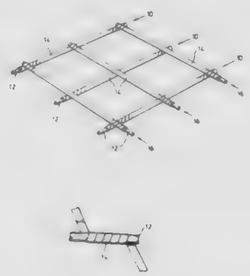


1. A thermostatic switch for mounting to a circuit board, comprising:
- a molded dielectric housing of boxlike shape having a cavity bounded by a floor, opposed parallel endwalls, and opposed parallel sidewalls,
- first and second terminals having inner parts disposed inside said housing in said floor toward respective endwalls, the inner part of said second terminal having a fixed contact thereon, each said terminal having an external mounting pin, said inner parts connecting to said pins through one of said sidewalls,
- an elongate contact arm having a first end fixed to the inner part of said first terminal and an opposed second end biased away from the inner part of said second terminal but movable theretoward, said second end having a movable contact fixed thereto,
- a stamped metal fulcrum plate between said sidewalls and said endwalls in said cavity, said plate having a substantially central dimple extending toward said floor, said dimple serving as a fulcrum point,
- an elongate bistable bimetallic element arranged between said fulcrum plate and said contact arm so that in one stable position the movable contact is against said fixed contact and in the other stable position the movable contact is displaced from said fixed contact,
- a metal mounting plate covering said cavity opposite said floor, said plate having a mounting bracket extending beyond the sidewall opposite said one sidewall through which said pins extend and
- a layer of epoxy between said fulcrum plate and said cover plate, said epoxy reinforcing said fulcrum plate and retaining said cover plate to said housing

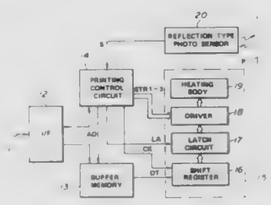
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4,795,998
SENSOR ARRAY
John H. Dunbar, Swindon, and Edward B. Atkinson, Suffolk, both of England, assignors to Raychem Limited, Swindon, United Kingdom
Continuation of Ser. No. 730,396, May 3, 1985, abandoned. This application Dec. 3, 1986, Ser. No. 938,346
Claims priority, application United Kingdom, May 4, 1984, 8411480
Int. Cl.[4] G01L *1/22*
U.S. Cl. 338—5 26 Claims

1. A sensor matrix comprising first and second sets of conductors, the first set crossing over the second set to form a matrix of one or more crossover points, and being separated from the second set at least at one crossover point by an electrical transducer material, at least one of the sets being incorporated in a fabric.

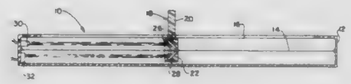


4,795,999
THERMAL TRANSFER TYPE PRINTER
Fumio Takahashi, and Hiromitsu Ogita, both of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Filed Jul. 6, 1987, Ser. No. 69,822
Claims priority, application Japan, Jul. 18, 1986, 61-169405
Int. Cl.[4] H01C *10/00*
U.S. Cl. 346—76 PH 5 Claims



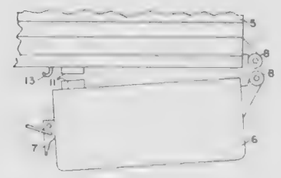
1. A thermal transfer type printer including at least a thermal head, a platen roller, a printing paper and a transfer film on which thermal melting ink is painted, one of at least two kinds of printing papers being used for printing, said thermal head including a plurality of heating elements therein, said printing paper and said transfer film being lapped and pressurized between said thermal head and said platen roller, said heating elements within said thermal head being heated in accordance with printing data so that said thermal melting ink is melted and transferred to said printing paper in accordance with an optimum pattern corresponding to said printing data so as to obtain a printed paper, said thermal transfer type printer comprising:
- (a) means for detecting the kind of printing paper being used, the printing paper detecting means including means for emitting light onto the printing paper, the light being reflected by the printing paper, and means for sensing the light reflected by the printing paper, the printing paper detecting means outputting a detection signal which varies in accordance with the amount of light reflected by the paper and thereby being indicative of the kind of said printing paper; and
- (b) control means for changing heating values of said heating elements based on said detection signal when said heating elements are to be heated.

4,796,000
OPTICAL POTENTIOMETER
John T. Mondl, Akron, Ohio, assignor to David N. Friedland, Akron, Ohio
Filed Apr. 28, 1986, Ser. No. 856,462
Int. Cl.[4] H01L *31/08;* H01C *10/10*
U.S. Cl. 338—15 30 Claims



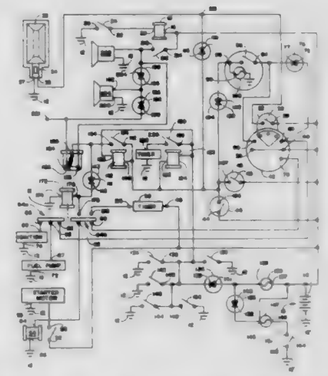
1. An optical potentiometer, comprising:
- a housing;
- a light source within said housing;
- a light sensor within said housing; and
- selectively moveable reflecting means within said housing for receiving light from said light source and reflecting a quantom of said light to said light sensor as a function of the position of said reflecting means within said housing, said light sensor providing an ouput signal corresponding to said quantom of light sensed thereby, wherein said reflecting means comprises a slide having a flat surface, said slide moveable longitudinally within said housing, said flat surface being laterally disposed within said housing.

4,796,001
REPLACEMENT BALLAST STRUCTURES IN ROADWAY AND/OR AREA LUMINAIRES
Eugene J. Gostyla, Parsippany, N.J., assignor to North American Philips Corp., New York, N.Y.
Continuation of Ser. No. 819,432, Jan. 16, 1986, abandoned. This application Jun. 2, 1987, Ser. No. 57,725
Int. Cl.[4] H01C *7/10;* F21P *1/02*
U.S. Cl. 338—20 5 Claims



1. In a low pressure sodium roadway or area luminaire comprising a luminaire housing supported by a lamp support and a ballast housing, said luminaire having an improved ballast structure, the improvement comprising
- a structural ballast housing pod containing a luminaire ballast, ballast capacitors, and self-aligned connector means including a lever for electrically connecting said structural ballast pod to said lamp support;
- releasable hinge means for attaching said structural ballast pod to said lamp support; and
- latchable connector means for connecting said structural ballast pod to said lamp support,
- wherein upon release of said latchable connector means and said releasable hinge means, said structural ballast pod is completely removable without tools from said lamp support and said structural ballast pod can be replaced by another structural ballast pod.

4,796,002
ALARM SYSTEM FOR AUTOMOTIVE VEHICLES
William A. Heidman, Jr., 4604 Robbins, San Diego, Calif. 92122
Continuation-in-part of Ser. No. 452,879, Dec. 27, 1982, and a continuation-in-part of Ser. No. 501,382, Jun. 6, 1983, abandoned. This application Sep. 15, 1986, Ser. No. 907,414
Int. Cl.[4] B60R *25/04, 25/10*
U.S. Cl. 340—64 19 Claims



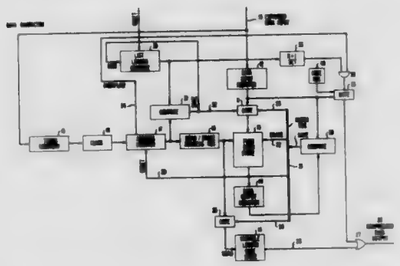
1. An alarm system for an automotive vehicle having first and second horns with different audible output sounds, a starter motor solenoid, an ignition circuit, an electric fuel pump and a source of electrical power comprising:
- a first activating switch means connected to said source of electrical power and switchable between at least on and off positions;
- an alarm activating means interconnected to said first activating means;
- an alternating flasher element having a first and second output with its input connected to said alarm system activating means, when activated said flasher element alternatingly connects said input between said first and second outputs;
- said first horn being connected to said first output,
- a timer means having a pre-determined running time connected between on and off positions connected to said alarm system activating means and said alternating flasher element; and
- a plurality of parallel connected switching means each switchable between on and off positions connected to said alarm system activating means, when said first activating switch means is in its on position and at least one of said plurality of parallel connected switching means activates said timer means, alternating the flasher element output between the first and second horns during the running of said timer means, whereby when said at least one or said plurality of parallel connected switching means is returned to an off position or disconnected the alternate sounding of said horns will continue to sound during the duration of the operation of said timing means.

4,796,003
DATA COMPACTION
Jon L. Bentley, New Providence; Daniel D. K. Sleator, Summit, and Robert E. Tarjan, Oldwick, all of N.J., assignors to American Telephone and Telegraph Company, Murray Hill, N.J.
Filed Jun. 28, 1984, Ser. No. 625,630
Int. Cl.[4] G06F *3/00;* H04N *1/00*
U.S. Cl. 341—95 12 Claims

1. A system for compacting a sequence of multicharacter data words, comprising:
- input means for receiving said sequence of words,

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means for outputting a compacted sequence of said words, a single fixed length push-down storage means,
means for determining in order if each word of the sequence is presently stored in the push-down storage means,
means responsive to the determining means for generating a location code corresponding to the present address, if any, of a word in the push-down storage means,



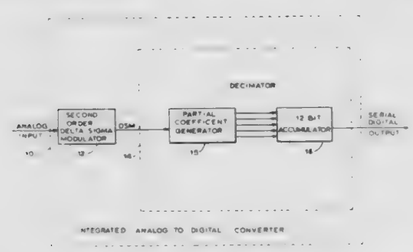
means for placing each word of said sequence nearer to the top of said push-down storage means than its present location, if any, in the push-down storage means, and
means for substituting for a word in the outputted character sequence a said generated location code, wherein the location code contains less characters on average than the corresponding data word.

4,796,004

INTEGRATED ANALOG-TO-DIGITAL CONVERTER

David Rich, Woodmere; Peter Staley, Kings Park, both of N.Y., and David Coyne, Fife, Scotland, assignors to General Instrument Corp., New York, N.Y.

Filed Feb. 14, 1986, Ser. No. 829,624
Int. Cl.[4] H03M *3/02*
U.S. Cl. 341—143 **11 Claims**



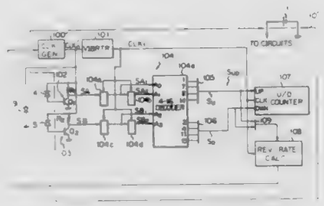
1. An integrated analog-to-digital converter comprisingg a second order delta sigma modulator for generating a single bit per time output signal and a decimator for reducing the sampling rate of said modular output signal by a rational number and generating a pulse code modulated word, said modulated comprising first and second summation means, each having first and second inputs and an output, first and second filter means, bistable means, and inverter means, said first input of said first summation means being operably connected to receive the analog input, the input of said first filter means being operably connected to the output of said first summation means, said fist input of said second summation means being operably connected to the output of said first filter means, the input of said second filter means being operably connected to the output of said second summation means, the input of said bistable means being operably connected to the output of said second summation means, the input of said bistable means being operably connected to the output of said second filter means, said inverter means being operably connected between the output of said bistable means and said second input of said second summation means, said output of said bistable means being operably connected to said second input of said first summation means and to form the modulator output, each of said filter means comprising CMOS push/pull amplification means.

4,796,005

CIRCUIT DEVICE FOR A POSITIONAL ENCODER

Hiroshi Ishida, and Mitsuyuki Taniguchi, both of Tokyo, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Division of Ser. No. 051,211, May 12, 1987. This application Aug. 5, 1987, Ser. No. 81,963
Claims priority, application Japan, Apr. 14, 1984, 59-73872; Aug. 17, 1984, 59-170489
Int. Cl.[4] H03M *1/22*
U.S. Cl. 341—11 **22 Claims**



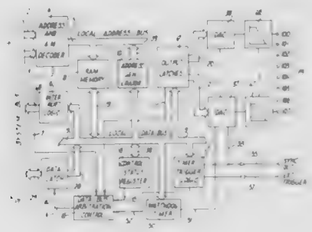
1. A circuit device for use with a positional encoder of an incremental type having a movable means mechanically connected to a movable machine for providing an incremental signal source in response to the movement of said movable machine, said circuit device comprising:
a signal outputting means for outputting at least two signals each having a burst of plural pulses wherein the time duration of each burst has a low duty cycle with respect to the time duration of the period from the beginning of each burst to the beginning of a next burst, and in response to the movement of said movable means;
circuit means including,
(a) a timing pulse generating means for generating a timing pulse having a predetermined frequency and pulse width,
(b) a signal-change detecting means for detecting a change of said signals from said signal outputting means and for outputting a first (up) or second (down) pulse signal in response to said change of signals,
(c) a counting means for counting up or down a count value in response to said first and second pulse signals from the signal change detecting means, said signal outputting means and said circuit means being operable in response to said timing pulse from said timing pulse generating means, and said signal outputting means being supplied with power from said timing pulse and outputting said signals, and
(d) timing-pulse control means for receiving the signal from said signal-change detecting means and calculating a revolution rate to be output as a timing-pulse frequency control signal in accordance with a change of the received pulse signal with time, said timing-pulse generating means varying a frequency of the timing pulse in response to the timing-pulse frequency control signal; and
battery-type power supply means for supplying power to said circuit means.

4,796,006

ANALOG OUTPUT SYSTEM COMPATIBLE WITH DIGITAL SYSTEM BUS

Kenneth W. Murray, Knightsridge, and Joseph Parvis, Deans, both of Scotland, assignors to Burr-Brown Limited, Livingston, Scotland

Filed Nov. 20, 1986, Ser. No. 932,678
Claims priority, application United Kingdom, Aug. 19, 1986, 8620122
Int. Cl.[4] H03M *1/66*
U.S. Cl. 341—144 **9 Claims**



1. A digital-to-analog conversion system coupled to a digital system bus for converting at least one digital signal input via said bus into an analog signal of proportionate value, said system comprising:
(a) random access memory means for temporarily storing said digital signal;
(b) interface means for coupling said random access memory to said bus;
(c) at least one digital-to-analog conversion circuit coupled to said random access memory means for converting said digital signal into said analog signal;
(d) control register means coupled to said bus for storing a control word received from said bus;
(e) a start address register for indicating the starting address in said random access memory of digital signals to be converted, said start address register being coupled to said control register, whereby the informational content said control word determines said starting address; and
(f) a stop address register for indicating the last address in said random access memory of digital signals to be converted, said stop address register being coupled to said control register, whereby the informational content of said control word determines said last address.

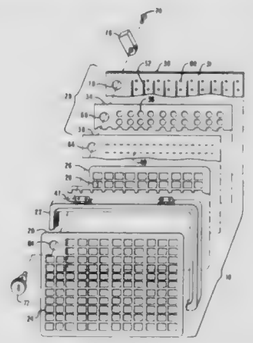
4,796,007

MICRO-MOTION KEYBOARD

George Heys, Jr., Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 5, 1987, Ser. No. 622
Int. Cl.[4] H04L *1/00*; G06F *3/02*
U.S. Cl. 341—31 **6 Claims**

1. A switch-matrix keyboard for use in a data terminal device comprising:
a printed circuit board having a first surface and a plurality of first apertures extending through the circuit board to a second surface of the circuit board, each aperture containing an electrically conductive material;
a transparent switch-matrix assembly secured to said first surface;
keyboard cover means for supporting said switch-matrix assembly and including a plurality of actuating portions adapted for movement to a position engaging a predetermined portion of said switch-matrix assembly enabling said switch-matrix assembly to generate electrical signals;
a plurality of electrical circuit elements mounted to the second surface of said circuit board adjacent said plurality of first apertures whereby a portion of the switch-matrix assembly engages the conductive material in each aperture enabling the circuit element to receive electrical signals from the switch-matrix assembly in response to the movement of an actuating portion of the cover means;
a plurality of light-emitting members mounted in said printed circuit board, said printed circuit board further including a plurality of second apertures extending through the circuit board, each of said light-emitting members being mounted in one of said second apertures for illuminating an associated actuating portion of said cover means when operated; and
a rotatably mounted switch means mounted in said printed circuit board, said switch-matrix assembly and said cover means for generating control signals when rotated to one of a number of predetermined positions thereby enabling the keyboard for operation, said switch means including a



key operated rotatably mounted support member extending through said printed circuit board and an arm member mounted to one end of said rotatably mounted support member extending in a direction parallel to the second surface of said printed circuit board, said keyboard further including a plurality of energy transmitter-receiver members mounted to said second surface of the printed circuit board adjacent said arm member whereby said arm member, when positioned adjacent to one of said transmitter-receiver members, reflects the energy outputted by said one transmitter-receiver member back towards the transmitter-receiver member enabling the transmitter-receiver member to sense the position of the arm member and to generate said control signals in response to sensing of the position of the arm member.

4,796,008

MODE SETTING DEVICE IN POCKET OR PORTABLE COMPUTERS WITH DATA TERMINAL FUNCTION

Isamu Haneda, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 535,821, Sep. 26, 1983, abandoned. This application Sep. 29, 1986, Ser. No. 912,695
Claims priority, application Japan, Sep. 30, 1982, 57-172792
Int. Cl.[4] G06F *3/02*; G09G *3/02*
U.S. Cl. 340—711 **1 Claim**



1. A data termainal interface device that can be used in a

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external connection with a portable computer that has a display with a small capacity for displaying characters in only a single horizontal line and a keyboard, the portable computer being usable as a data terminal, comprising:

means for causing the display of said computer to display data terminal control prompts so as to guide the operator in the use of the computer, whereby each prompt is arranged along said single horizontal line so that it is vertically aligned with a specific one of a plurality of function keys of the computer keyboard, said keys being disposed on a line parallel to the single horizontal line of the display and displaying said prompts on the display in accordance with a plurality of general formats whereby each format contains a plurality of specific mode setting capabilities of the computer;

means for stepping the display from one of said general formats to another of said general formats without activating one of the keys that correspond to the display prompts; and

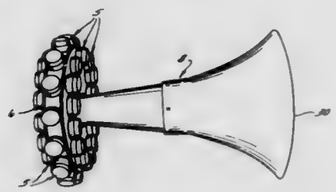
means for stepping the display through the available specific modes within any selected one of said general formats by actuating a key which is vertically aligned with a prompt associated with the specific modes.

4,796,009

ELECTRONIC WARNING APPARATUS

James E. Biersach, Mequon, Wis., assignor to Alerting Communicators of America, Mequon, Wis.

Filed Mar. 9, 1987, Ser. No. 23,678
Int. Cl.[4] G10K *11/02*
U.S. Cl. 340—388 **8 Claims**



1. An electronic alerting and warning apparatus of the type having a plurality of substantially identical drivers, each comprising a diaphragm, means for imparting audio frequency vibrations to the diaphragm, and housing means cooperating with the diaphragm to define at a front side thereof an acoustic impedance chamber that has a restricted driver port, said apparatus being characterized by:

A. rigid means defining a substantially cylindrical resonance chamber that has a peripheral wall with an interior surface concentric to an axis and has axially opposite end walls, said resonance chamber further having

(1) an inside diameter equal to a whole number multiple of one-quarter of the wavelength of a sound wave of a predetermined frequency,

(2) an inside axial-depth which is not substantially greater than the diameter of said driver port,

(3) a plurality of input ports, one for each of said drivers, spaced at substantially regular intervals around its peripheral portion, and

(4) output port means defined by at least one aperture in at least one of said end walls, said output port means

(a) being near said axis and substantially symmetrical to the same and

(b) having a total area which is between about one-half and two times the sum of the areas of the driver ports of said drivers; and

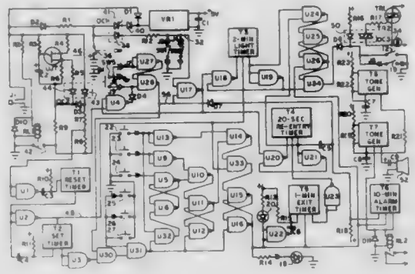
B. each said driver being secured to said rigid means with its driver port in register with its input port in said resonance chamber.

4,796,010

INTRUSION ALARM AND AUTOMATIC ILLUMINATION SYSTEM

Robert T. Bland, 919 Arbor Ct., Wheaton, Ill. 60187, and Al Stigvila, 266 Belden Ave., Glendale Heights, Ill. 60139

Filed Jul. 28, 1986, Ser. No. 890,025
Int. Cl.[4] G08B *13/08*
U.S. Cl. 340—541 **9 Claims**



1. An intrusion alarm system for detecting intrusion of an area via an entranceway comprising in combination

control circuit means adapted to be powered from a source of D.C. voltage,

first switch means located remotely from said control circuit means,

coupling means connecting said source of D.C. voltage and said first switch means to said control circuit means,

electric light means for illuminating said entranceway,

second switch means for energizing said electric light means independently of said first switch means,

alarm means included in said control circuit for energizing said electric light means and for emitting an audible alarm in response to the actuation of said first switch means,

a battery included in said control circuit means,

means for charging said battery from said source of D.C. voltage,

manual switch means for arming and disarming said alarm means to emit said audible alarm, and

means responsive to a loss of D.C. voltage from said source while said source is coupled to said control circuit means for powering said control circuit means from said battery and for arming said alarm means when said alarm means was disarmed by said manual switch means.

4,796,011

GATE OPERATOR WITH PERSISTANT, AUDIBLE WARNING SIGNAL

Rodger Lemirande, Riverview, and James S. Amtmann, Farmington Hills, both of Mich., assignors to Stanley Automatic Openers, Detroit, Mich.

Filed Dec. 8, 1986, Ser. No. 939,096
Int. Cl.[4] G05B *5/00*
U.S. Cl. 340—545 **8 Claims**

1. For use in combination with a fence gate of the type which includes a motive power source for selectively translating the gate parallel to an adjacent section of stationary fence between opened and closed limits, respectively, an operator comprising:

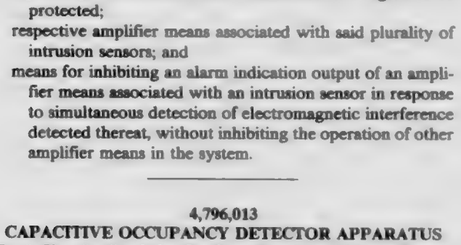
means for producing normally short term commands for translation of the gate;

means responsive to receipt of said commands for producing persistant activation signals;

audible sounder means;

means for applying said activation signals to said sounder means to activate same;

means for applying said activation signals to activate said motive power source a predetermined time delay after application of said activation signals to said sounder means to produce translation of said gate; and



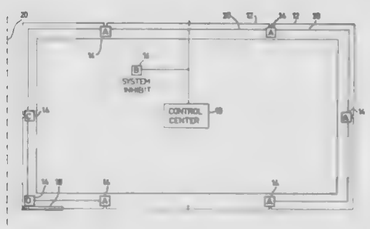
means for terminating said activation signals upon said gate reaching a limit of travel.

4,796,012

PERIMETER SURVEILLANCE SYSTEM WITH SECTIONAL INHIBITION

Mordechai Schechter, Rehovot, and Moshe Barkay, Rishon LeZion, both of Israel, assignors to LEV Advanced Detection Systems Ltd., Rehovot, Israel

Filed Mar. 27, 1987, Ser. No. 31,485
Claims priority, application Israel, Mar. 31, 1986, 78355
Int. Cl.[4] G08B *13/22*
U.S. Cl. 340—551 **7 Claims**



1. An improved perimeter surveillance system comprising:

a plurality of intrusion sensors distributed in a region to be protected;

respective amplifier means associated with said plurality of intrusion sensors; and

means for inhibiting an alarm indication output of an amplifier means associated with an intrusion sensor in response to simultaneous detection of electromagnetic interference detected thereat, without inhibiting the operation of other amplifier means in the system.

4,796,013

CAPACITIVE OCCUPANCY DETECTOR APPARATUS

Tomio Yasuda, Kasukabe; Jun Sato, Ibaraki, and Masao Ohashi, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 15, 1986, Ser. No. 919,272
Claims priority, application Japan, Oct. 18, 1985, 60-232371; Dec. 13, 1985, 60-280300; Mar. 27, 1986, 61-68960
Int. Cl.[4] G08B *21/00, 13/26*
U.S. Cl. 340—562 **12 Claims**

1. A personnel detector comprising

personnel containment means

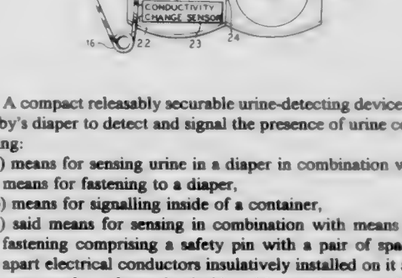
first and second electrodes insulated from each other and arranged such that at least part of a person present in said personnel containment means is disposed therebetween;

capacitance detecting means for detecting a capacitance between the first and the second electrodes and providing a representative electrical signal;

processing means including storage means for storing the electrical signal;

storage update means for causing the electrical signal stored in the storage means to be updated at given time intervals;

comparison means for producing an electrical signal representing the arrival of a person whenever a difference



between the electrical signal developed by the capacitance detecting means and the signal stored by the storage means exceeds a first threshold value; and

means for setting a second threshold value based on the capacitance detected during the presence of a person and determining the departure of a person when the capacitance detected by the detecting means decreases below said second threshold value;

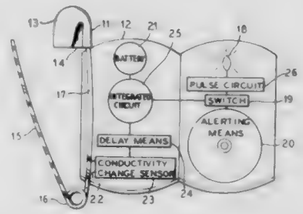
wherein said capacitance detecting means includes an oscillator means which produces a signal of a frequency which decreases with an increasing capacitance and a frequency/voltage converter.

4,796,014

DEVICE FOR DETECTING URINE IN DIAPERS

Jack T. Chia, 1247 West Wellington Ave., Chicago, Ill. 60657-4227

Filed Mar. 24, 1987, Ser. No. 29,700
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—573 **5 Claims**



1. A compact releasably securable urine-detecting device for a baby's diaper to detect and signal the presence of urine comprising:

(a) means for sensing urine in a diaper in combination with means for fastening to a diaper,

(b) means for signalling inside of a container,

(c) said means for sensing in combination with means for fastening comprising a safety pin with a pair of spaced apart electrical conductors insulatively installed on it and connected to electrodes inside said container, to which

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said safety pin is secured and with which said safety pin is used to engage a diaper,

(d) said container containing at least one battery, a pair of electrodes, a conductivity change sensor, a signal-producing integrated circuit, an alerting means and means for coupling them,

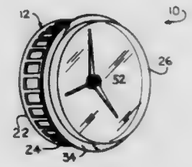
(e) said safety pin being secured to said container at such an angle that not only does it allow the safety pin to open and close freely but it also enables the container to lie flat on a diaper to which the safety pin is fastened, whereby, in use, as the safety pin with electrical conductors is inserted and threaded through the front lower center of a diaper and when the conductors are bridged by urine, an electrical circuit is completed which produces an alerting signal for diaper-change.

4,796,015

COMBINATION ELECTRIC CLOCK AND SMOKE DETECTOR

Woodrow W. Admire, Jr., 3717 Garner, Kansas City, Mo. 64124

Filed Mar. 23, 1987, Ser. No. 29,246
Int. Cl.[4] G08B 23/00
U.S. Cl. 340—693 3 Claims



1. A clock and smoke alarm assembly comprising:

a housing having walls defining an internal chamber, said walls including a front wall presenting a front face;

battery receiving means for receiving battery means within said chamber and for electrically coupling with said battery means;

an electrically powerable clock unit received within said chamber and including time-of-day indicia visible in relation to said front face;

an electrically powerable smoke alarm received within said chamber; and

means electrically coupling said clock unit and smoke alarm with said battery receiving means for electrically powering both said clock unit and smoke alarm from said battery means as the sole source of electric power for cooperation among said battery means, clock unit, and smoke alarm so that cessation of operation of said clock unit due to depletion of said battery means provides visual indication that said smoke alarm is also inoperable due to said depletion, said time-of-day indicia including analog clock hands.

4,796,016

PIXEL ROUNDING METHOD AND CIRCUIT FOR USE IN A RASTER SCAN DISPLAY DEVICE AND A RASTER SCAN DISPLAY DEVICE COMPRISING SUCH CIRCUIT

David G. Clark, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

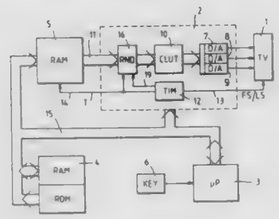
Filed May 5, 1986, Ser. No. 859,945
Claims priority, application United Kingdom, May 13, 1985, 8512043
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—750 13 Claims

1. A method for reducing the coarseness of a plurality of displayed information pixels, each of which pixels is represented by a respective digital code stored in a display memory, said digital codes being accessed repeatedly to display the information pixels in a recurrent cycle of scanning lines, with each row of information pixels being displayed twice in adjacent scanning lines and wherein each digital code either belongs to a dominant group of codes or to a non-dominant group of codes which are distinguished by the value of at least one bit position, said method comprising the steps of:

(a) obtaining from the display memory the digital codes of the current row of information pixels for the current scanning line as undelayed fundamental pixel information, and producing a second version thereof which is delayed by one pixel period as delayed fundamental pixel information;

(b) obtaining from the display memory, the digital codes of the preceding row of information pixels during the first occurrence of the current row of information pixels, as reference information, and the digital codes of the succeeding row of information pixels during the second occurrence of the current row of information pixels, as reference information;

(c) detecting allocations to said two groups from two successive undelayed fundamental information pixels, and two successive reference information pixels the existence of an



allocation of two diagonally opposed information pixels having codes belonging to a dominant group, and a further fundamental information pixel having a code belonging to said non-dominant group, such allocation representing a predetermined diagonal relationship;

(d) selecting for producing the pixel display in the second half of each pixel period the undelayed fundamental pixel information and in the first half of the next pixel period the delayed fundamental pixel information, when said diagonal relationship is not detected;

(e) when a first predetermined diagonal relationship is detected, prerounding a pixel of said dominant group by selecting for said first half of a pixel period the undelayed fundamental information and upon detecting a further predetermined diagonal relationship, postrounding a pixel allocated to said dominant group by selecting for the second half of a pixel period the delayed fundamental information, such prerounding and postrounding thereby suppressing a half pixel originally allocated to said non-dominant group.

4,796,017

LOW WATER LEVEL ALARM FOR CHRISTMAS TREE STAND

Joseph T. Merenda, Northport, N.Y., assignor to J. R. Microwave, Inc., Northport, N.Y.

Filed Jan. 20, 1987, Ser. No. 5,207
Int. Cl.[4] G08B 21/00
U.S. Cl. 340—620 12 Claims

1. An apparatus for use in combination with a plant stand, such as a Crhistmas tree stand, having a container for holding a fluid, such as water, to feed the plant, said apparatus comprising:

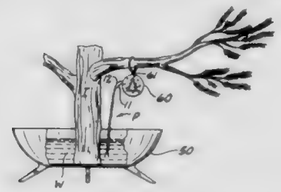
sensing means for sensing the fluid in the container, said sensing means located in the container and providing an indication when the level of the fluid in the container is below the sensing means;

supporting means for supporting the sensing means at a preselectable location within the container;

a power supply

detecting means, connected to the sensing means and the power supply, for detecting the indication and providing an enabling signal in response to the indication;

generating means, connected to the detecting means adn the power supply, for generating an alarm in response to receiving the enabling signal from the detectng means



whereby when the fluid level in the container falls below the sensing means, the sensing means provides the indication to the detecting means which, in turn, provides an enable signal to the generating means, thereby activating the generating means and generating an alarm; and

a housing enclosing said power supply, said detecting means and said generating means, said housing having a support for engaging the plant and for supporting the housing from the plant.

4,796,018

EXIT GUIDING SYSTEM

Tsutomu Nakanishi, Machida, Japan; Akira Kitajima, Huntington Beach, Calif.; Yoshiaki Fuwa, Yokohama, and Yasaburo Adachi, Nara, both of Japan, assignors to Hockiki Corp., Tokyo, Japan

Filed May 22, 1987, Ser. No. 53,371
Claims priority, application Japan, May 26, 1986, 61-120888
Int. Cl.[4] G08B 17/10, 7/06
U.S. Cl. 340—691 7 Claims



1. An exit guiding system comprising:

a first detector for positioning inside a building for detecting a change in the indoor ambient conditions due to occurrence of at least one of smoke and fire;

a second detector for positioning outside of said building for detecting a change in the outdoor ambient conditions due to occurrence of at least one of smoke and fire, said first and second detectors outputting signals at levels related to the intensity level of said smoke and fire;

a guiding device for positioning near a fire exit or in an access to an exit for providing escape guidance at the time of a fire;

instructing means for causing performance or suspension of at least a portion of operations of said guiding device, said suspension being based on said signal levels of said respective detectors;

said instructing means including evaluation means for determining whether or not the respective signal levels of said detectors reach a predetermined danger level;

said evaluation means comparing the signal level of said inside first detector with the signal level of said outside second detector when the signal level of either detector reaches said danger level, said evaluation means outputting an operation signal to said guiding device when the signal level of said inside first detector is greater than that of the outside second detector, on the other hand, said evaluation means outputting a suspension signal to said guiding device when the signal level of the outside detector is higher than that of said inside detector; and

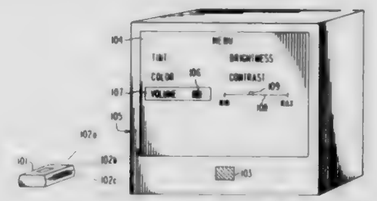
said guiding device being adapted to operate or suspend said at least a portion of the operations in response to the respective operation and suspension signals from said instructing means.

4,796,019

INPUT DEVICE FOR A DISPLAY SYSTEM

Victor Auerbach, Trenton, N.J., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Feb. 19, 1987, Ser. No. 16,805
The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—709 18 Claims



1. A remote control system, comprising:

handheld remote transmitting means having a pointing axis and including transducing means disposed for radiating a plurality of predetermined angularly spaced information beams when energized;

means for energizing said transducing means during a transmission period always having first and second portions, said transducing means being individually energized during said first portion with energizing signals corresponding to associated ones of said plurality of beams;

data input means mounted on said remote transmitting means and responsive to user input for providing a data signal which is related to a dedicated function;

encoding means coupled to said data input means and said plurality of transdicers for encoding said data signal and applying an encoded data signal to said plurality of transducers simultaneously during said second portion of said transmission period; and

receiving means substantially displaced from said receiving means along a line of sight between said remote transmitting means and said receiving means for receiving said plurality of beams transmitted during said first portion of said transmission period and responsive to relationships between signals derived from said plurality of beams for producing control signals indicative of the angular displacement of said pointing axis of said remote transmitting means relative to said line of sight between said remote transmitting means and said receiving means; and for receiving said plurality of beams transmitted during said

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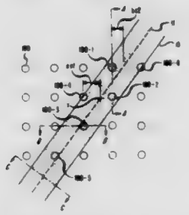
second portion of said transmission period and responsive to signals derived from said plurality of beams for processing data related to said dedicated function.

4,796,020

METHOD AND APPARATUS FOR DRAWING ANTIALIASED LINES AND POLYGONS

Zigmantas L. Budrikis, Nedlands, Australia, and Arun N. Netravali, Westfield, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 10, 1986, Ser. No. 837,886
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—728 **13 Claims**



1. A method for drawing a line on a raster scan terminal which creates images with a plurality of scans, where each scan includes a plurality of pixels and the collection of pixels from said scans stored in a screen memory, forms a regular array of pixels, comprising the steps of:
computing position of successive points n_1, n_2, n_3, . . . n_j of said line;
evaluating position of each of said successive point, n_j with respect to the immediately predeing point, n_{j-1} by developing a signal representative of the distance from n_j to the nearest pixel in the scan containing n_j and a signal representative of the number of pixels separating said nearest pixel of n_j from a corresponding nearest pixel of n_{j-1};
selecting a painting profile from said position of point n_j with respect to said position of point n_{j-1} from a precomputed set of profiles;
selecting a horizontal mode of painting or a vertical mode of painting of said profile, based on said position of point n_j with respect to said position of point n_{j-1}; and
applying said profile to said screen memory, in accordance with said step of selecting mode of painting, to modify intensity information stored in said screen memory.

4,796,021

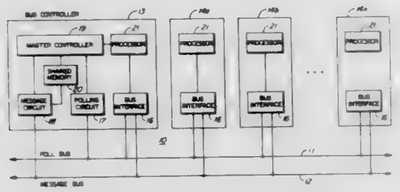
Patent Not Issued For This Number

4,796,022

DOUBLE TRANSIT BUS SYSTEM

David P. Schenkel, and Frank Mellor, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 811,125, Dec. 19, 1985, abandoned.
This application May 5, 1988, Ser. No. 190,325
Int. Cl.[4] H04Q *1/00*
U.S. Cl. 340—825.08 **6 Claims**



1. A bus system for facilitating the transfer of information between a plurality of circuit means connected to said bus system, said bus system comprising:
a polling bus;
a message bus;
a bus controller means, connected to both said polling bus and said message bus, both for controlling said polling bus and for exchanging information with said message bus;
whereby information from a first circuit means of said plurality of circuit means, bound for a second circuit means of said plurality of circuit means, is transmitted on said message bus to said bus controller, is transmitted on said message bus to said bus controller, is temporarily stored at said bus controller, and is subsequently transmitted to said second circuit means;
and whereby transmission or reception of messages is controlled by said first or second circuit means and access to said message bus is controlled by said bus controller [illegible].

4,796,023

STABILIZED BINARY TREE PROTOCOL

Robert E. King, 200 Dundalk Way, Cary, N.C. 27511

Filed Dec. 5, 1986, Ser. No. 938,635
Int. Cl.[4] H04Q *9/00, 11/04;* G06F *7/00*
U.S. Cl. 340—825.020 **14 Claims**



1. A system for designating groups of terminals in binary tree network including:
means for logically grouping the terminals in a binary tree,
means for designating terminal groups (states) of various sizes, including a root state and recursively defined first (left) and second (right) substates from said root state, said [illegible]
and means for selecting a subsequent state from a current state, including means whereby from a current rightmost substate, a leftmost substate may be selected; characterized in that
the selection criterion for selecting a subsequent state from a current right substate is the same for all right substates.

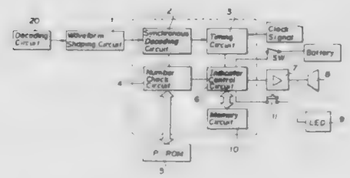
4,796,024

SELECTIVE CALLING RECEIVER WITH AUTOMATIC MEMORY STORAGE AND TURN-ON INDICATION

Kazushige Sakoh, Urawa; Hiroshi Arakawa, Yokohama; Hiroyuki Yamaguchi, Hamura; Tatsuaki Sekigawa, Hachiougi; Toshiyasu Takasugi, Hadano; Shinjiro Umetsu, Kawasaki, and Takehiko Tsutsumi, Funabashi, all of Japan, assignors to Nippon Telegraph and Telephone Corporation (et al.), Tokyo, Japan

Filed Jan. 30, 1986, Ser. No. 824,169
Claims priority, application Japan, Jan. 31, 1985, 60-16849
Int. Cl.[4] G08B *7/06;* H04Q *7/00*
U.S. Cl. 340—825.44 **3 Claims**

1. A selective calling receiver with automatic memory storage and turn-on indication comprising:
a decoding circuit for receiving an incoming indication signal of the receiver being in a called state and analyzing said signal to ascertain that the incoming call is intended for that receiver;
a waveform shaping circuit which receives a signal output from said decoding circuit as an incoming signal and reshapes the incoming signal to a waveform recognizable by a synchronous decoding circuit;
a synchronous decoding circuit which receives the reshaped signal from the waveform shaping circuit and separates the signal into a synchronizing signal and a call signal for input, respectively, to a timing circuit and a number check circuit;
a timing circuit, which receives said synchronizing signal separated by the synchronous decoding circuit, and generates a timing pulse required for synchronizing an indicator control circuit with the synchronizing signal from the synchronous decoding circuit;
a timer, which is part of said timing circuit, for automatically stopping operation of the indicator control circuit after a predetermined period of time has elapsed;
a number check circuit for collating said call signal with a local code stored in a programmed read-only memory;
an indicator control circuit, which is connected to said number check circuit and is actuated when said call signal



and said local call code coincide, and which produces an output which is sent to an amplifier;
an amplifier which amplifies the output signal from said indicator control circuit and sends said amplifier signal to both audible and visual indication devices thereby generating both an audible and a visible indication signal, respectively;
a memory circuit as part of the indicator control circuit for storing an indication of the called state;
a reset switch connected to said indicator control circuit for manually causing a stop of the indication signal before said indication signal is automatically stopped by said timer of said timer circuit after said predetermined time has elapsed;
a power source for energizing the selective calling receiver; and
said timer being programmed to count two periods of time, whereby a first period of time is counted when said power source of the receiver is turned on, before the indication signal that the receiver has been energized is turned off and a second period of time, differrent from said first period of time, is counted when there is an indication of the called state, which indication of the called state is stored in memory.

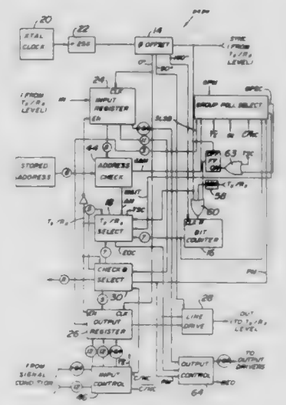
4,796,025

MONITOR/CONTROL COMMUNICATION NET WITH INTELLIGENT PERIPHERALS

Robert W. Farley, Gardner; Lawrence Kaplan, Greenfield; Daniel J. Rodrigues, Lunenburg; Bruce A. Wahler, Fitchburg, and Charles J. Motyka, Gardner, all of Mass., assignors to Simplex Time Recorder Co., Gardner, Mass.

Filed Jun. 4, 1985, Ser. No. 741,096
Int. Cl.[4] H04Q *9/00;* G05B *23/02*
U.S. Cl. 340—825.080 ***27 Claims***

1. Communication net comprising
a pair of communication lines,
at least one peripheral device connected to said communication lines including means for receiving a general poll digital message transmitted on said communication lines which message includes a first format code identifying the message as a general poll and an address uniquely identifying the peripheral, means for validating said format code and address, means for monitoring the outputs of one or more devices connected to the peripheral, means for detecting a change in any of said outputs, and means for



transmitting a digital message on said communication lines if a change has been detected in said outputs, said last-mentioned message including a second format code, an address identical to said address received by the peripheral, and a data field which indicates the status of said monitored outputs, and wherein said second format code indicates the length of said data field.

4,796,026

NOISE TOOL AND METHOD

John A. Hammond, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Continuation of Ser. No. 349,265, Feb. 16, 1982, abandoned.
This application Jul. 20, 1987, Ser. No. 75,280
Int. Cl.[4] G01V *1/40*
U.S. Cl. 340—857 **35 Claims**



1. Apparatus for detecting acoustic disturbances comprising:
a. piezoelectric means for sensing acoustic disturbances and generating electrical signals in response thereto, comprising a plurality of piezoelectric crystals, each crystal having a first contact surface and a second contact surface;
b. electrical signal processing means for receiving said signals from said piezoelectric means; and
c. electrical connection means for communicating said electrical signals from said piezoelectric means to said signal processing means, comprising first electrical conductor

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means generally circumscribing said plurality of piezoelectric crystals, and being in electrical contact with said first surface of each crystal, and second electrical conductor means comprising at least one electrical contact for each crystal, each said contact being biased against said corresponding second surface of the corresponding crystal and being in electrical contact with an elongate electrically conducting pole as part of said second conductor means;

d. wherein said signal processing means includes filter means for blocking electronic signals from said piezoelectric means below a cutoff frequency while passing signals of higher frequencies, amplifier means for amplifying said higher frequency signals to a usable level, first converter means for changing said high frequency signals to dc voltage levels representative of the amplitudes of said signals from said piezoelectric means, and second converter means for converting said dc voltage levels to dc pulse signals whose pulse rates are representative of said dc voltage levels from said first converter means and of the respective amplitudes of the high frequency signals from said piezoelectric means.

4,796,027

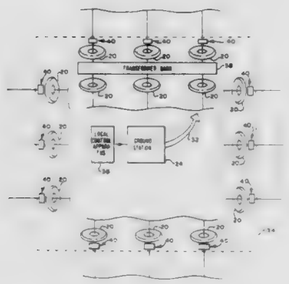
APPARATUS FOR DATA TRANSMISSION FROM MULTIPLE SOURCES ON A SINGLE CHANNEL

William R. Smith-Vaniz, Darien, Conn., assignor to Niagara Mohawk Power Corporation, Syracuse, N.Y.

Continuation of Ser. No. 837,099, Mar. 6, 1986, abandoned, which is a division of Ser. No. 484,681, Apr. 13, 1983, Pat. No. 4,689,752. This application Feb. 10, 1988, Ser. No. 157,132

Int. Cl.[4] G08C *15/06*

U.S. Cl. 340—870.03 **12 Claims**



1. A system for monitoring the state of an electric power delivery network including a plurality of power conductors, said system comprising:

a plurality of sensor modules distributed within said network, each being removably attached to a respective one of said power conductors of said network, each of said sensor modules adapted to measure at least one characteristic of the conductor to which it is attached, and each of said sensor modules including a radio transmitter for transmitting said measured characteristic;

a radio receiver for receiving said measured characteristic;

a common transmission channel over which said measured characteristic is transmitted from each of said sensor modules to said receiver; and wherein

each of said transmitters in each of said sensor modules transmits on said common transmission channel for a transmission period of time duration t with each transmission period being separated by a fixed, preselected time delay interval and said time delay interval between transmissions being different for each of said sensor modules, each of said different time delay intervals being an integral multiple of time duration t, and wherein

no two integral multiples of t defining each of said time delay intervals has a common factor.

4,796,028

APPARATUS FOR BIDIRECTIONAL DATA TRANSMISSION

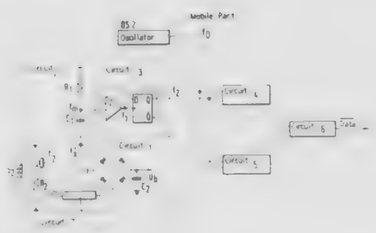
Holger Mackenthun, Hamburg, and Hans-Diedrich Kreft, Dassendorf, both of Fed. Rep. of Germany, assignors to Angewandte Digital Elektronik GmbH, Fed. Rep. of Germany

Filed Apr. 17, 1987, Ser. No. 39,436

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1986, 3614477

Int. Cl.[4] H04Q *9/00*; G08C *19/24*

U.S. Cl. 340—825.58 **2 Claims**



1. An apparatus for bidirectional data transmission between a predominantly stationary part and a predominantly mobile part, comprising:

a circuit in said predominantly stationary part including: a first oscillator in said stationary part operable to generate a first oscillating signal,

means in said predominantly stationary part for inductively transmitting to said predominantly mobile part during the entire time of data transmission;

means in said stationary part for imposing phase skips at predetermined points in time on said first oscillating signal for data transmission from said stationary part to said mobile part; and

a first single coil in said stationary part connected to said first oscillator and to said means for imposing phase skips for transmitting said first oscillating signal with imposed phase skips from said stationary part to said mobile part for simultaneous data and power transmission;

means in said stationary part connected to said first single coil for detecting data transmitted by synchronous switching;

a circuit in said predominantly mobile part including:

a second single coil in said predominantly mobile part positionable for inductive coupling with said first single coil to receive said first oscillating signal with imposed phase skips from said stationary part,

means in said mobile part connected to said second coil for transmitting data from said mobile part to said stationary part by synchronous switching,

a capacitor connected to said second coil for separating a frequency component from a DC component of said first oscillating signal received by said mobile part,

means for supplying said DC component acquired from said first oscillating signal to said circuit in said mobile part,

means for generating square wave pulses in said mobile part from said frequency component of said first oscillating signal received from said stationary part, said square wave pulses having a substantially constant chronological relationship between a duration of a high state and a duration of a low state when no phase skips are imposed on said first oscillating signal at said stationary part and having a difference in duration between a high state and a low state when a phase shift is imposed on said first oscillating signal, said rectangular pulse generating means including:

an over-driven operational amplifier connected to receive said frequency component of said first oscillating signal, and

a flip-flop connected at an output of said operational amplifier;

a second oscillator in said mobile part operable to generate a second oscillating signal having a significantly higher frequency than said first oscillating signal of said first oscillator in said stationary part;

means for comparing the duration of said high states of said square wave pulses with the duration of said low states of said square wave pulses, including:

means for counting said second oscillating signal of said second oscillator in said mobile part continuously during high and low states of said square wave pulses, said counting means counting said second oscillating signal during one of said high and low states and during a following other one of said respective low and high states, and

means for determining differences in the count of said counting means for sequential high and low states, said count differences being a indicative of a phase skip imposed on said first oscillating signal by detecting changes the relative chronological duration of said high and low states, said difference determining means documenting phase skips received from said stationary part by said mobile part by digital comparison of numerical values of counts of said counting means, the phase skips documented by said difference determining means representing data received from said stationary part by said mobile part.

4,796,029

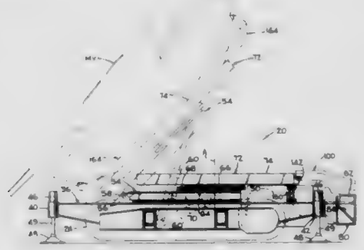
TURN TILT TABLE

Denis E. Duppong; James R. Dvorsky; David M. Mick; Richard L. Brandt, and Leland M. Rieck, all of Cedar Rapids, Iowa, assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 14, 1986, Ser. No. 851,762

Int. Cl.[4] G01S *7/00*

U.S. Cl. 342—13 **15 Claims**



1. A self propelled vehicle in combination with a test stand for moving the test stand to various test locations, comprising drivable ground engaging members supported on a surface;

a leveling frame supported by said ground engaging members;

a tilt frame means pivotally supported on said leveling frame for simulating undulating ground terrain conditions;

a turntable bearing on said tilt frame means and having a rotatable portion thereon for rotation about an axis;

a rotatable platform means rigidly secured to said rotatable portion of said turntable bearing for rotation about said axis for rotating a test combat vehicle mounted to the rotatable platform means for testing effectiveness of electronic surveillance devices for detecting the combat vehicle in various rotated and banked positions downrange from a command post;

means for securing the combat vehicle to said rotatable platform;

power means supported by said self-propelled vehicle for providing power to drive said ground engaging members, for pivoting said tilt frame through a prepdetermined arc, and for rotating said platform about said axis when said tilt frame is positioned anywhere within said predetermined arc; and

control means for selectively tilting said tilt frame, for rotating said platform, and for driving said ground engaging members.

14. A method for testing surface finishes of a military vehicle mounted on a rotatable table carried on a self propelled vehicle for simulating undulating ground terrain conditions which the military vehicle may encounter in combat for determining which surface finish best prevents an enermy from detecting the military vehicle by electronic surveillance devices at various down range test locations from a command post, comprising the steps of:

moving the self propelled vehicle and the military vehicle mounted on the rotatable table to selected down range test locations from the command post;

tilting the table and military vehicle between any one of a plurality of positions between a horiozntal position and an upwardly inclined position;

rotating the table and military vehicle about an axis normal to said table; and

the command post directing an electronic surveillance signal down range toward the selected down range location for trying to detect the military vehicle when rotated and banked on the table in a plurality of tilted and rotated positions.

4,796,030

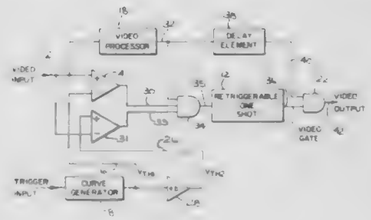
DUAL THRESHOLD AMPLITUDE DETECTOR

James J. Colotti, Waatagh, and Tullio N. G. DeFilippis, Garden City, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 20, 1987, Ser. No. 17,154

Int. Cl.[4] G01S *13/74*

U.S. Cl. 342—40 **4 Claims**



4. An amplitude detector passing only video input signals whose voltage amplitudes are within a dynamic window having dynamic minimum and maximum limits, comprising:

curve generator means providing first and second threshold voltages as a function of time, said first and second threshold voltages varying with time and providing said dynamic minimum and maximum limits to provide said dynamic window;

first comparator means comparing said video input signal against said first threshold voltage and generating an output signal when the input video signal voltage is greater than a given value relative to said first threshold voltage;

second comparator means comparing said video input signal against said second threshold voltage and generating an

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output signal when the input video signal voltage is less than a given value relative to said second threshold voltage;

video processor means quantizing said video input signals to a digital video signal;

first AND gate means AND'ing said output signal from said first comparator means and said output signal from said second comparator means and said digital video signal and generating an output signal when said three last mentioned signals are in a given state;

retriggerable one-shot means receiving said output signal from said first AND gate means and generating an output signal;

delay means receiving said digital video signal and outputting a delayed said digital video signal; and

second AND gate means AND'ing said delayed digital video signal and said output of said one-shot means and generating a video output signal.

4,796,031

RADAR SYSTEM

Nakatsuka Koki, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

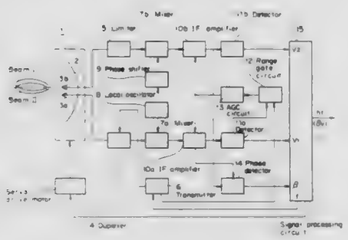
PCT No. PCT/JP86/00560, § 371 Date Jul. 2, 1987, § 102(e) Date Jul. 2, 1987, PCT Pub. No. WO87/03099, PCT Pub. Date May 21, 1987

PCT Filed Nov. 6, 1986, Ser. No. 85,101

Claims priority, application Japan, Nov. 6, 1985, 60-248334

Int. Cl.[4] G01S *13/48*

U.S. Cl. 342—148 **2 Claims**



1. A radar system for measuring the height of a target with a low elevation angle, comprising

a transmitter for outputting measuring-pulse of two different frequencies (λ_1, λ_2), one frequency at a time;

an antenna for receiving a first beam (I) and a second beam (II), one beam having a slightly different elevation angle from the other, and for emitting said measuring-pulses from said transmitter through at least one of said beams;

an antenna direction adjusting mechanism for determining a direction in which a receiving sensitivity of said first beam is equal to a receiving sensitivity of said second beam, the direction determined on the basis of the height (ha) of said antenna and the distance (R) to the target;

phase difference detecting means for determining, with respect to said two frequencies respectively, a phase difference (β) between a received signal through said first beam and a received signal through said second beam;

height data calculating means for calculating, with respect to said two frequencies, respectively, a series of data indicative of the height (ht) of the target on the basis of said phase difference (β); and

height determining means for extracting corresponding nearly equal data from the respective series of data indicative of the height (ht) by comparing the two series of data obtained with said two frequencies (λ_1, λ_2).

4,796,032

SATELLITE BROADCASTING RECEIVING SYSTEM

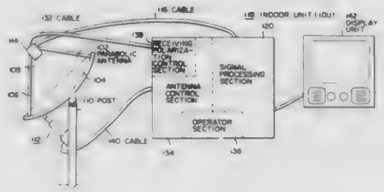
Masaru Sakurai; Hiroshi Matsue, and Kazuhiro Aoki, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 25, 1986, Ser. No. 843,680

Claims priority, application Japan, Mar. 25, 1985, 60-58183; Aug. 26, 1985, 60-185850

Int. Cl.[4] H01Q *3/02*

U.S. Cl. 342—359 **15 Claims**



1. A satellite broadcasting receiving system for receiving broadcasting waves from a plurality of satellites arranged on a geostationary satellite orbit for broadcasting purposes, each of said satellites broadcasting a plurality of channels, said receiving system comprising:

a parabolic antenna capable of changing its receiving state so as to receive horizontally and vertically polarized broadcasting waves from said satellites;

means for adjusting the direction of the antenna so as to receive the broadcasting waves from a specific satellite;

means for reproducing a signal of a specific channel of a plurality of channels from the specific satellite as received by said antenna;

memory means for storing the position data of the satellite corresponding to the specific direction of said antenna and channel selection data corresponding to the reproduced signal;

operating means including a selecting section for selecting the direction of said antenna and for selecting the channel, a requesting section for requesting the storage of the position of the specific satellite and the channel selection data to said memory means, and a label input section for assigning a label to the stored data for recognizing the channel of the specific satellite and for requesting that channel;

control means for storing the data representing the position of said specific satellite and the channel selection data into said memory means with said label when said label is input in response to a storage request by said requesting section of said operating means, and for reading out of said memory means said stored data for controlling said antenna, said direction adjusting means and said reproducing means when said label is input without a storage request, wherein said antenna direction adjusting means changes the direction of said antenna under control of said control means according to the selection of the antenna direction, which is derived from said operating means, and generates pulses with the change of antenna direction, an accumulated value of pulses being counted by counting means under control of said control means according to said selection of antenna direction, the satellite position data stored into said memory means being the accumulated value of the pulses counted by said counter, said control means readin out of said memory means the accumulated value of pulses stored with said label when said label is input without a storage request and controlling said antenna direction adjusting means so that said read out pulse accumulated value is equal to a count of said counting means; and

receiving polarization control means for controlling the receiving state of said antenna, said control means storing the receiving state of said antenna into said memory means, reading out of said memory means the antenna receiving state and its label when said label is input from said operating means without a storage request, and causing said receiving polarization control means to control the receiving state of said antenna so that it is coincident with said read out antenna receiving state.

4,796,033

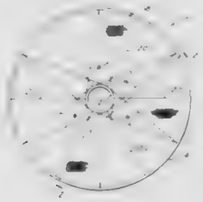
HUB AND RIM REFLECTOR

Charles P. Rubin, Culver City, and Thomas A. Bockrath, Hawthorne, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 18, 1987, Ser. No. 63,347

Int. Cl.[4] H01Q *15/14*

U.S. Cl. 343—912 **12 Claims**



1. A lightweight reflector for reflecting radio waves comprising:

a centrally located support means and a rigid peripheral rim surrounding and radially spaced from said support means;

a plurality of spoke means having their respective ends secured to a tangential point on said support means and to a point on said rim and acting in tension to maintain said support means and said rim in a predetermined spatial relationship;

a flexible radio frequency wave-reflecting surface constrained by said support means and said rim and by supplementary retaining means to maintain an approximation of a predetermined curved shape, said reflecting surface having an apex portion fastened behind and secured to one axial end of said support means and having an outer perimeter secured to said rim;

said supplementary retaining means comprising points of attachment between said spoke means and said reflecting surface at points intermediate said support means and said rim.

4,796,034

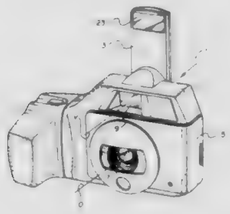
COMPACT CAMERA WITH FLASH UNIT

Bruce A. Leonard, Honeoye Falls, N.Y.; James S. Couch, Powell, and Robert W. Mervar, Columbus, both of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1988, Ser. No. 168,813

Int. Cl.[4] G03B *15/05*

U.S. Cl. 354—145.1 **5 Claims**



1. An improved photographic camera including a built-in electronic flash unit, wherein (a) a rear viewfinder window is provided on the camera body for viewing a subject to be photographed and (b) mounting means supports said flash unit for movement relative to said camera body between a folded inoperative position against the camera body and an erect operative position elevated higher than said viewfinder window, and wherein the improvement comprises:

said mounting means supports said flash unit for enabling the flash unit to be swung between its folded and erect positions about a pivot axis which extends through said rear viewfinder window.

4,796,035

IMAGE RECORDING APPARATUS WITH IMPROVED SYSTEM FOR FEEDING AND EXHAUSTING RECORDING SHEETS

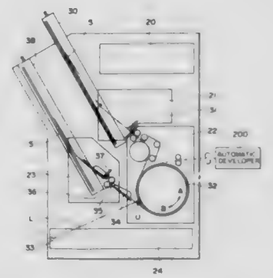
Keiichi Kawasaki, Tokyo; Kazuhisa Takahashi, Yokohama, and Yuji Itoh, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 802,317, Nov. 27, 1985, abandoned. This application Mar. 27, 1987, Ser. No. 31,043

Claims priority, application Japan, Nov. 30, 1984, 59-254438; Nov. 30, 1984, 59-254439; Nov. 30, 1984, 59-254440; Mar. 28, 1986, 61-71977

Int. Cl.[4] G01D *9/42, 15/24*

U.S. Cl. 346—108 **10 Claims**



1. An image recording apparatus comprising:

a feed system for picking up a recording sheet from a predetermined position and feeding the picked-up recording sheet;

a drum system, including a drum, for receiving the recording sheet fed by said feed system, for winding the recording sheet around said drum, and for rotating said drum to record an image on the sheet at a recording position, thereby performing subscanning;

a scanning system for main-scanning the recording sheet at the recording position with the optically modulated light beam;

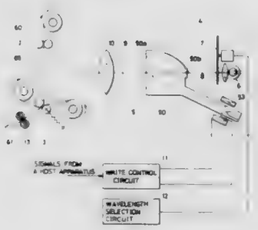
a first storage system for storing the recording sheet on which an image has been recorded and which is discharged in a first direction from said drum;

a second storage system for storing the recording sheet on which an image has been recorded and which is discharged in a second direction different from the first direction from said drum; and

a control system for rotating said drum in opposite directions during feed of a recording sheet thereto by said feed system and storage of the recording sheet in a selected one of said first and second storage systems.

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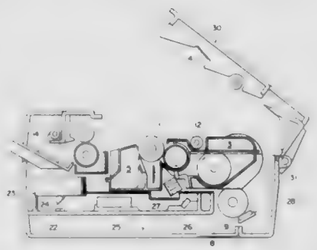
4,796,036
CAPSULE RUPTURE PRINTING SYSTEM
Shigeru Misono; Makoto Ueda; Kazuto Shikino; Tomoyuki Torii; Keiichi Ishiyama, and Toshiharu Aoyagi, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan
Filed Jun. 8, 1987, Ser. No. 59,732
Claims priority, application Japan, Jun. 10, 1986, 61-135439
Int. Cl.[4] G01D *9/42*; H04N *1/46*
U.S. Cl. 346—108 **8 Claims**



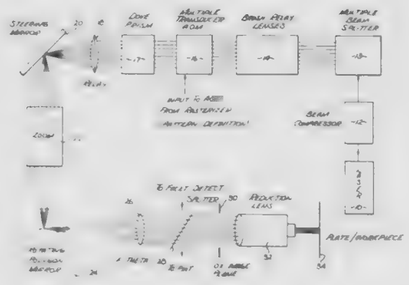
3. An apparatus for projecting an image pattern with a light component of a specific wavelength onto an image sheet coated with rupturable microcapsules to selectively activate the same according to the projected image pattern to thereby form a latent image on the image sheet, the apparatus comprising: a light source opposed to the image sheet for selectively producing chromatic light containing light components of different wavelengths and ultraviolet light; projecting means interposed between the image sheet and the light source for projecting an image pattern onto the image sheet, the projecting means including an optical laser receptive of light from the light source and composed of ferroelectric ceramic having variable birefringence, and electron beam irradiating means operative while the optical layer is selectively exposed to the ultraviolet light for irradiating the optical layer with an electron beam to selectively vary the birefringence thereof to form an image pattern thereon; and filtering means interposed between the image sheet and the light source for filtering the chromatic light to selectively pass a light component having a specific wavelength to enable the projecting means to project the image pattern with the selected light component to thereby activate the microcapsules.

4,796,037
COMPACT IMAGE RECORDING APPARATUS HAVING AN UP-SIDE DOWN STRUCTURE
Hiromi Takada, Yokohama; Toshio Shimazaki, Tokyo; Keiji Okamoto, and Hideo Aoki, both of Yokohama, all of Japan, assignors to Ricoh Company, Limited, Tokyo, Japan
Filed Mar. 11, 1988, Ser. No. 166,974
Claims priority, application Japan, Mar. 11, 1987, 62-53961
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—160.1 **14 Claims**

1. An image recording apparatus comprising:
a photosensitive member for forming an image thereon;
optical writing means disposed below a first horizontal level defined by the location of said photosensitive member for applying a light beam carrying image information to be recorded onto said photosensitive member to thereby form an electrostatic latent image thereon;
developing means for developing said electrostatic latent image to thereby form a developed image;
paper supplying means disposed below a second horizontal level defined by the location of said optical writing means for supplying transfer paper to be transported along a predetermined paper transportation path defined in said apparatus; and
image transferring means disposed above said first horizontal level for transferring said developed image from said photosensitive member onto said transfer paper while said transfer paper is being transported between said photosensitive member and said image transferring means.

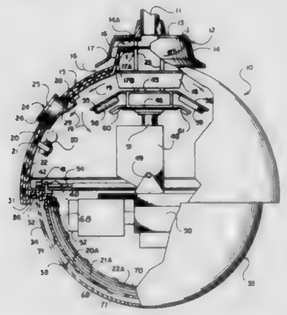


4,796,038
LASER PATTERN GENERATION APPARATUS
Paul C. Allen, Beaverton, and Paul A. Warkentin, Aloha, both of Oreg., assignors to ATEQ Corporation, Beaverton, Oreg.
Continuation of Ser. No. 867,205, May 27, 1986, abandoned, which is a continuation of Ser. No. 758,344, Jul. 24, 1985, abandoned. This application Mar. 28, 1988, Ser. No. 178,868
Int. Cl.[4] G03B *41/00*; G01D *9/42*
U.S. Cl. 354—4 **28 Claims**



1. An apparatus for generating a pattern on a workpiece which includes a film responsive to radiant energy comprising:
a laser for providing a radiant energy beam;
beam splitting means for splitting a beam into a plurality of beams, said beam splitting means being optically coupled to said laser;
modulation means for independently modulating each of said plurality of beams, said modulation means being optically coupled to said beam splitting means;
rotating mirror having a plurality of facets for causing said beams to scan said workpiece, said beams from said modulation means being directed onto said rotating mirror;
focusing means for receiving said beams from said rotating mirror and for focusing said beams onto said workpiece;
a part holder for receiving said workpiece;
a steering mirror for adjusting the position of said beams on said rotating mirror during operation of said apparatus to compensate for movement between said partholder and said beams, said steering mirror being optically disposed between said modulation means and said rotating mirror;
movement detection means for detecting movement of said partholder, said movement detection means for providing information for adjustment of said steering mirror relative to movement of said partholder during scanning of said workpiece;
whereby a pattern is generated on said workpiece.

4,796,039
BALLISTIC RATED CAMERA HOUSING AND METHOD FOR FORMING
Raymond V. Pagano, 2675C Lithonia Indus. Blvd., Lithonia, Ga. 30058
Filed Jun. 22, 1987, Ser. No. 64,401
Int. Cl.[4] G03B *29/00*
U.S. Cl. 354—81 **13 Claims**



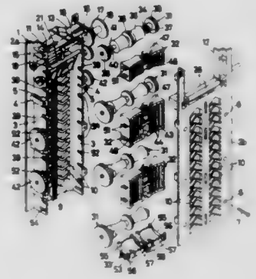
1. A housing for a surveillance camera, said housing including an upper dome and a lower dome, said upper dome comprising a plurality of layers of sheet material for increasing the puncture resistance of said upper dome, said lower dome comprising an outer cover fixed to said upper dome, and an inner portion rotatably carried within said outer cover, said inner portion comprising a plurality of layers of sheet material for increasing the puncture resistance of said lower dome, said inner portion further including a transparent window for use as a viewing area by the surveillance camera.

4,796,040
BOUNDARY SETTING DEVICE
Jorge M. Parra, 615 North Blvd., New Port Richey, Fla. 34652
Filed Jun. 22, 1987, Ser. No. 64,418
Int. Cl.[4] G03B *13/02*
U.S. Cl. 354—219 **2 Claims**



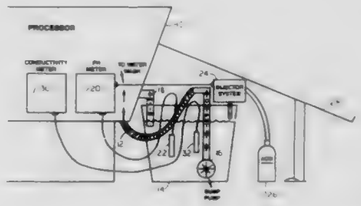
2. A camera scene framing device comprising,
a boundary setting device for a binocular visioned person, including:
a low powered light source means having a predetermined configuration for defining the boundary of a zone of a scene to be framed, and means to energize said light source,
sighting tube means defining a viewing axis for said light source means, including means forming an optical void around said light source means,
whereby when said low powered light source means is viewed through one eye of said person and a scene containing a section to be framed within said boundary is viewed by the other eye of said person, an optically fused image is presented to the person with said light source bounding said section to be framed on said scene.

4,796,041
FILM FEED UNIT FOR USE IN AUTOMATIC FILM DEVELOPING MACHINE
Masazumi Ishikawa, Wakayama, and Mitsuji Kawashima, Arida, both of Japan, assignors to Noritsu Kenkyu Center Co., Ltd., Wakayama, Japan
Filed May 28, 1987, Ser. No. 54,969
Claims priority, application Japan, May 29, 1986, 61-126852; May 31, 1986, 61-83243[U]
Int. Cl.[4] G03D *3/08*
U.S. Cl. 354—320 **2 Claims**



1. A film unit for use in an automatic film developing machine comprising a rack in the form of a square tube and a plurality of film feed members mounted in said rack with end portions thereof supported by said rack, characterized in that said rack is formed by a pair of rack plates provided with side plates, said side plates joining said rack plates and having cutouts into which said end portions of said film feed members are inserted for supporting said film feed members in said rack.

4,796,042
PRINTING PLATE PROCESSOR HAVING RECIRCULATING WATER WASH RECLAMATION
Carlton D. Mappin, Mahway, and Thomas N. Gillich, Whitehouse Station, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.
Filed Jul. 31, 1987, Ser. No. 80,136
Int. Cl.[4] G03D *3/06*
U.S. Cl. 354—324 **18 Claims**



1. A printing paste processor recirculating wash water reclamation system which comprises:
a. a plate processor having an enclosed housing capable of containing wash water therein, said processor having a plate inlet and a plate outlet and means for applying wash water to a plate between said inlet and said outlet; and
b. a wash water reservoir external to said housing; and
c. means for pumping wash water from the reservoir to the wash water applying means of the processor; and
d. means for collecting wash water from the wash water applying means of the processor and returning it to the reservoir; and

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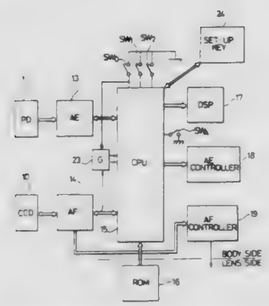
e. means for continuously and automatically measuring the pH of the wash water in the reservoir; and
f. injection means responsive to said pH measuring means capable of automatically adding a pH adjusting composition to the wash water in the reservoir at a predetermined pH.

4,796,043

MULTI-POINT PHOTOMETRIC APPARATUS

Shuji Izumi, Sakai; Masaaki Nakai, Kawachinagano; Akihiko Fujino, Sakai; Toshio Yamaki, Osaka; Hiromu Mukai, Kawachinagano, and Nobuyuki Taniguchi, Nishinomiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 899,099, Aug. 22, 1986, abandoned, and a continuation of Ser. No. 068,722, Jun. 30, 1987, Pat. No. 4,745,427. This application Jan. 15, 1988, Ser. No. 68,212
Claims priority, application Japan, Sep. 13, 1985, 60-201651; Sep. 13, 1985, 60-201652; Sep. 13, 1985, 60-201653; Sep. 13, 1985, 60-201654
Int. Cl.[4] G03B *7/091*
U.S. Cl. 354—402 **6 Claims**



1. A multi-point photometric apparatus for measuring the luminance of an objective field comprising:
means for measuring the luminance of a plurality of divided areas of an objective field to produce a plurality of luminance signals in correspondence to said areas;
means for performing an automatic focus adjustment for a specific area among said divided areas;
means for selecting a reference luminance signal corresponding to said specific area at the completion of automatic focus adjustment;
means for recognizing a luminance distribution in the objective field basing on said selected reference luminance signal and a plurality of luminance signals corresponding to the plurality of areas other than said specific area, said reference luminance signal being the reference of said distribution; and
means for producing exposure information in accordance with said luminance distribution.

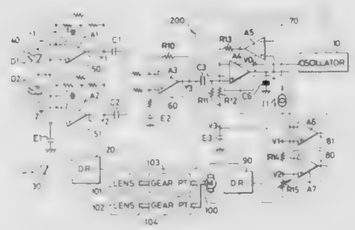
4,796,044

AUTO-FOCUS CAMERA

Tatuo Amanuma; Kenji Ishizuki, both of Tokyo, and Yoshiaki Ohtsubo, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 11, 1987, Ser. No. 24,133
Claims priority, application Japan, Mar. 18, 1986, 61-60033
Int. Cl.[4] G03B *3/00*
U.S. Cl. 354—403 **8 Claims**

1. An apparatus emitting radiation to an object field, comprising:
(a) radiation detecting means having two elements each of which generates an electrical signal conforming to incident radiation thereon;
(b) optical means for transmitting radiation reflected by the object field to said radiation detecting means;
(c) a phototaking lens;
(d) driving means for driving said phototaking lens;
(e) scanning means responsive to the driving of said phototaking lens for changing an amount of the incident radiation on each of said two elements so that the amount of the incident radiation on one of said two elements is larger than the amount of the incident radiation on the other of said two elements when said phototaking lens is at an out-of-focus position, and so that the amounts of the incident radiation on said two elements are substantially equal to each other when said phototaking lens is at an in-focus position;
(f) producing means for producing an output signal conforming to a difference between the levels of said two electrical signals;



(g) first comparing means for comparing the level of said output signal with a first reference level, detecting that the level of said output signal has a predetermined relationship with said first reference level and thereafter producing a first comparing signal;
(h) means responsive to said first comparing signal for stopping said driving means from driving said phototaking lens;
(i) second comparing means for comparing the level of said output signal with a second reference level, detecting that the level of said output signal has a predetermined relationship with said second reference level and thereafter producing a second comparing signal, the level of said output signal changing in one direction during the driving of said phototaking lens, said second reference level being set so that the level of said output signal reaches said second reference level before the level of said output signal reaches said first reference level; and
(j) control means responsive to said second comparing signal for increasing the time constant of said output signal.

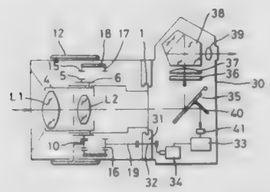
4,796,045

PHOTO-TAKING LENS ASSEMBLY HAVING AN AUTOMATICALLY AND MANUALLY MOVABLE LENS

Yoshinari Hamanishi, Tokyo; Yoshiharu Shiokama; Hitoshi Imanari, both of Kawasaki, and Sachio Ohmori, Yokosuka, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 46,701, May 7, 1987, abandoned. This application Mar. 15, 1988, Ser. No. 170,072
Claims priority, application Japan, May 9, 1986, 61-106083; Mar. 16, 1987, 62-60858
Int. Cl.[4] G03B *3/00*
U.S. Cl. 354—400 **32 Claims**

1. A photo-taking lens assembly having a lens moved along the optic axis thereof on the basis of a detection signal relating to the focusing state of a photo-taking optical system, said photo-taking lens assembly comprising:
manually operable means for moving said lens;
means for detecting an amount of the manual operation of said manually operable means and producing a drive output representing said amount of said manual operation; and
drive control means including electrically driven output transmitting means and adapted to respond to said detection signal to drive said output transmitting means and move said lens when said drive output of said manually operable means is not produced, and to move said lens on the basis of an amount determined by the combination of said detection signal and said drive output when said drive output of said manually operable means is produced.

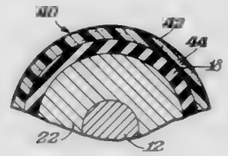


4,796,046

COPY MACHINE TONER FIXING DEVICE

Hirosuke Suzuki, 21-8 Kotesashi-Machi 4-chome, Tokorozawa-shi, Saitama; Etsuo Yamazaki, 2-34 Toyooka 5-chome, Iruma-#8 Shi, Saitama, and Yoshiaki Sato, 322 Umahikizawa Hitaka-machi, Iruma-gun, Saitama, all of Japan

Continuation of Ser. No. 585,277, Mar. 1, 1984, abandoned. This application Apr. 30, 1986, Ser. No. 830,949
Int. Cl.[4] G03G *15/20*
U.S. Cl. 355—3 FU **9 Claims**



1. A roller fixing device comprsiing a plurality of rollers in which adjacent rollers are in contact under pressure with respect to each other, at least one of said rollers being provided with a resilient material and its outer surface with a thin non-adhesive coating layer of expanded porous polytetrafluoroethylene (PTFE) film, said coating layer rendered nonporous near the region of its external surface but otherwise porous, said coating layer wrapped along axial direction of said roller and copy paper carrying toner images thereon can be passed between said plurality of rollers to thereby fix the toner images on paper.

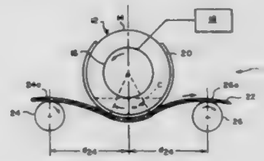
4,796,047

ROLLER TRANSFER APPARATUS HAVING AN EXTENDED NIP EXHIBITING LOW PRESSURE

William Y. Fowlkes, Fairport; Theodore H. Morse, Rochester; Robert C. Storey, Penfield, and James F. Paxon, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 29,006, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 867,179, May 27, 1986, abandoned. This application Apr. 20, 1987, Ser. No. 40,388
Int. Cl.[4] G03G *15/16*
U.S. Cl. 355—3 TR **14 Claims**

1. In a transfer apparatus for transferring a marking particle image from a dielectric web under the influence of an electric field, the improvement comprising:
a dielectric web support, said support including means offset



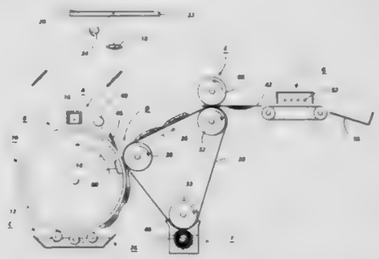
relative to said transfer apparatus in an upstream and/or downstream direction for positioning said dielectric web relative to said transfer apparatus to establish an extended contact nip zone and a low nip pressure in such zone.

4,796,048

RESILIENT INTERMEDIATE TRANSFER MEMBER AND APPARATUS FOR LIQUID INK DEVELOPMENT

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

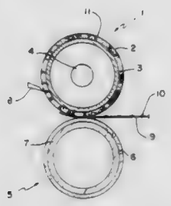
Filed Nov. 23, 1987, Ser. No. 124,321
Int. Cl.[4] G03G *15/14*
U.S. Cl. 355—3 TR **13 Claims**



1. An apparatus for transferring a liquid image having at least liquid carrier with toner particles dispersed therein from a member to a copy sheet, including:
an intermediate member positioned to have at least a portion thereof contacting the member in a transfer zone;
first biased roll transfer means positioned adjacent to a nip formed between the member and said intermediate member for attracting the liquid image from the member to said intermediate member and for roller squeezing the member and said intermediate member with a pressure such that (a) non-imaged areas of the member and said intermediate member are squeezed free of carrier fluid and (b) said intermediate member is deformed by the toner in image areas allowing toner particles and carrier fluid to pass through said nip; and
means for transferring the toner particles from said intermediate member to the copy sheet in image configuration.
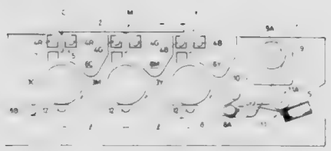
VOL 1098 ISS 1 JA 3 1989 UMI

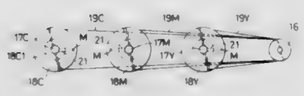
4,796,049
HEAT ROLLER FOR ELECTROPHOTOGRAPHIC COPYING MACHINE
Hideaki Taniguchi, Nara; Koichi Moriyama; Osamu Kawasaki, both of Yamatokoriyama, and Ken-ichi Iwamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 928,369, Nov. 10, 1986, abandoned.
This application Mar. 21, 1988, Ser. No. 171,168
Claims priority, application Japan, Nov. 11, 1985, 60-253597
Int. Cl.[4] G03G *15/20*; **B21B** *27/06*
U.S. Cl. 355—3 FU **1 Claim**



1. A heat fixing device for an electrophotographic copying machine comprising heat fixing roller means and compression roller means for fixing a toner image onto a copied paper in combination with said heat roller means, comprising:
a tetrafluoroethylene resin coating provided at the surface of said heat fixing roller means;
through pin holes said tetrafluoroethylene resin coating being present in the distribution of about 5–30 holes/cm^2 and the diameter of said pin holes being in the range of about 5–20 μm.

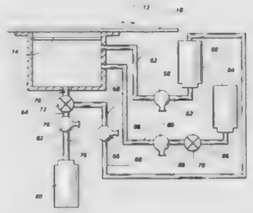
4,796,050
MECHANISM FOR DRIVING PHOTOSENSITIVE DRUMS
Hideya Furuta, Yokohama; Yoshihiro Sakai, Tokyo; Mitsuru Munizuka, Tokyo, and Fumitaka Fujieda, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 28, 1987, Ser. No. 7,664
Claims priority, application Japan, Feb. 3, 1986, 61-21769
Int. Cl.[4] G03G *15/01*
U.S. Cl. 355—4 **1 Claim**





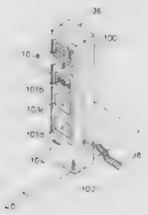
1. A mechanism for driving a plurality of photosensitive drums in a color recording apparatus including charging devices associated respectively with the photosensitive drums, a plurality of devices associated respectively with the photosensitive drums for illuminating an original document and exposing the photosensitive drums to color-separated images of the original document, image developing devices for developing latent images on the photosensitive drums into visible colored images, and image transfer devices for transferring the visible colored images from the photosensitive drums onto an image transfer sheet in overlapping relation, said mechanism comprising:
a single drive source having output means;
a plurality of driven rotational bodies which are substantially integral with said photosensitive drums, respectively; and
common transmitting means coupled to said output means for transmitting drive power from said single drive source to said driven rotational bodies under equal conditions wherein said driven rotational bodies are of identical dimensions and shape and are marked with indicia, respectively, at identical positions, said driven rotational bodies being angularly relatively positioned, using said indicia, on shafts of said photosensitive drums dependent on a phase of speed variations of the photosensitive drums.

4,796,051
MULTICOLOR LIQUID INK DEVELOPMENT SYSTEM
Edwin R. Monkelbaan, Fairport, and Joseph Fantuzzo, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 16, 1987, Ser. No. 26,423
Int. Cl.[4] G03G *15/10*
U.S. Cl. 355—4 **1 Claim**



1. An electrophotographic printing machine of the type having an electrostatic latent image recorded on a photoconductive member, wherein the improvement includes:
a plurality of stationarily mounted developer units;
means for supplying a liquid developer material of a selected color to each one of said plurality of said developer units, said supplying means supplying liquid developer material of a selected color to one of said plurality of developer units so as to develop the electrostatic latent image recorded on the photoconductive member with the liquid developer material of the selected color with the liquid developer material comprising at least a substantially colorless carrier having toner particles selected from cyan, magenta, yellow or black pigments therein; and
means for furnishing a cleaning material including at least the colorless carrier of the developer material to said one of said plurality of developer units so as to clean the liquid developer material therefrom prior to said supplying means supplying liquid developer material of another color to a other one of said plurality of developer units to prevent comingling of different color developer materials during development of another electrostatic latent image recorded on the photoconductive member, said furnishing means being de-energized prior to said supplying means supplying liquid developer material to said other one of said plurality of developer units.

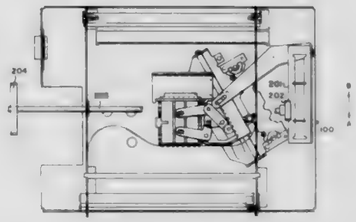
4,796,052
ELECTROPHOTOGRAPHIC COPYING MACHINE HAVING AN EDITORIAL FUNCTION
Taketomo Mizutani; Kenhachi Shiraki; Michihiko Hasegawa; Yujiro Koumoto; Yoshihiro Tanimoto; Masayuki Tanaka; Fumino Kimoto, and Fumihiko Hamada, all of Hyogo, Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Feb. 20, 1987, Ser. No. 17,811
Claims priority, application Japan, Feb. 20, 1986, 61-35658; May 7, 1986, 61-104271; May 13, 1986, 61-71503; May 16, 1986, 61-113102; May 16, 1986, 61-113103; May 28, 1986, 61-122535; May 29, 1986, 61-125320
Int. Cl.[4] G03B *15/00*
U.S. Cl. 355—7 **22 Claims**



1. An electrophotographic copying machine having an editorial function, comprising
position specifying means for specifying positions on a surface of an original to be edited by being moved while contacting with the surface of said original,
image forming means for forming a copied image of said original being edited according to positional data based on an amount of movement of said position specifying means,
said image forming means includes a photoreceptor for forming an electrostatic latent image thereon, and working means for working said electrostatic latent image based on positional data from said position specifying means,
said position specifying means includes a rotor rotated with movement of said position specifying means on said original and positional data generating means for generating positional data responding to an amount of rotation of said rotor,
said position specifying means further includes a pulse generator generating pulses attending on rotation of said rotor, and said positional data generating means including counting means for counting pulses generated by said pulse generator and generating counted value as said positional data.

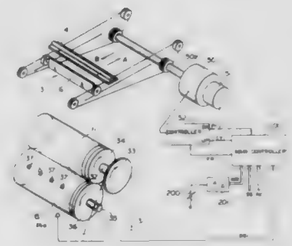
4,796,053
MAGNIFICATION CONVERTING MECHANISM FOR A VARIABLE MAGNIFICATION COPYING APPARATUS
Hiroshi Nakamura, Yamatokoriyama; Tatsushi Hayashi; Kenichi Iwamoto, both of Nara; Kenji Okada, Yamatokoriyama; Kouichi Matsumoto, Gojo, and Shoichiro Yoshiura, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 2, 1987, Ser. No. 104,047
Claims priority, application Japan, Oct. 4, 1986, 61-236898; Oct. 4, 1986, 61-236899
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—8 **10 Claims**

1. A magnification converting mechanism for a variable magnification copying apparatus comprising:
a magnification converting operational member provided on a control panel;
an operational torque transmitting device adapted to interlock with said magnification converting operational member;
a lens holder;
a lens assembly held by said lens holder;
an image scan speed change unit by which the image scan speed of an optical system is altered by changing speed change ratios; and



a speed change ratio selection means interlocked with said operational torque transmitting device so as to make operative one of a plurality of speed change ratios provided with the image scan speed change system.

4,796,054
CONTROL APPARATUS FOR A COLOR COPYING MACHINE
Satoru Maeno, Mie; Kenji Inoue, Ise; Masaaki Tanaka, Yokohama, and Akira Ogita, Sagamihara, all of Japan, assignors to Fuji Xerox Co., Ltd. and Shinko Electric Co., Ltd., both of Tokyo, Japan
Filed May 12, 1986, Ser. No. 862,020
Claims priority, application Japan, May 16, 1985, 60-104198
Int. Cl.[4] G03G *15/00*; **G03B** *27/50*
U.S. Cl. 355—8 **8 Claims**



1. A control apparatus for a color copying machine, said color copying machine comprising:
scanning means driven by a motor for applying a scanning beam onto a manuscript to effect a scanning operation, said motor being driven by a drive means;
a photoconductive drum operable to rotate for being exposed to said scanning beam to form on a peripheral surface thereof a latent image of an image on a scanned manuscript;
means for applying a toner to said latent image to form a toner image on said peripheral surface of said photoconductive drum;
a transfer drum for holding a record sheet therearound on a peripheral surface thereof and operable to rotate to thereby transfer said toner image on said photoconductive drum ot a held record sheet to form a copy image of said manuscript on said held record sheet; and
said control apparatus comprising:
means for providing data representative of a magnification

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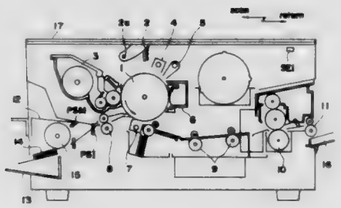
rate of said copy image to be formed on said record sheet to said image on said manuscipt;
calculation means for calculating data representative of a speed of said motor in accordance with said magnification-rate data; and
control means responsive to said speed data for driving said motor at a speed represented by said speed data, said control means including
pulse generating means for generating, in accordance with said speed data, a first pulse train whose pulse rate is determined by said speed data;
rotary encoder means operatively connected to said motor for outputting a second pulse train, the number of pulses of said second pulse train representing the amount of rotation by which said motor has been rotated; and
said drive means having counter means for up-counting the pulses of one of said first and second pulse trains and for down-counting the pulses of the other of said first and second pulse trains, said drive means driving said motor so that a count output of said counter means always represents a predetermined value,
whereby said scanning means effects said scanning operation at a speed determined by said magnification rate.

4,796,055

RECORDING APPARATUS INCORPORATING MANUAL PAPER FEEDER

Yoshiaki Takano; Masakazu Segane, both of Toyokawa, and Tomeo Kitagawa, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 14, 1987, Ser. No. 3,243
Claims priority, application Japan, Jan. 28, 1986, 61-17217
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 SH **13 Claims**



1. An image recording apparatus comprising:
means for transporting a paper inserted into a paper inlet toward a paper outlet through a recording position;
means for recording image onto the paper transported by said transporting means at the recording position; and
means for executing the paper transport operation by said transporting means without the image record operation by said recording means when paper is inserted into the paper inlet at an improper timing.

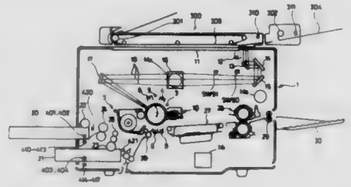
4,796,056

ELECTROPHOTOGRAPHIC COPYING MACHINE HAVING AN AUTOMATIC PAPER SELECTING FUNCTION

Masazumi Ito, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 6, 1987, Ser. No. 22,935
Claims priority, application Japan, Mar. 10, 1986, 61-53408; Mar. 10, 1986, 61-53409
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 SH **6 Claims**

1. An electrophotographic copying machine comprising:
means for forming an image of a document,
a plurality of paper feed portions capable of containing paper of different sizes,
first detection means for detecting a size of paper in each of said plurality of paper feed portions,
second detection means for detecting existence of paper in each of said plurality of paper feed portions,
means for manually selecting any of said plurality of paper feed portions,
third detection means for detecting a size of the document,
means for automatically selecting a paper feed portion con-



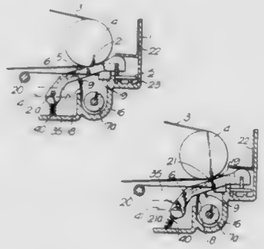
taining paper of a size corresponding to the detected size of the document,
means for selecting an automatic mode for performing copy operation by using said automatic selection means,
means for manually inputting an instruction for starting operation of said image forming means,
means for forbidding input of said instruction when paper does not exist in the paper feed portion selected by said manual selection means, and
means for cancelling a forbidden state of said input forbidding means when said automatic mode is selected.

4,796,057

TONER CLEANING APPARATUS

Alan C. R. Howard, Westoning; Philip R. Thompson, Harpenden, and Geoffrey Watts, Welwyn Garden City, all of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1987, Ser. No. 76,809
Claims priority, application United Kingdom, Jul. 25, 1986, 8618166
Int. Cl.⁴ G03G *21/00*
U.S. Cl. 355—15 **13 Claims**



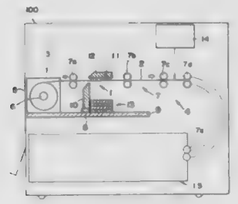
1. Apparatus for separating residual toner material from the surface of a re-usable image retaining member of a reproducing machine, comprising:
blade means for chiseling removal of toner from an image retaining member arranged for movement between two positions wherein at the first position the blade means operatively engages the image retaining member to remove said residual toner material therefrom and at the second position the blade means is spaced apart from the imaging retaining member;
a generally enclosed chamber with an opening for collecting the residual toner material as it is removed by said blade means; and
said second position of the blade means completely covering the opening and closing the chamber to form a sealed enclosure preventing the toner material contained therein from escaping.

4,796,058

RECORDING APPARATUS

Yukiyoshi Yamakoshi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1987, Ser. No. 139,453
Claims priority, application Japan, Jan. 6, 1987, 62-479[U]
Int. Cl.⁴ G03B *29/00, 27/52*
U.S. Cl. 355—29 **5 Claims**



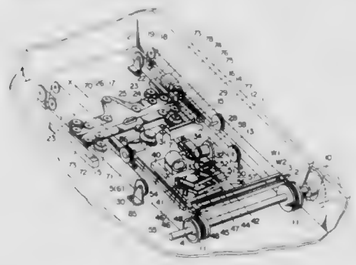
1. A recording apparatus for forming an image on a recording paper comprising:
means for feeding the recording paper drawn from roll storage paper along a predetermined path, said predetermined path including a portion where dust primarily from the recording paper accumulates;
means for forming an image on said recording paper;
a plurality of dust collecting means provided removably in superposed layers which are disposed at said portion for causing dust to adhere thereto, each of said dust collecting means including a base member and an adhesive layer covering said base member.

4,796,059

IMAGE FORMING APPARATUS WITH MAGNIFICATION CHANGING DEVICE

Yozo Fujii, and Taku Saito, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 26, 1988, Ser. No. 148,681
Claims priority, application Japan, Jan. 28, 1987, 62-11149[U]; Feb. 18, 1987, 62-36692
Int. Cl.⁴ G03B *27/34, 27/40, 27/70*
U.S. Cl. 355—57 **4 Claims**



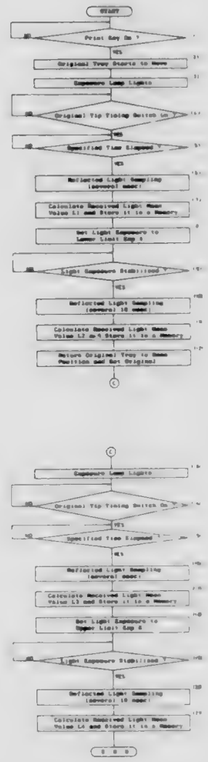
1. An image forming apparatus with a magnification changing mechanism, comprising first running means carrying a lamp and a mirror for scanning an image of a document; second running means adapted to run in the same direction but at one half speed of said first running means and carrying a mirror for reflecting again a light reflected from said first running means; and an optical system for projecting the image of said document on an image retainer through said mirrors; wherein a portion of said magnification changing mechanism is fixed when said optical system is in an exposure operation.

4,796,060

AUTOMATIC EXPOSURE DEVICE

Kazuhiro Mizade, Toyonaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 27, 1987, Ser. No. 89,874
Claims priority, application Japan, Aug. 29, 1986, 61-204650; Aug. 29, 1986, 61-204649
Int. Cl.⁴ G03B *27/72*; G03G *15/00*
U.S. Cl. 355—68 **8 Claims**



1. An automatic exposure device for an image forming apparatus which has a photosensitive drum and which is to copy an original document, said device comprising:
received light intensity obtaining means for obtaining received light intensity signals resulting from respectively exposing two documents which differ in density,
operation means for generating a characteristic signal indicative of the relationship between the two received light intensity signals, and
exposure light intensity calculation means for computing the exposure light intensity to be provided for the original document based on the comparison between the received light intensity signal obtained by exposing the original document and said characteristic signal.

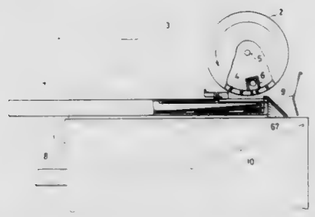
VOL 1098 ISS 1 JA 3 1989 UMI

4,796,061

DEVICE FOR DETACHABLY ATTACHING A FILM ONTO A DRUM IN A DRUM TYPE PICTURE SCANNING RECORDING APPARATUS

Masahide Ikeda; Hitomi Ataji, both of Kyoto; Takashi Ohara, Shiga, and Yumi Mizuno, Kyoto, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Nov. 13, 1986, Ser. No. 930,800
Claims priority, application Japan, Nov. 16, 1985, 60-255834
Int. Cl.[4] G03B *27/60*
U.S. Cl. 355—73 **9 Claims**



1. A film applying and removing device in a drum type picture scanning recording apparatus in which a photosensitive film is wound onto a rotational drum to be scanned and exposed by an exposing head, characterized by the following:

a frame,

a first tray on said frame for supporting a plurality of unexposed photosensitive films in overlapped manner, with each film having a tip end,

a scanning drum on said frame positioned substantially over the tip ends of said films in spaced relation thereto,

conveying means on said frame for raising and lowering the tip ends of said films with respect to said drum, and being adapted to raise selectively the tip ends of said film into contact with said drum,

a vacuum suctioning means attached to the body of said drum to hold only the tip end of one of said films in contact with the surface of said drum,

a drive means secured to said drum for selectively rotating said drum in opposite directions, and

a second tray on said frame for receiving exposed films for said drum, and

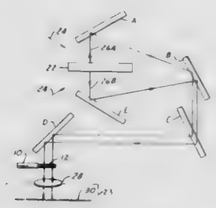
guide means on said frame for guiding said exposed films into said second tray.

4,796,062

METHOD FOR CALIBRATING EXPOSURE OF MULTIPLE CAMERAS

Michael D. Schulze, 23216 Marter, St. Clair Shores, Mich. 48080

Filed May 12, 1987, Ser. No. 49,136
Int. Cl.[4] G03B *27/74*
U.S. Cl. 355—77 **13 Claims**



1. A method for setting exposure of a first photographic film located in a first camera and thereafter setting exposure of a second photographic film located in at least one secondary camera, comprising the steps of:

(a) calibrating said first camera so that a first source of illumination will expose said first photographic film a predetermined amount;

(b) measuring light level of said first source of illumination at a first location relative to said first photographic film;

(c) calibrating said at least one secondary camera substantially equal to said calibrating of said first camera;

(d) measuring light level of a second source of illumination at a second location, said second location being a location which is positionally substantially similar in relation to said second photographic film as said first location was in relation to said first photographic film; and

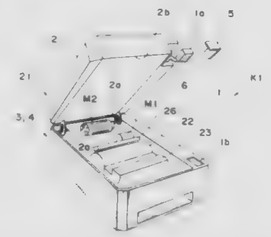
(e) setting brightness of said second source of illumination so that a light level is measured at said second location that is substantially equal to that measured at said first position.

4,796,063

MULTIPLE-UNIT TYPE COPYING APPARATUS

Akira Mitsuyama; Toshio Yamagishi, and Masanobu Deguchi, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 17, 1987, Ser. No. 121,801
Claims priority, application Japan, Nov. 17, 1986, 61-273717; Nov. 17, 1986, 61-273718
Int. Cl.[4] G03B *27/52*
U.S. Cl. 355—133 **6 Claims**



1. In a multiple-unit type copying apparatus having an apparatus housing divided into a plurality of units, the improvement comprising:

said units including a first unit in which an optical system and a driving means for driving said optical system are incorporated;

said first unit being openably provided so as to be opened about its one end portion relative to the remaining units;

a connector for coupling said driving means with a power source circuit, which is provided at a portion of said first unit other than said one end portion;

a coupling detecting means for detecting a coupling state of said connector; and

a power supply cut-off means for cutting off power supply to the remaining units when it has been found by said coupling detecting means that said connector is in an uncoupled state.

4,796,064

CYCLE-UP CONTROL SCHEME

Arthur L. Torrey, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

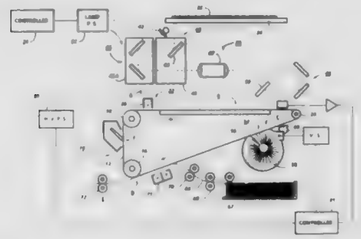
Filed Jan. 11, 1988, Ser. No. 142,591
Int. Cl.[4] G03G *15/02*
U.S. Cl. 355—14 CH **12 Claims**

5. A control device for adjusting the surface potential of an image bearing member during cycle up comprising:

output means for use in forming a latent image on the image bearing member wherein the output means produces a signal to control the surface potential of the image bearing member,

measuring means to measure the surface potential on said image bearing member, and

means responsive to the output means and the measuring



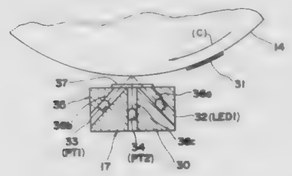
means after a first cycle of the machine to change the signal of the output means during a second cycle of the machine, the responsive means including a predictive component and a corrective component for enabling the printing of acceptable copy on unstable first cycles of the image bearing member.

4,796,065

APPARATUS FOR DETECTING IMAGE DENSITY IN AN IMAGE-FORMING MACHINE

Hideyuki Kanbayashi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 6, 1987, Ser. No. 22,124
Claims priority, application Japan, Mar. 10, 1986, 61-53413
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 E **5 Claims**



1. Apparatus for detecting image density in an image forming machine comprising:

means for forming at least a reference toner image on a recording medium;

means for projecting light onto the reference image;

first sensor means for receiving mainly a regular reflecting light reflected from said reference toner image, thereby generating an output signal corresponding thereto;

second sensor means for receiving mainly a scattered reflecting light reflected from said reference toner image, thereby generating an output signal corresponding thereto, said second sensor means generating an output signal equal to that from said first sensor means when both sensor means receive a reflecting light reflected from an image having a predetermined density; and

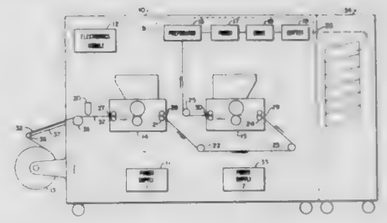
comparator means for comparing between the output from said first sensor means and the output from said second sensor means.

4,796,066

PRINTER APPARATUS HAVING TWO-SIDED PRINTING CAPABILITY

Scott S. Morris, Oklahoma City, Okla., and George R. Daniels, Glendale, Ariz., assignors to Honeywell Bull Inc., Minneapolis, Minn.

Filed Jul. 16, 1987, Ser. No. 74,201
Int. Cl.[4] G03B *27/32, 27/52*
U.S. Cl. 355—26 **9 Claims**



1. A printer capable of simultaneously performing front and backside printing on paper responsive to electronic input signals indicating images to be printed on the paper, said printer comprising:

a printer housing;

a first modular printing means mounted in said printer housing and being responsive to said electronic input signals for printing on a first side of said paper, said first printing means having an input via which said paper enters said first printing means, and an output via which said paper exits said first printing means after having been printed on said first side, said paper moving through the first printing means in a first direction;

a second modular printing means mounted in said printer housing and responsive to said electronic input signals for printing on a second side of said paper, said second printing means having an input via which said paper enters said second printing means, and an output via which said paper exits said second printing means after having been printed on said second side, said paper moving through the second means in a second direction, said first and second directions being substantially parallel, but opposite;

an output station for processing said paper after it has been printed on by one or both of said first and second printing means; and

paper handling means having two states, a first state for routing paper from the output of said first printing means to the input of said second printing means and from the output of the second printing means to said output station, and a second state for routing paper from the output of said first printing means directly to the output station.

4,796,067

SEMICONDUCTOR DEVICE HAVING A SUPERLATTICE STRUCTURE

Akira Shimizu; Toshitami Hara, both of Tokyo; Hidetoshi Nojiri, Matsudo; Isao Hakamada, Yokohama; Seiichi Miyazawa, and Yoshinobu Sekiguchi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1986, Ser. No. 828,254
Claims priority, application Japan, Feb. 19, 1985, 60-29305
Int. Cl.[4] H01L *27/12, 33/00*
U.S. Cl. 357—4 **5 Claims**

1. A semiconductor device comprising a plurality of laminated semiconductor layers adapted to receive a current flowing in the direction of lamination, and a semiconductor superlattice layer formed in at least one of said layers, wherein the potential of a quantum well of said superlattice layer is lower

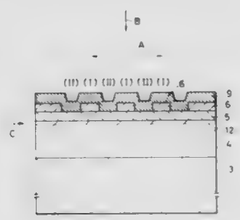
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than the potential of the semiconductor layer in which said superlattice layer is formed, and the potential of a barrier of



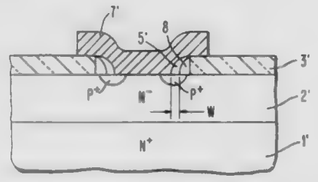
said superlattice layer is higher than the potential of the semiconductor layer in which said superlattice layer is formed.

4,796,068
SEMICONDUCTOR DEVICE HAVING ULTRAHIGH-MOBILITY
Yoshifumi Katayama, Tokorozawa; Yasuhiro Shiraki, Hino, and Yoshimasa Murayama, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 20, 1987, Ser. No. 40,123
Claims priority, application Japan, Apr. 21, 1986, 61-89961
Int. Cl.[4] H01L *29/161, /27/12*
U.S. Cl. 357—4 31 Claims



1. A semiconductor device comprising:
a semiconductor substrate;
first and second respective semiconductor layers formed on said semiconductor substrate, said first and second semiconductor layers forming therebetween aheterojunction and wherein a carrier transfer region is formed adjacent to said heterojunction;
first and second means for transmitting and receiving carriers and being formed on opposite ends of said carrier transfer region and in contact therewith;
a third semiconductor layer including a plurality of stripe regions formed on said second semiconductor layer, each of said stripe regions being formed on a portion of said second semiconductor layer with its length in a direction connecting said first and second means and wherein said plurality of stripe regions are parallelly spaced-apart and periodically disposed on said second semiconductor layer in a direction perpendicular to a direction connecting said first and second means; and
carrier controlling means for controlling the carriers in said carried transfer region, said carrier controlling means being formed on said plurality of stripe regions and on said second semiconductor layer region between respective pairs of stripe regions on a portion of said semiconductor device between said first and second means.

4,796,069
SCHOTTKY DIODE HAVING LIMITED AREA SELF-ALIGNED GUARD RING AND METHOD FOR MAKING SAME
Narasipur G. Anantha, Hopewell Junction; Harsaran S. Bhatia; Santosh P. Gaur, both of Wappingers Falls, all of N.Y., and John L. Mauer, IV, South Kent, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 263,227, May 13, 1981, Pat. No. 4,691,435.
This application Jun. 18, 1987, Ser. No. 63,345
Int. Cl.[4] H01L *29/48, 29/34, 29/04*
U.S. Cl. 357—15 2 Claims

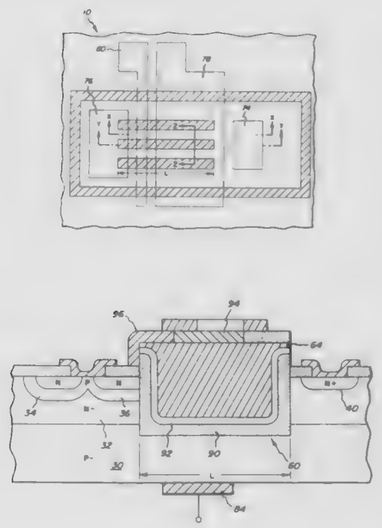


1. A self-aligned guard ring Schottky barrier diode comprising
a dielectric layer of a first thickness on a silicon substrate, said layer having a substantially vertically walled hole therein,
a doped silicon lining about the perimeter of said hole, said lining being of uniform horizontal width thickness in the range from about 1000 Å to about 3000 Å and being spaced from the perimeter of said hole by a lining of dielectric material, and
Schottky barrier contact metal on said substrate exposed within said lining.

4,796,070
LATERAL CHARGE CONTROL SEMICONDUCTOR DEVICE AND METHOD OF FABRICATION
Robert D. Black, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jan. 15, 1987, Ser. No. 3,678
Int. Cl.[4] H01L *29/06, 29/78, 29/40*
U.S. Cl. 357—23.4 19 Claims

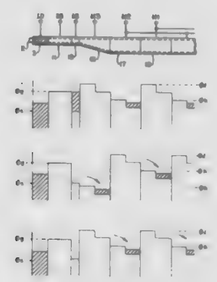
1. A semiconductor device comprising a semiconductor wafer including:
first and second layers, said first layer being of one type conductivity and said second layer being of an opposite type conductivity;
a first region of one type conductivity established within said second layer;
a second region of opposite type conductivity disposed within said first region;
a plurality of trenches disposed in said second layer extending through said first and second regions and said second layer and into said first layer;
a first insulated gate disposed in each of said trenches;

a second insulated gate disposed over a portion of said first region; and



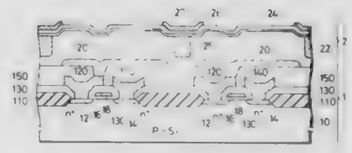
a field plate comprising an insulated gate structure disposed atop said first layer in the interstices of said plurality of trenches.

4,796,071
CHARGE COUPLED DEVICE DELAY LINE
Takuya Imaide, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 5, 1986, Ser. No. 893,181
Claims priority, application Japan, Aug. 5, 1985, 60-171089
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—24 4 Claims



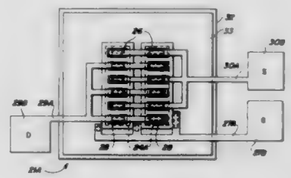
1. A charge coupled device comprising:
input means for producing a signal charge in response to an electrical signal applied thereto; and
transfer means, having a first end coupled to said input means and a second end, for transferring said signal charge from said first end to said second end, said transfer means including means adjacent to said first end thereof for decreasing said signal charge to be transferred to said second end.

4,796,072
SOLID-STATE IMAGING DEVICE WITH POTENTIAL BARRIERS BETWEEN PIXELS
Akio Higuchi, and Haruji Shinoda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 19, 1986, Ser. No. 932,412
Claims priority, application Japan, Nov. 22, 1985, 60-261455
Int. Cl.[4] H01L *27/14, 29/78*
U.S. Cl. 357—30 14 Claims



1. A solid-state imaging device comprising:
a semiconductor substrate having formed therein a scanning circuit for a plurality of photoconductive picture elements and including at least one semiconductor gate for each of said picture elements; and
a photoconductive film unit disposed on said semiconductor substrate in an area of said scanning circuit and including said plurality of photoconductive picture elements having a type of semiconductive carriers,
wherein said photoconductive film unit has, at positions separating said picture elements, impurity-doped regions, said impurity-doped regions forming potential barriers for said carriers.

4,796,073
FRONT-SURFACE N+ GETTERING TECHNIQUES FOR REDUCING NOISE IN INTEGRATED CIRCUITS
Jerry L. Bledsoe, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.
Filed Nov. 14, 1986, Ser. No. 931,211
Int. Cl.[4] H01L *29/72*
U.S. Cl. 357—34 16 Claims



1. A method of reducing noise in a semiconductor device, comprising the steps of:
(a) providing a first region in a top surface of a semiconductor wafer and providing a plurality of regions within the first region, some of the regions defining an electrically active region in which current flows to cause the semiconductor device to operate; and
(b) forming a gettering region of heavily doped, electrically inactive material in the top surface and located outside of and adjacent to the electrically active region of the semiconductor device by producing a high concentration of surface damage in the semiconductor crystal lattice in the top surface,
the gettering region occupying at least about 25 percent of the top surface area of the first region.

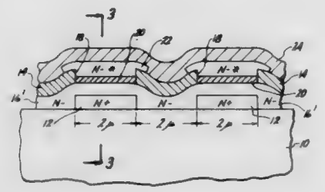
VOL 1098 ISS 1 JA 3 1989 UMI

4,796,074

METHOD OF FABRICATING A HIGH DENSITY MASKED PROGRAMMABLE READ-ONLY MEMORY

Bruce B. Roesner, San Diego, Calif., assignor to Instant Circuit Corporation, San Diego, Calif.

Filed Apr. 27, 1987, Ser. No. 42,682
Int. Cl.[4] H01L *27/02, 29/48, 29/04*
U.S. Cl. 357—51 **10 Claims**



1. An electrical programmable read-only memory comprising:

a semiconductor substrate;

a plurality of conductive word lines disposed on said substrate;

a first semiconductor material having a polycrystalline grain structure disposed on and between said plurality of word lines and on said substrate, said first semiconductor material having a sufficiently high lateral resistivity to avoid significant electrical conduction between adjacent ones of said conductive word lines, thereby avoiding limitations on the closeness of spacing of said conductive word lines to each other on said substrate, which limitations would have otherwise been encountered if said first semiconductor material were selectively disposed on said word lines;

an insulating layer disposed upon said first semiconductor material, said insulating layer having a plurality of apertures defined therethrough exposing portions of said first semiconductor material, each of said apertures defined in said insulating layer being approximately aligned with one of said word lines disposed beneath said aperture and said first semiconductor material;

a metallic compound in contact with said first semiconductor material forming a plurality of Schottky diodes therewith, said metallic compound being disposed in the form of a two-dimensional layer within each of said apertures in said insulating layer, a Schottky diode being formed in each of said plurality of apertures;

a second semiconductor layer disposed at least within said apertures in electrical contact with said metallic compound, said second semiconductor layer composed of semiconductor material having a first and second electrical state, said semiconductor material of said second semiconductor layer being electrically and permanently configured to said second electrical state from said first electrical state upon application of a threshold signal to said second semiconductor material; and

a plurality of conductive bit lines disposed on said second semiconductor layer and aligned at least with said metallic compound underlying said second semiconductor layer,

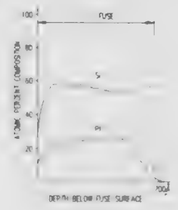
whereby cell densities in said memory is increased and having a decreased bit line and word line pitch without any increase in fabrication and alignment tolerances by which said memory is constructed.

4,796,075

FUSIBLE LINK STRUCTURE FOR INTEGRATED CIRCUITS

Ralph G. Whitten, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 564,439, Dec. 21, 1983, abandoned. This application Apr. 15, 1986, Ser. No. 852,473
Int. Cl.[4] H01L *27/02, 29/34, 23/48*
U.S. Cl. 357—51 **15 Claims**



1. In an integrated circuit structure, a fusible link structure comprising:

a first layer of dielectric material;

a resistive film comprising the platinum-silicide eutectic having approximately 23 weight percent silicon and having uniform composition throughout its thickness deposited on said first layer of dielectric material; and

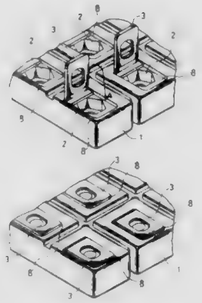
a second layer of dielectric material deposited on said resistive film.

4,796,076

SEMICONDUCTOR DEVICE

Hiroshi Ando, and Yoshio Takagi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1987, Ser. No. 19,561
Claims priority, application Japan, Feb. 28, 1986, 61-29312
Int. Cl.[4] H05K *7/02*
U.S. Cl. 357—65 **2 Claims**



1. A semiconductor device having a lid portion, said semiconductor device comprising:

a plurality of electrodes at an upper surface of said lid portion, said electrodes each having a given configuration and initially being positioned in a substantially vertical position generally perpendicular to said upper surface of said lid portion, said electrodes having a predetermined thickness; and

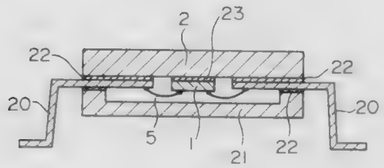
said lid portion defining recessed portions therein, each of said electrodes having a recessed portion for receiving said electrode after said electrode is bent from said substantially vertical position to a substantially horizontal position relative to said upper surface of said lid portion, said recessed portions guiding said electrodes as said electrodes are bent to said substantially horizontal position for avoiding deviations in positioning said electrodes in said substantially horizontal position, said recessed portions each having a configuration which substantially corresponds to the configurations of said electrodes such that said electrodes are encircled by and mated with said recessed portions when said electrodes are bent to said substantially horizontal position, said recessed portions each having a predetermined depth, and said predetermined depth of said recessed portions being slightly less than said predetermined thickness of said electrodes such that said electrodes in said horizontal position fail to be completely flush with said upper surface of said lid portion.

4,796,077

ELECTRICAL INSULATING, SINTERED ALUMINUM NITRIDE BODY HAVING A HIGH THERMAL CONDUCTIVITY AND PROCESS FOR PREPARING THE SAME

Yukio Takeda, and Satoru Ogihara, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1987, Ser. No. 84,073
Claims priority, application Japan, Aug. 13, 1986, 61-188479
Int. Cl.[4] H01L *23/48, 29/62;* **C04B** *35/52;* **F27B** *9/10*
U.S. Cl. 357—67 **11 Claims**



1. A highly thermal conductive, electrical insulating aluminum nitride sintered body having at least 90% of theoretical density, which comprises 20 to 40% by weight of silicon carbide, the balance being substantially aluminum nitride, the silicon carbide containing not more than 0.1% by weight of sum total of boron, aluminum and nitrogen, and not more than 0.2% by weight of sum total of iron, titanium, vanadium, chromium and nickel, and the aluminum nitride containing not more than 1% by weight of oxygen and not more than 0.5% by weight of sum total of silicon, iron and magnesium.

4,796,078

PERIPHERAL/AREA WIRE BONDING TECHNIQUE

Douglas W. Phelps, Jr., Burlington; Robert J. Redmond, Essex Junction, and William C. Ward, Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1987, Ser. No. 61,361
Int. Cl.[4] H01L *23/48, 23/30;* **H02G** *13/08*
U.S. Cl. 357—68 **18 Claims**

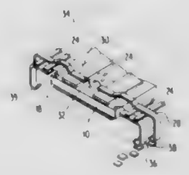
1. A electronic assembly comprising:

a first lead frame having a number of projecting leads;

an electronic device mounted on said first lead frame, said electronic device having a series of peripheral and center contact pads, means to establish electric contact between said first lead frame and said peripheral contact pads;

an adhesive insulative tape on both said first lead frame and said electronic device;

a second lead frame having a number of projecting leads and mounted on said tape, and means to establish electric



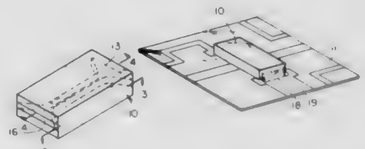
contact between said center contact pads and the leads of said second lead frame.

4,796,079

CHIP COMPONENT PROVIDING RF SUPPRESSION

James Hettiger, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Continuation of Ser. No. 634,330, Jul. 25, 1984, abandoned. This application Apr. 11, 1988, Ser. No. 183,301
Int. Cl.[4] H01L *23/54, 23/12, 23/14*
U.S. Cl. 357—68 **6 Claims**



1. A surface mounted ferrite shield component for application to an electrical printed circuit board in order to provide high frequency signal attenuation, comprising electrical conductor means having first and second leadless contact terminals and magnetically permeable ferrite material forming a ferrite body that substantially surrounds said conductor means, with said contact terminals being spaced apart and located at respective ends of said body, said first and second leadless contact terminals of said conductor means being accessible for providing electrical contact to said conductor means by circuitry associated with said printed circuit board, thereby permitting said high frequency signal to flow from one of said contact terminals to the other via a signal path provided by said conductor means in order to subject said high frequency signal to attenuation by the ferrite body along the signal path, wherein said conductor means defines a circuitous path located in a single plane and extending between said ends of said ferrite body to increase the length of said signal path inside the body for increasing the amount of high frequency signal attenuation provided by said surface mounted ferrite shield component.

4,796,080

SEMICONDUCTOR CHIP PACKAGE CONFIGURATION AND METHOD FOR FACILITATING ITS TESTING AND MOUNTING ON A SUBSTRATE

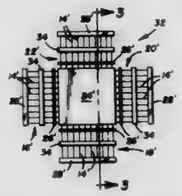
William S. Phy, Los Altos Hills, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Continuation of Ser. No. 758,607, Jul. 23, 1987, abandoned. This application Nov. 3, 1987, Ser. No. 122,545
Int. Cl.[4] H01L *23/48;* **H02G** *13/08*
U.S. Cl. 357—70 **6 Claims**

1. An integrated circuit semiconductor chip package having a plurality of closely spaced, freely extending, external leads internally connected to an integrated circuit for enabling elec-

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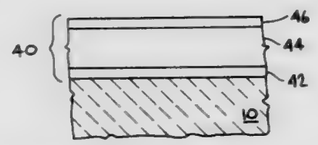
trical conduction to and from the integrated circuit, said chip package being of the type including a lead frame including electrically conductive bar means externally interconnecting said leads, said chip package further including lead alignment bar means removably externally interconnecting said leads for maintaining alignment thereof upon removal of said conductive bar means, said lead alignment bar means being formed from a semiconductive material selected to provide sufficient conductivity between said leads to substantially reduce electrostatic discharge conditions between leads during testing and handling, said semiconductive material being further selected to be sufficiently non-conductive to permit conventional functional and dynamic testing of said integrated circuit.



4,796,081
LOW RESISTANCE METAL CONTACT FOR SILICON DEVICES

Robin W. Cheung, Cupertino; Bernard W. K. Ho, Fremont; Hsiang-Wen Chen, Cupertino, and Hugo W. K. Chan, Fremont, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 2, 1986, Ser. No. 858,994
Int. Cl.⁴ H01L *23/48*
U.S. Cl. 357—71 **18 Claims**



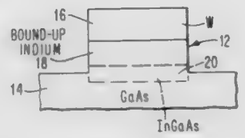
1. A metal contact system for silicon-based semiconductor devices comprising a first layer of a refractory metal silicide contacting a portion of a silicon region, an intermediate layer of aluminum formed on said first layer and a top layer of a refractory metal silicide formed on said intermediate layer.

4,796,082
THERMALLY STABLE OHMIC CONTACT FOR GALLIUM-ARSENIDE

Masanori Murakami, Goldens Bridge, and William H. Price, E. Rockaway, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1987, Ser. No. 26,337
Int. Cl.⁴ H01L *29/161, 23/48*
U.S. Cl. 357—71 **10 Claims**

1. In a semiconductor device having a substrate of gallium and arsenic, a contact to the substrate comprising:
a layer of conductive refractory material;
a metallic layer of intermetallic compounds with indium, said layer being disposed between said layer of refractory material and said substrate; and wherein

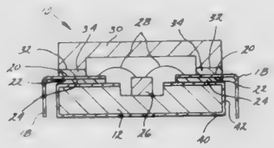


a layer of InGaAs is disposed between said metallic layer and said substrate.

4,796,083
SEMICONDUCTOR CASING

Satyam C. Cherukuri, West Haven, Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 2, 1987, Ser. No. 69,125
Int. Cl.⁴ H01L *23/02, 23/12, 23/30, 23/48*
U.S. Cl. 357—74 **10 Claims**



1. A semiconductor casing for an electrical component, comprising:
a metal or metal alloy leadframe having first and second opposite surfaces and being adapted to have said electrcial component connected thereto, each of said first and second surfaces having a first thin adherent oxide layer thereon;
a metal or metal alloy base member having first and second opposite surfaces with sides therebetween;
said base member having a relatively thin metal or metal alloy coating on at least the first surface and the sides thereof, the coating having a second thin adherent oxide layer on the outer surface thereof;
a metal or metal alloy cap member containing a bonding surface and a third thin adherent oxide layer on said bonding surface thereof; and
a glass or ceramic component bonding said first and second thin adherent oxide layers and said first and third thin adherent oxide layers.

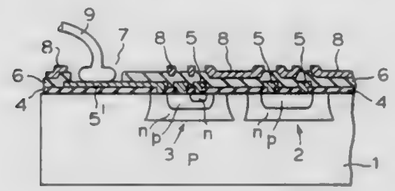
4,796,084
SEMICONDUCTOR DEVICE HAVING HIGH RESISTANCE TO ELECTROSTATIC AND ELECTROMAGNETIC INDUCTION USING A COMPLEMENTARY SHIELD PATTERN

Keiji Kanasaki; Tadao Dengo, both of Kanagawa; Ikuo Fukuda, Fukuoka, and Hideaki Motojima, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 12, 1986, Ser. No. 862,488
Claims priority, application Japan, May 13, 1985, 60-100913
Int. Cl.⁴ H01L *27/14, 23/48, 25/04, 31/12*
U.S. Cl. 357—84 **12 Claims**

1. A semiconductor device having high resistance to electrostatic and electromagnetic induction comprising:
a semiconductor element formed in a semiconductor substrate;

a first insulating film formed on a surface of said semiconductor substrate;
a wiring-pattern layer formed on said first insulating film, said wiring-pattern layer contacting said semiconductor substrate through at least one contact hole formed in said first insulating film;

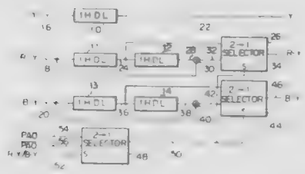


a second insulating film formed over said first insulating film to cover said wiring-pattern layer; and
a conductive shield film formed over said second insulating film substantially complementary to said wiring-pattern layer to substantially cover portions of said semiconductor substrate which are not covered by said wiring pattern layer.

4,796,085
DEVICE FOR INTERPOLATING MISSING COLOR-DIFFERENCE SIGNAL BY AVERAGING LINE-SEQUENTIAL COLOR-DIFFERENCE SIGNALS

Toru Shinada, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 17, 1987, Ser. No. 15,078
Claims priority, application Japan, Feb. 18, 1986, 61-32002
Int. Cl.⁴ H04N *1/46, 9/07*
U.S. Cl. 358—75 **6 Claims**

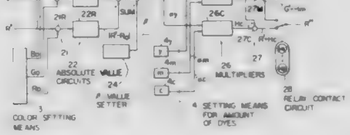


1. An apparatus for receiving consecutive video signals, each video signal representing data for a plurality of pixels on a horizontal scanning line and including a luminance signal and one of two possible color-difference signals, the two possible color-difference signals appearing alternately within the consecutive video signals, and for interpolating the other of the two possible color-difference signals in the video signal, comprising:
input means for receiving the consecutive video signals;
holding means, operatively connected to said input means, for temporarily holding the horizontal scanning line of each said video signal being received by said input means; and
interpolating means, operatively connected to said holding means and said input means, for producing an arithmetic mean of the color-difference signal of the video signal being held by said holding means and the color-difference signal of a next video signal simultaneously being received by said input means on a pixel to pixel basis, said pixels of one horizontal scanning line corresponding to the pixels of the next horizontal scanning line, thereby interpolating the missing color-difference signal;
said holding means including,
first delay means, operatively connected to said input means, for delaying by one horizontal scanning period the color-difference signal of the video signal being received by said input means, and
second delay means, operatively connected to said first delay means, for further delaying by one horizontal scanning period the color-difference signal having been delayed by said first delay means; said interpolating means including,
arithmetic mean means, operatively connected to said input means and said second delay means, for producing an arithmetic mean of an output of said second delay means and an output of said input means, and
selecting means, operatively connected to said arithmetic mean means and said first delay means, for selecting alternately either an output of said first delay means or an output of said arithmetic means.

4,796,086
METHOD FOR CONVERTING COLOR PICTURE SIGNALS

Noboru Ohta; Koji Takahashi; Tsuneo Suzuki, and Makoto Tsugita, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 26, 1985, Ser. No. 802,223
Claims priority, application Japan, Nov. 30, 1984, 59-252889; Dec. 19, 1984, 59-268104; Dec. 19, 1984, 59-268106
Int. Cl.⁴ H04N *1/46*
U.S. Cl. 358—80 **5 Claims**



1. A method for converting color picture signals regarding a displayed color picture to obtain a color hard copy thereof comprising the steps of:
designating a color for correction according to color hues of yellow, magenta and cyan;
maximally correcting said designated color by changing a signal level of a specific color; and
thereby obtaining a slow change of said correction far from said designated color.

4,796,087
PROCESS FOR CODING BY TRANSFORMATION FOR THE TRANSMISSION OF PICTURE SIGNALS

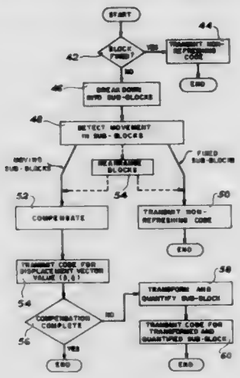
Jacques Guichard, 8 rue des Morillons, 75015 Paris, and Gérard Eude, 26 Allée Jean-Bart, 77200 Torcy, both of France

Filed Jun. 1, 1987, Ser. No. 59,333
Claims priority, application France, May 29, 1986, 86 07713
Int. Cl.⁴ H04N *7/13*
U.S. Cl. 358—136 **8 Claims**

1. A process for coding by transformation forthe transmission on a transmission line of a picture signal constituted by a sequence of frames, each containing a picture, said process comprising a stage of breaking the picture down into blocks, each block containing a group of matrix-organized digital data and representing part of the picture, the process being characterized in that it comprises, for each block, the steps of detecting movement of the block by comparing the said block of the current picture with the corresponding block of the preceding

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picture, if no movement is detected in the block, transmitting on the transmission line a non-refreshing code for the block and an identification code for the block in the picture and if a movement is detected in the block, breaking down the block



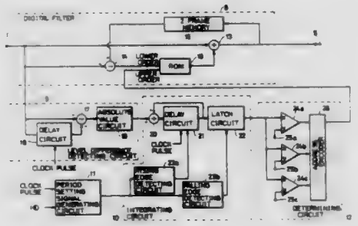
into several subblocks, detecting movement in each subblock of the block by comparing with the corresponding subblock of the corresponding block of the preceding picture and transmitting on the transmission line a code which is a function of the movement of the subblock.

4,796,088

NOISE REDUCER USING MAGNITUDE OF NOISE AND NON-LINEAR SIGNAL PROCESSING

Naruto Nishimura, Hirakata, and Junji Sato, Katano, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 19, 1987, Ser. No. 51,356
Claims priority, application Japan, May 20, 1986, 61-116911
Int. Cl.[4] H04N *5/213*
U.S. Cl. 358—167 **11 Claims**



1. A noise reducer for reducing noise included in a digital image signal, said digital image signal being input for every sample, said noise reducer comprising:

a digital filter for reducing noise in the digital image signal, by detecting for every sample a level difference signal between frames of said digital image signal, by processing said detected level difference signal in a non-linear manner in response to a kind of non-linear parameter selected from a predetermined plurality of kinds of non-linear parameters, and by providing a predetermined arithmetic processing to said digital image signal in according with an output signal processed in said non-linear manner, said digital filter including a level difference arithmetic means for detecting a level of the level difference signal between frames and for performing non-linear processing of the level difference signal between frames in accordance with one non-linear parameter selected from the predetermined plurality of kinds of non-linear parameters;

noise detecting means for detecting an amount of noise during a predetermined period of at least one frame of said digital image signal; and

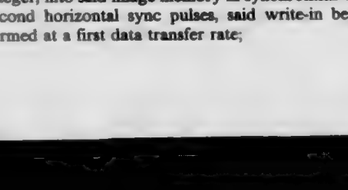
parameter selecting means for determining a magnitude of noise detected by said noise detecting means for selecting the kind of non-linear parameters to be used in said digital filter in response to results of the determination.

4,796,089

TELEVISION RECEIVER DISPLAY APPARATUS HAVING MULTI-IMAGE DISPLAY CAPABILITY

Kiyoshi Imai; Kazumi Kawashima, and Makoto Ishida, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1986, Ser. No. 942,914
Claims priority, application Japan, Dec. 17, 1985, 60-283521
Int. Cl.[4] H04N *5/262*
U.S. Cl. 358—183 **3 Claims**



1. A television receiver display apparatus for displaying a main image and at least one secondary image in combiantion upon a display screen, based upon data contained in first and second composite video signals respectively, the apapratus comprising:

an image memory capable of storing video data for one complete television image;

first and second line memories respectively capable of storing video data for one complete line of a television image;

first and second video signal processing circuits for producing a first video signal and second video signal respectively from said first composite video signal and second composite video signal, with at least said second video signal being output from said second video signal processing circuit in the form of successive data units representing respective picture elements;

first and second horizontal sync pulse generating circuits for producing first and second trains of horizontal sync pulses from said first and second composite video signals respectively;

circuit means for generating a set of n combining start pulses, where n is an integer, within each period of said first horizontal sync pulses and in synchronism with said first horizontal sync pulses;

circuit means for generating a train of line memory switching pulses each coinciding in time with a leading pulse of one of said set of n combining start pulses;

first memory control circuit means for alternately changing the operating modes of said first and second line memories, in response to successive ones of said line memory switching pulses, between a first condition in which write-in operation is enabled for said first line memory and read-out operation is enabled for said second line memory, and a second condition in which write-in operation is enabled for said second line memory and read-out operation is enabled for said first line memory;

second memory control circuit means for writing one in every m lines of said second video signal, where m is an integer, into said image memory in synchronism with said second horizontal sync pulses, said write-in being performed at a first data transfer rate;

third memory control circuit means for reading out from said image memory successive lines of video data in synchronism with said line memory switching pulses, said read-out being executed at said first data transfer rate, while transferring said read-out data to be alternately stored in said first and second line memories respectively, in accordance with the current statuses of said line memories;

fourth memory control circuit means for alternately reading out, in synchronism with said combining start pulses, successive lines of video data from said first and second line memories, in accordance with the current operating statuses of said line memories, said data read-out being executed at a second predetermined data transfer rate;

signal combining circuit means for combining said video data read out from said first and second line memories with said first video data from said first video signal processing circuit, to produce combined video data;

video display means for displaying said combined video data, and;

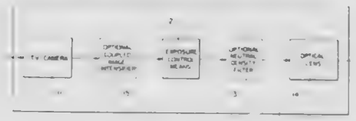
horizontal drive circuit means for implementing horizontal scanning of said video display means in synchronism with said first horizontal sync pulses.

4,796,090

RECONNAISSANCE SYSTEM

Israel Fraier, 22 Shmaryahu St., Rishon Lezion, Israel

Continuation-in-part of Ser. No. 773,132, Sep. 6, 1985, abandoned. This application Sep. 29, 1986, Ser. No. 912,524
Claims priority, application Israel, Sep. 6, 1984, 72878
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—211 **11 Claims**



1. A real time reconnaisance (surveillance) system adapted to be mounted on a moving aerial, ground or marine platform which provides very high resolution and high quality imaging, said system comprising in combination:

means for substantially eliminating or drastically reducing high frequency vibrations at frequencies higher than about the 30 to 40 Hz range, to a level of less than about 10 μrad peak to peak; TV electrooptical or staring arrays sensor means;

an optical lens of a focus of at least 300 mm;

exposure control means adapted to record or expose the target image on the said sensor for a period of time substantially shorter than the conventional frame time of the said sensors.

4,796,091

FACSIMILE APPARATUS

Hiroshi Nohtomi, Yokohama, Japan, assignor to Aisin Seiki Co., Ltd., Kariya City, Japan

Filed Jan. 30, 1987, Ser. No. 9,163
Claims priority, application Japan, Jan. 30, 1986, 61-018726
Int. Cl.[4] H04N *1/04*
U.S. Cl. 358—256 **18 Claims**

1. A facsimile apparatus comprising:

information signal receiving means,

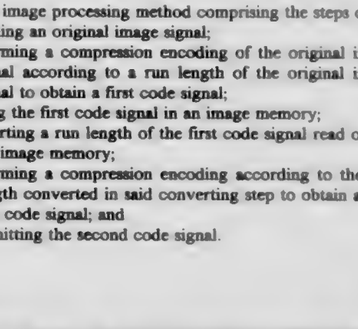
demodulation means connected to said receiving means which demodulates said signal to provide received information,

memory means connnected to said demodulation means which stores received information demodulated by said demodulation means,

display means connected to said memory means which displays received information demodulated by said demodulation means,

recording means connected to said memory means and said demodulation means which records received information demodulated by said demodulation means,

electronic control means which controls operation of said memory means, display means and recording means,



first power supply means which supplies electrical power to said memory means and display means, and

second power supply means which supplies electrical power to said recording means,

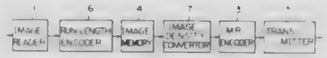
wherein said control means provides an operation selection means which selectively operates said memory means, display means and recording means and said operation selection means provides a driver detection means which detects absence of a driver.

4,796,092

IMAGE PROCESSING WITH COMPRESSION ENCODING

Yukihiko Ogata, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,707
Claims priority, application Japan, Apr. 3, 1984, 59-65075
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—261.1 **13 Claims**



1. An image processing method comprising the steps of:

obtaining an original image signal;

performing a compression encoding of the original image signal according to a run length of the original image signal to obtain a first code signal;

storing the first code signal in an image memory;

converting a run length of the first code signal read out of the image memory;

performing a compression encoding according to the run length converted in said converting step to obtain a second code signal; and

transmitting the second code signal.

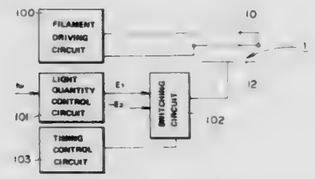
VOL 1098 ISS 1 JA 3 1989 UMI

4,796,093

METHOD AND SYSTEM OF DRIVING LIGHT SOURCE

Fumio Asano, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Japan

Filed Jun. 2, 1986, Ser. No. 869,593
Claims priority, application Japan, Jun. 10, 1985, 60-125783
Int. Cl.[4] H04N 1/00
U.S. Cl. 358—280 16 Claims



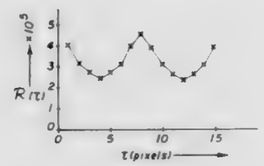
1. A method of driving a fluorescent indicator tube light source for reading a picture image, comprising a first step of applying to an anode of said fluorescent indicator tube an opposite polarity voltage having a polarity opposite to that of a voltage applied to said light source in a substantial picture-reading period, during a first predetermined period immediately before said substantial picture-reading period, a second step of applying a normal polarity voltage to said anode of the fluorescent indicator tube during the substantial picture-reading period, and a third step of applying said opposite polarity voltage to the anode of the fluorescent indicator tube during a second predetermined period immediately after the substantial picture-reading period.

4,796,094

METHOD FOR RECONSTRUCTING A DITHER MATRIX

Etienne L. M. E. van Dorsselaer, Sintjanstoren, Netherlands, assignor to OCE-Nederland B.V., Venlo, Netherlands

Filed Oct. 27, 1987, Ser. No. 113,889
Claims priority, application Netherlands, Oct. 29, 1986, 8602712
Int. Cl.[4] H04N 1/40
U.S. Cl. 358—283 5 Claims



1. A method of reconstructing a dither matrix from a dithered image dithered by said matrix comprising the steps of:

a. determining (i) a period m, where m is the main spatial frequency in the row direction and (ii) a period n, where n is the main spatial frequency in the column direction of said dithered image;

b. determining the dimensions in pixels of said dither matrix by equating the dimension in the row direction to m and equating the dimension in the column direction to n;

c. dividing the dithered image into adjacent areas of m×n pixels;

d. counting, for each given pixel position in the dither matrix to be reconstructed, the pixels having a specific value in those positions in the divided areas which correspond to the given pixel position in said dither matrix and compiling a distribution function of the counted pixels as a function of the position in said dither matrix; and

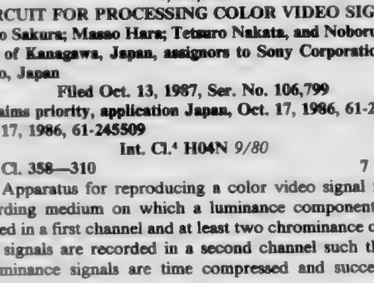
e. allocating a threshold value to each position in the dither matrix to be reconstructed, based on the value of said distribution function in that position.

4,796,095

METHOD OF GENERATING IMAGE SCANNING CLOCK SIGNALS IN OPTICAL SCANNING APPARATUS

Kazuyuki Shimada, Chofu, Japan, assignor to Rioch Company, Limited, Tokyo, Japan

Filed Sep. 22, 1987, Ser. No. 99,539
Claims priority, application Japan, Sep. 9, 1986, 61-226641
Int. Cl.[4] H04N 1/04
U.S. Cl. 358—285 2 Claims



1. A method of generating image scanning clock signals in an optical scanning apparatus in which a light beam is periodically deflected by a rotating light beam deflector to scan a surface area, and is detected by a light sensor disposed outside of the surface area being scanned for synchronizing main scanning cycles, said method comprising the steps of:

selecting one of a plurality of pulse signal groups which are of the same frequency as that of image scanning clock signals and are shifted in phase from each other, as image scanning clock signals in response to an output signal from the light sensor;

applying reference clock signals C_0 of the same frequency as that of the image scanning clock signals to a shift register;

applying corrective clock signals SCK of a higher frequency than that of the reference clock signals C_0 as shift clock signals to the shift register; and

delaying n output signals $C_1, C_2, C_3, \ldots C_n$ ($n \geqq 2$) from said shift register successively a phase Δt by delay circuits to produce the aforesaid plurality of pulse signal groups, said phase Δt meeting the relationship:

$$0 < \Delta t < \frac{1}{n \cdot f_0}$$

where C_0: f_0 MHz, and SCK: $n \cdot f_0$ MHz

4,796,096

CIRCUIT FOR PROCESSING COLOR VIDEO SIGNAL

Yasuo Sakura; Masao Hara; Tetsuro Nakata, and Noboru Fujii, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 106,799
Claims priority, application Japan, Oct. 17, 1986, 61-245510; Oct. 17, 1986, 61-245509
Int. Cl.[4] H04N 9/80
U.S. Cl. 358—310 7 Claims

1. Apparatus for reproducing a color video signal from a recording medium on which a luminance component is recorded in a first channel and at least two chrominance component signals are recorded in a second channel such that the chrominance signals are time compressed and successively

recorded in a cyclically repeated fashion, the apparatus comprising:

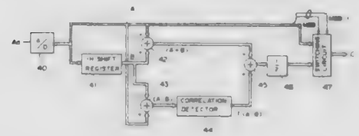
time expanding means supplied with reproduced chrominance signals for time expanding said reproduced chrominance signals to generate first and second time expanded chrominance signals; and

a pair of signal processing means supplied with said first and second chrominance signals, respectively, each of said signal processing means including:

delay means for delaying an input chrominance signal by a horizontal interval to provide a delayed chrominance signal;

adder means for adding said input chrominance signal and said delayed chrominance signal to provide an added output;

correlation detecting means for detecting a correlation between said input chrominance signal and said delayed chrominance signal and providing a correlation output;



level detecting means for detecting a level of said input chrominance signal and generating a first output when the level of said input chrominance signal is higher than a reference level and generating a second output when the level of said input chrominance signal is lower than said reference level; and

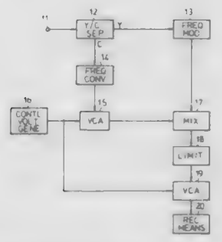
signal generating means controlled by the correlation output from said correlation detecting means and the first and second outputs of said level detecting means for generating an output signal equal to said input chrominance signal when said level detecting means generates the second output and when said level detecting means generates the first output and said correlation detecting means detects a smaller correlation, and generating an output signal equal to an average level of said input chrominance signal and said delayed chrominance signal when said level detecting means generates the first output and said correlation detecting means detects a larger correlation.

4,796,097

OPTICAL DISC RECORDING APPARATUS FOR A COLOR TELEVISION SIGNAL

Akira Mashimo, Tokorozawa, Japan, assignor to Teac Corporation, Musashino, Japan

Filed Jun. 26, 1987, Ser. No. 68,016
Claims priority, application Japan, Jul. 1, 1986, 61-154691
Int. Cl.[4] H04N 9/80, 5/85
U.S. Cl. 358—330 6 Claims



1. An optical disc recording apparatus for recording by use of a laser beam a frequency division multiplexed signal on an optical disc which is rotated at a constant angular velocity, said frequency division multiplexed signal being constituted by a frequency modulated luminance signal and a frequency converted carrier chrominance signal which has been frequency-converted into a frequency range lower than a frequency range of the frequency modulated luminance signal, said optical disc recording apparatus comprising:

multiplexing means for frequency-division-multiplexing the frequency modulated luminance signal and the frequency converted carrier chrominance signal with a variable frequency-division-multiplexing ratio so that a frequency-division-multiplexing ratio of the frequency converted carrier chrominance signal with respect to the frequency modulated luminance signal becomes greater approximately proportionally to a relative linear velocity between the optical disc which rotates at the constant angular velocity and the laser beam which scans the optical disc;

limiter means for converting an output frequency division multiplexed signal of said multiplexing means into a square wave having a constant amplitude;

amplitude varying means for varying an amplitude of the output square wave of said limiter means approximately proportionally to said relative linear velocity; and

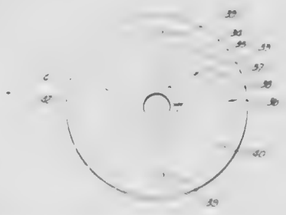
recording means including a laser right source for generating the laser beam responsive to an output signal of said amplitude varying means.

4,796,098

BANDED AND INTERLEAVED VIDEO DISC FORMAT WITH DUPLICATE INFORMATION STORED AT DIFFERENT DISC LOCATIONS

Gary M. Giddings, Laguna Hills, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Dec. 4, 1981, Ser. No. 327,321
Int. Cl.[4] H04N 5/85; G11B 7/007
U.S. Cl. 358—342 17 Claims



1. An information storage carrier for storing intelligence information along a path on said carrier, said carrier comprising:

an information storage member having a surface upon which said information is stored;

a first series of lineal regions arranged on said surface and defining a program of information, each region of said first series of regions containing information representative of a video frame of said program information, each video frame being accompanied by an associated frame identifying number; and

a second series of lineal regions arranged on said surface and spaced from said first series of lineal regions, each region of said second series of regions containing information representative of the same respective video frame of the information stored in a corresponding region of said first series of lineal regions with the accompanying frame number of each region of said second series of lineal regions being of a value higher than that of the corresponding region of said first series of lineal regions by a fixed increment, thereby providing duplication of said program

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information at two locations on said storage member each with its own unique series of frame identification numbers.

4,796,099

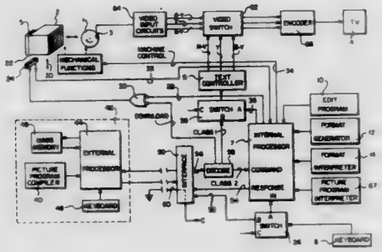
VIDEO STILL PLAYER WITH INTERNAL CAPABILITY FOR EXECUTING EXTERNALLY-GENERATED VIEWING PROGRAMS

John T. Compton, Leroy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1986, Ser. No. 855,251

Int. Cl.[4] H04N *5/781*

U.S. Cl. 358—342 **9 Claims**



9. In a video player capable of reproducing pictures recorded on a plurality of video disks contained in a magazine, the pictures being reproduced according to a viewing arrangement located in a storage device attached to the magazine, the player further including an internal processor for operating the player and an external port for attaching an external compiler to the player, the improvement wherein the player further comprises:

means for downloading custom program statements from the external compiler through the external port to the storage device;

custom interpreter means cooperative with the internal processor for generating machine operating instructions from the custom program statements; and

means for directing the custom program statements stored by said storage device to said custom interpreter means whereby the internal processor operates the player according the machine operating instructions and independently of the external compiler.

4,796,100

PICTORIAL INFORMATION SOURCE SYSTEM

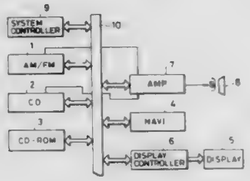
Shozabaro Sakaguchi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 28, 1986, Ser. No. 834,683

Claims priority, application Japan, Feb. 28, 1985, 60-39453; Feb. 28, 1985, 60-39454

Int. Cl.[4] H04N *5/76*

U.S. Cl. 358—342 **7 Claims**



1. An on-board pictorial information source system for providing pictorial information for vehicle riders comprising:

first disc reproducing means for reproducing a disc recording medium carrying digital data recorded therein;

output means for producing pictorial information on the basis of the reproduced digital data produced from said first disc reproducing means;

second disc reproducing means for reproducing another disc recording medium carrying digital audio signal recorded therein and for producing the reproduced digital audio signal in the form of a digital/analog converted signal, said first and second disc reproducing means being capable of operating independently of each other; and

a common controller for controlling both said first and second disc reproducing means.

4,796,101

AUTOMATIC FM SIDEBAND LEVEL CONTROL FOR VIDEO RECORDERS

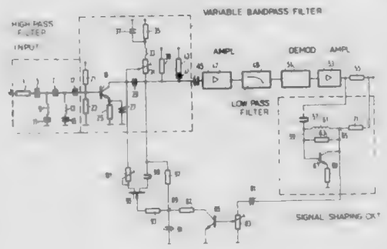
Karl-Heinz Kupfer, Krefeld, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed May 1, 1986, Ser. No. 858,479

Claims priority, application Fed. Rep. of Germany, May 10, 1985, 3516913

Int. Cl.[4] H04N *5/78;* **G11B** *5/04*

U.S. Cl. 358—335 **3 Claims**



1. A circuit arrangement for a luminance signal playback channel of a video playback apparatus, comprising an input terminal for receiving an input signal with an FM carrier and an FM sideband spectrum, a bandpass filter connected to said input terminal, said bandpass filter having a frequency characteristic which is variable in order to influence the amplitude characteristic of the FM sideband spectrum, a demodulator connected to said bandpass filter, a signal shaping circuit connected to said demodulator, and a control signal generator connected to said signal shaping circuit to derive a control signal from the output of the signal shaping circuit, said bandpass filter comprising a control input for receiving said control signals, said bandpass filter having a frequency characteristic which is controlled in response to the control signal, wherein said circuit arrangement in response to said control signal produces on an output of the bandpass filter an FM spectrum which is substantially amplitude symmetrical relative to the FM carrier frequency.

4,796,102

AUTOMATIC FREQUENCY CONTROL SYSTEM

Michael McGinn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1987, Ser. No. 81,041

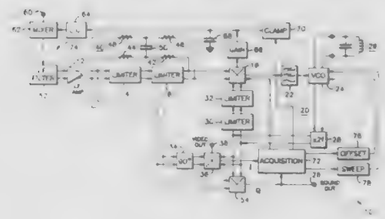
Int. Cl.[4] H04N *5/50;* **H04B** *1/18*

U.S. Cl. 358—195.1 **5 Claims**

1. In a television receiver having a local oscillator (LO), an intermediate frequency (IF) demodulator section including a pair of quadrature operated demodulators responsive to a received IF signal, a phase locked loop including a phase detector and a voltage controlled oscillator (VCO) for phase locking onto the received IF signal, and an automatic frequency control circuit responsive to the received IF signal for controlling the operating frequency of the LO, the improvement comprising:

sensing means for detecting the absence or presence of the received IF signal to provide a plurality of enabling and disabling control signals at respective outputs, said sensing means being coupled to respective outputs of the demodulators;

an offset circuit coupled to a first output of said sensing means which is enabled thereby in the absence of the



received IF signal for providing a control signal to the VCO causing the nominal operating frequency thereof to change to a first predetermined frequency;

a clamp circuit coupled to a second output of said sensing means which is enabled thereby in the absence of the received IF signal for providing a control signal to the LO thereby causing the nominal operating frequency hereof to be changed to a second predetermined frequency; and

said sensing means disabling said offset circuit and said clamp circuit in the presence of the received IF signal and the phase locked loop becoming phase locked thereto.

4,796,103

CONTROL PULSE RECORDING CIRCUIT FOR DUAL TAPE SPEED RECORDING AND REPRODUCING APPARATUSES USING TWO PAIRS OF HEADS SELECTIVELY FOR SELECTED SPEED INCLUDING RECORDING DELAYED CONTROL PULSES

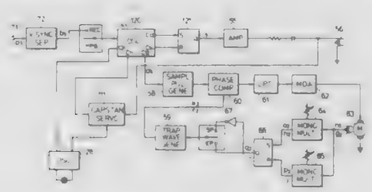
Yoshio Tokuyama, Yokohama, Japan, assignor to Victor Company of Japan Ltd., Kanagawa, Japan

Filed Jun. 2, 1986, Ser. No. 870,250

Claims priority, application Japan, Jun. 3, 1985, 60-119999; Jun. 4, 1985, 60-121168

Int. Cl.[4] H04N *5/783*

U.S. Cl. 360—10.3 **2 Claims**



1. A control pulse recording circuit for a magnetic recording and reproducing apparatus, said magnetic recording and reproducing apparatus comprising recording and reproducing means including two pairs of video heads for recording and reproducing a video signal on and from a magnetic tape by selectively switching and using one pair of video heads depending on a moving speed of the magnetic tape, each pair of video heads comprising video heads having gaps of mutually different azimuth angles; and separating means for separating a vertical synchronizing signal from the video signal supplied to said separating means, said control pulse recording circuit comprising:

oscillator means for generating a predetermined signal having a predetermined frequency which is higher than that of the vertical synchronizing signal;

counter means supplied with the predetermined signal from said oscillator means and the vertical synchronizing signal from said separating means, for counting the predetermined signal, said counter means being reset by the vertical synchronizing signal in a recording mode and running free at an oscillation frequency of 30 Hz in a reproducing mode, said counter means producing a 30 Hz signal when a counted value in said counter means reaches a threshold value, said 30 Hz signal being produced with a timing which has been delayed by a predetermined time from every other vertical synchronizing signal in the recording mode irrespective of the selective use of the pairs of video heads in said recording and reproducing means;

circuit means supplied with said 30 Hz signal from said counter means for producing 30 Hz control pulses; and

control head means coupled to said circuit means for recording the 30 Hz control pulses on the magnetic tape in the recording mode,

the 30 Hz control pulses being recorded on the magnetic tape with a timing delayed by a delay time t_{SP} from a timing of said every other vertical synchronizing signal in both first and second modes, so that a deviation in an X-value caused by a positional adjustment of said control head means in said first mode is corrected by said delay time t_{SP}, the moving speed of the magnetic tape in said first mode being faster than that of said second mode, said delay time t_{SP} being described by $t_{SP}=t_{EP}=(1-(1/N))^{-1}\times(P/A)\times T0$, where A denotes a track pitch of the video heads in said first mode, 1/N denotes a ratio of the moving speeds of the magnetic tape between said first and second modes, P denotes a difference C0−C1 between an actual difference C1 and an ideal difference C0 between relative height positions of the video heads with respect to a reference height position, and T0 denotes a field period, said X-value being a distance on said magnetic tape from one of said video heads which terminated a scan on the magnetic tape and said control head means, said ideal difference C0 being obtained when said X-value is set to a regular value.

4,796,104

VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS PERFORMING TIME-LAPSE RECORDINGS COMPATIBLE WITH STANDARD-TYPE APPARATUSES

Yutaka Ito, Tokyo; Kazuo Negishi, and Kohei Yamashita, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Apr. 3, 1987, Ser. No. 34,340

Claims priority, application Japan, Apr. 7, 1986, 61-79595; Apr. 8, 1986, 61-52561[U]

Int. Cl.[4] H04N *5/782*

U.S. Cl. 360—10.3 **14 Claims**

1. A helical scan type video signal recording and reproducing apparatus comprising:

a rotary body mounted with a pair of rotary magnetic heads at positions having an angular separation of $180°+\alpha$ on a rotational plane of the rotary body, where α is an angle smaller than 90°, said pair of rotary magnetic heads having mutually different height positions along an axial direction of the rotary body;

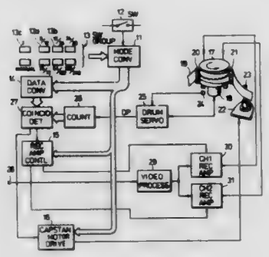
transporting means for intermittently transporting a magnetic tape which is wrapped obliquely around a peripheral surface of the rotary body for a predetermined angular range;

recording and reproducing means for successively recording a video signal on a pair of successive tracks of the magnetic tape by use of the pair of rotary magnetic heads, and for successively reproducing the video signal from the

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pair of successive tracks of the magnetic tape by use of the pair of rotary magnetic heads; and

control means for repetitively causing said transporting means to transport the tape a predetermined constant



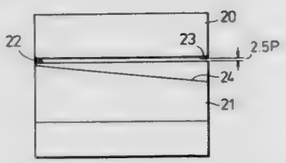
distance and to stop transport of the tape and said recording and reproducing means to record in a time lapse recording mode and to reproduce in a time lapse reproduction mode a video signal amounting to one field on each track of the pair of successive tracks.

4,796,105

HELICAL SCAN TYPE MAGNETIC RECORDING AND REPRODUCING APPARATUS FOR RECORDING AND REPRODUCING DIGITAL SIGNAL

Akinori Mawatari, Kodaira, Japan, assignor to Teac Corporation, Japan

Filed Feb. 10, 1987, Ser. No. 13,129
Claims priority, application Japan, Feb. 21, 1986, 61-37890
Int. Cl.[4] G11B *27/02, 15/14*
U.S. Cl. 360—14.1 **6 Claims**



1. A helical scan type magnetic recording and reproducing apparatus for recording and reproducing a digital information signal on and from tracks of a magnetic tape, said tracks being formed obliquely to a longitudinal direction of the magnetic tape, said helical scan type magnetic recording and reproducing apparatus comprising:

a drum assembly comprising a stationary drum and a rotary drum, said rotary drum rotating at a predetermined rotational speed so that a rotating angle of said rotary drum corresponds to a time period;

first and second rotary magnetic heads mounted on the rotary drum at positions having an angular separation of approximately 180° on a rotating plane of the rotary drum and having a predetermined separation along an axial direction of the rotary drum so that said second rotary magnetic head scans a predetermined track position on the magnetic tape a predetermined time after said first rotary magnetic head scans said predetermined track position;

first signal processing means for subjecting a digital signal which is to be recorded by one of said first and second rotary magnetic heads to a predetermined digital signal processing including an encoding process; and

second signal processing means for subjecting a digital signal which is reproduced by the other of said first and second rotary magnetic heads to a predetermined digital signal processing including a decoding process,

said predetermined time being longer than a maximum time required to carry out the digital signal processings in said first and second signal processing means and corresponding to a predetermined rotating angle θ_T of the rotary drum, where $\theta_T = 540° + 360° \times m$ and m=0, 1 or 2,

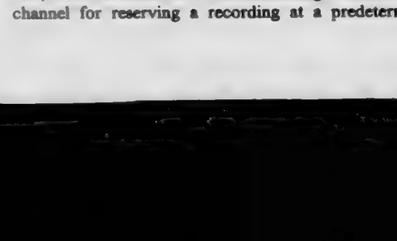
said predetermined separation being set to $(\theta_T/360°)\cdot P$ in track pitch P, said track pitch P being a distance between center lines of two mutually adjacent tracks on the magnetic tape.

4,796,106

A.C. SELF-BIASED MAGNETORESISTIVE REPRODUCE HEAD UTILIZING SECOND HARMONIC SIGNAL DETECTION

Dominique H. Veillard, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1987, Ser. No. 55,829
Int. Cl.[4] G11B *20/06, 5/127*
U.S. Cl. 360—30 **8 Claims**



1. An improved apparatus for recovery of a pre-recorded signal from a magnetic medium by means of a self-biased magnetoresistive reproduce head of the type adapted to have an a.c. sense current applied to the magnetoresistive element of said magnetoresistive reproduce head, wherein said pre-recorded signal effects modulation of resistance of said magnetoresistive element resulting in a voltage variation across said magnetoresistive element, said apparatus comprising:

a. means for selecting sideband components of said voltage variation resulting from the coaction of said a.c. sense current and said modulation of resistance of said magnetoresistive element, to provide selected sideband components,

b. local oscillator means having a frequency harmonically related to the frequency of said a.c. sense current for coacting with said selected sideband components, and

c. demodulator means cooperating with said local oscillator means for demodulating said selected sideband components whereby said pre-recorded signal is recovered.

4,796,107

APPARATUS FOR RESERVING PROGRAMS AT VARIOUS RECORDING TAPE RUNNING SPEEDS

Hiroshi Hiraki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 8, 1986, Ser. No. 904,934
Claims priority, application Japan, Sep. 19, 1985, 60-142984[U]
Int. Cl.[4] H04N *5/76*
U.S. Cl. 360—33.1 **9 Claims**

1. In an apparatus for recording signals at a predetermined future time, the combination of:

first means for storing a plurality of first sets of data respectively representative of a plurality of said recording signals, each said first set of data including time, date and channel for reserving a recording at a predetermined future time of the signal represented by said first set of data;

second means for storing second data representative of recording tape running speed respectively relatively related to each of the signals whose recording has been reserved; and



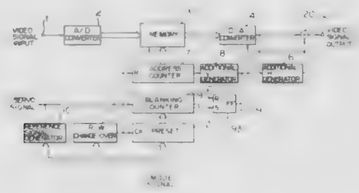
third means for reading each of said first sets of data and said second data to cause each of said signals to be respectively recorded at said predetermined future times at the predetermined recording tape running speed related to the signal thus reserved.

4,796,108

MAGNETIC RECORDING/REPRODUCING APPARATUS

Jun Kobayashi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1987, Ser. No. 83,164
Claims priority, application Japan, Aug. 11, 1986, 61-186825
Int. Cl.[4] H04N *5/78*
U.S. Cl. 360—37.1 **7 Claims**



1. A magnetic recording/reproducing apparatus comprising:

a field memory storing a signal portion corresponding to predetermined one field of a video signal read out from a magnetic tape by magnetic heads;

means for reading out a video signal from said field memory;

first adding means for adding a vertical synchronizing pulse to the output signal of said reading means;

substituting means for substituting a portion of the memory output signal, generated in a predetermined period immediately before the addition of the vertical synchronizing pulse, by a substituting signal having a level closer to the white level than the pedestal level; and

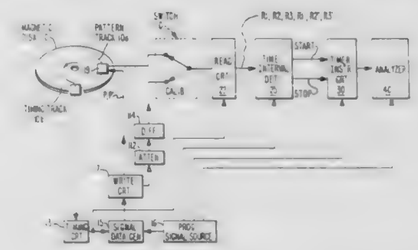
second adding means for adding a horizontal synchronizing pulse to the substituted predetermined period of the video signal.

4,796,109

METHOD FOR TESTING COMPONENTS OF A MAGNETIC STORAGE SYSTEM

Frank J. Sordello, Los Gatos, and Andrew M. Rose, Mt. View, both of Calif., assignors to Unisys Corp., Detroit, Mich.

Continuation of Ser. No. 617,437, Jun. 5, 1984, abandoned. This application Mar. 28, 1988, Ser. No. 180,659
Int. Cl.[4] G11B *5/09, 27/36*
U.S. Cl. 360—45 **14 Claims**



1. A method of testing magnetic storage system comprising the steps of:

providing a recording medium having a relatively large plurality of like recording patterns provided along a track of said medium, each pattern including at least first, second and third magnetically detectable manifestations formed in said medium, said magnetically detectable manifestations being spaced so that the spacings between said first and second manifestations and between said first and third manifestations are relatively large as compared to the spacing between said second and third manifestations, the spacing between said first and second manifestations constituting a first spacing and the spacing between said first and third manifestations constituting a second spacing;

moving said medium and a head relative to one another such that said head traverses said manifestations and produces head output signals in response thereto, said moving also being such that said first manifestation is traversed by said head before said second and third manifestations;

detecting said head output signals produced by said head as said head and medium are relatively moved;

producing in response to said detecting an indication of bit shift based on the difference between the time interval detected in response to said head traversing the manifestations corresponding to at least one of said first and second spacings and a reference time interval corresponding to that which would be obtained if there were no bit shift, and wherein said producing step produces said indication taking into account the differences obtained between its respective detected and reference time intervals for a relatively large plurality of said like recording patterns recorded in said track.

4,796,110

SYSTEM AND METHOD FOR ENCODING AND STORING DIGITAL INFORMATION ON MAGNETIC TAPE

Edward N. Glass, and Wayne Stark, both of Ann Arbor, Mich., assignors to Irwin Magnetic Systems, Inc., Ann Arbor, Mich.

Filed Feb. 18, 1986, Ser. No. 830,559
Int. Cl.[4] G11B *5/09;* **H03M** *13/00*
U.S. Cl. 360—53 **20 Claims**

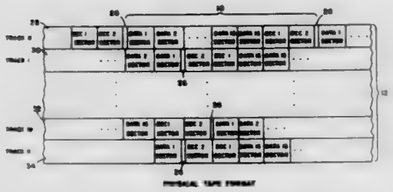
1. A method of storing digital data words on a tape in a manner permitting recovery from erasures of certain stored data words, the method comprising:

formatting the data words into a plurality of data sectors

each having the same number of data words, each of the data words having no more than eight bits;

formatting the data sectors into groups each having the same number of sectors;

generating for each data sector group at least one error-correction sector of error-correction words each corresponding to one of the data words in each of the data sectors in



the group, each error-correction word having no more than eight bits, said generating step including utilizing a Reed-Solomon code having a generator polynomial of $g(x)=x^2+q^{69}x+1$ where q is a primitive root of GF(256); and

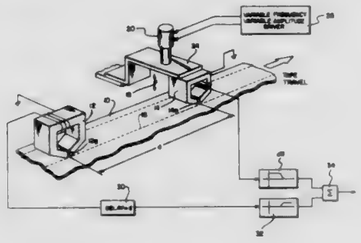
writing all data sectors and all error-correction sectors sequentially in any order on the tape as a block.

4,796,111

MODULATING HEAD TAPE DISTANCE WITH VIBRATORY MOTION

William W. French, Cardiff-by-the Sea, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1987, Ser. No. 25,686
Int. Cl.[4] G11B *5/35, 5/02*
U.S. Cl. 360—55 2 Claims



1. Apparatus for playing back signal information recorded in the recording face of a magnetic medium, said apparatus comprising

(a) a magnetic head of the type adapted to cooperate with said medium to produce therefrom an output signal representative of the rate of change of flux associated with a signal recorded in said medium, and

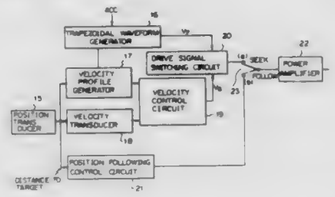
(b) means for providing relative vibratory motion between said magnetic head and said medium to augment the rate of change of flux associated with said recorded signal, thereby to increase the efficacy of the playback of said signal information, said relative vibratory motion being vibratory turning about an axis that makes an angle with said recording face of said medium.

4,796,112

ACTUATOR ACCESS CONTROL SYSTEM FOR A MAGNETIC HEAD USING TRAPEZOIDAL DRIVE CURRENT

Makoto Mizukami; Koji Otani, and Shuichi Takasumi, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Nov. 24, 1986, Ser. No. 934,059
Claims priority, application Japan, Nov. 26, 1985, 60-263699
Int. Cl.[4] G11B *5/55*
U.S. Cl. 360—78.07 11 Claims



1. An actuator access control system for positioning an actuator which carries a magnetic head to a desired track by flowing drive current into the VCM of the actuator,

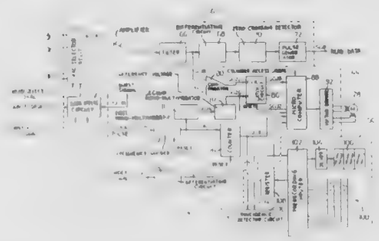
wherein the improvement comprises in that said drive current is a pair of trapezoidal waveform signals in opposite polarities, and that waveform factor which is ratio of upper side and bottom side of said trapezoidal waveform is dependent upon seek stroke, so that mechanical resonance frequency of the actuator coincides with frequency at which no or less power spectrum of said trapezoidal waveform resides.

4,796,113

METHOD AND APPARATUS FOR AUTOMATICALLY REPLACING DEFECTIVE RECORDING TRACKS IN DATA STORAGE APPARATUS

Yuji Hayakawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 11, 1986, Ser. No. 940,404
Claims priority, application Japan, Dec. 17, 1985, 60-284101
Int. Cl.[4] G11B *21/08, 5/55, 5/09*
U.S. Cl. 371—10 13 Claims



1. A method of writing or reading information on or from a storage medium in the form of a disk having a multiplicity of concentric recording tracks identified by respective identification numbers, said tracks including at least one defective track which has a defect, said method comprising the steps of:

obtaining the identification number of each of said at least one defective track;

providing said storage medium with a special track which is unaccessible with an external track-access signal, said special track having a multiplicity of divisions corresponding to the identification numbers of said multiplicity of recording tracks, said divisions consisting of a plurality of first divisions corresponding to normal tracks of said recording tracks, and at least one second division corresponding to said at least one defective track;

storing burst signals in one of each of said first divisions and said at least one second division of said special track, said burst signals being indicative of one of said normal tracks and said at least one defective track;

detecting, based on said burst signals, the identification number of each of said at least one defective track;

when said external track-access signal requires a writing or reading operation on one of said at least one defective track, selecting another of said multiplicity of tracks whose identification number is larger by one that the of said one of said at least one defective track, and effecting said writing or reading operation on said another track; and

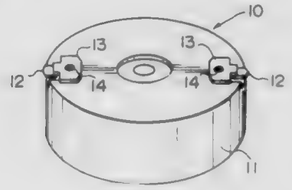
when a writing or reading operation is required on said another track, selecting yet another of said multiplicity of tracks whose identification number is larger by one than said another track, and effecting said writing or reading operation on said yet another track.

4,796,114

ROTARY HEAD ASSEMBLY WITH RIGID ADHESIVE BONDING POLE TIPS

Keiji Mori, and Osami Ishii, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 775,320, Sep. 11, 1985, abandoned. This application Oct. 28, 1987, Ser. No. 115,543
Claims priority, application Japan, Oct. 2, 1984, 59-2066521
Int. Cl.[4] G11B *5/027*
U.S. Cl. 360—84 2 Claims



1. A rotary head assembly for use in a helical-scan magnetic recorder-reproducer, comprising:

(i) a rotatable cylinder;

(ii) a pair of magnetic head tips of single-crystal ferrite mounted on an axial end of said rotatable cylinder in substantially diametrically opposite relation to each other, each of said magnetic head tips having outer side surfaces, each of said magnetic head tips having two tip members joined to each other through a mating interface and a surface for sliding contact with a magnetic tape, and each said magnetic head tip having a substantially central coil window formed therein and including coils wound around said tip members through said coil windows;

(iii) said mating interface joining the tip members including a first interface section between said surface and the central coil window and a second interface section on the opposite side of said window from said first section; and

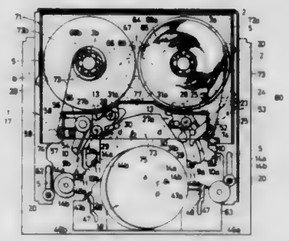
(iv) a body of rigid adhesive applied to an end of said first interface section remote from said sliding contact surface and being packed in an end of said coil window closer to said sliding contact surface; said adhesive also being applied to the outer side surfaces of the head tips to thereby suppress vibration of the tips and thereby reduce sliding noise.

4,796,115

TAPE LOADING DEVICE FOR A CASSETTE TYPE TAPE RECORDING AND/OR REPRODUCING APPARATUS

Eiji Okabima; Takao Kumagai, both of Tokyo, and Hiromitsu Baba, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 27, 1986, Ser. No. 866,968
Claims priority, application Japan, May 27, 1985, 60-113781
Int. Cl.[4] G11B *15/665, 15/675, 5/027*
U.S. Cl. 360—85 9 Claims



1. A tape loading device for a cassette type tape recording and/or reproducing apparatus comprising:

a main chassis on which a rotary head drum is mounted;

a sub-chassis slidably mounted on said main chassis for carrying a tape cassette;

a chassis drive mechanism arranged between said main chassis and said sub-chassis so as to move said sub-chassis towards said rotary head drum;

tape loading means movable from said sub-chassis to said main chassis for drawing tape out from a tape cassette and guiding said tape on the periphery of said rotary head drum;

guide rail means on said sub-chassis is for guiding movement of said tape loading means therealong; and

positioning means on said main chassis for cooperation with said guide rail means to transfer said tape loading means between said sub-chassis and main chassis and for positioning said tape loading means with respect to said rotary drum head;

said positioning means including coupling means for coupling said guide rail means to said positioning means.

4,796,116

COMPACT CASSETTE TYPE VIDEO TAPE RECORDER HAVING SINGLE ACTUATING PLATE

Sung T. Kwon, Kyunghi, and Jung Hyuk Choi, Seoul, both of Rep. of Korea, assignors to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 19, 1986, Ser. No. 943,687
Claims priority, application Rep. of Korea, Dec. 19, 1985, 17154/1985; Dec. 31, 1985, 10130/1985
Int. Cl.[4] G11B *15/66*
U.S. Cl. 360—85 9 Claims

1. A cassette type video tape recorder which includes tape cassette loading and running mechanisms comprising:

a deck;

a loading plate mounted on said deck;

a head drum disposed on said loading plate;

a loading motor disposed on said deck;

a mode conversion gear rotatably mounted on said deck having first and second continuous cam grooves formed on opposite surfaces thereof for converting the modes of said recorder;

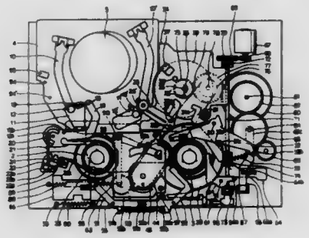
a take-up reel table rotatably mounted in a coaxial and concentric manner on said mode conversion gear;

a worm shaft rotatably mounted along the surface of said deck for transmitting the driving force of said loading motor to said mode conversion gear;

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an actuating plate slidably mounted over the surface of said deck so as to extend below said mode conversion gear and said loading plate, wherein said actuating plate is operatively connected to said first cam groove of said mode conversion gear so that said actuating plate actuates tape loading and running mechanisms of said recorder;

a load moving lever having a first end pivotally mounted on said deck and a second end, said load moving lever being operatively connected to said actuating plate for engaging or disengaging said tape cassette loading mechanism;



a load connecting gear rotatably mounted on said second end of said load moving lever;

a load driving gear for driving said tape cassette loading mechanism, wherein said load driving gear is operatively engaged by and disengaged from said load connecting gear which is moved towards and away from said load driving gear by said load moving lever which is in turn engaged with or disengaged from said actuating plate.

4,796,117

RECORDING AND/OR REPRODUCING APPARATUS

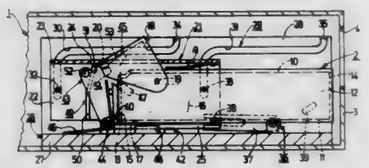
Harald Fleck, Schwechat, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 20, 1987, Ser. No. 18,098

Claims priority, application Austria, Feb. 24, 1986, 473/86

Int. Cl.[4] G11B *15/00*

U.S. Cl. 360—96.5 **1 Claim**



1. A recording and/or reproducing apparatus for a record carrier in the form of a tape (16) arranged in a rectangular cassette (2) comprising two main walls (10, 11), four side walls (11, 13, 14) and a shutter (18) for closing a side wall (13) formed with at least one opening (15, 17), which shutter is pivotable about a pivotal axis (19) and is movable from a closed position to an open position against spring force, which apparatus comprises a chassis (26) and a cassette holder (21) which is movable relative to the chassis, which holder is movable along a substantially L-shaped path from a loading position, in which a cassette (2) with the shutter (18) facing forwards in a direction of insertion can be inserted by hand into a predetermined insertion position in the cassette holder (21), initially substantially parallel to the main walls (10, 11) of the cassette and subsequently perpendicularly to the main walls (10, 11) of the cassette (2) in an operating position of the holder (21) in which a cassette (2) also occupies an operating position, and comprising a lever (43) which is mounted on the chassis (26) so as to be pivotable about a pivotal axis (44) parallel to the pivotal axis (19) of the shutter (18) and which is movable from a rest position into an operating position, for opening the shutter (18), which lever (43) comprises an actuating surface (45) which is adapted to cooperate with the shutter (18) and which during the movement of the cassette (2) into its operating position while the lever (43) is being pivoted from its rest position into its operating position, engages the shutter (18) and moves it from its closed position to its open position, the cassette holder (21) comprising an actuating element (49) movable with the cassette holder along the L-shaped path, said lever having a stop (52) which projects into the substantially L-shaped path of the movement of the actuating element (49), the actuating element (49) of the cassette holder (21) engaging the stop (52) and pivoting the lever (43) from its rest position towards its operating position when the holder (21) is moved from its loading position to its operating position, the actuating surface (45) of the lever (43) moving the shutter (18) from its closed position towards its open position.

4,796,118

WELDED LEAF SPRING MOUNTING FOR MAGNETIC HEAD ASSEMBLY OF DISK DRIVE APPARATUS

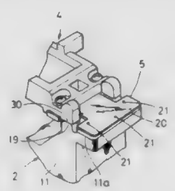
Masao Ohkita; Kazuo Kobayashi, both of Furukawa; Kunihiko Gunji, Miyagi; Tadami Sugawara, Furukawa; Osamu Shigenai, Furukawa, and Takamichi Fuke, Furukawa, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Mar. 12, 1987, Ser. No. 25,213

Claims priority, application Japan, Jul. 31, 1986, 61-178893

Int. Cl.[4] G11B *5/54, 21/16*

U.S. Cl. 360—105 **3 Claims**



1. In a disk drive apparatus having a horizontally movable carriage provided with a mounting portion on one end thereof and a distal portion on an opposite end thereof on which a lower magnetic head is carried, a pivotable arm having one end pivotally supported on the mounting portion of the carriage and a distal portion on an opposite end thereof on which a upper magnetic head is carried, wherein the arm is pivotable to bring the upper magnetic head on its distal portion opposite the lower magnetic head on the distal portion of the carriage with a predetermined gap spacing therebetween in which a magnetic disk is disposed, and a leaf spring made of metal having one end mounted to the mounting portion of the carriage and another end mounted to the one end of the arm,

the improvement wherein said mounting portion of said carriage has an upper metal surface, and wherein said one end of said leaf spring is positioned on said upper metal surface of said mounting portion in a reference position corresponding to said predetermined gap spacing between the magnetic heads, and is welded thereto by welding, said one of said leaf spring being fixedly mounted in said position only by said welding, whereby undesired forces for mounting said leaf spring end of said carriage mounting portion are avoided.

4,796,119

CASSETTE LOADING APPARATUS FOR TAPE PLAYER

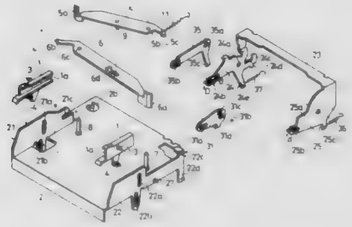
Eiichi Kakizaki, and Izumi Emura, both of Kakuda, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jan. 20, 1987, Ser. No. 4,980

Claims priority, application Japan, Mar. 22, 1986, 61-41997[U]

Int. Cl.[4] G11B *5/008, 15/00, 17/00*

U.S. Cl. 360—96.5 **4 Claims**



1. A cassette loading apparatus adapted to receive a cassette inserted in a front side of a chassis of a tape player in a rearward horizontal direction along an insertion path therein, and to move the cassette vertically downward on the chassis to an operative portion of the tape player, comprising:

a pair of cassette holders spaced apart in a lateral horizontal direction of the chassis in parallel with each other for receiving the cassette inserted in the tape player and guiding it by its lateral edges in a vertically downward direction in the chassis;

an ejector member provided at a rearward side of the insertion path and adapted to be retracted by contact with the cassette inserted along the insertion path and to be advanced so as to eject the cassette on the insertion path out of said tape player, said ejector member being biased toward a frontward horizontal direction for ejecting the cassette, wherein said ejector member includes a driving piece which is displaced to initiate loading of the cassette when the cassette is inserted and said ejector member is retracted thereby;

a pair of driving links spaced apart in the lateral horizontal direction and connected to each other in parallel, each of said driving links being connected by a first connecting portion to a corresponding one of said cassette holders on a respective outer lateral side thereof with a given allowance provided between one of said driving links and the corresponding cassette holder;

a pair of force-bias members each in parallel with a respective one of said driving links and connected by a second connecting portion to the corresponding one of said cassette holders on the respective outer lateral side thereof;

a pair of biasing members each connected between a part of said chassis and the respective driving link and force-bias member on each outer lateral side of the respective cassette holder for biasing them in tandem to lower the corresponding cassette holder on each outer lateral side thereof in the vertically downward direction, such that the cassette holders are moved downward on the respective sides by two independent biasing forces;

a lock member connected to said driving piece of said ejector member and moved to retracted and advanced positions in response to the retracting and advancing movement of said ejector member, respectively, said lock member having a retaining portion which engages said driving links when the lock member is in the advanced position to retain said driving links to hold the corresponding cassette holders in an upward unloaded position wherein the cassette can be ejected from the chassis by the biased advancing movement of said ejector member, and which releases said driving links when the cassette is inserted to retract said ejector member and move the lock member to the retracted position, so as to allow said driving links to be biased by the corresponding biasing members to move the corresponding cassette holders vertically downward to a loaded position on the chassis.

4,796,120

MAGNETIC TAPE DRIVE MACHINE

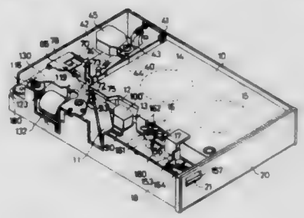
Fumito Komatsu; Tomo Tezuka; Akiyoshi Toyama, and Kiyoharu Iwasami, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Kosakusho, Nagano, Japan

Filed Mar. 17, 1987, Ser. No. 26,922

Claims priority, application Japan, Mar. 17, 1986, 61-56782; Nov. 7, 1986, 61-265004

Int. Cl.[4] G11B *15/00, 5/54*

U.S. Cl. 360—96.5 **11 Claims**



1. A magnetic tape drive machine for a magnetic tape fitted into a cartridge, comprising:

a drive roller for running a magnetic tape fitted into a cartridge when said cartridge is located at a recording/reproducing position in said magnetic tape drive machine;

a magnetic head having a tape contacting surface which can be brought into contact with said tape to record or reproduce information;

a support for supporting said magnetic head along a direction of a width of said tape;

moving means for moving said support along said direction of said width of said tape so that said magnetic head contacting surface moves from a position not facing said magnetic tape when said cartridge is not located at said recording/reproducing position to another position facing said magnetic tape when said cartridge is located at said recording/reproducing position.

4,796,121

TEMPERATURE-COMPENSATED HEAD POSITIONING DEVICE FOR MAGNETIC DISC STORE

Manfred Adamek, Kirchen-Freusberg; Klaus Rinneburger, Wilnsdorf, and Peter Schattmann, Siegen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 415,516, Sep. 7, 1982, abandoned. This application Mar. 5, 1986, Ser. No. 837,869

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209243

Int. Cl.[4] G11B *5/012, 5/54, 21/22, 5/016*

U.S. Cl. 360—78.13 **4 Claims**

1. A drive mechanism for a magnetic disc store comprising

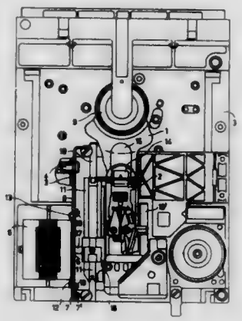
a chassis having therein a spindle about which said disc store is rotated;

a magnetic head mounted on a magnetic head support which is movable in a radial direction relative to the magnetic disc store;

a mounting plate having a low coefficient of thermal expansion, said plate being discrete from said chassis, said plate having one end toward said spindle and an other end away from said spindle, said one end being rigidly connected to said chassis;

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a stepping motor secured to said mounting plate toward said other end, said motor having a shaft which moves said magnetic head support in said radial direction;



a metal foil having high thermal conductivity on said mounting plate between said stepping motor and said mounting plate, whereby conduction of heat from said motor to said chassis is facilitated.

4,796,122

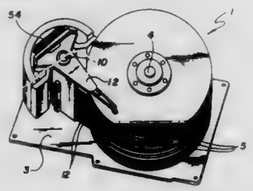
INTEGRAL HEAD POSITIONER FOR HARD DISK STORAGE SYSTEM

Lloyd Levy, Northridge, and Dan L. Kilmer, Reseda, both of Calif., assignors to Micropolis Corporation, Chatsworth, Calif.

Continuation-in-part of Ser. No. 944,466, Dec. 19, 1986, Pat. No. 4,754,353. This application Oct. 26, 1987, Ser. No. 113,614

Int. Cl.[4] G11B *5/55, 17/02, 21/08*

U.S. Cl. 360—98.01 **17 Claims**



1. A Winchester type digital storage system comprising:

a plurality of hard storage disks spaced apart from one another and mounted coaxially, said disks having magnetizable surfaces;

means for rotating said storage disks;

a plurality of magnetic heads for reading and writing digital information on the surfaces of said disks;

head positioning means for mounting said heads in proximity to the surfaces of said disks, and for shifting the position of said heads across said disks, said head positioning means including individual spring load beam mounting means for each head, and a main rotatable integral metal positioner body member, said integral metal positioner member having a central opening;

bearing means engaging said central opening for rotatably mounting said positioner member about a central axia;

said positioner body member including rigid integral arms extending outwardly to support said spring mounting means, said integral arms and said body member being a single homogeneous structure free of any joints; and

the outward extent of said rigid arms from said central axis being substantially greater than the length of said spring mounting means.

4,796,123

SLOW REPRODUCING APPARATUS POR VTR OR VCR USING IMAGE MEMORY

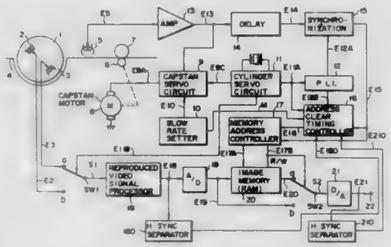
Hisaharu Takeuchi, Kawasaki, and Teruo Itani, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 15, 1986, Ser. No. 919,067

Claims priority, application Japan, Oct. 18, 1985, 60-231298

Int. Cl.[4] H04N *5/783, 5/95*

U.S. Cl. 360—10.1 **12 Claims**



1. A slow reproducing apparatus for VTR/VCR using an image memory comprising:

signal generating means for generating a write timing signal in accordance with a reproduced control signal from a video tape;

image memory means for storing video signal data of a reproduced video signal from said video tape in accordance with said write timing signal and a given address clear signal which designates write and read start addresses of said image memory means; and

address clear means for detecting a timing difference between a write timing and a read timing in said image memory means when slow reproduction is performed and correcting address clear signal generation timing so that the amount of said timing difference is substantially minimized.

4,796,124

INFORMATION RECORDING AND REPRODUCING APPARATUS

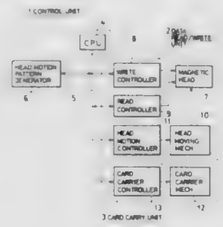
Yukio Yokota, Kawasaki; Isao Iwase, Ayase, and Satoshi Uematsu, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 18, 1987, Ser. No. 27,405

Claims priority, application Japan, Mar. 25, 1986, 61-67886; Oct. 9, 1986, 61-240588

Int. Cl.[4] G11B *21/02*

U.S. Cl. 360—76 **15 Claims**



1. An information recording apparatus, comprising:

a recording head for recording information on a recording medium on a card when the recording medium is moving with respect to the recording head; and

drive means for moving the recording head relative to the recording medium so that an angle between a longitudinal direction of the recording head and a lateral direction of the recording medium can be varied, wherein the drive means includes

(a) head motion pattern generating means for generating at least one head motion pattern code signal and a head motion signal corresponding to the head motion pattern code signal, and

(b) head moving means for moving the recording head relative to the recording medium in response to the head motion signal to vary the angle between the longitudinal direction of the recording head and the lateral direction of the recording medium.

4,796,125

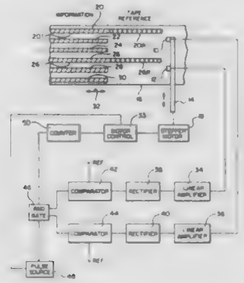
OPTIMIZING THE POSITIONING OF A PAIR OF MAGNETIC HEADS RELATIVE TO SPACED TRACKS ON MAGNETIC TAPE

Herbert Karsh, Laguna Beach, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 10, 1987, Ser. No. 83,138

Int. Cl.[4] G11B *5/58, 5/52, 21/10*

U.S. Cl. 360—77.12 **3 Claims**



1. In magnetic storage apparatus including a pair of magnetic heads for simultaneously reading information recorded on spaced magnetic tracks of magnetic media, the invention comprising:

means for simultaneously moving said pair of magnetic heads laterally across said pair of spaced magnetic tracks on said magnetic media;

means for comparing the output signal from each of said pair of magnetic heads with reference level signal as said heads are moved by said moving means;

means for determining the optimal position for both of said heads relative to said pair of tracks by calculating the mean position of the region of travel during which the output signal from each of said heads simultaneously exceeds said reference level; and

means for controlling said moving means to position said pair of heads at said optimal position.

4,796,126

MAGNETIC HEAD FLYING SLIDER ASSEMBLY

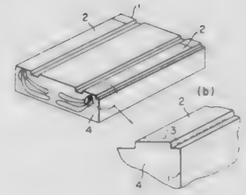
Hiroshi Tsuchiya, Kanagawa; Yoshiakira Karakama, Hadano; Sadanori Nagaike, Odawara; Hiroyasu Nakajima, Odawara, and Kousaku Chida, Odawara, all of Japan, assignors to Computer Basic Research Association, Tokyo, Japan

Continuation of Ser. No. 511,589, Jul. 7, 1983, abandoned. This application Sep. 8, 1986, Ser. No. 904,818

Claims priority, application Japan, Jul. 9, 1982, 57-118611

Int. Cl.[4] G11B *5/60, 5/187*

U.S. Cl. 360—103 **7 Claims**



1. A thin film magnetic head comprising: a polygonal substrate member having a first face constituting a slider flying face and a second face extending vertically to said first face at the end of said first face; and a thin film magnetic element formed on said second face of said substrate member; wherein at least a part of said first face of said substrate member is made to have a chemical composition different from that of the substrate so that the flying face has superior contact-start-stop-endurance characteristics; said substrate member containing Al_2O_3-TiC as the main constituent thereof and at least a part of such first face comprising a layer of Al_2O_3-TiO_2.

4,796,127

RECORDING HEAD SLIDER

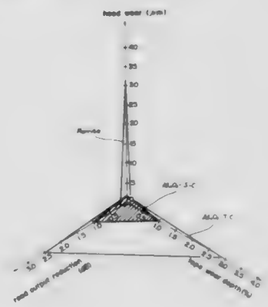
Toshiaki Wada, Osaka; Mitsuhiko Furukowa; Masakazu Shiroyama, both of Fukuoka; Michito Miyahara, Nakagawa; Mitsuyoshi Nagano, Saga, and Shigeki Mohri, Tosu, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka and Nippon Tungsten Co., Ltd., Fukuoka, both of, Japan

Continuation of Ser. No. 868,665, May 30, 1986, abandoned. This application Jan. 11, 1988, Ser. No. 143,245

Claims priority, application Japan, Apr. 23, 1986, 61-093587

Int. Cl.[4] G11B *5/60*

U.S. Cl. 360—103 **22 Claims**



1. A recording head slider comprising a slider body having a fluid bearing surface on a primary surface thereof and at least one transducer on at least one side of the slider body, the slider body being made of a sintered body produced by sintering a base composition consisting essentially of 10–40 percent by

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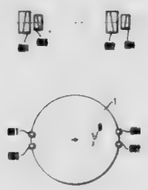
volume of silicon carbide and the balance being alumina, whereby a sintered body having excellent wear resistance and machinability is obtained.

4,796,128

ROTARY HEAD TYPE REPRODUCING APPARATUS

Hiroyuki Takimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1986, Ser. No. 884,799
Claims priority, application Japan, Jul. 11, 1985, 60-153022
Int. Cl.[4] H04N 5/783
U.S. Cl. 360—10.3 32 Claims



1. A rotary head type reproducing apparatus for reproducing information signals recorded in a plurality of recording tracks by tracing, with rotary type magnetic heads, the recordong tracks which are formed with said information signals on a tape-shaped magnetic record bearing medium in a direction of crossing the longitudinal direction of said medium, comprising:

(a) first and second pairs of magnetic heads, the heads of each pair being positioned closer to each other than to the heads of the other pair; and being arranged to have different azimuth angles from each other;

(b) a rotary member arranged to have said first and second pairs of magnetic heads mounted on the circumference thereof;

(c) rotation period detecting means arranged to detect the rotation period of said rotary member and to produce a rotation period information signal corresponding to the rotation period detected; and

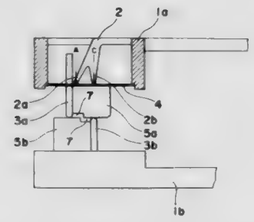
(d) output selection means for selectively producing, according to said rotation period information signal, the information signals reproduced from said recording tracks by said pairs of magnetic heads through their tracing action on said tape-shaped recording bearing medium.

4,796,129

MAGNETIC HEAD DEVICE POR IMPROVING HEAD PLACEMENT ON A MAGNETIC DISC

Nobuhiro Umebayashi, and Yoshito Tanaka, both of Ibaragi, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Jan. 7, 1987, Ser. No. 1,195
Claims priority, application Japan, Jan. 10, 1986, 61-2195
Int. Cl.[4] G11B 5/48, 21/16
U.S. Cl. 360—104 3 Claims



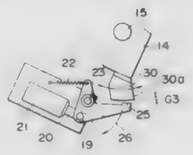
1. A magnetic head for use in writing and/or reading information on a rotating magnetic disc comprising: a first head core connected to an end surface of a first slider, a second head core connected to an end surface of a second slider each combination of head core and slider having an opposing surface which sandwich a magnetic disc therebetween, a gimbal spring on which one of said head core and slider combination is mounted and a pivotal means for pressing said magnetic disc by selectively applying pressure to said gimbal spring at predetermined points of contact, said pivotal pressing means having two pressing members aligned in a radial direction with respect to said magnetic disc said two pressing members producing two pressure points arranged so that a first pressure point is juxtapositioned to one of said first and second head cores and a second pressure point is positioned opposite the other of said head cores which causes said magnetic head to contact the surface of said magnetic disc in a uniform manner.

4,796,130

CARRIAGE LOCK MECHANISM OF A MAGNETIC RECORDING/REPRODUCTION APPARATUS

Machio Shimazaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 26, 1986, Ser. No. 935,014
Claims priority, application Japan, Nov. 30, 1985, 60-269624
Int. Cl.[4] G11B 5/54, 21/22
U.S. Cl. 360—105 8 Claims



1. A carriage lock mechanism for a magnetic recording/reproduction apparatus provided with a carriage mechanism for moving a magnetic head along a surface of a magnetic recording medium, wherein said carriage mechanism is locked at a predetermined position and the magnetic head is locked at a position corresponding to a non-recording region of said magnetic recording medium when the apparatus is not operated, comprising:

a lock member, mounted to a movable member of said carriage mechanism;

a lock pawl, mounted on a stationary member, for engaging with said lock member to lock said carriage mechanism;

urging means for biasing said lock pawl in a direction where said lock pawl engages with said lock member; and

an electro-mechanical lock pawl drive mechanism for driving said lock pawl against the biasing force of said urging means, in such a direction as to release said lock pawl from said lock member,

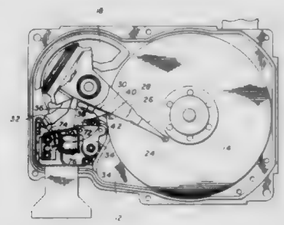
wherein at least one of said lock member and said lock pawl is formed of a synthetic resin material; said lock member having an arcuate shaped sliding surface corresponding to a locus of said lock member for allowing said lock pawl to slide smoothly on the sliding surface of said lock member while said lock pawl is urged against the sliding surface during return of said carriage mechanism to said predetermined position; and said lock member having an engaged portion, formed on an edge of the sliding surface, for engaging said lock pawl when said lock pawl reaches the edge of the sliding surface during movement of the carriage mechanism.

4,796,131

HEAD POSITIONER PRELOADED STOP

David D. Chang, Sherman Oaks, Calif., assignor to Micropolis Corporation, Chatsworth, Calif.

Filed Oct. 9, 1987, Ser. No. 107,369
Int. Cl.[4] G11B 5/55
U.S. Cl. 360—106 10 Claims



1. A Winchester drive storage system having a magnetic head positioner, including a preloaded bidirectional stop for the magnetic head positioner of the drive, comprising:

a Winchester type disk drive including a plurality of hard storage disks each having magnetizable surfaces and means for rotating said disks;

head positioning means for positioning magnetic heads adjacent said magnetizable surfaces to read and write digital information with respect to said disks in selected tracks across the surface of the disks; said head positioning means including a rotor;

means for stopping the angular motion of the head positioning rotor for both directions of rotation thereof; and

said stopping means including a generally U-shaped spring, means for partially pre-compressing said spring, first pivotally mounted plastic stop means for engaging said spring and further compressing substantially the entire length of said U-shaped spring when said first stop means is engaged by said rotatable head positioning rotor in one direction of rotation thereof; and second pivotally mounted plastic stop means for engaging said spring and further compressing substantially the entire length of said U-shaped spring when said second stop means is engaged by said head positioning rotor in the opposite direction of rotation thereof.

4,796,132

THIN FILM MAGNETIC HEAD HAVING AU ULTRASONIC CONNECTION STRUCTURE

Yoshinori Dekura, Hadano; Kazuhiro Momata, Chigasaki, and Tokiyuki Seto, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 22, 1987, Ser. No. 111,284
Claims priority, application Japan, Oct. 24, 1986, 61-251629
Int. Cl.[4] G11B 5/12, 5/30
U.S. Cl. 360—113 8 Claims

1. In a thin film magnetic head for use with recording media, including:

a substrate;

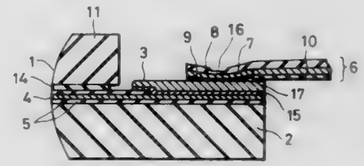
thin film transducer means on said substrate for at least one of reading from and writing to the recording media with correlated electrical signals;

conductor film terminal means on said substrate and electrically connected to said transducer means for carrying the signals and having a plurality of conductor film terminals with respective connection bonded surfaces;

a flexible printed circuit board means having a corresponding plurality of lead terminals with respective connection bonded surfaces electrically connected to said conductor film terminal connection bonded surfaces for transmitting the signals between said printed circuit board means and said conductor film terminal means, and further having a cover film covering said lead terminal means;

wherein the improvement comprises,

at least the connection bonded surface of said conductor film terminals consists of an Au film, the connection bonded surface of said lead terminals consists of an Au layer, said



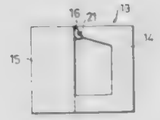
Au film and said Au layer being directly bonded to each other, the surface of said lead terminals opposite to said connection bonded surfaces being bonded to and having their relative spacing fixed by said flexible cover film, and said flexible cover film covers at least the connection bonded portion between said Au film and said Au layer.

4,796,133

FLOATING MAGNETIC HEAD

Toshihiro Kuriyama, Nagaoka, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Feb. 17, 1987, Ser. No. 15,423
Claims priority, application Japan, Jun. 3, 1986, 61-84352[U]
Int. Cl.[4] G11B 5/23
U.S. Cl. 360—119 2 Claims



1. In a floating magnetic head of the composite type wherein a magnetic core having a magnetic gap formed in one medium-contacting side thereof is joined integrally in a slider disposed in floating contact with a surface of a recording medium,

an improved gap structure for said magnetic core, comprising:

said magnetic core composed of two core halves, one core half having an abutting portion on said medium-contacting side extending toward the other core half, said abutting portion having a wedge surface facing said other core half which defines a wedge-shaped gap between said core halves, said wedge-shaped gap being filled with a joining material for joining said core halves together;

a metallic magnetic thin film formed over said wedge surface; and

said wedge-shaped gap having a predetermined gap width at said medium contacting side and progresively widening in gap width between the core halves in a direction away from said medium contacting side and which is parallel to the gap's depth dimension,

whereby said widening gap width of said wedge-shaped gap and said metallic magnetic thin film formed on said wedge surface forms an equivalent of a metal-in-gap type magnetic core having no gap depth such that saturation magentic flux density is high and magnetic saturation does not occur.

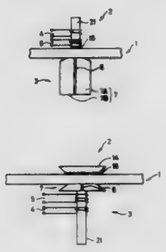
VOL 1098 ISS 1 JAN 3 1989 UMI

4,796,134

MAGNETIC HEAD WITH IMPROVED SUPPORTER FOR PERPENDICULAR MAGNETIZATION RECORDING

Yoshio Watanabe, Yokohama; Yasuhiko Nakayama; Nobuaki Furuya, both of Kawasaki, and Hiroshi Miyama, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 409,895, Aug. 20, 1982, Pat. No. 4,745,509.
This application Nov. 30, 1987, Ser. No. 127,538
Claims priority, application Japan, Aug. 21, 1981, 56-131958; Aug. 21, 1981, 56-131952; Aug. 21, 1981, 56-131957; Aug. 21, 1981, 56-131955; Feb. 12, 1982, 57-21411; Jul. 23, 1982, 57-129336
Int. Cl.[4] G11B *5/127, 5/187*
U.S. Cl. 360—125 34 Claims



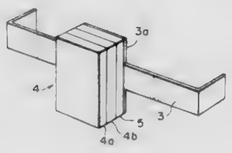
30. In a magnetic head of perpendicular magnetization type for use with a magnetic recording medium having a layer made of Co-Cr, including a main magnetic pole of a thin high permeability magnetic material and a nonmagnetic supporter therefor, and said supporter comprising a medium-contacting surface formed of a polycrystalline sintered body substantially composed of titanium carbide (TiC) and alumina (Al_2O_3) for contacting said recording medium during transducing.

4,796,135

TWO LAYERED TAPE PAD FOR A MAGNETIC TAPE CASSETTE

Kenjo Oishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 17, 1987, Ser. No. 39,418
Claims priority, application Japan, Apr. 17, 1986, 61-88767
Int. Cl.[4] G11B *15/60*
U.S. Cl. 360—130.33 2 Claims



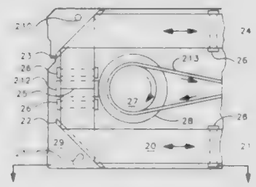
1. A tape pad for a magnetic recording tape cassette secured to a resilient strip-like member supported in a cassette casing to be urged on a magnetic head of a tape-recorder with the intervention of a magnetic tape therebetween, said pad comprising two layers including a surface layer which is to be put into contact with said magnetic tape and which is made of a porous synthetic resin material impregnated with at least one of a lubricant and an anti-static agent and, another layer which is to be adhered to said resilient strip-like member and which is impregnated with an adhesive.

4,796,136

DISC DRIVE COMPATIBLE CARTRIDGE TAPE

Richard H. Henze, Redwood City, Calif.; Charles H. McConica, Windsor, Colo.; George Clifford, Los Altos Hills, and Bruce F. Spenner, Los Gatos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 18, 1985, Ser. No. 713,162
Int. Cl.[4] G11B *5/78, 17/04, 25/10*
U.S. Cl. 360—132 14 Claims



1. A tape cartridge, suitable for transferring data between a tape and a disc drive head in a disc drive, said tape cartridge comprising:
- a tape suitable for transferring data between the tape and said disc drive head;
- a protective shell enclosing the tape, a portion of which is configured to interact with said disc drive;
- means for registering a portion of the tape at a location L at which data can be transferred between the tape and the disc drive head;

means for feeding the tape past location L; and
means for storing the tape.

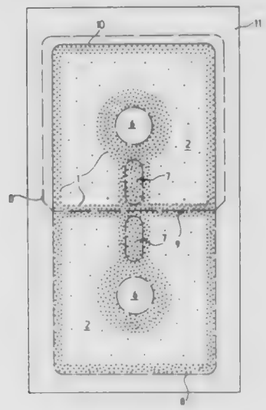
4,796,137

PROTECTIVE JACKET FOR A DISK-SHAPED RECORDING MEDIUM

Dietrich Gruehn, Appenweier; Joachim Hack, Ludwigshafen; Hubert Fehrenbach, Kehl; Peter Rudolf, Fussgoenheim, and Norbert Holl, Battenberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 15, 1986, Ser. No. 919,043
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1985, 8529251
Int. Cl.[4] G11B *23/033;* B65D *85/57*
U.S. Cl. 360—133 17 Claims

1. A protective jacket for a disk-shaped recording medium, in particular a flexible data recording medium, comprising a blank of plastics material having openings therein, the blank being folded and joined together at least two outer edges to form either a closed jacket or a jacket open along at most one edge, and a fleece covering attached to the blank by thermowelding by means of needles producing needle weld points,
- wherein the fleece covering is fastened to the blank in the regions close to the outer edges of the jacket and in the regions adjacent the outlines of said openings by means of closely spaced apart needle weld points having a short spacing between one another, and
- wherein, in the relatively large regions between the regions which include said closely spaced apart needle weld points, the fleece covering is fastened to the blank by means of relatively widely spaced apart needle weld points having a wide spacing which is more than two times larger than said short spacing so that over said relatively large regions a padded form including a plural-



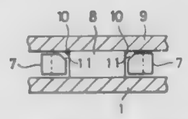
ity of at least tri-cornered individual cushions is imparted to said fleece covering.

4,796,138

SHUTTER IN A WRITE PROTECT MAGNETIC DISK CARTRIDGE

Tuyoshi Ono, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 3, 1987, Ser. No. 33,695
Claims priority, application Japan, Apr. 4, 1986, 61-49730[U]
Int. Cl.[4] G11B *23/03, 19/04*
U.S. Cl. 360—133 8 Claims



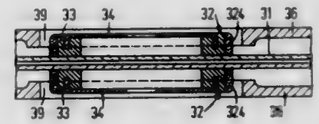
1. A disk cartridge, comprising: a recording disk;
- a case rotatably accommodating said disk and having aligned through holes in an upper and a lower principal wall, said case comprising a boss bonded to at least one of said upper and lower walls, wherein a bonding protrusion may be formed between said boss and said one wall at the junction thereof; and
- a slidable member sliding between said walls to selectively cover said through holes, said slidable member including legs slidable on opposite sides of said boss, said legs being separated by a distance slightly larger than the diameter of said boss but less than the combined diameter of said boss and said bonding protrusion, said legs being shaped so that a portion thereof which slides adjacent the junction of said boss and said one wall is indented to provide a separation from one indentation to another slightly greater than the combined diameter of said boss and said bonding protrusion, wherein said member can slide without coming into contact with said bonding protrusion.

4,796,139

DISC CASSETTE

Johannes W. Faber, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 843,896, Mar. 25, 1986, abandoned.
This application Dec. 23, 1987, Ser. No. 139,155
Claims priority, application Netherlands, Nov. 25, 1985, 8503236
Int. Cl.[4] G11B *23/03*
U.S. Cl. 360—133 6 Claims



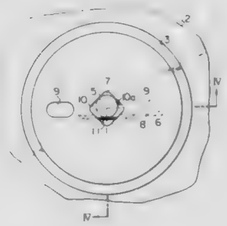
1. An information medium for reception in a drive unit having a spindle for rotary drive of an information disc, said medium comprising,
- an information disc having a hub fixed centrally thereto for cooperating with said drive spindle,
- an enclosure for the information disc, said enclosure comprising a main wall formed with a circular central opening in which said hub is received with some radial clearance between said hub and periphery of said opening whether or not said medium is in a playing mode in said drive unit, and
- elastic means for resiliently limiting radial displacement of said hub relative to said enclosure.

4,796,140

REMOVABLE DISK CONSTRUCTION

Manabu Wakabayashi, Yokohama; Toru Sampei, Kanagawa; Hiroshi Kanai, Hitachi; Tomiyoshi Satoo, Hitachi; Yosuke Nagano, Hitachi; Takeo Sonobe, Hitachi, and Isao Utsugi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 505,722, Jun. 20, 1983, abandoned.
This application Oct. 27, 1986, Ser. No. 923,497
Claims priority, application Japan, Jun. 21, 1982, 57-107184
Int. Cl.[4] G11B *23/03*
U.S. Cl. 360—133 9 Claims



1. A rotary disk comprising:
- a recording and reproducing sheet; and
- a hub formed of hard material secured to a central portion of said sheet, said hub comprising:
- a center opening formed in the hub and having an area large enough to loosely receive a main spindle of a turntable of a disk driving means therein;
- two generally planar surfaces arranged in an intersecting relationship to each other and formed on an inner peripheral wall of said center opening in said hub; and
- a resilient member located in a position facing said two planar surfaces for pressing said main spindle against said two planar surfaces;

wherein said hub further comprises at least one receiving

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surface formed therein so as to extend transverse to a direction of movement of thereof upon rotation of said rotary disk in a direction of rotation for receiving a driving force applied thereto upon rotation thereof in said rotation direction, said receiving surface having a positional and directional relationship with respect to said two planar surfaces such that said two planar surfaces of said hub are pressed against said main spindle by said driving force applied from said drive shaft to said receiving surface of said hub in said direction of movement during said rotation of said drive shaft.

4,796,141

DISC ASSEMBLY FOR A MAGNETIC DISC APPARATUS

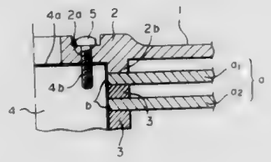
Hideo Tsunura, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1987, Ser. No. 105,611

Claims priority, application Japan, Oct. 22, 1986, 61-161994[U]

Int. Cl.⁴ G11B *5/82, 17/02, 17/038*

U.S. Cl. 360—135 **7 Claims**



1. A disc assembly for a magnetic disc apparatus which comprises:

a plurality of vertically arranged magnetic discs each having a central aperture;

a rotating shaft which is inserted in the central aperture of each of said magnetic discs and which is connected to a rotating source to be driven together with said magnetic discs;

spacers interposed between said magnetic discs; and a clamp attached onto a top surface of said rotating shaft, wherein a temperature compensating disc having substantially the same outer diameter as said magnetic discs is mounted on said clamp in one piece.

4,796,142

OVERLOAD PROTECTION APPARATUS FOR EMULATING THE RESPONSE OF A THERMAL OVERLOAD

James T. Libert, Waukesha, Wis., assignor to Square D Company, Palatine, Ill.

Filed Oct. 16, 1986, Ser. No. 919,917

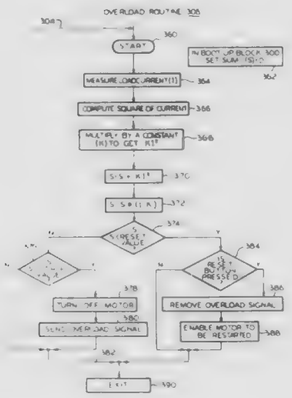
Int. Cl.⁴ H02H *3/08*

U.S. Cl. 361—23 **5 Claims**

1. A thermal overload detector and current interrupter for a device supplying load current to a load which may store heat and can become subject to thermal overload comprising:

load current measuring means for providing a current value signal proportionate to the load current;

processor means operatively connected to said load current measuring means, said processor means for computing the square of the current value signal to obtain a square current value, for computing a multiplied square current value by multiplying said square current value by a predetermined constant related to the heat transfer characteristics of the load, for computing a present running sum by adding the multiplied square current value to a past test value, for computing a proportionate present running sum by multiplying the present running sum by the predetermined constant, for computing a present test value related to stored heat in the load by subtracting the proportionate present running sum from the present running sum, for determining whether the present test value exceeds a trip value which is related to the thermal overload of the load, and for issuing a turn off signal if the present test value exceeds the trip value; and



interrupting means for responding to the turn off signal to interrupt the load current when the turn off signal is present.

4,796,143

ELECTRIC TRANSFORMER FOR UNDERGROUND MINING MACHINE

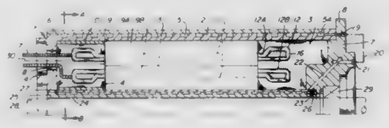
Horst Odenkirchen, and Klaus Lodwig, both of Bochum, Fed. Rep. of Germany, assignors to Gebr. Eickhoff Maschinenfabrik u. EisengieBerei mbH, Fed. Rep. of Germany

Filed Feb. 29, 1988, Ser. No. 161,752

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1987, 3707387

Int. Cl.⁴ H02H *5/04;* **H01F** *27/10*

U.S. Cl. 361—37 **14 Claims**



1. A transformer for an underground mining machine, including:

an outer tubular housing having an elongated cavity extending therethrough;

cylindrical iron core means positioned in said tubular housing, said iron core means having an outer diameter corresponding to the inner diameter of the tubular housing;

a plurality of longitudinally extending channels extending through said iron core means channeling primary and secondary windings of the transformer therethrough; and

coolant ducts extending through the outer tubular housing for providing a path for coolant fluid to allow the coolant fluid to carry away heat generated in the iron core means.

4,796,144

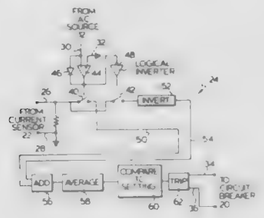
GROUND FAULT DETECTOR

Glenn W. Swift, Winnipeg, Canada, assignor to Federal Pioneer Limited, Toronto, Canada

Filed Aug. 24, 1987, Ser. No. 88,736

Int. Cl.⁴ H02H *3/08*

U.S. Cl. 361—42 **2 Claims**



1. A ground fault detector for an AC circuit, said detector being responsive to resistive ground fault current but not to capacitive ground fault current and comprising:

means for sensing current in the AC circuit and producing a corresponding signal current, means for reversing the direction of said signal current in each alternative half AC cycle without reversing the signal current in each intervening half cycle to provide unreversed and reversed signal current, means for averaging the unreversed and the reversed signal current, and means for sensing the presence of averaged signal current above a predetermined value to indicate significant resistive gorund fault current.

4,796,145

SEMICONDUCTOR MODULE

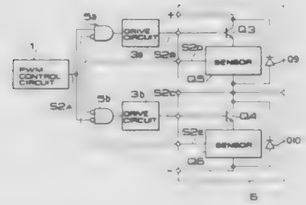
Keiichi Oshikiri, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 858,746, May 2, 1986, abandoned. This application Nov. 18, 1987, Ser. No. 124,337

Claims priority, application Japan, Jun. 3, 1985, 60-118908

Int. Cl.⁴ H02H *5/00*

U.S. Cl. 361—57 **1 Claim**



1. A semiconductor module comprising:

(a) two switching devices connected in series to each other and activated in response to respective driving signals;

(b) two current detectors for detecting currents conducted by the respective switching devices;

(c) short-circuit preventing means for preventing short-circuiting of said switching devices in accordance with non-delayed output signals produced by said current detectors, said short-circuit preventing means including two bypass circuits operated by the corresponding opposite current detector for shunting the drive signals to the respective switching devices only during the output signal of the corresponding opposite current detector so as to prevent activation of the respective switching devices when the corresponding opposite switch device is conductive; and

(d) diodes each connected in parallel to each of said switching devices, said current detectors each inserted between the respective switching device and an anode electrode of the corresponding diode.

4,796,146

PROTECTION CIRCUIT FOR A THYRISTOR CONVERTER

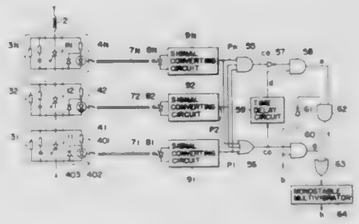
Tadashi Takahashi, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 938,979, Dec. 8, 1986, abandoned. This application Apr. 28, 1988, Ser. No. 188,154

Claims priority, application Japan, Dec. 10, 1985, 60-277488

Int. Cl.⁴ H02H *7/10, 3/20*

U.S. Cl. 361—91 **4 Claims**



1. A protection circuit for a thyristor converter having a unit arm comprising a plurality of units connected in series, each unit including at least one thyristor, said protection circuit comprising:

a plurality of forward voltage sense circuit means correspondingly provided in said plurality of units, each of said forward voltage sense circuit means sensing whether their corresponding unit is not in an ON state even though a forward voltage is applied;

first means for detecting the time when said forward voltage is applied across said unit arm on the basis of output signals from said forward voltage sense circuit means and producing a detection output;

second means for producing an operating signal when more than a predetermined number of said forward voltage sense circuit means have sensed their corresponding units are not in an ON state even though a forward voltage is applied; and

third means for simultaneously delivering a protection gate firing instruction to all of said thyristors of said unit arm on the basis of both outputs from said first and second means being applied to said third means, and

delay means provided between said first and third means for delaying the application of the detection output from said first means to said third means by a time required for compensating for variations in the operating characteristics of said forward voltage sense circuit means.

4,796,147

METHOD FOR DETECTING VOLTAGE LOSSES IN A LOW VOLTAGE DISTRIBUTION SYSTEM

Benjamin C. Anderson, 5745 Crafton Dr., Lakeland, Fla. 33809, and John H. Curran, 625 Parson Ave., Lakeland, Fla. 33801

Filed Oct. 15, 1986, Ser. No. 918,933

Int. Cl.⁴ H02H *3/24*

U.S. Cl. 361—92 **4 Claims**

2. In a power distribution system, apparatus for detecting voltage drops in each power distribution line of the system comprising:

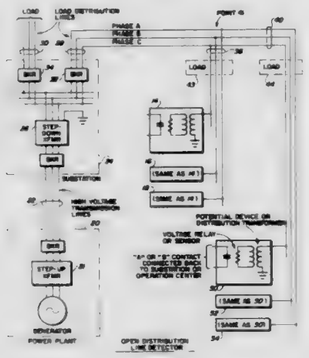
(a) a multiple phase, multiple line distribution line system

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characterized by unbalanced phase currents between lines such that current varies widely in each line during normal operation independently of current in others of the lines;

(b) a plurality of sensing means placed at predetermined locations on each distribution line for detecting a voltage drop on the line; and

(c) alarm signal means connected to each of said sensing means for providing a voltage loss signal when at least one



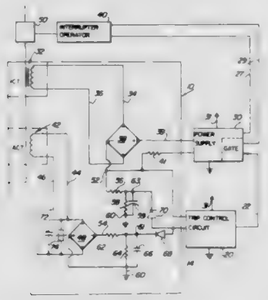
of said sensing means detects a voltage drop, wherein each of said sensing means comprising a voltage actuated relay responsive to voltage on an associated distribution line for controlling the production of signals by said alarm signal means, and each of said relays being a normally closed relay, a loss of voltage being effective to complete a circuit through contacts of said alarm signal means correspond to those segments and phases of the line in which a voltage drop has occurred.

4,796,148

CURRENT-SENSING ARRANGEMENT UTILIZING TWO CURRENT-SENSING SIGNALS

Joreph W. Ruta, Elmhurst, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Oct. 25, 1985, Ser. No. 791,199
Int. Cl.[4] H02H *3/08*
U.S. Cl. 361—97 **13 Claims**



1. A method for providing a signal that suitably represents the current in an AC line over a wide range comprising the steps of:

rectifying the output from an iron core transformer that senses the line current;

rectifying the output from an air core transformer that senses the line current;

filtering and scaling each of the resultant rectified outputs such that the output from the iron core transformer is dominant in the signal with respect to the output drived from the air core transformer over a low current range, and such that the output derived from the air core transformer is dominant in the signal over the output derived from the iron core transformer over a high current range; and

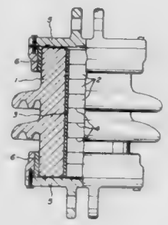
supplying the signal over a range of currents between the low and high current ranges by combining at each point in time the filtered and scaled outputs such that both of the filtered and scaled outputs contribute significantly to the signal throughout said range of currents between the low and high current ranges.

4,796,149

LIGHTNING ARRESTOR INSULATOR

Shoji Seike; Takao Totoki, both of Nagoya, and Masayuki Nozaki, Aichi, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed May 27, 1987, Ser. No. 54,789
Claims priority, application Japan, Nov. 27, 1986, 61-282822
Int. Cl.[4] H02H *3/22*
U.S. Cl. 361—117 **15 Claims**



1. A lightning arrestor insulator comprising:

an insulator body;

a ZnO element having voltage non-linear resistant characteristics, said element being embedded in said insulator body; and

a glassy bonding material disposed between said insulator body and said ZnO element, said glassy bonding material integrally fixing said ZnO element to said insulator body;

wherein said glassy bonding material has a thermal expansion coefficient which is smaller than a thermal expansion coefficient of said ZnO element and a thermal expansion coefficient of said insulator body.

4,796,150

TELECOMMUNICATION PROTECTOR UNIT WITH PIVOTAL SURGE PROTECTOR

Larry W. Dickey, Hackettstown, and Warren J. Rhines, Convent Station, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

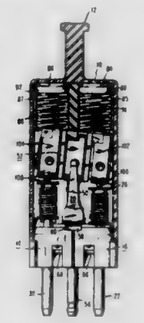
Continuation of Ser. No. 40,708, Apr. 16, 1987, abandoned, which is a continuation of Ser. No. 752,093, Jul. 5, 1985, abandoned. This application Oct. 2, 1987, Ser. No. 105,461
Int. Cl.[4] H02H *3/22*
U.S. Cl. 361—119 **7 Claims**

1. Apparatus for protecting telephone equipment in a central office or other location against sneak currents or surge voltages by conducting said sneak currents or surge voltages or both to ground potential, said apparatus comprising

first and second sneak current protection devices, the devices being positioned along side one another,

a single surge voltage protection device extending between and being supported on and electrically connected to said first and second sneak current protection devices, and,

first and second springs positioned along side one another, said first spring urging one portion of said surge protection device against said first sneak current protection device and said second spring urging another portion of said surge voltage protection device against said second



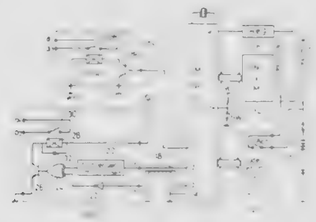
sneak current protection device, said surge voltage protection device being configured to be pivoted responsive to the operation of one of the said current protection devices and said spring urging said surge voltage protection device against said operated sneak current protection device.

4,796,151

IGNITION SYSTEM FOR VEHICLE

Toru Asada, Takaoka; Kenichi Komuro, Toyota; Ryoichi Fukumoto, Nagoya, and Nozomu Torii, Hekinan, all of Japan, assignors to Aisin Seiki Kabushikikaisha, Japan

Continuation of Ser. No. 842,683, Mar. 21, 1986, abandoned. This application Nov. 19, 1987, Ser. No. 122,809
Claims priority, application Japan, Mar. 22, 1985, 60-58109
Int. Cl.[4] H01H *47/00*; **B62D** *45/00*
U.S. Cl. 361—171 **3 Claims**



1. An ignition system for a vehicle comprising:

spark voltage generating means including a primary and a secondary coil;

first switching means for intermittently passing a current through the primary coil in order to generate a spark voltage;

means for applying a voltage induced across the secondary coil to the spark plugs of an engine;

second switching means connected to control a current in said primary coil of said spark voltage generating means for controlling the generation of a spark voltage;

switching driver means for receiving simultaneously, a first enabling signal and a second enabling signal, said switching driver means having enabling circuit means for processing said first and second enabling signals, and for turning said second switching means on or off in response thereto;

key code emitting means including a code generator having several switches for designating a code and a parallel-in/serial-out shift register for storing and outputting a code signal corresponding to the code designated by the switches;

key code receiving means for receiving the code signal emitted by the key code emitting means and detecting the code contained in the code signal;

memory means for storing a specific code; and

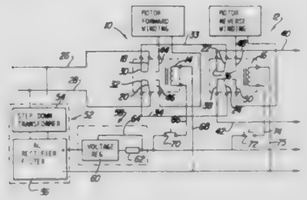
switching control means for comparing the code detected by the key code receiving means against the specific code to determine a match/mismatch therebetween, and once a match is found, said switching control means causing said switching driver means to turn said second switching means on by said switching control means outputting said first and second enabling signals to said switching driver means.

4,796,152

MULTI RELAY SELECTION CONTROL CIRCUIT POWER LIMITER

Michael W. Sinden, Ballwin, and Alexander Muller, Ellisville, both of Mo., assignors to VonWeise Gear Company, St. Clair, Mo.

Filed Jan. 19, 1988, Ser. No. 145,543
Int. Cl.[4] H01H *9/00*; **H02J** *1/00*
U.S. Cl. 361—192 **7 Claims**



1. In a relay actuated power supply circuit having at least two alternatively selectable relays for controlling power input to individual driving means respectively controlled by said relays, each relay including means for alternatively connecting a current source to or disengaging a current source from a controlled driving means and a coil for effecting operation of each of the respective said relays, the improvement comprising:

a voltage regulator-resistor circuit for supplying power to said relay coils including:

a DC voltage source,

a voltage regulator,

a current setting resistor in series with said voltage regulator, said current setting resistor and said voltage regulator serving to provide constant current from said voltage regulator-resistor circuit,

a series of relay coils,

said relay coils being in parallel connection in said voltage regulator-resistor circuit,

switching means respectively in connection with each of said coils and said circuit and each being operative to alternatively connect and disconnect one of said coils to said voltage regulator-resistor circuit for a respective supply of current to or a withdrawing of current from said one of said coils,

whereby attempted operation of more than one of said relays to closed position will cause a splitting of the current available from said regulator-resistor circuit, as limited by said regulator and said resistor, between the coils of the latter said relays and wherein said circuit being arranged

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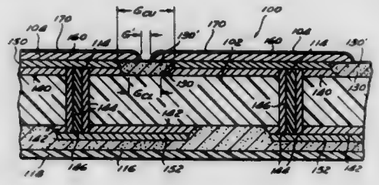
such that the current required for operating any one of said relays from a circuit open to a circuit closed position is greater than that required to maintain any one of said relays in a circuit closed position, and the total amount of current available from said voltage regulator-resistor circuit is restricted by said circuit to less than the power required to operate any one of said relays to a closed position from an open position while any other one of said relays is held in closed position by current from said regulator-resistor circuit, and only one of said relays can be operated to closed operative condition at any one time.

4,796,153

LIGHTNING DIVERSION STRIPS FOR AIRCRAFT

Myron P. Asmussen, Stanton; John E. Schroeder, Huntington Beach, and Evert C. Alsenz, Newport Beach, all of Calif., assignors to Lightning Diversion Systems, Huntington Beach, Calif.

Filed Jun. 1, 1987, Ser. No. 57,350
Int. Cl.[4] B64D 45/02; H05F 3/00
U.S. Cl. 361—218 **16 Claims**



1. A lightning diversion strip comprising:
a dielectric substrate supporting a plurality of conductive segments on a surface thereof, each said segment comprising a first conductive layer and a second conductive layer, said first conductive layer of one segment spaced apart from the first conductive layer of an adjacent conductive segment by a first gap having a first width determined by the distance between adjacent first conductive layers, said first gap filled with a non-conductive material, said second conductive layers spaced apart by a second gap having a second width less than said first width, a portion of each said second conductive layer formed over said non-conducting material in said first gap so that a junction between said non-conducting material and said first conductive layers is covered by said second conductive layer, said second width of said second gaps selected so that ionization occurs between adjacent second conductive layers in the presence of high voltage electricity during a lightning strike, said ionization providing an electrically conductive path across the tops of said second conductive layers to thereby conduct current caused by said high voltage electricity along said electrically conductive path.

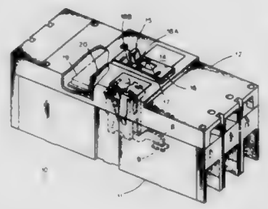
4,796,154

MOLDED CASE CIRCUIT BREAKER WITH CONTACT STATUS INDICATING HANDLE

Robert A. Morris, Burlington; Ireneeus S. Pauw, New Britain, and Roger N. Castonguay, Terryville, all of Conn., assignors to General Electric Company, Plainville, Conn.

Filed Jun. 11, 1987, Ser. No. 60,576
Int. Cl.[4] H02B 1/08
U.S. Cl. 361—353 **8 Claims**

1. A molded case circuit breaker comprising:
a plastic case and a plastic cover;
a pair of contacts within said case;
a trip unit and operating mechanism within said case responding to overcurrent conditions through an electric circuit to separate said contacts and interrupt said electric circuit; and
an operating handle comprising a post extending through a slot in said cover and joined to a central flange member contained within said case, said post including a transverse



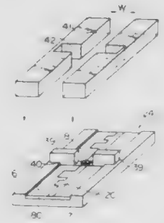
groove formed therein and aligned with one edge of said slot, to thereby allow travel of said central flange member within said case.

4,796,155

LIQUID COOLING TYPE HIGH FREQUENCY SOLID STATE DEVICE

Toshiyuki Saito; Naofumi Okubo, both of Kawasaki; Yoshiaki Kaneko, Yokohama, and Yasuyuki Tokunaitsu, Isehara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 675,868, Nov. 28, 1984, abandoned. This application Aug. 20, 1987, Ser. No. 88,520
Claims priority, application Japan, Nov. 29, 1983, 58-223103; Nov. 30, 1983, 58-224304; Nov. 30, 1983, 58-224307; Dec. 22, 1983, 58-240826; Dec. 27, 1983, 58-244537; Dec. 29, 1983, 58-247693; Jan. 13, 1984, 59-003555; Jan. 13, 1984, 59-003556
Int. Cl.[4] H01L 23/44
U.S. Cl. 361—385 **2 Claims**



1. A liquid cooling type high frequency solid state apparatus, comprising:
a solid state chip;
at least one matching circuit, having a cut-off dimension and connected to said solid state chip;
a carrier supporting said soild state chip and said matching circuit and constituting, together with said solid state ship and said matching circuit, a device to be cooled;
a coolant vessel for containing a liquid collant, with a space for coolant vapor at the top thereof at least a part of said solid state device contacting the liquid coolant for boiling the and evaporation the liquid coolant;
condensing means for condensing the coolant vapor contained in the space at the top of said collant vessel; and amplitude modulation reduction means for reducing amplitude modulation of said solid state device due to the boiling of the liquid collant, said amplitude modulation reduction means comprising.
radiator means, disposed on both sides of and adjacent to said solid state chip, for radiating heat generated by said solid state chip; and
two parallel metallic bars, disposed on both sides of said solid state chip with said radiator means therebetween,

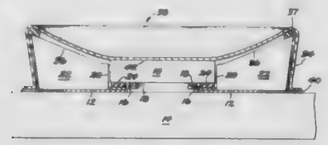
for preventing wave leakage from said matching circuit, a distance between said two bars being equal to the cut-off dimension.

4,796,156

SELF PACKAGING CHIP MOUNT

Harold F. Webster, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 4, 1987, Ser. No. 128,847
Int. Cl.[4] H05K 7/20
U.S. Cl. 361—386 **14 Claims**



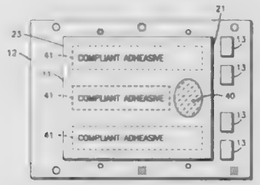
1. An integrated circuit chip mount, comprising:
a centering frame with an aperture, said centering frame being positioned on a printed circuit board such that interconnect leads attached to said printed circuit board extend into said aperture of said centering frame;
an integrated circuit chip removably situated in said aperture of said centering frame;
spring means forcing a pressure-fit electrical connection between conductive leads secured to terminals on said integrated circuit chip and said interconnect leads extending into said aperture of said centering frame, said centering frame properly aligning said conductive leads and said interconnect leads, said spring means being comprised of a thermally conductive metal for dissipating heat produced by said integrated circuit chip; and
a compliant backing member disposed around a periphery of said integrated circuit chip, said conductive leads being cemented to said compliant backing member, said compliant backing member compensating for variations in said aperture in said centering frame and for variations in positions of said interconnect leads.

4,796,157

SUBSTRATE MOUNTING ASSEMBLY

Fred E. Ostrem, Long Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1988, Ser. No. 140,458
Int. Cl.[4] H05K 7/20
U.S. Cl. 361—386 **18 Claims**



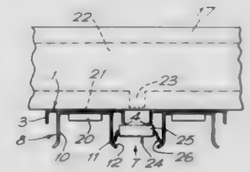
1. A substrate mounting assembly comprising:
a substrate having a plate-shaped configuration with a top surface having metallized conductor paths and bonding pads thereon and a bottom surface;
a base carrier having a top surface to which said substrate bottom surface is to be bonded to, said base carrier having a substantially different temperature coefficient of expansion than said substrate;
first adhesive means bonding a portion of said substrate bottom surface adjacent at least one critical one of said bonding pads to said base carrier top surface to effectively fix the position of said critical bonding pad with respect to said base carrier; and
second adhesive means bonding other portions of said substrate bottom surface to said base carrier top surface, said second adhesive means forming a substantially more compliant and flexible bond between said substrate and said base carrier than said first adhesive means.

4,796,158

APPARATUS FOR HOLDING ELECTRICAL OR ELECTRONIC COMPONENTS DURING THE APPLICATION OF SOLDER

Ah T. Sim, Singapore, Singapore, assignor to Sun Industrial Coatings Private Limited, Jurong, Singapore

Filed Jul. 10, 1987, Ser. No. 72,036
Claims priority, application United Kingdom, Jul. 11, 1986, 8616938
Int. Cl.[4] H05K 7/02
U.S. Cl. 361—417 **5 Claims**



1. A carrier (16) for a plurality of electrical or electronic components, comprising a frame in which is provided a plurality of parallel tracks (T) for receiving the components, the tracks (T) being formed by a plurality of parallel, laterally spaced, axially extending upper support members (1), each support member (1) being of substantially U-shaped configuration and defines a pair of parallel, axially extending upper legs (3), the upper legs (3) being directed downwardly and having downwardly facing portions (4), the tracks (T) being further formed by a plurality of parallel, laterally spaced, axially extending lower support members (8) aligned with the upper support members (1), each lower support member (8) being of substantially U-shaped configuration and defined a pair of parallel, axially extending lower legs (10), the lower legs (10) being directed downwardly and having end regions (11) directed outwardly to form generally upwardly racing portions (12), each track (T) being defined by four legs (3,10) and is situated between two adjacent upper support members (1) and their aligned lower support members (8), and wherein the legs (10) of each lower support member (8) project downwardly beyond the ends of the legs (3) of its aligned support member (1) and are spaced inwardly thereof.

4,796,159

EXPLOSION PROTECTED MODULAR HOUSING

Detlev Miksche, Niederahall, Fed. Rep. of Germany, assignor to R. Stahl Schalterbau GmbH, Kunzelsau, Fed. Rep. of Germany

Filed Sep. 10, 1987, Ser. No. 95,561
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632676
Int. Cl.[4] H02B 1/04
U.S. Cl. 361—429 **43 Claims**

1. A modular connection and plug-in system including means for electrical connection and mechanical retention of selectively replaceable explosion-protected electrical subsystems,
said system having
a frame (2, 8);
a plurality of said electrical subsystems, at least one of said subsystems including
an explosion-resistant modular housing (3) defining a cham-

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ber (28) therein, said modular housing being selectively positioned in said frame and individually removable therefrom,

and electrical components (29) located in the chamber (28) of the housing (3) of the at least one subsystem;

said system further comprising

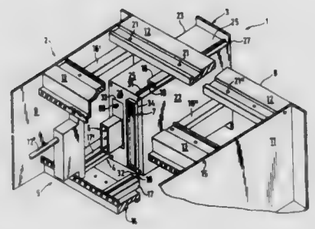
a two-part plug and receptacle arrangement (4) for said at least one of said subsystems, each plug and receptacle arrangement having

a first connection part (5, 51, 53) located on the frame (2, 8) and a second connection part (6, 38) located on said housing (3) to permit individual removal of said at least one subsystem;

connection means (35, 36) in the housing (3) for providing electrical power via said plug and receptacle arrangement (4) to the electrical components (29) in the respective chamber (28) of the housing (3),

means (12', 62) for coupling electrical energy to said at least one subsystem at energy levels which are "not intrinsically safe";

and comprising



means for rendering said plug and receptacle arrangement (4) capable of transferring electrical energy at levels which are "not intrinsically safe" in an explosion endangered environment and for permitting selective severing and removal of said at least one subsystem from the frame without interrupting, to said coupling means, electrical energy supply at said levels which are "not intrinsically safe", said energy transfer and selective severing means comprising

said first connection part (5, 51, 53) being secured in the frame (2, 8) and forming one element of a separable two-part interengaging flame-proof plug-and-receptacle connection system;

said second connection part (6, 38) being secured to the explosion-resistant housing (3) and forming a second element of the separable two-part interengaging flame-proof plug and receptacle connection system; and

wherein the means (12, 62) for coupling electrical energy at said levels which are "not intrinsically safe" are connected to the first connection part.

4,796,160

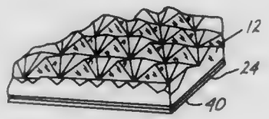
POLARIZED LIGHTING PANEL

Myron Kahn, 4923 Amigo Ave., Tarzana, Calif. 91356

Filed Nov. 13, 1987, Ser. No. 119,908

Int. Cl.[4] F21V *9/14, 5/02*

U.S. Cl. 362—19 **19 Claims**



1. An improvement in an laminated lighting panel having a first layer with at least one shaped surface comprising a plurality of three-dimensional elements extending from said one surface and a surface opposing said one shaped surface, each element defined by three generally flat triangular surfaces, each of said triangular surfaces having first and second sides and a base, and mating the other two of said three triangular surfaces defining each of said elements on said first and second sides of said element, each of said bases of said three triangular surfaces defining each of said element being substantially coincident with the base of one of said triangular surfaces defining an adjacent element, all of said bases being substantially coplanar, each of said three triangular surfaces being disposed at approximately 50 to 60 degrees with respect to the plane of said bases.

said improvement comprising a second layer laminated to said first layer and composed of a foamed laminated polarizing material having formed therein a multiplicity of flattened plastic bubbles so that light transmitted through said second layer, first layer and then through said shaped surface of said first layer is substantially polarized through a corresponding multiplicity of optical interfaces formed by said bubbles and said multiply polarized light is refracted through said shaped surface to distribute said light at wide angles from the vertical with a VCP of substantially equal or greater than 70.

4,796,161

ACTUATION DEVICE FOR A PLURALITY OF CHEMICAL LIGHT SOURCES

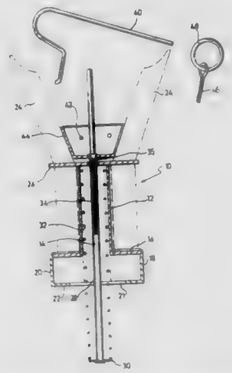
Meir Savariego, Moshav Nir Zvi, Israel

Filed Oct. 27, 1987, Ser. No. 114,112

Claims priority, application Israel, Nov. 4, 1986, 80486

Int. Cl.[4] F21K *2/00*

U.S. Cl. 362—34 **14 Claims**



1. Actuation apparatus for providing simultaneous actuation of a plurality of chemical radiation sources comprising:

means for mounting a plurality of elongate chemical radiation sources which are actuable by bending thereof; and

radiation source engagement means for selectable simultaneously bending engagement with said plurality of elongate chemical radiation sources for generally coincident actuation thereof, said radiation source engagement means comprising an engagement element which is relatively locatable along said axis in a first engagement orientation relatively distant from said mounting means at which location said engagement element engages said chemical radiation sources without causing bending thereof sufficient to cause actuation and in a second engagement orientation relatively closer to said mounting means at which location said engagement means engages said chemical radiation sources so as to cause bending thereof sufficient to cause actuation thereof.

4,796,162

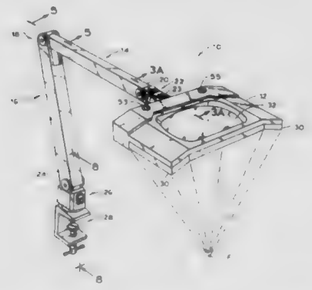
COUNTERBALANCED ARM ASSEMBLY

Jessen C. Krogsrud, Oslo, Norway, assignor to Jac Jacobsen A/S, Oslo, Norway

Division of Ser. No. 906,302, Sep. 12, 1986, Pat. No. 4,744,019. This application Dec. 11, 1987, Ser. No. 131,869

Int. Cl.[4] F21Y *13/00*

U.S. Cl. 362—33 **1 Claim**



1. A lamp head assembly comprising a frame, a magnifying lens mounted in said frame, a pair of light sources mounted in said frame on opposite sides of said magnifying lens and positioned at angles to said lens to direct light therefrom to a position beneath the lens, and separate switch means for each of said light sources for selectively operating the light sources to permit independent operation of the light sources to selectively create shadows in the area beneath said magnifying lens.

4,796,163

MOTOR VEHICLE HEADLIGHT

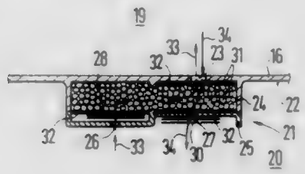
Helmut Dressler, Leutenbach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 17, 1986, Ser. No. 938,052

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1985, 3542457

Int. Cl.[4] B60Q *1/08*

U.S. Cl. 362—61 **11 Claims**



1. A headlight for motor vehicles, comprising a frame, a reflector, an incandescent lamp, and a lens, wherein an interior space which is closed from the atmosphere is formed by the frame or the reflector and the lens; an moveable member inlet valve through which air flows from the atmosphere into said interior space when underpressure is established in said interior space; at least one means which permits air to flow into the atmosphere from said interior space in response to overpressure established in said interior space; and drying means including a drying agent and arranged between said moveable member inlet valve and said interior space, said drying agent absorbing moisture from the air flowing into said interior space, said reflector having a flat upper portion and a lower portion, said overpressure-responsive means being an outlet valve, said inlet valve and said moveable member outlet valve being mounted at said lower portion.

4,796,164

RETRACTABLE HEADLAMP MOUNTING STRUCTURE

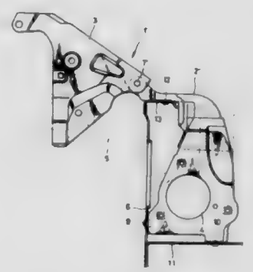
Kenichi Fukura, Toyota; Eiji Hiramatsu, Aichi, and Akira Nishimura, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Mar. 25, 1987, Ser. No. 29,813

Claims priority, application Japan, Mar. 31, 1986, 61-73342

Int. Cl.[4] B60Q *1/06*

U.S. Cl. 362—66 **5 Claims**



1. A retractable headlamp mounting structure for use on an automobile frame having a hood, comprising:

a radiator support mounted on the automobile frame, said radiator support having a vertically extending main portion, an upper portion, and a horizontally extending apron;

a fixed bracket disposed behind said main portion of said radiator support with the weight of said fixed bracket being borne by said apron, said fixed bracket having a connecting portion extending across the upper portion of the radiator support and resting thereon;

a motor support by said fixed bracket;

a movable bracket pivotably supported at one end of said fixed bracket connecting portion for holding a headlamp with the weight of said movable bracket being borne by said upper portion of said radiator support; and

a link having a first end connected to said movable bracket and a second opposite end connected to said motor;

said motor being energizable to cause said movable bracket to be angularly pivoted through said link between a position where the headlamp projects out of the hood and a position where the headlamp is retracted within the hood.

4,796,165

VEHICLE TAIL LIGHT CONSTRUCTION

Robert H. Mettl, Livonia, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Mar. 18, 1988, Ser. No. 170,204

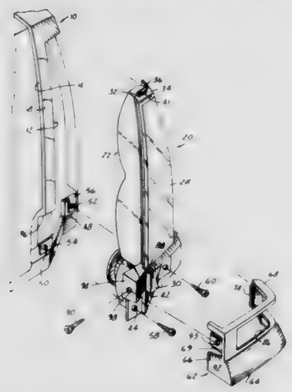
Int. Cl.[4] B60Q *1/22*

U.S. Cl. 362—80 **3 Claims**

1. The combination comprising a vehicle body having a tail light opening and a deck lid opening adjacent thereto, a deck lid mounted on the vehicle body over the deck lid opening and adapted to swing to open and closed positions with respect to the deck lid opening, a partition between the tail light opening and the deck lid opening defining an inboard wall of the tail light opening and an outboard wall of the deck lid opening, the deck lid obscuring the adjacent surface of the partition when it is in the closed position and permitting access to said surface when it is in an open position, a tail light assembly received in

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the tail light opening, the tail light opening having an upper wall, latch structure provided on said upper wall, the tail light assembly having an upper wall, cooperating latch structure provided on the upper end of the tail light assembly in latching engagement with the latch structure of the tail light opening upper wall, the tail light assembly having a lower wall with opening means therein, the tail light opening having a lower wall with mating opening means therein, threaded fastening means passing through the opening means in the lower wall of the tail light assembly into threaded engagement with the opening means in the lower wall of the tail light opening, a cover plate, the cover plate having a generally C-shaped cross section including an outer wall an inboard wall and an outboard wall, the cover plate being received on the lower portion of the tail light assembly with the outer wall thereof obscuring the threaded fastening means on the lower wall of the tail light assembly, the tail light assembly having a lower outboard wall, latch structure provided on said lower outboard wall, cooperating latch structure provided on the outboard wall of the cover plate in latching engagement therewith, the cover plate inboard wall having opening means therein, said partition having opening means on the lower portion thereof, the tail light assembly having an inboard wall portion on the lower portion thereof located at the opening means in the lower portion of the partition, the cover plate inboard wall having a tab overlapping the inboard wall portion on the lower portion of the tail light assembly, said last mentioned inboard wall structure and tab having mating opening means therein, and threaded fastening means passing from said deck lid opening into threaded engagement therewith to secure the cover plate to the tail light assembly, said last mentioned threaded fastening means being obscured when the deck lid is in the closed position and accessible when the deck lid in the open position as aforesaid.



4,796,166

HALOGEN SPOTLIGHT ASSEMBLY FOR CEILING FAN

Shelley A. Greenberg, Encino, Calif., assignor to Beverly Hills Trading Company, Inc., Los Angeles, Calif.

Filed Nov. 6, 1987, Ser. No. 117,500
Int. Cl.[4] F21S *1/04*
U.S. Cl. 362—96 **10 Claims**

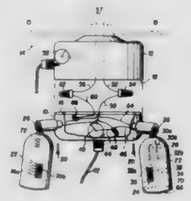
1. A halogen spotlight assembly for mounting on a ceiling fan, comprising

(a) a spotlight base portion configured for attachment to a switch housing of a ceiling fan;

(b) at least one spotlight body for housing a halogen bulb, the spotlight body being mounted on said spotlight base portion by a pivoting connector, the spotlight body having a light outlet;

(c) electric transformer means housed within the spotlight assembly for converting household electric current to electric current of about 12 volts for operating a corresponding halogen bulb within the spotlight body, the transformer having an input and an output;

(d) a switch connected to the transformer input, the switch having means for connecting with a household electric



line for selectively connecting the transformer to said household electric line; and

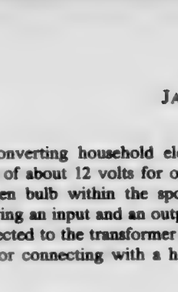
(e) socket means for mating with said corresponding halogen bulb within said spotlight body, the socket means being connected to the transformer output for connecting the transformer output to said corresponding halogen bulb.

4,796,167

LOCUS IDENTIFYING DEVICE

Thomas A. Brown, San Jose, and Kirk A. Martin, Aptos, both of Calif., assignors to Kat Electronics, Inc., Los Gatos, Calif.

Filed Dec. 8, 1987, Ser. No. 130,150
Int. Cl.[4] F21V *31/00*
U.S. Cl. 362—158 **7 Claims**



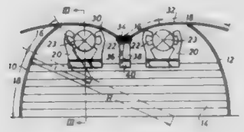
1. A water activated locus identifying device adapted to be coupled to an article to aid in locating such article, said device comprising a hollow sealed container, a cap threaded onto one end of said container to seal same and capture air therein to cause said container to float when disposed in a body of water, an electrically operated light carried by said container, electric circuit means within said container and coupled to said light, said circuit means including a pair of spaced leads extending out of said container and disposed in said circuit means to energize said light when coupled together by immersion into a body of conductive fluid such as water, said spaced leads supporting said circuit means from said cap and disposed within said container.

4,796,168

LIGHTING FIXTURE FOR FLUORESCENT LAMPS

Jaan Peterson, Rytterbakken 34, DK-2670 Greve Strand, Denmark

Filed Apr. 23, 1987, Ser. No. 41,830
Claims priority, application Denmark, May 1, 1986, 2015/86
Int. Cl.[4] F21S *3/02*; F21V *7/12*
U.S. Cl. 362—217 **5 Claims**



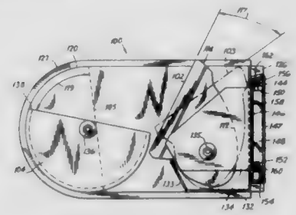
1. A lighting fixture for tubular fluorescent lamps, comprising lamp sockets (20) defining a pair of axes (23) for a set of two fluorescent lamps (22) said axes together defining a plane, a side reflector plate (10, 12) at each side of said pair of axes, said two side reflector plates being mutually connected by means of a number of mutually spaced transverse reflector plates (14), each said reflector plate (10, 12) following in its transverse direction an even curve having an upper relatively strongly curved portion (16) passing into a lower, less curved portion (18), two top reflector plates (30, 32) extending over said axes (23) towards the median plane between said two side reflector plates (10, 12), said two top reflector plates (30, 32) being arranged symmetrically relative to said median plane and having the same cross sectional shape and dimensions as the said two mutually identical side reflector plates (10, 12), whereby the less curved portion (18) of each said top reflector plate (30, 32) is situated above the corresponding one of said axes (23), and the strongly curved portion (16) thereof being situated between the said axes (23) with its lowest end arranged inside an area extending ¼d on each side of the said plane defined by the two axes (23), wherein "d" is the diameter of the fluorescent lamps (22) for which the fixture is intended.

4,796,169

LIGHTING FIXTURE WITH ROTATABLE GLARESHIELD

Sylvan R. Shemitz, Woodbridge, Conn., assignor to Sylvan R. Shemitz Associates, Inc., West Haven, Conn.

Filed May 8, 1987, Ser. No. 48,003
Int. Cl.[4] F21V *17/02, 21/02*
U.S. Cl. 362—282 **12 Claims**



1. In a lighting fixture which includes means for mounting the lighting fixture on a surface, and which includes a lamp and reflector system for projecting a beam of light through an aperture in the lamp and reflector system, said lighting fixture further including means connected to opposing first and second ends of the lamp and reflector system for pivotally supporting the lamp and reflector system such that the lamp and reflector system may be rotated about a first axis to vary the direction of projection of the beam of light which is projected through the aperture of the lamp and reflector system, means for adjustably shielding a portion of the beam of light which is projected through the aperture in the lamp and reflector system, the adjustable shielding means comprising:

a curved shield, partially cylindrical in shape, having opposing first and second ends, an inner concave surface, and a second axis displaced from the first axis, at least a portion of the inner concave surface being exposed to the beam of light projected through the aperture in the lamp and reflector system;

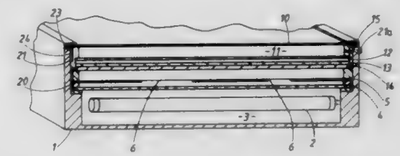
means, connected to the first and second ends of the curved shield, for pivotally supporting the curved shield such that the curved shield may be rotated about the second axis to vary the portion of the inner concave surface which is exposed to the beam of light projected through the aperture in the lamp and reflector system, whereby a desired portion of the beam of light projected by the lamp and reflector system is shielded by the exposed portion of the inner concave surface of the curved shield.

4,796,170

DISPLAY UNITS

Kenneth M. Pedersen, 165 Browns Bay Road, Browns Bay, and Alan M. Filmer, 88 Ti Rakau Drive, Pakuranga, both of Auckland, New Zealand

Filed Feb. 25, 1987, Ser. No. 18,413
Claims priority, application New Zealand, Apr. 14, 1986, 215814
Int. Cl.[4] F21V *7/00*
U.S. Cl. 362—308 **5 Claims**



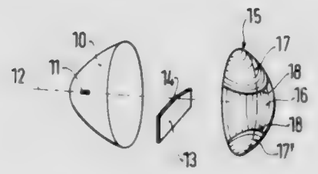
1. A display unit comprising a light box containing a source of illumination, one surface of said light box comprising a sheet of material which in use will transmit light from the interior of the light box outwardly, indicia bearing means including masked areas and areas selected from translucent and transparent areas mounted within the light box between the source of illumination and said sheet, and a plurality of layers of refracting light transmitting material with parallel sides interposed between said sheet of material and said indicia bearing means, the construction and arrangement being such that on the light source being illuminated said indicia will be displayed through said layers of refracting material and said sheet of material in a manner such that the indicia are displayed with a surrounding penumbra of light which gives a three dimensional effect to the display of said indicia.

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4,796,171
LOW BEAM OR FOG HEADLAMP FOR MOTOR VEHICLES

Gerhard Lindae, Leonberg; Richard Loewe, Gerlingen, and Peter Pertins, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 3, 1986, Ser. No. 926,960
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1985, 3539452; Jan. 25, 1986, 3602262
Int. Cl.[4] F21M *3/00*
U.S. Cl. 362—308 19 Claims

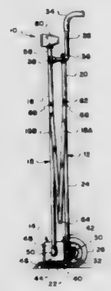


1. A low beam or fog headlamp for motor vehicles, comprising a reflector defining an optical axis, a light source arranged on the axis to generate in cooperation with the reflector a light beam propagating along the optical axis, a light shield arranged in the path of propagation of the light beam and having an optically effective edge, and objective concentrically arranged on the optical axis to project a partial light beam delimited by said edge as a light-dark boundary zone on a driveway, optical means formed as an integral part of said objective to adjust a desired light distribution and to correct color fringes of said partial light beam, said optical means including at least two aspheric partial surfaces formed on at least one side of the objective, said aspheric partial surfaces being arranged one above the other when viewed in the direction of said optical axis, and contacting each other through a rounded step which is formed on a curved surface of said objective, and said aspheric partial surfaces having different configurations and curvatures.

4,796,172
PORTABLE LIGHT SUPPORT APPARATUS AND METHOD OF ERECTING AND COLLAPSING SAME

H. Gary Chestnut, 7317 Impala Dr., Ventura, Calif. 93003

Filed Nov. 9, 1987, Ser. No. 118,760
Int. Cl.[4] F21V *21/06, 21/26*
U.S. Cl. 362—427 22 Claims

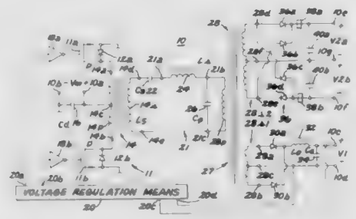


1. A portable light support apparatus, comprising:
(a) an elongated mobile frame;
(b) connecting means mounted on one end of said frame;
(c) lighting means;
(d) an elongated support member pivotally mounted at one end by said connecting means to said one end of said frame for movement of said support member at an opposite end toward and away from said frame, said support member at said opposite end mounting said lighting means at a location spaced remote from said connecting means; and
(e) a bracing member extending between and interconnecting said frame and said support member, said bracing member being adjustable for placing said support member in an erected operative condition relative to said frame and said lighting means remote from said frame and being oppositely adjustable for placing said support member in a collapsed inoperative transport condition relative to said frame and said lighting means adjacent to said frame, said frame being disposed in a generally horizontal position adjacent the ground when said bracing member is adjusted to place said support member in said erected condition relative to said frame and being disposed in a generally upright position relative to the ground when said bracing member is oppositely adjusted to place said support member in said collapsed condition relative to said frame.

4,796,173
LOW INPUT VOLTAGE RESONANT POWER CONVERTER WITH HIGH-VOLTAGE A.C. LINK

Robert L. Steigerwald, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1988, Ser. No. 150,599
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—25 18 Claims

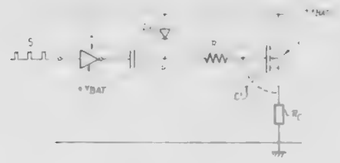


1. A power converter for providing at least one regulated D.C. output potential responsive to a D.C. input potential, comprising:
output section means for providing the at least one D.C. output potential responsive to a first A.C. potential;
input section means for transforming the D.C. input potential to a second A.C. voltage, having an amplitude which is greater than the amplitude of the D.C. input potential;
means for monitoring a selected one of the at least one D.C. output potential to provide a driving signal to said input section means with a value of a selected parameter which causes the second A.C. potential to change to maintain the at least one D.C. output potential substantially at a selected regulated value; and
A.C. link section means receiving the second A.C. potential from the input section means for providing to the output section means the first A.C. signal with a magnitude greater than the selected value of the at least one D.C. output potential and also responsive to variation of said selected parameter.

4,796,174
DIRECT VOLTAGE MULTIPLIER CAPABLE OF BEING INTEGRATED INTO A SEMICONDUCTING STRUCTURE

Bruno Nadd, Ollieres, France, assignor to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Apr. 1, 1987, Ser. No. 32,560
Claims priority, application France, Apr. 4, 1986, 86 04859
Int. Cl.[4] H02M *7/25*
U.S. Cl. 363—60 6 Claims

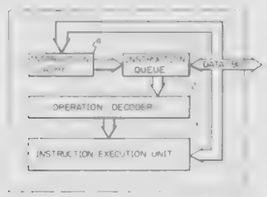


1. Multiplier of a direct voltage with a predetermined value in relation to a reference point, comprising at least one cell of the voltage doubler type, operating by the charging and discharging of a capacitor and controlled by a clock signal, the multiplier being designed to give a control signal to a device that has an input capacity of a predetermined value, multiplier comprising:
electronic means by which a first electrode of the capacitor can be set at the potential of the reference point according to the clock signal,
a diode linked to a second electrode of the capacitor, the diode providing for the passage of charging current under the effect of the direct voltage of predetermined value, this charge taking place when the first electrode of the capacitor is set at the potential of the reference point,
a resistor linking the common point between the diode and the capacitor to the device to be controlled, the resistor having a resistance and the clock signal having a pulse ratio such that the charging time of the capacitor is smaller than its discharging time, said capacitor charging to said predetermined value of said direct voltage only after application of plural clock pulses of said clock signal.

4,796,175
INSTRUCTION FETCHING IN DATA PROCESSING APPARATUS

Masahito Matsuo, and Toyohiko Yoshida, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1987, Ser. No. 34,093
Claims priority, application Japan, Aug. 27, 1986, 61-202041
Int. Cl.[4] G06F *9/38*
U.S. Cl. 364—200 5 Claims

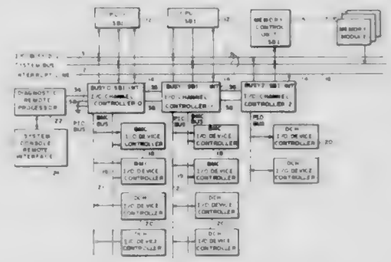


1. A data processing apparatus comprising:
a first memory device for storing a plurality of instructions including at least first, second and third series of instructions into a plurality of memory locations which are ordered by location identifiers based on a predetermined rule and including at least first, second and third location identifiers;
an execution unit connected to said first memory device for executing the first series of instruction consisting of one or more instructions stored in memory locations which are identified by the first location identifier in said first memory device;
an instruction prefetching unit connected to said first memory device and to said execution unit for fetching the second series of instructions consisting of one or more instructions stored in memory locations which are identified by the second location identifier having an order which is subsequent to said memory locations which are identified by the first location identifier having an order which is subsequent to said memory locations which are identified by the first location identifier while said first series of instructions are being executed by said execution apparatus; and
a second memory device connected to said first memory device and to said prefetching unit for storing the third series of instructions using the third location identifier as an index in the case where said third series of instructions are fetched when an amount of instruction data fetched in said instruction prefetching unit is below a constant value, said third series of instructions consisting of one or more instructions stored in memory locations which are identified by the third location identifier of said first memory device,
wherein when a previously executed series of instructions are executed again, said third series of instructions are fetched into said instruction prefetching unit from said second memory device.

4,796,176
INTERRUPT HANDLING IN A MULTIPROCESSOR COMPUTING SYSTEM

Lynn W. D'Amico, Hopkinton, and James M. Guyer, Northboro, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Nov. 15, 1985, Ser. No. 798,561
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 21 Claims



1. A multiprocessor computing system comprising:
a system bus, including an address bus for carrying an address phase of an instruction and a data bus for carrying a data phase of an instruction;
a plurality of processing units connected to said system bus, each processing unit including means for generating broadcast interrupt origin request instructions on said system bus;
a plurality of asynchronous input/output channel controllers connected to said system bus, each of said input/output channel controllers including means for generating a synchronizing signal in response to completion of an address phase of a broadcast instruction on said system bus, and
a plurality of priority lines, each priority line corresponding

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to a different one of said processing units connected through each of said input/output channel controllers, said input/output channel controllers being arranged on said priority lines in order of priority, said priority lines being gated in an input/output channel controller so that priority is asserted over all lower priority input/output channel controllers on a priority line by an input/output channel controller if said input/output channel controller has an interrupt pending in said input/output channel controller for the processing unit corresponding to said priority line.

4,796,177

ADDRESS EXTENSION SYSTEM

Hisayuki Nishimura, Kawasaki, and Tomochika Shibata, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

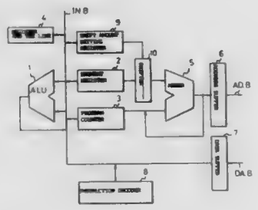
PCT No. PCT/JP86/00219, § 371 Date Nov. 7, 1986, § 102(e) Date Nov. 7, 1986, PCT Pub. No. WO86/06521, PCT Pub. Date Nov. 6, 1986

PCT Filed Apr. 30, 1986, Ser. No. 935,681

Claims priority, application Japan, Apr. 30, 1985, 60-092461; Apr. 30, 1985, 60-092495

Int. Cl.⁴ G06F *12/06*

U.S. Cl. 364—200 **7 Claims**



1. An address extension system in a processor for generating a physical address equal to a sum of a starting point address of a segment and an offset, by shifting a content of a segment register, storing the starting point address of the segment and summing the result of said shifting and the offset, designating an address in the segment, said system comprising:

(a) first means, having a shift amount data storing register, for setting a shift amount in said shift amount data storing register;

(b) second means for shifting a content of said segment register in accordance with said shift amount; and

(c) third means for summing an output of said second means and said offset, designating an address in the segment.

whereby the address space is extended and a starting point address of a segment can be selected as desired.

4,796,178

SPECIAL PURPOSE PROCESSOR FOR OFF-LOADING MANY OPERATING SYSTEM FUNCTIONS IN A LARGE DATA PROCESSING SYSTEM

Andrew T. Jennings, West Chester, and John A. Keller, Coatesville, both of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 15, 1985, Ser. No. 787,781

Int. Cl.⁴ G06F *9/06, 9/46*

U.S. Cl. 364—200 **11 Claims**

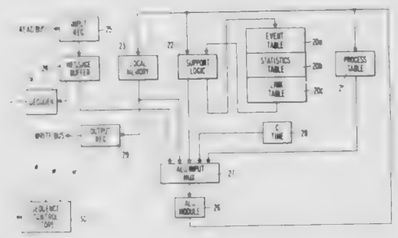
1. In a processing system having at least one central processor and at least one memory module for storing an operating system and a plurality of processes to be executed by said at least one central processor, which processes require different events to occur before their execution can be completed, a task control mechanism comprising:

input means coupled to said at least one central processor to receive therefrom a command to allocate an event token to a currently executing process and then to indicate that said currently executing process is in a wait state said allocation of said event token indicating that a required event is being initiated;

process table means coupled to said input means for receiving and storing designations of processes scheduled to be executed by said processing system including processes which are available to be executed and arranged according to assigned priorities;

event table means coupled to said input means to store status information about various event tokens including whether that token has been allocated and whether that event has occurred;

output means coupled to said process table means, event table means and said at least one central processor to



transmit to said at least one central processor an available event token and then a move command to move execution to a different process; and

control means coupled to said input means to receive said command to allocate, said control means being coupled to said output means, process table means and event table means to cause said output means to transmit said event token and move command to said at least one central processor;

said at least one central processor including means to transmit a process designation for insertion in said process table after receipt of said event token and before receipt of said move command, said process designation representing the process that implements said event.

4,796,179

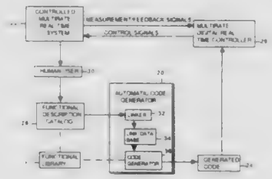
MULTIRATE REAL TIME CONTROL SYSTEM CODE GENERATOR

Larry L. Lehman, Palo Alto; Sunil C. Shah, Mountain View, and David B. Varvell, Campbell, all of Calif., assignors to Integrated Systems, Inc., Palo Alto, Calif.

Filed Aug. 20, 1986, Ser. No. 899,031

Int. Cl.⁴ G06F *1/00*

U.S. Cl. 364—300 **8 Claims**



1. An automatic computer software code generator for multirate real time control systems, comprising:

(a) functional library means for defining a multiplicity of functional blocks, including means for defining for each functional block a software template for generating a set of software statements for performing one or more logical and/or mathematical computations each time the software

associated with said functional block is executed, and parametric variables to be used in said computations;

(b) catalog means coupled to said functional library means, for describing a specified multirate real time control system having specified external input signals and specified external output signals, including a first database for representing computational relationships between said external input signals and said external output signals of said specified multirate real time control system;

said computational relationships being defined by specified combinations of said functional blocks, specified parametric values for said specified functional blocks, and specified computation initiation conditions; said computation initiation conditions including computational trigger conditions for asynchronous computations, and computational repetition rates and computational skew periods for periodic computations;

(c) linking means coupled to said catalog means for organizing said first database into a plurality of separate subsystems, each said subsystem including all the specified functional blocks with a given specified computation initiation condition, a separate subsystem being used for each unique specified computation initiation condition; and

(d) code generation means coupled to said catalog means for generating software for use in said specified control system, including means for generating:

a subsystem software routine for each said subsystem for performing computations corresponding to said computational relationships specified in said first database for said subsystem;

a scheduler program for initiating execution of said subsystem software routines in accordance with the specified computation initiation condition for each corresponding subsystem; and

software interface means for holding input, output and temporary data values for said specified multirate real time control system, including

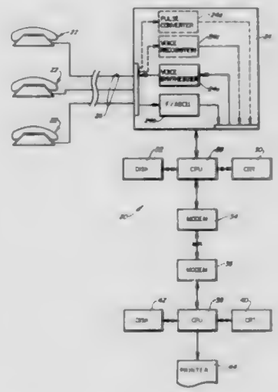
zero order hold means for each said subsystem, for holding output values generated by said subsystem during each execution of said subsystem for use as input signals to other ones of said subsystems; and

sample and hold means for each said subsystem, including a sample and hold buffer and sampling means for copying into said sample and hold buffer specified input data signals to said subsystem from other ones of said subsystems and specified ones of said specified external input data signals.

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telephonically receiving data of receipt of said selected pieces from said respondents,

recording said date of receipt,



and generating a report of the receipt of said selected pieces.

4,796,181

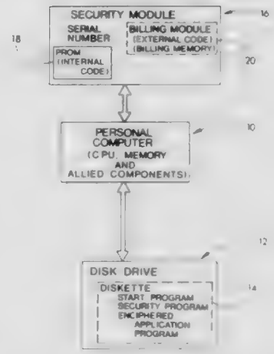
BILLING SYSTEM FOR COMPUTER SOFTWARE

John D. Wiedemer, 930 W. Forest Dr., Houston, Tex. 77079

Filed Oct. 24, 1986, Ser. No. 922,689

Int. Cl.⁴ H04L *9/00*

U.S. Cl. 364—406 **22 Claims**



4,796,180

METHOD OF MONITORING MAIL DELIVERY

Prince I. Riley, Chicago, Ill., assignor to R. R. Donnelley & Sons Co., Chicago, Ill.

Filed Oct. 14, 1986, Ser. No. 918,084

Int. Cl.⁴ G06F *15/20*

U.S. Cl. 364—400 **30 Claims**

1. A method of monitoring the delivery status of selected pieces in a batch delivery through a delivery service, comprising the steps of:

encoding each selected piece with indicia uniquely identifying a respondent therefor;

forwarding said pieces to said respondent as a part of said batch delivery; and

operating a data processing system to report receipt of said selected pieces by

18. A method of operating a billing and security system for distributing enciphered application programs on a pay-per-usage basis to users who have a personal computer with a hardware security module attached to it and a billing module removably received in the security module, the security module carrying an internal code therein and the billing module carrying an extenal code therein and having an alterable memory into which billing information may be entered, the method comprising the steps of

(a) reading the internal code form the security module and the external code form the billing module;

(b) generating a decipher key form the internal and external codes;

(c) using the decipher key to decipher the enciphered application program;

(d) executing the application program in the personal computer; and

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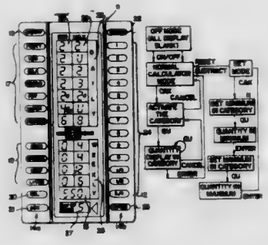
(e) during execution of the application program, periodically storing usage information into the alterable memory of the billing module so that the user can be charged for usage of the application program based on the information in the billing module.

4,796,182

DIET MONITOR AND DISPLAY DEVICE

Gary Duboff, 10066 Bay Harbor Ter., Bay Harbor Island, Fla. 33154

Filed Dec. 15, 1986, Ser. No. 941,629
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—413.29 14 Claims



1. A display device responsive to electronic processing means for visually presenting digital data representative of a dietary plan comprising in combination,

(a) means for digitally displaying respective minimum and maximum allowable daily consumption in selected food categories by said plan,

(b) means for digitally displaying respective minimum and maximum allowable weekly consumption in selected food categories by said plan,

(c) dedicated manually operable switch means for selecting one food category among said selected food categories,

(d) meanually operable switch means for activating a digital amount representative of an amount of food consumed in said food category,

(e) switch means for commanding entry of said digital amount of said food category to said processing means for processing and subtraction from the displayed minimum and maximum amounts, and

(f) means for storing the remaining allowable daily and weekly amounts in each of said selected food categories.

4,796,183

ROTATING DATA TRANSMISSION DEVICE

Helmut Ernert, Röttenbach; Thomas Ulherr, Nürnberg, and Albrecht Bär, Buckenhof, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 2, 1986, Ser. No. 914,236
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1985, 3538035
Int. Cl.[4] H05G *1/06*
U.S. Cl. 364—413.15 6 Claims

1. A data transmission device comprising:

a stationary part and a rotating part;

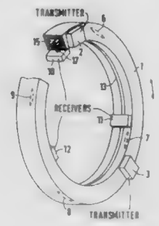
a first plurality of data transmitters mounted on either one said stationary part or said rotating part;

a second plurality of data receivers mounted on the other of said stationary part or said rotating part, wherein said second plurality exceeds said first plurality by one;

a circular data transmission path in the part in which said data transmitters are mounted, said path being in data transmitting communication with said data transmitters and said data receivers;

wavesinks means for dividing said data transmission path into a plurality of symmetrical sub-paths of equal length; and

means for arranging respective data transmitters and data receivers at selected locations around said data transmission path so that more than one of said transmitters can simultaneously transmit respective data via respective



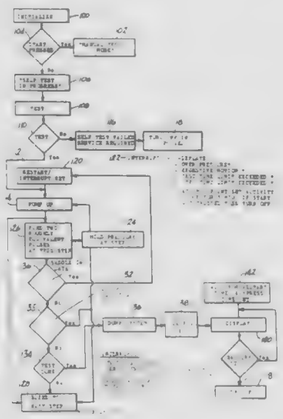
data links in said data transmission path as said rotating part rotates with respect to said stationary part, each data link constitutes a portion of total data transmission path and is formed by a number of adjoining sub-paths, with the number of said adjoining sub-paths in each data link being fewer than total number of sub-paths which are present in said circular data transmission path.

4,796,184

AUTOMATIC BLOOD PRESSURE MEASURING DEVICE AND METHOD

Dennis E. Bahr, Middletown; Kenneth R. Clark, Cottage Grove, and Kendall E. Post, Madison, all of Wis., assignors to Cas Medical Systems, Inc., Branford, Conn.

Filed Aug. 1, 1986, Ser. No. 892,848
Int. Cl.[4] A61B *5/02*
U.S. Cl. 364—413.03 17 Claims



1. A device for automatic determination of blood pressure values using a non-invasive oscillometric technique, said device comprising:

(a) a cuff means for girdling securement to a subject whose pressure is to be measured;

(b) pump means operably connected to said cuff means for inflating said cuff means to an initial pressure;

(c) valve means operably connected to said cuff means for venting air from aid cuff means to lower the pressure thereof;

(d) sensor means operably connected to said cuff means for sensing cuff pressure and oscillations in cuff pressure caused by arterial pulsations of the subject;

(e) memory means for storing cuff pressure data and cuff pressure oscillation data obtained from said sensor means; and

(f) computer means operably connected to said valve means, to said sensor means, and to said memory means, said computer means being operable to:

(i) actuate said valve means to periodically cause deflation of said cuff means in serial steps until a predetermined terminal cuff pressure step is reached;

(ii) record cuff pressure measurements at each pressure step;

(iii) record arterial cuff pressure oscillations at each pressure step;

(iv) collate each of said recorded cuff pressure measurements with the respective arterial cuff pressure oscillations and store said collated pressure measurements and pressure oscillations in said memory means;

(v) after said terminal cuff pressure step is reached, identify three stored arterial oscillation values, which include at least the greatest cuff pressure oscillation value and the next greatest oscillation values on each side of said greatest oscillation value, and their collated cuff pressure measurements;

(vi) fit a curve to said three oscillation values; and

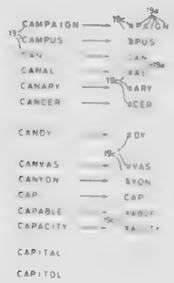
(vii) calculate true means blood pressure from said curve.

4,796,185

TYPEWRITER HAVING ELECTRONIC DICTIONARY WITH EFFICIENT STORAGE, FOR PRINTING ANY STORED INFORMATION ASSOCIATED WITH A ENTERED WORD OR ENTERED WORD

Motokazu Yoshimura; Koichi Hirata, both of c/o Brother Kogyo Kabushiki Kaisha, 35, 9-chome, Horita-dori, Mizuho-ku, Nagoya-shi, Aichi-ken, and Kimie Kurebayashi, 6-9, Nijigahama, Hiratsuka-shi, Kanagawa-ken, all of Japan

Continuation of Ser. No. 628,779, Jul. 9, 1984. This application Dec. 18, 1986, Ser. No. 943,834
Claims priority, application Japan, Jul. 8, 1983, 58-125139
Int. Cl.[4] G06F *15/38, 7/16, 7/07*
U.S. Cl. 364—419 7 Claims



1. A typewriter, comprising:

a dictionary memory having a multiplicity of data memory locations identified by respective addresses, each of said data memory locations including

a word-data memory location which stores word data representative of a respective word of one language, and

a related-data memory location for storing related data representing associated information associated with said word in the corresponding word-data memory location, said associated information being selected from a group consisting of a synonym, an antonym, and an equivalent word in another language, of the word in said corresponding word-data memory location,

said word data in the word-data memory location at each one of said addresses comprising at least one character code each representing a letter of said word, or at least one of said character codes and at least one special code each representing a combination of at least two adjacent letters of said word which are identical with corresponding adjacent letters of a word represented by respective word data in the word-data memory location at an adjacent address which is adjacent to said each one of said addresses, said word data stored in said word-data memory locations being arranged in alphabetical order;

a keyboard having a multiplicity of character keys operable to enter letters of a selected word of said one language, a call key, and a print-commanding key;

control means connected to said dictionary memory and said keyboard, and having retrieval means for retrieving upon operation of said call key said associated information associated with said entered word;

a working memory, connected to said keyboard and said retrieval means, for storing said entered word and the retrieved associated information;

display means operable under the control of said control means; and

a printing device operable under the control of said control means;

said control means being

responsive to said character keys for commanding said display means to indicate said entered word,

responsive to said call key for commanding said display means to indicate said entered word, along with the respective associated information when said entered word is the same as a word represented by word-data in a respective word-data memory location, and

responsive to said print-commanding key for commanding said printing device to print said entered word if said print-commanding key is operated when said display means displays no retrieved associated information responsive to said call key for the respective entered word displayed, and to print said retrieved associated information if said print-commanding key is operated when respective retrieved associated information is indicated on said display means along with the respective entered word responsive to the call key; and

said retrieval means of said control means for retrieving said associated information being operable to search for said entered word by a process which includes

defining a first range of said word-data memory locations for said searching for said entered word in said dictionary memory depending upon the first letter of said entered word,

determining one of said word-data memory locations in said dictionary memory that is in the middle of said first range, and determining between which one of said word-data memory locations defining said first range and said middle worddata memory location said entered word would lie if stored in a respective one of said data memory locations, and defining a smaller range between the respective one of said word-data memory locations defining said first range and said middle word-data memory location, and

repeating said determining of a middle word-data memory location for said smaller range and of between which one of the word-data memory locations defining the smaller range and the middle word-data memory location said entered word would lie if stored in said word-data memory, for successively smaller ranges in said word-data memory, until the entered word is located in said word data memory or it is determined that said entered word is not stored in said word-data memory.

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4,796,186

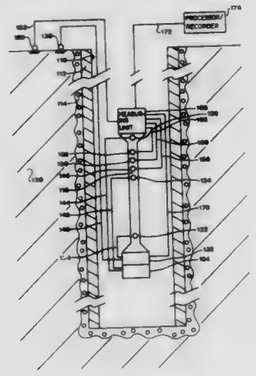
CONDUCTIVITY DETERMINATION IN A FORMATION HAVING A CASED WELL

Alexander A. Kaufman, Lakewood, Colo., assignor to Oil Logging Research, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 740,734, Jun. 3, 1985, abandoned. This application Jul. 30, 1986, Ser. No. 891,951

Int. Cl.[4] G01R *27/02*; **G01V** *3/20*

U.S. Cl. 364—422 **50 Claims**



1. A method for use in determining conductivity of an underground formation adjacent to a cased well, comprising:

using a cased well;

providing electrode means for supplying current;

positioning said electrode means in said cased well;

supplying current to the cased well using said electrode means;

obtaining a first determined magnitude relating to the conductance of the casing over a distance in said cased well;

obtaining a second determined magnitude relating to voltages over said distance in said well; and

using at least said first determined magnitude and said second determined magnitude to provide a value which is related to the conductivity of the underground formation adjacent to the cased well.

4,796,187

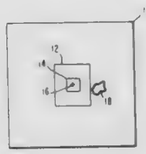
METHOD FOR PROCESSING IMAGE DATA TO SELECT A TARGET AIMPOINT

David M. North, Canoga Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 24, 1986, Ser. No. 946,233

Int. Cl.[4] F42B *15/00*; **H04N** *3/00*

U.S. Cl. 364—423 **9 Claims**



1. A method for processing data representative of the image content of a scene viewed by a sensor device for the purpose of selecting a target aimpoint, said method comprising:

first processing said data to select a unique contiguous image which is located closest to the center of the scene; and

further processing the data representative of said unique contiguous image to select the geometric median of the contiguous image as the target aimpoint.

4,796,188

PHASE ROTATION OF SIGNALS

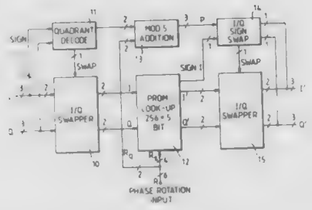
Simon J. Gale, Bishop's Stortford; Graham R. Fearnhead, Chelmsford, and Mark L. C. Furnace, Harlow, all of Great Britain, assignors to STC PLC, London, England

Filed Oct. 6, 1986, Ser. No. 915,394

Claims priority, application United Kingdom, Oct. 18, 1985, 8525702

Int. Cl.[4] H04L *7/02*; **G06F** *12/06*

U.S. Cl. 364—443 **6 Claims**



1. A method of rotating the phase of an input digital signal having in-phase and quadrature components, which phase is to be rotated in a range up to 360°, which range is divided into four 90° quadrants, the method involving the use of a look-up table in a memory, the memory having a memory output and the look-up table being provided for only one said quadrant, the method including the steps of determining which quadrant the input signal is in by consideration of the signs of the input components and transforming the input signal if necessary to correspond to the one said quadrant, applying said input as a partial address signal for said look-up table, and applying a rotation control signal forming an additional address signal to said look-up table, the memory output representing the input signal with its phase rotated.

4,796,189

NAVIGATION SYSTEM FOR AUTOMOTIVE VEHICLE WITH AUTOMATIC NAVIGATION START AND NAVIGATION END POINT SEARCH AND AUTOMATIC ROUTE SELECTION

Okihiko Nakayama, Kamakura; Toshiyuki Itoh, and Hiroshi Ueno, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 19, 1986, Ser. No. 842,365

Claims priority, application Japan, Mar. 20, 1985, 60-57475

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—449 **23 Claims**

1. A navigation system for an automotive vehicle comprising:

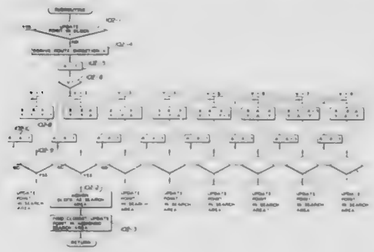
first means for monitoring vehicle motion and deriving first data indicative of vehicle travelling data;

second means for storing a map which is separated into a plurality of blocks and includes a plurality of known points;

third means for entry of position data of at least a start point and a destination;

fourth means operable for selection of a route for the vehicle and storing the selected route, said fourth means storing second data indicative of a navigation start point, a navigation end point, designated known points along said route and between said navigation start point and said navigation end point, and a predetermined condition for detecting when the vehicle reaches each of said designated known points, said fourth means determining one of the known points closest to the start point as said navigation start point and another of the known points closest to the destination as said navigation end point by searching said known points within a search area which is expandable in a limited direction determined based on a direction of a straight line extending through the start point and the destination;

fifth means for displaying said map stored in said second means, and a symbol representing a vehicle position; and



sixth means for setting a travel zone between successive designated known points and displaying instantaneous position of said vehicle, said sixth means further operable for:

monitoring said vehicle position within said travel zone;

detecting when said predetermined condition is satisfied; and,

in such cases, setting a successive travel zone.

4,796,190

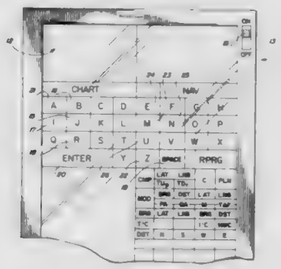
NAVIGATION SYSTEM

Elihu C. Cummings, 8432 7th Ave., SW., Seattle, Wash. 98106

Filed Jun. 4, 1986, Ser. No. 870,534

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—449 **4 Claims**



1. A navigation system for a vehicle, including

(a) a display screen:

(b) memory means for storing navigation chart information for a selected geographical area, including fixed environmental checkpoints in said area;

(c) means for storing information to update said navigation chart information stored in said memory means;

(d) means in communication with said update information storing means for transmitting an electromagnetic radiation signal carrying said update information;

(e) sensor means for detecting the touching of a fingertip to said display screen to generate signals representing certain environmental checkpoints and other chart information contained in said memory means for a portion of said selected geographical area;

(f) means in communication with said sensor means to recall from said memory means said chart information for said portion of said selected geographical area;

(g) means in communication with said recall means for generating signals corresponding to said chart information in said portion of said selected geographical area to display said information on said screen; and,

(h) means for receiving said electromagnetic radiation signal and processing said signal to direct said update information to said memory means.

4,796,191

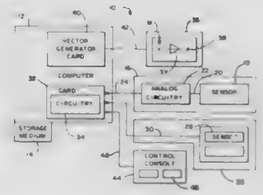
VEHICLE NAVIGATIONAL SYSTEM AND METHOD

Stanley K. Honey, Newark; Walter B. Zavoli, Palo Alto; Kenneth A. Milnes, Fremont; Alan C. Phillips, Los Altos; Marvin S. White, Jr., Palo Alto, and George E. Loughmiller, Jr., Cupertino, all of Calif., assignors to ETAK, Inc., Menlo Park, Calif.

Filed Jun. 7, 1984, Ser. No. 618,041

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—450 **78 Claims**



1. Apparatus for providing information to improve the accuracy of tracking a vehicle movable over streets in a given area, comprising:

(a) first means for providing data identifying respective positions of the vehicle, each position having an accuracy relative to an actual location of the vehicle and one of said positions being a current position, and for providing data identifying a measured heading of the vehicle;

(b) second means for providing a map data base of the streets; and

(c) means for deriving any of a plurality of parameters in dependence on one or more respective positions of the vehicle and the streets of the map data base to determine if a more probable current position exists, wherein one of said parameters is the measured heading of the vehicle as compared with the headings of the streets of the map data base.

27. Apparatus for providing information to improve the accuracy of tracking a vehicle movable over streets, comprising:

(a) first means for providing data identifying respective positions of the vehicle, each position having a certain accuracy and a current position possibly being subject to being updated; and

(b) second means for providing an estimate of the accuracy of the positions of the vehicle, the estimate changing as the vehicle moves and changing if the current position is updated, the estimate being used to determine if a more probable position than the current position exists.

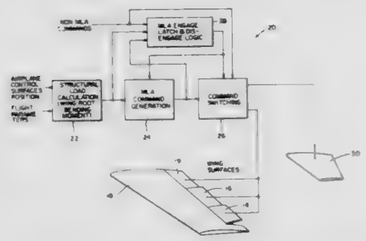
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4,796,192

MANEUVER LOAD ALLEVIATION SYSTEM

George E. Lewis, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 4, 1985, Ser. No. 781,656
Int. Cl.[4] B64C *9/10*
U.S. Cl. 364—463 10 Claims



1. A maneuver load alleviation system for shifting the wing airload inboard towards the wing root of an aircraft during a maneuver, the system comprising:

means receiving input data for computing the wing root bending moment load of each wing of the aircraft during the maneuver on the basis of a plurality of parameters, including the roll rate or acceleration of the aircraft;

means coupled to the means for computing for comparing the computed wing root bending moment load of each wing with a threshold level of the wing root bending moment; and

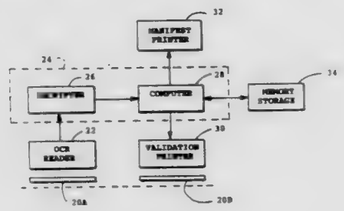
means coupled to the means for comparing for providing left and right wing command signals, to respective outboard flaps on the left and right wings for moving the flaps upward responsive to the calculated wing root bending moment load for the respective wing exceeding the threshold level, thereby reducing the wing root bending moment for each wing below the threshold level.

4,796,193

POSTAGE PAYMENT SYSTEM WHERE ACCOUNTING FOR POSTAGE PAYMENT OCCURS AT A TIME SUBSEQUENT TO THE PRINTING OF THE POSTAGE AND EMPLOYING A VISUAL MARKING IMPRINTED ON THE MAILPIECE TO SHOW THAT ACCOUNTING HAS OCCURRED

David E. Pitchenik, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 7, 1986, Ser. No. 882,805
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—464.02 12 Claims



1. A system comprising:

a computer;

a postage validating device responsive to said computer for providing postage value and user account information;

a printer responsive to said computer, said printer receiving from said computer said postage value and user account information for printing on a mailpiece, said computer providing said postage value information to be printed on a mailpiece but not accounting for such value at the time of postage printing;

a reader for reading validating data from said mailpiece;

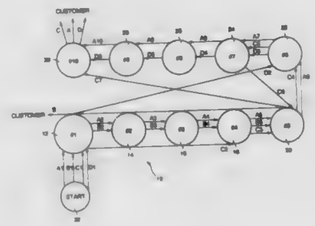
accounting means for account processing, said accounting means responsive to said reading means; and means responsive to said accounting means for imprinting a mark on said mailpiece at a time of account processing to provide a visual indication that accounting for said mailpiece has occurred.

4,796,194

REAL WORLD MODELING AND CONTROL PROCESS

Robert W. Atherton, 1694 Miller Ave., Los Altos, Calif. 94022

Filed Aug. 20, 1986, Ser. No. 898,131
Int. Cl.[4] G06F *15/46, 15/24*
U.S. Cl. 364—468 58 Claims



1. A process for modeling a manufacturing plant, which comprises delineating a set of factory operating rules which define how part lots interact with machines in actual operation of the plant, defining the manufacturing plant by specifying machines in the plant and at least batch size and processing time parameters of each machine, defining products manufactured in the plant, providing fabrication sequences consisting of process steps for the products manufactured in the plant, assigning the process steps to the machines, defining at least time and yield characteristics of each process step, identifying which phenomena in the manufacturing plant are stochastic in nature, and assigning distributions and parameters of the distributions to the stochastic phenomena.

4,796,195

METHOD FOR MACHINING WITH IMPROVED ACCURACY

William A. Haggerty, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

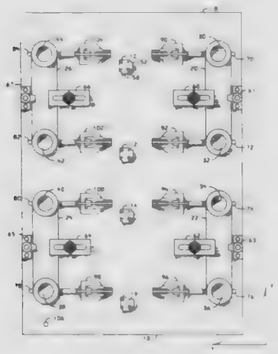
Filed May 13, 1987, Ser. No. 49,182
Int. Cl.[4] G06F *15/46;* G05B *23/02*
U.S. Cl. 364—474.35 4 Claims

1. A method for performing a machining operation at a predetermined location in response to a numerical control program irrespective of time variant influences affecting relative positions of a tool and workpiece, the numerical control program including a measurement instruction for measuring a location of a point, a calculation instruction for computing a magnitude of a coordinate offset, and a machining instruction for effecting a machining operation at a predetermined location, the method comprising the steps of:

(a) providing a reference feature proximate the predetermined location, the reference feature having a reference surface situated at an actual location;

(b) producing reference surface signals in response to the measurement instruction, the reference surface signals representing a measured location of the reference surface;

(c) producing location correction signals immediately subsequent to the production of the reference surface signals, the location correction signals being produced in response to the reference surface signals and the calculation instruction, the location correction signals representing a difference between the measured location of the reference surface and its actual location; and
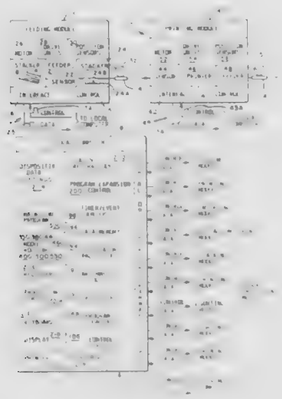


(d) performing the machining operation in response to the location correction signals and the machining operation instruction immediately subsequent to the production of the location correction signals to eliminate the effects of the time variant influences on relative positions of the tool and workpiece.

4,796,196

LETTER PROCESSING APPARATUS

Robert T. Durst, Jr., Monroe, and Alfred C. Schmidt, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 13, 1987, Ser. No. 25,304
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—478 23 Claims



1. Letter processing apparatus comprising:

a. means for preparing a letter including a returnable stationery item for sending to an addressee, said returnable stationery item including a code identifying said addressee;

b. means for routing said stationery item when returned to a selected one of a plurality of locations, said routing means including means for sensing said code;

c computer means, said computer means coupled to said routing means and includigg means for controlling said routing means, said computer means including means for storing a dispositive data listing for said code, said dispositive data listing including means defining said selected location, said controlling means including means for causing said routing means to route said returned stationery item to said selected location when said code is sensed; and

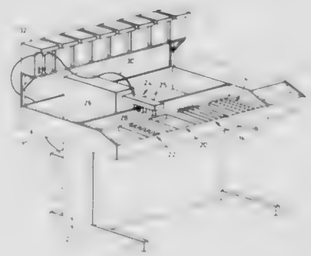
d. means for changing said dispositive data listing whereby said selected location may be changed.

4,796,197

AUTOMATED APPARATUS FOR CARRYING OUT BIOLOGICAL, BIOCHEMICAL OR PHYSICOCHEMICAL DETERMINATIONS

Jean Lissot, Brie-Comte-Robert; Jean-Pierre Vasseur, Longjumeau; Jean-Pierre Thomas, Vitry s/Seine, and Claude Pascal, Combs La Ville, all of France, assignors to Rhone-Poulenc S.A., Courbevoie, France

Continuation-in-part of Ser. No. 464,888, Feb. 8, 1983, abandoned. This application Apr. 24, 1986, Ser. No. 855,341
Claims priority, application France, Feb. 9, 1982, 82 02058
Int. Cl.[4] G01N *35/04*
U.S. Cl. 364—500 3 Claims



1. Apparatus for performing microbiological measurements by turbidimetry, such apparatus including:

(a) means to store a liquid nutrient and constituents for preparing samples including diluent solution and at least one of product solution and standard solution to be measured,

(b) preparation apparatus for the preparation in a plurality of test tubes arranged on a support of a plurality of solutions for performing the measurements, such plurality of solutions together comprising a determination unit, such preparation apparatus comprising in combination, a plurality of needles for dispensing liquid into the test tubes, a plurality of diluters each connected to a respective needle, a transposer and a needle selector, said plurality of diluters and needle selector being controlled so as to draw at least one of the product solutions to be measured and standard solutions from said means to store via selected ones of the said plurality of needles into the respective diluters, and subsequently place same in test tubes in volumes which increase at a predetermined ratio, to make up the solutions in the test tubes by drawing a volume of diluent from said means to store and adding it to said test tubes via said needles, and withdraw from said means to store a given volume of liquid nutrient and distribute it to the test tubes, the transposer allowing successive performance of the withdrawal and distribution in the test tubes, the distribution of the samples and liquid nutrient amongst the arrangement of test tubes being a random distribution, such preparation being without manual intervention and without the transfer of liquid,

(c) a dry incubator for receiving a said determination unit comprising a plurality of test tubes filled by the preparation apparatus,

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(d) measuring apparatus for determining the turbidity of the samples in the test tubes after incubation, and

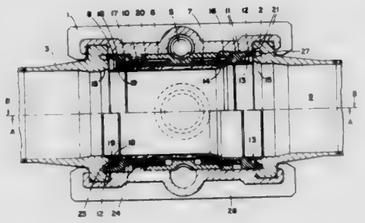
(e) a single computer effective to control the preparation apparatus, the incubator and the measuring apparatus, to store the conditions of preparation to generate the random distribution and store the distribution of samples and liquid nutrient amongst the test tubes, and to acquire and statistically interpret measurements with respect to siad stored random distribution of samples and liquid nutrient and to present the results.

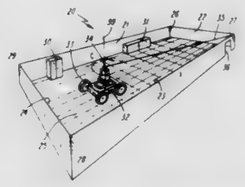
4,796,198

METHOD FOR LASER-BASED TWO-DIMENSIONAL NAVIGATION SYSTEM IN A STRUCTURED ENVIRONMENT

Kurian D. Boultinghouse, Sandia Park; J. Lee Schoeneman, and Bertice L. Tise, both of Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 17, 1986, Ser. No. 919,994
Int. Cl.[4] G01N *21/86*
U.S. Cl. 364—513 13 Claims





1. A laser-based mobile navigation system, capable of locating a mobile vehicle in a two-dimensional coordinate frame of reference in a structured environment, said system comprising:

at least three stationary retroreflective elements spaced apart from each other at known coordinates in said two-dimensional coordinate frame of reference, one of said retroreflective elements having a distinctive retroreflection;

mobile laser source means supported by said mobile vehicle for projecting a mobile narrow laser beam rotating about a mobile reference axis normal to the two-dimensional coordinate frame of reference, whereby said mobile rotating laser beam sequentially interacts with said retroreflective elements to generate corresponding retroreflections therefrom;

retroreflection responsive signal generating and receiving means connected to said mobile laser source means, responsive to the retroreflections from said stationary retroreflective elements, for generating output signals corresponding to each retroreflection, including said distinctive retroreflection, for receiving input signals corresponding to each retroreflection, including said distinctive retroreflection, and for measuring angles corresponding to said sequentially encountered retroreflector element, with respect to a current datum corresponding to said distinctive retroreflection; and

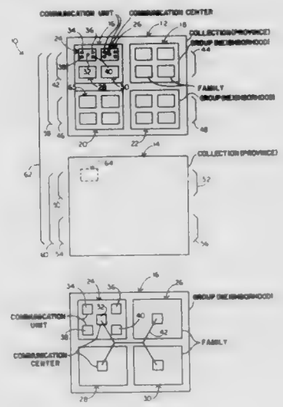
computation means cooperating with said signal generating and receiving means for computing from said known coordinates of said retroreflective elements and said output signals, by three-point resection, the real-time coordinates of said mobile reference axis in said two-dimensional coordinate frame of reference.

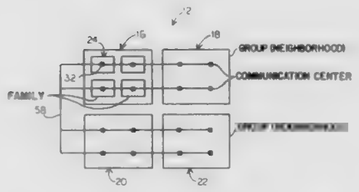
4,796,199

NEURAL-MODEL, INFORMATION-HANDLING ARCHITECTURE AND METHOD

Daniel W. Hammerstrom, Aloha, and James L. Bailey, Hillsboro, both of Oreg., assignors to Oregon Graduate Center, Beaverton, Oreg.

Filed Feb. 24, 1987, Ser. No. 17,788
Int. Cl.[4] G06F *15/18*
U.S. Cl. 364—513 12 Claims





1. A neural-model, broadcast-hierarchical, locality-of-communication-dominant, information-handling architecture structure comprising

a first information-handling level, including plural information-handling families organized into plural groups of such families, with each family in each group including at least two communication units and an associated communication center for communicating via a first level communication bus, directly on said first level, only with its family-associated units and with the communication centers in the other families in the same group, thus to enable broadcast communication, and simultaneous cooperative information handling, between different, respective, selected units in the families in the group, and

at least one other, higher-level, information-handling level, including means operatively communicative directly with said communication centers in the families in said first level for enabling the selective broadcast communication of information between different centers in the different groups via second level communication bus, thus to accommodate broadcast communication, and simultaneous

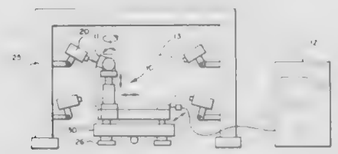
cooperative information handling, between selected units in the families in different groups which share said first level.

4,796,200

TARGET BASED DETERMINATION OF ROBOT AND SENSOR ALIGNMENT

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Windsor, Canada

Continuation of Ser. No. 940,153, Dec. 9, 1986, abandoned, which is a continuation of Ser. No. 660,043, Oct. 12, 1984, abandoned. This application Sep. 28, 1987, Ser. No. 104,517
The portion of the term of this patent subsequent to Jun. 28, 2005, has been disclaimed.
Int. Cl.[4] G06F *15/46*; H04N *7/18*
U.S. Cl. 364—513 10 Claims



1. A method for locating an object mounted on a structure comprising the steps of:

providing a plurality of optically visible targets on the object at known locations;

mounting a TV camera for movement on a highly accurately positionable robot having a plurality of axes of motion;

locating the positionable robot at a location known relative to the structure so that the position of the TV camera relative to the structure is known;

moving the positionable robot to position the TV camera at a predetermined point in space known relative to the structure;

viewing the targets with the TV camera;

determining the location of the targets with the TV camera relative to the TV camera, and hence relative to the structure; and

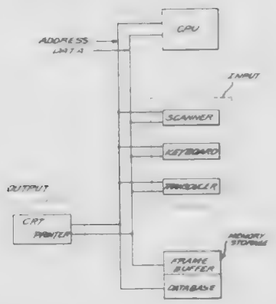
determining from the targets location relative to the structure the location of the object relative to the structure.

4,796,201

STORED PROGRAM CONTROLLED SYSTEM FOR CREATING AND PRINTING GRAPHICS BEARING PACKAGING

Warren K. Wake, 360 Walnut St., Blawnox, Pa. 15238

Filed Apr. 30, 1985, Ser. No. 728,922
Int. Cl.[4] G06F *15/626*
U.S. Cl. 364—518 17 Claims



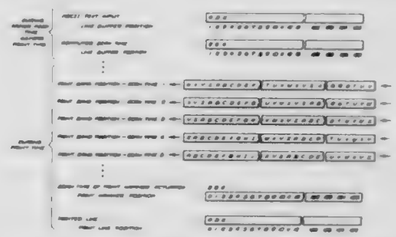
1. In combination in stored program controlled packaging developing apparatus for developing a plural element graphic packaging image, stored program controlled data processing means including memory means for storing plural attributes characterizing each image element, said data processing means including means for entering image elements, means for modifying image elements stored in said memory means, means for specifying a three dimensional form having an outer surface, and means for wrapping the graphic packaging image being developed about the outer surface of the three dimensional form specified by said form specifying means.

4,796,202

SPEEDING MAPPING OF PRINT CHARACTERS IN A MICROPROCESSOR CONTROLLED BANK PRINTER

Werner Loewenthal, North Hollywood; Patrick N. Leung, Canoga Park, and Yuen W. Wong, Glendale, all of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed May 2, 1986, Ser. No. 859,064
Int. Cl.[4] G06F *3/12*
U.S. Cl. 364—519 11 Claims



1. A method for controlling printing of a line of text by a band printer which advances paper during a paper feed time interval, said method comprising the steps of:

assigning, during the paper feed time interval preceding said printing of said line of text, to each character at each character location in the line of text to be printed a "scan time" value corresponding to the time, during the printing of said single line of test, at which the print band character font coresponding to that particular each character will be present at the corresponding character location; and

firing, at each print scan time during the printing following said paper feed interval, the print hammers at all character locations to which have been assigned that particular "scan time" value.

4,796,203

HIGH RESOLUTION MONITOR INTERFACE AND RELATED INTERFACING METHOD

Barry R. Roberts, Lindenhurst, Ill., assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 26, 1986, Ser. No. 900,591
Int. Cl.[4] G09G *1/02*
U.S. Cl. 364—521 13 Claims

1. An interface, between a display monitor and a source of image information, for permitting display of that image information at corresponding display locations of said monitor, said interface comprising:

(a) a monitor input terminal for receipt of image information for display on said monitor;

(b) a refresh memory for storing image information at memory locations corresponding to said display locations of said monitor;

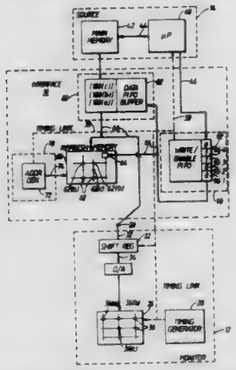
(c) first means for sequentially reading said image information from said memory locations of said refresh memory to said monitor input terminal for display at said corresponding display locations of said monitor;

(d) second means, coupled to said source of image information, for storing new image information for one of said memory locations of said refresh memory; and

(e) third means for replacing sequential reading of said image

information by said first means from said refresh memory at said one of said memory locations to said monitor input terminal with:

(i) reading said new image information from said second means to said monitor input terminal for display of said new image information at at least one display location



of said monitor corresponding to said one of said memory locations, and

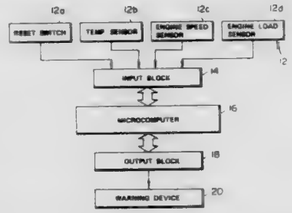
(ii) writing said new image information from said second means into said one of said memory locations of said refresh memory, said writing of said new image information being simultaneous with said reading of said new image information for display.

4,796,204

OIL DEGRADATION WARNING SYSTEM

Ryuzaburou Inoue, Yamato, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 5, 1985, Ser. No. 772,928
Claims priority, application Japan, Sep. 7, 1984, 59-186547
Int. Cl.[4] G01D *1/00*
U.S. Cl. 364—550 5 Claims



1. An oil degradation warning system comprising:

first means for detecting a plurality of parameters which are related to a plurality of degradation factors of an engine oil, wherein said first means comprises an oil temperature sensor which senses the temperature of the engine oil, an engine speed sensor which senses the rotation speed of the engine, and an engine load sensor which senses a load applied to the engine, wherein said engine oil temperature, engine rotation speed and engine load sensor constitute said plurality of parameters;

second means for processing said parameters and providing an oil degradation coefficient for each of said plurality of parameters and integrating each oil degradation coefficient in each factor with passage of time;

third means for issuing an instruction signal when at least one of the integrated values of the oil degradation coefficients exceeds a corresponding reference value; and

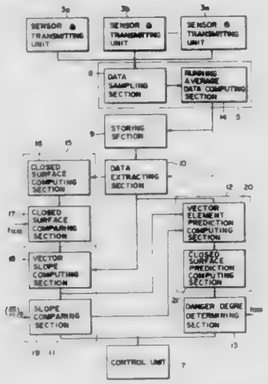
fourth means for providing a warning when said instruction signal is applied thereto, thereby indicating oil degradation.

4,796,205

FIRE ALARM SYSTEM

Hiromitsu Ishii, Chiba, and Yukio Yamauchi, Atsugi, both of Japan, assignors to Hochiki Corp., Tokyo, Japan

Filed Aug. 12, 1985, Ser. No. 764,991
Claims priority, application Japan, Aug. 17, 1984, 59-171337
Int. Cl.[4] G08B *17/00*; G06F *11/30*
U.S. Cl. 364—550 20 Claims



1. A fire alarm system which comprises:

n (two or more) detecting sections for detecting changes in n different physical phenomena in the surroundings, said changes being due to the occurrence of a fire, said detecting sections respectively, outputting analog data corresponding to the changes;

a data sampling section for sampling the data from each of said detecting sections at predetermined periods;

a storing section for storing said sampled data outputs from said data sampling section corresponding respectively to the n-detecting sections;

a first computing section for extracting said sampled data from said storing section and computing rates of change of such data;

a second computing section for computing vectors representing the present and future conditions of said n different physical phenomena in combination from the rates of changes of the sampled data computed by said first computing section and said data stored in said storing section;

a comparing section for comparing the vectors computed by said second computing section with predetermined data corresponding to hazardous fire conditions, and generating an output when the relation therebetween is not within a predetermined range; and

an alarming section for giving an alarm in response to the output from said comparing section.

4,796,206

COMPUTER ASSISTED VEHICLE SERVICE FEATURING SIGNATURE ANALYSIS AND ARTIFICIAL INTELLIGENCE

Joseph A. Boscove, Highland Beach; Hobart L. Kurtz, Boca Raton, both of Fla.; Jeffrey E. Prince and William P. Wiegand, both of Birmingham, Mich., assignors to International Business Machines Corporation, Armonk, N.Y.

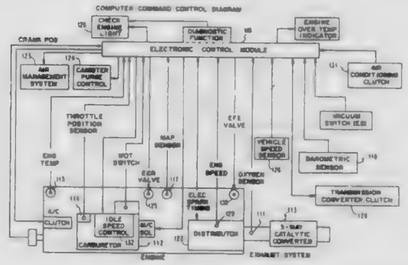
Filed Jun. 2, 1986, Ser. No. 869,534
Int. Cl.[4] G06F *11/32, 15/20*
U.S. Cl. 364—551.01 6 Claims

4. A diagnostic method for use in diagnosing a vehicle utilizing a diagnostic system, the vehicle having an on-board computer control system for monitoring and controlling vehicle functions and the diagnostic system including a technician terminal having a diagnostic controller for processing diagnostic signals representative of vehicle conditions said controller having data entry means, data output means and storage means for storing vehicle parameters and diagnostic routines and said technician terminal having a display means for providing instructions for fault repair sequences, said method comprising the steps of:

(1) displaying a main menu on said display means from which a vehicle setup is initiated including connecting the vehicle to the terminal and identifying the vehicle and any vehicle options;

(2) utilizing a Fault Detection Procedure for detecting vehicle malfunctions by interrogating data received from said on-board computer during different vehicle states: ignition on (not running), engine cranking, engine idling and engine at higher speed and comparing said data with known parameters in said diagnostic controller storage means, any faults detected being stored in a fault table by fault code;

(3) analyzing by a Fault Analysis Procedure the detected



fault codes stored in the fault table by comparison with lines of fault codes stored in a first portion of a Fault Analysis Table to indicate a specific component suspected of being at fault, accessing and selecting for each fault supplied by the Fault Analysis Procedure, one or more Fault Isolation Procedures stored in the form of fault code lists in a second portion of said Fault Analysis Table, such lists each being related to a particular component in said vehicle, storing one or more selected Fault Isolation Procedures in a predetermined order, the Fault Analysis Procedure initiating execution of the first Fault Isolation Procedure at the top of each list;

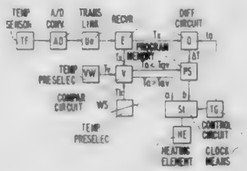
(4) utilizing the said first Fault Isolation Procedure and additional stored Fault Isolation Procedures if required, for testing of a related component in said vehicle by providing guidance via said display means for repairing, replacing or adjusting the related component.

4,796,207

PROCESS AND APPARATUS FOR ROASTING WITH A ROASTING VESSEL

Wolfram K. Andre, Ginsterweg, and Kurt Wolf, Langwiesenweg, both of Fed. Rep. of Germany, assignors to Fissler GmbH, Fed. Rep. of Germany

Filed Aug. 18, 1986, Ser. No. 897,319
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1985, 3529699
Int. Cl.[4] H05B *1/02*
U.S. Cl. 364—557 10 Claims



1. An apparatus for temperature regulation in a roasting system comprising food to be roasted, a roasting vessel and a heating element, said apparatus comprising:

a temperature sensor (TF) measuring the temperature (Tx) at said roasting vessel and transmitting a measured temperature (Tx) signal;

a temperature setting switch (WS) for selecting a preset roasting temperature (Tk) and transmitting a preset roasting temperature (Tk) signal;

a temperature preselection means (VW) for selecting a predetermined temperature (Tv) less than said roasting temperature (Tk) and transmitting a predetermined temperature (Tv) signal;

a comparator circuit (v) receiving said signals corresponding to said measured temperature (Tx), said preset roasting temperature (Tk), said preset roasting temperature (Tk), and said predetermined temperature (Tv), and deriving a measured temperature difference (Ta) by subtracting said measured temperature (Tx) from said preset roasting temperature (Tk) and a predetermined temperature differential (TaV) by subtracting said predetermined temperature (Tv) from said preset roasting temperature (Tk), comparing said measure temperature difference (Ta) with said predetermined temperature differential (Tav), and emitting a signal (a) when said measured temperature difference (Ta) is greater than said predetermined temperature differential (Tav);

a clock means (TG) generating period group control cycles (to) representing a plurality of time intervals;

a differential circuit (D) receiving signals corresponding to said measured temperature (Tx) and said period group control cycles (to), deriving a measured temperature differential (ΔT) during each said period group control cycle and transmitting a measured temperature differential (ΔT) signal for each said cycle;

a program memory (PS) having a preset program selecting and transmitting a signal (b) from said signals corresponding to said measured temperature differentials (ΔT) and said measured temperature differences (Ta) when said measured temperature difference (Ta) is less than said predetermined temperature differential (Tav);

a control circuit (St) comprising a period group control system activating said heating element (HE) to maintain full heat output during all said time intervals of the subsequent said cycle (to) in response to said signal (a) and activating said heating element (HE) to maintain full heat output during less than all of said time intervals of the subsequent said control cycles (to) in response to said signal (b), whereby the number of said time intervals said heating element (HE) is activated decreases as said measured temperature difference (ta) decreases and increases as said measured temperature differential (ΔT) decreases.

4,796,208

METHOD OF DETECTING REFERENCE CRANK ANGLE POSITION IN AN INTERNAL COMBUSTION ENGINE AT THE TIME OF STARTING SAME

Chiaki Kumagai; Shinji Juman, both of Saitama; Yutaka Kimura, and Haruhito Mitomo, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

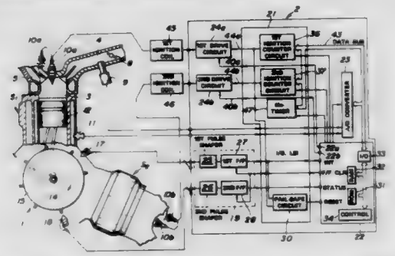
Filed Feb. 21, 1986, Ser. No. 832,516
Claims priority, application Japan, Feb. 21, 1985, 60-31628
Int. Cl.[4] G01B *7/00*
U.S. Cl. 364—559 3 Claims

1. A method of detecting the reference crank angle position in an internal combustion engine during cranking of the engine at the time of starting the engine, said engine having a crankshaft and a plurality of cylinders and associated with an ignition timing control device including (a) a pulse signal generating mechanism having a rotor rotatable with said crankshaft, a plurality of reactors disposed on said rotor at equally angularly spaced locations except one reactor-free location, and a pair of first and second pulsers angularly spaced by an angular interval about said rotor for detecting passage of said reactors to generate electric pulse signals indicative of the passage of the reac-

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tors, said second pulser being offset by a first predetermined angular interval from a position which is spaced from said first pulser by a second predetermined angular interval which is an integer times as wide as the angular interval between succeeding two of said plurality of reactors, (b) first latch means for latching the electric pulse signal from said first pulser, (c) second latch means for latching the electric pulse signal from said second pulser, and (d) processor means for referring to the contents of said first and second latch means and resetting said first and second latch means, said processor means having a counter, the arrangement being such that the reference angle position of the crankshaft can be detected by referring to the content of said second latch means, said method comprising the steps of:

counting the electric pulse signal generated by said first



pulser with said counter by referring to the content of said first latch means;

resetting, based on the electrical pulse signal generated by said second pulser by referring to the content of said second latch means, said counter and enabling same to count the electric pulse signal again when said reference angle position is not detected until the count of said counter reaches a predetermined count, said predetermined count being equal to a maximum number of electric pulses that can be generated by said first pulser while said rotor makes one revolution; and

continuously repeating said counting step and said resetting step until said reference angle position is detected before the count of said counter reaches said predetermined count.

4,796,209

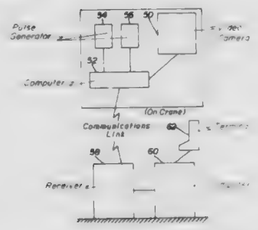
RANDOM INVENTORY SYSTEM

David L. Burk, Pittsburgh, Pa., assignor to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1986, Ser. No. 878,865

Int. Cl.[4] B65G *1/10*; G06F *15/24*

U.S. Cl. 364—559 **25 Claims**



1. The method for identifying the location of a randomly placed object, said method including the steps of:

applying visual indicia of identification to the object which is to be randomly placed;

generating and recording electrical signals corresponding to X, Y and Z coordinates of a random storage location of the object by transport means for the object;

indexing the recorded electrical signals of the visual indicia with the electrical signals of the X, Y, and Z coordinates of the random storage location thereby creating an index; and

accessing said index to identify, locate and retrieve the object from the random storage location.

4,796,210

METHOD OF DISPLAYING THE SPEED AND DISTANCE ON BOARD A MOTOR VEHICLE

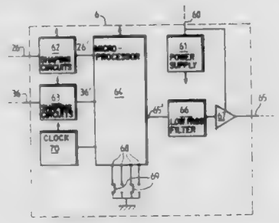
Georges Dubuisson, Orgeval, and Tan Duc Huynh, Champs sur Marne, both of France, assignors to Veglia, Paris, France

Filed Jul. 7, 1986, Ser. No. 882,187

Claims priority, application France, Jul. 5, 1985, 84 10296

Int. Cl.[4] G01P *3/44*

U.S. Cl. 364—565 **4 Claims**



1. A method of displaying the speed and the distance on board a motor vehicle, said method comprising:

(a) determining a first period of recurrence of a train of pulses generated by a speed sensor responsive to a speed of rotation of one of the wheels of the vehicle,

(b) determining a second period of recurrence of a train of pulses generated by a speed sensor responsive to a speed of rotation of a shaft of an auxiliary motor connected to a display device displaying a rotational speed of said shaft and to a totalizer totalizing a number of revolutions of said shaft during a period of driving of the vehicle,

(c) multiplying said first period by a multiplication factor which depends upon the size of said wheel to obtain a multiplication product,

(d) determining an arithmetical difference between said second period and said product,

(e) controlling a speed of rotation of said shaft of said auxiliary motor so that said speed is proportional to said difference between said second period and said product,

(f) counting a first number of said pulses generated responsive to rotation of said wheel from start up of the vehicle,

(g) counting a second member of said pulses generated responsive to rotation of said shaft of the auxiliary motor from start up of the vehicle,

(h) periodically determining a quotient of said first number divided by a factor which depends on the size of said wheel,

(i) determining an arithmetical difference between said second number and said quotient, and

(j) obtaining a variation factor of said multiplication factor which has a same sign (positive or negative) as said difference between said second number and said quotient.

4,796,211

WATCHDOG TIMER HAVING A RESET DETECTION CIRCUIT

Hiroshi Yokouchi, and Makoto Mogi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1986, Ser. No. 947,681

Claims priority, application Japan, Jan. 13, 1986, 61-4714

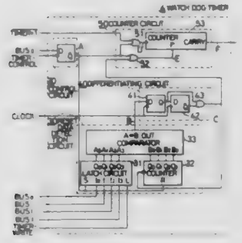
Int. Cl.[4] G06F *11/08*

U.S. Cl. 364—569 **11 Claims**

1. A watchdog timer comprising a reset data detection circuit for detecting input reset data and outputting a reset signal, and a first counter that outputs a carry signal unless, before its count overflows, it receives a reset signal from said reset data

a second characteristic curve defined by the zero point data and the span data both of which data are obtained at said second reference measurement temperature, and

a second counter for counting the number of times a said reset signal is generated, and



a comparator for comparing the output data from said latch circuit and said second counter and outputting said reset signal when the output data from said latch circuit and the output data from said second counter match.

4,796,212

LOAD CELL TYPE, WEIGHT-MEASURING DEVICE

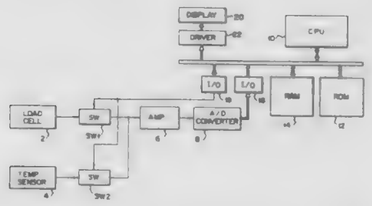
Toiru Kitagawa, Mishima, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1985, Ser. No. 799,122

Claims priority, application Japan, Nov. 29, 1984, 59-252392

Int. Cl.[4] G01K *19/00*; G06F *15/20*

U.S. Cl. 364—571.03 **5 Claims**



1. A load cell type, weight-measuring device, comprising:

load cell means for generating an electrical signal corresponding to an applied weight;

analog-to-digital converting means for converting an output signal from said load cell means to a digital data;

read only memory means in which temperature data indicative of a temperature characteristic of the output signal of said load cell means is stored;

said read only memory means storing zero point data obtained at least at first and second reference measurement temperatures, and span data obtained at least at said first and said second reference measurement temperatures;

temperature sensing means for detecting the temperature of said load cell means and generating a corresponding output signal; and

processing means coupled to said analog-to-digital converting means and said read only memory means, for deriving digital data, as weight data, from the digital data from said analog-to-digital converting means in accordance with the output signal of said temperature sensing means and the temperature data in said read only memory means;

said processing means including means for generating a first characteristic curve defined by the zero point data and the span data both of which data are obtained at said first reference measurement temperature, means for generating

detection circuit, wherein said reset data detection circuit comprises:

a latch circuit for latching said reset data,

means for generating a new characteristic curve corresponding to an actual measurement temperature between said first and said second reference measurement temperatures wherein the processing means interpolates the new characteristic curve from said first and said second characteristic curves when the actual measurement temperatures lies between said first and said second reference measurement temperatures.

4,796,213

METHOD OF FILTERING SIGNALS FOR A CONTROLLER OF A TURBO COMPRESSOR

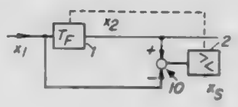
Wilfried Blotenberg, Dinslaken, Fed. Rep. of Germany, assignor to MAN Gutehoffnungshütte GmbH, Fed. Rep. of Germany

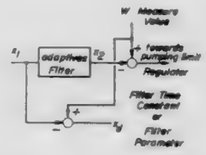
Filed Jun. 15, 1987, Ser. No. 62,722

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620614

Int. Cl.[4] H03F *1/266*; F04D *27/02*

U.S. Cl. 364—572 **25 Claims**





1. A method of filtering out undesired signals associated with a control input signal prior to input of the control input signal to a controller, the control input signal having an input signal amplitude, the control input signal representing the relationship between a sensed turbocompressor parameter of operation and a surge limit line representing a limit, beyond which the turbocompressor experiences surge, the amplitude of the control input signal increasing or decreasing with respect to the surge limit line indicating the operation of the turbocompressor going closer to or away from surge, respectively, comprising the steps of: feeding the input signal to a filter having a time constant; determining whether the control input signal is increasing or decreasing in amplitude with respect to the surge limit line; and, lowering the time constant when an increase in the control input signal is detected with respect to the surge limit line.

4,796,214

INTEGRAL CALCULATOR AND ADDRESS BOOK

Carl Fisherman, Old Bethpage, N.Y., assignor to Photo Audio Consumer Electronics Marketing Corp., New York, N.Y.

Filed Jan. 9, 1986, Ser. No. 817,498

Int. Cl.[4] G06F *3/02*

U.S. Cl. 364—705.01 **9 Claims**

9. A combined calculator and booklet comprising:

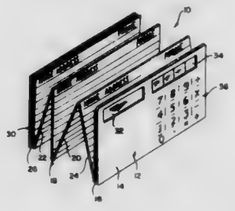
(a) a calculator including a front surface having means for receiving and displaying data and a back plate;

(b) a plurality of pages for receiving information in the form of a continuous strip folded to form said pages into a booklet which can be opened and closed in an accordion fashion;

(c) one page of said booklet being connected to said back

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plate such that said calculator forms a front cover for said booklet; and



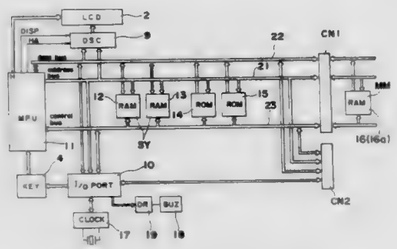
(d) a back cover connected to said booklet for covering said pages, said back cover being movable relative to the back plate of said calculator.

4,796,215

PROGRAMMABLE CALCULATOR WITH EXTERNAL MEMORY MODULE AND PROTECTION AGAINST ERRONEOUS ERASURE OF DATA IN THE MODULE

Koichi Hatta, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 22, 1985, Ser. No. 736,712
Claims priority, application Japan, May 22, 1984, 59-104210
Int. Cl.[4] G06F *15/02*
U.S. Cl. 364—706 **3 Claims**



1. A programmable calculator including internal memory means for storing data, comprising:

at least one external replaceable random access memory module;

means for determining the presence of applications program instructions and execution instructions in said memory module at the time of initialization of said calculator when power is first turned on;

means for initializing said calculator at the time that power is first turned on, including means for,

(a) setting leading and ending addresses of programs to be executed,

(b) erasing random access program memories of said calculator including said external memory module,

(c) erasing fixed and arrayed variables stored in a memory area of said internal memory means,

(d) initializing flags and pointers of said calculator,

(e) clearing internal buffer memories of said calculator, and

(f) initializing a display of said calculator; and

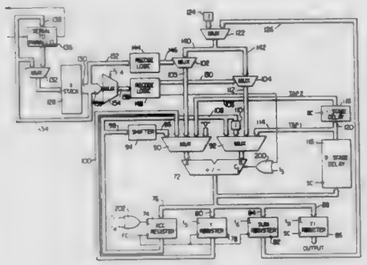
means for inhibiting said initializing means from erasing said program and execution instructions from said external memory module in response to a determination of the presence of said program and execution instructions by said means for determining.

4,796,216

LINEAR PREDICTIVE CODING TECHNIQUE WITH ONE MULTIPLICATION STEP PER STAGE

Karl H. Renner, Dallas, and Alec J. Morton, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 646,401, Aug. 31, 1984, abandoned.
This application Aug. 13, 1987, Ser. No. 86,225
Int. Cl.[4] G06F *7/38*; G10L *5/02*
U.S. Cl. 364—724 **10 Claims**



1. A digital lattice filter having n-operational stages for calculating Y-values and b-values for a linear predictive coding voice compression technique in accordance with the following equations:

$$Y(n)_i = Y(n+1)_i - k(n)(Y(n+1)_i + b(n)_{i-1})$$

$$b(n+1)_i = b(n)_{i-1} + k(n)(Y(n+1)_i + b(n)_{i-1})$$

wherein:

n is the operational stage in which the equation is being processed,

i is the sample time required to process the equations through the n operational stages, and

k is a multiplier constant, there being n multiplier constants, said digital lattice filter comprising:

multiplier storage means for storing the k multiplier constants in a predetermined order for output in each of the n-operational stages as a function of the value of n;

b-delay storage means for receiving generated b-values in the i sample time and decaying the received b-values for output as $b(n)_{i-1}$ in the next i+1 sample time;

Y-storage means for receiving the value of $Y(n)_i$ for a given n for output as $Y(n+1)_i$ in the subsequent n−1 stage of operation;

processor means having stages each for receiving the value $b(n)_{i-1}$ from said b-delay storage means, a multiplier constant k(n) for a given n from said mulitplier storage means, and the value $Y(n+1)_i$ from said Y-storage means, said processor means generating the sum $Y(n+1)_i + b(n)_{i-1}$ and multiplying the generated sum by k(n) to provide the product $k(n)(Y(n+1)_i + b(n)_{i-1}$, said processor means subtracting said product from $Y(n+1)_i$ to provide the value of $Y(n)_i$ and adding said product to $b(n)_{i-1}$ to generate the value of $b(n+1)_i$, said processor means outputting the generated values of $Y(n)_i$ and $b(n+1)_i$ to said Y storage means and said b-delay storage means, respectively; and

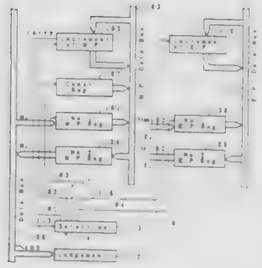
means for cycling the value of n for a given i sample time form a predetermined maximum value to a predetermined minimum value and controlling said b-delay storage means and said multiplier storage means to output stored data as a function of the value of n.

4,796,217

ROUNDING UNIT FOR USE IN ARITHMETIC PROCESSING OF FLOATING POINT DATA

Toshiya Takahashi, and Junichi Iwasaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 12, 1985, Ser. No. 754,102
Claims priority, application Japan, Jul. 12, 1984, 59-144691
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—745 **20 Claims**



1. A rounding unit for arithmetic processing of floating point data comprisng a mantissa part and an exponent part, said unit comprising:

a first data bus for transmitting data;

a mantissa part data bus for transmitting the mantissa part of the floating point data;

an exponent part data bus for transmitting the exponent part of the floating point data

a mantissa part register, connected to said first data bus and to said mantissa part data bus, for storing the mantissa part of the floating point data;

an exponent part register, separate from said mantissa part register and connected to said first data bus and to said exponent part data bus, for storing the exponent part of the floating point data;

a judging circuit, connected to said first data bus, for judging whether the rounding operation is raising or truncating;

a mantissa part incrementer, connected to said mantissa part data bus, for receiving and incrementing the mantissa part of the floating point data to provide incremented mantissa data and outputting a carry signal when it is overflowed;

an exponent part incrementer, connected to said exponent part data bus, for receiving and incrementing the exponent part of the floating point data to provide incremented exponent data, wherein said exponent part incrementer increments the exponent part of the floating point data concurrently with incremeating of the mantissa part of the floating point data by said mantissa part incrementer; and

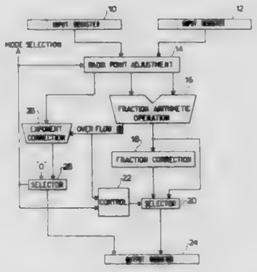
a selection circuit connected to said mantissa part register, said exponent part register, said judging circuit, said mantissa part incrementer, and said exponent part incrementer, wherein, in response to the carry signal from the mantissa part incrementer and the judging signal from the judging circuit, said selection circuit orders the mantissa part register to output previously-stored constant data of which the most significant bit is "1" and the other bits are "0", when the rounding operation is raising and the carry signal is present.

4,796,218

ARITHMETIC CIRCUIT CAPABLE OF EXECUTING FLOATING POINT OPERATION AND FIXED POINT OPERATION

Hideo Tanaka, and Takao Nishitani, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 18, 1987, Ser. No. 16,036
Claims priority, application Japan, Feb. 18, 1986, 61-34373
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—748 **6 Claims**



1. An arithmetic circuit capable of selectively executing both a floating-point operation and a fixed-point operation, comprising;

a pair of input registers for holding a given pair of numbers in a floating-point format or in a fixed-point format,

a radix point adjustment circuit coupled to the input registers for aligning the radix points of the given pair of numbers, the adjustment circuit being capable of outputting a pair of radix point aligned fractions and one exponent derived from the radix point alignment,

an arithmetic operation circuit receiving the pair of the radix point aligned fractions so as to output the result of a given arithmetic operation of the received fractions and to generate an overflow signal when an overflow is generated in the arithmetic operation of the received fractions,

an exponent correction circuit receiving the exponent from the adjustment circuit and responsive to the overflow signal from the arithmetic operation circuit so as to selectively correct the received exponent,

a fraction correction circuit receiving the output of the arithmetic operation circuit so as to correct the received data,

a first selector receiving the output of the exponent correction circuit and responsive to a mode selection signal so as to selectively output the output of the exponent correction circuit or a predetermined value, and

a second selector receiving the outputs of the arithmetic operation circuit and the fraction correction circuit and responsive to the mode selection signal so as to selectively output one of the two received fractions.

4,796,219

SERIAL TWO'S COMPLEMENT MULTIPLIER

Tim A. Williams, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1987, Ser. No. 56,493
Int. Cl.[4] G06F *7/52*
U.S. Cl. 364—758 **8 Claims**

1. A high speed serial data multiplier, comprising:

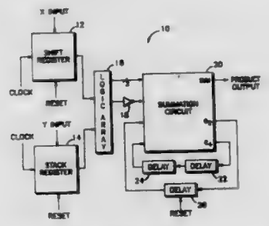
first clocked data storage means for receiving a first signed input operand and serially storing a sign bit and magnitude bits of the frst input operand in a predetermined order in response to a clock signal;

second clocked data storage means having predtermined register locations for receiving a second signed input

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operand having a sign bit and magnitude bits and serially clocking the magnitude bits and sign bit in response to the clock signal thru the second clocked data storage means until the second clocked data storage means contains the sign bit of the second operand in all the predetermined register locations;

logic means coupled to the first and second clocked data storage means, for successively forming groups of predetermined partial product bits of positive value in response to receiving clocked bits from the first and second clocked data storage means; and



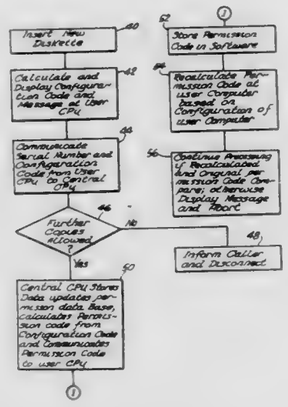
sum means coupled to the logic means for successively receiving groups of predetermined partial product bits serially from the logic means and adding the partial product bits with one or more input carry bits to provide an output product bit and one or more output carry bits for each receipt of partial product bits, said sum means having a delay portion for delaying outputting of said output carry bit or bits generated from the addition of partial product bits before coupling said output carry bit or bits to an input of the sum means as an input carry bit for a successive output product bit generation, said delay portion further providing a correction input bit for use during an initial addition of partial product bits.

4,796,220

METHOD OF CONTROLLING THE COPYING OF SOFTWARE

Everett W. Wolfe, Lauderdale Lakes, Fla., assignor to Pride Software Development Corp., Boca Raton, Fla.

Filed Dec. 15, 1986, Ser. No. 941,411
Int. Cl.[4] G06F *12/14*
U.S. Cl. 364—900 **12 Claims**



1. A method of controlling the use of copies of computer software, said software including an application program for performing a desired task and a first control program, said first control program allowing said application program, or a copy thereof, to be executed on an authorized given machine, but preventing said application program, or a copy thereof, from being executed on another unauthorized machine, said method comprising the steps of:

generating a configuration code in response to the hardware of said given machine;

transmitting said configuration code to a remote machine, said remote machine being programmed with a second control program, one of said first or second control programs including information defining a number of authorized copies which can be and have been made for use on machines in addition to said given machine;

generating, by said second control program, a permission code at said remote machine in response to said configuration code;

transmitting said permision code to said given machine;

entering said permission code as a part of said first control program to allow said associated application program, or copies thereof, to be executed only on said given machine; and

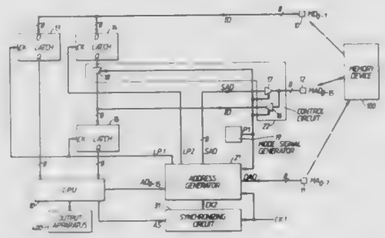
determining whether the number of authorized copies has been reached and, if said number of authorized copies has not been reached, repeating said steps of generating a configuration code, transmitting said configuration code, generating a permission code, transmitting said permission code and entering said permission code for each additional machine on which said application program is to be executed.

4,796,221

MEMORY CONTROL DEVICE

Shigenori Tokumitsu, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 27, 1986, Ser. No. 844,624
Claims priority, application Japan, Mar. 28, 1985, 60-61863
Int. Cl.[4] G06F *13/40, 3/00*
U.S. Cl. 364—900 **4 Claims**



1. A memory contorl device for use with a memory having stored data comprising:

a memory device;

an address generator for generating address information for reading out data from said memory device;

a data processing circuit for processing the data read out of said memory device;

a first bus for transmitting x bits of stored data from said memory device to said data processing circuit;

a second bus for transmitting m bits for address information from said address generator to said memory device;

a mode signal generator for generating a mode signal indicating whether said memory is of a first type or a second type;

a third data bus; and

a control circuit connected between said mode signal generator and said third data bus for controlling the selective data transmission of said third data bus in rseponse to said mode signal, wherein

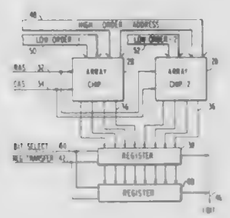
said control circuit causing said third data bus to transmit y bits of stored data from said memory device to said data processing circuit when said memory is of said first type and said control cirucit causing said third data bus to transmit n bits of address information from said address generator to said memory device when said memory is of said second type.

4,796,222

MEMORY STRUCTURE FOR NONSEQUENTIAL STORAGE OF BLOCK BYTES IN MULTI-BIT CHIPS

Frederick J. Aichelmann, Jr., Hopewell, and Vincent F. Sollitto, Jr., Rhinebeck, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1985, Ser. No. 791,833
Int. Cl.[4] G06F *12/02, 12/04*
U.S. Cl. 364—900 **9 Claims**



1. A random access memory, for storing multi-word blocks of N-bit ECC words, comprising:

at least one single pair of memory array chips for each of N word bit positions in said ECC words, each of said chip pairs storing data for a respective bit position in said ECC words in said multi-word blocks in the form of a plurality of contiguously stored bits output by said each chip pair over a first group and a second group of parallel output lines;

a register, a first portion of which is connected by said first group of parallel output lines to a first one of said chips in said at least one pair of chips and a second portion of which is connected by said second group of parallel output lines to a second one of said chips in said at least one pair of chips;

means responsive to a first address for applying in parallel a first group of bits from said first chip over said first group of output lines to said first portion of said register;

means responsive to a second address for applying in parallel a second group of bits from said second chip over said second group of output lines to said second portion of said register;

means for determining an arbitrary starting address for a block serial transfer of bits from said register in a predetermined sequencing order of addresses of said words; and

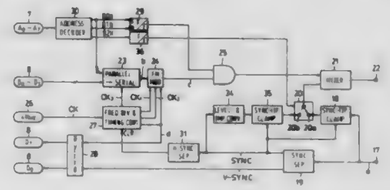
means responsive to said determining means for providing said first and second addresses according to the value of said starting address to said first and second address responsive means, respectively, said first and second addresses producing said first and second groups of bits for a given word bit position in a given multi-word block to said register, wherein one of said first and second groups of bits contains at least the bit at said starting address, and the other of said first or second groups of bits contains a plurality of bits with addresses which consecutively follow in said predetermined sequencing order the last bit that consecutively follows from said starting address bit in said predetermined sequencing order in said one group of bits.

4,796,223

MICRO-COMPUTER CONTROL FOR A VIDEO MACHINE

Takatoshi Sagita, Sagamihara, and Shunsuke Furukawa, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 380,131, May 20, 1982, abandoned. This application Oct. 20, 1986, Ser. No. 920,940
Claims priority, application Japan, May 28, 1981, 56-81516
Int. Cl.[4] G06F *3/06*
U.S. Cl. 364—900 **9 Claims**



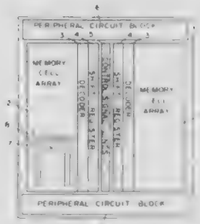
1. A micro-computer based video player control system for video signals comprising: a micro-computer system including a central processing unit and a memory, and a plurality of I/O ports, a video player connected to one I/O port of said micro-computer system, a video medium receivable in said video player and comprising a recording medium upon which a plurality of video fields are recorded on video tracks, said video fields comprising a video player control program to control the video player, video signals to be displayed, and address data to give addresses for the control program, and said control program is written on more than one video track and is repeated at least once, and during vertical scan intervals, blanking intervals of said video fields are provided, an initial loader program stored in a portion of said memory to control loading and storing said video player control program recorded on said recording medium in a said portion of said memory, and at a discrete address, error correcting codes for each vertical scan interval are recorded in blanking intervals of each video field recorded on said video medium, and a printer to print output data connected to another of said I/O ports, and a keyboard connected to another of said I/O ports to allow a student or instructor to input data.

4,796,224

LAYOUT FOR STABLE HIGH SPEED SEMICONDUCTOR MEMORY DEVICE

Hideki Kawai, Nara; Masaru Fujii; Kiyoto Ohta, both of Takatsuki, and Yoshikazu Maeyama, Kyoto, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed Feb. 17, 1987, Ser. No. 15,349
Claims priority, application Japan, Feb. 18, 1986, 61-34679
Int. Cl.[4] G11C *5/02*
U.S. Cl. 365—51 **2 Claims**



1. A high speed and high stability layout for semiconductor

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memory device comprising at least following circuit block elements on a semiconductor substrate:

at least two substantially rectangular memory cell arrays each having first sides and second sides orthogonally crossing each other, disposed on said semiconductor substrate such that said first sides of said at least two substantially rectangular memory cell arrays are faced mutually with a space therebetween, and having a plurality of memory cells arrayed in a matrix;

at least two shift register means for writing data into said memory cells and reading out data from said memory cells, said at least two shift register means being individually disposed adjacent to said faced first sides of said at least two substantially rectangular memory cell arrays;

control signal lines disposed between said at least two shift register means extending along said first sides of said at least two substantially rectangular memory cell arrays;

a peripheral circuit means disposed along said second sides of said at least two substantially rectangular memory cell arrays for supplying said control signal lines with control signals; and

an input and output circuit means for transferring data between said at least two shift register means and circuitry which is external to said semiconductor substrate;

wherein said peripheral circuit means comprises: a write control signal generator, a read control signal generator, and a shift register control signal generator; and

said control signal lines comprise: a write control signal line for supplying said at least two shift register means with write control signals from said write control signal generator so as to write the data stored in said at least two shift register means into said memory cells; a read control signal line for supplying said at least two shift register means with read control signals from said write control signal generator so as to read out the data stored in said memory cells into said at least two shift register means, nd a shift register control signal line for supplying said at least two shift register means with shift register control signals from said shift register control signal generator so as to transfer the data stored in each stage of said at least two shift register means sequentially.

4,796,225

PROGRAMMABLE DYNAMIC SHIFT REGISTER WITH VARIABLE SHIFT CONTROL

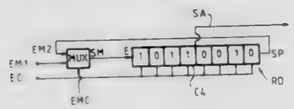
Ferial Benkara, Bagneux, France, and Daniel Campbell, Palos Verdes East, Calif., assignors to Enertec, Montrouge, France

Filed May 17, 1985, Ser. No. 735,238

Claims priority, application France, May 21, 1984, 84 07845

Int. Cl.[4] G06F *7/38*

U.S. Cl. 365—75 **1 Claim**



1. A data storage and delay circuit, comprising:

a shift register having an input and a main output between which is disposed a first number of cells arranged in series, each said cell containing, at an initial time, a bit of an initial word having a first bit thereof in an input cell of said register and a last bit thereof in an output cell of said register, and clock means generating clock pulses at a predetermined frequency for shifting bits stored in said register from one cell to the next in the direction of the output of the register at said predetermined frequency; and

control means synchronized to said initial time to enable a series of relevant bits including at least some consecutive bits of the initial word to be available bit by bit as an output of the register, from the beginning of an exploitation phase of the initial word;

wherein the beginning of said phase is separated from the initial time by a time interval corresponding to the appearance of a predetermined number of clock pulses;

and wherein the first one of said relevant bits is contained in a predetermined cell of said register at said initial time;

said control means including at least one auxiliary register output, at which said series of relevant bits is made available;

wherein said shift register comprises a dynamic register looped back on itself only by a connection of its main output with its input so as to enable a continuous recirculation of the digital data it contains;

and wherein said auxiliary output is separated from said predetermined cell by a number of cells which is equal to said predetermined number, in the direction of the output of the register.

4,796,226

READING HEAD IN INTEGRATED OPTICS FOR READING INFORMATION RECORDED ON A MAGNETIC SUPPORT

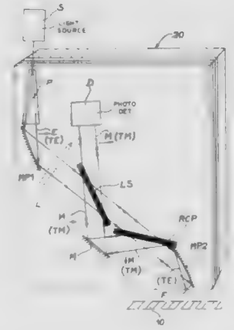
Serge Valette, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Nov. 19, 1987, Ser. No. 122,400

Claims priority, application France, Nov. 18, 1986, 86 16002

Int. Cl.[4] G11C *13/06*

U.S. Cl. 365—122 **9 Claims**



1. A reading head in integrated optics for the reading of information recorded on a magnetic support (**10**) having a magnetization directed in one or other of two opposite directions, said head being characterized in that it comprises:

a light source (**5**) emitting a light beam;

a structure for the optical guidance of said beam, said structure having a substrate (**22**) and a stack of a first,

a second and a third transparent layers (**24**, **26**, **28**), the second layer (**26**) having a higher index than the first and third layers (**24**, **28**) which border it, the light beam emitted by the source penetrating the second layer (**26**) of the structure;

a polarizer (P) integrated into the structure and constituted by a metal layer (**30**) deposited on the third layer (**28**), said polarizer attenuating the transverse magnetic propagation mode (TM) and thus aiding the transverse electric propagation mode (TE);

a collimation optics (MP1) integrated into the structure and located at the output of the polarizer and supplying a parallel light beam in the mode (TE);

a mirror (MP2) having a parabolic surface perpendicular to the plane of the layers and obtained by etching the latter, said mirror receiving the parallel light beam from the collimation optics and supplying a focused beam in the mode (TE) directed towards the magnetic support to be read, said beam being reflected on said support, which gives rise to a return beam having a first part still in the mode (TE) and a second part in the mode (TM), said second part having a phase dependent on the direction of the magnetization of the support, said return beam striking against the parabolic mirror (MP2) and being reflected thereon, giving rise to a parallel return beam; a polarization converter diffractive grating (RCP) placed on the path of the parallel return beam and integrated into the structure, said grating (RCP) having an inclination (θ) with respect to the direction of the return beam and a spacing (p) such that the part in the mode (TE) of the return beam is partly converted into the mode (TM) by Bragg diffraction, the part in the mode (TM) of said same return beam traversing the grating (RCP) without attenuation:

an interferometric assembly (M, LS) functioning in the mode (TM) and able to bring about interference between the beam in the mode (TM) diffracted by the diffractive grating and the beam in the mode (TM) which has traversed said grating;

a photodetector (D) located at the output of the interferometric assembly, said photodetector supplying an electric signal, whereof one component is ultimately dependent on the direction of the magnetization read on the support.

4,796,227

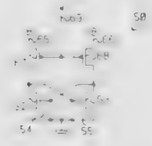
COMPUTER MEMORY SYSTEM

Richard F. Lyon, Los Altos, and Richard R. Schediwy, Mountain View, both of Calif., assignors to Schlumberger Systems and Services, Inc., Palo Alto, Calif.

Filed Mar. 17, 1987, Ser. No. 27,218

Int. Cl.[4] G11C *11/40, 13/00*

U.S. Cl. 365—154 **16 Claims**



1. A memory cell having two stable states comprising:

first and second read-write terminals for applying first and second potentials, respectively, to said memory cell;

word select terminal for coupling either a bias potential or a select potential to said memory cell, said select potential selecting said memory cell for reading or writing, and said bias potential being applied when said memory cell is not so selected;

a ground potential terminal for applying a third potential to said memory cell;

first and second field effect transistors having a first channel type, the sources of said first and second field effect transistors being connected to said ground potential terminal, the gate of said first field effect transistor being connected to the drain of said second field effect transistor and the gate of said second field effect transistor being connected to the drain of said first field effect transistor in order to form two stable states, a different one of said first and second field effect transistors being conductive in each said state; and

third and fourth field effect transistors having channel types opposite to those of said first and second field effect transistors, the drain of said third field effect transistor being connected to the drain of said first field effect transistor, the drain of said fourth field effect transistor being connected to the drain of said second field effect transistor, the source of said third field effect transistor being coupled to a first read-write terminal, the source of said fourth field effect transistor being coupled to said second read-write terminal, and the gates of said third and fourth field effect transistors being coupled to said word select terminal.

4,796,228

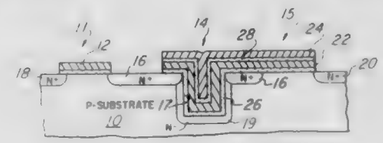
ERASABLE ELECTRICALLY PROGRAMMABLE READ ONLY MEMORY CELL USING TRENCH EDGE TUNNELLING

David A. Baglee, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1986, Ser. No. 869,497

Int. Cl.[4] G11C *11/34*; H01L *29/78, 27/02*

U.S. Cl. 365—185 **15 Claims**



1. An electrically programmable read only memory cell formed in a face of a semiconductor substrate, comprising a floating gate transistor having a floating gate and a control gate formed at least partially in a trench in said substrate wherein said trench has edges sufficiently sharp so as to enhance the likelihood of tunneling between corner regions of said trench and said floating gate over that between planar surface regions of said trench and floating gate.

4,796,229

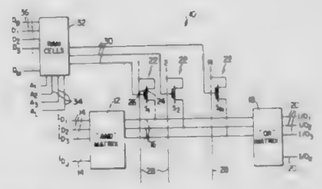
WRITABLE LOGIC ARRAY

W. T. Greer, Jr., and Frank L. Laczko, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 8, 1986, Ser. No. 883,415

Int. Cl.[4] G11C *7/00*

U.S. Cl. 365—189 **18 Claims**



1. A writable logic array, comprising:

a first matrix of logic gates connected to a plurality of input lines and a plurality of program lines as its outputs;

a second matrix of logic gates receiving as inputs said program lines, said second matrix connected to a plurality of output lines; and

switches associated with said program lines for selectively enabling the communication of data from said first matrix to said second matrix; and

a random access memory coupled to said switches and programmable to select whether said switches will enable communication on respective program lines, such that output functions of said logic array may be altered according to which program lines are enabled.

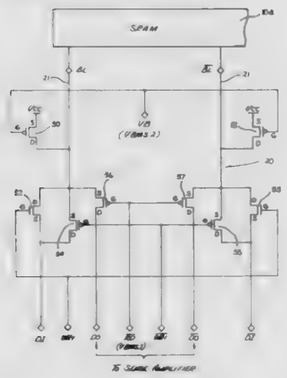
VOL 1098 ISS 1 JA 3 1989 UMI

4,796,230

FOLDED-CASCODE CONFIGURED DIFFERENTIAL CURRENT STEERING COLUMN DECODER CIRCUIT

Ian A. Young, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 24, 1987, Ser. No. 65,930
Int. Cl.[4] G11C 7/00
U.S. Cl. 365—189 **16 Claims**



1. A decoder circuit for coupling data stored in a memory to a sensing device, comprising:
- a pair of data lines for coupling said stored data from said memory;
- a pair of output lines for coupling said stored data to said sensing device;
- a first pair of transistors arranged in a cascode configuration and for switching said stored data from said data lines onto said output lines;
- a second pair of transistors each coupled to one of said pairs of data lines for sourcing current when said first pair of transistors are activated, wherein when said stored information is coupled onto said data lines from said memory, said data lines cause a current imbalance through said first pair of transistors;

whereby said stored data is coupled to said sensing device.

4,796,231

SERIAL ACCESSED SEMICONDUCTOR MEMORY WITH RECONFIGURABLE SHIFT REGISTERS

Raymond Pinkham, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 693,498, Jan. 22, 1985, Pat. No. 4,683,555. This application Jun. 25, 1987, Ser. No. 66,792
Int. Cl.[4] G11C 11/40, 13/00
U.S. Cl. 365—189 **15 Claims**

1. A memory device, comprising:
- a first plurality of addressable read/write memory cells, said memory cells arranged in rows and columns;
- a second plurality of addressable read/write memory cells, said memory cells arranged in rows and columns;
- a first register comprised of a third plurality of memory cells, each of said memory cells in said first register associated with one of said columns of said first plurality of memory cells, and each of said memory cells
- a first serial output means for presenting the contents of a memory cell in said first register;
- a second register comprised of a fourth plurality of memory cells, each of said memory cells in said second register associated with one of said columns of said second plurality of memory cells;
- a second serial output means for presenting the contents of a memory cell in said second register;

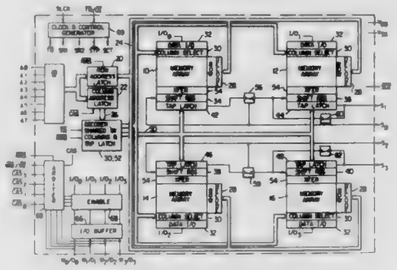
row decode means, responsive to a row address signal, for selecting a row of memory cells in said first plurality of memory cells, and a row of memory cells in said second plurality of memory cells, said selected rows corresponding to said row address signal;

column decode means, responsive to a column address signal, for selecting a column of memory cells in said first plurality of memory cells, and a column of memory cells in said second plurality of memory cells, said selected columns corresponding to said column address;

input means for writing data to said memory cells at the intersection of said rows and columns selected by said row decode means and said column decode means;

output means for presenting the data stored by said memory cells at the intersection of said rows and columns selected by said row decode means and said column decode means;

means, responsive to a transfer signal, for transferring the contents of memory cells in said selected row of said first plurality of memory cells to said first register, and for transferring the contents of memory cells in said selected



row of said second plurality of memory cells to said second register;

serial clock means, responsive to a serial clock signal, for shifting to said first serial output means the contents of another memory cell in said first register, and for shifting to said second serial output means the contents of another memory cell in said second register, so that, responsive to a series of said serial clock signals, the contents of a series of memory cells are presented by said first serial output means and said second serial output means; and

switch means having a first position and a second position for, in said first position, connecting said first serial output means to said second register so that, after the contents of a series of memory cells in said second register have been presented by said second serial output means, the contents of a series of memory cells in said first register are presented by said second serial output means, and for, in said second position, disconnecting said first serial output means from said second register.

4,796,232

DUAL PORT MEMORY CONTROLLER

Charles E. House, Redondo Beach, Calif., assignor to Contel Corporation, Atlanta, Ga.

Filed Oct. 20, 1987, Ser. No. 111,428
Int. Cl.[4] G11C 13/00
U.S. Cl. 365—189 **8 Claims**

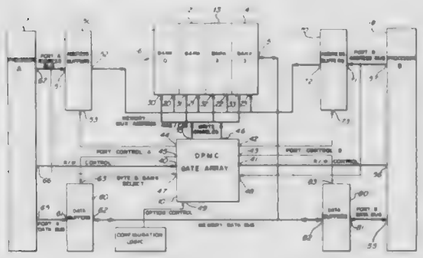
1. A dual port memory controller for use in interfacing a pair of processors to a common memory having a plurality of memory banks each organized into row and column defined addresses, said dual port memory controller comprising:

RAS means for generating row address strobe signals;

CAS means for generating column address strobe signals;

refresh means for periodically refreshing said common memory, said refresh means operating upon each of said banks within said common memory in a staggered manner;

arbitration means coupled to said pair of processors having logic means for granting either of said processors or said refresh means access to said common memory in accordance with a predetermined priority; and



memory cycle sequencing means coupled to said RAS means and said CAS means and said arbitration means for controlling the operation of said RAS means and CAS means upon said common memory.

4,796,233

BIPOLAR-TRANSISTOR TYPE SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANCY CONFIGURATION

Tomoharu Awaya, Yokohama, and Isao Fukushi, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 17, 1985, Ser. No. 788,587
Claims priority, application Japan, Oct. 19, 1984, 59-218707; Nov. 14, 1984, 59-238581; Nov. 14, 1984, 59-238582
Int. Cl.[4] G11C 7/00
U.S. Cl. 365—200 **11 Claims**



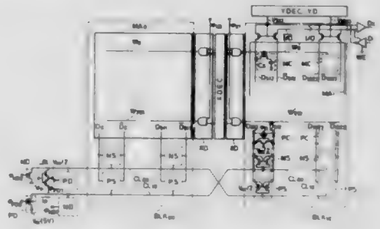
1. A bipolar-transistor type semiconductor memory device, operatively connected to receive an input address signal, and having a redundancy configuration for a defective memory cell, said memory device comprising:
- a memory cell array including memory cells and the defective memory cell;
- a redundancy memory cell array;
- a redundancy address decision circuit, operatively connected to receive the input address signal, for comparing the input address signal with a predetermined address signal of said defective memory cell and outputting a low level switching signal when the input address signal coincides with the predetermined address signal and a high level switching signal when the input address signal does not coincide with the predetermined address signal;
- a driving circuit including a first emitter-coupled logic gate connected to receive the switching signal as a reference voltage, and the input address signal and operatively connected to said memory cell array, for enabling said memory cell array in accordance with the input address signal when said first emitter-coupled logic gate receives the high level switching signal, said driving circuit being inhibited from enabling said memory cell when said first emitter-coupled logic gate receives the low level switching signal; and
- a redundancy driving circuit, including a second emitter-coupled logic gate operatively connected to receive the switching signal from said redundancy address decision circuit as an input signal and operatively connected to said redundancy memory cell array, for enabling said redundancy memory cell array when the high level switching signal is applied to said second emitter-coupled logic gate, the input signal of said first emitter-coupled logic gate having high and low voltage levels, the voltage level of the switching signal becoming low when the input address signal coincides with the predetermined address signal of said defective memory cell, the voltage level of the switching signal becoming high when there is no coincidence between the input address signal and the predetermined address signal, the high and low voltage levels of the switching signal being arranged such that the high voltage level of the switching signal is between the high and low voltage levels of the input signal and the low voltage level of the switching signal is lower than the low voltage level of the input signal, and the voltage level of a reference voltage of said second emitter-coupled logic gate is between the high and low voltage levels of the switching signal.

4,796,234

SEMICONDUCTOR MEMORY HAVING SELECTIVELY ACTIVATED BLOCKS INCLUDING CMOS SENSE AMPLIFIERS

Kiyoo Itoh, Higashikurume; Yoshiki Kawajiri, Hachioji; Katsutaka Kimura, Sagamihara; Ryoichi Hori, Tokyo, and Jun Etoh, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 5, 1986, Ser. No. 927,144
Claims priority, application Japan, Nov. 5, 1985, 60-247578
Int. Cl.[4] G11C 7/00
U.S. Cl. 365—227 **13 Claims**



11. A semiconductor memory including a plurality of blocks each comprised of at least one memory cell array and sense amplifiers for differentially amplifying a signal read out from said memory cell array, wherein a common drive line of sense amplifiers which are comprised of N-channel MOS transistors is connected to a common drive line of sense amplifiers which are comprised of P-channel MOS transistors between different blocks.

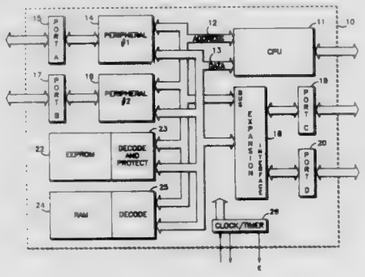
VOL 1098 ISS 1 JA 3 1989 UMI

4,796,235

WRITE PROTECT MECHANISM FOR NON-VOLATILE MEMORY

Robert W. Sparks; Brian F. Wilkie, and George G. Grimmer, Jr., all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 22, 1987, Ser. No. 76,509
Int. Cl.[4] G11C *13/00, 11/40*
U.S. Cl. 365—228 **17 Claims**



1. In a system comprising a PROM, a write protect register, clock means for providing a clock signal and write protect means for allowing writes to the PROM if and only if the write protect register contains predetermined data, a write protect control apparatus comprising:

timer means responsive to the clock signal and to an external event to generate a timeout signal a predetermined number of cycles of the clock signal after the occurrence of the external event; and

register protect means responsive to the external event and to the timeout signal for allowing the writing of the predetermined data into the write protect register only in the period between the occurrence of the external event and the generation of the timeout signal.

4,796,236

ARCHITECTURE FOR ULTRASONIC IMAGING

Kenneth B. Welles, II, Schenectady; Sharbel E. Noujaim; Thomas L. Vogelsong, both of Clifton Park, and Steven G. Karr, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1986, Ser. No. 947,065
Int. Cl.[4] G03B *42/06*
U.S. Cl. 367—7 **7 Claims**

1. An apparatus for ultrasonic image processing, said apparatus comprising:

a plurality of ultrasonic signal transducer means for receiving ultrasonic signals and generating electrical signals in response to said ultrasonic signals;

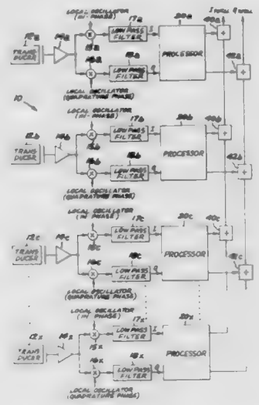
a plurality of signal processing elements receiving said electrical signals from at least one ultrasonic transducer associated therewith, each said signal processing element including:

means for producing an in-phase and a quadrature-phase signal from said signals from at least one of said associated transducers;

means for converting said in-phase and said quadrature-phase signals to digital form, said conversion being coordinated in time with respect to conversion means in other signal processing elements so as to substantially simultaneously convert signals arriving at said ultrasonic transducers from a single reflection point;

means for digitally adjusting said converted in-phase and quadrature-phase signals to correct for phase differences along distinct ultrasonic signal paths from said reflection point to said associated transducer; and

a pair of variable length delay means for receiving said adjusted in-phase and quadrature-phase signals respectively, said delay being selectable so as to synchronize signals from distinct ultrasonic transducers;



means for summing said in-phase signals from said variable length delay means; and

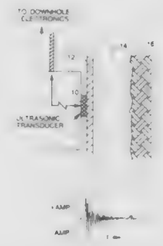
means for summing said quadrature-phase signals from said variable length delay means.

4,796,237

METHOD FOR ACOUSTIC REVERBERATION REMOVAL

Chriswell G. Hutchens, Tulsa, and Steven A. Morris, Sand Springs, both of Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Jan. 28, 1987, Ser. No. 8,015
Int. Cl.[4] G01V *1/40*
U.S. Cl. 367—35 **7 Claims**



1. A downhole tool for use in determining the presence of defects in cement surrounding a casing set within a wellbore, comprising:

a tool body adpated for suspension within the casing;

an acoustic energy transmitting transducer carried by the tool body for transmitting positive pulses of acoustic energy;

means carried by the tool body for receiving acoustic energy reverberations;

means for measuring the time delay, Δt, between the transmission of a pulse of acoustic energy and the reception of the first acoustic reverberation;

means for measuring the amplitude of the received acoustic reverberations, and

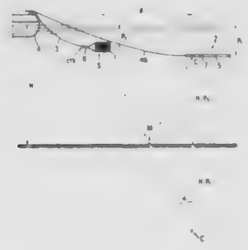
means carried on the tool for transmitting a series of negative pulses of acoustic energy at a time, Δt, later than the transmission of each positive pulse of acoustic energy, and each having an amplitude equal to the measured amplitude of the immediately preceding received acoustic reverberation.

4,796,238

SYSTEM FOR MEASUREMENT OF THE ACOUSTIC COEFFICIENT OF REFLECTION OF SUBMERGED REFLECTORS

Aline Bourgeois, Paris, and Jean-Claude Bourgeois, Le Flef, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 29, 1986, Ser. No. 901,802
Claims priority, application France, Aug. 29, 1985, 85 12990
Int. Cl.[4] G01S *9/66*; G01W *1/00*
U.S. Cl. 367—87 **7 Claims**



1. A system for measuring a reflection coefficient of submerged reflectors using sound waves, including a source of acoustic pulses towed underwater by a vessel provided with an echo-sounder for measurement of depth, a detection device having sensor means disposed close to said acoustic source for determining triggering moments of said acoustic source, receiving means also towed by the vessel at a position longitudinally offset with respect to said acoustic source for receiving acoustic pulses, and a control unit operatively connected to said acoustic source, said system comprising: programmable digital computer means for calculating the reflection coefficient of submerged reflectors on the basis of direct comparison of the acoustic pulses received by said receiving means along different paths from said acoustic source; recording means; an interface card including respective interface circuits providing communication between said computer means, said sensor, said recording means and snid control unit; variable attenuation means for variably attenuating signals received by said receiving means according to a variable attenuation factor; an acquisition unit under control of said computer means, said acquisition unit including filtering means having adjustable filtering characteristics, and command control means driven by said computer means for controlling said variable attenuation factor of said variable attenuation means and for adjusting the filtering characteristics of said filtering means.

4,796,239

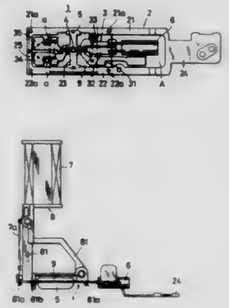
CIRCUIT UNIT FOR TIMEPIECE AND PROCESS FOR FABRICATING THE SAME

Tsuyoshi Hayakawa; Satoru Yamauchi; Isato Watanabe, and Isao Kondo, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1987, Ser. No. 37,466
Claims priority, application Japan, May 8, 1986, 61-105492; May 23, 1986, 61-118470
Int. Cl.[4] G04C *23/02*; H02G *13/08*
U.S. Cl. 368—88 **10 Claims**

1. In a circuit unit for a timepiece comprising a plurality of lead members constructed of individual metal sheets, the improvement comprising: a lead frame to which an integrated circuit is die-bonded, said lead frame comprising a die-bonding lead member formed into a letter "H" and including a pair of parallel side portions and a connecting portion connecting said side portions and having said integrated circuit die-bonded to said connecting portion;

other lead members comprising part of said lead frame and separated from said die-bonding lead member and arranged such that individual one end portions of said other lead members are positioned in the vicinity of said integrated circuit and electrically connected with said integrated circuit;



both said die-bonding lead member and said individual one end portions of said other lead members being integrated with a potting resin for protecting said integrated circuit and/or an insulating plate backing said potting resin such that individual other end portions of said other lead members are exposed from the potting resin and are free of support by the insulating plate to define electrical contacts with external circuit elements; and

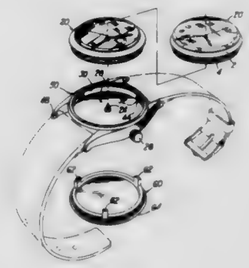
both said parallel side portions being fixed on a holding member.

4,796,240

CARTRIDGE TIMEPIECE

Robert B. Stevens, Baltalimani Caddesi, Cami Sokak No. 5/3, Istanbul, Turkey

Filed Dec. 14, 1987, Ser. No. 132,819
Int. Cl.[4] G04B *37/00*
U.S. Cl. 368—281 **17 Claims**



1. A timepiece comprising:

a central cartridge casing having a time keeping mechanism for driving a clock, a depression formed within said central cartridge casing, an engaging stem extending from said time mechanism and from said depression, and a releasable securing means connected to said casing;

a cartridge including time indicator means, a transparent

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shield means for protecting the time indicator means, a bezel and a shaft for receiving said engaging stem, the cartridge being shaped to be received within the casing depression; and

a locking means for engagement with said releasable securing means to lock the cartridge within the casing depression.

4,796,241

DEVICE FOR PRODUCING A HIGH FREQUENCY MODULATION MAGNETIC FIELD USED IN MAGNETO-OPTICAL RECORDING

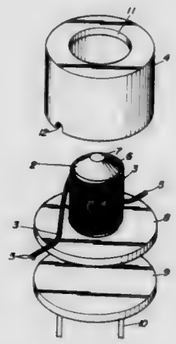
Masatoshi Hayakawa; Takehiro Nagaki; Koichi Aso, and Hiroshi Yamanoi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1987, Ser. No. 5,779

Claims priority, application Japan, Jan. 23, 1986, 61-10996; Aug. 22, 1986, 61-195615

Int. Cl.[4] G11B *5/03, 11/12*

U.S. Cl. 369—13 **5 Claims**



1. A device for producing a high frequency modulating magnetic field applied to a magneto-optical recording layer to determine the magnetization direction in the magneto-optical recording layer upon locally heating the layer by a focused laser beam, comprising:

a main magnetic pole formed of a low-loss soft magnetic material, said main magnetic pole having one end facing said magneto-optical recording layer and having a tapered portion at said one end;

a yoke completely surrounding and magnetically connected to said main magnetic pole at the other end of said main magnetic pole, said yoke having an extended portion extending towards said main magnetic pole at the one end facing said magneto-optical recording layer and forming a required gap between it and said tapered portion of said main magnetic pole; and

a sheathed conductor wound about said main magnetic pole, said conductor consisting of a parallel connection of a plurality of insulated elementary wires supplied with high frequency current to generate a high frequency magnetic field at said one end of said main magnetic pole.

4,796,242

SCANNING OPTICAL CARD READER

Gerald A. Pierce, Redwood City, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

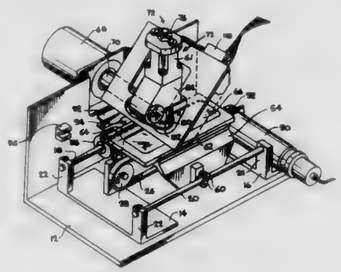
Continuation-in-part of Ser. No. 541,166, Oct. 12, 1983, abandoned. This application Jul. 9, 1984, Ser. No. 628,729

Int. Cl.[4] G11B *7/085*

U.S. Cl. 369—32 **4 Claims**

1. In an optical data card random access information system of the type having a data card with information written thereon in tracks of limited length the improvement comprising,

an electromechanical actuator supporting an arm carrying a light source and a CCD linear array detector arranged in a light generation and detection relation relative to the data card, the detector arranged to be parallel to the data



tracks and capable of imaging at least one track onto the linear array for simultaneously reading said track, said CCD detector being stationary when imaging said track, said CCD array detector having a plurality of detector elements, a plurality of said elements imaging each data bit recorded on said data track.

4,796,243

TIME BASE CORRECTING APPARATUS

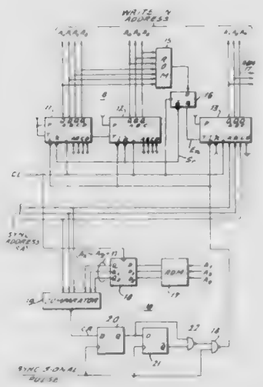
Hideaki Kato, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 876,482, Jun. 20, 1986, abandoned. This application Mar. 1, 1988, Ser. No. 166,729

Claims priority, application Japan, Jun. 21, 1985, 60-135652; Jul. 19, 1985, 60-159570

Int. Cl.[4] H04N *5/94*

U.S. Cl. 360—36.2 **9 Claims**



6. A timing correcting apparatus for correcting a timing fluctuation contained in an input digital signal, said digital signal having a signal format constructed of a train of blocks, each block containing a synchronizing signal and a synchronizing address identifying each of said blocks, comprising:

synchronizing signal detecting means for detecting said synchronizing signal contained in said input digital signal to produce a synchronizing pulse;

synchronizing address extracting means for extracting said synchronizing address contained in said input digital signal to produce a synchronizing address signal;

write-in address generating means for generating a write-in address signal on the basis of said synchronizing pulse and said synchronizing address signal, said write-in address signal including an address component discriminating each block;

memory means for storing said input digital signal in response to said write-in address signal;

reference signal receiving means for receiving a reference signal;

read-out address generating means for generating a read-out address signal on the basis of said reference signal to read a stored digital signal out of said memory means;

said write-in address generating means including:

counter means loadable with said synchronizing address signal in response to the timing of said synchronizing pulse, said counter means delivering said address component discriminating each block;

advancing means for advancing said address component delivered from said counter means by one to produce an advanced synchronizing address signal;

inspecting means for inspecting the continuity of said synchronizing address signal by comparing said synchronizing address signal and said advanced synchronizing address signal to detect said continuity when the address signals are equal to each other; and

control means responsive to the inspect result of said inspecting means for inhibiting said counter means from being loaded with said synchronizing address signal and for causing said counter means to be set to a value which is equal to the value of said advanced synchronizing address signal, when the continuity of said synchronizing address signal is lost within a limited predetermined period.

4,796,244

DISC PLAYER

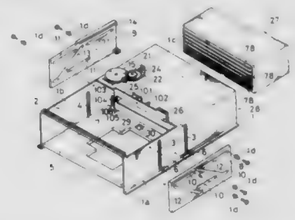
Yukiyasu Tsuruta, Kadoma; Saburo Yorizane, Osaka; Koichiro Kimura, Kyoto; Tetsuo Noda, Ikoma; Taizo Isshiki, Daito; Masanori Okada, Nishinomiya, and Masato Ishihara, Nagoya, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 3, 1988, Ser. No. 163,913

Claims priority, application Japan, Mar. 4, 1987, 62-49506; Oct. 29, 1987, 62-165605[U]

Int. Cl.[4] G11B *17/28, 5/48*

U.S. Cl. 369—38 **17 Claims**



1. A disc player including a lift chassis 5 liftably supported on a main chassis 1 and having a signal reproduction unit 31 mounted on the lift chassis, and a drive slide 9 supported by the main chassis 1 and movable in a direction intersecting the direction of movement of the lift chassis 5, the drive slide 9 being formed with a cam portion in engagement with a cam follower provided on the lift chassis 5, the drive slide 9 being drivingly movable in reciprocation to thereby move the lift chassis 5 stepwise, the disc player being characterized in that the cam portion of the drive slide 9 extends straight, an intermittent feed mechanism being provided between the drive slide 9 and a motor 23 for reciprocatingly moving the drive slide, the intermittent feed mechanism comprising a drive portion for continuously receiving rotation from the motor 23 and a driven portion to be intermittently driven by the drive portion, the drive portion having an engaging portion engageable with the driven portion to lock the driven portion while idly rotating without transmitting power to the driven portion.

4,796,245

OPTICAL DISC READER HAVING LENS MOUNTING WITH IMPROVED POSITIONING CONTROL

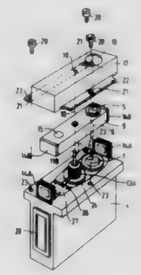
Antonius A. M. van Alem, and Gerard E. van Rosmalen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 868,999, Nov. 23, 1984, abandoned. This application Apr. 13, 1988, Ser. No. 186,644

Claims priority, application Netherlands, Dec. 1, 1983, 8304141

Int. Cl.[4] G11B *7/00*

U.S. Cl. 369—44 **9 Claims**



1. An electro-optical device for controlling the position of a radiation spot in two directions relative to a substantially planar surface representing an information structure on a moving information carrier, which device comprises

a frame;

a lens system comprising at least one lens having an optical axis along which said radiation spot is focussed;

a lens mounting to which the lens system is rigidly secured so that said optical axis is at least substantially perpendicular to said planar surface, said lens mounting being pivotable to a limited extent about and translatable to a limited extent along a pivotal axis therethrough which is parallel to and spaced from said optical axis, said lens mounting having a maximum longitudinal dimension extending along a line which intersects the optical and pivotal axes and a lateral dimension no greater than twice the diameter of the lens system, the two parts of the lens mounting which are situated on opposite sides of the pivotal axis along the longitudinal dimension having at least substantially the same mass and at least substantially the same mass distribution so that the lens mounting is substantially balanced both statically and dynamically;

supporting means comprising a bearing pin whose axis forms the pivotal axis and at least one bearing in which the bearing pin fits;

first electromagnetic actuator means for translating the lens mounting along the pivotal axis for focussing the radiation spot on the information structure; and

second electromagnetic actuator means for pivoting the lens mounting about the pivotal axis to follow a track of the information structure.

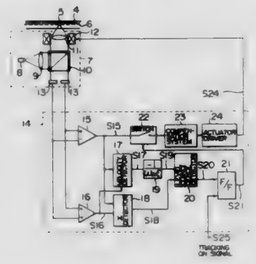
VOL 1098 ISS 1 JA 3 1989 UMI

4,796,246

METHOD AND APPARATUS FOR BEAM-TRACK ALIGNMENT IN OPTICAL DISK APPARATUS

Toshiaki Tsuyoshi, and Takeshi Mada, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 20, 1986, Ser. No. 932,497
Claims priority, application Japan, Nov. 20, 1985, 60-258536
Int. Cl.[4] G11B *7/095*
U.S. Cl. 369—44 **10 Claims**



1. A method of beam-track alignment in an apparatus including an optical disk and a tracking servo loop for controlling a beam spot until the beam spot is aligned with a target track according to a tracking error signal which is obtained on the basis of a reflected beam from the optical disk when a beam spot traverses the target track on the optical disk comprising the steps:

detecting the velocity v of a beam spot moving in parallel to the surface of the optical disk and traversing the target track, for which beam-track alignment is desired, in a direction orthogonal with respect to the track;

detecting the displacment x given by the distance between the center of the target track and the present position of the beam spot; and

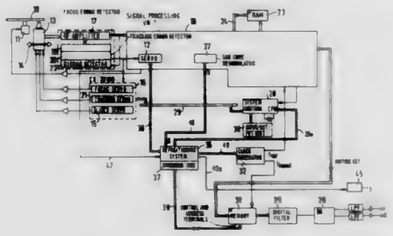
closing the tracking servo loop to thereby start tracking control when the relation between the detected values of the velocity v and displacment x of the beam spot satisfies a predetermined condition based on the closed loop characteristics of the tracking servo-loop.

4,796,247

COMPACT DISC (CD) PLAYER AND METHOD OF COMPENSATING FOR TRACKING JUMPS

Ulrich Vogelsang, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed May 27, 1987, Ser. No. 54,688
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1986, 3619258
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—44 **22 Claims**



1. Compact disc player, particularly for placement in unstable locations, especially in a motor vehicle, and for reproduction of data stored on a compact disc (CD) (**10**) located on the player, in which the data are stored on the CD along spiral tracks,

said player having a disc drive motor (**11**) for rotating the disc;

an optical scanning system (**13**) mechanically relatively at least radially movable with respect to the disc and producing scanning output signals;

signal processing means (**17, 18, 25**) coupled to receive the scanning output signals, said signal processing means storing groups of scanning output signals in data blocks and processing said blocks of signals and providing digital audio output signals;

means (**26**, LPF, L, R) for receiving said digital output signals and converting said digital output signals into analog audio output signals;

a tracking detector (**20**) for detecting tracking of the optical scanning system (**13**) on the tracks of the disc (**10**);

a tracking servo system (**14, 15, 21**) coupled to the tracking detector for maintaining the scanning optical system (**13**) on said tracks,

and comprising, in accordance with the invention,

a write-read memory (**31**) included in the signal processing means in the path of the signal from said

system to form the digital audio output signal, said write-read memory providing intermediate storage of the data blocks, and being arranged for continuous read-out of the data in the blocks and application thereof to said means for converting the digital output signals to analog output signals;

a repositioning system (**36**) coupled to the optical scanning system (**13**) for resetting the optical scanning system after a tracking jump;

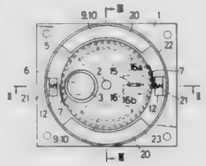
and synchronizing means (**37**) coupled to the write-read memory (**31**) for synchronizing the initiation of writing into the write-read memory after repositioning of the optical scanning system (**13**) with the end of writing or recording in said memory of a data block in advance of a track jump.

4,796,248

OBJECTIVE LENS DRIVE DEVICE

Hiroshi Ozaki, and Kouichi Ikebe, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1988, Ser. No. 196,554
Claims priority, application Japan, May 26, 1987, 62-80210[U]
Int. Cl.[4] G11B *7/12*
U.S. Cl. 369—45 **6 Claims**



1. An objective lens drive device comprising

a holding member for holding an objective lens that directs a first beam of light on to a disk for writing or reading data,

a support shaft for supporting the holding member slidably in the focusing direction and rotatably in the tracking direction,

a photodetector for detecting a second beam of light for detection of the position of the objective lens, the second beam of light being output from the holding member,

a frame on which the support shaft is mounted,

a cover on which the photodetector is mounted, and

a drive means, arranged on the holding member and the frame, that drives the holding member in the focusing direction and tracking direction,

wherein said frame has a guide part that constitutes at least a part of a circle whose center coincides with the center of said support shaft,

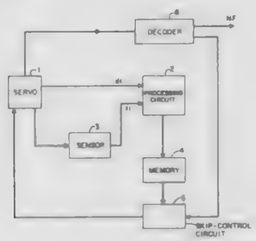
and said cover has a cylindrical side wall that is guided by said guide part so that said cover can rotate about said support shaft as center.

4,796,249

SYSTEM TO ASCERTAIN THE SCANNING SPEED OF AUDIO DISKS WITH CONTACTLESS SCANNING

Dieter Baas, Kehl, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

PCT No. PCT/EP86/00127, § 371 Date Nov. 4, 1986, § 102(e) Date Nov. 4, 1986, PCT Pub. No. WO86/05310, PCT Pub. Date Sep. 12, 1986
PCT Filed Mar. 8, 1986, Ser. No. 943,258
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1985, 3508423
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—50 **11 Claims**



1. A constant linear velocity system for determining the scanning speed of audio disks with remote scanning, comprising: an audio disk; means for rotating said disk; and means for determining the speed of rotation of said audio disk at a predetermined point on said disk. scanning speeds of disks varying among the disks, each disk having a scanning speed that is unigue to the disk and differs from the scanning speed of another disk whose scanning speed is to be determined.

4,796,250

OPTICAL RECORDING AND REPRODUCING APPARATUS INCLUDING A DISC EXTRACTION AREA FOR POWER SETTING A LASER

Seiji Kobayashi, Tokyo, and Kiyoshi Ohsato, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

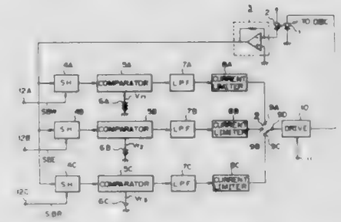
Filed Jul. 17, 1987, Ser. No. 74,865
Claims priority, application Japan, Aug. 13, 1986, 61-188388
Int. Cl.[4] G11B *3/90*; G01J *1/32*
U.S. Cl. 369—54 **10 Claims**

1. An apparatus for recording and reproducing data into/-from an optical disc in which part of a recording area on the disc is provided with an extracting area defining a time during which a light emission power from a laser light source is detected, comprising:

a detector to detect the light emission power of said laser light source;

power setting means for sampling and holding a detection output from said detector, for comparing the value of said sampled and held output with a target value, and for setting the light emission power of the laser light source on the basis of a comparison output; and

drive means for driving said laser light source in response to an output of said power setting means, whereby the light



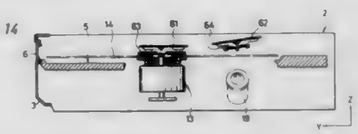
emission power of said laser light source is controlled on the basis of the output value sampled and held by said power setting means corresponding to the light emission power detected during said time defined by said extracting area.

4,796,251

DUAL-SIZED DISK PLAYER

Toshio Hirano, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 12, 1987, Ser. No. 2,468
Claims priority, application Japan, Jan. 11, 1986, 61-3979
Int. Cl.[4] G11B *15/30, 15/44, 25/04*
U.S. Cl. 369—75.2 **4 Claims**



2. A disk player comprising:

a housing;

a disk conveying mechanism for conveying a disk to a play position; and

playing means disposed within said housing, said playing means including a supporting mechanism, a first spindle motor fixedly mounted on said supporting mechanism and having a disk carrying surface, a carriage for carrying pickup means for a disk and arranged to move parallel to a plane containing said disk carrying surface of said first spindle motor, a second spindle motor having a disk carrying surface and arranged to move between a first position where said disk carrying surface of said second spindle motor is located substantially in the same plane as the disk carrying surface of said first spindle motor and a second position where the disk carrying surface of said second spindle motor is separated by a predetermined distance from the plane containing said disk carrying surface of said first spindle motor and from a movement path of said carriage, and moving means for moving said second spindle motor between said first and second positions, a distance between respective rotary axes of said first spindle motor and said second spindle motor located at said first position being larger than a sum of a radius of a disk to be carried by said second spindle motor and a radius of the disk carrying surface of said first spindle motor;

said disk conveying mechanism including a disk carrying portion adapted to be projected out of said housing and for carrying said disk so as to move said disk in a first direction parallel to the disk carrying surface of said first spindle motor and a second direction perpendicular to said

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first direction and a drive mechanism for driving said disk carrying portion;

said disk carrying portion including a first carrier for carrying a disk to be mounted on said first spindle motor and a second carrier for carrying a disk to be mounted on said second spindle motor, said first and second carriers being arranged to be movable relatively to each other within a plane parallel to the disk carrying surface of said first spindle motor, a relative movement of said first and second carriers being effected in response to a projection and accommodating operation of said disk carrying portion with respect to said housing.

4,796,252

OPTICAL ASSEMBLY COMPRISING A HOLDER AND AN OPTICAL ELEMENT, AND DEVICE PROVIDED WITH SAID OPTICAL ASSEMBLY

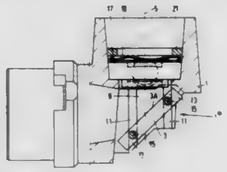
Nicolaas Maas, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

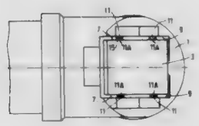
Continuation-in-part of Ser. No. 945,718, Dec. 23, 1986, Pat. No. 4,750,826. This application Jul. 7, 1987, Ser. No. 71,005

Claims priority, application Netherlands, Jul. 8, 1986, 8601775

Int. Cl.[4] G11B *7/12;* **G02B** *7/02, 7/18*

U.S. Cl. 369—112 **4 Claims**





1. A device for optically scanning a radiation-reflecting information surface in a record carrier, which device comprises a frame, a radiation source for producing a scanning beam, and an objective for focussing the scanning beam to form a scanning spot in the plane of the information surface, wherein an optical assembly having an optical axis is secured to the frame in the path of that part of the radiation beam which is situated between the radiation source and the objective, said assembly comprising a holder with an interior space bounded by an inner wall and an optical element having an outer wall mounted in said holder, the inner wall having formed thereon at least three ribs whose crests face the other wall, a number of gaps equal to the number of ribs being formed between the ribs and the other wall, an adhesive being applied in said gaps.

4,796,253

TIME BASE CONVERTER EMPLOYING TWO REFERENCE POSITION PHASE LOCK LOOP

Rex J. Crookshanks, Palos Verdes Estates, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 882,064, Jul. 3, 1986, Pat. No. 4,737,952. This application Jan. 12, 1988, Ser. No. 142,987

Int. Cl.[4] H04J *4/00*

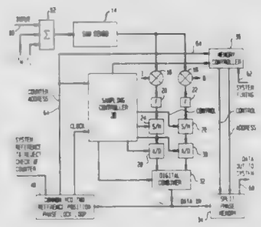
U.S. Cl. 370—50 **4 Claims**

1. A device for converting frequency division multiplexed signals to time division multiplexed signals for use in a digital signal processing system, comprising:

means for receiving a frequency division multiplexed signal having plural frequency bands each conveying a signal with successive symbol segments;

means coupled with said receiving means for injecting first and second marker frequencies into said frequency division multiplexed signal to form a composite signal;

a demodulator for demodulating said composite signal into a time division multiplexed signal, said demodulator including an input for receiving said composite signal and an output for delivering said time division multiplexed signal, said demodulator further including a first signal processing time base for demodulating said composite signal and



an analog signal processing circuit which causes variations in said first time base in accordance with changes in temperature; and,

a readout circuit coupled with said output of said demodulator for reading out said time division multiplexed signal from said demodulator to said digital signal processing system at a second signal processing time base, said readout circuit including:

(1) memory means for storing data representing said time division multiplexed signal, and

(2) control means responsive to said first and second marker frequencies for reading said data into said memory means and for writing said data from said memory means to said digital signal processing system at the rate of said second signal processing time base.

4,796,254

BROADBAND SPACE SWITCHING NETWORK AND PARALLEL-SERIES CONVERTER AND SERIES-PARALLEL CONVERTER FOR USE IN SUCH A SPACE SWITCHING NETWORK

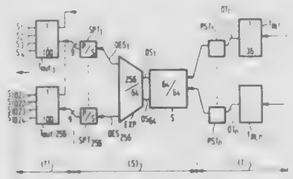
Johannes van Baardwijk, and Dick van der Steen, both of Eindhoven, Netherlands, assignors to AT&T Philips Telecommunications B.V., Hilversum, Netherlands

Filed Mar. 3, 1987, Ser. No. 21,319

Claims priority, application Netherlands, Mar. 10, 1986, 8600613

Int. Cl.[4] H04J *3/02*

U.S. Cl. 370—58 **3 Claims**



1. A broadband space switching network comprising a plurality of input lines, a plurality of output lines intersecting the input lines and a plurality of cross-point switches provided on each intersection of an input and an output line, the switches having a control input coupled to a cross-point control for selectively through-connected an input line to an output line, characterized in that a bit stream on the input lines and on the output lines is organized in nbit words, that each work contains n_1 ($n_1 < n$) information bits and ($n - n_1$) idle bits, that the cross-point switches always switch through the n_1 information bit word from an input line to an output line and that the cross-point switches are adjusted by the cross point control in the period in whcih the ($n - n_1$) idle bits are present on the input line.

4,796,255

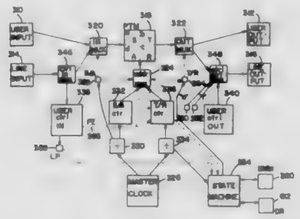
METHOD OF SYNCHRONIZATION BETWEEN DATA COMMUNICATION DEVICES PERMITTING PEER-PEER AND MASTER-SLAVE COMMUNICATIONS

James E. Westbrook, Sylmar, and Adolfo B. Juarez, Los Angeles, both of Calif., assignors to Datos Corporation, Van Nuys, Calif.

Filed May 2, 1986, Ser. No. 859,288

Int. Cl.[4] H04J *3/06;* **H04L** *7/00*

U.S. Cl. 370—100 **10 Claims**



1. A device for synchronizing communication between a pair of data communication devices, comprising in each said data communication

detection means for detecting a reception arrival time from the other data communication device;

comparator means for comparing said reception arrival time with a predetermined frame window;

signalling means for generating an adjustment signal in either said data communication device when said reception arrival time fails to fall within a predetermined range of said predetermined frame window; and

delay register means, responsive to said adjustment signal from the other said data communication device, for adjusting a transmission start time.

4,796,256

(MPRT) MINI PACKET RECEIVER TRANSMITTER

Holger Opderbeck, Herndon, Va.; Gulay Sencer, Red Bank; William N. Carr, Newark, both of N.J., and Steven J. Byars, Chantilly, Va., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Sep. 16, 1986, Ser. No. 908,056

Int. Cl.[4] H04J *3/02*

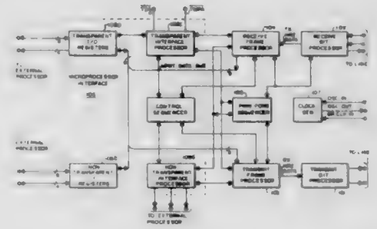
U.S. Cl. 370—110.1 **4 Claims**

1. A transmitter-receiver circuit for use in a communication system including a first and a second microprocessor and a digital subscriber loop circuit, each operated to send and receive digital information, said first microprocessor is operated to send and receive voice information and said second microprocessor is operated to send and receive data information;

said transmitter-receiver circuit connected between said digital subscriber loop circuit and said microprocessors; and comprising a transparent register connected to said first microprocessor and operated to store said voice information, and a nontransparent register connected to said second microprocessor and operated to store said data information;

said transmitter-receiver circuit operated to transmit alternating send and receive frames of said information of predetermined size between said digital subscriber loop circuit and said microprocessors, said transmitter-receiver circuit also operated to transmit said alternating send and receive frames in a ping-pong protocol and to encoded it in an alternate mark inversion format;

said digital information including a clock signal and a sync character, said transmitter-receiver circuit further comprising:



a transmit bit processor and a receive bit processor, each connected to said digital subscriber loop circuit;

said receive bit processor operated to extract said clock signal, detect said sync character and convert said alternate mark inversion information to non-return-to-zero information;

said transmit bit processor operated to convert non-return-to-zero information to alternate mark inversion information after inserting a clock signal and a sync character into each frame of such information.

4,796,257

BIPOLAR VIOLATION RATE CALCULATION METHOD

Darinsh Minoo, 2 Horseman's La., Muttontown, N.Y. 11791

Filed Nov. 3, 1986, Ser. No. 926,487

Int. Cl.[4] G06F *11/14*

U.S. Cl. 371—5 **6 Claims**



1. A method for calculating the bipolar violation (BPV) rate of a bipolar coded DS1 signal transmission, comprising the steps of:

accessing desired diagnostic data stored in Random Areas

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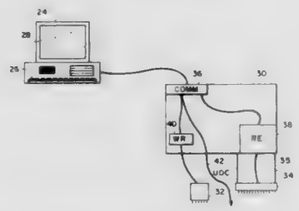
Memory (RAM) for obtaining information indicative of the BPV count in the data stored in the RAM;
processing the information indicative of the BPV count to make an initial determination of whether the BPV count exceeds a first predetermined threshold numerical value within a designated first time duration;
generating a first output indicator signal when the BPV count exceeds said first predetermined threshold numerical value within said designated first time duration;
generating a second output indicator signal when the BPV count does not exceed said predetermined threshold numerical value within said designated first time duration, but exceeds a second predetermined threshold numerical value within a designated second time duration, greater than said first time duration; and
utilizing said first and second indicator signals to initiate major and minor alarms respectively for diagnostics associated with said DS1 signal transmission, wherein said major alarm corresponds to a first predesignated BPV rate and said minor alarm corresponds to a second predesignated BPV rate.

4,796,258

MICROPROCESSOR SYSTEM DEBUG TOOL

Douglas G. Boyce; Sam M. Delegnaes, both of Aloha; Robert M. Nathanson, Tigard, and Timothy E. Bieber, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 23, 1986, Ser. No. 877,625
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—16 **8 Claims**



1. A microprocessor system debug tool comprising:
a mainframe having means for interfacing with a user and means for translating user specified commands into microprocessor specific command fragments;
a ROM emulator, which physically and logically replaces a ROM unit of a microprocessor system being tested, having a portion reserved by the user as a monitor memory;
a user defined control line connected to an interrupt system of the microprocessor system by which a user specified command causes a target microprocessor of the microprocessor system to transfer execution to the monitor memory to execute the microprocessor specific command fragments generated by the mainframe in response to user inputs via the interfacing means; and
means for monitoring the results of the execution of the command fragments by the microprocessor connected to the bus of the microprocessor.

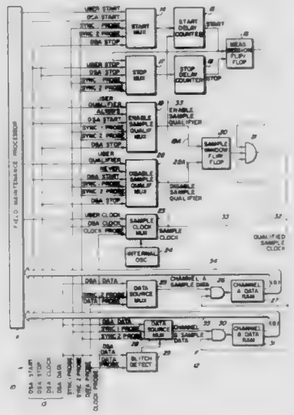
4,796,259

GUIDED PROBE SYSTEM AND METHOD FOR AT-SPEED PC BOARD TESTING

Frederick M. Troy, Phoenix, Ariz., assignor to Genrad, Inc., Concord, Mass.

Filed May 21, 1987, Ser. No. 53,158
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—20 **47 Claims**

1. A method of isolating faults in a UUT, comprising the steps of:
(a) storing a reference waveform produced on a first node of a known good circuit in response to a preselected stimulation of the known good circuit;
(b) measuring a waveform of the first node of a UUT that is substantially identical to the known good circuit in response to the preselected stimulation thereof;
(c) attempting to align the measured waveform to the reference waveform by shifting the measured waveform within a preselected first time window;
(d) if the attempt is not successful, indicating that the first node is bad, and if the attempt is successful, determining if each of a plurality of successive transitions of the measured waveform occur within a preselected second time window located at each of a plurality of corresponding transitions, respectively, of the reference waveform; and
(e) if each of the plurality of successive transitions falls within the respective second time windows, accepting the measured waveform as good, and if a transition of the measured waveform does not fall within a corresponding second time window, indicating a failing range for the first node equal to the time of occurrence of the mismatch plus a variance corresponding to the duration of the second time window.



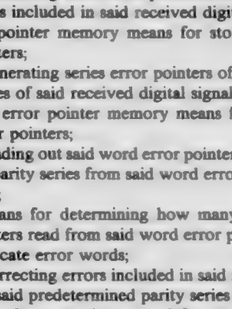
4,796,260

SCHILLING-MANELA FORWARD ERROR CORRECTION AND DETECTION CODE METHOD AND APPARATUS

Donald L. Schilling, Sands Point, and David Manela, Kew Gardens, both of N.Y., assignors to SCS Telecom, Inc., Port Washington, N.Y.

Filed Mar. 30, 1987, Ser. No. 32,011
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—39 **29 Claims**

1. A process for encoding a Schilling-Manela error correcting and detecting code comprising the steps of:
storing a block of a data-symbol sequence in memory means having g rows by h columns of information-memory cells;
calculating parity-check symbols from parity-line symbols having p-bits per symbol, along a first and a second set of parity lines, each of the first set of parity lines having a straight diagonal path with a first slope through the g rows by h columns of said information-memory cells and each of the second set of parity lines having a straight diagonal path with a second slope through the g rows by h columns of said information-memory cells, by adding modulo-2^p the parity-line symbols along each of the parity lines, respectively;
setting the parity-check symbol for each parity line equal to the modulo-2^p sum of the parity-line symbols along each parity line, respectively;
storing the parity-check symbols in r parity-memory cells of said memory means, and



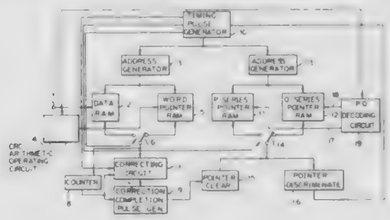
outputting an encoded-data-symbol sequence comprising the data-symbol sequence and the parity-check symbols.

4,796,261

ERROR CORRECTION APPARATUS FOR DIGITAL DATA

Hisayoshi Moriwaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 22, 1987, Ser. No. 5,786
Claims priority, application Japan, Jan. 31, 1986, 61-19676
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—40 **8 Claims**



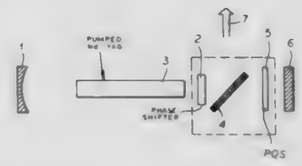
1. An apparatus for correcting errors in received digital data signals having parity series and CRC codes, comprising:
means for generating word error pointers on the basis of the CRC codes included in said received digital signals;
word error pointer memory means for storing said word error pointers;
means for generating series error pointers of predetermined parity series of said received digital signals;
parity series error pointer memory means for storing said series error pointers;
means for reading out said word error pointers of said predetermined parity series from said word error pointer memory means;
counting means for determining how many of said word error pointers read from said word error pointer memory means indicate error words;
means for correcting errors included in said received digital signals of said predetermined parity series when only one of said word error pointers read from said word error pointer memory means indicates an error word; and
means for clearing the series error pointer for the error corrected series from said parity series error pointer memory means.

4,796,262

OPTICAL RESONATOR USING A PASSIVE Q SWITCH OR OTHER OPTICAL ELEMENT WITH LOW-DAMAGE THRESHOLD

Glauco B. Michelangeli; Michele De Maria, and Giampiero Giuliani, all of Rome, Italy, assignors to Selenia Industrie Elettroniche Associate SpA, Rome, Italy

Filed Mar. 17, 1986, Ser. No. 840,421
Claims priority, application Italy, Mar. 18, 1985, 47824 A/85
Int. Cl.[4] H01S *3/10*
U.S. Cl. 372—9 **5 Claims**



1. An optical resonator for a power laser, comprising:
a elongate pumped laser crystal adapted to receive and emit beams of light at opposite ends of said element;
a respective totally reflecting mirror juxtaposed with each of said ends to form a power-laser cavity with said laser crystal; and a phase shifter disposed between one of the mirrors and the respective end of said laser crystal;
a passive optical switch assembly between said one of said mirrors and said laser crystal, said passive optical switch assembly consisting of:
capable of storing optical energy from said element over a substantial time period to saturation and then releasing the stored energy in a brief laser pulse over a shorter duration, said passive Q-switch having a threshold response at a laser emission optical frequency of said cavity and a saturation intensity enabling said passive switch to saturate by said beams of light, and
a polarizer between said phase shifter and said crystal and said mirrors for outputting a high power laser beam generally transversely to said axis and forming with said passive Q switch and said phase shifter an optical configuration that reduces radiation between the polarizer and said one mirror thereby reducing damage to the passive Q switch by reducing losses introduced by the Q switch in the path between said laser and said one of said mirrors to thereby increase the total efficiency of the resonator.

4,796,263

FTIR OPTICAL MANIFOLD AND WAVELENGTH AGILE LASER SYSTEM

Robert W. Rampolla, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1979, Ser. No. 106,205
Int. Cl.[4] H01S *3/08*; G02C *27/14*
U.S. Cl. 372—10 **2 Claims**

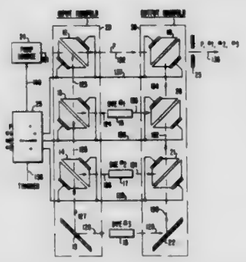
1. An optically pumped frequency agile laser system comprising:
(a) a source of optical energy for producing a first laser beam;
(b) a plurality of laser sources sequentially designated, 1 through n;
(c) a first optical manifold including a plurality of FTIR switches sequentially designated 1 through m wherein:
(1) said first laser beam is selectively switched by said first FTIR switch between the output port of said laser system and the input of the second (m=2) of said FTIR switch;
(2) said second (m=2) and subsequent FTIR switch through number (m−1) switching said first laser beam between the input to the next higher order FTIR switch

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and a selected laser with switch (m) switching said laser beam between laser source (n−1) and laser source (n);

(d) a second optical manifold comprising a plurality of FTIR switches designated 1 through k

(1) the first (k=1) of said plurality of optical switches receiving as inputs said first laser beam and the output beam of one of said n laser sources and selectively coupling one of these inputs to the output port of said laser system;



(2) said second (k=2) and subsequent switches receiving as inputs the output beam of laser (n=1) and the output beam of laser source where n≧k and selectively coupling these input signals to the output port of said laser system;

(e) control means for controlling the state of said switches to produce said frequency agile output signal.

4,796,264

SEMICONDUCTOR LASER DRIVER

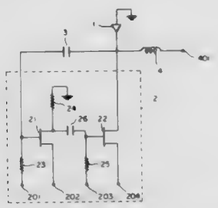
Akira Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 20, 1985, Ser. No. 735,602

Claims priority, application Japan, May 23, 1984, 59-103872

Int. Cl.⁴ H01S *3/13*

U.S. Cl. 372—29 **1 Claim**



1. A semiconductor laser oscillator comprising:

a semiconductor laser having a threshold level;

a means, electrically connected to a first electrode of said semiconductor laser, for supplying a bias current to said semiconductor laser beyond the threshold level of said semiconductor laser;

a high frequency amplifier means, electrically connected to said first electrode of said semiconductor laser, for amplifying a high frequency input to produce a high frequency output current, said high frequency output current being superposed with said bias current and provided to said semiconductor laser;

means, electrically connected between said first electrode of said semiconductor laser and an input terminal of said high frequency amplifier means, for providing positive feedback from said semiconductor laser as said high frequency input of said amplifier means; and

wherein said high frequency amplifier means electrically oscillates near the relaxation oscillation frequency of said semiconductor laser, and said semiconductor laser generates laser light in the longitudinal multimode oscillation.

4,796,265

IMAGING USING COLLECTIVELY CONTROLLED MULTIPLE BEAMS

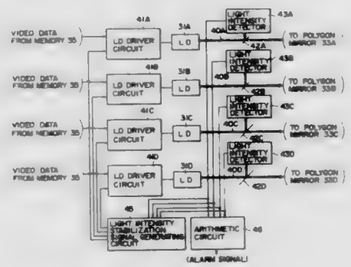
Kenichiro Asada, Tokyo; Takashi Mana, Yokohama, and Takanobu Fujioka, Chofu, all of Japan, assignors to Ricoh Company, Limited, Tokyo, Japan

Filed Apr. 6, 1987, Ser. No. 35,159

Claims priority, application Japan, Apr. 5, 1986, 61-78971; Mar. 31, 1987, 62-76316

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—31 **11 Claims**



1. A method for stabilizing light intensity in a system having a each of a plurality of light beams used for forming an image, wherein each of said light beams has a respective light intensity, comprising the steps of:

detecting the light intensity of each of the plurality of light beams and generating a respective light intensity detection signal for each of said light beams;

selecting one of said light intensity detection signals as a reference; and

adjusting the light intensity of said light beams such that the difference between each of the detected light intensities and the reference is within a first predetermined range.

4,796,266

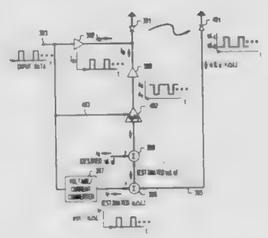
LASER DRIVER CIRCUIT WITH DYNAMIC BIAS

Thomas C. Banwell, Madison Borough, and William E. Stephens, Basking Ridge, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 21, 1987, Ser. No. 135,916

Int. Cl.⁴ H01S *3/00*

U.S. Cl. 372—38 **12 Claims**



1. A laser driver circuit for modulating the light output power of a laser between a desired predetermined low output power level and a high output power level in response to the ZEROes and ONEs, respectively, of an input digital signal comprising.

a photodetector for producing a feedback signal proportional to the light output of the laser,

means for deriving a reference signal from the input digital signal, means for combining the photodetector feedback signal, the reference signal and a level setting input signal having a value determined by the desired predetermined low output power level of the laser, to produce an error signal porportional to the difference between the desired predetermined low output power level of the laser and the low output power level detected by said photodetector, and

an integrating low frequency error amplifier responsive to said error signal for generating a bias current to the laser to maintain the low output power level at the desired predetermined value,

characterized in that

said laser driver circuit further comprises a variable gain amplifier connected between said combining means and said error amplifier, said variable gain amplifier having a gain controlled by the input digital signal, the gain of said variable gain amplifier being a first value when the input digital signal is ONE and a second value when the input digital signal is ZERO.

4,796,267

LASER CONTROL CIRCUIT

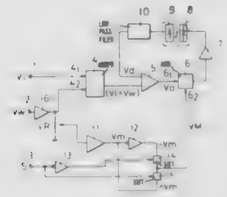
Fumiaki Yamada, and Masato Hosobuchi, both of Kodaira, Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Filed Apr. 10, 1987, Ser. No. 36,619

Claims priority, application Japan, Apr. 11, 1986, 61-53483[U]; Oct. 8, 1986, 61-153730[U]

Int. Cl.⁴ H01S *3/00*

U.S. Cl. 372—38 **2 Claims**



1. A laser control circuit comprising:

a laser source,

means for detecting an average light quantity of a laser beam emitted from said laser source to produce an average light quantity signal,

comparing means for producing an average light quantity control signal which is a difference between a reference signal and the average light quantity signal,

means for outputting a modulation signal based on a recording signal of high and low levels,

modulating means for outputting a laser control modulation signal by adding the average light quantity control signal to the modulation signal,

means for driving the laser source in accordance with the laser control modulation signal,

said detecting means and comparing means constituting a negative feedback circuit so that the average light quantity control signal follows the reference signal,

means for detecting information on fluctuation on an average level of said modulation signal based on a duty ratio change of said recording signal of high and low levels to output a fluctuation signal proportional to said detected information on fluctuation, and

means for correcting said average light quantity based on said fluctuation signal.

4,796,268

HETEROSTRUCTURE SEMICONDUCTOR LASER DIODE

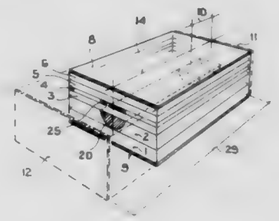
Werner Schairer, Weinsberg, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Jan. 12, 1987, Ser. No. 4,860

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1986, 3604293

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—46 **19 Claims**



1. In a heterostructure semiconductor laser diode having a sequence of layers formed on a substrate (1), with the sequence including a laser-active layer (4) arranged between upper and lower enclosing layers (3, 5) of respectively opposite conductivity types and a cover layer (6) disposed on the upper enclosing layer on the side of the sequence of layers facing away from the substrate, and further having respective ohmic electrical contacts for said cover layer and said substrate; the improvement wherein a further layer (2) of a conductivity type opposite to that of the substrate (1) is arranged between the substrate (1) and the lower enclosing layer (3) and comprises, in the area of the plane of symmetry (14), a narrow strip (20) produced by diffusion which has the same conductivity type as the substrate (1) and penetrates into the area of the substrate, whereby the current flowing in the forward direction of the semiconductor laser diode is restricted to a narrow strip-shaped area (25) of the laser-active layer (4) in the area of the plane of symmetry above said narrow strip.

4,796,269

TWO-DIMENSIONAL PHASE-LOCKED SURFACE EMITTING SEMICONDUCTOR LASER ARRAY

Richard E. DeFreez, Hillsboro; Richard A. Elliott, and Joseph Puretz, both of Beaverton, all of Oreg., assignors to Oregon Graduate Center, Beaverton, Oreg.

Filed May 22, 1987, Ser. No. 53,697

Int. Cl.⁴ H01S *3/19*

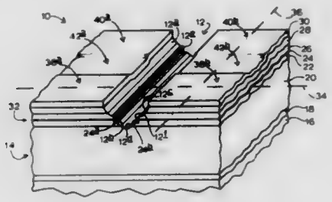
U.S. Cl. 372—50 **7 Claims**

1. A two-dimensional, coherent, surface emitting, semiconductor laser array in a wafer having an emission surface comprising:

at least three semiconductor lasers arrayed in two dimensions as viewed along an axis which is generally normal to said surface, each laser including plural semiconductor layers which form an oscillator cavity generally in the plane of said wafer and each laser including electrode means for energizing said cavity to emit energy of a predefined wavelength from said cavity;

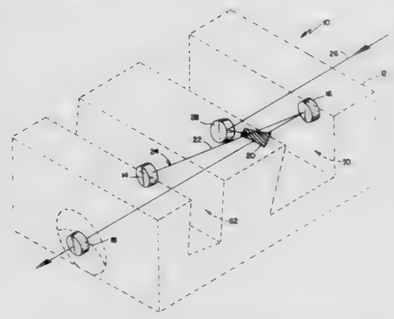
VOL 1098 ISS 1 JA 3 1989 UMI

means for phase locking said lasers during operation of said array; and



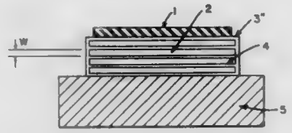
means for reflecting a portion of said energy generally normal to and away from said surface.

4,796,270
COMPACT RIGID DYE LASER CONSTRUCTION
Shiaun-Chur Sheng, Sunnyvale, and Stephen C. Wolgast, Fremont, both of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.
Filed Apr. 17, 1987, Ser. No. 40,542
Int. Cl.[4] H01S 3/20
U.S. Cl. 372—54 **11 Claims**



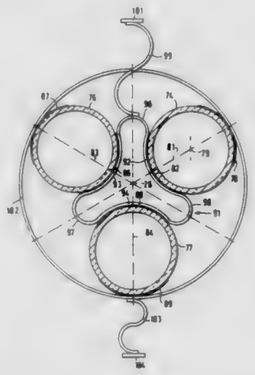
1. A dye laser of rigid and simplified construction, having dye pumping means and excitation means, and having a folded resonator cavity with three cavity mirrors, comprising:
- a solid laser resonator block of integral, rigid material having three non-collinear cavity mirror mount locations in a folded-cavity configuration, defined by a folding mirror mount location and two end mirror locations,
- openings in said block for passage of a lasing beam in a folded resonating path among said three mirror mount locations,
- three resonator mirrors at said three mirror mount locations, at least one being fixed rigidly, directly and nonadjustably to the block at the respective mirror mount location,
- dye nozzle means supported by said block for producing a dye jet positioned to extend across the laser resonator cavity between two of said three mirrors, said dye nozzle means having means for connection to a dye circulation system,
- pumping beam directing means for receiving and directing a pumping beam to intersect the dye jet where said dye jet crosses the beam resonating path, and
- dye jet adjustment means for adjusting the position and orientation of said dye nozzle means and said dye jet with respect to the resonator cavity and the pumping beam.

4,796,271
HIGH DUTY FACTOR RARE GAS HALIDE LASER
Clad P. Christensen, Jr., Washington, D.C., and Christopher Moutoulas, Beltsville, Md., assignors to Potomac Photonics, Inc., College Park, Md.
Filed Jul. 2, 1987, Ser. No. 69,220
Int. Cl.[4] H01S 3/22
U.S. Cl. 372—57 **13 Claims**



1. A high duty factor rare gas halide laser, comprising:
- (a) a rare gas halide gas mixture composed of at least one rare gas and one halide compound;
- (b) a hollow discharge tube of dielectric material containing said laser gas mixture;
- (c) means for exciting said laser gas mixture by high frequency electrodeless discharge; and
- (d) means for producing rapid recombination throughout said discharge tube of said halide compound after disassociation, comprising inner wall surfaces of said hollow discharge tube that are chemically inert to atomic and molecular species derived from said halide compound.

4,796,272
CO_2 LASER
Hans Klingel, Teckstr. 91, D 7141 Moeglingen, Fed. Rep. of Germany
Division of Ser. No. 745,539, Jun. 17, 1985. This application Jul. 6, 1987, Ser. No. 69,764
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1984, 3422525
Int. Cl.[4] H01S 3/097
U.S. Cl. 372—87 **12 Claims**

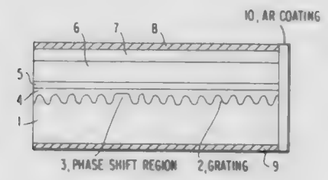


1. In a longitudinal flow CO_2 laser with an output of at least several hundred Watts, having:
- a geometrical longitudinal axis,
- a rectilinear tube device of dielectric material containing CO_2, parallel to said longitudinal axis,
- said rectilinear tube device having end zones,
- an end flange device at each end zone of said rectilinear tube device,
- a gas connecting aperture at each of said end flange devices

which communicates with said rectilinear tube device, and
- high frequency electrodes extending longitudinally relative to said rectilinear tube device,

the improvement, in which:
- said high frequency electrodes comprise a plurality of pairs of high frequency electrodes arranged diametrically opposed to each other,
- each of said pair of opposed high frequency electrodes has a central plane,
- said central plane of each pair of high frequency electrodes is offset at an angle relative to the central plane of an adjacent pair of high frequency electrodes, said angle is approximately 360 degrees divided by the number of pairs of high frequency electrodes, and
- each of said pair of high frequency electrodes contacts said rectilinear tube device over a significant lateral distance relative to the length of said rectilinear tube device.

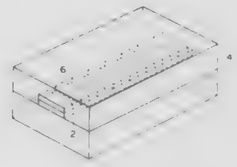
4,796,273
DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER
Masayuki Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 18, 1986, Ser. No. 840,818
Claims priority, application Japan, Mar. 20, 1985, 60-57334
Int. Cl.[4] H01S 3/08
U.S. Cl. 372—96 **12 Claims**



1. A distributed feedback semiconductor laser comprising:
- a semiconductor substrate of a first conductivity type;
- an optical waveguide formed on said substrate;
- a cladding layer of a second conductivity type formed on said optical waveguide, said optical waveguide including an active layer for emitting light and a guide layer positioned adjacent to said active layer and provided with a periodic corrugation structure for guiding and said guide layer being interacting the light emitted from said active layer;
- facets of different reflectivities at the ends of said optical waveguide, said periodic corrugation structure having a phase shift region located nearer the end facet of higher reflectivity for causing an optical phase shift ranging between $\pi/4$ to $7\pi/4$ to the light travelling said periodic corrugation structure; and
- a pair of electrodes for injecting a current into said active layer for excitation.

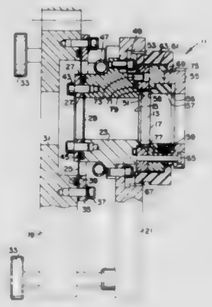
4,796,274
SEMICONDUCTOR DEVICE WITH DISTRIBUTED BRAGG REFLECTOR
Shigeyuki Akiba; Masashi Usami; Yukio Noda, and Masatoshi Suzuki, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 12, 1987, Ser. No. 13,665
Claims priority, application Japan, Feb. 17, 1986, 61-30986
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—96 **11 Claims**

1. A semiconductor device comprising, a substrate, two semiconductor layers on the substrate including a light waveguide layer, a distributed Bragg reflector comprising a diffraction grating having periodic corrugations between the two semiconductor layers along a direction of travel of light in the active light waveguide layer, said periodic corrugations comprising grid-like layers of a refractory material having a small



width thereof viewed perpendicularly to the direction of travel of light in comparison with that of the substrate, and electrodes for applying an electric field to the waveguide layer.

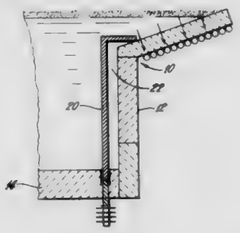
4,796,275
FLOATING MIRROR MOUNT
Dale E. Koop, Sunnyvale, Calif., assignor to Rofin-Sinar, Inc., San Jose, Calif.
Filed Mar. 31, 1987, Ser. No. 32,860
Int. Cl.[4] H01S 3/08
U.S. Cl. 372—107 **9 Claims**



1. A floating mirror mount for a mirror of a laser, said floating mirror mount comprising,
- a mirror having a front surface and a back surface,
- a keeper encircling the mirror and having a peripheral flange engaging the front surface of the mirror when the mirror is not installed in a laser,
- a retainer positioned rearwardly of the back surface of the mirror and connected to the keeper and having a spring seating surface,
- spring means engageable with said spring seating surface of said retainer for exerting a resilient biasing force on the mirror urging the mirror away from said retainer, said force being sufficiently large to force the mirror against said peripheral flange of said keeper when the mirror is not installed in a laser but sufficiently small to permit the mirror to be moved out of contact with said peripheral flange and retracted to a different location toward said retainer when the front surface of the mirror is engaged by mirror positioning structure of the laser in the course of installing the mirror mount in a laser, so that the mirror floats with respect to said keeper and the retainer, and
- fastening means for connecting said retainer to said mirror positioning structure of the laser on installation of the mirror mount in the laser.

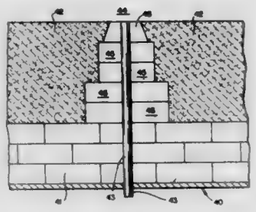
VOL 1098 ISS 1 JA 3 1989 UMI

4,796,276
MELTING FURNACE
Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Jun. 18, 1984, Ser. No. 621,639
Int. Cl.[4] C03B *5/02*
U.S. Cl. 373—30 **8 Claims**



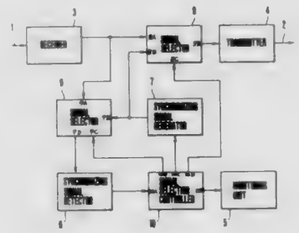
1. A method of protecting the refractory walls of a furnace for melting thermoplastic material from corrosion caused by the hot molten thermoplastic material within the furnace by providing a liner for the interior of the furnace and at the same time protecting the liner from oxidation including the steps of
locating the liner within the furnace in close proximity with the refractory walls for providing a relatively narrow space between the liner and walls,
confining a thermoplastic material supersaturated with refractory within the furnace between the liner and the walls, the confines of the narrow space inhibiting motion of the thermoplastic material, whereby corrosion of the walls is reduced and wherein the thermoplastic material confined between the liner and the refractory walls from the outset of operating the furnace is a viscous material such that its characteristics closely match those of a refractory composition, and
totally immersing the liner beneath the thermoplastic material for shielding the same from ambient oxygen and thereby protecting the liner from oxidation while the liner protects the refractory walls,
wherein the refractory dissolved in the confined thermoplastic material will deposit on the refractory walls adjacent the narrow space during operation of the furnace.

4,796,277
MELTING FURNACE FOR MELTING METAL
Wayne J. Maddever, Toronto, Canada; Michael F. Riley, Danbury, Conn., and Ronald J. Selines, North Salem, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.
Division of Ser. No. 849,389, Apr. 8, 1986, Pat. No. 4,699,654.
This application Jun. 15, 1987, Ser. No. 62,105
Int. Cl.[4] F27D *1/00*
U.S. Cl. 373—72 **10 Claims**



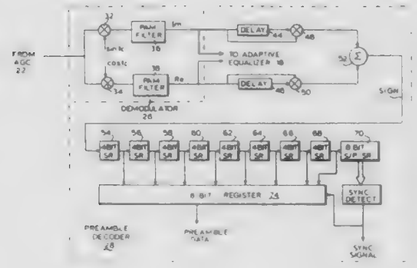
1. A melting furnace comprising:
(a) a relatively wide and shallow hearth having a bottom comprising at least one layer of refractory;
(b) at least one electrode within the furnace interior;
(c) at least one inert gas injection means passing through the hearth bottom through the hearth refractory layer(s) and communicating at one end with the hearth interior and at the other end with a source of inert gas; and
(d) high quality refractory, having a slow wear rate relative to the wear rate of the hearth refractory comprising the portion of the hearth bottom intended for contact with the molten metal bath, surrounding at least some portion of the upper length of the gas injection means which passes through the hearth refractory layer(s).

4,796,278
REPEATER FOR DIGITAL COMMUNICATION SYSTEM
Yoshihiro Naka, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Mar. 28, 1988, Ser. No. 173,870
Claims priority, application Japan, Mar. 27, 1987, 62-75400
Int. Cl.[4] H04B *7/15*
U.S. Cl. 375—3 **4 Claims**



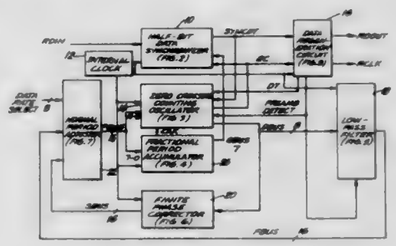
1. A repeater for a digital communication system, comprising:
a receiver for receiving an input signal from a transmission line;
a transmitter for outputting an output signal of said repeater;
synchronizing signal generating means for generating a synchronizing signal corresponding to the output signal from said receiver;
first signal selecting means for selecting one of the output signal from said receiver and the output signal from said synchronizing signal generating means and outputting the selected signal to said transmitter in response to a first control signal;
second signal selecting means for selecting one of the output signal from said receiver and the output signal from said synchronizing signal generating means in response to a second control signal;
step out detecting means for detecting step out in the output signal of said receiver or in the output signal from said synchronizing signal generating means, which is received through said second signal selecting means; and
control means for supplying first and second control signals to said first and second signal selecting means in response to an output signal from said step out detecting means.

4,796,279
SUBRATE PREAMBLE DECODER FOR A HIGH SPEED MODEM
William L. Betts, Madeira Beach, and Kenneth Martinez, Pinellas Park, both of Fla., assignors to Paradyne Corporation, Largo, Fla.
Continuation of Ser. No. 680,377, Dec. 11, 1984, abandoned.
This application Jun. 30, 1987, Ser. No. 68,733
Int. Cl.[4] H04L *5/12*; H04B *1/38*
U.S. Cl. 375—39 **3 Claims**



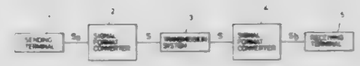
1. A data communication system comprising:
a data channel;
a plurality of remote modems for sending quadrature amplitude modulated signals over said channel, each remote modem being adapted to generate a preamble for each message, said preamble message comprising a sequence of phase reversed PSK signals having a pattern unique to each remote modem;
a local modem coupled to said data channel for receiving said messages, said local modem including adaptive equalizer means whose parameters are set by said preamble, and preamble decoder means for decoding the preamble to generate said unique pattern before the required parameters for said adaptive equalizer are set by adjustment thereto;
said preamble decoder means comprising a first and second multiplier for resolving said received messages respectively into their real and imaginary components and a first and a second PAM filter
each connected to an output of a respective said first and second multiplier and each having an output connected to said adaptive equalizer means;
said preamble decoder means further comprising a first and a second delay circuit each having an input connected to an output of
a respective said first and second PAM filter, said first and second delay circuits respectively functioning to delay said real and imaginary components;
said preamble decoder means further comprising a third and a fourth multiplier having inputs respectively connected to the outputs of said first and second delay circuits and to said outputs of said respective first and second PAM filters and functioning to multiply the respective real and imaginary outputs of said PAM filters by the outputs of said respective first and second delay circuits, and an adder having an input from each of said third and fourth multipliers , said adder functioning to output a digital signal at one discrete level if a phase reversal of said preamble message is detected and a digital signal at another discrete level if no phase reversal of said preamble message is detected.

4,796,280
DIGITAL DATA SEPARATOR
Richard Nesin, Sound Beach, and Tak-po Li, Nesconset, both of N.Y., assignors to Standard Microsystems Corporation, Hauppauge, N.Y.
Filed Nov. 6, 1987, Ser. No. 118,235
Int. Cl.[4] H04L *7/02*
U.S. Cl. 375—110 **4 Claims**



1. A digital data separator for deriving separated data and clock signals from an input encoded data stream that includes data and clock pulses, said data separator comprising a source of clock pulses, means for synchronizing each input data pulse with one of said clock pulses to generate synchronized data pulses, a counter coupled to said clock source, the count in said counter being incremented by said clock pulses until its count equals a predetermined period, latch means coupled to said counter and effective upon the receipt of one of said synchronized data pulses to store therein the value of said counter, said count value representing the required period adjustment, signal means coupled to said latch means for digitally processing said period adjustment signal and for deriving a digital signal representing the previous period, comparator and logic means having first and second inputs operatively respectively coupled to the outputs of said counter and said processing means for producing a reference clock signal when the output of said counter is a present ration of said previous period signal, and a data regeneration circuit operatively coupled to the output of said comparator and logic means for generating separate data and clock signals in response to said reference clock signal and synchronized data signals.

4,796,281
DIGITAL SIGNAL TRANSMISSION SYSTEM
Yoshitaka Takasaki, Tokorozawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 16, 1986, Ser. No. 919,458
Claims priority, application Japan, Oct. 16, 1985, 60-228675
Int. Cl.[4] H04L *7/00*
U.S. Cl. 375—112 **7 Claims**



1. A digital signal transmission system which converts first digital signals having a given bit rate into second digital signals having a predetermined bit rate to transmit them, comprising:
first means which generates said first digital signals;
second means which converts the first digital signals from said first means into said second digital signals;
third means which transmits said second digital signals from said second means;
fourth means which converts said second digital signals from said third means into third digital signals; and

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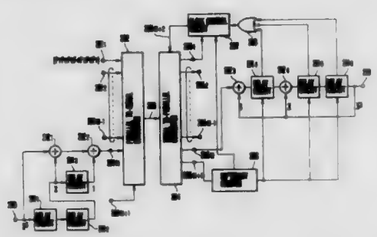
fifth means which receives said third digital signals from said fourth means; wherein said second means is comprised of:
a first buffer memory which temporarily stores said first digital signals;
means which writes said first digital signals onto said buffer memory at a bit rate of said first digital signals, and which reads the written signals from said first buffer memory at a bit rate of said second digital signals, said means reading the digital signals with a clock which consists of synchronous portions that read the written signals at any times and asynchronous portions that read the written signals depending upon the condition of the written signals; and
means which sends the second digital signals after adding a data signal to the asynchronous portions of the digital signals read by said reading means, said data signal indicating whether the written signal is read out or not; and wherein said fourth means is comprised of:
a second buffer memory which receives said second digital signals and temporarily stores them; and
means which writes said second digital signals onto said second buffer memory at the bit rate of said second digital signals, and which reads the written signals from said second buffer memory at a bit rate of the third digital signals, said means reading the third digital signals depending upon signals of the asynchronous portions of said second digital signals.

4,796,282

FRAME SYNCHRONIZATION DETECTION SYSTEM

Norio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 7, 1987, Ser. No. 1,409
Claims priority, application Japan, Jan. 9, 1986, 61-2446; Jul. 2, 1986, 61-156410; Aug. 26, 1986, 61-201042
Int. Cl.⁴ H04L *7/00*
U.S. Cl. 375—116 **5 Claims**



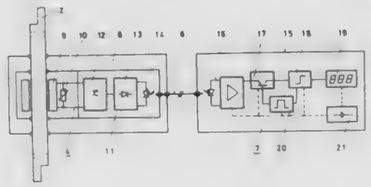
5. A frame synchronization detection system in a digital transmission system, wherein a frame consisting of N sub-frames each consisting of M bits, comprising:
at a transmitting end,
means for dividing N bits selected from the sub-frames into K trains (K is a factor of N) and inserting an N/K-bit frame synchronization pattern in one of the K trains,
means for sequentially inserting (K−1) cyclic codes, each comprising an N/K-bit word generated from a generating polynomial, in one of remaining (K−1) trans, and
means for sending out as serial information a frame with the cyclic codes and the synchronization pattern; and
at a receiving side
first serial-to-parallel converting means for extracting a reception signal for every M bits and producing an N-bit data train,
second serial-to-parallel converting means for dividing a code polynomial, having as coefficients N/K bits (N is a multiple of K) extracted from at least one train out of outputs from said first serial-to-parallel converting means, by a predetermined generating polynomial to obtain a remainder, and
means, coupled to an output of said second serial-to-parallel converting means and the remainder, for detecting synchronization by using K N/K-bit trains extracted from the data trains.

4,796,283

SURGE COUNTER FOR AN OVERVOLTAGE ARRESTER

Kurt Brunner, Ritti; Rudolf Fischer, Riedt bei Neerach, and Klaus Giese, Nenenshof, all of Switzerland, assignors to BBC Brown, Boveri Ltd., Baden, Switzerland

Filed Mar. 18, 1987, Ser. No. 27,549
Claims priority, application Switzerland, Apr. 9, 1986, 1391/86
Int. Cl.⁴ H02H *3/04, 9/04*; G06M *3/00*
U.S. Cl. 377—6 **9 Claims**



1. A device for counting overvoltage surges detected by a gapless overvoltage arrester having a sensing head surrounding a ground return line of said overvoltage arrester for detecting a discharge current carried by said overvoltage arrester during the occurrence of an overvoltage surge and a counting mechanism to which is applied a first signal responsive to said discharge current; said counting mechanism comprising:
a switch;
a threshold detector to which said first signal is applied through said switch, said threshold detector operative to generate a second signal when said first signal exceeds a threshold value;
a counter reaponsive to said second signal for recording the number of overvoltage surges, said counter being incremented by each occurrence of said second signal; and
a control element responsive to said second signal, said control element opening said switch in response to said second signal and maintaining said switch in an open position during a predetermined period, said first signal being disconnected from said threshold detector when said switch is in an open position.

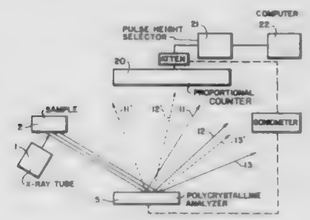
4,796,284

POLYCRYSTALLINE X-RAY SPECTROMETER

Ronald Jenkins, Dowingtown, Pa., assignor to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 688,096, Dec. 31, 1984, abandoned. This application Nov. 10, 1986, Ser. No. 929,960
Int. Cl.⁴ G01N *23/20, 23/22*
U.S. Cl. 378—49 **2 Claims**

1. In an X-ray spectrometer including a source of X-rays, a sample receiving X-rays from said source, said sample emitting characteristic radiation, analyzing means receiving said characteristic radiation for producing reflected radiation, and detector means receiving said reflected radiation for detecting concentrations of said sample, said detector means including proportional detector means for generating voltage pulses is response to said reflected radiation, the improvement comprising said analyzing means including a goniometer and a polycrystalline material disposed on said goniometer, said polycrsatlline material being a pellet of at least one ground-up crystalline material, wherein said detector means include variable attenuating means connected to the output of said proportional detector means for attenuating the intensity of said pulses, said attenuating means being connected to and controlled by said gonimeter such that the amount of attenuation varies with angular displacement of the goniometer.

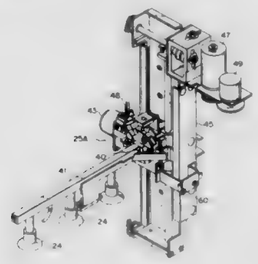


4,796,285

X-RAY RADIOGRAPHY APPARATUS

Hisashi Sakakihara, and Shigeru Sasaki, both of Ootawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 943,172, Dec. 18, 1986, abandoned. This application Mar. 25, 1988, Ser. No. 177,841
Claims priority, application Japan, Dec. 20, 1985, 60-285727
Int. Cl.⁴ G03B *41/16*
U.S. Cl. 378—173 **8 Claims**



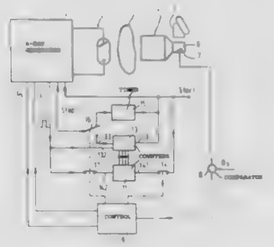
1. An X-ray radiography apparatus comprising:
sheet magazine means for containing stacked unimaged imaging medium sheets;
removing means, having attraction means for attracting the imaging medium sheets, for removing the medium sheets one by one from said sheet magazine means by moving the attraction means and controlling the attraction of the attraction means;
X-ray imaging means for forming an X-ray image of an object on the medium sheet removed by the removing means;
reference position detecting means for detecting when the attraction means passes a predetermined reference position, a reference displacement of the attraction means in a direction of the thickness of the stacked imaging medium sheets with reference to the inner bottom of said sheet magazine means being known when the attraction means is at the reference position;
attraction detecting means for detecting when said attraction means attracts one of the medium sheets and for generating a detection signal;
moving distance detecting means for detecting a moving distance of said attraction means, said moving distance detecting means having a pulse encoder for generating a pulse each time said attraction means moves a predetermined distance in the direction of the thickness of the stacked imaging medium sheets;
discriminating means for determining the number of remaining medium sheets in the magazine means on the basis of an attraction displacement of said attraction means in the direction of the thickness of the stack imaging medium sheets with reference to the bottom of said sheet magazine means, the attraction displacement being derived from the moving distance of said attraction means between the reference position and a position where the attraction means is located when the detection signal is generated by said attraction detecting means; and
display means for indicating the number of remaining medium sheets obtained by the discriminating means.

4,796,286

X-RAY GENERATOR DOSE FLUCTUATION SUPPRESSION

Rudolf W. Ochmann; Peter Stege, and Robert H. Zirnermann, all of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 25, 1987, Ser. No. 66,913
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1986, 3621803
Int. Cl.⁴ H05G *1/44*
U.S. Cl. 378—108 **5 Claims**



1. In an X-ray generator, comprising a converter for alternating voltage and means for dose-controlled or time-controlled switching-off of the high voltage for an X-ray tube, the improvement comprising counting means which count converter alternations during a first exposure and which terminate subsequent exposures of a series when a same number of converter alternations is reached as were counted during the first exposure.

4,796,287

DIGITAL LOUDSPEAKING TELEPHONE

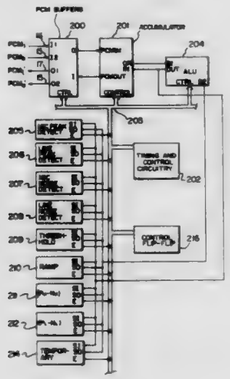
Gordon J. Reesor, and Gerald Kuhn, both of Nepean, Canada, assignors to Mitel Corp., Ontario, Canada

Filed Sep. 27, 1985, Ser. No. 781,020
Claims priority, application Canada, May 10, 1985, 481289
Int. Cl.⁴ H04M *1/60*
U.S. Cl. 379—390 **6 Claims**

6. In a loudspeaking telephone, a method of suppressing one or another of an incoming and an outgoing signal on incoming and outgoing lines, respectively, comprising the steps of:
(a) receiving and detecting the relative magnitudes of said incoming and outgoing signals and generating incoming and outgoing envelope signal samples in response thereto;
(b) detecting incoming and outgoing noise floor levels of said incoming and outgoing signals and generating incoming and outgoing noise floor signal samples in response thereto;
(c) generating incoming and outgoing predetermined threshold signal samples;
(d) detecting which of a previous one of said incoming or outgoing signals has been suppressed relative to the other;

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(e) in the event the previous outgoing signal was suppressed comparing the incoming noise floor signal sample to the incoming envelope signal sample, and in the event said incoming envelope signal sample is greater than said incoming noise floor sample, generating a ramp signal representative of an echo signal of said incoming signal appearing in said outgoing signal, and suppressing said outgoing signal; and in the event said incoming envelope signal sample is less than said incoming noise floor signal sample, summing said outgoing noise floor signal sample with said ramp signal and said outgoing predetermined threshold signal sample and in response generating a first sum signal sample, comparing said outgoing envelope signal sample with said first sum signal sample, and suppressing said outgoing signal in the event said outgoing envelope signal sample is less than said first sum signal sample, and suppressing said incoming signal in the event said outgoing envelope signal sample is greater than said first sum signal sample; and



(f) in the event the previous incoming signal was suppressed comparing the outgoing noise floor signal sample to the outgoing envelope signal sample and in the event said outgoing envelope signal sample is greater than said outgoing noise floor signal sample, generating a further ramp signal sample representative of an echo signal of said outgoing signal appearing in said incoming signal, and suppressing said incoming signal; and in the event said outgoing envelope signnal sample is less than said outgoing noise floor signal sample, summing said incoming noise floor signal sample with said further ramp signal sample and said incoming predetermined threshold signal sample and in response, generating a further sum signal sample, comparing said incoming envelope signal sample with said further sum signal sample, and suppressing said incoming signal in the event said incoming envelope signal sample is less than said further sum signal sample, and suppressing said outgoing signal in the event said incoming envelope signal sample is greater than said further sum signal sample.

4,796,258

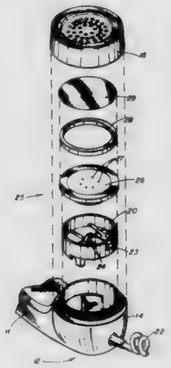
TELEPHONE HANDSET WITH STATIC DISCHARGE PREVENTION

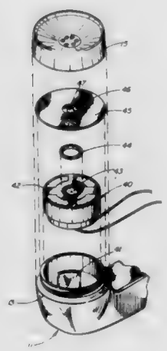
Alan C. Busche, Dorchester; Josef Talacek, Don Mills, and Ronald G. Wellard, Gloucester, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jan. 23, 1986, Ser. No. 877,569
Int. Cl.[4] H04M *1/04*
U.S. Cl. 379—433 **2 Claims**

1. A telephone handset including a transmitter housing at one end and a receiver housing at the other end, each housing having a hollow base part and a cap fitting on the base part;

said transmitter housing including a transmitter assembly comprising; a cup positioned in the hollow base part; a transmitter positioned in the cup, the transmitter including a dielectric body, a transducer within the body and a metal ferrule extending over the body and including apertures for acoustic access to the transducer; a dielectric annular spacer positioned on said ferrule on a surface remote from said transducer; and a dielectric membrane positioned on said spacer on a side remote from said ferrule and spaced therefrom and extending over said transmitter, said cup holding said dielectric membrane, said dielectric spacer and said transmitter assembly in said hollow base part of said transmitter housing;





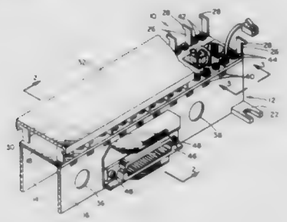
said receiver housing including a receiver positioned in the hollow base part of the receiver housing, said receiver including a transducer; a metallic shunt extending over a front surface of the receiver, said shunt including a central aperture providing acoustic access to the receiver transducer; an annular dielectric member positioned in said aperture; a dielectric membrane extending over said aperture, said dielectric member and said shunt; and a hole formed in the center of said dielectric membrane extending over said aperture, said hole being smaller than said aperture.

4,796,289

MULTI-LINE NETWORK INTERFACE

Randall B. Masor, 9010 Rowan, Houston, Tex. 77036

Continuation of Ser. No. 13,692, Feb. 12, 1987, abandoned. This application Mar. 3, 1988, Ser. No. 163,953
Int. Cl.[4] H04M *1/24*
U.S. Cl. 379—26 **10 Claims**



1. A multi-line telephone line installation and test system comprising:

(a) a multi-line network interface module having an elongated module body of substantially the same dimensions as a typical multi-line modular jack, said module body forming a support panel, said support panel having multiple pairs of company line and customer line connectors for multiple telephone circuits;

(b) a plurality of telephone circuit test receptacles being fixed in said support panel and being electrically coupled with respective pairs of company line connectors;

(c) a plurality of half-ringer circuits being located within said modular body and being coupled with respective pairs of company line connectors and with respective ones of said telephone circuit test receptacles;

(d) a plurality of telephone jack circuits being coupled with respective pairs of said customer line connectors telephone line circuits, each having a telephone jack receivable in removable electrically connected relation within respective ones of said telephone circuit test receptacles; and

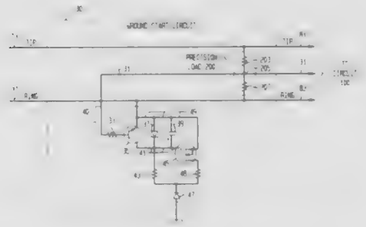
(e) circuit means electrically coupling respective pairs of said customer line connectors with a multi-line modular jack.

4,796,290

GROUND START CIRCUIT

Steven B. Perry, Perrineville, N.J., assignor to Keptel, Inc., Tinton Falls, N.J.

Filed Feb. 24, 1988, Ser. No. 159,720
Int. Cl.[4] H04M *1/24*
U.S. Cl. 379—27 **20 Claims**



1. A ground start circuit for use in conjunction with a telephone line having at least two wires comprising:

means, connected between an earth ground connection and a first terminal that is to be connected to one wire of a two-wire telephone line and operative in response to a potential difference appearing thereacross, for providing a control signal that changes in value;

means, connected between said first terminal and the earth ground connection and responsive to said control signal, for establishing a low impedance path between said first terminal and the earth ground connection whenever said control signal reaches a threshold value whereby said telephone line is placed in an unbalanced condition; and

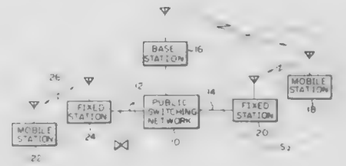
means, connected to said providing means and responsive to a potential difference subsequently applied across said first terminal and a second terminal that is to be connected to said second wire of said two-wire telephone line, for decreasing the value of said control signal to a level sufficient for said establishing means to eliminate said low impedance path existing between said first terminal and the earth ground connection, whereby said telephone line is returned to a substantially balanced condition.

4,796,291

MOBILE RADIO COMMUNICATIONS SYSTEM

Masayuki Makino, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 664,066, Oct. 23, 1984, Pat. No. 4,575,582. This application Mar. 7, 1986, Ser. No. 847,121
The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.
Int. Cl.[4] H04Q *7/04*
U.S. Cl. 358—58 **3 Claims**



1. A mobile radio communications system, comprising:

a plurality of fixed stations connected to a public telephone line of a switching network, a plurality of mobile stations each of which is connectable to any one of said fixed stations by radio, and a transmission base station for paging said mobile stations;

each of the fixed stations comprising means for sending to said switching network identification data associated with the calling and called mobile stations and a calling fixed station upon origination of a call from said mobile station to said called station, said calling fixed station being connected by radio with said calling mobile station;

the transmission base station comprising means for transmitting to said called mobile station a paging signal inclusive of the identification data associated with the calling and called mobile stations and the calling fixed station;

each of the mobile stations comprising means for announcing a call in response to the paging signal from the transmission base station, and means for displaying the calling mobile and fixed stations' identification data from the transmission base station, each of the mobile stations being constructed to send an answer to the paging from the transmission base station by way of a called fixed station which is connected by radio with the called mobile station, thereby enabling the calling mobile station and the called mobile station to be connected with each other.

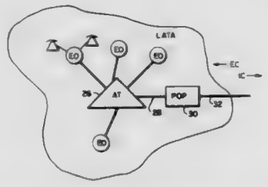
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4,796,292

DATA TRANSMISSION OVER THE PUBLIC SWITCHED NETWORK

Jerry S. Thomas, Phoenix, Ariz., assignor to American Express Company, New York, N.Y.

Filed Dec. 8, 1987, Ser. No. 129,979
Int. Cl.[4] H04M *1/57*
U.S. Cl. 379—91 **23 Claims**



1. A system for connecting selected calling stations to a predetermined destination over the public telephone switched network, said public telephone switched network having central offices for effecting switched connections between station lines and trunks, and trunk switching facilities, divided into (a) a plurality of Local Access and Transport Areas (LATAs) under control of Exchange Carriers (ECs), and (b) a plurality of Interexchange Customers (ICs) for providing telecommunication services between access facilities in one LATA and access facilities in another LATA, said ICs having a choice of Feature Group line-side and trunk-side switched access arrangements, with the charge of an EC for a call partially handled by an IC which interfaces with the EC via a Feature Group access facility trunk being borne solely by the IC and in no part directly by the calling station; comprising a group of modems situated at the location of at least one of said access facilities; and communication channel means interconnecting each group of modems with said predetermined destination; each of the modems situated at the location of an access facility having an associated dedicated means for interfacing with a respective Feature Group trunk accessed by said selected calling stations through an EC, and for extending communication over the interconnected communication channel means to said predetermined destination.

4,796,293

ENHANCED DEDICATED TELECONFERENCING SYSTEM

Robert J. Blinken, Bedford Hills; Robert J. Blinken, Jr., White Plains, both of N.Y.; Merle D. Garner, Chatham, N.J.; William J. Koenig, Warrington, Pa., and Billy B. Oliver, Chatham, N.J., assignors to Communications Network Enhancement Inc., New Providence, N.J.

Filed Dec. 18, 1987, Ser. No. 135,096
Int. Cl.[4] H04M *3/56*
U.S. Cl. 379—202 **37 Claims**

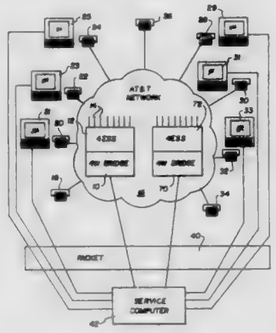
1. A method for operating a teleconferencing system, the system having a bridge with a plurality of ports, each for communication with a party and control means responsive to a plurality of commands and a plurality of information responses for each command, said plurality of information responses including a first group and a second group, the control means responding to reformatted information responses of the second group of information responses, the bridge being controlled to execute function according to the commands and in response to inputting of information responses into the control means, the method comprising:

connecting a service computer to the control means for issuing commands thereto for causing the bridge to execute functions corresponding to the commands;

storing in the service computer, the first group of information responses;

inputting into the service computer the second group of information responses;

issuing a selected command from the service computer to the control means for initiating a function corresponding to the selected command;



reformatting at least some of the second group of information responses; and

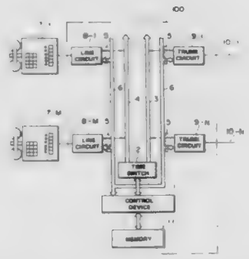
supplying the first, any unreformatted second and the reformatted second groups of information responses to the control means for completing the function corresponding to the selected command, from the service computer.

4,796,294

ELECTRONIC TELEPHONE EXCHANGE AND METHOD OF CONNECTING PORTS OF THE EXCHANGE

Kyoichi Nakagawara, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 2, 1987, Ser. No. 127,389
Claims priority, application Japan, Dec. 2, 1986, 61-287480
Int. Cl.[4] H04M *3/00*; H04Q *1/02*
U.S. Cl. 379—258 **16 Claims**



1. An electronic telephone exchange comprising:

a time switch for effecting exchange connections at least between an office line and an extension and between extensions;

an extension highway connected to said time switch;

an office line highway connected to said time switch;

a plurality of connectors with a specific first terminal connected to said extension highway and a specific second terminal connected to said office line highway;

at least one extension interface circuit each mounted on a substrate and having a terminal for connecting said extension highway at a position corresponding to the first terminal of said connector; said extension interface circuit being fitted to either one of said plurality of connectors so as to be connected with said extension highway via said first terminal;

at least one office line interface circuit mounted on a substrate and having a terminal for connecting an office line highway at a position corresponding to said second terminal of said connector, said office line interface circuit being fitted to either one of said connectors so as to be connected to said office line highway via said second terminal;

address designation means for designating addresses of said extension interface circuit and of said office line interface circuit; and

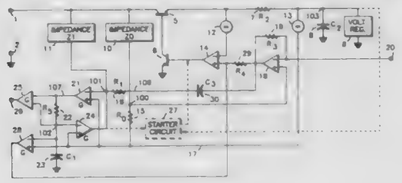
control means for controlling an exchange connection operation of said time switch and for controlling said extension interface circuit and said office line interface circuit based on the addresses designated by said address designation means.

4,796,295

TELEPHONE CIRCUITS

Michael J. Gay, and Johannes A. Gutmann, both of Vaud, Switzerland, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 26, 1986, Ser. No. 911,833
Claims priority, application United Kingdom, Oct. 7, 1985, 8524692
Int. Cl.[4] H04M *1/58*
U.S. Cl. 379—392 **11 Claims**



1. A telephone circuit for use in a telephone handset, comprising:

a signal node for receiving a signal voltage;

a microphone signal input for receiving a microphone signal;

an earphone amplifier having an input and an output;

a first impedance coupled between said signal node and said input of said earphone amplifier;

combining means for combining a microphone signal supplied to said microphone signal input with a voltage derived from said signal node such that the combined output signal is in antiphase with the signal voltage at said signal node, said combining means having a first input coupled to said microphone signal input, an output coupled to said input of said earphone amplifier and a second input, said combining means comprises a first operational amplifier;

a second impedance means coupled between said signal node and said second input of said combining means; and

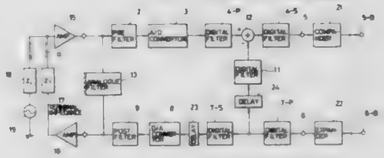
comparing means having a first input coupled to said output of said combining means, a second input coupled to said signal node and an output coupled to said signal node for comparing the combined output signal with a voltage representative of the current flowing at said signal node to provide a voltage at said output that is used to control current flowing at said signal node.

4,796,296

PCM CODER AND DECODER HAVING FUNCTION OF TWO-WIRE/FOUR-WIRE CONVERSION

Eiichi Amada, Kodaira; Kazuo Yasukido, Nishitama; Takahiko Kozaki, Kokubunji; Shigeo Nishita, Kokubunji, and Masaru Kokubo, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 30, 1985, Ser. No. 739,295
Claims priority, application Japan, May 30, 1984, 59-108354; Jun. 27, 1984, 59-131048
Int. Cl.[4] H04B *3/23*
U.S. Cl. 379—410 **5 Claims**



1. A PCM coder and decoder comprising;

a first circuit which decodes a first PCM signal and produces as an output a first analogue signal;

a second circuit which codes a second analogue signal and produces as an output a second PCM signal; and

balancing means connected to said first circuit and said second circuit for eliminating a signal produced when the output of said first circuit is applied to said second circuit;

said balancing means including an analogue balancing circuit having means for subtracting the first analogue signal of said first circuit from the second analogue signal supplied to said second circuit;

a digital balancing circuit having means for subetracting said first PCM signal supplied to said first circuit from said second PCM signal of said second circuit;

said first circuit comprises a first digital filter which converts the first PCM signal into a PCM signal having a sampling frequency higher than that of said first PCM signal, a second digital filter which converts the output of said first digital filter into a PCM signal having a sampling frequency higher than that of the output of said first digital filter, a D/A converter which converts the output of said second digital filter into an analogue output signal, and a post-filter for filtering the analogue output signal;

said second circuit comprises an analogue pre-filter, an A/D converter for converting an output signal of said pre-filter into a PCM signal, a third digital filter which changes an output of said A/D converter into a digital signal having a sampling frequency lower than that of the output of said A/D converter, and a fourth digital filter which changes an output of said digital balancing circuit into a digital signal having a sampling frequency lower than that of the output of said third digital filter; and

said digital balancing circuit is connected between the output of said first digital filter and the output of said third digital filter, and said analogue balancing circuit is connected between an output terminal of said post-filter and an input terminal of said analogue pre-fitter.

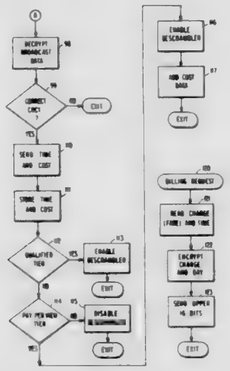
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4,796,297

DEVICE FOR CALCULATING A CHARGE FOR A CHARGED INFORMATION SIGNAL WITH ERRORS AVOIDED IN A REPORT OF THE CHARGE

Eiji Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 15, 1984, Ser. No. 641,111
Claims priority, application Japan, Aug. 19, 1983, 58-152350; Oct. 11, 1983, 58-189519
Int. Cl.[4] H04L *9/04*
U.S. Cl. 380—10 11 Claims



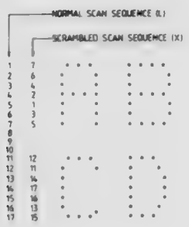
1. A charging device responsive to an information signal for calculating a fee to be charged for reception of said information signal, said charging device being assigned a key code specific thereto, comprising; charge calculating means for calculating an amount representative of said fee and encoding means responsive to said key code for encoding said amount and a time instant when calculation of said amount is completed, to form a check code.

4,796,298

VIDEO DISPLAY UNIT

Ian D. MacArthur, Stockport, England, assignor to International Computers Limited, London, England

Filed Feb. 13, 1987, Ser. No. 14,485
Claims priority, application United Kingdom, Feb. 28, 1986, 8605014
Int. Cl.[4] H04N *7/167*
U.S. Cl. 380—14 9 Claims



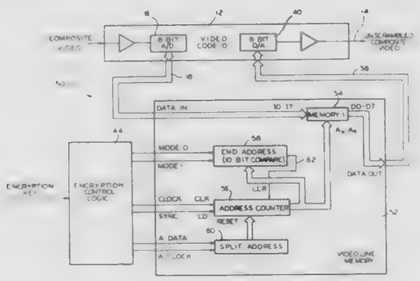
1. Video display apparatus comprising:
(a) raster-scanned display means for receiving a video signal and producing a display comprising a sequence of scan lines;
(b) memory means for storing display information defining said display;
(c) means for producing a first sequence of scan line addresses;
(d) means for producing a second, scrambled sequence of scan line addresses;
(e) means for utilizing said second sequence of scan line addresses to read said display information from the memory means in a scrambled order;
(f) means for utilizing said display information read from the memory means to produce said video signal for the display means;
(g) means for forming a difference signal between the first and second sequences of scan line addresses; and
(h) control means for utilizing said difference signal to control the display means, to vary the positions of said scan lines in the display.

4,796,299

VIDEO ENCODER APPARATUS

Jeffrey S. Hamilton, Oxford, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Aug. 22, 1985, Ser. No. 768,426
Int. Cl.[4] H04N *7/167*
U.S. Cl. 380—14 11 Claims



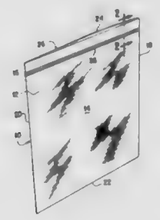
1. In a video encoder apparatus having an input-output converter unit and a control unit, an improvement comprising:
means for storing a first plurality of digital data samples of video information received from said converter unit, said storing means having a capacity for storing digital data samples for essentially only a single line of video information;
split-address means for determining a split-address; and
means for addressing unique sample storage locations in said storing means, coupled to said control unit, with said storing means including means for reading out a digital data sample from the first plurality prestored at a respective addressed storage location to said converter unit and for writing into said same addreaed sample storage location a respective digital data sample from a second plurality received from said converter unit
said addressing means being presettable to said split-address and including means for sequentially addressing a plurality of storage locations of said storing means starting from said split-address.

4,796,300

RECLOSABLE FLEXIBLE CONTAINER HAVING INTERIOR AND EXTERIOR CLOSURE ELEMENTS INTERLOCKED ON THE CONTAINER WALLS

Mark Branson, Shelbyville, Ind., assignor to KCL Corporation, Shelbyville, Ind.

Continuation-in-part of Ser. No. 796,632, Nov. 8, 1985, abandoned, and a continuation-in-part of Ser. No. 940,003, Dec. 10, 1986. This application Dec. 19, 1986, Ser. No. 944,414
Int. Cl.[4] B65D *33/16*
U.S. Cl. 383—63 21 Claims



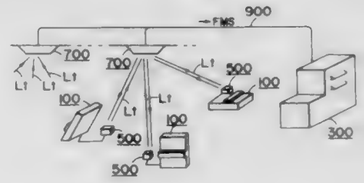
1. A flexible reclosable container comprising:
a pouch having a front wall with an inside and outside surface, a rear wall with an inside and outside surface and a pouch opening, said pouch being constructed of a flexible, thin thermoplastic film;
a pair of continuous exterior closure elements positioned on the respective outside surface of said front and rear walls;
a pair of continuous interior closure elements, each interior closure element having means mechanically interlocking with one of said exterior closure elements with one of said walls of said pouch being continuously interposed between said closure elements so as to affix said interior closure elements to said inside surface of one of said walls of said pouch, by said means, said interior closure elements further having means for mechanically interlocking with each other so as to selectively seal said pouch.

4,796,301

IMAGE TRANSMISSION APPARATUS

Shunichi Uzawa, Tokyo; Tetsuzo Mori, Kawasaki, and Noboru Koumura, Narashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 432,757, Oct. 4, 1982, abandoned. This application Nov. 19, 1985, Ser. No. 799,280
Claims priority, application Japan, Oct. 9, 1981, 56-160158; Oct. 9, 1981, 56-160161; Oct. 19, 1981, 56-165616
Int. Cl.[4] H04B *9/00*
U.S. Cl. 455—607 16 Claims



1. An image transmission system comprising:
a plurality of image data output means each for transmitting light signals representing image data on a wireless basis and for receiving light signals representing control data related to transmission of the image data;
image data input means for receiving the light signals representing image data from one of said plurality of image data output means and for transmitting the light signals representing control data to all of said image data output means on a wireless basis; and
image processing means, connected to said image data input means, for processing image data represented by the light signals received by said image data input means,
wherein the light signals representing control data are transmitted from said image data input means with lesser directivity than that with which the light signals representing image data are transmitted from said image data output means, and wherein said image data input means transmits the light signals representing control data for selecting any one of said image data output means to all of said plurality of image data output means, and the selected image data output means transmits the light signals representing image data to said image data input means.

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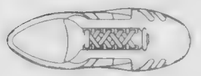
UMI

299,180
BICYCLIST'S HELMUT COVER
James J. Gentes, San Jose, Calif., assignor to Giro Sport Design, Inc., Santa Cruz, Calif.
Filed Jun. 10, 1986, Ser. No. 872,766
Term of patent 14 years
U.S. Cl. D2—260



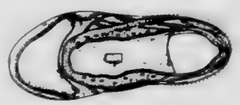
299,181
SHOE UPPER
Olaf T. Harken, 1251 W. Wisconsin Ave., Pewaukee, Wis. 53072, and Terry Bootz, 10527 Perrin Beitel C209, San Antonio, Tex. 78217
Filed Mar. 24, 1986, Ser. No. 845,792
Term of patent 14 years
U.S. Cl. D2—314



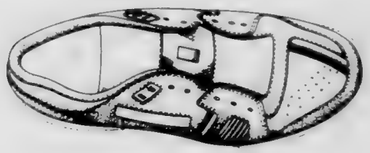


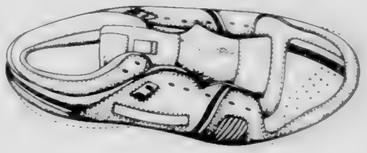
299,182
SHOE UPPER
Paul D. Brown, Hingham, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Jul. 16, 1987, Ser. No. 74,161
Term of patent 14 years
U.S. Cl. D2—314





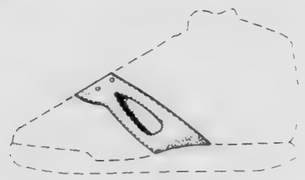
299,183
SHOE UPPER
Paul D. Brown, Hingham, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Jul. 16, 1987, Ser. No. 74,178
Term of patent 14 years
U.S. Cl. D2—314

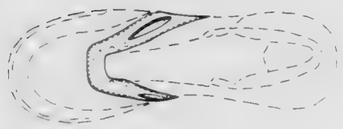




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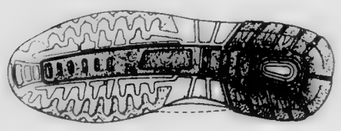
299,184
ELEMENT OF A SHOE UPPER
Mona McCrea, Portland, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Division of Ser. No. 87,743, Aug. 21, 1987, Pat. No. Des. 296,146. This application Nov. 23, 1987, Ser. No. 124,460
Term of patent 14 years
U.S. Cl. D2—314



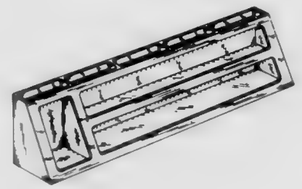


299,185
SHOE SOLE
Lawrence Selbiger, Portland, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Oct. 13, 1987, Ser. No. 106,767
Term of patent 14 years
U.S. Cl. D2—320

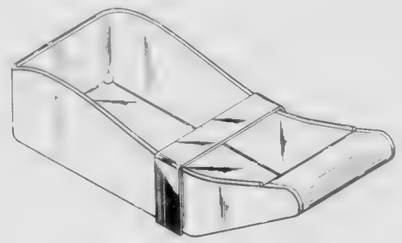


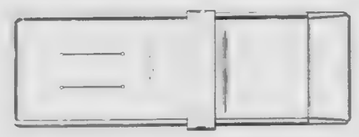


299,186
STORAGE CABINET FOR VEHICLES
Robert L. Sills, Polk City, Iowa, assignor to Dee Zee Manufacturing, Des Moines, Iowa
Filed Sep. 30, 1985, Ser. No. 782,224
Term of patent 14 years
U.S. Cl. D3—40



299,187
CARRYING CASE FOR A CORDLESS TELEPHONE
Patricia E. Ladley, 13 Stratton Dr., Cheshire, Conn. 06410
Filed Mar. 12, 1986, Ser. No. 842,865
Term of patent 14 years
U.S. Cl. D3—106





299,188
CAMOUFLAGE FABRIC
Don S. Norton, Clinton, Miss., assignor to Brell Mar Products, Inc., Jackson, Miss.
Filed Dec. 4, 1986, Ser. No. 938,119
Term of patent 14 years
U.S. Cl. D5—62



299,189
COMBINED WALKING STICK AND SEAT
Eric J. G. Large, Stroud, and John D. Payne, Evesham, both of England, assignors to Stroud Metal Company Limited, Stroud, England
Filed Aug. 6, 1985, Ser. No. 763,261
Claims priority, application United Kingdom, Mar. 26, 1985, 1,025,794
Term of patent 14 years
U.S. Cl. D6—335



299,190
ADJUSTABLE CHAIR OR SIMILAR ARTICLE
George C. Mulhauser, Paramus, N.J., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed May 15, 1986, Ser. No. 863,541
The portion of the term of this patent subsequent to Jul. 12, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—367



299,191
CHAIR
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company Limited Partnership, El Monte, Calif.
Filed Sep. 16, 1986, Ser. No. 908,142
Term of patent 14 years
U.S. Cl. D6—375

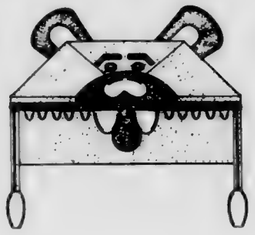


299,192
CHAIR
Donald T. Chadwick, Los Angeles, Calif., and William E. Stumpf, Winona, Minn., assignors to Herman Miller, Inc., Zeeland, Mich.
Division of Ser. No. 581,360, Dec. 17, 1984. This application Dec. 31, 1986, Ser. No. 948,282
Term of patent 14 years
U.S. Cl. D6—380

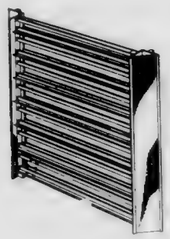


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299,193
CANOPY FOR A BED
Phillip J. Brandis, Jr., 6280 Brockman, Millington, Tenn. 38053
Filed Jul. 7, 1986, Ser. No. 883,143
Term of patent 14 years
U.S. Cl. D6—388



299,194
MODULAR VIDEO CASSETTE DISPLAY RACK
John S. Pate, 2498 Glenhaven Dr., Gainesville, Ga. 30501
Filed Jan. 8, 1986, Ser. No. 817,016
Term of patent 14 years
U.S. Cl. D6—407



299,195
TABLE
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Sep. 16, 1986, Ser. No. 908,102
Term of patent 14 years
U.S. Cl. D6—487



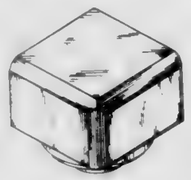
299,196
TABLE FRAME
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company Limited Partnership, El Monte, Calif.
Filed Sep. 16, 1986, Ser. No. 908,104
Term of patent 14 years
U.S. Cl. D6—499



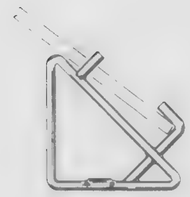
299,197
COMBINED TOOTHPASTE PUMP AND TOOTHBRUSH HOLDER
Gilles Rainville, and Francoise Rainville, both of Northridge, Calif., assignors to Howard A. Kenyon, Cerritos, Calif.
Filed Jun. 19, 1986, Ser. No. 876,256
Term of patent 14 years
U.S. Cl. D6—528



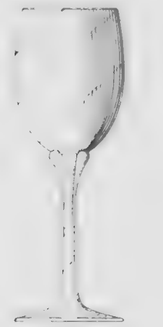
299,198
SINK DISPENSER HEAD
Stephen O. Gregory, 2508 Arapahoe St., Denver, Colo. 80205
Filed Oct. 8, 1986, Ser. No. 785,831
Term of patent 14 years
U.S. Cl. D6—542



299,199
BOW HOLDER
Alan M. Rogowski, 730 W. Armour Ave., Milwaukee, Wis. 53221
Filed Feb. 28, 1986, Ser. No. 838,010
Term of patent 14 years
U.S. Cl. D6—552



299,200
STEMMED WINE GLASS OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute 62510, Arques, France
Filed Nov. 13, 1985, Ser. No. 804,993
Term of patent 14 years
U.S. Cl. D7—13



299,201
STEMMED WINE GLASS OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute 62510, Arques, France
Filed Nov. 13, 1985, Ser. No. 804,997
Term of patent 14 years
U.S. Cl. D7—13

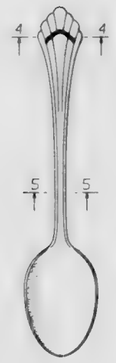


299,202
PORTABLE INSULATED BEVERAGE CONTAINER
Jerry A. Corcoran, 1002 SW. Hemlock, Lake Oswego, Oreg. 97034
Filed Apr. 21, 1986, Ser. No. 857,412
Term of patent 14 years
U.S. Cl. D7—71

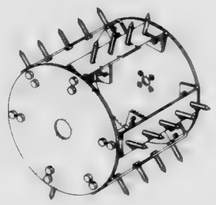


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299,203
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Vernon Center, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Mar. 20, 1986, Ser. No. 845,381
Term of patent 14 years
U.S. Cl. D7—137



299,204
POWER WEEDER ATTACHMENT
Anthony Nappi, 319 Twin River Rd., Lincoln, R.I. 02865
Filed Jul. 21, 1986, Ser. No. 888,331
Term of patent 14 years
U.S. Cl. D8—8



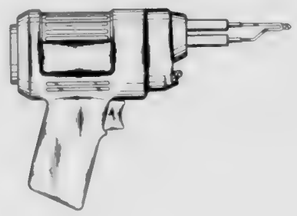
299,205
WASTE STRAINER REMOVAL AND INSERTION TOOL
Jack Reese, 17 Broadview Dr., Asheville, N.C. 28803
Filed Mar. 20, 1985, Ser. No. 713,827
Term of patent 14 years
U.S. Cl. D8—19



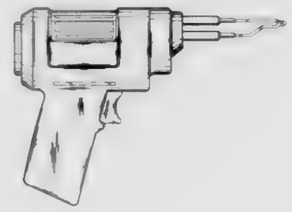
299,206
COMBINATION WRENCH
Jacob C. Krapowicz, Ridgefield, Conn., and William G. Mader, York, Pa., assignors to Easco Corporation, Baltimore, Md.
Filed Oct. 30, 1986, Ser. No. 925,128
Term of patent 14 years
U.S. Cl. D8—28



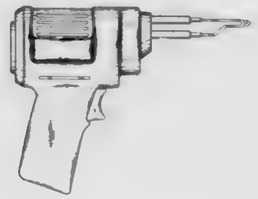
299,207
SOLDER GUN
Robert W. Arehart, Cook County, Ill., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Jan. 13, 1986, Ser. No. 818,087
Term of patent 14 years
U.S. Cl. D8—30



299,208
SOLDER GUN
Robert W. Arehart, Cook County, Ill., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Jan. 13, 1986, Ser. No. 818,088
Term of patent 14 years
U.S. Cl. D8—30



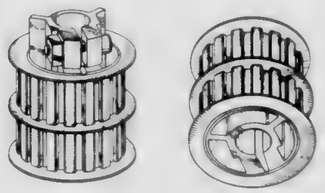
299,209
SOLDER GUN
Robert W. Arehart, Cook County, Ill., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Jan. 13, 1986, Ser. No. 818,132
Term of patent 14 years
U.S. Cl. D8—30



299,210
COMBINATION CROW BAR/SHOVEL TOOL
Ron Zabarte, 70 Alberta Ter., Walnut Creek, Calif. 94596
Filed Feb. 25, 1986, Ser. No. 836,452
Term of patent 14 years
U.S. Cl. D8—105



299,211
TOOTHED DRIVE PULLEY
Stig B. Ahlgren, Munich, Fed. Rep. of Germany, assignor to Prismavision AB, Malmo, Sweden
Filed Oct. 22, 1985, Ser. No. 790,140
Claims priority, application Sweden, Apr. 29, 1985, 85-1108
Term of patent 14 years
U.S. Cl. D8—360



299,212
ROD-MOUNTED SUPPORT BRACKET
Kent W. Murphy, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Nov. 29, 1985, Ser. No. 807,061
Term of patent 14 years
U.S. Cl. D8—380



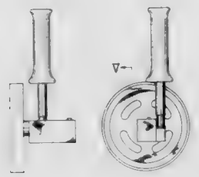


299,213
NAIL HOLDING ATTACHMENT FOR A HAMMER HEAD
Theodore F. Puntillo, Sacramento, Calif., assignor to Theodore Eugene Puntillo and Edward Anthony Puntillo, part interest to each
Filed Jun. 14, 1988, Ser. No. 206,628
Term of patent 14 years
U.S. Cl. D8—395

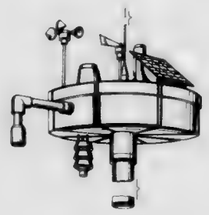


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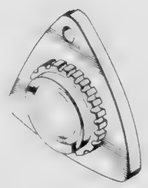
299,214
DISTANCE MEASURING DEVICE
Masaru Kimura, Osaka, Japan, assignor to Seashin Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jul. 21, 1986, Ser. No. 889,179
Claims priority, application Japan, Mar. 27, 1986, 61-11272
Term of patent 14 years
U.S. Cl. D10—70



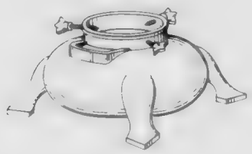
299,215
METEROLOGICAL STATION WITH SENSOR ARRAY
Harry R. Sampey, Vanderbilt, Pa., assignor to Arax International Corporation, Vanderbilt, Pa.
Filed Dec. 18, 1985, Ser. No. 810,293
Term of patent 14 years
U.S. Cl. D10—53



299,216
MAGNETIC COMPASS
Yusa Toshikazu, Tokyo, Japan, assignor to Tokyo Compass Mfg. Co., Ltd., Tokyo, Japan
Filed Aug. 27, 1985, Ser. No. 770,311
Term of patent 14 years
U.S. Cl. D10—68



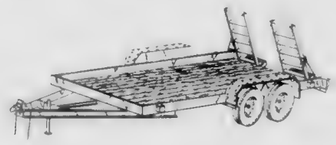
299,217
COMBINED CHRISTMAS TREE STAND AND VASE
Johannes Schoenborn, 325 Redmond Rd., South Orange, N.J. 07079
Filed Feb. 26, 1986, Ser. No. 836,180
Term of patent 14 years
U.S. Cl. D11—130.1



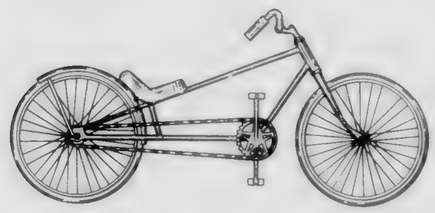
299,218
COMBINED SKI AND SLED
Gary L. Snyder, 6726 Clement Ave., Cleveland, Ohio 44105
Filed Dec. 12, 1986, Ser. No. 941,267
Term of patent 14 years
U.S. Cl. D12—8



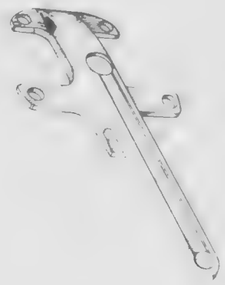
299,219
EQUIPMENT TRAILER
Keith Edwards, Jonesboro, Ga., assignor to Custom Trailer, Incorporated, Griffin, Ga.
Filed Dec. 9, 1986, Ser. No. 939,894
Term of patent 14 years
U.S. Cl. D12—101



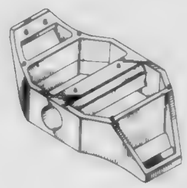
299,220
BICYCLE
Michael T. Trunky, Pewankee, Wis., assignor to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Jan. 21, 1986, Ser. No. 820,382
Term of patent 14 years
U.S. Cl. D12—111



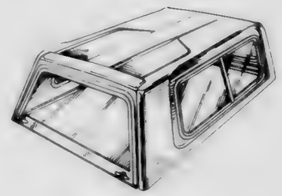
299,221
PEDAL CRANK FOR A BICYCLE
Lucio Borromeo, Turin, Italy, assignor to 3 T S.p.A., Italy
Filed Jan. 23, 1986, Ser. No. 824,344
Claims priority, application Italy, Jul. 26, 1985, 53639/85[U]
Term of patent 14 years
U.S. Cl. D12—123



299,222
BICYCLE PEDAL OR THE LIKE
William C. Feamster, III, and William A. Feamster, both of 4013 Nina Dr., Chesapeake, Va. 23321
Filed Feb. 19, 1986, Ser. No. 834,865
Term of patent 14 years
U.S. Cl. D12—125



299,223
VEHICLE CAMPER SHELL
Ray N. Galvin, Huntington Beach, Calif., assignor to Skill-Craft Enterprises, Inc., Huntington Beach, Calif.
Filed Nov. 5, 1986, Ser. No. 928,303
Term of patent 14 years
U.S. Cl. D12—156



299,224
VEHICLE ROOF CARRIER
Masahi Kamaya, Tokyo, Japan, assignor to PIAA Corporation, Tokyo, Japan
Filed Jul. 30, 1986, Ser. No. 890,548
Term of patent 14 years
U.S. Cl. D12—157

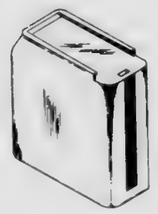


299,225
BICYCLE FRONT RACK
James R. Blackburn, Los Gatos, Calif., assignor to Jim Blackburn Designs, Inc., Campbell, Calif.
Filed Jun. 11, 1986, Ser. No. 873,319
Term of patent 14 years
U.S. Cl. D12—158

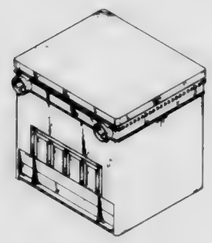


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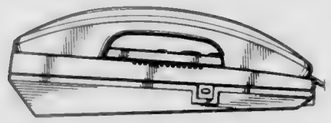
299,226
PORTABLE RADIO BATTERY OR SIMILAR ARTICLE
Richard J. Toth, Boca Raton, Fla.; James W. Brinkerhoff, Mount Clemens, Mich.; Craig F. Siddoway, Ft. Lauderdale, Fla., and Bruce A. Claxton, Coral Springs, Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 29, 1986, Ser. No. 902,334
Term of patent 14 years
U.S. Cl. D13—8

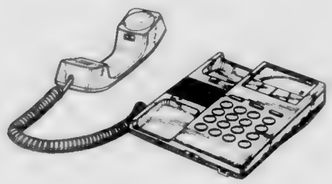


299,227
BATTERY CONTAINER WITH SIDE RECESSES
Walter A. Grannen, III, Bargersville, Ind., assignor to E. W. Mold & Tool Company, Inc., Indianapolis, Ind.
Filed Sep. 8, 1986, Ser. No. 905,036
Term of patent 14 years
U.S. Cl. D13—8

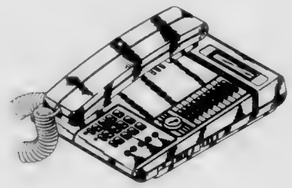


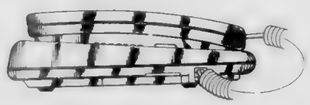
299,228
INTEGRAL TELEPHONE AND ANSWERING SET
Teisuke Kurosu, Tokyo; Fumiharu Ohta; Kazumasa Takenaka, both of Kanagawa; Masao Tamura, Tokyo; Hung C. Ming, and Satoshi Watanabe, both of Kanagawa, all of Japan, assignors to Matsushita Electric Industries, Co., Ltd., Osaka, Japan
Filed Feb. 25, 1987, Ser. No. 19,144
Term of patent 14 years
U.S. Cl. D14—141



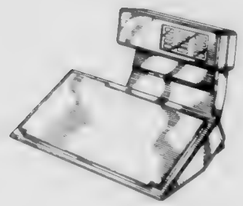


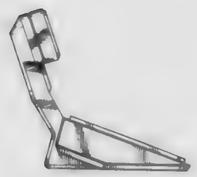
299,229
TELEPHONE SET
Pei Wen Kuo, 17-21 Bowhong Rd., Hsin Tien, Taiwan
Filed Apr. 17, 1987, Ser. No. 39,367
Term of patent 14 years
U.S. Cl. D14—151



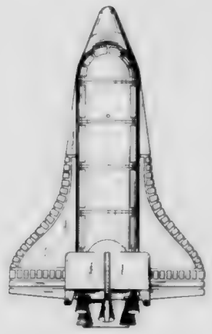


299,230
BASE FOR A TELEPHONE SET
Jacques Gagnon, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Mar. 20, 1987, Ser. No. 49,666
Term of patent 14 years
U.S. Cl. D14—150





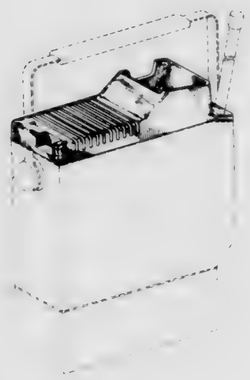
299,231
COMBINED STAND AND HANDSET TELEPHONE
Miu C. Yeung, 16/F, Block "A", Sze King Garden, Lot 413, Kin Tak Street, Yuen Long, N.T., Hong Kong
Filed Jun. 26, 1987, Ser. No. 67,472
Claims priority, application Switzerland, Mar. 13, 1987, 115,818
Term of patent 14 years
U.S. Cl. D14—143



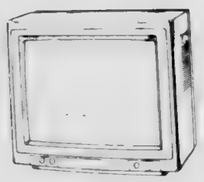


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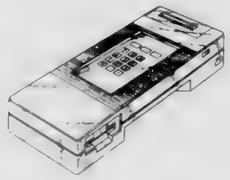
299,232
HOUSING PANEL FOR A PORTABLE CELLULAR RADIO TELEPHONE OR SIMILAR ARTICLE
Terrance N. Taylor, Cary, and John P. Murzanski, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 30, 1987, Ser. No. 9,406
Term of patent 14 years
U.S. Cl. D14—138



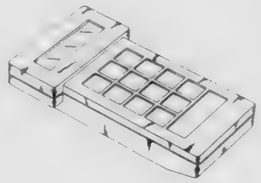
299,233
TELEVISION RECEIVER OR SIMILAR ARTICLE
Yoji Maki, Yokohama, and Hideo Yoshikawa, Komae, both of Japan, assignors to Fujitsu General Limited, Kawasaki, Japan
Filed Jul. 16, 1986, Ser. No. 887,691
Claims priority, application Japan, Jan. 16, 1986, 61-1038
Term of patent 14 years
U.S. Cl. D14—126



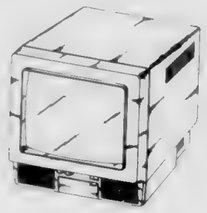
299,234
DATA ENTRY TERMINAL FOR ELECTRONIC COMPUTERS
Takashi Kajita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 31, 1985, Ser. No. 793,221
Claims priority, application Japan, May 17, 1985, 60-20131
Term of patent 14 years
U.S. Cl. D14—100



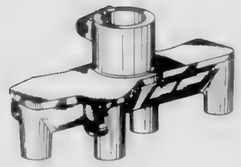
299,235
HOUSING FOR HAND HELD DATA ENTRY AND DISPLAY TERMINAL
Stephan Feger, Stuttgart, and Wolfgang Fischer, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 30, 1986, Ser. No. 869,120
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1985, MR6009
Term of patent 14 years
U.S. Cl. D14—100



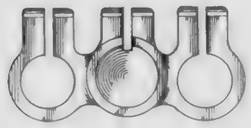
299,236
DISPLAY MONITOR
Kenneth A. High, Cary, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 16, 1986, Ser. No. 874,931
Term of patent 14 years
U.S. Cl. D14—113



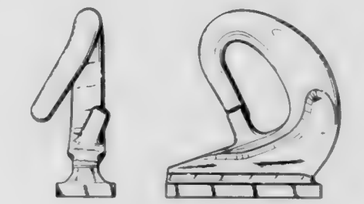
299,237
TYNE HOLDER
David J. Livingstone, 6 Barcoo Island, Sylvania Waters, NSW, Australia 2224
Filed Jun. 26, 1986, Ser. No. 879,175
Claims priority, application Australia, Jan. 2, 1986, 3764/86
Term of patent 14 years
U.S. Cl. D15—28

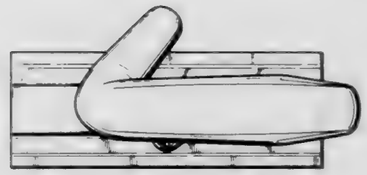


299,238
TYNE HOLDER
David J. Livingstone, 6 Barcoo Island, Sylvania Waters, NSW, Australia (2224)
Filed Jun. 26, 1986, Ser. No. 879,176
Claims priority, application Australia, Jan. 2, 1986, 3765/86
Term of patent 14 years
U.S. Cl. D15—28

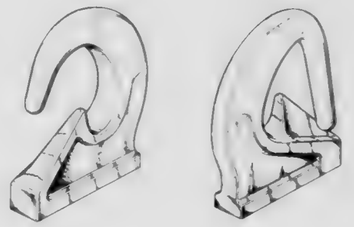


299,239
HOOK TO BE ATTACHED TO AN EXCAVATOR BUCKET
Ernst Hesningsen, Kvernaland, Norway, assignor to Kvernex A/S, Kvernaland, Norway
Filed Sep. 15, 1986, Ser. No. 907,612
Claims priority, application Norway, Mar. 17, 1986, 67102
Term of patent 14 years
U.S. Cl. D15—28



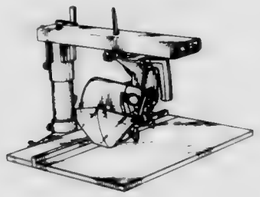


299,240
HOOK TO BE ATTACHED TO AN EXCAVATOR BUCKET
Ernst Hesningsen, Kvernaland, Norway, assignor to Kvernex A/S, Kvernaland, Norway
Filed Feb. 20, 1987, Ser. No. 16,861
Claims priority, application Norway, Sep. 11, 1986, 67642
Term of patent 14 years
U.S. Cl. D15—28



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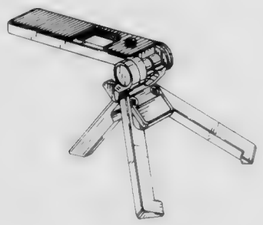
299,241
RADIAL ARM SAW
Kiyoshi Hoshino, Tokyo, and Kouichi Miyamoto, Hiroshima, both of Japan, assignors to Ryobi Ltd., Japan
Filed Oct. 3, 1986, Ser. No. 916,090
Claims priority, application Japan, Apr. 3, 1986, 61-12328
Term of patent 14 years
U.S. Cl. D15—133



299,242
MOLD FOR CONCRETE BEAMS OR THE LIKE
Gert E. Johansson, Jungfrustigen 2, S-574 00 Vetlanda, Sweden
Filed Mar. 25, 1985, Ser. No. 715,877
Claims priority, application Sweden, Sep. 26, 1984, 84-2573
Term of patent 14 years
U.S. Cl. D15—136



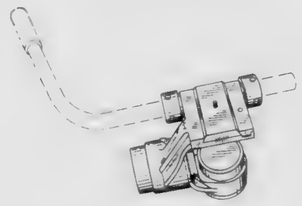
299,243
CAMERA TRIPOD
Osamu Iwasaki, Tokorozawa, Japan, assignor to Hakuba Shashin Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 27, 1985, Ser. No. 814,392
Claims priority, application Japan, Sep. 7, 1985, 60-37947
Term of patent 14 years
U.S. Cl. D16—244



299,244
TRIPOD
John A. Jones, Gresham; L. Mark Marchus, and Loren S. Hardy, both of Portland, all of Oreg., assignors to Cineonix, Inc., Portland, Oreg.
Filed Nov. 3, 1986, Ser. No. 927,407
Term of patent 14 years
U.S. Cl. D16—244



299,245
INSTRUMENT SUPPORTING HEAD
John A. Jones, Gresham, and L. Mark Marchus, Portland, both of Oreg., assignors to Cineonix, Inc., Portland, Oreg.
Filed Nov. 3, 1986, Ser. No. 927,408
Term of patent 14 years
U.S. Cl. D16—245



299,246
COMBINED PEN AND EYEGLASSES HOLDER
Keith E. Shepard, Carlsbad, Calif., assignor to Plastics Engineering & Development, Inc., Carlsbad, Calif.
Filed Feb. 24, 1986, Ser. No. 834,486
Term of patent 14 years
U.S. Cl. D16—129



299,247
EYEGLASSES HOLDER
Keith E. Shepard, Carlsbad, Calif., assignor to Plastics Engineering & Development, Inc., Carlsbad, Calif.
Filed Feb. 24, 1986, Ser. No. 834,487
Term of patent 14 years
U.S. Cl. D16—129



299,248
TYPEWRITER
Taro Kasagi, Tokyo; Kenji Tamada, Sayama, and Yojiro Fukui, Kodaira, all of Japan, assignors to Silver Seiko Limited, Japan
Filed Sep. 11, 1986, Ser. No. 906,775
Claims priority, application Japan, Mar. 11, 1986, 61-8666
Term of patent 14 years
U.S. Cl. D18—1



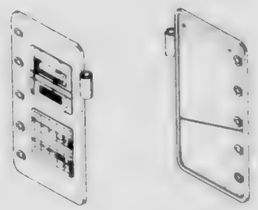


299,249
TYPEWRITER
Taro Kasagi, Tokyo; Kenji Tamada, Sayama, and Yoshimitsu Nagashima, Higashimurayama, all of Japan, assignors to Silver Seiko Limited, Japan
Filed Sep. 11, 1986, Ser. No. 906,776
Claims priority, application Japan, Mar. 11, 1986, 61-8667
Term of patent 14 years
U.S. Cl. D18—1



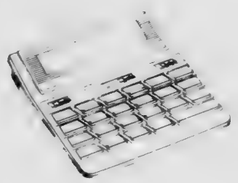


299,250
ELECTRONIC CALCULATOR
Isoroku Noguchi, Roselle, N.J., assignor to Aurora Impex Corporation, Kenilworth, N.J.
Filed Apr. 16, 1986, Ser. No. 852,905
Term of patent 14 years
U.S. Cl. D18—2

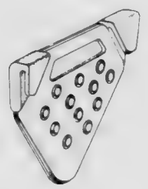


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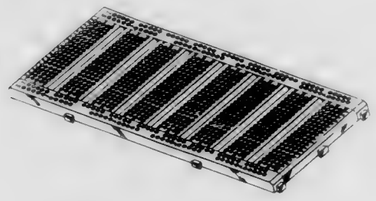
299,251
DESK-TOP ELECTRONIC CALCULATOR
Aiko Endo, Tokyo; Takeshi Hasegawa, Yokohama, and Akihiko Kobayashi, Mitaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1986, Ser. No. 857,549
Claims priority, application Japan, Oct. 24, 1985, 60-44815
Term of patent 14 years
U.S. Cl. D18—7



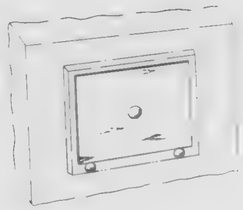
299,252
CALCULATOR
Stephen H. Goldberg, London, England, assignor to Fanfare Electronics Limited, England
Filed Apr. 24, 1986, Ser. No. 857,578
Term of patent 14 years
U.S. Cl. D18—7



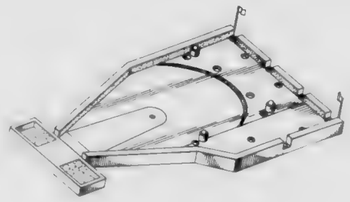
299,253
COMBINED LOGIC TRAINING BOARD AND POWER INPUT BODIES
Chuy-Nan Chio, 9-3F1., No. 333, Fu Hsing N. Rd., Taipei, Taiwan
Filed Oct. 23, 1985, Ser. No. 790,330
Claims priority, application Taiwan, Sep. 5, 1985, 74304442
Term of patent 14 years
U.S. Cl. D19—59



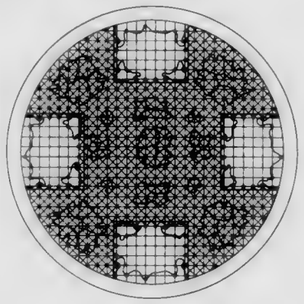
299,254
NAME PLATE
Frank J. Martin; Murray Hartman, and Randy Saunders, all of Ontario, Canada, assignors to Schlumberger Canada Limited, Toronto, Canada
Filed Apr. 26, 1985, Ser. No. 727,875
Term of patent 14 years
U.S. Cl. D20—42



299,255
MARBLE BASEBALL GAME BOARD
Thomas M. Boone, 2412 Huron St., Baltimore, Md. 21230
Filed Oct. 29, 1985, Ser. No. 793,433
Term of patent 14 years
U.S. Cl. D21—11



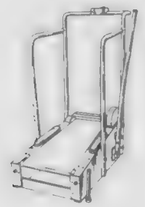
299,256
GAME BOARD
Samuel B. Cotton, 2809 Luxon, Irving, Tex. 75060
Filed Feb. 18, 1986, Ser. No. 833,759
Term of patent 14 years
U.S. Cl. D21—31



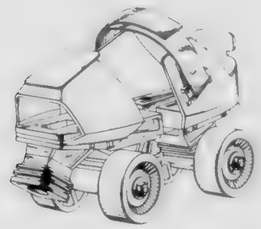
299,257
PHYSICAL EXERCISER
Hal T. Naboshek, 7225 Claybrook, Dallas, Tex. 75231
Filed Dec. 4, 1986, Ser. No. 938,121
Term of patent 14 years
U.S. Cl. D21—191



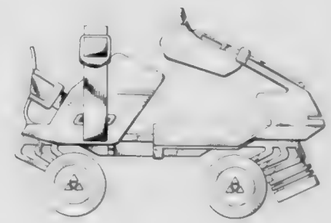
299,258
TREADMILL
Fred De Lorenzo, 26 B Coromar Dr., Goleta, Calif. 93117
Filed Jun. 27, 1986, Ser. No. 879,797
Term of patent 14 years
U.S. Cl. D21—192



299,259
ROLLERSKATE
Paul Vullierme, Aix les Bains, France, assignor to Vullierme S.A., Rumilly, France
Filed Feb. 6, 1986, Ser. No. 826,794
Term of patent 14 years
U.S. Cl. D21—226



299,260
ROLLERSKATE
Paul Vullierme, Aix les Bains, France, assignor to Vullierme S.A., Rumilly, France
Filed Feb. 6, 1986, Ser. No. 826,795
Claims priority, application France, Aug. 7, 1985, 85 3814
Term of patent 14 years
U.S. Cl. D21—226

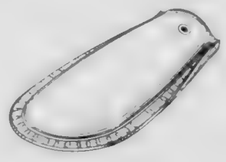


299,261
INFLATABLE SWIMMING GLOVE
Mark J. Gruenspecht, Jamaica, and Sam Samson, New York, both of N.Y., assignors to Sea Hands, Bay Shore, N.Y.
Filed Jul. 22, 1986, Ser. No. 888,003
Term of patent 14 years
U.S. Cl. D21—239





299,262
INFLATABLE SWIMMING GLOVE
Mark J. Gruenspecht, Jamaica, and Sam Samson, New York, both of N.Y., assignors to Sea Hands, Bay Shore, N.Y.
Filed Jul. 22, 1986, Ser. No. 888,076
Term of patent 14 years
U.S. Cl. D21—239



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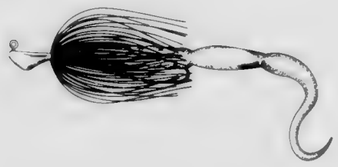
299,263
FISHING LURE
Eugene F. James, Box 218, Tyro, Kans. 67364
Filed Jun. 6, 1986, Ser. No. 871,594
Term of patent 14 years
U.S. Cl. D22—133



299,264
FISH LURE
James L. Bagley, Sr., P.O. Box 110, Spirit LK Rd. & Recker Hwy., Winter Haven, Fla. 33882
Filed Oct. 1, 1986, Ser. No. 915,883
Term of patent 14 years
U.S. Cl. D22—133

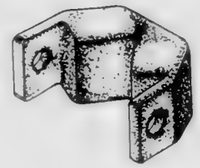


299,265
FISHING LURE
Chuck Devereaux, Stratford, and Joe D. Craig, Moore, both of Okla., assignors to Hart Tackle Company, Inc., Stratford, Okla.
Filed Nov. 17, 1986, Ser. No. 931,357
Term of patent 14 years
U.S. Cl. D22—127



299,266
MAGNET FOR THE TREATMENT OF LIQUID FUELS
Peter A. Kulish, P.O. Box 1000, Gardenville, Pa. 18926
Filed Apr. 7, 1987, Ser. No. 35,290
Term of patent 14 years
U.S. Cl. D23—207

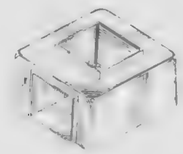




299,267
QUICK-CONNECT COUPLING
Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Fiume Veneto, Italy
Filed Oct. 4, 1985, Ser. No. 784,676
Claims priority, application Italy, Apr. 15, 1985, 21441/85[U]
Term of patent 14 years
U.S. Cl. D23—262



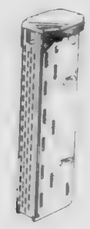
299,268
EVAPORATIVE COOLER STAND
David L. Peltier, Highland, and John R. Peltier, Ventura, both of Calif., assignors to Health-Aire Corporation, Highland, Calif.
Filed Apr. 1, 1986, Ser. No. 847,623
Term of patent 14 years
U.S. Cl. D23—354



299,269
ARTERIAL FILTER
Jeanne S. Pierson, El Toro; Wendell V. Ebling, Tustin; Jack W. Brown, Santa Ana, and Peter N. Cassimatis, Costa Mesa, all of Calif., assignors to Gish Biomedical, Inc., Santa Ana, Calif.
Filed Feb. 6, 1986, Ser. No. 826,820
Term of patent 14 years
U.S. Cl. D24—21



299,270
SURGICAL STAPLING CARTRIDGE
David T. Green, Norwalk, and Henry R. Sienkiewicz, Stamford, both of Conn., assignors to United States Surgical Corporation, Norway, Conn.
Filed May 23, 1986, Ser. No. 867,268
Term of patent 14 years
U.S. Cl. D24—27



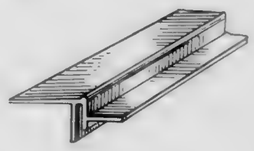
299,271
TUBE FOR RECTAL ADMINISTRATION OF PHARMACEUTICAL COMPOSITIONS
John F. Christensen, Copenhagen, Denmark, assignor to AB Akerlund & Rausing, Sweden
Filed Jun. 4, 1986, Ser. No. 870,695
Term of patent 14 years
U.S. Cl. D24—63



299,272
FINGER SLING FOR DYNAMIC SPLINTING OF THE HAND
Ralph H. Marx, 7702 N. 17th Pl., Phoenix, Ariz. 85020
Filed Sep. 11, 1986, Ser. No. 906,155
Term of patent 14 years
U.S. Cl. D24—64

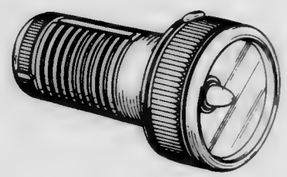


299,273
MOLDING ELEMENT
W. David Pittman, Jr., College Park, Md., assignor to Pittcon Industries, Riverdale, Md.
Filed Nov. 21, 1985, Ser. No. 805,175
Term of patent 14 years
U.S. Cl. D25—119



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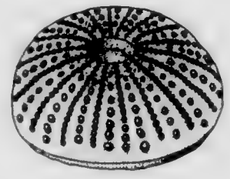
299,274
FLASHLIGHT
Keiichi Ohashi, Shizuoka, Japan, assignor to Skylite Industry Co., Ltd., Shizuoka, Japan
Filed Jun. 2, 1986, Ser. No. 869,961
Claims priority, application United Kingdom, Jan. 14, 1986, 1031566
Term of patent 14 years
U.S. Cl. D26—49



299,276
ADJUSTABLE COSMETIC APPLICATOR
Gino H. Casasi, 924 E. 96th St., Brooklyn, N.Y. 11236, and Henry J. Casasi, 163-47 85th St., Howard Beach, N.Y. 11414
Division of Ser. No. 547,004, Oct. 31, 1983, Pat. No. Des. 285,125. This application Nov. 20, 1985, Ser. No. 826,504
The portion of the term of this patent subsequent to May 1, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—7

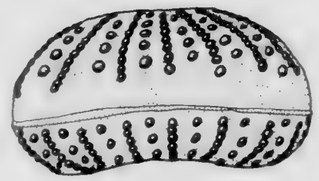


299,277
SOAP BAR
Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J.
Filed Jan. 27, 1986, Ser. No. 822,668
Term of patent 14 years
U.S. Cl. D28—8.2

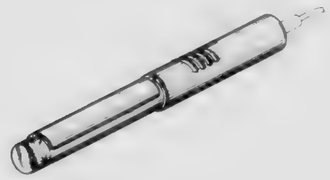


299,275
MEDICAL TABLET
Wilhelm Ott, Dreieich, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Fed. Rep. of Germany
Filed Nov. 26, 1986, Ser. No. 935,669
Term of patent 14 years
U.S. Cl. D28—2





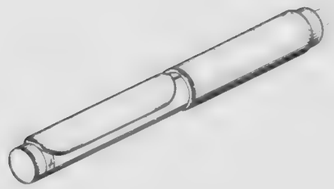
299,278
SOFT HANDLE CURLING IRON
Kevin E. Reeves, Trumbull, and John C. Wistrand, New Canaan, both of Conn., assignors to Clairol Incorporated, New York, N.Y.
Filed Jul. 23, 1986, Ser. No. 888,620
Term of patent 14 years
U.S. Cl. D28—35





299,279
HAIR BRUSH
Kevin E. Reeves, Trumbull, and John C. Wistrand, New Canaan, both of Conn., assignors to Clairol Incorporated, New York, N.Y.
Filed Oct. 15, 1986, Ser. No. 918,956
Term of patent 14 years
U.S. Cl. D28—35





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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF JANUARY, 1989

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A/S Ferrosan: *See*—
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A V L Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof. Dr.Dr.h.c. Hans List: *See*—
Fredericks, George E., 4,795,967, Cl. 324-61.00P.

AB Asea-Atom: *See*—
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Abe, Mitsuaki: *See*—
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Abe, Tooru: *See*—
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Abendschein, Frederic H.; Derr, Paul B.; and Huber, John H., to AMP Incorporated. Strain relief assembly for optical fiber connector. 4,795,229, Cl. 350-96.200.

Abraham, Donald J.: *See*—
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Adachi, Yasaburo: *See*—
Nakanishi, Tsutomu; Kitajima, Akira; Fuwa, Yoshiaki; and Adachi, Yasaburo, 4,796,018, Cl. 340-691.000.

Adam, Helmut: *See*—
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Adams, James P., to Adelco, Inc. Pickup truck bed cover system. 4,795,206, Cl. 296-98.000.

Adams, Mark J.; Crisman, Elton M., Jr.; and Khan, Asrar A., to Lockheed Corporation. Apparatus and system for thermographic identification of parts. 4,795,906, Cl. 250-341.000.

Adams, Phillip: *See*—
Dudzinski, Zdzislaw; and Adams, Phillip, 4,795,834, Cl. 564-479.000.

Adams, William V.; Avard, Duane A.; and Waling, Leroy A., to Durametallic Corporation. Magnetic seal assembly. 4,795,168, Cl. 277-80.000.

Addink, Jaap H.; Beelen, Christiaan M. J. M.; Steen, Adam; Verhoog, Hendrik M.; and De Boer, Jurrie, to Hoogovens Groep B.V. Method for the manufacture of refractory bricks containing CaO. 4,795,725, Cl. 501-101.000.

Adelco, Inc.: *See*—
Adams, James P., 4,795,206, Cl. 296-98.000.

Ademek, Manfred; Rinneburger, Klaus; and Schattmann, Peter, to U.S. Philips Corporation. Temperature-compensated head positioning device for magnetic disc store. 4,796,121, Cl. 360-78.130.

Adept Technology, Inc.: *See*—
Allan, Donald R.; and Shimano, Bruce E., 4,795,306, Cl. 414-744.800.

Adler, Josef H., to Nesher Industries, Inc. Concealable enclosure table. 4,794,868, Cl. 108-33.000.

Adler, Roberta S. Musical instrument pick for simultaneous two person use. 4,794,839, Cl. 84-322.000.

Admire, Woodrow W., Jr. Combination electric clock and smoke detector. 4,796,015, Cl. 340-693.000.

Adolph Coors Company: *See*—
Jensen, James W., Jr., 4,795,513, Cl. 156-108.000.

Advanced Micro Devices, Inc.: *See*—
Bower, Robert W.; and Schmidt, Christopher O., 4,795,721, Cl. 437-67.000.
Cheung, Robin W.; Ho, Bernard W. K.; Chen, Hsiang-Wen; and Chan, Hugo W. K., 4,796,081, Cl. 357-71.000.
Whitten, Ralph G., 4,796,075, Cl. 357-51.000.

AE PLC: *See*—
Turner, Michael; Dennis, John K.; and Eastham, David R., 4,795,682, Cl. 428-646.000.

Aeroquip Corporation: *See*—
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Agati, Jean P.: *See*—
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Agency of Industrial Science & Technology: *See*—
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Agnes, Giovanni; and Altamura, Maria, to Farmitalia Carlo Erba S.p.A. Taurine derivatives. 4,795,595, Cl. 260-508.000.

Ai, Minoru; Hiranuma, Kenji; Obana, Jinichi; and Ito, Toshio, to G-C Toshi Kogyo Corporation. Artificial teeth. 4,795,345, Cl. 433-202.100.

Aichelmann, Frederick J., Jr.; and Sollitto, Vincent F., Jr., to International Business Machines Corporation. Memory structure for nonsequential storage of block bytes in multi-bit chips. 4,796,222, Cl. 364-900.000.

Aichi Tokei Denki, Co., Ltd.: *See*—
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Aida Engineering, Ltd.: *See*—
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Lai, Ta-Wang; and Vijayendran, Bheema R., 4,795,770, Cl. 524-5.000.

Aisan Industry Co., Ltd.: *See*—
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Aisin Seiki Co., Ltd.: *See*—
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Aisin Seiki Kabushiki Kaisha: *See*—
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Akiba, Shigeyuki; Usami, Masashi; Noda, Yukio; and Suzuki, Masatoshi, to Kokusai Denshin Denwa Kabushiki Kaisha. Semiconductor device with distributed bragg reflector. 4,796,274, Cl. 372-96.000.

Akimoto, Kunio: *See*—
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A.B. Chance Company: *See*—
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Scarano, Robert V.; and Bolton, Joseph A., 4,795,131, Cl. 251-63.000.

Albert, Robert J.; and Martyn, Paul P., to COE Corporation. Plural diaphragm valve. 4,794,940, Cl. 137-1.000.

Albrecht, Peter. Device for the metered dispensation and registration of liquids. 4,795,060, Cl. 222-17.000.

Alcock, John M.; and Nicholson, Joseph A., to Tronic Electronic Services Limited. Electrical connector. 4,795,359, Cl. 439-271.000.

Alcorn, John W. Side wall and top rail construction for open top containers. 4,795,049, Cl. 220-71.000.

Alderfer, Earl L. Emergency belt kit and connector. 4,795,410, Cl. 474-256.000.

Aldrich-Boranes, Inc.: *See*—
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Alfred Teves GmbH: *See*—
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Allan, Donald R.; and Shimano, Bruce E., to Adept Technology, Inc. Force sensor. 4,795,306, Cl. 414-744.800.

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Young, Ping; and Polak, Anthony J., 4,795,533, Cl. 204-1.00T.
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Allread, Alan R.: *See—*
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Alm, Roger R.; Dunsmore, Irvin F.; and Stern, Richard M., to Minnesota Mining & Manufacturing Company. Poly(oxyalkylene) poly(aliphatic isocyanate) prepolymer and polyurea polymer derived therefrom by reaction with polyamine. 4,795,764, Cl. 521-107.000.

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Altamura, Maria: *See—*
Agnes, Giovanni; and Altamura, Maria, 4,795,595, Cl. 260-508.000.

Aluma-Form, Inc.: *See—*
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AM International Incorporated: *See—*
Yeoman, Edwin H., 4,795,144, Cl. 270-58.000.

Amada, Eiichi; Yamakido, Kazuo; Kozaki, Takahiko; Nishita, Shigeo; and Kokubo, Masaru, to Hitachi, Ltd. PCM coder and decoder having function of two-wire/four-wire conversion. 4,796,296, Cl. 379-410.000.

Amamiya, Hisao: *See—*
Ejima, Kikuo; and Amamiya, Hisao, 4,794,955, Cl. 138-30.000.

Amanuma, Tatsuo; Ishizuki, Kenji; and Ohtsubo, Yoshiaki, to Nikon Corporation. Auto-focus camera. 4,796,044, Cl. 354-403.000.

Amason, Myron P.; Schroeder, John E.; and Alsenz, Evert C., to Lightning Diversion Systems. Lightning diversion strips for aircraft. 4,796,153, Cl. 361-218.000.

Amata, Yoshitaka, to Aichi Tokei Denki Co., Ltd. Calorimeter using remanence type electromagnetic flowmeter. 4,795,267, Cl. 374-41.000.

AMCA International Group: *See—*
Wallace, Gary L.; and Moore, Robert K., 4,794,996, Cl. 177-25.000.

American Cyanamid Company: *See—*
Sanders, Charles B.; Bow, Clark; DeVito, Ralph; and Hoffman, Louis S., 4,795,059, Cl. 222-1.000.

American Express Company: *See—*
Thomas, Jerry S., 4,796,292, Cl. 379-91.000.

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Kamasaki, Keiji; Dengo, Tadao; Fukuda, Ikuo; and Motojima, Hideaki, to Kabushiki Kaisha Toshiba. Semiconductor device having high resistance to electrostatic and electromagnetic induction using a complementary shield pattern. 4,796,084, Cl. 357-84.000.

Kaminski, Earl W.; and Brown, David J., to Deere & Company. Coupling for seed and fertilizer hoses. 4,795,197, Cl. 285-12.000.

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Kao Corporation: *See*—
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Karlsson, Gosta. Container and trailer handling combination yoke device with improved elevated storage for lifting arms. 4,795,203, Cl. 294-81.510.

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Kasugai, Joji; Ohashi, Tamiyoshi; and Toki, Satoshi, to Toyoda Gosei Co., Ltd. Cap with valve for positive pressure. 4,795,053, Cl. 220-203.000.

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Kato, Akira; and Yamada, Junichiro, to Kabushiki Kaisha Toshiba. Control device for electric train. 4,795,859, Cl. 191-4.000.

Kato, Hideaki, to NEC Corporation. Time base correcting apparatus. 4,796,243, Cl. 360-36.200.

Kato, Hidetoshi, to Nippondenso Co., Ltd. Apparatus and method for engine idle speed control. 4,794,898, Cl. 123-339.000.

Kato, Masakazu; and Futsuhara, Koichi, to Nippon Signal Co., Ltd., The. Logic operation-oscillation circuit. 4,795,921, Cl. 307-442.000.

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Katoh, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Tone signal generator with code converter for converting stored waveshapes of different coding forms into a common coding form. 4,794,837, Cl. 84-1.010.

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Katz, Sidney. Pneumatic release mandrel. 4,794,858, Cl. 101-375.000.

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Kawamoto, Hiroyuki: *See*—
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Kawamoto Industrial Co., Ltd.: *See*—
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Kawanabe, Takao; Inoue, Morio; and Hongo, Mikio, to Hitachi, Ltd. Method for producing semiconductor devices and cutting fuses. 4,795,720, Cl. 437-52.000.

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Mizoguchi, Akira; Shioya, Jun; Yamaguchi, Yoichi; Ueba, Yoshinobu; and Matsubara, Hironaga, 4,795,656, Cl. 427-38.000.

Kozponti Valto-es Hitelbank Rt., Innovacios Alap: *See*—
Boros, Gyorgy; Gulacsy, Robert; Laszlo, Gyorgy; and Narancsik, Pal, 4,795,125, Cl. 249-78.000.

Kozuka, Kenji: *See*—
Nakasone, Takayoshi; Ida, Yoji; and Kozuka, Kenji, 4,795,234, Cl. 350-96.300.

Kraemer, Hans P.: *See*—
Berscheid, Hans G.; Bottger, Dirk; and Kraemer, Hans P., 4,795,808, Cl. 536-6.400.

Kraftwerk Union Aktiengesellschaft: *See*—
Asamann, Helmut; Dorr, Wolfgang; Maier, Georg; and Peehs, Martin, 4,795,341, Cl. 432-126.000.

Kramer Music Products, Inc.: *See*—
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Greiner, Max; Hafner, Udo; Hans, Waldemar; Knapp, Heinrich; Kramer, Wolfgang; Krauss, Rudolf; Reiter, Ferdinand; Romann, Peter; and Sauer, Rudolf, 4,795,097, Cl. 239-585.000.

Krasnov, Igor; Calk, Henry D., Jr.; Jones, Taylor L.; and McDougal, Billy L., to Vetco Gray Inc. Gate type kelly cock valve. 4,795,128, Cl. 251-62.000.

Krause, Andrew W.; Marianik, Charles G.; and Kovach, Ronald J., to Photon Technology International, Inc. Dual-wavelength spectrophotometry system. 4,795,256, Cl. 356-320.000.

Krause, Horst-Herbert: *See*—
Hilker, Dieter; and Krause, Horst-Herbert, 4,794,884, Cl. 123-41.790.

Krauss, Rudolf: *See*—
Greiner, Max; Hafner, Udo; Hans, Waldemar; Knapp, Heinrich; Kramer, Wolfgang; Krauss, Rudolf; Reiter, Ferdinand; Romann, Peter; and Sauer, Rudolf, 4,795,097, Cl. 239-585.000.

Kravetz, Alan G., to Kollmorgen Corporation. Durable working matte-/glossy color standard and method of making same. 4,795,254, Cl. 356-243.000.

Kreft, Hans-Diedrich: *See*—
Mackenthun, Holger; and Kreft, Hans-Diedrich, 4,796,028, Cl. 340-825.580.

Kreft, Keith A.; Dikopf, Michael; and Loewe, Thomas D., to Sun Electric Corporation. Method and apparatus for determining cylinder #1 power firing event in wasted spark ignition systems. 4,795,979, Cl. 324-379.000.

Kreiselmaier, Richard, to Dipl.-ing. Ernst Kreiselmaier GmbH & Co Wasser. Process for coating tube plates and similar parts of condenser, coolers, heat exchangers or the like with an anti-corrosion medium. 4,795,662, Cl. 427-230.000.

Kreuter Mfg. Co., Inc.: *See*—
Kreuter, Paul E.; and Odegaard, Larry G., 4,794,847, Cl. 92-136.000.

Kreuter, Paul E.; and Odegaard, Larry G., to Kreuter Mfg. Co., Inc. Rotary actuator. 4,794,847, Cl. 92-136.000.

Kreutzer, Stanley H.: *See*—
Henderson, James C.; Kreutzer, Stanley H.; Schmidt, Arthur A.; Smith, Charles A.; and Hagen, William R., 4,795,651, Cl. 426-456.000.

Kreuzer, Hans-Ueli: *See*—
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Krogsrud, Jessan C., to Jac Jacobsen A/S. Counterbalanced arm assembly. 4,796,162, Cl. 362-33.000.

Kromrey, Robert V., to United Technologies Corporation. Method for molding articles using barrier coatings. 4,795,600, Cl. 264-130.000.

Krones AG Hermann Kronseder Maschinenfabrik: *See*—
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Kropiwnicki, Tadek M.; Braymer, Joseph E.; and Dreiman, Nelik I., to Carrier Corporation. Compressor suction pulse attenuator. 4,795,316, Cl. 417-312.000.

Krueger, Dennis L., to Minnesota Mining and Manufacturing Company. Bicomponent fibers and webs made therefrom. 4,795,668, Cl. 428-174.000.

Kruger, Astrid: *See*—
Prellwitz, Hubert; John, Gunter; Steglich, Christian; and Kruger, Astrid, 4,795,201, Cl. 289-1.500.

Kruger, Hermann, to Volkswagen AG. Sealing arrangement for a rotary slide valve. 4,794,895, Cl. 123-190.00E.

Kruger, Peter: *See*—
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Krumme, John F.; and Cowell, Mark J., to Metcal, Inc. Conductive member having integrated self-regulating heaters. 4,795,870, Cl. 219-9.500.

Krummer, Thomas: *See*—
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Kubach, Hans: *See*—
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Kubo, Takako: *See*—
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Kubota, Ltd.: *See*—
Horii, Yasuyuki; and Yoshii, Takashi, 4,794,807, Cl. 74-15.840.

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Kumagai, Chiaki; Juman, Shinji; Kimura, Yutaka; and Mitomo, Haruhito, to Honda Gikea Kogyo Kabushiki Kaisha. Method of detecting reference crank angle position in an internal combustion engine at the time of starting same. 4,796,208, Cl. 364-559.000.

Kumagai, Takao: *See*—
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Kupfer, Karl-Heinz, to U.S. Philips Corp. Automatic FM sideband level control for video recorders. 4,796,101, Cl. 358-335.000.

Kuramochi, Atsuo, to Kabushiki Kaisha Nippon IC (also trading as Nippon IC, Inc.). Mass flow controller. 4,794,947, Cl. 137-486.000.

Kuramochi, Osamu: *See*—
Yumoto, Makoto; Yanagida, Shoji; Moriya, Tomoyuki; Takezawa, Mamoru; Kato, Shingo; Kuramochi, Osamu; Ogawa, Shunichi; Kimura, Takashi; Motohashi, Takeshi; Miyazaki, Hideto; and Hashimoto, Eiji, 4,795,284, Cl. 400-352.000.

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Kurita, Masaya; and Kanzaki, Katsuya, to Fuji Electric Company Ltd. Fluid bed system. 4,794,659, Cl. 5-453.000.

Kuriyama, Toshihiro, to Alps Electric Co., Ltd. Floating magnetic head. 4,796,133, Cl. 360-119.000.

Kuroki Kogyosho Co., Ltd.: *See*—
Kuroki, Takanori; and Yoshida, Toshio, 4,795,078, Cl. 228-131.000.

Kuroki, Takanori; and Yoshida, Toshio, to Kuroki Kogyosho Co., Ltd. Method for producing a clad steel pipe. 4,795,078, Cl. 228-131.000.

Kurrle, Hermann, to Schako Metallwarenfabrik Ferdinand Schad KG. Nozzle means for an air conditioning installation. 4,794,851, Cl. 98-40.180.

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Kusumgar, Rajal; Natarajan, K. M.; and Amond, Carl A., to Celanese Corporation. Printable polyacetal compositions. 4,795,477, Cl. 8-471.000.

Kuwahara, Heikichi; Takahashi, Kenji; Yanagida, Takehiko; Nakayama, Wataru; Sugimoto, Shigeo; and Oizumi, Kiyoshi, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Method of producing a heat transfer tube for single-phase flow. 4,794,775, Cl. 72-78.000.

Kuykendall, Jacob E., to Right Way Golf. Golf putter. 4,795,158, Cl. 273-164.000.

Kuzuya, Susumu; Sakanobe, Minoru; Takagi, Yukihito; Oku, Nobuaki; Sasaki, Toyonori; and Sagawa, Kasuyoshi, to Brother Kogyo Kabushiki Kaisha. Supporting apparatus for movably supporting an attachment apparatus relative to a basic apparatus. 4,795,120, Cl. 248-289.100.

Kwon, Sung T.; and Choi, Jung Hyuk, to Gold Star Co., Ltd. Compact cassette type video tape recorder having single actuating plate. 4,796,116, Cl. 360-85.000.

Kyhl, Henry, to buhl Industries, Inc. Overhead projector. 4,795,252, Cl. 353-122.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Itoh, Seiga; Sekine, Susumu; Taniguchi, Tadatsugu; Yoshida, Mitsuaki; and Sugano, Haruo, 4,795,805, Cl. 530-350.000.
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Lagnier, Alain, to Compagnie Generale des Etablissements Michelin. Tread for radial tire the elements in relief of which are provided with incisions having broken line or undulated line traces in the direction of their depth. 4,794,965, Cl. 152-209.00R.

Laguette, Stephen W.: *See*—
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Lai, Ta-Wang; and Vijayendran, Bheema R., to Air Products and Chemicals, Inc. Cement composition for oil well drilling holes containing high molecular weight poly (vinylamines). 4,795,770, Cl. 524-5.000.

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Lambert, Gabriele: *See*—
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Lancaster, Gerald M.; and Edmondson, Morris S., to Dow Chemical Company, The. Containers having internal barrier layers. 4,795,665, Cl. 428-34.200.

Landau, Paul: *See*—
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Landegger, Carl C.: *See*—
Chupka, David E.; and Landegger, Carl C., 4,795,560, Cl. 210-497.010.

Lander, Jacqueline R.; and Griffiths, John A., to Carbon Research Limited. Filled polymer compositions. 4,795,592, Cl. 252-511.000.

Landman, Ronald G.; Spring, Harold G.; and Burba, Joseph C., to Ford Motor Company. Digital energy meter. 4,795,974, Cl. 324-142.000.

Lane, William A., Jr.; and Davis, Steven D., to W. A. Lane, Inc. Free standing product pouch. 4,795,271, Cl. 383-104.000.

Lanfri, James A., to Huntington Mechanical Laboratories, Inc. Valve with improved sealing properties. 4,795,134, Cl. 251-335.300.

Lang, David J., to Sundstrand Corporation. Flight control surface actuation lock system. 4,795,110, Cl. 244-3.240.

Lang, William P., to Brunswick Corporation. Fuel puddle suction system for fuel injected engine. 4,794,888, Cl. 123-73.0SC.

Langelier, Yves: *See*—
Cohen, Eric A.; Gaudreau, Pierrette; Michaud, Jacques; Brazeau, Paul; and Langelier, Yves, 4,795,740, Cl. 514-14.000.

Langer, Friedrich H., to Weatherford U.S., Inc. Reticulated centralizing apparatus. 4,794,986, Cl. 166-241.000.

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Larm, Karl O. P.; Hoffman, James; Seljelid, Rolf; and Bogwald, Jarl. Macrophage-activating composition and a process for its manufacture. 4,795,745, Cl. 514-54.000.

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Latman, Neal S.; Kishore, Vimal; and Bruot, Brent C. 16-epiestriol to prevent, inhibit or reduce inflammation. 4,795,747, Cl. 514-182.000.

Latrobe Steel Company: *See*—
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Latsko, James M., to Eaton Corporation. Coupling assembly and friction shoe therefor. 4,795,013, Cl. 192-88.00B.

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Lauener, Wilhelm F., to Larex AG. Side dam for a continuous casting machine. 4,794,978, Cl. 164-431.000.

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Henriksson, Torbjorn; Laukia, Kari; Sipila, Heikki; and Hjerppe, Markus, 4,795,273, Cl. 384-97.000.

Laumen, Michael. Heat exchanger. 4,795,618, Cl. 422-202.000.

Laurent, Daniel; and Mayet, Jean C., to Compagnie Generale des Etablissements Michelin. Apparatus for the manufacture of reinforcements for tires. 4,795,523, Cl. 156-397.000.

LaValley Industrial Plastics, Inc.: *See*—
LaValley, Richard W., 4,795,558, Cl. 210-217.000.
LaValley, Richard W., 4,795,572, Cl. 210-784.000.

LaValley, Richard W., to LaValley Industrial Plastics, Inc. Shower pipes for rotary drum filter. 4,795,558, Cl. 210-217.000.

LaValley, Richard W., to LaValley Industrial Plastics, Inc. Replaceable trunnion seal. 4,795,572, Cl. 210-784.000.

Lawhead, Jack W.: *See*—
Frantum, Albert W., Jr.; Lawhead, Jack W.; and Loose, Winfield W., 4,795,364, Cl. 439-407.000.

Layrisse R., Ignacio A.; Polanco, Domingo R.; Rivas, Hercilio; Jimenez G., Euler; Quintero, Lirio; Salazar P., Jose; Rivero, Mayela; Cardenas, Antonio; Chirinos, Maria L.; Rojas, Daysi; and Marquez, Humberto, to Intevep, S.A. Viscous hydrocarbon-in-water emulsions. 4,795,478, Cl. 44-51.000.

Leach, Roger J., to Chelsea Artisans Limited. Apparatus for making mirror laminates. 4,795,521, Cl. 156-382.000.

Lech, Stanley J. Pulverizing apparatus. 4,795,103, Cl. 241-77.000.

Leckie, James H.; and Pope, Horace, to Essex Group, Inc. Inert gas purging during shaft furnace shut down. 4,795,490, Cl. 75-76.000.

Lee, David L., to Stauffer Chemical Company. 2-(Substituted benzoyl)-4-(substituted or unsubstituted phenyl)-1,3-cyclohexanediones as herbicides. 4,795,488, Cl. 71-103.000.

Lee, David L., to Stauffer Chemical Company. Certain 1,3-diphenyl-1,3-propanediones. 4,795,489, Cl. 71-123.000.

Lehman, Larry L.; Shah, Sunil C.; and Varvell, David B., to Integrated Systems, Inc. Multirate real time control system code generator. 4,796,179, Cl. 364-300.000.

Lehman, Marcus S.: *See*—
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Leinen, Hans T.; Lehmann, Rudolf; and Klueppel, Hans-Juergen, 4,795,832, Cl. 564-134.000.

Lehneis, Hans R. Cane supporting apparatus. 4,794,743, Cl. 135-65.000.

Leibfred, Kevin J., to Nabisco Brands, Inc. Continuous production of shelf-stable multi-textured shredded cereal biscuits having a paste filling. 4,795,647, Cl. 426-94.000.

Leinen, Hans T.; Lehmann, Rudolf; and Klueppel, Hans-Juergen, to Henkel Kommanditgesellschaft auf Aktien. Salicylic acid amides, their use, and a process for their production. 4,795,832, Cl. 564-134.000.

Lejeune, Bernard E.; and Lejeune, Philippe G., to Teradyne, Inc. Curved electrical components and laser trimming thereof. 4,795,881, Cl. 219-121.690.

Lejeune, Philippe G.: *See*—
Lejeune, Bernard E.; and Lejeune, Philippe G., 4,795,881, Cl. 219-121.690.

Lemirande, Rodger; and Amtmann, James S., to Stanley Automatic Openers. Gate operator with persistant, audible warning signal. 4,796,011, Cl. 340-545.000.

Leonard, Bruce A.; Couch, James S.; and Mervar, Robert W., to Eastman Kodak Company. Compact camera with flash unit. 4,796,034, Cl. 354-145.100.

Leorat, Francois, to Regie Nationale des Usines Renault. Control by switch under force of a declutching system at stop for automatic transmission. 4,795,864, Cl. 200-61.910.

Lerner, Bernard J. Removal of acid gases in dry scrubbing of hot gases. 4,795,619, Cl. 423-244.000.

Lesco Development: *See*—
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Leshchiner, Adolf; Larsen, Nancy E.; Balazs, Endre A.; and Hilal, Sadek K., to Biomatrix, Inc. Compositions for therapeutic percutaneous embolization and the use thereof. 4,795,741, Cl. 514-21.000.

Leslie, Stewart T.: *See*—
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Lessie, Stephen L., to Carrier Corporation. Scroll machine with anti-rotation mechanism. 4,795,323, Cl. 418-55.000.

Lethiais, Jean C., to Regie Nationale des Usines Renault. Automatic compressed air economizer device intended to be mounted on a pneumatic comparator. 4,794,786, Cl. 73-37.900.

Leuner, Hilmar: *See*—
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Leung, Ka-Ngo; Gordon, Keith C.; Kippenham, Dean O.; Purgalis, Peter; Mousa, David; Williams, Malcom D.; Wilde, Stephen B.; and West, Mark W., to United States of America, Energy. Large area directly heated lanthanum hexaboride cathode structure having predetermined emission profile. 4,795,940, Cl. 313-346.00R.

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Levi Strauss & Co.: *See*—
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Levine, Howard E. Two-piece combination boat and luggage carrier. 4,794,876, Cl. 114-352.000.

Levresse, Bernard, to Societe Chimique des Charbonnages - CdF Chimie. High pressure separation process. 4,795,854, Cl. 585-800.000.

Levy, Lloyd; and Kilmer, Dan L., to Micropolis Corporation. Integral head positioner for hard disk storage system. 4,796,122, Cl. 360-98.010.

Lewis, George E., to Boeing Company, The. Maneuver load alleviation system. 4,796,192, Cl. 364-463.000.

Leybold-Heraeus GmbH: *See*—
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Lhomme, SA: *See*—
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Li, Tak-po: *See*—
Nesin, Richard; and Li, Tak-po, 4,796,280, Cl. 375-110.000.

Lia, Raymond A., to Welch Allyn, Inc. Borescope or endoscope with fluid dynamic muscle. 4,794,912, Cl. 128-4.000.

Libbey-Owens-Ford Co.: *See*—
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Libert, James T., to Square D Company. Overload protection apparatus for emulating the response of a thermal overload. 4,796,142, Cl. 361-23.000.

Liberti, Paul A.: *See*—
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Liberty Diversified Industries: *See*—
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Liebl, Josef, to MTU Motoren- und Turbinen-Union Munchen GmbH. Method and apparatus for optimizing the vane clearance in a multistage axial flow compressor of a gas turbine. 4,795,307, Cl. 415-115.000.

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Sakai, Kazuo; Matsushima, Yuichi; and Utaka, Katsuyuki, to Kokusai Denshin Denwa Kabushiki Kaisha. Semiconductor optical switch. 4,795,225, Cl. 350-96.130.

Sakai, Koichi, to Hitachi, Ltd. Salient-pole rotary electric machine. 4,795,933, Cl. 310-269.000.

Sakai, Masao, to Nippon Wiperblade Co., Ltd. Yoke member connecting device in windshield wiper. 4,795,288, Cl. 403-24.000.

Sakai, Mitsunori, to Kabushiki Kaisha Neriki. Valve with residual pressure indicator for portable oxygen inhalant cylinder. 4,794,949, Cl. 137-557.000.

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Sakurai, Masaru; Matsue, Hiroshi; and Aoki, Kazuhiro, to Kabushiki Kaisha Toshiba. Satellite broadcasting receiving system. 4,796,032, Cl. 342-359.000.

Sakurai, Shigeru; Hasuo, Akiho; and Tanabe, Kazuo, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Resolver controlling method and apparatus. 4,795,954, Cl. 318-661.000.

Sakurai, Tadashi; Puchigami, Wataru; and Kitta, Hideaki, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust gas control means for engine. 4,795,420, Cl. 60-313.000.

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PATENTS WERE ISSUED ON THE 3RD DAY OF JANUARY, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Auth, Gerald L. Apparatus and method for photoluminescence analysis. Re. 32,821, Cl. 250-458.100.

Automotive Products, plc: *See*—
Leigh-Monstevens, Keith V., Re. 32,814, Cl. 60-585.000.

Copeland, James L.: *See*—
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., Re. 32,818, Cl. 252-90.000.

D. L. Auld Company, The: *See*—
Waugh, Robert E., Re. 32,819, Cl. 428-31.000.

Ecolab Inc.: *See*—
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., Re. 32,818, Cl. 252-90.000.

Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., to Ecolab Inc. Cast detergent-containing article and method of using. Re. 32,818, Cl. 252-90.000.

Guardian Products, Inc.: *See*—
Smith, Alfred A., Re. 32,815, Cl. 135-69.000.

Leigh-Monstevens, Keith V., to Automotive Products, plc. Hydraulic cylinder modular structure. Re. 32,814, Cl. 60-585.000.

Meurer Nonfood Product GmbH: *See*—
Vossen, Franz, Re. 32,817, Cl. 493-1.000.

Penttila, Richard C.: *See*—
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., Re. 32,818, Cl. 252-90.000.

Plank, Robert R. Drawer apparatus. Re. 32,816, Cl. 312-330.00R.

Pollack, Ronald M. Electric cord holder assembly. Re. 32,820, Cl. 174-68.300.

Smith, Alfred A., to Guardian Products, Inc. Height adjustable crutch. Re. 32,815, Cl. 135-69.000.

Vossen, Franz, to Meurer Nonfood Product GmbH. Sheet processing apparatus. Re. 32,817, Cl. 493-1.000.

Waugh, Robert E., to D. L. Auld Company, The. Trim strip for automobile bodies. Re. 32,819, Cl. 428-31.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Alza Corporation: *See*—
Gale, Robert M.; Goetz, Victor; Lee, Eun S.; Taskovich, Lina T.; and Yum, Su I., B1 4,588,580, Cl. 424-21.000.

Anderson, Larry D.: *See*—
Oldroyd, Malcolm; Rateau, Dominique G.; Luebke, Merlin A.; and Anderson, Larry D., B1 4,581,794, Cl. 28-141.000.

Asten Group Inc.: *See*—
Oldroyd, Malcolm; Rateau, Dominique G.; Luebke, Merlin A.; and Anderson, Larry D., B1 4,581,794, Cl. 28-141.000.

Cedars Sinai Medical Center: *See*—
Rubinstein, Alan, B1 4,456,590, Cl. 514-2.000.

Eastman Kodak Company: *See*—
Gustafson, Gary B., B1 4,140,387, Cl. 355-14.0SH.

Eguchi, Syusaku: *See*—
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, B1 4,236,078, Cl. 250-363.00R.

Figgie International, Inc.: *See*—
Young, Jorge A.; and Khandwala, Bhupendra J., B1 4,538,056, Cl. 235-377.000.

Fuji Photo Film Co., Ltd.: *See*—
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, B1 4,236,078, Cl. 250-363.00R.

Fujita, Hisanori: *See*—
Hasegawa, Shinichi; and Fujita, Hisanori, B1 4,252,576, Cl. 148-33.400.

Gale, Robert M.; Goetz, Victor; Lee, Eun S.; Taskovich, Lina T.; and Yum, Su I., to Alza Corporation. Transdermal administration of fentanyl and device therefor. B1 4,588,580, 1-3-89, Cl. 424-21.000.

Goetz, Victor: *See*—
Gale, Robert M.; Goetz, Victor; Lee, Eun S.; Taskovich, Lina T.; and Yum, Su I., B1 4,588,580, Cl. 424-21.000.

Griswold, Azel A., to Reeves Brothers, Inc. Process for rapid curing of polyether polyurethane foam. B1 4,537,912, 1-3-89, Cl. 521-53.000.

Gustafson, Gary B., to Eastman Kodak Company. Apparatus for producing collated copies from two sided originals. B1 4,140,387, 1-3-89, Cl. 355-14.0SH.

Hasegawa, Shinichi; and Fujita, Hisanori, to Mitsubishi Monsanto Chemical Co. Epitaxial wafer for use in production of light emitting diode. B1 4,252,576, 1-3-89, Cl. 148-33.400.

Howard, Harland V., III, to Panama Breakaway, Inc. Spearpoint assembly. B1 4,624,068, 1-3-89, Cl. 43-6.000.

Ito, Tadahiko: *See*—
Nakamura, Hirokazu; Kinoshita, Mitsutaka; Ito, Tadahiko; and Kawata, Kazumasa, B1 3,995,610, Cl. 123-192.00B.

Kato, Hisatoyo: *See*—
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, B1 4,236,078, Cl. 250-363.00R.

Kawata, Kazumasa: *See*—
Nakamura, Hirokazu; Kinoshita, Mitsutaka; Ito, Tadahiko; and Kawata, Kazumasa, B1 3,995,610, Cl. 123-192.00B.

Khandwala, Bhupendra J.: *See*—
Young, Jorge A.; and Khandwala, Bhupendra J., B1 4,538,056, Cl. 235-377.000.

Kinoshita, Mitsutaka: *See*—
Nakamura, Hirokazu; Kinoshita, Mitsutaka; Ito, Tadahiko; and Kawata, Kazumasa, B1 3,995,610, Cl. 123-192.00B.

Klinefelter, Glenn B. Moisture responsive switch actuator. B1 3,808,385, 1-3-89, Cl. 200-61.040.

Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, to Fuji Photo Film Co., Ltd. Method and apparatus for recording and reproducing a radiation image. B1 4,236,078, 1-3-89, Cl. 250-363.00R.

Lee, Eun S.: *See*—
Gale, Robert M.; Goetz, Victor; Lee, Eun S.; Taskovich, Lina T.; and Yum, Su I., B1 4,588,580, Cl. 424-21.000.

Lohrberg, Karl, to Metallgesellschaft Aktiengesellschaft. Vertically extending plate electrode for gas-forming electrolyzers. B1 4,474,612, 1-3-89, Cl. 204-252.000.

Luebke, Merlin A.: *See*—
Oldroyd, Malcolm; Rateau, Dominique G.; Luebke, Merlin A.; and Anderson, Larry D., B1 4,581,794, Cl. 28-141.000.

Matsumoto, Seiji: *See*—
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, B1 4,236,078, Cl. 250-363.00R.

Metallgesellschaft Aktiengesellschaft: *See*—
Lohrberg, Karl, B1 4,474,612, Cl. 204-252.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Nakamura, Hirokazu; Kinoshita, Mitsutaka; Ito, Tadahiko; and Kawata, Kazumasa, B1 3,995,610, Cl. 123-192.00B.

Mitsubishi Monsanto Chemical Co.: *See*—
Hasegawa, Shinichi; and Fujita, Hisanori, B1 4,252,576, Cl. 148-33.400.

Miyahara, Junji: *See*—
Kotera, Noboru; Eguchi, Syusaku; Miyahara, Junji; Matsumoto, Seiji; and Kato, Hisatoyo, B1 4,236,078, Cl. 250-363.00R.

Nakamura, Hirokazu; Kinoshita, Mitsutaka; Ito, Tadahiko; and Kawata, Kazumasa, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Four cylinder straight-type engine with secondary balancer system. B1 3,995,610, 1-3-89, Cl. 123-192.00B.

Oldroyd, Malcolm; Rateau, Dominique G.; Luebke, Merlin A.; and Anderson, Larry D., to Asten Group Inc. Automatic seaming machine for fabric belts. B1 4,581,794, 1-3-89, Cl. 28-141.000.

Panama Breakaway, Inc.: *See*—
Howard, Harland V., III, B1 4,624,068, Cl. 43-6.000.

Rateau, Dominique G.: *See*—
Oldroyd, Malcolm; Rateau, Dominique G.; Luebke, Merlin A.; and Anderson, Larry D., B1 4,581,794, Cl. 28-141.000.

Reeves Brothers, Inc.: *See*—
Griswold, Azel A., B1 4,537,912, Cl. 521-53.000.

Rubinstein, Alan, to Cedars Sinai Medical Center. Heat treatment of lyophilized blood clotting factor VIII concentrate. B1 4,456,590, 1-3-89, Cl. 514-2.000.

Taskovich, Lina T.: *See*—
Gale, Robert M.; Goetz, Victor; Lee, Eun S.; Taskovich, Lina T.; and Yum, Su I., B1 4,588,580, Cl. 424-21.000.

Young, Jorge A.; and Khandwala, Bhupendra J., to Figgie International, Inc. Card reader for time and attendance. B1 4,538,056, 1-3-89, Cl. 235-377.000.

Yum, Su I.: *See*—
Gale, Robert M.; Goetz, Victor; Lee, Eun S.; Taskovich, Lina T.; and Yum, Su I., B1 4,588,580, Cl. 424-21.000.

LIST OF DESIGN PATENTEES

AB Akerlund & Rausing: *See*—
Christensen, John F., 299,271, Cl. D24-63.000.

Ahlgren, Stig B., to Prismavision AB. Toothed drive pulley. 299,211, 1-3-89, Cl. D8-360.000.

Arax International Corporation: *See*—
Sampey, Harry R., 299,215, Cl. D10-53.000.

Arehart, Robert W., to Emerson Electric Co. Solder gun. 299,207, 1-3-89, Cl. D8-30.000.

Arehart, Robert W., to Emerson Electric Co. Solder gun. 299,208, 1-3-89, Cl. D8-30.000.

Arehart, Robert W., to Emerson Electric Co. Solder gun. 299,209, 1-3-89, Cl. D8-30.000.

Aurora Impex Corporation: *See*—
Noguchi, Isoroku, 299,250, Cl. D18-2.000.

AVIA Group International, Inc.: *See*—
McCrea, Mona, 299,184, Cl. D2-314.000.
Selbiger, Lawrence, 299,185, Cl. D2-320.000.

Bagley, James L., Sr. Fish lure. 299,264, 1-3-89, Cl. D22-133.000.

Blackburn, James R., to Jim Blackburn Designs, Inc. Bicycle front rack. 299,225, 1-3-89, Cl. D12-158.000.

Boone, Thomas M. Marble baseball game board. 299,255, 1-3-89, Cl. D21-11.000.

Bootz, Terry: *See*—
Harken, Olaf T.; and Bootz, Terry, 299,181, Cl. D2-314.000.

Borromeo, Lucio, to 3 T S.p.A. Pedal crank for a bicycle. 299,221, 1-3-89, Cl. D12-123.000.

Brandis, Phillip J., Jr. Canopy for a bed. 299,193, 1-3-89, Cl. D6-388.000.

Brell Mar Products, Inc.: *See*—
Norton, Don S., 299,188, Cl. D5-62.000.

Brinkerhoff, James W.: *See*—
Toth, Richard J.; Brinkerhoff, James W.; Siddoway, Craig F.; and Claxton, Bruce A., 299,226, Cl. D13-8.000.

Brown, Jack W.: *See*—
Pierson, Jeanne S.; Ebling, Wendell V.; Brown, Jack W.; and Cassimatis, Peter N., 299,269, Cl. D24-21.000.

Brown Jordan Company: *See*—
Frinier, Richard, 299,195, Cl. D6-487.000.

Brown Jordan Company Limited Partnership: *See*—
Frinier, Richard, 299,191, Cl. D6-375.000.
Frinier, Richard, 299,196, Cl. D6-499.000.

Brown, Paul D., to Reebok International Ltd. Shoe upper. 299,182, 1-3-89, Cl. D2-314.000.

Brown, Paul D., to Reebok International Ltd. Shoe upper. 299,183, 1-3-89, Cl. D2-314.000.

Bussell, Vanda J. Soap bar. 299,277, 1-3-89, Cl. D28-8.200.

Canon Kabushiki Kaisha: *See*—
Endo, Aiko; Hasegawa, Takeshi; and Kobayashi, Akihiko, 299,251, Cl. D18-7.000.

Cassai, Gino H.; and Cassai, Henry J. Adjustable cosmetic applicator. 299,276, 1-3-89, Cl. D28-7.000.

Cassai, Henry J.: *See*—
Cassai, Gino H.; and Cassai, Henry J., 299,276, Cl. D28-7.000.

Cassimatis, Peter N.: *See*—
Pierson, Jeanne S.; Ebling, Wendell V.; Brown, Jack W.; and Cassimatis, Peter N., 299,269, Cl. D24-21.000.

Chadwick, Donald T.; and Stumpf, William E., to Herman Miller, Inc. Chair. 299,192, 1-3-89, Cl. D6-380.000.

Chio, Chuy-Nan. Combined logic training board and power input bodies. 299,253, 1-3-89, Cl. D19-59.000.

Christensen, John F., to AB Akerlund & Rausing. Tube for rectal administration of pharmaceutical compositions. 299,271, 1-3-89, Cl. D24-63.000.

Cineonix, Inc.: *See*—
Jones, John A.; Marchus, L. Mark; and Hardy, Loren S., 299,244, Cl. D16-244.000.
Jones, John A.; and Marchus, L. Mark, 299,245, Cl. D16-245.000.

Claber S.p.A.: *See*—
Roman, Gianfranco, 299,267, Cl. D23-262.000.

Clairol Incorporated: *See*—
Reeves, Kevin E.; and Wistrand, John C., 299,278, Cl. D28-35.000.
Reeves, Kevin E.; and Wistrand, John C., 299,279, Cl. D28-35.000.

Claxton, Bruce A.: *See*—
Toth, Richard J.; Brinkerhoff, James W.; Siddoway, Craig F.; and Claxton, Bruce A., 299,226, Cl. D13-8.000.

Corcoran, Jerry A. Portable insulated beverage container. 299,202, 1-3-89, Cl. D7-71.000.

Cotton, Samuel B. Game board. 299,256, 1-3-89, Cl. D21-31.000.

Craig, Joe D.: *See*—
Devereaux, Chuck; and Craig, Joe D., 299,265, Cl. D22-127.000.

Custom Trailer, Incorporated: *See*—
Edwards, Keith, 299,219, Cl. D12-101.000.

Dee Zee Manufacturing: *See*—
Sills, Robert L., 299,186, Cl. D3-40.000.

De Lorenzo, Fred. Treadmill. 299,258, 1-3-89, Cl. D21-192.000.

Design Institute America, Inc.: *See*—
Mulhauser, George C., 299,190, Cl. D6-367.000.

Devereaux, Chuck; and Craig, Joe D., to Hart Tackle Company, Inc. Fishing lure. 299,265, 1-3-89, Cl. D22-127.000.

Durand, Jean-Jacques. Stemmed wine glass or similar article. 299,200, 1-3-89, Cl. D7-13.000.

Durand, Jean-Jacques. Stemmed wine glass or similar article. 299,201, 1-3-89, Cl. D7-13.000.

E. W. Mold & Tool Company, Inc.: *See*—
Grannen, Walter A., III, 299,227, Cl. D13-8.000.

Easco Corporation: *See*—
Krapowicz, Jacob C.; and Mader, William G., 299,206, Cl. D8-18.000.

Ebling, Wendell V.: *See*—
Pierson, Jeanne S.; Ebling, Wendell V.; Brown, Jack W.; and Cassimatis, Peter N., 299,269, Cl. D24-21.000.

Edwards, Keith, to Custom Trailer, Incorporated. Equipment trailer. 299,219, 1-3-89, Cl. D12-101.000.

Emerson Electric Co.: *See*—
Arehart, Robert W., 299,207, Cl. D8-30.000.
Arehart, Robert W., 299,208, Cl. D8-30.000.
Arehart, Robert W., 299,209, Cl. D8-30.000.

Endo, Aiko; Hasegawa, Takeshi; and Kobayashi, Akihiko, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 299,251, 1-3-89, Cl. D18-7.000.

Fanfare Electronics Limited: *See*—
Goldberg, Stephen H., 299,252, Cl. D18-7.000.

Feamster, William A.: *See*—
Feamster, William C., III; and Feamster, William A., 299,222, Cl. D12-125.000.

Feamster, William C., III; and Feamster, William A. Bicycle pedal or the like. 299,222, 1-3-89, Cl. D12-125.000.

Feger, Stephan; and Fischer, Wolfgang, to International Business Machines Corporation. Housing for hand held data entry and display terminal. 299,235, 1-3-89, Cl. D14-100.000.

Fischer, Wolfgang: *See*—
Feger, Stephan; and Fischer, Wolfgang, 299,235, Cl. D14-100.000.

Frinier, Richard, to Brown Jordan Company Limited Partnership. Chair. 299,191, 1-3-89, Cl. D6-375.000.

Frinier, Richard, to Brown Jordan Company. Table. 299,195, 1-3-89, Cl. D6-487.000.

Frinier, Richard, to Brown Jordan Company Limited Partnership. Table frame. 299,196, 1-3-89, Cl. D6-499.000.

Fujitsu General Limited: *See*—
Maki, Yoji; and Yoshikawa, Hideo, 299,233, Cl. D14-126.000.

Fukui, Yojiro: *See*—
Kasagi, Taro; Tamada, Kenji; and Fukui, Yojiro, 299,248, Cl. D18-1.000.

Gagnon, Jacques, to Northern Telecom Limited. Base for a telephone set. 299,230, 1-3-89, Cl. D14-150.000.

Galvin, Ray N., to Skill-Craft Enterprises, Inc. Vehicle camper shell. 299,223, 1-3-89, Cl. D12-156.000.

Gentes, James J., to Giro Sport Design, Inc. Bicyclist's helmut cover. 299,180, 1-3-89, Cl. D2-260.000.

Giro Sport Design, Inc.: *See*—
Gentes, James J., 299,180, Cl. D2-260.000.

Gish Biomedical, Inc.: *See*—
Pierson, Jeanne S.; Ebling, Wendell V.; Brown, Jack W.; and Cassimatis, Peter N., 299,269, Cl. D24-21.000.

Goldberg, Stephen H., to Fanfare Electronics Limited. Calculator. 299,252, 1-3-89, Cl. D18-7.000.

Grannen, Walter A., III, to E. W. Mold & Tool Company, Inc. Battery container with side recesses. 299,227, 1-3-89, Cl. D13-8.000.

Green, David T.; and Sienkiewicz, Henry R., to United States Surgical Corporation. Surgical stapling cartridge. 299,270, 1-3-89, Cl. D24-27.000.

Gregory, Stephen O. Sink dispenser head. 299,198, 1-3-89, Cl. D6-542.000.

Gruenspecht, Mark J.; and Samson, Sam, to Sea Hands. Inflatable swimming glove. 299,261, 1-3-89, Cl. D21-239.000.

Gruenspecht, Mark J.; and Samson, Sam, to Sea Hands. Inflatable swimming glove. 299,262, 1-3-89, Cl. D21-239.000.

Hakuba Shashin Sangyo Kabushiki Kaisha: *See*—
Iwasaki, Osamu, 299,243, Cl. D16-244.000.

Hardy, Loren S.: *See*—
Jones, John A.; Marchus, L. Mark; and Hardy, Loren S., 299,244, Cl. D16-244.000.

Harken, Olaf T.; and Bootz, Terry. Shoe upper. 299,181, 1-3-89, Cl. D2-314.000.

Harley-Davidson, Inc.: *See*—
Trusky, Michael T., 299,220, Cl. D12-111.000.

Hart Tackle Company, Inc.: *See*—
Devereaux, Chuck; and Craig, Joe D., 299,265, Cl. D22-127.000.

Hartman, Murray: *See*—
Martin, Frank J.; Hartman, Murray; and Saunders, Randy, 299,254, Cl. D20-42.000.

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Hasegawa, Takeshi: *See*—
Endo, Aiko; Hasegawa, Takeshi; and Kobayashi, Akihiko, 299,251, Cl. D18-7.000.
Health-Aire Corporation: *See*—
Peltier, David L.; and Peltier, John R., 299,268, Cl. D23-354.000.
Henningsen, Ernst, to Kvernex A/S. Hook to be attached to an excavator bucket. 299,239, 1-3-89, Cl. D15-28.000.
Henningsen, Ernst, to Kvernex A/S. Hook to be attached to an excavator bucket. 299,240, 1-3-89, Cl. D15-28.000.
Herman Miller, Inc.: *See*—
Chadwick, Donald T.; and Stumpf, William E., 299,192, Cl. D6-380.000.
High, Kenneth A., to International Business Machines Corporation. Display monitor. 299,236, 1-3-89, Cl. D14-113.000.
Hoshino, Kiyoshi; and Miyamoto, Kouichi, to Ryobi Ltd. Radial arm saw. 299,241, 1-3-89, Cl. D15-133.000.
Howard A. Kenyon: *See*—
Rainville, Gilles; and Rainville, Francoise, 299,197, Cl. D6-528.000.
International Business Machines Corporation: *See*—
Feger, Stephan; and Fischer, Wolfgang, 299,235, Cl. D14-100.000.
High, Kenneth A., 299,236, Cl. D14-113.000.
Iwasaki, Osamu, to Hakuba Shashin Sangyo Kabushiki Kaisha. Camera tripod. 299,243, 1-3-89, Cl. D16-244.000.
James, Eugene F. Fishing lure. 299,263, 1-3-89, Cl. D22-133.000.
Jim Blackburn Designs, Inc.: *See*—
Blackburn, James R., 299,225, Cl. D12-158.000.
Johansson, Gert E. Mold for concrete beams or the like. 299,242, 1-3-89, Cl. D15-136.000.
Jones, John A.; Marchus, L. Mark; and Hardy, Loren S., to Cineonix, Inc. Tripod. 299,244, 1-3-89, Cl. D16-244.000.
Jones, John A.; and Marchus, L. Mark, to Cineonix, Inc. Instrument supporting head. 299,245, 1-3-89, Cl. D16-245.000.
Kabushiki Kaisha Toshiba: *See*—
Kajita, Takashi, 299,234, Cl. D14-100.000.
Kajita, Takashi, to Kabushiki Kaisha Toshiba. Data entry terminal for electronic computers. 299,234, 1-3-89, Cl. D14-100.000.
Kamaya, Masahi, to PIAA Corporation. Vehicle roof carrier. 299,224, 1-3-89, Cl. D12-157.000.
Kasagi, Taro; Tamada, Kenji; and Fukui, Yojiro, to Silver Seiko Limited. Typewriter. 299,248, 1-3-89, Cl. D18-1.000.
Kasagi, Taro; Tamada, Kenji; and Nagashima, Yoshimitsu, to Silver Seiko Limited. Typewriter. 299,249, 1-3-89, Cl. D18-1.000.
Kimura, Masaru, to Senshin Kogyo Kabushiki Kaisha. Distance measuring device. 299,214, 1-3-89, Cl. D10-70.000.
Kobayashi, Akihiko: *See*—
Endo, Aiko; Hasegawa, Takeshi; and Kobayashi, Akihiko, 299,251, Cl. D18-7.000.
Krapowicz, Jacob C.; and Mader, William G., to Easco Corporation. Combination wrench. 299,206, 1-3-89, Cl. D8-28.000.
Kulish, Peter A. Magnet for the treatment of liquid fuels. 299,266, 1-3-89, Cl. D23-207.000.
Kuo, Pei Wen. Telephone set. 299,229, 1-3-89, Cl. D14-151.000.
Kurosu, Teisuke; Ohta, Fumiharu; Takenaka, Kazumasa; Tamura, Masao; Ming, Hung C.; and Watanabe, Satoshi, to Matsushita Electric Industries, Co., Ltd. Integral telephone and answering set. 299,228, 1-3-89, Cl. D14-52.000.
Kvernex A/S: *See*—
Henningsen, Ernst, 299,239, Cl. D15-28.000.
Henningsen, Ernst, 299,240, Cl. D15-28.000.
Ladley, Patricia E. Carrying case for a cordless telephone. 299,187, 1-3-89, Cl. D3-106.000.
Large, Eric J. G.; and Payne, John D., to Stroud Metal Company Limited. Combined walking stick and seat. 299,189, 1-3-89, Cl. D6-335.000.
Livingstone, David J. Tyne holder. 299,237, 1-3-89, Cl. D15-28.000.
Livingstone, David J. Tyne holder. 299,238, 1-3-89, Cl. D15-28.000.
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Krapowicz, Jacob C.; and Mader, William G., 299,206, Cl. D8-28.000.
Maki, Yoji; and Yoshikawa, Hideo, to Fujitsu General Limited. Television receiver or similar article. 299,233, 1-3-89, Cl. D14-126.000.
Marchus, L. Mark: *See*—
Jones, John A.; Marchus, L. Mark; and Hardy, Loren S., 299,244, Cl. D16-244.000.
Jones, John A.; and Marchus, L. Mark, 299,245, Cl. D16-245.000.
Martin, Frank J.; Hartman, Murray; and Saunders, Randy, to Schlumberger Canada Limited. Name plate. 299,254, 1-3-89, Cl. D20-42.000.
Marx, Ralph H. Finger sling for dynamic splinting of the hand. 299,272, 1-3-89, Cl. D24-64.000.
Matsushita Electric Industries, Co., Ltd.: *See*—
Kurosu, Teisuke; Ohta, Fumiharu; Takenaka, Kazumasa; Tamura, Masao; Ming, Hung C.; and Watanabe, Satoshi, 299,228, Cl. D14-52.000.
McCrea, Mona, to AVIA Group International, Inc. Element of a shoe upper. 299,184, 1-3-89, Cl. D2-314.000.
Merck Patent Gesellschaft mit beschraenkter Haftung: *See*—
Ott, Wilhelm, 299,275, Cl. D28-2.000.
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Kurosu, Teisuke; Ohta, Fumiharu; Takenaka, Kazumasa; Tamura, Masao; Ming, Hung C.; and Watanabe, Satoshi, 299,228, Cl. D14-52.000.
Miyamoto, Kouichi: *See*—
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Mulhauser, George C., to Design Institute America, Inc. Adjustable chair or similar article. 299,190, 1-3-89, Cl. D6-367.000.
Murphy, Kent W., to Rubbermaid Incorporated. Rod-mounted support bracket. 299,212, 1-3-89, Cl. D8-380.000.
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Nappi, Anthony. Power weeder attachment. 299,204, 1-3-89, Cl. D8-8.000.
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Pate, John S. Modular video cassette display rack. 299,194, 1-3-89, Cl. D6-407.000.
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Puntillo, Theodore F., to Puntillo, Theodore Eugene; and Puntillo, Edward Anthony, part interest to each. Nail holding attachment for a hammer head. 299,213, 1-3-89, Cl. D8-395.000.
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Rogowski, Alan M. Bow holder. 299,199, 1-3-89, Cl. D6-552.000.
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Reeves, Kevin E.; and Wistrand, John C., 299,279, Cl. D28-35.000.
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Benardella, Frank A., to Nor'East Miniature Roses, Inc. Rose plant named Benaros. 6,508, 1-3-89, Cl. 7.000.
Burks, Joe. Rose plant named Buryellow. 6,509, 1-3-89, Cl. 3.000.
California Plant Company: *See*—
van Wingerden, Jerry, 6,512, Cl. 76.000.
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Kordes, Reimer, to Jackson & Perkins Company. Rose plant Kortexung. 6,513, 1-3-89, Cl. 26.000.
Lecoufle, Maurice; and Vacherot, Michel, to Orchidees les Petits Fils et Fils de Vacherot & Lecoufle. Phalaenopsis plant named Velmer. 6,510, 1-3-89, Cl. 68.000.
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McRae, Edward A., to Melridge, Inc. Lily plant named Giselle. 6,502, 1-3-89, Cl. 68.000.
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van Wingerden, Jerry, to California Plant Company. Chrysanthemum named 'Hello Dolly' . 6,512, 1-3-89, Cl. 76.000.
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Warriner, William A., to Jackson & Perkins Company. Rose plant Jacwhim. 6,514, 1-3-89, Cl. 8.000.
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Whiting, Hubert F. Zoysia grass plant (ZT-4). 6,516, 1-3-89, Cl. 88.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

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STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 3RD DAY OF JANUARY, 1989

Allen, Arthur H., III; Heuser, Arthur R.; Meyer, Richard J.; and Payne, Judy B., to BASF Corporation. Pigment milling process. H564, 1-3-89, Cl. 106-497.000.
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Tanaka, Haruhiko; and Kaneko, Katutoshi, to Shell Oil Company. Olefin polymer composition and laminated structure including said composition as adhesive layer. H568, 1-3-89, Cl. 525-71.000.
Tylaska, Theodore T.; and Choinski, Thomas C., to United States of America, Navy. Fast Fourier transform data address pre-scrambler circuit. H570, 1-3-89, Cl. 364-715.010.
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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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41.79 4,794,884
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73 SC 4,794,888
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90.17 4,794,893
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190 E 4,794,895
192 B B1 3,995,610
193 4,794,896
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CLASS 128
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24 A 4,794,914
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87 B 4,794,917
92 VP 4,794,918
92 YK 4,794,919
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205.24 4,794,923
207.16 4,794,924
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344 4,794,928
397 4,794,925
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660.07 4,794,929
661.09 4,794,932
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244 4,795,500
249 4,795,501

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557 4,794,949
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596.18 4,794,950
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33.4 B1 4,252,576
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221 4,795,517
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285 4,795,518
363 4,795,519
380.4 4,795,520
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397 4,795,523
398 4,795,522
498 4,795,524
567 4,795,525
584 4,795,526
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CLASS 160
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758 4,796,219
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CLASS 365
51 4,796,224
75 4,796,225
122 4,796,226
154 4,796,227
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227 4,796,234
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CLASS 366
8 4,795,263
18 4,795,264
69 4,795,265
341 4,795,266
CLASS 367
7 4,796,236
35 4,796,237
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CLASS 369
88 4,796,239
4,796,240
CLASS 370
50 4,796,253
58 4,796,254
100 4,796,255
110.1 4,796,256
CLASS 371
5 4,796,257
10 4,796,113
16 4,796,258
20 4,796,259
39 4,796,260
40 4,796,261
CLASS 372
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87 4,796,272
96 4,796,273
4,796,274
107 4,796,275
CLASS 373
30 4,796,276
72 4,796,277
CLASS 374
41 4,795,267
CLASS 375
3 4,796,278
39 4,796,279
110 4,796,280
112 4,796,281
116 4,796,282
CLASS 376
142 4,795,605
248 4,795,606
299 4,795,607
444 4,795,608
CLASS 377
6 4,796,283
CLASS 378
49 4,796,284
108 4,796,286
173 4,796,285
CLASS 379
26 4,796,289
27 4,796,290
91 4,796,292
4,796,293
4,796,294
4,796,287
4,796,295
410 4,796,296
433 4,796,288
CLASS 380
10 4,796,297
14 4,796,298
4,796,299
CLASS 383
40 4,795,268
63 4,795,269
4,796,300
77 4,795,270
104 4,795,271
CLASS 384
45 4,795,272
97 4,795,273
4,795,274
107 4,795,275
4,795,276
420 4,795,220
447 4,795,277
448 4,795,278
450 4,795,279
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CLASS 400
74 4,795,281
124 4,795,283
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352 4,795,284
4,795,282
CLASS 401
209 4,795,286
CLASS 402
79 4,795,287
CLASS 403
24 4,795,288
CLASS 407
58 4,794,665
CLASS 408
80 4,795,289
224 4,795,290
CLASS 409
131 4,795,291
136 4,795,292
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CLASS 411
457 4,795,294
CLASS 413
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CLASS 414
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140.8 4,795,298
217 4,795,299
4,795,300
466 4,795,302
478 4,795,303
537 4,795,304
709 4,795,305
744.8 4,795,306
795.4 4,795,297
CLASS 415
115 4,795,307
119 4,795,308
138 4,795,309
CLASS 416
134 A 4,795,310
186 R 4,795,311
223 A 4,795,312
224 4,795,313
CLASS 417
43 4,795,314
68 4,795,315
312 4,795,316
322 4,795,317
4,795,318
354 4,795,319
360 4,795,320
CLASS 418
1 4,795,321
55 4,795,322
4,795,323
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87 4,795,325
152 4,795,326
CLASS 419
339 4,795,301
CLASS 420
109 4,795,609
582 4,795,610
CLASS 422
56 4,795,611
64 4,795,612
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94 4,795,614
179 4,795,615
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186.15 4,795,617
202 4,795,618
CLASS 423
243 4,795,620
244 4,795,619
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324 4,795,622
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439 4,795,624
566 4,795,625
CLASS 424
1.1 4,795,626
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Z1 B1 4,588,580
49 4,795,630
54 4,795,628
84 4,795,631
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85.9 4,795,634
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195.1 4,795,636
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438 4,795,641
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456 4,795,643
468 4,795,327
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489 4,795,646
CLASS 425
5 4,795,328
8 4,795,330
28.1 4,795,331
60 4,795,332
78 4,795,333
82.1 4,795,335
88 4,795,334
145 4,795,336
549 4,795,337
4,795,338
573 4,795,329
CLASS 426
94 4,795,647
111 4,795,648
243 4,795,649
306 4,795,650
456 4,795,651
549 4,795,652
615 4,795,653
635 4,795,655
CLASS 427
32 4,795,339
38 4,795,656
96 4,795,657
98 4,795,658
123 4,795,659
4,795,660
187 4,795,661
230 4,795,662
296 4,795,663
CLASS 428
1 4,795,664
31 Re.32,819
34.2 4,795,665
71 4,795,666
77 4,795,667
174 4,795,668
194 4,795,669
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331 4,795,673
391 4,795,678
428 4,795,679
450 4,795,680
635 4,795,654
646 4,795,682
CLASS 429
13 4,795,683
44 4,795,684
104 4,795,685
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213 4,795,687
CLASS 430
65 4,795,688
67 4,795,691
99 4,795,689
109 4,795,690
283 4,795,692
312 4,795,693
314 4,795,694
495 4,795,695
512 4,795,696
619 4,795,697
CLASS 431
1 4,795,340
CLASS 432
126 4,795,341
CLASS 433
19 4,795,342
116 4,795,343
143 4,795,344
202.1 4,795,345
215 4,795,346
216 4,795,347
CLASS 434
112 4,795,348
156 4,795,349
158 4,795,350
258 4,795,351
CLASS 438
4 4,795,698
5 4,795,699
6 4,795,700
7 4,795,701
13 4,795,703

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41	4,795,704		4,795,385	169	4,795,729	246	4,795,774	338	4,795,816	CLASS 454	
172.2	4,795,705	68	4,795,386	170	4,795,730	379	4,795,775	370	4,795,817	1	4,795,421
172.3	4,795,706	130	4,795,387	221	4,795,731	386	4,795,776	CLASS 549		10	4,795,437
246	4,795,708	CLASS 445		223	4,795,732	441	4,795,777	260	4,795,818	14	4,795,422
259	4,795,709			327	4,795,733	551	4,795,778	433	4,795,819	22	4,795,438
287	4,795,710	22	4,795,388	353	4,795,734	598	4,795,779	CLASS 556		24	4,795,423
288	4,795,707	28	4,795,389	415	4,795,735	CLASS 528		105	4,795,820	30	4,795,424
316	4,795,711	29	4,795,390	CLASS 503		53	4,795,780	CLASS 558		43	4,795,439
CLASS 436		36	4,795,391			58	4,795,781	298	4,795,821	51	4,795,426
74	4,795,712	43	4,795,392	211	4,795,736	86	4,795,782	CLASS 560		53	4,795,427
175	4,795,713	CLASS 446		CLASS 512		101	4,795,783			73	4,795,428
183	4,795,714	123	4,795,393	25	4,795,738	244	4,795,784	10	4,795,822	80	4,795,429
542	4,795,715	168	4,795,394	CLASS 514		288	4,795,785	182	4,795,823	97	4,795,430
CLASS 437		175	4,795,395			326.5	4,795,786	204	4,795,824		4,795,431
27	4,795,716	259	4,795,396	2	B1 4,456,590	328.2	4,795,787	CLASS 562		110	4,795,432
40	4,795,717	320	4,795,397	8	4,795,739	338	4,795,788	435	4,795,825	122	4,795,440
41	4,795,718	327	4,795,398	14	4,795,740	344	4,795,789	CLASS 564		124	4,795,441
43	4,795,719	CLASS 488		21	4,795,741	437	4,795,790	4	4,795,830	134	4,795,433
52	4,795,720	86	4,795,399	26	4,795,742	523	4,795,791	99	4,795,826	159	4,795,434
67	4,795,721		4,795,400	36	4,795,743	CLASS 526		134	4,795,832	179	4,795,442
192	4,795,722	CLASS 495		44	4,795,744	201	4,795,792	329	4,795,827	198	4,795,443
CLASS 439		607	4,796,301	54	4,795,745	243	4,795,793	409	4,795,833	218	4,795,444
63	4,795,352	CLASS 464		130	4,795,746	259	4,795,794	479	4,795,834	240	4,795,445
92	4,795,353			182	4,795,747	CLASS 528		512	4,795,828	264	4,795,446
137	4,795,354	14	4,795,401	192	4,795,748	18	4,795,796	CLASS 568		268	4,795,447
215	4,795,355	74	4,795,402	249	4,795,639	53	4,795,795	27	4,795,831	319	4,795,448
225	4,795,356	77	4,795,403	250	4,795,749	176	4,795,797	356	4,795,836	329	4,795,449
232	4,795,357	111	4,795,404	254	4,795,751	183	4,795,798	530	4,795,829	349	4,795,450
247	4,795,358	CLASS 474		260	4,795,750	222	4,795,799	CLASS 570		355	4,795,435
271	4,795,359			327	4,795,752	229	4,795,800	110	4,795,837	385.1	4,795,452
278	4,795,360	8	4,795,406	345	4,795,753	370	4,795,810	184	4,795,838	385.2	4,795,453
368	4,795,361	28	4,795,407	381	4,795,754	392	4,795,801	203	4,795,737		4,795,451
377	4,795,362	209	4,795,408	383	4,795,755	482	4,795,802	211	4,795,839	386	4,795,454
385	4,795,363	245	4,795,409	415	4,795,756	CLASS 580		CLASS 585		390	4,795,455
407	4,795,364	256	4,795,410		4,795,757	324	4,795,803	18	4,795,840	408	4,795,456
411	4,795,365	CLASS 493		428	4,795,758	350	4,795,804	240	4,795,841	CLASS 623	4,795,457
476	4,795,366			429	4,795,759		4,795,805	400	4,795,842		
481	4,795,367	1	Re.32,817	652	4,795,761	383	4,795,806	408	4,795,843	1	4,795,458
523	4,795,368	43	4,795,411	CLASS 521		CLASS 534		415	4,795,844	6	4,795,459
544	4,795,369	225	4,795,412	53	B1 4,537,912	58	4,795,807		4,795,845		4,795,460
584	4,795,370	309	4,795,413	83	4,795,760	CLASS 536		417	4,795,846	8	4,795,461
595	4,795,371	403	4,795,414	84.1	4,795,762	6.4	4,795,808	467	4,795,847	13	4,795,462
607	4,795,372	409	4,795,415	99	4,795,763	CLASS 540		506	4,795,848	16	4,795,463
619	4,795,373	422	4,795,418	107	4,795,764	341	4,795,809		4,795,849	18	4,795,464
634	4,795,374	423	4,795,416	154	4,795,765	CLASS 544			4,795,850	22	4,795,465
680	4,795,375	439	4,795,417	CLASS 522		11	4,795,811	512	4,795,851	23	4,795,466
715	4,795,376	CLASS 494		44	4,795,766	323	4,795,812		4,795,852		4,795,467
727	4,795,377			CLASS 523		CLASS 546		733	4,795,853		4,795,468
751	4,795,378	84	4,795,419	200	4,795,767	45	4,795,813	800	4,795,854	27	4,795,469
856	4,795,379	CLASS 501		208	4,795,768	249	4,795,814	809	4,795,835	86	4,795,470
861	4,795,380		4,795,723	219	4,795,769	CLASS 548		CLASS 600		CLASS 903	4,795,475
CLASS 440		98	4,795,724	CLASS 534		112	4,795,815	18	4,794,910	1	4,795,855
26	4,795,381	101	4,795,725	5	4,795,770						
81	4,795,382	CLASS 502		114	4,795,771						
89	4,795,383			159	4,795,772						
CLASS 441		26	4,795,726	170	4,795,773						
64	4,795,384	161	4,795,727								
		162	4,795,728								

CLASSIFICATION OF DESIGNS

D2—	260	299,180		528	299,197	D10—	53	299,215		113	299,236	D18—	1	299,248		133	299,263
	314	299,181		542	299,198		68	299,216		128	299,233			299,249			299,264
		299,182		552	299,199		70	299,214		138	299,232		2	299,250	D23—	307	299,266
		299,183	D7—	13	299,200	D11—	130.1	299,217		143	299,231		7	299,251		262	299,267
		299,184			299,201	D12—	8	299,218		150	299,230			299,252		354	299,268
	320	299,185		71	299,202		101	299,219		151	299,229	D19—	59	299,253	D24—	21	299,269
D3—	40	299,186		137	299,203		111	299,220	D15—	28	299,237	D20—	43	299,254		27	299,270
	106	299,187	D8—	8	299,204		123	299,221			299,238	D21—	11	299,255		63	299,271
D5—	62	299,188		19	299,205		125	299,222			299,239		31	299,256		64	299,272
D6—	335	299,189		28	299,206		156	299,223			299,240		191	299,257	D25—	119	299,273
	367	299,190		30	299,207		157	299,224		133	299,241		192	299,258	D26—	49	299,274
	375	299,191			299,208		158	299,225		136	299,242		326	299,259	D28—	2	299,275
	380	299,192			299,209	D13—	8	299,226	D16—	129	299,246			299,260		7	299,276
	388	299,193		105	299,210			299,227		244	299,243		239	299,261		8.2	299,277
	407	299,194		360	299,211	D14—	52	299,228			299,244			299,262		35	299,278
	487	299,195		380	299,212		100	299,234		245	299,245	D22—	127	299,265			299,279
	499	299,196		395	299,213			299,235									

CLASSIFICATION OF PLANTS

P.—	3	6,509			6,508		26	6,513			6,502			6,505		76	6,512
	7	6,506		8	6,514		51	6,511			6,503						
		6,507		23	6,515		68	6,501			6,504			6,510		88	6,516

STATUTORY INVENTION REGISTRATIONS

47—	57.6	H563	156—	286	H565									
106—	497	H564	357—	64	H569	364—	715.01	H570	427—	38	H566	430—	372	H567	525—	71	H568

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,794,695	4,795,047	4,795,471	4,796,131		4,796,196	4,794,682
	4,795,147	4,795,051	4,795,473	4,796,136		4,796,299	4,794,686
	4,795,182	4,795,066	4,795,481	4,796,153	10 :	4,795,040	4,794,700
	4,795,331	4,795,085	4,795,488	4,796,160		4,795,163	4,794,731
	4,795,367	4,795,092	4,795,489	4,796,166		4,795,476	4,794,740
	4,795,425	4,795,096	4,795,528	4,796,167		4,795,485	4,794,750
04 :	4,794,785	4,795,101	4,795,542	4,796,172		4,795,817	4,794,756
	4,794,876	4,795,108	4,795,546	4,796,179		4,795,830	4,794,772
	4,794,993	4,795,111	4,795,554	4,796,187		4,795,833	4,794,813
	4,795,077	4,795,113	4,795,556	4,796,191	11 :	4,796,271	4,794,872
	4,795,233	4,795,117	4,795,586	4,796,194	12 :	Re.32,819	4,794,877
	4,795,279	4,795,123	4,795,593	4,796,202		4,794,712	4,794,917
	4,795,518	4,795,134	4,795,600	4,796,227		4,794,766	4,794,926
	4,796,073	4,795,161	4,795,634	4,796,232		4,794,787	4,794,985
	4,796,102	4,795,162	4,795,669	4,796,242		4,794,865	4,795,007
	4,796,259	4,795,165	4,795,677	4,796,253		4,794,956	4,795,012
	4,796,292	4,795,176	4,795,700	4,796,255		4,794,991	4,795,044
05 :	4,795,149	4,795,177	4,795,719	4,796,270		4,795,004	4,795,083
06 :	Re.32,816	4,795,186	4,795,731	4,796,275		4,795,018	4,795,104
	Re.32,821	4,795,188	4,795,739	4,538,056		4,795,041	4,795,110
	4,794,658	4,795,196	4,795,765	4,588,580		4,795,049	4,795,126
	4,794,660	4,795,211	4,795,772	08 :	4,795,153	4,795,129	4,795,155
	4,794,698	4,795,216	4,795,804		4,795,187	4,795,205	4,795,158
	4,794,705	4,795,223	4,795,806		4,795,206	4,795,315	4,795,217
	4,794,715	4,795,224	4,795,822		4,795,275	4,795,350	4,795,269
	4,794,719	4,795,237	4,795,855		4,795,314	4,795,400	4,795,343
	4,794,721	4,795,240	4,795,870		4,795,348	4,795,475	4,795,362
	4,794,732	4,795,242	4,795,874		4,795,494	4,795,650	4,795,374
	4,794,742	4,795,245	4,795,880		4,795,513	4,795,718	4,795,383
	4,794,754	4,795,258	4,795,886		4,795,617	4,795,763	4,795,391
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STATUTORY INVENTION REGISTRATIONS

04 : [illegible]
[illegible] : H563
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

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—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Oct. 26, 1988.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 7, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,562,596 through 4,563,775
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 5, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,308,622 through 4,309,773
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED OCTOBER 23, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,477,933	06/497,054	10/23/84
4,477,935	06/338,040	10/23/84
4,477,936	06/457,932	10/23/84
4,477,937	06/498,854	10/23/84
4,477,943	06/497,294	10/23/84
4,477,953	06/280,924	10/23/84
4,477,954	06/469,525	10/23/84
4,477,956	06/458,730	10/23/84
4,477,958	06/269,286	10/23/84
4,477,967	06/525,792	10/23/84
4,477,974	06/377,363	10/23/84
4,477,977	06/433,555	10/23/84
4,477,979	06/457,561	10/23/84
4,477,980	06/492,170	10/23/84
4,477,981	06/503,387	10/23/84
4,477,983	06/311,463	10/23/84
4,477,985	06/384,733	10/23/84
4,477,989	06/503,862	10/23/84
4,477,990	06/386,219	10/23/84
4,477,992	06/346,901	10/23/84
4,477,997	06/466,920	10/23/84
4,477,998	06/499,454	10/23/84
4,477,999	06/528,476	10/23/84
4,478,001	06/275,571	10/23/84
4,478,002	06/430,347	10/23/84
4,478,003	06/344,635	10/23/84
4,478,015	06/414,968	10/23/84
4,478,017	06/479,721	10/23/84
4,478,019	06/311,633	10/23/84
4,478,025	06/297,860	10/23/84
4,478,030	06/301,723	10/23/84
4,478,037	06/399,127	10/23/84
4,478,040	06/425,609	10/23/84
4,478,046	06/486,307	10/23/84
4,478,052	06/535,222	10/23/84
4,478,057	06/521,707	10/23/84
4,478,059	06/530,908	10/23/84
4,478,064	06/355,090	10/23/84
4,478,079	06/494,209	10/23/84
4,478,091	06/407,174	10/23/84
4,478,092	06/468,857	10/23/84
4,478,093	06/472,447	10/23/84
4,478,097	06/233,939	10/23/84
4,478,113	06/373,888	10/23/84
4,478,114	06/426,672	10/23/84
4,478,127	06/422,045	10/23/84
4,478,128	06/262,351	10/23/84
4,478,132	06/505,062	10/23/84
4,478,135	06/424,396	10/23/84
4,478,136	06/405,094	10/23/84
4,478,138	06/431,699	10/23/84
4,478,142	06/571,381	10/23/84
4,478,147	06/463,178	10/23/84
4,478,158	06/490,221	10/23/84
4,478,163	06/426,145	10/23/84
4,478,168	06/401,230	10/23/84
4,478,172	06/560,390	10/23/84
4,478,175	06/550,982	10/23/84
4,478,176	06/421,433	10/23/84
4,478,178	06/493,814	10/23/84
4,478,188	06/362,373	10/23/84

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Patent Number	Serial Number	Issue Date
4,478,204	06/462,226	10/23/84
4,478,206	06/568,382	10/23/84
4,478,216	06/368,024	10/23/84
4,478,219	06/361,386	10/23/84
4,478,223	06/447,155	10/23/84
4,478,227	06/398,920	10/23/84
4,478,228	06/431,470	10/23/84
4,478,231	06/279,567	10/23/84
4,478,233	06/460,156	10/23/84
4,478,234	06/373,657	10/23/84
4,478,240	06/373,973	10/23/84
4,478,244	06/455,809	10/23/84
4,478,246	06/291,515	10/23/84
4,478,247	06/342,394	10/23/84
4,478,253	06/483,404	10/23/84
4,478,254	06/335,254	10/23/84
4,478,255	06/493,979	10/23/84
4,478,264	06/407,258	10/23/84
4,478,265	06/459,259	10/23/84
4,478,273	06/495,007	10/23/84
4,478,276	06/316,067	10/23/84
4,478,278	06/325,534	10/23/84
4,478,287	06/461,645	10/23/84
4,478,295	06/422,592	10/23/84
4,478,303	06/382,155	10/23/84
4,478,305	06/423,643	10/23/84
4,478,308	06/465,332	10/23/84
4,478,314	06/412,472	10/23/84
4,478,318	06/378,131	10/23/84
4,478,324	06/368,265	10/23/84
4,478,329	06/368,911	10/23/84
4,478,330	06/536,280	10/23/84
4,478,331	06/393,513	10/23/84
4,478,349	06/220,192	10/23/84
4,478,355	06/371,217	10/23/84
4,478,366	06/513,626	10/23/84
4,478,369	06/462,884	10/23/84
4,478,408	06/331,611	10/23/84
4,478,414	06/470,058	10/23/84
4,478,415	06/397,827	10/23/84
4,478,417	06/481,474	10/23/84
4,478,418	06/345,051	10/23/84
4,478,420	06/472,072	10/23/84
4,478,422	06/481,598	10/23/84
4,478,425	06/435,563	10/23/84
4,478,426	06/395,625	10/23/84
4,478,444	06/445,553	10/23/84
4,478,453	06/344,366	10/23/84
4,478,457	06/489,716	10/23/84
4,478,458	06/438,589	10/23/84
4,478,460	06/416,074	10/23/84
4,478,464	06/325,654	10/23/84
4,478,468	06/412,156	10/23/84
4,478,469	06/378,538	10/23/84
4,478,473	06/431,969	10/23/84
4,478,474	06/431,970	10/23/84
4,478,484	06/328,891	10/23/84
4,478,513	06/349,702	10/23/84
4,478,519	06/359,768	10/23/84
4,478,521	06/319,697	10/23/84
4,478,532	06/489,585	10/23/84
4,478,536	06/486,184	10/23/84
4,478,548	06/293,318	10/23/84
4,478,552	06/439,914	10/23/84
4,478,553	06/363,156	10/23/84
4,478,557	06/470,669	10/23/84
4,478,560	06/422,094	10/23/84
4,478,574	06/410,890	10/23/84
4,478,575	06/510,262	10/23/84
4,478,576	06/503,623	10/23/84
4,478,577	06/521,721	10/23/84
4,478,579	06/362,738	10/23/84
4,478,593	06/271,439	10/23/84
4,478,601	06/456,107	10/23/84
4,478,607	06/519,803	10/23/84
4,478,630	06/472,299	10/23/84
4,478,634	06/510,008	10/23/84
4,478,644	06/486,163	10/23/84
4,478,648	06/481,770	10/23/84
4,478,651	06/538,252	10/23/84
4,478,652	06/396,702	10/23/84
4,478,654	06/337,628	10/23/84
4,478,662	06/442,477	10/23/84
4,478,664	06/505,791	10/23/84
4,478,666	06/426,068	10/23/84
4,478,670	06/441,226	10/23/84
4,478,671	06/475,733	10/23/84
4,478,672	06/398,533	10/23/84
4,478,673	06/436,965	10/23/84
4,478,676	06/415,764	10/23/84
4,478,680	06/471,459	10/23/84
4,478,684	06/512,755	10/23/84
4,478,685	06/320,198	10/23/84
4,478,686	06/311,340	10/23/84
4,478,699	06/256,399	10/23/84
4,478,714	06/456,871	10/23/84
4,478,723	06/383,692	10/23/84
4,478,725	06/476,574	10/23/84
4,478,726	06/436,740	10/23/84
4,478,731	06/516,182	10/23/84
4,478,736	06/457,930	10/23/84
4,478,739	06/508,615	10/23/84
4,478,750	06/385,867	10/23/84
4,478,756	06/431,459	10/23/84
4,478,781	06/412,912	10/23/84
4,478,783	06/327,830	10/23/84
4,478,790	06/373,827	10/23/84
4,478,794	06/471,709	10/23/84
4,478,797	06/422,145	10/23/84
4,478,823	06/456,976	10/23/84
4,478,831	06/376,904	10/23/84
4,478,835	06/519,707	10/23/84
4,478,838	06/441,635	10/23/84
4,478,839	06/416,670	10/23/84
4,478,841	06/374,364	10/23/84
4,478,843	06/318,153	10/23/84
4,478,848	06/404,087	10/23/84
4,478,857	06/479,258	10/23/84
4,478,874	06/559,665	10/23/84
4,478,877	06/432,376	10/23/84
4,478,878	06/410,478	10/23/84
4,478,882	06/384,499	10/23/84
4,478,920	06/484,688	10/23/84
4,478,970	06/564,479	10/23/84
4,478,971	06/512,080	10/23/84
4,479,006	06/554,382	10/23/84
4,479,019	06/582,083	10/23/84
4,479,023	06/559,328	10/23/84
4,479,030	06/398,346	10/23/84
4,479,038	06/446,508	10/23/84
4,479,048	06/474,127	10/23/84
4,479,053	06/242,797	10/23/84
4,479,064	06/480,764	10/23/84
4,479,079	06/544,255	10/23/84
4,479,081	06/494,350	10/23/84
4,479,089	06/318,365	10/23/84
4,479,093	06/327,075	10/23/84
4,479,109	06/385,873	10/23/84
4,479,110	06/340,263	10/23/84
4,479,114	06/423,666	10/23/84
4,479,136	06/467,422	10/23/84
4,479,145	06/400,681	10/23/84
4,479,160	06/490,697	10/23/84
4,479,169	06/377,960	10/23/84
4,479,170	06/493,069	10/23/84
4,479,171	06/526,458	10/23/84
4,479,181	06/299,074	10/23/84
4,479,188	06/411,241	10/23/84
4,479,190	06/329,576	10/23/84
4,479,203	06/321,855	10/23/84
4,479,207	06/359,794	10/23/84
4,479,215	06/422,777	10/23/84
4,479,222	06/372,364	10/23/84
4,479,227	06/414,186	10/23/84
4,479,240	06/306,689	10/23/84
4,479,245	06/451,678	10/23/84

Notification of Acceptance of Delayed Payment of Maintenance Fee (35 U.S.C. 41(c); 37 CFR 1.378)

The patents listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,349,120	06/272,301	9/14/82	6/10/81	11/29/88
4,457,503	06/356,795	7/3/84	3/10/82	12/9/88

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,460,750 Re. S.N. 267,548, Filed Nov. 4, 1988, Cl. 525/333.8, PROCESS FOR THE TREATMENT OF LOW DENSITY POLYETHYLENE BY ORGANIC PEROXIDES WHICH GENERATE FREE RADICALS, Jean-Paul Thiersault, et al., Owner of Record: *B.P. Chemical Ltd., London, England,* Attorney or Agent: Harold Haidt, Ex. Gp.: 155

4,589,053, Re. S.N. 193,731, Filed Nov. 29, 1988, Cl. 361/213, METHOD AND DEVICE FOR CHARGING OR DISCHARGING A MEMBER, Nagao Hosono, et al., Owner of Record: *Canon Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: David M. Quinlan, Ex. Gp.: 214

4,605,938, Re. S.N. 232,110, Filed Aug. 12, 1988, Cl. 346/76PH, THERMAL TRANSFER RECORDING APPARATUS, Jyunichi Matsuno, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Gregory E. Montone, Ex. Gp.: 216

4,612,884, Re. S.N. 248,995, Filed Sept. 23, 1988, Cl. 123/90.16, VALVE OPERATING AND INTERRUPTING MECHANISM FOR INTERNAL COMBUSTION ENGINE, Yoshio Ajiki, et al., Owner of Record: *Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Conrad R. Slocum, Jr., Ex. Gp.: 346

4,713,243, Re. S.N. 272,354, Filed Nov. 16, 1988, Cl. 424/151, BIOADHESIVE EXTRIDED FILM FOR INTRA-ORAL DRUG DELIVERY AND PROCESS, Michael T. Schiraldi, Owner of Record: *Johnson & Johnson Products, Inc., New Brunswick, N.J.* Attorney or Agent: Joseph J. Brindisi, Ex. Gp.: 125

4,729,805, Re. S.N. 265,905, Filed Nov. 1, 1988, Cl. 156/160, RECORDING MEDIUM ANNEALING PROCESS, Jerry L. Alexander, et al., Owner of Record: *Inventors,* Attorney or Agent: Douglas B. Little, Ex. Gp.: 131

4,741,251, Re. S.N. 272,067, Filed Nov. 15, 1988, Cl. 92/57, SWASHPLATE ASSEMBLY FOR A SWASHPLATE TYPE HYDRAULIC PRESSURE DEVICE, Isytomu Hayashi, et al., Owner of Record: *Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: John D. McConaghy, Ex. Gp.: 341

4,763,291, Re. S.N. 272,950, Filed Nov. 18, 1988, Cl. 364/704, REMOTE DISPLAY DEVICE FOR A MICROCOMPUTER, Jeffrey G. Schwaber, Owner of Record: *Project Bemjamin, Ltd., Winter Park, Fla.,* Attorney or Agent: James H. Beusse, Ex. Gp.: 131

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,872,462, Reexam. No. 90/001,652, Requested: Nov. 29, 1988, Cl. 360/324, FORM FILLING SYSTEM AND METHOD, Jerome H. Lemelson, Owner of Record: *Inventor, Princeton, N.J.,* Attorney or Agent: None, Ex. Gp.: 260, Requester: Epson America Inc., Torrance, Calif.

4,391,705, Reexam. No. 90/001,650, Requested: Nov. 26, 1988, Cl. 210/218, BALLASTING DIGESTOR COVERS, Lyn W. Cook, et al., Owner of Record: *Envirotech Corp., Salt Lake City, Ut.,* Attorney or Agent: R. E. Krebs, Ex. Gp.: 130, Requester: Westech Engineering Inc., Salt Lake City, Ut.

4,468,702, Reexam. No. 90/001,649, Requested: Nov. 29, 1988, Cl. 358/245, RADIATION AND STATIC ELECTRICITY SUPPRESSION DEVICE, Louis Jandrell, Owner of Record: *Daca International, B.V., Sligo, Ireland,* Attorney or Agent: Albert J. Hillman, Ex. Gp.: 260, Requester: Kerkam, Stowell, Kondracki & Clarke, Falls Church, Va.,

4,559,382, Reexam. No. 90/001,651, Requested: Nov. 28, 1988, Cl. 524/535, PROCESSABLE RADIATION CURABLE POLY (VINYL CHLORIDE) RESIN COMPOSITIONS, John A. Martens, et al., Owner of Record: *Minnesota Mining & Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: David Weinstein, Ex. Gp.: 150, Requester: Owner

4,611,104, Reexam. No. 90/001,653, Requested: Nov. 29, 1988, Cl. 200/43.80, ELECTROMECHANICAL SWITCH ACTUATOR HAVING HIGH SECURITY KEY ACTUATOR, Redreddy S. Reddy, Owner of Record: *Vapor Corp., Chicago, Ill.,* Attorney or Agent: John F. Flannery, Ex. Gp.: 240, Requester: Owner

4,651,513, Reexam. No. 90/001,654, Requested: Dec. 1, 1988, Cl. 57/217, LAYERED STEEL CORD, Paul Dambre, Owner of Record: *N.V. Bekaert S.A., Zwevegem, Belgium,* Attorney or Agent: Arthur Schwartz, Ex. Gp.: 240, Requester: Owner

Patents Available for License or Sale

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

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Applications for license may be addressed to: Patent Counsel, GE Appliances, General Electric Co., Appliance Park 2-226, Louisville, Ky. 40225.

4,197,717. HOUSEHOLD REFRIGERATOR INCLUDING A VACATION SWITCH.
4,296,299. APPARATUS FOR THAWING FROZEN FOOD IN A REFRIGERATION APPLIANCE.
4,303,820. CAPACITATIVE APPARATUS FOR THAWING FROZEN FOOD IN A REFRIGERATION APPLIANCE.
4,422,129. HUMIDITY SENSOR.
4,429,544. REFRIGERANT STORAGE SYSTEM FOR A HEAT PUMP.
4,429,578. ACOUSTICAL DEFECT DETECTION SYSTEM.
4,463,348. REFRIGERATOR DOOR USAGE MONITOR AND DISPLAY SYSTEM.
4,534,179. AIR CONDITIONING DEVICE.
4,543,799. HOUSEHOLD REFRIGERATOR WITH AIR CIRCULATING AND COOLING ARRANGEMENT.
4,606,112. REFRIGERATOR CABINET AND METHOD OF ASSEMBLY.
4,704,237. VACUUM FORMING PROCESS FOR ARTICLES HAVING HIGH FORMING STRESSES.
4,706,363. METHOD OF REINFORCING A STRUCTURAL ASSEMBLY.
4,722,018. BLOCKED CONDENSER AIRFLOW PROTECTION FOR REFRIGERATION SYSTEMS.
4,722,019. PROTECTION METHODS AND SYSTEMS FOR REFRIGERATION SYSTEMS SUITABLE FOR A VARIETY OF DIFFERENT MODELS.
4,724,678. SELF-CALIBRATING CONTROL METHODS AND SYSTEMS FOR REFRIGERATION SYSTEMS.
4,727,320. METHOD AND APPARATUS FOR MOTOR SIZE DETERMINATION.
4,737,616. POWER CONTROL FOR COOKING APPLIANCE WITH TRANSIENT OPERATING MODES.
4,755,655. THERMAL PROTECTION ARRANGEMENT FOR SOLID DISK GLASS COOKTOP.

Simon J. Hoffman offers to license or sell each of the following patents on reasonable terms. Inquiries should be directed to John K. McCulloch at 5291 Colony Dr. N., Saginaw, Mich. 48603.

3,750,283. BLADE ATTACHMENT MEANS FOR SABER SAW ASSEMBLY.
3,823,473. BLADE ATTACHMENT MEANS FOR SABER SAW ASSEMBLY.
3,901,117. SABER SAW AND BLADE THEREFOR.
4,204,692. BLADE HOLDER FOR SABER SAW.
4,285,129. HOLDER FOR SABER SAW BLADE.
4,299,402. BLADE HOLDER FOR SABER SAW.
4,470,196. HOLDER FOR SABER SAW BLADE.
4,594,781. HOLDER FOR SABER SAW BLADE.
4,648,182. HOLDER FOR SABER SAW BLADE.

4,135,596. HOSE TRAY FOR LIQUID TRANSPORTER. *Glen R. Silba,* R.R. 7, Box 357A, Springfield, Mo. 65802.
4,185,407. DISPLAY DEVICE ELECTRIC OR BATTERY RUN. *Jack W. Lamb.* 10822 Magnolia Blvd., North Hollywood, Calif. 91601.
4,491,212. PICKERS AID. *Frank L. Gray,* P.O. Box 2950, Gary, Ind. 46403.
4,505,902. SKIN TREATMENT PREPARATION. *Mary Alice Millare,* 2068 Belover Dr., Memphis, Tenn. 38127.
4,576,178. AUDIO SIGNAL GENERATOR. *Guy W. Shoup,* Wyatt, Gerber, Shoup & Badie, One Rockefeller Plaza, New York, N.Y. 10020.
4,702,704. TETRAHEDRAL CODON STERO-TABLE. *Leonard R. Svensson,* Birch, Stewart, Kolasch & Birch, P.O. Box 747, Falls Church, Va. 22046.
4,765,618. TENNIS TABLE ROBOT. *Peter R. Bahn,* 744 New Britain Ave., Farmington, Conn. 06032.
4,767,511. CHLORINATION AND PH CONTROL SYSTEM. *Pedro Aragon,* 306 Highpoint Dr., Wadsworth, Ohio 44281.
07/185,131. BEVEL-SPLINED COMPONENT. *Stanley Walker,* Rte. 4 Box 13, Eureka Springs, Ariz. 72632.
07/158,398. ELECTRONIC DIGITAL DICE I, ELECTRONIC DIGITAL DICE II. *Glenn E. Simpson,* 204 N. 3rd St., Libertyville, Ill. 60048.
07/238,519. FRAME A 'SPECIAL' CARD. *Dorothy M. Smith,* 5828 Vandergrift Ave., Rockville, Md. 20851.

Errata

The following registration number, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of March 22, 1988, was listed inadvertently:

1,481,522	TM 159	Mar. 22, 1988

Consequently, the certificate of registration bearing the above-identified registration number was not issued on the date indicated, and the registration number has been vacated.

Dec. 12, 1988. PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Service by Publication

A petition to cancel the registrations below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notrice is hereby given that unless the registrant listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Tri-State Engineering Co., Washington, Pa., Reg. No. 512,417 for the mark "CARGOTAINER," Canc. No. 17,017.

PBI Industries, Rochester, Pa., Reg. No. 929,408 for the mark "PBI INDUSTRIES," Canc. No. 17,046.

Sport's of America, Inc., Reno, Nev., Reg. No. 1,219,509 for the mark "SPORT'S" and design, Canc. No. 17,260.

ERMA S. BROWN,
Administrator of the Trademark Trial and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner for Trademarks.

Survey of Registered Practitioners In Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on Nov. 18, 1988 from the Office of Enrollment and Discipline (OED) to all practitioners in patent cases whose last names begin with K through O. Enclosed with the letter was a data sheet which had to be completed and returned to OED as soon as possible. All data sheets returned to OED will be acknowledged. Failure by a practitioner to submit a completed data sheet within the time period specified in the survey letter will result in the practitioner being removed from the register in accordance with CFR 10.11(b).

If your last name begins with K through O and you have not received a data sheet or if you returned the data sheet to OED and you did not receive an acknowledgement within three (3) months after returning the data sheet to OED, please contact Patricia M. Jordan at (703) 557-1728.

Dec. 12, 1988. CAMERON WEIFFENBACH,
Director, Office of Enrollment and Discipline.

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PATENT NOTICES

Certificates of Correction for the Week of Jan. 10, 1989

P.P. 5,212	4,723,193	4,750,017	4,762,449
P.P. 5,215	4,724,520	4,750,050	4,762,744
P.P. 5,862	4,726,571	4,750,090	4,762,924
D. 293,570	4,726,854	4,750,175	4,763,345
D. 297,124	4,726,924	4,750,614	4,763,443
4,225,607	4,727,153	4,750,787	4,763,453
4,518,613	4,727,781	4,750,847	4,763,562
4,521,272	4,727,930	4,751,719	4,763,769
4,531,959	4,728,858	4,751,774	4,763,784
4,533,529	4,729,583	4,752,024	4,763,934
4,538,527	4,729,697	4,752,258	4,764,030
4,552,645	4,730,597	4,752,642	4,764,576
4,567,411	4,731,285	4,752,685	4,764,761
4,569,906	4,731,654	4,752,707	4,764,942
4,572,515	4,731,771	4,752,747	4,764,976
4,586,801	4,733,065	4,753,474	4,765,344
4,598,349	4,733,219	4,753,911	4,765,543
4,614,112	4,733,747	4,753,936	4,765,667
4,626,006	4,734,225	4,754,190	4,765,766
4,628,476	4,734,348	4,754,477	4,765,843
4,639,273	4,734,453	4,755,386	4,765,910
4,654,362	4,734,847	4,755,977	4,765,958
4,656,520	4,735,701	4,756,175	4,766,316
4,665,979	4,736,029	4,756,650	4,766,446
4,673,753	4,737,604	4,757,071	4,766,553
4,674,856	4,738,413	4,757,289	4,766,676
4,681,790	4,738,646	4,757,605	4,766,928
4,688,900	4,738,657	4,758,222	4,767,198
4,690,142	4,741,078	4,758,369	4,767,215
4,695,569	4,741,562	4,758,581	4,768,294
4,696,597	4,741,727	4,759,203	4,768,627
4,697,028	4,742,973	4,759,910	4,768,696
4,699,013	4,743,208	4,759,929	4,768,918
4,702,256	4,743,252	4,760,096	4,770,440
4,703,287	4,743,886	4,760,252	4,770,780
4,703,416	4,743,968	4,760,329	4,772,483
4,705,558	4,744,827	4,760,540	4,772,800
4,705,786	4,744,873	4,760,596	4,773,032
4,708,356	4,745,206	4,760,937	4,733,401
4,708,770	4,745,608	4,761,257	4,774,630
4,709,033	4,745,836	4,761,281	4,744,675
4,712,968	4,746,688	4,761,284	4,776,266
4,716,763	4,747,608	4,761,312	4,776,680
4,717,323	4,748,236	4,762,007	4,783,624
4,718,056	4,748,519	4,762,243	
4,721,763	4,749,518	4,762,260	

Disclaimers

4,509,113.—*Chester A. Heath,* Boca Raton, Fla. PERIPHERAL INTERFACE ADAPTER CIRCUIT FOR USE IN I/O CONTROLLER CARD HAVING MULTIPLE MODES OF OPERATION. Patent dated Apr. 2, 1985. Disclaimer filed Nov. 4, 1988, by the assignee, *International Business Machines Corp.*

The term of this patent subsequent to May 29, 2001, has been disclaimed.

4,555,007.—*Richard F. Harrington,* Lincolnwood; *Richard T. Dagiel,* Elk Grove Village; and *Villy Brown,* Chicago, all of Ill. SELF ADJUSTING THRUST, LOW ANGULAR CONTACT BEARING. Patent dated Nov. 26, 1985. Disclaimer filed Nov. 30, 1987, by the assignee, *Aetna Bearing Co.*

Hereby enters this disclaimer to claims 1–7 of said patent.

4,624,544.—*Lothar S. Jeromin,* Sierra Madre, Calif. AUTOMATIC XEROGRAPHIC PLATE DEVELOPMENT SYSTEM. Patent dated Nov. 25, 1986. Disclaimer filed Oct. 31, 1988, by the assignee, *Xerox Corp.*

Hereby enter this disclaimer to claim 2 of said patent.

4,783,705.—*Ronald R. Moon,* Santa Clara; *Michael G. Machado,* San Jose; *Thomas G. Cooper,* Palo Alto; *Patrick M. Weiher,* Los Altos; *Curtis H. Bruner,* Los Gatos; *Mark E. Strysko,* Sunnyvale; *Gregg J. Uhlendorf,* San Jose; *Steven G. Campbell,* San Jose; *Toung T. Quan,* San Jose; *Hoa V. Luong,* Milpitas, all of Calif. Patent dated Nov. 8, 1988. Disclaimer filed Oct. 20, 1988, by the assignee, *Quantum Corp.*

The term of this patent subsequent to May 26, 2004, has been disclaimed.

Disclaimers and Dedications

4,705,951.—*Frederick P. Layman,* Fremont; *David A. Huntley,* Mountain View; *Paul H. Dick,* San Jose; *George L. Coad,* Lafayette; *Michael J. Kuhlman,* Fremont; *Roger M. Vecta,* San Jose; *Phillip M. Hobson,* Los Altos, all of Calif. WAFER PROCESSING SYSTEM. Patent dated Nov. 10, 1987. Disclaimer and Dedication filed Sept. 28, 1988, by the assignee, *Varian Associates, Inc.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,713,551.
Frederick P. Layman and *Michael J. Kuhlman,* both of Fremont, Calif. SYSTEM FOR MEASURING THE POSITION OF A WAFER IN A CASSETTE. Patent dated Dec. 15, 1987. Disclaimer and Dedication filed Sept. 28, 1988, by the assignee, *Varian Associates, Inc.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,764,076.—*Frederick P. Layman,* Fremont; *Phillip M. Hobson,* Los Altos; and *Paul H. Dick,* San Jose, all of Calif. VALVE INCORPORATING WAFER HANDLING ARM. Patent dated Aug. 16, 1988. Disclaimer and Dedication filed Sept. 28, 1988, by the assignee, *Varian Associates, Inc.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

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PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 3, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-17-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-15-85
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-28-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-3-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	11-10-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	6-19-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-7-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during December 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,624,839 to 3,631,538, inclusive

Plant Patents ..... None

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REEXAMINATIONS

JANUARY 10, 1989

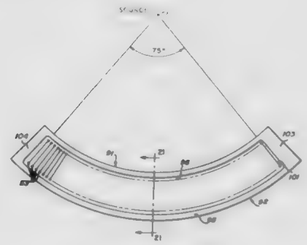
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,075,491 (988th)

POSITION SENSITIVE X-RAY OR γ-RAY DETECTOR AND 3-D TOMOGRAPHY USING SAME

Douglas P. Boyd, Palo Alto, Calif., assignor to The Board of Trustees of Leland Stanford, Jr. University, Stanford, Calif.

Reexamination Request No. 90/001,333, Sep. 21, 1987.
Reexamination Certificate for Patent No. 4,075,491, issued Feb. 21, 1978, Ser. No. 738,630, Nov. 3, 1976.
Continuation of Ser. No. 528,025, Nov. 29, 1974, abandoned.
Int. Cl.[4] A61B *6/02*; G01N *23/04*; G01T *1/18*; H01J *47/06*
U.S. Cl. 378—19



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **9**, **14** and **19** are determined to be patentable as amended.

Claims **2–8**, **10–13**, **15–18** and **20–23**, dependent on an amended claim, are determined to be patentable.

New claims **24–27** are added and determined to be patentable.

1. [A] *For use in X-ray computed tomography, a* position-sensitive detector for detecting *continuous* divergent rays of penetrating radiation transmitted from [a] *an X-ray point* source of penetrating radiation through an object [being examined] *to be imaged*, said detector comprising:

a detector housing;

anode and cathode electrode means spaced apart to define a gap therebetween within said housing, said housing adapted to receive an ionizable gaseous medium disposed in the space between said anode and cathode electrode means; [and]

at least one of said spaced apart anode or cathode electrode means including a divergent array of spaced apart elongated electrically conductive [electrode portions] *electrodes* defining a divergent array of elongated detector gaps therebetween, such elongated [electrode portions] *electrodes* being elongated along radial lines with a common center at a point in space corresponding to the position of the *point* source of penetrating radiation *with said electrodes being parallel to radiation emitted by the X-ray point source of penetrating radiation; and*

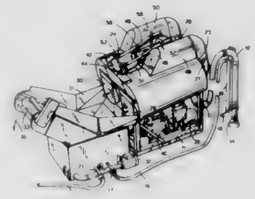
a plurality of separate signal detection means each individually connected to a respective one of said electrodes for simultaneously detecting a signal from each of said electrodes.

B1 4,517,099 (989th)

APPARATUS AND METHOD FOR HANDLING SOLIDS IN LIQUID

Raymond A. Breckner, 11360 Granville Ave., Richmond, British Columbia, Canada (V6Y 1R6)

Reexamination Request No. 90/001,390, Dec. 4, 1987.
Reexamination Certificate for Patent No. 4,517,099, issued May 14, 1985, Ser. No. 540,166, Oct. 7, 1983.
Int. Cl.[4] B01D *21/24*
U.S. Cl. 210—741



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

1. An apparatus for handling a solid/liquid mixture comprising solids carried in a liquid, the apparatus having a receiving chamber adapted to receive the mixture from a delivery duct and to hold the mixture temporarily, the chamber communicating with a low air pressure source or vacuum source through a main directional valve, the chamber having an inlet valve communicating with the delivery duct to receive the mixture, an outlet valve to discharge the mixture from the chamber, an admitting valve to raise pressure in the chamber, and a quantity sensing means responsive to a predetermined quantity of mixture within the chamber, the apparatus being characterized by:

(a) the inlet valve being positioned adjacent an upper portion of the chamber above a maximum upper level of mixture within the chamber, and the chamber being connectable, as required, to the low pressure source to expose the inlet valve to a pressure difference so as to open the inlet valve and to draw the mixture therethrough,

(b) a riser means positioned upstream of the inlet valve and adapted to receive and to constrain the mixture to move initially upwardly prior to discharging through the inlet valve into the chamber, the riser means being shaped so as to cause solids, that might other wise tend to rest adjacent the inlet valve when the mixture flow therethrough ceases, to fall under gravity either forwardly through the inlet valve and into the chamber, or backwardly towards the mixture within the delivery duct,

(c) time delay means responsive to the quantity sensing means to actuate the main directional valve when the predetermined quantity is attached to disconnect the vacuum source from the chamber, while concurrently permitting the mixture to continue to flow through the inlet valve under a gradually reducing pressure difference, so that flow through the inlet valve eventually ceases at a time when the maximum upper level is attained, prior to opening of the admitting valve to raise pressure in the chamber which closes the inlet valve, so as to provide

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time for solids to clear the inlet valve before closure thereof.

11. A method of handling a solid/liquid mixture comprising solids carried in a liquid, in which the mixture is temporarily stored within a receiving chamber having an inlet valve to receive the mixture, an outlet valve to discharge the mixture, an admitting valve to raise pressure in the chamber, and a quantity sensing means responsive to a predetermined quantity of mixture within the chamber, the method including steps of:

(a) positioning the inlet valve adjacent an upper portion of the chamber above a maximum upper level of mixture within the chamber,

(b) exposing the chamber to a vacuum source to generate a pressure difference across the inlet valve to cause the mixture to flow into the chamber, and concurrently constraining the flow of mixture by a riser means which causes the mixture to move upwardly prior to entering the inlet valve and discharging into the chamber,

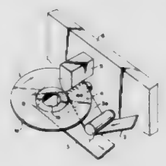
(c) sensing when the amount of mixture within the chamber attains the predetermined quantity, and disconnecting the vacuum source from the chamber while permitting continuation of the flow of mixture into the chamber so that the continuing flow gradually decreases the pressure difference across the inlet valve, so that flow of mixture through the inlet valve eventually ceases at a time when a maximum upper level of mixture within the chamber is below the inlet valve,

(d) opening the admitting valve sometime after disconnecting the vacuum source to provide a time delay sufficient to permit any solids coming to rest adjacent the inlet valve, when the mixture flow therethrough ceases, to fall under gravity either forwardly through the inlet valve and into the chamber, or backwardly towards the mixture within the delivery duct, so as to raise pressure in the chamber to permit the inlet valve to close and the outlet valve to open to discharge the mixture from the chamber.

B1 4,656,790 (990th)
BURNISHING METHOD AND APPARATUS FOR MAGNETIC DISK

Kazuo Mukai; Akira Houjoh, both of Tokyo, and Shuji Nakata, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Reexamination Request No. 90/001,433, Jan. 29, 1988.
Reexamination Certificate for Patent No. 4,656,790, issued Apr. 14, 1987, Ser. No. 801,762, Nov. 26, 1985.
Claims priority, application Japan, Dec. 4, 1984, 59-256290
Int. Cl.[4] B24B *21/00*
U.S. Cl. 51—141



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **3** are determined to be patentable as amended.

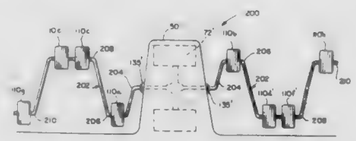
Claims **2** and **4**, dependent on an amended claim, are determined to be patentable.

1. A method of burnishing a surface of a magnetic disk by use of an abrasive tape, which comprises the steps of: rotating said magnetic disk, jetting compressed air via [opposed air nozzles to the same positions on the two surfaces] *a first air nozzle directly against one surface of the magnetic disk and via a second air nozzle on the opposite side of the disk toward a corresponding position on the opposite side surface* of said magnetic disk, intervening said abrasive tape between [one of said air nozzles] *the second air nozzle* and *the opposite* one of said surfaces of said magnetic disk, and closely contacting said abrasive tape with the [magnetic material] *opposite side* surface of said magnetic disk and thereby conducting the burnishing *under controlled contact pressure condition, the second air nozzle providing an unimpeded air flow from the nozzle to the abrasive tape.*

B1 4,668,196 (991st)
MANUALLY POWERED BOAT

Charles E. Billmayer, and Robert P. Koch, both of Grand Rapids, Mich., assignors to Leisure Life Limited, Grand Rapids, Mich.

Reexamination Request No. 90/001,498, Apr. 21, 1988.
Reexamination Certificate for Patent No. 4,668,196, issued May 26, 1987, Ser. No. 833,348, Feb. 25, 1986.
Int. Cl.[4] B63H *5/02*
U.S. Cl. 440—26



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **8**, **13**, **19**, **22** and **33** is confirmed.

Claims 1–7, 9–12, 14–18, 20, 21 and 23–32 are cancelled.

New claim **34** is added and determined to be patentable.

13. The boat of claim **1** wherein said means for rotatably mounting said propulsion means include bearing means mounted on said hull means; said bearing means including shaft engaging surface means extending through said hull means, flange means extending over at least a portion of said manual crank means for protecting said manual crank means against water from said propulsion means, and fastener means extending through said hull means for securing said bearing means thereon.

34. A manually powered boat comprising:

a buoyant hull means for floating said boat on water, said hull means having a longitudinal center line, extending therealong;

seat means for supporting at least three persons transversely across the width of said boat;

propulsion means for engaging the water for propelling said boat through the water;

means for rotatably mounting said propulsion means on said hull means;

manual crank means extending to either side of said center line and connected to said propulsion means for rotating said propulsion means to propel said boat; support means for supporting said manual crank means; said manual crank means having an axis of rotation and including extending portions having at least three extremity engaging areas on each side of said center line which are offset from said axis of rotation; the first of said areas on each side of said center line being closest to and immediately adjacent said center line and being offset across said axis of rotation from one another; said first areas each including first extremity engaging means for receiving an operator's extremity to operate said manual crank means and propulsion means; said second extremity engaging areas on each side of said center line including second extremity engaging means for engagement by adjacent extremities of at least two operators who are seated immediately adjacent and side-by-side one another on said seat means such that their adjacent extremities will be moved in unison during operation of said boat; the third extremity engaging areas on each side of said center line including third extremity engaging means for receiving an extremity of an operator different from the operator of said first area on each side to operate said manual crank means and propulsion means; said second and third areas on each side of said center line being spaced successively from said center line outwardly of said first area; said second extremity receiving areas being offset oppositely across said axis of rotation from said first and third areas on each side of said center line.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,822

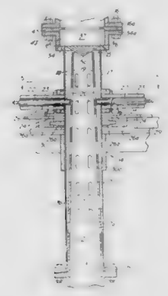
POTATO STRIP CUTTER

Joseph L. Hodges, and Glen R. Green, both of P.O. Box 10, Ontario, Oreg. 97914

Original No. 4,082,024, dated Apr. 4, 1978, Ser. No. 745,537, Nov. 29, 1976. Application for reissue Sep. 24, 1979, Ser. No. 77,945

Int. Cl.[4] B26D *7/06, 3/26*

U.S. Cl. 83—402 15 Claims



14. In an apparatus for cutting items as potatoes into strips, which apparatus comprises convergent conduit means followed by elongate conduit means followed by knife conduit means, means for hydraulically feeding said items to be cut into said convergent conduit means, and a strip cutting knife device in said knife conduit means, the combination therewith of a mechanism in said elongate conduit means for positioning said items in the hydraulic flow path for movement into said cutting knife device, said mechanism comprising a series of elongate walls internally of said elongate conduit means and peripheral to the flow passage therethrough each of said walls beings hingedly connected to the elongate conduit means at the upstream end of the wall but otherwise free along its length to move toward and away from the longitudinal axis of the elongate conduit means; means normally maintaining said walls at respective extreme positions of inward swing to define a flow passage of minimum cross-sectional area through the elongate conduit means; means for simultaneously and equivalently moving all of said walls outwardly to provide a flow passage of increased cross-sectional area through the elongate conduit means, when an item, which is being hydraulically carried through the elongate conduit means impacts against one or more of said walls; and passages in said walls permitting flow of hydraulic fluid to substantially equalize hydraulic pressure against said walls so they are not forced to increased cross-sectional area under hydraulic flow pressure.

Re. 32,823

APPARATUS AND METHOD FOR SEGREGATING PARTS

Larry C. Dahlby, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Original No. 4,676,380, dated Jun. 30, 1987, Ser. No. 821,661, Jan. 23, 1986. Application for reissue Jan. 27, 1988, Ser. No. 149,047

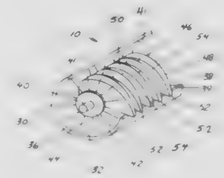
Int. Cl.[4] B07C *5/04, 5/36*

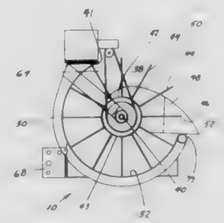
U.S. Cl. 209—616 21 Claims

20. A device for segregating parts of predetermined dimensions from a jumbled flow of such parts and unwanted pieces longer than said predetermined dimensions, comprising:

path means, including a chute having a cylindrical inside surface defining a lateral opening therethrough, for restricting the jumbled flow to a fixed flow space along a flow length, the cylindrical surface defining the fixed flow space;

a three-dimensional array of pickup fingers substantially filling the fixed flow space and extending therebeyond, said fingers spaced apart by distances greater than the predetermined dimensions of the parts, the distal portions of the fingers being so disposed in the chute as to contact both the parts and the unwanted pieces passing therethrough;





means to continuously move successive distal portions of the pickup finger array out of and into the fixed flow space, for selectively picking up and removing the unwanted pieces from the cylindrical inside surface of the chute; and

stationary means between the fingers and extending from the fixed flow space laterally to a position adjacent thereto, for receiving the unwanted pieces from the pickup-finger array thereby stripping the unwanted pieces from said fingers during pickup-finger array movement, the stationary stripping means extending through the cylindrical surface lateral opening.

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Re. 32,824

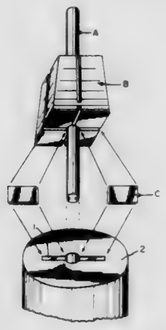
PRE-MADE REINFORCEMENT DEVICE

Geoffrey C. Bushway, Virginia Beach, Va., assignor to Advanced Dental Technology, Inc., Las Vegas, Nev.

Original No. 4,543,065, dated Sep. 24, 1985, Ser. No. 556,911, Dec. 1, 1983. Application for reissue Feb. 4, 1986, Ser. No. 825,989

Int. Cl.[4] A61C *5/08*

U.S. Cl. 433—221 **32 Claims**



31. The device of claim 33 wherein said core portion, said anti-rotational portion, and said post portion are symmetrical along said common axis, respectively.

Re. 32,825

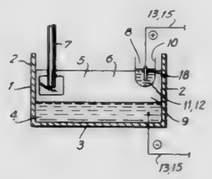
PROCESS FOR THE ELECTROCHEMICAL REDUCTIVE BLEACHING OF LIGNOCELLULOSIC PULP

Michael N. Hull, Bardonia, and Vacheslav M. Yasnovsky, Orangeburg, both of N.Y., assignors to International Paper Company, Tuxedo Park, N.Y.

Original No. 4,596,630, dated Jun. 24, 1986, Ser. No. 684,993, Dec. 21, 1984. Application for reissue Jun. 17, 1987, Ser. No. 63,466

Int. Cl.[4] D21C *9/10*

U.S. Cl. 162—50 **11 Claims**



1. [A continuous] *An* electrochemical reductive process for increasing the brightness of lignocellulosic pulp which comprises reacting said lignocellulosic pulp with a polydentate ligand complex of Cr^{++} or V^{++} formed by the electrochemical reduction of the complexed trivalent chromium or vanadium metal ion having a concentration from about 0.1 millimole to the upper limit of solubility of the complex wherein the lignocellulosic pulp is brightened during the reaction.

Re. 32,826

CATIONIC TECHNETIUM COMPLEXES USEFUL AS RADIODIAGNOSTIC AGENTS

Karen E. Linder, Kingston, N.J., assignor to E. I Du Pont de Nemours and Company, Wilmington, Del.

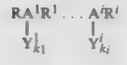
Original No. 4,512,967, dated Apr. 23, 1985, Ser. No. 404,372, Aug. 2, 1982. Application for reissue Feb. 6, 1987, Ser. No. 11,606

Int. Cl.[4] A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **26 Claims**

1. A cationic lipophilic complex of technetium wherein all of the coordination positions of the technetium atom are filled with a donor atom having a pair of electrons available for forming a coordinate bond with technetium to form said cationic complex, said donor atoms being provided by ligands or salts thereof, said ligands having the following structure:

(A)



wherein:

i is an integer from 1 to 6;

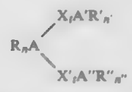
R, R^1, R^2, R^3, R^4, R^5 and R^6 are each independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups, and R plus R′ may be taken together to form a cyclic compound or separately to form a linear compound;

Y^1, Y^2, Y^3, Y^4, Y^5 are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A^1, A^2, A^3, A^4, A^5 and A^6 are each, independently, a donor atom having a free electron pair available for complexing with Tc-99m or Tc-99 to form a cationic complex; and

k_1, k_2, k_3, k_4, k_5 and k_6 are each independently zero or one;

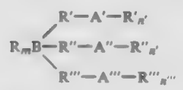
(B)



wherein:

R, R′ and R″ are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocylcloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

X and X′ are saturated or unsaturated alkyl groups; A, A and A″ are independently selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99 to form a cationic complex; t and t′ are independently 0 or 1; n is 0, 1 or 2; and n′ and n″ are independently the integer 1 or 2; or



wherein

R, R′, R″ and R‴ are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocylcloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A′, A″ and A‴ are independently selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99 to form a cationic complex;

B is an atom selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99, boron, or from the elements of Group IV A of the periodic table;

m is 0 or 1; and

n′, n″ and n‴ are independently the integer 1 or 2.

21. The cationic lipophilic complex of technetium of claim 1 wherein the Tc in said complex is Tc(I) and wherein said complex is $[^{99m}Tc(1,2\text{-bis-}(dimethylphosphino)ethane)_3]^+$.

Re. 32,827

NEUTRAL HYDROCARBOXYCARBONYL THIONOCARBAMATE SULFIDE COLLECTORS

Yun-Lung Fu, Milford, and Samuel S. Wang, Cheshire, both of Conn., assignors to American Cyanamid, Stamford, Conn.

Original No. 4,657,688, dated Apr. 14, 1987, Ser. No. 806,585, Dec. 9, 1985. Division of Ser. No. 641,657, Aug. 17, 1984, Pat. No. 4,584,097. Application for reissue Jul. 30, 1987, Ser. No. 79,629

Int. Cl.[4] C09K *3/00*

U.S. Cl. 252—61 **13 Claims**

1. A collector composition for froth flotation of sulfide minerals comprising at least one hydrocarboxycarbonyl thionocarbamate selected from the group consisting of:

[N-ethoxycarbonyl-O-n-butyl thionocarbamate;**]**

N-ethoxycarbonyl-O-isobutyl thionocarbamate;

N-ethoxycarbonyl-O-sec. butyl thionocarbamate;

N-ethoxycarbonyl-O-n-amyl thionocarbamate;

N-ethoxycarbonyl-O-isoamyl thionocarbamate;

N-ethoxycarbonyl-O-phenyl thionocarbamate;

N-phenoxycarbonyl-O-ethyl thionocarbamate;

N-phenoxycarbonyl-O-isopropyl thionocarbamate;

N-phenoxycarbonyl-O-n-butyl thionocarbamate;

N-phenoxycarbonyl-O-isobutyl thionocarbamate;

N-phenoxycarbonyl-O-sec. butyl thionocarbamate;

N-phenoxycarbonyl-O-n-amyl thionocarbamate and

N-phenoxycarbonyl-O-isoamyl thionocarbamate.

Re. 32,828

PASSIVE INFRARED INTRUSION DETECTION SYSTEM

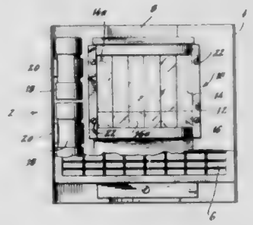
Philip H. Mudge, New Fairfield, Conn., assignor to Cerberus A.G., Switzerland

Original No. 4,275,303, dated Jun. 23, 1981, Ser. No. 93,443, Nov. 13, 1979. Application for reissue Jun. 9, 1983, Ser. No. 502,649

Int. Cl.[4] G01J *1/00*

U.S. Cl. 250—342 **24 Claims**

11. In a passive infrared intrusion detector of the type including an infrared sensing element, responsive to infrared radiation emanating from within at least one zone comprising an angular region of space desired to be protected and including means coupled to said sensing element for actuating a signal in response to changes in said infrared radiation within said zone, the improvement comprising: a lamp for emitting visible light and means for focusing said visible light to be emitted from said infrared intrusion detector into said angular region of space, said light being emitted in a direction generally parallel to the direction of radiation from said zone to said sensing element such that the boundaries of said



zone are defined by the location of said detector and the angular region of space in which said light is visually observable.

Re. 32,829

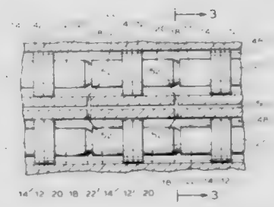
RECTIFIER WITH SLUG CONSTRUCTION AND MOLD FOR FABRICATING SAME

T. Michael McCann, Beaseville, Ill., assignor to General Instrument Corp., New York, N.Y.

Original No. 4,564,885, dated Jan. 14, 1986, Ser. No. 648,672, Sep. 10, 1984. Application for reissue Jul. 24, 1987, Ser. No. 77,636

Int. Cl.[4] H01G *9/16;* **H01L** *23/28, 3/00*

U.S. Cl. 361—436 **18 Claims**



1. A rectifier comprising a **[**substantially cylindrical**]** body situated between first and second end parts to form a unit, said end parts extending radially beyond the surface of said body and defining therebetween a recess adapted to receive a molding compound applied by injecting the compound into the recess when the unit is situated within a **[**substantially cylindrical**]** cavity in a mold, the cavity having **[**a diameter**]** *dimensions* substantially equal to the **[**diameters**]** *corresponding dimensions* of said end parts and being substantially longer than said unit, the end parts cooperating with the cavity walls to substantially seal said recess from the remainder of the cavity, the compound being injected into the recess through an opening in said cavity wall aligned with the recess.

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PLANT PATENTS

GRANTED JANUARY 10, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,517

ROSE PLANT NAMED BENALAY

Frank A. Benardella, Old Tappen, N.J., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Mar. 26, 1987, Ser. No. 30,429
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by purple and near white bicolored flowers of good form which are long lasting on the plant and after cutting.

6,518

ROSE PLANT JACUTE

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Mar. 19, 1987, Ser. No. 28,186
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant and parts thereof of the miniature class substantially as herein shown and described, characterized particularly as to novelty by an ability to root and grow rapidly in a four-inch pot, attractive hybrid tea form flowers of pink color, the occasional presence of seven sepals, over 100 petals per flower and resistance to powdery mildew.

6,519

APPLE TREE 'SANSA'

Yoshio Yoshida, Ibaraki; Tadayuki Haniuda, Suzaka; Shichiro Tsuchiya, Morioka; Tetsuro Sasada, Ibaraki; Tetsuo Masuda; Hideo Bessho, both of Morioka, all of Japan, and Donald W. McKenzie, Havelock North, New Zealand, assignors to Fruit Tree Research Station, Ministry of Agriculture Forestry and Fisheries, Tsukuba, Japan

Filed Mar. 12, 1987, Ser. No. 25,029
Claims priority, application Japan, Sep. 2, 1986, 61-2023
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree, substantially as illustrated and described herein, characterized over known apple trees by (A) having a slightly weak vigor, but (B) having a good spur-bearing habit and a quite strong resistance to Alternaria blotch and Scab, (C) being reciprocal-fertile with main cultivars and productive with a regular crop and almost no physiological fruit drop, (D) having leaves with genetic yellow mottle inherited from a male parent 'Akane', and (E) producing a rather small fruit (a) maturing early in the season, and (b) having a two to three weeks keeping quality which is good as an early-maturing cultivar, a conical shape, a yellowish green ground-colored skin with a bright red coloring superior to 'Tsugaru', and a fine, juicy and crisp flesh which has a whitish yellow color, a good texture, a moderate sweetness and moderate acidity, and gives a good sweet-acid balance and an excellent dessert quality superior to 'Tsugaru'.

6,520

PRNUS SERRULATA (ROYAL BURGUNDY)

Franklin D. Parks, Rte. 2, Box 778, Beaverton, Oreg. 97007

Filed Dec. 8, 1986, Ser. No. 939,167
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of *Prunus serrulata* as described and illustrated, distinguished from the species and other known varieties by the purplish red color of its leaves, the red branches, the purplish red stem and caps and the purplish Red blossoms.

6,521

LILY NAMED SUMMER PIXIE

Edward A. McRae, Boring, Oreg., assignor to Meiridge, Inc., Aurora, Oreg.

Filed Jan. 22, 1987, Ser. No. 6,024
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily, substantially as herein shown and described, characterized by its rich orange flowers accented by golden orange midribs and a decorative ring of spots encircling the center of the flowers; the excellence of the flower form; and its versatility both as a garden plant and as a pot plant variety well suited to forcing into flower out of season from properly precooled bulbs.

6,522

LILY NAMED IRISH PIXIE

Edward A. McRae, Boring, Oreg., assignor to Meiridge, Inc., Aurora, Oreg.

Filed Jan. 22, 1987, Ser. No. 6,025
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant, substantially as herein shown and described, particularly characterized by its rich orange flowers accented by lighter colored orange midribs and a decorative central ring of spots; the excellence of its flower form; and by its short stemmed, short leaved, upright flowering silhouette; and its versatility both as a garden plant and as a pot plant variety.

6,523

LILY NAMED COPELLIA

Edward A. McRae, Boring, Oreg., assignor to Meiridge, Inc., Aurora, Oreg.

Filed Mar. 9, 1987, Ser. No. 23,780
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinctive variety of Oriental hybrid lily plant and the parts thereof, substantially as herein shown and described, and particularly characterized by its unique upright to semi-upright flowers which have a clear pink coloration along the midrib of each tepal and between moderately broad, white tepal margins; and by its vigorous growth; the excellence of its flower form and substance; and its versatility both as a garden plant and as a cut flower producer from precooled bulbs forced under glass out-of-season.

6,524

AFRICAN VIOLET PLANT NAMED TRINIDAD

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 55,876
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Trinidad, as described and illustrated, and particularly characterized by its light lavender flowers with purple on the edge of the two smaller petals, white lightly frilled edges on the other petals; first flash of flowers forming a tight bouquet above the leaves; strong upright flower stems curving toward the center; profuse flowering; vigorous growth habit; medium green,

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slightly hairy, oval leaves; and long lasting and non-dropping flowering habit.

6,525
AFRICAN VIOLET PLANT NAMED MOLOKAI
Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany
Filed Jun. 1, 1987, Ser. No. 55,877
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Molokai, as described and illustrated, and particularly characterized by its light violet blue flowers which have a darker center and which fade out to a white edge; first flash of flowers forming a tight bouquet above the leaves on strong upright flower stems curving toward the center; profuse flowering; vigorous growth habit; dark green, serrated, velvety leaves, slightly hairy; and long lasting and non-dropping flowering habit.

6,526
AFRICAN VIOLET PLANT NAMED SHENANDOAH
Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany
Filed Jun. 1, 1987, Ser. No. 55,928
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Shenandoah, as described and illustrated, and particularly characterized by its semi-double, dark blue flowers with wavy edges; nice bouquet formed on strong upright flower stems; vigorous growth habit; round to oval, medium green, slightly serrated leaves; and long lasting, non-dropping flowering habit.

6,527
AFRICAN VIOLET PLANT NAMED LEO
Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haften, Fed. Rep. of Germany
Filed Jun. 1, 1987, Ser. No. 56,145
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Leo, as described and illustrated, and particularly characterized by its long-lasting, non-dropping, double, solid blue flowers with frilled edges; strong upright flower stems, curving toward the center; profuse flowering; vigorous growth habit; very attractive girl-type leaves, wavy, strongly serrated with a white to light green center; and long lasting and non-dropping flowering habit.

6,528
LILY PLANT NAMED 'CHERISHED'
Geradus C. Van der Saim, Rte. 1, Box 422, Woodland, Wash. 98674
Filed Mar. 13, 1987, Ser. No. 25,829
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described.

6,529
ZOYSIA GRASS PLANT CV 'P-1'
Walter L. Pursley, 1038 - 41st Ave. North, St. Petersburg, Fla. 33703
Filed Mar. 18, 1987, Ser. No. 27,620
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of Zoysia grass plant, substantially as herein described and illustrated, characterized particularly by fast stolon and rhizome establishment, and of a softer finer texture, with excellent green color retention in the winter period; the new claimed Zoysia grass plant is almost entirely glabrous, of dark yellowish green color, color No. 137, with anthers of dark purplish red color, color No. 259.

6,530
CHRYSANTHEMUM PLANT NAMED CADET
Leonard H. Shoesmith, deceased, late of Woking, England (by May Victoria Shoesmith, executrix), and Peter S. Hesse, Bradenton, Fla., assignors to Ball Pan Am Plant Company, Parrish, Fla.
Filed May 29, 1987, Ser. No. 55,597
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct Chrysanthemum plant named Cadet, as illustrated and described, and particularly characterized by its bright yellow ray floret color, almost fully double flower form, jagged or uneven ray floret tips which give the cultivar a carnation-like appearance, cushion growth habit, 8 week flowering response, and by its adaptability to outdoor or commercial pot programs.

6,531
CHRYSANTHEMUM PLANT NAMED CRUSADER
Leonard H. Shoesmith, deceased, late of Westfield, England (by May V. Shoesmith, executrix), and Peter S. Hesse, Bradenton, Fla., assignors to Ball Pan Am Plant Company, Parrish, Fla.
Filed May 29, 1987, Ser. No. 55,603
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Crusader, as illustrated and described, and particularly characterized by its lavender ray floret color; single flower form; cushion growth habit; 8 week flowering response; and its ability to perform well in outdoor and pot mum programs.

6,532
AFRICAN VIOLET PLANT NAMED DENVER
Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany
Filed Jun. 1, 1987, Ser. No. 56,412
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Denver, as described and illustrated, and particularly characterized by its profuse flowering, and very pure white flowers; strong upright flower stems curving toward the center; vigorous growth habit; bright green girl type velvet leaves with light green center; and long lasting and non-dropping flowering habit.

PATENTS

GRANTED JAN. 10, 1989

ERRATA

For CLASS	See PATENT NO.
057-006	4,796,414
059-093	4,796,420
116-173	4,796,553
119-028	4,796,563
600-022	4,796,605
600-018	4,796,606
383-109	4,797,010
405-291	4,797,023
055-227	4,797,132
162-135	4,797,176
549-038	4,797,298
430-065	4,797,299
514-018	4,797,471
219-010	4,797,521
370-063	4,797,589
341-051	4,797,653
341-050	4,797,654
365-154	4,797,804
380-049	4,797,928

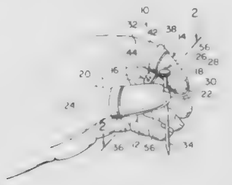
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PATENTS

GRANTED JANUARY 10, 1989

GENERAL AND MECHANICAL

4,796,302
FINGER AND THUMB PROTECTOR
Charles L. Davis, c/o George Spector, 233 Broadway RM 3815, and George Spector, 233 Broadway RM 3815, both of New York, N.Y. 10007
Filed Nov. 2, 1987, Ser. No. 115,836
Int. Cl.[4] A41D *19/00*
U.S. Cl. 2—21 4 Claims



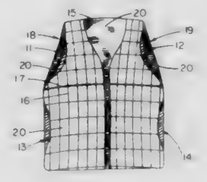
1. A finger protector which comprises:
(a) a pair of longitudinal sheaths, said first sheath having a depression on inner side near tip end thereof, said first sheath being of a size to fit over thumb of a person and said second sheath having a depression on inner side near tip end thereof, whereby said depressions are adapted to hold and guide a nail for being driven by a hammer when said depressions are in close proximity, said second sheath being of a size to fit over the index finger of the person;
(b) means pivotaly connecting said sheaths between said depressions and the joint connecting the finger and thumb whereby said sheaths are movable from an open position to a closed position with said depressions are in close proximity for holding and guiding said nail; and
(c) said sheaths having cavities at said tip ends.

4,796,303
KNEE PROTECTOR PAD
W. David Atwater, Yanceyville, N.C., assignor to Royal Textile Mills, Inc., Yanceyville, N.C.
Filed Nov. 23, 1987, Ser. No. 124,020
Int. Cl.[4] A41D *13/00*
U.S. Cl. 2—24 6 Claims



1. A protector pad for cushioning and protecting the knee of a volleyball player and the like, said protector pad including:
an elastic sleeve of textile fabric having sufficient length to cover the knee and adjacent portions of the calf and thigh of the wearer and having sufficient elasticity to snugly fit the area of the knee of the wearer,
a substantially flat elastomeric foam pad having an elliptical configuration with a major axis extending transversely of the knee of the wearer and being of sufficient width to cover opposite sides of the knee, and a minor axis extending longitudinally of the knee and being substantially shorter than said major axis,
a knit sleeve completely enclosing said elastomeric foam pad and being closed by lines of stitching at opposite upper and lower edges thereof, said pad and said knit sleeve being positioned inside of said elastic sleeve, and
spaced bar tack stitching attaching each of said upper and lower edges of said knit sleeve to said elastic sleeve to maintain said pad in a particular position inside of said elastic sleeve and across and along opposite sides of the knee of the wearer so that said elastic sleeve holds said pad in an arcuately curved configuration with said pad overlying the front and sides of the knee during use, and wherein said spaced bar tack stitching maintains full stretchability of said elastic sleeve when doffing and donning said protector pad.

4,796,304
VENTILATED HUNTING CLOTHING
Earl Shelby, 209 N. Linn St., Glenwood, Iowa 51534
Filed Oct. 19, 1987, Ser. No. 110,673
Int. Cl.[4] A41D *1/00*
U.S. Cl. 2—94 3 Claims



1. A hunting vest or the like comprising;
(a) a base fabric material,
(b) a net-like mesh material;
(c) said net-like mesh material covering the outside surfaces of said hunting vest and being attached to said base fabric material along the edges thereof except at selected edge portions and at other loci thereby forming openings thereat and pocket like structures in said vest or the like between said base fabric material and said net-like mesh material.

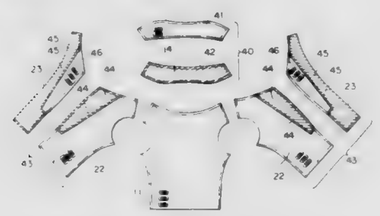
4,796,305
GARMENT
Mitsuru Itoh, 23-12, Chu-ou 1-chome, Edogawa-ku, Tokyo, Japan
Filed Oct. 21, 1987, Ser. No. 110,877
Claims priority, application Japan, Nov. 13, 1986, 61-268700
Int. Cl.[4] A41D *1/00*
U.S. Cl. 2—97 5 Claims

1. A garment comprising:
a body piece including a lapel portion;
a flyback joined to said lapel portion at one edge, said joined flyback and lapel portion being folded back against said body piece to form a lapel extending between the thus formed fold and said one edge;
a first expansible and contractible interfacing piece covering at least a portion of the surface of said lapel portion facing the flyback;
a second expansible and contractible interfacing piece covering at least a portion of the surface of said flyback facing said lapel portion, the opposite side of said flyback being

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free of interfacing material and forming the exterior surface of the folded lapel;

a first stitch, generally parallel to said one edge, joining said first interfacing piece to said body piece, said first interfacing piece extending between said one edge and said first stitch and beyond said first stitch to form a first free end portion;



a second stitch, generally parallel to said one edge, joining said second interfacing piece to said flyback, said second interfacing piece extending from the edge of said flyback opposite said one edge to said second stitch and beyond said second stitch to form a second free end, said second free end being folded back upon itself and joined to said first free end, said folded second free end urging said lapel outwardly to retain its shape.

4,796,306

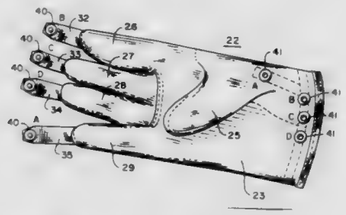
READILY ADJUSTABLE GRIP ENHANCING GRIPPING GLOVE

Rodger Mitchell, 921 Pontiac, Wilmette, Ill. 60091

Continuation-in-part of Ser. No. 22,989, Mar. 6, 1987, abandoned. This application Mar. 23, 1988, Ser. No. 173,044

Int. Cl.[4] A41D *19/00*

U.S. Cl. 2—160 **6 Claims**



1. A gripping glove comprising:

a palm;

first through fourth fingers;

a thumb; and

a back portion for receiving the hand of a user; and

first through fourth resilient grip-enhancing fource-applying means, each of said means including an elastic strap, means on the back of the associated finger for positioning said strap along the back of the finger, means securing a front end of each said strap to a predetermined position on said palm, and means for adjustably positioning a back end of each of said straps to said back portion such that the grip-enhancing force applied by the associated straps running behind the associated fingers of the user's hand within the glove for optimally distributing said grip enhancing force.

4,796,307

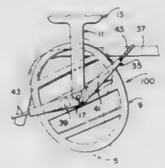
EAR PROTECTOR

Kurt Vantine, 105 E. Fairmount Ave., Maywood, N.J. 07607

Filed Mar. 12, 1987, Ser. No. 24,989

Int. Cl.[4] A42B *1/06*

U.S. Cl. 2—209 **1 Claim**



1. An ear protector for use with a headband or similar appliance, which protector comprises:

(a) a cap member of sufficient size and shape for covering an ear;

(b) suspension means including first and second ends;

(c) means pivotally connecting the cap member to the first end of the suspension means for permitting the adjustable positioning of the cap member with respect to the disposition of the ear;

(d) means for attaching the second end of the suspension means to a headband; and

(e) means for securing the protector to the temple of an eyeglass frame, which securing means includes arms attached to the cap member, each arm having a free end, and means carried at each free end for detachably securing same to the temple.

4,796,308

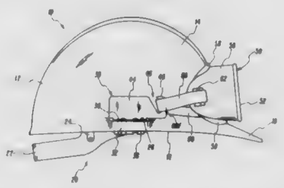
METHOD FOR RETAINING GOGGLES ON HELMET

Roy M. Bourgeois, Baton Rouge, La., assignor to American Allsafe Company, Irving, Tex.

Division of Ser. No. 052,616, May 20, 1987, Pat. No. 4,764,989. This application Feb. 1, 1988, Ser. No. 150,733

Int. Cl.[4] A42B *1/24;* **A61F** *9/02*

U.S. Cl. 2—243 R **2 Claims**



1. A method for retaining safety goggles against the crown of a safety helmet wherein said safety goggles are provided with an elastic head strap the ends of which are fastened to opposite sides of the goggles, comprising the steps of attaching first and second hook retainers onto the helmet on opposite sides of a crown portion of the safety helmet; placing the goggles and the head strap against said crown portion of the safety helmet; folding the head strap to produce first and second strap folds adjoining opposite sides of the goggles, respectively; and, looping the folded portions of the head strap around the retainer hooks with a major portion of the head strap engaging said crown portion of the safety helmet engaged by said goggles.

4,796,309

PROTECTIVE HELMET RETAINED ON THE REAR OF WEARER'S HEAD

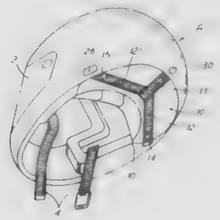
Pier L. Nava, Bergamo, Italy, assignor to Nava & Co. S.p.A., Verderio Superiore, Italy

Continuation of Ser. No. 858,374, May 1, 1986, abandoned. This application Oct. 2, 1987, Ser. No. 105,504

Claims priority, application Italy, Jul. 17, 1985, 21607 A/85

Int. Cl.[4] A42B *3/02*

U.S. Cl. 2—414 **3 Claims**



1. Protective helmet with an arched ribbon type element which engages and cooperates with the wearer's nape, for sports and similar uses, comprising flexible inextensible band-like means anchored in the rear internal part of the helmet to engage the lower part of wearer's neck, the flexible, band-like means comprising a Y-shaped structure the improvement comprising housing the Y shaped structure in the internal portion of the helmet the end of the stem of the Y being anchored in the rear central lower part of the helmet while the two lateral arms are housed laterally in the internal lower edge of the helmet and said Y shaped structure being embedded in a soft material.

4,796,310

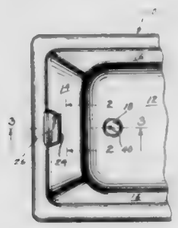
BATHTUB DRAIN VALVE CONTROL AND OVERFLOW PLATE

Robert Freville, Sheboygan Falls, and Philip Segor, Sheboygan, both of Wis., assignors to Kohler Co., Kohler, Wis.

Continuation of Ser. No. 885,055, Jul. 14, 1986, abandoned. This application Aug. 25, 1987, Ser. No. 89,923

Int. Cl.[4] E03C *1/24*

U.S. Cl. 4—199 **4 Claims**



1. A bathtub drain valve control arrangement, comprising:

a substantially vertical bathtub wall defining an overflow opening which is adapted to communicate with a downwardly directed drainpipe;

a bathtub floor defining a drain opening which is adapted to communicate with said drainpipe:

a drain valve for opening and closing fluid communication through said drain opening;

an overflow cover movably mounted adjacent one end on said substantially vertical bathtub wall so as to substantially conceal said overflow opening, said overflow cover adapted to move between open and closed positions and having a generally smooth outer surface, such that, in said closed position, said overflow cover is substantially flush with said vertical bathtub wall to follow the contours of the wall to provide a surface against which a bather could comfortably lean; and

a linkage connection said overflow cover and said drain valve, said linkage including a first linkage member pivotally connected to said overflow cover at a pivot point spaced from said mounting of said overflow cover and a second linkage member pivotally connected intermediate its ends to said bathtub wall, said second linkage member also being pivotably connected adjacent one end to said first linkage member, and linkage means connected between the other end of said second linkage member and said drain valve such that by moving said overflow cover to the open position causes one end of said second linkage member to rise and the other end to be lowered and said linkage means opens said drain valve, and moving said overflow cover to the closed position causes one end of said second linkage member to be lowered and the other end to be raised and said linkage means closes said drain valve.

4,796,311

CHEMICAL AND/OR RADIATION DECONTAMINATION

Jay Shankman, 48 Castle La., Holtsville, N.Y. 11742

Filed Apr. 10, 1987, Ser. No. 37,208

Int. Cl.[4] A47K *3/22;* **A61N** *5/00*

U.S. Cl. 4—596 **2 Claims**



1. An intake facility added on to and in combination with the emergency room of a hospital, said facility having an entrance separate from and in addition to the entrance to said emergency room for receiving and processing the disaster victims of chemical contamination prior to delivery of said victims as patients to said emergency room for treatment, comprising, external dock means for accepting exclusively as patients said victims, a contaminated intake area within said facility isolated from said emergency room for receiving said patients, trauma room means communicating with said contaminated intake area for receiving and permitting treatment of trauma patients, means in parallel with said trauma room means for receiving patients free of trauma comprising first room means for bagging the garments of the latter said patients, ejector room means for spraying patients emerging from said bagging room means with water under pressure of at least 75 psi mixed with detergent to remove adherent surface contamination, wash down room means for receiving patients emerging from said ejector room means for deluging said patients with a large flow of water to remove water and detergent remaining from said ejector room means, drying room means for blow drying patients emerging from said wash down room means, and triage room means for examining patients emerging from said drying room means, the openings into and out of said bagging, ejector, wash down and drying rooms means being aligned so that all of the patients in said room means can be viewed from

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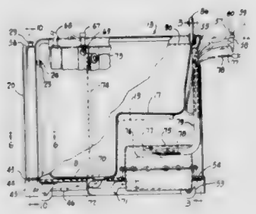
said triage room means, means for connecting said triage and said trauma room means directly to said emergency room, thereby isolating said emergency room from said chemical decontamination, means for treating the waste water from said ejector and wash down room means to permit its reintroduction into the environment, said treating means including holding tank means for receiving said waste water, and filter means for removing contaminents in said water prior to return to the environment.

4,796,312

BATHTUB WITH ACCESS DOOR IN THE SIDE THEREOF

Fred J. Corlew, 615 W. 48th St., Box 507, Ashtabula, Ohio 44004

PCT No. PCT/US84/01092, § 371 Date Mar. 10, 1986, § 102(e) Date Mar. 10, 1986, PCT Pub. No. WO86/00510, PCT Pub. Date Jan. 30, 1986
PCT Filed Jul. 13, 1984, Ser. No. 845,265
Int. Cl.[4] A47K *3/02*
U.S. Cl. 4—555 17 Claims



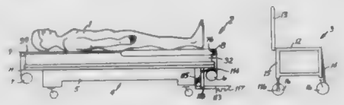
1. A bathtub comprising: a body portion, said body portion including:
a horizontal base
opposing, parallel vertical first and second walls on opposite sides of said base;
a vertical third wall interconnecting said first and second walls and said base; and
an entrance to said bathtub opposite said third wall, said entrance including opposing, vertical side edges and a horizontal base edge extending between said side edges;
a door for closing said entrance, one of said door and said entrance having an attachment surface and the other of said door and said entrance having an engagement surface wherein said door includes a central recessed portion, said attachment surface is disposed on said side edges and said base edge of said entrance, and said engagement surface is on said door projecting outwardly from said central recessed portion, said engagement surface being chamfered toward said central recessed portion;
hinge means for mounting said door on said body portion for pivotal movement between open and closed positions about an axis along one of the edges of said entrance; and
a single sealing means for sealing the interface of said door and said edges against the flow of water when the door is in the closed position, said sealing means including an elastic, elongated generally flat sealing member having an attachment edge portion and free edge portion, said attachment edge portion being attached to said attachment surface;
said free edge portion engaging said engagement surface to form the sole seal at the interface of said door and said edges against the flow of water when said door is in the closed position and the bathtub is filled with sufficient water to exert water pressure on said sealing member.

4,796,313

INVALID TRANSFER ARRANGEMENT

Paul DiMatteo, Dix Hills; Charles F. Chubb, Brookville, and Stewart Senator, Patchogue, all of N.Y., assignors to Nova Technologies Inc., Hauppauge, N.Y.

Division of Ser. No. 825,204, Feb. 3, 1986, Pat. No. 4,726,082, which is a continuation-in-part of Ser. No. 731,533, May 7, 1985, Pat. No. 4,776,047. This application Oct. 9, 1987, Ser. No. 107,372
The portion of the term of this patent subsequent to Mar. 23, 2005, has been disclaimed.
Int. Cl.[4] A61G *7/08*
U.S. Cl. 5—81 R 4 Claims



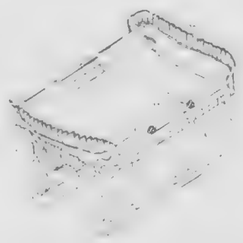
1. An invalid transfer arrangement comprising: a bed having a mattress, a bed frame, and legs; transport means having rollers at opposite ends of the bed; a flexible sheet on which a person may lie and extending over said mattress between said rollers; roller drive means for winding said sheet from a roller at one bed end and unwinding said sheet from a roller on the opposite bed end for pulling said sheet across the mattress surface so as to cause the person in a supine position to be transported across the bed; lift means having lift arms extending along each side of said mattress and movably attached to pivot points near the foot-end of said bed; lift drive means for causing said lift arms to rise above said mattress surface and rotating about said pivot points; lifting support means attached to said lift arms for raising the person to a sitting or standing position at the end of the bed.

4,796,314

PORTABLE INFANT FURNITURE

Stephanie Garduno, 33811 Oldbridge Rd., Dana Point, Calif. 92629

Filed Dec. 22, 1986, Ser. No. 945,376
Int. Cl.[4] A47D *7/00*
U.S. Cl. 5—98 A 11 Claims



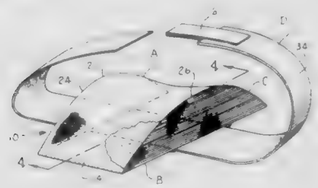
1. An infant bed foldable between unfolded and folded configuration, comprising:
a. a folding frame formed of:
(1) first and second end cross members at each end thereof which are centrally pivotally engaged;
(2) first and second upper rail members extending longitudinally between the upper ends of said cross members;
(3) first and second lowermost foot members, fixedly secured to and extending longitudinally between the lower ends of said cross members and at 45 degrees thereto, to spread outwardly when said bed is in its folded position and to assume a horizontal position when said bed is in its unfolded position, thereby stabilizing said bed in both folded and unfolded positions;
(4) first and second upper longitudinal lips, each having a centrally located elongated hand hold slot, coextensive with a respective one of said first and second upper rail members and dependent therefrom at 45 degrees thereto to assume a vertical position when said bed is in its unfolded position and to close inwardly and meet along respective inside upper edges and form a carrying handle when said bed is in its folded position; and
b. a fabric mat extending between the supported by said longitudinal rail members.

4,796,315

ROTATIONALLY CONTOURED LUMBAR CUSHION

Randolph E. Crew, 110 Stonehedge Dr., Greenville, S.C. 29615

Filed Jan. 27, 1986, Ser. No. 822,321
The portion of the term of this patent subsequent to Mar. 10, 2005, has been disclaimed.
Int. Cl.[4] A61F *5/01*; A47C *20/02*
U.S. Cl. 5—431 8 Claims



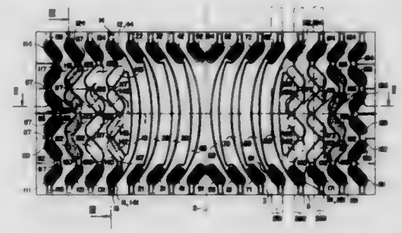
1. A rotationally contoured lumbar cushion for cradling the lumbar area while strapped to the back and facilitating turning while lying in a variety of bedrest positions comprising:
a cushion block of resilient polyurethane foam material having a lower base and an upper lumbar cradle;
said upper lumbar cradle including a convex surface for engaging a length of the spine along said lumbar area;
a concave cradle surface formed in said lumbar cradle spanning the lumbar area laterally from adjacent one side of the back to the other;
a winged cradle extension defined by said concave cradle surface extending past said lower base on opposing sides of said lower base for gripping the sides of said back, spanning said lumbar area laterally;
a rotationally contoured sidewall tapering outwardly from each said opposing side of said lower base to said winged cradle extension at each side of said cushion block, the sidewalls defining defining angles between said sidewalls and the lower base of between 45° and 75°;
said rotationally contoured sidewalls defining a fulcrum at the intersection of said lower base facilitating turning of said cushion block cradling said lumbar area between side rotated fetal and supine positions; said outwardly tapered sidewall and said lower base about which said cushion block rotates;
strap means encircling said cushion block and a waist of said person for strapping said cushion block in a lumbar cradling position during turning; and
said strap means securing said lateral winged cradle surfaces against side portions of the lower back of said person to facilitate rotation of said person without altering the cradling position of said cushion block while supporting the spine in said lumbar area.

4,796,316

MATTRESS WITH AERATION CAVITIES

Alain Bocelli, Triel Sur Seine, France, assignor to Dunlop France, Hauts-de-Seine, France

Filed Nov. 12, 1987, Ser. No. 119,507
Claims priority, application France, Nov. 13, 1987, 86 15732
Int. Cl.[4] A47C *27/00*
U.S. Cl. 5—464 9 Claims



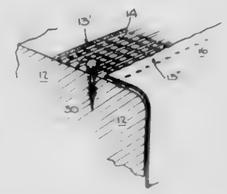
1. A mattress comprising a layer of a flexible material with a lower face (3) by which the mattress may bear on an undermattress, and an upper face (4) intended to receive the body of a person, each face being defined by an edge (5, 6), the lower face (3) having a plurality of pockets (111 to 116) disposed at the periphery of the mattress and extending into a major part of the thickness of the mattress, wherein said mattress is an expandable plastic foam, the lower face (3) having several grooves (110, 120) extending into a small part of the thickness of the mattress, said pockets being disposed in line with said grooves so as to locally increase the depth of the grooves.

4,796,317

DUST RUFFLES FOR A BED

Robert Kallman, 2030 Haring St., Brooklyn, N.Y. 11229, and Mark Henderson, 8 School Ave., Chanthum, N.J. 07928

Filed Oct. 28, 1987, Ser. No. 114,628
Int. Cl.[4] A47G *9/04*
U.S. Cl. 5—493 7 Claims



1. A valance for a bed, comprising:
a ruffled portion; and,
an unruffled portion attached to said ruffled portion, said unruffled portion comprising a flexible mesh material in combination with fastener means adapted to penetrate the apertures of said flexible mesh material to thereby fasten said valance to portions of said bed.

4,796,318

FISHERMAN'S PLIERS

Albert L. Bigej, 24775 Trask River Rd., Tillamook, Oreg. 97141

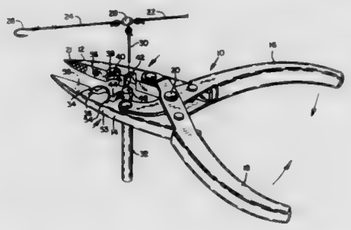
Filed Nov. 12, 1987, Ser. No. 119,692
Int. Cl.[4] A01K *69/00*; B25F *1/00*
U.S. Cl. 7—106 10 Claims

1. In combination with a pair of fisherman's pliers wherein a pair of elongated and tapered jaws are pivotally connected to a pair of handles such that the jaws are brought together as the

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handles are brought together, wherein the improvement comprises:

cutting means on the jaws for cutting an elongated piece of lead wherein the cutting means comprises blade means in one of the jaws extending toward the other jaw for cutting the lead as the jaws are brought together and lead retaining means in the other jaw for holding the lead as it is cut;



notching means on the jaws for impressing a notch into the elongated piece of lead;

first crimping means on the jaws for pressing the notch closed; and

second crimping means on the jaws for receiving and crimping a spherical piece of lead.

4,796,319

COMBINATION SCREW-TAPPING AND SCREWDRIVING TOOL

David Taft, 2 Capron St., Uxbridge, Mass. 01569

Filed Jun. 11, 1987, Ser. No. 60,654

Int. Cl.[4] B25F *3/00*

U.S. Cl. 7—158 2 Claims



1. A drill bitholder, said holder being a hexagonal rod with a cylindrical aperture running longitudinally down the center, a slot running longitudinally the length of the holder and extending radially from the center aperture to the outside hexagonal surface, said holder having at one end a conical tip with an abrasive cutting means, said central cylindrical aperture corresponding in diameter to specific drill bit sizes recommended for the drilling of pilot holes for specific screw sizes, whereby the corresponding drill bit is inserted through the aperture of the bitholder to a desired depth relative to the conical end of the bitholder, the conical end being the frontal end with the bit extending from it outward to the bit tip, said depth determined by the desired pilot hole depth, whereupon the drill bitholder is engaged distal end first in the chuck of a drill for up to two-thrids its length, and upon tightening of the chuck, the inward pressure of the chuck forces the bitholder to contract radially against the drill bit, holding it firmly in place, said assembly ready for drilling a pilot hole to a preferred shape, said shape corresponding in whole or in part to the embodiments of the bit and bitholder assembly, said embodiments being the cylindrical shaft of the bit, the conical flared end of the bitholder, and the enlarged cylindrical shape produced by the hexagonal bitholder in rotation, said pilot hole shape determined by the depth with which the tool is forced into the workpiece to produce the desired hole for simple flush-mounting, countersinking, or counterboring of various screw types.

4,796,320

METHOD OF DYEING AND HYDRO-EXTRACTING COLLECTIVELY YARN CHEESES AND APPARATUS THEREFOR

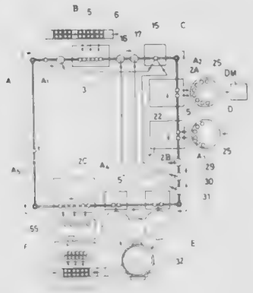
Nobutaka Ono, Ashiya, Japan, assignor to Osaka Bobbin Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1987, Ser. No. 129,859

Claims priority, application Japan, Jul. 11, 1987, 62-173479

Int. Cl.[4] D06B *3/04*

U.S. Cl. 8—155.2 4 Claims



1. A method of dyeing and hydro-extracting yarn cheeses collectively comprising the sequential steps of:

mounting empty spindles on mobile trucks and conveying said trucks carrying the spindles thereon following a rail;

inserting extension spindles on said empty spindles;

inserting simultaneously a plurality of yarn cheeses each wound about a bobbin and supplied form a carton on said spindles surmounted with the extension spindles until a definite number has been reached;

attaching spacers;

pressing the cheeses in the spindle direction with the actuation of a press machine;

removing said extension spindles and locking with fasteners, thereby providing cheese-mounted spindles;

mounting said cheese-mounted spindles on the mobile trucks and conveying them following the rail up to a location of a turntable;

loading said cheese-mounted spindles on a carrier on said turntable until a required number has been reached;

charging said carrier thus loaded into a dyeing machine for effecting a cheese dyeing;

subsequently discharging dyed cheese-mounted spindles from said dyeing machine together with said carrier to restore them on the turntable;

mounting and transferring said dyed cheese-mounted spindles on the mobile trucks on the rail;

removing said fasteners and spacers, and then dyed cheeses from the spindles to house a given number of said dyed cheeses in a hydro-extracting basket;

charging said basket thus filled into a hydro-exterior for purposes of undergoing a hydro-extracting treatment;

transferring and aligning hydro-extracted cheeses on a conveyor;

placing said cheeses aligned in a dryer to effect drying for a required time; and

delivering and storing dried cheeses in cartons, whereby the sequential steps are performed systematically in their sequence.

4,796,321

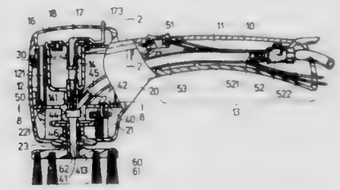
PORTABLE ELECTRICAL BRUSH

Fu-Kuei Lee, P.O. Box 10780, Taipei, Taiwan

Filed Aug. 12, 1985, Ser. No. 764,628

Int. Cl.[4] A46B *13/04*

U.S. Cl. 15—29 6 Claims



1. A portable electrically driven brush comprising:

a casing having upper and lower portions forming a hollow interior compartment;

a support plate mounted in said compartment;

motor means and speed reduction gear means mounted on said support plate, said motor means including switch means to control said motor means;

means coupling said motor means to said reduction gear means;

a hollow shaft mounted in said lower portion and having an upper end a lower end, said upper end coupled to said reduction gear means and said lower end extending outside of said lower portion;

a pipe means extending from within said casing into said hollow shaft;

a water supply means coupled to said casing and connected to said pipe means to discharge water through said hollow shaft, said water supply means having valve means to control the flow therethrough;

an additive container mounted on the upper casing portion, said container having means to discharge additive from said container to said pipe means to mix said additive with said water prior to discharge from said hollow shaft, said means to discharge including outlet means from the container and valve means to control said outlet means; and

a brush mounted on the lower end of said hollow shaft, said brush having a central opening mounting said brush on said hollow shaft and providing means for passage of water and additive through said brush to a work surface.

4,796,322

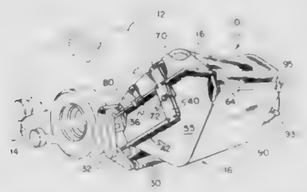
REAR DUMPING LAWN SWEEPER WITH FOLDING WIND APRON

Jeffrey A. Steed, Union City, Ind.; Walter F. Ruhl, and James M. Weaver, both of Greenville, Ohio, assignors to Lambert Corporation, Ansonia, Ohio

Filed Apr. 4, 1988, Ser. No. 176,906

Int. Cl.[4] E01H *1/04*

U.S. Cl. 15—79 A 3 Claims



1. In a powered lawn sweeper having a rear-dumping hamper in which lawn debris such as grass clippings are collected, and in which an open top hamper is mounted on a hamper support frame for movement between a normal position for collecting such lawn debris therein from the sweeper, and a rear-dumping position in which the hamper is rotated on the frame such that a back wall of the hamper is lowered with respect to the floor of the hamper while the floor thereof is elevated, the improvement comprising:

a wind apron proportioned normally to cover the open top of the hamper,

said wind apron being formed of a foldable open mesh material,

said wind apron having a forward end,

means attaching said wind apron forward end to a forward portion of said hamper,

means supporting said wind apron in relatively closing relation to said hamper open top in the normal position of the hamper,

said hamper support frame having a transverse wind apron support member,

said support member being positioned closely adjacent the hamper back wall in said normal position thereof,

means attaching a rear portion of said wind apron to said transverse support member such that said hamper top is closed by said wind apron in said normal position, and

said back wall being movable away from said support member during rotation of said hamper to said dumping position to expose the contents of said hamper for rear dumping, accompanied by folding of said wind apron about said support member.

4,796,323

ELECTRIC TOOTHBRUSH

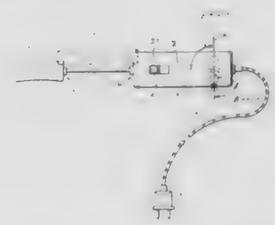
Dieter Benz, Hirschstrasse 21, 7900 Ulm, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 716,235, Mar. 26, 1985, abandoned, which is a continuation of Ser. No. 379,575, May 17, 1982, abandoned. This application Dec. 31, 1986, Ser. No. 948,051

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120300; Mar. 31, 1982, 3211984

Int. Cl.[4] A46B *13/02*

U.S. Cl. 15—23 3 Claims

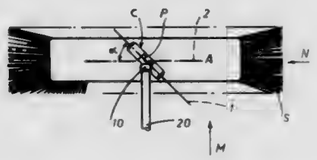


1. In a motor driven electric toothbrush comprising an elongated housing serving as a grip and accomodating an electric motor having a drive shaft; a rotary brush connected to an end of said drive shaft; at least one gravity-induced movement-responsive first switch positioned in said housing and having a switching path formed between two end points serving as contacts of said first switch, and a second switch, each switch being formed for switching a direction of rotation of said brush, the improvement comprising said second switch being a manually actuated hand switch having an actuating element, said housing having a side wall, said second switch being positioned on said side wall, said switching path being curved, a plane in which said end points of said switching path is located forming with an axis of elongation of said housing an angle between 60° and 90°, said housing including a guide forming said switching path, and a contact element movable in said guide and adapted to contact a respective one of said contacts depending on the position of said housing, said guide being formed so that said housing may be turned at an angle

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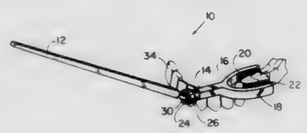
between 5° to 15° to change the direction of rotation of said brush.

4,796,324
BROOM OR BRUSH WITH HINGED HANDLE
Francesco Sartori, Via San Felice, 44, 40122 Bologna, Italy
Filed Sep. 25, 1987, Ser. No. 101,371
Int. Cl.⁴ B25G *3/38*
U.S. Cl. 15—144 R **5 Claims**



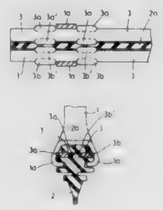
1. Broom or brush with hinged handle, comprising: a back, into which bristles are set in a plurality of tufts; said back having a longitudinal axis, a hinge, said hinge having a longitudinal axis of rotation disposed at a first acute angle to the longitudinal axis of the back; a pivot, associated with and extending from the hinge and affording means for the attachment of a handle, said pivot having an axis disposed at a second acute angle to the axis of the hinge.

4,796,325
ANGULARLY ADJUSTABLE DOUBLE HEADED TOOTHBRUSH
Isaar Bortman, 20441 NE. 30 Ave. #324, N. Miami, Fla. 33180
Filed Oct. 29, 1987, Ser. No. 114,045
Int. Cl.⁴ A46B *9/04*
U.S. Cl. 15—167.2 **2 Claims**



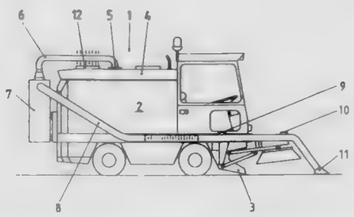
1. A double headed pivotal toothbrush, comprising:
a handle portion;
a bifurcated head portion having spaced facing brushes;
a pivotal connection between said handle portion and said head portion including a ball attached to said handle portion by an elongated reduced diameter neck and a longitudinally slotted socket collet attached to said head portion;
said head portion and said socket integrally molded from a plastic material;
a slip ring disposed around an outer surface of said socket collet for expanding and contracting said collet;
a curved radially projecting circular lip formed at an outer end of said socket collet;
an outer surface of said collet from said head portion to said radially projecting lip being generally cylindrical;
and
a concave spherical seat formed within said sicket collet.

4,796,326
DEVICE FOR CONNECTING A WIPING ELEMENT TO THE SUPERSTRUCTURE OF A WIPER BLADE
Christian Beneteau, Gorcy, France, and Norbert Guerard, Virton, Belgium, assignors to Champion Spark Plug Europe S.A., Binche, Belgium
Filed Aug. 17, 1987, Ser. No. 86,364
Claims priority, application France, Aug. 19, 1986, 86 11834
Int. Cl.⁴ B60S *1/02*
U.S. Cl. 15—250.42 **14 Claims**



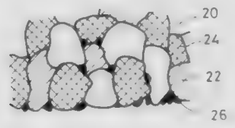
1. A device for securing a wiping element (2) to the superstructure (1, 11) of a wiper blade wherein the wiping element (2) is reinforced by two backing strips (3, 13) respectively located in two longitudinally extending recesses provided in the wiping element (2) and wherein the superstructure (1, 11) is provided with at least two claws (1*a*, 11*a*) which particularly surround the two backing strips (3,13) and the upper portion of the wiping element (2), characterized in that in the area of at least one of the claws (1*a*, 11*a*) of the superstructure (1,11) of the wiper blade at least one of the two backing strips (3,13) is provided, at its exterior longitudinal edge, with one flattened area (13*a*, 13*b*) which laterally projects from said exterior longitudinal edge and means are provided on one of the claws (11*a*) for cooperating with the one flattened area (3*a*, 3*b*; 13*a*, 13*b*) to limit relative longitudinal movement in opposite directions between the one claw (11*a*) and the at least one of the backing strips (3, 13) said cooperating means on the one of the claws and one flattened area being in alignment transverse to the length of the at least one backing strip—

4,796,327
APPARATUS FOR PICKING UP DOG EXCREMENT
Hans H. Doyen, Neustadt-Gimmeldingen, Fed. Rep. of Germany, assignor to Ing. Alfred Schmidt GmbH, Fed. Rep. of Germany
Filed Sep. 23, 1987, Ser. No. 100,208
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632787
Int. Cl.⁴ E01H *1/08*
U.S. Cl. 15—340.3 **4 Claims**



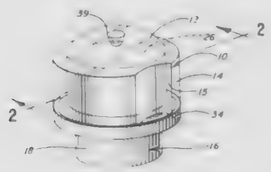
1. An apparatus for picking up dog excrement in combination with a self-propelled street sweeper, comprising a dirt container and a pick-up device cooperating with sweep brushes and being positioned below said dirt container and connected directly to said dirt container to convey picked up dirt thereinto, said dirt container including a cover and a connecting piece mounted on said cover, a separating container attached to said dirt container; a suction line connecting said separating container to said connecting piece; and a suction hose having one end opening into said separating container and another end terminating with a nose piece to pick up the dog excrement which is conveyed into said separating container through said suction hose and is separated therein from a suction stream so that the suction stream freed from the dog excrement passes through said suction line into said dirt container.

4,796,328
ERASER
Fumio Horie, Tokyo, Japan, assignor to Horie Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1987, Ser. No. 133,565
Claims priority, application Japan, Dec. 18, 1986, 61-302631
Int. Cl.⁴ B43L *19/00*
U.S. Cl. 15—424 **4 Claims**



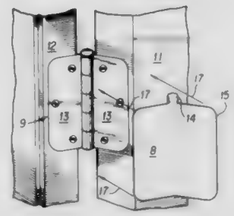
1. An eraser having an integral structure composed of plural types of eraser pieces having different hardnesses and an abrasive material, said eraser pieces and said abrasive material existing respectively in a particulately dispersed state.

4,796,329
FAUCET HANDLE
Steven Bory, River Forest, Ill., assignor to Injecto Mold, Chicago, Ill.
Filed Mar. 24, 1987, Ser. No. 29,624
Int. Cl.⁴ B25G *1/10*
U.S. Cl. 16—121 **20 Claims**



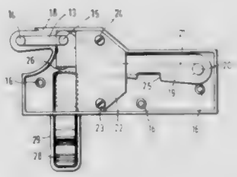
1. A faucet handle which comprises:
a light-transmissive upper portion having a top and a downwardly depending skirt;
a lower portion connected to the upper portion, the lower portion having a top with an outer peripheral wall that extends downwardly from the top and has an outer diameter that is less than the inner diameter of said skirt;
said lower portion top having a central sleeve extending downwardly therefrom for connection to faucet handle hardware;
said central sleeve having its lowest extremity lying in a plane that is above the plane of the lowest extremity of said lower portion;
means interposed between the light-transmissive upper portion and the lower portion to prevent viewing of the lower portion through the light-transmissive upper portion whereby viewing of the faucet handle hardware connected to said central sleeve is prevented.

4,796,330
HINGE MASK
Frederick J. Ziegler, 205 Slitting Mill Pl., Baltimore, Md. 21228
Filed Mar. 2, 1988, Ser. No. 163,320
Int. Cl.⁴ E05D *11/00*
U.S. Cl. 16—251 **1 Claim**



1. In an arrangement for protecting a hinge from having a material coated thereon during coating of a door and door frame, comprising, a door in said door frame wherein said hinges each comprise a pair of hinge leaves and a hinge pin, said hinges having a front face and an opposite back face, a hinge mask product comprising, a base of planar material and a hinge mask, said hinge mask consisting of two monolithic parts spacially positioned on said base, with the inner faces of said two parts being adhesive faces for being removably and adhesively attached to said base, one of said two parts being smaller in size than the other part, said one part being in the shape of a rectangle, said other part having a tab unitarily formed thereon and located on one side substantially midway between two ends, wherein said two parts are enclosed by kiss-cut lines for removing said parts from said base for attachment to the hinge, and said hinge mask adhesively positioned on the front and back faces of said hinges wherein said adhesive face of said one part being adhesively and removably attached to the back face of the entire hinge pin, said adhesive face of said other part being adhesively and removably attached to the entire front face of the hinge leaves and the hinge pin with said tab being adhesively and removably attached to the hinge pin, said tab being used to remove said other part from said hinge after the hinge has been coated.

4,796,331
HINGE FOR ROOF WINDOW
Paul S. White, Barnsley, and Michael D. Eaton, Wigan, both of United Kingdom, assignors to GKN Cromptom Limited, Lancashire, England
Filed Dec. 30, 1987, Ser. No. 139,723
Int. Cl.⁴ E05D *11/06, 11/08, 11/10*
U.S. Cl. 16—324 **12 Claims**



1. A hinge for a window comprising a sash openable relative to a peripheral frame about a pivot axis extending transversely

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of the frame in the mid-region between upper and lower edges thereof, said hinge comprising:

a body adapted to be secured to said peripheral frame and affording a first pivot formation;

support means pivotally connected to said body at said first pivot formation and adapted to be connected to said sash to support the latter, said support means also affording a further pivot formation spaced from said first pivot formation to move in an arcuate path thereabout;

a stay member having one end connected to said support means at said further pivot formation and its other end constrained for reciprocation within the body; and

constraining means arranged to engage said stay member within said body to constrain movement thereof at least one operative position of the stay member.

4,796,332

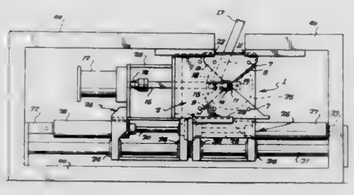
CONSTRICTING AND FASTENING APPARATUS

Thomas R. Stanley, Downers Grove, Ill., assignor to Teepak, Inc., Oak Brook, Ill.

Filed Aug. 13, 1987, Ser. No. 85,592

Int. Cl.[4] A22C *11/12*

U.S. Cl. 17—34 **15 Claims**



1. An apparatus for applying a pliable fastener around a tubular article constructed of flexible material comprising co-acting, reciprocally movable, means for circumferentially constricting a 360° arc of said tubular article to form a portion of circumferentially constricted flexible material gathered about the longitudinal axis of said tubular article, said co-acting means further comprising means synchronously reciprocating with said co-acting means, for urging a pliable fastener around said constricted portion of said material, and drive means for constricting said material and urging said pliable fastener.

4,796,333

SHELLFISH SHUCKING MACHINE

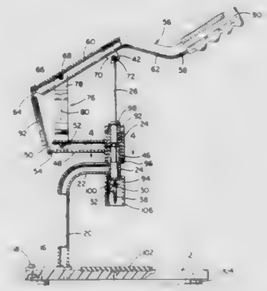
John L. Stinson, Jr., and George W. Henley, Jr., both of Fairhope, Ala., assignors to Easy Shucker, Inc., Foley, Ala.

Filed Jan. 7, 1988, Ser. No. 141,413

Int. Cl.[4] A22C *29/04*

U.S. Cl. 17—76 **6 Claims**

1. A shellfish shucking machine comprising a stand having a base for supporting a shellfish, said stand including a vertically disposed sleeve oriented above the base, a ram shaft slidably received in said vertical sleeve with a blade mounted on the lower end thereof for penetrating into the seam of a shellfish, a control arm pivotally connected to the upper end of the ram shaft and pivotally attached to the stand for moving the ram vertically, said stand including a pivot arm mounted on said sleeve for rotational movement thereon, said pivot arm including a laterally extending member having the end of the control arm mounted thereon for pivotal movement about a transverse axis with the control arm being rotatable with the pivot arm about the sleeve for rotating the ram shaft and blade about the longitudinal axis of the ram shaft so that the blade can be twisted after penetration into the seam of the shellfish for



prying the seam of the shellfish open thereby opening the shellfish.

4,796,334

TREATMENT OF COTTON

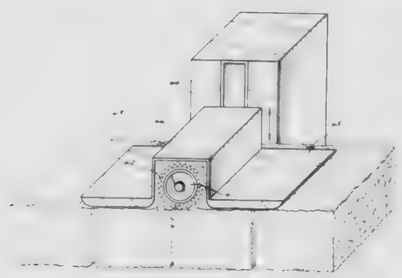
Herzel B. Yecheskel, 1 Eliahu Hanassi Street, Bat Yam; Gad Alon, 14 Hazaz Street, Herzlia, and Eliezer Beck, 40 Wolfson Street, Rishon Lezion, all of Israel

Filed Feb. 26, 1986, Ser. No. 833,987

Claims priority, application Israel, Feb. 27, 1985, 74469

Int. Cl.[4] D01G *37/00, 7/06*

U.S. Cl. 19—0.27 **1 Claim**



1. A device for rendering adhesive honeydew droplets adhering to cotton fibers non-adhesive, and for rendering them brittle and hard, which comprises at least one heated means with which the cotton fibers are brought into contact so that the fibers are heated to a temperature higher than 70° C., for a period of time of from ¼ to about 3 seconds, the heated means being formed as a heated plate which is contacted with the upper surface of cotton bales as cotton tufts are plucked from them by a bale opener, said contact preceding the removal of cotton tufts by the bale opener, the surface temperature of the heated plate being adequate to render honeydew droplets or other sticky substances, non-sticky.

4,796,335

METHOD AND APPARATUS FOR OPENING FIBER BALES

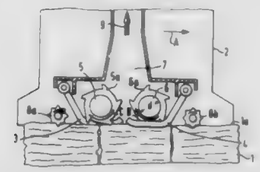
Andreas Kraemfeld, Erkelenz, and Josef Tenbarg, Jüchen, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen Gladbach, Fed. Rep. of Germany

Filed Dec. 17, 1987, Ser. No. 135,523

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1986, 3643507

Int. Cl.[4] D01G *7/04*

U.S. Cl. 19—80 R **15 Claims**



1. In a bale opener having an opening device arranged for a horizontal back-and-forth travel above a row of fiber bales; said opening device having two parallel-arranged and horizontally oriented opening rollers provided with teeth; said opening rollers being spaced from one another in a direction parallel to the direction of back-and-forth travel; each said opening roller having an axis of rotation oriented perpendicularly to the direction of the back-and-forth travel; said opening device further having a bale hold-down device through which the teeth of the opening rollers project for penetrating into upper faces of the bales and suction means for removing fiber tufts detached by said opening rollers; the improvement comprising means for codirectionally rotating said opening rollers during said back-and-forth travel.

4,796,336

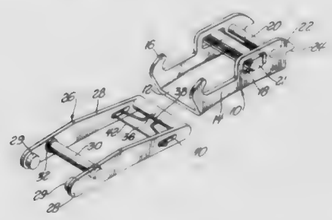
TWO PART BUCKLE

Andrew J. Scully, Macomb, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 5, 1987, Ser. No. 82,880

Int. Cl.[4] A44B *21/00*

U.S. Cl. 24—68 CD **1 Claim**



1. A two part overcenter buckle suitable for attachment to the free end of belting to fasten the ends together including: a first buckle member having a base, a pair of buckle sides mounted on opposite edges of the base each of the buckle sides having hook members formed in the sides of the first buckle member, a rectangular slot formed in each buckle side with the longitudinal axis being approximately parallel to the base member, a sliding retention bar extending transversely across the first buckle member with each end of the retention bar having one end mounted within the slot and adapted for movement along the slot, a jam bar having one end attached to each of the sides and extending transversely across the first buckle member near one end of the slot so that the sliding bar can be moved to a belt retaining position, at least one detent formed on the end of the first buckle member nearest the jam bar; and a second buckle member having a pair of complimentary arms permanently joined so the arms are maintained in a spaced parallel configuration, stub shafts are mounted near one end of the second buckle member, the stub shafts being formed so as to extead inward from the sides of the second buckle member and to engage the hook members and allow rotation of the second buckle member when engaged, means for permanently attaching one end of a belt to the second buckle member, a T-shaped spring member having one leg fixed in the second buckle member and having an arm extending transversely across the second buckle member with the ends of the arm moveably mounted in the sides of the second buckle member located at the end of the second buckle member opposite to the second retention means, and adapted to engage the detent on the first buckle member when the first and second buckle members are in a closed position.

4,796,337

DEVICE FOR CLOSING A BOOT

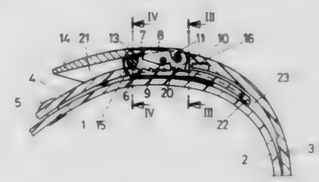
Herbert Marxer, Schaan, Liechtenstein, assignor to Lange International, SA, Switzerland

Filed Feb. 24, 1987, Ser. No. 17,928

Claims priority, application Switzerland, Apr. 25, 1986, 1703/86

Int. Cl.[4] A43C *11/00*

U.S. Cl. 24—68 SK **2 Claims**



1. Device for closing a first and a second part of a boot, comprising a toothed strap fixed to the first part of the boot fastening means which is mounted so as to slide on and around the toothed strap and is provided with a locking device cooperating with the toothed strap in a selected position, and a rectangular buckle which is integral with a tensioning lever hinged to the second part on the boot and which engages said fastening means, wherein the toothed strap has saw teeth, wherein said locking device comprising a a tip and a transverse groove with a hook-shaped profile located above said tip thereby engaging the saw teeth and wherein said buckle and said tensioning lever are hinged with said second part in its middle area and being pressed against said toothed strap after adjustably engaging the pawl.

4,796,338

WIRE TENSIONER

Richard G. Meyers, Euclid, Ohio, assignor to The National Telephone Supply Co., Cleveland, Ohio

Filed Mar. 17, 1986, Ser. No. 840,035

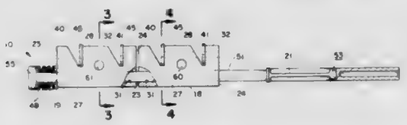
Int. Cl.[4] A44B *21/00*

U.S. Cl. 24—68 R **14 Claims**

1. A device for connecting first and second wire members including first and second block members having upper and lower side portions and first and second end portions, first and second longitudinally extending openings extending respectively through said lower and upper side portions from said first to said second end portions of each of said first and second block members, first and second wires adapted to extend respectively through said first and second openings in each of said first and second block members, first and second releas-

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able gripping means located in said upper side portions of each of said first and second block members respectively and associated with said second opening and wire adapted to extend therethrough, said first block member movable relative to said



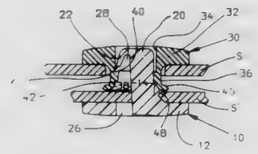
second block member on the first wire and said releasable gripping means permitting movement of the second wire through said second opening in a given direction and preventing movement in an opposite direction.

4,796,339

ONE-WAY SNAP FASTENER

James E. Burke, Huntington, Conn., assignor to Scovill Fasteners Inc., New York, N.Y.

Filed Feb. 17, 1988, Ser. No. 156,667
Int. Cl.[4] A44B *1/38*
U.S. Cl. 24—662 **5 Claims**



1. A permanently locking snap fastener comprising:

a. an integrally molded stud head comprising a circular base flange having a plurality of radially disposed thin fins extending up from about the axis of the circular base, the fins having on their upper end a generally circular dome, the dome having from its periphery alternating with the fins a plurality of spaced outwardly and downwardly extending straight barbs, the barbs having flat lower ends; and

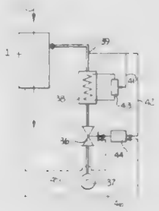
b. a socket comprising an annular base flange having a downward-extending sleeve, the sleeve having an upward tapered lead-in opening narrowing as its upper end is approached and above that an outwardly and downwardly inclined annular-bearing surface, the socket also being formed with a cylindrical opening extending from the base flange down to the outer diameter of the bearing surface, the cylindrical opening having approximately the same diameter as the distal ends of the barbs, the junction of the tapered lead-in and the inclined-bearing surface defining a throat having a radius substantially the same as the width of the fins on the stud head, the head and socket being of such relative dimensions that when the head is installed into and through the lead-in opening in the sleeve the barbs will flex inward as they pass the throat and then snap outward so that any subsequent attempt to open the fastener will cause the barbs to butt against the bearing surface and prevent opening.

4,796,340

METHOD OF THREADING A YARN PROCESSING NOZZLE

Klaus Gerhards, Hückeswagen, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Oct. 20, 1986, Ser. No. 921,363
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1985, 3537321; May 10, 1986, 3615829
Int. Cl.[4] D02G *1/12, 1/16*
U.S. Cl. 28—248 **9 Claims**



1. A method of threading a yarn through a yarn processing nozzle of the type comprising a body member having a yarn passageway extending therethrough, with said yarn passageway having a peripheral side wall, an internal duct in said body member and communicating with said passageway, means for selectively maintaining the peripheral side wall either substantially closed during normal yarn processing or laterally open along the entire length of said passageway to permit the lateral insertion of a yarn thereinto during yarn thread-up, and treatment fluid supply means including heating means for supplying a pressurized and heated treatment fluid to said internal duct and such that the treatment fluid enters said passageway, and comprising the steps of

maintaining the peripheral side wall substantially closed and while supplying a treatment fluid to said internal duct and said passageway, with the treatment fluid having a predetermined operating mass flow rate and a predetermined operating temperature,

laterally opening the peripheral side wall of said passageway to thereby reduce the flow resistance of the nozzle to said treatment fluid;

laterally inserting a yarn into the laterally open passageway, and then

laterally closing the peripheral side wall of said passageway, and

maintaining the mass flow rate and temperature of said treatment fluid substantially at said predetermined operating mass flow rate and predetermined operating temperature during all of the above steps.

4,796,341

PLATE ROUTING METHOD AND APPARATUS

James A. Kuhn, II, York, Pa., assignor to FMC Corporation, Chicago, Ill.

Filed Jan. 11, 1988, Ser. No. 142,586
Int. Cl.[4] B23Q *7/00*; B65G *47/24*; B23C *9/00*
U.S. Cl. 29—33 P **50 Claims**

1. A plate routing method comprising the steps of:

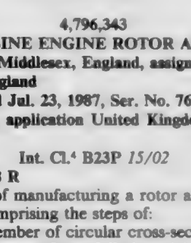
moving a plurality of plates of equal size onto a conveyor one at a time;

intermittently driving the conveyor for moving each plate in turn into a precision machining station having a power drive cutting tool therein;

lifting the plates off the conveyor for supporting the plates above the conveyor at a precise height relative to the cutting tool;

moving the plates in a direction longitudinally of the conveyor to a precise transverse machining position relative to the cutting tool;

clamping the plates at said precise height and in said transverse machining position;



driving the cutting tool to accurately machine the plates;

releasing the machined plates for support on said conveyor; and

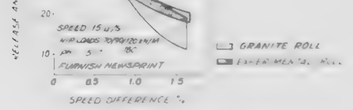
moving the machined plates off the conveyor.

4,796,342

PRESS ROLL FOR PAPER MAKING MACHINES

Veijo Miihkinen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Continuation-in-part of Ser. No. 894,925, Aug. 8, 1986, Pat. No. 4,748,736, which is a continuation-in-part of Ser. No. 816,628, Jan. 6, 1986. This application Aug. 17, 1987, Ser. No. 85,933
Claims priority, application Finland, Sep. 16, 1985, 853544
Int. Cl.[4] B21B *27/00*
U.S. Cl. 29—132 **20 Claims**



1. A press roll for paper machines, comprising:

a roll body having a cylindrical exterior formed of metallic material; and

a coating applied over said roll body exterior formed of a material including a mixture of a metallic component and a ceramic component, said coating material having a surface energy within the range of between about 35 to 50 mJ/m^2,

whereby said press roll has generally acceptable web release properties for paper pulp.

4,796,343

GAS TURBINE ENGINE ROTOR ASSEMBLY

Rodney G. Wing, Middlesex, England, assignor to Rolls-Royce plc, London, England

Filed Jul. 23, 1987, Ser. No. 76,832
Claims priority, application United Kingdom, Aug. 1, 1986, 8618786
Int. Cl.[4] B23P *15/02*
U.S. Cl. 29—156.8 R **11 Claims**

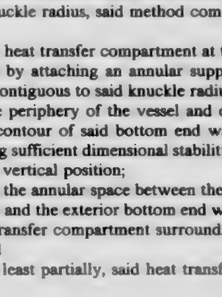
11. A method of manufacturing a rotor assembly for a gas turbine engine comprising the steps of:

fabricating a member of circular cross-section;

fabricating an array of aerofoil shaped blades, each blade comprising an aerofoil portion and a root portion;

mounting each said blade on a radially outer peripheral portion of said member, the root portion of each said blade confronting said member, each said root portion and said member being provided with at least one pair of grooves that cooperate to define first and second enclosed chambers at an interface between said member and each said root portion;

sealing the interface between each said root portion and said



member at a location between the first chamber and a peripheral edge of each said root portion; and

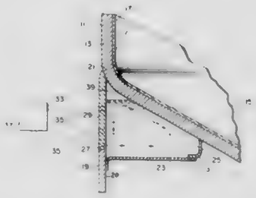
subsequently hot isostatically pressing the resultant assembly thereby to achieve diffusion bonding between each said blade and said member, and to collapse the second chamber thereby to provide a visual indication of success of the diffusion bonding.

4,796,344

METHOD FOR AVOIDING THERMAL STRESSES IN GLASS LINED VESSELS

Erwin J. Nunlist, Penfield, N.Y., assignor to The Pfaudler Companies, Inc., Rochester, N.Y.

Division of Ser. No. 668,604, Nov. 5, 1984, Pat. No. 4,711,296. This application Sep. 29, 1987, Ser. No. 102,381
Int. Cl.[4] B21D *53/00*
U.S. Cl. 29—157 R **6 Claims**



1. A method of reducing stresses in vertically arranged, cylindrical metal vessels having a side wall, and top and bottom end walls in which the side and bottom walls are connected by a knuckle radius, said method comprising the steps of:

(a) forming a heat transfer compartment at the lower end of said vessel by attaching an annular support skirt to said side wall contiguous to said knuckle radius and extending around the periphery of the vessel and downwardly beyond the contour of said bottom end wall, said support skirt having sufficient dimensional stability to support said vessel in a vertical position;

(b) enclosing the annular space between the interior portion of the skirt and the exterior bottom end wall of the vessel, said heat transfer compartment surrounding said knuckle radius, and

(c) filling, at least partially, said heat transfer compartment

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with a heat transfer medium to form a heat transfer sump for transferring heat from the bottom portion of said vessel to the outer portions of said annular heat transfer compartment.

4,796,345

METHOD OF FABRICATING A RIM GEAR, SUCH AS A STARTER RIM GEAR MADE OF SHEET METAL

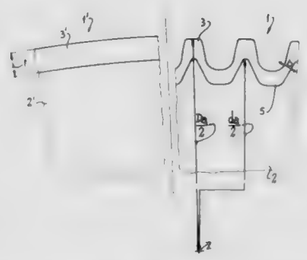
Hans Krapfenbauer, Zürich, Switzerland, assignor to Ernst Grob AG, Männedorf, Switzerland

Filed Jul. 20, 1987, Ser. No. 75,123

Claims priority, application Switzerland, Jul. 24, 1986, 02966/86

Int. Cl.⁴ B21D *53/28*

U.S. Cl. 29—159.2 **4 Claims**



1. A method of fabricating a rim gear, especially a starter rim gear, made of sheet metal, comprising the steps of:

cold forming a substantially cylindrical rim portion of a dished blank according to the Grob method to produce a gear tooth system possessing predetermined gear wheel meshing characteristics and containing an external gear tooth system and an internal gear tooth system;

said step of cold forming entailing reducing an outside diameter of said substantially cylindrical rim portion of said dished blank such that:

(a) the quotient of the difference between an addendum circle diameter of said external gear tooth system of the fabricated rim gear and a crown circle diameter of said internal gear tooth system of the fabricated rim gear divided by a predeterminate wall thickness of said substantially cylindrical rim portion of said dished blank before said step of cold forming is at least 1.6; and

(b) the quotient of a thinnest portion of a tooth flank wall of the fabricated rim gear divided by said predeterminate wall thickness of said subsuantially cylindrical rim portion of said dished blank before said step of cold forming is at most 0.4.

4,796,346

VEHICLE BODY POSITIONING APPARATUS

Yoshinobu Kawasaki; Ryo Niikawa, and Yuzi Ikeda, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 67,171

Claims priority, application Japan, Jun. 30, 1986, 61-151735

Int. Cl.⁴ B23D *21/00*

U.S. Cl. 29—700 **3 Claims**

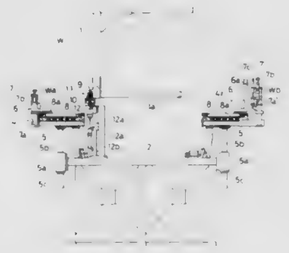
1. Apparatus for positioning a vehicle body comprising:

a hanger for conveying a vehicle body, said hanger having a pair of left and right sections adapted to support said vehicle body,

a pair of locating pins with each locating pin on one of said left and right sections of said hanger and engaging respective apertures in said vehicle body to locate said vehicle body relative to said hanger,

a pair of left and right standard pins with each standard pin projecting down from respective ones of said left and right sections of said hanger,

a machine base located at a work station stop position below said conveying hanger, and



means on said base including left and right clamp means arranged to clamp respective ones of said left and right standard pins and thereby position said hanger at a predetermined position relative to said machine base.

4,796,347

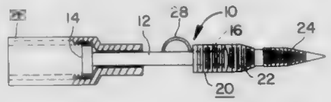
PLASTIC-PIPE PULLING TOOL

Domingo V. Aguillen, Jr., 7485 Fillmore Dr.; Pete P. Casares, 6324 Sherman Way; John E. DeForrest, 7152 El Veloz Way, all of Buena Park, Calif. 90620; Kevin C. Green, 6425 Belen Ave., Long Beach, Calif. 90815; Rocque A. Kavanagh, 4238 61st St., Los Angeles, Calif. 90043; Bryan Wilkinson, 4113 169th St., Lawndale, Calif. 90260; Marc K. Marks, 2507 Feijoa Ave., Lomita, Calif. 90717, and Gerardo Zuniga, 24511 Albatross Ave., Wilmington, Calif. 90744

Filed Oct. 27, 1987, Ser. No. 113,064

Int. Cl.⁴ F16G *11/05*

U.S. Cl. 29—280 **5 Claims**



1. A puller tool for installing plastic utility pipe having either first or second inner-wall diameters, including:

a shaft portion;

a bore-pipe coupler carried by said shaft portion at the first end thereof;

a utility-pipe coupler carried by said shaft portion at the opposite end thereof, said utility-pipe coupler having first and second coupling sections, the maximum outside diameter of said first coupling section being such as to form a snug fit with the inner-wall of said utility pipe of said first inner-wall diameter, said second coupling section having a maximum outside diameter which is such to form a snug fit with the inner-wall of said utility pipe of said second inner-wall diameter, said first coupling section being closer to said bore-pipe coupler than is said second coupling section;

said first and second coupling sections having tapered segments and carrying threads along at-least-a-portion of such tapered segments; and,

a location-wire connector loop fixedly carried by said shaft.

4,796,348

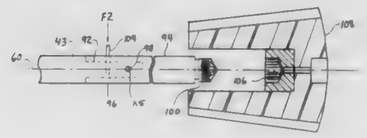
METHOD AND MEANS FOR ADAPTING PLUMBING VALVE STEMS TO DESIRED TRIM

Richard A. Rosen, 3934 Corbin Ave., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 808,270, Dec. 12, 1985, Pat. No. 4,670,959. This application Jun. 5, 1987, Ser. No. 58,401

Int. Cl.⁴ B21K *21/16;* **B23P** *17/04, 19/04*

U.S. Cl. 29—401.1 **19 Claims**



1. A method of adapting plumbing trim having a keyway of a first type with a stem of a plumbing valve, said stem having an end that does not match the first type of keyway of the plumbing trim, said method comprising the steps of

(a) drilling a first connection means into the end of said stem;

(b) connecting an adaptor to said first connection means, said adaptor having a spline at a first end thereof that matches the keyway of the first type of said plumbing trim, and said adaptor further having a second connection means at a second end thereof that connects with the first connection means drilled into said stem; and

(c) joining the keyway of the plumbing trim with the spline at the first end of the adaptor.

4,796,349

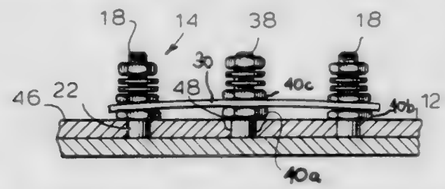
METHOD OF REPAIRING A BINDING POST

Douglas J. Miller, 1319 Pulaski St., Riverhead, N.Y. 11901

Filed May 22, 1987, Ser. No. 53,099

Int. Cl.⁴ B23P *6/00*

U.S. Cl. 29—402.08 **1 Claim**



1. A method for repairing a damaged binding post in a telephone connecting panel having a mounting board on which a plurality of spatially arrayed binding posts are mounted comprising the steps of removing said damaged binding posts, mounting a replacement binding post in the position of said damaged posts, applying a retaining means to the lower end of said replacement post at a point spaced from the surface of said mounting board, placing a bridging plate over the replacement post and extending over the laterally adjacent binding posts, and pressing and retaining the ends of said bridging plate downwardly to cause said bridging plate to react against said retaining means to force said replacement binding post conjointly into the mounting panel.

4,796,350

METHOD OF USING PORTABLE APPARATUS FOR UNITIZING ROOF SCHEMES

Christopher W. French, 27614 Renwick Ct., Saugus, Calif. 91350

Filed Feb. 24, 1987, Ser. No. 18,488

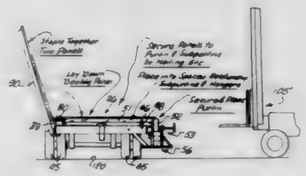
Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—432 **8 Claims**

1. A method of forming a unitized roofing scheme including joined panels, a major beam having a top, and minor beams having tops, comprising

securely mounting the major beam to a flat edge on a rectangularly-configured jig,

placing in transversely spaced parallel relationship to one another the minor beams by mounting them in fixed positions in the jig perpendicular to the flat edge, the tops of said major and minor beams being substantially flush and planar withh one another by such placing,



laying at least two panels atop the minor beams with edges thereof over the centerline of a minor beam,

aligning the laid panels on the jig so that an exposed edge of the panels overhangs the placed minor beams to the extent of aligning the exposed edge upon the centerline of the securely mounted major beam, and

securing the panels, minor beams and major beam together.

4,796,351

GASKETS

Colin Gee, Mirfield, England, assignor to Flexitallic Limited, Manchester, England

Filed May 12, 1983, Ser. No. 494,015

Claims priority, application United Kingdom, May 18, 1982, 8214453

Int. Cl.⁴ B81D *39/00*

U.S. Cl. 29—455.1 **1 Claim**

1. A method of making a spiral wound gasket having improved elastic recovery comprising the steps of:

(1) profiling a strip of an-annealed high tensile strength, precipitation hardening grade of alloy steel strip into a spiral wound gasket profile, followed by

(2) heat treating the strip and thereafter

(3) winding and interleaving it with a strip of a sealing material into a spiral wound gasket.

4,796,352

AC SERVOMOTOR AND A METHOD OF MANUFACTURING THE SAME

Shigeki Kawada; Yoichi Amemiya; Masatoyo Sogabe, all of Hachioji, and Noboru Iwamatsu, Hino, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Divison of Ser. No. 772,600, filed as PCT JP85/00829 on Dec. 28, 1984, published as WO85/03172 on Jul. 18, 1985, abandoned. This PCT application Dec. 28, 1984, Ser. No. 51,268

Claims priority, application Japan, Dec. 29, 1983, 58-247742

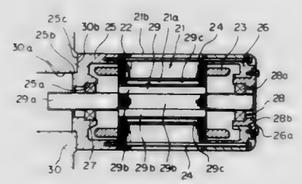
Int. Cl.⁴ H02K *15/14*

U.S. Cl. 29—596 **3 Claims**

1. A method of manufacturing an AC servomotor, comprising the steps of: laminating a plurality of magnetic steel plates to form a stator core having a center bore and slots for receiving coils; selecting at least one datum surface comprised of either the inner surface of said center bore or the outer circumference of said stator core ; loading stator coils in said stator core slots; securing a pair of brackets to the axial opposite ends of said stator core respectively to provide an assembly for rotatably supporting a rotor in bearing members thereon; machining each of said brackets to form bearing member mounting bores therein concentric with said selected datum surface

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of said stator core to form an outer mounting surface on one of said brackets which is perpendicular to said selected datum surface of said stator core; and rotatably supporting a rotor and shaft internally of said stator core center bore, said shaft being



rotatably mounted in bearing members fit to said bearing member mounting bores of said brackets whereby said rotor and shaft will be concentric with said selected datum surface of said stator core and normal to said outer mounting surface.

4,796,353

PROCESS FOR PRODUCING AN ELECTRIC ARBOR INTEGRATED WITH AN INDUCTION MOTOR

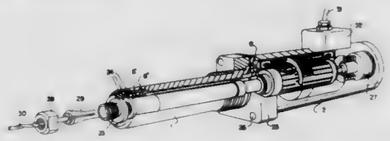
Elis Mantovani, Cadempino, Switzerland, assignor to Tecnodelta S.A., Manno, Switzerland

Filed Jul. 29, 1987, Ser. No. 79,029

Claims priority, application Switzerland, Nov. 24, 1986, 4690/86

Int. Cl.⁴ H02K *15/02*

U.S. Cl. 29—596 **1 Claim**



1. A process for manufacturing a stator (**4**, FIG. 2 or FIG. 5) and a rotor (**5**, FIG. 2 or FIG. 9) of an electric arbor, comprising by the following steps:

(a) providing laminations (FIG. 6) with a thickness less than that normally used;

(b) dimensioning said laminations with the minimum thickness of an outside ring (**7**, FIG. 6) of the stator;

(c) dimensioning stator slots (**8**, FIG. 6) to have the maximum thickness of the tooth (**9**, FIG. 6 and 7) by providing slot insulation (**10**, FIG. 7) with insulation having high resistivity and less than normal thickness;

(d) providing at each end of a stator core stack (**4'**, FIG. 8) a washer (**11**, FIG 8) of a material having a high thermal conductivity, superficially insulating and equal in shape to that of the laminations (FIG. 6), which transmits the heat from said stator stack (**4'**, FIG. 8) to an outside stator frame (**12**, FIG. 2 or FIG. 5) of a material having high thermal conductivity that is provided with a cooling system;

(e) introducing in the stator slots (**8**, FIG. 6) windings (**13**, FIG. 5 and FIG. 7) of wire of a material with high electrical conductivity and superficially insulated;

(f) inserting in said frame (**12**, FIG. 2 or FIG. 5) the wound stator (**4**, FIG. 2), a front flange (**12'**, FIG. 2 or FIG. 5) and a back flange (**12''**, FIG. 2 or FIG. 5);

(g) introducing insulating resin (**14**, FIG. 5 and FIG. 7) so that it comes to occupy all the interstices of the winding, thereby replacing the air which was present before this operation is performed, said resin being relatively elastic and undergoing an increase in its elasticity with an increase of temperature and being charged with substances that increase the thermal conductivity of the resin so as:

to increase the insulation between the coils of the winding (**13**, FIG. 5 and FIG. 7) within the stator slots (**8**, FIG. 6) and in the ends of the stator;

to make the winding (**13**, FIG. 5 and FIG. 7) hermetically sealed to infiltrations of liquids or minute metal particles;

to define with precision the geometry of the overhangs of the winding (**13**, FIG. 5 and FIG. 7);

to keep the conductors of the winding (**13**, FIG. 5 and FIG. 7) from being able to vibrate;

to increase the evaporation of heat from the stator (**4**, FIG. 2 and FIG. 5) to the outside frame (**12**, FIG. 2 and FIG. 5); and

to increase the resistance of the motor to overloads, even extended overloads without suffering damage;

(h) making the rotor core stack (**5**, FIG. 2 and FIG. 9) by using thin laminations (FIG. 10), inorganically insulated and having a hole (**15**, FIG. 10) for a larger than normal shaft, by using for this purpose conductors (**16**, FIG. 9 and FIG. 11), for a squirrel cage, with very low resistance and melted on the ends to achieve short-circuit rings (**19**, FIG. 9);

(i) placing on each end of the rotor (**5**, FIG. 2 and FIG. 9) a washer (**17**, FIG. 9) of a material having a high mechanical and amagnetic resistance, provided with ducts (**18**, FIG. 9) to feed in a damping resin (**22**, FIG. 9) to eliminate the vibrations of the conductors; melting the terminals of the conductors (**16**, FIG. 9 and FIG. 11) to obtain the respective short-circuit rings and successively to each short-circuit ring applying a housing (**20**, FIG. 9), also of a material having high mechanical and amagnetic resistance, welded (**12**, FIG. 9) to said washer (**17**, FIG. 9), without additional material, to contain the centrifugal effect to which the ring is subjected, given the very notable centrifugal force that is generated at high frequencies.

4,796,354

METHOD OF MANUFACTURING A POSITION SENSOR FOR DETECTING ANGULAR POSITION

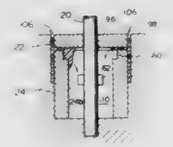
Toshio Yokoyama; Iwao Shimane, and Tsuneo Konno, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1987, Ser. No. 27,832

Claims priority, application Japan, Mar. 19, 1986, 61-63404

Int. Cl.⁴ H01F *41/02*

U.S. Cl. 29—608 **11 Claims**



1. A method of manufacturing a position sensor for measuring angular position of a rotating shaft, comprising:

(a) fabricating a hollow tubular member made of a magnetic material;

(b) disposing a center shaft inside the tubular member coaxially thereto, said tubular member being synchronously rotatable with the rotation of the shaft to be measured through said center shaft;

(c) placing said tubular member and said shaft disposed therein in a die surrounding both said tubular member and said shaft and injecting resin into said die such that said resin is first directed onto the oter surface of said tubular member so as to exert inward-acting compressive stress on at least a portion of the outer surface of said tubular member;

(d) injecting resin then into the die such that said resin is directed into the interior of said tubular member between an inner surface of said tubular member and said center shaft to affix said shaft to said tubular member while balancing exerted outward-acting tensile stress with the compressive stress; and

(e) forming magnetic poles on an outer surface of said tubular member for generating a signal indicative of the angular position in cooperation with a magneto electric transducer means provided on a member positioned independent of rotation.

4,796,355

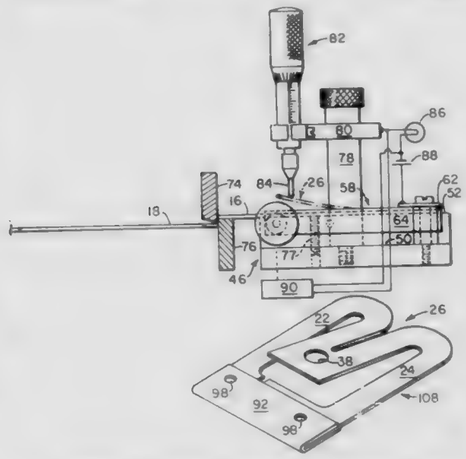
SNAP ACTION DEVICES AND METHODS AND APPARATUS FOR MAKING SAME

Lyndon W. Burch, Boston, Mass., and Hadley K. Burch, Pittsfield, Vt., assignors to B/K Patent Development, Inc., Los Angeles, Calif.

Filed Sep. 15, 1987, Ser. No. 96,468

Int. Cl.⁴ H01H *11/00, 65/00*

U.S. Cl. 29—622 **17 Claims**



1. A method of forming an inherently mechanically bistable element comprising the steps of

forming a blade element blank from a substantially flat, unstressed sheet of spring material to include at least two legs and a bridging portion integrally connecting one end of each leg to one end of the other,

supporting the blade element blank in a fixture adapted for controlled relative displacement of the other ends of said two legs in the nominal plane of said element,

progressively relatively displacing said other ends while detecting the deflection of the bridging portion normally to said plane,

arresting said relative displacement upon said detected deflection reaching a predetermined magnitude, and

rigidly attaching together said other ends in their relative positions at the arrest.

4,796,356

PROCESS FOR MAKING CLOSE TOLERANCE THICK FILM RESISTORS

Thomas Ozaki, Sycamore, Ill., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Aug. 27, 1987, Ser. No. 90,193

Int. Cl.⁴ H01C *17/06*

U.S. Cl. 29—620 **10 Claims**

1. A process for manufacturing close tolerance thick film resistors on a ceramic dielectric substrate comprising the steps of:

printing at least first and second resistor terminations to said dielectric substrate using a precious conductor material;

fixing said resistor terminations to said dielectric substrate by air drying and air firing said said resistor terminations;

printing a resistive material to portions of said first and second resistor terminations and to said dielectric substrate intermediate said first and second resistor terminations;

fixing said resistive material to said first and second terminations and said dielectric substrate by air drying and air firing said resistive material;

printing, using a base conductor material, at least first and second terminal pads and first and second conductor traces to said dielectric substrate, said first and second conductor traces extending from said first and second terminal pads respectively to at least first and second resistor interconnections, said first and second resistor



interconnections printed to said first and second resistor terminations and to portions of said resistive material;

fixing said first and second terminal pads, first and second conductor traces and first and second resistor interconnections by air drying and firing in nitrogen;

printing a dielectric encapsulant substantially over said first and second resistor interconnections and resistive material; and,

curing said dielectric encapsulant using a thermal source.

4,796,357

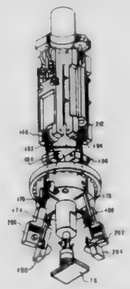
METHOD AND APPARATUS FOR POSITIONING ELECTRICAL COMPONENTS

Ted M. Smith, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 16, 1988, Ser. No. 155,773

Int. Cl.⁴ H05K *3/30*

U.S. Cl. 29—840 **20 Claims**



1. A placement head assembly for placing an electrical component on a circuit board, comprising:

a main shaft defining an outer surface extending about a longitudinal axis;

vacuum support means for releasable support of said component; and

alignment means for aligning said component relative to said axis, said alignment means including carriage means carrying actuator means for urging said carriage means along said axis in response to fluid pressures and having upper and lower roller means engaging said outer surface.

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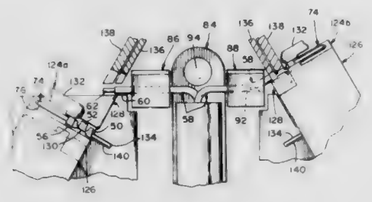
METHOD AND APPARATUS FOR ASSEMBLY OF ELECTRICAL CABLE

Alden O. Long, Jr., Carlisle, and Robert Voltaikie, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 905,902, Sep. 10, 1986, abandoned. This application Mar. 18, 1988, Ser. No. 169,787

Int. Cl.[4] H01R *43/04;* **B23P** *19/00*

U.S. Cl. 29—863 7 Claims



1. A method for assembling an electrical cable assembly comprising first and second section means having groove means extending from end to end and outwardly projecting rib means extending alongside said groove means, said groove and rib means on said first section means being laterally shifted relative to said groove and rib means on said second section means and electrical contact means for being disposed in said groove means, said method comprising the steps of:

spreading a plurality of wires outwardly in two opposite directions;

trimming said wires to predetermined lengths and stripping insulation from the ends thereof to bare a conductor therein;

terminating said bared conductors to said electrical contact means;

placing said contact means attached to said wires extending outwardly in one of said two opposite directions

in said groove means in said first section means; placing said contact means attached to said wires extending outwardly in another of said two opposite directions in said groove means in said second section means; and

forming said electrical cable assembly by joining said first and second section means together with said rib means on said first and second section means entering respective said groove means in said first and second section means to cooperatively form passageway means with said contact means therein and said wire attached thereto extending outwardly therefrom.

4. An apparatus for use in assembling an electrical cable assembly of the type formed by bringing first and second sections together with each section having wire-terminated electrical contacts therein, said apparatus comprising:

support means:

a pair of arm means with each having transverse grooves on one surface, said arm means mounted on said support means in parallel relation and pivotally movable from a first position where said grooved surfaces are facing in the same direction to a second position where said grooved surfaces are facing each other;

cable retaining means mounted on said support means for retaining an electrical cable therein; and

crimping means for crimping the electrical contacts to wires extending through said transverse grooves when said arm means are in a first position.

4,796,359

ELECTRIC SHAVING APPARATUS WITH A PIVOTED SHEARING HEAD SYSTEM

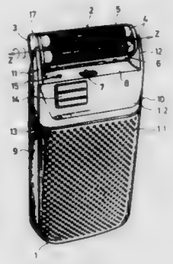
Klaus Oprach, Schwalbach; Lühr Harms, Oberursel; Gebhard Braun, Kelkheim, and Karl Trölitsch, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Mar. 23, 1987, Ser. No. 29,304

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1986, 3610736

Int. Cl.[4] B26B *19/04*

U.S. Cl. 30—43.92 16 Claims



1. An electric shaving apparatus having a housing, a motor in said housing, and a pivot axis located at one end of said housing, and

a shearing head system mounted on said housing for pivoting movement about said pivot axis, said shearing head system comprising a shearing head frame having opposing longitudinal sides

at least one upper cutter that includes two arcuate cutter extension portions extending along substantially the entire length of each longitudinal side of said shearing head frame,

at least one under cutter drivingly coupled to said motor and in cooperative relation to said upper cutter, said under cutter including arcuate extension portions in cooperative relation with said arcuate cutter extension portions of said upper cutter,

said shearing head frame defining a shearing plane that is tangent to both of said arcuate cutter extension portions along spaced tangent lines extending longitudinally of said shearing head frame, and said pivot axis being disposed in said shearing plane to at the center of the distance between the longitudinally extending tangent lines that define said shearing plane.

4,796,360

MOTOR-DRIVEN CHAIN SAW WITH A SPROCKET GUIDE

Manfred Fischer, Asperg; Klaus Dussler, Weinstadt; Wilfried Linke, Winnenden, and Werner Hartmann, Ostfildern, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Oct. 29, 1987, Ser. No. 114,657

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1986, 3640846

Int. Cl.[4] B23B *57/02*

U.S. Cl. 30—384 16 Claims

1. A guide bar and saw chain assembly for a motor-driven chain saw, the assembly comprising:

a guide bar having upper and lower edges and a nose sprocket mounted in the forward end thereof;

said nose sprocket having a plurality of teeth and each two mutually adjacent ones of said teeth conjointly defining a V-shaped tooth gap having an opening angle;

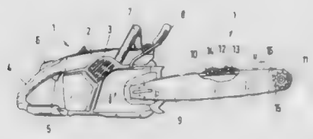
one of said two mutually adjacent teeth being a forward tooth when viewed in the direction of the movement of said saw chain and the other one of said teeth being a rearward tooth, said rearward tooth having a forward flank and said forward tooth having a rearward flank;

a plurality of links pivotally interconnected by rivet pins or the like to form an endless saw chain guided on said guide bar on said edges and on said nose sprocket;

a first portion of said links being cutting links and a second portion of said links being drive links;

each one of said cutting links including; a plate-like cutting-link body having an upwardly extending rearward portion defining a cutting tooth; and, a forward upwardly extending portion defining a depth limiter;

each one of said drive links being a triangularly-shaped plate-like body havig a forward bore and a rearward bore formed therein for accommodating two of said pins to define respective pivot axes;



each of said drive links having two downwardly extending inclined flanks for engaging said tooth gaps and said two downwardly extending inclined flanks having respective contours which extend asymmetrically with respect to a partition line drawn approximately perpendicularly to and approximately bisecting a connecting line passing through said pivot axes;

one of said inclined flanks being a forward flank which defines a forward flank angle (VFW) with said partition line and is in contact engagement with said forward flank of said rearward tooth; the other one of said inclined flanks being a rearward flank which defines a rearward flank angle (HFW) with said partition line and is in contact engagement with said rearward flank of said forward tooth; and, said forward flank angle (VFW) being greater than said rearward flank angle (HFW); and,

said forward flank angle and said rearward flank angle conjointly defining an angle greater than said opening angle.

4,796,361

WELDING ELECTRODE CAN OPENER

Kyle R. Neal, Rte. 1, Box 63, Gibson, Ga. 30810

Filed Feb. 12, 1988, Ser. No. 155,583

Int. Cl.[4] B26F *1/02*

U.S. Cl. 30—447 1 Claim

1. A new and improved welding electrode can opener, comprising:

an elongated rectangular base plate;

four upstanding walls forming a can receiving box on a central to portion of said base plate;

four upstanding elongated right angle corner rails mounted at corner portions of said can receiving box;

four side support braces connecting said corner rails, said support braces forming a square and secured at a midpoint of said corner rails;

a pair of "L"-shaped side support rails on opposite ends of said elongated base plate, each of said side support rods having a first end secured to one of said side support braces and an opposite end secured to said base plate;

a square top guide plate mounted on upper ends of said four corner rails;

a pair of circular guide apertures formed through said top guide plate;

a pair of slide bearings mounted on an underside of said guide plate in registry with said guide apertures;

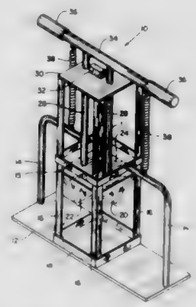
a pair of elongated circular slide rods extending through said guide apertures and slidably mounted in said slide bearings;

a transversely extending cross bar secured to upper ends of each of said slide rods;

a pair of handle grips disposed on opposite ends of said cross bar;

a resilient shock absorbing block secured to an upper service of said top guide plate between said guide apertures;

an elongated ejector pin extending downwardly from a bottom surface of said top guide plate;



a square blade mounting plate connected to bottom ends of said slide rods;

a central circular ejection apertured formed through said blade mounting plate;

four triangular shaped cutting blades formed form tempered steel and having a thickness of about one sixteenth of an inch secured along side edges of said blade mounting plate, each of said blades extending perpendicularly downwardly from said blade mounting plate; and

a pair of coil springs connected between said side support rods and said cross bar.

4,796,362

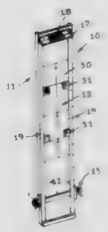
COMBINED CENTERLINE TARGET AND GRADE CHECKER APPARATUS

Jack W. Shoemaker, 9430 Woodsboro Pike, Walkersville, Md. 21793

Filed Aug. 27, 1987, Ser. No. 89,809

Int. Cl.[4] G01C *15/00*

U.S. Cl. 33—1 H 7 Claims



1. A combined centerline target and grade checker apparatus for use with a laser beam generating device, and a pipe segment for verifying the proper grade of a pipe trench and aligning a pipe segment in a pipe string, wherein the apparatus comprises:

a framework unit including a generally elongated rectangular open framework member comprising a pair of elongated apertured vertical leg elements connected together

on their upper and lower ends by cross-piece elements; wherein, each of the vertical leg elements comprise a generally L-shaped angle iron segment wherein the sides of the angle iron segment are provided with a plurality of equidistantly spaced and vertically aligned apertures and the face of the angle iron segment is provided with indicia representative of vertical height;

a target unit operatively associated with said framework member, wherein said target unit is provided with at least one horizontally disposed reference line and further includes releasable locking means for selectively positioning the target unit on said framework unit; and,

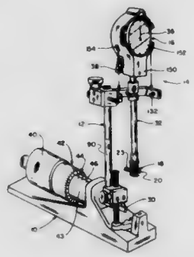
a movable support unit operatively associated with said framework unit and comprising a support member having a pair of elongated horizontally and rearwardly disposed members adapted to engage the interior surface of a pipe segment, and further including releasable locking elements for selectively positioning the movable support unit relative to said framework unit.

4,796,363

MEANS FOR SUPPORTING A GAGING DEVICE SUCH AS A DIAL BORE GAGE DURING THE SETTING THEREOF

Harold T. Rutter, Kirkwood, and Joseph F. Ondrus, St. Louis, both of Mo., assignors to Sunnen Products Company, St. Louis, Mo.

Filed Jan. 11, 1988, Ser. No. 142,192
Int. Cl.[4] G01B *5/12*
U.S. Cl. 33—164 R 24 Claims



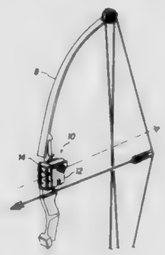
1. Means for supporting a dial bore gage in position to be adjusted on a setting fixture, the gage having a dial portion a work engaging portion with spaced opposed gage contacts and means connected therebetween, the setting fixture having a base for supporting aligned fixed and adjustable fixture members each having a gage contact engaging fixture surface thereon, the improvement comprising a support structure for mounting on the setting fixture in position extending upwardly from adjacent to the space formed by and between the fixture contact engaging surfaces, the support structure including an upright member having gage support means mounted thereon for cooperative engagement with the dial portion of the gage for supporting the gage in position with the work engaging portion extending downwardly from the dial portion in suspended condition into the space defined by and between the fixture contact engaging surfaces with the gage contacts located between the fixture contact engaging surfaces, said support structure having first means associated with the upright member adjustable to change the vertical position of the gage support means and the gage supported thereon and second means associated with the gage support means adjustable to change the horizontal position of the gage on the support structure to predeterminately position the gage contacts between the fixture contact engaging surfaces.

4,796,364

PENDULUM BOW SIGHT

Joseph A. Amacker, Rte. 3, Box 41, Tallulah, La. 71282

Filed Jan. 5, 1988, Ser. No. 141,041
Int. Cl.[4] F41G *1/46*
U.S. Cl. 33—265 33 Claims



1. A pendulum bow sight comprising:

a sight housing;

a pendulum sight mounted within said sight housing;

a sight window disposed on said sight housing, said sight window adapted to have a plurality of sighting pins mounted thereon; and

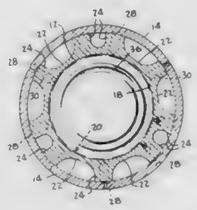
means for moving said sight window relative to said sight housing between a first position in which said sighting pins are located within the line of sight of said sight housing and a second position in which said sighting pins are located outside the line of sight of said sight housing.

4,796,365

UNDERWATER COMPASS SENSOR WITH COMPASS DITHER

Brian R. Hudson, Dallas, Tex., assignor to Whitehall Corporation, Dallas, Tex.

Filed Oct. 5, 1987, Ser. No. 104,379
Int. Cl.[4] G01C *17/32*
U.S. Cl. 33—356 8 Claims



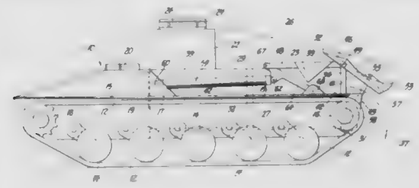
1. Underwater compass heading sensor and compass dither apparatus for marine seismic wherein the heading sensor includes a remote reading compass, compass heading sensing means, and interrogating circuitry associated with the heading sensor means to periodically provide a trigger pulse for interrogating the heading sensing means and to provide compass heading signals indicative of the heading of the compass at the time of interrogation; the apparatus comprising a housing for the magnetic compass heading sensor defining a chamber receiving the heading sensor therein and having a circumscribing coil-receiving recess, a dither coil comprising a plurality of electrically conductive coil windings in said recess encircling the portion of the housing in which the heading sensor is positioned, and electronic dither circuitry comprising means for producing a dither pulse having a preselected time relation with periodical interrogation of the heading sensor and causing current to be passed through the dither coil around the compass in a first direction for a preselected time duration to activate the coil to provide a light magnetic field causing the compass to move slightly to overcome any effects of static friction which might affect accuracy of compass heading signals upon interrogation.

4,796,366

PLOW/SCRAPER ASSEMBLY FOR EARTH MOVER VEHICLE

Robert M. Scully, 39290 Tunstall Dr., Mt. Clemens, Mich. 48044

Filed Feb. 27, 1987, Ser. No. 20,046
Int. Cl.[4] E02F *3/65, 3/815*
U.S. Cl. 37—4 18 Claims



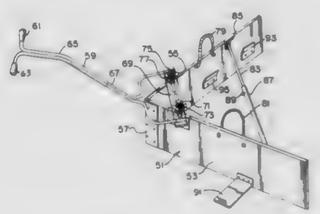
12. An earth-mover comprising: a containment bowl having a side opening; a door swingable about a first axis on the bowl so that the door can alternately serve as a side wall of the bowl or as a ramp to convey earth to the bowl; and a blade swingably connected about a second axis to the door so that the blade can serve a plowing function or serve to shovel material onto the door when the door is acting as a ramp.

4,796,367

ADJUSTABLE, MANUAL SNOWPLOW

Andrew C. Kulat, 94 Petticoat La., Lebanon, N.J. 08833

Filed Jul. 28, 1987, Ser. No. 78,906
Int. Cl.[4] E01H *5/06*
U.S. Cl. 37—273 6 Claims



1. An adjustable, manual snowplow, which comprises:

(a) a pair of elongated blade panels each of said panels having a substantially vertical plane blade surface, a leading end, a trailing edge, a top and a bottom, said panels being connected to one another in a hinged fashion at their leading ends so as to open and close relative to one another to form a vee shape;

(b) at least one set of hinges attached to the leading ends of the pair of elongated blade panels on the inside of the vee;

(c) a width adjustment member connecting said pair of panels to one another towards their trailing end so as to establish a plow path width, said adjustment member being at least partially removable so as to permit said panels to be folded into one another;

(d) a rigid plow head located on the outside of the leading end of both of said panels and attached to only one of said panels so as to permit said panels to be folded into one another;

(e) drive handle attachment means located on said panels toward the leading end of said panels;

(f) a drive handle attached to said drive handle attachment means, said drive handle being located forward of said leading ends of said panels and having adequate length to permit manual pushing by an operator located in front of said leading ends of said panels;

(g) at least one handle centrally located on a panel to enable said snowplow to be carried manually when folded; and,

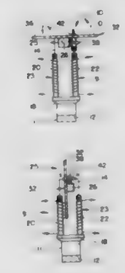
(h) blade edges located at the bottom of each of said pair of panels.

4,796,368

CHANGEABLE DOT DISPLAY ASSEMBLY

Alfred Skrobiach, 64 Fulton Blvd., Commack, N.Y. 11725

Filed Jun. 1, 1987, Ser. No. 56,438
Int. Cl.[4] G09F *9/00*
U.S. Cl. 40—449 11 Claims



1. A changeable dot display assembly for a portion of a matrix of dots in a variable message sign, comprising:

a stationary support;

a pair of substantially parallel reversely magnetizable magnetic core means carried by said support in an axial position;

wire coil means wound on said core means to magnetize the same when said coil means are electrically energized; and

a rotor carried by said support, said rotor comprising:

a shaft mounted to rotate on an axis perpendicular to and axially spaced from said core means and midway thereinbetween

a permanent magnet mounted to rotate with said shaft, said magnet having at least one magnetic pole axially positioned from said core means and disposed for attraction and repulsion by magnetized ends of at least one of said core means when said core means are magnetized by said coil means to rotate said rotor selectively to three different positions with respect to a viewing position, two of said three positions being substantially 180 degrees apart and the third position lying between said two positions; and

dot display means carried by said shaft, said display means having areas of different colors for selective display in said viewing position depending on the polarities of said ends of said core means when magnetized.

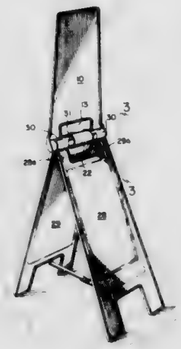
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,369

FLOOR SIGN EXTENSION ATTACHMENT

David L. Hamann, Cincinnati, Ohio, assignor to Rubbermaid Commercial Products Inc., Winchester, Va.

Filed Jul. 6, 1983, Ser. No. 511,259
Int. Cl.[4] G09F *15/00*
U.S. Cl. 40—606 10 Claims



1. A self-standing floor sign comprising:

a first floor sign panel having an upper end and a lower end;

a second floor sign panel having an upper end and a lower end;

means for hingably connecting said first floor sign panel to said second floor sign panel at said upper ends for selectively positioning apart said lower ends of said floor sign panels relative to each other;

a transverse handle integrally associated with said means for hingably connecting;

an extension panel;

means for pivotally connecting said extension panel to said handle, said means being coaxial with said means for hingably connecting; and,

means for selectively positioning said extension panel upwardly relative to said first and second floor sign panels when said lower ends of the latter are positioned apart relative to each other.

4,796,370

NUMERICAL DISPLAY MODULE

Kwangling Chang, 293 Kenilworth Avenue, Toronto, Ontario M4L 3S9, Canada

Filed Apr. 30, 1987, Ser. No. 44,301
Int. Cl.[4] G09F *3/04*
U.S. Cl. 40—450 3 Claims



1. In a seven-segment numerical display module, each segment comprising

a support block member directly mounted on a rectangular support board having a flat surface, said support block member having an upper portion extending at an acute angle above said flat surface, and said support block member having a side surface extending at a right angle to said flat surface of said support board,

an extra low voltage direct current motor mounted in an opening formed in said upper portion of said support block member, and having a rotatable shaft extending perpendicular to said side surface of said support block member,

a drive gear means directly mounted on said rotatable shaft of said direct current motor, said drive gear means having a predetermined diameter,

a transmission gear means having a freely rotatable shaft directly mounted on said support block member, said transmission gear means having a first gear means rotatably engaged with said drive gear means, and said first gear means having a diameter substantially larger than the diameter of said drive gear means, and said transmission gear means having a second gear means mounted on said freely rotatable shaft and operatively rotatable with said first gear means, said second gear means having a diameter substantially smaller than the diameter of said first gear means,

a second freely rotatable shaft directly mounted on said support block member,

a rotary gear means mounted on said second freely rotatable shaft and rotatably engaged with said second gear means, said rotary gear means having a diameter substantially smaller than the diameter of said second gear means,

a cylindrical member mounted on said freely rotatable shaft and operatively rotatable with said rotary gear means,

two substantially triangular blade carrier means mounted on said cylindrical member, said triangular blade carrier means having two hook shaped corners,

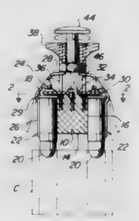
display blade member snap-mounted to said hook shaped corners of said blade carrier means, said display blade member being operative selectively to rotate relative to said cylindrical member to a first position wherein said display member is parallel to said flat surface of said board and to a second position wherein said display blade member is perpendicular to said flat surface of said board, a counterbalance weight mounted on said triangular blade carrier means and located at a third corner therein directly opposite to said display blade member, a pin member mounted on said rotary gear means, and a first abutment means and a second abutment means mounted on said upper portion of said support block member, said pin member operatively abutting said first abutment means when said display blade member is in said first position, and said pin member operatively abutting said second abutment means when said display blade member is in said second position.

4,796,371

CARTRIDGE LOADER FOR REVOLVERS

Gary J. Daniels, 1712 Brinton Manor Dr., Pittsburgh, Pa. 15221

Filed May 13, 1988, Ser. No. 193,603
Int. Cl.[4] F42B *39/04*
U.S. Cl. 42—89 5 Claims



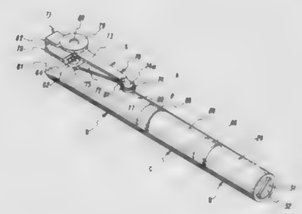
1. A cartridge loader for revolvers, comprising a holder formed symmetrically about a vertical central axis and having a top, a bottom and a plurality of flutes of substantially semi-cylindrical configuration arranged respectively on axes parallel to the central axis and equally angularly spaced about said axis and opening radially outwardly of the holder as well as at the top and bottom of the holder, each flute being dimensioned to receive a cartridge with a portion of the cartridge rim resting on a portion of the holder top adjacent to the associated flute, a support disposed coaxially with the holder and carried by the holder top, a plurality of fingers equal in number and angular spacing to the flutes and arranged about the support to extend normally downwardly respectively outwardly of and alongside the flutes for respectively engaging flute-carried cartridges, means biasing the fingers inwardly toward the holder for confining the cartridges to the flutes, means mounting the fingers on the support for selective outwardly swinging away from the flutes for releasing the cartridges for downward exit from the flutes, a grip member spaced coaxially above the support and fingers and having central bore, a plurality of upright mounting elements arranged in equal angularly spaced relation about the holder axis and having lower ends extending through the support and into the holder and upper ends extending into the grip member for securing the grip member to the holder, and means for engaging and moving the fingers comprising a plunger axially slidable in the bore of the grip member and having an upper end projecting above the grip member and a lower end engaging the fingers whereby the plunger is normally biased axially upwardly via the fingers and finger-biasing means and is movable manually downwardly relative to the grip member for actuating the fingers.

4,796,372

APPARATUS FOR CONDITIONING ARTIFICIAL FLIES AND LEADERS

Gerald R. Klein, 13451 Stuart Ct. (Rte. 2, Box 713), Broomfield, Colo. 80020

Filed Jun. 30, 1986, Ser. No. 880,191
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—4 12 Claims



1. A conditioner for the preparation of artificial flies and leaders to which artificial flies are attached, which is formed as a cylindrical container having several interconnected, separable segments including:

(a) a first segment containing a fly-treatment fluid, a reduced-diameter stub at one end and an applicator means at the stub adapted to apply a thin coating of fluid onto an artificial fly;

(b) a second segment adapted to be connected to the first segment, having a socket at one end to receive and house the aforesaid stub and applicator means when the segments are connected together, a reduced-diameter second stub at the opposite end of the second segment and a leader-conditioning means at the second stub adapted to straighten and to remove the shine from a leader;

(c) a third segment adapted to be connected to the second segment, having a socket at one end to receive and house the aforesaid second stub and leader-conditioning means;

(d) a holding clip mounted on the side of the third segment to hold the conditioner in a garment pocket when the segments are connected together; and

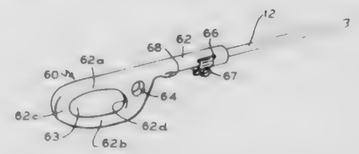
(e) a leader cutting means carried on the holding clip.

4,796,373

FISHING ROD WITH IMPROVED HANDGRIP

Bernard J. Struntz, 1002 Woodbridge St., St. Paul, Minn. 55117

Filed May 11, 1987, Ser. No. 48,747
Int. Cl.[4] A01K *87/00*
U.S. Cl. 43—23 2 Claims



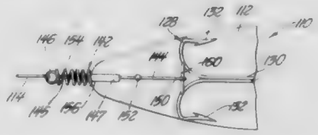
1. A fishing rod having an improved handle for use with a reel, mounted adjacent the handle, said handle being hollow to provide floatation, said handle formed from a pair of mating halves intersecting on a vertically disposed central parting line and fasteners secured between halves of said handle on either side of the parting line to secure said halves together, said handle including a horizontally disposed opening adapted to receive a strip fastener and said strip fastener is adapted to pass through said opening and to engage a portion of a fishing rod reel to secure the reel to said handle, said handle comprising an oblong handle grip having an elongated centrally located hand opening adapted to receive at least three fingers of the user during use, said handle grip formed by an upper and lower elongated forwardly and rearwardly oriented vertically spaced apart integral handle elements one of which is located above the hand opening and one of which is located below the hand opening, said handle element located below the opening forming an enclosure for the fingers of the user's hand, said handle element located above the opening forming a hand grip for the user to grasp in the palm of the hand by extending at least three fingers through said opening, said upper handle element and lower handle element having substantially similar size and shape, said handle elements intersecting and being integral with one another forwardly and rearwardly of the hand opening, said handle including a forwardly extending horizontally disposed rod supporting portion and a finger opening at the forward end of the handle grip portion adjacent the rear end of said forward extension, said finger opening located forward of said hand opening whereby said upper handle element can be held in the palm of the hand with fingers extending through said hand opening and the index finger placed in said finger opening to permit the user to control the action of said rod.

4,796,374

FISHING LURE

Peter F. Tomeo, Jr., 1747 Keats, Madison Heights, Mich. 48071

Filed Sep. 28, 1987, Ser. No. 101,432
Int. Cl.[4] A01K *85/00, 83/00*
U.S. Cl. 43—35 27 Claims



1. A fishing lure comprising: body support means for connection to a line;

a first hook means connected to said body support means adapted to be engaged by an object;

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a second hook means connected to said body support means for engaging the object and having an open cocked position and a closed position engaging the object;

pivotal means for allowing said second hook means to pivotally rotate relative to said first hook means;

first biasing means for biasing said second hook means toward said first hook means;

trip means connected to the line and engaging said second hook means for supporting said second hook means in said open cocked position and for releasing said second hook means to allow said second hook means to move toward said closed position in response to engagement by the object with said first hook means.

second biasing means for adjustably providing a predetermined amount of force on said trip means to release said second hook means from said open cocked position for movement toward said closed position to engage the object;

said second hook means including a first tubular means forming a first tube connected thereto; and

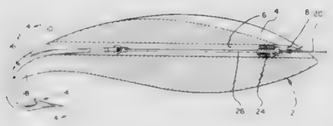
said trip means comprising a rod member having a first end connected to the line and having a second end slidably disposed in said first tubular means to support said second hook means in said open cocked position.

4,796,375

SUB-SURFACE GAME FISHING LURE

Geoff Wilson, 187 Solar Drive, Whittington, 3219 Victoria, Australia

Filed Jul. 1, 1987, Ser. No. 68,621
Claims priority, application Australia, Jul. 7, 1986, 59789/86
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.05 8 Claims



1. A lure for sub-surface game fishing, said lure including:

a main body of a shape substantially corresponding to the body shape of a fish, having respective front or nose and rear or tail ends, said main body having a single, unitary channel extending substantially from end to end therethrough,

a hook received and retained in said channel,

a substantially rigid member, extending within said channel between said nose and tail ends, wherein the front or leading end of said channel is displaced from said nose end of said main body such that the point of tow of said lure is similarly displaced from said nose end, said main body further including a shaped recess towards the front or nose end thereof, said recess forming a concave anterior dorsal surface for said main body, the arrangement being such that said main body is maintained substantially continuously beneath the surface of the water, in a submerged state, during towing or trolling, and wherein said main body includes, at or in the vicinity of the rear or tail end thereof, means for receiving and releasably retaining the hook relative to said main body, the arrangement being such that the hook is attached by the substantially rigid member to a trace or leader and is held substantially fixed relative to said main body until such time as the hook is taken by a fish.

4,796,376

FISHING DEVICE

Gene A. Schlaegel, 1810 Winston Dr., Iowa City, Iowa 52240

Filed Aug. 24, 1987, Ser. No. 90,087
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.29 12 Claims



1. A fishing device, comprising:

a plug type artificial fishing lure,

a fish bait harness secured to said lure and adapted to securely hold a fish bait in juxtaposition therewith,

said harness including spring-loaded openable and closable jaws having bait penetrating overlapping prongs for engaging a fish bait,

an elongated bar upon which a fish bait is impaled or skewered carried by said harness,

the prongs on said jaws when in closed position embracing said bar to hold said bar with fish bait against lateral movement relative to said lure, and

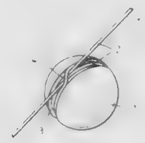
a fish hook depending from said harness.

4,796,377

LINE WEIGHT OR CLEAT

David C. Hosegood, 7 Fulmar Close, Lordswood, Southampton S0I 8E2 Hampshire, and Samuel B. Hosegood, Shipstal Point, Arne, Wareham, Dorset BH20 5BL, both of England

Filed Dec. 10, 1987, Ser. No. 131,376
Claims priority, application United Kingdom, Jan. 23, 1987, 8701499
Int. Cl.[4] A01K *75/06*
U.S. Cl. 43—43.1 6 Claims



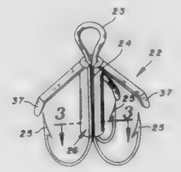
1. A translucent one-piece essentially spherical body having an essentially equatorial circumferential line guide in the form of a groove essentially V-shaped in cross-section and having a line attached to said body, in which when suspended, said line passes into said V-shaped line guide along a tangent thereto, around said body within said line guide, and out of said line guide along said tangent, said line being attached to the line guide of the body by a clove-hitch knot in said line whereby said line and said body are moveable relative to each other, said body being a weight in water.

4,796,378

SLIP-ON WEED GUARD FOR FISH HOOKS

Clyde A. Krueger, Box 107J, Lonsdale, Minn. 55046; Katharine C. Krueger, Box 107J R#1, Lonsdale, Minn. 55046, and Herman A. Preus, 1101-14th Ave. S.E., Minneapolis, Minn. 55414

Continuation-in-part of Ser. No. 555,437, Nov. 25, 1983, abandoned, which is a continuation of Ser. No. 340,007, Jan. 1, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 571,134
Int. Cl.[4] A01K *83/00*
U.S. Cl. 43—43.2 4 Claims



1. A weed guard for fishhook comprising

a homogeneous tube of molded, resilient, plastic material having a lengthwise bore and a lengthwise slit through the tube wall in communication with said bore, said tube characterized in that when the shank of a fishhook is inserted into the bore the side wall is self-biased to close the slit so that the tube tenaciously grasps the fishhook shank to prevent it from slipping on the shank;

integrally formed arm means extending outward from said tube at one end aligned to at least in part yieldably cover the point of a fishhook at the distal end; and

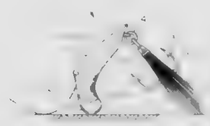
a member projecting from said tube for entering the eye of a fishhook when said arm means is aligned with the fishhook point.

4,796,379

DIVING PLUG FISH LURE

Phillip A. Rabideau, 3605 Fawn Creek Path, Austin, Tex. 78746

Continuation-in-part of Ser. No. 884,723, Jul. 11, 1986, abandoned. This application Jul. 24, 1987, Ser. No. 80,223
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.48 6 Claims



1. A diving plug fishing lure comprising:

A. a buoyant main body means;

B. a compound curved frontal section means, and integral weighted lip means, of said main body means, so that said lure descends stably, unaided, vertically, without line tension and so that the force of water reacting with said compound curved frontal section means causes said lure to wobble in a longitudinal, horizontal plane while descending vertically; and

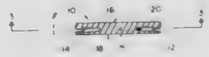
C. hook means attached to said main body means.

4,796,380

FISHHOOK HOLDER

Howard Beese, 111 Maroy Dr., South Amherst, Ohio 44001

Filed Jun. 8, 1987, Ser. No. 59,626
Int. Cl.[4] A01K *97/06*
U.S. Cl. 43—57.1 1 Claim





1. A fishhook holding device comprising a member having first and second exterior wall surfaces, and first and second opposing interior wall surfaces, wherein said first interior wall surface is angularly disposed with respect to said first exterior wall surface such that an angle α is thereby defined, wherein said second interior wall surface is angularly disposed with respect to said second exterior wall surface such that an angle β is thereby defined, wherein said angles α and β not necessarily being equal to each other, said first and second interior wall surfaces further defining a circumferential channel, said channel having its radial axis not parallel to said first and exterior wall surfaces, said member further having a central axis upon which said first and second interior wall surfaces converge, such that said circumferential channel narrows at the point of convergence, said first and second interior wall surfaces providing a yieldable surface area for retaining a fishhook when said fishhook is fixedly located near the point of convergence, said yieldable surface effectively eliminating the need for any outside biasing force.

4,796,381

INSECTICIDAL COMPOSITIONS

Hans-Herbert Kauth, Ingelheim am Rhein, and Hansheinut Itzel, Gau-Algesheim, both of Fed. Rep. of Germany, assignors to Celamerck GmbH & Co. KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 901,019, Aug. 28, 1986, abandoned. This application May 27, 1987, Ser. No. 54,437
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1985, 3531795
Int. Cl.[4] A01M *1/20*
U.S. Cl. 43—124 9 Claims

1. An insecticidal composition consisting essentially of a sheet of carrier material divisible into segments thereof by cutting, discrete deposits of at least one insecticidal substance printed onto a surface of said sheet of carrier material, and surface areas devoid of deposits of insecticidal substance spatially separating said discrete insecticidal deposits from each other, whereby waste material produced by cutting individual insecticidal segments from said sheet is devoid of insecticidal substance.

4,796,382

CHRISTMAS TREE HOLDER

William E. Anderson, 4211 174th SE., Bothell, Wash. 98036

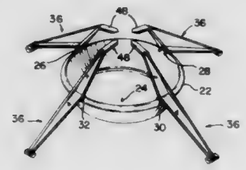
Filed Feb. 28, 1983, Ser. No. 470,389
Int. Cl.[4] A47G *7/02*
U.S. Cl. 47—40.5 2 Claims

1. A tree holder comprising:

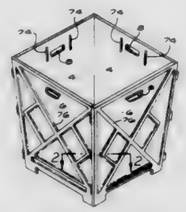
a. a container having a bottom and an outer rim, the diameter

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of said container being greater than the depth of said container;
b. impaling means disposed in the bottom of said container for engaging a tree placed in said container;
c. at least three brackets attached to the outer rim of said container, said brackets spaced an equal distance apart on the rim, each bracket adapted to receive a pin;
d. at least three legs with each leg comprised of three support members of unequal length in triangular shape with the apex of the longest and middle size support members resting on the ground, and a holding member extending from the apex of the shortest and longest support member, the distance between the ends of opposing holding members initially being greater than the diameter of the tree trunk to be placed therethrough, said legs supporting said container above the floor by being pinned to said brackets at the apex of the shortest and middle size support members by pins so as to allow rotation of said legs about a longitudinal axis running through the pins whereby the weight of a tree placed through said holding members and into the container engaging said impaling means depresses the container and causes the holding members to contact and support the tree; and
e. spring means wound around each pin and abutting against the inside of said container and the shortest support member to maintain the container in a position above ground level prior to insertion of a tree therein.

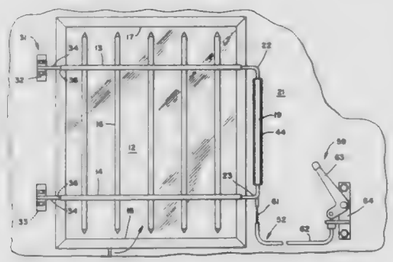


4,796,383
COLLAPSIBLE REUSABLE PLANTER BOX
Bert Inoue, Simi Valley, and Phil Lee, Moorpark, both of Calif., assignors to Dura Lee, Ltd., Moorpark, Calif.
Filed May 29, 1986, Ser. No. 868,263
Int. Cl.[4] A01G *9/02;* **47** *66, 73, 77, 76;* **217** *65;* **220** *4 F, 77;* **403** *253, 254, 231*
U.S. Cl. 47—73 **12 Claims**



1. A side panel capable of being connected to the other side panels to form a planter box comprising:
a. an inner surface and an outer surface, a top and a bottom edge and first and second side edges;
b. inserting means on the first side edge and receving means adjacent to the second side edge, the inserting means of one side panel capable of being connected with the corresponding receiving means of an adjacent side panel;
c. securing means on the side panel located adjacent to the receiving means for securing the connection between the inserting means and the receiving means; and
d. the side panel is in a plane, and wherein the first and second side edges contain rims that run along the first and second side edges and are perpendicular to the plane of the side panel wherein the securing means is adapted to engage one edge of the rim of the first side edge.

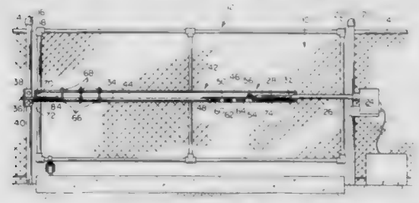
4,796,384
ADAPTABLE SECURITY GRILLE AND LATCHING MECHANISM
David R. Warwick, 51 Silverwood Dr., Lafayette, Calif. 94549
Filed Dec. 21, 1987, Ser. No. 136,704
Int. Cl.[4] E06B *3/68*
U.S. Cl. 49—55 **6 Claims**



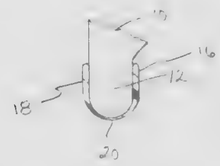
1. In a security grille for disposition at a window, door, or the like, the combination comprising:
at least first and second cross bars which extend in a horizontal direction and which are vertically spaced apart with said first bar being above said second bar, each of said first and second bars having a first end portion adjacent a first side region of said grille, at least said first end portions of aid firsts and second bars having a hollow tubular configuration defining internal passages in said cross bars,
a vertically extending side member situated at said first side region of said grille, said side member having a hollow tubular configuration at least at an upper portion thereof and a lower portion thereof,
means for fastening said side member to a wall or the like, comprising a releasable latch secured to said side wall or the like at a location which is behind said side member; said side member including a latch cover which extends between said side member and said wall or the like at each side of said latch when said side member is engaged by said latch; and
first and second angle members each having a horizontally extending leg and a vertically extending leg, said horizontal legs of said first and second angle members being entered into said first end portions of said first and second cross bars respectively in telescoping relationship therewith, and said vertical legs of said first and second angle members being entered into said upper and lower portions of said side connector member in telescoping relationship therewith.

4,796,385
GATE LOCKING DEVICE
Michael E. Tyler, One Medical Park Pla., 14615 San Pedro, San Antonio, Tex. 78232
Filed Aug. 5, 1987, Ser. No. 83,314
Int. Cl.[4] E05D *7/00*
U.S. Cl. 49—280 **9 Claims**

1. A locking apparatus for a swinging gate having a swing arm powered gate opener, said locking apparatus comprising:
a locking bolt slidably supported on said swinging gate so said locking bolt may move between an extended position for engaging bolt receiving means and a retracted position;
said swing arm powered gate opener for extending to produce a first force sufficient to move said gate from an open position to a closed position and to move said locking bolt to said extended position, and for retracting to produce a second force sufficient to move said gate from said closed position to said open position and to move said locking bolt to said retracted position;
said swing arm being attached to said gate through said locking bolt so said first force is in the direction of extending said locking bolt and so said second force is in the direction of retracting said locking bolt;
resisting means engaging said locking bolt for preventing said locking bolt from extending into said extended position until said gate reaches said closed position and for retracting said locking bolt before said second force moves said gate toward said open position, said resisting means positioned to exert a third force on said locking bolt directed against extension of said locking bolt, said first force on said locking bolt being substantially dissipated through movement of said gate until said gate reaches said closed position so said locking bolt remains retracted during said movement, and said first force overcomes said third force and extends said locking bolt when said first force is no longer dissipated through said movement, said resisting means comprising a first and a second spring, said first spring having a first resistance to stretching, said second spring having a second resistance to compression, the sum of said first and said second resistance being greater than a third resistance to moving said gate toward said closed position, said first spring being attached to said locking bolt and to said gate so said spring must be stretched for said locking bolt to extend toward said extended position, said second spring engaging said locking bolt and said gate so said second spring must be compressed for said locking bolt to extend toward said extended position, said first and said second resistance providing said third force.

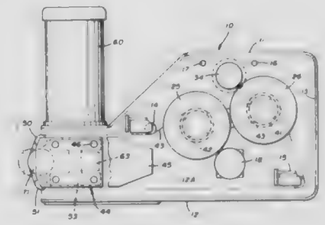


4,796,386
NON-METALLIC EDGE GUARD ATTACHMENT TO A DOOR
Robert Adell, Sunnyvale, Tex., assignor to U. S. Product Development Company, Sunnyvale, Tex.
Filed Jun. 25, 1987, Ser. No. 66,858
Int. Cl.[4] B60J *5/00*
U.S. Cl. 49—462 **17 Claims**



1. In combination with the trailing edge of a swinging door, a plastic door edge guard comprising a shaped cross section having inner and outer legs which extend from a base and fitting onto the trailing edge of the swinging door, said base comprising a character which enables the edge guard to be spread more or less apart so as to be open for fitting onto the trailing edge of the swinging door and assuming an installed condition wherein the sides of the legs are disposed against opposite sides of said trailing edge, said plastic door edge guard comprising an improved means for installing and attaching the edge guard to the trailing edge which comprises an adhesive material lining the interior of the edge guard from the base substantially to the distal ends of the legs, and a release layer covering said adhesive material prior to installation so that the adhesive material is not exposed, said release layer comprising separately releasable sections which are sequentially stripped from the edge guard during the installation process, one of said sections covering one leg and being the first stripped away to expose the adhesive material of that one leg while another section remains covering the other leg, the edge guard being somewhat spread open during installation such that the leg on which the adhesive material has been exposed can be adhered to one side of the door edge and then the other section of release layer stripped away to expose the adhesive material on the other leg, and the spread of the edge guard is then reduced by wrapping the base around and against the end of the trailing edge and by adhering the other leg to the other side of the trailing edge, said base having a reduced thickness from the thicknesses of said legs to facilitate conformance of the base to wrapping around the end of the trailing edge.

4,796,387
MICRO-ABRASIVE FINISHING DEVICE
James N. Johnson, P.O. Box 2747, Youngstown, Ohio 44507
Filed Nov. 19, 1987, Ser. No. 122,755
Int. Cl.[4] B24B *7/00, 21/00*
U.S. Cl. 51—62 **6 Claims**



1. A micro-abrasive finishing device used to finish work pieces of different configuration comprises in combination, a housing having multiple sides a bottom and a top, a removable interchangeable abrasive cassette mounted within said housing, said abrasive cassette comprises a pair of abrasive spool assemblies, an abrasive spool with an abrasive band of micro-abrasive material positioned on at least one of said abrasive spool assemblies, an oscillating head assembly within said housing, a plurality of guide rollers within said housing aligned to guide said abrasive band into said oscillating head assembly, said oscillating head assembly comprises in combination an independent fixed mounting plate, a plurality of spaced, fixed rods extending between said fixed mounting plate and said housing, a nylon head insert movably positioned on said rods, means for oscillating said head insert, means for selectively driving one of said abrasive spool assemblies, a yoke adjustably positioned in said nylon insert, a platen positioned in said yoke, means for adjustably positioning said yoke in said nylon head insert, means for restrictive, selective, directional rotation of said abrasive spool on said abrasive spool assemblies, means for adjustably maintaining tension on said abrasive band.

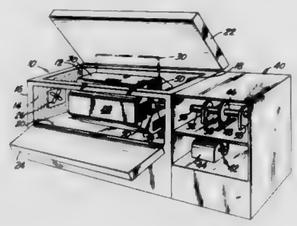
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,388

DEFLASHING APPARATUS

Al Steckis, 19 N. Ridge Dr., Corum, N.Y. 11727

Filed Jul. 9, 1987, Ser. No. 71,365
Int. Cl.[4] B24B *31/02*
U.S. Cl. 51—164.1 **22 Claims**



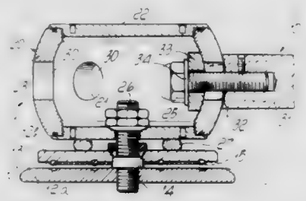
1. An apparatus for deflashing of elastomeric elements comprising:
(a) a tumbling barrel having a closable opening for introducing and withdrawal of elastomieric elements and deflashing media to the interior of the barrel;
(b) a refrigeration chamber sized for receiving the barrel therein, having an access opening for providing access to a barrel located therein, having means for mounting the barrel therein, means for lowering the temperature of the interior of the chamber and having additional cool air circulation means within the interior of the chamber;
(c) means for imparting motion to the barrel mounted within the chamber to achieve impacting movement to the barrel contents and
(d) said barrel having aperture means providing access of the cooled atmosphere within the refrigeration chamber into the interior of the tumbling barrel.

4,796,389

RETICULAR SPATIAL STRUCTURE

Dante Bini, San Francisco, Calif.; Domenico Bogliari, Olmo, Italy; Sandro Lomoro, Rome, Italy; Daniele Minozzi, Padua, Italy; Stefano Pietrogrande, Rome, Italy, and Dario Zucchi, Bologna, Italy, assignors to Binistar International N.V., Curacao, Netherlands Antilles

Filed Jun. 1, 1987, Ser. No. 55,955
Claims priority, application Italy, Jun. 5, 1986, 20687 A/86
Int. Cl.[4] E04H *14/00*
U.S. Cl. 52—2 **15 Claims**



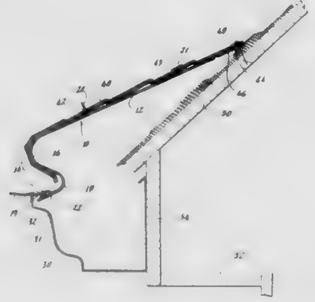
1. Reticular spatial structure comprising; perimetral nodes,
a plurality of perimetral rod-like elements having ends, said ends being associated with said perimetral nodes,
connecting nodes defining a geometrical center and each comprising a lower plate, an upper plate, and a hollow body having an inner surface and an outer surface,
a plurality of variable-length rod-like elements having ends and axes, said ends being hingeable to said connecting nodes to form a framework, at least part of said variablelength rod-like elements being rotatable both about said axes and with respect to said geometrical center of said connecting nodes for causing extension of said variablelength elements to a final selected extension length during raising of said framework to form a reticular spatial structure having a dome-like shape, said structure further comprising;
node rod fixing bolts adapted for fixing said rod-like elements to said nodes
locking means adapted to prevent return of said rod-like elements to a length which is different from said final selected extension length,
a rocker suspension pivot connected to each said hollow body, and
a covering membrane held by said lower plate and said upper plate of each of said connecting nodes and coupled to said rocker suspension pivot, wherein said inner surface and said outer surface of said hollow body are shaped as equatorial segments of concentric spheres, and wherein said hollow body has a wall inscribed by said two concentric spheres and provided with a plurality of openings, said openings being arranged radially for allowing insertion of said node-rod fixing bolts and for achieving structural continuity of said structure after pneumatic raising thereof.

4,796,390

RAIN GUTTER DEVICES

Robert J. Demartini, 3500 Canter La., Raleigh, N.C. 27604

Filed Nov. 12, 1987, Ser. No. 119,683
Int. Cl.[4] E04D *13/04*
U.S. Cl. 52—12 **8 Claims**



1. A device for securing rain water gutter deflector apparatus to an associated building structure comprising
an elongated continuous strip having a substantially straight upper portion and a double reverse-curved lower portion,
said straight portion having upper attachment means integral therewith for affixing to said device a gutter deflector positioned at the top of said straight section and the uppermost curve of said double-reverse curved lower portion,
the lowermost curve of said double-reversed portion including lower attachment means for affixing said device to an associated rain gutter in supported relationship thereto.

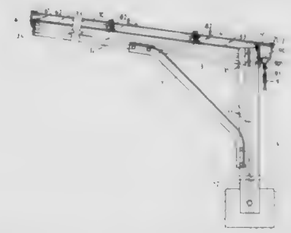
4,796,391

OVERHANG STRUCTURE

Chao-Hsiung Lu, Kaohsiung Hsien, China, assignor to Formosa Shinn Yuan Industrial Co., Ltd., Taiwan

Filed Nov. 24, 1987, Ser. No. 124,570
Int. Cl.[4] E04B *7/02*
U.S. Cl. 52—73 **2 Claims**

1. An improved structure comprising,
posts of an aluminium alloy having a hollow rectangular cross-sectional form with two wide sides and a top end, provided with a notch in the top end and with at least two lengthwise recessed or protruded reinforcing ribs at the two wide sides and holes bored between said two reinforcing ribs for assembling with rafters with bolts,
rafters of an aluminum alloy with two wide sides, an upper side, and a front and rear end, to be combined with the posts at the rafters' rear ends, having a hollow rectangular cross-sectional form, provided with at least two reinforcing ribs recessed or protruded at the two wide sides, two discontinuous parallel ridges having the same length on the upper side for placing auxiliary poles to increase the strength of the rafters,
struts of an aluminium alloy with two ends, an upper part, and a lower part, to be combined with posts at one end and with rafters at the other end for supporting the rafters, having the cross-sectional form that the upper part is provided with two side walls having the same height, the distance between the two side walls being equal to the width of the rafter and the post for attachment, and the lower part is a hollow rectangle with several vertical reinforcing ribs,
auxiliary poles of an aluminium alloy having two ends, to be placed crosswide on the rafters between the parallel ridges for supporting roof sheathing, having a U-shaped cross-sectional form with upper corners and a lower edge with a hook set at one upper corner for an assembly nail to be hooked, roof sheathing, having side edges, a front edge, and a rear edge, attached to the rafters,



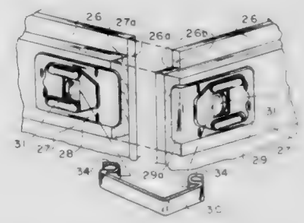
assembly nails provided with an elastic resin nail base having a vertical ridge for catching and a metal bended nail extending down from said base,
a right and a left symmetrical fascia of an aluminium alloy, having an E shape, provided with an upper flat horizontal wall for pressing the side edge of the roof sheathing, a middle flat horizontal wall wider than the upper wall for being set at the lower edge of the end of the auxiliary poles,
a front beam of an aluminium alloy with a rear upper and lower part, provided with two parallel horizontal walls forming an opening at the rear upper part for placing in the opening the front edge of the roof sheathing and a horizontal wall at the rear lower part for combining with the upper side of the front end of the rafter with screws,
a rear beam of an aluminium alloy, having a near U shape for its cross-section with a front upper edge, a rear wall having a top, and two ends, provided with a hook at the front upper edge for hooking in the top end notch of the post, at least two reinforcing ribs recessed or protruded at the rear wall, a L-shaped pressing wall at the top of the rear wall for pressing the rear edge of the roof sheathing, water outlets at both ends and a bucket placed under each outlet and connected with a drain chain hanging down to the ground and,
drain chains constituted with a chain head with several adjusting wings and a series of chain rings connected with one another, each ring provided with at least one connecting notch with an inclined tip end for connecting with the counterpart of another chain ring.

4,796,392

SYSTEM FOR INTERCONNECTING PANELS OF CONTAINERS

Andrew S. Graham, Jr., 2802 Jefferson Ct., Ambler, Pa. 19002

Continuation-in-part of Ser. No. 841,477, Mar. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 710,492, Mar. 11, 1985, Pat. No. 4,584,806. This application Nov. 4, 1987, Ser. No. 117,215
Int. Cl.[4] B65D *19/16, 9/12*
U.S. Cl. 52—79.5 **15 Claims**



1. A container having walls defining an interior container volume of rectangular shape, the walls including four upright side walls meeting at upright corners of the container, the walls being formed of panels extended horizontally between the upright corners, an end portion of a first panel at one side of a corner being positioned and extended to overlap the end surface of a second panel at the other side of that corner, a spring clip fastening device for interconnecting panels adjacent an upright corner, said device including apertured plates mounted on the outer sides of the panels adjacent the ends thereof and a spring clip having end portions positioned to engage the apertures of said plates, and the plate mounted on said second panel having an end abutment portion projecting beyond the end of the second panel in a position overlying the end of the first panel, the panels adjacent each of the upright corners of the container being relatively positioned with respect to each other in accordance with the above definition and being interconnected by a spring clip fastening device in accordance with the above definition, with the ends of the panels overlapping each other at each corner in a first series extended around the upright corners of the container in one direction and further with the abutment portions of the plates of the fastening devices at each corner projecting in a second series extended around the upright corners of the container in a direction opposite to said first series.

4,796,393

DECORATIVE AWNING AND FACIA STRUCTURES AND METHODS AND APPARATUS FOR FORMING THE SAME

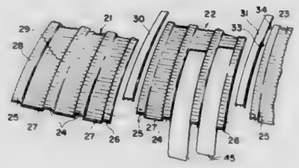
Andrew J. Toti, 311 W. River Rd., Modesto, Calif. 95351

Filed Aug. 9, 1985, Ser. No. 764,296
Int. Cl.[4] E04D *3/30*
U.S. Cl. 52—76 **14 Claims**

1. In a metal awning assembly, a main awning body section comprising a plurality of individual metal panel sections each having a prearranged curvature and being joined in side-to-side relation, each of said individual panel sections comprising a sheet of thin gauge metal formed with a plurality of individual longitudinal reinforcing rib sections mutually spaced from each other between panel regions, each of said rib sections having an inverted generally U-shaped cross section having a generally flat face and which includes a deep hook portion where joined to the intervening panel region; each of said

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panel sections including male and female rib sections formed on opposite edges of said panel with each of said male and female rib sections comprising an inner deep hook portion curving laterally and away from the body of said panel section, an outer deep hook portion curving laterally and toward the body of said panel section, and a generally flat section intermediate said inner and outer hook sections, said outer hook portion on said female rib section having a longer hook portion, and said male rib section being received into said female rib section in snap together relation to hold said panel sections



together; said assembly further including a plurality of elongated thin metal sheets each received in said hook portions between adjacent rib sections on said panel regions and having a width prearranged slightly greater than the distance between said indented hook portions such that opposite edges of each said elongated sheet are received in said indented hook portions to retain each said elongated sheet in position on said panel regions, whereby the basic decorative color appearance of said panel sections is determined largely by the color of said elongated thin metal sheets inserted therein.

4,796,394

GEODESIC STRUCTURE

Lennel J. Chastain, 8201 Fourth Ave., Brooklyn, N.Y. 11209

Filed Nov. 13, 1987, Ser. No. 119,969
Int. Cl.[4] E04B *1/32*
U.S. Cl. 52—81 **16 Claims**



1. A geodesic structure comprising at least three concentric surface layers, said layers being defined by planar panel members, said panel members of each layer approximating a polyhedral surface, each of the surface layers being related through geometric transformation further including support means for interconnecting the panel members of a first surface layer with the panel members of an adjacent surface layer and with the panel members of a non-adjacent surface layer.

4,796,395

SOLARIUM WITH MUNTINLESS EXTERIOR

Benjamin Israel, Huntingdon Valley, Pa., assignor to Jardin, Inc., Southampton, Pa.

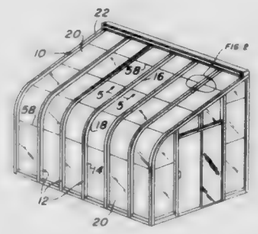
Filed Jan. 8, 1987, Ser. No. 1,591
Int. Cl.[4] E04B *7/18, 7/02*
U.S. Cl. 52—86 **13 Claims**

1. A solarium structure, comprising:

a framework for supporting and retaining a plurality of glazing panels, said glazing panels being comprised of at least two sheet panels of glass having a peripheral non-glass spacer therebetween to form an insulating space between the two panels of glass, at least one sheet panel comprising an outer sheet panel and at least one sheet panel comprising an inner sheet panel;

said framework including a plurality of mullions having substantially vertical portions, sloping portions and curved portions connecting said vertical portions with said sloping portions, said mullions having an inner supporting member and an outer retaining member;

said framework including a plurality of substantially horizontal inner muntins connected to said mullions, said muntins being comprised of a supporting member having a "T" cross-sectional shape with the leg of the "T" projecting outwardly, and the top of the "T" forming a pair of inner supporting surfaces for said glazing panels;



said glazing panels being supported between said inner supporting members and said outer retaining members of said mullions and on said inner supporting surfaces of the tops of the "T"s of said muntins and between the legs of said "T" shaped muntins;

said outer sheet of adjacent glazing panels juxtaposed the leg of said "T" shaped muntins being aligned and not overlapped to form an exterior surface in a single plane; and

caulking material covering the space between glazing panels and over the legs of the "T" of said substantially horizontal muntins but not extending above the plane of the exterior surface of the glazing panels and whereby there is an absence of a conductive path between exterior and interior along said muntin.

4,796,396

INTEGRAL WALLBOARD AND STUD

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Aug. 10, 1987, Ser. No. 83,488
Int. Cl.[4] E04B *2/30*
U.S. Cl. 52—127.5 **7 Claims**



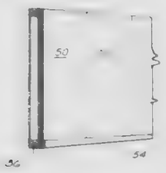
1. A wallboard and stud unit comprising a wallboard and an elongate sheet metal strip affixed to the back face of said wallboard, said metal strip having an elongate attachment portion affixed to said wallboard, said metal strip also having an elongate web portion which is formed and suitably disposed for bending, along an elongate fold line parallel to an edge of said wallboard, from a storage form, in which said attachment portion and said web portion are substantially coplanar, to a functional form, in which said web portion extends substantially perpendicularly to said wallboard back face and to said attachment portion, wherein said metal strip further includes a flange portion extending perpendicularly from the outer edge of said web portion and wherein said flange portion is disposed along and closely spaced from the side edge of said wallboard, when said web portion is in a storage form, and said flange portion is substantially equal in width to the thickness of said wallboard.

4,796,397

DEMOUNTABLE PANEL STRUCTURE

Raymond W. Capaul, Route #3, Wildwood Drive, Aurora, Ill. 60504

Filed Sep. 21, 1987, Ser. No. 98,794
Int. Cl.[4] E04B *1/82*
U.S. Cl. 52—144 **9 Claims**



1. A demountable acoustical ceiling and wall panel structure, consisting essentially of: a lightweight core member in the form of a honeycomb having wall portions defining a plurality of open-ended cells and opposed cell end planes; a single-ply, thin, dense, sound transmitting, substantially homogeneous, glass fiber sheet of substantially uniform thickness secured to each of the opposed major surfaces of the core member in substantially parallel relation to each other and to said cell end planes; separable fastening means secured in preselected spaced relation on the exposed surface of one of said single-ply glass fiber sheets to enable the panel structure to be demountably secured on a supporting surface provided with cooperating separable fastening means with only hand pressure; and decorative coating on the exposed surface of the other of said single-ply glass fiber sheets, said panel structure having a flame spread of less than 25.

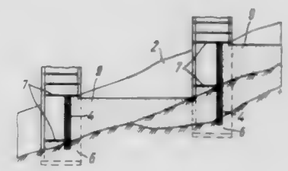
4,796,398

FOUNDATION OF A BUILDING OR INSTALLATION ERECTED ACROSS A RAVINE EXTENDING ALONG A SLOPE

Viktor A. Golovko; Semen P. Valts, both of Yalta; Alexandr M. Lekhno, Simferopol; Alexandr N. Tetior, Simferopol, and Boris J. Barykin, Simferopol, all of U.S.S.R., assignors to Simferopolsky Filial Dnepropetrovskogo Inzhenerno-Stroitelnogo Instituta, Simferopol, U.S.S.R.

PCT No. PCT/SU86/00091, § 371 Date May 29, 1987, § 102(e) Date May 29, 1987, PCT Pub. No. WO87/02083, PCT Pub. Date Apr. 9, 1987
PCT Filed Sep. 26, 1986, Ser. No. 82,862
Int. Cl.[4] E02D *19/00*
U.S. Cl. 52—169.2 **1 Claim**

1. A foundation of a building or installation erected across a ravine extending along a slope and having face ends bearing against opposite slopes of the ravine, said foundation comprising a vertically extending longitudinal wall and vertically extending transverse walls connected to said longitudinal wall, said longitudinal wall being arcuate with a camber facing towards a higher ravine point, characterized in that said transverse walls are substantially parallel with each other and are inscribed in an imaginary rectangle in the plan view.

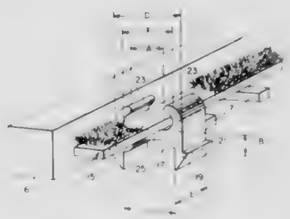


4,796,399

COMBINATION WALK-OFF AND FATIGUE MAT

Ronald N. Kessler, Youngstown; Myron Ullman, Canfield, and Milton Kessler, Youngstown, all of Ohio, assignors to Boardman Molded Products, Inc., Youngstown, Ohio

Filed Oct. 20, 1987, Ser. No. 110,313
Int. Cl.[4] E04F *19/10;* **A47L** *23/22*
U.S. Cl. 52—177 **10 Claims**



1. A combination walk-off and fatigue mat comprising

a first series of parallel flexible top ribs spaced apart a distance approximately equal to their own width,

a second series of parallel flexible bottom ribs underlying and crossing said top ribs and spaced apart at least twice the distance separating the top ribs, the ribs of the two series being integrally molded together at all points where they cross, and

a third series of parallel ribs extending parallel to said second series of parallel bottom ribs and located therebetween, said third series of ribs overlying said second series of parallel flexible bottom ribs and projecting upwardly therefrom to a height less than the height of said first series of parallel flexible top ribs.

4,796,400

SKYLIGHT WITH IMPROVED SEAL

Lawrence Mulder, Holland, Mich., assignor to ODL, Incorporated, Zeeland, Mich.

Filed Aug. 24, 1987, Ser. No. 88,563
Int. Cl.[4] E04B *7/18*
U.S. Cl. 52—200 **7 Claims**

4. A skylight kit comprising:

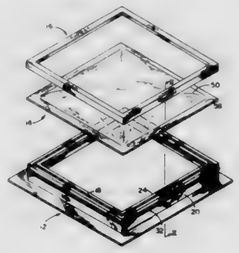
a curb assembly for supporting a dome on a roof, said curb assembly including an upwardly facing support portion defining a plane;

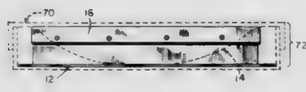
a gasket adhered to said support portion; and

a dome including an arched panel and a peripheral portion extending thereabout and defining a plane, said peripheral portion engaging at least one of said support portion and said gasket, said arched panel extending downwardly

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from said support portion and into the interior of said curb assembly, whereby said kit presents a low profile for storage and transportation, and further whereby said





dome can be removed from said curb assembly, inverted, and reseated on said curb assembly and gasket upon installation in a roof.

4,796,401

COMPOSITE FIRE STOP DEVICE

Jonathan B. Wexler, Victoria, Australia, assignor to Fire Research Pty., Limited, Victoria, Australia

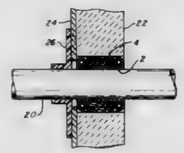
PCT No. PCT/AU86/00213, § 371 Date Apr. 3, 1987, § 102(e) Date Apr. 3, 1987, PCT Pub. No. WO87/00761, PCT Pub. Date Feb. 12, 1987

PCT Filed Jul. 28, 1986, Ser. No. 51,629

Claims priority, application Australia, Aug. 6, 1985, 45811/85

Int. Cl.⁴ A62C *3/00, 3/04*

U.S. Cl. 52—232 12 Claims



1. A fire stop composite assembly which is positionable on a plastic pipe as a composite, said assembly comprising:

a rigid sleeve of heat-softenable material adapted to be fit over a plastic pipe;

an annular collar of intumescent material surrounding an external surface of the sleeve, said collar having an axial end face located inwardly of one axial end of the sleeve;

said sleeve defining an annular flange between said axial end face of the collar and said one end of the sleeve;

an annular layer of flexible refractory material around said annular flange;

force-applying means applied around the refractory layer to apply a radially compressive force to the flange, wherein upon softening of the annular flange and pipe in the event of a fire said force-applying means acts to constrict the flange and the pipe which may subsequently burn to form a carbon mass within the annular layer of refractory material, and wherein said assembly is positionable as a composite on the pipe by slidably engaging the sleeve on the pipe.

4,796,402

STEP SILENCING PARQUET FLOOR

Jari Pajala, Riihimaki, Finland, assignor to Paloheimo Oy, Riihimaki, Finland

Filed Mar. 30, 1987, Ser. No. 31,568

Claims priority, application Finland, Apr. 1, 1986, 861396

Int. Cl.⁴ E04F *13/08*

U.S. Cl. 52—390 6 Claims



1. A laminated flooring board for a parquet flooring comprising a wear resistant surface layer on top of the board and a parallel supporting construction layer bonded to the bottom side of said surface layer, said board having longitudinal sides and ends formed with a tongue and groove whereby said board will cooperate with adjacent boards to form a self-silencing parquet floor, said flooring board being characterized in that said supporting construction layer consists of a non-homogeneous fiber board wherein said non-homogeneity is provided by surface compactness of the fiber board.

4,796,403

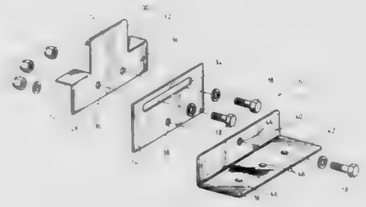
ARTICULATING ROOFING PANEL CLIP

David A. Fulton, Humble, and Jerry D. Boen, Houston, both of Tex., assignors to Metal Building Components Incorporated, Houston, Tex.

Filed Aug. 28, 1987, Ser. No. 90,705

Int. Cl.⁴ E04D *1/34*

U.S. Cl. 52—713 14 Claims



11. A clip for assembly of two roofing panels, interconnected by a standing seam, on a purlin, comprising:

a bracket, attachable to a purlin, and configured to fit within and engage said standing seam;

said bracket including a separate central component, an upper component and a lower component,

said central component disposed inbetween, and interconnecting, said upper component and said lower component, said central component being pivotally connected to said lower component to provide for relative rotational movement between said lower component and said upper component;

said lower component being attachable to said purlin and said upper component configured to fit within and engage said standing seam.

4,796,404

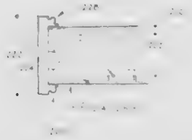
LIGHT-TRANSMITTING THERMAL BARRIER

Robert B. Butler, 20 Tibet Dr., Carmel, N.Y. 10512

Continuation-in-part of Ser. No. 783,630, Oct. 3, 1985, abandoned, which is a continuation of Ser. No. 586,636, Apr. 10, 1984, which is a division of Ser. No. 449,682, Dec. 14, 1982, Pat. No. 4,443,978. This application Jan. 9, 1987, Ser. No. 4,858

Int. Cl.⁴ E04C *2/54*

U.S. Cl. 52—789 21 Claims



18. A light-transmitting thermal barrier comprising:

(a) a translucent body of thermally-insulating material,

(b) a first light-transmitting panel on one side of said translucent body of thermally-insulating material having an inner side,

(c) a second light-transmitting panel on the other side of said translucent body of thermally-insulating material having an inner side,

(d) each of said first and second light-transmitting panels being substantially coextensive in area to the area of said translucent body of thermally-insulating material,

(e) said first light-transmitting panel having a first plurality of inner ribs orthogonally extending from said inner side of and along said light-transmitting panel and in contact with one side of said translucent body of thermally-insulating material,

(f) said second light-transmitting panel having a second plurality of inner ribs orthogonally extending from said inner side of and along said light-transmitting panel and in contact with the other side of said translucent body of thermally-insulating material.

4,796,405

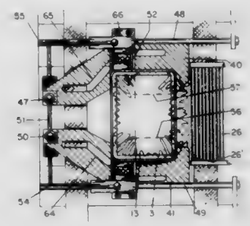
FILM FOLDING DEVICE

Dave L. Owen, Wellford, and Robert E. Jahn, Greer, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Sep. 25, 1987, Ser. No. 101,234

Int. Cl.⁴ B65B *11/18*

U.S. Cl. 53—222 2 Claims



1. In an apparatus for wrapping a generally rectangular tray filled with a product in a sheet of thermoplastic film or the like, a film folding device for folding film under the tray comprising:

(a) means for holding a sheet of film horizontally above the tray;

(b) means for lifting the tray into the film while the film is so held, the film being draped and held around the tray when the tray is lifted to its highest position;

(c) a back folding bar mounted parallel to the back edge of the tray for reciprocal, linear motion towards and under the tray to fold the film against the back underside of the tray; said back folding bar being above the film while the film is so held;

(d) a pair of folding arms mounted to move linearly towards and under the tray but above the film simultaneously with the back folding bar to fold the film against the underside of each the side of the tray; said folding arms further comprising:

(1) a straight edge of the side of each folding arm adjacent the tray, said straight edge being parallel to the adjacent tray edge and said straight edge extending in length for a substantial portion of the length of the adjacent tray edge; said straight edges being disposed to contact the draped film immediately before contact of the film by the back folding bar;

(2) a cam slot in each folding arm, said slots defining a cam surface sloped relative to the direction of movement of said arms for a portion of the length of the slots, so that cam followers moving linearly in each slot will drive the arms towards each other at right angles to the direction of motion of the cams followers;

(3) a cam follower mounted in each slot for travel therein, each cam follower being fixed to said back folding bar whereby when said bar is advanced towards the tray, the folding arms move simultaneously towards the tray; and,

(4) a gathering edge, said gathering edge extending from the straight edge in the direction towards the rear of the tray and sloping away from the tray, the slope of said gathering edge and said portion of the cam slot being chosen so that the back folding bar and gathering edge coincide at a point which is approximately below the adjacent back corner of the tray;

(e) a horizontally stationary front folding bar mounted parallel to the front edge of the tray and above the film; and,

(f) means for moving the tray forward from the lifting means after the film has been released from the holding means, the side arms have folded the film under the sides, and the back bar has folded the film under the back of the tray whereby when said tray is moved forward the front folding bar folds the film under the front underside of the tray to complete the wrapping of the tray.

4,796,406

CUP-FILLING APPARATUS FOR A NUTRIENT AND PALATABLE MATERIAL, ESPECIALLY A DAIRY PRODUCT

Burkhard Gies, Wuppertal, and Berthold Lingenhoff, Hilden, both of Fed. Rep. of Germany, assignors to Hamba-Maschinenfabrik Hans A. Muller GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Jun. 4, 1987, Ser. No. 58,164

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1986, 3619519

Int. Cl.⁴ B65B *43/40, 43/42*

U.S. Cl. 53—202 10 Claims

4. In a cup-filling apparatus for packaging a comestible product, comprising:

transport means for carrying a plurality of rows of cups moving on separate tracks along a transport path,

means at a first station for positioning said cups on said transport means,

means for filling said cups with said comestible product, and

means at another station along said transport path for applying covers to said cups, the improvement which comprises:

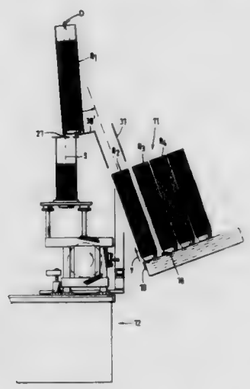
feeder magazine means at one of said stations formed with a number of upright feed magazines equal in number to the number of cups of each row, each of said feed maga-

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zines being assigned to a respective one of said tracks and receiving a stack of elements selectively constituted of said cups and said covers and provided with means for feeding individual elements from bottoms of said stacks to said transport means;

an intermediate magazine having a number of upright magazine shafts equal in number to said tracks and simultaneously shiftable into alignment with respective feed magazines of said feeder magazine means for delivering respective stacks of said elements from said shafts to said feed magazines;

elevator means below said intermediate magazine and having a number of elevator shafts equal in number to



said tracks and alignable from below with respective ones of said magazine shafts of said intermediate magazine in a position of said magazine shafts out of alignment with said feed magazines and prior to shifting of said magazine shafts into alignment with the respective feed magazines, and means for linearly lifting respective stacks of said elements along said elevator shafts into said magazine shafts; and

means engageable from below with the stacks lifted into said magazine shafts by said elevator means for retaining the stacks in said magazine shafts during shifting of said magazine shafts into alignment with the respective feed magazines.

4,796,407

METHOD AND FITTINGS ENABLING ARTICLES TO BE RAPIDLY TAKEN INTO AND OUT OF A CASE

Ko-Lin Sun, No. 4, Song Bor Lane, Fu Shing Road, Li Shan Tsuen, Tai Chung Shian, Taiwan

Filed Jul. 30, 1987, Ser. No. 79,517

Int. Cl.[4] B65B *35/30, 5/06, 67/02*

U.S. Cl. 53—390 14 Claims

1. A method for packing articles into a case or container having a plurality of holes in a bottom wall comprising the steps of:

(a) providing a stationary base having a plurality of rods extending upwardly therefrom, the rods having first ends inserted into the base and second ends;

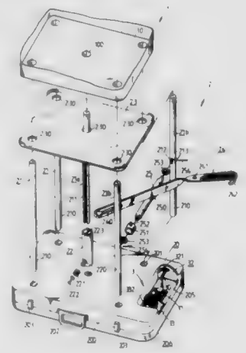
(b) providing a slide plate having a plurality of holes to allow passage of the plurality of rods;

(c) providing means to raise and lower the slide plate;

(d) placing a empty case on the slide plate;

(e) lowering the slide plate and case such that the second ends of the plurality of rods extend through the holes in the bottom wall of the case;

(f) supporting the articles to be packed on the second ends of the plurality of rods; and,



(g) raising the slide plate and the case until the case surrounds the articles.

4,796,408

METHOD AND APPARATUS FOR VACUUM PACKAGING

Bengt U. Mobark, Hollviken, Sweden, assignor to W. R. Grace & Co., Duncan, S.C.

Filed Jul. 27, 1987, Ser. No. 78,445

Claims priority, application United Kingdom, Nov. 14, 1986, 8627252

Int. Cl.[4] B65B *11/52, 31/02, 47/02, 47/10*

U.S. Cl. 53—427 15 Claims

1. A vacuum packaging process, comprising placing a product between two sheets of plastic film; drawing one of the sheets of film away from the product into contact with a heated mould cavity for both partly deforming the sheet and heating it by conduction; and then drawing said one of the film sheets into a deeper mould cavity for further heating and deforming said one film sheet away from the product; subjecting the space between the two film sheets to vacuum; and causing the said one sheet to contact the top and sides of the product thereby moulding said one sheet to the shape of the product and causing said one sheet to contact the other film sheet to form a sealed pack.

4,796,409

PRODUCTION OF TEA AND THE LIKE BAGS

James R. Rimmer, Wirral, and Ronald M. Sweeney, West Kirkby, both of England, assignors to Premier Brands U.K. Limited, Birmingham, England

Division of Ser. No. 849,480, Apr. 8, 1986, Pat. No. 4,712,358. This application Jun. 11, 1987, Ser. No. 61,881

Int. Cl.[4] B65B *29/02, 35/50, 63/02*

U.S. Cl. 53—438 2 Claims

1. A method of producing and packaging tea or the like bags comprising the steps of:

(a) moving a first web of material along a horizontal path;

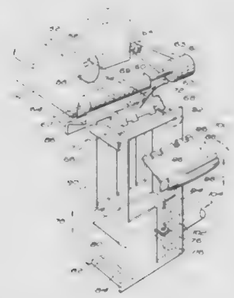
(b) placing individual and spaced portions of tea in parallel rows on the first web;

(c) applying a second web over the first web and said rows of tea portions;

(d) sealing said first and second webs together to form a web of rows of tea bags;

(e) severing the web of tea bags into individual tea bags;

(f) stacking the individual tea bags in parallel stacks in a magazine;



(g) displacing the parallel stacks from the magazine into an insertion mechanism;

(h) pushing the stacks of tea bags together to reduce the overall width of the stacks; and

(i) inserting the pushed together stacks of tea bags by the insertion mechanims in a tea bag carton.

4,796,410

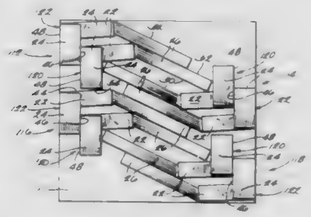
METHOD AND APPARATUS FOR SHIPPING AND STORING PORTABLE AUTOMOBILE RAMPS

Philip L. Lundman, 3631 Fredonia-Kohler Dr., Fredonia, Wis. 53021

Filed Jun. 30, 1987, Ser. No. 68,230

Int. Cl.[4] B65B *35/56*

U.S. Cl. 53—446 7 Claims



1. A method for storing a plurality of portable automobile ramps, the ramps each including a platform having opposite ends and an upper surface for supporting an automobile tire, a leg extending downwardly from one end of the platform, and a ramp extending at an incline downwardly from the other end of the platform, said method comprising the steps of

providing a plurality of substantially identical containers, each of said containers housing at least one of said automobile ramps and having a shape conforming to the at least one ramp housed therein, and each of said containers including a body portion for enclosing the platform of a respective ramp, said body portion including opposite ends, a leg portion for enclosing the leg of said respective ramp, said leg portion being integrally connected to said body portion and extending generally perpendicularly from one end of said body portion, and a ramp portion for enclosing the ramp of said respective ramp, said ramp portion being integrally connected to said body portion and extending obliquely from the opposite end of said body portion,

providing a pallet, and

arranging said containers in nested relationship on said pallet.

4,796,411

PACKAGING FOOD IN RAISED STATE

Masatoshi Kimura; Hiroshi Okuda; Yujiro Fujikawa, and Tatsuaki Inomata, all of Tsuchiura, Japan, assignors to Prima Meat Packers, Ltd. Research and Development Center, Tsuchiura, Japan

Filed May 6, 1987, Ser. No. 48,538

Claims priority, application Japan, May 6, 1986, 61-103397

Int. Cl.[4] B65B *47/00, 47/10*

U.S. Cl. 53—453 3 Claims



1. A method of packaging of pieces of food in a raised state, comprising the steps of:

forming a projecting wall portion integrally with and in the central section of a bottom wall of container, said wall portion projecting towards the outside of the lower surface of said bottom wall;

inserting the pieces of food in said container with said wall portion maintained so as to project towards the outside of the lower surface of said bottom wall;

sealing the opening of said container with a film; and

applying pressure on the outside surface of said wall portion of said sealed container so that said wall portion is pressed upwardly, said wall portion projecting into said container forming a recess on an underside surface of the package, thereby raising the pieces of food by the food-raising force of said inwardly-projected wall portion to a level above the plane of the upper end of said container against the tension of said film to form a bulge extending above the plane of the upper end of said container.

4,796,412

METHOD OF PACKAGING UTILIZING A TAPED BAG CHAIN WITH CASSETTE

Ronan R. O'Neill, Varese, Italy, assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 806,909, Dec. 9, 1985, Pat. No. 4,693,372. This application Apr. 1, 1987, Ser. No. 102,979

Claims priority, application United Kingdom, Jun. 14, 1985, 8515097

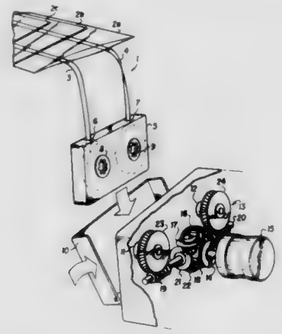
Int. Cl.[4] B65B *43/12*

U.S. Cl. 53—473 3 Claims

1. A method of loading a bag chain on a bag loader, comprising taking a bag chain incorporating a succession of imbricated packaging bags on two supply tapes from which they are removed during the loading operation, the supply tapes having lead ends equipped with tape-winding rotors which are supported on spacing means to hold them with substantially parallel axes of rotation; attaching the tape-winding rotors to parallel drive shafts of a bag indexing drive unit; operating the bag indexing drive unit to bring each of the imbricated bags successively to a loading position where the bag is loaded and separated from the tapes; and, after separation of most or all of the

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bags from the tapes, removing the tape-winding rotors and spacing means from the bag indexing drive unit and replacing

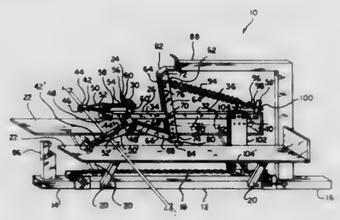


them by a fresh pair of tape-winding rotors and spacing means with imbricated taped bags already attached.

4,796,413
TREE BALER

Wayne Howe, 5330 Tacoma St. NE., Brooks, Oreg. 97305

Filed Dec. 28, 1987, Ser. No. 138,570
Int. Cl.[4] B65B *13/20, 63/02*
U.S. Cl. 53—530 **7 Claims**

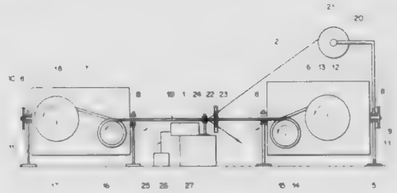


1. A tree baling apparatus for attachment to a motor driven pulley chain comprising; traveling jaw means having both an open and a closed position for clamping on a tree when pressed toward said closed position and releasing the tree when urged toward said open position; means for reciprocating said jaw means along a path; traveling upper contact means and traveling lower contact means for opening said jaw means; stationary limiting means fixed to said tree baling apparatus for abutment to said upper and lower contact means at the ends of said path; a traveling horizontally disposed beam connected to said reciprocating means and having a forward section, an intermediate section, and an aft section with said jaw means mounted on said first forward section; a traveling vertical actuator having an upper region, an intermediate region and lower region pivotally attached to said intermediate section of the horizontally disposed beam at the intermediate region of actuator; said upper contact means and said lower contact means being on the upper region and lower region of said vertical actuator; and linkage means connecting said jaw means and said actuator for driving said jaw means toward said open position by said actuator being pushed by said abutment on said upper and lower contact means and means connected to said actuator and linkage means for closing said jaw means when said contact and limiting means are out of abutment.

4,796,414
INSTALLATION AND METHOD FOR PRODUCING AN OPTICAL CONDUCTOR

Remy Bruggmann, Brent, and Philipp De Boer, Nyon, both of Switzerland, assignors to Maillefer S.A., Switzerland

Filed Jun. 30, 1987, Ser. No. 68,066
Claims priority, application Switzerland, Jul. 3, 1986, 02719/86
Int. Cl.[4] G02B *6/04;* **H01B** *13/02;* **D01H** *7/00*
U.S. Cl. 57—6 **14 Claims**



1. An installation for fitting a group of optical fibers into longitudinal grooves of a rod, comprising:

two capstans having parallel axes, capable of moving said rod continuously along a predetermined straight section of path and for applying to said rod a fixed elastic tension within said section,

capstan-supporting means and optical-fiber payout reels for producing a relative rotary movement about the axis of said rod between said fibers as a whole and the portion of said rod within said section, and

means, disposed adjacent to the point of entry of said fibers into said grooves, for causing said fibers to adhere at least momentarily to the walls of said grooves, said means for causing said fibers to adhere comprising an ionizer device disposed between said capstans in proximity to said rod.

11. An installation for manufacturing an optical fibers cable comprising a core with helical grooves having parallel walls therein and with optical fibers loosely encompassed between said walls, said installation comprising a pay-out device delivering said core, at a given speed, feeding means for freely delivering said optical fibers, dispensing means for causing said optical fibers to enter said grooves, a take-up device for said core having said fibers in said grooves, and driving means for both said pay-out and take-up devices, said dispensing means being located between said pay-out and take-up devices, said driving means being arranged for permanently subjecting a section of said core extending between said devices to an elastical elongation $\Delta L/L$, and said installation further comprising an adhering device located outwardly of said core, acting on said core and said fibers and at least temporarily adhering said fibers to the walls of said grooves during the travel of said cable from said dispensing means to said take-up device.

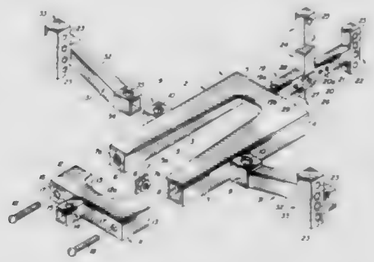
4,796,415
DOLLY FOR LINE TRIMMING APPARATUS

Mark R. Moore, 268 Settlers Park Dr., Shreveport, La. 71115

Filed Oct. 26, 1987, Ser. No. 112,374
Int. Cl.[4] A01D *34/67, 34/46*
U.S. Cl. 56—16.9 **19 Claims**

1. A dolly for a line trimming apparatus comprising a dolly frame adapted to receive and mount the line trimming apparatus; cap means removably carried by one end of said dolly frame for securing the line trimming apparatus to said dolly frame and cap receptacle means provided on said cap means; first and second leg receptacle means provided on opposite sides of said dolly frame; at least two frame leg means selectively and removably carried by said first and second leg receptacle means, and said cap receptacle means, respectively, said frame leg means extending outwardly of said dolly frame and

said cap means; and at least two frame wheels rotatably attached to said frame leg means, respectively, whereby said

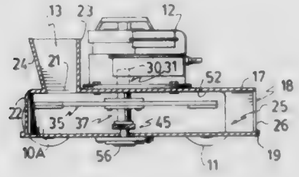


dolly frame is mobile in a selected configuration for cutting grass responsive to operation of the line trimming apparatus.

4,796,416
PORTABLE SHREDDER/LAWN MOWER FOR GARDEN USE AND THE LIKE

Thomas J. Bendig, and Doana A. Bendig, both of P.O. 26, Bruno, Saskatchewan, Canada S0K 0S0

Filed Aug. 17, 1987, Ser. No. 85,774
Claims priority, application Canada, Aug. 29, 1986, 517261
Int. Cl.[4] B02C *18/10;* **A01D** *55/18*
U.S. Cl. 56—16.9 **19 Claims**

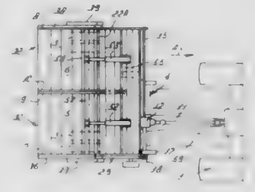


1. A shredder for relatively soft garden refuse and the like comprising in combination a susbtantially rectangular frame having an upper plate, a vertical surrounding wall and a base plate substantially spaced and parallel to said upper plate, an internal, cylindrical blade enclosure within said frame, an intake chute on said internal enclosure adjacent the upper side thereof and communicating through said wall and a discharge chute on said internal enclosure and also communicating through said wall, a source of power mounted on said upper plate with a substantially vertical drive shaft extending downwardly therefrom, at least two shredder blade assemblies in said internal enclosure and measns mounting said shredder blade assemblies to said drive shaft for rotation in a substantially horizontal plane within said internal enclosure, and in spaced apart relationship, one adjacent the underside of said upper plate and the other adjacent the upper side of said lower plate, said means mounting said shredder blade assembly for rotation in a substantially horizontal plane to said drive shaft including a spacer coupling between said blades with said upper blade being detachably secured to the upper end of said spacer coupling and the lower blade being detachably secured to the lower end of said coupling and means securing said coupling to said drive shaft whereby said coupling and said blades rotate therewith, ground engaging wheels mounting said frame for ease of movement, a handle assembly extending upwardly and outwardly from one side of the said frame, and further means detachably securing said spacer coupling into said shaft, said further means including a drive coupling secured to the distal end of said drive shaft and extending into said internal blade enclosure substantially centrally through the upper plate of said frame, the upper end of said spacer coupling being secured to the lower end of said drive coupling with said upper blade being clamped therebetween, a bearing shaft being secured axially to said spacer coupling and extending downwardly therefrom and a bearing assembly in said base plate, the lower end of said bearing shaft being supported for rotation within said bearing assembly.

4,796,417
BALER5

Cornelis van der Lely, Zug, Switzerland, assignor to Texas Industries Inc., Netherlands

Division of Ser. No. 676,298, Nov. 29, 1984, Pat. No. 4,651,512. This application Dec. 23, 1985, Ser. No. 812,763
Claims priority, application Netherlands, Dec. 1, 1983, 8304135
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[4] A01D *39/00*
U.S. Cl. 56—341 **10 Claims**

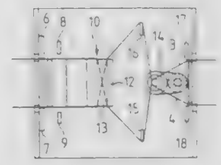


1. A baler comprising a pick-up device for picking up crop from the ground, at least two chambers for receiving said crop which has been picked-up by said device and forming said crop which has been picked-up by said device into bales, and means for laterally displacing said pick-up device with respect to said chambers.

4,796,418
APPARATUS FOR JOINING TWO THREAD ENDS BY SPLICING

Arthur Rebsamen, Stallikon, and Bruno Hablützel, Horgen, both of Switzerland, assignors to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed Apr. 1, 1987, Ser. No. 33,521
Claims priority, application Switzerland, Apr. 5, 1986, 1330/86
Int. Cl.[4] D01H *15/00*
U.S. Cl. 57—22 **6 Claims**



1. Apparatus for splicing together two thread ends which are disposed in spaced parallel position and are subsequently cut, said apparatus comprising:

first means to subject the two cut ends to a single air flow to

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prepare the ends by untwisting them and removing loose thread parts therefrom;

second means to place the prepared ends in a splicing chamber; and

third means to direct compressed air upon said ends in the chamber to splice together said ends, said first means including a single thread end preparation device at least partially constructed as a preparation tube, said device having an air gap for thread end introduction which is disposed at right angles to the preparation tube, said device having an air intake tube having an axis and a discharge mouth defining a surface disposed at an angle less than ninety degrees with respect to the axis of the tube.

4,796,419

BEARING SUPPORT FOR A TWISTING OR SPINNING MACHINE

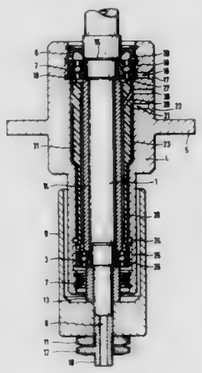
Hans Braxmeier, Süssen, Fed. Rep. of Germany, assignor to Novibra GmbH, Fed. Rep. of Germany

Filed Jan. 27, 1987, Ser. No. 7,200

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1986, 3603999

Int. Cl.⁴ D01H *7/20, 7/12;* **F16C** *33/66*

U.S. Cl. 57—134 12 Claims



1. Spinning or twisting spindle assembly having at least one spindle shaft comprising:

at least two supporting bearing means for supporting said shaft;

bearing housing means in which said supporting bearing means are disposed;

lubricant feeding and discharging duct means for feeding and discharging lubricant to and from said at least two supporting bearing means, said lubricant feeding and discharging duct means including at least one lubricant feeding duct for each of said at least two supporting bearing means and at least one lubricant discharging duct for each of said at least two supporting bearing means;

at least one outlet discharging means through which lubricant is discharged out of said bearing housing means; and

at least one inlet feeding means for feeding lubricant into said bearing housing means, said at least one inlet feeding means being disposed adjacent said at least one outlet discharging means.

4,796,420

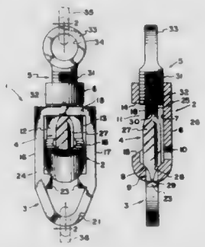
FUSIBLE LINE CONSTRUCTION

Carmen Gucil, Saginaw, Mich., assignor to Van Wormer Management Corporation, Standish, Mich.

Filed Nov. 13, 1987, Ser. No. 119,956

Int. Cl.⁴ F16G *15/10*

U.S. Cl. 59—93 15 Claims



1. A fusible link construction comprising a first body having in one side thereof a recess terminating at one end in a ledge member; a second body having an arm member accommodated in said recess for movements toward and away from said ledge member; a thermally sensitive, collapsible strut reacting between said bodies, said strut having its opposite ends seated on the respective bodies and normally maintaining said arm member spaced from said ledge member; and means carried by said bodies for coupling them to force applying means operable to effect relative movement of said bodies in response to collapse of said strut and in such direction as to cause said arm member to move toward engagement with said ledge member, said members being so configured that engagement therebetween effects ejection of said arm member from said recess and separation of said bodies.

4,796,421

ARRANGEMENT FOR OPEN-END ROTOR SPINNING

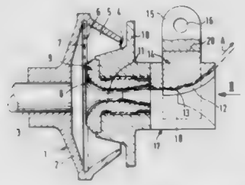
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Jan. 27, 1988, Ser. No. 149,178

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1987, 3705319

Int. Cl.⁴ D01H *7/882*

U.S. Cl. 57—417 11 Claims



1. Open-end rotor spinning apparatus comprising:

a spinning rotor rotatable about a substantially horizontal rotor axis and including a spinning surface means for forming yarn;

a yarn withdrawing means comprising a first part for receiving yarn and deflecting means downstream of said first part for deflecting yarn withdrawn from said rotor, said deflecting means including at least one false-twisting edge facing downwardly, and

a fiber part collecting recess disposed below said deflecting means for collecting fiber parts rubbed off at the deflecting means without interfering with spinning and yarn withdrawal operations.

4,796,422

APPARATUS FOR TREATING TAIL YARN IN TEXTILE SPINDLE ASSEMBLY

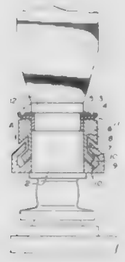
Kunimitsu Odawara, Hiroshima, Japan, assignor to Odawara Industry Co., Ltd., Hiroshima, Japan

Filed May 17, 1988, Ser. No. 194,886

Claims priority, application Japan, May 26, 1987, 62-130632; Dec. 20, 1987, 62-333155

Int. Cl.⁴ D01H *1/38, 1/40, 9/16*

U.S. Cl. 57—299 4 Claims



1. An apparatus for treating a tail yarn in a textile spindle assembly which comprises an upper slit ring fixedly mounted on a base portion of the spindle, a cylindrical member having a lower slit ring at an upper end thereof and a lower portion outwardly expandable by centrifugal force, and a guiding surface fixed on a lower part of said base portion of the spindle, said cylindrical member being axially slidably fitted on said base portion of the spindle beneath said upper slit ring, said cylindrical member being mounted so that a lower end of the expandable portion thereof capably comes into contact with said guiding surface, said upper slit ring and said lower slit ring being pressed together to form a tail yarn gripping means, whereby expansion of said lower portion of said cylindrical member by centrifugal force causes said cylindrical member to slide axially downward to release a pressed state between said upper slit ring and said lower slit ring.

4,796,423

SHEET METAL PANEL

Louis Lievestro, West Chester; James S. Kelm, Milford; Arthur L. Ludwig; Harvey M. Maclin, both of Cincinnati, and Thomas G. Wakeman, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 786,722, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 562,566, Dec. 19, 1983, abandoned. This application Jan. 12, 1987, Ser. No. 4,827

Int. Cl.⁴ F02G *1/00, 3/00*

U.S. Cl. 60—39.33 28 Claims

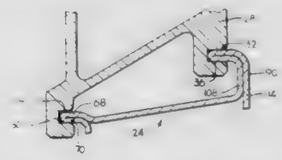
1. A gas turbine engine with an annular flowpath, said engine having:

a compressor, combustor, and turbine in serial flow communication within said flowpath; and

a sheet metal panel attached to a support and defining at least one portion of said flowpath in said turbine, wherein said sheet metal panel comprises:

a bent region for attaching said sheet metal panel to said support wherein said support includes a slot and said bent region is inserted in said slot;

said region defining a first arc of intersection with a first plane and defining a second arc of intersection with a



second plane, wherein said second arc has a radius of less than twice the thickness of said sheet metal panel.

4,796,424

INTAKE FOR A TURBOPROPELLER GAS TURBINE ENGINE

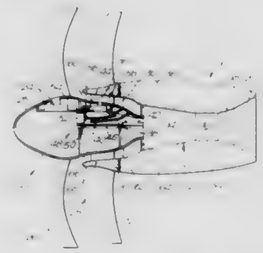
Peter G. G. Farrar, Derby; Eric Wright, Nottingham, and Nicholas J. Peacock, Derby, all of England, assignors to Rolls-Royce plc, London, England

Filed Jul. 22, 1987, Ser. No. 76,712

Claims priority, application United Kingdom, Oct. 16, 1986, 8624833

Int. Cl.⁴ F02K *3/02*

U.S. Cl. 60—268 8 Claims



1. A turbopropeller gas turbine engine comprising a gas generator, an upstream propeller, a downstream propeller, shaft means, gear means and intake means,

the gas generator comprising in flow series compressor means, combustor means and turbine means,

the upstream propeller and the downstream propeller being positioned upstream of the gas generator, the turbine means being arranged to drive the upstream propeller and the downstream propeller via the shaft means and the gear means,

the intake means supplies air to the gas generator, the intake means comprises an intake opening and an intake duct, the intake opening being positioned axially between the upstream propeller and the downstream propeller, the intake duct being defined at its radial extremity at least partially by a spinner of the downstream propeller whereby the intake duct extends axially through the downstream propeller.

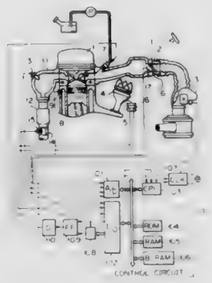
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,425

DOUBLE AIR-FUEL RATIO SENSOR SYSTEM CARRYING OUT LEARNING CONTROL OPERATION

Toshinari Nagai, Ann Arbor, Mich., and Nobuaki Kayanuma, Gotenba, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 8, 1987, Ser. No. 105,702
Claims priority, application Japan, Oct. 13, 1986, 61-241484
Int. Cl.[4] F02D *41/14*
U.S. Cl. 60—274 44 Claims



1. A method for controlling an air-fuel ratio in an internal combustion engine having a catalyst converter for removing pollutants in the exhaust gas thereof, and upstream-side and downstream-side air-fuel ratio sensors disposed upstream and downstream, respectively, of said catalyst converter, for detecting a concentration of a specific component in the exhaust gas, comprising the steps of:

calculating a first air-fuel ratio correction amount in accordance with the output of said upstream-side air-fuel ratio sensor;

determining whether said engine is in an air-fuel ratio feedback control state or in an open control state for said downstream-side air-fuel ratio sensor;

calculating a second air-fuel ratio correction amount in accordance with the output of said downstream-side air-fuel ratio sensor when said engine is in said air-fuel ratio feedback control state;

determining whether or not said engine is in a learning control state;

calculating a period of the output of said upstream-side air-fuel ratio sensor;

determining a region defined by the output period of said upstream-side air-fuel ratio sensor;

calculating a center value of said second air-fuel ratio correction amount when said engine is in said learning control state and said calculated period remains in the same region;

storing said center value of said second air-fuel ratio correction amount of the same region;

setting said center value of said second air-fuel ratio correction amount stored for the current region in said second air-fuel ratio correction amount when said engine is transferred from said open control state to said air-fuel ratio feedback control state or when said calculated period is transferred to a different region in said air-fuel ratio feedback control state; and

adjusting an actual air-fuel ratio in accordance with said first and second air-fuel ratio correction amounts.

4,796,426

HIGH EFFICIENCY TRANSITION ELEMENT POSITIONED INTERMEDIATE MULTI-CYLINDER EXHAUST SYSTEM AND SECONDARY PIPE ASSEMBLIES

James J. Feuling, 686 Ash Ave., Chula Vista, Calif. 92010

Continuation of Ser. No. 394,910, Jul. 6, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 631,218
Int. Cl.[4] F02B *27/02*; F01N *7/10*
U.S. Cl. 60—313 17 Claims



1. An improved transition means for use with multi-cylinder engine exhaust systems comprising:

multi-cylinder exhaust gas input means, said multi-cylinder input means being adapted for accepting a plurality of separate tubular inputs, one input from each cylinder of at least one side of said engine;

a single exhaust gas output means;

an open chamber positioned intermediate said exhaust input means and said exhaust output means; and

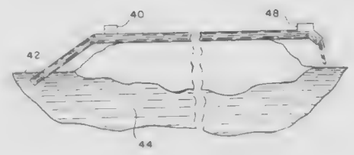
a thin flat blade member terminating at its downstream end within said open chamber and forming a gas tight seal between at least two of said plurality of separate tubular inputs at its upstream end, said thin flat blade member has an inwardly directed cutout across its downstream blade surface.

4,796,427

METHOD OF IMPARTING ENERGY TO LIQUIDS

Craig H. Zeyher, 660 Clinton Ave., Haddonfield, N.J. 08033

Continuation-in-part of Ser. No. 733,656, May 13, 1985, abandoned. This application May 21, 1987, Ser. No. 58,651
Int. Cl.[4] F03B *13/00*
U.S. Cl. 60—398 6 Claims



1. A method of generating electrical power, which comprises:

a. providing liquid-conduit means;

b. furnishing liquid to said means;

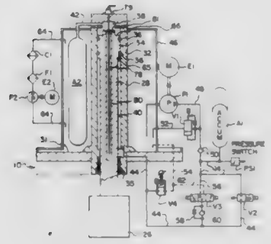
c. longitudinally orienting said means in the centrifugal force field of the earth to produce flow of liquid within said means to develop a velocity head sufficient to drive a turbo-generating system to produce electrical power.

4,796,428

DOUBLE-ACTING FORGING HAMMER AND METHOD

Richard W. Hall, Springfield, Ohio, assignor to Oilgear Towler, Inc., Milwaukee, Wis.

Filed Jan. 17, 1983, Ser. No. 458,598
Int. Cl.[4] F16D *31/02*
U.S. Cl. 60—413 2 Claims



1. A double-acting accelerated forging hammer in which a vertically movable hammer ram is mounted on a hammer frame, for imparting a predetermined and controlled amount of blow energy in said ram, comprising:

a cylinder having a rod and piston therein defining a closed end above said piston and an annulus region between the cylinder and said piston rod,

means connecting said rod to said ram,

a source of hydraulic fluid,

a high pressure hydraulic pump connected to draw hydraulic fluid from said source,

a hydraulic accumulator connected to receive hydraulic fluid under high pressure from said pump,

pressure switch means connected to maintain said hydraulic accumulator at a predetermined high fluid pressure,

a gas accumulator having a substantial volume compared to the volume in said cylinder at said closed end for storing a quantity of gas under pressure with said gas at a substantially lower pressure than that of hydraulic fluid in said hydraulic accumulator for applying a relative constant bias to said piston to provide a relatively uniform acceleration to said ram,

means connecting said gas accumulator to said cylinder closed end,

first controllable valve means for applying fluid under pressure from said hydraulic accumulator to said annulus region, variable valve means connected to exhaust fluid from said annulus region to said source at a controlled rate to allow the fall of said ram under the influence of gravity and said gas pressure on said piston, and

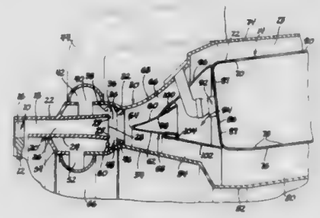
control means, including means responsive to the position of said ram, for closing said first valve means at a given ram elevation, for opening said variable valve means providing for the fall of said ram, and thereafter for closing said variable valve means and opening said first valve means to apply pressure from said hydraulic accumulator to said annulus to effect a rapid rise in hydraulic pressure therein for controlling rebound and reinitiating upward movement of said ram, and said control means closes said variable valve means just prior to ram impact and immediately thereafter opens said first valve means, to control rebound of the ram.

4,796,429

COMBUSTOR DIFFUSER

Albert J. Verdouw, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1976, Ser. No. 742,289
Int. Cl.[4] F02C *1/00*
U.S. Cl. 60—751 4 Claims



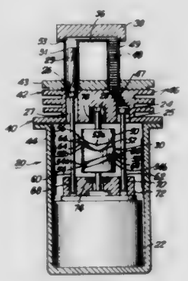
1. A diffuser assembly for distributing high velocity inlet air to the inside and outside walls of an annular combustor having an inlet dome, the assembly comprising: an inlet prediffuser having an inner wall and an outer wall defining an annular inlet and an annular outlet with a divergent flow passage from the inlet to the outlet to produce a useable pressure at the outlet of said prediffuser, said inlet prediffuser having a ratio of outlet area to inlet area of about 1.5, a vortex controlled diffuser downstream of said prediffuser having inner and outer annular fences, said inner and outer walls each having an end surface arranged in spaced axial relationship to said fences to form gaps to bleed air and form vortices and to maintain a uniform flow into the vortex diffuser, said vortex controlled diffuser having a ratio of inlet area to outlet area of about 1.8, said bleed gaps directing about 8% of total inlet air flow from said diffuser assembly, said vortex diffuser having an outlet, splitter means including a pair of constant area passages having a length to height ratio of about 5.0 for uniformly distributing the air flow from said vortex diffuser outlet to the inside wall, outer wall and dome of said combustor to produce a substantially equal pressure condition at the walls of the combustor.

4,796,430

CAM DRIVE FOR CRYOGENIC REFRIGERATOR

Stephen F. Malaker, Mountainside, N.J., and Alfred Gorawski, Westmoreland, N.H., assignors to Cryodynamics, Inc., Mountainside, N.J.

Filed Aug. 14, 1987, Ser. No. 85,536
Int. Cl.[4] F25B *9/00*
U.S. Cl. 62—6 20 Claims



1. A modified Stirling cycle refrigerator having a first piston for compressing a working gas in a first cylinder, a second piston for expanding the working gas in a second cylinder, a

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channel connecting the cylinders, and a cold head in thermal contact with the working gas in the second cylinder, comprising

first and second camming elements mounted for rotation at a phase angle with respect to one another;

a first cam follower mounted in contact with said first camming element and coupled to said first piston for reciprocally driving said first piston in said first cylinder in response to rotation of said first camming element;

a second cam follower mounted in contact with said second camming element and coupled to said second piston for reciprocally driving said second piston in said second cylinder at a predetermined phase angle with said first piston in response to rotation of said second camming element; and

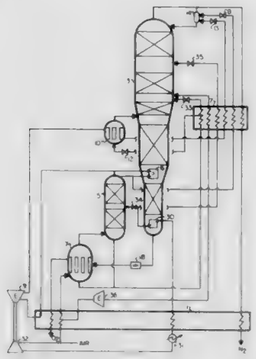
motive means for rotating said first and second camming elements.

4,796,431

NITROGEN PARTIAL EXPANSION REFRIGERATION FOR CRYOGENIC AIR SEPARATION

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Jul. 15, 1986, Ser. No. 885,868
Int. Cl.[4] F25J *3/04*
U.S. Cl. 62—31 **20 Claims**



1. A process for obtaining at least one of oxygen and nitrogen from pressurized, cooled, and cleaned supply air by cryogenic distillation in an apparatus comprised of at least a high pressure rectifier and a low pressure distillation column, comprising:

(a) introducing at least part of a vapor obtained from said supply air into the HP rectifier;

(b) withdrawing pressurized gaseous nitrogen from the HP rectifier and superheating it;

(c) partially expanding the superheated nitrogen to an intermediate pressure;

(d) condensing said partially expanded nitrogen by latent heat exchange with at least one of LP distillation column intermediate height liquid and at least part of the depressurized kettle liquid;

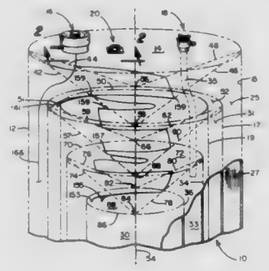
(e) refluxing at least one of the HP rectifier and the distillation column by direct injection of the condensed nitrogen.

4,796,432

LONG HOLD TIME CRYOGENS DEWAR

Dale J. Fixsen, St. Louis Park; Roger N. Hastings, Burnsville, and John A. Imadahl, Richfield, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 9, 1987, Ser. No. 79,200
Int. Cl.[4] F17C *1/00*
U.S. Cl. 62—45 **20 Claims**



1. In a dewar for maintaining superconducting temperatures for an extended period of time comprising an outer case, comprising a plurality of cryogen containing chambers, the improved structure wherein the dewar is constructed so that each of said cryogen chambers completely surrounds the next innermost one of said cryogen chambers, and, except for the innermost one of said cryogen chambers, the cryogens contained in each of said chambers are maintained in states such that each cryogen has a progressively higher phase change temperature proceeding from the innermost one of said cryogen chambers to the outermost one of said cryogen chambers and isothermal suspension means for suspending all of said cryogen chambers within the dewar wherein the outermost one of said cryogen chambers is suspended in said dewar solely by isothermal suspension means comprising rods having a low thermal conductivity and all of said cryogen chambers, except said outermost cryogen chamber, are suspended in said dewar solely by isothermal suspension means comprising cords having a low thermal conductivity.

4,796,433

REMOTE RECONDENSER WITH INTERMEDIATE TEMPERATURE HEAT SINK

Allen J. Bartlett, Milford, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Jan. 6, 1988, Ser. No. 141,996
Int. Cl.[4] F17C *13/00*
U.S. Cl. 62—54 **28 Claims**

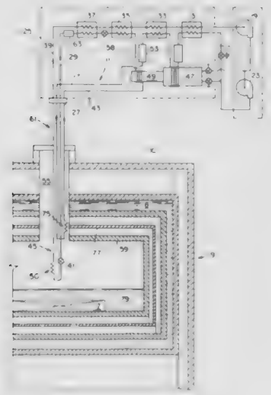
1. A cryogenic recondenser for recondensing cryogen retained in a storage vessel having a radiation shield, the recondenser comprising:

cooling means positioned outside of the storage vessel, the cooling means having a mechanical refrigerator and precooling a volume of working gas;

an intermediate transfer line leading from an intermediate portion of the cooling means into the storage vessel;

an end of the intermediate transfer line in the storage vessel being in thermal communication with but out of physical contact with the radiation shield of the storage vessel, partially pre-cooled gas being transferred in the intermediate transfer line from the intermediate portion of the cooling means to the end of the intermediate transfer line and back to the cooling means for further cooling, said transferring being in a manner such that the end of the intermediate transfer line through the partially pre-cooled gas removes heat from the radiation shield; and

a final transfer line removeably leading into the storage vessel from the cooling means, an end of the final transfer line in the storage vessel being in heat exchange relation with boil-off from the cryogen retained in the storage



vessel, pre-cooled gas being transferred in the final transfer line from the cooling means to the end of the final transfer line in the storage vessel in a manner which cools and recondenses the boil-off.

shroud furthest from said outlet so that a gap is present between said fleece and said shroud; and

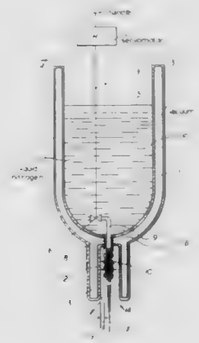
a precision regulating valve submerged in said liquefied gas mounted adjacent the bottom of said container, said precision regulating valve being connected with said outlet and being connectable to a regulating device located outside of said container.

4,796,434

APPARATUS FOR DELIVERING A MEASURED AMOUNT OF A LOW-BOILING LIQUEFIED GAS

Franz Garnreiter, Föhrenstrasse 26, D-8206 Bruckmühl, Fed. Rep. of Germany

Filed Nov. 25, 1987, Ser. No. 126,217
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1986, 3642199
Int. Cl.[4] F17C *7/02*
U.S. Cl. 62—55 **7 Claims**



1. An apparatus for metering or delivering a measured amount of a low-boiling liquefied gas comprising:

a thermally insulated container provided with an outlet for said liquefied gas;

a cylindrically shaped fleece made of natural material, plastic material or metal connected with said outlet extending immediately downstream of said outlet coming to a point on the side of said fleece furthest from the side of said fleece adjacent or closest said outlet of said container;

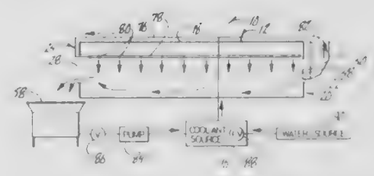
a cylindrical shroud for said fleece open at the end of said

4,796,435

BY-PRODUCTS CHILLER AND METHOD FOR USING SAME

Glenn H. Mattson, Chanhassen, Minn., assignor to Omaha Cold Storage Terminals, Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 856,469, Apr. 28, 1986, Pat. No. 4,700,546. This application Dec. 22, 1986, Ser. No. 945,372
Int. Cl.[4] F25D *13/06, 17/02*
U.S. Cl. 62—63 **21 Claims**



1. A by-products and hide chiller, comprising:

an elongated tank having an inlet end for introducing fresh animal by-products into said tank and an outlet end for removing said by-products from said tank;

said tank having a sidewall extending between said inlet and outlet ends, said sidewall being void of apertures;

support means for rotatably supporting said tank;

means for introducing a liquid coolant from a coolant source into said tank so as to partially fill said tank with a body of liquid coolant for bathing and thereby cooling said by-product or hides therein;

said liquid coolant draining from said tank from said outlet end of said tank;

circulation means for recirculating said liquid coolant drained from said tank to said coolant source for re-cooling thereby and for subsequent re-introduction into said tank for cooling additional by-products or hides therein; and

means operatively secured to said tank for rotating said tank about its longitudinal axial such that said by-products or hides are tumbled within said tank and bathed in said coolant and chilled thereby.

4,795,436

HEAT PUMP CHARGING

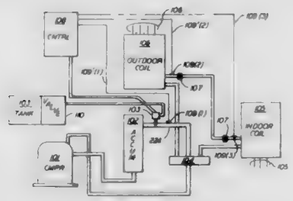
Roger J. Voorhis, Liverpool, and John M. Palmer, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 9, 1986, Ser. No. 939,825
Int. Cl.[4] F25B *45/00*
U.S. Cl. 62—77 **2 Claims**

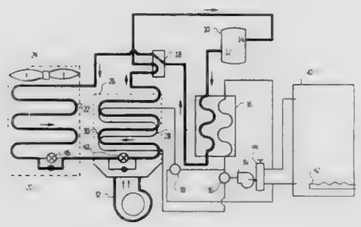
1. The method of charging a heat pump system including a compressor for circulating refrigerant between indoor and outdoor coils, comprising the steps of attaching a source of refrigerant to the heat pump system at a charging port, successively monitoring indoor coil inlet and suction temperatures, comparing said indoor coil inlet and suction temperatures

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successively to establish successive temperature differences therebetween, comparing said successive temperature differences and halting charging operation when said comparisons attain a predetermined threshold.



4,796,437
MULTIFLUID HEAT PUMP SYSTEM
Larry S. James, 1749 Mount Ephraim Rd., Adamstown, Md. 21710
Filed Oct. 23, 1987, Ser. No. 111,635
Int. Cl.[4] F25B *7/00*
U.S. Cl. 62—79 **6 Claims**



1. A method of heating or cooling an indoor space and/or heating or cooling a stored liquid comprising the steps of:
operating a heat pump to transfer heat between and among an indoor heat exchange coil located within the conditioned space, outdoor heat exchange coil located outside of the conditioned space and a desuperheat exchange means;
transferring heat between the indoor coil and the conditioned space by passing ambient air over the indoor coil;
storing heat transferred between the indoor coil of a multifluid heat exchange means and/or the desuperheat exchange means and the outdoor coil by circulating a stored liquid between a heat storage facility and the second heat exchange coil of the multifluid heat exchange means located in thermal contact with the indoor coil, and/or selectively circulated through the liquid coil of the desuperheat exchange means; or
storing "cool" transferred between the indoor coil and the outdoor coil by circulating a stored liquid between a cool storage facility and the second heat exchange coil of the multifluid heat exchange means located in thermal contact with the indoor refrigerant coil of the multifluid heat exchange means; and
transferring stored heat/cool between the heat/cool storage facility and the conditioned space by circulating the stored liquid between the heat/cool storage facility and the second heat exchange coil of the multifluid heat exchanger and passing ambient air over said second heat exchange coil.

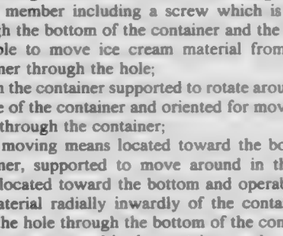
4,796,438
METHOD AND APPARATUS FOR CONTROLLING AN AUTOMOTIVE AIR CONDITIONING SYSTEM
Kenichiro Sato, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan
Filed Oct. 29, 1987, Ser. No. 114,013
Claims priority, application Japan, Oct. 29, 1986, 61-164918[U]
Int. Cl.[4] B60H *1/32*
U.S. Cl. 62—133 **4 Claims**

AIR BY	TEMP T THERMISTOR	ELECTROMAGNETIC	ACCELERATION DETECTING DEVICE	CAPACITY OF COMP
	T≧T	ON	OFF	LARGE
			ON	SMALL
	To < T < T	ON	OFF	SMALL
			ON	SMALL
	T < To	OFF	—	—

1. A control device for controlling the operating capacity of a compressor in an automobile air conditioning system comprising temperature detecting means for detecting air temperature, acceleration detecting means for detecting an accelerating condition of the automobile, and control means for controlling a variable displacement mechanism of said compressor, said control device including:
first comparison means for comparing a first predetermined temperature with a detected air temperature and providing a first control signal when the air temperature is higher than said first predetermined temperature, wherein the operation of said compressor is terminated in the absence of said first control signal,
second comparison means for comparing a second predetermined temperature with said detected air temperature in response to the comparison by the first comparison means and the presence of said first control signal, said second comparison means providing a second control signal when said detected air temperature is higher than said second predetermined temperature, wherein said variable displacement mechanism causes said compressor to operate at a reduced capacity in the absence of said second control signal,
means responsive to the detected acceleration condition of the automobile and the presence of said second control signal for causing said variable displacement mechanism to cause said compressor to operate at a reduced capacity upon the occurrence of a first acceleration condition and at full capacity upon the occurrence of a second acceleration condition.

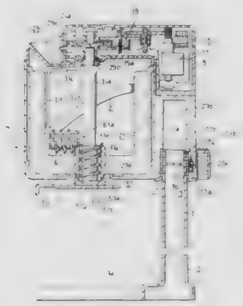
4,796,439
AIR CONDITIONING SYSTEM
Tetsuo Yamada; Yoshinori Inoue; Sinji Miura; Masao Endo; Setsuo Kaneda, and Yashutoshi Yoshida, all of Osaka, Japan, assignors to Takenaka Komuten Co., Ltd. and Sinko Kogyo Co., Ltd., both of Osaka, Japan
Filed Oct. 28, 1987, Ser. No. 113,761
Claims priority, application Japan, Nov. 5, 1986, 61-264309
Int. Cl.[4] F25B *29/00*
U.S. Cl. 62—159 **6 Claims**

1. An air conditioning system for a building, said system comprising:
a cold thermal source at which a relatively low temperature is developed, said cold thermal source comprising a first thermal storage tank disposed at a relatively high location on the building;
a hot thermal source at which a relatively high temperature is developed as compared to the temperature developed at said cold thermal source, said hot thermal source comprising a second thermal storage tank disposed at a relatively low location on the building as compared to the location at which said first thermal storage tank is disposed;
a plurality of air conditioners for air conditioning respective areas in the building, each of said air conditioners disposed at a respective location between said first and said second thermal tanks; and



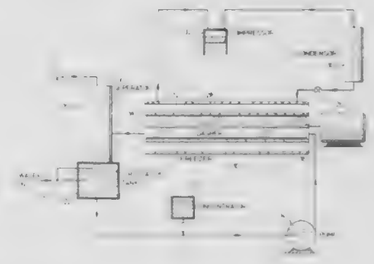
gravity type heat piping extending between and operatively connecting said plurality of air conditioners with said cold and said hot thermal sources for allowing thermal medium to circulate between said cold thermal source and said plurality of air conditioners and between said hot thermal source and said plurality of air conditioners.

4,796,440
ICE CREAM MAKER
Tadahiko Shiotani, and Hideo Matsuura, both of Aichi, Japan, assignors to Sanyei Corp., Japan
Filed Oct. 19, 1987, Ser. No. 110,209
Claims priority, application Japan, Jan. 28, 1987, 62-10836[U]; Jun. 19, 1987, 62-95206[U]; Jun. 19, 1987, 62-95207[U]; Jun. 19, 1987, 62-95208[U]; Jun. 19, 1987, 62-95209[U]
Int. Cl.[4] A23G *9/12*
U.S. Cl. 62—343 **15 Claims**



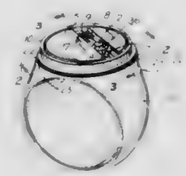
1. Apparatus for preparing ice cream, and the like, comprising:
a cold storage container having a bottom; a hole through the bottom; means for selectively opening and closing the hole through the bottom of the cold storage container; a rotary member including a screw which is in the hole through the bottom of the container and the screw being rotatable to move ice cream material from within the container through the hole;
a blade in the container supported to rotate around the inner surface of the container and oriented for moving material down through the container;
material moving means located toward the bottom of the container, supported to move around in the container while located toward the bottom and operable for moving material radially inwardly of the container and toward the hole through the bottom of the container while it also moves around in the container; and
means for both moving the blade and the material moving means together around in the container.

4,796,441
ICE MAKING MACHINE
Vladimir Goldstein, Concord, Canada, assignor to Sunwell Engineering Company Limited, Concord, Canada
Continuation of Ser. No. 739,225, May 30, 1985, abandoned. This application Sep. 28, 1987, Ser. No. 105,951
Int. Cl.[4] F25C *1/00*
U.S. Cl. 62—354 **19 Claims**



1. An ice-making machine comprising housing to receive a fluid from which ice is to be made and having an outlet to permit the egress ice from said housing,
a heat exchanger means located within said housing and having a coolant inlet and a coolant outlet to permit a flow of coolant to extract from said fluid, and including at least one heat exchange surface separating coolant from said fluid,
means to maintain a body of fluid in said housing to fill substantially said housing and cover said heat exchange surface,
blade means in contact with said surface and movable about an axis to move across said surface, and drive means operable upon said blade means to drive said blade means about said axis, said drive means moving said blade means across said surface at a speed such that successive passes of said blade means removes a cooled layer prior to crystallization of ice on said surface, said blade means being configured to discharge fluid from said surface into the body of fluid in said housing to maintain a substantially uniform temperature therein.

4,796,442
ITEM OF JEWELRY INCLUDING A GEM SLIDABLE WITHIN A GEM INSERT
Anthony O. Sarcona, Staten Island, N.Y., assignor to Sarcona Bros., New York, N.Y.
Filed Dec. 4, 1986, Ser. No. 937,851
Int. Cl.[4] A44C *17/02*
U.S. Cl. 63—26 **2 Claims**



1. An item of jewelry comprising:
a first gem having a top, and a bottom,
a second gem,
said first gem including in its top, a groove that is longer than said second gem for retaining said second gem se-

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curely but slidably within the groove, with portions of the second gem that are above and below the groove exposed for public view and,

said groove traversing the first gem and being open at both ends for slidably admitting the second gem,

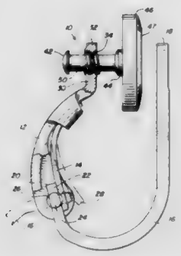
a housing, removably covering both ends of the groove for retaining the second gem within the groove yet allowing it to slide within the groove, said housing including means for holding the first gem on the item.

4,796,443

COMFORT EARRING CLIP

A. Karen Baanister, West Warwick, R.I.; Kristen Brandriff, Brooklyn, Conn.; John A. Carlotto, Barrington; Richard J. DiDonato, North Providence, both of R.I.; Virginia Haigh, Bronxville, N.Y., and Edmond Sirois, Providence, R.I., assignors to Trifari, Krussman & Fishel, Inc., East Providence, R.I.

Filed Feb. 2, 1987, Ser. No. 9,964
Int. Cl.[4] A44C *7/00*
U.S. Cl. 63—14.5 **5 Claims**



1. A support device for an earring which device comprises a back support element having pivotally attached thereto a front ear clamping member, a back ear clamping member carried by said back support element which is adjustable to a forward position and to a rearward position with respect to said front ear clamping member, said back ear clamping member being floatably free to move horizontally and vertically when either in the forward or rearward position to conform to the shape and thickness or the earlobe of the wearer of the earring support device.

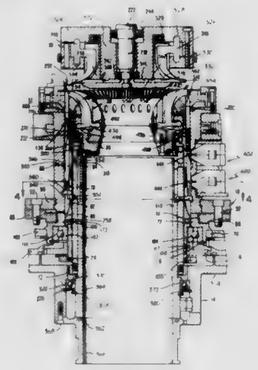
4,796,444

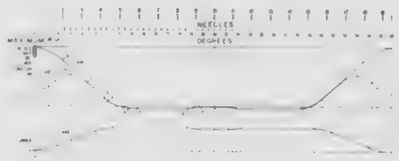
CIRCULAR WEFT KNITTING MACHINE

E. C. Tibbals, Jr., Rte. 2, Box 386, High Point, N.C. 27260

Division of Ser. No. 398,303, Jul. 14, 1982, Pat. No. 4,608,839. This application Aug. 28, 1986, Ser. No. 901,313
Int. Cl.[4] D04B *15/78, 15/06, 35/00*
U.S. Cl. 66—13 **15 Claims**

1. In the circular weft knitting of articles, the step of selectively displacing a yarn engaging hooked end needle element in a discrete vertical and circumferential displacement path in response to knitting cylinder rotation that is symmetric about each of a pair of adjacent yarn feed locations and which is also symmetric about midlocation halfway between said pair of adjacent yarn feed locations





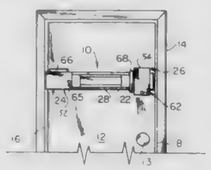
independent of the direction of circumferential displacement thereof effected by said knitted cylinder rotation.

4,796,445

DOOR LOCKING MECHANISM

Howard P. Norden, Jr., 3 Crest Hill Pl., Smithtown, N.Y. 11787

Filed Dec. 15, 1986, Ser. No. 941,597
Int. Cl.[4] E05B *65/10*
U.S. Cl. 70—94 **6 Claims**



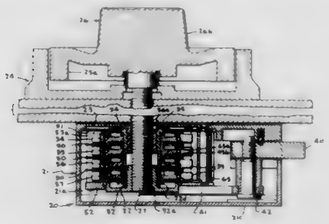
1. An emergency exit door locking mechanism for use on the inside of an outswinging door mounted in the opening of a frame comprising a door mounted in said frame for swinging outwardly to open, stationary bar means permanently mounted on the inside of and spanning substantially the whole width of said door, position means for selectively preventing said door from being opened or being blocked when required as an exit comprising independently operable blocking means mounted at each end of said bar means each movable between a first positive blocking said door against swinging outwardly from said frame and a second position permitting said door to swing outwardly, and each said blocking means comprising a plate for pivoting on each end of said bar means and having means on said movable blocking means for padlocking said blocking means in either of the aforesaid first and second positions so as to prevent said door from being opened or preventing said door from being blocked when required as an exit, respectively.

4,796,446

RADIOLOGICAL DETECTION RESISTANT COMBINATION LOCK

Harry C. Miller, 105 Bridle Ct., Nicholasville, Ky. 40356, and Stephen Helesfai, 26 Vassar St., Rochester, N.Y. 14607

Filed Jan. 7, 1987, Ser. No. 1,221
Int. Cl.[4] E05B *37/00*
U.S. Cl. 70—316 **23 Claims**



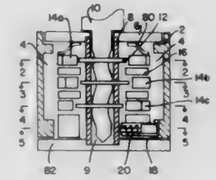
1. A combination lock of the type adapted for changing of the combination by a change key, comprising a lock case having front and rear walls and a cylindrical tumbler post normally extending along a horizontal axis rearwardly from said front wall, a tumbler wheel stack formed of a plurality of tumbler wheels loosely journaled on the tumbler post for rotation about the axis thereof and each including an annular outer rim portion and an inner annular hub portion having formations about its periphery releasably intercoupling the hub portion and rim portion at any of a plurality of relative angular positions, a peripherily gated rotatable driving cam driven by a rotatable dial, means for driviag the tumbler wheels responsive to rotation of the dial and driving cam a fence lever pivotally connected to a bolt for shifting the bolt between locked and unlocked positions, the rim portions of said tumbler wheels having peripheral gates therein to receive therein confronting portions of a fence on said fence lever when the tumbler wheels are properly aligned following dialing of the proper lock opening combination, said rear wall of the lock case having an opening therein for insertion of a combination change key into the lock case and rotation thereof at as position located radially outwardly of the tumbler wheels adjacent the outer peripheries thereof, means supporting said tumbler post within the tumbler wheel hub portions for nonrotatable axial movement between first and second positions and having shoulder means forwardly and rearwardly abutting the wheel hub portions of the tumbler wheel stack for movement of the hub portions axially relative to said outer rim portions between coupled and decoupled relation therewith, rim restraint means restraining said outer rim portions against axial movement, and tumbler post positioning means within the lock case activated by rotation of the change key within the lock case between coupled and decoupled positions for axially moving the tumbler post and said tumbler wheel hub portions to shift the tumbler wheel hub portions to decoupled relation with the tumbler wheel rim portions for combination change by rotation of the hub portions to new combination positions relative to their rim portions responsive to rotation of the dial and driving cam to a new changed lock opening combination, and said tumbler post positioning means being operative to return the tumbler post and the tumbler wheel hub portions axially to positions again intercoupling the tumbler wheel hub portions and their respective rim portions responsive to rotation of the change key to coupled position.

4,796,447

LOCK WITH KEY ISOLATION USING TRANSFER TUMBLERS

Jacob Rabinow, 6920 Selkirk Dr., Bethesda, Md. 20817

Filed Jul. 9, 1987, Ser. No. 71,417
Int. Cl.[4] E05B *29/02*
U.S. Cl. 70—495 **27 Claims**



1. In a lock and key combination:

an outer member, and an inner member rotatable with reference to the outer member to open the lock,

rotatable means for receiving said key and being rotated thereby,

first and second locking means for locking said inner member to the outer one to thus prevent the lock from being unlocked,

said first locking means locking said inner and outer members together until said key has rotated said rotatable means at least a given angular amount,

said second locking means comprising a portion of said inner member movable along a diameter of its path of rotation, said second locking means locking said inner and outer members to prevent relative rotation thereof except when said portion is in one particular position in its path of motion along said diameter,

said inner member being rotatable with respect to said outer member to unlock the lock when said portion is in said particular position and said rotatable means has rotated at least said given angular amount,

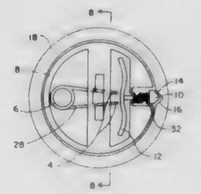
said portion being positioned along said diameter by the key.

4,796,448

LOCK WITH REFERENCE PLATE

Jacob Rabinow, 6920 Selkirk Dr., Bethesda, Md. 20817

Continuation-in-part of Ser. No. 921,437, Oct. 22, 1986, abandoned. This application Jan. 4, 1988, Ser. No. 140,904
Int. Cl.[4] E05B *29/02*
U.S. Cl. 70—495 **14 Claims**



1. In a lock,

locking means comprising first and second members one of which is movable with respect to the other in order to unlock the lock,

a movable third member, which when the lock is in a locked mode is in a first position wherein it blocks relative movement of said first and second members, and is movable in a predetermined direction away from said first position to a second position wherein it does not block relative movement of said first and second members,

a plurality of elongated settable elements which if set in

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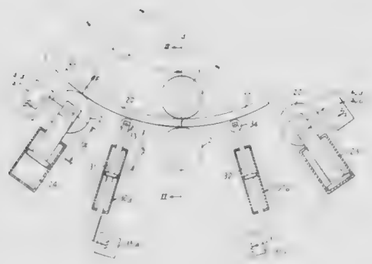
predetermined positions, respectively, permit said third member to be moved in said predetermined direction,
lock opening means for setting said elements in said predetermined positions, respectively,
said settable elements comprising elongated elements having free ends for engaging said third member,
means for mounting each of said settable elements at a location remote from its free end, each said settable element being movable so that its free end may be set in a selected position,
said free ends and said third member comprising means so that if any one of said free ends is not in its selected position such free end will block movement of said third member in said predetermined direction and thus prevent the lock from opening; but when all of said free ends are in their respective selected positions the third member may move in said predetermined direction with a resulting overlap between said third member and each of said free ends whereby the first and second members may have relative movement permitting the lock to open,
said third member comprising a plate having holes therein with one such hole for each said free end, each hole being positioned to receive its complementary said free end when said free ends are in said predetermined positions, respectively.

4,796,449

AUTOMATICALLY CONTROLLED MACHINE FOR ROLLING METAL SHEETS

Jean G. Berne, Aix En Provence, France, assignor to Societe Nouvelle Des Ateliers Et Chantiers Du Havre, Le Havre, France

Filed Dec. 30, 1986, Ser. No. 947,719
Claims priority, application European Pat. Off., Dec. 30, 1985, 85402653
Int. Cl.⁴ B21D *5/14, 7/14*
U.S. Cl. 72—9 5 Claims



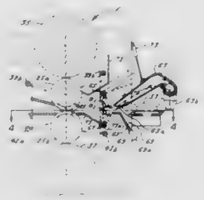
1. An automatically controlled machine for rolling metal sheets comprising:
at least two central rollers;
means for rotating and adjustably driving said at least two central rollers with a metal sheet passing therebetween;
side rollers placed on each side of said central rollers;
positioning means for positioning said side rollers and including positioning cylinders (**23, 24**);
a first set of sensors (**40***a*, **40***b*, **41***a*, **1***b*) connected to said side rollers and to a computer for registering a position of said side rollers;
at least two probes positioned symmetrically with respect to the central rollers and one probe disposed between said central rollers and each of said side rollers, said probe being connected to a second set of sensors and comprising a cylinder having a stem provided at a distal end thereof with a rotating wheel in contact with a metal sheet passing out of the central rollers so as to obtain a position of said probes by means of said second set of sensors;
means for rolling in a continuous manner; and
said second set of sensors being connected to said computer for providing information compared to instructions from the computer in order to correctly position the side rollers for suitably rolling the metal sheet to a required radius within given tolerances.

4,796,450

APPARATUS FOR IMPROVING HOT STRIP MILL PROCESSING

David T. Blazevic, 201 Lake Dr. - Unit 1A, Olympia Fields, Ill. 60461

Filed Sep. 22, 1986, Ser. No. 910,503
Int. Cl.⁴ B21B *45/08, 27/10, 39/16*
U.S. Cl. 72—39 27 Claims



1. In a hot strip mill, a system for descaling an oxide layer on strips as they are delivered to a finishing mill, said system comprising:
means for supporting said strips as they leave a previous mill and move toward said finishing mill;
guide means associated with said supporting means for centering said strips as they enter said finishing mill;
a pair of cooperating work rolls comprising said finishing mill for receiving said strips from said supporting means;
said guide means being located upstream relative to the direction of motion of said strips from said pair of cooperating work rolls such that a predetermined distance separates said pair of cooperating work rolls from the closest portion of said guide means; and
a descaling means for removing an oxide layer from said strips prior to their engaging said pair of cooperating work rolls, said descaling means positioned within said predetermined distance so as to be immediately adjacent an upstream side of said pair of cooperating work rolls and downstream of said guide means, such that said strips experience a minimum buildup of a new oxide layer after descaling by said descaling means and before entry into said finishing mill, resulting in the minimization of the thickness of the oxide layer formed on the strips after they are processed by said finishing mill.

4,796,451

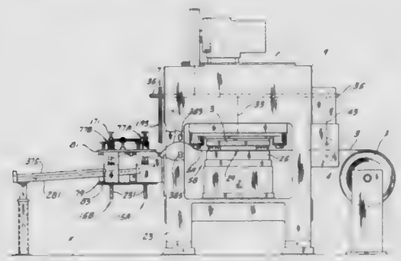
APPARATUS AND METHOD FOR CONTINUOUSLY FORMING EDGEWISE WOUND CORES

Harold L. Fritzsche, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 660,211, Oct. 12, 1984, Pat. No. 4,613,780.
This application Sep. 4, 1986, Ser. No. 904,140
Int. Cl.⁴ B21C *47/04;* **H02K** *15/04*
U.S. Cl. 72—131 47 Claims

1. A method of continuously forming edgewise wound cores at a plurality of winding stations from a strip stock of a generally thin ferromagnetic material received at an operation station, the method comprising the steps of:
operating the winding stations and the operation station conjointly from a common drive therefor;

lancing the strip stock received at the operation station in response to the driven operation thereof to divide the strip stock into a plurality of continuous strips thereof;
feeding the continuous strips intermittently from the operation station to the winding stations, respectively;
providing a looped portion in each continuous strip during the feeding step and enabling thereby continuous feeding of the continuous strips from the looped portions thereof to the winding stations, respectively;



winding continuously and simultaneously the continuous strips generally edgewise thereof at the winding stations in response to the driven operations thereof, respectively, and forming thereby a plurality of helical convolutions from the continuous strip at each winding station; and
simultaneously varying the rate at which the continuous strips are continuously and simultaneously wound at the winding stations relative to the rate at which the continuous strips are intermittently fed from the operation station, respectively.

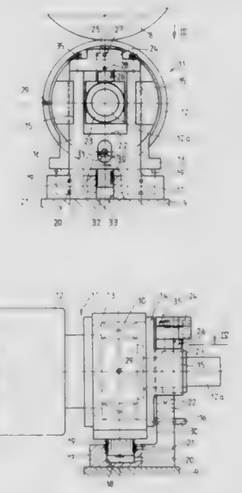
4,796,452

SETTING DEVICE FOR ADJUSTING THE POSITION OF A ROLL

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Mar. 24, 1987, Ser. No. 29,859
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610107
Int. Cl.⁴ B21B *31/32, 35/00;* **B30B** *3/04*
U.S. Cl. 72—245 20 Claims

1. A setting device for changing the position of a roll in a transverse direction with respect to a mating roll that is disposed side to side with respect to the roll, the roll having a longitudinal axis and the setting device being operable for moving the roll transverse to the roll axis in a first direction toward and in a second direction away from the mating roll, the setting device comprising:
the roll having opposite longitudinal ends and support means at the ends of the roll for supporting the roll while it rotates; a respective bearing rotatably supporting the roll on the support means ; a respective bearing housing containing the bearing at the support means at the end of the roll and adjustable with the roll;
a stationary base; actuator means supported to the base and engaging the bearing housing and supporting the bearing and being movable for moving the bearing housing and the bearing, for moving the support means for moving the roll transversely to the roll axis and with respect to the base; along the direction across the roll axis, the actuator means is at least approximately centered on the bearing;
first and second linear motion guide elements arranged at the axial outer end of the bearing housing and supported respectively to the bearing housing and to the base for guiding linear motion of the bearing housing and of the



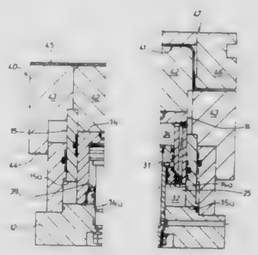
roll with respect to the base transversely to the longitudinal axis of the roll.

4,796,453

HYDRAULIC ELEMENT AND DRAWING DIE ASSEMBLY

Erhardt Reitter, Sulzfeld, Fed. Rep. of Germany, assignor to Karl Hehl, Loesburg, Fed. Rep. of Germany

Filed Jun. 18, 1987, Ser. No. 63,327
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1986, 3620876
Int. Cl.⁴ B21D *24/02, 24/14*
U.S. Cl. 72—347 8 Claims



1. In a hydraulic element including a working cylinder defining a cylinder chamber having an axis and containing hydraulic medium and a working piston movable in the cylinder chamber along the axis and having an interior end arrange to communicate with the hydraulic medium in the cylinder chamber, the improvement wherein said element further comprises an annular piston movable in said cylinder chamber, along the axis, and enclosing said working piston, said annular piston having an interior end communicating with the hydraulic medium in said cylinder chamber so that movement of one of said pistons in a first direction along the axis causes the other of said pistons to move in a second direction opposite to the first

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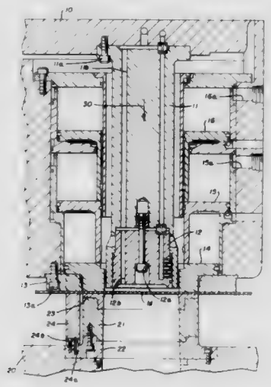
direction and wherein said working piston is a differential piston having a differential surface, said working piston has a hollow interior extending from said interior end and comprises an annular part extending radially inwardly and carrying said differential surface, and said element further comprises: a base plate supporting said working cylinder and facing said interior end of said working piston; a cylindrical extension piece secured to said base plate, extending into said hollow interior of said working piston, and being in sliding contact with said annular part; and a head member carried by said extension piece and disposed in said hollow interior such that a first portion of said hollow interior lies between said head and said annular part and forms a differential chamber for receiving hydraulic fluid which acts on said working piston in opposition to the hydraulic medium in said cylinder chamber.

4,796,454

METHOD FOR CONTROLLING MOVEMENT IN A SINGLE ACTION FORMING PRESS

Joseph D. Bulso, Jr., Canton, and James A. McClung, North Canton, both of Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Feb. 9, 1987, Ser. No. 12,625
Int. Cl.[4] B21D *22/22, 28/02*
U.S. Cl. 72—350 4 Claims



1. A method of forming a workpiece in a press having a movable slide and a fixed base, comprising:
(a) engaging the workpiece with a draw pad carried by the slide and urged toward the base by fluid pressure so as to hold the workpiece against a blank and draw die carried by the base;
(b) blanking the workpiece by advancing a blank cut edge carried by the movable slide past the blank and draw die;
(c) then interrupting the travel of the draw by engaging the draw pad with stop means carried by and projecting from the base only after blanking of the workpiece; and
(d) forming the workpiece by advancing a draw horn, carried by the slide, toward the base.

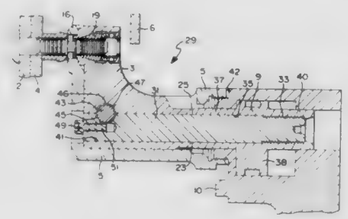
4,796,455

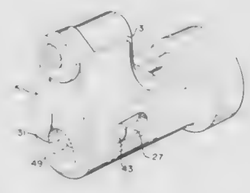
COMPACT OFFSET NOSE ASSEMBLY FOR SETTING FASTENERS

Hendrik E. Rosier, Kingston, N.Y., assignor to Huck Manufacturing Company, Irvine, Calif.

Filed Mar. 24, 1987, Ser. No. 29,935
Int. Cl.[4] B21D *31/00*
U.S. Cl. 72—391 5 Claims

1. An offset nose assembly for swaging a lockbolt type collar about a lockbolt type fastener pin, comprising:
an anvil housing provided with a swaging anvil for swaging said collar around said pin, said swaging anvil having a central axis aligned with said pin during swaging;
a collet member mounted for axial movement within said anvil housing, said collet member adapted for receiving jaw means for gripping said pin, said collet member formed with an axially-extending smooth-walled bore having an axis radially offset from the central axis of said anvil;
a drawbar for connecting said collet member to an actuator of an installation tool, said drawbar having a substantially





smooth axially-extending surface portion closely fitted within said axially-extending smooth-walled bore of said collet member for minimizing assembly tolerances therebetween; and
a pin member rotatably mounted to said collet member, said drawbar securely connected and fixed to said collet member by said pin member for axially moving said collet member within said anvil housing so as to prevent excessive deflection of said nose assembly with respect to said pin during said swaging.

4,796,456

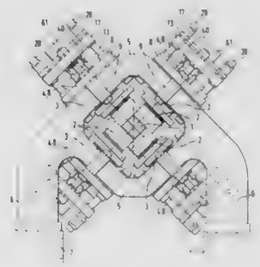
FORGING MACHINE

Heinz Schmoll; Peter Schubert, both of Kaarst; Hans A. Schubert, Düsseldorf; Klaus Schulze, Mönchengladbach, and Heinrich Kutz, Neuss, all of Fed. Rep. of Germany, assignors to SMS Hasenclever Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 29, 1986, Ser. No. 947,331
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1986, 3600018; Jan. 7, 1986, 3600178; Jan. 13, 1986, 3600690; Aug. 16, 1986, 3627843; Sep. 4, 1986, 3630170; Sep. 16, 1986, 3631439
Int. Cl.[4] B21J *7/02*
U.S. Cl. 72—402 23 Claims

1. In a forging machine with four rams which are arranged in the form of a cross in an operating plane perpendicular to the longitudinal axis of the workpiece and are movable transversely relative to said axis along a radial ram axis and which are movable themselves as part of a piston/cylinder drive unit, and are operatively connected to tools which form a workpiece space in the stroke end position nearer the center of the cross, each tool having an unused width of its working surface overlapped by one side surface of one of the adjacent tools, and overlapping in turn with one of its side surfaces an unused

width of the working surface of the other adjacent tool, the improvement wherein:
said drive units are arranged to act radially relative to the longitudinal axis of the workpiece;
stroke setting means are provided for each of said drive units for setting and indicating the stroke end position;
a cross element is provided on each ram forming a support means adjustable transversely to the respective radial ram axis;



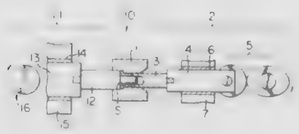
each tool is supported on a respective cross element for adjustment transversely to the respective radial ram axis; and
a setting device is provided operating in response to the stroke and position setting which determines the forging dimension for adjusting the tool transversely to said radial axis by an amount equal to half the difference between the total width of the tool working surface and the used width of said working surface of the tool for respective workpiece space.

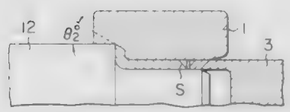
4,796,457

METHOD AND APPARATUS FOR PRODUCING FLANGED BUSH

Yoshio Iijima, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Continuation of Ser. No. 691,705, Jan. 15, 1985, abandoned. This application Jun. 15, 1987, Ser. No. 63,716
Claims priority, application Japan, Jul. 26, 1984, 59-154124
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—370 6 Claims





1. A method of producing a flanged bush comprising the steps of:
providing a hollow cylindrical stock;
providing a die having a bore framed therein axially from one end to the other end thereof, said bore having a widened portion at said other end, a cylindrical portion narrower than said widened portion and of a diameter essentially equal to the outer diameter of said hollow cylindrical stock so that said hollow cylindrical stock may be inserted therein essentially without change in its outer diameter, a first annular shoulder portion having an outer diameter between that of said cylindrical portion and that of said widened portion, and a conical transition portion extending from said first annular shoulder portion to said widened portion, and a part of said bore, including a part of said conical transition portion adjacent said first annular shoulder portion, said cylindrical portion and said first annular shoulder portion, having a configuration conforming with the final shape of the flanged bush;
providing a flange-forming punch having a reduced diameter portion and a wider flange-forming second annular shoulder portion from which said reduced diameter portion axially and concentrically extends, said reduced diameter portion being of an outer diameter just smaller than the inner diameter of said hollow cylindrical stock, said second annular shoulder portion having an outer diameter just smaller than the inner diameter of said widened portion of said bore, said second annular shoulder portion and said reduced diameter portion being joined by a concave curvelinear surface;
providing a coining punch at said one end of said die;
inserting said hollow cylindrical stock into said one end of said die by means of said coining punch;
driving said reduced diameter portion of said flange-forming punch into said bore from the other end of said die while applying pressure by moving said coining punch against an adjacent first end face of said hollow cylindrical stock in opposition to the motion of said flange-forming punch until said reduced diameter portion fills the entire length of said hollow cylindrical stock, in such a manner that said curvelinear surface first contacts an inner edge of a second end face of said hollow cylindrical stock opposite said coining punch, while said second end face is positioned within said widened portion of said bore;
driving said second annular shoulder portion of said flange-forming punch against said second end face while applying pressure with said coining punch against said first end face until said hollow cylindrical stock fills said part of said conical transition portion, thus forming a flange in said part of said conical transition portion;
whereby said curvelinear surface bends said second end face radially outward, and, during said driving step, said second annular shoulder portion and said coining punch cooperate to axially compress said stock and said conical transition portion radially compresses said stock thereby plastically deforming the same.

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FORGING MANIPULATOR

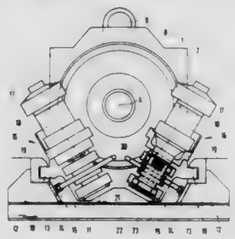
Peter Schubert, Kaarst, Fed. Rep. of Germany, assignor to SMS Hasenclever Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 19, 1987, Ser. No. 86,948
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1986, 3628407; Sep. 16, 1986, 3631440; Oct. 11, 1986, 3635952
Int. Cl.[4] B21D *43/00*; B61B *13/08*
U.S. Cl. 72—420 6 Claims

1. In a forging machine installation, comprising a forging machine having a horizontal main axis, forging manipulator means comprising a manipulator carriage, a gripper carrier supported on the carriage and rotatable about a horizontal axis corresponding to the main axis of the forging machine, and workpiece grippers movably mounted on the gripper carrier

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for gripping a workpiece; horizontal longitudinal guide means parallel to said main axis and disposed respectively on opposite sides of the manipulator carriage, the manipulator being supported by and slidable along said guide means; a respective toothed rack associated with each said guide means, disposed, in vertical cross section, at an inclination to the horizontal,



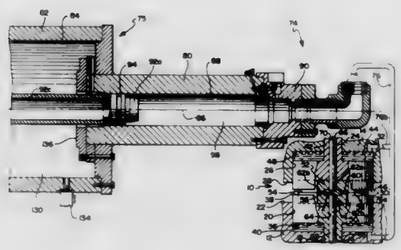
with the teeth of said racks facing upwardly and inwardly with respect to said main axis; and for each said rack a respective travel drive secured to said manipulator carriage and provided with a respective drive pinion in mesh with the associated rack, the said travel drives and pinions having respective axes disposed in a V, as seen in the direction along said main axis.

4,796,459

ACCUMULATOR SYSTEM FOR CLOSED DIE FORGING

William A. Mueller, Fairhaven, and Wolfgang Hoffmann, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 8, 1987, Ser. No. 93,888
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—354 **2 Claims**



1. In combination with a closed die forging apparatus wherein a closed die cavity is defined between a pair of dies clamped together by a fluid pressure in a variable volume oil chamber defined between at least one of said dies and an element of said forging apparatus movable through a forming stroke relative to said one die,

said oil chamber having a maximum volume at the beginning of said forming stroke and a minimum volume at the conclusion of said forming stroke,

an accumulator system comprising,

an accumulator housing,

a differential piston means having a big piston and a small piston disposed on said accumulator housing for movement between a retracted position and an extended position,

said small piston cooperating with said accumulator housing in defining a variable volume accumulator oil chamber having a minimum volume in said retracted position of said differential piston and a maximum volume in said extended position of said differential piston,

a free piston means disposed on said accumulator housing for movement between a retracted position and an extended position and cooperating with said accumulator housing in defining a variable volume high pressure gas chamber,

said free piston cooperating with said big piston and with said accumulator housing in defining a variable volume low pressure gas chamber between said free piston and said big piston,

a gaseous pressure medium in said high pressure gas chamber at an initial high pressure urging said free piston means to said retracted position,

a gaseous pressure median in said low pressure gas chamber at an initial low pressure substantially lower than said initial high pressure urging said differential piston to said retracted position, and

fluid conduit means between said variable volume oil chamber in said closed die forging apparatus and said accumulator oil chamber,

oil in said variable volume oil chamber in said closed die forging apparatus being forced into said accumulator oil chamber during said forming stroke thereby to move said differential piston from said retracted position to said extended position first against resisting gas pressure in said low pressure gas chamber increasing from said initial low pressure to a maximum at engagement of said big piston on said free piston and second against resisting gas pressure in said high pressure gas chamber as said free piston moves as a unit with said differential piston,

said resisting gas pressure achieving a maximum value at said extended positions of each of said differential piston and said free piston.

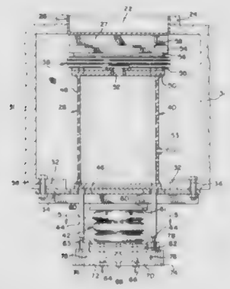
4,796,460

CUSHION CONSTRUCTION INCLUDING SNUBBER

Kenneth L. Smedberg, Crete; George J. Bozich, Chicago, and Robert J. Kotynski, South Holland, all of Ill., assignors to Kenneth L. Smedberg, Crete, Ill.

Continuation-in-part of Ser. No. 912,332, Sep. 26, 1986, Pat. No. 4,732,033. This application May 29, 1987, Ser. No. 55,687
Int. Cl.[4] B21D *24/02*
U.S. Cl. 72—453.13 **15 Claims**

1. A die cushion construction for use in a press, said cushion construction having a fixed plate connected to a base of the press, a resilient actuator having one end sealingly connected to the fixed plate, said actuator having an opposite end sealingly connected to a movable plate, said movable plate connected to a portion of a die in the press, the improvement comprising; a resilient snubbr actuator having one end fixed relative to the fixed plate, said snubber actuator having an opposite movable end connected to the movable plate for affecting the rate of movement of the movable plate, a plurality of rods connecting the movable plate with the movable end of the snubber actuator, and means for allowing fluid to flow into



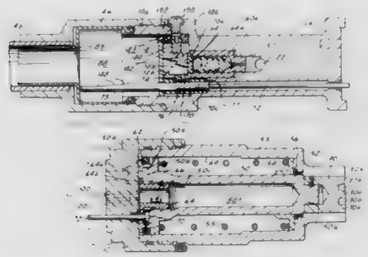
the snubber actuator when the movable plate of the cushion moves toward the snubber actuator.

4,796,461

HYDRAULIC CRIMPING TOOL

Howard Mead, Loves Park, Ill., assignor to Greenlee Textron Inc., Rockford, Ill.

Filed Jun. 2, 1986, Ser. No. 869,625
Int. Cl.[4] B21J *9/12*
U.S. Cl. 72—453.16 **10 Claims**



1. A hydraulic crimping tool comprising:

a movable piston driven by a fluid for applying crimping force on an article to be crimped; and

crimping force adjusting means including a piston follower member interconnected with said piston for directly related movement whenever said piston moves, said crimping force adjusting means being adapted to sequentially and automatically reduce the force applicable by said piston in dependence on the amount of movement from a starting position of said piston.

4,796,462

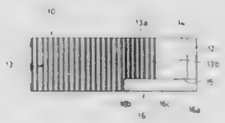
WORKPIECE BITE DEVICE IN A ROLLING FLAT CUTTER

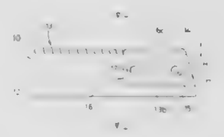
Hideo Hikuma, and Masaji Yamada, both of Hamamatsu, Japan, assignors to Fuji Tekko Co., Ltd., Shizuoka, Japan

Filed Apr. 2, 1987, Ser. No. 14,531
Claims priority, application Japan, Aug. 2, 1986, 61-119120[U]
Int. Cl.[4] B21H *5/00*
U.S. Cl. 72—469 **11 Claims**

1. A workpiece bite device in a rolling flat cutter comprising a cutter body having a width extending in a lateral direction and a length extending in a longitudinal direction, said cutter body having a plurality of corrugated working blades formed on a portion of a surface thereof and a charging portion extend-

ing in said longitudinal direction with said charging portion of said surface being free of said working blades, said working blades extending a height above a plane containing said charging portion, means comprising a pinch member provided at one longitudinal side of said cutter body so as not to extend across the width of said cutter body for biting a workpiece with a predetermined pinch force, said pinch member having a starting portion thereof disposed adjacent said charging portion of said surface at which a workpiece is charged into engagement with said flat cutter so that said workpiece fed into said charging portion moves simultaneously along said charging portion and starting portion of said pinch member, a terminal portion





of said pinch member being positioned adjacent a starting portion of said working blades of said cutter body such that said terminal portion of said pinch member has a longitudinal side thereof abutting a longitudinal side of said starting portion of said working blades over a predetermined distance in said longitudinal direction so that said workpiece fed within said starting portion of said working blades simultaneously moves along said terminal portion of said pinch member and said starting portion of said working blades, said pinch member having a surface thereof extending outwardly above said plane from said cutter body a distance greater than a working surface height of said starting portion of said working blades.

4,796,463

VARIABLE PERMEABILITY STEERING TORQUE SENSOR

Izrail Tsals, Princeton Junction; Ilya Feygin, Westfield, and William Marder, Pennington, all of N.J., assignors to General Motors Corporation, Detroit, Mich.

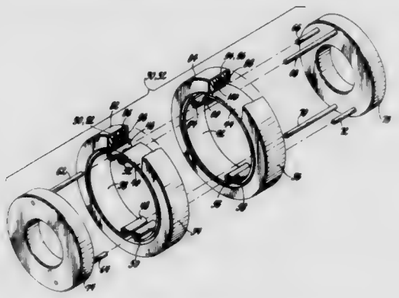
Filed Apr. 6, 1987, Ser. No. 34,535
Int. Cl.[4] G01L *3/10*
U.S. Cl. 73—862.33 **5 Claims**

1. A sensor responsive to the deformation of a rotary shaft to provide an indication of the torque which produced the deformation, the sensor comprising:

annular magnetic core means disposed about said shaft and supported stationary with respect thereto, primary and secondary windings disposed within a recess in the inner periphery of said core means, and magnetic deflectable means disposed within said core means to define an air gap between said deflectable means and said core means, the deflectable means being supported at longtitudinally displaced points thereof by a pair of support means which experience relative rotation in relation to the deformation of the shaft, such that the deflectable means is deflected relative to the inner periphery of the core means to vary the average dimension of said air gap in relation to the

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deformation of said shaft, and the voltage induced in the secondary winding when the primary winding is excited



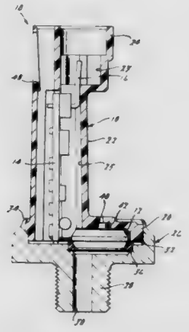
with alternating current provides an indication of the torque which produced the deformation.

4,796,464

ELECTRONIC OIL PRESSURE SENSOR DEVICE

Paul D. Miller, Huntsville, Ala., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Oct. 29, 1987, Ser. No. 114,331
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—115 **7 Claims**



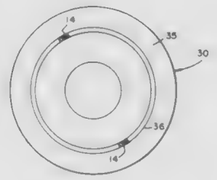
1. An electronic fluid pressure sensing device for determining the pressure of a fluid in an engine comprising:
sensor means for sensing the pressure of a fluid;
circuit means for determining the pressure of the fluid;
housing means forming a housing about said circuit means and said sensing means;
attachment means for attaching said housing means to the engine;
locating means for locating said housing means relative to said attachment means;
said attachment means comprising a base member having a threaded projection extending outwardly from said base member for threadably engaging the engine;
aperture means forming an aperture in said base member to allow fluid to enter and exit said base;
said base member including a cavity, said aperture communicating with and formed concentric to said cavity;
said locating means comprising a recess formed eccentrically within said cavity for allowing said sensing means to be disposed in said recess.

4,796,465

METHOD AND APPARATUS FOR MONITORING TURBOMACHINE MATERIAL

Diether E. Carreno, and Peter J. Morgan, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1987, Ser. No. 43,578
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 **10 Claims**



6. A turbomachine rotor wheel comprising:
the rotor wheel having opposite faces and made from a block forging;
a receptacle comprising an annular groove formed in at least one face of the rotor wheel;
at least one test specimen taken from the same block forging as the rotor wheel inserted into the annular groove whereby the test specimen may be removed and tested apart from the rotor wheel without destroying the rotor wheel.

4,796,466

SYSTEM FOR MONITORING PIPELINES

Ed Farmer, 1611 20th St., Sacramento, Calif. 95814

Filed Feb. 17, 1987, Ser. No. 15,739
Int. Cl.[4] G01M *3/00*
U.S. Cl. 73—40.5 R **14 Claims**



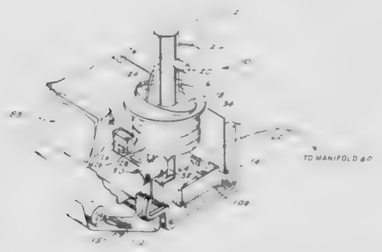
1. A system for monitoring fluid pipelines or pressure vessels to determine the probability of a break, leak or rupture therein using a procedure in which two or more different sets of pressure or velocity measurements, each of said different sets containing a different number of readings, are compared statistically to detect a trend in the readings that would be indicative of a break, leak or rupture, which system comprises:
(a) a fluid characteristic measuring means for monitoring a characteristic of a fluid in the pipeline, and which measuring means provides an output signal that is proportional to the characteristic being monitored;
(b) statistical analyzer means receiving the output signal from a measuring means and providing a statistical analysis of the data from a transducer means to determine by a statistical analysis the probability of a break, leak, or rupture in said pipeline, said probability being expressed as an output signal to a display device.

4,796,467

TESTING DEVICE FOR RESPIRATORY PROTECTIVE DEVICES

John F. Burt, Old Saybrook; Jeffrey M. Whynall, Haddam, both of Conn.; Jonathan Howe, Perry, Me.; Gilbert L. Knott, Portland, and Tavin Harnvorakiat, Rocky Hill, both of Conn., assignors to Biosystems Inc., Rockfall, Conn.

Filed Apr. 30, 1987, Ser. No. 44,915
Int. Cl.[4] G01N *19/00*
U.S. Cl. 73—168 **38 Claims**



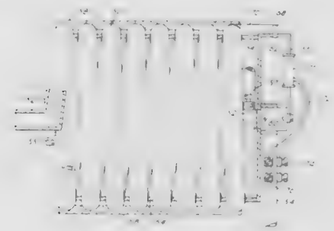
1. Apparatus for testing the performance of respiratory protective devices of the type including a respiratory inlet cover comprising:
test head means, said test head means having at least a first orifice;
breathing simulator means communicating with said orifice in said test head means wherein simulated respiration is provided to said test head means;
first pressure sensor means communicating with said test head means for measuring pressure surrounding said test head means; and
computer means communicating between said breathing simulator means and said first pressure sensor means.

4,796,468

APPARATUS FOR MEASURING FLUID DENSITY

Barry Blake-Coleman, and David Clarke, both of Salisbury, United Kingdom, assignors to Public Health Laboratory Service Board, England

Continuation-in-part of Ser. No. 832,713, Jan. 31, 1986, abandoned. This application Mar. 5, 1987, Ser. No. 22,213
Claims priority, application United Kingdom, Apr. 3, 1984, 8408527
Int. Cl.[4] G01N *9/00*
U.S. Cl. 73—32 A **18 Claims**



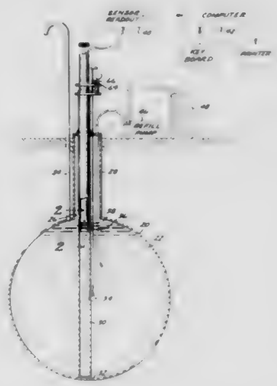
1. Apparatus for use in measuring fluid density comprising:
(A) a substantially rigid base structure;
(B) a helical sample tube having a tube wall which is electrically conductive at least in a continuous portion thereof extending throughout a substantial length of the sample tube, the sample tube being fixed at end portions thereof on said base structure;
(C) sample feed means for introducing into said sample tube a body of fluid whose density is to be measured;
(D) drive means for the sample tube, comprising current means for passing an electrical current through said length of the sample tube and reactor means mounted on the base structure and adapted through magnetic coupling with the current carrying sample tube to excite bodily vibrational movement of the sample tube along the helical axis thereof; and
(E) monitoring means for monitoring said vibrational movement to determine the fluid density.

4,796,469

APPARATUS AND PROCESS FOR MEASURING CHANGE OF LIQUID LEVEL IN STORAGE TANKS

Robert L. Brown, Buena Park, and Roger W. Richesson, Huntington Beach, both of Calif., assignors to B-Conn, Inc., Huntington Beach, Calif.

Filed Mar. 16, 1987, Ser. No. 26,113
Int. Cl.[4] G01M *3/26*
U.S. Cl. 73—49.2 **16 Claims**



1. A process for measuring slow changes in the level of a liquid stored in a storage tank in an environment wherein the temperature of the liquid is prone to change during the measurement, such as measuring leakage of hydrocarbon fuel from an underground tank, the process comprising the steps of:
placing a container into the storage tank in a position where the longitudinal axis of the container is substantially vertical and wherein its bottom reaches substantially to the bottom of the storage tank, the horizontal cross-sectional area of the container being constant along the vertical axis of the container, so that the volume of liquid contained in the container is a linear function of the height of the liquid level in the container;
allowing the container to be in fluid communication with the storage tank whereby the height of the liquid level in the container is even with the liquid level in the storage tank, and measuring the height of the liquid level in the container, the measuring providing a first liquid level reading;
shutting off fluid communication between the container and the storage tank for a fixed time period which is sufficient to allow effective measurement of leakage of liquid out of the storage tank, or into the storage tank;
measuring for a second time the height of the liquid level in the container after expiration of the time period, the second measuring providing a second liquid level reading, any change between the first and second readings being due substantially exclusively to density change of the

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liquid caused by change of temperature of the liquid during the fixed time period, and

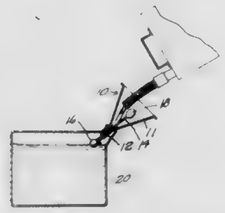
after the step of measuring for a second time, allowing fluid communication to occur again between the storage tank and the container, whereby the height of the liquid level in the container and in the storage tank equalizes, and thereafter measuring for a third time the height of the liquid level in the container, the difference in the first and second readings providing the basis for mathematically calculating the theoretical level of the liquid in the storage tank which would have been caused solely by the change in the temperature of the liquid during the fixed time period, and the difference between the calculated theoretical level and the third reading providing the basis for finding the volume of liquid which has leaked into or out of the storage tank during the fixed time period.

4,796,470

INDICATING LIQUID FUNNEL

Frank U. Lahde, Rochester, Mich., assignor to The Alten Corporation, South Bend, Ind.

Filed Jun. 24, 1982, Ser. No. 391,521
Int. Cl.[4] G01F *23/30*
U.S. Cl. 73—294 **6 Claims**



1. An indicating liquid funnel comprising a tapered open ended large filling portion and an open ended reduced diameter tubular discharge portion, an indicator unit having an elongated stem portion extending through the discharge portion, a buoyant member of cross-sectional size larger than the diameter of said discharge portion carried by said stem and projecting externally from said discharge portion, and a light weight indicating portion of a size larger than said discharge portion carried by said stem and adapted to seat within the filling portion of the funnel, said stem being of a length positioning said buoyant member spaced from the end of the funnel discharge portion when said indicating portion engages the filling portion of the funnel and being of a traverse dimension not greater than one-half the inner diameter of said funnel discharge portion, said indicating portion being of a shape to permit flow of liquid therepast when engaging the filling portion of said funnel and moving visibly when said buoyant member floats toward said discharge portion during a liquid filling operation.

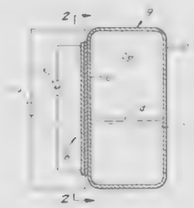
4,796,471

TECHNIQUES USEFUL IN DETERMINING LIQUID LEVELS

Cullen M. Sabin, Solana Beach, Calif., assignor to Thermonetics Corporation, San Diego, Calif.

Continuation of Ser. No. 929,498, Nov. 12, 1986, abandoned. This application May 2, 1988, Ser. No. 203,514
Int. Cl.[4] G01F *23/22*
U.S. Cl. 73—295 **3 Claims**

1. In a liquid level determining system for liquids in a storage tank that has an external surface exposed to the ambient atmosphere wherein the improvement comprises, an elongated heater producing heat uniformly along its length, an elongated thermopile having a multiplicity of hot and cold junction pairs extending uniformly along its length adjacent to and coextensively with said elongated heater, said heater being a strip electrical resistance heating element that has two flat sides, one flat side of which is mountable on said external tank surface and the other flat side of which has said elongated thermopile mounted thereon, and means mounting said thermopile on said heating element so that when said heating element is mounted on said surface a first portion of the heat produced by said



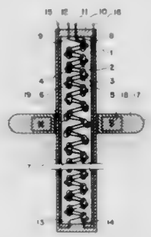
heater element flows in a first direction directly into said tank and a second portion of the heat produced by said heater flows in a second opposite direction through said thermopile in a path which extends through one of said hot junctions, then through one of said cold junctions and then into the ambient atmosphere, said heater producing insufficient heat to significantly raise the temperature of said tank.

4,796,472

LEVEL DETECTOR WITH MULTIPLE MAGNETICALLY ACTIVATED SWITCHES

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 913,100, Sep. 29, 1986, Pat. No. 4,730,491. This application Jul. 10, 1987, Ser. No. 71,776
The portion of the term of this patent subsequent to Mar. 15, 2005, has been disclaimed.
Int. Cl.[4] G01F *23/62;* **H01H** *35/18*
U.S. Cl. 73—308 **11 Claims**



1. An apparatus for detecting position comprising in combination :

(a) an elongated tubular container;

(b) a first elongated electrically conducting member disposed following the length of said elongated tubular container and enclosed therein;

(c) a second elongated electrically conducting member disposed following the length of said elongated tubular container and enclosed therein, wherein at least one of the first and second elongated electrically conducting members has a high specific ohmic resistance;

(d) a plurality of normally open switches disposed within said elongated tubular container at regular intervals in a parallel circuit arrangement intermediate said first and second elongated electrically conducting members, each of said plurality of normally open switches establishing electrical connection between said first and second elongated electrically conducting members when said normally open switch is closed, wherein the earth's gravitational pull acting on the normally open switches keeps the normally open switches at open position in the absence of a magnetic force field, and a magnetic force field closes the normally open switches;

(e) a marker guided by said elongated tubular container in a sliding relationship, said marker including at least one magnet creating a magnetic force field penetrating into the interior of said elongated tubular container;

(f) means for measuring ohmic resistances of two electric circuits respectively including in series one portion of said at least one elongated electrically conducting member having a high specific ohmic resistance intermediate one extremity thereof and the normally open switch closed by the magnetic force field of said marker, the normally open switch closed by the magnetic force field of said marker and a portion of the other elongated electrically conducting member, and in series the other portion of said at least one elongated electrically conducting member intermediate the normally open switch closed by the magnetic force field of said marker and the other extremity opposite to said one extremity, the normally open switch closed by the magnetic field of said marker and said a portion of the other elongated electrically conducting member; and

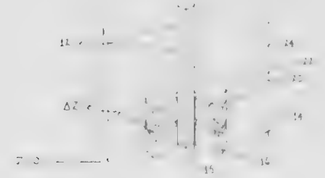
(g) means for determining the position of said marker from the measured ohmic resistances of the two electric circuits, wherein contact resistance of the normally open switch closed by the magnetic field of said marker is eliminated in arithmetics providing the position of the marker.

4,796,473

LEVEL SENSING SYSTEM

Craig S. Custer, Pompano Beach, Fla., assignor to Chem Tec Equipment Corp., Deerfield Beach, Fla.

Filed May 4, 1987, Ser. No. 45,980
Int. Cl.[4] G01F *23/12*
U.S. Cl. 73—308 **6 Claims**



1. A system for sensing the level of a body of liquid in a container, the system comprising:

(a) a shaft secured parallel to a vertical axis of said container, said shaft having therein a plurality of magnetic position responsive switches;

(b) a reference element situated circumferentially about said shaft and secured at a fixed level thereto, said reference element having a magnetic axis co-directional with the axis of said shaft; and

(c) a measuring and sensing element situated circumferentially about said shaft and vertically above said reference element but without securement thereto, said measuring element having a magnetic axis co-directional with the axis of said reference element, said axis having a polarity in repulsive relationship to said magnetic axis of said reference element, said sensing element having a negative buoyancy relative to the specific gravity of said liquid within said container,

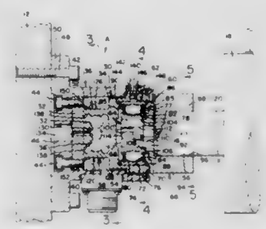
whereby said reference and sensing elements will magnetically repel each other while they are in magnetic proximity of each other, thereby causing said sensing element to float above the level of said reference element and, further whereby, the relative buoyancy of said sensing element will increase as a function of the level of said body of liquid, thereby causing the distance between said sensing and reference elements to change as a direct function of changes in the level of said body of liquid, which changes are monitored by selective magnetic actuation of said plurality of switches by said sensing element.

4,796,474

WEB TENSION TRANSDUCER APPARATUS

Robert G. Koenig, Hudson, Ohio, assignor to Cleveland Machine Controls, Inc., Cleveland, Ohio

Filed Sep. 2, 1987, Ser. No. 92,395
Int. Cl.[4] G01L *5/10*
U.S. Cl. 73—862.65 **21 Claims**



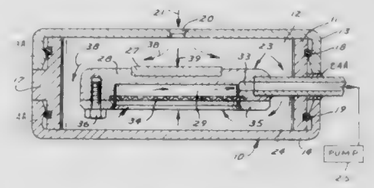
1. A transducer device for connecting one end of a shaft to a support frame, including flexure beam means cantilever supported at one end on said frame and extending in generally longitudinally centered relation with the axis of said shaft toward the said one end thereof, strain gauge means mounted on said beam means for creating a signal indicative of flexure of said beam means, a self-aligning bearing rotatively supporting said one end of said shaft on the flexurable free end of said beam means, a multiply axially split expandable cylindrical collar on one of the said free end of said beam means and the said one end of said shaft and coaxial with said shaft, said self-aligning bearing surrounding and being axially fitted onto said cylindrical collar, and a locking member forcibly inserted into the axial center passageway of said axially split collar and expanding said collar to lock it to the said bearing.

4,796,475

PERSONAL AIR SAMPLING IMPACTOR

Virgil A. Marpel, Maple Plain, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jun. 25, 1987, Ser. No. 67,106
Int. Cl.[4] G01N *7/00, 31/00, 15/02, 1/00*
U.S. Cl. 73—863.22 **8 Claims**



1. An impactor comprising an impaction plate and filter unit including an impactor housing having oppositely facing first and second sides bounded by an outer wall, said impactor housing having an exterior surface on the first side thereof, an impaction plate mounted on said exterior surface of said impac-

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tor housing, a chamber defined by a recess in said impactor housing which opens to the second side of the impactor housing and which faces in opposite direction from said impaction plate, filter means for covering said opening, means defining an air outlet from said chamber for connection to an air flow producing means for creating an air flow through said air outlet and through said opening, and outer housing means supported relative to and surrounding said impactor housing and defining a second chamber around said impactor housing, said outer housing means having an inlet nozzle opening therethrough aligned with said impaction plate so that when flow is created through said air outlet, air flows inwardly through the nozzle of the outer housing means and impinges against the impaction plate and flows around said impaction plate to reverse flow direction and flow through said filter and out through said air outlet.

4,796,476

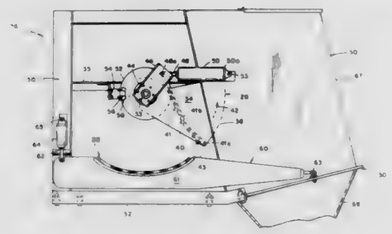
CONVEYOR BELT CROSS-STREAM SAMPLING SYSTEM AND METHOD

John B. Long, 421 Heron Hill Dr., Louisville, Tenn. 37777

Division of Ser. No. 915,746, Oct. 6, 1986, and a continuation-in-part of Ser. No. 688,394, Jan. 2, 1985, Pat. No. 4,619,149. This application Oct. 29, 1987, Ser. No. 115,883

Int. Cl.[4] G01N *1/12, 1/20*

U.S. Cl. 73—863.91 **2 Claims**



2. In a sampler which includes a sample sweep mounted for rotation about a rotative axis with a pair of cranks connected to the sweep for rotating the sweep about the rotative axis, the cranks being angularly displaced from one another and having a double acting pneumatic cylinder operatively connected to each crank, valve means for alternately pressurizing and venting chambers of each double acting pneumatic cylinder, said sweep being adapted to pass through a body of material to be sampled as the sweep is rotated, the method of controlling and rotating the sweep comprising/pressurizing a selected chamber of each cylinder to provide balancing forces to hold the sweep in a predetermined ready position, thereafter alternately pressurizing and venting selected chambers of the cylinders to provide forces to rotate the sweep through an arc which passes through the body of material to be sampled, and thereafter pressurizing selected chambers of the cylinders to return said sweep to the ready position.

4,796,477

ROTARY REVERSIBLE INDEXING MECHANISM

John H. Brems, Apt. 16-D, 2800 S. Ocean Blvd., Boca Raton, Fla. 33432

Filed Dec. 5, 1983, Ser. No. 557,467

Int. Cl.[4] F16H *37/12*

U.S. Cl. 74—52 **5 Claims**

1. An intermittent reversible indexing system having a rotary input and a rotary output, with variable kinematic characteristics comprising:

(a) a frame,

(b) a reaction gear member mounted for oscillation in said frame and concentric about a first axis,

(c) a planetary carrier member mounted for rotation in said frame and rotating about said first axis,

(d) a planetary gear member mounted for rotation in said planetary carrier member and rotating about a planetary axis displaced from said first axis and adapted for driving engagement with said reaction gear member,

(e) an eccentric shaft member mounted on said planetary gear member concentric about a third axis displaced from said planetary axis,



(f) an output member mounted in said frame and rotating about an output axis and in driven engagement with said eccentric shaft member,

(g) means for oscillating said reaction gear member, and

(h) input power means driving said planetary carrier member about said first axis and driving said means for oscillating,

whereby said planetary gear member rotates and said reaction gear member oscillates about said first axis in a predetermined relationship.

4,796,478

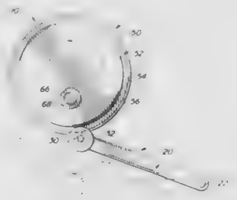
NON-LINEAR ROTARY DRIVE APPARATUS

Donald G. Carson, 12108 Towner Ave., NE., Albuquerque, N. Mex. 87112

Filed Feb. 6, 1987, Ser. No. 11,684

Int. Cl.[4] F16H *27/02, 29/02*

U.S. Cl. 74—89.2 **8 Claims**



1. Non-linear rotary drive apparatus, comprising, in combination:

first rotatable member means having a geometric center and an axis of rotation spaced apart from its geometric center for providing non linear rotational speed as the member means is rotated;

second rotatable member means disposed adjacent to the first rotatable member means;

cable means coupling the first and second rotatable member means together for joint rotary movement; and

pivoting link means for compensating for the difference between the geometric center and the axis of rotation of the first rotatable member means connected to the second rotatable member means for pivoting the second rotatable member means to maintain the second rotatable member means adjacent to the first rotatable member means as the first rotatable member means rotates on its axis of rotation.

4,796,479

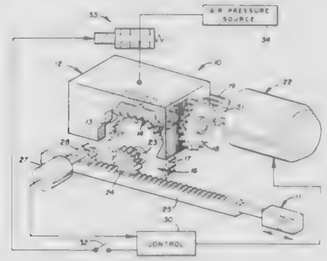
CLUTCH MECHANISM

Martin L. Wisecarver, 22032 Fallview La., Sonora, Calif. 95370

Filed Jun. 30, 1987, Ser. No. 68,111

Int. Cl.[4] F16H *35/06, 57/00;* **F16D** *21/04*

U.S. Cl. 74—398 **17 Claims**



1. A clutch mechanism comprising:

(a) a rotatable worm member having a thread,

(b) a driven member having teeth meshingly engageable with the thread of said worm member,

(c) mounting means mounting said worm member and said driven member for relative movement of said members towards and away from each other,

(d) spring means acting upon said worm and driven members to bias said members apart from each other,

(e) a source of air pressure,

(f) a pressure actuated device acting upon said worm and driven members to force said members towards each other with a force greater than that of said spring means when said pressure actuated device is connected to said source of air pressure,

(g) means for alternatively connecting said pressure actuated device to said source of air pressure or for venting said pressure actuated device, and

(h) driving means for rotatably driving said worm member.

4,796,480

CONSOLE MOUNTED CONTROLLER

Barry L. Amos, London; Ronald Sapelak, Belmont, and Peter Vanderweg, London, all of Canada, assignors to General Motors of Canada Limited, Oshawa, Canada

Filed Jul. 17, 1987, Ser. No. 74,995

Int. Cl.[4] G05G *11/00*

U.S. Cl. 74—483 R **11 Claims**

9. A controller for locomotives and the like, said controller comprising

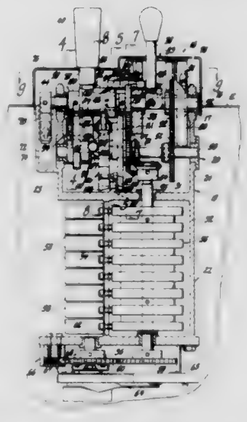
a throttle handle and a removable handle both mounted in a body for actuation by an operator,

a throttle shaft and a reverser shaft mounted in the body for oscillation about a common axis, said throttle handle being pivotally fixed to the throttle shaft for oscillation therewith into an engine idle position and various additional positions and said reverse handle being removably attached to the reverser shaft for oscillation therewith into a neutral position and forward and reverse positions, when installed,

electrical reverser switch means mounted on the body and operatively actuatable by the reverser shaft when it is oscillated into the forward and reverse positions,

an auxiliary shaft mounted for oscillation in the body on a second axis parallel with the common axis and spaced therefrom,

first drive means connecting the auxiliary shaft with the throttle shaft and causing corresponding oscillation therewith,



a switch shaft mounted for oscillation in the body on a third axis,

second drive means connecting the switch shaft with the auxiliary shaft and causing corresponding oscillation therewith,

electrical throttle switch means mounted on the body, and

throttle switch actuating means fixed to the switch shaft and engagable with the throttle switch means to actuate them when the switch shaft is oscillated into predetermined positions.

4,796,481

HEIGHT-ADJUSTABLE STEERING COLUMN FOR MOTOR VEHICLES

Frank Nolte, Osnabruck, Fed. Rep. of Germany, assignor to Lemforder Metallwaren AG, Fed. Rep. of Germany

Filed Nov. 9, 1987, Ser. No. 118,420

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638163

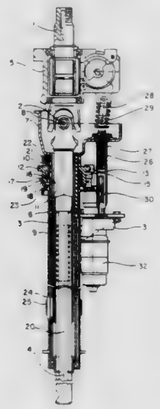
Int. Cl.[4] B62D *1/18*

U.S. Cl. 74—493 **9 Claims**

1. A height-adjustable steering column for a vehicle, comprising an inner steering spindle assembly of telescopic parts including an upper part having a steering wheel connecting end, an inner rotatable steering spindle part having a drive connection end and a jacket tube telescopic over said steering spindle part, a tubular housing overlying said steering spindle assembly and a drive motor coupling means carried by one of said tubular housing in said jacket tube and driveably con-

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nected to the other of said housing and jacket tube for displacing said jacket tube relative to said housing for extending and



retracting said jacket tube with said steering spindle part relative to said tubular housing.

4,796,482

STEERING WHEEL

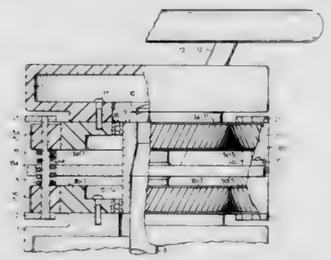
Tetsushi Hiramitsu; Satoshi Ono; Atsuo Hirano, all of Aichi, and Zenzaburo Murase, Konan, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jun. 6, 1986, Ser. No. 871,544

Claims priority, application Japan, Jun. 10, 1985, 60-125761; Jun. 10, 1985, 60-125762; Aug. 29, 1985, 60-191612; Apr. 16, 1936, 61-58165

Int. Cl.⁴ B62D *1/16*

U.S. Cl. 74—492 **5 Claims**



1. A steering wheel, comprising:

a non-rotatable column section;

a rotatable steering shaft having a longitudinal axis, said steering shaft passing axially through said column section and having an upper end portion;

a boss portion secured to the upper end portion of said steering shaft for rotation therewith;

a boss plate secured on said boss portion;

spoke means secured to and radiating outwardly from said boss plate;

a steering ring secured to said spoke means and arranged such that rotation of said steering ring effects corresponding rotation of said steering shaft;

a steering wheel pad axially superimposed upon said outer end of said upper end portion of said steering shaft;

a first sun gear of helical gear type mounted on said column section and journalled by bearing means with respect to said boss portion, so that said steering shaft, including said boss portion, may be rotated by rotation of said steering ring, about said longitudinal axis without requiring said first sun gear to rotate;

a second sun gear of helical gear type mounted on said steering wheel pad and journalled by bearing means with respect to said boss portion, so that said steering shaft, including said boss portion, may be rotated by rotation of said steering ring, about said longitudinal axis, without requiring said second sun gear and said steering wheel pad to rotate;

a plurality of planetary gear shafts arranged with respective longitudinal axes parallel to the longitudinal axis of said steering shaft; means mounting each planetary gear shaft on said boss plate; each planetary gear shaft having two opposite end portions, including one located radially beside said first planetary gear and another located radially beside said second sun gear;

a sun of planetary gear means pairs of helical gear type; each planetary gear means pair being mounted on a respective said planetary gear shaft so as to rotate therewith;

each said planetary gear means pair including:

a first planetary gear means disposed on said one end portion of the respective planetary gear shaft and in meshing engagement with said first sun gear, and

a second planetary gear means disposed on said other end portion of the respective planetary gear shaft and in meshing engagement with said second sun gear;

in at least one but less than all of said planetary gear means pairs, said first planetary gear means and said second planetary gear means being provided as separate planetary gears of helical gear type, at least one of which is mounted on the respective said planetary gear shaft by mounting means which permit the respective at least one planetary gear to move axially, to a limited extent, so that said planetary gears are relatively axially movable towards and away from one another on the respective said planetary gear shaft; and

resilient means associated with said planetary gear shaft of said one planetary gear means pair and resiliently engaging said at least one planetary gear for resiliently tending to move said at least one planetary gear axially to a limited extent for thereby taking-up play in a mechanical linkage constituted by the first planetary gear meshed with the first sun gear, the planetary gear shaft on which the first and second planetary gears are mounted, and the second planetary gear meshed with the second sun gear.

4,796,483

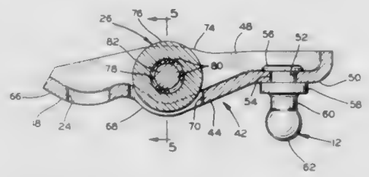
COLD-FORMED ROCKER ARM WITH CAM-CONTACTING ROLLER

Ramanlal L. Patel, Spartanburg, S.C., and Jesse V. Mills, Toledo, Ohio, assignors to The Henley Group, Inc., La Jolla, Calif.

Filed Sep. 11, 1987, Ser. No. 95,129

Int. Cl.⁴ F01L *1/18*

U.S. Cl. 74—519 **9 Claims**



1. In combination, a lifter post, a valve stem spaced from said lifter post, an overhead cam, and a cold-formed rocker arm of the cam-follower type comprising a one-piece metal body of generally U-shaped cross section throughout most of its length, said body having a bottom wall and two side walls extending upwardly therefrom and structurally integral therewith, said bottom wall having a rectangular opening at an intermediate portion thereof, said rectangular opening extending substantially the width of said bottom wall between the side walls and having a length which is less than the length of the bottom wall, said metal body having a pin with a downwardly-extending spherical portion at one end portion of said body, said spherical portion being received in an end of said lifter post on which said rocker arm can pivot, said body having a surface at a second end portion thereof with an opening extending therethrough receiving an end of said valve stem, said side walls of said body having axially-aligned openings therein above said rectangular opening, an axle extending through said aligned openings and affixed to said side walls to prevent longitudinal movement of said axle, a roller located around said axle and extending between the side walls of said body, bearing means around said axle and within a bore of said roller to enable said roller to be rotatably mounted on said axle, and a portion of a circumferential surface of said roller projecting upwardly above the upper edges of said side walls and engaging said cam.

7. A cold-formed rocker arm of the cam-follower type comprising a one-piece metal body of generally U-shaped cross section throughout its length, said body having a bottom wall and two side walls extending upwardly therefrom and structurally integral therewith, said bottom wall having a first end portion to which a pin is affixed, said pin having a rounded portion extending downwardly to receive an end of a lifter post, said bottom wall having a downwardly-facing end convex portion at a second end thereof, said bottom wall having an elongate opening at said convex portion extending longitudinally of said metal body to receive a tip portion of a valve stem, said body having an intermediate generally convex portion facing downwardly, said bottom wall having a rectangular opening therein at the convex portion, said side walls of said body having axially-aligned openings therein above said rectangular opening, an axle extending through said aligned openings and affixed to said side walls to prevent longitudinal movement of said axle, a roller located around said axle and extending substantially between the side walls of said body, bearing means around said axle and within a bore of said roller to enable said roller to be rotatably mounted on said axle, and a portion of a circumferential surface of said roller projecting upwardly above said rectangular opening to engage a cam.

4,796,484

SHAFT DETENT ASSEMBLY FOR A TIMING MECHANISM

Robert L. Eder, Speedway, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 17, 1987, Ser. No. 26,454

Int. Cl.⁴ F16H *53/00*; H01H *7/08, 43/10*

U.S. Cl. 74—568 T **5 Claims**

1. A timing mechanism comprising:

a support,

a camstack having a hollow hub, said camstack rotatably mounted in said support;

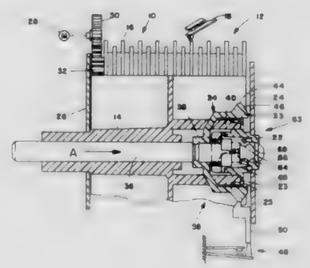
first switch means engaging said camstack to be actuated thereby;

a bearing rotatably journalled in said support;

a shaft rotatably mounted within said camstack and in said bearing and axially movable between a first position and a second position;

clutch means for engaging and disengaging said shaft and said camstack when said shaft is moved between said positions;

detent means for locating said shaft in either said first position or said second position, said detent means comprising a plurality of grooves formed in said shaft and spring fingers integrally formed with said bearing and engaging one of said grooves when said shaft is in said first portion



and another of said grooves when said shaft is in said second position.

4,796,485

REMOTE CONTROL APPARATUS FOR TRANSMISSION

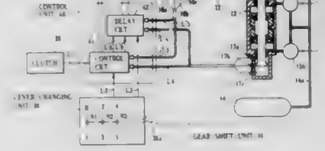
Akimitsu Ebina, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1985, Ser. No. 782,496

Claims priority, application Japan, Oct. 25, 1984, 59-223014

Int. Cl.⁴ B60K *41/06*

U.S. Cl. 74—866 **4 Claims**



1. A remote control apparatus for a transmission which has a selection path, a plurality of shift paths disposed parallel to each other and intersecting said selection path, neutral positions each of which is disposed at the intersections of said selection path and each of said plurality of shift paths, a shift position disposed at each end of each of said shift paths, and a striker which changes its position from one to another of said shift positions through at least one of said shift paths and at least one of said neutral positions, comprising:

means for sending a signal representing an operation state of a change lever;

auxiliary power means, remote-controlled by said change lever, for changing a gear position of the transmission and sending a signal representing the gear position; and

control means for controlling an operation of said auxiliary power means in accordance with the change lever operation state signal and gear position signal, said control means being provided with neutral position holding means responsive to a signal indicating that the shift path on which the striker presently exists is different from the shift path instructed by said change lever, for holding for a predetermined period the striker in the neutral position on the current shift path of said striker;

wherein said neutral position holding means comprises signal transmission delay means having: detecting means for detecting that the shift path on which said striker pres-

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ently exists is different from the shift path instructed according to said change lever operating signal, then detecting that said striker has reached the first neutral position according to the neutral position signal and generating a neutral position detection signal; timer means, started in response to the neutral position detection signal, for generating an output signal when a predetermined period of time has elapsed; and gate means for opening a signal line between said control means and said auxiliary power means in response to an output signal from said timer means.

4,796,486

GEAR MECHANISM FOR FULL-TRACK VEHICLE

Bernhard Binger, Ravensburg; Hans J. Eickhoff, Tettnang; Paul Maier, Friedrichshafen; Anton Engstler, Friedrichshafen, and Herbert Grolig, Friedrichshafen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

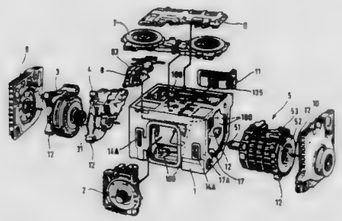
PCT No. PCT/EP85/00562, § 371 Date Jul. 11, 1986, § 102(e) Date Jul. 11, 1986, PCT Pub. No. WO86/02892, PCT Pub. Date May 22, 1986

PCT Filed Oct. 25, 1985, Ser. No. 887,803

Claims priority, application European Pat. Off., Nov. 14, 1984, PCT/EP84/00359

Int. Cl.⁴ F16H *57/02*

U.S. Cl. 74—606 R **10 Claims**



1. A transmission system for full track vehicle having a transmission housing, a variable gear subassembly (5) and a steering gear subassembly (6) disposed across a longitudinal axis and a plurality of additional subassemblies (2–4 and 7–11) being interconnected to one another only by internal connections (13, 31, 51), the improvement characterized in that at least one said subassembly is aligned and fastened to the transmission housing (1) by at least two fastening elements (12), each comprising a bearing lug (121), a centering means (122) and a fastening means (123), said bearing lug receiving said centering means and said fastening means and said fastening means (123) being surrounded by said centering means (122), each of said at least two fastening elements (12) being peripherally spaced adjacent the perimeter of said at least one subassembly (3, 4, 5, 8), being aligned substantially parallel to one another, and being staggered in an axial direction of the transmission housing with respect to one another, wherein said at least two fastening elements securely fasten said at least one subassembly to the transmission housing and thereby reduce surface area of the transmission housing to be machined.

4,796,487

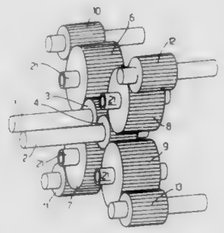
HIGH TORQUE DRIVE MEANS FOR TWO VERY CLOSE SHAFTS WHICH ARE ALSO SUBJECTED TO STRONG AXIAL THRUSTS AND APPLICATION THEREOF TO A DOUBLE SCREW EXTRUDER

Stefano De Bernardi, Busto Arsizio, Italy, assignor to Bausano & Figli S.p.A., Turin, Italy

Continuation of Ser. No. 622,828, Jun. 21, 1984, Pat. No. 4,682,510, which is a continuation-in-part of Ser. No. 599,100, Apr. 11, 1984, abandoned. This application Sep. 15, 1986, Ser. No. 907,347

Int. Cl.⁴ F16H *37/06*

U.S. Cl. 74—665 GA **5 Claims**



1. An apparatus for rotationally driving two closely spaced extrusion shafts at the same speed and in opposite directions, comprising:

a driven gear fixedly mounted on each respective shaft;

two respective drive gears engaged with the driven gears for directly driving each said respective driven gear;

a separate drive means for driving each respective drive gear; each said respective drive means including a motor means; and

synchronizing means, secured on each respective shaft, for constraining each of said two closely spaced shafts to rotate at the same speed and in the opposite direction.

4,796,488

DIFFERENTIAL WHOSE A RING GEAR IS MOUNTED IN SOUND DAMPING MANNER ON ITS CARRIER

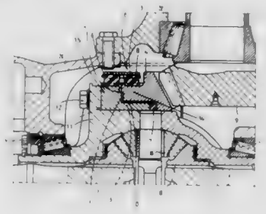
Faust Hagin, Munich; Franz Seethaler, Karlsfeld; Robert Zelinka, Munich, and Manfred Stiglmaier, Gilching, all of Fed. Rep. of Germany, assignors to Man Nutzfahrzeuge GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 13, 1987, Ser. No. 25,506

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3609034

Int. Cl.⁴ F16H *1/40, 55/14*

U.S. Cl. 74—713 **12 Claims**



1. A drive axle comprising:

a differential case,

two differential side gears,

two differential pinions positioned for meshing engagement with said differential side gears,

a differential carrier supporting said differential pinions and said side gears,

a drive pinion having means for connection with an external drive shaft,

bearing means for supporting said carrier and said drive pinion in said case,

a ring gear in meshing engagement with said drive pinion, and

means mounting said ring gear on said carrier in sound damping manner, including,

an intermediate member rigidly connected with said carrier,

an elastic coupling connecting said ring gear to said intermediate member, and

vibration deadening material between adjacent faces of said ring gear and said intermediate member.

4,796,489

SPEED RATIO CONTROL FOR A STEP-LESSLY VARIABLE VEHICLE TRANSMISSION

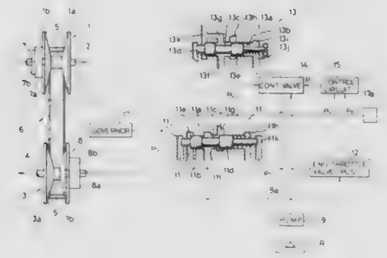
Hiroaki Nagamatsu, and Takashige Ebisumoto, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

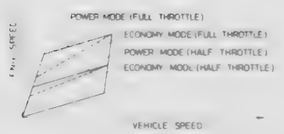
Continuation of Ser. No. 665,884, Oct. 29, 1984, abandoned. This application Apr. 27, 1987, Ser. No. 42,528

Claims priority, application Japan, Oct. 29, 1983, 58-203348

Int. Cl.⁴ B60K *41/12*

U.S. Cl. 74—868 **11 Claims**





1. A steplessly variable power transmission device for motor vehicles comprising a steplessly variable transmission in which a speed ratio can be changed steplessly, hydraulic actuator means for determining the speed ratio of the transmission mechanism, valve means for controlling a supply of hydraulic pressure of said hydraulic actuator means, speed ratio control means for producing a valve control signal in accordance with vehicle operating conditions which are defined by engine load and either engine speed or vehicle speed and applying the control signal to said valve means so that the speed ratio of the transmission mechanism is controlled in accordance with the vehicle operating conditions, a plurality of modulator means for producing pressure signals of different pressures corresponding to a selected mode and throttle pressure, and manual select means for selecting one of the modulator means, said speed ratio control means including control mode changing means having at least two control modes for controlling the speed ratio in accordance with the vehicle operating conditions.

4,796,490

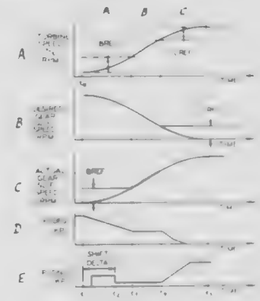
EVENT SEQUENCED CLUTCH-TO-CLUTCH DOWNSHIFT FOR AN ELECTRONICALLY CONTROLLED TRANSMISSION

Kenneth R. Butts, Grosse Pointe Woods, and Joseph L. Wanamaker, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1987, Ser. No. 136,417

Int. Cl.⁴ B60K *41/18*

U.S. Cl. 74—866 **5 Claims**



1. In a motor vehicle including an engine connected to drive the vehicle through an automatic transmission, where the engine develops output torque in relation to operator demand and the transmission includes a fluid-operated torque establishing device associated with each of an upper and a lower speed ratio mechanism, which devices are selectively engageable to transmit engine torque through their respective speed ratio mechanisms, a method of operating the torque establishing devices so as to downshift the transmission from the upper speed ratio to the lower speed ratio when the downshift is needed to satisfy operator demand, said method comprising the steps of:

progressively reducing the fluid pressure supplied to the torque establishing device associated with the upper speed ratio, thereby allowing the engine to increase the transmission input speed;

suspending the progressive reduction of the fluid pressure supplied to the torque establishing device associated with the upper speed ratio when the slippage thereacross exceeds a first reference value; and

progressively engaging and disengaging the torque establishing devices associated with the lower and upper speed ratio mechanisms, respectively, when the slippage across the torque establishing device associated with the lower speed ratio mechanism falls below a reference value chosen in relation to the time required for such engagement and disengagement, whereby the transmission input speed substantially achieves a post shift value at the time of such engagement and disengagement, resulting in reduced shift-related output torque disturbance.

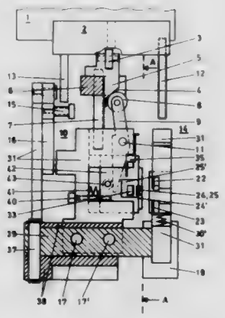
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4,796,491

APPARATUS FOR STRIPPING ELECTRICAL CONDUCTORS

Hans-Jurgen Klassener, Via Lango Lago 2-4 (XXV) 25.aprile, I-21037 Lavena/Ponte Tresa, Italy

Filed May 26, 1987, Ser. No. 53,748
Claims priority, application Switzerland, May 31, 1986, 0201/86
Int. Cl.[4] H02G *1/12*
U.S. Cl. 81—9.51 **7 Claims**



1. Apparatus for stripping insulation from electrical conductors comprising:

a fixed casing;

a first movable machine part and a second movable machine part mounted on said fixed casing;

said first machine part including a conductor clamping unit;

said second movable machine part including a stripping unit with means for removing a desired length and depth of insulation from the conductor;

a drive unit having actuating means for actuating said conductor clamping unit and said stripping unit; and

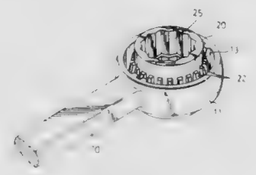
drive transmission means for transmitting drive from the drive unit to the second movable machine part, the drive transmission means including at least one slider provided with a first cam surface, a cam follower in contact with the first cam surface, and a ram having a first roll mounted thereon and being movable to operate the slider, the cam follower being movable on the first cam surface to actuate the second movable machine part.

4,796,492

CLUTCH TYPE SOCKET WRENCH

Mou-Tang Liou, No. 33, Hsi-hu Rd., Ta-Lee Hsiang, Taichung Hsien, Taiwan

Filed May 20, 1988, Ser. No. 196,311
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—58 **4 Claims**



1. A socket wrench comprising:

a one piece member having a cylindrical hollow head and a handle radially extending in a plane perpendicular to an axis of said hollow head, said hollow head having two opposite open ends and an inner peripheral surface, said inner peripheral surface having at least two pairs of spaced apart first teeth elongated axially and extending inward therefrom, each of said pairs of said first teeth being located at a position diametrically opposite to the other, said inner peripheral surface of said hollow head further having a first annular groove formed thereon, said first annular groove passing across each of said first teeth, each of said first teeth having a notch where said annular groove passes across and thus being separated into two first parts, each of said first parts of each of said first teeth having a gradually decreasing height from a point adjacent to said notch towards one of said open ends of said hollow head,

a torque transmitting means including a sleeve member inserted in said hollow head and having an axial length greater than that of said hollow head, said sleeve member having two opposite open ends extending out of said hollow head, said sleeve member having an outer periphery provided with a plurality of second teeth elongated axially and extending radially therefrom, said outer periphery further having a second annular groove extending around said outer periphery and passing across said second teeth, each of said second teeth having a second notch where said second annular groove passes across and thus being separated into two parts, each of said two parts of said second teeth having a gradually decreasing height from a point adjacent to said second notch towards one of said open ends of said sleeve member,

a substantially C-shaped locking ring inserted in said second annular groove and extending partially into said first annular groove, said C-shaped locking ring being restricted from moving axially relative to said sleeve member,

said first annular groove having a width greater than that of said second annular groove, thus permitting said hollow head to move axially in a limited amount relative to said sleeve member,

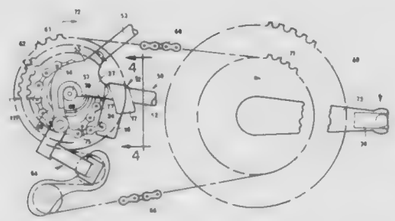
said first teeth and said second teeth being disengaged from each other when said sleeve and said hollow head are placed in a position in which the axis of said sleeve and said hollow head are in alignment, said first teeth and said second teeth being engaged with each other when the axis of said hollow head inclines to the axis of said sleeve.

4,796,493

APPARATUS AND METHOD FOR UNSCREWING A BICYCLE CHAIN SPROCKET

Richard J. Menard, 1680 Adanac Street, Vancouver, British Columbia, Canada V5L 2S5

Continuation-in-part of Ser. No. 853,857, Apr. 21, 1986, abandoned. This application Feb. 17, 1987, Ser. No. 15,687
Int. Cl.[4] B25B *13/52*
U.S. Cl. 81—65.2 **20 Claims**



1. An apparatus for unscrewing a bicycle chain sprocket from a bicycle sprocket cluster, the apparatus having:

(a) a hook means for engaging a portion of a bicycle frame generally adjacent journalling means of the sprocket cluster, the hook means having first and second end portions and an intermediate portion, the intermediate portion being disposed between and rigidly interconnecting the end portions so that the end portions extend away from the intermediate portion in a generally similar direction, the first end portion lying in a plane offset from the second end portion to receive a portion of the bicycle frame therebetween,

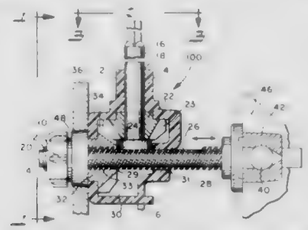
(b) a sprocket engaging means for engaging a particular sprocket to be unscrewed, the sprocket engaging means being connected to the first end portion of the hook means so as to prevent essentially rotation of the particular sprocket relative to the frame as torque is applied to the sprocket cluster.

4,796,494

HEADLIGHT POSITION ADJUSTMENT ASSEMBLY

Robert T. Eckenrode, North Canton, and Joseph J. Dillon, Jr., Canal Fulton, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 30, 1987, Ser. No. 31,636
Int. Cl.[4] B25B *33/00*
U.S. Cl. 81—484 **3 Claims**



1. A vehicular headlight position adjusting assembly comprising:

intermeshed drive and driven gears having their respective rotational axis angularly displaced from each other,

an elongate drive member drivingly connected to the drive gear and operable upon rotation to cause both the drive gear and the driven gear to rotate about their respective rotational axis

an elongate adjusting member threadingly engaged with the driven gear and having an end thereof adapted to engage a movable frame upon which the headlight is mounted,

a housing comprising first and second housing members releasably joined together and adapted to protectively enclose the drive and driven gears and having respective openings therein enabling the drive and adjusting members to extend therefrom,

means for securing the housing to a fixed frame on the vehicle so as to enable the adjusting member to move the movable frame in response to rotation of the drive member,

and means within the housing members for preventing the adjusting member from rotating whilst enabling the adjusting member to traverse in opposite axial directions in response to rotation of the drive member in opposite rotational directions, said means comprising an elongate flat on the adjusting member that is slidingly engaged with a projection from the drive gear operable to prevent the adjusting member from rotating whilst enabling the adjusting member flat to slide in opposite axial directions relative thereto.

4,796,495

MAGAZINE HAMMER

Anton Schär, Horgen, Switzerland, assignor to Hammermat AG, Zurich, Switzerland

Filed Mar. 4, 1988, Ser. No. 173,464
Claims priority, application Switzerland, Mar. 26, 1987, 842/87
Int. Cl.[4] B25G *1/00*
U.S. Cl. 81—490 **16 Claims**

1. A magazine hammer comprising:

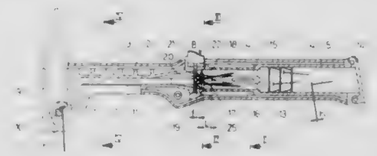
a hammer head,

a hammer shaft running substantially transversely to the hammer head,

a guide channel running substantially in the longitudinal direction of the hammer shaft and having an interior configured to guide nails towards the hammer head,

a nail magazine comprising a hollow space formed in the interior of the hammer shaft end remote from the hammer head for accommodating a plurality of nails substantially oriented in the longitudinal direction of the hammer shaft,

an apportioning device for individually delivering nails originating from the nail magazine, in their longitudinal direction, into the guide channel,



a deflection channel disposed substantially adjacent the hammer head and having an outlet end, in which the nails moved individually towards the hammer head are deflected and moved into a dispensing position, the deflection channel and the guide channel having a passage slot configured so that the nail head is prevented from passing through the passage slot and the nail shank is permitted to swing out unimpeded, and

a setting device arranged at the outlet end of the deflection channel and configured to bring each nail coming out of the deflection channel into an appropriate setting position relative to the hammer head.

4,796,496

Patent Not Issued For This Number

4,796,497

METHOD AND APPARATUS FOR CUTTING A CHAIN OF ELONGATE PRODUCTS

Toyoo Morita, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 24, 1986, Ser. No. 946,210
Claims priority, application Japan, Dec. 25, 1985, 60-296419
Int. Cl.[4] B65H *35/06*
U.S. Cl. 83—23 **8 Claims**

1. A method of cutting a continuous chain of longitudinally joined elongate products into pieces of a desired length, the chain having longitudinally spaced successive joint portions, said method comprising the steps of:

(a) feeding the chain of elongate products intermittently by a first distance equal to the length of each piece to be severed, along a path through a detecting station and a cutting station downstream of the detecting station;

(b) cutting the chain successively into pieces of the desired length at the cutting station while the chain is at rest;

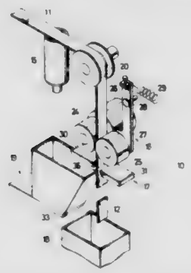
(c) during said feeding, detecting the joint portion of each adjacent pair of the elongate products at the detecting station;

(d) in response to said detecting, computing the number of prospective pieces of the desired length producible by severing from a longitudinal portion of the chain which extends from the present leading end of the chain toward

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the detected joint portion and terminates short of the detected joint portion;

(e) repeating said feeding and said cutting until the computed number of pieces have been severed;



(f) thereafter, feeding the chain forwardly by a second distance until the detected joint portion is located downstream of the cutting station;

(g) cutting the chain to produce a severed a piece including the detected joint portion; and

(h) removing the last-named severed piece.

4,796,498

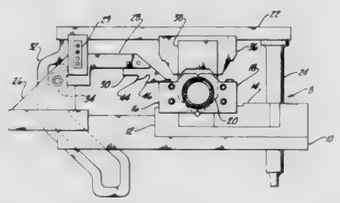
METHOD FOR DIMPLE FREE GUILLOTINE CUTTING OF MULTIPLE WALL TUBE

John J. Borzym, Birmingham, Mich., assignor to Alpha Industries, Inc., Novi, Mich.

Filed Feb. 24, 1987, Ser. No. 18,027

Int. Cl.[4] B26D *3/06, 3/16*

U.S. Cl. 83—49 **3 Claims**



1. A method for dimple free guillotine cutting of multiple wall tube comprising the steps of:

cutting a first notch laterally of the tube axis to a depth substantially equal to the thickness of the outermost tube wall;

cutting a second notch through the path of the first notch but to a greater depth, which greater depth extends partially through the innermost tube wall, the steps of cutting the first and second notches being performed in sequence during a single stroke of a notching blade relative to the tube; and

severing the tube entirely with a guillotine blade which enters the tube through the notches.

4,796,499

APPARATUS FOR STACKING AND DELIVERING FLAT ARTICLES, SUCH AS DOUBLE BAGS MADE OF PLASTIC FILM

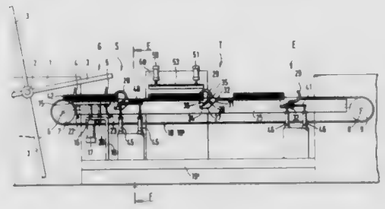
Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 3, 1987, Ser. No. 33,700

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1986, 3611237

Int. Cl.[4] B26D *7/10, 7/02, 5/20;* **B26F** *3/08*

U.S. Cl. 83—151 **9 Claims**



1. In an apparatus for stacking and delivering flat articles, such as double bags, which have been severed by hot wire welding from a tubular or semitubular web of plastic film and which adjacent to their center line having opening-defining edges, the articles being deposited by a transfer device at a stacking station on an endless stack conveyor means supported by a frame, the apparatus including a retaining plate disposed in the stacking station and provided with upstanding stacking pins or stacking needles for impaling the articles adjacent their longitudinal center line so as to form a stack which is to be forwarded by intermittent operation of the conveyor means, the apparatus further including a severing station downstream from the stacking station, the severing station including a knife movable vertically for severing the stack along a center line extending in the direction of travel, spring-loaded gripping means for gripping stacks which have been formed on the stack conveyor by engaging the stacks at their leading edge portion, and actuating means secured to the frame for selectively opening and closing the gripping means; the improvements

wherein the stack conveyor comprises two spaced apart parallel, revolving belts, chains or like endless elements, the retaining plate is disposed in the stacking station in tracks between the endless elements and is adapted to be raised and lowered in such a manner that the stacking pins can be lowered below a plane of travel of the endless elements,

the knife cooperates in the severing station with an abutment disposed adjacent said plane of travel between the courses of the endless elements,

the gripping means comprises pairs of opposed grippers respectively secured to inner edge portions of respective ones of the endless elements, the grippers having opposite actuator elements respectively extending between the endless elements and wherein the actuating means comprises common actuating means located between the endless elements to operate on both of the opposite actuator elements in unison.

4,796,500

SHIFTING DEVICE

Gino Benuzzi, deceased, late of Bologna, and by Lidia Benuzzi, Heiress-at-law, 5, Via Angelo Custode, Bologna, both of Italy

Filed Apr. 2, 1986, Ser. No. 847,375

Claims priority, application Italy, Apr. 3, 1985, 15150/85[U]

Int. Cl.[4] B23Q *5/22, 5/26*

U.S. Cl. 83—277 **4 Claims**

1. A device for shifting packs (P) of panels along a flat horizontal surface, said device comprising first and second levers (**1**, **2**) hingedly mounted on a motorized carriage (C), said first, lower lever (**1**) being adapted to frontally contact a side of a pack (P) to be shifted by its forward end defining a vertical pushing front (**13**), said first lever having a lower jaw element (**17**) arranged so as to act on an underside of an edge of said pack (P) of panels to be shifted, said second, upper lever (**2**) forming, with its forward end (**20**, **21**), an upper jaw element acting on a top side of said edge of said pack (P) of panels to be shifted, means (**26**) being provided for actuation of said second lever for gripping said edge of said pack between said



two jaw elements (**17**, **20**, **21**), said lower jaw element (**17**) being movable from an operative position in which it projects forwardly with respect to said vertical pushing front of said first lever (**1**), whereby said shifting device is adapted to grip said edge of said pack (P) of panels to be shifted, to an inoperative position in which it is retracted to the rear of said vertical pushing front of said first lever (**1**), whereby said shifting device is adapted to act as a pusher which shifts said pack (P) of panels with a skimming action with respect to the underlying flat horizontal surface, without gripping said edge of said pack itself.

4,796,501

APPARATUS FOR PUNCHING OUT A PART FROM A WORKPIECE

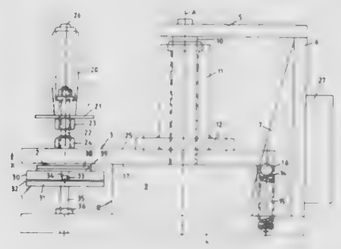
Peter Hagmann, Bohnackerweg 4, CH-2545 Selzach, Switzerland

Filed Jul. 16, 1987, Ser. No. 74,529

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1986, 3624490

Int. Cl.[4] B26F *1/40*

U.S. Cl. 83—535 **9 Claims**



1. A punching apparatus for punching out a portion of a workpiece comprising a punching table, a punching plate located above said punching table, a punching pattern for punching out a portion of the workpiece, means for driving said punching plate from a rest position toward a work position when said punch plate is in a first position whereby said punch pattern punches out a portion of the workpiece and means for rotating said punching plate around a pivot axis for rotation between said first position and a second position wherein said workpiece can be located on said punching table and biasing means for returning said punch plate from said work position to said rest position wherein said biasing means presses a detent against the underside of the punching plate and said detent runs into locking trays when said punching plate is in the first position and the second position.

4,796,502

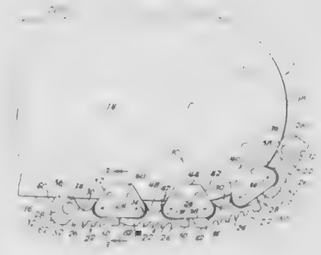
SAW BLADE STRUCTURE WITH DEPTH-CONTROL MEANS

Harvey G. Anderson, Muskegon, Mich., assignor to Pro Power Corporation, Three Rivers, Mich.

Filed Aug. 26, 1987, Ser. No. 89,580

Int. Cl.[4] B27B *17/02*

U.S. Cl. 83—834 **13 Claims**



1. A chain saw cutting link segment having a leading end and a trailing end and saw teeth forming a cutting edge therebetween with the teeth alined in a unit cutting plane and valleys between the teeth alined in a second plane parallel to said cutting plane and comprising depth-control means disposed adjacent the trailing and leading ends of said segment and between the cutting plane and the second plane, which depth-control means comprises planar surfaces disposed between and parallel to said planes, in which said planar surfaces lie in a plane parallel to said cutting plane and are spaced therefrom a distance sufficient for the teeth to bite into the material being cut but less than the normal maximum depth of penetration of said saw teeth in the absence of depth-control means, depth-control surface adjacent the leading end of said segment comprises a canted non-cutting planar surface which is normal to a longitudinal plane normal to said cutting plane and slopes to the leading end edge of said segment and which forms a corner with said leading end edge which is disposed substantially in alinement with said second plane.

4,796,503

AMPLIFICATION CIRCUIT FOR ELECTRONIC TONE GENERATOR

Shyuh-Der Liu, Hsin-Chu, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Jun. 15, 1987, Ser. No. 62,088

Int. Cl.[4] G10H *1/02, 1/057*

U.S. Cl. 84—1.26 **7 Claims**

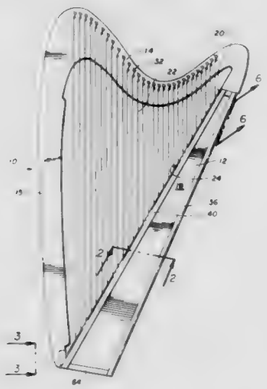


1. In an electronic tone generator, first and second source follower transistors connected, respectively, to two different voltage sources, means including an RC network for producing waveform shaped currents in said follower transistors, first

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and second switch means, first and second amplifiers having inputs and outputs, a piezo-buzzer connected to the outputs of said amplifiers, said first switch means being capable of alternately connecting the input of said first amplifier to said first follower transistor and to said second follower transistor, said second switch means being capable of alternately connecting the input of said second amplifier to said first follower transistor and to second follower transistor, and means for imparting a tone signal to said first and second switch means.

4,796,504
MUSICAL INSTRUMENT
Harlan McWillis, 5529 Duarte St., Los Angeles, Calif. 90058
Filed Jul. 30, 1986, Ser. No. 891,924
Int. Cl.[4] G10D *1/04*
U.S. Cl. 84—265 **20 Claims**

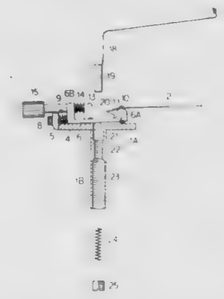


1. In a musical instrument having a body comprising a case having a rear side and connecting side walls having a plurality of edges defining an open front side, and a soundboard having front and rear sides provided with edges adjacent the edges of the side wall of said case closing the front side of said case, and strings stretched on said instrument so as to impart an outward force on said soundboard relative to said case, said soundboard having a front surface from which said strings extend and a rear surface facing the rear side of said case, the improvement comprising means for securing said soundboard to said case whereby all edges of said soundboard are movable by the force of said strings relative to said case.

4,796,505
TREMOLO ARM ADJUSTMENT MECHANISM IN ELECTRIC GUITAR
Toshitaka Takeuchi, 28, Azasakasandanbata, Ooazasaitou, Fusou-cho, Niwagun, Aichi-ken, Japan
Filed Nov. 20, 1987, Ser. No. 123,596
Claims priority, application Japan, Nov. 26, 1986, 61-181290[U]
Int. Cl.[4] G10D *3/00*
U.S. Cl. 84—313 **2 Claims**

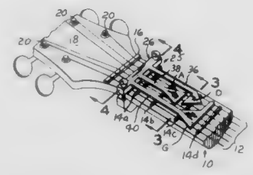
1. A tremolo arm adjustment mechanism in an electric guitar comprising a body section holding a bridge saddle thereon, a block section extending downward from the body section, said body section and said block section constituting a tremolo unit, said tremolo unit having front end portion pivotally installed to the body and being rotatable in the vertical direction, and a tremolo arm mounted on the tremolo unit,

wherein said tremolo unit is provided with a mounting hole for the tremolo arm penetrating through the body section and the block section in the vertical direction, a male screw portion threaded on base portion of the tremolo arm is threadedly engaged with the mounting hole from upper side in freely traveling state, a torque adjusting screw is threadedly engaged with the mounting hole from



lower side in freely traveling state, and a spring is interposed between the torque adjusting screw and the male screw portion.

4,796,506
STRINGED INSTRUMENT CHORD ATTACHMENT
Gary T. Gray, P.O. Box 1593, McAlester, Okla. 74502
Filed Nov. 9, 1987, Ser. No. 117,871
Int. Cl.[4] G10D *3/04*
U.S. Cl. 84—317 **1 Claim**



1. A chord playing attachment for a musical instrument having a neck and having a plurality of strings extended longitudinally of the neck, comprising:

a unitary clamp means including a top bar having a planar top surface extending transversely of said neck and, integrally supporting a plurality of elongated planar spring members of uniform thickness projecting laterally of the top bar and extending longitudinally of the neck in string overlying cantilever juxtaposed fashion and generally parallel spaced relation,

the top surface of each spring member normally lying in the plane of the top surface of said top bar,

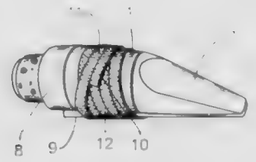
the terminal end portions of each said spring member extending transversely of said neck a distance at least overlying the position of at least three said strings;

a pad interposed between selected strings and said spring members and depending from the latter;

a clamp bottom bar extending transversely of said neck; and, screw means rigidly connecting said bars and impinging the strings against said neck and supporting the spring members in superposed spaced relation with respect to said strings,

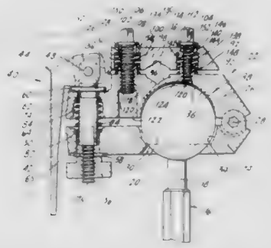
whereby pressing selected ones of said spring members toward the neck impinges the plurality of strings between the pads and the neck.

4,796,507
REED HOLDING DEVICE
Terry L. Stibal, P.O. Box 768, Belleville, Ill. 62222-0768
Filed Jan. 28, 1986, Ser. No. 823,347
Int. Cl.[4] G10D *9/02*
U.S. Cl. 84—383 A **3 Claims**



1. A holding device for a reed placed against a surface of a mouthpiece of a single-reed musical instrument, said device comprising a single unitary continuous strip material, having a base comprised of first and second surfaces, having attached to said first surface a plurality of loops made of flexible resilient material, and having attached to said second surface a plurality of hooks made of flexible resilient material, said strip material being wound around said mouthpiece and said reed in a helical fashion with said first surface placed against said mouthpiece and said reed, ends of said strip material secured in place by engaging said loops on said first surface into the surface of said hooks by winding of said strip material around said mouthpiece and said reed, said strip material exerting holding pressure against said reed.

4,796,508
MUSICAL INSTRUMENT SUPPORT FIXTURE
Yoshihiro Hoshino, Nagoya, Japan, assignor to Hoshino Gakki Co., Ltd., Japan
Filed Feb. 13, 1987, Ser. No. 14,603
Claims priority, application Japan, Jul. 31, 1986, 61-118581
Int. Cl.[4] G10G *5/00*
U.S. Cl. 84—421 **17 Claims**



1. A musical instrument support, comprising:

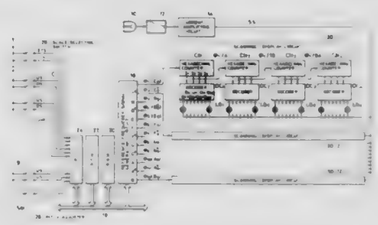
a stem on which the support is supported, a clampable part on the stem;

a clamp for clamping the clampable part, the clamp having a first clamping part and a cooperating second clamping part which are releasably clampable around the clampable part; the clampable part and the first and second clamping parts being respectively so shaped as to enable the clamp to assume various orientations with respect to the stem upon clamping of the first and second clamping parts upon the clampable part;

an instrument holding rod arranged for being clamped to the second clamping part;

a third clamping part for clamping the holding rod to the second clamping part, and means at the third clamping part for clamping the third clamping part to the second clamping part.

4,796,509
ELECTRONIC TUNING APPARATUS
Masaaki Mizaguchi, and Hirohisa Kuroyanagi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Shizuoka, Japan
Filed Nov. 18, 1987, Ser. No. 122,112
Claims priority, application Japan, Nov. 22, 1986, 61-279377
Int. Cl.[4] G10G *7/02*
U.S. Cl. 84—454 **14 Claims**



1. An electronic tuning apparatus comprising:

(a) input means for inputting a tone signal to be measured;

(b) signal generating means for generating a plurality of reference frequency signals, respectively, corresponding to a plurality of predetermined tone names independently for each tone;

(C) a plurality of groups of luminous elements, respectively, corresponding to said plurality of tone names;

(d) a plurality of display control means arranged, respectively, corresponding to said plurality of tone names; and in which

each of said display control means drives the group of luminous elements corresponding to said tone name on the basis of the reference frequency signal of the corresponding tone name from said signal generating means and the input tone signal from said input means, and an on-off arrangement pattern composed of turned-on luminous elements and turned-off luminous elements is differently displayed in the group of luminous elements corresponding to said tone name between the case of the agreement of the frequency of said input tone signal with the frequency of said tone name at a certain octave and the case of the agreement with the frequency of said tone name at another octave.

4,796,510
ROCKET EXHAUST RECIRCULATION OBTURATOR FOR MISSILE LAUNCH TUBE
Edward T. Piesik, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.
Filed Nov. 9, 1987, Ser. No. 118,674
Int. Cl.[4] F41F *3/04*
U.S. Cl. 89—1.816 **5 Claims**

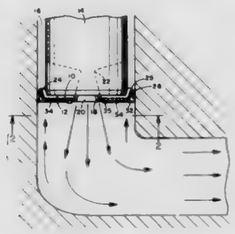
1. A rocket exhaust recirculation obturator apparatus for sealing a launch tube around an exhaust propelled vehicle, comprising:

a cover member for extending across the base of an exhaust propelled vehicle in a launch tube, the member having at least one opening for sealing around a rocket motor nozzle exit in the base of the vehicle and an outer periphery for sealing against the walls of the launch tube and being moveable up the launch tube with the vehicle under the pressure of recirculating exhaust gases; and

release means for releasing the cover member from the vehicle as the vehicle exits the launch tube and retaining

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the cover member in the launch tube by linking with the cover member at least when the vehicle is leaving the

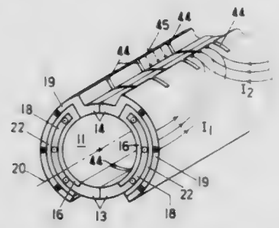


launch tube to pull the cover member away from the vehicle.

4,796,511
ELECTROMAGNETIC PROJECTILE LAUNCHING SYSTEM

Yehia M. Eyssa, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Aug. 21, 1985, Ser. No. 768,017
Int. Cl.[4] F41F *1/02*
U.S. Cl. 89—8 **16 Claims**



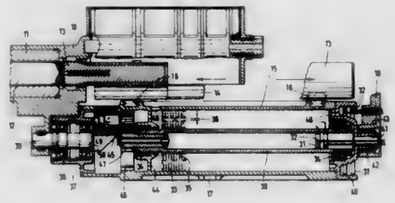
1. An electromagnetic projectile launcher comprising:
(a) a pair of electrically conductive firing rails disposed generally parallel to one another to define a projectile path between them;
(b) electrical coil means formed outwardly of the firing rails for producing, when current is flowing therethrough, a magnetic field transverse to the projectile path between the firing rails;
(c) first and second supply conductors disposed outwardly of the firing rails, one of the conductors connected to one of the firing rails and the seocnd conductor connected to the other firing rail along the lengths thereof, the first and second supply conductors formed as sectors of a cylinder and disposed generally parallel to and coaxial with each other with respect to the projectial path.

4,796,512
EXTERNALLY DRIVEN AUTOMATIC WEAPON

Richard Koine, Ratingen, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 13, 1987, Ser. No. 106,952
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1986, 3634815
Int. Cl.[4] F41D *7/00*
U.S. Cl. 89—11 **6 Claims**

1. In an externally driven automatic weapon including a gun barrel, a weapon housing connected to said barrel, a breechblock and cartridge supply slide mounted within said housing for linear movement along the bore axis of said barrel, a control cylinder having an outer circumferential surface provided with a camming path which is in a form-locking connection with said breechblock and cartridge supply slide, means for rotatably mounting said control cylinder within said housing so as to cause reciprocating linear movement of said breechblock and cartridge supply slide upon rotation of said control cylinder, and drive means, including an electric motor, for rotating said cylinder, with said motor being disposed within

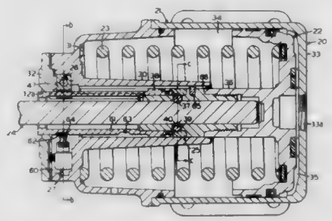


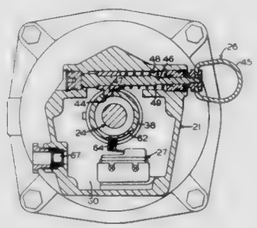
said control cylinder; the improvement wherein: a continuous shaft, which is mounted in said housing, extends axially through said control cylinder; and said motor includes a first electrical coil arranged on said shaft and a second electrical coil arranged on the inner wall of said control cylinder and radially spaced from said first coil, whereby said control cylinder itself forms part of said electric motor.

4,796,513
SPRING BRAKE CYLINDER

Yasuhisa Hata, Akashi, and Osamu Akamatsu, Kobe, both of Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Mar. 27, 1987, Ser. No. 32,103
Claims priority, application Japan, Mar. 28, 1986, 61-46433
Int. Cl.[4] F01B *25/26*
U.S. Cl. 92—5 R **5 Claims**



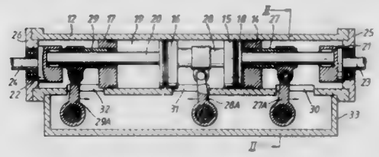


1. A spring brake cylinder assembly, said assembly comprising:
(a) a body portion having a pair of axially-opposed end walls;
(b) a piston positioned for reciprocal axial movement within said body portion, said piston having a face portion adjacent a first end wall of said body portion and a stem portion extending in an axial direction from an inner surface of said face portion of said piston;
(c) a piston guide means engageable with said stem portion of said piston and a second end wall of said body portion for guiding said piston in an axial direction during reciprocal axial movement of said piston;
(d) a brake spring caged between said inner surface of said face portion of said piston and said second end wall of said body portion to supply a predetermined braking force to said assembly;
(e) a pushrod extending coaxially out of said second end wall of said body portion and movable in an axial direction in response to said reciprocal axial movement of said piston;
(f) a clutch means positioned for engagement with each of said stem portion of said piston and said pushrod and said piston guide means for making a connection and disconnection of said pushrod with said piston, thereby controlling their relative displacements in an axial direction;
(g) a clutch control means engageable with said clutch means and said piston guide means for controlling said clutch means between an engaged and disengaged state, said clutch control means including an elongated hollow portion surrounding said pushrod and extending out of said second end of said body portion;
(h) a clutch operating means positioned to engage said clutch control means for manually releasing said assembly from a brake application; and
(i) a sensing means positioned adjacent to and in engagement with said hollow portion of said clutch control means adjacent said second end of said body portion for indicating an operating condition of said assembly.

4,796,514
ROTARY/LINEAR CONVERTOR

Paul A. Richter, 33 Breadalbane Street, Carindale, 4152 Queensland, Australia

PCT No. PCT/AU86/00302, § 371 Date Jan. 29, 1987, § 102(e) Date Jan. 29, 1987, PCT Pub. No. WO87/02412, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 10, 1986, Ser. No. 87,257
Claims priority, application Australia, Oct. 11, 1985, PH2867/85; Mar. 26, 1986, PH5216/86
Int. Cl.[4] F01B *3/00, 7/10, 7/02*
U.S. Cl. 92—33 **11 Claims**

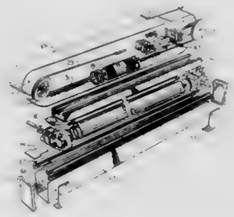


1. A rotary/linear converter comprising:
a first member having a central axis and being adapted for linear movement in the direction of said central axis;
a second member adapted for rotational movement;
connecting means operatively interconnecting said first and second members so that respective linear or rotational movement of one said member causes respective linear or rotational movement of the other said member;
characterized in that said connecting means comprises:
a connecting shaft disposed eccentrically of said central axis of said first member;
first coupling means operatively connecting said first member to said connecting shaft such that axial reciprocation of said first member causes orbital movement of said connecting shaft and vice versa; and
second coupling means operatively connecting said connecting shaft to said second member so that said orbital movement of said connecting shaft causes rotation of said second member and vice versa, wherein said first coupling means comprises a sleeve operatively connected to said first member for axial reciprocation therewith, said sleeve being associated with said connecting shaft for axial reciprocation relative thereto and at least one link member extending between said sleeve and a mounting which is in a fixed position.

4,796,515
RODLESS CYLINDER

Alan G. Dry, Brantford, Canada, assignor to Ascolectric Limited, Brantford, Canada

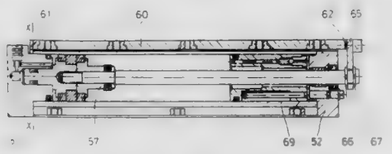
Filed Jan. 12, 1987, Ser. No. 2,740
Claims priority, application Canada, Sep. 5, 1986, 517623
Int. Cl.[4] F01B *9/00*; F15B *15/22*
U.S. Cl. 92—137 **15 Claims**



1. A rodless cylinder, comprising:
a cylinder,
a piston within the cylinder for reciprocal movement therein,
a guide positioned outside of the cylinder and including a channel-shaped support secured to the cylinder and forming a track along free edges of flanges of the channel-shaped support,
a drive block mechanism constrained to move along the guide and including a plurality of rollers to guide the mechanism in a path which is constrained vertically and traversely with respect to the channel-shaped support,
a pulley at each end of the cylinder and guide,
a cable extending from each end of the cylinder, around one pulley and secured to each end of the drive block mechanism,
a compressible resilient member extending from each end of the piston,
a sealing member cooperable with a valve seat located within an exit from each end of the cylinder such that when the piston approaches one end of the cylinder, the resilient member forces the sealing member into sealing contact with the valve seat so preventing egress of fluid from one end of the piston to outside of the respective end of the cylinder; and
a cover having a top, bottom, sides and ends, the top having a slot for permitting reciprocal movement of the drive block mechanism therein, an inwardly facing groove in the cover and along each side of the slot, and a belt extending below the drive block mechanism, around the pulleys and below the cylinder to completely enclose the cylinder, the guides, the drive block mechanism, the pulleys, the cable, the compressible resilient member, and the sealing member.

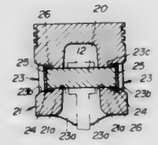
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4,796,516
ACTUATOR PROVIDING GUIDED LINEAR DISPLACEMENT
Gábor Horváth, Budapest, Hungary, assignor to LICENCIA Talalmanyokat Ertekesito es Innovacios, Hungary
Filed Dec. 22, 1986, Ser. No. 944,752
Int. Cl.[4] F15B *15/08*
U.S. Cl. 92—165 R **17 Claims**



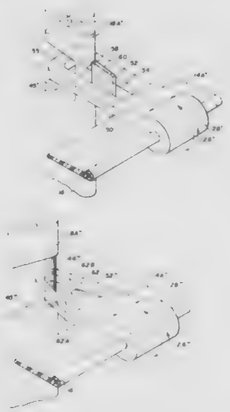
1. Apparatus providing a linear guided displacement with a predetermined maximum stroke, comprising an elongated stationary part and an elongated moving part each having respective uniform cross sections and comprising a resilient material less hard than steel, said parts defining a pair of spaced cooperating guiding channels extending linearly at respective side regions of said parts, one of said parts comprising a pair of spaced arms resiliently mounted on and extending out of a body portion of said one part, said channels of said one part being defined in internal walls of said arms and the other part being arranged between said arms, guiding bars in each of said channels abutting the channel wall and made of a material substantially harder than said one and said other parts, a linear ball bearing assembly in each of said channels guided between said bars and interconnecting said parts, said ball bearings being at least as long as half of said stroke, and biasing means pressing said channels towards each other to maintain sufficient fitting cooperation between said bars and said ball bearing assemblies and to provide for a smooth displacement during operation under load, said biasing means being formed by a biasing portion on said one part dimensioned and configured such that the spacing between said pair of spaced arms in a disassembled state is slightly less than when assembled, and the resilient flexing of said portion causing separation of said arms.

4,796,517
METAL PISTON AND CERAMIC PISTON PIN ASSEMBLY
Shigeaki Akao; Mitsuyoshi Kawamura, and Takio Kojima, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Filed Jun. 29, 1987, Ser. No. 67,009
Claims priority, application Japan, Jul. 8, 1986, 61-104495[U]; Jul. 8, 1986, 61-104496[U]
Int. Cl.[4] F16J *1/14*
U.S. Cl. 92—187 **9 Claims**



1. A piston and piston pin assembly comprising:
a piston made of metal and having piston bosses;
a connecting rod;
a piston pin connected to the rod and made of ceramics, said pin being journalled in said piston bosses and having axially opposed terminal ends;
retaining means for retaining said pins in said bosses;
intermediate ring members in abutment with said retaining means and remote from said rod interposed between said terminal ends of said ceramic piston pin and said piston bosses, said intermediate members being made of metal which is intermediate in thermal expansion coefficient between the metal forming said piston and the ceramics forming said piston pin; and
said piston having a piston head, said intermediate members being formed integral with said piston head.

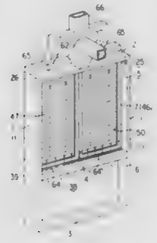
4,796,518
ARTICULATED AIR VANE ARRANGEMENT
Patrick M. Murray, Waterford Township, Oakland County, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 129,190, Dec. 7, 1987, abandoned. This application May 20, 1988, Ser. No. 196,860
Int. Cl.[4] B60H *1/34*
U.S. Cl. 98—2 **2 Claims**



1. An articulated air vane arrangement comprising at least two vanes mounted for pivotal movement at substantially right angles relative to each other, operating means slidably mounted on and pivotal with one of said vanes for effecting pivotal movement of said one vane independent of said other vane on pivotal movement of said operating means, unidirectional linkage means including eccentric means on the other vane and arm means on said operating means operatively unidirectionally linking said operating means to said other vane for effecting pivotal movement of said other vane independent of said one vane on sliding movement of said operating means, an arm fixed on said operating means extending radially outward from the pivot axis of said one vane, said arm having an elongated slot receiving said eccentric means, and said eccentric means comprising a leverage arm fixed to said other vane and extending radially outward from the pivot axis of said other vane within said slot.

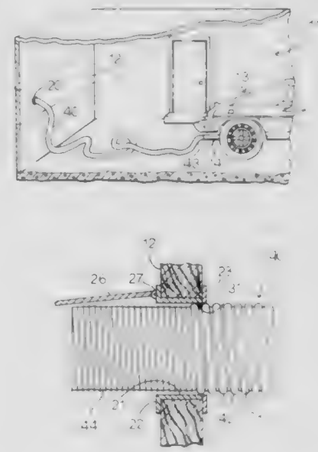
4,796,519
PREFABRICATED WINDOW UNIT WITH AIR CONDITIONING SYSTEM
Hiroshi Kondo; Toshimasa Kuzunoki, both of Funabashi, and Ryo Kameda, Chiba, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Sep. 4, 1987, Ser. No. 93,043
Claims priority, application Japan, Sep. 8, 1986, 61-136689[U]
Int. Cl.[4] E06B *7/02*
U.S. Cl. 98—97 **2 Claims**

1. A prefabricated window unit comprising a rectangular framework consisting of left and right vertical members, an upper horizontal member and a lower horizontal member, a waist transom disposed between and connected to said left and right vertical members, a sealingly enclosed space delimited by indoor side and outdoor side transparent plates mounted in a windowpane frame section consisting of said left and right vertical members, said upper horizontal member and said waist transom, a blind disposed within said sealingly enclosed space indoor side hollow space portions formed in said upper horizontal member and said waist transom, respectively, so as to



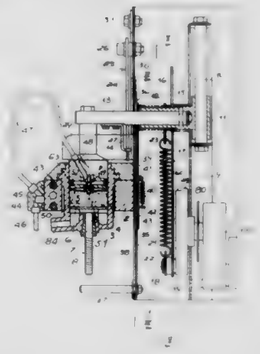
open at and communicate with hollow space portions in said vertical members, outdoor side hollow space portions formed in said upper horizontal member and said waist transom, respectively, so as to open at and communicate with said sealingly enclosed space, an air feed duct connected to said indoor side hollow space portion in said upper horizontal member, an air recovery duct connected to said outdoor side hollow space portion in said upper horizontal member, a blow port for opening said indoor side hollow space portion in said waist transom to a room, and a suction port for opening said outdoor side hollow space portion in said waist transom to said room.

adapted to be inserted through said passage to engage and raise said closure plate and to extend therethrough suffi-



ciently that said main length portion threadedly engages said rib when axially rotated relative thereto.

4,796,521
COMPACT AUTOMATIC COFFEE-MAKING MACHINE MORE PARTICULARLY FOR DOMESTIC USE
Lucio Grossi, Via Sylva, 30, Bergamo, Italy
Filed Oct. 22, 1987, Ser. No. 112,941
Claims priority, application Italy, Oct. 31, 1986, 22197 A/86
Int. Cl.[4] A47J *31/34*
U.S. Cl. 99—287 **15 Claims**



1. An automatic coffee-making machine, comprising:
a base;
a filter carrier formed with an internal cavity and mounted on said base;
a movable filter disposed at a lower end of said cavity for filtering a coffee infusion;
means on said base for introducing powdered coffee into said cavity;
a movable piston introducible into said cavity and forming a watertight seal therewith, said piston provided with

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4,796,520
SYSTEM FOR EXHAUSTING FUMES FROM RESIDENTIAL GARAGES
Vance M. Kramer, Jr., 1913 Greendale Ave., Findlay, Ohio 45840
Filed Nov. 27, 1987, Ser. No. 125,883
Int. Cl.[4] F23J *11/02*
U.S. Cl. 98—115.4 **4 Claims**

1. An apparatus for venting to outside atmosphere exhaust fumes from the exhaust pipe of an automotive vehicle located in an enclosed space with at least one outside wall portion, comprising:
means defining an aperture in the outside wall portion;
a tubular sleeve member mounted in said aperture and having a cylindrical interior surface defining a passage therethrough, said sleeve member including an exterior closure plate connected thereto for pivotal movement about a horizontal hinge axis located above the passage, between a closed position suspended over and closing the passage and an upwardly-pivoted open position, the interior surface of said sleeve having an inwardly projecting radial rib defining an arcuate portion of an internal helical thread; and
a flexible hose having a helically corrugated main length portion that defines an external helical thread, an inner end portion attachable to the exhaust pipe and an outer end portion connectable to the tubular sleeve member, said outer end portion having a cylindrical outer surface

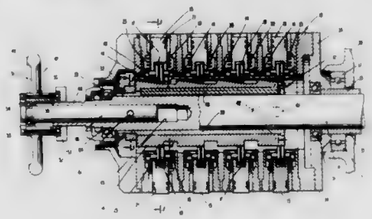
means for delivering into said cavity pressurized hot water supplied by a metering unit on said base;
a geared motor mounted on said base;
at least one cam disc rotatably driven by said motor;
resilient pulling means connected between said cam disc and said piston for drawing said piston into said cavity and compressing said powdered coffee;
a rod connected between said cam disc and said piston for displacing said piston out of said cavity;
guide means on said base for supporting and guiding said piston in the movement thereof, said guide means providing an irreversible transmission of the movement from said motor to said piston; and
expelling means on said base for automatically removing from said cavity said powdered coffee when spent.

4,796,522

ADJUSTABLE CAM ACTUATOR

Joseph A. Lynch, Hillsdale, N.J., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Filed Oct. 18, 1982, Ser. No. 434,784
Int. Cl.[4] A21C *9/06*
U.S. Cl. 99—450.4 **9 Claims**



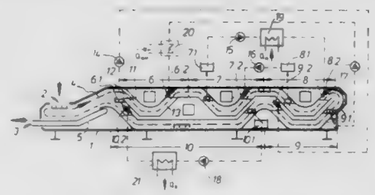
1. An actuator for moving a reciprocating element through an operational cycle with provision for adjustment to change the stroke pattern of the element during one portion of the cycle independently with respect to the stroke pattern during another portion of the cycle, comprising in combination: a cam; a cam follower engaging said cam; means for connecting said cam follower to said reciprocating element to move said element in accordance with the contour of said cam, said cam having a first track for engaging said cam follower to move said element through a predetermined stroke pattern, said first track including an outer curved perimetrical surface extending parallel to a central axis, said cam also having a formation laterally adjacent to said first track and sloping from said first track at an angle with respect to said central axis, said cam having a surface including said formation providing a plurality of cam follower tracks parallel to said first track for producing various stroke patterns for said element, said cam follower including a cylindrical portion engageable with said first track and a conical portion engageable with said formation; means for moving said cam laterally with respect to said cam follower to position said follower on a selected one of said tracks; and means for moving the cam with respect to said cam follower so that said follower travels the length of said cam along said selected track.

4,796,523

INSTALLATION FOR THE CONTINUOUS HEAT TREATMENT OF FOODSTUFFS

Manfred Mette, Hamburg, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH + Co, Lubeck, Fed. Rep. of Germany

Filed Mar. 19, 1987, Ser. No. 27,639
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610124
Int. Cl.[4] A23L *3/00, 3/18*
U.S. Cl. 99—470 **12 Claims**



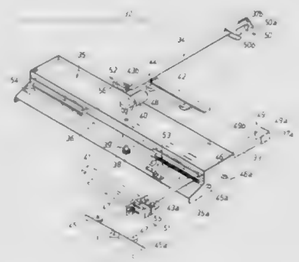
1. An installation for the continuous heat treatment of foodstuff material under atmospheric pressure for at least one of finishing and dewatering said material through contact with a liquid heat carrier, said installation comprising:
a housing having inlet and outlet means for said material to be treated and including a series of treatment zones;
endless conveyor means driven to traverse said treatment zones successively in a conveying direction for conveying said material to be treated through said treatment zones;
means for supplying and removing said heat carrier and for conveying the same within said installation;
heat exchange means for controlling an enthalpy of said heat carrier;
a series of containers arranged separately from each other and to receive said heat carrier, respectively; and
said means for supplying and removing said heat carrier including means for permitting said supplying and removing to be controlled independently between said containers for a variable exchange of said heat carrier within said installation.

4,796,524

METHOD AND APPARATUS FOR WRAPPING BALES OF CROP MATERIAL

Loic Renaud, Coex, France, assignor to Hay & Forage Industries, Hesston, Kans.

Filed Sep. 24, 1986, Ser. No. 910,940
Int. Cl.[4] B65B *13/18*
U.S. Cl. 100—3 **21 Claims**



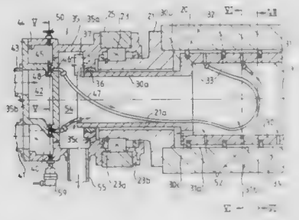
1. In a method of wrapping bales of fibrous crop materials in a pick-up bales inside which cylindrical bales (**8**), having longitudinal axis, a median zone, two end zones, and two longitudinal halves, are formed from windrowed fibrous crop materials (**10**), and of the type in which, when a bale (**8**) is completed, the free end of a binding twine (**61**) is projected onto the periphery of the bale (**8**) by means of a pair of twine guiding devices (**33,34**), the improvement comprising the steps of helically winding the twine under tension around said bale while moving the guiding devices (**33,34**) at constant speed in parallel to the axis of the bale (**8**) so as to wrap the whole cylindrical periphery of the bale with the twine, which later is cut at the end of the wrapping operation in the median zone of the bale periphery; simultaneously starting wrapping of said bale in the two end zones of the bale periphery, first on the inside (**70***a*) of each end zone (**69***a*, **69***b*) at sufficient distance from the edge to prevent crumbling of the bale, and then on the outside (**70***b*) of said end zone; continuing wrapping by simultaneously wrapping the two halves of the bale, starting from the end zones, and then mixing the two twine-guides (**33,34**) and their twines (**61**), at constant speed, one towards the other and in parallel to the axis of the bale (**8**), the transversal displacement of the two twines (**61**) in parallel to the axis of the bale (**8**) being stopped when the twine-guides (**33,34**) have moved toward each other opposite the median zone of the bale (**8**); two sets (**72***a*,**72***b*) of several circular windings of twine being made before the twines are cut (**61**); and cutting said twine.

4,796,525

PRESS NIP FORMED BY A DEFLECTION-CONTROLLED ROLL IN CONJUNCTION WITH A TEMPERATURE-CONTROLLED ROLL

Christian Schiel, and Albrecht Baader, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Division of Ser. No. 762,154, filed as PCT EP84/00376 on Nov. 29, 1984, published as WO85/02425 on Jun. 6, 1985, Pat. No. 4,639,990. This application Jul. 21, 1986, Ser. No. 899,236
This application Jul. 21, 1986, Ser. No. 899,236
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343313
Int. Cl.[4] B30B *3/04*
U.S. Cl. 100—93 RP **18 Claims**



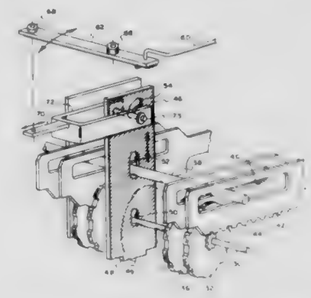
1. A roll arrangement comprising at least two press rolls which rotate against each other to form a press nip, one of the two rolls being solely a deflection-controllable roll and the other press roll being solely a zone by zone temperature-controllable roll whereby the rolls are controlled independently of one another and the temperature-controllable roll includes a rotatable tubular roll shell and a stationary core extending through the roll shell, the tubular roll shell and the stationary core each having respective first and second axial ends, means for supporting the first and second axial ends of both the roll shell and the core, a plurality of annular chambers which follow one another along the rotational axis of the roll, the annular chambers being located in an annular clearance provided between the core and the roll shell, and a means for flowing fluid through each annular chamber to control the temperature of each respective section of the roll shell which lies adjacent each annular chamber.

4,796,526

VALUE PRINTING DIE PROTECTION DEVICE IN AN ELECTRONIC POSTAGE METER MACHINE

Timothy R. Erwin, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 27, 1983, Ser. No. 508,356
Int. Cl.[4] B41L *39/04*
U.S. Cl. 101—65 **10 Claims**



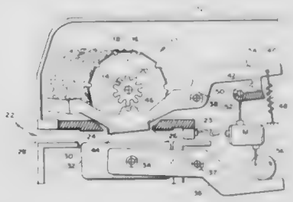
4. An obstruction mechanism for preventing fraudulent impressions from being obtained from the print wheels of a reciprocating type of postage meter machine that has postage information inputting means, print wheels that are settable in accordance with the input information, a reciprocating platen operative to be moved into contact with fonts of the print wheels selected through the inputting means, a switch for providing power to the machine, and enabling means for driving the platen into contact with the print wheels, comprising: a slug received within the print wheels and extending intermediate the print wheels and the platen when in its home position, means for moving said slug away from the home position to a non-obstructing position upon the switch being enabled and a means for returning the slug to its home position upon the switch being disabled.

4,796,527

VALUE PRINTING DIE PROTECTION MECHANISM IN A POSTAGE METER MACHINE

Timothy R. Erwin, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 15, 1983, Ser. No. 523,507
Int. Cl.[4] B41L *39/04*
U.S. Cl. 101—70 **6 Claims**



5. A method of preventing the taking of fraudulent impressions from a postage meter machine that has settable print wheels, a reciprocating platen operative to be moved into printing contact with the print wheels and a print switch for initiating a print cycle, the steps comprising: placing a blocking member in a position intermediate the print wheels and the platen, actuating the print switch, removing the blocking member from the intermediate position, locking the print wheels,

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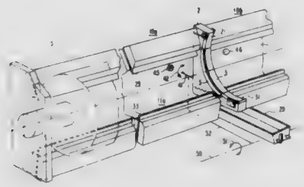
driving the platen into printing contact with the print wheels, driving the platen away from the print wheels, and returning the blocking member to the intermediate position as the platen is driven away from the print wheels.

4,796,528

SEPARATED INK FOUNTAIN FOR A FLEXOGRAPHIC PRINTING MACHINE

David J. Saraceu, Hoboken, N.J., assignor to M.A.N. Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 56,785
Int. Cl.[4] B41F *31/06*
U.S. Cl. 101—208 **19 Claims**



1. In a flexographic printing machine,
an arrangement to separate an ink fountain (11) into different axial zones (10*a*, 10*b*) to permit use of inks of respectively different characteristics on various zones of an anilox roller (10) comprising
a separating strip element (3)
and means (21, 14*a*, 15*a*; 31, 14*b*, 15*b*; 18) for introducing a hydraulic film of a separating liquid between the surface of the strip element (3) and the surface of the anilox roller (10), including a pad element (21, 31) of a porous substance, positioned in alignment with said separating strip element (3);
liquid supply means (14*a*, 15*a*; 14*b*, 15*b*) in hydraulic fluid communication with said pad element (21, 31) of the porous substance; and
the separating strip element (3) having a curved low-friction surface fitting against and matching the surface of the anilox roller (10), positioned, with respect to the direction of rotation of the anilox roller, downstream from said pad element (21, 31), and extending over a portion of the circumference of the anilox roller,
the hydraulic film forming a ring of liquid essentially only in the circumferential region of the anilox roller which includes said portion of the circumference thereof, to float the separating strip element (3) on said ring of separating liquid.

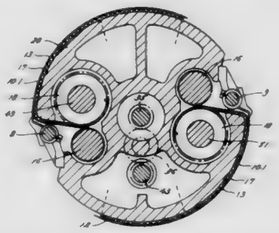
4,796,529

SHEET TURNING DEVICE FOR ROTARY PRESSES OF THE IN-LINE TYPE

Josef Mathes, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Dec. 3, 1986, Ser. No. 937,550
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1985, 3542649
Int. Cl.[4] B41F *21/10, 13/18*
U.S. Cl. 101—230 **18 Claims**

1. An assembly in a rotary press for turning a sheet comprising in combination:
a first impression cylinder for retaining said sheet as said sheet is printed on a first side;
a second impression cylinder for retaining said sheet as said sheet is printed on a second side;
a rotating transfer drum positioned between said first and second impression cylinders for removing said sheet from said first impression cylinder and delivering said sheet to said second impression cylinder;
means for providing a circumferential adjustable covering about the surface of said first impression cylinder which serves as a support surface for said sheet and extends circumferentially about said first impression cylinder a



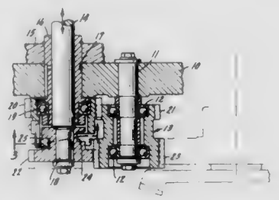
distance that is less than the circumferential extent of said sheet about said first impression cylinder such that a trailing end of said sheet extends beyond an end of said covering; and
said transfer drum including a gripper system for gripping said trailing end of said sheet.

4,796,530

OSCILLATING ROLL FOR PRINTING PRESSES

Gordon Etchell, Downers Grove, Ill., assignor to Pathfinder Graphic Associates Inc., Justice, Ill.

Filed Jun. 1, 1987, Ser. No. 56,392
Int. Cl.[4] B41F *31/00*
U.S. Cl. 101—349 **3 Claims**



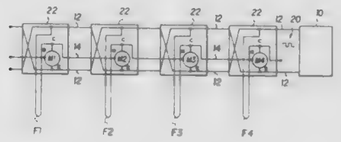
1. A distributing roller assembly for distributing printing ink or a dampening liquid on a driven roller of a printing machine comprising:
(a) a first shaft rotatably carried by said printing machine for rotatably supporting a dual geared drive member;
(b) a second shaft for the distributing roller journaled through a suitable bearing carried by said printing machine extending in a spaced parallel relation to said first shaft;
(c) a barrel cam gear adapted to be driven by said drive member and keyed to said second shaft for rotation therewith;
(d) a second driven gear mounted on said second shaft in spaced relation to said first gear and adapted to be rotated freely of said second shaft;
(e) cam means extending between said barrel cam gear and second driven gear and effective for causing said barrel cam gear and said second shaft to be reciprocally axially moved relative to said second gear and said dual drive gear;
(f) said dual geared drive member having different gear teeth ratios between it and said hub gear and said second driven gear.

4,796,531

MINING METHOD

Stafford A. Smithies, and Raymond C. Atkins, both of Pretoria, South Africa, assignors to Gernal Mining Union Corporation Limited, Johannesburg, South Africa

Filed Jul. 1, 1987, Ser. No. 69,210
Claims priority, application South Africa, Jul. 4, 1986, 86/4984
Int. Cl.[4] F42B *3/10*
U.S. Cl. 102—217 **7 Claims**



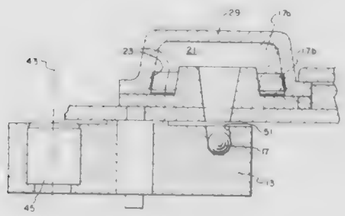
1. A system for the electrical sequential initiation of explosions comprising:
a series of initiating modules connected to one another and connectable to a power supply;
a corresponding series of electrically actuable initiators;
each initiating module being connected to an initiator and embodying non-latching switching means for actuating the initiator associated with that initiating module;
the non-latching switching means comprising a solid state electronic device having an emitter, a gate and a collector, the device comprising a short circuit between the gate and the emitter for holding the device in an "off" state to a voltage applied to the collector and an open circuit between the gate and the emitter for turning the device "on" to a voltage applied to the collector, whilst a diode integrated on the device blocks a reverse applied voltage;
the switching means of each initiating module save the first in the series being connected to the initiator associated with the preceding initiating module in the series, the arrangement being such that in operation of the system the switching means of each initiating module are disabled until the initiator associated with the preceding initiating module in the series has been actuated by that initiating module, the initiating modules in the series being actuable sequentially by the power supply so as sequentially to initiate the series of initiators.

4,796,532

SAFE AND ARM DEVICE FOR SPINNING MUNITIONS

George Webb, Larwill, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Nov. 12, 1987, Ser. No. 119,801
Int. Cl.[4] F42C *15/04, 15/26*
U.S. Cl. 102—233 **7 Claims**



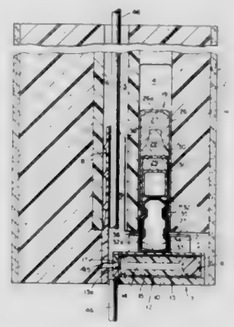
1. In a safe and arm mechanism for an explosive projectile of the type subjected to both axial and angular acceleration when discharged from a rifled barrel, the mechanism including a detonating device, an escapement mechanism for delayed arming, and a primary safety lock which precludes escapement mechanism operation until the projectile is discharged, the improvement comprising:
a void sensing mechanism for sensing deceleration caused by the projectile striking a target followed by a significant reduction of that deceleration for enabling the detonating device including a ball movable generally in the axial direction from a first position to a second position in response to the deceleration and subsequently movable from the second position to a third position in response to the reduction in deceleration.

4,796,533

PRIMER ASSEMBLY

Malak E. Yunan, Morris County, Boonton Township, N.J., assignor to ETI Explosives Technologies International Inc., Wilmington, Del.

Division of Ser. No. 714,505, Mar. 25, 1985, Pat. No. 4,718,345, which is a continuation-in-part of Ser. No. 616,138, Jun. 1, 1984, abandoned. This application May 6, 1987, Ser. No. 46,559
Int. Cl.[4] C06C *5/04*; F42B *3/10*
U.S. Cl. 102—322 **34 Claims**



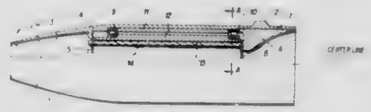
16. An explosive primer comprising a substantially cylindrical mass of explosive having
(a) a cord-receiving perforation and a detonator-receiving cavity substantially on or parallel to its longitudinal axis, said perforation and cavity being spaced apart from one another, and said perforation extending substantially from one end of said cylindrical mass to the other; and
(b) a block-like cavity for receiving a connecting block adjacent said cord-receiving perforation and said detonator-receiving cavity.

4,796,534

SPINNING RAMJET VEHICLE WITH A NON-SPINNING COMBUSTOR

Ameer G. Mikhail, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 22, 1988, Ser. No. 146,914
Int. Cl.[4] F42B *15/00*
U.S. Cl. 102—374 **8 Claims**



1. A rotating ramjet propelled vehicle comprising:
a generally cylindrical outer shell body that rotates about a

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longitudinal axis, said outer shell body having forward and rearward ends;

means, within and at the forward end of said outer shell body, for receiving intake air;

means, within said outer shell body and positioned between said forward and rearward ends of said outer shell body, for providing combustion with said intake air thereby providing propulsion gases;

means, separating said combustion means from said outer shell body, for rotatably mounting said combustion means within said outer shell body to allow said combustion means to rotate about the longitudinal axis at a slower rate than said outer shell body; and

means, within and at the rearward end of said outer shell body for expelling the propulsion gases generated by the combustion means.

4,796,535

ADAPTER CARTRIDGE FOR INSERTION TUBE SYSTEMS

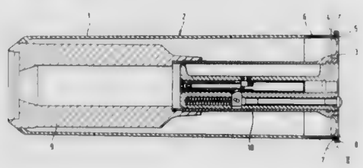
Roland Bertiller, Schramberg, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Jun. 12, 1987, Ser. No. 62,450

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620697

Int. Cl.[4] F42B *5/02, 8/00*

U.S. Cl. 102—446 **9 Claims**



1. An adapter cartridge for insertion tube systems, comprising a cartridge chamber; a firing pin sleeve secured to said chamber and following said chamber in an axially rearward direction; a circular, metal, cartridge base joined to the sleeve to extend transversely thereof and a cylindrical jacket casing made of fiber-reinforced plastic, securely joined to said base and extending over the cartridge chamber, said cartridge base having an encircling drawn shell rim with opposite forward and rearward faces joined by the circumferential face; and, a shock absorbing plastic ring securely enclosing the rearward and circumferential faces only so that the forward face of the rim is exposed.

4,796,536

CHAFF DISPENSER SYSTEM

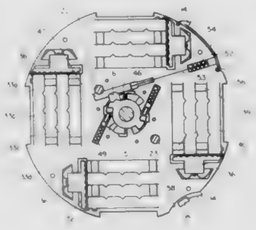
Edward K. Yu, Newark, Calif., and David W. Rogers, Spokane, Wash., assignors to Acurex Corporation, Mountain View, Calif.

Filed Jun. 23, 1987, Ser. No. 65,509

Int. Cl.[4] F42B *13/00*

U.S. Cl. 102—505 **7 Claims**

1. A chaff deployment system including a platelet, a plurality of compartments formed in said platelet, said compartments each including a bottom defined by a plurality of preformed tang springs and a top formed by a door whereby upon release of the door followed by release of the tang springs, chaff



contained in the compartments is propelled out of the compartment with predetermined direction and velocity.

4,796,537

MOBILE TRUCK TURNTABLE

Robert G. Besser, 3115 Aloha La., Chico, Calif. 95926

Filed Nov. 23, 1987, Ser. No. 124,295

Int. Cl.[4] B65G *67/04*

U.S. Cl. 104—37 **5 Claims**

1. A mobile truck turntable comprising a substantially rectangular, scow-like turntable platform affixed upwardly on a top surface with carrier ramps and having drive-up loading ramps hingedly attached at both ends thereof; said turntable platform provided with mechanical means for redirecting a vehicle positioned on said carrier ramps; said turntable platform having vertical side walls and a bottom surface curved upwardly at two short walled terminal ends producing a slidable scow-like structure; said bottom surface affixed with slide plates and at least four retractable wheels positioned in wells in said bottom surface; there being mechanical means included therein for raising and lowering said wheels; there being street tires on said wheels; the arrangement of said retractable wheels with said street tires providing towable mobility for said turntable platform with two of said wheels adjacent two tow bar brackets affixed in the vertical surface of one said terminal end; said slidable scow-like structure being for sliding said turntable platform to use position with wheels retracted; there being mechanical means for raising and lowering said loading ramps; there being mechanically adjustable supports for said carrier ramps and ram activated stabilizers adjustably fitted at four corners of said turntable platform; said turntable platform having interconnected hydraulic lines as required for operating said rams turntable mechanical means; said interconnected hydraulic lines terminating at a hydraulic line junction box in a vertical side wall of said turntable platform with pressurized hydraulic fluid supplied through said junction box by hydraulic lines removably connected thereto; said hydraulic lines supplying pressurized hydraulic fluid from a trailer equipped with controls, gauges, pressure tank, pump and a gasoline or diesel engine as a power supply.

4,796,538

HOLD DOWN BAR FOR RAIL CAR HATCH COVERS

Ralph M. McLean, Jr., 1525 Hampton Hall Dr., Chesterfield, Mo. 63017, and James C. Bates, 2247 N. Geyer Rd., St. Louis, Mo. 63131

Filed May 1, 1987, Ser. No. 44,474

Int. Cl.[4] B61D *39/00*

U.S. Cl. 105—377 **24 Claims**



1. In combination with a car roof having a hatch in it and at least two covers which are capable of fitting over the hatch with their ends adjacent such that a slight gap exists between the adjacent ends, an improved hold down bar for securing the covers to the roof at their adjacent ends and for further closing the gap between such covers so that the gap will not admit contaminants, said hold down bar comprising: a latch arm which at one end is pivotally connected to the roof on one side of the hatch and at its other end is adapted to be fastened to the roof on the other side of the hatch, the latch arm being formed from a resilient material and being substantially flat in cross-section intermediate its ends so that it is capable of flexing easily intermediate its ends; a shoe attached to the latch arm and being formed from a resilient material which enables it to flex with the arm; and gasket attached to the shoe and being configured to generally conform to the upper surface of the hatch covers at the adjacent ends of those hatch covers, the latch arm being configured such that it flexes easily against the natural resiliency of the material from which it is formed and undergoes a perceptible change in shape as its other end is brought down toward and fastened to the roof with the shoe and gasket interposed between the arm and the covers.

4,796,539

EXTENDERS FOR AIRCRAFT PALLETS

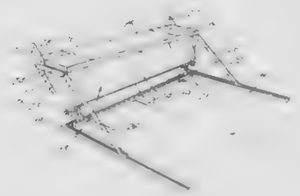
Thomas R. Berrett, Wallingford, United Kingdom, assignor to Brownline (U.K.) Limited, Hounslow, United Kingdom

Filed Feb. 9, 1987, Ser. No. 12,695

Claims priority, application United Kingdom, Feb. 7, 1986, 8603057; May 6, 1986, 8610950

Int. Cl.[4] B65D *19/44*

U.S. Cl. 108—55.1 **19 Claims**



1. A pallet extender for mounting at an end of an aircraft cargo pallet comprising a first elongate load support panel, first means along one elongate edge of the first panel for mounting the first panel along an end of a pallet and for pivoting the first panel about an axis extending along said edge of the first panel, a second elongate panel extending along another elongate edge of the first panel and connected thereto by second means for pivoting the second panel with respect to the first panel, locking means acting between the first and second panels for locking the second panel in any one of a plurality of different positions with respect to the first panel, a support structure at each end of said first panel including a leg member having one end thereof pivotally engaged to said first means and the other end thereof connected to one end of a strut, said strut having the other end thereof connected to said first panel, and brace means connected to the support structures and adapted for connection to the pallet for supporting the panels in selectively different positions with respect to the pallet, said support structures being adapted to support the second panel in a substantially horizontal position when the first panel extends upwardly and outwardly from the end of the pallet supported by said brace means.

4,796,540

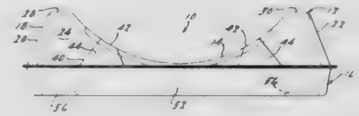
ROLL CRADLE PALLET AND METHOD FOR FABRICATING THE SAME

Steven D. Pelfrey, Warren, Mich., assignor to Cadillac Products, Inc., Sterling Heights, Mich.

Filed Jan. 11, 1988, Ser. No. 142,822

Int. Cl.[4] B65D *19/44*

U.S. Cl. 108—55.3 **23 Claims**



1. A roll cradle pallet for supporting objects comprising; a first member having an arcuate support portion to support an object, and a second member for engaging a support surface and including protrusion means extending outwardly from said second member for engaging and supporting said arcuate support portion of said first member, said protrusion means including a curved surface complementary circumferentially to said arcuate support portion of said first member to nest and support said arcuate support portion of said first member upon said protrusion means of said second member to form an integrated pallet.

4,796,541

STORAGE RACK

Robert T. Halstrick, c/o Scotland Rack Ltd., Willow Grove, Pa. 19090

Filed Jul. 31, 1987, Ser. No. 80,741

Int. Cl.[4] A47B *3/00*

U.S. Cl. 108—111 **3 Claims**

1. A storage rack which comprises

a plurality of upright posts of U-shape in cross section each with an outside wall and with side walls perpendicular to said outside wall,

said outside walls each having a plurality of truncated cone-shaped openings at spaced vertical locations therealong,

said side walls each having a plurality of inverted h-shaped openings at spaced vertical locations therealong, said inverted h-shaped openings being at an angle with respect to said outside wall,

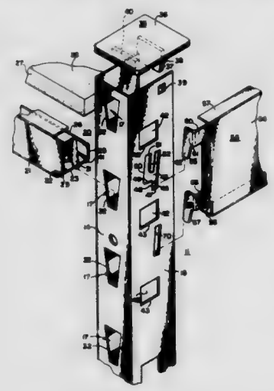
said side walls each having a plurality of elongated slot openings at spaced vertical locations therealong between said inverted h-shaped openings and at an angle with respect to said outside wall,

connecting members for fastening pairs of posts together to form a rack end,

said connecting members each have pairs of extensions and angled wedging tongues at each end for insertion into said inverted h-shaped openings and said elongated slot openings of said posts for connection and retention of posts thereto,

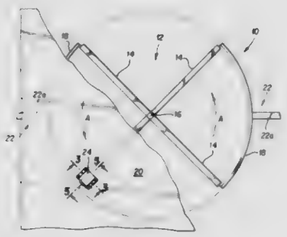
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said post side walls having a plurality of square shaped vertically spaced openings at spaced locations therealong,
shelf support members for supporting loads and for connection of pairs of said rack ends together to form a rack,
said shelf support members having at least one angled wedging tongue at each end thereof for insertion into said



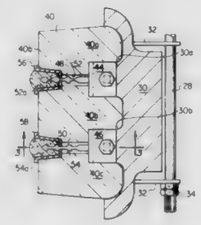
truncated openings of said outside walls for connection, and at least one projection at each end for insertion into one of said square shaped openings in said post side wall for retention and load transfer to said post, and
a plurality of load bearing shelves engaged with said shelf support members.

4,796,542
SECURITY LOCK FOR REVOLVING DOOR
Choong G. Lee, 510F Keawe St., Honolulu, Hi. 96813
Filed Jun. 17, 1987, Ser. No. 63,261
Int. Cl.[4] E05G *3/00*
U.S. Cl. 109—8 **22 Claims**



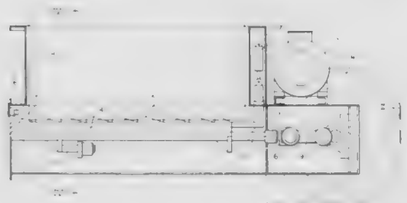
1. A lock for a door comprising:
(a) an actuator movable in a first direction into the path of the door for contact by the door, said actuator movable by a selectively-activatable means;
(b) a locking element movable into a first, door-arresting position whereat said locking element contacts the door to prevent movement of the door, said locking element being urged into said first position by a biasing member; and
(c) a latching member coupled to said actuator and cooperating with said locking element to releaseably restrain said locking element in a second position whereat the locking element is separated from engagement with the door, said latching member and said actuator movable in a second direction to release the locking element for movement into said first position.

4,796,543
CLOSURE ASSEMBLY FOR A FURNACE
James D. Barkley, Bethlehem, Pa., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.
Filed Apr. 22, 1987, Ser. No. 41,161
Int. Cl.[4] F23M *7/00*
U.S. Cl. 110—173 R **2 Claims**



1. A closure assembly for an access opening in a furnace wall, said assembly comprising a door shell; means for pivoting said door shell to said furnace wall; at least one shoulder formed on said shell; a clip angle having one leg portion extending over a face of said shoulder; bolt means extending through said one leg portion and said shoulder for securing said clip angle to said shoulder; an anchor member secured to another leg portion of said clip angle; a plug member having a portion extending in said shell, a recessed portion for receiving said shoulder, and a portion adapted to extend in said access opening when said door is closed; at least one opening extending through said plug member for receiving said anchor member; a cup extending in said opening and adapted to receive a corresponding anchor member; and a castable material extending in said cup and over said anchor member to secure said plug member to said shell.

4,796,544
APPARATUS FOR TEARING UP AND STOKING BALES OF STRAW MATERIAL AND FOR STOKING OTHER KINDS OF SOLID FUEL
Arvid Overgaard, Industivej, Denmark, assignor to Norfab A/S, Mariager, Denmark
PCT No. PCT/DK86/00008, § 371 Date Sep. 17, 1986, § 102(e) Date Sep. 17, 1986, PCT Pub. No. WO86/04404, PCT Pub. Date Jul. 31, 1986
PCT Filed Jan. 17, 1986, Ser. No. 918,999
Claims priority, application Denmark, Jan. 17, 1985, 0206/85
Int. Cl.[4] F23B *1/28*
U.S. Cl. 110—196 **18 Claims**



1. An apparatus for comminuting and stoking of straw bales, and for automatic stoking of chips, pieces of wood, paper, industrial waste, garbage, lignite, coal briquettes, pellets, and similar solid fuel comprising:
a number of substantially parallel reciprocating or eccentrically moved serrated rods situated in connection with a feeding opening of a furnace, said serrated rods being operatively positioned for comminuting fuel and for tearing any retaining material utilized to contain the fuel;
means for feeding fuel onto the serrated rods;
a grate situated between the serrated rods, said grate being vertically movable in relation to the serrated rods, preferably by being hinged in the end that is closest to the feeding opening; and
means for conveying fuel into the furnace.

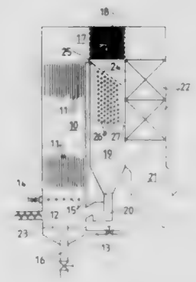
4,796,545
APPARATUS FOR TREATING COMBUSTION EXHAUST GAS
Katsuo Hashizaki; Toshio Koyanagi, and Atsushi Morii, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan
Filed Mar. 11, 1988, Ser. No. 167,044
Claims priority, application Japan, Mar. 30, 1987, 62-74168; Aug. 12, 1987, 62-201145
Int. Cl.[4] F23J *3/00*
U.S. Cl. 110—216 **4 Claims**



1. An apparatus for treating a combustion exhaust gas which comprises a fire furnace, a denitrating reactor for denitrating said combustion exhaust gas discharged from said fire furnace, a dust collector for collecting solids in said exhaust gas passed through said reactor, and a transport pipe for circulating said solids collected by said dust collector through said fire furnace, said apparatus being characterized in that said transport pipe is provided with an arsenic removal means for removing arsenic from said solids.

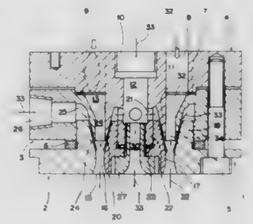
4,796,546
COMBUSTION PLANT INCLUDING A CIRCULATION FLUID BED
Ola Herstad, Torslanda, and Lars Olausson, Angered, both of Sweden, assignors to Gotaverken Energy Systems AB, Gothenburg, Sweden
Filed Jul. 31, 1987, Ser. No. 79,924
Claims priority, application Sweden, Aug. 14, 1986, 8603419
Int. Cl.[4] F23J *3/00*; B01D *45/04*
U.S. Cl. 110—216 **6 Claims**

1. A combustion plant comprising a combustion shaft having a vertical axis with a lower end and an upper end as well as means for supplying fuel and inert material to form a particulate bed, first and second vertical shafts parallel to said combustion shaft, a horizontal passage connecting the upper ends of said shafts, a lock communicating the lower end of said first shaft with said combustion shaft, means to convey combustion gases away from said second shaft, means for supplying a fluidizing gas to the lower end of said combustion shaft for burning said fuel while causing fluid circulation up through said combustion shaft and down through said first shaft, a mechanical separator means in said horizontal passage, above said first shaft and including a plurality of mutually parallel plates being inclined in relation to the vertical axis of said first shaft and arranged to ensure a laminar gas flow from said combustion shaft to said second shaft while separating out entrained particles for a free drop down said first shaft, a heat exchanger comprising heat exchange surfaces traversing said first shaft, and being so distributed therein that at least one free vertical passage is formed for descending particles, below said separator means, and a particle distribution device located



below said separator means for directing said dropping particles in preselected proportions towards said heat exchanger and said passage, respectively.

4,796,547
FINE PARTICLE DISPERSING DEVICE FOR MIXING REACTANT WITH COMBUSTION GAS
Yoshio Kobayashi, Sennan; Chiaki Tojo, Sakai, and Masayoshi Kinoshita, Nara, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan
Filed Jan. 14, 1987, Ser. No. 3,226
Claims priority, application Japan, Jan. 24, 1986, 61-13994; Jan. 28, 1986, 61-17332
Int. Cl.[4] F23D *1/00*
U.S. Cl. 110—263 **14 Claims**



1. A dispersing device comprising a body, a fine particle channel provided in said body, terminating in a spout in the form of an annular slit and having inner and outer peripheral sides, and gas clearances provided on both said inner and outer peripheral sides of the fine particle channel, inclined downstream with respect to said fine particle channel and communicating with said fine particle channel for emitting a gas into said fine particle channel.

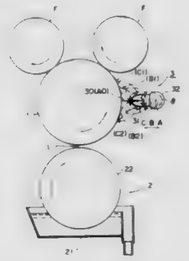
4,796,548
METHOD OF CONDITIONING FIRESIDE FOULING DEPOSITS USING SUPER LARGE PARTICLE SIZE MAGNESIUM OXIDE
Gene A. Merrell, Huntingdon Valley, and Richard J. Sujdak, Morrisville, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed May 8, 1984, Ser. No. 608,053
Int. Cl.[4] F23J *11/00*
U.S. Cl. 110—343 **15 Claims**

1. Method of minimizing the deleterious effects of combustion residues on structures normally contacted thereby, com-

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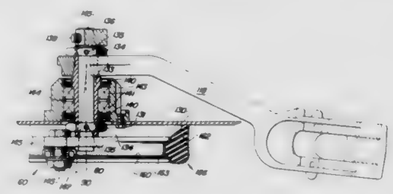
prising burning coal in a furnace combustion zone, and adding to said furnace an effective amount of a magnesium oxide material comprising particles the major mass fraction of which is about 150 microns in diameter or greater so as to increase the friability of said residues which may normally adhere to said structures.

4,796,549
INK SUPPLYING APPARATUS
Yuuichi Okamura, Tokyo, Japan, assignor to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan
Filed Oct. 8, 1987, Ser. No. 105,614
Claims priority, application Japan, Dec. 9, 1986, 61-292983
Int. Cl.[4] B41F *31/04*
U.S. Cl. 101—350 **1 Claim**



1. An ink supplying apparatus for use with inks having various viscosities, comprising:
- a rotating printing cylinder;
- a rotating cylindrical feeding roller having a mesh circumferential surface;
- means for feeding ink onto said circumferential surface of said feeding roller;
- means for feeding ink from said feeding roller to said printing cylinder;
- a blade shaft mounted in a parallel relation to the longitudinal axis of said feeding roller, having a doctor blade pivotably disposed on said blade has, such that said doctor blade contacts said circumferential surface at a predetermined contact angle and with a predetermined pressure;
- means for pivotably moving said doctor blade about said blade shaft;
- shifting means for varying the distance between said blade shaft and said feeding roller axis in a common plane;
- wherein said means for pivotably moving said doctor blade varies said contact angle from a tangential line following the rotation of said feeding roller to a tangential line in the counter direction of rotation of said feeding roller;
- said means for pivotably varying said doctor blade and said means for varying the distance between said blade shaft and said feeding roller axis vary the pressure between said doctor blade and said circumferential surface of said roller;
- said pivotably moving means comprising a worm wheel mounted on said blade shaft, a worm gear operatively engaging said worm wheel, and a first handle; and
- said shifting means comprising a bracket for supporting said blade shaft, a rack fixed to said bracket, a bracket base for receiving said bracket, at least one pinion gear pivotably mounted on said base, and a second handle in operative association with said pinion gear, whereby said contact angle is controlled by operating said first handle, and the space between said doctor blade and said circumferential surface is controlled by operating said second handle.

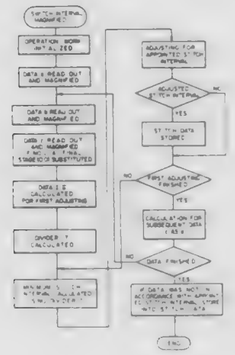
4,796,550
SINGLE ANGLED BLADE COULTER AND FERTILIZER OPENER
Terry L. Van Natta, Bettendorf, Iowa, and Donald R. Hartwig, Rock Island, Ill., assignors to Deere & Co., Moline, Ill.
Filed Mar. 29, 1985, Ser. No. 717,394
Int. Cl.[4] A01C *5/08*; A01B *39/08, 63/16*
U.S. Cl. 111—87 **1 Claim**



1. In an attachment for a seed planting implement of the type including a main frame adapted to be moved along the ground and having at least one seed planting unit connected to said main frame, said seed planting unit including a subframe and a seed trench forming unit attached to the subframe, the improvement comprising:
- a single disk blade disposed forward of the seed trench forming unit and mounted to the main frame independently of the subframe, said single disk blade being disposed on a support arm at an angle to the direction of travel of said implement;
- means for selectively adjusting a downwardly biasing force on said disk blade wherein said adjustable force means includes a compression spring disposed to interconnect a support attached to said main frame and said single disk blade, and a pivotable force adjustment strap pivotally attached to said support and having one end attached to said spring and having the opposite end selectively securable to said support in a plurality of position; and
- means for selectively adjusting the working depth of said disk blade wherein said depth adjustment means includes a gauge wheel rotatably attached adjacent to said disk blade and having a center point selectively movable with respect to the center point of said disk blade, and wherein said single disk blade is rotatably mounted on a hollow spindle attached to the support arm and said gauge wheel is rotatably attached to an offset spindle of an arm assembly having a first shaft portion received and secured within said hollow spindle.

4,796,551
METHOD AND APPARATUS FOR PREPARING SEWING DATA
Masanori Nukushina, Chofu, Japan, assignor to Juki Corporation, Tokyo, Japan
Continuation of Ser. No. 890,348, Jul. 25, 1986, Pat. No. 4,704,977. This application Nov. 5, 1987, Ser. No. 117,468
Int. Cl.[4] D05B *3/02, 21/00*
U.S. Cl. 112—266.1 **7 Claims**

1. A method of preparing stitch data in an automatic sewing machine, comprising the steps of:
- (a) storing stitch data for embroidery of a stitch pattern;
- (b) calculating a first stitch position of the stitch pattern, said calculation comprising the steps of,
  - (i) reading out three basic stitch data items as one process unit,
  - (ii) multiplying each of the basic stitch data items of said one process unit by a magnification factor,
  - (iii) adjusting each of said multiplied stitch data items to divide the stitch pattern into minimum stitch intervals, and
  - (iv) summing each of said adjusted stitch data items corresponding to the multiplied stitch data of the selected stitch interval;
- (c) calculating each subsequent stitch position of the stitch pattern, each subsequent stitch position calculated based on the previous stitch position; and



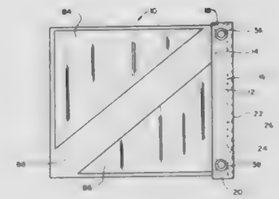
- (d) moving one or both of a workpiece retainer and a sewing machine body relative to each other in accordance with each calculated stitch position.

4,796,552
LATCH TACKER
Maximilian Adamski, Jr., Palatine, Ill., assignor to Union Special Corporation, Chicago, Ill.
Filed May 18, 1987, Ser. No. 50,360
Int. Cl.[4] D05B *65/00*
U.S. Cl. 112—285 **4 Claims**



1. An apparatus for positioning a chain of stitches for stitching onto material in a sewing machine having a needle and a throat plate, comprising:
- a cutting device;
- means for positioning the chain of stitches forwardly of the needle;
- means for grasping the chain in the forward position;
- means for releasing the chain from the grasping means; and
- means for placing the chain in the path of the cutting device, wherein the grasping means comprises an elongated lower plate, an elongated nipper having a finger, and an elongated guide having an end portion defining a space between the end portion and finger.

4,796,553
FLAG DEVICE SUCH AS A DIVE FLAG DEVICE AND FLOATS FOR USE THEREWITH
Sarah L. Cogswell, and Frederick R. Edington, II, both of No. 8 Sunset Ct., Avenue D, Marathon, Fla. 33050
Filed Nov. 28, 1986, Ser. No. 935,821
Int. Cl.[4] G09F *17/00*
U.S. Cl. 116—173 **24 Claims**



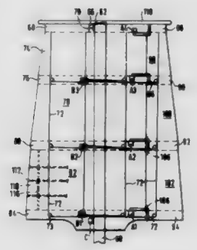
1. A flag and means for mounting same comprising
- a panel formed of foam material capable of floating on water having finite thickness sufficient so that the foam material will resist bending and maintain the panel in a substantially flat unstressed condition, said panel having relatively smooth parallel spaced opposite surfaces and a plurality of side edges extending around and forming the periphery thereof,
- an elongated flexible cloth-like member folded midway along its length with portions located adjacent opposite sides of the panel along one side edge thereof,
- means attaching the cloth-like member to the panel with said cloth-like member and said one side edge of the panel forming a passageway therebetween,
- means blocking the passageway adjacent one end thereof,
- spaced attachment means attached to the panel adjacent to said one side edge,
- an elongated rod member having an end portion extendible into the passageway being limited by the means blocking one end thereof for mounting said panel for rotational movement, and
- means cooperatively engageable with the spaced attachment means on the panel including means extending around the passageway and the end portion of the rod member positioned therein adjustable to tighten the cloth-like member on the rod.

4,796,554
SAILBOAT
Wilhelm Laib, Mozartstr. 28, D-7030 Boeblingen, Fed. Rep. of Germany
Filed Apr. 15, 1987, Ser. No. 38,691
Claims priority, application European Pat. Off., Apr. 16, 1986, 86 105247
Int. Cl.[4] B63B *1/04*; B63H *9/04*
U.S. Cl. 114—39.1 **18 Claims**

1. A sailboat, comprising:
- (a) a generally closed hull having a deck;
- (b) a sail including at least one mast adjustably mounted on said hull;
- (c) said mast forming a central part of said sail and having an edged cross-section;
- (d) a plurality of generally horizontal said beams cooperating with said mast and being vertically displaceable relative thereto;
- (e) said sail beams being interconnected by individual sail segments;
- (f) each said segment being adapted to be reefed in the form of bellows between adjacent sail beams;
- (g) each said sail segment being displaceable to assume a deployed position;

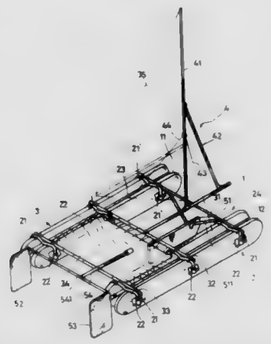
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(h) said sail having a symmetrical airfoil contour top and including a laterally adjustable airfoil cap about the front thereof;
(i) said mast including a polygonal pipe means;



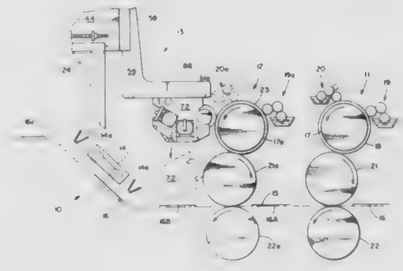
(j) said deck including a seat for rotatably mounting said pipe means therein; and
(k) said sail beams being individually connected to the next higher sail beam by at least one cable means and at least one winch motor means.

4,796,555
KNOCKDOWN TYPE INFLATABLE SAILBOAT
Herry Chang, No. 371-7, Hsin Ming Road, Nei Hu District, Taipei, Taiwan
Continuation-in-part of Ser. No. 16,360, Feb. 19, 1987, abandoned. This application Sep. 29, 1987, Ser. No. 105,526
Int. Cl.[4] B63B 7/08
U.S. Cl. 114—39.1 **12 Claims**



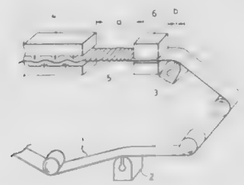
1. A knockdown type inflatable sailboat comprising:
twin inflatable, elongated mutually spaced rafts having sides and fore and aft ends;
breakwater means disposed beneath said rafts for stabilizing said sailboat;
stress elimination system including a plurality of U-shaped fastening rods disposed on the upper surface of said rafts in a mutually spaced relationship with the ends thereof depending on opposite sides of said rafts;
stress distribution means coupling the ends of each U-shaped rod to a corresponding side portion of said raft whereby weight disposed on said U-shaped rods will be carried by the sides of said rafts said means comprising a plurality of mutually spaced plates, each plate affixed to a side of a raft adjacent an end portion of each of said U-shaped rods and a plurality of sleeves, each mounted on one of said plates surrounding an end each of said U-shaped rods;
at least one stress rod extending substantially the length of each raft along the upper surface thereof interconnecting respective U-shaped fastening rods, and at least three connecting rods extending laterally between said rafts connecting a pair of U-shaped rods thereon;
rudder means carried by said sailboat at the aft end of aid rafts for steering said sailboat;
sail means including a mast mounted on a connecting rod connecting the fore ends of said rafts.

4,796,556
ADJUSTABLE COATING AND PRINTING APPARATUS
John W. Bird, Westport, Conn., assignor to Birow, Inc., Westport, Conn.
Filed Jun. 24, 1987, Ser. No. 65,954
Int. Cl.[4] B05C 11/00
U.S. Cl. 118—46 **23 Claims**



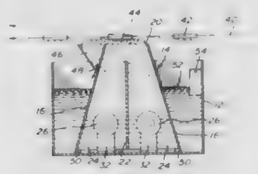
1. An adjustable in-line coating application apparatus for attachment in association with a downmstream liquid application station of an offset printing machine having a plurality of liquid application stations, for converting said downstream liquid application station to a coating application station for applying either continuous or spot coatings over the printed surface of a succession of copy sheets carrying ink images printed thereon at one or more upstream liquid application stations, said downstream liquid application station containing a blanket cylinder positioned to contact said plurality of printed copy sheets and an offset plate cylinder in vertical elevation above said blanket cylinder and supported for adjustment into and out of coating association therewith, said coating application apparatus having vertical guide means, a coating carriage attached to said support for substantially vertical movement along said guide means, said carriage comprising a coating application unit, including a container for a supply of liquid coating composition and an elongate coating applicator roll supported to receive a uniform supply of said composition on the surface thereof and to transfer a uniform supply of said composition to the surface of either a plate cylinder or a blanket cylinder in coating association therewith, and mechanical adjustment means for moving said carriage on said guide means relative to said support vertically between elevations corresponding to the locations of the blanket cylinder and the plate cylinder of an offset printing machine in order to move said coating applicator roll into coating association with either said blanket cylinder or said plate cylinder, as desired.

4,796,557
DEVICE FOR APPLICATION WITH USE OF WEB VIBRATION ABSORBER
Norio Shibata; Tsunehiko Sato; Hideo Takeda, and Naoyoshi Chino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan
Filed Apr. 17, 1987, Ser. No. 39,420
Claims priority, application Japan, Apr. 17, 1986, 61-87182; Apr. 19, 1986, 61-89215
Int. Cl.[4] B05C 5/02, 11/00
U.S. Cl. 118—62 **12 Claims**



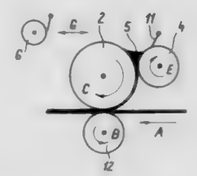
1. A vibration absorber for damping vibrations induced in a running web, comprising a pair of gas ejection chambers facing each other across said running web, each said gas ejection chambers comprising:
a first chamber receiving pressurized gas;
a second chamber having a gas ejection surface facing a respective side of said running web; and
a distributor plate disposed between said first and second chambers for making uniform a pressure distribution of said gas in said second chamber, wherein a plurality of pairs of said gas ejection chambers are provided along a length of said running web, a separation between opposing gas ejection surfaces of respective pairs of said gas ejection chambers decreasing in an upstream direction of said running web.

4,796,558
FOAM FLUXER
Raymond J. Chartrand, Kirkland, and Carlos A. Deambrosio, LaPrairie, both of Canada, assignors to Electrovert Limited, Ontario, Canada
Filed Feb. 19, 1988, Ser. No. 157,959
Int. Cl.[4] B05C 5/02
U.S. Cl. 118—74 **5 Claims**



1. A foam fluxer for fluxing components conveyed in a conveyor path above the fluxer, for installation in an open tank containing liquid flux, the fluxer comprising:
an aerator chimney housing with side walls and end walls for placement in and protruding above the open tank, the housing having a top foam outlet for positioning below the conveyor path,
at least one vertical internal divider located in the housing below the foam outlet, the divider forming at least two chambers, and
a porous aerator tube located in each chamber with connection means for a compressed gas supply to produce foam in each chamber, the foam from each chamber joining above the divider to exit upwards from the foam outlet.

4,796,559
APPARATUS FOR APPLYING A LIQUID TO A WEB OF MATERIAL
Walter Lohse, Herisau, Switzerland, assignor to Ulrich Steinemann AG, St. Gallen, Switzerland
PCT No. PCT/CH86/00109, § 371 Date Apr. 17, 1987, § 102(e) Date Apr. 17, 1987, PCT Pub. No. WO87/01401, PCT Pub. Date Mar. 12, 1987
PCT Filed Jul. 28, 1986, Ser. No. 51,142
Claims priority, application Switzerland, Sep. 4, 1985, 3806/85
Int. Cl.[4] B05C 1/08
U.S. Cl. 118—210 **11 Claims**



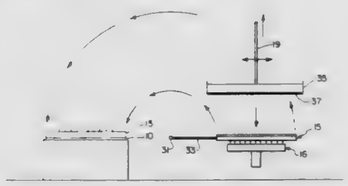
1. Apparatus for applying a liquid to a web of material (3), comprising an applicator roller (2), means for driving the applicator roller in both directions of rotation, means for advancing the web of material under the applicator roller tangentially in relation to the surface thereof such that it moves in the same direction as or in the opposite direction to the direction of movement of the adjacent surface of the roller dependent upon the direction of rotation of the roller, and a metering roller (4) which can be adjusted toward the applicator roller (2) and which is so arranged that in conjunction with the applicator roller (2) it forms a reservoir zone (5) for the liquid to be applied, such that in a first direction of rotation of the applicator roller the liquid will flow downwardly through a gap formed at the bottom of the reservoir zone (5) between the applicator roller (2) and the metering roller (4) and from there is conveyed by the applicator roller directly onto the web of material, and in a second opposite direction of rotation of the applicator roller (2) the liquid is conveyed away from the reservoir zone (5) freely upwardly and is conveyed as a liquid film by the applicator roller over the highest point of the applicator roller and onto the web of material, and wherein there is provided a drivable distributor roller (6) which, when the applicator roller is driven in the second opposite direction, can be adjusted toward the applicator roller (2) in the region of the liquid film between the reservoir zone (5) and the line of contact between the web of material and the applicator roller (2), such that the liquid to be applied is metered by a gap formed between the distributor roller (6) and the applicator roller (2), and means comprising an adjusting device for so adjusting the distributor roller.

4,796,560
AUTOMATIC SOLDER PASTE APPLICATION TO CIRCUIT BOARDS
Jean P. Berger, Raleigh; Evans H. Pridgen, Pittsboro, and Alfred W. Owens, Raleigh, all of N.C., assignors to Northern Telecom Limited, Montreal, Canada
Continuation of Ser. No. 63,790, Jun. 22, 1987, abandoned, which is a division of Ser. No. 681,265, Dec. 13, 1984, Pat. No. 4,704,305, which is a continuation-in-part of Ser. No. 586,807, Mar. 6, 1984, abandoned. This application Jul. 11, 1988, Ser. No. 217,031
Int. Cl.[4] B05C 1/02
U.S. Cl. 118—211 **10 Claims**

1. Apparatus for the application of solder paste to a circuit board, comprising:

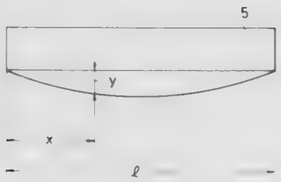
VOL 1098 ISS 2 JA 10 1989 UMI

(a) a perforated plate, the perforations in the plate being in a predetermined pattern facing in an upward direction;
(b) means for filling solder paste downwardly into said perforations;



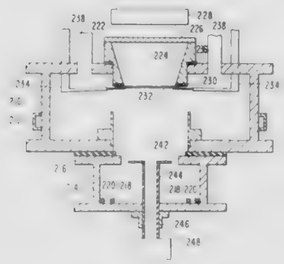
(c) means for rotating said plate 180° to a location adjacent a circuit board wherein said perforations face downwardly; and
(d) means for ejecting the solder paste from said perforations onto the circuit board.

4,796,561
ELECTROPHOTOGRAPHIC DEVELOPING DEVICE HAVING A SHAPED DOCTOR BOARD
Yusuo Takano; Hiroyoshi Tokoro; Junji Kobayashi; Masato Yamada; Toshimitsu Harada, and Kensei Hosoya, all of Ibaraki, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan
Filed Sep. 14, 1987, Ser. No. 95,716
Claims priority, application Japan, Sep. 12, 1986, 61-141109[U]
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 118—657 **3 Claims**



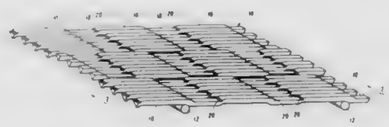
1. An electrophotographic developing device comprising:
a magnetic roll rotatably suported at bearing points in an electrographic developing device; and
a fixed doctor board disposed adjacent to, and spaced from, said magnetic roll for controlling the thickness of a layer of magnetic developing agent forwarded by said magnetic roll, wherein said doctor board has a longitudinal edge which confronts said magnetic roll and which is shaped in such a manner that a gap between said edge and said magnetic roll varies and has a minimum in the vicinity of the middle of said magnetic roll when said magnetic roll is stationary, and is substantially uniform along the entire length of the magnetic roll when said magnetic roll is rotating, thereby assuring a uniform thickness of said layer of said magnetic developing agent applied to a photosensitive drum rotating adjacent said rotating magnetic roll.

4,796,562
RAPID THERMAL CVD APPARATUS
Daniel L. Brors, Fremont; Larry R. Lane, San Jose; Mark W. Goldsborough, Santa Clara; Jason M. Samsel, Milpitas; Max van Mastrigt, San Jose, and Robert Foster, San Francisco, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.
Continuation-in-part of Ser. No. 805,029, Dec. 3, 1985, Pat. No. 4,709,655. This application Jan. 15, 1987, Ser. No. 3,516
Int. Cl.⁴ C23C *16/48*; F27D *11/00*
U.S. Cl. 118—725 **25 Claims**



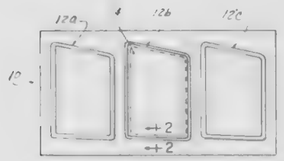
1. An apparatus for quickly heating a semiconductor wafer in a wafer processing machine, comprising:
a ring chuck and clamping means for holding a wafer face downward;
a holder for holding said ring chuck;
a window located above and spaced from the wafer;
a radiant heat source located above the window;
said window being sealed to said holder to provide a vacuum-tight seal, and said holder being sealed to the processing machine to provide a vacuum-tight seal.

4,796,563
WIRE MESH FLOORING
Dale H. Kenter, Earlville, Iowa, assignor to Eastern Iowa Pork, Earville, Iowa
Filed Apr. 20, 1987, Ser. No. 39,708
Int. Cl.⁴ A01K *1/00*
U.S. Cl. 119—28 **4 Claims**



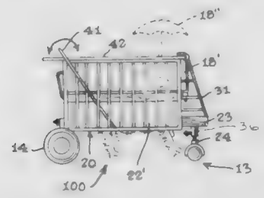
1. Flooring for livestock buildings comprising a plurality of longitudinally-extending wires which are parallel to each other and spaced apart a sufficient distance to permit the passage of waste through the flooring while close enough to prevent the feet of animals from being caught between adjacent wires, each longitudinally-extending wire having a plurality of alternate high and low portions along its length, the longitudinally-extending wires being arranged in a pattern so that a selected number of longitudinally-extending wires form a first group with the high portions and low portions aligned with each other and a selected number of the longitudinally-extending wires form a second group with the high and low portions aligned with each other, the first group of longitudinally-extending wires having its high portions staggered with respect to the high portions of the second group thus forming alternate groups of high and low portions throughout the flooring, and cross wires extending substantially transversely to the longitudinally-extending wires to provide support for the longitudinally-extending wires, the crosswires being positioned so as to be always beneath the high portions of the longitudinally-extending wires, the crosswires thereby all lying in the same plane.

4,796,564
CARRIER FOR SPRAYCOATING AUTO LIGHT COVERS
Francis M. Smith, 11060 Hupp, Warren, Mich. 48089
Filed Mar. 10, 1986, Ser. No. 837,890
Int. Cl.⁴ B05C *11/14, 13/00, 13/02*
U.S. Cl. 118—500 **11 Claims**



1. A carrier for a work piece having a generally dome shaped outer surface and an open faced lower inside surface, to be spray coated with a coating material on the domed surface side, comprising:
a planar support board having an upper side adapted to receive said workpiece;
a locating center piece affixed to said support board configured to receive said hollow side of said workpiece to laterally locate said workpiece on said support board;
a renewable upper surface mounted on the upper side of said support board comprised of a plurality of layers of coating absorbent material loosely adhered to each other, whereby the topmost layer may be successively stripped away after continued exposure to coating overspray to present a renewed exposed surface adjacent said center piece.

4,796,565
PET TRANSPORTING, RESTRAINING AND EXERCISING ASSEMBLY
Rodney P. Charbeneau, 2909 Oakdale, Grand Prairie, Tex. 75050
Filed Jul. 6, 1987, Ser. No. 69,800
Int. Cl.⁴ A01K *15/02, 29/00*
U.S. Cl. 119—101 **5 Claims**



1. The combination of a wheeled transport unit and a harness apparatus for exercising, transporting and protecting small domestic four legged pets wherein the combination comprises:
a wheeled transport unit including a base member having an enlarged opening and further provided with a front and rear wheel assembly wherein at least the front wheel assembly is removably mounted on the base member; and,
said rear wheel assembly comprises an elongated axle member provided with a pair of wheel elements; wherein, the axle member is movable secured to said base member such that said pair of wheel elements may be disposed in a retracted position relative to the longitudinal axis of the transport unit;
a cage member mounted on said base member and provided with a movable cage panel;
a panel member operatively associated with said base member and comprising at least one movable floor panel member capable of translation within the cage member to a position whereby the enlarged opening in said base member is exposed; and,
a harness apparatus operatively associated with said wheeled transport unit wherein said harness apparatus includes a generally rectangular body harness member; a plurality of strap elements attached to the body harness member and provided with cooperating securing means; and, a plurality of attachment elements secured to the body harness member; wherein, the harness apparatus is adapted to captively surround the torso of a pet; and, at least one of the plurality of attachment elements is adapted to releasably engage the cage member of the transport unit; whereby, the movement of the pet within the body harness may be transmitted via said at least one attachment element to impart movement to the wheeled transport unit, when the at least one movable floor panel has been raised to allow the feet of the domestic pet to extend through said enlarged opening in the base member of the wheeled transport unit.

4,796,566
CONVERTIBLE TETHERING SYSTEM
Thomas E. Daniels, 1603 Babcock, Suite 130, San Antonio, Tex. 78229
Filed May 21, 1987, Ser. No. 53,155
Int. Cl.⁴ A01K *1/04*
U.S. Cl. 119—124 **6 Claims**



1. A tethering system for mobile and stationary use comprising:
a portable leash cartridge having a casing, a leash extending therefrom, and cartridge means for retracting said leash within said cartridge;
a housing for holding said leash cartridge, said housing having a cartridge opening for receiving and removing said leash cartridge and a leash cord opening for allowing a leash cord to pass from said cartridge through said housing;
means for removably anchoring said housing in a fixed location, said housing being pivotally mounted to said anchoring means wherein said cartridge is useful for mobile restraint of an animal on said leash, and when held within said housing, is useful for tethering an animal on said leash at a fixed location without becoming entangled; and
means for removably securing said leash cartridge within said housing, said securing means attached to said housing, said securing means comprising
a door member hingedly attached to said housing being oriented, sized, and shaped to at least partially obstruct

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said cartridge opening when said door member is in a closed position; and

a U-shaped member hingedly attached by a hinge to said housing having first and second arms, and oriented so said first arm may be superposed over a portion of said door member by pivoting said U-shaped member about said hinge when said door member is in a closed position, and said second arm may be superposed over an opposing portion of said housing by pivoting said U-shaped member about said hinge.

4,796,567

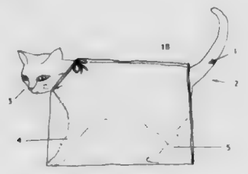
PROTECTIVE BAG FOR HANDLING POTS

Nancy J. Ailsa, and Lorraine J. Ailsa, both of 6633 Elwell St., Burnaby, B.C., Canada V5E 1J9

Filed Jun. 26, 1987, Ser. No. 67,717

Int. Cl.[4] A01K *29/00*; A01D *11/00*

U.S. Cl. 119—158 **9 Claims**



1. A bag for containing a pet while the pet is being bathed or groomed, said bag comprising a water-permeable mesh having an open end sized to receive the pet and a substantially closed end, and having adjacent said closed end an aperture formed in said bag for allowing the passage of the head of the pet.

4,796,568

POWER PLANT BURNING FUEL IN A FLUIDIZED BED

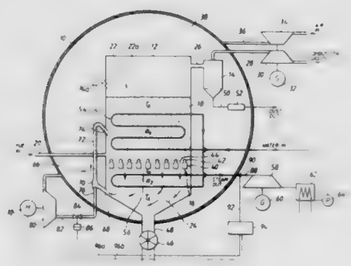
Krishna K. Pillai, Finspong, Sweden, assignor to ABB Stal AB, Finspong, Sweden

Filed Mar. 22, 1988, Ser. No. 171,597

Claims priority, application Sweden, Mar. 25, 1987, 8701228

Int. Cl.[4] F22B *1/00*

U.S. Cl. 122—4 D **10 Claims**



8. In a pressurized fluidized bed combustion plant which includes a bed vessel containing fluidized fuel and particulate bed material, with the bed divided into an upper fluidized bed region and a lower non-fluidized ash chamber region which receives hot bed material from the upper region, and with heat-exchange tubes embedded in the upper region to generate steam from water fed therethrough,

the improvement of superheating the steam by passing it through further heat-exchange tubes embedded in the lower region and providing means to recycle bed material from the ash chamber back to the fluidized bed region.

4,796,569

FURNACE BOILER AND PROCESS FOR THE OPERATION OF THE BOILER

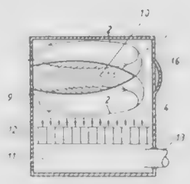
Rolf Bommer, Hochbildstrasse 21, 7770 Ueberlingen, Fed. Rep. of Germany

Filed Jan. 15, 1988, Ser. No. 144,540

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1987, 3701439

Int. Cl.[4] F22B *37/00*

U.S. Cl. 122—6 A **25 Claims**



1. Process for operating a furnace boiler with a firebox having a cooled wall and at least one blowpipe to direct flame into the firebox, and heat exchangers connected to the firebox through which the flue gases flow, consisting of the steps of extracting heat from the flue gases essentially only by the heat exchangers and cooling the wall of the firebox only to the extent that, at maximum burner output, the temperature on the inner side of the wall does not exceed approximately 600° C. and, when the burner output is reduced to about 1/10 of maximum output, the temperature does not fall below approximately 180° C.

4,796,570

APPARATUS FOR HEATING STEAM FORMED FROM COOLING WATER

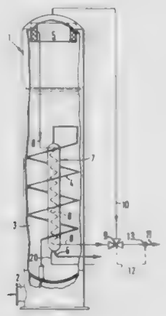
Herman J. Lameris, Utrecht, Netherlands, assignor to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Filed Sep. 30, 1987, Ser. No. 79,534

Claims priority, application Netherlands, Aug. 26, 1986, 8602162

Int. Cl.[4] F22D *1/00*

U.S. Cl. 122—7 R **9 Claims**



1. An apparatus for heating steam formed from cooling water in a heat exchanger for hot gas, comprising:

a vessel having a compartment for cooling water, an inlet for the gas to be cooled, and a collecting space for maintaining generated steam;

at least one gas transmitting tube for transmitting gas from the inlet into the water cooling compartment;

at least one steam tube connected to the collecting space; and

at least one superheater module situated within the cooling water compartment of said vessel, each module having an inlet end and an outlet end with the outlet end defining an outlet, each module being connected to at least one gas transmitting tube at its inlet end for the passage through the module of gas to its outlet end and out its outlet, and to a respective steam tube, said steam tube passing through the superheater module from its inlet end to its outlet end.

4,796,571

THERMAL RESPONSE TYPE FLUID FAN COUPLING DEVICE

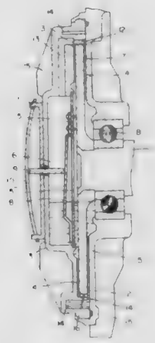
Yuichi Ono, and Kazunori Takikawa, both of Numazu, Japan, assignors to Usui Kokusai Sangyo Kabushiki Kaisha, Sunto, Japan

Filed Dec. 14, 1987, Ser. No. 132,152

Claims priority, application Japan, Dec. 16, 1986, 61-299323

Int. Cl.[4] F16D *31/00*

U.S. Cl. 123—41.12 **15 Claims**



1. A thermal response type fluid fan coupling device for an internal combustion engine wherein:

the inside of a sealed chamber which is supported on a rotational shaft whose tip is provided with a driving disc through a bearing and which comprises a case and a cover having cooling fans on the exterior surface thereof is divided by a separating plate which has an oil flow adjusting hole into an oil accumulating chamber and a torque transmission chamber accommodating said driving disc;

a dam is formed between an exterior surface of said driving disc and an inner surface of said sealed chamber for the purpose of introducing oil into a circulated passage connecting said torque transmission chamber and said oil accumulating chamber;

the inside of said sealed chamber is provided with a valve member which is arranged to open said flow adjusting hole in said separating plate when the ambient temperature exceeds a predetermined level and to close the same when the ambient temperature falls below a predetermined level in association with transformation of a thermosensitive body provided on the front surface of said cover, said transformation occuring in accordance with the change in the ambient temperature;

an effective oil contact area in a gap portion for transmitting torque which is disposed between the surfaces of said case and cover and the surface of said driving disc, the surfaces opposing each other at the outer periphery of said driving disc is increased or decreased in order to control the torque transmission from the rotational shaft to the follower side of said sealed chamber, said thermal response type fluid coupling device being characterized in that an idle oil accumulating chamber which is connected to an introducing gap that is connected to said torque transmission chamber is provided at an outer position over a dam in the radial direction in said sealed chamber side and oil introducing means which is arranged to communicate said oil accumulating chamber and said torque transmission chamber only when the engine is stopped is provided in said separating plate.

4,796,572

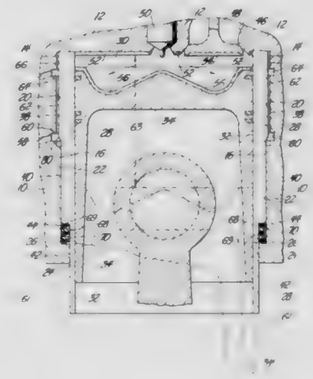
COMBUSTION CHAMBER LINER

Hans Heydrich, Phoenix, Ariz., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 1, 1987, Ser. No. 55,962

Int. Cl.[4] F01P *3/00*

U.S. Cl. 123—41.42 **14 Claims**



1. In a piston engine comprising an engine having a cylindrical bore therein, and a cooperating engine head closing the bore: the improvement comprising a sleeve extending concentrically through the bore; the inner side surface of said sleeve being designed to slidably support a piston; the outer side surface of said sleeve having a step configuration defining a first annular shoulder facing away from the cylinder head; the bore having a step configuration defining a second annular shoulder facing the cylinder head; said second shoulder being further away from the cylinder head than the first shoulder, whereby an annular free space is formed between the two shoulders; a compression spring means located in the annular free space; said spring means being trained between the two shoulders to bias the sleeve toward the cylinder head; said sleeve having a sliding fit in the bore whereby the sleeve can undergo changes in its length in response to thermal stresses associated with the combustion process; said spring means having sufficient strength to maintain the sleeve in pressure contact with the cylinder head while at the same time accommodating axial thermal growth of the sleeve; the engine further including a protection means for isolating the sleeve from radially directed thermal or mechanical distortions of the cylindrical bore and for dampening the vibrations transferred to the sleeve from the engine block, the protection means being comprised of an annular portion of the cylinder bore surface remote from the end of the bore at the cylinder head, an opposing portion of the sleeve surface defining with the remote

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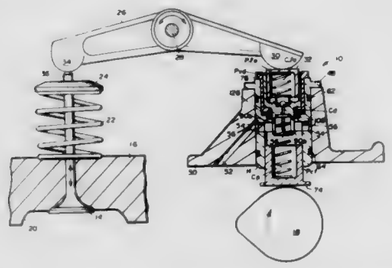
cylinder bore surface portion a toroidal gap, and a stationary body of fluid filling the toroidal gap.

4,796,573

HYDRAULIC ENGINE VALVE LIFTER ASSEMBLY

Russell J. Wakeman, and Stephen F. Shea, both of Newport News, Va., assignors to Allied-Signal Inc., Morris County, Morris Township, N.J.

Filed Oct. 2, 1987, Ser. No. 103,879
Int. Cl.[4] F01L *1/24*
U.S. Cl. 123—90.16 **39 Claims**



1. In a hydraulic engine valve lifter of the type including a pair of pistons defining therebetween a pressure chamber, the improvement comprising a lash adjusting piston establishing a lash adjustment chamber with respect to at least one of said pair of pistons, and one-way valve means for permitting fluid to flow from said pressure chamber into said lash adjustment chamber when excess valve lash is present whereby such excess valve lash is adjusted, and damping control means for preventing motion damping of said at least one piston during an upstroke thereof while yet damping motion of said at least one piston at a predetermined position during a downstroke thereof, said damping control means including

a valve damper chamber,

primary and secondary passageways between said pressure and damper chambers,

a secondary passageway closing means movable between (i) an open position with respect to said secondary passageway to allow fluid to flow into said damper chamber during said upstroke of said at least one piston whereby motion damping thereof is prevented, and (ii) a closed position to prevent fluid from flowing from said damper chamber into said pressure chamber during a downstroke of said at least one piston, and

primary passageway closing means for closing said primary passageway at said predetermined position during said downstroke of said at least one piston, said primary passageway closing means closing said primary passageway subsequent to closure of said secondary passageway by said secondary passageway closing means, whereby motion damping of said at least one piston occurs.

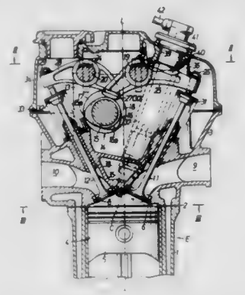
4,796,574

SOHC TYPE INTERNAL COMBUSTION ENGINE

Noriaki Fujii; Takeshi Iwata, and Toshihiro Oikawa, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,493
Claims priority, application Japan, Jul. 9, 1986, 61-161479
Int. Cl.[4] F01L *1/26*
U.S. Cl. 123—90.23 **12 Claims**

1. An SOHC type internal combustion engine comprising a cylinder head which has a combustion chamber defined therein, a camshaft carried thereon, an ignition plug mounting hole opening to a center portion of a top surface of the combustion chamber and a protecting cylinder formed therein with an ignition plug insertion hole, wherein a journal for the camshaft has a diameter larger than a path of rotation of a lobe of a cam on the camshaft and is supported by a bearing hole formed in



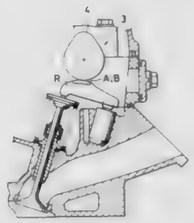
a camshaft receiving wall which is provided on said cylinder head, and said protecting cylinder and said camshaft receiving wall are formed in a single piece.

4,796,575

WEAR RESISTANT SLIDE MEMBER MADE OF IRON-BASE SINTERED ALLOY

Toshihiko Matsubara, Kawagoe, and Akira Fujiwara, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1987, Ser. No. 111,253
Claims priority, application Japan, Oct. 22, 1986, 61-249441; Oct. 22, 1986, 61-249442
Int. Cl.[4] F01L *1/18, 1/04*
U.S. Cl. 123—90.44 **5 Claims**



1. A wear resistant slide member made of iron-base sintered alloy, in which carbides are dispersed in a matrix phase; characterized in that 80% or more of the carbides contained in an alloy metallurgical structure have grain sizes of 4～15 μm, said carbides are dispersed at an average grain interval of 5～15 μm, and a field-of-view occupation area proportion of the carbides is 10～50%.

4,796,576

ADJUSTMENT MECHANISM FOR CERAMIC ROCKER ARM

Tooru Matsuura; Noboru Ishida, and Mitsuyoshi Kawamura, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

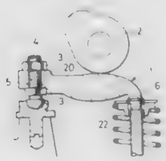
Filed Jun. 24, 1987, Ser. No. 65,880
Claims priority, application Japan, Jun. 30, 1986, 61-98988[U]
Int. Cl.[4] F01L *1/18*
U.S. Cl. 123—90.43 **9 Claims**

1. An adjustment mechanism for a ceramic rocker arm, said

rocker arm having a valve engaging end and an opposite adjustment end, said mechanism comprising:

an opening through said adjustment end of said rocker arm, said opening having an unthreaded circular bore;

an externally threaded adjusting shaft disposed to pass through said opening;



an internally threaded locking member on said shaft disposed to engage the external threads of said adjusting shaft; and

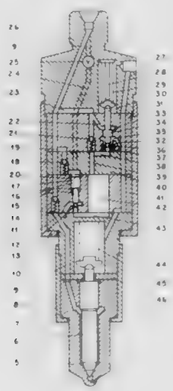
an internally threaded member having a threaded portion disposed to engage the external threads of said shaft, said threaded member being engaged on said adjustment end of said rocker arm.

4,796,577

INJECTION SYSTEM WITH PILOT INJECTION

George S. Baranescu, 5316 Howard Ave., Western Springs, Ill. 60558

Filed Jun. 16, 1986, Ser. No. 874,523
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—300 **20 Claims**



1. An internal combustion engine having at least one cylinder, each cylinder being provided with an injector which includes a nozzle whose delivery channel in opened and closed by a valve actuated by the nozzle spring, said injector including also a drain, and a high pressure channel connected by means with an injection pump and with the nozzle, the injection pump being connected to a fuel tank, said internal combustion engine being characterized by several capacities including the division of the fuel charge of each cycle in two portions of different amount, which are injected sequentially through the same injector, starting with the smaller portion which acts as a pilot for the main fuel charge, the two sequential injections being achieved by the same injection pump, through the storage of the pilot in an accumulator located inside the injector, the storage occuring during the injection of the main fuel charge, the accumulated pilot being injected by fuel expansion in the cycle following its accumulation, at controllable timing and in controllable amount, the main fuel charge being delivered by the injection pump at controllable timing and in controllable amount, when the temperature and pressure in the combustion chamber have substantially increased due to the combustion of the pilot, these capacities of the engine being achieved by means including

an accumulator connected with the high pressure channel, and with the nozzle,

means which control the connection between the high pressure channel and the accumulator,

means which control the timing of pilot injection, this timing being electronically programmed,

means which prevent a fuel flow from the accumulator towards the injection pump during the injection of the pilot,

means which control the fuel pressure in the accumulator,

means which control the residual pressure in high pressure channel,

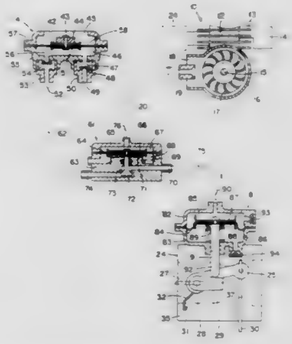
means for the electric ignition of the pilot, when the engine operates with fuels having low self-ignition property.

4,796,578

ANTI-OVERRUNNING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Kohji Nagasaka, Kawasaki; Takeshi Kobayashi, Yokohama, and Yoshimi Sejimo, Urayasu, all of Japan, assignors to Walbro Far East, Inc., Kawasaki, Japan

Filed Sep. 29, 1987, Ser. No. 102,383
Claims priority, application Japan, May 6, 1987, 62-110116
Int. Cl.[4] F02D *9/02*
U.S. Cl. 123—378 **1 Claim**



1. An anti-overrunning device for an internal combustion engine comprising an actuator responsive to control pressure for actuating a throttle valve of a carburetor in a direction of closing the valve, a vibrating pump actuated by vibration of the engine for directing control pressure to said actuator to cause said throttle valve to move in a closing direction, and a control valve actuated by air pressure of an engine cooling fan to connect said pump to said actuator to cause said throttle valve to move in a closing direction under conditions of overrun of said engine.

4,796,579

AUTOMOTIVE TYPE THROTTLE BODY

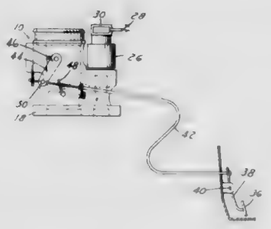
Brian C. Wolfe, Canton, and Thomas D. Wernholm, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1988, Ser. No. 162,844
Int. Cl.[4] F02M *7/12*
U.S. Cl. 123—336 **7 Claims**

1. A multi-stage throttle body having parallel primary and

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secondary throttle bores defining air flow induction passages each open to ambient air at one end and adapted to be connected to an engine intake manifold at the other end for providing two independent passages of air to the engine, said primary and secondary passages each having throttle valve means therein movable between positions opening and closing the respective passages to control air flow therethrough, a drive-by-wire electrical actuator means for moving the primary throttle valve means, an operator controlled vehicle accelera-



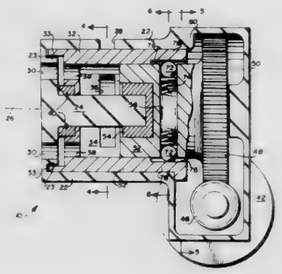
tor pedal electrically connected to the primary throttle valve means and mechanically connected directly to the secondary throttle valve means and depressible for effecting movement of the primary throttle valve means by the drive-by-wire means and for positively moving the secondary throttle valve means at times, and lost motion means in the connection between the accelerator pedal and secondary throttle valve means effecting movement of the secondary throttle valve means only after a predetermined depression of the accelerator pedal.

4,796,580

IDLE CONTROL VALVE FOR USE WITH A THROTTLE ASSEMBLY OF AN INTERNAL COMBUSTION ENGINE

Russell Wakeman, Newport News, Va., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Sep. 11, 1987, Ser. No. 95,085
Int. Cl.[4] F02M *3/00*
U.S. Cl. 123—339 **16 Claims**



1. An idle control valve for an internal combustion engine, said idle control valve having an air inlet and an air outlet to permit a controllable amount of air to flow therebetween, and including:

a valve body;

a valve spool;

means for mounting said valve spool within said valve body so that said valve spool is rotatable in first and second opposite rotational directions about an axis common to said valve spool and valve body;

said valve spool and valve body together including valve port means defining an alterable effective area which, in turn, permits an amount of air flowing through said valve body between said air inlet and outlet thereof to be correspondingly alterable;

drive means for rotating said valve spool about said common axis is said first and second opposite directions for altering said effective area of said port means to thereby responsively controllably alter the amount air flowing through said valve body between said inlet and outlet thereof;

clutch means for (i) said valve spool at torque levels below a threshold so as to transmit same to, and thus rotate, said valve spool, and (ii) releasing said engagement with said valve spool in response to said threshold torque being exceeded to allow relative slippage to occur between said drive means and said valve spool thereby preventing torque transmission to, and thus rotation of, said valve spool, and

seal means for effectively sealing said valve spool and valve body against air leakage, said seal means including,

(i) a generally U-shaped flange rigidly associated with a terminal end of said valve body; and

(ii) a finger flange rigidly associated with said valve spool adjacent said valve body terminal end, wherein

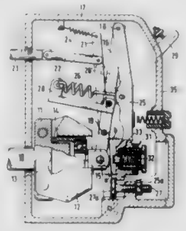
(iii) said finger flange and said U-shaped flange are interdigitated with one another in close fitting relationship so as to collectively establish a mechanical labyrinth seal.

4,796,581

CENTRIFUGAL RPM GOVERNOR FOR INTERNAL COMBUSTION ENGINES

Werner Brühmann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 29, 1984, Ser. No. 584,961
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321715
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—373 **5 Claims**



1. A centrifugal rpm governor for internal combustion engines having a governor member adjusting in accordance with the rpm, having a force-transmitting member subject to the force of at least one governor spring and having a torque-control capsule which is threaded in a positionally secured manner into a chamber in a portion of the force-transmitting member which includes a bore in axial alignment with said governor member and which can be acted upon by the governor member, said torque-control capsule includes a stop housing embodied as a screw sheath, said stop housing includes internal and external threads and an inside stepped longitudinal bore, an aperture in said stop housing in alignment with said bore in said chamber, a stop bolt received in said aperture, said stop bolt protrudes through said aperture beyond said bore in said chamber in the force-transmitting member with a dimension of its protrusion (b) which is dependent on the threaded position of the torque-control capsule in the force-transmitting member which determines a torque-control stroke, a torque-control spring, supported on one end on the stop bolt and on another end by a bottom end face of a cup shaped adjusting ring which has contin uous infinitely graduated external adjusting screw threads and is secured in a positionally fixed manner inside said

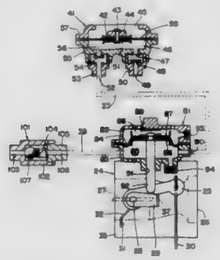
stop housing in the vicinity of its internal thread, said cup-shaped adjusting ring having a hollow-cylindrical, sheath-like wall in which said external adjusting screw threads have a normal, circular outer contour at its bottom end which is in abutment with said torque-control spring, and said adjusting ring is formed into an oval shape over a portion of its length prior to installation, in the vicinity of the sheath-like wall and has its greatest oval deformation in the vicinity of an end section open toward the outer end of the sheath-like wall of said adjusting ring.

4,796,582

ANTI-OVERRUNING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Yoshimi Sejimo, Urayasu; Toshiaki Tsubai, Sendai, and Teruhiko Tobinai, Izumi, all of Japan, assignors to Walbro Far East, Inc., Kawasaki, Japan

Filed Sep. 29, 1987, Ser. No. 102,133
Claims priority, application Japan, Apr. 10, 1987, 62-88451
Int. Cl.[4] F02D *9/02*
U.S. Cl. 123—378 **5 Claims**



1. An anti-overrunning device for an internal combustion engine comprising a vibrating pump for generating pneumatic pressure by vibrations of the engine; an actuator having a spring-biased rod for urging a throttle valve lever in a direction of closing a throttle valve and responsive to the pneumatic pressure of said vibrating pump to act against said spring to open said throttle valve; and a vibration sensor positioned in a passage for communicating a pressure chamber of said actuator to atmosphere by virtue of the vibrations of the engine during overrunning thereof and cause said spring-biased rod to move said throttle valve in a closing direction.

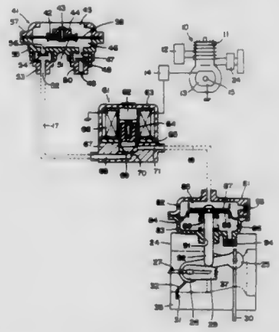
4,796,583

ANTI-OVERRUNNING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Kohji Nagasaka, Kawasaki; Takeshi Kobayashi, Yokohama, and Yoshimi Sejimo, Urayasu, all of Japan, assignors to Walbro Far East, Inc., Kawasaki, Japan

Filed Sep. 29, 1987, Ser. No. 102,354
Claims priority, application Japan, May 6, 1987, 62-110117
Int. Cl.[4] F02D *9/02*
U.S. Cl. 123—378 **1 Claim**

1. An anti-overrunning device for an internal combustion engine comprising a vibrating pump for generating pneumatic pressure by vibrations of the engine, an actuator for actuating a throttle valve of a carburetor in a direction of closing the valve, and a control valve for controlling a flow of the pneumatic pressure from said vibrating pump to said actuator during overrunning of the engine, and said control valve being



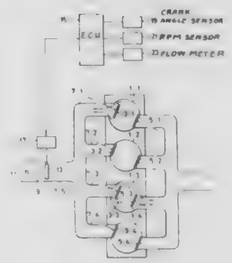
actuated by virtue of the electromotive force of a generator driven by the engine.

4,796,584

INTAKE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE AND INTAKE CONTROL VALVE USED THEREIN

Hiroyuki Goto, Anjo; Tokio Kohama, Nishio; Yoshitaka Nishio, Nagoya; Hideki Obayashi, Okazaki, and Kazuyuki Horie, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 9, 1987, Ser. No. 12,548
Claims priority, application Japan, Feb. 7, 1986, 61-26259; Feb. 19, 1986, 61-34767; May 29, 1986, 61-125192
Int. Cl.[4] F02D *9/08, 9/10*
U.S. Cl. 123—403 **25 Claims**



1. An intake control system in a multi-cylinder internal combustion engine having a plurality of engine cylinders connected to a common intake passage and having respective intake valves, said intake control system comprising:

an intake control valve disposed in said common intake passage;

an actuator for selectively opening and closing said intake control valve; and

an electronic control unit including:

means for generating an electric signal indicative of an operating condition of each said intake valves; and

means for controlling said actuator on the basis of said electric signal so that said intake control valve is set to the closed state at a time earlier by a predetermined time period than a time that said intake valve is switched from the open state to the closed state and set to the open state in response to the closed state of said intake valve.

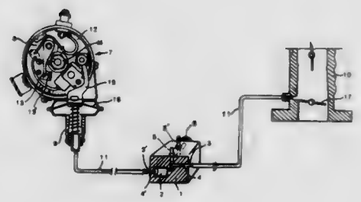
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,585

VACUUM ADVANCE REGULATOR FOR A SPARK IGNITION ENGINE

Sang M. Kim, 36-6 Seongjang-Dong, Seongdong-Ku, Seoul, Rep. of Korea

Filed Oct. 27, 1986, Ser. No. 923,384
Claims priority, application Rep. of Korea, Oct. 31, 1985, 8122
Int. Cl.[4] F02P 5/10
U.S. Cl. 123—409 2 Claims



1. A vacuum advance regulator for an internal combustion engine having spark timing comprising:
(a) a body having a first bore and a second bore,
(b) a vacuum chamber located within said body and connected to the outside of said body by means of a nipple extending from one side of said chamber through the first bore and a nipple extending from the other side of said chamber through the second bore where the other side of the nipple attached to the first bore is connected by means of a vacuum hose to a carburetor and where the other side of the nipple attached to the second bore is connected by means of a vacuum hose to a vacuum advancer,
(c) a first adjustable throttle connected in-line with said nipple extending from the first bore,
(d) adjustable throttle in communication with said vacuum chamber, atmosphere and with said first throttle where said first and second throttles allow adjustment to set the spark timing, and
(e) wherein said first and second throttles are set to provide spark timing control in accordance with the following equation:

$$\theta(BTDC) = \frac{\left(\beta \times \frac{L}{350} - \beta\right)}{\pi} + \beta$$

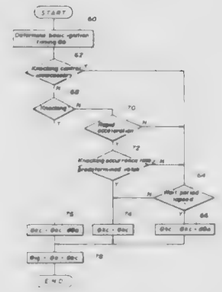
where:
θ(BTDC)=angle before top dead center (°)
β=substitution parameter for engine speed in revolutions per minute
L=exhaust volume divided by the number of cylinder in cubic centimeters (cc)
π=Pi or 3.1416.

4,796,586

METHOD OF AND APPARATUS FOR CONTROLLING IGNITION TIMING IN INTERNAL COMBUSTION ENGINE

Akira Tanaka; Akira Nagao; Yukihiko Sasaki; Hideji Yamada; Toyohei Nakajima, and Toshiyuki Mieno, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1987, Ser. No. 74,606
Claims priority, application Japan, Jul. 22, 1986, 61-170934; Jul. 22, 1986, 61-170931
Int. Cl.[4] F02P 5/15
U.S. Cl. 123—425 3 Claims



1. An apparatus for controlling ignition timing in an internal combustion engine, comprising:
a first means for detecting an angular position of an engine crankshaft to generate an output signal indicative of engine speed;
a second means for detecting a state of engine load to generate an output signal in response thereto;
a third means for detecting a knocking condition of the engine to generate an output signal in response thereto;
a control means for receiving the output signals of the first, second and third means to determine a basic ignition timing of the engine based upon the detected engine speed and engine load and when the knocking condition is detected, adjusting the basic ignition timing in a retard direction, said control means comparing the detected engine speed with a predetermined low engine speed to determine a region of engine operation in which knocking control is unnecessary and when an engine operation is detected to be in the region with the ignition timing still retarded, slightly adjusting the retarded ignition timing in an advance direction, the slight adjustment occurring once per predetermined number of firings which are proportional to the engine speed, said control means generating an output signal based upon the determined ignition timing; and
ignition means for receiving the output signal of the control means to ignite an air/fuel mixture in a combustion chamber of the engine.

4,796,587
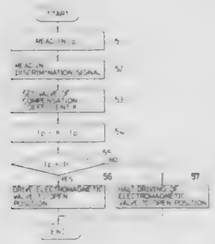
AIR/FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Toyohei Nakajima, and Yasushi Okada, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1987, Ser. No. 10,553
Claims priority, application Japan, Feb. 4, 1986, 61-14758[U]
Int. Cl.[4] F02D 41/14
U.S. Cl. 123—440 5 Claims

1. An air/fuel ratio control system for an internal combustion engine, comprising:

an oxygen concentration sensor disposed within an exhaust gas passage of said internal combustion engine, said sensor having a linear output characteristic for producing an output signal varying in proportion to the concentration of oxygen in exhaust gases produced from said internal combustion engine;
an electric element having an electric characteristic which represents deviations of the actual value of said output signal from a predetermined reference linear output characteristic;
signal generating means for producing a discrimination signal in response to the electric characteristic of said electric element;



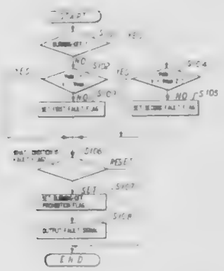
compensation means for performing compensation of said output signal of said oxygen concentration sensor in accordance with said discrimination signal, to produce a compensated output signal;
comparing means for comparing the compensated output signal with a reference signal corresponding to a target air/fuel ratio; and
air/fuel ratio adjustment means for adjusting the air/fuel ratio of the mixture supplied to said internal combustion engine, in accordance with a resultant signal produced by said comparing means.

4,796,588

FUEL CONTROL APPARATUS

Setsuhiro Shimomura, and Yukinobu Nishimura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1987, Ser. No. 41,066
Claims priority, application Japan, Apr. 22, 1986, 61-95139; Apr. 25, 1986, 61-97212; Sep. 18, 1986, 61-222520
Int. Cl.[4] F02D 41/22
U.S. Cl. 123—479 5 Claims



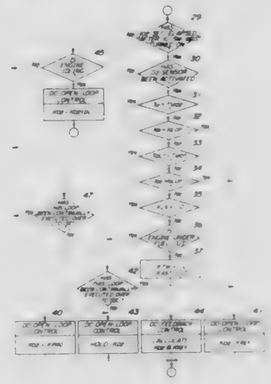
1. A fuel control apparatus for calculating the quantity of fuel required for operating an internal combustion engine based on an output of a hot-wire type intake air quantity sensor disposed in an air intake passage for the internal combustion engine and supplying the optimum amount of the fuel to the engine by controlling a fuel control valve in accordance with the calculated value, characterized in that said fuel control apparatus comprises a burn-off control section for heating the hot wire of said sensor at a temperature high than a temperature in the normal operation, after said engine has been stopped, so as to burn off a deposit on said hot wire, means for stopping the operation of said burn-off control section when an output from said sensor crosses a predetermined value and means for outputting a signal indicative of a trouble in said sensor upon reaching a predetermined number of the stops of operation which exceeds one.

4,796,589

AIR-FUEL RATIO FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Sachito Fujimoto, and Kazunari Yamashita, both of Wako, Japan, assignors to Honda Giken Kogyo K.K. (Honda Motor Co., Ltd. In English), Tokyo, Japan

Filed Jan. 26, 1988, Ser. No. 148,486
Claims priority, application Japan, Mar. 31, 1987, 62-78336
Int. Cl.[4] F02M 23/08; F02B 3/00
U.S. Cl. 123—489 8 Claims



1. A method of effecting feedback control of the air-fuel ratio of an air-fuel mixture being supplied to an internal combustion engine having an exhaust system and an exhaust gas ingredient concentration sensor arranged in said exhaust system, to bring the air-fuel ratio to desired values by correcting a fuel quantity to be supplied to said engine by means of a correction coefficient which varies in response to output from said exhaust gas concentration sensor, when said engine is operating in an air-fuel ratio feedback control region, the method comprising the steps of:
(a) determining whether said engine is operating in said feedback control region or another region other than said feedback control region;
(b) calculating an average value of values of said correction coefficient obtained while said engine is operating in said feedback control region, when it is determined that said engine is operating in said feedback control region; and
(c) correcting the calculated average value in dependence on a temperature of said engine and initiating said feedback control by using the corrected average value as an initial value of said correction coefficient, when it is determined that said engine has shifted to said feedback control region from said another region.

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4,796,590

RAPID-RESPONSE METHOD AND DEVICES FOR DETECTION OF POOR COMBUSTION

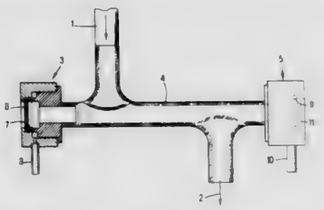
Paul Degobert, Rueil-Malmaison; Emmanuel Goldenberg, Poissy; Yvon Nadaud, Saint-Ouent, and Michel Molinier, St. Cloud, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 534,650, Sep. 22, 1983, abandoned. This application Nov. 29, 1985, Ser. No. 802,723

Claims priority, application France, Sep. 22, 1982, 82 16075

Int. Cl.[4] F02D *41/14*

U.S. Cl. 123—489 **15 Claims**



1. A method of regulating combustion of a lean mixture by rapid-response monitoring of the gaseous effluents leaving a combustion chamber, which comprises emitting ultraviolet radiation to a zone of small volume traversed by at least part of the gaseous effluents leaving the combustion chamber, receiving at least part of the ultraviolet radiation which has passed through this zone; measuring the degree to which the ultraviolet radiation has been absorbed by a chemical compound contained in the gaseous effluents, said compound serving as an additive for detection purposes, and governing at least one parameter influencing combustion within said combustion chamber within said degree of absorption.

4,796,591

INTERNAL COMBUSTION ENGINE CONTROL SYSTEM

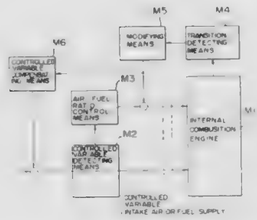
Masashi Kiyono, Anjo; Tomoaki Abe, Obu, and Mitsunori Takao, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 19, 1987, Ser. No. 87,031

Claims priority, application Japan, Sep. 3, 1986, 61-208356; Sep. 4, 1986, 61-208619; Sep. 8, 1986, 61-211270

Int. Cl.[4] F02M *51/00*; **F02D** *41/10*

U.S. Cl. 123—492 **16 Claims**



1. An internal combustion engine control system comprising:

controlled variable detecting means which measures one of the quantity of intake air and quantity of fuel supply as a control value reflect the operational state of an internal combustion engine;

air-fuel ratio control means which determines, basing on the measured controlled variable, a base control value used for controlling the other controlled variable;

transition detecting means which detects a transitional change in the operating condition of said engine;

modifying means which determines the value of modification for increasing or decreasing the determined base control value in accordance with the detected transistion; and

controlled variable compensating means which increases or decreases in accordance with the determined modification value the control value detect by said controlled variable detecting means,

wherein the transitional change detected by said transition detecting means is the acceleration of said engine, and

wherein said transition detecting means for detecting the engine acceleration comprises means for detecting that a throttle valve located in an intake pipe of said engine has operated from a full-closed state to an open state.

4,796,592

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

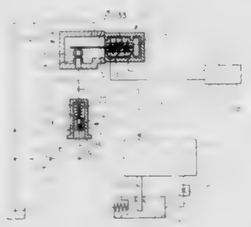
Gerald Höfer, Weissach; Helmut Laufer, and Max Straubel, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 415,302, Sep. 7, 1982, abandoned. This application Jun. 2, 1986, Ser. No. 871,135

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138607

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—502 **10 Claims**



1. A fuel injection pump for internal combustion engines having a fuel supply pump driven in synchronism with said fuel injection pump, the pressure side of said fuel supply pump communicating with a work chamber ahead of an adjusting piston for the purpose of adjusting an injection onset and with said adjusting piston exposed to a restoring force, said fuel supply pump further communicating with a relief chamber for generating an rpm-dependent control pressure, a pressure control valve, an outflow opening in said pressure control valve communicating with said relief chamber and controlled by a control piston of said pressure control valve, said control piston being exposed on its rear side to a restoring force, a control pressure chamber in said pressure control valve located on the rear side of said control piston communicating via a throttle connection with the pressure side of said fuel supply pump and via a relief line communicating with said relief chamber, and a switching valve means disposed in said relief line controllable in accordance with operating parameters by an electric control means, and at least one spring-loaded closing means communicating with said relief chamber and with said control pressure chamber, whereby said control pressure chamber is relieved by said at least one spring-loaded closing means toward said relief chamber independently of the switching status of said switching valve means.

4,796,593

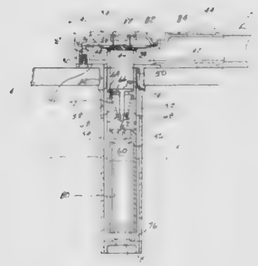
TANK MOUNTED VALVE FOR FUEL VAPOR RECOVERY SYSTEM

William F. Woodcock, Dearborn, Mich., and Loren H. Kline, Oregon, Ohio, assignors to Colt Industries Inc., New York, N.Y.

Filed Oct. 16, 1987, Ser. No. 109,194

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—518 **10 Claims**



1. In a vehicle mounted fuel vapor recovery system for receiving fuel vapor from the head space of the fuel tank of the vehicle and feeding said vapor at a controlled rate to the vehicle engine for combustion therein, said system including canister means for receiving and storing fuel vapor, purge means for withdrawing vapor from said canister at a controlled rate for combustion in said engine, and valve means for controlling the flow of vapor between said fuel tank and said canister means; the improvement wherein said valve means comprises a valve housing having inlet passage means opening into the head space in said fuel tank and outlet passage means in direct substantially unrestricted communication with said canister means, pressure responsive means in said housing for placing said inlet passage means in communication with said outlet passage means when the pressure in said inlet passage means exceeds a predetermined pressure and for blocking communication between said inlet passage means and said outlet passage means when the pressure in said inlet passage means falls below said predetermined pressure, and float valve means responsive to the level of fuel within said tank for sealing said inlet passage means from the head space in said tank when the level of fuel within said tank exceeds a predetermined level, said pressure responsive means comprising a flexible diaphragm mounted in said housing to divide a cavity within said housing into a first chamber and a second chamber sealed from each other by said diaphragm, said inlet passage means including an inlet port opening into said first chamber and said outlet passage means including an outlet port opening into said first chamber, vent means venting said second chamber to atmosphere, and biasing means for biasing said diaphragm into overlying sealed relationship to said inlet port when the pressure in said inlet passage means is less than said predetermined pressure, and bypass means in said housing for placing said second chamber in communication with the head space of said tank when the pressure in said head space is at or below a predetermined sub-atmospheric pressure.

4,796,594

DEVICE AND METHOD FOR INJECTING FUEL INTO AN ENGINE, ASSISTED BY COMPRESSED AIR OR GAS

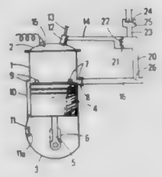
Pierre Daret, 124, boulevard Saint Germain, 75006 Paris, France

Continuation of Ser. No. 814,767, Dec. 30, 1985. This application Jul. 9, 1987, Ser. No. 71,357

Claims priority, application France, Dec. 28, 1984, 84 20059

Int. Cl.[4] F02M *25/00*

U.S. Cl. 123—531 **4 Claims**



1. A method for effecting an injection of fuel in an internal combustion engine, the internal combustion engine including a pneumatic injection member and an exhaust pipe, the method comprising the steps of establishing a communication between the exhaust pipe and the injection member, communicating the communication between the exhaust pipe and the injection member with a gas source via an obstruction member including one of a stop valve or a check valve.

4,796,595

FREE-RUNNING PRESSURE WAVE SUPERCHARGER DRIVEN BY GAS FORCES

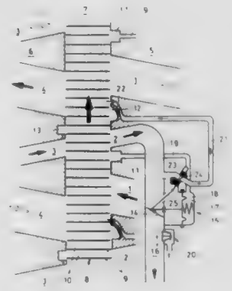
Ibrahim El-Nasher, Klotex; Francois Jaussi, Wettingen; Hubert Kirchhofer, Gebenstorf; Christian Komaner, Rieden; Andreas Mayer, Niederrohrdorf; Josef Perevuznik, Fislisbach, and Fritz Spianler, Ariadorf, all of Switzerland, assignors to BBC Brown, Boveri Ltd., Baden, Switzerland

Filed Feb. 11, 1987, Ser. No. 13,931

Claims priority, application Switzerland, Feb. 28, 1986, 826/86

Int. Cl.[4] F02B *33/42*

U.S. Cl. 123—559.2 **20 Claims**



1. A free-running pressure wave supercharger to be driven by the exhaust-gas flow of an internal combustion engine, comprising:

a rotor casing having two end surfaces,

a cell rotor with cell walls within the rotor casing,

an air casing and a gas casing on the two end surfaces of the rotor casing,

a low-pressure air port for the supply of low-pressure air in the air casing,

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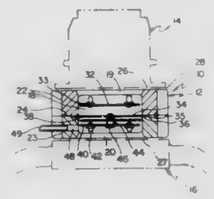
a high pressure air port in the air casing for the removal of high pressure air,
a high-pressure exhaust-gas port for the supply of high-pressure exhaust-gas in the gas casing,
a low pressure exhaust gas port in the gas casing for the removal of low pressure exhaust gas,
a compression pocket arranged in the air casing after the low-pressure air port and before the high-pressure air port,
an expansion pocket arranged in the air casing after the high-pressure air port and before the low-pressure air port,
a gas pocket arranged in the gas casing between the two exhaust-gas ports,
a bearing for accepting the rotor shaft in the air casing,
said high-pressure exhaust-gas port and said low-pressure exhaust-gas port arranged so as to subject the cell walls of the cell rotor to high-pressure exhaust gas for the purpose of generating an impulse on the cell walls acting in the direction of rotation of the rotor,
said high-pressure exhaust-gas port and said low-pressure air port entering the rotor casing at an acute angle, referred to the vector of the rotor peripheral velocity,
a supercharge air line in communication with said high-pressure air port,
a supercharge air flap and a breather valve in the supercharge air line,
a control device being effectively connected to the supercharge air flap,
the control device being activatable by a pressure pulse signal derived from the pressure wave process,
said cell rotor and the rotor casing arranged so as to maintain a small as possible clearance between the end surfaces of the cell rotor and the air casing and the gas casing in the run-up phase of the pressure wave supercharger in order to keep the leakage losses of the exhaust gases and the air as small as possible,
port means for subjecting the cell walls of the cell rotor to gas action, said port means being located in one of the air casing and the gas casing and enter into the rotor casing, wherein the geometrical axes of the port means enclose an acute angle with the peripheral velocity vector of the rotor in the region of their entry into the rotor casing, said port means are each passage-connected with a position on the casing in which it is provided at which a positive pressure is present relative to the entry of these ports in the rotor casing,
the control device being in effective connection with the supercharged air flap provided in the high-pressure air port, said control device adapted to hold the supercharged air flap closed in the starting phase of the engine and, at the same time, relieve the high-pressure air port in such a way that gases escaping from the high-pressure air port are supplied to the port means.

4,796,596
FUEL SAVING METHOD AND DEVICE FOR INTERNAL COMBUSTION ENGINES

Wesley F. Coker, 615 Vance Jackson, Apt. 208, San Antonio, Tex. 78201

Continuation-in-part of Ser. No. 899,881, Aug. 25, 1986, abandoned. This application Sep. 8, 1987, Ser. No. 93,815
Int. Cl.[4] F02M *29/04*
U.S. Cl. 123—593 **27 Claims**

1. A fuel saving device comprising a housing adapted to be interposed between a carburetor and an intake manifold of an internal combustion engine; a chamber formed within said housing, said chamber having an inlet end opening adapted to register with a discharge passage of said carburetor and receive fuel-air mixture formed in said carburetor, and said chamber having an outlet end opening adapted to connect to said intake manifold; characterized by micro-porous filter means mounted within said chamber and extending transversely to the path of flow of said fuel-air mixture between said inlet and outlet end openings, said filter means being formed at least in part by a

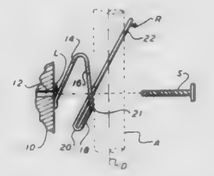


micro-porous filter plate adapted to permit the flow therethrough of the fuel-air mixture received from said carburetor.

4,796,597
ARROW REST

Henry Farro, P.O. Box 418, Hopatcong, N.J. 07843

Filed Feb. 9, 1987, Ser. No. 12,271
Int. Cl.[4] F41D *10/00*; F41B *5/00*
U.S. Cl. 124—41 A **10 Claims**

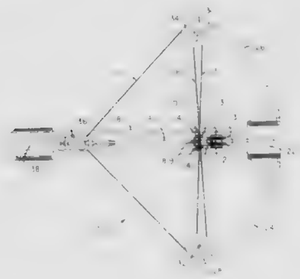


1. A rest adapted to be mounted on a bow and adapted to guide an arrow into its flight direction, comprising:
a flexible, elongated element adapted to doubly contact an arrow, said flexible element comprising a serpentine wire, and having:
(a) a lower segment adapted to extend laterally from a bow and positioned, sized and adapted to support the underside of an arrow, said lower segment being skewed and extending at an acute angle with respect to flight direction;
(b) a lateral segment connected to said lower segment, said lateral segment being spaced from and adapted to extend alongside a bow, said lateral segment having a jog adapted to receive an arrow to make single-point contact at said jog, said lateral segment comprising a serial pair of lateral guides oriented with respect to each other at an obtuse angle to form an apex adapted to bear laterally against an arrow; and
(c) a connecting segment connecting between said lower and lateral segments, said lateral segment being positioned above said lower segments; and
mounting means adapted to attach said flexible element to a bow, the portion of said lateral segment between said jog and said mounting means being acutely bifilar and free to flex, said mounting means comprising:
a loop oriented in a plane parallel to flight direction; and
a flexible support segment connected between said loop and said lateral segment to space it away from said loop and adjacent to flight direction.

4,796,598
RETRACTABLE ARROW LAUNCH RAMP WITH COMPOUND CROSSBOW

Robert L. Jones, 432 Adams St., Elyria, Ohio 44035

Filed Mar. 6, 1987, Ser. No. 22,981
Int. Cl.[4] F41B *5/00*
U.S. Cl. 124—25 **2 Claims**



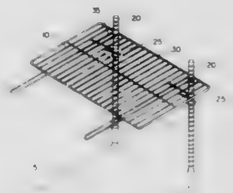
1. A compound crossbow comprising:
an elongated hollow stock member having first and second terminating end portions,
a pair of bow limbs disposed adjacent said first terminating end portion, said bow limbs each terminating at one end thereof in a cable pulley assembly, each pulley assembly comprising two wheel pulleys,
an endless arrow cable strung about said pulley assemblies thereby forming a pair of crossed over cables positioned forward of a third cable, said third cable adapted to engage an arrow,
an arrow launch ramp assembly disposed within the hollow stock member and located at a position defined as being past a mid-point between said first and second stock terminating ends, said arrow launch ramp being pivotally mounted onto said stock member and including a forward terminating end having a pair of generally parallel spaced arms and a seat portion describing a surface generally parallel to said stock member when said arrow launch is in an upward position,
trigger and arrow holding means mounted on said second terminating end of said stock member,
biasing means for normally retaining said arrow launch ramp in an arrow support position when said third cable is drawn and hooked to the arrow holding means,
the forward most part of an arrow being placed upon said seat portion and the most rearward part of said arrow engaged by said third cable, and
means for urging said arrow launch ramp to a position generally parallel to a plane described by said stock member upon the release of said third cable thereby removing said arrow launch ramp from the arrow flight path upon the discharge of said arrow.

4,796,599
PORTABLE COOKING GRILL DEVICE

Robert Cooper, 910 Steele St., Denver, Colo. 80206

Filed Apr. 11, 1988, Ser. No. 179,662
Int. Cl.[4] F24B *3/00*
U.S. Cl. 126—30 **6 Claims**

1. A cooking grill device comprising:
(a) A base;
(b) Vertical posts removably attached to the base;
(c) A grill having a rod extending along the rear edge of the grill, and a plurality of parallel rods extending perpendicular thereto from the front to the back of the grill; said grill being removably attachable to the vertical posts, with each of the vertical posts passing through the grill between adjacent parallel rods, and with the rod extending along the rear edge of the grill braced against the back of the vertical posts; and

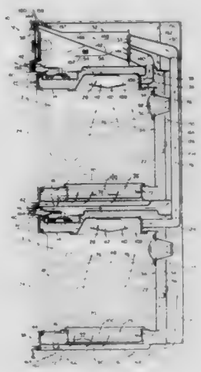


(d) Braces attached to the grill, extending diagonally downward and rearward from the grill, the distal ends of which are braced against the front of the vertical posts.

4,796,600
GAS WALL OVEN

James E. Hurley, Allentown, and Robert H. Stettler, Reading, both of Pa., assignors to Raytheon Company, Lexington, Mass.

Filed May 14, 1987, Ser. No. 49,498
Int. Cl.[4] A21B *1/00*
U.S. Cl. 126—273 H **11 Claims**



1. A gas wall oven, comprising:
an oven compartment comprising a top, bottom, side and back walls, and a door;
a burner box proximate said bottom;
a first burner positioned in said burner box;
means for providing secondary combustion air from the front of said oven to said burner box;
a second burner proximate said top;
means for channeling primary combustion air from the front of said oven to said second burner; and
said providing means being substantially isolated from said channeling means to prevent first burner combustion products from recirculating through said second burner and said channeling means back to said first burner when said first burner is activated and said second burner is off.

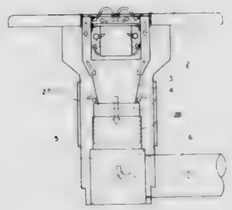
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4,796,601

SMOKELESS ROASTER

Takeshi Yamada, Nagoya, Japan, assignor to Shinpo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 12, 1987, Ser. No. 119,815
Int. Cl.[4] F24C *15/20*
U.S. Cl. 126—299 R **12 Claims**



1. A smokeless roaster comprising:
(a) an upper support wall extending horizontally and having an opening contained therein;
(b) a roasting unit comprising an outer box having an opened upper end, said outer box being mounted and supported within said opening in said upper support wall by end edges thereon, an inner box having an opened upper end contained and supported in the outer box by end edges thereon, said inner box having a metal grill contained at an upper portion thereof and a burner provided at a lower portion thereof, and an exhausting unit provided at a lower part of said roasting unit, said exhausting unit diminishing in outer and inner diameter as it extends away from said lower part of said roasting unit;
(c) a movable draft pipe vertically, slidably fitted on the outer circumference of said exhausting unit, said movable draft pipe being capable of introducing outside air into gas exhausted from said roasting unit and regulating a suction force applied to said roasting unit, said movable draft pipe additionally having an inner diameter approximately equal to the maximum outer diameter of said exhausting unit;
(d) a connector box provided at a lower part of said movable draft pipe and connected therewith at a side surface thereof through a fixed pipe, said connector box containing a static pressure equalizer comprising a slit of triangular shape, said slit gradually widening from a lower portion to an upper portion thereof and separating an inner exhaust passage from an outer exhaust passage, said static pressure equalizer equalizing said suction force applied to said roasting unit with a static pressure; and
(e) a duct unit provided at the side of said connector box and attached thereto, said duct unit leading to a source of said suction force.

4,796,602

MAPLE SYRUP VAPORIZER APPARATUS WITH HOLLOW SHELL RECIRCULATION ARCH

Arthur H. Atkinson, Burlington, and David E. Buttolph, Fairfax, both of Vt., assignors to Small Brothers U.S.A., Inc., Swanton, Vt.

Filed Nov. 23, 1987, Ser. No. 123,744
Int. Cl.[4] A01G *13/06*; B01D *1/00*
U.S. Cl. 126—59.5 **12 Claims**

1. A maple syrup vaporizer apparatus comprising a vaporizing pan assembly, a hollow shell recirculation arch underlying and supporting said vaporizing pan assembly and being sealably coupled thereto said hollow shell recirculation arch comprising an outer sheet metal shell including laterally spaced vertical sidewalls, longitudinally spaced vertical front and rear walls, and a bottom wall edge coupled at opposite ends to said front wall and rear wall, respectively and laterally edge coupled to respective lateral sidewalls, an inner shell upwardly open within said outer shell defined by at least laterally opposed sidewalls and a front wall and a rear wall at opposite ends thereof, said inner shell being sized such that at least over a portion of its width and length, it forms with said outer shell a first heat exchange chamber therebetween a bridge wall interposed within said inner shell, intermediate of said inner shell front wall and rear wall and forming, with said inner shell front wall a fire box, and with said rear wall of said inner shell, a second heat exchange chamber, said first and second heat exchange chamber defining a regenerative heat exchanger, an insulated deck extending horizontally over the major portion of the length of the second heat exchange chamber having a front edge sealed to said bridge wall and a rear edge spaced from the vertical rear wall of said inner shell, brickwork lining the interior surfaces of the fire box, the fire box being open at the top and directly facing the bottom of the pan assembly, and wherein means are provided within at least one of said hollow shell regeneration arch and said pan assembly for forming a



horizontal passage from said fire box to the rear edge of the insulated deck for permitting products of combustion to flow from the fire box between the insulated deck and the bottom of the pan assembly and for entering the second regenerative heat exchange chamber by reverse flow about the rear edge of the insulated deck, and a smoke stack assembly including a horizontal smoke stack pipe fixedly mounted to the arch, projecting through the rear wall of the outer shell and the rear wall of the inner shell, and extending over the major length of the regenerative heat exchanger section of the arch and having an open end facing the bridge wall and spaced slightly therefrom, and means for forcing fresh combustion air into the first regenerative heat exchange chamber between the inner and outer shells for flowing the length of the arch, for preheating of the combustion air and means for discharging preheated combustion air as a primary air stream into the fire box for facilitating the combustion of fuel within the fire box in contact with the preheated fresh combustion air.

4,796,603

PAD-LIKE IMPLANT

Hermann Dahlke, Hamburg, and Hans-Rainer Willmen, Grevenborich, both of Fed. Rep. of Germany, assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 4, 1987, Ser. No. 92,908
Int. Cl.[4] A61B *19/00*; A61F *2/02*
U.S. Cl. 128—899 **12 Claims**

1. Pad-like implant of resorbable material for the treatment of hernias, comprising a cushion-like or hose-like body closed on all sides, having an outer enclosing sleeve formed of porous



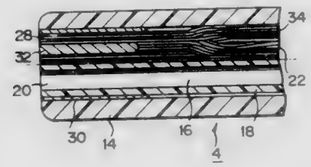
sheet-like material, which is filled with a filling of discrete pieces of resorbable material.

4,796,604

ENDOSCOPE AND A LIGHT GUIDE THEREOF AND A METHOD FOR MANUFACTURING THE LIGHT GUIDE

Masahiro Kawashima, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1988, Ser. No. 153,241
Claims priority, application Japan, Feb. 13, 1987, 62-29732
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—6 **12 Claims**



1. An endoscope comprising:
an insertion section having an internal space;
light guide means contained in the internal space of the insertion section and adapted to guide a illumination light, said light guide means including a number of elongated optical fibers having individual distal end portions bound into a bundle and bonded together; and
spacing means contained in the distal end portion of the bundle of optical fibers, with the optical fibers kept loose on the proximal-end side of the distal end portion of the optical fiber bundle to provide gaps among the optical fibers.

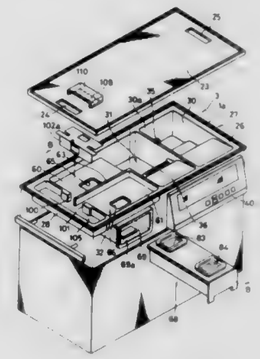
4,796,605

INCUBATOR

Migaku Sasaki; Eiji Koike; Toshio Ohtomo, and Jun Hirose, all of Urawa, Japan, assignors to ATOM Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1987, Ser. No. 69,035
Claims priority, application Japan, Jul. 11, 1986, 61-163266; Jul. 11, 1986, 61-106447[U]; Jul. 11, 1986, 61-106448[U]
Int. Cl.[4] A61B *19/00*
U.S. Cl. 600—22 **9 Claims**

1. An incubator consisting of an incubator body, an incubating chamber located above the incubator body for accommodating an infant, air supply means disposed below the incubating chamber for supplying heated and humidified air to said incubating chamber, and a partition plate for partitioning said air supply means from said incubating chamber, said air supply means comprising:
means for providing air flow through the air supply means from an upstream location to a downstream location;
a heating chamber provided with heating means for warming the air to be supplied to said incubating chamber;
a dry chamber located downstream from and communicating with said heating chamber, said dry chamber having a bottom arranged parallel to the direction of air flow;
a wet chamber arranged adjacent to said dry chamber and having a bottom arranged parallel to the direction of air flow;
a first partition wall arranged perpendicular to the air flow for preventing air flow between said wet chamber and said heating chamber and said dry chamber;
a water tank disposed below said dry chamber and said wet chamber and containing humidifying water;
an outlet opening formed in the bottom of said dry chamber for communicating said dry chamber with said water tank;
an inlet opening formed in the bottom of said wet chamber



for communicating said wet chamber with said water tank;
a mixing chamber arranged downstream from said dry chamber and said wet chamber;
a second partition wall arranged perpendicular to said flow of air for preventing flow of air between said mixing chamber from said dry chamber and said wet chamber, said second partition wall having a first opening formed therein for communicating said dry chamber with said mixing chamber and a second opening formed therein for communicating said wet chamber with said mixing chamber;
first restricting means for regulating the flow rate of the air through said first opening; and
an air outlet provided in said partition plate for communicating said incubating chamber with said heating chamber and an air inlet provided in said partition plate adjacent said mixing chamber for communicating said mixing chamber with said incubating chamber.

4,796,606

DRIVE UNIT FOR MEDICAL PUMP

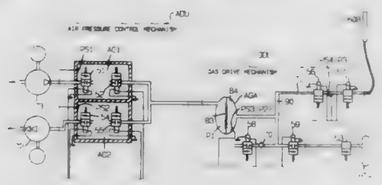
Sadahiko Mushika, Tokyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 27, 1987, Ser. No. 89,792
Claims priority, application Japan, Aug. 27, 1986, 61-201091
Int. Cl.[4] A61B *19/00*
U.S. Cl. 600—18 **7 Claims**

1. A drive unit for medical pump comprising
pressure producing means for producing a driving pressure in the form of an alternating positive and negative pressure;
fluid isolator means having its interior divided into a primary

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and a secondary side, with the primary side being connected to the output of said pressure producing means;
connection means internally containing a fluid passage for connecting the secondary side of the fluid isolator means to a medical pump;
first valve means for supplying a given fluid to the interior of the connection means;
second valve means for exhausting the fluid within the connection means to the exterior thereof;
first pressure detecting means responsive to the pressure



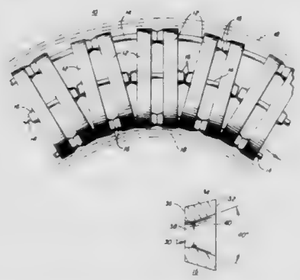
within the connection means to produce a corresponding electrical signal and
electronic control means connected to said first and second valve means and said first pressure detecting means for monitoring the electrical signal developed by the first pressure detecting means when said pressure producing means produces a positive pressure to thereby determine the pressure within the connection means and for controlling flow of fluid through the first and the second valve means in accordance with the pressure thus determined to control the pressure within said connection means.

4,796,607

ENDOSCOPE STEERING SECTION

Jimmie B. Allred, III, Skaneateles, and Richard Bingham, Auburn, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jul. 28, 1987, Ser. No. 78,714
Int. Cl.[4] A61B *1/00*
U.S. Cl. 128—4 **13 Claims**



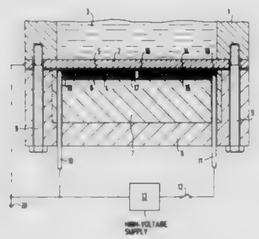
1. In a steerable endoscope or borescope of the type having a viewing head, a cable-bendable steering section proximally of the viewing head and including a flexible sheath, a plurality of axially aligned flat washers each having a central passage and a plurality of peripheral bores therethrough, pairs of which are generally diametrically disposed, a plurality of steering cables passing through respective axially aligned peripheral bores of said washers, and pairs of spacer beads disposed at the locations of at least certain peripheral bores associated with certain ones of said steering cables and serving to define bending locations for said steering section such that displacement of one opposed pair of the steering cables results in bending of the steering section; the improvement wherein said spacer beads are tapered beads disposed over said certain ones of said cables and have a relatively wide base surface facing the associated one of the successive washers and a relatively narrow flat nose surface facing a like nose surface of the other of the pair of spacer beads, wherein said beads each have an axial bore therein that is flared out towards said base surface to prevent said spacer bead from binding on said steering cable.

4,796,608

SHOCK WAVE GENERATOR FOR AN APPARATUS FOR NON-CONTACTING DISINTEGRATION OF CALCULI IN THE BODY OF A LIFE FORM

Georg Koehler, Geisfeld, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 14, 1987, Ser. No. 49,518
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1986, 3620189
Int. Cl.[4] A61B *17/22*
U.S. Cl. 128—24 A **12 Claims**



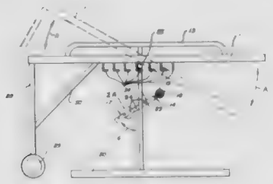
1. A shock wave generator comprising:
a housing having a volume containing a shock wave transmitting medium;
a membrane consisting of electrically conductive material, said membrane terminating said volume on one side;
means for applying a first potential to said membrane;
a high voltage source having terminal means for supplying a second potential and terminal means for supplying a third potential, said high voltage source being capable of generating a current pulse;
a coil having two terminals, said coil being disposed next to said membrane and having two layers of helical windings disposed congruently in respective parallel planes, said layers being connected in series and being wound in respective winding directions such that the respective magnetic fields of said two layers intensify each other upon a current flowing through said coil; and
means for respectively connecting said terminals of said coil to said terminal means for supplying said second and third potentials of said high voltage source for respectively applying said second and third potentials to said terminals of said coil and for releasing said current pulse into said coil, the high voltage dropping along said coil, thereby generating respective voltage differences in said layers of said coil relative to said membrane and one of said layers exhibiting a smaller voltage difference relative to said membrane than the other of said layers, when said coil is connected to said high voltage source, and said one layer exhibiting said smaller voltage difference being disposed immediately adjacent said membrane.

4,796,609

TILTABLE BACK TRACTION TABLE HAVING ADJUSTABLE BALANCE POINT AND BUMPER

Emmet T. Rix, P.O. Box 261, Paradise, Calif. 95967

Filed Apr. 10, 1987, Ser. No. 36,885
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—74 **5 Claims**



1. A back traction table, comprising:
a platform having a head end, a foot end, a top surface and a bottom surface;
a base having a top and a bottom;
balancing means positioned substantially at said top of said base;
a series of retainers attached to said bottom surface of said platform offset from each other and positioned at intervals between said foot end of said platform and said head end of said platform, attachable to said balancing means so that said platform substantially balances on said balancing means when positioned thereon, at least two of said retainers having a planar first portion oriented substantially perpendicular to said platform and planar second portion extending from the end of said first portion remote from said platform and oriented substantially perpendicular to said first portion and extending toward said head end of said platform, said retainers being sized and offset from each other so that said balancing means fits between said retainers and into an area between said second portion of one of said retainers and said bottom surface of said platform, thereby minimizing the likelihood that said platform will slip off of said balancing means during use of said back traction table, and
a leg support positioned near said foot end of said platform which captures an individual's leg so that, when said individual lies down upon said top surface of said platform with said individual's head positioned toward said head end of said platform, said individual is restrained from sliding away from said foot end of said platform.

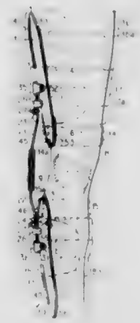
4,796,610

LATERAL IMPACT KNEE GUARD AND MEDIAL COLLATERAL LIGAMENT KNEE BRACE

Hendrick L. Cromartie, Floyd County, Ga., assignor to Donjoy, Inc., Carlsbad, Calif.

Filed Jul. 2, 1987, Ser. No. 69,503
Int. Cl.[4] A61F *5/00, 5/04*
U.S. Cl. 128—80 C **8 Claims**

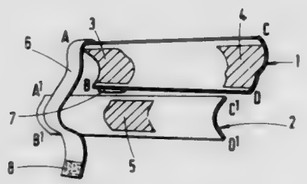
1. A knee guard and brace, which comprises:
(a) a side member which is adapted to fit on the outer side of a wearer's leg, the side member having a pair of thigh and calf support pads, each support pad including an elongated, generally rigid shell which extends approximately the length of the pad of which the shell is a part;
(b) means situated generally between the pads for interconnecting the ribs, the ribs and the interconnecting means forming an arch over the side of the knee;
(c) first means for flexibly connecting one end of a first rib to the thigh support pad at at least two points thereon which are transversely spaced from each other and which are disposed generally midway between the endpoints of the thigh support pad, any movements of end sections of the thigh support pad distal from each other occurring simultaneously but alternately inwardly and outwardly about an imaginary line connecting said two points on the thigh support pad, a first end section of the thigh support pad which is disposed proximate to the knee moving away from the first rib when the first end section is moved inwardly and said first end section moving toward the first rib when the first end section is moved outwardly;
(d) second means for flexibly connecting one end of a second rib to the calf support pad at at least two points thereon which are transversely spaced from each other and which are disposed generally midway between the endpoints of the calf support pad, any movements of end sections of the calf support pad distal from each other occurring simultaneously but alternately inwardly and outwardly along an imaginary line connecting said two points on the calf support pad, a second end section of the calf support pad which is disposed proximate the knee moving away from the second rib when the second end section is moved inwardly and said second end section moving toward the second rib when the second end section is moved outwardly, so that the first and second connecting means not only help to dissipate the impact of any lateral blows to the arch but also allow for adjustments in the orientation



of each pad relative to the contiguous rib to accommodate differences between individual wearers in the inclination of the femur relative to the tibia;
(e) first means mounted on the thigh support pad generally between the ends of the first rib but not connected thereto for limiting the extent to which the first end section of the thigh support pad can move inwardly independently of the first rib;
(f) second means mounted on the calf support pad generally between the ends of the second rib but not connected thereto for limiting the extent to which the second end section of the calf support pad can move inwardly independently of the second rib, the first and second ribs disengaging from said first and second limiting means, respectively, under the impact of a lateral blow to the arch, so that the arch can deform inwardly essentially independently of the first and second end sections of the thigh and calf support pads, respectively; and
(g) means for securing the pads to the wearer's leg, the securing means including a pair of straps for holding said leg against the first and second end sections, so that the femur and the tibia cannot pull away from the thigh and calf support pads, respectively.

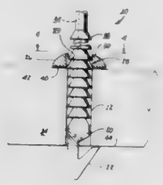
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,611
FRACTURE BRACE
Douglas Wardlaw, Mill of Mosquich, Netherly, Stonehaven, United Kingdom
Filed Jul. 29, 1987, Ser. No. 79,091
Claims priority, application United Kingdom, Jul. 31, 1986, 8618651
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—87 R **13 Claims**



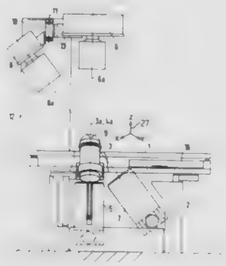
1. An orthopaedic brace suitable for the treatment of fractures of a lower part of a limb which brace comprises two preformed portions of substantially equal length, one of said portions being larger than the other, said portions together extending substantially around the circumference of the limb, the first one of said portions having two areas of high loading arranged distally and proximally on the portion and the second one of said portions having an area of high loading at or near its centre, said areas of high loading being provided by raised areas on the inside surfaces of said first and second portions, whereby the portions when fitted around the limb and fracture provide three point loading of the limb.

4,796,612
BONE CLAMP AND METHOD
Hewitt W. Reese, 3214 River, Tempe, Ariz. 85282
Filed Aug. 6, 1986, Ser. No. 893,624
The portion of the term of this patent subsequent to Aug. 25, 2004, has been disclaimed.
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 YF **13 Claims**



1. A bone clamping apparatus, comprising:
an elongated shaft means for passing through an aperture in the bone, wherein said shaft means has opposed first and second ends;
first bone engagement meas, attached to said shaft means at said first end for engaging a first surface of the bone;
unitary second bone engagement means, separate from said shaft means, and having a central bore for sliding over said shaft means and engaging a second surface of the bone opposite said first surface to form a clamp;
wherein said elongated shaft means has thereon one or more substantially circumferential ring means for permitting said second bone engagement means to move along said shaft toward said first end, but preventing said second bone engaement means from moving back toward said second end, said elongated shaft means further having slot means extending substantially from said second end to said first bone engagement means for receiving a tool for inserting said clamp in said aperture in said bone.

4,796,613
LITHOTRIPSY WORK STATION
Reiner Heumann, Spardorf; Erich Noske, Weiher, and Manfred Rattner, Buckenhof, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 26, 1986, Ser. No. 912,043
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1985, 3536091; Dec. 6, 1985, 3543265
Int. Cl.[4] A61B *17/22*
U.S. Cl. 128—24 A **9 Claims**

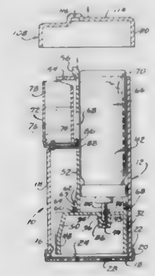


1. A lithotripsy work station comprising:
a patient support table having a longitudinal axis for selectively positioning a patient thereon with respect to a fixed point in space;
at least one shock wave generator for disintegrating calculi disposed beneath said patient support table, said shock wave generator having a membrane for coupling said shock wave generator to the skin of said patient, and said patient support table having an opening therein through which said shock wave generator can at least partially extend;
means for mounting said shock wave generator for permitting adjustment of the focus of said shock wave generator to said fixed point in space; and
an x-ray examination means for transilluminating said patient at selected angles for locating calculi, said x-ray examination means including two x-ray radiators disposed above said patient support table and each having a central ray, a central ray of one of said radiators being emitted in a direction perpendicular to said patient support table and the central ray of the other radiator being emitted in an oblique direction with respect to said patient support table, with both of said central rays proceeding in a common plane which includes said longitudinal axis of said patient support table and intersecting in said fixed point in space

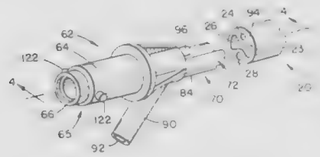
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4,796,614
COLLAPSIBLE INHALATION VALVE
Christopher Nowacki, Arlington Heights, and Alfred G. Brisson, Kildeer, both of Ill., assignors to Trutek Research, Inc., Lake Zurich, Ill.
Filed Feb. 26, 1987, Ser. No. 19,212
Int. Cl.[4] A61M *11/00*
U.S. Cl. 128—200.14 **6 Claims**

1. A collapsible inhalation valve for administering asthmatic medication or the like comprising an upright cylindrical air chamber adapted to be held in the hand and having an upper end and a lower end, means for supporting a pressurized cartridge of medication, means mounting said cartridge supporting means to said air chamber for movement between storage position substantially within said air chamber and raised using position above and substantially out of said air chamber, means for establishing fluid communication from said cartridge into said air chamber with said cartridge supporting means in said raised using position for spraying a measured dose of medication into said air chamber, a one-way valve including a diaphragm adjacent the lower end of said air chamber for admitting air but retaining medication, a mouthpiece adjacent the upper end of said air chamber for receipt in a patient's mouth, said air chamber opening into said mouthpiece to pass medication from said air chamber through said mouthpiece and into the patient upon patient inhalation, and stop means on said cartridge supporting means coacting with said air chamber to stop said cartridge means short of said diaphragm.



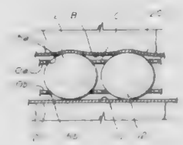
4,796,615
CONNECTOR FOR ESOPHAGEAL PROBE
James K. Bullock, Burbank; L. Arnold Mann, Valencia, and Daniel R. Kuni, Saugus, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Oct. 16, 1986, Ser. No. 920,290
Int. Cl.[4] A62B *9/04*
U.S. Cl. 128—202.27 **11 Claims**



1. A quick disconnect connector for use in a system for measuring depth of anesthesia of a patient, the system including a cylindrical female receptacle having a base and a terminal circular edge and a sidewall extending between the base and the edge to thereby define a receiving cavity having a longitudinal axis, the female receptacle having a pair of diametrically opposed bayonet slots formed therein, each slot extending generally parallel to the longitudinal axis for a first distance then curving to extend generally perpendicular to the longitudinal axis for a second distance, the slots extending in the same direction, each to its own terminus; and a resilient gasket received in the cavity adjacent the base; said connector adapted to be joined to multi-lumen tubing having at least a central conduit and a lower conduit, comprising:
a main body having a chamber therein, a longitudinal axis, and a first end terminating at a rim defining an opening into the chamber and having a second end opposite said first end;
a first elongated member integral with said main body and extending away from said second end and having a passageway extending therethrough communicating with the chamber, said first member being generally aligned with the longitudinal axis of said main body and fittingly receivable within the central conduit of the associated multilumen tubing;
said first end being a cylindrical male element having radially directed bayonet pins extending in diametrically opposed directions engageable with the mating bayonet slots in the female receptacle such that, with said first end aligned with the cavity in the female receptacle, said first end is inserted therein toward the base and turned about the longitudinal axis as it proceeds until each of said pins reaches its associated terminus, said rim being engaged with said gasket to thereby achieve a fluid tight junction between said connector and said female receptacle;
a duct member integral with said main body extending transversely therefrom and having a passage extending therethrough; and a second elongated member integral with said main body and extending away from said second end and having a passageway extending therethrough communicating with the passageway in said duct member, said second elongated member being fittingly receivable in the lower conduit

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4,796,616
MASSAGING DEVICE
Yousef Panahpour, 1980 Post Oak Blvd., Suite 1015, Houston, Tex. 77056
Filed Aug. 28, 1987, Ser. No. 90,955
Int. Cl.[4] A61H *15/00*
U.S. Cl. 128—57 **5 Claims**



1. A massaging apparatus, comprising:
a plurality of elastic spherical massaging balls which are yieldable and compressible from a spherical shape to a substantially elliptical shape upon applying a compressive force thereto;
a carrier for said balls having sides a generally planar first plate and a generally planar second plate;
each of said plates having an opening through said plates with a substantially circular edge for mounting each of said balls between said plates in order to permit rotation of said balls relative to said plates whether in a non-compressed or compressed condition;
the distance between said first plate and said second plate being less than the diameter of each of said balls so that a portion of each of said balls projects externally of each said opening beyond both said first plate and said second plate;
each of said balls when in a non-compressed condition being laterally and longitudinally spaced from each adjacent ball a sufficient distance to enable each of said balls to be compressed to a substantially eliptical shape without contacting the adjacent ball and being rotatable relative to said carrier while so compressed; and
the opening for each of said balls having a diameter which is slightly smaller than the diameter of each ball and large enough so that there is very little frictional contact be-

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tween the edge of said opening and the ball when the ball is in the non-compressed condition so as to allow the balls to freely rotate in all directions at all times and so that upon compression of each ball to a substantially elliptical shape, each ball can still be rotated relative to said plates of said carrier.

4,796,617

TRACHEOSTOMY TUBE ASSEMBLY

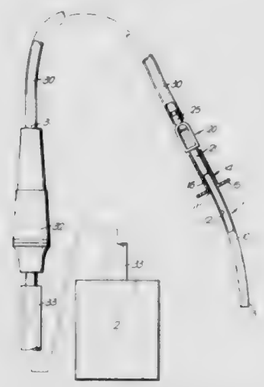
Hugoe R. Matthews, 43 Moor Green Lane, Moseley, Birmingham, and Huw B. J. Fischer, Chestons Cottage, Uphampton, Ombersley, Worcestershire, both of England

Filed Jan. 3, 1985, Ser. No. 688,484

Claims priority, application United Kingdom, Jan. 11, 1984, 8400618

Int. Cl.⁴ A61M *16/00*

U.S. Cl. 128—204.25 2 Claims



1. A tracheostomy tube assembly comprising a main tube having a patient end and a machine end, the patient end of the main tube being inserted into the trachea of a patient through an incision in the patient's throat, the patient end of said main tube being configured such that gas flow along the trachea around the main tube is substantially unimpeded, and a substantially tubular adaptor that is joined to the machine end of the main tube close to and external of the throat of the patient, the adaptor including: means defining a cavity; a first bore extending from said cavity to said main tube; a high frequency jet tube, one end of said jet tube opening into said cavity and being directed towards said first bore, the cross-sectional area of said jet tube being less than that of said cavity; an aperture that opens into said cavity; and means for selectively completely blocking said aperture; said aperture opening to atmosphere when unblocked such that high-frequency jet-ventilation pulses supplied to said jet tube cause entrainment of air from the aperture towards the patient end of the main tube, the cross-sectional area of the patient end of the main tube being small enough that when said aperture is completely blocked by said blocking means the said high-frequency jet-ventilation pulses are produced at the patient end of the main tube and are operative to entrain gas within the trachea.

4,796,618

BREATHING REGULATOR APPARATUS

Dean R. Garraffa, Garden Grove, Calif., assignor to Undersea Industries, Inc., Rancho Dominguez, Calif.

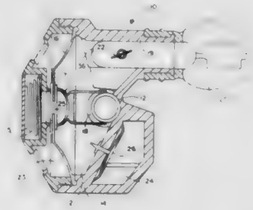
Filed Jan. 21, 1986, Ser. No. 820,845

Int. Cl.⁴ A62B *7/04*

U.S. Cl. 128—204.26 6 Claims

1. An improved breathing regulator apparatus for use by a scuba diver having a housing; a movable diaphragm extending across one end of said housing to define a breathing chamber; a mouthpiece tube fluidly coupled to said breathing chamber extending from the opposing end of said housing and integrally formed therein; an air inlet fluidically coupled to said breathing chamber and adapted for connection to a pressurized source of air; an air inlet valve means for controlling the air stream from the pressurized source to said mouthpiece tube; and means connecting said valve means to said diaphragm for operating said valve means responsive to a reduction in pressure within the regulator induced by inhalation of air through said mouthpiece tube by the scuba diver during an inhalation portion of a breathing cycle, the improvement comprising:

flow vane means pivotedly mounted within said mouthpiece tube adjacent said breathing chamber having a first positional location for intercepting and directing the air



stream through said mouthpiece tube; said flow vane means creating a venturi effect to assist in the reduction in pressure within said regulator induced by the inhalation, said flow vane means having a second positional location for redirecting at least a predetermined portion of the air stream toward said diaphragm thereby reducing the venturi effect, and

means for manually varying the orientation of said flow vane means between said first and second positional locations to adjust the portion of the air stream being redirected; said means for manually varying said positional location of said flow vane means extending through said mouthpiece tube external of said housing for permitting the scuba diver to adjust said flow vane means during operation of said breathing regulator apparatus.

4,796,619

LUNG-CONTROLLED VALVE FOR RESPIRATOR MASKS HAVING POSITIVE PRESSURES INSIDE THE MASK

Hans-Joachim Walther, Lübeck, Fed. Rep. of Germany, assignor to Dräger werk Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 5, 1986, Ser. No. 837,089

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1985, 3508130

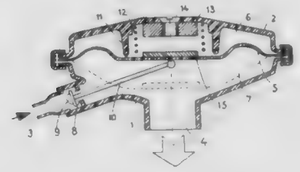
The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.

Int. Cl.⁴ A62B *7/04*

U.S. Cl. 128—204.19 3 Claims

1. A lung-controlled valve for respirator masks which have a positive interior mask pressure therein fluidically connected to the user's respiratory organs, comprising a valve housing defining an interior valve cavity, a flexible diaphragm connected to said housing and extending across said valve cavity to divide said cavity into an outer chamber on one side of said diaphragm having an outer chamber wall spaced from said diaphragm and a respiration chamber on the other side of said diaphragm having a respiration chamber wall spaced from said diaphragm, an outlet connected into the respiration chamber, a respirator gas inlet connected into said respiration chamber, valve means in said respirator gas inlet having a valve body with a lever portion engaged with said diaphragm and being

movable with said diaphragm to open and close said gas inlet, a magnet secured to said outer chamber wall, a magnetically attractable part arranged on said diaphragm opposite to said magnet, a compression spring disposed between said outer chamber wall and said flexible diaphragm for controlling the



movement of said diaphragm for controlling the pressure in the respirator chamber, and a spacer between said outer chamber wall and said diaphragm holding said magnetically attractable part and said diaphragm against movement in the direction of the magnet, under the influence of said magnet, beyond a minimum spacing from said magnet.

4,796,620

SYSTEM FOR SENSING ABNORMAL HEART ACTIVITY BY MEANS OF HEART RATE ACCELERATION AND DECELERATION DETECTION

Mir Imran, San Francisco, Calif., assignor to Mieczyslaw Mirowski, Owings Mills, Md.

Filed May 13, 1986, Ser. No. 862,785

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—706 5 Claims



1. An arrhythmia detection system for an automatic defibrillator/cardioverter capable of sensing heart activity and delivering high-energy electrical pulses to the heart in response to an arrhythmia detection, the system comprising:

ECG input means for receiving an ECG waveform;

R-wave detecting means operatively connected with said ECG input means for detecting the presence of the R-waves;

rate averaging means operatively connected with the R-wave detecting means for determining the average R-wave rate and for providing a rate averaging signal when the average R-wave rate exceeds a predetermined value;

acceleration detector means, operatively connected with said R-wave detecting means, for determining the rate of acceleration of a series of R-waves and for providing a acceleration output signal when the rate of acceleration of the R-waves exceeds a predetermined value;

arrhythmia detection means operatively connected with said rate averaging means and said acceleration detector means for providing an arrhythmia signal to activate a defibrillator/cardioverter pulse generator in response to receipt of the rate averaging signal and the acceleration output signal.

4,796,621

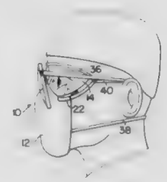
PROTECTIVE SURGICAL FACE MASK

Louis Barle, 109 Fenwood Dr., Old Saybrook, Conn. 06475, and Ron Vliet, 376 Wells Rd., Wethersfield, Conn. 06109

Filed Dec. 9, 1987, Ser. No. 130,301

Int. Cl.⁴ A61F *9/00*

U.S. Cl. 128—206.23 11 Claims



1. A mask for covering the face to prevent invasive entry of fluids, atomized particles and the like into the openings of the mouth, nose and eyes, said mask comprising:

a lower portion of sheet material having means for conforming the shape of the material to cover the mouth and nose of a user and an opening in the region of the eyes at an upper portion of said sheet material including means for covering the eye opening with a transparent plastic sheet material of substantially constant thickness throughout wherein the plastic sheet material is anatomically contoured to extend generally transversely across the brow and substantially from temple to temple and downward from an upper edge and at both sides of the bridge portion of the nose to a region of the face defined by the cheekbone and generally inward toward the fleshy portion of the face and terminating in a lower edge to cover the facial area in the region of the eyes and permit a user to wear spectacles in the normal manner outside the covering means, and

first means secured to the lower portion of the sheet material and second means secured to the anatomically contoured covering in the upper portion of the sheet material for attaching the mask to the head of a user.

4,796,622

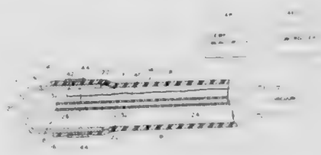
CATHETER WITH OXYHYDROGEN CATALYTIC THERMAL TIP

David Y. Lu, Rockville, and Robert L. Bowman, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 6, 1987, Ser. No. 26,540

Int. Cl.⁴ A61B *17/36*

U.S. Cl. 128—303.1 15 Claims



1. A catalytic thermal tip catheter, comprising:

a distal metallic tip end; a catalytic chamber adjacent to and partially enclosed by said metallic tip; a catalyst for initiating an exothermic reaction between two gases, located in said chamber; and elongated catheter body comprising means for the passage of a reactive gas from a remote location to said catalytic chamber; whereby introduction of said reactive gas in said catalytic chamber effects a

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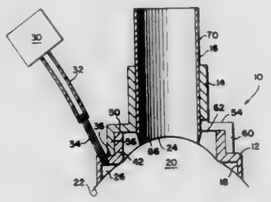
catalytically initiated chemical reaction which produces heat conducted directly to said metallic tip to heat said metallic tip to a temperature of at least 180° C.

4,796,623

CORNEAL VACUUM TREPHINE SYSTEM

Gary N. Krasner, Irvine, and John W. Berkman, Costa Mesa, both of Calif., assignors to The Cooper Companies, Inc., Menlo Park, Calif.

Filed Jul. 20, 1987, Ser. No. 75,842
Int. Cl.[4] A61F *17/32*
U.S. Cl. 128—305 **56 Claims**



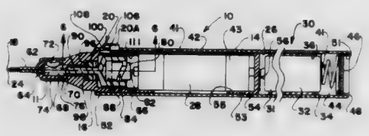
1. A corneal vacuum trephine system comprising:
a suction ring adapted to be positioned on an eye over the cornea,
said suction ring having an annular suction ring surface configured to define an annular suction space when said suction ring is positioned against the eye.
said suction ring defining a suction ring bore,
said annular suction space being positioned outside of and so as to generally not be in fluid communication with said suction ring bore,
a trephine positionable in said suction ring bore and so as to be movable relative to said suction ring for cutting the cornea,
said trephine comprising a generally cylindrical member and a sharp circular corneal cutting edge at the distal end of said cylindrical member for cutting a corneal disk by the rotation of said cylindrical member against the cornea,
a trephine guide means positionable on said suction ring for guiding said trephine therein and for permitting said trephine to be separated from said suction ring when said suction ring is secured to the eye, and
said trephine guide means defining an elongated guide cylinder for guiding said trephine therein.

4,796,624

LASHLINER

Arthur F. Trott, Largo, and Sam R. Marchand, Dunedin, both of Fla., assignors to Concept, Inc., Clearwater, Fla.

Filed Nov. 19, 1986, Ser. No. 932,638
Int. Cl.[4] A61D *1/00*; B43K *5/00*
U.S. Cl. 128—316 **18 Claims**



1. An apparatus for introducing a liquid within a material, comprising:
a body member having an interior cavity;
motor means disposed in said interior cavity of said body member;
an end member secured to said body member;
needle means;
needle guide extending through said end member for slidably mounting said needle means;
reciprocal coupling means interconnecting said motor means and said needle means for reciprocating said needle means relative to said end member upon rotation of said motor means;
said reciprocating needle means being capable of creating a plurality of perforations in the material;
reservoir means in fluid communication with said needle means for retaining the liquid therein and for enabling the liquid to flow along said needle means to enter the plurality of perforations in the material upon reciprocation of said needle means;
said reservoir further including an internal cavity disposed in said end member;
said end member further including a filling aperture communicating with said internal cavity for filling said internal cavity with the liquid; and
a perforatable reservoir membrane for covering said filling aperture to retain the liquid in said internal cavity and for permitting in use piercing by a liquid delivering needle to deliver the liquid to said reservoir and to self-seal upon withdrawal of said liquid delivering needle from said perforatable reservoir membrane.

18. An apparatus for introducing a liquid pigment into tissue, comprising:
a body member having an interior cavity;
motor means disposed in said interior cavity of said body member;
said interior cavity being dimensioned for receiving battery means therein for supplying electrical power to said motor means;
an end member secured to an end of said body member;
needle means;
a tubular member extending through said end member for slidably receiving said needle means therein;
reciprocal coupling means comprising a solid cylindrical cam having a groove formed therein;
a cam follower interconnecting said motor means and said needle means for reciprocating said needle means relative to said end member upon rotation of said motor means;
a cam follower tooth with a first end for engaging said cam groove to reciprocate said cam follower and said needle means upon rotation of said motor;
said cam follower tooth having a second end extending outwardly from said cam follower to be slidably received within a slot defined within said end member such that in use said cam follower is prevented from from rotating within said end member;
said reciprocating needle means being capable of creating a plurality of perforations in the tissue;
reservoir means comprising an internal cavity disposed in said end member and in fluid communication with said needle means for retaining the liquid pigment therein and for enabling the liquid pigment to flow along said needle means to enter the plurality of perforations in the tissue upon reciprocation of said needle means; and
a switch electrically interposed between said motor means and the battery means for controlling the rotation of said motor means.

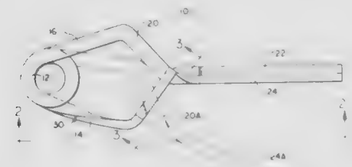
4,796,625

ANEURYSM CLIP

George Kees, Jr., Alexandria, Ky., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Nov. 15, 1982, Ser. No. 441,535
Int. Cl.[4] A61B *17/12*
U.S. Cl. 128—325 **1 Claim**

1. A one-piece aneurysm clip having an elongated flat ribbon body including a central helical section joining first connecting portions, wide sides of the flat ribbon body in the helical section being substantially normal to the axis of the helical section, second connecting portions extending from the first connecting portions transversely of the first connecting portions, blade portions extending from the second connecting portions, the blade portions being engageable substantially flatwise, spring action of the helical section urging the blade portions to engaged position, and a guide bar and stop member mounted on one of the second connecting portions and overlying an opposed other of the second connecting portions, the guide bar



and stop member including a stop portion extending outwardly of said one of the second connecting portions and being engageable by the other of the second connecting portions to limit opening of the clip and a guide bar portion spaced from and substantially parallel to said one of the second connecting portions to hold the blade portions in alignment, there being a 90 degree turn in the ribbon between the helical section and said one of the second connecting portions so that said one of the second connecting portions is in a plane parallel to the axis of the helical section.

4,796,626

TOURNIQUET TUBE

James H. DeVries, Grand Rapids, Mich., assignor to DLP Inc., Grand Rapids, Mich.

Filed Apr. 15, 1987, Ser. No. 38,721
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—334 R **7 Claims**



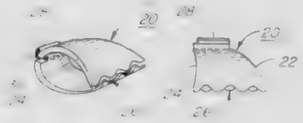
1. A suture lumen for securing sutures in a surgical procedure which comprises:
(a) a lumen open at both ends and having a proximal end and a distal end,
(b) a projection at one portion of said lumen adjacent the proximal end independent of the lumen passage having an annular recess to receive sutures wound into said recess, and
(c) means forming a notch adjacent said projection to frictionally engage suture ends drawn into the notch.

4,796,627

CLIP APPLICATOR AND SPREADABLE CLIPS FOR USE THEREIN

Wilson H. Tucker, Box 265, R.D. 1, Mystic, Conn. 06355

Filed Aug. 26, 1986, Ser. No. 900,383
Int. Cl.[4] A61B *17/08*
U.S. Cl. 128—337 **12 Claims**



1. In a spreadable surgical clip having a front face and a bight portion, a pair of opposed leg portions extending from the bight portion and terminating at their distal ends in respective bearing lips facing clamping slit in the front face of the clip, the bight portion being narrower than the front face, the improvement comprising that the clip has a front-to-rear narrowing taper which is greater on one lateral side of the clip than on the other.

4,796,628

INFANT PACIFIER

Sanford J. Anderson, 10284 Nottingham Trail, Eden Prairie, Minn. 55344

Filed Jun. 8, 1987, Ser. No. 59,331
Int. Cl.[4] A61J *17/00*
U.S. Cl. 128—360 **17 Claims**



1. An infant feeding and pacifying system comprising:
(a) a gavage container;
(b) a gavage tube connected to the gavage container; and
(c) an infant pacifier comprising:
(i) a nipple; and
(ii) a guard having an inner surface and an outer surface, wherein the nipple is connected to the guard and extends from the inner surfsace thereof, and wherein the guard forms groove means for receiving the gavage feeding tube, whereby the pacifier and the gavage feeding tube can be used simultaneously and whereby the pacifier can be inserted and removed without disturbing the gavage tube.

4,796,629

STIFFENED DILATION BALLOON CATHETER DEVICE

Joseph Grayzel, 262 Fountain Rd., Englewood, N.J. 07631

Filed Jun. 3, 1987, Ser. No. 57,807
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—344 **26 Claims**

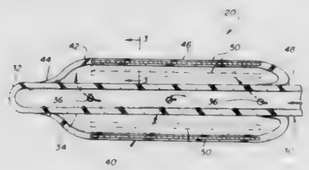
1. A balloon catheter for use in angioplasty and/or valvuloplasty procedures comprising:
a catheter section having a flow passage for pressurized liquid;

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an expandable chamber connected to the catheter section having a wall for containing a pressurized liquid;

passage means in said catheter section communicating said flow passage with said expandable chamber;

said expandable chamber having a wall section forming a cylindrical section when expanded;



a plurality of relatively rigid stiffening members peripherally disposed and axially extending along said expandable chamber, said stiffening members connected along the length thereof to the wall of said expandable chamber and movable with the wall of the expandable chamber; and

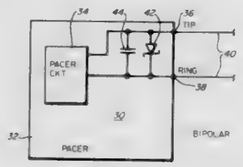
said stiffening members acting to maintain said cylindrical section to resist localized deformation in the surface of the expandable chamber.

4,796,630

CARDIAC PACEMAKER WITH COMBINED DEFIBRILLATION AND ELECTROSURGERY PROTECTION

Richard C. Regna, Miami, Fla., assignor to Telectronics N.V., Netherlands Antilles

Filed Mar. 23, 1987, Ser. No. 28,753
Int. Cl.[4] A61N *1/00*; **H05G** *00/00*
U.S. Cl. 128—419 D **10 Claims**



1. A cardiac pacemaker having combined defibrillation and electrosurgery protection which comprises:

an implantable housing;

a pacing circuit located within said housing;

means for attaching a lead to said housing;

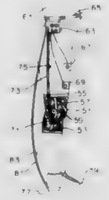
a protection circuit located between the pacing circuit and said attaching means, said protection circuit comprising a voltage breakdown device and a capacitor connected across said voltage breakdown device, said capacitor having a value to provide a relatively low impedance with respect to electrosurgery frequencies and a relatively high impedance with respect to cardiac myopotential frequencies, said protection circuit having no series inductor whereby there is no tuned circuit nor is detuning required, thereby alleviating an electromagnetic interference problem that might be caused by using a series inductor.

4,796,631

ELECTRICAL MUSCLE STIMULATOR FOR KNEE STABILIZATION

Leon M. Grigoryev, 14 Hunts Mill Rd., Clinton, N.J. 08809

Filed Jun. 11, 1987, Ser. No. 60,660
Int. Cl.[4] A61N *1/32*
U.S. Cl. 128—421 **18 Claims**



1. A portable electrical muscle stimulator for knee stabilization in a leg having inadequate neurological and muscular control to obtain normalization of locomotion, which comprises:

(a) a power source means for generating electrical current sufficient to stimulate muscle activation to the leg muscles;

(b) at least one muscle stimulation electrode for attachment to muscles of the leg, said electrode being connected to said power source means;

(c) a control unit for said power source means, having manual on/off means and having two control on/off switches which are activated and deactivated in response to predetermined conditions, a first switch of said two control on/off switches being responsive to knee angle and a second switch, of said two control on/off switches being responsive to heavy heel ground contact, said control unit being inactive unless said on/off means and both of said two control on/off switches are all activated;

(d) knee angle measuring means attachable to a knee and electrically connected to said first switch so as to activate said first switch when the knee angle is equal to or greater than a preset angle and to deactivate said first switch when the knee angle is less than said preset angle; and,

(e) a heel ground contact determining means attachable to a heel of a foot and electrically connected to said second switch so as to activate said second switch when the heel has ground contact with adequate weight on the heel to establish standing, and to deactivate said second switch when the heel does not have ground contact with adequate weight on the heel to establish standing; said stimulator being capable of transmitting electrical pulses to quadriceps through said at least one electrode to simulate the quadriceps sufficiently to assist in the stabilizing musculature of the knee during locomotion.

4,796,632

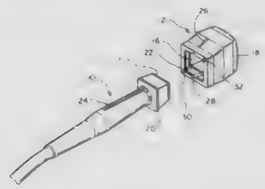
STANDOFF ADAPTER FOR ULTRASOUND PROBE

Ronald J. Boyd, Sacramento; Wing Law, Gold River, and Gary L. Wilson, Rancho Cordova, all of Calif., assignors to General Electric Company, Milwaukee, Wis.

Continuation of Ser. No. 895,342, Aug. 11, 1986, abandoned. This application Feb. 16, 1988, Ser. No. 158,087
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—662.03 **11 Claims**

1. An adapter for an ultrasound probe comprising a first unitary, molded elastic coupler portion and a second unitary, molded elastic receptacle portion, said coupler portion including a first housing with an integral coupling surface on one end of said first housing and an opening on an opposing end of said first housing, said receptacle portion including a second housing with an integral coupling surface on one end of said second housing and an opening on an opposing end of said second

housing, said second housing being inserted through said opening of said first housing and nested within said first housing with said coupling surfaces and said first housing defining a fluid cavity for transmitting ultrasound waves and said second



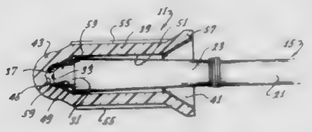
housing further including a vent hole for venting air from said fluid cavity and a filler hole for filling said fluid cavity with fluid, said opening of said second housing receiving a probe head whereby said probe head is positioned within said first and second housings and abutting said fluid cavity.

4,796,633

METHOD AND APPARATUS FOR IN VITRO CALIBRATION OF OXYGEN SATURATION MONITOR

Lori J. Zwirkoski, Tustin, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 25, 1985, Ser. No. 748,485
Int. Cl.[4] A61B *5/00*; **G01J** *1/02*
U.S. Cl. 128—634 **15 Claims**



1. A calibration reference apparatus for use with a light guide having an end portion which terminates in an end face, said apparatus comprising:

a calibration element having a surface defining a cavity, said cavity having an opening at one end and otherwise being essentially optically closed, said opening being sized to receive the end portion of a light guide;

means for releasably positioning the end portion of a light guide in the cavity with the end face of the light guide spaced from said surface opposite said opening to define a gap whereby a light guide can direct light at least at one wavelength from the end face thereof across the gap and against said surface opposite said opening;

said calibration element having means for returning some of the light at said one wavelength which is directed against said surface opposite said opening;

said means for returning having similar light returning properties as blood; and

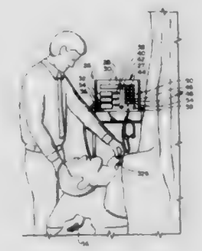
said positioning means and said calibration element being fixed with respect to each other.

4,796,634

METHODS AND APPARATUS FOR MONITORING CARDIAC OUTPUT

Lee L. Huntsman, Bainbridge Island; Richard S. Leard, Issaquah; Gary L. Tarbox, Bainbridge Island; Stephen R. Barnes, Seattle, and Barry D. McLaren, Auburn, all of Wash., assignors to Lawrence Medical Systems, Inc., Camarillo, Calif.

Filed Aug. 9, 1985, Ser. No. 763,992
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—662.01 **21 Claims**



9. A method of determining the cardiac index of a human patient which includes the steps of: computing the cardiac output of the patient by determining the cross-sectional area of the patient's ascending aorta, generating a signal representative of the systolic velocity of the blood flowing through the patient's descending aorta with an ultrasonic probe inserted in the esophagus of the patient, upwardly scaling that signal from a calibration signal representing a relationship between said systolic velocity representative signal and the velocity of the blood flowing through patient's ascending aorta, subjecting said first systolic velocity signal to frequency spectrum analysis to produce a multicomponent velocity profile signal, integrating said velocity profile signal with respect to time to thereby produce a systolic velocity integral, computing stroke volume as a function of said cross-sectional area and said systolic velocity integral, summing the stroke volumes thus determined for n beats of the patient's heart, and dividing the resulting sum by the time spanning said n beats to determine said cardiac output, and dividing the cardiac output of the patient by his body surface area.

4,796,635

MULTIPLE-ECHO, MULTIPLE-VIEW NMR ANGIOGRAPHY

Charles L. Dumoulin, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 11, 1987, Ser. No. 13,592
Int. Cl.[4] A61B *5/05*
U.S. Cl. 128—653 **13 Claims**

1. A method for acquiring a plurality of nuclear magnetic resonance (NMR) angiographic images of flowing material in at least a selected portion of a sample, comprising the steps of:

(a) immersing the sample in a main static magnetic field;

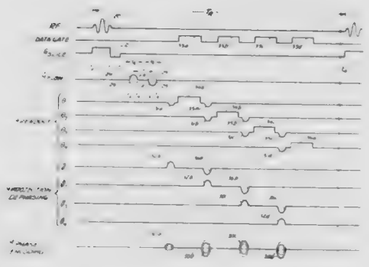
(b) nutating, in an initial part of each of a first sequence and a second sequence of a sequential pair of imaging sequences for each of a multiplicity S of regions of said selected sample portion, the spins of all nuclei of a selected species;

(c) applying a pair of alternating-polarity flow-encoding signal pulses in a first magnetic field gradient impressed upon the sample in a first direction selected to establish one axis of each of the NMR angiographic projection images, to cause a resulting NMR response echo signal from the spin of a moving nucleus to differ from the NMR response echo signal resulting from the spin of a substantially stationary nucleus; each of the flow-encoding pulses

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in the first sequence of each pair having a polarity flow-encoding pulse in the second sequence of each pair;

(d) acquiring, responsive to a readout magnetic field gradient impressed upon the sample in a second direction, substantially orthogonal to the first direction, and varied to be different in each j-th one, where $1 \leq j \leq N$, of a plurality N of response data acquisition time intervals of a sequence, with the second direction being the same in each like-numbered j-th acquisition interval of both sequences of all sequence pairs, a set of data from the NMR response echo signal evoked, from the same sample portion, in each different one of the plurality N of acquisition time intervals of each of the first and sequences; generating a rephasing pulse in the readout gradient prior to each of the N acquisition time intervals in each sequence; generating a rephasing pulse in the readout gradient after each of the



first (N−1) acquisition time intervals in each sequence; and providing each rephasing pulse with substantially the same amplitude as the associated dephasing pulse;

(e) subtracting, for each different j-th one of the N different acquisition time intervals, the data acquired in the j-th acquisition interval of one sequence from the data acquired in the like-numbered j-th acquisition interval of the other sequence of each sequence pair, to generate a j-th one of N different-pair difference sets from which response data obtained from stationary nuclei has been substantially removed; and

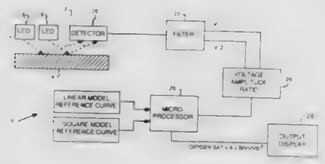
(f) generating N different angiographic images, with the j-th image being generated from all of the j-th pair difference sets and with each j-th image lying in a plane having a preselected relationship with respect to the first direction and the different second direction for that j-th image.

4,796,636

NONINVASIVE REFLECTANCE OXIMETER

Ronald L. Branstetter, and Reuben W. Edgar, Jr., both of San Antonio, Tex., assignors to Nippon Colin Co., Ltd., Komaki, Japan

Filed Sep. 10, 1987, Ser. No. 95,125
Int. Cl.[4] G01N *33/48*
U.S. Cl. 128—633 **18 Claims**



1. A blood oxygen saturation monitoring system comprising:

a first source of electromagnetic radiation at a first wavelength;

a second source of electromagnetic radiation at a second wavelength;

means for positioning said first and second sources of electromagnetic radiation to illuminate a sample of blood;

sensing means for receiving electromagnetic radiation reflected by said sample of blood, said reflected electromagnetic radiation comprising an AC component and a DC component, said sensing means producing an output signal corresponding only to the AC components of the reflected portions of said first and second electromagnetic radiation;

means for producing a quotient of squared values of said AC voltage components;

means for calculating blood oxygen saturation by correlating said quotient of said squared AC components with an oxygen saturation reference curve, said reference curve being uniquely representative of the blood oxygen saturation characteristics of a particular individual.

4,796,637

RADIOPAQUE MARKER FOR STEREOTAXIC CATHETER

Frank Mascuch, Watchung, and Arthur Winter, Short Hills, both of N.J., assignors to Victory Engineering Company, Springfield, N.J.

Filed Jun. 17, 1987, Ser. No. 62,967
Int. Cl.[4] A61M *25/00*
U.S. Cl. 128—658 **5 Claims**



1. A radiopaque marking system for a cathether, wherein said catheter includes at least one lumen parallel to an axis thereof, comprising:

said at least one lumen including a first length;

a staff in said at least one lumen;

said staff being a radiotransparent material;

at least first and second bands of a radiopaque material axially spaced a predetermined distance apart on said staff;

said staff including a second length;

said second length being substantially equal to said first length, whereby said staff is disposed in a known position within said lumen;

said at least first and second bands having a known positional relationship along a length of said staff, whereby said at least first and second bands also have a known positional relationship along a length of said catheter; and

means for sealing said staff within said lumen, whereby said radiopaque material is isolated from an exterior of said catheter.

4,796,638

ARTIFACT DETECTING APPARATUS IN THE MEASUREMENT OF A BIOLOGICAL SIGNAL

Minoru Sasaki, Yokohama, Japan, assignor to Kabushiki Kaisya Advance Kaihatsu Kenkyujo, Tokyo, Japan

Continuation of Ser. No. 876,859, May 22, 1986, abandoned.
This application Mar. 10, 1988, Ser. No. 169,144
Claims priority, application Japan, Sep. 28, 1984, 59-201897
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—696 **4 Claims**



1. An artifact detecting apparatus comprising:

a filter for passing high frequency components approximate to or the same as the frequency components of a QRS wave complex signal contained in a electrocardiogram signal;

a first comparing means for comparing each of the amplitude voltages of said high frequency components with a first predetermined level and for generating a pulse or pulses when at least one voltage of said amplitude voltages exceeds said predetermined level;

pulse-counting means for counting a pulse or pulses output from said first comparing means within a predetermined time interval; and

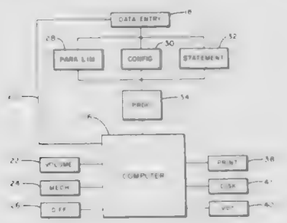
a second comparing means for comparing a level of a signal output from said pulse-counting means with a second predetermined level and for output in a signal indicating a detection of an artifact when said level exceeds said second predetermined level.

4,796,639

PULMONARY DIAGNOSTIC SYSTEM

Michael G. Snow, North St. Paul; William R. Tyler, St. Paul; Sung-Peng Hsu, Eagan, all of Minn., and Robert J. Fallat, San Rafael, Calif., assignors to Medical Graphics Corporation, St. Paul, Minn.

Filed Nov. 5, 1987, Ser. No. 117,482
Int. Cl.[4] A61R *5/08*; G06F *15/42*
U.S. Cl. 128—719 **16 Claims**



1. A pulmonary diagnostic apparatus, including:

a first electronic data storage means, and a plurality of expected values stored in said first data storage means, each expected value representing a predicted normal level for a pulmonary function;

a first data input means for entering a plurality of value ranges into said first data storage means, each of said ranges corresponding to and encompassing one of said expected values, said first data input means including user operable range input means for adjustably determining the ranges corresponding to each expected value whereby each said range represents a pulmonary function at a level within a normal range as determined by the user;

a second data input means for entering a plurality of boundary values into said first data storage means, said boundary values being arranged in sets of consecutively increasing value, each set corresponding to one of said ranges and determining, with respect to its corresponding range, increasing degrees of departure from said range, said second data input means including user operable boundary input means for adjustably determining said boundary values, thereby to determine the degrees of departure corresponding to each range that represent a pulmonary function at increasingly abnormal levels as determined by the user;

a pulmonary function testing means for measuring a plurality of pulmonary functions and providing a plurality of performance values to said first data storage means, each performance value based upon a measured pulmonary function and corresponding to one of said expected values; and

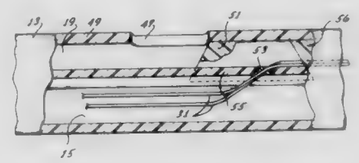
a processing means operatively associated with said first data storage means for comparing each of said performance values with its corresponding one of said value ranges and generating a first output indicating whether or not said performance value is within said corresponding range, said processing means further comparing each of said performance values lying outside of its corresponding range with its corresponding one of said sets of boundary values and generating a second output indicating a degree of departure from the corresponding range.

4,796,640

APPARATUS WITH FAST RESPONSE THERMISTOR

William E. Webler, Santa Ana, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 13, 1984, Ser. No. 570,619
Int. Cl.[4] H61B *5/02*
U.S. Cl. 128—736 **19 Claims**



1. An apparatus for measuring the temperature of a fluid within a living body, said apparatus comprising:

an elongated tube sized to be received within a vein or an artery and having proximal and distal ends, a peripheral wall, at least one lumen extending longitudinally within the tube and an opening in the peripheral wall which extends from the lumen to the exterior of the tube;

a thermistor;

a thermistor mounting body in said lumen adjacent said opening at least partially defining a cavity at said opening, said cavity opening radially outwardly; and

said thermistor being partially within said mounting body and projecting radially outwardly of the mounting body into said cavity with the thermistor being spaced from the wall of the cavity over a major area thereof whereby the portion of the thermistor which projects into the cavity is in good heat transfer relationship to the fluid within the body.

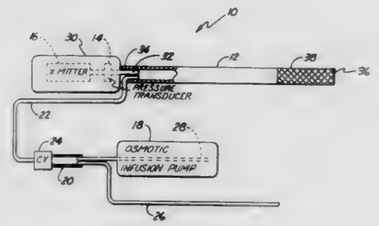
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,641

DEVICE AND METHOD FOR CHRONIC IN-VIVO MEASUREMENT OF INTERNAL BODY PRESSURE

Perry A. Mills, Roseville, and Brian P. Brockway, Minneapolis, both of Minn., assignors to Data Sciences, Inc., Minneapolis, Minn.

Filed Jul. 6, 1987, Ser. No. 69,728
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—748 **11 Claims**



1. An inplantable device for sensing an internal body pressure of an animal, the device comprising:

implantable catheter means having proximal and distal ends, the distal end for placement at a position within the animal at which the internal body pressure is to be sensed;

implantable pressure sensing means connected to the proximal end of the catheter means for providing a signal which is a function of the internal body pressure;

implantable osmotic infusion pump means connected to the proximal end of the catheter means for supplying does of an antithrombogenic solution to the distal end; and

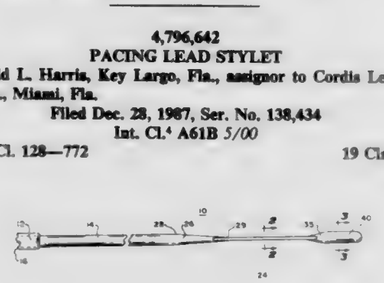
means associated with the osmotic infusion pump means for preventing body fluid from entering the distal end of the catheter means.

4,796,642

PACING LEAD STYLET

Donald L. Harris, Key Largo, Fla., assignor to Cordis Leads, Inc., Miami, Fla.

Filed Dec. 28, 1987, Ser. No. 138,434
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—772 **19 Claims**



1. A pacing lead stylet for insertion into a pervenous pacing lead for facilitating insertion of the lead into a patient, the pervenous pacing lead including at least one helical coil in an insulating sheath surrounding a lumen, the lumen being open at a proximal end of the pacing lead and extending to a distal end of the pacing lead where it is generally closed by a pacing lead electrode assembly, said stylet comprising:

a proximal end adapted for manipulation;

a distal end;

a stylet wire connected to said proximal end and extending in distal direction from the proximal end to said distal end and having an axial length sufficient to nearly contact the pacing lead electrode assembly with said stylet distal end, when said stylet wire is fully inserted into the lumen, said stylet wire having a generally constant stylet cross sectional area;

a decreasing taper connected to said stylet wire and extending in a distal direction away from the wire distal end for a decreasing taper distance, said decreasing taper having a decreasing cross section which is reduced from the stylet cross sectional area to a decreased cross sectional area at a decreasing taper distal end of said decreasing taper;

a flat connected to said decreasing taper and extending in a distal direction away from the decreasing taper distal end for a flat distance to a flat distal end, said flat having a cross section which has a maximum extent and a minimum extent;

an increasing taper connected to said flat and extending in a distal direction away from said flat distal end for an increasing taper distance, said increasing taper having an increasing cross section from the minimum extent of the flat to the stylet cross section area; and

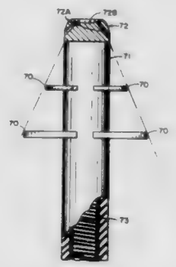
a tip at said stylet distal end connected to said increasing taper extending in a distal direction away from said increasing taper for a predetermined distance, said tip having a generally constant tip cross section area except at a tip distal end which is hemispherical, has a maximum hemispherical cross section area nearly equal to the tip cross section area, and has a hemispherical radius of curvature larger than half a maximum tip cross section.

4,796,643

MEDICAL ELECTRODE LEADS

Akira Nakazawa, Balmain, and Zoran Milijasevic, Sydney, both of Australia, assignors to Telectronics N.V., Curacao, Australia

Filed Sep. 30, 1986, Ser. No. 913,512
Int. Cl.[4] A61N *1/05*
U.S. Cl. 128—785 **12 Claims**



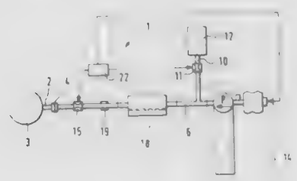
1. An electrode lead for engaging trabeculae having a lead body with an exposed conductive distal tip in a conductive shank supporting the distal tip, said conductive shank having a proximal end, there being an electrical conductor coupled to the proximal end of said shank, insulating means for insulating said shank and the conductor, said insulating means including molded anchoring means, said molded anchoring means comprising at least two rows of loop means having substantially parallel upper and lower surfaces within substantially parallel planes substantially perpendicular to the longitudinal axis of the lead body, the rows of loop means being spaced apart for independent motion a sufficient distance to allow trabeculae to be temporarily entrapped perpendicular to the longitudinal axis of the lead body, said loop means being sufficiently rigid to hold the trabeculae frictionally in place yet sufficiently flexible to be adapted to fold back against the lead body when being passed through a lead introducer and into the heart without tearing the loop means.

4,796,644

APPARATUS FOR INFUSION AND REMOVAL OF SAMPLES OF BLOOD AND OTHER BODY FLUIDS

Hans-Dietrich Polaschegg, Oberursel, Fed. Rep. of Germany, assignor to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Jul. 10, 1986, Ser. No. 884,128
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1985, 3524824
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—760 **10 Claims**



1. Apparatus for taking samples of body fluids from a living body, said apparatus comprising:

a single needle means to connect with a living body for withdrawing body fluids from the living body;

a first valve (**15**);

a second valve (**11**);

conduit means coupled at least to said first valve, to said second valve and to said needle means for carrying fluid between said first valve, said second valve and said needle means;

a reciprocating pump (**14**);

control means coupled at least to said first valve and to said second valve for alternately switching said first valve and said second valve open and closed to control said reciprocating pump in an infusion mode and a removal mode;

an infusion fluid supply (**12**) coupled to said second valve; and

means (**18**) for extracting samples of the body fluid from said conduit means;

said second valve disposed between said infusion fluid supply and said pump for controlling fluid access between said infusion fluid supply and said pump;

said first valve being disposed between said pump and said needle means for controlling body fluid access between said pump and the body;

said samples extracting means being disposed between said pump and said needle means for taking samples at least of body fluids from the body;

the filling volume of said pump (**14**) being substantially greater than the filling volume of the the conduit means.

4,796,645

CYLINDER FOR COMBINE

George J. Kuchar, 939 Charles, P.O. Box 595, Carlinville, Ill. 62626

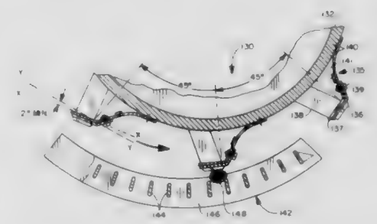
Filed Oct. 13, 1987, Ser. No. 107,556
Int. Cl.[4] A01F *12/18*
U.S. Cl. 130—27 HA **15 Claims**

1. For use with a concave member in a combine for separating grain from the leafy portion of a plant, a cylinder comprising:

a cylindrical-shaped member adapted for rotational displacement about a longitudinal axis thereof and positioned adjacent to the concave member;

a plurality of linear, elongated bars affixed in a spaced manner about the circumference of said cylindrical-shaped member and extending substantially the entire length thereof, wherein each adjacent pair of bars includes a leading and a trailing bar relative to the direction of rotation of said cylindrical-shaped member; and

a plurality of filler plates extending substantially the entire length of said cylindrical-shaped member, wherein each of said filler plates is disposed between adjacent bars and is attached to and continuous with its associated trailing bar



and extends toward its associated leading bar so as to leave a gap between it and its associated leading bar, and wherein each of said filler plates includes a concave outer portion adapted to receive, engage and transport the grain between said cylindrical-shaped member and the concave member.

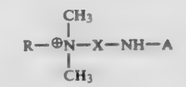
4,796,646

COMPOSITION AND PROCESS FOR TREATING KERATINIC SUBSTANCES WITH AT LEAST ONE ANIONIC POLYMER AND AT LEAST ONE QUATERNIZED PROTEIN

Jean F. Grollier, Paris, and Claude Dubief, Le Chesnay, both of France, assignors to L'Oreal, Paris, France

Filed Oct. 26, 1984, Ser. No. 665,386
Claims priority, application Luxembourg, Oct. 28, 1983, 85067
Int. Cl.[4] A45D *7/00*; A61K *7/06, 7/08, 7/11, 7/13, 7/135, 9/12*
U.S. Cl. 132—202 **24 Claims**

1. Composition for the cosmetic treatment of hair, skin or nails which comprises, in a cosmetically acceptable medium which is suitable for application on said hair, skin or nails, a strongly cationic quaternised protein and an anionic polymer other than homopolymers of acrylic acid crosslinked with a polyfunctional agent, said anionic polymer having a molecular weight of between 500 and 5,000,000 and having a large number of sulphonic, carboxylic, or phosphoric groups, said strongly cationic quaternised protein corresponding to the formula:



(I)

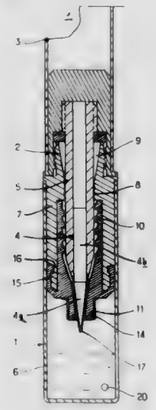
in which A denotes a protein residue derived from hydrolysates of collagen protein, R denotes a lyophilic group containing up to 30 carbon atoms, and X denotes an alkylene group containing from 1 to 6 carbon atoms, said strongly cationic quaternised protein and said anionic polymer being present in concentrations between 0.01 and 10% by weight.

4,796,647

APPLICATOR UNIT FOR A LIQUID, PASTY OR PULVERULENT PRODUCT

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Sep. 2, 1987, Ser. No. 92,214
Claims priority, application France, Sep. 15, 1986, 86 12841
Int. Cl.[4] A45D *40/26*
U.S. Cl. 132—320 **10 Claims**



1. An applicator unit for a liquid, pasty or pulverulent product such as a cosmetic product, said unit comprising a bottle adopted to contain the product and provided with a threaded neck, a cap receivable on the said bottle to close the same, there being provided interengaging screwthread means on the said neck and in said cap, a stem carried by said cap, an applicator disposed at the end of said stem, and a wiper device in said bottle adapted to be traversed by the applicator upon insertion of the applicator into and withdrawal of the applicator from the bottle, said wiper device comprising a first portion disposed within the bottle at the base of the neck and a second portion that has a smaller diameter than the first portion and extends from the lower end of the said first portion, a first bore being defined within the said first portion, said first bore having a wall formed as a spiral with a thread in the opposite direction to the direction of rotation required for unscrewing the cap, a second bore being defined in said second portion to extend the first bore coaxially and to pass through the end of the second portion, the second bore having, an internal wall and the second element having an external wall and a fibrous coating at least partly covering said internal and external walls.

4,796,648

ERGONOMIC CANE HAVING OVAL, TAPERED SHORT HANDLE AND TRIANGULAR SHANK FOR EASIER CONTROL WITH MORE COMFORTABLE GRIP

Victor H. Goulter, 485 Molimo Dr., San Francisco, Calif. 94127

Filed Mar. 26, 1987, Ser. No. 30,120
Int. Cl.[4] A45B *1/00*
U.S. Cl. 138—65 **9 Claims**

1. An ergonomic cane, comprising:
an elongated shank having a lower end and an upper end,
a handle grip attached to said upper end of said shank,
the portion of said shank which extends at least part way down from and adjacent to said handle grip having a triangular shape with three sides,
said handle grip extending generally normal to said shank and out from said shank about 70 to 80 millimeters so as to be about two thirds the width of an adult human hand and having a free end at the part thereof distal from said shank,
said handle grip having a generally oval cross section which increases in area from the free end of said handle grip to the portion of said handle grip which joins said shank, the height of said handle grip measured parallel to and adjacent said shank being at least twice the height thereof at said free end, such that said handle grip has a larger cross section adjacent said shank than at said free end thereof,
the lower side of said handle grip which is adjacent said shank extending from said shank at a relatively large obtuse angle with said shank,
the upper side of said handle grip which is adjacent said shank extending from said shank at a relatively small obtuse angle with said shank,



the part of said lower side of said handle grip beyond said part which is adjacent said shank curving from said relatively large obtuse angle with said shank to a generally normal angle to said shank,
said handle grip having a plurality but no more than three generally parallel finger grooves adjacent and extending up from said lower side thereof,
whereby said handle grip can be grasped with the thumb and first three fingers of a hand in a very comfortable manner due to the oval shape and increasing size of said handle grip and the index finger and end of the thumb can be comfortably rested on a respective two of the three sides of said shank to help control and direct said cane with precision.

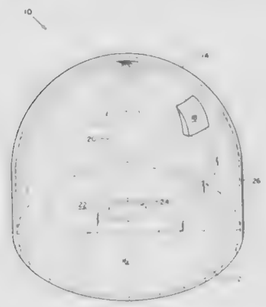
4,796,649

ICE FISHING SHELTER

James E. Tolomay, P.O. Box 452, North Bend, Pa. 17760

Filed Sep. 16, 1987, Ser. No. 97,149
Int. Cl.[4] E04H *15/18*
U.S. Cl. 135—102 **1 Claim**

1. A new and improved igloo shaped ice fishing shelter, comprising:
a first curved hollow molded shell half having a first arcuate peripheral flange;
a second curved hollow molded shell half having a second arcuate peripheral flange;
said first and second peripheral flanges having cooperating VELCRO fastening strips, whereby said first and second shell halves may be assembled to form an igloo shaped ice fishing shelter;
a semicircular floor integrally molded on said first shell half;
said second shell half having an open bottom portion;
a hooded ventilation opening formed in said first shell half;
an arcuate hinged door having curvature in two perpendicular directions formed in said second shell half;
said first and second shell halves formed from reinforced fiberglass; and



said first and second shell halves provided with a layer of insulation.

4,796,650

STRUCTURE FOR A FLOAT VALVE ASSEMBLY

Biing-Yih Hwang, 89, LinYuan South Road, LinYuan Shian, Kaohsiung Hsien, Taiwan

Filed Dec. 1, 1987, Ser. No. 127,263
Int. Cl.[4] F16K *31/26, 33/00*
U.S. Cl. 137—443 **4 Claims**



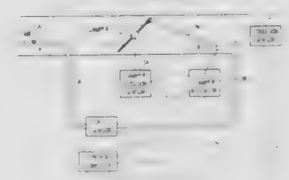
1. A float valve assembly comprising:
a valve body comprising an elongated enclosed tube having an upstream end and a downstream end, and being of generally cylindrical cross-section between said ends, the upstream end of the tube having means for connection to a water supply, the downstream end of the tube having a shoulder so as to define an outlet opening directly at said end of reduced cross-section relative to the internal cross-section of the tube, said shoulder including a circular edge which extends back into the elongated tube to form a valve seat of the outlet opening directly at said end thereof said valve body having ears directly on the downstream end and being adjacent to said outlet valve seat said ears having openings therethrough and a pin inserted therethrough to unite the valve body with a moving member,
said moving member having an axis hole therethrough for also receiving said pin, said moving member also engaging and removably secured to a float rod such that the moving member and the float rod pivot together about the pin axis, and said moving member also having a foot extending downwardly and inserted through an opening in a cap,
a resisting disc within the elongated tube of the valve body, said disc provided with an axially extending post which is united to a central opening of said cap, said resisting disc also having attached thereto said anti-leak gasket which is movable against the said protruding edge of the outlet to close the same,
wherein when the float is raised up by the water surface to a certain level, the float rod turns up with the pin passing through the axis hole of the moving member as the axis, causing the foot of the moving member to pull the cap outward, in turn pulling outward the resisting disc together with the anti-leak gasket to urge them against the inwardly protruding edge of the outlet to stop the water flow, with the aid of the water pressure acting against the resisting disc, and wherein when the flow has moved down as the water surface is lowered, the float rod turns down with the said pin as the axis, causing interrelated movement of the said foot of the moving member, the cap, the resisting disc and the anti-leak gasket to open the outlet.

4,796,651

VARIABLE GAS VOLUME FLOW MEASURING AND CONTROL METHODS AND APPARATUS

LeRoy D. Ginn, 15247 Laverne Ct.; LeRoyce S. Ginn, 1749 Kappa Ave., both of San Leandro, Calif. 94579, and Karen B. Schneider, Berkeley, Calif., assignors to LeRoy D. Ginn and LeRoyce S. Ginn, both of San Leandro, Calif.

Filed Mar. 30, 1988, Ser. No. 175,234
Int. Cl.[4] G05D *7/00*
U.S. Cl. 137—8 **25 Claims**



1. A method of measuring gas flow volume in a system of the kind in which the amount of gas flowing in a duct can vary in response to the variation of area of a variable area orifice in the duct and/or in response to changes in the total pressure of the gas upstream of said orifice and wherein the total pressure upstream of the orifice is referenced to the static pressure downstream of the orifice, said method comprising,
sensing the total pressure upstream of said orifice,
sensing the static pressure downstream of said orifice,
sensing a condition which is representative of the differential pressure between said total pressure upstream of the orifice and said static pressure downstream of the orifice,
producing a first signal corresponding to said sensed condition representative of the differential pressure,
producing a second signal corresponding to the area of the opening in the orifice,
supplying said first and second signals to a gas flow volume database correlated to the sensors and the orifice in the duct, and
reading out from the database the gas flow volume occurring in the duct at the first and second signals.

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PRESSURE REGULATOR FOR HYDRAULICALLY CONTROLLED MACHINE TOOLS

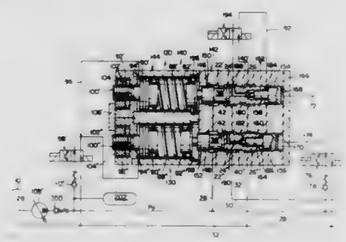
Dietmar F. Hafla, Hobeugebren, Fed. Rep. of Germany, assignor to Index-Werke Komm.-Ges. Hahn & Tessky, Fed. Rep. of Germany

Filed Jul. 22, 1987, Ser. No. 76,220

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1986, 3625222

Int. Cl.[4] F15B *13/043*

U.S. Cl. 137—116.3 **32 Claims**



1. A pressure regulator for hydraulically controlled machine tools comprising:

a first directly controlled three-way pressure-regulating valve with a housing including an inflow, an outflow and a pressure port for a hydraulic fluid, and with a control spool mounted therein which is movable back and forth between a first position connecting the inflow with the pressure port, a second position closing the pressure port and a third position connecting the pressure port with the outflow, with a constant pressure being settable at the pressure port, on the one hand, by a force being applied to the control spool by a biased elastic element in the direction of the position connecting the inflow with the pressure port, and, on the other hand, by the control spool having a first surface to which hydraulic fluid under the pressure at the pressure port is applied, by means of which a force counteracting the force of the elastic element acts upon the control spool, the control spool provided with a second surface to which the hydraulic fluid under the pressure at the pressure port can be applied by means of an externally controllable valve and, when applied, results in an additional force acting upon the control spool in the direction opposite to the force of the elastic element.

4,796,653

METHOD OF ENHANCING RESIDUAL COMPRESSIVE STRESS IN DOUBLE METALLIC TUBES

Masahiro Kobayashi, Ebina; Akitake Matsushita, Yokosuka; Hitoshi Nakamura; Shinji Tanaka, both of Yokohama, and Shuji Furuya, Yokohama, all of Japan, assignors to Toshiba Corporation, Kawasaki and Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, both of, Japan

Filed May 28, 1987, Ser. No. 54,895

Claims priority, application Japan, May 30, 1986, 61-125504

Int. Cl.[4] F16K *49/00*; **C21D** *9/52*

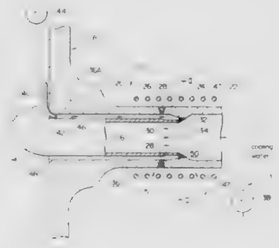
U.S. Cl. 137—341 **2 Claims**

1. A method of enhancing residual compressive stress in horizontal double metallic pipe constructed of an outer pipe made of an austenitic stainless steel which comprises the main pipe of a boiling water reactor pressure vessel with the main pipe including a nozzle and a safe-end welded coaxially to the nozzle through a first weld joint, and an inner pipe fitted into the outer pipe which is a thermal sleeve welded at one end thereof to the inner face of the main pipe through a second welded joint, said main pipe having been induction heated near said first and second welded joints to produce residual compressive stress in the first and second welded joints, comprising the steps of:

(a) introducing cooling water into both the inner pipe and the annular space defined between the inner pipe and the outer pipe, said annular space having an upper portion;

(b) injecting cooling water into said upper portion of the annular space to form a partial cooling water flow through the cooling water in the annular space;

(c) during the step (b), heating the outer pipe from the outside thereof by high frequency induction heating for a time period τ defined by the expression:



$$\tau \geqq 0.7t^2/a$$

wherein t is the wall thickness in mm of the outer pipe, and a is the temperature conductivity in mm^2 of the outer pipe, to generate a temperature difference between the inner and outer faces thereof to such a degree that a thermal stress larger than a yield point is produced in the outer pipe, said temperature difference being defined by the expression:

$$\Delta T \geqq \frac{4\sigma_y(1-\nu)}{E\alpha}$$

wherein σ_y, ν, E, and α are material yield strength in kg/km^2, Poisson's ratio, Young's modulus in kg/mm^2 and the thermal expansion coefficient in mm/°C., respectively; and

(d) then, stopping the heating of the outer pipe and allowing the outer pipe to stand, whereby residual compressive stress is provided to a radially inner portion of the outer pipe.

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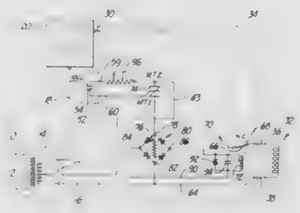
SOIL MOISTURE CONTROL SYSTEM AND METHOD

Bobby R. Simpson, 10072 Trask Blvd., Garden Grove, Calif. 92643

Continuation-in-part of Ser. No. 852,323, Apr. 15, 1986, Pat. No. 4,718,446. This application Jan. 11, 1988, Ser. No. 141,946

Int. Cl.[4] A01G *25/16*

U.S. Cl. 137—78.3 **12 Claims**



1. A soil moisture control system comprising:

an alternating current source for supplying alternating current;

a switch and a magnetic coil serially connected to said alternating current source, said magnetic coil being for connection to an irrigation water valve so as to control the opening and closing of the water valve;

a soil moisture sensor having first and second spaced electrically conductive graphite rods forming probes for sensing the moisture in soil between said probes, first and second resilient metal springs wrapped around the cut into said first and second graphite rod probes, respectively, said first and second metal springs being connected to said alternating current source so that alternating current passes between said probes when said sensor is immersed in moist soil, said sensor being connected to control said switch; and

including a gate circuit connected to said switch for controlling said switch and said soil moisture sensor being connected to said gate circuit so that said switch changes states when said sensor detects a predetermined amount of moisture in the soil between said probes so that said soil moisture control system inhibits delivery of irrigation water to the soil when soil moisture is adequate.

4,796,655

FLUID CONTROL DEVICES

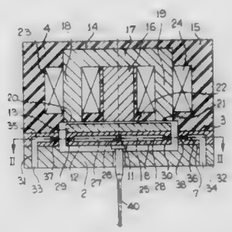
Dennis W. Parker, Cheltenham, and David F. Lakin, Churchdown, both of England, assignors to Dowty Hydraulic Units Limited, Cheltenham, England

Filed Sep. 3, 1987, Ser. No. 92,581

Claims priority, application United Kingdom, Jun. 9, 1987, 8721532

Int. Cl.[4] G05D *16/00*

U.S. Cl. 137—83 **11 Claims**



1. A fluid control device comprising a pivotable member having a planar major face and mounted so as to be pivotable about an axis parallel to the major face, the pivotable member including a first layer of non-magnetizable material having a fluid jet channel which directs a fluid jet parallel to the major face and transverse to the pivot axis at a position remote from the pivot axis and a second layer of magnetizable material, a receiving member defining a fluid receiving channel which is positioned so as to receive the fluid jet, and electromagnetic means selectively operable on said magnetizable material to pivot the pivotable member about the pivot axis so as to alter the position of the fluid jet channel relative to the fluid receiving channel and thereby vary the quantity of fluid received by the fluid receiving channel.

4,796,656

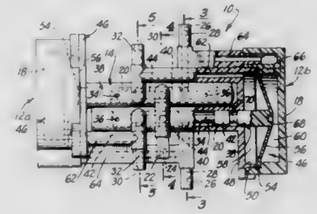
METHOD AND APPARATUS FOR CAUSING A SERIES OF MECHANICAL ACTIONS

Robert E. Phillips, 12217 Iredell St., Studio City, Calif. 91601, and Ben A. Otsap, 7661 Airport Blvd., Los Angeles, Calif. 90045

Filed Feb. 20, 1987, Ser. No. 17,324

Int. Cl.[4] F16K *31/365*; **A47C** *27/10*

U.S. Cl. 137—106 **23 Claims**



1. An apparatus for sequentially performing a repetitive series of mechanical actions, said apparatus including a series of independently operable mechanical means for providing a physical movement in response to a change in fluid pressure applied to it, each of said mechanical means having an inlet to receive fluid to be used in operating said apparatus, said apparatus also including regulating means for causing sequential changes in the fluid applied to all of said mechanical means in which the improvement comprises:

said regulating means comprising a series of feedback valve means for controlling fluid flow so as to operate said mechanical means, each of said valve means having an inlet and two separate outlets and a pressure differential responsive actuating means, including two compartments and a moveable member separating said compartments, each of said outlets on each of said valve means being connected to the inlet of one of said mechanical means and to a compartment of the actuating means of another of said valve means, none of said outlets being connected to the same mechanical means and the same compartment to which another of said outlets is connected,

said outlets, said mechanical means and said compartments being connected so that an operating cyle is commenced by supplying a fluid through one of said inlets and one of said outlets of one of said valve means to one of said mechanical means so as to cause a mechanical movement and to a compartment of another of said valve means so as to create a pressure differential between it and the other compartment in said other valve means so that such differential causes movement of the movable member separating such compartments, so as to connect a different outlet of the other valve means to the inlet thereof so as to cause a corresponding mechanical movement in the mechanical means connected to it and to initiate another corresponding action of a valve means.

4,796,657

ZONE SELECTOR AND LOCKING MECHANISM FOR SEQUENCING VALVE

Joseph R. Baker, 73 Fairview East, Tequesta, Fla. 33469

Continuation-in-part of Ser. No. 52,267, May 21, 1987, abandoned. This application May 2, 1988, Ser. No. 189,029

Int. Cl.[4] F16K *21/00*

U.S. Cl. 137—119 **19 Claims**

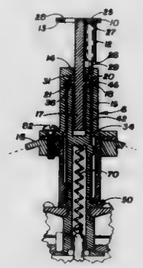
1. In an automatic sprinkling valve of the type having a housing, an inlet and a plurality of outlets in said housing, a movable valve member constructed to sequentially connect the inlet with each of the outlets, a mechanism responsive to sequential increases and decreases in pressure at the inlet for

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moving said valve member to sequentially connect the inlet with each of said outlets, the improvement comprising:

(a) manual control means for engaging said mechanism for manually moving said valve to any selected position so that the next pressure increase will connect the inlet to a selected outlet, said manual control means having a first, inactive position in which the operation of said valve is unaffected by said manual control means and said operation of said valve does not affect said manual control means and a second, active position in which the operation of said valve is prevented from sequentially connecting the inlet with each of said outlets and the inlet is connected to a selected outlet and that connection is unchanged by water pressure changes; and

(b) locking means for selectively locking said manual control means in either said first position or said second position.



4,796,658

APPARATUS FOR DETECTING BASEMENT WATER

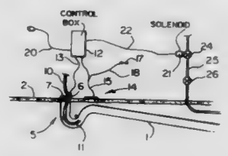
Roderick Caple, 916 Canford Cres., S.W., Calgary, Alberta, Canada T2W 1L2

Filed Jul. 1, 1987, Ser. No. 68,385

Claims priority, application Canada, Jul. 24, 1986, 514610

Int. Cl.[4] F16K *31/02;* **H01H** *29/04*

U.S. Cl. 137—312 **15 Claims**



15. In a building having a below-grade basement floor, a floor drain in the basement floor leading to an exterior waste water disposal means, a generally U-shaped trap disposed below said floor drain, and a water supply line for supplying water to the building, apparatus for monitoring the liquid level in the basement floor drain of the building comprising cover means for closing the top of the drain, a tubular casing extending through the cover means into the drain, said tubular casing having means for venting any trapped air above the rising liquid level, said tubular casing having an open lower end for admitting liquid, first sensor means extending downwardly into said casing to a predetermined level above said U-shaped trap so as to be contacted by liquid upon rising in said casing to said predetermined level, said casing further including an open ended extension member extending downwardly in the drain beyond the low point of said trap such that the lower inlet end of the casing is above the low point of said trap to minimize the possibility of bubbles entering said open end and forming a foam in said casing which might give a false signal to said sensor means, and control means connected to said sensor means for shutting off the water supply to the building when the liquid level rises above said predetermined level.

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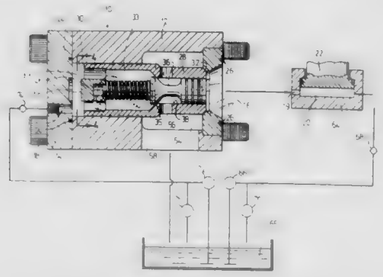
HIGH RESPONSE UNLOADING VALVE

George F. Lehmann, 155 Gunn Avenue, Cambridge, Ontario, 2Z5, Canada

Filed Dec. 22, 1987, Ser. No. 136,703

Int. Cl.[4] G05D *16/00*

U.S. Cl. 137—492 **17 Claims**



1. A fast relief valve comprising: a housing having a pressure setting chamber and a pressure sensing chamber;

a trigger valve seat;

a low inertia trigger valve element extending between said pressure setting chamber and said pressure sensing chamber and reciprocable along a path between said pressure sensing chamber and said pressure setting chamber between an open and a closed position on said trigger valve seat such that said trigger valve element is responsive to the differential in force between said pressure sensing chamber and said pressure setting chamber;

a relief valve element seat;

a low enertia relief valve element extending between said pressure setting chamber and said pressure sensing chamber and reciprocable along a path between said pressure sensing chamber and said pressure setting chamber between an open and a closed position on said relief valve seat such that said relief valve element is responsive to the differential in force between said pressure sensing chamber and said pressure setting chamber;

said trigger valve element seat and said relief valve element seat each being a positive stop for their respective valves;

a pressure relief passage;

said trigger valve element when seated on its seat being adapted to seal said pressure setting chamber and said pressure sensing chamber from said pressure relief passage and when open adapted to permit communication between said pressure setting chamber and said pressure relief passage, while still maintaining said seal between said sensing chamber and said relief passage;

said relief valve element when closed being adapted to seal said pressure setting chamber and said pressure sensing chamber from said pressure relief passage and when open being adapted to permit communication between said pressure sensing chamber and said pressure relief passage, while still maintaining said seal between said setting chamber and said relief passage;

said trigger valve element and said relief valve element being reiprocable as aforesaid independently of each other.

4,796,660

DRIP EMITTER

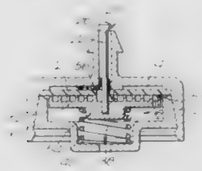
Dan Bron, Haifa, Israel, assignor to Manisa Establishment, Zurich, Switzerland

Filed Mar. 4, 1987, Ser. No. 21,494

Claims priority, application Israel, Mar. 5, 1986, 78045

Int. Cl.[4] F16K *17/32*

U.S. Cl. 137—504 **9 Claims**



1. A flow-regulated drip emitter, comprising:

a housing provided with an inlet connector connectable to a relatively high-pressure liquid-line, and an outlet opening;

a flexible disphragm retained along a peripheral portion thereof in said housing and dividing the interior of said housing into an inlet chamber and an outlet chamber;

a flow-regulating valve comprised of a valve head accessible to said high presure and a valve stem one end of which is attached to said valve head;

at least one flow-attenuating element disposed in the path of said liquid flowing from said inlet chamber to said outlet chamber;

a valve seat associated with said valve head and located in a high-pressure region upstream of said inlet chamber, said valve seat and said valve head defining between them a gap through which the liquid passes on its way from said high-pressure line into said inlet chamber, said valve head being adapted to be acted upon by a first force tending to reduce said gap, and by a second force tending to increase said gap, a state of equilibrium between said forces defining the set point of said flow-regulated emitter.

wherein said gap is fully exposed to liquid flow in said high-pressure line, wherein said flow-attenuating element is in the form of a labyrinth-type passageway, at least one liquid-contacting, active wall of said flow-attenuating element being constituted by said flexible diaphragm, and

wherein the maximum opening size of said gap defined by said valve head and said valve seat is smaller than the maximum opening provided in aid labyrinth-type passageway.

4,796,661

PROPORTIONAL ELECTRO-HYDRAULIC PRESSURE CONTROL VALVE

Yasuo Hishinuma, Yokohama, and Hiroshi Ito, Kanagawa, both of Japan, assignors to Yuken Kogyo Kabushiki Kaisha, Fujisawa, Japan

Filed Aug. 19, 1986, Ser. No. 898,041

Claims priority, application Japan, Aug. 30, 1985, 60-131723[U]; Aug. 30, 1985, 60-131724[U]; Aug. 30, 1985, 60-131726[U]; Mar. 20, 1986, 61-39935[U]

Int. Cl.[4] F16K *31/02*

U.S. Cl. 137—487.5 **15 Claims**

1. In a proportional electro-hydraulic relief valve, said relief valve comprising:

a valve body,

a hydraulic fluid inlet port in said valve body,

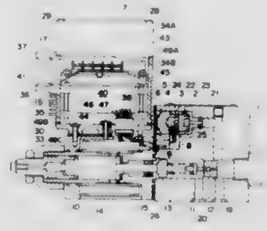
a hydraulic fluid outlet port in said valve body,

a pressure detecting fluid path in said valve body filled with hydraulic fluid,

valve means arranged between said ports to control a pressure at said hydraulic fluid inlet port, and

proportional plunger means slidably mounted in said valve body for causing application of a force proportional to an input current for setting a controlled pressure to act on said valve means,

said valve means including a sensor holder having a pressure sensor mounted in a sensor receiving hole defined by said valve body for detecting a hydraulic fluid pressure in said pressure detecting fluid path and outputting the same as an electric signal, a pressure sensing portion of said pressure sensor being positioned so as to be exposed to said pressure detecting fluid path, said sensor holder being positioned and fixed in said valve body by a plug-and-snap assembly for preventing said pressure sensor from slipping out of position under the action for hydraulic pressure, and notches formed in said plug-and-snap assembly for accommodating signal lead wires from said pressure sensor.



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VALVE ARRANGEMENT WITH MAIN SHIFTING VALVE AND PILOT CONTROL VALVE

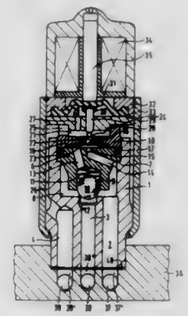
Ruediger Hoffmann, Sindelfingen; Dieter Feichtiger, Aidlingen, and Paul Schwerdt, Freudenstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 23, 1988, Ser. No. 197,268

Claims priority, application Fed. Rep. of Germany, May 22, 1987, 3717341

Int. Cl.[4] F15B *13/043;* **F16K** *31/42*

U.S. Cl. 137—596.16 **16 Claims**



1. A valve arrangement comprising main shifting valve means, pilot control valve means including a valve member movable between two valve seats, said valve member being operable to be sealingly pressed against one valve seat by means of an externally actuatable plunger means and thereby closes off a connection between an inlet line with a control pressure space which is opened up when placed against the other valve seat and at the same time also opens a connection between the control pressure space and a return line which is closed off when the valve member of the pilot control valve

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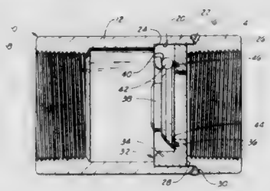
means is placed against the other valve seat, said main shifting valve means including a main valve member displaceable into a closing position by the pressure in the control pressure space when the connection between the inlet line and the control pressure space is open, said main valve member being displaceable into the control pressure space at least partly in the manner of a displacement member, the main valve member being operable to be sealingly pressed against its seat arranged between the inlet line and an outlet line when displaced into its closing position, valve housing means accommodating the control pressure space, the one valve seat of the pilot control valve means being provided at the other end face of the valve housing means opposite the control pressure space, a valve seat part arranged at said other end face of the valve housing means and providing the other valve seat of the pilot control valve means, a first intermediate space means operatively connected with the inlet line remaining between the seat of the main shifting valve means and the valve housing means, a second intermediate space means remaining between the valve seat part and the valve housing means, said second intermediate space means being operatively connected, respectively, operatively connectable by way of a line extending through the valve housing means with the first intermediate space means, by way of a further line extending through the valve housing means with the control pressure space and by way of an opening adjoining the other valve seat of the pilot control valve means respectively controlled by the valve member of the pilot control valve means with the return line, the inlet, outlet and return lines being arranged extending through a socket means of the valve arrangement and terminating at the same end face of the socket means, the socket means being provided at its end face opposite the orifices with a cup-like recess in which the inlet and outlet lines terminate on the side of the bottom, the seat of the main shifting valve means being arranged at the inlet orifice of the outlet line, the valve housing means being inserted into the cup-like recess in the manner of a plug while leaving free the first intermediate space means, the valve seat part resting on the end face of the valve housing means opposite the bottom of the cup-like recess in the manner of a cover and holding fast a sealing ring sealing the valve housing means in the cup-like recess at the facing circumferential edge of the valve housing means, sleeve means surrounding the socket means being arranged at the socket means under formation of an annular space which is operatively connected, on the one hand with the return line, and on the other, with a space present on the end face of the valve seat part opposite the valve housing means, said last-mentioned space being operatively connected with the second intermediate space means by way of an opening adjoining the other valve seat in the valve seat part.

4,796,663

FABRICATED CHECK VALVE CONSTRUCTION

John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Filed May 20, 1988, Ser. No. 196,447
Int. Cl.[4] F16K *15/03*
U.S. Cl. 137—515.5 **15 Claims**



1. A valve for installation in adjacent sections of a pipe, a body, comprising:

a first, tubular body section having one end thereof adapted for connection with an adjacent pipe section, and having a counterbore in the opposite end thereof forming an annular shoulder facing in the same direction as said opposite end;

a second tubular body section having one end thereof adapted for connection with an adjacent pipe section, and having its opposite end welded to said opposite end of the first body section;

an annular seat secured in said counterbore;

a disc in the body having a hinge pin and supported for swinging movement to and from the seat for closing and opening the valve; and

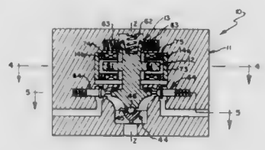
a cage member secured in said counterbore surrounding a portion of the disc when the disc is in engagement with the seat, a portion of the cage member forming a hanger for the disc hinge pin.

4,796,664

TWO-AXIS FORCE MOTOR

Hans G. Toews, East Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.

PCT No. PCT/US87/00730, § 371 Date Oct. 20, 1987, § 102(e) Date Oct. 20, 1987, PCT Pub. No. WO87/06051, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 25, 1987, Ser. No. 114,585
Int. Cl.[4] F16K *11/14*
U.S. Cl. 137—595 **13 Claims**



1. A two-axis force motor, comprising:

a body;

an armature mounted on said body for omni-directional pivotal movement relative thereto, said armature having an axis of elongation;

a centering device for urging said armature to move toward a null position relative to said body at which said armature axis will be coincident with a line defined by the intersection of two planes;

a first coil mounted on said body and selectively energizable to cause said armature to pivot off-null in one of said planes;

a second coil mounted on said body and selectively energizable to cause said armature to pivot off-null in the other of said planes; and

at least two actuators movably mounted on said body and engaging said armature, said actuators being arranged such that pivotal movement of said armature in any plane will cause at least one of said actuators to be displaced, each of said actuators being arranged to operated a valve.

4,796,665

MULTI-PURPOSE DRAINING VALVE

Charles Christiany, Fameck, France, assignor to Societe Lorraine de Laminage Continu - Sollac, Florange, France

Filed Feb. 2, 1987, Ser. No. 9,738
Claims priority, application France, Feb. 7, 1986, 86 01725
Int. Cl.[4] F16K *1/54, 49/00*
U.S. Cl. 137—614.13 **12 Claims**

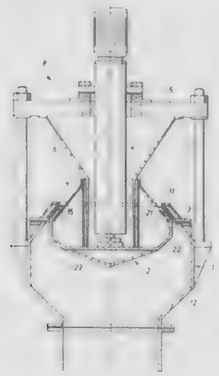
1. A valve device for the sealing, draining or regulated discharging of a gaseous fluid circuit comprising:

(a) a valve body provided with opposed first and second sealing seats;

(b) a valve element disposed inside the valve body for movement along an axis of the device, the valve element being provided with opposed first and second bearing surfaces;

(c) the first and second sealing seats being, respectively, engagable by the first and second bearing surfaces for tightly separating a zone situated downstream of the device from a zone situated upstream of the device;

(d) control means, including a control unit and a support, for moving the valve element along the axis of the device to a predetermined position and maintaining the valve element in such position;



(e) the control unit including a first part joined to the valve body by the support, and a second part movable along the axis of the device, the second part being joined to the valve element; and

(f) the connection between the control unit and the support, and the connection between the control unit and the valve element being articulated and so disposed that their articulation axes are orthogonal one with respect to the other, and with respect to the axis of the device.

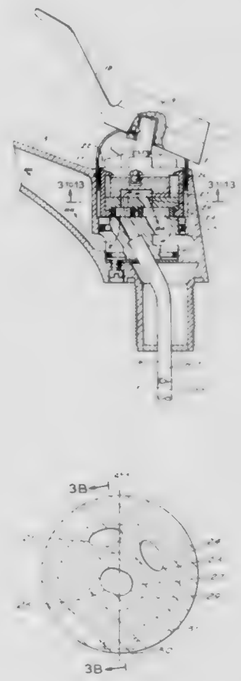
4,796,666

SANITARY SINGLE-HANDLE MIXING VALVE

Konrad Bergmann, Wittlich, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

Filed Oct. 5, 1987, Ser. No. 104,629
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1986, 3633995; Oct. 6, 1986, 8627223
Int. Cl.[4] F16K *11/06*
U.S. Cl. 137—625.17 **4 Claims**

1. A single-handle mixing valve in combination with an in-line flow heater, said mixing valve comprising: valving means having at least two disc, one of which is in the form of a fixed valve seat having an outlet opening and asymmetrically formed hot and cold water inlet openings, the other of said discs, arranged in face-to-face sealing contact with said valve seat disc, is shiftably mounted thereon, said movable disc having a chamber formed therein, so that when said movable disc is shifted a few degrees toward the cold water setting, the edge forming the perimeter of said chamber on said movable disc uncovers free flow areas of the asymmetrically formed hot and



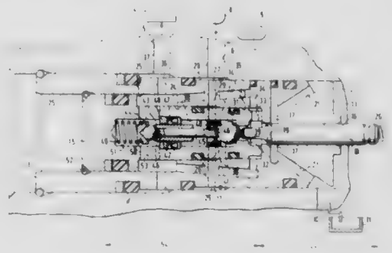
cold water inlet openings whereby hydraulic symmetry is achieved.

4,796,667

BRAKE PRESSURE CONTROL VALVE

Georg Kehl, Stuttgart, and Ernst-Dieter Schäfer, Pliezhausen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1987, Ser. No. 25,532
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1986, 3619482
Int. Cl.[4] B60T *13/12*
U.S. Cl. 137—629 **5 Claims**



1. A brake pressure control valve comprising a brake pressure build-up valve having a valve chamber (30) with a first inner valve seat (31), a fluid pressure source connectable to

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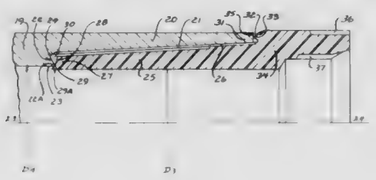
said valve chamber, a movable first valve member in said valve chamber for cooperation with said valve seat, a movable compensating piston (42, 42b) associated with said first valve member, a sealing ring (47) surrounding said compensating piston and arranged to enclose a portion of said compensating piston in a seal-tight manner, said compensating piston (42, 42b) further including an end means arranged to project from said valve chamber, said end means adapted to form a second valve seat, a second valve member arranged to cooperate with said second valve seat, said second valve member being connected to said first valve member via a rod which extends through said compensating piston with minimal radial play and a closing spring for closing said first and second valve members, a relatively movable control slide having opposite sides disposed between said compensating piston and said first valve member, said control slide being connected to said first valve member, said valve chamber further provided with a cylindrical bore in proximity to said control slide and adapted for enclosure thereof and to thereby form a fixed control valve sleeve; said control slide and said control valve sleeve comprises flow bores adapted to form a control valve which may be opened after the first valve member has been removed from said first valve seat, and further wherein at least one pressure compensating channel is provided which produces pressure compensating between said opposite sides of said control slide.

4,796,668

DEVICE FOR PROTECTING THREADINGS AND BUTT-TYPE JOINT BEARING SURFACES OF METALLIC TUBES

Jean-Paul Depret, Aulnoye Aymeries, France, assignor to Vallourec, France

PCT No. PCT/FR85/00003, § 371 Date Jul. 18, 1985, § 102(e) Date Jul. 18, 1985, PCT Pub. No. WO85/03104, PCT Pub. Date Jul. 18, 1985
PCT Filed Jan. 7, 1984, Ser. No. 763,140
Claims priority, application France, Jan. 9, 1984, 84 00700
Int. Cl.⁴ F16L *55/10*
U.S. Cl. 138—96 T **12 Claims**



1. A device for protecting male or female threadings and butt-type annular joint bearings of metallic tubes comprising:

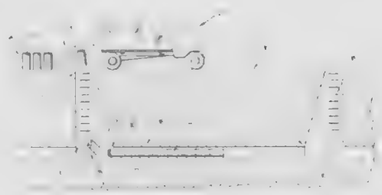
a metallic tube provided with a joining region at one end thereof, said joining region including screw threadings which terminate in a butt-type joint having a butt-type bearing surface and inside and outside surfaces where said bearing surface and said inside surface meet to form an annular inner edge, a plastic ring provided with screwthreads for engaging said threadings of said metallic tube, said ring further having an annular abutment region provided with a front face which is dimensioned so as to face the butt-type bearing surface of the metallic tube when the ring is tightly screwed onto said tube, said front face having an inner surface which comprises a first annular tight sealing means which cooperates with the butt-type joint bearing surface near said annular inner edge to insure sealing, said front face being further dimensioned such that a closed annular volume is created between the entire butt-type joint bearing surface and said front face.

4,796,669

PRODUCT FOR RELINING SEWERS AND WATER PIPES

Henri S. St. Onge, Scarborough, Canada, assignor to Duratron Systems Limited, Scarborough, Canada

Continuation of Ser. No. 284,482, Jul. 17, 1981, abandoned. This application Jan. 13, 1986, Ser. No. 892,875
The portion of the term of this patent subsequent to Jun. 10, 2002, has been disclaimed.
Int. Cl.⁴ F16L *55/18, 9/22*
U.S. Cl. 138—97 **14 Claims**



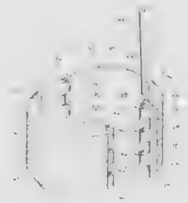
1. In combination, a plurality of plastic pipe lengths interconnected to reline an existing sewer, each pipe length having a male portion at one end of the pipe length and a female portion at the other end of the pipe length, said male and female portions forming an interconnection between adjacent pipe lengths, said male portion compressing against a sealing member about the interior of the female portion associated therewith, and including thread-like means for cooperating with an appropriately shaped interior of the associated female portion in a manner to maintain said interconnection when the combination is placed in axial tension or compression, each pipe length being of a length which allows insertion through a manhole and positioning of the entire pipe length in the manhole in a manner to align with the sewer.

4,796,670

DRILL PIPE PROTECTOR

Larry R. Russell, Houston, and Kevin T. Corbett, Missouri City, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Oct. 15, 1987, Ser. No. 109,349
Int. Cl.⁴ F16L *57/00*
U.S. Cl. 138—110 **14 Claims**



1. In a casing having a drill pipe element and a drill pipe protector disposed in said casing, protector comprising:

a support element adapted to be affixed to the outer surface of said drill pipe element; and

an elastomeric bearing element secured to said support element, said bearing element extending radially outward from said support element to define a radially outer contact surface of said drill pipe protector, said outer contact surface, at least a radially outermost portion of said bearing element and the remainder of said elastomeric bearing element being configured of an elastomeric material having a quantity of abrasive particles interspersed throughout said particles having a hardness of the MOH scale of hardness of at least 5, said particles having a size in the range of 0.05 to 3.0 millimeters, said particles making up between 8% to about 30% of the combined volume of said particles and said elastomeric material, some of said particles protruding from said outer contact surface, said particles being configured and arranged in such elastomeric material to provide a means to continually abrade and polish the interior surface of said casing and therby decrease torque and drag loads therebetween.

4,796,671

PROTECTIVE TUBE FOR THERMOCOUPLE AND METHOD OF PRODUCING SAME

Kiyoshi Furushima; Kazunori Haratoh, and Hideshige Matsuo, all of Kitakyushu, Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 17, 1987, Ser. No. 26,751
Claims priority, application Japan, Mar. 18, 1986, 61-58325
Int. Cl.⁴ H01L *35/02*
U.S. Cl. 138—140 **6 Claims**



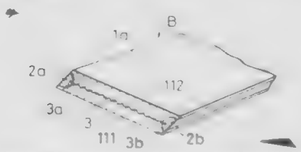
1. A protective tube for a thermocouple for measuring the temperature of molten metal, comprising two layers, an inner layer being made of a material selected from the group consisting of silicon nitride and sialon ceramic, said inner layer having a bending strength of 50 kg/mm^2 or more, a density of 90% or more based on a theoretical density and a thermal shock temperature ΔT of 400° C. or more, and protective means including an outer layer being formed on said inner layer and containing BN and SiO_2.

4,796,672

PRESSURE-WITHSTANDING PIPE

Shiro Kanao, No. 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Filed Aug. 13, 1986, Ser. No. 896,147
Claims priority, application Japan, Dec. 12, 1985, 60-280082
Int. Cl.⁴ F16L *11/08*
U.S. Cl. 138—154 **16 Claims**



1. A pressure-withstanding pipe comprising: a single belt body helically wound to form a pipe, said body comprising a strip of a first soft synthetic resin material or a soft rubber material, said first material having an interior inner surface over the entire width of said body and an exterior outer surface and being helically wound to form an overall continuous interior wall of said pipe;

at least first and second reinforcing members of a second synthetic resinous material harder than said first material and embedded in said first material, said second material being enclosed in said first material so that said second material is not exposed at the interior surface of said pipe, but is enclosed by the interior surface of said first material; and

a reinforcing layer of a third material thinner than the second material and materially different therefrom, having first and second opposite side end portions embedded within said first material and secured to each of said first and second reinforcing members by embedding said first and second opposite side end portions of said thin reinforcing layer in said first and second reinforcing members, respectively.

4,796,673

REPRODUCTION PROCESS OF THE EXISTING PIPELINE

Kouhei Ueda, Kanagawa, Japan, assignor to Taisei Corporation, Tokyo, Japan

Continuation of Ser. No. 852,268, Apr. 15, 1986, abandoned. This application Dec. 24, 1987, Ser. No. 139,097
Int. Cl.⁴ F16L *1/00*
U.S. Cl. 138—97 **6 Claims**



1. A process for the reproduction of the pipe of an existing pipeline, said existing pipeline including an opened end, comprising the steps of:

(a) inserting into said pipeline from said opened end and axially of said pipeline, a first section of rigid pipe having an outer diameter slightly smaller than the inner diameter of said pipe of said existing pipeline, said first section having its interior front leading end temporarily blocked;

(b) advancing said front leading end of said first section of rigid pipe into said existing pipeline by applying fluid pressure into the interior of said inner pipe against said temporarily blocked front leading end until said first section of rigid pipe, except for its rear, trailing end and a portion of said first section immediately adjacent said trailing end and sufficient in length for connection to a section of rigid pipe remains exposed at said opened end;

(c) securing a second section of rigid pipe having an outer diameter and an inner diameter substantially equal to the outer and inner diameter of said first section to said rear, trailing end of said first section and advancing said first and second section of rigid pipe into said existing pipeline; and

(d) repeating said steps of advancing sections of rigid pipe and securing an additional section of rigid pipe to the rear, trailing end of the previously inserted sections of rigid pipe, until said reproduction is completed.

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4,796,674

SHED-FORMING APPARATUS FOR DOUP WEAVE

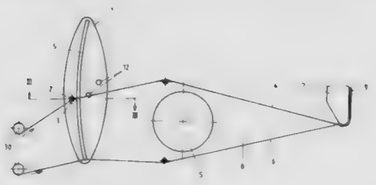
Rudolf Wolf, Lenzing, and Kurt Vilsecker, Gmunden, both of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Sep. 1, 1987, Ser. No. 91,933

Claims priority, application Austria, Sep. 1, 1986, 2354/86; Jul. 7, 1987, 1712/87; Aug. 13, 1987, 2048/87

Int. Cl.[4] D03D *37/00*

U.S. Cl. 139—13 R **11 Claims**



11. Circular loom comprising a shed-forming apparatus for producing a doup weave comprising shed-forming places, each provided with a slot for accommodatng a wip thread and a bore for accommodating a stationary thread and adapted to be pivoted back and forth, about a pivoting axis substantially normal to the wip thread and the stationary thread and essentially parallel to a warp plane wherein at least two of the shed-forming plates are rigidly interconnected by bolts positioned radially outwardly beyond the slot, at least one of said shed-forming plates being connected to at least one drive disc, the drive disc including a pivot for connection with a drive rod and carrying an axle pin for pivotal mounting.

4,796,675

YARN STORING, FEEDING AND MEASURING DEVICE

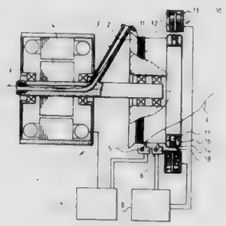
Lars H. G. Tholander, Huskvarna, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

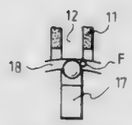
Continuation of Ser. No. 889,646, Jul. 24, 1986, abandoned, which is a division of Ser. No. 614,774, filed as PCT EP83/00254 on Sep. 30, 1983, published as WO84/01394 on Apr. 12, 1984, Pat. No. 4,627,474. This application Jan. 25, 1988, Ser. No. 147,649

Claims priority, application Sweden, Sep. 30, 1982, 8205598; Dec. 10, 1982, 8207096; Sep. 13, 1983, 8304891; Sep. 20, 1983, 8305040

Int. Cl.[4] D03D *47/36;* **R65H** *51/20*

U.S. Cl. 139—452 **13 Claims**





1. A yarn storing and feeding device comprising a stationary storage drum onto which an intermediate yarn store is wound by a winding-on device and from which the yarn is withdrawn spiralling through a gap around the withdrawal end of the storage drum, the stationary storage drum being surrounded by a stationary ring structure adjacent the withdrawal end so as to define said gap therebetween, and at least one yarn stopping means cooperating with the gap for stopping the withdrawal of yarn, said yarn stopping means including:

(a) a yarn stopping element arranged radially inwardly with respect to said gap and being supported on said drum for movement radially thereof between a retracted position wherein the stopping element is disposed radially inwardly of the gap and an extended position wherein an outer end part of the stopping element projects radially outwardly of the drum so as to radially span across said gap to contact said stationary ring structure and stop the withdrawal of yarn,

(b) electromagnetic actuator means for causing said stopping element to be moved radially outwardly into said extended position when said actuator means is energized, said electromagnetic actuator means being mounted on said ring structure radially outwardly with respect to said gap,

(c) means mounted on said stationary drum for at least partially urging said stopping element in its retracted position and for normally holding said stopping element in the retracted position; and

(d) said outer end part having a rounded yarn contact surface which is of a convex rounded configuration in the circumferential direction of the gap so that the tensioned yarn engages the contact surface when the stopping element is in said extended position and imposes thereon a force tending to move said stopping element back towards said retracted position.

4,796,676

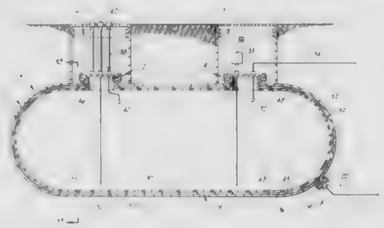
FLUID STORAGE TANK SYSTEM

John A. Hendershot, P.O. Drawer 789, Shawnee, Okla. 74801, and Leale E. Streebin, 2301 Morgan Dr., Norman, Okla. 73069

Filed Jun. 5, 1987, Ser. No. 58,798

Int. Cl.[4] G08B *21/00;* **G01M** *3/26*

U.S. Cl. 141—83 **21 Claims**



1. A fluid storage tank system comprising:

an external tank having an inner side and an outer side;

a flexible inner tank positioned within and adjacent said external tank and defining with said external tank, a space therebetween;

said flexible inner tank having a geometric configuration complementary to that of said external tank, and said inner tank having an interior and an exterior;

registering access manholes in the inner and external tanks facilitating access to the interior of the inner tank so that said access manholes are registered;

means for sealing the inner and external tanks to each other at the registering access manholes with a seal adequate to impart fluid tight integrity to the space between the inner and external tanks;

means for removably closing said manholes and facilitating the selective opening of the registered manholes without affecting the integrity of the seal of the tanks to each other at the registering access manholes;

means for reducing the pressure in said space between the tanks to a negative pressure below atmospheric pressure; and

means for periodically automatically evacuating such space to restore the negative pressure therein to a predetermined level.

4,796,677

APPARATUS FOR FACILITATING LIQUID TRANSFER FROM A DRUM

Jeffrey D. Nice, 1515 Northridge, Columbus, Ohio 43224

Filed Jul. 1, 1987, Ser. No. 69,011

Int. Cl.[4] B67D *1/16*

U.S. Cl. 141—88 **4 Claims**



1. An apparatus for facilitating liquid transfer from a drum to a vessel with a return to the drum of unused liquid, comprising receptacle means for receiving and supporting the vessel to which liquid is to be transferred and having an inlet and egress end, the egress end having a first fluid coupling extending therefrom, the first fluid coupling having a threaded portion adapted to be threadably received in a threaded port of the drum, the threaded portion of the fluid coupling comprising first and second threaded portions, the first threaded portion being more distal from the egress end of the receptacle than the second threaded portion, the first threaded portion having an outside diameter less than an outside diameter of the second threaded portion, the first threaded portion adapted to be threadably received in a first threaded port of the drum for returning the unused liquid, the second threaded portion adapted to be threadably received in a second threaded port of the drum which is larger than the first port for returning the unused liquid, the receptacle including an upper skirt and a lower conical member, the apex of the conical member including the receptacle's egress end, the receptacle including an adjustable mounting bracket extending from the upper skirt and means for mounting a second fluid coupling to the adjustable mounting bracket, the second fluid coupling including means for flexibly coupling an inlet thereof to an outlet of a pump, an inlet of the pump being adapted to be independently connected via a further coupling into the drum to extend adjacent the bottom thereof, and the adjustable mounting bracket adjustable to fixedly locate the second fluid coupling in different positions with respect to the receptacle, to accommodate different sized receptacles.

4,796,678

LIQUID DELIVERY APPARATUS

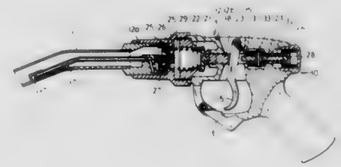
Toshiaki Motokashi, and Yasushi Saisu, both of Tokyo, Japan, assignors to Tokyo Tatsuno Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1987, Ser. No. 120,436

Claims priority, application Japan, Nov. 13, 1986, 61-270338

Int. Cl.[4] B65B *3/26*

U.S. Cl. 141—206 **8 Claims**



1. Apparatus for liquid delivery comprising a barrel portion having an open free end;

a hollow body portion integrally fixed thereto and having an inlet to form a liquid passage extending therefrom through the barrel portion to said open free end;

a trigger mounted at said body portion so as to be manually actuated;

a main valve arranged downstream from said inlet in the liquid passage in the body portion and having a valve rod to be longitudinally movable together;

a valve set arranged so as to face said main valve and having a wall exposed in the liquid passage around said main valve;

first spring means for urging said main valve toward said valve seat for normally closing the liquid passage;

an extended bar arranged so as to be longitudinally moved by the actuated trigger;

second spring means for urging said bar toward said trigger;

means for disengageably engaging said bar with said valve rod so as to be longitudinally movable together;

and means for detecting liquid level rising up close to the open free end of said barrel portion and adapted to actuate said engaging means so as to disengage said bar from said valve rod when detecting liquid inclusive of bubbles and splashes thereof; in which

said valve seat is made slidingly movable toward said main valve by third spring means and apart therefrom by pressure force of liquid pumped up through said inlet in the liquid passage to be just in front of said main valve and the exposed wall of said valve seat against the force of said third spring, to which said main valve follows by the force of said first spring means;

whereby when actuating the trigger, the bar and consequently the valve rod engaged therewith is longitudinally moved against the force of said first spring means so as to open the liquid passage;

when said detecting means detects liquid splashes and bubbles, said valve rod is disengaged from said bar so that said valve rod is longitudinally moved by said first spring means despite of that the trigger is still actuated and the main valve closes the liquid passage; and,

when liquid is freed from pressure, the main valve seat is slidingly moved toward the main valve by the force of said third spring means so that said detecting means now detecting no splashes and bubbles actuates said engaging means so as to engage said bar with said valve rod again.

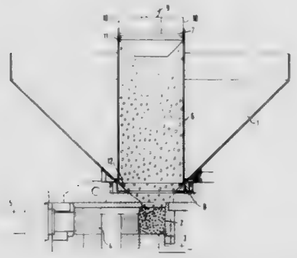
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APPARATUS FOR DISPENSING A DEFORMABLE AND FLOWABLE FILLING MATERIAL

Albert Frey, Fischerstr. 21, 7922 Herbrechtingen, Fed. Rep. of Germany

Filed Jan. 21, 1987, Ser. No. 5,636
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1936, 3605896
Int. Cl.[4] A22C *11/06*; B65B *3/12*
U.S. Cl. 141—258 **7 Claims**



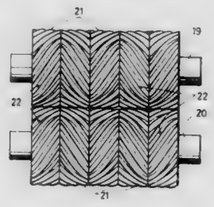
1. Apparatus for dispensing a deformable and flowable comprising: a filling funnel having a top end and a base end; a filling chamber disposed beneath said filling funnel; an outlet at said base end of said filling funnel; means for subjecting said filling chamber to a vacuum to draw said filling material downwardly from said filling funnel into said filling chamber; a dispensing tube communicating with said filling chamber for the dispensing of said filling material from said filling chamber; and a cylindrical filling tube having top and bottom ends, wherein said bottom end is coaxially insertable into said filling funnel above and in communication with said outlet, and wherein a lid is provided within said cylindrical filling tube, there being means for guiding said lid for axial movement within said cylindrical filling tube from said top end thereof to said bottom end, said lid thereby forming a wandering terminal wall of said filling tube, whereby said cylindrical filling tube is adapted for the transfer of residual quantities of said filling material through said outlet into said filling chamber under the influence of said means for subjecting the filling chamber to a vacuum.

4,796,680

APPARATUS FOR TENDERIZING VENEER SHEETS

Yoshinori Kobe, Tokaishi, Japan, assignor to Meinan Machinery Works, Inc., Japan

Filed Apr. 8, 1987, Ser. No. 36,004
Claims priority, application Japan, Apr. 10, 1986, 61-82492
Int. Cl.[4] B27M *1/02, 3/00*
U.S. Cl. 144—2 R **12 Claims**



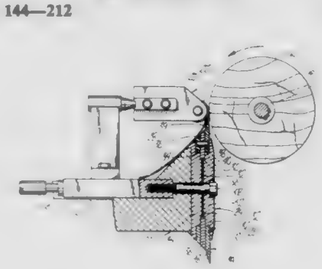
1. An apparatus for tenderizing veneer sheets, comprising
(a) a pair of first and second rotatable press means each having a circumference with a plurality of radial projections extending in predetermined directions,
(b) said projections of each said press means being formed of substantially rigid material,
(c) each said projection of each said press means having a top for pressing against a veneer sheet to be tenderized,
(d) said first and second press means being so located relative to each other that the tops of the projections of the first press means and the tops of the projections of the second press means are separated by less than the thickness of the veneer sheet when the projections of the two press means are opposed to each other during rotation thereof,
(e) means mounting the two press means for passing the veneer sheet between the press means, for tenderization, with such an orientation that the fibers thereof extend along directions predetermined relative to the directions of axes of rotation of the two press means, and
(f) the tops of the projections of the first press means and the tops of the projections of the second press means defining respective first and second elongate regions, said regions intersecting each other transversely to form localized intersection regions of sufficiently high compression between opposed projections pressing against the veneer sheet from opposite sides as the sheet is passed therebetween, to produce small cracks in the sheet localized at said intersection regions.

4,796,681

CONTINUOUSLY MOVING LATHE KNIFE

Leonard L. Hayes, P.O. Box 230215, Tigard, Oreg. 97223

Filed Jan. 4, 1988, Ser. No. 140,732
Int. Cl.[4] B27L *1/00*
U.S. Cl. 144—212 **11 Claims**



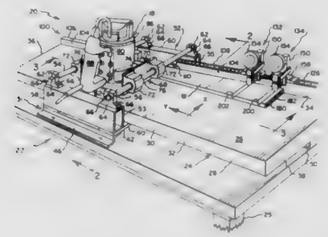
1. A knife assembly for cutting layers of veneer from the surface of a log, comprising:
a frame;
a knife carriage on such frame;
a chain bar on such knife carriage;
a chain channel with an angular groove extending substantially around said chain bar;
a continuous chain comprising a plurality of pivotally connected chain links movably extending through said channel and a stabilizing link secured to each of said pivotally connected links, said stabilizer links being slidably mounted in said annular groove, each chain link including a knife tip;
means for moving the surface of the log and the carriage relative to one another; and
means on said frame for rotating said chain around said chain bar and within said channel such that said knife tips cut a layer of veneer from said log.

4,796,682

GROOVING APPARATUS

John Michaels, 7454 Shawnee Rd., N. Tonawanda, N.Y. 14120-1368

Filed Nov. 2, 1987, Ser. No. 116,369
Int. Cl.[4] B27M *1/00*
U.S. Cl. 144—371 **5 Claims**



4. A method for forming a blank for a mitre corner square box drawer formed of a workpiece having an outer surface defined by a flexible material, said method comprising the following steps:
(a) providing a planar support having an upper horizontally disposed planar surface, a fence along one side of said surface, means to clamp a workpiece upon said surface, means to cut a V-shaped groove across a workpiece in a direction perpendicular to the fence and parallel to the planar surface, and first stop means provided with a V-shaped stop capable of engaging a previously cut V-shaped groove;
(b) positioning a workpiece on the planar surface with the flexible material adjacent said surface and with one side of the workpiece in engagement with said fence;
(c) clamping said workpiece in said position;
(d) cutting a single V-shaped groove across said workpiece and to a depth wherein the only remaining material is the flexible material adjacent said planar support;
(e) unclamping the workpiece;
(f) repositioning the workpiece with the first V-shaped groove being engaged by the V-shaped stop said first stop means;
(g) repeating steps c, d and e to form a second V-shaped groove;
(h) repositioning the workpiece with the second V-shaped groove being engaged by the V-shaped stop of the first stop means;
(i) repeating steps c, d an e to form a third V-shaped groove in the workpiece;
(j) repositioning the workpiece with the third V-shaped groove being engaged by the V-shaped stop of said first stop means;
(k) repeating steps c, d and e to form a fourth V-shaped groove in the workpiece;
(l) repositioning the workpiece with the fourth V-shaped groove being engaged by the V-shaped stop of the first stop means; and
(m) repeating steps c, d and e to form a fifth V-shaped groove.

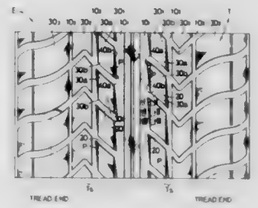
4,796,683

PNEUMATIC RADIAL TIRE

Misao Kawabata, Saitama, and Tetsuro Kobayashi, Fussa, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jan. 20, 1987, Ser. No. 4,944
Claims priority, application Japan, Apr. 30, 1986, 61-99553
Int. Cl.[4] B60C *11/04, 11/11*
U.S. Cl. 152—209 R **9 Claims**

1. A pneumatic radial tire having a tread portion comprising; blocks having sidewalls with a slope and arranged on a tread surface thereof and partitioned by a pair of first relatively wide main circumferential grooves (10_1) formed at a tread crown portion thereof, at least a pair of second relatively narrow main circumferential grooves (10_2) extending in parallel to and axially outside the first main circumferential grooves, and transverse grooves intersecting the first and second main circumferential grooves being inclined at an angle thereto, wherein difference in inclination angle between the block



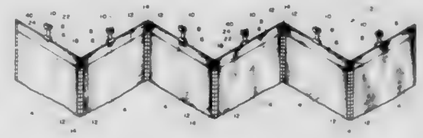
sidewall slope and a line perpendicular to the tread surface, of block sidewalls (**40**) between acute angle corners (**30***a*) and obtuse angle corners (**30***b*) on the first main circumferential groove (10_1) side is greater than that of block sidewalls on the second main circumferential groove (10_2) side, and wherein said inclination angle increases gradually from the obtuse angle corner to an acute angle corner.

4,796,684

COMPACT DRAPERY SYSTEM

Leonard J. Haimovitz, 1059 Summit Rd., Santa Barbara, Calif. 93108

Filed May 26, 1987, Ser. No. 53,711
Int. Cl.[4] A47H *1/00*
U.S. Cl. 160—330 **13 Claims**



1. A drapery system comprising:
a drapery composed of a sheet of fabric folded to define a plurality of contiguous panels;
a track means for supporting said drapery from an adjacent structure, said track means having a lower track portion; and
a plurality of hanger glides secured to said panels to support said drapery from said track means, each of said hanger glides comprising
a flat, elongated base portion secured to an upper edge of a respective one of said panels,
a neck portion connected to and projecting upwardly from said base portion, and
a head portion mounted at an upper end of said neck portion, said head portion having a forwardly projecting lip disposed in overlying, engaged relation upon said lower track portion and a rearwardly projecting flange vertically offset upwardly from said lip and spaced above said lower track portion through a distance at least slightly greater than the vertical thickness of said lip so as to permit said flange to overlie and overlap in a vertical plane the lip of an adjacent hanger glide and thereby enable said head portions of adjacent hanger glides to nest together in a partial overlapping arrangement in a vertical plane when said drapery is in its retracted position.

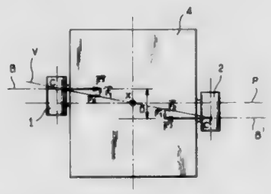
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,685

VIBRATING TABLE FOR FORMING SAND MOLDS

Jean-Jacques Hanneton, Nogent le Roi, and Michel Sivori, Les-Clayes-Sous-Bois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 22, 1986, Ser. No. 921,408
Claims priority, application France, Oct. 29, 1985, 85 16028
Int. Cl.[4] B28B *1/08*; B22C *15/10*
U.S. Cl. 164—203 **2 Claims**



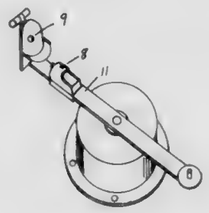
1. A vibrating table for compacting sand in a rigid foundary mold, comprising:
a stationary frame;
a horizontal plane having a central vertical axis, said horizontal plate comprising means for fixedly supporting a foundary mold directly on said plate;
elastic damping means for supporting said horizontal plate on said frame; and
two rotary vibrators fixed directly to said horizontal plate, said vibrators having unbalance rotors defining unbalance axes of rotation extending perpendicular to a vertical reference plane passing through said central vertical axis, said rotors each defining an unbalance center on a respective one of said unbalance axes, said centers each lying in a plane perpendicular to said vertical reference plane and in which centrifugal forces derived form the rotation of said unbalance rotors extend, said unbalance centers being offset and mutually symmetrical with respect to said central vertical axis, said vibrators also having means for operating said vibrational means in synchronism and in opposite directions.

4,796,686

CENTRIFUGAL CASTING MACHINE WITH VENTURI ACTUATED VACUUM VENTING

Donald W. Gayso, 1092 Perkins Ter., Memphis, Tenn. 38117

Filed Aug. 20, 1986, Ser. No. 898,381
Int. Cl.[4] B22D *13/10*; B29C *7/84*
U.S. Cl. 164—287 **2 Claims**



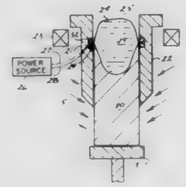
1. In a centrifugal molding apparatus having at least one mold defining a mold cavity, attached to an arm mounted for rotation, the improvement comprising: at least one venturi connected with said mold and mounted such that rotation of said arm will induce a negative pressure in said cavity to vent gases from said cavity.

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LIQUID/SOLID INTERFACE MONITORING DURING DIRECT CHILL CASTING

Brian G. Lewis, Branford, and John C. Yarwood, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 10, 1987, Ser. No. 71,836
Int. Cl.[4] B22D *11/16, 27/02*
U.S. Cl. 164—455 **44 Claims**



1. An apparatus for monitoring the liquid/solid interface position of an ingot being formed by a direct chill casting system having mold walls, starter block and coolant, said apparatus comprising:
an inductive sensor wire disposed within about 3 mm of the inner surface of said mold wall of the direct chill casting system;
a direct power source means for driving said inductive sensor wire causing a magnetic flux to penetrate into said ingot; and
means for sensing a change in the impedance of said system.
24. A process for monitoring the liquid/solid interface position of an ingot being formed by a direct chill casting system having mold walls, starter block and coolant, said process comprising:
positioning an inductive sensor wire within about 3 mm of the inner surface of said mold walls of said direct chill casting system;
driving said inductive sensor wire at a predetermined frequency to generate a magnetic flux which penetrates into said ingot; and
sensing a change in the impedance of said system.

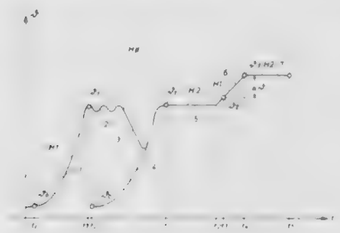
4,796,688

METHOD FOR CONTROLLING THE MELTING AND CASTING PROCESS IN PRECISION CASTING, PARTICULARLY FOR DENTAL ENGINEERING, AND ARRANGEMENT FOR CARRYING OUT THE METHOD

Hans-Werner Gundlach, Bremen, and Friedrich Jacob, Lilienthal, both of Fed. Rep. of Germany, assignors to Bego Bremer Goldschagerei Wilh. Herbst GmbH & Co., Bremen, Fed. Rep. of Germany

Continuation of Ser. No. 826,399, Feb. 5, 1986, abandoned. This application Sep. 4, 1987, Ser. No. 94,056
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1985, 3505346
Int. Cl.[4] B22D *37/00*
U.S. Cl. 164—457 **14 Claims**

1. Method for controlling the melting and casting process in precision casting under the control a heating system, particularly for dental engineering, comprising the following steps:
heating a melting charge by supplying thermal energy to the melting charge;
continuously measuring the temperature of the melting charge with respect to time; calculating the slope of temperature, i.e. the change with time ($d\theta/dt$) of the temperature θ of the melting charge;
generating, during supply of energy to the melting charge, a first signal at a time t1 when the slope deviates from an initially high value of slope greater than zero to a slope of substantially zero;
generating a second signal at a time t3 when the slope increases from the slope of substantially zero to a constant slope of substantially greater than zero wherein at time t1 the melting charge reaches the solidus temperature and at time t3 when all the melting charge changed from solid to liquid phase, and said higher value corresponding to a



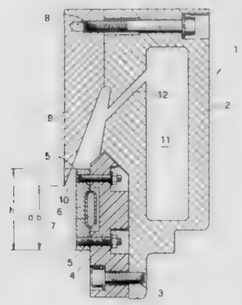
moment the temperature of the melting charge reaches the liquidus temperature; and
generating a third signal at a time t3' for triggering the casting process, said third signal being delayed by a predetermined period of time with respect to said second signal.

4,796,689

MOLD FOR ELECTROMAGNETIC CONTINUOUS CASTING

Jean-Claude Weber, Sierre, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 14, 1988, Ser. No. 167,536
Claims priority, application Switzerland, Mar. 23, 1987, 1095/87
Int. Cl.[4] B22D *27/02*
U.S. Cl. 164—503 **8 Claims**



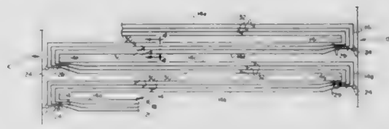
1. A mold for the electromagnetic continuous casting of rolling slabs comprising a substantially rectangular support frame having a pair of broad sides and a pair of narrow sides, an inductor associated with said substantially rectangular support frame for applying a magnetic field to define a mold cavity, and a screen associated with said substantially rectangular support frame and said inductor for controlling the electromagnetic force applied by said inductor wherein the screen at the narrow sides of the substantially rectangular support frame is arranged with respect to the inductor such that the electromagnetic force acting on the mold cavity is greater at the narrow sides of the mold than at the broad sides of the mold.

4,796,690

SUPPORT SYSTEM FOR HEAT EXCHANGE TUBE

Frantisek L. Elsinger, Demarest, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Continuation-in-part of Ser. No. 799,389, Nov. 18, 1985, abandoned. This application Apr. 8, 1987, Ser. No. 36,821
Int. Cl.[4] F22B *37/24*
U.S. Cl. 165—67 **3 Claims**



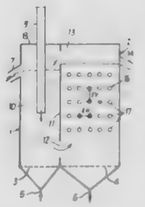
1. A heat exchange apparatus comprising an enclosure, a plurality of heat exchange tubes disposed in said enclosure, means for supporting each tube relative to two opposed upright walls of said enclosure, each tube being formed in a serpentine manner with adjacent tube sections of each tube extending horizontally in a vertically spaced, parallel relationship between said upright walls, a first and second series of connector means connecting adjacent tube sections adjacent said two opposed walls, respectively, a third series of connecting means connecting adjacent tube sections at a distance from one of said walls between one-fourth and one-third the distance between said walls, and a fourth series of connecting means connecting said adjacent tube sections at a distance form the other of said walls between one-fourth and one-third said distance between said walls, each connecting means being offset from its adjacent connecting means in a horizontal direction said connecting means constituting the only support between said adjacent sections.

4,796,691

FLUIDIZED BED HEAT EXCHANGE APPARATUS

Jean-Francois Large, Compiegne, and Pierre F. Guigon, Le Meux, both of France, assignors to Charbonnages de France, Paris, France

Continuation-in-part of Ser. No. 855,475, Apr. 24, 1986, abandoned. This application Jul. 13, 1987, Ser. No. 73,349
Claims priority, application France, Apr. 24, 1985, 85 06248
Int. Cl.[4] F28D *19/02, 13/00*
U.S. Cl. 165—104.16 **4 Claims**



1. Heat exchange apparatus comprising a first fluidization chamber, first gas supply means for supplying fluidizing gas to said first fluidization chamber, and means for feeding particulate material to said first fluidization chamber, said particulate material having average dimensions of between 50 and 3000 micrometers, and a second fluidization chamber, second gas supply means for supplying fluidizing gas to said second fluidization chamber, and discharge means through which the particulate material can be discharged from said second fluidization chamber, and means providing communication between said first and second fluidization chambers, the maximum speed of the fluidizing gas in said second chamber being

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arranged to be between 1.5 times and 10 times the minimum fluidization speed of the particulate material, the apparatus further comprising a plurality of spaced apart heat exchange tubes received within the second fluidization chamber, adjacent heat exchange tubes being horizontally spaced by a distance of between substantially 1.4 to 2.1 times the external diameter of said tubes and spaced by a vertical distance of between substantially 1.4 to 2.1 times the external diameter of said tubes, said distances between said tubes and said second chamber permitting a differential density to be achieved between said first and second chambers to thereby result in an improved heat transfer coefficient while permitting operational flexibility.

4,796,692

CONVECTOR WITH FINNED TUBES

László Szücs, and József Szabó , both of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

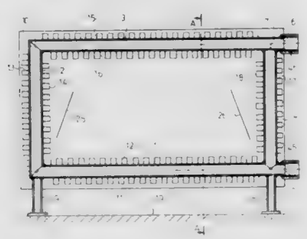
PCT No. PCT/HU86/00011, § 371 Date Dec. 12, 1986, § 102(e) Date Dec. 12, 1986, PCT Pub. No. WO86/04981, PCT Pub. Date Aug. 28, 1986

PCT Filed Feb. 21, 1986, Ser. No. 932,510

Claims priority, application Hungary, Feb. 22, 1985, 675/85

Int. Cl.⁴ F24H *9/02*

U.S. Cl. 165—129 **7 Claims**



1. A convector for heat exchange between a hot first medium and second medium to be heated, comprising a substantially horizontal lower finned tube, one end of which is provided with a first opening for the first medium; a substantially vertical lateral finned tube connected to the other end of said lower finned tube, said lateral finned tube constituting a first lateral ording element for an upright channel for the second medium; a substantially horizontal upper finned tube constituting an upper closure for an upright channel, one end of said upper finned tube being connected to the upper end of said lateral finned tube, the other end of said upper finned tube being provided with a second opening for the first medium; said lower lateral and upper finned tubes having accordion-like fins comprising fin sections substantially perpendicular to the axis of the like respective tubes; and said lower, lateral, and upper finned tubes constituting a path for the first medium between said first and second opening; a second lateral bording element for the upright channel, said second lateral bording element being disposed between said one end of the lower finned tube and said other end of said upper finned tube so that said lower, lateral, and upper finned tubes and said second lateral bording element constitute a self-supporting structure; and a bording front plate for the upright channel, fastened to that self-supporting structure.

4,796,693

FINNED TUBE WITH INDENTED GROOVE BASE AND METHOD OF FORMING SAME

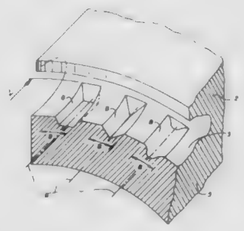
Hans-Werner Kastner, Vöhringen; Robert Klöckler, Tiefenbach, and Manfred Hage, Senden-Ay, all of Fed. Rep. of Germany, assignors to Weiland-Werke AG, Graf-Arco-Strasse, Fed. Rep. of Germany

Filed Oct. 21, 1986, Ser. No. 921,194

Claims priority, application European Pat. Off., Oct. 31, 1985, 85113859

Int. Cl.⁴ F28F *1/42*

U.S. Cl. 165—133 **30 Claims**



1. A tube for heat transfer systems having radially extending fins disposed on the outer surface thereof, grooves disposed between adjacent fins, said grooves having a base, a plurality of spaced indents formed in the base of said grooves, said tube having a smooth interior surface; said indents having a first dimension extending substantially in the direction of the length of said grooves and a second dimension substantially transverse to said first dimension, said first dimension being less than or equal to said second dimension.

4,796,694

COOLING FIN FOR HEAT EXCHANGER

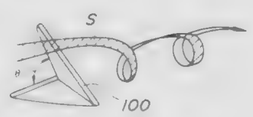
Shiro Ikuta; Eizo Suyama; Masaru Yokoyama, and Takeshi Yoshimura, all of Tokyo, Japan, assignors to Nihon Radiator Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1986, Ser. No. 869,694

Claims priority, application Japan, Aug. 26, 1985, 60-129877[U]

Int. Cl.⁴ F28D *1/02*

U.S. Cl. 165—152 **16 Claims**



1. In a heat exchanger

a plurality of tubes through which a working fluid flows, said plurality of tubes being spaced apart from one another by a predetermined distance;

a fin connected with and extending between said plurality of tubes, said plurality of tubes and said fin being arranged so that heat is exchanged therebetween via conduction, said fin being exposed to a flow of fluid medium with which heat exchange is to be effected;

means formed on said fin for causing a plurality of spiral flow patterns in a flow of medium which flows over first and second major surfaces of said fin, said spiral flow causing means comprising:

a plurality of shaped projections each which extend from one of said first and second major surfaces of said fin at a predetermined angle, each of said shaped projections being oriented to split the flow of the fluid medium which contacts the same, into at least two spiralling flows which curl in toward each other downstream of the projection and subsequently contact the major surface of said fin form which each of said shaped projections extend at locations separate from and downstream of said projections, said projections being formed in a manner that a plurality thereof are provided per said predetermined distance by which said plurality of tubes are spaced apart from one another.

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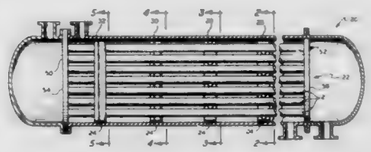
TUBE SUPPORTS

Kenneth A. Cannon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 30, 1983, Ser. No. 509,542

Int. Cl.⁴ F28F *9/23, 9/00*

U.S. Cl. 165—159 **11 Claims**



3. Apparatus comprising a plurality of parallel tubes arranged in the form of a tube bundle having a first plurality of parallel tube rows with lanes between adjacent rows and a second plurality of parallel tube rows with lanes between adjacent rows and support structure for supporting the tubes, said support structure comprising at least a first baffle and a second baffle wherein each baffle comprises an outer ring surrounding the tube bundle and at least one slat attached to the outer ring as a chord and extending through the tube bundle between adjacent row sin one of said pluralities of parallel tube rows, said at least one slat being characterized by corrugations or folds extending along its length for point contact with the tubes of the bundle, the at least one slat in the first baffle extending in lanes between the first plurality of parallel tube rows, the at least one slat in the second baffle extending in lanes between the second plurality of parallel tube rows.

4,796,696

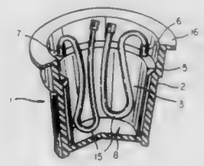
DEVICE FOR HEATING OR COOLING INFUSION FLUIDS OR INJECTABLE FLUIDS

Paul M. Stocton, Dallas, Tex.; Michael Greive, Senden-Ottmarsbocholt, and Raymond Glocker, Munster-Hiltrup, both of Fed. Rep. of Germany, assignors to Glocker und Greive GmbH, Fed. Rep. of Germany

Filed Jul. 2, 1986, Ser. No. 881,103

Int. Cl.⁴ F28F *3/12*; A61F *7/12*

U.S. Cl. 165—169 **9 Claims**



1. A device for heating or cooling infusion fluids or injectable fluids comprising a heat exchanger in the form of a hollow cylindrical or truncated conical pot, open at the top, characterized in that the pot has a double casing and the outer wall of the pot is higher than the inner wall of the double casing whereby the hollow space of the casing is sealed by a ledge surrounding the brim of the inner wall and extending outwardly to the outer wall and the ledge is provided with two connection branches, one branch for the inlet of said infusion fluids or injectable fluids to be cooled or heated and the other branch for the outlet of said infusion fluids or injectable fluids after being cooled or heated, spaced apart from each other and extending within the inner space of the pot and below the brim of the outer wall of said pot, said outer wall is further provided with a circumferentially outwardly extending ledge at the brim to accommodate a sealing sheet.

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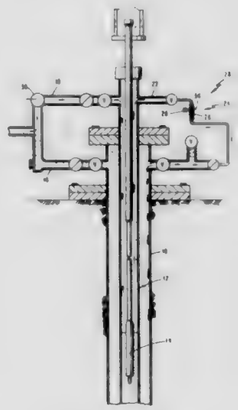
SLIP STREAM DEVICE

Robert N. Ayres, 7009 Meadowview Loop W., Lake Charles, La. 70605

Filed Jul. 8, 1987, Ser. No. 71,020

Int. Cl.⁴ E21B *37/08*

U.S. Cl. 166—90 **7 Claims**



1. A device for continuously adding chemicals to a production oil and gas well including a casing extending into the ground with a substantially coaxially disposed tubing therein wherein a down hole pump pumps crude oil upwardly through the tubing and gas flows upwardly through the casing, said device comprising:

an above ground mixing chamber having an inlet and an outlet;

first means communicating between said tubing and inlet for diverting a flow of production oil into the inlet;

pressure responsive valve means at the inlet for closing the inlet when the pressure within the chamber exceed a predetermined value;

second means downstream of the inlet for admitting a predetermined flow of liquid chemical into said chamber; and

choke means disposed within said chamber downstream of said second means for permitting only a predetermined flow rate of the liquid contents thereof through the outlet

conduit means communicating between the outlet and said casing for conveying the flow through the outlet in the casing;

whereby said liquid contents flush downwardly through said casing through the well to be pumped upwardly through the tubing.

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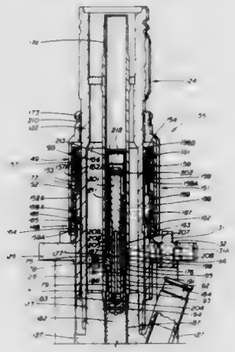
LANDING NIPPLE AND PLUG

John C. Gano, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Division of Ser. No. 867,499, May 28, 1986, Pat. No. 4,691,781. This application May 7, 1987, Ser. No. 46,634

Int. Cl.[4] E21B *33/128*

U.S. Cl. 166—135 **5 Claims**



1. An apparatus comprising:

landng nipple means providing passageway means therethrough;

upwardly facing no-go shoulder means in said passageway means;

locking groove means in said passageway means above said no-go shoulder means;

said locking groove means including downwardly facing cam shoulder means; and

plug means in said passageway means comprising:

plug housing means;

downwardly facing shoulder means on said housing means confronting said no-go shoulder means;

metal seal means on sad plug housing means between said no-go shoulder means and said downwardly facing shoulder means;

bore means in said plug housing means having threads adjacent the lower end of said bore means;

lug means carried by said plug housing means;

said lug means having upwardly facing surfaces complementary to and engaging said cam shoulder means;

stem means having a threaded nose in threaded engagement with said bore means threads;

downwardly facing expander cone means on said stem means for expanding said lug means;

said cone means in engagement with said lug means and holding said lug means upwardly facing surfaces in engagement with said downwardly facing cam shoulder means to compress said seal means; and

wrench means on the upper end of said stem means for threading said stem means into said bore means to expand said lug means and compress said seal means between said no-go shoulder means and said housing shoulder means to seal therebetween.

4,796,699

WELL TOOL CONTROL SYSTEM AND METHOD

James M. Upchurch, Sugarland, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

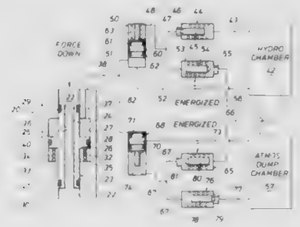
Filed May 26, 1988, Ser. No. 198,968

Int. Cl.[4] E21B *34/10, 47/06, 49/08*

U.S. Cl. 166—250 **44 Claims**

1. Apparatus for use in operating a downhole well tool that includes a pressure responsive member which is adapted to be shifted from one position to another position comprising: a pressure responsive surface on said member; and means for supplying a working medium to said surface at a pressure substantially equal to the hydrostatic pressure of well fluid to shift said member from said one position to said other position in response to a comand signal applied to said well fluid, said command signal including at least one low level pressure pulse having a predetermined signature.

23. A method of controlling the operation of a downhole well tool having a pressure responsive member which is



adapted to be shifted from one position to another position, said member having pressure responsive surface means, comprising the steps of: applying a command signal to fluids in the well, said command signal including at least one low level pressure pulse having a predetermined signature; detecting said command signal at said well tool; and supplying a working medium at a pressure substantially equal to hydrostatic pressure to said pressure responsive surface means in response to detection of said command signal to shift said pressure responsive member from said one position to said other position.

4,796,700

PROCESS FOR RETARDING FLUID FLOW

Burton B. Sandiford, Balboa Island, Calif., and Roger C. Zillmer, Bloomington, Minn., assignors to Cities Service Oil and Gas Corporation, Tulsa, Okla.

Continuation-in-part of Ser. No. 624,111, Jun. 25, 1984, abandoned. This application Jan. 24, 1986, Ser. No. 822,156

Int. Cl.[4] E21B *43/12; C08J 3/24*

U.S. Cl. 166—270 **37 Claims**

1. A process for retarding the flow of fluid in a subterranean formation, comprising:

(a) introducing an effective amount of a gel-forming composition into a subterranean formation, said gel-forming composition being operable when gelled in said formation for retarding the flow of fluid therein, said gel-forming composition comprising

i. a first substance dissolved in water to form an aqueous solution, said first substance being selected from the group consisting of polyvinyl alcohols, and mixtures thereof, wherein said gel-forming composition contains an amount of said first substance of from about 0.5 to about 5 weight percent of said gel-forming composition, and

ii. an effective amount of glutaraldehyde which is operable for forming a weakly acidic condition having a pH from about 5.5 to less than 7 in said gel-forming composition and also operable for promoting crosslinking of said first substance and glutaraldehyde and for forming a gel from said gel-forming composition under said weakly acidic condition within a period of time no greater than about 5 days without adding an acidic catalyst to said gel-forming composition to lower the pH of said gel-forming composition below about 5.5,

wherein, other than glutaraldehyde and acidic products produced in said gel-forming composition from said glutaraldehyde, said gel-forming composition is substantially free of effective amounts of crosslinking catalyzing substances which are operable for promoting substantial acidic catalysis of a crosslinking reaction which is sufficient to form a gel within a period of time no greater than about 5 days,

wherein said effective amount of glutaraldehyde is also from about 0.15 to about 4 weight percent of said gel-forming composition; and

(b) allowing said gel-forming composition to form a gel in said subterranean formation within a period of time no greater than about 5 days without adding an acidic catalyst to said gel-forming composition to lower the pH of said gel-forming composition below about 5.5, said thusly formed gel being effective for retarding the flow of fluid therein.

4,796,701

PYROLYTIC CARBON COATING OF MEDIA IMPROVES GRAVEL PACKING AND FRACTURING CAPABILITIES

Tommy E. Hudson, Skiatook, and James W. Martin, Broken Arrow, both of Okla., assignors to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Jul. 30, 1987, Ser. No. 79,728

Int. Cl.[4] E21B *43/04, 43/267*

U.S. Cl. 166—278 **12 Claims**

1. A method for placement of particles in a well comprising the steps of:

(a) providing pyrolytic carbon coated particles comprised of a thermally stable substantially spherical substrate particles and a substantially uniform layer of pyrolytically deposited carbon encapsulating each of said thermally stable substantially spherical substrate particles;

(b) suspending said prolytic carbon coated particles in a fluid; and

(c) pumping said fluid with suspended pyrolytic carbon coated particles into a well.

4,796,702

MULTIPURPOSE AQUEOUS FOAMER

Gary A. Scherubel, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 624,065, Jun. 25, 1984, abandoned. This application Sep. 4, 1987, Ser. No. 96,261

Int. Cl.[4] E21B *37/00, 43/26*

U.S. Cl. 166—308 **14 Claims**

1. An aqueous composition containing from about 0.025 to about 1.0 percent by weight of a composition comprising from about 5 to about 20 percent by weight zwitterionic surfactant, from about 10 to about 50 percent by weight cationic surfactant and from about 1 to about 10 percent by weight nonionic surfactant.

8. A foam resulting from incorporation of a gas into the composition of claim 1.

9. Method of fracturing a subterranean hydrocarbon-bearing formation comprising injecting a foam of claim 8 into said formation.

4,796,703

COMPOSITIONS FOR AGGLOMERATING SOLID CONTAMINANTS IN WELL FLUIDS AND METHODS FOR USING SAME

Robert K. Gabel, and Robert E. Law, both of Houston, Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Aug. 17, 1987, Ser. No. 86,060

Int. Cl.[4] E21B *37/00, 43/00*

U.S. Cl. 166—312 **22 Claims**

1. A composition useful for agglomerating solid contaminants in a well fluid comprising:

(a) at least about 10 percent by weight, relative to the total composition weight, of a surfactant comprising amides and glycerides formed by contacting one or more secondary amines selected from the group consisting of Alkyl secondary amines having from 2 to 8 carbon atoms, saturated aliphatic hydroxyl-containing secondary amines having from 2 to 8 carbon atoms, and mixtures thereof with triglyceride fats, triglyceride oils or mixtures thereof; and

(b) a carrier capable of forming a solution with said surfactant and which is substantially insoluble in said well fluid and is selected from the group consisting of alkanolamines having from 2 to 8 carbons, alcohols having from 6 to 24 carbons, fatty acids having 12 to 24 carbons, aliphatic hydrocarbons selected from the group consisting of straight chain hydrocarbons, branched hydrocarbons and cycloaliphatic hydrocarbons having 8 to 20 carbons, aromatic hydrocarbons selected from the group consisting of substituted and unsubstituted benzenes and napthalenes and mixtures thereof.

18. In a process for eliminating drilling mud solids and oil from a well system comprising well bore equipment and surface equipment prior to introduction of a fresh well fluid in which the process comprises:

(a) displacing drilling mud from the well system by circulation therein of a first portion of clean water until most of the drilling mud is removed from the well system;

(b) circulating a treated water mixture comprising an agglomerating composition and a second portion of clean water or brine through the surface equipment and the well bore equipment of the well system to displace therefrom the first portion of the clean water carrying drilling mud;

(c) circulating the treated water mixture in the well system in which the fresh well fluid is to be introduced until substantially all the drilling mud is suspended in the circulated treated water mixture; and

(d) displacing the treated water mixture with fresh well fluid in the parts of the well system receiving the fresh well fluid;

wherein the improvement comprises circulating a treated water mixture containing an agglomerating composition comprising:

(i) at least about 10 percent by weight, relative to the total composition weight, of a surfactant comprising amides and glycerides formed by contacting one or more secondary amines selected from the group consisting of alkyl secondary amines having from 2 to 8 carbon atoms, saturated aliphatic hydroxyl-containing secondary amines having from 2 to 8 carbon atoms, and mixtures thereof with triglyceride fats, triglyceride oils or mixtures thereof; and

(ii) a carrier capable of forming a solution with said surfactant and which is substantially insoluble in said well fluid and is selected from the group consisting of alkanolamines having from 2 to 8 carbons, alcohols having from 6 to 24 carbons, fatty acids having 12 to 24 carbons, aliphatic hydrocarbons selected from the group consisting of straight chain hydrocarbons, branched hydrocarbons and cyclo-aliphatic hydrocarbons having 8 to 20 carbons, aromatic hydrocarbons selected from the group consisting of substituted and unsubstituted benzenes and napthalenes and mixtures thereof.

4,796,704

DROP BALL SUB-ASSEMBLY FOR A DOWN-HOLE DEVICE

John Forrest, Aberdeen; William Stewart, New Pitsligo, and Rory Tulloch, Aberdeen, all of Scotland, assignors to Drilex UK Limited, New Pitsligo, Scotland

PCT No. PCT/GB86/00409, § 371 Date Mar. 4, 1987, § 102(e) Date Mar. 4, 1987, PCT Pub. No. WO87/00572, PCT Pub. Date Jan. 29, 1987

PCT Filed Jul. 15, 1986, Ser. No. 27,231

Claims priority, application United Kingdom, Jul. 19, 1985, 8518218

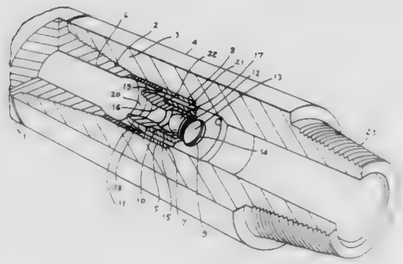
Int. Cl.[4] E21B *34/10*

U.S. Cl. 166—317 **9 Claims**

1. A drop-ball sub-assembly for down-hole use comprising a

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tubular casing (4) defining a flushing fluid flow passage between inlet (3) and outlet (23) ends adapted for coupling at the inlet end (3) to an inlet pipe (1) and at the outlet end (23) to an outlet pipe (24), characterized by a drop-ball (17) supporting member comprising a cylindrical body (8) secured within the casing (4) in the flow passage, at least one aperture (21) extending longitudinally of the cylindrical body through a wall thereof and forming a passage from end to end of said supporting member and arranged to allow fluid flow past the supporting member (8), a further central cylindrical aperture (9) extending through the supporting member (8) and surrounded by said cylindrical body, a blow-out device (13) closing said further aperture and supported by the cylindrical body against movement toward said outlets end (23) of the casing, the blow-out device (13) comprising a disc-like member and supporting a drop-ball (17) of smaller diameter than said further aperture on a side distal from said outlet end (23) against movement towards said outlet end (23), the blow-out device (13) and the apertures (21,9) being such that at a first, lower fluid flow rate from the inlet (3) to the outlet (23) end, fluid flows through said at least one aperture (21) and the blow-out device is retained in and maintains closed the further aperture (9), and that at a second, higher flow rate the blow-out device (13) is blown out of the further aperture to release the ball (17) through the further aperture (9) and said outlet end.



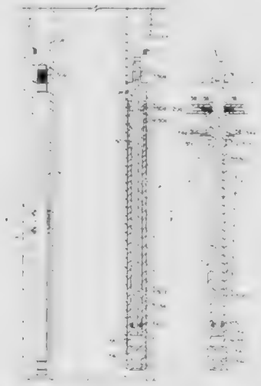
4,796,705

SUBSURFACE WELL SAFETY VALVE

Michael A. Carmody, and Jefferey J. Lembcke, both of Broken Arrow, Okla., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Aug. 26, 1987, Ser. No. 89,522
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—323 **9 Claims**

1. In a valve for controlling the flow in a fluid transmission conduit in a subteranean well comprising a tubular valve housing defining an axial fluid passage, a valve closure member shiftably mounted in said valve housing for movement between an open and closed position relative to said fluid passage, resilient means biasing said valve closure member to said closed position, a valve-actuator sleeve concentrically mounted within said tubular valve housing for axial movements between two positions relative to said valve closure member, in one of said positions holding said valve closure member in said open position and in the other of said two positions permitting said valve closure member to close, and fluid pressure operated means for axially shifting said valve-actuator sleeve to said one position; the improvement comprising: a spindle attached at one end to said housing and disposed in an axially extending position intermediate said valve-actuator sleeve and the axial fluid passage of said tubular housing; means on the other end of said spindle defining a piston; an axially elongated cylinder having a bore slidably and sealably cooperating with said piston and a closed end defining a fluid pressure chamber adjacent said other end of said spindle, said cylinder having a plurality of peripherally spaced ports therein disposed adjacent said one end of said spindle; means for supplying pressured fluid to said fluid pressure chamber, thereby shifting said cylinder axially to abuttingly engage and shift said valve-actuator sleeve to its said one position; and latching means including a collet having a ring portion mounted on the exterior of said cylinder and latching heads projecting through said parts through said cylinder to engage a latching shoulder of said spindle adjacent said position, said latching means being operable between said cylinder and said spindle to secure said valve-actuator sleeve in said one position, thereby locking said valve closure member in its said open position.

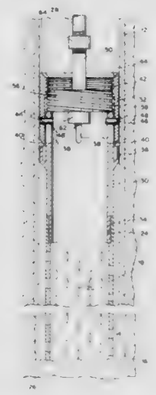


4,796,706

LINER SETTING APPARATUS AND METHOD FOR USE IN WELL CASINGS

Thomas R. Townsend, 1666 Myrtle Ave., Bakersfield, Calif. 93301, and Mitchell Townsend, 7201 Angela Ave., Bakersfield, Calif. 93308

Filed Apr. 4, 1988, Ser. No. 176,962
Int. Cl.[4] E21B *43/10*
U.S. Cl. 166—380 **18 Claims**



16. An apparatus for setting a production liner within a well casing upon the bottom of the well comprising:

an elongated tubular setting sleeve adapted to be mounted on the upper end of said liner;

an annular sealing flange located around the outer diameter of said tubular setting sleeve, the inner diameter of said annular sealing flange being spaced away from the outer diameter of said tubular setting sleeve except at the bottom of said annular sealing flange, where said annular sealing flange is attached to said tubular setting sleeve,;

a tubular flaring sleeve fitting closely over said outer diameter of the top portion of said tubular setting sleeve, the bottom end of said tubular flaring sleeve being beveled with the bevel facing outwardly, the beveled end of said tubular flaring sleeve flaring said annular sealing flange radially outwardly in a sealing relationship with said well casing when said beveled end of said tubular flaring sleeve is driven downwardly on said tubular setting sleeve; and

tool means for lowering said liner, said tubular setting sleeve, and said tubular flaring sleeve into said well casing.

17. A method of setting a production liner within a well casing upon the bottom of the well comprising:

mounting an elongated tubular setting sleeve on the upper end of said liner, said tubular setting sleeve having an annular sealing flange located around the outer diameter of said tubular setting sleeve at an intermediate portion thereof, the inner diameter of said annular sealing flange being spaced away from the outer diameter of said tubular setting sleeve except at the bottom of said annular sealing flange, where said annular sealing flange is attached to said tubular setting sleeve;

installing a tubular flaring sleeve having an inner diameter sized to fit closely over said outer diameter of the top portion of said tubular setting sleeve onto said top portion of said tubular setting sleeve, the bottom end of said tubular flaring sleeve being beveled with the bevel facing outwardly;

lowering said liner, said tubular setting sleeve, and said tubular flaring sleeve into said well casing; and

flaring said annular sealing flange radially outwardly in a sealing relationship with said well casing by driving said beveled end of said tubular flaring sleeve downwardly on said tubular setting sleeve after said liner, said tubular setting sleeve, and said tubular flaring sleeve have been lowered to the bottom of said well.

4,796,707

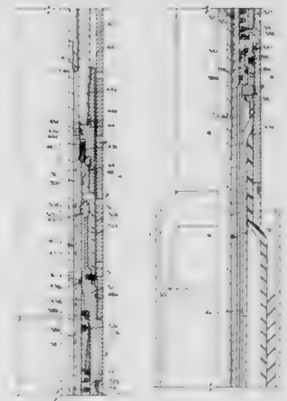
APPARATUS FOR SETTING, UNSETTING, AND RETRIEVING A PACKER OR BRIDGE PLUG FROM A SUBTERRANEAN WELL

Floyd A. Halbardier, deceased, late of Pasadena, Tex. (by Anna L. Halbardier, heiress), assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 877,421, Jun. 23, 1986, Pat. No. 4,708,208. This application Oct. 23, 1987, Ser. No. 112,888
Int. Cl.[4] E21B *33/127*
U.S. Cl. 166—387 **19 Claims**

1. An inflatable packing tool capable of being run in a subterannean well by a remedial tubing comprising, in combination, a radially expandable, tubular elastomeric element, a tubular body assemblage securing each end of said elastomeric element against radial expansion; an elongated mandrel inserted through said tubular body assemblage; axially spaced seal means in said tubular body cooperating with said mandrel in a first axial position of said mandrel to define an annular fluid pressure chamber having the unsecured medial portion of said elastomeric element as an outer wall; said mandrel having peripherally spaced, axially extending recesses in its exterior bypassing said seal means in a second axial position of said mandrel; means for connecting the top end of said mandrel to the bottom end of a remedial tubing for run-in; a collet secured to said tubular body assemblage and having latching heads operatively connected to said mandrel to secure said mandrel in said first position; means for supplying fluid pressure through the remedial tubing to said annular fluid pressure chamber to inflate said medial portion of said elastomeric element into sealing engagement with the well bore when said mandrel is in said first position; means for trapping said fluid pressure in said annular fluid pressure chamber, whereby upward fluid pressure forces on said mandrel are resisted by said collet; a latching sleeve telescopically engaging said collet latching heads to secure same in locking relation to said mandrel and having an upward lost motion connection with said mandrel, and means for elevating said latching sleeve to release said collet latching heads from said mandrel and raise said mandrel to said second axial position to deflate said elastomeric element.

14. The method of setting and retrieving a packing tool in a subterranean well casing partially traversed by a smaller diameter tubing string, comprising the steps of assembling an inflatable packer on an inflation control mandrel having axially spaced inflating and deflating positions relative to the inflatable packer, securing the inflation control mandrel in said inflating position by a collet on the inflatable packer; connecting the inflatable packer to a connector device having a detachable engagement with a remedial mandrel and an abutting connection with the collet to secure same in locking relation to said inflation control mandrel; lowering the inflatable packer on remedial tubing through the small diameter tubing string to position the inflatable packer at a desired location in the casing below the end of the small diameter tubing string; closing the bore of the inflation control mandrel; applying fluid pressure through the remedial tubing to inflate said inflatable packer into sealing engagement with the casing bore; and subsequently elevating the connector device for first, releasing the collet engagement with said inflation control mandrel, and





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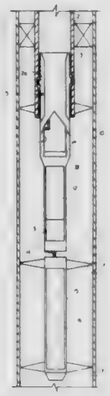
then secondly, elevating the inflation control mandrel to its deflation position, thereby deflating the inflatable packer and then thirdly, retrieving the mandrel and deflated packer to the well surface through the small diameter tubing string.

4,796,708

ELECTRICALLY ACTUATED SAFETY VALVE FOR A SUBTERRANEAN WELL

Jeffrey J. Lembcke, Broken Arrow, Okla., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Mar. 7, 1988, Ser. No. 164,866
Int. Cl.[4] E21B *34/06, 34/16;* G01V *1/40*
U.S. Cl. 166—386 **28 Claims**



1. Apparatus for shifting a downhole tool axially shiftably mounted in a subterranean well conduit for movement between an initial and a second position comprising, in combination: an axially extending actuator connected at one end to said downhole tool; resilient means opposing axial movement of said actuator in the direction away from said initial position; peripheral abutment means on said actuator; shifting means disposed adjacent said actuator; an axial force transmitting member in operative engagement with said shifting means; means for mounting said force transmitting member for non-rotatable axial movement relative to said conduit; an electric motor fixedly mounted in said conduit; and threaded means rotatable by said electric motor and threadably engagable with said force transmitting member to axially shift said shifting means and said actuator in the direction opposed by said resilient means and thereby position the downhole tool in said second position.

14. The method of axially shifting a downhole tool in a subterranean well from an initial position to a second position against the bias of a spring comprising the steps of:

axially shifting the downhole tool to the second position by an electric motor driven gearing mechanism;

supplying power to said electric motor from a downhole battery;

latching the downhole tool in said second position by a solenoid shiftable latch energized by said downhole battery, whereby said downhole tool remains in said second position without energization of said electric motor; and

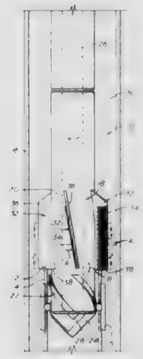
selectively controlling the energization of said electric motor and said solenoid by electromagnetic wave signals transmitted through the earth.

4,796,709

MILLING TOOL FOR CUTTING WELL CASING

Gerald D. Lynde, Bossier City; Kenneth W. Winterrowd, Shreveport, and Harold H. Harvey, Jr., Bossier City, all of La., assignors to Tri-State Oil Tool Industries, Inc., Bossier City, La.

Filed Jan. 6, 1986, Ser. No. 816,287
Int. Cl.[4] E21B *29/00*
U.S. Cl. 166—55.6 **11 Claims**



1. In a cutting tool for cutting a previously installed metal well casing at an open upper end thereof and comprising a body having a lower portion adapted to be received within said casing for rotation about a longitudinal axis; the improvement comprising:

a plurality of blades on the body at spaced intervals about the body and extending outwardly therefrom, each of said blades having a base with a leading surface relative to the direction of rotation, a plurality of metal carbide cutting elements secured to said leading surface of said base in a predetermined generally symmetrical pattern and being of a generally similar size and shape for each blade, each of said cutting elements having an exposed front face, a rear face secured to the leading surface of said base and a peripheral surface extending between said faces defining a relatively sharp lower cutting edge at the juncture of the peripheral surface and front face, the lower cutting edge of each cutting element having a lowermost intermediate portion and adjacent opposed side portions inclined upwardly from said intermediate portion to continually present a relatively sharp cutting surface to the upper end of the well casing;

said cutting elements being positioned on the leading surface of each blade in a plurality of closely spaced parallel rows extending generally outwardly from the axis of rotation and in a plurality of closely spaced parallel columns extending generally along the axis of rotation with each row having at least two cutting elements therein, the front faces and associated cutting edges of the lowermost row of cutting elements defining a lower generally continuous cutting surface which is progressively worn away during the cutting operation;

the lowermost cutting elements forming a lower cutting surface biting into said upper end of the casing in a cutting action to remove metal turnings from said upper end upon rotation of the cutting tool, the lowermost row of cutting elements and adjacent base being worn away along a generally horizontal plane as the cutting operation continues with the next successive row of cutting elements then engaging the upper end of the casing in a continuous cutting action.

4,796,710

GLASS BULB FOR SPRINKLER HEADS

Eduard J. Job, Hansdorfer Strasse 14, 2070 Ahrensburg, Hamburg, Fed. Rep. of Germany

Filed Sep. 5, 1986, Ser. No. 904,158
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1985, 3532042
Int. Cl.[4] A62C *37/08*
U.S. Cl. 169—38 **14 Claims**



1. An elongate thermally responsive glass bulb to carry a mechanical load applied endways between opposing seats of a sprinkler head or the like, comprising,

an elongate one piece glass envelope having integrally formed end portions and a tubular column therebetween and defining an elongate sealed chamber, the elongate envelope including an elongate tapered end tip extending endways of the elongate envelope,

and a quantity of expansible breaking liquid substantially filling said sealed chamber and being responsive to increased temperatures to rupture the glass envelope at said tubular column,

said end portions having endways facing seating areas for engaging the sprinkler head seats, one end portion of the envelope having an outer periphery smoothly tapering divergently progressively endways from a portion of the tubular column and toward the seating area, said one end portion having a diameter in excess of a diameter of the tubular column, said one end portion having a thickness of glass inwardly of said tapering outer periphery to the sealed chamber, said thickness smoothly increasing to larger dimension also progressively endways toward the seating area.

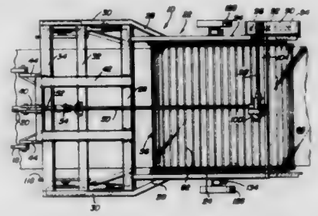
4,796,711

APPARATUS FOR REMOVING PLASTIC FILM FROM RAISED PLANT BEDS

Ralph W. Chrysler, Alva, Fla., assignor to Row Runner Corp. of America, Alva, Fla.

Continuation-in-part of Ser. No. 722,140, Apr. 11, 1985, abandoned. This application Jun. 27, 1986, Ser. No. 879,469
Int. Cl.[4] A01D *33/08*
U.S. Cl. 171—1 **10 Claims**

1. The method of separating a plastic film mulch from a raised plant or seedbed after the plants have matured and the produce crop harvested in which the plastic film has downwardly inclined side edges tucked under soil placed thereon to hold the film in place during the growing and harvesting season, said method consisting of the steps of forming longitudinal slits in the soil surface alongside the side edges of the plastic film and raised plant bed, positioning a blade in a downwardly and laterally inwardly inclined relation under each side edge of the film and partially into the inclined side edges of the raised plant bed, elevating and conveying the plastic film and a substantial portion of the raised plant bed and conveying it rearwardly at a speed equal to the forward speed of the elevating and conveying mechanism while substantially maintaining the shape of the raised plant bed to enable the tuck soil on top of the side edges of the plastic film to be maintained on the side edges of the plastic film and discharging the raised plant bed, plastic film and tuck soil from the rear of the conveying mechanism with the tuck soil falling off the film with the with the plastic film then being substantially free of soil on the upper surface thereof to facilitate removal without hindrance from soil on the upper surface of the plastic film.

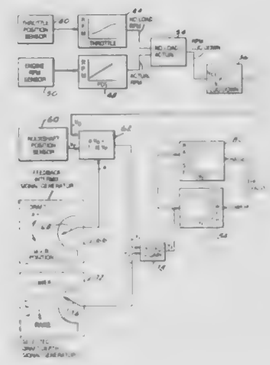


4,796,712

DRAFT LOAD CONTROL SYSTEMS

David J. Rutkowski, Grosse Ile; Wendell J. Ver Ploeg, West Bloomfield, and Larry I. Ross, Lake Orion, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 3, 1987, Ser. No. 92,813
Int. Cl.[4] A01B *63/112*
U.S. Cl. 172—7 **9 Claims**



1. A method for adjusting the depth of a draft implement propelled by a vehicle having an internal combustion engine, comprising the steps of:

sensing the throttle position of said engine;

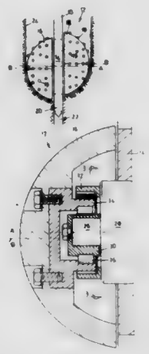
comparing a stored rpm value representative of a zero engine load condition at said sensed throttle position to an actual rpm measurement of said engine;

generating a draft load signal representative of the draft load exerted by said implement said draft load signal being determined by said step of comparing rpm values; and

generating an error signal by comparing a reference value representative of a desired implement depth to said draft load signal, said error signal providing a command for adjusting the depth of said implement.

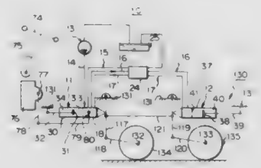
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4,796,713
ACTIVATED EARTH DRILL
Ulrich W. Bechem; Klaus Bechem, and Philip C. Bechem, all of Tiefendorfer Str. 87, D-5880 Hagen, Fed. Rep. of Germany
Filed Apr. 14, 1987, Ser. No. 38,212
Claims priority, application Switzerland, Apr. 15, 1986, 1465/86
Int. Cl.⁴ E21B *4/04, 4/16*
U.S. Cl. 175—96 **10 Claims**



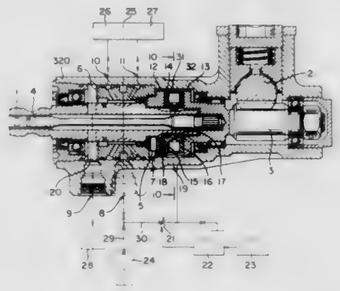
1. An activated earth drill assembly comprising, an elongated drill rod having an upper portion and a lower portion and defining a longitudinal axis, a drill bit attached to the lower portion of the drill rod, the drill bit including a drive arrangement having two opposed drive shafts which extend outwardly away from the drill rod, each shaft defining an axis of rotation, means for rotationally driving the drive shafts, about its axis of rotation and a rock comminuting cutter eccentrically mounted on each drive shaft for rotation therewith, the eccentric mounting providing for both rotational movement of each cutter about the respective axis of rotation and movement of the cutter upwardly and downwardly in a direction generally perpendicular to the axis of rotation as each cutter is rotated by the respective drive shaft.

4,796,714
POWER STEERING SYSTEM FOR USE IN LARGE VEHICLE
Fujio Momiyama, Hino, Japan, assignor to Hino Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 26, 1986, Ser. No. 935,304
Claims priority, application Japan, Nov. 30, 1985, 60-270455
Int. Cl.⁴ B62D *5/06, 5/08*
U.S. Cl. 180—143 **7 Claims**



1. A power steering system for use in a large vehicle, comprising:
- a main booster for steering a pair of steering knuckle spindles swingably connected to opposite ends of an axle;
- an auxiliary booster for compensating the steering power of said main booster;
- hydraulic pump means for supplying hydraulic oil;
- a main hydraulic line for connecting said main booster to said hydraulic pump;
- an auxiliary hydraulic line branching off from said main hydraulic line and connecting said auxiliary booster to said hydraulic pump;
- a control valve disposed in said main hydraulic line for connecting said main and auxiliary boosters to said hydraulic pump and having a reaction chamber, a pump port, a tank port, a pair of power cylinder ports which are interchangeably connected to said pump and tank ports, and a reaction pressure supply port and a reaction pressure relief port each communicating with said reaction chamber;
- a reaction pressure supply passage for connecting the delivery side of said hydraulic pump to said reaction pressure supply port of said control valve;
- a reaction pressure supply-side variable throttle disposed in said reaction pressure supply passage;
- a reaction pressure relief passage for connecting the suction side of said hydraulic pump to said reaction pressure relief port of said control valve;
- a reaction pressure relief-side variable throttle disposed in said reaction pressure relief passage;
- a controller for opening and closing said reaction pressure supply-side and reaction pressure relief-side variable throttles in response to a signal transmitted from a vehicle speed sensor; and
- a load sensing valve disposed in said auxiliary hydraulic line and operable to activate and deactivate said auxiliary booster in response to the load of said main booster.

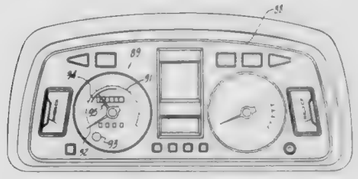
4,796,715
HYDRAULIC PRESSURE REACTION DEVICE IN A POWER STEERING DEVICE
Takeshi Futaba, and Masahiko Noguchi, both of Yao, Japan, assignors to Koyo Jidoki Kabushiki Kaisha, Nara, Japan
PCT No. PCT/JP86/00105, § 371 Date Oct. 27, 1986, § 102(e) Date Oct. 27, 1986, PCT Pub. No. WO86/05152, PCT Pub. Date Sep. 12, 1986
PCT Filed Feb. 28, 1986, Ser. No. 932,734
Claims priority, application Japan, Mar. 1, 1985, 60-41499; Mar. 18, 1985, 60-52442
Int. Cl.⁴ B62D *6/02, 5/04, 5/00*
U.S. Cl. 180—143 **16 Claims**



1. A hydraulic pressure reaction device for a steering system to assist a steering mechanism for a vehicle by a hydraulic pressure power device, comprising: an input shaft remotely interconnected to a steering handle; an output shaft having a pinion which engages with a rack; a torsion rod for relatively and torsionally interconnecting said input shaft and output shaft to each other; valve bodies constituting a rotary valve means which surrounds said input shaft and cooperates with said input shaft; and interconnecting means which functionally interconnects said output shaft and valve bodies for rotating

said valve bodies together with said output shaft to constitute a single rotary assembly; said rotary valve means being actuated based on an angular directional deviation between the input shaft and said valve bodies created by relative torsional displacement between said input shaft and output shaft, said hydraulic pressure power device being controlled by said rotary valve means, said rotary assembly including a sleeve portion which surrounds said input shaft, said sleeve portion having a plurality of holes radially passing therethrough and being mutually connected to each other by annular ditches, said rotary assembly including plunger members mounted in said respective holes, said input shaft having a plurality of slots which engage with said respective plunger members on an outer periphery of the input shaft, said each plunger being supplied with hydraulic pressure corresponding to a speed of said vehicle and being forcibly contacted with each of said slots to operate said hydraulic pressure reaction device, said slots extending in an axial direction of said input shaft and having a bottom and a pair of slant surfaces which slant in circumferentially opposite directions of the input shaft to create gaps between said plunger and each slant surface when a center of each plunger circumferentially coincides with a center between the pair of slant surfaces of the corresponding slot.

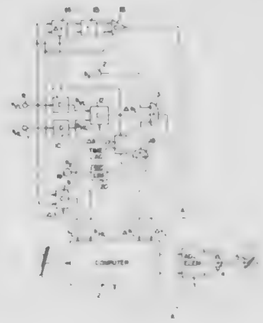
4,796,716
AUTOMATIC SPEED CONTROL SYSTEM FOR MOTORCYCLES
Yutaka Masuda, Fukuroi, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan
Division of Ser. No. 645,494, Aug. 29, 1984, Pat. No. 4,645,027.
This application Nov. 13, 1986, Ser. No. 930,231
Claims priority, application Japan, Aug. 31, 1983, 58-160037
Int. Cl.⁴ B60K *31/08, 31/18*
U.S. Cl. 180—176 **9 Claims**



1. In an automatic speed control for a vehicle comprising throttle means for controlling vehicle speed, operator control means for selectively positioning said throttle means, and automatic speed control means operable between an off condition for operator controlled vehicle speed and on condition for operating said throttle means to operate the vehicle at a preset speed, the improvement comprising means for indicating actual speed of vehicle travel when the automatic speed control means is in its off condition and for indicating the preset speed when the automatic speed control means is in its on condition.

4,796,717
INSTALLATION FOR THE FORWARD DRIVE REGULATION IN MOTOR VEHICLES
Heinz Leiber, Oberriexingen; Hans Ohnemueller, Reutlingen, and Klaus Kastner, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Dec. 23, 1987, Ser. No. 136,956
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644134
Int. Cl.⁴ B60K *31/00*
U.S. Cl. 180—197 **6 Claims**

1. An installation for the forward drive regulation in motor vehicles in the sense of a reduction of the undesired slippage of its driven vehicle wheels, comprising a first regulating circuit means coordinated to each driven wheel and responding to the slippage of a respective driven wheel in relation to the velocity of the non-driven wheel on the same vehicle side, said first regulating circuit means being operable to effect a reduction of the output torque of a drive aggregate of the motor vehicle when said wheel exceeds a slippage threshold value and for increasing the output torque of the drive aggregate when said wheel drops below the slippage threshold value, and a second regulating circuit means coordinated to each driven wheel which replaces the first-mentioned slippage regulating circuit means at least during the first regulating cycle or for a predetermined duration, said second regulating circuit means being operable to reduce the output torque of the drive aggregate



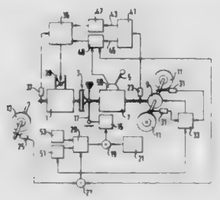
when the acceleration of the driven wheel exceeds the acceleration that of the non-driven wheel of the same vehicle side by a predetermined amount and including means for storing the difference between the wheel circumferential velocity of the driven wheel and of the non-driven wheel of the same vehicle side which exists at the instant of the beginning of the torque reduction, means for adding the stored value to the wheel circumferential velocity of the non-driven wheel, whereby said summing value forms a threshold value, and said second regulating circuit means being operable to increase the output torque of the drive aggregate again after the wheel circumferential velocity of the driven wheel has dropped below said threshold value.

4,796,718
DRIVE SLIP CONTROL SYSTEM FOR A MOTOR VEHICLE
Christoph Thielen, Wiesenstr. 2, 3423 Bad Sachsa, and Franz Nagler, Am Zehntgrafen 12, D-8729 Gädheim/Ottendorf, both of Fed. Rep. of Germany
Filed Jul. 28, 1986, Ser. No. 891,255
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1985, 3528389
Int. Cl.⁴ B60K *23/00, 28/00, 31/00*
U.S. Cl. 180—197 **6 Claims**

1. A system for controlling the drive slip of a motor vehicle driven wheel driven by an internal combustion engine through a change-speed gear having multiple gear settings and a friction clutch arranged in a torque transmission path between the internal combustion engine and the change-speed gear, comprising
- (a) a first rotation rate sensor which generates a first rotation rate signal corresponding to the rotation rate of the driven wheel,
- (b) a second rotation rate sensor which generates a second rotation rate signal corresponding to the rotation rate of a non-driven wheel of the motor vehicle,
- (c) a controllable servo-drive means for engaging and disengaging the clutch and
- (d) means responsive to the first and second rotation rate

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signals for controlling the servo-drive means of the clutch for displacing the clutch in a clutch release direction when the first rotation rate signal represents a rotation rate higher by at least a pre-determined difference from the rotation rate represented



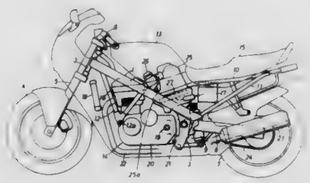
by the second rotation rate signal, and for displacing the clutch in a clutch engagement direction when the rotation rates represented by the first and the second rotation rate signal differ by less than the pre-determined difference.

4,796,719

MOTORCYCLE WITH FAVORABLE AIR CLEANER LAYOUT

Koji Shiratsuchi, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1987, Ser. No. 85,765
Claims priority, application Japan, Aug. 21, 1986, 61-195781
Int. Cl.[4] B62D *61/02*
U.S. Cl. 180—219 **18 Claims**



1. A motorcycle, comprising a power unit including an engine having a substantially vertically disposed cylinder and a transmission extending rearwardly from a lower part of the engine; a fuel tank arranged above the power unit; and a seat arranged behind the fuel tank; further comprising:

an air cleaner unit accommodated in a space defined by a rear surface of the engine and an upper surface of the transmission;

an upper part of the air cleaner unit protruding into a concave bottom surface of a rear part of the fuel tank;

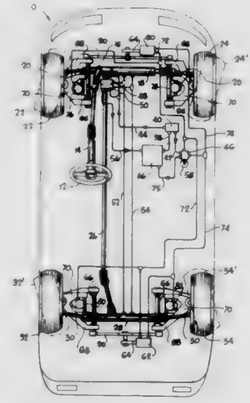
the air cleaner unit comprising a casing, an air inlet provided in a lower part of the air cleaner casing, a vertical and upward flow passage, an air outlet which extends from an upper part of the air cleaner casing and is connected to an intake port of the engine by way of a passage which is slanted downwards as it extends to the intake port of the engine.

4,796,720

FOUR-WHEEL STEERING, LEVELING AND BANKING FOR VEHICLES

John K. Bauer, 510 Lenox Ave., Miami Beach, Fla. 33139

Continuation-in-part of Ser. No. 99,395, Sep. 21, 1987, abandoned. This application Jan. 11, 1988, Ser. No. 142,642
Int. Cl.[4] B62D *5/00, 17/00;* **B60G** *17/00*
U.S. Cl. 180—234 **9 Claims**



1. A vehicle having a steering wheel, a frame, left and right front wheels, and left and right rear wheels, said frame having a longitudinal axis and a transverse axis, comprising,

a front steering means operatively linked to a steering wheel for turning left and right front wheels in response to rotation of said steering wheel,

a rear steering means operatively linked to said steering wheel for turning left and right rear wheels in response to rotation of the steering wheel,

front camber adjustment means operatively linked to said front wheels for transmitting rotary rotation to said left and right front wheels, said front camber adjustment means including a left suspension arm attached to the left front wheel and a right suspension arm attached to the right front wheel, said left and right suspension arms each pivotally connected to a vehicle frame opposite the associated wheel, said front camber adjustment means being responsive to a fluid working medium to cause rotary motion of aid front wheels relative to the longitudinal axis of the vehicle frame,

rear camber adjustment means operatively linked to said rear wheels for transmitting rotary motion to said left and right rear wheels, said rear camber adjustment means including a left suspension arm attached to the left rear wheel and a right suspension arm attached to the right rear wheel, said left and right suspension arms each pivotally connected to the vehicle frame opposite the associated wheel, said rear camber adjustment means responsive to a fluid working medium to cause rotary motion of said rear wheels relative to the longitudinal axis of the vehicle frame,

attitude adjustment means connecting said front and rear wheels to said vehicle frame for controlling the distance between a wheel and said vehicle frame, said attitude adjustment means actuated by a fluid working medium,

supply means for providing said fluid working medium,

valve means for directing fluid flow of said fluid working medium between said supply means on the one hand and said front and rear adjustment means and said attitude adjustment means of the other hand, and

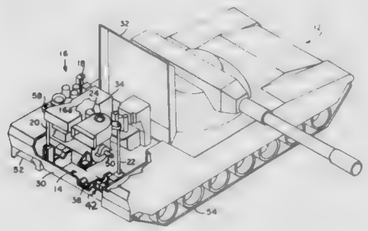
a pendulous mass pivotally suspended from said vehicle frame and operatively connected to said valve means for regulating the orientation of each wheel, said pendulous mass disposed to pivot in response to the magnitude of lateral acceleration of a vehicle and in response to the vertical position of the right front and rear wheels relative to the left front and rear wheels.

4,796,721

SYSTEM FOR DISPLACING A POWER PACK FROM A VEHICLE

Malcolm H. Knapp, Lynnfield, and Gerhard Sonder, Manchester, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Jul. 6, 1987, Ser. No. 70,751
Int. Cl.[4] B60K *1/00, 5/10*
U.S. Cl. 180—294 **38 Claims**



22. The system for displacing a power pack component of a vehicle from a compartment in said vehicle comprising:

means for releasably mounting said component in said vehicle;

means for displacing said component from an initial first position to a displaced second position;

means for sensing attitude variations of said component; and

means for controlling said displacing means in response to said sensing means for maintaining said component in a selected attitude from said first position to said second position.

4,796,722

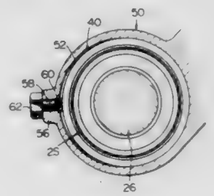
DRIVE SHAFT APPARATUS FOR TRANSVERSE ENGINE VEHICLE

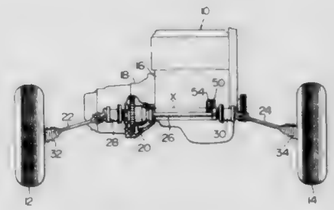
Tadanobu Kumagai, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 29, 1987, Ser. No. 8,322
Claims priority, application Japan, Feb. 21, 1986, 61-24910[U]
Int. Cl.[4] B60K *17/24*
U.S. Cl. 180—297 **1 Claim**

1. A drive shaft apparatus for a transverse engine vehicle having an intermediate shaft, a bracket secured to an engine block and having a through hole formed therein, first and second drive shafts equal in length and respectively connected at respective first ends thereof to first and second wheels through first and second velocity joints, the first of said drive shafts being connected at a second end thereof through a third velocity joint to a first output side of a differential unit offset from the center of said vehicle in the transverse direction thereof, the second of said drive shafts being connected at a second end thereof through a fourth velocity joint to a first end of said intermediate shaft which is connected at a second end thereof to a second output side of said differential unit, a bearing attached to an intermediate portion of said intermediate shaft and inserted into said through hole formed in said bracket secured to said engine block,

said drive shaft apparatus comprising an opening portion formed in said bracket in the radial direction thereof, said pressing means having an elastic body, said pressing means being fitted into said opening portion from the outside thereof for pressing the outer peripheral surface of said bearing against the inner peripheral surface of said through hole and for preventing an excessive force acting on an outer race portion of the bearing and for preventing said outer race portion from being rotated relative to the bracket so that said outer race portion can be properly positioned wherein said opening portion comprises a single opening portion having a threaded hole and said pressing means comprises a single elastic body and a single bolt





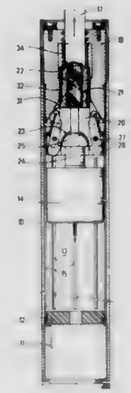
such that play exists between an inner surface of said through hole of said bracket and said bearing.

4,796,723

SYSTEM FOR TRANSMITTING ENERGY THROUGH AN APPARATUS USABLE FOR SUBSOIL PROSPECTION, LOWERED INSIDE A WELL OR DRILL HOLE

Jean Laureat, Oregeval; Charles Naville, Massy, and Rene Paterna, Pechabou, all of France, assignors to Institut Francais du Petrole & Compagnie Generale De Geophysique, Rueil-Malmaison, France

Filed Dec. 1, 1986, Ser. No. 936,618
Claims priority, application France, Nov. 29, 1985, 85 17832
Int. Cl.[4] G01V *1/40*
U.S. Cl. 181—102 **4 Claims**



1. A system for providing energy to a seismic source adapted to be lowered in a deep wellbore, the system comprising a rigid elongated hollow body provided with at least one inner cavity

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communicating with an outside of the body through an opening, mobile means linearly displaceable in said at least one inner cavity including a rod adapted to slide through said opening in the elongated hollow body and sealing means for isolating an interior of the body from the deep wellbore, traction on said mobile means through said rod providing for a sliding thereof in the elongated hollow body and the accumulation of energy within said elongated hollow body, releasable anchoring means for coupling said elongated hollow body to walls of the wellbore, a rigid column secured to said rod, and drive means outside the wellbore for linearly pulling the rigid column when the elongated hollow body is coupled to the walls of the wellbore, said seismic source comprising generating means disposed within said elongated hollow body,

wherein said mobile means includes a piston rigidly connected with said rod and adapted for sealingly sliding in at least one chamber upon traction on said rigid column in said at least one chamber containing a hydraulic fluid, a hydraulic accumulator and valve means for accumulating hydraulic fluid pressurized by the sliding of said piston whereby the seismic source provided with the releasable anchoring means can be hydraulically energized.

4,796,724

PROCESS AND DEVICES FOR PRODUCING PRESSURE - OR SHEAR-WAVES IN A SOLID MEDIUM

Gerhard Bohn, Munich; Guenter Steinmetz, Train, and Ulf Steenbeck, Putzbrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

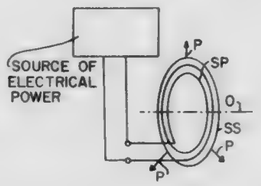
PCT No. PCT/DE85/00368, § 371 Date Jun. 6, 1986, § 102(e) Date Jun. 6, 1986, PCT Pub. No. WO86/02169, PCT Pub. Date Apr. 10, 1986

PCT Filed Oct. 7, 1985, Ser. No. 878,957

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1984, 3436829

Int. Cl.[4] G01V *1/40*

U.S. Cl. 181—106 **13 Claims**



1. A method for introducing a force through a wall of a bore hole in a solid medium by applying mechanical impulse forces to said bore hole wall having a central longitudinal bore hole axis, comprising the following steps:

(a) rigidly connecting at least one short-circuited secondary coil with at least one expansion fold to said bore hole wall for introducing said impulse forces to the surroundings of said bore hole directly through said short-circuited secondary coil,

(b) arranging primary coil means inside said short-circuited secondary coil in said bore hole in a position for cooperation with said short-circuited secondary coil to form a transformer for generating a magnetic field repelling said short-circuited secondary coil from said primary coil means for introducing said force into said solid medium,

(c) passing a current of short-duration through said primary coil means for energizing said primary coil means to produce said impulse forces which constitute repulsion forces between said primary coil means and said short-circuited secondary coil, and

(d) directly transmitting said repulsion forces through said short-circuited secondary coil into said solid medium.

4,796,725

ELECTROSTATIC TRANSDUCER

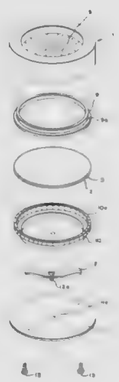
Susumu Katayama, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 849,133, Apr. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 416,657, Sep. 10, 1982, abandoned. This application Dec. 4, 1987, Ser. No. 129,969

Claims priority, application Japan, Sep. 14, 1981, 56-144902

Int. Cl.[4] H04R *19/00*

U.S. Cl. 181—142 **7 Claims**



1. An electrostatic transducer comprising:

a casing having with a front opening and a rear opening;

a fixed electrode extending across the front opening;

a vibration membrane extending over the fixed electrode in surface contact therewith;

a movable electrode extending over the vibration membrane in surface contact therewith for causing the vibration membrane to vibrate when an electric signal is applied between said fixed electrode and the movable electrode and for producing an electric signal in relation to said fixed electrode in response to the vibrating membrane being vibrated; and

a back cover closing said rear opening to enclose said vibration membrane and said movable electrode between the fixed electrode and the back cover;

and further characterized in that:

said fixed electrode is exposed on its surface opposite to the movable electrode to define thereat a sound emitting and receiving surface and is concavely shaped with respect to said exposed surface;

said fixed electrode terminates at its periphery at an inner periphery of said front opening of said casing and is provide in its inner surface opposite to the exposed surface with a plurality of depressions which are arranged concentrically with a center of the fixed electrode; and

said fixed electrode is further provided with a plurality of through openings corresponding only to the plurality of depressions to allow sound to pass through the fixed electrode to and from the vibration membrane.

4,796,726

ULTRASONIC RANGEFINDER

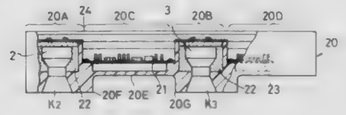
Hiroshi Kobayashi, Yokohama, and Hiroaki Obayashi, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Division of Ser. No. 737,937, May 28, 1985, Pat. No. 4,739,860. This application Nov. 6, 1987, Ser. No. 117,807

Claims priority, application Japan, May 29, 1984, 59-107559; May 29, 1984, 59-107560; May 29, 1984, 59-77919[U]

Int. Cl.[4] G01S *15/00;* **H05K** *5/00;* **H04R** *7/00*

U.S. Cl. 181—123 **1 Claim**



1. An ultrasonic rangefinder for measuring the distance between the rangefinder and an object, said rangefinder comprising:

means for transmitting an ultrasonic wave toward the object and having a transmitting surface;

means for receiving an ultrasonic wave reflected from the object and having a receiving surface;

a casing having two cavities for housing said transmitting and receiving means, respectively, and provided with a signal-processing unit for processing signals supplied from the transmitting and receiving means to measure the distance between the rangefinder and the object, said signal-processing unit being disposed in a concave portion formed in a connecting section between the transmitting and receiving means; and

a foaming insulator having an independent cell structure and covering the interior walls of at least one of said cavities whereby ultrasonic waves from the transmitting means are prevented from directly propagating to the receiving means through the interior of the casing.

4,796,727

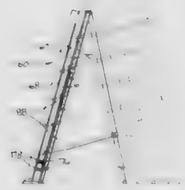
FOLDING STEP LADDER

Earl V. Eaton, Box 1162, Eagle, Colo. 81631

Filed Feb. 1, 1988, Ser. No. 151,008

Int. Cl.[4] E06C *1/22*

U.S. Cl. 182—168 **10 Claims**



1. A folding step ladder comprising:

a ladder having at least a pair of opposed side leg portions having inner and outer surfaces;

at least three spaced apart steps extending between and fixedly connected to said inner surfaces of said side leg portions and having an upper surface for supporting an user;

said ladder having a top end portion, a bottom end portion, a front side and a back side, a length equal to the longitudinal extent of each of said side leg portions, a width equal to the distance between said outer surfaces of said side leg portions and a depth extending between said front side and said back side;

at least a pair of support legs each having a top end section and a bottom end section;

pivot means for pivotally mounting said top end sections of said pair of support legs on said ladder at said top end portion thereof so that said pair of support legs may be pivotally moved to an opened or closed position, said pair of support legs each pivoting about an axis extending in a depthwise direction and generally parallel to each other;

said pair of support legs having support feet at the bottom thereof and when said pair of support legs have been moved to said opened position, said support feet are spaced apart a distance greater than said width of said ladder;

at least one additional support leg having a top end section and a bottom end section;

pivot means for pivotally mounting said top end section of said additional support leg on said ladder at said top end portion thereof so that said one additional support leg may be pivotally moved to an opened or closed position, said one additional support leg pivoting about an axis extending generally in a widthwise direction.

4,796,728

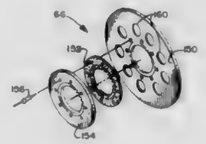
BRAKE NOISE REDUCTION SYSTEM

Glenn G. Kanengieter, Owatonna, and David E. Stomberg, Faribault, both of Minn., assignors to Amstoft Inc. (U.S.A.), Owatonna, Minn.

Continuation of Ser. No. 859,472, May 5, 1986, abandoned. This application Jul. 10, 1987, Ser. No. 73,399

Int. Cl.[4] F16D *65/12*

U.S. Cl. 188—18 A **9 Claims**



1. A brake system for a vehicle having separate independently driven transmission for reducing noise during at least non-braking operation of the transmission comprising:

a plurality of brake disc assemblies mounted for rotation about a common axis, each brake disc assembly being loosely splined to a shaft drivingly connected to one of said transmissions;

each brake disc assembly including a rigid brake disc plate and a rigid retainer plate spaced from the brake disc plate in non-continuous relationship and a resilient disc secured between the rigid brake disc plate and the rigid retainer plate for noise reduction with the brake disc plate being relatively larger in diameter than the retainer plate and resilient disc and further with the rigid brake disc plate, the resilient disc and the rigid retainer plate being individually directly splined to the shaft;

a caliper assembly associated with said brake disc assemblies, said caliper assembly including a transverse bore and longitudinal slots receiving the brake disc plates;

a stop associated with one end of the bore of said caliper assembly;

a slidable plunger disposed in the other end of the bore of said caliper assembly;

a plurality of brake pucks slidably disposed in the bore of

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said caliper assembly between said plunger and said stop, and on opposite sides of each brake disc; and

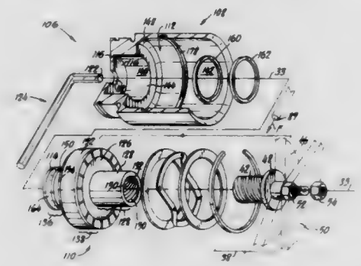
means for cam-actuating said plunger to compress said brake pucks on said brake disc assemblies to arrest movement of said transmissions.

4,796,729

DISC BRAKE SYSTEM

Marco Viscoglioni, 31 Lenox Ave., Pleasantville, N.Y. 10570

Filed Aug. 12, 1987, Ser. No. 84,924
Int. Cl.[4] F16D *55/02, 55/26*
U.S. Cl. 188—71.7 34 Claims



1. A brake system for a motor vehicle connected to a brake fluid pressure system and including calipers positioned around a wheel disc and an emergency brake apparatus, including, in combination,

a housing mounted to the vehicle proximate a wheel, said housing including a housing mounting portion holding said calipers and a housing enclosed portion having a housing chamber having an axis,

outer piston means positioned in said housing chamber for exerting pressure against said calipers, said outer piston being axially aligned with and movable along said axis, said outer piston means having a first actuating area,

inner piston means positioned in said outer piston for moving said outer piston means from an inactivated position to a selected activated position so as to create pressure against said calipers and said disc, said inner piston means having a second actuating area in pressure contact with said first actuating area, said inner piston means being rotatable about said axis and movable along said axis,

actuating screw means positioned in said housing chamber for providing rotational and axial movement movement for said inner piston relative said outer piston means, said actuating screw means also being operatively connected to the emergency brake apparatus,

fluid chamber means in said housing chamber operatively connected to the brake fluid pressure system, said fluid chamber means being for containing brake fluid of the brake fluid system so that fluid pressure can be exerted against said inner piston when the brake fluid brake system is activated so as to rotate and axially move said inner piston means relative said actuating screw means,

return means for moving said outer piston from said selected activated position to said inactivated position when the brake fluid system is deactivated,

pressure means for maintaining said inner piston means in contact with said outer piston means and for initiating movement of said inner piston means from said inactivated position towards said selected activated position upon activation of the brake fluid system, and

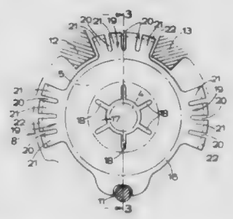
pressure relief means associated with said inner piston means for axially rotating and moving said inner piston means from contact with said outer piston means at said first and second actuating areas, wherein said outer piston means can be subsequently moved inwardly into the housing without resistance.

4,796,730

SELF-ENERGIZING DISC BRAKES

Anthony G. Price, Gwent, Wales; Roy Campbell, Worcestershire, England, and Eric Henson, Gwent, Wales, assignors to Lucas Industries, Ltd., Birmingham, England

Filed Jan. 13, 1987, Ser. No. 3,056
Claims priority, application United Kingdom, Nov. 6, 1986, 8626522
Int. Cl.[4] F16D *55/02, 65/78*
U.S. Cl. 188—71.6 7 Claims



1. A self energizing disc brake comprising a housing, first and second axially spaced braking surfaces in said housing, radial pilot lugs and a drag-taking stop abutment in said housing, an actuator mechanism comprising first and second pressure plates centered on said pilot lugs, adjacent faces of said pressure plates being provided with co-operating oppositely inclined angularly spaced recesses, and rolling bodies located in complementary pairs of said recesses, at least one rotatable friction member disposed between each said pressure plate and an adjacent said braking surface, each said friction member comprising a disc, and first and second linings of friction material for engagement with said pressure plate and said braking surface carried by opposite faces of said discs, said linings having outer peripheral edges, and said pressure plates being movable angularly relative to said housing to initiate application of said brake with said pressure plates also moving axially to urge said friction members into engagement with said braking surfaces due to a tendency for said rolling bodies to ride up ramps defined by said end faces and constituting camming means, said plates being carried round with said discs until one of said plates is arrested by the engagement of a lug on that plate with said drag-taking stop abutment, whereafter continued angular movement of the other of said plates provides a servo action, wherein an intermediate spacer disc is disposed between adjacent linings of a pair of said friction discs on one side of said actuator mechanism, and said intermediate disc comprising a metal plate of which the area is greater than the area of each said lining, means keying said plate to said housing against rotation relative thereto, portions of said plate projecting radially with respect to the linings each include a plurality of angularly spaced radial slots, fins which assist cooling being defined between said slots, and wherein each said fin is disposed outwardly of said outer peripheral edges of said linings.

4,796,731

COMPRESSION TYPE TRUCK/TRAILER BRAKE SLACK ADJUSTER

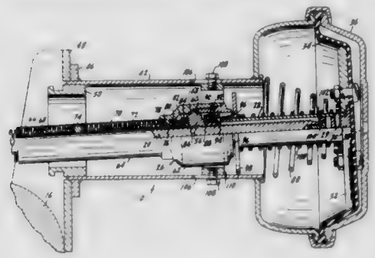
Eugene W. Schmitt, Lockport, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Apr. 24, 1987, Ser. No. 42,295
The portion of the term of this patent subsequent to Jun. 10, 2003, has been disclaimed.
Int. Cl.[4] F16D *65/38, 65/56*
U.S. Cl. 188—196 D 2 Claims

1. A combination in-line brake slack adjuster and air chamber including an air chamber housing, a diaphragm movable in said housing, a piston movable in said housing and attached to said diaphragm, a return spring positioned within said air chamber and urging said piston, and diaphragm to a brake release position,

an air chamber housing extension, a slack adjuster coaxially positioned within said housing extension and having relatively movable telescoping members, one of which is attached to said piston the other of said telescoping members adapted to be attached to a brake operating member, brake force applying spring means coaxially positioned about said other telescoping member and urging said telescoping members in opposite directions,

a clutch disc rotatably mounted on said other of said telescoping members and first and second spaced clutch surfaces on said one of said telescoping members, said clutch disc interconnecting said telescoping member for relative movement therebetween to take up and let out slack to



maintain a generally uniform piston travel during brake application movement, movement of said clutch disc from said first clutch surface to said second clutch surface during brake application movement of the piston contracts said slack adjuster, with movement, during brake release, of said clutch disc from said second clutch surface to said first clutch surface lengthening said slack adjuster,

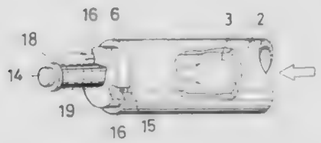
and a thrust assembly including a thrust plate coaxial with said telescoping members and a thrust spring also coaxial with said telescoping members, with said thrust spring, through said thrust plate, urging said clutch disc into contact with said first clutch surface, a stop on said air chamber housing extension, contact between said thrust plate and said stop, during brake application movement, removing the pressure of said thrust spring upon said clutch disc to permit movement thereof to said second clutch surface, whereby said slack adjuster becomes rigid between the piston and the brake operating member.

4,796,732

PISTON CYLINDER TYPE OIL DAMPER

Alan Kong, Kawasaki, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jul. 7, 1987, Ser. No. 70,739
Claims priority, application Japan, Jul. 10, 1986, 61-160926
Int. Cl.[4] F16F *9/19, 9/50*
U.S. Cl. 188—282 2 Claims

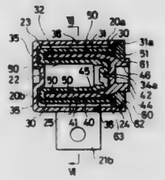


1. An elongation type oil damper comprising a closed cylinder having a bore containing oil, a hollow plunger having an inner end sealingly and slidably fitted in said cylinder bore and also containing oil in a hollow space thereof, said plunger including an outer end projecting from a rod end of said cylinder and being movable through an elongation stroke and a contraction stroke, said plunger being provided through the end face of said inner end with a plurality of communication holes through which the oil in said hollow space and the oil in said cylinder bore join each other, said holes providing the only path of fluid communication between said bore and said hollow space, said plunger including an axial extension at said inner end projecting into said bore, said extension comprising a stem fast therewith projecting from said plunger's inner end into said bore, a single axially floating valve located between said cylinder bore and at least some of said communication holes and axially slidable relative to and retained by said stem of said axial extension, said valve being movable axially for closing at least one but less than all of said communication holes during a contraction stroke of said plunger and for opening said communication holes during an elongation stroke of said plunger, a floating piston axially movable within said hollow space of said plunger and sealing the outer end of said plunger, and spring means in said plunger connected to said plunger's outer end for resiliently biasing said floating piston toward said inner end of said plunger, said valve further comprising a valve element slidably disposed on said stem, said element being biased toward the front surface of said plunger by spring means situated between said valve element and annular ring mounted on said stem, said holes of said plunger being located so as to intersect an inner end face and said plunge, said valve element being engageable with said plunger face for closing certain of said holes, and said valve element including a notch therein aligned with at least one of said holes of said plunger for avoiding closing said one hole.

2. An elongation type oil damper comprising a closed cylinder having a bore containing oil, a hollow plunger having an inner end sealingly and slidably fitted in said cylinder bore and also containing oil in a hollow space thereof, said plunger including an outer end projecting from a rod end of said cylinder and being movable through an elongation stroke and a contraction stroke, said plunger comprising a slide section in direct sliding contact with the inner periphery of the cylinder and comprising an axially extending, cylindrical projection which projects into the cylinder, said projection having a reduced diameter thus radially spaced from the inner periphery of said cylinder and said projection being open at the front, an axially, single floating valve movable directly in the inner periphery of the cylindrical projection provided with a plurality of circumferentially spaced, deformed check pawls, the cylindrical projection provided at its rear inner end between said projection and slide section with a plurality of large holes through which the oil in said hollow space and the oil in said cylinder bore join each other, the valve including a constantly or continously open, small axial central through-hole, the large holes and through-hole providing the only path of fluid communication between said bore and said hollow space, the axially floating valve located between said bore and at least some of said communication holes and axially slidable relative to and retained by said axial projection, said valve being movable axially for closing said large communication holes during an elongation stroke of said plunger, a floating piston axially movable within said hollow space and sealing the outer end of said plunger, and spring means in said plunger connected to said plunger's outer end for resiliently bissing said floating piston toward said inner end, said valve being disposed in said cylindrical projection in axial sliding contact with the inner periphery of the cylindrical projection such that the valve is retained by said check pawl means, the valve being tapered toward the slide section to engage a corresponding tapered surface of said slide section acting as a seat for said valve to close the large holes thus permitting fluid flow communication only through the small axial constantly or continuously open through-hole in the floating valve.

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4,796,733
OIL DAMPER
Hiromichi Nakayama, Yokohama, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Aug. 3, 1987, Ser. No. 80,833
Claims priority, application Japan, Aug. 5, 1986, 61-183786
Int. Cl.[4] F16D *57/02*
U.S. Cl. 188—291 **8 Claims**



1. An oil damper for braking a rotor shaft, comprising:
a tubular case open at one end thereof and having first engagement means formed upon an inner peripheral surface portion thereof;
an intermediate rotor including inner and outer cylinders integrally formed together wherein said inner cylinder extends coaxially from one end of said outer cylinder, so as to project into said outer cylinder, with a diametrical extent less than that of said outer cylinder so as to define an annular space which is open at the other end of said outer cylinder, an outer peripheral portion of said outer cylinder being provided with second engagement means for engagement with said first engagement means of said tubular case whereby said intermediate rotor is disposed within said tubular case such that it is rotatable in only one direction without being stopped by engagement of said first and second engagement means while being prevented from rotating in the opposite direction by engagement of said first and second engagement means, and wherein the open end of said annular space of said intermediate rotor corresponds to the open end of said tubular case;
a shaft rotor having a tubular section open at one end thereof for rotatable accommodation within said annular space of said intermediate rotor; a transverse wall closing an opposite end of said tubular section of said shaft rotor; and rotor shaft socket means, open at one end thereof while having the other end thereof closed by said transverse wall, extending in an axial direction opposite that of said tubular section, relative to said transverse wall, for receiving said rotor shaft to be braked; and
oil sealed within said annular space defined between said inner and outer cylinders of said intermediate rotor for providing adequate resistance with respect to the relative movement defined between said intermediate rotor and said shaft rotor.

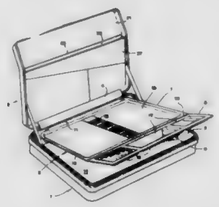
4,796,734
TOTEABLE SHADED HEADREST
Shawn M. Distasio, P.O. Box 60794, Sacramento, Calif. 95860-0794
Filed Mar. 11, 1988, Ser. No. 166,629
Int. Cl.[4] A45C *3/10*
U.S. Cl. 190—1 **5 Claims**

1. A toteable shaded headrest compriaing:
a cloth covered frame work structured in three panel sections attached by adjustable hinging at converging corners in a manner to form a head shade panel, a support panel, and a base panel with said panels sufficiently sized for human head and shoulder coverage when said base panel is in a horizontal head rest position, said support panel is vertically inclined as a header, and said head shade panel is positioned in horizontal alignment with said base panel, there being manual means for tightening and loosening said adjustable hinging with said frame work structure being foldable into a carrying package with carrying handles affixed, there being multiple capped pouches in outwardly facing surfaces of said panels, and there being side extending flaps affixed to said shade panel for added



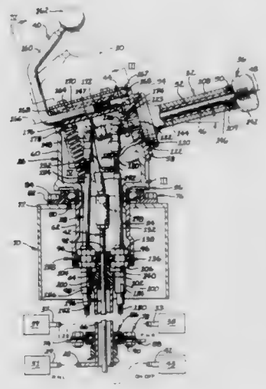
shading and for a carrying package retainer when said frame work structure is folded, said shade panel and said side extending flaps affixed with cooperative means for attachment and detachment.

4,796,735
CARRYING CASE
Yutaka Horiuchi, 910, 100 Eighth Avenue, Kitchener, Ontario, Canada N2C 1S3
Continuation-in-part of Ser. No. 837,071, Mar. 6, 1986, Pat. No. 4,694,940. This application May 4, 1987, Ser. No. 45,456
Int. Cl.[4] A45C *3/02, 13/00, 13/04, 13/26*
U.S. Cl. 190—109 **11 Claims**



1. A carrying case, which comprises a body (1), a tray (3), and a lid (2), characterized:
in that the lid is separate from the tray (3);
in that the lid is pivotably attached to a back wall (12) of the body (1);
in that the tray is pivotably attached to the said back wall;
in that the body includes side-walls and a front-wall which, together with the back-wall, define a well-shaped compartment (14) in the body;
in that the tray (3) includes a main-portion (7) and a flap-portion (8), the portions being connected by a flap-hinge (10), which permits relative pivoting movement therebetween;
in that the axis of the flap-hinge is spaced from the said back wall of the body;
in that the axis (11) about which the tray is pivotable, and the axis about which the lid is pivotable, and the axis of the flap hinge, are all three parallel;
in that the flap-portion (8) is smaller than the main-portion (7);
in that the main-portion (7) is rigid;
and in that the tray (3) can be set selectably to all these positions relative to the body:
(a) a closed position, in which the said two portions (7,8) of the tray (3) lie over respective parts of the well-shaped compartment (14), the tray (3) being so shaped and dimensioned as to substantially close at least a major part of the well-shaped compartment (14) when set in the closed position;
(b) a wide-open position, in which both portions (7, 8) are displaced away from the well-shaped compartment (14), leaving the well-shaped compartment wide open;
(c) and a partially-open position where the main-portion (7) lies over, and substantially closes, a part of the well-shaped compartment (14) and where, simultaneously, the flap-portion (8) lies open enough relative to the body (1) to permit access into the well-shaped compartment.

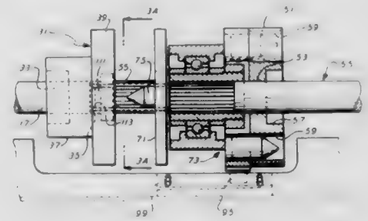
4,796,736
CONTROL MECHANISM FOR APPLYING A BRAKE AND NEUTRALIZING A TRANSMISSION OF A VEHICLE
David M. Fee, Groveland, and Craig W. Riediger, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Dec. 30, 1987, Ser. No. 139,889
Int. Cl.[4] B62D *11/04;* **G05G** *9/00;* **F16H** *57/10*
U.S. Cl. 192—4 C **11 Claims**



1. A control mechanism for applying a brake and operating a transmission of a vehicle having an element mounted on the vehicle for limited rotational movement about an upstanding axis, comprising:
actuator means for controlling the transmission and movement of the vehicle and including a transmission actuating member mounted on the element and being limitedly rotatable about a second axis between a plurality of operating positions and a neutral position; and
brake and neutralizer means for simultaneously restricting movement of the vehicle by applying the brake and urging the transmission actuating member to the neutral position, the brake and neutralizer means including a brake actuating member mounted on the element and being limitedly rotatable about a third axis between a brake-off position and a brake-on position, and cam means for positioning the transmission actuating member to the neutral position in response to movement of the brake actuating member to the brake-on position, the cam means being directly mechanically connected to the brake actuating member.

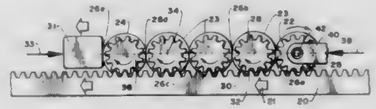
4,796,737
CLUTCH AND LOCK MECHANISM
D. Kevin Tyler, Hebron, Ky., assignor to Litton Industrial Automation Systems, Inc., Hebron, Ky.
Filed Mar. 13, 1987, Ser. No. 25,639
Int. Cl.[4] F16D *67/02*
U.S. Cl. 192—18 R **9 Claims**

1. A clutch and lock mechanism comprising:
a first shaft rotatable about an axis of rotation;
a first shaft ring assembly fixedly coupled to said first shaft;
a second shaft rotatable about said axis of rotation;
a second shaft ring assembly fixedly coupled to said second shaft,
said first and second shafts and said first and second shaft ring assemblies being spaced one from the other; and
an engaging mechanism positioned between said first and second shaft ring assemblies and laterally movable along said axis of rotation between said first and second shaft ring assemblies,
said engaging mechanism including first and second portions which are rotatable relative to one another and laterally fixed relative to one another,



wherein one of said second portion of said engaging mechanism or said second shaft ring assembly includes at least one axially extending locking pin and the other of said second portion of said engaging mechanism or said second shaft ring assembly includes at least one receptacle complementary to said locking pin adapted to mate therewith for rotationally locking said second portion of said engaging mechanism to said second shaft ring assembly.

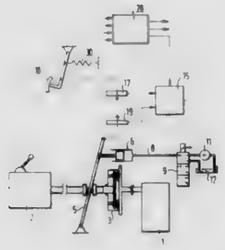
4,796,738
CONTROLLABLE CLUTCH
Gregory M. East, Santee, Calif., assignor to J. C. Pemberton, La Mesa, Calif., a part interest
Continuation-in-part of Ser. No. 857,218, Apr. 30, 1986, abandoned. This application May 13, 1987, Ser. No. 50,791
Int. Cl.[4] F16D *13/00, 15/00, 43/00*
U.S. Cl. 192—20 **16 Claims**



1. A clutch for selectively clutching and declutching a first member and a second member, comprising:
a rail on said first member;
a plurality of clutch rollers each in the form of a circular surface of revolution mounted for rotation about clutch roller axes transverse of said rail;
said clutch roller axes being disposed on a clutch roller line substantially paralleling said rail;
said clutch rollers being movable toward and away from each other;
coupling means for coupling said rail and said clutch rollers for applying a rotative torque to said clutch rollers about their respective said axes, upon relative movement between said first member and said clutch rollers whenever said members are in a declutched condition;
bunching means for causing said clutch rollers to bunch frictionally together and bind against rotation, thereby to lock said first member and said clutch rollers together, and including:
control means distinct from said first member for selectively causing a control clutch roller at one end of said clutch roller line to move toward and contact the adjacent clutch roller; and

load means including a load clutch roller disposed at the other end of said clutch roller line, and coupled to said second member for transmitting a load between said members, thereby clutching together said members.

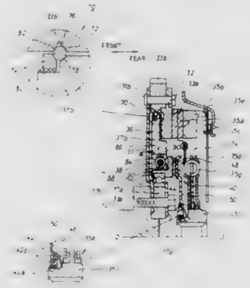
4,796,739
CLUTCH ACTUATION DEVICE
Wolf-Dieter Jonner, Beilstein, and Jurgen Zechmann, Heilbronn, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jun. 17, 1987, Ser. No. 62,991
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1986, 3630750
Int. Cl.[4] F16D *67/04*
U.S. Cl. 192—13 R 4 Claims



1. A clutch actuation device for a vehicle comprising an actuating operative element to engage and disengage a clutch (3) in response to output signals from an electronic control unit (28), a clutch pedal (18), a first sensor (17) which determines an extent of depression of said clutch pedal (18) and sends a measurement signal whose magnitude depends on the position of said clutch pedal (18) to the electronic control unit (15), a further sensor (19), which sends another measurement signal to the electronic control unit (15) which depends on the position of a clutch actuation element (5) of said actuating operative element, said electronic control unit (15) produces an output signal depending upon a set value input associated with said first sensor (17) and by a second actual value input associated with said further sensor (19), which output signal is directed to a fluid pressure control valve (9), and said vehicle is equipped with a brake locking protection control system (LPCS) controllable via a regulating unit (28), which includes a signal transmission device which, when a brake locking protection function is present, supplies an additional signal produced in the regulating unit (28) to said electronic control unit (15) and in response thereto, said control valve 9 is switched to permit fluid flow to operate a piston of said clutch actuation element (5) which disengages said clutch (3) in which, upon simultaneous receipt of a measurement signal from said sensor (17) and an additional signal from said regulating unit (28), said electronic control unit (15) forms an output signal which is the same as it would form if only the additional signal from the regulating unit (28) were present.

4,796,740
FLYWHEEL ASSEMBLY
Hirotaka Fukushima, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
Filed Feb. 10, 1987, Ser. No. 13,292
Claims priority, application Japan, Feb. 18, 1986, 61-34793; Feb. 18, 1986, 61-34794
Int. Cl.[4] F16F *15/12, 15/30*
U.S. Cl. 192—30 V 5 Claims

1. A flywheel assembly including a first flywheel fastened to an engine crankshaft and engaged and disengaged by a clutch disc, a second flywheel concentrically supported with respect to the first flywheel and rotatably connectable to a spline hub of the clutch disc via a friction damping mechanism, wherein the second flywheel comprises a damper inertial part and a damper hub resiliently coupled together by a torsion damper mechanism, and wherein the friction damping mechanism comprises a friction plate rotatably connected to the spline hub



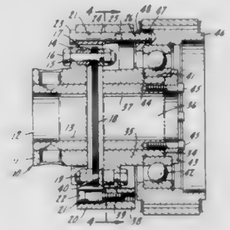
of the clutch disc, a friction member fixed to the friction plate which presses against a pressure surface provided on the damper hub only when the clutch disc engages the first flywheel and a spring member positioned between the friction plate and the spline hub to urge the friction plate and the friction member toward the second flywheel.

4,796,741
SYNCHRONIZER BLOCKER PIN MOUNTING STRUCTURE
John M. Loeffler, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio
Filed Dec. 11, 1987, Ser. No. 131,559
Int. Cl.[4] F16D *23/08*
U.S. Cl. 192—53 E 10 Claims



1. In a synchronizer assembly, a sychronizer friction ring and blocker pin subassembly characterized in that said blocker pin has a cylindrical shoulder thereon external of said friction ring, said friction ring has a cylindrical bore coaxial with said blocker pin and from about 0.0005" to 0.0015" smaller than said cylindrical shoulder, an extension of said cylindrical shoulder being pressed into said bore, a chordally extending groove in said bore, and a cross pin pressed into said chordally extending groove to lock said blocker pin in said bore.

4,796,742
FLEXIBLE CLUTCH DRIVE PULLEY ASSEMBLY
Gordon Etchell, Downers Grove, Ill., assignor to Pathfinder Graphic Associates Inc., Justice, Ill.
Filed Jun. 19, 1987, Ser. No. 63,816
Int. Cl.[4] F16D *11/00, 3/60*
U.S. Cl. 192—67 P 7 Claims



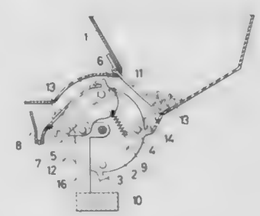
1. A flexible clutch drive pulley assembly including:
(a) a first half coupling connected to a drive shaft;
(b) a second half coupling connected to a driven shaft;
(c) a flexible connection between said half couplings accommodating misalignment between said drive shaft and said driven shaft;
(d) a bearing member mounted on said second half coupling;
(e) a pulley drum mounted for rotation on said bearing member;
(f) a slide ring mounted upon the periphery of said first half coupling for rotation therewith;
(g) a retractable drive connecting means carried by said ring and projecting into receptacles provided by said pulley drum for operatively connecting said pulley drum to said ring and said first half coupling for rotation therewith.

4,796,743
CLUTCH RELEASE BEARING ASSEMBLY
Stig Hallerback, Vastra Frolunda, Sweden, assignor to AB SKF, Gothenburg, Sweden
Filed May 8, 1987, Ser. No. 47,656
Claims priority, application Sweden, May 14, 1986, 8602185
Int. Cl.[4] F16D *23/14*
U.S. Cl. 192—98 1 Claim



1. A clutch release bearing assembly adapted to be connected to a cup spring member of a coupling, said bearing assembly comprising a bearing including an inner race ring having a generally cylindrical portion (4), said spring member (2) having a plurality of radially inwardly directed tongues having spaces therebetween, a plurality of radially outwardly extending projections (5) circumferentially spaced about the periphery of the cylindrical portion (4), the circumferential spacing of said projections (5) being such that they correspond to the spaces between said radial tongues and of a size to be axially displaceable therethrough, an annular member (7) having a plurality of circumferentially spaced catch fingers (6) each having a terminal end portion (6a) which extends axially in a first direction and is engageable in a respective space between the projections (5) and normally positioning the catch fingers to prevent relative rotation of said spring member (2) and cylindrical portion (4) wherein the tongues are aligned with the projections (5), said catch fingers being displaceable axially toward said bearing in a second direction opposite said first direction to a point where the terminal end portions (6a) disengage said spaces between said tongue to permit relative rotation of said spring member (2) and cylindrical portion (4) to a position where the tongues are aligned with the spaces between the projections (5) to permit disassembly of said bearing assembly from spring member (2) in said second axial direction.

4,796,744
APPARATUS FOR SEPARATING TEST STRIPS
Hans D. Sänger, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jul. 28, 1987, Ser. No. 78,661
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1986, 3625697
Int. Cl.[4] B65G *47/24*
U.S. Cl. 198—397 1 Claim



1. An apparatus for separating test strips, comprising:
a supply container for receiving a plurality of test strips randomly disposed therein, said supply container having an exit orifice;
a transport device, closely associated with said exit orifice, for separately transferring said test strips from said exit orifice to a guide chute, said transport device including a rotatably mounted roller plate and at least one hook-shaped driver extending from the periphery thereof, said hook-shaped driver defining a slot for receiving one of said test strips therein and for carrying said test strip from said exit orifice to said guide chute;
a pivotable bar, having a free end extending into said exit orifice, for selectively feeding said test strips into said exit orifice and for preventing blocking of said exit orifice;
said at least one hook-shaped driver of said roller plate having a nose portion configured to engage said bar as said roller plate is rotated to pivotably move said free end of said bar;
pawl means, pivotably mounted adjacent to said roller plate, for moving said test strip received in said slot of said driver toward said guide chute, and at least one bolt-like projection, extending from said roller plate, for pivoting said pawl means as said roller plate is rotated; and
return means, operably connected to said pawl means, for biasing said pawl means toward an initial position.

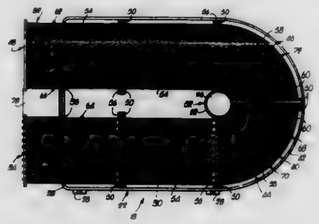
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,745

CONTINUOUS CONVEYING APPARATUS

Marshall Long, 11147 Old Harbour Rd., North Palm Beach, Fla. 33408

Division of Ser. No. 802,705, Nov. 29, 1985, Pat. No. 4,686,894.
This application Aug. 6, 1987, Ser. No. 82,835
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[4] B65Q *47/24*
U.S. Cl. 198—407 10 Claims



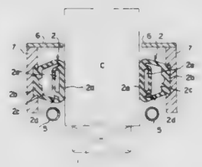
1. Conveying apparatus comprising:
a U-shaped, primary grid, presenting a pair of elongated, spaced legs and a bight having a pair of separate, arcuate sections;
conveyors for advancing items successively along one of said pair of legs, one of said arcuate sections, the other of said accurate sections and the other of said pair of legs,
said one of said accurate sections being higher than said other of said arcuate sections whereby the items invert as they fall from the one of said arcuate sections to the other of said arcuate sections at a zone of inversion and thereafter travel upside down,
said conveyors including a U-shaped secondary grid shiftable intermittently up and down relative to the primary grid for raising the items off the primary grid, said secondary grid having a pair of elongated, spaced legs corresponding to the legs of the primary grid and a pair of separate, arcuate, bight sections corresponding to said bight sections of the primary grid.

4,796,746

DEVICE FOR BRAKING ARTICLES TO BE CONVEYED ON A CONVEYER AND BRAKING RUBBER TUBES THEREFOR

Anders Bergstrom, and Gösta Sevrell, both of Lund, Sweden, assignors to AB Tetra Pak, Lund, Sweden

Filed Nov. 12, 1987, Ser. No. 119,645
Claims priority, application Japan, Nov. 13, 1986, 61-270397
Int. Cl.[4] B65G *47/29*
U.S. Cl. 198—463.4 4 Claims



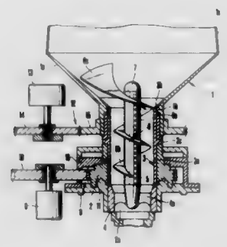
1. A device for braking articles conveyed on a conveyor comprising:
a pair of side walls extending along said conveyor;
a pair of inflatable rubber tubes of a predetermined length with flat braking surfaces adjacent said articles and along said conveyor, said rubber tubes being provided on the inside of said pair of side walls such that said articles on said conveyor can pass between said rubber tubes;
a means for inflating said pair of rubber tubes such that both sides of said articles are engaged by said rubber tubes when said rubber tubes are inflated; and
guide members for guiding said articles, said guide members being provided adjacent an upper portion of each of said pair of side walls and a lower portion of each of said rubber tubes.

4,796,747

FOODSTUFF DELIVERY MACHINE

Tokuji Kajiwara, Tokyo, Japan, assignor to Kajiwara Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1987, Ser. No. 24,415
Claims priority, application Japan, Mar. 14, 1986, 61-37337
Int. Cl.[4] B65G *47/20*
U.S. Cl. 198—535 7 Claims



1. A foodstuff delivery machine for use with delicate food products, such as bean jam, and for delivering the delicate food products without subjecting the delicate food product to undue compression forces, the delivery machine comprising:
a fixed machine frame;
a hopper rotatably supported on said fixed machine frame and having a lower tapered end portion;
a feed sleeve rotatably supported on said fixed machine frame and having an upper end rotatably connected to the lower tapered end portion of said hopper and a lower end communicating with an outer side of said fixed matching frame;
an upstanding stationary shaft fixed to said fixed machine frame;
a helical delivery blade fixedly secured to said stationary shaft and having a first helical blade portion fitted in said feed sleeve and a second helical blade portion fitted in the lower tapered end portion of said hopper, said second helical blade portion being continuous with said first helical blade portion and having a larger outer diameter;
a first drive mechanism arranged externally of said feed sleeve for rotating said feed sleeve in a given direction at a first speed; and
a second drive mechanism arranged externally of said hopper for rotating said hopper in the same direction as said feed sleeve at a second speed lower than said first speed.

4,796,748

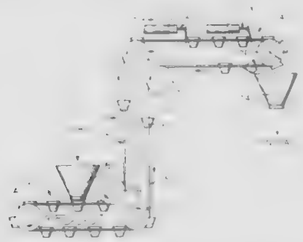
CONTINUOUS BUCKET CONVEYOR SYSTEM

William Manning, Burnaby, Canada, assignor to C-I-L Inc., North York, Canada

Filed Oct. 5, 1987, Ser. No. 104,296
Int. Cl.[4] B65G *17/36*
U.S. Cl. 198—711 1 Claim

1. An endless closed-loop continuous bucket conveyor elevator assembly not requiring internal lubrication comprising in combination:

one or more endless, free-running, guided flexible cables for carrying buckets pivotally attached at equidistantly spaced intervals therealong, said endless cables defining a first substantially horizontal bucket-charging section, a substantially vertical bucket-elevating section and a second substantially horizontal bucket-discharging section, and
driving means for continuously advancing the said cables



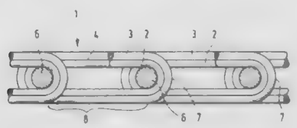
and attached buckets, the said driving means comprising at least two hydraulically or pneumatically operated, reciprocally-acting cylinder and piston combinations mounted adjacent the said cables and attached buckets, the said cylinder and piston combinations acting on the forward stroke of each said piston to successively engage one or more contact members attached to the said cables to continuously move the said cables and said buckets in a forward direction.

4,796,749

SPIRAL LINK BELT WITH COMPOSITE HELICES

Johannes Lefferts, Enschede, Netherlands, assignor to Siteg Siebtechnik GmbH, Ahaus-Alstatte, Fed. Rep. of Germany

Filed Nov. 6, 1987, Ser. No. 120,139
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1986, 3638036
Int. Cl.[4] B65G *17/06*
U.S. Cl. 198—851 7 Claims



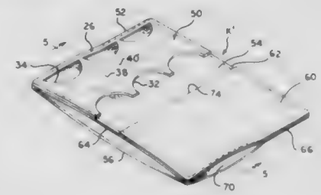
1. A spiral link belt comprising a multiplicity of synthetic resin helices comprised of flat winding legs and winding arcs, the winding arcs of a helix meshing in zipper fashion with the winding arcs of adjacent helices, and pintle wires inserted into the channels formed by the meshing winding arcs of each two helices, wherein a plurality of helices are each made of filament material which has at least two components which contact each other along an interface extending along the length of the helix, the helices being wound such that a first component is disposed on the inside of the helix and a second component is disposed on the outside of the helix.

4,796,750

SEPARATE KEYHOLDER APPARATUS AND SAME COMBINED WITH WALLET

Dan Ingham, Paddock Pl. at Vermont Ave., Toms River, N.J. 08753

Filed Jul. 31, 1987, Ser. No. 79,923
Int. Cl.[4] A45C *11/32*
U.S. Cl. 206—37.4 5 Claims



1. A compartmentalized receptacle comprising:
first rectangular means, having four sides, for forming first walls of compartments for keys;
second rectangular means, having four sides, for forming second walls of said compartments for said keys;
said first rectangular means and said second rectangular means being leathery;
three sides comprising two parallel sides and an end side on said second rectangular means, stitched to three sides of said first rectangular means;
a fourth side on said second rectangular means opposite and parallel to said end side;
said compartments delineated by parallel stitching including stitching between said two parallel sides and by diagonal stitching centered between said parallel stitching;
curvedly shaped cuts with secants formed in said second rectangular means symmetrically arranged to said parallel stitching;
said secants delineated by cuts adjacent and parallel to said stitching of said end side and along said fourth side;
fold means bisecting said first rectangular means with said second rectangular means on at least one side of said fold means;
abutment means for limiting travel of said keys out of said compartments comprising said secants delineated by cuts and said fold means.

4,796,751

PORTABLE EYEGLASS CLEANING DEVICE

Catherine M. Madkour, 7117 Fort Hamilton Pkwy., Brooklyn, N.Y. 11228

Filed Mar. 28, 1988, Ser. No. 174,191
Int. Cl.[4] B65D *81/22*
U.S. Cl. 206—223 12 Claims



1. A portable kit for cleaning eyeglass lenses which comprises:
a flat container hvaing two separate openable compartments including a first compartment containing an eyeglass lens cleaning media capable of cleaning eyeglass lenses without deteriorating the lens and a second compartment containing an eyeglass lens wiping media capable of wip-

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ing eyeglass lenses cleaned by said lens cleaning media without affecting viewing through the lens.

7. A portable eyeglass lens cleaning product comprising:

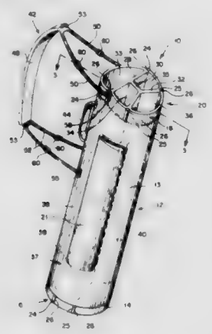
a flat, flexible container having two separate air-tight openable compartments with a common wall therebetween, a first of said compartments containing a moistened absorbent eyeglass lens cleaning material capable of cleaning eyeglass lenses without deterioriating or adversely effecting the eyeglass lens, and a second of said compartments containing a dry lens wiping material capable of wiping eyeglass lenses cleaned by said lens cleaning material without affecting viewing through the lens.

4,796,752

CART BAG FOR GOLF

Eric W. Reimers, 235 N. First St., Missoula, Mont. 59802

Filed Dec. 2, 1987, Ser. No. 127,809
Int. Cl.[4] A63B *55/00*
U.S. Cl. 206—315.3 16 Claims



1. A golf bag device, specifically adapted for being carried on a powered or pull type cart device, comprising:

a bag portion generally in the form of an elongated holow cylinder; and

carrying means for enabling a user to lift and carry the bag portion;

wherein, the bag portion includes:

a base plate;

a collar including a peripheral frame and a plurality of apertures formed axially therethrough for receiving the shafts of golf clubs;

a plurality of rigid elongated stays extending axially from the peripheral portion of said base plate to the peripheral portion of said collar, said stays maintaining axial separation between said base plate and said collar;

a flexible tube stretched about the radial exterior of said stays and being attached to said base plate and said collar so as to form therewith said elongated hollow cylinder, with said stays situated within said cylinder; and wherein

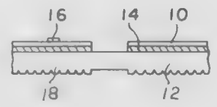
the carrying means is in the form of a strap assembly attached both to said collar and to points on one or more of said stays axially displaced from said collar, such that said strap assembly is situated in the rear of the bag, said strap assembly including an upper webbing having a loop which passes through a cross member formed in said collar, a padded portion for receiving the golfer's shoulder during carrying, attached to said upper webbing, and a lower webbing extending downward from said padded portion and being attached to one or more of said stays.

4,796,753

CASING FOR MAGNETIC RECORDING MEDIUM AND PREPARATION THEREOF

Tatsuo Fujii, Saku, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Mar. 14, 1986, Ser. No. 839,534
Claims priority, application Japan, Apr. 5, 1985, 60-51179[U]; Apr. 8, 1985, 60-74129; Jan. 7, 1986, 61-000500[U]; Jan. 8, 1986, 61-001890
The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.
Int. Cl.[4] B65D *85/672*
U.S. Cl. 206—387 2 Claims



1. A casing for magnetic recording medium having a laminated structure in which a printed plastic film is bonded on one surface of a raw plastic sheet of the same material with its printed surface directing outside and wherein an anchor coating layer compatible with said raw plastic sheet is formed on said printed plastic film, wherein the inner surface of the casing has been modified by a lattice-like embossing treatment.

4,796,754

OPEN-ENDED MULTIPAK WITH CARRYING STRAP AND METHOD

Jean Chaussadas, Deols, and Philippe Le Bras, Chateauroux, both of France, assignors to The Mead Corporation, Dayton, Ohio

Filed Feb. 4, 1988, Ser. No. 152,267
Claims priority, application United Kingdom, Feb. 10, 1987, #7702976
Int. Cl.[4] B65D *65/00*
U.S. Cl. 206—434 14 Claims



12. A method of forming a package of cylindrical or oval articles comprising a central group of articles and outer groups of articles disposed on both sides of said central group and being held together by first and second securing means, said method comprising the steps of forming a first group of articles and applying thereto a first securing means in the form of a loosely fitting endless band or strap encircling said first group and disposed along the sides of said articles, positioning auxiliary groups of articles one on either side of the central group in abutting nested relationship with respect to the articles in said central group whereby said first securing means is tightened so as to closely embrace the articles in said central group, applying a second securing means to said consolidated groups to maintain the articles of the auxiliary groups in their abutting nested relationship with respect to the articles in said central group.

4,796,755

MEANS AND METHOD OF PROTECTING DATA STORED ON OPTICAL OF MAGNETIC MEDIA OR VARIOUS SIZES AND SHAPES

Angelo M. Ardenti, 10123 Woodbury Dr. Apt. 312, Manassas, Va. 22110

Filed Feb. 3, 1987, Ser. No. 10,531
Int. Cl.[4] B65D *85/57*
U.S. Cl. 206—444 32 Claims



1. A magnetic or optical media transporting and storing system adapted to selectively receive magnetic or optical media of various sizes and shapes comprising:

(A) a holder adapted to selectively receive and securely support a multiplicity of individual magnetic or optical media receptacles in at least one arranged row, said holder including

(1) a monolithic disposable element which includes a base having ends and sides and a length as measured between said ends which is essentially equal to but just slightly greater than the longest media receptacle to be carried in said holder, and a width as measured between said sides which substantially exceeds the thickness of any media receptacle to be carried in said holder,

(2) a hinge on each of said base ends,

(3) an end flap connected to each of said hinges to be movable into a position which is substantially upright with respect to said element base to define a U-shape for said disposable element,

(4) a plurality of end flap track forming elements positioned on each of said end flaps with track defining elements in one of said end flaps cooperating with track defining elements in the other of said end flaps to define a plurality of media receptacle receiving tracks for securely supporting said media receptacles on said disposable element;

(B) a container for accommodating said holder, said container including a container bottom and container sides and ends which are attached to said container bottom to form an open-topped configuration, said container being sized so that said holder is removably receivable and securely held in said container;

(C) a shield means having a bottom, sides and ends which cooperate to form an open-topped configuration, said shield means being formed of material which prevents magnetic energy from passing therethrough and reaching any objects located within said shield means and being sized to removably receive said container therewithin; and

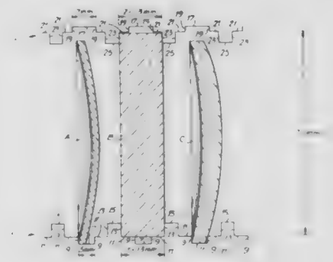
(D) a carrying case having a bottom compartment forming means which includes a bottom, front and rear sides and ends which cooperate to form an open-topped bottom compartment and a top compartment forming means having top front, rear and end portions which cooperate to form a top compartment, and connecting means for connecting said top compartment forming means to said bottom compartment forming means, said top and bottom compartment forming means each being sized to removably receive and securely hold a shield means and being adapted to cooperate to form a closed carrying case for said media receptacles.

4,796,756

OPTICAL LENS CARRIER

William M. Ott, St. Petersburg, Fla., assignor to Silor Optical of Florida, Inc., St. Petersburg, Fla.

Filed Apr. 11, 1988, Ser. No. 180,225
Int. Cl.[4] B65D *85/48*
U.S. Cl. 206—454 13 Claims



1. A lens-carrying device adapted to receive and retain a plurality of optical lenses having a predetermined range of thicknesses in a spaced-apart non-contacting relations, comprising

a first tray having a plurality of longitudinally-spaced side-by-side cavities;

a second tray having a plurality of longitudinally-spaced side-by-side cavities;

said first and second trays being releasably engagable such that the plurality of first tray cavities and plurality of second tray cavities are juxtaposed in mirror relation opposite each other to define a plurality of side-by-side lens-carrying chambers for receiving and retaining a plurality of optical lenses in side-by-side non-contacting relation;

each of said chambers having a central peripheral slot for supporting on edge an optical lens having a thickness up to a first predetermined value, lateral step means adjacent said central peripheral slot for supporting on edge above said central peripheral slot an optical lens having a thickness greater than said first predetermined value and up to a maximum predetermined value and divider means adjacent said lateral means for preventing contact between lenses in adjacent chambers.

4,796,757

VESSEL

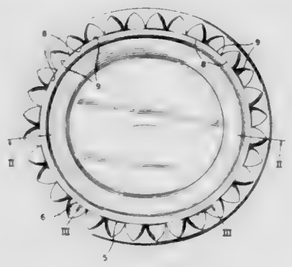
Karl E. Strunkmann-Meister, 40, Clemenstr. 78, F.R.G., 8000 Munich, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 55,887
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1986, 3618507
Int. Cl.[4] B65D *21/00, 85/30*
U.S. Cl. 206—509 33 Claims

1. Vessel comprising vessel components, the vessel component having rims on which profiles are arranged such that the profiles of two vessel components positioned one on the other and facing each other, interlock positively, the profiles being elevations and depressions having an arc shape in a cross-sec-

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tion parallel to the rim, the elevations protruding from the rim in a cross-section along the longitudinal direction of the elevations, and the depressions merging into the rim in a cross section along the longitudinal direction of the depressions, the



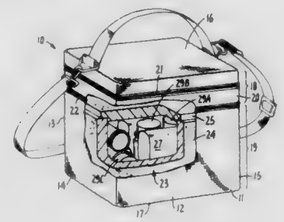
profiles having on one end cheeks essentially perpendicular to the rim and at their remaining sides steplessly merging into the rim, the surfaces of the cheeks being essentially perpendicuair to a connecting line between a center of the vessel component and a center of the cheeks.

4,796,758

ASSEMBLY FOR STORAGE, TRANSPORTATION AND CHILLING OF EXPRESSED HUMAN MILK

David Hauk, 183 Florence Ave., Oakland, Calif. 94618

Filed Sep. 2, 1987, Ser. No. 92,166
Int. Cl.[4] B65D *81/38*
U.S. Cl. 206—545 **1 Claim**



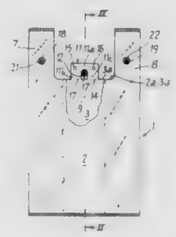
1. An improved storage assembly for storage, transportation and chilling of expressed human milk comprising:
- a plurality of thermally conductive storage bottles each substantially rectangular in horizontal cross-section to provide at least a pair of broad sides for conduction cooling of the contents of said bottles;
- a plurality of coolant bags for chilling said storage bottles, said bags positioned in contact with both of the broad sides of at least a plurality of said bottles;
- a foam insulated chest having a chamber for housing said bottles and said bags;
- said chamber, said storage bottles and said bags dimensioned to provide direct contact between at least a plurality of said bags with at least a plurality of said bottles;
- a fitted lid for closing said chamber;
- a carrying case having:
  - a front and a back panel, two sides panels, a top panel and a bottom panel;
  - a wall panel joined to the front, back and side panels dividing the case into a first compartment containing said chest and a second compartment having capacity to store and transport a breast pump;
  - a zipper below said wall pump extending around said front and said side panels and portions on opposite sides of said back panel providing access into said first compartment; and
- means for providing access to said second compartment.

4,796,759

BUNDLE OF SUPPLE BAGS, MADE OF FINE MATERIAL SUCH AS PLASTICS MATERIAL OR PAPER

Jacques Schisler, Thouars, France, assignor to C.E.E. Compagnie Europeene des Emballages, Thouars, France

Filed Dec. 29, 1987, Ser. No. 139,306
Int. Cl.[4] B65D *27/10*
U.S. Cl. 206—554 **15 Claims**



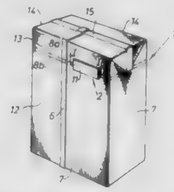
1. A bundle of supple bags for carrying articles, in which each said bag comprises:
- a front and a rear principal wall defining a volume which presents a bottom and an upper opening;
- each said principal wall including a pair of spaced lateral handles having aligned holes therethrough, the superimposed bags of the bundle being adapted to be supported by at least two parallel rods passing through said holes;
- said bags being joined in series by a separable connection of each of their two principal walls with the adjacent principal wall of an adjacent bag, in the vicinity of said opening, the assembly being such that the first bag is removed by pulling thereon in the direction of superposition in order to separate the first bag from the following by destroying said connection, such removal being accompanied by a spacing apart of the principal walls of the following bag due to said pulling, wherein the separable connection is constituted by a glued or welded localized zone below the center of the edge of the opening; and
- each said bag comprises, above this glued or welded localized zone and between said lateral handles, a single support tongue having an elongated opening and base portions on each side of said elongated opening, said base portions being joined in separable manner to at least one of said principal walls of said bag, considering the direction of removal, the base portions of said tongue being joined to the edge of said one principal wall defining the opening of the bag and forming at least one central hole for the passage of another rod separate and apart from said at least two parallel rods;
- said elongated opening defining said central hole terminating at the upper edge of said principal wall to which said base portions are connected.

4,796,760

PACKING CONTAINER PROVIDED WITH OPENING ARRANGEMENT

Hans Rausing, Wadhurst, England, assignor to AB Tetra Pak, Lund, Sweden

Filed Feb. 26, 1987, Ser. No. 19,171
Claims priority, application United Kingdom, Mar. 4, 1986, 8605323
Int. Cl.[4] B65D *5/54*
U.S. Cl. 206—606 **8 Claims**



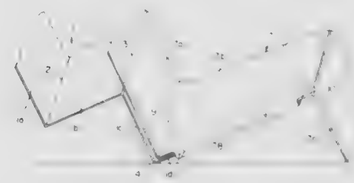
1. In a packing container, an opening arrangement comprising:
- a wall portion having an interior surface and a pair of spaced tearing perforations arranged to define a strip of wall material therebetween;
- a hole interconnecting said pair of spaced tearing perforations, said strip adjacent said hole being formed as a tongue, said hole being bordered by two edges extending from points of connection of the tongue to the lines of tearing perforations and converging towards a single point, the tongue and the two edges together forming the borders of the hole;
- a cover strips sealed to said wall portion and extending across said wall strip and over said hole; and
- a first thin liquid tight plastics film sealed to said interior surface of said wall portion and covering said hole, a portion of the cover strip exposed to the hole being sealed to the immediately underlying plastics film.

4,796,761

MODULABLE OBLIQUE BIN

René Hermelin, Trie sur Baise, France, assignor to Services Equipments France (S.E.F.), Paris, France

Filed Apr. 23, 1984, Ser. No. 603,024
Claims priority, application France, Apr. 22, 1983, 83 06679
Int. Cl.[4] B42F *17/00*
U.S. Cl. 211—11 **1 Claim**



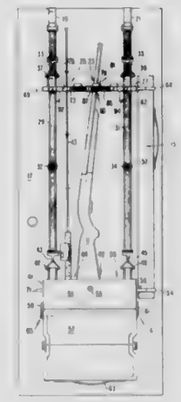
1. A series of compartments forming a bin comprising:
- a container consisting of two parallel vertical walls connected to each other at the lower ends thereof by a horizontal wall;
- a plurality of obliquely-oriented divider units nested together and disposed within said container, each dividing unit comprising first, second, third and fourth planar sections connected together in series in end-to-end relationship to form a unit having a W-shaped cross-section, with adjacent sections being at right angles to each other and forming inner and outer corners at the intersection of said sections, said first section extending obliquely upward from the horizontal wall and being the longest of the four sections, said second section being next longest, and the third section being the shortest section, the inner corner formed by the intersection of said third and said fourth sections of the units receiving the outer corner formed by the intersection of said first and second sections of the next succeeding divider unit; and
- a final divider unit nesting against the last of the divider units having a W-shaped cross-section consisting of first, second and third planar sections which are analogous to the first, second and third sections, respectively, of the units having a W-shaped cross-section, said second section of the final divider unit being provided with a pair of lateral guide means for retaining the fourth section of the immediately preceding divider unit against the lower surface of said second section of the final divider unit.

4,796,762

STORAGE RACK

Donel G. Law, R.R. 1, Box 232B, Tipton, Ind. 46072

Filed Jun. 24, 1987, Ser. No. 65,842
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—64 **24 Claims**



1. A storage rack for holding generally elongated gear having an upper and a lower end comprising:
- a pair of generally vertical suspension members;
- a first support member at least partially suspended by said suspension members and adapted to receive the lower end of the gear to be stored;
- a second support member at least partially suspended by said suspension members and adapted to receive the upper end of the gear to be stored; and
- a fishing tackle box removably suspended below said generally vertical suspension members.

4,796,763

MODULAR DISPLAY

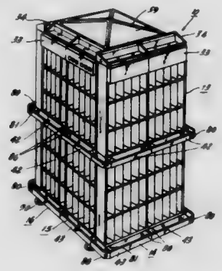
Robert P. Franklin, Lake Hopatcong, and John LaRocca, Fairfield, both of N.J., assignors to Trans-World Marketing Corporation, East Rutherford, N.J.

Filed Dec. 16, 1986, Ser. No. 942,525
Int. Cl.[4] A47F *3/14*
U.S. Cl. 211—133 **21 Claims**

1. A free standing display rack including:
- first, second, third and fourth modules each having a generally closed rear, a generally open front and sides extending forward from opposite vertical side edges of said rear;

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said first and second modules being secured together in sideways alignment, said third module having a side thereof positioned adjacent to said first module at its said rear with the front of said third module being generally coplanar with a side of said first module remote from said second module, and said fourth module having a side thereof positioned adjacent to said second module at its



said rear with the front of the fourth module being generally coplanar with a side of said second module remote from said first module;

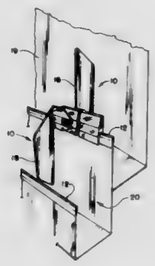
each of said modules including a first pan, a second pan positioned above said first pan and in vertical alignment therewith, a frame having a portion disposed at the rear of said module and having said first and second pans secured thereto.

4,796,764

DIVIDER FOR MERCHANDISE DISPLAY

Stephen N. Hardy, Copley, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio

Filed Oct. 22, 1987, Ser. No. 112,668
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—184 **26 Claims**



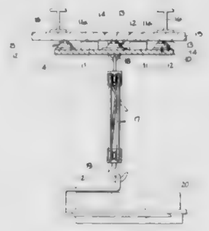
1. Apparatus comprising a merchandise display including a display wall with display spaces defined on each side of the display wall, and a pair of identical dividers for dividing the display spaces into segments; each of the identical dividers having attachment means for engaging the display wall and a divider tongue extending longitudinally from the attachment means for extending into the display spaces for dividing the display spaces into segments; the attachment means and the divider tongues being designed to enable both divider tongues to extend simultaneously into the display spaces on each side of the display wall at any desired location over the entire length of the display wall.

4,796,765

PERMANENT MAGNET TRANSPORTER

Jimmy Mayne, Goshen, Ohio, assignor to Chase Industries, Inc., Cincinnati, Ohio

Filed Sep. 2, 1987, Ser. No. 92,048
Int. Cl.[4] B66C *17/00*
U.S. Cl. 212—205 **10 Claims**



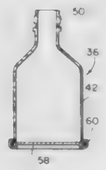
1. A permanent magnet transporter for use with an iron or steel sheet structure having a horizontal downwardly facing supporting surface, said transporter comprising a frame member having upper and lower surfaces, a plurality of bipolar permanent magnets mounted on the upper surface of said frame member so as to project upwardly therefrom and having planar upper surfaces in close proximity to but not in contact with said supporting surface, a plurality of rollers mounted on said upper surface of said frame member and projecting upwardly therefrom into contact with said supporting surface, said rollers permitting movement of said transporter in any direction across said supporting surface, and means connected to the lower surface of said frame member for attachment to and support of a load.

4,796,766

PLASTIC CONTAINER AND METHOD OF FORMING SAME

Richard E. Clark, Merrimack, N.H., assignor to The Continental Group, Inc., Norwalk, Conn.

Filed Apr. 1, 1982, Ser. No. 364,563
Int. Cl.[4] B65D *1/02, 1/06*; B29C *49/16, 49/17*
U.S. Cl. 215—1 C **18 Claims**



1. A method of simultaneously forming two blow molded plastic containers, said method comprising the steps of providing a tubular preform having an open end and a closed end, placing said preform in a blow mold cavity of greater length than said preform, introducing a blowing gas into said preform through said preform open end and blow molding said preform with the stretching of said preform both axially and radially to an intermediate shape defining at least two containers each having an open end defined by a radially outwardly directed biaxially oriented seaming flange with said flanges being generally in opposed relation, said preform open end remaining constant, and cutting said intermediate shape to separate and define said two containers.

11. An intermediate article of manufacture comprising an integral blow molded hollow plastic member having an open neck portion and at least two separate containers integrally joined together, and each of said containers has an open end defined by a biaxially oriented seaming flange.

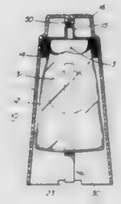
17. A blow molded plastic container comprising a biaxially oriented tubular body having one end open and a second end defined by a shoulder joined to a tubular neck, and a metal bottom seamed to said body enclosing said one open end, said tubular neck being of an injection molded construction.

4,796,767

PRESSURE APPLICATOR

Frank R. McKeown, 1044 Kennedy Road, Scarborough, Ontario, Canada M1P 2K6

Filed Sep. 8, 1987, Ser. No. 93,723
Claims priority, application Canada, Jul. 8, 1987, 541604
Int. Cl.[4] A61J *9/00*
U.S. Cl. 215—11.1 **19 Claims**



1. Apparatus for expelling air from a flaccid container carried within a nursing bottle having open ends and a nipple disposed at one end in communication with an outlet of the container, comprising in combination:

a pushrod member with elongated narrow sides adapted to lie unobtrusively along a side wall of the bottle in removably storable relation therewith;

attachment means disposed cooperatively between the bottle and member for detachably fastening the latter at a plurality of positions thereon to the side wall of the bottle; and

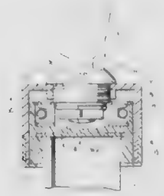
pad means disposed substantially orthogonally at one end of the pushrod member interiorly of the free end of the bottle for supportively engaging an external surface of the container by applying a restraining force thereagainst, whereby the container is collapsed to expel air contained therein when the restraining force is exceeded.

4,796,768

LOCKABLE CLOSURE CAP

William C. Stuckey, 1503 Virginia Street, E., Charleston, W. Va. 25311

Filed Jan. 26, 1988, Ser. No. 148,468
Int. Cl.[4] B65D *55/14*
U.S. Cl. 215—207 **6 Claims**



1. A lockable closure for bottles and containers having a neck and external threads formed on said neck,

a closure cap having internal threads coacting with said external threads to seal said bottle, and an annular cylindrical clutch element projecting from integrally formed with said closure cap and rotatable therewith,

an annular shell housing having an annular skirt, said skirt having an axial length equal to or greater than the axial length of said closure cap and enclosing same to prevent external twisting access to said closure cap when engaged with the external threads on said neck,

annular rib means extending from one of said annular shell and said closure cap and a coacting shoulder on the other one of said annular shell and said closure cap for retaining said closure cap within said annular shell, and

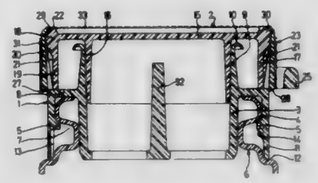
said annular shell housing having a lock receiving wall at one end thereof and a lock mechanism secured in said lock receiving wall, said lock mechanism having laterally movable clutch shoe means operable to extend laterally to drivingly engage and disengage with said annular cylindrical clutch element upon operation of said lock mechanism.

4,796,769

TAMPER-PROOF POURER AND STOPPER CAP ASSEMBLY

Jacques Obadia, Paris, France, assignor to RICAL S.A., Longvic, France

Filed Jun. 22, 1987, Ser. No. 64,561
Claims priority, application France, Jun. 26, 1986, 86 09302
Int. Cl.[4] B65D *41/48*
U.S. Cl. 215—232 **17 Claims**



1. A pourer and stopper cap assembly molded from plastic material for bottles and similar receptacles, including in combination

a pourer for fastening to a bottle neck or a similar receptacle orifice, said pourer comprising an inner annular skirt adapted for fitting inside a said neck, an outer annular skirt adapted for fitting outside said neck, and an annular connecting portion joining said two skirts at their upper end, said connecting portion having a spout projecting upwardly from said connecting portion, said spout being substantially an extension of said inner skirt, and

a cap comprising an upper circular end wall and, projecting downwardly from said end wall, an inner annular skirt and an outer annular skirt at the outer edge of said end wall so that when said cap is fitted on said pourer, said cap's inner skirt is forced into said pourer spout and said cap's outer skirt surrounds said spout with its lower end bearing against said connecting portion of said pourer, said end wall of said cap having on its upper face an annular shoulder offset inwardly from the outer edge of said end wall,

said pourer also having an annular tear-off guarantee strip integrally molded with said pourer, said strip being connected by a peripheral weakening line to said connecting portion of said pourer, said strip extending from said connecting portion upwardly around said cap's outer skirt over the entire height of said cap's outer skirt, and being provided at its upper end, when molded, with an annular turned-in portion which surrounds said outer edge of said end wall of said cap and bears against said annular shoulder of said end wall, the height of said shoulder being at

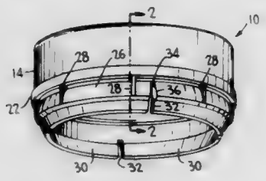
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least equal to the thickness of said guarantee strip at said turned-in portion.

4,796,770
MOLDED PLASTIC CLOSURE WITH SPLIT SKIRT TAMPERBAND

Douglas G. Begley, Palatine, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Oct. 5, 1987, Ser. No. 104,075
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—252 **12 Claims**



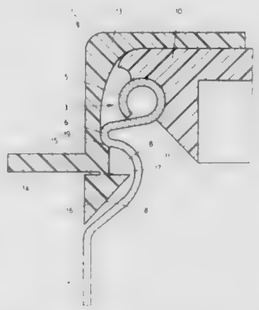
1. A molded plastic closure comprising an inverted cup-shaped part including a skirt and an end panel, means for attachment to a container carried by said skirt, and tamper indicating means carried by said skirt in depending relation, said tamper indicating means including a tamper indicating band permanently hingedly connected to said skirt, for radially outward expansion, said tamper indicating band having formed therein at least one axial line of weakening forming means wherein said tamper indicating band is subject to axial splitting and radial expansion in response to radially outwardly directed forces, and a plurality of separate flaps hingedly connected to said tamper indicating band remote from said skirt, hinge connections between said flaps and said tamper indicating band permitting generally reverse folding of said flaps from a downwardly directed position to an upstanding position whereby free edges of said flaps may engage a retaining bead on a container neck finish and swing towards a transverse intermediate position during removal of said closure hinging said tamper indicating band radially outwardly to permit complete removal of said closure.

4,796,771
SECURITY CLOSURE LID AND CONTAINER PROVIDED WITH SUCH LID

Friedrich Stettler, Hauptstr. 116, 8264 Eschenz, Switzerland

Continuation of Ser. No. 887,241, Jul. 18, 1986, abandoned. This application Jan. 11, 1988, Ser. No. 143,316
Claims priority, application Switzerland, Jul. 18, 1985, 3117/85; Jun. 25, 1986, 2550/86
Int. Cl.[4] B65D *41/48*
U.S. Cl. 215—253 **11 Claims**

6. In combination, a container and a lid for the container;
the container having an open mouth and having an annular locking bead around the open mouth;
the lid being shaped for closing the open mouth;
the lid having a peripheral edge; a security strip attached at the peripheral edge, the strip being shaped for passing over the locking bead at the mouth of the container when the lid is applied to the container and for engaging beneath the locking bead for preventing removal of the lid from the container;
the security strip being connected to the lid through a reduced thickness neck which is thinner than both the lid and the security strip which the neck joins; the security strip having an outward surface which is radially outward of the container and of the neck of the security strip and is placed for abutting the edge of the lid if the security strip is attempted to be pivoted outwardly from the container around the neck; the security strip having an inward surface which is radially inward of the neck and which is shaped for contacting the locking bead around the container when it is attempted to raise the lid from the container, which attempts to pivot the security strip outwardly and brings the outward surface of the security strip into abutment against the peripheral edge of the lid for preventing such pivoting of the security strip; the

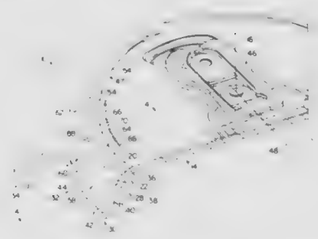


security strip further including an entrance surface which is both downwardly and radially outwardly inclined at the underside of the security strip for engaging the locking bead upon the lid being applied to the container, and such engagement urges both the security strip and the attached lid outwardly temporarily for enabling the security strip to pass the locking bead enabling the lid to be applied to the container.

4,796,772
METAL CLOSURE WITH CIRCUMFERENTIALLY-VARIEGATED STRENGTHENING

Tuan A. Nguyen, Thornton, Colo., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 91,690, Sep. 7, 1987, abandoned. This application Apr. 14, 1988, Ser. No. 183,498
Int. Cl.[4] B65D *8/08*
U.S. Cl. 220—66 **53 Claims**

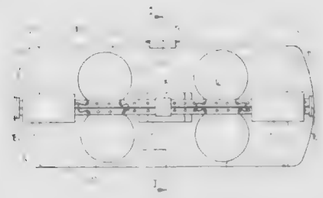


1. A container closure which comprises:
an inner portion having a perimeter;
an outer portion being disposed perimetrically around said inner portion and being spaced outwardly therefrom;
a connecting portion being disposed perimetrically between said inner and outer portions and being integral with both of said portions; and
circumferentially-variegated strengthening means, comprising a selected part of said closure that generally follows the contour of said perimeter, for strengthening said container closure.

4,796,773
TRANSPORT TANK INCLUDING SLOSH GUARD ELEMENTS

Helmut Gerhard, Weitefeld, Fed. Rep. of Germany, assignor to Westerwaelder Eisenwerk Gerhard GmbH, Weitefeld, Fed. Rep. of Germany

PCT No. PCT/DE86/00341, § 371 Date Jun. 23, 1987, § 102(e) Date Jun. 23, 1987, PCT Pub. No. WO87/01101, PCT Pub. Date Feb. 26, 1987
PCT Filed Aug. 25, 1986, Ser. No. 44,029
Int. Cl.[4] B65D *1/24*
U.S. Cl. 220—22 **26 Claims**

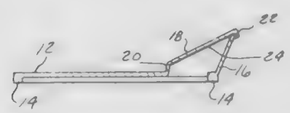


1. A slosh guard arrangement for transporting liquids and the like of the type including cylindrical wall means closed at both axial ends to form a cylindrical tank, and a manhole extending radially through the cylindrical tank wall means, said man hole having a cross-sectional size substantially smaller than the cylindrical cross-section of the tank, said slosh guard arrangement comprising:
slosh guard elements exhibiting liquid movement dampening surfaces,
and slosh guard element retaining means for retaining said slosh guard elements in position inside the tank with liquid movement dampening surfaces of said slosh guard elements extending transversely to the longitudinal axis of the tank,
wherein said slosh guard elements and said slosh guard element retaining means are dimensioned and configured to be insertable into the tank and assembled into their operative positions via the manhole without disturbing the remaining structure of the tank.

4,796,774
REMOVABLE AND RESEALABLE LID FOR A CONTAINER

Richard Nabinger, Utica, Mich., assignor to The Answer Company, Warren, Mich.

Filed Jul. 16, 1987, Ser. No. 74,065
Int. Cl.[4] A47G *19/22*
U.S. Cl. 220—90.4 **2 Claims**

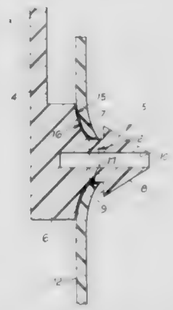


1. A resealable container cover for engagement with a container comprising:
a resilient flat member having a downwardly extending sealing lip, integrally formed on the circumference thereof for sealing engagement with the outer rim of the container top;
a spout forming a generally rectangular opening through said flat member, integrally formed on the top surface of said flat member, having a flat pouring surface extending angularly upwardly from said top surface and beyond the circumference of said flat member, and having a spout sealing ridge, extending outwardly about the circumference of said spout opening;
a spout cover, pivotally mounted to the radially inward edge of said spout opening, having a downwardly extending sealing lip, integrally formed on the circumference thereof, for sealing engagement with said spout sealing ridge of said spout when pivoted into a closed position; and
hinge means integrally formed between said spout and said spout cover at said radially inward edge of said spout opening.

4,796,775
CONTAINER WITH HANDLE

Henryk Dudzik, Mansfield, United Kingdom, assignor to Mardon Illingworth Limited, Nottinghamshire, United Kingdom

Filed Nov. 23, 1987, Ser. No. 123,898
Claims priority, application United Kingdom, Nov. 28, 1986, 8628469
Int. Cl.[4] B65D *25/32*
U.S. Cl. 220—92 **7 Claims**



1. An injection molded plastic container comprising a body having a base and a peripheral wall, said peripheral wall having marginal parts defining a pair of opposite holes passing through said wall and open to the interior of the body; a separately formed bail handle having a projection adjacent each end, the projections extending towards each other and engaging in said holes to mount the handle pivotally on the body, each projection having a cylindrical shank push-fitted in a corresponding hole and directly engaged in said hole, the diameter of each hole in the as-molded state being less than the external diameter of the shank, wherein the marginal parts are inwardly deformed to define a frusto-conical shape, whereby the marginal part of the peripheral wall around the hole is inwardly deformed by the projection and is stressed under compression so as sealingly to grip the shank so that the marginal part is clamped on the shank to form a liquid tight seal.

4,796,776
PRESSURE COOKER FOR MICROWAVE OVENS

H. David Dalquist, Minnetonka; Jorgen A. Jorgensen, Bloomington; Lloyd G. Keleny, Champlin; Donald W. Nygren, and John N. Taylor, both of St. Louis Park, all of Minn., assignors to Northland Aluminum Products, Inc., Minneapolis, Minn.

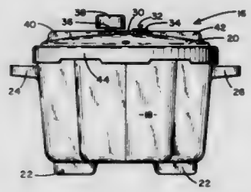
Filed Feb. 19, 1987, Ser. No. 16,632
Int. Cl.[4] B60L *1/02*; B65D *51/16*
U.S. Cl. 220—203 **17 Claims**

1. A pressure cooker including:
a housing including a container open at its top and a cover adapted for a sealing engagement with said container to close the housing, means forming a valve opening through said cover, and a fastening means for releasably maintaining said container and cover in said sealing engagement

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responsive to movement of said cover, relative to said container, to a locking position;

a flexible valve means, mounted with respect to said valve opening, for providing a fluid path between the interior and exterior of said housing, said valve means including a valve portion extended into said interior; and



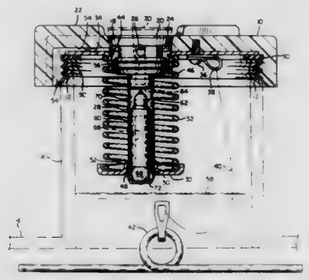
at least one closure projection integral with said container; said valve portion being positioned to contact one of said closure projections as said cover is moved toward said locking position; and, responsive to further movement of said cover toward the locking position, elastically deforming to close said fluid path and permit the maintenance of a positive pressure in said housing interior.

4,796,777

VENTED FUEL TANK CAP AND VALVE ASSEMBLY

Russell D. Keller, 149 N. Lotus Beach Dr., Portland, Oreg. 97217

Filed Dec. 28, 1987, Ser. No. 138,150
Int. Cl.[4] B65D *45/00*
U.S. Cl. 220—203 **20 Claims**



1. Vented tank cap apparatus comprising:

cap means for closing a liquid fill opening of a liquid container tank, said cap means including a cap member for covering said fill opening and having a main vent opening therethrough;

valve means for closing said main vent opening, said valve means including a main valve member mounted on said cap member for normally closing said main vent opening in a closed position;

resilient closure means for resiliently urging said main valve member into said closed position but allowing it to open when the pressure within said tank exceeds a predetermined pressure; and

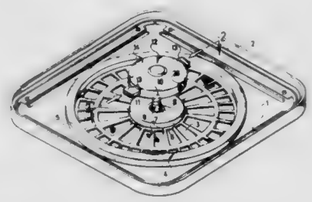
fusible means operatively coupled to the main valve member for closing the main vent opening and for releasing said main valve member and enabling it to move from said closed position to an open position when said fusible means melts.

4,796,778

LOCKING MECHANISM

Klaus Hilbig; Wolfgang Taschner, both of Tuttlingen, and Wilfried Wölfle, Bad Dürrheim, all of Fed. Rep. of Germany, assignors to Aesculap-Werke AG vormals Jetter & Scheerer, Fed. Rep. of Germany

Filed Mar. 21, 1988, Ser. No. 176,366
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1987, 3710049
Int. Cl.[4] B65D *45/00*
U.S. Cl. 220—315 **15 Claims**



1. A locking mechanism, in particular, for fixing filter holders on sterilizing containers, comprising:

a housing in which a locking member is displaceable between two end positions, said locking member engaging behind a locking projection in the first end position and releasing it in the second end position,

a spring means which biases said locking member in the direction towards said first end position, and

an actuating member which can be pushed into said housing in order to displace said locking member,

characterized in that:

a second actuating member (**13**; **50**, **51**; **71**, **72**) which can be pushed into said housing is provided,

and in that:

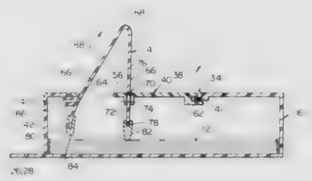
said actuating members (**13**; **50**, **51**; **71**, **72**) protrude from said housing (**14**; **30**; **62**) on opposite sides thereof and are actuatable by displacement in the direction towards the respective other actuating member, said locking mechanism (**12**) only being unlockable if both actuating members are actuated.

4,796,779

COMBINED FILTER HOUSING AND EXTRACTOR

Charles A. Mamolou, 5 Princeton Dr., Bordentown, N.J. 08505

Filed Jan. 11, 1988, Ser. No. 142,010
Int. Cl.[4] B65H *3/00*
U.S. Cl. 221—36 **7 Claims**



1. A combined filter housing and extractor comprising:

(a) filter storage means capable of holding a plurality of conically-shaped filters collapsed into a generally pie-shaped configuration therein, said storage means including;

(i) a hollow generally pie-shaped housing having a top surface provided with a generally pie-shaped opening,

(ii) a bottom surface,

(iii) side walls,

(iv) a small end wall, and

(v) a larger open end through which said plurality of filters may be introduced;

(b) generally pie-shaped cover means for covering said top surface opening, said cover means including;

(i) cover retaining means disposed proximate the larger end thereof for cooperating with said housing means opening releasably retaining said cover means in said housing means opening,

(ii) a major opening and a minor opening, and

(iii) guide means disposed about said minor opening; and

(c) extractor means including;

(i) a V-shaped member having a pair of arms adapted to cooperate with each other by flexing under pressure, one arm of said pair of arms being slidably received into said cover means minor opening for movement perpendicular to said cover means as determined by said guide means, the other arm of said pair of arms being inserted into said cover means major opening, said major opening permitting said other arm to flex and return parallel to said cover and towards and away from said one arm within said cover means major opening, said other arm further comprising an extactor retaining means which cooperates with said housing means opening to releasably retain the cover and extractor when said other arm is in a rest position, and,

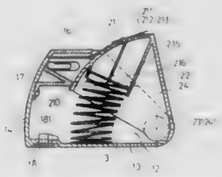
(ii) resilient semi-adhesive material disposed at the distal end of each of said arms.

4,796,780

BOX FOR PINS AND STAPLES

Harrison Huang, Shenkang, Taiwan, assignor to Glory Formosa Co., Ltd., China

Filed Jan. 19, 1988, Ser. No. 145,569
Int. Cl.[4] B65D *83/00*
U.S. Cl. 221—154 **4 Claims**



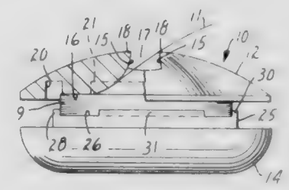
1. A box for pins, staples and the like comprises: an outer case having an opening and an inner box with an upper part projecting out of the top of the outer case; a spring; said outer case having two side plates, one bottom plate and a front plate; said two side plates having round holes disposed at rear lower corners thereof respectively; an inclination plate affixed to an inner side of said front plate, said inclination plate extending backward for a distance; a trigger button extending into the inner portion of the outer case formed in the shape of a hook; said inner box including a front plate with at least one magnetic iron element, a top plate and two side plates; on each of the two side plates of the inner box, a round protruding element enters the round holes on the two side plates of the outer case to serve as a rotating axis of the inner box; the bottom edge of the front plate of the inner box being bent upward to form a hook edge; a cylinder extending downwardly from a bottom edge of the top of the inner box, said spring having its top end inserted in said cylinder and its bottom end being supported against an upper surface of the bottom plate of the outer case, said trigger button for releasably hooking onto the hook edge of the front plate of the inner box.

4,796,781

DISPENSER FOR A STACK OF NOTEPAPER

David C. Windorski, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 23, 1987, Ser. No. 29,172
Int. Cl.[4] B65H *1/00*
U.S. Cl. 221—45 **12 Claims**



1. A dispenser for sheets of notepaper disposed in a stack with each of said sheets having a narrow band of adhesive coated on one surface along one edge by which the sheets are adhered together and with the sheets being stacked with the band of adhesive of adjacent sheets at alternate opposite edges of the tack, said dispenser comprising:

a body part and a base part,

said body part having a top surface, a bottom surface including spaced generally planar portions and convex arcuate portions having a large radius between said planar portions and said top surface defining a narrow slot through and extending centrally across said body,

said base part having a bottom surface and a top surface comprising a generally planar portion,

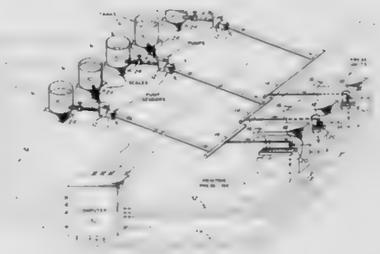
one of said parts including a projecting platform providing one of said planar surface and planar surface portions and the other of said parts having a recess adapted to receive and orient a said stack of sheets and adapted to receive said platform and providing the other one of said planar surface and planar surface portions, the projecting height of said platform being equal to or greater than the depth of the recess so that said planar surface and planar surface portions can engage, said planar surface on said base being adapted to receive and support the bottom of a said stack of sheets and said spaced surface portions being adapted to rest on the top of the stack of sheets.

4,796,782

INK MONITOR SYSTEM

R. Langdon Wales, Lincoln, and H. W. Crowley, Newton, both of Mass., assignors to Automation, Inc., Needham, Mass.

Filed Oct. 30, 1985, Ser. No. 792,745
Int. Cl.[4] B67D *5/08*
U.S. Cl. 222—57 **32 Claims**

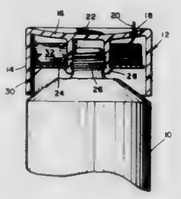


17. A method for monitoring ink flow from an ink storage

VOL 1098 ISS 2 JA 10 1989 UMI

tank to at least one ink fountain of a high-speed web-fed printing process comprising the steps of, measuring the weight of the ink storage tank along with any ink stored therein to provide a continuous signal representative of measured weight, pumping the ink to the fountain, comparing the weight signals at successive times to determine the weight of ink consumed over the interval between comparisons, operating delivery to only a single fountain at a time, and measuring the volume flow of ink during a single fountain delivery.

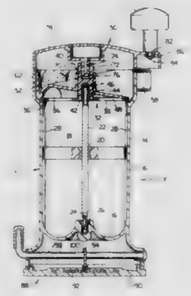
4,796,783
DENTAL FLOSS DISPENSER
Ralph E. Paulson, 14802 Grevillea St., Lawndale, Calif. 90260
Filed Aug. 10, 1987, Ser. No. 84,976
Int. Cl.[4] B65D *25/38*
U.S. Cl. 222—80 5 Claims



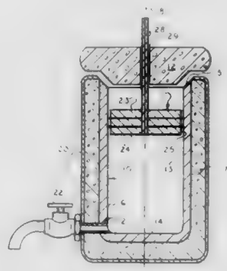
1. A dental floss dispenser comprising:
an external thin walled substantially cylindrical member having a given diameter and covered at on end with a substantially solid face having a single opening,
a smaller diameter internal cylindrical member located within and co-axial with said external member and connected at one end to said solid face and terminating at the other end with a shoulder,
the length of said internal member being less then the length of said external member,
a rotatable hollow disc adapted to be inserted within said external member and having an internal diameter that is greater then the external diameter of said internal member but less then the diameter of said shoulder and an external diameter that is less then the internal diameter of said external member,
said disc located within said external member whereby said shoulder on said internal member holds and supports said disc in a rotatable relationship, and
a coil of dental floss located on said disc within said external member and with one end of said dental floss extending through said opening on said face.

4,796,784
SOFT ICE CREAM DISPENSER
John W. Spirk; John R. Nottingham, both of Moreland Hills, and Jeffrey M. Kalman, Cleveland Heights, all of Ohio, assignors to G & S Metal Product Company, Inc., Cleveland, Ohio
Filed Jul. 2, 1987, Ser. No. 69,099
Int. Cl.[4] B67D *5/00*
U.S. Cl. 222—80 18 Claims

1. An ice cream dispenser comprising a container for receiving ice cream, said container having side wall means, bottom wall means, and removable cover means defining a dispensing spout, said removable cover means including a first closure member having a closure wall defining a volute channel facing said shearing means and being closely spaced therefrom, said volute channel having a progressively increasing cross section measured in a circular direction, with its larger cross section terminating at said dispensing spout, piston means movable along a rectilinear path from a first position adjacent said bottom wall means, along said side wall means, and toward a second position adjacent said cover means, shearing means between said second position and said cover mounted for movement in a plane substantially normal to said path, means to drive said piston means along said rectilinear path, said drive means being operatively connected to said shearing means to move said shearing means in said plane as said piston approaches said second position, whereby ice cream placed in said container may be moved through said shearing means and extruded from said dispensing spout by said piston means upon actuation of said drive means to shear and thereby soften said ice cream.

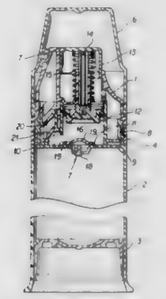


4,796,785
APPARATUS FOR HOLDING AND DISPENSING BEVERAGES
Timothy K. Merritt, 117 Arbor Park North, Louisville, Ky. 40214
Filed Aug. 17, 1987, Ser. No. 86,938
Int. Cl.[4] B67D *5/42*
U.S. Cl. 222—131 1 Claim



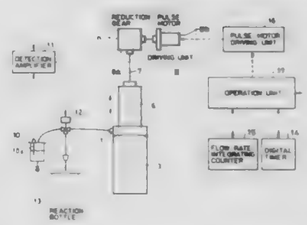
1. A beverage dispensing apparatus comprising:
(a) a confining vessel comprised of a circular cylindrical sidewall rising perpendicularly upward from a flat circular bottom panel and terminating in an open circular upper extremity, said sidewall and bottom panel being bounded by interior and exterior surfaces, the height of said vessel, measured along its center axis, being at least twice its diameter,
(b) thermal insulation comprised of closed cell polymer foam disposed upon the exterior surfaces of said vessel, and an outer shell of durable impervious material disposed upon said insulation,
(c) a drain conduit which penetrates said thermal insulation means and said sidewall adjacent said bottom panel,
(d) flow control means associated with said conduit exterior to said vessel,
(e) a piston having upper and lower flat surfaces joined by a circular cylindrical boundary surface disposed in close-fitting sliding engagement with the interior surface of said sidewall, said boundary surface being equipped with at least two O-rings in spaced apart relationship and adapted to make an air-tight seal with the interior surface of the sidewall of the vessel,
(f) a straight stem rising perpendicularly upward from said piston in coaxial alignment with the axis of said vessel, said stem being of hollow construction and adapted to vent off any air trapped below the lower surface of the piston, and
(g) a thermal insulative closure lid having a perimeter adapted to make sealing engagement with the open upper extremity of the vessel, and having a centered aperture adapted to make close-fitting sliding engagement with said stem.

4,796,786
DISPENSER FOR PASTE-LIKE PRODUCTS
Joachim Czech, Jahnstrabe 19, D-8405 Donaustauf, Fed. Rep. of Germany
Continuation of Ser. No. 738,537, May 24, 1985, abandoned, which is a continuation-in-part of Ser. No. 563,392, Nov. 14, 1983, abandoned. This application Apr. 22, 1987, Ser. No. 47,570
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1982, 3222492
Int. Cl.[4] B67D *5/40*
U.S. Cl. 222—256 16 Claims



1. A dispenser for paste-like products comprising:
a dispensing head which includes a pumping device with a pump chamber, the volume of which chamber may be varied by means of an actuation device manually actuatable form outside the dispensing head, an outlet passage leading from the pump chamber to a dispensing mouth on the dispensing head and means in the outlet passage adapted to prevent backflow of the paste-like material into the pump chamber, a container containing the product to be dispensed, the container being formed as a disposable cartridge and having an upper cover wall with an opening therethrough for admitting the product into the pump chamber, the container having its lower end closed by a follower piston slidable along the interior wall surface thereof under the action of the exterior atmosphere as the product leaves the container, means for releasably connecting the container to the lower end of the dispensing head, and an inlet-check valve for prevention of backflow of paste-like material form the pump chamber to the container through the opening therein, characterized in that the inlet-check valve comprises two parts, namely, a valve seat on the upper cover wall of the container and a closure member non-releasably supported on the dispensing head, said closure member being integrally formed with the dispensing head and comprising a plate-like portion engageable with the valve seat and flexible connection members connected between the plate-like portion and the dispensing head.

4,796,787
APPARATUS FOR PRECISELY MEASURING AND SUPPLYING LIQUID
Isao Tsuyuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 2, 1986, Ser. No. 914,401
Claims priority, application Japan, Oct. 2, 1985, 219986
Int. Cl.[4] B67D *5/08*
U.S. Cl. 222—64 2 Claims



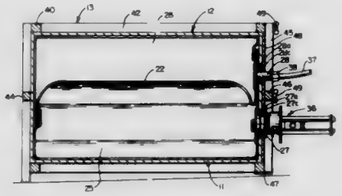
1. An apparatus for supplying a liquid, comprising:
a vessel;
a sealing box sealable to an upper side of said vessel and having a liquid discharge port at a lower portion of said sealing box, said vessel being at least partially filled with a liquid at a lower portion of said sealing box;
a cylinder loosely and airtightly pushable downward into said vessel through said sealing box;
a driving unit for driving through a power transmission shaft said cylinder to be pushed into said vessel by a predetermined distance and at a predetermined speed, whereby a correspondingly predetermined amount of said liquid is pushed through said discharge port at a correspondingly predetermined flow rate;
a cross valve coupled to said liquid discharge port;
a receiving vessel coupled to said cross valve;
an air extractor coupled to said cross valve;
a liquid detector in said air extractor; and
a control circuit for coupling said liquid discharge port through said cross valve alternatively to said receiving vessel or to said air extractor in response to a signal from said liquid detector.

4,796,788
BAG-IN-BOX PACKAGING AND DISPENSING OF SUBSTANCES WHICH WILL NOT READILY FLOW BY GRAVITY
Curtis J. Boad, Longboat Key, Fla., assignor to Liqui-Box Corporation, Worthington, Ohio
Filed Aug. 26, 1987, Ser. No. 89,653
Int. Cl.[4] B65D *35/22*
U.S. Cl. 222—94 26 Claims

1. A disposable flexible bag for packaging a product which will not readily flow by gravity comprising at least three plies of flexible material sealed together at their peripheral edges, the plies forming an outer product wall, an intermediate product baffle wall, and an outer displacement wall, thereby providing a product-receiving chamber and a pressure-receiving chamber which are independent of each other, and coupling fitments comprising product and pressure fitments connected independently to the respective chambers, said fitments being mounted on one of said outer walls, and a sealing seam between the fitments which seals the outer wall on which they

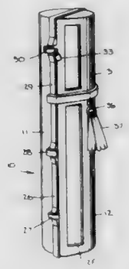
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are disposed to the inner baffle wall so that the product fitment communicates with the product chamber and the pressure



fitment communicates with the pressure chamber independently.

4,796,789
DUAL-FUNCTION GOLF BAG
Reginald Wilkocks, 1 Joel Pl., Port Washington, N.Y. 11050
Filed Aug. 2, 1985, Ser. No. 761,788
Int. Cl.[4] A63B *55/00*
U.S. Cl. 224—202 **6 Claims**



1. A golf bag adapted to function as a shoulder carrier for a set of golf clubs and other golf game accessories or as a locked travel case therefor suitable for air transport, said bag having a closed, generally-cylindrical form to store said clubs and comprising:

(A) a semi-cylindrical chest section;

(B) a semi-cylindrical lid section hinged to said chest section, said lid section being divided into a major lid which extends from the closed bottom end of the bag to an upper level below the closed top end, and a minor lid which extends from the upper level of the closed top end, whereby when the minor lid is swung open, the heads of the golf clubs stored in said bag are accessible for removal, the long handles of the clubs resting on the closed bottom end of the bag;

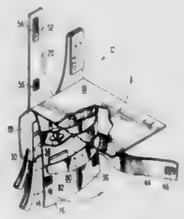
(C) raised edge borders on the major and minor lids which, when the lids are closed, overlie the corresponding edge of the chest section, said edge borders each including a longitudinal course which is parallel to the longitudinal edge of the chest section, the border on the minor lid having at its lower end a circumferential course that overlies a circumferential border course in the upper end of the major lid, whereby the major lid cannot be swung open without first swinging open the minor lid;

(D) releasable latching means on the longitudinal border courses of the major and minor lids adapted to engage complementary anchors on the chest section;

(E) a lock to lock the latching means for the minor lid to its anchor, whereby neither the major nor the minor lid can be swung open without first unlocking the lock and a single lock provides the necessary security against unauthorized access to the contents of the bag, said chest section and said lid section being molded of synthetic plastic material; and

(F) a shoulder strap linked to the exterior of said chest section and a handle attached to said chest section under the strap.

4,796,790
MEDICAL SUPPLY CASE
Olivia B. Hamilton, 5120 Sargent Rd., NE., Apt. 207, Washington, D.C. 20017
Filed Oct. 9, 1986, Ser. No. 917,204
Int. Cl.[4] A45F *5/00*
U.S. Cl. 224—253 **52 Claims**



1. A medical supply case for organizing and holding small medical supplies and to be worn or carried by medical personnel comprising:

a first panel having a first panel front side, a first panel rear side, and a first panel side edge,

a second panel connected to said first panel and having a second panel inside side, a second panel outside side, and a second panel side edge,

a hinge means for positioning said first and second panels relative to each other alternatively in a first position wherein said first panel front side is generally facing said second panel inside side and a second position wherein said second panel outside side is generally facing said first panel rear side,

a first securing means for releasably securing said first and second panels in said first position,

a supply pocket on said first panel front side,

a supply pocket on said second panel outside side,

a flap connected generally to said first panel and movable to and between alternative first and second flap positions,

said flap when in said first flap position being disposed between said first and second panels,

said flap when in said second flap position being disposed outside of said second panel outside side,

an attaching means for attaching said first panel to the medical personnel, and

said hinge means being generally vertically disposed when said first panel is worn by the medical personnel by way of said attaching means.

4,796,791
CONSOLE FOR A VEHICLE
Ray J. Goss, 601 TCS, Box 183, Apo, N.Y. 09692-5360, and George Spector, 233 Broadway RM 3815, New York, N.Y. 10007
Filed May 8, 1987, Ser. No. 47,280
Int. Cl.[4] B60R *7/00*
U.S. Cl. 224—275 **2 Claims**

1. A console adapted for mounting in a vehicle comprising:

(a) a base unit with front and rear corners having a bottom panel, a front panel, a rear panel, two side panels, a top panel, and two inner panels spaced apart and parallel to said front panel and said rear panel to form three chambers therebetween, wherein said base unit is adapted to sit on the floor and fit between two front seats of a vehicle;

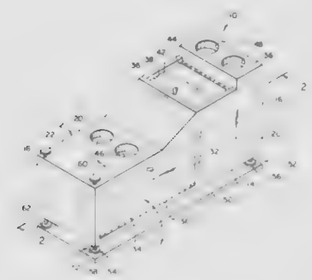
(b) one of said side panels having an opening formed therein to provide access to said chambers to store various items and a pivotal door normally covering said side panel opening and adapted to be pivoted to a lowered position;

(c) said top panel having a stepped portion extending upwardly and rearwardly to said rear panel, said rear panel being higher than said front panel, said stepped portion having an opening formed therein to provide access to said second chamber between said inner panels adapted to hold a removeable trash receptacle and a pivotal lid normally covering said top panel opening and adapted to be pivoted to a raised open position, said top panel further having a first pair of circular recesses formed therein adjacent said front panel to hold drinks and a second pair of circular recesses formed in said stepped portion adjacent said rear panel to hold drinks;

(d) an elongated plate member having front and rear corners adapted to sit upon the floor of a vehicle and support said base unit:

(e) means for leveling said base unit on said plate member with respect to the floor of the vehicle, wherein said leveling means comprises:

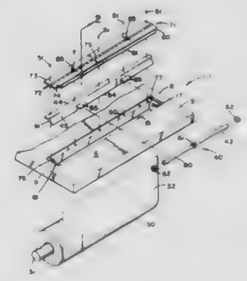
(f) a pair of front levelling units, each of said front leveling



units extending vertically through one front corner of said base unit and including an elongated threaded shaft with top and bottom ends having a top knob at said top end and a front level foot at said bottom end, said front level foot having a socket therein and a ball member on each front corner of said plate member to cooperate with said socket in said front level foot so that said top knob can be turned for vertical adjustment of said front leveling units; and

(g) a pair of rear leveling units, each of said rear leveling units extending vertically into one rear corner of said base unit and horizontally through said rear panel and including a long vertical shaft having a top end with a first bevel gear at said top end and an enlarged bottom end with a threaded hole therein, said vertical shaft rotatably mounted to said rear panel of said base unit, a short horizontal shaft having ends and having a second bevel gear cooperating with said first bevel gear at one end and a rear knob at the other end, said horizontal shaft extending through said rear panel, and a rear level foot having a short vertical threaded arm being keyed through said bottom panel and threaded into said enlarged bottom end of said long vertical shaft, said rear level foot further having a socket therein and a ball member on each rear corner of said plate member to cooperate with said socket in said rear level foot so that said rear knob can be turned for vertical adjustment of one of said rear leveling units.

4,796,792
APPARATUS FOR CUTTING WRAPPING PAPER
Robert A. Nelson, Elk River, and Carroll C. Altman, Maple Grove, both of Minn., assignors to Kwik-Flic, Inc., Golden Valley, Minn.
Filed Jul. 23, 1987, Ser. No. 77,123
Int. Cl.[4] B26F *3/02*
U.S. Cl. 225—72 **8 Claims**



1. A paper retainer and cutting assembly for mounting in a countertop feed slot having a sidewall, said assembly comprising:

(a) a retainer mechanism including an elongate rod member and a downwardly extending ramp member;

(i) said ramp member being positionable completely within a countertop feed slot in a manner completely recessed relative to an upper work surface thereof and with said ramp member positioned to extend downwardly toward the feed slot sidewall and partially across the feed slot to a line of termination spaced from the sidewall;

(ii) said elongate rod member being positionable upon said ramp member for being biasing thereby toward the feed slot sidewall;

(b) a knife blade mechanism comprising a hinged arrangement having a first hinge plate and a second hinge plate;

(i) said knife blade mechanism being mountable in the feed slot with the knife blade first and second hinge plates substantially flush with the countertop upper work surface;

(ii) said first hinge plate being a mounting plate and said second hinge plate having an outer edge with a knife blade mounted thereon; said second hinge plate being pivotable between a first horizontal storage position and a second substantially vertical cutting position; and

(iii) said knife blade mechanism including biasing means for urging said second hinge plate into said first horizontal position.

4,796,793
SURGICAL STAPLER AND METHODS
George D. K. Smith; James D. Hughett, both of Cincinnati, and Thomas E. Warman, Williamsburg, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.
Filed May 10, 1984, Ser. No. 609,091
The portion of the term of this patent subsequent to Jun. 24, 2003, has been disclaimed.
Int. Cl.[4] A61B *17/00*
U.S. Cl. 277—19 **28 Claims**

1. A four-bar linkage for operating the staple driver of a surgical stapler and comprising:

a bell crank operatively connected to said driver and pivoted to said stapler at a first pivot;

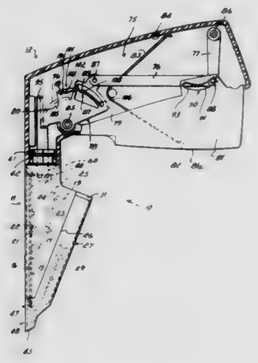
two drive links pivoted together by a drive pin;

a first one of said links pivoted to said bell crank, and a

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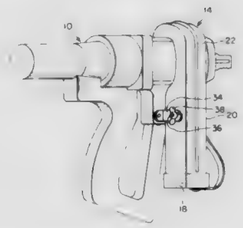
second one of said links pivoted to said stapler at a second pivot;
a drive cam means mounted on said stapler for motion with respect to said stapler and for engaging and moving said drive pin to operate said driver;
said drive cam presenting an inclined drive surface to said pin during movement of said drive cam.

8. A drive linkage for operating the driver of a surgical stapler having a handle, said linkage comprising:
a trigger lever pivot;
a trigger lever pivoted to said pivot;
a bell crank pivoted to said pivot and having two crank arms;



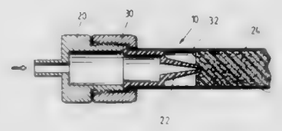
a drive cam carried on said trigger lever;
two drive links;
a drive pin pivoting the two drive links together at a respective end of each;
one of said drive links pivoted at another end to said handle and the other drive link pivoted at another end to one arm of said bell crank;
another arm of said bell crank operatively connected to said stapler driver; and
said drive cam being engageable with said drive pin to operate said drive linkage and to drive said driver.

4,796,794
COLLECTION DEVICE FOR A RIVET GUN
Duane M. Schultz, Lansing, Ill., and Gerald J. Wetle, Earl Park, Ind., assignors to Illinois Tool Works, Inc., Chicago, Ill.
Filed Jun. 12, 1987, Ser. No. 61,689
Int. Cl.[4] B21J *15/10*
U.S. Cl. 227—156 **4 Claims**



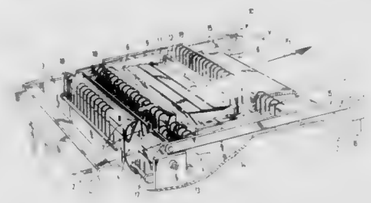
1. A device for collecting spent mandrels ejected from a rivet gun, comprising a hollow one-piece member including an elongated container portion having an outlet and a chute portion defining a surface generally conforming to the shape of a portion of the external surface of the gun, said chute portion having an inlet configured to be disposed over a spent mandrel ejection port of the gun when mounted to the gun, said chute portion opening into said container portion, a cover removably mounted to said container over said outlet, and means for mounting said one-piece member to the rivet gun.

4,796,795
FLUX FUME REMOVAL DEVICE
Paul Urban, Cheraw, S.C., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Oct. 13, 1987, Ser. No. 107,200
Int. Cl.[4] B23K *3/00*
U.S. Cl. 228—20 **6 Claims**



1. A flux fume removal device comprising:
a housing constructed and arranged for series connection to a vacuum line;
a duckbill valve located within said housing;
means for collecting liquid flux located downstream from said duckbill valve, said means for collecting liquid flux also located within said housing.

4,796,796
SOLDERING APPARATUS
Johannes C. Habraken, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.
Filed Mar. 31, 1987, Ser. No. 33,142
Claims priority, application Netherlands, Apr. 10, 1986, 8600905
Int. Cl.[4] H05K *3/34*; B23K *1/02*
U.S. Cl. 228—37 **4 Claims**



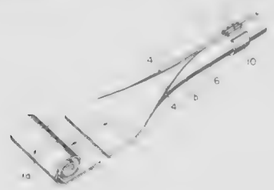
1. A soldering apparatus for soldering components to a printed circuit board, said soldering apparatus comprising a soldering station with at least one nozzle, means for forming at least one soldering wave, a transport device extending above the soldering station for transporting a printed circuit board in a predetermined direction past said at least one soldering wave, said transport device comprising two parallel transport tracks for supporting two opposite edge strips of a printed circuit board, support means and a supporting member affixed to said support means for supporting a printed circuit board, said supporting member being arranged near the soldering station, said supporting member comprising at least one resiliently yielding supporting element, said resiliently yielding supporting element being in the form of an elongate body or bodies having one end secured to said support means, each said elongate body extending from said support means toward said transport device, each said elongate body having a curved free end.

4,796,797
METHOD FOR MAKING THIN-WALLED METAL PIPES
Takefumi Nakako; Shoji Inoue, and Akinobu Takezoe, all of Sakai, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan
Filed Aug. 12, 1987, Ser. No. 84,431
Claims priority, application Japan, Oct. 14, 1986, 61-243854
Int. Cl.[4] B23K *31/06*
U.S. Cl. 228—144 **9 Claims**



1. A method for making thin-walled metal pipes, comprising the steps of:
subjecting a metal sheet to lengthwise plastic bending by means of a small-diameter bending roll with an axis disposed perpendicularly thereto, a face of said metal sheet which is to define the inside of the metal pipe turning inward,
causing said metal sheet to bend itself widthwise into a pipelike shape by use of widthwise curvature resulting from residual stress of the metal sheet after receiving such plastic bending by reducing the lengthwise curvature of the metal sheet to zero, and
joining longitudinal edges of said metal sheet together.

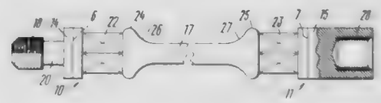
4,796,798
METHOD OF AND APPARATUS FOR CONTINUOUS PRODUCTION OF SEAM-WELDED METAL TUBING
Toshio Tsuta, Hyogo; Koji Kadota, Kobe; Shigetomo Matsui, Osaka; Hiroyuki Matsumura, Kobe; Hisao Hasegawa, Kobe; Hiromichi Nakamura, Kobe; Tetsuro Noma, Kobe; Hisahiko Miyazaki, Osaka, and Munekatsu Furugen, Nishinomiya, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo and Sumitomo Metal Industries Ltd., Osaka, both of, Japan
Filed Jun. 9, 1987, Ser. No. 60,084
Claims priority, application Japan, Jun. 11, 1986, 61-137087
Int. Cl.[4] B23K *31/06*
U.S. Cl. 228—146 **19 Claims**



1. A method of continuous production of a seam-welded metal tubing, comprising the steps of:
feeding a metal strip unwound from a strip coil;
shaping the metal strip being fed into a preformed tubing having its longitudinal edges arranged in an opposing and abutting relationship, by means of a series of roll groups arranged substantially in line, said roll groups including a finpass roll group for shaping the strip preparatory to bringing said longitudinal edges into said opposing and abutting relationship;
welding the opposing and abutting longitudinal edges at a position downstream of said finpass roll group while the preformed tubing is being fed forward;
heating in the zone of the finpass roll group, before the welding is carried out, a substantial part of said preformed tubing being fed through the zone of said finpass roll group with exception of edge zones including said longitudinal edges, to a temperature approximately 50° to 200° C. higher than room temperature; and
cooling in the zone of the finpass roll group concurrently with the heating said edge zones of the preformed tubing being fed through said zone of the finpass roll group to keep the edge zones at a temperature of from room temperature to a temperature lower than the room temperature by approximately 50° C.

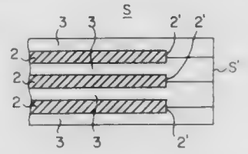
4. An apparatus for continuous production of a seam-welded metal tubing, comprising:
a series of roll groups arranged substantially in line for shaping a metal strip unwound from a strip coil into a preformed tubing having its longitudinal edges arranged in an opposing and abutting relationship, said roll groups including a finpass roll group for shaping the strip preparatory to bringing said longitudinal edges into said opposing and abutting relationship;
means for welding the opposing and abutting longitudinal edges of the strip at a position downstream of said finpass roll group while said preformed tubing is being carried forward;
heating means arranged in the zone of said finpass roll group for heating a substantial part of said preformed tubing with exception of edge zones including said longitudinal edges of said tubing; and
cooling means arranged along said longitudinal edges of the strip which are passing through the zone of the finpass roll group, said cooling means being disposed substantially in parallel to said heating means for cooling said edge zones, when seen transversely to said tubing.

4,796,799
METHOD FOR MAKING SUCKER RODS
Artur T. O. Rasi-Zade; Nariman G. O. Kurbanov; Pavel M. Sutovsky; Talat M. O. Shikhlinsky; Khalid T. Kakhramanov; Avraam M. Rabinovich; Islam K. O. Karaev; Vladimir I. Timofeev, all of Baku, and Oktai I. O. Ibragimov, deceased, late of Baku, all of U.S.S.R. (by Samaya N. K. Ibragimova, administrator), assignors to Azerbaidzhansky Nauchno-Issledovatelsky I Proektno-Konstruktorsky Institut Neftyanogo Mashinostroenia, Baku, U.S.S.R.
PCT No. PCT/SU85/00094, § 371 Date Jul. 20, 1987, § 102(e) Date Jul. 20, 1987, PCT Pub. No. WO87/03330, PCT Pub. Date Jun. 4, 1987
PCT Filed Nov. 26, 1985, Ser. No. 96,016
Int. Cl.[4] B23K *20/12, 31/02*
U.S. Cl. 228—155 **1 Claim**



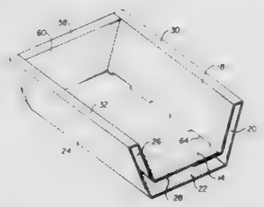
1. A method for making sucker rods composed of a central rod body (16, 17) and end heads (8, 9, 10, 11), incorporating upsetting and pressure-welding procedures, characterized in that first a rod-blank (1) is welded together with rod-end blanks (2, 3), which are made from different materials than the rod-body blank, to obtain a welded sucker-rod blank, whereupon end heads (8, 9, 10, 11) are upset from the welded sucker-rod blank, while the length of the rod-end blanks (2, 3) are so selected that weld joints (6, 7) are established, after the upsetting procedure, across the maximum cross-section of the end heads (8, 9, 10, 11).

4,796,800
STRIP TAPE FOR A FOOD PRODUCT PACKAGING CONTAINER
Motochika Kobinata, Gotenba, Japan, assignor to AB Tetra Pak, Lund, Sweden
Filed Nov. 25, 1987, Ser. No. 125,199
Claims priority, application Japan, Dec. 16, 1986, 61-301211
Int. Cl.[4] B65D *3/10*
U.S. Cl. 229—5.7 4 Claims



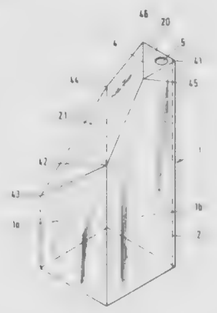
1. A strip tape for a food product packaging container attached to the inner side of a seam of said food product packaging container formed of a paper-based ply material blank so as to improve a barrier feature on the seam area, said tape comprising a plurality of layers which include at least one metal layer, side edges of said metal layer being arranged in a lengthwise direction in the interior of the strip tape so as to not reach the right or left ends of said strip tape arranged in a lengthwise direction.

4,796,801
ARTICLE PACKAGE
Charles R. Goetz, Carnegie, Pa., assignor to Alco Industries, Inc., Valley Forge, Pa.
Filed Dec. 16, 1987, Ser. No. 133,545
Int. Cl.[4] B65D *5/00*
U.S. Cl. 229—104 7 Claims



1. A blank adapted to be formed into a container for protecting an article during shipping, storage and display in which at least a part of the article can be seen and touched, said blank comprising:
- a planar sheet having a first portion substantially rectangular in shape with a length substantially greater than its width, said first portion having a pair of substantially parallel elongated opposed edges and a free edge at one end, said first portion including a plurality of main panels and a terminal panel opposite the end having said free edge, said terminal panel having an outer edge and an inner edge, each of said main panels being defined by lateral perforations extending between said opposed edges of said first portion,
- a single second portion attached to only one of said opposed edges of said first portion and adjacent to only one of said main panels of said first portion, said second portion attached to said one of said opposed edges of said first portion along a perforation, said second portion having a plurality of panels adapted to form an end member of a container when said blank is formed into a container to close one end of a container upon assembly of said blank into a container, and
- a series of elongated openings located along said inner edge of said terminal panel of said first portion and a series of tabs extending along said free edge of said first portion, the spacing of said tabs corresponding to the spacing of said elongated openings,
- whereby said blank is formed into a container by folding said main panels and said terminal panel along said perforations and inserting said tabs into said elongated openings to hold the container together and folding said panels of said second portion to form the end member to close one end of the container formed from said blank.

4,796,802
FLUID PACK WITH A TAPERED UPPER PORTION
Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Park Finance & Trading S.A., Pully, Switzerland
Filed Jun. 25, 1987, Ser. No. 66,829
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1986, 3621742
Int. Cl.[4] B65D *31/16*
U.S. Cl. 229—108 3 Claims



1. A pack for filling materials which are capable of flow, the pack comprising:
- a tube formed by at least one longitudinal sealing seam and having two ends the tube comprising a carrier material coated with thermoplastic material on at least one side thereof;
- a top having a pouring opening in the vicinity of its outer edge mounted to one end of the tube;
- a bottom mounted to the other end of the tube the bottom being quadrangular and formed from the folded-over tube of the pack in the form of a fold closure;
- the top having at least corners and least a first plane and a second plane which include an angle, the first plane being parallel to the plane of the bottom, and the second plane being formed from the tube carrier material.

4,796,803
AIR VOLUME REGULATOR VALVE
Winfield L. Kelley, 1501 Brickell Ave., Miami, Fla. 33129
Continuation-in-part of Ser. No. 880,101, Jun. 30, 1982, Pat. No. 4,739,924, which is a continuation-in-part of Ser. No. 712,762, Mar. 18, 1985, abandoned. This application Oct. 19, 1987, Ser. No. 109,909
The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.
Int. Cl.[4] F24F *11/053*
U.S. Cl. 236—49 4 Claims

1. An air regulating apparatus comprising a valve, said valve comprising
- a corrugated fixed sidewall having openings therein;
- a corrugated slidable sidewall having openings complementarily mounted on one side of said fixed corrugated sidewall to move in one direction relative to said fixed corrugated sidewall;
- said corrugated slidable sidewall being in communication with an air inlet;
- said corrugated fixed sidewall being in communication with an air outlet;
- said corrugated slidable sidewall being movable in a single direction from a first open position wherein said openings of said corrugated slidable sidewall are aligned with openings of said fixed corrugated sidewall to a closed position wherein the openings of said corrugated slidable sidewall are not aligned with the openings of said fixed corrugated sidewall and to a second open position wherein said openings of said corrugated slidable sidewall are aligned with openings of said fixed corrugated sidewall, means to move said first slidable sidewalls activated by temperature change,
- said fixed corrugated sidewall having means fixed thereto upon which said corrugated slidable sidewall is slidably mounted thereon.

4,796,805
ICE MAKING METHOD USING ICE NUCLEATING MICROORGANISMS
Kristine E. Carlberg, and Carole B. Lindsey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 15, 1987, Ser. No. 97,227
Int. Cl.[4] F25C *3/04*
U.S. Cl. 239—2.2 5 Claims

1. In a method for making ice using ice nucleating microorganisms comprising the steps of:
- (a) forming an aqueous suspension of ice nucleating microorganisms;
- (b) introducing said suspension into a water source to form an ice nucleated water source;
- (c) distributing and freezing said ice nucleated water source;

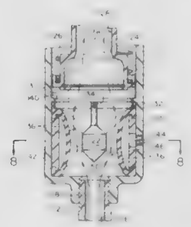
the improvement wherein said suspension of ice nucleating microorganisms is maintained throughout steps (a) and (b) at a temperature below about 13° C.

4,796,806
BARBECUE SAUCE SPRAYER
Joyce P. Reid, 1316 W. 115th St., Chicago, Ill. 60643
Filed Mar. 27, 1987, Ser. No. 30,961
Int. Cl.[4] B05B *9/043*
U.S. Cl. 239—11 5 Claims



1. A device for spraying barbecue sauce comprising:
- a container having a single opening surrounded by a threaded neck;
- a plunger pump for pumping barbecue sauce substantially vertically out of said container, said plunger pump being mounted in a lid having a single opening, said lid constructed and arranged to threadably engage said threaded neck;
- a tubular fluid connection for receiving the output of said plunger pump;
- an externally threaded drum shaped receptacle for receiving the output of said tubular fluid connection:
- an internally threaded cap having a plurality of holes to allow for the substantially horizontal passage of barbecue sauce, said internally threaded cap constructed and arranged to threadably engage said drum shaped receptacle.

4,796,804
POP-UP SPRINKLER WITH IMPROVED INLET VALVE
Ilan Weiss, 11 Ralph Avenue, Copiague, N.Y. 11726
Filed Aug. 26, 1987, Ser. No. 89,566
Int. Cl.[4] B05B *15/10*
U.S. Cl. 239—1 3 Claims



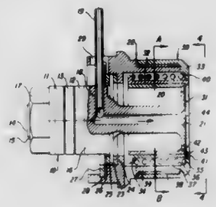
1. A pop-up irrigation sprinkler having a below surface inlet and a diaphragm valve operatively disposed in a vertical orientation in said inlet, said diaphragm valve being of the type having a sealing core and a cylindrical belows in encircling relation thereabout operatively effective to be urged in opposite directions between a clearance position spaced from said sealing core and a contact position therewith for opening and closing said inlet, whereby said bellows movement opening said inlet is not in opposition to the directional flow therethrough and contributes to minimal pressure loss in said flow.

4,796,807
ULTRASONIC ATOMIZER FOR LIQUIDS
Lothar Bendig, Pfullingen, and Frieder Hofmann, Metzingen, both of Fed. Rep. of Germany, assignors to Lechler GmbH & C. KG, Fellbach, Fed. Rep. of Germany
Filed Mar. 11, 1988, Ser. No. 167,136
Claims priority, application European Pat. Off., Mar. 17, 1987, 87103907.9
Int. Cl.[4] B05B *3/14*
U.S. Cl. 239—102.2 12 Claims

1. An ultrasonic atomizer for liquids, comprising a piezoelectric transducer mechanically coupled to an amplitude transformer; an atomizing disk mounted on a free end of the amplitude transformer; a housing enclosing at least the amplitude transformer; a cap supporting a sieve-like diaphragm and

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mounted on the housing so that the diaphragm rests on the atomizing disk; said cap (30) consisting of two parts mounted mutually concentrically, an inner first cap part (32) supporting the diaphragm (31) and an outer, second cap part (33) serving to mount the entire cap (30) on the housing (22); and spring



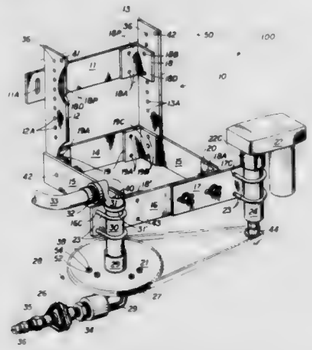
means (36) mounted between the two cap parts (32, 33) and biasing them in mutually opposite axial directions in such a manner that the sieve-like diaphragm (31) is held elastically against the atomizing disk (21) and that the opposing force from the spring means (36) is transmitted to the second cap part (33) fixed to the housing.

4,796,808

TRUCK BUMPER MOUNTABLE WATER SWEEPER

John W. Linda, and Anthony Matracia, both of 7615 Granite Ave., Orangevale, Calif. 95662

Filed Mar. 14, 1988, Ser. No. 177,918
Int. Cl.[4] B05B *9/00*
U.S. Cl. 239—175 14 Claims



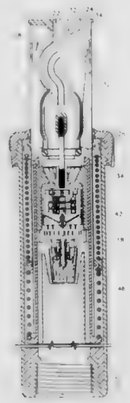
1. A truck bumper mountable apparatus for sweeping streets with water, which apparatus comprises:
(a) a superstructure,
(b) a bushing assembly,
(c) a motor and drive,
(d) a nozzle assembly, and
(e) linking means operatively connecting said bushing assembly to said nozzle assembly;
said superstructure comprising a pair of spaced vertical struts connected to one another by a pair of spaced normally disposed generally horizontal plates, an upper of which is a mount plate for mounting to a truck bumper and the other of which is a lower plate;
a pair of spaced parallel hinge arms, each of which is pivotally mounted to one of said vertical struts at its proximal end, and each of said hinge arms being connected to the other hinge arm at its distal end, by support means;
said hinge arms being capable of moving from a first upward stowed position to a second lowered operative position;
said bushing assembly having first and second ends, with a motor drive engaging means at its first end and a hub at its second end, said assembly being mounted on said support means;
said motor and drive being a reversible motor and drive mounted on said bushing assembly first end and engaged with bushing assembly;
said nozzle assembly also being mounted on said support means, and having a first end and a second end, with means for connecting a hose from a truck mounted water source at the first end and a sprayhead mounted at the second end thereof,
said sprayhead being disposed at a lower elevation than said hinge arms when said hinge arms are in their lower operative position;
means mounted on said nozzle assembly for rotation of said nozzle assembly with respect to said support means;
wherein said linking means controls the rotation of said nozzle means upon actuation of said motor.

4,796,809

TWO-STAGE POP-UP SPRINKLER

Edwin J. Hunter, 5551 Codorniz Rd., Rancho Santa Fe, Calif. 92067

Filed May 15, 1987, Ser. No. 49,843
Int. Cl.[4] B05B *3/04, 1/34, 15/10*
U.S. Cl. 239—205 9 Claims



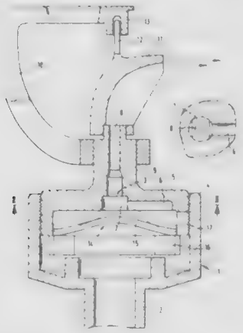
8. A multi-stage pop-up sprinkler unit comprising:
a first elongated tubular housing having an axially extending cylindrical bore with inlet means for attachment to a source of pressurized water and outlet means communicating with said bore;
a second elongated tubular housing having an upper end and a lower end reciprocably mounted in said housing for movement between a retracted position within said bore and an extended position extending from the outlet means of said bore;
a nozzle comprising an elongated passage having a curved portion between an inlet thereof and an elongated straight outlet section extending outward at an angle to the axis of the housing, and further comprises means in said curved portion dividing said curved portion into multiple separate passages for inhibiting turbulence in water flowing from said outlet, said curved portion of said passageway extending to one side of the rotary axis of said nozzle and the straight outlet section extending to the other side of the axis;
a tubular protective sleeve reciprocably mounted between said inner and outer housings and moveable with said inner housing for movement between a retracted position wherein said nozzle is encased therein and an extended position wherein said nozzle is cooperatively extended from said sleeve;
retracting means for biasing said second tubular housing and said sleeve to said retracted position, said retracting means comprises a first compression spring compressed between said first housing and a radial flange of said tubular sleeve for normally biasing said second housing and said sleeve to a retracted position within said first housing;
a second compression spring compressed between said radial flange of said tubular sleeve and a radial flange on said lower end of said second housing for normally biasing said second housing to a retracted position within said first housing; and
said second housing and said sleeve being responsive to water pressure in said housing for extending said first housing and sleeve from said housing together to a first position wherein said sleeve is restrained from further movement and said second housing extending to a position for exposing the nozzle.

4,796,810

ROTARY IRRIGATION SPRINKLER

Avi Zakai, Rishon Le-Zion, Israel, assignor to Dan Mamtirim, Kibbutz Dan Galil Elyon, Israel

Filed Jul. 24, 1987, Ser. No. 77,209
Claims priority, application Israel, Sep. 18, 1986, 80074
Int. Cl.[4] B05B *3/04, 1/34, 1/30;* A62C *31/02*
U.S. Cl. 239—222.17 2 Claims



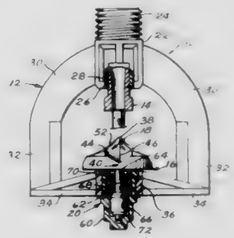
1. In a rotary irrigation mini-sprinkler of the kind comprising a housing having a housing inlet and a housing outlet and, intermediate thereof, a differential pressure control means responsive to variations in the pressure differential between the inlet and outlet and including a throughflow path serving to communicate with said housing inlet and outlet, the throughflow dimensions of said path varying in accordance with said differential, the improvement wherein said housing outlet includes an outflow port in direct communication with said path and having a non-circular transverse cross-sectional shape such as to reduce substantially the velocity of water entering said port from said path and thereby ensuring that the water fully occupies said port.

4,796,811

SPRINKLER HAVING A FLOW RATE COMPENSATING SLOW SPEED ROTARY DISTRIBUTOR

Paul D. Davisson, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Apr. 12, 1988, Ser. No. 180,448
Int. Cl.[4] B05B *3/06*
U.S. Cl. 239—222.17 22 Claims



1. A rotary sprinkler head comprising
a sprinkler body having an outlet and means devoid of any operative dynamic seals for communicating a source of water under pressure with said outlet,
said outlet being defined by a nozzle for directing water under pressure communicated therewith into an atmospheric condition in a primary stream having a generally vertically extending axis,
a rotary distributor mounted for rotational movement about a generally vertical rotational axis with respect to said sprinkler body in engaging relation with respect to the primary stream directed from said nozzle,
said rotary distributor having surface means for receiving the primary stream, dividing the primary stream into a plurality of horizontally separated streams, each having a major vertical component of movement and a minor horizontal component of movement, and directing the separated streams while retaining the integrity of the streams in a plurality of generally circumferentially balanced directions outwardly of the vertical axis of the primary stream so that (1) the separated streams leave the distributor surface means with a minor vertical component and a major horizontal component of stream movement and (2) the change in the components of movement of the streams create reactionary forces having net components acting tangentially to the axis of rotation of the distributor which do not increase substantially with increases in flow rates under constant pressure conditions thereby enabling said distributor to operate with a relatively narrow range of rotational speed changes within a relatively wide range of nozzle size changes, and
speed reducing means operatively associated with said distributor for reducing the rotational speed of the distributor resulting from the net tangential components of the reactionary forces from a relatively high whirling speed which would occur without said speed reducing means to a relatively slow speed so related to the distributor surface means forming the pattern forming stream means as to permit said plurality of streams to leave said distributor surface means with sufficient stream integrity to flow outwardly a distance substantially as great as the same streams would flow if the distributor were held stationary.

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4,796,812

DEVICE FOR PREPARING AND DISPENSING A PRODUCT CONSISTING OF TWO COMPONENTS AND THE CORRESPONDING PROCESS

Jean-Francois Grollier, Paris, France, assignor to L'Oreal, Paris, France

Filed Mar. 24, 1987, Ser. No. 29,539

Claims priority, application Luxembourg, Mar. 24, 1986, 86368

Int. Cl.[4] B05B *7/26*

U.S. Cl. 239—303 **14 Claims**



1. A device for preparing and dispensing a product consisting of first and second components which may be mixed only when the product is being dispensed, said first component being fluid and able to constitute a foam, and said second component being solid, comprising:

(a) a pressurized container containing said first component in the form of a liquid;

(b) an outlet valve of said pressurized container through which the first component is to be dispensed;

(c) an operating device for said outlet valve;

(d) means defining an ejection duct from said outlet valve; said ejection duct having a first end nearer said outlet valve and a second end remote from said outlet valve, the second end of said ejection duct delivering the first component in the form of foam;

(e) a chamber having an inlet connected to said second end of said ejection duct and an outlet, said chamber enclosing said second component in particulate form and maintaining it outside the said pressurized container; and

(f) said device consisting of a single grid closing said outlet of said chamber;

said device including a retaining plug separating said second, solid component from said grid.

4,796,813

VISCOUS FLUID SPRAYING APPARATUS HAVING A UNITARY NOZZLE

Lee Marshall, Santa Cruz, Calif., assignor to Slautterback Corporation, Monterey, Calif.

Continuation of Ser. No. 941,859, Dec. 15, 1986, abandoned. This application Feb. 23, 1988, Ser. No. 161,310

Int. Cl.[4] B05B *7/06, 1/14, 1/30*

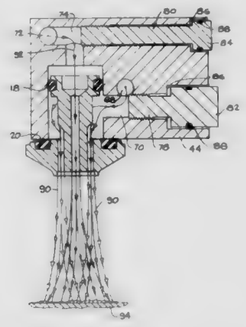
U.S. Cl. 239—425 **17 Claims**

1. A nozzle system for spraying of viscous fluid material comprising:

a nozzle body having an axis, an outlet face at a forward end and two sets of passageways defined at least partially therethrough, including a first set of axially inward gas passageways and including a second set of viscous fluid passageways axially outward and spaced apart from but proximate to the first set of passageways, said fluid passageways disposed partialy coextensive and parallel to the first set of passageways at least closely adjacent said outlet face, said fluid passageways each terminating at the outlet face of the nozzle body, said gas passageways each having an outlet section extending at least to said outlet face,

inert gas supply means in communication with said first set of axially inward gas passageways distal to said outlet face, and

viscous fluid material supply means in communication with said second set of axially outward fluid passageways distal to said outlet face,



whereby volumetric expansion of gas from said gas passageways into the ambient atmosphere at said outlet face breaks up and gives direction to viscous fluid material dispensed from said fluid passageways.

4,796,814

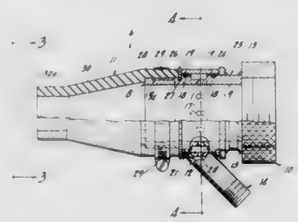
SEMI-LIQUID CEMENTITIOUS SPRAY NOZZLE APPARATUS

Robert E. Klemm, Milwaukee, and Gary D. Lehnhardt, Belgium, both of Wis., assignors to Construction Forms, Inc., Cedarburg, Wis.

Filed Sep. 9, 1987, Ser. No. 94,651

Int. Cl.[4] B05B *7/04, 7/14*

U.S. Cl. 239—430 **20 Claims**



17. A high pressure nozzle for semi-liquid abrasive material, comprising a tubular body having a passageway for transport of abrasive material, an outer air/swivel housing for telescoped in sealing and sliding engagement with said tubular body, sealing means coupled to the housing and tubular body to define an essentially air tight seal between said tubular body and cylindrical housing, air supply means coupled to said cylindrical housing for introducing air between said sealing means, and opening means for transferring of said air into said tubular body for air pressurized movement of said abrasive material.

4,796,815

VARIABLE-SPRAY SHOWER HEAD

Ilan Greenberg, Geula St. 15, Haifa, Israel

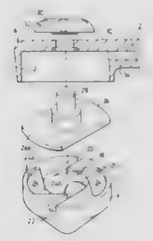
Filed Mar. 29, 1988, Ser. No. 174,559

Claims priority, application Israel, Apr. 3, 1987, 82096

Int. Cl.[4] B05B *1/34, 3/04*

U.S. Cl. 239—477 **20 Claims**

1. A variable-spray shower head, comprising: a housing including first and second end walls connected together by an annular side wall and defining an internal chamber therebetween; an inlet through one of said walls for connecting said chamber to a source of pressurized water; a circular cavity formed in said first end wall; a discharge nozzle formed through said first end wall centrally of said circular cavity; means defining a plurality of flow passageways from said inlet



to said circular cavity along different paths with respect to the tangent to said circular cavity; and a manual selector for selectively directing the water to flow from said inlet to said circular cavity via a selected one of said flow passageways to produce a different spray pattern according to the passageway or passageways selected.

4,796,816

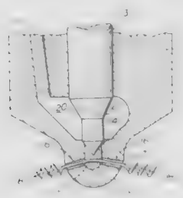
IMPINGING-JET FUEL INJECTION NOZZLE

Gregory Khinchuk, 15 Westbourne Ter., Apt. 3, Brookline, Mass. 02146

Filed Sep. 21, 1987, Ser. No. 98,689

Int. Cl.[4] B05B *15/02, 1/26;* **F02M** *61/16*

U.S. Cl. 239—501 **4 Claims**



1. A fuel injection nozzle, comprising: a hollow nozzle body having a spray tip with at least one discharge orifice; an axially movable fuel control valve mounted within said nozzle body; a fuel jet disintegrator being attached to said nozzle body and running as an extension of the longitudinal axis of said at least one discharge orifice; said disintegrator comprising a wire which runs through said at least one discharge orifice, whereby the end of said wire extends outside said spray tip and has a shape of a spring with an outer diameter greater than a diameter of said at least one discharge orifice; and when injected fuel exits said at least one discharge orifice, it impinges on the spring-shaped end of the wire, thereby breaking into tiny particles.

3. A fuel injection nozzle comprising:

a hollow nozzle body having a spray tip with at least one discharge orifice; an axially movable fuel control valve mounted within said nozzle body; a fuel jet disintegrator being attached to said nozzle body and running as an extension of the longitudinal axis of said discharge orifice; wherein said at least one discharge orifice has a threaded widened section on its outlet and said disintegrator has a shape of a spring which is screwed into said threaded widened section and leading from said at least one discharge orifice into the combustion chamber; and when injected fuel exits said at least one orifice, it impinges on the portion of the spring leading from said at least one discharge orifice, thereby breaking into tiny particles.

4,796,817

METHOD OF CONTROLLING A BOWL-MILL CRUSHER

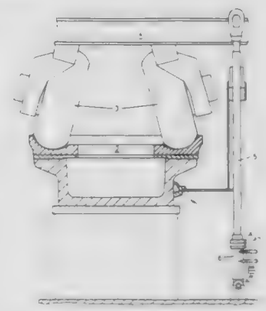
H. Zacher, Am Loh 20, 6349 Greifenstein-Holzhausen, Fed. Rep. of Germany

Filed Oct. 5, 1987, Ser. No. 105,594

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1986, 3639206

Int. Cl.[4] B02C *25/00*

U.S. Cl. 241—18 **8 Claims**



1. A method of controlling a bowl mill crusher having cylinders remaining in one position and rolling over a rotating bowl with a predetermined force, comprising the steps of supplying raw coal and primary air to the crusher; removing crushed coal from the crusher along with the primary air through a separator; supplying thereafter the crushed coal and primary air to burners through a pulverized-coal line; controlling the pressure of the primary air at entry of the bowl mill crusher according to a first function of load so that pressure of the crushing cylinders against the bowl is decreased according to a second function when a desired load dependent level is not attained. said pressure being increased when said level is exceeded said pressure being dependent on the amount of coal introduced into the mill said pressure being additionally corrected indirectly with respect to the supply of raw coal.

4,796,818

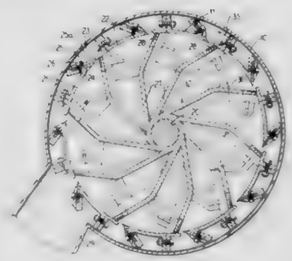
CHIP SLICER IMPROVEMENT

Ed Thoma, W. Vancouver, Canada, assignor to Beloit Corporation, Beloit, Wis.

Filed Jul. 30, 1987, Ser. No. 79,841

Int. Cl.[4] B02C *18/14*

U.S. Cl. 241—85 **12 Claims**



1. A mechanism for slicing oversize wood chips into smaller chips, which mechanism includes an enclosing housing; a

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cylindrical drum adapted to be rotated about its longitudinal axis within the housing and having a wall including a plurality of segments defining a corresponding plurality of slots in the wall, with the slots extending generally longitudinally along the drum wall, the wall including a plurality of knife elements each being mounted in a wall segment adjacent a slot; means for introducing oversize chips into the drum; an anvil rotor having a plurality of arms each with a corresponding blade element mounted thereon, with the anvil rotor adapted to rotate concentrically within the drum; and means for rotating the anvil rotor and drum in the same direction at different rotational speeds, with the rotor arm speed being greater than the drum speed; whereby oversize chips are positioned and oriented against the drum wall by centrifugal force where they are engaged by the anvil rotor arm blade elements and moved along the wall to the next drum knife element where relative movement of the blade element pushing the chip past the knife element cuts a slice from the chip to pass through a slot for discharge from the mechanism; the improvement comprising:

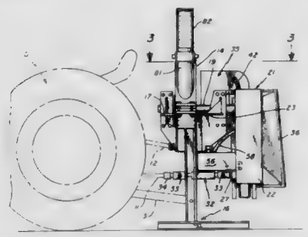
said knife elements and said blade elements being mounted on, respectively, the wall segments and rotor arms angularly relative to each other, passing knife and blade elements thereby defining a region for cutting chips between them less than the length of either, with said region for cutting chips beginning at one end of the passing knife and blade elements and progressing along the axial extent of both to the opposite ends as the blade rotates past the knife.

4,796,819

WOOD CHIPPER TO BE TRANSPORTED AND POWERED BY A TRACTOR

Carl D. Waterman, P.O. Box 349, Waldoboro, Me. 04572

Filed Nov. 16, 1987, Ser. No. 121,078
Int. Cl.[4] B02C *18/06*
U.S. Cl. 241—92 **10 Claims**



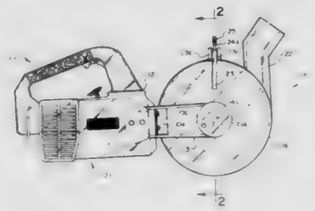
1. A wood chipper adapted to be attached to the rear end of a tractor having a power takeoff shaft and lifting arms and transported by the tractor, said chipper including forward and rearward housings and a stand below the forward housing in support of both housings and to which said arms are connectable, the forward housing being proximate to the tractor when the chipper is connected thereto and provided with a chip discharge, a driven shaft extending through the forward housing and into the rearward housing, bearing units in support of the shaft on opposite sides of the forward housing, a chipping unit within the forward housing and fixed on said driven shaft and provided with chipping blades exposed on the rearward side thereof and with impellers operable to discharge chips through said discharge, a drive shaft connectable to the power takeoff shaft of the tractor extending below the forward housing and rotatably supported by the rearward housing a belt drive within the rearward housing connecting the drive and driven shafts, and a wood feed including a chute opening into the forward housing at an acute angle with respect to the rearward side of the chipping unit with its infeed end close to but lateral of the rearward unit, said wood feed including a pair of feed rollers, means enabling one roller to move towards or away from the other roller, and an hydraulic drive for each roller, said drive including a pump driven by one of said belt connected shafts.

4,796,820

PORTABLE ROCK CRUSHER

Richard W. Hansen, 1027 Crestwood, Meridian, Id. 83642

Filed Aug. 12, 1985, Ser. No. 764,389
The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.
Int. Cl.[4] B02C *13/284, 13/288*
U.S. Cl. 241—69 **12 Claims**



1. A portable pulverizer comprising

a housing including a first housing portion and a second housing portion;

means releasably clamping the second housing portion to the first housing portion; to provide a crushing chamber therein;

a chute opening into the crushing chamber, whereby material crushed is fed into the crushing chamber through the chute;

a shaft journaled through the first housing portion;

a pulley on the shaft outside the crushing chamber;

flail means fixed to and rotatable with the shaft in the crushing chamber;

a chain saw frame and drive means; and

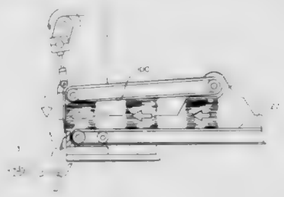
means coupling the drive means of the chain saw to the pulley to drive the shaft and the flail means, whereby operation of the drive means will turn the flail means in the crushing chamber to crush material placed in the housing.

4,796,821

CUTTING APPARATUS FOR LIVING PLANT MATERIALS

Liem T. Pao; Yeong H. Yuen, both of Singapore, Singapore, and Dan T. Wu, Surabaya, Indonesia, assignors to P. T. Panamas, Denpasar-Bali, Indonesia

Filed Jul. 25, 1986, Ser. No. 890,598
Int. Cl.[4] B02C *1/00*
U.S. Cl. 241—101.2 **8 Claims**



1. An apparatus for cutting bundled tobacco leaves, comprising:

cutting means, having a cutting blade coupled to a blade driving means, for cutting bundled tobacco leaves along a cutting plane defined by the cutting blade;

conveying means for conveying the bundled tobacco leaves on a conveying surface to the cutting plane, the bundled tobacco leaves having a thickness perpendicular to the conveying surface less than a preset maximum thickness at the cutting plane;

blade driving means for driving the cutting blade along the cutting plane in a downward stroke and an upwad stroke, the blade cutting bundles within the cutting plane in the downward stroke and the blade withdrawing in the upward stroke above the preset maximum thickness over the conveying surface; and

conveyor driving means, coupled to the conveying means and the blade driving means, for driving the conveying surface so that the conveying surface does not move toward the cutting plane while the cutting blade is less than the preset maximum thickness from the conveying surface and the conveying surface moves a preset distance toward the cutting plane when the cutting blade is more than the preset maximum thickness from the conveying surface wherein the blade driving means includes:

a rotating cam shaft;

means, coupled between the cam shaft and the cutting blade, for translating rotation motion of the cam shaft into reciprocating motion to drive the cutting blade in the upward and downward strokes; and wherein the conveyor driving means includes:

a conveyor cam mounted on the cam shaft of the blade driving means for translating rotation motion of the cam shaft into a reciprocating motion to supply an upward motion and a downward motion synchronized with the upward and downward strokes of the cutting blade;

connecting rod means, having a first end and a second end, connected to the conveyor cam at the first end and having an ajustable stop near the second end, for supplying the reciprocating motion;

a rod joint having a passage receiving the connecting rod means between the first end and the adjustable stop adapted to allow movement of the connecting rod means through the passage unless contacted by the adjustable stop during an upward motion;

a drive cam, coupled to the connecting rod means through the rod joint so that the connecting rod means engages the drive cam when the adjustable stop contacts the rod joint during the upward motion; and

a one way clutch coupled to the drive cam and the conveyor means so that the conveyor surface moves only in the direction of the cutting plane in response to the motion of the drive cam, the position of the adjustable stop on the connecting rod resulting in movement of the conveyor surface while the cutting blade is above the preset maximum thickness and setting the preset distance of the movement.

4,796,822

IMPELLER FOR AN IMPACT CRUSHER

Gabriel M. Terrenzio, Seattle, Wash., assignor to Acrowood Corporation, Everett, Wash.

Continuation of Ser. No. 774,669, Sep. 11, 1985, abandoned, which is a continuation-in-part of Ser. No. 553,222, Nov. 18, 1983, Pat. No. 4,577,806. This application Mar. 9, 1987, Ser. No. 23,925
Int. Cl.[4] B02C *19/00*
U.S. Cl. 241—275 **14 Claims**

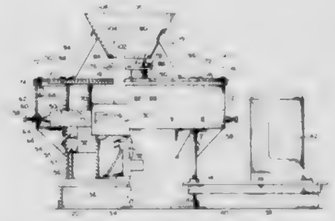
1. An impeller for use in a centrifugal impact rock crusher, said crusher having a cylindrical housing with a vertically disposed central axis and an interior, means defining an impact surface positioned radially around the interior of said housing and transverse to said central axis, impeller mounting means for mounting said impeller concentrically within said housing and for rotating said impeller about said axis, and feed means for feeding rock to be crushed to said impeller, said impeller comprising:

upper and lower cover plates, said lower cover plate being connected to said impeller mounting means and said upper cover plate defining an opening concentric with said axis for receiving rock to be crushed into said impeller;

means defining a landing surface carried upon said lower cover plate concentrically with said axis for impingement thereon of rock being fed to said impeller by said feed means;

a generally cylindrical sidewall between said upper and lower cover plate concentricall with a plurality of exit openings in an equally spaced relationship along said sidewall, each of said openings having two opposite side edges and a top edge and bottom edge between said side edges;

rock retaining means connected to at least one of said cover plates and said sidewall and adjacent to one of said side edges of each of said openings for retaining a portion of rock to be crushed as an accumulation within said impeller in response to rotation thereof, said retaining means being adapted to create and accumulation of such rock at each of said openings, wherein each of said accumulations will include a relatively well-defined accumulation face, rotation of said impeller causing rock to move generally along said accumulation faces as said rock is thrown through said openings; and



a plurality of wear plates carried on said upper and lower cover plates and covering said top and bottom edges of said exit openings, each of said wear plates having a wear plate surface extending outwardly from said landing surface away from said central axis, having an outermost edge, and being connected to one of said cover plates such that one of said accumulation faces will intersect at least one of said wear plates at a respective intersection, each at least one of said wear plates defining a recess along said intersection which extends into said wear plate surface of each of said at least one of said wear plates to a level below the level of the outermost edge of said at least one of said wear plates and away from the location of the respective accumulation face along at least a portion thereof, said recess extending outwardly relative to the landing surface and being adapted to retain therein a portion of rock to be crushed whereby the recess comprises part of the rock retaining means.

4,796,823

SPOOL FOR PROTOGRAPHIC FILM

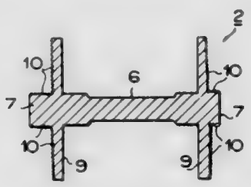
Mutsuo Akao; Hisao Eado; Toshio Sata, and Masanori Ishiguro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1987, Ser. No. 88,224
Claims priority, application Japan, Aug. 25, 1986, 61-197065
Int. Cl.[4] B65H *75/18*
U.S. Cl. 242—71.8 **3 Claims**

1. A spool for a photographic film comprising 50 to 99.8 wt. % of polystyrene resin, 0.05 to 2.2 wt. % of at least one member selected from the group consisting of dimethylpolysiloxane and modified dimethylpolysiloxane of which a part of the methyl groups are substituted by carboxylalkyl groups, 0.5 to 6 wt. % of rubber and 0.05 to 3 wt. % of carbon black having

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a pH of 5 to 9 and a mean particle size of 10 to 120 m, and the outer surface of the flange of the spool is made rough so that



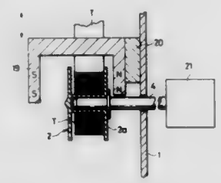
the reflectance of the incident light at an incident angle of 75 degrees is less than 40% in the direction of regular reflection at an angle of 75 degrees.

4,796,824

DEVICE FOR WINDING MAGNETIC TAPE USING MAGNETIC ALIGNMENT

Hiroshi Chikamasa; Akira Takagi, and Masaaki Sakaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 20, 1987, Ser. No. 51,785
Claims priority, application Japan, May 20, 1986, 61-113463
Int. Cl.[4] B65H *23/02*
U.S. Cl. 242—76 **5 Claims**



1. A magnetic tape winder, comprising:

a tape winding member to which a magnetic tape is attached;

means for rotating said tape winding member, whereby said magnetic tape is wound on said tape winding member;

at least one, substantially U-shaped magnet for generating a magnetic field extending substantially along the direction of of width of said wound tape, said tape winding member being at least partially disposed between opposing magnetic poles of said magnet, wherein the width l of each of said magnetic poles is greater than the maximum diameter of said wound tape, and wherein the U-shaped magnet is positioned such that at least half the maximum diameter of the wound tape is disposed between opposing magnetic poles of said magnet.

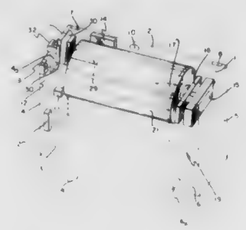
4,796,825

ELECTRONIC PAPER TOWEL DISPENSER

Junior F. Hawkins, 3120 W. 16th, Wichita, Kans. 67203

Continuation-in-part of Ser. No. 877,159, Jun. 23, 1986, abandoned, and Ser. No. 872,041, Jun. 9, 1986, Pat. No. 4,721,265. This application Sep. 25, 1987, Ser. No. 100,904
The portion of the term of this patent subsequent to Jan. 26, 2005, has been disclaimed.
Int. Cl.[4] B65H *16/00*; **G01V** *9/04*
U.S. Cl. 242—55.53 **6 Claims**

1. A paper towel dispenser comprising a cabinet means including a back panel, a top pivotally secured to said back panel, a first side panel secured to said back panel, a second side panel having a side opening and secured to said back panel, a front panel secured to said first and second side panels, and a bottom panel having a bottom opening and secured to said first and second side panels and to said front and back panels, a motor means secured to said back panel for producing rotational energy; a control circuit means mounted in said cabinet means and comprising a touchless switch means for energizing and de-energizing said motor means and dispensing paper towels in a sanitary manner; cone-shaped bearing means coupled to said motor means and frictionally, rotationally engages one side of paper towels for dispensing same when said motor means is energized; a stop member mounted to said back panel; a second bearing means releasably engaging an-



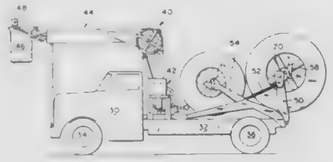
other side of the paper towels and supporting the same while being rotationally dispensed when the cone-shaped bearing means is rotated by the motor means; a bracket assembly integrally bound to said second bearing means and superimposed over the stop member and slidably mounted along the back panel in proximity to said side opening; and a means secured to said stop member and to said bracket assembly for biasing said bracket assembly away from said stop member and for biasing said second bearing means towards said paper towels.

4,796,826

METHOD OF STRINGING CABLE FROM A SPOOL MOUNTED ON A WHEELED VEHICLE AND A SYSTEM FOR PERFORMING THE METHOD

Wayne M. Pierce, 393 West River Rd., Milford, Conn. 06477

Division of Ser. No. 707,646, Mar. 4, 1985, Pat. No. 4,643,370.
This application Jan. 6, 1987, Ser. No. 845
Int. Cl.[4] B65H *75/42*
U.S. Cl. 242—86.5 R **11 Claims**



1. An apparatus for loading a spool onto a vehicle, the spool provided with a rod substantially axially extending therethrough and beyond the longitudinal ends thereof, one longitudinal end of the rod being provided with a drive sprocket concurrently rotatable with the rod, said apparatus comprising:

a pair of spaced rear arms pivotable about a first common axis, each rear arm provided with at least one finger protruding from an end thereof, the region between the rear arm and its associated finger being recessed and adapted to receive an end of the rod;

means associated with one of said rear arms adapted for operable engagement with and for rotating the drive sprocket when the drive sprocket is disposed in a predetermined position relative to said one rear arm;

means for disposing the drive sprocket in said predetermined position relative to said one rear arm;

a pair of spaced forward arms pivotable about a second common axis substantially parallel with said first axis, each forward arm provided with at least one finger protruding from an end thereof, the region between the forward arm and its associated finger being recessed and adapted to receive an end of the rod;

means associated with one of said forward arms adapted for operable engagement with and for rotating the drive sprocket when the drive sprocket is disposed in a predetermined position relative to said one forward arm;

means for disposing the drive sprocket in said predetermined position relative to said one forward arm;

means for pivoting the pair of rear arms such that the fingers of the rear arms move between a first, lower position and a second, higher position; and

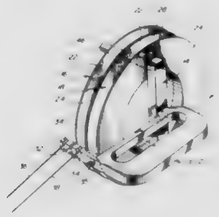
means for pivoting the pair of forward arms such that the fingers of the forward arms move between a third position and a fourth position, said second position and said fourth position being in substantially the same region of space, whereby the rod may be transferred from the recesses of said rear arms to the recesses of said forward arms.

4,796,827

COMBINATION KITE CONTROL AND REEL DEVICE

Dean J. Munt, III, and Nancy J. Munt, both of 27665 Estepona, Mission Viejo, Calif. 92630

Filed Aug. 26, 1987, Ser. No. 89,560
Int. Cl.[4] B65H *75/40*; **B64C** *31/06*
U.S. Cl. 242—96 **10 Claims**



1. A dual-line, hand-held, kite-control device, comprising:

a handle means including an axle pin integrally formed therewith;

a drive spindle rotatably mounted to said axle pin;

said drive spindle including means for rotating said drive spindle about said axle pin;

a pair of line spools removably mountable to said drive spindle whereby said line spools are hand-held in each hand of an operator thereof when said line spools are removed from said drive spindle;

means for removably mounting said line spools to said drive spindle; and

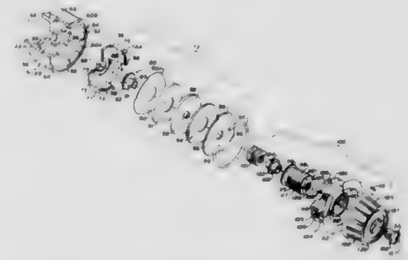
guide means formed on said handle means whereby lines from said line spools mounted on said drive spindle are guided back onto said line spools as said drive spindle is rotated.

4,796,828

CARTRIDGE REAR MOUNTED DRAG ASSEMBLY AND METHOD

Richard R. Councilman, Collinsville, Okla., assignor to Zebco Corporation, Tulsa, Okla.

Continuation of Ser. No. 794,965, Nov. 5, 1985, abandoned, which is a continuation of Ser. No. 670,657, Nov. 9, 1984, abandoned, which is a continuation of Ser. No. 470,604, Feb. 28, 1983, abandoned, which is a continuation-in-part of Ser. No. 406,539, Aug. 9, 1982, Pat. No. 4,488,689. This application Jan. 28, 1987, Ser. No. 9,648
Int. Cl.[4] A01K *89/00*
U.S. Cl. 242—84.5 A **22 Claims**



1. In an open faced spinning reel used for casting and retrieving a fishing line, the reel having a housing and a centershaft, the centershaft being axially reciprocable and having a keyed portion extending into a rearwardly facing cavity on the reel housing, a spool carried by a forward portion of the centershaft, a handcrank, a rotatably mounted bail support member connected by a transmission means to the handcrank to be rotated thereby; and bail means pivotally mounted on the support member to be rotated therewith; the improvement comprising

drag adjusting means for changing the drag on the centershaft and on the spool, the drag adjusting means comprising:

(A) drag applying cartridge means seated in the rearward facing cavity of the housing and being keyed to the reel housing to prevent rotation of the cartridge means relative to the cavity and to the reel housing; the cartridge means including

(a) drag drive means in the cartridge means keyed to the keyed portion of the centershaft;

(b) driven means in the cartridge means keyed to the drag drive means;

(c) a non-rotatable, axially movably means in the cartridge means which is axially spaced by friction means from the driven means; and

(d) means for retaining the drag drive means, driven means and non-rotatable means together whereby the cartridge means includes the drag drive means removable keyed to the centershaft, driven means keyed to the drag drive means, and friction means between the driven means and the non-rotatable means;

(B) spring means external of the cartridge means and bearing against the non-rotatable, axially movable means;

(C) adjusting means carried by the reel housing and bearing against the spring means; knob means turning the adjusting means for increasing or decreasing the loading of the spring means against the non-rotatable portion of the cartridge means to increase or decrease the drag on the centershaft and spool; gear means carried by the drag drive member and clicker means carried by the cartridge means extending into contact with the gear means whereby rotation of the centershaft produces an audible clicking sound.

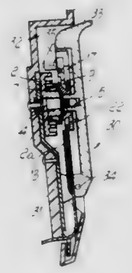
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,829

WINDER SAFETY DEVICE, PARTICULARLY FOR SKI BOOTS

Alessandro Pozzobon, Paderno Di Ponzano Veneto, and Pietro Maafré, Vedelago, both of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Filed Oct. 7, 1987, Ser. No. 105,623
Claims priority, application Italy, Oct. 20, 1986, 82584 A/86
Int. Cl.[4] B65H *75/38;* **A43B** *11/00, 5/04*
U.S. Cl. 242—100 **5 Claims**



1. A winder safety device, particularly for ski boots, comprising:
a supporting element defined by a ski boot
an operating knob
a stem defined by said knob
axial means for linking said stem to said supporting means so as to permit both a loose rotatory movement and a limited axial movement between said stem and said supporting means
a drive wheel
faceted means for connecting in rigid rotatory relationship said drive wheel to said stem while allowing for an axial movement between said drive wheel and said stem
a first gear provided on said drive wheel
a winder
a flexible traction element having a portion thereof secured to said winder so as to be able to be wound on said winder
said winder being pivotally mounted on said supporting element and being arranged for coaxial rotation with respect to said stem, in a direction of winding and in a direction of unwinding of said flexible traction element, a second gear defined by said winder, said second gear being arranged in facing relationship with said first gear for substantially continuous engagement therewith, said first gear and said second gear being so shaped that, upon driving of said first gear in said winding direction, said first gear is caused to mesh unidirectionally with said second gear to permit transmission of drive between said knob and said winder in said winding direction and, upon driving of said first gear in said unwinding direction, said first gear is automatically caused to engage without meshing with said second gear to prevent transmission of drive from said knob to said winder in said unwinding direction, whereby insuring safe unidirectional winding of said traction element.

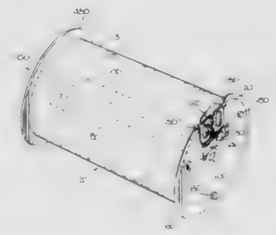
4,796,830

CABLE REEL

Stanley Gelfman, 491 High Cliffe La., Tarrytown, N.Y. 10591

Filed Mar. 25, 1988, Ser. No. 173,288
Int. Cl.[4] B65H *75/12*
U.S. Cl. 242—117 **21 Claims**

1. A cable reel comprising:
a first cylindrical member about which cable can be wound having a longitudinal axis and a hollow interior;
first and second flanges disposed at opposite ends of said cylindrical member substantially at right angles to the longitudinal axis of said cylindrical member, one of said flanges having an outside surface having at least one opening arranged adjacent the periphery of said one flange through which the cable can be traversed and a second opening in the surface disposed adjacent the center of said one flange and opening into the hollow interior of the cylindrical member, said hollow interior adapted to receive ends of the cable wound on said cylindrical member through the second opening, and further comprising means attached to said one flange having a wall disposed adjacent and parallel to the outside surface of said one flange and at a spacing from the surface of said one flange equal to at least approximately the thickness of said cable, for receiving the cable between the surface and the wall, thereby protecting said cable extending between said first and second openings.

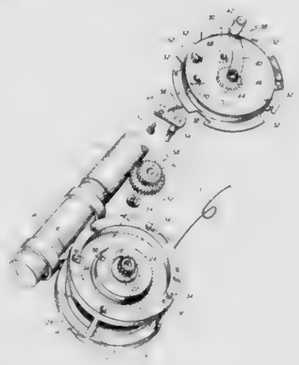


4,796,831

MULTIPLIER FLY CASTING REEL WITH ANTI-REVERSING MECHANISM

William G. Sheppard, Ilion, N.Y., assignor to Martin Automatic Fishing Reel Co., Inc., Mohawk, N.Y.

Filed Oct. 16, 1987, Ser. No. 109,076
Int. Cl.[4] A01K *89/00*
U.S. Cl. 242—212 **11 Claims**



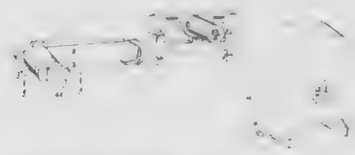
1. A multiplier fly casting reel comprising a spool for containing a length of fly fishing line; a frame rotatably mounting said spool; a cover mounted on said frame axially over one side of the spool; a manually rotatable crank journalled in said cover and having a crank gear affixed thereon; an axial drive pinion mounted at one side of said spool; a multiplier gear assembly disposed between the spool and the cover and engaging the spool drive pinion and the crank gear such that a single rotation of said crank results in more than one rotation of the spool; and means for mounting said multiplier gear assembly to permit limited movement thereof with respect to said crank gear and spool drive pinion including means for moving the multiplier gear assembly in response to spool rotation when said fly line is drawn out from said spool to disengage the crank from the spool so that the crank is not turned by the rotation of said spool, and means for automatically moving back the multiplier gear assembly for reengaging the crank with the spool to permit rewind of said line when drawing out of the line ceases.

4,796,832

DISPENSER FOR JUMBO ROLL OF TOILET TISSUE

Rudolph W. Schutz, Walnut Creek, and William Schultz, Pacifica, both of Calif., assignors to James River II, Inc., Oakland, Calif.

Continuation-in-part of Ser. No. 20,635, Mar. 2, 1987, abandoned. This application Nov. 16, 1987, Ser. No. 121,310
Int. Cl.[4] B65H *19/10, 35/06*
U.S. Cl. 242—55.3 **5 Claims**



1. A dispenser for roll tissue comprising a base adapted to be secured to a wall, a first spindle extending from the base for receiving a jumbo roll of tissue, a second spindle mounted on the base for receiving the jumbo roll after it has been partially spent, a housing adapted to enclose the first spindle but not the second spindle, the housing being hinged to the base to permit access to the first spindle, means securing the housing and the second spindle that discourage pilferage of the rolls but permit access to them by an attendant when the rolls are changed, the means for securing the second spindle being a movable retaining element capable of extending from the end of the spindle in a direction substantially perpendicular to the axis of the spindle to discourage pilferage of a stub roll borne by the spindle, and being capable of being moved so that it does not so extend from the spindle to permit the stub roll to be removed and replaced.

4,796,833

OPTICAL FIBER GUIDED TUBE-LAUNCHED PROJECTILE SYSTEM

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 032,448, Mar. 31, 1987. This application Sep. 8, 1987, Ser. No. 93,599
Int. Cl.[4] F41G *7/32*
U.S. Cl. 244—3.12 **7 Claims**



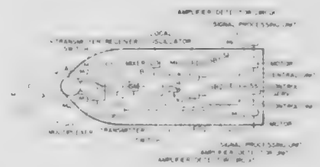
1. In an optical fiber guided projectile system for firing a projectile having trailing and leading ends from a generally tubular launcher and for guiding the projectile to a target, wherein the projectile includes an extended length of optical fiber disposed for streaming from the trailing end of the projectile during flight and wherein, prior to firing, a portion of the optical fiber extends from the trailing end of the projectile axially along the inner surface of the tubular launcher and through the mouth of the launcher to a control means, the improvement comprising:
a generally resilient plug disposed in the launcher between the leading end of the projectile and the mouth of the launcher, said plug securing said portion of the optical fiber in axial orientation along the inner surface of the tubular launcher during firing of said projectile.

4,796,834

METHOD FOR COMBATTING OF TARGETS AND PROJECTILE OR MISSILE FOR CARRYING OUT THE METHOD

Lars G. W. Ahlström, Stockholm, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 298,129, Aug. 31, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 599,215
Claims priority, application Sweden, Sep. 15, 1980, 8006457
Int. Cl.[4] F41G *7/22*
U.S. Cl. 244—3.16 **2 Claims**



1. A weapon system for guiding projectiles to a target at which they are fired, said projectiles including:
(a) at least one target illuminating projectile having illuminating means for directively transmitting illuminating electromagnetic radiation towards the target only during a latter part of a continuing path of travel of said illuminating projectile toward said target; and
(b) at least one self-guided projectile having a target tracking device comprising:
(1) receiving and detecting means adapted for receiving and detecting illuminating electromagnetic radiation transmitted by a target illuminating projectile and reflected from the target;
(2) signal processing means coupled to the receiving and detecting means for producing an error signal representing deviation of the self-guided projectile's path of travel from the target; and
(3) guiding means coupled to the signal processing means and responsive to said error signal to adjust the path of travel of the self-guided projectile to reduce said deviation;
said illuminating means comprising a multilobe antenna and means coupled to said antenna and to said signal processing means for selectively activating a lobe of said antenna in which the target is detected.

4,796,835

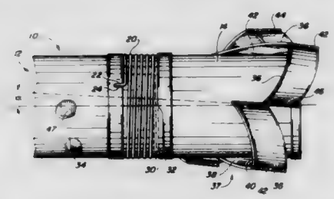
PROJECTILE

Mark W. Galvin, Simi Valley, Calif., assignor to The Marquardt Company, Van Nuys, Calif.

Continuation-in-part of Ser. No. 942,724, Dec. 17, 1986, Pat. No. 4,752,052. This application Aug. 24, 1987, Ser. No. 88,650
Int. Cl.[4] F42B *13/32*
U.S. Cl. 244—3.29 **18 Claims**

1. An improved spin and flight-stabilized projectile, said projectile comprising in combination:
(a) an elongated projectile body;
(b) an outer shell disposed around a portion of said body;
(c) a plurality of fins connected to and forming part of said shell for simultaneous movement of said fins between a closed low-profile position overlying the outer periphery

of said body and a fully deployed flight-stabilizing position projecting outwardly from said body, each said fin comprising a pair of elongated plates separately hinged on the opposite ends thereof, one end of each plate being hinged to the other of said pair of plates and the opposite ends of said pair of plates being hinged to said shell, said



pairs of plates being aligned in a direction diagonal to the longitudinal axis of said body, with said hinges at an angle to said longitudinal axis; to provide said projectile during flight with a rolling moment around said longitudinal axis,

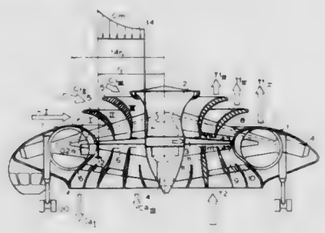
(d) impeller means operatively connected to said shell for moving said fins between said stored and deployed positions.

4,796,836

LIFTING ENGINE FOR VTOL AIRCRAFTS

Benso Buchelt, Maria Saal, Austria, assignor to Dieter Schatzmayr, Klagenfurt, Austria

Continuation-in-part of Ser. No. 834,799, Feb. 28, 1986, abandoned. This application Feb. 3, 1987, Ser. No. 10,360
Claims priority, application Austria, Feb. 28, 1985, 600/85
Int. Cl.[4] B64C *29/00*
U.S. Cl. 244—23 R **15 Claims**



1. A propulsion apparatus for generating vertical lift in an aircraft, comprising:

a fan shroud defining a substantially vertical airflow passage having an axis, an upper inlet end and a lower outlet end, said passage being rotationally symmetrical about said axis but differing from a right-circular cylinder over its entire length;

a fan rotatable in said passage about said axis and having a plurality of generally radial blades where the radial axis of these blades is lying in a plane perpendicular to said axis between said inlet and outlet ends and where these fan blades can be also rotatable around their blade axis for control purposes;

a torus-like convexly curved part rotationally symmetrical about said axis and formed on said shroud at said inlet end of said passage, said torus-like convexly curved part extending from a location substantially 1.4 r_f upstream of said blades seen radially to a location substantially 0.2 r_f downstream of said blades seen axially where r_f is a tip radius of said blades measured from said axis to a tip of the blades, said tips of said blades defining a gap with said part which is at most 1/25 of the diameter of said fan; and

at least one engine operatively connected with said fan for rotating same,

said rotating blades being of airfoil cross section with the angle between the chord lines of the blades and the rotation plane of the fan blades decreasing from the hub of the fan to a radial midsection of the fan blades and increasing from the radial midsection towards the fan tip by an increment (AB) having a value in the range from 0 degrees up to 25 degrees to generate upon rotation of said fan a meridional airflow velocity through said passage which is nonuniform over the radius thereof and increases from a value proximal to said axis to a maximum at the periphery of said passage, said radial midsection of the fan blades being defined as a distance $\pm 0.25r_f$ around a means fan blade radius and as the arithmetic means between fan hub radius and fan tip radius, and

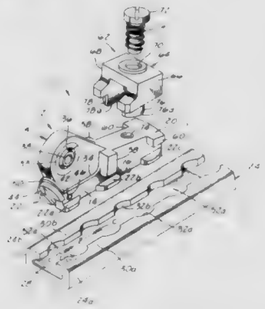
the meridional radii of curvature of said torus-like convexly curved part between said locations being $0.2r_f$ to $1r_f$.

4,796,837

LEG SEAT TRACK FITTING WITH IMPROVED BEARING MEMBER

Eugene G. Dowd, 4711 Clubview Dr., Westlake Village, Calif. 91362

Continuation-in-part of Ser. No. 78,202, Jul. 27, 1987. This application Apr. 15, 1988, Ser. No. 182,103
Int. Cl.[4] B64D *11/06*
U.S. Cl. 244—122 R **10 Claims**



5. A leg seat track fitting adapted to be removably secured in a track carrying an airplane seat wherein said track has an elongated groove disposed lengthwise in the track which is partially covered by a pair of spaced apart lips which are parallel to each other and provide a gap there between and have therein a series of aligned pairs of slots which provide a series of receptacle sections in the track,

said track fitting comprising

a body member having a base and a wall element extending outwardly from the base, an enlarged leg holding section integral with the wall element and including a spherical bearing member for receiving pin means which is attached to the leg of the airplane seat, said spherical bearing member being received within an opening in the wall element and comprising

(a) a tubular member having opposed open ends connected by a passageway which receives the pin means, said tubular member having a raised, external portion intermediate said ends which has a segmented, convex spherical bearing surface, and

(b) a pair of retainer elements having internal, segmented, concave, spherical surfaces which conform to the spherical bearing surface, each retainer element being on opposite sides of the raised external portion of the tubular member and press fitted in the opening in the wall element to hold the tubular member in position,

said base being generally flat and adapted to abut the floor of the track when the fitting is placed in the track, with the wall extending outwardly through the gap between the lips,

integral with the body member, a plurality of spaced apart pairs of tabs, with the tabs of each pair being on opposite sides of the wall and projecting outwardly from the wall generally at a right angle to the wall, with the distance between said pairs of tabs being equal to the distance between adjacent pairs of receptacle sections, and

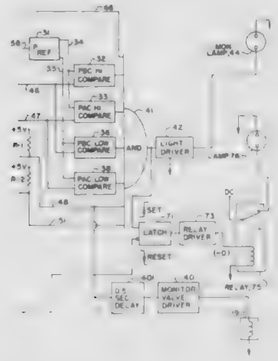
said tabs being adapted to grip the underside of the lips between adjacent pairs of receptacles when aligned therewith and the fitting received in the groove, said tabs also being adapted to be received in the groove by passing through corresponding receptacles and laterally moving the fitting in the groove to bring the tabs into registration with the underside of the lips between adjacent pairs of slots.

4,796,838

HOSE REEL MONITOR FOR INFLIGHT REFUELING SYSTEM

Tsutomu Yamamoto, Fountain Valley, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 14, 1988, Ser. No. 144,885
Int. Cl.[4] B64D *39/02*
U.S. Cl. 244—135 A **1 Claim**



1. Aircraft inflight fuel transfer hose reel monitor system having a boost cylinder and an accumulator, comprising:

a first signal source for producing a first signal proportional to actual hydraulic pressure within said boost cylinder;

a second signal source for producing a second signal proportional to actual hydraulic pressure within said accumulator;

first, second, third and fourth comparator means each having first and second input terminals and an output terminal;

reference signal generator means for applying an upper limit reference signal derived from an airspeed related computed reference voltage to the first input terminal of said first and second comparator, and for applying a lower limit reference signal, derived from said computed reference voltage to the first input terminal of said third and fourth comparator;

a first test signal source for producing a first simulated test signal representing a normal value of hydraulic pressure within said boost cylinder;

a second test signal source for producing a second simulated test signal representing a normal value of hydraulic pressure within said accumulator;

indicator means coupled to the output terminals of said first, second, third and fourth comparators for producing an output indication only if signals applied to the second input terminals of all of said comparators have values lying between said lower limit and said upper limit; and

switching means for coupling said first and second simulated test signals to the second input terminals of said comparators during a self test interval, and for thereafter coupling said first and second actual hydraulic pressure signals to the second input terminals of said comparators after deployment of said hose.

4,796,839

SPACE LAUNCH VEHICLE

Hubert P. Davis, Star Rte. 2, Box 298K, Canyon Lake, Tex. 78130

Filed Jan. 8, 1987, Ser. No. 1,804
Int. Cl.[4] B64G *1/40, 1/62*
U.S. Cl. 244—158 R **3 Claims**



1.

A method of launching a rocket vehicle having one fixedly mounted rocket engine and two detachable mounted rocket engines affixed to a structural base member, having a plurality of propellant tanks demountably fastened to the exterior of said rocket vehicle forward of said structural base member, having fuel tanks fixed to the interior of said rocket vehicle, and having a payload fairing in the forward portion of said rocket vehicle, said method of launching comprising the steps of:

igniting said fixedly mounted rocket engine and said detachably mounted rocket engines;

passing propellant to said engines from said plurality of propellant tanks until said rocket vehicle achieves a desired altitude;

stopping the passage of propellant between said propellant tanks and said two detachably mounted rocket engines such that said detachably mounted rocket engines are shut down;

detaching first each of said detachably mounted rocket engines from said rocket vehicle such that each of said detachably mounted rocket engines drop from said rocket vehicle, said step of detaching further comprising:

securing the detached rocket engines within a reentry vehicle, said reentry vehicle being a structural member having atmospheric shielding capabilities for protection of said rocket engine, said reentry vehicle having a parachute deployment section arranged therein;

demounting second said plurality of propellant tanks from the exterior of said rocket vehicle such that said plural-

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ity of propellant tanks drop from said rocket vehicle; and

passing propellant from said fuel tanks to said fixedly mounted rocket engine, said propellant from said fuel tanks sufficient to allow said rocket vehicle to achieve an orbit.

4,796,840

TRAILING EDGE FLAP OPERATION IN WINGS

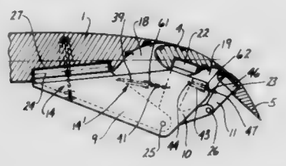
Johann T. Heynatz, Immenstaad, Fed. Rep. of Germany, assignor to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 22, 1987, Ser. No. 76,307

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1936, 3624675

Int. Cl.⁴ B64C *9/18*

U.S. Cl. 244—215 **7 Claims**



1. Flap arrangement with adjustment devices along the trailing edge of an aircraft wing, having a plurality of wing flaps, comprising:

a first flap carrier, pivotably mounted to the wing, on shaft means which extend in chord direction of the wing, said shaft means being slidably mounted in a recess on the underside of the wing, for sliding in spanwise direction, said first carrier thus being provided for pivoting and down extension as well as sliding, in and retraction into the recess in the wing, while undergoing a combined sliding and pivot motion for down extension, the carrier will extend in spanwise direction when folded into the recess;

a plurality of further carriers including a second carrier being hinged to said first carrier through a first, spanwise pivot axis when the first carrier is pivoted out of the recess, and a third carrier pivoted to the second carrier by a second pivot axis extending spanwise when the second and third carrier extend down, the plurality of further carriers being respectively pivoted to further chordwise axes on said wing flaps such that when all said wing flaps are in a retracted position the latter chordwise pivot axes are coaxial with said first pivot axis;

means for pivoting the further carriers about the spanwise pivot axes for protraction and retraction of the wing flaps;

said wing flaps having recesses, said further chordwise axes being established by additional shafts, respectively, sliding in the latter recesses; and

the first carrier, when situated in the recess of the wing, causing the wing to offer minimal drag as all of the carriers are now within aerodynamic confines of the wing plus wing flap configuration.

4,796,841

FABRIC REINFORCED RUBBER PRODUCT HAVING MOLDED ISOLATOR BUSHINGS

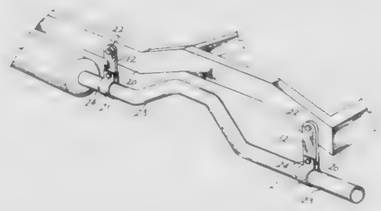
Louis Baker, Mishawaka, Ind., and Gerald W. Holland, Matthews, N.C., assignors to Baker Rubber, Inc., South Bend, Ind.

Filed Sep. 24, 1984, Ser. No. 653,332

Int. Cl.⁴ F16L *3/00*

U.S. Cl. 248—60 **2 Claims**

1. A corrosion-proof hanger for automotive exhaust systems and the like comprising: an elongate strap of fiber-reinforced, cured rubber composition, having spaced-apart, fastener-receiving apertures; and a tubular bushing of molded rubber material snugly mounted in at least one of said apertures,



whereby to combine the respective strength, shock-damping, vibration-isolating and heat-insulating properties of said fiber-reinforced cured rubber composition and said molded rubber material.

4,796,842

SWIVEL SUPPORT STRUCTURE FOR AN ELECTRIC APPARATUS

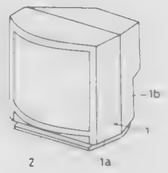
Takashi Hamada; Teruyuki Hino; Takashi Nodama, and Hiroshi Matsuoka, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1987, Ser. No. 19,118

Claims priority, application Japan, Mar. 5, 1986, 61-32732[U]; Mar. 5, 1986, 61-32733[U]; Mar. 5, 1986, 61-32734[U]; Mar. 5, 1986, 61-32735[U]; Mar. 5, 1986, 61-32736[U]; Mar. 5, 1986, 61-32737[U]; Mar. 5, 1986, 61-32738[U]; Mar. 5, 1986, 61-32739[U]; Mar. 5, 1986, 61-32740[U]

Int. Cl.⁴ F16M *11/08*

U.S. Cl. 248—186 **40 Claims**



1. A remote-controlled, motor-driven swivel support structure which comprises a console; a pedestal for the support thereon of the console for angular movement from a neutral position to any one of leftward and rightward positions, said pedestal comprising a stationary and a generally ring-shaped turntable rotatably mounted thereon, said turntable having a generally ring-shaped driven bevel gear provided thereon in concentrical relationship with the axis, about which the console is rotatble, so as to face upwardly, said pedestal also including a plurality of roller assemblies arranged in a circular row concentrical with the turntable and spaced a predetermined distance from each other in a direction circumferentially of the turntable for the support of the weight of the console; and a drive mechanism including remote-controlled, reversible drive motor and a drive bevel gear drivingly coupled with the drive motor, said drive bevel gear being so positioned as to partially protrude outwardly downwardly from the bottom of the console for engagement with the driven bevel gear on the turntable, the engagement between the drive bevel gear and the driven bevel gear taking place when the console is mounted on the pedestal from above.

4,796,843

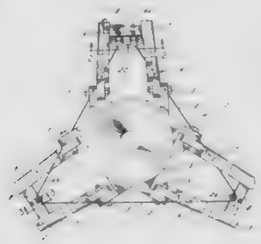
CABLE TRIPOD SPREADER

Chadwell O'Connor, 2024 Galaxy Dr., Newport Beach, Calif. 92660

Filed Nov. 5, 1987, Ser. No. 116,960

Int. Cl.⁴ F16M *11/38*

U.S. Cl. 248—168 **3 Claims**



1. An instrument supporting tripod comprising, in combination, three legs adapted to be supported from a substantially parallel transport position to a spread support position, means interconnecting said legs including a flexible cable, a spring biased drum for receiving said cable in spooled relation, said spring bias being sufficient to drive the drum to spool on said cable after the cable has been pulled from the drum as the legs move to said spread support position, a locking device for positively preventing rotation of said drum, and means for operating said locking device to lock or release said drum.

4,796,844

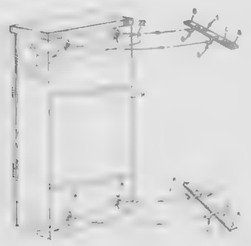
BRACKET FOR USE IN SECURING AN ELECTRIC METER BASE

Ronald Barker, 17 Satok Terrace, West Hill, Ontario, Canada M1E 3N4

Filed Nov. 27, 1987, Ser. No. 125,690

Int. Cl.⁴ F16L *3/08*

U.S. Cl. 248—222.2 **3 Claims**



1. A bracket for attaching an electric meter base to an exterior wall of a building, the base having at least one pair of mounting passages opening through its rear wall, each pair of mounting passages being spaced a predetermined first distance from an adjacent end of the base, the rear wall of the base having a predetermined width between its side edges, said bracket comprising;

(a) a mounting strap having a front face extending in a first plane, a pair of end portions at opposite ends thereof and an upper edge, said strap having a length between said end portions which is at least equal to said predetermined width of the rear wall of the base whereby said end portions may project laterally from the side edges of said base in use, and openings opening through said opposite end portions for mounting said bracket on a wall with the front face remote from the wall;

(b) a pair of hook members each having a shank portion and a curved end portion which projects from the shank portion and terminates at a free distal end, the curved end portion being proportioned to extend through the mounting passages in a free fitting sliding relationship, the hook members being mounted on or formed from the mounting strap and spaced from one another so as to be alignable with said mounting passages, said hook portions being arranged to extend from the upper edge of the strap and projecting from said first plane in an arc of curvature which initially extends forwardly from the front face of said strap and then back toward the first plane to locate said distal end in a spaced relationship with respect to said first plane to form a box retaining gap therebetween which is narrower than said first distance such that in use hook member must be threaded through the mounting passages before the bracket is mounted on a wall and the base cannot be removed from the hook members when the bracket is secured to the wall.

4,796,845

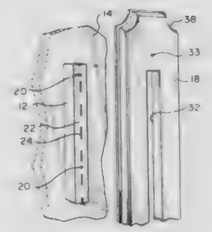
SUPPORT DEVICE FOR MODULAR WALL UNIT

Edmond R. Regel, 6761 Oldstage Rd., Boulder, Colo. 80302

Filed Aug. 7, 1987, Ser. No. 83,526

Int. Cl.⁴ E04G *3/08*

U.S. Cl. 248—243 **20 Claims**



1. In a modular wall unit support system including in combination an elongate support member mountable to a vertical surface, said support member including an inward face and an outward face and a depth dimension, means for mounting said inward face of said support member to said vertical surface, and further including means for receiving one or more load bearing members, said receiving means being spaced longitudinally along said outward face of said support member; and said load bearing members providing a base to which a load can be secured, each load bearing member including means for engaging said receiving means of said support to adjustably located and detachably mount said loading bearing member to said support member, wherein the improvement comprises:

a unitary elongated pilaster, said pilaster including an inward face and an outward face and a depth dimension, and defining a substantially centrally elongate opening, said opening being sized and shaped to surround and substantially firmly engage a support member mounted on a vertical surface, and provide firm lateral support and firm vertical support to such a support member when such a support member has a load bearing member mounted on it and loading forces are imposed on such a load bearing member.

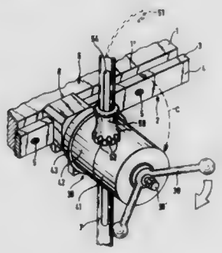
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,846

RETAINING DEVICE FOR A SURGICAL INSTRUMENT

Hans Meier, Mellingen, Switzerland, and Nash Annenberg, New York, N.Y., assignors to Automated Medical Products, Corporation, New York, N.Y.

Filed Jan. 1, 1987, Ser. No. 55,925
Int. Cl.[4] E04G *3/00*
U.S. Cl. 248—286 **7 Claims**



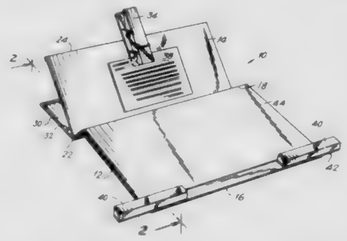
1. A retaining device, especially for holding a surgical instrument, comprising:
- a holder block adapted to be displaceably securable along a guide rail;
- said holder block being provided with clamping elements for fixedly engaging said holder clock with said guide rail;
- support means for holding the surgical instrument and displaceably supported by said holder block;
- clamping means provided for said holder block and serving for allowing displacement of said support means and for arresting said support means in a desired position;
- said clamping means being rotatable with respect to said clamping elements;
- actuating means for simultaneously actuating said clamping means and said clamping elements during arresting of said support means in a desired position;
- said clamping means comprising a fixed clamping jaw and a movable clamping jaw;
- said holder block comprising a guide body for supporting said clamping means;
- said clamping means being displaceably and rotatably mounted at said guide body;
- said actuating means comprising tightening means cooperating with said clamping means and serving for simultaneously tightening said clamping means and clamping said clamping elements at the guide rail;
- said holder block comprising a substantially horseshoe-shaped body member;
- said fixed clamping jaw being arranged at said substantially horseshoe-shaped body member;
- said substantially horseshoe-shaped body member of said holder block further comprises two arm members;
- a pivot pin arranged between said two arm members;
- spring means disposed about said pivot pin;
- said movable clamping jaw being mounted upon said pivot pin for pivotable movement between an open position and a closed position;
- said movable clamping jaw being biased into said open position by said spring means;
- said guide body being provided at said substantially horseshoe-shaped body member and serving to displaceably and rotatably mount said clamping means;
- said clamping means comprising a bipartite clamping mechanism composed of two clamping parts; and
- each of said two clamping parts having a pair of coaxially arranged recesses extending transverse to said guide body.

4,796,847

DESKTOP ORGANIZER

Morris Kayner, 8800 Boulevard East, North Bergen, N.J. 07047

Filed Sep. 30, 1987, Ser. No. 103,427
Int. Cl.[4] A47B *19/00*
U.S. Cl. 248—441.1 **11 Claims**



1. A unitary desktop organizer operatively positionable in self-supported freestanding relation on a desktop for selectively and concurrently supporting a plurality of articles in positions facilitating the availability and use of the articles, comprising:
- a first substantially planar member operatively disposed at a first angle relative to the desktop and extending from a front edge for supported abutment with the desktop to a rear edge vertically upwardly spaced from the desktop to define a first article support surface;
- a second substantially planar member operatively disposed at a second angle relative to the desktop and extending from a front edge for supported abutment with the desktop to a rear edge vertically upwardly spaced from the desktop to define a second article support surface, said second angle being greater than said first angle;
- a third substantially flat planar member unitarily connecting said first member rear edge and said second member front edge and defining an article capturing trough between said first and said second members; and
- a substantially planar base member unitarily connected to said second member front edge and extending rearwardly therefrom along and supportedly on the desktop to define a third article support surface, said base member and second member defining therebetween an article storage area; and wherein said first and second members are constructed at least in part of ferromagnetic material so as to provide at least portions of said first and second article support surface to which articles having magnetic means are magnetically cooperably retainable; and further comprising article retaining means including a surface having a magnetic portion for magnetically cooperable and releasable retention of said article retaining means to at least one of said first and second members for facilitating support of articles of said organizer.

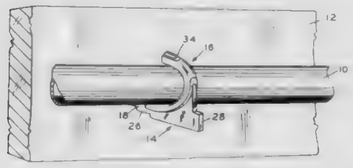
4,796,848

PLASTIC-CLAD, ELECTRICALLY INSULATED, METAL PIPE HANGER

Donald D. Lanz, 15702 S. Neibur Rd., Oregon City, Oreg. 97045

Filed Mar. 30, 1987, Ser. No. 31,582
Int. Cl.[4] F16B *15/00*
U.S. Cl. 248—71 **2 Claims**

1. A pipe hanger comprising:
- (a) a metal stud-like shank segment and an integral metal, pipe-receiving hook segment merging with the shank segment through an inwardly facing throat segment, and
- (b) a sheath of electrically insulating flexible plastic tubing having a substantially half-round inner end segment overlying the inner surface of the throat segment and a tubular segment outwardly of the inner end segment encircling at least a portion of the hook segment and overlying the inner surface of the hook segment.

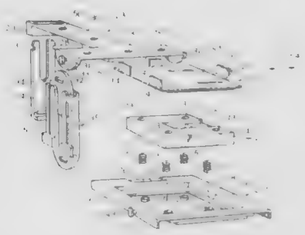


4,796,849

ANTI-VIBRATION MOUNTING DEVICE FOR A COMPACT DISK PLAYER

Jean P. Fouassier, Cachan, France, assignor to Armodel S.A., Fontenay aux Roses, France

Filed Oct. 22, 1987, Ser. No. 111,275
Claims priority, application France, Jan. 7, 1987, 87 00085
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—619 **28 Claims**



1. An anti-vibration device for attaching an article to a movable vehicle comprising:
- (a) a generally planar base;
- (b) a support plate defining a supporting surface;
- (c) clamping means mounted on the support plate such that at least a portion of the clamping means extends above the supporting surface for removably clamping the article to the support plate;
- (d) spring means mounted between the base and the support plate;
- (e) a layer of vibration dampening foam material attached to the base and to the support plate to attach the support plate to the base so as to minimize the transmission of vibrations from the base to the support plate; and,
- (f) mounting means to attach the base to the vehicle.

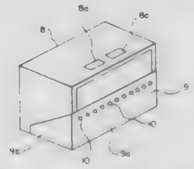
4,796,850

COOKING APPARATUS FOR MOUNTING ON A WALL

Yoshihiro Aramaki, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 37,061, Apr. 13, 1987, abandoned, which is a continuation of Ser. No. 826,756, Feb. 6, 1986, abandoned. This application Apr. 22, 1988, Ser. No. 186,766
Claims priority, application Japan, Mar. 14, 1985, 60-37831[U]
Int. Cl.[4] F16M *1/00*
U.S. Cl. 248—674 **2 Claims**

1. A cooking apparatus for mounting on a wall comprising a front structure and a back structure which are removably attachable to each other to form together a housing for said apparatus, said back structure including back and bottom plates which form portions of said housing, said back structure being directly attached to a wall surface, said apparatus becoming mounted on said wall surface with said front structure becoming secured to said back structure; and
- wherein said back structure further includes side plates, said front structure also includes side plates, and said side plates of said front and back structures fit together to form side walls of said housing; and
- wherein said housing is slidably attachable to said back structure.

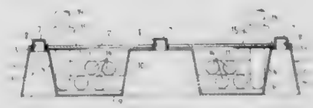


4,796,851

REINFORCING ROD HOLDER FOR USE IN JOINING CAST CONCRETE WORK

Fritz Brechbuehler, Muensingen, Switzerland, assignor to Pebes, N.V., Curacao, Netherlands Antilles

Filed Jan. 14, 1987, Ser. No. 3,266
Claims priority, application European Pat. Off., Jan. 15, 1986, 86810014.0; Mar. 24, 1986, 86810139.5
Int. Cl.[4] E04B *1/41*
U.S. Cl. 249—91 **21 Claims**



1. A reinforcing rod holder for use in joining cast concrete work comprising:
- a box-shaped body adapted to receive free ends of reinforcing rods;
- a cover means removably secured to said body, for substantially enclosing said body; and
- an embedding means for embedding said cover means in a concrete mass, apart from said body, while said cover means is removably secured to said body, said embedding means comprising a recess means formed in said box-shaped body for permitting concrete to pass behind said cover means when the holder is embedded in concrete.

4,796,852

Patent Not Issued For This Number

4,796,853

REMOTELY CONFIGURABLE SOLENOID DRIVER CIRCUIT FOR DIRECT PRESSURE ELECTRONIC TRANSMISSION CONTROL

Kenneth R. Butts, Grosse Pointe Woods, and Joseph L. Wanamaker, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1987, Ser. No. 136,331
Int. Cl.[4] F16K *31/06*
U.S. Cl. 251—129.05 **5 Claims**

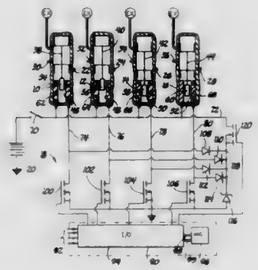
1. In a motor vehicle multi-speed ratio transmission including a source of fluid pressure, a source of direct current, and a plurality of electromagnetic valves which receive fluid from said fluid source, and are adapted to be individually and intermittently energized with said current source during shifting modes of operation in which at least one of such valves is

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alternately opened and closed to supply fluid at a pressure lower than said fluid source, and nonshifting modes of operation in which the energized valves are maintained fully opened to supply fluid substantially at the pressure of said fluid source, a driver circuit for controlling energization of said valves, comprising:

energization circuit means including battery means connected to an unswitched terminal of each of said valves, and plurality of selectively activated power switching devices, each having a pair of current carrying terminals connected between said battery means and a switched terminal of a respective one of said valves to form selectively activated energization circuits for each of said valves;

current interruption/protection means including a Zener diode connected across the current carrying terminals of



each of said power switching devices, in each case, through an oppositely poled diode associated with the respective power switching device, such means being operative during said shifting modes of operation to interrupt the current supplied to the valves between intermittent energizations thereof while limiting the electromagnetic voltage thereby generated across the respective power switching devices; and

current sustaining means effective during said nonshifting modes of operation for connecting a junction between said Zener diode and said oppositely poled diodes to the unswitched terminals of each of said valves, thereby to disable the operation of said current interruption/protection means, and to connect said oppositely poled diodes across the respective valves for sustaining the current in such valves between intermittent energizations thereof.

4,796,854

BALANCED SOLENOID VALVES

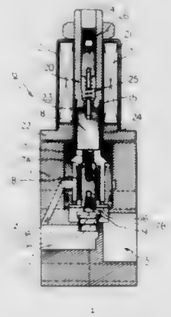
James H. Ewing, Brockton, Mass., assignor to MKS Instruments, Inc., Andover, Mass.

Filed May 18, 1987, Ser. No. 50,900

Int. Cl.[4] F16K *31/02, 39/02*

U.S. Cl. 251—129.07 **2 Claims**

1. Fluid valving apparatus comprising a valve body having fluid inlet and outlet ports, a valve seat having a passageway for connecting said ports, a valving member, a stem structure fixed with said valving member, substantially frictionless means suspending said stem structure in said body in support of said valving member for movements thereof along an axis toward and away from said seat in nearby positions where fluid pressure differences appear across said valving member and create first net forces tending to move said valving member in one direction along said axis, solenoid control means for moving and setting the position of said valve stem structure and valving member along said axis to govern flow of fluid between said ports through said seat passageway, said solenoid control means including an electrical solenoid winding fixed with said body and a cooperating relatively movable armature of magnetic material fixed with and movable with said stem structure along said axis, said substantially frictionless means including at least a pair of flat springs connected between said stem structure and said body at axially-spaced positions along said axis, yieldable frictionless motion-accomodating seal means connected fluid-tight between said stem structure and said valve body and allowing substantially frictionless relative movement therebetween along said axis, said motion-accommodating seal means comprising a metal bellows defining a closed path along which it accommodates said relative movements whose enclosed effective area, transverse to said axis, is about the same as that of said seat passageway and the confronting surfaces of said valving member, transverse to said axis, means exposing those surface areas of said stem structure



which are transverse to said axis and lie to one side of the seal provided by said motion-accommodating seal means to pressures at said inlet and simultaneously exposing those surfaces of said stem structure which are transverse to said axis and lie to the other side of the seal provided by said motion accommodating seal means to pressures at said outlet, whereby said stem structure is subjected to second net forces along said axis which are related to differences in pressures at said inlet and outlet and which are of substantially the same magnitude as said first net forces and in direction opposite thereto, and adjustable biasing-spring means exerting force between said body and said stem structure along said axis in direction to bias said valving member toward closure with said seat.

4,796,855

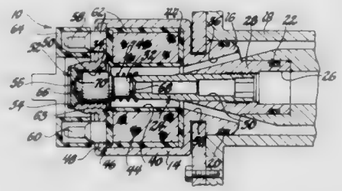
PWM ELECTROMAGNETIC VALVE WITH SELECTIVE CASE HARDENING

Jay K. Sofianek, Livonia, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 15, 1988, Ser. No. 168,483

Int. Cl.[4] F16K *31/06*

U.S. Cl. 251—129.15 **4 Claims**



1. A pulse-width-modulated valve having an armature axially movable between a first position in which it is seated against a first seat, and a second position in which it is seated against a second seat, resilient means for biasing the armature into engagement with the first seat, and magnetic circuit means selectively activatable to establish a flow of magnetic flux through a flux path including the armature and the second seat for overcoming the bias of said resilient means and moving the armature into engagement with the second seat, the improvement wherein:

the armature and second seat are formed of magnetic flux conducting material;

the surfaces of the armature and second seat which come into direct contact upon activation of said magnetic circuit means are case hardened to minimize wear and residual magnetization thereof; and

the surfaces of the armature and second seat which are adjacent such direct contact surfaces are substantially free of the case hardening to permit substantially unrestricted flow of magnetic flux between the armature and second seat during activation of said magnetic circuit.

4,796,856

WATERTIGHT JOINT FOR FLEXIBLE PIPES

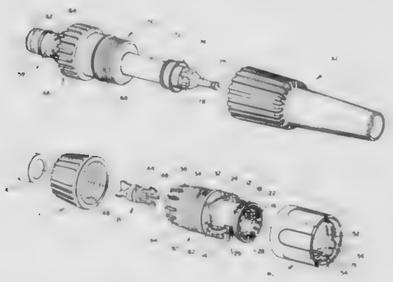
Dino Munini, S. Quirino, Italy, assignor to Protec Pordenonese S.p.A., S. Quirino, Italy

Continuation-in-part of Ser. No. 922,081, Oct. 21, 1986, abandoned. This application Sep. 11, 1987, Ser. No. 96,630

Claims priority, application Italy, Oct. 22, 1985, 83429 A/85

Int. Cl.[4] F16L *37/28*

U.S. Cl. 251—149.5 **18 Claims**



1. A removably coupling watertight joint comprising:

a male element having a fluid passageway therethrough, at least one engaging notch, and means for providing an external watertight seal;

a female element having a mating portion for receiving the male element, means for coupling a tubular device to the female element, and a shoulder separating the mating portion from the coupling portion, said coupling portion and said mating portion forming a fluid passageway through the female element;

at least one flexible clasping tongue having an inwardly projecting tooth, said clasping tongue being integrally molded to the shoulder of said female element;

at least one opening positioned on the mating portion of the female element through which a corresponding projecting tooth of the clasping tongue may move to engage the engaging notch of the male element;

a generally cylindrical joint coupling bushing surrounding the mating portion of the female element which is longitudinally slidable in relation to said female element, said bushing having at least one internal projection which causes the elastic clasping tongue to deflect inwardly and engage the engaging notch on the male element; and

means for biasing the joint coupling bushing in a lock position such that the clasping tongue is deflected inwardly in order to engage the engaging notch on the male element, said biasing means being integrally molded to the shoulder of the female element.

4,796,857

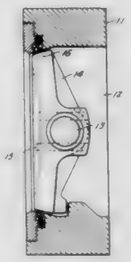
METALLIC SEAL FOR HIGH PERFORMANCE BUTTERFLY VALVE

William R. Hayes, Cincinnati, Ohio, and Allan K. Shea, Erie, Pa., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Dec. 3, 1987, Ser. No. 128,282

Int. Cl.[4] F16K *1/22, 25/00*

U.S. Cl. 251—173 **11 Claims**



1. In a valve of the type having a casing provided with a through passage for fluid, a rotatable valving member supported in said passage for rotational movement between valve-closed and valve-open positions and having spherical outer surface portions forming a sealing surface, and an annular seal mounted in said casing and surrounding said valving member and contacting said sealing surface in the valve-closed position of said valving member, the improvement characterized by

(a) said flexible annular seal being of thin sheet metal construction and having its radially outer annular edge portions clamped in sealed relation to said valve casing, in a mounting plane transverse to said passage,

(b) said flexible annular seal having its radially inner annular portions arranged to have self-pressed, resilient wiping contact with the spherical outer surface portions of said valving member in its valve-closed position in order to establish a low pressure fluid seal between the higher pressure (upstream) and lower pressure (downstream) sides of said valve casing,

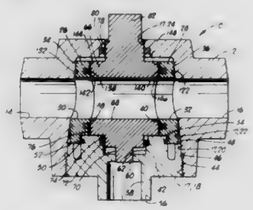
(c) the radially inner annular portions of said flexible annular seal extending in inclined relation to said spherical outer surface portions and contacting said surface portions in regions thereof offset in an upstream direction from the intersection with said surface portions of a line normal to said spherical outer surface portions and projected to the radially outermost unsupported portions of said flexible annular seal, whereby upstream fluid pressure acting upon unsupported portions of said annular seal tends to press it more tightly against the spherical outer surface portions of said valving member,

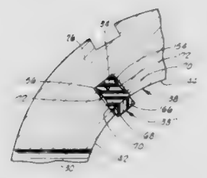
(d) said flexible annular metal seal being initially unsupported for a substantial distance radially outward from the spherical outer surface portions of said valving member to accommodate flexing of radially intermediate portions of said annular seal,

(e) said casing having an annular abutment positioned on the downstream side of said flexible annular seal and adapted, upon predetermined deflection of the unsupported seal portions in a downstream direction in response to increasing pressure differential, to engage and support an intermediate annular support region of the previously unsupported flexible seal portions.

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4,796,858
DUAL SEAL VALVE
Terry D. Kabel, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Oct. 1, 1987, Ser. No. 104,721
Int. Cl.[4] F16K *15/14*
U.S. Cl. 251—171 18 Claims

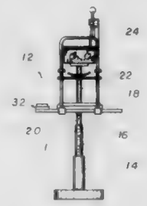




1. A valve comprising:
body means having inlet means and outlet means thereon and defining a central cavity therein in communication with said inlet and outlet means;
insert means disposed in said central cavity and defining an opening therethrough in communication with at least one of said inlet and outlet means;
valve means disposed in said central cavity and rotatable with respect to said body means and said insert means, said valve means defining an opening therethrough in communication with said opening in said insert means when said valve means is in an open position and spaced from said opening in said insert means when in a closed position, one of said valve means and said insert means having a sealing surface thereon and the other of said valve means and said insert means defining a seal groove therein adjacent said sealing surface; and
composite seal means disposed in said seal groove and comprising:
a relatively hard, high lubricity element adapted for sealing engagement with said sealing surface; and
a relatively soft, elastomeric element integrally connected to said hard element and adapted for resiliently biasing said hard element toward said sealing surface,
wherein a radial side wall of said composite seal means defines an annular concave groove therealong such that at least a portion of said side wall of said elastomeric element is spaced from a corresponding side wall of said seal groove.

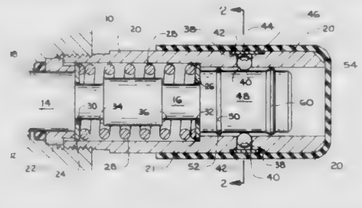
4,796,859
SLIT LAMP ASSEMBLY
Lori M. Ventura, 801 N. Venetian Dr., Apt. 1104, Miami, Fla. 33139
Filed Jan. 14, 1988, Ser. No. 144,306
Int. Cl.[4] A61B *3/00, 3/10*
U.S. Cl. 351—245 9 Claims

1. For use after eye examinations, the combination of a slit lamp assembly including (a) a stand, (b) a table on the stand, (c) means to adjust the table height relative to the stand, and (d) a slit lamp including a tonometer head carried on the table, and a container having a swab discharge opening,
means on the table to removably connect the container to the table, and



a plurality of alcohol impregnated swabs in the container for withdrawal of the swabs through the opening for use to clean the head.

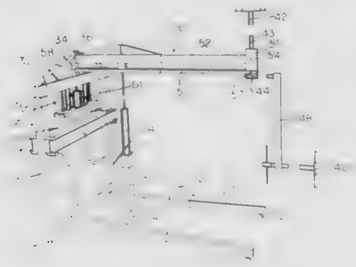
4,796,860
VALVE SPOOL DETENT
Robert M. Diel, Hutchinson, Kans., assignor to Eaton Corporation, Cleveland, Ohio
Filed Oct. 16, 1987, Ser. No. 109,050
Int. Cl.[4] F16K *35/04*
U.S. Cl. 251—297 11 Claims



1. A valve spool detent device, comprising the combination of:
a valve body having a first bore therein;
a valve spool slidably positioned in the first bore having inner and outer portions, the force for operating the valve being applied to the inner spool portion;
a detent assembly surrounding the outer spool portion including a sleeve attached to the body, the sleeve including a plurality of radially spaced holes therein in a common plane;
a plurality of balls positioned in the holes of the sleeve;
a c-shaped adjustable bias spring means positioned on the outside of the sleeve covering each of the radial holes in said sleeve;
the outer portion of the spool including a cylindrical surface passing through said plane including a circumferential outwardly extending lug means which engages the plurality of balls and c-spring as the lug means approaches said plane.

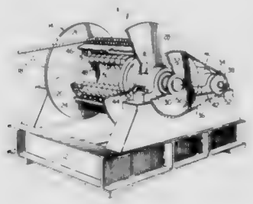
4,796,861
PORTABLE RAM, ENGINE STAND AND TRANSMISSION CRADLE
James W. Petty, Rolla, Mo., assignor to Donald W. Petty, Rolla, Mo., a part interest
Filed Sep. 28, 1987, Ser. No. 101,823
Int. Cl.[4] B66F *5/02*
U.S. Cl. 254—8 B 10 Claims

1. A lifting jack for automotive transmissions, engines and the like and a ram press, said lifting jack comprising a horizontally extending base, a support frame extending vertically from an end of said base, a horizontally extending boom pivotally connected to a top portion of said support frame, said boom having a free end extending over said base and having means



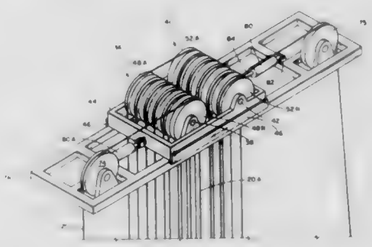
for supporting simultaneously a transmission cradle and an engine stand, jack means supported on said base bearable upon said boom for raising and lowering said boom, said ram press being supported upon said support frame and being operable independently of said boom and said jack means.

4,796,862
WINCH COMPENSATOR
George W. Peppel, Arlington, Tex., assignor to Lockheed Corporation, Calabasas, Calif.
Continuation of Ser. No. 897,722, Aug. 18, 1986, abandoned.
This application Dec. 4, 1987, Ser. No. 128,990
Int. Cl.[4] B66D *1/14;* F16F *1/14, 1/36*
U.S. Cl. 254—277 12 Claims



1. A winch, comprising:
a drum for receiving a cable, said drum having a cylindrical portion, the cable being received on the exterior of the cylindrical portion;
means for supporting said drum for rotation about an axis;
a drive element having a portion extending within the interior of the cylindrical portion of the drum;
means for supporting said drive element for rotation about the axis;
an unpreloaded cylindrical elastomeric element connected between the drum and drive element within the cylindrical portion of the drum for torsional deformation about the axis, said elastomeric element transmitting torque between the drum and drive shaft to absorb shock loading in the cable.

4,796,863
DUAL CLUSTER CROWN BLOCK
Lowell M. Reed, Moore, Okla., assignor to Parco Mast and Substructures, Inc., Del City, Okla.
Filed Oct. 23, 1986, Ser. No. 922,201
Int. Cl.[4] B66D *3/08*
U.S. Cl. 254—337 2 Claims



1. A crown block unit for use on a derrick in which the derrick is provided with a drum and drawworks and a dead line tie down which comprises:
a support frame mounted at the top of a derrick;
a traveling frame slidably mounted on said support frame;
a first cluster of a plurality of sheaves having a first common axle supported by said traveling frame;
a second cluster of a plurality of sheaves having a second common axle supported by said traveling frame and in a position parallel to said first axle;
a traveling block unit having a third cluster of sheaves all having a third common axle and a fourth cluster of sheaves all having a fourth common axle, a cross member connecting said third and fourth common axle and means for connecting the load to said cross member;
a single continuous cable having a first end and a second end with said first end attached to said drum and extending upwardly over said first cluster and downwardly to said third cluster, and repeated until a plurality of the sheaves on said first and third cluster are utilized, and then to said second cluster and downwardly about said fourth cluster and back up over said second cluster and repeated until a plurality of the sheaves in said second and fourth clusters are utilized and then said second end of said cable is connected to said deadline tiedown.

4,796,864
SPRING LOADED DROP FOOT TRAILER JACK
James E. Wilson, Chickasha, Okla., assignor to Stallion Trailer Kits, Inc., Chickasha, Okla.
Filed Oct. 26, 1987, Ser. No. 113,254
Int. Cl.[4] B60S *9/02*
U.S. Cl. 254—425 11 Claims

1. An apparatus for at least partially supporting a portion of a wheeled vehicle, said apparatus comprising:
a tubular outer housing for attaching to said vehicle and having an upper end and an open lower end;
a second tubular member slidably disposed within said tubular outer housing, said second tubular member defining an aperture in a wall thereof;
a third tubular member having upper and lower portions and slidably disposed within said second tubular member, said third tubular member defining a series of spaced openings in a wall thereof selectively alignable with said aperture in said second tubular member;
biasing means located within said third tubular member for biasing said third tubular member toward a retracted position with respect to said second tubular member;
locking means for securing said second and third tubular members from relative movement therebetween when

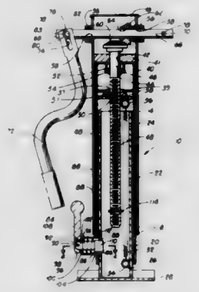
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said locking means is actuated, said locking means comprising:

a pin case extending from a wall of said second tubular member adjacent said aperture;

a pin slidably disposed in said pin case and having a first portion and an enlarged second portion;

a plate with an aperture defined therein for allowing passage of said first portion of said pin therethrough, and preventing passage of said enlarged second portion of said pin from said pin case, adjacent an end of said pin case;



a lever pivotally engaging said first portion of said pin, and movable from a first position wherein said pin engages one of said openings in said third tubular member to a second position wherein said pin is removed from engagement with said one of said openings; and

a spring abutted against said plate and said enlarged second portion of said pin; and

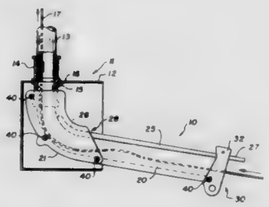
a vehicle support member attached to said lower portion of said third tubular member.

4,796,865

FISHTAPE FEEDING TOOL

Steve Marchetti, 6827 E. Broadway, Burnaby, British Columbia V5B 2Y7, Canada

Filed Jun. 29, 1987, Ser. No. 67,156
Int. Cl.⁴ B65H *59/00*
U.S. Cl. 254—134.3 FT **11 Claims**



1. A fishtape feeding tool adapted to be held in position relative to a conduit, comprising:

an elongated hollow body having a generally straight section at a first end and a curved section at a second end, said first and second end being open, said body having a slot extending longitudinally between said open ends to enable said tool to be removed from said fishtape;

receptacle means at said second end;

a hollow cylindrical plug having a first end adapted to be received by said receptacle means and a second end for inserting in said conduit, said plug having a slot longitudinally thereof adapted to be aligned with said body slot when said tool is removed;

removable cover means for attachment to said body to cover said slot from said first open end to a point near said second end; and

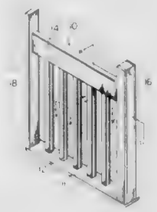
resilient clamp means for holding said cover means to said body.

4,796,866

RAILING STRUCTURE

Jocelyn C. Garneau, 1, rue Verret, St-Emile, Quebec, Canada G0A 3N0

Filed Jul. 24, 1987, Ser. No. 77,507
Int. Cl.⁴ E04H *17/14*
U.S. Cl. 256—59 **8 Claims**



1. An upright for railing comprising an elongated core member made of a material having a weak resistance to bending, the said core member having a rectangular cross-section surrounded by a front and a rear face and two lateral faces, the said front and rear faces being provided with a longitudinal groove and the said lateral faces being covered by a thin protective sheet, facing plates made of solid and rigid material covering said front and rear faces, each of said plates being provided with a ridge correspondingly fitting in one of said grooves, the said facing plates being adheringly mounted to said core member. A block member made of solid material adheringly fitted in a recess provided in the lower end of said core member, means for securing said block member to a base member, the said core member being provided at its upper end with a perforation emerging in said groove, the said perforation adapted to receive a screw hidden from view by one of the facing members for threadedly engaging said upright to an adjacent structure.

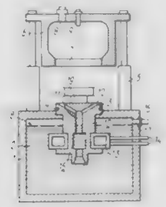
4,796,867

APPARATUS FOR THERMAL DEBURRING OF PARTS

Valery P. Bozhko; Sergei V. Yatsenko; Vitaly E. Strizhenko; Alexei V. Losev; Viktor I. Pleshkov, and Viktor M. Junash, all of Kharkov, U.S.S.R., assignors to Kharkovsky Aviatsionny Institut, Kharkov, U.S.S.R.

PCT No. PCT/SU86/00037, § 371 Date Dec. 28, 1987, § 102(e) Date Dec. 28, 1987, PCT Pub. No. WO87/06510, PCT Pub. Date Nov. 5, 1987
PCT Filed Apr. 30, 1986, Ser. No. 165,267
Int. Cl.⁴ C21D *9/00;* **B23K** *7/06*
U.S. Cl. 266—51 **3 Claims**

1. An apparatus for thermal deburring of parts comprising a working chamber (6) and a bottom member (3) for sealing the chamber (6) which are mounted for a movement relative to each other, an inlet valve (8) for admission of a fuel gas mixture to the chamber (6), a spark plug (9) in the chamber (6) and an outlet valve for discharging combustion products from the chamber (6), characterized in that it is provided with a vessel (1) containing a liquid (2) and an annular cooling chamber (13) accommodated in the vessel (1), the outlet valve comprising a rod (10) having a through passage (11) having one end thereof communicating with the interior of the chamber (6) and the other end disposed in the vessel (1) containing liquid (2) and surrounded by the annular cooling chamber (13).

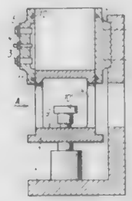


4,796,868

APPARATUS FOR THERMAL DEBURRING OF PARTS

Valery P. Bozhko; Alexei V. Losev; Vitaly Strizhenko; Viktor I. Pleshkov, all of Kharkov, and Ivan A. Levityansky, Leningradskaya, all of U.S.S.R., assignors to Kharkovsky Aviatsionny Institut, Kharkov, U.S.S.R.

PCT No. PCT/SU86/00038, § 371 Date Dec. 28, 1987, § 102(e) Date Dec. 28, 1987, PCT Pub. No. WO87/06511, PCT Pub. Date Nov. 5, 1987
PCT Filed Apr. 30, 1986, Ser. No. 165,263
Int. Cl.⁴ C21D *9/00;* B23K *7/00*
U.S. Cl. 266—51 **2 Claims**



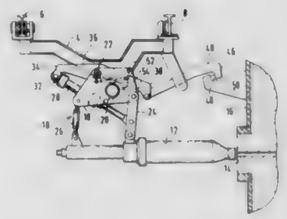
1. An apparatus for thermal deburring of parts, comprising a cylindrical working chamber (2) with admission and discharge valves (3,5) and a spark plug (4), a bottom member (7) for closing and opening the chamber (2) provided with a worktable (9) for supporting parts (10) being treated, movably mounted along the axis of the chamber (2), and an elastic sealing ring (11) for sealing the joint between the bottom member (7) with the chamber (2), characterized in that the bottom member (7) comprising a hollow cylinder with end plates and openings (8) in the peripheral wall, the height and the outside diameter of the cylinder being approximately equal to the height and outside diameter of the working chamber (2), while the apparatus is provided with an additional sealing ring (12) interposed between the chamber (2) and the hollow cylinder on the side opposite to a loading hole in the chamber (2).

4,796,869

SUSPENSION AND ANCHORAGE DEVICE FOR A RAIL-MOUNTED MOVABLE PLUGGING MACHINE FOR METALLURGICAL FURNACES

Pierre Mailliet, Howald, and Jean Metz, Luxembourg, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Sep. 11, 1987, Ser. No. 95,568
Claims priority, application Luxembourg, Sep. 30, 1986, 86612
Int. Cl.⁴ C21B *7/12*
U.S. Cl. 266—271 **6 Claims**



1. Suspension and anchoring device for a rail-mounted movable machine for use in conjunction with metallurgical furnaces, the machines being suspended on cradle means suspended on said rails, said machine being movable by means of a parallelogram configured guide bar system actuated by an operating cylinder for shifting the machine between a work position and a travel position and further comprising:

pivotable lever means provided on said cradle means, said lever means having opposed first and second ends;

an operating cylinder having opposed first and second ends, said operating cylinder being articulated at said first end to link plate means of said parallelogram guide bar system and at said second end to said first end of said pivotable lever means;

anchorage hook means articulated to said second end of said lever means;

means for receiving said anchorage hook means on said metallurgical furnace, said receiving means mating with said hook means;

wherein when said machine is in a work position, said operating cylinder supports itself at said first end such that said lever means pivots in a first direction and said hook means is brought into engagement with said hook receiving means; and

wherein when said machine is in a travel position, said operating cylinder supports itself at said first end such that said lever means is pivoted in a second direction and said hook means comes out of engagement with said hook receiving means.

4,796,870

SUSPENSION SYSTEM FOR VEHICLES CONTAINING COMBINATION ISOLATOR MOUNT AND AIR SPRING CLOSURE

Keith E. Hoffman, Atlanta, and Wayne H. Geno, Cicero, both of Ind., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 18, 1987, Ser. No. 50,812
Int. Cl.⁴ B60G *11/62;* **F16F** *9/04;* **F16J** *15/50;* **B25G** *3/34*
U.S. Cl. 267—35 **20 Claims**

1. An improved air spring suspension system for vehicles including:

(a) a fluid shock absorber strut having an outer cylinder and a reciprocal piston rod;

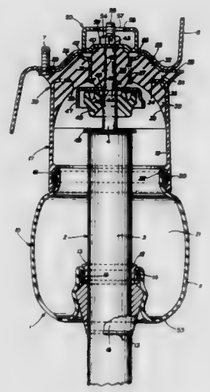
(b) first attachment means for mounting the cylinder on a first vehicle support structure;

(c) a fluid pressure chamber formed by a canister and a flexible sleeve sealingly connected to and extending be-

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tween said canister and the cylinder, said pressure chamber adapted to contain a supply of pressurized fluid with said piston rod and cylinder extending through said pressure chamber; and

(d) an isolator unit for mounting the canister on a second vehicle support structure spaced from the first vehicle support structure and for closing an open tope of the canister, said isolator unit comprising an end cap adapted to be secured to said second vehicle support structure and an isolator formed of an elastomeric material bonded to



said end cap and to said canister which is spaced below said end cap; said isolator being an integral one-piece member having generally concave bottom surface forming a generally dome-shaped end closure for the air spring, a central portion formed with an axially extending opening for passage of the piston rod therethrough and adapted to be placed in compression when the isolator unit is mounted on a vehicle, said isolator furthermore having an intervening portion located between a lower surface of the end cap and an upper surface of the canister for bonding the end cap to the canister.

4,796,871

GAS SPRING WITH END POSITION DAMPING

Hans-Peter Bauer; Hans J. Bauer; Ludwig Stadelmann, and Emil Frisch, all of Altdorf, Fed. Rep. of Germany, assignors to Fritz Bauer & Söhne oHG, Altdorf, Fed. Rep. of Germany

Filed Jan. 10, 1987, Ser. No. 61,826

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1986, 3623787

Int. Cl.[4] F16F *5/00, 9/49*

U.S. Cl. 267—64.11 **17 Claims**

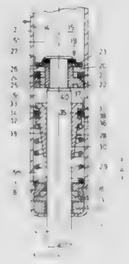
8. A gas spring with plural damping phases, comprising

a piston rod disposed axially in a cylindrical housing having a first closed end and a second end through which said piston rod sealingly extends out from said housing and retracts thereinto, said housing containing at least one fluid and at least partially filled with a gas under pressure,

a damping piston disposed on the end of said piston rod in said housing,

an independent auxiliary piston provided about and guided on said piston rod between said damping piston and said second end of said housing, said auxiliary piston including damping means for allowing said at least one fluid to pass with substantially more damping when said auxiliary piston is moved towards said second end of said housing than when moved towards said first end thereof, said auxiliary piston comprising at least one permanently open throttle duct and said throttle duct being formed between the piston rod and the auxiliary piston,

said damping means including energy accumulator means, and further providing that when said piston rod is extended a predetermined amount, further extension of the piston rod in the direction of said second end results in



increased damping including by said energy accumulator means, and wherein a throttle effect of the auxiliary piston is independent of the damping effect of the damping piston.

4,796,872

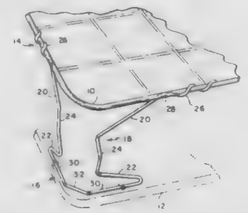
BENT WIRE SPRING MODULE

Robert C. Hagemeister, Boston, Mass., assignor to Webster Spring Co. Inc., Oxford, Mass.

Filed Jul. 13, 1987, Ser. No. 72,405

Int. Cl.[4] A47C *23/02;* **F16F** *3/02*

U.S. Cl. 267—103 **6 Claims**



1. A bent wire spring module for disposition between a rigid, rectangular base frame comprising spaced, parallel sides and ends and a wire grid frame comprising a rectangular border wire and transversely and longitudinally-crossing grid wires attached at their ends to the border wire and bent wire spring modules at each corner of the base frame and the grid frame, each comprising a unitary length of wire embodying right-angularly disposed lower and upper attaching means and a pair of vertical supports disposed therebetween, said lower attaching means comprising integrally-connected first lengths of wire disposed at substantially right angles to each other and substantially parallel to the respective sides at the corners of the base frame for attachment thereto, said upper attaching means comprising integrally-connected second lengths of wire of helical configuration at substantially right angles to each other each disposed helically about and substantially parallel to respective sides of the border wire at a corner of the grid frame for attachment thereto, each vertical support comprising lower and upper legs, said lower legs being connected at their lower ends to the lower attaching means, means comprising lateral extensions at the upper ends of the upper legs disposed at an angle thereto such as to abut the underside of the border wire, said lateral extensions being connected at one end to the upper ends of the upper legs and at the other ends to the helical lengths of wire and said lower and upper legs at their upper and lower ends respectively being connected to each other.

4,796,873

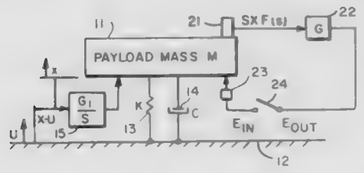
ACTIVE VIBRATION ISOLATION SYSTEM

Dale W. Schubert, Sudbury, Mass., assignor to Barry Wright Corporation, Newton Lower Falls, Mass.

Continuation of Ser. No. 716,026, Mar. 26, 1985, abandoned. This application Apr. 28, 1987, Ser. No. 43,630

Int. Cl.[4] F16M *1/00, 13/00;* **B60G** *17/00*

U.S. Cl. 267—136 **29 Claims**



1. A vibration isolation system comprising:

a payload mass;

a support;

a passive isolation system for supporting said payload mass on said support;

a velocity transducer for sensing vibrational movement of said payload mass relative to said support and for producing a velocity transducer output signal that varies as a function of the velocity of said payload mass as it undergoes vibrational motion relative to said support;

control circuit means responsive to said velocity transducer output signal for modifying said velocity transducer output signal so that the effective resonant frequency of said velocity transducer is substantially lower than the resonant frequency of said passive isolation system;

a force transducer for applying a force to said payload mass in response to an input signal; and

signal applying means for applying said modified velocity transducer output signal as said input signal to said force transducer so as to cause said force transducer to apply a force to said payload mass in a direction opposite to the direction of movement of said mass as it vibrates.

4,796,874

ELECTRONIC HYDRAULIC MOUNT WITH CONTINUOUSLY VARIABLE CONTROL

John F. Hoying, Bellbrook, and Stanley E. Smith, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1987, Ser. No. 103,756

Int. Cl.[4] F16M *5/00*

U.S. Cl. 267—140.1 **3 Claims**

1. A hydraulic mount assembly providing variable damping characteristics comprising:

a pair of mounting members;

an elastomeric hollow body connected to said mounting members;

an elastomeric diaphragm closing said hollow body and forming therewith a closed cavity that is filled with liquid;

means for partitioning said cavity into a primary chamber and a secondary chamber enclosed by said diaphragm, said partitioning means including an opening and first and second elongated orifices communicating in parallel relationship between said chambers, said first orifice being open providing a continuous path for flow of liquid between said primary and secondary chambers at all times;

decoupler means positioned with said opening in said partitioning means;

valve means for providing an infinitely variable rate of liquid flow through said second "flow passage" orifice between said primary and secondary chambers to provide a variable damping effect to said hydraulic mount assembly;

means for sensing vehicle operating conditions and resulting vibrations;



means for controlling said valve means in response to said means for sensing vehicle operating conditions so as to allow the damping characteristics of said mount assembly to be tuned.

4,796,875

HYDRAULIC MOUNTING

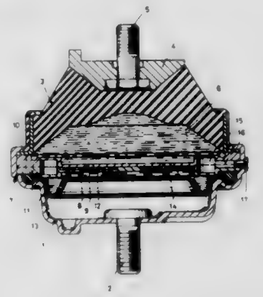
Theobald Mertens, Mainz, and Jurgen Roos, Treburr, both of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1987, Ser. No. 112,277

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1987, 3701264

Int. Cl.[4] F16F *9/342*

U.S. Cl. 267—140.1 **4 Claims**



1. A hydraulic mounting having two chambers filled with a liquid and separated by a flexible disk, a pair of stop plates sandwiching the disk, a helical channel outside the region of the disk connecting the chambers, a filler opening leading from the channel to outside the mounting, a closure member comprising a sealing body sealingly inserted in the opening, and a throttle valve in the channel having a shaft extending out through the sealing body.

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4,796,876

ENGINE MOUNT

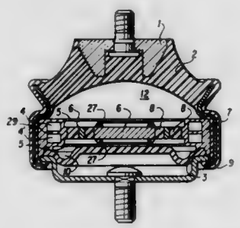
Giacomo Sciortino, Heidelberg, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed Apr. 8, 1987, Ser. No. 35,990

Claims priority, application Fed. Rep. of Germany, May 27, 1986, 3617813

Int. Cl.[4] F16F *9/34*

U.S. Cl. 267—140.1 **8 Claims**



1. An engine mount having hydraulic damping comprising:
a bearing member, a bearing wall, and an annular bearing spring connecting said bearing member to said bearing wall, together defining a working chamber;
means comprising a resilient buffer wall defining a compensating chamber;
a partition wall disposed between said working chamber and said compensating chamber;
a compensation part movable between said working chamber and said compensating chamber disposed radially within said partition wall, said compensating part comprising a circular inertial mass;
an annular elastic diaphragm means connecting said compensating part to said partition wall;
stop means for limiting the movement of said compensating part between said working chamber and said compensating chamber; and
throttle port means for connecting said working chamber and said compensating chamber in fluid communication, with said throttle port means, said working chamber, and said compensating chamber filled with an incompressible fluid,
said throttle port means comprising a common inlet connected to said working chamber, a plurality of channels connected at one of their ends to said common inlet and at another of their ends to a common outlet, said common outlet being connected to said compensation chamber, whereby said channels are arranged in parallel to each other.

4,796,877

WORKPIECE HOLDER AND SAW GUIDE DEVICE

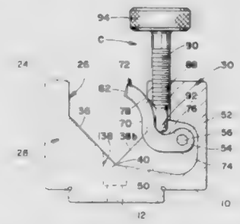
James C. Musil, Hudson, and Emery J. Zahuranec, Novelty, both of Ohio, assignors to Crawford Fitting Company, Solon, Ohio

Filed Mar. 7, 1988, Ser. No. 164,535

Int. Cl.[4] B25B *1/10*

U.S. Cl. 269—87.2 **10 Claims**

1. A holding device for an elongated workpiece comprising:
a body having a base portion including a mounting lug extending outwardly therefrom;
a first cavity formed in said body opening opposite said base portion, said first cavity including V-shaped support areas adapted to supportingly receive a variety of workpiece sizes;
a cavity extension portion contiguous with said first cavity and extending between said support areas;
a gripping member having a first end pivotally mounted in said cavity extension portion and a second gripping end, said gripping member having a reverse curved configuration including first and second oppositely facing concave surfaces, said first concave surface disposed adjacent sid second end and adapted for abutting gripping engagement with an associated workpiece supported by said support areas;
an adjustment stem threadedly mounted to said body in communication with said cavity extension for selective



movement relative thereto, said stem including a first end having a smooth curvilinear surface in cooperative engagement with said second concave surface for exerting a first rotational force on said gripping member;
biasing means exerting a second rotational force against said gripping means opposed to said first rotational force; and,
means adapted for guiding a cutting blade relative to a workpiece retained in said body, said guide means having a second cavity spaced from said first cavity.

4,796,878

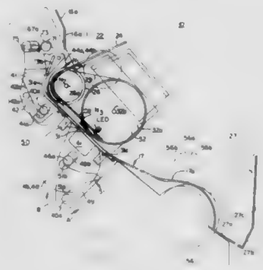
DOCUMENT HANDLING COUNTING APPARATUS

William Nicheison, Willow Grove; Gordon H. Groff, Bristol, and Paul C. Jones, Philadelphia, all of Pa., assignors to Brandt, Incorporated, Bensalem, Pa.

Continuation of Ser. No. 796,115, Nov. 8, 1985, abandoned. This application Apr. 20, 1987, Ser. No. 40,742

Int. Cl.[4] B65H *3/06*

U.S. Cl. 271—10 **6 Claims**



1. Apparatus for handling and counting sheets comprising:
an input tray for receiving a stack of sheets, each having a nominal thickness;
a rotatable feed roller;
picker means for advancing the bottom sheet in a stack of sheets placed in the input stacker along a predetermined path toward said feed roller;
means for accelerating sheets;
the periphery of said feed roller having an annular groove;
stationary stripper means cooperating with the feed roller to form a feed nip for feeding single sheets delivered from the input tray to said sheet acceleration means in a one-at-a-time fashion to facilitate examination of the sheets and for preventing the passage of double-fed sheets to said sheet acceleration means;
said stripper means comprising a stripper surface having a convex surface portion, extending toward the bottom of said annular groove for a distance to leave a gap between said groove bottom and said convex surface portion of less than said nominal thickness, an imaginary line passing through the point on said convex surface closest to said feed roller and the axis of rotation of said feed roller defining a pinch line, said pinch line forming an angle of between 15° plus or minus 5° with an imaginary vertical line passing through the axis of rotation of said feed roller to limit the passage of sheets beyond the feed nip to single sheets while preventing passage of double-fed sheets beyond the feed nip and at the same time the leading edges and surfaces of the sheets from being damage or abraded by said feed roller and stripper means;
a member having a curved surface covering a portion of the stripper means convex surface portion forward of the feed nip and having a surface with low coefficient of sliding friction as compared with said convex surface to reduce the friction experienced by sheets engaging said low friction surface and to reduce wearing of the stripper means and sheets being processed;
said curved member comprising a clip;
a mounting means for mounting the stripper means;
said clip retaining said stripper shoes on said mounting means;
said stripper means comprising first and second shoe members each having an opening;
said mounting means having an opening;
a pin extending through the openings in said mounting means and said shoe members, which are arranged on opposite sides of said mounting means;
said clip being resilient and having a C-shaped configuration having a central portion and integral sides embracing said stripper shoe member and holding the shoe members against said mounting means and holding said pin in said openings.

inserting a lower clamping jaw (9) into the larger gap (13), withdrawing the separating member (7) from the larger gap (13), forming a second gap (14) in the same manner as the larger gap (13), inserting an upper clamping jaw (10) into the second gap (14), clamping the sheets between the lower and upper clamping jaws (9,10), lowering the stack below the clamped jaws and lowering the clamped jaws more slowly so as to form a still larger gap (16) below the lower jaw (9), inserting a support (11) into said still larger gap (16), removing the platform (3) and sheets stacked thereon, positioning a new platform (3) below the support (11), withdrawing the support (11), raising the new platform (3') to just below the lower clamping jaw (9), removing the lower clamping jaw (9) and then the upper clamping jaw (10) whereby first the clamped sheets and then the sheets above the upper jaw (10) fall onto the new platform (3'), and repeating the cycle.

4,796,879

METHOD AND APPARATUS FOR STACKING SHEETS CONVEYED CONTINUOUSLY TO A STACKING POINT

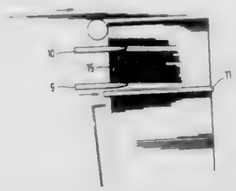
Norbert Martini, Erkrath, and Peter Naudascher, Hilden, both of Fed. Rep. of Germany, assignors to Jagenberg Aktienbesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 938,206

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1985, 3544511; May 15, 1986, 3616470

Int. Cl.[4] B65H *31/32, 29/34*

U.S. Cl. 271—218 **1 Claim**



1. A method for intermittently removing stacked sheets from a continuously forming stack, comprising continuously supplying sheets to fall onto a stack formed on a platform (3) positioned therebelow forming a first gap (12) between the stack and a sheet to fall onto the stack, inserting a separating member (7) into said gap (12), whereby newly supplied sheets form an auxiliary stack above the separating member (7), lowering the stack and lowering the separating member more slowly than the stack thereby to enlarge the gap (12) to a larger gap (13),

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4,796,880

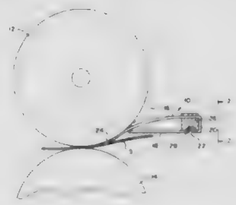
SKIVE WITH ANTI-GOUGE STIFFENER

Ernest J. Tamary, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1986, Ser. No. 947,074

Int. Cl.[4] B65H *29/54*

U.S. Cl. 271—311 **4 Claims**



1. An apparatus having a soft roller and a skive for separating a sheet from the roller, the skive being generally U-shaped in configuration and having a flexible finger and a stiffener each connected at one end to a base, the finger and stiffener being spaced from each other and generally parallel to each other in an unflexed condition, the finger being longer than the stiffener, and means mounting the skive relative to the roller so that the end portion of the finger opposite from the base is flexed and contacts the roller to define therewith a small acute angle, and such end portion of the finger is in contact with the end of the stiffener opposite from the base, whereby the stiffener limits flexing of the finger and prevents its movement to a position wherein the end of the finger could gouge the roller.

4,796,881

MULTIPURPOSE EXERCISING APPARATUS

Scott R. Watterson, River Heights, Utah, assignor to Weslo, Inc., Logan, Utah

Filed May 8, 1986, Ser. No. 861,050

Int. Cl.[4] A63B *69/06*

U.S. Cl. 272—72 **17 Claims**

1. A multipurpose exercising apparatus usable in a plurality of orientations for the performance of exercises in each orientation comprising: main frame means having a head end and a front end; support means mechanically associated with said main frame means
for supporting said main frame means in a horizontal orientation on a support surface for the performance of exercises in said horizontal orientation; track means mechanically associated with said main frame means; seat means slidably connected to said track means for supporting
a user seated thereon; at least one lever having distal and proximal ends and

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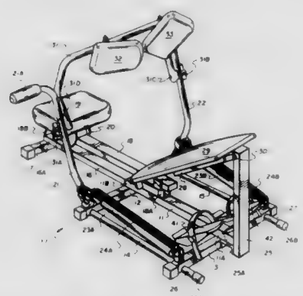
mechanically associated with and rotatably mounted at its distal end to said main frame means for movement by a user positioned on said seat means; resistance means associated with said lever for surmountably resisting movement of said lever by the user; alternate frame means attached to said main frame means at one end thereof for supporting said main frame means on said support surface in a substantially upright orientation, said alternate frame means comprising:

a first alternate frame member angularly mounted adjacent to, and extending from, one end of said main frame means, said first alternate frame member having a free end, and

a second alternate frame member rotatably mounted to said first alternate frame member adjacent said free end for rotation about said free end through an arc from a first position in which said second alternate frame member is oriented toward said track means with said main frame means in said horizontal orientation for performance of selected exercises including exercises wherein the user operates the lever and to a second position in which said second alternate frame member is oriented away from said track means toward said support surface with said main frame means in said horizontal orientation for the performance of selected exercises and to a third position in which said second alternate frame member is oriented between said first and said second positions in alignment with said first alternate frame member with said main frame means in said substantially upright orientation for the performance of selected exercises including exercises wherein the user operates the lever;

user support means adaptable to both said first alternate frame member and said second alternate frame member, for providing support to a user's body in said first, second and third positions; and

foot bracing means mounted to said main frame means for bracing the user's feet.



4,796,882

PHYSICAL TRAINING APPARATUS

Fanchan J. Jiumr, 520, Chung-San Road, Shin-Woo Shiang, Taoyuan Prefecture, Taiwan

Filed Aug. 13, 1987, Ser. No. 87,854
Int. Cl.[4] A63B *69/06, 21/00*
U.S. Cl. 272—72 **6 Claims**

1. A new and multipracticable physical training apparatus comprising:

(a) a longitudinally extending angular frame defined by:

(i) a laterally extending rear support bar;

(ii) a longitudinally extending slide bar connected at its rear end to said rear support bar;

(iii) a laterally extending backward support bar, adapted for a pedaling exerciser and connected to the other end of said longitudinally extending slide bar;

(b) a stepped pedaling exerciser further including:

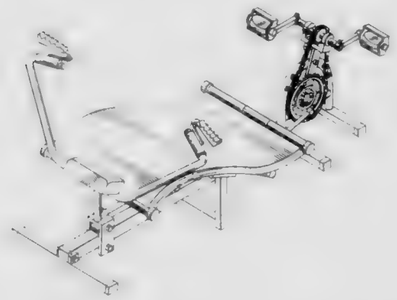
(i) an arched support bar having its backward end seated in said backward support bar and its forward end seated in a forward support bar, said arch support including a plurality of position regulating holes defined in its curved edge and extending between the forward and backward bottom support bars with a side support bar extending between the two ends of the arch support;

(ii) a directional regulating bar pivoted at its lower end in said side support bar and having an adjusting aperture alignable with said regulating position holes in said arch support at its mid portion, said regulating bar including a yoke defining left and right hand apertures for a hollow axle at its top;

(iii) a small ratchet wheel mounted on a hollow axle within said yoke;

(iv) a foot pedal attached to pedal axle extending laterally on each side of said arch support and pivotally engaging pedal cranks, in turn, pivotally supported on each end of said hollow axle;

(v) a big ratchet wheel rotatably positioned by means of a drive axle extending through the regulating bar bottom hole and a pivotal connector defined in the side support bar, chain means interconnecting the small ratchet wheel and the big ratchet wheel; and



(vi) a link bar pivotally connected at its forward end to said big ratchet wheel with its rear end extending towards the forward end of said frame;

(c) an arched massager apparatus further including:

(i) a U-shaped support frame positioned intermediate said rear support bar and said backward support bar and extending below said longitudinally extending side bar to which it is affixed and above both sides of said longitudinal support bar, said arched support bar further including:

(i) an arch support bar supported upon each upstanding end of said U-shaped support frame so as to support a massaging frame with a front low and rear high profile above said longitudinally extending support; and

(ii) a plurality of sets of rolling devices mounted upon axles extending laterally throughout said frame, such that rolling devices engage the back of an exerciser supported thereon;

(d) a forward sliding mechanism of inverted U-shaped configuration having an upper roller and a lower roller respectively engaging the top and bottom of said longitudinally extending slide bar, said forward sliding mechanism slidably positioned at the front end of said slide bar so as to be engagable pivotally with the rear end of said link bar of said stepped pedaling exerciser and including a vertically extending upper tube and a longitudinally extending flange tube;

(e) a backward sliding mechanism of inverted U-shaped configuration having an upper roller and a lower roller respectively engaging the top and bottom of the rear of said longitudinally extending slide bar, including a vertically extending draw tube and one longitudinally extending flange tube, said draw tube supporting at its top an adjustable horizontally extending pivot link tube and supporting a rear portion of said massaging frame;

(f) a joint bar extending from the flange tube of the rear sliding mechanism to the flange tube of the forward sliding mechanism to maintain synchronous, sliding movement between said forward and backward sliding mechanism;

(g) a hand rowing exerciser in the form of a rowing handle bar positioned in said horizontally extending pivot link tube and extending outwardly of said device, said handle bar having a plurality of elastic rubber rings on its mid portion and supported within said pivot link tube;

(h) an arched handle positioned at each handlebar end and further including:

(i) a compression spring, and

(ii) a hand gripping tube rotatably supported at the outer ends of said handle bar, such that said hand gripping tube pivots upon said handle bar;

(i) an elastomeric seat mat having a soft clothing cover supported upon said massaging frame and including:

(i) covering tubes which engage the forward and rear portions of the frame; and

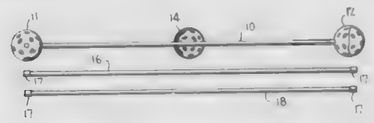
(ii) a pillow connected to the back of said mat and extending between the covering tubes mounted upon the rear portion of the frame.

4,796,883

METHOD AND APPARATUS FOR JUGGLING

Harvey Ratner, 2905 Red Lion Lane, Silver Spring, Md. 20914

Filed Dec. 11, 1986, Ser. No. 940,415
Int. Cl.[4] A63B *67/00;* **A61B** *3/00*
U.S. Cl. 272—93 **9 Claims**



1. A twirlable amusement device for use in ocular exercise and training and for hand-eye coordination exercise and training, said device comprising:

an elongated rod of material having a smooth exterior surface with a low coefficient of friction, said rod having first and second ends and an intermediate portion disposed between said first and second ends;

first and second end members with exterior surfaces of first and second different colors, respectively, removably secured to said first and second ends, respectively, each end member having a transverse dimension at least twice as large as the transverse dimension of said rod, wherein the exterior surfaces of said first and second end members intersect the exterior surface of said rod at first and second visible junctions, respectively;

means for selectively varying the center of gravity of said rod, said means comprising a slide member slidably disposed on the smooth exterior surface of said rod to frictionally engage said intermediate portion of said rod at multiple selectible positions along the rod, said slide member having a transverse dimension at least twice as large as the transverse dimension of said rod and having an exterior surface of a third color different from said first and second colors, the exterior surface of said slide member intersecting the exterior surface of said rod at third and fourth visible junctions that are movable along said intermediate portion of the rod with said slide member; and

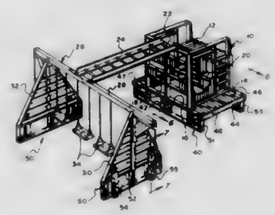
first and second catcher/tosser means adapted to be held in first and second hands, respectively, of a user of the device to permit said rod to be engaged between said first and second catcher/tosser means alternatively at said first, second, third and fourth junctions, wherein said first and second catcher/tosser means comprise respective first and second elongated wands each having a smooth outer surface of relatively low coefficient of friction such that the smooth outer surface of said rod slides smoothly and easily along the smooth outer surfaces of said wands when the rod is engaged between the wands.

4,796,884

CHILD'S PLAY SET WITH A LIFT SYSTEM

Donald B. Ely; Dale A. Ely, both of Richwood, and Eric W. Anderson, Franklinville, all of N.J., assignors to Loop Design, Inc., Richwood, N.J.

Filed Feb. 10, 1987, Ser. No. 13,235
Int. Cl.[4] A63B *17/00*
U.S. Cl. 272—113 **19 Claims**



1. A play set comprising:

(a) a box-like structure with four walls each having a base wood member that together form a foot print that can rest on the ground wherein the box-like structure has no floor attached to it and no cross members spanning between the base members, wherein the height of the box-like structure is suitable for small children, and

(b) a lift system comprising:

(i) four vertically positioned rectangular frame structures of a height chosen to raise the box-like structure a sufficient distance to provide a total interior height suitable for larger size children, and

(ii) attachment means to fix the four vertically positioned rectangular frame structures into a four sided horizontal frame of a size to match the footprint of the base wood members of the box-like structure,

wherein there are no cross members spanning the horizontal frame.

4,796,885

INSERT FOR BATTING TEE AND METHOD OF REPAIRING A BATTING TEE

Robert L. Wright, 4221 75th St., Des Moines, Iowa 50322

Filed Jun. 16, 1986, Ser. No. 874,508
Int. Cl.[4] A63B *69/40*
U.S. Cl. 273—26 R **3 Claims**

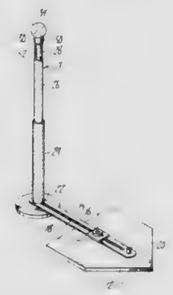
1. A batting tee comprising,

an upstanding post having a hollow upper post section adapted to hold a ball on the upper end thereof, and

an insert unit including a substantially solid plug positioned in the hollow upper end of said upper post section to strengthen and rigidify said post against damage from

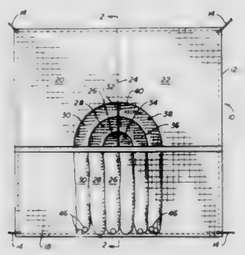
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impact from ball bats striking balls held by the upper end of said upper post section, and



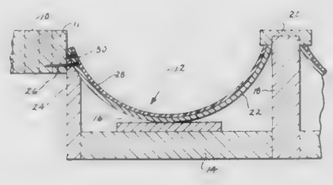
said insert unit including at its upper end a sleeve extending downwardly and outwardly around the outer end of said upper post section.

4,796,886
HOME TENNIS PRACTICE APPARATUS
George A. Loh, 1344 Tarpon St., Foster City, Calif. 94404
Filed Jul. 7, 1986, Ser. No. 882,952
Int. Cl.[4] A63B *69/38*
U.S. Cl. 273—29 A 4 Claims



1. A tennis practice apparatus, which comprises a supporting surface, said supporting surface being divided into a lower portion corresponding in height to a regulation tennis net and at least one court portion above said tennis net portion, means for positioning said supporting surface in a substantially vertical position, at least first and second target pockets positioned in said at least one count portion of said supporting surface, said at least first and second target pockets each having an opening at said supporting surface, said at least first and second target pockets being dimensioned and configured to receive a tennis ball directed at one of the openings, said first target pocket having its opening of a first area and being positioned immediately above said tennis net portion, said second target pocket having its opening of a second area greater than the first area, at least part of the second area being spaced from said tennis net portion by the first area, said supporting surface including at least a second court portion above said tennis net portion and beside said at least one court portion, and at least third and fourth target pockets in said second court portion corresponding to said first and second target pockets.

4,796,887
BOWLING LANE GUTTER
David A. Sternhagen, Green Bay, Wis., assignor to D & H Bowling Supply, Inc., DePere, Wis.
Filed Jul. 14, 1986, Ser. No. 885,238
Int. Cl.[4] A63D *1/04*
U.S. Cl. 273—51 14 Claims



1. A gutter structure for a bowling lane comprising:
an elongated gutter substrate positioned adjacent a side of the bowling lane, said substrate having a generally concave configuration suitable for receiving a bowling ball, said substrate having an upwardly exposed surface; and
a single sheet of polyethylene material applied to said upwardly exposed surface of said substrate and running the length of said elongated gutter substrate, said single sheet covering the gutter substrate; and
a plurality of fastener means along one edge of the gutter substrate and sheet, said fastener means being spaced in the direction of elongation of said gutter substrate and recessed below the surface of said sheet of polyethylene material.

4,796,888
HUE SEQUENCE DEVICE
Nigel Louez, 111 Belmont Road, Mosman, New South Wales 2088, Australia
PCT No. PCT/AU85/00254, § 371 Date Jun. 17, 1986, § 102(e) Date Jun. 17, 1986, PCT Pub. No. WO86/02569, PCT Pub. Date May 9, 1986
PCT Filed Oct. 23, 1985, Ser. No. 885,609
Claims priority, application Australia, Oct. 23, 1984, PG7780; Nov. 26, 1984, PG8288
Int. Cl.[4] A63B *41/00, 41/08;* A63H *33/04*
U.S. Cl. 273—58 R 22 Claims



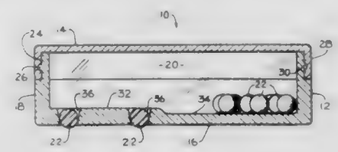
1. A novelty item capable of producing variable axis colour mixing, said novelty item comprising: a sphere, spheroid or polyhedron capable of spinning freely and randomly upon many axes of spin when spun on a generally planar surface, the whole exterior surface of said sphere, spheroid or polyhedron being divided into a plurality of generally equally sized and generally equally shaped coloured areas, said axes including both neutral and non-neutral axes, a neutral axis being an axis passing through the center of said sphere, spheroid or polyhedron and through a point on the surface of said sphere, spheroid or polyhedron which is a function point of a triadic colour combination, a triadic colour combination being a set of three of said coloured areas having colours selected from points located at equal spacings around a 2D colour wheel; said coloured areas being coloured according to a 2D to 3D colour mapping scheme wherein no two adjacent one of said coloured areas are of the same colour and the colour of each one of said coloured areas is selected such that any two of said coloured areas which are respectively coloured with colours which are at a maximum distance from each other on the 2D colour wheel with respect to any other colour on the 2D colour wheel are also at a maximum distance, measured across the exterior surface of said sphere, spheroid or polyhedron, from each other with respect to any other of said coloured areas on said sphere, spheroid or polyhedron; said mapping scheme providing an inherent infinite plurality of non-neutral and an inherent finite plurality of neutral axes of spin of said sphere, spheroid or polyhedron; whereby when said sphere, spheroid or polyhedron is randomly spun on any one of said infinite plurality of non-neutral axes a clean mix of colours near the poles and a strobing effect of colours at the equator is presented to an observer, the detailed colour composition of which varies as the axis of spin varies; said sphere, spheroid or polyhedron when randomly spun on one of said finite number of neutral axes presenting to an observer an overall even, neutral tone; said sphere, spheroid or polyhedron spinning on a planar surface continually and randomly varying its axis of spin so that said sphere, spheroid or polyhedron spins successively upon a multiplicity of the infinite plurality of non-neutral axes interspersed with the occasional spin on ones of said finite number of neutral axes.

4,796,889
TIP FOR TENNIS RACKET HANDLE AND THE LIKE, AND RACKET EQUIPPED WITH THIS TIP
Renaud Muraour, 57 avenue de Saint-Paul, Montelimar, Drome, France
Filed Dec. 15, 1987, Ser. No. 133,725
Claims priority, application France, Dec. 19, 1986, 86 18456; European Pat. Off., Nov. 2, 1987, 87420300.3
Int. Cl.[4] A63B *49/00*
U.S. Cl. 273—73 J 10 Claims



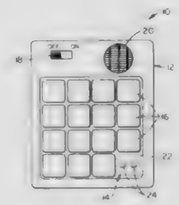
1. A tip for a free end of a racket handle comprising:
a flat element having an octagonal perimeter corresponding to the perimeter of the cross section of the free end of the racket handle;
said element comprising at least two adjacent differentiated triangular sectors;
said triangular sectors having one vertex which coincides with the longitudinal axis of said handle;
the side of said triangular sectors opposite this vertex comprising one of the adjacent sides of said octagonal perimeter;
said element being adapted and constructed to be fastened to said free end of said handle in such position whereby the differentiation of the triangular sectors permits correct angular positioning of said handle relative to a precise point of the hand of the user of the racket.

4,796,890
RANDOM NUMBER SELECTION DEVICE
Blair G. Snyder, 1405 N. 36th St., No. 2, St. Joseph, Mo. 64506
Filed Mar. 6, 1987, Ser. No. 23,002
Int. Cl.[4] A63F *7/04*
U.S. Cl. 273—144 B 4 Claims



1. A random indicia selection device comprising:
a container having a generally transparent top wall, a bottom wall, and enclosing side walls, said walls defining a ball-receiving compartment; and
a plurality of equal-sized balls received within said compartment, each of said balls bearing a respective, distinct indicium thereon,
said bottom wall including a plurality of equal-sized, ball-receiving cavities defined therein, the number of cavities being less than the number of said balls, said balls being respectively registrable within said balls, those of said balls registered in said cavities and respective indicia being viewable through said top wall, said indicia so viewed representing a random set of indicia, said cavities being arranged in a plurality of rows, each of said rows having at least one of said cavities, the number of said cavities in a given one of said rows being different than the number of said cavities in any other one of said rows.

4,796,891
MUSICAL PUZZLE USING SLIDING TILES
Ronald E. Milner, Grass Valley, Calif., assignor to Applied Design Laboratories, Inc., Grass Valley, Calif.
Filed Feb. 2, 1987, Ser. No. 9,961
Int. Cl.[4] A63F *9/08*
U.S. Cl. 273—153 S 18 Claims



1. A puzzle, comprising:
a rectangular array of title members enclosed in a frame structure, each of the title members having an electrical property;
tone-generating means housed in the frame structure; and
means for selectively placing the electrical property of one or more of the title members in circuit with the tone-generating means to produce a sound having a characteristic determined by the electrical property carried by the title member that identifies such tile member and distinguishes it from other of the tile members.

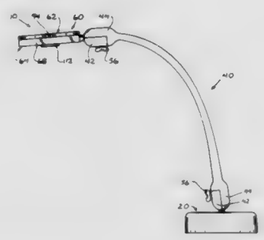
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4,796,892

GOLF TRAINING AND PRACTICE DEVICE

Leonard G. Doerrfeld, 317 Pheasant Trail, Lake In The Hills, Ill. 60102

Filed Jun. 29, 1987, Ser. No. 67,005
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 E 18 Claims



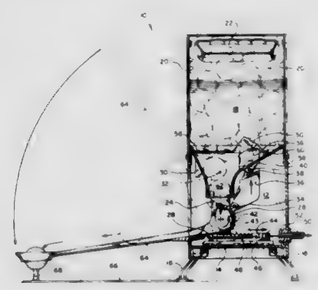
1. A golf training and practice device for use by a golfer and a golf training instructor wherein said device includes:
a. a base having a weight means secured thereto for stability;
b. an arcuate arm extending in an upward curve from said base and movably attached to said base at a first end of said arm;
c. a sighting-aiming member movably attached to said arm at a second end of said arm, said second end being oppositely disposed from said first end;
d. said sighting-aiming member has an oval-shaped sighting aperture capable of providing a binocular view of a golf ball;
e. said sighting-aiming member includes an upper part and a lower part;
f. said upper part has a swing-path line on a longest portion thereof;
g. said lower part has a club-alignment line on a breadth of said lower part; and
h. said upper part includes a mating section to secure said upper part to said lower part.

4,796,893

PORTABLE GOLFBALL TEEING DEVICE

Young S. Choi, 3434 El Camino Real, Santa Clara, Calif. 95051

Filed Aug. 3, 1987, Ser. No. 57,215
Int. Cl.[4] A63B *57/00*
U.S. Cl. 273—201 6 Claims



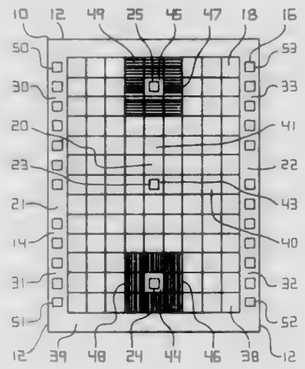
1. A device for separating spherical objects comprising:
(a) an upstanding hopper means for holding a plurality of spherical objects;
(b) platform means having large and small openings, said openings being joined by an inclined wall to form a funnel shape, said large opening being attached to the lower end of said hopper and said small opening extending downward therefrom, said wall having a plurality of elongated slots therein to move only in single file through said small opening;
(c) blade means, including a pair of parallel blades that travel in an arcuate path through a corresponding pair of elongated slots in said wall and a third blade that reciprocates vertically through a third slot in said wall said blade means cooperating to rotate said spherical objects downward in single file toward said small opening; and
(d) rotatable cup means below said opening to singly receive said object through said opening and to deliver said object in response to actuation; and
(e) pedal means interconnected to said cup means whereby pressing of said pedal means simultaneously actuates or rotates said cup means to deliver a spherical object while simultaneously causing said blade means to rotate spherical objects toward the opening.

4,796,894

BOARD GAME APPARATUS AND METHOD

Donald G. Smith, 507 Tufts Ave., Burbank, Calif. 91504

Filed Jul. 6, 1987, Ser. No. 69,838
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—244 7 Claims



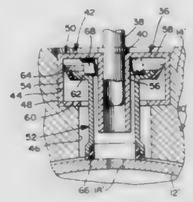
1. A game apparatus consisting of:
a board having a plurality of sides and a surface with holes and spaces,
said holes forming a plurality of vertical columns consisting of only one inner-column and a plurality of outer-columns, said inner-column having only one inner-hole and a plurality of outer-holes, each of said outer-columns having a plurality of groups of holes,
said spaces forming a grid of horizontal, vertical and diagonal rows, said grid having only one mid-horizontal and only one mid-vertical row, said mid-vertical and said horizontal rows intersect at a center space,
said grid being separated from said sides of said board by a continuous margin,
said columns of holes being superimposed over said surface of said board in such a way that said inner-column occupies said mid-vertical row and said outer-columns occupy said margin, said inner-hole occupies said center space, each of said outer-holes occupies a space equal distance from said center space,
a plurality of goal-spaces, each of said goal spaces being occupied by an outer-hole,
a plurality of goal-areas, each of said goal areas including each of said spaces adjacent one of said goal spaces,
a plurality of pieces each designed to occupy one of the spaces, a plurality of pegs designed to fit in the holes on the surface, and
a plurality of cubes, each of said cubes having a plurality of faces each of said faces of each of said cubes having only one symbol thereon, a plurality of said faces of each cube having a symbol the same as another symbol on a face of said cube, a plurality of said faces of each cube having a symbol differing from said symbols on said other faces of said cube.

4,796,895

SELF ADJUSTING SEAL FOR HIGH PRESSURE SUPPLY LINE

Robert L. Perkins, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 25, 1988, Ser. No. 148,297
Int. Cl.[4] F16J *15/00, 15/32*
U.S. Cl. 277—4 2 Claims



1. A self adjusting seal assembly for use with a pipe that supplies a high pressure fluid through an inlet in a housing, said housing inlet including a generally cylindrical side wall, a generally planar bottom wall, and a central port through said bottom wall, said seal assembly comprising,
a generally cylindrical outer sleeve having a generally annular top wall axially spaced from said inlet bottom wall and through which said pipe is centrally received, said outer sleeve also having an outer wall joined continuously to the periphery of said annular top wall and sized so that the outer surface thereof tightly fits within said inlet cylindrical wall to retain said outer sleeve in said inlet,
a generally cylindrical inner sleeve located within and radially inwardly spaced from said outer sleeve and radially outwardly spaced from said pipe, said inner sleeve having a generally radially extending upper end surface axially spaced from said outer sleeve top wall and a lower edge located proximate said inlet bottom wall,
a lip seal on said inner sleeve upper end surface wipingly engaged with the inside of said outer sleeve outer wall,
a compression seal on said inner sleeve lower edge compressible against said inlet bottom wall in surrounding relation to said port, and,
resilient means engageable between said outer sleeve top wall and said inner sleeve to bias said compression seal against said inlet bottom wall,
whereby, before high pressure fluid leaves said pipe, said compression seal will be maintained compressed against said inlet bottom wall regardless of tolerance variations in the spacing between said outer sleeve top wall and said inlet bottom wall, and when high pressure fluid does leave said pipe, it will, by, virtue of being blocked by said lip seal, pressurize the space between said outer sleeve top wall and said inner sleeve upper end surface and force said compression seal more strongly against said inlet bottom wall.

4,796,896

MULTI-STAGE ELASTOMERIC SEAL WITH RETAINER

Russell C. Anderson, Jr., N. Tonawanda, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 16, 1988, Ser. No. 156,344
Int. Cl.[4] B65D *53/00*
U.S. Cl. 277—181 3 Claims



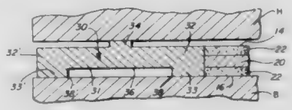
1. A two-stage elastomeric seal for sealing a passage extending through two parts that form a joint, said seal comprising a rigid retainer having a first annular section adapted to extend about said passage and be directly contacted and clamped by said joint parts thereby to be retained and effect a predetermined space between said joint parts, said rigid retainer further having a second annular section integral with and extending radially inward and axially of said first annular section and adapted to extend into an annular groove in one of said joint parts, an annular elastomeric seal body sandwiching and bonded to said second annular section, said seal body having an annular primary seal section adapted to extend about said passage and be received in said annular groove and be directly contacted and squeezed by the bottom of said groove and an annular surface on the other of said joint parts, said seal body further having an annular secondary seal section adapted to extend about said passage and be directly contacted and squeezed by said joint parts, and said primary seal section having a cross section with a thickness substantially greater than that of said secondary seal section thereby to effect substantially higher compression of said secondary seal section than of said primary seal section on squeezing of said seal body by said joint parts.

4,796,897

HEAD GASKET WITH BEAM-FUNCTIONING FIRE RING

Josefino T. Inciong, Skokie, Ill., assignor to Fel-Pro Incorporated, Skokie, Ill.

Filed Aug. 28, 1987, Ser. No. 90,843
Int. Cl.[4] F16J *15/06*
U.S. Cl. 277—211 12 Claims



1. A gasket assembly comprising an expansive main gasket body having upper and lower main surfaces adapted to be disposed between the head and block of an internal combustion engine, and defining a plurality of openings, including at least one combustion opening, fluid openings and bolt holes, and an annular beam functioning fire ring positioned and disposed in each combustion opening,
said beam functioning fire ring comprising, in radial cross-section, an annular beam, an annular bead projecting from the beam in a first vertical direction and annular support

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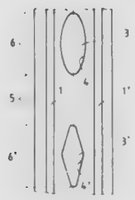
feet projecting from the beam in the opposite vertical direction, said feet straddling and defining an annular recess therebetween, said bead being disposed above said recess and between said feet and being offset radially inwardly of said recess from the vertical projection of each foot by a distance equal to at least one half of the radial width of said bead.

4,796,898

OIL SCRAPER PISTON RING WITH ELLIPTICAL OIL VENT HOLES

Bert Brauers, and Martin Mersbach, both of Burscheid, Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Mar. 26, 1987, Ser. No. 30,321
Int. Cl.[4] F16J 9/12, 9/22
U.S. Cl. 277—216 **4 Claims**



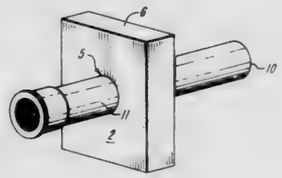
1. An oil scraping piston ring for use within a cylinder of an internal combustion engine, the cylinder having an inner wall, comprising at least one web for lying against the inner wall of the cylinder, said at least one web having an external circumferential face for facing the wall, a circumferential groove in said face, and elliptically shaped radial oil vent holes opening into said groove.

4,796,899

LIQUID-TIGHT SEALING DEVICE AND METHOD

Robert S. Herrick, 1065 South East St. Lucie Blvd., Stuart, Fla. 33494, and Gary E. Webb, 501 Southeast Capon Ter., Port St. Lucie, Fla. 33452

Filed Feb. 2, 1987, Ser. No. 10,267
Int. Cl.[4] F16J 15/10
U.S. Cl. 277—228 **9 Claims**



1. A device for providing a liquid-tight seal between a hollow structure and a cured casting comprising:

a. a hollow structure; and

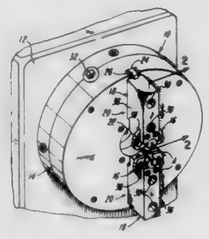
b. a foamed polymeric sealing element adhesively bonded to and extending completely about an exterior surface of said structure along a portion of the length thereof, and extending outwardly from said exterior surface.

4,796,900

WORKPIECE HOLDING ASSEMBLY FOR A CHUCK

Eugene Gant, 4605 Merrydale Ave., Dayton, Ohio 45431, and Richard Spangler, 3924 Cloverdale Rd., Medway, Ohio 45341

Filed Mar. 3, 1988, Ser. No. 163,779
Int. Cl.[4] B23B 31/16
U.S. Cl. 279—123 **19 Claims**



1. An adjustable workpiece holder for use on a chuck jaw, comprising:

(a) a base portion adapted to extend into a groove defined in an end of the chuck jaw, said base portion having an arcuate shaped slot defined therethrough adapted to receive at least one fastener therethrough for releasably clamping said base portion in the chuck jaw end groove; and

(b) opposing shaft portions attached to and projecting in opposite directions from said base portion and adapted to rotatably seat in recesses formed in the chuck jaw end on opposite sides of the groove therein when said base portion extends into the groove;

(c) said shaft portions and said base portion slot having a common central axis and a workpiece engaging notch defined therein extending generally parallel to the common central axis thereof;

(d) said base portion being movable in the chuck jaw end groove and said shaft portions being rotatable in the chuck jaw end recesses for adjusting the angular position of said shaft and base portions and thereby of said notch relative to the chuck jaw end before clamping of said base portion in the chuck jaw end groove.

4,796,901

SADDLE-SEATED VEHICLES

Takemitsu Furukawa, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

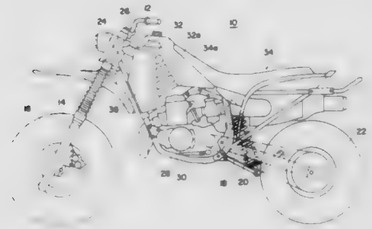
Filed Mar. 2, 1987, Ser. No. 21,038
Claims priority, application Japan, Mar. 3, 1986, 61-30288[U]
Int. Cl.[4] B62K 11/04
U.S. Cl. 280—5 A **6 Claims**

1. A saddle-seated vehicle including a fuel tank having a rear upper face, and a seat located in the rear of said fuel tank, wherein:

said fuel tank includes on the rear upper face a recess receiving the front portion of said seat,

said seat is formed of a cushion material and has a front portion extending over the rear upper face of said fuel tank and in resilient contact with said rear upper face in said recess, and

a resilient member contained in the cushion material forming said front portion and resiliently biasing said front portion





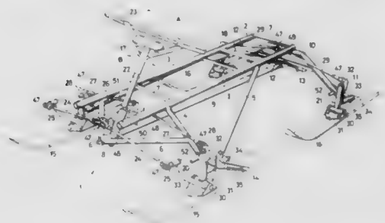
of said seat into engagement with said rear upper face of said fuel tank in said recess.

4,796,902

STEERABLE SLED EQUIPPED WITH RUNNER MEANS

Silvano Capra, Carzano, Italy, assignor to Manghen S.r.l., Parma, Italy

Filed Jun. 12, 1987, Ser. No. 61,286
Claims priority, application Italy, Jun. 19, 1986, 59013/86[U]; Mar. 6, 1987, 21050/87[U]
Int. Cl.[4] B62B 13/08
U.S. Cl. 280—16 **18 Claims**



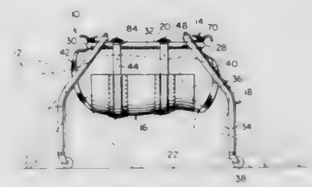
1. A steerable sled, comprising: a front chassis connected to a rear chassis through a suspension system and a directional control system, and a pair of sled runner members connected to at least one of the chassis through said directional control system, the directional control system comprising a steering wheel coupled to a rotable and laterally displaceable steering column, a pair of hinge linkages, each hinge linkage being connected to a corresponding one of the sled runner members and defining at least two mutually perpendicular rotational axes, one of which axes is a horizontal rotational axis, and sled runner actuation means including a sled runner actuation rod extending generally parallel to the longitudinal axis and interconnecting the front chassis, steering column and rear chassis for transmitting directional input from the steering column to the sled runnner members about the horizontal rotational axis through the hinge linkages, said sled runner actuation rod being coupled to said rear chassis by means for effecting axial and rotational displacement of said rear chassis relative to said front chassis.

4,796,903

CREEPER FOR HANDICAPPED CHILDREN

David C. Proctor, P.O. Box 5202, Abilene, Tex. 79604, and James M. Proctor, P.O. Box 3313, Abilene, Tex. 79608

Filed Oct. 22, 1986, Ser. No. 921,448
Int. Cl.[4] B60P 3/00
U.S. Cl. 280—87.02 W **19 Claims**



1. In a crawl training device having a wheeled frame, a body support, flexible means for suspending the body support and a relatively rigid panel secured to the frame having a peripheral portion and opposite longitudinal ends, the improvement comprising means mounted above the body support for anchoring the flexible means directly to the panel and guide means on the panel engageable by the flexible means to prevent longitudinal and inward movement thereof for positioning the suspended body support below and in alignment with the panel, said flexible means including longitudinally spaced body holding straps extending laterally from the body support in encircling relation to the panel between said ends thereof, said guide means including a plurality of formations on the peripheral portion of the panel receiving the holding straps therein while enabling removal thereof by outward movement relative to the panel.

4,796,904

REAR WHEEL STEERING DEVICE FOR FRONT AND REAR WHEEL STEERING SYSTEM

Kanji Kubo, and Kenichi Ohno, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1987, Ser. No. 25,583
Int. Cl.[4] B62D 7/00
U.S. Cl. 280—91 **3 Claims**



1. A rear wheel steering device for a front and rear wheel steering system of a wheeled vehicle wherein rear wheels are steered by displacement of tie rods connected to knuckles of the rear wheels and disposed in the lateral direction of the vehicle in an opposite phase relationship relative to the front wheels at least under a certain condition, characterized in that:

a pair of imaginery lines formed by connecting pivot points between the knuckle arms and the tie rods to corresponding points of intersection between a horizontal plane con-

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taining the said pivot points and center lines of rotation of the knuckles, as they are steered, relative to a body of the vehicle intersect at a point which is located ahead of a center line of the rear wheel axle, wherein said pivot points between the knuckle arms and the tie rods are located behind the points of intersection between the horizontal plane containing said pivot points and the center lines of rotation of the knuckles relative to the vehicle body.

4,796,905

SPRAY-SUPPRESSANT SURFACE CONFIGURATION

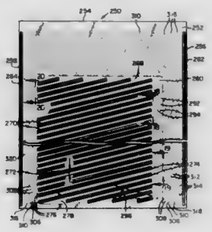
Patrick F. Sullivan, 3645 Glen Oak, Eugene, Oreg. 97405

Continuation-in-part of Ser. No. 794,306, Nov. 1, 1985, which is a continuation-in-part of Ser. No. 732,439, May 9, 1985, abandoned. This application Oct. 31, 1986, Ser. No. 926,142

Claims priority, application United Kingdom, May 3, 1985, 8511307; Dec. 14, 1985, 8530858; European Pat. Off., May 2, 1986, 86303379.1

Int. Cl.[4] B62D *25/16*

U.S. Cl. 280—154.5 R **18 Claims**



1. A spray-suppressant flap for use behind the wheels of a highway vehicle for limiting the amount of spray thrown into the air by operation of such a vehicle on a wet roadway, comprising:

(a) an imperforate base member defining a generally planar base surface limited by a top and a bottom, a laterally inner marginal portion and a laterally outer marginal portion, said marginal portions extending vertically and defining a width of said flap;

(b) a plurality of substantially parallel and straight bars located only on a first area of said base surface, each of said bars projecting fowardly and sloping downwardly from said base member and extending along said base member slopingly from an upper end located nearer said laterally inner marginal portion toward a lower end located nearer said laterally outer marginal portion; and

(c) a plurality of spray-suppressant members projecting forwardly from said base surface in a second area of said base surface located adjacent said first area thereof, said spray-suppressant members in said second area defining a plurality of generally vertical channels, and the portions of said base surface within said channels and between said bars in said first area being free from said spray-suppressant members.

4,796,906

SPRAY-SUPPRESSANT SURFACE CONFIGURATION

Patrick F. Sullivan, 3645 Glen Oak, Eugene, Oreg. 97405

Continuation-in-part of Ser. No. 732,439, May 9, 1985, abandoned. This application Nov. 1, 1985, Ser. No. 794,306

Claims priority, application United Kingdom, May 3, 1985, 8511307

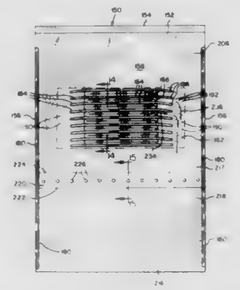
Int. Cl.[4] B62D *25/16*

U.S. Cl. 280—154.5 R **18 Claims**

1. A spray-suppressant flap for use behind the wheels of a highway vehicle for limiting the amount of spray thrown into the air by operation of such a vehicle on a wet roadway, comprising:

(a) an imperforate base member of a resilient, elastomeric material, defining a planar base surface limited by a top and a bottom and a pair of lateral marginal portions which extend vertically and define a width of said flap;

(b) a plurality of substantially parallel, vertically apart-spaced laterally-extending bars projecting forwardly from said planar base surface only in a first area located laterally centrally and extending above mid-height of said



planar base surface, each of said bars having a thickness and a forwardly-projecting width at least about twice as great as said thickness; and

(c) a plurality of spray-suppressing members projecting forwardly from said planar base surface in a second area of said planar base surface located adjacent said first area thereof, said spray-suppressing members in said second area defining generally vertical channels extending along said planar base surface between said spray-suppressing members, with said planar base surface within said channels being free from said spray-suppressing members.

4,796,907

MUSCLE-POWER-DRIVEN VEHICLE

Herbert Geller, Maxburgstrasse 8, D-6701 Altrip, Fed. Rep. of Germany

Filed Jul. 2, 1987, Ser. No. 69,522

Int. Cl.[4] B62M *1/14*

U.S. Cl. 280—220 **14 Claims**



1. A muscle-power-driven vehicle comprising chassis with a frame and two front wheels at one end, footoperable means to guide the vehicle, a front axle, yoke, at least one drivable rear wheel having an axle, a seat, a lever which is pivoted on the chassis, a toothed rim, which is free-wheeling in one direction, surrounding the drivable rear wheel axle, chain-drive means for at least one rear wheel, said chain-drive means engaging the free-wheeling toothed rim and having two ends, one of which is attached to the lever and the other of which is connected, via a recovery spring, to the chassis, and guiding roller means around which the chain-drive means traverses at a position intermediate the end attached to the lever and said free-wheeling toothed rim;

the frame comprising two one-piece pipe segments which are substantially alike and parallelly disposed, between

which is positioned the rear wheel and the guiding roller means, which are joined together by spacing members,

the two one-piece pipe segments comprising upper struts and lower struts, the upper struts being in the form of rails which support rollers on which the seat is mounted.

4,796,908

SKI BINDING

Vladimir S. Makarenko, prospekt Kultury, 11,korpus 1, kv. 279, Leningrad, U.S.S.R.

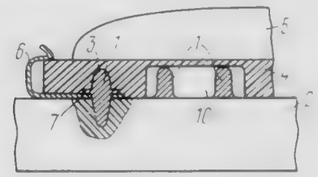
PCT No. PCT/SU86/00034, § 371 Date Dec. 12, 1986, § 102(e) Date Dec. 12, 1986, PCT Pub. No. WO86/06291, PCT Pub. Date Nov. 6, 1986

PCT Filed Apr. 18, 1986, Ser. No. 44,366

Claims priority, application U.S.S.R., Apr. 26, 1985, 3880000

Int. Cl.[4] A63C *9/10*

U.S. Cl. 280—615 **4 Claims**



1. A ski binding comprising:

a plurality of rest pins disposed on one of a ski and the bottom surface of a ski boot along a longitudinal axis thereof, said rest pins having substantially the same shape;

a plurality of holes for mating with said rest pins, disposed on the other of said ski and ski boot along the longitudinal axis thereof, such that any of said pins can be selectively fitted within selected ones if said holes for varying the location of the ski boot relative to the ski along the longitudinal axis thereof, thereby restraining said boot on said ski in a manner dependent on the type of skiing to be performed; and

lock means for locking the forwardmost one of said pins and said holes being disposed on the ski boot to a selected one of said pins and said holes disposed on the ski.

4,796,909

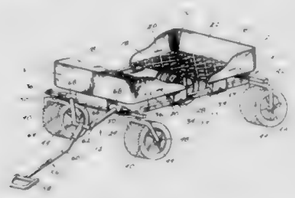
LOW-BED SERVICE CART

Vern S. Kirkendall, 783 Portal Dr., Chico, Calif. 95926

Filed Feb. 8, 1988, Ser. No. 153,845

Int. Cl.[4] B62B *3/02*

U.S. Cl. 280—651 **1 Claim**



1. A four wheeled, low bed service cart with adjustable bed comprising

a. a bed portion having two substantially rectangular platforms horizontally positioned with broad surfaces upwardly and downwardly and a longer straight edge of one of said platforms aligned with a longer straight edge of the other of said platforms, the opposite outside longer edges of both said platforms rounded cornerwise at emergence with shorter edges, said platforms being separably attached to each other by an adjustable supporting means, said platforms affixed upwardly along said outside longer edges with vertical solid walled low-profile end rails extending in uniform height to said curved merging corners, then curving downwardly along said shorter edges from a higher position to a lower side position forming side rails with said side rails apertured for strap attachment, said two platforms fabricated of expanded material producing minute rectangular openings through said broad surfaces being flooring for said bed portion of said service cart;

b. a frame portion being said adjustable supporting means for said platforms with said frame portion comprising two horizontally disposed U-shaped rods having a straight rod affixed across the opened end of said U with said U-shaped rods affixed as supportive edging to said downwardly faced broad surfaces of said platforms, said U-shaped rods and said platforms affixed downwardly on each side to a support hanger transversely shafted and slidably encasing an adjustable bed support bar, said bed support bar being a horizontally inclined squared tubing, said bed support bar aligned with adjustment apertures and retained in position in said encasing by a slide adjustment retainer means fitting said apertures in said bed support bar and a single aperture in said support hanger providing adjustment means for increasing and decreasing separation between said separably attached platforms;

c. a front wheel assemblage aligned crosswise relative to said frame portion and affixed downwardly adjustably to a first extreme end of said bed portion with that particular end being the front end of said cart, said front wheel assemblage attached to said bed portion by a support hanger transversely shafted for centrally encasing a removable front wheel support bar, said front wheel support bar being a hollow rectangular tube sized to accept end insertion of wheel support insert rods, there being means for removably retaining said wheel support insert rods with end fixtures attached oppositely, the inserted end downwardly in a use position or upwardly in a storage position, said end fixtures of said wheel support insert rods having endwardly mounted removable swivel brackets housing balloon tire wheels attached by axles therein, said brackets and wheels positioned individually swiveling one at each end of said front wheel assemblage, there being removably attached hingedly to said front wheel support bar a frontwardly extending telescoping tow handle arm affixed with a rounded and cross membered handle grip at the free end thereof;

d. a rear wheel assemblage aligned crosswise relative to said frame portion and affixed downwardly adjustably to a second extreme end of said bed portion with that particular end being the rear end of said cart, said rear wheel assemblage attached to said bed portion at said rear end of said cart by a support hanger transversely shafted to house a removable rear wheel support bar, said rear wheel support bar being a hollow rectangular tube sized to accept end insertion of wheel support insert rods, there being means for removably retaining said wheel support insert rods with end fixtures attached oppositely, the inserted end downwardly in a use position or upwardly in a storage position, said end fixtures on said wheel support insert rods having endwardly mounted removable brackets housing balloon tire wheels attached by axles therein, said brackets and wheels positioned one at each end of said rear wheel assemblage;

e. a load securing means comprising two elongated straps removably fastened to said cart attached through said side rail apertures with said straps having adjustable attachment means for temporarily fixing free ends thereof one to the other;

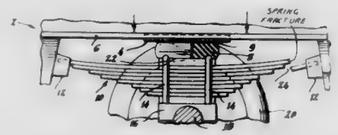
f. an accessory storage means in the form of a rectangular fabric pouch compartmented to house folded beach chairs and lesser items and having straps sized for retaining the

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maximum cargo applicable to said cart, there being means for adjustably attaching the free ends of said straps one to the other.

4,796,910
AUXILIARY SUSPENSION SYSTEM FOR A MOTOR VEHICLE

Urban Starr, Sr., Upper Main St., North Troy, Vt. 05859
Filed Oct. 31, 1984, Ser. No. 666,828
Int. Cl.[4] B60G *11/40*
U.S. Cl. 280—715 12 Claims

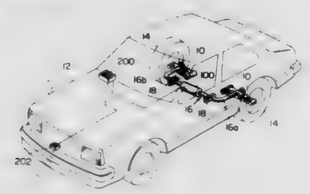


1. In a suspension system for a motor vehicle including a vehicle frame mounted on rotatable wheels and spring means for resiliently supporting said frame and preventing said frame from dropping onto said wheels, the improvement comprising:

auxiliary suspension means comprising a layer of resilient material mounted to the underside of said frame and extending downwardly therefrom, said layer being mounted above said spring means and resting directly on supporting means therebelow when said vehicle is loaded such that said resilient material provides supplement support to said vehicle frame, said resilient layer being sufficiently thick to support said vehicle frame on said supporting means and separate said underside of said frame above said wheels in the event that said spring means rupture.

4,796,911
AUTOMOTIVE SUSPENSION SYSTEM WITH ROLL-STABILIZER HAVING ROAD CONDITION-DEPENDENT TORSION MODULUS, AND CONTROL OF TORSIONAL MODULES

Junsuke Kuroki, Yokohama; Toru Takahashi, and Ken Ito, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Ltd., Japan
Continuation of Ser. No. 647,648, Sep. 6, 1984, abandoned. This application Feb. 24, 1987, Ser. No. 18,821
Claims priority, application Japan, Sep. 9, 1983, 58-166353
Int. Cl.[4] B60G *21/00*
U.S. Cl. 280—689 23 Claims



1. An automotive vehicle suspension system comprising:

first means for rotatably supporting a pair of vehicle wheels and for supporting a vehicle body;

a roll stabilizer connected to said first means and extending perpendicular to the longtudinal axis of the vehicle, said stabilizer producing a damping force against rolling moment applied to said first means, said stabilizer including second means for adjusting torsion modulus of the stabilizer to adjust the damping force produced;

an actuator associated with said second means for operating said second means to adjust the torsion modulus of the stabilizer;

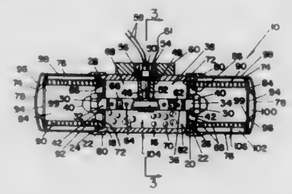
a detector adapted to detect a preselected vehicle driving condition-indicative parameter and produce a detector signal indicative thereof; and

a controller including means responsive to the detector signals for deriving a smooth or rough road condition indicative signal on the bases of the detector signals relative to a predetermined road roughness, and means responsive to the road condition indicative signal for providing a control signal indicative of the road condition to said actuator to activate the latter so as to adjust the torsion modulus of said stabilizer and the damping force produced thereby at least between a higher and a lower value responsive to the smooth or rough road condition indicative signal, respectively;

said stabilizer comprising a first torsion bar segment associated with a first portion of said first means near one of said vehicle wheels and a second torsion bar segment associated with a second portion of said first means near a second vehicle wheel, and said second means comprising a connector tube to which the proximal ends of said first and second segments are connected, said connector tube being filled with a magnetic fluid in which the concentration of ferromagnetic material included therein is subject to adjustable spacial gradients according to external magnetic fields, which in turn influences the torsion modulus of the stabilizer, and said actuator comprising third means for producing a magnetic field with an adjustable field strength around said connector tube, which field strength is determined by said control signal.

4,796,912
ELONGATE GAS GENERATOR FOR INFLATING VEHICLE INFLATABLE RESTRAINT CUSHIONS

Donald R. Lauritzen, Hyrum, and Gregory R. Goin, Smithfield, both of Utah, assignors to Morton Thiokol, Inc., Chicago, Ill.
Filed Nov. 12, 1987, Ser. No. 119,764
Int. Cl.[4] B60R *21/26*
U.S. Cl. 280—736 20 Claims



1. A gas generator for inflating a vehicle inflatable restraint cushion comprises a tubular member having a pair of end portions, a pair of plate members one of which is attached to one of said end portions of said tubular member and the other of which is attached to the other of said end portions to define a combustion chamber therewithin, a solid fuel gas generant composition contained within the combustion chamber, ignition means for igniting said solid fuel gas generant composition, a plurality of aperture means in each said plate member for effecting exit of generated gases from the combustion chamber, a pair of chamber means one of which is attached to one of said pair of tubular member end portions and the other of which is attached to the other of said pair of tubular member end portions for receiving and filtering the generated gases, and means for routing the generated gases from said pair of chamber means to an inflatable restraint cushion.

4,796,913
SAFETY BAR FOR VEHICLES

Gerald Amabile, and Ronald Rogers, both of Jessup, Pa., assignors to Safety Research and Manufacturing, Inc., Archbold, Pa.
Filed Mar. 9, 1987, Ser. No. 23,798
Int. Cl.[4] B60R *21/01*
U.S. Cl. 280—751 14 Claims



1. A restraining device for use with bench seats of the type used in school buses, wherein a restraining bar is attached to a forward seat to restrain passengers in the rearward seat directly behind said forward seat, comprising:

a hinge plate means mounted on the frame of the forward seat, said plate means presenting a profiled cam with a generally arcuate rear face having an upper limit position, a lower limit position, and a locking lower position, said plate means having a pivot pin on the outside of said plate means; and

a restraining bar having a restraining support sized to be positioned across the waist of passengers seated in the rearward seat, said restraining bar having an arm at each end of said support and extending to the frame of the forward seat, said arm having a slot sized to receive said hinge plate means pivot pin and said arm further having a lock pin sized and positioned to cooperatively contact said generally arcuate rear face to position said arm generally vertically in said upper limit position and generally horizontally in said lower limit position.

4,796,914
TRUCK BED LINER WITH BALLAST CHAMBER

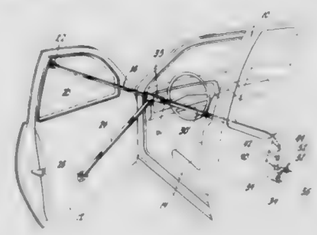
Leighton A. Raynor, 335 E. Parker Rd., Morganton, N.C. 28655
Filed Jan. 14, 1988, Ser. No. 143,765
Int. Cl.[4] B62D *33/04*
U.S. Cl. 280—757 7 Claims



1. In a protective liner for a truck bed including a floor, a front wall, opposed side walls, and a rear access opening, said linear being shaped to be inserted in the truck bed and including corresponding bottom, front and opposed side walls, the combination therewith of ballast means incorporated in said protective liner for at times providing stability and traction for the truck in which said protective liner is positioned, said ballast means comprising a hollow compartment extending substantially throughout said bottom wall of said protective linear and defining a ballast chamber therein, a filling opening for permitting liquid ballast to be inserted in said ballast chamber when it is desired to provide additional weight on the rear portion of the truck, and a drainage opening for permitting removal of the liquid ballast from said ballast chamber when it is desired to reduce the weight on the rear portion of the truck.

4,796,915
SEAT BELT EXTENDER

Michael S. Kaurich, Sterling Heights, and Paul E. Risbel, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1987, Ser. No. 120,363
Int. Cl.[4] B60R *22/18*
U.S. Cl. 280—802 6 Claims



1. A seat belt extender for positioning a seat belt being unwound from a seat belt retractor, comprising:

at least a pair of sleeves telescopably slidable relative one another between retracted and extended positions and having belt passages through which the belt passes from the retractor toward the occupant, said sleeves having means acting therebetween by which extension of the endmost of the sleeves causes progressive extension of each of the other sleeves;

and detent means acting between the belt and the endmost of the sleeves to releasably couple the belt and the endmost of the sleeves so that unwinding and extension of the belt from the retractor causes the belt to carry the endmost sleeve therewith and thereby extend the other sleeves to their extended positions so that the sleeves support the belt at an extended position relative to the occupant, and said detent means releasing the belt from the endmost sleeve upon further extension of the belt.

4,796,916
INHIBIT CONTROL OF A BELTED VEHICULAR PASSIVE RESTRAINT SYSTEM HAVING DOOR-MOUNTED RETRACTORS

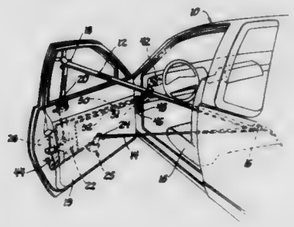
Lloyd W. Rogers, Utica, and David E. Compean, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 16, 1987, Ser. No. 134,171
Int. Cl.[4] B60R *22/40*
U.S. Cl. 280—803 7 Claims

1. In a motor vehicle seat belt system including a seat belt retractor mounted on a vehicle door, a motion sensitive mechanism for preventing belt movement through the retractor in response to a sensed motion, and a desensitizing mechanism energizable to inhibit operation of said motion sensitive mechanism, control apparatus for controlling energization of said desensitizing mechanism, comprising:

first and second switch means mounted in relation to the vehicle door for independently sensing and indicating closure or nonclosure of the vehicle door;

monostable means effective when either of said first and second switch means indicates nonclosure of the vehicle door for energizing said desensitizing mechanism for at least a predetermined interval; and

means effective in response to a condition wherein if both of said first and second switch means indicate nonclosure of the vehicle door within the predetermined interval of energization effected by said monostable means, then the energization of said desensitizing means is sustained so



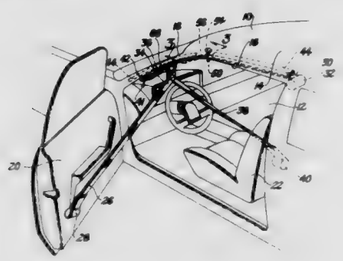
long as such condition persists, but if both of said first and second switch means do not indicate nonclosure of the vehicle door within the predetermined interval of energization effected by said monostable means, then the desensitizing means is deenergised.

4,796,917

PASSIVE SEAT BELT SYSTEM

Larry D. Miller, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 17, 1987, Ser. No. 97,725
Int. Cl.[4] B60R *22/06*
U.S. Cl. 280—804 **5 Claims**



5. In a passive seat belt system including a lap belt having an outboard end mounted on the door, a shoulder belt having an outboard end mounted on the body, a control belt having an inboard end mounted on the body inboard the seat and having an outboard end connected to the inboard ends of the lap and shoulder belts, retractor means associated with at least one of the belts to draw the lap and shoulder belts to restraining positions about a seated occupant, and a track mounted carriage slidably engaging the shoulder belt and movable forwardly along a roof mounted track upon door opening movement to move the shoulder belt forwardly and thereby move the lap belt forwardly and upwardly away from the seat to permit occupant ingress and egress, the improvement comprising:

said track extending further forwardly and downwardly along the windshield pillar to move the lap and shoulder belts further forwardly;

a belt supporting hook pivotally mounted on the body at the juncture between the roof rail and the windshield pillar;

spring means acting on the hook to urge the hook to a normal position extending into the path of movement of the carriage along the track, said spring yielding upon engagement of the carriage with the hook to temporarily pivot the hook away from the belt during movement of the carriage past the hook and then return the hook into the path of movement so that the hook supports the belt at the juncture of roof rail and windshield pillar during the further forward and downward movement of the carriage along the track;

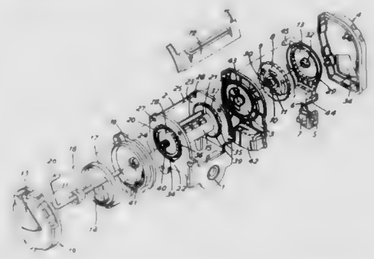
and a belt loop mounted on the pillar and surrounding the track in spaced relation therefrom to permit the carriage to move through the loop during said forward movement thereof whereby the further forward movement of the carriage after the carriage passes through the loop causes the shoulder belt to be doubled back from the carriage and deflected by the belt loop to lift the inboard ends of the lap belt and the shoulder belt higher while the carriage proceeds forwardly and downwardly along the pillar.

4,796,918

AUTOMATIC REWINDING TYPE SAFETY BELT RETRACTORS

Rudolph Meyer, Odelzhausen, and Martin Specht, Munich, both of Fed. Rep. of Germany, assignors to BSRD Limited, Carlisle, Cumbria, United Kingdom

Filed Apr. 5, 1988, Ser. No. 177,723
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1987, 3711537
Int. Cl.[4] B60R *22/36, 22/40, 22/38*
U.S. Cl. 280—806 **9 Claims**



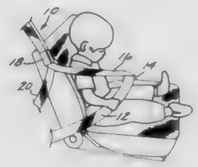
1. An automatic safety belt webbing retractor mechanism having a webbing reel **(15)** rotatable around the reel axle **(14)** for winding and unwinding a safety belt and biassed by a spring **(17)** said webbing reel being rotably moveably in a frame having two parallel side parts **(22,23)**, locking teeth peripheries **(20,21)** provided at both ends of the webbing reel, said teeth being cooperable with teeth **(36,37)** disposed on the frame parts, an inertia device sensitive to exceeded vehicle deceleration or vehicle acceleration and/or accelerated belt movements for mechanical locking of the webbing reel **(15)** said webbing reel being supported so as to be able to make rocking movement between an operation position in which said webbing reel is freely rotatable and a locking position in which the teeth are engaged said inertia device comprising a toothed wheel **(8)** mechanically rotatable with the reel **(15)** and carried by a member **(13)** which carries one end of the reel axis pawl means **(6 or 10)** acting between said wheel **(8)** and said member **(13)** said member being rockable about a pivot under the effect of belt tension when such pawl means **(6,10)** are engaged to effect engagement of the teeth **(20,21,36,37)** for locking the reel characterised in that the distance of the axis of the pivot **45** of the member **(13)** from the axis of the reel is greater than the radius of the toothed peripheries of the reel and that means **(14,26,31)** are provided operable to synchronise engagement of the locking teeth **(20,21;36,32)** on each side of the reel **(15)**.

4,796,919

VEHICLE SEATBELT DEFLECTION DEVICE

Scott R. Linden, 16044 Outer Bear Valley Rd., Victorville, Calif. 92392

Filed Jan. 12, 1988, Ser. No. 143,639
Int. Cl.[4] A47C *31/00;* **B60R** *35/00*
U.S. Cl. 280—808 **8 Claims**



1. In combination with a vehicle seatbelt which extends in a substantially vertical run from an outside anchorage on one side of a vehicle seat to a door post anchorage, and which then extends in a diagonal run from the door post anchorage to a buckle means adapted for detachable connection to an inside anchorage on the other side of the vehicle seat, an improved deflection device for shortening the diagonal run and disposing it at a greater angle relative to the vertical run to suit the seatbelt to a smaller seat occupant, the deflection device comprising:

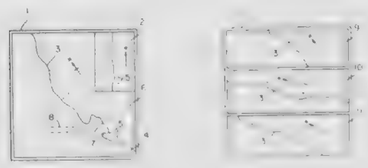
clamping means operative to fixedly clamp the diagonal run to the vertical run below the door post anchorage at a location which is selected to dispose the diagonal run at a desired angle relative to the vertical run, the clamping means in operation being freely movable relative to fixed structure of the vehicle, the clamping means preventing the diagonal run from moving relative to the vertical run at the location of the clamping means.

4,796,920

NAUTICAL CHART FOR PILOTING

John M. Landry, Sassaman Ct., Punta Gorda, Fla. 33955, and Paul L. Ravenna, Rd. 1, Box 33B, Waitsfield, Vt. 05673

Continuation of Ser. No. 817,490, Jan. 9, 1986, Pat. No. 4,687,230. This application Aug. 14, 1987, Ser. No. 86,389
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[4] B42D *15/00*
U.S. Cl. 283—34 **30 Claims**



1. A nautical chart having a combination of indicia comprising:

(a) a least one small scale chart suitable for piloting having a representation of a shoreline; and

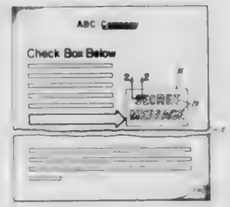
(b) a plurality of large scale charts, said large scale charts in combination present a substantially continuous shoreline, said substantially continuous shoreline formed by said combination of said large scale charts presents an extension of said shoreline of said small scale chart and/or overlaps said shoreline of said small scale chart.

4,796,921

HIDDEN PRINTING

Ralph Neiman, Dayton, Ohio, assignor to Penny-Ohlmann-Neiman, Inc., Dayton, Ohio

Filed Feb. 2, 1987, Ser. No. 9,782
Int. Cl.[4] B42D *15/00*
U.S. Cl. 283—91 **4 Claims**



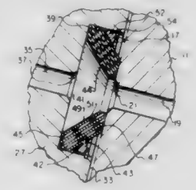
1. An article having a secret message which can be conveniently identified, comprising a sheet of translucent paper which is white in color and capable of transmitting natural light, a first portion of the sheet having printed thereon a first ink which has a color different from white and which forms visually identifiable information, a second portion of the sheet being free of the first ink and having printed thereon a white ink, said second portion of the sheet being less translucent in the area of the white ink, and said white ink forming a secret message, and said secret message being visually readable when viewing natural light through the second portion of the sheet.

4,796,922

SUBSEA MULTIWAY HYDRAULIC CONNECTOR

Richard M. H. Prichard, Katy, Tex., assignor to Vetco Gray Inc., Houston, Tex.

Filed Dec. 30, 1987, Ser. No. 139,686
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—26 **5 Claims**



1. For a subsea well assembly, a hydraulic connector comprising in combination:

a pair of connector members, each having a hydraulic seat and a plurality of hydraulic passages, each hydraulic passage having a port terminating at the hydraulic seat;

means for coupling the connector members rigidly together, with the hydraulic seats seating against each other and the ports of one of the connector members registering with the ports of the other connector member;

a counterbore located at the port of each hydraulic passage of one of the connector members, defining a base recessed below the hydraulic seat of that connector member;

a seal element located in each counterbore, the seal element being generally frusto-conical and having a passage therethrough for the passage of hydraulic fluid from one of the ports of one of the connector members to another port of the other connector member, the seal element having a base in contact with the base of the counterbore and a face protruding out of the counterbore a short distance for compression against the hydraulic seat of the other con-

VOL 1098 ISS 2 JA 10 1989 UMI

nector member surrounding one of the ports when the connector members are coupled together; and

the seal element being formed of at least one conical metal lamination and at least one elastomer lamination bonded to each other, the elastomer lamination having ends which protrude past ends of the metal lamination a short distance prior to the coupling of the connector members together.

4,796,923

JOINTS FOR TUBULAR MEMBERS

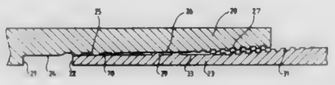
Brian D. Liggins, Kettering; Timothy S. Round, Gretton; Stuart J. Welch, Burton Latimer, and Gordon F. Reynolds, Corby, all of England, assignors to British Steel Corporation, United Kingdom

Filed Jul. 21, 1987, Ser. No. 76,029

Claims priority, application United Kingdom, Jul. 22, 1986, 8617827

Int. Cl.[4] F16L *15/00*

U.S. Cl. 285—27 **7 Claims**



1. A joint between two tubes comprising a box at one end of one tube and a pin at one end of the other tube, the pin being provided on its external surface with a threadless zone at its nose serving as a stabbing guide for entry of the pin into the box, a parallel threaded load carrying zone, and an inclined threaded locking and load carrying zone; the box being provided on its inner surface with a parallel threaded load carrying zone, and an inclined threaded locking and load carrying zone, both generally matching and engageable with the corresponding zones of the pin, and an unthreaded stabbing guide zone axially disposed between said parallel load carrying zone and said inclined locking and load carrying zone of the box; the parallel load carrying zone in the box serving as an extension of the stabbing guide provided between the parallel load carrying zone and the inclined locking and load carrying zone for the nose of the pin, and two threaded zones in the box being so separated that the parallel threaded load carrying zone engages with the corresponding threaded zone on the pin firstly on make-up of the joint; the inclined locking and load carrying threaded zones of the pin and box comprising double start threads and the parallel load carrying zones of the pin and box comprising single start threads.

4,796,924

COUPLING FOR MULTI-PASSAGE TUBE

Seiji Kosugi; Norio Ando, and Hisao Sagara, all of Sohka, Japan, assignors to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

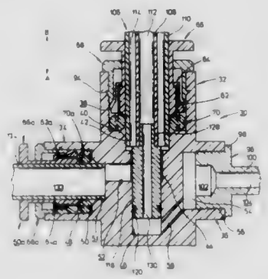
Continuation of Ser. No. 824,235, Jan. 30, 1986, abandoned. This application Feb. 2, 1988, Ser. No. 153,569

Claims priority, application Japan, Aug. 20, 1985, 60-127106[U]; Aug. 26, 1985, 60-130687[U]

Int. Cl.[4] F16L *39/00*

U.S. Cl. 285—39 **3 Claims**

1. A coupling for a multi-passage tube having first and second fluid passages therein, comprising a body having first and second passages corresponding to the first and second fluid passages of the multi-passage tube, a recess formed in said body, a guide member seated in said recess, a radially flexible release bushing mounted on an outer annular surface of said tube and extending into said recess, said bushing being axially movable on said tube, a radially flexible chuck mounted on an outer annular surface of said bushing and having a portion engaged with said outer annular surface of said tube, a radially flexible collet mounted on an outer annular surface of said chuck, said coupling having a cylindrical portion connected within and extending from said first passage of said tube, said cylindrical portion defining a third passage therein aligned with said first passage of said tube for providing communication between the first passage of the tube and the first passage of the body, said cylindrical portion having an outer surface, and said coupling member defining a fourth passage between



said cylindrical portion outer surface and said body, said fourth passage communicating between said second passage of the tube and said second passage of the body, whereby in response to axial movement of said release bushing on said tube, said bushing urges said chuck and collet radially outwardly for releasing said tube.

4,796,925

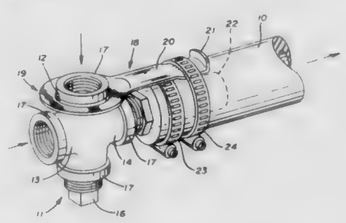
SAFETY RETAINER CLIP

Fred Zwicker, 7075 State Rt. 14, By-Pass, Canfield, Ohio 44406

Filed Sep. 11, 1987, Ser. No. 95,160

Int. Cl.[4] F16L *35/00*

U.S. Cl. 285—114 **3 Claims**



1. A safety retainer clip for use on a high pressure hose and associated fitting having multiple outlets comprises a single elongated flattened body member, said body member having an apertured enlarged end portion for fitting around one of said outlets and a oppositely disposed single elongated transversely curved hose portion extending from said body member and terminating in a free end, an arcuate upstanding flange on the free end of said elongated hose end portion, a first clamping means separate from and secured over said elongated hose portion and said hose adjacent said upstanding flange, a second clamping means separate from said hose portion and engageable on said hose adjacent said first clamping means.

4,796,926

DUMP FITTING FOR SEWER HOSE

Benny L. Rapstlver, Rt. 4 Box 2640, Nacogdoches, Tex. 75961

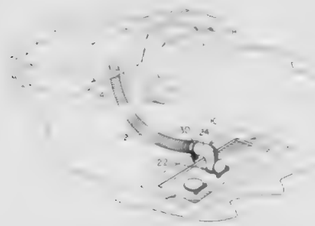
Filed Dec. 23, 1986, Ser. No. 945,685

Int. Cl.[4] F16L *43/00*

U.S. Cl. 285—181 **2 Claims**

1. In combination with a flexible sewer hose for discharging effluent from a holding tank of a recreational vehicle, a rigid

dump fitting in the form of a tubular elbow connected to a discharge end of the hose, the dump fitting having an outlet for close fitting telescopic insertion in a sewer drain to enable flow of effluent from the hose into the sewer drain without interruption and being of a weight sufficient for preventing the discharge end of the hose from jumping out of the drain under the influence of thrust created by effluent flowing through the hose, said dump fitting having an inlet limb telescopically inserted in the discharge end of the sewer hose and hold in place by a hose clamp encircling the hose, and an outlet limb telescopically inserted into the sewer drain in close fitting



relation with both limbs being rigid and provided with a spigoted end portion, said fitting being a two-piece molding of hard plastic comprising first and second sections and means for releasably connecting the sections substantially along a midplane of the elbow, said connecting means comprising a spigot element on one section telescoped into the other section, an O-ring seal carried on the spigot element and external interengageable latch elements on the respective sections, said latch elements including eye hooks pivotally mounted on one of the sections and eye hook keepers in the form of headed projections on the other section.

4,796,927

MOBILE JOINT FOR CONNECTORS

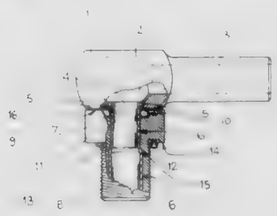
Alfredo D. Bona, Abbiategrasso, and Attilio Airaghi, Cornaredo, both of Italy, assignors to Murray Europe S.p.A., Milan, Italy

Filed Jun. 15, 1987, Ser. No. 63,006

Claims priority, application Italy, Nov. 3, 1986, 23573/86[U]

Int. Cl.[4] F16L *27/08*

U.S. Cl. 285—190 **4 Claims**



1. A mobile joint for connecting two tubes (3 and 4) which comprises:

(a) a central body (1) provided with a compartment (2), into which said two tubes (3, 4) converge, one (3) of said tubes being integral with said central body (1), the other tube (4) having two ends and being fixed to said central body (1) and being provided with an enlarged drawing die portion (15) in the end opposite to the end fixed to said central body;

(b) a hollow bolt inserted over said tube (4) fixed to said central body (1), said bolt having a faceted head (7), a threaded part (8) and a central duct (6) provided with a wider portion at the end thereof, said bolt being inserted over the tube (4) whereby the faceted head (7) comes into contact with said central body (1) and said enlarged portion (15) of said tube (4) matches the widening of said central duct (6);

(c) said faceted head having upper (9) and lower (14) surfaces, elastic annular gaskets (11, 12) arranged on the upper (9) and lower (14) surfaces of said faceted head (7), respectively, wherein said first annular gasket (11) is inserted into an annular seat (10) machined on said upper surface (9) of said head (7) and said second annular gasket (12) is inserted in a groove (13) machined on said threaded portion (8) of the bolt between the lower surface (14) of the head (7) and the threaded part (8) of the bolt, and wherein said central body (1) has a lower surface (16) and said upper annular gasket (11) is compressed and sealed between said annular seat (10), said upper surface (9) of said head (7) of said bolt and said lower surface (16) of said central body (1) by forming the enlarged portion of said tube (4) with a drawing die.

4,796,928

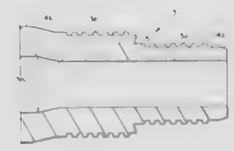
THREADED CONNECTION FOR PIPES AND METHOD OF FABRICATING SAME

Frank J. Carlin, Houston, Tex., and Terrell F. Wafford, Wilburton, Okla., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 28, 1987, Ser. No. 101,653

Int. Cl.[4] F16L *15/00*

U.S. Cl. 285—334 **2 Claims**



1. A threaded connection for pipe produced in accordance with A.P.I. specifications comprising a pin portion formed on one pipe end and a box portion formed on another pipe end; said pin portion being formed to an internal diameter that is greater than the A.P.I. drift diameter by 0.001 to 0.003 inches; said box portion being formed to an external diameter equal to the max A.P.I. diameter $+0.000''-0.002''$; and cooperating threads formed on the exterior of said pin portion and on the interior of said box portion; said cooperating threads comprising axially adjacent large and small diameter threads; said axially adjacent threads being machined to the following dimensional relationship:

$$P1=B1=A1+A2;$$

where P1 is the root diameter of the small diameter thread on the pin end of the pipe; B1 is the difference between the root diameter of the small diameter thread in the box end of the pipe and said machined outer diameter of said box end; A1 is the difference between the root diameter of said large diameter thread in said box end of the pipe and said machined outer diameter of said box end; and A2 is the difference between the root diameter of the large diameter thread on said pin end and said machined inner diameter of said pin end.

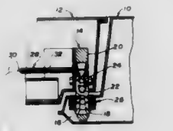
VOL 1098 ISS 2 JA 10 1989 UMI

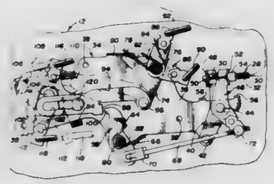
4,796,929

CLOSURE LATCH CONTROL MECHANISM

Bela Gergoe, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 2, 1987, Ser. No. 92,102
Int. Cl.[4] E05C *3/26*
U.S. Cl. 292—28 **1 Claim**





1. In combination with a closure latch including latch means movable between latched and unlatched positions by the relative movement of a cable member and a sheath member housing the cable member, a control mechanism for moving the cable and sheath relative to each other comprising, in combination,

a support, a first lever pivoted to the support, a second lever pivoted to the first lever, means connecting the first lever to the sheath member, means connecting the second lever to the cable member, an intermediate lever pivoted to the support and operatively connected to the second lever for pivoting the second lever relative to the first lever to move the cable member relative to the sheath member and move the latch means to unlatched position, latch operating means operatively connected to independently actuatable inside and outside closure latch operators, a coupling member operatively connected to the latch operating means for movement upon operation of either the inside or the outside closure latch operator, the coupling member including means cooperatively engageable with the intermediate lever for pivoting the intermediate lever upon movement of the coupling member, and locking means operatively connected to the coupling member for moving the coupling member between a coupled position and a bypass position with respect to the intermediate lever, the coupling member engageable means bypassing the intermediate lever when the coupling member is in bypass position to uncouple the inside and outside operators from the intermediate lever and block movement of the latch means to unlatched position.

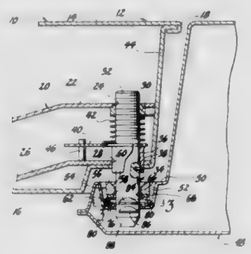
4,796,930

CLOSURE LATCH

Dennis Baynes, Coventry, England, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1987, Ser. No. 87,028
Int. Cl.[4] E05C *5/04*; E05B *15/02*
U.S. Cl. 292—58 **4 Claims**

1. A closure latch for releasably latching a vehicle closure to a vehicle pillar comprising, in combination, an elongated cylindrical latch bolt having threaded and non-threaded exterior surface portions and a circumferentially spaced pair of exterior coplanar grooves, means threadably mounting the threaded portion of the latch bolt on the vehicle closure for concurrent rotational and axial movement of the latch bolt relative to the vehicle closure, means releasably securing the threadedly mounting means to the closure, second means mounting the non-threaded portion of the latch bolt on the vehicle closure for concurrent rotational and axial movement relative thereto, means locating the latch bolt in a predetermined rotational position relative to the vehicle closure and permitting axial movement of the latch bolt independently of the locating means while in such rotational position, a pair of striker members, each having a free edge portion shaped for mating with a respective latch bolt groove, means mounting the striker members on the vehicle pillar for movement toward each other and



into latching engagement with a respective latch bolt groove to block withdrawl of the latch bolt from between the striker members, release of the releasable securing means from the closure and subsequent rotational movement of the threadedly mounting means relative to the latch bolt member when the latch bolt member is in the predetermined position adjusting the position of the latch bolt grooves relative to the free edge portions of the striker members to provide matching engagement of such free edge portions of the striker members with their respective latch bolt grooves.

4,796,931

EXIT DEVICE HAVING ADJUSTABLE BACKSET

George E. Heid, Charlotte, N.C., assignor to Yale Security Inc., Monroe, N.C.

Filed Aug. 7, 1987, Ser. No. 82,749
Int. Cl.[4] E05B *65/10*
U.S. Cl. 292—92 **9 Claims**



1. An exit device comprising a base plate secured to one side of a door, a touch bar mounted on the base plate for rectilinear movement toward and away from the base plate, spring means biasing the touch plate away from the base plate, a latch assembly mounted at one end of the base plate and including a latch mounted for pivotal movement at a position adjacent the edge of the door, and actuating means connected to the touch bar and terminating in a finger under the base plate and adapted to move the finger when the touch bar is pressed, the latch assembly comprising a retracting linkage connected to the latch and terminating at its opposite end in a projection under the base plate spaced from the finger, an exterior operator mounted on the opposite side of the door and extending through the door, an apertured drive plate under the base plate and receiving in its apertures respectively the finger and the projection for movement together with the drive plate, cam means adjacent the drive plate and connected to the operator, the cam means being adapted when the operator is moved to shift the drive plate along the base plate, the cam means and the drive plate being positionable in a plurality of locations on the base plate

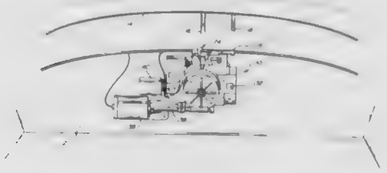
so that the device can accommodate different backset distances for the exterior operator.

4,796,932

REMOTE RELEASE AND PULL-DOWN UNIT

Omar D. Tame, W. Bloomfield, Mich., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Sep. 22, 1987, Ser. No. 99,761
Int. Cl.[4] F05B *65/19*
U.S. Cl. 292—112 **18 Claims**



1. A mechanism for releasing a compartment panel of a vehicle from a closed position, and pulling down said panel to said closed position, comprising:

a housing,

a rotatable eccentric driving member,

means for rotating said eccentric driving member,

a latch hook forming a hook end and a pivot, said pivot coupled to said eccentric driving member at a position displaced from the center of rotation of said eccentric driving member, said housing defining cam surfaces acting on said latch hook such that rotation of said eccentric driving member causes said latch hook end to extend from said housing and pivot wherein, in a first position of said eccentric driving member, said hook end engages an engagement feature of said panel and maintain said panel in said closed position, and said eccentric driving member moveable to a second position wherein when said eccentric driving member is moved between said first and second positions, said latch hook pivots causing said hook end to disengage said engagement feature enabling said compartment panel to be released,

first switch means for responding to the position of said compartment panel such that when said compartment panel is being closed, said means for rotating is energized causing said eccentric driving member to be rotated from said second to said first position thereby pulling down said compartment panel to said closed position,

second switch means for responding to the position of said eccentric driving member for de-energizing said means for rotating to cause said eccentric driving member to dwell at said second position, and

third switch means for responding to the position of said eccentric driving member to cause said eccentric driving member to dwell at said first position.

4,796,933

WINDOW SASH WITH FRAME AND OPERATING HANDLE

Per G. Nielsen, Horsens; Elgard Nielsen, Ostbirk, and Steen Nygaard, Frederikssund, all of Denmark, assignors to V. Kann Rasmussen Industri A/S, Soborg, Denmark

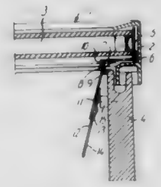
PCT No. PCT/DK86/00062, § 371 Date Jan. 23, 1987, § 102(e) Date Jan. 23, 1987, PCT Pub. No. WO86/07404, PCT Pub. Date Dec. 18, 1986
PCT Filed Jun. 11, 1986, Ser. No. 26,549
Claims priority, application Denmark, Jun. 13, 1985, 2663/85
Int. Cl.[4] E05C *17/18*
U.S. Cl. 292—265 **5 Claims**

1. A window sash to be hinged in an associated casing, comprising:

a frame;

a glass pane mounted in said frame, and having an inner side and an outer side;

a holder secured to the sash between said frame and said pane and by said frame and said pane and having a portion extending along said inner side of the pane past an inner edge of said frame;



an operating handle releasably mounted on said holder portion and adapted to hold the sash in at least one position relative to said casing; and

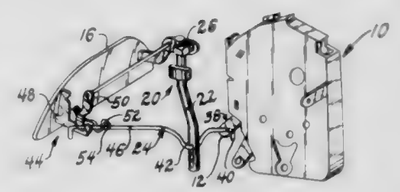
means associated with said holder for allowing said operating handle to be mounted on said holder portion while preventing an unintentional removal of the holder therefrom, said means comprising a leaf spring.

4,796,934

RELEASE LINKAGE FOR DOOR LATCH

Thomas A. Kesel, Dearborn, and Robert M. Paszko, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 24, 1987, Ser. No. 137,638
Int. Cl.[4] E05B *65/20*; F05C *3/26*
U.S. Cl. 292—336.3 **12 Claims**



1. A release linkage for the latch of an automotive vehicle door, the latch having a release lever pivotally mounted for operative movement between latched and unlatched conditions, and the door having an inside handle mounted thereon and connected to the release lever for effecting the operative movement and an outside handle mounted for pivotal movement with respect to the door, the release linkage comprising:

a mounting clip pivotally mounted on the outside door handle;

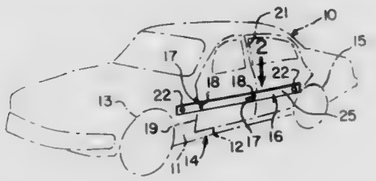
a release link clampingly engaged by the mounting clip;

an elongated actuating rod having one end supported on the outside door handle and the other end operatively connected to the release level and having an intermediate actuating portion;

and lost motion means for interconnecting the release link and the actuating rod actuating Portion to prevent movement of the release lever in response to operative movement of the inside handle.

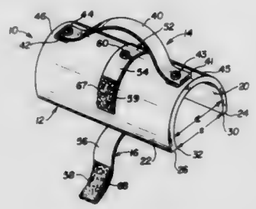
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4,796,935
PROTECTIVE BODY BUMPER STRIP FOR A MOTOR VEHICLE
Charles Marais, 24-13 33rd St., Astoria, N.Y. 11102
Filed Jul. 20, 1987, Ser. No. 75,414
Int. Cl.[4] B60R *19/04*
U.S. Cl. 293—128 **5 Claims**



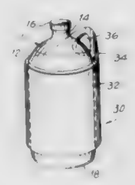
1. A protective body bumper strip for a motor vehicle, said bumper strip comprising:
(a) an elongated elastic belt to be positioned against side body of the motor vehicle between front wheel well and rear wheel well;
(b) a pair of clamping members, spaced apart and affixed to said belt so that said clamping members can removably engage with forward and rearward edges of front door of the motor vehicle, said clamping members including a clip member having at least one hook arm to removably engage with one of the edges of the front door of the motor vehicle, said clip member positioned on inner surface of said belt, and a face plate positioned on outer surface of said belt in the vicinity of said clip member, and means for fastening said face plate to said clip member with said belt being affixed there between; and
(c) a pair of suction cups, spaced apart and affixed to said belt so that said suction cups can removably engage with the side body of the motor vehicle to position the belt and give maximum protection against minor damage thereto.

4,796,936
GAS CYLINDER CARRIER
Patrick M. Sherin, P.O. Box 911, Beaver Falls, Pa. 15010
Filed Jan. 15, 1988, Ser. No. 144,104
Int. Cl.[4] B65D *63/18*
U.S. Cl. 294—31.2 **4 Claims**



1. A carrier for a compressed gas cylinder and the like comprising
a cylinder engaging member including a segment of a tube having an inner face, an outer face, a first end face, a second end face, a first inner edge formed at the intersection of said inner face and said first end face and a second inner edge formed at the intersection of said inner face and said second end face,
said segment having an arc the angle of which is in excess of 180° and having an inner diameter which is at least as small as the outside diameter of said cylinder,
said first inner edge and said second inner edge being spaced apart from each other a distance less than said outside diameter of said cylinder,
said cylinder engaging member being made of material which is elastic to an extent which permits said first and second inner edges to be opened outwardly such that the distance between said edges is equal to said outside diameter of said cylinder without exceeding the elastic limit of said material,
strap means associated with said cylinder engaging member for holding said first and second inner edges said distance less than said outside diameter of said cylinder, said strap means including an elongated strip of material having a top side, a bottom side, a free end, and an opposing fixed end which is mounted onto said cylinder engaging member,
said strap means having fastener means in operative association therewith, and
handle means attached to said cylinder engaging member, whereby said cylinder engaging member is pressed down onto said cylinder and said strap means is wrapped around said cylinder by taking said free end of said strap having said fastener means, wrapping said strap means around the portion of said cylinder not engaged by said cylinder engaging member and contacting said fastener means to said fastener means disposed on said fixed end of said strap so that said cylinder will be held firmly and securely in place by said cylinder engaging member so that said cylinder may be carried away by use of said handle means.

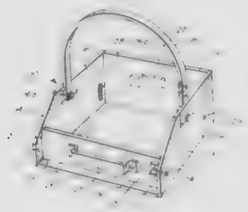
4,796,937
INSULATING SHELL AND POURING AID FOR CONTAINER AND METHOD OF MAKING SAME
Douglas J. Andrea, 165 Brookville La., New York, N.Y. 11545
Filed Oct. 6, 1987, Ser. No. 106,227
Int. Cl.[4] B65D *25/18, 81/38*
U.S. Cl. 294—31.2 **8 Claims**



1. An insulating shell for a container having a main body portion with an outer surface configuration comprising:
a shell of insulating material formed of a shape to define a central opening corresponding to the outer surface configuration of the container main body portion;
said shell having a central portion to encompass a substantial part of the main body portion of the container to insulate the container contents, and
an integral handle portion formed in the shell extending from and along the shell central portion and having an opening therein with at least a part of said opening adapted to extend above the container central body portion.

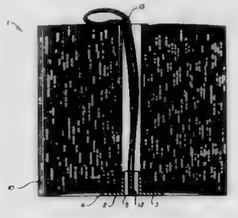
4,796,938
GARDEN SCOOP
Douglas Knights, Route 1, Box 291, Sandwich, Ill. 60458
Continuation-in-part of Ser. No. 907,119, Sep. 12, 1986, abandoned. This application Nov. 24, 1987, Ser. No. 124,816
Int. Cl.[4] A47F *13/08;* **B65F** *1/06*
U.S. Cl. 294—55 **8 Claims**

1. A garden scoop for removing trash or carrying objects comprising a flat rectangular bottom, an upstanding back wall, opposite side walls having a sloping front opposite the back wall, and a front gate between the side walls and adjacent the bottom, said front gate being detachably mounted for facile



removal and replacement and a handle mounted on said side walls adapted for carrying said garden scoop.

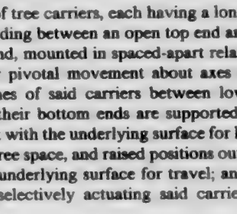
4,796,939
LIFTING MEANS
Darrell Symonds, Perth, Australia; Kenneth R. King, and William N. Smith, both of Savannah, Ga., assignors to CorSling, Inc., Savannah, Ga.
Filed Mar. 4, 1987, Ser. No. 21,882
Int. Cl.[4] B65H *49/00;* **B66C** *1/16*
U.S. Cl. 294—67.1 **10 Claims**



1. An assembly for effecting the lifting of a roll of paper having a hollow interim core, a plurality of wrapped layers and a bottom face, said assembly including a support device provided at one end of said hollow core and a flexible lifting sling attached to said support device and extending through said hollow core so as to protrude from the opposite end of said hollow core, said support device including a horizontally extending support plate having substantially flat top and bottom surfaces, an upwardly extending member centrally positioned on said support plate and being integrally formed therewith, said upwardly extending member including means defining a hollow interior extending therethrough a web member positioned within said hollow interior and extending across the full interior dimension thereof for engaging said sling and having a bottom surface spaced a predetermined distance inwardly from the bottom of said device, said support plate extending outwardly beyond said upwardly extending member so that it will extend radially beyond said hollow core and engage the bottom face of the paper roll and a plurality of but less than all of the wrapped layers forming the paper roll.

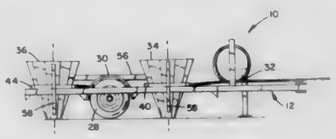
4,796,940
DISPOSABLE HAND GRIP FOR USE WITH PLASTIC BAG LOOP HANDLES
Bernard Rimland, 4182 Adams Ave., San Diego, Calif. 92116
Continuation-in-part of Ser. No. 22,924, Feb. 26, 1987, abandoned. This application Sep. 11, 1987, Ser. No. 95,305
Int. Cl.[4] A45F *5/10;* **B65D** *33/06*
U.S. Cl. 294—171 **7 Claims**

1. An attachable hand grip for encircling handles of plastic carrying bags or the like, consisting of
a generally fat body portion formed of substantially uniform plastic sheet material of about 20–40 mils thickness sufficiently flexible to be bent into a generally U-shaped configuration to provide an inside surface and an outside surface, said body portion being generally rectangular with a pair of opposite side edges and a pair of opposite end edges;
said side edges being sufficiently soft to constitute cushioning means for cushioning handles of carrying bags or the



like so as to prevent the cutting or tearing of such handles; and
fastening means unitary with said body portion for fastening opposite ends of said body portion together near said end edges when said body portion has been folded to a generally U-shape, said fastening means comprising a male member die cut generally adjacent one end edge and an interengagable female member adjacent another end edge extending entirely through said body portion.

4,796,941
TREE TRANSPORT TRAILER
Clyde L. Reilly, RR 1-Box 73, Crystal, N. Dak. 58222
Filed Aug. 19, 1987, Ser. No. 86,736
Int. Cl.[4] B60P *3/00*
U.S. Cl. 296—3 **14 Claims**



1. A tree transport trailer, which comprises:
a frame;
a pair of laterally spaced-apart wheels supporting said frame for travel;
an underlying surface supporting said wheels;
hitch means for releasably connecting said frame to a tow vehicle;
a plurality of tree carriers, each having a longitudinal center line extending between an open top end and a convergent bottom end, mounted in spaced-apart relationship on said frame for pivotal movement about axes offset from the center lines of said carriers between lowered positions wherein their bottom ends are supported in stopped engagement with the underlying surface for loading/unloading by a tree space, and raised positions out of engagement with the underlying surface for travel; and
means for selectively actuating said carrier between said positions.

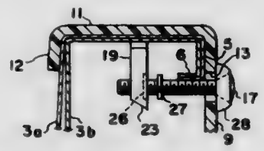
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4,796,942

ANCHORING OF TRUCK BED LINERS

Bernard L. Robinson, Coleman, and George L. Pickard, Beaverton, both of Mich., assignors to Homestead Products, Inc., Coleman, Mich.

Filed Aug. 3, 1987, Ser. No. 80,667
Int. Cl.[4] B62D *33/00*
U.S. Cl. 296—39.2 **13 Claims**



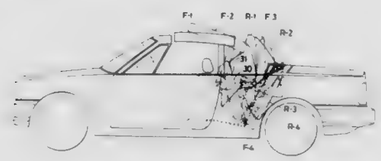
1. A fastener for use in securing a liner side wall to a pickup truck cargo box having a wall terminating at its upper end in a transverse sill joined to a depending flange, said side wall having an aperture therein at a level below that of said flange, said fastener comprising a bolt having a cylindrical, threaded shank extending through said aperture and terminating at one end in an enlarged head; and an elongate anchor member having a correspondingly threaded bore adjacent one end thereof and through which said shank extends, said anchor member being rotatable with and relative to said bolt and having a length from said bolt to the opposite end of said anchor member greater than the maximum distance between said bolt and said sill whereby conjoint rotation of said bolt and said anchor member effects engagement between said opposite end of said anchor member and said sill and prevents further rotation of said anchor member, thereby enabling said anchor member and said head to move toward one another into clamping engagement with said flange.

4,796,943

CONVERTIBLE VEHICLE BODY STRUCTURE HAVING A REAR SEAT

Hisao Fukutomi; Takanori Tachiya; Takeshi Yamamoto; Takeshi Konishi, and Iseo Hamasaki, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 20, 1986, Ser. No. 932,949
Claims priority, application Japan, Nov. 20, 1985, 60-260833; Nov. 20, 1985, 60-260835; Apr. 30, 1986, 61-99828
Int. Cl.[4] B60J *7/14*
U.S. Cl. 296—65.1 **4 Claims**



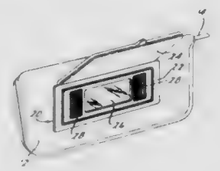
1. A convertible vehicle body structure including body means which includes front windshield means having an upper edge portion, a rear body section having an upper edge defining a belt line and front and rear seat means respectively each having seat back means, said seat back means of said rear seat means being movable between an upright position and a forwardly inclined position, locking means for locking said seat back means of the rear seat means in the upright position, to said rear body section, retractable roof panel means movable between an erected position wherein it covers a top portion of a passenger compartment and a retracted position wherein it is retracted in the rear body section first means for actuating the roof panel means between the erected and retracted positions, second means for inclining the seat back means of the rear seat means forwardly, said second means including lock releasing means for releasing the locking means, sequential control means for operating the second means and the first means sequentially to incline the seat back means of the rear seat means forwardly and actuate the roof panel means, said locking means including a locking plate provided on the rear body section and having a locking edge and a locking lever swingably mounted on the seat back means of the rear seat means, said locking lever having a locking pawl adapted to be engaged with said locking edge of the locking plate, resilient means for biasing the locking lever to a position wherein the locking pawl is engaged with the locking edge of the locking plate, said releasing means being means for acting on the locking lever to swingably move the locking lever so that the locking pawl is disengaged form the locking edge.

4,796,944

SPRING-LOADED HINGE ASSEMBLY FOR VEHICLE ACCESSORIES

Mark Lobanoff, Troy, and James A. Gavagan, Centerline, both of Mich., assignors to Irvin Industries, Inc., Rochester Hills, Mich.

Division of Ser. No. 910,129, Sep. 22, 1986, Pat. No. 4,715,644. This application Dec. 28, 1987, Ser. No. 138,314
Int. Cl.[4] B60J *3/00*
U.S. Cl. 296—97.5 **14 Claims**



1. A spring-loaded hinge assembly for interconnecting an accessory door with an accessory housing structure for a vehicle, said hinge assembly comprising: pivot means pivotally interconnecting the door with the housing structure for rotational movement of the door relative to the housing structure about a longitudinally-extending axis; a cam member protruding in a generally lateral direction from the housing structure; resilient biasing means disposed on the door for rotational movement therewith, said resilient biasing means being slidably and resiliently deflectably engageable by said cam for exerting a resilient biasing force on said cam in a generally lateral direction generally toward said axis; and support means interconnected with the door for supporting said resilient biasing means in a direction generally opposite the direction of said engagement of said resilient biasing means by said cam, said support means including seat portions for slidably supporting said resilient biasing means at least at two spaced-apart locations thereon.

4,796,945

AGRICULTURAL WAGON PROTECTIVE COVER

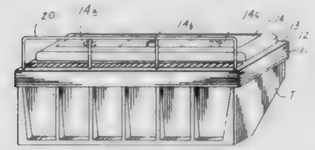
Danny D. Congdon, 73 Evergreen St., Cortland, N.Y. 13045

Filed Aug. 3, 1987, Ser. No. 80,797
Int. Cl.[4] B60P *7/02*
U.S. Cl. 296—100 **8 Claims**

1. A new and improved agricultural wagon protective cover for use with a load carrying vehicle comprising a substantially planar surface; and

a continuous flange means depending downwardly from said planar surface for forming an interfitting relationship with said load carrying vehicle, and

a hatch means depending upwardly of and integrally secured to said planar surface for enabling access through said protective cover including a pivoting hatch portion wherein said hatch portion comprising at least one pivoting hatch, and



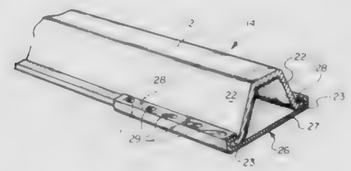
a longitudinal brace positioned medially of said hatch means to brace said hatch portion and provide support thereto.

4,796,946

AUTOMOTIVE VEHICLE DOOR AND BAR REINFORCEMENT

Roland B. Wilson, Valparaiso, Ind.; Jack M. Shapiro, Homewood, and Richard S. Cline, Crete, both of Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed Sep. 4, 1987, Ser. No. 92,956
Int. Cl.[4] B60J *5/00*; **B21C** *37/04*; **C22C** *38/18*
U.S. Cl. 296—146 **16 Claims**



1. An elongated steel shape particularly adapted for use as a strengthening or reinforcing member for imparting crush resistance to a side impact against an automotive vehicle door, comprising

a high strength alloy steel section having a predetermined shape, including an elongated web portion and elongated laterally extending flange portions;

said steel section being hot rolled directly from a billet to said predetermined shape and thereafter air cooled;

said high strength alloy steel containing about 0.14 to 0.21% carbon; about 3 to 4% of at least one hardenability element selected from the group consisting of manganese, chromium, molybdenum, boron, columbium, vanadium, and nicket; about 0.3 to 1.0% silicon; and the balance essentially iron; and

said steel section having a minimum tensile strength of about 150,000 lb/in^2 and a total elongation of at least about 7.5%.

4,796,947

REVERSIBLE MOTOR VEHICLE ROOF

Lelio Alfonso, Turin, Italy, assignor to Vallko S.r.l., Turin, Italy

Filed Jul. 24, 1987, Ser. No. 77,249
Claims priority, application Italy, Aug. 1, 1986, 67625 A/86
Int. Cl.[4] B60J *7/057*
U.S. Cl. 296—223 **9 Claims**

1. A reversible roof for a motor vehicle, comprising:

a hollow elongate body fixed to the frame of the roof and in which there are mutually slidable towards and away from one another the distal ends of a lamina whose central section protrudes from an opening of the hollow body and is rigidly connected to the reversible roof;

manual control means for actuating a mechanical transmission contained within the body which is separately connected and acts at the distal ends of the lamina, thereby sliding the lamina in opposite directions towards and away



from the control means thus producing the opening and closing of the roof, respectively.

4,796,948

PATIENT SUPPORT SYSTEM FOR WHEELCHAIRS AND THE LIKE

Patrick R. D. Paul, 13100 Pelican Watch Villas, Johns Island, S.C. 29455; James H. Price, 1118 Shadow Lake Cir., Mt. Pleasant, S.C. 29464, and Kenneth Olshansky, 7029 Chowning Cir., Richmond, Va. 23229

Filed Feb. 14, 1986, Ser. No. 829,312
Int. Cl.[4] A47C *7/14*, *27/08*
U.S. Cl. 297—284 **9 Claims**



1. An improved support system for a patient in a sitting attitude comprising:

(a) first resilient support means for supporting body portions of the patient proximate the ischial tuberosities of the patient, said first support means forming an annulus region therein for unsupported receipt of the ischial tuberosities of the patient;

(b) normally deflated inflatable second fluid support means, situated in annulus region of said first support means and configured accordingly, for receiving and supporting upon periodic inflation thereof ischial tuberosities of the patient upon fluid being supplied to said second fluid support means adequate to relieve pressures exerted on patient body portions contacting said first resilient support means;

(c) means associated with said second support means for supplying fluid thereto; and

(d) means associated with said fluid supply means for automatically controlling supply of fluid to and from said second support means for inflating and deflating said second support means according to a predetermined arrangement whereby pressures exerted on affected body portions of a patient residing atop said first and second support means are varied so that the supporting of the patient is alternatingly substantially performed by said normally deflated second fluid support means receiving said ischial tuberosities when said second fluid support means is periodically inflated and by said first resilient support means receiving said body portions proximate said ischial tuberosities when said second fluid support means is deflated, thereby leading to improved blood perfusion thereat;

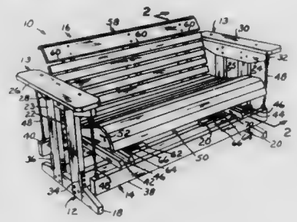
(e) timer means operatively associated with said means for automatically controlling supply of fluid for periodically

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admitting fluid to said second fluid support means according to a predetermined timing sequence only so that said second support means is normally deflated for minimizing surface pressures to the ischial tuberosities of the patient; and

(g) valve means operatively associated with said second fluid support means for regulating said redetermined arrangement of inflation and deflation dependent on the weight of a patient.

4,796,949
ROCKER/GLIDER
Ted L. Boyce, P.O. Box 130425, Tyler, Tex. 75713
Filed Dec. 28, 1987, Ser. No. 138,181
Int. Cl.[4] A47C *3/02*
U.S. Cl. 297—259 3 Claims



1. A rocking glider, comprising

a horizontal base frame including a pair of elongated parallel bars;

upright end frames including horizontal top and bottom bars connected with respective end portions of said parallel bars;

a pair of rails disposed respectively in spaced parallel relation on opposite sides of said parallel bars;

means supporting said pair of rails from said end frames for generally horizontal to and fro movement laterally of said parallel bars;

crossties overlying and transversely interconnecting said rails intermediate their ends, said crossties each having an upwardly open longitudinally extending groove;

seat means including a back mounted on rockers nested in seat means supporting relation by the grooves in said crossties for rocking movement in unison with or independently of the to and fro movement of said pair of rails; and,

chock means slidably supported by said bars and selectively interposed between said bars and said crossties for immobilizing said pair of rails horizontal to and fro movement.

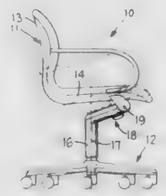
4,796,950
TILT MECHANISM, PARTICULARLY FOR KNEE-TILT CHAIR
Walter C. Mrotz, III, North Muskegon; Donald L. Cool, Holland, and Fred C. Liebertz, Twin Lake, all of Mich., assignors to Haworth, Inc., Holland, Mich.
Filed Feb. 9, 1987, Ser. No. 12,573
Int. Cl.[4] A47C *3/00*
U.S. Cl. 297—302 18 Claims

1. In a pedestal-type chair having a base assembly defining thereon a pedestal which projects vertically upwardly in cantilevered fashion, a seat structure having both a seat and a back, the seat being disposed directly above the pedestal so that the latter has its vertical centerline intersecting the seat adjacent the midpoint thereof, and a knee-tilt mechanism connected between the pedestal and seat and defining a substantially horizontally extending tilt axis which extends sidewardly relative to the seat in the vicinity of the front edge thereof for permitting the seat to be tilted downwardly about the tilt axis from a substantially zero-tilt position when the chair is unoccupied through a maximum tilt angle to a lower tilt position when the chair is occupied, said tilt axis being disposed a substantial distance forwardly from and in nonintersecting relationship to the vertical centerline of said pedestal, the improvement wherein said tilt mechanism comprises:

a housing structure mounted on said pedestal adjacent the upper end thereof and projecting forwardly therefrom toward the front edge of said seat, and a support structure secured to said seat and projecting downwardly therefrom adjacent but spaced slightly rearwardly from the front edge thereof, said support and housing structures having opposed parts which are relatively rotatably supported on one another for defining said tilt axis;

first biasing means coacting between said housing and support structures for imposing a restoring torque about said tilt axis which normally urges said seat into said zero-tilt position, said first biasing means including spring means for generating a restoring torque which increases approximately linearly in relationship to the angularity of seat tilt as the seat tilts from the zero-tilt position toward the lower tilt position;

second biasing means coacting between said support and housing structures for imposing a restoring torque about



said tilt axis which continuously urges said seat toward said zero-tilt position, said second biasing means being operatively coupled between said structures in generally parallel relationship with said first biasing means so that said first and second restoring torques add together for urging the seat toward said zero-tilt position;

said second biasing means including a spring unit hingedly supported at one end about a first substantially horizontal pivot axis and lever means hingedly supported at one end about a second substantially horizontal pivot axis which is parallel with but spaced sidewardly from said first pivot axis, one of said first and second pivot axes being coaxially aligned with said tilt axis, and cam means cooperating between the other end of said spring unit and the other end of said lever means for creating said second restoring torque, said cam means including cam follower means associated with the other end of said spring unit, said cam means also including a first elongated cam profile associated with the other end of said lever means and a second elongated cam profile stationarily associated relative to one of said structures, said cam follower means being cooperatively engaged with and captivated between said first and second elongated cam profiles.

4,796,951
AUTOMOTIVE SEAT
Hisao Tamura; Shuichi Tokumitsu, and Yuji Tagawa, all of Kanagawa, all of Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Apr. 25, 1986, Ser. No. 855,621
Claims priority, application Japan, Apr. 27, 1985, 60-91585
The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.
Int. Cl.[4] B60N *1/023*
U.S. Cl. 297—337 8 Claims

1. A seat assembly arranged on a floor, comprising a main slide mechanism including two parallel stationary rails

mounted on said floor and two parallel movable rails slidably disposed on said stationary rails, and an auxiliary slide mechanism including a generally rectangular first frame structure mounted on said movable rails to move therewith, a generally rectangular second frame structure slidably disposed on said first frame structure, an operating device for adjusting the position of said second frame structure relative to said first frame structure, a seat cushion mounted on said second frame structure to move therewith and a seatback mounted on said movable rails of the main slide mechanism to move therewith, wherein said operating device comprises:

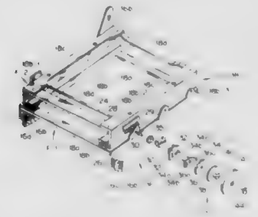
a shaft supported by a given portion of said first frame structure and rotatable about its axis;

a first gear secured to said shaft to rotate therewith;

a rack secured to said second frame structure and meshed with said first gear so that rotation of said shaft about its axis induces a sliding movement of said second frame structure relative to said first frame structure;

a second gear secured to said given portion of the first frame structure;

a lock device rotated together with said shaft and lockingly engageable with said second gear to lock the shaft to the fixed second gear; wherein said lock comprises;



a pawl mounting piece secured to said shaft for rotation therewith and mounted adjacent said second gear; and

a pair of pawls rotatably mounted on said pawl mounting piece, one of said pawls adapted to engaged said second gear so to prevent rotation in one direction and the other of said pawls adapted to engage said second gear so as to prevent rotation of said second gear in the opposite direction and

a lock cancelling device pivotally disposed about said shaft and disengaging said latch device from said second gear when rotated by a given angle about the shaft, wherein said lock cancelling device comprises;

a lock cancelling device pivotally disposed about said shaft and disengaging said latch device from said second gear when rotated by a given angle about the shaft, wherein said lock cancelling device comprises:

a rotation knob rotatably mounted on said shaft; and

a bracket fixedly secured to said rotation knob and having two pins projecting in the axial direction of said shaft, said pins adapted to pass through corresponding slots in said pawl mounting piece and selectively disengage said pawls.

4,796,952
CHAIR WITH HINGED BACKREST
Giancarlo Piretti, Piazza Trento e Trieste 2/2, Bologna, Italy
Filed May 18, 1987, Ser. No. 50,862
Claims priority, application Italy, Jun. 12, 1986, 53523/86[U]
Int. Cl.[4] A47C *3/20*
U.S. Cl. 297—340 13 Claims

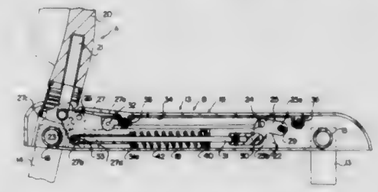
1. A chair comprising a support structure; a seat connected to the support structure by means of a pair of first and second levers having respective first ends hinged to the seat and respective second ends hinged to the support structure, so that the support structure, first and second levers, and seat define a parallelogram system that is able to move the seat between a lowered position and a raised position; and a backrest hinged to the support structure and operationally connected to the seat so as to be able to pivot between an upright position corresponding to the lowered position of the seat and a reclined position corresponding to the raised position of the seat,

characterized in that:

a. the backrest (**20**) is integral with at least one of the second levers (**27**);

b. elastic means (**42**) are associated with the parallelogram system (**18, 19, 25, 27**) and are designed to hold the backrest (**20**) elastically in the upright position (**A**);

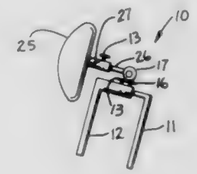
c. at least one of the levers (**27**) has, on the end hinged to the



support structure (**12**), an arm (**27*b***) such that the arm defines with the lever (**27**) a right-angled lever pivotally mounted on the support structure (**12**), the elastic means (**42**) being inserted between the arm (**27*b***) and the support structure (**12**);

d. a rod (**31**) is hinged to the arm (**27*b***) of the right-angled lever, which rod is provided with an annular shoulder (**31*a***) facing an associated projection (**40**) integral with the support structure (**12**), the elastic means comprises a helical spring (**42**) coaxial with the rod (**31**) being arranged between the shoulder (**31*a***) and the projection (**40**) to render the parallelogram system adjustable.

4,796,953
AUTOMOTIVE ADJUSTABLE HEAD & NECK REST
Anthony S. Pereira, 207 Ashurst Ave., Secane, Pa. 19018
Filed Nov. 16, 1987, Ser. No. 121,664
Int. Cl.[4] A47C *7/38*
U.S. Cl. 297—400 1 Claim



1. An automobile head rest for use in combination with an automobile seat comprising,

an automobile seat clamp means for securement to an automobile seat including a pair of first "L" shaped portions telescopingly receiving a respective pair of second "L" shaped portions and a bridge member adjustably securing said first pair of "L" shaped portions together;

said bridge member including a single first bridge member telescopingly receivable within a single second bridge member, and

said first "L" shaped portions and said second bridge member each including clamp means for respectively securing said second "L" shaped portions and said first bridge member, and

wherein a padded head support member is telescopingly securable relative to said automotive seat by means of a telescoping link arrangement including a forward link

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secured to said automotive head rest telescopingly receiving a rearward link secured to a pivotal positioning means, and

wherein said pivotal positioning means is fixedly secured to said first bridge member, and

wherein said pivotal positioning means comprises first and second interdigited housing members including a spring therebetween to normally bias said first and second housing members in a first lock position, and

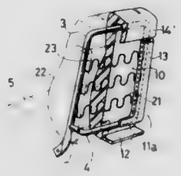
said pivotal positioning means including a manually displaceable plunger to displace said first and second housing members to a second unlock position to enable said pivotal movement of said padded head support means relative to said seat clamp means.

4,796,954

SEAT BACK REAR STRUCTURE

Tetsuo Saito, Tokyo, Japan, assignor to Tachi-S Ltd., Akishima, Japan

Filed Feb. 13, 1987, Ser. No. 14,816
Int. Cl.[4] A47C *7/18*
U.S. Cl. 297—452 **4 Claims**



1. A rear structure of a seat back in which a rearwardly curved reinforcing rod member is provided so as to extend between the lower right and left ends of a frame curved in an inverted U-shaped configuration, support members are provided on the right and left of said frame, and cushion member formed of a foam material is applied against said support members, said cushion member being covered by a trim cover assembly which extends the distance from the lower portion of said seat back to the front portion thereof so as to increase the depth dimension of said seat cushion, characterized in that said seat cushion is provided with first and second portions at the outer sides thereof; wherein said first portions extend rearwardly from said seat cushion at the outer side surface of said frame and has ends which are folded over to contact said frame to form a back surface of said seat back; said second portions extend rearwardly from said seat cushion in the area of said reinforcing rod member and have ends which are folded over to contact the rear surface of said reinforcing rod member; and the said second portions being formed thick in said depth dimension around said rearwardly curved reinforcing rod member thereby forming a planar surface with said first portions being the back surface of said seat back.

4,796,955

ELASTIC MEMBRANE SEAT WITH FLUIDIC BLADDER TENSIONING APPARATUS AND METHOD

Jerry K. Williams, Sterling Hts., Mich., assignor to General Motors Corporation, Detroit, Mich.

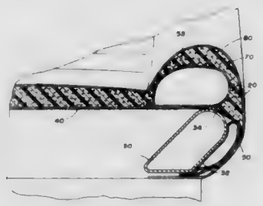
Filed Nov. 4, 1987, Ser. No. 116,575
Int. Cl.[4] A47C *7/02*
U.S. Cl. 297—452 **6 Claims**

1. A vehicle seat, said seat in combination comprising:

a frame with at least two spaced apart members;

a prestretched membrane elastically spanning said spaced apart frame members providing a support surface for said seat and having at least one side portion partially wrapped around at least one of said frame members; and

a selectively inflatable fluid bladder with means of connection to said frame and contacting said membrane beyond said support surface, said bladder being captured between



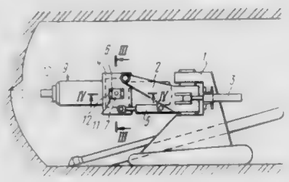
said at least one side portion of said membrane and said frame member whereby the tension of said member is a function of the inflation of said bladder.

4,796,956

MACHINE FOR DRIVING WORKINGS IN HARD ROCKS

Petr Y. Fadeev, Moscow; Vladimir Y. Fadeev; Vladlen V. Korobko, both of Novosibirsk; Rim A. Kuisgin, and Nikolai P. Ermilov, born of Novosibirsk, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro Gidroimpulsnoi Tekhniki, Novosibirsk, U.S.S.R.

PCT No. PCT/SU85/00064, § 371 Date Mar. 30, 1987, § 102(e) Date Mar. 30, 1987, PCT Pub. No. WO87/00885, PCT Pub. Date Feb. 12, 1987
PCT Filed Jul. 30, 1985, Ser. No. 35,585
Int. Cl.[4] E21C *29/28*
U.S. Cl. 299—69 **8 Claims**



1. A machine for driving workings in hard rocks, comprising

a movable carrier;

a swinging boom mounted for rotation in a horizontal plane on said movable carrier;

a frame rotatable in a vertical plane carried at an end of said swinging boom;

an implement mounted on said frame for a limited rotation in horizontal and vertical planes and for a limited axial movement;

a hammer piston extendable from said implement to act directly upon the rock for breaking the rock;

pins mounting said implement in said frame;

support members arranged about said pins to support said pins in said frame so that each of said pins is rotatably received within one of said support members, each of said support members received for sliding within an opening in said frame;

at least two shock-absorbing means;

piston rods of the at least two shock-absorbing means coaxially mounted opposite to each other in the frame, first ends of the piston rods engaging one of said support members;

cylinders within which said piston rods are axially movable for taking up undesired displacements of the implement and for returning the implement to a pre-set position wherein each shock-absorbing means comprises

a casing including an actuator space filled with a compressible fluid under pressure and receiving an end of one of said piston rods, the end being remote from the first end of the piston rod; and

first and second dashpot spaces filled with a non-compressible fluid and provided within said casing, said piston rod preventing fluid communication between said dashpot spaces and said actuator space;

throttling means through which the first and second dashpot spaces communicate with each other;

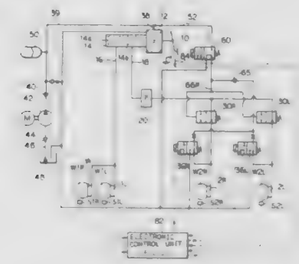
at least one enlarged piston-like portion on the piston rod acting upon the non-compressible fluid so as to cause it to flow through the throttling means between the first and second dashpot spaces during movement of the piston rod.

4,796,957

VEHICULAR DRIVE CONTROL SYSTEM

Hideo Wakata, Nagoya; Yuzo Imoto, Kariya; Toshihiro Takei, Okazaki, and Yoshiyuki Hattori, Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 18, 1985, Ser. No. 799,166
Claims priority, application Japan, Nov. 20, 1984, 59-245455; Nov. 21, 1984, 59-246757
The portion of the term of this patent subsequent to Dec. 23, 2003, has been disclaimed.
Int. Cl.[4] B60T *13/00*
U.S. Cl. 303—116 **6 Claims**



1. A vehicular drive control system including:

a brake system having a reservoir, hydraulic pressure actuated brakes connected to wheels, including driving wheels, on a vehicle, a hydraulic pump for pumping brake fluid from said reservoir, and hydraulic booster means connected to said pump for amplifying a vehicular brake actuating force by using a high hydraulic pressure supplied from said hydraulic pump and applying hydraulic pressure to said brakes to brake said wheels;

electrically-operated change-over valve means connected to said reservoir and said hydraulic pump for outputting a low hydraulic pressure from said reservoir during normal braking and outputting said high hydraulic pressure from said pump during a hydraulic pressure passing state in response to a first control signal;

pressure-operated cut-off valve means controlled by the output of said change-over valve means for applying hydraulic pressure from said booster means to said brakes therethrough in response to said low hydraulic pressure from said changeover valve means during normal braking and preventing said booster means from applying hydraulic pressure to at least said brakes associated with said driving wheels in response to said high hydraulic pressure from said change-over valve means, said cut-off valve means further preventing reverse application of hydraulic pressure from said brakes to said booster means when said high hydraulic pressure is applied from said change-over valve means during said hydraulic pressure passing state;

check valve means connected to said output of said change-over valve means for passing said high hydraulic pressure from said change-over valve means therethrough and preventing reverse flow;

electrically-operated control valve means, connected serially between said brakes and said check valve means and responsive to a second control signal, for selectively applying said high hydraulic pressure from said check valve means to said brakes associated with said driving wheels to selectively brake said driving wheels; and

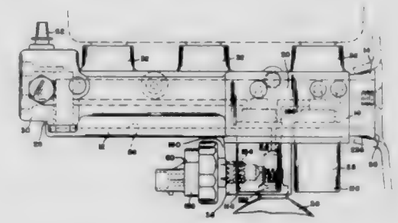
control means for: (1) detecting acceleration slip of said driving wheels, (2) generating said first control signal to control said change-over valve means to switch said change-over valve means into said hydraulic pressure passing state, and (3) generating said second control signal to control said control valve means according to the state of said detected acceleration slip of said driving wheels so as to control hydraulic pressure being supplied to said brakes of said driving wheels such that acceleration slip does not exceed a predetermined degree.

4,796,958

INTEGRATED ANTI-LOCK BRAKING SYSTEM

Arthur K. Brown, Jr., South Bend, Ind., assignor to Allied Signal Inc., Morristown, N.J.

Filed Aug. 26, 1987, Ser. No. 89,459
Int. Cl.[4] B60T *8/06*
U.S. Cl. 303—113 **15 Claims**



1. An integrated anti-lock braking system assembly comprising: an elongated body having a mounting end and an axial bore extending from said mounting end, a master cylinder assembly operatively disposed in said bore, said mounting end including a modulator valve mounting pad having a plurality of modulator valve receptacles therein, the distal end of said body including a valve block having a plurality of valve chambers and an outlet port for each vehicle wheel cylinder therein, brake pressure proportioning valve means and differential pressure valve means being operatively received in corresponding valve chambers, a plurality of primary fluid passages in said body extending in parallel spaced type relationship to said bore, a plurality of secondary fluid passages formed in said body on axes perpendicular to said primary fluid passages to intersect a corresponding one of said bore, primary fluid passages, modulator valve receptacles and valve chambers, to define an anti-lock braking system hydraulic circuit.

4,796,959

BRAKE SYSTEM WITH CONTROL OF BRAKE SLIP AND TRACTION SLIP

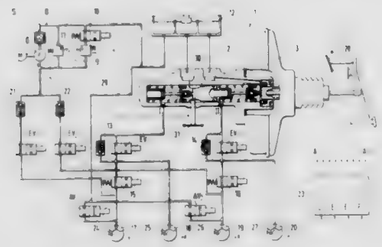
Wolfram Seibert, Pfungstadt; Norbert Ocvirk; Guenther Trach, both of Offenbach, and Joachim Maas, Darmstadt, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 10, 1987, Ser. No. 71,960
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1986, 3623150
Int. Cl.[4] B60T *8/36, 8/64, 8/34*
U.S. Cl. 303—119 **8 Claims**

1. A brake system for automotive vehicles with control of

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brake slip and traction slip, said system comprising an auxiliary-energy-assisted braking pressure generator, two hydraulically separated pressure medium circuits each of which connects one driven wheel and one non-driven wheel with said pressure generator, valve arrangements in pressure medium paths leading from the braking pressure generator and from an auxiliary-pressure-supply system to the wheel brakes and from the wheel brakes to a pressure compensation reservoir, said valve arrangements hydraulically connecting the braking pressure generator with the wheel brakes in one switching position and hydraulically connecting the auxiliary-pressure-supply system instead of the braking pressure generator with the wheel brakes in a second switching position, two separating valves each of which is located in one of said pressure medium circuits between an inlet valve of said valve arrangement and the wheel brakes of the respective pressure medium circuit, and each of which is operative in the traction slip control phase to lock the pressure medium connection to the wheel brakes of



the non-driven vehicle wheels from the auxiliary-pressure-supply system, wheel sensors and electronic circuits for the determination of the rotational behavior of the wheels and for the generation of electric braking pressure control signals by means of which the valve arrangements and the separating valves can be changed over, the separating valves in each brake circuit each comprising a multi-directional valve which is normally open for passage and which connects the two wheel brakes of one brake circuit, said valve arrangements further comprising additional multi-directional valves between the auxiliary-pressure-supply system and the wheel brakes of the driven wheels, said additional multi-directional valves having a first position connecting the auxiliary pressure system and the wheel brakes of the driven wheels and a second position to modify brake pressure and wherein the auxiliary pressure provided by said auxiliary-pressure-supply system is introduced into the braking circuit between aid separating valves and the wheel brakes of the respective driven wheels.

4,796,960

CAROUSEL PORTABLE PANTRY

Rodrigo A. Candelas, P.O. Box 63133, 3725 E. Ramboz Dr., Los Angeles, Calif. 90063

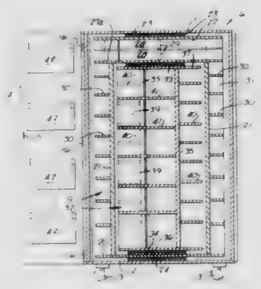
Continuation-in-part of Ser. No. 933,639, Nov. 19, 1986, abandoned. This application Sep. 18, 1987, Ser. No. 98,219
Int. Cl.[4] A47B *88/00*
U.S. Cl. 312—305 **4 Claims**

1. A carousel portable pantry for the storage of products including:

a cabinet including a vertical wall, and top and bottom end plates closing said wall and a vertical opening in said wall for access to the interior of said cabinet;

an outer storage cylinder rotatably mounted within said cabinet including a vertical opening therein, said outer storage cylinder including a plurality of vertically spaced shelves radiating outwardly from said cylinder toward said cabinet, and said outer storage cylinder rotatable to present said shelves to said vertical opening in said cabinet for access thereto;

an inner storage cylinder rotatably and concentrically mounted within said outer storage cylinder, said inner cylinder including a vertical opening therein, said inner storage cylinder also including a plurality of vertically spaced shelves rotating extending outwardly from said inner cylinder toward said outer storage cylinder, and a plurality of vertically spaced shelves circular in configuration fitted within said inner cylinder and the spacing of said circular shelves not adopted to correspond with the



horizontal plane of said outwardly extending shelves of said inner storage cylinder; and said inner storage cylinder rotatable to present said outwardly extending shelves and said circular shelves to said vertical opening in said outer storage cylinder for access;

a plurality of turntables interspaced between the cabinet and cylinders at the bottom and top to effect rotation of said outer and inner storage cylinder; and

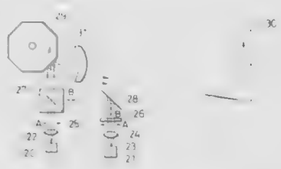
said inner storage cylinder includes a plurality of vertical dividers breaking up the circumferential area of said vertically spaced outwardly extending shelves of said inner cylinder.

4,796,961

MULTI-BEAM SCANNING OPTICAL SYSTEM

Kunio Yamada, and Masao Ito, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 28, 1987, Ser. No. 55,042
Claims priority, application Japan, May 29, 1986, 61-124538
Int. Cl.[4] G02B *26/08*
U.S. Cl. 350—6.8 **5 Claims**



1. A multibeam scanning optical system for simultaneous scanning with a plurality of laser beams of a scanning surface, comprising:

a plurality of semiconductor lasers each emitting a beam of laser radiation, said beams of laser radiation having planes of polarization parallel to each other and each of said beams of laser radiation having a major axis perpendicular to its direction of polarization;

means for collimating each of said plurality of laser beams;

means for rotating the polarization direction of at least one of said plurality of laser beams by 90°;

means for arranging said plurality of laser beams such that said beams define a scanning pitch on said scanning surface;

means for directing said plurality of laser beams to the scanning surface; and

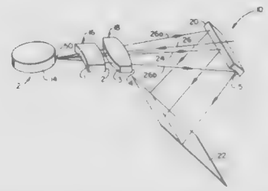
means for imaging said arranged beams as beam spots onto said scanning surface.

4,796,962

OPTICAL SCANNER

Donald DeJager, and David Keasler, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1987, Ser. No. 29,003
Int. Cl.[4] G02B *26/10*
U.S. Cl. 350—6.8 **13 Claims**



1. An optical scanner for scanning a light beam generated by a light source onto a receiving medium, said scanner comprising:

deflector means for scanning said beam through a predetermined angle; and

optical means interposed between said deflector means and said receiving medium, said optical means comprising a pair of spherical lenses and a cylindrical mirror disposed along an optical axis.

4,796,963

SCANNING APPARATUS USING A ROTARY POLYGON MIRROR

Tsuyoshi Yoshimura, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 18, 1987, Ser. No. 86,635
Claims priority, application Japan, Aug. 20, 1986, 61-194176; Aug. 20, 1986, 61-194175
Int. Cl.[4] G02B *26/10*
U.S. Cl. 350—6.8 **7 Claims**

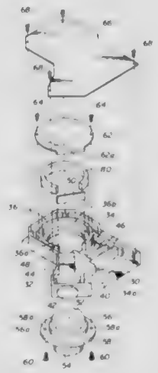
1. A scanning apparatus using a rotary polygon mirror comprising:

a housing including a hollow cylindrical part having a cut-out opening;

a rotary polygon mirror being supported by a cylindrical member and being accommodated within said hollow cylindrical part in a state where said cylindrical member is tightly fitted into said hollow cylindrical part;

a motor for driving said rotary polygon mirror;

a noise insulating member mounted on an upper edge surface of said hollow cylindrical part;



an optical lens system accommodated in said housing and arranged in front of said rotary polygon mirror, said optical lens system projecting a laser beam onto said rotary polygon mirror and outputting said laser beam reflected thereby toward a photosensitive drum; and

a transparent plate member being fitted into said cutout opening,

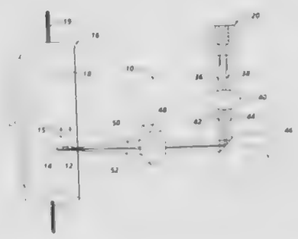
said transparent plate member is inclined by a predetermined inclination angle with respect to an axis of said rotary polygon mirror effective to substantially eliminate noise due to undesirable reflected light.

4,796,964

METHOD OF UTILIZING A MULTIPLE EMITTER SOLID STATE LASER IN A RASTER OUTPUT SCANNER (ROS)

G. A. Neville Connell, Cupertino, and Daniel C. Kowalski, Santa Cruz, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 9, 1988, Ser. No. 165,700
Int. Cl.[4] G02B *26/10*
U.S. Cl. 350—6.8 **4 Claims**



1. A scanning method utilizing a plurality of output beams without the necessity of beam cross-polarization comprising the steps of

generating a plurality of light beams,

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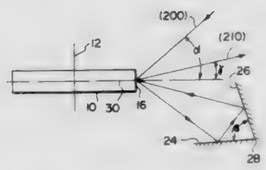
deflecting said beams in a primary scanning direction,
directing said deflected light beams onto a scanning surface,
focusing said light beams to lie substantially along a coordinate axis in a direction substantially orthogonal to said primary scanning direction,
further positioning said light beams so that their focused spots on said scanning surface are overlapped along said coordinate axis,
scanning in overlapped unison a requisite longitudinal region of said scanned surface parallel to said scanning direction with said focused light beams forming a plurality of scan lines,
modulating said light beams to expose positional pixels along said scan lines and
sequentially alternating the operational ON time of said light beams so that no more than one beam is in an ON state at any given time of exposure of the same positional pixels in adjacent scan lines.

4,796,965

OPTICAL SCANNING DEVICE

Hiromi Ishikawa, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Filed Jun. 21, 1985, Ser. No. 747,185
Claims priority, application Japan, Jun. 22, 1984, 59-127322
Int. Cl.[4] G02B *26/10*
U.S. Cl. 350—6.8 **5 Claims**



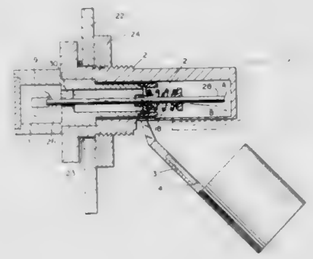
4. An optical scanning device for reducing scanning line distortion, said device comprising: a mechanical type optical deflector provided with a deflecting reflecting surface which can be turned about an axis of rotation, said deflecting reflecting surface being planar and extending in a direction substantially parallel to said axis of rotation, light source means for providing a light beam incident on said deflecting reflecting surface at a first reflection point to provide a reflected light beam, two plane correction mirrors positioned at an angle to each other to define a line of intersection, said plane correction mirrors being positioned to receive said reflected light beam from said first reflection point and to direct the beam to the deflecting reflecting surface at a second reflection point, said plane correction mirrors being disposed in opposition to said deflecting reflecting surface with the line of intersection of the two mirrors extending at a right angle to said axis of rotation, scanning surface means for receiving a scanning light beam from said second reflection point of said deflecting reflecting surface, wherein the incident light beam which falls on the deflecting reflecting surface is reciprocated once between the two plane correction mirrors and the deflecting reflecting surface and is then directed and transmitted to the scanning surface means, said light source means being located on one side of the transmitted scanning light beam and said two plane correction mirrors both being located on an opposite side of the transmitted scanning light beam, said two plane correction mirrors and the angle of incidence of the light beam from said light source means incident on said deflecting reflecting surface being set so that the projection of the scanning light beam from said second reflection point projected on a first plane which is at right-angles to the line of intersection of the two correction mirrors and contains said axis of rotation, forms an angle of from about 5° to about 15° with a line lying in said first plane and perpendicular to said axis of rotation, and said first reflection point and said second reflection point defining a reflection point line on said deflecting reflecting surface, said reflection point line extending parallel to a second plane which is perpendicular to the axis of rotation.

4,796,966

MAGNETICALLY ACTIVATED FIBER OPTIC SWITCH

Joseph G. Kovaleski, 41 Woodward Dr., New Haven, Conn. 06512, and Thomas H. Arms, 44 Fort Hill Ave., Shelton, Conn. 06484

Continuation-in-part of Ser. No. 900,807, Aug. 27, 1986, abandoned. This application Oct. 27, 1987, Ser. No. 122,479
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.2 **17 Claims**



1. A non-electrical switch for regulating passage of light through an optical fiber cable:
a housing
a encasing movement body circumscribed in spaced relation by the housing;
a shaft formed of paramagnetic material, its length describing a first and second section, said first section surrounded by said body and said second section extending outward of said body and the shaft having a longitudinal axis;
at least one optical fiber position adjacent to said movement body at a point remote from an exit point of said first shaft section out of said body;
a paramagnetic element situated outside said housing
the paramagnetic element in spaced, substantially parallel relation with the longitudinal axis of the shaft
a light intercepting surface attached to an end of said first section of said shaft and alienable with an end surface of said optical fiber; and
a spring member communicating with said shaft to return said shaft from an activated position to a rest position whereby said shaft in the at rest position will pivot under influence of sufficient magnetic force toward a paramagnetic element situated outside said body and cause a shift in alignment of the light intercepting surface, the paramagnetic element in spaced parallel relation relation with the longitudinal axis of said shaft.

4,796,967

SOLAR RAY ENERGY RADIATION DEVICE FOR USE IN MEDICAL TREATMENT

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-Ku, Tokyo, Japan

Filed Jan. 12, 1987, Ser. No. 2,099
Claims priority, application Japan, Jan. 16, 1986, 61-6972
Int. Cl.[4] A61N *5/06*
U.S. Cl. 350—96.10 **9 Claims**

1. A solar-ray energy radiation device for the uniform application of solar rays to a localized part of a person's body comprising a cylindrical means having a cylindrical member with a longitudinal axis and a closure part on one longitudinal end of said cylindrical member, said cylindrical member being made of a transparent or a semi-transparent material, an optical conductor having a light-rays emitting end mounted on said

closure part at a position generally aligned with the axis of said cylindrical member such that light rays emitted from said light-rays emitting end of said optical conductor pass into said cylindrical member, said cylindrical member confining the light rays emitted from said light-rays emitting end within said cylindrical member, said light-rays emitting end emitting the blue-colored light ray component of said light rays outwardly toward the cylindrical wall of said cylindrical member, said light rays emitted from said light-rays emitting end being emitted at an angle corresponding to the numerical aperture of said optical conductor such that said blue-colored wave length component of said light rays is concentrated on a cylindrical



section of said cylindrical member as a result of chromatic aberration, the other longitudinal end of said cylindrical member being open and being adopted to face a part of a person's body to thereby radiate said light rays onto said person's body part, and return means on said cylindrical member operable to return said blue-colored light-ray component generally inwardly toward a central portion of said cylindrical member and onto said person's body part, said return means comprising a cylindrical reflection part disposed at said circumferential section of said cylindrical member, whereby light rays pass from said light-emitting end through the interior of said cylindrical member and are uniformly radiated onto said person's body part facing said open ends of said cylindrical member.

4,796,968

SINGLE-MODE OPTICAL-FIBER DIRECTIONAL COUPLER

Joseph D. Coccoli, Sudbury; John R. Stemniski, Swampscott, and Donato Cardarelli, Westwood, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jun. 2, 1986, Ser. No. 869,315
Int. Cl.[4] G02B *6/26*
U.S. Cl. 350—96.15 **29 Claims**



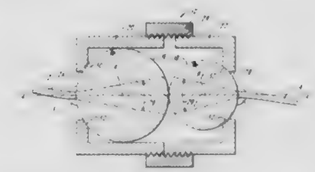
19. A single-mode optical-fiber directional coupler comprising:
at least two optical fibers each having a core surrounded by a cladding material and having a region of reduced cladding diameter contiguous with a reduced-cladding-diameter region of the other said fiber throughout the length of an optical interaction area, each said reduced-cladding-diameter region being bounded on each end by a tapered region which gradually increases in diameter as it extends away from said reduced-cladding-diameter region toward a full-diameter region of each said fiber, said optical fibers gently wound about each other without torsional twisting in their reduced-cladding-diameter region;
a substrate;
means, located near each end of said optical interaction area, for securing said reduced-cladding-diameter region to said substrate;
means for supporting said fibers in their full-diameter regions beyond each end of said optical interaction area, said means for supporting circuiting said optical interaction area to define a void encompassing said optical interaction area;
means for fastening said support means to said substrate; and
a medium, disposed within said void, surrounding said reduced-diameter regions and having an index of refraction similar to that of the cladding material.

4,796,969

FIBER OPTIC RELAY CONNECTOR

Stephen D. Fantone, Saugus, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 809,186, Dec. 16, 1985, abandoned. This application Apr. 1, 1988, Ser. No. 176,469
Int. Cl.[4] G02B *6/32*
U.S. Cl. 350—96.18 **3 Claims**



1. A connector for optically coupling a pair of fiber optic elements, said connector comprising a pair of spherical balls with their surfaces in physical contact with one another at a point along an optical axis through their centers, said spherical balls being composed of material that is transparent to radiation at the operating wavelengths of said fiber optic elements, the radii of said spherical balls and the index of refraction of said materials belonging to that set of combinations of radii and indices that provide said spherical balls with the property of imaging one of said fiber optic elements onto the other with their numerical apertures matched when each of said fiber optic elements are respectively in optical contact with the surface of one of said spherical balls at a point thereon opposite said point of contact and along said optical axis to assure that substantially all of the radiation emerging from either fiber optic element is coupled into the other, said indices of refraction and radii of said spherical balls being related by:

$$N_1 = 2(R_1 + R_2)/(R_2 + KR_1)$$

to satisfy that one fiber optic element is imaged onto the other and by:

$$T = (R_1 N_2)/(R_2 N_1)$$

to assure that the numerical apertures of said fiber elements match while said fiber elements are imaged one onto the other where:
R_1 and R_2 are the radii of said spherical balls;
N_1 and N_2 are the indices of refraction of said spherical balls;
$K = N_2 N_1$; and

VOL 1098 ISS 2 JA 10 1989 UMI

T=the ratio of the numerical apertures of said fiber elements.

4,796,970

OPTICAL FIBRE TRANSMISSION LINES

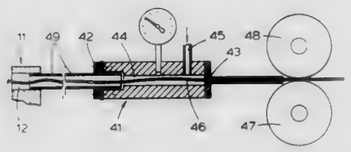
Michael H. Reeve, and Stephen A. Cassidy, both of Ipswich, England, assignors to British Telecommunications plc, London, England

Division of Ser. No. 848,950, Apr. 7, 1986, Pat. No. 4,691,896, which is a continuation of Ser. No. 551,640, Nov. 8, 1983. This application Feb. 13, 1987, Ser. No. 15,113

Claims priority, application United Kingdom, Nov. 8, 1982, 8231840; Apr. 8, 1983, 8309671

Int. Cl.[4] G02B *6/44, 6/00, 6/04*

U.S. Cl. 350—96.23 **22 Claims**



1. An optical fibre cable structure of extended length L comprising:

a conduit having one or more tubular ductlets of length L disposed therewithin and said ductlets having openings only at either end of said length L and being capable of loosely accommodating at least one optical fibre member, and

at least one optical fibre member inserted into and through an associated ductlet by propelling the fibre member from one end to the other of said ductlet using fluid drag of a gaseous medium distributed along the inserted length of said fibre member.

4,796,971

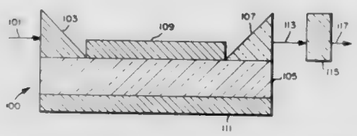
OPTICAL ARTICLE CONTAINING A POLYMERIC MATRIX EXHIBITING A HIGH LEVEL OF SECOND ORDER POLARIZATION SUSCEPTIBILITY

Douglas R. Robello, Webster; Abraham Ulman, and Craig S. Willand, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 28, 1987, Ser. No. 101,886

Int. Cl.[4] G02B *6/00*

U.S. Cl. 350—96.34 **20 Claims**



1. An optical article containing, for the transmission of electromagnetic radiation, a medium exhibiting a second order polarization susceptibility greater than 10^{-9} electrostatic units comprised of organic polar aligned noncentrosymmetric molecular dipoles having an electron donor moiety linked through a conjugated π bonding system to an electron acceptor moiety to permit oscillation of the molecular dipole between a ground state exhibiting a first dipole moment and an excited state exhibiting a differing dipole moment,

characterized in that the molecular dipoles form repeating units in a crosslinked polymeric matrix.

4,796,972

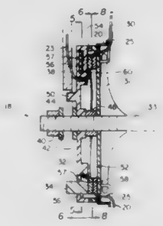
ILLUMINATED SPOKE MOUNTED REFLECTOR FOR BICYCLES

Charles A. Thomas, 632 Gressett St., Petersburg, Va. 23803, and William N. Bland, Jr., 578 Roberson St., Petersburg, Va. 23805

Filed Dec. 24, 1987, Ser. No. 137,561

Int. Cl.[4] G02B *5/12;* **B62J** *3/00*

U.S. Cl. 350—99 **9 Claims**



9. An illuminated reflector system for bicycles, each having a frame and a pair of spoked wheels mounted for rotation on said frame by a pair of axles, said system comprising:

means on said frame for supplying an electrical current;

a negative terminal of said electrical current supply means electrically grounded to said frame;

a stationary plate formed from a non-conducting material and having a central aperture for engagement with one of said axles;

a non-conducting carrier ring mounted on said stationary plate for rotation through a limited circular arc;

a pair of diametrically opposed metallic spring contacts carried on said carrier ring;

a pair of circular arc segment metallic contacts mounted on said stationary plate, overlying said carrier ring;

switch means slidably mounted on said stationary plate for selectively rotating said carrier ring and connecting said circular arc segment contacts;

shift cable means secured on said frame for remotely actuating said switch means;

means connecting said circular arc segment contacts with a positive terminal of said electrical current supply means;

a rotary plate formed from a non-conducting material and having a central aperture for engagement with one of said axles;

a rotary carrier ring mounted for rotation on said rotary plate;

a metallic spring contact secured on said rotary carrier ring adapted to engage said circular arc segment contacts mounted on said stationary plate;

spoke clip means on said rotary plate for securing said rotary plate for rotation with one of said wheels;

reflector means including light bulb means mounted on the spokes of at least one of said wheels;

a negative terminal of said light bulb means being electrically grounded to said spoke; and

a positive terminal of said light bulb means connected to said metallic spring contact secured on said rotary carrier ring.

4,796,973

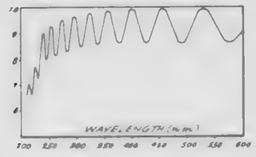
PELLICLE STRUCTURE FOR TRANSMISSION OF MID ULTRAVIOLET LIGHT

Joseph Gordon, Wappingers Falls, N.Y., assignor to Tau Laboratories, Inc., Poughkeepsie, N.Y.

Continuation of Ser. No. 661,577, Oct. 16, 1984, abandoned. This application Sep. 4, 1987, Ser. No. 94,026

Int. Cl.[4] G02B *1/04*

U.S. Cl. 350—1.1 **11 Claims**



1. A pellicle comprising a thin film of substantially uniform thickness which is tautly fixed to one edge of an enclosed frame, said thin film consisting of cellulose acetate butyrate.

4,796,974

DEVICE FOR FOCUSING ELECTROMAGNETIC WAVES OR SOUND

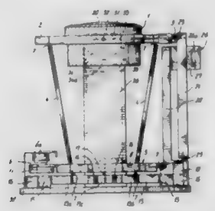
Godefridus J. Brakenhoff, Amsterdam, Netherlands, assignor to Stichting Voor De Technische Wetenschappen, Utrecht, Netherlands

Filed Jan. 19, 1988, Ser. No. 145,606

Claims priority, application Netherlands, Jan. 21, 1987, 8700148

Int. Cl.[4] E02B *7/02*

U.S. Cl. 350—247 **11 Claims**



1. Device for focusing electromagnetic waves or sound, comprising a focusing element fitted in a holder having two edges which is supported in such a way that moving it in three directions perpendicular to each other (X, Y and Z directions) is possible, while drive units are present to move the holder independently in said three directions, characterized in that the holder rests by means of hinges on at least three legs each having top and bottom ends which at said bottom ends are connected by means of hinges to a structure which can be moved in the Z direction, and that the holder for movement in the X and Y directions is hingedly connected by said two edges which are perpendicular to each other and to a strip which can be moved to and fro by means of said drive units.

4,796,975

METHOD OF ALIGNING AND ATTACHING OPTICAL FIBERS TO SUBSTRATE OPTICAL WAVEGUIDES AND SUBSTRATE OPTICAL WAVEGUIDE HAVING FIBERS ATTACHED THERETO

Gregory J. Lukas, Lisle; Kevin L. Sweeney, Wheaton, and Michael R. Kerr, Niles, all of Ill., assignors to Amphenol Corporation, Wallingford, Conn.

Filed May 14, 1987, Ser. No. 50,254

Int. Cl.[4] G02B *6/00;* **B65H** *69/02*

U.S. Cl. 350—320 **10 Claims**



1. A method of aligning and attaching optical fibers to substrate optical waveguides, comprising the steps of:

(a) placing at least one slab of preferentially etchable material and a waveguide substrate face down on an flat surface for aligning the top of the slab with the top of the waveguide substrate and with the slab positioned abutting at least one end of the waveguide on the substrate;

(b) securing said position of said slab and said waveguide substrate by securing a base plate support to the bottom of said slab and waveguide substrate; and

(c) forming a groove in the top surfaces of the slab in a manner wherein said groove is aligned coextensive with the waveguide on said waveguide substrate.

4,796,976

SIDE CHAIN LIQUID CRYSTALLINE POLYMERIC MEDIA EXHIBITING THIRD ORDER NONLINEAR OPTICAL RESPONSE

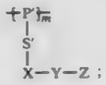
Thomas M. Leslie, Clinton Township; Hyun-Nam Yoon, New Providence; Ronald N. DeMartino, Wayne, and James B. Stamatoff, Westfield, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 915,180, Oct. 3, 1986, Pat. No. 4,762,912. This application Oct. 15, 1987, Ser. No. 108,756

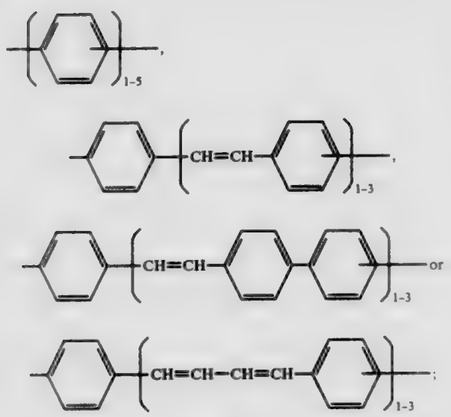
Int. Cl.[4] C09K *19/52;* **G02F** *1/13*

U.S. Cl. 350—330 **3 Claims**

1. An optical light switch or light modulator device with a polymeric nonlinear optical component comprising a transparent solid medium of a liquid crystalline polymer which is characterized by a recurring monomeric unit corresponding to the formula:



where P' is a main chain polymer unit; m is an integer of at least 10; S' is a flexible spacer group having a linear chain length of between about 1–25 atoms; X is —NR—, —O— or —S—; R is hydrogen or a C_1–C_4 alkyl group; Y is



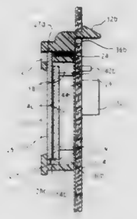
and Z is an electron-donating group or an electron-withdrawing group; and where the polymer has a glass transition temperature above about 40° C.; wherein the transparent nonlinear optical medium exhibits a third order nonlinear optical susceptibility $\chi^{(3)}$ of at least about 1×10^{-11}esu as measured at 1.91 μm excitation wavelength, and the optical medium has an isotropic molecular configuration with macroscopic centrosymmetry.

4,796,977

UNITARY LCD DISPLAY HOLDER

George M. Drake, 8757 Pierpoint Cove, Germantown, Tenn. 38138

Filed Mar. 17, 1987, Ser. No. 26,635
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—331 R 15 Claims



1. A one-piece display holder for positively locating and removably mounting a visually perceptible display comprising:
(a) an exterior wall having a plurality of opposed side wall portions at the periphery of said one-piece display holder with at least one of said side wall portions having an inwardly projecting lip forming a closed border for retaining the display within said one-piece display holder;
(b) an interior wall extending parallel to a first one of said side wall portions and having a first surface spaced apart from the interior surface of said first side wall portion and defining a recess for receiving an edge-connector means for making electrical connection to a visually perceptible display received in said one-piece display holder;
(c) at least one resilient inwardly projecting element integrally formed in one side wall portion of said one-piece display holder for resiliently urging a visually perceptible display received in said holder against a side wall portion opposed to said side wall portion having said resilient inwardly projecting element formed therein; and
(d) support means for removably mounting said one-piece display holder to a planar surface.

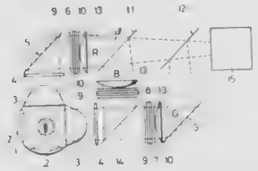
15. The combination of a planar liquid crystal display, a resilient electrical connector formed of a plurality of spaced apart conductive segments, and a display holder comprising:
(i) a unitary holder having side wall portions extending completely around the periphery of said holder with at least one of said side wall portions having an inwardly projecting lip at a first surface thereof;
(ii) an interior wall extending parallel to a first one side wall portion and having a first surface spaced apart from and generally parallel to an interior surface of said first one of said side wall portions defining a recess receiving said resilient electrical connector for making electrical connection to said planar liquid crystal display received in said holder;
(iii) a plurality of resilient inwardly projecting elements integrally formed as a part of said holder in adjacent side wall portions for positively locating said liquid crystal display in said holder; and
(iv) at least one inwardly projecting step integrally formed as a part of said holder and located on a side wall portion other than said first one of said side wall portions for retaining one edge of said liquid crystal display in said holder such that said planar liquid crystal display is located in said holder generally perpendicularly to said resilient electrical connector.

4,796,978

PROJECTION TYPE LIQUID CRYSTAL DISPLAYING DEVICE

Sakae Tanaka; Tadahiko Yamaoka; Shingo Takahashi, and Tomoaki Takahashi, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,789
Claims priority, application Japan, Jul. 8, 1986, 61-159935
Int. Cl.[4] G02F *1/13*; G02B *5/30*
U.S. Cl. 350—337 1 Claim



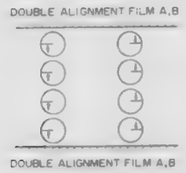
1. A projection type liquid crystal displaying device comprising: an optical system for splitting the light emitted from a light source into beams of substantially parallel light of two groups which are orthogonal to each other; a first reflection optical system for reflecting beams of the light of one group at a right angle so that they travel in the same direction as that of the other group; a first liquid crystal panel provided on a light path extending from said first reflection optical system; a first dichroic mirror orthogonally reflecting the light having specified wavelengths among beams of the light of the other group which come from said optical system and admitting the light having other wavelengths; a second liquid crystal panel provided on a light path for the light reflected on said first dichroic mirror; a second dichroic mirror admitting the light which passes through said first liquid crystal panel and reflecting the light which transmits said second liquid crystal panel so as to synthesize beams of such light; a third liquid crystal panel provided on a light path for the light transmitting said first dichroic mirror; a second reflection optical system for reflecting the light transmitting said third liquid crystal panel at a right angle; a third dichroic mirror for synthesizing the reflected light from said second reflection optical system with the transmitted light from said second dichroic mirror; and a projection lens system for projecting beams of the light which are synthesized by said third dichroic mirror.

4,796,979

FERROELECTRIC LIQUID CRYSTAL DEVICE HAVING DUAL LAMINATED ALIGNMENT FILMS

Akira Tsuboyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1987, Ser. No. 33,787
Claims priority, application Japan, Apr. 7, 1986, 61-78285; Apr. 7, 1986, 61-78286
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—350 S 55 Claims



1. A ferroelectric liquid crystal device, comprising: a pair of substrates, and a ferroelectric liquid crystal layer disposed between the substrates; at least one substrate being provided with an alignment control layer, the alignment control layer comprising at least two laminated alignment films of mutually different materials.

17. A ferroelectric liquid crystal device, comprising: a pair of substrates each having an alignment control layer thereof, and a ferroelectric liquid crystal disposed between the substrates; one of the alignment control layers comprising either a single layer of a laminated structure of the following alignment films A and B, and the other of the alignment control layers comprising a laminated structure of the following alignment films A and B:
(A) an alignment film A having a property of orienting the polarization direction of ferroelectric liquid crystal molecules n the vicinity of the alignment control layer toward the alignment control layer, and
(B) an alignment film B having a property of orienting the polarization direction of ferroelectric liquid crystal molecules in the vicinity of the alignment control layer toward the ferroelectric liquid crystal layer:

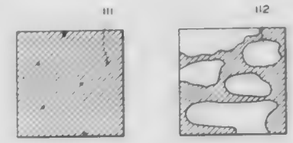
4,796,980

FERROELECTRIC LIQUID CRYSTAL OPTICAL MODULATION DEVICE WITH REGIONS WITHIN PIXELS TO INITIATE NUCLEATION AND INVERSION

Shuzo Kaneko, Tokyo; Tsutomu Toyono, and Junichiro Kanbe, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1987, Ser. No. 30,569
Claims priority, application Japan, Apr. 2, 1986, 61-075867; Apr. 2, 1986, 61-075868
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—350 S 21 Claims

1. An optical modulation device, comprising: a plurality of pixels arranged two-dimensionally, each pixel comprising a first electrode and a second electrode disposed opposite to each other and an optical modulation material disposed between the first and second electrodes; each pixel having regions with mutually different uniaxial alignment control powers for aligning the optical modulation material.

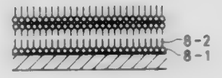


4,796,981

OPTICAL ELEMENT FOR MODULATION OF LIGHT BY HEATING A MONOMOLECULAR FILM

Yukuo Nishimura, Sagamihara; Masahiro Haruta, Fuzabashi; Yutaka Hirai; Kunihiro Sakai, both of Tokyo, and Hiroshi Matsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,602
Claims priority, application Japan, Nov. 26, 1983, 58-221431; Nov. 26, 1983, 58-221432; Nov. 26, 1983, 58-221433; Nov. 26, 1983, 58-221434; Dec. 13, 1983, 233656; Dec. 14, 1983, 58-234352; Dec. 15, 1983, 58-234951
Int. Cl.[4] G02F *1/01*
U.S. Cl. 350—353 13 Claims



1. An optical modulation device comprising (a) a substrate, (b) a Langmuir-Blodgett built-up film of a plurality of monomolecular layers each comprising a long chain dialkylammonium salt compound having at least a long chain alkyl hydrophobic moiety and an ammonium hydrophilic moiety, said plurality of monomolecular layers having an interface between adjacent monomolecular layers wherein alternately the ammonium hydrophilic moieties of the long chain dialkylammonium salt compound molecules in adjacent monomolecular layers face each other, and the long chain alkyl hydrophobic moieties of the long chain dialkylammonium salt compound molecules in adjacent monomolecular layers face each other at said interfaces; and the ammonium hydrophilic moieties of the long chain dialkylammonium salt compound molecules face the substrate in the monomolecular later adjacent the substrate, and (c) a heat-generating element for changing a refractive index of said film.

4,796,982

OPTICAL VALVE

Makoto Kitabatake, Katano; Kentaro Setsune, Sakai, and Kiyotaka Wasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

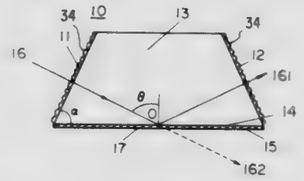
PCT No. PCT/JP83/00402, § 371 Date Jul. 6, 1984, § 102(e) Date Jul. 6, 1984, PCT Pub. No. WO84/02010, PCT Pub. Date May 24, 1984
PCT Filed Nov. 10, 1983, Ser. No. 629,842
Claims priority, application Japan, Nov. 11, 1982, 57-198688
Int. Cl.[4] G02F *1/01*
U.S. Cl. 350—356 15 Claims

1. An optical valve for controlling a light beam having a predetermined wavelength, comprising:
a first prism having a predetermined light refractive index, said prism including a light input surface through which said light beam enters said prism, a light output surface

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through which said light beam emerges from said prism and a bottom surface;

a light-reflective control layer deposited by sputtering on the bottom surface of said first prism, said light reflective control layer being constituted by a thin film made of a heat-sensitive optical material composed of at least one compound selected from the group consisting of ABO_3 type compounds sillenite compounds oxides of transition metals, said film having a thickness not less than the wave-

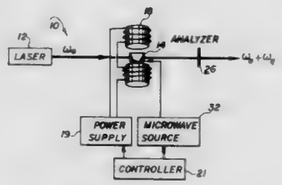


length of said light beam, the light refractive index of said light-reflective control layer being lower than the light refractive index of said first prism;

means for thermally controlling the light refractive index of said light reflective control layer; and

means provided on the outer surface of said light-reflective control layer, said means preventing total-reflection of the light beam impinging upon the bottom surface of said prism.

4,796,983
OPTICAL FREQUENCY SHIFTER USING MAGNETOSTATIC WAVES
Daniel D. Stancil, 855 MacArthur Dr., Pittsburgh, Pa. 15228
Filed Jun. 5, 1987, Ser. No. 58,586
Int. Cl.[4] G02F *1/09*
U.S. Cl. 350—376 **9 Claims**



1. A frequency shifter comprising:

means for producing a monochromatic beam of light having frequency ω_o;

means for producing magnetostatic waves having frequency ω_q and wavenumber K_φ;

means for varying the magnetostatic wave frequency ω_q while maintaining the magnetostatic wave number K_φ; and

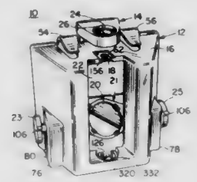
means for allowing the magnetostatic waves and the beam of light to interact so light having frequency $\omega_o+\omega_q$ is produced.

4,796,984
OPTICAL IMAGING SYSTEMS
Charles G. Wynne, Hailsham, England, assignor to National Research Development Corporation, London, England
PCT No. PCT/GB87/00348, § 371 Date Jan. 22, 1988, § 102(e) Date Jan. 22, 1988, PCT Pub. No. WO87/07392, PCT Pub. Date Dec. 3, 1987
PCT Filed May 21, 1987, Ser. No. 145,761
Claims priority, application United Kingdom, May 23, 1986, 8612609
Int. Cl.[4] G02B *17/00*
U.S. Cl. 350—444 **5 Claims**



1. A substantially unity magnification image forming system comprising at least one convex mirror and at least one concave mirror, said mirrors being supported with their centres of curvature substantially coincident and means to define a location for an object the image of which after at least three reflections including at least one reflection at each of said mirrors is a real image at a second location characterised in that it comprises a monocentric meniscus lens between said concave and said convex mirrors substantially to give overall correction for Petzval sum, to produce with said meniscus lens at said second location a stigmatic image of an object at said first location.

4,796,985
OPTICAL WAVE GUIDE LIGHT COLLECTOR FOR MICROSCOPE
Richard A. Onanian, 85 Irving St., Arlington, Mass. 02174
Continuation-in-part of Ser. No. 16,580, Feb. 19, 1987. This application Mar. 23, 1987, Ser. No. 29,177
Int. Cl.[4] G02B *21/06*
U.S. Cl. 350—523 **18 Claims**



1. A self-contained microscope system for operating in ambient light, comprising:

a base including an integral stage section for holding a specimen to be viewed and an inner cavity having access to an external ambient light source, said stage section defining a stage hole;

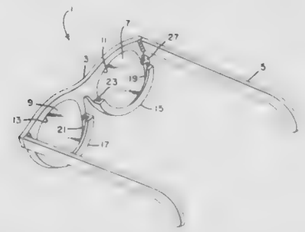
an eyepiece section adjustably mounted to said base for holding a lens, said eyepiece section aligned with said stage hole;

means for finely adjusting the position of said eyepiece section relative to said base to adjust the focus of said lens;

an optical wave guide light collector including a collector element and a light pipe having a first, enlarged end interconnected with said collector element and a second, smaller end for alignment with said stage hole for transmitting the collected light to the specimen being viewed; and

means in said cavity for holding said collector element for disposition in a field of ambient light.

4,796,986
COMBINATION SAFETY GLASSES
Wilford B. Gowdy, Jr., Rt. 1, Box 157, Cades, S.C. 29518
Filed Mar. 14, 1988, Ser. No. 167,724
Int. Cl.[4] G02C *7/08*
U.S. Cl. 351—57 **1 Claim**



1. Combination safety lenses for detachably mounting, in locked relationship, correcting lenses of the full magnifier, full prescription or full bifocal type to provide for the vision needs of a person wearing safety glasses; said combination safety glasses comprising a frame having lens openings, said lens openings fitting non-correcting safety lenses therein, said lens openings having bottom half portions, said lens openings having, along their said bottom half portions, rearwardly projecting raised portions integral with said lens openings and of one-piece construction, said lens openings and rearwardly projecting portions being in parallel relationship, each of said lens openings and projecting portions forming a continuous channel, said channel defining a guide recess receiving therein and disposing thereby said correcting lens in parallel relationship with its corresponding non-correcting safety lens, each of said raised projecting portions having a nasal-side end and a temporal-side end, said nasal-side end having a nasal-side detent of integral, one-piece construction with its said nasal-side end, said temporal-side end having a temporal-side detent, said temporal-side detent being resilient and having a spring biasing locking action, each of said correcting lenses having a periphery, said periphery having cut therein a nasal-side guide notch and an opposite temporal-side locking notch, said nasal-side detents engaging, in guiding relationship, said nasal-side guide notches, said temporal-side detents cooperating with and engaging said temporal-side locking notches to automatically effect spring-biased removable locking engagements with said temporal-side locking notches.

4,796,987
DIGITAL DISPLAY FOR HEAD MOUNTED PROTECTION
Harry A. Linden, 146 S. Sierra Vista, Santa Barbara, Calif. 93108
Continuation of Ser. No. 683,813, Dec. 20, 1984, abandoned. This application Apr. 7, 1987, Ser. No. 35,219
Int. Cl.[4] G02C *1/00*
U.S. Cl. 351—158 **14 Claims**

1. A headgear comprising:

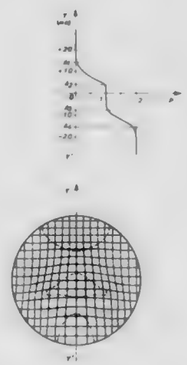
a frame releasably securable to a wearer's head, said frame including a goggle portion for protecting the wearer's eyes from water;

a liquid crystal digital display unit for indicating digital time parameters, said unit being secured to said goggle portion so as to be protected from water, said display unit being light-transmissive so as to permit viewing therethrough by the wearer, said display unit being readable by the wearer against an ambient background; and



control means for controlling said display unit, said control means being accessible by the wearer when said frame is secured to the wearer.

4,796,988
PROGRESSIVE LENS
Maurice Dufour, Paris, and Gerard Obrecht, Issy Les Moulineaux, both of France, assignors to Essilor International Compagnie Generale d'Optique, Creteil, France
Filed Sep. 12, 1986, Ser. No. 906,249
Claims priority, application France, Sep. 13, 1985, 85 13614
Int. Cl.[4] G02C *7/06*
U.S. Cl. 351—169 **2 Claims**



1. Continuous surface progressive lens comprising a substantially constant power first area matched to far vision, a substantially constant power second area matched to near vision, a substantially constant power third area between said first and second areas matched to intermediate vision and respective progressively varying power areas between said first and third areas and between said third and second areas.

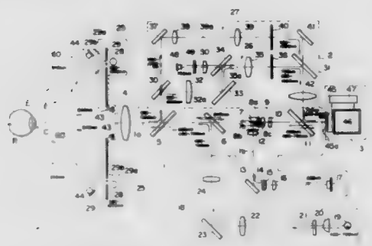
VOL 1098 ISS 2 JA 10 1989 UMI

4,796,989

OPTHALMOLOGICAL MEASURING APPARATUS

Yasufumi Fukuma; Yoshinori Ooaa, and Akihiro Arai, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1987, Ser. No. 73,707
Claims priority, application Japan, Jul. 17, 1986, 61-168825
Int. Cl.[4] A61B *3/10*
U.S. Cl. 351—212 **4 Claims**



1. An ophthalmological measuring apparatus comprising:
(A) projecting means for projecting first and second target images to the retina and cornea of an eye to be tested, respectively;
(B) anterior portion illuminating means for providing illumination to an anterior portion of the eye;
(C) measuring optical means including:
(1) eye refractive power measuring optical means for forming a retina reflected beam of light from said first target image reflected by said retina and projecting said retina reflected beam of light along a first optical path;
(2) corneal configuration measuring optical means for forming a cornea reflected beam of light from said second target image reflected by said cornea and projecting said cornea reflected beam of light along a second optical path; and
(3) anterior portion reflection means for forming an anterior portion reflected beam of light from said illumination reflected by said anterior portion of the eye;
(D) light receiving means for receiving the corneal reflected beam of light, the retina reflected beam of light and the anterior portion reflected beam of light through said measuring optical means at a light receiving surface and generating a cornea image signal, a retina image signal, and an anterior portion image signal, respectively, in response thereto;
(E) image displaying means for displaying an image of an anterior portion of the eye based on said anterior portion image signal from said light receiving means; and
(F) calculating means for calculating a corneal configuration and an eye refractive power of the eye to be tested based on said cornea image signal and said retina image signal, respectively.

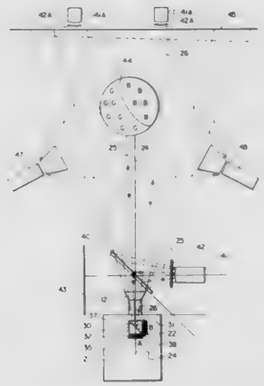
4,796,990

METHOD AND APPARATUS FOR SUPERIMPOSING SCENES

Paul Crothers, 2388 Ontono Cir., Thousand Oaks, Calif. 91362, and Robert Schaffer, 160 Triangle St., Thousand Oaks, Calif. 91360

Filed Jul. 1, 1983, Ser. No. 510,299
Int. Cl.[4] G03B *19/18;* A63J *5/00*
U.S. Cl. 352—89 **12 Claims**

1. A method for producing a travelling matte image for combining a foreground object with a background scene comprising:
positioning the foreground object in front of a retro-reflective screen;
illuminating the screen with polarized light;
illuminating the foreground object with general illumination;
receiving in a camera light from the screen and from the foreground object;
dividing the light from the screen and from the object in the camera by directing the light polarized in the manner it is



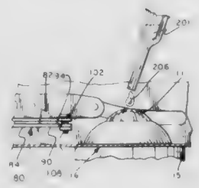
polarized from the screen to a first imaging medium to create a first image of the foregoing object and the screen on the first imaging medium, and directing the light that is not polarized in the manner it is polarized from the screen to a second imaging medium to create a second image of the foreground object and the screen on the second imaging medium.

4,796,991

METHOD AND APPARATUS FOR MEASURING SOFT CONTACT LENSES

Michael D. Gordon, 10225 E. 71st South, Derby, Kans. 67233, and Norris R. Long, 5166 S. Vine, Wichita, Kans. 67217

Filed May 20, 1987, Ser. No. 51,719
Int. Cl.[4] G01B *9/00*
U.S. Cl. 356—125 **20 Claims**



1. A lens holding apparatus used to measure the power of soft contact lenses in conjuction with a lensmeter, comprising:
(a) a basic support housing means;
(b) a lens holder assembly connected to said basic support housing means including a lens support member having a lens support surface to receive a soft contact lens thereon;
(c) a lens conditioner means connected to said basic support housing means and having a lens wiper assembly initially positioned adjacent and out of contact with said lens support surface in a non-use position and selectively engagable with the lens support surface; and
(d) said lens wiper assembly having a wiper blade member which is selectively moved and engaged with said lens

support member to provide a uniform thickness of a fluid solution thereon.

4,796,992

APPARATUS FOR OPTICALLY ANALYZING AN OBJECT USING FOUR-WAVE MIXING TECHNIQUE

Shinichiro Aoshima, and Yutaka Tsuchiya, both of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 10, 1987, Ser. No. 131,404
Claims priority, application Japan, Dec. 11, 1986, 61-293538; Dec. 19, 1986, 61-302912
Int. Cl.[4] G01B *9/027*
U.S. Cl. 356—347 **15 Claims**



1. An apparatus for optically analyzing an object using four-wave mixing technique comprising:
a laser source for producing a pulse beam;
a nonlinear optical element for producing a phase conjugate wave according to an incident beam thereon;
a beam splitting means for splitting said pulse beam into first and second pulse beams and guiding said first and second pulse beams to said nonlinear optical element and said object, respectively;
a first guide means for guiding said first pulse beam to enter said nonlinear optical element, said first pulse beam serving as a reference beam and being slit into two beams having the substantially same optical length, one entering said nonlinear optical element from a first direction and the other entering from a second direction opposite to said first direction;
a second guide means for guiding said object beam from said object to enter said nonlinear optical element;
an image observing means for forming an image of said phase conjugate wave from said nonlinear optical element; and
a third guide means for projecting said phase conjugate wave from said nonlinear optical element on said image observing means, wherein said object beam has the substantially same optical length as said reference beam.

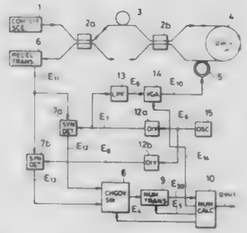
4,796,993

PHASE MODULATION TYPE FIBER OPTIC GYROSCOPE

Hisao Sonobe; Junichi Makino, both of Katsuta; Shigeru Oho, Hitachi; Masahiro Matsumoto; Kouji Kitano, both of Hitachi, and Hiroshi Araki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1988, Ser. No. 181,316
Claims priority, application Japan, Apr. 13, 1987, 62-88825; Jun. 18, 1987, 62-150235
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—350 **7 Claims**

1. A phase modulation type fiber optic gyroscope which has an optical fiber system including an optical phase modulator driven with a modulation signal at a modulation frequency and detects an angular velocity processing an interference signal produced in the optical fiber system, comprising
a number of signal generators which generate said modulation signal and reference signals whose frequencies are identical to said modulation frequency or integer multiplies of said modulation frequency;
a number of synchronous detectors which all have a pair of signal and reference input ports, and all input said interference signal and one of said reference signals as the signal and reference inputs, respectively, and are classified into odd and even groups of the synchronous groups, in which the synchronous detectors of the odd and even groups



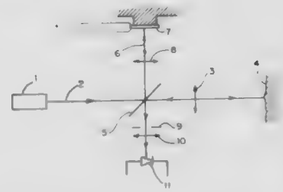
sense only the fundamental and odd harmonic components, and only the even harmonic components, respectively, of said modulation frequency from said interference signal with a certain weighting to the fundamental and harmonic frequency components;
a signal processing unit which inputs the output signals from said synchronous detectors and generates said angular velocity processing said output signals from said synchronous detectors.

4,796,994

METHOD AND APPARATUS FOR MEASURING VARIATIONS IN DISTANCES

Lars Bager, 54, Vester Faelledvej, DK-1750 Kobenhavn V, Denmark

Filed Aug. 5, 1986, Ser. No. 893,474
Claims priority, application Denmark, Aug. 13, 1985, 3665/85
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—358 **7 Claims**



1. Method for measuring variations in the distance between a point of reference and a surface of an object, said method comprising:
directing a beam emitted from a substantially monochromatic light source onto said surface of said body;
combining in an interferometer light reflected from said surface of said object with a reference beam having a known path and from the same light source to give a combined beam;
converting said combined beam into an electric signal by means of light sensitive means;
effecting a substantially momentary change of the length of the path of said reference beam with a value corresponding to ¼ wave-length of said emitted beam from said monochromatic light source;
converting said electric signal into an output signal in digi-

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tized signal processing means for establishing whether a change in sign takes place with respect to a mean value of said electric signal, the same or the opposite sign being applied to the registered variation of the signal if the electrical signal is positive or negative after said momentary change, providing said momentary change is an increase of the length of the path and the opposite application of the sign, if the change is a decrease of the length of the path of said reference beam, said digitized signal processing means comprising means for effecting a continuous processing of the first derivative of the curve of the electric signal, said output signal being an expression for the said variation in distance.

4,796,995

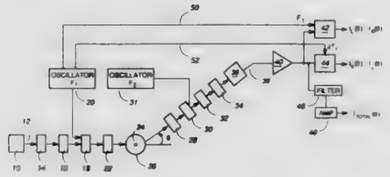
OPTICALLY ACTIVE BIOLOGICAL PARTICLE DISTINGUISHING APPARATUS

Gary C. Salzman, Los Alamos, N. Mex., and Robert H. Kupperman, Washington, D.C., assignors to The United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 815,185, Dec. 23, 1985, abandoned, which is a continuation of Ser. No. 763,894, Aug. 9, 1985, abandoned, which is a continuation of Ser. No. 452,360, Dec. 22, 1982, abandoned. This application Sep. 2, 1987, Ser. No. 93,052

Int. Cl.[4] G01N *21/21*

U.S. Cl. 356—368 **18 Claims**



1. An apparatus for distinguishing microorganisms, pollens, and eukaryotic cell types as single cells in a cell stream, said apparatus comprising:

a source for a continuous light beam of suitable diameter in the infrared to ultraviolet light range;

means for selecting a linearly polarized component from the beam;

first means for optically modulating the linearly polarized component of the beam into left and right circularly polarized components at a single first frequency;

means for shaping the circularly polarized components and for focusing on and passing the left and right circularly polarized components through a flow chamber through which a stream containing the cells to be distinguished can be flowed as individual cells;

means for collecting the circularly polarized components scattered by a cell to be distinguished at least one angle relative to the direction of the continuous light beam, the scattered components being amplitude modulated at said first frequency in accordance with the circular birefringence of the cell and amplitude modulated in accordance with the linear birefringence of the cell at a second frequency, said second frequency being twice said first frequency;

second means for optically modulating the collected scattered beam components at a single third frequency;

means for again linearly and circularly polarizing the modulated scattered beam components;

means for spatially filtering said again polarized modulated scattered beam components;

photodetector means for receiving said spatially filtered amplitude modulated scattered beam components and for generating an output in accordance therewith; and

means for receiving and analyzing the output and for extracting the amplitude modulated components at at most said first frequency and said second frequency at said at least one angle relative to the direction of the continuous light beam to identify microorganisms and eukaryotic cells as individual cells in the cell stream.

4,796,996

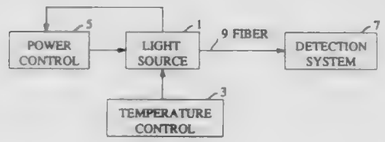
LASER TEMPERATURE MODULATION AND DETECTION METHOD

Matthew J. Burns, Philadelphia, Pa., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 14, 1987, Ser. No. 85,448

Int. Cl.[4] G01B *11/00*

U.S. Cl. 356—372 **6 Claims**



1. A method of measuring a parameter of a system comprising a semiconductor laser comprising the steps of:

periodically cycling the emission wavelength of said semiconductor laser;

monitoring the optical power from a first face of said laser;

using a feedback control system to maintain said optical power from said first face at a constant level;

emitting light from said laser into an optical cavity which is optically coupled to one face of said semiconductor laser; and

measuring a characteristic of said system.

4,796,997

METHOD AND SYSTEM FOR HIGH-SPEED, 3-D IMAGING OF AN OBJECT AT A VISION STATION

Donald J. Svetkoff; Brian Doss, both of Ann Arbor, and David N. Smith, South Lyons, all of Mich., assignors to Synthetic Vision Systems, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 866,735, May 27, 1986, abandoned. This application May 21, 1987, Ser. No. 52,841

Int. Cl.[4] G01B *11/03*

U.S. Cl. 356—376 **31 Claims**



1. A method for the high-speed, 3-D imaging of an object at a vision station to develop dimensional information associated with the object, the method comprising the steps of:

scanning a beam of controlled light at the surface of the object at a first predetermined angle to generate a corresponding reflected light signal;

receiving said reflected light signal at a second angle with a set of optical components;

spatially filtering the received signal;

spatially averaging the received light signal with the set of optical components to compensate for non-uniform intensity distributions in the received signal, said step of averaging including the step of creating a uniform spot of light;

optically splitting the received light signal into first and second split beams, the second split beam being a reference beam;

imaging the first and second split beams to first and second predetermined measuring areas of first and second photodetector means, respectively, to produce corresponding first and second electrical signals proportional to the measurements;

normalizing the first and second electrical signals to lie within a predetermined range; and

computing a centroid value for the first split beam from the normalized signals.

4,796,998

METHOD FOR MOBILE SURVEY OF ROAD SURFACE

Koroku Soma, Tokyo; Noritsugu Watanabe, Saitama, and Wataru Taniguro, Tokyo, all of Japan, assignors to Pasco Corporation, Tokyo, Japan

Filed Apr. 11, 1986, Ser. No. 850,574

Claims priority, application Japan, Oct. 3, 1985, 60-220849; Oct. 21, 1985, 60-234908

Int. Cl.[4] G01B *11/30*

U.S. Cl. 356—376 **2 Claims**



1. A method of obtaining information of cracks and the like in road surface utilizing a laser beam while a vehicle is travelling in which a road survey apparatus is mounted, said method comprising the steps:

scanning the road surface with a laser beam at right angles to the direction in which the vehicle is travelling, the intensity of said laser beam being modulated with a predetermined frequency prior to the scanning;

receiving the laser beams reflected on said road surface at first and second pickups;

optically filtering the laser beams entering said first and second pickups in a manner to filter out light having frequencies outside of the frequency of the laser beam;

converting the optically filtered laser beams obtained at said first and second pickups into first and second electrical signals, respectively;

electrically band-pass filtering said first and second electrical signals wherein the center frequency of said band pass filtering coincides with said predetermined frequency, and demodulating the electrically filtered first and second signals;

obtaining a ratio of the amplitudes of the demodulated first and second signals, and

comparing said ratio with a predetermined threshold level for obtaining the information of cracks and the like of the road surface.

4,796,999

DEVICE FOR AUTOMATICALLY DETERMINING THE DEVIATION BETWEEN THE STRUCTURES OF A PATTERN AND THOSE OF AN OBJECT COMPARED THEREWITH

Erich Schuster, Huettenberg, and Manfred Kartzow, Wetzlar, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

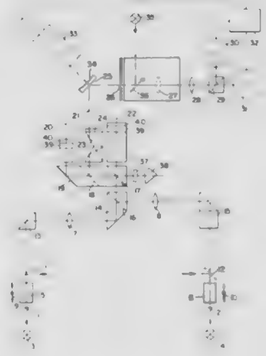
PCT No. PCT/DE86/00157, § 371 Date Jan. 16, 1987, § 102(e) Date Jan. 16, 1987, PCT Pub. No. WO86/07169, PCT Pub. Date Dec. 4, 1986

PCT Filed Apr. 10, 1986, Ser. No. 25,144

Claims priority, application Fed. Rep. of Germany, May 20, 1985, 3518043

Int. Cl.[4] G01B *11/00*

U.S. Cl. 356—394 **11 Claims**



1. A device for automatically comparing and determining the deviation between at least two structures, said device comprising:

means for generating an image of each structure to be compared and for guiding the image of each structure along a respective beam path,

means for providing the image of each structure with an identifying polarization characteristic,

means for combining the respective imaging beam paths into a common imaging beam path,

means for coupling out at least one of a visual and television observation beam path from the combined beam path, the coupling means including a face plate with associated polarizing filters inserted in the visual and/or television beam path in order to generate a color representation of the image of each of the structures which corresponds to their respective identifying polarization characteristic,

means for imaging the image of each structure to be compared on a measuring gap to form a superimposed image of the structures on the measuring gap,

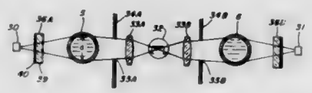
means for providing relative movement between the superimposed image of the structures and the measuring gap,

means for splitting radiation passing through the measurement gap into radiation components corresponding to the identifying polarization characteristic of the image of each structure, and imaging the radiation components onto photoelectric detectors,

means for producing signal curves as a function of the relative position of the superimposed image and a measurement gap,

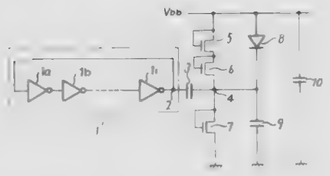
means for evaluating the signal curves with reference to a mutual displacement.

4,797,000
COMPARATIVE COLORIMETER
Richard H. Curtis, Gorham, Me., assignor to Artel, South Windham, Me.
Filed Jan. 2, 1986, Ser. No. 815,522
Int. Cl.[4] C01N *21/53*
U.S. Cl. 356—436 8 Claims



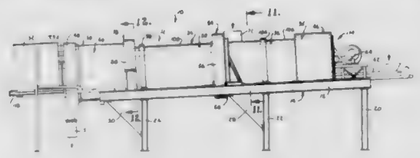
1. An improved optical system for a colorimeter of the type wherein the optical density of a liquid in a cylindrical optically transparent sample tube is determined by passing a beam of light from a light source through the liquid and onto a photodetector, said optical system comprising:
a collimating lens positioned between the sample tube and light source and spaced closer to the light source than the lens transmits a divergent beam to said sample tube;
said sample tube being spaced with respect to the lens so that the outer diameter of said divergent beam at the center plane of said tube is substantially equal to the inner diameter of said tube; and
said sample tube acting as a cylinder lens to focus said beam at a vertical focal line and said photodetector being spaced slightly ahead of said focal line so that the beam strikes a substantial portion of said photodetector.

4,797,001
SUBSTRATE BIAS GENERATOR FOR USE IN DYNAMIC RANDOM ACCESS MEMORY
Noriaki Matsumoto; Koichiro Mashiko; Kazutami Arimoto; Kiyohiro Furutani, and Yoshio Matsuda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1987, Ser. No. 79,147
Claims priority, application Japan, Jul. 30, 1986, 61-179740
Int. Cl.[4] G11C *7/00, 7/02;* H01L *27/02;* H03K *3/353*
U.S. Cl. 365—189 2 Claims



1. A substrate bias generator for setting a potential of a semiconductor substrate in a dynamic random access memory and reducing soft errors such as errors caused by alpha ray irradiation, in an IC having insulated gate type field effect transistors (IGFET) as the fundamental elements, said substrate bias generator comprising:
substrate potential generating means provided for generating a substrate potential,
a coupling capacitor connected to an output of said substrate potential generating means,
an IGFET transistor for rectification provided between said coupling capacitor and a ground potential,
substrate potential control means provided between said coupling capacitor and a substrate potential electrode for controlling the substrate potential to maintain a required level, said substrate potential control means comprising a plurality of IGFET transistors connected in series between said coupling capacitor and said substrate potential electrode.

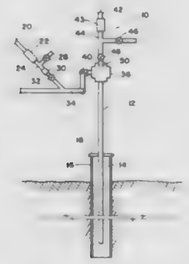
4,797,002
APPARATUS FOR MIXING ASPHALT COMPOSITIONS
Ronald E. Heap, Kansas City, Mo., assignor to Standard Havens, Inc., Kansas City, Mo.
Filed Jun. 23, 1986, Ser. No. 877,120
Int. Cl.[4] B28C *5/46*
U.S. Cl. 366—25 8 Claims



1. A drum mixer for producing an asphaltic composition from asphalt and aggregates, said mixer comprising:
a rotatable cylinder having first and second open ends with an internal passageway communicating therebetween and having first and second zones, said cylinder disposed substantially horizontal with said first end inclined slightly above said second end;
drive means to rotate said cylinder about the central longitudinal axis thereof;
aggregate feed means having a discharge portion extending within said first open end of said cylinder to deliver aggregate material to said first zone of said cylinder;
burner means adjacent said first end of said cylinder to generate a hot gas stream within said first zone of said cylinder in order to heat and dry the aggregate material delivered thereto;
an exhaust tube penetrating the second end of said cylinder and disposed within said internal passageway of said cylinder, said exhaust tube communicating with said first zone to remove said hot gas stream generated by said burner means and thereby prevent said hot gas stream from reaching said second zone;
liquid asphalt feed means disposed within said second zone of said cylinder for delivering liquid asphalt thereto to form an asphaltic composition; and discharge means for directing said asphaltic composition from said second zone of said cylinder.

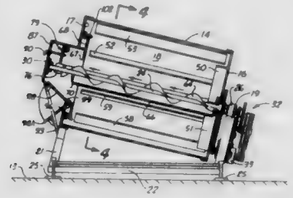
4,797,003
FOAMED SLURRY GENERATOR
Donald C. Cameron, Tulsa, Okla., and Mat Hoover, Midland, Tex., assignors to Dowell Schlumberger Incorporated, Tulsa, Okla.
Filed Apr. 22, 1987, Ser. No. 41,553
Int. Cl.[4] B01F *13/02*
U.S. Cl. 366—101 9 Claims

1. A high pressure foamed slurry generator operatively connected to a tubing string which pumps the slurry into a well, comprising:
a source of liquid;
a source of gas;
means for combining the liquid and the gas in a manner to form small bubbles of gas substantially uniformly in the liquid;
the means for combining including a housing and a multichannel connector having a mixing area operatively attached to inlets and an outlet in the housing;
one channel of the connector being the inlet for the gas, at least one channel being the inlet for the slurry, and one channel being the outlet for the foamed slurry;
the inlet channel having a means for changing the gas into a plurality of smaller diameter, higher velocity streams of gas which are combined with the slurry in the mixing area and transported out of the outlet channel, wherein the means for changing the gas into a plurality of smaller



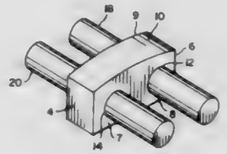
streams includes a bushing operatively connected to the gas inlet channel, the bushing having a plurality of substantially parallel holes through which the gas passes into the slurry, thereby providing a foamed slurry.

4,797,004
MATERIAL MIXER
Floyd E. Buschbom, Long Lake, Minn., assignor to Van Dale Inc., Long Lake, Minn.
Filed Sep. 28, 1987, Ser. No. 101,858
Int. Cl.[4] B01F *15/02*
U.S. Cl. 366—186 31 Claims



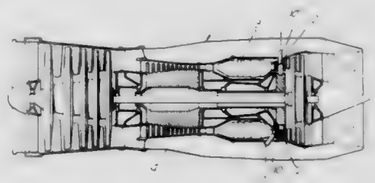
1. An apparatus for mixing materials comprising: a drum having longitudinal axis, an inlet end, a closed end, and a chamber for accommodating materials, housing means for directing materials to the inlet end of the drum for movement into the chamber, means supporting the drum for rotation about the longitudinal axis thereof and inclining the drum and the axis downwardly from the inlet end thereof, conveyor means located in said drum between said inlet end and closed end thereof operable to move mixed material from the closed end into the housing means, drive means for rotating the drum about the longitudinal axis thereof and operating said conveyor means, said conveyor means including open top trough means having a longitudinal axis, and means for moving materials along said trough means, means for angularly moving the trough means about the longitudinal axis thereof between a generally horizontal position to a tilt position, means mounted on the drum for moving materials in said chamber upwardly and allowing said materials to flow into said open top trough means, said means for moving the materials along said trough means operable to move the materials from the trough means back into the chamber when the trough means is in its tilt position and operable to move the materials into the housing means when the trough means is in its generally horizontal position, said housing means having means to allow said materials in the housing means be discharged to a selected location.

4,797,005
DUAL MAGNETIC STIRRING BAR ARRANGEMENT
Kurt Landsberger, 103 Harrison St., Verona, N.J. 07044
Filed Apr. 21, 1988, Ser. No. 184,366
Int. Cl.[4] B01F *13/08*
U.S. Cl. 366—343 7 Claims



1. A dual magnetic stirring bar arrangement, comprising:
a substantially oblong holder having a pair of oppositely disposed ends; a pair of oppositely disposed sides and a pair of oppositely disposed faces;
a pair of holes extending through the oppositely disposed faces; and
a pair of elongated magnetic stirring bars, each of which is received in force fit relation by a corresponding hole.

4,797,006
PYROMETER SYSTEMS FOR GAS-TURBINE ENGINES
Ronald A. Mason, Southampton, England, assignor to Smiths Industries Public Limited Company, London, England
Filed May 20, 1987, Ser. No. 52,435
Claims priority, application United Kingdom, Jun. 5, 1986, 8613622
Int. Cl.[4] G01J *5/10*
U.S. Cl. 374—130 7 Claims



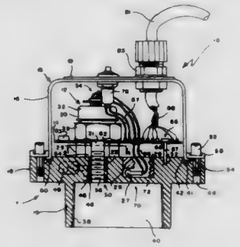
1. A pyrometer system for providing an indication of the temperature of rotating blades in a gas-turbine engine comprising:
(a) a pyrometer,
(b) means mounting said pyrometer to view the blades to enable said pyrometer to produce an output signal in accordance with the radiation received by the pyrometer in response to thermal emission directly from said blades and also via reflections from said blades but originating with other sources,
(c) processing means, and
(d) means connecting said processing means with said pyrometer to receive said output signal,
(e) said processing means including synchronization means, gating means, and output means, said synchronization means controlling said gating means to interrupt passage to the output means of temperature signals from the engine combustion chamber that occur repetitively between blade emission signals,
whereby passage of the temperature signals from said other sources to said output means is prevented.

2. A method of providing an indication of the temperature of rotating blades in a gas-turbine engine comprising the steps of:

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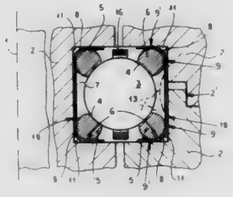
(a) viewing the blades of the engine with a pyrometer to generate signals responsive to the radiation emitted and reflected by the blades,
(b) differentiating the output signals of the pyrometer between those parts thereof arising from emission of radiation from the blades and those parts arising from the reflection by the blades of combustion chamber radiation,
(c) generating gating signals in synchronism with the aforesaid differentiated signals,
(d) interrupting in response to said gating signals the subsequent passage of repetitive signals arising from the reflections of combustion chamber radiation by the blades occurring between each blade emission signal,
(e) and generating an output signal indicative of blade temperature substantially only from the signals responsive to the signals responsive to the temperature of the blades.

4,797,007
TEMPERATURE AND LINE PRESSURE PROBE
John M. Elmore, III, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.
Filed Dec. 18, 1987, Ser. No. 134,974
Int. Cl.[4] G01L 7/00; G01K 1/14
U.S. Cl. 374—143 10 Claims



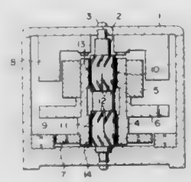
1. A line pressure probe for use on a liquid conduit, said probe comprising:
pressure transducer means of providing an electrical signal representative for the pressure in said liquid conduit, said transducer means including a transducer housing and duct means for transmitting pressure from the liquid in said conduit to the interior of said transducer housing;
a circuit board having circuit components mounted thereon and a hole through it;
a circuit board support;
probe housing means for enclosing said pressure transducer means and said circuit board, said probe housing means including base means for attaching said probe housing means to said liquid conduit, said base means having a channel means through it for communicating with liquid in said conduit; and
securing means for securing said transducer means to said base means;
wherein said circuit board is mounted between said circuit board support and said transducer housing with said duct means passing through said hole in said board and connecting with said channel in said probe housing base means, whereby said securing means also secures said circuit board in said probe housing.

4,797,008
ROLLER BEARING FOR ROTARY OR LINEAR APPLICATIONS
Michael Helbig, Bopfingen, and Heinrich Staudt, Aalen, both of Fed. Rep. of Germany, assignors to Franke & Heydrich KG, Aalen, Fed. Rep. of Germany
Filed Oct. 9, 1987, Ser. No. 107,692
Int. Cl.[4] F16C 29/04, 33/61
U.S. Cl. 384—49 7 Claims



1. A rolling bearing, comprising:
a pair of juxtaposed relatively displaceable bearing members relatively shiftable in a guide direction, separated by a bearing gap extending in said direction, and formed with respective mutually registering bearing grooves;
a pair of race wires received in each of said grooves;
an array of rolling bodies uniformly spaced in said direction rolling upon riding surfaces of said race wires; and
a respective lining strip individual to each of said wires interposed between the respective wire and the respective member, each of said lining strips:
having an inner side turned toward the respective race wire and form-identical to the respective race wire and shaped to form a bed in surface contact with the respective race wire all along the length thereof,
having an outer side forming respective contact surfaces lying in form-fitting engagement with countersurfaces on walls of the respective groove bracing the respective lining strip in two mutually perpendicular directions both of which are perpendicular to said guide direction and which are respectively transverse to and along said bearing gap, and
each of said lining strips in at least one of said grooves being spaced from the other lining strip in said one of said grooves with a selectively variable spacing therebetween.

4,797,009
DYNAMIC PRESSURE AIR BEARING
Mutsuki Yamazaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 28, 1987, Ser. No. 101,996
Claims priority, application Japan, Sep. 30, 1986, 61-231861
Int. Cl.[4] F16C 32/06
U.S. Cl. 384—100 17 Claims



1. A dynamic pressure air bearing comprising a sleeve member, and a shaft member arranged coaxially in the sleeve member, in which air is introduced through a clearance between the

sleeve member and the shaft member by the rotation of the sleeve member, dynamic pressure of the introduced air acts on a gap in the inner surface of the sleeve member opposite a gap in the surface of the shaft member, and at least one of the inner surface of the sleeve member and the surface of the shaft member is covered with ceramics, the ceramics covering at least one of the inner surface of the sleeve member and the surface of the shaft member comprises at least one element selected from the group consisting of SiN, SiCN, SiO, TiN, TiC, BN, BC, BCN, Al_2O_3, WC, and diamond.

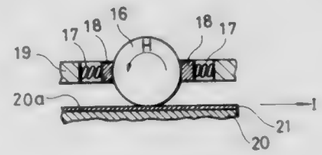
5. A dynamic pressure air bearing comprising a sleeve member, and a shaft member arranged coaxially in the sleeve member, in which said shaft member has an upper dynamic pressure portion and a lower dynamic pressure portion each having a plurality of grooves formed obliquely with respect to the axial direction of the shaft member on the surface of the shaft member, the sleeve member has upper and lower sleeve portions facing the dynamic pressure portions, air is introduced into a clearance between the dynamic pressure portions and the sleeve portions through the grooves, by the rotation of the sleeve member, dynamic pressure of the flowing air acts on the surface of the dynamic pressure portions and the inner surfaces of the sleeve portions, the axial length of the dynamic pressure portions is longer than that of the sleeve portions, at least one of the inner surface of the sleeve member and the surface of the shaft member is covered with ceramics, and said clearance is defined by a gap in the outer shaft surface opposite a gap in the inner sleeve surface, said gaps separating the upper and lower portions.

4,797,010
REHEATABLE, RESEALABLE PACKAGE FOR FRIED FOOD
Urban J. Coelho, Bedminster, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.
Filed Sep. 22, 1987, Ser. No. 101,001
Int. Cl.[4] B65B 25/06
U.S. Cl. 383—109 18 Claims



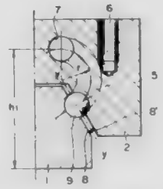
1. A reheatable, resealable package for fried food, comprising:
(a) an inner grease-absorbent paper layer, wherein said layer is in the shape of a bag having a closed end, an opened end and edges about the opened end;
(b) an outer grease-resistant layer, wherein said layer is in the shape of a bag having a closed end, an opened end and an edge about the opened end, wherein said outer layer encloses said inner layer, wherein said layers are connected at the edges about the opened ends and at the closed ends, whereby a layer of insulating air located between the connected edges and the connected closed ends forms between the layers.

4,797,011
SOLID LUBRICANT BEARING
Hiroshi Saeki, Ibaraki, and Teruo Maruyama, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 11, 1988, Ser. No. 141,741
Claims priority, application Japan, Jan. 12, 1987, 62-4358
Int. Cl.[4] F16C 29/04, 33/46
U.S. Cl. 384—13 9 Claims



1. A solid lubricant bearing comprising:
plural rollers disposed in a line or in a circle,
plural solid lubrication elements contacting rolling faces of said rollers,
plural elastic elements respectively for pressing said plural solid lubrication elements on respective rollers,
at least one guiding member having at least one roller receiving face on which said rollers roll, and
at least one solid lubricant film formed on said roller receiving face.

4,797,012
LINEAR MOTION ROLLING GUIDE UNIT
Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan
Filed Mar. 8, 1988, Ser. No. 165,501
Claims priority, application Japan, Nov. 12, 1987, 62-284200
Int. Cl.[4] F16C 29/06
U.S. Cl. 384—45 3 Claims



1. A compact size linear motion rolling guide unit comprising a track rail member having a generally square cross section, a slidable casing having an inverted U-shaped cross section and straddling said track rail member via a plurality of balls in freely movable relation therewith, side panels fixed onto the longitudinally opposing ends, respectively, of said slidable casing, said track rail member having, on the side surface, a pair of guide grooves for balls, each extending in parallel with the longitudinal axis of said track rail member, said slidable casing having, on the inner surface, a pair of guide grooves for balls in mating relation with a pair of said track rail side guide grooves so that one of the track rail side guide grooves and the mating casing side guide grooves form a load bearing passage for balls between the track rail member and the slidable casing, said slidable casing comprising a pair of ball return passages therewithin, each extending in parallel with said load bearing casing side guide grooves, each of said side panels comprising a pair of direction changing passages each adapted to connect one end of the casing side guide groove with the adjacent end of the ball return passage so that together with the direction changing passage of the opposite end side panel, an endless ball

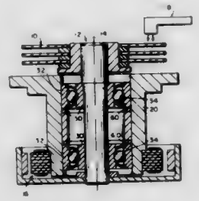
circulating path is formed, wherein in each of said side panels, each of said direction changing passage is so arranged, as seen on a cross section of the unit including a side panel and vertical to the travelling direction of the slidable casing, as to form an arcuate section of a circle having a center that is positioned, in the side panel, on a line passing through the center of a ball present in said load bearing passage and extending in parallel with the related inclined inner side surface of the slidable casing, while each of said ball return passages is formed, within the slidable casing, on the level corresponding to the uppermost part of said direction changing passage as seen in the same cross section mentioned above.

4,797,013

COMPACT FERROFLUIDIC ELECTRICALLY CONDUCTING SEALED BEARING

Kuldip Raj, Merrimack; Hanumaiah L. Gowda, Hudson, and Ronald Moskowitz, Hollis, all of N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed Feb. 9, 1987, Ser. No. 12,193
Int. Cl.[4] F16C *33/82*
U.S. Cl. 384—462 **9 Claims**



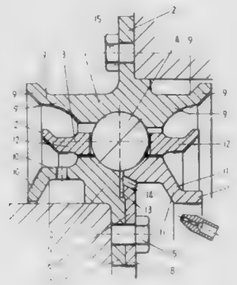
1. A sealed rolling element bearing for supporting a shaft of magnetic or nonmagnetic material and for permitting rotation of the shaft relative to a housing comprising:
an inner race attachable to the shaft;
an outer race concentric with said inner race and attachable to the housing;
a plurality of rolling elements located in an annular region between said inner race and said outer race;
a pair of shields extending inwardly from said outer race toward said inner race on opposite sides of said rolling elements so as to substantially enclose said annular region, said shields having a closely-spaced, noncontacting relationship with said inner race thereby defining a gap between each of said shields and said inner race,
said inner race, said outer race, said rolling elements and said shields being of magnetically permeable material;
magnetic means for producing a magnetic field in said gaps and in regions where said rolling elements contact said inner race and said outer race; and
a ferrofluid retained by said magnetic field in the gaps between said shields and said inner race and in the regions where said rolling elements contact said races, said ferrofluid permitting relative rotary movement of said housing and said shaft while sealing opposite ends of said bearing and lubricating said rolling elements; and wherein at least a portion of each of said shields is angled toward said rolling elements and said inner and outer races have equal axial dimensions.

4,797,014

HIGH-SPEED ANTI-FRICTION BEARING PARTICULARLY FOR AIRPLANE POWER PLANTS

Patrick Nicolich, Dittlebrunn, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Jan. 19, 1988, Ser. No. 145,519
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1987, 8711624[U]
Int. Cl.[4] F16C *19/06, 33/66, 33/60, 33/46*
U.S. Cl. 384—490 **20 Claims**



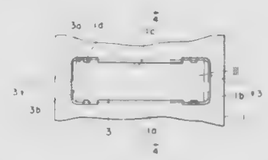
1. A high-speed anti-friction bearing comprising an outer ring, an inner ring inward of and spaced from the outer ring, and the rings defining races for rolling elements moving between the rings; rolling elements supported in the races of the rings;
at at least one axial side of the bearing, axially outward of the rolling elements at that one axial side, the inner ring and the outer ring are both provided with respective axial extensions projecting axially outward for strengthening the rings against deformation; each axial extension comprises a generally cylindrically shaped portion and connected thereto an annular portion which is inclined at an angle from the cylindrical portion for generally defining a frustoconical portion.

4,797,015

ROLLER CAGE ASSEMBLY FOR USE IN A BEARING

Kengo Hidano, Fujisawa, and Susumu Amano, Ayase, both of Japan, assignors to Nippon Thomson Co., Ltd., Japan

Continuation of Ser. No. 863,642, May 15, 1986, abandoned. This application Nov. 20, 1987, Ser. No. 124,331
Claims priority, application Japan, May 20, 1985, 60-106124
Int. Cl.[4] F16C *33/46*
U.S. Cl. 384—580 **8 Claims**



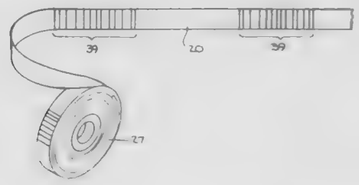
1. A roller-cage assembly for use in a bearing, comprising:
a cylindrical cage including a plurality of axial sections arranged circumferentially and spaced apart from one another and a pair of end sections each connected to one end of each of said plurality of axial sections, each of said axial sections providing a side guide surface at each side thereof and each of said pair of end sections providing an end guide surface at an inner side thereof, whereby openings are defined between the side guide surfaces of any two adjacent axial sections and said pair of end guide surfaces, each of said axial sections having a central inner portion of an inner surface thereof removed, thereby making said central portion locally thinner than the remaining portion of such of said axial sections in the radial direction of said cage and dividing said side guide surface at each side substantially into a pair of side guide surface portions spaced apart from each other and each located adjacent to a corresponding one of said pair of end sections;
at least one outer projection provided at an outermost location of said guide surface;
at least one inner projection provided at an innermost location of said side guide surface;
a plurality of rollers, each of which is received in a corresponding one of said openings; and
whereby the distance between the side guide surfaces of each of the openings is larger than the diameter of a roller, the distance between the end guide surfaces of each of the openings is larger than the length of a roller, and distances between tip ends of the oppositely disposed outer projections and between oppositely disposed inner projections of an opening are smaller than the diameter of a roller.

4,797,016

RIBBON INDICIA SYSTEM

Roy J. Lahr, Los Angeles, Calif., assignor to Creative Associates, Los Angeles, Calif.

Continuation of Ser. No. 797,180, Nov. 8, 1985, abandoned, which is a continuation of Ser. No. 570,734, Jan. 16, 1989, abandoned. This application Feb. 20, 1987, Ser. No. 18,802
Int. Cl.[4] B41J *31/00*
U.S. Cl. 400—237 **4 Claims**



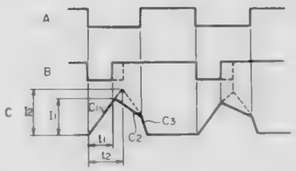
1. A print ribbon having a start end and a finish end and a longitudinal length representing ribbon footage therebetween comprising:
a flexible substrate having a first side and a second side;
transferable ink deposited on the first side of said flexible substrate;
a plurality of machine-readable marks deposited on the second side of said substrate distributed over the length of said ribbon from said start end to said finish end, each of said plurality of marks being located at a preselected position along the length of said ribbon at a preselected distance from said start end of said ribbon and being spaced from each adjacent mark at a preselected footage interval along the length of said ribbon;
each of said marks being machine-readable information indicating the distance of each said mark from the start end of said ribbon.

4,797,017

WIRE DOT MATRIX PRINTER CAPABLE OF PRINTING LETTERS ON A PLURALITY OF SUPERPOSED SHEETS OF PAPER

Satoshi Okouchi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 24, 1986, Ser. No. 910,968
Claims priority, application Japan, Sep. 27, 1985, 60-213784
Int. Cl.[4] B41J *11/20, 9/38*
U.S. Cl. 400—59 **1 Claim**



1. A wire dot matrix printer for printing letters on a plurality of superposed sheets of paper, comprising:
a printing head including a plurality of solenoids and a plurality of printing wires which are each displaced by a corresponding one of the solenoids;
a platen roller opposed to the printing head;
distance adjusting means for increasing and decreasing the relative distance between the front ends of the printing wires in the printing head and the platen roller, the distance adjusting means including a control lever for adjusting a relative distance between the front ends of the printing wires of the printing head and the platen roller; and
control means cooperable with the distance adjusting means for controlling the drive current to the respective solenoids to continuously adjust the drive current of the solenoids in accordance with the position of the control lever, the control means comprising:
a one-shot monostable multivibrator generating variable-width printing control signals to continuously adjust the drive current of the solenoids, and
a capacitance/resistance circuit including a variable resistor coupled to the one-shot monostable multivibrator and to the control lever such that adjustment of the control lever is operable to adjust the resistance value of the variable resistor to change the pulse width of the printing control signals and adjust the drive current of the solenoids in accordance with the position of the control lever.

4,797,018

RIBBON CASSETTE AND METHOD FOR OPERATING AN ELECTRONICALLY CONTROLLED TYPEWRITER

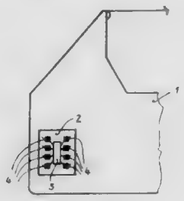
Norbert Hofmann, Nuremberg, and Rudolf Spotka, Fuerth, both of Fed. Rep. of Germany, assignors to TA Triumph-Adler Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Oct. 2, 1987, Ser. No. 105,893
Claims priority, application Fed. Rep. of Germany, May 27, 1987, 3718013
Int. Cl.[4] B41J *41/00, 35/30*
U.S. Cl. 400—249 **8 Claims**

1. A ribbon cassette for an electronically controlled typewriter said ribbon cassette comprising an electronic memory equipped with external electronic contacts, said memory being

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capable of storing a changeable value corresponding to a respective amount of ribbon left for use in the cassette, and



which stored value can be changed as a result of electrical signals received via said contacts.

4,797,019

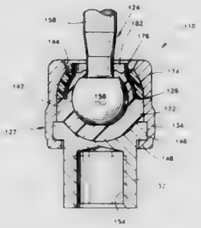
BEARING FOR A JOINT

Huey E. Wood, Jr., St. Clair Shores, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Division of Ser. No. 886,232, Jul. 16, 1986, Pat. No. 4,725,159. This application Aug. 28, 1987, Ser. No. 90,784

Int. Cl.⁴ F16C *11/00*

U.S. Cl. 403—133 **7 Claims**



1. A joint comprising:

a stud including a head portion and a shank portion extending from said head portion;

a socket having a surface defining a chamber in which said head portion is disposed and an opening through which said shank portion extends; and

means for resisting relative pivotal movement of said ball stud and said socket with a first resistance and then a second resistance, said second resistance being greater than said first resistance, said means including a bearing disposed between said stud and said socket comprising:

a first layer of an elastomeric material for exerting said first resistance upon relative pivotal movement of said stud and said socket;

a second layer of another elastomeric material for exerting said second resistance upon a predetermined amount of relative pivotal movement of said stud and said socket; and

a retainer disposed between sid first layer and said second layer, said retainer having a portion engageable by said shank portion upon the predetermined amount of relative pivotal movement of said ball stud and said socket for transmitting movement to said second layer.

4,797,020

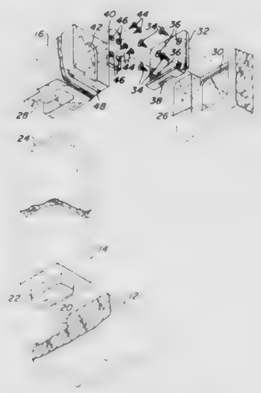
SELF-LOCKING MORTISE AND TENON JOINT

Robert H. Winston, Quakertown, Pa., assignor to Creative Structures, Inc., Quakertown, Pa.

Filed Dec. 7, 1987, Ser. No. 129,667

Int. Cl.⁴ B25G *3/00*

U.S. Cl. 403—231 **18 Claims**



1. A mortise and tenon joint comprised of two structural members, said first member being positioned at right angles to said second member and having a first mortise cut into the lateral surface which is juxtaposed to said second member with a pocket mortise cut into the rear wall of the first mortise to receive a joint securing plate within the pocket mortise, said joint securing plate having an angled section extending outward along the bottom shoulder of the first mortise, said second member having a mortise cut into the end face facing said first member to receive a tongue plate which, when positioned within the mortise in the end face of the second member, extends beyond the outer dimensions of the end face in a downward direction a distance sufficient to mate and lock with a slot in the outward extending angled section of the joint securing plate in the first member by insertion therein, thereby creating a self-locking joint between the two structural members.

4,797,021

QUICK RELEASE JOINTS AND STRUCTURES INCORPORATING SAME

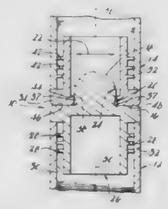
John W. Stamper, The Mounds, 19 Westwood Park Road, Peterborough PE3 6JL, Cambridgeshire, United Kingdom

Filed Mar. 23, 1987, Ser. No. 29,273

Claims priority, application United Kingdom, Apr. 1, 1986, 8607951

Int. Cl.⁴ B25G *3/00*; **F16B** *7/00*

U.S. Cl. 403—407.1 **3 Claims**



1. A structural module such as a shelf or table unit adapted to be connected to a complementary module in directly superimposed and stacked relationship to form a structually integral assembled structure, said module comprising a frame having at least three projecting legs, each of which legs has two opposite ends, each of said legs further having a ball joint means on one of its ends and a socket joint means on the other of its ends, said ball joint means including a first base member and a ball element carried on said first base member, and said socket joint means comprising a second base member having a recess defining a socket element adapted to receive and hold a ball element such as that of said ball joint means, said socket element being sized and shaped to receive a ball element such as that of said ball joint means and to permit such ball element to be inserted in said socket element by applying compression between such joint elements so as to cause resilient deformation of at least one of said joint elements during said insertion followed by retention of such ball element, and said socket element also permitting subsequent withdrawal of such ball element by applying tension between the joint elements, said first and second base members each being formed with a shoulder having an abutment surface, said shoulders engaging the terminal ends of said legs and each of said abutment surfaces being positioned for face-to-face contact with the abutment surface of a complementary joint means on a complementary module when it is part of an assembled joint, said abutment surfaces each being substantially planar and facing generally lengthwise of the axis of insertion of a ball element into a socket element, each of said ball elements projecting outwardly from its associated abutment surface and each of said socket elements being located closely adjacent to its associated abutment surface, the arrangement of said abutment surfaces being such that upon insertion of a ball element into a socket element and retention of the ball element thereby the associated abutment surfaces make face-to-face contact with one another thereby defining the retained position of the ball element relative to the socket element and inhibiting pivotal movement of the involved elements in said retained position, said ball elements on said legs being exposed to view for engagement and connection to complementary socket elements on the opposite ends of the legs of another complementary module, whereby said module can be used individually or assembled with one or more complementary modules to form a structurally integral assembled structure without any modification of its structure.

4,797,022

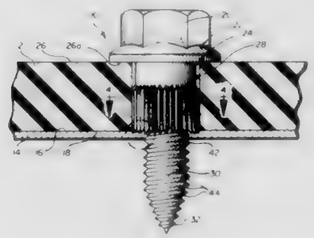
FASTENER AND FABRICATION METHOD THEREFOR

Edward G. Crigger, Rural Retreat, Va., assignor to Textron Inc., Providence, R.I.

Filed Jan. 9, 1987, Ser. No. 2,304

Int. Cl.⁴ F16B *39/282*

U.S. Cl. 403—408.1 **11 Claims**



1. A joint structure comprising in combination: a composite of at least two sheets of material having respective generally planar surfaces in secured engagement, said sheet materials comprising; a first, generally thinner sheet metal or the like, and a second, relatively thicker sheet material; and a fastener securing the composite, said fastener comprising; a threaded shank securely engaged within an aperture formed in said first sheet; a head engaging an exposed surface of said second sheet opposing the engaged surfaces of said first and second sheets; a medial collar formed between said head and said shank, and positioned within a passageway through said second sheet, said collar comprising; a generally cylindrical radially exterior surface; a shoulder formed at an end of the collar joining an end of said shank, said shoulder having an axially exposed, annular face extending radially beyond the joining end of said shank, and a series of teeth extending axially from said annular face and biting into the engaged surface of said first sheet, for increasing the strength of the engagement of the aperture by said shank.

4,797,023

MINE ROOF SUPPORTS

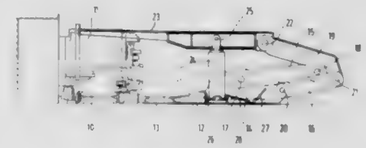
Roy Park, Wigan, England, assignor to Gullick Dobson Limited, Lancashire, England

Filed May 20, 1987, Ser. No. 51,784

Claims priority, application United Kingdom, Jun. 4, 1986, 8613514

Int. Cl.⁴ E21D *15/44*

U.S. Cl. 405—291 **6 Claims**



1. A mine roof support, comprising:

a mine floor engaging base having a front, a rear and a longitudinal axis extending from said front to said rear;

a mine roof engaging canopy;

linkage means for pivotally connecting said base and said canopy;

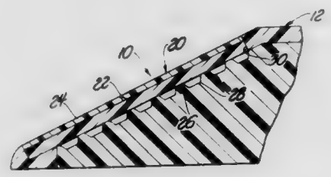
hydraulic jack means for urging said canopy upwardly into load bearing contact with a mine roof, said hydraulic jack means having upper and lower ends;

upper pivotal connection means for permanently pivotally connecting said upper end of said hydraulic jack means to said canopy;

first and second jack receiving means disposed in said base for receiving said lower end of said hydraulic jack means, said second jack receiving means being non-vertically aligned with said upper pivotal connection, said first jack receiving means being spaced from said second jack receiving means in the direction of said longitudinal axis and spaced from said upper pivotal connection by a distance which is shorter than the distance between said upper pivotal connection and said second jack receiving means, said hydraulic jack means being pivotally movable from a first mine roof load bearing position in which said second end is received by said first jack receiving means and said linkage means is in a substantially open configuration to a second transportation position in which said second end is received by said second jack receiving means and said linkage means is in a substantially closed configuration, the space occupied by said mine roof support in said second position being reduced substantially with respect to the space occupied by said mine roof support in said first position, whereby transportation of said support is facilitated.

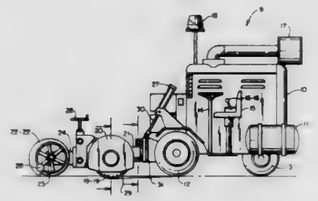
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4,797,024
ABRASIVE RESISTANT PAVEMENT MARKER
Douglas S. Forrer, Heath, Ohio, assignor to Pac-Tec, Inc., Newark, Ohio
Division of Ser. No. 912,521, Sep. 29, 1986, Pat. No. 4,753,548.
This application Feb. 2, 1988, Ser. No. 151,464
Int. Cl.[4] E01F 9/06
U.S. Cl. 404—16 7 Claims



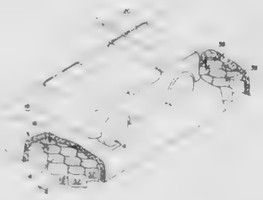
1. A method of making a pavement marker (10) including the step of: forming a lens (20) having a front face (22); adhering and integrally incorporating a photo polymerizable acrylic composition to the lens; and irradiating said coating with ultraviolet or electron beam irradiation to cure said acrylic composition to an abrasion resistant protective hardcoat capable of abrasion resistance while simultaneously retaining reflectivity of the underlying lens.

4,797,025
DEVICE FOR CUTTING A RECEPTACLE IN PAVEMENT TO RECEIVE A REFLECTOR
Ralph Kennedy, Pataskala, Ohio, assignors to Ampsco Corporation, Columbus, Ohio
Filed Mar. 14, 1988, Ser. No. 168,086
Int. Cl.[4] E01C 23/09
U.S. Cl. 404—90 6 Claims



1. A device for cutting a slot in the surface of pavement, said slot being adapted to receive a headlight reflector, comprising
support means positioned on said pavement,
means associated with said support means for moving said support means from place to place,
a rotary cutting means depending from said support means and of a width adapted to cut a slot in the surface of said pavement of a size adapted to receive a headlight reflector,
means on said support means for providing power to operate said rotary cutting means,
means on said support means for raising and lowering said rotary cutting means,
said rotary cutting means being supported on an axis capable of being tilted,
two cams adapted to rotate in engagement with said pavement as said support means is moved, said cams being spaced from each other and positioned on a common shaft and attached to said axis on which said rotary cutting means are supported so that said rotary cutting means performs its cutting function while at right angles to the tangent to that portion of the surface of pavement in which said slot is to be cut and so that the length and longitudinal shape of said slot is determined by said cams.

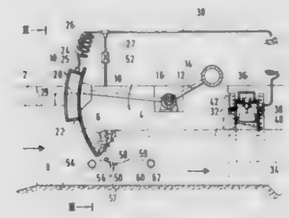
4,797,026
EXPANDABLE SAND-GRID FOR STABILIZING AN UNDERSURFACE
Steve L. Webster, Vicksburg, Miss., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation of Ser. No. 608,629, May 9, 1984, abandoned. This application Jul. 24, 1986, Ser. No. 889,025
Int. Cl.[4] E01C 5/20
U.S. Cl. 404—28 59 Claims



1. A structure for providing a trafficable surface comprising:
(a) a grid comprising a plurality of interconnected, flexible upstanding strips of generally constant equal height and generally equal length, each said strip having a top edge and a bottom edge, said bottom edges of said grid strips adapted for only resting on an underlayer whereby said top edges of said grid strip and said bottom edges of said grid strips assume the contour of said underlayer;
(b) said grid having a first collapsed orientation whereby said strips are generally linearly aligned and substantially contiguous and a second expanded orientation whereby said strips are of a generally longitudinal sinusoidal configuration and form a plurality of open ended cells; and
(c) each of said cells being substantially filled with a compacted, granular material, said compacted, granular material providing said trafficable surface.

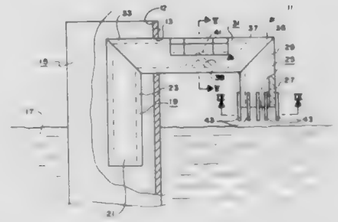
33. A method of stabilizing an underlayer and providing a support surface, comprising the steps
(a) providing a first expandable grid comprised of a plurality of interconnected flexible strips, said grid having a first collapsed orientation whereby said strips are generally linearly aligned and contiguous and a second expanded orientation whereby said strips provide a number of open ended cells;
(b) supporting said grid in said collapsed orientation only on said underlayer;
(c) expanding said grid to said expanded orientation for thereby providing said number of open ended cells whereby said grid assumes the contour of said underlayer;
(d) substantially filling each of said cells with a granular material; and
(e) compacting said granular material to form compacted granular material said compacted, granular material providing said support surface.

4,797,027
AUTOMATIC LEVEL-REGULATING SLUICE
Gilles Combes, Grenoble, and Germain Deiage, Montbonnot St Martin, both of France, assignors to Alsthom, Paris, France
Filed Jun. 15, 1987, Ser. No. 61,367
Claims priority, application France, Jun. 13, 1986, 86 08560
Int. Cl.[4] F02B 7/20
U.S. Cl. 405—92 7 Claims



1. An automatic level-regulating sluice, comprising:
a plate (6) located in a throat (8) for separating an upstream reach (2) from a downstream reach (4), one of said reaches being a controlled reach whose level is to be maintained, said plate being movable by a motion including a vertical component for closing said throat to a greater or lesser extent to pass a greater or lesser water flowrate, and thereby counteract possible variations in level;
a moving driving caisson (18) whose motion includes a vertical component linked to the vertical component of the plate motion, said caisson having a variable depth thereof immersed in the water in order to receive a variable flotation thrust therefrom;
said caisson having a bottom opening (22) for enabling water (20) to enter into said caisson and occupy a variable depth bottom portion thereof in order to increase the total weight acting on said caisson so that the resulting vertical force of said thrust and said weight may optionally cause said plate to move;
said caisson also having top opening (24) for enabling air to leave the remaining top portion of the caisson and/or to enter said top portion;
said sluice further including a source of low pressure air (50) for setting up a primary pressure reduction relative to the atmosphere;
an air circuit itself including a low pressure feed branch (27) and/or a low pressure exhaust branch (30), with at least one of said branches being controllable in such a manner as to put said top portion (24) into communication with said source and with the atmosphere, in order respectively to cause water to penetrate into said caisson and to cause it to depart therefrom; and
a level sensor (40) sensitive to the difference in level between said controlled reach (4) and a reference level, said sensor controlling said controllable branch (30, 32, 36) in order to apply an effective reduced air pressure to said driving caisson (6), said effective reduced air pressure being a controllable fraction of said low pressure provided by said source, said sensor causing said fraction to vary in a manner which is controlled by the level of said reach and of said reference level;
said sluice being characterized by the fact that said low pressure source (50) is a hydraulic suction Venturi, said Venturi comprising a water inlet (54) fed from said upstream reach (2), a converging portion (56), an air suction inlet (58), a diverging portion (60), and a water and air outlet (62) opening out towards said downstream reach (4) in order to cause said primary reduction in air pressure to appear at said suction inlet.

4,797,028
BEAVER CONTROL SIPHON APPARATUS
Robert E. Jamieson, Rte. 4, Box 151, Ripley, Miss. 38663
Filed Jun. 29, 1988, Ser. No. 212,904
Int. Cl.[4] E02B 8/06
U.S. Cl. 405—108 8 Claims



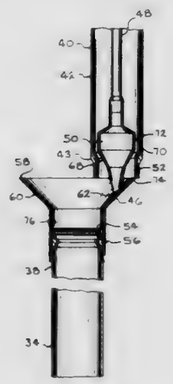
1. A siphon apparatus for hindering beavers from blocking the inlet means of a flood control riser in a water reservoir, said siphon apparatus comprising:
(a) first conduit means for being positioned within said riser, said first conduit means having a lower end and an upper end;
(b) second conduit means for being positioned outside said riser, said second conduit means having a lower end and an upper end, said lower end of said second conduit means being at a higher horizontal plane than said lower end of said first conduit means;
(c) horizontal third conduit means for joining said upper ends of said first and second conduit means and for allowing water to be siphoned from said lower end of said second conduit means to said lower end of said first conduit means;
(d) delay means for preventing the flow of water through said third conduit means until the level of water in said reservoir has risen to a level which allows substantially maximum flow through said siphon apparatus.

4,797,029
REMOTELY INSTALLING A TUBULAR STRING
William S. Cowan, Southside Place, and Edward M. Galle, Jr., Houston, both of Tex., assignors to National Oilwell, Houston, Tex.
Filed Nov. 24, 1986, Ser. No. 934,285
Int. Cl.[4] E21B 7/128; F16L 1/04
U.S. Cl. 405—170 5 Claims

1. A method of remotely connecting a tubular string between a surface facility and a subsea installation wherein the vertical axis of the surface facility is misaligned relative to the vertical axis of the subsea installation, the surface facility including a plurality of spaced underwater guides rings along its vertical axis, comprising the steps of:
lowering a first tubular section from the surface facility to the subsea installation,
connecting the lower end of said first section to the subsea installation,
said first section having a length so that its upper end is positioned below the lowermost of the spaced guide rings,
lowering a second tubular section from the surface facility until the lower end of said second section is adjacent to said upper end of said first section,
one of the adjacent ends including guide means,
continue lowering said second section so that said guide

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means laterally displaces said adjacent ends into vertical alignment,



connecting said lower end of said second section to said upper end of said first section.

4,797,030

PRECAST CONCRETE CULVERT SYSTEM

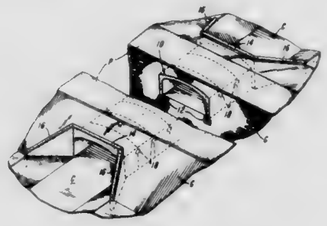
William D. Lockwood, Dayton, Ohio, assignor to Con/Span Culvert Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 853,206, Apr. 17, 1986, Pat. No. 4,687,371, which is a continuation of Ser. No. 566,438, Dec. 28, 1983, Pat. No. 4,595,314. This application Aug. 17, 1987, Ser. No. 86,064

The portion of the term of this patent subsequent to Jun. 17, 2003, has been disclaimed.

Int. Cl.[4] E01F *5/00*

U.S. Cl. 405—125 8 Claims



1. A concrete culvert assembly comprising a set of parallel spaced elongated footers, a plurality of precast concrete culvert sections mounted on said footers in longitudinal alignment, each of said culvert sections having an open bottom and including parallel spaced vertical side walls having bottom surfaces resting on said footers, an arcuate top wall integrally connected to each of said side walls of each said section, said side walls of each said section having opposing inner surfaces defining a span greater than the length of said side and top walls, said arcuate top wall of each section having a generally uniform thickness with a curved inner surface having a radius of curvature at least twice the rise defined between the top center of said curved inner surface and said bottom surfaces of said side walls, said radius of curvature being at least twenty feet and said rise being at least five feet, each of said side walls of each said section having a generally uniform thickness and a generally flat vertical outer surface with a vertical height at least sixty percent of said rise and less than fifty percent of said radius of curvature, said concrete top wall of each said section having a curved outer surface forming a relatively sharp corner with said outer surface of each said side wall, reinforcing members embedded in said concrete of each said section and extending generally parallel to said outer surfaces of said top and side walls, and said inner surface of each said side wall and said inner surface of said top wall of each said section being connected by a surface cooperating with said relatively sharp corner to define a corner thickness substantially greater than the uniform thickness of said side and top walls.

4,797,031

CAISSON SINKING METHOD

Hakumi Hagimoto; Yutaka Kashima; Norio Kondo, and Masami Inoue, all of Tokyo, Japan, assignors to Daiho Construction Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1987, Ser. No. 28,540

Claims priority, application Japan, Jan. 6, 1986, 61-132060

Int. Cl.[4] E21D *1/08*

U.S. Cl. 405—133 1 Claim



1. A method of sinking a caisson underground, said method comprising the steps of:

excavating in ground where said caisson is to be sunk a support recess having at least the same shape as the caisson in plan view;

forming said support recess as a ditch made continuously along said shape and down to a caisson sinking position;

forming said support recess to have substantially the same width as a wall thickness of said caisson;

forming said support ditch by sequentially forming trenches reaching down to said caisson sinking position by a method including the steps of:

excavating a first one of said trenches while pouring a high concentration muddy water into excavated part of the trench;

installing a first interlocking pipe at one side end of said trench excavated while casting said bearing material into a remaining part of the trench;

excavating a next trench adjacent to said first trench with said interlocking pipe interposed between them while pouring said muddy water into said next trench being excavated;

installing a second interlocking pipe at one end of said next one of the trenches excavated;

casting said bearing material into a remaining part of the next excavated trench; and

extracting said first interlocking pipe between the first and next ones of the trenches;

casting into said support recess up to the top of the support recess, a bearing material that can carry the caisson but easily collapse by itself;

placing said caisson on said bearing material cast in the support recess as aligned with the case material; and

sequentially removing the bearing material from the support recess to sink the caisson substantially down to the bottom zone of the support recess.

4,797,032

SEALING PROFILE

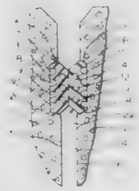
Siegfried Glang, Hamburg, Fed. Rep. of Germany, assignor to Phoenix Aktiengeiselischaft, Harburg, Fed. Rep. of Germany

Continuation of Ser. No. 912,313, Sep. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 865,690, May 22, 1986, abandoned. This application Jan. 21, 1988, Ser. No. 147,114

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1985, 3526063

Int. Cl.[4] E21D *11/38;* **E04B** *1/68;* **E16J** *15/02*

U.S. Cl. 405—152 10 Claims



1. A sealing profile for sealing segments of a tunnel tube having an edge recess therearound, comprising:

a base section having a substantially planar base surface including from 4 to 6 substantially uniform, laterally and equally spaced-apart parallel grooves, extending in a direction parallel to the longitudinal axis of said profile, and lateral sides extending from said base surface divergently inclined from one another at an angle of from 10 to 20 degrees with respect to a plane perpendicular to said base surface; and

a top section, integral with said base section, having a number of laterally and equally spaced apart parallel ducts equal to one less than the number of said grooves, said ducts extending in a direction parallel to the longitudinal axis of sia profile, said ducts being at least partially laterally displaced with respect to said grooves, the wall thicknesses of the profile material between any of said grooves and ducts all being substantially equal.

4,797,033

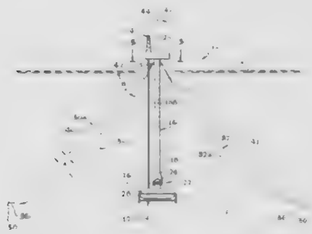
ANCHOR LINE-STABILIZED SYSTEM

Jack Pollack, Reseda, Calif., assignor to Amtel, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 137,840, Apr. 7, 1980, abandoned. This application Dec. 15, 1980, Ser. No. 216,151

Int. Cl.[4] E02B *17/00*

U.S. Cl. 405—202 4 Claims



1. An offshore system comprising:

a tower having a lower end lying nearer the sea floor than the sea surface, said tower having an upper end portion lying at a height at least near the sea surface, said tower being tiltable away from a vertical orientation;

a plurality of chain devices having upper ends extending at downward inclines from the upper end portion of the tower and lower ends anchored to the sea floor at locations that are spaced about the lower end of the tower and that are spaced from the lower end of the tower by over 50% of the height of the sea above the sea floor;

means for sensing tilting of said tower;

which means on said tower and coupled to the upper ends of said chain means for selectively pulling on said chain means; and

means responsive to said sensing means for operating said winch means to pull on at least one chain means which lies largely opposite the direction of tower tilting;

each of said chain devices extending in a loose catenary curve wherein the maximum deviation (A) of the chain device from an imaginary straight line extending between the upper end of the chain and the anchor location of the lower end of the chain, is more than 5% of the length of the chain device.

4,797,034

OSCILLATING MARINE PLATFORM WITH A RIGID BASE

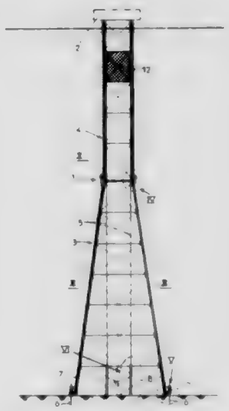
Loic M. J. Dangay des Deserts, Paris; Francois G. Sedillot, Vellzy, and Dominique Michel, Paris, all of France, assignors to Doris Engineering, France

Filed Apr. 6, 1987, Ser. No. 34,944

Claims priority, application France, Oct. 24, 1986, 86 14784

Int. Cl.[4] E02B *17/02*

U.S. Cl. 405—202 13 Claims



1. An unguyed, free standing, segmented marine platform, for use in deep waters, comprising:

a fully submerged, fixed structure, having a polygonal cross-section and a plurality of substantially vertical legs, the fixed structure being anchored to the sea floor;

a substantially submerged, oscillating structure, positioned vertically above said fixed structure and having a polygonal cross-section and a plurality of substantially vertical legs which are in general vertical alignment with the legs of the fixed structure;

a connection means, for connecting the oscillating structure to the fixed structure, which is comprised of a plurality of flexible piles each having two ends, and of a plurality of pairs of cross structural members,

the flexible piles being arranged on the periphery of the oscillating structure, the one set of ends of the respective piles being fastened to the oscillating structure and the opposing ends of the piles being fastened to the fixed structure,

and the pairs of crossed structural members interconnecting legs of the oscillating structure to non-aligned legs of the

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fixed structure, and located in a zone from 30% to 60% of the water depth from water level; and

a submerged floater, positioned on the oscillating structure, having its upper end located in a zone between 1/30 and 1/10 of the water depth from water level.

4,797,035

METHOD OF INSTALLING A TEMPLATE ON THE SEAFLOOR

Andrew F. Hunter, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Jun. 5, 1987, Ser. No. 58,488
Int. Cl.[4] E02B *17/02*
U.S. Cl. 405—205 **5 Claims**



1. A method for placing a template on the sea floor beneath a floating vessel comprising:

a. securing at least one pendant buoy to said template;

b. securing a tow cable to a first end of said template and a restraining cable to a second end of said template;

c. securing at least one descent sling to a plurality of corners of said template;

d. ballasting said template, as necessary, such that said template is suspended beneath said pendant buoy to avoid interference with said floating vessel;

e. reeling in said tow cable and unreeling said restraining cable to move said template to a position generally centered beneath said floating vessel;

f. connecting an extendable support means to said at least one descent sling;

g. disconnecting said tow cable, said restraining cable and said at least one pendant buoy;

h. lowering said template to the ocean floor using said extendable support means.

4,797,036

MARINE TETHER ANCHORING DEVICE

Roger J. Collins, Botley, and James R. T. Hodgson, Eastleigh, both of United Kingdom, assignors to Brown & Root Vickers Technology, London, England

Filed Dec. 28, 1987, Ser. No. 137,931
Claims priority, application United Kingdom, Jan. 12, 1987, 8700579
Int. Cl.[4] E02D *5/74*; B63B *21/50*
U.S. Cl. 105—224 **9 Claims**

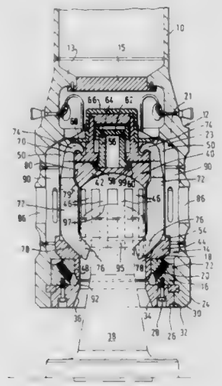
1. A marine tether anchoring device comprising in combination;

a tubular anchor body for eventual attachment at its upper end below a marine tether;

a spigot for eventual fixing to the sea bed so as to be upstanding therefrom and for reception in the anchor body to establish the anchor;

latching means within the anchor body for establishing a releaseable connection to the spigot; and

flexjoint means supported within the tubular body for transmitting tensile load in the anchor body as an inwardly and upwardly directed compressive load through the latching means to the spigot whilst permitting relative tilting



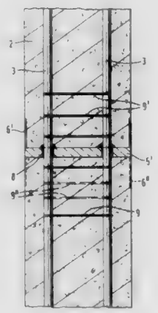
movement between the latching means and the anchor body consequent upon sway of the tether.

4,797,037

PILING

Lee P. Hong, Kuala Lumpur, Malaysia, assignor to Pilecon Engineering Berhad, Kuala Lumpur, Malaysia

Filed Apr. 29, 1987, Ser. No. 43,725
Claims priority, application United Kingdom, Apr. 30, 1986, 8610617
Int. Cl.[4] E02D *5/30*
U.S. Cl. 405—255 **10 Claims**



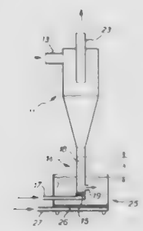
1. A reinforced, pre-cast concrete pile including pile end reinforcing metal end caps, reinforcing means cast into and reinforcing said pile and extending substantially the length of said pile, and a metal member attached to said reinforcing means and cast into said pile, extending in the pile transversely of the pile at a location remote from ends of the pile and formed as a plate element able to act as a metal end cap of a truncated pile formed by cutting the pile immediately below said metal member.

4,797,038

POWDER RECOVERY METHOD AND DEVICE

Jean-Yves Correard, Saint Martin d'Heres, France, assignor to SAMES S.A., Meylan, France

Filed Aug. 20, 1986, Ser. No. 898,382
Claims priority, application France, Aug. 22, 1985, 85 12613
Int. Cl.[4] B65G *53/38*
U.S. Cl. 406—138 **21 Claims**



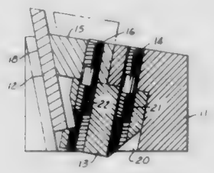
1. A powder recovery system comprising means for processing powder, a receptacle adapted to receive said powder, a substantially vertical column, said substantially vertical column comprising means for permanently and directly fluidically communicating said powder processing means with said receptacle, and means for fluidizing at least said powder located within said column, wherein said receptacle is at atmospheric pressure and said powder processing means is at a pressure different from atmospheric pressure, wherein powder is maintained within said column.

4,797,039

CUTTING TOOL BIT SUPPORT

Ronald P. Bosek, Davisburg, Mich., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Sep. 23, 1987, Ser. No. 102,063
Int. Cl.[4] B23P *15/28*
U.S. Cl. 407—87 **11 Claims**



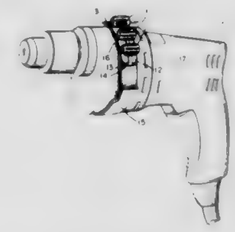
2. Cutting tool bit support comprising a body, tool bit tool bit mounting reaction surface means in said body accommodating linear tool bit adjustment, said surface means including linear beveled tool bit side engaging reaction surfaces, a tool bit adjustably engaging said beveled side surface means having a projecting cutting edge, a jack recess in said body accommodating linear jack adjustment, a jack engaging said tool bit, a first differential screw means engaging differential screw threads in said respective body and jack to effect said jack and tool bit projection adjustment, a wedge clamp having angular surfaces engageable with matching surfaces of said tool bit and said body, and a second differential screw means engaging differential screw threads in said respective wedge clamp and and jack to effect clamping engagement of said tool bit in adjusted position.

4,797,040

STRAP ON DRILL PARAPHERNALIA HOLDING SYSTEM (DPHS)

Bruce A. Hibbard, Los Angeles, Calif., assignor to H-Tech, Inc., Sherman Oaks, Calif.

Filed Feb. 2, 1987, Ser. No. 9,946
Int. Cl.[4] B23B *45/00*
U.S. Cl. 408—241 R **3 Claims**



1. A holding device for storing drill bits or drill accessories upon a drill body, comprising:

(a) an adjustable circular strap consisting of an elastic portion and a fastening device to fasten one end of said strap to another portion of said strap, said elastic portion being stretched when said strap is placed on the drill body to securely locate the strap on the drill;

(b) a pad which will fasten to the strap;

(c) a means to fasten the pad to the strap;

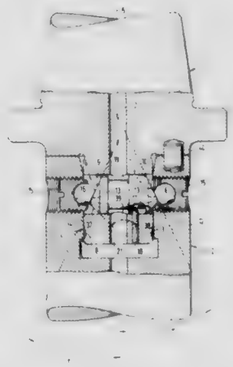
(d) a plurality of sleeves having means to connect the sleeves to the front of the pad, each sleeve having a plurality of axially spaced, flexible ribs extending radially inward from the inner circumference of the sleeve such that a drill bit may be removably inserted into the sleeve and be held by the ribs until the bit is removed for use.

4,797,041

CHUCK

Franz Glaser, Nuremberg, Fed. Rep. of Germany, assignor to Hertel AG Werkzeuge & Hartstoffe, Fürth, Fed. Rep. of Germany

Filed Dec. 23, 1987, Ser. No. 137,151
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644091; May 20, 1987, 3716932; Oct. 14, 1987, 3734699
Int. Cl.[4] B23C *1/00*
U.S. Cl. 409—232 **27 Claims**



1. A chuck for clamping tools (1) into a carrier (2) particu-

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larly in a revolving head or into the drive spindle of a machine tool,

wherein the tool (1) has a rearward shank (3) which is inserted into a mating bore (4) in the carrier (2), with said bore being surrounded by an annular flange (12) and including the system axis (5) as the bore axis and said shank is fixable therein by means of blocking members, for which purpose a locking element (7) is provided whose frontal ends have sloped faces (9, 10) and which is mounted in a continuous, radial, transverse recess (6) of the shank (3) so as to be radially displaceable therein; said two sloped faces (9, 10)

form an acute angle (11) with the system axis (5), said angle closing in the direction toward the tool (1) to be clamped in; and

are charged for clamping by balls (14) which are held at an annular flange (12) so as to be non-displaceable in the axial direction but radially movable, characterized in that

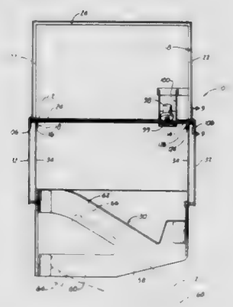
a planar truncation surface (13) of each ball (14) charges the slopes (9, 10) of the locking element (7) with each ball being rotatably supported in a ball seat (16), with at least one ball (14) being disposed at the frontal end of a pressure screw (15) which is screwed from the exterior radially through the annular flange (12) and is there held captive (FIGS. 1, 2).

4,797,042

WHEELCHAIR LOADING APPARATUS

Robert E. McFarland, 8301 Northwest 39th Expressway, Bethany, Okla. 73008

Division of Ser. No. 761,427, Aug. 1, 1985, Pat. No. 4,671,729. This application Jun. 1, 1987, Ser. No. 57,101
Int. Cl.[4] B60P *3/06, 7/06*
U.S. Cl. 410—3 **16 Claims**



1. A loading platform for a scooter-type wheelchair comprising:

a substantially horizontal track upon which rear wheels of said wheelchair may be rolled;

a vertical shaft positioned adjacent said track;

a horizontal shaft pivotally attached to said vertical shaft;

a positioning plate for receiving a forward wheel of said wheelchair, said positioning plate pivotally attached to said horizontal shaft and having a tilted loading position and a substantially horizontal loaded position.

8. A loading platform for a scooter-type wheelchair comprising:

a substantially V-shaped track comprising:

a leg portion generally forming a side of said platform; and

another leg portion extending angularly from the first-mentioned leg portion such that said wheelchair may be rolled onto said track from said side of said platform and located in a loading position thereon;

rear wheel location means for locating said rear wheels of said wheelchair in said loading position on said track; and

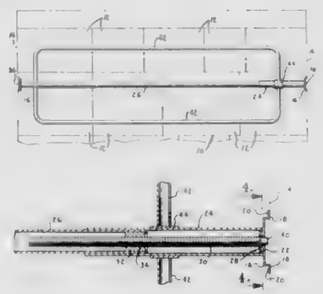
front wheel location means for locating a front wheel of said wheelchair in said loading position on said track.

4,797,043

LOAD SHORING BEAM FOR CARGO TRUCKS

John J. Williams, Jr., 9543 Horton, Overland Park, Kans. 66212

Filed Nov. 23, 1987, Ser. No. 123,716
Int. Cl.[4] B60P *7/08*
U.S. Cl. 410—145 **13 Claims**



1. A load shoring beam for restraining cargo in a truck body having opposite side walls provided with track openings, said shoring beam comprising:

a tube assembly comprising first and second cylindrical tubes fitting together telescopically to permit telescopic extension and retraction thereof to respectively lengthen and shorten the tube assembly, each tube presenting on an outer end thereof a tip having a size and shape to enter the track openings;

an internally threaded nut secured in said first tube;

an externally threaded screw secured in said second tube and extending through said nut in threaded engagement therewith, said tubes being rotatable relative to one another in opposite directions to lengthen and shorten the tube assembly, thereby permitting the tube assembly to be extended between the opposite side walls with said tips in the track openings and tightened by threaded action effected by relative rotation of the tubes in a direction to lengthen the tube assembly;

a sleeve fitted on said second tube for rotation thereon; and

a pair of C-shaped hoops on the tube assembly, each hoop having opposite ends one of which is connected with said first tube and the other of which is connected with said sleeve.

4,797,044

IMPROVEMENTS INTRODUCED IN THE ANCHORING SYSTEMS BY MEANS OF THREADED BOLTS

Vincente S. Velasco, Canillas 93 4°-a, Madrid, Spain

Filed Oct. 30, 1986, Ser. No. 926,401
Claims priority, application Spain, Oct. 31, 1985, 548461; European Pat. Off., Oct. 27, 1986, 86500001.2
Int. Cl.[4] F16B *13/06*
U.S. Cl. 411—51 **26 Claims**

1. An anchoring device for mooring a mounting element in a mounting hole with an undercut in a substrate, the device comprising:

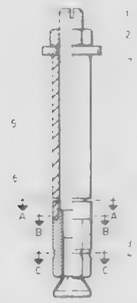
an elongated mounting element having a stud portion, a neck portion diametrically smaller than said stud portion and extending axially therefrom so as to form a transition edge portion therebetween, and a trunk-conical head portion having a base diametrically wider than said neck and a head end diametrically smaller than said base, said head portion extending axially from said neck and having a trunk-conical shape;

a sleeve slidably mounted on said stud portion, said sleeve having a lower edge;

means for preventing said sleeve from axially moving together with said mounting element in a direction in which said mounting element is being withdrawn out of the hole;

a plurality of bushing members axially positionable simultaneously on said neck and head portions, said bushing members engaging said lower edge of said sleeve so that an end portion of said bushing members is between said sleeve and said mounting element, said members having an external surface with a perimetrical groove; and

means for holding said mounting element and said sleeve against each other to thereby hinder said mounting element and said bushing members from axially sliding relative to each other and including elastic means and a perimetral slot in said sleeve accomodating said elastic means therein, said mounting element being axially slidable relative to said sleeve from a fully extended position, in which said bushing members are against said neck but not yet against said trunk-conical head portion, to a withdrawn position, in which said bushing members are against said trunk conical-head portion to thereby obtusely bend outward against the undercut of the hole at an angle equal to that of a conicity of said trunk-conical head portion and said neck portion is opposite said elastic means so that said elastic means elastically closes onto said neck portion to wedge between said transition edge portion and said perimetral slot of said sleeve and thereby hinders said mounting element and said bushing members from axially sliding relative to each other.



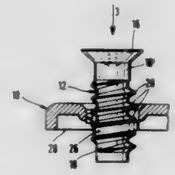
4,797,045

FORMATION OF A SCREW THREAD IN MOUNTING HOLES IN FURNITURE HARDWARE MADE OF SHEET METAL

Karl Lautenschläger, Jr., Reinheim, and Gerhard Lautenschläger, Brensbach 1-Wersau, both of Fed. Rep. of Germany, assignors to Karl Lautenschlager GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

Filed Jun. 30, 1987, Ser. No. 68,897
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1986, 3622001
Int. Cl.[4] F16B *39/00, 37/12*
U.S. Cl. 411—107 **6 Claims**

1. In combination: a piece of furniture hardware of relatively thin stamped and pressed sheet metal, having a section defining a mounting hole; and a mounting screw extending through the mounting hole; said screw having a head, a shaft with a thread, and adjacent the head a thread-less portion with a diameter smaller than that of the thread, the thickness of the sheet metal section being the same or slightly greater than the spacing between two adjacent turns of the thread measured at a central diameter of the thread, the mounting hole having a free cross section which is smaller than the outer diameter of the thread, the sheet metal section being annular, and having a thread extending continuously over more than 180° up to a maximum of 360°, with a pitch corresponding to that of the thread of the mounting screw, a portion of the annular section being cut free from the surrounding sheet metal along an arcuate boundary line; whereby the thread in the mounting hole is sufficient to pre-set the mounting screw, but upon screwing of the mounting screw into a bore in a piece of furniture the annular section is free of the thread of the mounting screw and surrounds the thread-less section and the head presses the furniture hardware against the piece of furniture.

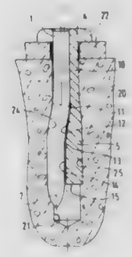


4,797,046

FASTENING UNIT WITH NAIL ANCHORAGE

Jean Ollivier, Valeace, and Jean-Paul Barthomeuf, Alixan, both of France, assignors to Societe de Prospection et D'Inventions Techniques (S.P.I.T.), Paris, France

Filed Dec. 15, 1987, Ser. No. 132,394
Claims priority, application France, Dec. 16, 1986, 86 17552
Int. Cl.[4] F16B *15/00, 13/04*
U.S. Cl. 411—448 **1 Claim**



1. A fastening unit adapted to anchor a part to a wall or ceiling structure having a cylindrical bore defined therein, said unit comprising a nail guide member receivable snugly within said bore and a nail receivable within said guide member, said nail guide member having, in axially successive relation, an elongated opening for receiving said nail, an outwardly slanted nail guide portion, an axially extending guide surface, and terminating in an end surface spaced from the end of said bore, said nail having a pointed end, which upon engagement with the slanted guide portion of said guide member, causes the nail to deflect into engagement with the wall of said bore whereupon the nail is deflected back toward the axial direction when constrained between the bore wall and said axially extending guide surface, said nail when completely driven into said nail guide member having its point extending beyond said end surface whereby the fastening unit is securely fastened to the wall or ceiling structure.

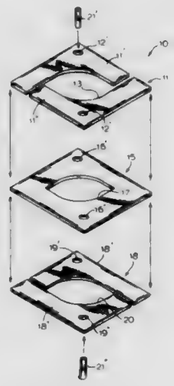
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4,797,047

EXPANDABLE RETAINER

Peter Gold, 465 North Wood Rd., Rockville Centre, N.Y. 11570

Continuation of Ser. No. 940,335, Dec. 11, 1986, abandoned.
This application Feb. 1, 1988, Ser. No. 150,439
Int. Cl.[4] F16B *21/00*
U.S. Cl. 411—512 **12 Claims**



1. A retainer comprising:

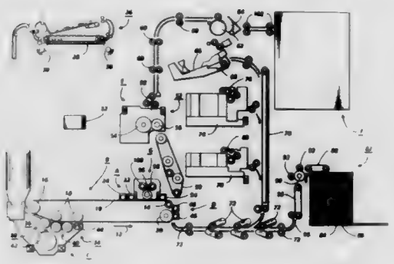
a plural-layered assembly defining a generally oblong central opening formed therethrough composed of at least one relatively resilient layer and at least one relatively rigid layer, said rigid layer being split to allow said assembly to radially expand or bend thereby temporarily elongating the minor axis of said generally oblong central opening in said resilient layer to permit insertion of a post therein and to capture said post upon contraction of said minor axis.

4,797,048

BINDING APPARATUS

Michael S. Doery, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 8, 1987, Ser. No. 94,369
Int. Cl.[4] B42C *13/04, 9/00*; H02K *7/06*; G03G *15/00*
U.S. Cl. 412—11 **12 Claims**



1. An apparatus for binding a set of sheets by applying a tape having adhesive thereon to the spine of the set of sheets, including:

a heated member;

means for detecting the thickness of the set of sheets;

a spring operatively associated with said heated member; and

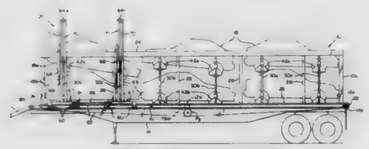
means, responsive to said detecting means, for compressing said spring a distance dependent upon the detected thickness of the set of sheets so that said spring presses said heated member against the tape with a force dependent upon the detected thickness of the set of sheets to optimize adhesive melt and flow for binding.

4,797,049

SYSTEM FOR LOADING MOTOR VEHICLES INTO STANDARD CARGO-CARRYING ENCLOSURES

Peter Gearin, Portland, and Everett A. Leech, Clackamas, both of Oreg., assignors to G & G Intellectual Properties, Inc., Portland, Oreg.

Filed Dec. 18, 1986, Ser. No. 943,688
Int. Cl.[4] B60P *1/64*; B65D *88/12, 88/52*
U.S. Cl. 414—400 **16 Claims**



5. A system for containing wheeled vehicles for transport, said system comprising:

(a) an elongate three-dimensional frame;

(b) means for supporting a plurality of wheeled vehicles within said frame in a condition physically isolated from one another at multiple levels whereby certain vehicles are supported in an elevated condition and other vehicles are supported at levels below said certain vehicles;

(c) an elongate three-dimensional closed-sided general-purpose cargo-carrying container separate and apart from said frame for transporting multiple types of cargo, said container having an open end adapted to matingly receive said frame through said end;

(d) means for positioning wheeled vehicles at multiple levels within said frame, while the frame is separate and apart from said container, said means for positioning functioning to position said certain vehicles in said elevated condition; and

(e) power operated means for moving said frame, while loaded with vehicles, through said open end and into matingly received condition within said container.

4,797,050

APPARATUS FOR LIFTING AND TILTING DRUMS OF FLOWABLE MATERIAL

Helmut Habicht, 15 Royal Park Terrace, Hillsdale, N.J. 07642

Filed Jul. 6, 1987, Ser. No. 70,297
Int. Cl.[4] B65G *65/23*
U.S. Cl. 414—420 **26 Claims**

1. Apparatus for lifting and tilting a drum and like containers of flowable materials brought to a lift device whereat the container is lifted to a desired height above the floor, and during said lift a determined tilt is made to an established angle at which the material in the container is discharged, this apparatus including:

(a) a base support;

(b) a tubular column arrayed in a substantially vertical attitude and secured to said base support;

(c) a slot formed in this column and providing an access opening to the interior of said column, this slot extending for much of the length of this column;

(d) a container support having a bottom portion adapted to receive and retain the weight of the container;

(e) means for retaining the container in a placed condition on the container support during lift and tilting of the container;

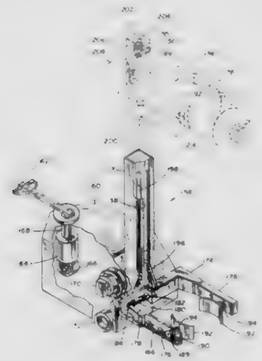
(f) movable plate positioned within the tubular column, this plate having cam follower-type rollers secured to the plate;

(g) U-shaped channel members attached to the column and providing retaining guideways for the cam-follower rollers on the movable plate so that said plate may be cycled up and down the column;

(h) a pinion and meshed spur gear carried on and by said movable plate, the pinion fixedly carried on a rotatable output shaft, with the end portion of said shaft extending through said slot and adapted for securing to the container support, and the spur gear carried on another shaft and rotatable thereon;

(i) a selectively actuated lift-and-lowering means adapted to move the movable plate and the rollers thereon in the U-shaped tracks including a reversible pneumatic motor having an output shaft on which is mounted a roller chain sprocket which is adapted to cycle a roller chain therein, the roller chain arranged so that both ends are attached to the movable plate, and means attaching the lifting-and-lowering means to the movable plate;

(j) an arm secured to said spur gear so as to move said spur gear as the arm is moved, and said arm having a cam follower-type roller thereon;



(k) a cam track secured to the column and adapted to receive and retain said roller on the end of the arm associated with the spur gear, this cam track having an angled portion adapted to engage the cam follower and cause the spur gear to rotate a determined amount, this motion causing rotation of the spur gear and meshed pinion so that a determined rotation of the pinion shaft is made,

(l) means attaching the output shaft to said container support so that during the lift of the movable plate the secured container is lifted and, when the roller on the end of the arm associated with the spur gear is moved in the cam track, said container support and the retained container are tilted to a discharge position, and the lowering motion is adapted to bring the now emptied container and support to the "start" condition and position; and

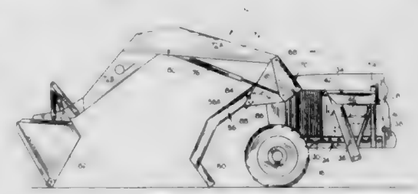
(m) the end of the tubular column being closed by a base plate on which is secured a bracket adapted to rotatably retain a second roller chain sprocket which is disposed to carry and redirect the roller chain attached to the movable plate, and the base plate carrying a secured stop post having adjusting means to limit the downward movement of the movable plate.

4,797,051

LOADER DEVICE FOR A TRACTOR

Joseph W. Langenfeld, and Neal W. Westendorf, both of Onawa, Iowa, assignors to Westendorf Mfg. Co., Inc., Onawa, Iowa

Filed Mar. 26, 1984, Ser. No. 593,699
Int. Cl.[4] E02F *3/34*
U.S. Cl. 414—686 **5 Claims**



1. In combination,

a tractor,

a bracket means secured to the tractor,

said bracket means including a first bracket assembly secured to said tractor at one side thereof,

said bracket means also including a second bracket assembly secured to said tractor at the other side thereof,

each of said first and second bracket assemblies comprising a longitudinally extending, generally flat horizontal support member at the upper end thereof; said support member having rearward and forward ends, and inner and outer sides,

a pivot pin means on the forward end of each of said support members and extending inwardly therefrom,

a first connector element at the rearward end of each of said support members,

a tower assembly adapted to be releasably mounted on said bracket means,

said tower assembly comprising a generally U-shaped frame means including spaced-apart first and second side frames having rearward and forward ends, and a front frame secured to the forward ends of said side frames and extending therebetween; a first upstanding upright secured to said first side frame and having upper and lower ends, inner and outer sides; a second upstanding upright secured to said second side frame and having upper and lower ends, inner and outer sides; the upper ends of said first and second uprights being positioned above said first and second side frames respectively, the lower ends of said first and second uprights being positioned below said first and second side frames respectively, first and second boom arms pivotally connected at their rearward ends to the upper ends of said first and second uprights respectively and extending forwardly therefrom; an implement pivotally secured to the forward ends of said boom arms; first power cylinder means connecting said uprights with said boom arms for raising and lowering said boom arms relative to said U-shaped frame means; second power cylinder means connecting said boom arms and said implement for pivotally moving said implement relative to said boom arms; first and second releasable connection means on said first and second side frames for connection to the inner ends of said pivot pin means on said support members for maintaining said frame means on said bracket means; the rearward ends of said first and second side frames adapted to be releasably connected to said connector elements at the rearward end of said support members for at least limiting the vertical movement of said side frames relative to said bracket means; the rearward ends of said side frames being supported upon said support members,

the lower ends of said uprights being positioned below said support members, during and after the mounting of said tower assembly on said bracket means,

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the inner sides of said uprights being positioned outwardly of said support members during and after the mounting of said tower assembly on said bracket means,

the relationship of said uprights to said support members, during the mounting of said tower assembly on said bracket means, serving to prevent the uprights from engaging the sides of the tractor,

the relationship of said uprights to said support members, after the mounting of said tower assembly on said bracket means, serving to prevent lateral movement of the rearward end of said tower assembly relative to said bracket means.

4,797,052

PALLET EXCHANGE APPARATUS

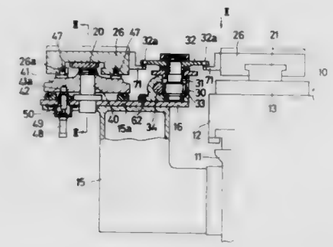
Takeshi Ohta, Nishio; Yoji Kamiya; Kunimichi Nakashima, both of Anjoh, and Mitsuyoshi Taniguchi, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 14, 1986, Ser. No. 885,451

Claims priority, application Japan, Jul. 15, 1985, 60-155789; Aug. 6, 1985, 60-172959

Int. Cl.[4] B65G *47/90*

U.S. Cl. 414—744.3 **4 Claims**



1. A pallet exchange apparatus for exchanging pallets between a table of a machine and a turntable at a loading and unloading station, comprising:

a base, said turntable being rotatably mounted on said base;

pallet engaging means mounted on said turntable;

a movable arcuate pallet guide mounted on said turntable;

engaging blocks mounted on a side surface of said pallets and extending outwardly of a turning radius of said pallets at said loading and unloading station;

a pallet exchange arm rotatably mounted on said base and having engaging portions formed at respective ends thereof; wherein said pallet exchange arm does not extend into said turning radius of said pallets at said loading and unloadng station;

cylinder means mounted on said turntable for shifting said movable arcuate pallet guide between a first position wherein said engaging blocks engage with said engaging portions of said pallet exchange arm and said pallet disengages from said engaging means and a second position wherein one of said pallets engages with said engaging means and said engaging blocks disengage from said engaging portion of said pallet exchange arm;

means for rotationally positioning said turntable at an exchange position;

a pair of fixed arcuate pallet guides secured to said base upon placement of said movable pallet guide therebetween, so as to constitute a circular track for guiding said pallets when said movable pallet guide is shifted to said first position and said turntable is positioned at said exchange position; and

means for rotating said pallet exchange arm while said pallet guide is shifted to said first position and said turntable is positioned at said exchange position, so as to exchange said pallets between said turntable and said table of said machine.

4,797,053

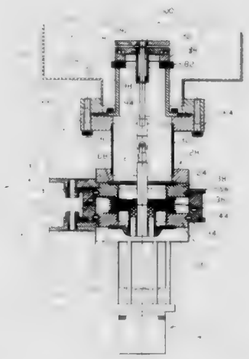
MANIPULATOR FOR VACUUM APPLICATIONS

Valentin Balter, Cupertino, Calif., assignor to Huntington Mechanical Laboratories, Inc., Mountain View, Calif.

Filed Feb. 16, 1988, Ser. No. 156,340

Int. Cl.[4] B65G *54/00*

U.S. Cl. 414—749 **12 Claims**



1. A manipulator for vacuum applications, comprising:

rotary drive means having a rotating output member;

adjustable angular connection means having first and second side members;

first and second ring members and respective drive means for said ring members, said ring members having guide means and being moveable with respect to each other and with respect to said side members along said guide means, said ring members having mating surfaces which are in contact with each other;

said rotary drive means being attached to said first side member;

said mating surfaces of said ring members being located in a plane which is nonperpendicular to an axis of rotation of said output member, so that roation of said first ring member with respect to said second ring member will cause the side member corresponding to said first ring member to be moved to an angular position relative to said second side member;

rotating driven means connected to said output member through a universal joint which allows angular articulation and axial displacement between said output member and said rotating driven means;

spacing means which embraces said rotating output, said universal joint means, and a part of said rotating driven means, said spacing means having first attachment means for connection to said second side member, and second attachment means for connection to a vacuum chamber;

a rigid frame means connected to the surface of said second attachment means on the side thereof facing said vacuum chamber, so that said frame means extends into the interior of said vacuum chamber;

first sliding means and means for guiding said first sliding means on said frame means for linear movement in one linear direction;

second sliding means and means for guiding said second sliding means on said first sliding means in a second linear direction perpendicular to said one linear direction;

said second sliding means supporting said driven means in a rotating manner;

said driven means passing through said both sliding means so that its end which is opposite to said universal joint means protrudes through said first and second sliding means;

sample holding means which are attached to said protruding end of said driven means so that said sample holding means forms a gap with said second sliding means; and

sealing means which seals an interior of said manipulator which communicates with said vacuum chamber, said sealing means surrounding said output member and said driven means.

4,797,054

APPARATUS FOR LOADING AND UNLOADING A VACUUM PROCESSING CHAMBER

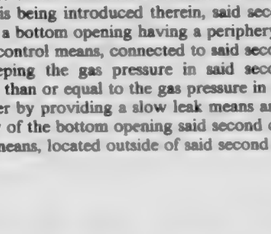
Katsuyuki Arii, Tama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 13, 1986, Ser. No. 874,000

Claims priority, application Japan, Jun. 17, 1985, 60-131013

Int. Cl.[4] B65G *11/00*

U.S. Cl. 414—217 **12 Claims**



1. An apparatus for loading and unloading a workpiece into and from a vacuum chamber for processing the workpiece, said apparatus comprising:

a loadlock chamber coupled to the vacuum chamber, the workpiece being loaded into or unloaded from the vacuum chamber through said loadlock chamber and the workpiece being loaded from or unloaded into an external atmosphere through said loadlock chamber;

evacuation means, operatively connected to said loadlock chamber, for evacuating said loadlock chamber;

gas introduction means, operatively connected to said loadlock chamber, for introducing gas into said loadlock chamber;

first gate means, provided between the external atmosphere and said loadlock chamber, for allowing loading said workpiece into and unloading said workpiece from said loadlock chamber, said first gate means being capable of opening or providing a vacuum seal between said loadlock chamber and the outside;

second gate means, provided between the vacuum chamber and said loadlock chamber, for allowing transfer of the workpiece to and from said loadlock chamber into the vacuum chamber, said second gate means being vacuum sealed when said first gate means is open or when inner pressure of said loadlock chamber is higher than a predetermined level;

a table provided in said loadlock chamber on which the workpiece is placed;

a second chamber, provided in said loadlock chamber, being capable of contacting said table for enclosing the workpiece and isolating the workpiece from said loadlock chamber while said loadlock chamber is being evacuated or gas is being introduced therein, said second chamber having a bottom opening having a periphery;

pressure control means, connected to said second chamber, for keeping the gas pressure in said second chamber greater than or equal to the gas pressure in said loadlock chamber by providing a slow leak means around the periphery of the bottom opening said second chamber; and

transfer means, located outside of said second chamber and within said loadlock chamber, for transferring the workpiece, positioning the workpiece on said table, and moving the workpiece from said table while said second chamber is separated from said table so as to expose said workpiece in said loadlock chamber.

4,797,055

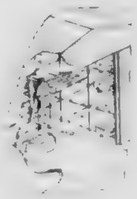
LOAD MOVING APPARATUS

Peter C. Tworoger, Astor, and E. A. Johnson, Crescent City, both of Fla., assignors to Atlas Marine Technologies, Gibsonburg, Ohio

Filed Dec. 18, 1986, Ser. No. 943,568

Int. Cl.[4] B65G *1/06*

U.S. Cl. 414—283 **5 Claims**



1. A boat handling system for lifting, transporting and storing boats in a cellular storage facility, the storage facility having an access aisle parallel to a plurality of rows and columns of boat receiving stalls, the system comprising:

a first set of rails extending the length of the aisle and continuing to a boat loading location;

a base structure having rollers positioned to ride on the first set of rails for effecting movement of the base structure along the rails;

a second set of rails attached to the base structure for movement therewith, the second set of rails being oriented orthogonally to the first set of rails;

a support assembly having rollers positioned to ride on the second set of rails for effecting movement of the support assembly thereon, the support assembly including a lower base plate to which the support assembly rollers are coupled and an upper base plate rotatably coupled to the lower base plate for rotation about a vertical axis therethrough;

a tower assembly mounted on the upper base plate, the tower assembly including a vertically extending tower, a guide slidably coupled to the tower for vertical motion therealong, and a fork slidably coupled to the guide for vertical motion therealong, the fork being adapted for supporting a boat; and

means coupled to the tower assembly for effecting movement of the guide and the fork for raising and lowering the fork to selected positions and for moving the tower assembly along the first and second sets of rails for transporting boats between selected ones of the stalls and the loading location comprising:

(i) a hydraulic cylinder having a pistion vertically extendible along the tower assembly;

(ii) a first pulley attached to an end of the piston for movement therewith;

(iii) a first cable having one end attached to the support assembly and a second end attached to the guide, the cable passing over the pulley whereby movement of the piston affects motion of the guide;

(iv) a second pulley attached to the guide for movement therewith; and

(v) a second cable having one end attached to the fork and a second end attached to a variable position stop, the second cable passing over the second pulley whereby

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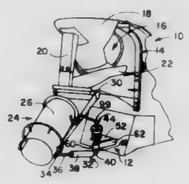
motion of the guide effects extension of the second cable until the second end thereof reaches the stop and thereafter effects motion of the fork along the guide.

4,797,056

SAFETY BRAKE FOR CEMENT TRUCK CHUTE

Charles Gerold, 2839 Ilopango, Hacienda Heights, Calif. 91740, and John Gregorio, 1533 E. Dexter, Covina, Calif. 91724

Filed Jul. 20, 1987, Ser. No. 75,131
Int. Cl.[4] B65G *67/24*
U.S. Cl. 414—467 11 Claims



1. A cement truck discharge chute locking system for preventing lateral rotation of a chute ram relative to the truck chassis comprising:

a vertically orientated ram pivot axle secured to said chute ram and rotatably mounted relative to said truck chassis,

a first flat, annular brake element secured in horizontal disposition relative to said truck chassis and radially outwardly from said ram pivot axle and coaxial relative thereto,

a second flat, annular brake element coupled to said ram pivot axle in coaxial alignment therewith and located radially outwardly therefrom and juxtaposed vertically adjacent to said first brake element and including,

pneumatic actuation means having ga reciprocal plunger extending from a housing in coaxial alignment with said ram pivot axle,

first means rigidly coupling said housing to said ram pivot axle,

second means rigidly coupling said plunger to said second brake element, whereby said pneumatic actuation means is actuable to press said second brake element against said first brake element over an annular surface area of contact coaxial with and located radially outwardly from said ram pivot axle to thereby immobilize said ram from rotation relative to said truck chassis and alternatively deactuable to vertically separate said brake elements, thereby permitting rotation of said ram relative to said truck chassis.

4,797,057

WHEEL-LIFT TOW TRUCK

Gary L. Shoup, Greencastle; Allen B. Coffman, Mercersberg, both of Pa., and Robert L. Fix, Hagerstown, Md., assignors to Jerr-Dan Corportion, Greencastle, Pa.

Filed Aug. 20, 1985, Ser. No. 767,740
Int. Cl.[4] B60P *3/12*
U.S. Cl. 414—563 33 Claims

1. A tow truck for lifting a part of a vehicle and towing the vehicle comprising:

(a) a tow truck chassis including spaced frame members and a deck above said frame members, and said tow truck chassis having a forward end and a rearward end including a rear wheel axle,

(b) means for engaging a vehicle for lifting a part thereof,

(c) an extensible boom having an inner end and an outer end and means supporting said engaging means at said outer end,

(d) means for raising and lowering said boom comprising:

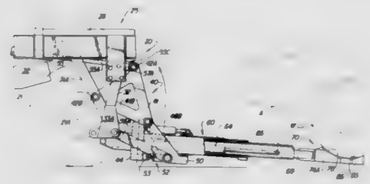
(i) linkage means for causing movement of said boom while maintaining said boom at a substantially constant angle to the horizontal, and

(ii) motor means for causing said raising and lowering movement of said boom,

(e) means for horizontally swinging said boom comprising:

(i) means for pivotally supporting said boom for rotation about a substantially vertical axis, and

(ii) motor means for effecting horizontal swinging movement of said boom,



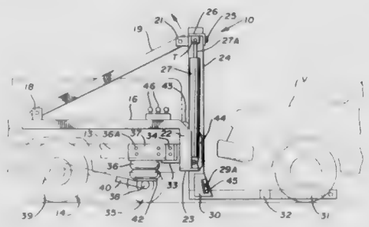
(f) said boom raising and lowering means and said boom swinging means being below said deck and said boom raising and lowering means moving said boom between a first position in which the inner end of said boom is rearwardly of said tow truck rear axle, and a second position in which the inner end of said boom is forward of the axis of said tow truck rear axle.

4,797,058

AUTOMOBILE WHEEL LIFT

Michael Bilas, 2730 Columbiana-New Castle Rd., New Springfield, Ohio 44443

Filed Jun. 8, 1987, Ser. No. 59,029
Int. Cl.[4] B60P *3/12*
U.S. Cl. 414—563 3 Claims



1. An automobile wheel lift device used to convert a pick-up truck have a rear axle assembly into a tow truck, comprises a horizontally extending support frame secured to a truck frame on said pick-up truck, said support frame is comprised of elongated side and end rails in a generally rectangular arrangement having extension support frame members extending in a vertical direction at right angles thereto, boom members pivotally secured to a portion of said support frame, a lift tube movably positioned on said extension support frame member of said support frame rearwardly of said rear axle assembly, said lift tube pivotally secured on one of its ends to said boom members, an automobile engagement element pivotally secured to the other end of said lift tube, means on said automobile engagement element for securing an automobile thereon, means for securing said support frame to said truck frame rearwardly of said rear axle and wheel assembly, hydraulic piston and cylinder assemblies pivotally secured to a portion of said support frame between said extension of said support frame members extending at right angles therefrom rearwardly of said rear axle and wheel assembly, and to said lift tube at said one

of its ends, for lifting said lift tube from a first vertically aligned position at rest to a second position angularly disposed from said vertical, and said auto engagement element in relation to said support frame, a supplemental wheel and axle assembly mounted between said axle and said extension support frame members and pivotally secured to said truck, and lift tube guide means on said support frame.

4,797,059

SEAT HANDLING FIXTURE

Rodrick D. Karg, Oxford, and Thomas N. Whetstone, Clarkston, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 928,812, Nov. 7, 1986, abandoned. This application May 6, 1988, Ser. No. 193,157
Int. Cl.[4] B66F *9/00*
U.S. Cl. 414—590 8 Claims



1. A fixture for use with an overhead lifting device for transporting a seat having a seat back and a seat cushion into a vehicle, said fixture in combination comprising:

a "C" frame with spaced apart upper and lower legs, said upper leg providing means of connection with said lifting device;

a first link pivotally connected at one end with said lower leg of said "C" frame and projecting in a generally downward direction along a pivotal axis generally parallel with said lower leg;

a second link pivotally connected to the other end of said first link remote from said "C" frame at an angle with said first link for penetrating between said seat back and said seat cushion; and

lift means to angularly raise said second link whereby said seat is captured with said fixture so that said seat can be transported by said lifting device.

4,797,060

EARTH-WORKING MACHINE

Mitsuhiro Kishi, 1320 Mizuhonocho, Ashikaga-shi, Tochiga-prefecture 326-03, and Yokichi Nagasawa, 1902, Honjo 2-chome, Ashikaga-shi, Tochigi-prefecture 326, both of Japan

Continuation of Ser. No. 823,922, Jan. 30, 1986, abandoned, which is a division of Ser. No. 503,688, Jun. 13, 1983, Pat. No. 4,596,508. This application Oct. 8, 1987, Ser. No. 107,868
Claims priority, application Japan, Jul. 22, 1982, 57-128468; Sep. 18, 1982, 57-162971; Nov. 1, 1982, 57-192120; Jan. 28, 1983, 58-13376
Int. Cl.[4] E02F *5/02*
U.S. Cl. 414—687 8 Claims

1. An earth-working machine comprising:

a mobile chassis;

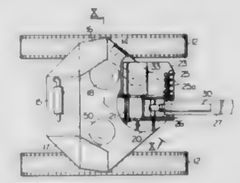
a turntable mounted centrally on said mobile chassis and rotatable on said mobile chassis about an axis of said turntable;

a carriage mounted on approximately one half side of said turntable and rotatable on said turntable about an axis of said carriage, said axis of said carriage being in horizontal eccentric relation to said axis of said turntable;

an earth-working mechanism mounted on said carriage;

first driving means mounted on a top of said turntable for rotating said turntable horizontally and with respect to said chassis;

second driving means mounted on a top of said turntable for rotating said carriage horizontally and with respect to said turntable independently of rotation effected by said first driving means;



said first and second driving means being mounted on the other half side of the turntable laterally adjacent said carriage, the axis of said carriage and said first and second driving means forming an isosceles triangle with the axis of said carriage being located on a line perpendicularly bisecting a line joining the axes of said first and second driving means,

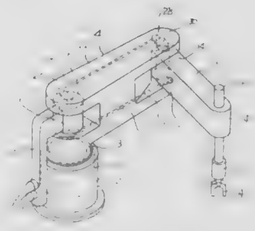
sprockets and an endless chain connected to said sprockets operatively connected to said carriage and said second driving means for turning said carriage via said second driving means.

4,797,061

MULTI-JOINTED ROBOT

Tadashi Munakata, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1987, Ser. No. 13,136
Claims priority, application Japan, Mar. 3, 1986, 61-44131
Int. Cl.[4] B25J *17/00*
U.S. Cl. 414—744.5 9 Claims



1. A multi-jointed robot, comprising:

a first arm;

first drive means connected to the first arm and having a central axis, for pivotally moving the first arm about the central axis;

a second arm, pivotally connected to the first arm for relative motion, therebetween; and

second drive means for moving the second arm with respect to the first arm, including a low-speed, high-torque motor and motor drive shaft means directly extending from opposite sides of the motor and being operatively connected to the second arm on the both sides of the motor for reducing stress on the motor, wherein the shaft means includes a rotatable shaft protruding from opposite sides

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of the motor, a pair of connecting rods, each connecting rod being directly connected to the shaft on an opposite side of the motor for transmitting the motion of the shaft to the second arm, and coupling means for jointing the shaft to the connecting rods.

4,797,062

DEVICE FOR MOVING GAS AT SUBATMOSPHERIC PRESSURE

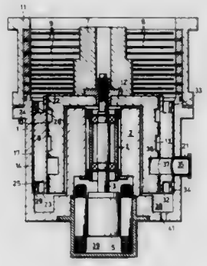
Ladger Deters, Cologne; Heinrich Engländer, Linnich; Hans-Peter Kabelitz, and Günter Schiltz, both of Cologne, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 713,993, Mar. 20, 1985, abandoned. This application Oct. 20, 1987, Ser. No. 111,150

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3410905

Int. Cl.[4] F01D *1/36*

U.S. Cl. 415—90 17 Claims



1. A device for accommodation in a housing and moving a gas at subatmospheric pressure, the device comprising:

a rotor and a stator wherein the stator axially surrounds the rotor with a space for relative rotation formed therebetween;

first and second screwthread-like structures in tandem axially along at least one of the rotor and stator respectively for moving the gas upon relative rotation between the rotor and stator and for forming a viscous seal therebetween; and

thermal insulation means for thermally insulating the stator from the housing.

4,797,063

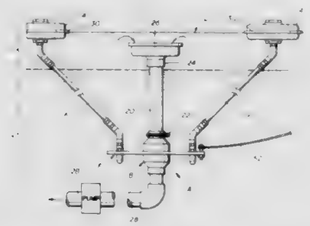
FLOATING SUCTION APPARATUS

Gerald Lott, Houston, Tex., assignor to Chem-O Company, Inc., Houston, Tex.

Filed May 27, 1987, Ser. No. 54,742

Int. Cl.[4] F04D *31/00*

U.S. Cl. 415—116 18 Claims



1. An apparatus for floating within immisible layers of fluid above a bottom surface in order to withdraw fluid from a preselected layer comprising:

a frame;

floatation means connected to said frame for securing said frame at a preselected elevation within the fluid;

pump means mounted with said frame for drawing fluid in the apparatus said pump means including pump intake means; and

positioning means for mounting said pump intake means at various vertical positions above and below said frame, said apparatus being independent of contact with the bottom surface.

4,797,064

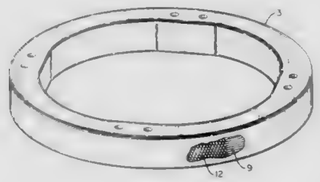
COMPOSITE HELICOPTER ROTOR HUB

Donald L. Ferris, Newtown, Conn., and Francis E. Byrnes, White Plains, N.Y., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 30, 1987, Ser. No. 80,370

Int. Cl.[4] B64C *11/06*

U.S. Cl. 416—134 A 14 Claims



1. A main helicopter rotor hub having a retention plate, said retention plate comprising:

(a) a fiber reinforced braided tubular ring said fiber reinforced resin braided tubular ring having substantially circumferential fibers interwoven with angled fibers oriented at a predetermined angle to said: circumferential fibers said circumferential and angled fibers disposed about a central core; and

(b) arm means for attaching said braided ring to a driveshaft said arm means extending inwardly from said braided ring; wherein said fiber orientation withstands forces both in the plane of said retention plate and normal to said plane.

4,797,065

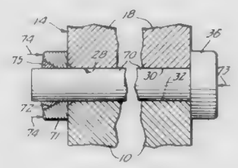
TURBINE BLADE RETAINER

Frank J. Conlow, Allentown, N.J., assignor to Transamerica DeLaval Inc., Princeton, N.J.

Division of Ser. No. 920,168, Oct. 17, 1986, which is a continuation-in-part of Ser. No. 758,487, Jul. 24, 1985, abandoned. This application Apr. 18, 1988, Ser. No. 182,443

Int. Cl.[4] F01D *5/32*

U.S. Cl. 416—220 R 2 Claims



1. In a turbine rotor, the combination comprising a wheel having an angularly spaced plurality of radially outwardly directed fir-tree formations about the wheel axis and defining axially extending slots between adjacent profiles of adjacent fir-tree formations, a corresponding plurality of blades each of which has a root configured for radial retention in one of said slots by reason of root profiling in axially engageable conformance with adjacent profiles of the adjacent fir-tree formations of said one slot, the axial extent of said blade root being equal to the axial width of said fir-tree formations, radially inner confronting limits of said blade root and of the root-engaged slot between fir-tree formations being spaced to define a through-passage on an alignment parallel to the wheel axis, and an elongate two-part axially extending retainer having a cylindrical outer surface of said alignment and nested between said confronting limits; one of said retainer parts having (a) a headed end, (b) a contiguous cylindrical shank defining the entire cylindrical outer surface and of length of its outer end exceeding the axial extent of said root and wheel formations; the other of said retainer parts being a collar having a bore engaged to said outer end and having an axially outwardly open counterbore which is lapped by said outer end; said headed end and said collar (a) being of sufficient radially outward extent to lap both said root and wheel formations when in engaged relation and (b) being in axially compressed engagement to said root and wheel formations and (c) being welded to each other at lap of said counterbore with said outer end for retention of said axially compressed engagement.

4,797,066

TURBINE WHEEL HAVING HUB-MOUNTED ELASTICALLY DEFORMABLE BLADE MADE OF REINFORCED POLYMERIC COMPOSITE MATERIAL

Karl-Otto Strömberg, Kilgrind, S-302 40, Halmstad, Sweden

PCT No. PCT/SE87/00036, § 371 Date Sep. 21, 1987, § 102(e) Date Sep. 21, 1987, PCT Pub. No. WO87/04400, PCT Pub. Date Jul. 30, 1987

PCT Filed Jan. 28, 1987, Ser. No. 102,563

Claims priority, application Sweden, Jan. 28, 1986, 8600369

Int. Cl.[4] B63H *1/26*

U.S. Cl. 416—230 4 Claims



1. A turbine wheel, comprising:

a hub, said hub having secured thereto for rotation with the hub about an axis of the hub, a plurality of circumferentially-spaced blades each having a pitch relative to said hub;

each said blade being made of a built-up composite material having a matrix of polymeric material and a plurality of superimposed layers of reinforcing material having anisotropic properties, including at least one internal reinforcement and an enclosing shell-shaped external reinforcement;

said blades being elastically deformable, in use, relative to said hub, under loading, including strains, including deformation about a turning center of each blade for reversibly altering the pitches of said blades;

said internal reinforcement of each blade including a rigid beam arranged in the turning center of the respective blade;

each said beam being made of fibrous reinforcing material having a fiber direction arranged at a non-coinciding angle to the turning center of the respective blade;

each said external reinforcement being connected to said beam of the respective blade for cooperation therewith in portions wherein said blade is thereby made less rigid.

4,797,067

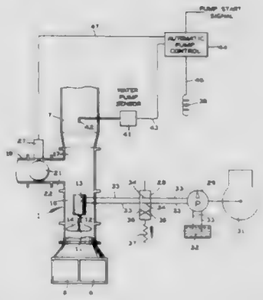
PUMPING SYSTEM WITH DESILTING ARRANGEMENT

J. David Eller, Deerfield Beach, and Juan E. Ponce, Boca Raton, both of Fla., assignors to M & W Pump Corporation, Deerfield Beach, Fla.

Filed Oct. 13, 1987, Ser. No. 107,273

Int. Cl.[4] E02F *3/88*; **F04B** *49/00, 49/10*

U.S. Cl. 417—43 16 Claims



1. Pumping system with desilting arrangement comprising: a bidirectional water pump, being operable in the forward and the reverse direction; a pump housing for containing the pump, having a pump inlet at one end and a pump outlet at the other end; a silt blow-out pipe in fluid communication with the pump outlet, having a desilting valve therein; a water discharge pipe containing a flow sensor, both being in fluid communication with the pump outlet; a pump drive means connected to the pump; and means to direct both operation of the pump in a reverse direction and the desilting valve responsive to an absence of a water flow signal from the flow sensor, for the purpose of blowing out any silt in the pump inlet.

4,797,068

VACUUM EVACUATION SYSTEM

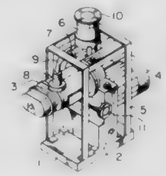
Tadashi Hayakawa; Kazuaki Shiinoki, both of Ebina; Sinji Mitsuhashi, Yokohama, and Kotaro Naya, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1987, Ser. No. 58,821

Claims priority, application Japan, Jun. 12, 1986, 61-134837

Int. Cl.[4] F04B *37/14, 23/08*

U.S. Cl. 417—201 9 Claims



1. A vacuum evacuation system comprising:

a first vacuum pump having a rotary component which is adapted to rotate at high speeds to produce a linear velocity and against which gas molecules are caused to strike, thus giving momentum of said rotary component in a direction of the linear velocity of the rotary component to produce a gas flow in a given direction;

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a second vacuum pump having a casing provided with suction and exhaust ports between which a gas flow passage is defined and in which a pair of male and female screw rotors are supported with a minute gap between said screw rotors and said casing, the inner surface of said casing and said pair of male and femal screw rotors defining a working chamber in which said screw rotors rotate with a minute gap maintained therebetween in the absence of sealing, cooling and lubrication liquid, within said working chamber and the gas flow passage thereby producing a differential pressure between the suction and exhaust ports provided in said casing;

means connecting said exhaust port of said first vacuum pump to said suction port of said second vacuum pump; and

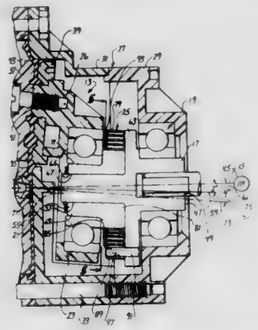
said suction port of said first vacuum pump being disposed on a vacuum side, and said exhaust port of said second vacuum pump being disposed on an atmospheric side.

4,797,069

PUMP WITH VARIABLE ANGLE WOBBLE PLATE

E. Dale Hartley, Malibu, and F. Scott Hartley, Camarillo, both of Calif., assignors to Product Research And Development, Anaheim, Calif.

Filed Jun. 3, 1987, Ser. No. 57,808
Int. Cl.[4] F04B *1/28*; F01B *3/00*
U.S. Cl. 417—222 **14 Claims**



1. An apparatus for moving a fluid medium and adapted to be driven by a motor, said apparatus comprising:

a positive displacement member movable on intake and discharge strokes to move the fluid medium;

a wobble plate coupled to the positive displacement member with the wobble plate having an angle which influences the length of said strokes and the volume of the fluid medium moved by the positive displacement member;

rotatable driving member rotatable about a rotational axis and adapted to be driven by the motor about a rotational axis;

a rotatable driven member mounted on the driving member for rotation relative to the driving member about a driven member axis which is eccentric to said rotational axis to thereby vary the relative angular position of the driving and driven members, said driven member being drivingly coupled to said wobble plate;

means including said rotational axis and said driven member axis for adjusting the angle of the wobble plate as a function of the relative angular position of the driving and driven members; and

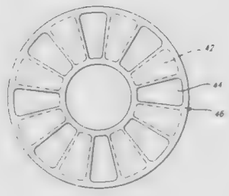
a resilient torque transmitting coupling for coupling the driving member to the driven member so that rotation of the driving member drives the driven member and the relative angular position of the driving and driven members about said rotational axis and said driven member axis and the wobble plate angle are related to the torque transmitted by the torque transmitting coupling.

4,797,070

DISPLACEMENT COMPRESSOR FOR SUPERCHARGING OF COMBUSTION ENGINES

Oskar Schatz, Tellhohe 14, D-8031 Stockdorf, Fed. Rep. of Germany

Continuation of Ser. No. 609,956, May 14, 1984, abandoned. This application Jul. 28, 1986, Ser. No. 892,872
Claims priority, application Fed. Rep. of Germany, May 18, 1983, 3318136
Int. Cl.[4] F04B *35/00, 39/00*
U.S. Cl. 417—380 **6 Claims**



1. Displacement compressor for compression of gases, preferably for supercharging internal combustion piston engines having an air charge chamber equipped with one air input and one air output, with a flexible membrane for changing the volume firmly fastened to a wall, distinguished by the fact that the membrane (**16, 62, 78**) is composed of tightly fitting single elements (**40, 76**) which are movable relative to each other and are made from a heat-resistant material;

said single element (**76**) being closely fitting strips or threads;

said membrane being plate-shaped and movable in an axial direction;

said membrane comprised of laminations (**84**) which are flexibly fastened to a center bracket (**88**) and an outer bracket (**86**) such that said center bracket (**88**) is positioned rotationally on a normal axis to the surface of the lamination, relative to the outer bracket (**86**);

said membrane being driven by exhaust gases from said internal combustion engine such that movement of said membrane is synchronized with piston movement of said internal combustion engine.

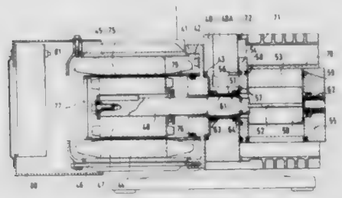
4,797,071

MOTOR AND VANE-PUMP ASSEMBLY FREE FROM EXTERNAL OIL LEAKS

Gilles Veyrat, Minzier, France, assignor to Alcatel, Paris, France

Continuation of Ser. No. 900,434, Aug. 26, 1986, abandoned. This application Mar. 1, 1988, Ser. No. 166,781
Claims priority, application France, Aug. 27, 1985, 85 12774
Int. Cl.[4] F04B *17/00*
U.S. Cl. 417—410 **7 Claims**

1. A motor and vane-pump set comprising a vane-pump for pumping a gas and comprising a stator (**53**) and a rotor (**50**) fitted with vanes (**52**) and extended by a shaft (**51**), a gas suction duct (**40A**) leading to the interior of the stator (**53**), said rotor and stator assembly being immersed in a tank (**71**) partially filled with oil, said shaft rotating in bearings (**61, 62**) lubricated by said oil immersing said rotor and stator assembly and fitted with lip seals (**63, 64**) said pump shaft being rotated by an electric motor open to the atmosphere comprising a stator (**44**) and a rotor (**47**) fitted with a shaft (**48**), the motor and vane-pump set being characterized in that the rotor shafts (**48, 51**) of the motor and the pump are joined together and in that a sleeve (**75**) of non-magnetic material is coaxially disposed between the stator (**44**) and the rotor (**47**) of the motor, said sleeve being closed at its far end from the pump by a cover (**77**), and fixedly mounted in a sealed manner at its opposite end on a motor end plate (**41**) which is fixed to the pump, whereby



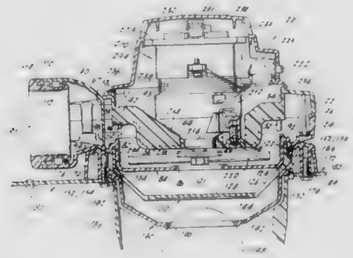
said sleeve (**75**), said cover (**77**) and said motor end plate (**41**) form a sealed volume (**79**) which collects oil leaking through the lip seal (**63**) to prevent it from contaminating the exterior of the motor and vane-pump set without disturbing the motor operation.

4,797,072

PORTABLE ELECTRIC BLOWER

Robert C. Berfield, Jersey Shore; Ronald F. Meland, Muncy, and Craig A. Seasholtz, Avis, all of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed Jun. 19, 1987, Ser. No. 64,768
Int. Cl.[4] F04B *35/04*; A47L *5/22*
U.S. Cl. 417—423.2 **9 Claims**



1. An air blower, comprising:

an external housing, an air inlet into the housing, an air outlet from the housing, a motor in the housing, a centrifugal fan in the housing having a periphery and connected to be driven by the motor for drawing air into the housing inlet and for blowing air out the housing outlet;

a support located in the housing for supporting the motor and the support being shaped and so disposed in the housing for providing air separation between the motor and the fan;

the housing including a chamber outside the periphery of the centrifugal fan and at the fan side of the support for the motor, and the chamber communicating with the outlet from the blower;

the inlet to the housing including an inlet opening through which air is drawn into the housing and the fan being disposed near the inlet opening;

an intake shield sealingly attached to the housing and extending past the inlet to the housing; where the intake shield extends past the inlet opening, the intake shield being spaced from the housing and from the housing inlet; and

air passage means through the intake shield for enabling air to be drawn past the intake shield and into the housing inlet;

said intake shield serving as an external surface of the housing shaped and disposed so that the entire blower may be sealed upon the intake shield external surface; the air passage means on the intake shield being generally off the intake shield external surface so as not to be blocked if the intake shield surface is against another or supporting surface;

said external housing further including a blower housing having therein the air inlet and air outlet of the external housing;

said blower housing comprising separate upper and lower portions which are held together, the lower portion being attached to the intake shield, and the support for the motor being part of the upper portion of the blower housing;

each of said upper and lower portions of the blower housing having a first cooperating section, which cooperating sections constitute sidewall sections that are combined to define said air outlet; and

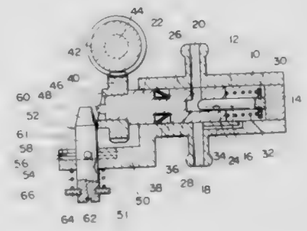
each of said upper and lower portions of the blower housing having a second cooperating section, which second cooperating sections define a chamber wherein said fan is disposed.

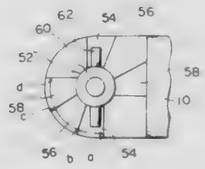
4,797,073

PUMP WITH ROTATING AND RECIPROCATING PISTON

Kenichi Kubota, Iwate Prefecture, Japan, assignor to Tohoku Mikuni Kogyo Kabushiki Kaisha, Japan

Filed Oct. 9, 1987, Ser. No. 106,370
Claims priority, application Japan, Oct. 20, 1986, 61-159478[U]; Oct. 31, 1986, 61-167466[U]
Int. Cl.[4] F04B *19/02, 7/06*
U.S. Cl. 417—461 **15 Claims**





1. A plunger pump including:

a worm adapted to be rotated as a crankshaft is rotated,

a cylindrical pump body having a bore having a closed end, a suction port and a delivery port formed therein, said suction port and said delivery port communicating with said bore,

a plunger having one end rotatably and slidably fitted into the bore of the pump body in a cantilevered fashion with a free end external to said pump body, a pump chamber

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formed in said plunger, said pump chamber being brought into fluid communication alternately with the suction port and the delivery port,

a cam surface on the end face of the free end of the plunger, said cam surface being inclined relative to the axis of the plunger,

an adjustment cam in the form of a projection extending axially from said plunger, through the center of said cam surface, at the free end of the plunger to carry out a camming function in cooperation with said cam surface,

first engagement means, provided on the outer periphery of the plunger adjacent said free end, for engaging said worm,

biasing means for biasing the plunger toward said free end,

a control pin mounted on the pump body for contact with said cam surface or the adjustment cam, and

wherein said worm is directly connected to the crankshaft and is directly engaged by said first engagement means, with the worm not being held directly by the pump body.

9. A plunger pump of the type rotably driven by a crankshaft, said plunger pump comprising:

a cylindrical pump body having a central, longitudinal bore, a suction port and a delivery port, said bore opening through said pump body at one end and closed at the other end;

a plunger rotatably and slidably mounted within said bore and a pumping chamber within said plunger;

rotary drive means for rotating said plunger responsive to rotation of the crankshaft;

means for alternately establishing fluid communication between said pumping chamber and said suction port and between said pumping chamber and said delivery port, as said plunger is rotated;

an end face cam provided on a first end of said plunger, said first end extending beyond said open end of said bore, said end face cam being inclined relative to the axis of the plunger;

a projection extending axially from the center of said first end of said plunger defining a camming surface in cooperation with said end face cam;

biasing means for urging said plunger outward, through the open end of said bore;

a control pin mounted on said pump perpendicular to the axis of said plunger and having a free end continuously engaging said camming surface, thereby limiting the outward movement of said plunger, said free end being tapered so that the diameter of said free end at the point of contact with said camming surface is changed by adjustment of the position of said free end of said control pin relative to the axis of said plunger;

and means for adjusting said position of said free end of said control pin.

4,797,074

GOVERNOR DEVICE

Gregory P. Albert, Waverly, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 29, 1987, Ser. No. 67,994
Int. Cl.[4] F01C *21/12*; G05D *13/10*
U.S. Cl. 418—41 **9 Claims**

1. A motor speed controller for pressure fluid operated motors comprising:

a pressure fluid motor;

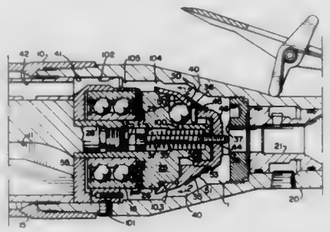
a controller body rotating in proportion to the speed of said motor;

a plurality of balls disposed on said controller body for radial displacement upon increase of rotation speed;

a control means surrounding said controller body and mounted thereon for resilient resisted axial extension in response to the radial displacement of said balls; and

a face seal means on said control means for cooperation with a face seat means for controlling air flow to said pressure fluid motor in response to motor speed;

said control means further comprises:



a hollow cone which overlays said controller body, and;

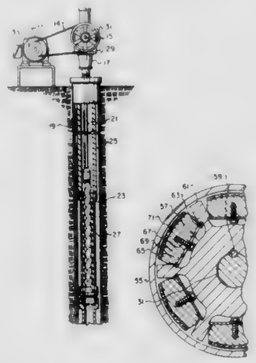
said control means forms a sealed cover over said controller body at low speed.

4,797,075

OVERSPEED PROTECTIVE GEAR BOX FOR A WELL PUMP

Wallace L. Edwards, Stockton, Mo.; Joel F. Jones, Claremore, and Howard G. Thompson, Jr., Tulsa, both of Okla., assignors to Hughes Tool Company, Houston, Tex.

Filed Apr. 9, 1987, Ser. No. 36,218
Int. Cl.[4] F04C *5/00, 15/00, 2/107*; F04B *49/02*
U.S. Cl. 418—48 **2 Claims**



1. A progressing cavity well pump assembly, comprising in combination:

a power source;

a right angle gear box adapted to be mounted over the well, having a horizontally oriented input shaft adapted to be rotated by the power source and a vertically oriented output shaft adapted to be connected to a string of rods extending into the well, the gear box having gear means for rotating the output shaft at a lesser speed than the input shaft;

a stator having a helical elastomeric interior and adapted to be located stationarily in the well;

a helical rotor adapted to be connected to the lower end of the string of rods and rotatably carried in the stator for pumping fluid to the surface;

a carrier mounted to the input shaft for rotation therewith;

a cylindrical brake drum stationarily positioned around the carrier;

a plurality of brake shoes carried by the carrier and facing radially outward from the input shaft toward the brake drum; and

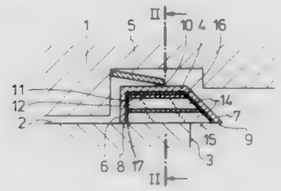
spring means mounted between the carrier and the brake shoes for maintaining the brake shoes spaced from the drum during normal rotation of the input shaft, and for allowing the brake shoes to contact the drum should the speed of the input shaft exceed a selected level, to slow reverse rotation of the input shaft due to torque in the rods as a result of the rotor locking in the stator.

4,797,076

INNER SEAL OF A ROTARY PISTON ENGINE

Dankwart Eiermann, Weissenberg, Fed. Rep. of Germany, assignor to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed Jun. 10, 1986, Ser. No. 872,592
Int. Cl.[4] F01C *19/00*; F04C *27/00*; F16J *15/34*
U.S. Cl. 418—142 **5 Claims**



1. An inner face seal, which is arranged axially in an end surface of a rotary piston engine of trochoidal-type construction including an eccentric shaft and a housing with axially opposite housing sidewalls and with an inner periphery having at least one arcuate runway as well as said housing sidewalls having central axial bore openings through which said eccentric shaft passes and journals a multi-corner rotary piston rotating upon said eccentric shaft, said seal having a base body U-shaped in axial cross section including a base surface and legs having a scraper edge at an outward end thereof extending therefrom, which legs form two sealing rings including end surfaces effective as inner sealing surfaces that glide and move along an adjoining housing sidewall under resilient spring-effect pressing engagement of said sealing surfaces, as well as means defining a bore opening in this housing sidewall and located coaxial to the eccentric shaft, said opening being partially polished and wipedover by the inner sealing surfaces during rotation of the piston, the improvement therewith which comprises:

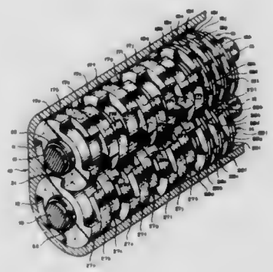
that a plurality of resilient trapezoidally shaped sealing lamination segments in layers tightly placed for overlapping each other in a closely matched relationship with freedom of resilient movability thereof being maintained although secured at the base surface in the U-shaped base body, so that said sealing lamination segments allow said legs to move and engage resiliently for sealing purposes along said housing sidewall so as to be pressed and engaged via the scraper edges thereof leading in a rotational direction and having an acute abutting angle at sealing engagement location of said sealing surfaces, said scraper edges forming an angle α in rotational direction via a radius of the inner face seal to assure that oil residues are cleared away and discharged under effectiveness of centrifugal force along with close sequence of said scraper edges whereby large oil quantities or volume can never collect.

4,797,077

ROTARY EXPANSIBLE CHAMBER DEVICE

Dean R. G. Anderson, 1306 W. Bluff Rd., Syracuse, Utah 84121

Filed Sep. 27, 1984, Ser. No. 655,357
Int. Cl.[4] F01C *1/14*
U.S. Cl. 418—201 **17 Claims**



1. A rotary expansible chamber device being adapted for compression or expansion of a compressible gas said device comprising:

(a) a housing defining two or more parallel cylindrical working chambers,

(b) mating, stepped impellers adapted to axially pass a compressible gas along the length thereof through said working chambers, said impellers being rotatably mounted about an axis in each of said working chambers for rotation in opposite directions to each other, each of said stepped impellers consisting of a plurality of offset risers having an outer and inner radius, each riser of all said stepped impellers having the same peripheral constant cross section and consisting of at least one lobe having at least one well adjacent thereto, said lobes having an arcuate outer surface which defines the outer radius, said wells having an arcuate lower surface which defines the inner radius, said wells also having concave sidewalls, said lobes and wells of adjacent risers along the same impeller being offset angularly from each other in a stepped spiraling relationship opposite the direction of impeller rotation in the direction of axial compressible gas flow along the axis of said impeller with the offset lobes forming spiraling angular steps and the offset wells defining a stepped helical volume, the risers along the axis of said impellers being a predetermined height which height will vary to enable the compression or expansion of a compressible gas within said working chambers, said impellers being mated such that, as said impellers rotate, a compressible gas passing axially through said working chambers will be sealed as a 360° helical stepped gas volume in said helical volume by the rotation of said impellers and remain sealed with a change of sealed helical stepped gas volume size as a result of the angular rotation and variation in riser height as said compressible gas axially traverses through said working chambers, and

(c) inlet means in said housing forward of said impellers for introducing a compressible gas into said working chambers and outlet means in said housing aft of said impellers for removing a compressible gas from said working chambers.

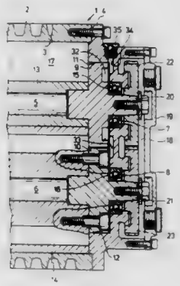
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4,797,078

BEARING ARRANGEMENT OF AN EXTERNAL-AXIAL ROTARY PISTON BLOWER

Werner Schubert, Lindau, Fed. Rep. of Germany, assignor to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed Jun. 5, 1987, Ser. No. 58,922
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1986, 3619645
Int. Cl.[4] F04C *10/18*
U.S. Cl. 418—206 1 Claim



1. A bearing arrangement of an axial rotary piston blower including transmission gear means therewith and provided for gaseous medium with a housing consisting of an interior runway surface and two side plates and forming working chambers with pistons rotating therein, whereby shafts upon which said pistons are mounted have shaft ends journaled by ball bearings with face seals laterally outside and extending radially in a location axially immediately adjacent to one side thereof for sealing-off of gas pressure in the working chambers, said bearings also having bearing collar means adjoining said shaft ends for mounting of said bearings and said transmission gear means of said blower located externally of said bearings, said arrangement comprising:

annular groove means which are open in a direction extending radially outwardly around said bearing collar means of ball bearings of said shafts of the pistons;

radially located walls provided on a transmission gear means side of said annular groove means opposed to inner recess edges of the transmission gear means forming therewith an annular gap of closest narrow tolerance extending axially therebetween;

means forming axial bores for said shaft ends as well as axial hubs of said transmission gear means and further annular gaps provided coaxially internally with respect to said axial bores for said shaft ends located in the bearing collar means axially relative to said axial hubs of said transmission gear means therewith;

a width in a range of a tenth to a twentieth millimeter being provided for the annual gaps axially between the radially located wall on the transmission gear means side thereof and the inner recess edges of the transmission gear means respectively as well as for the further annular gaps axially between the bearing collar means and the axial hubs of the transmission gear means;

an annular chamber means formed and arranged extending radially on a side laterally of one end plate of one shaft on a side toward the side plate, said annular chamber means communicating via a centrally located passage with gap chambers between the other end plate of the shaft and the adjoining side plate; and

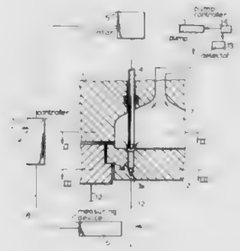
a check valve in communication with gap chambers via a radially outwardly extending bore in the side plate.

4,797,079

APPARATUS FOR MAKING A THERMOPLASTIC MONOFILAMENT OF EXACT THICKNESS

Hermann Balk, Troisdorf, Fed. Rep. of Germany, assignor to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 874,280, Jun. 13, 1986. This application May 28, 1987, Ser. No. 55,466
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1985, 3521571
Int. Cl.[4] B29C *47/92*
U.S. Cl. 425—140 1 Claim



1. An apparatus for making a plurality of thermoplastic monofilaments each of an exact diameter comprising:

a horizontal spinning plate having an array of spinning orifices;

a spinneret housing above said spinning plate and defining therewith a distribution chamber communication with all of said orifices for delivering a thermoplastic material to said orifices for the formation of individual thermoplastic monofilaments thereby;

at least one spinning pump for feeding said thermoplastic material to said chamber and communicating with said chamber through an opening formed in said housing centrally of said array of spinning orifices;

a respective rod-shaped movable stopper above said plate and formed with a valve head defining a variable flow passage at an upper edge of each of said orifices and regulating by up and down movement relative to said plate, a flow of the thermoplastic material through the respective orifice, said stoppers extending upwardly through said chamber and emerging from said housing at an opposite side of the chamber from said plate;

a respective positioning motor operatively connected to each of said stoppers at said opposite side of said chamber for moving said the respective stopper up and down to control said flow;

a respective device positioned for measurement of an actual value of the diameter of each individual one of said thermoplastic monofilaments and generating an actual value signal corresponding to the measured actual value;

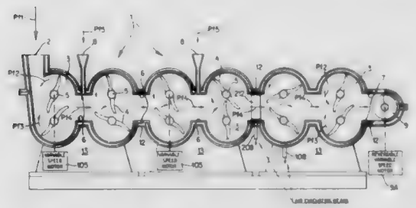
a control circuit connected to each of said devices, receiving said actual value signal and provided with a setpoint input representing a desired diameter of said monofilaments for comparing the respective actual value with the setpoint value, said control circuit being connected to each positioning motor for shifting the respective stopper in response to the comparison of the respective actual value with said setpoint value.

4,797,080

CONTINUOUS KNEADING MACHINE

Peter Wanninger, Heitersheim, Fed. Rep. of Germany, assignor to IKA-Maschinenbau Janke & Kunkel GmbH & Co. KG, Staufen, Fed. Rep. of Germany

Filed May 28, 1986, Ser. No. 868,264
Claims priority, application Fed. Rep. of Germany, May 30, 1985, 3519349; European Pat. Off., Feb. 6, 1986, 86101551.9
Int. Cl.[4] H01J *17/00*
U.S. Cl. 425—203 24 Claims



1. A kneading machine comprising a housing having an at least substantially horizontal row of at least three communicating neighboring kneading chambers including a first chamber and a last chamber, said first chamber having a charging opening for admission of the material to be kneaded and said last chamber having an evacuating opening for kneaded material; first and second substantially axially parallel rotary kneading members provided in each of said chambers; means for rotating the first and second kneading members in opposite directions; and a driven worm provided in said evacuating opening.

4,797,081

MANDREL FOR MAKING ELASTOMERIC ARTICLES

Ronald E. Prater, 3432 N. Washington Rd., Fort Wayne, Ind. 46804

Filed Mar. 10, 1987, Ser. No. 24,067
Int. Cl.[4] B29C *67/24*
U.S. Cl. 425—275 21 Claims



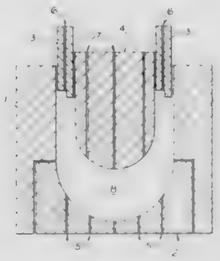
1. A one-piece mandrel, suitable for making a thin-walled elastomeric article by a dipping process, said mandrel comprising a one-piece body having at least one opening therein and a split extending from the opening through a cross-section of the one-piece body, at least a portion of said body being formed of an elastically resilient material such as to allow the split to open for removal of the elastomeric article after formation thereof, and substituted to cause the split to automatically close after removal of the elastomeric article from the mandrel to form a substantially continuous surface of the mandrel in the vicinity of the split, and wherein a portion of said one-piece body extends generally radially outwardly from said body, said portion having means for mounting the mandrel to a dipping apparatus.

4,797,082

APPARATUS FOR FORMING SHAPED PIECES OF INSULATION

John T. Hughes, Worcester, United Kingdom, assignor to Micropore International Ltd., Worcs., United Kingdom

Division of Ser. No. 894,496, Aug. 4, 1986. This application Apr. 28, 1987, Ser. No. 43,544
Claims priority, application United Kingdom, Aug. 16, 1985, 8520564
Int. Cl.[4] A01J *21/00*
U.S. Cl. 425—356 8 Claims



1. An apparatus for forming shaped pieces of insulation having a non-uniform thickness in the direction of compression thereof but substantially uniform density, which apparatus comprises:

a die for receiving a compressible flowable particulate material, which die comprises side walls and a base;

first and second plungers movable within the die;

means for moving the first and second plungers within the die in a first stage, said plungers being moved simultaneously so as to compact the insulation material and to cause the insulation material to flow and to become distributed within the die in an homogeneous manner, and subsequently in a second stage, means to move said plungers simultaneously and through different distance stroke cycles so as to compact and consolidate first and second portions of the insulation material in an independent manner so as to form a shaped piece of insulation in which first and second portions have different thicknesses in the direction of compaction but the degree of compaction of the first portion is the same as the degree of compaction of the second portion so that the shaped piece of insulation has substantially uniform density;

means for causing the strokes of the first and second plungers to vary dependent upon the density change of the insulation of the respective portion; and

means for permitting the escape of gas from within the die.

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EXTRUSION DIE FOR MAKING A FOAMED THERMOPLASTIC WEB

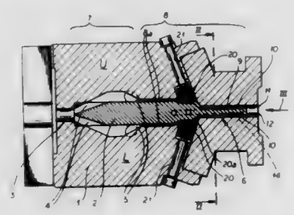
Hans Reifenhäuser, Troisdorf, Fed. Rep. of Germany, assignor to Reifenhäuser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Filed Apr. 30, 1987, Ser. No. 44,892

Claims priority, application Fed. Rep. of Germany, May 13, 1986, 3615994

Int. Cl.[4] B29C *47/12, 47/90*

U.S. Cl. 425—378.1 **4 Claims**



1. In an extrusion die connectable to an extruder for making a thermoplastic foam web formable into a thermoplastic foam mat or a thermoplastic foam plate comprising a block and a flow-splitting and flow-displacement body in said block, said block including an inlet duct, two feed passages connectable to said inlet duct, two transversely widened gaps connectable to said feed passages and an outlet duct, said flow-splitting and flow-displacement body having a mounting portion and a guide portion, said body being downstream of said inlet duct in said block separating both of said feed passages and said transversely widened gaps with said guide portion and projecting with a sword-like tongue of said guide portion into said outlet duct to form two outlet gaps and an inner expansion chamber upstream of a mouth of said outlet duct, the improvement wherein said flow-splitting and flow-displacement body is plate-like, supporting rib-free and is held fixed from above and below by said mounting portion, said sword-like tongue of said body has sides running in a flow direction of a thermoplastic feed, said sides being set back from lateral interior walls of said block to form two lateral gaps whose width corrresponds approximately to a width of said outlet gaps, said thermoplastic material surrounding said sides of said sword-like tongue, said feed passages extend from said mounting portion to said guide portion, a plurality of flow control members positioned in said block in a throttling passage between said transversely widened gaps and said outlet gaps, said flow control members supported in said block and adjustable with the aid of an adjusting element toward said flow-splitting and flow-displacement body, and at least said sword-like tongue of said flow-splitting and flow-displacement body has a temperature-control passage system distributed over the length and breadth of said sword-like tongue which is connected with a plurality of lateral connecting tubes for feeding and removing a temperature-control medium upstream of said sword-like tongue.

4,797,084

MOLD DEVICE FOR MOLDING A PREFORM

Yoshinori Nakamura; Koubei Koga; Satoru Kosuge, and Yoshihiro Fukunishi, all of Hanishina, Japan, assignors to Nissei ASB Machine Co., Ltd., Japan

Filed Nov. 24, 1986, Ser. No. 934,196

Claims priority, application Japan, Nov. 29, 1985, 60-270029; Oct. 31, 1986, 61-260373

Int. Cl.[4] B29C *45/06, 49/36*

U.S. Cl. 425—533 **14 Claims**

1. An injection molding machine, comprising:

a machine bed and a bed plate vertically spaced from and extending generally horizontally above the machine bed;

a plurality of horizontally spaced injection stages including a preform molding stage for molding a preform of an article and an orientation and blow molding stage for blow molding the preform into an article;

a rotatable transfer plate disposed below the bed plate and effective for transferring an article being molded from stage to stage;

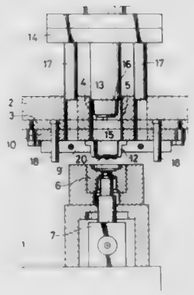
a cavity mold, stationarily supported on the machine bed at the preform molding stage, for molding the preform;

an opening in the transfer plate and another opening in the bed plate projecting above the cavity mold, the respective openings in the bed plate and in the transfer plate being alignable with one another;

a mold supporting plate disposed below the transfer plate and projecting above the preform molding stage, the mold supporting plate having a molding opening therethrough;

a retaining and lip mold supported in the molding opening in the mold supporting plate and movable with the mold supporting plate;

means for vertically moving the mold supporting plate toward and away from the cavity mold, the means for



moving the mold supporting plate including spring members for biasing the mold supporting plate and the retaining and lip mold toward the transfer plate and including vertically disposed shafts projecting from a lower surface of the transfer plate for guiding the mold supporting plate thereon, the spring members being mounted on the vertically disposed shafts;

the vertical shafts having upper connecting plates which are integrated into and supported on the transfer plate, a flange disposed on opposed ends of the vertical shafts and the spring members being disposed between the flanges and the mold supporting plate;

a vertically movable core mold movable vertically along the openings in the bed plate and in the transfer plate and into the retaining and lip mold, the injection molding machine being so structured that the retaining and lip mold is movable to abut the cavity mold and the core mold is movable into the retaining and lip mold to define the preform; and

means for injecting resin into the cavity mold to mold a preform of an article.

4,797,085

FORMING APPARATUS EMPLOYING A SHAPE MEMORY ALLOY DIE

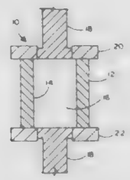
Tien-Hon Chiang, El Toro, and Donald N. Thatcher, Santa Ana, both of Calif., assignors to Aerojet-General Corporation, La Jolla, Calif.

Continuation-in-part of Ser. No. 938,204, Dec. 4, 1986, Pat. No. 4,738,610. This application Apr. 3, 1987, Ser. No. 33,664

The portion of the term of this patent subsequent to Apr. 19, 2005, has been disclaimed.

Int. Cl.[4] B30B *12/00*

U.S. Cl. 425—405.2 **15 Claims**



1. An expansion forming apparatus comprising:

an outer die of generally cylindrical shape and having an interior cavity for receiving material to be formed, and an inner die also of generally cylindrical configuration and positioned within said cavity in substantially contiguous engagement with said material, the inner die being made of a shape memory alloy for compression of said material between said inner die and said outer die in response to heat applied to said apparatus for selectively causing transformation of said alloy between a martensitic phase and its parent phase for selectively increasing the outer radial dimension of said inner die.

4,797,086

APPARATUS CLUTCH CONTROLLED CLOSURE MEANS FOR A MOLDING

Taira Adachi, Sakura, Japan, assignor to Sumitomo Heavy Industries Ltd, Tokyo, Japan

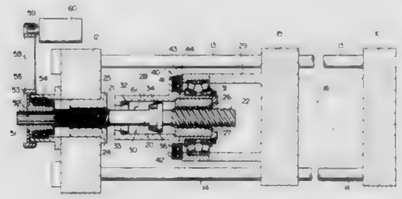
PCT No. PCT/JP86/00585, § 371 Date Jul. 16, 1987, § 102(e) Date Jul. 16, 1987, PCT Pub. No. WO87/02931, PCT Pub. Date May 21, 1987

PCT Filed Nov. 17, 1986, Ser. No. 86,127

Claims priority, application Japan, Nov. 18, 1985, 60-258320; Apr. 21, 1986, 61-91742; Jun. 24, 1986, 61-147675

Int. Cl.[4] B29C *45/64*

U.S. Cl. 425—589 **7 Claims**



1. A molding machine which is arranged to perform molding by means of at least one mold constituted by a pair of mold parts, comprising:

a stationary frame;

a fixed platen holding one of said pair of mold parts;

a movable platen holding the other of said pair of mold parts, said movable platen being attached to said stationary frame for reciprocal movement with respect to said fixed platen in a direction toward and away from said one of said pair of mold parts;

a shaft having an axis extending toward said movable platen, said shaft being supported for rotation with respect to said stationary frame and for reciprocal movement along said axis of said shaft, said shaft having first and second threaded portions formed thereon along said axis of said shaft;

an electrical motor mounted on said stationary frame for causing rotation of said shaft;

first and second nut members screwed onto said respective first and second threaded portions of said shaft, said first nut member being secured to one of said stationary frame and said movable platen, said first nut member and said shaft being movable with respect to each other when said shaft is rotated, said second nut member capable of being rigidly coupled with the other of said stationary frame and said movable platen; and

clutch means disposed between said other of said stationary frame and said movable platen and said second nut member for free movement between an engagement position which allows for relative movement between said shaft and said second nut member while said shaft is being rotated with said second nut member rigidly coupled with said other of said stationary frame and said movable platen and a disengagement position which allows said shaft to be rotated together with said second nut member while said shaft is being rotated with said second nut member released from rigid coupling with respect to said other of said stationary frame and said movable platen.

4,797,087

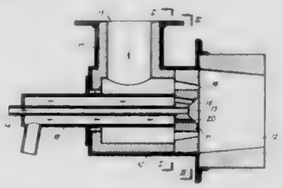
METHOD AND APPARATUS FOR GENERATING HIGHLY LUMINOUS FLAME

Grigory M. Gitman, Duluth, Ga., assignor to American Combustion, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 755,831, Jul. 15, 1985, Pat. No. 4,642,047, which is a continuation-in-part of Ser. No. 642,141, Aug. 17, 1984, Pat. No. 4,622,007. This application Jul. 9, 1986, Ser. No. 883,769

Int. Cl.[4] F23M *3/04*

U.S. Cl. 431—10 **32 Claims**



1. A method of combusting combustible material in a burner having a combustion tunnel with an outlet opening to generate a high temperature, high luminosity flame, comprising the steps of:

separately supplying combustible material, a first oxidizing gas having a given oxygen concentration, and a second oxidizing gas having a different oxygen concentration from said first oxidizing gas to the burner;

separately directing said first oxidizing gas and a first portion of said combustible material into said combustion tunnel such that said portion of said combustible material and said first oxidizing gas mix at least partially within said combustion tunnel to create a hot oxygen lean luminous flame core;

separately directing the remainder of said combustible material and said second oxidizing gas into said combustion tunnel such that said remainder of said combustible material and said second oxidizing gas mix at least partially

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within said combustion tunnel to create at least one oxygen rich mixture stream; and

mixing said oxygen lean flame core with said at least one oxygen rich mixture stream to create a final highly luminous flame pattern extending out of said combustion tunnel.

12. A burner for combustion of combustible material to generate a high temperature, high luminosity flame which comprises:

a combustion tunnel having an outlet opening;

means for separately supplying combustible material, a first oxidizing gas having a given oxygen concentration, and a second oxidizing gas having a different oxygen concentration from said first oxidizing gas to the burner;

first means for separately directing said first oxidizing gas and a first portion of said combustible material into said combustion tunnel such that said portion of combustible material and said first oxidizing gas mix at least partially within said combustion tunnel to create a flame core;

second means for separately directing the remainder of said combustible material and said second oxidizing gas into said combustion tunnel such that said remainer of combustible material and said second oxidizing gas mix together at least partially prior to mixing with said flame core; and

means for causing said mixture of combustible material and said second oxidizing gas to subsequently mix with said flame core to create the final flame pattern.

4,797,088

SAFETY DEVICE FOR OIL BURNER

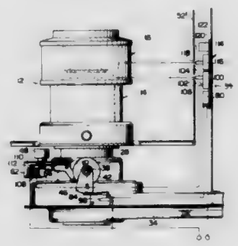
Kazuharu Nakamura, Aichi; Yoshio Mito, Gifu; Yutaka Nakanishi, Aichi; Toshihiko Yamada, Aichi, and Yuji Sanada, Aichi, all of Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Apr. 29, 1986, Ser. No. 857,013

Claims priority, application Japan, Apr. 30, 1985, 60-93445; Nov. 12, 1985, 60-254513

Int. Cl.⁴ F23N *5/24*

U.S. Cl. 431—15 **35 Claims**



1. A safety device for an oil burner comprising:

an abnormal combustion sensing and actuation mechanism arranged to receive heat rays emitted from a combustion cylinder construction of said oil burner to detect abnormal combustion which occurs in said oil burner after a normal combustion forming a combustion flame emitting heat rays of at least a predetermined intensity and which forms an excessively decreased flame sufficient to produce incomplete combustion gas; and,

a starting means for starting a fire-extinguishing device of said oil burner, said starting means being operatedly connected to said abnormal combustion sensing and actuation mechanism so as to be actuated to operate said fire-extinguishing device when said abnormal combustion sensing and actuation mechanism detects said abnormal combustion occuring after said normal combustion, said abnormal combustion sensing and actuation mechanism including means for preventing said actuation of the starting means for a period of time after ignition of the oil burner sufficient to provide said normal combustion.

4,797,089

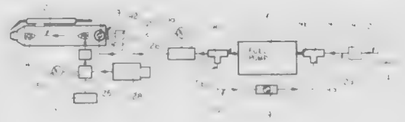
SYSTEM CONTROL MEANS TO PREHEAT WASTE OIL FOR COMBUSTION

Gary Schubach, 4805 S. Farr Rd., Spokane, Wash. 99206, and Frank Schubach, N. 1406 Aladdin Rd., Greenacres, Wash. 99016

Filed Jun. 22, 1987, Ser. No. 65,919

Int. Cl.⁴ F23N *5/00*

U.S. Cl. 431—28 **4 Claims**



1. A waste oil burner feed system apparatus for preheating and then controlling the temperature of fuel oil for the air pressure driven atomization of the fuel oil in cooperation with a waste oil burner, comprising:

a heat transfer assembly which includes a helical oil passageway through an elongated aluminum heat transfer body, which receives heat from a heating element operatively connected to it, and which distributes the heat to fuel oil within its helical oil passageway;

an oil supply line in constant communication with the helical oil passageway in the heat transfer assembly and consequently in constant communication with an atomization nozzle which is securable at a terminal end of the heat transfer assembly;

an oil expansion and pressure relief means to prevent expanding fuel oil from passing through the atomization nozzle on cold startup and prior to the fuel oil attaining a temperature of a pre-selected value by means of associated configuration of the heat transfer assembly in cooperation with the atomization nozzle and an adjacent air supply inlet and an air supply line in constant communication therewith;

a system control means for cold startup to energize only the heating element, until the heat transfer assembly adjacent to the atomization nozzle attains a temperature of a preselected value, at which time said system control means energizes a fuel oil pump means, energizes an air pump, and energizes a means of igniting the atomized fuel oil exiting the aperture of the atomization nozzle; and

an air supply line and an air supply inlet means operatively secured to the heat transfer assembly adjacent the atomization nozzle for providing a pre-selected pressure for atomization of the fuel oil during operation and for accepting therein expanding oil and associated pressure from within the heat transfer assembly prior to the expanding oil attaining a temperature of said pre-selected value and during said cold startup.

4,797,090

CANDLE LANTERN APPARATUS

H. Gardner Rogers, 20 Newton St., Weston, Mass. 02193

Filed Jun. 12, 1987, Ser. No. 62,164

Int. Cl.⁴ F23D *3/16*

U.S. Cl. 431—290 **19 Claims**

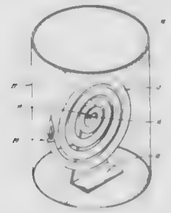
1. A candle apparatus, comprising

candle means, including a spiral candle element, for providing a flame at a first burning end of said element,

base means for supporting said candle means, and

hinge means rotatably connected between said candle means and said base means for supporting said candle means in a

substantially vertical plane, for rotation of said candle means with respect to said base means under the influence of gravity, so that as said first end burns, said candle means



rotates due to the influence of gravity and said flame remains at a substantially constant angular relationship with respect to said base means.

4,797,091

METHOD AND APPARATUS FOR UTILIZING THE HEAT ENERGY OF DOMESTIC AND COMMERCIAL REFUSE

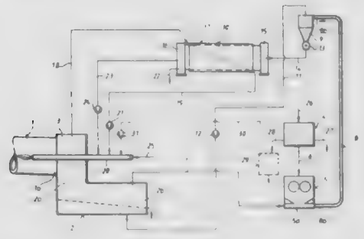
Eberhard W. Neumann, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Fed. Rep. of Germany

Filed Mar. 4, 1988, Ser. No. 164,085

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1987, 3708220

Int. Cl.⁴ F27B *15/00*

U.S. Cl. 432—14 **16 Claims**



1. Method of utilising the heat energy of domestic and commercial refuse in a kiln installation containing a kiln and a cooler arranged after the kiln, especially for the manufacture of mineral structural materials, in which

(a) a light fraction is sorted out of the crude refuse as so-called fluff, is crushed and fed as prepared valuable material to a pyrolysis reactor in which this valuable material is degassed with air excluded and heat delivered, yielding pyrolysis gas and pyrolysis residues.

(b) the pyrolysis gas is delivered to the main burner of the kiln, optionally with the additional use of primary fuel,

characterised by the following features:

(c) in order to obtain the valuable material, at least the crushed fluff is dried pneumatically to a dry substance content of at least approximately 78%, preferably approximately 88–92%, in a hot gas stream which is preferably branched off from the cooler of the kiln installation;

(d) the valuable material thus obtained is fed to the pyrolysis reactor and degassed at low temperature, the pyrolysis reactor being indirectly heated with hot secondary air taken from the region of the junction between the kiln and the cooler and/or combustion gases from an auxiliary firing system or from the kiln;

(e) the pyrolysis gas produced in the pyrolysis reactor, any quantity of primary fuel which may be necessary and the secondary air utilised for the indirect heating of the pyrolysis reactor are delivered to the main burner of the kiln.

4,797,092

CULLET PREHEATER

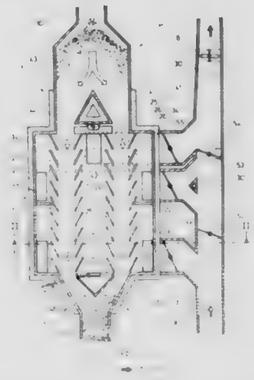
Helmut Pieper, Lohr/Main, Fed. Rep. of Germany, assignor to Nikolaus Sorg GmbH & Co. Kg, Lohr/Main, Fed. Rep. of Germany

Filed Jul. 29, 1987, Ser. No. 79,171

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1986, 3626076

Int. Cl.⁴ F27B *15/00*

U.S. Cl. 432—95 **8 Claims**



1. In a preheater for cullet, in which hot gas coming from a hot gas supply duct can be passed through the cullet while yielding heat to the latter and can be carried away through a hot gas exhaust duct, and wherein the cullet is guided between guiding walls forming a cullet shaft and permitting has entry as well as gas exit, the improvement comprising: said cullet shaft has at least two cullet shafts each defined by two approximately parallel guiding walls, the two outer guiding walls being fixed and the two inner guiding walls being spaced from one another forming a hot-gas gap and are combined into a single movable central body, said central body being pivotingly suspended at its upper end; and moving means for repeatedly moving at least one of the guiding walls laterally relative to another guiding wall so as to change the spacing between them by continuously or periodically impart a switching or shaking movement to the central body, said moving means including an unbalanced or eccentric drive.

4,797,093

MUSCULAR EXPANSION BUMPER AND HEAD-GEAR APPLIANCE

Earl O. Bergersen, 950 Green Bay Rd., Winnetka, Ill. 60093

Filed Oct. 19, 1987, Ser. No. 109,938

Int. Cl.⁴ A61C *7/00*

U.S. Cl. 433—5 **15 Claims**

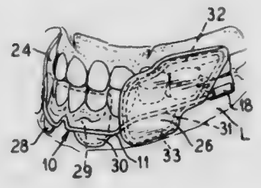
1. A muscular expansion bumper appliance comprising:

a wire form member having a generally U-shaped configuration having a central bight portion with two free posterior ends,

at least one additional wire segment secured on a lateral side of at least one of said free posterior ends of said wire form member, said wire segment configured into a generally geometrical parallelogram shape, and

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a side pad comprising a moldable material molded onto and carried by said wire segment and together with said wire



segment forming a selectively deformed side pad to permit desired expansion.

4,797,094

ORTHODONTIC WIRE TERMINAL AND ATTACHMENT TOOL THEREFOR

Thaddeus M. Karwoski, 5420-B Roundtree Ct., Concord, Calif. 94521

Filed Dec. 7, 1987, Ser. No. 129,480
Int. Cl.[4] A61Q *7/00*
U.S. Cl. 433—22 **8 Claims**



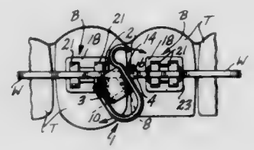
1. A terminal cap for reducing injury to a patient from the sharp ends of orthodontic wires, said terminal cap comprising:
a small domelike body having a first hole therethrough for accommodating the end of the orthodontic wire, and
A set screw threaded into a secod hole substantially normal to and intercepting said first hole in said body, said set screw for removably securing said body to said orthodontic wire.

4,797,095

ORTHODONTIC HOOK MOUNTING

Maclay M. Armstrong, Seattle; Steven A. Houser, Edmonds, and Jeffrey A. Armstrong, Mercer Island, all of Wash., assignors to Unitek Corporation, Monrovia, Calif.

Continuation-in-part of Ser. No. 609,409, May 11, 1984, abandoned. This application Feb. 27, 1986, Ser. No. 834,288
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—22 **20 Claims**



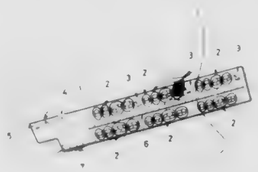
1. A mounting for an orthodontic hook or the like capable of being installed on an arch wire and tooth bracket assembly comprising a front member for positioning in front of an arch wire and tooth bracket, a pair of generally parallel rear prongs disposed generally parallel to said front member for straddling the body of a tooth bracket behind the arch wire of the assembly when said prongs are disposed substantially parallel to the arch wire, crosstie means supporting and spacing said rear prongs from said front member in a position projecting from said crosstie means, and rearwardly-opening slot means alongside said crosstie means for receiving the arch wire only when said prongs are not substantially parallel to the arch wire to enable movement of said rear prongs from a position in front of the arch wire to a position behind the arch wire.

4,797,096

MEASURING TOOL FOR THE SELECTION OF ARTIFICIAL TEETH

Toshio Ito; Takashi Miwa, and Fujio Yamagishi, all of Kasugai, Japan, assignors to G-C Toshi Kogyo Corporation, Kasugai, Japan

Filed Jan. 14, 1987, Ser. No. 3,145
Claims priority, application Japan, Jan. 29, 1986, 61-10250[U]; Oct. 23, 1986, 61-252426
Int. Cl.[4] A61C *19/04*
U.S. Cl. 433—26 **10 Claims**



1. A measuring tool for the selection of artificial teeth having a full-scale mesiodistal highest position of contour, said measuring tool comprising:
(a) a flexible substrate sized and shaped to be inserted into a patient's mouth or into an impression of a patient's mouth and to contact the existing teeth or gingiva to allow easy and accurate selection of artificial teeth for that patient:
(b) at least the full-scale mesiodistal highest position of contour of a plurality of artificial teeth indicated on said substrate;
(c) a product classification mark corresponding to the full-scale mesiodistal highest position of contour of said plurality of artificial teeth indicated on said substrate;
(d) a scale located at an interval of 13 mm for determining the average condyle indicated on said substrate; and
(e) a scale for judging the angle that the occlusal surface makes with the interalveolar ridge line indicated on said substrate.

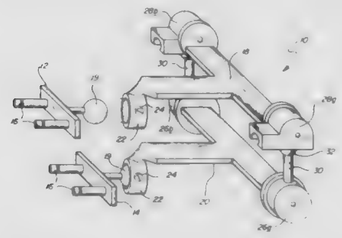
4,797,097

ARTICULATOR FOR DENTAL MODEL

Moritz Cohn, 26100 Orchard Lake Rd., Farmington Hills, Mich. 48018

Filed Apr. 15, 1987, Ser. No. 38,821
Int. Cl.[4] A61C *11/00*
U.S. Cl. 433—64 **11 Claims**

1. A dental articulator for hingedly retaining a pair of dental castings, said articulator comprising:
a pair of attachment members, each adapted to engage one of said castings, and,
a hinge unit including two pivotally interconnected retaining members, each adapted to pivotally engage one of said attachment members by means of at least one ball and socket joint, the socket of which includes a locking screw for selectively and reversibly immobilizing said joint;
said hinge unit further including a hinge connection which (a) provides a pair of pivot axes disposed in spaced-apart parallel relationship, each retaining member adapted to pivot about one of said axes, and which (b) provides for



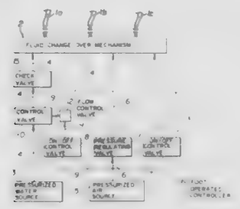
the ready and reverible separation of said retaining members.

4,797,098

APPARATUS FOR DENTAL TREATMENT PROVIDED WITH CHECK VALVE IN FLUID PASSAGE

Shosaku Kawata, Kanuma, Japan, assignor to Nakanishi Dental Mfg. Co., Ltd., Japan

Filed Apr. 22, 1987, Ser. No. 41,090
Int. Cl.[4] F27D *1/08*
U.S. Cl. 433—98 **4 Claims**



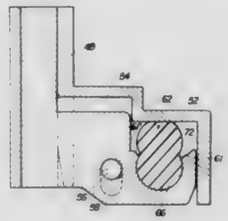
1. A dental treatment apparatus comprising:
a pressurized fluid source for pressurizing and supplying fluid to perform dental treatment operation;
fluid passage means for supplying said fluid pressurized to a dental treatment tool provided to the extreme end of a dental handpiece;
suction means interposed between said pressurized fluid source and said handpiece and adapted to stop the flow of said pressurized fluid and to suck the fluid in a direction opposite to a supplying direction of said fluid when said dental treatment operation is terminated; and
check valve means interposed in said fluid passage means between said suction means and said dental treatment tool, said check valve means including a resilient valving member and a through-slit formed in said valving member, said slit being extended apart under pressure to permit the fluid to pass therethrough when said pressurized fluid is conveyed through said check valve means during said dental treatment operation, said through-slit being closed by the resiliency of said valving member to inhibit the fluid lying between the check valve and the dental treatment tool from being sucked towards said suction means when said dental treatment operation is terminated.

4,797,099

RESILIENT DENTURE CONNECTING DEVICE

Melvin D. Poveromo, 14135 N. Miami Ave., Miami, Fla. 33168

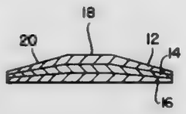
Filed Feb. 16, 1988, Ser. No. 156,120
Int. Cl.[4] A61C *13/22*
U.S. Cl. 433—169 **12 Claims**



1. A resilient denture connecting device having a proximal end and a distal end, a male-female attachment means to connect the device to an abutment tooth **12**, said attachment means having a surface facing the gingival tissue **14** and a distally facing abutment surface **50**,
said attachment means including a distally extending rigid shank **18** adjacent the surface of the attachment means which faces the gingival tissue,
said shank **18** having an upper surface **20** and a lower surface **22**, said distal surface **16** and a pair of side surfaces **24–26** and including a distal portion **28** and an intermediate portion **30**,
a housing **32** having a roof **38** with an upper surface, a distal wall **40** with a distal surface, a pair of opposing side walls **42–44** and mouth in an open bottom **46**, said housing being sized to receive the shank with the side walls of the housing **42–44** confronting the side surfaces **24–26** of the shank,
said housing including a proximal face plate **48** in a normal position in abutting relation to the distally facing surface **50** of said attachment means,
said housing having a distal cavity portion **52** extending proximately from the distal wall **40** and an intermediate cavity portion **54** between the face plate **48** and the distal cavity portion **52**,
pivot means interconnecting the side walls of the housing and the intermediate portion of the shank, said intermediate portion of the shank having a through recess **56** which is elongated toward the lower surface of the shank, and said pivot means including a pin **58** in the through recess **56** effective to permit hinged movement of the housing relative to the shank from said normal position of the face plate and vertical movement of the housing **32** relative to the shank upon movement of the pin vertically in the recess **56**,
said upper surface **20** of said shank including an intermediate portion spaced from the housing roof **38** a predetermined distance of between 0.4 and 0.6 millimeters,
the upper surface **20** of said distal portion **28** of the shank **18** being spaced beneath the housing roof **38** and having a recess **60** in the upper surface **20** of the shank **18**,
resilient means **62** captivated in the recess **60** and with a portion **64** at all times in engagement with the housing **32** normally biasing the housing **32** into the normal position, when said male-female attachment means connect the device to an abutment tooth,
said resilient means being effective to permit vertical movement of the housing simultaneously with hinged movement of said housing through said predetermined distance and said resilient means being effective to reboundingly restore the housing when masticating loads are cyclically relieved.

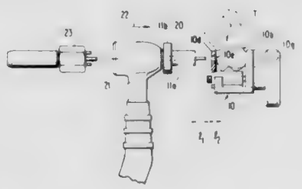
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4,797,100
METAL FOIL FOR FORMING A DENTAL COPING
Itzhak Shoher, 50 Shlomo-Hamelech St., Tel-Aviv, Israel 64386, and Aharon E. Whiteman, 13 J. L. Perez St., Petach-Tikvah, Israel 49206
Filed Jun. 1, 1987, Ser. No. 56,054
Int. Cl.[4] A61C *5/08*
U.S. Cl. 433—222.1 10 Claims



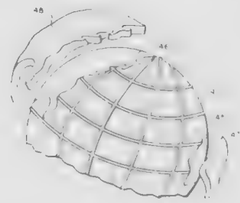
1. A metal foil for forming a dental coping in the construction of a ceramic or acrylic to metal dental restoration in which the coping represents the metal understructure of the dental restoration and is sized for adaptation to fit the tooth to be restored, comprising two or more layers of precious metal having a circular disk like shape with at least one layer of high fusing temperature metal and at least one layer of low fusing temperature metal and with said metal foil having a central area forming the occlusal surface of the coping and a cross section with a variable thickness extending from the central area to the periphery of the foil.

4,797,101
DENTAL IDENTIFICATION SYSTEM
Alvan Morris, 7148 Loch Lomond Dr., Bethesda, Md. 20817
Filed Mar. 11, 1987, Ser. No. 24,487
Int. Cl.[4] A61C *5/00*
U.S. Cl. 433—229 13 Claims



1. A method of enabling photographic identification of a human subject by use of a camera having a lens of predetermined fixed focal length, comprising the steps of
placing a clamp on the tooth of a human subject to be identified to establish a reference plane that is generally parallel to and spaced outwardly from a buccal face of said tooth;
inserting an end-cutting burr into a dental hand piece;
adjusting the position of said burr in said hand piece so that the burr protrudes outwardly of said hand piece by a predetermined fixed distance that is related to the fixed focal length of the camera lens which is to be used in effecting said photographic identification, said adjusting step being effected by placing an elongated cylindrical spacer onto said burr in surrounding relation to said burr and thereafter varying the position of said burr in said handpiece by a distance which is equal to the length of said cylindrical spacer, plus the distance between said reference plane and said tooth face established by said clamp, plus a predetermined depth of a recess that is to be drilled into said tooth face;
positioning the hand piece relative to said clamp with said spacer on said burr and with the burr so adjusted thereafter moving said hand piece toward said tooth face and clamp until the end of the spacer remote from the hand piece engages an outer surface of said clamp so as thereby to drill a recess of said predetermined depth into said tooth face; and
placing a microdot bearing identifying information thereon at the bottom of said recess and securing said microdot in place thereby to fix said microdot in place at a location that is spaced inwardly of the buccal face of the tooth by a precise distance that is related to said fixed focal length of the camera lens.

4,797,102
INSTRUCTIONAL GLOBE
Maria K. Forsyth, 63 Sterling Pl., W. Boylston, Mass. 01583
Continuation of Ser. No. 642,649, Aug. 20, 1984, Pat. No. 4,595,367. This application Jun. 16, 1986, Ser. No. 874,608
Int. Cl.[4] G09B *27/08*
U.S. Cl. 434—147 14 Claims

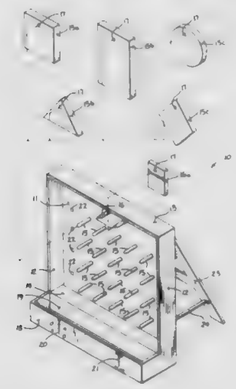


1. An instructional globe comprising:
(a) a globe-shaped body;
(b) a plurality of preformed spherical surface segments, the spherical surface of each segment structurally representing a portion of a geographical globe surface;
(c) detachably interengageable means on the globe-shaped body for removably attaching each spherical surface segment to the globe-shaped body at a pre-established position; and
(d) a plurality of cues formed on the globe-shaped body, each cue having a correspondence in shape to a set of said spherical segments whereby the placement of each of said segments in its respective pre-established position is facilitated, and wherein said cues comprise a plurality of indentations and wherein each of said spherical segments is geometrically similar in outline to a corresponding indentation.

4,797,103
LEARNING BOARD
Susan Pittman, Rte. 2 Box 353-AA, Lowell, Ark. 72745
Filed Nov. 23, 1987, Ser. No. 123,728
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—211 7 Claims

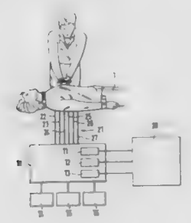
1. A learning board for learning concepts of color, geometric configuration, and counting comprising,
a board means formed with a matrix of blind bores for the selective positioning of a pre-determined matrix of support pegs within said bores,
plural sets of geometric configurations wherein each set includes a plurality of similar geometrically shaped elements, each set comprising a geometric shape of elements, each of said elements in said set formed of a unitary color and each set including a plurality of colors, and
peg means in overlying relationship to said matrix for the acceptance of pre-selected number cards, each of said number cards including a number thereon for determining the number of geometrical elements to be selected, and

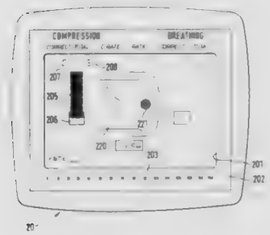
random selector means for the selection of a particular geometric shape from among said sets of geometric shapes



and for the random selection of a color within the geometric set selected.

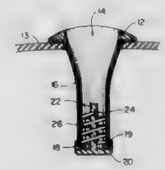
4,797,104
SYSTEM AND METHOD OF TESTING A PERSON IN THE PERFORMANCE OF CARDIOPULMONARY RESUSCITATION
Tore Laerdal; Kjell Aamodth, and Harald Eikeland, all of Stavanger, Norway, assignors to Asmund S. Laerdal, Stavanger, Norway
Filed Aug. 3, 1987, Ser. No. 81,317
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638192
Int. Cl.[4] G09B *5/02, 23/28*
U.S. Cl. 434—265 15 Claims





1. A system for testing a person in the performance of cardiopulmonary resuscitation (CPR) and for evaluating the correctness of a training exercise in CPR, including:
(a) a training device which simulates a patient, comprising at least one sensor for the output of parameter signals defining characteristic parameters for a resuscitation procedure to be carried out on the training device;
(b) a memory means for storing parameter values which define
(i) a parameter minimum value for the recognition of an operating procedure on the training device, as an attempt at a resuscitation procedure, and
(ii) upper and lower parameter limit values for the recognition of an operating procedure on the training device as a correct resuscitation procedure;
(c) a computer connected to the training device and the memory means for receiving the parameter signals from said at least one sensor, the computer being adapted to compare the parameter signals from the said at least one sensor to respective stored parameter values in the memory means thereby to detect the character of a resuscitation procedure in respect of correctness thereof, and
(d) a liquid crystal display means controlled by the computer for displaying a symbolic representation of the training device and a moving graphic representation of the parameter signals from said at least one sensor.

4,797,105
ONE-WAY BREATHING DEVICE
Curtis A. Green, 2520 Wellerman Way, Turlock, Calif. 95380
Filed Nov. 6, 1987, Ser. No. 117,325
Int. Cl.[4] G09B *23/28*
U.S. Cl. 434—265 8 Claims



1. A new and improved one-way breathing device for use with a CPR training mannequin having a mouth with lips, comprising:
hollow conduit means dimensioned for insertion into the mouth of the mannequin;
radially outwardly extending flange means at one end of said conduit means for engagement over the lips of the mannequin;
said flange means formed from a soft flexible material configured to resemble human lips and dimensioned for sealing conformance with the mannequin lips;
one-way valve means in said conduit for allowing air to be blown through said conduit means into said mannequin and for preventing air from returning through said conduit means from said mannequin; and
said conduit means tapering from a wide end adjacent said flange means to a narrow end adjacent said one-way valve means.

4,797,106
ELECTRONIC BLACKBOARD SYSTEM
Seiji Umehara, and Katsuyoshi Sakai, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 2, 1986, Ser. No. 902,488
Claims priority, application Japan, Sep. 6, 1985, 60-197343; Sep. 6, 1985, 60-197344; Dec. 23, 1985, 60-287966
Int. Cl.[4] H04N *1/024*
U.S. Cl. 434—408 11 Claims

1. An electronic blackboard system for positioning in front of and in facing relationship with an existing information writ-

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ing board to read information written on the board therefrom, said system comprising:

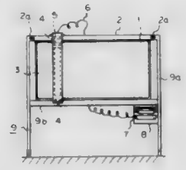
a pair of left and right struts;

a horizontal guide rail supported by said pair of struts;

said struts and guide rail forming a support unit that is disposed separated from and independent of said information writing board;

a drive means supported from said guide rail and including roller means for contacting said guide rail and to roll in contact with said guide rail;

a positioning roller means provided at the lower part of said drive means, said roller rolling in contact with an information writing surface of said information writing board;



a photoelectric conversion device attached to said drive means such as to face the information writing board and adapted to read written information in the form of lines and convert them into electrical signals, said photoelectric conversion device being moved by said drive means in the direction of intersecting said lines to obtain an image of the information written on the information writing board;

the positioning of said positioning roller means and support unit made so as to provide a uniform spacing between said photoelectric conversion device and information writing board writing surface;

a memory adapted to store said information image; and

a hardcopying device adapted to read out the information image contained in said memory and record it.

4,797,107

COPYABLE BLACKBOARD

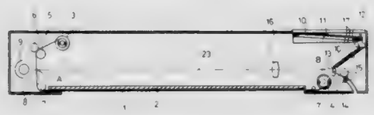
Naoyuki Hatta; Hideo Yoshihara; Takeshi Izaki; Akihiro Sawada; Takemi Yamamoto, and Kazuo Sasgyoji, all of Nagoya, Japan, assignors to Brother Kogyo Kabushikikaisha, Aichi, Japan

Filed May 19, 1987, Ser. No. 52,865

Claims priority, application Japan, May 19, 1986, 61-113874; Dec. 29, 1986, 61-200788[U]; Jan. 13, 1987, 62-2429[U]; Jan. 23, 1987, 62-14817

Int. Cl.[4] H04N *1/10*

U.S. Cl. 434—408 **29 Claims**



1. A copyable blackboard comprising:

a written member on which is depicted a picture comprising data such as characters or figures;

first carrier means for carrying said written member;

light source for irradiating light to said picture on a portion of said written member to generate an optical signal corresponding to said picture, said portion being located at a predetermined position on said written member;

photosensitive member which receives said optical signal from said written member and thereby produces a corresponding latent image of said picture;

second carrier means for carrying said photosensitive member;

image developing means for developing said latent image of said photosensitive member on the photosensitive member itself; and

control means for controlling said first and second carrier means to control feeding speeds of said written member and said photosensitive member to values determined to correspond to a preselected picture reduction ratio and to also control said image developing means and said light source.

4,797,108

METHOD OF MANUFACTURING AMORPHOUS SILICON FIELD EFFECT TRANSISTORS

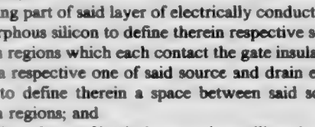
Simon N. Crowther, Basingstoke, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Division of Ser. No. 706,940, Mar. 1, 1985, abandoned. This application Dec. 10, 1986, Ser. No. 939,967

Claims priority, application United Kingdom, Mar. 10, 1984, 8406330

Int. Cl.[4] H01L *29/78*

U.S. Cl. 437—41 **4 Claims**



1. A method of manufacturing an amorphous silicon field effect transistor having component parts thereof formed on an insulating substrate, the component parts of said amorphous silicon field effect transistor including electrically conductive source and drain regions, a layer of intrinsic amorphous silicon provided in a space between said source and drain regions and in intimate electrical contact with said source and drain regions, source and drain electrodes in electrical connection with said source and drain regions respectively, a gate electrode adjacent said layer of intrinsic amorphous silicon, and a gate insulating layer separating said gate electrode from said layer of intrinsic amorphous silicon, said gate insulating layer contacting said source and drain regions, the method comprising the steps of:

forming source, drain and gate electrodes on an insulating substrate;

forming a gate insulating layer over said gate electrode;

forming a layer of electrically conductive doped amorphous silicon over said source and drain electrodes and over said gate insulating layer so as to be in direct contact therewith, said layer of electrically conductive doped amorphous silicon being destined to form said source and drain regions;

removing part of said layer of electrically conductive doped amorphous silicon to define therein respective source and drain regions which each contact the gate insulating layer and a respective one of said source and drain electrodes, and to define therein a space between said source and drain regions; and

depositing a layer of intrinsic amorphous silicon in said space defined between said source and drain regions so as to bring said layer of intrinsic amorphous silicon into intiamte electrical contact with said source and drain regions and in contact with said gate insulating layer, points of contact of said layer of intrinsic amorphous silicon with said gate insulating layer corresponding to those points where said source and drain regions are closest to one another and in intimate electrical contact with said layer of intrinsic amorphous silicon.

4,797,109

COILED WIRE INTERCONNECTOR

Russell E. Wende, Oak Lawn, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Feb. 25, 1988, Ser. No. 160,342

Int. Cl.[4] H01R *35/00*

U.S. Cl. 439—15 **17 Claims**



1. An electrical interconnector member which comprises: an outer housing defining a first aperture; a rotor member occupying said first aperture in rotational relation thereto; a first electrical connection carried on said outer housing; a second electrical connection carried on said rotor member; and coiled conductor means loosely coiled about said rotor member within said outer housing, said coiled conductor means being connected at respective ends thereof to said first and second electrical connections; the improvement comprising, in combination:

recess means carried by one of said outer housing and rotor member, and flexible detent means carried by the other of said outer housing and rotor member, said detent means being normally positioned to project into said recess means to inhibit rotation between said outer housing and rotor member when said interconnector member is not mounted on a device such as a vehicle steering column, said detent means being positioned and proportioned whereby mounting of said interconnector member for use on a device such as said vehicle steering column causes said detent means to be flexed out of projecting relation with said recess means, to permit rotation between the outer housing and rotor member.

4,797,110

PRINTED CIRCUIT BOARD WITH INTEGRAL ELECTRICAL CONNECTOR AND METHOD FOR MAKING IT USING WAVE SOLDERING

Richard L. Ponziani, Dayton; William E. Davies, Kettering, and Everett P. Trittschuh, III, Centerville, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 906,125, Sep. 8, 1986, abandoned. This application Jan. 21, 1988, Ser. No. 147,043

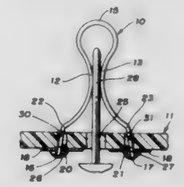
Int. Cl.[4] H01R *9/09*

U.S. Cl. 439—83 **4 Claims**

1. A printed circuit board assembly with a soldered integral connector adapted to receive a mating connector shaft with no solder blockage of the connector, the printed circuit board assembly comprising, in combination:

connector means comprising a single strip of electrically conducting metal having a pair of oppositely oriented concave legs joined at one end in a convex head providing a spring bias therefore with each concave leg having a narrow foot on its other end, the concave legs being spaced apart by a smaller distance at a closest point intermediate their one and other ends than at their other ends;

an insulating circuit board with a pair of mounting openings therethrough, a central access opening between the mounting openings and an electrically conducting printed circuit on one side thereof bordering at least one of the mounting openings, the mounting openings receiving the feet of the connector means inserted from the other side of the circuit board and being spaced apart by a distance (1) sufficiently small to force the concave legs toward each other against the bias of the convex head so that the feet are biased outward against walls of the mounting openings and so that the concave legs are adapted for physical and electrical at their closest point, with an engagement force precisely determined by the distance, of the mating connector shaft when inserted through the central access



opening, and (2) sufficiently great to maintain the feet apart in the openings to prevent the wicking of liquid solder by capillary action from the mounting openings or access opening between the concave legs on a wave soldering process; and

a solder connection in each of the mounting openings physically retaining the feet therein with at least one of the solder connections electrically connecting the connector means to the printed circuit, the solder connections not extending away from the circuit board between the concave legs and therefore not blocking access to the connector means by the mating connector shaft.

4,797,111

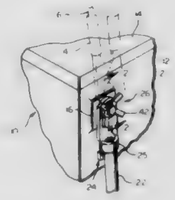
TERMINAL FOR SIDE-MOUNT BATTERY

Martin E. Ackmann, 851 Bode Rd., Elgin, Ill. 60120

Filed May 4, 1987, Ser. No. 45,532

Int. Cl.[4] H01R *11/01*

U.S. Cl. 439—755 **17 Claims**



1. A battery terminal bolt for a side-mount electrical storage battery, comprising the combination of

a bolt having a threaded stem at one end and having an enlarged body at the opposite end;

a plurality of arms rigidly projecting radially from the bolt body at a location spaced from the threaded stem; and

said bolt and arms being electrically conductive.

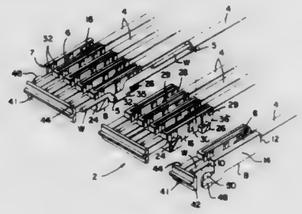
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,112

WIRE HOLDERS AND HARNESSES INCORPORATING WIRE HOLDERS

Lawrence P. Weisenburger, Kernersville, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 4, 1987, Ser. No. 81,195
Int. Cl.[4] H01R *13/00*
U.S. Cl. 439—55 **21 Claims**



1. A wire holder for holding a plurality of discrete wires in an array in side-by-side parallel relationship, the wire holder comprising:

a frame having oppositely-facing first and second major surfaces, oppositely-facing first and second minor surfaces, and oppositely-facing ends, the major surfaces and the minor surfaces extending between the ends,

a plurality of parallel side-by-side wire-receiving cavities extending into the first major surface and extending through the frame from the first minor surface to the second minor surface, the cavities being in a row which extends between the ends, the cavities having wire retaining means therein for retaining wires inserted therein,

a wire guard for protecting the tip portions of the end portions of wires contained in the cavities, the guard extending beside, and being spaced from, the first minor surface, the wire guard comprising a bar like member which is connected to the frame, there being clearance space between the bar like member and the first minor surface for the reception of the tip portions of the end portions of wires held in the cavities, whereby,

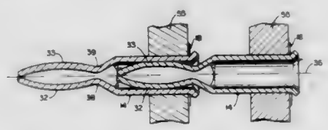
a discrete wire can be placed in one of the cavities by positioning the wire adjacent to the first major surface with the axis of the wire in alignment with the one cavity and with the tip portion of the end portion of the wire aligned with the clearance space, and thereafter moving the wire laterally of its axis and into the cavity so that the end portion of the wire is retained in the cavity with the tip portion of the end portion of the wire projecting from the first minor surface and into the clearance space.

4,797,113

BOARD TO BOARD FLEXIBLE PIN

Roger T. Lambert, 5164 St. Moritz Dr., Fridley, Minn. 55421

Filed Feb. 5, 1987, Ser. No. 11,030
Int. Cl.[4] H01R *13/28*
U.S. Cl. 439—74 **9 Claims**



7. A flexible pin for use in conjunction with another flexible pin comprising:

(a) a one-piece elongated sheet metal member having at least a first and a last portion defining a longitudinal axis;

(b) said first portion having a barrel shape in which the lateral edges thereof are bent towards each other until they are in close proximity to each other, and said first portion being constructed and arranged to receive and communicate with substantially all of another said last portion of another identical flexible pin;

(c) said last portion cantilevered integrally from said first portion and extending away from said first portion generally in the direction of said longitudinal axis, said last portion having a pair of cantilevered fingers disposed in confronting relationship, one of which is the mirror image of the other, each finger having a generally continuously arcuate cross-section in a plane parallel to said longitudinal axis in which the greatest transverse projection of said fingers is at least equal to the width of the inside diameter of said first portion; and

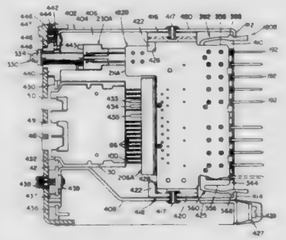
(d) a printed circuit board having a plurality of bores formed therein communicating with electrical circuits formed thereon, one of said bores receiving said first portioN of said flexible pin.

4,797,114

JACK CIRCUIT BOARD ASSEMBLY

Frederick L. Lau, Skokie, Ill., assignor to Switchcraft, Inc., Chicago, Ill.

Filed Mar. 2, 1987, Ser. No. 20,803
Int. Cl.[4] H01R *23/68*
U.S. Cl. 439—79 **12 Claims**



1. An electrical connector comprising:

an elongated first dielectric body having extended through its thickness a pair of longitudinally spaced aperatures, each being provided with an integral first latching device, and an interposed plurality of first contact receiving holes;

an elongated second dielectric body having a front surface and a rear surface defining an interposed thickness of said second dielectric body, said second dielectric body having its front surface interfaced with said first dielectric body and having extended through its thickness a plurality of second contact receiving holes, each being aligned with a respective first contact receiving hole, and said second body having a pair of longitudinally spaced portions from which respective integral second latching means extend into engagement with respective first latching devices for removably securing second body to said first body;

a plurality of electrical contact members having contact end portions disposed in respective first contact receiving holes in said first body and being extended integrally therefrom through said aligned second contact receiving holes in said second body, said electrical contact members having integral other end portions protruding from said rear surface of said second body; and

wall means extended from said rear surface of the second body with said protruding end portions of said electrical contact members for cooperating therewith in forming electrical connections with said connector through said electrical contact members, said dielectric wall means including means for mounting to a printed circuit board

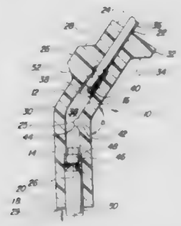
and disposing said contact members in electrically connectable relationship with conductors on said printed circuit board.

4,797,115

ANGLED BOOT FOR ANGLED SPARK PLUG CABLE TERMINALS

Ronald P. Sturdevan, Tifton, and Alexander J. Pickelhaupt, Valdosta, both of Ga., assignors to Prestolite Wire Corporation, Farmington Hills, Mich.

Filed Nov. 13, 1987, Ser. No. 121,045
Int. Cl.[4] H01R *11/11, 13/516*
U.S. Cl. 439—125 **11 Claims**



1. An angled boot for an angled spark plug cable terminal, comprising:

an angled boot made from an elastomeric material having a first portion with a first end and a second portion with a second end, said portions being disposed at an angle relative to each other, said angle being greater than 90° and less than 180°, each of said first and second portions having a central bore for receiving said angled spark plug cable terminal, said angled boot having at said first end a first aperture contiguous with said central bore for receiving a spark plug and at said second end a second aperture contiguous with said central bore for receiving a spark plug cable which is mechanically and electrically connected to said spark plug cable terminal;

a first external protuberance provided on said second portion of said angled boot, said first external protuberance having a pressing surface which is in a plane substantially perpendicular to the axis of said central bore of said first portion of said angled boot for pressing said terminal onto a spark plug; and

retaining means for fixedly retaining said angled boot and said spark plug cable terminal relative to each other.

4,797,116

ELECTRICAL CONNECTOR HAVING A MOVABLE CONTACT GUIDE AND LANCE-MAINTAINING MEMBER

Shigeru Isohata, Machida, and Masao Tsukakoshi, Kawasaki, both of Japan, assignors to AMP Incorporated, Harrisburg, Pa.

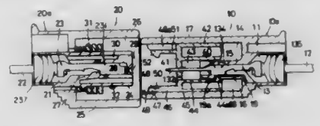
Continuation-in-part of Ser. No. 145,428, Jan. 19, 1988. This application Apr. 26, 1988, Ser. No. 186,339
Claims priority, application Japan, Jan. 26, 1987, 62-009823; May 14, 1987, 62-117918
Int. Cl.[4] H01R *13/424*
U.S. Cl. 439—141 **7 Claims**

1. An electrical connector for electrical engagement with a complementary electrical connector, comprising:

a dielectric housing having passageway means extending therethrough in which electrical contact means disposed;

housing lance means engaging the contact means maintaining said contact means in said passageway means;

movable contact guide means disposed in said housing and having guide plate means provided with hole means through which a front end of contact section means of said contact means extend in order to align and guide the contact section means for electrical engagement with complementary contact section means in the complementary electrical connector when the electrical connector electrically connects with the complementary electrical connector as the movable contact guide means moves



along said housing from an outer position to an inner position during the connection between the electrical connector and the complementary electrical connector; and

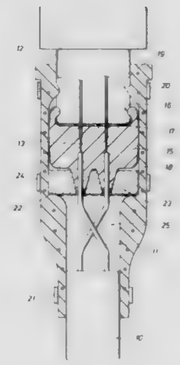
means provided by said movable contact guide means maintaining the housing lance means in engagement with the contact means.

4,797,117

MARINE ELECTRICAL PLUG

Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1982, Ser. No. 452,590
Int. Cl.[4] H01R *4/64*
U.S. Cl. 439—200 **7 Claims**



1. A plug, male or female, for an underwater electrical cable comprising:

an electrical contact insert;

at least one conductive pin extending from said electrical contact insert;

at least one insulated conductor extending from said electrical cable and into conductive contact with said conductive pin;

a first non-conductive material disposed surrounding the locale of said conductive contact of said conductive pin and said insulated conductor;

a seal boot at least partially surrounding the first non-conductive material, the insulated conductor extending through a nipple of the seal boot, the first non-conductive material being surrounded on one side by the electrical contact insert and on the other side by the seal boot;

a preloader abutting the seal boot and having an aperture through which the nipple is wedged, the preloader binding and sealing the nipple to the insulated conductor;

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a second non-conductive material disposed surrounding the insulated conductor adjacent the preloader; and

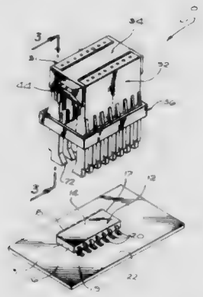
an outer boot at least partially surrounding the non-conductive materials, seal boot and preloader, the seal boot forming a cup and a rim of the cup being secured between a recess in the insert and the outer boot.

4,797,118

TEST ADAPTER FOR INTEGRATED CIRCUIT CARRIER

Kim L. Fenmster, Ontario, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Oct. 23, 1987, Ser. No. 112,654
Int. Cl.⁴ H01R *23/72*
U.S. Cl. 439—264 **4 Claims**



1. An adapter for coupling to a circuit carrier including a carrier housing with opposite sides and a plurality of leads spaced in a row along said sides, comprising:

a one-piece integral frame embodying two spaced slots parallel to each other:

said slots defining a relatively rigid support therebetween:

said frame having two opposite sides;

said slots being parallel to said sides and defining relatively resilient sidewalls adjacent to said sides:

a pair of contact housings each having a set of contacts mounted on one side thereof;

said housings being mounted vertically in said slots with the sides mounting said contacts facing each other;

said sidewalls deforming outwardly when said housings are mounted into said slots;

said housings being pivotable about the sides of said rigid support; and

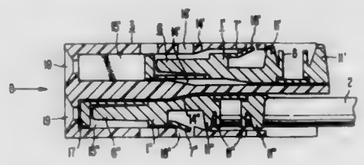
cam means mounted on said housings movable between first and second positions, in said first position said cam means locating the lower ends of said housings so that said contacts can be disposed over said leads with little or no resistance, and shifting of said cam means from said first position to said second position pivots said housings to cause said lower ends thereof to be urged toward each other to press said contacts firmly against said leads.

4,797,119

INSULATION DISPLACEMENT CONNECTION (IDC) TYPE CABLE CONNECTOR AND A METHOD FOR ASSEMBLING A CABLE THERETO

Hideo Miyazawa; Ikuhiro Andoh, both of Yokohama; Hiromichi Koyama, Suzaka, and Mitsuru Kobayashi, Nagano, all of Japan, assignors to Fujitsu Limited, Kawasak, Japan

Continuation of Ser. No. 011,601, Feb. 6, 1987, Pat. No. 4,714,306. This application Dec. 21, 1987, Ser. No. 135,708
Claims priority, application Japan, Feb. 7, 1986, 61-025005
The portion of the term of this patent subsequent to Dec. 22, 2004, has been disclaimed.
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 439—395 **12 Claims**



1. A cable connector having a plurality of contact parts for engagement with respective corresponding counter contact parts of an opposite connector, said cable connector comprising:

a plurality of separable, elongated, metallic contact terminals, each of which is provided with,

a contact part at one end of the contact terminal for contacting a corresponding contact part of the opposite connector, said contact part of the cable connector having a cross-sectional configuration presenting a width and a height, and

an elongated connection part provided at the opposite end of said contact terminal and adapted for connection to a cable;

a housing made from an insulator material for receiving and holding said contact terminals, said housing being provided with an outer wall, a floor wall, spaced side walls and at least one internal wall parallel to said side walls, said walls defining a plurality of holes, said holes corresponding respectively to said contact terminals for receiving the latter separately and holding them separated from each other, said outer wall being cut away at one end of the housing so as to expose said floor wall and present an open deck therefrom disposed in front of each hole, adjacent decks being separated by an internal wall; and

pre-loading means for holding each contact terminal at respective first and second positions in the housing, said connection part of the contact terminal being positioned on the open deck in an exposed condition when the terminal is in its first position, and said connection part of said contact terminal being entirely covered by said outer wall of said housing when the terminal is in its second position.

4,797,120

COAXIAL CONNECTOR HAVING FILTERED GROUND ISOLATION MEANS

Kirk D. Ulery, Mount Joy, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

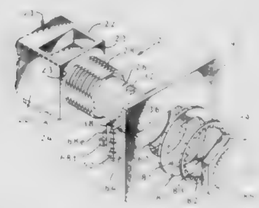
Filed Dec. 15, 1987, Ser. No. 132,390
Int. Cl.⁴ H01R *17/04*
U.S. Cl. 439—578 **20 Claims**

1. An electrical coaxial connector assembly having filtered isolation means for isolating the connector from ground comprising:

a coaxial connector having a conductive inner contact and a conductive outer shell, said shell having first and second portions, said second portion extending outwardly from said first portion, said second portion including means for being mounted to a conductive panel member;

isolation means having first and second dielectric members cooperating with each other to provide a dielectric passageway through a cutout of a panel member to which the coaxial connector is to be mounted, each said dielectric member having an aperture extending therethrough for receiving said second portion of said conductive shell, said first and second dielectric members including bushing sections extending from surfaces proximate said panel member to engage and thereby form said passageway through said panel member cutout, said first and second dielectric members further including peripheral flanges to extend along major surfaces of said panel member about the periphery of said cutout;

said first dielectric member further including at least one laterally extending flange section providing a respective



substrate to which at least one electrical component is mountable,

conductive circuit means secured to a surface of said peripheral flange and said at least one lateral flange section, said flange surface being remote from said panel member, said circuit means including a portion substantially surrounding said aperture and adapted to engage said conductive shell of said coaxial connector and establish an electrical connection therewith; and

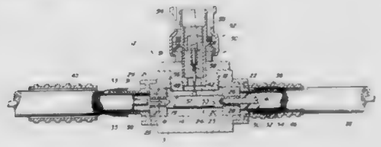
at least one electrical component mounted to said first dielectric member including at least a first contact means connected to said conductive circuit means and including a second contact means adapted to be electrically connected with said conductive panel member whereby said at least one electrical component completes an electrical circuit and provides filtering means between said conductive shell and said conductive panel member.

4,797,121

COAXIAL CABLE FITTING

Robert D. Hayward, Phoenix, Ariz., assignor to Gilbert Engineering Company, Inc., Phoenix, Ariz.

Filed Mar. 9, 1988, Ser. No. 168,890
Int. Cl.⁴ H01R *17/04*
U.S. Cl. 439—579 **4 Claims**



1. A fitting for tapping into a coaxial cable network comprising:

(A) a block fabricated from a conductive material, said block including:

1. a cylindrical channel extending between coaxially aligned first and second openings; and

2. a passage extending between a third opening and said channel, said passage having an axis disposed at right angles with respect to the axis of said first and second openings;

(B) first and second cylindrical insulators having outside diameters dimensioned to be closely received within said cylindrical chamber, each of said first and second insulators extending between an inside face and an outside face;

1. said first cylindrical insulator being positioned within said cylindrical chamber with its said outside face disposed proximate said first opening;

2. said second cylindrical insulator being positioned within said cylindrical chamber with its said outside face disposed proximate said second opening;

3. a first central aperture extending coaxially through said first insulator; and

4. a second central aperture extending coaxially through said second insulator;

(C) a double-ended pin unit fabricated from a conductive material, said pin unit:

1. having a central region and first and second end regions, said central region extending between said first and second end regions;

2. said first and second end regions extending, respectively, into said first central aperture and into said second central aperture such that said pin unit is supported coaxially within said chamber;

3. a first coaxial center-conductor-receiving blind hole in said first end region; and

4. a second coaxial center-conductor-receiving blind hole in said second end region;

(D) a removable coaxial cable connector assembly comprising:

1. a nipple adapted to be closely removably received within said passage; and

2. an outwardly directed conventional coaxial cable connector extending through and supported by said nipple, said connector including:

a. outer conductor coupling means; and

b. inner conductor coupling means; and

3. an inwardly directed and inwardly spring biased center pin, said center pin:

1. being electrically connected to said inner conductor coupling means; and

2. bearing at one end on said central region of said pin unit;

(E) first coaxial cable coupling means adapted to permanently secure a first bus coaxial cable end to said block such that a center conductor of said first bus coaxial cable end extends into said first center-conductor-receiving blind hole and an outer conductor of said first bus coaxial cable end is in electrical contact with said block; and

(F) second coaxial cable coupling means adapted to permanently secure a second bus coaxial cable end to said block such that a center conductor of said second bus coaxial cable end extends into said second center-conductor-receiving blind hole and an outer conductor of said second bus coaxial cable end is in electrical contact with said block.

4,797,122

DRIP-PROOF CONNECTOR

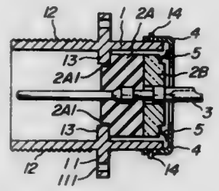
Sadao Kuboi, and Tomosari Ohtsuki, both of Mooka, Japan, assignors to Daiichi Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1988, Ser. No. 176,308
Claims priority, application Japan, Apr. 8, 1987, 62-86189; Dec. 10, 1987, 62-188039[U]
Int. Cl.⁴ H01R *13/40*
U.S. Cl. 439—589 **6 Claims**

1. A drip-proof connector including at least one contact, an insert having said contact inserted therein, and a shell enclosing said insert, wherein said insert consists of a front insert having a rubber-like elasticity and a rear insert having no

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rubber-like elasticity, diameters of said front and rear inserts being not more than an inner diameter of the shell, said shell being provided in its inside with an inwardly extending flange



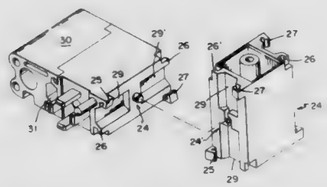
whose inner diameter is smaller than the diameter of said front insert, and a pressing cover is provided on said shell on a side of a contact tail of said contact.

4,797,123

PROGRAMMABLE MODULAR CONNECTOR ASSEMBLY

Ronald M. Weber, Cleona, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 855,225, Apr. 22, 1986, abandoned. This application Mar. 25, 1988, Ser. No. 178,786
Int. Cl.[4] H01R 9/00
U.S. Cl. 439—717 **10 Claims**



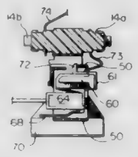
1. A modular connector assembly for the distribution of power to a printed circuit board comprising first and second pairs of matable individual connector modules having different power carrying characteristics, a first connector module of each pair having a pluggable mating face located transversely of a board-engaging face and the second connector module of each pair having a complementary pluggable mating face located opposite a board-engaging face, the board-engaging faces having the same common dimensions, the first individual modules of respective pairs being provided with other, first, pairs of mutually opposite faces extending perpendicularly of the mating and board-engaging faces and having first means to link and interlock them with respective ones of other mutually opposite faces of adjacent modules to form a composite connector body when mounted in a row along one edge of a daughter board such that the mating faces extend perpendicularly to the plane of the printed circuit board, and the second individual modules of respective pairs being provided with other, second, pairs of mutually opposite faces extending perpendicularly of the mating and board-engaging faces and having second means to link and interlock them with respective ones of such other mutually opposite faces of the adjacent modules to form a composite connector body when mounted in a row along the face of a mother board with matable modules of respective pairs in corresponding positions and their mating faces extending parallel to the plane of the mother board, said first and second linking and interlocking means between respective adjacent first and second modules comprising a plurality of interengageable latch members located around and equidistant from a central rotational axis on each of the other mutually opposite faces, the latch members on one of such other mutually opposite faces being oriented in an opposite tangential direction from the latch members on the opposite of the other faces whereby the modules can be linked and interlocked together by relative rotation of their respective other mutually opposite faces about such axes to bring the latch members into engagement.

4,797,124

CONNECTOR BODIES AND ASSEMBLIES

Laurence A. J. Benalicu, Kanata, and Alex G. Cristescu, Montreal, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 856,518, Apr. 28, 1986, abandoned. This application Feb. 24, 1987, Ser. No. 18,230
Int. Cl.[4] H01R 9/24
U.S. Cl. 439—719 **4 Claims**



1. A connector comprising an elongate dielectric body provided by first and second body portions in which:

the first body portion is planar and elongate and has two elongate sides and two opposite edges extending between the sides, the first body portion carrying a first row and a second row of insulation displacement terminals positioned one row along each side of the first body portion with the terminals of one row electrically interconnected with the terminals of the other row through the first body portion; and

the second body portion projects outwardly from one of the elongate sides of the first body portion and extends along the length of the first body portion, the second body portion have two oppositely facing elongate sides which face laterally of the length of the first and second body portions, one of said elongate sides having a first series of openings spaced apart along said one side to receive plug retainers for modular jacks and other side having a second series of openings spaced apart along said other side for receiving plugs for the modular jacks, the first series of openings facing laterally of the body in the same direction as the first row of terminals and each opening of the first series interconnecting through the second body portion with a corresponding opening of the second series.

4,797,125

ELECTRODE CONNECTOR FOR SUBSTRATE ELECTRODES

Anthony Malana, San Dimas, Calif., assignor to Tronomed, Inc., Laguna Hills, Calif.

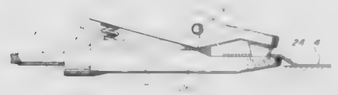
Filed May 27, 1987, Ser. No. 55,163
Int. Cl.[4] H01R 4/48
U.S. Cl. 439—729 **19 Claims**

1. A medical electrical connector for flexible resting electrodes applied to a patient, comprising:

a first base member having a flat support surface with a receptacle extending into the flat support surface;

a second member attached to the first member and relatively movable with the first member, the second member having a prong member of a configuration compatible with movement into the receptacle; and

means, on one of the receptacle and prong member, for providing electrical contact with the electrode when the prong member is positioned on one side of the electrode and the receptacle is positioned on the other side, the prong member forcing the electrode to be deformed and



to be positioned within the receptacle for providing a positive locking contact.

4,797,126

ADJUSTABLE LENGTH SLOTLESS FEMALE CONTACT FOR CONNECTORS

Julius Botka, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

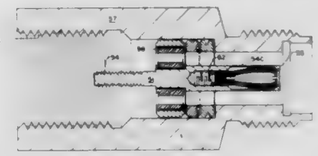
Continuation of Ser. No. 877,951, Jun. 24, 1986, abandoned. This application Jun. 23, 1988, Ser. No. 212,038
Int. Cl.[4] H01R 13/11
U.S. Cl. 439—843 **4 Claims**

1. A slotless female connector comprising:

a cylindrical outer shell having a side wall encircling a cavity and forming an opening extending from the cavity through a first end of the shell;

that slopes an acute angle B relative to an axis A of the cylindrical outer shell;

a collette inserted within the cavity, said collette having a plurality of tines, each of which has a first end that is in contact at an associated point P with the sloping inner



surface of the shell, each of points P being substantially flush with the first end of the shell;

wherein, for each tine, the distance from axis A to the tine is the smallest at an associated point Q located at substantially the same distance along axis A as point P, whereby, when a center pin of a male connector is inserted into the female connector, contact with each tine is made at point Q adjacent to point P.

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4,797,127

LOW FOAMING, HIGH WEAVING EFFICIENCY POLYVINYL ALCOHOL SIZE COMPOSITION

Flan L. Marten, Macungie, and Amir Famili, Schnecksville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 785,940, Oct. 9, 1985, abandoned. This application Mar. 17, 1988, Ser. No. 171,206

Int. Cl.[4] C08L 5/00

U.S. Cl. 8—115.6 14 Claims

1. A sizing composition consisting essentially of

(a) 100 parts by weight 85–97 mole % hydrolyzed polyvinyl alcohol,

(b) 2–15 parts by weight hydrogenated tallow wax or a fatty acid,

(c) 1–3 parts by weight surfactant composition consisting essentially of an ethylene oxide-propylene oxide surfactant having a surface tension ranging from 37 to 48 dynes/cm measured at 25° C. in a 0.1% aqueous solution and a foaming number less than 10 as determined in a 7% aqueous polyvinyl alcohol solution containing 11.4 parts by weight hydrogenated tallow wax and two parts by weight surfactant per 100 parts by weight 87–89 mole % hydrolyzed polyvinyl alcohol having a DP of about 1700.

4,797,128

METHOD OF AND APPARATUS FOR CLEANING GARMENTS AND SOFT GOODS CONTAMINATED WITH NUCLEAR, CHEMICAL AND/OR BIOLOGICAL CONTAMINANTS

David E. Fowler, Gainesville, Fla., assignor to Quadrex HPS, Inc., Gainesville, Fla.

Filed Dec. 10, 1984, Ser. No. 679,641

Int. Cl.[4] B08B 3/00

U.S. Cl. 8—137 15 Claims

1. A method of decontaminating garments, soft good or mixtures thereof contaminated with radioactive particulates, toxin, chemical, and biological contaminants comprising the steps of:

(a) depositing contaminated garments, soft goods or mixtures thereof in a cleaning drum;

(b) charging the drum with a cleaning solvent in which the chemical contaminants are soluble;

(c) agitating the drum during a wash cycle to separate radioactive, toxin, biological particulate matter or mixtures thereof from the garments;

(d) draining the drum of the dry cleaning solvent which contains suspended particulate contaminants and dissolved chemical contaminants;

(e) contacting the drained solvent with both a neutralizing agent and an oxidizing agent, said neutralizing agent being selected from the group consisting of sodium hydroxide, potassium hydroxide and mixtures thereof and having a concentration greater than one (1.0) normal, said oxidizing agent being selected from the group consisting of calcium hypochlorite, sodium hypochlorite and mixtures thereof and having a concentration of greater than ten percent (10%), so as to activate the toxin, the biological contaminants or mixtures thereof suspended in the solvent and further so as to oxidize the chemical contaminants dissolved in the solvent and thereby placing the toxin, biological contaminants chemical contaminants or mixtures thereof in nontoxic form;

(f) rinsing the garments, soft goods or mixtures thereof by circulating clean solvent from a solvent tank through the drum thereby effecting additional removal and flushing of particulate and chemical contaminants;

(g) filtering the circulated solvent to remove the particulate material suspended in the solvent prior to addition to the drum; and

(h) preferentially adsorbing the chemical contaminants dissolved in the circulated solvent prior to addition to the drum.

4,797,129

DYE COMPOSITIONS FOR KERATINOUS FIBRES CONTAINING 2-NITRO-METAPHENYLENEDIAMINES

Alex Junino, Livry-Gargan; Gerard Lang, Saint-Gratien; Nicole Jehanno, Bruno, and Jean J. Vandenbossche, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

Filed Feb. 17, 1987, Ser. No. 15,032

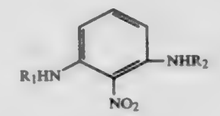
Claims priority, application Luxembourg, Feb. 14, 1986, 86308

Int. Cl.[4] A61K 7/13; C07C 87/58, 87/60

U.S. Cl. 8—407 22 Claims

1. A dye composition for keratinous fibers comprising a solvent, a tinctorially effective amount of at least one dye compound having the formula

(I)



wherein

R_1 and R_2, each independently, represent hydrogen, alkyl containing 1–6 carbon atoms, monohydroxyalkyl containing 1–6 carbon atoms, polyhydroxyalkyl containing 1–6 carbon atoms, alkoxyalkyl wherein the alkyl moiety contains 1–6 carbon atoms, hydroxyalkoxyalkyl wherein the alkyl moiety contains 1–6 carbon atoms, or aminoalkyl wherein the alkyl moiety contains 1–6 carbon atoms and wherein the amino moiety is unsubstituted or substituted with 1–2 alkyl or hydroxyalkyl groups wherein said alkyl has 1–6 carbon atoms or wherein the nitrogen atom of said amino alkyl forms part of a heterocycle, or a cosmetically acceptable salt of the dye compound of formula I containing an amino group which can be salified and at least one of an anionic, cationic, nonionic or amphoteric surface active agent or a mixture thereof, a thickener, a dispersing agent, a penetrating agent, a sequestrant, a film-forming agent, a buffer, a perfume or an acidifying agent.

4,797,130

OXIDATIVE HAIR DYE COMPOSITION BASED ON 4-AMINO-2-AMINOMETHYL-PHENOLS

Thomas Clausen, Alsbach, and Eugen Konrad, Darmstadt, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP86/00674, § 371 Date Jul. 27, 1987, § 102(e) Date Jul. 27, 1987, PCT Pub. No. WO87/03474, PCT Pub. Date Jun. 18, 1987

PCT Filed Nov. 22, 1986, Ser. No. 93,744

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1985, 3543345

Int. Cl.[4] A61K 7/13; C07C 10/344, 91/44; C07D 263/22

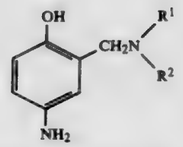
U.S. Cl. 8—421 12 Claims

1. A hair dyeing composition comprising a combination of

(A) at least one organic coupler substance customary in hair coloring with the coupler containing a moiety from the group consisting of hydroxy, ether, amino and mixtures thereof; and

(B) a developer substance selected from the group consisting of 4-amino-2-amino-2-aminomethyl-phenol of the formula (I)

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(I)

and its physiologically compatible salts with inorganic or organic acids, wherein R^1 and R^2 independently of one another represent hydrogen, alkyl, hydroxyalkyl, aminoalkyl, mono- or dialkylaminoalkyl, acylaminoalkyl, aryl- or alkylsulfonylaminoalkyl, carbamidoalkyl, alkylsulfonyl, the alkyl radical in each case having 1 to 4 carbon atoms, arylsulfonyl, acyl or carbamoyl, or a heterocyclic, non-aromatic five-membered or six-membered ring, which can have an oxo group in addition, is formed by means of R^1 and R^2.

4,797,131

USE OF CERTAIN QUATERNARY AMMONIUM COMPOUNDS IN DYEING LEATHER WITH BASIC DYESTUFFS

Hans-Peter Baumann, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 781,342, Sep. 30, 1985, abandoned. This application Feb. 19, 1987, Ser. No. 16,302

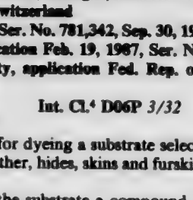
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1984, 3436572

Int. Cl.[4] D06P *3/32*

U.S. Cl. 8—436 **30 Claims**

1. A method for dyeing a substrate selected from the group consisting of leather, hides, skins and furskins which comprises the steps of

A. applying to the substrate a compound or mixture of compounds of formula I



(I)

in which R_1 is a C_{8-18}aliphatic residue;

each R_2, independently, is C_{1-4}alkyl;

R_3 is a C_{1-18}aliphatic residue or $—CH_2R_4$ where R_4 is phenyl; phenyl substituted by up to two substituents selected from the group consisting of chlorine, bromine, methyl, methoxy and ethoxy; or naphthyl; and

X is a non-chromophoric anion, and

B. dyeing the substrate with a basic dyestuff selected from the group consisting of polycationic dyestuffs having at least 1.3 cationic groups per dyestuff molecule and cationic zeo dyestuffs containing at least one component residue derived from a further substituted 6-hydroxy-2-pyridone,

said step A being carried out before or during said step B and the amount of compound of formula I being effective to improve the levelness of the dyeing with the basic dyestuff.

4,797,132

GAS CONTROL APPARATUS

Edward E. VanVlack, 1627 Maple, Myrtle Point, Oreg. 97458

Filed Jul. 7, 1987, Ser. No. 70,584

Int. Cl.[4] B01D *53/14*

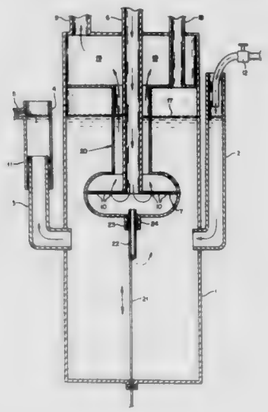
U.S. Cl. 55—227 **3 Claims**

1. A gas control apparatus comprising:

a. a tank with liquid into which a fluid inlet and a fluid outlet communicates;

b. at least one gas flow unit within said tank immersed in said liquid where a gas inlet communicates to said gas flow unit and a gas outlet communicates from said gas flow unit and where a baffle with holes connects the base of said gas inlet to said gas flow unit;

c. a fixed safety pipe fixeably attached to the base of said gas



flow unit where an adjustable safety depth outlet is contained within said fixed safety pipe; and

d. a safety outlet communicating said tank to the atmosphere.

4,797,133

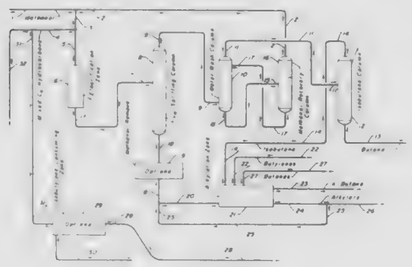
PROCESS FOR RECOVERY OF BUTENE-1 FROM MIXED C4 HYDROCARBONS

Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 29, 1986, Ser. No. 946,999

Int. Cl.[4] C10L *1/02*

U.S. Cl. 44—53 **24 Claims**



1. A process for the production of butene-1, which process comprises the steps of:

(a) contacting a mixed C_4 feedstream comprising isobutylene, isobutane, normal butane, butane-2 and butene-1 and an alcohol with an etherification catalyst maintained at etherification promoting conditions in a reaction zone, and producing a reaction zone effluent stream comprising normal butane, butane-2, butene-1, isobutane and a C_4-plus ether;

(b) separating the reaction zone effluent stream in a first fractionation zone into a net overhead stream comprising butene-1 and isobutane and a net bottoms stream comprising normal butane, butene-2 and the ether, with the net bottoms stream having a hydrocarbon concentration above 10 mole percent;

(c) recovering the net bottoms stream as a first product stream; and,

(d) separating the net overhead stream in a second fractionation zone into a second product stream rich in isobutane and a third product stream rich in butene-1.

4,797,134

ADDITIVE COMPOSITION, FOR GASOLINE

Marcel Vatara, Los Angeles, Calif., assignor to Wynn Oil Company, Fullerton, Calif.

Filed Aug. 27, 1987, Ser. No. 89,598

The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.

Int. Cl.[4] C10M *1/14, 1/22, 1/18*

U.S. Cl. 44—66 **13 Claims**

5. An admixture that comprises Diesel fuel and an additive composition added thereto which is between about 0.05 to about 2.0 percent by weight of the fuel, said composition comprising:

(a) between about 0.05 and 25% relative weight parts of an organic peroxide, and

(b) between about 0.1 and 25% relative weight parts of detergent selected from the component group that consists of:

(i) fatty amines

(ii) ethoxylated and propoxylated derivatives of fatty amines

(iii) fatty diamines

(iv) fatty imidazlines

(v) polymeric amines and derivatives thereof,

(vi) combination of one or more of said (i) through (v) components with carboxylic acid or acids having from three to forth carbon atoms,

(c) from about 99.0 to about 50% by weight of a hydrocarabon solvent.

4,797,135

METHOD OF FACILITATING COMMINUTION OF WOOD AND OTHER TYPES OF VEGETABLE BIOMASS FOR USE AS FUEL

Josef Kubat, Solparksvägen 3, S-171 35 Solna, and Lars M. Qvist, Hästhagsvägen 6, S-448 00 Floda, both of Sweden

PCT No. PCT/SE87/00071, § 371 Date Dec. 4, 1987, § 102(e) Date Dec. 4, 1987, PCT Pub. No. WO87/05044, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 13, 1987, Ser. No. 132,952

Claims priority, application Sweden, Feb. 14, 1986, 8600669-9

Int. Cl.[4] C10L *5/44, 5/40*

U.S. Cl. 44—500 **6 Claims**

1. A method for the production of highly comminuted flour of wood and other types of vegetable biomass suitable for use as fuel characterized in that coarsely ground wood or other type of coarsely ground vegetable biomass is treated with a dilute aqueous solution of an alkaline substance and subsequently is dried by exposure to elevated temperatures, whereafter the treated coarsely ground material is subjected to grinding, whereby a finely divided powder with a narrow particle size distribution is obtained.

4,797,136

LOW RANK COAL BY WET OXIDIZING, DRYING AND COOLING

Mark A. Siddoway, Houston; Neal D. Stidham, Gillette, Wyo., and William C. Machmer, Sugarland, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 943,455, Dec. 19, 1986, abandoned. This application Mar. 15, 1988, Ser. No. 175,653

Int. Cl.[4] C10L *5/24;* **F26B** *7/00*

U.S. Cl. 44—501 **11 Claims**

1. In a process in which low rank coal is oxidized, dried and cooled for reducing its tendency toward spontaneous combustion, an improvement comprising:

contacting particulate coal with an aqueous oxidant solution which becomes substantially homogeneously distributed over the surfaces of the coal particles, without adding more than about 10% by weight of water to the coal;

said solution containing an oxidizing agent containing combined oxygen;

drying the oxidant solution wetted coal by heating the coal particles to a temperature between about 100° F. and about 400° F. to reduce the moisture content to substantially the moisture content desired for the coal product; and

cooling the so-treated coal to a temperature of less than about 100° F.

4,797,137

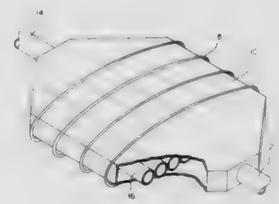
APPARATUS FOR CLEANING FOSSIL FUEL, SUCH AS COAL AND CRUDE OIL

Robert C. Sutton, Peoria, Ill., assignor to Sutton Energy Corporation, Washington, Ill.

Division of Ser. No. 31,744, Mar. 30, 1987. This application Jul. 6, 1987, Ser. No. 69,853

Int. Cl.[4] B01J *16/00*

U.S. Cl. 44—639 **4 Claims**



1. An apparatus for the desulfurization of fossil fuels including crude oil and/or coal, the apparatus comprising:

(a) a receptacle for containing the fossil fuel in a liquid medium, the receptacle having at least one opening for the inlet and one opening for the outlet of the fossil fuel;

(b) a plurality of copper tubes which are aligned generally parallel to the flow path between the openings for the inlet and outlet to permit the liquid medium to flow both interiorly and exteriorly of the copper tubes within the receptacle;

(c) an electrical induction coil electromagnetically coupled to said receptacle for stirring the fossil fuel in the receptacle, and

(d) a lower portion of the receptacle being formed as a sump for the collection of waste particles.

4,797,138

POLYCRYSTALLINE DIAMOND AND CBN CUTTING TOOLS

Ranga Komanduri, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 830,414, Feb. 18, 1986, Pat. No. 4,690,691. This application May 11, 1987, Ser. No. 48,176

Int. Cl.[4] B24D *3/00*

U.S. Cl. 51—293 **4 Claims**

1. A cutting tool consisting essentially of a polycrystalline diamond or cubic boron nitride layer directly adhered to an integral substrate structure, said substrate structure consisting essentially of a substrate having only one substantially straight edge from which a wall extends integrally, said substrate having a flat support surface which forms a support area with said wall, said support area being substantially in the form of a half circle, said substrate being substantially in the form of a half circle, said support area being substantially filled with said diamond or cubic boron nitride layer, said diamond or cubic

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boron nitride layer being substantially in the form of a half circle having a round cutting edge and one substantially straight adhered edge, a face of said diamond or cubic boron nitride layer being adhered to said flat support surface and the adhered edge of said diamond or cubic boron nitride layer



being adhered to a side of said wall, the thickness of said polycrystalline layer and the height of said wall being substantially equivalent, said substrate structure consisting essentially of polycrystalline metal carbide containing a metallic cementing agent.

4,797,139

BOEHMITE PRODUCED BY A SEEDED HYDYOTHERMAL PROCESS AND CERAMIC BODIES PRODUCED THEREFROM

Ralph Bauer, Niagara Falls, Canada, assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 84,549, Aug. 11, 1987, abandoned. This application Dec. 16, 1987, Ser. No. 133,584
Int. Cl.[4] B24D *3/00*
U.S. Cl. 51—293 **27 Claims**

1. A method of making a microcrystalline boehmite product comprising heating under autogenous pressure a boehmite alumina precursor in an aqueous medium having a pH selected from a value of 5 or less and 8 or higher and in the presence of boehmite seed particles finer than 0.02 microns, said seed particles being present in an amount greater than 7.5% by weight of the precursor alumina, calculated as Al_2O_3, said heating being carried out above 130° C. for a time sufficient to substantially convert said precursor to microcrystalline boehmite.

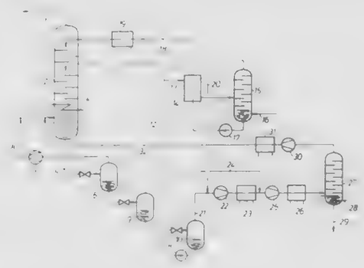
4,797,140

SCRUBBING OF GAS TO RECOVER LIGHT HYDROCARBONS

Heiner Landeck, Munich, and Gerhard Ranke, Poecking, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 871,988, Jun. 9, 1986. This application Aug. 14, 1986, Ser. No. 896,371
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1985, 3529216; Oct. 7, 1985, 3535764
Int. Cl.[4] B01D *47/00*
U.S. Cl. 55—48 **27 Claims**

1. In a process for the recovery of:
(a) C_{2+} hydrocarbons together with sulfur compounds, or
(b) C_{3+} hydrocarbons together with sulfur compounds, from a gaseous mixture containing the hydrocarbons, CO_2, at least one of H_2S, COS or a mercaptan and at least one of CH_4 or an inert gas from the group comprising H_2, N_2 and CO, said process comprising scrubbing said gaseous mixture with a physical scrubbing medium to selectively remove (a) or (b) by absorption and regenerating resultant loaded scrubbing medium to produce a product stream containing (a) or (b) and regenerated scrubbing medium, the improvement wherein the scrubbing medium comprises a compound having one to two rings formed by 5 to 6 carbon atoms, respectively, wherein the compound comprises in total at least 9 and at the most 17 carbon



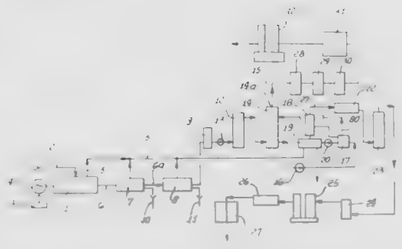
atoms, and the rings are saturated, unsaturated or partially saturated.

4,797,141

METHOD FOR OBTAINING CO_2 AND N_2 FROM INTERNAL COMBUSTION ENGINE OR TURBINE GENERATED GASES

Juan P. Mercader, and Pablo R. Villamanan, both of Barcelona, Spain, assignors to Carburos Metalicos S.A., Barcelona, Spain

Filed Aug. 24, 1987, Ser. No. 88,805
Claims priority, application Spain, Apr. 21, 1987, 8701147
Int. Cl.[4] F25J *3/00*
U.S. Cl. 62—17 **21 Claims**



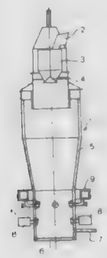
1. In the method of obtaining CO_2 and N_2 from hot combustion exhaust gas, the steps that include:
(a) recovering heat from the hot exhaust gas, thereby to cool the gas,
(b) stripping CO_2 from the cooled gas and compressing and liquifying the CO_2,
(c) thereafter purifying the remaining cooled gas to remove contaminates, thereby to recover pure N_2, and compressing and liquifying said N_2,
(d) the energy required for said (b) and (c) steps being derived from said (a) step heat recovery.

4,797,142

METHOD OF PREPARING A MELT FOR THE PRODUCTION OF MINERAL WOOL

Leif M. Jensen, Roskilde, Denmark, assignor to Rockwool International A/S, Hedehusene, Denmark

PCT No. PCT/DK87/00056, § 371 Date Jan. 7, 1988, § 102(e) Date Jan. 7, 1988, PCT Pub. No. WO87/06926, PCT Pub. Date Nov. 19, 1987
PCT Filed May 14, 1987, Ser. No. 143,132
Claims priority, application Denmark, May 14, 1986, 2226/86
Int. Cl.[4] C03B *37/01, 37/06, 5/12*; F27B *1/09*
U.S. Cl. 65—2 **5 Claims**



1. A method of preparing a melt for the production of mineral wool, wherein a raw material having a composition suitable for the production of the melt and a carbonaceous material are fed into a preheating zone in the upper portion of a shaft furnace and oxygen-containing gas is introduced into an oxidation zone in the lower portion of the shaft furnace to effect a combustion of the carbonaceous material and to heat the raw material, and wherein a melt is discharged from the bottom of the shaft furnace, characterized in that combustion in the oxidation zone is controlled in such a manner that the temperature in the transition between the oxidation zone and the preheating zone does not exceed about 1000° C., and that the material in the zone below the oxidation zone is heated solely by plasma heating.

4,797,143

PROCESS FOR THE PRODUCTION OF OPTICAL FIBER PREFORMS

Kazunori Chida, Ibaraki; Hiroshi Yokota, Kanagawa; Michihisa Kyoto, Kanagawa; Hisao Sato, Kanagawa; Minoru Watanabe, Kanagawa, and Naoki Yoshioka, Kanagawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Continuation of Ser. No. 473,420, Mar. 9, 1983, abandoned. This application Jul. 19, 1985, Ser. No. 781,182
Claims priority, application Japan, Mar. 12, 1982, 57-38094
Int. Cl.[4] C03B *37/018*
U.S. Cl. 65—3.12 **16 Claims**

1. A process for producing an optical fiber porous preform having a predetermined refractive index distribution by a vapor-phase axial deposition method in which a glass material and a refractive index changing dopant material are subjected to flame oxidation by use of an oxyhydrogen burner to form fine glass particles deposited on one end of a supporting rod adapted to move apart from the oxyhydrogen burner while rotating to allow a rod-like porous preform to grow thereon, the improvement which comprises; determining a relationship between shape of the deposition face of the preform and refractive index and, controlling the shape of the deposition face of said preform during growth thereof to provide a predetermined refractive index to the preform based on said relationship.

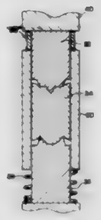


4,797,144

DEEP PRESSING MOLD AND PROCESS FOR MOLDED OPTICAL ELEMENTS

Jeffery A. DeMeritt, Painted Post; Thomas E. Patyknis, Elmira, and Paul A. Sachenik, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 20, 1987, Ser. No. 75,518
Int. Cl.[4] C03B *23/00*
U.S. Cl. 65—102 **11 Claims**



1. An apparatus for molding an optical element having first and second opposed optical surfaces comprising
a first mold having a molding surface adapted to form said first optical surface,
a second mold having an opposed molding surface adapted to form said second optical surface,
an alignment sleeve defining a cavity extending therethrough to accommodate said first and second molds, said molding surfaces being cooperable within said cavity to form an enclosed mold cavity of fixed volume,
means for independently controlling the movement of said first mold relative to said second mold,
means in operable relationship with said alignment sleeve for stopping the movement of said first mold relative to said alignment sleeve when the distance traveled during such movement equals a distance corresponding to the total relative movement between said first and second molds necessary to form the optical surfaces at substantially the same time multiplied by a predetermined ratio.

9. A method of molding an optical element having first and second opposed optical surfaces comprising the steps of
providing a first mold having a molding surface adapted to form said first optical surface,
providing a second mold having an opposing molding surface adapted to form said second optical surface,
providing an alignment sleeve defining a cavity extending therethrough to accommodate said first and second molds,
providing means operatively associated with said alignment sleeve for floating said sleeve,

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disposing said first and second molds within said alignment sleeve cavity and in a slidable engagement therewith such that said molding surfaces are in a cooperable relationship defining an enclosed mold cavity,
disposing a quantity of molding material within said mold cavity,
moving said first mold within said sleeve cavity along the longitudinal axis thereof in a direction toward said second mold,
controlling the movement of said first mold so that it is independent of the movement of said second mold,
providing means in operable relationship with said alignment sleeve for stopping the movement of said first mold relative to said alignment sleeve after said first mold traversed a predetermined distance,
stopping the movement of said first mold relative to said alignmenet sleeve by said means for stopping,
moving said second mold within said sleeve cavity along the longitudinal axis thereof in a direction toward said first mold, and
stopping the movement of said second mold relative to said alignment sleeve defining a fixed mold cavity volume between said mold surfaces thereby forming an optical element having opposed optical surfaces.

4,797,145

METHOD OF AGRICULTURAL SOIL IMPROVEMENT

Gurn A. Wallace, 1647 Manning Ave., Los Angeles, Calif. 90024, and Arthur Wallace, 10215 Clematis Ct., Los Angeles, Calif. 90077

Filed Feb. 18, 1986, Ser. No. 830,078
Int. Cl.⁴ C05G *3/04*
U.S. Cl. 71—27 **4 Claims**

1. The method of improving the tilth, structure, aeration, friability and water infiltration of soils subject to slaking, erosion, compaction, or crusting, said method comprising mixing a synthetic, water soluble polyelectrolyte and a polysaccharide with water, wherein said polyelectrolyte consists essentially of polyacrylamide having an average molecular weight of at least 15,000, with said polyelectrolyte being mixed with the water in an amount of between about 0.0001% and 0.1% by weight, and further wherein said polysaccharide consists essentially of polygalactosylmannose, with said polysaccharide being mixed with the water in an amount of between about 1% and 300% of the amount of polyelectrolyte, and applying the mixed water solution to the soil.

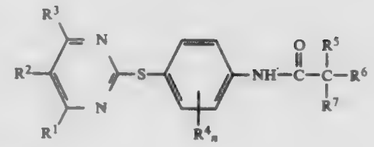
4,797,146

HERBICIDAL 2-[4-SUBSTITUTED CARBOXYAMINO-PHENYL MERCAPTO)]-SUBSITUTED PYRIMIDINES

Klaus Sasse, Bergisch Gladbach; Hermann Hagemann; Hans-Joachim Santel, both of Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 937,940
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544208
The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.
Int. Cl.⁴ C07D *239/02*; A01N *43/48*
U.S. Cl. 71—92 **11 Claims**

1. A pyrimidylmercaptoacylanilide of the formula



in which
R^1 represents methyl or ethyl,
R^2 represents halogen, methyl or ethyl,
R^3 represents hydrogen or methyl,
R^4 represents halogen, methyl or methoxy,
n represents 0, 1 or 2,
R^5 represents hydrogen, halogen, cyano, alkyl having 1 to 6 carbon atoms which is unsubstituted or substituted by fluorine, chlorine, bromine or alkoxy having 1 to 4 carbon atoms, phenyl which is unsubstituted or substituted by fluorine, chlorine, bromine, trifluoromethyl, methoxy or methyl, benzyl which is unsubstituted or substituted by fluorine, chlorine, bromine, trifluoromethyl, methoxy or methyl, or the $—OR^8$ or $—SO_m—R^8$ radical, where
R^8 represents alkyl having 1 to 6 carbon atoms unsubstituted or substituted by fluorine, chlorine or bromine, or phenyl which is unsubstituted or substituted by fluorine, chlorine, bromine or alkyl having 1 to 4 carbon atoms and
m represents 0, 1 or 2, and
R^6 and R^7, independently of one another, represent halogen or alkyl having 1 to 6 carbon atoms unsubstituted or substituted by fluorine, chlorine or bromine, or
R^5 and R^6, together with the neighboring carbon atom, represent a carbocyclic ring or a ring which can also contain oxygen in the ring in addition to carbon atoms, which has 3 to 8 ring members, and which is unsubstituted or substituted by fluorine, chlorine or alkyl having 1 to 4 carbon atoms or
R^6 and R^7, together with the neighboring carbon atom, represent a carbocyclic ring or a ring which can contain oxygen in the ring in addition to carbon atoms, which has 3 to 8 ring carbon atoms, and which is unsubstituted or substituted by fluorine, chlorine or alkyl having 1 to 4 carbon atoms.

10. A method of combating unwanted vegetation which comprises applying thereto or to a locus from which is is desired to exclude such vegetation a herbicidally effective amount of pyrimidylmercapto-acylanilide according to claim 1.

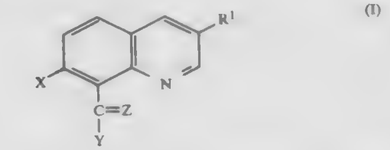
4,797,147

HERBICIDAL METHOD AND COMPOSITION UTILIZING CERTAIN 5-(2-SUBSTITUTED BENZOYL)-BARBITURIC ACIDS

David L. Lee, Martinez, Calif., and Charles G. Carter, Silver Spring, Md., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 872,068, Jun. 9, 1986, abandoned. This application Aug. 31, 1987, Ser. No. 91,162
Int. Cl.⁴ A01N *43/54*
U.S. Cl. 71—92 **16 Claims**

1. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein
R is halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; nitro; cyano; C_1–C_2 haloalkyl; or $R^aSO_m—$ wherein m is 0 or 2 and R^a is C_1–C_2 alkyl;
R^1 is hydrogen or C_1–C_2 alkyl;
R^2 is hydrogen or C_1–C_2 alkyl; and
R^3 and R^4 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) $R^bSO_n—$ wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) $—NR^cR^d$ wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)—$ wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) $—SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) $—N(R^c)C(O)R^d$ wherein R^c and R^d are as defined and their salts.

4,797,148

QUINOLINE DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Helmut Hagen, Frankenthal; Ulrich Eichenauer, Frankfurt; Peter Plath, Frankenthal; Norbert Meyer, Ladenburg, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 24, 1986, Ser. No. 933,795
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1985, 3541722; Mar. 4, 1986, 3606949
Int. Cl.⁴ C07D *215/48*; A01N *43/42*
U.S. Cl. 71—94 **8 Claims**

1. A quinoline derivative of the formula

(I)

where R^1 is halogen or C_1–C_4-alkyl, X is halogen, Z is oxygen Y is a radical $—NR^2R^3$, in which R^2 is hydrogen and R^3 is C_1–C_4-alkoxy, or Y is a hydrazino radical which is unsubstituted or substituted by C_2–C_5-alkylcarbonyl, C_2–C_5-alkoxycarbonyl or C_1–C_4-alkyl which is unsubstituted or substituted by C_2–C_5-alkoxycarbonyl.

7. A process for combatting the growth of unwanted plants, wherein the unwanted plants and/or the area to be kept free from unwanted plant growth are treated with a herbicidally effective amount of a quinoline derivative of the formula I as set forth in claim 1.

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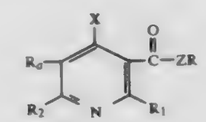
4,797,149

2,6-SUBSTITUTED PYRIDINE COMPOUNDS

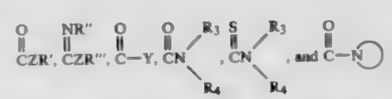
Leu F. Lee, St. Charles, and Maria L. Miller, Manchester, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 768,659, Aug. 27, 1985, Pat. No. 4,698,093, which is a continuation-in-part of Ser. No. 668,929, Nov. 6, 1984, abandoned. This application Jan. 22, 1987, Ser. No. 65,210
Int. Cl.⁴ C07C *213/55*; A01N *43/40*
U.S. Cl. 71—94 **22 Claims**

1. A compound represented by the formula



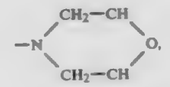
wherein:
R is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alknyl, cyanoalkyl, alkoxyalkyl, haloalkyl, haloalkenyl, benzyl, and a cation, and Z is selected from O and S;
R_1 and R_2 are independently selected from fluorinated methyl, chlorofluorinated methyl, fluorinated ethyl, and lower alkyl provided that R1 and R_2 cannot both be lower alkyl radicals;



radicals wherein R' is selected from hydrogen, lower alkyl, lower alkenyl, lower alkynyl, cyanoalkyl, alkoxyalkyl, haloalkyl, haloalkenyl, benzyl and a cation; R'' and R''' are independently selected from lower alkyl, lower alkenyl, lower alkynyl, cyansoalkyl, alkoxyalkyl, haloalkyl, and haloalkenyl provided that R''' may also be hydrogen; R_3 and R_4 are in each occurrence independently selected from hydrogen, lower alkyl, aralkyl, lower alkenyl, lower alkynyl, haloalkyl, and haloalkenyl; Y is a halogen selected from F, Cl, and Br; and



is selected from the group consisting of aziridinyl, piperidinyl, azetidinyl, pyrrolidinyl, hexahydroazepinyl, imidazolyl, pyrrolyl, triazolyl, pyrazolyl, morpholino, and



optionally substituted with lower alkyl substituents, and; X is selected from
(j)



in which R_{16} is alkyl.

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4,797,150

CERTAIN 2-(2-SUBSTITUTED BENZOYL)-1,3,5-CYCLOHEXANETRIONES

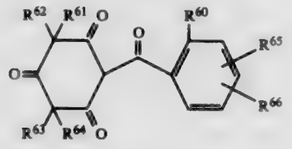
Charles G. Carter, Silver Spring, Md., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 110,988, Oct. 21, 1987, which is a continuation-in-part of Ser. No. 880,370, Jun. 30, 1986, which is a continuation-in-part of Ser. No. 872,067, Jun. 9, 1986, abandoned. This application Nov. 30, 1987, Ser. No. 126,449

Int. Cl.[4] A01N *41/10*; C07C *147/107*

U.S. Cl. 71—103 **35 Claims**

1. Compounds of the formula



wherein

R^{60} is hydrogen; halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; nitro; cyano; C_1–C_2 haloalkyl; or R^aSO_n- wherein n is 0 to 2 and R^a is C_1–C_2 alkyl, trifluoromethyl or difluoromethyl; or trifluoromethoxy or difluoromethoxy;

R^{61} is hydrogen or C_1–C_4 alkyl;

R^{62} is hydrogen or C_1–C_4 alkyl; or

R^{61} and R^{62} together are R_2–C_5 alkylene;

R^{63} is C_1–C_4 alkyl;

R^{64} is C_1–C_4 alkyl; or

R^{63} and R^{64} together are C_2–C_5 alkylene;

R^{65} and R^{66} independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n- wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) -NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$- wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) -$SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) -$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined and their salts.

4,797,151

PROCESS FOR IMPROVING FLORAL FERTILITY

Edmond A. DeMil, 140 rue Saint-Charles, 75015 Paris, France

Filed Sep. 16, 1986, Ser. No. 908,404

Claims priority, application France, Sep. 17, 1985, 85 13738

Int. Cl.[4] A01N *37/02*

U.S. Cl. 71—113 **5 Claims**

1. Process for increasing the floral fertility of plants consisting of the step of applying to the plants, during the period betewen floral induction and the end of inflorescence of said plants, a floral fertility increasing amount of lipoaminoacids, said lipoaminoacids being defined as the result of acylation by a fatty acid compriaing from 4 to 30 carbon atoms of a compound selected from the group consisting of isolated naturally occuring aminoacids, mixtures of naturally occuring aminoacids obtained by hydrolysis of proteins, metal or amine salts of either of the foregoing, and basic aminoacids, thereby increasing the floral fertility of the plant.

4,797,152

CYCLOHEXENONECARBOXYLIC ACID DERIVATIVES WITH HERBICIDAL AND PLANT GROWTH REGULATING PROPERTIES

Hans-Georg Brunner, Lausen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

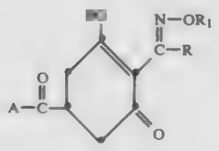
Division of Ser. No. 714,133, Mar. 20, 1986, Pat. No. 4,640,706. This application Nov. 14, 1986, Ser. No. 930,829

Claims priority, application Switzerland, Mar. 30, 1984, 1613/84

Int. Cl.[4] A01N *37/18*; C07C *103/19*

U.S. Cl. 71—118 **8 Claims**

1. A cyclohexenone carboxylic acid derivative of formula I



(I)

wherein

A is —NR_3R_4

B is —R_6

R is C_1–C_6alkyl or C_3–C_6cycloalkyl, each unsubstituted or substituted by halogen, C_1–C_4alkoxy or C_1–C_4alkylthio,

R_1 is C_1–C_6alkyl, C_1–C_6haloalkyl, C_3–C_6alkenyl, C_3–C_6haloalkenyl or C_3–C_6alkynyl,

R_3 is hydrogen, C_1–C_6alkyl, C_1–C_6haloalkyl, C_2–C_{10}alkoxyalkyl, C_2–C_{10}alkylthioalkyl; or is C_3–C_6alkenyl which is unsubstituted or substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy or C_1–C_4alkylthio; or is C_3–C_6alkynyl; or is phenyl or benzyl, the phenyl nucleus of which is unsubstituted or substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, nitro or cyano,

R_4 is C_1–C_4alkoxy or has the same meaning as R_3, or R_3 and R_4 together with the nitrogen atom to which they are attached are also a saturated 5- or 6-membered heterocycle and

R_6 is C_1–C_6alkyl, C_3–C_6alkenyl, C_3–C_6alkynyl; or is benzyl, the nucleus of which unsubstituted or substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, nitro or cyano.

4,797,153

METHOD OF INCREASING BIOMASS IN PLANTS

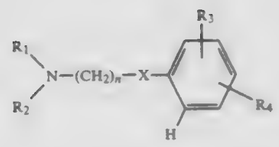
Henry Yokoyama, Pasadena; Wan-Jean Hsu, San Marino; Stephen M. Poling, Arleta, and Ernest P. Hayman, Pasadena, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 435,597, Oct. 21, 1982, abandoned. This application Feb. 15, 1985, Ser. No. 701,660

Int. Cl.[4] A71N *33/04*

U.S. Cl. 71—121 **15 Claims**

1. A method for increasing total plant biomass which comprises applying to a plant immediately prior to or at a time when cell differentiation and growth of the plant or flower buds are great, that is, to the plant seed, to the plant seedling prior to the full expansion of the fourth set of primary leaves, or to trees during a week before or after flower bud swell, a bioregulatory compound in an amount sufficient to increase total biomass, i.e., in an amount sufficient to increase individual constituents of the plant but insufficient to cause harm to the plant, wherein said constituents are selected from the group consisting of protein, lipid, sugar, and essential oil, and wherein said compound is applied in an amount of about 0.005 to 0.3 mg active ingredient per plant seed or seedling or about 1 to 4 grams active ingredient per tree, said compound selected from the group having the structure



(a)

wherein:

X is either oxygen or sulfur,

R_1 and R_2 are lower alkyl containing from 1 to 3 carbon atoms,

n is an integer from 1 to 3,

R_3 and R_4 are independently hydrogen, chlorine, bromine, iodine, lower alkyl containing from 1 to 6 carbon atoms, lower alkoxy containing from 1 to 6 carbons, or condensed benzene ring, and wherein:

if R_3 and R_4 are 3,5-substituents, then the lower alkyl or alkoxy group contain 3 to 6 carbon atoms; and wherein;

if R_3 is hydrogen, the R_4 must be a 4-substituent, with the proviso that R_4 is other than hydrogen; and

(b) and acid addition salt thereof.

4,797,154

PLANT TO CONVERT A METALLIC CHARGE INTO SEMIFINISHED PRODUCTS, AND CONNECTED SMELTING AND CASTING METHOD

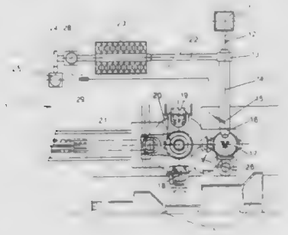
Giampietro Benedetti, Campoformido, and Fulvio Fasano, Gorizia, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Sep. 24, 1987, Ser. No. 100,615

Claims priority, application Italy, Sep. 25, 1986, 83413 A/86

Int. Cl.[4] C22B *4/00*; C21C *5/52*

U.S. Cl. 75—46 **9 Claims**



1. A method for continuously converting metallic charge into semi-finished products comprising the steps of:

continuously feeding the metallic charge to a preheating chamber;

preheating the metallic charge in the chamber;

continuously feeding the preheated charge, at a controlled and adjustable rate, to a furnace;

melting the preheated metallic charge in the furnace to form molten metal;

tapping the furnace at regular intervals at a tapping station, to deliver part of the molten metal from the furnace to a ladle;

refining the molten metal in the ladle at a refining station;

delivering the refined molten metal to a casting station, said casting station comprising a tundish and a continuous caster, the tundish continuously feeding the refined molten metal, at a controlled rate, to the continuous caster; and

casting the molten charge;

wherein first and second ladles are utilized in the method and are respectively engaged with first and second independently rotatable arms of a multi-functional manipulator, the arms being circumferentially and vertically traversable to deliver the ladles to the tapping station, refining station and casting station, with the ladles being simultaneously manipulated so that while the first ladle is engaged in one operation at a particular station, the second ladle may be simultaneously engaged in a different operation at a different station, with the two ladles continuously cycling between the stations, so that various operations may be simultaneously performed.

4,797,155

METHOD FOR MAKING METAL MATRIX COMPOSITES

K. Bhagwan Das, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 756,008, Jul. 17, 1985, Pat. No. 4,699,849. This application Feb. 27, 1987, Ser. No. 20,276

Int. Cl.[4] B22F *1/00*

U.S. Cl. 75—229 **22 Claims**

1. A method of producing a metal matrix composite, comprising the steps of:

plastically deforming particles of the metal to impart strain energy thereto;

mixing the strained metal particles with ceramic fibers to form a substantially uniform dispersion of fibers in the metal; and

compacting the mixture at elevated temperatures to form a metal matrix composite of substantially full density without degrading the fibers or reacting the fibers with the metal.

4,797,156

METAL TREATED BY A SOLUTION CONTAINING FERRIC FERROUS SALT

Shoji Yamashita, Aichi, Japan, assignor to I.B.E. Co., Ltd., Aichi, Japan

Division of Ser. No. 655,220, Sep. 27, 1984. This application Apr. 14, 1987, Ser. No. 40,081

Claims priority, application Japan, Mar. 6, 1984, 59-043209

Int. Cl.[4] B22F *1/00*

U.S. Cl. 75—251 **5 Claims**

1. A metal having been treated by immersion in an aqueous solution consisting essentially of a ferric ferrous salt and a salt of an alkali metal or a compound containing a metal which belongs to the zinc family.

4,797,157

AMINE SALTS OF LIGNOSULFONATES

Peter Dilling, Isle of Palms; Humbert T. DelliColli, and James E. Davis, both of Hanahan, all of S.C., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 093,312, Sep. 4, 1987, Pat. No. 4,751,247, which is a division of Ser. No. 783,781, Oct. 3, 1985, Pat. No. 4,732,572. This application Jan. 22, 1988, Ser. No. 147,340

Int. Cl.[4] C09D *11/02*

U.S. Cl. 106—20 **6 Claims**

1. A printing ink composition comprising a printing paste gel and, as an additive therein, a sulfomethylated lignin amine salt prepared according to the steps of:

(a) ionizing the phenol component of a lignin material in alkaline liquid medium;

(b) methylolating the lignin material in the ortho position of the phenol component;

(c) lowering the pH of the liquid to an acid pH to precipitate the methylolated lignin material;

(d) washing the precipitated lignin material with water to remove inorganic salts and residual reactants therefrom; and

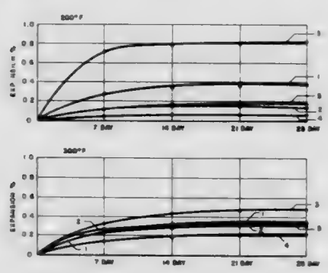
(e) reacting the washed, purified methylolated lignin material with an amine compound and a sulfur-oxygen-containing compound in liquid medium to produce sulfomethylated lignin amine salt.

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4,797,158
FLEXIBLE GROUT COMPOSITION AND METHOD
Todd D. Harriett, Elk Grove Village, Ill., assignor to American Colloid Company, Arlington Heights, Ill.
Continuation-in-part of Ser. No. 849,048, Apr. 7, 1986, Pat. No. 4,696,699, which is a continuation-in-part of Ser. No. 787,505, Oct. 15, 1985, Pat. No. 4,696,698. This application Jun. 15, 1987, Ser. No. 61,493
Int. Cl.[4] C04B *12/04*
U.S. Cl. 106—74 30 Claims

1. A grout composition for admixture with water to form a gelled grout essentially impermeable to water comprising, where percentages are percent by weight of the composition before admixture with water:
10–80% water-swellable clay;
5–80% solid, essentially non water-swellable particulate filler; and
0.5–35% water soluble silicate,
wherein the essentially non water-swellable particulate filler prevents the breakdown of the grout composition, after admixture of the grout composition with water, after freezing.

4,797,159
EXPANDABLE CEMENT COMPOSITION
Lloyd B. Spangle, Claremore, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.
Filed Jul. 25, 1986, Ser. No. 890,672
Int. Cl.[4] C04B *7/02, 7/32, 9/00, 11/02*
U.S. Cl. 106—89 22 Claims

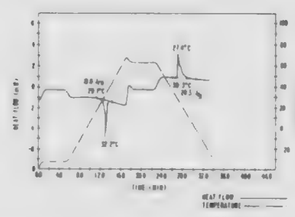


1. An expandable cement composition useful for cementing a well casing within the bore of a well, and which sets in no less than about 12 hours, comprising:
(a) a hydratable cement;
(b) 0.25 to 3.75 percent by weight of cement magnesium oxide which has been calcined at between about 1100° C. and about 1500° C., and which has at least about 50% of the particles with a diameter of greater than about 30 microns, so as to produce an expansion in the set cement composition of at least about 0.2% when the set composition is exposed to a temperature of at least about 70° C.

4,797,160
PHASE CHANGE COMPOSITIONS
Ivel O. Salyer, Dayton, Ohio, assignor to University of Dayton, Dayton, Ohio
Continuation-in-part of Ser. No. 935,081, Nov. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 835,418, Mar. 3, 1986, abandoned, which is a continuation-in-part of Ser. No. 646,402, Aug. 31, 1984, Pat. No. 4,617,332. This application Aug. 19, 1987, Ser. No. 88,040
Int. Cl.[4] C04B *24/08*
U.S. Cl. 106—96 18 Claims

1. A composite useful in thermal energy storage comprising a matrix material having incorporated therein a phase change material, said phase change material being a crystalline, straight chain, alkyl hydrocarbon having 14 or more carbon atoms and a heat of fusion greater than 30 cal/g., said composite also comprising a flame retarding agent selected from the group consisting of halogenated hydrocarbons and halogenated phosphates.

14. A composite useful in thermal energy storage comprising a matrix material having incorporated therein a phase change



material, said matrix material being plasterboard and said phase change material being a crystalline, straight chain, alkyl hydrocarbon having 14 or more carbon atoms and a heat of fusion greater than 30 cal/g., said plasterboard also comprising a flame retarding agent incorporated therein said flame retarding agent being selected from the group consisting of halogenated hydrocarbons and halogenated phosphates.

4,797,161
MIXTURE FOR MANUFACTURE OF SHAPED ELEMENTS AND ITS USE
Karl Kirchmayr, Vöcklabruck; Hans-Jürgen Miko, Altmünster; Bruno Watzka, Vöcklabruck, all of Austria; Josef Studinka, Zürich, and Carl Schmitt-Henco, Wesen, both of Switzerland, assignors to Ametex AG, Niederurnen, Switzerland
Filed May 26, 1987, Ser. No. 53,626
Claims priority, application Austria, Jun. 2, 1986, 1474/86; Switzerland, Oct. 13, 1986, 4078/86
Int. Cl.[4] C04B *7/02*
U.S. Cl. 106—98 10 Claims

1. A mixture for use in the manufacture of hydraulically-setting, fiber-containing shaped elements, said mixture containing, based on the total weight of the mixture when dry, 5 to 20% by weight fibers 20 to 85% by weight hydraulic binder, 5 to 40% by weight pozzuolanic silicic acid, and 5 to 35% by weight limestone.

4,797,162
PROCESS FOR THE PREPARATION OF PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID N,N'-DIMETHYLIMIDE IN A HIGH-HIDING PIGMENTARY FORM
Ernst Spietschka, Idstein, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jul. 8, 1986, Ser. No. 883,086
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1985, 3524535
Int. Cl.[4] C09B *67/20*; C07D *471/06*
U.S. Cl. 106—498 3 Claims

1. A process for the preparation of perylene 3,4,9,10-tetracarboxylic acid N,N'-dimethylimide in a high-hiding pigmentary form and a pure red shade, wherein a finely divided, dry perylene-3,4,9,10-tetracarboxylic acid N,N'-dimethylimide prepigment which is prepared in a conventional manner and has a crystallite size of <400 Å is treated with an organic solvent which is liquid in the treatment temperature range stated below and is selected from the series comprising saturated aliphatic brominated or chlorinated hydrocarbons, aromatic hydrocarbons and aromatic brominated or chlorinated

hydrocarbons, in a mill or a disperser at temperatures from 0° C. to 100° C., the organic solvent is the distilled off and the perylene-3,4,9,10-tetracarboxylic acid, N,N'-dimethylimide pigment is isolated.

4,797,163
PROCESS FOR THE PRODUCTION OF TITANIUM DIOXIDE PIGMENTS
Günter Lailach, and Karl-Heinz Schultz, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Akteingesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany
Filed Aug. 24, 1987, Ser. No. 88,949
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1986, 3630220
Int. Cl.[4] C09C *1/36*
U.S. Cl. 166—437 10 Claims

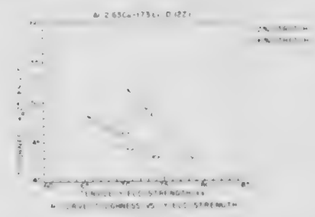
1. In an improved process for the production of titanium dioxide pigments wherein titanium-containing raw materials are chlorinated under reducing conditions to produce titanium tetrachloride and by-product offgases, the titanium tetrachloride is oxidised to titanium dioxide, washed calcined and/or dried,
the improvement comprises burning the by-product offgases to provide at least a part of the heat energy required in the calcining or drying steps.

4,797,164
PROCESS FOR MANUFACTURING A FINE-GRAINED RECRYSTALLIZED SHEET
Günter Höllrigl, and Pedro Rodrigues, both of Schaffhausen, Switzerland, assignors to Swiss Aluminum Ltd., Chippis, Switzerland
Filed Sep. 22, 1987, Ser. No. 99,746
Claims priority, application Switzerland, Sep. 30, 1986, 3908/86
Int. Cl.[4] C22F *1/04*
U.S. Cl. 148—2 2 Claims



1. Process for manufacturing a fine-grained recrystallized sheet that is suitable for superplastic forming made of an age-hardenable aluminum alloy, which comprises: providing an aluminum base alloy consisting essentially of at least one age hardening additive and an addition selected from the group consisting of the elements Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, and mixtures thereof having a total concentration of 0.08–1.5 wt %; bringing the alloy into a condition A in which both the alloying elements that lead to age-hardening and the addition elements are at least for the greater part in solid solution; precipitating out in step B the incoherent hardening phases in a temperature range between the solvus T_{gs} and the solvus T_s; and precipitating in a subsequent step C the aluminides of the above mentioned elements as a very dense uniform dispersion by heating in a temperature range between 300° C. and $T_s-30°$ C., whereby any deformation by rolling may take place between condition A and step C at temperatures not higher than $T_s-30°$ C., and in which process the temperature of the sheet below a thickness of $2.5\times d$ does not exceed 200° C.; and heating the sheet at a thickness d to a recrystallization temperature D such that the heating rate is at least 20° C./s until above the recrystallization threshold.

4,797,165
ALUMINUM-LITHIUM ALLOYS HAVING IMPROVED CORROSION RESISTANCE AND METHOD
Philip E. Bretz, Plum Boro; Ralph R. Sawtell, Pittsburgh, and Warren H. Hunt, Jr., Monroeville, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 594,344, Mar. 29, 1984, Pat. No. 4,648,913. This application Dec. 24, 1984, Ser. No. 685,731
The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.
Int. Cl.[4] C22F *1/04*
U.S. Cl. 148—12.7 A 30 Claims



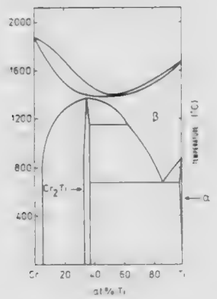
17. Method of making aluminum base alloy products having combinations of improved strength, corrosion resistance and fracture toughness, the method comprising the steps of:
(a) providing a lithium-containing aluminum base alloy product consisting essentially of 2.2 to 3.0 wt. % Li, 0.4 to 2.0 wt. % Mg, 0.2 to 1.6 wt. % Cu, 0 to 2.0 wt. % Mn, 0 to 1.0 wt. % Zr, 0.5 wt. % max. Fe, 0.5 wt. % max. Si, the balance aluminum and incidental impurities, the product having imparted thereto, prior to an aging step, a working effect equivalent to stretching so that after an aging step the product has improved combinations of strength and toughness; and
(b) imparting to said product, prior to an aging step, a working effect equivalent to stretching said product an amount greater than about 3.6% at room temperature and aging said product to provide improved combinations of strength and fracture toughness in addition to corrosion resistance.

4,797,166
METHOD FOR PRODUCING AN AT LEAST PARTLY AMORPHOUS ALLOY PIECE
Martin Von Allmen, Zollikofen, and Andreas Blatter, Ostermundigen, both of Switzerland, assignors to Cendres & Metaux, S.A., Biel, Switzerland
Filed May 11, 1987, Ser. No. 47,481
Claims priority, application Switzerland, May 29, 1986, 02177/86
Int. Cl.[4] C21D *1/26*
U.S. Cl. 148—13.1 3 Claims

1. A method for producing an at least partly amorphous alloy piece, comprising the steps of
preparing an alloy composition of at least two elements of appreciably different atomic radius,
at least one of said elements being elected from the group consisting of Si, Al, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Zr, Nb, Mo, Pd, Ag, Hf, Ta, W, Pt or Au,
the composition being chosen such that a high -temperature solution crystal or high-temperature compound crystal exists for said composition,
heating the composition to an elevated temperature with respect to the glass temperature, so that the composition becomes a high-temperature solution crystal or high-temperature compound crystal,
quenching the composition to a temperature below the glass temperature at such a cooling rate, that the high-temperature solution crystal or high-temperature compound crys-

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tal is preserved as a metastable crystal phase in at least a part of the composition,



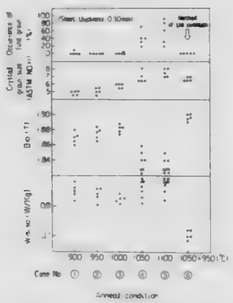
annealing the composition under a vacuum or in an inert gas environment at an annealing temperature, which is below the glass temperature by a tolerance of at least a few degrees in order to vitrify the metastable crystal phase.

4,797,167

METHOD FOR THE PRODUCTION OF ORIENTED SILICON STEEL SHEET HAVING EXCELLENT MAGNETIC PROPERTIES

Hisanobu Nakayama; Shouzaburo Nakashima; Yoshiaki Shimoyama, and Yasukazu Mori, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 2, 1986, Ser. No. 881,834
Int. Cl.[4] H01E *1/04*
U.S. Cl. 148—111 **1 Claim**



1. In a method for the production of a single oriented silicon steel strip which consists of a series of steps of providing a silicon steel slab consisting of 0.010 to 0.10% C, 2.5 to 4.5% Si, 0.02 to 0.15% Mn, a total amount of 0.008 to 0.080% S, Se or S and Se, the remainder being Fe and unavoidable impurities, hot rolling said silicon steel slab into strip, subjecting said hot rolled strip to hot strip annealing, subjecting said hot rolled and annealed strip to more than 2 cold rolling steps including an intermediate annealing between any two of said cold rolling steps, said final cold rolling being carried out with a reduction rate of 40 to about 65% to a specified strip thickness, and finally subjecting said cold rolled strip to decarburizing annealing and the final annealing, the improvement which consists of subjecting said hot rolled strip in said hot strip annealing procedure to a two-step annealing cycle in which the first step consists of heat soaking in a furnace at an elevated temperature range of 1000° to 1200° C., immediately followed by the second step which consists of heat soaking in a furnace at a low temperature range of 750° to 980° C., and said silicon steel strip being maintained at said first step elevated temperature range for a finite period of up to 300 seconds prior to transfer to said second step low temperature range, and finally said silicon steel strip being maintained at said low temperature range for a finite period for up to 600 seconds, and then being cooled to room temperature, the duration of said first and second steps being sufficient to improve the core loss value $W_{15/50}$ and magnetic flux density B_{10} values of said steel strip.

4,797,168

AZIDODINITRO PROPELLANTS

Joseph E. Flanagan, 20883 Kelvin Pl., Woodland Hills, Calif.

Filed Aug. 11, 1986, Ser. No. 895,082
Int. Cl.[4] C06B *25/00*
U.S. Cl. 149—88 **1 Claim**

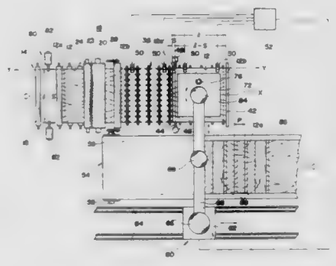
1. A desensitized liquid monopropellant comprising from about 70 to about 90 weight percent 1,1,1-azidodinitroethane, and from about 10 to about 30 weight percent of a desensitizing diluent selected from the group consisting of $N_3C_2H_4OH$, $(N_3CH_2)_2CHOH$, $N_3C(NO_2)_2C_3H_6OH$, $O_2NN(CH_2CH_2N_3)_2$, $N_3C(NO_2)_2C_3H_6N_3$, and mixtures thereof.

4,797,169

METHOD AND APPARATUS FOR ASSEMBLING VENEER SHEET INTO A PLYWOOD

Tadashi Aizawa, Nagoya; Toshimichi Nishiyama, Tokai; Masaru Okawa, Aichi, and Kazuo Nakane, Nishio, all of Japan, assignors to Hashimoto Denki Co. Ltd., Japan

Filed Jun. 29, 1987, Ser. No. 67,696
Claims priority, application Japan, Jul. 2, 1986, 61-155277; Jul. 9, 1986, 61-161453; Nov. 14, 1986, 61-272611
Int. Cl.[4] B32B *31/00*
U.S. Cl. 156—64 **28 Claims**



1. A method for assembling veneer sheets into a plywood comprising the steps of:

supplying the veneer sheets having a uniform size to feed means extending in the longitudinal direction;

stopping the veneer sheet on said feed means to orient the forward edge of the veneer sheet precisely in the transverse direction perpendicular to the feed direction;

detecting the position of the veneer sheet in the transverse direction and calculating deviation thereof from a reference line extending along the feed direction by a computer;

transporting the veneer sheet by a transfer unit to a position on an assembling conveyor for fabricating a stepped lamination, said assembling conveyor extending parallel to said feed means and adapted to be operated intermittently, and said transfer unit including means for holding the veneer sheet during the transportation;

detecting length of movement of said assembling conveyor and comparing said length with a stored value by said computer for determining an error; and

controlling said transfer unit by said computer for correcting said deviation and said error while transporting the veneer sheet.

4,797,170

SYSTEM FOR HOLDING CARPET IN PLACE WITHOUT STRETCHING

Merle R. Hoopengardner, Lafayette, Calif., assignor to JacTac, Inc., Lafayette, Calif.

Filed Jul. 7, 1986, Ser. No. 882,173
The portion of the term of this patent subsequent to Dec. 10, 2002, has been disclaimed.
Int. Cl.[4] E04B *2/00*
U.S. Cl. 156—71 **13 Claims**



1. A method of installing a carpet with a carpet cushion, comprising:

applying an adhesive to a floor surface;

positioning a carpet cushion on the floor surface to adhere it thereto and trimming as required, said carpet cushion having a preapplied pressure-sensitive adhesive on its upper surface and a removable release film on the pressure-sensitive adhesive;

positioning the carpet on top of the release film on the carpet cushion and cutting and seaming the carpet as required;

folding back the carpet and removing the release film from the exposed area of the carpet cushion;

pressing the carpet down onto the exposed pressure-sensitive adhesive on the upper surface of the carpet cushion;

folding back another portion of the carpet and removing the release film from that area and then pressing that portion of the carpet onto the exposed pressure-sensitive adhesive of the carpet cushion; and

performing final trimming at the carpet edges as required when the entire carpet has contacted the adhesive.

4,797,171

COATED FABRIC AND METHOD OF MAKING THE SAME

Paul T. Van Gompel, Hortonville, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 690,350, Jan. 10, 1985, Pat. No. 4,753,840.
This application Feb. 18, 1988, Ser. No. 157,429
Int. Cl.[4] B65C *9/25*
U.S. Cl. 156—322 **11 Claims**

1. A method of making a coated fabric comprising:

providing a base ply of nonwoven fiber matrial,

forming in the base ply material a pattern of densified and undensified portions, the densified portions extending to at least one surface, designated the coating surface,

then providing a thermoplastic film in a heat-softened condition,

contacting the heat-softened thermoplastic film with the coating surface of the base ply,

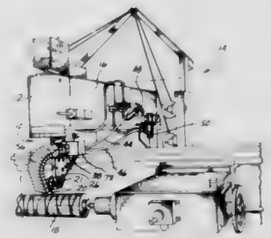
controlling the depth of penetration of the heat-softened thermoplastic film into the base ply to a depth less than the entire depth of the base ply by maintaining the temperature of the film and the contact pressure between the film and the base ply at predetermined values, thereby forming the film into a surface coating only on the coating surface of the base ply, and thereafter allowing the surface coating of film the cool.

4,797,172

FILAMENT PREHEAT APPARATUS

Michael R. Hebert, and Arnold J. Lander, both of Winnipeg, Canada, assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 12, 1988, Ser. No. 155,618
Int. Cl.[4] B65H *81/00*
U.S. Cl. 156—425 **4 Claims**



1. For use in connection with a filament winding machine and the like that has a movable payout assembly for feeding a filament or similar prepregged material to a winding mandrel, an apparatus for preheating said filament and mandrel during the winding process, comprising:

heating means, mounted to said payout assembly, for providing a heated airflow; and

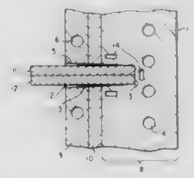
an air duct member having an air inflow and an air outflow end, said inflow end being positioned relative to said heating means in a manner so that said heated airflow is delivered into said inflow end, wherein said airflow passes through said duct member and exits through said outflow end, and further, said duct member is shaped so that said outflow end is normally positioned near the location where said filament contacts said mandrel, so that said exiting air is directed against both said filament and mandrel, and still further, said duct member is rotatable about said inflow end, in a manner so that said outflow end may be swung away from said normal position, to direct said exiting airflow away from said filament and mandrel.

4,797,173

APPARATUS FOR FACE WELDING BUNDLES OF THERMOPLASTIC MOLDINGS UNDER PRESSURE

Heinz Gross, Muhltal; Klaus E. Pohlmann, and Harnut Schikowsky, both of Darmstadt, all of Fed. Rep. of Germany, assignors to ROHM GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Jun. 16, 1986, Ser. No. 874,649
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1985, 3522190
Int. Cl.[4] B29C *65/18, 65/26, 65/70*
U.S. Cl. 156—498 **11 Claims**



1. An apparatus for face welding a bundle of thermoplastic moldings the end faces of which lie in a plane and the end face

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edges of which are juxtaposed in a coplanar fachion, said apparatus comprising:

(a) a heatable and coolable plate that can be pressed against the end face of the bundle and that has grooves therein, said grooves being sized, shaped, and positioned to correspond to the cross-section of the bundle and being a little bit wider than the thickness of the coplanarly juxtaposed end face edges that are to be sunk into the grooves;

(b) first means for heating the floor and the lower part of the walls of said grooves up to or above the melting temperature of the plastic, thereby melting the adjacent coplanarly juxtaposed end face edges of the theroplastic moldings;

(c) second means for thermally insulating the entry of said grooves from the floor of said grooves on all sides;

(d) third means for confining the melted thermoplastic resin in said grooves; and

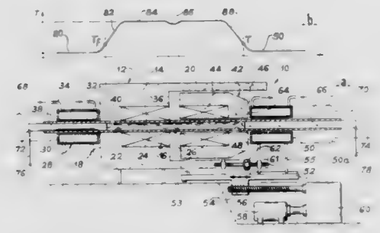
(e) fourth means for applying pressure through said heatable and coolable plate to the end face of the bundle, thereby pressurizing the melted thermoplastic resin confined in said grooves.

4,797,174

PROCESS AND APPARATUS FOR THE CONTINUOUS CHECKING OF THE SUPERMELTING OF THE SOLIDIFICATION FRONT OF A MONOCRYSTAL DURING FORMATION AND APPLICATION TO THE CHECKING OF THE GROWTH OF A CRYSTAL

Jean Comera, Gieres; Pierre Contamin, Claix; Jean-Jacques Favier, Grenoble, and Guy Marquet, Seyssinet, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 16, 1987, Ser. No. 38,996
Claims priority, application France, Apr. 28, 1986, 86 06107
Int. Cl.⁴ C30B *13/16, 35/00*
U.S. Cl. 156—616.1 **13 Claims**



1. An apparatus for forming and continuously checking said monocrystal part as it is being formed from that portion of a material mass which is heated to a liquid state comprising:

means for heating a portion of a solid material mass to create a liquid state in a portion thereof that lies between a solid part of said material mass and a monocrystal part of said material mass to produce

a first fixed solid-liquid interface located between said solid part and said liquid state and

a second solid-liquid interface comprising a solidification front located between said liquid state portion and said monocrystal part;

means for moving said solidification front;

means for measuring the potential at a first point on said solid part at a distance from said first interface to obtain a first potential;

means for measuring the potential at a second point on said monocrystal part at a distance from said second interface to obtain a second potential; and

means for measuring a potential difference between said potentials at said first and second points and, in response thereto, controlling said means for moving said solidification front.

8. A process for the continuous checking of the formation of a monocrystal part as it is being formed from that portion of a material mass which is heated to a liquid state comprising the steps of:

(a) heating a portion of said material mass to create a liquid state in a portion thereof that lies between a solid part of said material mass and said monocrystal part of said material mass and establishing

a first fixed solid-liquid interface located between said solid part and said liquid state, and

a second solid-liquid interface consistuting a solidification front located between said liquid state and said monocrystal part;

(b) causing said solidification front to move to create a mobile solidification front at which supercooling occurs as said crystal part is continuously forming;

(c) measuring the potential of said solid part at a first point on said solid part to obtain a first potential;

(d) measuring the potential of said monocrystal part at a second point on said monocrystal to obtain a second potential;

(e) comparing said first and second potentials to obtain a potential difference; and

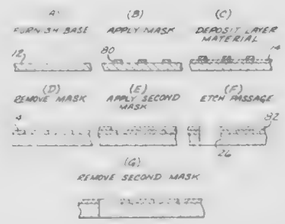
(f) determining a temperature deviation ΔT at said solidification front utilizing said potential difference.

4,797,175

METHOD FOR MAKING SOLID ELEMENT FLUID FILTER FOR REMOVING SMALL PARTICLES FROM FLUIDS

M. Edmund Ellion, Arcadia; Philip A. Donatelli, Marina del Rey, and George Wolff, Huntington Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 23,175, Mar. 9, 1987. This application Oct. 26, 1987, Ser. No. 112,359
Int. Cl.⁴ B44C *1/22;* **C23F** *1/02;* **C03C** *15/00;* **B05D** *5/00*
U.S. Cl. 156—644 **3 Claims**



1. A method for preparing a filter element for use in a fluid filter, comprising the steps of:

providing a flat plate;

depositing a mask onto said flat plate, said mask having a pattern therein defining a plurality of channels extending transversely across the face of the flat plate;

depositing a material over said mask to form a deposited layer, the thickness of the deposited layer being less than about 10 micrometers, the deposited layer having a pattern comprising a plurality of channels; and

removing the mask to form a filter element.

4,797,176

THERMOSETTING SIZE PRESS COMPOSITION

John E. Katchko, Barrington; Charles W. Strobel, Schaumburg, and Thomas H. Plaisance, Wilmette, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Aug. 10, 1987, Ser. No. 83,166
Int. Cl.⁴ D21H *3/36*
U.S. Cl. 162—135 **22 Claims**

1. A thermosetting size applyable to paper in a size press and curable at a temperature not in excess of about 260° F. for 10 seconds, said size comprising an aqueous emulsion comprising water having suspended therein: (1) aqueous emulsion copolymer particles of monoethylenically unsaturated monomers comprising hydroxy-functional monomer, said copolymer having an hydroxy number of from about 40 up to about 300, and the balance of said monomers providing a water insoluble polymer having a glass transition temperature of from about −20° C. to about 50° C., said emulsion having a pH greater that about 2.5 up to about 7; (2) a stoichiometric deficiency of an aminoplast cross-linking agent providing a ratio of hydroxy groups to N-methylol curing groups of from 4:1 to 1.2:1; and (3) an acid curing catalyst uniformly distributed in said size.

4,797,177

METHOD OF CUTTING AN ORGANIC MEMBRANE

Toshio Kaya, Iwakuni, and Makoto Fujimoto, Waki, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 1, 1988, Ser. No. 151,204
Claims priority, application Japan, Feb. 3, 1987, 62-23750
Int. Cl.⁴ B44C *1/22;* **B29C** *37/00*
U.S. Cl. 156—630 **3 Claims**



1. In the process of producing a device in which an organic membrane is adhered to, or intimately adhered to, a frame or a substrate, a method of cutting the organic membrane which comprises bringing an injection syringe-like needle into contact with, or approach to, the lateral end surface of the frame and while moving it along said lateral end surface, injecting an organic solvent capable of dissolving the organic membrane from the needle, whereby the membrane is cut along the frame by dissolving.

4,797,178

PLASMA ETCH ENHANCEMENT WITH LARGE MASS INERT GAS

Vu Q. Bui, Endicott; Kevin K. Chan, Staten Island; Joseph G. Hoffarth, Binghamton, all of N.Y., and Vicki J. Maluez, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1987, Ser. No. 49,254
Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06;* **B29C** *37/00*
U.S. Cl. 156—643 **9 Claims**

3. A method of plasma cleaning a surface comprising,

subjecting said surface to a plasma process gas which includes carbon tetrafluoride and oxygen,

whereby non-polymerized organics are removed and polymerized fluorocarbons are formed on said surface,

simultaneously subjecting said surface to bombardment by a large mass inert gas, whereby said polymerized fluorocarbons are removed,

thereby enhancing the action of process gas.

4,797,179

FABRICATION OF INTEGRAL LENSES ON LED DEVICES

George P. Watson, Plainfield, and Kathleen Meehan, Somerville, both of N.J., assignors to Lytel Corporation, Somerville, N.J.

Filed Jun. 9, 1987, Ser. No. 60,772
Int. Cl.⁴ H01L *21/306;* **B44C** *1/22*
U.S. Cl. 156—647 **14 Claims**



1. A method of fabricating LED devices from a wafer having LED's defined therein, comprising

forming a substantially circular first masking portion over each area of said wafer from which radiation would be emitted; and

forming a second masking portion on said wafer to define unmasked portions associated with said first masking portions; said unmasked portions being non-circular and shaped relative to a chemical etchant so that said chemical etchant can etch said wafer to produce mesas having substantially circular cross sections.

4,797,180

METHOD FOR THE DETECTION OF NOXIOUS GASES

Alan A. Schneider, Reisterstown; David A. Stewart; Joseph D. Joison, both of Baltimore; RaeAnn M. Auel, Westminster, and John F. Price, Owings Mill, all of Md., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 760,144, Jul. 29, 1985, Pat. No. 4,707,242, which is a continuation-in-part of Ser. No. 646,316, Aug. 30, 1984, abandoned. This application Jun. 4, 1987, Ser. No. 58,134
Int. Cl.⁴ G07N *27/46*
U.S. Cl. 204—1 T **15 Claims**



1. A method for quantitatively detecting a noxious gas in air in an electrochemical cell comprising a first working electrode, a second working electrode, a counter electrode and a reference electrode, said first working electrode comprising a gas diffusion membrane having bonded thereto a catalytic portion electrochemically reactive with the noxious gas and said second working electrode having electrochemical activity with oxidation/reduction products produced at the first working electrode; an electrolyte in contact with the catalytic portion of the first working electrode and in contact with second working electrode, the counter electrode and the reference electrode; and means for containing the electrolyte and said electrodes; said method comprising:

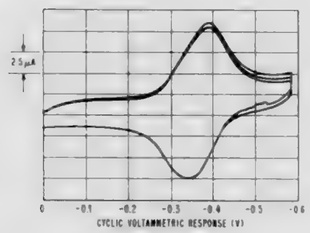
VOL 1098 ISS 2 JA 10 1989 UMI

(a) feeding an air sample containing the noxious gas to be detected to the first working electrode of said cell;
(b) maintaining the first working electrode by means of a potentiostat at a fixed potential relative to the reference electrode of from about 1.0 to 1.8 volts with respect to the potential of the reversible hydrogen couple in the electrolyte of said cell to oxidize the noxious gas;
(c) maintaining the second working electrode by means of a potentiostat at a fixed potential relative to the reference electrode of from above 1.0 to about 2.2 volts with respect to the potential of the reversible hydrogen couple in the electrolyte of said cell to further oxidize/reduce the oxidation/reduction products of the noxious gas to minimize the contamination of the electrolyte and the counter electrode, the fixed potential on said second working electrode being maintained at a voltage higher than the fixed potential being maintained on said first working electrode; and
(d) measuring the current flowing between said first working electrode and said counter electrode to quantitatively determine the amount of the noxious gas in said air, said measured current being a measure of the concentration of the noxious gas in said air sample being detected.

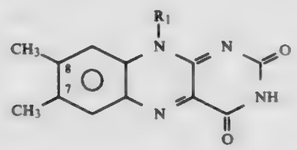
4,797,181
FLAVIN COFACTOR MODIFIED ELECTRODES AND METHODS OF SYNTHESIS AND USE

Charles N. Durfor, Rockville, Md.; Mark L. Bowers, Watertown, and Barbara A. Yenser, Essex, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 3, 1987, Ser. No. 81,251
Int. Cl.[4] B01D *59/40*
U.S. Cl. 204—1 T **25 Claims**



8. A method of effecting electron transfer between an electrode having a working surface of an electrically conducting or semiconducting material and an enzyme comprising the steps of:
modifying the working surface of the electrode by electrochemically bonding to an existing or derivatized outer oxide or hydroxyl layer on the working surface, by means of a mercaptosilane linking group, a redox active material derived from a redox active flavin -compound having the formula



wherein the redox active material is selected to activate a protein moiety of the enzyme, R_1 being a ribose derivative selected to provide the selected redox active material, and the redox active material is bonded to the sulfur atom of the linking group through the 8-alpha methyl position on the redox active material;
immersing the modified working surface of the electrode in an electrolyte solution containing the protein moiety of the enzyme; and
applying an electric potential to the electrode sufficient to effect the electron transfer between the electrode surface and the enzyme through the redox active material.

4,797,182
ELECTRODE WITH A PLATINUM METAL CATALYST IN SURFACE FILM AND ITS USE

Henri B. Beer, Heide-Kalmthout, and Dirk Arnouts, Essen, both of Belgium, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Apr. 13, 1987, Ser. No. 37,661
Claims priority, application European Pat. Off., Apr. 17, 1986, 86105360.7
Int. Cl.[4] C25D *1/00*
U.S. Cl. 204—14.1 **9 Claims**

8. The method of carrying out an electrolytic process wherein oxygen is evolved at an anode during said process at a current density exceeding 3.5 kA per m^2 of projected anode surface, which method comprises contacting with an electrolyte an electrode and connecting said electrode as an anode, said electrode being manufactured by providing an electrode substrate of film-forming metal, and then establishing an integeral surface film of film-forming metal oxide grown from the substrate, said electrode manufacture including incorporating electrocatalyst in said surface film, said electrocatalyst comprising two superimposed layers, with a first layer containing platinum metal and a second layer containing an oxide of iridium, rhodium, plalladium or ruthenium, with said first layer being next to the substrate and said second layer coforming the outer surface of the intergral surface film with the film-forming metal oxide.

4,797,183
ELECTROPLATED COMPOSITE OF ZINC AND ORGANIC POLYMER

Yuzo Yamamoto, Wakayama; Hiroyuki Nagamori, Utsunomiya, and Kozo Kitazawa, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Oct. 9, 1987, Ser. No. 107,368
Claims priority, application Japan, Oct. 17, 1986, 61-247093
Int. Cl.[4] C25D *15/00; 204 16, 55.1*
U.S. Cl. 204—16 **17 Claims**

1. An electroplated composite coating which comprises 70 to 99.9 percent by weight of an organic polymer,
said polymer being soluble in water and anionic, cationic or amphoteric and dispersed in the electroplated crystal grains or grain boundaries of the zinc and/or the zinc alloy and having a weight-average molecular weight of 1,000 to 1,000,000,
said polymer having at least one aromatic ring and 1 to 10 hydroxyl groups on the average per molecular weight unit of 500,
said polymer containing therein a polar group selected from the group consisting of:
a sulfo group,
a phosphoric acid group of the formula —O—PO(OR)2,
a phosphorous acid group of the formula —O—P(OR)2,
a phosphonic acid group of the formula —PO(OR)2,
a phosphonous acid group of the group —P(OR)2,
phosphinic acid group of the formula —RPO(OR),
a phosphinous acid group of the formula —PR(OR),
a tertiary amino group of the formula —NR1R_2,
a quaternary ammonium group of the formula [—NR1R2R3.X] —NR1R2R3 X and a
carboxyl group having the formula —COOH,
in which R is hydrogen or a hydrocarbon group and R1, R2 and R3 each are a straight or branched alkyl, a straight or branched hydroxyalkyl or an aromatic ring and X is a counter anion,
the sulfo group being contained therein on the average in an amount of 0.1 to 4 sulfo groups per molecular weight unit of 500, the other groups being contained therein on the average in a total amount of 0.1 to 5 groups per molecular weight unit of 500,
the main chain bridging between two aromatic rings being at least one of C—C linkage, C=C linkage and an ether linkage (C—O—C).

4,797,184
PROCESS FOR PRODUCING 7,7,8,8-TETRACYANOQUINODIMETHANE

Tomio Nakamura, Ichikawa; Katsuaki Kikuchi, and Takeshi Inagaki, both of Yokohama, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

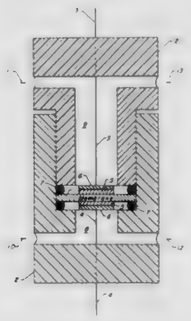
Filed Jan. 4, 1988, Ser. No. 140,562
Claims priority, application Japan, Jan. 12, 1987, 62-3189
Int. Cl.[4] C25B *3/02*
U.S. Cl. 204—59 R **6 Claims**

1. A process for producing 7,7,8,8-tetracyanoquinodimethane, which comprises subjecting 1,4-bis-(dicyanoethylene)-cyclohexane to anodic oxidation in a solvent.

4,797,185
HYDROGEN SEPARATION AND ELECTRICITY GENERATION USING NOVEL ELECTROLYTE MEMBRANE

Anthony J. Polak, Lake Zurich, and Sandra Petty-Weeks, Naperville, both of Ill., assignors to Allied-Signal Inc., Morristownship, Morris County, N.J.

Continuation of Ser. No. 756,889, Jul. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 687,351, Dec. 28, 1984, abandoned. This application Jul. 6, 1987, Ser. No. 70,620
Int. Cl.[4] C25B *1/02, 9/00*
U.S. Cl. 204—129 **17 Claims**

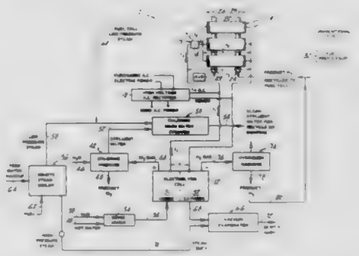


1. Apparatus for performing an electrochemical process involving a gaseous mixture having a component which is capable, in the presence of a catalytic agent, of dissociating to yield hydrogen ions or of combining with hydrogen ions, comprising:
(a) a thin film macroscopically homogeneous polymer blend membrane possessing a high protonic conductivity and which is formed by removing the solvent from a solution of a phosphoric acid and an organic polymer, wherein said phosphoric acid is present in the blend in an amount in the range of about 10% to about 70% by weight of the blend and is selected from a group consisting of hypophosphoric acid, metaphosphoric acid, orthophosphoric acid, pyrophosphoric acid, and polyphosphoric acid, and wherein said organic polymer is present in the blend in an amount in the range of about 90% to about 30% by weight of the blend and is selected from a group consisting of poly(vinyl alcohol), poly(vinyl fluoride), polyethylenimine, poly-(ethylene glycol), cellulose acetate, poly(ethyloxazoline), poly(vinyl sulfonic acid), poly(vinyl pyridine), poly(vinyl pyrrolidone), polyimide, poly(acrylamide), poly(acrylic acid), poly(N-isopropyl acrylamide), poly(N,N-dimethyl acrylamide), and copolymers having as repeat units the monomer units used in the polymers of said group.
(b) a membrane housing comprising a first gas chamber and a second gas chamber separated by a partition comprising said membrane, said membrane having a first surface in common with the first gas chamber and a second surface in common with the second gas chamber;
(c) two separate portions of catalytic agent effective to promote dissociation and combination, a first portion in contact with said first surface and a second portion in contact with said second surface of said membrane; and
(d) means for forming electrical connection in operative contact with said catalytic agent at said first surface and with said catalytic agent at said second surface.

4,797,186
METHOD AND APPARATUS FOR OPERATING A FUEL CELL IN COMBINATION WITH AN ELECTROCHEMICAL CELL TO PRODUCE A CHEMICAL PRODUCT

Alexander H. Levy, Bloomfield, and Kenneth Lipman, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 501,239, Jun. 3, 1983, abandoned. This application Mar. 20, 1987, Ser. No. 27,038
Int. Cl.[4] H01M *8/06;* **C25B** *1/02, 15/00*
U.S. Cl. 204—129 **23 Claims**



1. A method for operating a first electrochemical fuel cell in combination with a second electrochemical cell which employs a direct current converter, the fuel cell consuming a fuel and an oxidant to produce electrical power, the second electrochemical cell producing a chemical product and an oxidant as a result of the consumption of electrical power, which comprises:
operating the electrochemical cell at a first current and at a first voltage to produce a chemical product and an oxidant;
supplying the oxidant to the fuel cell for consumption of at least a portion of the oxidant in the fuel cell;
operating the fuel cell to consume fuel and at least a portion of the oxidant to produce direct current electrical power at a second current and at a second voltage which is independent of the voltage of the electrochemical cell;
converting the power output of the fuel cell which is at the second current and the second voltage to a third current and an output voltage which matches the first voltage of the electrochemical cell by flowing current intermittently through a direct current converter responsive to the power output of the fuel cell and the fuel available to the fuel cell; and,
supplying the third current to the electrolysis cell to provide at least a portion of the power required to produce the

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chemical product and the oxidant at the first current and the first voltage.

4,797,187
SEMI-PERMEABLE MEMBRANES PREPARED VIA REACTION OF CATIONIC GROUPS WITH NUCLEOPHILIC GROUPS

Thomas E. Davis, Lafayette, Calif.; Donald L. Schmidt, Midland, Mich.; Jee I. Kau, Concord, Calif.; Ritchie A. Wessling, Midland, Mich.; Sharon S. Whipple, Sanford, Mich.; Richard F. Fibiger, Midland, Mich., and Dale M. Pickelman, Auburn, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 790,287, Oct. 22, 1985, Pat. No. 4,704,324, which is a continuation-in-part of Ser. No. 719,037, Apr. 3, 1985, abandoned, which is a continuation of Ser. No. 313,051, Oct. 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 162,356, Jun. 24, 1980, abandoned. This application Aug. 17, 1987, Ser. No. 86,123
Int. Cl.⁴ C05B *7/00*
U.S. Cl. 204—180.2 **26 Claims**

1. Method of improving the selectivity of a semi-permeable membrane comprising:

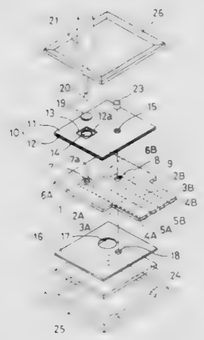
(a) contacting the membrane with a first reactive, ionic compound in an aqueous diluent while maintaining chemical potential gradient so as to deposit the ionic compound on membrane surface; and

(b) maintaining chemical potential gradient while contacting the membrane in an aqueous diluent with a second reactive, ionic compound of a charge opposite to the first compound, so as to form a coacervate.

4,797,188
SHEET TYPE ELECTRODE FOR USE IN MEASUREMENT OF IONS

Katsuhiko Tomita, Miyanohigashi, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Nov. 24, 1987, Ser. No. 124,909
Claims priority, application Japan, Mar. 16, 1987, 62-61633
Int. Cl.⁴ G01N *27/30*
U.S. Cl. 204—414 **9 Claims**



1. In an eleotrode assembly for the measurement of ions, in which an ion-selective response membrane is formed on an upper surface of an insulating support layer, the improvement comprising;

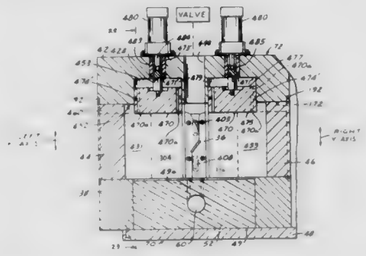
a pair of sheet members bound together to form the support layer, and

means for providing the ion-selective response membrane on the support layer including an adhesive mixture-containing solvents that are compatible with a sealing adhesion to the support layer to form ion-selective response membrane.

4,797,189
PRESSURE BALANCED SEALING PISTONS FOR CATHODES IN AN ELECTROLYTE CHAMBER

Edmund R. Hinman, Monroe, and Richard A. Jack, Granby, both of Conn., assignors to Airfoil Textron Inc., Lima, Ohio

Continuation of Ser. No. 29,022, Mar. 23, 1987, abandoned. This application Dec. 11, 1987, Ser. No. 131,759
Int. Cl.⁴ B23H *3/00, 9/10*
U.S. Cl. 204—224 M **12 Claims**

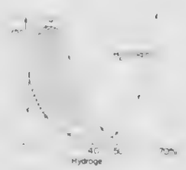


1. An electrolyte chamber for electrochemically machining a workpart positioned therein as an anode comprising cathode means movably disposed in the chamber for movement in a direction generally toward the workpart, electrolyte inlet means in the chamber for introducing pressurized electrolyte into the chamber, sealing means moveable in opposite directions in the chamber toward or away from the cathode means to close off or open a space between the cathode means and electrolyte chamber forming means, means for moving the sealing means in the chamber in said opposite directions and means for substantially balancing electrolyte pressure on the sealing means in the opposite directions.

4,797,190
IONIC SEMICONDUCTOR MATERIALS AND APPLICATIONS THEREOF

Robert L. Peck, Lebanon, Conn., assignor to T and G. Corporation, Lebanon, Conn.

Filed Oct. 6, 1986, Ser. No. 915,994
Int. Cl.⁴ C25B *13/00*
U.S. Cl. 204—296 **18 Claims**

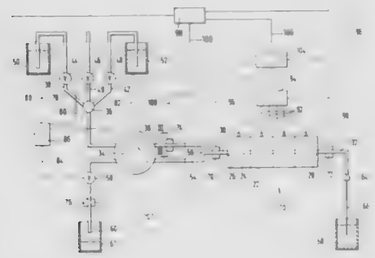


1. An ionic semiconductor having an ion transport rate which is temperature dependent, said semiconductor comprising an inert man-made polymeric matrix material and a hydrogel, the molecules of the hydrogel being substantially uniformly dispersed within said matrix material to form a composite structure wherein contact between hydrogel molecules is minimized by the matrix and the formation of channels is thereby limited, the composite allowing the transfer of ions and preventing the passage of un-ionized matter, the hydrogel comprising 10 to approximately 50% by weight of the dry composite, there being sufficient bonding between the hydrogel molecules and the matrix material to prevent substantial leach-out of hydrogel molecules from the composite.

4,797,191
MEASURING DEVICE FOR DETERMINATION OF THE ACTIVITY OR OF THE CONCENTRATION OF IONS IN SOLUTIONS

Klaus Metzner, Bad Homburg; Detlef Westphal, Oberursel; Wolfgang Allendörfer, Bad Homburg; Reinhard Hahnel, Lollar, and Hans-Dietrich Polaschegg, Oberursel, all of Fed. Rep. of Germany, assignors to Fresenius AG, Fed. Rep. of Germany

Filed May 8, 1985, Ser. No. 732,022
Claims priority, application Fed. Rep. of Germany, May 8, 1984, 3416956
Int. Cl.⁴ G01N *27/26*
U.S. Cl. 204—411 **15 Claims**



1. A measuring device for determination of the activity or the concentration of ions in solution comprising:

a flow channel (**24**) having a reference electrode and at least one measuring electrode, said flow channel having a first end (**26**) and a second end (**28**);

a first line (**30**) connecting said first end of said flow channel to at least one calibrating liquid container (**50, 52**) through first valve means (**44, 46, 48**);

first pumping means (**34**) interposed in said first line (**30**) between said first valve means (**44, 46, 48**) and said first end (**26**) of said flow channel (**24**);

a waste line (**54**) connected to said first line adjacent said first end (**26**) of said flow channel (**24**), said waste line having second pumping means and second valve means (**58**);

a sample feed line (**32**) connected to said second end (**28**) of said flow channel for providing a sample to said flow channel;

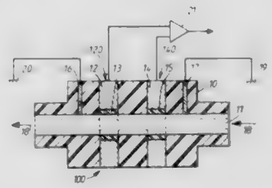
first and second sensors (**70, 72**) arranged in said first and second ends of said flow channel, respectively, for detecting the flowing fronts of liquids, said sensors comprising electro-optical sensors capable of discriminating between the presence and absence of liquids and among liquids of differing properties;

control means coupled to said sensors, pumping means, and valve means for controlling said pumping means and valve means so that, sequentially, a calibrating liquid is fed from said calibrating liquid container (**50, 52**) through said first line (**30**) and said flow channel via said first end by means of said first pumping means (**34**) until the flowing front of said calibrating liquid is detected by said second sensor (**72**), the calibrating liquid is removed from said flow channel out of said first end by said second pumping means and delivered to said waste line, a sample is fed from said sample container (**68**) through said sample feed line (**32**) and said flow channel (**24**) via said second end by means of said second pumping means until the flowing front of said sample is detected by said first sensor (**70**) and, the sample is removed from said flow channel out of said first end by said second pumping means and delivered to said waste line.

4,797,192
ION SELECTIVE ELECTRODE APPARATUS WITH AN EARTH ELECTRODE

Toshio Takiguchi, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 16, 1987, Ser. No. 74,188
Claims priority, application Japan, Jul. 18, 1986, 61-169324; Jul. 22, 1986, 61-170822
Int. Cl.⁴ G01N *27/26*
U.S. Cl. 204—412 **8 Claims**



1. An apparatus for measuring ion activity in a solution to be examined, comprising:

a block having a conduit through which the solution flows;

reference electrode means, disposed in said block so as to contact the solution flowing through the conduit, for generating a first potential as a reference potential of the solution independent of the activity of the solution;

ion selective electrode means, disposed adjacent to said reference electrode means in said block so as to contact the solution flowing through the conduit for generating a second potential dependent on the activity of the solution;

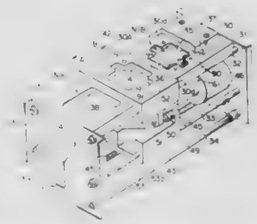
first earth electrode means disposed in said block in electrical contact with the solution flowing through the conduit and downstream of both said reference electrode means and said ion selective electrode means; and

second earth electrode means disposed in said block in electrical contact with the solution flowing through the conduit and upstream of both said reference electrode means and said ion selective electrode means.

4,797,193
ANALYZER FOR IONIC ACTIVITY MEASUREMENT

Tadashi Uekusa; Takashi Koizumi, and Nobuhiko Amano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 16, 1987, Ser. No. 3,989
Claims priority, application Japan, Jan. 16, 1986, 61-7079
Int. Cl.⁴ G01N *27/28*
U.S. Cl. 204—416 **5 Claims**



1. An analyzer for measuring ionic activity by use of an ionic activity measuring device provided with at least one ion selective electrode pair for generating potential corresponding to ionic activity of a predetermined ion, and a porous bridge disposed to make the electrodes of the ion selective electrode pair communicate with each other, the analyzer comprising:

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(i) a device supporting base provided with a liquid feeding section for feeding a reference solution in drops to one of said electrodes of said ion selective electrode pair of said ionic activity measuring device and feeding a sample solution in drops to the other thereof, a potential difference measuring section, and a device ejecting section for ejecting said ionic activity measuring device,

(ii) a device holder for holding said ionic activity measuring device on and connected to said device supporting base,

(iii) a holder movement means for moving said device holder for sending said ionic activity measuring device, which is held by said device holder, sequentially to the respective sections of said device supporting base, wherein said holder movement means comprises a holder movement base releasably associated with said device holder so that said holder movement base is released from said device holder for further movement in a first direction away from said device holder after said holder movement base moves said device holder up to said potential difference measuring section in said first direction

(vi) potential difference measuring probes formed for contact with said electrodes of said ion selective electrode pair for measuring a difference in potential between said electrodes, and

(v) a probe movement means mechanically interlocked with said holder movement means for making said probes contact with said electrodes when said ionic activity measuring device has been transferred to said potential difference measuring section of said device supporting base, and moving said probes away from said electrodes before said ionic activity measuring device is moved out of said potential difference measuring section.

4,797,194

ELECTROCHEMICAL ELEMENT

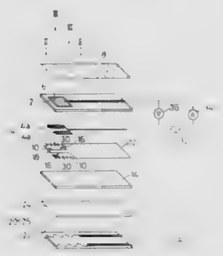
Syunzo Mase, Tobishima, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 899,815, Aug. 25, 1986, abandoned. This application Mar. 22, 1988, Ser. No. 171,225

Claims priority, application Japan, Aug. 30, 1985, 60-192568

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—425 32 Claims



9. An electrochemical element, comprising:

a planar solid electrolyte body;

at least two electrodes including a first electrode and a second electrode which are disposed on said planar solid electrolyte body;

a first means for defining a thin flat space which has a predetermined diffusion resistance to restrict diffusion of a measurement gas to said first electrode, said thin flat space communicating with a measurement-gas space in which said measurement gas exists via a gas inlet aperture, said gas inlet aperture being formed through said electrochemical element in a plane normal to and intersecting a plane of said thin flat space, such that an inlet is formed in said thin flat space at a portion of said gas inlet aperture which intersects said thin flat space, said first electrode being substantially exposed to said measurement gas in said thin flat space, said means for defining a thin flat space including two opposed flat surfaces parallel to said plane of said thin flat space, said first electrode being disposed on a first of said two opposed flat surfaces and contacting a first portion of said first opposed flat surface, such that said first electrode is spaced a predetermined distance away from said inlet of said thin flat space in a direction parallel to said plane of the thin flat space, said measurement gas being introduced through said inlet into said thin flat space; and

a second means for substantially defining the thickness of said thin flat space, said second means comprising ceramic bridging means disposed in said thin flat space, said ceramic bridging means contacting a second portion of said first flat surface and the second surface of said two opposed flat surfaces, thereby bridging a gap between said two opposed flat surfaces and being in a non-contacting relationship with said first electrode.

4,797,195

THREE ZONE HYDROCRACKING PROCESS

Simon G. Kukes, Naperville; L. Charles Gutberlet, Wheaton, and Jeffrey T. Miller, Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Feb. 26, 1988, Ser. No. 160,683

Int. Cl.[4] C10G *65/10*

U.S. Cl. 208—59 16 Claims

1. A process for hydrocracking a hydrocarbon feedstock with hydrogen at hydrocracking conversion conditions in a plurality of reaction zones in series which comprises:

(a) contacting said feedstock in a first reaction zone with a first reaction zone catalyst comprising a nickel component and a molybdenum component deposed on a support component consisting essentially of a refractory inorganic oxide;

(b) contacting the effluent from said first reaction zone in a second reaction zone with a second reaction zone catalyst comprising a nickel component and a tungsten component deposed on a support component consisting essentially of an alumina component and a crystalline molecular sieve component; and

(c) contacting the effluent from said second reaction zone in a third reaction zone with a third reaction zone catalyst comprising a cobalt component and a molybdenum component deposed on a support component comprising a silica-alumina component and a crystalline molecular sieve component.

4,797,196

HYDROCRACKING PROCESS USING SPECIAL JUXTAPOSITION OF CATALYST ZONES

Simon G. Kukes, Naperville; L. Charles Gutberlet, Wheaton, both of Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Amoco Corporation, Chicago, Ill.

Filed Feb. 26, 1988, Ser. No. 160,680

Int. Cl.[4] C10G *65/10*

U.S. Cl. 208—59 19 Claims

1. A process for hydrocracking a hydrocarbon feedstock with hydrogen at hydrocracking conversion conditions in a plurality of reaction zones in series which comprises:

a. contacting said feedstock in a first reaction zone with a first hydrocracking catalyst comprising a nickel component and a tungsten component deposed on a support component consisting essentially of an alumina component and a crystalline molecular sieve component;

b. contacting the effluent from said first reaction zone in a second reaction zone with a second hydrocracking catalyst comprising a cobalt component and a molybdenum component deposed on a support component comprising a silica-alumina component and a crystalline molecular sieve component.

c. contacting the effluent from said second reaction zone in a third reaction zone with said first hydrocracking catalyst.

4,797,197

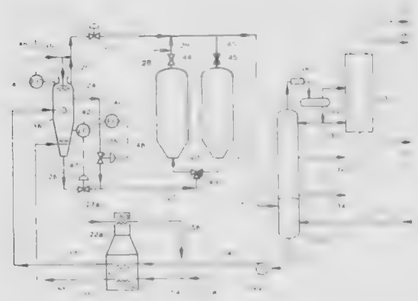
DELAYED COKING PROCESS

Renato M. Mallari, 6403 Teal Run Dr., Houston, Tex. 77035

Continuation of Ser. No. 699,417, Feb. 7, 1985, abandoned. This application Jan. 6, 1986, Ser. No. 816,366

Int. Cl.[4] C10G *9/14*

U.S. Cl. 208—131 12 Claims



1. In a process for delayed coking of heavy petroleum residue feedstock within a coker heater, a coke drum and a fractionator, wherein the feedstock and recycle material are heated in said heater and then passed to said coke drum to produce coke and overhead vapors, wherein said vapors are fed into a bottom primary section of said fractionator, wherein a heavy gas oil product is fractionated and withdrawn from a secondary section of said fractionator, wherein a light gas oil and other lighter distillates products are fractionated and withdrawn from the succeeding sections of said fractionator, wherein a naphtha and gaseous constituents are fractionated and withdrawn from the top section of said fractionator, wherein a selected portion of said coke drum overhead vapors is condensed as heavy recycle in said primary section of said fractionator and combined with the preheated but unvaporized feedstock, wherein a selected quantity ratio of said heavy recycle and said feedstock is charged to said coker heater, wherein a flow rate of said combined heavy recycle and feedstock is adjusted to operate said coker heater at a selected inlet cold oil velocity, wherein said combined heavy recycle and feedstock is heated to thermal cracking temperature in said coker heater, wherein said temperature is increased further to effect more thermal reactions and additional vaporization of hydrocarbons, wherein a final temperature of the heater effluent is selected to minimize excessive coke deposition in the heater tubes, and wherein said heater effluent of vapor and liquid constituents consists solely of the products of thermal reactions and vaporization of said combined feedstock and heavy recycle at its prevailing pressure and temperature, the improvement comprising:

(a) Feeding and flashing said heater effluent at its prevailing temperature into a flasher drum wherein its vapor and liquid constituents are separated at a selected pressure, and wherein the separated liquid constituent is soaked at a selected residence time to allow further thermal reactions and vaporization in said liquid;

(b) Injecting selected flow rates of heated hydrogen-rich gas and one or more gases selected from the group of steam, light hydrocarbons and refinery fuel gas at a selected temperature into said separated liquid constituent to provide a stripping medium and to provide additional heat for thermal reactions, additional vaporization of hydrocarbons, and minimization of polycyclic aromatic polymerization of bimolecular radicals; all of said heater effluent flashing, said effluent liquid constituent of thermal reactors, and combining of effluent vapor constituent with the vapor products of thermal reactions and vaporization from the liquid therein being performed in said flasher drum to produce a resultant liquid bottoms with more thermally reacted heavy hydrocarbons than said heater effluent liquid; and to produce a resultant vapor with more gaseous constituents, more thermally converted light hydrocarbons, and more vaporized hydrocarbons than said heater effluent vapor;

(c) Injecting a selected flow rate of said resultant vapor at selected flasher drum pressure into the feed line of said coke drum at prevailing coke drum inlet pressure, in order to: (i) reduce the partial pressure of hydrocarbons in the coke drum; (ii) minimize the coke deposition in the coke drum feed line; (iii) control the hardness and quality of the coke product; (iv) control the coke drum overhead vapor temperature;

(d) Flashing to vapor and liquid constituents said resultant liquid bottoms at its prevailing temperature and at prevailing flasher drum pressure into the feed line of said coke drum at prevailing coke drum inlet pressure;

(e) Combining said flashed resultant liquid bottom with said injection vapor in said coke drum feed line at prevailing coke drum inlet pressure;

(f) Feeding said combination of flashed resultant liquid bottoms and injection vapor from the coke drum feed line into said coke drum; and

(g) Removing the remainder of said resultant vapor at its prevailing temperature and at selected flasher drum pressure for further processing.

4,797,198

PROCESS FOR THE WORKING UP OF SALVAGE OIL

Rolf Wetzel, Heiligenhaus; Hubert Coenen, Essen, and Wilfried Krenck, Essen-Heisingen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Jan. 27, 1987, Ser. No. 7,358

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1986, 3602586

Int. Cl.[4] C10G *33/00*

U.S. Cl. 208—181 20 Claims

1. Process for the working up of salvage oil, by subjecting previously dewatered salvage oil to an extraction under supercritical conditions with a solvent which is gaseous at normal conditions and separating extracted components from a separated supercritical gas phase through lowering of pressure or alteration of temperature, comprising

(a) removing solid impurities present in said salvage oil by filtration;

(b) subjecting filtered salvage oil to an atmospheric distillation;

(c) subjecting previously distilled salvage oil to a supercritical extraction, thereby producing a separated supercritical gas phase containing extract components, and separating said extract components from said separated supercritical gas phase in a single step or fractionally;

(d) removing from separated extract components any solvent residue still remaining therein through single or multiple stage relaxation;

(e) subjecting solvent-free extract components to a catalytic hydrogenation, thereby producing a gas stream, and purifying said gas stream by pressurized washing with water or caustic soda;

(f) removing from an extraction residue produced by said extraction any solvent dissolved therein by single or multiple stage relaxation;

(g) eliminating said solvent-free extraction residue through thermal treatment composed of gasifying the solvent-free extraction residue in a flame reaction in the presence of oxygen or air and removing from a gas so produced, composed essentially of CO, H_2, CO_2, H_2O and N_2, any

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undesirable components by a subsequently disposed gas purification; and

(h) combining solvent recovered from said extraction residue with solvent recovered from said extract components, condensing said solvent and adding said condensed solvent to a main solvent stream which is led back to said extraction stage.

4,797,199

TEMPERATURE CONTROL FOR A KOH TREATER

Joe B. Hampton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1985, Ser. No. 714,226

Int. Cl.[4] C10G *17/00*

U.S. Cl. 208—262.1 **6 Claims**



1. A method for cooling a KOH treater to which propane containing HF acid is provided as a feed, wherein the reaction of KOH and HF acid in said KOH treater produces heat, wherein propane containing a substantially reduced concentration of HF acid, with respect to the concentration of HF acid in the feed provided to said KOH treater, is withdrawn from said KOH treater and wherein an external jacket surrounds said KOH treater, said method comprising the steps of:

passing a cooling fluid through said external jacket, wherein said cooling fluid passes in heat exchange with the external surface of said KOH treater and withdraws heat caused by the reaction of KOH and HF acid from said KOH treater;

establishing a first signal representative of the desired pressure in said external jacket;

establishing a second signal representative of the actual pressure in said external jacket;

comparing said first signal and said second signal and establishing a third signal which is responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of the rate in which vapor should be withdrawn from said external jacket so as to maintain the actual pressure in said external jacket substantially equal to the desired pressure represented by said first signal;

manipulating the withdrawal of vapor from said external jacket in response to said third signal;

establishing a fourth signal representative of the actual liquid level in said external jacket;

establishing a fifth signal representative of the desired liquid level in said external jacket;

comparing said fourth signal and said fifth signal and establishing a sixth signal which is responsive to the difference between said fourth signal and said fifth signal, wherein said sixth signal is scaled so as to be representative of the rate at which liquid should be withdrawn from said external jacket in order to maintain the actual liquid level in said external jacket substantially equal to the desired liquid level represented by said fifth signal; and

manipulating the withdrawal of liquid from said external jacket in response to said sixth signal.

4,797,200

UPGRADING HEAVY OILS BY SOLVENT DISSOLUTION AND ULTRAFILTRATION

Edward J. Osterhuber, Phillipsburg, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 4, 1984, Ser. No. 606,938

Int. Cl.[4] C10C *3/00*; C10G *21/06*

U.S. Cl. 208—308 **10 Claims**

1. A method for the separation of a heavy oil comprising aromatic, saturated, polar, and metal-containing hydrocarbons into a permeate fraction enriched in aromatic and saturated hydrocarbons and a retentate fraction enriched in polar and metal-containing hydrocarbons comprising the steps of:

diluting the heavy oil selected from raw crudes, reduced crudes, heavy atmospheric residual oils, heavy vacuum residual oils, hydrorefined crude oils, hydrorefined atmospheric residual oils, shale oil, tar sand products, and coal liquefaction products with a solvent which is completely miscible with the heavy oil in an amount sufficient to completely dissolve the oil so as to produce an ultrafiltration feed;

contacting the ultrafiltration feed with a first side of a continuous generally unswelled organic membrane selected from the group consisting of those comprising cellulose or polyvinylidine fluoride at a pressure between about 750 kPa and about 1500 kPa and at a temperature between 20° C. and about 125° C.;

recovering a permeate fraction enriched in aromatic and saturated hydrocarbons from a second side of the membrane, and

recovering a retentate fraction enriched in polar and metal-containing hydrocarbons from the first side of the membrane.

4,797,201

ELECTROSTATIC FREE-FALL SEPARATOR

Helmuth Küppers, and Hans-Jürgen Knauer, both of Kassel, Fed. Rep. of Germany, assignors to Kali und Salz Aktiengesellschaft, Kassel, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 531,597

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233528

Int. Cl.[4] B03C *7/12*

U.S. Cl. 209—127.4 **6 Claims**



1. An electrostatic free-fall separator for separating mixtures of materials having low electrical conductivity, particularly mineral material mixtures, the electrostatic free-fall separator comprising inlet means for feeding a material to be separated; outlet means for withdrawing the material after having been separated and including separating flaps located underneath said inlet means; means for separating the material, located between said inlet means and said outlet means and including at least two rotatable roller-shaped field electrodes arranged parallel to and at a distance from one another and generating a substantially horizontally directed electrical high-voltage field, said roller-shaped field electrodes being formed as cylindrical hollow bodies having a predetermined diameter, two ends formed as semi-spherical caps without edges and of one-piece with a remaining portion of the same hollow body, and horizontally directed longitudinal axes located at the same height parallel to one another, said hollow bodies which form said electrodes being spaced from one another by a relatively small distance which is at most equal to the diameter of said electrodes; and stripping means arranged outside of the electric field generated between said field electrodes.

4,797,202

FROTH FLOTATION METHOD

Richard R. Klimpel, and Robert D. Hansen, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 856,728, Apr. 28, 1986, Pat. No. 4,684,459, which is a continuation-in-part of Ser. No. 803,026, Nov. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 787,199, Oct. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 649,890, Sep. 13, 1984, abandoned. This application Feb. 26, 1987, Ser. No. 19,461

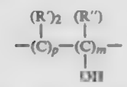
Int. Cl.[4] B03D *1/02*

U.S. Cl. 209—166 **12 Claims**

1. A method of recovering metal-containing sulfide minerals, sulfidized metal-containing oxide minerals, precious metal containing minerals, nickel-bearing oxide minerals or copper-bearing oxide minerals from a metal ore which comprises subjecting the metal ore, in the form of an aqueous pulp, to a froth flotation process in the presence of a flotating amount of a flotation collector under conditions such that the metal-containing sulfide mineral, sulfidized metal-containing oxide mineral, precious metal containing mineral, nickel-bearing oxide mineral or copper-bearing oxide mineral is recovered in the froth, wherein the collector comprises a compound corresponding to the formula:

$$R^1—X—(R)_n—N—(R^2)_2$$

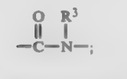
wherein $—(R)_n—$ is



each R′ and R″ is independently hydrogen, methyl or ethyl; p+m=n; n is an integer from 1 to 6; m is independently 0 or 1, and p is an integer from 1 to 6 and each



moiety of the $—(R)_n—$ group can occur in random sequence; R^1 is a $C_{1\text{-}22}$ hydrocarbyl or a $C_{1\text{-}22}$ substituted hydrocarbyl; one R^2 is hydrogen or a $C_{1\text{-}22}$ hydrocarbyl and one R^2 is hydrogen, $C_{1\text{-}22}$ hydrocarbyl or a $C_{1\text{-}22}$ substituted hydrocarbyl; —X— is $N(R^3)—$ or



R^3 is H or a $C_{1\text{-}22}$ hydrocarbyl or a $C_{1\text{-}22}$ substituted hydrocarbyl and recovering said mineral or minerals from said froth.

4,797,203

REVERSE HYDROCYCLONE CLEANER FOR REMOVING LIGHT CONTAMINANTS FROM PULP SLURRY

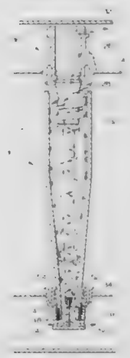
Jacek J. Macierewicz, Calgary, Canada, assignor to ELP Products Limited, Calgary, Canada

Filed Nov. 19, 1986, Ser. No. 932,251

Claims priority, application United Kingdom, Feb. 22, 1986, #604462

Int. Cl.[4] B01D *3/00*

U.S. Cl. 209—211 **6 Claims**



1. A reverse hydrocyclone cleaner for removing light contaminants from pulp slurry, comprising:

a housing defining a hydrocyclone separating chamber,

means for feeding pulp slurry into the separating chamber adjacent an upper end thereof to form an outer helically and downwardly moving slurry stream relatively free from light contaminants, an inner pulp stream containing a substantial amount of said light contaminants and an air core within said inner stream,

an overflow orifice adjacent an upper end of the separating chamber,

an underflow orifice adjacent a lower end of the separating chamber to remove said outer pulp stream relatively free from light contaminants, and

a centrally located blocking finger in the underflow orifice defining a flow passage around which the outer pulp stream passes, said blocking finger having a top portion with a substantially flat upper surface of sufficient diameter to define lower limits of both the air core and the inner pulp stream and cause the inner pulp stream containing a substantial amount of said light contaminants to travel upwardly in the separating chamber in a helical manner around the air core to and through the overflow orifice,

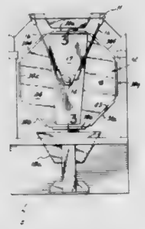
said separating chamber having a conical section adjacent the blocking finger, and said top portion of the blocking finger and said conical section providing therebetween a narrowest portion of said flow passage in the underflow orifice for the outer pulp stream, said top portion having a diameter which is from about 15 to about 25% of the diameter of the separating chamber at entry of the pulp slurry adjacent the upper end thereof and which blocks from about 15 to about 25% of the area of the underflow orifice.

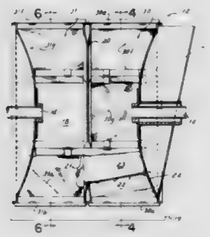
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4,797,204
AUTOMATIC PARTICLE-SIZE ANALYZER WITH DIVIDED DRUM

William E. Lower, and Glenn J. Pogue, both of Cincinnati, Ohio, assignors to Rotex, Inc., Cincinnati, Ohio

Filed Mar. 14, 1988, Ser. No. 167,959
Int. Cl.[4] B07B *1/28*
U.S. Cl. 209—237 **15 Claims**





1. In a particle size analyzer of the type having a hollow polygonal drum with a plurality of faces on its periphery with graded screens on different faces thereof, means for rotationally indexing said drum about its longitudinal axis to sequentially position each face in a generally horizontal screening position, and means for applying a screening motion to said drum while in said screening position the improvement comprising:

a. partition means within said drum, said partition means transverse to said longitudinal axis and dividing said drum into first and second screening chambers,

b. said drum having screens of different mesh sizes on the respective faces of said first and second chambers,

c. means for feeding the material to be analyzed into said first chamber,

d. means for transferring said material from said first chamber into said second chamber.

4,797,205
APPARATUS FOR SEPARATING OILY CUTTING LIQUID

Koichiro Kitsmura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Takaoka, Japan

Filed Mar. 31, 1987, Ser. No. 32,310
Claims priority, application Japan, Apr. 3, 1986, 61-48964[U]
Int. Cl.[4] B03D *3/00*; B01D *21/06*
U.S. Cl. 210—86 **7 Claims**

1. An apparatus for separting an oily cutting liquid from a water-soluble cutting liquid, comprising:

a main tank (**10**) for containing combined liquids (**11**) including in combination the oily cutting liquid and the water-soluble cutting liquid which constitute two liquid layers;

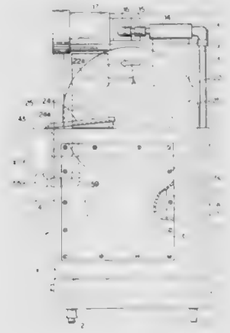
rotation means (**22**) always immersed at its lower position in the combined cutting liquids (**11**) for taking out upwardly the oily cutting liquid and some minor amount of water-soluble cutting liquid in a mixed condition from the combined cutting liquids (**11**) in such a way that the oily cutting liquid is attached onto the rotation means (**22**) when the rotation means (**22**) rotates in the combined cutting liquids (**22**);

means (**23, 24**) for removing the oily cutting liquid from the rotation means (**22**);

means (**41**) for receiving from the removing means (**23, 24**) the oily cutting liquid mixed with a minority of the water-soluble cutting liquid;

an auxiliary tank (**53**) for containing only the oily cutting liquid; and

means (**48**) having first, second and third passages for separating the oily cutting liquid and the water-soluble cutting liquid due to the specific gravity difference between them, the first passage being connected to the receiving means (**41**) for receiving the mixed liquids from the receiving means (**41**), the second passage being connected to the main tank (**10**) for supplying only the water-soluble liquid



into the main tank (**10**), the third passage being connected to the auxiliary tank (**53**) for supplying only the oily cutting liquid into the auxiliary tank (**53**).

7. An apparatus for separating an oily cutting liquid from a water-soluble cutting liquid, comprising:

a main tank (**10**) for containing combined liquids (**11**) including in combination the oily cutting liquid and the water-soluble cutting liquid which constitute two liquid layers;

rotation means (**22**) always immersed at its lower position in the combined cutting liquids (**11**) for taking out upwardly the oily cutting liquid and some minor water-soluble cutting liquid in a mixed condition from the combined cutting liquids (**11**) in such a way that the oily cutting liquid is attached onto the rotation means (**22**) when the rotation means (**22**) rotates in the combined cutting liquids (**22**);

means (**23, 24**) for removing the oily cutting liquid from the rotation means (**22**); and

a surface sensor (**60**) for detecting a liquid surface of the combined cutting liquids (**11**) within the main tank (**10**) so as to avoid overflow thereof.

4,797,206
SIPHON DEVICE FOR CLEANING SPAS

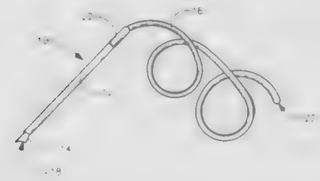
James P. Lynch, 6901 W. 87th Way, #304, Arvada, Colo. 80003

Filed Nov. 6, 1985, Ser. No. 795,362
Int. Cl.[4] E04H *3/20*; F04F *10/02*
U.S. Cl. 210—169 **13 Claims**

1. A siphon device adapted to remove particulate debris from a spa by utilizing siphoned liquid to convey the debris out of the spa, as the liquid flows to a waste location, comprising:

an elongated, relatively rigid tubular handle having a longitudinal passageway operative to convey liquid from an upstream end to a downstream end thereof;

a nozzle having a surrounding sidewall defining a nozzle outlet in fluid communication with said passageway at the upstream end of said handle and having an ovoid nozzle inlet formed by a rim of said nozzle at an upstream end thereof, said rim being contiguous on an imaginary concave surface with respect to said nozzle, said nozzle being formed of a pliable material; and

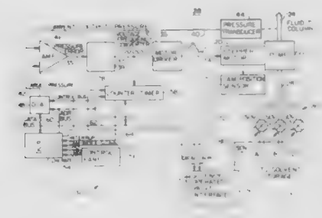


a flexible hose having a hose inlet in fluid communication with said passageway at the downstream end of said handle and having a discharge outlet opposite said hose inlet whereby liquid may flow into said nozzle, through said passageway and said hose and be discharged at said waste location.

4,797,207
APPARATUS FOR CONTROLLING A PUMP TO ACCOUNT FOR COMPRESSIBILITY OF LIQUIDS IN OBTAINING STEADY FLOW

Ronald E. Honganen, Campbell; Robert L. Howe, San Ramon, and Leslie A. Miller, San Jose, all of Calif., assignors to Spectra Physics, Inc., San Jose, Calif.

Filed Sep. 30, 1986, Ser. No. 913,356
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—198.2 **9 Claims**



1. An apparatus for causing controlled flow of a solvent composition through a liquid chromatography column comprising:

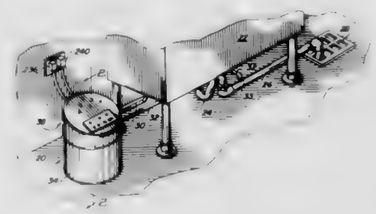
means for pumping a solvent composition comprised of one or more solvents through said column at a constant pressure determined by a pressure control signal including a dual piston pump means for pumping said solvent composition at a pressure determined by said pressure control signal where said dual pistons each have their own cylinder and are driven by the same rotating shaft and an associated drive mechanism such that said pistons have an associated overlap interval in the rotation of said rotating shaft during which both pistons are pushing said solvent composition out their respective cylinders, and where each piston has an intake interval in the rotation of said rotating shaft during which said solvent composition is being drawn by each respective piston into the associated cylinder, said intake interval including a linear interval defined by a constant piston velocity, and further including control means including transducer means for detecting data indicating the actual pressure at the output of said means for pumping, said control means for comparing the actual pressure detected by said transducer means to the desired pressure as determined by said pressure control signal and for controlling the speed of rotation of said rotating shaft during intervals including said overlap interval such that the actual pressure at the output of said means for pumping equals the desired pressure; and

computer means for for receiving data defining the desired flow rate and for determining a correction factor determined by the compressibility of the solvent composition by computing the ratio of the duration of a first interval during which said rotating shaft is moving said pistons through said overlap interval for the current solvent composition and the current actual constant pressure to the duration of a second interval during which said rotating shaft is moving said pistons through said overlap interval for incompressible solvent pumped at a constant pressure, each said first and second intervals being normalized to the time it takes said rotating shaft to rotate through a predetermined angle during which the corresponding one of said pistons moves during the corresponding one of said respective linear intervals, where said predetermined angle is equal to the angle through which said rotating shaft moves while said pistons are in said overlap interval, and said computer means for subtracting one from each said normalized first and second interval before computing said ratio and for multiplying said ratio times a volume factor equal to the amount of volume displaced by one of said pistons during said overlap interval to derive a product and for subtracting said product from said volume factor to derive said correction factor, and for updating said pressure control signal by multiplying the value of the old pressure control signal times the quantity equal to the correction factor plus 1.

4,797,208
AUTOMATIC DRAIN SYSTEM TREATMENT PROCESS

Adam C. Miller, Phoenix; Mitchell M. Hazar, Scottsdale, and William G. Harvey, Glendale, all of Ariz., assignors to Grease Genie, Inc., Phoenix, Ariz.

Filed Nov. 23, 1987, Ser. No. 124,151
Int. Cl.[4] C02F *1/00*
U.S. Cl. 210—606 **4 Claims**



1. A method for automatic cyclic treatment of a drain system comprising the sequential steps of:

(a) energizing a normally closed solenoid valve which is connected to a supply of fresh water under pressure to an open state for directing fresh water into the drain system for a predetermined length of time, and thereafter de-energizing said solenoid valve;

(b) injecting bioactive liquid cultures at a metered flow rate into the drain system for a predetermined length of time subsequent to step (a);

(c) re-energizing said normally closed solenoid valve for again directing fresh water into the drain system for a predetermined length of time, and thereafter de-energizing said solenoid valve

(d) providing a time out period of predetermined duration subsequent to step (b); and

(e) providing a control system including timing devices and

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logic circuitry to automatically and sequentially repeat steps (a), (b), (c) and (d) in a cyclic manner.

4,797,209

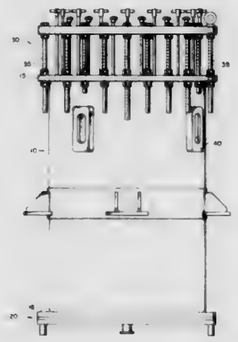
ADJUSTABLE DISTRIBUTION CELL APPARATUS

Derek H. A. Jackson, Tetbury, England, assignor to Amicon Wright Ltd., Gloucestershire, England

Continuation of Ser. No. 881,305, Jul. 2, 1986, abandoned. This application Dec. 1, 1987, Ser. No. 129,926

Int. Cl.[4] B01D *15/08*

U.S. Cl. 210—656 **12 Claims**



1. In combination, an adjustable distribution cell apparatus and a chromatography column adapted to receive said apparatus and comprising a column tube, a bed of stationary phase medium and a mobile phase medium, said apparatus comprising:

support means for mounting the apparatus onto the column tube and including means for adjusting the height of the apparatus within the column tube;

second adjustable sealing means suspended from the support means and including a seal-forming element adapted to engage to inside wall of the column tube; and

first adjustable sealing means, disposed between the second adjustable sealing means and the support means, suspended from the support means and including a seal-forming element adapted to engage the inside wall of the column tube, each of said first and second adjustable sealing means being independently adjustable between a first position, wherein said seal-forming element does not engage the inside wall of the column in a fluid-tight manner, and a second position wherein said seal-forming element engages the inside wall of the column in a fluid-tight manner.

4,797,210

AUTOMATICALLY CONTROLLED WATER BUOYANT POLLUTION-SKIMMER-AND-RECOVERY SYSTEM

Vincent P. Lonardo, 2642 Salt Springs Rd., Girard, Ohio 44420

Filed Apr. 17, 1987, Ser. No. 39,213

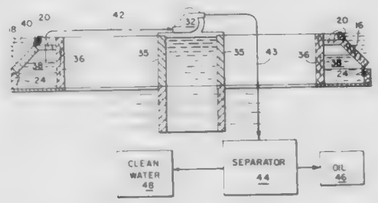
Int. Cl.[4] E02B *15/04*

U.S. Cl. 210—242.3 **7 Claims**

1. A system for recovering water-light pollutants immiscible with water from the surface of contaminated water, said system which comprises in combination:

(A) a hull submersible in water to be processed, said hull having an opening along the bottom thereof which is in open contact with the water to be processed and for permitting water entry into the central portion of the hull such that the entire hull will be substantially submerged when disposed in water to be processed, said hull having a vertically disposed frame defining an inner surface of a moat which extends about the perimeter of the hull, said moat having side members which are disposed oppositely to said vertically disposed frame and extending about the perimeter of the hull, said side members being joined to inwardly tapered base members which define said opening at an edge opposite the side members;

(B) pivotal weir members disposed oppositely to the vertically disposed frame and extending about the perimeter of the moat, said pivotal weir members joined by a flexible membrane to the top surface of the side members, said pivotal weir members configurated for limiting water and pollutants entry into the moat when the pivotal weir



members are pivoted away from the vertically disposed frame and to the upright position, said pivotal weir members configurated for providing a cascade of water and pollutants into the moat when the pivotal weir members are pivoted toward the vertically disposed frame and to a lowered position, said pivotal weir members being raised to the upright position and lowered to the lowered position by buoyant means and the weight of water and contaminants in the moat; and

(C) a pump for withdrawing pollutants and water from the moat.

4,797,211

CROSS FLOW MICROFILTER

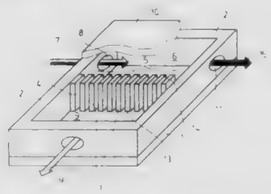
Wolfgang Ehrfeld, Karlsruhe, and Dietrich Münchmeyer, Stutensee, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Dec. 24, 1986, Ser. No. 945,882

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1985, 3546091

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—321.84 **7 Claims**



1. In a cross flow microfilter comprising a filter housing having a flow chamber wherein a fluid is introduced through at least one inlet and a concentrate is removed through at least one outlet on the side opposite the inlet, a collection chamber from which a filtrate is removed, and at least one microporous membrane disposed between the flow chamber and the collection chamber, said membrane having an inlet surface along which the fluid to be filtered flows, an outlet surface oriented toward the collection chamber and pores of a width between about 0.1 micron and 30 microns, the improvement wherein

said membrane comprises a plurality of webs disposed in at least one row and spaced at a predetermined distance from one another to define openings having slit-shaped cross-sections said openings having uniform and predetermined widths and given profiles and constituting said pores;

said microfilter further comprises two terminating plates enclosing said webs and laterally bounding said openings; and

said webs are formed on one of said plates by one of X-ray lithography, X-ray depth lithographic-galvanoplasty molding, and molding with subsequent galvanoplasty.

4,797,212

BIOLOGICAL PURIFICATION OF WASTE WATERS

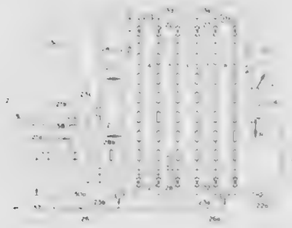
Reinhart von Nordenskjöld, Am Jadweg 4, 8011 Solalinden, Fed. Rep. of Germany

Filed Jun. 15, 1987, Ser. No. 62,479

Claims priority, application European Pat. Off., Jun. 13, 1986, 3619954.0

Int. Cl.[4] C02F *3/20*

U.S. Cl. 210—614 **18 Claims**



1. A process for the biological purification of water in a basin having a plurality of aerator chains installed in generally parallel spaced-apart relation across the basin, the aerator chains each including a plurality of bottom aerators located close to the basin floor, the aerator chains being supported so as to move in a reciprocating way during operation so that the bottom aerators periodically move over the basin floor to mix sludge with the water, comprising supplying air sufficient for aeration and mixing of the sludge and waste water in the adjacent portion of the basin to one or more selected aerator chains while supplying less or no air to other aerator chains so that mixing of water and sludge takes place in the portions of the basin adjacent to the selected aerator chains, and periodically changing the selected aerator chains in a progressive manner through the basin to provide one or more zones which move through the basin in wave-like fashion in which mixing of sludge and water occurs.

12. A water treatment facility comprising a basin through which water flows in one direction during treatment, a plurality of aerator chains extending in generally parallel spaced-apart relation across the basin, a plurality of bottom aerators included in each aerator chain at locations adjacent to the bottom of the basin, the bottom aerators and the aerator chains being arranged to move with respect to the bottom of the basin when the aerator chain is fully aerated to mix sludge with the water and supply air to the water, air supply means, and control means for controlling the supply of air from the air supply means to each of the aerator chains selectively and causing spaced aerator chains in the plurality to be fully aerated and at least one aerator chain between the spaced chains to receive less or no air and for periodically changing the aerator chains which are fully aerated in a progressive manner along the length of the basin to produce aerated zones which move in a wave-like fashion through the basin.

4,797,213

SEPARATION OF ISLETS OF LANGERHANS

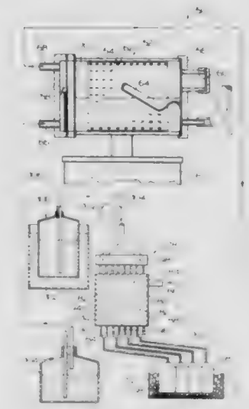
John W. Parisius, 205 Maplehurst Avenue, Willowdale, Ontario, Canada M2N 3C3, and Anthony M. Sun, 4 Barkwood Crescent, Willowdale, Ontario, Canada M2H 3G6

Filed Feb. 24, 1987, Ser. No. 17,844

Claims priority, application United Kingdom, Feb. 24, 1986, 8604497

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—651 **9 Claims**



1. A method for the separation of Islets of Langerhans from pancreatic tissue, which comprises:

treating pancreatic tissue to release Islets from other pancreatic tissue to provide an aqueous suspension of Islets and pancreatic tissue debris;

removing said pancreatic tissue debris from said aqueous suspension by filtering off said pancreatic tissue debris and leaving an aqueous suspension of Islets,

removing said Islets from said aqueous suspension by passing said aqueous suspension of Islets successively through a series of screens of decreasing pore size in the direction of flow of said suspension of Islets so as to remove said Islets from said aqueous suspension of Islets on the surface of said screens, and

recovering the Islets from each of said screen surfaces by passing an aqueous wash medium across the surface of each of the screens to remove said Islets from said screen surfaces as an aqueous suspension thereof in said aqueous wash medium.

4,797,214

METHOD OF TREATMENT OF WASTE STREAMS OF OIL/WATER EMULSIONS OR SOLUTIONS

David C. Sevier, Branford, Conn., assignor to Vincent Saputo; Lorraine Saputo, both of Branford; Charles Blaha, Killingworth; Paul Orsino, East Haven and Accu-Lab, Inc., Branford, all of, Conn., part interest to each

Filed Jul. 7, 1987, Ser. No. 70,869

Int. Cl.[4] B01D *17/05*

U.S. Cl. 210—651 **5 Claims**

1. A process for treating an emulsion or solution of water and oil comprising the steps of:

(a) contacting said emulsion or solution with sodium chloride in an amount of at least 140 g/l of emulsion or solution;

(b) contacting said emulsion or solution with a synthetic anionic polyelectrolyte flocculant having a molecular weight of about six to eight million and a charge of 3 in an amount of at least 0.5 ml/l of emulsion or solution; and

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(c) after steps (a) and (b), contacting said emulsion or solution with a demulsifying agent comprising sulfuric acid in an amount of at least 5 ml/l of emulsion or solution to split said emulsion or solution into separate oil and water phases for subsequent separation.

4,797,215

METHOD FOR SEQUENTIAL CENTRIFUGAL STRATIFICATION CHROMATOGRAPHY FOR SEPARATING COMPONENTS FROM MIXTURES

Szabolcs Nyiredy; Clemens Erdelmeier, and Otto Sticher, all of Zurich, Switzerland, assignors to Petazon, Inc., Zug, Switzerland

PCT No. PCT/CH85/00054, § 371 Date Feb. 4, 1986, § 102(e) Date Feb. 4, 1986, PCT Pub. No. WO85/04594, PCT Pub. Date Oct. 24, 1985

PCT Filed Apr. 3, 1985, Ser. No. 842,703

Claims priority, application Switzerland, Apr. 5, 1984, 1717/84

Int. Cl.⁴ B01D *15/08*

U.S. Cl. 210—658 **12 Claims**



1. A method for separating complonents of a mixture by a sequential centrifugal stratification chromatographic technique utilizing a rotatably supported rotor which includes an adsorbing medium, comprising the steps of:

(a) applying the mixture which is to be separated to a radially inner part of said adsorbing medium on said rotatable rotor;

(b) separating the mixture by rotating said rotor and by applying to a radially inner part of said adsorbing medium on said rotating rotor a first eluent which effects different amounts of radially outward migration of the components of the mixture through said adsorbing medium on said rotor through the action of centrifugal force;

(c) thereafter stopping said migration of the components of the mixture;

(d) thereafter applying a second eluent to a circular region of said adsorbing medium which is concentric to the axis of rotation of said rotor and which has a radius within a range bounded by said radially inner part and a radially outer edge portion of said adsorbing medium, said second eluent causing at least one of the components of the mixture which is near said circular region of said adsorbing medium to migrate radially through said adsorbing medium through capillary action;

(e) thereafter interrupting the application of eluent to said adsorbing medium;

(f) thereafter drying said adsorbing medium;

(g) thereafter rotating said rotor and applying a third eluent to a circular region of said adsorbing medium which is concentric to the axis of rotation of said rotor, said third eluent causing at least one of the components of the mixture to migrate radially outwardly through said adsorbing medium through the action of centrifugal force and to be eluted from a radially outer edge of said adsorbing medium; and

(h) collecting and discharging each component which is eluted from said radially outer edge of said adsorbing medium on said rotating rotor.

4,797,216

DELAYED CROSSLINKER COMPOSITION

Richard M. Hodge, Sand Springs, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Division of Ser. No. 831,229, Feb. 19, 1986, Pat. No. 4,657,081. This application Nov. 17, 1986, Ser. No. 931,772

Int. Cl.⁴ E21B *43/26*

U.S. Cl. 252—8.551 **13 Claims**

1. A crosslinker composition that can produce delayed crosslinking of an aqueous solution of a crosslinkable organic polymer, consisting essentially of about 1% to about 10% by weight of an organic zirconium complex and about 2% to about 37% by weight organic hydroxycarboxylic acid selected from the group consisting of lactic, mandelic and hydroxyacetic acids the pH of the composition being no greater than 4.8.

4,797,217

OVERBASED ADDITIVES

John A. Cleverley, Didcot, United Kingdom, assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Aug. 12, 1986, Ser. No. 895,839

Claims priority, application United Kingdom, Aug. 13, 1985, 8520254; Jan. 18, 1986, 8601193

Int. Cl.⁴ C10M *135/10*

U.S. Cl. 252—42.7 **9 Claims**

1. A process for preparing an oil solution of a highly basic lithium sulphonate having a TBN of at least 250 mg(KOH)/gm, which comprises:

(i) heating lithium monohydrate with a solvent to remove water as an azeotrope of water and said solvent, without formation of any substantial amount of lithium alkoxide, and to form a mixture comprising substantially dehydrated basic lithium compounds in the remaining solvent;

(ii) adding to the mixture an alkoxyalkanol and an organic sulphonic acid so as to convert a part of the basic lithium compounds to the lithium salt of the sulphonic acid;

(iii) thereafter introducing carbon dioxide into the mixture so as to react with the residual basic lithium compounds;

(iv) removing solvent by distillation; and

(v) adding base oil to the process during one or more of steps (ii), (iii) and (iv) so that the desired product is obtained.

4,797,218

STABILIZER THIIRANE DERIVATIVES CONTAINING HINDERED PHENOL GROUPS

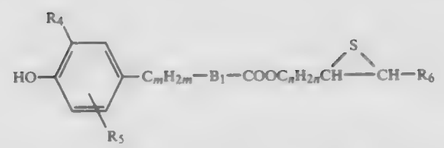
David H. Steinberg, New York, and Frank Cortolano, Valhalla, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 836,361, Mar. 5, 1986, abandoned, which is a division of Ser. No. 773,723, Sep. 9, 1985, Pat. No. 4,617,404. This application Aug. 18, 1986, Ser. No. 898,815

Int. Cl.⁴ C10M *105/08;* **C09K** *15/08, 15/10;* **C07D** *327/02*

U.S. Cl. 252—47.5 **2 Claims**

2. A method for stabilizing a lubricating oil against oxidative, thermal and actinic degradation which comprises incorporating into said lubricating oil an effective stabilizing amount of a compound of the formula



wherein R_4 and R_5, independently, denote alkyl with 1 to 6 carbon atoms, cycloalkyl with 5 to 8 carbon atoms, allyl, methallyl, aralkyl with 5 to 9 carbon atoms, R_5 moreover also denotes hydrogen, m is an integer from 0 to 6, n is an integer from 1 to 6, B_1 denote —O—, —S— or —NH—, the group —OC(O)—, —OC(O)—CH_2—CH_2— or a direct bond, and R_6, when B_1 is a direct bond, denotes hydrogen, alkyl with 1 to 6 carbon atoms, unsubstituted phenyl or phenyl substituted by chlorine, methyl or chlorine and methyl.

4,797,219

NOVEL DISPERSANTS FOR OLEAGINOUS COMPOSITIONS

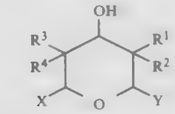
Antonio Guttierrez, Mercerville, and Jack Ryer, East Brunswick, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Apr. 24, 1987, Ser. No. 41,983

Int. Cl.⁴ C10M *129/72, 129/74*

U.S. Cl. 252—56 D **24 Claims**

1. An adduct formed by reacting at least one long chain hydrocarbyl polymer substituted mono- or polycarboxylic acid acylating reagent and at least one heterocyclic polyol of the formula:



wherein R^1, R^2, R^3 and R^4 are the same or different and are selected from the group consisting of H, alkyl and —CH(OH)R^5, wherein R^5 is hydrogen or alkyl of from 1 to 10 carbon atoms and X and Y are the same or different and are H or alkyl of from 1 to 10 carbon atoms, with the proviso that at least one of R^1, R^2, R^3 and R^4 is the —CH(OH)R^5 moiety, wherein said long chain hydrocarbon polymer has a number average molecular weight of from about 700 to about 5000.

4,797,220

DESCALING AND ANTI-OXIDIZING COMPOSITION AND PROCESS THEREFOR

Dale A. Miller, 110 W. Missouri, #26, Phoenix, Ariz. 85013

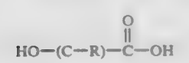
Filed Feb. 3, 1988, Ser. No. 151,712

Int. Cl.⁴ C11D *7/32*

U.S. Cl. 252—82 **22 Claims**

1. A chemical composition comprising:

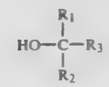
(a) a hydroxycarboxylic acid having the formula



(I)

wherein R is hydrogen, a branched or straight chain alkyl, cycloalkyl or aryl substituent having one or more carbon atoms and which does not inactivate the carboxylic acid group;

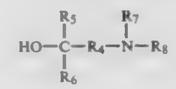
(b) an alcohol having the formula



(II)

wherein R_1, R_2 and R_3 are each selected from the group consisting of hydrogen, a branched or straight chain alkyl group, a cycloalkyl group or an aryl group; and

(c) an alkanolamine having the formula



(III)

wherein R_4 is an branched or straight chain alkyl group having from 0–5 carbon atoms, and R_5, R_6, R_7 and R_8 are selected from the group consisting of hydrogen, a branched or straight chain alkyl group, a cycloalkyl group or aryl group.

4,797,221

POLYMER SHEET FOR DELIVERING LAUNDRY CARE ADDITIVE AND LAUNDRY CARE PRODUCT FORMED FROM SAME

Thomas D. Gueldenzopf, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 775,298, Sep. 12, 1985, abandoned. This application May 9, 1988, Ser. No. 193,205

Int. Cl.⁴ A62D *3/00, 9/00;* **C01B** *7/00;* **C09K** *3/00*

U.S. Cl. 252—95 **22 Claims**

1. A water-soluble sheet for delivering laundry care additives containing bleaches, which sheet comprises a self-supporting water-soluble film of an addition polymer formed of:

(a) from about 0 to 85% by weight of a water-insoluble soft monomer;

(b) from about 15 to 60% by weight of a water-soluble anionic monomer;

(c) from about 0 to 25% by weight of a water-soluble nonionic monomer; and

(d) from about 0 to 40% by weight of a water-insoluble hard monomer,

wherein said addition polymer is up to about 100% neutralized with a Group IA metal base or a Group IA metal basic salt.

4,797,222

FOAM INHIBITOR MIXTURE

Rainer Hoefer, Duesseldorf; Karl H. Schmid, Mettmann; Adolf Asbeck, Duesseldorf, and Uwe Held, Velbert, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 16, 1987, Ser. No. 39,050

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613128

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

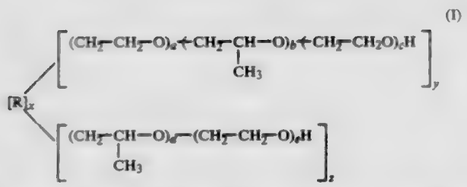
Int. Cl.⁴ C11D *1/72;* **B01D** *19/04*

U.S. Cl. 252—174.21 **10 Claims**

1. A foam inhibitor mixture comprising:

(a) a foam inhibiting quantity of a block polymer of the formula:

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(I)

in which R represents a glycerol residue (x=1), a trimethylol ethane residue (x=1) or trimethylol propane residue (x=1) or a polyglycerol residue having a degree of polymerization x of from 2 to 6, and the indices $y=(x-z+2)$, $z=(x-y+2)$, a=1 to 15, b=50 to 250, c=1 to 15, d=50 to 250 and e=1 to 15, with the proviso that the sums $(a+c+e)=2$ to 20, $(b+d)=50$ to 250 and $(c+e)=1$ to 15 and y has a value of at least 1, and

(b) a minor quantity of an emulsifier of the formula:

$$R^1—O—(CH_2CH_2—O)_n—R^2 \quad \text{(II)}$$

in which R^1 is a linear or branched C_8–C_{20} alkyl or alkenyl radical or a C_{12}–C_{20} aromatic alkyl radical, R^2 is a C_3–C_8 alkyl radical and n is a number of from 4 to 30.

4,797,223

WATER SOLUBLE POLYMERS FOR DETERGENT COMPOSITIONS

David R. Amick, Doylestown; Charles E. Jones, Yardley, and Kathleen A. Hughes, Blue Bell, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 11, 1988, Ser. No. 142,751
Int. Cl.[4] C11D *3/37*
U.S. Cl. 252—174.23 **16 Claims**

1. A detergent composition containing a surfactant selected from the group consisting of anionic, nonionic, and cationic surfactants and mixtures thereof and including a water soluble polymer, the water soluble polymer being selected from

(a) polymers of acrylic and methacrylic acid esters of an alkyl polyalkylene oxide, alkylpolyalkylene oxide of urethanes or containing alkylpolyalkylene oxide thio end groups, said polymers having the formula

$$A\ (B)_m\ (C)_n\ (D)_o\ E,$$

(1) A being a group selected from

$$R^b—C(O)—R^a— \text{ and } R^c—C(O)NH—R^d—;$$

R^a being selected from $(C_2$–$C_5)$alkylidene and $(C_2$–$C_5)$alkylidene derivatives including a chain initiator or chain transfer radical;
R^b being selected from —OQ and R^c;
R^c having the formula

$$R^1\ Z\ (X^1)a\ (X^2)b—;$$

R^1 being selected from $(C_1$–$C_{18})$alkyl, $(C_1$–$C_{18})$alkaryl, and $(C_1$–$C_{18})$aralkyl;
Z being selected from —O—, —S—, $—CO_2—$, $—CONR^2—$, and $—NR^2—$;
X^1 being $—CH_2CH_2O—$;
X^2 being $—C(CH_3)HCH_2O—$;
a being a positive integer and b being a non-negative integer, the sum of a and b being from 3 to about 100, it being understood that the X^1 and X^2 units can be arranged in any sequence;
R^2 being selected from H, $(C_1$–$C_4)$alkyl, and $H(X^1)d(X^2)e—$; d and e being nonnegative integers, the sum of d and e being from 1 to about 100;
Q being selected from H and the positive ions forming soluble salts with carboxylate anions;
R^d being a group which includes a carbon-carbon single bond formed during polymerization of the polymer from a polymerizable carbon-carbon double bond;

(2) B having the formula

$$—R^e—C(O)—OQ,$$

R^e being a saturated trivalent aliphatic group having from two to five carbon atoms

(3) C being selected from

$$—R^e—R^c, —R^f—NHC(O)—R^c \text{ and } —R^e—C(O)—R^c,$$

R^f being a group which includes a carbon-carbon single bond formed during polymerization of the polymer from a polymerizable carbon-carbon double bond;

(4) D having the formula

$$—R^e—G$$

wherein G is an organic group excluding Rc and $—CO_2Q$;

(5) E being a group selected from

$$R^c—R^g—,\ R^b—C(O)—R^g— \text{ and } R^c—C(O)NH—R^d—,$$

R^g being selected from $(C_2$–$C_5)$alkylene and $(C_2$–$C_5)$ alkylene derivatives including a chain transfer radical;
m being a positive integer and n and o being non-negative integers, m being selected such that $(B)_m$ comprises from about 20 to percent by weight of the polymer, n being selected such that R^c comprises from about 80 to 5 percent by weight of the polymer, o being selected such that $(D)_o$ comprises from zero up to about 30 percent by weight of the polymer, the sum of the weight percentages of A, $(B)_m$, $(C)_n$, $(D)_o$ and E being 100 percent, it being further understood that the B, C, and D groups can be arranged in any sequence; and the polymer having a number-average molecular weight from about 500 to 50,000; and

(b) polymers having the formula L-J,
L— having the formula $R^c—C(O)(CHR^3)_c—S—$,
—J having the formula $—(B)_m(D)_oE$,
the subscript c being selected from 1, 2, and 3,
R^3 being selected from H—, $CH_3—$, and $C_2H_5—$,
the weight ratio of L to J being from about 1:340 to 7:1,
o being selected such the $(D)_o$ comprises up to about 40 percent by weight of the polymer, and
the sum of m and n being from about 10 to 500.

4,797,224

BRANCHED ALKYL ACRYLAMIDE TYPES OF POLYMER-ZINC CORROSION INHIBITOR

Guy A. Crucil, Bloomingdale, and Laura J. Bisser, Western Springs, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 848,014, Apr. 3, 1986, abandoned. This application Sep. 2, 1987, Ser. No. 92,008
Int. Cl.[4] C02F *5/14*
U.S. Cl. 252—181 **5 Claims**

1. A composition for preventing corrosion and scale in aqueous recirculating systems which consists essentially of an aqueous solution having a pH within the range 2.0–13.5 and containing at least 2 ppm of 2-phosphono-butane-1,2,4 - tricarboxylic acid, or its water-soluble salts and containing a water-soluble zinc-polymer complex having a zinc:polymer weight ratio with the range 1:3 to about 1:20 and having also dissolved therein a water-soluble orthophosphate ion source that the zinc:orthophosphate ion weight ratio is between about 1:1 to about 1:5, and wherein the polymer is a nitrogen-containing zinc-complexing polymer having a molecular weight between about 2500–25,000 and is chosen from the group consisting of water-soluble terpolymers containing from 20–80 percent by weight acrylic acid, or its water-soluble salts, 10–40 weight percent methacrylic acid, or its water-soluble salts, and at least two (2) weight percent of an N-alkylated acrylamide monomer, wherein the nitrogen substituted alkyl group contains from 3–12 carbon atoms and wherein the nitrogen substituted alkyl group is branched.

4,797,225

NONAQUEOUS LIQUID NONIONIC LAUNDRY DETERGENT COMPOSITION CONTAINING AN ALKALI METAL DITHIONITE OR SULFITE REDUCTION BLEACHING AGENT AND METHOD OF USE

Guy Broze, Grace-Hollogne, and Danielle Bastin, Soumagne, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 8, 1986, Ser. No. 904,327
Int. Cl.[4] C11D *7/54*; D06L *3/00*
U.S. Cl. 252—105 **21 Claims**

1. A nonaqueous liquid heavy duty built laundry detergent composition which comprises 20 to 50 percent of a nonionic liquid surfactant detergent, 15 to 50 percent of a detergent builder and 2 to 25 percent of a reduction bleaching agent which is a member selected from the group of alkali metal dithionite and alkali metal sulfite.

4,797,226

LOW TEMPERATURE, COMPATIBLE MIXTURES OF POLYETHER PREPOLYMERS AND FLOW MODIFIERS

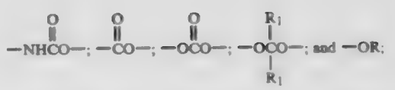
Fritz Hostettler, 200 Springhill Rd., Skillman, N.J. 08558

Continuation of Ser. No. 779,312, Sep. 24, 1985, abandoned, which is a continuation of Ser. No. 508,192, Jun. 27, 1983, abandoned. This application May 5, 1987, Ser. No. 48,455
Int. Cl.[4] C09K *3/00*; H05B *33/00*
U.S. Cl. 252—182.2 **31 Claims**

1. A stable, compatible liquid mixture which does not phase separate when stored for several days at temperatures substantially below normal room temperature consisting essentially of:

(a) an isocyanato-containing prepolymer obtained from the reaction of (i) a diphenylmethane diisocyanate and (ii) linear or slightly branched polyetherpolyols having hydroxyl equivalent weights of from about 60 to about 2250 and an average hydroxyl functionality of from 2 to about 3, said diisocyanate and said polyetherpolyol being used in such quantities so as to provide at least about 2.5 NCO equivalents per OH equivalent, and

(b) from about 3 to about 35 parts by weight, per 100 parts by weight of said prepolymer, of a non-hydroxyl flow modifier, said flow modifier having the following characteristics: (i) a boiling point above about 150° C., (ii) normally-liquid at 20° C. or relatively low melting solid which forms a compatible liquid mixture with said prepolymer, (iii) an average molecular weight of from about 100 to approximately 3000, and (iv) consisting essentially of carbon and hydrogen atoms in the form of monovalent or polyvalent hydrocarbon groups or mixtures of such groups; etheric oxygen in the form of oxyalkylene, all terminal oxyalkylene groups being satisfied by acyclic, alicyclic or aromatic groups which are monovalently bonded to the oxy moiety of the terminal oxyalkylene groups; and at least one group having the following structural configuration;



each R_1, individually, being hydrogen or a monovalent hydrocarbon group, and R being a hydrocarbyl group; and wherein each of the unsatisfied bonds of the above structural units are monovalently bonded to separate carbon atoms of the flow modifier molecule, said flow modifier being further characterized by the absence of groups which are normally reactive with an isocyanato group.

4,797,227

PROCESS AND COMPOSITION FOR PURIFYING HYDROGEN SELENIDE AND HYDROGEN TELLURIDE, TO REMOVE MOISTURE AND OXIDANT IMPURITIES THEREFROM

Glenn M. Tom, New Milford, and Duncan W. Brown, Wilton, both of Conn., assignors to Advanced Technology Materials Inc., New Milford, Conn.

Filed Jul. 31, 1987, Ser. No. 80,478
Int. Cl.[4] C09K *3/00*
U.S. Cl. 252—194 **17 Claims**

1. A scavenger, having utility for purifying a mixture comprising

(i) a primary component selected from one or more members of the group consisting of hydrogen selenide and hydrogen telluride, and

(ii) impurities selected from one or more members of the group consisting of moisture and oxidants, said scavenger comprising

(a) a support, and

(b) associated with said support, one or more members of the group consisting of compounds of the formula $R_{3-x}AlH_x$, wherein x is 0 or 1, and R is a hydrocarbon radical containing from 1 to 12 carbon atoms.

10. A scavenger, having utility for purifying a mixture comprising

(i) a primary component selected from one or more members of the group consisting of hydrogen selenide and hydrogen telluride, and

(ii) impurities selected from one or more members of the group consisting of moisture and oxidants, said scavenger comprising

(a) a macroreticulate polymer support, and

(b) associated with the support, but not covalently bonded thereto, aluminum chalconides of tellurium and/or selenium.

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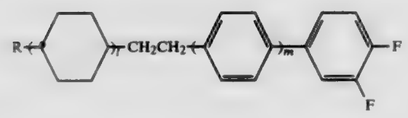
4,797,228

CYCLOHEXANE DERIVATIVE AND LIQUID CRYSTAL COMPOSITION CONTAINING SAME

Yasuyuki Goto, Yokohamashi; Shigeru Sugimori, Fujisawashi, and Tetsuya Ogawa, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 28, 1986, Ser. No. 867,680
Claims priority, application Japan, Jun. 10, 1985, 60-125489
Int. Cl.[4] G02F 1/13; C09K 19/30; C07C 19/08, 21/24, 25/13
U.S. Cl. 252—299.63 5 Claims

1. A cyclohexane derivative expressed by the formula



wherein R is an alkyl group of 1 to 10 carbon atoms; l is 1 or 2; m is 0 or 1; with the proviso that the sum of l and m is 1 or 2.

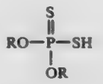
4,797,229

FUNCTIONAL FLUIDS CONTAINING ASSOCIATIVE POLYETHER THICKENERS, CERTAIN DIALKYL-DITHIOPHOSPHATES, AND A COMPOUND WHICH IS A SOURCE OF MOLYBDATE ION

Mark A. Frentrup, Dearborn; Joseph R. Gibson, Riverview; James E. Carson, Lincoln Park, and Paula Davis, Gibraltar, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Dec. 6, 1984, Ser. No. 678,963
Int. Cl.[4] B01D 17/04; C10M 125/22
U.S. Cl. 252—345 8 Claims

1. A functional fluid which comprises
(a) a dialkyldithiophosphate having the following structural formula:



wherein R is individually a linear or branched alkyl, alkenyl, aryl, arylalkyl, or alkylaryl groups having from 1 to 24 carbon atoms;
(b) from 0.2 part to 3.0 parts by weight of a compound which is a soure of molybdate ion;
(c) from 0.5 part to 10.0 parts by weight of a polyether nonionic surfactant; and
(d) from 0.01 part to 20.0 parts by weight of an associative polyether thickeners, said weight of components (a), (b), (c), and (d) based upon 1.0 part by weight of the dialkyldithiophosphate; and
(e) a diluent in an amount such that from about 60 to about 99 percent of the fluid is water, or a mixture of water and a freezing point lowering additive.

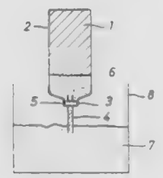
4,797,230

METHOD OF DISSOLVING SOLID OR SEMI-SOLID MATERIAL INTO SOLVENT

Kiyoshi Yamamoto; Toshihiro Nakamura; Tadao Ito, and Keiichiro Inui, all of Osaka, Japan, assignors to Shinto Paint Co. Ltd., Amagasaki, Japan

Filed May 28, 1986, Ser. No. 867,836
Claims priority, application Japan, Jun. 24, 1985, 137132
Int. Cl.[4] B01F 1/00, 3/12; B01J 8/02; B08B 3/04
U.S. Cl. 252—364 4 Claims

1. A method of dissolving a solid or semi-solid material which has formed a hard mass in a container equipped with a takeout opening or takeout openings in communication with a solvent in another container, comprising contacting the solvent and the solute by positioning the container of one of said solute or said solvent which has the larger specific gravity above the container of the other which has the smaller specific



gravity, whereby dissolution of the solute in the solvent forms a solution having a different specific gravity than the solvent which creates convection currents drawing the heavier material down and the lighter material up.

4,797,231

MULTIPURPOSE CLEANING PREPARATIONS FOR HARD SURFACES

Klaus Schumann, Erkrath; Ortburg Guirr, Krefeld; Paul Schulz, Wuppertal, and Franz Foerg, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 851,636, Apr. 14, 1986, abandoned.
This application Feb. 5, 1988, Ser. No. 150,464
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1985, 3514019; Jan. 22, 1986, 3601798
Int. Cl.[4] C11D 1/18, 1/12
U.S. Cl. 252—547 15 Claims

1. A builder-free aqueous, liquid, suspension-stable multipurpose cleaning composition consisting essentially of:
A. from about 10 to about 35% by weight, based on the weight of the cleaning composition, of a mixture of at least two of the following:
(a) at least one anionic sulfonate surfactant,
(b) at least one anionic sulfate surfactant, and
(c) at least one amphoteric surfactant, wherein when the mixture consists of a mixture of (a) and (b), from about 5 to about 95% by weight of (a) and correspondingly from about 95 to about 5% by weight of (b) is present, based on the weight of the mixture, and when the mixture consists of (c) and either one or both of (a) and (b), then (c) is present in from about 0.5 to about 15% by weight, based on the weight of the cleaning composition, provided that when (c) is present the ratio by weight of (a) or (b) or (a)+(b) to (c) is from about 20:1 to about 1:1;
B. from about 5 to about 20% by weight, based on the weight of the cleaning composition, of at least one abrasive having a particle diameter of from about 5 to about 15 μm;
C. at least one viscosity regulator in amount sufficient to regulate the viscosity of the cleaning composition to from about 4,000 to about 6,000 mPas;
D. from 0.3 to about 1% by weight based on the weight of the cleaning composition, of fat solvent selected from a terpene hydrocarbon, a terpene alcohol, and a glycol ether having a molecular weight of greater than about 200,000 to about 4,000,000;
E. a pH regulator in amount sufficient to provide a pH in the range of from about 5.5 to about 9.5 for the cleaning composition; and
F. the remainder, water.

4,797,232

PROCESS FOR THE PREPARATION OF A BOROSILICATE GLASS CONTAINING NUCLEAR WASTE

Bruno Aubert, Marignan, France, assignor to Societe Generale pour les Techniques Nouvelles, Paris, France

Filed Apr. 6, 1987, Ser. No. 35,051
Claims priority, application France, Apr. 8, 1986, 86 05010
Int. Cl.[4] G21F 9/16, 9/14
U.S. Cl. 252—629 21 Claims

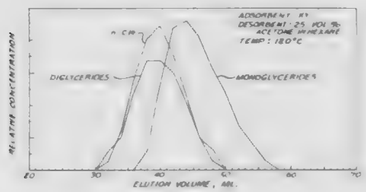
13. A process for immobilizing nuclear waste in the form of a liquid aqueous solution as a waste material, the process comprising the steps of:
A. simultaneously mixing glass-forming materials in an aqueous system, the ingredients comprising:
1. a silica gel precursor for forming silica in the final glass, the precursor being an aqueous suspension of colloidal silica;
2. a boron compound in an aqueous solution for forming boron oxide in the final glass; and
3. an aqueous solution of vitrification adjuvant, the mixing being done at an acid pH and a temperature of about 20° to 80° C. to provide a gel solidified material;
B. drying the resultant solidified material to provide a dried gel;
C. calcining the dried gel of Step B at a temperature of about 300° to 500° C.;
D. melting the calcined product of Step C to form a melted glass;
E. solidifying the melted glass to form a borosilicate glass that encapsulates a nuclear waste material; and
F. adding an aqueous solution of nuclear waste or a calcinate of the aqueous solution of the nuclear waste to the dried material of step B or the calcined product of step C or the melted product of step D to provide the immobilized waste product.

4,797,233

PROCESS FOR SEPARATING MONO-, DI-AND TRIGLYCERIDES

Hermann A. Zinnen, Evanston, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 20, 1986, Ser. No. 898,300
Int. Cl.[4] C11C 1/08
U.S. Cl. 260—428.5 10 Claims



1. A continuous process separating monoglycerides from a mixture comprising monoglycerides and diglycerides said process comprising contacting said mixture at adsoprtion conditions with an adsorbent selected from the group consisting of an X type zeolite exchanged with Na, Mg, Li or K at exchangeable sites, a Y type zeolite exchanged with potassium or sodium at exchangeable sites, and an L type zeolite exchanged with potassium, thereby selectively adsorbing said monoglycerides thereon and desorbing said monoglycerides at desorption conditions and eluting said diglycerides with a desorbent selected from the group consisting of ketones having up to 7 carbon atoms and mixtures thereof with paraffin hydrocarbons.

4,797,234

PRODUCTION OF SUSTAINED RELEASE COMPOSITION FROM SALT-FORM REACTANTS

Tully J. Speaker; Tycho J. Speaker, both of Philadelphia, Pa., and John H. Collett, Sale, England, assignors to Temple University, Philadelphia, Pa.

Filed Jan. 19, 1987, Ser. No. 64,859
Int. Cl.[4] A61K 9/50, 9/62, 9/66; B01J 13/02
U.S. Cl. 264—4.1 7 Claims

1. A method for producing a microcapsule comprising an anisotropic salt film for the gradual release of an encapsulated core material, consisting essentially of reacting (a) a partially hydrophilic, partially lipophilic polyfunctional Lewis acid salt in aqueous medium; and (b) a core material and a Lewis base salt in a water-immiscible, slightly polar, organic solvent for the base; in the form of an emulsion consisting essentially of a continuous aqueous phase of Lewis acid salt and water, and a discontinuous droplet phase of core material, Lewis base salt, and organic solvent, to form an anisotropic Lewis acid/Lewis base salt film semipermeable to and encapsulating the core material, and a neutral salt.

4,797,235

PROCESS FOR ENHANCED ORIENTATION OF POLYMERIC FILMS

Steven B. Garland, Simpsonville, and Thomas C. Warren, Greer, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Filed Apr. 16, 1987, Ser. No. 39,551
Int. Cl.[4] B29C 35/10
U.S. Cl. 264—22 8 Claims

1. A process for manufacturing a heat-shrinkable oriented polymeric film comprising:
(a) introducing a chemical cross-linking agent to a cross-linkable polymer by blending the chemical cross-linking agent with the cross-linkable polymer,
(b) extruding a film of the blended cross-linkable polymer, said chemical cross-linking agent is originally present in an amount from about 0.001 to about 0.025% by weight,
(c) subjecting the extruded polymer film to electron beam irradiation,
(d) heating and stretching to orient the irradiated extruded polymer film in at least one direction, followed by cooling the film while it is in its stretched condition and
(e) recovering an oriented, heat-shrinkable polymeric film, wherein
(f) both the original amount of chemical cross-linking agent and the dosage of electron beam irradiation are to an extent sufficient to provide an amount of cross-linking effective to accomplish an increased orientation rate.

4,797,236

ULTRAHIGH SPEED INJECTION MOLDING METHOD

Hisashi Kojima, Tokyo, Japan, assignor to Technoplas, Inc., Tokyo, Japan

Continuation of Ser. No. 442,433, Nov. 17, 1982, abandoned.
This application Dec. 18, 1985, Ser. No. 810,892
Claims priority, application Japan, May 9, 1982, 57-77179; May 9, 1982, 57-77180; Jun. 2, 1982, 57-80689[U]
Int. Cl.[4] B29C 45/77
U.S. Cl. 264—40.1 2 Claims

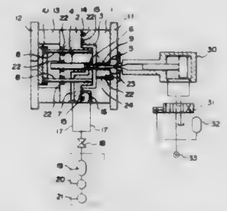
1. An injection molding method, including a filling process in which a plasticized material is injected into a metal mold composed of a stationary mold member and a movable mold member and a molding pressure maintenance process in which the internal pressure of the material which has been injected into the mold is maintained constant, which method comprises the steps of:
predetermining an internal pressure pattern representing reference internal pressure in the mold during a filling time in which the filling process is carried out and during a molding pressure maintenance time in which the internal pressure is maintained, providing the filling time from the

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start to the termination of the filling process to be in the range from 0.05 to 0.01 sec., and providing the molding pressure maintenance time following said filling time, said internal pressure pattern having the internal pressure during the molding pressure maintenance time equal to or lower than the pressure during said filling time, and having the maximum internal pressure during the filling time;

tightly sealing the interior of the mold from the atmosphere surrounding the mold;

exerting a large suction on the interior of the mold to evacuate the interior of the mold to a high vacuum at least as low as 10^{-3} torr;



injecting the plasticized material into said mold during said filling time at ultrahigh speed while controlling the internal pressure in the mold in accordance with said predetermined internal pressure pattern, thereby causing the material to fill the interior of the mold before heat escapes from the material sufficient to reduce the viscosity thereof; and

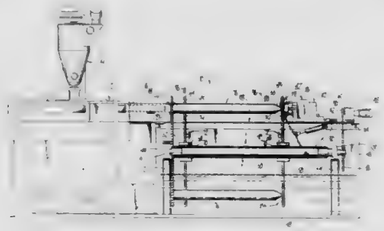
maintaining the internal pressure of the plasticized material under low pressure in the mold during the molding pressure maintenance time in accordance with said predetermined internal pressure pattern, thereby obtaining a molded article with accuracy of dimension on the order of microns corresponding to the dimensions of the mold.

4,797,237

METHOD FOR RECYCLING A BEVERAGE CONTAINER

Floyd V. Hammer, R.R. 1, Union, Iowa 50258, and Brian Harper, Havant, United Kingdom, assignors to Floyd V. Hammer, Union, Iowa

Filed May 4, 1987, Ser. No. 45,387
Int. Cl.[4] B29C *33/34, 47/38, 47/60*
U.S. Cl. 264—45.3 **11 Claims**



1. A method for recycling a beverage container comprising at least a PET body having a metal cap attached thereto, said method comprising:

grinding said entire beverage container, including said body and said metal cap into particles sufficiently small to flow into a screw extruder molding machine;

feeding all of said ground particles from said entire container into said screw extruder molding machine;

applying heat and pressure to said ground particles within said screw extruder molding machine whereby said screw extruder molding machine will convert said ground particles into a softened plastic flowable material capable of being molded and comprising a heterogeneous mixture of at least all of said PET and all of said metal of said cap;

forcing said plastic flowable material formed from said entire beverage container from said screw extruder molding machine into a mold of predetermined shape at a mold filling pressure of from 300 p.s.i. to 1,000 p.s.i whereby said flowable material will assume said predetermined shape of said mold;

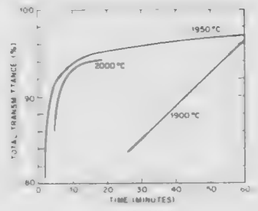
cooling said plastic flowable material within said mold whereby said plastic flowable material will harden and form a solid object having said predetermined shape.

4,797,238

RAPID-SINTERING OF ALUMINA

William H. Rhodes, Lexington; George C. Wei, Weston, both of Mass., and George A. Fryburg, Newmarket, N.H., assignors to GTE Laboratories Incorporated, Waltham and GTE Product Corp., Danvers, both of, Mass.

Continuation-in-part of Ser. No. 802,416, Nov. 27, 1985, abandoned. This application May 12, 1987, Ser. No. 53,501
The portion of the term of this patent subsequent to Aug. 9, 2005, has been disclaimed.
Int. Cl.[4] C04B *35/10*
U.S. Cl. 264—65 **10 Claims**



1. A process for producing a translucent polycrystalline alumina body comprising:

rapid-sintering a prefired, compacted green body of predetermined shape under a flowing gas mixture of nitrogen and at least about 2.5 volume percent and less than 75 volume percent hydrogen, the green body comprising alumina doped with one or more sintering aids, said rapid-sintering comprising the steps of:

raising the temperature of said prefired compacted green body of predetermined shape up to a maximum sintering temperature at a heating rate greater than or equal to about 0.1° C./second and less than the heating rate at which the green body experiences thermal shock; and

heating the green body at said maximum sintering temperature for a period of time sufficient to produce a translucent polycrystalline alumina body.

4,797,239

FOAM PIG WITH TEXTURED SURFACE

Hyun J. Cho, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.

Filed Apr. 9, 1987, Ser. No. 36,877
Int. Cl.[4] B29C *67/20*
U.S. Cl. 264—45.5 **5 Claims**

1. A method of manufacturing a pipeline pig having a rough textured surface comprising:

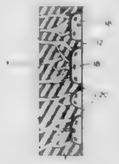
(a) forming a mold having a cavity therein defining the desired exterior configuration of the pipeline pig;

(b) heating the mold to a temperature elevated above ambient to about 130° F. to 150° F.;

(c) injecting a urethane based foamable mixture into the heated mold;

(d) causing the mold to be filled with the injected urethane based foam and curing the injected urethane based foam within the mold for about 20 to 30 minutes;

(e) controlling the temperature of the mold in step (b) and the curing time in step (d) such as to produce on the



molded pig a tough (texture) textured surface defined by closely spaced indentations of about $\frac{1}{8}$ to 3 mm. in depth; and

(f) removing the cured pig from the mold.

4,797,240

COMPOSITION AND METHOD FOR PREVENTING THE STAINING OF NITROCELLULOSE FINISHED SHOE UPPERS ATTACHED TO POLYURETHANE SHOE SOLES

Gary D. Andrew, Walnutport; Edward A. Galla, Macungie, and Robert L. Ricci, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 8, 1987, Ser. No. 58,963
Int. Cl.[4] C08G *18/14*
U.S. Cl. 264—46.4 **16 Claims**

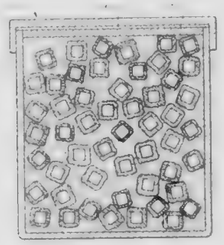
1. In a method for preparing a polyurethane shoe sole for attachment to a nitrocellulose-coated shoe upper which shoe sole is prepared by reacting a mixture comprising a polyisocyanate, a polyester or polyether polyol, a chain extender, a tertiary amine catalyst, a surfactant and water, the improvement which comprises adding a reactive organic halogen compound to the mixture in an amount of about 5–10 wt %, based on total urethane composition, to prevent the staining of the nitrocellulose coated shoe upper.

4,797,241

METHOD FOR PRODUCING MULTIPLE POLYCRYSTALLINE BODIES

Gary R. Peterson, Orem, and M. Duane Horton, Provo, both of Utah, assignors to SII Megadiamond, Provo, Utah

Filed May 20, 1985, Ser. No. 736,422
Int. Cl.[4] C04B *38/06*
U.S. Cl. 264—63 **27 Claims**



1. A method for producing multiple polycrystalline bodies which method comprises the steps of: shaping quantities of crystals selected from the group consisting of diamond, graphite, cubic boron nitride, hexagonal boron nitride, and combinations thereof into temporarily held bodies of predetermined shapes and sizes in the presence of a temporary binding means;

placing a quantity of said temporarily held bodies into a reaction chamber;

surrounding each of said temporarily held bodies with a powdered pressure transmitting medium after the temporarily held bodies are placed in the reaction chamber; and

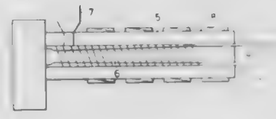
pressing and heating said reaction chamber to a pressure and temperature sufficient to form discrete polycrystalline bodies of approximately the same shapes as said temporarily held bodies of crystals.

4,797,242

METHOD FOR SHAPING THERMOSETTING RESINS

Yoshiaki Fukuda; Takeshi Miyasaka; Iori Matsumoto; Nobukatsu Kato, and Kenji Ema, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 594,663, Mar. 29, 1984, abandoned. This application Dec. 23, 1986, Ser. No. 40,323
Claims priority, application Japan, Mar. 29, 1983, 58-51526; Jun. 14, 1983, 58-104891; Oct. 27, 1983, 58-200038; Oct. 27, 1983, 58-200040; Nov. 2, 1983, 58-204965; Nov. 2, 1983, 58-204966; Nov. 8, 1983, 58-208298
Int. Cl.[4] B29C *47/78*
U.S. Cl. 264—108 **8 Claims**



1. A method of extrusion-molding a thermosetting resin comprising the following steps:

employing a screw-type extrusion-molding machine which comprises a screw having in sequence a feed zone, a compression zone, a metering zone, and a smooth zone, said smooth zone being in a front section of said screw, said machine further including a first cylinder portion having a heat control mechanism in areas respectively corresponding to the feed, compression, and metering zones, and a second cylinder portion having a heat-supplying capability in an area corresponding to the smooth zone, wherein said screw has a length to diameter ratio of 7 to 40, and a compression ratio of 1.0 to 5.0, a length of the smooth zone being in the range of 1D to 15D, wherein D is a diameter of the screw, wherein said employing step comprises the following steps:

heating the parts of the cylinder which correspond to the compression, metering, and smooth zones of the screw to a temperature in a range of 50° to 200° C.; and

molding said resin in the smooth zone;

said method further comprising the step of thermosetting the resin in the smooth zone to such an extent that the resin after being extruded from the extrusion molding machine is capable of retaining its own shape, wherein said resin is selected from the group consisting of a phenolic resin, a melamine resin, and an epoxy resin.

4,797,243

DYE-CONTAINING POROUS PLASTIC ELEMENT AND METHOD OF MAKING IT

Irving M. Wolbrom, 44 Bayview Ave., Great Neck, N.Y. 11021

Filed Apr. 4, 1988, Ser. No. 177,333
Int. Cl.[4] B27J *5/00*
U.S. Cl. 264—126 **2 Claims**

1. A method of making a dye-containing porous plastic element, comprising the steps of:

mixing together plastic granules having diameters of between about fifty and eight hundred microns, and water-soluble dry dye granules, and

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subjecting the mixture to heat and pressure so as to fuse the granules together into a porous body having interconnected capillary passageways and the dye granules within the passageways.

4,797,244

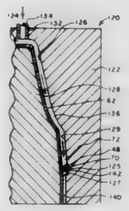
MULTIWALLED CONTAINER AND METHOD OF MAKING SAME

Donald G. Saner, Harwinton, Conn., assignor to American National Can Company, Chicago, Ill.

Continuation of Ser. No. 426,269, Sep. 29, 1982, abandoned. This application Aug. 23, 1984, Ser. No. 644,056

Int. Cl.[4] B29C *45/14, 45/16, 49/06, 49/22*

U.S. Cl. 264—266 **3 Claims**



1. A method of producing a multiwalled plastic container having a first wall means and a second wall means comprising:

providing a pre-formed thermo-plastic hollow first wall means, said first wall means having a sidewall having an inner and outer surface and defining an opening, said first wall means also having circumferentially-extending lip about said opening, said lip forming an acute angle with said sidewall to provide a trough-like region;

placing said first wall means in an injection-mold cavity having a molding surface to thereby provide a space between first wall means and said molding surface;

injecting a molten plastic material into said space to form said second wall means, said injected plastic entering the trough-like region and re-forming the configuration of said lip, said injected plastic material forming a circumferential rim on said second wall means defining an opening and said injected plastic material forcing said lip against said molding surface to re-form said lip to wrap over and around said rim of said second wall means; and,

removing said first and second wall means from said molding cavity.

4,797,245

INJECTION MOLDING PRESS

Takefumi Sonoda, Yamaguchi, Japan, assignor to Ube Industries, Ltd., Ube, Japan

Filed Oct. 27, 1987, Ser. No. 113,948

Claims priority, application Japan, Nov. 28, 1986, 61-283277; Dec. 2, 1986, 61-287451

Int. Cl.[4] B29C *45/80, 45/23, 45/03*

U.S. Cl. 264—328.4 **15 Claims**

1. A method of operating an injection molding press for injection molding a resin materials, comprising:

preparing a hollow barrel having front and rear sides, a material inlet at the rear side, and valve seat means situated between the front and rear sides,

arranging a plunger in the rear side of the barrel so that a space is formed between a part of an inner surface of the barrel and a part of an outer surface of the plunger, said plunger having valve body means a a front side thereof,

arranging a sleeve in the front side of the barrel so that barrel slides relative to the sleeve,

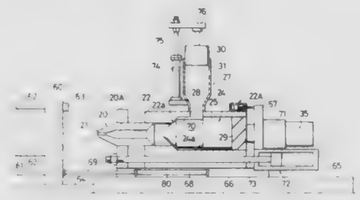
moving the plunger situated in the barrel rearwardly so that the valve body means of the plunger disengages from the valve seat means of the barrel to thereby provide communication between the material inlet and the front side of the barrel,

moving the barrel to a forward position relative to the sleeve so that a part of the sleeve slidably retained in the barrel is located in the front portion of the barrel,

rotating the plunger at a predetermined speed,

charging the resin material into material pushing-supplying means attached to the material inlet of the barrel,

supplying the resin materials from the material pushing-supplying means to the front side of the barrel through the material inlet, the space between the inner surface of the barrel and the plunger and a space between the valve seat means and the valve body means,



reducing the supply pressure of the resin materials at the material pushing-supply means before the total amount of the resin materials is supplied to the material inlet,

stopping rotation of the plunger after the resin materials are completely fed into the front side of the barrel,

moving the plunger relative to the barrel so that the valve body means is seated onto the valve seat means to prevent the resin materials to pass therebetween, and

moving the barrel relative to the sleeve so that the resin materials stored at the front side of the barrel is ejected from the barrel to a mold through the sleeve.

4,797,246

CONTINUOUS MANUFACTURE OF A PERFORATED PLASTIC FILM

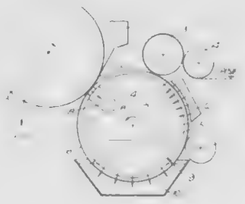
Dietmar Reinke, Ringstrasse 50, 8551 Kirchehrenbach, and Theo Schmidt, Kiefernstrasse 7, 8550 Forchheim, both of Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,717

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1983, 3303836

Int. Cl.[4] B29C *47/78, 59/00*

U.S. Cl. 264—504 **9 Claims**



1. A method for manufacturing a perforated plastic film utilizing a perforating roller having a sievelike peripheral surface and an interior vacuum source, comprising the steps of:

(a) passing a film in a thermoplastic state from an extruder to the sievelike surface of the perforating roller;

(b) effecting a perforating action on the film with the perforating roller by the air being sucked through the sievelike surface into the interior vacuum source; and

(c) effecting shock cooling of the film substantially simultaneously with the perforating action thereof by sucking cold air through the thermoplastic film during the practice of step (b), and by bringing the film into contact with a cooled back-up roller, the back-up roller being contacted simultaneously with the practice of steps (a) and (b).

4,797,247

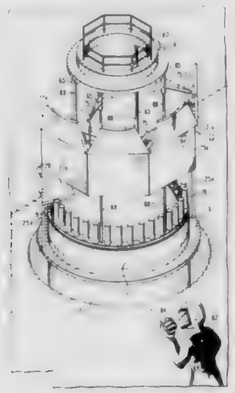
THERMAL INSULATION OF NUCLEAR REACTOR

Ronald M. Blaushild, Penn Hills; Leonard R. Golick, Level Green; Stephen L. Samiuk, and Richard E. Tome, both of Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,491

Int. Cl.[4] G21C *11/00*

U.S. Cl. 376—289 **13 Claims**



1. A nuclear reactor including a vessel having a body and a removable head, a thermal insulating shield for said head, said sheild including a generally vertical frame of thermal insulation encircling said head, a plurality of panels of thermal insulation extending from said frame, and means, connected to said frame and to each said panel, for connecting each said panel pivotally near the top of said frame so that each said panel is pivotal on said frame between a closed position in which said panels extend over said head and a retracted position, the adjacent edges of said panels mating when said panels are in said closed position whereby in said closed position said panels provide substantially closed thermal insulation at least over a portion of said head and prevent removal or replacement of said head and when said panels are in said retracted position said panels are separated, and permit removal or replacement of said head, and remotely-actuable means, connected to said panels, cooperative with said pivotally-supporting means, for moving said panels between said closed position and said retracted position whereby access for removal of said head is obtainable without exposure of personnel to radioactivity.

4,797,248

GRIPPING APPARATUS FOR A GROUP OF RODS OF NUCLEAR FUEL ASSEMBLY

Jean Tsitsichvili, Issy les Moulineaux, France, assignor to Cogema-Compagnie Generale des Matieres Nucleaires, France

Filed Dec. 2, 1986, Ser. No. 936,841

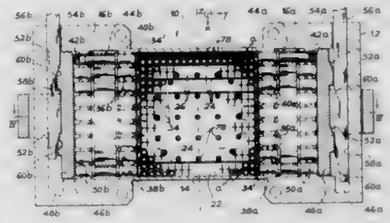
Claims priority, application France, Dec. 2, 1985, 85 17779

Int. Cl.[4] G21C *19/33*

U.S. Cl. 376—261 **9 Claims**

1. Apparatus for gripping a bundle of rods (a) arranged in the form of parallel rows of at the most (n) rods, in accordance with a square grid in a nuclear fuel assembly, characterized in that:

said apparatus comprises a body (**12**) having a central portion (**14**) provided with a rectangular recess, parallel partitions (**24**) subdividing said central portion into (p) passageways (**26**), each of which is able to receive the ends of the rods of, at the most, two rows of adjacent rods; (p) rows of (n+1) mobile members (**34**,**34'**) located in each of the



(p) passageways (**26**), in such a way that the end of each rod can be placed between two adjacent mobile members of the same passageway; locking means (**36***a*, **36***b*, **48***a*, **48***b*, **54***a*, **54***b*) located in said body (**12**) on at least one side of said central portion (**14**), actuation of said locking means applying to the ends of the rods (a) and the mobile members (**34**, **34'**) contained in each of the passageways (**26**) a force tending to lock each rod between two adjacent mobile members of the same passageway.

4,797,249

PROCESS FOR PRECLUDING OR REDUCING THE DANGER TO A SYSTEM AND THE SURROUNDINGS THEREOF BY REACTIVE MIXTURES

Willy Schweiger, Am Mühlanger 81, D-8039 Puchheim, Fed. Rep. of Germany

Continuation of Ser. No. 342,167, Jan. 25, 1982. This application Jul. 18, 1985, Ser. No. 756,816

Claims priority, application European Pat. Off., Jan. 25, 1981, 81100534.7

Int. Cl.[4] G21C *9/00*

U.S. Cl. 376—279 **8 Claims**



1. A process for precluding or reducing the danger to a non-preinerted nuclear reactor containment system and the enclosed equipment resulting from fission products, and hydrogenhydrogen deflagrations or detonations in the containment atmosphere, which containment atmosphere contains air and hydrogen which hydrogen is generated during a loss of coolant accident, comprising after said loss of coolant accident the steps of:

transferring at least one portion of the air within the containment volume from a part where the release of hydrogen occurs, into at least one area where no hydrogen is released,

said one portion of the air is not containing amounts of hydrogen sufficient for a deflagration,

keeping the hydrogen atmosphere enclosed within the part

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of the containment volume where the release of hydrogen occurs and in presence of only another portion of the air, which remains after the transfer of the one portion of the air and which has therefore a small oxygen content insufficient to cause catastrophic oxygen-hydrogen reaction in the one part of the containment volume.

4,797,250

NUCLEAR REACTOR CONFINEMENT ENCLOSURE FOUNDATION

Philippe Moreau, Neuilly, France, assignor to Framatome, Courbevoie, France

Filed Aug. 19, 1987, Ser. No. 87,007
Claims priority, application France, Aug. 21, 1986, 86 11946
Int. Cl.[4] G21C *13/00*
U.S. Cl. 376—293 **8 Claims**



1. A nuclear reactor confinement enclosure comprising a foundation and a skirt connected to said foundation, wherein said foundation comprises a horizontal, concrete footing embedded in the ground, and two groups of oblique frusto-conical or planar concrete slabs bearing on said footing and supporting said confinement enclosure, a first group of said slabs being inclined towards the inside of said footing and prestressed slabs of a second group of said slabs beirg inclined towards the outside of said footing, disposed around and facing the slabs of said first group, and being connected to said skirt.

4,797,251

PROCESS FOR FIXING METAL POWDER MOLDING AT SINTERING

Takahumi Sakuramoto; Eishi Asoshina; Takashi Tominaga; Ichiro Ijichi; Kiyohiro Kamei, and Toshiharu Konishi, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 728,538, Apr. 29, 1985, abandoned. This application Dec. 5, 1986, Ser. No. 939,298
Claims priority, application Japan, Apr. 29, 1984, 59-87313; Apr. 29, 1984, 59-87314; Apr. 29, 1984, 59-87315
Int. Cl.[4] B22F *7/04*
U.S. Cl. 419—9 **12 Claims**

1. A process for forming a metal layer from a metal power molding on a metal base material which comprises:

interposing a composition for adhering and fixing the metal powder molding to the metal base material between the metal powder molding and the metal base material by placing a sheet of the composition between the metal power molding and the metal base material or by coating at least one of the metal powder molding and the metal base material with the composition, to thereby form a composite of the metal powder molding, the composition and the metal base material, wherein the composition comprises a thermosetting resin composition containing a mixture of a thermosetting resin and at least one member selected from the group consisting of a metal fine powder, a thermoplastic resin and an adhesive material; and

sintering the composite of the metal powder molding, the composition and the metal base material in a non-oxidizing atmosphere until the amount of residual carbon of the composition after completion of sintering is at least about 0.5% by weight and the metal powder molding yields the metal layer on the metal base material, wherein the metal powder molding is formed by rolling a mixture of a metal powder and a synthetic resin-based binder.

4,797,252

CORROSION-RESISTANT, LOW-CARBON PLUS NITROGEN AUSTENITIC STAINLESS STEELS WITH IMPROVED MACHINABILITY

John J. Eckenrod, Corsopolis; Geoffrey O. Rhodes, Saxonburg; Kenneth E. Pinnow, Pittsburgh, all of Pa., and William E. Royer, Lafayette, N.Y., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Filed Sep. 19, 1986, Ser. No. 910,238
Int. Cl.[4] C22C *38/40*
U.S. Cl. 420—42 **16 Claims**

1. A corrosion resistance fully austenitic stainless steel having improved machinability consisting esntially of, in weight percent, carbon plus nitrogen up to about 0.052, chromium 16 to 20, nickel 8 to 12, sulfur 0.026 to 0.07, manganese up to 2.0, silicon up to 1.0, phosphorus up to 0.05, molybdenum up to 3.0, copper up to 1.0 and the balance iron with incidental impurities.

4,797,253

LAMINATED FABRIC COATED PLASTIC MATERIAL

Kurt Petersen, No. 18 Kongebakken, DK-5700 Svendborg, Denmark

PCT No. PCT/DK87/00026, § 371 Date Nov. 25, 1987, § 102(e) Date Nov. 25, 1987, PCT Pub. No. WO87/05953, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 26, 1987, Ser. No. 126,130
Int. Cl.[4] A41D *31/02*; B32B *3/26, 7/12, 27/16, 27/32*
U.S. Cl. 428—196 **4 Claims**

1. A laminated fabric coated plastic material with insulating properties and comprising plastic encapsulated air cells, characterized in that it is produced by

(a) radiating with beta- and/or gamma-rays an air cell sheet of polyethylene, known per se and consisting of two welded layers, one of which is plane and the other encloses blisters which together with the plane layer form airfilled cells,

(b) coating one or both sides of the radiated air cell sheet with a web of hot melt adhesive film,

(c) coating the surface of said adhesive film with a web of fabric material, and

(d) heating the sheets for melting the adhesive film and compressing the heated sheets.

4,797,254

PROTECTION MEANS FOR A PROCESS ANALYZER SYSTEM

Rudolf Seidel, Basel, Switzerland, assignor to Beake Instrument & Elektro Ag, Prattein, Switzerland

Filed Mar. 9, 1987, Ser. No. 23,391
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1986, 3609929
Int. Cl.[4] G01N *37/00*
U.S. Cl. 422—49 **17 Claims**

1. A process analyzer system comprising:

at least one means for preparing samples;

at least one process analyzer;

at least one auxiliary material system;

unidirectional or bidirectional communications means for transmitting electrical signals;

self-supporting and sealed housing means for enclosing a housing interior in an explosion-proof manner;

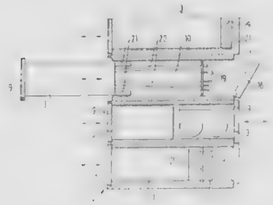
said housing means comprising a stationary housing part, a door member and an opening in said stationary housing part and said door member serving to close said opening;

movable support means for carrying said process analyzer, said means for preparing samples, said auxiliary material system and said unidirectional or bidirectional communications means;

means for mounting said support means for displacement to and from the housing interior of said housing means through said opening;

said support means being connected at a front side thereof with said door member;

flexible supply and disposal lines connecting said support means to said stationary housing part;



means for closing said door;

means for protecting said system against an explosion and/or against the environment;

monitoring means for coupling said door closing means to said explosion and/or environment protection means so that opening of said door member is only possible in a safe state; and

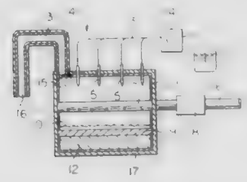
at least one keyboard and observation station provided on the outside of said housing means for locally checking said system.

4,797,255

STERILIZATION METHOD AND APPARATUS THEREFOR

Koichi Hatanaka, Sayama, and Yoshito Shibanchi, Kawagoe, both of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Mar. 16, 1987, Ser. No. 26,384
Claims priority, application Japan, Mar. 24, 1986, 61-65346; Jul. 24, 1986, 61-174235
Int. Cl.[4] A61L *2/18, 2/20*
U.S. Cl. 422—28 **4 Claims**



1. A method of sterilizing an object to be sterilized, said method comprising:

dropping hydrogen peroxide in the form of liquid droplets having a diameter of 1 to 3 mm. onto an evaporation surface of a heater, whereby said hydrogen peroxide liquid is instantaneously gasified, said heater being heated to a temperature between 140 and 180 degrees C., whereby decomposition of hydrogen peroxide during said gasification is minimized;

sweeping said hydrogen peroxide gas from the evaporator surface by transport air heated to a temperature which is at least substantially equal to the temperature of said evaporation surface to a surface of an object to be sterilized through a guide pipe heated to a temperature which is at least substantially equal to the temperature of said evaporation surface;

condensing said hydrogen peroxide gas at about ambient pressure at said surface of said object, said surface of said object being maintained at a temperature which is lower than the condensing temperature of said hydrogen peroxide gas so as to sterilize said object; and

removing condensed hydrogen peroxide from said object by drying with hot air.

2. A sterilization apparatus comprising:

(1) means for forming droplets of liquid hydrogen peroxide fluidly connected to a source of liquid hydrogen peroxide wherein the diameters of said liquid droplets are between 1 and 3 mm., said liquid hydrogen peroxide being fed to the forming means by a constant amount feeder means;

(2) an evaporator surface disposed such that said formed droplets are dropped thereunto;

(3) a heater means associated with the evaporator surface such that said evaporator surface is maintained at a temperature between 140 and 180 degrees C. while said liquid droplets are dropped thereonto, whereby the liquid droplets are instantaneously gasified to hydrogen peroxide gas and the decomposition of the hydrogen peroxide during said gasification is minimized;

(4) transport air supply means for supplying transport air near said evaporator surface for transporting the gasified hydrogen peroxide to articles to be sterilized;

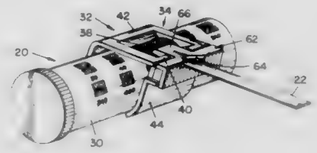
(5) guide means for guiding said gasified hydrogen peroxide contained in said transport air to objects to be sterilized, said guide means having heating means for maintaining the temperature of the gasified hydrogen peroxide and transport air at least at the evaporation temperature of the hydrogen peroxide.

4,797,256

REGISTRATION DEVICE FOR BLOOD TEST STRIPS

Thomas M. Watlington, IV, Indianapolis, Ind., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Jun. 5, 1987, Ser. No. 59,789
Int. Cl.[4] G01N *1/48, 21/06*; B01L *9/00*
U.S. Cl. 422—58 **19 Claims**



1. A system of testing for glucose in whole blood comprising:

a cylindrical vial for containing a plurality of inactivated test strips which are selectively removable therefrom, each test strip provided with a reagent area adapted to receive a blood sample thereon and thereby being activated to indicate a particular color consistent with the condition of the blood and the time elapsed since reception of the blood sample thereon, said vial having an outer peripheral surface;

a plurality of graduated markings on said peripheral surface providing a range of different colors which are indicative of a range of possible conditions which might be evidenced by an activated test strip;

holder means slidably mounted on said outer peripheral surface and including a support region for slidably receiving the reagent area of an activated test strip, said holder means defining a window for outlining, simultaneously, at least one of said markings on said peripheral surface and on the reagent area of the activated test strip;

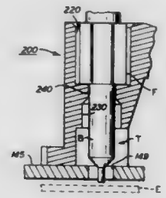
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thereby enabling the reagent area on the activated test strip to be matched with an appropriate one of said markings on said peripheral surface to thereby indicate the condition of the blood being sampled.

4,797,257
SLIDE HOLDER AND TIP LOCATOR

James D. Shaw, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 20, 1987, Ser. No. 75,477
Int. Cl.[4] G01N *35/04*
U.S. Cl. 422—65 **4 Claims**



1. In a slide holder for mounting a slide in an analyzer in position to receive liquid dispensed from a dispensing tip having a barrel and grasping fins, the holder comprising a body portion, means on said body portion for releasably holding a slide constructed to assay for an analyte of a liquid, and a dispensing tip guide and support turret for positioning a dispensing tip in proper relationship to a held slide;

the improvement wherein said guide and support turret has two passageways extending therethough to a position just above said slide-holding means, constructed so that a liquid-dispensing tip is selectively positionable in one or the other passageway for dispensing liquid on either a colorimetric or potentiometric slide, said passageways including a shoulder dimensioned to position and support such tips based on the barrel of the tip rather than the grasping fins,

whereby any overlap of said passageways is minimized and the disposable tip is stabilized when positioned in one or the other passageway.

4,797,258
CHEMICAL REACTION APPARATUS

Ei Mochida, Tokyo, Japan, assignor to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1985, Ser. No. 794,551
Claims priority, application Japan, Nov. 10, 1984, 59-236907
Int. Cl.[4] G01N *35/04*
U.S. Cl. 422—65 **64 Claims**

1. A chemical reaction apparatus comprising:

a plurality of cylindrical reaction containers;

at least one endless travelling belt constructed and arranged for supporting thereon said plurality of cylindrical reaction containers arranged in parallel;

driving means for advancing said at least one travelling belt at a constant speed in one horizontal direction;

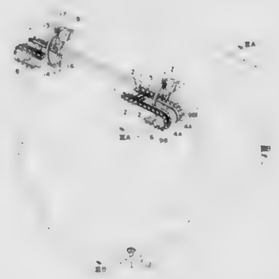
separate endless retaining belts disposed on each side of said at least one travelling belt, said retaining belts being disposed parallel to and not contiguously to said at least one travelling belt, each retaining belt being provided thereon with a multiplicity of teeth projecting up at fixed, spaced intervals slightly greater than the diameter of said reaction containers, and adapted to retain said reaction containers at fixed relative positions, portions of said retaining belt teeth being positioned lower than the surface of the travelling belt;

a base on a frame of the apparatus adjacent said at least one endless travelling belt and said endless retaining belts constructed and arranged for supporting bottoms of said reaction containers;

drive means for advancing said retaining belts intermittently over fixed intervals of space; and

means for maintaining said cylindrical reaction containers on said at least one travelling belt at an angle inclined with respect to a horizontal plane;

said base and retaining belts cooperating with one another to maintain the plurality of cylindrical reaction containers in

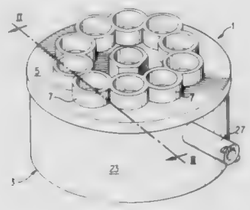


juxtaposed position relative to one another with respective tops of the containers positioned above corresponding container bottoms so that a central axis of each of the containers is on a plane inclined at said angle relative to a horizontal plane; and said travelling belt driving means and said retaining belt drive means cooperating with one another and with said travelling and retaining belts to rotate each container about its respective central axis and allow a required chemical reaction to proceed therein.

4,797,259
WELL-TYPE DIAGNOSTIC PLATE DEVICE

Vlado I. Matkovich, Glen Cove; Jerold Martin, New York, and Peter J. Degen, Huntington, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Dec. 15, 1986, Ser. No. 941,386
Int. Cl.[4] C12M *1/20*
U.S. Cl. 422—101 **35 Claims**



1. A diagnostic test device comprising:

a plate,

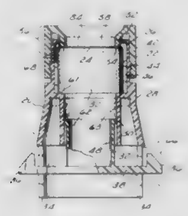
at least one well formed in said plate, said at least one well having an open bottom, and

a composite membrane having at least three layers including, sequentially, a microporous liquophilic reaction layer, a sealing layer, and a liquophobic barrier layer having at least one aperture therein for each said well and located substantially at the center of the well, said composite membrane coextensive with the bottom of said at least one well and forming a liquophobic, liquid-tight seal at the periphery of the well.

4,797,260
ANTIBODY TESTING SYSTEM

James E. Parker, Long Beach, Calif., assignor to V-Tech, Inc., Pomona, Calif.

Filed Jan. 27, 1987, Ser. No. 6,874
Int. Cl.[4] B01D *29/00*; B01L *11/00*
U.S. Cl. 422—101 **16 Claims**



1. An apparatus for testing, comprising:

a membrane having a component reactive with a specific compound bound to the membrane, said membrane allowing the passage of liquid;

a body member having:

an internal piston housing; and

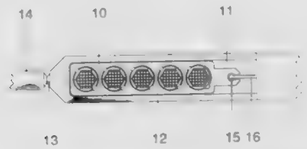
a porous membrane support mounted adjacent said piston housing having a first side adjacent to and contacting said membrane and a second side defining the upper surface of said piston housing; and

a piston, sealingly engaged with said piston housing for movement from a first position to a second position within said piston housing to create a zone of reduced pressure below said porous membrane support to facilitate passage of liquid through said porous membrane support.

4,797,261
MULTIPLE SPECIMEN CRYOTRANSFER HOLDER FOR ELECTRON MICROSCOPES

Peter R. Swann, Diablo, and Joseph S. Jones, Livermore, both of Calif., assignors to Gatan Inc., Pleasanton, Calif.

Filed Nov. 3, 1987, Ser. No. 116,167
Int. Cl.[4] G01N *21/01*; B01L *11/00*
U.S. Cl. 422—102 **3 Claims**



1. A specimen cooling holder for a transmission electron microscope including:

a cooling means for cooling the high thermal conductivity tip of said specimen cooling holder,

a low thermal conductivity bearing between said tip and a transmission electron microscope stage,

a recess within said tip, said recess being trough-shaped proximal to said low thermal conductivity conductivity bearing and being tube-shaped distal from said low thermal conductivity conductivity bearing,

an opening interconnecting the two sections of said recess,

a specimen cartridge dimensioned to fit closely within said recess and constructed from a material of high thermal conductivity,

a plurality of holes passing completely through said specimen cartridge,

securing means for securing specimens within said holes,

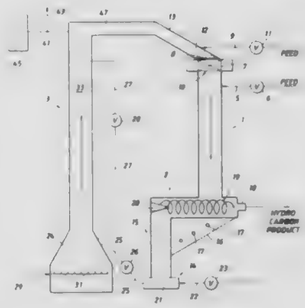
and a translating means for moving said specimen cartridge within said recess such that said specimen cartridge can be withdrawn inside the tube-shaped portion of said recess or positioned at any point within said recess,

whereby a plurality of specimens may be positioned in the tube-shaped part of said recess and thereby kept cold and shielded from frosting during transfer into said transmission electron microscope.

4,797,262
DOWNFLOW FLUIDIZED CATALYTIC CRACKING SYSTEM

Thomas S. Dewitz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 874,758, Jun. 16, 1986, Pat. No. 4,693,808.
This application Jan. 3, 1987, Ser. No. 56,929
Int. Cl.[4] B01J *8/18*
U.S. Cl. 422—142 **19 Claims**



1. An integral hydrocarbon catalytic cracking conversion apparatus for the catalytic conversion of a hydrocarbon feed material to a hydrocarbon product material having smaller molecules which comprises:

(a) an elongated catalytic downflow reactor having a top and bottom portion comprising a hydrocarbon feed inlet at a position juxtaposed to said top portion of said downflow reactor, a regenerated catalyst inlet at a position juxtaposed to said top portion of said downflow reactor and a product and spent catalyst withdrawal outlet at a position juxtaposed to said bottom portion of said downflow reactor;

(b) an elongated upflow catalytic riser regenerator having a top and bottom portion for regeneration of spent catalyst passed from said catalytic downflow reactor having a spent catalyst inlet at a position juxtaposed to said bottom portion of said regenerator, a regeneration gas inlet means for entry of an oxygen-containing gas at a position juxtaposed to said bottom portion of said regenerator, a uniform fast fluidized or entrained bed of regenerating catalyst situated from near said bottom to near said top of said riser regenerator and a regenerated catalyst and vapor phase outlet at a position juxtaposed to said top portion said regenerator, said outlet having a means to remove regenerated catalyst and vapors resultant from the oxidation of coke, present on said spent catalyst, with said oxygencontaining regeneration gas;

(c) a horizontal cyclonic separator for separating spent catalyst from hydrocarbon product material, said horizontal cyclone separator being in communication with said bottom portion of said catalytic downflow reactor and said bottom portion of said upflow riser regenerator and comprising:

(i) a horizontal elongated vessel having a body comprising a top having a center line, a first imperforate sidewall, a

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bottom and a perforate second side wall for penetration of a hydrocarbon product outlet withdrawal conduit, said top of said vessel body communicating with said catalytic downflow reactor to form a point of communication at a location off center from the center line of said top of said vessel as defined by a vertical plane through the diameter of said horizontal body, said point of communication being sufficient to provide passage of an admixture of spent catalyst and hydrocarbon products in a downward direction into said elongated vessel;

(ii) a downcomer elongated relatively vertical conduit interconnecting said vessel bottom at the relatively opposite extreme end of said vessel from said communication of said vessel with said catalytic downflow reactor for passage downward through said downcomer vertical conduit of a relatively minor amount of spent catalyst;

(iii) a hydrocarbon product withdrawal conduit situated in said second side wall of said vessel beneath and to the side of said point of communication of said catalytic downflow reactor with said top of said vessel for the continuous removal of said hydrocarbon product after a secondary centrifugal separation from spent catalyst;

(iv) an inclined slot solid dropout means interconnecting said bottom of said vessel at a position at least 90° separated from said catalytic downflow reactor point of communication with said top of said vessel as measured by an angle around the horizontal circumference of said vessel where 360° degrees equal one complete revolution around said circumference, said dropout means receiving spent catalyst by primary mass separation of spent catalysts from said hydrocarbon product by centrifugal acceleration of spent catalyst about said angle of at least 90° degrees in said horizontal vessel, wherein spent catalyst is accelerated against said horizontal circumference to cause primary mass flow separation and to thereby pass the majority of spent catalyst through said inclined solid dropout means to said downcomer vertical conduit;

(v) wherein said horizontal cyclonic separator and said catalytic downflow reactor are constructed to insure that the diameter of said hydrocarbon product withdrawal conduit is smaller than the diameter of said horizontal vessel and said off center ingress of said admixture of said hydrocarbon product and spent catalyst are constructed to develop a swirl ratio of greater than 0.2 defined by the tangential velocity of said hydrocarbon product across the cross section of said catalytic downflow reactor divided by the superficial axial velocity of fluid through the cross section of said hydrocarbon product withdrawal conduit to produce a vortex of hydrocarbon product with entrained minor quantities of spent catalyst in a helical path extending from said imperforate wall opposite said hydrocarbon product withdrawal conduit to cause said secondary centrifugal separation and disengagement of a minor amount of entrained spent catalyst from said helical hydrocarbon product and thereby passage of a disengaged minor amount of disentrained spent catalyst to the point of interconnection of said vessel with said downcomer vertical conduit to pass disengaged and separated spent catalyst through said downcomer conduit to a stripping zone; and

(vi) a stripping zone communicating with said downcomer vertical conduit and said bottom portion of said upflow riser regenerator, said stripping zone comprising a dense bed of spent catalyst received from both 1) said primary mass flow separation via said inclined slot solid dropout means and 2) said secondary centrifugal separation via said downcomer vertical conduit, wherein stripping gas is passed to said stripping zone by means of a stripping gas inlet means and wherein said helical flow path of said hydrocarbon product material extending from said second side wall to said hydrocarbon product material withdrawal outlet prohibits at least a portion of stripping gas from passing upward through said downcomer vertical conduit and into said horizontal vessel;

(d) a connection separation means communicating with said top of said upflow riser regenerator and said top of said catalytic downflow reactor to separate regenerated catalyst, derived from said upflow riser regenerator, from spent oxidation gases, said connection separation means providing a relatively dense phase of catalyst intermediate said top of said catalytic downflow reactor and said top of said upflow regenerator; and

(e) a pressure reduction means to attain a higher pressure in said relatively dense phase in said connection separation means immediately upstream of said catalytic downflow reactor compared with the pressure in said top portion of said catalytic downflow reactor.

4,797,263

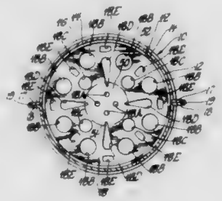
MONOLITHIC CATALYTIC CONVERTER WITH IMPROVED GAS DISTRIBUTION

Rajshekhar D. Oza, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 836,699, Mar. 6, 1986, abandoned. This application Aug. 6, 1987, Ser. No. 82,929

Int. Cl.[4] F01N *3/24*; B01D *53/36*

U.S. Cl. 422—176 **2 Claims**



1. A method of redistributing exhaust gases from an internal combustion engine comprising providing a catalytic converter consisting essentially of a housing, a catalyst coated monolith and a downstream deflector adjacent a downstream face of the monolith, passing exhaust gases through the monolith and downstream deflector and selectively blocking flow across the entire downstream race of said monolith to produce a centrally located, relatively small, restricted flow region and a radially outwardly located, relatively large substantially unrestricted flow region parallel to said central region, whereby a substantially uniform distribution of gases between the passages at their entrance to the monolith is achieved without increasing catalyst warm-up time or adding substantial back pressure.

4,797,264

RECOVERY OF METALS ADSORBED ON CHELATING AGENTS

Yasuhiko Inoue; Masaaki Matsuda, and Yoshirou Akiyoshi, all of Ehime, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 27, 1986, Ser. No. 867,061

Claims priority, application Japan, May 28, 1985, 60-115089; Jun. 17, 1985, 60-131199

Int. Cl.[4] C01G *43/00*; B01J *45/00, 49/00*

U.S. Cl. 423—7 **6 Claims**

1. A method for eluting a metal absorbed on a chelating agent, said metal being uranium, molybdenum, rhenium, titanium, vanadium, germanium, or tungsten, said agent having at least one of the functional groups selected from the group consisting of —NOH, $—P(OR)_2$, $—PO(OR)_2$, $—PH(OR)_3$, —SR, $N(R)_2$, $—N^{+(R)}_3$, and alkali or alkaline earth metal salts thereof where R may be the same or different and stands for a hydrogen atom, phenyl group, alkyl group or alkenyl group, which comprises:

bringing the chelating agent having the metal absorbed thereon into contact with an eluent containing both

(1) at least one reducing agent selected from the group consisting of sulfurous acid, nitrous acid, thiosulfuric acid and, their alkali metal salts, sodium borohydride, hydrogen peroxide, sulfur dioxide, hydrazine, phenylhydrazine, hydroxylamine, hydroquinone, oxalic acid, and formaldehyde, and

(2) at least one basic compound selected from the group consisting of inorganic alkaline compounds and water soluble organic amines.

4,797,265

PROCESS FOR THE PRODUCTION OF HIGHLY CONCENTRATED PHOSPHORIC ACID

Tadashi Inoue; Akira Ohkoba; Kunio Sakashita; Akira Utsunomiya; Takeki Shinozaki, all of Shimonoseki, and Minoru Ieda, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 12, 1987, Ser. No. 25,159

Claims priority, application Japan, Aug. 12, 1986, 61-290583

Int. Cl.[4] C01B *25/16*; C01F *1/00, 11/46*

U.S. Cl. 423—320 **14 Claims**

1. A process for the production of highly concentrated phosphoric acid, comprising digesting phosphate rock with a mixed acid consisting essentially of sulfuric acid and phosphoric acid to obtain a slurry comprising phosphoric acid and hemihydrate, calcium sulfate $CaSO_4 \cdot \frac{1}{2}H_2O$, then filtering the slurry, taking out highly concentrated phosphoric acid as product acid and subsequently hydrating the hemihydrate to obtain gypsum dihydrate, $CaSO_4 \cdot 2H_2O$, the process which comprises:

mixing phosphate rock into a portion of the slurry comprising highly concentrated phosphoric acid and hemihydrate after completion of the digestion to obtain a premixed slurry;

forming a recycle acid using substantially the bulk of washed filtrate obtained by washing hemihydrate cake from a hemihydrate filter and also using a portion of the highly concentrated phosphoric acid as product acid;

adding concentrated sulfuric acid to tee recycle acid to obtain a mixed acid consisting essentially of sulfuric acid and phosphoric acid and having a sulfuric acid concentration in this mixed acid adjusted to less than 60% by weight;

adding this mixed acid to the premixed slurry and allowing digestion to take place at a temperature in the range of 70° to 85° C. to obtain a slurry comprising highly concentrated phosphoric acid having a concentration of at least 40% P_2O_5 by weight and including a concentration of at least 0.5% excess H_2SO_4 by weight and hemihydrate;

recycling a portion of this slurry just obtained as a premixing slurry to a premixer, while filtering another portion thereof by the hemihydrate filter to separate it into the highly concentrated phosphoric acid as product acid and hemihydrate;

using a portion of the product acid just obtained for the formation of the recycle acid;

while washing the hemihydrate cake on the hemihydrate filter with mother filtrate provided from a dihydrate filter;

using substantially the bulk of the resulting washing filtrate from a hemihydrate filter for the formation of the recycle acid;

while slurrying the washed hemihydrate cake using washed filtrate obtained by water-washing dihydrate cake from dihydrate filter and also using a two- to five-fold amount of the same slurry, based on the amount of dihydrate slurry obtained after the completion of hydration;

adding concentrated sulfuric acid to the resulting slurry and allowing hydration of the hemihydrate to take place under strong agitation to obtain a dihydrate slurry;

filtering this dihydrate slurry by the dihydrate filter followed by water-washing; and

using the resulting mother filtrate for washing hemihydrate cake on the hemihydrate filter.

4,797,266

METHOD OF PREPARATION OF A COMBINED ZSM-5-FERRIERITE ALUMINOSILICATE

Wayne E. Evans, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 7, 1986, Ser. No. 894,164

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—328 **7 Claims**



1. A method of preparation of a combined ZSM-5 and ferrierite aluminosilicate which comprises crystallizing, at crystallization conditions, an aqueous crystallization admixture comprising sodium silicate, a compound of aluminum, sodium oxide, water and a combination of amines comprising piperidine and an aliphatic amine selected from the group consisting of n-butylamine, tetrapropylammonium hydroxide, and mixtures thereof, wherein said components are present in a content expressed by:

silica:alumina:sodium oxide:water:total amine content equal to 25:XXX:YYY:350–2000:3–20

wherein XXX is equal to 0.1 to 2.0

wherein YYY is equal to 0.2 to 10 and

wherein the ratio of piperidine to said chosen aliphatic amine is equal to 0.1 to 20.

4,797,267

METHOD OF PRODUCING ROD-SHAPED ZSM-5 ZEOLITE

Guenter H. Kuehl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 23, 1987, Ser. No. 139,098

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—329 **4 Claims**

1. In the process for the production of high-silica ZSM-5 zeolites having a silica to alumina molar ratio of greater than 70 from a reaction mixture containing a source of alkali metal oxide, a source of silica, quaternary ammonium ion and water wherein the reaction mixture is held at elevated temperatures and pressures until crystals are formed, the improvment which comprises adding to said reaction mixture a non-fluoride buffer capable, at temperatures of about 200° C., of controlling the final pH to a value within the range of 9.5–10.5, in such amounts that about 0.1 to 0.35 equivalents of buffer per mol of silica are present in the reaction medium, so as to produce rod-shaped ZSM-5 having a length-to-width ratio greater than 3, wherein the buffer is selected from the group consisting of ammonium or alkali metal salts of phosphate, tartrate, citrate, oxalate, ethylenediaminetetraacetate and acetate.

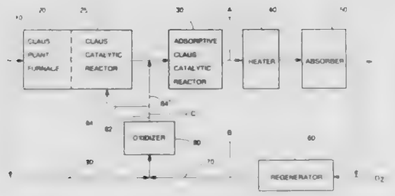
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4,797,268

SULFUR RECOVERY PROCESS USING METAL OXIDE ABSORBENT WITH REGENERATOR RECYCLE TO CLAUS CATALYTIC REACTOR

John J. McGovern; Paul T. Pendergraft, and Min-Hsiun Lee, all of Tulsa, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 30, 1987, Ser. No. 126,815
Int. Cl.[4] C01B *17/04*
U.S. Cl. 423—574 R 14 Claims



8. Method comprising:

converting H_2S in an acid gas feedstream to a Claus plant to elemental sulfur by the Claus reaction and producing a Claus plant tailgas in a Claus plant comprising a Claus furnace and a Claus catalytic reactor;

removing both H_2S and SO_2 in the presence of ZnO, optionally after converting SO_2 to H_2S, producing ZnS and absorber effluent;

regenerating ZnS to ZnO in the presence of O_2 producing regenerator effluent;

providing a portion of acid gas feedstream withdrawn upstream of the Claus furnace to oxidation means distinct from the Claus furnace for oxidizing H_2S to SO_2 in the presence of O_2;

further providing regenerator effluent to the oxidation means; and

providing effluent from the oxidation means to the Claus catalytic reactor of the Claus plant.

4,797,269

PRODUCTION OF BETA ALUMINA BY SEEDING AND BETA ALUMINA PRODUCED THEREBY

Ralph Bauer, Niagara Falls, Canada, and Rufus M. Franklin, Holden, Mass., assignors to Norton Company, Worcester, Mass.

Filed Feb. 8, 1988, Ser. No. 153,676
Int. Cl.[4] C01F *7/04*
U.S. Cl. 423—600 8 Claims

1. A method of making a beta alumina body, comprising:

(a) providing a composition consistent with the formation of beta alumina upon firing, said composition comprising (i) an alumina sol or gel, (ii) a material selected from the group consisting of oxides and precursors of oxides of sodium, potassium, lithium, magnesium, and calcium, and (iii) submicron seed particles selected from the group consisting of beta alumina and alpha alumina, said seed particles being present in an amount of at least 0.1% by weight of the final solids content of said body;

(b) shaping said gel or sol;

(c) drying the shaped gel sol from step (b); and

(d) firing the dried shaped gel from step (c) at a temperature of from 1200° C. to 1500° C. to produce said beta alumina body, said seed particles being present in said gel or sol in an amount at least equivalent to 10^6 particles per cubic centimeter of said beta alumina body.

4,797,270

METHOD FOR THE OBTENTION OF AN ESPECIAL ALUMINA FROM THE POWDER PRODUCED IN METALLURGICAL ALUMINA CALCINATION

José M. Alarado Cendan, and Flor Campa Campa, both of Foz, Spain, assignors to Alumina Espanola S.A., Spain

Filed Sep. 3, 1987, Ser. No. 92,674
Claims priority, application Spain, Jul. 17, 1987, 8702105
Int. Cl.[4] C01F *7/02*
U.S. Cl. 423—625 14 Claims

1. A method for obtaining special alumina from powder produced in the calcination of metallurgical alumina comprising

(a) calcining metallurgical alumina

(b) collecting said calcined alumina powder said powder being extremely thin and formed by a mixture of aluminas of different calcination degree, both mono and tri-hydrate and with a high sodium content,

(c) washing the powder in water in order to reduce its sodium content, repulping it in a tank with stirring,

(d) separating solid and liquid by decantation,

(e) filtering, and washing in water,

(f) calcining at a high temperature, whereby the powder is transformed into special alumina or corindon and

(g) grinding the obtained product.

4,797,271

PRODUCING ALUMINA GRANULES IN A FLUIDIZED BED

Hubert L. Fleming, Mars; Jon F. Edd, Monroeville; Alan Pearson, Murrysville, all of Pa.; Chia-Liang Chou, Terre Haute, Ind.; Hisashi O. Kono, and Ching-Chung Huang, both of Morgantown, W. Va., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 16,631, Feb. 19, 1987, Pat. No. 4,704,378. This application Oct. 22, 1987, Ser. No. 111,218
The portion of the term of this patent subsequent to Nov. 3, 2004, has been disclaimed.
Int. Cl.[4] C01F *7/02*
U.S. Cl. 423—625 20 Claims



1. A process for preparing granules of alumina comprising:

(a) pretreating alumina powder by admixing said powder with cold water in a mixer at a temperature below about 20° C. to form a stabilized alumina having a pore volume partially saturated with water; and

(b) agglomerating said pretreated alumina in a fluidized bed to form granules having a high macropore volume.

4,797,272

WATER-IN-OIL MICROEMULSIONS FOR COSMETIC USES

Edwards E. Linn, Carmel, and Michael P. West, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 15, 1985, Ser. No. 798,501
Int. Cl.[4] A61K *7/42, 7/44, 7/48, 9/10*
U.S. Cl. 424—59 20 Claims

1. A stable water-in-oil microemulsion non-irritating moisturizing composition which when applied to skin promotes the penetration of moisturizers into the skin and leaves little residue on the surface of the skin following its application comprising from about 5% by weight to about 35% by weight of a moisturizer, from about 20% by weight to about 80% by weight of surfactants, from about 10% by weight to about 70% by weight of skin compatible oils, and from about 5% by weight to about 50% by weight of skin humectants and the composition having an average droplet size in the range of about 0.001 microns to about 0.2 microns in diameter, and wherein the compositon is adapted to promote the penetration of the moisturizers into the skin.

4,797,273

SKIN MOISTURIZING MICROEMULSIONS

Edwards E. Linn, Wanaque, N.J., and Thomas O. York, Indianapolis, Ind., assignors to Elizabeth Arden Inc., New York, N.Y.

Continuation-in-part of Ser. No. 798,501, Nov. 15, 1985. This application Nov. 7, 1986, Ser. No. 928,217
Int. Cl.[4] A61K *7/42, 7/44, 7/48, 9/10*
U.S. Cl. 424—59 57 Claims

1. A method of moisturizing human skin comprising administering to skin in need of moisturizing an effective amount of a stable water-in-oil or oil-in-water microemulsion non-irritating moisturizing composition which when applied to skin promotes the penetration of moisturizers into the skin and leaves little residue on the surface of the skin following its application selected from the group consisting of one of the following compositions comprised of

(a) from about 1.0% by weight to about 36.0% by weight of a fatty alcohol, from about 23.5% by weight to about 90.0% by weight of a microemulsion forming surfactant, from about 1.0% by weight to about 28.0% by weight of a polysiloxane, and from about 2.0% by weight to about 36.0% by weight of a skin humectant;

(b) from about 1.0% by weight to about 46.0% by weight of an animal oil, from about 14.0% by weight to about 90.0% by weight of a microemulsion forming surfactant, from about 1.0% by weight to about 35.0% by weight of a polysiloxane, and from about 2.0% by weight to about 18.0% by weight of a skin humectant;

(c) from about 1.0% by weight to about 31.0% by weight of a triglyceride, from about 37.0% by weight to about 90.0% by weight of a microemulsion forming surfactant, from about 1.0% by weight to about 35.0% by weight of a polysiloxane, and from about 2.0% by weight to about 24.0% by weight of a skin humectant;

(d) from about 1.0% by weight to about 41.0% by weight of a fatty diester, from about 23.0% by weight to about 90.0% by weight of a microemulsion forming surfactant, from about 1.0% by weight to about 31.0% by weight of a polysiloxane, and from about 2.0% by weight to about 42.0% by weight of a skin humectant;

(e) from about 1.0% by weight to about 41.0% by weight of a branched chain fatty ester, from about 18.5% by weight to about 90.0% by weight of a microemulsion forming surfactant, from about 1.0% by weight to about 31.0% by weight of a polysiloxane, and from about 2.0% by weight to about 54.0% by weight of a skin humectant;

(f) from about 1.0% by weight to about 6.0% by weight of a fatty acid, from about 60.0% by weight to about 90.0% by weight of a microemulsion forming surfactant, from about 1.0% by weight to about 5.0% by weight of a polysiloxane, and from about 2.0% by weight to about 26.0% by weight of a skin humectant;

(g) from about 1.0% by weight to about 41.0% by weight of a tribasic acid ester, from about 23.0% by weight to about 90.0% by weight of a microemulsion forming surfactant, from about 1.0% by weight to about 31.0% by weight of a polysiloxane, and from about 3.0% by weight to about 33.0% by weight of a skin humectant;

(h) from about 3.0% by weight to about 35.0% by weight of a vegetable oil, from about 20.0% by weight to about 80.0% by weight of a microemulsion forming surfactant, from about 10.0% by weight to about 70.0% by weight of a polysiloxane, and from about 5.0% by weight to about 50.0% by weight of a skin humectant;

(i) from about 5.0% by weight to about 35.0% by weight of a long chain hydrocarbon, from about 20.0% by weight to about 80.0% by weight of a microemulsion forming surfactant, from about 10.0% by weight to about 70.0% by weight of a polysiloxane, and from abbut 5.0% by weight to about 50.0% by weight of a skin humectant; and

(j) from about 5.0% by weight to about 35.0% by weight of a straight chain fatty ester, from about 20.0% by weight to about 80.0% by weight of a microemulsion forming surfactant, from about 10.0% by weight to about 70.0% by weight of a polysiloxane, and from about 5.0% by weight to about 50.0% by weight of a skin humectant and the composition having an average droplet size in the range of about 0.001 microns to about 0.2 microns in diameter, and wherein the composition is adapted to promote the penetration of the moisturizers into the skin.

4,797,274

COMPOSITION COMPRISING COPPER COMPOUND

Yoshiaki Miki, Yokohama, and Tsunehisa Ueda, Zushi, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1987, Ser. No. 89,178
Claims priority, application Japan, Aug. 26, 1986, 61-199568
Int. Cl.[4] A01N *37/42, 59/20*; A61L *9/01*
U.S. Cl. 424—76.1 15 Claims

1. A composition comprising a copper compound, and blended with it, (A) an L-ascorbic acid compound and/or an erythorbic acid compound and (B) an hydroxycarboxylic acid compound.

4,797,275

NICARBAZIN FEED PREMIX

Norman D. Brooks, Greenfield; Rebecca A. Kenyon, Indianapolis, and Peter W. Vanevenhoven, West Terre Haute, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 26, 1985, Ser. No. 780,352
Int. Cl.[4] A61K *31/74, 31/505*
U.S. Cl. 424—78 11 Claims

1. An animal feed premix in substantially granular and nondusty form comprising from about 5% to about 80% of finely powdered nicarbazin and polyethylene glycol with a molecular weight range of from about 3,000 to about 12,000.

4,797,276

COTTON BOLL WEEVIL, ALFALFA WEEVIL, AND CORN ROOTWORM VIA CONTACT WITH A STRAIN OF BACILLUS THURINGIENSIS

Corinna Herrnstadt, and George G. Soares, both of San Diego, Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 714,790, Mar. 22, 1985, Pat. No. 4,764,372. This application Mar. 21, 1986, Ser. No. 842,529
Int. Cl.[4] C12P *21/00*; C12R *1/07*; A01N *63/00*
U.S. Cl. 424—84 6 Claims

1. A process, for controlling cotton boll weevil which comprises contacting the host plant of said cotton boll weevil with a cotton boll weevil-controlling effective amount of *Bacillus thuringiensis* strain *san diego*, having the identifying character-

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istics of NRRL B-15939, or toxic crystals or spores from said strain.

2. A process, according to claim 1, which comprises incorporating said *Bacillus thuringiensis* strain *san diego*, or toxic crystals or spores TM from said strain, into a bait granule and placing said granule on or in the soil when planting seeds of cotton, or at later stages of the crop cycle.

4,797,277

METHOD FOR REPERFUSION THERAPY

Karl E. Arfors, del Mar, Calif., assignor to Pharmacia AB, Uppsala, Sweden

Filed Sep. 22, 1987, Ser. No. 99,403
Int. Cl.[4] A61K *39/00*
U.S. Cl. 424—85.8 **7 Claims**

1. Method for reperfusion therapy of a mammalian organ comprising the step of administering systemically to said organ a therapeutically active amount of an antibody preparation having specificity for a LAC-epitope that is responsible for leukocyte-endothelial cell adherence.

4,797,278

HYPOCHOLESTEROLEMICALLY AND/OR HYPOTRIGLYCERIDEMICALLY ACTIVE PRODUCTS AND THEIR USE

Yasuo Kawai, Atsugi; Kazunaga Yazawa, Sagamihara; Nobuo Saegusa, Tsukui, and Hirotaka Shimohashi, Kodaira, all of Japan, assignors to Kabushiki Kaisya Advance Kaihatsu Kenkyujo, Tokyo, Japan

Division of Ser. No. 762,817, Aug. 5, 1985, Pat. No. 4,579,733, which is a continuation of Ser. No. 516,888, Jul. 25, 1983, abandoned. This application Jan. 14, 1986, Ser. No. 818,827
Claims priority, application Japan, Aug. 6, 1982, 57-136241
Int. Cl.[4] A61K *35/74*; C12N *1/20*; C12R *1/46*
U.S. Cl. 424—93 **3 Claims**

1. A method for lowering the serum cholesterol and/or triglyceride level of humans comprising orally administering to said humans a hypocholesterolemically or hypotriglyceridemically effective amount of living cells, dead cells, or a mixture thereof of a microorganism having the identifying characteristics of at least one strain selected from the group consisting of *Streptococcus faecium* FERM BP-296, *Streptococcus faecalis* FERM BP-297, *Streptococcus avium* FERM BP-298, *Streptococcus salivalius* FERM BP-299, *Streptococcus durans* FERM BP-300, *Streptococcus mitis* FERM BP-301, *Streptococcus equinus* FERM BP-302, and mutants thereof, and a pharmaceutically acceptable carrier therefor.

4,797,279

INSECTICIDAL HYBRID BACTERIA FROM *B.T. KURSTAKI* AND *B.T. TENEBRIONIS*

Dimitri Karamata, Epalinges, and Jean-Christophe Piot, Lausanne, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Oct. 28, 1986, Ser. No. 924,372
Claims priority, application United Kingdom, Oct. 30, 1985, 8526774
Int. Cl.[4] A61K *35/74*; A01N *63/00*; C12N *1/20*
U.S. Cl. 424—93 **12 Claims**

1. Hybriid *Bacillus thuringiensis cells capble of producing delta-endotoxin crystals typical for Bacillus thuringiensis kurstaki*, also capable fo producing delta-endotoxin crystals typical for *Bacillus thuringiensis tenebrionis* and having insecticidal activity against the larvae of *trichoplusia ni, Spodoptera littoralis* and *Phaedon cochlaeriae*.

9. The method of combatting insects which comprises applying to the insects or their habitat an insecticidally effective amount of a B.t. hybrid of claim 1.

4,797,280

ANTIBIOTICS PRODUCED BY *KIBDELOSPORANGIUM ARIDUM* SHEARER GEN. NOV., SP. NOV. ATCC 39323

Betty A. Bowie, Havertown; Richard D. Hedde, West Chester; Thomas O. Lindsey, Coatesville; David J. Newman, Wayne; Marcia C. Shearer, Conshohocken; Robert D. Sitrin, Plymouth Meeting, and Joseph R. Valenta, Strafford, all of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jun. 10, 1986, Ser. No. 872,717
Int. Cl.[4] A61K *35/74*
U.S. Cl. 424—118 **6 Claims**

1. A method for improving milk production in a lactating ruminant which comprises orally administering to the ruminant an effective amount of an enriched AAD 216 complex which at a pH of about 6 has the following characteristics:

(a) pale-white-yellow solid which decomposes at 300° to 350° C.;

(b) an approximate elemental composition of 53.22 percent carbon, 6.14 percent hydrogen, 3.73 percent nitrogen and 0.28 percent ash;

(c) an infrared spectrum in potassium bromide which exhibits peaks at the following wave numbers in cm^{-1}: 3400, 2920, 1660, 1600, 1410, 1460, 1430, 1390, 1320, 1240, 1150, 1060 and 1020;

(d) an ultraviolet spectrum in acetonitrile:water (1:1) which exhibits an absorption maximum at 280 nm under neutral and acid conditions with an $E_{1\%}=43.9$ and at 301 nm under basic conditions with an $E_{1\%}=56.8$;

(e) a positive reaction with periodate and negative reaction with ninhydrin; and

(f) soluble in H_2O, methanol, dimethylsulfoxide and dimethylformamide and insoluble in ethanol, acetonitrile, acetone, diethylether and aliphatic hydrocarbons.

4,797,281

PROCESS FOR PREPARING WOOD PRESERVATIVE COMPOSITIONS

Andrew D. J. Broome, Warrington, and Ian K. Egerton, Runcorn, both of England, assignors to Laporte Industries Limited, London, England

Filed Jan. 16, 1987, Ser. No. 3,741
Claims priority, application United Kingdom, Jan. 23, 1986, 8601570
Int. Cl.[4] A01N *59/22*
U.S. Cl. 424—133 **8 Claims**

1. A process for the production of a copper/chrome/arsenic wood preservative composition comprising mixing copper arsenate and alkali metal dichromate in an aqueous medium in the presence of an added acid selected from the group consisting of nitric acid, hydrochloric acid, sulphuric acid and formic acid effective to produce a pH in the aqueous medium below 0.05, thereby to produce a water-soluble product.

4,797,282

DRUG DEPOT CONTAINING CYTOSTATICS

Helmut Wahlig, Darmstadt, and Elvira Dingeldein, Dreieich, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Apr. 18, 1986, Ser. No. 853,320
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1985, 3513938
Int. Cl.[4] A61F *13/00*
U.S. Cl. 424—422 **21 Claims**

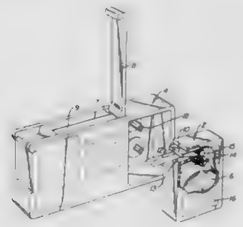
1. A drug depot composition comprising a base of a polyacrylate or polymethacrylate, an amount of an amino acid effective to control the release of the drug from the composition and an effective amount of a cytostatic agent, wherein the amino acid is in the form of particles of a size less than 125 μm.

4,797,283

INTEGRATED DRUG DOSAGE FORM AND METERING SYSTEM

Jimmy D. Allen, Los Altos; Michael E. Cobb, San Jose; Robert S. Hillman, Cupertino; Dennis R. Mungall, Redwood City; Vladimir E. Ostoich, San Jose, and Gary H. Stroy, Los Altos, all of Calif., assignors to Biotrack, Incorporated, Mountain View, Calif.

Division of Ser. No. 798,780, Nov. 18, 1985, Pat. No. 4,712,460. This application Sep. 23, 1987, Ser. No. 100,123
Int. Cl.[4] A61K *9/70*
U.S. Cl. 424—443 **11 Claims**



1. An ingestable medicament tape, comprising:

about 10 to 40 weight % of a physiologically acceptable thermoplastic polymer selected from the group consisting of polyvinylpyriolidone, hydroxypropylmethylcellulose, and hydroxypropycellulose;

about 15 to 50 weight % of a polysaccharide;

about 5 to 40 weight % of a compatible physiologically acceptable plasticizer; and

about 0 to 20 weight % sorbitol;

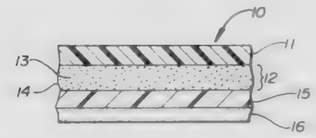
said ingestable medicament tape being capable of being fed from a roller and cut at preselected lengths to provide a predetermined medicament dosage, having a tensile strength of at least 200 psi, and containing from 0.01 to 2 mg drug/mm^3.

4,797,284

TRANSDERMAL DRUG DELIVERY SYSTEM

Alice E. Loper, Lederach, Pa., and Anup K. Majumdar, Eatontown, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 12, 1986, Ser. No. 838,852
Int. Cl.[4] A61F *13/00*
U.S. Cl. 424—449 **12 Claims**



1. A transdermal drug delivery system for administering a drug, chemically identifiable as (1*a*,2,3,4*a*,5,6-hexahydro-9-hydroxy-4-propyl-4H-naphth[1,2-b]-1,-oxazine, over an extended period comprising,

(a) a backing layer substantially impermeable to the drug and forming the top or outer surface of a bandage employing the delivery system,

(b) a resevoir layer comprising drug in a completely dissolved form in a continuous matrix of a carrier,

(c) a membrane layer comprising a structure exhibiting some rate controlling property,

wherein a substantially constant release rate is achieved over a substantial part of the wear period by the combined action of the reservoir layer and the membrane layer wherein:

$$\frac{h/KD_m}{x_{max}/D_r} \geqq \frac{(1-\beta\alpha)}{\beta\alpha} \quad (1)$$

and

$$\frac{(x_{max})^2}{(TD_r)} \geqq \frac{\beta\alpha}{(2\alpha-\beta\alpha-\beta\alpha^2)}\left[(1-\alpha)+\left(\frac{(1-\alpha)(2+2\alpha-3\beta\alpha-\beta\alpha^2)}{2-\beta\alpha}\right)^{\frac{1}{2}}\right] \quad (2)$$

are satisfied simultaneously, and wherein:

h is membrane thickness

K is partition coefficient between membrane and reservoir

D_m is diffusion coefficient of drug in membrane

x_{max} is reservoir thickness

D_r is diffusion coefficient of drug in reservoir

T is the desired wear time of the bandage,

α is a design parameter ranging from but not including 0 to and including 0.67, and representing the fractional drop in the theoretical flux from time zero to the end of the wear period T and

β is a design parameter ranging from but not including 0 to and including 1, which allows adjustments to shape of release profile, initial concentration, C_o, fraction of total drug depleted from the reservoir, h and x_{max}; and

$\geqq$ signifies equal to or greater than.

4,797,285

LIPOSOME/ANTHRAQUINONE DRUG COMPOSITION AND METHOD

Yechezkel Barenholz, Jerusalem, Israel, and Alberto Gabizon, San Francisco, Calif., assignors to Yissum Research and Development Company of the Hebrew University of Jerusalem and Hadassah Medical Organization, both of Jerusalem, Israel

Filed Dec. 6, 1985, Ser. No. 806,084
Int. Cl.[4] A61K *37/22*; A61J *5/00*; B01J *13/02*; B33B *5/16*
U.S. Cl. 424—450 **5 Claims**

1. A doxorubicin-containing liposome composition comprising

liposomes containing phosphatidylglycerol:phosphatidylcholine:cholesterol in a mole ratio of 3:7:4 and 1.5 mole percent alpha-tocopherol,

doxorubicin entrapped in the lipid bilayer region of the liposomes, and

ferrioxamine at a concentration of 50 μm.

4,797,286

ORALLY ADMINISTERABLE SUSTAINED RELEASE PHARMACEUTICAL FORMULATIONS

Arvind L. Thakkar, Indianapolis, and Lowell L. Gibson, Beech Grove, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 12, 1985, Ser. No. 797,305
Int. Cl.[4] A61K *9/64*
U.S. Cl. 424—456 **2 Claims**

1. A pharmaceutical formulation in capsule unit dosage form comprising a gelatin capsule containing a semi-solid matrix, said semi-solid matrix comprising an antibacterial agent, a pharmaceutically acceptable hydrophobic carrier matrix and a hydrophilic substance capable of creating channels in the hydrophobic carrier matrix thereby providing a sustained rate of release of the active agent from the formulation.

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4,797,287

CYLINDRICAL MICROTABLETS

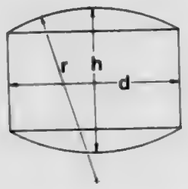
Claus H. Pich, and Thomas Moest, both of Moorrege, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 745,960, Jun. 18, 1985, abandoned. This application Apr. 30, 1987, Ser. No. 45,194

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1984, 3422619; Jun. 19, 1984, 8418439

Int. Cl.[4] A61K 9/20

U.S. Cl. 424—464 2 Claims



1. A cylindrical pharmaceutical microtablet consisting essentially of pancreatin, said microtablet having a convex upper face and convex lower face, wherein the cylinder diameter and the height independently of one another are each from 1.0 to 2.5 mm, the ratio from the said diameter to the said height being from 1:0.5 to 1:1.5, and the radius of curvature r of the convex upper and lower faces of the cylindrical microtablet is from 0.6 to 1.5 times the diameter of the cylinder.

4,797,288

NOVEL DRUG DELIVERY SYSTEM

Shri C. Sharma, Mendham; James J. Shaw, Morristown, and Robert K. Yang, Morris Plains, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 658,101, Oct. 5, 1984, abandoned. This application Feb. 14, 1985, Ser. No. 701,470

Int. Cl.[4] A61K 9/46, 47/00

U.S. Cl. 424—476 14 Claims

1. A dry particulate drug delivery system designed to be chewed or swallowed whole comprising:

(A) cholestyramine in an amount of about 1% to about 75% and

(B) a hydrophobic matrix comprising

(i) about 0.5% to about 20% by weight of an emulsifier; and

(ii) about 61% to about 95% by weight of an edible material having a melting point in the range of about 25° C. to about 100° C. selected from the group consisting of (a) fatty acids having an iodine value of about 1 to about 10, (b) natural waxes, (c) synthetic waxes and (d) mixtures thereof; and

(iii) at least one glyceride, wherein the cholestyramine and hydrophobic matrix form an agglomerate, and

(c) a coat effective to delay hydration until ingested comprising about 200% to baout 400% by weight of the agglomerate an edible material having a melting point in the range of about 25° C. to about 100° C. selected from the group consisting of (a) fatty acids having an iodine value of about 1 to about 10, (b) natural waxes, (c) synthetic waxes and (d) mixtures thereof; wherein the coat forms a protective barrier effective to prevent unpleasant taste perception for the cholestyramine agglomerate.

4,797,289

ENHANCEMENT OF LACTOBACILLUS ACIDOPHILUS GROWTH AND VIABILITY IN YOGURT AND OTHER CULTURED DAIRY PRODUCTS

Malireddy S. Reddy, 6983 S. Telluride St., Aurora, Colo. 80016

Filed Mar. 9, 1987, Ser. No. 23,686

Int. Cl.[4] A23C 9/127, 9/133

U.S. Cl. 426—43 33 Claims

1. A method of making a cultured dairy product having a substantial quantity of viable *Lactobacillus acidophilus* microorganisms, said method comprising the steps of:

preparing a base mixture comprising milk;

pasteurizing or heat treating said base mixture;

cooling the base mixture;

inoculating the cooled base mixture with a culture of *Lactobacillus acidophilus* in a quantity sufficient to drop the pH to within the range of 6.0 to 6.3 to produce an acidophilus growing mixture;

incubating said acidophilus growing mixture until the pH drops wihtin the range of 6.0 to 6.3 to produce a substantial quantity of viable *Lactobacillus acidophilus* therein;

subsequently inoculating the acidophilus growing mixture with a starter culture specific to the cultured dairy product to produce a dairy product mix; and

incubating said dairy product mix to produce a cultured dairy product having a substantial viable content of *Lactobacillus acidophilus*.

4,797,290

LYOPHILIZED PROCESS FOR THE PRODUCTION OF A KEFIR YOGHURT

Sennosuke Tokumaru, 10-3, Tsujido Taiheidai 1, Fujisawa-shi, Kanagawa-ken; Michinori Kubo, Sakai, and Mari Nogami, Saita, all of Japan, assignors to Sennosuke Tokumaru, Kanagawa, Japan

Division of Ser. No. 914,835, Oct. 2, 1986, Pat. No. 4,702,923. This application Apr. 10, 1987, Ser. No. 36,935

Claims priority, application Japan, Oct. 8, 1985, 60-223987; Feb. 12, 1986, 61-26671

Int. Cl.[4] A23C 9/127, 1/08

U.S. Cl. 426—43 6 Claims

1. A process for the production of lyophilized kefir yoghurt obtained from milk with the use of Kefir fungi, said process comprising the steps of:

culturing kefir grain in pasteurized milk at a temperature of 20° to 25° C. for a sufficient time to produce a kefir starter,

preparing a cooled pasteurized milk or a pasteurized milk mixture, wherein the milk mixture is obtained by the step of combining fresh milk and at least one milk product; by heating the milk or milk mixture to a temperature of 60 to 70° C. under a pressure of 100 to 150 kg/cm, and then pasteurizing the heated milk or milk mixture at 85° to 95° C. for 5 to 30 minutes, and then cooling the pasteurized milk or pasteurized milk mixture to a temperature of 15° to 25° C. to obtain a cooled pasteurized milk or pasteurized milk mixture, culturing the kefir starter in the cooled pasteurized milk or pasteurized milk mixture at a temperature of 15° to 25° C. for 12 to 24 hours,

ripening the cultured kefir starter in the cooled pasteurized milk or pasteurized milk mixture for 5 to 20 hours at a temperature of 10° to 15° C. to produce kefir yoghurt to a temperature of, −25° to −35° C. to produce frozen kefir yoghurt, and

lyophilizing the forzen kefir yoghurt under a reduced pressure of 0.1 to 1.0 mmHg at a temperature of 35° to 40° C. to produce a lyophilized kefir yoghurt.

4,797,291

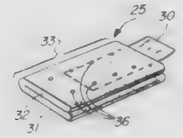
METHOD OF PREPARING A COMESTIBLE WITH INSERT

William W. Pierce, 3030 McKinney Ave., No. 802, Dallas, Tex. 75204; George June, Indianapolis, Ind.; James M. Meadows, Dallas, Tex., and Albert G. Cheek, Richmond, Ind., assignors to William W. Pierce, Chicago, Ill.

Filed Jul. 1, 1985, Ser. No. 750,593

Int. Cl.[4] A21D 8/04; A23P 1/08

U.S. Cl. 426—63 19 Claims



1. A method for making a comestible product comprising the following steps:

(A) forming food material into pairs of first and second sections with the first sections of said pairs arranged in substantially end-to-end alignment and with the second sections of said pairs arranged in substantially end-to-end alignment;

(B) positioning an insert article adjacent one of said first sections of a pair of said sections to locate a first portion of said insert article inwardly of some of said food material of said one first section to define peripheral regions which extend beyond said insert article and to locate a second portion of said insert article projecting beyond said one first section and onto an adjacent first section of an adjacent pair of sections;

(C) effecting relative movement between said two sections of each pair to rearrange said two sections in registration to contact each other at said peripheral regions and to contact the interposed insert article portions to substantially contain each said insert article first portion between said first and second sections of one pair of sections and to substantially contain each said insert article second portion between the first and second sections of an adjacent pair of sections;

(D) cooking said rearranged food material sections with said insert articles contained therein; and

(E) separating adjacent pairs of the rearranged and cooked sections whereby said second portion of each of said insert article is exposed in projecting relationship from one of said rearranged and cooked pairs of sections.

4,797,292

PROCESS FOR PREPARING AGGLOMERATES OF POTATO GRANULES

Johannes DeWit, Beauvais, France, assignor to Nestec S. A., Vevey, Switzerland

Filed Aug. 24, 1987, Ser. No. 88,947

Claims priority, application France, Sep. 26, 1986, 8613473

Int. Cl.[4] A23L 1/2165

U.S. Cl. 426—285 7 Claims

1. A process for the agglomeration of potato granules comprising mixing 45 to 55 parts by weight of potato granules, 45 to 55 parts by weight of water and 2 to 3 parts dry matter by weight of egg white solids, passing the mixture through a 3 mm to 6 mm mesh sieve, drying the sieved mixture to a residual moisture content of from 1% to 10% and then crushing the dried mixture and obtaining agglomerates.

4,797,293

PROCESS FOR A NON-CLOUDING, CONCENTRATED TEA EXTRACT

David N. Evans, Englishtown; Charles L. Fairchild, East Windsor; Karl C. Kramer, Dunellen; John C. Spruill, Burlington County; Gerard J. Wanser, Mercer County, and Robert W. Wood, Cranbury, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 9, 1987, Ser. No. 60,123

Int. Cl.[4] A23F 3/16

U.S. Cl. 426—330.3 9 Claims

1. A method for producing a shelf-stable, non-clouding tea concentrate having a pH of from 3.9 to 4.3 consisting of the following steps:

(a) producing a deionized, aqueous tea concentrate having a tea solids level of from 8 to 24% by weight and a pH of from about 4.7 to 5.5, said concentrate being either a fresh brewed concentrate which is obtained by infusing tea leaf material with hot, deionized water or a reconstituted concentrate which is obtained by dissolving spray-dried tea solids in deionized water;

(b) adding food-acceptable acids to the aqueous tea concentrate of step (a) to reduce the pH to from 2.9 to 3.5;

(c) reducing the temperature of the reduced - pH concentrate of step (b) from 30° to 45° F. and holding said concentrate at this reduced temperature for at least one hour in the presence of a minimal amount of agitation in order to produce a precipitate;

(d) removing the precipitate from the concentrate of step (c) in order to clarify the concentrate, thereby resulting in a 5 to 20% reduction in the level of solids contained in the concentrate

(e) raising the pH of the clarified concentrate to a level of from 3.9 to 4.3 by the addition of food-approved alkaline materials; and, thereafter, (f) storing the concentrate at ambient temperature.

4,797,294

CHILLPROOFING WITH MAGNESIUM SILICATE/SILICA GEL AGENTS

Kenneth A. Berg, Norristown, Pa., assignor to PQ Corporation, Valley Forge, Pa.

Filed Jun. 29, 1987, Ser. No. 67,022

Int. Cl.[4] C12H 1/02

U.S. Cl. 426—330.4 8 Claims

4. A method of treating beer to prevent chill haze comprising the steps of:

a. contacting said beer with a sufficient amount of a combination of magnesium silicate and silica gel to remove chill haze components, said combination being 30 to 60% magnesium silicate and 70 to 40% silica gel;

b. maintaining said contact for a time sufficient to absorb the chill haze component; and

c. separating the combination from the beer.

4,797,295

METHOD OF MAKING STICK-SUPPORTED MOLDED ICE CREAM WITH UNDERCUT PORTIONS

Grigoli Franco, and Trabacchi Franco, both of Milano, Italy, assignors to Sidam S.R.L., Cormano, Italy

Filed Jun. 1, 1987, Ser. No. 57,226

Claims priority, application Italy, Jun. 6, 1986, 20707 A/86

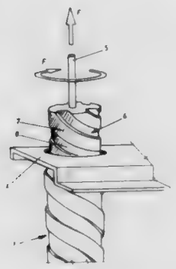
Int. Cl.[4] A23G 9/26

U.S. Cl. 426—421 2 Claims

1. A method of making a stick-supported ice-cream comprising the steps of providing a single-piece rigid mold having on an internal surface thereof alternating internally raised and recessed threads, filling the rigid mold with an ice-cream in a liquid state, inserting a stick into said ice-cream, then solidifying said ice-cream in said mold to produce a stick-supported ice-cream having on the external surface thereof alternating externally raised and recessed threads and applying external

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means to said stick and pulling upon said stick in an axial direction of said mold while allowing said stick to rotate such that said pulling action is assisted by a natural movement ex-



erted on said stick-supported ice-cream by virtue due to a cooperation between the threads of said mold and said stick-supported ice-cream so that said ice-cream is easily removed from the mold.

4,797,296

PISTON-CYCLINDER-ASSEMBLY FOR A COFFEE BREWING APPARATUS AND A METHOD OF ITS OPERATION

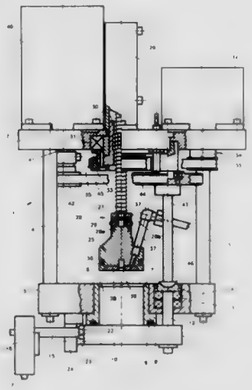
Hermann Meier, Museweg, and Jean-Paul Franzolin, Au Floreal, both of Switzerland, assignors to Cafina AG, Hunzenschwil, Switzerland

Filed Feb. 24, 1987, Ser. No. 17,365

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1986, 3607656

Int. Cl.⁴ A23F *5/00*

U.S. Cl. 426—433 **14 Claims**



1. A piston-cylinder-assembly for use in a coffee brewing apparatus, comprising:

spaced first and second frame members;

a cylindric cavity formed in the second frame member, said cylindric cavity serving as a brewing chamber into which coffee powder to be scalded is filled, and having a first open end facing the first frame member and a second open end remote from said first frame member;

a piston member mounted on said first frame member coaxially with said cylindric cavity and displaceable axially toward and away from said cylindric cavity, said piston member comprising internal brewing water channels merging to the outside in the region of its front surface adjacent to said first open end of said cylindric cavity, and connected to a brewing water supply pipe;

first drive means mounted on said first frame member and operatively coupled to said piston member for displacing said piston member between a rest position in which the front surface of said piston member is spaced from said first open end of said cylindric cavity to permit access to said first open end, and an operative position in which the piston member closes said first open end of said cylindric cavity;

closing means mounted on said second frame member and displaceable between an operative position in which said closing means closes said second open end of said cylindric cavity, and a rest position in which said closing member does not hinder access to said second open end of said cylindric cavity, said closing means being fixed with respect to the central axis of said cylindric cavity;

second drive means operatively coupled to said closing means for displacing said closing means between said operative and rest positions;

said first drive means comprising an electric motor, gear means driven by said electric motor, and control means comprising a pressure sensor for sensing the pressure exerted by the front face of said piston member on the coffee powder in said cylindric cavity and for generating a stop signal to stop the operation of said electric motor when a preselected pressure is reached.

4,797,297

PROCESSING OF SUGAR CANE PRODUCT AND DRIED PRODUCT OBTAINED THEREFROM

Mark H. O'Sullivan, 32 Lambert Road, Indooroopilly, Queensland, Australia

Filed Aug. 27, 1986, Ser. No. 901,271

Claims priority, application Australia, Sep. 2, 1985, PH2229; Sep. 16, 1985, PH2446; Apr. 14, 1986, PH5446; Jun. 26, 1986, PH6562

Int. Cl.⁴ A23L *1/10*

U.S. Cl. 426—483 **7 Claims**

1. A process for the separation of sugar cane into three fractions, one fraction of pieces containing substantially only fibrous sclerenchyma cells from the rind of the sugar cane, one fraction of pieces containing substantially only vascular bundles from the sugar cane, and one fraction of pieces containing substantially only non-fibrous parenchyma cells from the sugar cane, the process comprising the steps of:

(a) subjecting cut lengths of whole sugar cane to a disintegrating force in a disintegrating means to produce disintegrated sugar cane by inducing longitudinal and transverse severance of the lengths of sugar cane so as to cause a physical separation of the fibrous sclerenchyma cells and the vascular bundles from the non-fibrous parenchyma cells while preserving the fibrous nature of the sclerenchyma cells of the rind and of the vascular bundles and wherein substantially all of the pieces containing the sclerenchyma cells and the vascular bundles have a length greater than 2 cm;

(b) drying the disintegrated sugar cane by discharging the disintegrated sugar cane directly from the disintegrating means into a drying means containing a drying gas heated to a temperature of from 60° to 600° C., and maintaining and agitating the disintegrated sugar cane therein for an average residence time of from 0.1 to 20 second so that the moisture content of the disintegrated sugar cane is reduced to less than 20% by weight and the dried parenchyma cells deposit on or within the dried parenchyma cell walls substantially all of the dried sugar resulting from the evaporation of the contents of the natural parenchyma cells; and

(c) after the disintegrated sugar cane has been dried, separating the disintegrated sugar cane into the three aforementioned fractions.

4,797,298

BRANCHED AMIDES OF L-ASPARTYL-D-AMINO ACID DIPEPTIDES

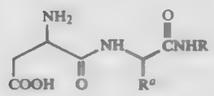
Thomas M. Brennan, Mountain View, Calif., and Michael E. Hendrick, Groton, Conn., assignors to Pfizer, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 496,428, May 20, 1983, which is a division of Ser. No. 201,745, Nov. 5, 1980, Pat. No. 4,411,925, which is a continuation-in-part of Ser. No. 113,800, Jan. 21, 1980, abandoned. This application Dec. 18, 1986, Ser. No. 944,269

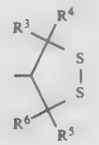
Int. Cl.⁴ C07D *339/02;* **A23L** *1/236*

U.S. Cl. 426—548 **12 Claims**

1. An L-aspartyl-D-amino acid dipeptide amide of the formula



and the physiologically acceptable cationic and acid addition salts thereof, wherein R^a is methyl, hydroxymethyl, ethyl, n-propyl or isopropyl and R is



where at least one of R^3, R^4, R^5 and R^6 is alkyl having from one to four carbon atoms, the remainder are hydrogen or alkyl having from one to four carbon atoms, the sum of the carbon atoms in R^3,R^4, R^5 and R^6 is not greater than six; and when both of R^3 and R^4 or R^5 and R^6 are alkyl, they are methyl or ethyl.

4,797,299

LIGHT RECEIVING MEMBERS HAVING A-SI (GESN) PHOTOSENSITIVE LAYER AND A-SI (O,C,N) SURFACER LAYER ON A SUPPORT HAVING SPHERICAL DIMPLES WITH INSIDE FACES HAVING MINUTE IRREGULARITIES

Mitsuru Honda; Atsushi Koike, both of Chiba; Kyosuke Ogawa, Miye, and Keiichi Murai, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1986, Ser. No. 924,448

Claims priority, application Japan, Nov. 1, 1985, 60-244142

Int. Cl.⁴ G03G *5/085*

U.S. Cl. 430—65 **32 Claims**

1. A light receiving member comprising a support and a light receiving layer constituted by a photosensitive layer and a surface layer having a free surface; said support having a surface provided with irregularities composed of spherical dimples, each of which dimples having an inside face provided with minute irregularities; said photosensitive layer being composed of amorphous material containing silicon atoms and at least one selected from the group consisting of germanium atoms and tin atoms; said surface layer being composed of amorphous material containing silicon atoms and at least one selected from the group consisting of oxygen atoms, carbon atoms and nitrogen atoms and not containing any germanium atoms or tin atoms; and wherein an optical band gap possessed by said surface layer and an optical band gap possessed by said photosensitive layer on which said surface layer is disposed are matched at an interface between the surface layer and the photosensitive layer.

4,797,300

COMPOSITIONS CONTAINING NOVEL SOLID, NONDIGESTIBLE, FAT-LIKE COMPOUNDS

Ronald J. Jandacek, Cincinnati, and James C. Letton, Forest Park, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 10, 1987, Ser. No. 36,836

Int. Cl.⁴ A23D *5/00*

U.S. Cl. 426—549 **14 Claims**

1. A shortening composition comprising from about 75% to about 90% of an edible oil having a complete melting point below about 37° C. and from about 10% to about 25% of a solid polyester of sucrose wherein the ester groups consist essentially of a mixture of short chain saturated fatty acid radicals containing from 2 to 10 carbon atoms and long chain saturated fatty acid radicals containing from 20 to 24 carbon atoms in a molar ratio of short chain to long chain fatty acid radicals of from about 3:5 to about 4:4, and wherein the degree of esterification is from about 7 to about 8.

4,797,301

METHOD OF AND APPARATUS FOR APPLYING A FLUID TO A BULK COMMODITY

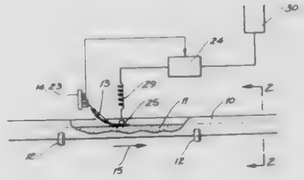
John H. Ardley, Neutral Bay; Brett A. Smith, Five Dock, and Alison W. Nicholls, Pennant Hills, all of Australia, assignors to Wellcome Australia Limited, Australia

Filed Sep. 18, 1987, Ser. No. 98,272

Claims priority, application Australia, Sep. 22, 1986, PH08142

Int. Cl.⁴ B05D *1/02;* **B05C** *11/00, 5/00;* **B05B** *17/00*

U.S. Cl. 427—8 **9 Claims**



1. An apparatus for applying a fluid by direct contact to a material which is carried by a conveyor, the apparatus comprising a flap device located adjacent the conveyor and positioned to continuously contact material carried by or discharged from the conveyor, a distributor extending across at least a portion of the width of the flap device and arranged in use of the apparatus to direct fluid into the material which is contacted by the flap device, means for delivering the fluid to the distributor, and means for sensing the existence of material on the conveyor and means for admitting the fluid to the distributor responsive to the sensing means sensing material present on the conveyor.

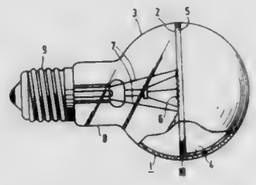
9. A method of applying a fluid to a bulk material which is carried by a conveyor, comprising conveying the bulk material, directing the fluid into the material by way of a distributor mounted to a pivotable flap device, the flap device being located adjacent the conveyor, contacting the material carried by or delivered from the conveyor with the flap device, sensing the material on the conveyor with the flap device, and delivering the fluid to the distributor responsive to the material being sensed by the flap device to be present on the conveyor.

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4,797,302
ELECTRIC LAMP HAVING A MIRROR-COATED LAMP VESSEL

Johannes W. Ingeveld, and Albert J. Westerhof, both of Weert, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Division of Ser. No. 40,450, Apr. 16, 1987, Pat. No. 4,758,761.
This application Dec. 23, 1987, Ser. No. 137,047
Claims priority, application Netherlands, Apr. 16, 1986, 8601055
Int. Cl.[4] B05D 5/12
U.S. Cl. 427—107 6 Claims



1. A method of forming a sharp boundary on an aluminum mirror coating in an electric lamp envelope, said method comprising:

(a) providing a lamp envelope having a transparent wall portion adjoining an aluminum mirror coated portion on it's inner surface, said mirror coated portion having a border region comprising a layer of aluminum thinner than said mirror coated portion; and

(b) heating said border region to convert the thinner layer of aluminum to a layer of substantially aluminum oxide for forming said boundary.

4,797,303
SURFACE LUBRICANTS FOR DISC RECORD

Duncan W. Frew, Alamo, and Robert P. Shadwick, San Jose, both of Calif., assignors to Unisys Corp., Detroit, Mich.

Filed Sep. 4, 1985, Ser. No. 772,966
Int. Cl.[4] B05D 5/12; B32B 27/00; G11B 5/72
U.S. Cl. 427—131 2 Claims

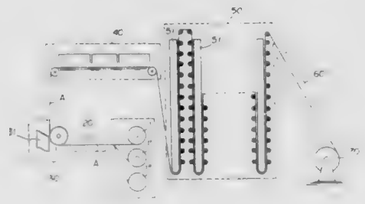
1. A method of over-coating a magnetic recording surface with fluoro-polymer "reactive-film" lube material including prescribed reactive terminations at both ends of a prescribed magnetic lube-like backbone.

said surface being characterized by active hydroxyls, said method being characterized by selecting and treating said "reactive-film" lube materials, and applying them to said recording surface and creating a relatively scant, continuous uniform reacted-film of minimum thickness and characterized by di-bonding to active hydroxyls of this recording surface; selecting a surface-lube fluoropolymer structurally the same as, or similar to, the backbone of the "reactive-film" lube material, and applying this surface lube on the di-bonded "reactive-film" material, and allowing it to be attracted to the exposed backbone of the "reactive-film" lube material, the said di-bonding of the "reactive-film" lube material, together with affinity of the surface-lube to said backbone serving to provide superior resistance to lubricant spin-off and like depletion phenomena.

4,797,304
CONTINUOUS COATING METHOD CAPABLE OF ACHIEVING HIGHER YIELD

Tunezo Sugita, Odawara, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1986, Ser. No. 947,603
Claims priority, application Japan, Mar. 18, 1986, 61-59899
Int. Cl.[4] B05D 5/10; G03C 1/495
U.S. Cl. 427—208.6 8 Claims

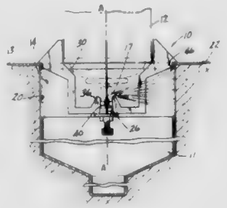


1. A method of applying a coating layer on at least one surface of an elongated support traveling continuously on rollers comprising providing said coating layer on said support, providing an adhesive layer on selected areas of at least one surface of said support in contact with at least some of said rollers, wherein some portions of said coating layer have no adhesive layer thereon and whereby substantially no adhesive from said adhesive layer is transferred onto a surface of any of said rollers.

4,797,305
PROCESS AND APPARATUS FOR PAINTING GOLF HOLES

John Schleicher, 46 Sperry Rd., Bethany, Conn. 06525

Filed Nov. 27, 1987, Ser. No. 125,885
Int. Cl.[4] B05D 1/02, 7/22
U.S. Cl. 427—236 11 Claims



*1. A process for spray painting a golf hole which comprises:

providing a can of spray paint having a valve assembly, a push button for operating said valve assembly, and a discharge opening in said button;

positioning a holder for said can having means for actuating said valve assembly over said hole;

inverting said can and inserting said inverted can into said holder so that said discharge opening lies a desired distance below the upper periphery of said hole;

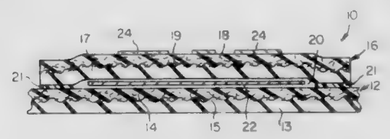
pressing said push button against said valve assembly actuating means to initiate the flow of paint through said opening; and

rotating said can to paint the walls of said golf hole.

4,797,306
RADIENT HEAT RESISTANT STENCILIBLE INFLATABLE FABRIC AND METHOD

Lowell W. Roemke, Wadsworth, and Hildreth W. Stevenson, Medina, both of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio and The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 866,656, May 27, 1986, Pat. No. 4,719,138.
This application Jul. 16, 1987, Ser. No. 74,110
Int. Cl.[4] B05D 1/36
U.S. Cl. 427—261 5 Claims



1. A method for stenciling a radiant heat resistant inflatable structure formed of at least one ply of a structural fabric having an aluminum rich coating thereover comprising the steps of:

providing a spacer element upon the aluminum rich coating of the structural ply;

providing a surface ply having an outer surface including an aluminum rich coating thereover;

defining a cavity by adhering the edge portions of the surface ply to the structural ply in a manner encapsulating the spacer element between the structural and surface plies; and

stenciling the outer surface of the surface ply.

4,797,307
PROCESS FOR THE PREPARATION OF POLYIMIDE FILM

Akihiro Kunimoto; Seiichiro Takabayashi, and Yuji Matsui, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed May 14, 1987, Ser. No. 50,492
Claims priority, application Japan, May 15, 1986, 61-112277
Int. Cl.[4] B05D 3/02; B29C 71/02
U.S. Cl. 427—386 17 Claims

1. A process for the preparation of a polyimide film comprising the steps of:

evenly coating unto the surface of a solid film, a surface treating solution which contains at least one heat-resistant surface treating agent selected from the group consisting of aminosilane type, epoxysilane type and titanate type in an amount of not less than 0.5 wt. % and has a water content of not higher than 20 wt. %; said solid film being formed of an aromatic polymer composition which contains 100 parts by weight of an aromatic polyamic acid and 5–150 parts by weight of an organic polar solvent, said aromatic polyamic acid being produced by polymerization of an aromatic tetracarboxylic acid component and an aromatic diamine component in essentially equimolar amounts wherein the tetracarboxylic acid component contains a biphenyltetracarboxylic acid or a dianhydride thereof in an amount of not less than 60 mol % and the aromatic diamine component contains a phenylene diamine in an amount of not less than 50 mol %; and

heating said solid film having the coated surface treating solution thereon to a temperature of 100°–600° C. to imidize the polyamic acid constituting said solid film and simultaneously to dry said film.

4,797,308
SIMULATED MOTHER-OF-PEARL

Harry E. Mattia, Briarcliff Manor, N.Y., assignor to The Mearl Corporation, Ossining, N.Y.

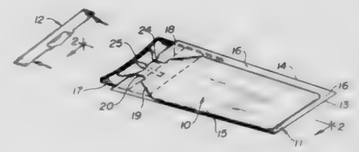
Filed Jul. 6, 1987, Ser. No. 70,051
Int. Cl.[4] B32B 27/20
U.S. Cl. 428—15 10 Claims

1. An irridescent, lustrous composite consisting of a transparent or translucent thermoplastic resin pigmented with 0.5–10% of a metal oxide-coated mica pigment, said substrate carrying on at least one surface thereof a transparent thermoplastic resinous laminate film of at least 70 very thin and generally parallel layers of transparent thermoplastic resinous materials, the contiguous layers differing in refractive index by at least about 0.06, and in which the layer at each external surface has a thickness which is greater than the thickness of any one of said very thin layers and at least 5% of the total thickness of the film.

4,797,309
FOIL POUCH

Gene W. Kammerer, East Brunswick, and Donald Barcan, Maplewood, both of N.J., assignors to Johnson & Johnson Orthopaedics, Inc., New Brunswick, N.J.

Filed Dec. 14, 1987, Ser. No. 133,596
Int. Cl.[4] B65D 47/10
U.S. Cl. 428—35.3 4 Claims



1. A container for a viscous material comprising a pouch formed from two layers of a sealable thermoplastic metal foil laminate having two opposed side edges, a top edge and a bottom edge, the two laminates being sealed at the side edges and the top and bottom edges to form the pouch, a neck adjacent the seal at the top edge of the pouch, a portion of said neck intersecting with tear lines which extend in a substantially straight line from each side edge of the container toward the center of the container, a tear line extension at the end of the straight line portion of the tear lines extending at an angle of from 15° to 90° towards the bottom edge of the container, a spreader secured to one surface of the pouch, said spreader having an arcuate edge, said spreader being secured to said pouch so that the arcuate edge is positioned between the tear line and the top edge of the unopened pouch.

4,797,310
SUBSTRATE CARRYING A POROUS POLYMERIC MATERIAL

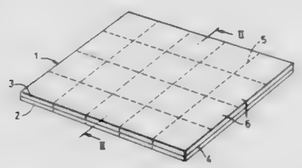
Donald Barby, Chester, and Zia Haq, Merseyside, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 22, 1982, Ser. No. 391,046
Claims priority, application United Kingdom, Jun. 26, 1981, 8119739
Int. Cl.[4] C08J 9/28
U.S. Cl. 428—71 17 Claims

1. An article suitable for delivering liquid, said article comprising a flexible liquid-permeable substrate carrying a pressure-sensitive porous polymeric material capable of retaining

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at least 5 times its own weight, defined in terms of water, of liquid and of releasing at least some of said liquid on the application thereto of hand pressure, the porous polymeric material containing an aqueous or non-aqueous liquid.

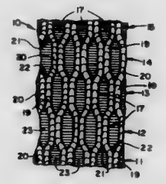


4,797,311

INSULATING FABRIC AND METHOD OF MANUFACTURE THEREOF

Philip Kemp, Closter, N.J., assignor to J. E. Morgan Knitting Mills, Inc., Tamaqua, Pa.

Continuation of Ser. No. 59,576, Jun. 8, 1987, Pat. No. 4,771,614, which is a continuation-in-part of Ser. No. 823,674, Jan. 29, 1986, Pat. No. 4,678,693. This application Mar. 18, 1988, Ser. No. 170,306
Int. Cl.[4] B32B *33/00*
U.S. Cl. 428—92 16 Claims



1. An insulating fabric having an inner fabric face of soft texture formed of a bulk yarn and an outer fabric face formed of a combined synthetic and cotton yarn, said insulating fabric being characterized by an increase in thickness as the result of plural washings to enhance its heat insulating quality and comprising

(a) a base fabric constituted of a 2×1 rib knitted thermal fabric having air-entrapping cells,

(b) said base fabric being knitted of a bulk yarn in selected courses and being knitted of a combined synthetic and cotton yarn in courses intevening between the selected courses,

(c) the combined synthetic and cotton yarn forming a knitted framework for anchoring and stabilizing the bulk yarn in the fabric, and

(d) the combined synthetic and cotton yarn being formed into tuck loops in spaced courses and spaced wales of the fabric.

4,797,312

FOAM-HONEYCOMB ARTICLE AND METHOD

Kent Sherwood, 2612 Highland Ave., Santa Monica, Calif. 90405

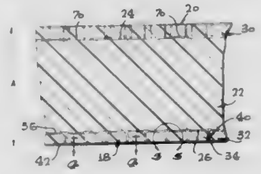
Filed Sep. 30, 1987, Ser. No. 103,449
Int. Cl.[4] B32B *1/04, 3/02;* A63C *15/05*
U.S. Cl. 428—117 9 Claims

1. A surface-reinforced article, comprising:

a core of foam material having a first outer side;

a surface region of said article which includes a porous but flow-through resistant first layer lying on said outer side of said core, a multi-cell honeycomb-type sheet structure lying outside said first layer and a fibrous third layer lying outside said honeycomb-type structure;

said first layer, said cells of said honeycomb-type sheet structure, and said fibrous third layer each being impregnated with the same foam material as said core, and the foam material in said core, first layer, cells, and third layer is of the same composition throughout.

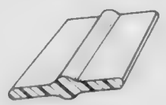


4,797,313

NON-METALLIC POLYMERIC TWIST TIE

Richard D. Stolk, Manchester, and Vladimir O. Bekker, Olivette, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 8, 1985, Ser. No. 796,662
Int. Cl.[4] B32B *3/02*
U.S. Cl. 428—156 18 Claims



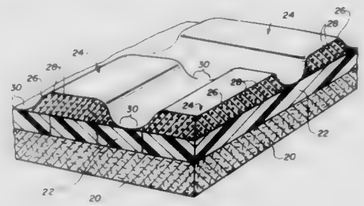
1. A wireless twist tie adapted to be twisted from a ribbon into a fastly holding closure comprising polymeric material exhibiting a glass transition temperature greater than about 30° C. and exhibiting glass/rubber transitional behavior in a temperature range from about 10° C. to about 40° C., wherein, when said twist tie is deformed under tensile stress at 25° C. at a strain rate between 0.1 and 0.5 inches per inch per minute, said twist tie exhibits yield at a stress between about 500 and 9,000 psi, said material comprising polyethylene terephthalate and particulate rubber impact modifier.

4,797,314

SURFACE COVERING PRODUCT

Raymond G. Davey, Lancaster, and Martin Dees, Jr., Landisville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 27, 1987, Ser. No. 127,036
Int. Cl.[4] B05D *5/06*
U.S. Cl. 428—167 11 Claims



1. A surface covering product comprising:

(a) a substrate material,

(b) an impervious coating bonded to at least one surface of said substrate material, and

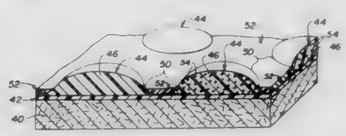
(c) raised elements having a thickness between about 0.003 inch and 0.080 inch selectively arranged in a space pattern upon said coating, comprising a thixotropic plastic containing particles of solid material, wherein said thixotropic plastic contains at least one thixotrope chosen from the group consisting of fumed silicas, precipitated silicas, finely powdered organophilic clays, highly substituted sorbatols and calcium/organic complexes.

4,797,315

DECORATIVE SURFACE COVERINGS WITH DOT PATTERNS

Richard H. Balmer, Manheim, and Barbara A. Pfeiffer-Meshaw, Gordonville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 59,518, Jun. 8, 1987, abandoned. This application Dec. 30, 1987, Ser. No. 139,768
Int. Cl.[4] B05D *5/06*
U.S. Cl. 428—167 14 Claims



1. A decorative surface covering product comprising:

(a) a substrate;

(b) a first impervious layer of a synthetic plastic polymeric material, said layer bonded to at least one surface of said substrate;

(c) a second layer partially covering said first layer, said second layer comprising discrete raised portions of a cured thixotropic plastic material forming raised elements extending upwardly therefrom with depressed areas around the raised elements; and

(d) a third layer filling in part of the depressed areas whereby the raised elements and third layer form a colored dot pattern on a contrasting colored background.

4,797,316

ETCHED GLASS AND PROCESS OF MANUFACTURING SAME

André Hecq, Nalinnes, and René Ledroit, Les Bons Villers, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Dec. 4, 1987, Ser. No. 129,962
Claims priority, application Luxembourg, Dec. 23, 1986, 86722
Int. Cl.[4] B32B *3/28;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 428—167 57 Claims



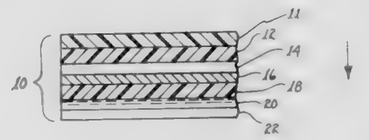
1. An article comprising a glass sheet and having an etched pattern, characterised in that said glass sheet is a chemically tempered glass sheet, and the pattern comprises one or more grooves etched into the article using fluorine ions to a depth of less than 2 μm.

4,797,317

SOLAR CONTROL WINDOW FILM

Dell B. Oliver, Gilbert, and Peter Jakoda, Chandler, both of Ariz., assignors to Gila River Products, Inc., Chandler, Ariz.

Continuation of Ser. No. 655,336, Sep. 27, 1984, abandoned. This application Aug. 11, 1986, Ser. No. 895,513
Int. Cl.[4] B32B *5/14, 7/02*
U.S. Cl. 428—204 10 Claims



1. A flexible, solar control, composite sheet for use on the inside surface of a motor vehicle window comprising:

(a) a first polymeric stratum having a high density layer applied by conventional vacuum deposition to a just surface, at least a portion of said high density layer having a density great enough to reduce the visible light transmission value to less than about 45% and the reflectance of visible light to no more than about 35%, said high density layer being a substance selected from the group consisting of nickel, chromium, alloys of nickel and/or chromium, stainless steel, and aluminum oxide;

(b) a second polymeric, dye-treated stratum bonded to the said first surface of said first polymeric stratum, and having light transmission values from about 35% to 70%; and

(c) means for adhering said first polymeric stratum to the inside surface of a motor vehicle window.

4,797,318

ACTIVE PARTICLE-CONTAINING NONWOVEN MATERIAL, METHOD OF FORMATION THEREOF, AND USES THEREOF

Ronald W. Brooker, Atlanta; Bernard Cohen, Duluth, and David M. Jackson, Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 31, 1986, Ser. No. 892,529
Int. Cl.[4] D04H *1/58*
U.S. Cl. 428—283 13 Claims

1. A substantially non-dusting nonwoven material comprising:

a web of meltblown fibers having a diameter of from less than about 1 micron to about 25 microns, said fibers comprising a blend of a polyolefin and from about 5% to about 30%, by weight, of an adhesive polymer selected from the group consisting of polybutylene and polyethylene acrylic acid; and

up to about 35%, by weight, based on the weight of the nonwoven material, of unblocked active particles, ranging in size from about 50 to about 150 microns, adhered to the surface of said fibers and distributed throughout said web.

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4,797,319

GLAZED CEMENT PRODUCT AND METHOD FOR MANUFACTURING THEREOF

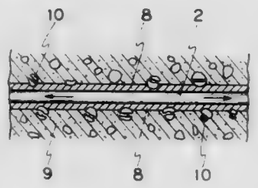
Shigeo Yoshida, Shiga; Satoshi Kitagawa, Yokaichi; Shozo Harada, Handa; Tetsuya Koide, Nagoya, and Masabu Hasegawa, Chita, all of Japan, assignors to National House Industrial Co., Ltd., Osaka and INAX Corporation, Aichi, both of, Japan

Filed Jan. 6, 1986, Ser. No. 816,533

Claims priority, application Japan, Jan. 29, 1985, 60-16103

Int. Cl.[4] B29C *39/10, 67/12;* **B32B** *13/04;* **C04B** *7/02*

U.S. Cl. 428—312.4 **12 Claims**



1. A method of manufacturing a glazed cement product comprising the steps in sequence of:
(a) preparing a kneaded mixture of cement,
(b) pouring the resulting kneaded mixture into a form or on a bed wherein reinforcing steel is laid,
(c) molding a molded body of the cement,
(d) curing the molded body of cement,
(e) applying a glaze onto a surface of the cured molded body of cement,
(f) burning the glazed molded body of cement,
(g) cooling the burned molded body of cement,
(h) hydrating to harden the cooled molded body of cement, wherein the action of generating cracks while burning and cooling, which is caused by the difference between the coefficient of thermal expansion between the reinforcing steel and a portion of the cement material, is absorbed by a stress absorbing portion around the reinforcing steel, the stress absorbing portion comprising a stress absorbing layer of pearlite power mortar coated on the reinforcing steel; and a reaction of an unreacted cement component is promoted by the hydration to harden for recovering mechanical strength.

4,797,320

COMPOSITE PLASTIC MOLDINGS AND A PROCESS FOR THEIR PRODUCTION

Richard Kopp, Cologne; Gerhard Grögler, Leverkusen; Heinrich Hess, Leverkusen; Hermann Schäfer, Leverkusen, and Werner Rasshofer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 4, 1988, Ser. No. 140,468

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1987, 3700572

Int. Cl.[4] B29C *67/20;* **B32B** *3/26*

U.S. Cl. 428—316.6 **16 Claims**

1. A composite plastic molding made up of a plastic foam having a polyurethane skin produced by heating a reactive one-component system composed of
(a) a finely divided polyisocyanate in which from 0.1 to 25 equivalent percent of the isocyanate groups have been deactivated and
(b) a polyamine and/or polyol having a molecular weight of from 400 to 8000
to form the polyurethane skin and joining the plastic foam to the polyurethane skin.

7. The molding of claim 1 in which the polyurethane skin is foamed.

4,797,321

MAGNETIC RECORDING MEDIUM

Masaya Funahashi, Osaka; Teruhisa Miyata, Kyoto; Kenichi Inoue, Muko; Akira Miyake, Kyoto, and Kohji Norimatsu, Fukuchiyama, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Oct. 15, 1986, Ser. No. 918,973

Claims priority, application Japan, Oct. 15, 1985, 60-230575

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—328 **17 Claims**

1. A magnetc recording disc which comprises:
a non-magnetic support and
a magnetic layer provided on at least one surface of said support, wherein said magnetic layer has a thickness r of from 0.3 to 0.9 microns and comprises
magnetic powder,
a resinous binder,
polishing particles having a Mohs' scale of hardness of not less than 7 and an average particle size of from 0.40 r to 0.65 r, wherein r is the thickness in microns of said magnetic layer, and
a lubricating agent having a melting point of not higher than 10° C. which comprises a fatty acid ester selected from the group consisting of n-butyl oleate, hexyl oleate, n-octyl oleate, 2-ethylhexyl oleate oleyl oleate, n-butyl laurate, heptyl laurate, n-butyl myristate, n-butoxyehtyl oleate, and trimethylopropane trioleate.

4,797,322

NOVEL ADHESIVES

Elwyn Huddleston, Franklin, and Karen C. Long, Bowling Green, both of Ky., assignors to The Kendall Company, Boston, Mass.

Filed Nov. 30, 1987, Ser. No. 126,432

Int. Cl.[4] B32B *25/08*

U.S. Cl. 428—355 **6 Claims**

1. An adhesive tape characterized as possessing resistance to degradative environmental forces of ultraviolet light and oxidation, as being tacky to the feel, as having good shear resistance, and as being cost-effective, said tape comprising a support carrying on one or both surfaces thereof a layer of adhesive including an elastomer composition comprising:
(1) at least 30 percent by weight of a triblock terpolymer elastomer having polystrene end blocks and rubbery poly-(ethelyene-butylene) midblocks;
(2) at least 10 percent by weight of a diblock copolymer elastomer of styrene and ethylene-butylene; and
(3) at least 30 percent by weight of a non-liquid polyisobutylene or a copolymer containing at least 95 percent by weight of isobutylene; said adhesive composition further including about 80 to about 150 parts by weight of resin for each 100 parts by weight of rubber components of at least one tackifying resin possessing minimal unstaturated hydrocarbon groups, said resin being selected from the group consisting of saturated hydrocarbon, beta-terpene, hydrocarbon ester and pinene tackifying resins.

4,797,323

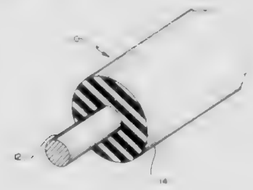
FLAME RETARDANT WIRE WITH HIGH INSULATION RESISTANCE

Alexander F. Wu, Bridgeport, Conn., and Robert B. Walters, Morrison, Colo., assignors to Vulkor, Incorporated, Lowell, Mass.

Division of Ser. No. 578,729, Feb. 9, 1984, abandoned, which is a continuation of Ser. No. 315,339, Oct. 26, 1981, abandoned. This application Feb. 19, 1985, Ser. No. 703,057

Int. Cl.[4] B32B *15/04*

U.S. Cl. 428—389 **26 Claims**



1. A cable coated with a crosslinkable composition having suitable properties for an insulation material, which comprises a polyolefin, a reactive silicone fluid, from 5 to 80 parts by weight of a bromine-containing flame retardant agent, from 0.5 to 15 parts by weight of a zinc salt of mercaptoimidazole, and from 0.5 to 15 parts by weight of a sterically hindered di-tertiary butyl phenol, these amounts being for each 100 parts by weight of the polyolefin.

4,797,324

MAGNETIC RECORDING MEDIUM

Kotaro Hata, Ichikawa, Japan, assignor to Nippon Zeon Company, Ltd, Tokyo, Japan

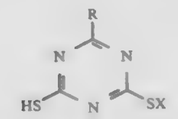
Filed Jan. 28, 1988, Ser. No. 149,255

Claims priority, application Japan, Feb. 7, 1987, 62-26792

Int. Cl.[4] G11B *5/702*

U.S. Cl. 428—411.1 **16 Claims**

1. A magnetic recording medium comprising a substrate and a magnetic layer formed on at least one surface of the substrate, wherein the magnetic layer is constituted of a magnetic powder and a binder which contains an epoxy-containing vinyl chloride resin and a triazinethiol compound, said triazinethiol compound being at least one compound selected from the group consisting of those represented by the general formula:



wherein X is a hydrogen atom, an alkali or alkaline earth metal and R is $OR_1)SR_1$ or NR_1R_2 (wherein R_1 and R_2 are each a hydrogen atom or a hydrocarbyl group having 1 to 20 carbon atoms, which may be substituted, or alternatively, R_1 and R_2 may be interconnected to form a ring), and the amount of said triazinethiol compound being 0.1 to 20 parts by weight per 100 parts by weight of the magnetic powder.

4,797,325

SPACECRAFT MATERIALS

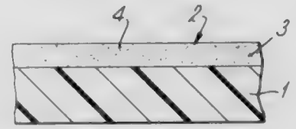
Derek Verdin, Wantage, and Michael J. Duck, Didcot, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 10, 1985, Ser. No. 807,465

Claims priority, application United Kingdom, Dec. 13, 1984, 8431518

Int. Cl.[4] B32B *27/00;* **B05D** *3/02;* **B64C** *1/00*

U.S. Cl. 428—473.5 **19 Claims**



5. A dielectric material according to claim 1 wherein the thickness of the surface layer lies between one and one hundred micrometres.

4,797,326

SUPPORTED POLYCRYSTALLINE COMPACTS

Frank J. Csillag, The Woodlands, Tex., assignor to The General Electric Company, Worthington, Ohio

Filed Jan. 14, 1986, Ser. No. 818,850

Int. Cl.[4] B22F *7/08*

U.S. Cl. 428—552 **20 Claims**

1. A process for fabricating a supported polycrystalline diamond or CBN compact which comprises:
(a) forming a sintered polycrystalline diamond or CBN compact having a surface;
(b) separately forming a plastically deformable support having a support surface;
(c) mating said diamond or CBN compact and said support at their respective surfaces;
(d) subjecting said mated diamond or CBN compact and said support to elevated temperature and pressure conditions sufficient to plastically deform said support surface into attachment with said compact surface, said temperature, pressure and the time of application thereof being inadequate to cause substantial degradation of said diamond or CBN compact; and
(e) recovering the resulting supported compact.

4,797,327

SURFACE TREATED METAL MEMBER, PREPARATION METHOD THEREOF AND PHOTOCONDUCTIVE MEMBER BY USE THEREOF

Mitsuru Honda, Kashiwa; Tetsuo Sueda, Chofu; Keiichi Murai, Kashiwa, and Kyosuke Ogawa, Nabari, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 847,449, Apr. 3, 1986, Pat. No. 4,735,883. This application Jul. 17, 1987, Ser. No. 74,890

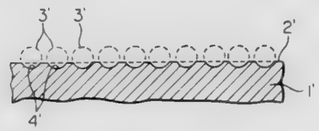
Claims priority, application Japan, Apr. 6, 1985, 60-73171; May 8, 1985, 60-98601; May 8, 1985, 60-98602; May 8, 1985, 60-98603

Int. Cl.[4] G03G *15/00*

U.S. Cl. 428—600 **6 Claims**

1. A surface treated metal member comprising an electro-

photographic layer support having a plurality of spherical mark impressions thereon, said impressions having a radius of



curvature R and a width D satisfying the relationship $0.035 \leqq D/R$, wherein D is 500 μm or less.

4,797,328

SOFT-SOLDER ALLOY FOR BONDING CERAMIC ARTICLES

Wolfgang Boehm, Alzenau-Albstadt; Juergen Hausselt, Langenselbold; Wolfgang Weise, Frankfurt am Main, and Willi Malikowsik, Aschaffenburg, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 17, 1987, Ser. No. 15,259

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1986, 3605170

Int. Cl.[4] B32B *15/01, 15/04;* **C22C** *11/00, 13/00*

U.S. Cl. 428—621 **14 Claims**

1. A soft-solder alloy for bonding ceramic parts together for bonding a ceramic part to a metallic part consisting of 86 to 99% lead, 0 to 13% silver, 0 to 10% indium and 1 to 10% of a member selected from the group consisting of titanium, zirconium, and mixtures thereof.

4,797,329

OXIDATION RESISTANT FERROUS BASE FOIL

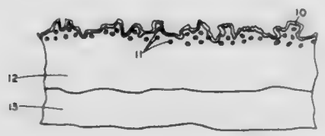
Farrell M. Kilbane, Centerville, and F. Curtiss Dunbar, West Chester, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Division of Ser. No. 741,282, Jun. 4, 1985, Pat. No. 4,686,155. This application May 8, 1987, Ser. No. 47,892

The portion of the term of this patent subsequent to Aug. 11, 2004, has been disclaimed.

Int. Cl.[4] B01J *21/02*

U.S. Cl. 428—623 **4 Claims**



1. A monolithic support structure for catalytic converters for internal combustion engine exhaust systems, comprising an aluminum coated ferrous base metal foil having a thickness not greater than 0.13 mm formed by cold reduction of a hot dip substantially pure aluminum coated ferritic base metal strip containing from 10% to about 35% by weight chromium, up to 3% aluminum, up to 1% silicon, and balance essentially iron, said ferritic base metal strip having a thickness of at least 0.25 mm and an aluminum coating thickness ranging from 0.013 to 0.13 mm on each side, said coated foil having a ratio of total aluminum coating thickness to base metal foil thickness of at least 1:10, with at least 4% by weight total aluminum in said coated foil, said coated foil being further provided with an aluminum oxide layer on each side ranging in thickness from about 500 to about 10,000 angstroms, and a washcoat of a heat resistant, ceramic catalyst support material.

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PERPENDICULAR MAGNETIC STORAGE MEDIUM

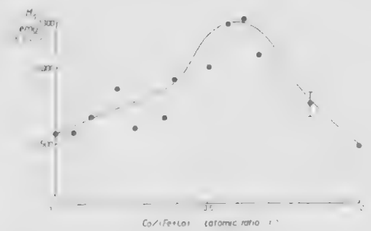
Shogo Nasu, Kobe, and Koji Saiki, Toyonaka, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 6, 1987, Ser. No. 23,039

Claims priority, application Japan, Mar. 18, 1986, 61-60184; Sep. 22, 1986, 61-224214

Int. Cl.[4] G11B *5/64*

U.S. Cl. 428—694 **6 Claims**



1. A perpendicular magnetic storage medium comprising a substrate and a perpendicular magnetic anisotropic film formed on the substrate, characterized in that the perpendicular magnetic anisotropic film is a film consisting of a sub-oxide of a metal having a composition which is described by a general formula $[(Fe_{1-x}Co_x)_{1-p}M_y]_{1-z}O_z$, wherein $0.01 \leqq x \leqq 0.75$, $0.001 \leqq y \leqq 0.30$, $0.05 \leqq z \leqq 0.50$ and M means at least one metal selected from the group consisting of Al, Cr, Mo, Ti and Zr, wherein the concentration of M at the surface of the film is more than 1 atom %; said film having an easy magnetization axis perpendicular to the plane of the film and an X-ray diffraction spectrum having both a peak of diffracted X-ray intensity caused by oxidized Fe and a peak of diffracted X-ray intensity caused by metal state Fe and Co and M.

4,797,331

MAGNETO-OPTICAL RECORDING MATERIAL

Atsuyuki Watada, Numazu, and Fumiya Ohmi, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

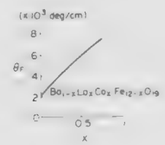
Filed Nov. 10, 1986, Ser. No. 928,378

Claims priority, application Japan, Nov. 19, 1985, 60-259384

The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.

Int. Cl.[4] G11B *7/24*

U.S. Cl. 428—694 **6 Claims**



1. A magneto-optical recording material consisting of magnetoplumbite type ferrite containing barium in which part of Ba is replaced by La and part of Fe is replaced by Co, wherein said barium magnetoplumbite type ferrite has the following formula:

$$Ba_{1-x}La_xCo_yFe_{12-y}O_{19}$$

wherein $0<x<1$, $x \simeq y$;
or has the following formula:

$$Ba_{1-x}La_xCo_yFe_{12-(y+z)}O_{19}$$

wherein $0<x<1$, $0<z<6$, M_I represents a metal element having 4, 5 or 6 valences, wherein when M_I is a 4-valence metal element, $y \simeq x+z$, when M_I is a 5-valence metal element, $y \simeq x+2z$, and when M_I is a 6-valence metal element, $y \simeq x+3z$;
or has the following formula:

$$Ba_{1-x}La_xCo_yM_{Iz}M_{IIw}Fe_{12-(y+z+w)}O_{19}$$

wherein $0<x<1$, $0<z<6$, M_I represents a metal element having 4, 5 or 6 valences, and M_{II} represents a metal element having 3 valences, wherein when M_I is a 4-valence metal element, $y \simeq x+z$, when M_I is a 5-valence metal element, $y \simeq x+2z$, and when M_I is a 6-valence metal element, $y \simeq x+3z$.

4,797,332

METHOD OF PREPARING CERAMIC SURFACES FOR WETTING THEREOF BY ALKALI METALS

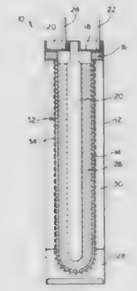
Peter Barrow, Alvaston, and Michael L. Wright, Allestree, both of England, assignors to Lilliwyte Societe Anonyme, Luxembourg

Filed Sep. 16, 1987, Ser. No. 97,521

Claims priority, application United Kingdom, Sep. 25, 1986, 8623071

Int. Cl.[4] H01M *10/39*

U.S. Cl. 429—104 **12 Claims**



1. A method of preparing a surface of a ceramic solid electrolyte conductor of alkali metal ions for wetting, in molten form, by the alkali metal whose ions are conducted by the ceramic, which method comprises doping the ceramic surface with an oxide of a transition metal.

4,797,333

ELECTROCHEMICAL CELL

Johan Coetzer, Pretoria, and Roger J. Wedlake, Johannesburg, both of South Africa, assignors to Lilliwyte Societe Anonyme, Luxembourg, Luxembourg

Filed Jun. 2, 1987, Ser. No. 57,368

Claims priority, application United Kingdom, Jun. 6, 1986, 8613800

Int. Cl.[4] H01M *6/00, 10/44*

U.S. Cl. 429—103 **30 Claims**

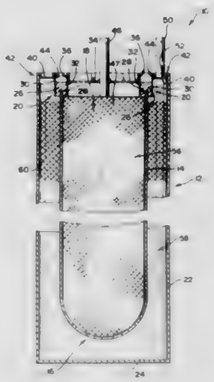
1. A method of making an electrochemical cell of the type comprising an anode compartment containing, at the operating temperature of the cell and when the cell is in its discharged state, a molten alkali metal anode, and a cathode compartment containing, at said operating temperature and in said discharged state, an alkali metal aluminium halide molten salt electrolyte which is also molten at the operating temperature of the cell, and having the formula $MalHal_4$ wherein M is the alkali metal of the anode and Hal is a halide, the cathode compartment containing also a cathode which comprises an electronically conductive electrolyte-permeable matrix which has dispersed therein an active cathode substance which includes a transition metal T selected from the group comprising Fe, Ni, Co, Cr, Mn and mixtures thereof, the matrix being impregnated with said electrolyte, and, separating the anode compartment from the cathode compartment, a separator which comprises a solid conductor of the ions of the alkali metal of the anode or a micromolecular sieve which contains said alkali metal sorbed therein, which method comprises loading, into a cathode compartment of a cell housing comprising an anode compartment separated from a cathode compartment by a separator which is a solid conductor of ions of alkali metal M or is a micromolecular sieve which contains alkali metal M sorbed therein,

a matrix precursor, capable of becoming an electronically conductive electrolyte-permeable matrix on the cell being subjected to at least one charge cycle;

an alkali metal aluminium halide molten salt electrolyte having the formula $MAlHal_4$ wherein M is the alkali metal of the separator and Hal is a halide;

an alkali metal halide MHal wherein M and Hal are respectively the same alkali metal and halide as in the molten salt electrolyte;

aluminium; and



an active cathode substance which includes a transition metal T selected from the group consisting Fe, Ni, Co, Cr, Mn and mixtures thereof,

thereby to make an electrochemical cell precursor wherein, when it is subjected to charging at a temperature at which the molten salt electrolyte and alkali metal M are molten, aluminium reacts with the alkali metal halide MHal to produce further said molten salt electrolyte and to form said alkali metal M, the alkali metal M passing through the separator into the anode compartment; and

after all the aluminium has reacted with the alkali metal halide to provide a cell in a discharged state, the active cathode substance is halogenated, with further alkali metal M being produced and passing through the separator into the anode compartment, the proportions of alkali metal halide MHal, molten salt electrolyte and aluminium loaded into the cathode compartment being selected so that when the cell is fully charged and all the available active cathode substance has been halogenated, the proportion of alkali metal ions and aluminium ions in the electrolyte is such that the solubility of the active cathode substance in the molten electrolyte is at or near its minimum.

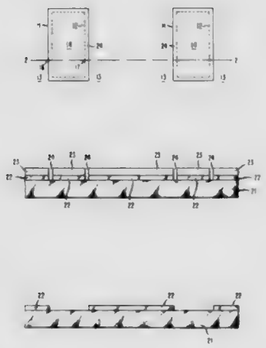
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,334

PATTERNING OPTICAL AND X-RAY MASKS FOR INTEGRATED CIRCUIT FABRICATION

William B. Glendinning, Red Bank, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 14, 1987, Ser. No. 133,582
Int. Cl.[4] G03F *1/00*
U.S. Cl. 430—5 10 Claims



1. A method of lithographic patterning of integrated circuit chip process mask plates and mask membranes comprising the steps of:

applying a thin layer of metal over a mask substrate;

covering the layer of metal with a layer of positive electron resist;

delineating the peripheral boundaries of the desired mask geometry using a direct-write spot electron beam;

said electron beam serving to expose the resist in the peripheral boundaries delineated by said electron beam;

developing and etching the mask substrate to remove the positive resist and the underlying metal in the exposed peripheral boundaries;

raster scanning the mask substrate with a low exposure-level intensity beam until a peripheral boundary is detected, the detection then serving to increase the beam intensity six or more times so as to expose the high intensity raster scanned positive resist;

said scanning and high intensity exposure continuing until the mating peripheral boundary is detected, the latter detection then serving to rapidly decrease the beam intensity to its former low exposure-level intensity;

developing the substrate to remove the positive resist subjected to the increased exposure-level beam intensity;

etching away the metal underlying the positive resist that was subject to said exposure-level beam intensity; and

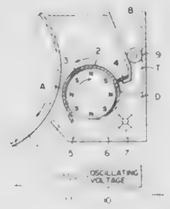
removing the remaining positive electron resist covering the substrate area outside of the geometry(s) circumscribed or delineated by said peripheral boundaries, said detection having an intrinsic delay so that the increase and decrease in beam intensity occurs a short predetermined time after a boundary has been encountered.

4,797,335

DEVELOPING METHOD FOR ELECTROSTATIC IMAGES USING COMPOSITE COMPONENT DEVELOPER UNDER NON-CONTACTING CONDITIONS

Seiichiro Hiratsuka; Satoshi Haneda, and Hisashi Shoji, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 859,859, May 1, 1986, abandoned, which is a continuation of Ser. No. 634,976, Jul. 27, 1984, abandoned. This application Sep. 10, 1987, Ser. No. 96,818
Claims priority, application Japan, Aug. 5, 1983, 58-142597; Aug. 10, 1983, 58-145031
Int. Cl.[4] G03G *15/09*
U.S. Cl. 430—35 12 Claims



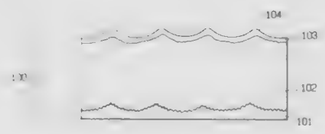
1. In a developing method wherein an image retainer, on which a latent electrostatic image is formed, and a developer feeding carrier of a composite developer, which comprises a toner and a carrier and contains a chargeable component, face each other across a gap formed between the surfaces thereof which is larger than the thickness of the layer of said developer, said latent electrostatic image being developed in this construction, the improvement which comprises an oscillating electric field formed in a development area wherein said gap is maintained, the oscillating waveform of said oscillating electric field being variable automatically based on the detection of a potential of the latent electrostatic image formed on said image retainer to provide a control of a density of the developed image.

4,797,336

LIGHT RECEIVING MEMBERS HAVING A-SI(GE,SN) PHOTOSENSITIVE LAYER AND MULTI-LAYERED SURFACE LAYER CONTAINING REFLECTION PREVENTIVE LAYER AND ABRASION RESISTANT LAYER ON A SUPPORT HAVING SPHERICAL DIMPLES WITH INSIDE FACES HAVING MINUTE IRREGULARITIES

Mitsuru Honda; Atsushi Koike, both of Chiba; Kyosuke Ogawa, Miye, and Keiichi Murai, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1986, Ser. No. 924,265
Claims priority, application Japan, Nov. 2, 1985, 60-246473
Int. Cl.[4] G03G *5/085*
U.S. Cl. 430—57 35 Claims



1. A light receiving member comprising a support and a light receiving layer comprising a photosensitive layer and a surface layer having a free surface; said support having a surface provided with irregularities composed of spherical dimples, each of said dimples having an inside face provided with minute irregularities; said photosensitive layer being composed of amorphous material containing silicon atoms and at least one selected form the group consisting of germanium atoms and tin atoms; said surface layer being multi-layered and having at least a reflection preventinve layer in the inside and an abrasion-resistant layer at the outermost side; and said reflection prevention layer and said abrasin-resistant layer having different refractive indices.

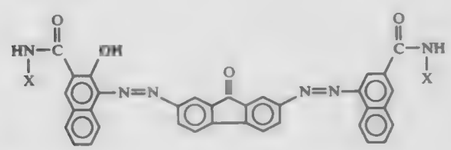
4,797,337

DISAZO PHOTOCONDUCTIVE IMAGING MEMBERS

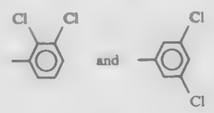
Kock-Yee Law, Fairport, and Ihor W. Tarnawskyj, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1987, Ser. No. 78,481
Int. Cl.[4] G03G *5/06*
U.S. Cl. 430—58 42 Claims

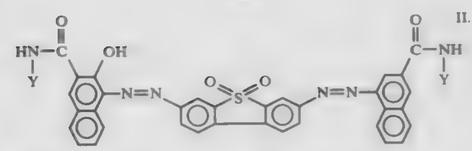
1. A photoconductive imaging member comprising a supporting substrate, a hole transport layer, and a photogenerating layer comprising disazo compounds selected from the group consisting of:



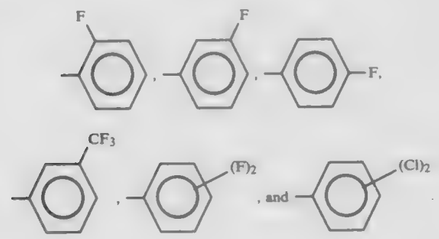
wherein X is selected from the group consisting of:



and



wherein Y is selected from the group consisting of:



4,797,338

PHOTOSENSITIVE MEMBER COMPRISING CHARGE GENERATING LAYER AND CHARGE TRANSPORTING LAYER

Syuji Iino, Hirakata; Hideo Hotomi, Suita; Noboru Seeki; Masanori Fujiwara, both of Osaka; Fumiko Uchino, Takatsuki, and Izumi Osawa, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 14, 1987, Ser. No. 95,930
Claims priority, application Japan, Sep. 16, 1986, 61-219005
Int. Cl.[4] G03G *5/10*
U.S. Cl. 430—58 4 Claims

1. A photosensitive member comprising:

an electrically conductive substrate;

a vacuum evaporated layer formed from phthalocyanine compounds serving as a charge generating layer; and

a plasma polymerized layer serving as a charge transporting layer comprising amorphous carbon containing hydrogen.

4,797,339

TONER FOR DEVELOPING ELECTROSTATIC IMAGES

Masatoshi Maruyama; Yukinobu Hasegawa, and Teyokichi Tange, all of Hiratsuka, Japan, assignors to Nippon Carbide Koyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1986, Ser. No. 924,738
Claims priority, application Japan, Nov. 5, 1985, 60-246322
Int. Cl.[4] G03G *9/08*
U.S. Cl. 430—109 19 Claims

1. A toner for developing an electrostatically charged image, comprising

(A) an inner layer comprising a resin ion complex comprising a resin particle-to-particle ionically crosslinked resin complex having a coloring agent and optionally a charge controlling agent and/or a magnetic material substantially dispersed therein, and

(B) an outer layer containing a flowability imparting agent.

4,797,340

DRY ELECTROPHOTOGRAPHIC TONER COMPRISING GRAFT COPOLYMER

Koichi Tanaka; Shigeo Aoyama; Yoshimi Amagai; Toshiaki Murofushi, and Takaaki Kimura, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 749,980, Jun. 28, 1985, abandoned. This application Jul. 9, 1987, Ser. No. 71,520
Claims priority, application Japan, Jun. 29, 1984, 59-134773
Int. Cl.[4] G03G *9/08*
U.S. Cl. 430—109 19 Claims

1. A dry toner for use in electrostatic latent image development comprising a colorant in a resin binder, wherein said resin binder comprises a graft copolymer comprising

(a) a crystalline main chain-polymer portion of at least one selected from the group consisting of ethylene, propylene, and vinyl acetate,

(b) an unsaturated polyester main chain-polymer portion containing —COOH groups, and

(c) a vinyl side chain-polymer portion, wherein at least one of the —COOH groups in the unsaturated polyester main chain polymer is modified with a nitrogen-containing functional group selected from an amine, an ammonium salt, a betaine, a pyridinium salt, and an azine, wherein the index of modification of —COOH groups in the polyester portion, as represented by the expression

$$\frac{A.V._0 - A.V.}{A.V._0} \times 100$$

wherein $A.V._0$ is the acid value of the polyester main chain polymer prior to the modification, and A.V. is the acid value of the polyester main chain polymer after the modification, is at least 10.

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4,797,341

LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY

Kenzo Tsubuko, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1986, Ser. No. 903,810
Claims priority, application Japan, Sep. 10, 1985, 60-200749
Int. Cl.[4] G03G 13/10
U.S. Cl. 430—114 5 Claims

1. A liquid developer for electrophotography comprising a coloring agent and toner particles dispersed in a highly insulating aliphatic hydrocarbon and/or halogenated hydrocarbon carrier liquid having a low dielectric constant, said toner particles having two particle size distributions of a mean small toner particle size in the range of 0.01 μm to 1 μm and a mean large toner particle size in the range of 2 μm to 30 μm, characterized in that said large toner particles in the range of 2 μm to 30 μm are prepared by using polytetrafluoroethylene as the main binder resin.

4,797,342

PROCESSES FOR THE PREPARATION OF LIQUID DEVELOPERS WITH LOW VAPOR PRESSURE COMPONENTS

Melvin D. Croucher, Oakville; Raymond W. Wong, Mississauga, and Stephan Drappel, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1987, Ser. No. 124,230
Int. Cl.[4] G03G 9/12
U.S. Cl. 430—137 19 Claims

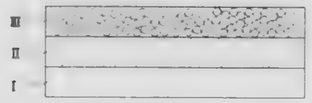
1. A process for the preparation of liquid developer compositions which comprises admixing molten resin components in a vehicle component possessing a vapor pressure of from about 0.01 to about 0.1 millimeter of mercury; thereafter adding thereto pigment particles; subsequently cooling and attriting the aforementioned resulting mixture thereby enabling entrapment of the vehicle in the developer composition; thereafter filtering and dispersing the resulting particles in a low viscosity oil; and adding to the formed composition a charge control director component.

4,797,343

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND

Taku Nakamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 27, 1987, Ser. No. 43,129
Claims priority, application Japan, Apr. 25, 1986, 61-96340
Int. Cl.[4] G03C 5/54, 1/68, 1/06
U.S. Cl. 430—138 11 Claims



1. A light-sensitive material comprising a light-sensitive layer which contains silver halide, a reducing agent and a polymerizabel compound containing carbon to carbon unsaturation and a layer containing a base or base precursor, both layers being provided on the same side of a support, wherein a barrier layer is provided between the light-sensitive layer and the layer containing a base or base precursor, said barrier layer keeping the base or base precursor from the light-sensitive layer and, when heated, allowing transmission of the base or base precursor therethrough.

3. The light-sensitive material as claimed in claim 1, wherein the polymerizable compound is contained in microcapsules which are dispersed in the light-sensitive layer.

4,797,344

ENCAPSULATED TONER HAVING SHELL WITH FIRST VINYL POLYMER WITH MN OF 2000-225000 AND SECOND VINYL POLYMER WITH MN OF 1000-15000

Toshiaki Nakahara, Tokyo; Ichiro Ohsaki, Kawasaki; Hisayuki Ushiyama, Hiratsuka; Masashi Kiuchi; Masuo Yamazaki, both of Kawasaki; Yasuhide Goseki, and Hisayuki Ochi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1986, Ser. No. 911,099
Claims priority, application Japan, Sep. 30, 1985, 60-214968
Int. Cl.[4] G03G 9/16
U.S. Cl. 430—138 20 Claims

1. An encapsulaed toner for developing electrostatic images, comprising microcapsules comprising:

a core particle and an outer shell coating the core particle;

the outer shell comprising a mixture having predominant components of a vinyl polymer A comprising a copolymer of a styrene monomer and a tertiary amino group-containing vinyl monomer having a number-average molecular weight of 2,000–225,000 and a vinyl polymer B comprising a copolymer of a styrene monomer and a tertiary amino group-containing vinyl monomer having a number-average molecular weight of 1,000–15,000 of different number-average molecular weights; the ratio of the number-average molecular weight of the vinyl polymer A (Mn_A) to that of the vinyl polymer B (Mn_B) being in the range of 2 to 15; the vinyl polymers A and B respectively having a ratio of weight-average molecular weight to number-average molecular weight of 5 or less and the weight ratio of the vinyl polymer A to the vinyl polymer B being in the range of 1:4 to 10:1.

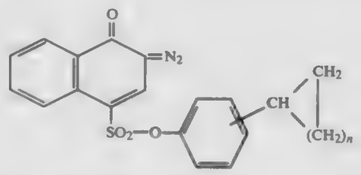
4,797,345

LIGHT-SENSITIVE 1,2-NAPHTHOQUINONE-2-DIAZIDE-4-SULFONIC ACID MONOESTERS OF CYCLOALKYL SUBSTITUTED PHENOL AND THEIR USE IN LIGHT-SENSITIVE MIXTURES

Alfred T. Jeffries, III, Providence, R.I., assignor to Olin Hunt Specialty Products, Inc., Palisades Park, N.J.

Filed Jul. 1, 1987, Ser. No. 68,397
Int. Cl.[4] G03C 1/54, 1/76; C07C 113/00
U.S. Cl. 430—165 18 Claims

1. A light-sensitive 1,2-naphthoquinone-2-diazide-4-sulfonic acid monoester of a cycloalkyl-substituted phenol corresponding to the formula:

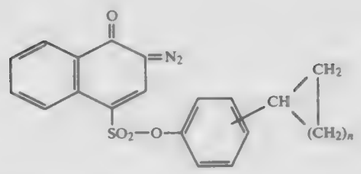


wherein n is from about 2 to about 10.

5. A light-sensitive mixture useful as a positive-working photoresist composition comprising in admixture:

(a) from about 50 to about 95 percent of at least one alkali-soluble resin; and

(b) from about 50 to about 5 percent of a light-sensitive 1,2-naphthoquinone-2-diazide-4-sulfonic acid monoester of a cycloalkyl-substituted phenol corresponding to the formula:

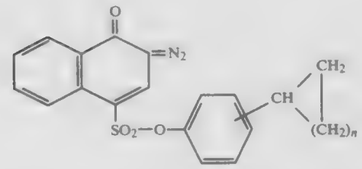


wherein n is from about 2 to about 10, said percentages of (a) and (b) are based on the non-volatile content of said mixture.

11. A coated substrate comprising a substrate material coated with a film of a light-sensitive mixture comprising in admixture:

(a) from about 50 to about 95 percent of at least one alkali-soluble resin; and

(b) from about 50 to 5 percent of a light-sensitive 1,2-naphthoquinone-2-diazide-4-sulfonic acid monoester of a cycloalkyl-substituted phenol corresponding to the formula:



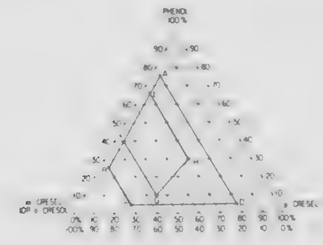
wherein n is from about 2 to about 10, wherein said percentages of (a) and (b) are based on the non-volatile content of said mixture.

4,797,346

LIGHT-SENSITIVE COMPOSITION FOR POSITIVE-TYPE LIGHT-SENSITIVE LITHOGRAPHIC PRINTING PLATES

Takeshi Yamamoto, Mitaka; Nobumasa Sasa, Sayama, and Miegi Nakano, Chofu, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 884,206, Jul. 10, 1986, abandoned, which is a continuation of Ser. No. 743,775, Jun. 12, 1985, abandoned. This application May 13, 1987, Ser. No. 51,224
Claims priority, application Japan, Jun. 20, 1984, 59-127187
Int. Cl.[4] G03C 1/60; G03F 7/08
U.S. Cl. 430—192 8 Claims



1. A light-sensitive composition for positive-type light-sensitive lithographic printing plates comprising an admixture of a light-sensitive o-quinonediazide compound present in an amount of from 30 to 95% by weight of said light-sensitive composition and a novolak resin present in an amount of from 5 to 60% by weight of the total solid components of said light-sensitive composition, wherein

said novolak resin comprises at least two different novolak resins, said novolak resins each being a resin obtained by the polycondensation or co-polycondensation of an aldehyde with at least one compound selected from the group consisting of phenol, m-cresol, o-cresol and p-cresol, and the ratios in mole percentages of the respective sums of the quantities of said phenol, the quantities of one or both of said m-cresol and the quantities of said p-cresol, which are constituents for the polycondensation or co-polycondensation of each said novolak resin contained in said light-sensitive composition, to the total of the quantities of all said constituents are from 5 to 75 mole % for said phenol, from 20 to 70 mole % for one or both of said m-cresol and said o-cresol and from 5 to 75 mole % for said p-cresol.

4,797,347

PROCESS FOR PRODUCING ELECTRICALLY CONDUCTIVE COATING

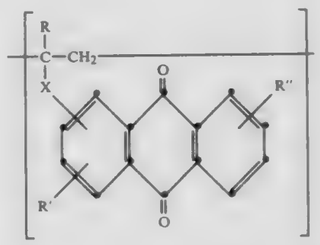
Jürgen Finter, Freiburg, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 837,851, Mar. 6, 1986, Pat. No. 4,677,155, which is a continuation of Ser. No. 445,404, Nov. 30, 1982, abandoned. This application Apr. 6, 1987, Ser. No. 34,367
Claims priority, application Switzerland, Nov. 30, 1981, 7653/81
The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.
Int. Cl.[4] G03C 5/00
U.S. Cl. 430—311 20 Claims

1. A process for the production of electrically conductive coatings or patterns, which comprises

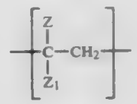
reducing the metal ions of an at least partly complexed polymer having an intrinsic viscosity of not less than 0.10 dl/g, measured at 25° C. in N,N-dimethylformamide, which consists of 1 to 40 mol % of recurring structural elements of the formula I

(I)



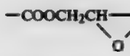
and 60 to 99 mol % of recurring structural elements of the formula II

(II)



in which R is hydrogen, methyl or ethyl, R′ and R″ independently of one another are hydrogen, C_1–C_4-alkyl, halogen, nitro or methoxy, X is —COO—, —CO—O—$(CH_2)_n$—, —CO—O—[$(CH_2)_n$—O]$_r$—CH_2—, —CO—O—[$(CH_2)_n$—O]$_r$—, —CO—O—[$CH_2CH(CH_3)O]_n$—, phenylene-CH_2—O—, —CO—O—[$(CH_2)_n$—O]$_r$—CO—, —CO—O—[$CH_2CH(CH_3)$ —O]$_n$CO—, —CO—NR—, phenylene-$CH_2O[(CH_2)_n$—O]$_r$—$(CH_2)_m$—, phenylene-

CH_2—O—$[CH_2)_n$—O]$_r$—CO—, —$COOCH_2CH(OH)CH_2OCO$—, —$COOCH_2CH(OH)CH_2O$— or —CO—O—$[CH_2CH(CH_3)O]_rCH_2$—, m is zero or 1, n is an integer from 1 to 12, r is an integer from 1to 4, Z is hydrogen, chlorine or methyl, Z_1 is hydrogen, chlorine, methyl, —CN, —COOH, —$CONH_2$, phenyl, methylphenyl, methoxyphenyl chclobexenyl, imidazolyl, pyrrolidonyl, —COO—alkyl having 1–12 C atoms in the alkyl moiety, —COOphenyl,



—COO—alkylene-OH having 2–12 C atoms in the alkylene moiety, —$COO(CH_2CH_2O)_pH$ or —$COO[CH_2CH(CH_3)O]_pH$, where p is 2–4, —OCOalkyl having 1–4 C atoms in the alkyl moiety, —OCOphenyol, —COalkyl having 1–4 C atoms in the alkyl moiety, C_{1-12}-alkoxy, phenoxy, hydroxymethylphenyl, —CONH—C_{1-4}-alkylene—OH or —COO—C_{1-4}-alkylene—N(Q') (Q''), Q' is hydrogen or C_{1-5}alkyl and Q'' is C_{1-5}-alkyl, and in which, in not less than 20% of the structural elements of the formula II, Z_1 is —COO—C_{2-12}-alkylene-OH, —$COO(CH_2CH_2O)_pH$, —$COO[CH_2CH(CH_3)O]_pH$, hydroxymethylphenyl, —CONH—C_{1-4}-alkylene-OH or —COO—C_{1-4}-alkylene-N-(Q')(Q''), and the structural elements of the formula II are at least partly complexed with metal ions of a metal of group VIII or Ib of the periodic table, with the provison that, if X is —CO—O—CH_2—, Z_1 is —$COOCH_2CH_2OH$ in not more than 80% of the structural elements of formula II, to zero-valent, non-conductive metal nuclei by action of light, and

depositing metal thereon without a current.

4,797,348

METHOD OF FORMING A POSITIVE RESIST PATTERN IN PHOTORESIST OF O-NAPHTHOQUINONE DIAZIDE AND BISAZIDE WITH UV IMAGING EXPOSURE AND FAR UV OVERALL EXPOSURE

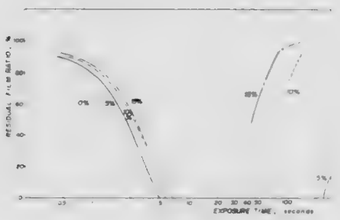
Yoichi Nakamura, Hiratsuka; Shiraki Yamamoto, Isehara; Takashi Komine, Yokohama; Akira Yokota, Yamato, and Hisashi Nakane, Kawasaki, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 935,592, Nov. 26, 1986, abandoned, which is a continuation of Ser. No. 690,584, Jan. 11, 1985, abandoned, which is a division of Ser. No. 541,570, Oct. 13, 1983, abandoned. This application Feb. 17, 1988, Ser. No. 161,213

Claims priority, application Japan, Oct. 13, 1982, 57-179325; Oct. 29, 1982, 57-190544; Oct. 29, 1982, 57-190545

Int. Cl.[4] G03F 7/26

U.S. Cl. 430—326 **4 Claims**



1. A method for forming a positive type resist pattern on a substrate by use of a dually photosensitive composition negatively photosensitive under a first condition of exposure to light and positively photosensitive under a second condition of exposure to light which comprises the steps of:

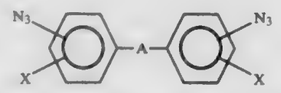
(a) forming a layer of the dually photosensitive composition in admixture with a novolac type phenolic resin on the substrate;

(b) subjecting the layer of the dually photosensitive composition to a pattern-wise exposure to light under the second condition of exposure;

(c) developing the layer of the dually photosensitive composition with an organic or inorganic alkaline solution to form a positive type resist pattern;

(d) subjecting the developed layer of the dually photosensitive composition to a whole-surface exposure to light under the first condition of exposure;

wherein the dually photosensitive composition comprises an admixture of an o-naphthoquinone diazide and novolac type phenolic resin based photoresist material of the positive type, and from 5 to 50 parts by weight per 100 parts by weight of the o-naphthoquinone diazide-based photoresist material on a solids basis, of a bis azide compound cross linkable by irradiation with far ultraviolet light in the wavelength region of 200 to 330nm represented by the general formula:



in which A is a divalent atom or group selected from the class consisting of an oxygen atom, a sulfur atom, a disulfide linkage S_2, a sulfone linkage SO_2 and a methylene group CH_2 and X is a hydrogen atom or a chlorine atom; and wherein the step (b) comprises subjecting layer of a dually photosensitive composition to pattern-wise exposure with ultraviolet light, and the step (d) comprises subjecting the layer of dually photosensitive composition to whole-surface exposure with far ultraviolet light, after developing, to produce a good heat and solvent resistant patterned resist.

4,797,349

METHOD FOR FORMING A COLOR IMAGE COMPRISING DEVELOPING A LIGHT SENSITIVE MATERIAL CONTAINING A SURFACTANT WITH A DEVELOPER NOT CONTAINING BENZYL ALCOHOL

Osamu Takahashi; Tadashi Ogawa; Minoru Sakai, and Masaharu Toriuchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 16, 1987, Ser. No. 39,203

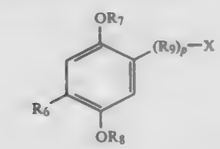
Claims priority, application Japan, Apr. 16, 1986, 61-85857

Int. Cl.[4] G03C 7/30

U.S. Cl. 430—372 **11 Claims**

1. A method for forming a color image which comprises imagewise exposing a color photographic material comprising a reflective support having thereon at least one photosensitive layer containing a color coupler capable of forming a dye image through its coupling reaction with an oxidation product of aromatic primary amine color developing agent and a silver halide emulsion and processing it with a color developing solution containing substantially no benzyl alcohol, wherein the color development is carried out under the condition that at least one substantially anionic surface active agent having an unsubstituted aliphatic group, a substituted aliphatic group excluding a fluorine-substituted aliphatic group, or an unsubstituted or substituted aromatic group as a hydrophobic group and —SO_3M, —SO_2M, —OSO_3M, or —OSO_2M, wherein M represents a hydrogen atom or a metallic atom or atomic group capable of being a cation, as a hydrophilic group in the molecule thereof is present in a total amount within a range of from 0.1 to 3 times the total weight of the color couplers applied in the photosensitive layer during the color development, and

wherein said anionic surface active agent comprises at least one compound represented by formula (IV)



(IV)

wherein R_6 represents a substituted or unsubstituted alkyl, alkoxy, aromatic or alkylthio group containing 6 or more carbon atoms; R_7 and R_8 each represents a hydrogen atom or an alkyl group containing from 1 to 18 carbon atoms; R_9 represents an alkylene group containing from 1 to 4 carbon atoms; p represents 0 or 1; and X represents —SO_3M, —SO_2M, —OSO_3M, or —OSO_2M, wherein M represents a hydrogen atom or a metallic atom or atomic group capable of being a cation.

4,797,350

PROCESS FOR FORMING DYE-IMAGE USING A DEVELOPER COMPRISING AN IMAGE STABILIZER, A HYDROXYLAMINE AND NOT CONTAINING BENZYL ALCOHOL

Keiji Ohbayashi; Shigeo Chino; Mitsuhiro Okumura, all of Hino, and Kaoru Onodera, Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1987, Ser. No. 35,078

Claims priority, application Japan, Apr. 16, 1986, 61-87489

Int. Cl.[4] G03C 7/16, 7/40

U.S. Cl. 430—380 **17 Claims**

1. A process for forming a dye-image comprising the steps of:

imagewise exposing a silver halide photographic light-sensitive material which comprises a support, provided thereon, with at least one silver halide emulsion layer containing a hydrophobic dye-forming coupler and at least one compound selected from the group consisting of compounds having sterically hindbbKred phenol group and polyalkylpiperidine compounds, and

color developing said silver halide photographic light-sensitive material with a color developer comprising an aromatic primary amine and an N,N-dialkylhydroxylamine or the water soluble acid salt thereof and not containing benzyl alcohol.

4,797,351

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Masao Ishikawa; Shigeharu Koboshi; Kazuyoshi Miyaoka, and Satoru Kuse, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

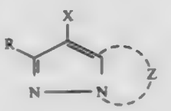
Filed Apr. 25, 1986, Ser. No. 856,779

Claims priority, application Japan, Apr. 30, 1985, 60-94760

Int. Cl.[4] G03C 7/30, 7/38

U.S. Cl. 430—387 **30 Claims**

1. A processing method of an image-wise exposed silver halide color photographic light-sensitive material comprising a replenishing process to replenish a color developer-replenisher to a color developer being used for said processing, wherein said silver halide color photographic material comprises at least one emulsion layer comprising a core-shell structural silver halide grain containing not less than 3 mol% of silver iodide and a magenta coupler represented by the following general formula [I], and said color developer replenisher contains 0 to 3.0×10^{-3} mol of bromide per liter and a replenishing volume of said color developer-replenisher to be replenished to said color developer is 0.5 to 9 ml per 100 cm^2 of said silver halide color photographic light-sensitive material:



[I]

wherein,

Z represents a group of non-metallic atoms necessary to form a nitrogen-containing heterocyclic ring;

X represents a hydrogen atom or a substituent which is, upon a reaction with an oxidation product of a color developing agent, capable of being released from the coupler residue;

and R represents a hydrogen atom, substituent.

4,797,352

METHOD OF PROCESSING A SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITJVE MATERIAL

Shigeharu Koboshi, and Masayuki Kuroyama, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 739,378, May 30, 1985, abandoned. This application Jun. 19, 1986, Ser. No. 878,390

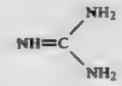
Claims priority, application Japan, Jun. 8, 1984, 59-116672

Int. Cl.[4] G03C 5/38, 7/42

U.S. Cl. 430—421 **7 Claims**

1. A method of processing an imagewise exposed silver halide photographic light-sensitive material characterized in that said material is developed and then processed with a first liquid capable of fixing and is, in succession, processed with a second liquid capable of stabilizing, without applying any intervening washing step, and containing at least one of the following compounds:

(A) a substituted or unsubstituted guanidine compound represented by

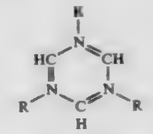


(B) a morpholine compound;

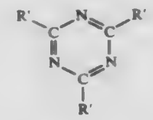
(C) a substituted or unsubstituted 2-carbonyl-amino-benzimidazole;

(D) A quaternary onium salt compound;

(E) a triazine compound represented by the following Formula (1) or (2)



(1)



(2)

wherein R is an alkyl group and R' is a halogen, amino group, alkyl group, or thioether group; or

(F) an oxazolone compound containing at least one each of N, O, and C═O in the five-membered ring thereof;

and wherein a ratio of a volume of said first liquid to a volume of said second liquid is not less than 1/2,000.

5. The method of processing an imagewise exposed silver

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halide photographic light-sensitive material as claimed in claim 1 wherein a multistage stabilizing tank counter-flow system is used comprising a plurality of individual stabilizing tanks.

4,797,353

METHOD FOR DEVELOPMENT OF SILVER HALIDE PHOTOGRAPHIC MATERIALS UTILIZING REDUCED AMOUNTS OF ORGANIC SUBSTANCES

Sawito Yamada; Hiroshi Kawasaki, and Masaki Satake, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 10, 1987, Ser. No. 94,782

Claims priority, application Japan, Sep. 10, 1986, 61-213503; Dec. 15, 1986, 61-298405

Int. Cl.[4] G03C *1/02, 1/76, 1/495, 5/24*

U.S. Cl. 430—434 **17 Claims**

1. A method for processing a silver halide light-sensitive material comprising a support having thereon at least one silver halide emulsion layer with an automatic developing machine which comprises developing an imagewise exposed silver halide light-sensitive material, wherein an amount of organic substances remaining in at least one of the emulsion layer or other hydrophilic colloid layers comprising a surface protective layer after said processing with said automatic developing machine, is not more than about 90 wt% of the weight of said organic substances prior to said processing, said organic substances being selected from the group consisting essentially of polyacrylamide, polyvinyl alcohol, polyvinyl pyrrolidone, Dextran and gelatin of the type which is free from cross-linking upon reaction with a hardener.

4,797,354

SILVER HALIDE EMULSIONS COMPRISING HEXAGONAL MONODISPERSE TABULAR SILVER HALIDE GRAINS

Mitsuo Saitou; Shigeharu Urabe, and Katsuhisa Ozeki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 6, 1987, Ser. No. 23,040

Claims priority, application Japan, Mar. 6, 1986, 61-48950; Dec. 16, 1986, 61-299155

Int. Cl.[4] G03C *1/02*

U.S. Cl. 430—567 **8 Claims**



1. A silver halide emulsion comprising a dispersion medium and silver halide grains, wherein the projected area of hexagonal tabular silver halide grains having as the basal planes having an adjacent edge ratio of 2/1 to 1/1 accounts for from 70% to 100% of the projected area of the whole silver halide grains, and further said hexagonal tabular silver halide grains are monodisperse grains wherein the average aspect ratio of the hexagonal tabular silver halide grains is from 2.5/1 to 20/1.

4,797,355

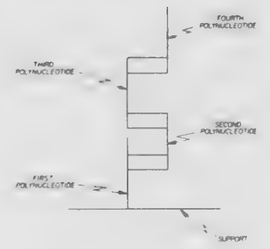
METHODS FOR ATTACHING POLYNUCLEOTIDES TO SUPPORTS

Yitzhak Stabinsky, Boulder, Colo., assignor to Amgen Inc., Thousand Oaks, Calif.

Filed Jun. 13, 1985, Ser. No. 744,507

Int. Cl.[4] C12Q *1/68;* **G01N** *33/566*

U.S. Cl. 435—6 **3 Claims**



1. A method for a hybridization assay comprising the steps of:

attaching a first single-stranded polynucleotide to a support so that the first single-stranded polynucleotide has a first free end;

hybridizing a first portion of a second single-stranded polynucleotide with the first single-stranded polynucleotide so that the second single-stranded polynucleotide has a free single-stranded end;

connecting by hybridization a third single-stranded polynucleotide to a second portion of the second single-stranded polynucleotide, separate and distinct from the first portion of the second single-stranded polynucleotide, so that the third single-stranded polynucleotide has a first end adjacent the first end of the first single-stranded polynucleotide;

ligating the first end of the first single-stranded polynucleotide to the first end of the third single-stranded polynucleotide to form a probe polynucleotide bound to the support;

denaturing the second single-stranded polynucleotide from the probe polynucleotide; and

immobilizing a fourth polynucleotide constituting a target analyte by hybridization to the probe polynucleotide.

4,797,356

MONOCLONAL ANTIBODIES SPECIFIC TO GLACTOSYLTRANSFERASE ISOENZYME II AND THEIR USE IN CANCER IMMUNOASSAYS

Alan E. Brandt, Redwood City, and Morito Uemura, Menlo Park, both of Calif., assignors to Konishiroku Photo Industries, Co., Ltd, Japan

Filed Dec. 2, 1985, Ser. No. 803,818

Int. Cl.[4] G01N *33/53, 33/577;* **G07K** *15/14*

U.S. Cl. 435—7 **11 Claims**

1. A monoclonal antibody to galactosyltransferase II that has no measurable cross-reactivity with galactosyltransferase I.

4,797,357

LIGHT-STABLE REDUCIBLE COMPOUNDS AND ANALYTICAL COMPOSITIONS, ELEMENTS AND METHODS UTILIZING SAME

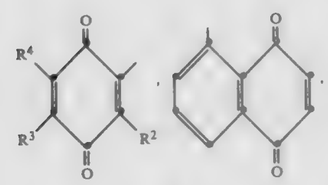
Albert J. Mura, and Paul B. Merkel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

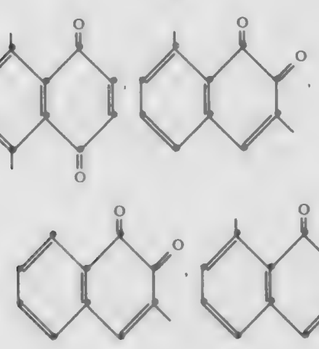
Filed May 30, 1986, Ser. No. 868,479

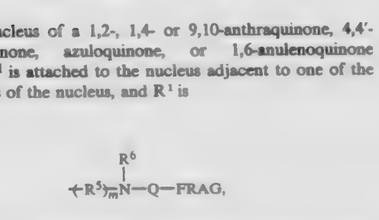
Int. Cl.[4] C12Q *1/04;* **C07C** *50/00*

U.S. Cl. 435—34 **18 Claims**

1. A reducible compound of the structure CAR—$R^1)_n$ wherein n is 1 or 2, CAR— is a substituted or unsubstituted aromatic or quinone nucleus selected from the group consisting of







and the nucleus of a 1,2-, 1,4- or 9,10-anthraquinone, 4,4'-diphenoquinone, azuloquinone, or 1,6-anulenoquinone wherein R^1 is attached to the nucleus adjacent to one of the oxo groups of the nucleus, and R^1 is

R^2 and R^4 are independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl or an electron withdrawing group,

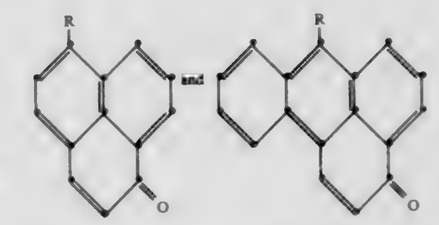
R^3 is the same as R^1, hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl or an electron withdrawing group, provided that at least one of R^2, R^3 and R^4 is an electron withdrawing group, or R^3 and R^4, taken together, represent the atoms necessary to complete a substituted or unsubstituted strained fused carbocyclic ring,

R^5 is substituted or unsubstituted alkylene of 1 or 2 carbon atoms,

R^6 is a substituted or unsubstituted organic group having a molecular weight of at least 40, or together with R^5 forms a divalent substituted or unsubstituted heterocyclic group having at least 5 atoms in the ring,

Q is carbonyl or thiocarbonyl,

FRAG is a moiety derived from a phenalenone or benzphenalenone dye selected from the group consisting of



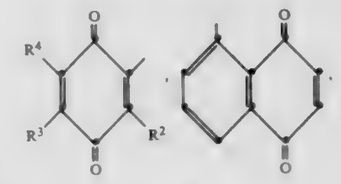
wherein R is hydroxy or mercapto, and

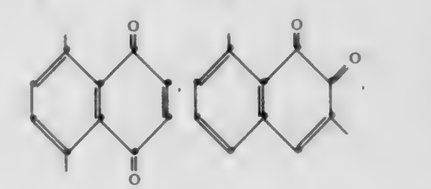
m is 0 or 1,

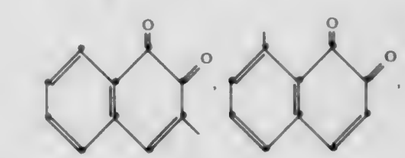
provided that when R^1 is replaced with H, CAR-H has an $E_{\frac{1}{2}}$ of at least about +100 mV when measured in water using a normal hydrogen electrode as a standard.

14. A method for the determination of an analyte comprising the steps of:

A. at a pH of 9 or less, contacting a sample of a liquid suspected of containing an analyte with a reducible compound of the structure CAR—$R^1)_n$ wherein n is 1 or 2, CAR— is a substituted or unsubstituted aromatic or quinone nucleus selected from the group consisting of

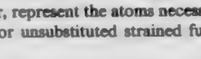






and the nucleus of a 1,2-, 1,4- or 9,10-anthraquinone, 4,4'-diphenoquinone, azuloquinone, or 1,6-anulenoquinone wherein R^1 is attached to the nucleus adjacent to one of the oxo groups of the nucleus, and

R^1 is

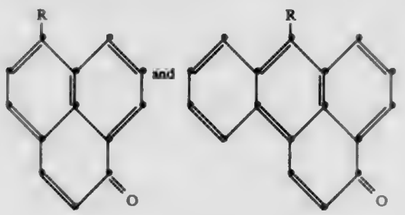


R^2 and R^4 are independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl or an electron withdrawing group,

R^3 is the same as R^1, hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl or an electron withdrawing group, provided that at least one of R^2, R^3 and R^4 is an electron withdrawing group, or R^3 and R^4, taken together, represent the atoms necessary to complete

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a substituted or unsubstituted strained fused carbocyclic ring,
R^5 is substituted or unsubstituted alkylene of 1 or 2 carbon atoms,
R^6 is a substituted or unsubstituted organic group having a molecular weight of at least 40, or together with R^5 forms a divalent substituted or unsubstituted heterocyclic group having at least 5 atoms in the ring,
Q is carbonyl or thiocarbonyl,
FRAG is a moiety derived from a phenalenone or benzphenalenone dye selected from the group consisting of



wherein R is hydroxy or mercapto, and
m is 0 or 1,
provided that when R^1 is replaced with H, CAR—H has an $E_{\frac{1}{2}}$ of at least about +100 mV when measured in water using a normal hydrogen electrode as a standard, and
B. determining the phenalenone or benzphenalenone dye released as a result of the presence of said analyte.

4,797,358
MICROORGANISM OR ENZYME IMMOBILIZATION WITH A MIXTURE OF ALGINATE AND SILICA SOL
Hiroshi Motai; Yaichi Fukushima; Katsumichi Osaki, all of Noda; Katutoshi Okamura, Nagoya, and Kazutaka Imai, Owariasahi, all of Japan, assignors to Kikkoman Corporation, Noda and Fuji-Davison Chemical, Ltd., Aichi, both of, Japan
Filed May 28, 1985, Ser. No. 738,181
Int. Cl.[4] C12N *11/14, 11/02, 11/10, 11/04*
U.S. Cl. 435—176 **8 Claims**

1. A process for preparing an immobilized microorganism or enzyme which comprises mixing a starting microorganism or enzyme in the presence of water with an alginate selected from the group consisting of sodium alginate, potassium alginate and ammonium alignate and a silica sol, said silica sol havig a silica colloid particle diameter in the range of from 1 nm to 100 nm, a water solvent, and a pH in the range of 2 to 11, to obtain a liquid mixture having a pH of 3 to 10and containing an alginate concentration of 0.5 to 3.5% (w/v) and a silica concentration originating from the silica sol of 0.5 to 35% (w/v) selected from the group consisting of calcium chloride, aluminum chloride, calcium acetate and aluminum sulfate in the form of an aqueous solution to gel the mixture.

4,797,359
HEAT SHOCK REGULATED PRODUCTION OF SELECTED AND FUSED PROTEINS IN YEAST
David B. Finkelstein, Dallas, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.
Filed May 10, 1983, Ser. No. 493,251
Int. Cl.[4] C12P *21/00, 21/02;* **C12N** *5/00;* **C07H** *15/12*
U.S. Cl. 435—68 **15 Claims**

1. A process for producing a transformed *S. cerevisiae* yeast microorganism capable of heat regulated synthesis of a selected unfused protein, which comprises:
(1) cleaving DNA having a heat shock inducible gene of a *S. cerevisiae* yeast microorganism to produce a promoter sequence of said heat shock inducible gene and excluding the structural gene sequence coding for the heat shock protein;
(2) preparing a recombinant transfer vector by combining a suitable transfer vector with said promoter sequence obtained in step (1) and a DNA fragment comprising a DNA sequence encoding for said selected heterologous protein, said transfer vector being capable of replication in a host yeast microorganism, said promoter sequence and said DNA fragment being capable of recombination;
(3) transforming said host yeast microroganism with said recombinant transfer vector;
(4) culturing said transformed host yeast microorganism; and
(5) selecting a transformed host microorganism capable of heat regulated synthesis of said selected unfused heterologous protein.

4,797,360
CONVERSION OF SUCROSE TO FRUCTOSE AND ETHANOL
Horst W. Doelle, Kenmore, Australia, assignor to The University of Queensland, Australia
Continuation of Ser. No. 594,580, Mar. 29, 1984, abandoned. This application Dec. 2, 1986, Ser. No. 936,764
Claims priority, application Australia, Sep. 27, 1983, PG1587
Int. Cl.[4] C12P *19/02, 7/06, 7/14;* **C12N** *1/20*
U.S. Cl. 435—105 **17 Claims**

1. A method for the production of fructose and ethanol from sucrose, comprising the step of fermenting sucrose, using the microorganism *Zymomonas mobilis* in the presence of a fermentation medium wherein the concentration of sucrose is greater than 30% by weight, to produce a fermentation product consisting essentially of ethanol and fructose under semi-anaerobic conditions.

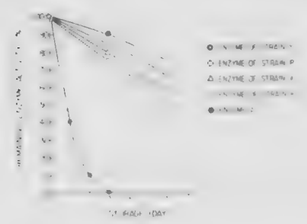
4,797,361
MICROORGANISM AND PROCESS
Bland S. Montenecourt, Bloomsbury, N.J., assignor to Lehigh University, Bethlehem, Pa.
Continuation of Ser. No. 868,168, May 22, 1986, abandoned, which is a continuation of Ser. No. 544,819, Oct. 24, 1983, abandoned. This application Sep. 11, 1987, Ser. No. 96,766
Int. Cl.[4] C12N *9/20, 9/22, 9/26, 9/30, 9/42, 9/58, 1/14, 1/22*
U.S. Cl. 435—198 **10 Claims**

3. A process utilizing *Trichoderma reesei* RL-P37 for the production of an extracellular glycoprotein enzyme, from the group consisting of cellulases, laminarinases, amylase, xylanases and pectinases, said process comprising culturing the microbial strain RL-P37 and permitting said cultured strain to secrete said enzyme.

4,797,362
ALKALINE PROTEASES AND MICROORGANISMS PRODUCING SAME
Keiji Takeuchi, Tokyo; Takashi Nishino; Motoyasu Odera, both of Odawara; Hisao Shimogaki, Minami-Ashigara, and Tahee Negi, Fujisawa, all of Japan, assignors to Lion Corporation, Tokyo, Japan
Filed Jun. 3, 1986, Ser. No. 870,018
Claims priority, application Japan, Jun. 6, 1985, 60-123021; Jun. 6, 1985, 60-123022; Dec. 20, 1985, 60-286944
Int. Cl.[4] C12N *9/54, 1/20, 9/50, 9/56, 9/52*
U.S. Cl. 435—221 **11 Claims**

1. Alkaline protease Ya having the following physicochemical properties:
a. activity: decomposes various proteins in highly alkaline conditions,
b. substrate specificity: remarkably specific to insoluble proteins, particularly to keratin,
c. optimal pH: pH 10.0 to 12.5 when reacted at 35° C. for 10 minutes on a casein substrate,
d. pH range for stability: pH 6.5 to 13.0 when incubated at 25° C. for 24 hours on a casein substrate,
e. optimal temperature: 70° C. when reacted at pH 10.5 on a casein substrate,

f. thermal stability: at least 90% of the activity remains after incubation at pH 10.5 and 60° C. for 10 minutes,
g. absorption spectrum: maximum absorption at 276 nm in 50 mM Tris-HCl buffer of pH 8.0,
h. effect of metal ions: the activity is inhibited by Hg^{2+} ion and thermal stability of the enzyme is increased by Ca^{2+} ion when casein is used as a substrate,
i. effect of inhibitors: when casein used as a suostrate, the activity is not inhibited by EDTA (ethylenediaminetetra-



acetate) and PCMB (p-chloromercury benzoate), but inhibited by DFP (diisopropylfluorophosphate) and PMSF (phenylmethylsulfonyl fluoride),
j. effect of surfactants: when stored in heavy duty liquid detergent at 40° C. for one month, the full activity remains at pH 9.0 and 50% of the activity at pH 10.5,
k. molecular weight: 21,000 (gel filtration method using Toyopearl HW-55), and
l. isoelectric point: 10.1 (isoelectric focusing electrophoresis method using Pharmalyte 3-10).

4,797,363
BACTERIOPHAGES AS RECOGNITION AND IDENTIFICATION AGENTS
Marius C. Teodorescu, Westchester, and Alexandre M. Gaspar, Chicago, both of Ill., assignors to Board of Trustees, University of Illinois, Urbana, Ill.
Continuation of Ser. No. 591,136, Mar. 19, 1984, abandoned. This application Jul. 14, 1986, Ser. No. 885,328
Int. Cl.[4] C12N *7/00, 7/02, 13/00;* **C12Q** *1/70*
U.S. Cl. 435—235 **6 Claims**

1. A method for preparing a bacteriophage binding through a head segment to molecular or cellular materials, comprising the steps of:
(a) mixing the bacteriophage, having both head and tail segments, with bacteria;
(b) irrading the mixture with ultraviolet light to effect mutation of the bacteriophage;
(c) nultiplying the mutant bacteriophage in the presence of bacteria binding through a tail segment to molecular of cellular material;
(d) purifying the population of nutant bacteriophage;
(e) binding the pruified mutant bacteriophage to the cellular material or to the molecular material; and
(f) multiplying the bound mutant bacteriophage in bacteria.

4,797,364
PROCESS FOR PREPARING CONCENTRATED AMOUNTS OF LYOPHILIZED MICROORGANISMS
Jean Amen, Versailles, and Michel Caban, Coublevie Voiron, both of France, assignors to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Continuation-in-part of Ser. No. 663,986, Oct. 23, 1984, abandoned. This application May 5, 1987, Ser. No. 46,261
Claims priority, application France, Oct. 27, 1983, 83 17156
Int. Cl.[4] C12N *1/00, 1/02*
U.S. Cl. 435—243 **11 Claims**

1. In a process for preparing microorganisms, of the type comprising the steps of: supplying a culture medium, which was previously seeded and maintained at a temperature of between 25° C. and 45° C. with a nutritive substrate comprising lactose and yeast, a neutralizing agent selected to maintain the pH of the culture medium at a constant value between 5.5 and 7.5, the whole being diluted in water; adjusting the supplies of substrate and water relative to the neutralizing agent based on a determination of the concentration of inhibiting agent generated by the microorganisms, said inhibiting agent retarding the subsequent growth of microorganisms as a function of its concentration; and effecting an ultrafiltration operation for reducing the quantity of said inhibiting agent while maintaining a constant volume of the culture medium, the improvement comprising the steps of:
(a) ceasing the supply of nutritive substrate and water, while maintaining the pH at said constant value by supplying said neutralizing agent;
(b) continuing the ultrafiltration operation simultaneouly with cooling at a temperature between 15° C. and 20° C. to obtain a primary concentration of microorganisms between 40 and 80 kg dry weight of microorganisms per cubic meter;
(c) washing said primary concentration with a washing solution comprising mineral salts and amino acids;
(d) ultrafiltering said washed primary concentration to a final concentration between 90 and 220 kg dry weight of microorganisms/cubic meter;
(e) cooling the said final concentration to a temperature of 5° C.; and
(f) lyophilizing said final concentration.

4,797,365
ACTIVE DRIED YEAST
Seymour Pomper, Stamford; Gary W. Cole, Ridgefield, both of Conn., and James R. Davis, Yorktown Heights, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.
Filed Jan. 22, 1985, Ser. No. 693,045
Int. Cl.[4] C12N *1/18*
U.S. Cl. 435—256 **10 Claims**

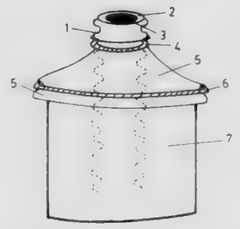
1. In a process for the preparation of active dried yeast comprising the steps of treating a yeast cream with an osmotically active salt solution, filtering to separate yeast from the yeast cream, washing the separated yeast with water, and drying the washed yeast, the improvement which comprises employing as said osmotically active salt solution an aqueous solution comprising calcium or magnesium chloride present in a concentration such that the amount of calcium or magnesium cation present is from about 0.1 percent to about 5 percent by weight based on the weight of yeast cream being treated.
6. A product produced according to the process of claim 1.

4,797,366
GAS TREATMENT AND RESIN REGENERATION PROCESS
Constant J. van Lookeren-Campagne, Woking, and Edward D. A. Obeng, Cobham, both of England, assignors to Shell Oil Company, Houston, Tex.
Filed Feb. 9, 1987, Ser. No. 12,454
Claims priority, application United Kingdom, Feb. 17, 1986, 8603842
Int. Cl.[4] D06M *16/00;* **A61L** *9/01*
U.S. Cl. 435—264 **7 Claims**

1. A process for the removal of hydrogen sulphide from contaminated gas which comprises treating the gas with a cation exchange resin doped with ions of a metal selected from magnesium, calcium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, cadmium and lead, and regenerating the resin by treatment thereof with an oxidising microorganism.

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4,797,367
AEROBIC COMPOSTING APPARATUS
John A. Pinder, 3 Albacore Crescent, Scarborough, Ontario, Canada M1H 2L2
Filed Aug. 14, 1987, Ser. No. 84,814
Int. Cl.[4] C12M *1/04*; B01J *1/00*
U.S. Cl. 435—313 10 Claims

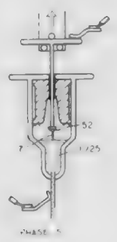


1. A composting apparatus comprising, in combination; (a) a compost containable container, and (b) a hollow tube-like structure with improvements in said hollow tube like structure including apertured corrugated side walls and including improved means enabling air admission while excluding wastes and pests from the hollow tube-like structure, said compost containable container having an access opening in an upper wall portion thereof providing access to the interior of the container, and the hollow tube-like structure being releasably installed in said access opening so as to be attachable to and detachable from the upper wall portion of the said container and on being attached to the said container substantially closing at least part of said access opening and said hollow tube-like structure including an air admitting portion, said portion having installed therein at least one member suitable for excluding flying insects and including, beyond that necessary to exclude flying insects larger than one tenth inch in their smallest dimension, means enabling the said member to resist displacement from the air admitting portion, said hollow tube-like structure being installed in the container, said air admitting portion being in communication with the atmosphere exteriorly of said hollow tube-like structure and exteriorly of said container and with the atmosphere interiorly of said hollow tube-like structure, and said hollow tube-like structure also including an air conveying portion, and whereupon the hollow tube-like structure being installed in the access opening of the container, that portion extending into the said container having apertured side walls permitting air in the interior of the hollow tube-like structure to be in communication with air exteriorly of the said hollow tube like structure.

4,797,368
ADENO-ASSOCIATED VIRUS AS EUKARYOTIC EXPRESSION VECTOR
Barrie J. Carter, Kensington, Md., and Jon D. Tratschin, Berne, Switzerland, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Filed Mar. 15, 1985, Ser. No. 712,236
Int. Cl.[4] C12N *7/00, 15/00*; C12P *19/34, 21/00*
U.S. Cl. 435—320 4 Claims

1. A vector comprising part of AAV DNA contained in a plasmid and capable of being packaged into AAV particles and functioning as a vector for stable maintenance or expression of a gene or a DNA sequence in eukaryotic cells when under control of an AAV transcription promotor.

4,797,369
METHOD AND APPARATUS FOR DETECTING A BLOOD CLOT
Michael Mintz, Edison, N.J., assignor to Internstional Technidyne Corp., Edison, N.J.
Filed Apr. 5, 1985, Ser. No. 720,575
Int. Cl.[4] G01N *33/86*
U.S. Cl. 436—69 10 Claims

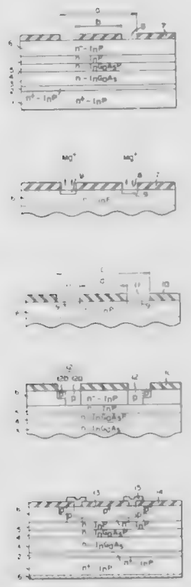


1. A method of detecting the formation of fibrin clots in whole blood or blood plasma comprising the steps of:
dispensing a sample of blood to be analyzed in a container,
moving a probe having a hydrophilic tip into said dispensed sample to cause a first part of said sample to adhere to said probe tip with a second part remaining in said container,
repeatedly moving said first part of said sample into said second part from a given fixed point at a given distance from said second part and out of said second part to repeatedly join and separate said first and second parts, a fluid bridge being formed between said parts by surface tension and during movement of said first part over a portion of said given distance away from said second part, said given distance being selected so that said fluid bridge collapses when said first part is separated from said second part by said given distance unless a fibrin clot is aligned and entrained within said bridge such that said clot connects said first part to said second part at said given distance,
applying an electrical potential between said parts when said first and second parts are separated at said given distance,
monitoring the electrical current between said first and second parts when said electrical potential is applied,
providing a signal when an electrical current is detected between said first and second parts indicative of the presence of an electrically conductive path between said first and second parts, said path comprising at least one fibrin clot simultaneously connected between both said first and second parts and entrained within said bridge when said first and second parts are separated at said given distance.

4,797,370
ANTIBODY PREPARATION WITH SPECIFICITY FOR 4-(2-AMINOETHYL) IMIDAZOYL GROUP MANUFACTURE AND USE OF THE ANTIBODY PREPARATION
Asta B. Berglund; Eva B. Akerblom, both of Upsala, and Anders J. Hedin, Täby, all of Sweden, assignors to Pharmacia AB, Upsala, Sweden
PCT No. PCT/SE86/00029, § 371 Date Sep. 24, 1986, § 102(e) Date Sep. 24, 1986, PCT Pub. No. WO86/04420, PCT Pub. Date Jul. 31, 1986
PCT Filed Jan. 24, 1986, Ser. No. 914,825
Claims priority, application Sweden, Jan. 24, 1985, 8500340
Int. Cl.[4] G01N *33/531, 33/532, 33/543, 33/577*
U.S. Cl. 436—518 17 Claims

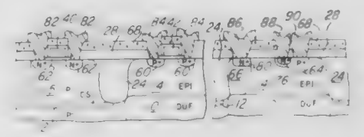
1. An anti-histamine antibody preparation in which a substantial part of the anitigen-binding entities that possess immunological affinity for histamine also possess immunological affinity for an aliphatically bound 4-(2-aminoethyl)imidazolyl group.

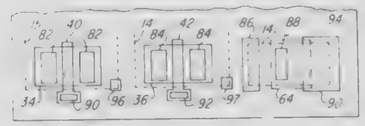
4,797,371
METHOD FOR FORMING AN IMPURITY REGION IN SEMICONDUCTOR DEVICES BY OUT-DIFFUSION
Fumihiko Kuroda, Kashiwa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 11, 1987, Ser. No. 131,732
Claims priority, application Japan, Feb. 26, 1987, 62-43567
Int. Cl.[4] H01L *21/383, 21/425*
U.S. Cl. 437—2 20 Claims



1. A method for forming an impurity region in a semiconductor device, in particular, a method including the following processes (a) through (c),
(a) a process that forms at least one second conductive type impurity doped region by means of doping second conductive type impurity selectively to a predetermined region of a first conductive type semiconductor layer constituting a semiconductor substrate;
(b) a process that forms on the surface of said semiconductor substrate a diffusion mask having a first opening for exposing at least one of said second conductive type impurity regions and having second opening for exposing a part at least one of said first conductive type semiconductor layer; and
(c) a process that forms a low concentration second conductive type impurity region by out-diffusing through said first opening the second coductive type impurity in said second conductive type impurity region and doping the out-diffused impurity through said second opening to said first conductive type semiconductor layer, by means of heat treating.

4,797,372
METHOD OF MAKING A MERGE BIPOLAR AND COMPLEMENTARY METAL OXIDE SEMICONDUCTOR TRANSISTOR DEVICE
Douglas P. Verret, Sugarland, Tex.; Michael C. Smayling, Freising, Fed. Rep. of Germany; Abnash C. Sachdeva, Houston, and Stephen A. Keller, Sugarland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation-in-part of Ser. No. 793,881, Nov. 1, 1985, abandoned. This application Oct. 24, 1986, Ser. No. 922,961
Int. Cl.[4] H01L *21/22, 21/265*
U.S. Cl. 437—034 28 Claims





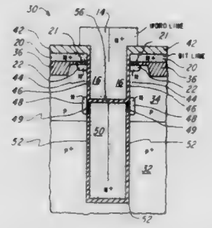
1. A method of making a merged bipolar and field effect transistor on a semiconductor substrate of a first conductivity type, comprising:
forming diffused buried DUF regions of a second conductivity type in said substrate;
growing an epitaxial layer of said second conductivity type over said substrate;
forming FET and bipolar dielectrically isolated isolation regions in said epitaxial layer; at least one FET isolation region being formed over one of said DUF regions;
forming a gate within said FET isolation region;
implanting a source and drain within said FET isolation region;
implanting a base in said bipolar isolation region substantially concurrently with the implanting of said source and drain in said FET isolation region;
protecting said gate from being implanted during said source, drain and base implants;
implanting a collector in said bipolar isolation region;
passivating the surface of the structure formed from the foregoing method steps, with a surface gettering material;
heating said structure so as to cause said collector implant to merge with the surface of said epitaxial layer and with said DUF region, said heating also causing activation of said source, drain, and base implants;
selectively etching away said gettering material; and
implanting an emitter in said bipolar isolation region.

4,797,373
METHOD OF MAKING DRAM CELL WITH TRENCH CAPACITOR
Satwinder S. Malhi, Garland, and Gordon P. Pollack, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 873,466, Jun. 6, 1986, abandoned, which is a division of Ser. No. 666,715, Oct. 31, 1984, abandoned. This application Nov. 12, 1987, Ser. No. 122,560
Int. Cl.[4] H01L *27/10, 21/302*
U.S. Cl. 437—60 5 Claims

1. A method for forming a coupled capacitor and transistor comprising the steps of;

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forming a trench in the surface of a substrate;
coating the surfaces of said trench with a first insulating layer;
forming a first conductive region by filling the lower portion of said trench with a conductive material;
removing the exposed portion of said insulating layer plus an additional portion of said insulating layer between said conductive material and said substrate;
filling the crevice formed by said additional portion removal with a conductive material;



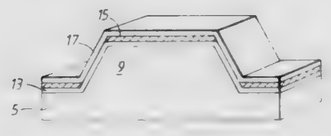
diffusing dopant atoms from said first conductive region, through said filled crevice, into said substrate to form a source region;
forming a drain region in said substrate adjacent the upper portion of said trench, separated from said source region by a channel region;
forming a gate insulating layer in the upper portion of said trench; and
filling the remainder of said trench with a conductive material which serves as a gate.

4,797,374

METHOD FOR SELECTIVE HETEROEPITAXIAL III-V COMPOUND GROWTH

Michael D. Scott, Northampton, Great Britain, and Alan H. Moore, Quebec, Canada, assignors to Plessey Overseas Limited, Ilford, England

PCT No. PCT/GB86/00423, § 371 Date May 20, 1987, § 102(e) Date May 20, 1987, PCT Pub. No. WO87/00694, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 18, 1986, Ser. No. 34,178
Claims priority, application United Kingdom, Jul. 20, 1985, 8518353
Int. Cl.[4] H01L *21/20, 21/76*
U.S. Cl. 437—129 **13 Claims**



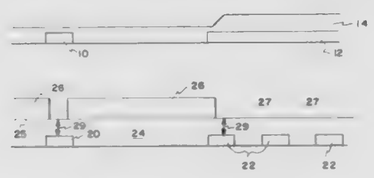
1. A method for producing a heterostructure semiconductor device, the method comprising defining a structure in a semiconductor substrate comprising Indium Phosphide, the structure comprising one or more first faces orientated parallel or near parallel to a first crystallographic plane andd one or more second faces parallel or near parallel to a second crystallographic plane, and exposing the structure to a group III vapour phase chemical reagent and a group V chemical reagent, thereby to deposit a first group III–V material on said first or said second faces using one group V constituent without the use of a mask and deposit a second group III–V material on both said first and said second faces using another group V constituent.

4,797,375

FABRICATION OF METAL INTERCONNECT FOR SEMICONDUCTOR DEVICE

David J. Brownell, Maple Grove, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 658,104, Oct. 5, 1984, abandoned. This application Apr. 9, 1987, Ser. No. 36,185
Int. Cl.[4] H01L *21/441, 21/443*
U.S. Cl. 437—187 **13 Claims**



1. A method of forming a substantially planar insulating layer over metal features on a semiconductor device, wherein said semiconductor device has an upper surface which is substantially planar, comprising the steps of:
forming a plurality of said metal features directly on said upper surface, said metal features all being of substantially the same thickness, wherein at every point on each of said metal features, said metal feature is not substantially larger than a predetermined feature size in at least one direction parallel to said upper surface and wherein at least two of said metal features will operate together to perform the same function on said device; and
bias sputtering an insulating layer over said metal features, wherein said predetermined feature size is such that the surface of said insulating layer opposite said upper surface will be substantially planar.

4,797,376

SOL-GEL METHOD FOR MAKING GRADIENT-INDEX GLASS

J. Brian Caldwell, and Duncan T. Moore, both of Rochester, N.Y., assignors to University of Rochester, Rochester, N.Y.

Filed Jun. 9, 1987, Ser. No. 59,906
Int. Cl.[4] C03C *3/00, 3/06, 3/089, 3/093*
U.S. Cl. 501—12 **7 Claims**



1. A method for making a gradient-index glass comprising the steps of (1) forming a mixture between a silicon alkoxide and an alcohol in a slightly acidic water solution sufficient to partially hydrolyze the alkoxide, (2) adding to said mixture an index modifying metal alkoxide selected from the group consisting of alkoxides of titanium and zirconium, (3) adding to said mixture at least one additional metal alkoxide element for providing an index modifying oxide wherein said metal alkoxide element is selected from the group consisting of alkoxides of aluminum, boron and germanium, (4) stirring the resulting solution with additional water sufficient to cause gelation by conversion of the metal alkoxides in solution to an interconnected network of the corresponding metal oxides, (5) pouring said solution into a mold, (6) allowing sufficient time for said solution to form a gel, (7) placing said gel into an acidic leaching bath for a time sufficient to leach out some of the index modifying metal oxide, (8) fixing said gel in an alcoholic bath, (9) drying said gel for a time sufficient to remove liquid within the gel, and (10) sintering said dried gel into transparent gradient index glass.

4,797,377

MASSIVE CRYSTALLINE ALUMINOSILICATE WITH EXPANDED STRUCTURE AND PROCESS FOR ITS MANUFACTURE

Yves Laurent, Cesson Sevigne; Patrick Verdier, and Jean Guyader, both of Acigne, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

Continuation of Ser. No. 838,914, Mar. 12, 1986, abandoned. This application Jan. 7, 1988, Ser. No. 144,593
Claims priority, application France, Mar. 13, 1985, 85 03694
Int. Cl.[4] C03C *11/00*
U.S. Cl. 501—39 **6 Claims**

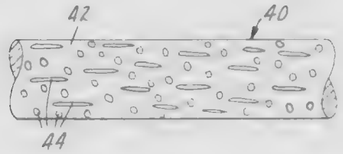
1. A massive partially crystalline aluminosilicate material comprising a plurality of expanded closed cell structures containing nitrogen gas.

4,797,378

INTERNALLY MODIFIED CERAMIC FIBER

Harold G. Sowman, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 18, 1986, Ser. No. 830,651
Int. Cl.[4] C04B *35/00*
U.S. Cl. 501—95 **14 Claims**



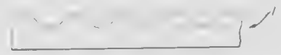
1. A fiber comprising a continuous ceramic first phase and at least one in-situ-generated discontinuous metal or ceramic second phase.

4,797,379

ELECTRODE STRUCTURE AND METHOD OF MAKING SAME

Pinakin S. Patel, Danbury, and Lawrence M. Paetsch, Sherman, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Continuation of Ser. No. 409,518, Aug. 19, 1982, abandoned. This application Sep. 20, 1985, Ser. No. 779,294
Int. Cl.[4] H01M *4/86, 4/88*
U.S. Cl. 502—101 **10 Claims**



1. A method of fabricating a molten carbonate fuel cell electrode from an electrode structure having pores, the method comprising:
preselecting an amount of carbonate constituent for said electrode;
selecting a stabilizing constituent for said electrode;
incorporating a ceramic oxide into said pores of said electrode structure;
incorporating an alkaline hydroxide in solution form into said pores of said electrode sturcture at about room temperature, said step of incorporating said alkaline hydroxide constituent including selecting the amount of alkaline hydroxide to be sufficient to enable said alkaline hydroxide and said ceramic oxide in the pores of said electrode structure to be converted to said preselected amount of carbonate constituent and said stabilizing constituent upon subjecting said electrode structure to carbon dioxide;
and subsequent to said incorporation steps, subjecting the electrode structure carrying said alkaline hydroxide and said ceramic oxide in the pores of the electrode structure to carbon dioxide to convert the alkaline hydroxide and said ceramic oxide to said preselected amount of carbonate constituent and said stabilizing constituent.

4,797,380

METHOD FOR PRODUCING HIGHLY DISPERSED CATALYST

Satoshi Motoo, and Masahiro Watanabe, both of Kofu, Japan, assignors to Satoshi Motoo; Masahiro Watanabe and Tanaka Kikinzoku Kogyo K.K., all of, Japan

Filed Mar. 5, 1987, Ser. No. 22,073
Claims priority, application Japan, Mar. 6, 1986, 61-49480; Mar. 6, 1986, 61-49481
Int. Cl.[4] B01J *31/06*
U.S. Cl. 502—159 **5 Claims**

1. A method for producing a highly dispersed catalyst, comprising:
mixing a cross linking agent with a polymer having a reactive functional group in its molecular chain in a solvent in order to cross-link the polymer with the cross linking agent;
apply the mixture of cross-linked polymer and solvent to a carrier;
drying the carrier in order to remove the solvent therefrom, to form a polymer film of the polymer over the surface of the carrier;
impregnating the polymer film with a metallic complex compound solution in order in connect the complex compound to the reactive functional group of the polymer;
reducing the metallic complex compound connected to the polymer to the corresponding catalyst metal in a reducing atmosphere; and then heating the carrier in order to remove the polymer film by decomposition.

4,797,381

PREPARATION OF ABRASION RESISTANT ALUMINA-SUPPORTED VANADIUM-ANTIMONY OXIDIC CATALYSTS

Joseph P. Bartek, Highland Heights, and Andrew T. Guttmann, Maple Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jul. 30, 1987, Ser. No. 79,551
Int. Cl.[4] B01J *23/18, 23/22, 23/30, 27/198*
U.S. Cl. 502—202 **7 Claims**

1. A method of making an active and abrasion resistant catalyst composition comprising at least 5 weight percent alumina support and at most 95 percent of a complex oxide composition having the empirical formula:

$$VSb_mA_aH_bC_cO_x$$

where
A is one or more of W, Sn, Mo, B, P and Ge;

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H is one or more of Cu, Ag, Nb, Ta, Ti, Fe, Co, Ni, Cr, Pb, Mn Zn, Se, Te, Ga, In and As;

C is one or more of an alkali metal, alkaline earth metal, and rare earths; and

where m is from 0.01 and up to 20; a is 0–10; b is 0–20; c is 0–20; the ratio (a+b+c):(1+m) is 0.01–6; wherein x is determined by the oxidation state of the other elements, which method comprises mixing a hydrosol or gel of boehmite with a slurry or solution containing the other batch materials containing the elements of said formula, and thereafter drying and calcining the resultant solid.

4,797,382

HYDROGENATION CATALYST AND PROCESS FOR PREPARING THE CATALYST

Waldo De Thomas, Parsippany, and Paul D. Taylor, West Milford, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Nov. 27, 1987, Ser. No. 126,065
Int. Cl.[4] B01J *23/58, 23/64, 23/72*
U.S. Cl. 502—245 **7 Claims**

1. A hydrogenation catalyst consisting essentially of:

(a) between about 8 and about 40 wt. % of metallic copper;

(b) between about 0.05 and about 5 wt. % of palladium or a mixture of palladium with another metal having an atomic weight greater than 100 and selected from Groups VIIB and VIII of the Periodic Table; and

(c) between about 1.5 and about 10 wt. % of an alkali metal or alkaline earth metal supported on a magnesium silicate support in an amount of between about 45% and about 97% of the total composition.

4,797,383

CATALYST

Susan A. Topham, Stockton-on-Tees, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 563,546, Dec. 21, 1983, abandoned, which is a continuation of Ser. No. 352,059, Feb. 24, 1982, abandoned. This application Apr. 9, 1985, Ser. No. 721,137
Claims priority, application United Kingdom, Mar. 18, 1981, 8108409
Int. Cl.[4] B01J *23/74*
U.S. Cl. 502—338 **4 Claims**

1. A method of making a hydrogenation catalyst bed of particles having a size within a desired range within the range 1–20 mm comprising the steps of:

(a) melting a composition comprising iron oxide to the extent of a least 60% w/w calculated as Fe_3 '04' on its constituents not volatile at 900° C.;

(b) casting the melt on a surface to a depth within the desired size range and controlling the rate of cooling of the composition so that, on solidifying, the formed layer shrinks and separates from said surface;

(c) subdividing the resultant solid by light crushing effecting fracture through faces formed by solidification thereby producing particles over 50% w/w of which have two opposed faces formed by solidification, one of these faces is formed by solidification in contact with said surface, with the faces other than said two opposed faces formed by fracture;

(d) selecting from said particles, particles of the desired size range;

(e) without any further comminution or agglomeration of the selected particles, charging them to a hydrogenation reactor to form a bed of particles therein, and

(f) reducing the iron oxide of said selected particles to catalytically active metallic iron before or after step (e); said casting and solidification step (b) being effected to form channels in at least one of the solidification surfaces.

4,797,384

HEAT-SENSITIVE RECORDING SHEET

Akira Igarashi; Akihiro Shimomura, and Shinichiro Serizawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 29, 1988, Ser. No. 150,274
Claims priority, application Japan, Jan. 29, 1987, 62-18950
Int. Cl.[4] B41M *5/18*
U.S. Cl. 503—200 **8 Claims**

1. A heat-sensitive recording sheet comprising a paper support, on one side of which a heat-sensitive color forming layer is provided, and on the other side of which an antistatic layer is provided, wherein said antistatic layer contains: (a) at least one polymer of homopolymers and copolymers of vinyl compounds having a sulfonic acid group, having a weight-average molecular weight of at least 5,000; and (b) at least one surfactant selected from sulfosuccinates, alkylbenzenesulfonic acid salts and naphthalenesulfonic acid salts.

4,797,385

HEAT-SENSITIVE RECORDING MATERIAL

Akira Igarashi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 27, 1987, Ser. No. 7,206
Claims priority, application Japan, Jan. 24, 1986, 61-13397
Int. Cl.[4] B41M *5/18*
U.S. Cl. 503—207 **10 Claims**

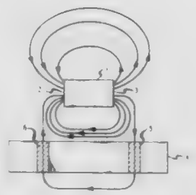
1. A heat-sensitive recording material comprising a support having provided thereon a heat-sensitive recording layer containing a colorless electron-donating dye precursor and an electron-accepting compound as main components, with said heat-sensitive recording layer containing granules of starch or a starch derivative, which have a volume average granule diameter of from 10 μm to 30 μm, in a proportion of from 0.2 wt % to 5 wt % based on the total weight of solids therein.

4,797,386

SUPERCONDUCTOR-MAGNET INDUCED SEPARATION

Ernst M. Gyorgy, Madison; Frances Hellman, Berkeley Heights, and David W. Johnson, Jr., Pluckemin, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Labs, Murray Hill, N.J.

Filed Apr. 22, 1987, Ser. No. 41,278
Int. Cl.[4] H01F *7/22*
U.S. Cl. 505—1 **13 Claims**



1. Apparatus comprising separated elements, separation of which is induced by force comprising magnetic-superconducting repulsion, in which, in the operating state one such element is superconducting and a second such element is magnetized, characterized in that the said superconducting element consists essentially of a Type II superconductor, and the properties and relative position of the elements are such that, in operation, the lower field value $H_{c,1}$ of the superconducting element is exceeded by a field produced by the magnetized element so as to result in magnetic field penetration within the superconducting element within at least one region which is at least partially surrounded by superconducting regions which are not field-penetrated, whereby lateral stabilization of the said relative position is at least in part due to the fact that lateral shift requires field penetration in the direction of shift.

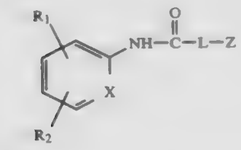
4,797,387

CERTAIN PHARMACEUTICALLY USEFUL UREAS

Francis D. King, Harlow, England, assignor to Beecham Group, p.l.c., Middlesex, England

Filed Jan. 14, 1987, Ser. No. 3,222
Claims priority, application United Kingdom, Jan. 16, 1986, 8600978; Oct. 31, 1986, 8626042
Int. Cl.[4] A61K *31/46*; C07D *451/04*
U.S. Cl. 514—212 **12 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

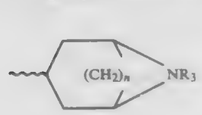
wherein

L is NH;

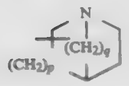
X is $N^+—O^-$, COR_5 wherein R_5 is hydrogen, C_{1-6} alkyl, C_{3-7} alkenyl-methyl, phenyl or phenyl C_{1-4} alkyl in which either phenyl moiety may be substituted by one or two C_{1-6} alkyl, C_{1-6} alkoxy or halo, or C—R_6 wherein R_6 is CO_2R_7 wherein R_7 is hydrogen or C_{1-6} alkyl, $CONR_8R_9$ or $SO_2NR_8R_9$ wherein R_8 and R_9 are independently hydrogen or C_{1-6} alkyl or together are C_{4-6} polymethylene, or R_6 is NO_2, $(CH_2)_mOR_{10}$ wherein m is 1 or 2 and R_{10} is C_{1-6} alkyl or $S(O)_nR_{11}$ wherein n is 0, 1 or 2 and R_{11} is C_{1-6} alkyl;

R_1 and R_2 are independently selected from hydrogen, halogen, CF_3, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{1-7} acyl, C_{1-7} acylamino, C_{1-6} alkylsulphonylamino, N-(C_{1-6} alkylsulphonyl)-N-C_{1-4} alkylamino, C_{1-6} alkylsulphinyl, carboxy, C_{1-6} alkoxycarbonyl, hydroxy, nitro or amino, aminocarbonyl, aminosulphonyl, aminosulphonylamino or N-(aminosulphonyl)-C_{1-4} alkylamino optionally N-substituted by one or two groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl C_{1-4} alkyl, phenyl or phenyl C_{1-4} alkyl groups or optionally N-disubstituted by C_{4-5} polymethylene; and

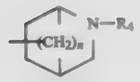
Z is a group of formula (a), (b) or (c)



(a)



(b)



(c)

wherein n is 2 or 3; p is 1 or 2; q is 1 to 3; r is 1 to 3; and R_3 or R_4 is C_{1-7} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl-C_{1-2} alkyl or C_{2-7} alkenyl-C_{1-4} alkyl.

4,797,388

PHARMACEUTICAL COMPOSITIONS WITH GALACTITOL AS CARRIER

Daniel L. Francis, Ravenna, Ohio, assignor to Cetus Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 612,626, May 21, 1984, Pat. No. 4,659,699, which is a continuation-in-part of Ser. No. 524,899, Aug. 22, 1983, abandoned. This application Jan. 26, 1986, Ser. No. 879,143
Int. Cl.[4] A61K *31/66, 31/70, 47/00*
U.S. Cl. 514—23 **16 Claims**

1. A hydrated lyophilizate composition, having enhanced chemical and physical stability and uniform appearance and consistency, comprising about 20 parts by weight of cyclophosphamide, taken as the anhydride, about 5 to 21 parts by weight of galactitol, and about 1.4 to 3 parts by weight of water.

4,797,389

SUBSTANCE HAVING AN ANTI-INFECTIVE ACTIVITY

Rintaro Nakaya; Nobuo Okamura, both of Tokyo; Takuji Kawashima, Kawasaki; Misaru Saito, Konae; Nobuya Yanai, Nakano; Tomohiro Toida, Hachioji, and Hajime Yokota, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed May 9, 1986, Ser. No. 861,771
Claims priority, application Japan, May 9, 1985, 60-96725
Int. Cl.[4] A61K *31/715*
U.S. Cl. 514—54 **12 Claims**

1. A substance having an anti-infective activity comprising a polysaccharide separated from the cell wall of bacteria belonging to genus Bifidobacterium, wherein the substance has the following physical and chemical properties:

(a) molecular weight; 15,000 to 200,000 daltons as determined by gel filtration;

(b) constituent saccharides; mainly composed of glucose and galactose at the molar ratio of 1:about 2.8; and

(c) elementary analysis; 44.6% of carbon, 6.2% of hydrogen and 0.2% or less of nitrogen.

4,797,390

INOSITOL TRIPHOSPHATE PHARMACEUTICAL COMPOSITIONS

Matti Siren, Via Poporino 9, CH-6926 Montagnola/Lugano, Switzerland

Continuation-in-part of Ser. No. 788,801, Oct. 18, 1985, Pat. No. 4,735,936. This application Feb. 17, 1987, Ser. No. 15,679
Claims priority, application Sweden, Oct. 23, 1984, 8405295
The portion of the term of this patent subsequent to Apr. 5, 1988, has been disclaimed.
Int. Cl.[4] A61K *31/66*; C12P *7/02*
U.S. Cl. 514—103 **21 Claims**

1. A pharmaceutical composition comprising as a pharmaceutically active ingredient an isomer of inositol triphosphate, a salt thereof or an acid thereof and a pharmaceutically acceptable carrier, excipient or additive thereof, said isomer having the structural formula



where

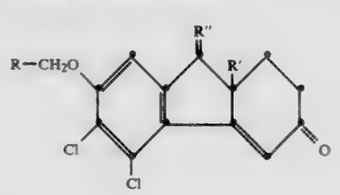
(a) three of R_1, R_3, R_5, R_7, R_{10} and R_{11} are hydroxyl and the remaining three are phosphate and R_2, R_4, R_6, R_8, R_9 and R_{12} are hydrogen;

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(b) three of R_1, R_3, R_6, R_7, R_9 and R_{12} are hydroxyl and the remaining three are phosphate and R_2, R_4, R_5, R_8, R_{10} and R_{11} are hydrogen;
(c) three of R_1, R_3, R_5, R_8, R_{10} and R_{12} are hydroxyl and the remaining three are phosphate and R_2, R_4, R_6, R_7, R_9 and R_{11} are hydrogen;
(d) three of R_1, R_4, R_5, R_8, R_9 and R_{12} are hydroxyl and the remaining three are phosphate and R_2, R_3, R_6, R_7, R_{10} and R_{11} are hydrogen;
(e) three of R_1, R_3, R_6, R_8, R_9 and R_{12} are hydroxyl and the remaining three are phosphate and R_2, R_4, R_5, R_7, R_{10} and R_{11} are hydrogen;
(f) three of R_1, R_3, R_6, R_7, R_{10} and R_{12} are hydroxyl and the remaining three are phosphate and R_2, R_4, R_5, R_8, R_9 and R_{11} are hydrogen;
(g) three of R_1, R_3, R_5, R_8, R_{10} and R_{11} are hydroxyl and the remaining three are phosphate and R_2, R_4, R_6, R_7, R_9 and R_{12} are hydrogen;
(h) three of R_1, R_3, R_5, R_7, R_9 and R_{11} are hydroxyl and the remaining three are phosphate and R_2, R_4, R_6, R_8, R_{10} and R_{12} are hydrogen.

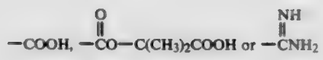
4,797,391
((5,6-DICHLORO-3-OXO-9,9A-DISUBSTITUTED-2,3,9,9A-TETRAHYDROFLUOREN-7-YL)OXY)ALKANOIC ACIDS AND ALKANIMIDAMIDES
Otto W. Woltersdorf, Jr., Chalfont; Edward J. Cragoe, Jr., Lansdale, and Adolph M. Pietruszkiewicz, North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation of Ser. No. 910,924, Sep. 24, 1986, abandoned. This application Feb. 8, 1988, Ser. No. 150,462
Int. Cl.[4] A61K *31/645;* **C07C** *129/12*
U.S. Cl. 514—120 **16 Claims**

1. A compound of the formula:



(II)

wherein:
R is



R′ is lower alkyl, branched or unbranched, containing from 1 to 5 carbon atoms; and
R″ is =O, H plus

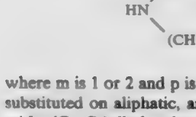
and the pharmaceutically acceptable salts thereof.

4,797,392
USE OF ANORECTAL COMPOSITIONS
Simon A. Chernomorsky, P.O. Box 2882, Elizabeth, N.J. 07207
Filed Jan. 27, 1987, Ser. No. 6,780
Int. Cl.[4] A61K *31/555, 31/40*
U.S. Cl. 514—185 **3 Claims**

1. A method of treating hemorrhoids and anorectal fissures, cracks, fistulas and abcesses, which comprises topically applying an anti-anorectal disease effective amount of a chlorophyll derivative to a host in need thereof.

4,797,393
BIS-PLATINUM COMPLEXES AS CHEMOTHERAPEUTIC AGENTS
Nicholas Farrell, Winooski; Miles P. Hacker, Williston; John J. McCormack, Burlington, and Sergio G. DeAlmeida, Winooski, all of Vt., assignors to University of Vermont and State Agricultural College, Burlington, Vt.
Filed Jul. 25, 1986, Ser. No. 889,397
Int. Cl.[4] C07F *15/00*
U.S. Cl. 514—188 **22 Claims**

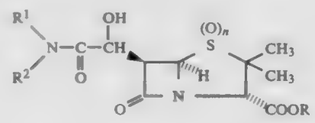
1. A bis-platinum complex having the structure:



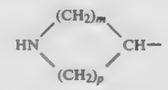
in which X and Y are the same or different ligands and are halide, sulphate, phosphate, nitrate, carboxylate, substituted carboxylate, or dicarboxylate; B and C are the same or different groups selected from primary and secondary amines and pyridine type nitrogens; and A is a diamine or polyamine wherein the primary amine N atoms are coordinated to the Pt atom such that platinum is present as Pt^{2+}.

4,797,394
6-(1-CARBAMOYL-1-HYDROXYMETHYL)PENICILLANIC ACID DERIVATIVES
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.
PCT No. PCT/US85/02134, § 371 Date Jun. 5, 1987, § 102(e) Date Jun. 5, 1987
PCT Filed Oct. 29, 1985, Ser. No. 85,675
Int. Cl.[4] C07D *499/00;* **A61K** *31/425*
U.S. Cl. 514—192 **86 Claims**

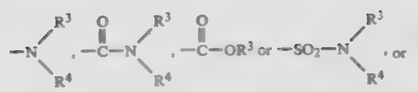
1. A compound having the formula



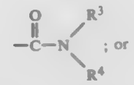
wherein
n is 0, 1 or 2;
R is hydrogen, a radical group forming an ester hydrolyzable under physiological conditions, or an acyloxymethyl or 1-(acyloxy)ethyl radical derived from a conventional beta-lactam antibiotic; and
R^1 and R^2 are taken separately and are each independently hydrogen, (C_1–C_7)alkyl, phenyl, (C_7–C_{12})phenylalkyl, (C_3–C_7)cycloalkyl, naphthyl, or



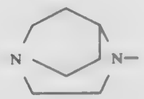
where m is 1 or 2 and p is 1, 2 or 3; or one of said groups substituted on aliphatic, aromatic or heterocyclic carbon with (C_1–C_4)alkyl, phenyl, hydroxy, hydroxymethyl, 2-hydroxyethyl, (C_1–C_4)alkoxy, (C_2–C_5)alkanoyloxy, carbamoyloxy, formamido, (C_2–C_5)alkanecarboxamido, (C_1–C_4)alkanesulfonamido,



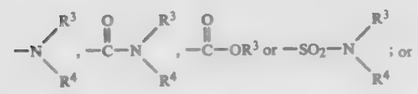
on heterocyclic nitrogen with (C_1–C_4)alkyl, phenyl, (C_7–C_9)phenylalkyl, pyridyl, 2-hydroxyethyl, formyl, (C_2–C_5)alkanoyl; or



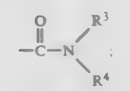
R^1 and R^2 are taken together with the nitrogen to which they are attached to form a pyrrolidine, piperidine, perhydroazepine, morpholine, piperazine, homopiperazine, indoline, isoindoline, 1,2,3,4-tetrahydroquinoline, 1,2,3,4-tetrahydroisoquinoline or



ring system; or one of said ring systems substituted on aliphatic, aromatic or heterocyclic carbon with (C_1–C_4)alkyl, phenyl, hydroxy, hydroxymethyl, 2-hydroxyethyl, (C_1–C_4)alkoxy, (C_2–C_5)alkanoyloxy, carbamoyloxy, formamido, (C_2–C_5)alkanecarboxamido, (C_1–C_4)alkanesulfonamido,



on heterocyclic nitrogen with (C_1–C_4)alkyl, phenyl, (C_7–C_9)phenylalkyl, pyridyl, 2-hydroxyethyl, formyl, (C_2–C_5)alkanoyl; or



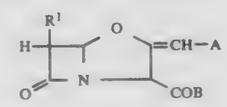
R^3 and R^4 are taken separately and are each hydrogen, (C_1–C_4)alkyl or phenyl; or R^3 and R^4 are taken together with the nitrogen to which they are attached to form a pyrrolidine, piperidine, morpholine, or 4-[(C_1–C_3)alkyl or phenyl]piperazine ring;
with the provisos that in said group —NR^1R^2 (a) there is no tetrahedral carbon atom which is simultaneously bonded to two of the same or different atoms selected from the group consisting of nitrogen, oxygen or sulfur and (b) when both of R^1 and R^2 are other than hydrogen, then the carbons of R^1 and R^2 which are adjacent to the nitrogen branch point are substituted with a total of at least two hydrogens;
a pharmaceutically acceptable cationic salt when the compound contains a carboxylic acid group; or
a pharmaceutically acceptable acid addition salt when the compound contains a basic nitrogen atom.

4,797,395
1-ACYLOXYALKYL ESTERS OF CEPHALOSPORIN
Akio Miyake; Yoshinobu Yoshimura, and Mitsuo Numata, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 616,402, Jun. 1, 1984, abandoned. This application Jul. 18, 1986, Ser. No. 886,814
Claims priority, application Japan, Jun. 2, 1983, 58-99213; Sep. 21, 1983, 58-175496
Int. Cl.[4] A61K *31/545;* **C07D** *501/36*
U.S. Cl. 514—206 **6 Claims**

1. A compound, namely 1-(phenylacetoxy)-2-methylpropyl 7β-[2-(2-aminothiazol-4-yl)acetoamido]-3-[[[1-(2-dimethylaminoethyl)-1H-tetrazol-5-yl]thio]methyl]ceph-3-em-4-carboxylate, or a pharmaceutically acceptable salt thereof.
4. A compound, namely 1-(cyclohexylcarbonyloxy)butyl 7β-[2-(2-aminothiazol-4-yl)acetoamido]-3-[[[1-(2-dimethylaminoethyl)-1H-tetrazol-5-yl-]thio]methyl]ceph-3-em-4-carboxylate, or a pharmaceutically acceptable salt thereof.

4,797,396
β-LACTAM DERIVATIVES AS ANTI-INFLAMMATORY AND ANTIDEGENERATIVE AGENTS
Paul E. Finke, Milltown; Morris Zimmerman, Watchung; James B. Doherty, New Milford; Bonnie Mae Ashe, Scotch Plains, and Conrad P. Dora, Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 627,166, Jul. 2, 1984, Pat. No. 4,711,886. This application Jul. 16, 1987, Ser. No. 74,440
Int. Cl.[4] C07D *487/04;* **A61K** *31/42*
U.S. Cl. 514—210 **3 Claims**

1. A method of treating or managing elastase-mediated diseases comprising the administration to a mammalian species in need of such treatment an effective amount of a compound of structural formula:



wherein
A is
(a) hydrogen;
(b) C_{1-6} alkyl;
(c) phenyl;
(d) OR;
(e) halo;
(f) OCOR;
R is
(a) hydrogen;
(b) C_{1-6} alkyl; or
(c) phenyl;
R_1 is:
(1) R′NH wherein R′ is
(a) hydrogen;
(b) CF_3CO or CH_3OCO;
(c) C_{1-6} alkyl SO_2; or
(d) $C_6H_5CH_2SO_2$;
(2) hydrogen;
(3) C_{1-6} alkyl;
(4) OR;
(5) SR;
(6) C_{1-6} hydroxyalkyl;
(7) C_{1-6} alkoxycarbonyl-C_{1-6} alkyl;
(8) C_{1-6} alkoxycarbonyloxy-C_{1-6} alkyl;
(9) benzoxycarbonyloxy-C_{1-6} alkyl; or
(10) phenoxycarbonyloxy-C_{1-6} alkyl;
B is OB_1 or NHB_1 wherein B_1 is
(1) benzyl;
(2) phenyl;
(3) straight or branched C_{1-6} alkyl;

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(4) straight or branched C_{2-8} alkenyl;
(5) C_{3-8} cycloalkyl;
(6) C_{1-6} alkanoyloxy C_{1-6} alkyl;
(7) C_{1-6} alkanoyl C_{1-6} alkyl;
(8) C_{1-6} alkoxy C_{1-6} alkyl; or
(9) halo$=C_{1-6}$ alkyl;
the above groups (1)–(9) can optionally be substituted by radicals selected from a group consisting of C_{1-6} alkyl, hydroxy, C_{1-6} alkoxy, halo, nitro, mercapto, amino, cyano, carboxy, sulfoamino, carbamoyl, carbamoyloxy, C_{1-6}alkyl or amino sulfonyl, C_{1-6} alkylamino, sulfamoyl, azido, carboxamido or N-C_{1-6} alkylcarboxamido.

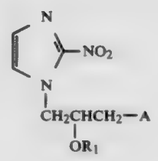
4,797,397

2-NITROIMIDAZOLE DERIVATIVES USEFUL AS RADIOSENSITIZERS FOR HYPOXIC TUMOR CELLS

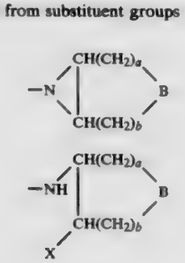
Mark J. Suto, and Leslie M. Werbel, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 31, 1987, Ser. No. 80,280
Int. Cl.[4] C07D *401/12, 233/91;* A61K *31/415, 31/445*
U.S. Cl. 514—212 **24 Claims**

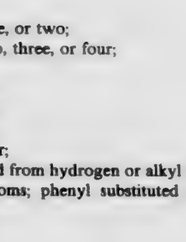
1. A compound having the strutural formula



wherein
R_1 is
hydrogen;
alkanoyl of from two to five carbon atoms; or
benzolyl;
A is selected from substituent groups (a) to (f)

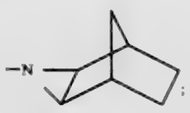


(a)



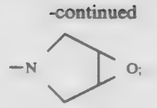
wherein
a is zero, one, or two;
b is one, two, three, or four;
B is
$>CHR_2$,
$>NR_2$, or
>0, and
X is Cl or Br;
R_2 is selected from hydrogen or alkyl of from one to four carbon atoms; phenyl substituted with halogen, hydroxy, or

(b)

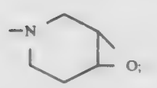


(c)

-continued



(d)



(e)

(f) $-N_3$, or
a pharmaceutically acceptable acid addition salt thereof,

24. A method of sensitizing hypoxic tissues to X-irradiation therapy comprising administering to a patient, prior to receiving said therapy, a radiation-sensitizing effective amount of a compound as defined by claim 1.

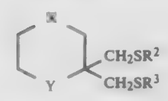
4,797,398

MORPHOLINE COMPOUNDS, COMPOSITIONS AND USE

Michael D. Turnbull, Reading, and Ian T. Kay, Penzance, both of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 068,526, Jul. 1, 1987, Pat. No. 4,746,677, which is a division of Ser. No. 941,101, Dec. 12, 1986, Pat. No. 4,696,926. This application Jan. 25, 1988, Ser. No. 148,020
Claims priority, application United Kingdom, Dec. 19, 1985, 8531284; Dec. 19, 1985, 8531285
Int. Cl.[4] A01N *43/84;* C07D *265/30*
U.S. Cl. 514—237.5 **4 Claims**

1. A compound of formula (IA):



(IA)

or a salt thereof;
wherein one of X or Y is oxygen and the other is NR^1 where R^1 is alkyl, aralkyl or acyl; and R^2, and R^3 are independently selected from nitrile, $CONH_2$ and SO_2R^4 wherein R^4 is optionally substituted aryl, optionally substituted alkyl, aralkyl or cycloalkyl.

3. An insecticidal or nematocidal composition comprising a compound of formula (I) as defined in claim 1 in combination with an agriculturally acceptable carrier.

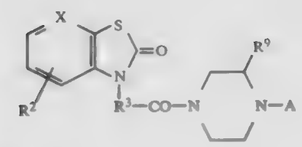
4,797,399

PIPERAZINE COMPOUNDS AND ANTITHROMBOTIC PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Ikuo Ueda; Masaaki Matsuo, both of Toyonaka; Kiyoshi Tsuji, Kishiwada; Hiroyuki Okumura, Ibaraki, and Osamu Nakaguchi, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 23, 1986, Ser. No. 945,853
Claims priority, application United Kingdom, Jan. 17, 1986, 8601160
Int. Cl.[4] A61K *31/495, 31/44;* C07D *513/00, 513/06*
U.S. Cl. 514—253 **6 Claims**

1. A compound of the formula:



wherein
R^2 is halogen,
R^3 is lower alkylene,
R^9 is hydrogen or lower alkyl,
X is CH or N, and
A is hydrogen, a group of the formula:



wherein R^6 and R^7 are each hydrogen, lower alkanoyl or lower alkaneimidoyl, or a group of the formula: $—N{=}R^8$ wherein R^8 is lower alkylidene,
or a pharmaceutical acceptable salt thereof.

6. A method for the treatment of thrombosis in a human being or animal comprising administering an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof.

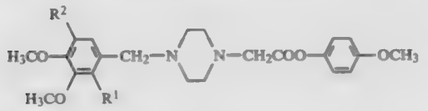
4,797,400

PIPERAZINE COMPOUNDS AND ANTI-ULCER COMPOSITION CONTAINING THE SAME

Hiroshi Ohtaka; Kenji Yoshida, both of Osaka; Kenji Sukuzi, Nara; Koichi Shimohara, Neyagawa; Sigeru Tajima, and Keizo Ito, both of Osaka, all of Japan, assignors to Kanebo, Ltd., Japan

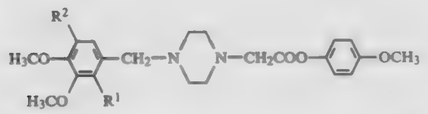
Filed Jun. 16, 1987, Ser. No. 62,573
Claims priority, application Japan, Jun. 23, 1986, 61-147789
Int. Cl.[4] A61K *31/495;* C07D *295/14*
U.S. Cl. 514—255 **6 Claims**

1. A piperazine compound of the formula:



wherein either one of R^1 and R^2 is methoxy group and another is hydrogen atom, or a pharmaceutically acceptable acid addition salt thereof.

4. A pharmaceutical composition for the prophylaxis and treatment of peptic ulcers, which comprises as an active ingredient a therapeutically or prophylactically effective amount of a piperazine compound of the formula:



wherein either one of R^1 and R^2 is methoxy group and another is hydrogen atom, or a pharmaceutically acceptable acid addition salt thereof in admixture with a pharmaceutically acceptable carrier or diluent.

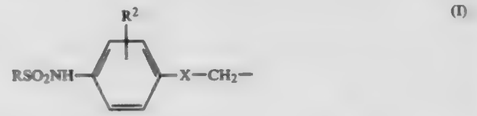
4,797,401

4-SUBSTITUTED-1-(4-ALKYLSULPHONAMIDO-PHENYL)PIPERAZINES AS ANTIARRHYTHMIC AGENTS

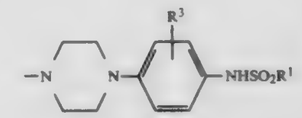
John E. G. Kemp, and Peter E. Cross, both of New York, N.Y., assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 15, 1987, Ser. No. 73,535
Claims priority, application United Kingdom, Aug. 9, 1986, 8619472
Int. Cl.[4] A61K *31/495;* C07D *241/04*
U.S. Cl. 514—255 **4 Claims**

1. A process for the prevention or reduction of cardiac arrhythmias in a human being which comprises administering to said human being a cardiac arrhythmia preventing or reducing amount of a compound of the formula (I):



(I)



or a pharmaceutically acceptable salt thereof, wherein
R and R^1, which are the same or different, are C_1–C_4 alkyl;
R^2 and R^3, which are the same or different, are H, halo or C_1–C_4 alkyl; and
X is $—CH_2—$,



or —CH(OH)—.

4,797,402

COOLING ANTI-ITCH SKIN PREPARATIONS

Kenneth E. Dorsey, 8821 Bluff Wood La., Fort Washington, Md. 20744

Filed Jun. 2, 1987, Ser. No. 56,692
Int. Cl.[4] A61K *31/56, 9/06*
U.S. Cl. 514—171 **7 Claims**

1. A hydrophilic ointment petrolatum base composition for the topical adminstration of an antiflammatory corticosteroid which provides a cooling effect and anti-itching characterisitcs consisting essentially of:
an antiflammatory effective amount of a corticosteroid; peppermint oil in amounts of from about 0.01 to about 0.05% by weight; urea in amounts of from about 5.0 to about 10.0% by weight; and an oil soluble surfactant selected from hydroxylated lanolin, ethoxylated lanolin or polyoxyethylene esters, based on the weight of the composition.

4,797,403

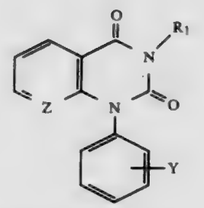
QUINAZOLINEDIONES AND PYRIDOPYRIMIDINEDIONES

John A. Lowe, III, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 1,718, Aug. 21, 1986. This application Jul. 23, 1987, Ser. No. 76,976
Int. Cl.[4] C07D *293/96, 471/04;* A61K *31/505*
U.S. Cl. 514—259 **7 Claims**

1. A compound of the formula

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or a pharmaceutically acceptable acid addition salt thereof, wherein

R_1 is benzyl;

Y is carboxy, carboalkoxy wherein the alkoxy has 1 to 6 carbon atoms, carbobenzyloxy, carbamoyl, N-alkylcarbamoyl wherein the alkyl has 1 to 6 carbon atoms, CO_2M wherein M is a pharmaceutically acceptable cation, or

Z is CH.

4,797,404

PHARMACEUTICAL PREPARATION COMPRISING CO-DERGOCRINE AND A CALCIUM ANTAGONIST

Dieter Welzel, and Hans Bühlmann, both of Nuremberg, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 889,160, Jul. 25, 1986, abandoned, which is a continuation of Ser. No. 775,985, Sep. 13, 1985, Pat. No. 4,617,306, which is a continuation of Ser. No. 723,948, Apr. 16, 1985, abandoned, which is a continuation of Ser. No. 601,496, Apr. 18, 1984, abandoned. This application Dec. 1, 1987, Ser. No. 126,663

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314607

Int. Cl.[4] A61K *31/44*

U.S. Cl. 514—288 **19 Claims**

1. A method of treating hypertension comprising co-administering to a subject in need of such treatment:

(a) co-dergocrine or a pharamceutically acceptable acid addition salt thereof; and

(b) as a calcium antagonist, a compound selected from the group consisting of

4-(2,1,3-benzoxadiazol-4-yl)-1,4-dihydro-2,6-dimethyl-3-ethoxycarbonyl-5-pyridine carboxylic acid ethyl ester,

4-(2,1,3-benzthiadiazole-4-yl)-1,4-dihydro-2,6- -dimethyl-3-methoxycarbonyl-5-pyridine carboxylic acid methyl ester and 4-(2,1,3-benzoxadiazol-4-yl)-1,4-dihydro-2,6-dimethyl-3-isopropoxycarbonyl-5-pyridine carboxylic acid methyl ester;

said components (a) and (b) being co-administered in a ratio of 1:1 to 1:50 p.p.w.

4,797,405

STABILIZED PERGOLIDE COMPOSITIONS

James W. Conine, and Julian L. Stowers, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 26, 1987, Ser. No. 112,360

Int. Cl.[4] A61K *31/48;* **C07D** *457/02*

U.S. Cl. 514—288 **10 Claims**

1. A pharmaceutical composition of pergolide or a salt thereof stabilized to decomposition by light comprising a therapeutically effective amount of pergolide or a salt thereof, a stabilizing agent selected from polyvinylpyrrolidone, α-tocopherol succinate and propyl gallate in an amount sufficient to effect stabilization to decomposition by light and pharmaceutically acceptable excipients.

6. A method of stabilizing a pharmaceutical composition of pergolide or a salt thereof to decomposition by light comprising incorporating into said pharmaceutical composition, in addition to a therapeutically effective amount of said pergolide or a salt thereof and pharmaceutically acceptable excipients, a stabilizing agent selected from polyvinylpyrrolidone, α-tocopherol succinate and propyl gallate in an amount sufficient to effect stabilization to decomposition by light.

4,797,406

AMIDES AND ESTERS CONTAINING BRIDGED PIPERIDINES AND USE AS SEROTONIN M ANTAGONISTS

Brian P. Richardson, Magden, Switzerland; Günter Engel, Weil, Fed. Rep. of Germany; Rudolf K. A. Giger, Riehen, and Andrea Vasella, Meilen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

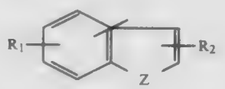
Continuation of Ser. No. 644,810, Aug. 27, 1984, abandoned. This application Jun. 16, 1986, Ser. No. 874,756

Claims priority, application Switzerland, Aug. 26, 1983, 4675/83; Nov. 3, 1983, 5933/83; Dec. 23, 1983, 6877/83

Int. Cl.[4] A61K *31/445;* **C07D** *401/12, 405/12, 221/22*

U.S. Cl. 514—299 **9 Claims**

1. A compound of formula A-B-C-D wherein A is a group of formula (a)



(a)

wherein the free valence is attached to either of the fused rings,

Z is $—CH_2—$, $—NR_3—$, —O— or —S—;

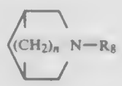
R_1 and R_2, independently, are hydrogen, halogen, (C_{1-4})alkyl, (C_{1-4})alkoxy, hydroxy, amino, (C_{1-4})alkylamino, di-(C_{1-4})alkylamino, mercapto or (C_{1-4})alkylthio;

R_3 is hydrogen, (C_{1-4})alkyl, (C_{3-5})alkenyl, unsubstituted phenyl, phenyl mono- or polysubstituted by (C_{1-4})alkyl, halogen, hydroxy or (C_{1-4})alkoxy, or unsubstituted phenyl (C_{1-4})alkyl;

B is —CO— or $—SO_2—$;

C is —O— or —NH—; and

D is a group of formula (f)



(f)

where R_8 is hydrogen, (C_{1-7})alkyl, (C_{3-5})alkenyl unsubstituted phenyl(C_{1-4})alkyl/mono- or poly-substituted on the phenyl moiety thereof by (C_{1-4})alkyl, halogen, hydroxy or (C_{1-4})alkoxy; and n=2, 3 or 4 or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

9. A method of inducing a serotonin M receptor antagonist effect comprising administering to a subject in need of such treatment a therapeutically effective amount of a compound of claim 1, or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

4,797,407

FUNGICIDAL PYRIDYL CARBAMATES

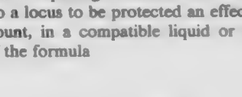
Don R. Baker, Orinda, and Keith H. Brownell, San Jose, both of Calif., assignors to ICI Americas Inc., Wilmington, Del.

Filed Oct. 29, 1987, Ser. No. 114,810

Int. Cl.[4] C07D *213/75;* **A01N** *43/40*

U.S. Cl. 514—346 **9 Claims**

1. A compound having the structural formula



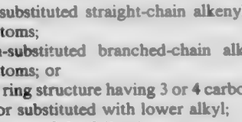
wherein

R is selected from the group consisting of halogen, C_1–C_3 alkoxy, $—CF_3$, C_3–C_4 alkenyloxy and C_1–C_3 haloalkoxy;

R_1 is selected from the group consisting of C_1–C_6 alkyl, C_3–C_6 cycloalkyl, benzyl, C_1–C_3 haloalkyl, and C_3–C_8 cyclic, straight or branched alkoxyalkyl;

X is either oxygen or sulfur; Y is either oxygen or sulfur; or a fungicidally acceptable organic or inorganic salt thereof.

6. The method of controlling fungi comprising applying to the area where control is desired, a fungicidally effective amount of a compound having the formula



wherein

R is selected from the group consisting of halogen, C_1–C_3 alkoxy, $—CF_3$, C_3–C_4 alkenyloxy and C_1–C_3 haloalkoxy;

R_1 is selected from the group consisting of C_1–C_6 alkyl, C_3–C_6 cycloalkyl, benzyl, C_1–C_3 haloalkyl, and C_3–C_8 cyclic, straight or branched alkoxyalkyl;

X is either oxygen or sulfur; or a fungicidally acceptable organic or inorganic salt thereof.

4,797,408

COCKROACH REPELLENTS

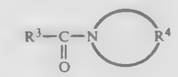
Terrence P. McGovern, Bowie, Md., and George S. Burden, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 625,329, Jun. 27, 1984, Pat. No. 4,621,143. This application Sep. 5, 1986, Ser. No. 875,911

Int. Cl.[4] A01N *43/40*

U.S. Cl. 514—315 **12 Claims**

1. A method of repelling cockroaches consisting essentially of applying to a locus to be protected an effective cockroach repellent amount, in a compatible liquid or solid carrier, a compound of the formula



wherein R^3 is one of the following groups:

a. branched-chain alkyl having 3 to 9 carbon atoms;

b. straight-chain alkenyl having 2 to 8 carbon atoms;

c. branched-chain alkenyl having 3 to 8 carbon atoms;

d. halogen-substituted straight-chain alkyl having 1 to 3 carbon atoms;

e. halogen-substituted branched-chain alkyl having 3 carbon atoms;

f. halogen-substituted straight-chain alkenyl having 1 to 3 carbon atoms;

g. halogen-substituted branched-chain alkenyl having 3 carbon atoms; or

h. alicyclic ring structure having 3 or 4 carbon atoms, unsubstituted or substituted with lower alkyl;

wherein R^4 is one of the following groups:

a. C_5 alkylene; or

b. lower alkyl substituted C_5 alkylene.

4,797,409

1-HYDROXY-2-PYRIDONES, A PROCESS FOR THEIR PREPARATION, AND MEDICAMENTS WHICH CONTAIN THEM, AND INTERMEDIATES FORMED IN THE PREPARATION OF THE 1-HYDROXY-2-PYRIDONES

Gerhard Lohaus, Kelkheim; Walter Dittmar, Hofheim am Taunus; Heinz Hänel, Bad Homburg; Wolfgang Raether, Dreieich; Dieter Reuschling, Butzbach, and Bengt-Thomas Gröbel, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

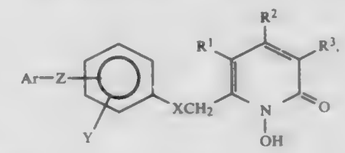
Filed Apr. 16, 1987, Ser. No. 38,903

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613061; Aug. 2, 1986, 3626211

Int. Cl.[4] A61K *31/44*

U.S. Cl. 514—345 **15 Claims**

1. A 1-hydroxy-2-pyridone of the formula I



I

in which

R^1, R^2 and R^3, which are identical or different, denote hydrogen or lower alkyl having 1–4 carbon atoms,

X denotes S or O,

Y denotes hydrogen or up to 2 halogen atoms selected from chlorine and bromine,

Z denotes a single bond or the bivalent radicals O, S, $—C(R-)_2—$ wherein R is H or C_1–C_4-alkyl, or denotes other bivalent radicals with 2–10 carbon atoms linked to form a chain or said other bivalent radicals containing 2–10 carbon atoms and oxygen or sulfur atoms linked to form a chain, with the proviso that when the radicals contain 2 or more oxygen or sulfur atoms, said oxygen or sulfur atoms are separated by at least 2 carbon atoms, or denotes said other bivalent radicals having 2 adjacent carbon atoms linked together by a double bond, with the free valencies of the carbon atoms being saturated by H or C_1–C_4-alkyl groups,

Ar denotes a fused or an isolated aromatic ring system selected from the group consisting of phenyl, naphthyl, tetrahydronaphthyl, indenyl, biphenyl, diphenylalkane, diphenylether and diphenylthioether, or said fused or isolated aromatic ring system substituted by up to three radicals selected from the group consisting of fluorine, chlorine, bromine, methoxy, C_1–C_4-alkyl, trifluoromethyl and trifluoromethoxy.

13. A compound as claimed in claim 1, wherein R^1 and R^3 denote hydrogen.

4,797,410

SUPPRESSION OF WITHDRAWAL SYMPTOMS IN OPIOID-INDUCED TOLERANCE OR DEPENDENCE

Esam E. El-Fakahany, West Minster, Md., assignor to Miles Inc., Elkhart, Ind.

Continuation of Ser. No. 733,664, May 13, 1985, abandoned. This application Apr. 16, 1987, Ser. No. 40,755

Int. Cl.[4] A61K *31/44, 31/275, 31/135*

U.S. Cl. 514—356 **6 Claims**

1. A method for suppressing withdrawal symptoms in an opioid-induced tolerant or physically dependent individual, said withdrawal symptoms selected from the group consisting of:

(a) the sympathetic effects of lacrimation, rhinorrhea, sweating, piloerection, dilated pupils and elevated pulse rate;

(b) parasympathetic effects;

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(c) behavioral hyperexcitability;
(d) muscle and joint pain; and
(e) ptosis,
said method comprising administering to said individual an effective amount of a 1,4-dihydropyridine calcium channel blocking drug or a pharmaceutically acceptable non-toxic salt thereof to suppress said withdrawal symptoms in said individual.

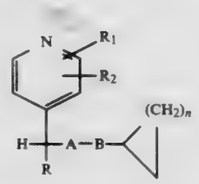
4,797,411

CYCLOALKYL-SUBSTITUTED 4-PYRIDYL DERIVATIVES AND USE AS AROMATASE INHIBITORS

Angelo Crugnola, Varese; Enrico di Salle, and Paolo Lombardi, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Jul. 13, 1987, Ser. No. 72,678
Claims priority, application United Kingdom, Jul. 18, 1986, 8617596; Nov. 24, 1986, 8628029
Int. Cl.[4] A61K *31/44;* **C07D** *213/26, 213/28, 213/24*
U.S. Cl. 514—357 **17 Claims**

1. A cycloalkyl-substituted 4-pyridyl derivative of formula (I)



(I)

wherein
R is C_1–C_4 alkyl;
each of R_1 and R_2 is, independently, hydrogen or C_1–C_4 alkyl;
n is an integer of 1 to 5; and either
(a) A is >C═O and B is —O—, —NH— or —CH_2—; or
(b) A is —CH_2— and B is —O—, —NH—, —CH_2— or >C═O; or
(c) A is —O— and B is >C═O or —CH_2—; or
(d) A is —NH— and B is >C═O or —CH_2—,
and the pharmaceutically acceptable salts thereof.

11. Method of producing inhibition of the enzyme aromatase in a patient in need of it, which method comprises administering to the patient an effective amount of a compound according to claim 1.

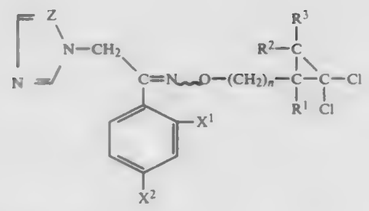
4,797,412

FUNGICIDAL SUBSTITUTED CYCLOPROPYL OXIME ETHERS

Hans-Joachim Knops, Monheim, Fed. Rep. of Germany; Karl Steinbeck, Kansas City, Mo.; Karl H. Büchel, Burscheid, Fed. Rep. of Germany; Wilhelm Brandes, Leichlingen, Fed. Rep. of Germany, and Paul Reinecke, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 16, 1986, Ser. No. 942,154
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1985, 3545085
Int. Cl.[4] A01N *43/653;* **C07D** *249/08*
U.S. Cl. 514—383 **7 Claims**

1. A substituted cyclopropyl oxime ether of the formula



in which
z represents a nitrogen atom,
X^1 represents chlorine,
X^2 represents chlorine or hydrogen,
R^1, R^2 and R^3 independently of one another represent hydrogen, methyl or chlorine and
n represents an integer from 1 to 4,
or an addition product thereof with an acid or metal salt.

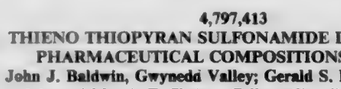
4,797,413

THIENO THIOPYRAN SULFONAMIDE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS AND USE

John J. Baldwin, Gwynedd Valley; Gerald S. Ponticello, Lansdale, and Marcia E. Christy, Collegeville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

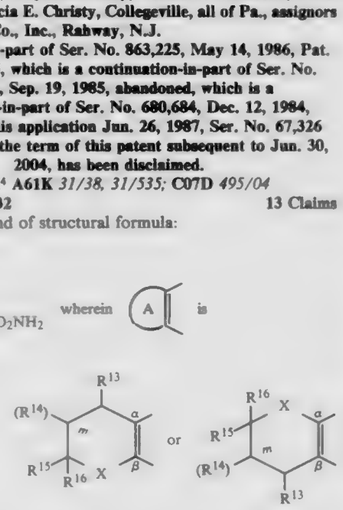
Continuation-in-part of Ser. No. 863,225, May 14, 1986, Pat. No. 4,677,115, which is a continuation-in-part of Ser. No. 777,654, Sep. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 680,684, Dec. 12, 1984, abandoned. This application Jun. 26, 1987, Ser. No. 67,326
The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.
Int. Cl.[4] A61K *31/38, 31/535;* **C07D** *495/04*
U.S. Cl. 514—432 **13 Claims**

1. A compound of structural formula:



wherein

is



or

or a pharmacologically acceptable salt thereof, wherein:
X is —S—, —SO—, or —SO_2—;
Y is —S—, C_{1-3}alkyl or benzyl,
m is 1
R^{13} is
(a) hydrogen,
(b) phenyl either unsubstituted or substituted with one or more of
(1) hydroxy,
(2) C_{1-3}alkoxy,
(3) $R^{17}R^{18}N$-C_{1-5}alkyl, wherein R^{17} and R^{18} are independently selected from:
(i) hydrogen or
(ii) C_{1-5}alkyl, or taken together with the nitrogen to which they are attached form a heterocycle selected from morpholine, piperidine, pyrrolidine, and piperazine,
(c) —OH,
(d) =O; or
(e) $-NR^{17}R^{18}$

R^{14} is
(a) hydrogen,
(b) —CN,
(c) phenyl-C_{1-3}alkyl, wherein the phenyl is either unsubstituted or substituted with one or more of
(1) hydroxy,
(2) C_{1-3}alkoxy, or
(3) $R^{17}R^{18}N$-C_{1-5}alkyl;
R^{15} is
(a) hydrogen,
(b) C_{1-5}alkyl,
(c) phenyl-C_{1-3}alkyl, wherein the phenyl is either unsubstituted or substituted with on or more of:
(1) hydroxy,
(2) C_{1-3}alkoxy,
(3) $R^{17}R^{18}N$-C_{1-3}alkyl,
(d) phenyl either unsubstituted or substituted with one or more of
(1) hydroxy,
(2) C_{1-3}alkoxy,
(3) $R^{17}R^{18}N$-C_{1-3}alkyl, or
(4) chloro or fluoro
(e) aromatic heterocycle of 5 or 6 members selected from furyl, pyridyl, and thienyl either unsubstituted or substituted with $R^{17}R^{18}N$-C_{1-3}alkyl,
(f) $-NR^{17}R^{18}$; and
(g) C_{2-5}alkyl substituted with $-NR^{17}R^{18}$
R^{16} is
(a) hydrogen, or
(b) C_{1-3}alkyl,
with the proviso that if R^{13} is other than phenyl or substituted phenyl and R^{14} is hydrogen, one of R^{15} and R^{16} is other than hydrogen.

8. An ophthalmological formulation for the treatment of ocular hypertension comprising an ophthalmologically acceptable carrier and an effective ocular antihypertensive amount of a compound of claim 1.

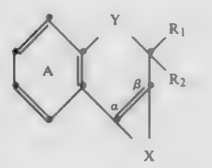
4,797,414

NAPHTHOTHIOPHENE DERIVATIVES AND THEIR USE AS RESPIRATORY ENHANCING AGENTS

Christian G. Rimbault, Grand-Lancy, Switzerland, assignor to Zyma SA, Nyon, Switzerland

Filed Feb. 14, 1986, Ser. No. 829,631
Claims priority, application United Kingdom, Feb. 23, 1985, 8504702
Int. Cl.[4] A61K *31/38;* **C07D** *333/74*
U.S. Cl. 514—443 **22 Claims**

1. A compound of the formula



(I)

wherein ring A is unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, hydroxy, lower alkoxy, lower alkylenedioxy, lower alkanoyloxy, halogen, lower alkylamino, di-lower alkylamino, lower alkanoylamino, lower alkanoyl, carboxy and lower alkoxycarbonyl, R_1 and R_2, independently of one another, each represents hydrogen, lower alkyl or phenyl which is unsubstituted or substituted in the same manner as indicated above for the ring A, Y is methylene, oxygen or sulfur, X represents a bivalent radical —S—C(—B—$(Z)_n$)═CH— the sulfur group S of which is bound directly to the alpha- or to the β-position of the bicyclic ring system, B denotes a direct bond, lower alkylene or lower alkenylene, n is 1 or, in the case where B is lower alkylene or lower alkenylene, may also be 2 or 3, and Z represents carboxy, alkoxycarbonyl, carbamoyl which is unsubstituted or substituted by one or two equal or different radicals selected from the group consisting of (a) lower alkyl; (b) phenyl-lower alkyl, the phenyl group in turn being unsubstituted or substituted in the same manner as indicated above for the ring A; (c) amino; (d) lower alkylamino; and (e) di-lower alkylamino; esterified or amidated carboxy that can be cleaved under physiological conditions selected from lower alkanoyloxy-methoxycarbonyl, amino-lower alkanoyloxymethoxycarbonyl, lower alkanoylamino-methoxycarbonyl, 3-phthalidyloxycarbonyl, 1-lower alkoxycarbonyloxy-lower alkoxycarbonyl, 1-lower alkoxy-lower alkoxycarbonyl, 2-oxo-1,3-dioxolen-4-yl methoxycarbonyl that is unsubstituted or substituted by lower alkyl or phenyl in the 5-position of the dioxolene ring, and carboxymethylcarbamoyl; cyano, hydroxycarbamoyl, 5-tetrazolyl, unsubstituted or lower alkyl-substituted 4,5-dihydro-2-oxazolyl, formyl, iminomethyl which is unsubstituted or substituted by hydroxy, lower alkoxy, or lower alkanoyloxy, or lower alkanoyl which is unsubstituted or substituted by halogen, or benzoyl or phenyl-lower alkanoyl each of which is unsubstituted or substituted in the phenyl ring as indicated above for the ring A, sulfo, lower alkoxysulfonyl, sulfamoyl, lower alkylsulfamoyl, di-lower alkylsulfamoyl, hydroxy, lower alkoxy, alkanoyloxy, amino, lower alkylamino, di-lower alkylamino, lower alkyleneamino, N-morpholino, N-thiomorpholino, N-piperazino which is unsubstituted or substituted by lower alkyl at its 4-position nitrogen atom, lower alkanoylamino, halo-lower alkanoylamino, nitro or halogen; with the provisos
(a) that R_1 is phenyl unsubstituted or substituted as defined above, if R_2 represents hydrogen, Y denotes methylene and X is (alpha)—S—C(—Z)═CH—(β) wherein Z denotes carboxy or said esterified or amidated carboxy as defined above,
(b) that ring A is substituted as defined above, if R_1 and R_2 both are hydrogen Y represents oxygen or sulfur and X is (alpha)—S—C(—COOH)═CH—(β), and
(c) that Y is oxygen or sulfur, if R_1 and R_2 both are hydrogen, X is (alpha)—S—C(—Z)═CH—(β) wherein Z denotes carboxy, ethoxycarbonyl, cyano, formyl, acetyl, nitro or bromo, and ring A is unsubstituted or monosubstituted in 7-position by methoxy or acetyl;
or a tautomer, a stereoisomer or an optical isomer thereof, or a mixture of optical isomers; or a pharmaceutically acceptable salt thereof.

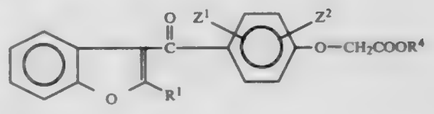
4,797,415

BENZOFURAN DERIVATIVES AND USE THEREOF FOR TREATING HYPERURICEMIA

Tsuyoshi Tomiyama; Akira Tomiyama, and Koichi Kubota, all of Nagano, Japan, assignors to Kotobuki Seiyaku Company Limited, Nagano, Japan

Continuation-in-part of Ser. No. 543,292, Oct. 19, 1983, abandoned. This application Jul. 28, 1986, Ser. No. 891,276
Claims priority, application Japan, Oct. 19, 1982, 57-182130
Int. Cl.[4] A61K *31/34;* **C07D** *307/80*
U.S. Cl. 514—469 **27 Claims**

1. A compound of the formula



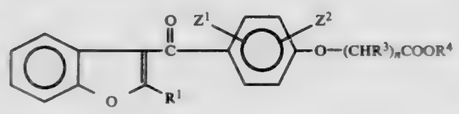
wherein:
R^1 is a lower alkyl group,

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R^4 is hydrogen or a lower alkyl group and
Z^1 and Z^2 are each hydrogen or a lower alkyl group
and pharmaceutically acceptable salts thereof.

17. A method for treating hyperuricemia which comprises administering to a patient suffering from hyperuricemia a compound defined in claim **1**.

18. A compound of the formula

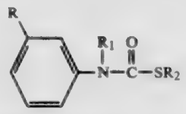


wherein:
R^1 is a lower alkyl group,
R^3 is hydrogen or a lower alkyl group,
R^4 is hydrogen or a lower alkyl group and
Z^1 and Z^2 are each hydrogen or a lower alkyl group, with the proviso that at least one of Z^1 and Z^2 is a lower alkyl group and
n is an integer of 1 or 2
and pharmaceutically acceptable salts thereof.

27. A method for treating hyperuricemia which comprises administering to a patient suffering from hyperuricemia a compound defined in claim **18**.

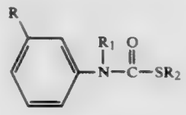
4,797,416
FUNGICIDAL CARBANILATES
Don R. Baker, Orinda; Keith H. Brownell, Cupertino, and Charles Kezerian, Orinda, all of Calif., assignors to Stauffer Chemical Co., Westport, Conn.
Filed Jan. 5, 1987, Ser. No. 607
Int. Cl.[4] C07C *155/02;* **A01N** *47/10*
U.S. Cl. 514—485 **17 Claims**

1. A compound having the structural formula



wherein R is methoxy or allyloxy; R_1 is selected from the group consisting of C_2–C_4 alkoxyalkyl and formyl; and R_2 is C_1–C_6 alkyl.

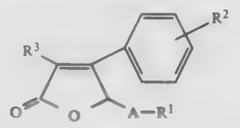
10. The method of controlling fungi comprising applying to the area where control is desired, a fungicidally effective amount of a compound having the formula



wherein R is methoxy or allyloxy; R_1 is selected from the group consisting of C_2–C_4 alkoxyalkyl and formyl; and R_2 is C_1–C_6 alkyl.

4,797,417
FURANONE DERIVATIVES, PROCESS FOR PREPARATION THEREOF AND USE THEREOF
Masanori Okamoto, Osaka; Itsuo Uchida, Kyoto; Kazuyoshi Umehara, Ashiya; Masanobu Kohsaka, Sakai, and Hiroshi Imanaka, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan
Continuation of Ser. No. 695,001, Jan. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 508,892, Jun. 29, 1983. This application Mar. 27, 1987, Ser. No. 31,199
Claims priority, application Japan, Jul. 19, 1982, 57-126599
The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.
Int. Cl.[4] C07D *307/32, 307/34;* **A61K** *31/365*
U.S. Cl. 514—473 **8 Claims**

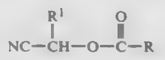
1. A compound of the formula:



wherein
A is a lower alkylene group,
R_1 is a carboxy, hydroxy, benzyloxy, or lower alkoxycarbonyl group,
R^2 is a hydrogen or halogen atom or a halo(lower)alkyl group, and
R^3 is a hydrogen atom or a hydroxy, carboxy, lower alkoxy or lower alkoxycarbonyl group, and pharmaceutically acceptable salts thereof.

4,797,418
ANTIBACTERIAL CYANOMETHYL CARBOXYLATES
Andrew T. Au, Needham, Mass., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 756,904, Jul. 19, 1985, Pat. No. 4,625,045. This application Aug. 12, 1986, Ser. No. 895,651
Int. Cl.[4] A01N *37/34*
U.S. Cl. 514—521 **2 Claims**

1. A method for inhibiting bacteria which comprises contacting said bacteria with a bacteria inhibiting amount of an antibacterial compound of the formula



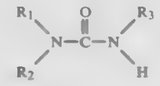
wherein R represents:
(a) $—CCl_3$;
(b) $—CF_3$;
(c) $—CH_2NO_2$;
(d) $—CH_2CN$;
(e) $—CH_2\oplus N(R^2)_3$;
wherein each R^2 is independently alkyl or aryl; or
(f)



wherein X is one to three election-withdrawing groups; and R^1 represents H, alkyl or aryl.

4,797,419
METHOD OF TREATING THE SYMPTOMS OF SENILE COGNITIVE DECLINE EMPLOYING DI- OR TRISUBSTITUTED UREA CHOLINERGIC AGENTS
Walter H. Moos, and Anthony J. Thomas, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Nov. 3, 1986, Ser. No. 926,162
Int. Cl.[4] A61K *31/17*
U.S. Cl. 514—588 **14 Claims**

1. A method of alleviating cholinergic deficits that accompany aging or dementia comprising administering to a patient suffering therefrom an effective amount of a compound having the formula



wherein R_1, R_2 and R_3 are each independently hydrogen; straight or branched alkyl of from one to twenty carbon atoms; straight or branhed alkenyl of from two to twenty carbon atoms; straight or branched alkynyl of from two to twenty carbon atoms; cycloalkyl of from three to eight carbon atoms; phenyl; phenyl substituted with alkyl of from one to four carbon atoms, alkyloxy of from one to four carbon atoms, chlorine, bromine, hydroxyl, nitro, $—SO_3H$, $—SO_3$-alkyl (wherein alkyl is from one to four carbon atoms), independently hydrogen or alkyl of from one to four carbon atoms, trifluoromethyl, or NR_4R_5 where R_4 and R_5 are independently hydrogen or alkyl of from one to four carbon atoms or trifluoromethyl; with the proviso that only one of R_1, R_2 or R_3 may be hydrogen at any time.

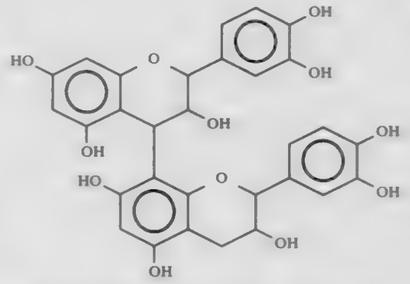
4,797,420
DISINFECTANT FORMULATION AND METHOD OF USE
James A. Bryant, Jennings, La., assignor to Jabco Manufacturing, Inc., Lake Arthur, La.
Continuation of Ser. No. 06/775,030, Sep. 11, 1985, abandoned, which is a continuation-in-part of Ser. No. 06/649,793, Aug. 14, 1984, abandoned. This application Mar. 13, 1987, Ser. No. 25,666
Int. Cl.[4] A01N *33/12;* **A61K** *31/14*
U.S. Cl. 514—643 **10 Claims**

1. A quick drying virucide formulation for killing microroganisms selected from the group consisting of herpes simplex type 1 and herpes simplex type 2 comprising a mixture consisting essentially of about 0.2 to about 10 by weight of alkyl (58% C_{14}, 28 C_{16}, 14% C_{12}) dimethyl benzyl ammonium halide, 20 to 90% by weight of a lower C_1–C_4 aliphatic alcohol, 0.1 to 10% by weight of nonionic surfactant formed by condensing a compound selected from the group consisting of an alkyl phenol, an alkyl amine, an aliphatic alcohol or a fatty acid with ethylene oxide, and a remainder of water.

4,797,421
ANTIOXIDANT COMPRISING PROANTHOCYANIDIN AS PRINCIPAL COMPONENT
Toshiaki Ariga, Noda; Ikunori Koshiyama, Nagareyama, and Danji Fukushima, Omiya, all of Japan, assignors to Kikkoman Corporation, Noda, Japan
Continuation of Ser. No. 798,620, Nov. 15, 1985, abandoned. This application Sep. 22, 1987, Ser. No. 102,805
Int. Cl.[4] A23D *5/04;* **A61K** *7/00*
U.S. Cl. 514—844 **4 Claims**

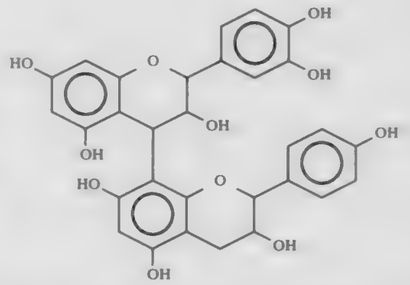
2. A method for inhibiting the oxidation of fats and oils in food compositions and cosmetric preparations which comprises adding to said food compositions or cosmetic preparations about 0.001 to 2% by weight of a proanthocyanidin compound which exhibits an antioxidant action, said proanthocyanidin compound being selected from the group consisting of

a dimeric procyanidin B-2 and its stereoisomers represented by formula (1)



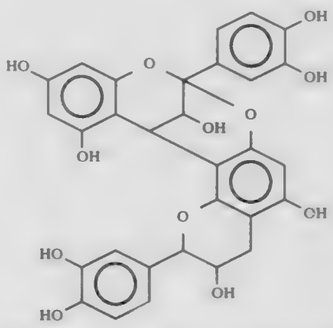
(1)

a dimeric procyanidin represented by formula (2)



(2)

a dimeric proanthocyanidin A-2 and its stereoisomers represented by formula (3)

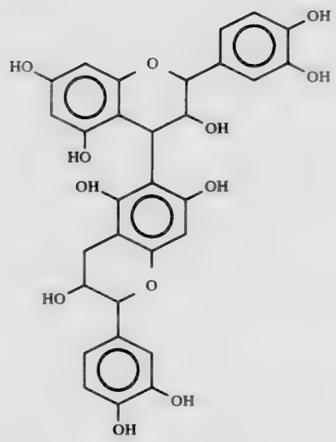


(3)

a dimeric procyanidin represented by formula (4)

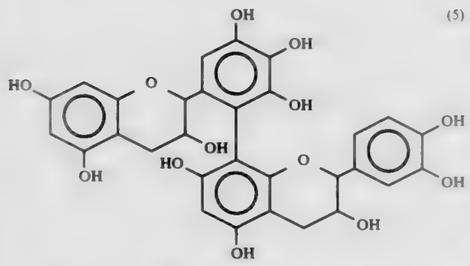
VOL 1098 ISS 2 JA 10 1989 UMI

(4)



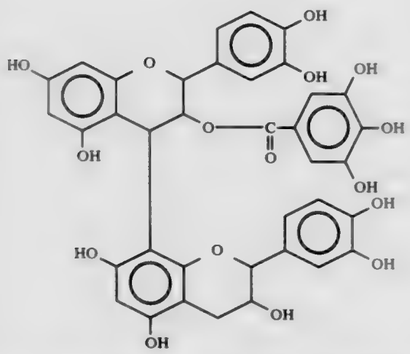
a dimeric prodelphinidin represented by formula (5)

(5)



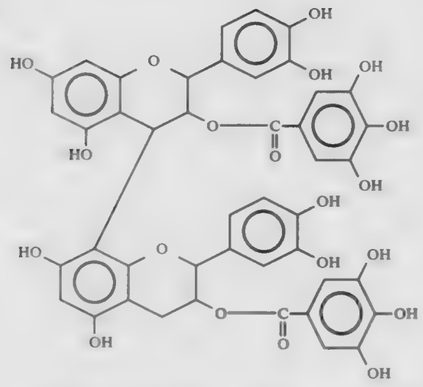
a dimeric procyanidin B-1 gallate and its stereoisomers represented by formula (6)

(6)



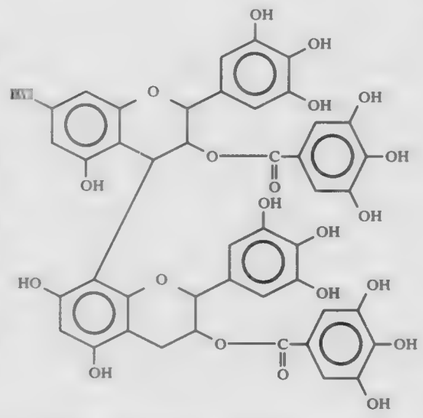
a dimeric procyanidin B-1 gallate and its stereoisomers represented by formula (7)

(7)



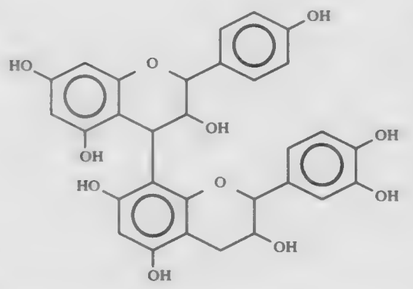
a dimeric prodelphinidin B-2 gallate and its stereoisomers represented by formula (8)

(8)



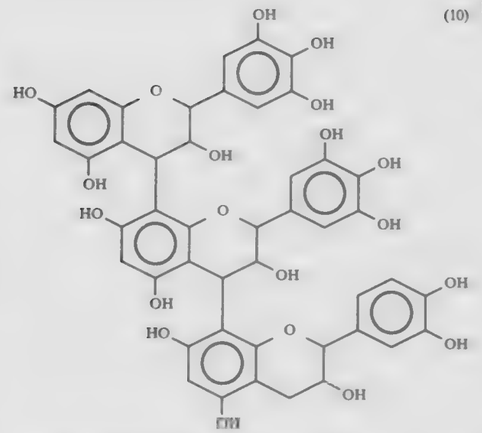
a dimeric propelargonidin represented by formula (9)

(9)



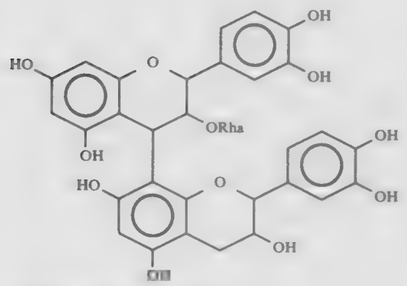
a trimeric prodelphinidin represented by formula (10)

(10)



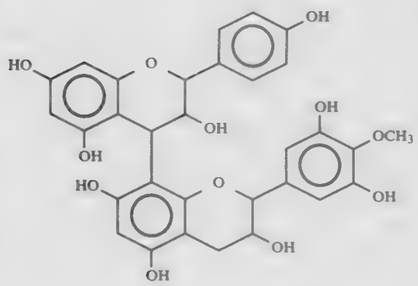
a dimeric procyanidin represented by formula (11)

(11)



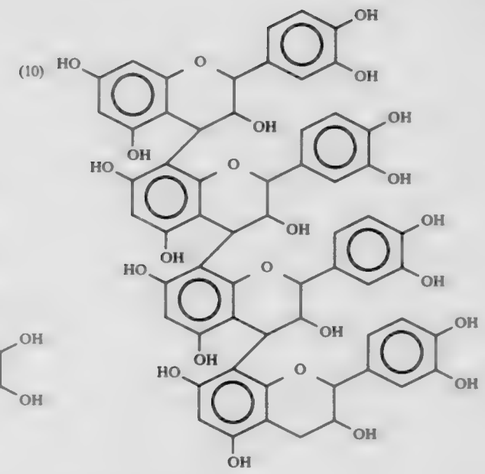
wherein Rha is rhamnose
a propelargonidin represented by formula (12)

(12)



a tetrameric proanthocyanidin represented by formula (13)

(13)



and mixtures thereof.

4,797,422

PHARMACEUTICAL COMPOUNDS EFFECTIVE AGAINST SEVERAL DISORDERS OF THE EYE IN PARTICULAR THE CATARACT AND COMPOSITION CONTAINING THEM

Michele Testa, 30 Via Guantai Nuovi, 80133 Naples, Italy

Filed Jul. 23, 1986, Ser. No. 888,348
Claims priority, application Italy, Aug. 5, 1985, 48447 A/85; Oct. 23, 1985, 22596 A/85
Int. Cl.[4] A61K *31/045*
U.S. Cl. 514—912 **14 Claims**

1. A method for the treatment of cataracts of the eye in humans and animals, which comprises topically administering to the eye of a human or animal in need thereof an anti-cataract effective amount of a compound of the formula

$$R—C_6H_4—(CH_2)_n—OH$$

wherein R is hydrogen, alkyl of 1 to 6 carbon atoms, amino, monosubstituted amino, disubstituted amino, or hydroxyl, and n is a whole number of from 1 to 6.

4,797,423

LYSINE SALT OF 4-DIPHENYLACETIC ACID AND ITS OPHTHALMIC FOMULATIONS

Giuseppe Beaunti, Santa'Agata Li Battisti, Italy, assignor to S.I.F.I. Societa Industria Farmaceutica Italiana S.p.A., Catania, Italy

Filed Sep. 22, 1987, Ser. No. 99,597
Claims priority, application Italy, Sep. 26, 1986, 21828 A/86
Int. Cl.[4] C07C *101/26;* **A61K** *31/13*
U.S. Cl. 514—914 **1 Claim**

1. An ophthalmic therapeutic composition, comprising:
a therapeutically effective amount of the lysine salt of 4-diphenylacetic acid of the formula:



in combination with pharmaceutically acceptable excipients.

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4,797,424

SALINE SOLUTION FOR FROZEN FOAM

Nancy G. Abt, 9397 Midnight Pass Rd., #404S, Sarasota, Fla. 34242

Filed Feb. 19, 1988, Ser. No. 157,598
Int. Cl.[4] C08J 9/36
U.S. Cl. 521—53 6 Claims

6. A frozen foam comprising:
an open-cell foam material saturated with a saline solution of from 40 to 50 grams of salt to 1 liter of water and frozen.

4,797,425

METHOD OF PRODUCING POROUS MATERIAL HAVING OPEN PORES

Noboru Kishima, and Akio Matsumoto, both of Kitakyushu, Japan, assignors to Toto Ltd., Kitakyushu, Japan

Filed Sep. 3, 1987, Ser. No. 92,585
Int. Cl.[4] C08J 9/28
U.S. Cl. 521—64 6 Claims

1. A method of producing a porous material having open pores, comprising the steps of preparing an emulsion slurry by vigorously agitating a mixture comprising a main ingredient, a polyamide hardener, a filler and water, casting said emulsion slurry in a water-impermeable mold, hardening said slurry while it contains the water, wherein the improvement comprises that said main ingredient is a bisphenol epoxy resin added with one or more reactive diluent each having one or more epoxy rings per molecule and added in an amount of 27–50 wt %, based on 100 wt % of said bisphenol epoxy resin.

4,797,426

HARD POLYVINYL CHLORIDE RESIN COMPOSITION AND OPEN-CELL FOAM MADE OF SAID COMPOSITION

Tatsuo Waki; Takeshi Watanabe, and Kazuo Suzuki, all of Tsuchiura, Japan, assignors to Lonseal Corporation, Tokyo, Japan

Filed Nov. 18, 1987, Ser. No. 122,686
Claims priority, application Japan, Feb. 21, 1987, 62-38231; Oct. 6, 1987, 62-250614
Int. Cl.[4] C08J 9/06
U.S. Cl. 521—93 36 Claims



1. A hard polyvinyl chloride resin composition comprising, an essential components thereof, the following components (a)–(e):
(a) a polyvinyl chloride base resin produced by suspension polymerization and/or bulk polymerization;
(b) a super high molcular acrylic resin base processing aid of molecualr weight of at least 1,000,000;
(c) a stabilizer containing one or more Group-II and/or Group-IV metals, said stabilizer being free of any Group-I metal;
(d) a surfactant which is a combination of an anionic surfactant and a non-ionic surfactant or a combination of an anionic surfactant and a low polymerization-degree polyolefin or wax; and
(e) a heat-decomposable organic foaming agent.

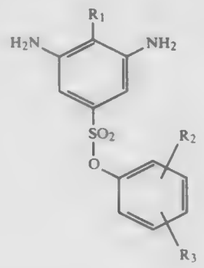
4,797,427

AROMATIC DIAMINES CONTAINING SULFONIC ACID ARYL ESTERS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE IN THE PRODUCTION OF POLYURETHANE PLASTICS

Josef Sanders, Cologne; Helmut Reiff, Leverkusen; Gerhard Ballé, Leverkusen, and Dieter Dieterich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Apr. 19, 1988, Ser. No. 183,107
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1987, 3713856
Int. Cl.[4] C08G 18/14
U.S. Cl. 521—159 22 Claims

1. An aromatic diamine containing a sulfonic acid aryl ester corresponding to the formula



wherein
R_1 represents hydrogen, an optionally branched C_1–C_6 alkyl radical, a C_1–C_6 alkoxy radical or a halogen atom,
R_2 and R_3, which may be the same or different, represent hydrogen, an optionally branched C_1–C_{20} alkyl radical, a C_1–C_6 alkoxy radical or a halogen atom.

4,797,428

FOAM SYSTEMS AND ASTM E-84 CLASS 1 RATED FOAMS PRODUCED THEREFROM

Wolfgang W. Reichmann, Pittsburgh, Pa., assignor to Mobay Corporation, Pittsburgh, Pa.

Filed Jun. 22, 1987, Ser. No. 65,228
Int. Cl.[4] C08G 18/42
U.S. Cl. 521—137 7 Claims

1. A rigid flame retardant foam having an ASTME E-84 Class 1 rating which is the reaction product, formed at an isocyanate index of less than 300, of
(a) an organic polyisocyanate;
(b) an isocyanate-reactive mixture comprising
(i) 25–75 weight % (based on total isocyanate-reactive materials) of an oligoester, wherein said oligoester is the reaction product of a dicarboxylic acid semi-ester or semi-amide and an alkylene oxide, said reaction product being formed in the presence of a catalyst, wherein said catalyst is the N-alkoxylation product of an alkylene oxide of at least three carbon atoms with ammonia, a C_2–C_6 aliphatic diamine, or piperazine, and
(ii) at least 25 weight % of an isocyanate-reactive compound different from oligoester (b)(i); and
(c) a blowing agent.

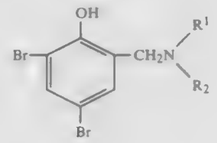
4,797,429

BROMINE-CONTAINING POLYOLS

David Thorpe, Everberg, Belgium, assignor to Imperial Chemical Industries PLC, London, England

Filed Mar. 11, 1987, Ser. No. 24,569
Claims priority, application United Kingdom, Mar. 12, 1986, 8606066
Int. Cl.[4] C08G 59/00
U.S. Cl. 521—163 10 Claims

1. A Mannich base of the formula:



wherein each of R^1 and R^2, independently, represents a hydroxyalkyl radical.

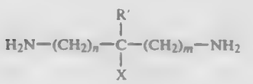
4,797,430

AMINE-MODIFIED POLYURETHANE (UREA) FOAMS AND A PROCESS FOR THEIR PRODUCTION

Peter Haas, Haan, and Hans-Joachim Kogelnik, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

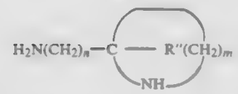
Filed Jun. 3, 1987, Ser. No. 57,473
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1986, 3620504
Int. Cl.[4] C08G 18/00, 18/14; C08J 9/00
U.S. Cl. 521—164 19 Claims

1. A process for the production of polyurethane (urea) foams in which
(a) an organic compound having at least two isocyanate-reactive hydrogen atoms and a molecular weight of from 400 to 10,000
is reacted with
(b) a polyisocyanate
in the presence of
(c) 0.01 to 5.0 parts by weight of a crosslinking agent for every 100 parts by weight isocyanate-reactive compound (a) wherein said crosslinking agent is a difunctional or polyfunctional amine corresponding to the formula



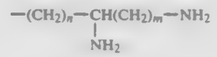
(I)

or

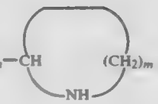


(II)

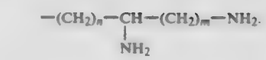
or a mixture of such amines
in which
m and n each represents an integer of from 2 to 10,
X represents an —OH, $—NH_2$ or $—(CH_2)_m NH_2$ group,
R′ represents hydrogen, a C_1–C_5 alkyl group or



and
R″ represents hydrogen,



or



4,797,431

GLASS/POLY(CARBOXYLIC ACID) CEMENT COMPOSITIONS

Richard W. Billington, London, and Jill A. Williams, Thorpe, both of England, assignors to Deutsply Limited, Weybridge, England

Filed Apr. 6, 1987, Ser. No. 34,880
Claims priority, application United Kingdom, Apr. 18, 1986, 8608546
Int. Cl.[4] A61K 5/06
U.S. Cl. 523—116 8 Claims

1. A substantially optically translucent dental restorative material comprising a polymerized matrix containing an acid or an alkali-leachable source of polyvalent metal ions, said matrix consisting essentially of a homopolymer or copolymer of acrylic acid having a molecular weight of 20,000 to 125,000 and said leachable source consisting essentially of by weight about 15–33% SrF_2, not more than 25% CaO, 28–38% Al_2O_3, 25–30% SiO_2, 0–9% P_2O_5, the ratio of said homopolymer to said leachable source being between 0.15 to 1 and 0.5 to 1 whereby the strontium fluoride provides essentially all of the radiopaque properties.

4,797,432

THERMOPLASTIC EPOXY RESIN AND COATINGS PREPARED THEREFROM

Michael B. Cavitt, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 24,938, Mar. 11, 1987, abandoned. This application Nov. 19, 1987, Ser. No. 122,979
Int. Cl.[4] C08F 283/10; C08L 63/02; C08K 3/40
U.S. Cl. 523—172 13 Claims

1. A thermally stable, epoxy resin resulting from
(A) reacting a composition comprising
(1) the product resulting from reacting
(a) the product resulting from reacting
(i) at least one aromatic based epoxy resin having an average of more than one but not more than about 2.1 vicinal epoxy groups per molecule and an equivalent weight of not greater than about 225: with
(ii) at least one unsaturated monofunctional carboxylic acid;
wherein components (i) and (ii) are employed in an amount which provides a ratio of equivalents of component (ii) to equivalent of component (i) of from about 0.0087:1 to about 0.035:1: with
(b) at least one unsaturated acrylate ester or methacrylate ester:
wherein component (b) is employed in an amount of from about 5 to about 20 percent by weight of the combined quantity of components (a) and (b):
(2) at least one phenolic compound having an average of more than 1 but not more than about 2 phenolic hydroxyl groups per molecule: and
(3) optionally, at least one aromatic based epoxy resin having an average of more than 1 but not more than about 2.1 vicinal epoxy groups per molecule and an equivalent weight of not greater than about 225: and
wherein components (1) and (3) are employed in quantities which provide a ratio of epoxide groups from component (3) to component (1) of from about zero:1 to about 12:1: and

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components (1), (2) and (3) are employed in quantities such that the resultant product has an epoxide equivalent weight (EEW) of from about 700 to about 2000; each of the aforementioned EEWs being calculated on the basis that the aromatic groups contained therein are free of substituent groups even if they do in fact contain substituent groups; and

(B) reacting the product resulting from (A) with

(4) a reactant compound having only one group per molecule which is reactive with a vicinal epoxy group selected from —OH, —SH, —COOH and —CO—O—CO— groups; wherein component (4) is employed in an amount which provides a ratio of groups reactive with a vicinal epoxy group to vicinal epoxy group contained in the product from (A) from about 0.85:1 to about 1.1:1.

4,797,433

UTILIZATION OF MELAMINE WASTE EFFLUENT

Shawqui Lahalih, Rique, and Ma'mun Abul-Halabi, Salmia, both of Kuwait, assignors to Kuwait Institute for Scientific Research, Safat, Kuwait

Division of Ser. No. 719,158, Apr. 2, 1985, Pat. No. 4,663,387.
This application Aug. 25, 1986, Ser. No. 899,889
The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.
Int. Cl.[4] C08L *61/28;* **C08G** *12/30;* **C08J** *3/18*
U.S. Cl. 524—3 **4 Claims**

1. A method of improving the workability and stength of concrete mixes which comprises adding to a concrete mixture comprised of portland cement, water, and at least one member selected from the group consisting of sand and aggregate, an effective amount of the thermally stable water soluble resin solution containing melamine, oxy triazines and polycondensates prepared from the mother liquor effluent stream from a melamine manufacturing plant by a process which comprises:

(a) treating the waste solids from the effluent stream with an aldehyde solution at a temperature of about 40° C.–80° C. after adjusting the pH of said solution to about 110°–13.0;

(b) sulfonating the solution from the preceding step at a temperature of aobut 70° C.–90° C. for about 60 to 180 minutes with a sulfonating agent selected from the group consisting of alkali metal sulfites, alkali metal bisulfites and alkali metal metabisulfites;

(c) polymerizing the reactive components contained in the sulfonated solution for the preceding step at a pH of 1.0–5.0 and at a temperature of 30° C.–80° C. for about 10 to about 150 minutes; and

(d) stabilizing the resulting resin solution by heating the same at a pH of about 7.0–10.0 and at a temperature of about 50° C.–100° C. for about 30 to 180 minutes.

4,797,434

PROCESS FOR THE MANUFACTURE OF PARTICULATE BITUMINIZED PLASTICS MATERIAL

Frederick D. Lovatt-Smith, Herstmonceaux, Great Britain, assignor to Denchunt Ltd., Heathfield, Great Britain

PCT No. PCT/GB86/00223, § 371 Date Feb. 20, 1987, § 102(e) Date Feb. 20, 1987, PCT Pub. No. WO86/06391, PCT Pub. Date Nov. 6, 1986
PCT Filed Apr. 23, 1986, Ser. No. 2,697
Claims priority, application United Kingdom, Apr. 23, 1985, 8510317
Int. Cl.[4] C08L *23/06, 27/06, 95/00*
U.S. Cl. 524—60 **10 Claims**

1. A process for manufacturing particulate bitumenized plastics material, comprising the steps of providing raw granulated plastics material, adding to said plastics material cationic bitumen emulsion and water to form a mixture, the quantity of added water being substantially greater than the quantity of bitumen emulsion, agitating said mixture to produce particulate plastics material coated with bitumen in which significant agglomeration of the particles is avoided, and separating said particulate material coated with bitumen from said water.

4,797,435

USE OF 3-BENZALPHTHALIDES AS UV STABILIZERS FOR THERMOPLASTIC, AROMATIC POLYESTERS, POLYCARBONATES AND POLYESTER CARBONATES

Thomas Scholl; Volker Serini, both of Krefeld; Dietrich Rathmann, Leverkusen, all of Fed. Rep. of Germany; Ross Savage, Newtownards, Ireland, and Klaus Kircher, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1987, Ser. No. 2,749
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1986, 3601900
Int. Cl.[4] C08K *5/34, 5/48, 5/49*
U.S. Cl. 524—89 **6 Claims**

1. Thermoplastic polymers selected from the group consisting of aromatic polyesters, polycarbonates and polyester carbonates stabilized against ultraviolet light with a stabilizing amount of 3-benzalphthalides.

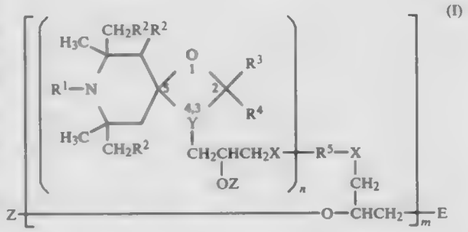
4,797,436

OLIGOMERIC DIAZAOXASPIRODECANES, PREPARATION THEREOF AND USE THEREOF AS LIGHT STABILIZERS FOR POLYMERS

Josef Ertl, Wertingen, and Helmut Korbanka, Adelsried, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 24, 1986, Ser. No. 934,109
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1985, 3541664
Int. Cl.[4] C08K *5/34;* **C07D** *498/10*
U.S. Cl. 524—97 **12 Claims**

1. A compound of the formula (I)



(I)

in which

n is a whole number from 1 to 4,

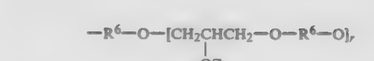
m is a whole number from 1 to 100,

R^1 is hydrogen, C_1- to C_4-alkyl, benzyl, allyl, C_2- to C_{30}-alkanoyl, C_2- to C_{20}-alkenoyl, C_7- to C_{11}-aroyl, C_8- to C_{14}-arylalkanoyl or C_9- to C_{20}-alkylaryl,

R^2 is hydrogen or C_1- to C_4-alkyl,

R^3 and R^4 are identical or different and denote hydrogen, C_1- to C_{13}-alkyl, unsubstituted or chlorine- or C_1- to C_4-alkyl-substituted phenyl, unsubstituted or C_1- to C_4-alkyl-substituted C_7- to C_{14}-aralkyl, or together with the carbon atom connecting them denote an unsubstituted or C_1- to C_4-alkyl-mono-, -di-, -tri- or -tetrasubstituted C_5- to C_{12}-cycloalkyl or piperidine ring,

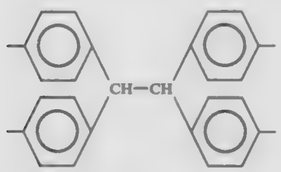
R^5 when n=1 denotes C_2- to C_{18}-alkylene, unsubstituted or C_1- to C_4-alkyl-mono- or -di substituted phenylene, α,ω-dicarboxyl-C_1- to C_8-alkylene, a dicarboxy-C_6-ring, C_7- to C_{14}-aralkylene, cycloalkylene, dicycloalkylene, tricycloalkylene, bismethylenemonocycloalkylene, bismethylenedicycloalkylene, bismethylenetricycloalkylene, arylene, bisarylenealkyl, which radicals can also be bromine- or chlorine- or C_1–C_4-alkyl-substituted, a radical



with r=1 to 20 and R^6 equal to C_2- to C_{12}-alkylene, cycloalkylene, dicycloalkylene, tricycloalkylene, bismethylenemonocycloalkylene, bismethylenedicycloalkylene, bismethylenetricycloalkylene, arylene, bisarylenealkyl, which radicals can also be bromine- or chlorine- or C_1- to C_4-alkyl-substituted,

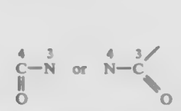
R^5 when n=2 denotes the radical of a trifunctional alcohol or amine, the trifunctional radical of an aliphatic alcohol which contains further hydroxyl groups, or the trifunctional radical of a novolak based on phenyl, cresol, bisphenol-F or bisphenol-A,

R^5 when n=3 denotes the tetrafunctional radical of an aliphatic alcohol or amine or of a novolak based on phenol, cresol, bisphenol-F or bishenol-A or the radical



R^5 when n=4 denotes a pentafunctional radical of a polyol, or a polyamine or of a novolak based on phenol, cresol, bisphenol-F or bisphenol-A,

Y denotes

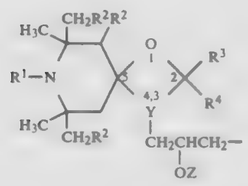


and occupies ring positions 3, 4 in the formula (I),

X represents —O— or



where R^7 is hydrogen, C_1- to C_{30}-alkyl, a piperidine ring which is substituted by 1 to 4 C_1- to C_4-alkyl groups, or a radical of the formula (II)

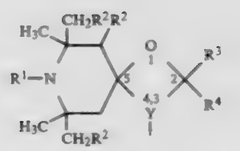


(II)

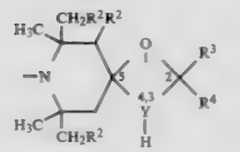
in which R^1, R^2, R^3, R^4, Y have the abovementioned meanings,

Z is hydrogen,

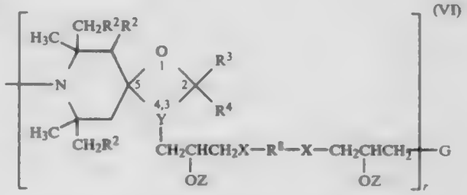
E stands for hydrogen, hydroxyl, a radical of the formula (IV), (V) or (VI)



(IV)

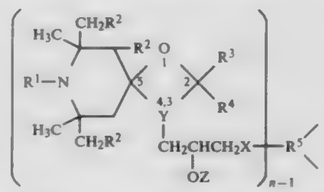


(V)



(VI)

in which R^1, R^2, R^3, R^4, R^5, X, Y and Z have the abovementioned meanings, r represents a whole number from 1 to 100, and G is a radical of the formula (IV) or (V) and R^8 has the meaning of formula (VII)



(VII)

in which R^1, R^2, R^3, R^4, R^5, X, Y, Z and n have the abovementioned meanings.

4,797,437

THERMOPLASTIC ELASTOMER

Michael D. Golder, Allendale, and Stanley J. Gromelski, Jr., West Caldwell, both of N.J., assignors to Hoechst Celanese Corporation, Chatham, N.J.

Filed Dec. 1, 1983, Ser. No. 557,100
The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.
Int. Cl.[4] C08L *67/02*
U.S. Cl. 524—100 **10 Claims**

1. Thermoplastic elastomer composition consisting essentially of:

(a) segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain units being represented by the formula



Formula I

and said short chain units being represented by the formula

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Formula II

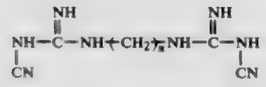


where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a number average molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4-butanediol or 1,4-butenediol; provided, said short chain units amount to between about 30% and about 85% by weight of the copolyester;

(b) between about 0.1 and about 25% by weight of said polyester of polyvinylpyrrolidone having a K value not exceeding about 30;

(c) between about 0.05 and about 5% by weight of said copolyester of cyanoguanidine or guanidine stabilizer of the formula

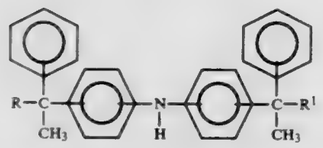
Formula III



where n is an integer between 2 and about 20;

(d) between about 0.1 and about 5% by weight of said copolyester of diphenylamine derivative of the formula

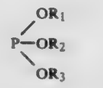
Formula IV



where R and R^1 are methyl or phenyl; and

(e) between 0.05 and about 3% by weight of said copolyester of phosphorus compound of the formula

Formula V



where each of R and R_1 independently represents a hydrocarbon radical selected from the group consisting of alkyl, aryl and alkyl/aryl hydrocarbon radicals having from 1 to about 22 carbon atoms and R_3 represents hydrogen or a hydrocarbon radical selected from the group consisting of alkyl, aryl and alkyl/aryl hydrocarbon radicals having from 1 to about 22 carbon atoms.

4,797,438

STABILIZED GAMMA-IRRADIATED POLYPROPYLENE AND STERILIZABLE ARTICLES THEREOF

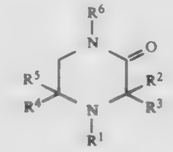
George Kletecka, Fairview Park; John T. Lai, Broadview Heights, and Pyong-Nae Soo, Akron, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed May 11, 1987, Ser. No. 48,168

Int. Cl.[4] C08K *5/34*

U.S. Cl. 524—100 **9 Claims**

1. A method for imparting improved strength and discoloration resistance to a stabilized, gamma-irradiated polypropylene polymer article which comprises incorporating into said polypropylene polymer, which is essentially free of an antioxidant, an effective amount from 20 ppm to 2% of a hindered amine stabilizer containing a polysubstituted piperazin-2-one (PSP) moiety having the structure



wherein,

R^1 represents hydrogen, oxygen, C_1–C_{18} alkyl, C_1–C_6 hydroxyalkyl, C_2–C_{12} acyl, C_3–C_8 alkenyl, C_3–C_8 alkynyl, C_7–C_{12} aralkyl which is unsubstituted or substituted in the alkyl moiety by hydroxyl, or C_1–C_8 alkanoyl or C_3–C_5 alkenoyl;

R^2, R^3, R^4 and R^5 independently represent hydrogen, C_1–C_{24} alkyl, C_1–C_{12} hydroxyalkyl, C_1–C_{12} haloalkyl, C_1cyanoalkyl, C_2–C_{12} aminoalkyl or iminoalkyl, C_3–C_{18} ether groups, C_4–C_{18} hydroxyalkyl ether or cyanoalkyl ether groups, C_7–C_{14} alkenyl or aralkyl, C_2–C_7 alkylene, and optionally containing a phosphite, ester, or hindered phenol group, and which in combination, one with another, represent C_5–C_{14} cycloalkyl at least four of which C atoms are cyclized, and, optionally containing a keto, ester, amide, ether, thio or hydroxy groups; but, only one of R^2 and R^3, and only one of R^4 and R^5 may be hydrogen; and, R^6 represents a free valency through which the PSP moiety is connected to the remaining structure of the stabilizer;

said hindered amine stabilizer being selected from the group consisting of (i) a bis-compound consisting of a C_2–C_{12} alkylene connecting two PSP moieties, and (ii) a polyalkylene polyamine having a pendant triazine ring with a PSP substituent;

said effective amount being sufficient to attenuate oxidative degradation of said polypropylene polymer.

4,797,439

DIORGANOPOLYSILOXANES CURABLE INTO ADHESIVE/ELASTOMERIC STATE

Pierre-Michel Peccoux, Lyon, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Filed Sep. 11, 1987, Ser. No. 95,408

Claims priority, application France, Sep. 11, 1986, 86 12892

Int. Cl.[4] C08K *5/54*

U.S. Cl. 524—188 **10 Claims**

1. A storage-stable diorganopolysiloxane composition of matter curable into elastomeric state, comprising an α,ω-dihydroxydiorganopolysiloxane polymer, a ketiminoxysilane crosslinking agnet therefor, and a tackifier which comprises a (Δ^2-imidazolinyl)alkylsilane in an amount effective to enhance adhesion of the composition.

4,797,440

DISPERSED PARTICULATE COMPOSITION

John D. Schofield, Bury, and Roger Slater, Saddleworth, both of England, assignors to Imperial Chemical Industries PLC, London, England

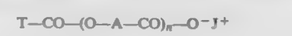
Filed Jun. 25, 1987, Ser. No. 66,236

Claims priority, application United Kingdom, Jul. 16, 1986, 8617186

Int. Cl.[4] C08K *5/16, 5/10, 5/09*

U.S. Cl. 524—239 **7 Claims**

1. A composition comprising a dispersion of a finely divided particulate solid in a thermoplastic polymeric organic medium in the presence of a lubricant and a processing additive of the formula:



wherein

A is a divalent aliphatic radical containing 17 carbon atoms, at least 4 of which are directly between the oxygen atom and the carbonyl group;

J is H, a metal, NH_4 or substituted ammonium;

T is selected from alkyl, alkenyl, cycloalkyl, polycycloalkyl, aryl, and polyaryl, each of which is unsubstituted or substituted by a group selected from hydroxy, halo and C_{1-4}-alkoxy; and

n is an integer between 1 and 6.

4,797,441

DICHLORO (ACETIC OR PROPIONIC) ACID ARYL ESTER FLAME RETARDANTS

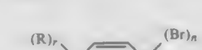
William J. Parr, Naperville, Ill., and Peter Hope, Twello, Netherlands, assignors to Akzo N.V., Netherlands

Filed Jun. 11, 1987, Ser. No. 61,932

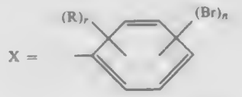
Int. Cl.[4] C07C *69/63, 147/115, 149/40;* **C08K** *5/10*

U.S. Cl. 524—288 **9 Claims**

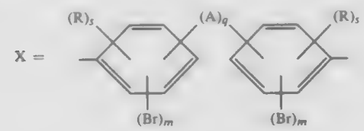
1. A compound of the formula



where Y has the meaning of a methyl group or hydrogen atom and p=1 or 2, and when p=1,



wherein n=2,3,4 or 5 and n +r+5 and when p=2,



wherein separately for each aromatic ring m=2,3 or 4 and m+s≦4 and q=O or 1, where R is a lower alkyl group containing 1 to 3 carbon atoms, and when q=1, A is a substituted or unsubstituted alkylidene group containing 1 to 3 carbon atoms, SO_2, S or O.

4,797,442

MELT PROCESSABLE CPVC BLENDS AND ALLOYS THEREOF

Richard C. Neuman, Vermilion, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 895,096, Aug. 11, 1986, Pat. No. 4,710,533. This application Oct. 19, 1987, Ser. No. 109,683

Int. Cl.[4] C08K *5/09, 27/04*

U.S. Cl. 524—394 **11 Claims**

1. A melt processed chlorinated polyvinyl chloride polymer alloy, comprising:

100 parts by weight of chlorinated polyvinyl chloride, said chlorinated polyvinyl chloride having a chlorine content of at least 60% by weight,

from about 12 parts to about 40 parts by weight of a flow enhancing polymer for every 100 parts by weight of said chlorinated polyvinyl chloride, and

from about 2 parts to about 10 parts by weight for every 100 parts by weight of said chlorinated polyvinyl chloride of a compatibilizing agent,

said chlorinated polyvinyl chloride, said flow enhancing polymer, and said compatibilizing agent melt processed at a temperature of from about 300° F. to about 400° F.

4,797,443

STABILIZED VINYL HALIDE RESINS AND COMPOSITIONS AND ARTICLES MADE THEREFROM

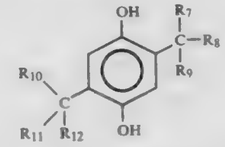
Zaev Sharaby, Cleveland Heights, and Josef C. Vyvoda, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 29, 1985, Ser. No. 728,548

Int. Cl.[4] C08K *5/13*

U.S. Cl. 524—347 **13 Claims**

1. A stabilized vinyl halide resin composition comprising a vinyl halide resin and at least one 2,5-substituted hydroquinone stabilizer having the formula



wherein R_7, R_8, R_{10}, and R_{11} are methyl and R_9 and R_{12} are either methyl or ethyl.

4,797,444

WATERBORNE PIGMENTED ACRYLIC HYDROSOL COATING COMPOSITION AND PROCESS

Richard A. Cowles, Perrysburg, Ohio; Nick Georgalas, Chappaqua, N.Y., and Shailesh C. Shah, Paramus, N.J., assignors to BASF Corporation, Clifton, N.J.

Filed Feb. 3, 1987, Ser. No. 10,452

Int. Cl.[4] C08J *3/02;* **C08K** *3/20*

U.S. Cl. 524—501 **7 Claims**

1. A waterborne pigmented coating composition comprising one or a combination or mixture of substantially uniformly dispersed pigment particles, a film forming constituent comprising a mixture of uniformly dispersed acrylic hydrosol particles and an aqueous soluble salt of a thermosettable dispersant polymer having acid functionality, the aqueous soluble salt having a volatile substituent, and a liquid constituent comprising a mixture of water and organic solvents, the organic solvents functioning as coalescing agents for the film forming constituents whereby the resulting composition is substantially free of surfactants and emulsifiers.

4,797,445

NON-TRANSFERRING DRY-FILM MOLD RELEASE AGENT

Charles Piskoti, Grand Blanc, Mich., assignor to Genesee Polymers Corporation, Flint, Mich.

Continuation of Ser. No. 925,466, Oct. 30, 1986, abandoned, which is a continuation of Ser. No. 715,507, Mar. 26, 1985, abandoned. This application Apr. 4, 1988, Ser. No. 180,628

Int. Cl.[4] C08L *83/00*

U.S. Cl. 524—588 **15 Claims**

1. A method of preparing an organoalkoxy substituted silicone resin consisting essentially of the steps of: adding an organo-silicone resin that is a three dimensional trifunctional siloxane polymer with each silicone atom sharing three oxygen atoms with adjacent silicon atoms and having hydroxyl-terminated functional groups, to an alkoxysilane wherein the ratio of resin contributed moles of hydroxyl groups to alkoxysilane containing molecules is at least 1:1 in the presence of catalytic amounts of a titanate compound and incubating the mixture until there is complete substitution of the hydroxyl groups with alkoxy moieties from the alkoxysilane to derive the stable organoalkoxy substituted silicone product absent any free

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hydroxyl groups having extended shelf life and a hydroxylated biproduct.

4,797,446
ADHESION OF SILICONE SEALANT
John E. Dietlein, Bay City, and Jerome M. Klosowski, Monitor Township, Bay County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.
Continuation-in-part of Ser. No. 508, Jan. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 787,587, Oct. 15, 1985, abandoned. This application Jan. 28, 1988, Ser. No. 149,252
Int. Cl.[4] C08L *83/04*
U.S. Cl. 524—860 **17 Claims**

1. A composition consisting essentially of a product obtained by mixing

(A) 100 parts by weight of a hydroxyl or alkoxy endblocked polydiorganosiloxane having viscosity of between 1.0 and 100 Pa.s at 25° C. the organic groups being selected from the group consisting of methyl, ethyl, propyl, phenyl, and trifluoropropyl.

(B) from 0.35 to 9.0 parts by weight of an alkyltrialkoxysilane of the formula $RSi(OR')_3$ where R is a monovalent hydrocarbon radical of from 1 to 4 carbon atoms and R is an alkyl or alkoxyalkyl radical.

(C) from 0.5 to 5.0 parts by weight of titanium catalyst such that there is from 0.05 to 0.94 part of titanium.

(D) from 0 to 250 parts by weight of filler,

(E) silane of the formula

$$(MeO)_3SiCH_2CH_2CH_2NHCH_2CH_2NH_2$$

in an amount such that there is from 0.1 to 1.0 mole of silane per mole of titanium in (C), and

(F) silane of the formula

$$(MeO)_3SiCH_2CH_2CH_2OCH_2CH\text{—}CH_2$$

(with O)

an amount such that there is at least 25 percent on a molar basis of the amount of (E) present, and less than about 5 percent by weight based upon the weight of (A).

4,797,447
IMPACT RESISTANT BLENDS OF THERMOPLASTIC POLYESTERS AND MODIFIED BLOCK COPOLYMERS
William P. Gergen, Houston, and Robert G. Lutz, Spring, both of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Aug. 16, 1985, Ser. No. 766,216
Int. Cl.[4] C08L *67/02, 53/02*
U.S. Cl. 525—92 **34 Claims**

1. Impact resistant polymeric composition comprising:

(a) from 50 to 97 percent by weight of a thermoplastic polyester; and

(b) from 3 to 50 percent by weight of a functionalized selectively hydrogenated block copolymer of the formula $B_n(AB)_oA_p$ where n=0 or 1, o≧1, p=0 or 1, each A is predominantly a polymerized vinyl aromatic hydrocarbon block and, each B prior to hydrogenation is predominantly a polymerized conjugated diene hydrocarbon block, to which has been grafted at least one graftable functional molecule selected from the group consisting of an electrophilic graftable molecule containing a functional group and an electrophile, wherein substantially all of said electrophilic graftable molecules or electrophiles are grafted to the block copolymer in the vinyl aromatic hydrocarbon block.

4,797,448
ADDITIVE FOR ARYLENE SULFIDE POLYMERS OF IMPROVED IMPACT STRENGTH
Yeon F. Liang, Florence, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 875,815, Jun. 18, 1986, Pat. No. 4,708,983, and a continuation-in-part of Ser. No. 744,078, Jun. 12, 1985, abandoned. This application Jun. 2, 1987, Ser. No. 57,406
Int. Cl.[4] C08F *8/00*
U.S. Cl. 525—106 **18 Claims**

1. A composition comprising

(A) at least one polysiloxane having the repeating unit



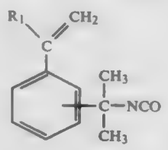
(B) at least one trialkoxysilane having the formula $X—Si(OR')_3$, and

(C) at least one solid, resinous polyolefin selected from the group consisting of homopolymers and copolymers of mono-1-olefins having from 2 to 6 carbon atoms per molecule;

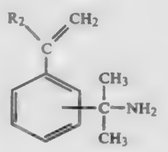
wherein each R is a monovalent hydrocarbyl radical having from 1 to 8 carbon atoms, individually selected from the group consisting of alkyl, cycloalkyl, alkylcycloalkyl, aryl and alkaryl; each R' is a radical having from 1 to 8 carbon atoms, individually selected from the group consisting of alkyl and alkoxyalkyl radicals; and X is a radical having from 1 to 8 carbon atoms, selected from the group consiting of mercaptoalkyl and aminoalkyl groups.

4,797,449
RESIN COMPOSITIONS
Takeo Nakayama, Ibaraki; Saburo Inoue, Toyonaka, and Takurou Sakamoto, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Mar. 3, 1988, Ser. No. 163,850
Claims priority, application Japan, Mar. 5, 1987, 62-51048; Oct. 2, 1987, 62-250467
Int. Cl.[4] C08L *75/04*
U.S. Cl. 525—217 **8 Claims**

1. A resin composition, which comprises (a) a copolymer containing isocyanate group prepared by subjecting a compound represented by the general formula:



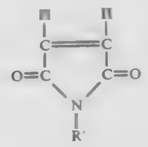
wherein R_1 stands for hydrogen or methyl group and an ethylenic unsaturated monomer to copolymerization, and (b) a copolymer containing amino group prepared by subjecting a compound represented by the general formula:



wherein R_2 stands for hydrogen or methyl group and an ethylenic unsaturated monomer to copolymerization.

4,797,450
ADDITIVES FOR WATER-BASE DRILLING FLUID AND PROCESS
David C. Dehm, Thornton, and H. Franklin Lawson, Downingtown, both of Pa., assignors to Arco Chemical Company, Newtown Square, Pa.
Continuation of Ser. No. 547,304, Oct. 31, 1983, abandoned. This application Jun. 13, 1986, Ser. No. 854,959
Int. Cl.[4] C08F *8/36*
U.S. Cl. 525—326.7 **2 Claims**

1. A dispersant for water-based drilling fluids comprising a sulfonated copolymer containing from about 25 to about 75 mole percent recurring units of a maleimide monomer and from about 75 to about 25 mole percent recurring units of a vinyl monomer, wherein the maleimide monomer has the formula:



wherein R' represents an aromatic group wherein the vinyl monomer has the formula:



wherein R^2 represents an aromatic group, or an alkyl substituted aromatic group, wherein the copolymer has a number average molecular weight within the range of from about 1,000 to about 50,000, and wherein both the maleimide and the vinyl monomers of the copolymer are sulfonated subsequent to the polymerization reaction between the maleimide monomer and the vinyl monomer by reacting the resulting copolymer with a sulfonating agent.

4,797,451
SOLID POLYMERIC STABILIZER COMPOUNDS AND PROCESS FOR THEIR MANUFACTURE
Arnaldo Roggero, San Donato Milanese; Guglielmo Bertolini, Pavia, and Carlo Busetto, Milan, all of Italy, assignors to Enitricerche S.p.A., Milan, Italy
Filed Sep. 24, 1986, Ser. No. 910,885
Claims priority, application Italy, Oct. 9, 1985, 22408 A/85
Int. Cl.[4] C08F *8/42, 65/00*
U.S. Cl. 525—332.9 **13 Claims**

1. A process for the preparation of a polymeric stabilizer compound comprising:

(a) dissolving a vinyl-aromatic polymer, aromatic ether polymer, dienic or olefinic polymer containing hydrogen atoms replaceable by metal atoms in an inert organic solvent;

(b) replacing at least partially by metal atoms the replaceable-by-metal hydrogen atoms of said vinyl-aromatic polymer, aromatic ether polymer, dienic or olefinic polymer by reacting a metal-atoms-introducing agent selected from C_1–C_{12} metal-alkyls, alkali metal hydrides or alkali metal amides with said vinyl-aromatic polymer, aromatic ether polymer, dienic or olefinic polymer;

(c) reacting said vinyl-aromatic polymer, aromatic ether polymer, dienic or olefinic polymer, into which metal atoms have been so introduced, with a compound having a sterically hindered aminic function and an electrophilic function, said reaction being carried out using stoichiometric or nearly stoichiometric ratios between said compound having a sterically hindered aminic function and the carbanionic centers of said polymer into which metal atoms have been introduced, at a temperature of 0° to 150° C., for a period of 30 minutes to 6 hours, to form said polymeric stabilizer compound;

(d) separating polymeric stabilizer compound from the reaction mixture of the preceding step, in the form of a subdivided solid.

4,797,452
POLYMERIC HYDROGENATION CATALYST CONTAINING PENDANT RHODIUM CONTAINING GROUPS
Lawson G. Wideman, Tallmadge, and Wen-Liang Hsu, Copley, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 19, 1987, Ser. No. 16,605
Int. Cl.[4] C08F *8/04;* **C08C** *19/02*
U.S. Cl. 525—338 **15 Claims**

1. A process for improving the selectivity of hydrogenating double bonds in the backbone of a polymer containing double bonds in its backbone and vinyl unsaturation, said process comprising contacting said polymer containing double bonds in its backbone and vinyl unsaturation with hydrogen in the presence of a polymer containing pendant groups having the structural formula $—Rh(P\phi_3)_2X$ wherein ϕ represents a phenyl group; wherein X represents a halogen atom; wherein said process is carried out at a pressure within the range of 1.0×10^5 Pascals to about 7.0×10^6 Pascals; and wherein said process is carried out at a temperature which is within the range of about 20° C. to about 200° C.

4,797,453
GRAFT POLYMERS OF POLYPHENYLENE ETHERS
Christof Taubitz, Wachenheim; Hermann Gausepohl, Mutterstadt; Erhard Seiler, Ludwigshafen, and Lothar Schlesmmer, Maxdorf, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jun. 19, 1987, Ser. No. 63,687
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1986, 3621207
Int. Cl.[4] C08L *71/02*
U.S. Cl. 525—397 **4 Claims**

1. A graft polymer of

(A) a polyphenylene ether as a base polymer and

(B) a half ester of an unsaturated dicarboxylic acid of the formula

$$R^2—C(=R^3—C—COOQ)—COOR^1 \quad \text{I}$$

as a graft monomer, where R^1 is C_1–C_{25}-alkyl, C_2–C_{25}-alkylene or aryl, R^2 and R^3 are each hydrogen, bromine, chlorine or one of the radicals R^1, and Q is hydrogen, an alkali metal, one equivalent of an alkaline earth metal or an ammonium cation.

4,797,454
CURABLE RESIN SYSTEMS CONTAINING CYANATE ESTER FUNCTIONAL OXAZOLINYLPOLYSILOXANES
Hong-Son Ryang, Camarillo, Calif., assignor to BASF Corporation, Parsippany, N.J.
Filed Sep. 24, 1987, Ser. No. 100,652
Int. Cl.[4] C08F *283/00*
U.S. Cl. 525—476 **13 Claims**

1. A cyanate-functional oxazolinylpolysiloxane modifier for heat curable resins which comprises the reaction product of an epoxy-functional polysiloxane and a polycyanate-functional monomer.

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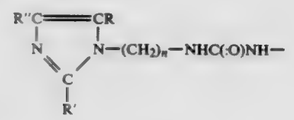
4,797,455

ISOCYANATES BLOCKED WITH 1-AMINO-ALKYLIMIDAZOLES AS EPOXY CURING AGENTS

Shiow-Ching Lin, Ellicott City, and Ping-Lin Kuo, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Aug. 6, 1987, Ser. No. 82,168
Int. Cl.⁴ C08G *59/40*
U.S. Cl. 525—504 **16 Claims**

1. A single package epoxy resin composition comprising a curable epoxy resin and composition of the formula X_mY where X is



wherein

m has a value of at least 1;

R and R'' are independently H,, methyl, or ethyl; n is 2–5;

R′ is methyl or ethyl; and

Y has a valence m and is an organic radical.

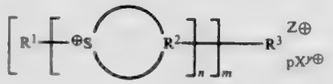
4,797,456

AQUEOUS-DISPERSIBLE CYCLIC SULFONIUM COMPOUNDS THAT CURE TO FORM WATER-INSOLUBLE POLYMERS

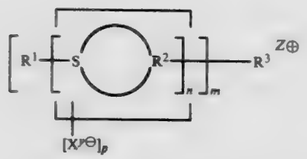
Ritchie A. Wessling; Donald L. Schmidt, both of Midland, Mich., and Kiyoshi I. Aikawa, Chiba Prefecture, Japan, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1982, Ser. No. 448,083
Int. Cl.⁴ C08G *59/14*; C08F *128/06*; C07D *333/02*
U.S. Cl. 525—531 **3 Claims**

1. A water-soluble cyclic aliphatic sulfonium salt represented by the formulas:



or



wherein R^1 is a n-valent organic radical wherein each valence bond to the sulfonium moiety is on an aliphatic carbon other than benzyl; R^2 is a polyvalent organic radical that unites with the sulfonium atom to form a 5- to 7-membered ring, said R^2 bearing a molecular weight enhancing substituent (R^3); R^3 is an α,β-alkenyl carbonyloxy moiety and X is a hydroxide, saturated carboxylate, polycarboxylate, bicarbonate, sulfate or alkylaryl sulfonate; n is an integer from 1 to 500, m is an integer from 1 to 500 provided that the produce of $m \times n \cong 500$, y is a number from 1 to 4, z is a number corresponding to the net cationic charge on the sulfonium cation and p is a number equal to z/y.

4,797,457

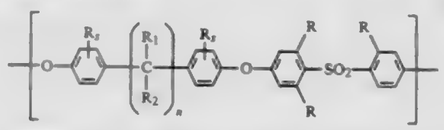
PREPARATION OF SUBSTITUTED POLYSULFONES THROUGH ORTHO-METALATED INTERMEDIATES

Michael D. Guiver; John W. ApSimon, and Oleh Kutowy, all of Ottawa, Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Oct. 27, 1986, Ser. No. 923,211
Claims priority, application Canada, Oct. 29, 1985, 494160
Int. Cl.⁴ C08G *65/40*
U.S. Cl. 525—534 **33 Claims**

1. An aromatic polysulfone derivative containing repeating units of the formula:

(I)



wherein each R is ortho to the sulfone, at least one R per polymer chain is an aliphatic or aromatic substituent, a heteroatom, heteroatom-containing group, metal or metal-containing group, with any remainder thereof being hydrogen; R_1 and R_2 each represent lower alkyl or aryl; each R_s is hydrogen and n is zero or one.

4,797,458

COLLOIDAL STABLE VINYL HALIDE POLYMERIZATIONS WITH MERCAPTAN CHAIN TRANSFER AGENTS

Zaev Sharaby, University Heights, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed Sep. 2, 1986, Ser. No. 902,714
Int. Cl.⁴ C08F *2/20, 2/38*
U.S. Cl. 526—194 **14 Claims**

1. A process for the production of vinyl halide polymers by aqueous polymerization, comprising the use of a chain transfer composition wherein said chain transfer composition comprises (a) at least one mercaptan chain transfer agent, and (b) at least one material which is characterized by being (i) miscible with said mercaptan, (ii) substantially insoluble in water, and (iii) is non-polymerizable with said vinyl halide; and wherein all of the chain transfer composition is added to the polymerization medium prior to the start of the polymerization reaction.

4,797,459

DISPERSING AGENTS FOR PRODUCING VINYL POLYMER POLYOLS UTILIZING AN ALKOXYLATED ALKYL OR ALKYLPHENYL POLYOXYALKYLENE ISOPROPYLAMINE

Michael Cuscurida, Austin, Tex., assignor to ARCO Chemical Company, Newtown Square, Pa.

Continuation-in-part of Ser. No. 780,155, Sep. 26, 1985, Pat. No. 4,683,277. This application Mar. 30, 1987, Ser. No. 31,498
Int. Cl.⁴ C08F *2/30*
U.S. Cl. 526—209 **15 Claims**

1. A vinyl polymer polyol prepared by polymerizing via a free radical initiated reaction a monomer component of at least one vinyl monomer in the presence of a dispersing medium comprising a polyether polyl which does not contain nitrogen in a dispersing agent comprising the reaction product of a compound selected from the group consisting of an alkyl polyoxyalkylene isopropyl amine and an alkylphenyl polyoxyalkylene isopropyl amine, with an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof.

4,797,460

TACKIFIER RESIN COMPOSITION AND PROCESS FOR PREPARING SAME

Curry B. Davis, Panama City, Fla., assignor to Arizona Chemical Company, Panama City, Fla.

Filed Jan. 12, 1987, Ser. No. 2,040
Int. Cl.⁴ C08F *212/00, 212/08*
U.S. Cl. 526—281 **9 Claims**

1. A tackifier resin composition prepared by the copolymerization of A110-ocimene containing isomerizates selected from the class consisting of the reaction product of pyrolysis isomerized turpentine, the reaction product of pyrolysis isomerized alpha-pinene and mixtures thereof and a vinyl benzene derivative selected from a class consisting of styrene, alpha-methyl styrene, para-methyl styrene, vinyl toluene and mixtures thereof.

4,797,461

AMORPHOUS HIGH MOLECULAR WEIGHT COPOLYMERS OF ETHYLENE AND ALPHA-OLEFINS

Marie-Line Aubanel, Saint Mitre-les-Remparts, and Jean C. Bailly, Martigues, both of France, assignors to BP Chemicals Limited, London, England

Filed Apr. 14, 1987, Ser. No. 38,211
Claims priority, application France, Apr. 17, 1986, 8605541
Int. Cl.⁴ C08F *210/16*
U.S. Cl. 526—348.6 **4 Claims**

1. Amorphous copolymers of ethylene and of one or more alpha-olefins comprising 3 to 12 carbon atoms, which copolymers are characterised in that they have a content of units derived from ethylene comprised between 40 and 60% molar, a content of units derived from propylene and/or 1-butene comprised between 60 and 40% molar and a content of units derived from alpha-olefins comprising 5 to 12 carbon atoms comprised between 0 and 10% molar, an intrinsic viscosity measured at 135° C. in decalin greater than 10 dl/g, a crystallinity level of the polyethylene type measured by X-ray diffraction of less than or equal to 1.0%, no measurable crystallinity of the polypropylene or polybutene type, a fusion enthalpy, measured by differential scanning calorimetry of less than or equal to 3 J/g, and substantially no inversion in the chain formation of units derived from alpha-olefins containing 3 to 12 carbon atoms, these copolymers occurring in the form of a powder consisting of solid, non-sticky particles.

4,797,462

ORGANOPOLYSILOXANES CONTAINING CURE ACCELERATORS

Michel Letoffe, Sainte Foy Les Lyon, and Georges Barrandon, Mornant, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Sep. 11, 1987, Ser. No. 95,407
Claims priority, application France, Sep. 11, 1986, 86 12893
Int. Cl.⁴ C08G *77/06*
U.S. Cl. 528—12 **11 Claims**

1. An organopolysiloxane composition of matter curable into elastomeric state, comprising a polyhydroxylated polysiloxane, a polyacyloxysilane crosslinking agent, and an effective amount of a cure accelerator comprising at least one of calcium oxide, strontium oxide or barium oxide.

4,797,463

TWO-COMPONENT MATERIAL AND THE USE THEREOF

Stefan Grimm, Eppelheim; Michael Schatzle, Walldorf, and Fritz Stahr, Penzberg, all of Fed. Rep. of Germany, assignors to Teroson GmbH, Heidelberg, Fed. Rep. of Germany

Filed Mar. 1, 1988, Ser. No. 162,442
Int. Cl.⁴ C08G *18/10*
U.S. Cl. 528—60 **6 Claims**

1. Two-component material based on curable prepolymers and conventional additives, characterized in that the volume ratio of the first to the second component is 0.5:1 to 1.5:1, both components contain curable prepolymer, the prepolymer in the first component is a polyurethane prepolymer with free NCO-groups, the prepolymer in the second component is a polymer with free SH-groups and the first component contains curing agent for the polymer with free SH-groups and the second component curing agent for the polyurethane prepolymer with the free NCO-groups.

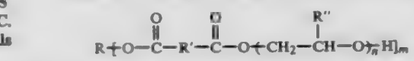
4,797,464

DIEPOXIDE REACTED WITH A HALF ESTER FROM A DICARBOXYIC ACID ANHYDRIDE AND POLYALKYLENE GLYCOL

Neil H. Nodelman, Pittsburgh, Pa., assignor to Mobay Corporation, Pittsburgh, Pa.

Filed Aug. 7, 1987, Ser. No. 83,537
Int. Cl.⁴ C08G *63/42, 59/42*
U.S. Cl. 528—110 **5 Claims**

1. A polyester polyol having the idealized structure:



where R represents the residue of a polyepoxide after ring opening with a carboxylic acid group, R′ represents the residue of a cyclic anhydride, n is a number of from 4 to 25, m represents the number of epoxy groups of the polyepoxide ring opened with carboxylic acid groups, and R'' represents —H or —CH_3.

4,797,465

WHOLLY AROMATIC MESOMORPHIC POLYETHER ESTERS AND THE PREPARATION THEREOF

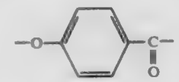
Michael Portugall, Wachenheim; Gerd Blinne, Bobenheim, and Hans-Josef Sterzel, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 938,050
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542778
Int. Cl.⁴ C08G *63/60*
U.S. Cl. 528—176 **7 Claims**

1. A wholly aromatic mesomorphic polyester which forms a liquid-crystalline fiber-forming melt below 320° C. and is composed of

(a) not less than 10 mol % of repeat units of the formula I

I



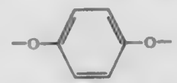
(b) a molar amount equivalent to the total amount of components (c) and (d) of repeat units of the formula II

II



(c) from 3 to 20 mol % of repeat units of the formulae III and/or IV

III

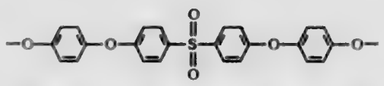


IV



and

(d) from 5 to 30 mol % of repeat units of the formula V



the molar proportions of components a, b, c and d adding up to 100 mol % in each case.

4,797,466

HIGH-TEMPERATURE ADHESIVE POLYIMIDE FROM 2,6-BIS(3-AMINOPHENOXY)PYRIDINE

Hideaki Oikawa; Masahiro Ohta, both of Yokohama; Saburo Kawashima, Yokosuka; Shoji Tamai; Yoshiko Sonobe, both of Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

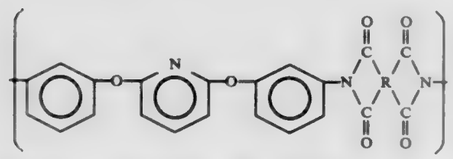
Filed Feb. 6, 1987, Ser. No. 11,907

Claims priority, application Japan, Feb. 12, 1986, 61-026936

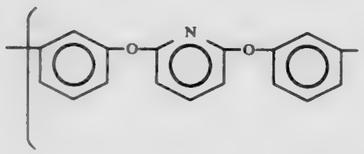
Int. Cl.[4] C08G *73/10*

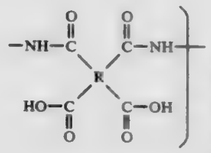
U.S. Cl. 528—185 **6 Claims**

1. Polyimide consisting of recurring units of the formula:



wherein R is a tetra-valent radical selected from the group consisting of an aliphatic radical having not less than two carbons, a cyclo-aliphatic radical, a monoaromatic radical, a condensed polyaromatic radical and a non-condensed polyaromatic radical wherein the aromatic radicals are linked to one another directly or via bridged member, wherein the polyamic acid precursor of said polyimide consists of recurring units of the formula:





and has an inherent viscosity of 0.1 to 3 0 dl/g measured to 35° C. in a solution of 0.5 gram of said polyamic acid per 100 ml of n,n-dimethylacetamide solvent.

4,797,467

THERMOPLASTIC POLYCARBONATE BRANCHED WITH TETRA-HYDROXYARYL-BIS-QUINOXALINE

Volker Eckhardt; Hans-Rudolf Dicke, and Dieter Freitag, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

This application Division of Ser. No. 876160, Jun. 19, 1986, Pat. No. 4,739,058. Aug. 13, 1987, Ser. No. 84,776

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1985, 3524054

Int. Cl.[4] G08G *63/62*

U.S. Cl. 528—203 **2 Claims**

1. In the process for the preparation of brancehed thermoplastic polycarbonate from at least one diphenol, a branching agent and either phosgene or a carbonic acid diaryl ester the improvement comprising employingas a branching agent a bisquinoxaline conforming to the formula



wherein R independently denotes a 4-hydroxy aryl or a 3-hydroxyaryl radical which is unsubstituted or substituted with one or more alkyl, alkoxy, aryl or a halogen substituent and Ar denotes a tetravalent mononuclear or a polynuclear aromatic radical which is unsubstituted or substituted with one or more alkyl, alkoxy, aryl or a halogen substitutent, said polynuclear radical being selected from the group consisting of fused rings and bridges rings and said bridged rings being bridged by a member selected from the group consisting of hetero atoms and carbonyl groups.

4,797,468

PREPARATION OF POLYLACTIC ACID AND COPOLYMERS OF LACTIC ACIDS

Klaas S. De Vries, Dieren, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

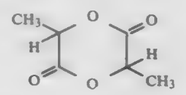
Filed Dec. 10, 1987, Ser. No. 130,905

Claims priority, application Netherlands, Dec. 19, 1986, [illegible]231

Int. Cl.[4] C08G *63/08;* **C07D** *319/12*

U.S. Cl. 528—354 **10 Claims**

1. Method for preparing polylactic acid or copolymers of lactic acid by polymerizing the lactide according to formula I:



(I)

comprising forming the lactide according to formula I by polycondensation of L-, D- or D, L-lactic acid followed by decomposition of the low-molecular polylactic acid thus obtained to yield crude lactide I, dissolving the crude lactide I in a liquid organic solvent that is not miscible with water, extracting the solution thus formed with a water solution comprising a basic substance that is sparingly soluble or insoluble in the organic solvent, isolating the lactide I from the organic solvent layer and polymerizing the isolated lactide I to the high-molecular polylactic acid or copolymer thereof.

4,797,469

SYNTHESIS OF HGRF (SOMATOCRININ) IN LIQUID PHASE AND INTERMEDIATE PEPTIDES

Joseph Diaz, Perols; Henri Demarne, Montpellier; Roméo Roncucci, and Paul-Henry Schmelck, both of Paris, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 752,799, Jul. 8, 1985, Pat. No. 4,707,541. This application Aug. 21, 1987, Ser. No. 87,892

Claims priority, application France, Jul. 10, 1984, 84 10965

Int. Cl.[4] C07K *7/10, 7/06, 7/08, 5/10*

U.S. Cl. 530—324 **7 Claims**

1. An intermediate peptide selected from the following peptides:

H-Ala-Arg-Ala-Arg-Leu-NH_2 called Fragment A hGRF (40-44) or alaninamide;

H-Gln-Glu-Arg-Gly-OH called Fragment B'_1 hGRF (36-39);

H-Glu-Ser-Asn-OH called Fragment B'_2 hGRF (33-35);

H-Ser-Arg-Gln-Gln-Gly-OH called Fragment C hGRF (28-32);

H-Leu-Gln-Asp-Ile-Met-OH called Fragment D' hGRF (23-27);

H-Arg-Lys-Leu-OH called Fragment E'_1 hGRF (20-22);

H-Gln-Leu-Ser-Ala called Fragment F_1 hGRF (16-19);

H-Tyr-Arg-Lys-Val-Leu-Gly-OH called Fragment G_1 hGRF (10-15)

H-Ile-Phe-Thr-Asn-Ser-OH called Fragment H_1 hGRF (5-9); and

H-Tyr-Ala-Asp-Ala-OH called Fragment I hGRF (1-4).

4,797,470

N-TERMINALLY SUBSTITUTED TYROSYL ALANINE

Barnett S. Pitzele, Skokie; Donald W. Hansen, Jr., Chicago; Robert W. Hamilton, Wilmette; Daniel R. Pilipauskas, Glenview, and Michael Clare, Skokie, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

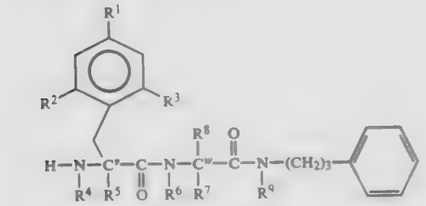
Continuation-in-part of Ser. No. 882,795, Jul. 14, 1986, Pat. No. 4,760,180, which is a continuation-in-part of Ser. No. 829,241, Feb. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 765,881, Aug. 14, 1985, abandoned. This application Feb. 13, 1987, Ser. No. 14,340

The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.

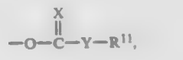
Int. Cl.[4] C07K *5/08*

U.S. Cl. 530—331 **15 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein R_1 is



wherein X is oxygen or sulfur, Y is oxygen or nitrogen, and R_{11} represents straight or branched chain lower alkenyl having 1–6 carbon atoms, or phenyl or benzyl; wherein R^2 and R^3 may be the same or different and represents straight or branched chain lower alkyl having 1–6 carbon atoms; wherein R^4–R^9 may be the same or different and represent hydrogen, or straight or branched chain lower alkyl having 1–6 carbon atoms; wherein C^w is an asymmetric carbon atom when R^7 and R^8 are not the same and may be racemic or may have the D or L configuration; and wherein C^v is an asymmetric carbon atom and may be racemic or having the D or L configuration.

4,797,471

PEPTIDE DERIVATIVES HAVING AN INHIBITORY ACTION ON HYDROXYLATING ENZYMES, A PROCESS FOR THEIR PREPARATION, AGENTS CONTAINING THEM, AND THEIR USE

Volker Teetz, Hofheim am Taunus; Stephan Henke, Bad Soden am Taunus; Dietrich Brocks, Wiesbaden; Hartmut Hanauske-Abel, Dexheim, and Volkmar Günzler, Marburg-Cappel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

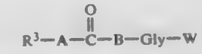
Filed Dec. 12, 1986, Ser. No. 941,066

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1985, 3544338

Int. Cl.[4] H61K *37/43;* **C07K** *5/08*

U.S. Cl. 514—18 **11 Claims**

1. A compound of the formula I

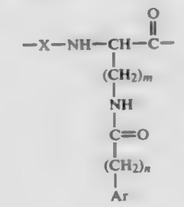


(I)

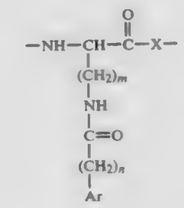
in which R^3 denotes (C_1–C_8)-alkyl which is optionally monosubstituted by carboxyl, amino, hydroxyl or (C_1–C_4)-alkoxy; (C_3–C_8)-cycloalkyl; (C_3–C_8)-cycloalkyl-(C_1–C_5)-alkyl; (C_6–C_{10})-aryl or (C_6–C_{10})-aryl-(C_1–C_5)-alkyl, both of which can optionally be substituted in the aryl moiety by one or two, identical or different, radicals from the series comprising carboxyl, amino, hydroxyl, (C_1–C_4)-alkoxy or halogen; (C_3–C_9)-heteroaryl or (C_3–C_6)-heteroaryl-(C_1–C_5)-alkyl;

A represents —O—, —NH— or a direct bond;

B denotes a radical of the formula IIIa or IIIb;



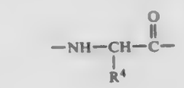
(IIIa)



(IIIb)

in which

X represents a radical of proline or 4-thiaproline or a radical of the formula IV



(IV)

in which

R^4 denotes hydrogen or (C_1–C_4)-alkyl which is optionally monosubstituted by hydroxyl, carboxyl, carbamoyl, meth-

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ylthio, phenyl, 4-hydroxyphenyl, 4-imidazolyl or 3-indolyl;
m represents 2, 3 or 4,
n represents 0 or 1, and
Ar represents mono-, di- or trihydroxyphenyl, and
W denotes hydroxyl or a radical of the formula V



(V)

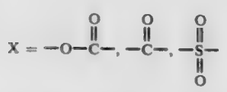
in which
R^1 denotes hydrogen, (C^1–C^6)-alkyl or (C^3–C^6)-cycloalkyl, and
R^2 denotes hydrogen, (C_1–C_6)-alkyl or (C_3–C_6)-cycloalkyl, or
R^1 and R^2 together represent —$[CH_2]_4$— or —$[CH_2]_5$—, it being possible for one $[CH_2]$group to be replaced by —O— or —S—,
and its physiologically tolerated salts.

4,797,472
NEW PEPTIDE DERIVATIVES
Stig I. Gustavsson, Möladal, and Salo Arielly, Kungsbacka, both of Sweden, assignors to KabiVitrum AB, Stockholm, Sweden
Filed Mar. 19, 1987, Ser. No. 27,969
Claims priority, application Sweden, Mar. 21, 1986, 8601329
Int. Cl.⁴ C07K *5/08*
U.S. Cl. 530—331 **22 Claims**

1. Tripeptide derivative characterized by the general formula:

R_1—X—D—Arg—A—Arg—NH—R_2

wherein R_1 is hydrogen, α- or β-naphtyl residue, lower alkyl residue which may be substituted with a carboxyl group, unsubstituted or substituted phenyl- or phenylalkyl residue, wherein the alkyl group having 1 to 4 carbon atoms and wherein said substituted phenyl is a phenyl substituted with a lower alkyl, lower alkoxy, halogen or nitro group

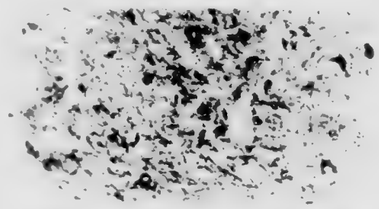


or a single bond with the proviso that when
R_1 is hydrogen then X is a single bond
A=Gly or Sar
R_2=an aromatic or heterocyclic residue which in conjunction with the NH moiety to which it is connected gives a compound R_2—NH_2 by enzymatic hydrolysis, which can be determined quantitatively,
or disalts and trisalts of inorganic or organic acids thereof.

4,797,473
MONOCLONAL ANTIBODIES TO UNREDUCED, NONENZYMATICALLY-GLYCATED PROTEINS
Joseph F. Tarsio, and Leo T. Furcht, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.
Filed Jun. 25, 1986, Ser. No. 878,420
Int. Cl.⁴ C07K *15/04*; A61K *39/395*; C12N *5/00*; G01N *33/577*
U.S. Cl. 530—387 **22 Claims**

16. A monoclonal antibody which binds to an epitope on an unreduced, nonenzymatically-glycated protein selected from the group consisting of total serum protein, fibronectin, transferrin and laminin, wherein said glycated protein comprises glucose attached to an epsilon-amino group of a lysine residue in the polypeptide chain of the protein, and which antibody does not substantially cross-react with the corresponding non-glycated protein as tested by enzyme-linked immunosorbent assay.

4,797,474
SOLUBILIZATION OF PROTEIN AGGREGATES
Joseph J. Patroni, Preston West, and Malcolm R. Brandon, Ivanhoe East, both of Australia, assignors to Bunge (Australia) Pty. Ltd., Australia
Filed Dec. 9, 1986, Ser. No. 939,578
Claims priority, application Australia, Dec. 11, 1985, PH 3818
Int. Cl.⁴ C07K *3/12*
U.S. Cl. 530—351 **20 Claims**



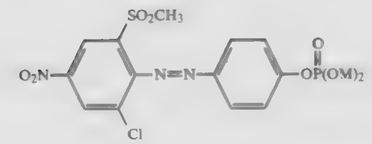
1. A method for the recovery of proteins which method includes providing a source of protein in an insoluble form, a source of at least one cationic surfactant; treating the insoluble protein with the at least one cationic surfactant, in the absence of denaturing guanidine hydrochloride and urea denaturing agents, in an amount sufficient to effect solubilisation without substantial modification to the structural backbone of the protein.

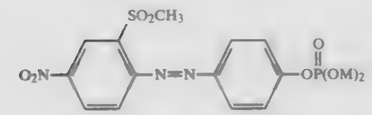
4,797,475
METHOD AND COMPOSITION FOR ISOLATING WHITE CELL ELEMENTS
Paul I. Terasaki, Los Angeles; Jimmy Loon, Reseda; Steven Hardiwidjaja, Simi Valley, and Nadim El-Awar, Burbank, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Continuation of Ser. No. 496,638, May 20, 1983, abandoned. This application Jul. 17, 1985, Ser. No. 756,393
Int. Cl.⁴ G01N *33/48, 1/18, 33/559, 33/53*
U.S. Cl. 530—387 **18 Claims**

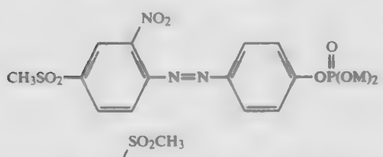
1. A composition of matter adapted for use in separating a given amount of a subpopulation of cells bearing a specific immunogenic marker from a heterogeneous cell suspension, said composition of matter consisting essentially of an aqueous solution of:
a sufficient amount of a monoclonal antibody which recognizes a specific immunogenic marker and is immunoreactive with a subpopulation of cells to form an antibody tagged subpopulation of cells, said subpopulation of cells being present within a heterogeneous cell suspension;
complement in an amount sufficient to provide lysing of substantially all of said antibody tagged subpopulation cells to provide lysed subpopulation cells having a density less than the density of the non-lysed cells in said heterogeneous cell suspension; and
a sufficient amount of a density gradient media consisting essentially of colloidal silica or cesium chloride to provide a solution after addition of said heterogeneous cell suspension having a density greater than said lysed subpopulation cells, but less than the density of the nonlysed cells in said heterogeneous cell suspension, said density gradient media being nontoxic with respect to the cells in said heterogeneous cell suspension.

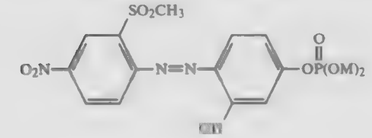
4,797,476
MONO-4-ARYLAZOARYL PHOSPHORIC ESTERS
Yoshio Inagaki, and Masaki Okazaki, both of Minami-ashigara, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Japan
Continuation of Ser. No. 749,014, Jun. 26, 1985, abandoned, which is a continuation of Ser. No. 360,211, Mar. 22, 1982, abandoned. This application Sep. 10, 1986, Ser. No. 906,098
Claims priority, application Japan, Mar. 26, 1981, 56-44325
Int. Cl.⁴ C07C *107/06, 107/08*; C09B *43/00, 62/825*
U.S. Cl. 534—727 **13 Claims**

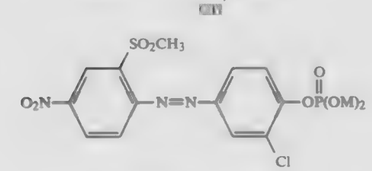
1. A phosphoric ester selected from the group consisting of:

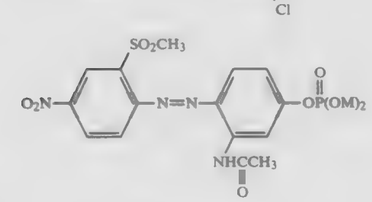


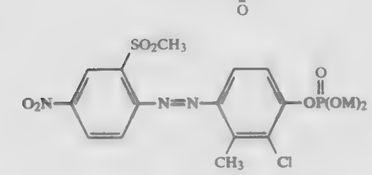




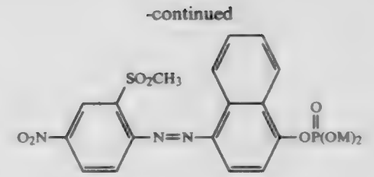


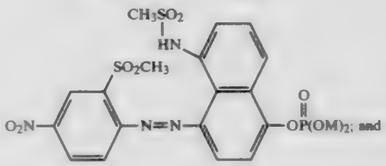


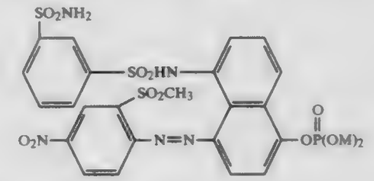




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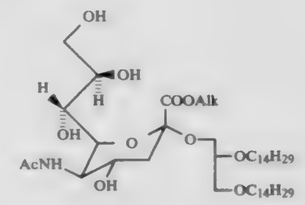




wherein M is hydrogen, sodium or potassium.

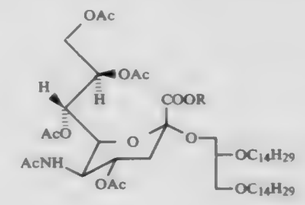
4,797,477
PROCESS FOR PREPARING SIALIC ACID DERIVATIVES
Shoji Yoshimura, Iruma; Yoichiro Tsai; Youzi Matsuzaki, both of Tokorozawa; Masayoshi Ito, Kunitachi; Yoshiyasu Shitori, Tokyo, and Tomoya Ogawa, Musashino, all of Japan, assignors to Meet Corporation, Tokyo, Japan
Filed Aug. 11, 1987, Ser. No. 84,018
Claims priority, application Japan, Aug. 12, 1986, 61-189340
Int. Cl.⁴ C07H *5/06, 15/04*
U.S. Cl. 536—18.5 **7 Claims**

1. A process for preparing a compound represented by the formula:



(3)

wherein Ac is acetyl and Alk is an alkali metal, consisting essentially of:
hydrolyzing, in a single step, a compound of the formula:



(1)

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wherein Ac is as defined above and R is C_{1-5} alkyl, in an aqueous ROH solution of an alkali metal hydroxide.

4,797,478

PROCESS FOR PRODUCING COLOR-STABLE, INDUSTRIAL-GRADE METHYL GLUCOSIDE

Rolf Lebuhn; John Feldmann, and Hubert Koebernick, all of Krefeld, Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Mar. 23, 1987, Ser. No. 29,496

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1986, 3611035

Int. Cl.[4] C07H *1/00, 15/04;* C07G *3/00*

U.S. Cl. 536—18.5 **22 Claims**

1. A process for producing a color-stable, industrial-grade methyl glucoside which comprises:

(a) first heating a mixture of glucose and excess methanol in the presence of an acidic catalyst under conditions which exclude water until the reaction product mixture contains less than about 20% glucose on a dry weight basis;

(b) then heating the reaction product mixture with an excess of a higher-boiling alcohol in the presence of an acidic catalyst under conditions for the continuous azeotropic removal of water until the glucose content of the mixture is about 0.3% or less on a dry substance basis, said higher-boiling alcohol being one that boils above 80° C. at atmospheric pressure and forms an azeotrope with water; and

(c) separating unreacted higher-boiling alcohol from the mixture obtained in Step (b).

15. A process for producing a color-stable, industrial-grade methyl glucoside which comprises:

(a) heating a mixture of glucose and excess of a higher-boiling alcohol in the presence of an acidic catalyst under conditions for the continuous azeotropic removal of water until the glucose content of the reaction product mixture measured as a D.E. value is below about 0.2% on a dry weight basis, said higher-boiling alcohol being one that boils above 80° C. at atmospheric pressure and forms an azeotrope with water;

(b) separating unreacted alcohol from the reaction product mixture of Step (a); and

(c) reacting the mixture obtained in Step (b) with an excess of methanol in the presence of an acidic catalyst until the methyl glucoside content of the resulting product is at least 60% on a dry weight basis.

4,797,479

NUCLEOSIDE-PHOSPHOLIPID CONJUGATE

Satoshi Shuto; Hiromichi Ito; Kiyofumi Fukukawa; Hideo Sakakibara, and Masatoshi Tsujino, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

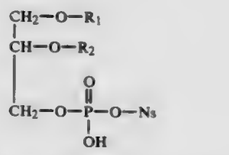
Filed Apr. 15, 1986, Ser. No. 852,881

Claims priority, application Japan, Apr. 15, 1985, 60-78283; Oct. 25, 1985, 60-237695

Int. Cl.[4] C07H *19/10, 19/20;* C07D *473/00*

U.S. Cl. 536—27 **5 Claims**

1. A compound of the formula



wherein R_1 and R_2 are long-chain fatty acid residue, and Ns is neplanocin A-6'-yl- or a nucleoside residue selected from the group consisting of 5-fluorouridine-5'-yl, and arabinocyl-5-fluorocytosine-5'-yl-, and pharmacologically acceptable salts thereof.

4,797,480

NEW BIOLOGICALLY ACTIVE FLUORESCENT CYCLIC NUCLEOTIDES

Robert T. Sorbi; Antonio Caretta; Andrea Cavaggioni, and Liliana Marchesi Gastaldi, all of Parma, Italy, assignors to Universita Degli Studi di Parma, Parma, Italy

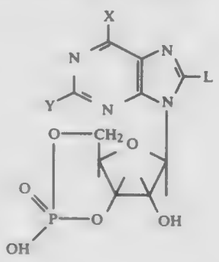
Filed May 23, 1986, Ser. No. 866,354

Claims priority, application Italy, Jun. 6, 1985, 42506 A/85

Int. Cl.[4] C07H *19/10, 19/20*

U.S. Cl. 536—27 **11 Claims**

1. Biologically active cyclic nucleotides made fluorescent by inserting a fluorescent group, represented by the formula:



(I)

wherein:

X is OH or NH_2, Y is NH_2 when X=OH and is H when X=NH_2 and L is a fluorescent group selected from: 5-thioacetamido-fluorescein, 6-thioacetamido-fluorescein, 5-thioacetamido-2',4',5',7'-tetrabromofluorescein, 6-thioacetamido-2',4',5',7'-tetrabromofluorescein, 5-thioacetamido-2',4',5',7'-tetraiodo-fluorescein, 6-thioacetamido-2',4',5',7'-tetraiodofluorescein, 5-(2-thioacetamido-ethyl)-amino-naphthalene-1-sulphonic acid, and 8-(2-thioacetamido-ethyl)-amino-naphthalene-1-sulphonic acid.

4,797,481

SURFACTANTS DERIVED FROM DI- OR TRI-CARBOXYLIC HYDROXY-ACIDS

Salvatore Garlisi, Vercelli; Luigi Turchini, Milan; Aurelio Albanini, Casteggio, and Dario Fornara, Massiola, all of Italy, assignors to Raffineria Olii Lubrificanti "R.O.L." S.p.A., Milan, Italy

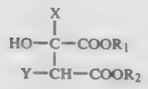
Filed Aug. 24, 1987, Ser. No. 88,382

Claims priority, application Italy, Aug. 28, 1986, 21540 A/86

Int. Cl.[4] C07H *15/04, 13/02, 15/00;* B01F *17/00*

U.S. Cl. 536—116 **11 Claims**

1. Esters of di- or tri-carboxylic hydroxyacids having the formula:



(I)

wherein:

X is H or a $—CH_2COOR$ group;

Y is H or —OH, with the proviso that Y is H when X is $—CH_2COOR$;

R, R_1, R_2, which may be the same or different, represent a hydrogen atom, an alkali or alkaline-earth metal, an ammonium group, the cation of an ammonium organic base, or an A radical derived from a polyhydroxylated organic compound selected from the group consisting of etherified (C_6–C_{16}) alkyl polysaccharides containing from 2 to 6 monomeric saccharide units and etherified (C_6–C_{16}) hydroxyalkyl aliphatic polyalcohols containing from 2 to 16 hydroxyl radicals, with the proviso that at least one of said R, R_1, R_2 is an A radical.

4,797,482

PROCESS FOR THE PREPARATION OF OXAZINOBENZOTHIAZINE 6,6-DIOXIDE DERIVATIVES

Jordi F. Constansa; Augusto C. Pinol, and Juan P. Corominas, all of Barcelone, Spain, assignors to Provesan S.A., Geneva, Switzerland

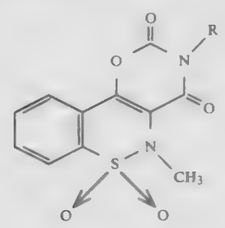
Filed Apr. 15, 1987, Ser. No. 39,518

Claims priority, application France, Apr. 15, 1986, 86 05377

Int. Cl.[4] C07D *498/04, 513/04*

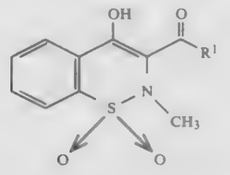
U.S. Cl. 544—33 **7 Claims**

1. A process for the preparation of a 5-methyl-3-heteroaryl-2H,5H-1,3-oxazino-[5,6-c[1,2]benzothiazine-2,4-(3H)-dione 6,6 dioxide of the formula I:



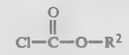
(I)

in which R represents a pyrimidinyl or pyridyl group, consisting in reaction an amide of the general formula II:



(II)

in which R^1 represents a pyrimidinylamino or pyridylamino group, with a compound of the general formula III:



(III)

in which R^2 represents a C_1 to C_4 lower alkyl radical, an aryl radical or an alkylaryl radical,

wherein the reaction is carried out in an organic solvent selected from the group consisting of pyridine, 4-dimethylaminopyridine, 4-(pyrrolidin-1-yl)pyridine and 2,6-ditert.-butyl-4-methylpyridine, and mixtures thereof.

4,797,483

PROCESS FOR OBTAINING 4-HYDROXY-2-METHYL-N-(2-PYRIDYL)-2H-1,2-BENZOTHIAZINE-3-CARBOXAMIDE 1,1-DIOXIDE

Jordi Frigola Constansa; Jose M. Ribalta Baro, and Julio Campon Pardo, all of Barcelone, Spain, assignors to Induspol, S.A., Barceloaa, Spain

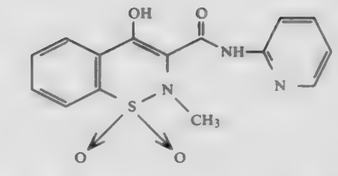
Filed Jun. 24, 1987, Ser. No. 66,711

Claims priority, application Spain, Mar. 27, 1987, 8700867

Int. Cl.[4] C07D *279/16*

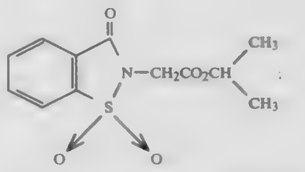
U.S. Cl. 544—49 **1 Claim**

1. A process for manufacturing 4-hydroxy-2-methyl-N-(2-pyridyl)-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxide, of formula I,



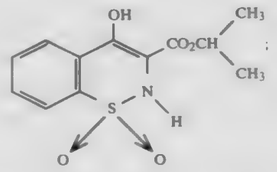
(I)

which comprises the following reaction sequence: reacting saccharin sodium with isopropyl chloroacetate in dimethylformamide to obtain isopropyl 3-oxo-1,2-benzoisothiazoline-2-acetate 1,1-dioxide, of formula II



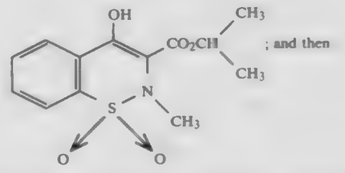
(II)

reacting the isopropyl 3-oxo-1,2-benzoisothiazoline-2-acetate 1,1-dioxide of formula II with sodium isopropylate in isopropanol at a temperature between 60° C. and the boiling point of the solvent, for a time between 15 minutes and 3 hours, to produce an intermediate of formula III



(III)

methylating the intermediate of formula III in an aqueous-alcoholic basic medium with dimethyl sulfate to produce an intermediate compound of formula IV



(IV)

; and then

condensing the intermediate compound of formula IV with 2-aminopyridine in xylene to obtain a final product of formula I.

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4,797,484

PROCESS FOR THE PREPARATION OF N'-SULPHONYL- AND N',N''-BIS-SULPHONYL-GUANIDINE DERIVATIVES

Koichi Moriya, Hachioji, Japan; Theodor Pfister, Monheim, Fed. Rep. of Germany; Hans-Jochem Riebel, Wuppertal, Fed. Rep. of Germany; Ludwig Ense, Leverkusen, Fed. Rep. of Germany; Robert R. Schmidt, and Klaus Lürssen, both of Bergisch-Gladbach,, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

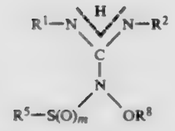
Continuation-in-part of Ser. No. 853,822, Apr. 18, 1986, Pat. No. 4,721,785, which is a division of Ser. No. 578,345, Feb. 9, 1984, Pat. No. 4,602,938. This application Jan. 16, 1987, Ser. No. 5,800

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307679; Sep. 23, 1983, 3334455

Int. Cl.[4] C07D *251/26, 215/16, 213/62*

U.S. Cl. 544—215 **11 Claims**

1. A process for the preparation of a guanidine derivative of the formula



in which

R_1 represents hydrogen or the radical $R^5—S(O)_m—$,

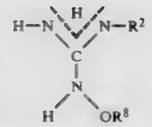
m represents the numbers zero, 1 or 2 and

R^5 represents a radical selected from the group consisting of alkyl aralkyl, pyridyl, quinolinyl, furyl, thienyl and pyrrolyl,

R^2 represents a six-membered aromatic heterocyclic structure selected from the group consisting of pyridyl, pyrimidinyl and 1,3,5-triazinyl and which is substituted by halogen, amino, cyano or formyl and/or by optionally substituted radicals from the group consisting of alkyl, alkoxy, alkylamino, dialkylamino, alkylcarbonyl and alkoxycarbonyl, and

R^8 represents an optionally substituted radical from the group consisting of C_1–C_6-alkyl, alkenyl, alkinyl, cycloalkyl, phenylalkyl and aryl,

which comprises reacting a guanidine derivative of the formula



with one or two molar equivalent(s) respectively, of a halogen/sulphur compound of the formula



in which

X^1 represents fluorine, chlorine or bromine.

4,797,485

PLATINUM-FLAVIN ANTI-TUMOR COMPLEXES

Yoshinori Kidani, and Masahide Noji, both of Nagoya, Japan, assignors to Yoshinori Kidani, Japan

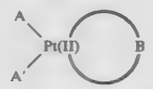
Filed Sep. 17, 1987, Ser. No. 99,301

Claims priority, application Japan, Sep. 19, 1986, 61-219429

Int. Cl.[4] A61K *31/555, 31/675, 475/14;* **C07F** *9/65*

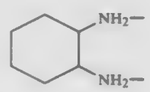
U.S. Cl. 544—225 **6 Claims**

1. An anti-tumor platinum(II)-flavin complex represented by the general formula (I)

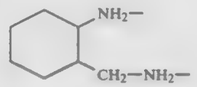


(I)

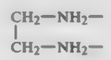
wherein A and A' taken together form a 1,2-cyclohexanediamine ligand of the formula:



where the 1- and 2-amino groups have a configuration selected from cis-, trans-l- and trans-d-,relative to the cyclohexane ring; or A and A' taken together form a 2-(aminomethyl)cyclohexylamine ligand of the formula:

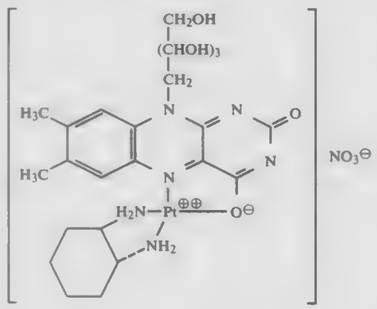


where the 1-amino group and 2-aminomethyl group have a configuration selected from cis-l-, cis-d-, trans-l and trans-d-, or a mixture thereof, relative to the cyclohexane ring; or A and A' taken together form an ethylenediamine ligand of the formula:



A and A' each denote NH_3-, and B denotes riboflavin or riboflavin-mononucleotide which coordinates the platinum atom, or a nitrate of the platinum(II)-flavin complex of the formula (I).

4. Riboflavin-(trans-l-1,2-cyclohexanediamine) platinum(II) complex nitrate of the formula:



4,797,486

HETEROCYCLIC RING FUSED PYRIMIDINE-4(3H)-ONES AS ANTICOCCIDIAL AGENTS

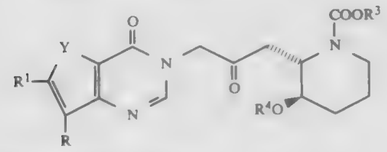
Edward A. Glazer, Waterford, and James W. McFarland, Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 913,884, Sep. 8, 1986, Pat. No. 4,725,599. This application Oct. 14, 1987, Ser. No. 108,172

Int. Cl.[4] C07D *495/04, 491/048*

U.S. Cl. 544—250 **14 Claims**

1. A compound of the formula



wherein Y is sulfur or oxygen;

R and R^1 are taken separately, R is hydrogen, chloro or bromo and R^1 is chloro or bromo; or

R and R^1 are taken together and are —CH=CH—CH=CH—; with the proviso that R and R^1 are taken together when Y is oxygen;

R^3 is allyl or (C_1–C_4)alkyl; and

R^4 is hydrogen or (C_1–C_4)alkyl.

4,797,487

PRODUCTION OF BICYCLIC GUANIDINES FROM BIS(AMINOALKYL)AMINE

Richard A'Court, Beverley, England, assignor to BP Chemicals Ltd., London, England

Filed Apr. 4, 1986, Ser. No. 848,819

Claims priority, application United Kingdom, Apr. 13, 1985, 8509531

Int. Cl.[4] C07D *487/04*

U.S. Cl. 544—279 **4 Claims**

1. A process for the production of bicyclic guanidines which process comprises reacting in one step a bis(aminoalkyl)amine selected from the group consisting of bis(2-aminoethyl)amine and bis(3-aminopropyl)amine, at a temperature in the range from 10° to 200° C., with carbon disulphide and in a high boiling hydrocarbon solvent.

4,797,488

PSYCHOTROPIC POLYCYCLIC IMIDES

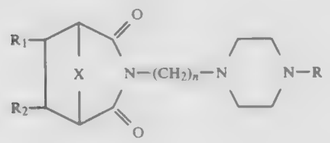
Gary P. Stack, Merion; Thomas D. Golobish, Devon, both of Pa., and Magid A. Abou-Gharbia, Wilmington, Del., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 3, 1987, Ser. No. 34,820

Int. Cl.[4] C07D *401/14, 403/14, 413/14, 417/14*

U.S. Cl. 544—295 **17 Claims**

1. A compound of the formula:



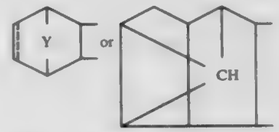
in which

X is —O—, —S—, —SO—, —SO_2—, —CR_3R_4— where R_3 and R_4, independently, are hydrogen, alkyl of 1 to 4 carbon atoms or, taken together with the carbon atom to which they are attached, R_3 and R_4 form a cycloalkyl group of 3 to 5 carbon atoms;

n is one of the integers 2, 3, 4 or 5;

R is phenyl, halophenyl, trifluoromethylphenyl, alkoxyphenyl in which the alkoxy substituent contains 1 to 3 carbon atoms, 2-pyrimidinyl, halopyrimidin-2-yl, 2-pyrazinyl, halopyrazin-2-yl, 2-pyridinyl, halopyridin-2-yl, cyanopyridin-2-yl, quinolyl, or haloquinolyl;

R_1 and R_2, taken together, are alkylene of 3 to 5 carbon atoms or alkenylene of 3 to 5 carbon atoms, or taken with the carbon atoms to which they are attached, R_1 and R_2 complete a benzene ring, or a group of the formula:



where Y is —CH_2—, —CH_2—CH_2—, —O— or —S— and the dotted line represents optional unsaturation; or a pharmaceutically acceptable salt thereof.

4,797,489

ADAMANTYL- AND FLUORENYL-ARYLPIPERAZINES AND -ARYLPIPERIDINES

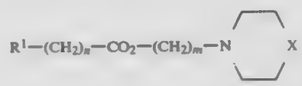
Magid A. Abou-Gharbia, Wilmington, Del.; Gary P. Stack, Merion, and John P. Yardley, Gulph Mills, both of Pa., assignors to American Home Products Corp., New York, N.Y.

Filed Dec. 2, 1987, Ser. No. 127,740

Int. Cl.[4] C07D *295/14*

U.S. Cl. 544—331 **14 Claims**

1. A compound of the formula:



wherein

R^1 is 1-adamantyl, 3-methyl-1-adamantyl, 9-fluorenyl or 1-fluorenyl;

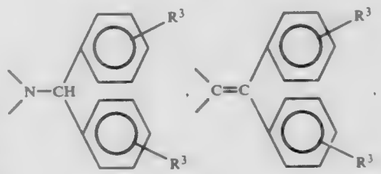
n is 0 or 1;

m is 1, 2, 3, 4 or 5; and

X is

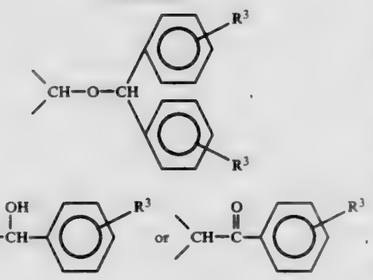


where R^2 is phenyl, benzyl, pyridinyl, pyrimidinyl, pyrazinyl, or substituted phenyl or benzyl in which the substituent is alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, cyano, nitro or trifluoromethyl,



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-continued



where R^3 is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, halo, cyano or nitro; or a pharmaceutically acceptable salt thereof.

4,797,490

PROCESS FOR THE PREPARATION OF 3-(2'-FLUOROPHENYL)PYRIDINE

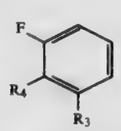
Paul J. Gilligan, New Haven; Paul R. McGuirk, Gales Ferry, both of Conn., and Michael J. Witty, Dover, Great Britain, assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 679,148, Dec. 6, 1984, abandoned. This application Sep. 15, 1986, Ser. No. 907,176

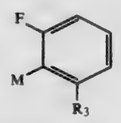
Int. Cl.[4] C07D *213/26*

U.S. Cl. 546—290 **8 Claims**

1. A process for preparing a compound of the formula



wherein R_3 is hydrogen or fluoro; and R_4 is 3-pyridyl which may be substituted by one or two substituents selected from the group consisting of fluoro, chloro, hydroxy, alkoxy of 1 to 4 carbon atoms, amino, alkylamino of 1 to 4 carbon atoms, dialkylamino of 2 to 8 carbon atoms, carboxy, hydroxalkyl of 1 to 6 carbon atoms, aminoalkyl of 1 to 6 carbon atoms and, said hydroxy, amino, carboxy, hydroxyalkyl, aminoalkyl in suitably protected form, which comprises reacting at rool temperature to 50° C. a phenylzinc compound of the formula



wherein R_3 is as defined above and M is zinc or a zinc halide group, with a compound of the formula R_4 Hal wherein R_4 is as defined above and Hal is bromo or iodo in the presence of a transition metal catalyst complex comprising a transition metal in the (0) or (II) oxidation state and a phosphine containing ligand, and removing any protecting group in any of the above suitably protected forms.

4,797,491

COMPOUND 1-(3-(2-PYRIDYLDITHIO)PROPIONAMIDO)-12-(5-HYDRAZIDOGLUTARAMIDO)-4,9-DIOXADODECANE

Danute E. Nitecki, and Margaret Moreland, both of Berkeley, Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed Mar. 17, 1986, Ser. No. 840,604

Int. Cl.[4] C07D *213/71*

U.S. Cl. 546—291 **1 Claim**

1. The compound 1-(3-(2-pyridyldithio)propionamido)-12-(5-hydrazidoglutaramido)-4,9-dioxadodecane.

4,797,492

POLYFLUOROALKYLISOXAZOLYLAMINES

Shinzaburo Sumimoto, Ashiya; Ichiro Ishizuka, Toyono; Hiroyuki Kai, Koka; Shiro Ueda, Osaka, and Akira Takase, Kobe, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Oct. 22, 1986, Ser. No. 921,415

Claims priority, application Japan, Oct. 23, 1985, 60-238344

Int. Cl.[4] C07D *261/14*

U.S. Cl. 548—245 **23 Claims**

1. A compound of the formula:



(I)

in which:

R is sufluoro C_{1-14} alkyl; R^1 is C_{1-5} alkyl, chlorine, bromine, iodine, phenyl, phenyl substituted with one or an plurality of substituents selected from the group consisting fluorine, shlorine, C_{1-4} alkyl and C_{1-4} alkoxy or phenyl substituted with methylendioxy or ethylene dioxy; and R^2 is hydrogen or C_{1-4} alkyl, or a salt of thereof.

4,797,493

BENZYLIDENE COMPOUNDS

Kazuhiro Matsuno, deceased, late of Kawasaki (by Chieko Matsuno, legal representative); Toru Kobayashi, Kawasaki; Takeshi Miyoshi, Kawasaki, and Hideaki Kawashima, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

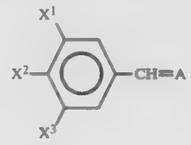
Filed Apr. 14, 1987, Ser. No. 38,364

Claims priority, application Japan, Apr. 22, 1986, 61-92481; Oct. 16, 1986, 61-246308; Oct. 16, 1986, 61-246309; Nov. 14, 1986, 61-271287

Int. Cl.[4] C07D *233/64*

U.S. Cl. 548—312 **7 Claims**

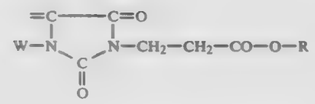
1. A benzylidene compound represented by the formula (I):



(I)

wherein

A represents



wherein

W is a hydrogen atom or a group $—CH_2—CH_2—CO—R$;

X^1, X^2 and X^3 each represents independently a hydrogen atom, a hydroxyl group or a methoxyl group, wherein two or three of X^1, X^2 and X^3 are the same or all are different; and

R is a straight chain alkyl group having 1 to 18 carbon atoms, or a branched or cyclic alkyl group having 3 to 18 carbon atoms,

provided that when X^1, X^2 and X^3 are a hydrogen atom, R is a straight chain, a branched or a cyclic alkyl group having 3 to 18 carbon atoms.

4,797,494

CARBAMIC ACID DERIVATIVES AND METHOD FOR PREPARING SAME

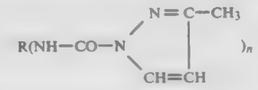
Mikhail G. Ivanov, prospekt Tsiolkovskogo, 31, kv. 47; Veniamin G. Golov, prospekt Pobedy 3, kv. 11, both of Dzerzhinsk Gorkovskoi oblasti; Vladimir N. Kuzmin, ulitsa Doboroselskaya, 195-a, kv. 48; Aida I. Alyakrinskaya, ulitsa Voroshilova, 6, kv. 2, both of Vladimir; Roman Y. Mushy, Gvardeisky prospekt, 45, kv. 15; Alexei D. Kovalev, prospekt Kosmonavtov, 15, kv. 46, both of Severodonetsk Voroshilovgradskoi oblasti; Nadezhda V. Shutova, prospekt Leninskogo Komsomola, 42, kv. 103, Dzerzhinsk Gorkovskoi oblasti; Jury A. Rodionov, prospekt Tsiolkovskogo, 81, kv. 31, Dzerzhinsk Gorkovskoi oblasti; Igor I. Molev, ulitsa Griboedova, 36, kv. 22, Dzerzhinsk Gorkovskoi oblasti; Ljudmila S. Yakovleva, Baiaklavsky prospekt, 20, korpus 1, kv. 52, Moscow; Vitaly B. Berezin, Ryazansky prospekt, 51, kv. 106, Moscow; Alexei I. Petrashko, ulitsa Tashkentskava, 24, korpus 1, kv. 181, Moscow; Gennady M. Shuev, ulitsa Prosojuznaya, 18, kv. 64; Boris A. Bukin, ulitsa Profsojuznaya, 40, kv. 17, both of Narofominsk Moskovskoi oblasti; Tamara M. Belkina, deceased, late of Moscow, and by Naum S. Belkin, administrator, ulitsa Flotskaya, 18, kv. 94, Moscow, all of U.S.S.R.

Division of Ser. No. 573,795, Jan. 25, 1984, Pat. No. 4,623,931. This application Aug. 28, 1986, Ser. No. 901,753

Int. Cl.[4] C07D *231/10*

U.S. Cl. 548—374 **4 Claims**

1. A compound of the formula



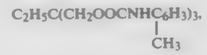
wherein R is selected from the group consisting of

$NH(CONHCH_2CH_2OOCNHC_6H_4CH_2C_6H_4)_2$

wherein n=2

$C_6H_4CH_2C_6H_4NHCOO[CH_2CH_2COO(CH_2)_4COO]_gCH_2CH_2OOCNHC_6H_4CH_2—C_6H_4—$,

in which g=8–14 wherein n=2, and



wherein n=3.

4,797,495

BENZO[C]CARBAZOLE PROPANEDIOL COMPOUND AND SALTS THEREOF

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 801,087, Nov. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 673,356, Nov. 20, 1984, abandoned. This application Dec. 4, 1987, Ser. No. 128,638

Int. Cl.[4] C07D *209/80*

U.S. Cl. 548—420 **5 Claims**

1. 2-methyl-2-[[(7-methyl-7H-benzo[c]carbozol-10-yl)methyl]amino]-1,3-propanediol.

4,797,496

PROCESS FOR THE PREPARATION OF PYRROLIDONE DERIVATIVES

Mario Pinza, Corsico, and Ugo C. Pfeiffer, Milan, both of Italy, assignors to I.S.F. Societa Per Azioni, Milan, Italy

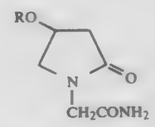
Continuation of Ser. No. 92,250, Sep. 2, 1987, abandoned, which is a continuation of Ser. No. 705,818, Feb. 26, 1985, abandoned. This application Mar. 8, 1988, Ser. No. 165,340

Claims priority, application Italy, Feb. 27, 1984, 19802 A/84

Int. Cl.[4] C07D *207/12*

U.S. Cl. 548—544 **24 Claims**

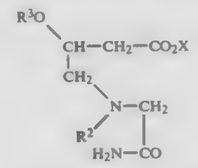
1. A process for preparing a pyrrolidinone derivative of structure (1)



(1)

in which R is hydrogen, comprising:

(a) N-deprotecting a compound of structure (2)



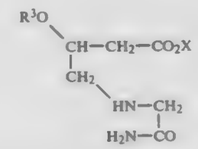
(2)

wherein

R^2 is benzyl, α-methylbenzyl or p-methoxybenzyl;

R^3 is hydrogen, and X is straight or branched alkyl containing 1 to 10 carbon atoms;

to give a compound of structure (3)



(3)

wherein X and R^3 are as defined above; and

(b) cyclizing the compound of structure (3) intramolecularly by heating at 0° to 120° C.

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4,797,497

TRIMELLITIC ANHYDRIDE PURIFICATION PROCESS

Wayne P. Schammel, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Feb. 25, 1988, Ser. No. 160,187
Int. Cl.[4] C07D *307/89*
U.S. Cl. 549—245 4 Claims

1. A process for purifying trimellitic anhydride prepared by the oxidation of a reaction mixture comprising a dilute solution of pseudocumene in a lower fatty acid having two to four carbon atoms containing minor portions of water which comprise the direct mixing of the molten trimellitic anhydride with pseudocumene at a temperature of about 200° F. to about 450° F. to dissolve said molten trimellitic anhydride in said pseudocumene for a period of about 10 to about 210 minutes and crystallizing the purified trimellitic anhydride at a temperature of about 80° F. to about 400° F. and then cooling the resulting mixture to produce crystalline trimellitic anhydride from the pseudocumene.

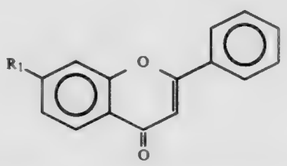
4,797,498

FLAVONOXYPROPANOLAMINES AND ESTERS OF FLAVONOXYPROPANOLAMINES AS ANTIARRHYTHMIC AGENTS

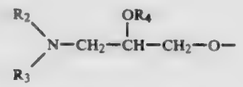
William L. Albrecht, and Edwin S. Wu, both of Rochester, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 18, 1986, Ser. No. 887,670
Int. Cl.[4] C07D *311/30*
U.S. Cl. 549—403 11 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein
R_1 is



R_2 is n-propyl or i-propyl,
R_3 is hydrogen, and
R_4 is benzoyl or diphenylacetyl and is benzoyl only when R_2 is i-propyl.

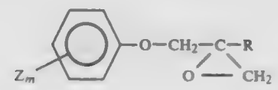
4,797,499

FUNGICIDAL AND PLANT GROWTH-REGULATING NOVEL SUBSTITUTED 1-HYDROXYALKYL-AZOLYL DERIVATIVES

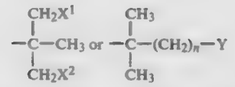
Graham Holmwood; Erik Regel, both of Wuppertal; Gerhard Jäger, Leverkusen; Karl H. Büchel, Burscheid; Klaus Lürssen, Bergisch Gladbach; Paul-Ernst Frohberger, Leverkusen; Wilhelm Brandes, Leichlingen, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 683,891, Dec. 20, 1984, Pat. No. 4,734,126, which is a continuation of Ser. No. 458,086, Jan. 14, 1983, abandoned. This application Aug. 11, 1986, Ser. No. 895,089
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 320260[illegible]
Int. Cl.[4] C07D *303/08*
U.S. Cl. 549—559 6 Claims

1. An oxirane of the formula



in which
R is



X^1 is hydrogen, fluorine, chlorine or bromine,
X^2 is fluorine, chlorine or bromine,
Y is methoxy, ethoxy, methylthio, ethylthio, trifluoromethoxy, vinyl, phenyl or phenyl substituted by a radical selected from the group consisting of fluorine, chlorine and methyl, or is phenoxy or phenoxy substituted by a radical selected from the group consisting of fluorine, chlorine, methyl and phenyl, or is phenylthio or phenylthio substituted by a radical selected from the group consisting of fluorine, chlorine and methyl, and,
n is 0, 1 or 2,
Z is a halogen atom or an alkyl having 1 to 4 carbon atoms, cycloalkyl having 5 to 7 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, halogenoalkyl having 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkoxy having 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkylthio having 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms, unsubstituted phenyl or phenyl substituted by a substituent selected from the group consisting of halogen and C_1–C_4-alkyl, phenylalkyl having 1 to 2 carbon atoms in the alkyl part and being unsubstituted or substituted by a substituent selected from the group consisting of halogen and C_1–C_4-alkyl, phenylakoxy having 1 to 2 carbon atoms in the alkoxy part and being unsubstituted or substituted by a substituent selected from the group consisting of halogen and C_1–C_4-alkyl, and alkylthio, halogenalkyl, halogenoalkoxy, halogenoalkylthio, optionally substituted phenyl, optionally substituted phenylalkyl or optionally substituted phenylalkoxy group, and
m is 0, 1, 2 or 3.

4,797,500

PURIFICATION OF ORGANOMETALLIC COMPOUNDS

Hidekimi Kadokura; Kenichi Sawara, and Tadaaki Yako, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation of Ser. No. 938,985, Dec. 3, 1986, abandoned. This application Apr. 21, 1988, Ser. No. 184,115
Claims priority, application Japan, Dec. 3, 1985, 60-272228
Int. Cl.[4] C07F *5/00, 5/06*
U.S. Cl. 556—1 4 Claims

1. A method for purifying a trialkylmetallic compound of the formula R_3M wherein R represents an alkyl group of 1–4 carbon atoms and M represents gallium, aluminum or indium, which comprises contacting said trialkylmetallic compound with at least one metallic sodium, metallic potassium or metallic potassium alloy at a temperature and a time sufficient to remove impurities, including silicon impurities, from the trialkylmetallic compound, wherein the molar ratio of the total of sodium and potassium to the trialkylmetallic compound is 0.05 to 0.6.

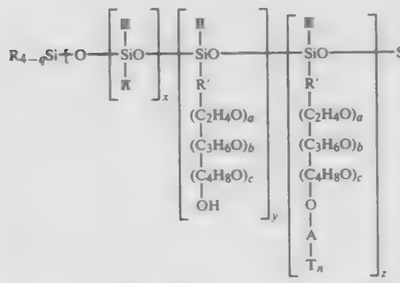
4,797,501

SILICONE-BASED STABILIZERS USEFUL IN THE PREPARATION OF IMPROVED POLYURETHANE FOAMS

Richard C. Myerly; Michael W. Jorgenson, both of Charleston, and Frank E. Critchfield, South Charleston, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 948,000, Dec. 31, 1986, abandoned. This application Oct. 13, 1987, Ser. No. 107,343
Int. Cl.[4] C08G *18/14*
U.S. Cl. 556—445 9 Claims

1. A polymer/polyol stabilizer of the general formula



wherein R is an alkyl group having from 1 to about 4 carbon atoms; R' is an alkylene group having from 3 to 6 carbon atoms; a is an integer having a value of from 0 to about 100; b is an integer having a value of from 0 to about 100; c is an integer having a value of from 0 to about 100; the sum of a+b+c is at least 5; the values of a, b and c may be the same or different within y and z groups; g is an integer having a value of from 0 to 3; x is an integer having a value of from 0 to about 200; z has a value of from about 0.2 to about 3.0; y+z has a value of from about 3 to about 50; A is a reactive unsaturated group, T is an alkylene oxide group, and n is an integer having a value of from 0 to about 3.

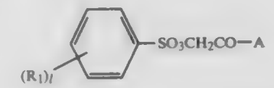
4,797,502

SULFONIC ACID ESTER DERIVATIVES AND PROCESS FOR PREPARING SAME

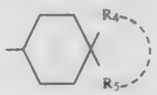
Setsuro Fujii, Toyonaka; Kazuo Ogawa, Tokushima; Toshihiro Hamakawa, Naruto, and Yoshiyuki Muranaka, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company Limited, Tokyo, Japan

Division of Ser. No. 861,635, May 7, 1986, Pat. No. 4,675,428, which is a continuation-in-part of Ser. No. 609,568, Apr. 30, 1984, abandoned. This application Jan. 20, 1987, Ser. No. 4,610
Claims priority, application Japan, Sep. 6, 1982, 57-155675; Nov. 24, 1982, 57-206579
Int. Cl.[4] C07C *143/68*
U.S. Cl. 558—52 4 Claims

1. A sulfonic acid ester derivative represented by the general formula



wherein R_1 is a hydrogen atom, alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms, A is a group represented by the general formula



wherein R_4 and R_5 are each alkyl having 1 to 4 carbon atoms or, when taken together with the carbon atom to which they are attached, form cycloalkyl having 4 to 6 carbon atoms, and l is an integer of from 1 to 3.

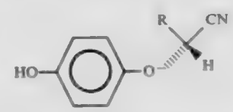
4,797,503

CHIRAL 1-CYANOALKOXY 4-HYDROXYPHENYL DERIVATIVES

Kirk F. Eidman, and David M. Walba, both of Boulder, Colo., assignors to University Patents, Inc., Westport, Conn.

Continuation of Ser. No. 880,851, Jul. 1, 1986. This application Jan. 15, 1988, Ser. No. 144,001
Int. Cl.[4] C07C *121/52*
U.S. Cl. 558—389 9 Claims

1. A compound of the formula:



wherein R is an alkyl of one to twelve carbon atoms.

4,797,504

METHOD AND COMPOSITION FOR INHIBITING ACRYLATE ESTER POLYMERIZATION

Paul V. Roling, Spring, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 7, 1986, Ser. No. 916,267
Int. Cl.[4] C07C *67/62*
U.S. Cl. 560—4 18 Claims

1. A method of inhibiting acrylate monomer polymerization at elevated temperatures comprising adding to the acrylate monomer an effective amount of (a) a hydroxylamine having the formula

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wherein R and R′ are the same or different and are hydrogen, alkyl, aryl, alkaryl or aralkyl groups and (b) a phenylenediamine or derivative thereof having at least one N-H group.

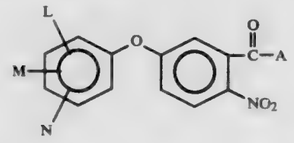
4,797,505

PROCESS FOR THE PREPARATION OF SUBSTITUTED DIPHENYL ETHERS

Michael J. Brown, Randolph, and Kou-Chang Liu, Wayne, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Mar. 17, 1982, Ser. No. 358,974
Int. Cl.⁴ C07C *79/46*
U.S. Cl. 560—021 **29 Claims**

1. The process for the preparation of substituted diphenyl ethers having the formula:

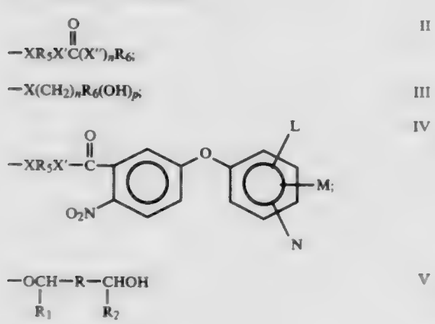


1.

wherein L, M and N are independently hydrogen, halogen, trihalomethyl, nitro, cyano, C_{1-4} alkyl, C_{1-4} alkoxy and



and A is selected from the group of radicals defined by the formulae:



I

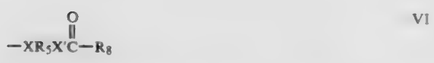
II

III

IV

V

and



VI

wherein

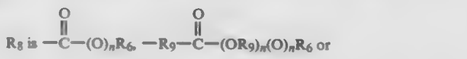
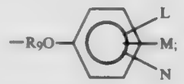
R is an unsaturated, straight chain or branched aliphatic radical having from 2 to 8 carbon atoms;

R_1 and R_2 are independently hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 and R_4 are independently hydrogen, or a saturated or unsaturated straight or branched chain C_{1-8} aliphatic radical optionally substituted with halogen, hydroxy, alkoxy, cyano or nitro;

R_5 is a saturated or unsaturated, straight chain or branched aliphatic hydrocarbon radical of from 1 to 18 carbon atoms wherein one or more of the $—CH_2—$ groups can be replaced with —O—, —S—, —S—S—, —SO— or $—SO_2—$ and said hydrocarbon radical is optionally substituted with halogen, trihalomethyl, cyano, aryl, hydroxy, alkoxy, nitro or cycloalkyl having 3 to 6 carbon atoms;

R_6 is a saturated or unsaturated straight chain or branched aliphatic radical containing from 1 to 8 carbon atoms, optionally substituted with halogen, trihalomethyl, cyano, hydroxy, nitro, acetoxy, alkoxy, thioalkoxy or aryl; an aryl radical optionally substituted with halogen, trihalomethyl, hydroxy, cyano, nitro, alkyl or alkoxy; a cyclic 3–6 membered alkylene ring or a 5–6 membered alkenylene ring or benzyl optionally substituted with halogen, trihalomethyl, alkyl, hydroxy, alkoxy or cyano;

R_8 is  , 

each R_9 is independently an alkylene diradical having from 1 to 4 carbon atoms;

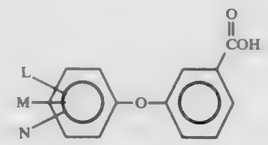
X, X′ and X″ are independently —O—, —S— or $—NR_4—$;

Z and Z″ are independently, —O— or —S—, Z″ additionally can be thiol or $—SO_3—$; and Z′ is —S—, —S—S—, —SO— or $—SO_2—$;

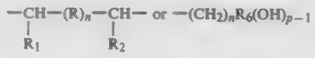
p has a value of 2–6; n in each instance, has a value of 0 or 1; and

m has a value of 1–8;

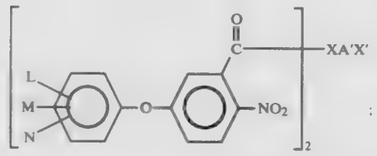
which comprises reacting a correspondingly substituted phenoxybenzoic acid having the formula



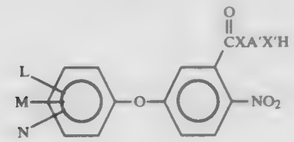
with about a stoichiometric amount of a diacylating agent having the formula HX—A′—X′H where A′ is R_5,



to produce the corresponding bis compound and then nitrating the bis compound to produce a compound having the formula



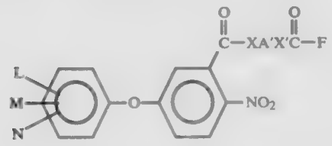
and then optionally transacylating the bis compound with an excess of said diacylating agent, preferably in the presence of a transacylating catalyst, to produce the compounds of formula 1 where A is I, III or V, namely



and further optionally reacting the product of transacylation where A′ is R_5 with a carbonyl-containing compound of the formula



or the acid halide or anhydride of such carbonyl-containing compounds to produce the compounds of formula 1 where A is II or VI, namely



where F is R_8 or $(X'')_nR_6$.

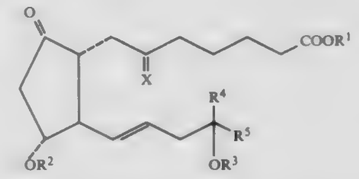
4,797,506

6-SUBSTITUTED PROSTAGLANDINS E_1 AND PROCESS FOR PRODUCING SAME

Toshio Tanaka; Atsuo Hazato, both of Hino, and Seizi Kurozumi, Kokubunji, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP85/00096, § 371 Date Oct. 18, 1985, § 102(e) Date Oct. 18, 1985, PCT Pub. No. WO85/03935, PCT Pub. Date Sep. 12, 1985
PCT Filed Feb. 28, 1985, Ser. No. 794,857
Claims priority, application Japan, Feb. 29, 1984, 59-36096
Int. Cl.⁴ C07D *177/00*
U.S. Cl. 560—121 **4 Claims**

1. 6-Substituted prostaglandins E_1 which are compounds represented by the following formula [I] or their enantiomers or mixtures thereof in any ratio:



wherein

R^1 represents a hydrogen atom, a C_1–C_{10} alkyl group, a substituted or unsubstituted phenyl group, a substituted or unsubstituted C_3–C_{10} cyloalkyl group, a substituted or unsubstituted phenyl (C_1–C_2) alkyl group, or one equivalent cation;

R^2 and R^3, which may be the same or different, represent a hydrogen atom, a tri (C_1–C_7) hydrocarbon silyl group, or a group forming an acetal linkage together with an oxygen atom of a hydroxyl group;

R^4 represents a hydrogen atom, a methyl group or a vinyl group;

R^5 represents a linear or branched C_3–C_8 alkyl group, a linear or brancehd C_3–C_8 alkenyl group, a linear or branched C_3–C_8 alkynyl group, a phenyl group which is unstubstituted or substituted, a C_3–C_{10} cycloalkyl group which is unsubstituted or substituted, or a linear or branched C_1–C_5 alkyl group which is substituted with a C_1–C_6 alkoxy group, a phenyl group which is unsubstituted or substituted, a phenoxy group which is unsubstituted or substituted, or a C_3–C_{10} cycloalkyl group which is unsubstituted or substituted;

X represents an



group or an oxygen atom, and

said subtituted groups are independently substituted with a C_2–C_7 acyloxy group, a C_1–C_4 alkyl group which is unsubstituted or substituted with a halogen atom, a C_1–C_4 alkoxy group which is unsubstituted or substituted with a halogen atom, a nitrile group, a carboxyl group or a (C_1–C_6) alkoxycarbonyl group.

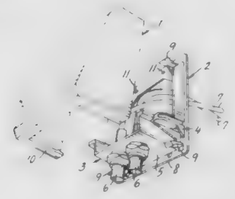
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OUTLET BOX PROVIDED WITH COAXIAL CONNECTORS

Stig-Arne Löfving, Nykköping, Sweden, assignor to Thorsman & Co. Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE86/00235, § 371 Date Feb. 10, 1987, § 102(e) Date Feb. 10, 1987, PCT Pub. No. WO86/07202, PCT Pub. Date Dec. 4, 1986
PCT Filed May 21, 1986, Ser. No. 25,141
Claims priority, application Sweden, May 23, 1985, 8502563-3
Int. Cl.[4] H01R *13/516*
U.S. Cl. 174—48 12 Claims



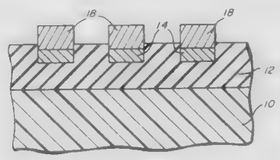
1. An outlet box for a coaxial connector, adapted for mounting on a wall, on a conduit channel section or on a recessed junction box in which the coaxial connector is arranged parallel to the underlying support surface, comprising a base plate mountable on a support surface, and a hood-shaped cover detachably mountable on the base plate to protect said plate and any components located thereon, said base plate including a frame having at least one straight edge and a central opening occupying a substantial portion of the base plate for passage of a cable such that when the base plate is fitted on a junction box recessed in a wall the opening in the junction box is substantially exposed to enable the coaxial cable to be bent along a sufficiently large radius in order to minimize damage to the cable, said base plate including two brackets projecting forwardly from said frame and having guide grooves extending substantially at right angles to the base plate, a replaceable connector holder plate slidably mounted in said guide grooves, at least one connector on said holder plate for attachment of said cable thereto, said base plate including means for detachable connection with said hood-like cover, said cover being provided with a recess through which said connector is accessible when the cover is connected to said base plate.

4,797,508

METHOD FOR PRODUCING CIRCUIT BOARDS WITH DEPOSITED METAL PATTERNS AND CIRCUIT BOARDS PRODUCED THEREBY

Peter R. Chant, Burlington, Canada, assignor to Firan Corporation, Oakville, Canada

Continuation-in-part of Ser. No. 909,256, Sep. 19, 1986, Pat. No. 4,707,394. This application Aug. 31, 1987, Ser. No. 90,043
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] H05K *1/00;* B32B *3/00;* C23F *1/02;* B29C *37/00*
U.S. Cl. 174—68.5 24 Claims



1. In a process for producing circuit boards having a metallized circuit pattern firmly bonded to a resinous substrate, the steps comprising:

(a) coating a resinous substrate with a fluid mixture of a formualtion containing;

(i) a low molecular weight polyfunctional reactive rubber component comprising an interpolymer of butadiene and acrylonitrile; and

(ii) an epoxy polymer component, said components being interactive at temperatures of at least 180° F., said rubber component comprising 50–200 percent by weight of the epoxy polymer component, said coating having a thickness of 0.0005–0.015 inch;

(b) partially curing the coating to produce partial cross-linking of said epoxy polymer component, further polymerization of the rubber, and interaction of said rubber and epoxy polymer components;

(c) etching the exposed surface of the coating to produce a microporous surface;

(d) depositing metal on the microporous surface of the coating to form a conductive layer with microformations extending into the recesses of said microporous surface;

(e) applying heat and pressure to said conductive layer and coating to fully cure said coating, thereby firmly bonding said coating to said metal layer and thereby said conductive layer through said coating to said resinous substrate; and

(f) electrodepositing metal on said conductive layer to form a conductive pattern therewith, said conductive pattern being bonded firmly to said substrate through said conductive layer and coating.

19. In a circuit board, the combination comprising:

(a) a resinous substrate;

(b) an intermediate coating on one surface of said substrate of about 0.0005–0.015 inch and containing a rubber component and an epoxy polymer which have interacted to provide a matrix of the interacted rubber/epoxy polymer, said rubber component comprising at least 35 percent by weight of said coating; and

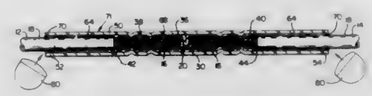
(c) a metal conductive pattern on said coating providing a circuit, said conductive pattern having a base metal layer with microformations at the interface with said coating an extending thereinto, said conductive pattern being embedded in said coating to a depth substantially equal to the thickness of said base metal layer, said coating being firmly bonded to said base metal layer and said conductive pattern thereby being bonded through said coating and base metal layer to said substrate.

4,797,509

METHOD AND APPARATUS FOR CONNECTING ELECTRICAL CONDUCTORS TOGETHER

Jeffrey A. Cook, Sherwood, Oreg., assignor to Nicor, Inc., Tualatin, Oreg.

Filed Nov. 19, 1987, Ser. No. 122,748
Int. Cl.[4] H02G *15/08;* H01R *43/04, 4/20*
U.S. Cl. 174—84 C 22 Claims



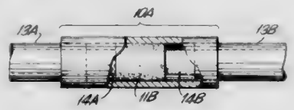
9. A method for connecting a plurality of electrical conductors together, the ends of which comprise an exposed portion of electrically conductive material, said method comprising:

placing a deformable connecting member comprised of electrically conductive material within a sheath comprised of a material allowing the passage of ultraviolet light therethrough, said sheath having ends sized to receive said conductors, a diameter greater than that of said

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connecting member, and a length greater than that of said connecting member;
inserting a portion of ultraviolet-curable adhesive within each end of said sheath; and
sealing each end of said sheath so as to retain said adhesive therein until the connection of said conductors is desired.

4,797,510
DEVICE FOR JOINING SUPERCONDUCTING WIRE
John L. Mihelich, Ann Arbor, Mich., assignor to Amax, Inc., New York, N.Y.
Filed Oct. 13, 1987, Ser. No. 107,077
Int. Cl.[4] H01R *4/68*
U.S. Cl. 174—94 R **8 Claims**

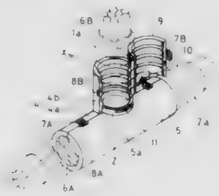


1. A coupling device for joining together at least a pair of superconducting cored wires, the core of each wire consisting essentially of a substantially unitary structure of a sintered superconducting material, each core being confined within a tubular element of a metal having an electrical conductivity of at least about 20% of that for pure copper taken as unity, said metal forming a cladding around each core, said coupling device comprising:
a tubular segment of the same clad metal as said superconducting cored wires,
said tubular segment having an internal diameter (I.D.) corresponding substantially to the outside diameter (O.D.) of said cored wires sufficient for receiving an exposed end core portion of said superconducting cored wire and providing an interference fit with the O.D. thereof,
said tubular segment having disposed therein a green pellet of the same material as said superconducting material, and
said pellet being positioned inwardly from both ends of said tubular element to allow for entry at each end thereof of an exposed end portion of a superconducting cored wire to be joined and thereby provide a coupling therefor.

4,797,511
POLYETHYLENE STABILIZED BY MIXTURE OF HINDERED PHENOL AND AMINE ANTIOXIDANTS
Janet D. Capolupo, Watertown, and Thomas M. Chacta, Naugatuck, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.
Filed Sep. 25, 1987, Ser. No. 101,318
Int. Cl.[4] C08K *5/36*
U.S. Cl. 174—110 PM **7 Claims**

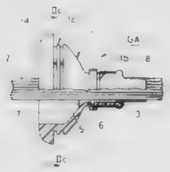
1. A composition stabilized against oxidative degradation comprising:
(a) a non-cross-linked polyolefin;
(b) 0.1 to 20 weight percent carbon black homogeneously incorporated in said polyolefin;
(c) an effective amount of thiodiethylene bis(3,5 di-t-butyl-4-hydroxy)hydrocinnamate incorporated into said polyolefin; and
(d) an amine antioxidant based on quinoline selected from the group consisting of polymerized quinoline, 6-dodecyl-2,2,4-trimethyl-1,2-dithydroquinoline and 6 ethyoxy-2,2,4-trimethyl-1,2-dihydroquinoline, wherein thiodiethylene bis(3,5 di-t-butyl-4-hydroxy) hydrocinnamate and said amine antioxidant constitute a combined weight percent of about 0.05 to about 3.0.

4,797,512
BRANCH WIRE PROTECTOR
Fumio Kumagai, and Toshio Okazaki, both of Toyota, Japan, assignors to Yazaki Corporation, Japan
Filed Dec. 24, 1987, Ser. No. 137,662
Claims priority, application Japan, Dec. 25, 1986, 61-198255[U]
Int. Cl.[4] H02G *3/02*
U.S. Cl. 174—135 **5 Claims**



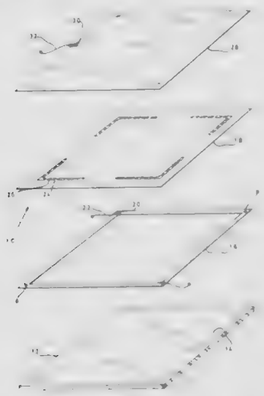
1. A branch wire protector comprising:
(a) a T-shaped semicylindrical member having a trunk portion and a branch portion;
(b) a trunk semicylindrical member openably joined to the trunk portion of said T-shaped semicylindrical member and having a semicylindrical base portion near a junction point of the trunk portion and the branch portions;
(c) a branch semicylindrical member openably joined to the branch portion of said T-shaped semicylindrical member;
(d) locking members for locking said trunk semicylindrical member and said branch semicylindrical member to said T-shaped semicylindrical member; and
(e) means for clinching said branch semicylindrical member to said trunk semicylindrical member near the junction point of the trunk portion and the branch portion of said T-shaped semicylindrical member.

4,797,513
GROMMET WITH WIRES SEALED THERETO AND METHOD OF FORMING SAME
Mamoru Ono; Kohji Naruse, and Toshio Okazaki, all of Aichi, Japan, assignors to Yazaki Corporation, Japan
Filed Nov. 25, 1987, Ser. No. 125,583
Int. Cl.[4] H01B *17/30*; H02G *3/22*
U.S. Cl. 174—153 G **5 Claims**



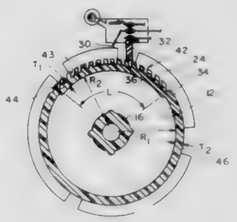
1. An assembly of a grommet and wires extending therethrough, comprising:
(a) an elastic funnel-shaped grommet body having a large-diameter cylindrical portion formed with an outer circumferential annular groove fittable to a hole of a panel and a small-diameter cylindrical portion through which the wires are passed; and
(b) a penetrating and waterproof sealing material filling a space between the small-diameter cylindrical portion and the wires and gaps among wires passed through the small-diameter portion of the grommet.
5. A method of sealing wires to a grommet fittable to a panel to guide the wires passing through the panel, which comprises the following steps of:
(a) passing wires through a large-diameter cylindrical portion and a small-diameter cylindrical portion of a grommet;
(b) positioning the grommet at a determined position on the wires;
(c) temporarily fixing the wires to the grommet by taping a border between the small diameter cylindrical portion and the wires;
(d) standing up the grommet so that the larger diameter cylindrical portion faces upward;
(e) putting a sealing material from above the grommet to fill a space between the small-diameter cylindrical portion and the wires and gaps among the wires; and
(f) hardening the sealing material before fitting the grommet to a hole of the panel.

4,797,514
TOUCH SENSITIVE DEVICE WITH INCREASED LINEARITY
John E. Talmage, Jr., Anderson County, and William A. Gibson, Knox County, both of Tenn., assignors to Elographics, Inc., Oak Ridge, Tenn.
Filed Jun. 9, 1986, Ser. No. 871,991
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 **19 Claims**



1. A position touch sensor which provides a linear output response over an enhanced proportion of the surface area of said sensor by reducing the bow of equipotential lines along edges of said sensor, which comprises:
a resistive layer having a selected substantially uniform resistivity throughout said layer, said layer defining perimeter edges joined at corners;
a resistance element positioned proximate each of said perimeter edges of said resistive layer for providing orthogonal electrical fields to said resistive layer, each of said resistance elements having opposite ends joined to proximate ends of adjoining resistance elements, each of said resistance elements being in electrical contact with said resistive layer;
a plurality of discontinuous insulator regions of selected effective lengths in said resistive layer arranged along a selected path proximate said resistance elements in a direction toward said area of linear output, and defining spaces of selected effective lengths and width between adjacent of said insulator regions, said resistivity of said resistive layer producing in said spaces resistor electrode elements having selected values of resistance, said selected effective lengths of said insulator regions and said selective resistance values of said resistor electrode elements being selected to produce a selected voltage gradient along said path to compensate for any voltage drop along said resistance element when said orthogonal fields are introduced into said resistive layer through said resistor electrode elements whereby said bow is reduced; and
means for deriving output signals corresponding to coordinates of a selected point on said resistive layer within said area of linear output.

4,797,515
SWITCH TIMING MECHANISM WITH SERRATED CAMSTACK
Henry E. Burgin, Greenwood, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.
Continuation of Ser. No. 100,729, Sep. 25, 1987, abandoned. This application Jun. 13, 1988, Ser. No. 205,551
Int. Cl.[4] H01H *43/10*
U.S. Cl. 200—38 R **6 Claims**



1. A timing mechanism comprising:
a motor;
a camstack coupled to said motor, said camstack including: (a) a hub having an outer hub surface and an inner hub surface, said inner hub surface having a first inside radius and an arc segment of said inner surface having a second inside radius smaller than said first inside radius; and (b) cam means carried on said hub for providing a cam surface;
a switch comprising: (a) at least one switch blade; (b) referencing means for referencing said blade to said hub, said referencing means including a hub follower riding on said hub surface; and (c) a cam follower riding on said cam surface; and
wherein a section of said hub directly underneath the area where said hub follower rides and above said arc segment has material removed therefrom.

4,797,516
MOLDINGS FOR ISOLATION SWITCH AND FUSE CLIPS
Michael R. Clark; Gerald J. Kuiper, both of Columbia; Donald B. Monson, Eastover, and Dominick Tringali, Columbia, all of S.C., assignors to Square D Company, Palatine, Ill.
Continuation of Ser. No. 754,873, Jul. 12, 1985, abandoned. This application Mar. 3, 1987, Ser. No. 18,767
Int. Cl.[4] H01R *13/70*
U.S. Cl. 200—51 R **12 Claims**

1. An improved electrical switch apparatus having:
a first molding means for supporting an isolation switch and for supporting at least one line side power fuse clip, and at least one line side power fuse clip capable of retaining a first end of a power fuse fed by said isolation switch;
a second molding means for supporting at least one load side power fuse clip, said at least one load side power fuse clip capable of retaining a second end of said power fuse;
wherein the improvement comprises:
at least one projection formed into said second molding means supporting a control circuit fuse, said at least one

projection being substantially parallel to and beside a power fuse when a power fuse is installed in said apparatus;

a control circuit line side fuse clip and a corresponding



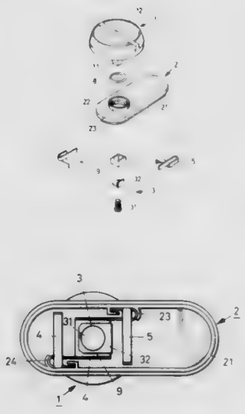
control circuit load side fuse clip mounted to each said projection formed into said second molding means, so that a control fuse and a power fuse are spaced apart and substantially parallel when both are installed in the apparatus.

4,797,517

SWITCH DEVICE OF PORTABLE FLASHLIGHT

Keiichi Ohashi, Shizuoka, Japan, assignor to Skylite Industry Co., Ltd., Shizuoka, Japan

Filed Sep. 18, 1987, Ser. No. 98,149
Int. Cl.[4] F21V *23/04*
U.S. Cl. 200—60 **4 Claims**



1. A switch device of a portable flashlight having a casing, built-in casing for housing bulbs, and a lighting circuit connected to said bulbs, and a rotatable switch mounted on said casing for turning on and off said casing for turning on and off said lighting circuit, comprising:

means for operating said rotatable switch;

a turnable contact means coupled to said operating means on said axis of said rotatable switch;

a base-board;

at least two contact means installed on said base-board on opposing sides of said axis and directly on opposing sides of said turnable contact means for selectively detachably engaging said turnable contact means, and

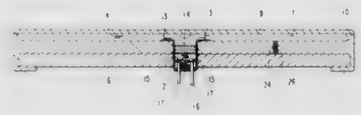
wherein said casing has a recess portion to receive said base-board and has a hole through which said lighting circuit is connected with said turnable contact means and said at least two contact means.

4,797,518

BRAKING INDICATOR

Stephen D. Ambrose, 2 Washington St., Rocky Hill, N.J. 08553; Jeffrey W. Tunkel, 4667 Willow Grove Dr., Ellicott City, Md. 21043, and Joseph F. Shelley, 54 Talbot La., Princeton, N.J. 08540

Filed Nov. 30, 1987, Ser. No. 126,571
Int. Cl.[4] H01H *3/14, 35/24;* **B60Q** *1/00*
U.S. Cl. 200—61.89 **14 Claims**



1. An apparatus for indicating vehicle braking, comprising:

a means for actuating brakes of the vehicle;

a flexible member located on the actuating means to be directly contacted by the driver of the vehicle when it is desired to brake the vehicle, such member being deformable in response to direct contact with the member by the driver of the vehicle; and

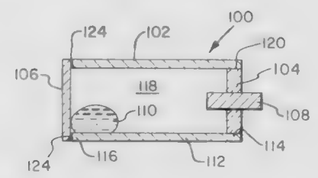
a fluid pressure actuated switching means responsive to deformation of the member for energizing a braking indicator on the vehicle.

4,797,519

MERCURY TILT SWITCH AND METHOD OF MANUFACTURE

George H. Elenbaas, 25526 N. Shore Dr., Elkhart, Ind. 46514

Filed Apr. 17, 1987, Ser. No. 40,213
Int. Cl.[4] H01H *29/04*
U.S. Cl. 200—226 **15 Claims**



1. A mercury tilt switch comprising:

a hollow housing having opposite open ends;

an insulating member disposed at, making a compression seal with, in direct contact with, and closing, one of said open ends of said housing,

an end cap disposed at, making a seal with, and closing, the other of said open ends of said housing;

said housing defining a single chamber therewithin between said insulating member at said one housing end and said end cap at said other housing end;

at least one electrical electrode sealably mounted through and in direct contact with said insulating member and projecting from opposite sides thereof to outside of and into said housing chamber; and

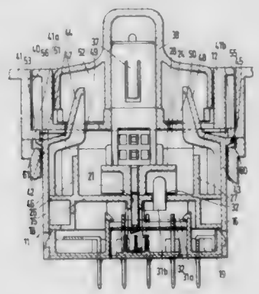
a quantity of mercury disposed in said single housing chamber and flowable between and contactable with said electrode at said one housing end and with said end cap at said other housing end upon tilting and countertilting of said housing.

4,797,520

SWITCH, ESPECIALLY FOR MOTOR VEHICLES

Hubert Spazierer, and Adam Weber, both of Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Bietigheim-Bissingen, Fed. Rep. of Germany

Continuation of Ser. No. 907,448, Sep. 15, 1986, abandoned. This application Oct. 19, 1987, Ser. No. 110,629
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1985, 3533055
Int. Cl.[4] H01H *9/02*
U.S. Cl. 200—295 **14 Claims**



1. A switch assembly comprising:

a housing inserted into an opening of a mounting plate, said housing

comprising several side walls, a base plate and a front plate formed with an aperture, said housing containing switch means, said front plate bearing on an exterior surface of said mounting plate;

a locking spring projecting laterally from at least one of said side walls for snapping behind said mounting plate when said switch assembly is inserted in the mounting plate and retaining said housing in said mounting plate; and

a release shank projecting from said locking spring into the housing interior and ending adjacent said aperture in said front plate for moving said locking spring to a position where said housing can be removed from said mounting plate.

4,797,521

MICROWAVE OVEN COOKWARE PEDESTAL

Henrietta M. Liwski, Rte. 1, Box 365, Readville, Va. 22539

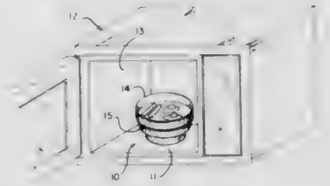
Filed Nov. 4, 1987, Ser. No. 116,355
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 E **2 Claims**

1. A pedestal adapted for use in a microwave oven cooking chamber for supporting cookware having a metallic coating on its bottom and wherein the coating occupies the central area of the cookware bottom and leaving an outer bottom perimeter free of the coating, comprising:

a pair of pan-shaped dished having bottom walls joined to one another to define a unitary member,

each said dish provided with a rim defining a horizontal planar cookware supporting surface vertically spaced from the respective said bottom wall,

said rims of said two dishes defining two different diameters, and



said pedestal constructed of plastics material devoid of reflective or absorbent coatings and substantially inert to the effects of microwave radiation, whereby

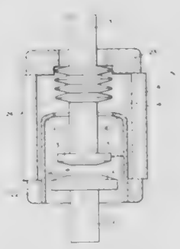
said pedestal may be selectively inverted prior to placing within the chamber of a microwave oven to utilize either diameter rim for supporting the outer bottom perimeter of cookware at an elevated position within the oven with the cookware coating disposed in an isolated manner within the confines of said dish rim.

4,797,522

VACUUM-TYPE CIRCUIT INTERRUPTER

Roy E. Voshall, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 11, 1988, Ser. No. 165,067
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B **4 Claims**



1. A vacuum circuit interrupter comprising

(a) an insulated cylindrical evacuated housing;

(b) a stationary electrode in said housing;

(c) a movable electrode in said housing adapted to engage said stationary electrode so as to provide an arc on separation;

(d) an arc shield surrounding the stationary electrode and electrically connected thereto extending toward the movable electrode to provide a predetermined spacing between the arc shield and the movable electrode; and

(e) in which the movable electrode is of a smaller dimension with respect to the stationary electrode so as to form asymmetric shaped electrode structures, whereby to provide the predetermined spacing between the arc shield and the movable electrode.

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4,797,523

COVER FOR AN OPEN CONTAINER, WHOSE CONTENT IS TO BE HEATED IN A MICROWAVE OVEN

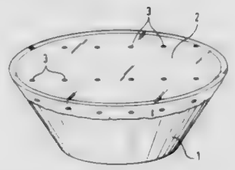
Friederun Kohnen, Untere Heide 6a, 4322 Sprockhovel, Fed. Rep. of Germany

Filed Aug. 19, 1986, Ser. No. 897,998

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1985, 3530008

Int. Cl.[4] H05B *6/80;* **B65D** *65/02*

U.S. Cl. 219—10.55 E **8 Claims**



1. A cover for an open container in which material therein is to be heated in a microwave oven, characterized in that the cover is made from a cellulose hydrate film including means defining ventilation holes therein.

4,797,524

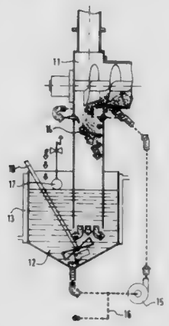
APPARATUS AND METHOD FOR REGENERATING ACTIVE CARBON

Jacques Moret, Saint Pardoux; Jean-Maurice Fosset, Nantiat; Jacques Couturier, Razes, and Noël Viard, Bessines, all of France, assignors to Compagnie Generale des Matieres Nucleaires, Velizy Villacoublay, France

Filed May 20, 1986, Ser. No. 864,918

Int. Cl.[4] H05B *6/10*

U.S. Cl. 219—10.69 **27 Claims**



1. In an apparatus for regenerating a particulate material which includes (a) an enclosed reactor having an input end and an output end; (b) means for introducing said material, to be regenerated, into said input end of said reactor; said material introducing means being in air-tight communication with said input end; (c) a shaft with blades or a first Archimedes screw within said reactor and extending continuously between said input and output ends of said reactor to transport said material all the way from said input end to said output end; and (d) means for substantially uniformly heating the inside of said reactor and thereby heating said material to regenerate said material and form gaseous byproducts; the improvement which comprises:

(e) means for providing an atmosphere inside said reactor that: (i) contains steam, (ii) is saturated with water vapor and (iii) is close to atmospheric pressure; and

(f) means in communication with said output end for: (i) evacuating said gaseous byproducts, (ii) condensing steam from said reactor, (iii) trapping particles of said material in said gaseous byproducts and steam from said reactor; and (iv) transporting said material from said output end; said means (f) for evacuating, condensing, trapping and transporting providing a relatively reduced pressure at said output end which causes steam, inside said reactor, to circulate cocurrently with said material as it is transported through said reactor.

4,797,525

INDUCTION HEATER FOR FLOATING ZONE MELTING

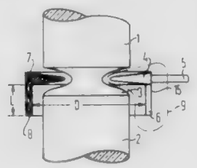
Wolfgang Keller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 21, 1987, Ser. No. 76,254

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1986, 3625669

Int. Cl.[4] H05B *6/40*

U.S. Cl. 219—10.79 **4 Claims**



1. An induction heater for flating zone melting of a crystalline semiconductor rod, the induction heater comprising: a flat coil and a cylindrical supplementary heater arranged coaxially with the flat coil and connected to the coil; the supplementary heater being of an electrically conductive metal and electrically connected parallel with the flat coil; the supplementary heater being arranged exclusively on one side of the flat coil the supplementary heater having two metal rings and axial metal rods extending between the two metal rings to form a cylindrical cage, and each metal ring having a radial slot, the radial slot of one metal ring axially with the radial slot of the other ring, and the flat coil having a single turn defining an opening and two terminals having a slot between them aligned with the radial slots.

4,797,526

METHOD FOR WIRE-CUT ELECTRIC DISCHARGE MACHINING UTILIZING ADJOINING SEGMENTS OF A COMMON ELECTRODE

Inoue Kiyoshi, Tokyo, Japan, assignor to Inoue Japax Research Incorporated, Tokyo, Japan

PCT No. PCT/JP86/00018, § 371 Date Sep. 17, 1986, § 102(e) Date Sep. 17, 1986, PCT Pub. No. WO86/04279, PCT Pub. Date Jul. 31, 1986

PCT Filed Jan. 17, 1986, Ser. No. 919,249

Claims priority, application Japan, Jan. 18, 1985, 60-05943; Feb. 8, 1985, 60-21793; Apr. 11, 1985, 60-75361; Apr. 16, 1986, 60-79400

Int. Cl.[4] B23H *7/02, 7/10*

U.S. Cl. 219—69 W **10 Claims**

1. In a method of performing wire-cut electric discharge machining using a wire electrode which is pulled off a supply reel, passes along a predetermined path, machines a work piece, and is collected by a collecting apparatus, the improvement comprising the steps of:

allowing a first segment of said wire electrode to pass through a working portion of said work piece;

turning back the wire electrode for return along the path it has come;

allowing a return segment of the wire electrode to pass through the working portion of the work piece again in adjoining relation to the first segment;

then collecting the wire electrode by engaging said return segment; and



simultaneously machining the work piece by reciprocating said two segments of the wire electrode while feeding said segments along a common cutting line through the working portion of the work piece.

4,797,527

ELECTRODE FOR ELECTRIC DISCHARGE MACHINING AND METHOD FOR PRODUCING THE SAME

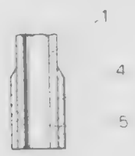
Kenji Yamamoto; Takehisa Nakayama, and Yoshihisa Tawada, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 3, 1986, Ser. No. 825,288

Claims priority, application Japan, Feb. 6, 1985, 60-21403; Nov. 5, 1985, 60-247464

Int. Cl.[4] B23H *1/04;* **B05D** *3/06*

U.S. Cl. 219—69 E **15 Claims**



6. An electric discharge machining electrode comprising a conductive core; a buffer material coated thereon, selected from the group consisting of metals having a small thermal expansion coefficient and amorphous material; and a hard insulator having a surface Vickers hardness of not less than 1000 coated on the buffer material.

4,797,528

VACUUM CARBON ARC METAL REMOVAL PROCESS AND APPARATUS

Paul E. Moore, Glouster; Jeffrey S. Henderson, Lancaster; Lawrence R. Soisson, Hide-A-Way Hills, and Andrew J. Toth, Copley, all of Ohio, assignors to Arcair Company, Lancaster, Ohio

Filed Dec. 8, 1987, Ser. No. 130,016

Int. Cl.[4] B23K *9/32;* **A47L** *5/00*

U.S. Cl. 219—70 **8 Claims**

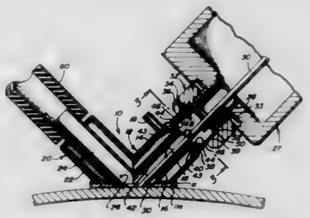
1. A method for cutting or gouging a metallic workpiece comprising the steps of:

(a) providing an electrode and means for striking and maintaining an arc between said electrode and said workpiece;

(b) isolating a portion of the electrode and the related arc struck between the electrode and said workpiece and the atmosphere surrounding said arc and said workpiece;

(c) injecting water into said isolated atmosphere surrounding said arc and

(d) subjecting said isolated portion to the effect of a vacuum to continuously evacuate said atmosphere surrounding said arc and said workpiece, said atmosphere containing molten metal and air drawn from outside said isolated portion while moving said electrode in a direction to produce the desired cut or gouge in said workpiece.



4,797,529

STUD WELDING APPARATUS

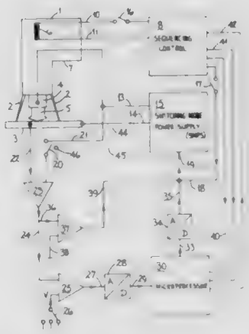
Klaus G. Schmitt, Giessen, and Wolfgang Schmidt, Reiskirchen, both of Fed. Rep. of Germany, assignors to Emhart Enterprises Corp., Farmington, Conn.

Continuation of Ser. No. 036,046, Apr. 8, 1987, abandoned. This application May 23, 1988, Ser. No. 203,535

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1986, 3611823

Int. Cl.[4] B23K *9/20*

U.S. Cl. 219—99 **25 Claims**



1. An apparatus for arc welding a stud onto the surface of a workpiece which comprises:

means for gripping said stud;

means for initially positioning said stud adjacent said surface;

means for effecting a return stroke to bring said stud away from said surface;

means for igniting a pre-current arc during said return stroke;

means for initially setting the magnitude of said pre-current arc;

means for initially setting the time duration of said pre-current arc;

means for effecting a forward stroke;

means for igniting a main welding arc during said forward stroke;

means for initially setting the magnitude of said main welding arc;

means for initially setting the time duration of said main welding arc;

means for sensing the voltage of said pre-current arc;

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means for comparing the voltage of said pre-current arc to a desired value to determine a correction voltage;
means for sensing said correction voltage;
means for changing the time duration of said pre-current arc responsive to said correction voltage;
means for changing the magnitude of said pre-current arc responsive to said correction voltage;
means for changing the magnitude of said main welding arc responsive to said correction voltage; and
means for changing the time duration of said main welding arc responsive to said correction voltage.

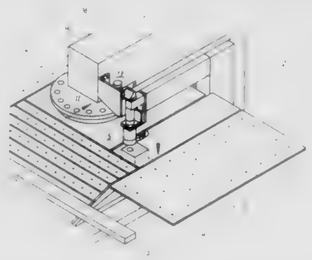
4,797,530
CERAMIC CIRCUIT SUBSTRATES AND METHODS OF MANUFACTURING SAME
Nobuo Iwase, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 10, 1986, Ser. No. 939,969
Claims priority, application Japan, Dec. 11, 1985, 60-278154
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.85 **44 Claims**



1. A method of manufacturing ceramic circuit substrate, comprising the steps of:
(i) providing an electrically insulating ceramic substrate that is comprised of at least one material selected from the group consisting of aluminum nitride and silicon nitride; and
(ii) irradiating a predetermined region of said ceramic substrate with an energy beam such that at least a portion of said region is rendered conductive.

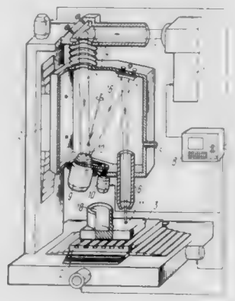
4,797,531
CUTTING PRESS
Gerhard Otto, Alfeld; Manfred Rohrbach, Hildesheim, and Gerald Leupold, Alfeld, all of Fed. Rep. of Germany, assignors to C. Behrens AG, Alfeld, Fed. Rep. of Germany
Filed Sep. 8, 1987, Ser. No. 94,528
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3637204
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.67 **32 Claims**

1. A cutting press for working plate-shaped workpieces, comprising at least one working station in which a workpiece having a working plane is supported and in which a part of the workpiece is to be cut out; means for cutting out the part of the workpiece; and means for releasing the cutout part of the workpiece from the plane of the workpiece for removing the cutout part from said working station, said releasing means including substantially a structural element which is movable in a working region of said working station in a motorized manner, and shaped to release the cutout part from the workpiece, said structural element being an extracting plate which is shaped for displacing the cutout part from the plane of the workpiece, said extracting plate having a side which is arranged to face the cutout part of the workpiece and is provided



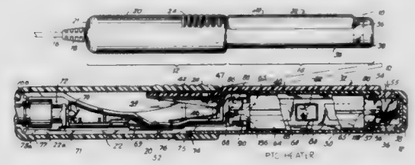
at said side with a plurality of displacement bodies composed of an elastic material.

4,797,532
APPARATUS FOR LASER TREATMENT OF MATERIALS
Vladimir S. Maiorov, Dokuchaev pereulok, 15, kv. 42, Moscow, U.S.S.R.
PCT No. PCT/SU86/00025, § 371 Date Nov. 16, 1987, § 102(e) Date Nov. 16, 1987, PCT Pub. No. WO87/05843, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 26, 1986, Ser. No. 156,918
Int. Cl.[4] B23K *26/06*
U.S. Cl. 219—121.74 **5 Claims**



1. An apparatus for laser treatment of materials, comprising a laser (1), a coordinate table (2) on which a material (3) to be treated is placed, a system (4) for delivery, transformation and focusing of laser radiation, equipped with an outlet barrel (6), arranged along the path of a laser beam (7), and provided with a numerical control system (8) connected to the laser (1) and the coordinate table (2), characterized in that the laser radiation delivery, transformation and focusing system (4) comprises a mirror optical unit (9) provided with a drive (10) for rotation about the axis (16) thereof and connected to the numerical control system (8).

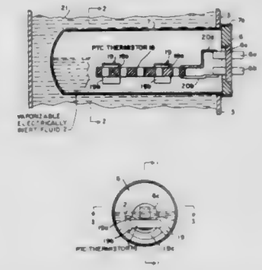
4,797,533
ELECTRIC HAIR APPLIANCE HAVING AN IMPROVED HANDLE AND ACTUATING MECHANISM CONSTRUCTION
Daniel Santhouse, Stratford, and Kevin E. Reeves, Trumbull, both of Conn., assignors to Clairol Incorporated, New York, N.Y.
Filed Nov. 7, 1986, Ser. No. 929,023
Int. Cl.[4] H05B *3/00;* **A45D** *1/04, 2/36*
U.S. Cl. 219—225 **11 Claims**



1. In a hair appliance having a cylindrical handle, an elongated hair winding portion connected to an end of said handle and having at least a part thereof movable relative to said handle and said hair winding portion, an actuating mechanism for enabling movement of said movable part, said actuating mechanism including a movable surface, said hair appliance further having a bias means for biasing said actuating mechanism to a predetermined position, the improvement comprising:
said handle having a cylindrical external surface at a predetermined radial distance from the longitudinal axis of said handle, said surface being indented over a predetermined longitudinal length and predetermined arcuate extent to form a recess in said external surface,
said actuating mechanism having said movable surface thereof overlying said recess and substantially aligned at said predetermined radial distance with the cylindrical external surface of said handle when said actuating mechanism is biased to said predetermined position, said movable surface being radially inwardly movable relative to said handle and adapted to be received, upon radially inward movement thereof, in said recess, and
a cylindrical flexible sleeve member covering a predetermined portion of said recess and said handle and at least part of said movable surface of said actuating mechanism, that part of said sleeve member covering said movable surface of said actuating mechanism being adapted to be flexed radially inwardly to move said actuating mechanism against said bias means and into said recess within said external surface of said handle, said recess being sufficiently large to enable said flexible sleeve member to be deformed inwardly a sufficient amount to enable adequate radially inward movement of said actuating mechanism without unduly stressing sad sleeve.

4,797,534
PTC THERMISTOR HEATING DEVICE
Lee A. Prager, Raymond, and Mason Ide, Gorham, both of Me., assignors to GTE Products Corporation, Stamford, Conn.
Filed Jun. 8, 1987, Ser. No. 59,291
Int. Cl.[4] H05B *3/78;* **F24H** *1/20;* **F28D** *15/00*
U.S. Cl. 219—326 **12 Claims**

1. A heater adapted to be disposed in a vessel thereby to heat liquids contained therein, said heater comprising:
a sealed heat-transmitting cannister;
a PTC thermistor disposed within said cannister and electrically insulated therefrom;
means to convey current to opposite sides of said PTC thermistor;
at least one brace disposed in said cannister;
each said brace including a pair of channels which face each other and engage the edges of said PTC thermistor; and



a partial fill of electrically inert fluid disposed in said cannister.

4,797,535
TUNGSTEN-HALOGEN HEATER
Wayne A. Martin, P.O. Box 147, West Lebanon, N.Y. 12195
Filed Nov. 30, 1987, Ser. No. 126,786
Int. Cl.[4] F24H *3/00;* **H05B** *1/008*
U.S. Cl. 219—338 **10 Claims**



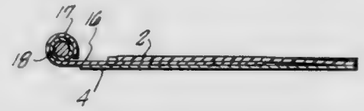
1. A heater comprising:
conduit means for liquidic fluid flow having defined therein fluid ingress and egress ports;
physical and electrical means within said conduit for attachment and operation of at least a singular tungsten-halogen heating element therein; and
at least one tungsten-halogen heating element attached to said electrical means.

4,797,536
TEMPERATURE CONTROL APPARATUS FOR A WATERBED
Jerome D. Handley, Palmdale, Calif., assignor to Electrofilm, Inc., Valencia, Calif.
Filed Mar. 31, 1986, Ser. No. 846,368
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—494 **6 Claims**

1. An apparatus for controlling the temperature of the water in a waterbed in preventing localized overheating during use, said apparatus comprising: a substantially flat heater means for heating the water in the waterbed; a substantially flat thermally conductive plate adjacent to and in thermal contact with said heater means; a thermally conductive member disposed in thermal contact with said plate and defining holding means outwardly spaced from said plate, temperature sensing means

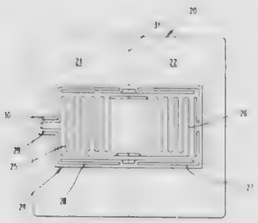
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carried by said holding means in thermal contact with said thermally conductive member for sensing the temperature of said member; and temperature control means in operative



communication with said temperature sensing means and said heater means for activating and deactivating said heater means in response to variations in the temperature of said thermally conductive member.

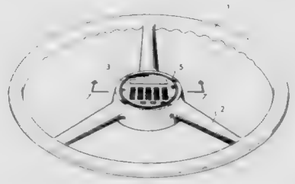
4,797,537
FOIL ELEMENT
Rolf Berthelius, Västerås, and Tommy Fredriksson, Hallstahammar, both of Sweden, assignors to Kanthal AB, Hallstahammar, Sweden
Filed Dec. 10, 1986, Ser. No. 939,968
Claims priority, application Sweden, Dec. 13, 1985, 8505911
Int. Cl.[4] H05B *3/34*
U.S. Cl. 219—528 **5 Claims**



1. Heating apparatus for heating a planar surface, including an electric resistance foil heating element, said element comprising at least two plastic foils, a metallic electric resistance heating coil disposed between said foils and occupying a substantial portion of the area of the element surface to heat objects placed against the surface of the element, a metallic sensor coil formed of the same metallic material and of the same thickness as said heating coil and situated beside said heating coil between said foils at a distance from said heating coil and in coplanar relationship therewith, said sensor coil occupying a smaller portion of the area of the element surface than said heating coil, said sensor coil being electrically isolated from said heating coil and spaced sufficiently far from said heating coil that said sensor coil is heated primarily by heat conducted through said foils and is heated to a smaller extent by direct heat from said resistance coil, whereby the temperature of said sensor coil is determined substantially by the heat traveling to or from the object being heated.

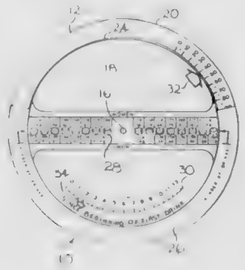
4,797,538
CALCULATOR —HORN BUTTON
David E. Schick, 1000 E. Oak St., Lamar, Colo. 81052
Filed Sep. 8, 1987, Ser. No. 93,960
Int. Cl.[4] G06C *5/02;* **H01H** *9/00*
U.S. Cl. 235—1 D **13 Claims**

1. In combination;
a motor vehicle steering wheel having means connecting an outer circumferential rim portion of said wheel with a center portion of said wheel,
a calculator including keys on a top side of said calculator for performing user specified calculations when selected ones of said keys are depressed by a pressure less than a predetermined amount,
securing means for affixing said calculator to said center portion of said wheel so that said calculator can also function as a horn circuit activating means for said vehicle,



and means affixed to a back side of said calculator for activating a horn circuit of said vehicle when a pressure greater than said predetermined amount is exerted on said keys on said top side of said calculator.

4,797,539
ALCOHOLIC CONCENTRATION INDICATOR
Guy A. Forest, 942, Nicole-Lemaire, Boucherville, Qc, Canada J4B 3G5
Filed Jun. 10, 1987, Ser. No. 60,236
Int. Cl.[4] G06C *3/00*
U.S. Cl. 235—85 R **6 Claims**



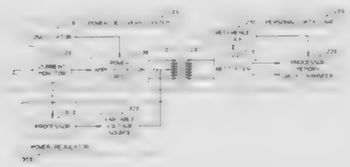
1. An alcoholic concentration indicator comprising at least two superposed concentric circular discs adapted to rotate about their axis relative to one another, the lower one having on, at least part of its peripheral margin, a scale representing alcohol concentration indicia and a multiplicity of numbers concentrically displayed inside said margin, the said numbers representing the number of drinks consumed, the second disc having a dimension adapted to cover the portion of said lower disc inside said margin and being provided with an elongated slot across a diameter of said second disc, the width of said slot corresponding substantially to the size of the said numbers displayed on the lower disc, the said second disc displaying along the edges of said slot a series of figures representing the weight of human bodies and also displaying a series of numbers along a circumferential portion thereof, the said series of numbers representing the number of hours elapsed since the beginning of the first drink, means rotating about the axis of said superposed discs for the double and simultaneous identification of a number of said series of numbers and a portion of said scale, whereby the said discs are rotated relative to one another to match one of said figures representing a weight with one of said numbers on the lower disc appearing through said slot, the said means being rotated to identify simultaneously a number in said series of numbers and an alcohol concentration indicium on said scale.

4,797,540
PAYMENT MAKING TERMINAL DEVICE
Ryuichi Kimizu, Ootsu, Japan, assignor to Omron Tateisi Electronics Co., Tyoto, Japan
Filed Nov. 5, 1987, Ser. No. 116,778
Claims priority, application Japan, Nov. 6, 1986, 61-264328
Int. Cl.[4] G06K *15/00*
U.S. Cl. 235—383 **3 Claims**



1. A payment making terminal device electrically connected to a registration processing device, for making payment when an operator enters data related to commodities purchased by a customer to the registration processing device and then the customer operates keys of the payment making terminal device, which comprises:
first displaying means, disposed on a front surface of the device so as to display to the customer, operation guidance for the customer and
second displaying means, disposed on a rear surface of the device so as to display to the operator, the operation guidance.

4,797,541
POWER REGULATOR FOR A CONTACTLESS CREDIT CARD SYSTEM
Robert L. Billings, Andover, Mass.; Mark A. Bowers, Woodburn, and Frankie G. Meier, Indianapolis, both of Ind., assignors to American Telephone and Telegraph Company—AT&T Information Systems, Holmdel, N.J.
Filed Apr. 14, 1986, Ser. No. 851,849
Int. Cl.[4] G06K *7/08, 19/06*
U.S. Cl. 235—449 **12 Claims**

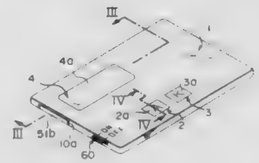


1. In a receptor for a computerized transaction card containing microcomputer means, a power transfer coil, and a power transfer ferromagnetic member adapted, when said card is in said receptor, to flux link said coil with a transformer primary means in said receptor for transfer of energy from said receptor to said microcomputer means to provide therefor both operating power and a clock signal transmitted to said coil from said receptor, an improvement comprising:
a power amplification circuit adapted to drive the transformed primary means in response to an oscillator signal of predetermined frequency, the transformer primary means being connected to a variable voltage source;
means for measuring current flow in the transformer primary and for providing an output signal (I_a) representing an averaged magnitude of same; said microcomputer means being responsve to values of P_{thresh}, I_q, V_n and C.F., stored in memory means, for performing the calculations;

$$P_{card}=(I_a-I_q)\times V_n\times C.F.$$

where:
I_q=quiescent current flow in the transformer primary
V_n=magnitude of voltage source
C.F.=correction factor
P_{thresh}=threshold power level for the transaction card and increasing said variable voltage source until P_{card} exceeds P_{thresh}.

4,797,542
MULTIPLE APPLICATION ELECTRONIC CARD-LIKE APPARATUS
Kazuya Hara, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jan. 27, 1987, Ser. No. 7,343
Claims priority, application Japan, Feb. 4, 1986, 61-22538
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 **21 Claims**



1. A multiple application card-like electronic apparatus, comprising:
electronic component means for performing predetermined electrical functions, including:
circuit board means having a plurality of external terminals for connecting to an external device,
input terminal means for receiving an input signal,
memory means for storing application data,
application designation means for selecting application data stored in said memory means according to an input signal received through said input terminal means, and
indication means for indicating application selected by said application designation means; and
cover means for covering said electronic component means, said cover means having an outer surface defining a substantially flat plane and an opening in said outer surface for exposing said external terminals to the outside of said card-like electronic apparatus.

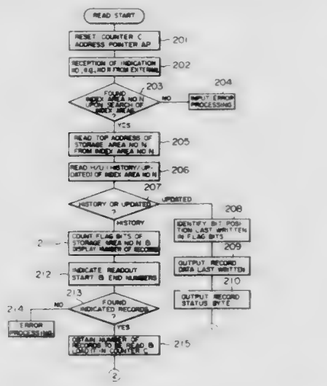
4,797,543
SELECTABLE DATA READOUT IC CARD
Hiroshi Watanabe, Kokubunji, Japan, assignor to 501 Toppan Moore Company, Ltd., Tokyo, Japan
Filed Jul. 30, 1986, Ser. No. 892,099
Claims priority, application Japan, Jul. 31, 1985, 60-169237
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—492 **11 Claims**

1. An IC card containing an electronic circuit including at least a CPU and memory means in which a plurality of storage areas are allocated, wherein information can be written sequentially in said memory means and said information can be read from said memory means, comprising:
means for receiving an external indicator at the IC card;
means for generating a signal at the IC card in response to the external indicator;
means for selectively indicating in response to said signal that information recorded in a plurality of storage areas of the memory means is either updated information or history information;
means for reading updated information, including only information recently stored in said storage areas, when said

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indicating means indicates that the information written in said storage areas is updated information; and

means for reading history information, including the information stored in said storage areas, in a predetermined sequential order when said indicating means indicates that the information written in said storage areas is history information.



4,797,544

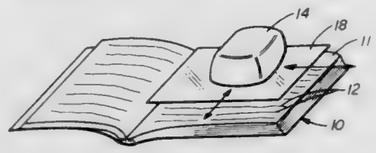
OPTICAL SCANNER INCLUDING POSITION SENSORS

James R. Montgomery, 211 Durham St., Menlo Park, Calif. 94025; John A. Figueroa, P.O. Box 160, Mountain View, Calif. 94042, and George White, 25785 Bassett La., Los Altos Hills, Calif. 94022

Filed Jul. 23, 1986, Ser. No. 889,130

Int. Cl.[4] G01V *9/04*

U.S. Cl. 250—221 **4 Claims**



2. Apparatus for scanning a surface displaying information, said apparatus comprising:

a transparency including optically detectable indicia of location and adapted to cover, and to extend said indicia over siad information on, at least a portion of said surface; and

an image scanner adapted to be moved across said transparency in any selected direction parallel to said surface and including

at least one photosensitive element for sensing light emanating from said surface through said transparency and for developing information signals corresponding to said information, and

means including first and second detectors for optically detecting said indicai of location and, in response thereto, providing data signals indicative of the location and orientation of said image scanner relative to said transparency.

4,797,545

OPTICAL HEAD DEVICE HAVING POSITIONALLY ADJUSTABLE PARTS

Shinsuke Shikama; Mitsushige Kondo, and Eiichi Toide, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

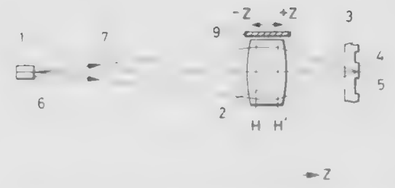
PCT No. PCT/JP86/00416, § 371 Date Apr. 29, 1987, § 102(e) Date Apr. 29, 1987, PCT Pub. No. WO87/01466, PCT Pub. Date Mar. 12, 1987

PCT Filed Aug. 14, 1986, Ser. No. 52,860

Claims priority, application Japan, Sep. 10, 1985, 60-200163

Int. Cl.[4] G01J *1/20*

U.S. Cl. 250—201 **12 Claims**



1. An optical head device including a semiconductor laser and a finite conjugate type condensing lens for concentrating a beam of light which is emitted by said laser, the device comprising:

altering means for altering the distance between said lens and said laser along the optical axis thereof to reduce the spherical aberration of said beam concentrated through said lens.

4,797,546

METHOD FOR READING A LIGHT-SENSITIVE ELEMENT CONSTITUTED BY A PHOTODIODE AND A CAPACITOR

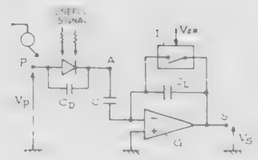
Jean L. Berger, and Marc Arques, both of Grenoble, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 16, 1987, Ser. No. 3,890

Claims priority, application France, Jan. 17, 1986, 86 00656

Int. Cl.[4] H01J *40/14*; **H04N** *3/14*

U.S. Cl. 250—214 R **5 Claims**



1. A method for reading a quantity of charge produced by illumination of a photodetective element, said photodetective element comprising a photodiode in series with an associated capacitor, said capacitor and photodiode connected to a common node, said photodiode having a forward threshold voltage beyond which it is conductive in a forward direction, in which said photodiode is reverse biased during illumination and may be forward biased by means of periodic reading pulses, wherein, after each periodic read pulse, a constant biasing charge background is applied to said common node, said constant biasing charge background being such that during a next read pulse the photodiode is forward biased beyond its threshold voltage even when illumination is at zero level, said constant biasing charge background being obtained by restoring to a predefined value, after each read pulse, a voltage across the diode.

4,797,547

OPTICAL FIBRE MONITORING DEVICE USING A SYNCHRONIZATION SELECTOR TO CHANNEL OPTICAL SIGNALS

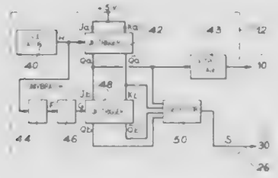
Floréal Blanc, Verrieres le Buisson, and Claude Bonnejean, Courcouronnes, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 18, 1987, Ser. No. 50,461

Claims priority, application France, May 30, 1986, 86 07809

Int. Cl.[4] G01V *9/04*

U.S. Cl. 250—221 **9 Claims**



1. An optical fiber monitoring device comprising:

a light emitting diode coupled to an optical emission fiber;

a photoreceiver coupled to an optical reception fiber;

a control system comprising an emission control module for controlling the emission of the light-emitting diode, a preamplifier module connected to a photoreceiver and a processing module for processing a preamplified signal wherein said processing module is connected to said preamplifier module, and

wherein said emission control module comprises an oscillator producing a pulse train having a first repetition rate, a first JK-type trigger having an input connected to said oscillator and two complementary outputs supplying a first set of two complementary logic signals Qa, $\overline{Qa}$ of a second repetition rate which is one half of the first repetition rate, a first univibrator connected to said oscillator, a second univibrator connected to said first univibrator, a second JK-type trigger having an input connected to said second univibrator and a second set of two complementary outputs supplying a second set of two complementary logic signals Qb, $\overline{Qb}$, a synchronization detector having four inputs respectively connected to the four outputs of said two JK triggers and wherein said synchronization detector has an output supplying one of said two sets of two complementary logic signals Qa, $\overline{Qa}$, Qb, $\overline{Qb}$, an output stage connected to the first output of said first JK trigger and receiving the signal Qa and having an output connected to said light emitting diode, and

wherein said processing module is a synchronous detection type processing module comprising an input connected to the output of said preamplifier module, a band pass filter, an amplifier connected to said filter, a synchronous detection circuit comprising two complementary channels wherein each of said complementary channels comprises an amplifier and a sampler with said samplers being respectively controlled by the synchronization signal supplied by said synchronization selector and by the complementary signal obtained by a logic inverter, a low pass filter connected to said two samplers, an amplifier providing an analog output for said processing module, and a threshold circuit connected to an amplifier and having an output of said threshold circuit which constitutes a logic output for said processing module and wherein said processing module further comprises a time lag circuit connected to the output of said threshold circuit and an inhibiting input and an output connected to an alarm circuit wherein said control system further includes a means for detecting the possible failure of said light-emitting diode and wherein said means for detecting providing an output to said inhibiting input.

4,797,548

REFLECTION LIGHT BEARER SYSTEM WITH SELF-TESTING FEATURE

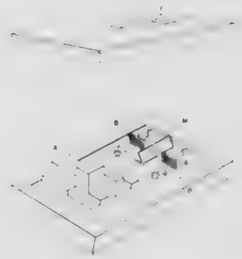
Heinz Köbbing, Dortmund, and Hermann Gebhard, Castrop-Rauxel, both of Fed. Rep. of Germany, assignors to Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed Sep. 1, 1987, Ser. No. 91,860

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1986, 3629715

Int. Cl.[4] G01V *9/04*; **G06M** *7/00*

U.S. Cl. 250—221 **20 Claims**



1. A reflection light barrier, comprising measuring light emitter means which emits light into a space to be monitored, measuring light receiver means which receives light reflected from an object present in the space to be monitored, at least one further light receiver means which receives the light of the measuring light emitter means without emission into and reflection from said space to be monitored, and at least one further light emitter means which emits light only in a test cycle which light is received by the measuring light receiver means without emission into and reflection from said space to be monitored.

4,797,549

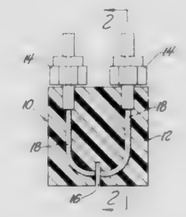
OPTICAL SENSOR AND METHOD OF MAKING SAME

Thanh Ho, Indianapolis, and Gerald T. Fattic, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1987, Ser. No. 118,474

Int. Cl.[4] H01J *5/16*

U.S. Cl. 250—227 **5 Claims**



4. The method of making an optical sensor with aligned spaced optical fibers comprising the steps of;

forming a generally U-shaped bend in an optical fiber such that the fiber path has a straight portion in the bend as well as a curved portion,

supporting the fiber in a straight recess of a mold to secure the straight portion,

molding the U-shaped bend of the fiber in an epoxy material to maintain the fiber shape,

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exposing the straight portion of the fiber by removing the mold,

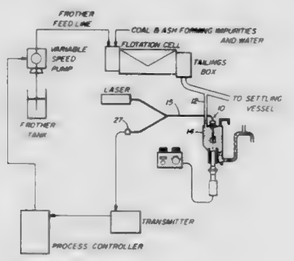
cutting a segment of the exposed straight portion of the fiber element along spaced planes perpendicular to the fiber axis to form a pair of parallel faces defining a gap with axially aligned fiber optic portions adjacent the gap, and polishing the faces.

4,797,550

FIBER OPTIC DETECTOR FOR FLOTATION CELL PROCESSING

Michael G. Nelson, and Hayward B. Oblad, both of Bethel Park, Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed Nov. 6, 1987, Ser. No. 117,263
Int. Cl.[4] H01J *5/16, 40/14*
U.S. Cl. 250—227 **5 Claims**



1. An apparatus for automatically monitoring the operatsion of a froth flotation cell for extracting coal from a coal slurry, the cell having an outlet from a tailings box; comprising

(a) a canister for receiving tailings from a bypass line out of the tailings box;

(b) a fiber optic cable having randomized filaments terminating in a scanner end portion adapted to be inserted into said canister;

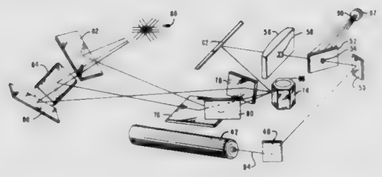
(c) said cable being bifurcated at the opposed end spaced from the slurry and having randomized filaments contacting a light source and randomized filaments contacting a light receiving photoelectric sensor, said light source filaments transmitting light to said scanning end portion, and said light receiving filaments transmitting backscattered light from the tailings to said photoelectric sensor to sense the hue of the color of the tailings to monitor the operation of the flotation cell.

4,797,551

COMPACT LASER SCANNER OPTICAL SYSTEM

Ronald A. Ferrante, Senecaville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 11, 1987, Ser. No. 60,586
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—234 **12 Claims**



1. An optical scanning apparatus for reading bar code symbols on objects passing over the scanning apparatus comprising a housing structure which includes:

a base member;

a cover member having an aperture therein through which scanning light beams are projected and past which aperture a merchandise item bearing a coded label is moved;

oppositely located first and second wall members;

a support member mounted between said first and second wall members intermediate said base and cover members;

a source of a coherent light beam secured to said first wall member above said support member for projecting the light beam along the top surface of said support member;

first and second light reflecting means mounted on the top surface of said support member for receiving said light beam and reflecting the light beam along a first light path;

light transmitting means mounted on said support member in said first light path and adjacent said second light reflecting means for transmitting the light beam along a second light path;

third reflecting means mounted on said support member in said second light path and at an acute angle to said support member for reflecting the light beam in a downward direction along a third light path in the same vertical plane as the second light path but in the opposite direction;

scanning means mounted on said base member below said support member and in said third light path for cyclically sweeping the light beam along a plurality of fourth light paths;

fourth reflecting means mounted in said fourth light paths and to the bottom surface of said support member for reflecting the light beam along a plurality of fifth light paths; and

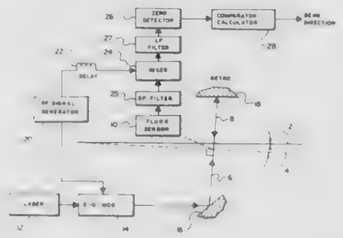
fifth reflecting means mounted in said fifth light path and on said base member adjacent the cover member for reflecting the light beam through said aperture in the cover member for scanning a bar code label positioned adjacent said aperture.

4,797,552

APPARATUS AND METHOD FOR LOCATING THE DIRECTION OF AN ATOMIC BEAM

Duncan G. Steel, Ann Arbor, Mich., and R. Steven Turley, Newbury Park, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 9, 1987, Ser. No. 23,844
Int. Cl.[4] H01S *1/00*
U.S. Cl. 250—251 **22 Claims**



1. A system for measuring the angle between an atomic beam and a reference axis for the beam, comprising:

means for generating and directing a pair of laser beams having the same frequency through the atomic beam at known angles to the reference axis,

means for varying a characteristic of the two laser beams, the varied characteristic being selected from the laser beam frequencies and their angles relative to the atomic beam,

means for sensing the laser beam intensities as said characteristic is varied,

means for obtaining the derivatives of the sensed laser beam intensities, and

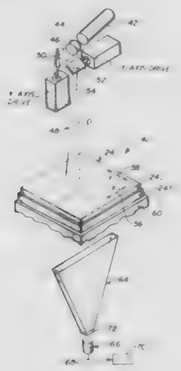
means for measuring the interval over the varying laser beam characteristic between the derivatives crossing zero as an indication of the angular deviation between the actual atomic beam axis and the laser beams, and thereby of the angular deviation between the actual beam axis and the reference axis.

4,797,553

METHOD AND APPARATUS FOR READING A TRANSPARENT PHOTOSTIMULABLE LUMINESCENT SCREEN

Edward B. Caruthers, Jr., Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed May 11, 1987, Ser. No. 48,650
Int. Cl.[4] G01N *23.04*
U.S. Cl. 250—327.2 **5 Claims**



1. A method for interrogating a transparent phosphor screen in which image information has been stored by positioning the screen at a predetermined location with respect both to a source of a high energy imaging beam and an object being examined so that the imaging beam passes through the volume of the screen along predetermined paths to create a predetermined angular distribution of image information within the volume of the phosphor, comprising the steps of:

positioning the screen with respect to a source of a beam of interrogating radiation such that the interrogating beam passes through the volume of the screen along substantially the same paths as the imaging beam; and

scanning the beam of interrogating radiation in a predetermined pattern across the screen.

4,797,554

ION MOBILITY SPECTROMETER

William C. Blanchard, Phoenix, and Allan T. Bacon, Baltimore, both of Md., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 24, 1987, Ser. No. 137,700
Int. Cl.[4] H01J *49/40*
U.S. Cl. 250—287 **2 Claims**

1. An ion mobility spectrometer comprising:

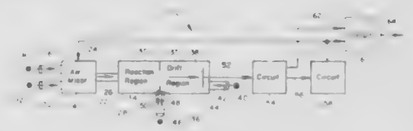
an air mixer having a first input port for receiving clean air and a second input port for receiving sample air, said air mixer having a control input responsive to electrical signals for controlling the mixture of said clean air received from said first input port to said sample air received from said second input port,

said air mixer having an output port coupled to the inlet of the reaction region, said reaction region including means for generating ions from said mixed clean air and sample air to form reactant ions and sample ions from selected sample molecules in said sample air,

means for introducing said ions into a drift region,

said drift region including means for measuring the amplitude and mobility of reactant ions and sample ions in said drift region,

said means for measuring including means for generating a first electrical signal indicative of the reactant ion amplitude,



first means for generating a second electrical signal from said first electrical signal indicative of a desired air mixture of said clean air to said sample air in response to the amplitude of said first electrical signal, said second electrical signal coupled to said control input of said air mixer, and

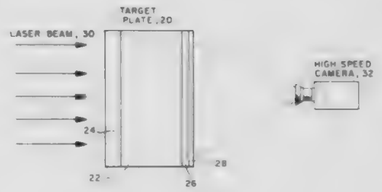
second means coupled to said first and second electrical signals for generating a third electrical signal indicative of the concentration of said sample molecule in said sample air.

4,797,555

HIGH ENERGY LASER TARGET PLATE

Charles R. La Mar, Marietta, Ga., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 28, 1987, Ser. No. 55,092
Int. Cl.[4] G01T *1/00;* **G01J** *5/48*
U.S. Cl. 250—336.1 **6 Claims**



1. Apparatus for determining the intensity profile of a beam of radiant energy comprising:

a metallic plate substrate having a first planar surface and an opposed second planar surface;

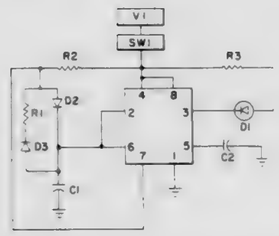
a first metallic layer disposed on said first surface of said substrate and being positioned to be irradiated by said beam of radiant energy;

a layer of temperature sensitive paint disposed on said second surface of said substrate and undergoing a change of phase from a solid phase to a liquid phase when subjected to a predetermined temperature;

and optical recording means for recording an indication of the intensity profile of said beam, said optical recording means being focused on said layer of temperature sensitive paint.

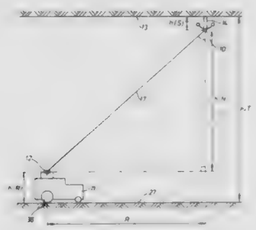
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4,797,556
OPTICAL CONTINUITY TESTING APPARATUS WITH PULSATING TRANSMITTER
Robert L. Marsarl; Robert K. Southard, and William J. Stape, all of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 842,613, Mar. 21, 1986. This application Oct. 7, 1987, Ser. No. 105,800
Int. Cl.[4] G02B *27/00*
U.S. Cl. 250—551 **11 Claims**



1. Apparatus for receiving an optical test signal from a transmitter pulsating at a selected repetition rate comprising, optical detector means for sampling the test signal and generating a voltage signal pulsating at said repetition rate and with an amplitude proportionate to the amplitude of the sampled test signal, an indicator for indicating the amplitude of the sampled test signal, amplifying means connected between the indicator and the detector means, and a filter circuit for eliminating voltage signals resulting from optical sources other than said test signal.

4,797,557
POSITION SENSING SYSTEM FOR A MOVING OBJECT WHEREIN A LENS FOCUSES LIGHT ONTO A RADIATION SENSITIVE MATRIX
Carl G. Öhman, Atvidaberg, Sweden, assignor to Aktiebolaget Electrolux, Sweden
Filed May 14, 1987, Ser. No. 49,565
Claims priority, application Sweden, May 23, 1986, 8602369
Int. Cl.[4] G01V *9/04*
U.S. Cl. 250—561 **4 Claims**



1. An electro-optic position system for a mobile robot moving in a plane comprising at least one light source mounted in a fixed position and emitting light, a light receiver on said robot having a lens arrangement, means in said system for calculating the position of said robot relative to said light source, said light source so mounted and arranged whereby the radiation field of the light source covers the complete area within which said robot is capable of movement, said light receiver being provided with a matrix of radiation sensitive elements, said lens arrangement focusing incident light from said light source to a light spot on said matrix whereby said elements thus illuminated responding by emitting corresponding electric signals, means being provided for sensing the matrix to determine the position of said light spot from the element which unambiguously reacts to incident light, and calculating means for calculating the position coordinates of the robot in the plane of movement from the position of said unambiguously reacting element in said matrix, said calculating means being arranged to present the position coordinates in a polar form, and means being provided which during movement of the robot in a predetermined direction repeatedly compares each value of the polar angle coordinates with the immediately preceding value in order to detect and correct a turning of the robot relative to a predetermined direction.

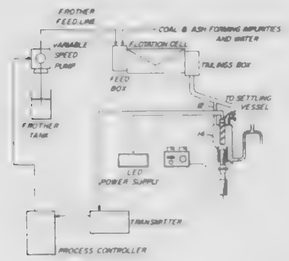
4,797,558
INSPECTION APPARATUS INCLUDING PHOTODETECTION AND SCANNING APPARATUS
Robert N. West, Chislehurst, England, assignor to Sira Limited, Chislehurst, England
Filed Apr. 28, 1987, Ser. No. 43,654
Claims priority, application United Kingdom, Apr. 28, 1986, 8610305
Int. Cl.[4] G01N *21/88*; H01J *3/14*
U.S. Cl. 250—572 **8 Claims**



1. Inspection apparatus comprising:
a radiation source;
a rotatable mirror scanner having a plurality of facets so that, as the mirror scanner rotates, it scans a beam of radiation from the radiation source across an object to be inspected by reflection from a suitably disposed facet of the mirror scanner; and
a plurality of radiation detector means, one of the radiation detector means receiving the central part of the beam of radiation, after it has been influenced by the object, via said suitably disposed facet of the mirror scanner, and another of the radiation detector means being positioned to receive radation scattered by the object and reflected by another facet of the mirror scanner.

4,797,559
METHOD AND APPARATUS FOR CONTROLLING A FLOTATION CELL
Hayward B. Oblad; Michael G. Nelson, both of Bethel Park, and Thomas D. Sandbrook, Eighty Four, all of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.
Filed Nov. 6, 1987, Ser. No. 117,264
Int. Cl.[4] H01J *5/16, 40/14*
U.S. Cl. 250—227 **11 Claims**

1. Method of controlling the operation of a flotation cell to which additives such as a frother and collector are added for extracting coal from a coal slurry; comprising
(a) coacting a light sensitive detector with the slurry to determine the coal content of the slurry, and



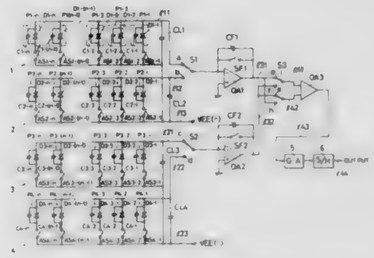
(b) adjusting the flow rate of additives to the flotation cell in response to the function of the detector.

4,797,560
MATRIX OF PHOTOSENSITIVE ELEMENTS AND AN ASSOCIATED READING METHOD IN IMAGE FORMATION
Jean. L. Berger, and Marc Arques, both of Grenoble, France, assignors to Thomson-CSF, Paris, France
Filed Jan. 16, 1987, Ser. No. 3,891
Claims priority, application France, Jan. 20, 1986, 86 00716
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **6 Claims**



1. A matrix of photosensitive elements including an assembly of p lines of n columns of photosensitive elements, each element having a first and second terminal, wherein each element includes in series a photodiode and a capacitor, said photodiode and capacitor connected to a common node, said photodiode having a forward threshold voltage beyond which it is conductive in a forward direction, said matrix comprising means for reverse biasing said photodiodes during an illumination phase, means for applying to said lines a periodic reading pulse after an illumination phase, means for setting on said common node, after each reading pulse, a constant biasing charge background, said constant biasing charge background being such that during a next reading pulse the photodiode is forward biased beyond its threshold voltage even when illumination is at a zero level during an illumination phase preceding said reading pulse.

4,797,561
READING APPARATUS WITH IMPROVED PERFORMANCE
Hiromitsu Tajiri; Yasuo Nishiguchi, and Chiaki Matsuyama, all of Kagoshima, Japan, assignors to Kyocera Corporation, Kyoto, Japan
Filed Aug. 28, 1986, Ser. No. 901,898
Claims priority, application Japan, Aug. 31, 1985, 60-192360; May 30, 1986, 61-127010; Jun. 9, 1986, 61-134155
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **5 Claims**



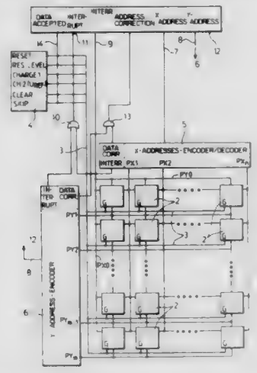
1. A reading apparatus, comprising:
a plurality of groups of reading elements wherein each group of reading elements is coupled in parallel to define a common output, wherein each element comprises a photodetector and a reading switch coupled in series with the photodetector and wherein each photodetector comprises a light detecting element having an impedance corresponding to received light and a capacitor coupled in parallel with the light detecting element;
an operational amplifier having an output;
switching means for coupling the common output of one group at a time to the operational amplifier input;
a feedback capacitor coupling the output of the operational amplifier to the input of the operational amplifier;
a feedback switch coupled in parallel to the feedback capacitor;
means for selectively switching the reading switches on and off so that one reading switch of a group is turned on at a time to thereby activate the reading elements; and
means for selectively turning the feedback switch on if the reading switches are off and for turning the feedback switch off when any of the reading switches are on.

4,797,562
IMAGE RECORDING SENSOR
Klaus Dietrich, Gochsheim, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed Oct. 15, 1987, Ser. No. 109,185
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1986, 3635687
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **9 Claims**

1. An image recording sensor including a preselected line-shaped pattern of photodetectors for recording an image, said photodetectors being coupled to an image processing circuit, which image recording sensor comprises:
at least one part of said image processing circuit comprising a plurality of discrete circuit cells;
each of said discrete circuit cells being electrically coupled to a complementary one of said photodetectors;
said plurality of discrete circuit cells being coupled to an address circuit means operable to generate electrical signals which selectively define an address for each of said discrete circuit cells;
each of said discrete circuit cells including:

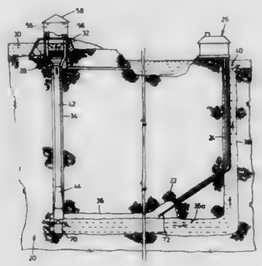
VOL 1098 ISS 2 JA 10 1989 UMI

an input control circuit for receiving external control signals to selectively activate and control said cell;
a capacitor for accepting the photocharge of said complementary one of said photodetectors;
a voltage comparator operable to compare the voltage of said capacitor with a comparison voltage; and



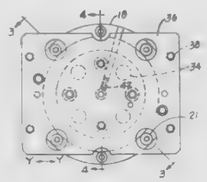
an output circuit coupled to said voltage comparator and operable when the voltage of said capacitor is greater than said comparison voltage to transmit a signal to said address circuit means to thereby generate an electrical signal representative of the address of said cell.

4,797,563
POWER PLANT
Timothy M. Richardson, R.R. #3, Old Scone Mill, Chesley, Ontario, Canada N0G 1L0
Filed Jul. 24, 1987, Ser. No. 77,358
Int. Cl.[4] F02C *3/12*
U.S. Cl. 290—54 9 Claims



1. A power plant, comprising:
a hydraulic air compressor including: a water intake in a stream of water at an upper level and a water outlet at a lower level in said stream, said intake being adapted to entrain air with water entering said intake; an air compressor shaft in the ground, said shaft communicating at an upper level with said intake and permitting entrained air to be compressed by water moving downward in said shaft; an air separation and storage chamber in the ground communicating with a lower end of said shaft and in which air is allowed to bubble to the surface of the water and is trapped in the chamber above the water; a return shaft for delivering water from said chamber to said water outlet in the water stream; and a compressed air outlet from said chamber;
A turbine having a compressed air inlet; burner means for heating said compressed air; an expansion chamber for receiving said heated compressed air; an exhaust outlet downstream of said expansion chamber; and a rotary shaft carrying driven turbine blades, said blades being located in said expansion chamber for driving by hot gases expanding in said chamber;
means for preventing water flow to said turbine in the event that water enters said air outlet of the hydraulic air compressor;
heat exchanger means coupled between said turbine exhaust outlet and said air control means for pre-heating compressed air entering said compressed air inlet of the turbine; and,
generator means coupled to said rotary turbine shaft;
wherein said tubine is an axial-flow gas turbine;
and wherein said rotary shaft of the turbine has a first end portion at which said turbine blades are located, and a second end portion, said air inlet of the turbine being disposed between said first and second end portions and said second end portion of the shaft being provided with a balance piston for counteracting axial thrust exerted on the shaft by combustion gases acting on said turbine blades.

4,797,564
ROBOT OVERLOAD DETECTION MECHANISM
Valdas S. Ramunas, Euclid, Ohio, assignor to Erickson Tool Company, Solon, Ohio
Filed Aug. 25, 1986, Ser. No. 900,307
Int. Cl.[4] B25J *9/00*; B23K *9/12*
U.S. Cl. 307—119 24 Claims
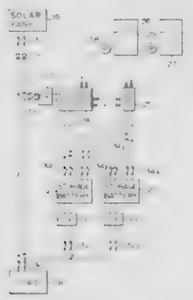


1. An overload detection mechanism for a robot arm comprising, in combination:
a first member having a Z axis;
a second member having a second axis;
urging means acting between said members to urge said members toward axial alignment on said Z axis;
guide means to guide said second member in movements departing from coaxial alignment on said Z axis;
means to support said first member near the end of a robot arm;
means to connect said second member to a tool mount for the end of a robot arm;
an electrical device mounted on one of said members and a device actuator on the other of said members; and
reactions means acting between said members to relatively move said members upon thrust along a Z axis, or movement in an X-Y plane normal to said Z axis, whereby due to overload on said second member said first and second members are relatively moved and said electrical device is actuated to change an electrical condition thereof.

4,797,565
CASCADE FET LOGIC CIRCUITS
Lawrence E. Lach, Chicago, and Mikiharu Ohoka, Schaumburg, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill. and Nippon Mining Co., Ltd., Japan
Filed Mar. 13, 1987, Ser. No. 25,899
Int. Cl.[4] H03K *19/094*
U.S. Cl. 307—450 25 Claims



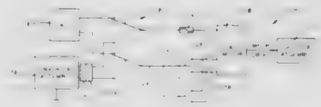
25. A logic circuit, comprising:
a first potential node;
a second potential node;
a first group III–V field effect transistor having a first gate, having a first source, and having a first drain, said first gate receiving an input signal;
a second group III–V field effect transistor having a second gate, having a second source, and having a second drain, said first drain and said second drain being coupled at said first node to receive said first potential, said second gate and said second source being coupled together; and
a third group III–V field effect transistor having a third source receiving said second potential, having a third drain coupled to said second source, and having a third gate coupled solely to said first source.

4,797,566
ENERGY STORING APPARATUS
Ken Nozaki, and Yuichi Akai, both of Ibaragi, Japan, assignors to Agency of Industrial Science and Technology and Ebara Corporation, both of Tokyo, Japan
Filed Feb. 27, 1987, Ser. No. 19,621
Claims priority, application Japan, Feb. 27, 1986, 61-40361
Int. Cl.[4] H02J *9/04*; H01M *8/20*
U.S. Cl. 307—43 11 Claims



1. An energy storing apparatus including power generating means, a load and power lines interconnected between said electric power generating means and said load, comprising:
lead-acid storage battery means;
flowing type battery means;
first switch means for connecting said lead-acid battery means with said power lines;
second switch means for connecting said flowing type battery means with said power lines;
third switch means for connecting said lead-acid battery means with said flowing type battery means;
wherein such first, second and third switch means are selectively operated so that said lead-acid battery means and said flowing type battery means are charged by surplus electric energy when the amount of electric energy supplied from said electric power generating means is larger than the amount of electric energy being consumed by said load, that said lead-acid battery means supplies the electric energy stored therein to said load when the amount of electric energy consumed by said load is larger than the amount of electric energy supplied from said electric energy generating means, and that said flowing type battery means operates to charge said lead-acid battery means.

4,797,567
SHUTTER CONTROL APPARATUS
Greg Pappas, 8490 York Rd., North Royalton, Ohio 44133
Filed Jan. 27, 1987, Ser. No. 6,915
Int. Cl.[4] H02J *9/06*
U.S. Cl. 307—66 5 Claims



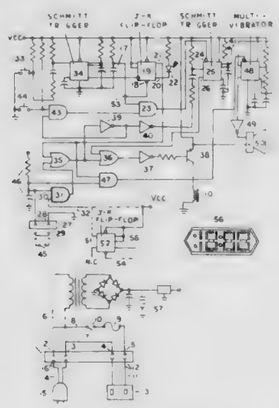
1. An apparatus for actuating from outside of a building an electric motor drive for winding and unwinding a shutter on the building, said apparatus comprising:
switch means located outside of the building and having a first position in which it connects the main electric current supply of the building with said electric motor drive;
an auxiliary electric power source for directing electric power to said electric motor drive when the main electric power supply is lost;
access means located outside of the building and connected with said auxiliary electric power source for connecting said auxiliary electric power source and said electric motor drive; and
said switch means having a second position in which it connects said access means with said electric motor drive.

4,797,568
ELECTRONIC SWITCHING SYSTEM FOR CONTROLLING INDOOR AND OUTDOOR LIGHTS
Curtis M. Gumbs, 333 College Dr., Edison, N.J. 08817
Filed Aug. 21, 1987, Ser. No. 87,889
Int. Cl.[4] H01H *43/00*
U.S. Cl. 307—141 26 Claims

1. an electronic switching system for automatically illuminating and delay in extinguishing of outdoor/indoor lights and electrical wall receptacles, in which said system's integrated circuits and mounted on a printed circuit board, said system comprising:
an input/output barrier block having a pair of power input screw terminals and a pair of power output screw terminals, which comprises a screw-type barrier block having posts to connect a first set of wires underneath, a second set of wires one black one white, a relay, and a fuse, the screw-type barrier block being mounted on the etching side of the printed circuit board to receive and output 115 V 60 Hz and the second set of wires being connected in parallel to the posts of input and output terminals of the barrier block, with the relay and fuse in series with the black wire, so that energizing the relay places corresponding ones of the power input and output screw terminals in parallel;
a manual power on/off circuit;

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an automatic sensing circuit;
means for generating a delay pulse;
a relay drive circuit which comprises a first OR gate cascaded to a second OR gate, a first inverter, and a relay drive transistor, whereby the first OR gate receives a logic one signal from the manual power on/off circuit and the automatic sensing circuits when said circuits are actuated, which signal is then cascaded to the second OR gate which also receives a delay pulse from said delay pulse generating means, and means for inverting the output of the second OR gate to turn 'ON' and 'OFF' the relay drive transistor to energize and de-energize the relay;
said means for generating a delay pulse being a delay circuit which comprises a first Schmitt trigger with a delay adjusting means, a manual delay reset AND gate cascaded to a power-up reset AND gate, and a second inverter cascaded to a third inverter, whereby the third inverter permits a high to low transition to be detected by the first Schmitt trigger, which generates a delay pulse having a corresponding delay value equal to the desired duration to which the delay adjusting means has been set, to keep the relay energized for the same duration and then to de-energize the relay;
said manual power on/off circuit comprising a first J-K flip-flop with $\overline{Q}$ and Q outputs, a manual power on/off



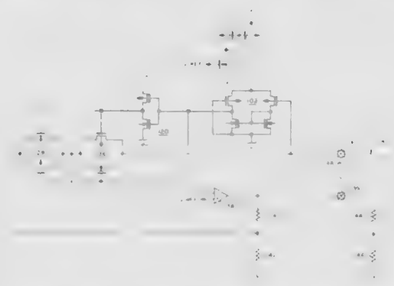
indicator, a second Schmitt trigger, and a manual power on/off switch, interconnected so that depressing said switch generates a pulse from the second Schmitt trigger, which toggles and latches the J-K flip-flop outputs to 'ON' and 'OFF' conditions, with the power on/off indicator connected to the $\overline{Q}$ output and providing a visual indication of said condition;
said automatic sensing circuit comprising an automatic sensing AND gate, a resistor and capacitor network for mechanical debounce, and input sense terminals, so that sensors for automatically operating the system may be connected to said sense terminals and the state of said sensors may be detected by the automatic sensing AND gate as an open or closed circuit, which automatic sensing AND gate sends a logic one to the relay drive circuit for an open detection and a logic zero for a closed detection;
said manual power on/off circuit including a manual power 'ON' circuit which comprises a manual power 'ON' sensing AND gate, a multivibrator circuit, a fourth inverter, and an alarm, interconnected so that activating the relay drive circuit as a result of actuation of both the manual power on/off and automatic sensing circuits causes the alarm to emit an audible signal at the same frequency as the multivibrator circuit; and
a power supply including a transformer, the transformer having power input wires connected in parallel with the posts of the power input screw terminals to supply power to the system's integrated circuits,
the automatic sensing circuit including means to detect an open circuit condition at the input sense terminals so as to automatically illuminate lights in response to the open circuit condition,
the delay circuit being responsive to initiation of a closed circuit condition at the input sense terminals to initiate the delay,
the manual power on/off circuit permitting the outdoor/indoor lights and electrical wall receptacles to be operated independently of the automatic sensing circuit,
the manual power 'ON' circuit causing an audible warning signal to be generated when the power on/off and the automatic sensing circuits are both activating the relay drive circuit,
the delay circuit being responsive to the last high to low transition from the output of the first cascading OR gate to generate said delay pulse to keep the lights and wall receptacles illuminated or energized respectively for the duration of the delay and then to extinguish the same.

4,797,569

APPARATUS FOR PRE-DEFINING CIRCUIT CHARACTERISTICS

Ziya G. Boyacigiller, Hayward, Calif., assignor to Maxim Integrated Products, Sunnyvale, Calif.

Continuation of Ser. No. 9,051, Jan. 27, 1987, Pat. No. 4,752,700, which is a continuation of Ser. No. 697,200, Jan. 31, 1985, abandoned. This application Oct. 28, 1987, Ser. No. 114,546
The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.
Int. Cl.[4] H03K *5/24, 3/01;* **G05F** *1/46*
U.S. Cl. 307—297 **8 Claims**
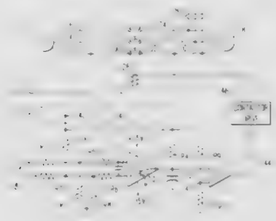


1. A voltage selection circuit for providing a regulated voltage, the value of which is chosen from between an internal fixed voltage and an externally supplied fixed voltage, including:
an input terminal,
a comparator, said comparator including a first comparator P-channel transistor having its gate connected to said input terminal and its drain connected to a first node, a first comparator N-channel transistor having its source connected to a source of a first voltage and its drain and gate connected to the source of said first comparator P-channel transistor, a second comparator P-channel transistor having its drain connected to said first node, and its gate connected to said source of a first voltage, a second comparator N-channel transistor having its drain connected to the source of said second comparator P-channel transistor, its gate connected to the gate of said first N-channel transistor and its source connected to said source of a first voltage, the output of said comparator comprising the connection between the source of said second comparator P-channel transistor and the drain of said second comparator N-channel transistor, wherein the output of said comparator assumes a first state if the voltage on said input terminal is equal to or less than said first voltage and assumes a second state if the voltage on said input terminal exceeds said first voltage,
a constant current source connected to said first node,
an inverter, having an input and an output, said input connected to the output of said comparator,
a voltage follower amplifier having an input and an output connected to an output terminal,
a first switch, connected between said input terminal and said input to said voltage follower amplifier, including control means, responsive to the output of said comparator, for activating said first switch when said comparator is in said second state,
a second switch, connected between said input of said voltage follower amplifier and a source of an internal reference voltage, including control means, responsive to the output of said comparator, for activating said second switch when said comparator is in said first state.

4,797,570

AUTOMATIC PARALLELING OF AC POWER SOURCES

David A. Fox, Shawnee Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1987, Ser. No. 80,031
Int. Cl.[4] H02J *3/00*
U.S. Cl. 307—87 **4 Claims**



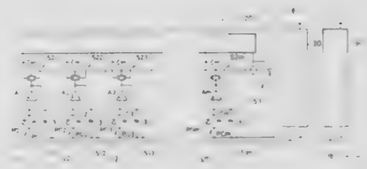
1. A system for effecting paralleling operation of a first alternating current electrical power source with a second alternating current electrical power source, said system comprising:
means for monitoring the difference voltage occurring between output voltages on corresponding phases of first and second alternating current electrical power sources;
a capacitor connected to an output of said means for monitoring;
means for charging said capacitor;
said means for monitoring including means for shorting said capacitor when the difference voltage occurring between the output voltages on corresponding phases of said first and second alternating current electrical power sources exceeds a first predetermined threshold level;
control means for effecting the electrical connection of voltage outputs of said first and second electrical power sources; and
means for inhibiting said control means until the voltage on said capacitor reaches a second predetermined threshold level.

4,797,571

CONTACT TYPE IMAGE SENSOR

Takashi Ozawa, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Japan

Continuation of Ser. No. 736,690, May 22, 1985. This application Jun. 18, 1987, Ser. No. 63,779
Claims priority, application Japan, May 23, 1984, 59-103997
Int. Cl.[4] H03K *3/42;* **H01L** *27/02;* **H01J** *40/14*
U.S. Cl. 307—311 **5 Claims**



1. A contact type image sensor comprising:
(a) a plurality of light receiving elements for storing electric charges in response to light incident thereon, said light receiving elements being formed by a plurality of separate electrodes disposed on a substrate, a photoconductive layer, disposed over said separate electrodes, and a transparent electrically conductive layer disposed over said photoconductive layer;
(b) a signal output line for outputting electric charges stored in said plurality of light receiving elements;
(c) a plurality of first switching circuits each provided for a respective one of said plurality of light receiving elements, for discharging the electric charge stored in said light receiving elements;
(d) a plurality of high input impedance amplifiers each provided for a respective one of said plurality of light receiving elements, having an output outputting a voltage corresponding to the amount of electric charge stored in said light receiving elements;
(e) a plurality of second switching circuits each provided for a respective one of said plurality of light receiving elements and comprising complementary CMOS transistors, said CMOS Transistors having gates, and an inverter which is connected between said gates of said CMOS transistors for sequentially switching the output of said high input impedance amplifiers; and
(f) a third switching circuit comprising a CMOS transistor and an inverter, and having an input terminal commonly connected to every output of said plurality of second switching circuits and an output terminal connected to said signal output line.

4,797,572

TRIGGER RE-SYNCHRONIZATION CIRCUIT

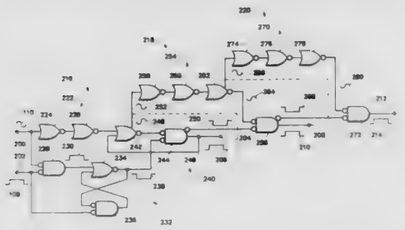
Arthur J. Metz, Gervais, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 21, 1987, Ser. No. 6,816
Int. Cl.[4] H03K *5/13, 17/00, 5/159, 4/08*
U.S. Cl. 307—269 **37 Claims**

1. In combination with a trigger signal generating circuit having a first trigger gating means coupled and responsive to a trigger source signal and holdoff signal, said first trigger gating means providing a first trigger signal, a trigger re-synchronization circuit comprising:
a first trigger source signal delay means having an input and an output, said input being coupled to receive said trigger source signal and said output providing a first delayed trigger source signal; and
a second trigger gating means coupled and responsive to said

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first trigger signal and said first delayed trigger source signal, said second trigger gating means providing at its



output a second trigger signal having less jitter than the output of the first trigger gating means.

4,797,573

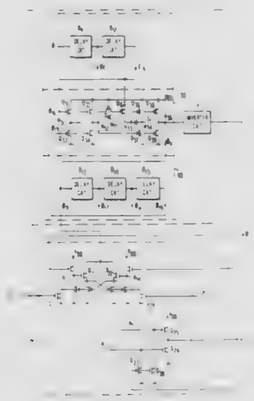
OUTPUT CIRCUIT WITH IMPROVED TIMING CONTROL CIRCUIT

Shoji Ishimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 673,454, Nov. 21, 1984. This application Jan. 29, 1987, Ser. No. 8,496

Int. Cl.[4] H03K *5/13;* **G11C** *7/00*

U.S. Cl. 307—269 **1 Claim**



1. A timing-controlled circuit comprising a first terminal for receiving a control signal; a second terminal for receiving a data signal; a control circuit having an enable terminal, a reset terminal and a control output terminal, each terminal assuming an active level or an inactive level, said control circuit making a level of said control output terminal active when a level of said enable terminal is active and a level of said reset terminal is inactive, and making said output terminal inactive when a level of said enable terminal is active and level of said reset terminal is active; a delay circuit having an input and an output and having a predetermined delay time; first means coupled to said first terminal and said enable terminal for making a level at said enable terminal active and inactive when said control signal is at a first level and at a second level, respectively; second means for connecting an input of said delay circuit to said control output terminal; third means for connecting an output of said delay circuit to said reset terminal thereby to make said reset terminal active after said predetermined delay time has elapsed from the time when said control output terminal is made active; a data section having an input terminal coupled to said second terminal for processing said data signal and a control terminal; and fourth means coupled to said control output terminal and said control terminal of said data section for enabling said data section only when said output control terminal is at the active level, whereby said data section processes said data signal only during said predetermined delay period from the time when said control output terminal is changed to the active level.

4,797,574

SYNCHRONIZING CIRCUIT

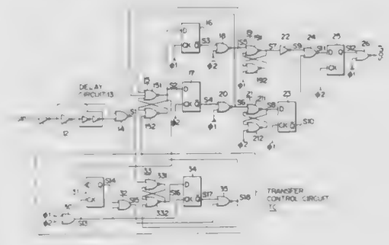
Yasuo Okubo, Tokyo, and Masataka Hirasawa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 16, 1987, Ser. No. 133,622

Claims priority, application Japan, Dec. 24, 1986, 61-306309

Int. Cl.[4] H03K *5/13, 9/06, 7/00;* **G05F** *5/00*

U.S. Cl. 307—269 **9 Claims**



1. A synchronizing circuit comprising:

input pulse detecting means for detecting the arrival of an externally applied input pulse signal and generating a pulse signal of a predetermined width;

a first bistable circuit;

first latch means for latching the output signal from said first bistable circuit, in synchronism with a first internal clock signal;

second latch means for latching the output signal of said first bistable circuit, in synchronism with a second internal clock signal, which is different in phase from said first internal clock signal;

reset signal generating means which responds to the output signal from one of said first and second latch means which executed the latching operation, and supplies a reset signal to said first bistable circuit during a period of generation of the clock signal corresponding to the latch means which did not execute the latching operation;

output means for outputting the output signal from said reset signal generating means, in synchronism with one of said first and second clock signals; and

pulse signal transfer control means, which receives the pulse signal output from said detecting means, prohibits said pulse signal from being transferred to said first bistable circuit during a period in which said first bistable circuit is set, a period of generation of said first clock signal, and a period of generation of said second clock signal, and allows the pulse signal to be transferred to said first bistable circuit during a period in which said first and second clock signals are not generated and said period in which said first bistable circuit is reset.

4,797,575

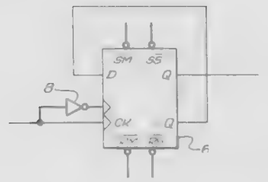
FLIP-FLOP WITH IDENTICAL PROPAGATION DELAY IN CLOCK PASS THROUGH MODE AND IN NORMAL OPERATION

Karl M. J. Lofgren, Long Beach, Calif., assignor to Western Digital Corporation, Irvine, Calif.

Filed Dec. 5, 1986, Ser. No. 938,626

Int. Cl.[4] H03K *3/037, 5/13*

U.S. Cl. 307—272.1 **4 Claims**



1. A flip-flop circuit having master and slave set and master and slave reset input gates that may be independently set so as to select between a first state and a second state, the flip-flop circuit also having a clock input signal and an output signal and its complement, wherein:

during the first state the flip-flop circuit operates such that the output signal value follows the clock input signal value; and

during the second state the flip-flop circuit operates upon the clock input signal such that the input signal follows the identical circuit path as in the first state upon the occurrence of a low to high logic level transition on the output signal, thereby preventing any phase step when selecting between the first state and the second state.

4,797,576

FLIP-FLOP CIRCUIT WITH SHORT PROPAGATION DELAY

Hiroshi Asazawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 5, 1987, Ser. No. 81,877

Claims priority, application Japan, Aug. 18, 1986, 61-191616

Int. Cl.[4] H03K *3/284, 3/29*

U.S. Cl. 307—272.1 **2 Claims**



1. A flip-flop circuit comprising:

a first pair of input terminals for respectively receiving a first pair of input data signals;

a second pair of input terminals for respectively receiving a second pair of input data signals which pair is complement of the first pair of input data signals;

first and second output terminals;

a NOR gate whose output terminal is connected to said first output terminal;

a NAND gate whose output terminal is connected to said second output terminal;

two pairs of latch switches respectively inserted between said first pair of input terminals and two input terminals of said NOR gate, and between said second pair of input terminals and two input terminals of said NAND gate, said two pairs of latch switches being controlled by a latch signal to be turned on/off; and

two pairs of hold switches respectively inserted between said two input terminals of said NOR gate and said output terminal of said NAND gate and between said two input terminals of said NAND gate and said output terminal of said NOR gate, said two pairs of hold switches being controlled by a hold signal to be synchronously turned on/off.

4,797,577

BANDGAP REFERENCE CIRCUIT HAVING HIGHER-ORDER TEMPERATURE COMPENSATION

Sam A. Hieg, Gland, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1987, Ser. No. 133,778

Claims priority, application United Kingdom, Dec. 29, 1986, 8630980

Int. Cl.[4] G05F *1/567*

U.S. Cl. 307—297 **5 Claims**



1. A bandgap reference circuit comprising first and second transistors coupled in parallel to share a current, each having a first, second and control electrode, the control electrodes of the transistors being coupled together and to an output terminal; first and second resistors connected in series between the first electrode of the second transistor and a reference potential, the first electrode of the first transistor being coupled to a first node between the resistors; a third transistor having an emitter coupled to said first node, a second electrode coupled to the output terminal, and a control electrode; third and fourth resistors connected in series between the output terminal and the reference potential, the control electrode of the third transistor being coupled to a second node between the third and fourth resistors.

4,797,578

ARRANGEMENT FOR ADJUSTING AN IMPEDANCE NETWORK IN AN INTEGRATED SEMICONDUCTOR CIRCUIT

Hans O. Eriksson, Järfälla, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 17, 1986, Ser. No. 942,769

Claims priority, application Sweden, Dec. 19, 1985, 8506023

Int. Cl.[4] H01L *27/02;* **G05F** *5/00*

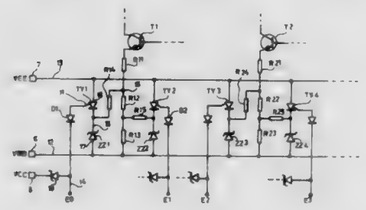
U.S. Cl. 307—303 **17 Claims**

1. In an integrated semiconductor circuit of the type having first and second power supply terminals for applying an operating current to the circuit and at least one signal terminal for providing an input signal to the circuit during normal operation, an arrangement for adjusting the impedance value of an impedance network within said circuit, comprising:

an adjustment impedance connected to said impedance network;

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an adjustment circuit connected between said first and second power supply terminals, said adjustment circuit including a current switching means which can be set into one of two selectable states to respectively close or open a current path from said adjustment impedance to said first or second power supply terminals, and a selectively controllable switch means connected to said current switching means for selectively setting the state of said current switching means, said selectively controllable switch



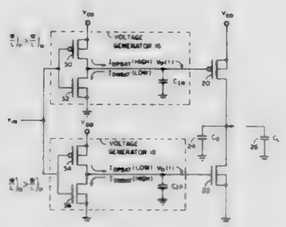
means having a control electrode connected to said signal input terminal and being responsive to a signal during adjustment at said input terminal to selectively apply a current to said current switching means with at least one of said first and second power supply terminals having a different voltage during adjustment than during normal operation, said signal input terminal being operably connected with means to prevent said selectively controllable switch means from applying current to said current switching means during normal operation.

4,797,579

CMOS VLSI OUTPUT DRIVER WITH CONTROLLED RISE AND FALL TIMES

Edward T. Lewis, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jul. 27, 1987, Ser. No. 78,142
Int. Cl.[4] H03K *4/94, 17/16*
U.S. Cl. 307—443 **11 Claims**



1. A CMOS output circuit for producing an output signal comprising:

an input signal applied to said output circuit;

first means coupled to receive said input signal for generating an approximately linear decreasing signal for control of said output signal rise time;

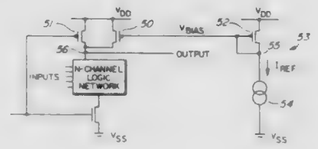
second means coupled to receive said input signal for generating an approximately linear increasing signal for control of said output signal fall time; and means, free of any output feedback connections, for producing said output signal having a first input coupled to an output of said first control means and a second input coupled to an output of said second control means.

4,797,580

CURRENT-MIRROR-BIASED PRE-CHARGED LOGIC CIRCUIT

Stephen K. Sunter, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 29, 1987, Ser. No. 114,552
Int. Cl.[4] H03K *17/16, 19/017, 19/094*
U.S. Cl. 307—451 **8 Claims**



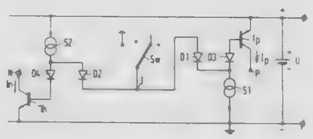
1. A dynamic logic curicut comprising at least one dynamic logic cell and a bias circuit, each dynamic logic cell comprising a first field-effect transistor having a channel extending between a first supply voltage and a pre-charged node of a respective logic network and also comprising a second field-effect transistor having a channel extending between a second supply voltage and the respective logic network, the gate of each of the first and second transistors being connected to a clocked input signal, the bias circuit comprising a third field-effect transistor for each dynamic logic cell and also comprising a fouth field-effect transistor in each dynamic logic cell extending between the first supply voltage and the pre-charged node of the respective logic network, the gate of each of the third transistors being connected to the gate of the fourth transistor, the channel of the fourth transistor extending between the first supply voltage and an intermediate node, the resistance element extending between the intermediate node and the second supply voltage, the gate of the fourth transistor being connected to the intermediate node, whereby all of the transistors and the resistance element are formed as an integral part of an integrated logic circuit, and whereby current flows from the first supply voltage to the pre charged nodes of the logic networks at a steady rate determined by the relative dimensions selected for each of the third transistors and the fourth transistor and by the resistance value selected for the resistance element.

4,797,581

CIRCUIT FOR CONVERTING TRI-STATE SIGNALS INTO BINARY SIGNALS

Ingo A. Martiny, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 18, 1987, Ser. No. 51,810
Claims priority, application Fed. Rep. of Germany, May 17, 1986, 3616818
Int. Cl.[4] H03K *19/092, 19/00, 17/60*
U.S. Cl. 307—475 **8 Claims**



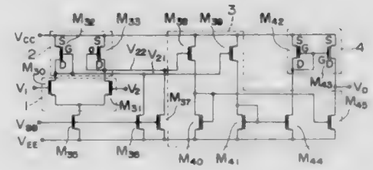
1. A circuit arrangement for converting tri-state signals into binary signals comprising: an input terminal for receiving the tri-state signals, a first diode path connected between the input terminal and a first node and including a first diode having an anode connected to the input terminal, a first direct current source conducting a first current from the first node towards a low supply voltage terminal, a second diode path connected between the input terminal and a second node and including a second diode having a cathode connected to the input terminal, a second direct current source conducting a second current from a high supply voltage terminal towards the second node, a first output transistor having a main current path connected between one of the supply voltage terminals and a first output terminal for supplying a first controllable output current and having a control electrode coupled to the first node via a third diode path including a third diode having a cathode connected to the first node, and a second output transistor having a main current path connected between one of the supply voltage terminals and a second output terminal for supplying a second controllable output current and having a control electrode coupled to the second node via a fourth diode path including a fourth diode having an anode connected to the second node.

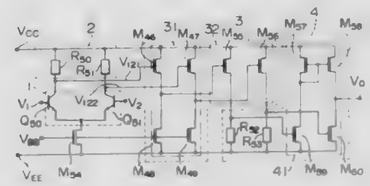
4,797,583

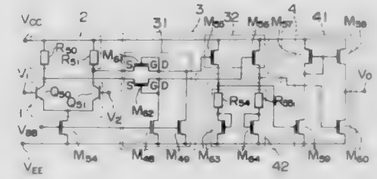
LEVEL CONVERTING CIRCUIT FOR CONVERTING VOLTAGE LEVELS, INCLUDING A CURRENT AMPLIFYING ARRANGEMENT

Masahiro Ueno; Kouzaburo Kurita; Ikuro Masuda, all of Hitachi, and Nobuaki Miyakawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,501
Claims priority, application Japan, Dec. 20, 1983, 58-241642
Int. Cl.[4] H03K *19/092, 19/094, 19/01, 17/04*
U.S. Cl. 307—475 **15 Claims**







1. A level converting circuit for transforming differential input voltages into an output voltage comprising:

voltage-to-current conversion means for transforming said differential input voltages into differential currents;

current detection means coupled to said voltage-to-current conversion means for detecting said differential currents and providing a voltage output corresponding to said detected differential currents;

current amplifying means coupled to said current detection means for amplifying said voltage output of said current detection means and producing a current output corresponding to said amplified voltage output of said current detection means; and

current-to-voltage conversion means coupled to said current amplifying means for transforming and combining said current output of said current amplifying means into an output voltage.

4,797,582

BIDIRECTIONAL INTERFACE CIRCUIT HAVING A UNIPOLAR PORT AND A BIPOLAR PORT FOR LOGIC SIGNALS

Van T. Nguyen; Claude Chateignon, both of Toulouse, and Georges Deschamps, Montreuil sous Bois, all of France, assignors to Bendix Electronics S.A., Toulouse, France

Filed May 13, 1987, Ser. No. 49,868
Claims priority, application France, May 14, 1986, 86 06936
Int. Cl.[4] H03K *19/092, 17/16, 17/56*
U.S. Cl. 307—475 **8 Claims**



1. Interface circuit for exchanging logic signals between an unipolar port connected to a wire for the transmission of unipolar serial signals and a differential port connected to a pair of wires for the transmission of differential serial signals, characterized in that it comprises:

a first sub-circuit (C2,T1) for transmitting signals from the differential port to the unipolar port;

said signals having a first and second logic state, said first logic state having a first level within a first range ($V_b - V_{L2}$);

a second sub-circuit (C1, T2, T3, T4, T5) for transmitting signals from the unipolar port to the differential port;

said signals having a second level within a second range ($V_{L1} - 0$) for transmission on the differential line of a signal ($+V_d$) representative of said first logic state, said first and second ranges having no common part; and

means responsive to the non-overlapping of said first and second ranges to prevent the looping of said signals representative of said first logic state through the interface circuit from blocking the interface circuit.

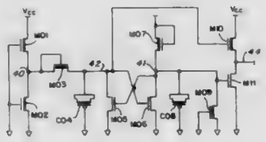
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,584

POWER-ON RESET CIRCUIT FOR MOS LOGIC DEVICES

Alberto Agati, Posternaica; Maurizio Galbotti, Barlassina, and Vittorio Masina, Cerponzo, all of Italy, assignors to SGS Microelettronica S.p.A., Catania, Italy

Filed Feb. 13, 1987, Ser. No. 14,490
Claims priority, application Italy, Feb. 18, 1986, 19441 A/86
Int. Cl.[4] H03K 5/13, 17/16, 19/20, 3/01
U.S. Cl. 307—594 18 Claims



1. A power-on reset circuit for MOS technology logic networks, for automatically supplying a reset voltage pulse as a supply voltgage is applied, particularly for peripheral units of microprocessors and the like, characterized in that it comprises:

(a) a voltage divider having one and opposite ends and adapted for supplying a reference voltage and comprised of series arranged normally conducting transistors with one end coupled to a reference potential, the opposite end coupled to the supply voltage and defining therebetween a voltage divider coupling point;

(b) a bistable circuit comprised of a decoupling means wherein said decoupling means is comprised of a normally conducting transistor, the gate of which is coupled to its drain and a third and fourth transistors, having their respective gates and drains cross-coupled, and their sources coupled to said reference potential, the drain of said third transistor being coupled to the voltage divider coupling point through said decoupling means and the drain of said fourth transistor being coupled to said supply voltage through a fifth transistor which is coupled as a diode; and

(c) an end stage comprised of a sixth transistor which has its source coupled to said reference potential and its gate coupled to the drain of said fourth transistor, and a seventh transistor having its source coupled to the drain of said sixth transistor and its drain coupled to said supply voltage, the gate of said seventh transistor being coupled to the drain of said third transistor, the sixth and seventh transistors defining therebetween a coupling point forming the output line supplying said reset pulse.

4,797,585

PULSE GENERATING CIRCUIT IN A SEMICONDUCTOR INTEGRATED CIRCUIT AND A DELAY CIRCUIT THEREFOR

Hiroshi Segawa, and Tetsuya Matsumura, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1987, Ser. No. 30,662
Claims priority, application Japan, Mar. 31, 1986, 61-74965
Int. Cl.[4] H03K 5/159
U.S. Cl. 307—594 12 Claims

1. A pulse generating circuit in a semiconductor integrated circuit comprising:

a first input terminal for receiving a first signal,

a delay circuit receiving the first signal and producing a second signal delayed with respect to the first signal,

the delay circuit having delay time which is variable by a control signal supplied from the outside,

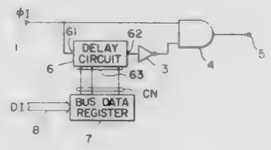
control means connected for supplying the control signal to the delay circuit to vary the delay time, and

logic circuit means for receiving the first and the second signals and producing a pulse having a duration corresponding to the delay time of the second signal with respect to the first signal, wherein the delay circuit comprises

an input terminal,

an output terminal,

a plurality of MOS transistor switching circuits connected in parallel with each other, the parallel connection of the



MOS transistor switching circuits being connected between the input and the output terminal,

a capacitance element connected between the output terminal and a power source terminal, and

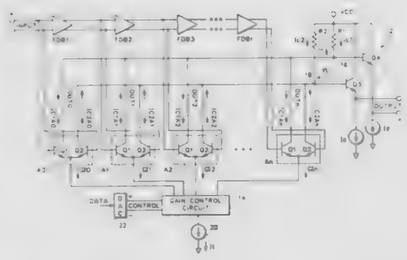
conduction control means for controlling the conduction of the MOS transistor switching circuits to vary the overall resistance of the parallel connection of the MOS transistor switching circuits.

4,797,586

CONTROLLABLE DELAY CIRCUIT

Einar O. Traa, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 25, 1987, Ser. No. 125,023
Int. Cl.[4] H03K 5/13, 17/28
U.S. Cl. 307—603 13 Claims



1. A method utilizing a first and at least two additional amplifiers to provide a delayed output signal that changes state in delayed response to an input signal, the method comprising the steps of:

generating a plurality of delayed signals, each corresponding to a separate one of said additional amplifiers, said delayed signals changing state at differing times in delayed response to a change in state of said input signal;

amplifying said input signal using said first amplifier to produce a first amplifier output, said first amplifier having adjustable gain through a range of amplification;

amplifying said delayed signals using their corresponding additional amplifiers to produce additional amplifier outputs, said additional amplifiers having adjustable gain through a range of amplification; and

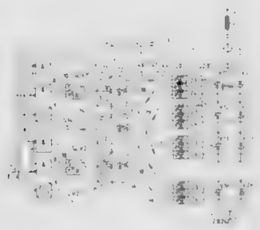
combining said first and additional amplifier outputs to produce said output signal.

4,797,587

TRIGGERING METHOD FOR A THYRISTOR SWITCH

Christoph Tschudi, and Fritz Wittwer, both of Untersiggenthal, Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 30, 1987, Ser. No. 31,862
Claims priority, application Switzerland, Apr. 14, 1986, 1479/86
Int. Cl.[4] H03K 17/72
U.S. Cl. 307—646 27 Claims



1. A triggering method for triggering a thyristor switch containing a multiple number of thyristors encompassing a predetermined number of series connected thyristors and a series connected of a predetermined number of thyristors connected antiparallel to said predetermined number of series connected thyristors, said method comprising the steps of:

generating an on-off signal for switching on the thyristor switch in the presence of the on-off signal and for switching off the thyristor switch in the absence of said on-off signal;

detecting the anode-cathode voltage present at said multiple number of thyristors;

defining a predetermined threshold value of said anode-cathode voltage and comparing the detected anode-cathode voltage with said predetermined threshold value of said anode-cathode voltage;

generating a trigger standby signal of a predetermined duration in the presence of (i) said on-off signal and (ii) an anode-cathode voltage in excess of said predetermined threshold value of said anode-cathode voltage at a preselected number of said multiple number of thyristors; and

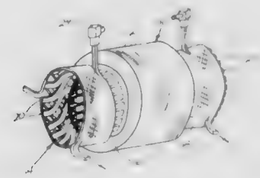
triggering at least once said multiple number of thyristors by generating a triggering pulse during said predetermined duration of said trigger standby signal.

4,797,588

STATOR COOLING FOR DYNAMOELECTRIC MACHINE

Robert L. Capion, Ridott, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 14, 1987, Ser. No. 132,878
Int. Cl.[4] H02K 9/00, 3/46
U.S. Cl. 310—54 15 Claims



1. A dynamoelectric machine including:

a stator having opposed sides;

a rotor-receiving opening in said stator and extending between said sides;

an electrical winding on said stator about said opening and including end turns extending generally axially from said sides;

a circumferentially coolant conduit in heat exchange relation with said end turns on the radially outer side thereof; and

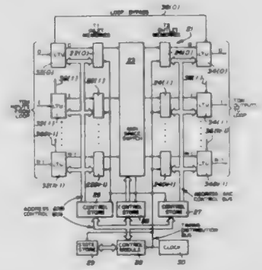
a circumferential retainer radially outwardly of said conduit for holding said conduit in said heat exchange relation, said retainer having a coefficient of thermal expansion that is substantially less than the coefficients of thermal expansion of said conduit and said end turns.

4,797,589

DYNAMICALLY RECONFIGURABLE TIME-SPACE-TIME DIGITAL SWITCH AND NETWORK

Arthur A. Collins, Dallas, Tex., assignor to Arthur A. Collins, Inc., Dallas, Tex.

Continuation of Ser. No. 825,394, Feb. 3, 1986, Pat. No. 4,701,907. This application Jul. 29, 1987, Ser. No. 79,252
Int. Cl.[4] H04Q 11/04
U.S. Cl. 370—63 3 Claims



1. A dynamically reconfigurable time-spacetime (DRTST) switching system for use in conjunction with a high speed transmission media which conveys a plurality of time division multiplex (TDM) channels within a repeated frame of data, comprising:

a bypass for selectively accessing said transmission media for extracting data from channels and inserting data into channels;

a control store connected to said bypass for receiving a variable number of dynamically selected channels from the plurality of channels, one or more of said selected channels comprising a control channel;

a time-space-time (TST) switch having a space switch including a plurality of inlet ports and a plurality of outlet ports each having a memory;

said bypass having a plurality of inlet line terminating units and a plurality of outlet line terminating units, said inlet line terminating units connected to receive selected channels from said transmission media for transferring data to said TST switch, said outlet line terminating units connected to transfer data from said TST switch to said transmission media;

said inlet line terminating units selectively passing ones of said channels to said TST switch and the remaining ones of said channels of said frame to said outlet line terminating units thereby selectively reducing the frame size of said transmission media transmitted to said TST switch, said outlet line terminating units restoring said reduced frame size to its original size;

said inlet ports of said TST switch being connected to randomly receive channels from said inlet line terminating units, said outlet ports of said TST switch being connected

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to randomly transmit channels from said outlet ports to said outlet line terminating units for transferring data from said TST switch to said transmission media, ones of said inlet ports and outlet ports receiving frames of variable sizes determined by said control store; and

said control store responding to commands received through said control channels for dynamically allocating active ones of said selected channels to respective inlet ports of said TST switch, and for dynamically allocating received channels of said selected channels to active ones of said outlet ports of said TST switch and further for routing the data from said active ones of said selected channels through said TST switch to a selected active one of said outlet ports wherein said data for said active selected channel is returned to said transmission media to thereby accommodate various types of data.

4,797,590

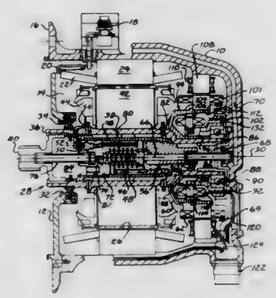
BRUSHLESS GENERATOR WITH MINIMAL AXIAL LENGTH

Bernard A. Rand, and Edmund A. Schott, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 9, 1987, Ser. No. 117,951

Int. Cl.[4] H02K *19/26*

U.S. Cl. 310—68 D **14 Claims**



1. A brushless generator capable of manufacture with a relatively short axial length, comprising:

a stator having a rotor-receiving opening, an exciter field including a first ferromagnetic body and a permanent magnet generator output aramature including a second ferromagnetic body separate from said first ferromagnetic body; and a rotor journaled for rotation about an axis within said opening and including

(a) a main field winding,

(b) an exciter output winding,

(c) a rotating rectifier interconnecting said main field winding and said exciter output winding, and

(d) a permanent magnet generator field magnetically separate from said exciter output winding,

said exciter field being operatively associated with said exciter output winding and said permanent magnet generator output armature being operatively associated with said permanent magnet generator field and generally coplanar in a plane transverse to said axis and axially spaced from, but adjacent to, said main field.

4,797,591

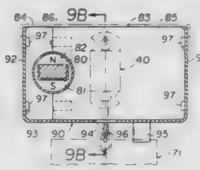
LINK SUSPENSION FOR A ROTOR MEMBER

Edward C. Streeter, 89 Park Place, Harrogate, N. Yorkshire, England HG1 5NS

Continuation-in-part of Ser. No. 425,417, Sep. 28, 1982, Pat. No. 4,754,182. This application Nov. 5, 1986, Ser. No. 927,067

Int. Cl.[4] H02K *49/06*

U.S. Cl. 310—103 **4 Claims**



1. A link suspension permitting limited rotation of a rotor in response to a control torque, comprising a supporting member having an anticlastic supporting surface, a rotor having an anticlastic supported surface, torque coupling means fixed to said rotor, and a louver connected under tension to said rotor and holding said surfaces in contact, the radius of convexity along a transverse plane section of each of said surfaces being at least an order of magnitude smaller than the radius of concavity along a longitudinal plane section of the respective surface.

4,797,592

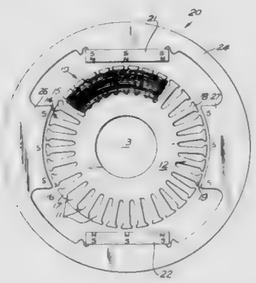
DYNAMO ELECTRIC MACHINE WITH UPWARDLY SHIFTED RIPPLE FREQUENCY

Thomas R. England, Blacksburg, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Jun. 17, 1982, Ser. No. 389,481

Int. Cl.[4] H02K *23/06*

U.S. Cl. 310—154 **7 Claims**



1. In a rotary dynamo electric machine the combination of

a rotor including

winding slots,

armature windings located in said slots, and

commutating means connected to said windings;

a stator including

at least one permanent magnet providing a pole face with a nonuniform airgap relative to said rotor,

at least one pole face provided by a consequent pole, said pole face of said consequent pole spanning a distance on the surface off said rotor different from the integer slot distance, and means including said permanent magnet for generating magnetic flux at said pole faces; and

wherein said permanent magnet is in a block form providing a flat pole face surface to provide said nonuniform airgap relative to said rotor.

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CATHODE FOR ELECTRON TUBE

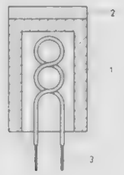
Masato Saito; Keiji Fukuyama; Masako Ishida; Keiji Watanabe, all of Kamakura; Toyokazu Kamata, and Kinjiro Sano, both of Nagaokakyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1986, Ser. No. 886,777

Claims priority, application Japan, Jul. 19, 1985, 60-160851; Oct. 14, 1985, 60-229304; Oct. 14, 1985, 60-229302; Oct. 14, 1985, 60-229303; Oct. 15, 1985, 60-231905; Oct. 15, 1985, 60-231906; Oct. 15, 1985, 60-231904; Jan. 18, 1986, 61-8365; Jan. 18, 1986, 61-6366; Feb. 19, 1986, 61-35670; Feb. 19, 1986, 61-35671; Feb. 25, 1986, 61-41050

Int. Cl.[4] H01J *1/02*

U.S. Cl. 313—346 R **30 Claims**



1. An oxide-coated thermionic cathode for an electron tube, comprising:

a base comprising Ni as a major element, said base having a outer surface;

a reducing agent contained in said base;

only at least a portion of said outer surface of said base having coated thereon an electron-emisive substance comprising (a) an alkaline earth metal oxide as a principal component including barium oxide, and (b) 0.1 to 20 wt. % of at least one rare earth metal oxide selected from the group consisting of the oxides of Y, La, Ce, Pr, Nd, Sm, Gd, Sc, Dy, Ho, Er and Tm, and

a heater for heating said layer.

4,797,594

REPROGRAPHIC APERTURE LAMPS HAVING IMPROVED MAINTENANCE

A. Gary Sigai, Lexington, and Fred R. Taubner, Danvers, both of Mass., assignors to GTE Laboratories Incorporated, Waltham and GTE Products Corporation, Danvers, both of, Mass.

Continuation-in-part of Ser. No. 718,095, Apr. 3, 1985, Pat. No. 4,710,674, which is a continuation-in-part of Ser. No. 607,865, May 7, 1984, abandoned, and Ser. No. 607,846, May 7, 1984, abandoned. This application Nov. 12, 1986, Ser. No. 929,694

Int. Cl.[4] H01J *61/44, 61/46*

U.S. Cl. 313—488 **16 Claims**



1. An aperture fluorescent reprographic lamp comprising:

an elongated envelope containing an ionizable medium including mercury and having electrodes at each end of said envelope;

a reflector layer on a major portion of the inner surface of said envelope;

a phosphor layer disposed upon said reflector layer within said envelope, said phosphor layer comprising particles of green-emitting zinc orthosilicate phosphor, said particles being individually coated with a non-particulate, conformal coating of aluminum oxide; and

a protective coating over at least the portion of the inner surface of said envelope not covered with said reflector layer.

4,797,595

ELECTRODELESS LOW-PRESSURE DISCHARGE LAMP HAVING A STRAIGHT EXHAUST TUBE FIXED ON A CONICAL STEM

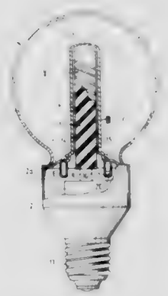
Hearicus J. J. M. De Joog, Terneuzen, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jun. 30, 1987, Ser. No. 68,660

Claims priority, application Netherlands, Jun. 30, 1986, 8601702

Int. Cl.[4] H01J *65/04*

U.S. Cl. 313—493 **6 Claims**



1. In an electrodeless low-pressure discharge lamp of the type having a discharge vessel defining a lamp axis comprising an outer envelope with an open end and a stem sealed in a gas tight manner to said outer envelope at said open end, said stem comprising a tubular section extending along said lamp axis within said outer envelope and a conical collar extending between the end of the tubular section near said open end and said open end, and means for generating a discharge within said discharge vessel during lamp operation, said means comprising a magnetic core accommodated within said tubular section, the improvement comprising:

said conical collar comprising a recess having a planar portion transverse to the lamp axis;

an exhaust tube parallel to said lamp axis having an end joined to said transverse portion; and

an orifice in said transverse portion positioned within the inner periphery of the exhaust tube for allowing communication between the exhaust tube and the interior space of the discharge vessel.

4,797,596

FILTER APPARATUS FOR A MAGNETRON

Mamoru Tsuzurahara, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 4, 1987, Ser. No. 93,214

Claims priority, application Japan, Sep. 8, 1986, 61-209489; Sep. 8, 1986, 61-209490

Int. Cl.[4] H01J *25/50*

U.S. Cl. 315—5.13 **8 Claims**

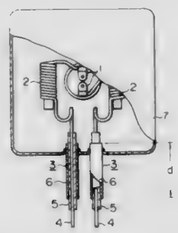
1. A filter for reducing electromagnetic wave energy leakage from an electrode wiring of a magnetron, comprising:

(a) a cathode line for supplying a current to a cathode of the magnetron;

(b) an inductance element connected between said cathode and one end of said cathode line;

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(c) capacitance means having a coaxial structure including a dielectric material surrounding said cathode line and a first conductor surrounding said dielectric material for imparting a capacitive parallel impedance as viewed from an electromagnetic wave source of said magnetron; and



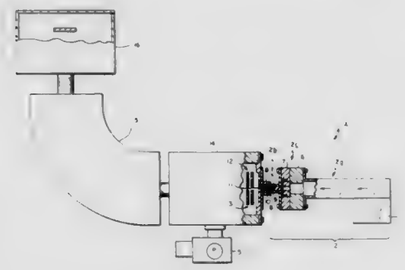
(d) high impedance means including a second conductor having a portion thereof connected to the first conductor of said capacitance means and surrounding the coaxial structure of said capacitance means to impart an inductive parallel high impedance as viewed from said electromagnetic wave source, said second conductor being in the shape of a cup and containing said capacitance means.

4,797,597

MICROWAVE ION SOURCE

Norman A. Bostrom, Rte. 2, Box 157-D, Georgetown, Tex. 78626

Filed Dec. 22, 1986, Ser. No. 944,026
Int. Cl.[4] H01J *27/00*
U.S. Cl. 315—39 **20 Claims**



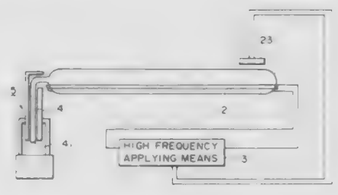
1. A microwave ion source comprising:
a microwave generator;
a waveguide comprising a first section to which said microwave generator is coupled for generating microwave radiation in said waveguide, a second section downstream of the first section in the direction of microwave propagation along the waveguide, and in which a discharge chamber is defined, and a transformer section beteween said first and second sections, said first and second sections having uniform rectangular internal cross-sectional shapes throughout the lengths of the respective sections, defined by a first dimension which is equal for both sections and is selected to at least approximate one half of the nominal wavelength of the microwaves produced at the rated operating frequency of the generator, and a lesser, second dimension which is smaller in said second section of the waveguide than in said first section, said transformer section being dimensioned to provide for transmission of microwaves from said first section to said second section substantially without impedance losses;
said transformer section including means between said first and second waveguide sections for providing a vacuum seal without impeding propagation of microwaves along the waveguide;
a liner of dielectric material within said second waveguide section defining said discharge chamber;
means for generating a magnetic field in the discharge chamber;
means for producing a vacuum in said chamber;
means for introducing a gaseous feed material into said chamber for forming a plasma; and,
means for extracting an ion beam from said chamber.

4,797,598

ILLUMINATION APPARATUS

Katsuya Oikawa, Yokohama; Hidemi Egami, Zama; Katuo Saitor, Yokohama, and Hiroshi Satomura, Hatogaya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1987, Ser. No. 61,552
Claims priority, application Japan, Jun. 19, 1986, 61-143877; Jun. 19, 1986, 61-94003[U]; Mar. 3, 1987, 62-48080; Mar. 3, 1987, 62-48081; Mar. 3, 1987, 62-48082
Int. Cl.[4] H01J *65/09;* **H05B** *6/80*
U.S. Cl. 315—85 **17 Claims**



1. An illumination apparatus comprising:
a discharge tube for emitting light upon an application of a external high frequency wave electromagnetic field;
an electrode, arranged outside said discharge tube, for applying the high frequency wave electromagnetic field to said discharge tube;
high frequency wave applying means for supplying high frequency wave power to said electrode;
a projected portion extending from said discharge tube; and
a metal shielding member disposed between said projected portion and said discharge tube, said shielding member substantially shielding said projected portion from the high frequency wave electromagnetic field.

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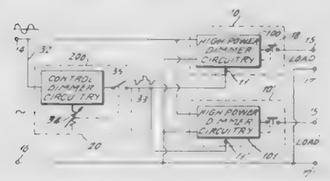
POWER CONTROL CIRCUIT WITH PHASE CONTROLLED SIGNAL INPUT

Jonathan H. Ference, Kintnersville; Steven M. Blonstein, Allentown; Michael J. Rowen, and Robert C. Newman, Jr., both of Emmaus, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Apr. 21, 1987, Ser. No. 40,618
Int. Cl.[4] H05B *41/29*
U.S. Cl. 315—194 **58 Claims**

1. A phase control circuit comprising, in combination:
a controllably conductive device having first and second main electrodes connectable in series with an a-c source and a load, and a control electrode;
an input circuit connected between said control electrode and one of said first and second main electrodes; and
a control signal source separate from said input circuit and connected to said input circuit, said control signal source generating a periodic phase controlled voltage wave shape in which each half-cycle has a sharply rising wave shape beginning at a delayed time in its respective period,

,and thereafter follows a generally sinusoidal shape to the end of its respective period; whereby said controllably



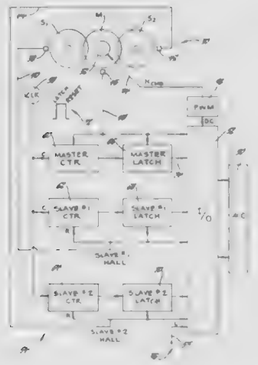
conductive device conducts to produce an output voltage wave shape across said load with a phase delay which is derived from the wave shape of said control signal source.

4,797,600

MAGNETIC DRIVE CONTROL SYSTEM FOR A MULTIPLE COOLING FAN INSTALLATION

Jack W. Savage, Centerville, and John R. Savage, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1987, Ser. No. 126,025
Int. Cl.[4] F16D *3/00;* **H02P** *6/02*
U.S. Cl. 318—254 **14 Claims**



1. A motor vehicle cooling fan drive apparatus comprising:
first and second juxtaposed and magnetically coupled rotary cooling fans;
drive means including an electric motor connected to rotatably drive said first cooling fan, and motor controller means connected to said electric motor for controlling its running speed in accordance with the value of a speed command signal applied thereto; and
system control means including means for (1) generating a desired speed value for said fans in accordance with the vehicle cooling demand, (2) determining a phase error E_P according to the relative rotary positions of said first and second fans, (3) adjusting said desired speed value in a direction to reduce said phase error E_P at least when said phase error is greater than a threshold error, and (4) applying a speed command signal to said motor controller means in accordance with the adjusted speed value, thereby to control said electric motor for synchronously accelerating and running said first and second fans at said desired speed value.

4,797,601

ABUTMENT FORCE ADJUSTABLE WINDSHIELD WIPER ARRANGEMENT

Erich Ditzer, and Ludwig Hasenknopf, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Munich, Fed. Rep. of Germany

Filed Aug. 21, 1987, Ser. No. 87,791
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1986, 3628342
Int. Cl.[4] B60S *1/04*
U.S. Cl. 318—443 **3 Claims**



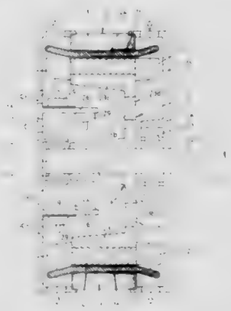
1. A windshield wiper arrangement for motor vehicles comprising:
a wiper arm resting on a surface to be cleaned with a variable abutment force dependent on vehicle velocity; and
control means for increasing the abutment force compared to the abutment force in effect with a standing-still motor vehicle and for rendering the abutment force smaller during non-wiper operation than during wiper operation and for rendering the abutment force larger during an additional washing operation than during the wiper operation;
said control means increases the abutment force in two steps, the transition between the steps taking place during wiper operation as a function of the velocity, while during non-wiper operation always a lower base step of abutment force is engaged and during an additional washing operation always a higher maximum step of the abutment force is engaged.

4,797,602

DYNAMO ELECTRIC MACHINES

John G. W. West, Pershore, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Feb. 12, 1987, Ser. No. 13,706
Claims priority, application United Kingdom, Feb. 13, 1986, 8603590
Int. Cl.[4] F02N *11/04;* **H02K** *1/00, 21/12*
U.S. Cl. 322—10 **7 Claims**



1. A starter-generator comprising; a rotor assembly includ-

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ing a plurality of circumferentially disposed rare earth-iron permanent magnets,

a stator assembly within which said rotor assembly in rotatable, said stator assembly including an annular stator body formed from a silicon containing iron alloy of high electrical resistivity and low magnetic loss, and a multiphase stator winding secured to an inner periphery of said stator body and lying in and airgap defined between the stator body and the rotor assembly,

a semiconductor inverter-rectifier assembly electrically connected with said multiphase stator winding for rectifying and controlling the output from the stator winding when acting in generator mode, and for switching the input to the winding when operating in motor mode, and,

means associated with said semiconductor inverter-rectifier assembly whereby the angular position of the rotor assembly is determined for controlling switching of the electrical input to the stator winding to afford operation in motor mode.

4,797,603

DEVICE FOR MEASURING THE RATIO OF TWO LOW VALUE CAPACITIES

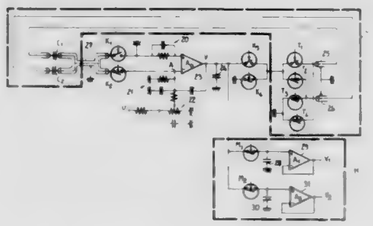
Joël Choimet, Colombes, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 9, 1986, Ser. No. 883,765

Claims priority, application France, Jul. 9, 1985, 85 10481

Int. Cl.[4] G01R *27/26*

U.S. Cl. 324—60 CD **18 Claims**



1. A device for measuring a ratio between a first and a second capacity, comprising:

first and second switching means for selectively conducting a signal based on a control signal;

capacity switching means, including first means for receiving a first capacity, second means for receiving a second capacity, and third switching means, coupled to said first and second means, for selectively conducting a signal based on a control signal, said capacity switching means being coupled between said first and second switching means to separately and successively connect said first and second receiving means between said first and second switching means;

control means, coupled to said first and second switching means, for controlling said first and second switching means to be conducting in phase opposition to one another by supplying respective control signals thereto, and for controlling said third switching means to succesively and separately connect said first and second receiving means between said first and second switching means, said controlling being at a chopping frequency;

means for measuring a capacity ratio; and

an integrator circuit, having an input connected to an output of said second switching means and to a D.C. voltage, and having an output connected to said capacity ratio measuring means and to an input of said first switching means.

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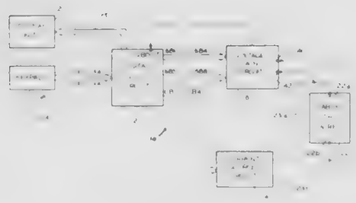
WIRE LENGTH METER SUPPLING CURRENT TO A WIRE FROM WHICH A SIGNAL REPRESENTATIVE OF LENGTH IS DERIVED

Joseph A. Rocci, Palos Heights; John Crosetto, Bridgeview; Kent L. Earle, Woodridge, and David W. Kirby, Palos Heights, all of Ill., assignors to Etcon Corporation

Filed Dec. 9, 1987, Ser. No. 130,417

Int. Cl.[4] G01R *27/02*

U.S. Cl. 324—65 R **20 Claims**



1. An apparatus for determining the length of wires, said apparatus comprising:

connecting means for connecting across the ends of the wire whose length is to be determined;

current source means for selectively supplying different values of currents through the wire whose length is to be determined;

voltage gain means responsive to said different values of currents for selectively generating a plurality of different voltage levels for each of said different values of currents so as to provide an analog voltage signal having a predetermined range;

analog-to-digital converting means responsive to said analog voltage signal for converting the same to a first digital signal corresponding to a resistance of the wire;

storage means for storing data representative of resistance per unit length of various sizes of wires having a uniform cross-sectional area and for storing programmed instructions;

digital data processing means being responsive to the programmed instructions stored in said storage means for controlling the operation of said current source means, voltage gain means, and analog-to-digital converting means so as to generate said first digital signal;

said data processing means utilizing said first digital signal corresponding to the resistance of the wire and the data representative of resistance per unit length for generating a second digital signal representative of the length of the wire; and

display means responsive to said second digital signal for indicating the wire length.

4,797,605

MOISTURE SENSOR AND METHOD OF FABRICATION THEREOF

Ponnusamy Palanisamy, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 21, 1987, Ser. No. 87,826

Int. Cl.[4] G01N *27/07*; G01R *27/22*

U.S. Cl. 324—65 R **2 Claims**

1. A moisture sensor comprising:

a first layer of conductive material formed on a portion of a windshield to be wiped by windshield blades, said layer being patterned to provide a plurality of spaced apart electrodes; and

a second, continuous layer of a material having a higher resistivity than the material of said first layer overlying said first layer and the portions of said windshield exposed between the electrodes of said first layer wherein

said first and second layers each comprises a material including a powder of conductive metal oxide dispersed within



a glass matrix bonding said layers to each other and to said windshield.

4,797,606

MEASURING DEVICE FOR THE MEASUREMENT OF THE DEFORMABILITY OF RED BLOOD CORPUSCLES

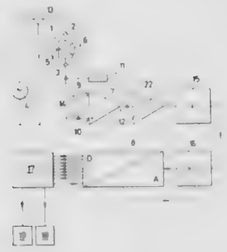
Helmut Jahn, Mainz, and Waldemar Karger, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 19, 1986, Ser. No. 876,165

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1985, 3522186

Int. Cl.[4] G01N *27/02*

U.S. Cl. 324—71.1 **5 Claims**



1. A measuring device for the measurement of the deformability of red blood corpuscles, which device comprises a measurement chamber, which is subdivided by a foil into two chamber spaces, the foil having a passage opening with a diameter smaller than the diameter, at rest, of a red corpuscle, said chamber spaces being formed such that a static pressure gradient comes into existence between said chamber spaces creating a flow from one chamber space to the other, and at least one electrode being disposed on each of the two sides of said foil in the region of the passage opening, each respective electrode being connected to an alternating voltage source, and an operational amplifier, having an inverting input and a non-inverting input functioning as a current-measuring device, said operational amplifier further including regenerative coupling means for creating a fictitious ground potential at said inverting input, said operational amplifier being disposed in the connection between one of said electrodes and said alternating voltage source, said one electrode being connected to said inverting input of said operational amplifier thereby disposing said one electrode closer to ground than the other of said electrodes.

4,797,607

METHOD OF UPDATING THE SCALE FACTOR OF APPARATUS FOR MEASURING AN ALTERNATING ELECTRIC CURRENT BY MEANS OF THE FARADAY EFFECT

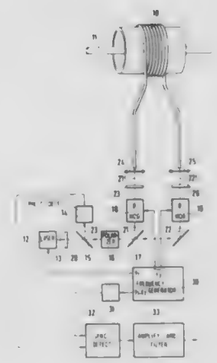
Jean-Pierre Dupraz, Aix les Bains, France, assignor to Alsthom, Cedex, France

Filed Apr. 11, 1988, Ser. No. 179,805

Claims priority, application France, Apr. 10, 1987, 87 05103

Int. Cl.[4] G01R *31/00*

U.S. Cl. 324—96 **4 Claims**



1. A method of updating the scale factor of a current measuring apparatus for measuring an alternating electrical current by means of the Faraday effect implemented in an interferometer which delivers an output light beam whose optical power includes a frequency spectrum component which is proportional, by a scale factor k2, to the sine or the cosine of the phase difference generated by the Faraday effect on the light waves travelling through the interferometer, said phase difference itself being proportional to the instantaneous value of the current to be measured as multiplied by a Faraday effect efficiency factor k1, said light beam being received by a photodetector and said component being extracted therefrom by associated electronics in order to constitute an output signal s(t) from the interferometer, said method consisting in:

determining the peak value I1 of the alternating current to be measured from the output signal s(t) from the interferometer, from the value k1 of the Faraday effect efficiency coefficient for the alternating current to be measured and the available value k2 of the scale factor;

causing two successive disturbances of different amplitudes by adding an auxiliary Faraday effect to the Faraday effect due to the alternating concurrent to be measured, said auxiliary Faraday effect being generated by a test drive current which successively takes on two distinct values I21 and I22 which are different from zero and which are applied with a Faraday effect efficiency factor k3;

storing the direct components so1 and so2 of the output signal from the interferometer in response to the above two disturbances; and

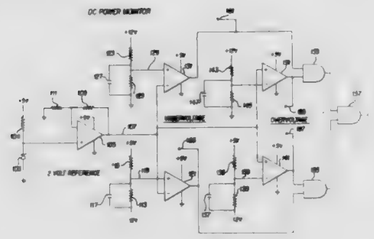
adopting a new scale factor k2 given by the expression:

$$(so1-so2)/(JO(k1.I1)[\sin(k3\ I21)-\sin(k3\ I22)])$$

where JO is the zero order Bessel function of the first kind.

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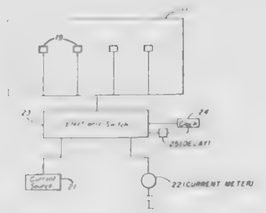
4,797,608
D.C. POWER MONITOR
Randall A. White, Plainville, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Aug. 13, 1987, Ser. No. 85,095
Int. Cl.[4] G01R *19/165, 19/30*
U.S. Cl. 324—96 **9 Claims**



7. A method for monitoring at least first and second DC voltages being positive and negative voltages, respectively, comprising:
establishing a reference voltage level from a third voltage source, said third voltage source being a positive voltage;
coupling said first voltage to one end of a first and second means for dividing and coupling the other end to ground;
dividing the first voltage in the first dividing means to obtain a first divided voltage higher than said reference voltage;
comparing said first divided voltage with said reference voltage to provide a first output;
dividing said first voltage in the second dividing means to obtain a second divided voltage lower than said reference voltage;
comparing said second divided voltage with said reference voltage to provide a second output;
coupling said second voltage to one end of a third and fourth means for dividing and coupling the other end to the third voltage, whereby in each case positive voltages can be provided as inputs for comparing with the reference voltage;
dividing said second voltage in the third dividing means to obtain a third divided voltage lower than said reference voltage;
comparing said third divided voltage with said reference voltage to provide a third output;
dividing said second voltage in the fourth dividing means to obtain a fourth divided voltage higher than said reference voltage;
comparing said fourth divided voltage with said reference voltage to provide a fourth output;
Anding said first, second, third and fourth outputs to obtain a fifth output; and
energizing one color cathode of a two color LED if said fifth output is present and the other cathode if said fifth output is not present.

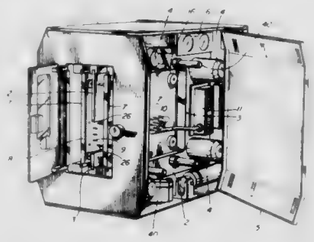
4,797,609
LED MONITORING WITHOUT EXTERNAL LIGHT DETECTION
J. Leon Yang, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Continuation of Ser. No. 266,267, May 22, 1981. This application Dec. 12, 1983, Ser. No. 547,550
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 D **3 Claims**

1. An apparatus for measuring the intensity of light in a plurality of identical light emitting diodes, comprising:
a source of current,
switch means for connecting said source of current to at least one of said plurality of identical light emitting diodes for the energization thereof,
a current measuring device, and
said switch means connecting said current measuring device



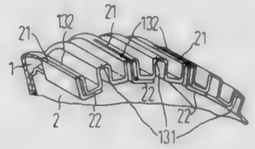
to an unenergized light emitting diode adjacent to said energized diode, said unenergized light emitting diode having a current induced therein linearly proportional to the intensity of light emitted by said energized light emitting diode.

4,797,610
ELECTRONIC TEST FIXTURE
Miguel Fombellida, 905-371 Gilmour St., Ottawa, Canada K2P 0R1
Filed May 8, 1986, Ser. No. 860,891
Int. Cl.[4] G01R *31/02, 31/28*
U.S. Cl. 324—158 F **16 Claims**



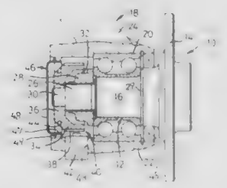
1. An electronic test fixturing apparatus for testing a generally planar circuit board having two reference holes pierced transversely therethrough comprising:
(1) circuit board support means within said apparatus, said support means being provided with first and second guide means adapted to receive and maintain said circuit board in a position between said guide means, said circuit board being biased to rest normally on said first guide means, but being loosely constrained and displaceable towards second guide means;
(2) a pair of probe plates, each member of said pair being mounted on opposed sides of said circuit board when said circuit board is installed upon said support means, said plates carrying, collectively, a pair of inwardly directed parallel index pins and complementary index pin receiving holes; and
(3) end positioning means adapted to approximately align said circuit board upon insertion on said support means so that said index pins are opposite said reference holes,
wherein said index pins are targeted, under conditions of perfect alignment, within the central region of the upper half of said reference holes furthermost from said first guide means.

4,797,611
BIPARTITE GENERATOR WHEEL FOR AN ANGULAR PULSE GENERATOR
Hans Schreiber, Lappersdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jul. 1, 1987, Ser. No. 68,925
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1986, 3622214
Int. Cl.[4] G01B *7/30*
U.S. Cl. 324—208 **3 Claims**



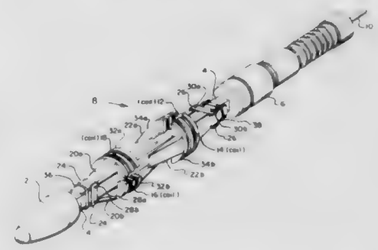
1. A generator wheel for an angular pulse generator, having a rotational axis comprising:
a sheet metal tooth part having a central region and a toothed edge formed at a circumferential region coaxial to said rotational axis and having a plurality of teeth of which n teeth are fashioned as marker teeth, said marker teeth each including a recess; and
a marker part connected to said tooth part and having marker members being sheet metal strips formed as an integral part of said marker part, said strips projecting into said recess of said marker teeth, said teeth and said marker members being composed of materials having different eddy current losses.

4,797,612
DEVICE FOR DETECTING ROTATING SPEED OF VEHICLE WHEEL
Nobuyasu Nakanishi; Noboru Noguchi; Hideyuki Aizawa, and Kenzi Ito, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Jul. 6, 1987, Ser. No. 69,900
Claims priority, application Japan, Jul. 8, 1986, 61-104529[U]
Int. Cl.[4] G01P *3/48*
U.S. Cl. 324—173 **19 Claims**



1. A device for detecting a rotating speed of a wheel of a vehicle, comprising:
an axle hub including a shaft portion, and a flange portion which extends radially outwardly from one of opposite axial ends of said shaft portion and which supports said wheel, said shaft portion having an intermediate section at which said axle hub is rotatably supported by a bearing device supported by a stationary member, said shaft portion further having a free end section which extends axially from said intermediate section in a direction away from said flange portion;
a rotor secured to said free end section of said shaft portion such that said intermediate section and said bearing device are interposed between said rotor and said flange portion axially of said axle hub, so that said rotor is rotatable with said wheel and accessible without moving said bearing device, said rotor including an externally toothed section which has a multiplicity of teeth spaced apart from each other in a circumferential direction of the rotor;
a detector supported by said stationary member, and operable to detect said teeth of said externally toothed section of said rotor while said rotor is rotated; and
a covering attached to said stationary member, and cooperating with said stationary member to cover said rotor.

4,797,613
EXPANDABLE EDDY CURRENT PROBE FOR INSPECTING THE INTERIOR OF TUBULAR CONDUITS
Timothy H. Wentzell, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jan. 22, 1985, Ser. No. 693,427
Int. Cl.[4] G01N *27/72, 27/82;* **G01R** *33/12*
U.S. Cl. 324—220 **2 Claims**



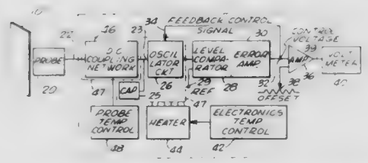
1. A probe for longitudinally traversing the interior of an elongated, variable inner diameter installed steam generator tube, comprising:
a central rod, opposing guide arms, each guide arm mounted on a pivot oriented transversely to the central rod at a fixed point intermediate the ends of the guide arm and each guide arm further including,
a tube engaging guide arm free end configured to fit closely against a portion of the interior tube surface and an opposite guide arm lever end extending from the pivot point in a direction opposite the tube engaging end and terminating in a spaced apart relationship with the central rod;
electrical sensor means disposed within the tube engaging free end, for detecting flaws in the tube wall currently adjacent the tube engaging end;
compression means acting radially inwardly on the opposite guide arm lever end of each of the guide arms for urging the tube engaging free end of the opposing guide arms outward from the central rod into supportive contact with the interior of said tube; and
means for selectively moving the probe longitudinally through said installed steam generator tube.

4,797,614
APPARATUS AND METHOD FOR MEASURING CONDUCTANCE INCLUDING A TEMPERATURE CONTROLLED RESONANT TANK CIRCUIT WITH SHIELDING
Roger E. Nelson, Northridge, Calif., assignor to Sierracin Corporation, Sylmar, Calif.
Continuation of Ser. No. 667,537, Dec. 3, 1984, abandoned. This application Apr. 20, 1987, Ser. No. 45,244
Int. Cl.[4] G01R *27/00;* **G01N** *27/72;* **H03B** *1/00;* **H01F** *15/04*
U.S. Cl. 324—236 **11 Claims**

3. Apparatus for measuring conductance of a sample comprising:
(a) a resonant tank circuit having a tank coil for loading by the sample, the tank coil having an axis;

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(b) means for positioning the tank coil in a predetermined relation to the sample;
(c) an oscillator incorporating the tank circuit;
(d) a control circuit for the oscillator responsive to the loading of the tank coil by the sample, the control circuit stabilizing the amplitude of oscillation of the oscillator and producing a control signal proportional to the loading;



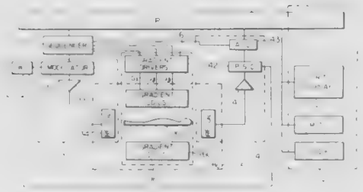
(e) means for controlling the temperature of the tank coil by coupling a variable direct current into the tank coil, the direct current varying in response to a circuit for measuring the resistance of the tank coil so that the direct current is reduced when the resistance of the tank coil increases; and
(f) means responsive to the control signal for indicating the conductance.

4,797,615
DETERMINING AND CORRECTING FOR PHASE JUMPS
Haim Rotem, Moshav Rishpon; Yair Shimoni, Jerusalem, and Shmuel Goldberg, Tel Tsur, all of Israel, assignors to Elscint Ltd., Haifa, Israel
Filed Sep. 30, 1987, Ser. No. 103,012
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 **16 Claims**



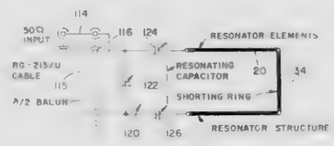
1. A method of providing a continuous magnetic field map for magnetic resonance systems, said method including the steps of:
acquiring a phase image comprising a plurality of elements corresponding to pixels,
dividing the phase image into a plurality of subimages each comprising a plurality of said elements wherein the sizes of the subimages are sufficiently small to limit the phase spread of each of the subimages to being no more than 2π, and
phase unwrapping in each subimage by adding a selected modulo 2π constant to each element of the subimage to provide said continuous map of the magnetic field.

4,797,616
HIGH SPEED NMR SPECTROSCOPIC IMAGING METHOD
Shigeru Matsui, El Cerrito, Calif.; Takashi Onodera, Koganei, Japan; Kensuke Sekihara, Hachioji, Japan; Hidemi Shiono, Akigawa, Japan, and Hideki Kohno, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 3, 1988, Ser. No. 151,901
Claims priority, application Japan, Feb. 4, 1987, 62-22310
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 **8 Claims**



1. A high speed spectroscopic imaging method comprising:
a first step of preparing a transversal magnetization signal of an object placed in a homogeneous static magnetic field;
a second step of applying a field gradient in a specified direction in a specified plane of said object to translate a position of the signal in a phase domain from the origin of a K-space;
a third step of sampling the signal while rotating a position of the signal in the K-space plural times on a given circle with the center thereof at the origin of the K-space by applying a field gradient with its direction continuously rotating in said specified plane; and
a fourth step of performing respective Fourier transformations for plural data trains each of which is composed of data present at the same position on the K-space in a group of data obtained at said third step, thereby effecting a spectral analysis of the signal.

4,797,617
NUCLEAR MAGNETIC RESONANCE RADIO FREQUENCY ANTENNA
George J. Misic, Hiram; Aarne Lillo, North Royalton; John L. Patrick, Solon, and G. Neil Holland, Chagrin Falls, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio
Continuation of Ser. No. 641,570, Aug. 16, 1984, Pat. No. 4,634,980. This application Nov. 21, 1986, Ser. No. 933,152
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—322 **13 Claims**



1. A RF coil for an NMR device, the coil being tuneable to at least one resonant frequency and comprising:
at least two active sections, the active sections all being substantially parallel to an axis, each active section having a drive end and a ground end that is connected to a common potential, each drive end being situated in a first region and each ground end being situated in a second region, the first and second regions being spaced from each other along the axis, each active section comprising at least one conductive element extending between the drive end and the ground end; and,
a connecting circuit connected between the drive ends of the active sections, each active section being coupled by the connecting circuit to at least one of the other active sections, the connecting circuit maintaining a phase difference of approximately one half wavelength between the drive ends of two of the active elements at a tuned resonant frequency.

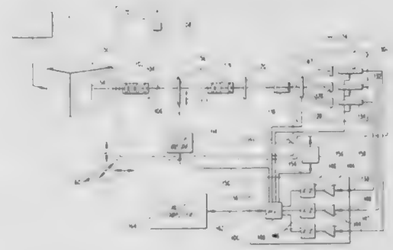
4,797,618
CADDY FOR METAL DETECTOR
Charles V. De Vries, 16203 Serenity St., Plainfield, Ill. 60544
Filed Feb. 11, 1987, Ser. No. 13,476
Int. Cl.[4] G01V *3/11, 3/165;* **B62B** *1/00*
U.S. Cl. 324—326 **18 Claims**



9. A caddy for metal detectors of the type having an elongated stem with a handle at one end for holding by a user and having a searchcoil head at the opposite end extending angularly from the elongated stem to be positioned substantially parallel to the surface of the ground when the elongated stem is held at a diagonal to the ground, wherein said caddy includes a supporting frame including an elongated connecting member with adjustable attachment means for connection to said elongated stem of said metal detector to support said elongated stem of said metal detector at a diagonal to the ground and said searchcoil head positioned substantially parallel to and above the surface of the ground, transport means to move said caddy and metal detector supported thereon across the ground, an extension member extending from said elongated connecting member at an oblique angle to said transport means for connection thereto, said transport means including an axle, said extension member being connected to said axle, and a wheel mounted on each opposite end of said axle and said attachment means mounted on said connecting member being adjustable to adjust the height of said searchcoil head above the surface of the ground to a pre-selected height.

4,797,619
METHOD AND APPARATUS FOR MEASURING SPATIAL PROFILES OF ENERGY BEAMS
Richard L. Austin, Del Mar; Herbert J. Otto, and Frank L. Jones, both of San Diego, all of Calif., assignors to EG&G Gamma Scientific Incorporated, San Diego, Calif.
Filed Mar. 13, 1987, Ser. No. 25,897
Int. Cl.[4] G01R *31/24*
U.S. Cl. 324—409 **37 Claims**

1. An apparatus for measuring spatial profiles of energy beams, comprising:
means for generating a radiant energy image representative of the energy intensity of a cross section of a beam to be measured;
detector means for measuring the intensity of the radiant energy of said image;
means for supplying the radiant energy of said image along an optical path to said detector means;
a knife edge aperture positioned in said optical path between said generating means and said detector means;
means for transversely moving said knife edge aperture across said optical path; and



processor means connected to said detector means and said moving means for obtaining the integral of said detector means output with respect to the position of said knife edge aperture and for generating an output representative of the spatial characteristics of said beams from said integral.

4,797,620
HIGH VOLTAGE ELECTROSTATIC SURFACE POTENTIAL MONITORING SYSTEM USING LOW VOLTAGE A.C. FEEDBACK
Bruce T. Williams, 454 South St., Lockport, N.Y. 14094
Filed Aug. 20, 1986, Ser. No. 898,115
Int. Cl.[4] G01R *29/12*
U.S. Cl. 324—458 **32 Claims**



1. A non-contacting electrostatic detector comprising:
(a) a detector electrode sensitive to electrostatic quantities such as electrostatic fields, voltages and charges;
(b) means operatively associated with said electrode for varying the capacitive coupling between said electrode and a surface bearing an electrostatic quantity to which said electrode is exposed;
(c) an amplifier having first and second inputs and an output, said first input functioning as a summing node;
(d) means for connecting said electrode to said first input of said amplifier;
(e) said amplifier being connected as a summing amplifier by impedance means connected between said output and said first input in a manner not allowing the voltage from said electrode and appearing in said amplifier to change due to change in capacitance between said electrode and said surface;
(f) said means for varying the capacitive coupling causing a first current to flow through said impedance means in the form of a capacitance displacement current flowing through the capacitance between said electrode and said surface due to the voltage between said electrode and said

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surface and the change in the capacitance between said electrode and said surface; and

(g) means for applying to said second input of said amplifier a sinusoidal voltage signal having a frequency equal to that of said capacitance varying means and having an amplitude and phase producing a second current in the capacitance between said electrode and said surface having a magnitude and phase to cancel said first current so that the ratio between the change in amplitude of said sinusoidal voltage and the magnitude of the electrostatic quantity on said surface is fixed by the ratio of the capacitance between said electrode and said surface and the change in said capacitance;

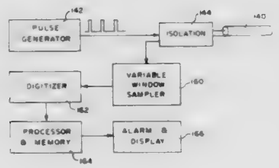
(h) whereby the amplitude and phase of said sinisoidal voltage provides information as to the magnitude and polarity of said electrostatic quantity.

4,797,621

LEAK DETECTOR AND LOCATOR UTILIZING TIME DOMAIN REFLECTOMETRY AND SAMPLING TECHNIQUES

Arthur L. Anderson, Kokomo, Ind.; Douglas S. Bailey, Deerfield, and Richard J. Korinek, Aurora, both of Ill., assignors to Midwesco, Inc., Niles, Ill.

Filed Jul. 8, 1987, Ser. No. 71,022
Int. Cl.[4] G01M *3/18*
U.S. Cl. 324—533 **31 Claims**



1. A detector for detecting fluid in a predetermined area comprising:

an electric cable adapted to be disposed in said predetermined area;

means for applying pulses to said cable;

means coupled to said cable for receiving reflections of said pulses from said cable;

means for sampling said reflections, said sampling means being operative to sample a plurality of reflections and to take only one sample of each reflection subsequent to the application of each pulse to said cable, each sample being shifted in time by a different amount with respect to the last applied pulse and corresponding to a different portion of the reflection;

means for storing said samples to provide a stored representation of a reflection; and

means coupled to said sampling means for comparing samples of subsequent reflections with said stored samples and providing an indication of the presence of a fluid if samples of subsequent reflections differ from said stored samples by a predetermined amount.

4,797,622

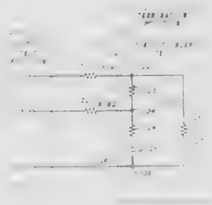
TECHNIQUE FOR DETERMINING THE VALUES OF CIRCUIT ELEMENTS IN A THREE TERMINAL EQUIVALENT CIRCUIT

Chia-Lung Lin, Matawan, N.J., assignor to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 1, 1987, Ser. No. 33,445
Int. Cl.[4] G01R *31/08*; H04M *3/44*
U.S. Cl. 324—537 **20 Claims**

1. Apparatus for determining the electrical values of circuit elements in a three terminal equivalent circuit, said equivalent circuit being representative of an actual communications network, said apparatus comprising

means for applying predetermined signals to said actual communications network and measuring the electrical effects in response thereto;



means for forming at least one ratio, the numerator and denominator of each ratio being a different function of at least one of said measured effects and each ratio being representative of the value of one preselected circuit element to another in said equivalent circuit; and

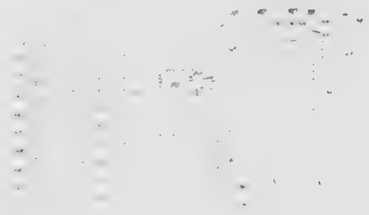
means for determining the electrical values of said circuit elements in response to at least one of said formed ratios.

4,797,623

TESTER FOR FIRE-SUPPRESION COMPONENTRY

Steven L. Hoffman, Macomb, and Robert L. Rammage, Wayne, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1987, Ser. No. 39,186
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—556 **1 Claim**



1. A method to check electrical continuity in a control panel and in a cable connecting the control panel to fire supression system components of a military vehicle, wherein access to the panel is limited and obstructed by surrounding vehicle elements, wherein the panel has first panel lines for sending power to the components, second panel lines for receiving current from the components, a third panel line for receiving electrical current from an electrical power source, panel lights in grounded end segments of the second and third panel lines for indicating receipt of current in the second and third panel lines, a light checking circuit connecting the panel lights in parallel, means to prevent current in the grounded end segments from entering the remaining portions of the second and third panel lines, a panel switch connected to the third panel line having a first position to energize the light checking circuit and a second position to energize the first panel lines, and wherein the cable has first cable lines for connecting the first panel lines to the components and has second cable lines for connecting the components and a power source to the second panel lines, the method comprising:

providing a test mechanism having a source of electrical power independent of the source of electrical power for the panel, a pair of terminal lines for detachably connecting the test mechanism to the independant source of electrical power, first test lines corresponding to respective first panel lines, test lights in the first test lines, second test lines corresponding to respective second panel lines, a test switch having one position for connecting the independent power source to the light checking circuit and another position for simultaneously connecting the independent source of electrical power to all the second test lines, the test mechanism being shaped as a tube no greater than about five inches in length;

attaching the test mechanism to the panel so that the first test lines connect with the respective first lines of the panel and the second test lines connect with respective second lines of the panel;

placing the panel switch in the first position wherein the light checking circuit is tested;

placing the test switch in the one position and then detecting which panel lights illuminate;

placing the panel switch in the second position to energize the first panel lines;

moving the test switch from the one position to the other position, thereby de-energizing the light checking circuit and sending current to all the second panel lines, and then detecting which panel lights are illuminated;

removing the test mechanism from the panel;

attaching the cable to the panel so that the second cable lines connect with the second panel lines;

disconnecting the terminal lines of the test mechanism from the independant power source and then connecting the ends of the terminal lines together;

attaching the test mechanism to the free end of the cable and disconnecting the terminal lines of the test mechanism from the independant power source, the first test lines of the test mechanism being connected in series with respective first cable lines and first panel lines;

detect which of the test lights is illuminated;

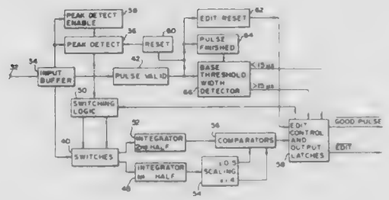
detect which of the panel lights is illuminated.

4,797,624

METHOD AND APPARATUS FOR EDITING PARTICLE PRODUCED ELECTRICAL PULSES

Harvey J. Dunstan, Wheathampstead; John G. Harfield, Harlington; Paul Knight, and Harvey J. Podgorney, both of Luton, all of England, assignors to Coulter Electronics, Ltd., Luton, England

PCT No. PCT/US86/01197, § 371 Date Jan. 29, 1987, § 102(e) Date Jan. 29, 1987, PCT Pub. No. WO86/07218, PCT Pub. Date Dec. 4, 1986
PCT Filed May 30, 1986, Ser. No. 44,530
Claims priority, application United Kingdom, May 31, 1985, 8513809
Int. Cl.[4] H03K *5/22, 5/00*
U.S. Cl. 328—114 **19 Claims**



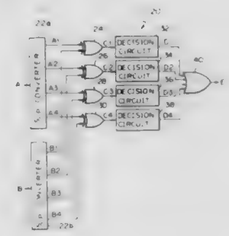
1. A method for editing particle produced electrical pulses, said method comprising the steps of: determining the symmetry of each pulse, comparing said symmetry with respect to acceptable limits thereof, and editing each pulse which lies outside of the acceptable symmetry limits.

4,797,625

DEVICE FOR DETECTING BIT PHASE DIFFERENCE

Satoshi Nakazawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 22, 1987, Ser. No. 99,540
Claims priority, application Japan, Sep. 25, 1986, 61-226670; Jan. 14, 1987, 62-7815
Int. Cl.[4] H03K *9/06*; H03D *13/00*
U.S. Cl. 328—133 **6 Claims**



1. A device for detecting a difference in bit phase between two identical data sequences A and B each being transmitted over a respective one of two transmission paths, comprising:

means for serial-to-parallel converting the data sequences A and B into respective bit sequences A_1 to A_m and B_1 to B_m where M is a positive integer equal to a predetermined common measure of a frame period of the data sequences A and B;

M bit phase detecting means for detecting respective phase differences between corresponding ones of the bit sequences A_1 to A_m and B_1 to B_m, such corresponding being with respect to order; and

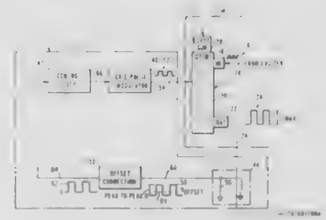
means to determine the bit phase difference between the data sequences A and B responsive to respective outputs from said M bit phase detecting means.

4,797,626

OFFSET VOLTAGE CORRECTION CIRCUIT FOR GRIDDED POWER TUBES

Hiroshi Honda, Garden Grove, Calif., and Eduardo D. Szyszlican, Lanus O., Argentina, assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 29, 1986, Ser. No. 902,270
Int. Cl.[4] H03K *3/02*; H01J *19/82*
U.S. Cl. 328—225 **10 Claims**



1. An electronic, voltage-offset correcting circuit for a gridded power tube having a pulsed output current, the correcting circuit comprising:

(a) means responsive to the pulsed output current of the power tube for providing a pulsed, offset voltage signal proportional to said output current said offset voltage signal being offset from a zero voltage reference by between about zero percent and about 50 percent of the

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peak-to-peak voltage of the offset voltage signal, the percentage of the voltage offset varying according to operating conditions of the power tube;

(b) voltage offset correcting means for receiving the offset voltage signal and responsive thereto for providing a pulsed, corrected voltage signal having substantially no voltage offset from said zero reference; and

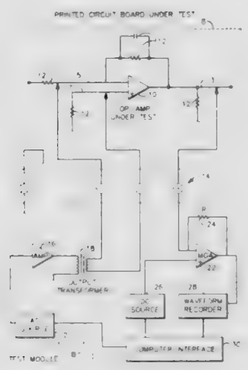
(c) means for receiving the corrected voltage signal and responsive thereto for providing to the tube grid a pulsed grid voltage which causes the pulsed output current of the tube to have a predetetmined value.

4,797,627

PROGRAMMATICALLY GENERATED IN-CIRCUIT TEST FOR GENERAL PURPOSE OPERATIONAL AMPLIFIERS

Wayne R. Chism, Greeley, and Larry G. Smeins, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 31, 1988, Ser. No. 175,831
Int. Cl.[4] G01R *27/00*
U.S. Cl. 330—2 **11 Claims**



1. A module for programmatically testing an operational amplifier that is connected to components in a circuit comprising:

alternating current voltage means for generating a precision alternating current signal for isolation and stimulation of said operation amplifier;

transformer coupled drive amplifier means for coupling said alternating current voltage means to said operational amplifier;

direct current voltage means for generating precision direct current signal;

measuring operational amplifier means with feedback resistor for clamping output voltage of said operational amplifier and converting output current of said op-amp to a voltage;

waveform recorder means for recording said output voltage of said operational amplifier

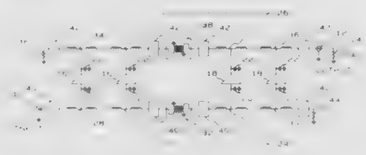
comparator means for comparing said recorded output with expected results to provide an indication of functionality of said operational amplifier.

4,797,628

DISTRIBUTED PUSH-PULL AMPLIFIER

Michael E. Gruchalla, 4816 Palo Duro, NE, Albuquerque, N. Mex. 87110, and David C. Koller, 4522 Idlewilde Ln. SE, Albuquerque, N. Mex. 87108

Filed Mar. 23, 1988, Ser. No. 173,062
Int. Cl.[4] H03F *3/60, 3/28*
U.S. Cl. 330—54 **14 Claims**



1. A distributed amplifier system comprising:

a. at least one input line;

b. an output line;

c. at least two amplifying means; and

d. at least one output signal inverting means

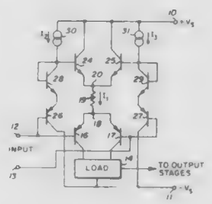
wherein an input terminal of each said amplifying means is connected to said input line, and an output terminal of each said amplifying means is connected to said output line, and said output signal inverting means is interconnected into said output line between at least one pair of adjacent said amplifying means.

4,797,629

WIDE RANGE OPERATIONAL AMPLIFIER INPUT STAGE

Robert J. Widlar, Puerto Vallarta, Mexico, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 3, 1988, Ser. No. 163,573
Int. Cl.[4] H03F *3/45*
U.S. Cl. 330—258 **11 Claims**



1. A differential amplifier input stage having differential signal input terminals, said stage being operative over a wide range of input signal potentials and connectable to positive and negative power supply terminals, said circuit comprising:

first and second input transistor means, each one including collector, base and emitter electrodes;

means for coupling said input transistor base electrodes to said signal input terminals;

means for coupling said collector electrodes to a common load circuit for responding to the differential collector currents in said first and second input transistor means;

means for coupling said emitters of said first and second input transistor means together and to the first end of a series resistor, the other end of which is coupled to a tail current supply;

a first current amplifier having an input coupled to said base of said first transistor means and an output coupled to said other end of said series resistor; and

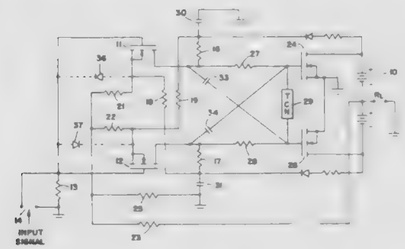
a second current amplifier having an input coupled to said base of said second transistor means and an output coupled to said other end of said series resistor.

4,797,630

TWO STAGE PUSH-PULL MOSFET POWER AMPLIFIER

Albert W. Brown, 622 Commercial Ave., #4, S. San Francisco, Calif. 94080

Filed Apr. 1, 1986, Ser. No. 846,951
Int. Cl.[4] H03F *3/30*
U.S. Cl. 330—264 **12 Claims**



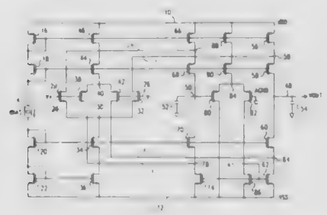
10. A power amplifier, comprising; an output stage including a first pair of complementary MOSFET power transistors connected in push-pull fashion, a second pair of complementary MOSFET driver transistors connected in push-pull fashion, means for conducting a signal to said second pair of transistors, first signal path means extending from the drain of each of said driver transistors to the gate of an associated one of said power transistors, power supply means for biasing said first and second pair of transistors so that as each driver transistor is driven toward conduction by said signal the associated power transistor is driven toward non-conduction, and cross-signal path means extending from the drain of each of said driver transistors to the gate of the non-associated power transistor.

4,797,631

FOLDED CASCODE AMPLIFIER WITH RAIL-TO-RAIL COMMON-MODE RANGE

Wei-Chan Hsu, Plano; William R. Krenik, Dallas, and James R. Hellums, Arlington, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 24, 1987, Ser. No. 124,694
Int. Cl.[4] H03F *3/45*
U.S. Cl. 330—253 **13 Claims**



1. A folded cascode differential amplifier with rail-to-rail common-mode range, comprising:

a positive supply rail;

a negative supply rail;

first common source circuitry for converting a differential input voltage to a first differential current and operable to said positive rail;

second common source circuitry for converting said input voltage to a second differential current and operable with a common-mode range to said negative rail;

a plurality of first push-pull cascade devices for receiving on an input one side of each of said first and second differential currents for conversion to a voltage on a first output node;

a plurality of second push-pull cascode devices for receiving on an input one side of each of said first and second differential currents for conversion to a voltage on a second output node;

a first current variable load for varying the current through said first ascode devices to vary the voltage on said first output node;

a second current variable load for varying the current through said second cascode devices to vary the voltage on said second output node; and

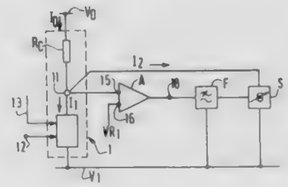
a negative-feedback auxiliary amplifier coupled to said cascode devices and said current variable loads, said auxiliary amplifier operable to maintain said cascode devices in linear operation while permitting variations in load current resulting from rail-to-rail common mode operation.

4,797,632

VARIABLE GAIN AMPLIFIER CIRCUIT AND ITS USE IN AN AUTOMATIC GAIN CONTROL ARRANGEMENT

Alain Guery, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 23, 1987, Ser. No. 112,869
Claims priority, application France, Nov. 18, 1986, 8615994
Int. Cl.[4] H03G *3/30*
U.S. Cl. 330—285 **7 Claims**



1. An amplifier circuit comprising an input stage including an active element connected in series with a load resistor between first and second points of D.C. reference potential, said active element having a signal input terminal and a gain control adapted to be varied by varying the operating point of said active element for producing on an active terminal of said load resistor an amplified output signal which has a D.C. component which may vary in level with changes in said operating point; and

means for stabilizing the level of the D.C. component of said output signal comprising

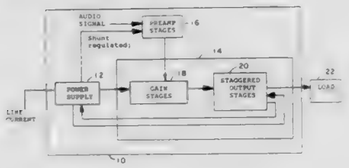
a variable D.C. current generator for generating and applying to the active terminal of said load resistor a current in opposition to the average output current of said input stage of a value such that the sum of the currents passing through said load resistor is constant,

a high-gain differential amplifier having a first input connected to said active terminal of said load resistor, a second input connected to a third point of reference potential, and an output terminal, and

a low-pass filter connected to receive a signal from the output terminal of said differential amplifier and supplying a signal for controlling said D.C. current generator in a way such that the current generated by said generator is applied as negative feed-back to the first input of said differential amplifier.

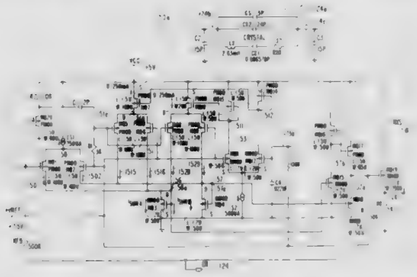
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4,797,633
AUDIO AMPLIFIER
Theodore J. Humphrey, Los Angeles, Calif., assignor to Video Sound, Inc., Boulder City, Nev.
Filed Mar. 20, 1987, Ser. No. 28,551
Int. Cl.[4] H03F 3/04
U.S. Cl. 330—297 16 Claims



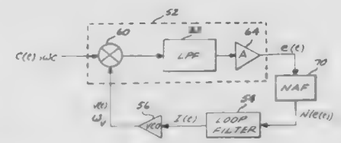
1. An audio amplifier comprising:
a power supply for supplying a direct current voltage;
an amplifier circuit coupled to the power supply to receive the direct current voltage, the amplifier circuit having an input for receiving a signal and an output stage, the output stage for coupling the amplifier to an audio transducer, the amplifier circuit drawing power from the power supply;
means for sensing the power drawn from the power supply and means for reducing the available voltage provided by the power supply to the amplifier circuit in an inverse relationship to the power drawn from the power supply;
whereby the power supply is collapsible, in that the voltage rails available to drive the output stage is limited by the output power drawn to enable the generation of an efficient audio output signal minimizing the effects of clipping distortion.

4,797,634
CONTROLLED OSCILLATOR
Paul D. Filliman, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.
Filed Aug. 31, 1987, Ser. No. 91,167
Int. Cl.[4] H03L 7/00
U.S. Cl. 331—12 21 Claims



1. A stereo decoder apparatus responsive to a baseband composite audio signal that includes a pilot signal component, comprising:
a controllable oscillator responsive to a control signal, said oscillator generating an oscillatory output signal at a frequency that is controlled in accordance with said control signal, said controllable oscillator including:
a differential, first amplifier for generating first and second output signals that are opposing in phase;
a second amplifier for generating a third output signal, at least one of said amplifiers being responsive to said control signal for varying an amplitude of one of said first, second and third output signals when said control signal varies;
a resonator responsive to said oscillatory output signal for generating at an output terminal thereof a second oscillatory signal that is coupled to said first and second amplifiers, said resonator having a frequency response that determines a range of frequencies from which said frequency of said oscillatory signal can be selected;
reactive means coupled to said second oscillatory signal and to one of said amplifiers for providing a phase shift to one of said first, second and third output signals relative to at least another one of said first, second and third output signals;
combining means for combining said first, second and third output signals for generating said oscillatory output signal; and
means responsive to said pilot signal component and to said oscillator signal for generating said control signal to vary said amplitude for synchronizing said oscillatory output signal to said pilot signal component.

4,797,635
TRACKING LOOP HAVING NONLINEAR AMPLITUDE FILTER
G. Stephen Hatcher, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed May 11, 1987, Ser. No. 48,635
Int. Cl.[4] H03L 7/06
U.S. Cl. 331—17 9 Claims



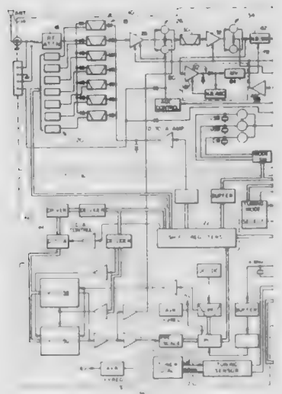
1. A tracking loop for receiving a periodic carrier signal and for producing an output signal that is phase locked to the carrier signal, the tracking loop comprising:
an oscillator having an input terminal, an output terminal, and means for producing the output signal at the output terminal at a frequency that is a function of an input signal applied to the input terminal;
a phase detector connected to receive the carrier signal and the output signal, and to produce an error signal e having a magnitude that is a function of the product of the carrier and output signal amplitudes and of the phase difference between the carrier and output signals;
a nonlinear amplitude filter connected to receive the error signal e and to produce a modified error signal N such that N is an odd function of e, such that the derivative of N with respect to e is a constant k for comparatively small values of e, and such that the magnitude of N is greater than the product of k times the magnitude of e for relatively large values of e; and
a loop filter for receiving the modified error signal and for producing the input signal.

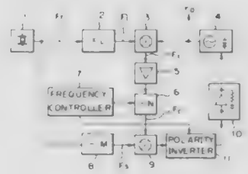
4,797,636
RADIO RECEIVER
Kazuyoshi Imazeki, and Nobuaki Yokoyama, both of Tokyo, Japan, assignors to General Research of Electronics, Inc., Tokyo, Japan
Division of Ser. No. 661,025, Oct. 15, 1984, abandoned. This application Jun. 20, 1986, Ser. No. 853,846
Int. Cl.[4] H03B 21/02
U.S. Cl. 331—48 5 Claims

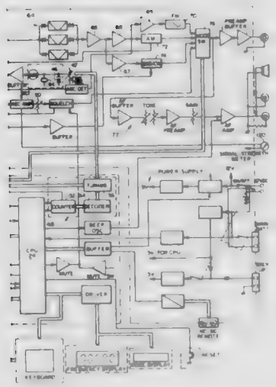
1. A tuning system for a radio receiver comprising: first local oscillator means for producing first local oscillator signals at frequencies over a first predetermined range of frequencies; said first local oscillator means being responsive to first predetermined oscillator control signals for varying the frequency of said first local oscillator signals over said first predetermined

range at first predetermined increments; second local oscillator means for normally producng a second local oscillator signal at a predetermined frequency; frequency varying means coupled with said second local oscillator means and responsive to second predetermined oscillator control signals for varying the frequency of said second local oscillator signal over a second predetermined range of frequencies relative to said predetermined frequency normally produced thereby and at second predetermined increments, said second predetermined increments being smaller than said first predetermined increments; and control circuit means for producing said first and second predetermined oscillator control signals; wherein said frequency varying means comprises counter means coupled to receive said second predetermined oscillator control signals and decoder means coupled to said counter means, for counting and decoding said second predetermined oscillator control signals to form control signals corresponding to frequencies in said second predetermined range and at said second predetermined increments.

4,797,637
PLL FREQUENCY SYNTHESIZER
Koyo Kegasa; Takafumi Murai; Osamu Yamanaka, and Takeshi Fujii, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Daisha, Tokyo, Japan
Filed Aug. 24, 1987, Ser. No. 88,663
Claims priority, application Japan, Aug. 28, 1986, 61-203410
Int. Cl.[4] H03L 7/00
U.S. Cl. 331—4 8 Claims







1. A PLL frequency synthesizer comprising:
voltage controlled oscillator means which oscillates in response to a frequency signal corresponding to a control signal to be input and which outputs said frequency signal as an output of said PLL frequency synthesizer;
multiplier means for multiplying a reference frequency signal to be input;
mixer means for mixing the frequency signal which is output from said voltage controlled oscillator and the multiplied reference frequency signal which is output from said multiplier, and for outputting a frequency signal representative of a difference therebetween;
variable frequency divider means for dividing said difference frequency signal at a variable dividing ratio;
fixed frequency divider means for dividing said reference frequency signal at a predetermined dividing ratio;
frequency phase comparator means for detecting a phase difference between an output signal from said variable frequency divider and an output signal from said fixed frequency divider and for outputting a phase difference signal therebetween;
filter means for removing high frequency components of said phase difference signal which is supplied as said control signal to said voltage controlled oscillator; and
means for switching the polarity of said phase difference signal;
wherein an output frequency of the voltage controlled oscillator can be switched to either a frequency higher than or a frequency lower than the frequency which is H (H is a positive integer) times as high as the output frequency of said multiplier, or the output frequency of the voltage controlled oscillator can be switched to either a frequency higher than the frequency which is H times as high as the output frequency of the multiplier or a frequency lower than the frequency which is (H+1) times as high as the output frequency of the multiplier.

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4,797,638

OSCILLATOR INCLUDING A TRANSISTOR USED BOTH AS CONSTANT CURRENT SOURCE AND AMPLIFIER

Akira Usui, Takatsuki; Kazuhiko Kubo, Osaka, and Hiroyuki Nagai, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

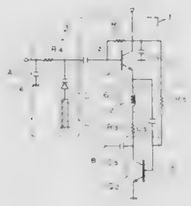
PCT No. PCT/JP86/00359, § 371 Date Apr. 10, 1987, § 102(e) Date Apr. 10, 1987, PCT Pub. No. WO87/00993, PCT Pub. Date Feb. 12, 1987

PCT Filed Jul. 14, 1986, Ser. No. 30,852

Claims priority, application Japan, Jul. 30, 1985, 60-167924; Jul. 30, 1985, 60-167925; Sep. 26, 1985, 60-213105

Int. Cl.[4] H03B *5/18, 5/12*

U.S. Cl. 331—117 D **4 Claims**



1. A local oscillator circuit comprising:

an oscillation transistor having a base, an emitter, and a collector, said oscillation transistor producing an oscillation output signal at said emitter of said oscillation transistor;

a power input connected to said collector of said oscillation transistor;

means for grounding an alternating current connected to said collector of said oscillation transistor;

resonance circuit means for producing a resonant signal of at least one predetermined frequency connected to said base of said oscillation transistor, said resonance circuit means including a series combination of a variable capacitance diode and a resonator;

an amplifier transistor having a base, an emitter, and a collector, said amplifier transistor producing an amplified oscillation output signal at said collector of said amplifier transistor;

means for reducing an alternating current component of said oscillation signal so that a direct current signal can pass, said alternating current reducing means connected between said emitter of said oscillation transistor and said collector of said amplifier transistor;

means for suppling said oscillation output signal to said base of said amplifier transistor;

means for biasing said amplifier transistor to produce a bias potential on said amplifier transistor; and

an output connected to said collector of said amplifier transistor.

4,797,639

LOW NOISE CRYSTAL CONTROLLED OSCILLATOR

Michael M. Driscoll, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 22, 1987, Ser. No. 57,461

Int. Cl.[4] H03B *5/32*

U.S. Cl. 331—158 **6 Claims**

1. A low noise crystal oscillator circuit comprising:

a modular type amplifier having an input, an output, and a ground reference terminal, said amplifier having an input impedance of substantially fifty ohms and an output impedance of substantially fifty ohms;

a tuned circuit having an input, an output, and a ground reference terminal, said tuned circuit having its input coupled to the output of said amplifier, said tuned circuit having an input impedance of substantially fifty ohms and an output impedance of substantially fifty ohms;

an RF signal output terminal;

a power divider having an input, a first output, a second output, and a ground reference terminal, said power divider having its input coupled to the output of said tuned circuit and having its first output coupled to said RF signal output terminal, said power divider having an input impedance of substantially fifty ohms and an output impedance of substantially fifty ohms;

a signal limiter circuit having an input, and output, and a ground reference terminal, said signal limiter circuit having its input coupled to the second output of said power divider, a first resistor coupled between the input and output of said signal limiter circuit, first diode means



having its anode coupled to the output of said signal limiter circuit and its cathode coupled to the ground reference terminal of said signal limiter circuit, and second diode means having its cathode coupled to the output of said signal limiter circuit and its anode coupled to the ground reference terminal of said signal limiter circuit, said signal limiter circuit having an input impedance of substantially fifty ohms; and

a crystal resonator circuit having an input, an output, and a ground reference terminal, said crystal resonator circuit having its input coupled to the output of said signal limiter circuit and its output coupled to the input of said amplifier, a crystal coupled between the input and the output of said crystal resonator circuit, and a second resistor coupled between the input of said crystal resonator circuit and the ground reference terminal of said crystal resonator circuit.

4,797,640

APPARATUS FOR AMPLITUDE MODULATING THE OUTPUT OF A LASER DIODE OR L.E.D.

Maurice C. Heard, Hullbridge, United Kingdom, assignor to The General Electric Company, p.l.c., London, England

Filed Aug. 14, 1986, Ser. No. 896,273

Claims priority, application United Kingdom, Aug. 21, 1985, 8520923

Int. Cl.[4] H04B *9/00*

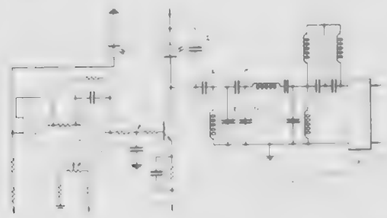
U.S. Cl. 332—7.51 **1 Claim**

1. Apparatus for generating an amplitude modulated optical signal in response to an input modulating signal comprising

a light emitting diode having a forward conducting direction and an internal capacitance, said light emitting diode emitting light when a current flows therethrough in said forward conducting direction;

a first current source including a photodiode receiving light from said light emitting diode, a comparator coupled to the output of said photodiode and a transistor having its colletor-emitter path connected in series with said light emitting diode and its base connected to the output of said comparator, said comparator comparing the output of said photodiode with a reference signal to generate a substantially constant current component of the forward direction current through said light emitting diode; and

a second current source including a broad band amplifier, a filter network and an impedance transformer coupling said input modulating signal to said light emitting diode to generate a varying current component of said forward



direction current, said impedance matching transformer comprising the internal capacitance of said light emitting diode and capacitive elements only, whereby substantially ideal impedance matching between said filter network and said light emitting diode is obtained for all frequencies of said input modulating signal.

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OPTOELECTRONIC MODULATOR

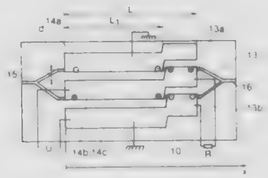
Anders G. Djupsjöbacka, Solna, Sweden, assignor to Telefonaktiebolaget Lm Ericsson, Stockholm, Sweden

Filed Mar. 18, 1986, Ser. No. 840,910

Claims priority, application Sweden, Apr. 30, 1985, 8502113

Int. Cl.[4] G02F *1/03*

U.S. Cl. 332—7.51 **8 Claims**



1. An optoelectric modulator for generating an optical signal comprising a wafer of optoelectronic material, two spaced lightwave conductors having opposite ends at which they are connected to each other to form input and output ends, means for introducing a lightwave of constant amplitude and wave length at said input end, the lightwave undergoing division in the conductors and mutual phase shift, the conductors being uncoupled between the input and output ends so that the divided lightwaves in the conductors do not influence one another, a difference modulation between the conductors being sensed at the output end, and three planar electrodes extending substantially parallel to one another and respectively including transversely offset portions such that two adjacent electrodes define with their longitudinal sides an elongate intermediate space of up to three sections, which are transversely displaced in relation to each other such that one longitudinal side of one of the sections is situated approximately in the line of extension of the other longitudinal side in the adjacent section, the lightwave conductors being disposed along said extension lines so as to be connected with one portion of one electrode and an adjacent portion of the adjacent electrode, means for applying a modulating voltage between the middle electrode and the two outer electrodes, so that the lightwave conductors are modulated in counter-phase in the two adjacent sections by said modulating voltage, the relationship between the lengths of said sections being such that the ratio of the length of the longest section and the length of the electrodes is in the range of 0.70 to 0.94 whereby the modulator has a frequency response between DC and high frequencies.

4,797,642

ZERO-SETBACK SLIDING LOAD FOR NETWORK ANALYZER CALIBRATION

Robert E. Rennard, Evanston, Ill., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 31, 1987, Ser. No. 140,177

Int. Cl.[4] H01P *1/26, 1/00*

U.S. Cl. 333—22 R **11 Claims**



1. An apparatus for connecting to a mating electrical connector, said apparatus comprising:

a housing for mechanically connecting to said mating electrical connector, said housing defining a first connection plane;

a center conductor disposed generally within said housing for mechanically and electrically connecting to said mating electrical connector, said center conductor having a tip portion defining a second connection plane; and

means for extending and retracting said tip portion, said means providing for the extension of said tip portion out of said housing to allow mechanical coupling of said center conductor with said mating electrical connector, said means providing for the retraction of said tip portion into said housing to allow aligning of said second connection plane with said first connection plane while said mating electrical connector is not engaged so that upon connection with said mating electrical connector said second connection plane can be spaced within a predetermined tolerance of said mating electrical connector so as to minimize the separation between said second connection plane and said mating electrical conductor while assuring that minimal axial pressure is applied to said center conductor.

4,797,643

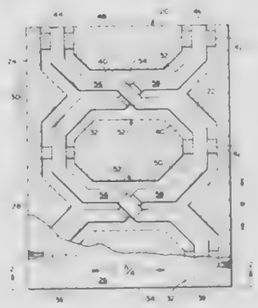
COAXIAL HYBRID COUPLER AND CROSSING ELEMENT

Mon N. Wong, Torrance, and Samuel S. Wong, Lawndale, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 23, 1987, Ser. No. 111,825

Int. Cl.[4] H01P *5/18*

U.S. Cl. 333—115 **42 Claims**



1. A coaxial transmission-line crossing-element comprising:

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a first hybrid coupler and a second hybrid coupler, each of said couplers having a first input port, a second input port, a first output port, and a second output port; and wherein

said first output port of said first coupler is connected to said first input port of said second coupler, said second output port of said first coupler is connected to said second input port of said second coupler, said first and said second input ports of said first coupler serving as input ports of said crossing element, and said first and said second output ports of said second coupler serving as output ports of said crossing element; and wherein

each of said couplers comprises:

a housing of electrically conductive material having a top wall and a bottom wall, there being a front wall, a back wall, a first sidewall and a second sidewall joining said top wall to said bottom wall, said housing having four openings oriented normally to a common plane, said top wall and said bottom wall being parallel to said common plane, said openings being positioned serially around a center of said housing and pointing outward in different directions;

center conductors disposed in each of said openings to form therewith said input ports and said output ports, said first input port and said first output port being located at opposite ends of said first sidewall, said second input port and said second output port being located at opposite ends of said second sidewall, said first input port and said second input port being located at opposite ends of said front wall, and said first output port and said second output port being located on opposite ends of said back wall;

a pair of bars electrically connecting ports of said first sidewall with ports of said second sidewall, said bars being uniformly positioned apart from each other and from an inner surface of said housing, a first bar of said pair of bars being twisted about a second bar of said pair of bars with a half twist to enable said first bar to interconnect said first input port with said second output port, and to enable said second bar to interconnect said second input port with said first output port; and wherein

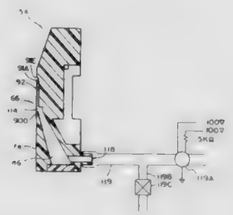
in each of said couplers, said half twist comprises a central portion of said first and of said second bars, in each of said bars said central portion having a notch, the notch of said first bar facing and interleaving the notch of said second bar.

4,797,644

PROCESSING HEAD FOR ELECTROPHOTOGRAPHIC APPARATUS

Kazuo Takahashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 8, 1987, Ser. No. 105,785
Claims priority, application Japan, Oct. 8, 1986, 61-239801
Int. Cl.⁴ G03G *15/10*
U.S. Cl. 355—10 **13 Claims**



1. A process head for use in an electrophotographic apparatus and adapted to supply a developer to an electrophotographic film in a developing section of said electrophotographic apparatus thereby developing a latent image on said electrophotographic film, said process head comprising:

a seal section provided adjacent to said developing section and separated from said developing section by a frame portion which defines said developing section; and

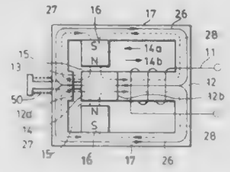
seal pressure supply means capable of supplying to said seal section a seal gas selectively at a first pressure which is higher than the pressure in said developing section and, hence, effective to prevent said developer from leaking out said developing section and at a second pressure which is higher than said first pressure and, hence, effective to drive said gas into said developing section from said seal section beyond said frame portion.

4,797,645

ELECTROMAGNETIC ACTUATOR

Tokio Uetsuhara, Urawa, Japan, assignor to Mitsubishi Mining & Cement Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 774,610, filed as PCT JP84/00084 on Mar. 5, 1984, published as WO85/04044 on Sep. 12, 1985, abandoned. This application Oct. 18, 1985, Ser. No. 794,231
U.S. Cl. 335—230 **2 Claims**



1. An electromagnetic actuator comprising a magnetic circuit consisting of a stationary element and a movable element, and electromagnetic means with a permanent magnet inserted in the magnetic circuit, the permanent magnet being mounted so that the magnetomotive force of the permanent magnet is parallel to that of said electromagnetic means; and the movable element is held within a space in the stationary element so that it can be actuated under monostable condition, characterized in that said electromagnetic means comprises a single electromagnetic coil (**11**) defining two pole faces (**12***a*, **12***b*) so that the movable element contacts one or the other pole face, said permanent magnet (**16**) is fixed to the stationary element in series and contact elements (**37**) are mounted in contact with both pole faces of the permanent magnet (**16**) so as to force the side surfaces of the movable element (**14**) at right angles through the second gap (**15**).

4,797,646

SUPERCONDUCTOR FOR MAGNETIC FIELD SHIELDING

Yoshiro Saji, Osaka, and Eiichi Tada, Kobe, both of Japan, assignors to Yoshiro Saji and Kostsu Gas Kogyo Co., Ltd., both of Osaka, Japan

Continuation of Ser. No. 826,291, Feb. 5, 1986, abandoned. This application Dec. 29, 1987, Ser. No. 142,282
Claims priority, application Japan, Feb. 8, 1985, 60-24254
Int. Cl.⁴ H01F *7/00*
U.S. Cl. 335—301 **12 Claims**

1. A magnetic field shield including a superconductor film having a magnetic field shielding effect which abruptly increases from the vicinity of the origin to a turning point of a graph illustrating the relationship between the thickness of a single layer of said superconductor film and the magnetic field shielding effect of said superconductor film, and after said turning point gradually increases as the thickness of said superconductor film increases, said magnetic field shield being characterized in that it comprises at least one composite lamination comprising a thin continuous film of said supeconductor, said



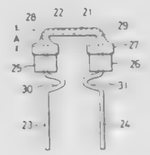
thin continuous film having a thickness not more than that obtained at said turning point and not less than 2 μm.

4,797,647

INDUCTOR AND A MANUFACTURING METHOD THEREFOR

Akira Okubo, Takefu, and Kenichi Sasaki, Imadate, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagokakyo, Japan

Filed Feb. 5, 1988, Ser. No. 152,797
Claims priority, application Japan, Feb. 6, 1987, 62-16714
Int. Cl.⁴ H01F *17/06, 15/10, 41/02*
U.S. Cl. 336—175 **3 Claims**



1. An inductor comprising a U-like-shaped lead wire provided at both lengthwise ends of a head with a pair of legs opposite to each and a magnetic material core insertably mounted on at least one of said legs, said inductor characterized in that an exposed portion is formed at said leg of said wire for part of said leg to be exposed between one end of said magnetic material core and said head of said lead wire and an arcuate portion is formed at said leg at the other end side of said magnetic material core.

4,797,648

CHIP INDUCTOR

Toshimi Kaneko; Ryuichi Fujinaga; Tetsuya Morinaga; Atsuo Senda; Toshi Numata, and Hideyuki Kashio, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

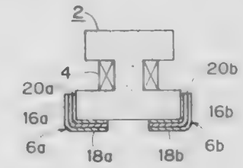
Filed Mar. 9, 1988, Ser. No. 165,763
Claims priority, application Japan, Mar. 9, 1987, 62-53657
Int. Cl.⁴ H01F *15/10*
U.S. Cl. 336—192 **7 Claims**

1. A chip inductor comprising:

a magnetic core having a surface;

winding means disposed in relation to said magnetic core;

terminal electrode means electrically connected to said winding means and formed on said surface of said magnetic core; and



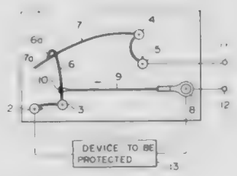
said terminal electrode means including a film made from a nickel alloy.

4,797,649

CIRCUIT BREAKER ACTUATED BY SHAPE MEMORY ALLOY

Dai Homma, Yokohama, Japan, assignor to Naomitsu Tokieda, Tokyo, Japan

Filed Nov. 17, 1987, Ser. No. 121,802
Claims priority, application Japan, Nov. 17, 1986, 61-271729
Int. Cl.⁴ H01H *61/06, 71/18*
U.S. Cl. 337—140 **7 Claims**



1. A circuit breaker for protecting an electrical device comprising:

a first and a second contactor having respective connecting-/disconnecting means for normally keeping said first and second contactors in contact with each other, and for continuously separating said first and second contactors from each other when a mechanical force of a predetermined value is applied to said means in a predetermined direction; and

a shape memory alloy electrically connected in parallel with said device being protected, said alloy further being mechanically coupled to said means for applying said force in said predetermined direction when the shape memory effect is generated therein.

4,797,650

CMOS BINARY EQUALS COMPARATOR WITH CARRY IN AND OUT

James K. Pickett, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 25, 1987, Ser. No. 66,654
Int. Cl.⁴ G05B *1/00;* **G06F** *7/02*
U.S. Cl. 340—146.2 **1 Claim**

1. A CMOS binary equals comparator circuit comprising, in combination:

a carry in terminal;

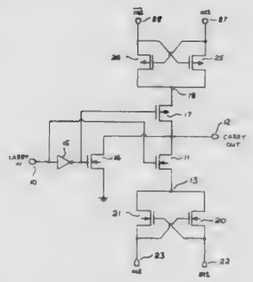
a carry out terminal;

N and P nodes;

a first N channel MOSFET having a drain connected to the carry out terminal, a source connected to the N node, and a gate connected to the carry in terminal;

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a first P channel MOSFET having a source connected to the carry out terminal and a drain connected to the P node;
a second N channel MOSFET having a drain connected to the carry out terminal and a source adapted for connection to an electric power supply at a low voltage;
an inverter connecting the carry in terminal to the gates of the first P channel MOSFET and the second N channel MOSFET, whereby the low voltage input to the carry in terminal produces the low voltage output on the carry out terminal;
third and fourth N channel MOSFETs having drains connected to the N node and each having a gate connected to the source of the other, the third and fourth N channel MOSFETs having sources connected to a first bit voltage



and a second bit voltage, respectively, the first and second bit voltages being one of the low voltage or a higher voltage from the electric power supply; and
second and third P channel MOSFETs having sources connected to the P node and each having a gate connected to the drain of the other, the second and third P channel MOSFETs having drains connected to the first bit voltage and the complement of the second bit voltage, respectively, wherein the complement of the second bit voltage is the other of the low or higher voltages from the power supply from the second bit voltage and whereby, when the higher voltage from the power supply is provided to the carry in terminal, the carry out terminal is at the higher voltage when the first and second bits are equal and the low voltage when they are not.

4,797,651

MULTICOLOR COMPARATOR OF DIGITAL SIGNALS

Karel Havel, P.O. Box 66, Station M, Toronto, Ontario, Canada (M6S 4T2)

Continuation-in-part of Ser. No. 856,196, Apr. 28, 1986, abandoned. This application May 27, 1986, Ser. No. 866,929
Int. Cl.⁴ G06F *7/04*
U.S. Cl. 340—146.2 **19 Claims**



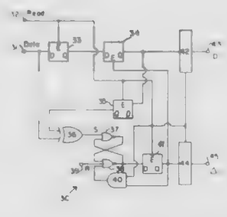
1. A method of comparing a first signal and a second signal, each said signal having either a first level or a second level, comprising the steps of:
developing light of a first color when only said first signal has a first level;
developing light of a second color when only said second signal has a first level;
developing light of a third color when both said first signal and said second signal have a first level;
developing no light when both said first signal and said second signal have a second level;
filtering light to obtain filtered light by removing light of said third color and by transmitting light of said first color or of said second color; and
interrogating said filtered light to determined whether said first signal and said second signal have the same level or different levels.

4,797,652

STATUS REGISTER BIT AND DELTA

Christopher M. Hall, Mountain View, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 607,545, May 7, 1984, abandoned. This application Mar. 17, 1987, Ser. No. 26,715
Int. Cl.⁴ G05B *1/00*; **G06F** *7/02, 7/38*
U.S. Cl. 340—146.2 **2 Claims**



1. A structure for receiving a series of input data signals and providing an output status signal identical to the input data signal and providing an output delta signal indicating if the present input data signal is the same as the previous input data signal, said structure comprising:
an input terminal for receiving said input data signal;
a read enable input terminal for receiving a read enable signal;
a status signal output terminal for providing said output status signal;
a delta signal output terminal for providing said output delta signal;
first means for storing said input data signal, having an input terminal, an enable terminal, and having an output terminal coupled by buffer means to said status signal output terminal;
second means for storing said previous input data signal, having an input terminal connected to said output terminal of said first means for storing, having an output terminal, and having an enable terminal connected to said read enable terminal;
exclusive or means for comparing said input data signal with said previous input data signal stored within said second means for storing, and providing a comparison signal on its output lead indicating if said input data signal is identical to said previous input data signal;
third means for storing said comparison signal, comprising a flip flop and latch combination, said flip flop having a set lead connected to said output lead of said exclusive or means and an output lead connected to the input lead of said latch, said latch further having an enable terminal connected to said read enable terminal, and having an output lead connected to said enable terminal of said first means for storing said output lead further being coupled by buffer means to said delta signal output terminal;
fourth means for storing having an input terminal connected to said input terminal of said structure, an output terminal connected to said input terminal of said first means for storing and an enable terminal connected to said read enable terminal; and
and gate means having a first input lead connected to said output lead of said latch of said third means for storing, a second input lead connected to said read enable terminal, and an output lead coupled to said reset terminal of said latch of said third means for storing for enabling said first means for storing in response to said comparison signal, thereby storing said input data signal in said first means for storing only when said input data signal and said previous input data signal are different.

4,797,653

DPCM ENCODER

Makoto Takayama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1986, Ser. No. 938,268
Claims priority, application Japan, Dec. 26, 1985, 60-292159
Int. Cl.⁴ H03M *3/04*
U.S. Cl. 341—51 **5 Claims**



1. A predictive encoder for converting data to variable-length codes and outputting them, comprising:
(A) differential data calculating means for calculating a differential data from an input information data and a predictive data;
(B) quantizing means for quantizing said differential data calculated by said differential data calculating means and outputting a quantized differential data;
(C) predictive data generating means for calculating said predictive data using said quantized differential data output from said quantizing means, and supplying it to said differential data calculating means; and
(D) encoding means for outputting coded data having code lengths corresponding to values of the quantized differential data output of said quantizing means, said encoding means assigning code lengths to the coded data in which assigned code lengths at the +side of values of the quantized differential data and assigned code lengths at the −side thereof are symmetric relative to a center of the quantized differential data which is other than "0".
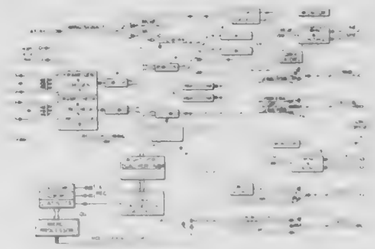
4,797,654

DATA FORMAT CONVERSION CIRCUIT

John S. Young, Scottsdale; Peter Kruis, Glendale, and William D. Blewitt, Phoenix, all of Ariz., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed May 1, 1987, Ser. No. 44,617
Int. Cl.⁴ H03M *7/00*
U.S. Cl. 341—50 **15 Claims**

1. A data format conversion circuit for an ISDN system for high-speed conversion between T-carrier format data channels and ISDN format data channels, said data format conversion circuit being operated to store said ISDN data channels in a memory for subsequent transmission, said data format conversion circuit comprising:
timing and control means connected to said ISDN system, said timing and control means being operated to produce a load signal corresponding to each of said ISDN data channels transmitted from said ISDN system and said timing and control means being further operated to produce a once per channel signal corresponding to a number of bits contained with each of said ISDN data channels;
selecting means connected to said timing and control means, said selecting means being operated in response to said load signal and to said once per channel signal to produce an enabling signal for storing each of said ISDN data channels which include valid ISDN format data for conversion to said T-carrier format data channels;
first address generation means connected between said selecting means and said memory, said first address generation means being operated in response to said enabling signal to sequentially produce storage addresses for each of said converted T-carrier data channels, said first address generation means being further operated to produce counts modulo 24 for a predefined number of frames of said T-carrier data channels;
said selecting means being further operated to produce a second load signal;



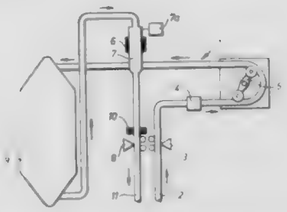
counting means connected to said selecting means, said counting means being operated in response to said second load signal to produce T-carrier data channel counts in the range of 0 to 191 and said counting means being further operated to produce frame counts in the range of 0 to 23 providing for an extended superframing T-carrier format; and
second address generation means connected between said counting means and said memory, said second address generation means being operated in response to said T-carrier channel counts and to said frame counts (modulo 32) to produce contiguous memory addresses (modulo 24) for storing said data channels corresponding to said channel and frame counts.

4,797,655

DETECTOR SYSTEM FOR MONITORING A FLUID CONTAINING TUBE

Carl-Henry Orndal, Eslov; Bengt-Ake G. Gummesson, Bara, and Bjorn-Inge Ericson, Lund, all of Sweden, assignors to Gambro AB, Sweden

Filed Mar. 23, 1987, Ser. No. 29,252
Claims priority, application Sweden, Mar. 24, 1986, 8601354
Int. Cl.⁴ G08B *19/00*
U.S. Cl. 340—521 **15 Claims**



1. Apparatus for monitoring a fluid flow system including a tube through which fluid is intended to flow compriaing mounting means for mounting said tube at a predetermined location, transmitting means for transmitting a signal through

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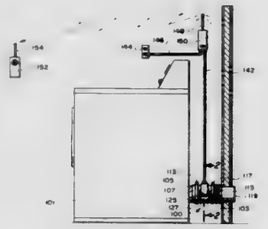
said predetermined location, receiver means for receiving said signal after it has passed through said predetermined location, and sensing means comprising comparator means for comparing said signal received by said receiver means with a first predetermined reference signal for determining whether or not said tube is mounted at said predetermined location and with a second predetermined reference signal for determining whether or not said fluid is contained within said tube, whereby both said determinations can be made on the basis of the same signal received by said receiver means.

4,797,656

APPLIANCE PAGING SYSTEM

Charles N. Keppler, 498 Huntington Ave., Ventura, Calif. 93004

Continuation-in-part of Ser. No. 7,905, Jan. 28, 1987, abandoned. This application Jan. 21, 1988, Ser. No. 146,714
Int. Cl.[4] G08B *1/08*
U.S. Cl. 340—539 13 Claims



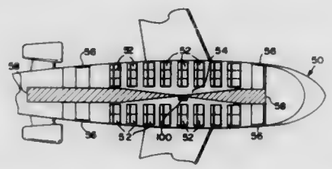
1. A humidity sensing unit for a clothes dryer comprising in combination:
an adaptor having an inlet end adapted for sealing attachment to an exhaust air fitment of a laundry dryer;
a humidity sensing unit mounted on said adaptor with a sensor element disposed within the adaptor for developing a signal indicative of moisture content of the exhaust air leaving the dryer;
a transmitter for receiving and broadcasting said signal; and
a hand-held receiver for receiving said broadcast signal and for generating an audible or visual signal indicative of an end of a cycle of drying.

4,797,657

PORTABLE SELF-CONTAINED INTRUSION DETECTOR FOR PASSENGER AIRCRAFT

Mark A. Vorzimmer, Houston, and John Beardslee, The Woodlands, both of Tex., assignors to Instant Security Systems, Inc., Houston, Tex.

Filed May 27, 1987, Ser. No. 54,520
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—541 17 Claims



1. An intrusion detector for passenger aircraft, comprising:
a portable housing adapted to be hand carried into a detection zone within the aircraft;
a battery disposed in the housing, the battery being connected to power the detector apart from connection to a power source in the aircraft;
at least one detection device including an infrared motion sensor, disposed within the housing and operative to detect activity in the detection zone; and
a control means connected to the at least one detection device, the control means also being connected to activate at least one of an indicator and a signaling means when said activity is detected, the control having a delay feature operable for at least temporarily disabling the intrusion detector such that an authorized individual can temporarily occupy the detection zone without triggering the control means.

4,797,658

ARTICLE SURVEILLANCE MARKER CAPABLE OF BEING DEACTIVATED BY RELIEVING THE RETAINED STRESS THEREIN AND METHOD AND SYSTEM FOR DEACTIVATING THE MARKER

Floyd B. Humphrey, Meredith, N.H., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Division of Ser. No. 761,611, Aug. 1, 1985, Pat. No. 4,686,516, which is a continuation-in-part of Ser. No. 675,005, Nov. 26, 1984, Pat. No. 4,660,025. This application Jul. 13, 1987, Ser. No. 72,355
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—551 14 Claims



1. An electronic surveillance system deactivatable marker comprising a component with retained mechanical stress which is responsive to incident magnetic energy for causing an associated article surveillance system to render an output alarm and is characterized by being deactivatable so as not to render an output alarm upon being relieved of said retained mechanical stress.

4,797,659

METHOD AND A UNIT FOR SYNCHRONIZING BURGLARY DETECTORS

Stig K. Larsen, Roskilde, Denmark, assignor to Anton Security Denmark A/S, Roskilde, Denmark

Filed Jan. 9, 1987, Ser. No. 1,698
Claims priority, application Denmark, Jan. 27, 1986, 395/86
Int. Cl.[4] G08B *13/24*
U.S. Cl. 340—572 7 Claims



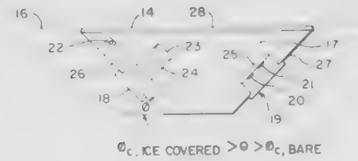
1. In a system for detecting passage of a marker on an article through an area, the system comprising transmitter and receiver means for alternately transmitting a signal and receiving another, responsive signal from the marker, if in the area during the transmitting, an improved synchronization method, comprising:
providing with a transformer a galvanic separation between the transmitter and receiver means and power mains therefor, said power mains having a power wave; and
synchronizing the transmitter and receiver means directly to the power wave of the power mains, whereby adjacent systems may be synchronized to each other without other, cable connection therebetween or distortion from the transformer.

4,797,660

PHOTOELECTRIC ICE ACCUMULATION MONITOR USING DUAL DETECTORS

Robert G. Rein, Jr., 3106 128th N.E., Bellevue, Wash. 98005

Filed Mar. 3, 1987, Ser. No. 21,343
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—583 30 Claims



1. An ice accumulation monitor for detecting the formation of ice on a surface and measuring the amount of ice accumulated, comprising:
(a) a prism that is transparent to radiation emitted by an emitter and with one surface of the prism exposed to ice accumulation and this surface positioned in the same plane as the surface on which ice accumulation is to be measured;
(b) an emitter of pulsed electromagnetic radiation with means for maintaining the emission intensity independent of temperature, which emitter is oriented so that at the exposed prism surface the emitted radiation is totally reflected within the prism when the exposed prism surface is bare, but at the exposed prism surface the emitted radiation is only partially reflected within the prism when the exposed prism surface is covered with ice and the balance of the emitted radiation is transmitted into the ice layer and reflected at the subsequent ice-air interface;
(c) two radiation detectors located to detect radiation reflected within the prism with one radiation detector located closer to the exposed surface than the other radiation detector; and
(d) a temperature sensor located in the transparent prism near the exposed surface, whereby upper and lower bounds of ice accumulation are measured by comparing outputs from each radiation detector with a calibration curve for that radiation detector.

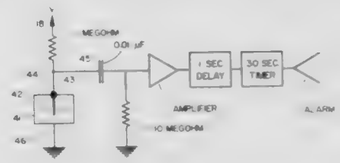
4,797,661

MOTION SENSING DEVICE

Wallace F. Wiley, Prairie Village, Kans., assignor to Robert Hooke Memorial Laboratories, Inc., Prairie Village, Kans.

Filed Aug. 31, 1987, Ser. No. 91,447
Int. Cl.[4] G08B *21/00*; G01C *9/06*; G01P *15/00*
U.S. Cl. 340—664 33 Claims

1. A device adapted to sensing motion when activated by passage of an electric current between two electrodes comprised of a container partially filled with a mobile, conductive liquid and first and second electrodes in contact with said conductive liquid with at least said second electrode being partially immersed in said conductive liquid, the immersed



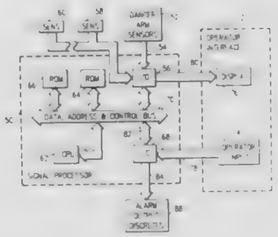
portion of said second electrode receiving the electric current from above the surface of the liquid through a resistor.

4,797,662

WIRE PREBREAK/BREAK DETECTOR

Randall C. Graham, Nashville, and Jeffrey S. Smith, Franklin, both of Tenn., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Sep. 25, 1987, Ser. No. 101,231
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—677 1 Claim



1. A wire break sensor, comprising:
a plurality of rods having sheaves on an end of each;
a support structure for supporting an other end of each rod and for pivoting each supported end on an axis;
a plurality of sensors, each responsive to the position of a corresponding one of said plurality of rods for providing a position signal having a magnitude indicative thereof;
an operator input device, responsive to operator initiated inputs for providing input signals indicative of wire gauge; and
a signal processor, responsive to said position signals and to said input signal, for retrieving a pair of boundar signals in response to said input signals for comparing the magnitudes of said position signals to said boundary signals and for providing an alarm signal whenever any one of said position signal magnitudes is greater or less than the magnitudes of both of said pair of boundary signals.

4,797,663

PORTABLE SECURITY MONITOR AND TIME RECORDING

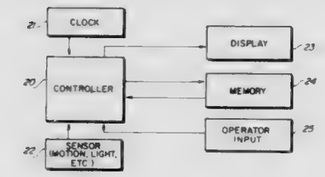
Jess Rios, Tucson, Ariz., assignor to Tekmate Industries Inc., Tucson, Ariz.

Filed Mar. 12, 1987, Ser. No. 25,174
Int. Cl.[4] G08B *13/08, 13/18, 23/00*
U.S. Cl. 340—691 22 Claims

1. An occurrence monitor comprising:
a. a sensor means for generating an electrical signal upon the occurrence of a preselected physical phenomenon within the environment surrounding the occurrence monitor; and,
b. a palm sized monitor having:

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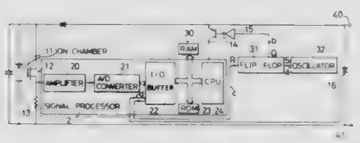
1 a clock means,
2. a connector means for connecting/disconnecting said sensor means to said palm sized monitor,
3. an electronic memory means,
4. a controller means in communication with said clock means, said sensor means, and said electronic memory



means, said controller means recording in said electronic memory means, the time as defined by said clock means, of any electrical signal received from said sensor means via said connector means, and,
5. fastening means permitting said palm sized monitor to be coupled to and decoupled from a selected object.

4,797,664
ENVIRNMENTAL ABNORMALITY DETECTION APPARATUS

Tatsuo Kimura, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan
Filed Sep. 14, 1987, Ser. No. 95,885
Claims priority, application Japan, Sep. 29, 1986, 61-228389
Int. Cl.[4] G08B *23/00*; G05B *9/02*
U.S. Cl. 340—693 **4 Claims**

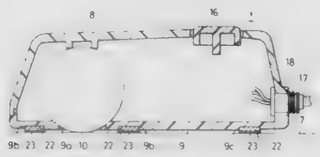


1. An environmental abnormality detection apparatus comprising:
a detection means for detecting a selected environmental abnormality;
a signal processor means connected to said detection means for processing signals therefrom for determining whether an environmental abnormality has occurred and for generating an alarm signal when the abnormality occurs, said signal processing means also including means for generating an end of processing signal; and
a power source control means for intermittently supplying power to said signal processor and for stopping power supply thereto upon receipt of said end of processing signal from the signal processor.

4,797,665
X-Y POSITION INPUT DEVICE

Yuichi Ida, and Junichi Hosogoe, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Feb. 6, 1986, Ser. No. 826,860
Claims priority, application Japan, Feb. 6, 1985, 60-14653
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—710 **4 Claims**

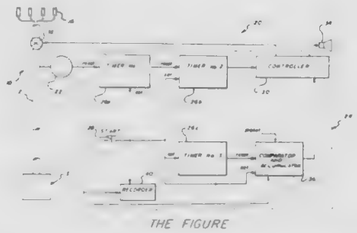
1. An input device movable on a base surface comprising a casing with an opening provided in one part of its bottom surface, a globe held rotatably in the casing with a portion thereof projecting through the opening to engage and roll on the base surface when the input device is moved thereon,
the improvement comprising:
said bottom surface of the casing having an annular groove (9*b*) formed therein surrounding the opening in said one part thereof through which the globe portion projects, a cushion member bonded in said annular groove, and a slidable sheet bonded to the cushion member, and
said bottom surface further having a rectangular groove (9c) formed in another part thereof spaced from said opening



in said one part, a corresponding cushion member bonded in said rectangular groove, and a slidable sheet bonded to said cushion member,
wherein said slidable sheets bonded to said cushion members in said annular groove and said rectangular groove project downward from the bottom surface of the cashing for making resilient, noiseless, low-friction sliding contact when said casing is moved on the base surface, and said slidable sheet bonded to said cushion member in said annular groove prevents foreign material from becoming adhered to said globe projecting through said opening.

4,797,666
METHOD AND APPARATUS FOR MONITORING FLUID FLOW

Carlton J. Baxter, 74 Sawmill Rd., Penfield, N.Y. 14526, and David C. Baxter, 93 Carlisle St., Rochester, N.Y. 14615
Filed Sep. 16, 1986, Ser. No. 908,015
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—606 **12 Claims**



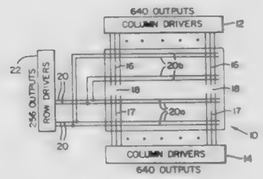
THE FIGURE

8. In a fluid supply system, a method of monitoring fluid flow so as to produce a control signal upon determining that either an abnormal flow condition or a catastrophic flow condition exist in such supply system, said method comprising the steps of:
(1) continuously sampling the flow of fluid in said supply system and measuring the flow volume;
(2) during a preselected time period, determining if the flow is less than a minimum preselected flow during a preselected shorter time period;
(3) producing a control signal indicative of an abnormal flow condition if the flow determined in step (2) is not less than the minimum preselected flow volume during such preselected shorter time period;
(4) comparing an accumulated running total of the flow in a third preselected time period with a predetermined maximum flow for such period; and

(5) producing a control signal indicative of a catastrophic flow condition if such accumulated running total flow exceeds such predetermined maximum flow.

4,797,667
SPLIT SCREEN ELECTRODE STRUCTURE FOR TFEL PANEL

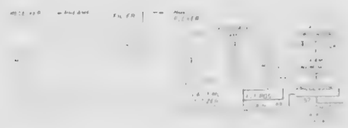
Brian J. Dolinar, Lake Oswego; Robert T. Flegal, Beaverton, and Larry L. Lewis, Portland, all of Oreg., assignors to Planar Systems, Inc., Beaverton, Oreg.
Division of Ser. No. 729,974, Apr. 30, 1985, Pat. No. 4,739,320.
This application Nov. 2, 1987, Ser. No. 116,630
Int. Cl.[4] G09G *3/30*
U.S. Cl. 340—781 **3 Claims**



1. An electrode structure for an AC matrix-addressed thin film electroluminescent (TFEL) panel comprising:
(a) a top set of scanning electrodes located in an upper half of said panel and extending from a first edge thereof across the panel to anm opposite edge;
(b) a bottom set of scanning electrodes located in a bottom half of the panel and extending from said first edge of the panel across the panel to said opposite edge;
(c) a top set of data electrodes located in said upper half of said panel extending at right angles to said top set of scanning electrodes for a distance slightly less than halfway across said panel;
(d) a bottom set of data electrodes located in a bottom half of said panel extending at right angles to said bottom set of scanning electrodes for a distance of slightly less than halfway across said panel;
(e) scanning electrode driver means for simultaneously energizing scanning electrode pairs, each pair comprising an electrode from said top set and an electrode from said bottom set, in line-by-line fashion; and
(f) data electrode driver means for simultaneously energizing selected ones of said top and bottom data electrode sets as each said scanning electrode pair is energized.

4,797,668
ACOUSTIC WELL LOGGING SYSTEM HAVING MULTIPLEXED FILTER DIGITIZING

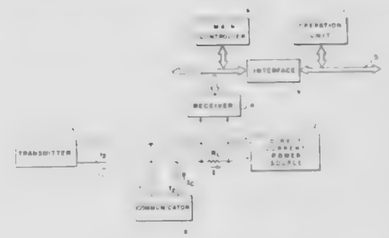
Mark D. Zimmer, Katy, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Dec. 12, 1986, Ser. No. 941,133
Int. Cl.[4] G01V *1/40*
U.S. Cl. 340—857 **10 Claims**



1. A downhole well logging system including a fluid tight sonde sized and adapted for passage through a well bore for use in acoustic well logging for acoustic travel time measurement and full waveform acoustic signal processing comprising:
means housed in said sonde for generating a high frequency content acoustic signal having a peak energy content in the frequency range from 10 to 15 kilohertz and having several propagation modes in a well borehole;
means housed in said sonde and spaced longitudinally from said signal generating means by at least an 8 to 10 foot spacing distance, for detecting arriving acoustic energy signals propagated through a well borehole and for generating analog electrical signal waveforms representative thereof;
selectable analog high pass filter means housed in said sonde for supplying, in response to a control signal, selectably filtered representations of said representative analog waveform electrical signals as input to an analog to digital converter for conversion to digital form; and
means housed in said sonde and responsive to signals output from said analog to digital converter, for generating said control signal to said selectable filter means, said control signal generating means having digital logic means for detecting the arrival of compressional wave acoustic modes at said detecting means and generating a control signal to change the frequency response of said selectable filter means subsequent thereto from a higher frequency cutoff limit to a lower frequency cutoff limit.

4,797,669
RECEIVER

David L. McGowan, III, Warminster; Arthur M. Olsen, Feasburg, and Steven M. Oxenberg, Richboro, all of Pa., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 1, 1986, Ser. No. 913,925
Int. Cl.[4] G08C *15/00*
U.S. Cl. 340—870.40 **15 Claims**



1. A receiver for receiving a digital reception signal defining a measured value, the receiver being connected to a transmission line used for transmitting a digital command signal from a communicator, the digital reception signal from a transmitter, and a response signal responding to the command signal comprising
time defining means connected to the transmission line and discriminating that a nonsignalling state of said transmission line has continued for a predetermined period by producing an output signal indicative thereof, and
control means connected to receive said output signal and validating a specific period of the reception signal received after the discrimination operation of said time defining means.

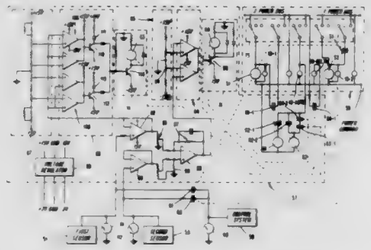
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,670

REDUNDANT SIGNAL SELECTOR SYSTEM

Luther L. Joyner, Forest, Va., assignor to Joyner Engineers & Trainers, Inc., Forest, Va.

Filed Jan. 30, 1987, Ser. No. 11,764
Int. Cl.[4] G05B 23/02; G08B 23/00
U.S. Cl. 340—825.170 41 Claims



1. A signal selector system which selects a signal for control of various operating parameters in a process facility, comprising:

a display;

first and second sensing means each for providing a signal representative of a single controlled parameter, the first signal being preferred as a control signal for the parameter;

switch means on said display for manually selecting between the first and second signals or for selecting an automatic selection mode;

means for determining if said first signal is unacceptable including means for comparing said first and second signals to one another and to a first pre-selected threshold value and for comparing said first signal to a second threshold value;

means for automatically switching to said second signal when said first signal is unacceptable when the switch means is in the automatic selection mode; and

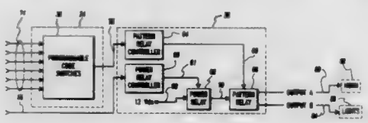
means on said display for indicating when said determining means indicates that at least the first pre-selected threshold value has been exceeded.

4,797,671

MOTOR VEHICLE LOCATOR SYSTEM

Robert P. Toal, Jr., 3545 Carman Road, Schenectady, N.Y. 12303

Filed Jan. 15, 1987, Ser. No. 3,644
Int. Cl.[4] H04Q 7/00; H04B 7/00
U.S. Cl. 340—825.490 18 Claims



1. A programmable operator actuated motor vehicle locator system, said system comprising:

transmitter means for generating a transmission signal;

receiver means associated with a motor vehicle for outputting a trigger signal in response to said transmission signal;

a pattern generator connected to the output of said receiver means;

adjustable programming means associated with said generator for operator preselection of a pattern signal comprising a predefined number of signal units, each of said signal units having one of two different values, said programming means being readily adjustable to allow for operator definition of each signal unit's value, said preselected pattern signal being outputted by said associated pattern generator and programming means in response to said trigger signal; and

translation means responsive to the output of said associated pattern generator and programming means for converting said operator selected pattern signal into a unique, motor vehicle emitted audible/visual location signal comprising a train of discrete pulses, each pulse of said train comprising an audible or visual signal, each of said signal units being sequentially converted to either an audible or visual signal pulse by said translation means in predefined relation to the operator assigned value thereof, whereby the locator system allows an operator to easily select and modify individual signal pulses within the train of discrete audible or visual signals emitted by the system once activated.

4,797,672

VOICE NETWORK SECURITY SYSTEM

Paavo T. Kousa, Campbell, Calif., assignor to Octel Communications Corp., Milpitas, Calif.

Filed Sep. 4, 1986, Ser. No. 904,085
Int. Cl.[4] H04L 9/02
U.S. Cl. 340—825.300 3 Claims



1. A communication security system comprising

a base station,

one or more node stations,

means for transmitting a first signal from said base station to a first one of said node stations,

said first node station responsive to said first signal for transmitting a second response signal to said base station,

said base station responsive to said second response signal for generating a node encryption key which includes a node identification number of said first node station and an arbitrary number,

said base station further including means for generating a first random number, means for encrypting said first random number with said node encryption key, and means for transmitting said first encrypted random number to said first node station,

said first node station including means for decrypting said encrypted random number to recover said first random number to act as a seed for subsequent encrypted transmissions to said base station, means for generating a second random number, means for encrypting said second random number with an encoding key based upon said decoded first random number to form a second encrypted random number, and means for transmitting said second encrypted number to said base station,

said base station including means for decoding said transmitted second encrypted number to recover said second random number to act as a seed for subsequent encrypted transmissions to said first node station.

4,797,673

DRIVER ALERTING DEVICE

Anthony E. Dombrowski, Omaha, Nebr., assignor to Steven F. Sommers, Omaha; Bruce E. Schreiner, Grand Island; Land Paving Company, Omaha; Omni Holding Company, Omaha; Jerry Rouk, Omaha and Robert Wichser, Omaha, all of, Nebr.

Continuation of Ser. No. 895,535, Aug. 13, 1986, abandoned, which is a continuation of Ser. No. 646,838, Sep. 4, 1984, abandoned, which is a continuation-in-part of Ser. No. 579,160, Feb. 10, 1984, abandoned. This application Apr. 1, 1988, Ser. No. 178,778
Int. Cl.[4] G08G 1/00
U.S. Cl. 340—904 9 Claims



1. An alarm device for construction equipment, comprising, a transceiver comprising a micro-wave radar device using the doppler shift principle to detect the presence of a target within the transceiver range,

means for supporting said transceiver at the rearward end of the equipment for directing the wave output thereof rearwardly of the equipment,

means for supplying to said receiver return wave signals from any target within the transceiver range, an intermediate frequency amplifier operatively connected to said transceiver, said amplifier being operative to amplify and shape said return wave signals, an indicator on the equipment,

means for electrically connecting said indicator to said transceiver for activation of said audible indicator in response to detection by said transceiver of return wave signals from any target within the transceiver range, and

means for operatively electrically connecting said transceiver to means associated with the transmission of the equipment whereby said transceiver will only be activated in response to the transmission of said equipment being placed in reverse gear, said device being substantially unaffected, in operation, by varying weather conditions.

4,797,674

FLIGHT GUIDANCE SYSTEM FOR AIRCRAFT IN WINDSHEAR

Terry L. Zweifel, Phoenix, and David A. Johnson, Chandler, both of Ariz., assignors to Honeywill Inc., Minneapolis, Minn.

Filed Feb. 28, 1986, Ser. No. 834,729
Int. Cl.[4] G08B 23/00
U.S. Cl. 340—968 27 Claims

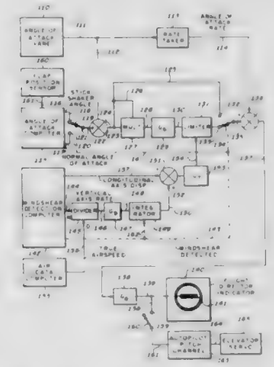
1. A method for providing a flight command signal for optimizing the flight path of an airborne aircraft encountering a windshear condition, comprising the steps of:

(a) providing a signal proportional to true air speed rate,

(b) providing a signal proportional to a vector rate of change of the windshear condition,

(c) providing a signal proportional to an angle of attack,

(d) deriving an error signal representative of a desired change in air speed rate by applying said angle of attack signal to limit said vector rate signal whereby as the difference between actual angle of attack and stick shaker angle of attack decreases, the vector rate signal decreases,



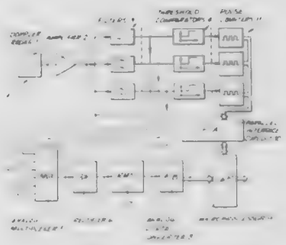
(e) algebraically subtracting said true air speed rate signal from said error signal to derive said command signal.

4,797,675

PROCEDURE FOR COUNTING MOVING OBJECTS AS THEY STOP

Seppo Ovaska, Hyvinkää, Finland, assignor to Elevator GmbH, Baar, Switzerland

Continuation of Ser. No. 740,302, Jun. 5, 1985, abandoned, which is a continuation of Ser. No. 555,479, Nov. 28, 1983, abandoned, which is a continuation of Ser. No. 246,624, Mar. 23, 1981, abandoned. This application Apr. 23, 1987, Ser. No. 41,633
Claims priority, application Finland, Mar. 27, 1980, 800954
Int. Cl.[4] G01S 13/56
U.S. Cl. 342—28 13 Claims



1. A procedure for counting moving objects as they slow and stop, comprising the steps of:

monitoring the movements and stopping of the objects, by use of at least one Doppler radar module directed at the objects and which provides an output signal;

identifying changes of velocity of the objects by said radar output signal R.M.S. amplitude changes and Doppler radar signal pulses derived from said radar output signal; and

calculating the number of objects slowing and stopping after said velocity changes occur from the magnitude of the radar output signal R.M.S. amplitude changes taking place during slow-down of the objects and from the number of Doppler radar pulses recorded.

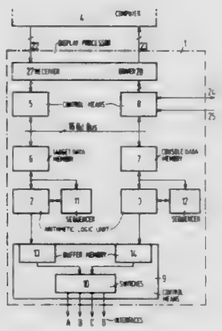
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,676

SURVEILLANCE RADAR SYSTEM

Norbert Koehnsen, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 13, 1987, Ser. No. 72,392
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1986, 3626035
Int. Cl.[4] G01S *7/08, 7/22;* G06F *15/626;* G09G *1/14*
U.S. Cl. 342—176 7 Claims



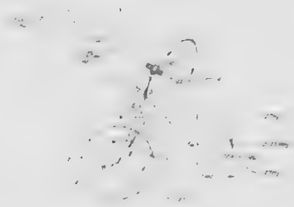
1. A surveillance radar system comprising, a plurality of picture screens mounted in consoles and selectable to display different graphics data from a display processor which receives graphics data, such as target data, console-associated data, background information data in the form of lines, ciroles, texts, traces or the like, alarm reports and interface test data from a computer and edits these data upon receipt of individual console requests, and, after editing, forwards them by way of a plurality of output interfaces which are referred to as refresh channels to the console picture screens for display, characterized in that first and second arithmetic logic units (2, 3) operated in parallel are provided in the display processor (1), said first logic unit (2) editing the target data and said second logic unit (3) editing the console-associated data and background information data; the data transfer from the computer (4) to the arithmetic logic units (2, 3) is executed by a separate control means (5) which stores the target data in a target data memory (6) connected to input of said first logic unit (2) for processing the target data and storing the console-associated data and background information data in a console data memory (7) connected to input of said second the logic unit (3) for processing these data; a separate control means (8) is provided for processing information between aid first and second arithmetic logic units (2, 3) and said individual consoles, said separate control means (8) assuring that console status words, for example, current settings of scale and decentering of all consoles are available in said target and said console data memories (6, 7) for coordinate transformation; and a third control means (9) provided at the output side in said display processor (1), said third control means (9) comprising an electronic switch (10) for driving the output interfaces (A, B, C, D) allocated to the refresh channels, output interfaces being supplied with the data edited in said target data first logic unit (2) and in said console data second logic unit (3) and said output interfaces providing these data in coordinated form for forwarding to the respective refresh channels.

4,797,677

METHOD AND APPARATUS FOR DERIVING PSEUDO RANGE FROM EARTH-ORBITING SATELLITES

Peter F. MacDoran, Pasadena, and Donovan J. Spitzmesser, La Crescenta, both of Calif., assignors to Istac, Incorporated, Pasadena, Calif.

Continuation-in-part of Ser. No. 437,819, Oct. 29, 1982, abandoned. This application May 19, 1986, Ser. No. 865,958
Int. Cl.[4] H04B *7/185*
U.S. Cl. 342—352 5 Claims



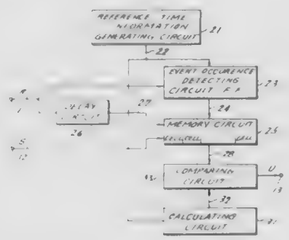
1. A method for deriving pseudo range from a user to earth-orbiting, signal-transmitting satellites that transmit a radio frequency signal having a component at a given frequency, the method comprising the steps of:
- intercepting the signal from each satellite at the position of the user;
- recovering the component from the intercepted signal from each satellite;
- measuring the phase of the component;
- measuring the frequency of the component;
- deriving from the measured phase and frequency of the intercepted signal component from each satellite a fractional phase;
- deriving from the measured frequencies from at least two satellites a Doppler range value;
- dividing the Doppler range value by the wavelength of the given frequency to produce an integer and a remainder; and
- adding the integer to the fractional phase.

4,797,678

DEVICE FOR PREDICTING UNIQUE WORD DETECTION POSITIONS IN A TDMA STATION BY USING LATEST VALID DETECTION POSITIONS

Akira Tsuji, and Haruki Takai, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jun. 13, 1985, Ser. No. 744,377
Claims priority, application Japan, Jun. 14, 1984, 59-123199
Int. Cl.[4] H04B *7/185*
U.S. Cl. 342—352 4 Claims



1. A receive position predicting device for use in a receiving arrangement of an earth station of a time division multiple access satellite communication network in predicting, in response to a sequence of burst identifying flags identifying those time slots repeatedly in time division multiple access frames at which bursts are received and in response to a unique word detection pulse indicative of detection of a unique word in a burst received as a reception burst in a current frame of said time division multiple access frames, a position of detection of the unique word in another burst which corresponds to said reception burst in a next succeeding frame of said time division multiple access frames, said device comprising:
- reference time information generating means for generating a sequence of reference patterns representative of reference time information along each time division multiple access frame;
- event occurrence detecting means coupled to said reference time information generating means and responsive to said unique word detection pulse for detecting an instant of occurrence of said unique word detection pulse to produce one of said reference patterns as a selected pattern that represents said instant;
- memory means coupled to said event occurrence detecting means and responsive to said sequence of burst identifying flags used as an address signal and to said unique word detection pulse used as a write pulse for memorizing said selected pattern as a memorized pattern and responsive to the sequence of burst identifying flags of said next succeeding frame for producing said memorized pattern as a read-out pattern;
- calculating means coupled to said reference time information generating means for adding an offset amount to the reference time information represented by the respective reference patterns to produce a sequence of offset representing patterns representative of offset time information; and
- comparing means for comparing said read-out pattern with said offset representing patterns to produce a receive position predicting pulse predictive of said position of detection when said read-out pattern is coincident with one of said offset representing patterns.

4,797,679

RADIO DIRECTION-FINDING USING TIME OF ARRIVAL MEASUREMENTS

Anthony R. Casdin, Horley; Alan F. Dadds, Hartfield, and Peter Mallinson, Redhill, all of England, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1987, Ser. No. 59,730
Claims priority, application United Kingdom, Jun. 10, 1986, 8614107; Jun. 10, 1986, 8614108
Int. Cl.[4] G01S *1/24*
U.S. Cl. 342—387 29 Claims



1. A method of determining the direction of incidence of electromagnetic wave signals from a distant source from the time of arrival of the leading edge of the wave signals, wherein the method comprises:
- receiving said signals at a plurality of mutually spaced wave-receiving elements,
- detecting the respective instantaneous amplitude of the signal received at each element,
- measuring the times at which the detected amplitudes of wave signals received respectively at at least two of said elements first exceed a minimal threshold value such that signals can be satisfactorily distinguished from noise and which is substantially less than the minimum peak value of signals whose direction of incidence is to be determined by said method, the time being measured in such a manner that the measured time is generally unaffected by multi-path propagation,
- determining the difference between the measured times in respect of one pair or of a plurality of pairs of said elements, wherein the two elements of said one pair or of each of at least two of said plurality of pairs are sufficiently close together that the length of the interval of time within which signals from the same source must arrive at the two elements is so short that there is a high probability in operation that no signals from another source will arrive in that interval, and
- deriving a representation of the direction of incidence from the time difference(s) utilising the relationship

$$\cos \alpha = c\delta t/d$$

where α is the angle between the direction of incidence of the signals and the line joining the two elements of a said pair, d is the distance between those two elements, δt is the time difference in respect of that pair of elements, and c is the free-space velocity of electromagnetic waves.

4,797,680

AIRBORNE ANTENNA PLATFORM

Rollo G. Smethers, Jr., Atlanta, Ga., assignor to Lockheed Corporation, Calabasas, Calif.

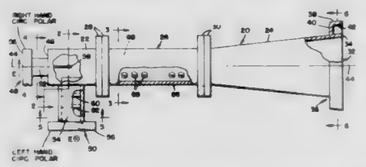
Filed Sep. 16, 1985, Ser. No. 776,264
Int. Cl.[4] H01Q *1/28*
U.S. Cl. 343—705 8 Claims



1. An airborne antenna platform comprising:
- (a) an aircraft having wing structural elements for the attachment of external equipment;
- (b) an antenna housing having a substantially circular configuration and a substantially elliptical cross-section, said antenna housing cross-section having a major axis L and a minor axis D, the ratio of L to D being on the order of about 2.6 to 1;
- (c) a plurality of attachment members for flexibly affixing said antenna housing to said aircraft, said attachment members comprising:
  - (1) a pair of fasteners having a predetermined length such that the distance of the antenna housing beneath the wing of said aircraft minimizes the possibility that said housing will contact the ground during takeoff or landing, each of said fasteners being adapted for pivotal attachment to said wing structural elements and to said housing, said fasteners having at least a load bearing support;
  - (2) strut extensions for attaching said antenna housing to the nose of said aircraft; and
  - (3) fastener means for fastening said antenna housing to the afterbody of the fuselage of said aircraft; and
- (d) an antenna, housed within said antenna housing, for transmitting and receiving electromagnetic energy.

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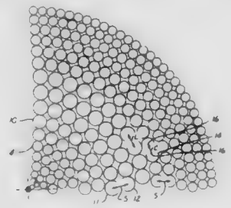
4,797,681
DUAL-MODE CIRCULAR-POLARIZATION HORN
Sidney Kaplan, Los Angeles, and Mon N. Wong, Torrance, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jun. 5, 1986, Ser. No. 871,194
Int. Cl.[4] H01Q *13/02*; H01P *1/161*
U.S. Cl. 343—786 **13 Claims**



11. A dual mode circularly polarized horn radiator comprising:
- means, including a radiating aperture, for radiating circularly polarized electromagnetic radiation, said aperture having a diameter of approximately one free-space wavelength of the radiation. said means for radiating including means for buffering said radiating aperture to improve uniformity in a pattern of the radiation;
- conversion means for providing a conversion between circularly polarized and linearly polarized radiation, said conversion means including a set of phase shift elements spaced apart by one-eighth the guide wavelength of the radiation for conversion between both clockwise and counterclockwise circularly polarized radiation and two orthogonal linearly polarized waves;
- coupling means including a first port and a second port for propagation of respective ones of said linearly polarized waves, said coupling means coupling said linearly polarized waves individually between said conversion means and respective ones of said ports; and
- means within said coupling means for isolating said linearly polarized waves from each other, said isolating means including first and second planar blade structures oriented along axes of respective ones of said ports, said first blade structure comprising a single blade extending along a direction of radiation propagation in said coupling means a distance of one-half of the guide wavelength of the radiation and said second blade structure comprising a pair of coplanar blades positioned along a plane perpendicular to a plane of said blade in said first blade structure, the blades of said second blade structure being of shorter dimension than the blade of said first blade structure, as measured along a direction of wave propagation.

4,797,682
DETERMINISTIC THINNED APERTURE PHASED ANTENNA ARRAY
William N. Klimczak, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jun. 8, 1987, Ser. No. 59,353
Int. Cl.[4] H01Q *21/00*
U.S. Cl. 343—844 **10 Claims**

1. An improved antenna array of the type having a thinned aperture defined by a plurality of radio frequency radiating elements operable over a preselected bandwidth and having a desired gain, said antenna array producing a main lobe signal and side lobe signals within said bandwidth, wherein the improvement comprises:
- the radiating elements being arranged in at least first, second and third groups thereof concentrically disposed about a reference point, said first, second and third groups being respectively spaced at successively greater distances from said reference point with said second group positioned between said first and third groups, the radiating sizes of the elements in said first and third groups being smaller than those of the elements in said second group, whereby to increase the amplitude and directivity of said main lobe



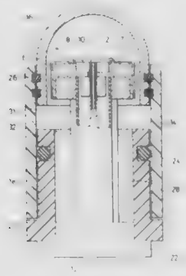
signal and minimize the amplitude of said side lobe signals relative to said main lobe signal.

4,797,683
MULTI-SPECTRAL RADOME
Lester H. Kosowsky, Stamford; Peter E. Raber, Milford, both of Conn., and Brian J. Horais, Oakton, Va., assignors to United Technologies Corporation, Hartford, Conn.
Filed Oct. 1, 1986, Ser. No. 913,898
Int. Cl.[4] H01Q *1/42, 1/28*
U.S. Cl. 343—872 **6 Claims**



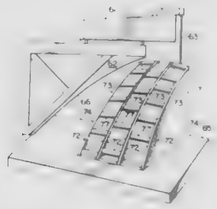
1. A dual radome for permitting the ingress and egree of selected first and second frequency bands of radiation comprising inner and outer layers disposed about means for transmitting and/or receiving electromagnetic radiation in both said first and second frequency bands, in which said inner layer is transmissive to both said first and second frequency bands of radiation, and characterized in that:
- said outer layer is transmissive to at least one of said bands of radiation;
- said outer layer is formed from an abrasion and weather resistant material; and
- said arrangement includes removing means for removing said outer layer, whereby said radome arrangement is operable in a multimode detection system having a first mode in which said radome passes only radiation in said first frequency band through both said inner and outer layers and a second mode in which said outer layer is removed and said radome passes radiation in both said first and said second frequency bands through said inner layer.

4,797,684
WAVEGUIDE-FED MICROWAVE SYSTEM PARTICULARLY FOR CAVITY-BACKED SPIRAL ANTENNAS FOR THE KA BAND
Joel Bernstein, Petach Tikva, and Samuel Spinner, Rishon Lezion, both of Israel, assignors to Elisra Electronic Systems Ltd., Benei Brak, Israel
Filed Jan. 13, 1987, Ser. No. 3,039
Claims priority, application Israel, Jan. 17, 1986, 77635
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—895 **18 Claims**



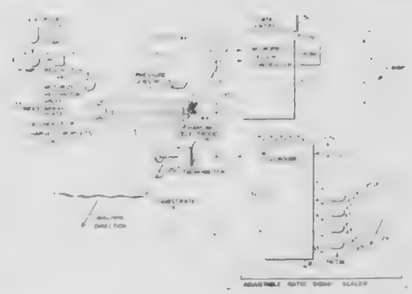
1. A waveguide-fed microwave system designed particularly for the Ka band, comprising:
- a waveguide transmission line;
- a microwave device having a pair of balanced, parallel feed wires separated by a dielectric;
- and a doubled-tapered ridge transformer directly connecting the waveguide transmission line to the balanced, parallel feed wires of the microwave device, said double tapered-ridge transformer comprising a pair of ridges fixed at their outer edges to, and in electrical contact with, the inner face of the waveguide transmission line at opposite sides thereof in alignment with each other and forming a gap between the inner edges of said ridges, said gap being formed with a taper which decreases in width from the waveguide transmission line to the pair of balanced, parallel feed wires, thereby providing a smooth, direct symmetrical transition between said waveguide transmission line and said microwave device.

4,797,685
OFFSET SHAPED ANTENNA REFLECTOR
Michael G. Guler; Sharadchandra D. Patel, both of Melbourne; James K. Conn, Indialantic, and Marcus L. Foster, Palm Bay, all of Fla., assignors to Harris Corp., Melbourne, Fla.
Division of Ser. No. 676,924, Nov. 30, 1984, Pat. No. 4,688,325.
This application Oct. 27, 1986, Ser. No. 923,419
Int. Cl.[4] H01Q *15/16*
U.S. Cl. 343—912 **11 Claims**



1. An antenna reflector, the surface configuration of which is unsymmetric with respect to any axis, made by the method comprising the steps of:
- (a) analyzing the surface configuration of a reflector to be fabricated and, on the basis of the analysis, establishing a geometrical surface of revolution describable about a prescribed axis, at least a portion of said geometrical surface of revolution containing a shape approximating that of the surface configuration of said reflector to be fabricated; and
- (b) engaging a reflector tooling device with material of which the antenna reflector is to be fabricated, and sweeping said reflector tooling device about said prescribed axis about which said geometrical surface of revolution is describable while maintaining engagement of the tooling device with the material, thereby shaping the material into a reflector that conforms with said geometrical surface of revolution and effectively contains said unsymmetric surface configuration.

4,797,686
FLUID JET APPLICATOR FOR UNIFORM APPLICATIONS BY ELECTROSTATIC DROPLET AND PRESSURE REGULATION CONTROL
Joseph P. Holder, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Continuation-in-part of Ser. No. 908,289, Sep. 17, 1986, which is a division of Ser. No. 729,412, May 1, 1985, Pat. No. 4,650,694.
This application Mar. 3, 1987, Ser. No. 21,358
Int. Cl.[4] G01D *15/18*; B05C *11/00*; B05B *5/00*
U.S. Cl. 346—1.1 **23 Claims**



1. A hybrid fluid jet applicator having an orifice array, means for supplying pressurized fluid to said orifice array, and means for selectively charging and deflecting fluid droplets to control the quantity of fluid striking a moving substrate, said hybrid fluid jet applicator further comprising:
- means for controlling said fluid jet applicator to operate in an electrostatic control mode;
- means for sensing when said fluid is being supplied at a predetermined flow rate in said electrostatic control mode and for generating a signal indicative thereof; and
- means, responsive to said signal from said means for sensing, for controlling said applicator to operate in a non-electrostatic control mode and for increasing said flow rate to a level beyond said predetermined rate.

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4,797,687

PATTERNING EFFECTS WITH FLUID JET APPLICATOR

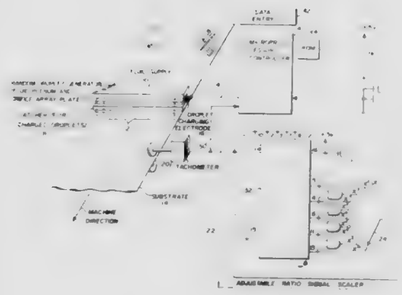
Joseph P. Holder, Greensboro; Michael I. Glean, Burlington; Bobby L. McConnell, and Louis A. Graham, both of Greensboro, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 908,289, Sep. 17, 1986, which is a division of Ser. No. 729,412, May 1, 1985, Pat. No. 4,650,694. This application Mar. 16, 1987, Ser. No. 26,413

The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—1.1 **24 Claims**



1. A method of applying patterns to a moving substrate using an electrostatic fluids jet applicaotr which employs random drop formation processes, said applicator having a linear array of orifices extending along a transverse or cross-machine direction with respect to said substrate motion, means for selectively charging fluid droplets emanating from said orfice array including a single ganged electrode extending in said cross-machine direction, said means for charging fluid droplets operating to simultaneously charge or not charge all fluid droplets then being formed in an electrostatic charging zone disposed downstream of the orifices, said applicator including means for passing droplets onto said moving substrate only during controlled successive print times T, and not passing droplets onto said moving substrate during controlled time intervals between such successive print times, said method of applying patterns comprising the step of:

selecting a predetermined desired patterning effect to be generated from a plurality of distinct patterns which may be generated by said applicator;

setting said print time T to a predetermined value to initiate said desired patterning effect,

simultaneously charging or not charging all fluid droplets in said electrostatic charging zone using said single ganged electrode, and

controlling said electrostatic fluid jet applicator to apply a pattern to said substrate over a substantial length of substrate which pattern is not merely a solid shade by controllably varying at least one of said print times T and said controlled time intervals between print times to generate said desired patterning effect.

4,797,688

MULTI-NOZZLE INK-JET PRINTER

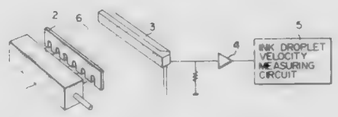
Tatsuya Furukawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 6, 1986, Ser. No. 915,760

Claims priority, application Japan, Oct. 4, 1985, 60-221413

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—75 **40 Claims**



1. A multi-nozzle ink-jet printer comprising:

ejecting means for ejecting a plurality of ink droplets substantially at the same time in parallel in a predetermined direction;

charging means for charging said plurality of ink droplets selectively;

means for producing a deflecting electric field through which said plurality of ink droplets fly through, thereby causing said ink droplets to be deflected depending on an amount of charge carried by each of said ink droplets;

collecting means located at a predetermined distance away from said ejecting means for collecting those of said ink droplets which have not been deflected over a predetermined amount, said collecting means being comprised of an electrically conductive material at least partly for producing a detection signal upon detection of said ink droplets; and

measuring means electrically connected to said collecting means for measuring an average velocity of said plurality of ink droplets based on said detection signal.

4,797,689

ULTRASONIC VIBRATION DRIVING TYPE THERMAL PRINTER

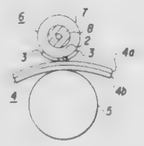
Sadaaki Nanai, Saitama, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1987, Ser. No. 138,626

Claims priority, application Japan, May 25, 1987, 62-127324

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **2 Claims**



1. In a thermal printer in which dye is transferred from a film to a receiver in response to heating including:

a. a thermal head having a plurality of heating elements arranged in a predetermined configuration and selectively energized on the basis of print data;

b. said heating elements being brought into frictional contact with the film having heat transferable color dye for causing the color dye to be transfered from the film to the receiver by means of the heat produced from the selectively energized heating elements; and

c. a platen for supporting the film and the receiver,

i. an improvement in the thermal head comprising:

ii. a vibration device having an elastic member formed on said heating elements, said vibrating device including means for vibrating said elastic member which induces a vibration traveling wave in said heating elements; and

iii. the induced vibration wave in said heating elements causes the film and receiver to move in a predetermind direction.

4,797,690

RIBBON FEED MECHANISM

Masaaki Takita, Ibaraki; Yoshikazu Tsuru, Hirakata; Masaharu Ushikara, Hirakata; Taichi Itoh, Hirakata, and Masami Tanaka, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 29, 1988, Ser. No. 162,409

Claims priority, application Japan, Mar. 4, 1987, 62-49289; Mar. 23, 1987, 62-68409; May 8, 1987, 62-113020

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—105 **9 Claims**



1. A ribbon feed mechanism comprising: first, second and third ribbon feed components fitted on a shaft, a friction plate mounted between said first and second ribbon feed components, a spring mounted between said second and third ribbon feed components, a cylinder which is in contact with said third ribbon feed component at one end thereof, and a ribbon feed presser for pressing the other end of said cylinder toward said third ribbon feed component, wherein said second and third ribbon feed components are mechanically coupled to each other by said spring, the engaging surfaces of said second and third ribbon feed components are toothed, said second and third ribbon feed components are pressed by said spring in a state in which a gap is partially provided between said engaging surfaces, and said third or first ribbon feed component is driven by rotating said first or third ribbon feed component about said shaft.

4,797,691

SIDE PRINTING HEAD ASSEMBLY

Nobuyasu Akiyoshi, and Shigehisa Shimizu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 13, 1987, Ser. No. 85,633

Claims priority, application Japan, Aug. 13, 1986, 61-190008

Int. Cl.[4] G01D *9/42*; **G02B** *6/26*

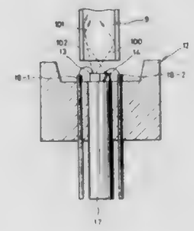
U.S. Cl. 346—108 **6 Claims**

1. A side printing head assembly for printing an optical mark on a photographic material comprising:

a light source comprising a plurality of LED units each of which comprises a plurality of LED elements arranged in a planar array, each of said LED elements emitting one of a plurality of different monochromatic lights;

light guide members as many as said plurality of LED units and superimposed adjacent said array of LED elements of each LED unit, respectively, for directing light from said LED units toward said moving photographic material; and

means for driving the LED elements of each of said plurality of LED units independently of each other so as to provide



a desired color and amount of light for printing said optical mark on said photographic material.

4,797,692

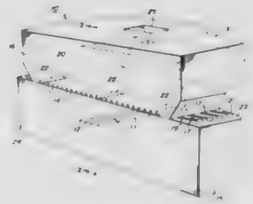
THERMAL INK JET PRINTER HAVING INK NUCLEATION CONTROL

Dale R. Ims, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1987, Ser. No. 92,111

Int. Cl.[4] G01D *15/16*; **C09D** *11/00*

U.S. Cl. 346—140 R **5 Claims**



1. A thermal ink jet printer having ink nucleation control, comprising:

a printhead having an ink supply reservoir, a plurality of capillary filled ink channels, each communicating at one end with the reservoir and at the other end having an opening which serves as a nozzle, each channel having a bubble generating heating element adjacent but upstream from the nozzle;

means for supplying ink to the printhead reservoir, said ink being an emulsion comprising a water-based ink phase and second liquid disperse phase suspended therein, the second liquid disperse phase having a homogeneous nucleation temperature below the heterogeneous nucleation temperature of the water-based ink phase and being in the form of relatively small droplets suspended throughout the water-based ink phase;

means for selectively applying current pulses representative of digitized data to each of the printhead heating elements to generate thermal energy which is transferred to the ink contacting the heating elements thereby causing the ink to produce temporary bubbles which expel and propel droplets to a recording medium; and

said second liquid disperse phase providing a sufficiently high droplet density per unit volume of ink emulsion to initiate nucleation of the ink emulsion contacting the respectively pulsed heating elements at a temperature below that of water-based inks alone and to grow the bubbles with lower pulse power levels.

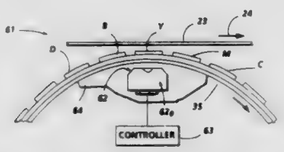
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,693

POLYCHROMATIC ACOUSTIC INK PRINTING

Calvin F. Quate, Stanford, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1987, Ser. No. 57,874
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R **23 Claims**



1. An acoustic ink printer for printing polychromatic images on a recording medium, said printer comprising the combination of

a marking solution containing a plurality of different colored liquid inks, said marking solution having a free surface proximate said recording medium, with said different colored inks appearing on said free surface in a predetermined order;

a single acoustic printhead acoustically coupled to said marking solution for launching converging acoustic waves into said marking solution such that the free surface of said marking solution is radiated with focused acoustic energy, whereby radiation pressure is exerted against said surface;

transport means for sequentially bringing the different colored inks of said marking solution into alignment with said printhead; and

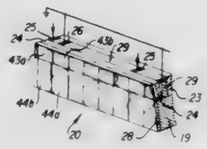
controller means coupled to said printhead means for modulating the radiation pressure exerted against the different colored inks appearing on said free surface in accordance with data representing corresponding color separations of a polychromatic image, whereby droplets of said different colored inks are ejectedon command from said free surface to print said color separations in superimposed registration on said recording medium.

4,797,694

SCAN-MULTIPLEXED LIGHT VALVE PRINTER WITH BAND-REDUCING CONSTRUCTION

John A. Agostinelli, Rochester, and José M. Mir, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1987, Ser. No. 99,954
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—160 **6 Claims**



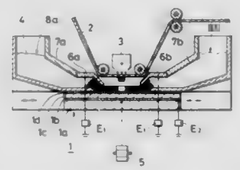
1. In light valve imaging apparatus of the kind having (i) a linear light valve array comprising a plurality of selectively activatible light valve portions having approximately equal linear widths and spaced by intermediate non-transmissive portions, (ii) source means for directing generally uniform illumination through said light valve portions, (iii) means for forming an image of said light valves at a generally linear image zone and (iv) multiplexing means for scan-indexing the image of said light valves along said image zone in a plurality of increments, the improvement comprising source-scan means for scan-indexing the illumination from said source means onto said light valve array in synchronism with the scan-indexing by said multiplexing means.

4,797,695

ELECTROPHOTOGRAPHIC RECORDING SYSTEM

Tetsuro Kouno; Yutaka Kanai, and Tetsuya Fujita, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Division of Ser. No. 874,108, Jun. 13, 1986, abandoned. This application Oct. 2, 1987, Ser. No. 105,503
Claims priority, application Japan, Jun. 13, 1985, 60-128498
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—160 **10 Claims**



1. An electrophotographic recording apparatus comprising: a transparent substrate having front and rear surfaces; a transparent electrode layer disposed on the front surface of the substrate; a photoconductive layer disposed on the electrode layer; a plurality of floating electrode segments disposed separate from but close to one another on the photoconductive layer; feeding means for feeding electrically charged toner onto the floating electrode segments such that the charged toner is electrostatically attracted onto the floating electrode segments; irradiating means for selectively irradiating an optical beam onto the photoconductive layer from the rear surface of the substrate to establish electrical paths extending through the photoconductive layer at the selectively irradiated portions thereof to thereby selectively electrically connect the floating electrode segments to the electrode layer; supplying means electrically connected to the electrode layer for supplying electric charge having opposite polarity relative to the polarity of the charged toner to the selected floating electrode segments through the electrical paths to inject the electrical charge into the toner attracted to the selected floating electrode segments through the surface thereof to thereby reverse the polarity of the toner; and transferring means for directly transferring the polarity-reversed toner to a printing medium to thereby produce a visible image on the printing medium.

4,797,696

BEAM SPLITTING APPARATUS

Paul C. Allen, Beaverton, and Paul A. Warkentin, Aloha, both of Oreg., assignors to ATEQ Corporation, Beaverton, Oreg.

Continuation of Ser. No. 867,205, May 27, 1986, abandoned, which is a continuation of Ser. No. 758,344, Jul. 24, 1985, abandoned. This application Sep. 21, 1987, Ser. No. 98,565
Int. Cl.[4] G03B *41/00*; G02B *27/14*
U.S. Cl. 354—4 **14 Claims**

3. An apparatus for generating a pattern on a workpiece, comprising:

a beam generating means for providing a radiant energy beam;

a beam splitting means optically coupled to said beam generation means comprising a first beam splitting mirror for receiving said beam from said laser and for splitting said beam into two beams, said first beam splitting mirror comprising:

a body;

a first reflective layer covering a first portion of a first surface of said body, said body not covered by said first reflective layer on a second portion of said first surface of said body;



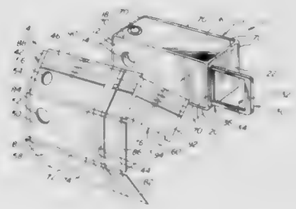
a second reflective layer covering at least a second portion of a second surface of said body, said second reflective layer being generally parallel with said first reflective layer.

4,797,697

MINIATURE 110 CAMERA WITH FOUR-PANEL WRAPPER

William H. Heuer, Arlington Heights, and Hari Matsuda, Evanston, both of Ill., assignors to W. Haking Enterprises Limited, Hong Kong, Hong Kong

Filed Sep. 14, 1987, Ser. No. 96,618
Int. Cl.[4] G03B *13/04, 17/02*
U.S. Cl. 354—75 **23 Claims**



3. A photographic camera adapted to carry a selcected one of several different appearance-distinguishing indicia, comprising:

A. a housing having a rectangular front wall that includes a lens aperture, a rectangular top wall extending from the top of said front wall and carrying a shutter button for tripping a shutter behind said lens aperture, a rectangular bottom wall extending rearwardly from the bottom of said front wall, and at least one side wall extending between the sides of said front, top and bottom walls, said housing also including a viewfinder and mounting means for pivotally mounting said viewfinder on said housing for rotation between positions substantially lying against one of said walls and extending substantially parallel to said front wall; and

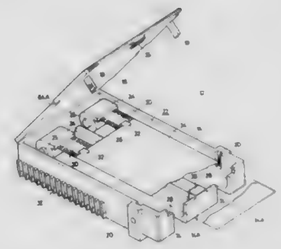
B. a wrapper integrally formed of a sheet of material and presenting inner and outer faces, said inner face carrying an adhesive substance securing said wrapper to said housing by bonding thereto and said outer face being provided with said selected appearance-distinguishing indicia, said wrapper including a front panel, a bottom panel, a top panel and a side panel all carrying said selected indicia, the respective panels conforming to the respective dimensions of said front wall, bottom wall, top wall and side wall and being secured thereto by said adhesive, said front panel having an opening therethrough aligned with said lens aperture to provide clear view for said lens aperture, and said top panel having a passage therethrough aligned with said shutter button for free access to said shutter button.

4,797,698

FILM FEEDING APPARATUS

Kazushige Uesaka, Tokyo; Haruo Takase, Kanagawa; Riuzi Utomo, and Masao Akimoto, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 813,320, Dec. 24, 1985, Pat. No. 4,731,628. This application Dec. 7, 1987, Ser. No. 129,207
Claims priority, application Japan, Dec. 26, 1984, 59-278989; Dec. 26, 1984, 59-278990; Dec. 26, 1984, 59-278991
Int. Cl.[4] G03B *17/36*; G03D *3/08*
U.S. Cl. 354—275 **7 Claims**



1. A magazine employed when a film accommodated within a film cartridge is fed to a developing machine by using a film feeding apparatus, said magazine comprising:

(a) a magazine body for at least partially enclosing said cartridge;

(b) a cover which covers the interior of said magazine body, said interior being exposed when said cover is raised; and

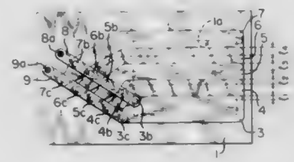
(c) a film delivery port formed in a part of said magazine body, said magazine body having a space extending toward said port along a direction in which said film in drawable from said cartridge whereby said cartridge is movable within said space, while said cover is closed, from a position away from said silm delivery port to a position close to said port.

4,797,699

FOCAL PLANE SHUTTER

Ichiro Nemoto; Ko Aosaki; Atsushi Misawa, and Takahito Otora, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1988, Ser. No. 146,330
Claims priority, application Japan, Jan. 21, 1987, 62-7218[U]
Int. Cl.[4] G03B *9/40*
U.S. Cl. 354—246 **3 Claims**



1. In a focal plane shutter comprising two sets of parallel

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blades positioned between the plane of a lens in a camera and the plane of a film set therein and in a parallel relation thereto, said sets of blades being movable in opposite directions between a first position in which they are unfolded to close a shutter aperature and a second position in which they are folded to form a slit to open said aperature every two adjoining blades in each set of blades having a smaller overlapping width in said first position than in said second position, the improvement wherein said overlapping width in said first position is smaller between two adjoining blades closer to said lens plane than between two adjoining blades closer to said film plane.

4,797,700

DIAPHRAGM DEVICE

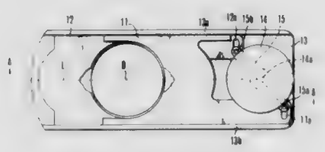
Sadakiko Tsuji, and Hiroyoshi Inaba, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1986, Ser. No. 878,605

Claims priority, application Japan, Jun. 28, 1985, 60-99779[U]; Oct. 30, 1985, 60-243644[U]; Nov. 14, 1985, 60-175530[U]; Nov. 29, 1985, 60-182889[U]

Int. Cl.⁴ G03B *9/02*

U.S. Cl. 354—271.1 **3 Claims**



1. A diaphragm device including two diaphragm blades arranged to be movable in parallel relatively to each other along a common line on a plane at right angle to an optical axis of an optical system and having aperture forming cut portions respectively, said diaphragm device further comprising at least one auxiliary diaphragm blade which is movable along said common line on the same plane as the above-mentioned diaphragm blades and has an aperture forming cut portion of the shape different shape from those of the above-mentioned diaphragm blades and amount of relative movement different from those of the above-mentioned diaphragm blades.

4,797,701

APPARATUS FOR THE REMOTE LOCALIZATION OF RADIOACTIVE SOURCES

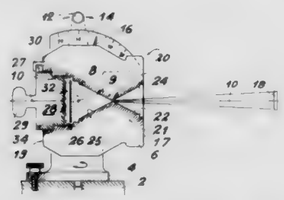
André Launes, Viroflay, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 26, 1985, Ser. No. 813,333

Claims priority, application France, Jan. 4, 1985, 85 00088

Int. Cl.⁴ G03B *17/02;* **G02B** *3/00*

U.S. Cl. 354—288 **12 Claims**



12. A portable apparatus for use within a building for the remote localization of radioactive sources, said apparatus operating by exposure and comprising a pinhole camera whose walls constitute a shield for gamma radiation, said pinhole camera having an opening for the introduction of a first film able to detect gamma radiation emitted by said sources and positioned facing said pinhole, a second light-sensitive film being placed in said pinhole camera after removal of said first film in the same location as was occupied by said first film, said second film being sensitive to visible light, said camera having an openable shutter enabling gamma radiation and light to enter through said pinhole and selectively expose said films when contained therein.

4,797,702

FLASH PHOTOGRAPHING SYSTEM

Nobuyuki Taniguchi, Tondabayashi; Hiroshi Hosomizu, Nara; Kenji Tsuji, Kashiwara; Takanobu Omaki, Sennan, and Masaaki Nakai, Nara, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 819,015, Jan. 15, 1986, which is a division of Ser. No. 614,031, May 25, 1984, Pat. No. 4,573,786. This application Feb. 18, 1987, Ser. No. 16,004

Claims priority, application Japan, May 27, 1983, 58-94605; Jun. 1, 1983, 58-98227; Jun. 4, 1983, 58-100050; Jun. 7, 1983, 58-102407; Jun. 10, 1983, 58-104650; Jun. 13, 1983, 58-106424; Jun. 15, 1983, 58-108484; Jun. 17, 1983, 58-109921; Jun. 18, 1983, 58-109854; Jun. 21, 1983, 58-112326; Jun. 23, 1983, 58-113920; Jun. 23, 1983, 58-113921; Mar. 13, 1984, 59-48435

Int. Cl.⁴ G03B *15/05*

U.S. Cl. 354—413 **6 Claims**



1. A flash photography system having a camera body and an electronic flash device, comprising:

first to third terminals included in said camera body;

fourth to sixth terminals included in said electronic flash device and connectable to said first to third terminals, respectively;

means in said camera body for producing a distinguishing signal to distinguish between first and second modes, wherein data from said camera body is transmitted to said electronic flash device in said first mode and data from said electronic flash device is transmitted to said camera body in said second mode, said producing means being connected to said first terminal;

means in said camera body for generating clock pulses to control data transmission between said camera body and said electronic flash device, said generating means being connected to said first terminal;

means in said camera body for reading data from said electronic flash device in response to the clock pulses, said reading means being connected to said second terminal through which the data is serially transmitted from said electronic flash device;

means in said camera body for serially providing data to be transmitted to said electronic flash device in response to said clock pulse, said providing means being connected to said second terminal;

means in said camera body for generating an initiating signal to cause a production of artificial illuminating light from said electronic flash device, said initiating signal generating means being connected to said third terminal;

means in said electronic flash device, for selecting between the first and second modes in response to said distinguishing signal, said selecting means being connected to said fourth terminal;

means in said electronic flash device for serially providing data to be transmitted to said camera body in response to said clock pulses coming through said fourth terminal, said providing means in said electronic flash device being connected to said fifth terminal;

means in said electronic flash device for reading data from said camera body in response to said clock pulses coming through said fourth terminal, said reading means in said electronic flash device being connected to said fifth terminal; and

means in said electronic flash device for causing the production of artificial illuminating light in response to said initiating signal, said initiating means being connected to said sixth terminal.

4,797,703

MECHANISM FOR LOCATING A FLEXIBLE PHOTOCONDUCTOR RELATIVE TO A PLURALITY OF DEVELOPMENT STATIONS

Vladimir S. Guslits, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1987, Ser. No. 135,861

Int. Cl.⁴ G03G *15/06, 15/01*

U.S. Cl. 355—3 DD **4 Claims**

1. In a reproduction apparatus having a flexible photoconductor, means supporting the photoconductor for movement along a path, the photoconductor having first and second surfaces with the first surface being adapted to have latent images formed thereon, and first and second development stations positioned along the path adjacent the first surface of the photoconductor for applying developer material to the latent images thereon, a mechanism for deflecting the photoconductor into a position for receiving developer material from the first station or the second station comprising:

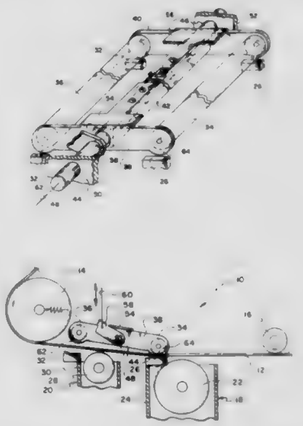
means defining two spaced stops on each of the development stations,

first and second back-up rollers adjacent the second surface of the photoconductor, the rollers being spaced from each other,

means mounting the rollers for conjoint movement about an axis located between the rollers,

means for moving the back-up rollers between (1) a first position wherein the first roller engages and deflects the photoconductor into a position relative to the first development station to permit developer material from such stations to be applied to a latent image on the photoconductor, and (2) a second position wherein the second roller engages and deflects the photoconductor in a position relative to the second development station to permit developer material from the second station to be applied to a latent image on the photoconductor,

means associated with the mounting means for limiting movement of the back-up rollers, the limiting means comprising first means on the mounting means engageable



with the stops on the first development station when the back-up rollers are moved to their first position and second means on the mounting means engageable with the stops on the second development station when the back-up rollers are moved to their second position.

4,797,704

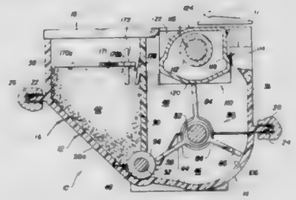
DISPOSABLE DEVELOPMENT STATION HAVING MEANS FOR ASSISTING IN THE FEEDING OF THE TONER SUPPLY AND PREVENTING REPLENISHMENT OF THE TONER SUPPLY

Lawrence A. Hill, Rochester; Michael E. Jacobs, Hearietta; Arthur S. Kroll, Rochester; Ralph E. Williams, Rochester, all of N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1987, Ser. No. 116,200

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—3 DD **6 Claims**



1. A disposable development station for developing latent images on a photoconductor in a copier or printer, the station comprising:

an elongate housing having a plurality of walls defining first and second chambers with one of the walls comprising a vertically orientated separating wall extending longitudinally of the housing and separating the first and second chambers, the first chamber having an opening at the top, the second chamber being adapted to receive a single supply of toner particles for developing latent images;

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means at the bottom of the separating wall for feeding toner particles from the second chamber to the first chamber;

toner applying means located in the first chamber relative to the opening to provide toner particles to a latent image adjacent the opening;

the walls defining the second chamber substantially fully enclosing the second chamber and being permanently secured together so that the supply of toner particles in the second chamber cannot be replenished after it has been fed from the chamber by the feeding means, whereby the useful life of the station is determined by the single supply of toner particles in such chamber; and

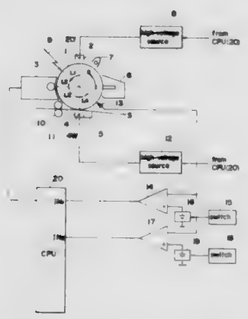
a plate positioned above and resting on the toner particles in said second chamber, the plate initially being in a first position in the upper portion of the chamber, and the plate being movable downwardly with the toner particles to a second position in the lower portion of the chamber as the feeding means removes toner particles from the second chamber.

4,797,705

IMAGE FORMING APPARATUS HAVING A HIGH-VOLTAGE UNIT MALFUNCTION DETECTING FUNCTION

Nobuaki Nishioka, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 3, 1987, Ser. No. 10,476
Claims priority, application Japan, Feb. 4, 1986, 61-22767
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 CH **13 Claims**



1. An image forming apparatus comprising:

a photosensitive member;

means for charging the photosensitive member;

means for forming an electrostatic latent image on the photosensitive member charged by the charging means;

reversal development means for developing said latent image with a toner of the same polarity as the latent image;

means for transferring the toner image from the photosensitive member to a paper;

a sensing means for detecting the amount of the toner adhering to the photosensitive member or on the paper; and

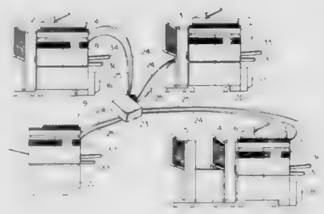
means for detecting a malfunction in the charging means or in the transferring means based on an output from the sensing means.

4,797,706

MULTI-UNIT IMAGE PROCESSING SYSTEM WITH CENTRAL CONTROL

Kiyohisa Sugishima, Yokohama, and Masanori Yamada, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1986, Ser. No. 832,536
Claims priority, application Japan, Feb. 28, 1985, 60-039043; Feb. 28, 1985, 60-039045
Int. Cl.⁴ G03G *15/00;* **H04N** *1/00*
U.S. Cl. 355—14 R **20 Claims**



1. An image processing system comprising:

means for supplying an image signal;

a plurality of image forming means for forming images in accordance with the image signal from said supplying means;

means for inputting a number of images to be formed;

means for setting an image formation mode for forming images on both sides of a recording medium;

means for selecting at least one of said image forming means having a two-sided copy function for image formation in accordance with the mode set by said setting means; and

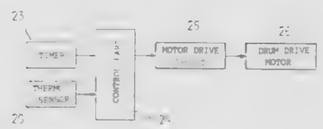
means for discriminating as to whether or not the selected image forming means having a two-sided copy function is or are capable of forming a number of images equal to the inputted number of images.

4,797,707

IMAGE FORMING APPARATUS

Haruo Iwahashi, and Kazuhiro Nakazawa, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 21, 1987, Ser. No. 135,359
Claims priority, application Japan, Dec. 23, 1986, 61-305291
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **9 Claims**



1. Image forming apparatus comprising

a photosensitive member being rotatable for forming latent image thereon,

said photosensitive member having an electric capability of establishing electric potential thereon by being subjected to electrification and having a fatigue characteristic in which the electric capability changes with respect to operation period and the changed electric capability recovers with respect to rest time period,

a means for judging the rest time period,

a means for detecting temperature of said photosensitve member,

a means for providing fatigue to said photosensitive member in order to change the electric capability,

a means for controlling said fatigue providing means based on the rest period and the temperature.

4,797,708

APPARATUS FOR SCAVENGING UNWANTED PARTICLES FROM A PHOTOCONDUCTOR OF AN ELECTROGRAPHIC APPARATUS

W. Charles Kasiske, Jr., and John M. Fiske, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 4, 1987, Ser. No. 45,931
Int. Cl.⁴ G03G *21/00, 15/00*
U.S. Cl. 355—15 **3 Claims**

1. In electrographic apparatus having a plurality of rollers guiding an endless flexible photoconductor along a path past a series of stations including an imaging station at which a latent image is formed on the photoconductor, a development station at which the latent image is developed with toner particles, and a transfer station at which the developed image is transferred to a receiver sheet, one of the rollers guiding the photoconductor being located between the development station and the transfer station, spring means for urging the one roller toward the photoconductor to tension the photoconductor, the improvement comprising:

a vacuum plenum having (a) an elongate entrance slot through which air can be drawn into the plenum and (b) an exit opening adapted to be connected to a source of negative pressure;

means for mounting the plenum adjacent the one roller, the mounting means comprising at least one pin slidably supporting the plenum, and spring means for urging the plenum toward the one roller, the plenum being positioned on the mounting means with the slot facing and adjacent the one roller; and

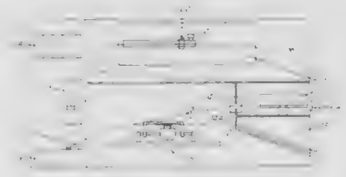
a plurality of tires carried by the plenum and engageable with end portions of the one roller for limiting movement of the plenum slot toward the one roller by the spring means, wherein the one roller of the electrographic apparatus is movable away from the photoconductor into a retracted position for removing tension on the photoconductor, and the improvement further comprises stop means for limiting movement of the plenum toward the one roller by the spring means when the one roller is in its retracted position, thereby providing sufficient space between the one roller and the plenum for replacement of the photoconductor.

4,797,709

INTEGRATED SCANNER/PLOTTER FOR MICROFILM APERTURE CARDS

Robert A. D. Brash, Fishers Pond; Anthony J. Wicks, Meadow Cottage, and Eric T. Wilson, Medstead, all of United Kingdom, assignors to Wicks & Wilson Limited, Basingstoke, United Kingdom

Filed Oct. 8, 1987, Ser. No. 106,147
Claims priority, application United Kingdom, Oct. 9, 1986, 8624263
Int. Cl.⁴ G03B *27/32, 27/52*
U.S. Cl. 355—27 **15 Claims**



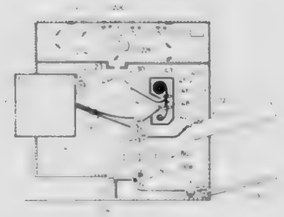
1. A microfilm aperture card handling machine having punched card reading and punching means, single means capable of both scanning and plotting microfilm images, a photographic developer station for developing plotted images, and control means enabling selective operation to read existing data carried by a card or to create data on a previously blank card.

4,797,710

HEAT DEVELOPING DEVICE

Minoru Ishikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 7, 1987, Ser. No. 129,196
Claims priority, application Japan, Dec. 5, 1986, 61-289058
Int. Cl.⁴ G03B *27/32, 27/52*
U.S. Cl. 355—27 **7 Claims**



1. A heat developing device for use with an image recorder of the type in which an image is exposed onto a thermally developable sensitive medium and is therefter developed, and the developed image is transferred to an image-receiving material by overlapping the sensitive material and the image-receiving material on each other, said device comprising:

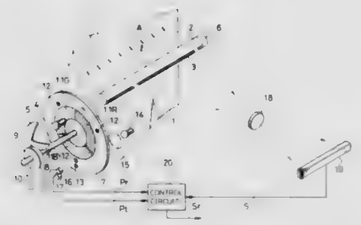
a belt having heating means incorporated therein;

means for delivering said sensitive material into contact with said belt; and

a take-up roll rotatable in a first direction to roll up said belt and sensitive material for development of said sensitive material and rotatable in a second direction to unroll said belt and sensitive material from said take-up roll.

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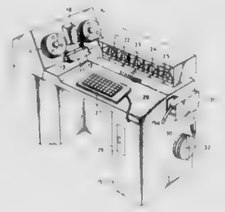
4,797,711
IMAGE SCANNING APPARATUS
Shigeru Sasada; Masahiro Yamamoto, both of Kyoto; Yoshio Shimizu, Osaka, and Tsutomu Sumioka, Kyoto, all of Japan, assignors to Dainippon Screen Mfg., Co., Ltd., Japan
Filed Sep. 9, 1987, Ser. No. 94,519
Claims priority, application Japan, Sep. 10, 1986, 61-137800[U]; Sep. 19, 1986, 61-142528[U]; Nov. 12, 1986, 61-172705[U]; Feb. 9, 1987, 62-16601[U]
Int. Cl.⁴ G03B *27/32, 27/52*
U.S. Cl. 355—32 3 Claims



1. A linear light source for use in an image scanning apparatus, said light source comprising:
(a) a cylindrical rod made of a transparent material which is arranged in parallel with a picture plane of an original picture to be scanned;
(b) an elongated strip-like diffused reflection layer provided on said cylindrical rod along a longitudinal axis of said cylindrical rod; and
(c) light means directing light fluxes into one side end of said cylindrical rod, said light means comprising:
(1) a lamp;
(2) a concave mirror which reflects light fluxes emitted from said lamp into one side end of said rod so as to cause light fluxes to enter into said cylindrical rod through said one side end;
(3) a filtering device for selectively placing any one of a plurality of color filters between said one side end of said cylindrical rod and said lamp; and
(4) a control device for generating a control pulse each time a different said color filter is placed between said lamp and said one side end of said cylindrical rod and generating a control pulse during each changing period of said filtering device.

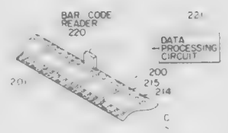
4,797,712
COLOR NEGATIVE INSPECTION APPARATUS
Ryoichi Hayashi, Tokyo; Kiichiro Sakamoto, and Takaaki Terashita, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 12, 1987, Ser. No. 61,612
Claims priority, application Japan, Jun. 13, 1986, 61-137668
Int. Cl.⁴ G03B *27/80*
U.S. Cl. 355—38 10 Claims

1. A color negative inspection apparatus comprising:
means for providing a plurality of different printing exposure control modes, each defining a standardized printing exposure condition;
means for reading a color negative image on a single frame of a color negative film;
memory means for storing image data of said color negative image read by said reading means;
means for selecting any one of said plurality of different printing exposure control modes; and
means for displaying at least one simulated color positive image based on said image data read out from said memory means and a standardized printing exposure condition



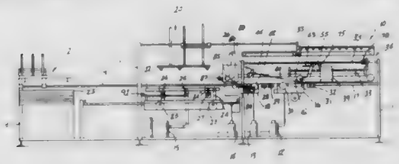
according to said selected one of said plurality of different printing exposure control modes.

4,797,713
PHOTOGRAPHIC PRINTING METHOD
Takaaki Terashita, and Hideaki Iijima, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 3, 1987, Ser. No. 81,098
Claims priority, application Japan, Aug. 4, 1986, 61-183072
Int. Cl.⁴ G03B *27/32*
U.S. Cl. 355—77 9 Claims



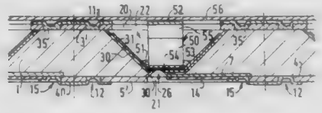
1. A photographic printing method which comprises the steps of:
maintaining a storage of preprocessed exposure correction data and preprocessed image characteristic data for each representative one of a plurality of image frames having been previously processed, each respective preprocessed exposure correction data being related to a respective frame image by a respective preprocessed image characteristic data;
subjecting an image frame on a negative film having an image to be printed, to a photometry operation for obtaining processing image characteristic data and processing exposure correction data for said image frame;
determining whether preprocessed exposure correction data is currently being stored for said image frame of said negative film by comparing said processing image characteristic data to said preprocessed image characteristic data; and
printing said image frame of said negative film by utilizing said preprocessed exposure correction data when a result from said comparison determines that data is currently being stored for said image frame, and by utilizing said processing exposure correction data when a result from said comparison determines that data is not currently being stored for said image frame.

4,797,714
MASTER AND MASTER TRANSPORT ASSEMBLY REGISTRATION SYSTEM
David P. Bujese, Butler, N.J., assignor to Olin Hunt Specialty Products, Inc., Palisades Park, N.J.
Filed Jan. 7, 1988, Ser. No. 141,564
Int. Cl.⁴ G03B *27/32*
U.S. Cl. 355—77 28 Claims



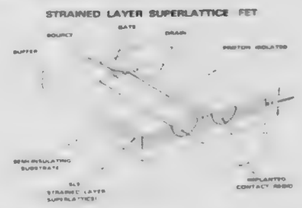
1. A method of registering a flexible web to a rigid support station, the flexible web being usable to accurately and repeatably transfer a developed image to a receiving surface, the receiving surface being supported by the rigid support station, comprising the steps of:
(a) placing a master on the rigid support station;
(b) aligning the master in a fixed position on the rigid support station;
(c) securing the aligned master in the fixed position on the rigid support station;
(d) moving the flexible web to a position opposite the secured master;
(e) aligning the flexible web with the secured master;
(f) registering and securing the flexible web with the secured master and the rigid support station;
(g) taking the aligned master from the rigid support station and securely placing it onto the registered flexible web; and
(h) removing the flexible web with the master attached from opposite the rigid support station.

4,797,715
OPTOELECTRIC COMPONENT FOR SURFACE MOUNTING
Jacques C. Thillays, and Jean-Claude A. Vallee, both of Herouville, France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 29, 1986, Ser. No. 924,550
Claims priority, application France, Nov. 5, 1985, 8516374
Int. Cl.⁴ H01L *33/00, 29/06, 27/14, 29/04*
U.S. Cl. 357—17 8 Claims



1. An optoelectronic component comprising a highly doped silicon substrate of a first conductivity type having upper and lower surfaces orientated along the plane (100) and an optoelectronic element disposed on the bottom of a first cavity provided in said substrate, the surface of the first cavity being coated with a metallic layer such that it becomes reflective and said cavity having four faces disposed along (111) planes inclined with respect to the upper surface and a flat bottom also coated with the metallic layer, the optoelectronic element having a first electrode comprising a zone of the first conductivity type soldered at said flat bottom on the metallic layer and a second electrode comprising a zone of the second conductivity type connected electrically to the upper surface of the substrate, said component comprising a second cavity having dimensions smaller than those of the first cavity and having a surface extending from the lower surface of the substrate to an opening of said flat bottom, the first and second cavities having a region of the second conductivity type opposite to the first conductivity type adjacent to their surfaces, the second electrode being connected to the upper surface of the substrate by means of a first conductive layer for surface mounting of the component on the surface of said first cavity, and the lower surface of the substrate comprising a second conductive layer in electrical contract with the region of the second conductivity type and a third conductive layer in electrical contact with the substrate.

4,797,716
FIELD-EFFECT TRANSISTOR HAVING A SUPERLATTICE CHANNEL AND HIGH CARRIER VELOCITIES AT HIGH APPLIED FIELDS
Roger J. Chaffin, deceased, late of Albuquerque (by Nancy Davis, legal representative); Ralph Dawson, Albuquerque; Ian J. Fritz, Albuquerque; Gordon C. Osbourn, Albuquerque, and Thomas E. Zipperian, Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation-in-part of Ser. No. 602,109, Apr. 4, 1984, abandoned. This application Jun. 8, 1987, Ser. No. 59,365
Int. Cl.⁴ H01L *29/80*
U.S. Cl. 357—22 9 Claims



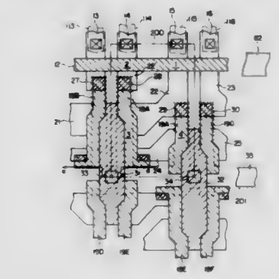
8. A field-effect transistor having a source, a drain, a channel and a gate in operational relationship, said channel consisting of a semiconductor being a strained layer superlattice comprising alternating lattice-mismatched quantum well and barrier layers;
said quantum well layers being selected of a material having:
an energy difference greater than 0.3 eV, the value of GaAs, between the lowest energy level in L_{2D} valleys and the lowest energy level in $L_{(\Gamma\text{-}D)}$ valleys; and
a bandgap value less than 1.424 eV, the value of GaAs;
said barrier layers being selected of a material having a L-valley energy level greater than the L-valley energy of the quantum well material;
the thickness of said quantum well layers being less than about 100 angstroms, the thickness of said barrier layers being in the range of 50–400 angstroms.

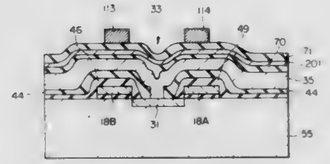
4,797,717
SEMICONDUCTOR MEMORY DEVICE
Koichiro Ishibashi; Osamu Minato; Toshiaki Masuhara, all of Tokyo; Yoshio Sakai, Kanagawa; Toshiaki Yamanaka, Houya; Naotaka Hashimoto, Hachioji; Shoji Hanamura, Kokubunji; Nobuyuki Moriwaki, Kodaira; Shigeru Honjyo, and Kiyotsugu Ueda, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 17, 1987, Ser. No. 39,291
Claims priority, application Japan, Apr. 18, 1986, 61-88233
Int. Cl.⁴ H01L *29/78, 27/02, 29/04*
U.S. Cl. 357—23.1 7 Claims

1. A semiconductor memory device comprising:
a plurality of memory cells formed on a principal surface of a semiconductor substrate, where each of said memory cells is defined by a substantially square cell region which has first, second, third and fourth sides, said first and second sides being disposed so as to be in substantially parallel to each other, said third and fourth sides being

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disposed so as to be in substantially parallel to each other, each of said memory cells including two transfer gate MOS transistors, two driver MOS transistors and two load resistances, said two transfer gate MOS transistors in each of said memory cells being disposed in the vicinity of said first side, said two transfer gate MOS transistors in each of said memory cells having gate electrodes formed from a first electrode wiring layer disposed substantially parallel to said first side, said two driver MOS transistors in each of said memory cells having gate electrodes formed from second and third electrode wiring layers which are formed simultaneously with said first electrode wiring layer, said first, second and third electrode wiring layers being defined by a first-level conductive layer provided on said principal surface of said semiconductor substrate, said two driver MOS transistors in each of said





memory cells having source regions respectively disposed in the vicinity of said third side and in the vicinity of said fourth side, each of the source regions of said two driver MOS transistors in each of said memory cells being connected to a fourth conductive layer as a second-level conductive layer formed on said first-level conductive layer, said fourth conductive layer being connected to a first operating potential point, said two load resistance in each of said memory cells being formed from a high-resistance material layer formed as a third-level layer on said second-level conductive layer, said two load resistances in each of said memory cells each having one end thereof connected to said gate electrode of the corresponding one of said two driver MOS transistors, and the other ends of said two load resistances being connected to a second operating potential point which is different from said first operating potential point.

4,797,718

SELF-ALIGNED SILICON MOS DEVICE

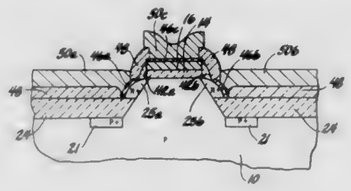
Peter J. Schubert, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Division of Ser. No. 939,183, Dec. 8, 1986, Pat. No. 4,714,685. This application Sep. 14, 1987, Ser. No. 95,868

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.4 1 Claim

1. An MOS transistor including a silicon body which includes an upper portion, a middle portion, and a lower portion, the upper portion including an intermediate channel portion and laterally grown epitaxial regions, the intermediate channel portion being of one conductivity type and located between the laterally grown epitaxial regions which are doped to be of an opposite conductivity type for serving as the respective source and drain regions of the transistor, the middle portion including a tapered portion which is contiguous with the intermediate channel portion, the tapered portion being encircled by a layer of silicon oxide which is sandwiched between the lower portion and the doped regions of the upper portion, the lower portion including an intermediate substrate portion and laterally disposed field implants, the intermediate substrate



portion being contiguous with the tapered portion, the laterally disposed field implants being adjacent to the layer of silicon dioxide and being the same conductivity type as the intermediate substrate portion but more heavily doped than the intermediate substrate portion, the tapered portion included within the middle portion and the intermediate substrate portion included within the lower portion being of the one conductivity type, and a gate region dielectrically isolated from the silicon body and overlying the surface of the intermediate channel portion.

4,797,719

MOS CAPACITOR WITH DIRECT POLYCRYSTALLINE CONTACT TO GROOVED SUBSTRATE

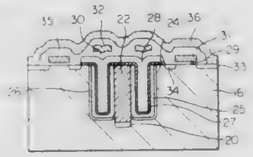
Seiji Ueda, Otsu, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Continuation of Ser. No. 846,902, Apr. 1, 1986, abandoned. This application Mar. 21, 1988, Ser. No. 171,177

Claims priority, application Japan, Apr. 3, 1985, 60-70278

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.6 10 Claims



1. A MOS capacitor comprising:

a semiconductor substrate having a principal surface and a pair of spaced trenches formed in said principal surface, each of said trenches being defined by side walls, having first and second parts, and a bottom, said first parts of the side walls and the bottoms of said trenches being inner surfaces of said substrate;

an isolation region embedded in said semiconductor substrate only between said pair of trenches, said isolation region having a pair of side walls which extend in a direction substantially perpendicular to the principal surface of said substrate and define said second parts of the side walls of said trenches;

first polycrystalline silicon films formed within each of said trenches directly on said first parts, said second parts and said bottoms of said trenches, said first polycrystalline films serving as a first electrode of said MOS capacitor;

insulating films formed on said first polycrystalline films, said insulating films constituting dielectric layers of said MOS capacitor; and

a second polycrystalline silicon film formed on said insulating films, said second polycrystalline film serving as a second electrode of said MOS capacitor, whereby said first polycrystalline silicon films are disposed entirely between the bottoms of said trenches and said insulating films.

4,797,720

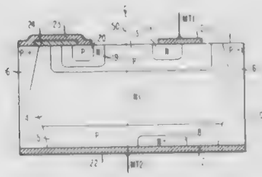
CONTROLLED BREAKOVER BIDIRECTIONAL SEMICONDUCTOR SWITCH

Richard Lindner, Bethlehem, and Bertram R. Rex, Lehighton, both of Pa., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 29, 1981, Ser. No. 288,001

Int. Cl.⁴ H01L *29/747*

U.S. Cl. 357—39 11 Claims



1. A bidirectional semiconductor switching device comprising a body of silicon semiconductor material having first and second major surfaces and having a first portion including a switching element and a second portion integral therewith including a bidirectional voltage-sensitive breakdown element, and further comprising means connecting said breakdown element as a gating element to said switching element for triggering conduction in either direction therein, CHARACTERIZED in that said breakdown element includes three zones of alternating conductivity type, the zones having a common surface coincident with the first major surface and comprising a first terminal zone, an intermediate zone, and a second terminal zone, with the first terminal zone being encompassed by the intermediate zone and the intermediate zone being encompassed by the second terminal zone, and further characterized in that the second portion includes a section of relatively higher conductivity at the intersection of the boundary between the intermediate zone and the second terminal zone, and the first major surface, whereby a desired breakdown voltage between said first terminal zone and said second terminal zone for triggering said conduction in said switching element is achieved.

4,797,721

RADIATION HARDENED SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME

Sheng T. Hsu, West Windsor Township, Mercer County, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 13, 1987, Ser. No. 37,482

Int. Cl.⁴ H01L *27/12, 29/78*

U.S. Cl. 357—23.7 13 Claims

1. A semiconductor device, comprising:

an insulating substrate,

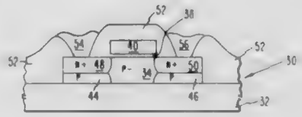
a layer of semiconductor material of a first conductivity type disposed on said insulating substrate;

a gate insulating layer disposed over said layer of semiconductor material;

a gate electrode disposed over said gate insulating layer;

source and drain regions of a second conductivity type disposed in said layer of semiconductor material, said source and drain regions having a depth less than the thickness of said layer of semiconductor material;

a first region of a first conductivity type having an impurity concentration greater than the impurity concentration of



said layer of semiconductor material disposed in said layer of semiconductor material between said source region and said substrate and subtending said source region; and

a second region of a first conductivity type having an impurity concentration greater than the impurity concentration of said layer of semiconductor material disposed in said layer of semiconductor material between said drain region and said substrate and subtending said drain region.

4,797,722

HOT CHARGE-CARRIER TRANSISTORS

John M. Shannon, Whyteleafe, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1987, Ser. No. 46,974

Claims priority, application United Kingdom, May 23, 1986, 8612603

Int. Cl.⁴ H01L *29/72, 29/205*

U.S. Cl. 357—34 11 Claims



1. A hot charge-carrier transistor comprising a base region through which current flow is by hot majority charge-carriers of one conductivity type, barrier-forming means which forms with the base region an emitter-base barrier serving for injection of the hot charge-carriers of said one conductivity type into the base region, and a base-collector barrier for collecting the hot charge-carriers of said one conductivity type from the base region during operation of the transistor, wherein the base region comprises alternate layers of semiconductor material of said one conductivity type and of metal-based material of higher conductivity than that of the semiconductor material, one of the semiconductor layers of the base region adjoins the base-collector barrier so that each metal-based layer of the base region is separated from but extends substantially parallel to the base-collector barrier, and each metal-based layer in the vicinity of the emitter-base barrier and each metal-based layer in the vicinity of the base-collector barrier is sufficiently thin to

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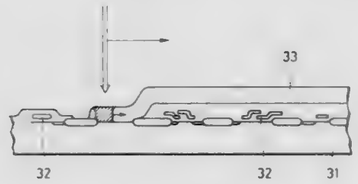
permit quantum mechanical tunnelling, having a thickness of less than or equal to 1 nm, thereby aiding efficient transmission of the hot charge-carriers through the base region and over the base-collector barrier.

4,797,723

STACKED SEMICONDUCTOR DEVICE

Tadashi Nishimura, and Yoichi Akasaka, both of Hyogo, Japan, assignors to Mitsubishi Denki, K.K., Itami, Japan

Continuation of Ser. No. 812,600, Dec. 23, 1985, abandoned, which is a continuation of Ser. No. 444,093, Nov. 24, 1982, abandoned. This application Sep. 8, 1987, Ser. No. 96,212
Claims priority, application Japan, Nov. 25, 1981, 56-191118
Int. Cl.[4] H01L *27/02, 29/06, 29/04, 29/78*
U.S. Cl. 357—40 **6 Claims**



1. A stacked semiconductor device comprising:

a first semiconductor layer having formed at least partially therein a first plurality of active integrated circuit elements containing a large number of circuit elements and at least one additional coplanar complete active integrated circuit having a relatively high heat generating capacity to thereby provide said stacked semiconductor device with an improved heat dissipating ability, said first plurality of elements and said one additional circuit forming a first integrated circuit;

an insulating layer formed upon and continuously and uniformly contacting and covering all of said first plurality of elements and leaving exposed all of said one additional circuit; and

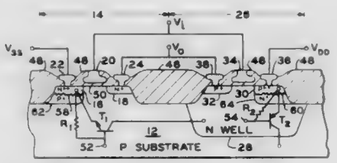
a second semiconductor layer formed upon and continuously and uniformly covering and contacting said insulating layer and leaving exposed all of said one additional integrated circuit and having formed at least partially therein a second plurality of active integrated circuit elements, said second plurality of elements forming a second integrated circuit.

4,797,724

REDUCING BIPOLAR PARASITIC EFFECTS IN IGFET DEVICES

Clifford H. Boler, New Hope; Marc D. Hartranft, Brooklyn Park, and Thomas E. Hendrickson, Wayzata, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 30, 1982, Ser. No. 393,891
Int. Cl.[4] H01L *27/04, 29/78*
U.S. Cl. 357—42 **3 Claims**



1. A solid state device, comprising:

a substrate of a substantially monocrystalline semiconductor material including a principal surface, said principal surface having a substantially flat portion;

an insulating material overlying part of said flat portion;

a first region in said substrate extending into said substrate from said principal surface and being doped with a first conductivity type;

second and third regions in said substrate wherein said second and third regions are spaced apart from each other along said flat portion by a part of said first region, said second and third regions each extending into said substrate from said principal surface and each being doped with a second conductivity type, and wherein said second and third regions form first and second junctions, respectively, of said first and second conductivity types within said substrate, and wherein at least a part of each of said first and second junctions intercepts said flat portion;

a first conductive means overlying at least a part of said space between said second and third regions and being separated from said flat portion by said insulating material;

a fourth region in said substrate at said first junction wherein said monocrystalline material is damaged to an extent sufficient to provide a low resistivity path through said first junction, the resistivity of said low resistivity path being lower than the resistivity of said first junction when said first junction is undamaged and unbiased by electrical potentials, and wherein said fourth region is separated from said flat portion by said substrate;

a fifth region in said substrate extending into said substrate from said principal surface and being doped with said second conductivity type;

sixth and seventh regions in said substrate wherein said sixth and seventh regions are spaced apart from each other along said flat portion by a part of said fifth region, each extend into said substrate from said principal surface and each are doped with said first conductivity type, and wherein said sixth and seventh regions from third and fourth junctions, respectively of said first and second conductivity types with said fifth region, and wherein at least a part of each of said third and fourth junctions intercepts said flat portion;

a second conductive means overlying said space between sixth and seventh regions and being separated from said flat portion by said insulating material;

an eighth region in said substrate at said third junction wherein said monocrystalline material is damaged to an extent sufficient to provide a second low resistivity path through said third junction, the resistivity of said second low resistivity path being lower than resistivity of said third junction when said third junction is undamaged and unbiased by electrical potentials, and wherein said eighth region is separated from said flat portion by said substrate;

a ninth region in said substrate, adjacent to said fourth region and on the opposite side of said first junction from said second region, said ninth region being heavily doped with said first conductivity type and separated from said flat portion by said substrate; and

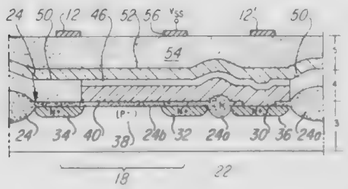
a tenth region in said substrate adjacent to said eighth region and on the opposite side of said third junction from said sixth region, said tenth region being heavily doped with said second conductivity type and separated from said flat portion by said substrate.

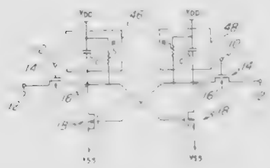
4,797,725

MEMORY CELL FOR SRAM WITH A DIELECTRIC LAYER OVER A GATE ELECTRODE TO PROVIDE A PARALLEL RESISTIVE AND CAPACITIVE ELEMENT

Masashi Hashimoto, Miho, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 15, 1985, Ser. No. 798,656
Claims priority, application Japan, Nov. 26, 1984, 59-249296
Int. Cl.[4] H01L *29/34, 27/02, 29/78, 29/04*
U.S. Cl. 357—54 **7 Claims**





1. A static memory cell in a semiconductor substrate, comprising:

a plurality of doped regions in said substrate, providing source and drain regions of first and second field-effect transistors, said doped regions being spaced to provide respective a channel region for each of said first and second field-effect transistors,

thin insulating layers each over a respective one of said channel regions,

first and second gate electrodes over said thin insulating layers, respectively, the first gate electrode being connected to the drain region of the second field-effect transistor and the second gate electrode being connected to the drain region of the first field-effect transistor,

first and second circuits each comprising a resistance and capacitance connected in parallel, the first circuit being coupled betweem a supply voltage and the drain region of said first field-effect transistor, and the second circuit being coupled between the supply voltage and the drain region of said second field-effect transistor, each of said circuits comprising a highly dielectric layer formed directly on each of said gate electrode layers.

4,797,726

LEAD FRAME INCLUDING DEFORMABLE PLATES

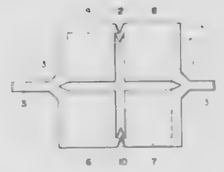
Masamichi Manabe, Yamanashi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,611
Claims priority, application Japan, Feb. 10, 1981, 56-18676
Int. Cl.[4] H01L *23/48, 23/12*
U.S. Cl. 357—70 **9 Claims**

1. A lead frame of the type having a chip fixing plate for supporting an electronic part in a device wherein said electronic part is fixed to said chip fixing plate and the electronic part and chip fixing plate are subsequently subjected to heat, e.g., in a resin encapsulation process, said chip fixing plate comprising:

a plurality of supporting plate portions to which said electronic part is to be fixed; and

a plurality of readily deformable plate portions coupling said supporting plate portions to one another and for deforming to allow said supporting plate portions to move with respect to one another to compensate for differences in thermal expansion of said electronic part and chip fixing plate when said electronic part and chip fixing plate are



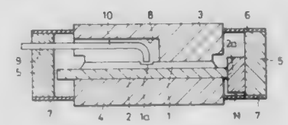
subjected to heat, said readily deformable plate portions each comprising belt-shaped plate portions each having first and seconds ends respectively coupled to adjacent supporting plate portions, each said belt-shaped plate portion having a bent portion intermediate said first and second ends and bent at a predetermined angle, said belt-shaped portions being readily deformable to vary said angle to allow adjacent supporting plates to move with respect to one another.

4,797,727

THYRISTOR WITH ALIGNED TRIGGER GUIDE

Kazuhiko Niwayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,510
Claims priority, application Japan, Aug. 12, 1982, 57-141456
Int. Cl.[4] H01L *23/42, 23/44, 23/46*
U.S. Cl. 357—79 **14 Claims**



1. A thyristor, comprising:

a thyristor element having a first electrode and a trigger section (1*a*) formed in the center of one principal surface thereof for receiving trigger signals;

a reinforcing metal disk (2), the first principal surface of which is secured to the other principal surface of said element thereby forming a second electrode, the periphery of said disk being unsecured to said element and comprising at least three faces (2*a*) spaced from the center of said trigger section by a predetermined distance;

a first electrode unit (3) connected to the first electrode formed on said one principal surface of the element;

a second electrode unit (4) connected to the second principal surface of said reinforcing metal disk;

an insulating tube (5) surrounding said element;

a trigger signal guide (10) in the form of a rod for directing trigger signals to said trigger section, one end of said signal guide being adjacent to said trigger section and the other end of which penetrates said insulating tube and is fixed thereto; and

positioning members (11) that abut the faces on said reinforcing metal disk for positioning said metal disk within said insulating tube,

wherein said positioning members each have a form such that the thickest part is slightly wider than a difference

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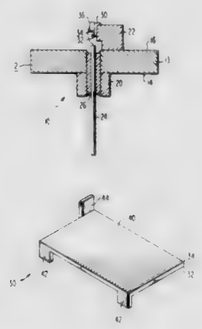
between the radius of the inner circumference of the insulating tube and a distance between each cut face and the center of the trigger section.

4,797,728

SEMICONDUCTOR DEVICE ASSEMBLY AND METHOD OF MAKING SAME

Anil R. Dholakia, Cranbury Township, Middlesex County, and Louis Trager, Raritan Township, Somerset County, both of N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1986, Ser. No. 886,077
Int. Cl.[4] H01L 23/02
U.S. Cl. 357—81 **4 Claims**



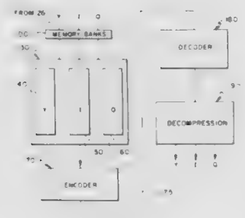
1. A semiconductor device assembly comprising:
a header;
a mounting plate composed of an electrically conductive material about 250 micrometers or less in thickness having opposed first and second major mounting surfaces and a leading edge surface extending therebetween with a first mounting surface attached to said header;
a means for positioning said mounting plate relative to said header attached to said mounting plate; and
a semiconductor device having an end face attached to said second mounting surface wherein said end face is substantially coplanar with said leading edge surface.

4,797,729

SYSTEM INCORPORATING AN ERROR TOLERANT PICTURE COMPRESSION ALGORITHM

Yusheng T. Tsai, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 5, 1988, Ser. No. 152,793
Int. Cl.[4] H04N 7/13, 11/04
U.S. Cl. 358—13 **10 Claims**



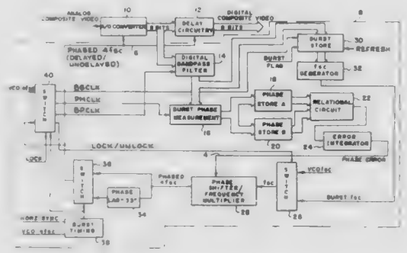
1. A method for processing Y, I and Q color plane image signals representing pixel values, comprising the steps of:
(a) grouping the Y color image plane elements into groups of four 2×2 blocks with each element formed from the average value of 4 neighboring pixels values;
(b) grouping I color image plane elements into one 2×2 block with each element formed from the average value of 4 neighboring pixels values;
(c) computing an average threshold value for each Y and I block of picture elements;
(d) generating a bitmap of one value for each associated picture element equal to or above the average threshold value and of another value for each picture element having a value below the average threshold value;
(e) generating a Hi average signal for the picture elements associated with said one bitmap value;
(f) generating a Lo average signal for the picture elements associated with said another bitmap value;
(g) average all of the elements of one 4×4 group of Q color image plane elements to provide a Q_{avg} signal;
(h) quantizing said Hi, Lo and Q_{avg} signals; and
(i) encoding said quantized signals and said generated bitmaps for compressed signal processing.

4,797,730

METHOD AND APPARATUS FOR CONTROLLING THE SAMPLING PHASE OF AN ANALOG COLOR TELEVISION SIGNAL

Terrance Smith, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 10, 1987, Ser. No. 37,298
Int. Cl.[4] H04N 9/475
U.S. Cl. 358—19 **33 Claims**



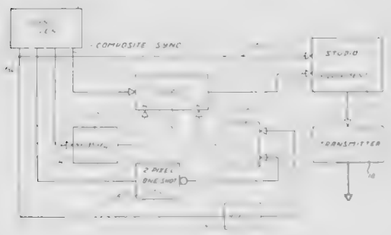
1. A method for removing sampling clock phase error relative to color burst when sampling an analog color television signal, comprising:
obtaining digital samples of the color burst at similar phase locations along a horizontal line of the analog color television signal via the sampling clock;
averaging a plurality of the digital burst samples taken at first similar phase locations of said color burst to form a first averaged sampling phase signal;
averaging a plurality of the digital burst samples taken at second similar phase locations of said color burst to form a second averaged sampling phase signal;
determining the difference between the first and second averaged sampling phase signals to provide a phase error signal indicative of the difference; and
adjusting the phase of the sampling clock in response to the phase error signal.

4,797,731

METHOD AND APPARATUS FOR COMPATIBLY LOCKING HORIZONTAL SYNC TO THE PAL SUBCARRIER

Lee R. Dischert, Burlington, N.J., and Robert J. Topper, Hatboro, Pa., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 9, 1987, Ser. No. 60,097
Int. Cl.[4] H04N 9/44, 11/16
U.S. Cl. 358—17 **5 Claims**



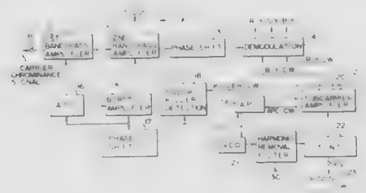
1. Apparatus for generating compatible synchronizing signals for use in a PAL color television system comprising:
a sync generator for providing standard synchronizing signals of a PAL system including waves of the subcarrier frequency, vertical synchronizing signals and line synchronizing signals,
means responsive to signals provided by said sync generator for producing other line synchronizing signals having a frequency such that an integral number of quarter cycles of the subcarrier wave occur between them, there being an additional two quarter cycles between two line synchronizing signals occurring during a vertical blanking interval, and
means coupled to said sync generator and to said means for producing said other line synchronizing signals for combining at least said vertical synchronizing signals and said other line synchronizing signals.

4,797,732

SUBCARRIER GENERATING DEVICE FOR COLOR SIGNAL PROCESSING CIRCUIT

Tokio Aketagawa, Kumagaya, and Osamu Shimano, Fukaya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 24, 1987, Ser. No. 29,769
Claims priority, application Japan, Mar. 26, 1986, 51-65844
Int. Cl.[4] H04N 9/64, 9/68
U.S. Cl. 358—28 **12 Claims**



1. A subcarrier generating device for a color signal processing circuit, comprising:
input means for receiving a burst signal, said burst signal being a part of a color video signal;
oscillating circuit means, for generating a continuous reference subcarrier signal;
harmonic filter means, connected to said oscillating circuit means, for removing harmonic components contained in said continuous reference subcarrier signal and for outputting a filtered continuous reference subcarrier signal;
tint control signal supply circuit means for supplying a tint control signal;
subcarrier signal generating circuit means connected to said harmonic removal filter means and said control voltage supply circuit means, for generating a plurality of reference carrier signals by performing a predetermined processing on said filtered continuous reference subcarrier signal, accoriding to said tint control signal, the phases of said reference carrier signals being related to one another in a predetermined manner; and
phase control means for receiving said burst signal from said input means and one of said reference carrier signals from said subcarrier signal generating circuit means, detecting a phase difference between said burst signal and said reference carrier signal, and controlling the frequency and phase of said continuous reference subcarrier signal generated by said oscillating circuit means such that said burst signal and said reference carrier signal always have a specific phase relationship to one another.

4,797,733

WHITE BALANCE ADJUSTING DEVICE FOR A COLOR VIDEO CAMERA

Yasushi Takagi, and Toshio Murakami, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1987, Ser. No. 129,978
Claims priority, application Japan, Dec. 12, 1986, 61-294808
Int. Cl.[4] H04N 9/73
U.S. Cl. 358—29 **10 Claims**



1. A white balance adjusting device for a color video camera, comprising:
a first detecting means for detecting color temperature variation on the basis of a video signal provided by the color video camera;
a chrominance signal gain control means which is controlled for controlling the gain of chrominance signals by a detection signal provided by the first detecting means;
a second detecting means for detecting color information from the video signal;
a first output means which decides whether the level of the detection signal provided by the second detecting means is within a first range, and provides a first control signal; and
a control execution means which enables the control of the chrominance signal gain control means by the detection signal provided in accordance with the first detecting means by the first control signal, when the level of the

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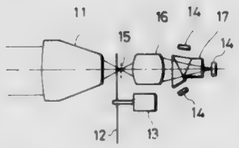
detection signal provided by the second detecting means is in the first range.

4,797,734

PICKUP APPARATUS

Shigeru Okshima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 692,629, Jan. 18, 1985, abandoned. This application Apr. 21, 1987, Ser. No. 41,664
Claims priority, application Japan, Jan. 31, 1984, 59-16366
Int. Cl.[4] H04N *9/097*
U.S. Cl. 358—55 **9 Claims**



1. An adapter to be attached between a first imaging system for forming an image of an object at a predetermined position and a camera body having video means for picking up the image of the object comprising:
- a second imaging system for re-imaging an image of the object formed at said predetermined position on said video means; and
- a shutter disposed at a position proximate to said predetermined position for repeatedly and periodically effecting intermittent exposures.

4,797,735

DISTORTION SURVEILLANCE APPARATUS FOR TELEVISION SIGNAL TRANSMISSION SYSTEM

Hitoshi Takai, Hirakata, and Noriaki Morotomi, Fujisawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 2, 1986, Ser. No. 881,832
Claims priority, application Japan, Jul. 4, 1985, 60-147538; Jul. 4, 1985, 60-147551; Jul. 4, 1985, 60-147552
Int. Cl.[4] H04N *7/10*
U.S. Cl. 358—86 **21 Claims**



1. A distortion surveillance apparatus used in a transmission system for signals including a television signal, comprising:

means coupled to a first specified position in said transmission system for supplying a pilot signal to said transmission system;

first extraction means coupled to a second specified position in said transmission system for extracting said pilot signal which has been subjected to a cross modulation with said television signal via a nonlinearity of said transmission system between said first and second specified positions;

rectifying means for obtaining an envelope of said cross modulated pilot signal from an output signal of said first extraction means;

second extraction means for extracting from said envelope at least a signal component of a horizontal scanning frequency of television signal and its harmonic components;

level detection means for detecting a level of a signal extracted by said second extraction means; and

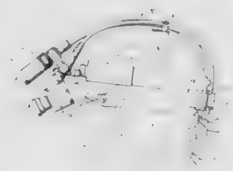
judging means for producing a signal indicating an occurrence of abnormal signal distortion increase when said level detected by said level detection means becomes abnormally large.

4,797,736

HEAD MOUNTED ILLUMINATION AND CAMERA ASSEMBLY

Jacobus Kloots, Sturbridge, and Frans G. Van Der Bel, Southbridge, both of Mass., assignors to Luxtec Corporation, Sturbridge, Mass.

Filed Sep. 2, 1987, Ser. No. 92,233
Int. Cl.[4] A61B *1/04, 1/06;* **F21V** *13/04;* **H04N** *7/18*
U.S. Cl. 358—93 **20 Claims**



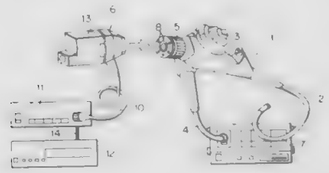
1. A head mounted apparatus for illumination and remote viewing of a work site, said apparatus comprising:
- a head band adapted to fit snugly on a human head above the eyes;
- camera means mounted on said head band for generating signals representative of the visual image received from the work site;
- means mounted on said head band for illuminating the work site; and
- means for coupling both said camera means and said illuminating means to said head band, said copling means comprising:
  - a first pivot to which said camera means is pivotally secured to permit pivoting of said camera means with respect to said illuminating means and said head band;
  - a second pivot to which said illuminating means is pivotally secured to permit pivoting of said illuminating means with respect to said camera means and said head band; and
  - a third pivot connecting said coupling means to said head band for pivoting of said illuminating means and said camera means together with respect to said head band.

4,797,737

IMAGING APPARATUS FOR ENDOSCOPE

Nobuyoshi Yazawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1987, Ser. No. 117,800
Claims priority, application Japan, Nov. 19, 1986, 61-276086
Int. Cl.[4] A61B *1/04, 1/06;* **H04N** *7/18;* **G11B** *15/18*
U.S. Cl. 358—98 **6 Claims**



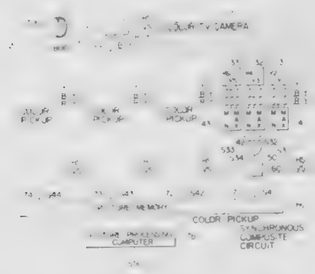
1. An imaging apparatus for an endoscope, comprising:
- a TV camera which can be mounted on an eyepiece section of the endoscope;
- a VTR electrically connected to said TV camera;
- a manual switch, arranged in said TV camera, for controlling a recording operation performed by said VTR; and
- safety means for automatically stopping the recording operation being performed by said VTR when said camera is removed from the endoscope.

4,797,738

COLOR RECOGNITION APPARATUS

Motofumi Kashi, Chofu, and Hiroaki Shimoe, Hino, both of Japan, assignors to Kabushiki Kaisha Tohken, Tokyo, Japan

Filed May 15, 1987, Ser. No. 50,038
Claims priority, application Japan, May 19, 1986, 61-114244; May 19, 1986, 61-114245; Feb. 14, 1987, 62-32167
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—101 **11 Claims**



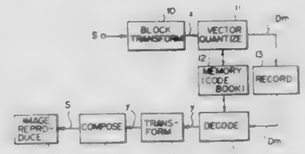
1. A color recognition apparatus wherein the picture of an assigned color is picked up from NTSC system composite color video signals photographed by a color pick-up apparatus, thereby determining color wherein signal components of brightness, chroma and hue are separated from said composite color video signal, and a decision output means is provided to determine whether or not said signal components of brightness, chroma and hue fall within respective ranges of preset upper and lower limit values, wherein a binary signal is outputted if all of said signal components of brightness, chroma and hue are in their respective set ranges; and wherein horizontal and vertical synchronizing signals are separated from said composite color video signal, an area decision means being provided to determine whether or not said synchronizing signals fall within ranges of present upper and lower limit values, a binary signal being outputted if said synchronizing signals fall within their respective set ranges.

4,797,739

METHOD OF COMPRESSING AND RECONSTRUCTING IMAGE SIGNALS BY VECTOR QUANTIZATION

Nobuyuki Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 25, 1988, Ser. No. 160,372
Claims priority, application Japan, Feb. 25, 1987, 62-42111; Feb. 24, 1988, 63-41713
Int. Cl.[4] H04N *7/133*
U.S. Cl. 358—133 **3 Claims**



1. A method of compressing and reconstructing image signals by vector quantization, which comprises the steps of:
- (i) dividing two-dimensional image signals into blocks, each comprising a fixed number of samples,
- (ii) selecting a vector that corresponds with the minimum distortion to the set of the image signals in each of the blocks from a code book comprising a plurality of vectors different from one another and prepared in advance by defining said fixed number of vector elements,
- (iii) encoding the information representing the selected vector to correspond to each of the blocks, and
- (iv) taking the vector elements of the vector, which the encoded information represents, as reconstructed signals of each of the blocks,

wherein the improvement comprises the steps of, in the case where said reconstructed signal attains a value between image signals "a" and "b" subjected to image reproduction and having a relationship of $b-a=\alpha$ where α denotes the minimum level difference corresponding to a density resolution of an image reproducing apparatus:

- (a) transforming said reconstructed signal to said image signal "a" or said image signal "b" by giving a larger probability weight to said image signal "a" or said image signal "b", whichever is closer to said reconstructed signal.

4,797,740

REAL-TIME VIDEO SIGNAL PROCESSING DEVICE CAPABLE OF TYPICALLY EXECUTING INTERFRAME CODING

Hidenobu Harasaki; Ichiro Tamitani, and Yukio Endo, all of Tokyo, Japan, assignors to NEC Corporation, Japan

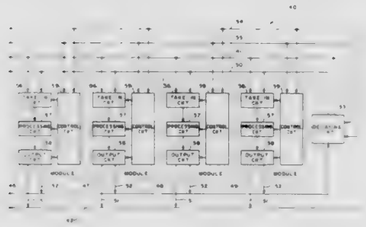
Filed Jun. 9, 1987, Ser. No. 59,844
Claims priority, application Japan, Jun. 10, 1986, 61-135316; Aug. 14, 1986, 61-189525; Apr. 30, 1987, 62-108261
Int. Cl.[4] H04N *7/12*
U.S. Cl. 358—136 **5 Claims**

1. A real-time video signal processing device comprising a real-time video signal processor for processing an input digital video signal having a frame period into an output digital video signal with said input digital video signal divided into a succession of principal blocks, each principal block being in a form of at least one scanning line of said input digital video signal and having a time duration which is shorter than said frame period, each principal block being divisible into at least two partial blocks with each scanning line divided into the respective

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partial blocks, said real-time video signal processor comprising:

a plurality of signal processing modules corresponding to the respective partial blocks of each principal block, said signal processing modules being respective to said input digital video signal and an additional digital video signal for processing the respective partial blocks of each principal block into processed signals during said time duration, respectively, each processed signal comprising a first and



a second partial signal, the first partial signals produced in response to said input and said additional digital video signals being used as said output digital video signal; and

delaying means coupled to said signal processing modules for delaying the second partial signals produced in response to said input and said additional digital video signals into a delayed signal with a delay which is equal to a difference between said frame period and said time duration, said delayed signal being supplied back to said signal processing modules as said additional digital video signal.

4,797,741

INFORMATION SIGNAL TRANSMISSION SYSTEM

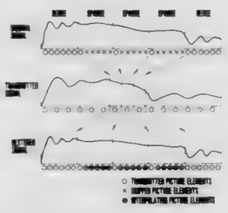
Chikara Sato; Tadayoshi Nakayama; Koji Takahashi, and Tomohiko Sasatani, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1986, Ser. No. 898,936

Claims priority, application Japan, Aug. 28, 1985, 60-189275; Dec. 23, 1985, 60-291175

Int. Cl.⁴ H04N *7/12*

U.S. Cl. 358—138 **35 Claims**



1. An information signal transmission system for transmitting an original image signal corresponding to an original picture consisting of m picture elements (m is an integer, $m \geq 2$) by dividing the original picture into a plurality of picture element blocks, each consisting of n adjoining picture elements (n is an integer, $n < m$), sampling image signals corresponding to the respective picture element blocks on the basis of one of a plurality of sampling modes which are different from each other in number of picture elements to be sampled and then transmitting the image signals, comprising:

(A) first image information signal sampling means for sampling a first image information signal corresponding to a first picture element among the n picture elements constituting each picture element block, in respect of all of said plurality of picture element blocks;

(B) first memory means for storing the first image information signals of each picture element block sampled by said first image information signal sampling means;

(C) second image information signal sampling means for sampling a second image information signal corresponding to a second picture element, which is different from said first picture element, among the n picture elements constituting each picture element block, in respect of at least a part of said plurality of picture elements;

(D) second memory means for storing the second image information signals sampled by said second image information signal sampling means;

(E) sampling mode indicating signal generating means arranged to decode which sampling mode among said plurality of sampling mode is adopted, in respect of the respect blocks of said plurality of picture element blocks, and to output a sampling mode thus decided; and

(F) transmission signal forming means arranged to read out the image information signals from said first memory means or said second memory means by sequentially reading out the image information signals corresponding to the picture elements arranged in a same horizontal direction of said original picture, among the first image information signals or the second information signals stored in said first or second memory means, according to the sampling mode indicated by said sampling mode indicating signal and to form a transmission signal by using said first image information signals and said second image information signals.

4,797,742

DIVISIONAL IMAGE TRANSMISSION SYSTEM AND METHOD

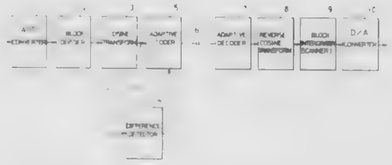
Fumio Sugiyama, Sagamihara, and Kenshi Dachiku, Machida, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 12, 1987, Ser. No. 14,016

Claims priority, application Japan, Mar. 31, 1986, 61-072973

Int. Cl.⁴ H04N *7/04*

U.S. Cl. 358—141 **15 Claims**



1. An image transmission system comprising:

(*a*) dividing means for dividing an image frame into a plurality of blocks;

(*b*) transforming means responsive to said dividing means, for transforming video information signals block by block to generate transform coefficients in accordance with an orthogonal transform method;

(*c*) detecting means responsive to said transforming means, for detecting differences in transform coefficient between a current frame and a past frame for each block and outputting a difference presence signal when a sum of the detected differences in transform coefficient in each block exceeds a predetermined threshold; and

(d) coding means responsive to said transforming means and said detecting means, for coding and transmitting the transform coefficients block by block in response to the difference presence signal outputted from said detecting means.

4,797,743

VIDEO MEMORY CONTROL DEVICE

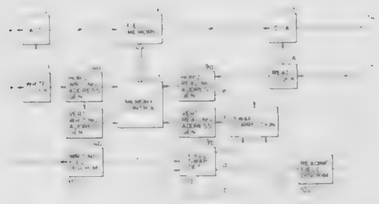
Haruhito Miyazaki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 6, 1987, Ser. No. 22,899

Claims priority, application Japan, Mar. 6, 1986, 61-49253

Int. Cl.⁴ H04N *5/04*

U.S. Cl. 358—149 **8 Claims**



1. A video memory control device for the synchronous conversion of video signals transmitted in a first field and a second field, each field comprising a plurality of lines, each line having a period of substantially 1H in duration, said lines intended for display in a correct sequence of a line of said first field being followed by a line of said second field, said system comprising:

a digital memory having a capacity corresponding to one of said fields;

writing means for writing received video signals into said memory according to a writing address;

reading means for reading data from said memory according to a reading address;

sequential addressing means for sequentially providing both said writing address and said reading address;

address processing means for altering an operation of said sequential addressing means, said address processing means comprising:

first means for advancing said reading address by a period of substantially 1H in duration; and

second means for delaying said reading address by a period of substantially 1H in duration; and

means for selectively enabling one of said first and second means according to a phase relation between first data indicating whether said writing address is for said first field or said second field, and second data indicating whether said reading address is for said first field or said second field, whereby said reading address is generated in a corrected sequence, allowing lines to be displayed in said correct sequence.

4,797,744

METHOD AND CIRCUIT FOR NONLINEAR TRANSMISSION-PROCESSING OF A VIDEO SIGNAL

Wolfram Klemmer, Langen, and Reinhard Kirschenstein, Roosdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 10, 1987, Ser. No. 61,121

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1986, 3620990

Int. Cl.⁴ H04N *5/20, 5/16*

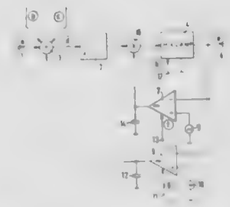
U.S. Cl. 358—164 **12 Claims**

1. Method of nonlinear transmission-processing of a video signal having horizontal and vertical video blanking intervals, with correction of tendencies for variation of signal offset and amplification with respect to a nonlinear characteristic of a transmission-processing stage, comprising the steps of:

inserting first and second series of control pulses in blanking intervals of said video signal prior to processing said video signal in said transmission-processing stage;

processing said video signal and said inserted pulses in said nonlinear processing stage;

comparing pulses of said first and second pulse series, as obtained from a signal derived from the output of said nonlinear transmission-processing stage, respectively with first and second reference signal values to produce first and second correction signals;



applying said first correction signal as a correction of said video signal prior to processing said video signal in said transmission-processing stage, and

applying said second correction signal as a correction of said video signal following its processing by said transmission-processing stage.

4,797,745

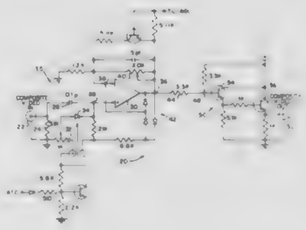
VIDEO IMAGE ENHANCER

William E. Westell, Weston, Mass., assignor to Baird Corporation, Bedford, Mass.

Filed Feb. 11, 1985, Ser. No. 700,620

Int. Cl.⁴ H04N *5/57, 5/14, 5/202*

U.S. Cl. 358—169 **7 Claims**



1. A video image enhancer comprising:

(a) an input designed to receive a composite video signal having high and low contrast segments and dark and bright segments;

(b) a device coupled to said input and designed to selectively amplify said low contrast segments and said dark segments of said composite video signal, and to selectively diminish said high contrast segments and said bright segments, said device being a non-inverting operational amplifier having a non-inverting input and an output;

(c) a first variable potentiometer and a dc restorer circuit connected to said non-inverting input of said device to provide an adjustable-bias dc clamp of said composite video signal;

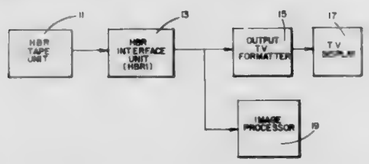
(d) a second variable potentiometer connected between a negative input and said output of said device for adjusting the gain of said device at said output;

(e) a driver coupled to said output of said device to provide a low impedance output video signal with said low contrast and dark segments enhanced and with said high contrast and bright segments diminished; and

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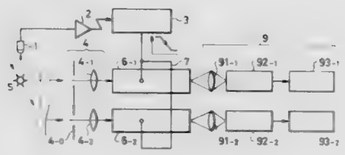
(f) a signal shaping network in the form of a diode clamp connected to said output of said device.

4,797,746
DIGITAL IMAGE INTERFACE SYSTEM
William D. Ashcraft, Fullerton, Calif., assignor to Rockwell International Coporation, El Segundo, Calif.
Filed Aug. 24, 1987, Ser. No. 88,369
Int. Cl.[4] H04N *7/01, 17/00*
U.S. Cl. 358—140 **6 Claims**



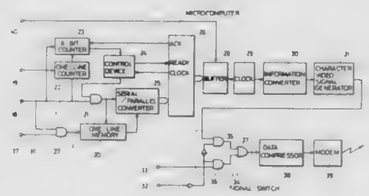
1. An interface system for converting digital image information into an output format, the interface system comprising:
an input for receiving input digital image information;
a memory connected to said input for storing said digital image information;
an input controller connected to said memory and comprising a programmable logic array programmed according to a plurality of formats, each, format corresponding to a format of a respective input digital image information signal, to cause said input digital image information to be read into said memory in a predetermined memory format;
means for selecting a format in said programmable logic array a format corresponding to the format of the format of the received input digital image information signal;
an output connected to said memory for outputting said digital image information;
an output controller connected to said memory for controlling the output of said memory to cause said digital image information to be readout of said memory in said output format.

4,797,747
STREAK CAMERA DEVICE HAVING A PLURALITY OF STREAK TUBES
Yoshihiro Takiguchi, and Yutaka Tsuchiya, both of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan
Filed Mar. 3, 1987, Ser. No. 21,228
Claims priority, application Japan, Mar. 4, 1986, 61-46579
Int. Cl.[4] H04N *3/18*
U.S. Cl. 358—217 **11 Claims**



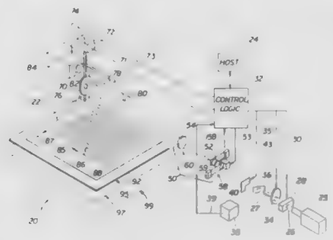
1. A streak camera device, comprising:
plural streak tube means generating a plurality of tube outputs for simultaneous measurement of a plurality of separate characteristics of a light emission, the plural streak tube means forming electron beams in response to the light emission;
deflecting signal generating means including only a single deflecting signal generating device generating a deflection output for simultaneously deflecting the corresponding respective beams of the plural streak tube means; and
means for recording the tube outputs of the streak tube means.

4,797,748
APPARATUS FOR SETTING TIME INFORMATION IN FACSIMILE SYSTEM
Matahira Kotani, Nara; Motohiko Hayashi, Yamatokoriyama, and Yoshikatsu Ooi, Habikino, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 21, 1986, Ser. No. 921,148
Claims priority, application Japan, Oct. 21, 1985, 60-235948
Int. Cl.[4] H04N *1/32*
U.S. Cl. 358—257 **6 Claims**



1. Apparatus for reading time information into an internal clock of a facsimile system, comprising:
means for sampling time mark data on a time mark sheet fed into an image reader of said facsimile system;
means for converting said sampled time mark data into said time information; and
means for setting said internal clock of said facsimile system with the time information produced by said means for converting.

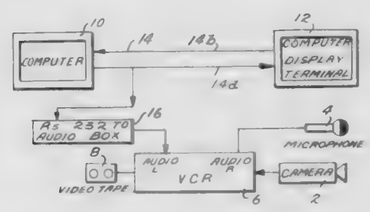
4,797,749
SCANNING SYSTEM WITH TUNABLE RESONANT ACTUATOR
Dean R. Paulsen, Danvers, Mass., assignor to General Scanning, Inc., Watertown, Mass.
Filed Nov. 18, 1986, Ser. No. 932,687
Int. Cl.[4] H04N *1/21*
U.S. Cl. 358—302 **8 Claims**



1. In a surface-scanning system defining an optical path and having a scanning assembly comprised of X and Y angularly oscillating scanners for deflecting a portion of said path, and first and second optical elements aligned with stationary portions of said optical path and driven in rectilinear oscillating motions along said path to provide focus correction respectively for said X and Y scanners,
the improvement wherein
said X direction scanner is of the resonant type and provided with means for dynamically tuning its resonant frequency,

said first optical element is mounted to oscillate in rectilinear resonant motion, and
said tuning means of said X direction scanner is arranged to receive a signal representing the oscillations of said first optical element and to tune the resonant frequency of said X direction scanner to synchronize its resonant motion with that of said first optical element.

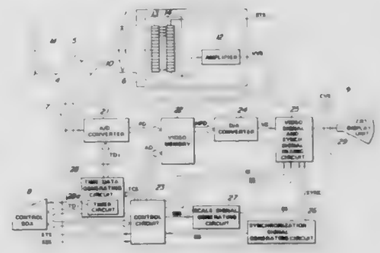
4,797,750
METHOD AND APPARATUS FOR TRANSMITTING/RECORDING COMPUTER-GENERATED DISPLAYS ON AN INFORMATION CHANNEL HAVING ONLY AUDIO BANDWIDTH
Michael J. Karweit, Baltimore, Md., assignor to John Hopkins University, Baltimore, Md.
Filed Apr. 16, 1986, Ser. No. 852,738
Int. Cl.[4] H04N *5/782*
U.S. Cl. 358—335 **43 Claims**



1. Apparatus for transmitting a computer-generated image together with an audio signal, comprising:
audio signal generating means adapted for receiving an aural input and converting said aural input into electrical audio signals indicative thereof;
computer means for generating first display codes from which said computer-generated image may be derived;
first conversion means for receiving said first display codes and converting each said display code into an electrical audio tone signals indicative of said each first display codes; and
transmission means, coupled to said audio signal generating means and to said first conversion means and having first and second channels of an audio bandwidth, for simultaneously transmitting said audio signals on said first channel and said audio tone signals on said second channel.

41. An apparatus for recording an informational session in synchronism with images on a computer display, comprising:
means for receiving said informational session, and for encoding said informational session into a form which can be recorded on a recording medium;
a computer for performing processing operations of a type related to said information session and for creating first display codes indicative of characters to be displayed on the screen of said computer;
a modem, coupled to said computer to receive said first display codes to produce audio signals indicative of said first display codes; and
multi-channel recording means, coupled to simultaneously receive said encoded informational session information on one channel thereof and said encoded display codes on another channel thereof, for recording said information on respective channels on the recording medium.

4,797,751
ELECTRONIC CAMERA APPARATUS FOR RECORDING AND REPRODUCING MOVING OBJECT IMAGES
Yoshihisa Yamaguchi, Tokyo, Japan, assignor to Yamaguchi Cinema Corporation, Tokyo, Japan
Filed Jun. 16, 1986, Ser. No. 874,550
Claims priority, application Japan, Jun. 19, 1985, 60-133355; Jun. 19, 1985, 60-133356; Jun. 19, 1985, 60-133357; Jun. 19, 1985, 60-133358
Int. Cl.[4] H04N *5/91*
U.S. Cl. 358—335 **9 Claims**



1. A video recording and reproducing apparatus comprising:
a. a line sensor camera having a line scan image sensor which is scanned along a predetermined standard line and receives an image of a plurality of moving objects passing the standard line and having an image pick-up section having means for picking up the image of at least two moving objects, said sensor having a scan speed set in response to an estimated speed of said objects;
b. first converter means for successively converting a one vertical scanning line output video signal of the line sensor camera into picture element data;
c. storage means for successively storing the picture element data, for a plurality of pictures, supplied from the first converter means;
d. selection means for selecting a desired picture from the plurality of the pictures;
e. read means for successively reading the picture element data corresponding to the selected picture by the selection means from the picture element data for the plurality of the pictures written on the storage means;
f. second converter means for converting the picture element data read by the read means into a video signal; and
g. display means for displaying a continuous picture image of said at least two moving objects moving in accordance with time on said one vertical scanning line video signal supplied to said display means from the second converter means.

4,797,752
INFORMATION STORAGE CARRIER AND METHOD FOR STORING DUPLICATE INFORMATION
Gary M. Giddings, Laguna Hills, Calif., assignor to Discovision Associates, Costa Mesa, Calif.
Division of Ser. No. 327,321, Dec. 4, 1981. This application Feb. 13, 1984, Ser. No. 579,618
Int. Cl.[4] H04N *5/85*; G11B *7/007*
U.S. Cl. 358—342 **4 Claims**

4. A method for storing intelligence information along a path on an information storage carrier, said method comprising the steps of:
providing an information storage member having a surface upon which said information is to be recorded;
recording a first series of lineal regions on said surface, defining a program of information, said program having a first subprogram part and a second subprogram part, said second subprogram part having a series of information

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segments identified by a corresponding first series of identification numbers; and

recording a second series of lenial regions arranged on said surface and spaced from said first series of lineal regions, each lineal region of said second series of regions containing information segments duplicative of respective information segments of said second subprogram part of said



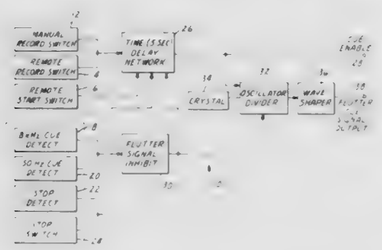
first series of lineal regions, said duplicative series of information segments identified by a corresponding second series of identification numbers, said first series of identification numbers being different than said second series of identifications numbers, thereby providing duplication of said second subprogram part of said program of information at two locations on said storage member.

4,797,753

MONITOR FOR VISUALLY INDICATING WEAR ON RECORD MEDIA

Joseph D. Montgomery, Bloomington, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 10, 1986, Ser. No. 917,490
Int. Cl.[4] G11B *5/00, 27/36;* **G01N** *27/72*
U.S. Cl. 360—27 **10 Claims**



1. A device for dynamically indicating relative wear in a cartridge containing recorded magnetic tape based on the amount of flutter present in signals reproduced from the tape, wherein message containing signals are recorded within at least a first track on said tape and a plurality of first cue signals are recorded on a second track on said tape at predetermined locations relative to the locations on said first track to define predetermined portions of the message containing signals, said device comprising:

(a) encode means including

(i) means for providing flutter detect cue signals containing uniquely identifiable components distinguishable upon playback from said first cue signals and

(ii) means responsive to said first cut signals for enabling recording said flutter detect cue signal onto said second track at locations outside of said predetermined locations and at least nominally coextensive with said locations at which said message containing signals are recorded on said first track, and

(b) decode means responsive to cue signals reproduced from said second track concurrently with said message containing signals reproduced from said first track, including

(i) means responsive to said unique signal components of said reproduced cue signals for producing a playback flutter detect cue signal,

(ii) means for comparing said playback flutter detect cue signal with a reference signal containing said uniquely identifiable components to produce an error signal indicative of the relative magnitude of flutter in said playback signal on said second track,

(iii) means responsive to said error signal for producing parallel outputs, each successive output being activated upon the occurrence of an error signal the level of which exceeds a previous level by a given amount, and

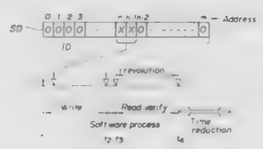
(iv) display means coupled to each of said plurality of successive outputs for producing a different visual indication upon the activation of a given successive output, whereby the relative magnitude of flutter in said playback signal and hence the amount of wear is readily determinable by the visual indication thus produced.

4,797,754

METHOD FOR WRITING SERVO PATTERN IN MAGNETIC DISK UNIT

Mitugu Sugano, Odawara; Shinichi Kaneko, Hadano; Mitsunori Oka, Fujisawa; Kimiya Nokina, Naka, and Kazuhiro Koshimizu, Hiratsuka, all of Japan, assignors to Hitachi, Ltd. and Hitachi Electronics Eng. Co., Ltd., both of Tokyo, Japan

Filed Dec. 15, 1986, Ser. No. 941,645
Claims priority, application Japan, Dec. 13, 1985, 60-279179
Int. Cl.[4] G11B *5/09, 15/12*
U.S. Cl. 360—48 **5 Claims**



1. A method of writing servo pattern data on a rotating magnetic disk having a plurality of recording tracks, comprising the steps of:

(a) writing servo pattern data including an index pattern onto a selected recording track of said rotating magnetic disk;

(b) effecting a plurality of processes during a predetermined period of time of known length immediately following said writing of servo pattern data;

(c) reading the servo pattern data which has been written on said selected recording track, including reading the index pattern included in said servo pattern data immediately following completion of said plurality of processes; and

(d) comparing the servo pattern data read from said selected recording track with the servo pattern data written on said selected recording track to determine whether a coincidence exists therebetween;

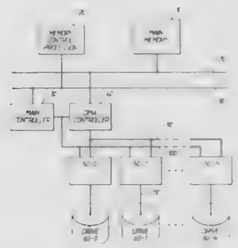
wherein said index pattern is positioned within said servo pattern data at a location which is spaced from the beginning of the servo pattern data by a distance which results in said index pattern being read out in step (c) without delay following completion of said plurality of processes.

4,797,755

SYSTEM AND METHOD FOR TRANSFERRING DATA BETWEEN A PLURALITY OF DISKS AND A MEMORY

David R. Baldwin, Sheppatoe, United Kingdom, and Shingo Sata, Otawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Oct. 2, 1986, Ser. No. 914,471
Claims priority, application Japan, Oct. 2, 1985, 60-217968
Int. Cl.[4] G11B *5/09*
U.S. Cl. 360—49 **10 Claims**



1. A system for data transfer comprising:

a memory;

a data bus coupled to said memory;

a plurality of disks each having surfaces divided into sectors in which data may be stored;

drive means for rotating said disks;

a plurality of data transfer heads, one said transfer head associated with each disk surface;

sector determining means for determining the current sector of each disk surface relative to the associated head;

a buffer coupled between each of said heads and said data bus; and

control means responsive to said sector determining means for transferring data between said head and said associated disk surface whenever said head for that surface is at the beginning of any sector involved in said transfer,

said control means further includes means for determining a correspondence between a location in said memory and a sector of said disk surfaces for data involved in said transfer and for individually transferring data directly with said memory and between said head and said associated disk surface for each sector involved in said transfer in an order independent of the order of said data in said memory.

4,797,756

METHOD FOR POSITIONING HEAD IN DISK DRIVE DERIVING "POSITION" OFFSET FROM "QUADRATURE" SIGNALS

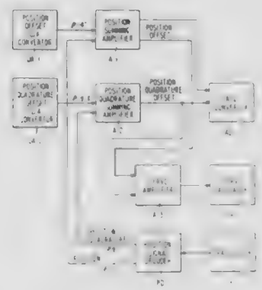
Hideki Yoshihara, San Jose, and Nicholas M. Warner, Livermore, both of Calif., assignors to Unisys Corp., Detroit, Mich.

Filed Mar. 5, 1987, Ser. No. 22,189
Int. Cl.[4] G11B *20/00*
U.S. Cl. 360—77.02 **10 Claims**

1. A method of automatically effecting absolute track registration of a R/W actuator means in a disk file of a disk drive servo system including a servo transducer, and associated servo control means including means for generating positioning signals PS comprising position signals P and related position-quadrature signals Q, this method including the steps of:

registering the actuator means in a nominal initial rest position corresponding to a zero-crossing of one of the signals PS and causing an initial sample-offset thereof;

detecting the corresponding magnitude of another of the positioning signals PS, repeatedly, until arriving at the peak-value/location thereof, and using the position-offset corresponding to this peak-location to derive a tru-offset value T-O and repositioning actuator means by this value T-0; and



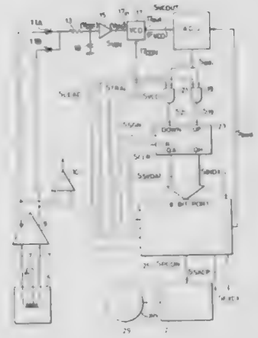
repeating the foregoing for a prescribed number of track sites across the disk file.

4,797,757

SERVO HEAD POSITIONER WITH PULSE ADJUSTING CIRCUITRY

Munehisa Haitani, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Aug. 25, 1986, Ser. No. 899,812
Claims priority, application Japan, Aug. 23, 1985, 60-128571[U]
Int. Cl.[4] G11B *5/596*
U.S. Cl. 360—77.08 **3 Claims**



1. A servo control apparatus for positioning a head at a target track position on a disk, comprising:

a position data region extending radially of the disk having recorded therein servo information for indicating deviation of the head from any selected one of a plurality of track positions of the disk;

indexing means for providing an index signal marking said position data region on the disk;

reading means including the head for reading the servo information stored in the position data region for a target track on which the head is to be precisely positioned;

signal providing means for providing a pulse signal representing the servo information which is read by the head in the position data region of the disk;

control means responsive to said index signal from said indexing means for generating a basic window signal representing a predetermined pulse signal supply time

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period in which deviationindicating pulses occurring in said pulse signal are to be supplied as an output;
adjusting means receiving said pulse signal from said signal providing means and said basic window signal from said control means for providing an adjusted output signal of only the deviationindicating pulses of said pulse signal occurring within said predetermined time period;
counting means including a reversible counter for maintaining a pulse count based upon said adjusted output signal which is indicative of the deviation of the head from the target track position of the disk; and
driving means for driving said head to the precise target track position in accordance with the counted output of said reversible counter.

4,797,758
PINCH ROLLER DRIVING MECHANISM
Katsumi Yamaguchi; Syouichiro Yokoi; Takao Kanai, and Kikuo Yoshikawa, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan
Filed Jan. 6, 1987, Ser. No. 713
Claims priority, application Japan, Jan. 14, 1986, 61-6052; Jan. 14, 1986, 61-6051; Jan. 14, 1986, 61-3223[U]; Jan. 29, 1986, 61-10382[U]
Int. Cl.[4] G11B *15/66*
U.S. Cl. 360—85 **8 Claims**



1. A mechanism for a tape recorder provided with a rotating head, comprising:
a driving gear driven by a selectively operable tape loading motor;
first and second tape loading gears and means responsvive to movement of said loading gears for moving a pair of tape loading blocks to positions in which a tape guided by said loading blocks extends at least partway around said rotating head;
first driving force transmitting means for transmitting a driving force from said driving gear to said first tape loading gear;
second driving force transmitting means for transmitting said driving force from said first tape loading gear to said second tape loading gear, said second driving force transmitting means including a rotatable cam gear having thereon a cam; and
pinch roller driving means engaging said cam of said cam gear for moving a pinch roller toward a capstan in response to rotation of said cam gear, said pinch roller driving means including a pinch roller gear, and said cam on said cam gear causing said pinch roller driving means to initiate movement of said pinch roller at a point in time after said loading blocks have been moved a predetermined distance.

4,797,759
TAPE RECORDER MODE SELECTOR DEVICE FOR PLURAL CASSETTE TAPES
Satoru Koizumi; Daisuke Teshima, and Yoshio Katayama, all of HigashiHiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 24, 1986, Ser. No. 911,150
Claims priority, application Japan, Sep. 26, 1985, 60-213520
Int. Cl.[4] G11B *15/68*
U.S. Cl. 360—92 **3 Claims**

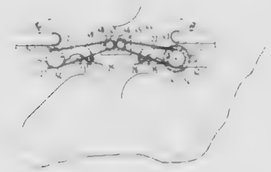


1. A tape recorder comprising:
a cassette tape compartment for detachably housing a plurality of cassette tapes,
a capstan on which said plurality of cassette tapes housed in said tape compartment are coaxially loaded,
a separate roller means for driving each of said plurality of cassette tapes, each of said roller means being mounted so that it can be pressed against said capstan,
a single control means for selecting a cassette tape to be driven by said roller means,
means for selecting one of a plurality of cassette tape drive modes, said mode selecting means comprising a record button, a play button, a fast forward button, a rewind button and a stop button, each of said buttons actuating a drive mode for any selected cassette tape,
said single control means including a tape selecting member,
said tape selecting member including means for placing the roller means for driving any non-selected tape in a non-driving position spaced from said capstan, and
fast rotator means alternatively positionable for causing the selected cassette to rotate at a high speed for a rewinding operation or for a fast-forwarding operation.

4,797,760
CASSETTE DECK WITH COMBINATION TAPE PULL-OUT & TENSIONING LEVERS
Karl-Heinz Rademacher, Aisbach, and Theo Wolf, Rossdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 30, 1987, Ser. No. 79,820
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1986, 3626940
Int. Cl.[4] G11B *5/008, 15/00, 17/00*
U.S. Cl. 360—95 **6 Claims**

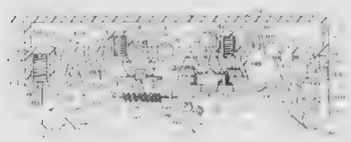
1. Magnetic tape transducing apparatus with automatic tape withdrawal, to withdraw tape (**11**) from a cassette (**12**), having
support means (**65***a*) for supporting the cassette (**12**);
dynamo electric means (**M1,M2**) for, respectively, driving a cassette reel (**R1,R2**) for supplying tape and taking up tape, and providing tensioning torque, to maintain tape tensioned at a predetermined level;
tape tension control means (**21, 22; 90,91,91***a*) coupled to the tape and to the dynamo electric means and controlling the dynamo electric means to maintain a predetermined tape tension,
said apparatus comprising, in accordance with the invention,
tape loading elements (**21, 22**) located on the support means and movable from a rest position for engagement behind the tape (**11**) in the cassette and to move the tape out of the cassette towards a transducing path (**11'**, **11''**, **11***a*);

means (**60**) for moving the tape loading elements from the rest position to move said tape toward the transducing path; and
means (**90,91,91***a*) sensing the position of the tape loading elements during operation of the apparatus when said tape loading elements are engaged by the tape,



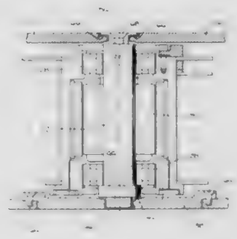
said tape loading elements (**21, 22**) and said position sensing means (**90,91,91***a*) forming part of the tape tension control means, controlling the dynamo electric means during removal of tape from the cassette, placing the tape in the transducing path, and controlling tape tension during tape operation when in said transducing path.

4,797,761
TELESCOPING DISK DRIVE ASSEMBLY
Vincent L. Cocco, Wakefield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jun. 13, 1986, Ser. No. 874,003
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—99.06 **7 Claims**



1. A compact apparatus for writing and/or reading information on a disk, said apparatus comprising:
a housing including a first housing section having a first opening, a telescoping second housing section, and means for mounting said second housing section on said first housing section to move by sliding through said first opening between a compact operative position and an extended disk insertion and withdrawal position;
means for defining a second opening in said first housing section serving as an access opening through which a disk is moved for insertion and withdrawal;
a disk drive within said housing for writing and/or reading information on a disk inserted thereinto through said access opening, said disk drive including at least first and second components mounted, respectively, on said first and second housing sections for relative movement therewith between said compact position, wherein said first and second components are in operative relation with the disk for write and/or read operations, and said extended position wherein at least one of said first and second components is spaced further away from the disk, than when said first and second components are in said operative position, for facilitating disk insertion and withdrawal operations;
means on said first housing section for applying a biasing force on said second housing section urging it toward said extended position;
latching means for releasably latching said second housing section, said latching means being movable between a latching position wherein it retains said second housing section in said compact position against the urging of said applied biasing force, and an unlatching position wherein it releases said second housing section for movement to said extended position under the influence of said biasing force; and
a door mounted on said housing for movement between a closed position blocking said access opening and an open position unblocking said access opening.

4,797,762
STRESS FREE WINCHESTER DRIVE SHAFT MOUNTING
Lloyd Levy, Northridge; Dan L. Kilmer, Reseda, and Kevin P. Maher, Burbank, all of Calif., assignors to Micropolis Corporation, Chatsworth, Calif.
Filed Sep. 22, 1987, Ser. No. 99,536
Int. Cl.[4] G11B *5/105, 17/02. 21/02*
U.S. Cl. 360—99.06 **20 Claims**



1. A Winchester disk drive assembly having stress free shaft mounting arrangements comprising:
a housing for the disk drive including first and second spaced mounting plates;
a disk drive mounted within said housing, said disk drive including shafts for both a main drive motor assembly and for a head positioner;
a first end of at least one of said shafts being rigidly secured to said first mounting plate;
means including a shouldered washer for securing the second end of said shaft to said second mounting plate;
said second mounting plate having a hole and an associated counterbored recess for receiving said shouldered washer;
said washer having a reduced diameter portion for engagement with said second end of said shaft, at a point spaced inward from said second mounting plate, and having an enlarged portion located in said counterbore;
screw means for holding said shouldered washer in firm engagement with said second end of said shaft, and with the enlarged portion of said shouldered washer spaced from said counterbored recess; and
adhesive means for filling the space between the enlarged portion of said shouldered washer and said counterbored recess and for firmly securing said shouldered washer to said second mounting plate following securing of said washer to the end of said shaft;
whereby a stress-free mounting of said shaft is obtained, with access being provided to the housing by removing said screw means, and disassembling said second plate with said washer.

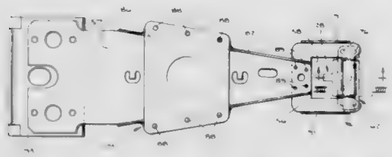
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,763

COMPACT MAGNETIC HEAD FLEXIBLE SUSPENSION

Lloyd Levy, Chatsworth; Michael W. Warner, Westlake, and Dan L. Kilmer, Reseda, all of Calif., assignors to Micropolis Corporation, Chatsworth, Calif.

Filed Aug. 13, 1986, Ser. No. 896,383
Int. Cl.[4] G11B *5/48, 21/16*
U.S. Cl. 360—104 **18 Claims**



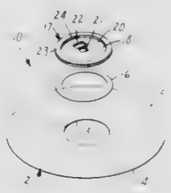
1. A hard disk memory head mounting assembly having low inertia and reduced inter-disk spacing, comprising:
an extended load beam mounting arm having a substantially ring-shaped outer end including a transverse head supporting portion at its outermost end;
a standard hard disk type magnetic head having a first disk bearing and coupling side having a pair of longitudinally extending grooves, and a second mounting side having a transverse mounting slot therethrough;
means for mounting said magnetic head to said transverse head supporting portion, with said portion extending through the mounting slot, and said head having one portion extending up into the opening in the ring-shaped outer end of said mounting arm; and
said mounting means being a springy sheet metal member having a central broad area with a rounded bearing means extending from said broad central area for pivotally engaging substantially the center of said transverse head supporting portion at an engagement point at the end of said rounded bearing means, said central broad area being secured to said magnetic heat at the bottom of said mounting slot, and said sheet metal member having two arms extending from said central broad area in opposite directions along said supporting portion and bonded to said supporting portion at the ends of each said arm;
whereby the magnetic head is pivotally and resiliently mounted to said mounting arm to pivot through small angles about the engagement point at the end of said rounded bearing means.

4,797,764

RECORDING DISK WITH LOW TOTAL INDICATED RUNOUT

Arlin B. Doering, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 27, 1986, Ser. No. 823,190
Int. Cl.[4] G11B *5/82*
U.S. Cl. 360—135 **4 Claims**



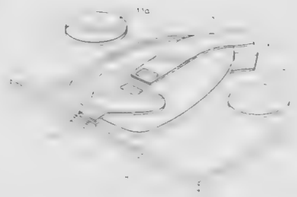
1. A magnetic recording medium disk comprising:
a one-piece hub, including a center portion and a flange portion, said center portion having a planar drive surface and said flange portion having a characteristic total indicated runout (hub T.I.R.);
a magnetic medium, including a side zero and a side one; and
a thermoplastic adhesive which can be melted by ultrasonic vibrations, located between the magnetic medium and the hub flange and bonding said side one of said medium to said flange of said hub;
said side zero of said medium being fixed a distance, α, from the plane of said drive surface, the total indicated runout of α being called α T.I.R.;
wherein, the T.I.R. ratio is defined as hub T.I.R. divided by α T.I.R., and the magnetic recording medium disk is characterized by a T.I.R. ratio greater than one.

4,797,765

THIN FILM MAGNETIC HEAD HAVING SOLDER-BONDED PROTECTIVE PLATE

Joichiro Ezaki, and Hiroshi Kanai, both of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 847,358, Apr. 2, 1986, abandoned. This application Apr. 14, 1988, Ser. No. 183,542
Claims priority, application Japan, Apr. 3, 1985, 60-48668[U]
Int. Cl.[4] G11B *5/255, 5/31, 5/105*
U.S. Cl. 360—110 **5 Claims**



1. A thin film magnetic head comprising:
a head structure having a substrate, a head core formed of a thin magnetic material on said substrate, and a conductor encircling said head core to form a coil,
a protective plate,
at least two isolated first solder areas formed directly on the surface of said substrate,
at least two isolated second solder areas formed on the surface of said protective plate,
the protective plate facing the substrate such that the second solder areas are at a plane-symmetrical or mirror image position with respect to the first solder areas,
the first and second solder areas being vertically registered and fused together,
whereby a bond is formed between the head structure and said protective plate at said isolated solder areas,
the surface of said head structure which faces the protective plate, except for said first solder areas, being covered by a protective coating, said first solder areas being partially encased in said protective coating.

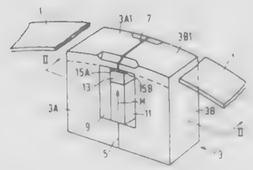
4,797,766

MAGNETIC HEAD WITH MAGNETORESISTIVE ELEMENT

Ulrich E. Enz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1986, Ser. No. 929,940
Claims priority, application Netherlands, Feb. 17, 1986, 8600390
Int. Cl.[4] G11B *5/127, 5/33*
U.S. Cl. 360—113 **12 Claims**

1. A magnetic head, particularly for reading information from a magnetic registration medium, which magnetic head comprises a magnetic yoke having two limbs spaced at a distance from each other whose free ends constitute pole faces on either side of a read gap present between the limbs and defined thereby, said magnetic head also comprising a magnetoresistive element present within the magnetic yoke at a distance from the pole faces, characterized in that a magnetic intermediate yoke is arranged between the limbs of the magnetic yoke



and in that the magnetoresistive element is formed by a layer of Bi provided on said intermediate yoke, which layer of Bi, viewed in the longitudinal direction of the read gap, extends on either side of said gap and at least during operation is present in a constant magnetic field directed transversely to the layer of Bi.

4,797,767

DIGITAL MAGNETIC HEAD STRUCTURE

Rene Baus, Jr., Palos Verdes, Calif., assignor to American Magnetics Corporation, Carson, Calif.

Filed Nov. 20, 1986, Ser. No. 933,075
Int. Cl.[4] G11B *5/265, 5/29, 5/127*
U.S. Cl. 360—121 **9 Claims**



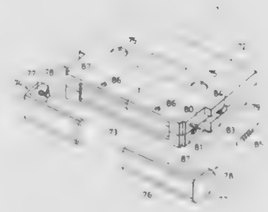
1. A magnetic head assembly comprising first and second wafers of abrasion resistive material, each of said wafers having first and second major faces and anterior and posterior edges, each of said wafers including first and second slots extending inwardly from each of said anterior and posterior edges and extending from said first to said second major faces, like numbered ones of said slots being aligned with one another, respective opposing slots in said first and second wafers also being in alignment, each of said slots including magnetically soft material, said material in said first and second slots at said interior edge extending to said anterior edge and also being abrasion-resistive, each of said faces of said first and second wafers including lateral troughs extending laterally across said slots, a glass layer between said first faces, said first faces being juxtaposed with respect to one another, the anterior edges thereof being separated by said glass layer, first and second flux closure elements abutting opposing second faces and extending between magnetically soft material filling respective ones of said opposing slots for forming flux closure paths therebetween.

4,797,768

MAGNETIC TAPE CASSETTE WITH SPRING BIASED U-SHAPED PIVOTABLE GUARD PANEL

Kengo Oishi, and Osamu Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 687,304, Dec. 28, 1984, Pat. No. 4,701,822.
This application May 19, 1987, Ser. No. 51,331
Claims priority, application Japan, Dec. 28, 1983, 58-199198; Dec. 28, 1983, 58-199199; Jan. 4, 1984, 59-1; Jan. 4, 1984, 59-2; Jan. 19, 1984, 59-5613; Jan. 19, 1984, 59-5616
Int. Cl.[4] G11B *23/04*
U.S. Cl. 360—132 **3 Claims**



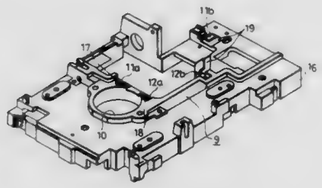
1. A magnetic tape cassette having a cassette case including upper and lower halves, a front wall, a rear wall, and laterally opposed right and left side walls, a magnetic head inserting opening formed in the front wall of said cassette case, said cassette case incorporating a pair of hubs on which a magnetic tape is wound, the improvement comprising:
said cassette case having shaft-receiving through-holes in front end portions of right and left side walls thereof, each shaft receiving through-hole being of V-shape inclined forwardly and opening towards the front wall and bisected by a line dividing the casing into said upper and lower halves;
a substantially U-shaped guard panel, said guard panel comprising a front piece and right and left end pieces at opposite ends of said front piece, cylindrical shafts fixedly mounted to respective right and left end pieces on the inside faces thereof, facing each other, and being slidably engaged with respective ones of said shaft-receiving through-holes, each cylindrical shaft having a base part proximate to said end piece and an end part remote from said end piece, which are each in the form of a radial flange having a diameter larger than the diameter of said shaft-receiving through-hole and having an intermediate portion smaller in diameter than said shaft-receiving through-hole and being positioned therein and captured thereby, and said guard panel being swingable vertically of said cassette and adapted to close said opening; and
urging means provided on at least one of said right and left side walls of said cassette case and connected to an adjacent one of said end pieces at a position which is closer to said cassette case than said shaft of said end piece to urge said guard panel towards said cassette case and with said shaft positioned at the intersection of oppositely inclined portions of said V-shaped through-hole, and wherein:
the two halves of said cassette case are symmetrical in configuration.

4,797,769

DISC DRIVING DEVICE

Hiroaki Sasaki; Kazuo Hasegawa; Noboru Fukukawa, and Masanori Yata, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 856,636, Apr. 25, 1986, abandoned. This application Apr. 29, 1988, Ser. No. 188,655
Claims priority, application Japan, Apr. 25, 1985, 60-87538
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—99.08 3 Claims



1. A disc driving device comprising:

a carriage carrying a magnetic head thereon for movement radially of a disc along a first, horizontal direction of the disc driving device while sliding on a pair of parallel guide shafts extending in the first, horizontal direction; and

a housing for mounting parts of the disc driving device, said housing including a pair of front bearing portions spaced apart from each other in a second horizontal direction perpendicular to said first horizontal direction, each of said front bearing portions being spaced apart and facing opposite a respective one of a pair of rear bearing portions along said first horizontal direction, each of said rear bearing portions corresponding in position to the respective one of said front bearing portions for accurately holding front and rear ends of the respective ones of said pair of guide shafts so that they are mounted in parallel for movement of said carriage thereon, each of said front bearing portions and rear bearing portions being open toward one vertical direction and having a bearing width facing said vertical direction which is suitable for journalling a corresponding end of a respective one of said guide shafts therein;

wherein said rear pair of bearing portions consists of a first rear bearing portion and a second bearing portion, each of said first and second rear bearing portions having a front side facing the corresponding one of said front bearing portions and a rear side facing opposite therefrom,

and said housing further including a relief slot extending from the rear side of the first rear bearing portion then across said second horizontal direction to the rear side of the second rear bearing portion, said relief slot being open toward said vertical direction and having a relief width larger than said bearing width,

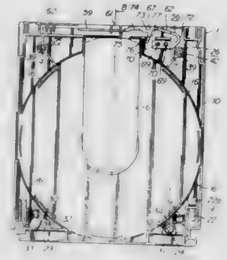
whereby said front and rear pairs of bearing portions are all machined by a cutting tool oriented in said vertical direction and moving in one continuous horizontal movement without backtracking by moving from one of said front bearing portions along the first horizontal direction through the first rear bearing portion to the rear side thereof, then along the relief slot having said larger relief width across the second horizontal direction, to the rear side of and through the second rear bearing portion, then back along the first horizontal direction to the other one of said front bearing portions.

4,797,770

DISK CARTRIDGE WITH RELEASABLE LATCHING SHUTTER

Kenji Takahasi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP86/00184, § 371 Date Feb. 13, 1987, § 102(e) Date Feb. 13, 1987, PCT Pub. No. WO86/06204, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 14, 1986, Ser. No. 6,550
Claims priority, application Japan, Apr. 15, 1985, 60-55761
Int. Cl.[4] G11B *23/03*
U.S. Cl. 369—291 10 Claims



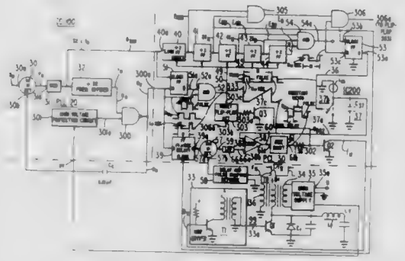
1. A disk cartridge comprising pickup apertures provided in the plane of the cartridge body, a sliding shutter having a bent portion, said sliding shutter having portions for opening or closing said pickup apertures, and a resilient locking member having a locking recess in which said bent portion is engaged when said sliding shutter is in a shutter-closed position so as to lock said shutter, said locking member also having a base portion mounted to said cartridge body and a free end, there being formed in said sliding shutter an unlocking pin insertion aperture adapted to receive an unlocking pin from a recording and/or reproducing apparatus to deflect said free end of said locking member and for sliding the shutter to a shutter-open position, said aperture being disposed aligned with the free end of said locking member when said sliding shutter is in the shutter-closed position.

4,797,771

TELEVISION FAULT DETECTION AND PROTECTION APPARATUS

James H. Doty, II, Indianapolis, and Jeffery B. Lendaro, Noblesville, both of Ind., assignors to RCA Licensing Corporation, Princeton, N.J.

Filed Jun. 30, 1987, Ser. No. 68,084
Int. Cl.[4] H02H *3/20*
U.S. Cl. 361—88 11 Claims



1. A television apparatus power supply with a fault protection arrangement, comprising:

a source of an input signal at a frequency that is related to a deflection frequency;

means for generation of a fault indicative signal when a fault condition occurs in said power supply;

means responsive to said input signal for generating a first signal at a first terminal during normal operation having transition edges at a frequency that is related to that of said input signal such that when said fault indicative signal is generated, the occurrence of said transition edges of said first signal is prevented, and for generating a second signal at a second terminal, both during normal operation and when said fault indicative signal occurs, at a frequency that is related to that of said input signal;

missing edge detecting means responsive to said first signal for generating a third signal when a transition edge within said first signal is missing;

a source of input supply voltage;

a load;

switching means, switching in response to said second signal and coupled to said load and to said source of input supply voltage for developing an output supply voltage for said load during normal operation; and

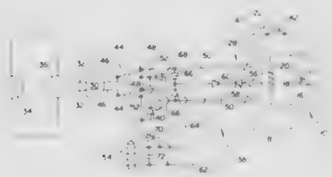
means responsive to said third signal and coupled to said switching means for generating a signal that prevents the occurrence of said switching operation to substantially reduce said output supply voltage when said third signal is generated.

4,797,772

IMMERSION DETECTOR CIRCUIT INTERRUPTER

Kostas Kapianis, Fort Wayne, Ind., assignor to Patton Electric Company, Inc., New Haven, Ind.

Filed Mar. 3, 1987, Ser. No. 21,185
Int. Cl.[4] H02H *3/16*
U.S. Cl. 361—42 29 Claims



1. A circuit interrupter which interrupts the delivery of alternating current to an electrical appliance through a plurality of conductors, said circuit interrupter comprising:

switch means connected to each of the conductors for interrupting the delivery of alternating current therethrough to the appliance;

sensor means located substantially near the appliance for conducting electrical current;

coil means connected to said sensor means for actuating said switch means and interrupting the delivery of alternating current to the appliance when said coil means is energized;

a plurality of rectifier means connected in series with said coil means and said sensor means, each rectifier means connected in a parallel fashion to each of the respective conductors for conducting current in one direction through said coil means and said sensor means and for preventing a short circuit between the conductors, whereby current to the appliance is interrupted when said sensor means contacts water or when water bridges the appliance components and said sensor means; and,

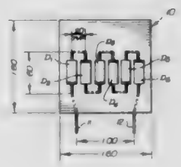
latch means for retaining said switch means actuated and the delivery of alternating current to the appliance interrupted after said coil means actuates said switch means.

4,797,773

SPATIAL ARRAY FILTERING SYSTEM FOR ELECTRICAL DEVICES

Frank D. Hosorof, Priest River, and Richard Odenberg, Coeur d'Alene, both of Id., assignors to Transtector Systems, Inc., Hayden Lake, Id.

Continuation of Ser. No. 861,321, May 9, 1986, abandoned. This application Apr. 13, 1988, Ser. No. 183,383
Int. Cl.[4] H02H *9/00*
U.S. Cl. 361—58 11 Claims



1. A device for protecting electrical circuitry from electrical transients, said device comprising:

a plurality of diodes connected between a pair of electrical terminals, the physical spacing and orientation of said diodes being selected to provide

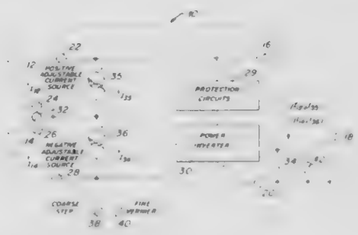
a selectively tailored impedance versus frequency characteristic enabling filtering of undesired noise at frequencies selected for individual applications utilizing said device.

4,797,774

SIGNAL CONDITIONING CIRCUIT

Wilson A. Clayton, La Habra, and Algis P. J. Babilius, Diamond Bar, both of Calif., assignors to General Signal Corporation, Stamford, Conn.

Filed Sep. 30, 1986, Ser. No. 913,825
Int. Cl.[4] H02H *3/08, 3/20*
U.S. Cl. 361—86 14 Claims



1. A signal conditioning circuit comprising:

power terminal means adapted to be connected to a direct current power source;

sensor terminal means adapted to receive a direct current signal;

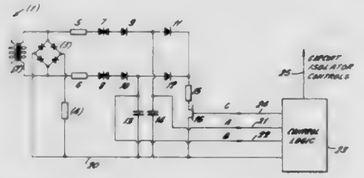
output terminal means adapted to be connected to an electrical resistance;

inverter means connected to said power terminal means for generating an output signal of opposite polarity to the signal received at said power terminal means; and

adjustment means connected to said sensor terminal means, said inverter means, said power terminal means and said output terminal means for receiving said inverter output signal and for shifting the scale of the signal received at said sensor terminal means to a desired scale at said output terminal means.

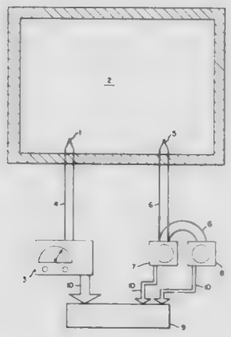
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4,797,775
SYMMETRICAL FAULT CURRENT DETECTOR
David R. Ashrey, Senghall, and Ian Jameson, Wirral, both of United Kingdom, assignors to The Electricity Council, London, England
Filed Apr. 21, 1986, Ser. No. 854,246
Claims priority, application United Kingdom, May 20, 1985, 8512746
Int. Cl.[4] H02H *3/087*
U.S. Cl. 361—93 4 Claims



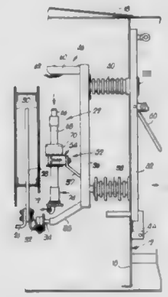
1. A fault current detector comprising:
current tranaformer means adapted to be inductively coupled to an alternating current power line to provide a signal representative of current flowing in the alternating current power line; and
means responsive to the signal to provide a fault current indication if the alternating current flow represented by the signal exceeds a predetermined threshold in each polarity but not to provide the fault current indication if the alternating current flow exceeds the predetermined threshold in only one polarity.

4,797,776
FURNACE TEMPERATURE SAFETY SYSTEM
William J. Snyder, White Plains, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.
Filed May 12, 1987, Ser. No. 48,879
Int. Cl.[4] F23N *5/24*
U.S. Cl. 361—103 16 Claims



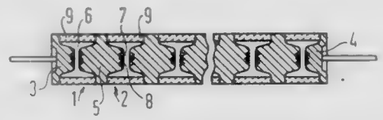
1. Furnace temperature safety system comprising:
(a) first thermocouple means for sensing temperature within a furnace, and means to transmit a signal corresponding to its sensed temperature to furnace temperature reading means;
(b) second thermocouple means for sensing temperature within a furnace, and means to transmit a signal corresponding to its sensed temperature in parallel to both low temperature reading means and high temperature reading means; and
(c) means to transmit the temperature reading from each of the furnace temperature, low temperature, and high temperature reading means to a signal comparator capable of comparing the three readings and making a logical decision based on their present values.

4,797,777
ELECTRONIC SECTIONALIZER AND MOUNTING STRUCTURE FOR SWITCHGEAR
Lloyd R. Beard, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.
Filed Oct. 20, 1987, Ser. No. 110,966
Int. Cl.[4] H02H *7/22*
U.S. Cl. 361—115 13 Claims



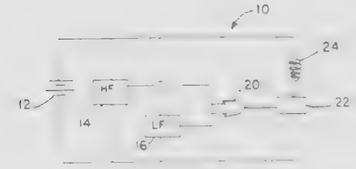
8. Electronic sectionalizer mechanism including:
an elongated element having a first portion and a second portion electrically connected to said first portion;
means for sensing the magnitude of current flowing through said element;
first mounting structure including a first contact engageable with said first portion of said element;
second mounting structure constructed for telescopically receiving said second portion of said element and including a second contact engageable with said second portion of said element;
means for releasably retaining said element in an operating position with said first portion and said second portion of said element in engagement with said first contact and said second contact respectively; and
means coupled to said sensing means for selectively releasing said element from said operating position and for enabling telescopic movement of said element in an essentially longitudinal direction through said second mounting structure in order to shift said first portion of said element away from said first contact and toward an isolated, open circuit position.

4,797,778
GAS DISCHARGE PATH
Juergen Boy, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jun. 5, 1987, Ser. No. 58,874
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1986, 3620344
Int. Cl.[4] H02H *9/06*; H01T *4/16*
U.S. Cl. 361—130 2 Claims



1. A gas discharge structure for high voltages, high frequencies and high numbers of switching actuations, comprising: at least two series-associated individual arresters; an insulator tube including two openings;
each of said arresters comprising two electrodes which extend into said tube openings of said insulator tube and are connected thereto in a vacuum-tight manner such that said insulator tube and said electrodes form an individual gas discharge gap;
a gas in said gas discharge gap which is partially composed of hydrogen with the hydrogen constituent lying between 5 vol. % and 10 vol. %;
said electrodes including end faces lying opposite one another and an activation compound carried on said end faces, said electrodes comprising solid copper and said electrodes which are adjacent to one another in the series being arranged on the same axis and being a one-piece structure.

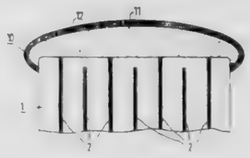
4,797,779
PULSED POWER SUPPLY
James A. Richards, Joliet, and Ronald T. Stefanek, Lockport, both of Ill., assignors to Folger Adam Company, Lemont, Ill.
Filed Oct. 5, 1987, Ser. No. 104,685
Int. Cl.[4] H01H *47/12, 47/32*
U.S. Cl. 361—154 10 Claims



1. A power supply for controlling a solenoid actuated lock comprising:
a D.C. voltage source;
a solenoid connected to said voltage source, said solenoid having a coil and a plunger;
means for generating a first train of constant voltage pulses, the first pulse of said train being produced upon application of said D.C. voltage to said generating means and having a first pulse width, and all subsequent pulses having a pulse width less than said first pulse width;
means for generating a second pulse train, the pulses of said train being of constant voltage and of a frequency greater than said first pulse train; and
switching means responsive to said first and second pulse trains for switching current through the coil of said solenoid, said first pulse train acting to seat the plunger of said solenoid, and said second pulse train acting to maintain said plunger in the seated position.

4,797,780
COMPONENT WITH FILLED LAYERS AND ELECTRICAL CONTACTS AND METHODS FOR ITS PRODUCTION
Thomas Moser, Schnaittach; Klaus Otto, Nuremberg; Horst Kippenberg, Herzogenaurach, all of Fed. Rep. of Germany; Johann Ramler, Deutschlandsberg, and Josef Unterlass, Graz, both of Austria, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Aug. 18, 1987, Ser. No. 86,564
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1986, 3627938
Int. Cl.[4] H01G *4/10, 7/00, 1/14*
U.S. Cl. 361—321 11 Claims

1. component with filled layers, comprising: a ceramic body of dense and porous layers impregnated by a metal or an alloy impregnating material and having electrical contacts on its outer faces, wherein the contacts contain enrichments of elemental constituents which alloy with the main elemental substance of the contacts to form at least one intermetallic compound which is largely insoluble in the impregnating material, said elemental constituents comprising at least one element selected from the group consisting of indium, gallium and thallium.



4,797,781
EARTHQUAKE RESISTANT HIGH VOLTAGE DEVICE
Dietrich Kluge, Waldshut-Tiengen, Fed. Rep. of Germany, assignor to BBC Brown Boveri AG, Baden, Switzerland
Filed Oct. 19, 1987, Ser. No. 124,561
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1986, 3636009
Int. Cl.[4] H02B *1/00*; H01F *27/06*
U.S. Cl. 361—332 8 Claims



7. An earthquake resistant high voltage device having a high potential side and a ground potential side and comprising:
a least one high voltage breaker;
at least one connection from said at least one high voltage breaker to a high voltage line;
at least one high voltage insulator connected between the high voltage side and the ground potential side of said at least one high voltage breaker;
means for rotatably movably suspending the high voltage insulator from the ground potential side of said at least one high voltage breaker;
said rotatably movably suspending means suspending said at least one high voltage breaker from the ground potential side in a reverse position as compared to a normal position in which said at least one high voltage breaker has a grounded base point; and
said at least one high voltage breaker being supported in a substantially zero-load carrying manner on the high voltage side of said at least one high voltage breaker.

4,797,782

ARRANGEMENT IN ONE OR MORE UNITS DISPOSED IN AN OUTER UNIT

Roger Wistling, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

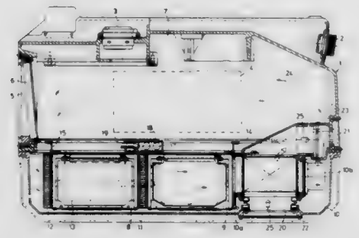
PCT No. PCT/SE86/00443, § 371 Date May 20, 1987, § 102(e) Date May 20, 1987, PCT Pub. No. WO87/02214, PCT Pub. Date Apr. 9, 1987

PCT Filed Oct. 2, 1986, Ser. No. 54,178

Claims priority, application Sweden, Oct. 3, 1985, 8504570

Int. Cl.[4] H05K *7/20*

U.S. Cl. 361—384 **10 Claims**



1. An apparatus comprising:

a portable, low-weighted outer unit defining an inner, dust-free aseptic space housing optical components and heat generating electronic components;

inner units provided in said space and disposed along one inner wall of said outer unit to form a channel having an inlet and outlet positioned close to two opposite inner walls of said outer unit;

at least one, first inner unit encasing said electronic components which are disposed on assembly boards stacked in said first unit;

a second inner unit including a cooler provided with an air heat exchanger;

a first circulation means for circulation of inner air in said space and through said inlet of said channel past said electronic components, said heat exchanger of said cooler unit; said outlet of said channel, said optical components in said space and back to said inlet of said channel;

a second circulation means for drawing in outer air through said heat exchanger and out through an exhaust outlet in said outer unit;

wherein said heat transported from said electronic components by said inner air flow is transferred to said outer air flow whereby the temperature of said inner air in said space is kept reduced.

4,797,783

AIR COOLING EQUIPMENT FOR ELECTRONIC SYSTEMS

Mitsuo Kohmoto, and Yohichi Matsuo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 780,496, Sep. 26, 1985, abandoned. This application Oct. 13, 1987, Ser. No. 106,891

Claims priority, application Japan, Sep. 26, 1984, 59-199434; Oct. 4, 1984, 59-207135

Int. Cl.[4] H05K *7/20*

U.S. Cl. 361—384 **9 Claims**

1. Air cooling equipment housing having therein a plurality of wiring boards with a plurality of heat generating electric components mounted thereon, said air cooling equipment housing comprising:

first blower means introducing cooling air from top of the housing;

first air passage means having an intake port, an air passage over at least one of said plurality of wiring boards and an exhaust port, said first air passage means passing the air from said first blower over said one of said plurality of boards wiring and exhausting it;

second blower means introducing cooling air from bottom of the housing;

second air passage means having an intake port, an air passage over at least a second of said plurality of wiring boards and an exhaust port, said second air passage means passing the air from said second blower over said second of said plurality of boards and exhausting it; and

a partition wall separating said first air passage means and said second air passage means.

4,797,784

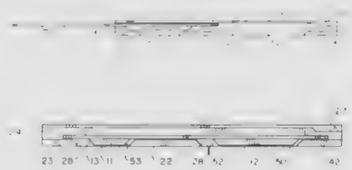
SUBSTRATE MOUNTING DEVICE

Thomas D. Belanger, Jr., Clarendon Hills, Ill., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 32,667, Apr. 1, 1987, abandoned. This application Sep. 28, 1987, Ser. No. 101,893

Int. Cl.[4] H05K *1/18*

U.S. Cl. 361—395 **8 Claims**



1. A substrate mounting device for mounting an electrical substrate to a carrier substrate comprising:

a first pair of guide rails each mounted on the perimeter edge of said electrical substrate directly opposite each other;

a second pair of guide rails located in a spaced relationship to said first pair of guide rails and each guide rail of said second pair of guide rails mounted on the perimeter edge of said electrical substrate directly opposite each other;

first and second substrate guides mounted to said carrier substrate in a spaced and parallel relationship to each other, each of said substrate guides including a channel longitudinally oriented along a first side thereof, and each of said channels including an open end and a top guide, and each channel extends between said open end and said top guide, said first and second substrate guide channels further defined by a top surface and first and second drop guides, said first and second drop guides located opposite said top surface, and said first and second drop guides further defining first and second guide rail receiving slots;

said electrical substrate and said first and second guide rails arranged to be manually inserted into respective first and second substrate guide channels at respective channel open ends and manually pushed along said channels riding between respective first and second drop guides and channel top surfaces until said substrate encounters a respective top guide whereby, said first guide rail and said second guide rail fall within respective first and second guide rail receiving slots on each of said first and second substrate guides, resting each of said first and second electrical substrate guide rails on said carrier substrate.

4,797,785

CIRCUIT ARRANGEMENT AND RESONANT LABEL, AND A PROCESS FOR ITS PRODUCTION

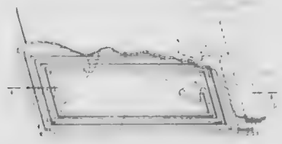
Paul R. Jorgensen, Almunecar, Spain, assignor to Durgo AG, Switzerland

Filed Jul. 29, 1987, Ser. No. 79,579

Claims priority, application Switzerland, Jul. 30, 1986, 3103/86

Int. Cl.[4] H05K *1/16*; **H01G** *7/00*; **C25D** *5/02*

U.S. Cl. 361—402 **32 Claims**



1. A circuit arrangement comprising:

a substrate;

a first circuit pattern formed on the substrate which comprises a first circuit section and a second circuit section; and

a second circuit pattern superposed on the first circuit pattern, which comprises a third circuit section and a fourth circuit section;

said second and fourth circuit sections having corresponding size and shape and being separated and adhered by an adhesive insulating material; and

wherein said first and third circuit sections have an adhesive insulating layer therebetween, and crimped portions of at least one of said first and third circuit sections extend through said insulating layer for directly conductively interconnecting said first and third circuit sections.

4,797,786

SUBSTRATE MOUNTING DEVICE

Thomas D. Belanger, Jr., Clarendon Hills, Ill., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Continuation of Ser. No. 32,667, Apr. 1, 1987, abandoned. This application Sep. 28, 1987, Ser. No. 102,239

Int. Cl.[4] H05K *7/02*

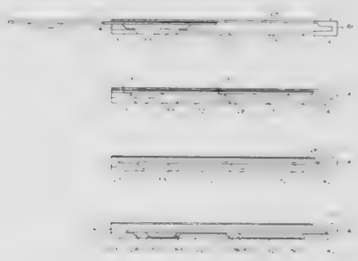
U.S. Cl. 361—419 **8 Claims**

1. A substrate mounting device for mounting an electrical substrate to a carrier substrate comprising:

a first pair of guide rails each mounted on the perimeter edge of said electrical substrate directly opposite each other;

a second pair of guide rails located in a spaced relationship to said first pair of guide rails and each guide rail of said second pair of guide rails mounted on the perimeter edge of said electrical substrate directly opposite each other;

first and second substrate guides mounted to said carrier substrate in a spaced and parallel relationship to each other, each of said substrate guides including a channel longitudinally oriented along a first side thereof, and each of said channels including an open end and a top guide, and each channel extending between said open end and said top guide, and each top guide extending transversely to the other top guide forming an end cap between said first and second substrate guides, said first and second substrate guide channels further defined by a top surface and first and second drop guides, said first and second drop guides located opposite said top surface, and said first and second drop guides further defining first and second guide rail receiving slots;



said electrical substrate and said first and second guide rails arranged to be manually inserted into respective first and second substrate guide channels at respective channel open ends and manually pushed along said channels riding between respective first and second drop guides and channel top surfaces until said substrate encounters a respective top guide whereby, said first guide rail and said second guide rail fall within respective first and second guide rail receiving slots on each of said first and second substrate guides, resting each of said first and second electrical substrate guide rails on said carrier substrate.

4,797,787

LEAD FRAME AND ELECTRONIC DEVICE

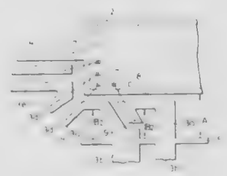
Ichio Shimizu, Gunma, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

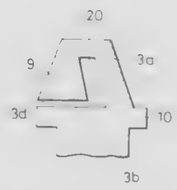
Filed Jul. 23, 1985, Ser. No. 758,030

Claims priority, application Japan, Jul. 25, 1984, 59-152884

Int. Cl.[4] H05K *5/02*

U.S. Cl. 361—421 **13 Claims**



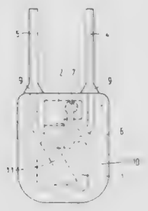


1. A lead frame comprising:

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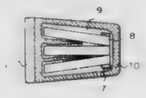
chip supporting means for supporting a chip; and
a plurality of leads arranged around said chip supporting means, each of said plurality of leads having an inner end disposed proximate to said chip supporting means;
said inner end of at least one of said plurality of leads including a first lead portion extending in a direction toward said chip supporting means, a second lead portion contiguous with said first lead portion, said second lead portion extending in a direction away from said chip supporting means, and a third lead portion connected between said first lead portion and said second lead portion, said third lead portion being contiguous with said first and second lead portions and having a first end connected to said first lead portion and a second end connected to said second lead portion with substantially parallel sides extending between said first and second ends thereof, one of said substantially parallel sides being adjacent to and spaced a predetermined distance from a peripheral wall of said chip supporting means facing said first lead portion and extending in a direction in parallel with said peripheral wall, said second lead portion extending from said second end of said third lead portion in a direction away from said chip supporting means so as to have an end part thereof disposed at a position farther away from said peripheral wall of said chip supporting means than the other of said substantially parallel sides of said third lead portion.

4,797,788
ELECTRONIC COMPONENT WITH WIRE CONNECTIONS
Evert H. L. J. Dekker, Zwolle, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 3, 1987, Ser. No. 57,844
Claims priority, application Netherlands, Jun. 24, 1986, 8601640
Int. Cl.⁴ H01G *9/00*
U.S. Cl. 361—540 **2 Claims**



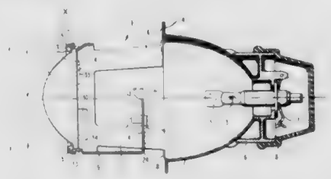
1. An electronic component in which connection elements emanating from said component are connected at connection points in said component to electrode ends or electrode coatings and which component is surrounded tightly by a cured polymer envelope provided by means of a solution or suspension or by means of powder sputtering, characterized in that at least one of the connection elements is provided, from its connection point, with a loop which first of all extends in a direction substantially opposite to the emanating direction of said connecting element and towards the electronic component and then extends in said emanating direction.

4,797,789
SOLID ELECTROLYTIC CAPACITOR
Kazumi Naitoh; Yoshiaki Arakawa, both of Yokohama, and Takashi Ikezaki, Atsugi, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed May 15, 1987, Ser. No. 50,104
Claims priority, application Japan, May 16, 1986, 61-110623; Dec. 27, 1986, 61-309181; Mar. 2, 1987, 62-45322
Int. Cl.⁴ H01G *9/00*
U.S. Cl. 361—525 **16 Claims**



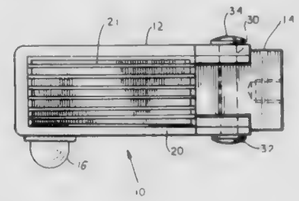
1. A solid electrolytic capacitor comprising a plurality of superposed etched foils of a valve metal having an oxide film surface layer, which are electrically connected with a positive electrode terminal, a semiconductor layer formed on the entire surface of the oxide film layer, an electroconductive layer formed on the entire surface of the semiconductor layer, and a negative electrode terminal common to the respective foils, which is formed on the electroconductive layer.

4,797,790
DIMMED MOTOR VEHICLE HEADLIGHT
Günter Brödling, Lippstadt; Franz Feyerabend, Paderborn; Peter Hubert; Franz Krilkling, both of Lippstadt; Wolfgang Peitz, Erwitte; Karlernst Sewing, Lippstadt-Hörste, and Diethard Schnelle, Erwitte, all of Fed. Rep. of Germany, assignors to Westfälische Metall Industrie KG, Hueck & Co., Lippstadt, Fed. Rep. of Germany
Filed May 12, 1986, Ser. No. 862,129
Claims priority, application Fed. Rep. of Germany, May 10, 1985, 3516812; May 10, 1985, 3516813
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 362—61 **27 Claims**



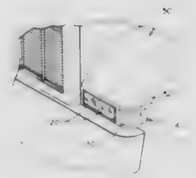
1. A dimmed motor vehicle headlight operable to be mounted on the front of a motor vehicle and having a standard orientation at a motor vehicle comprising:
a light-focussing reflector with a source of light at a focal point of said reflector;
a lens for focussing light;
a stamped sheet metal cup-like frame defining a centermost axis and comprising: first and second open ends, a plurality of arm-like webs extending between said ends, said first end mounted on front of said reflector wherein the lens is supported by said second end via radially inwardly receding connection pieces distributed over the circumference of a ring shaped frame forming support points for the lens inserted from the side with the smaller inner diameter, and a diaphragm having an edge disposed intermediate said ends to form a light-dark border, said diaphragm formed by bending a web having a free end toward said axis, where the frame narrows its inner diameter in the direction of light outflow, where a smaller inner diameter of the ring-shaped part corresponds to an outer diameter of the lens;
a cracked ring disposed between the radially protruding connection pieces and the inwardly narrowing ring shaped frame under pretensioning, where the cracked ring is pressed against a slot formed by the lens and the ring shaped frame part without resting at the base of the slot and where the cracked ring presses the lens against respective support points.

4,797,791
FOOT PEG WITH LIGHT
Ronald W. Burchick, 348 W. 18th St., Erie, Pa. 16502
Filed Feb. 29, 1988, Ser. No. 162,145
Int. Cl.⁴ B62J *6/00*
U.S. Cl. 362—72 **6 Claims**



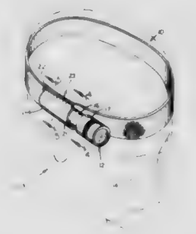
1. In combination [10], a motorcycle foot peg [12], a bracket [14] and a lamp [16],
said bracket [13] having means [18] for attaching said bracket [14] to a motorcycle frame,
said foot peg [12] comprising a top [20], having a removable foot pad [21] supported on it,
two spaced channel-like side flanges [22,24] attached to said top [20] and extending downwardly from said top [20],
said flanges [22,24] extending toward said bracket [14] forming ears [26,28] and receiving said bracket [14] between said ears [26,28],
hinge pin [30] extending through said ears [26,28] and through said bracket [14], forming a hinge,
said hinge pin [30] having two enlarged ends [32,34] attached to said hinge pin [30],
said enlarged ends [32,34] overlying the ends of said ears [26,28],
an end flange [36] attached to said side flanges [22,24] and extending downwardly therefrom and attached to said side flanges [22,24],
a web [38] between said hinge pin [30] and said flange [36],
said web [38] being fixed to said [20] top and to said side flanges [22,24],
an opening [40] in one said side flange [22] adjacent said end flange [36],
a lamp socket [42] in said opening [40] supporting said lamp [16],
said lamp socket [42] having a lamp base [44],
fastening means [46] on said base [44] overlying outside of said side flange [24] around said opening [40],
said lamp [16] being received in said lamp socket [42],
an electrical line [48] attached to said lamp base [44],
a central opening [50] in said web [38],
rubber grommet means [52] in said central opening [50],
said electrical line [48] extending through said rubber grommet [52] between said hinge pin [30] and said top [20] and adapted to be attached to an electrical system.

4,797,792
FORWARD LIGHT HOUSING ASSEMBLY
Joshua T. Oen, Castro Valley, Calif., assignor to Paccar, Inc., Bellevue, Wash.
Filed Sep. 9, 1987, Ser. No. 95,094
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 362—83 **16 Claims**



1. A fender arrangement forming part of a motorized vehicle, comprising:
(a) a front fender having a forwardmost end;
(b) a light assembly separate from but adapted for attachment to the front end of said fender so as to form an extension thereof, said assembly including:
(i) at least one headlight,
(ii) a turn signal,
(iii) a light housing module for containing said headlight and said turn signal; and
(c) means for attaching said light housing to the front end of said fender whereby the light assembly is incorporated into the contour of the fender.

4,797,793
HEADBAND FOR HOLDING A FLASHLIGHT
Tom R. Fields, 5714 Verner Oak Ct., Sacramento, Calif. 95841
Filed Feb. 24, 1988, Ser. No. 159,676
Int. Cl.⁴ F21L *15/14*
U.S. Cl. 362—105 **9 Claims**



1. A headband wearable on the head of a user, for retaining a flashlight adjacent to the user's temple and oriented to project a light beam in a forward direction generally in the direction the user is facing, comprising:
a band of elastic, stretchable material formed generally into a loop sized to fit about a user's head when stretched,
the band being formed from a strap of material having two ends, with the ends being overlapped by an overlap distance of sufficient length generally to accommodate the length of a cylindrical portion of a flashlight,
the overlapPed portion of the band being secured along edges of the two layers of strap so as to form a pocket between the two layers, oPen at a forward end, with an outer layer of the straP being at the forward end of the overlapped portion, and
the width of the strap of material being sufficient to accommodate in the pocket a cylindrical portion of a flashlight.

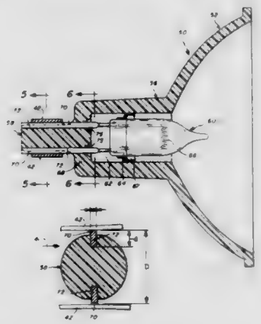
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,794

REFLECTOR LAMP

William G. Connor, Peterborough, and Chris Coliandris, Hillsboro, both of N.H., assignors to GTE Products Corporation, Danvers, Mass.

Filed Aug. 12, 1987, Ser. No. 84,352
Int. Cl.[4] H01R *33/00*
U.S. Cl. 362—226 22 Claims



1. A reflector lamp for being positioned within a device having contacts therein, said reflector lamp comprising:

a reflector member having a reflecting portion and a base neck portion with a stub portion extending therefrom, said stub portion having elongated slots of rectangular cross-section disposed along the exterior of at least a portion of said stub;

a lamp capsule disposed within said base neck portion and having a pair of lead wires extending therefrom for being positioned within said slots of said stub portion;

said pair of lead wires each having, along at least a segment thereof, a rectangular cross-section of dimension sufficient to provide a snug fit within a respective one of said slots within said stub portion;

said lead wires being disposed within said respective slots to a depth sufficient to maintain an interlock therebetween despite exertion of compressive forces imposed on said leads by said contacts within said device which open and close against said lead wires, said lead wires being so disposed within said slots without the requirement of adhesive between said lead wires and slots.

4,797,795

CONTROL SYSTEM FOR VARIABLE PARAMETER LIGHTING FIXTURES

Michael Callahan, 201 W. 85th St., New York, N.Y. 10024

Continuation of Ser. No. 750,873, Jul. 1, 1985, Pat. No. 4,697,227, which is a continuation-in-part of Ser. No. 443,127, Nov. 19, 1982, Pat. No. 4,527,198. This application Jun. 25, 1987, Ser. No. 66,790
The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.
Int. Cl.[4] G03B *15/02*
U.S. Cl. 362—233 20 Claims

1. A control system for a lighting system, said lighting system including: a plurality of light projectors, said projectors each generating a beam suitable for entertainment lighting and illuminating a common area, and each of a first plurality of said plurality of projectors provided with means to vary a plurality of parameters of said beam, such as the pan, tilt, size, shape, color and focus of said beam, and with means to conform, said means to conform operable from a remote location, having an input, having an output coupled to said means to vary, and cooperating with said means to vary to produce a desired adjustment of said parameters of said beam in response to the presense of a corresponding first value set at said input; and each of a second plurality of said plurality of projectors provided with dimming means for adjusting the intensity of said beam, said dimming means having a control input and capable of producing a desired adjustment of the intensity of said beam of at least one of said projectors in response to the presense of a corresponding third value at said control input, said control system comprising:

(a) at least one first controller, said first controller adapted to the requirements of the control of said plurality of parameters of said beam of a light projector, said first controller comprising at least:

(i) at least one short-term memory capable of storing at least five of said first value sets, each of said first value sets corresponding to the desired adjustment of said plurality of said parameters of said beam of at least one of said first plurality of projectors in at least one desired lighting effect;

(ii) at least one means adapted for entering at least one of said first value sets corresponding to a desired adjustment of said parameters for at least one of said projectors, said means adapted for entering disposed at and operable from a location remote from said projector and having at least one output;

(iii) means, coupled to said at least one output of said means adapted for entering and to said short term memory, cooperating with said means for entering to store said first value set entered by said means for entering in said short-term memory, and further for associating said first value set with at least one second value identifying a desired lighting effect;



(iv) means, having a selection input, for causing said control system to produce said first value set stored in said short-term memory at said input of said means to conform in response to the presense of an associated second value identifying a desired lighting effect at said selection input;

(b) a second controller, said controller having at least one output suitable for coupling to said control input of said dimming means, adapted for the adjustment of values corresponding to desired intensity values, said first and said second controller each capable of functioning substantially independent of the other, said second controller comprising at least:

(i) at least one short-term memory capable of storing a plurality of digitally-encoded third values corresponding to desired intensity adjustments for each of a plurality of light projectors in each of a plurality of desired lighting effects;

(ii) at least one means for entering said third values corresponding to desired intensity adjustments in at least one lighting effect for at least one of said projectors, said means for entering having at least one output;

(iii) means, coupled to said at least one output of said means for entering and to said short term memory, cooperating with said means for entering to store said third values corresponding to desired intensity values entered by said means for entering in said short-term memory, and further for associating said desired intensity values with at least one additional value identifying said lighting effect;

(iv) means, having a selection input, for causing said second controller to produce said desired intensity value stored in said short-term memory at said output suitable for coupling in response to the presense of said additional value identifying said desired lighting effect at said selection input;

(v) a first means for selecting a desired lighting effect to be reproduced, said means for selecting disposed at a location remote from said projectors, having at least a first output coupled to said selection input of said means for causing of said second controller, and capable of producing a plurality of said additional values at said first output, each of said additional values associated with a desired lighting effect;

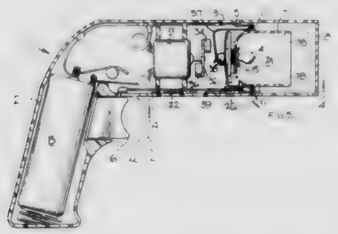
(c) electronic means for coupling at least said first and said second controllers and for automatically producing the substantially simultaneous presense of a value associated with a given lighting effect at said selection input of said means for causing of one of said controllers and of said value associated with the same lighting effect at said selection input of said means for causing of the other of said controllers, such that the selection of a desired lighting effect may result in the presense of said corresponding first value set at said input of said means to conform and said corresponding third values at said control input of said dimming means.

4,797,796

ELECTRIC LANTERN WITH OSCILLATING FEATURE

Lewis K. Eastman, II, Parker, and Robert L. Bromley, Boulder, both of Colo., assignors to L. Kent Eastman Co., Inc., Parker, Colo.

Filed Nov. 9, 1987, Ser. No. 118,607
Int. Cl.[4] F21L *7/00*
U.S. Cl. 362—199 21 Claims



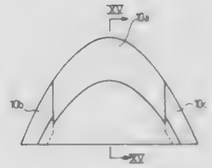
1. An electric lantern comprising an optical system for projecting a beam of light, an energy source, a switch operated by the operator of said lantern for selectively connecting said energy source to said optical system, means for oscillating said optical system, and means for selectively activating said oscillating means whereby said means for oscillating, when activated, causes said beam to scan back and forth at oscillation frequencies such that illumination of a relatively wide swath appears to the operator of said electric lantern to be continuous, whereby said beam can be made to illuminate said relatively wide swath.

4,797,797

DIPPED HEADLAMP FOR MOTOR VEHICLES

Pierre Collot, Pantin, and Norbert Brun, Bobigny, both of France, assignors to Cibie Projecteurs, France

Continuation of Ser. No. 755,070, Jul. 15, 1985, abandoned. This application Jun. 25, 1987, Ser. No. 67,432
Claims priority, application France, Jun. 7, 1985, 85 08655
Int. Cl.[4] F21V *7/00*
U.S. Cl. 362—348 5 Claims



1. A dipped headlamp for motor vehicles comprising a bulb and a reflector having a reference axis and a closure glass placed in front of the bulb ad the eflector, and adapted to create a light beam under a cut-off defined in a standardized vertical transverse screen by two horizontal half-lines at different heights, and on the opposite sides of a vertical center line, the left-hand half-line being at the lower level;

said bulb being an axial filament bulb with its light-emitting surface completely exposed,

said reflector comprising a reflecting surface without any discontinuity and forming on said screen images of the filament such that substantially all points of said images are below a horizontal line contained in said screen and intersecting the reflector axis, and the side portions of the reflector forming images of the filament smaller than the center portion thereof,

the axis of the filament and the axis of the reflector being both inclined downwardly with respect to the horizontal in such manner that said horizontal line is at the same level as the lower half-line of the cut-off,

the axis of the filament and the axis of the reflector being further inclined to the right at an angle corresponding to about one half of the horizontal extent of said concentration images, and

the headlamp further comprising correction means associated with said side portions of said reflector for angularly displacing said concentration images upwardly to the level of the right-hand upper half-line.

4,797,798

MEDICAL EXAMINING LAMP

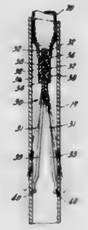
Eugene J. Schumaker, Milwaukee, and Christopher J. King, West Allis, both of Wis., assignors to Adjustable Fixture Co., Milwaukee, Wis.

Filed Apr. 10, 1987, Ser. No. 36,923
Int. Cl.[4] F21S *1/12*
U.S. Cl. 362—413 5 Claims

1. A lamp includes a first tubular member and a second tubular member telescopingly received within the first member, a lamp socket coupled to the opposite end of one of said members and the opposite end of the other member being secured to a support, a spring assembly mounted at the telescoped end of the second tubular member and including a pair of leaf springs having an end portion disposed within the second tubular member, said leaf springs diverging outwardly from the end of the second tubular member, at least one opening formed in the end portions of said leaf springs, and retaining means extending into said openings for retaining the leaf springs in said second tubular member, said leaf springs resiliently engaging the inner surface of the first tubular member to permit axial and rotational relative movement of the tubular

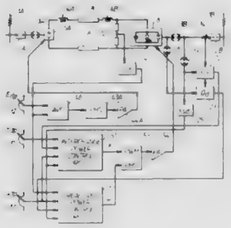
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members but retaining the tubular members in their adjusted positions, said second tubular member being deformed in-



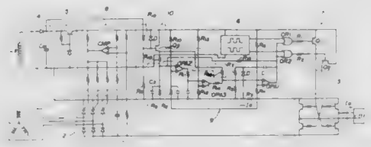
wardly for engaging the end portions of said leaf springs extending into said openings for clamping and retaining the leaf springs in the end of the second tubular member.

4,797,799
POWER CONVERTER
Haruhisa Inokuchi, Kunitachi, and Takasi Sakai, Tokorozawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 10, 1988, Ser. No. 154,312
Claims priority, application Japan, Feb. 13, 1987, 62-31061
Int. Cl.[4] H02M 5/45
U.S. Cl. 363—37 **4 Claims**



1. A power converter device that interchanges power between a first A.C. system and a second A.C. system, comprising:
an externally commutated power converter which converts A.C. power supplied from the first A.C. system to D.C. power on a D.C. line;
a voltage type self-commutated power converter which converts the output D.C. power of said externally commutated power converter to A.C. power under pulse width control and supplies the converted A.C. power to the second A.C. system, said D.C. line effecting electrical coupling between said externally commutated power converter and said voltage type self-commutated power converter;
D.C. voltage control means for determining the control angle of said externally commutated power converter such that the D.C. voltage of said D.C. line tracks a first reference value;
interchange power control means for controlling the phase difference angle of the voltage on the A.C. side of said voltage type self-commutated power converter and the voltage of the second A.C. system such that the interchange power between the first A.C. system and the second A.C. system tracks a second reference value; and
reactive power control means for controlling the control factor of the pulse width control such that the reactive power generated by said voltage type self-commutated power converter tracks a third reference value.

4,797,800
POWER REGULATING SYSTEM FOR AN ENGINE GENERATOR
Motohiro Simizu, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 20, 1988, Ser. No. 147,244
Claims priority, application Japan, Jan. 26, 1987, 62-13153; Jan. 26, 1987, 62-15848
Int. Cl.[4] H02M 5/458; H02H 7/10
U.S. Cl. 363—37 **12 Claims**
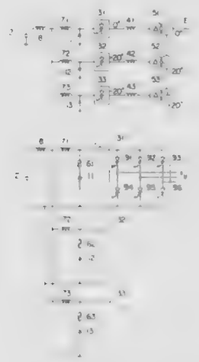


1. In a power generating system for an engine generator provided with an engine, an AC generator driven by the engine, and an inverter for reconverting a rectification output of a main output winding of the AC generator into an alternating current of arbitrary frequency according to a driving signal, the improvement comprising an overcurrent detecting means for detecting an overcurrent state of the inverter on the basis of the result of comparison between a detected value of the current carried to said inverter and a reference value, an inverter protecting means for protecting the inverter from the overcurrent state when detected by cutting off said driving signal and thus inactivating the inverter, and an automatic reference value setting means for automatically changing said reference value stepwise to thereby set an optimal reference value in accordance with the ON/OFF state of a semiconductor switching element which is turned ON/OFF on the basis of the result of comparison between a signal based on a voltage which changes in accordance with a rectification output of an auxiliary output winding of the AC generator and a signal based on a voltage obtained by stabilizing the rectification output.

4,797,801
PLURAL POLYPHASE INVERTER UNITS HAVING TONED INPUT FILTERS
Takeshi Furuhashi, Tokyo, and Yoshio Kanei, Yoshikawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 2, 1988, Ser. No. 162,904
Claims priority, application Japan, Mar. 3, 1987, 62-46886
Int. Cl.[4] H02M 1/14
U.S. Cl. 363—43 **3 Claims**

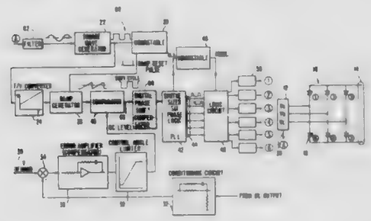
1. A polyphase inverter comprising:
a plurality of unit inverters;
a plurality of filter capacitors provided at respective d.c. input sections of said unit inverters;
a plurality of fuses inserted in series with said filter capacitors, respectively;
a filter circuit including a plurality of reactors inserted into d.c. side circuits of said unit inverters for protection coordination of said fuses, and having a resonance frequency selected so that it is equal to a frequency obtained by the product of the number of pulses per each of said unit inverters, the number of said unit inverters, and the output fundamental frequency;

reactors in the respective output paths of said unit inverters; and



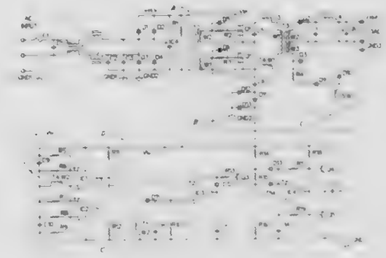
a plurality of transformers for synthesizing outputs of said plurality of unit inverters, thus to provide a single output.

4,797,802
MULTIPLE PHASE RECTIFIER WITH ACTIVE FILTER FOR REMOVING NOISE IN TRIGGERING SIGNALS AND DIGITAL PHASE SHIFT COMPENSATOR FOR PHASE SHIFTING SIGNAL PASSED THROUGH
Chai-Nam Ng, and John J. Dhyanchand, both of Rockford, Ill., assignors to Sundstrand Corp., Rockford, Ill.
Filed Dec. 3, 1987, Ser. No. 128,445
Int. Cl.[4] H02M 1/084
U.S. Cl. 363—87 **7 Claims**



1. A converter for converting a multiple phase variable frequency AC voltage produced by a variable frequency multiple phase voltage source into a DC voltage comprising:
(a) a multiple phase full wave rectification bridge having a pair of switches associated with each of the phases with each of the switches having a conductivity controlled by a switching signal, each switch conducting current from one of the phases to an output when the switching signal has a predetermined polarity and reverting to a blocking state when the flow of current drops to zero;
(b) low pass filtering means, coupled to the multiple phase voltage source, for producing a reference signal having a frequency equal to the variable frequency of the variable frequency AC voltage source with the reference signal having a constant phase shift independent of variation in frequency of the voltage source with respect to a signal from the variable frequency multiple phase voltage source;
(c) means, coupled to the filtering means, for phase shifting the reference signal by a fixed phase throughout the variable frequency range of the variable frequency multiple phase voltage source which compensates for the phase introduced by the low pass filtering means and producing a timing signal with the fixed phase, the means for phase shifting the reference signal comprising a phase shifter responsive to a signal having a frequency identical to the variable frequency AC voltage and producing the timing signal; and
(d) switching signal generation means, responsive to the timing signal, for generating the switching signals of the full wave rectification bridge.

4,797,803
SWITCHING POWER SUPPLY VCO
David T. Carroll, Sonoma, Calif., assignor to DCI Technology, Sonoma, Calif.
Filed Dec. 23, 1987, Ser. No. 137,788
Int. Cl.[4] H02M 3/24
U.S. Cl. 363—95 **5 Claims**



1. A voltage controlled oscillator (VCO) of the type used in a symmetrical switching power supply wherein the frequency of a squarewave control signal produced at an output terminal of said VCO, said control signal controlling a switching means to drive current symmetrically positive and negative through a magnetic device, controls a DC output voltage of said power supply, and wherein said frequency of said control signal is controlled by a VCO input signal, said VCO comprising:
a voltage comparator means having a plus(+) terminal and a minus(−) terminal, wherein if a voltage at said plus(+) terminal exceeds a voltage at said minus(−) terminal, said output terminal of said voltage comparator means will be at a high voltage, and if said voltage at said minus(−) terminal exceeds that voltage at said plus(+) terminal, said output terminal of said voltage comparator means will be at a low voltage;
a first resistor with one end coupled to said output terminal of said voltage comparator means;
a capacitor coupled between said resistor and a ground wherein said capacitor is coupled to said minus(−) terminal of said voltage comparator means, wherein said capacitor charges up when said output terminal of said voltage comparator means is at a high voltage and discharges when said output terminal of said voltage comparator means is at a low voltage;
a voltage divider formed by a plurality of resistors for providing a high bias voltage and a low bias voltage corresponding to voltages at each end of one of said plurality of resistors, wherein each end of said one of said plurality of resistors is coupled to sai plus(+) terminal of said voltage comparator means via a diode, and wherein said plus(+) terminal of said voltage comparator means is also coupled to said output terminal of said voltage comparator means via a second resistor so that when said output terminal of said voltage comparator means is at a high voltage, said high bias voltage will be coupled to said plus(+) terminal, and when said output terminal of said voltage comparator means is at a low voltage, said low bias voltage will be

coupled to said plus(+) terminal, resulting in said capacitor charging to approximately said high bias voltage when said output terminal of said voltage comparator means is at a high voltage and discharging to said low bias voltage when said output terminal of said voltage comparator means is at a low voltage; and,

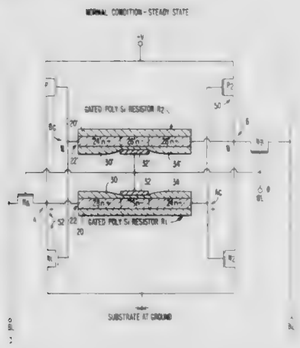
a transistor means coupled to said voltage divider for shunting said one of said plurality of resistors forming said voltage divider and controlling the voltage difference between said high bias voltage and said low bias voltage, in response to said VCO input signal applied to a control terminal of said transistor, in order to control the frequency of said voltage at said output terminal of said voltage comparator means, said voltage at said output terminal being a squarewave.

4,797,804

HIGH DENSITY, HIGH PERFORMANCE, SINGLE EVENT UPSET IMMUNE DATA STORAGE CELL

Leonard R. Rockett, Jr., Washington, D.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1987, Ser. No. 23,426
Int. Cl.[4] G11C *7/00, 7/02*
U.S. Cl. 365—154 **4 Claims**



1. A CMOS flip-flop storage cell having an enhanced immunity to single event upset conditions, comprising:

a first CMOS inverter circuit including a P channel FET device connected between a first storage node and a relatively positive potential and a first N channel FET device connected between said first storage node and a relatively negative potential, with the gates of said first P channel and first N channel devices connected in common to a first gate node and with said first storage node selectively connected to a first binary signal source by a write enable signal;

a second CMOS inverter circuit including a second P channel device whose source drain path is connected between a second storage node and said positive potential and a second N channel FET device having its source drain path connected between said second storage node and said relatively negative potential with said gates of said second P channel and said second N channel devices connected to a second gate node and said second storage node being selectively connected to a second binary signal source of opposite polarity to said first binary signal source by means of said write enable signal;

a first gated polysilicon resistor having its primary conduction path connected between said first storage node and said second gate node and its control electrode connected to said write enable signal;

a second gated polysilicon resistor having its primary conduction path connected between said second storage node and said first gate node and having its control electrode connected to said write enable signal;

said first gated polysilicon resistor and said second gated polysilicon resistor having a relatively high resistance state when said write enable signal is off, thereby providing a high impedance between said first storage node and said second gate node and a high impedance between said second storage node and said first gate node which minimizes the transfer of charge between said first inverter and said second inverter during single event upset conditions;

said first gated polysilicon resistor and said second gated polysilicon resistor assuming a low resistance state when said write enable signal is on, thereby enabling charge transfer between said first storage node and said second gate node and charge transfer between said second storage node and said first gate node for write operations during normal conditions;

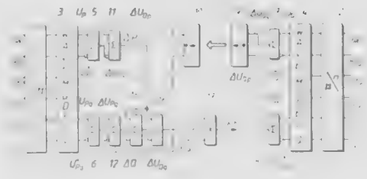
whereby the resistance of said circuit to single event upset conditions is enhanced and the writing speed of the circuit is not impaired.

4,797,805

FAULT LOCATION IN A POWER SUPPLY NETWORK

Gunnar Nimmerjö, Västerås, Sweden, assignor to Asea Aktiebolag, Västerås, Sweden

Filed Dec. 18, 1986, Ser. No. 942,990
Claims priority, application Sweden, Dec. 20, 1985, 8506061-4
Int. Cl.[4] G06F *15/20, 15/56*
U.S. Cl. 364—481 **11 Claims**



1. A method for locating a fault on an electrical power line extending between a first and a second station included in a power transmission system, in which at each end point of the line, measurement is made of the instantaneous values of the current flowing in the line and the voltage of the line, which values are converted into corresponding digital values and are supplied to each respective station to produce in accordance with a travelling wave model of the line the instantaneous voltage distribution along the transmission line, as seen from the first and from the second station, comprising:

determining the difference between the present line voltage and the line voltage at an immediately preceding time and when a fault is indicated by the difference exceeding a pre-set threshold value in either station,

generating a first value in the first station representing the difference between the voltage in the second station, calculated in the travelling wave model in the first station with values of the currents and voltages measured in the first station and the corresponding voltage at an immediately preceding time,

generating a similar second value in the second station for the first station using the travelling wave model in the second station, and

transmitting one of said first and second values to the station in which it was not generated and used there in digital form to compute where the fault lies on the line relative to said station.

4,797,806

HIGH SPEED SERIAL PIXEL NEIGHBORHOOD PROCESSOR AND METHOD

David M. Krich, Peoria, Ariz., assignor to GTX Corporation, Phoenix, Ariz.

Filed Feb. 19, 1987, Ser. No. 16,230
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—900 **16 Claims**



1. A method of filtering a stream of serial input data arranged as a plurality of alternate odd and even numbered segments each corresponding, respectively, to a plurality of odd and even numbered rows of the data, the method comprising the steps of:

(a) providing a first group of FIFO memories including first, second, and third FIFO memories and a second group of memories including fourth, fifth, and sixth FIFO memories;

(b) serially shifting bits of a first odd numbered segment out of the third FIFO memory and simultaneously serially shifting bits of a second odd numbered segment out of the first FIFO memory into the second FIFO memory, and simultaneously serially shifting bits of a first even numbered segment out of the fifth FIFO memory into the sixth FIFO memory, and simultaneously serially shifting bits of a second even numbered segment into the fourth FIFO memory;

(c) simultaneously with step (b), serially shifting bits of the first odd numbered segment, the first even numbered segment, and the second odd numbered segment into first, second, and third serial-to-parallel converters;

(d) serially shifting bits of the first even numbered segment out of the sixth FIFO memory, simultaneously serially shifting bits of the second odd numbered segment out of the second FIFO memory into the third FIFO memory, simultaneously serially shifting bits of the second even numbered segment out of the fourth FIFO memory into the fifth memory, and simultaneously serially shifting bits of a third odd numbered segment into the first FIFO memory;

(e) simultaneously with step (d), serially shifting the bits of the first even numbered segment, the second odd numbered segment, and the second even numbered segment into the first, second, and third serial-to-parallel converters;

(f) repeating steps (b) through (e) for successive alternate odd numbered and even numbered segments; and

(g) repetitively operating upon outputs of the first, second, and third serial-to-parallel converters to address a read only memory storing filtering table, and producing a serial stream of filtered data at the data rate of the serial input data at an output of the read only memory.

4,797,807

MULTIPLE CHANNEL FAST ORTHOGONALIZATION NETWORK

Karl Gerlach, Dunkirk, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1985, Ser. No. 761,648
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—724.07 **5 Claims**



1. A fast orthogonalization network for orthogonalizing N inputs with respect to each other, where $N=2^m$ and $m=2$, said network comprising:

first means responsive to a root structure of the N inputs in input order 1 to N for partially orthogonalizing said root structure inputs with respect to their common inputs so that the 1 to 2^{m-1} inputs are decorrelated with respect to inputs 2^{m-1} to 2^m;

second means responsive to an inverted root structure of the N inputs in input order N to 1 for partially orthogonalizing said inverted root structure inputs with respect to their common inputs so the 2^m to $2^{m-1}+1$ inputs are decorrelated with respect to inputs 1 to 2^{m-1};

third means responsive to a first root substructure of inputs 1 to 2^{m-1} from said first means for orthogonalizing said first root substructure so input 1 is decorrelated with respect to input 2^{m-1};

fourth means responsive to a second root substructure of inputs 1 to 2^{m-1} from said first means for orthogonalizing said second root substructure so input 2^{m-1} is decorrelated with respect to input 1;

fifth means responsive to a first inverted root substructure of inputs 2^m to $2^{m-1}+1$ from said second means for orthogonalizing said first inverted root substructure so input 2^m is decorrelated with respect to $2^{m-1}+1$; and

sixth means responsive to a second inverted root substructure of inputs 2^m to $2^{m-1}+1$ from said second means for orthogonalizing said second inverted root substructure so input $2^{m-1}+1$ is decorrelated with respect to input 2^m.

4,797,808

MICROCOMPUTER WITH SELF-TEST OF MACROCODE

Jeffrey D. Bellay; Kevin C. McDonough, and Michael W. Patrick, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 22, 1981, Ser. No. 276,421
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—200 **10 Claims**

1. A microcomputer device formed in a single semiconductor integrated circuit (**10**) with internal self-test of instruction code, comprising:

a CPU having an ALU (**14**) with a plurality of address/data registers (**15**) and bus means (**16**) for accessing the registers and input/output for the ALU,

control means including an instruction register (IR) for defining the operation of the CPU in response to multi-bit instruction code words, said control means including means (**17**) for generating control signals from said in-

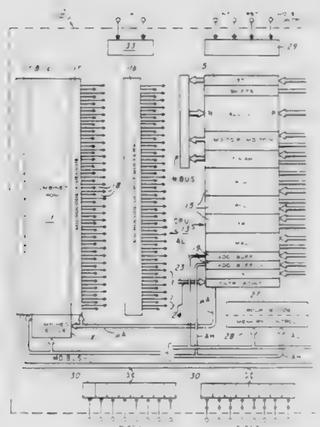
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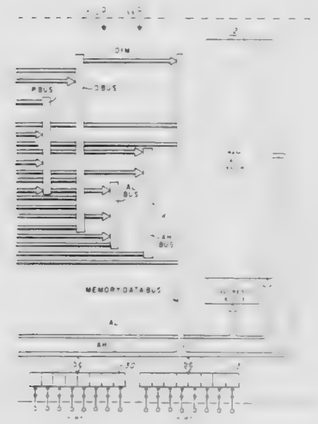
struction code words which are transferred into said instruction register (IR),

program storage means (11) in the integrated circuit for permanently storing a plurality of instruction code words and a check-code representation of all of the bits in all of said plurality of instruction code words,

read/write storage means (12) in the integrated circuit (10) for temporarily storing data or storing other instruction code words,

means for transferring (MD) sequences of said instruction





code words into said instruction register either from said program storage means (11) or from said read/write storage means (12),

said CPU and control means accessing said other instruction code words from said read/write memory (12) to perform a sequential operation on all of the bits in all of said plurality of instruction code words and to generate a first output (30) from the device if a result of such operation corresponds to said check-code representation and a second output (30) from the device if such result does not correspond to said check-code representation.

4,797,809

DIRECT MEMORY ACCESS DEVICE FOR MULTIDIMENSIONAL DATA TRANSFERS

Kei Sato, Yokohama, and Noboru Murayama, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 646,502, Aug. 31, 1984, abandoned. This application Nov. 4, 1987, Ser. No. 118,712

Claims priority, application Japan, Sep. 7, 1983, 58-164520

Int. Cl.[4] G06F *12/00*

U.S. Cl. 364—200 6 Claims



1. A direct memory access device for transferring data from a first storage location to a second storage location within a memory device, said direct memory access device comprising:

first storing means for storing the start address at said storage location of data to be transferred;

second storing means for storing the start address at said second storage location where said data is to be transferred;

source line counting means for indicating the number of first data lines of predetermined length to be read from said first storage location;

destination line counting means for indicating the number of second data lines of predetermined length to be written to said second storage location;

first line byte holding means for storing information indicating how many bytes of data to be transferred are in each of said first lines;

first line storing means for storing information indicating how many of said first lines constitute each of a plurality of source blocks of data to be transferred;

second line byte holding means for storing information indicating how many bytes of data are in each of said second lines;

second line storing means for storing information indicating how many of said second lines constitute each of a plurality of destination blocks of data to be written into said second storage location;

first increment storing means for storing the size of the address increment to move from one start address to another in said first storage location;

second increment storing means for storing the size of the address increment to move from one start address to another in said second storage location; and

control means responsive to the information stored in said first storing means, said source line counting means, said first line byte holding means, said first line storing means, and said first increment storing means for transferring said source blocks of data as a series of first lines in accordance with the information in said first line storing means, said transfer being from said first storage location by addressing the start address of the first of said source blocks and then addressing the start address of each subsequent source block at an address location determined by the size of the increment stored in said first increment storing means and said control means further responsive to the information stored in said second storing means, said destination line counting means, said second line byte holding means, said second line storing means, and said second increment storing means for writing said destnation blocks of data as a series of second lines in accordance with the information in said second line storing means into said second storage location by addressing the start address of the first of said destination blocks and then addressing the start address of each subsequent destination block at an address location determined by the size of the increment stored in said second increment storing means.

4,797,810

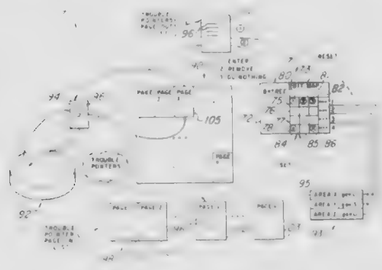
INCREMENTAL, MULTI-AREA, GENERATIONAL, COPYING GARBAGE COLLECTOR FOR USE IN A VIRTUAL ADDRESS SPACE

Timothy J. McEntee, Garland; Robert W. Bloemer, Dallas; Donald W. Oxley, Carrollton, and Satish M. Thatte, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 26, 1986, Ser. No. 878,551

Int. Cl.[4] G06F *11/00*

U.S. Cl. 364—200 11 Claims



1. A method for managing a virtual memory of a computer system, such virtual memory having a main memory and a backing store, and a plurality of virtual pages in each of the main memory and the backing store, comprising the steps of:

(a) dividing the virtual memory into at least two areas, each area containing a plurality of pages, and capable of storing a plurality of objects;

(b) dividing each area into at least two generations, each generation containing a plurality of pages, and capable of storing a plurality of objects, wherein the generations in each area are ordered from youngest to oldest, with an older generation containing objects which have survived more garbage collection processes than those contained in a younger generation;

(c) for each generation within each area, providing a first trouble pointers data structure which identifies the locations of trouble pointers for that generation, wherein a trouble pointer is considered to be (1) a pointer from within the same area but originating from an older generation, or (2) a pointer originating from another area;

(d) providing a second trouble pointers data structure which indicates, for each page currently located in the main memory, whether that page has contained, since such page was last loaded into the main memory, any pointers which are trouble pointers for another generation or area;

(e) whenever a page is copied into the main memory from the backing store, scanning such page for pointers to other areas or younger generations within the same area, whereby any pointers so found are trouble pointers;

(f) for each page in which trouble pointers are found in step (e), providing a trouble pointers page-in list containing all trouble pointers which were found in step (e);

(g) whenever a page is copied from the main memory to the backing store, scanning such page for trouble pointers as in step (e), and comparing any trouble pointers so found with the trouble pointers page-in list provided in step (f);

(h) whenever step (g) indicates that a page being written to the backing store has different trouble pointers that when that page was copied into the main memory, updating the first trouble pointers data structures of the generations, which are referenced by those trouble pointers which have been changed; and

(i) periodically performing garbage collection on generations within areas, wherein each such generation has a root set which includes all trouble pointers into that generation as defined by the corresponding first trouble pointers data structure, and wherein all pages which are indicated by the second trouble pointers data structure as having contained trouble pointers are scanned for trouble pointers which point to the generation being collected, with any such pointers being included in the root set thereof.

4,797,811

DUAL LANGUAGE NUMERICAL CONTROLLER

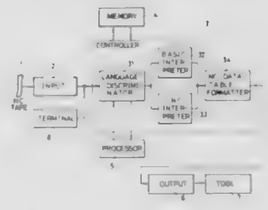
Morio Kiyokawa, and Akihiko Fujimoto, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 592,491, Mar. 22, 1984, abandoned. This application Mar. 23, 1987, Ser. No. 30,295

Claims priority, application Japan, Mar. 22, 1983, 58-47475

Int. Cl.[4] G05B *19/02*; G06F *9/06*

U.S. Cl. 364—200 12 Claims



1. A numerical control device for controlling an object (7) by a numerical control system, comprising:

means for inputting in a single flow a machining program including NC language instructions and general purpose high level language instructions;

control section means (3') for interpreting said instructions inputted by said inputting means and setting NC instruction data as an NC data table in the order the instructions are inputted; and

output section means (6) for applying said NC instruction data set by said control section to said object under control;

wherein said control section means comprises:

language discriminating section means receiving said instructions (31) for discriminating languages used for forming said program;

NC language interpreting means coupled to said language discriminating section means (33) for interpreting and processing machine programs of NC language instructions which are discriminated by language by said language discriminating section and for forming NC instruction data;

high level language interpreting means coupled to said language discriminating section means (32) for interpreting and processing a machining program of high level language instructions which are discriminated by language by said language discriminating means and for forming said NC language data; and

NC data table forming means coupled to said NC language interpreting means and said high level language

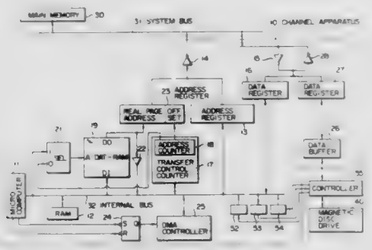
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interpreting means (34) for forming said NC instruction data formed by said NC interpreting means and said NC instruction data formed by said high level language interpreting means into NC instruction data in the form of a data table in the order in which said language instructions are inputted.

4,797,812
SYSTEM FOR CONTINUOUS DMA TRANSFER OF VIRTUALLY ADDRESSED DATA BLOCKS

Jyunichi Kihara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 16, 1986, Ser. No. 874,995
Claims priority, application Japan, Jun. 19, 1985, 60-133401; Jun. 19, 1985, 60-133402; Jun. 19, 1985, 60-133403
Int. Cl.[4] G06F *12/08, 13/00*
U.S. Cl. 364—200 **26 Claims**



1. A channel apparatus for effectively performing a DMA transfer of input data to an external memory, comprising:

DMA transfer means for holding an input initial value of a DMA address including offset data and a read storage address, said DMA transfer means comprising:

means for performing the DMA transfer of the input data to the external memory in a read mode in accordance with an input transfer start instruction while the input data is being input from an external device,

means for generating a memory request to output the generated request with the held DMA address every time a DMA transfer of a word of the input data is performed, and

means for incrementing said held DMA address by one every time an output is made to said held DMA address;

real address storage means for receiving designated real block address (RBA) data and a write storage address to store the designated RBA data at said write storage address in a write mode, comprising:

means for receiving said DMA address from said DMA transfer means in said read mode, and

means for outputting to the external memory a real address produced in combination with the offset data in said received DMA address and the stored RBA data at said read storage address in said received DMA address in response to said memory request; and

transfer control means responsive to an input data transfer command, for translating virtual block address data designated by a channel command word (CCW) into RBA data, to store the translated RBA data, comprising:

means responsive to the CCW for commanding the DMA transfer of the input data over a plurality of subsequent blocks of said external memory,

means for setting said real address storage means in the write mode,

means for designating a predetermined number of the translated RBA data to sequentially output the designated RBA data with the write storage address to said real address storage means in the write mode,

means for incrementing the write storage address by one each time the write storage address is output,

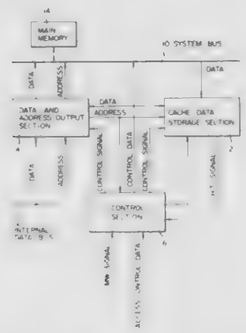
means for outputting the initial value of the DMA address to said DMA transfer means, and

means for setting said real address storage means in the read mode to output the transfer start instruction to said DMA transfer means in the read mode.

4,797,813
CACHE MEMORY CONTROL APPARATUS

Tetsu Igarashi, Fuchu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 15, 1986, Ser. No. 941,385
Claims priority, application Japan, Dec. 20, 1985, 60-286937
Int. Cl.[4] G06F *12/04*
U.S. Cl. 364—200 **9 Claims**



1. An apparatus for performing a partial write operation of at least one byte of partial write data to an address of a word in a main memory wherein data is stored in words of multiple bytes, comprising:

cache means for storing cache data in addressable words containing a plurality of bytes capable of being individually enabled for reading and writing, for determining in accordance with the main memory address whether the main memory address causes a cache hit, for selectively generating a cache hit signal in accordance with the determined result, for outputting at least one byte of cache data from a byte enabled for reading and designated by the main memory address in accordance with negation of a first control instruction input thereto, and for inputting and storing the partial write data at all bytes enabled for writing of a word at a cache address corresponding to the main memory address in accordance with said first control instruction;

address and data output means for receiving the main memory address and the partial write data, for outputting the main memory address to said cache means, for combining the outputted cache data and the partial write data in accordance with a second control instruction input thereto, and for outputting the partial write data to said cache means in accordance with said second control instruction such that said combining and said outputting the partial write data to cache are simultaneously performed; and

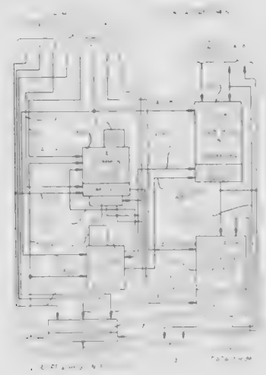
control means for selectively generating the first and second control instructions from the main memory address, for generating an input access control data indicating a byte width of the partial write data in accordance with the hit signal, and for outputting said first control instruction to said cache means wherein negation of said first control instruction enables at least one byte in a word of said cache means for reading, and wherein said first control instruction enables for all other bytes in said word for

writing, and for outputting said second control instruction to said address and data output means.

4,797,814
VARIABLE ADDRESS MODE CACHE

James G. Brenza, Putnam Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1986, Ser. No. 858,322
Int. Cl.[4] G06F *12/08*
U.S. Cl. 364—200 **24 Claims**



1. A logical address private cache arrangement in a data processing system including a processor, a translation lookaside buffer (TLB) and a main storage, the processor being able to switch its mode of addressing between real and virtual in its requests for data units from main storage, the cache arrangement comprising:

a first cache accessible to the processor, the first cache having locations for containing a plurality of lines of data initially copied from main storage,

a cache directory having a plurality of directory entries, each cache directory entry including a logical address representation with an associated indicator of whether the representation is of a real/absolute address or is of a virtual address,

means providing to the cache directory each logical address (LA) requested by the processor with an indicator signal of whether the requested LA is a real/absolute address or a virtual address,

directory selecting means for receiving each logical address (LA) requested by the processor and selecting a set containing one or more potential hit entries in the cache directory,

cache hit determining means for examining each potential hit entry in the set by comparing the logical address (LA) and the indicator signal requested by the processor with a LA representation and the associated indicator in each valid entry in the set for a match condition in order to determine if any entry is a hit entry without using any address translation from the TLB.

4,797,815
INTERLEAVED SYNCHRONOUS BUS ACCESS PROTOCOL FOR A SHARED MEMORY MULTI-PROCESSOR SYSTEM

Wayne T. Moore, Safety Harbor, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Nov. 22, 1985, Ser. No. 800,995
Int. Cl.[4] G06F *13/14*
U.S. Cl. 364—200 **1 Claim**

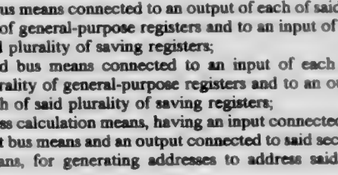
1. A method for providing asynchronous processors with inter-processor communication and access to several memory modules over a common bus which includes a first bus and a second bus, comprising:

providing clock pulses on said common bus, each pulse having a period;

asserting a request signal and placing priority signal on said common bus during a first period when any one of said processors performs an operation that requires access to the memory module;

polling the processors during said first period to determine whether the processors request access to said common bus and to determine which one processor has priority;

sending a destination address from said one processor to a destination during a second period, said destination being chosen from said processors and said several memory modules;



performing one of reading input data between said destination and said processor having priority during a reading input data period and writing output data between said processor having priority and said destination during a writing output data period, said reading period being separated from said second period by a plurality of idle periods during which a second processor accesses a second destination on said common bus;

multiplexing priority and reading input data signals on said first bus, and multiplexing address and writing output data signals on said second bus;

generating poll inhibit signals prior to each reading input data signal and prior to each memory address signal preceeding a writing output data operation; and

queuing said input data in a first-in-first-out manner for each of said processors when said input data indicates an interprocessor interrupt.

4,797,816
VIRTUAL MEMORY SUPPORTED PROCESSOR HAVING RESTORATION CIRCUIT FOR REGISTER RECOVERING

Kunio Uchiyama, Hachioji, and Tadahiko Nishimukai, Sagamihara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1986, Ser. No. 822,231
Claims priority, application Japan, Jan. 28, 1985, 60-12394
Int. Cl.[4] G06F *12/08*
U.S. Cl. 364—200 **8 Claims**

1. A processor for supporting a virtual memory system comprising:

a plurality of general-purpose registers for storing information;

a plurality of saving registers for saving information contained in at least one of said plurality of general-purpose registers during an addressing operation for said virtual memory system;

first bus means connected to an output of each of said plurality of general-purpose registers and to an input of each of said plurality of saving registers;

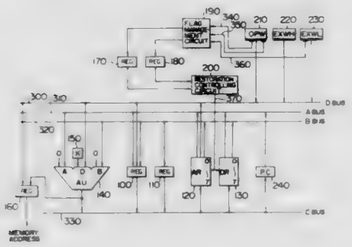
second bus means connected to an input of each of said plurality of general-purpose registers and to an output of each of said plurality of saving registers;

address calculation means, having an input connected to said first bus means and an output connected to said second bus means, for generating addresses to address said virtual

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memory system in response to information which is received from said general-purpose registers and simultaneously saved in said saving registers;

flag register means for storing discriminating information indicating which of said plurality of general-purpose registers have information saved in said plurality of saving registers; and



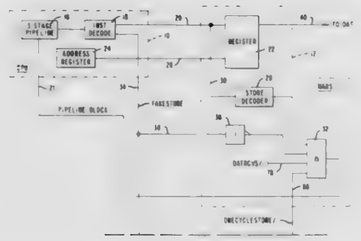
restoration controlling means connected to said flag register means and said general-purpose registers and responsive to a fault exception signal from said virtual memory system for re-storing at least that part of the information saved in said plurality of saving registers to a general-purpose register which is indicated by said discrimination information stored in said flag register means.

4,797,817

SINGLE CYCLE STORE OPERATIONS IN A VIRTUAL MEMORY

Chinh K. Nguyen, San Diego, and Charles A. Flicek, Escondido, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 10, 1986, Ser. No. 940,315
Int. Cl.[4] G06F 9/00, 9/30, 9/38, 9/06
U.S. Cl. 364—200 7 Claims



1. A device for performing memory stores in a memory of a computer system wherein virtual addresses must be translated to real addresses, said device comprising:

processor means having a pipeline for processing commands in multiple stages, said commands including a plurality of instructions, including store instructions, and virtual addresses, said pipeline being blocked by the store instructions;

first decode means connected to said processor means for generating a first signal in response to a decoding of a selected store instruction of selected commands in a first selected stage of said pipeline;

translation assist means including input means for receiving virtual addresses in the pipeline of said processor means, said translation assist means for generating a second signal if a virtual address in a second selected stage of said pipeline has been previously translated to a real address;

pipeline controlling means connected to said first decode means and said translation assist means, said pipeline controlling means for unblocking said pipeline in response to at least one of said first signal and said second signal; and

second decode means connected to said processor means for generating a third signal in response to a decoding of every store instruction from said processor means; and

wherein said pipeline controlling means includes first logic means having a first input connected to said first decode means for receiving said first signal, a second input means connected to said translation assist means for receiving said second signal, and a third input connected to said second decode means for receiving said third signal, said first logic means for blocking said pipeline for every store instruction decoded by said second decode means except when said first decode means decodes said selected store instruction.

4,797,818

FOOD ORDER/DELIVERY SYSTEM

Jeffrey J. Cotter, Orlando, Fla., assignor to Jeno F. Paulucci, Sanford, Fla.

Filed Mar. 26, 1987, Ser. No. 30,878
Int. Cl.[4] G06F 15/21
U.S. Cl. 364—401 7 Claims



1. A system for receiving orders for food at a central location and transmitting said orders to a preselected remote store for preparation of said food comprising:

means at said central location for storing market allocation data in the form of a software database;

means at said central location for receiving customer order data;

means at said central location for automatically comparing said customer order data with said market allocation data and for automatically selecting a particular store to receive said order data on the basis of said comparison;

means at said central location responsive to said means for comparing and selecting for automatically transmitting said order data to said selected store; and

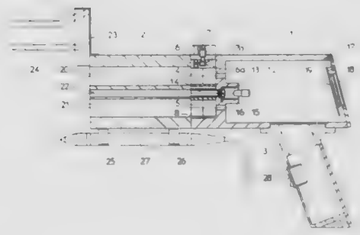
means at said selected store for automatically receiving and displaying said order data.

4,797,819

SYSTEM FOR DETERMINING REPLENISHMENT NEEDS ON A PRODUCT DISPLAY BY MEASURING VACANT SPACE

Jean-Pierre Dechirot, Balan, France, assignor to Societe Vynex SA, France

PCT No. PCT/FR85/00232, § 371 Date Apr. 29, 1986, § 102(e) Date Apr. 29, 1986, PCT Pub. No. WO86/01386, PCT Pub. Date Mar. 13, 1986
PCT Filed Aug. 28, 1985, Ser. No. 866,490
Claims priority, application France, Aug. 31, 1984, 84 13598
Int. Cl.[4] G06F 15/24; G06M 9/00; G01D 5/28; G01S 15/08
U.S. Cl. 364—403 28 Claims



1. A system for the automatic determination of the quantity of product units required to replenish the inventory on a sales display including a plurality of pegs projecting therefrom, each of said plurality of pegs including a first end mounted to a display surface and a second end projecting therefrom, whereby each of said plurality of pegs can carry a predetermined maximum number of said product units thereon and said quantity of product units required to replenish the inventory of each of said plurality of pegs is a function of the distance between said second ends of said plurality of pegs and the remaining plurality of said product units on each of said plurality of pegs, said system comprising marking indicia applied along substantially the entire length of each of said plurality of pegs, portable marking indicia reading means for reading said marking indicia so as to determine said distance between said second ends of said plurality of pegs and said remaining plurality of said product units on each of said plurality of pegs, and microcomputer means connected to said portable marking indicia reading means for automatically converting said determined distance into said quantity of product units by using product parameter data associated with said product units required to replenish the inventory on each of said plurality of pegs.

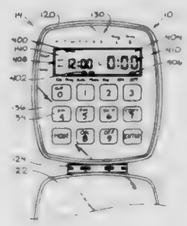
3. The system according to claim 1 wherein said marking indicia comprises bar markings and said portable marking indicia reading means comprises a pencil-type reader.

4,797,820

PROGRAMMABLE FLOW CONTROL VALVE UNIT WITH CLOCK, PROGRAM, AUTOMATIC, MANUAL, AND REPEAT MODES

Dennis A. Wilson, Wauconda Township, Lake County; Dennis W. Ancel, Rolling Meadows, and Mark S. Williamson, Evanston, all of Ill., assignors to Ansen Industries Limited, Harwood Heights, Ill.

Filed Jul. 28, 1986, Ser. No. 890,170
Int. Cl.[4] G05D 7/06
U.S. Cl. 364—420 20 Claims



1. A programmable flow control valve unit for directing the flow of a fluid, said valve unit including a valve assembly operably connected to an electronic assembly, wherein:

a. said electronic assembly includes a sequence type control with a programmable memory means operably connected to a means for accepting cycle selections by a user of said programmable flow control valve unit;

b. said sequence type control includes a selected program for activating said electronic assembly and thereby operate said valve assembly;

c. said selected program includes at least one discrete program advancing operation;

d. said discrete program advancing operation is dependent, at least in part, upon said cycle selections;

e. said electronic assembly further includes a copying means for duplicating said discrete program advancing operation to permit said selected program to have easily duplicated parts;

f. said electronic assembly further includes a display means operably interconnected with said electronic assembly for providing an indication of instructions given to said programmable flow control valve unit;

g. said electronic assembly further includes a clock means operably interconnected with said electronic assembly for timing said operations; and

h. said electronic assembly further includes a control logic means operable during a programmable mode operably

connected to said electronic assembly in order to enable the electronic assembly to function;

i. said sequence-type control is a push button assembly operably connected to said discrete program advancing operation for setting a set of five modes including a clock mode, a program mode, an automatic mode, a manual mode, and a repeat mode;

j. an enter means is operably connected for loading each of said five modes within said discrete program advancing operation;

k. said clock mode provides a day readout and a time of day readout within said display means; and

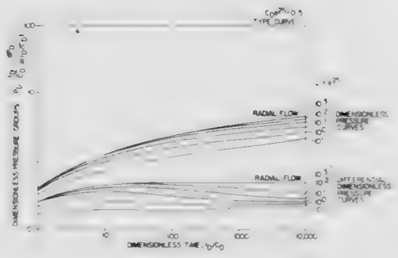
l. said display means provides a program readout for said discrete program advancing operation and a clock mode readout for said clock mode at the same time.

4,797,821

METHOD OF ANALYZING NATURALLY FRACTURED RESERVOIRS

Kevin R. Petak, Duncan; Mohamed Y. Soliman, Lawton, and Merlin F. Anderson, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 2, 1987, Ser. No. 34,441
Int. Cl.[4] E21B *49/00, 47/00*
U.S. Cl. 364—422 **22 Claims**



1. A method of determining characteristics of an underground reservoir formation having a well communicating therewith comprising the steps of:

obtaining a theoretical solution representing the variation of dimensionless wellbore pressure during an early time radial flow period and a transition flow period in the underground reservoir as a function of (a) the ratio of dimensionless time to dimensionless wellbore storage coefficient, t_D/C_D, (b) a first parameter C_De^{2S}, and (c) a second parameter $\omega'\lambda'e^{-2S}$, the theoretical solution being based on the early time radial flow period and the transition period flow of a dual porosity isotropic uniform thickness reservoir exhibiting wellbore storage and skin effects;

varying, at a predetermined time, a flow area of a valve passage through whioh fluid from a wellbore flows;

detecting and recording a variation of wellbore pressure at the underground reservoir formation as a function of time measured from the variation of wellbore flow area to thereby obtain an experimental data variation;

comparing the experimental data variation to the theoretical solution to determine which values of the first parameter and the second parameter correspond to the experimental data variation;

selecting a match point on the experimental data variation and the corresponding theoretical surface;

using the selected match point and the dimensionless time corresponding to the end of the transition period to determine at least one of the following characteristics of the underground formation:

flow capacity, kh,

effective permeability, k,

transmissibility, kh/μ'

wellbore storage constant, C,

dimensionless wellbore storage coefficient, C_D,

dimensionless fracture transfer coefficient, λ or λ', and

dimensionless storativity ratio, ω or ω'; and

recording the detected variation of wellbore pressure and the at least one determined characteristic of the underground formation.

4,797,822

APPARATUS AND METHOD FOR DETERMINING THE POSITION OF A TOOL IN A BOREHOLE

Rex B. Peters, Woodinville, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Dec. 31, 1986, Ser. No. 948,323
Int. Cl.[4] G01V *3/18*; E21B *47/00*
U.S. Cl. 364—422 **32 Claims**



1. A method for determining the path length between a borehole entrance opening and a probe that is suspended to move through the borehole by an elastic cable, said method comprising:

(a) generating a cable feed rate signal representative of the current rate at which said cable is moving past said entrance opening of said borehole;

(b) generating a cable feed rate correction signal representative of current changes in the length of said cable that are induced by temperature and inclination of the portion of said borehole that surrounds said probe;

(c) combining said cable feed rate signal and said cable feed rate correction signal to provide a compensated cable feed rate signal;

(d) generating a probe velocity signal representing the current rate at which said probe is moving along said borehole;

(e) detecting whether the magnitude of the difference between said probe velocity signal and said compensated feed rate signal exceeds a predetermined value;

(f) selecting said compensated feed rate signal when said magnitude of the difference between said probe velocity signal and said compensated cable feed rate does not exceed said predetermined value;

(g) selecting said probe velocity signal when said magnitude of the difference between said probe velocity signal and said compensated feed rate signal exceeds said predetermined value;

(h) periodically repeating steps (a) through (g); and,

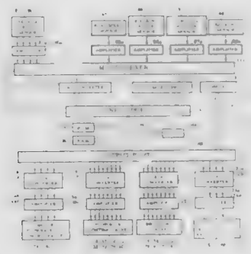
(i) determining the integral with respect to time of the selected one of said probe velocity signal and said compensated cable feed rate signal as said steps (a) through (g) are periodically repeated.

4,797,823

SYSTEM FOR VEHICLE BODY ROLL CONTROL PERFORMING SUSPENSION HARDNESS CONTROL

Hiroyuki Ikemoto; Nobutaka Oowa, both of Toyota; Yasutaka Hayashi, and Shunichi Doi, both of Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Toyota Central Research & Development Laboratories, Inc., both of Aichi, Japan

Filed Oct. 21, 1986, Ser. No. 921,138
Claims priority, application Japan, Oct. 22, 1985, 60-235662; Oct. 22, 1985, 60-235663
Int. Cl.[4] B60G *17/00*
U.S. Cl. 364—424.05 **28 Claims**



1. For a vehicle comprising a body and a plurality of wheels upon which it runs, a vehicle roll control system of vehicle height adjustment type, comprising:

a plurality of suspension means, one corresponding to each one of said vehicle wheels, for resiliently suspending said vehicle wheels from the vehicle body and being controllable to vary the hardness/softness characteristic of suspension of said vehicle wheels between at least two different hardness/softness characteristic levels including a harder characteristic level and a softer characteristic level, each said suspension means comprising an actuator assembly which has a pressure chamber and being adapted to increase or decrease the suspension height of its corresponding vehicle wheel as a result of the supplying or discharging of working fluid to or from said pressure chamber;

a plurality of working fluid supplying and discharging means, one corresponding to each said actuator assembly, which serve to supply working fluid to each said pressure chamber and to discharge working fluid from each said pressure chamber;

vehicle speed detecting means for sensing the road speed of the vehicle;

steering angle detecting means for sensing the steering angle of the vehicle;

means for sensing the actual roll angle ϕ_f of said vehicle body; and

means for computing and control, which computes a steady state roll angle ϕ_∞ of the vehicle body from the vehicle speed sensed by said vehicle speed detecting means and the steering angle sensed by said steering angle detecting means, advances the phase of a signal indicative of said steady state roll angle ϕ_∞ to thereby compute a compensating value ϕ_∞, and then computes a difference value ϕ based upon a desired roll angle ϕ_d of the vehicle body, said compensating value ϕ_∞, and said actual vehicle body roll angle ϕ_f, according to the equation:

$$\phi=\phi_d-(k_1\phi_\infty+k_2\phi_f)$$

where k_1 and k_2 are positive constants; said computing and control means being adapted to control said plurality of working fluid supplying and discharging means based upon said difference value ϕ when the absolute value of said difference value ϕ is larger than a first predetermined value ϕ_1, and to control the hardness/softness characteristics of said plurality of vehicle wheels suspension means according to the absolute value of said difference value ϕ when the absolute value of said difference value ϕ is smaller than said first predetermined value ϕ_1.

4,797,824

AUTOMATIC HEADREST POSITIONING APPARATUS FOR SEAT OF MOTOR VEHICLES

Hiroshi Sugiyama, Hiratsuka; Mikio Fujiwara, and Chikamasa Ikeda, both of Yokohama, all of Japan, assignors to Ikeda Bussan Co. Ltd., Kanagawa, Japan

Continuation of Ser. No. 696,423, Jan. 30, 1985, abandoned. This application Apr. 14, 1988, Ser. No. 181,522
Claims priority, application Japan, Jan. 31, 1984, 59-15431
Int. Cl.[4] G06F *15/20*; B60N *1/02*
U.S. Cl. 364—424.05 **10 Claims**



6. An automatic headrest positioning apparatus, comprising:

a headrest provided on a seat which can be displaced by seat displacing means, said headrest being displaceable by headrest displacing means;

seat position detecting means for detecting the displacements of a seat cushion in up-down and in forward-rearward directions, and an inclination of a seat back;

eye position detecting means including light beam projecting means which project a plurality of different colors of light beam for detecitng the position of the eye of a sitter on said seat;

memory means for storing seat position data obtained through said seat position detecting means and detected eye position data obtained through said eye position detecting means; and

control means for performing arithmetic operation on the selected seat position data and the detected eye position data read out from said memory means to thereby cause said headrest to be displaced to an optimal position by driving the headrest displacing means on the basis of the result of said arithmetic operation.

4,797,825

ANTI-SKID CONTROL SYSTEM FOR MOTOR VEHICLES

Haruki Shimanuki, Kasukabe; Katsuya Miyake, Ageo; Hideo Akima, Yokohama, and Akira Hosoki, Musashi, all of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo and Fujitsu Limited, Kawasaki, both of, Japan

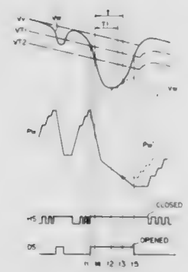
Filed Dec. 29, 1986, Ser. No. 946,824
Claims priority, application Japan, Dec. 27, 1985, 60-292994
Int. Cl.[4] B60T *8/58*
U.S. Cl. 364—426.02 **4 Claims**

1. An anti-skid control system for a motor vehicle, having a plurality of wheels and in which wheel velocity of the wheels is decreased by increasing brake pressure and is increased by reducing the brake pressure, and in which the reduction of the brake pressure is to be stopped at a point where a level of the wheel velocity is reached which is higher than a low peak of the wheel velocity by a predetermined percentage of difference between the wheel velocity at time when reduction of the

brake pressure is started, and the low peak of the wheel velocity, comprising:

means for providing a computed vehicle velocity on the basis of the highest one of the wheel velocities of the motor vehicle;

means for providing a first reference velocity and a second reference velocity, each of said reference velocities being lower than said computed vehicle velocity, said first and second reference velocities respectively having a first and



a second velocity different, or a first and a second velocity ratio, with respect to said computed vehicle velocity; said first reference velocity being higher than said second reference velocity; and

means for continuing reducing the brake pressure beyond said point until the wheel velocity recovers up to said first reference velocity, if the time period from when the wheel velocity reaches said second reference velocity to said point where said level of the wheel velocity is reached, is longer than a predetermined time period.

4,797,826

SPEED CONTROL SYSTEM FOR VEHICLES

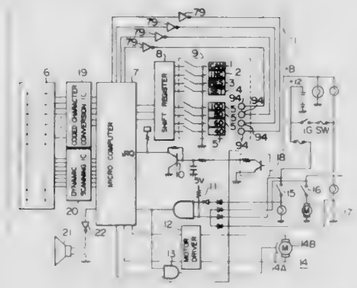
Nobuyoshi Onogi; Mamoru Shimamoto, both of Nagoya, and Yoshio Shinoda, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 24, 1985, Ser. No. 737,657

Claims priority, application Japan, May 31, 1984, 59-112297

Int. Cl.[4] B60K *31/04*

U.S. Cl. 364—426.04 **7 Claims**



1. A speed control system for a vehicle comprising:

preset means for selecting and presetting a desired running speed of a vehicle;

means for determining an actual running speed of said vehicle;

means for defining a lower limit running speed which is smaller than said desired running speed by a predetermined value and for defining an upper limit running speed which is larger than said desired running speed by said predetermined value;

means for comparing said actual running speed of said vehicle with said upper and lower limit running speeds;

means for permitting a control of the vehicle speed in accordance with said desired running speed only when said actual running speed is greater than said lower limit running speed and is less than said upper limit running speed; and

controlling means, responsive to said permitting means for controlling a vehicle speed to approach said desired running speed only when said permitting means permits said control.

4,797,827

ANGULAR POSITION DETECTOR

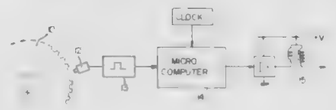
Kevin Cockerham, Birmingham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Continuation of Ser. No. 625,893, Jun. 29, 1984, abandoned. This application Aug. 22, 1986, Ser. No. 899,778

Claims priority, application United Kingdom, Jul. 2, 1983, 8318006

Int. Cl.[4] F02P *5/03;* **H03K** *13/02*

U.S. Cl. 364—431.03 **5 Claims**



1. An angular position detector, comprising:

a toothed wheel having a plurality of teeth, each one of said plurality of teeth being spaced apart from at least one adjacent tooth by a first predetermined angular spacing;

a gap between two adjacent teeth of said toothed wheel, said gap having a second predetermined angular spacing which is greater than said first predetermined angular spacing;

a sensing means for sensing the teeth of said toothed wheel, said sensing means being provided adjacent said toothed wheel, for producing an output signal in the form of a pulse train as individual ones of said plurality of teeth pass by said sensing means;

a discriminating means for discriminating the passing of said gap past said sensing means, said discriminating means receiving said output signal from said sensing means, said discriminating means including a datum signal generating means for generating a datum signal and a measurement means for measuring interpulse time intervals between successive pulses of said pulse train of said sensing means output signal, said discriminating means triggering said datum signal generating means for producing a datum signal in response to said gap passing by said sensing means, said discriminating means discriminating passage of said gap past said sensing means by comparing the current interpulse interval to the next preceding interpulse interval and triggering said datum signal generating means to generate a datum signal when the current interpulse interval is significantly shorter than the next preceding interpulse interval.

4,797,828

ELECTRONIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

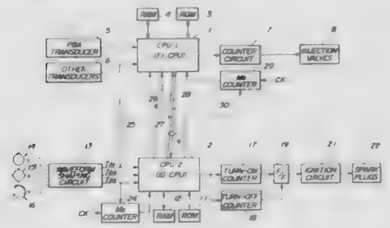
Yoshio Suzuki, Wakoh, and Suzaki Yukihiko, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1986, Ser. No. 840,584

Claims priority, application Japan, Mar. 18, 1985, 60-052506

Int. Cl.[4] F02M *51/00*

U.S. Cl. 364—431.04 **5 Claims**



1. An electronic control system for an internal combustion engine, comprising:

at least two central processing units for executing control of different operations;

at least two counters connected to respective ones of said central processing units for individually detecting engine speed;

means connected to said counters and operable when the engine is in a predetermined operating state, wherein the engine operation is steady, for inputting clock pulses to each of said counters at a predetermined time interval whereby said each counter counts said clock pulses to thereby detect engine speed in said predetermined operating state of the engine;

memory means storing values representative of normal engine speed in said predetermined operating state as counted values of said counters;

means for sensing a malfunction in each of said counters by comparing a counted value recorded by a counter and a respective stored value stored in said memory device; and

means for enabling each of the operations to be controlled based on an output from one of said counters when it is sensed that the other of said counters malfunctions.

4,797,829

FLIGHT CONTROL OPTIMIZATION SYSTEM FOR MULTI-CONTROL SURFACE AIRCRAFT

Romeo P. Martorella, Dix Hills, and Jimmie Chin, Flushing, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 11, 1986, Ser. No. 940,454

Int. Cl.[4] G05B *11/42*

U.S. Cl. 364—434 **10 Claims**



1. In a flight control system for an aircraft having three control surfaces, interconnected feedback control loops for stabilizing and optimizing the performance of the aircraft, the stabilizing loop comprising:

first means for summing signals representing pitch rate and vertical acceleration of the aircraft;

complementary filter means connected at its input to the pitch rate signal and a canard position signal for filtering these signals together to form a combined signal thereby reducing signal noise;

second means for summing the combined signal and an output signal from the first summing means;

filter means connected at its input to the output of the second summing means for providing lead compensation of the signal resulting at the output of the second summing means thus providing a lead compensated signal;

means for obtaining an error signal between the lead compensated signal and a pilot command input signal; and

parallel means distributing the error signal as respective stabilization error signals for the three controlled surfaces;

means for integrating the stabilization error signal; and

means for connecting the stabilization error signals to actuators of corresponding control surfaces.

4,797,830

INSERTION MACHINE WITH POSTAGE CATEGORIZATION AND SELECTIVE MERCHANDISING

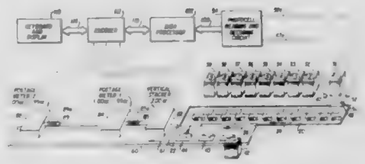
Brad A. Baggarly, Upland, Calif., and Christopher K. Scullion, Bethlehem, Pa., assignors to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 818,389, Jan. 13, 1986, Pat. No. 4,639,873, which is a continuation of Ser. No. 576,839, Feb. 3, 1984, abandoned. This application Jan. 27, 1987, Ser. No. 6,853

The portion of the term of this patent subsequent to Jan. 27, 2004, has been disclaimed.

Int. Cl.[4] B65H *39/075;* **B65B** *35/50;* **G06F** *15/20*

U.S. Cl. 364—464.03 **22 Claims**



1. An insertion machine of the type in which a plurality of feed stations feed items onto an insertion track, said plurality of feed stations including a control feed station from which a master control item is fed onto said track and further feed stations from which items are selectively fed in accordance with indicia on said master control item onto said track for inclusion with a group including said master control item, wherein the improvement comprises:

means for reading said indicia;

means for designating at least one of said feed stations as a required feed station from which items must be fed if said indicia so indicates or an optional feed station from which items may conditionally be fed;

means for determining from said indicia on said master control item the particular further feed stations from which items must be fed onto said insertion track for inclusion with said group including said master control item;

data processing means including memory means and arithmetic logic means;

means including said data processing arithmetic logic means for using values indicative of the per item weight of items held in said control feed station and said required feed stations from which it is required that items be fed to obtain a calculated total weight with respect to said group of items;

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means for using said calculated total weight to determine a postage category for said group of items;

means for determining whether optional items from one or more respective optional feed stations can be fed from said optional feed stations and associated with said group of items without changing the postage category determined on the basis of the calculated total weight of said group of items; and,

means for selectively enabling one or more optional feed stations to feed items for inclusion with a group of items in accordance with said determination of whether said optional items can be fed without changing the postage category of said group of items.

4,797,831

APPARATUS FOR SYNCHRONIZING CYLINDER POSITION IN A MULTIPLE CYLINDER HYDRAULIC PRESS BRAKE

Paul A. Dressing, Cincinnati, Ohio, and John L. Macdonald, Aurora, Ind., assignors to Cincinnati Incorporated, Cincinnati, Ohio

Filed Nov. 18, 1986, Ser. No. 932,107
Int. Cl.[4] G06F *15/46*; B21D *5/02*
U.S. Cl. 364—474.07 **22 Claims**



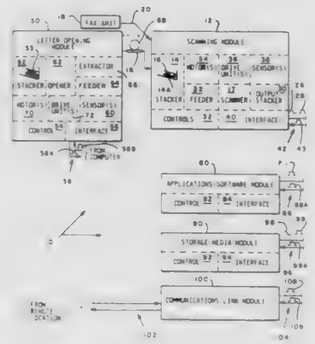
1. In a press brake having a bed supporting a forming die, a vertically movable ram mounting a punch for cooperating with the die to bend a workpiece positioned on said die, at least two pistons connected to said ram at horizontally spaced locations, a hydraulically operated cylinder associated with each of said pistons for vertically moving said ram, and flow control means associated with each of said cylinders and responsive to an electrical command signal for its respective cylinder to control the flow of hydraulic fluid to and from its respective cylinder, the improvement comprising a ram position encoder is association with each of said cylinders each producing a digital pulse for each increment of vertical ram travel in the form of a ram position signal, control means for generating said command signal for each of said flow control means, said control means including programmed means for generating an electrical speed signal representative of the desired speed of the ram, said control means including means to produce a digital re ference signal proportional to the desired speed of said ram, and means to compare said ram position signals to said digital reference signal and to produce an error signal for each flow control means, and means to sum each error signal with said speed signal to produce said command signal for each of said flow control means whereby to control the speed of said ram and to control the vertical position of all parts of said ram during vertical movement thereof at least just before and during ram reversal.

4,797,832

LETTER PREPARING APPARATUS

Barry H. Axelrod, Newtown; Robert T. Durst, Jr., Monroe; Kevin D. Hunter, Stratford, and Alfred C. Schmidt, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 13, 1987, Ser. No. 25,307
Int. Cl.[4] G06F *15/20*; B65H *39/02*
U.S. Cl. 364—478 **41 Claims**



1. Apparatus for preparing a letter, comprising:

a. printing means;

b. means for supplying a stationery item; and

c. computer means, said computer means including means for receiving a signal representative of letter data corresponding to information having a format, said information including a plurality of parts, said computer means including means programmed for reformatting said letter data, said reformatted letter data including a plurality of parts, each of said information parts corresponding to a different one of said data parts, said computer means including means programmed for selecting at least one of said data parts, said computer means including means for causing said supplying means to supply said stationery item, and said computer means including means for causing said printing means to print on said stationery item the information part corresponding to the selected data part.

4,797,833

MICROPROCESSOR BASED CONTROLLER FOR A THREE PHASE BRIDGE RECTIFIER

Ahmed El-Amawy, and Ali Mirbod, both of Baton Rouge, La., assignors to Louisiana State University, Baton Rouge, La.

Filed Sep. 30, 1986, Ser. No. 913,765
Int. Cl.[4] H02M *7/155*; H02P *13/26*
U.S. Cl. 364—483 **8 Claims**

1. A method of controlling a six pulse bridge phase controlled rectifier using a microprocessor comprising the steps of:

(a) synchronizing an oscillator to a frequency of an ac power source wherein said oscillator frequency is a multiple of said power source frequency;

(b) driving a first counter with said oscillator;

(c) driving a second counter with said oscillator;

(d) executing a delay angle match routine for a value of said second counter, said match routine comprising:

(i) determining a cosine of α wherein α is a delay angle corresponding to said value of said second counter;

(ii) reading a desired output voltage;

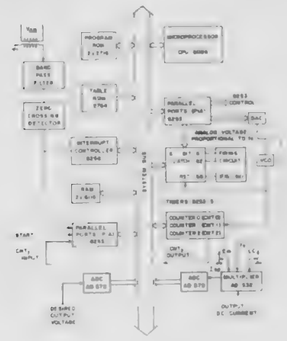
(iii) determining whether said output voltage is greater than or equal to cosine α minus an inductance factor;

(iv) repeating said match routine for a successive value of said second counter;

(e) exiting said match routine when said output voltage is greater than or equal to cosine α minus said inductance factor, and advancing a gating pattern of said rectifier;

(f) calculating a reload value of said second counter based upon a solution value of α when said gating pattern was advanced, whereby a number of counts of said second counter from said reload value to a value corresponding to said solution value of α projects a subsequent gating pattern advancement in 60° of said power source's cycle;

(g) reloading said second counter with said reload value;



(h) determining whether a zero crossing has occurred, an occurrence of which indicates a value of said first counter has been read and said first counter has been reset;

(i) if said zero crossing has occurred, comparing said value of said first counter to a previous value of said counter to determine if said first counter needs to be synchronized to said power source frequency;

(j) if said first counter needs to be synchronized, adjusting said oscillator frequency via a phase locked loop subroutine; and

(k) resuming said match routine.

4,797,834

PROCESS FOR CONTROLLING A PUMP TO ACCOUNT FOR COMPRESSIBILITY OF LIQUIDS IN OBTAINING STEADY FLOW

Ronald E. Honganen, 600 Marathon Dr., Campbell, Calif. 95008; Robert L. Howe, 273 Marsh Dr., San Ramon, Calif. 98543, and Leslie A. Miller, 4150 Piper Dr., San Jose, Calif. 95117

Filed Sep. 30, 1986, Ser. No. 913,709
Int. Cl.[4] G06F *15/46*; F17D *3/00*
U.S. Cl. 364—510 **9 Claims**



8. A method of controlling a pumping system for a liquid chromatography system having a pump having at least two pistons which pump liquid in a pump cycle, and having solvent intake valves coupling a plurality of solvent reservoirs for solvents of different types to an input of said pump, comprising the steps of:

receiving user data regarding a selected flow rate and a selected solvent composition;

generating control signals for controlling said pump to obtain said selected flow rate and controlling said solvent intake valves for said pumping system to obtain the selected solvent composition;

calculating a compressibility correction factor of the selected solvent composition at the selected flow rate using measurable times for movements of said pistons through selected portions of said pump cycle for compressible and incompressible liquids and correcting the control signals for said pump and said solvent intake valves to maintain said selected flow rate and said selected solvent composition over changing conditions of compressibility.

4,797,835

MODEL FOLLOWER CONTROL APPARATUS

Kunihiko Kurami, and Kiyoshi Akutagawa, both of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 16, 1987, Ser. No. 133,686
Claims priority, application Japan, Dec. 16, 1986, 61-297770; Jan. 9, 1987, 62-1868
Int. Cl.[4] G05B *13/00*
U.S. Cl. 364—513 **7 Claims**



1. An apparatus for model follower control of a robot, comprising:

sensor means sensitive to existing robot conditions for producing existing robot condition data representing the sensed robot conditions;

a source for generating target position data representing a target position for the robot;

means responsive to the target position data for calculating target angular position data representing target angular positions of the robot for respective control periods;

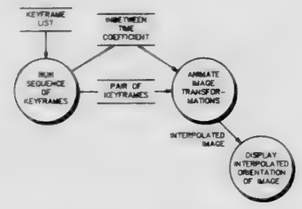
means responsive to the target angular position data and the existing robot condition data for calculating step input data from a first relationship programmed therein;

means responsive to the step input data for calculating command data from a second relationship programmed therein, the second relationship being represented by a discrete equation; and

means responsive to the command data and the existing robot condition data for controlling the robot to permit continuous path operation of the robot;

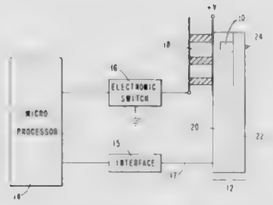
the first relationship being represented by an equation derived from the discrete equation used in calculating command data for a control period after a predetermined number of control periods.

4,797,836
IMAGE ORIENTATION AND ANIMATION USING QUATERNIONS
Francis A. Witek, Cedar Ridge, and David E. Lake, Jr., Penn Valley, both of Calif., assignors to The Grass Valley Group, Inc., Grass Valley, Calif.
Filed Nov. 19, 1986, Ser. No. 932,805
Int. Cl.[4] G06F *15/66*; G09G *1/16*
U.S. Cl. 364—518 **21 Claims**



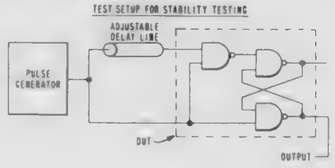
1. In a television video effects device of the type that transforms an input video image to provide motion of the input video image on a display a method for orientating and animating video images comprising the steps of:
inputting new orientation parameters for the input video image, the input video image having a current orientation quaternion;
converting the new orientation parameters into a new orientation quaternion for the input video image on a field by field basis; and
transforming the new orientation quaterion into a transformation matrix for combination with the input video image to display the input video image in the new orientation.

4,797,837
METHOD AND APPARATUS FOR THERMAL PRINTER TEMPERATURE CONTROL
Ralf M. Brooks, Waterloo, Canada, assignor to NCR Canada Ltd. - NCR Canada LTEE, Mississauga, Canada
Filed Apr. 24, 1986, Ser. No. 855,271
Int. Cl.[4] G01D *15/10*
U.S. Cl. 364—519 **22 Claims**



8. Thermal printing apparatus comprising, in combination:
thermal print head means including a ceramic layer and a plurality of resistive elements thereon and capable, when heated to a sufficient degree, of producing markings on a record member;
a heat sink in contact with said thermal print head means;
a thermal print head frame located in proximity to said heat sink;
sensing means located in said heat sink for measuring the temperature of the thermal print heat means;
cooling means positioned in an aperture in said thermal print head frame in contact with said heat sink, and capable of cooling said thermal print head means;
means for periodically comparing the temperature of the sensing means with a reference temperature; and
means for operating said cooling means when the measured temperature exceeds the reference temperature, and for terminating the operation of said cooling means when the measured temperature is reduced to the reference temperature or below.

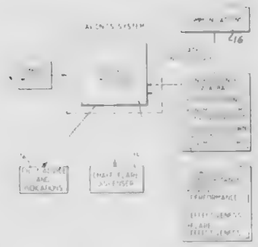
4,797,838
PROCEDURE FOR EVALUATING THE METASTABILITY CHARACTERISTICS OF A SYNCHRONIZING DEVICE
Hilding E. Nelson, Scandia; Jeffrey O. Brown, St. Paul, and Shayne M. Zura, Blaine, all of Minn., assignors to NCR Corporation, Dayton, Ohio
Filed Nov. 16, 1987, Ser. No. 120,903
Int. Cl.[4] G01D *21/00*; G06F *11/00*; H03K *11/16*
U.S. Cl. 364—551.01 **4 Claims**



1. A method for evaluating the metastability characteristics of a synchronizing device having a latching stage, comprising the steps of:
verifying a stable response of the latching stage in the region of the metastable operating point;
verifying that the closed loop gain of the latching stage is greater than one in the region of the metastable operating point; and
estimating of the meantime between failure to resolve from a combination of values relating to the effective gain (A) of the latching stage, the effective time delay (TP) through the latching stage, the time allowed for the latching stage to resolve (Trc), the rise time of a clock signal (Tr), the frequency of the clock signal (Fc) and the frequency of the data signal (Fd).

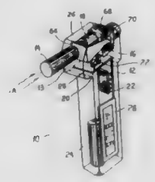
4,797,839
RESOURCE ALLOCATION SYSTEM AND METHOD
John H. Powell, Preston, England, assignor to British Aerospace Public Limited Company, London, England
Continuation of Ser. No. 639,429, Aug. 10, 1984, abandoned. This application Jan. 12, 1987, Ser. No. 4,853
Claims priority, application United Kingdom, Aug. 13, 1983, 8321869
Int. Cl.[4] G06F *15/20, 15/36*
U.S. Cl. 364—554 **18 Claims**

1. A resource allocation system for optimally allocating a physical source among a series of demands on said physical resource, said system comprising:
resource allocation computing means having memory means, said resource allocation computing means:
(i) determining demand success probability data for each demand,
(ii) combining the demand success probability data of two of said demands, thereby to determine the optimum success probability data for the two demands combined and the optimum distribution data for the two demands combined,
(iii) storing the optimum success probability data and the optimum distribution data in said memory means,
(iv) selecting the demand success probability data relating to further demands in turn and processing this data, together with the optimum success probability data for the previous combination of demands previously determined, to determine updated optimum success probability data for the further demand and the previous combination and to determine the optimum distribution data for the further demand and the previous combination, and
(v) repeating said selecting and processing so as to process the data for the remaining demands and so as to determine



for a given amount of said physical resource the optimum allocation of the physical resource among the demands together with the resultant probability of successfully overcoming the demands, and
means connected to said resource allocation computing means for physically indicating how the physical resource should be optimally allocated in response to said demands.

4,797,840
INFRARED ELECTRONIC THERMOMETER AND METHOD FOR MEASURING TEMPERATURE
Jacob Fraden, Hamden, Conn., assignor to Thermoscan Inc., Tucker, Ga.
PCT No. PCT/US86/00782, § 371 Date Jan. 20, 1987, § 102(e) Date Jan. 20, 1987, PCT Pub. No. WO86/06163, PCT Pub. Date Oct. 23, 1986
Continuation-in-part of Ser. No. 724,339, Apr. 17, 1985, abandoned. This PCT application Apr. 15, 1986, Ser. No. 9,181
Int. Cl.[4] G01J *5/18*; G01K *3/10*
U.S. Cl. 364—557 **41 Claims**



1. A thermometer comprising:
a housing;
a sensor carried by said housing and responsive to infrared radiation for generating an electrical signal which exhibits a transient response upon initial receipt of said radiation;
means, carried by said housing, in optical alignment with said sensor, for directing infrared radiation from an object, the actual temperature of which is to be measured, to impinge upon said sensor;
means, carried by said housing, for enabling response of said sensor to said radiation;
and electrical means carried by said housing and responsive essentially only to said transient response of said signal for processing said signal to develop an indication of the actual temperature of said object.

4,797,841
METHOD AND APPARATUS FOR AUTOMATIC CALIBRATION OF MAGNETIC COMPASS
Ronald R. Hatch, Wilmington, Calif., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.
Continuation-in-part of Ser. No. 555,885, Nov. 28, 1983, Pat. No. 4,611,293. This application Jul. 2, 1986, Ser. No. 881,441
Int. Cl.[4] G06F *15/31*; G01C *17/38*
U.S. Cl. 364—571.04 **21 Claims**



1. Apparatus for calibrating the distortions in the readings of a magnetic compass having a plurality of windings in a two dimensional plane and mounted in a vehicle comprising:
first means coupled to the compass windings for obtaining the outputs from each of the windings as a function of time by weighting and combining the outputs from each of the windings at a first time and for a predetermined number of the next previous times to said first time to obtain a time filtered output for each of the windings;
second means coupled to said first means to form from said windings outputs measurement parameters having sensitivity values; said sensitivity values being variables in a generalized equation that represents the configuration and location of a geometrical figure defined by the locus of coordinates of said outputs, said outputs having distortions due to permanent and induced magnetism of the vehicle and distortions due to winding imbalance between the misorientation of the magnetic compass windings;
said second means for defining calibration coefficients of said measurement parameters in said equation;
third means coupled to said second means to incorporate said measurement parameters and said calibration coefficients into a least squares matrix and to solve for said calibration coefficients;
fourth means coupled to said third means for computing calibration parameters from said calibration coefficients that are to be applied to said outputs;
fifth means coupled to said first means and said fourth means for applying said calibration parameters to said outputs from said first means to form an output from each of two windings; said two windings being orthogonally related to one another;
sixth means coupled to said fifth means for obtaining the calibrated compass heading from said two windings outputs.

4,797,842

METHOD OF GENERATING FINITE ELEMENTS USING THE SYMMETRIC AXIS TRANSFORM

Lee R. Nackman, White Plains, and Vijay Srinivasan, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 717,368, Mar. 28, 1985, abandoned. This application Sep. 16, 1987, Ser. No. 97,382

Int. Cl.[4] G06F *15/60, 15/62, 15/328*

U.S. Cl. 364—578 **19 Claims**



1. A method for generating finite elements of an object defined by a geometric model and predicting a physical quantity of said object, comprising the steps of:

a first step of providing an object defined by a geometric model of a predetermined physical medium, wherein said first step includes inputting into a computer system said geometric model, said computer system including an image display screen displaying said geometric model;

a second step of transforming, using a symmetric axis transform, the object defined by said geometric model into a plurality of sub-objects, each defined by the symmetric axes of said symmetric axis transform, said geometric model and linkages from branches or terminators of said axes to said geometric model;

a third step of transforming each sub-object into finite elements, using said symmetric axes and radius functions of said axes;

calculating a finite difference equation for said finite elements; and

predicting a physical quantity of a physical phenomenon in said physical medium from said calculated finite difference equation.

4,797,843

PARALLEL OPTICAL ARITHMETIC/LOGIC UNIT

R. A. Falk, Renton, and C. D. Capps, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 27, 1987, Ser. No. 19,767

Int. Cl.[4] G06F *7/56*

U.S. Cl. 364—713 **20 Claims**



1. A method of performing parallel logic or arithmetic operations comprising the steps of:

(a) providing at least two channels of coherent light sources, all channels being arranged in a parallel fashion with each other and each channel having a plurality of coherent light sources aligned with one another at inputs to the channels;

(b) turning on one of the plurality of light sources in each channel whereby a specific spatial pattern is formed;

(c) inputting the specific spatial pattern to an optical system having a plurality of channels, each channel of the optical system having only a plurality of linear optical elements;

(d) passing light from the specific spatial pattern primarily through only one channel of the optical system, and

(e) detecting the light that was passed through the one channel of the optical system and, thereby, recognizing the specific spatial pattern.

4,797,844

DIGITAL MIXING APPARATUS WHICH ATTENUATES THE SUM FREQUENCY OF THE MIXED SIGNALS

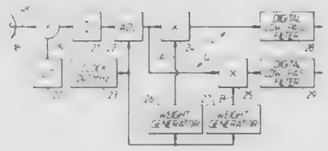
Michael C. Jackson, Chelmsford, United Kingdom, assignor to The General Electric Company, p.l.c., London, England

Filed Jun. 5, 1986, Ser. No. 870,890

Claims priority, application United Kingdom, Jun. 6, 1985, 8514260

Int. Cl.[4] G06F *15/31*

U.S. Cl. 364—724.01 **10 Claims**



1. Digital mixing apparatus comprising:

means, responsive to a variable input signal and a predetermined input signal, for mixing the input signals and for providing a mixed output signal in digital form, each input signal representing a respective frequency and the mixed output signal representing sum and difference frequencies of the input signals, and a digital filter for removing the sum frequency, the digital filter including means for taking numbers representing successive samples of the mixed output signal in blocks and weighting selected numbers of each block so as to reduce the magnitude of at least the first and last number of each block relative to the others whilst having the majority of the numbers within each block, between the first and last, unchanged relative to each other.

4,797,845

PHASE-LOCKED LOOP COEFFICIENT GENERATOR FOR A FILTER ARRANGEMENT HAVING A NON-RATIONAL RATIO BETWEEN INPUT AND OUTPUT SAMPLING FREQUENCIES

Eduard F. Stikvoort, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 11, 1986, Ser. No. 940,326

Claims priority, application Netherlands, Dec. 18, 1985, 8503478

Int. Cl.[4] G06F *7/38;* **H03H** *17/06*

U.S. Cl. 364—724.1 **4 Claims**

1. An arrangement for changing the sampling frequency of a discrete-time signal having a value f_i into a value f_k, one of said two sampling frequencies being equal to f_l and the other being equal to a higher frequency f_h, said arrangement comprising:

(a) first means for supplying low-rate clock pulses occurring at the said rate f_l;

(b) second means for supplying high-rate clock pulses occurring at the said rate f_h;

(c) a filter coefficient generator comprising:

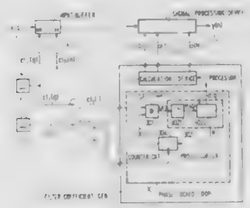
(c1) a deviation circuit to which the low and high-rate clock pulses are applied and which supplies a deviation d which is equal to the product of f_h and a time interval T_d between a low-rate clock pulse and the immediately subsequent or the immediately preceding high-rate clock pulse;

(c2) means to generate a predetermined number of (M) filter coefficients in response to the supplied deviation d, the filter coefficient having ordinal number m being equal to a(m) and being defined by the relation

$$a(m)=h[(d+m)/f_h]$$

wherein the function h represents the pulse response of a finite impulse response filter and m=0, 1, 2, . . . M−1; and

(d) a signal processing circuit for generating at a rate f_u the samples of the discrete-time signal having the changed



sampling frequency by multiplication of samples of the original discrete-time signal by selected filter coefficients and by adding the products thus obtained;

wherein the deviation circuit comprises:

(c1,1) a phase detector to which the low-rate clock pulses are applied on the one hand and to which synthetic low-rate clock pulses are applied on the other hand and which supplies a discrete-time phase difference signal;

(c1,2) a counter circuit adapted to receive a reference value, which circuit receives the high-rate clock pulses as counting pulses and supplies a synthetic low-rate clock pulse each time after receiving a number of high-rate clock pulses which is equal to the reference value; and

(c1,3) a processor circuit receiving the discrete-time phase difference signal and in response thereto supplying deviators and reference values for the counter circuit at the rate f_l.

4,797,846

DIGITAL RESONANT FILTER

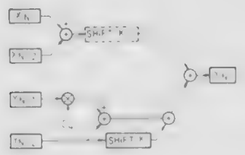
Ferial Benkara, Bagneux, France, and Daniel Campbell, Palos Verdes East, Calif., assignors to Enertec, Montrouge, France

Filed May 17, 1985, Ser. No. 735,234

Claims priority, application France, May 21, 1984, 84 07846

Int. Cl.[4] G06F *7/38*

U.S. Cl. 364—724.17 **10 Claims**



1. A recursive digital filter, comprising:

at least a first filter stage for receiving successive digital input samples X_N and in response providing successive digital output samples Y_N, said filter stage having a z-transform transfer function

$$H(Z)=(A_0+A_1{\cdot}Z^{-1}+A_2{\cdot}Z^{-2})/1+C_4{\cdot}Z^{-1}+C_5{\cdot}Z^{-2})$$

and having two zeros at frequencies defined by solutions of the equation:

$$A_0+A_1A^{-1}+A_2Z^{-2}=0$$

and two poles at frequencies defined by solutions of the equation

$$1+C_4{\cdot}Z^{-1}+C_5Z^{-2}=0$$

said filter stage including

(a) means for positioning the poles and the zeros in a circle of unitary radius centered at the origin of the real and imaginary axes of the complex plane, the poles being represented by complex coordinates the polar radius of which is sufficiently close to unity such that the filter stage provides a filter pass band about a center frequency, the arguments of which are, in absolute value, representative of the center working frequency of said stage;

(b) means for forming coefficients A_0 and A_2 of the transfer function to be substantially equal and of opposite sign and a coefficient A_1 to be zero, with the zeros positioned at points along or close to the real axis of respective abscissae −1 and +1; and

(c) means for forming a coefficient C_5 to be greater in magnitude than 0.8,

the filter stage filtering by resonance a band centered about a resonant frequency, the bandwidth of the filter stage and its gain for a signal at the resonant frequency depending only upon the difference between unity and the polar radius of poles.

4,797,847

DISCRETE COSINE TRANSFORMER

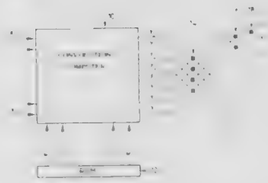
Pierre Duhamel, 97, avenue de Verdun, 92130 Issy les Moulineaux, France

Filed Feb. 4, 1987, Ser. No. 10,702

Claims priority, application France, Feb. 6, 1986, 86 01629

Int. Cl.[4] G06F *15/332*

U.S. Cl. 364—725 **3 Claims**



1. A device for computing the discrete cosine transform X_k of a signal x represented by N digitized samples $x_0, \ldots, x_i \ldots x_{N-1}$, where N is a power of 2:

$$X_k = \sum_{i=0}^{N-1} x_i \cos[(2\pi/4N)(2i+1)k]$$

comprising:

means for storing a predetermined sequence of samples w_i (N);

convolving means connected to receive said N digitized samples x_i, and said predetermined sequence of samples w_i(N) and arranged to carry out a convolution between the samples x_i and said stored sequence of samples w_i(N) and to provide N convolution products having indices i from 0 to N−1; and

a set of identical elementary circuits distributed into a plural-

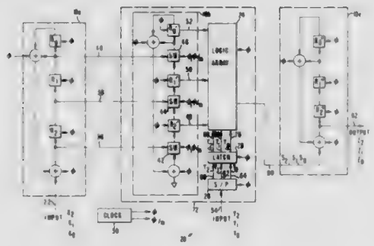
ity of serially connected banks, each circuit having two inputs and two outputs one of which delivers the sum and the other the difference of the two inputs, each of the elementary circuits of the first bank being connected to receive, on its two inputs, samples of the convolution products whose indices are separated by N/2 from each other.

4,797,848

PIPELINED BIT-SERIAL GALOIS FIELD MULTIPLIER

Douglas R. Walby, Pomona, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 18, 1986, Ser. No. 853,529
Int. Cl.[4] G06F 7/38, 7/52
U.S. Cl. 364—754 **18 Claims**



1. A pipeline Galois Field (2^m) multiplier for multiplying elements of a finite field, represented by factors K(X) and Y(X), to obtain a product Z(X), wherein K(X) has the form $K(X)=K_{m-1}X^{m-1}+K_{m-2}X^{m-2}+\ldots+K_0$, Y(X) has the form $Y(X)=Y_{m-1}X^{m-1}+Y_{m-2}X^{m-2}+\ldots+Y_o$ and Z(X) has the form $Z(X)=Z_{m-1}{}^{m-1}+Z_{m-2}X^{m-2}+\ldots+Z_o$, said multiplier apparatus comprising:

(a) a serial in, parallel out input shaft register buffer circuit having m serially arranged register stages R_{m-1}, R_{m-2}, . . . , R_0 and being connected for serially receiving the K(X) coefficients K_{m-1}, K_{m-2}, . . . , K_0;

(b) computer means connected for receiving, in parallel, at a preselected clock pulse, the contents of the R_{m-1}, R_{m-2}, . . . , R_0 register stages of the initiating register circuit and for serially receiving the Y(X) coefficients Y_{m-1}, Y_{m-2}, . . . , Y_0, and for operating thereon to provide an intermediate series of m logic functions $S_f=f_{m-1}Y_{m-1}+f_{m-2}Y_{m-2}+\ldots+f_0Y_0$, wherein f_{m-1}, f_{m-2}, . . . , f_0 are functions of K_{m-1}, K_{m-2}, . . . , K_0;

(c) a serial in serial out output shift register circuit having m serial arranged shift register stages R_{m-1}'', R_{m-2}'', . . . , R_0'' and being connected for serially receiving the series of m logic functions S_f from the computing means and, in response thereto, providing a serial output of Z(X) product coefficients Z_{m-1}, Z_{m-2}, . . . , Z_0; and

(d) timing means for providing clock pulses to the input and output shift register circuits and to the computing means for synchronizing the operation thereof.

4,797,849

PIPELINED VECTOR DIVIDE APPARATUS

Hiraku Nakano, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

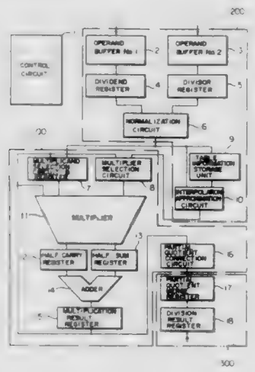
Filed Nov. 13, 1986, Ser. No. 929,913
Claims priority, application Japan, Nov. 19, 1985, 60-259448
Int. Cl.[4] G06F 7/52
U.S. Cl. 364—765 **5 Claims**

1. A vector divide apparatus comprising:

pre-processing means including a dividend register for sequentially storing each vector element of a dividend, a divider register for sequentially storing each vector element of a divisor, and a normalization circuit connected to said dividend register and divisor register for normalizing either a vector element in said dividend register or a vector element in said divisor register;

main processing means connected to said pre-processing means for obtaining a quotient vector element, including at least one multiplier for calculating a partial quotient of a predetermined bit length for each of a predetermined number of vector elements sequentially from a high order through iterative calculations;

post-processing means connected to said main processing means for merging a plurality of the partial quotients obtained through said iterative calculations by said main processing means so as to obtain a quotient vector element of a desired bit length as a result of the divide operation between said dividend vector element and said divisor vector element; and



control means, connected to said pre-processing means, main processing means and post-processing means, for controlling said main processing means so as to prevent an idle duration in the operation of said multiplier in such a manner that the multiplications for (i+1)-th vector elements follow immediately after the multiplication for obtaining final partial quotient i-th vector elements, and for controlling said pre-processing means and said post-processing so that said pre-processing means and post-processing means are operated at a time interval equal to the total time elapsed during said iterative calculations performed by said main processing means to obtain a quotient vector element, in such a manner that an (i+1)-th dividend vector element and an (i+1)-th divisor vector element are input to said pre-processing means before an i-th quotient vector element is outputting from said post-processing means.

4,797,850

DYNAMIC RANDOM ACCESS MEMORY CONTROLLER WITH MULTIPLE INDEPENDENT CONTROL CHANNELS

Zvie Amitai, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 12, 1986, Ser. No. 862,081
Int. Cl.[4] G06F 9/00; G11C 19/00
U.S. Cl. 364—900 **9 Claims**

1. A dynamic random access memory controller for providing address and control signals to memory banks comprising:

means for providing address and control signals, including row address, column address, row address strobe and a plurality of column address strobe signals;

row address strobe driver means coupled to said row address strobe input signal providing means for producing a multiplicity of row address strobe output signals;

column address strobe driver means coupled to said plurality of column address strobe input signals providing means for producing a like plurality of column address strobe output signals which are processed independently in separate channels;

means for providing an address latch strobe signal, and a bank latch coupled to a source of a pair of bank select



input signals and to said address latch strobe signal providing means for enabling one of the row address strobe output signals; and

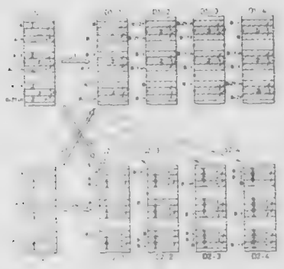
a multiplexer coupled to said row address, column address, and row address strobe providing means for selecting row address and column address signals to produce a multiplexed output of said row address and column address signals, whereby said controller operates to selectively access individual or combinations of bytes in a data word.

4,797,851

DATA TRANSFER CONTROL EQUIPMENT

Yoshito Suzuki, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1985, Ser. No. 812,926
Claims priority, application Japan, Dec. 24, 1984, 59-270813
Int. Cl.[4] G06F 12/00
U.S. Cl. 364—900 **17 Claims**



1. A data transfer control device whose operation is controlled by a microprocessor, comprising:

a plurality of registers into which source address data, destination address data, first offset data and second offset data are set; and

controller means for performing a control operation for transferring data stored within a storage location indicated by a device address designated by said source address data into a storage location indicated by a device address designated by said destination address data, an arithmetic operation for updating said source address data using an offset value designated by said first offset data and an arithmetic operation for updating said destination address data using an offset value designated by said second offset data.

7. A method of controlling data transfer in a microcomputer system having a microprocessor, first memory means for holding data, second memory means for holding data and a memory access controller having a plurality of registers, comprising the steps of:

(a) storing source address data in a first register;

(b) storing destination address data in a second register;

(c) storing first offset data in a third register;

(d) transferring data from a first region in said first memory means designated by said source address data in said first register into a second region in said second memory means designated by said destination address data in said second register;

(e) updating said source address data using an offset value designated by said first offset data in said third register; and

(f) transferring data from a third region in said first memory means designated by the source address data updated in step (e) into a fourth region in said second memory means which is located therein adjacent said second region.

4,797,852

BLOCK SHIFTER FOR GRAPHICS PROCESSOR

Sunil Nanda, Santa Cruz, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 3, 1986, Ser. No. 825,652
Int. Cl.[4] G06F 7/00; G11C 19/00
U.S. Cl. 364—900 **23 Claims**



1. In data processing system, an apparatus for shifting video pixel data stored in a memory, comprising:

storage means for storing a plurality of selected bits from said memory and said storage means configured as a matrixed array of individual registers, such that each individual register is coupled to all adjacent registers to provide for shifting an array of video pixel data in any direction along any dimension of said array;

shifter means coupled to said storage means for interchanging positions of said bits by vertically and horizontally shifting each of said video pixel data by one position at a time within said array such that said bits which are located at the edges of said matrixed array have two possible transitions, an output transition allowing for shifting to said memory, and a wrap around transition allowing for shifting and rotating back into said storage means forming a circular loop;

transfer means coupled to said storage means and said memory for transferring said video pixel data as a sequence of

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words having a horizontal transition and a vertical transition;

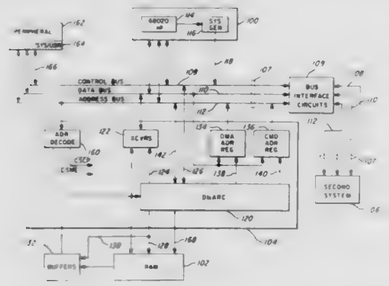
whereby a block shifting of data in said memory is achieved.

4,797,853

DIRECT MEMORY ACCESS CONTROLLER FOR IMPROVED SYSTEM SECURITY, MEMORY TO MEMORY TRANSFERS, AND INTERRUPT PROCESSING

Shaun V. V. Savage, Bountiful, and Johnny M. Harris, Woods Cross, both of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 15, 1985, Ser. No. 798,532
Int. Cl.[4] C06F *12/14, 13/14*
U.S. Cl. 364—900 **17 Claims**



1. In a data processing system including a system processor, a plurality of units having addressable memory space, and a bus over which data may be transferred between said units, the improvement comprising:

a plurality of controllers connected to said bus, each of said controllers being associated with one of said units by connection thereto;

each of said controllers including,

first means for placing an address on said bus, said address being an address in the memory space of a unit associated with one of said controllers other than the one placing said address;

second means for generating and placing on said bus a security level signal indicating the security level of memory space which the controller may access;

third means for storing limiting addresses defining boundaries for each security level of the memory space in the unit associated with the controller, said boundaries defining at least a lower security level memory space and a higher security level memory space;

fourth means responsive to a security level signal placed on said bus by any other controller for selecting one of said limiting addresses;

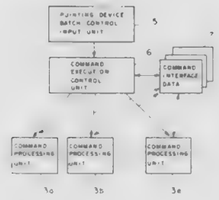
fifth means for comparing said selected limiting address and an address placed on said bus, said fifth means producing an error signal when the address placed on said bus by a given controller is an address in said memory space having a higher security level than that of the security level signal placed on said bus by said given controller.

4,797,854

OPERATING SYSTEM FOR CONTROLLING MAN-MACHINE INTERACTION IN INFORMATION PROCESSING SYSTEM

Katsuichi Nakazaki, and Yasumasa Nonoyama, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1986, Ser. No. 940,097
Claims priority, application Japan, Feb. 20, 1986, 61-35713
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 **10 Claims**



1. A man-machine interface operating system, including display means, for interactive processing of input data given by means of input means in accordance with a menu displayed on the display means, which comprises:

input batch operation means which receives input data from the input means;

command execution control means which produces and/or updates interface data for executing a command based on the input data received by the input batch operation means, and makes a decision based on the interface data as to whether the command to be executed is a continuous command or a new command;

command processing means which processes the command selected by the command execution control means;

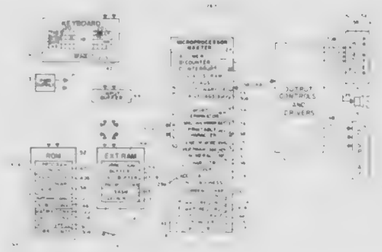
whereby a command execution routine is repeated according to the produced and/or updated interface data for executing the command.

4,797,855

WORD PROCESSOR HAVING SPELLING CORRECTOR ADAPTIVE TO OPERATOR ERROR EXPERIENCE

Howard C. Duncan, IV; R. William Gray, both of Ithaca, and Joseph P. Battista, Homer, all of N.Y., assignors to Smith Corona Corporation, Cortland, N.Y.

Filed Jan. 6, 1987, Ser. No. 700
Int. Cl.[4] G06F *3/02, 11/00, 11/34*
U.S. Cl. 364—900 **10 Claims**



1. In a word-processing system of the kind having operator input through a keyboard with a plurality of depressible keys, a spelling dictionary storing valid words within the system, a

display, and an error-signal generator activated upon entry of an incorrect word as compared with the valid words of the dictionary; the combination of:

(a) a special key included on said keyboard,

(b) storage means holding correction information of at least two kinds,

(c) statistical means for controlling the selection order of said at least two kinds of correction information, comprising an individual counter for a respective one of said at least two kinds of correction information, each said counter storing a count dependent upon the relative extent of prior successful usage of each said kind in amending incorrect words previously entered by said operator;

(d) amending means operable to apply to said incorrect word the one of said kinds of correction information first selected by said statistical means, thereby producing therefrom a trial word for presentation on said display, said amending means being responsive to operator depression of said special key as a reaction to generation of an error-signal;

(e) means for adjusting said statistical means to select a second, next-in-order kind of correction information;

(f) a discrete key on said keyboard, depression of said discrete key rejecting said trial word presenting in said display and causing operation of said means for adjusting to supply said next-in-order kind of correction information to said amending means for application thereof to said incorrect word, thereby producing a new trial word for presentation on said display;

(g) a particular key on said keyboard, operator depression of said particular key indicating a trial word currently presented on the display is accepted as a replacement for said incorrect word; and

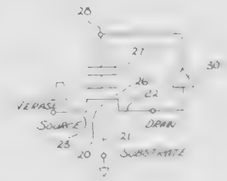
(h) incrementing means for unit incrementation of said individual counter for said next-in-order kind of correction information, said incrementing means responding to said operator depression of the particular key when said new trial word is presented in said display, whereby said statistical means is modified in accordance with the frequency of usage of each said kind of correction information.

4,797,856

SELF-LIMITING ERASE SCHEME FOR EEPROM

Winston K. M. Lee, San Francisco; Duane H. Oto, Santa Clara, and Simon M. Tam, San Mateo, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 16, 1987, Ser. No. 39,086
Int. Cl.[4] G11C *7/00, 11/40*
U.S. Cl. 365—185 **14 Claims**



1. An apparatus for self-limiting an electrical erase of a floating gate electrically programmable and electrically erasable read-only memory (EEPROM) cell having first and second doped regions separated by a channel region, and having a floating gate and a control gate overlying said channel region and a portion of said first doped region, comprising:

voltage supply means coupled to said first doped region to provide an erase voltage for discharging electrons from said floating gate to said first doped region;

feedback means coupled to said second region for providing a feedback signal to limit said discharging;
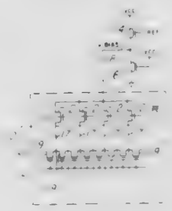
wherein as said floating gate discharges electrons to said first doped region, said second doped region increases in potential and said feedback means uses said potential to provide said feedback signal such that an erasing cycle is terminated prior to over-erasing said EEPROM cell.

4,797,857

ARRAY DISCHARGE FOR BIASED ARRAY

John F. Schreck, Houston; Timmie M. Coffman, and David D. Wilmoth, both of Sugar Land, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 11, 1986, Ser. No. 850,636
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—203 **8 Claims**



1. A discharge circuit for discharging bit lines of an array of semiconductor memory cells in which the bit lines are biased from a common bias line, comprising:

a discharge switch coupled to said bias line for discharging said bit lines and said bias line; and

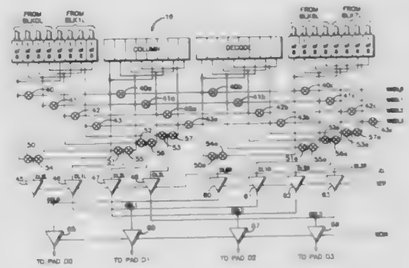
a control circuit coupled to said discharge switch operative to turn on said discharge switch in response to the voltage on said bias line rising above a first predetermined level and then to turn off said discharge switch in response to the voltage on said bias line falling below a second predetermined level.

4,797,858

SEMICONDUCTOR MEMORY WITH DIVIDED WORD LINES AND SHARED SENSE AMPLIFIERS

Karl L. Wang, and Lal C. Sood, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1987, Ser. No. 31,305
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—230 **6 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cells organized into an array of N rows and M columns, said rows and columns being further organized into K blocks, each comprising N rows and M/K columns, each said block being further organized into two half-blocks, each comprising N rows and M/2K columns;

P metal word lines extending across said array in the row direction;
row decoder means for receiving a portion of an address and for selecting one of said P metal word lines in response thereto, a first half of said blocks lying on a first side of said row decoder means and a second half of said blocks lying on a second side thereof;
block decoder means for receiving a portion of said address and for selecting two of said half-blocks in response thereto, one of said selected half-blocks lying on said first side of said row decoder means and the other selected half-block lying on the other side thereof;
local word line selector means for receiving signals from said metal word lines and from said block decoder means and for selecting one local word line for each of said two selected half-blocks;
M pairs of bit lines extending across said array in the column direction;
column decoder means coupled to said M pairs of bit lines for receiving a portion of said address and for selecting L pairs of said bit lines from each said half-block in response thereto; and
sense amplifier means for responding to signals carried on said L pairs of bit lines from each of said selected half-blocks and for providing a plurality of data bits corresponding to said signals at outputs of said memory device;
wherein said sense amplifier means further comprises;
a first plurality of fewer than KL sense amplifiers, each of said first plurality of sense amplifiers being coupled to more than one of said 2KL pairs of bit lines selected by said column decoder means; and
a second plurality of sense amplifiers equal in numbers to said number of data bits, each of said second plurality of sense amplifiers having an input coupled to outputs of more than one of said first plurality of sense amplifiers and an output coupled to said outputs of said memory device.

4,797,859

METHOD FOR DETERMINING FORMATION PERMEABILITY BY COMPARING MEASURED TUBE WAVES WITH FORMATION AND BOREHOLE PARAMETERS

Brian E. Hornby, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 8, 1987, Ser. No. 58,973
Int. Cl.[4] G01V *1/40*
U.S. Cl. 367—31 **5 Claims**



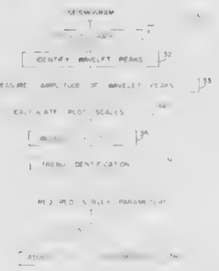
1. A method of determining the permeability of an earth formation traversed by a borehole, using a tool adapted for movement in said borehole, comprising:
transmitting acoustic energy from a first location on said tool;
measuring the acoustic wave forms of the transmitted energy at a plurality of locations on said tool at varying distances from said first location;
filtering each of said wave forms to obtain a tube wave component;
determining a measured slowness parameter of said tube wave component;
generating a value of the computed slowness parameter for said borehole under the conditions of an elastic nonpermeable medium;
determining the difference between the measured slowness parameter and the computed value;
determining the permeability of said formation in response to the difference between said measured slowness parameter and said computed value.

4,797,860

METHOD FOR SHOT POINT ANALYSIS OF SEISMIC REFLECTION SIGNALS

Carl A. Quaglino, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 27, 1987, Ser. No. 125,903
Int. Cl.[4] G01V *1/36, 1/28*
U.S. Cl. 367—47 **9 Claims**



1. A method for conducting a marine seismic survey along a line of exploration, comprising the steps of:
(a) traversing said line of exploration with a seismic survey system having an acoustic energy source, an array of spaced-apart receivers, and a recording system,
(b) firing said acoustic energy source at a plurality of shot points along said line of exploration.
(c) recording the seismic reflections signals received by one of said receivers for each of said shot points,
(d) selecting a common wavelet in said recorded seismic signals of said receiver for each of said shot points,
(e) measuring the amplitudes of said common wavelet of said receiver over said plurality of shot points, and
(f) comparing said measured amplitudes to identify a trend from shot point to shot point over said plurality of shot points in an actual value of a seismic survey parameter.

4,797,861

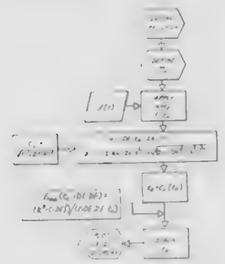
METHOD OF PROCESSING SEISMIC DATA

Craig J. Beasley, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 779,176, Nov. 16, 1985, Pat. No. 4,742,497. This application Mar. 30, 1988, Ser. No. 175,274
Int. Cl.[4] G01V *1/04*
U.S. Cl. 367—50 **4 Claims**

1. A method for stacking three dimensional seismic data to form a seismic section, the data consisting of a plurality of traces corresponding to individual source-to-receiver pairs stacked into a plurality of cells geometrically defined on a representation of the surface of the earth and in which stacking is based upon a selected root-mean-squared velocity, comprising the steps of:

(a) normal-moveout correcting each trace prior to stacking based on the source-to-receiver distance for each trace;



(b) weighting each normal-moveout corrected trace to compensate for geometric spreading between the source-to-receiver pairs according to the expression:

$$w_i(iDf,t_n,2k) = Df/[(1 + 4k(2s - s^2)) \times \sqrt{[(1 - (iDf)^2/(k^2))^3]}\ ]$$

where:
w_i an amplitude weighting coefficient;
iDf is one half the dimension of the cell;
t_n is a normal moveout corrected time;
k is one-half the offset distance;
Df is the cell spacing between said plurality of cells along a line including the source-to-receiver pairs;
s is equal to $t_n(2/F)$; and
F is equal to the dominant frequency; and
(c) altering the resultant normal-moveout corrected and weighted traces by a moveout coefficient which is a function of a relative distance between said plurality of cells into which each trace is to be stacked and the midpoint between the source and receiver corresponding to that trace, the altering of the traces made according to the expressions:

$$t_o = C_i \times t_n; \text{ and}$$

$$C_i = \sqrt{(1 - (iDf/K)^2)}\ ;$$

where: t_o is the altered travel time seismic signal; and
(d) limiting local frequency content of each normal-moveout corrected trace to avoid aliasing artifacts in the stacked seismic data according to the expression:

$$F_{max}(t_o, iDf, Df) = (k^2 - (iDf)^2)/(2iDf \times Df \times t_o),$$

where F_{max} is the maximum allowable frequency.

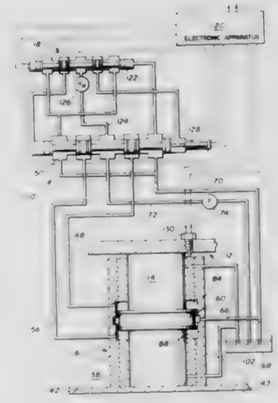
4,797,862

SEISMIC GENERATOR

Serge S. Wisotsky, Tulsa, Okla., assignor to Industrial Vehicles International, Inc., Tulsa, Okla.

Continuation of Ser. No. 885,245, Jul. 14, 1986, abandoned, which is a continuation of Ser. No. 670,378, Nov. 9, 1984, abandoned. This application Feb. 13, 1987, Ser. No. 15,091
Int. Cl.[4] H04R *1/02*
U.S. Cl. 367—143 **14 Claims**

1. A seismic generator for creating vibratory signals in liquid comprising in combination:
a housing assembly including a post assembly projecting centrally therefrom, said post assembly having a sidewall, first and second power passageways therein extending through said sidewall and a relief passageway extending through said sidewall between said first and second power passageways;
a piston assembly mounted for reciprocating travel on said post assembly and having a surface thereon arranged to egage the liquid, said piston assembly encircling said post assembly and including means for providing fluid communication between said first power passageway and said relief passageway and between said second power passageway and said relief passageway, respectively, before said piston assembly has reached each end of its travel;
said piston assembly and said post assembly cooperating to provide an expansible first power chamber and an expansible second power chamber communicating, respectively with said first and second power passageways to enable relative reciprocating travel between said piston assembly and said post assembly;
valve means connected with said passageways and for connection to a source of pressurized fluid; and
control means responsive to the relative position of said post assembly and said piston assembly for controlling said valve means to direct pressurized fluid to an appropriate one of said power passageways to cause reciprocation of said piston assembly for production of vibratory signals in the liquid.

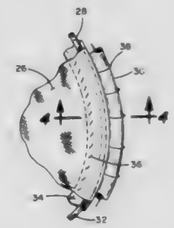


4,797,863

UNDERWATER ACOUSTICAL TRANSDUCER

Manuel A. Gonzalez, and David L. Hutchins, both of Seattle, Wash., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 22, 1986, Ser. No. 944,050
Int. Cl.[4] H04R *17/00*
U.S. Cl. 367—157 **17 Claims**



1. An underwater acoustical transducer including:

a diaphragm, a frame, and means for securing the periphery of said diaphragm with respect to said frame, said frame having a select deployment configuration and elastically deformable into configurations other than said select deployment configuration; and

a flexible piezoelectric transducing element at least substantially adjacent said frame, running the length of said frame and conforming to the configuration of said frame; and means for fastening said transducing element with respect to said frame;

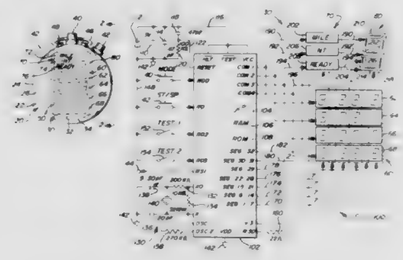
wherein said transducing element includes a first coaxial cable with an electrically conductive core surrounded by a flexible piezoelectric material, said coaxial cable substantially adjacent a radially outward surface of said frame, and wherein said means for fastening said transducing element with respect to said frame include a plurality of loops around said first coaxial cable and threaded through the periphery of said diaphragm.

4,797,864

RACE STOPWATCH WITH PLURAL DISPLAYS AND OPERATING MODES

Robert R. Stano, Belleville, and Richard H. Harrington, Ann Arbor, both of Mich., assignors to Robert R. Stano, Belleville, Mich.

Filed Oct. 9, 1987, Ser. No. 106,473
Int. Cl.[4] G04F 8/00
U.S. Cl. 368—111 **17 Claims**



1. A hand-holdable, self-contained, portable stopwatch having a plurality of different modes of operation for measuring and displaying a plurality of intervals of time representing the elapsed times a racer has taken to cover successive predetermined distances, comprising:

time-base means for providing an internal source of timing signals for the stopwatch;

first operator-actuatable input switch means for generating first input commands designating start and stop points of the plurality of intervals of time to be measured;

second operator-actuatable input switch means for generating second input commands for switching the stopwatch between at least first and second distinct timing modes of operation;

timing means connected to the time-base means for successively measuring the duration of each of the plurality of intervals of time designated by the input commands received from the first input means;

first display means for simultaneously displaying at least a plurality of multiple-digit values respectively representing the measured duration of at least two of the plurality of intervals of time;

second display means distinct from the first display means for indicating when the stopwatch is in its first timing mode when the stopwatch is in its second timing mode;

third display means distinct from the first display means for displaying at least one alphanumeric symbol indicating which of the plurality of intervals of time the stopwatch is currently set up to time, and

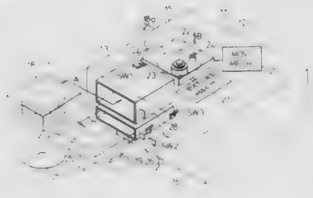
wherein said timing means including microprocesor means for controlling the sequence of automatic operations of the stopwatch in response to input commands received from the first and second input means, including automatically operating the display means and providing the first and second timing modes, with the operation of the first timing mode including measuring at least a plurality of overlapping intervals of time having a common start point and different stop points, and with the operation of the second timing mode including measuring at least a plurality of successive non-contiguous intervals of time such that the stop point of any one such interval is separated by an operator-determined length of time from the start point of the next interval of time if any to be measured.

4,797,865

INFORMATION RECORDING DISC PLAYER HAVING RECEIVING PARTS FOR RECEIVING A PLURALITY OF DISC CARTRIDGES

Tooru Imai, Yamato; Kouichi Muton, Chigasaki; Hidetoshi Yamazaki, Atsugi, and Masae Murata, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed May 26, 1987, Ser. No. 54,854
Claims priority, application Japan, Jun. 2, 1986, 61-84260
Int. Cl.[4] G11B 23/04
U.S. Cl. 369—39 **8 Claims**



1. An information recording disc player for playing an information recording disc, said information recording disc player comprising: a main player body;

a first receiving part in said main player body for receiving a first disc cartridge which can accommodate a plurality of information recording discs each put on a tray;

a second receiving part in said main player body for receiving a second disc cartridge which can only accommodate a single information recording disc put on a tray, said first and second receiving parts being arranged so that the information recording discs accommodated within said first and second disc cartridges are arranged coaxially when said first and second disc cartridges are in said first and second receiving parts, respectively, said first and second receiving parts being open at first and second predetermined openings of a front panel of the main player body, respectively:

means for ejecting said first disc cartridge from said first receiving part through said first predetermined opening of the front panel of the main player body;

means for moving said second disc cartridge through said second predetermined opening of the front panel of the main player body between a disc receive/eject position, where said single information recording disc can be set into and removed from said second disc cartridge, and a loaded position within said second receiving part;

a disc playing unit in said main player body for playing an information recording disc; and

a mechanism for selectively loading an information recording disc on said disc playing unit from either one of said first and second disc cartridges in said first and second receiving parts and for unloading the information recording disc from said disc playing unit into the disc cartridge from which the information recording disc was originally loaded,

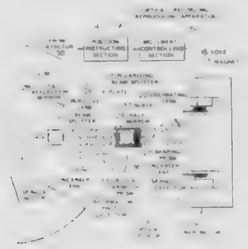
said mechanism comprising a first mechanism for moving said disc playing unit in a first direction so that said disc playing unit confronts one information recording disc accomodated within one of said first and second disc cartridges in said first and second receiving parts, and a second mechanism including a slider for extracting said one information recording disc together with the tray from said one disc cartridge to be loaded on said disc playing unit and for inserting said one information recording disc together wit the tray unloaded from said disc playing unit into said one disc cartridge, said slider moving in a second direction perpendicular to said first direction, said second mechanism being mounted on said disc playing unit to be moved together with said disc playing unit by said first mechanism.

4,797,866

OPTICAL RECORDING/REPRODUCING APPARATUS

Shoji Yoshikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1987, Ser. No. 16,687
Claims priority, application Japan, Feb. 19, 1986, 61-034067
Int. Cl.[4] G11B 7/00
U.S. Cl. 369—43 **8 Claims**



1. An optical recording/reproducing apparatus, comprising:

(a) a laser source for generating a light beam for recording-/reproducing operation;

(b) an optical pickup including:

(1) information reproducing photodetector means for receiving a light returned from a recording medium for optically recording/reproducing information to reproduce data recorded in the recording medium;

(2) control photodetector means for receiving the light returned from the recording medium to effect position control of the light beam;

(3) pickup position detecting means for detecting a position of said optical pickup; and

(4) an optical system for guiding the light beam from said laser source to the recording medium, said information reproducing photodetector means, and said control photodetector means; said optical system

including half mirror means for dividing the light beam from said laser source to a transmitted beam directed to the recording medium and a reflected beam directed to said pickup position detecting means, and for reflecting light returned from said recording medium to said control photodetector means; and

(c) pickup moving means for moving at least a part of said optical pickup in a track traverse direction;

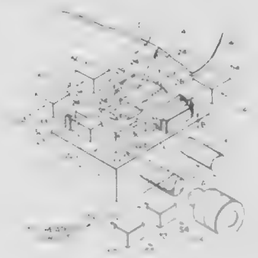
whereby said pickup position detecting means will detect the position of said optical pickup in response to said reflected beam and said control photodetector means will control the position of the transmitted beam on the recording medium in response to said light returned from the recording medium.

4,797,867

PICK-UP HEAD FOR OPTICAL INFORMATION STORAGE DISK

Hiroshi Sunagawa, and Kozi Kamiyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 15, 1986, Ser. No. 919,015
Claims priority, application Japan, Oct. 16, 1985, 60-230289
Int. Cl.[4] G11B 7/095
U.S. Cl. 369—45 **4 Claims**



1. A pick-up head and tracking control for use with an optical disk, comprising in combination:

(i) an optical waveguide made of a material capable of a propagating a surface elastic wave;

(ii) a light source for emitting light into said optical waveguide;

(iii) a waveguide lens for converting wave light traveling through said optical waveguide into parallel-ray wave light;

(iv) a focusing grating coupler formed on a surface of said optical waveguide for guiding the wave light out of the surface of said optical waveguide and for focusing the wave light onto a surface of the optical disk;

(v) a light detector for detecting light which has been reflected by the surface of the optical disk back into said optical waveguide through said focusing grating coupler;

(vi) means for generating on said optical waveguide a surface elastic wave which travels in a direction across a path of said parallel-ray wave light for deflecting the wave light;

(vii) a tracking error detector circuit for detecting a tracking error of light focused on the surface of the optical disk relative to a track on the optical disk by said focusing grating coupler and for generating a tracking error signal indicative of the detected tracking error; and

(viii) a control circuit for controlling said generating means to vary a frequency of said surface elastic wave dependent on said tracking error signal in order to eliminate said tracking error by deflection of the wave light in a direction across the track.

4,797,868

OPTICAL SYSTEM EMPLOYING A LASER BEAM FOR FOCUSING, TRACKING AND TRANSFERRING INFORMATION SIGNALS WITH RESPECT TO A MAGNETO-OPTICAL MEMORY

Hideo Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

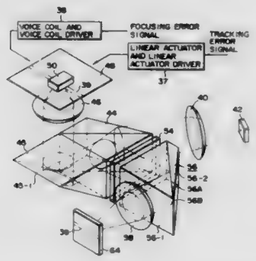
Filed May 13, 1986, Ser. No. 862,829
Claims priority, application Japan, May 15, 1985, 60-103323; May 16, 1985, 60-104422; May 22, 1985, 60-109564
Int. Cl.[4] G11B 7/00
U.S. Cl. 369—44 **19 Claims**

1. An optical system for use with an optical memory comprising:

means for directing a light beam onto a surface of said optical memory;

means for separating light reflected from said surface of said

optical memory into a plurality of resultant light beams, said separating means including a plurality of light reflecting surface portions each arranged at a different angle



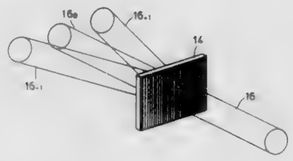
relative to said optical memory to cause each of said resultant light beams to converge onto a single plane; and means for detecting said resultant light beams as said resultant light beams converge upon said plane.

4,797,869
DISK DETECTING APPARATUS
Toshio Hirano, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jul. 16, 1987, Ser. No. 74,121
Claims priority, application Japan, Jul. 16, 1986, 61-167562
Int. Cl.[4] G11B *17/04, 25/04*
U.S. Cl. 369—75.2 9 Claims



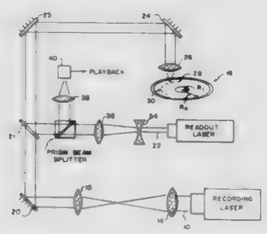
1. A disk detecting apparatus comprising:
a casing;
a turntable in said casing;
a carrier moveable between a first position wherein a disk may be loaded on said carrier and a second position wherein said carrier is centered in said casing over said turntable, said carrier including a plurality of disk mounting surfaces and a plurality of position restriction portions for mounting disks having different diameters on respective ones of said disk mounting surfaces;
first detecting means for detecting the position of said carrier; and
second detecting means positioned in said casing for detecting the presence of a disk on said carrier adjacent said detecting means at several successive positions of said carrier as said carrier moves from said first position to said second position, whereby the number of carrier positions at which said second detecting means detects the presence of said disk is an indication of the diameter of said disk.

4,797,870
OPTICAL RECORDING AND REPRODUCING APPARATUS
Takao Nagai, Sagamiko, and Kenichi Sato, Tokyo, both of Japan, assignors to TEAC Corporation, Tokyo, Japan
Filed Sep. 4, 1987, Ser. No. 93,380
Claims priority, application Japan, Sep. 20, 1986, 61-222982
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—100 4 Claims



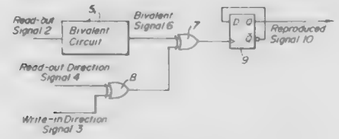
1. An optical recording and reproducing apparatus comprising:
an optical disc having a recording surface;
a laser diode emitting a laser beam;
an optical lens for changing the laser beam into a parallel laser beam;
a diffraction grating for diffracting the parallel laser beam and generating 0-order and ±1st diffracted lights, a light intensity ratio of each of the ±1st diffracted lights to the 0-order diffracted light ranging from 8:1 to 9:1; and
an optical system for forming spot lights of the 0-order and ±1st diffracted lights on the recording surface of said disc and extracting the 0-order and ±1st diffracted lights which have been reflected from the recording surface.

4,797,871
ERASABLE OPTICAL RECORDING METHOD
Yuan S. Tyan; Kee C. Pan, both of Webster, and Fridrich Vazan, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 15, 1986, Ser. No. 907,553
Int. Cl.[4] G11B *7/24*
U.S. Cl. 369—100 5 Claims



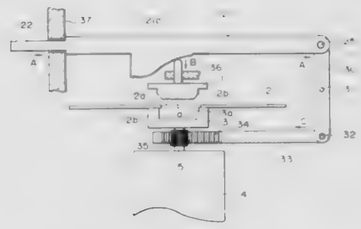
1. A method of writing and erasing on a optical recording element comprising the steps of:
a. providing an optical recording element comprising a support and an amorphous thin film of a GeTe alloy; wherein the ratio of Ge:Te in the film is 45/55 to 70/30 on an atom-to-atom basis
b. preparing the thin film for writing and erasing cycles by:
i. heating the film, or a selected portion thereof, above its melting point using a pulsed laser or light beam; rapidly cooling the film to form a phase-segregated amorphous state evidenced by the appearance of regions of different densities; and then heating the same areas of the film with a focused beam to below its melting point to transform those areas from the phase-segregated amorphous state into a crystalline state; or,
ii. crystallizing the film, or a selected portion thereof, by heating the film to its crystallization temperature;
c. writing on selected portions of the thus prepared film with a focused information modulated laser beam, thereby converting those portions on the films upon which the laser beam has been focused to a phase-segregated amorphous state from a crystalline state; and,
d. when desired, erasing the written information by heating those portions of the film bearing the written information with a focused unmodulated or high frequency modulated laser beam thereby converting the written portions of the film to a crystalline state from the phase-segregated amorphous state.

4,797,872
METHOD FOR REPRODUCING DATA RECORDED ON OPTICAL CARD
Takao Rokutan, Higashimurayama, Japan, assignor to Olympus Optical Co., Ltd., Japan
Filed Aug. 13, 1987, Ser. No. 84,844
Claims priority, application Japan, Aug. 15, 1986, 61-190621
Int. Cl.[4] G11B *7/00;* G06K *7/10*
U.S. Cl. 369—109 7 Claims



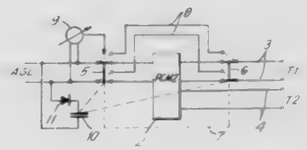
1. A method for reproducing data recorded on an optical card on which said data has been recorded by modulating distances between successive pits comprising the steps of:
moving the optical card and an optical reading device relative to each other in a reciprocal manner to derive a read-out signal; and
processing said read-out signal to derive a reproduced signal by detecting distances between front or rear edges of pits viewed in a write-in direction of pits.

4,797,873
DISK CRAMP APPARATUS
Toshiyuki Nobutani, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1987, Ser. No. 41,222
Claims priority, application Japan, Apr. 24, 1986, 61-093313
Int. Cl.[4] G11B *17/02*
U.S. Cl. 369—270 8 Claims



1. A disk cramp apparatus comprising:
(a) means for holding a disk, said holding means including a first half for rotating said disk and a second half for pressing said disk rotatably against said first half of said holding means;
(b) means for moving said second half of said holding means from a disk non-hold position to a disk hold position; and
(c) torque applying means for converting a force generated by the movement of said moving means into a torque and applying the torque to said first half of said holding means.

4,797,874
CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF COMMUNICATION SIGNALS
Ziaedin Chahabadi, Bad Münder, and Christian Preuser, Langenhagen, both of Fed. Rep. of Germany, assignors to kabelmetal electro Gesellschaft mit beschränkter Haftung, Hanover, Fed. Rep. of Germany
Filed Aug. 14, 1987, Ser. No. 86,104
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1986, 3633057
Int. Cl.[4] H04J *1/16, 3/14*
U.S. Cl. 370—16 5 Claims



1. In a circuit arrangement for the transmission of intelligence signals between a central office and two subscribers who are connected over a common subscriber line to the central office, wherein the intelligence signals are transmitted from the central office over the subscriber line in digital form to a conversion device in which incoming digital signals are converted into analog signals and vice versa, and wherein the conversion device is connected to the two subscribers by cables; the improvement comprising
a first switch connected to the subscriber line;
a second switch connected to a cable of one of the subscribers, said first and said second switches being operatively coupled to each other;
a bypass line electrically connecting said first switch to said second switch;
a measuring device which detects a dc voltage present on the subscriber line, said measuring device being connected to the subscriber line between the central office and said first switch, said measuring device being electrically connected to said first and said second switches for operating each of said switches; and wherein
said measurement device responds to a voltage which is less than a predetermined value by operating each of said switches to connect the bypass line to the subscriber line and to the cable of one subscriber while disconnecting said conversion device; and
said measuring device responds to a voltage which exceeds a predetermined voltage by operating each of said switches to connect said conversion device to the subscriber line and to the cable of said subscriber while disconnecting said bypass line.

4,797,875

METHOD FOR MONITORING AND CONTROLLING THE TRAFFIC IN DIGITAL TRANSMISSION NETWORKS

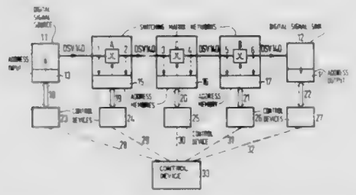
Reginhard Pospischil, Graefelfing; Peter Breitfelder, Taufkirchen, and Uwe Timmermann, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 8, 1986, Ser. No. 883,375

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1985, 3524381

Int. Cl.[4] H04J *3/12, 3/24*

U.S. Cl. 370—92 **13 Claims**



1. A method for monitoring and controlling the traffic in digital transmission networks which comprise a plurality of sections and circuit switching devices of a multiplex hierarchy stage, comprising the steps of:

inserting an identification character in each pulse frame of the digital signal to be transmitted at the beginning of each digital signal connection;

forming the identification characters with information concerning the traffic relationships of the individual digital signal connection;

monitoring the respective identification characters at the circuit switching devices and/or at the data sinks of the multiplex hierarchy stage;

transmitting the identification character of the desired digital signal connection to the appertaining circuit switching devices via a control network; and

controlling the circuit switching devices in accordance with the transmitted identification characters.

4,797,876

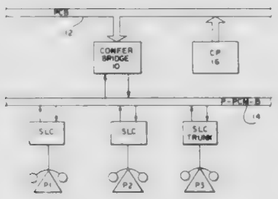
CONFERENCING BRIDGE

Reginald Ratcliff, Atlanta, Ga., assignor to Solid State Systems, Inc., Kennesaw, Ga.

Filed Jul. 10, 1987, Ser. No. 72,254

Int. Cl.[4] H04J *3/02;* **H04M** *3/56*

U.S. Cl. 370—62 **36 Claims**



1. A conferencing bridge for supporting a telephone conversation involving more than two parties wherein each party transmits a unique PCM bit stream and receives a unique PCM bit stream; comprising:

means for receiving first and second incoming serial PCM highways carrying said transmit and receive PCM bit streams;

means for converting serial data on said PCM highways to parallel data;

arithmetic logic means for implementing a conferencing algorithm and producing a sequence of PCM outputs;

means for providing valid output PCM data when an arithmetic overflow occurs without passing said arithmetic logic unit output through a PROM so that propagation delay is minimized;

means for providing valid output PCM data when a sum is being cleared without passing said arithmetic logic unit output through a PROM so that propagation delay is minimized; and

means for receiving the PCM outputs from said arithmetic logic means, separating said outputs by highway, and converting said outputs to serial data streams.

4,797,877

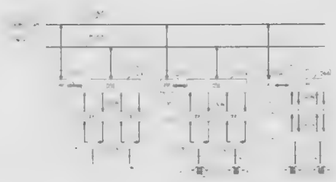
COMMUNICATION SYSTEM DYNAMIC CONFERENCER CIRCUIT

Kevin T. Pope, Poway, Calif., and David C. Trimble, Holmdel, N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Dec. 18, 1986, Ser. No. 943,242

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—62 **16 Claims**



1. A port circuit including a plurality of ports, each port interfacing a digital device to a digital communication system, said port circuit comprising

a plurality of conference registers for storing digital port signals, wherein each of said conference registers is assignable to any of said plurality of ports; and

assigning means responsive to a signal requesting an N party conference connection (N is an integer >2) for assigning no more than N–2 available ones of said conference registers to each port of said port circuit connected to said N party conference connection.

4,797,878

MULTIPLE VIRTUAL MULTIPOINT MODEM USING TDM/TOKEN THROWING TECHNIQUE

Thomas Armstrong, Clearwater, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Aug. 18, 1987, Ser. No. 86,518

Int. Cl.[4] H04J *3/16;* **G05B** *23/02*

U.S. Cl. 370—96 **6 Claims**

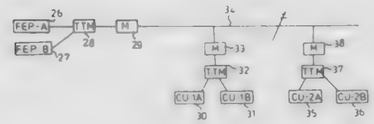
1. A communications system for use on communication channels comprising:

a plurality of front end processors at a master station, each of said front end processors being dedicated to a separate communications network;

a master token transmitter multiplexer having a plurality of inputs, each of said inputs connected to an output of one of said front end processors, having means for generating a token bit stream and having an output which continuously timedivision multiplexes bits of said inputs and said token bit stream in a predetermined sequence;

means for communicating data over the communications channel, input to said transmitting means being said output of said master token transmitter; and

a plurality of remote stations, each of said remote stations comprising a plurality of control units, one control unit



corresponding to each of said dedicated front end processors, a remote means for communicating with the communications channel, and a remote token transmitter multiplexer responsive to said token bit stream for time division multiplexing output between said control units and of said remote communicating means.

4,797,879

PACKET SWITCHED INTERCONNECTION PROTOCOLS FOR A STAR CONFIGURED OPTICAL LAN

Isam M. I. Habbab, Aberdeen; Mohsen Kavehrad, Holmdel, and Carl-Erik Sundberg, Hazlet, all of N.J., assignors to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 5, 1987, Ser. No. 58,739

Int. Cl.[4] H04B *9/00*

U.S. Cl. 370—3 **12 Claims**



1. A method of transmitting packets of information in an optical local area network (LAN) including a plurality of M optical transceivers connected to a Star coupler, the method comprising the steps of:

in transmitting information from a first transceiver to a second transceiver,

(a) transmitting a control information packet at a random time period over a first wavelength division multiplex (WDM) channel using a first access protocol, the control information packet including information relating to (1) a unique identification of the first transceiver, (2) a unique identification of the second transceiver, and (3) an identification of a randomly chosen one of a plurality of N second WDM channels used to transmit data packets, where M>N; and

(b) immediately after step (a), transmitting an associated data packet over the chosen one of the plurality of N second WDM channels indicated in the control information packet transmitted in step (a) using a second access protocol.

4,797,880

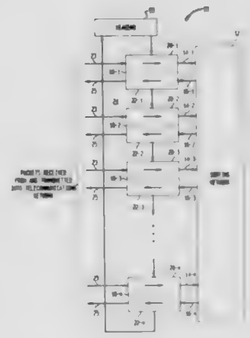
NON-BLOCKING, SELF-ROUTING PACKET SWITCH

Howard E. Bussey, Jr., Clinton; James N. Giacopelli, Flanders, and William S. Marcus, New Providence, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Oct. 7, 1987, Ser. No. 106,575

Int. Cl.[4] H04J *3/26*

U.S. Cl. 370—60 **15 Claims**



1. A full access packet switch for use in a telecommunications network comprising:

a self-routing sorting network having a plurality of inputs and a plurality of outputs, said sorting network being adapted to route a set of packets from said inputs to said outputs so that said packets emerge from said network in an order according to addresses contained in said packets, and

means associated with said inputs for resolving conflicts if more than one packet contains the same output address and for generating dummy packets containing no actual user data to insure that said set of packets includes one packet destined for each output port.

4,797,881

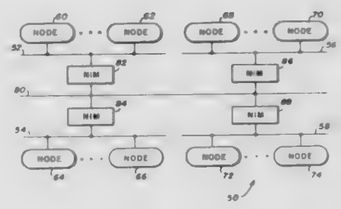
BRIDGE SYSTEM FOR CONNECTING NETWORKS

Amatzia Ben-Artzi, Sunnyvale, Calif., assignor to Sytek, Inc., Mountain View, Calif.

Filed Mar. 12, 1987, Ser. No. 25,386

Int. Cl.[4] H04J *3/26*

U.S. Cl. 370—88 **14 Claims**



1. A network interface module (NIM) for connecting a local area network to a backbone network comprising:

a first interface means connected to a local area network for transmitting and receiving local area network messages to and from said local area network;

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a second interface means connected to a backbone network for transmitting and receiving backbone network messages to and from said backbone network;

a memory means connected to said first and second interface means for storing a bridge identification address of a particular NIM, a table of addresses, and for temporarily storing said local area network and backbone network messages; and

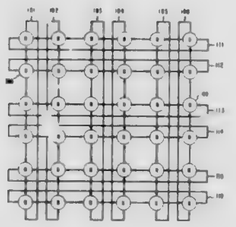
a logic means connected to the first and second interface means and the memory means for storing a local area network source address in said local area network message in said table of addresses in association with said bridge identification address of said particular NIM, comparing a destination address in said local area network message with said table of addresses, and if the destination address is associated with the bridge identification address of said particular NIM, then ignoring said local area network message, and if the destination address is associated with a bridge identification address of a NIM other than said particular NIM, then enveloping said local area network message in a backbone network message having a header specifically addressed to said other NIM, and if the destination address is not associated with any of the addreses in said address table then enveloping said local area network message in a backbone netowrk message addressed to be multicast to all other NIMs on said backbone network, the logic means also being for storing local area network source address information in said backbone message in said table of addresses in association with a bridge identification address in said backbone message, and de-enveloping said backbone network message for transmission to said local area network.

4,797,882

MESH-BASED SWITCHING NETWORK

Nicholas F. Maxemchuk, Mountainside, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 2, 1985, Ser. No. 782,969
Int. Cl.[4] H04J *3/24*
U.S. Cl. 370—94 15 Claims



1. A communication network having a plurality of nodes, each adapted for coupling a device to said network and having a first and second incoming link and a first and second outgoing link, with said plurality of nodes being approximately equally divided among a plurality of row groups and also approximately equally divided among a plurality of row groups and also approximately equally divided among a plurality of column groups, each of said nodes thereby belonging to a row group and to a column group, charcterized by:

each of said nodes, belonging to a particular row group and a particular column group has its first outgoing link connected to a first incoming link of another one of said nodes belonging to said particular row group, and has its second outgoing link connected to a second incoming link of another one of said nodes belonging to said particular column group; and

each of said row groups and each of said column groups are interconnected with only one of said nodes;

where

a first node, belonging to a first row group and to a first column group, has its first outgoing link connected to a first incoming link of a second node in said first row group;

said second node, belonging to said first row group and to a second column group, has its second outgoing link connected to a second incoming link of a third node in said second column;

said third node, belonging to said second column group and to a second row group, has its first outgoing link connectd to a first incoming link of a fourth node in said second row group; and

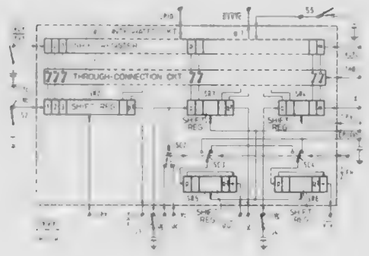
said fourth node, belonging to said second row group and said first column group, has its second outgoing link connected to the second incoming link of said first node.

4,797,883

ENCODING OR DECODING CIRCUIT FOR TIME DIVISION MULTIPLEX AND SIMULTANEOUS SIGNALS

Uwe E. Kraus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 17, 1986, Ser. No. 840,366
Claims priority, application Netherlands, Mar. 22, 1985, 8500841
Int. Cl.[4] H04J *3/00, 3/04;* H04N *11/20*
U.S. Cl. 370—109 4 Claims



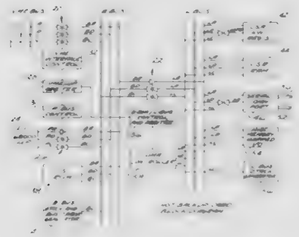
1. An encoding or decoding circuit for encoding from simultaneous signals to a time division multiplex signal or for decoding from the time division multiplex signal to the simultaneous signals, respectively, comprising a signal compression or expansion circuit, respectively, said compression or expansion circuit including at least three shift registers, each individual shift register having one of at least three different sets of write and read rates under the control of clock pulses of different frequencies, characterized in that said encoding or decoding circuit is constituted as an integrated circuit, said shift registers are suitable for both series-in, parallel-out and parallel-in, series-out operation, a first shift register having the largest number of register stages, which stages are coupled to parallel connections of at least a second and a third shift register via a through-connection circuit for parallel, bi-directional connection of the register stages of said first shift register to the other shift registers, the series inputs and series outputa of at least the first, second and third shift registers each being coupled to a separate connection terminal of the integrated circuit.

4,797,884

REDUNDANT DEVICE CONTROL UNIT

Charles I. Yalowitz, and Ronald D. Harris, both of Johnson City, Tenn., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 29, 1986, Ser. No. 913,138
Int. Cl.[4] G06F *11/20*
U.S. Cl. 371—9 2 Claims
MICROFICHE APPENDIX INCLUDED
(30 Microfiche, 2870 Pages)



1. An industrial, digitally controlled processing system including two nominally identical electronic devices each operable in response to instructions from a control unit and to data derived from operations being performed by the processing system, each said electronic device being connected in the system in a manner such that one of the devices functions as an active device in the system regulating an operating sequence of the system including a plurality of specific, different system routines and

the other device functions as a standby device, each said electronic device comprising internal diagnostic means operative for diagnosing the operating status of said device and selecting means for placing said device in a condition to operate as an active device or a standby device, and each said electronic device comprising a back-up control unit comprising:

communications means including an optical fiber link for establishing communication between said device and the other nominally identical device;

control means connected to said communication means for determining whether said device is presently functioning as an active or standby device and for receiving, from said communication means, signals indicating whether the other nominally identical device is functioning as an active or a standby device;

synchronizing means connected to said communication means for synchronizing the operation of the device acting as an active device with that of the other nominally identical device acting as the standby device at selected limited points in the operating sequence of the system at which specific routines thereof are completed to maintain the nominally identical standby device substantially synchronized with the active device as the active device responds to data derived from operations being performed by the processing system; and

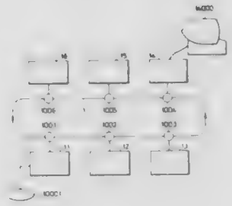
switching means connected to said communication means and responsive, when said device is functioning as the standby device, to the occurrence of a failure in the other nominally identical device during performance of a routine in the operating sequence of the system for causing said device to begin operating as the active device promptly after ending of said routine with improved synchronization relative to the operating sequence of the system.

4,797,885

DISTRIBUTED PROCESSING SYSTEM AND METHOD

Masayuki Ortuo, Kawasaki; Kinji Mori, Yokohama; Yasuo Suzuki, Ebina; Minoru Koizumi, Yokohama; Katsumi Kawano, Fuchu; Hirokazu Kanajima, Hitachi, and Kozo Nakai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1986, Ser. No. 940,495
Claims priority, application Japan, Dec. 11, 1985, 60-281418
Int. Cl.[4] G06F *11/22*
U.S. Cl. 371—19 8 Claims



1. Distributed processing method for a processing system including a plurality of processing means connected by a common transmission medium, comprising the steps of:

storing, in each processing means, information which represents whether or not a program to be executed therein is in a test mode;

when an executable program exists in a processing means, executing the program in said processing means on data received on said common transmission medium;

deciding in a processing means, on the basis of said stored information therein, whether or not a program executed therein is in a test mode;

producing test data in a processing means when it is decided that a program executed therein on data received on said common transmission medium is in a test mode; and

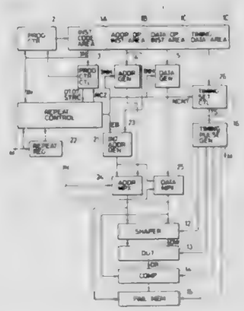
sending produced test data from said processing means to the common transmission medium so that the test data is received in at least one other one of said processing means.

4,797,886

MEMORY TEST PATTERN GENERATOR

Hideaki Imada, Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Dec. 10, 1986, Ser. No. 940,059
Claims priority, application Japan, Dec. 13, 1985, 60-280653
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—27 9 Claims



1. A memory test pattern generator for generating a test

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pattern for a memory under test, the memory having internal address generating means and being capable of incrementing the internal address by merely supplying a clock signal, said memory test pattern generator comprising:

a program memory for storing instructions, each including an instruction code area for storing an instruction code and an internal address mode code, an address operation instruction area for storing an address operation instruction and an internal address operation instruction, a data operation instruction area for storing a data operation instruction, and a timing data area for storing timing data;

a program counter, operatively connected to said program memory, for producing program memory addresses in synchronization with operation clock signals to determine a program sequence, said program memory addresses being supplied to said program memory for accessing the instructions;

a program counter controller, operatively connected to said program counter and said program memory, for controlling, during a normal address mode, advancement of the program memory addresses in said program counter in accordance with the instruction code read out from the instruction code area of an accessed instruction in said program memory and for suspending, during an internal address mode, the advancement of the program memory addresses in said program counter by disregarding the instruction code when the internal address mode code indicating the internal address mode is read out from the instruction code area of the accessed instruction in said program memory;

an address generator, operatively connected to said program memory, for executing, during the normal address mode, an address operation in accordance with the address operation instruction read out from the address operation instruction area of the accessed instruction in said program memory to generate an address to be supplied to the memory under test, said address generator inhibiting the operation therein upon receipt of an inhibition signal during the internal address mode and outputting a previously produced address while the inhibition signal is received during the internal address mode;

data generating means, operatively connected to said program memory, for executing a data operation in accordance with the data operation instruction read out from the data operation instruction area of the accessed instruction in said program memory to generate one of write data and expected value data to be applied to the memory under test;

an internal address generator, operatively connected to said program memory, for executing, upon receipt of an internal address increment control signal during the internal address mode, an internal address operation in accordance with the internal address operation instruction read out from the address operation instruction area of the accessed instruction in said program memory to produce an internal address;

timing pulse generating means, operatively connected to said program memory and said program counter for generating, during the normal address mode, the operation clock signals in accordance with the timing data read out from the timing data area of the accessed instruction in said program memory and generating, during the internal address mode, the operation clock signals based on a timing reference signal applied thereto, the operation clock signals being supplied to said program counter;

repeat control means, operatively connected to said program memory, said program counter controller, said address generator, said internal address generator, and said timing pulse generating means, for generating, upon receipt of the internal address mode code from the accessed instruction in said program memory, the inhibition signal, the timing reference signal and the internal address increment control signal and for counting a predetermined number of the operation clock signals, said repeat control means producing, after counting the predetermined number of the operation clock signals, a release signal to be applied to said program counter controller for releasing the suspending of the advancement of the program memory addresses in said program counter; and

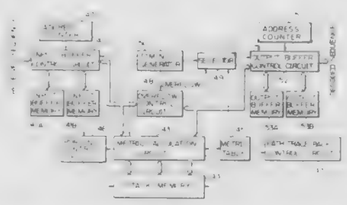
an address multiplexer, operatively connected to said internal address generator and said address generator, for outputting, during the normal address mode, the addresses from said address generator and for producing, during the internal address mode, a composite address by replacing predetermined bits of the previously produced address from said address generator with respective bits of the internal address from said internal address generator, the composite address corresponding to an address accessing the memory under test in the internal address mode.

4,797,887

SEQUENTIAL DECODING METHOD AND APPARATUS

Norikazu Yamasaki, Tokyo, and Keiichiro Koga, Saitama, both of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1986, Ser. No. 921,517
Claims priority, application Japan, Nov. 1, 1985, 60-244105
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—43 **8 Claims**



5. A sequential decoding apparatus for decoding a received code word sequence which is convolutionally encoded, by determining a most likely path on a code tree referring to the received sequences, comprising:

input memory means for storing the received sequence;

stack memory means for storing nodes and their attributes which are provided by a calculation means;

said calculation means for extending paths along the code tree from one node, located at the top of the stack memory means, over plural tree levels at a time, calculating likelihoods of destination nodes at which the extension arrive referring to the received sequence, eliminating the node placed at the top of the stack memory means and then storing and reordering the destination nodes so that one of the nodes which have the largest likelihood may be placed at the top instead; and

tracking-back means for tracking-back from the node placed at the top of the stack at the final stage of decoding to a root node of the tree and then outputting one path leading therebetween as the decoded sequence.

4,797,888

CIRCUIT FOR THE PREIONIZATION AND MAIN DISCHARGE OF A PULSED GAS LASER

Peter Klopotek, Brookline, Mass., assignor to Lambda Physik, Gottingen, Fed. Rep. of Germany

Filed Jun. 23, 1987, Ser. No. 65,510
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1986, 3621005; Dec. 22, 1986, 3644004
Int. Cl.⁴ H01S *3/00*
U.S. Cl. 372—38 **13 Claims**

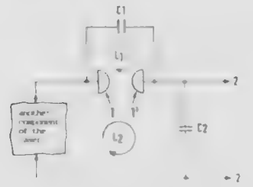
1. A circuit for preionization and main plasma discharge of a pulsed gas laser comprising

a supply circuit for supplying energy to a plasma discharge, transverse stimulation of a working gas by said plasma discharge between main electrodes disposed in a chamber of said laser,

at least one spark electrode pair in the laser chamber,

a pulse voltage source for charging capacitive energy storage means, wherein

the capacitive energy storage means is connected low-inductively to a spark discharge taking place between the spark electrodes,



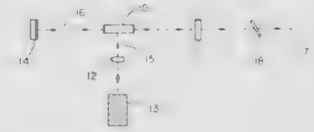
the capacitive energy storage means is charged by said pulse voltage source until a static breakdown voltage is achieved between the spark electrodes, thereafter a spark discharge takes place between the spark electrodes, in which the spark itself switches the energy stored in the low-inductively connected capacitive energy storage means.

4,797,889

SOLID STATE MOLECULAR LASER

Alexander Lempicki, Boston, Mass., assignor to Boston University, Boston, Mass.

Filed Jun. 24, 1987, Ser. No. 65,844
Int. Cl.⁴ H01S *3/16, 3/17*
U.S. Cl. 372—39 **20 Claims**



1. A laser comprising:

a solid state lasing medium having a molecular emitting species such that an element of the molecular species has a closed shell configuration;

optical means for exciting the states of said species; and

an optical resonant cavity for oscillating coherent radiation emitted by the medium.

4,797,890

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH VERTICAL LIGHT EMISSION

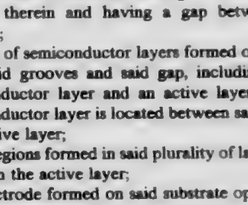
Fumio Inaba, 1-13-1, Yagiyama-minami; Hiromasa Ito, 390-82, Aza-aoba, Aramaki, both of Sendai-shi, Miyagi-kes; Noriaki Onodera, Sendai, and Akira Mizuyoshi, Amagasaki, all of Japan, assignors to Mitsubishi Cable Industries, Ltd.; Ricoh Company, Ltd.; Ricoh Research Institute of General Electronics; Fumio Inaba and Hiromasa Ito

Filed Dec. 24, 1986, Ser. No. 946,324
Claims priority, application Japan, Dec. 24, 1985, 60-291536; Jan. 10, 1986, 61-4032; Jan. 11, 1986, 61-2891
Int. Cl.⁴ H01S *3/19;* **H01L** *33/00;* **H01J** *1/62*
U.S. Cl. 372—46 **24 Claims**

1. A light emitting device comprising:

a substrate having a first surface and a second surface which is opposite to said first surface, said substrate being provided with a through hole extending between said first and second surfaces;

an active area defined in said substrate as extending in parallel with a side wall of said through hole, said active area



generating light when current flows through said active area; and

first and second electrodes formed on said substrate at opposite sides of said active area for passing current through said active area.

4,797,891

SEMICONDUCTOR LASER

Kazuhisa Uomi, Hachioji; Misuzu Yoshizawa; Yuichi Ono, both of Tokyo; Naoki Chinone, Hachioji, and Takashi Kajimura, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1986, Ser. No. 941,842
Claims priority, application Japan, Dec. 20, 1985, 60-285519
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—46 **22 Claims**



1. A semiconductor laser device comprising:

a semiconductor substrate having at least two grooves formed therein and having a gap between each two grooves;

a plurality of semiconductor layers formed on said substrate over said grooves and said gap, including at least one semiconductor layer and an active layer, wherein said semiconductor layer is located between said substrate and said active layer;

diffused regions formed in said plurality of layers, to a depth less than the active layer;

a first electrode formed on said substrate opposite said plurality of layers; and

a plurality of second electrodes formed on said diffused regions,

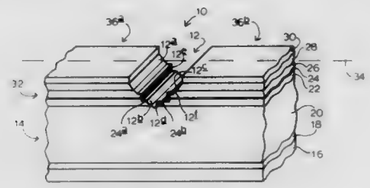
wherein a radiation angle of a laser emission beam generated by said semiconductor laser device is turnable by controlling current injection quantities into said second electrodes.

4,797,892

LONGITUDINALLY COUPLED SURFACE EMITTING SEMICONDUCTOR LASER ARRAY

Richard E. DePreaux, Hillsboro; Richard A. Elliott, and Joseph Paretz, both of Beaverton, all of Oreg., assignors to Oregon Graduate Center, Beaverton, Oreg.

Filed May 11, 1987, Ser. No. 48,544
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—50 5 Claims



1. A coherent, surface emitting, semiconductor laser array in a monolithic wafer having an emission surface comprising:

at least one pair of adjacent, spaced semiconductor lasers, each laser including plural semiconductor layers which form an oscillator cavity generally in the plane of said wafer and each laser including electrode means for energizing said cavity to emit energy of a predefined wavelength from said cavity;

means for phase locking said pair; and

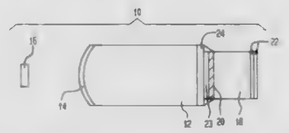
means for reflecting a portion of said energy generally normal to and away from said surface.

4,797,893

MICROLASER SYSTEM

George J. Dixon, Lutz, Fla., assignor to Virgo Optics, Inc., Port Richey, Fla.

Filed Jun. 9, 1987, Ser. No. 59,804
Int. Cl.[4] H01S 3/16, 3/082
U.S. Cl. 372—66 19 Claims



13. In a microlaser system in which a solid state rod useful as the gain medium is included in an optical cavity and supplied at one end with pumping light for the stimulated emission of light from the rod at its opposite end and the optical cavity includes a mode selector for limiting the number of axial modes at which the microlaser oscillates, the improvement wherein said

solid state rod comprises a homogeneously broadened gain medium, one end of said rob bains curved and including a coating highly transmissive of pumping light and highly reflective of the desired stimulated light, and the other end of which is planar and transmissive of the stimulated light,

a flat having one planar surface contiguous the planar end of the rod and the other surface coated with a reflector for providing a reflecting mirror that is partially transmissive of the stimulated light for passage therethrough,

a thin film of a material absorptive of the stimulated light positioned between the planar end of the rod and the said one planar surface of the flat, and

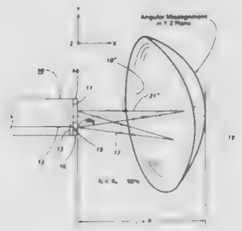
the axis of the gain medium rod being normal to the plane of the flat.

4,797,894

ALIGNMENT METHOD AND ARRANGEMENT FOR EXTERNAL OPTICAL FEEDBACK FOR SEMICONDUCTOR DIODE LASERS

Joseph Yaeli, Haifa, Israel, assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 21, 1987, Ser. No. 88,178
Int. Cl.[4] H01S 3/08
U.S. Cl. 372—92 19 Claims



1. In a semiconductor diode laser having at least one output beam emitted from an emission aperture from a facet of said laser, external optical feedback means to redirect said output beam back into said laser emission aperture and comprising a reflective surface mirror on said facet laterally adjacent to said emission aperture and a spherical mirror spatial positioned from said laser facet to receive said output beam and image the same onto said facet mirror and reimage said beam reflected from said facet mirror back to said emission aperture.

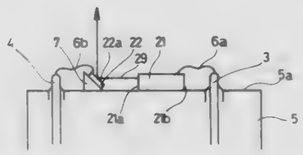
the improvement comprising said spherical mirror being spaced from the center of said facet a distance substantially equal to the center of curvature of said mirror so that the reimaging of said beam provides a spot size substantially equal to the spot size of said emission aperture, the alignment of said spherical mirror relative to said laser facet in directions laterally of and rotationally about said radius being insensitive to limited relative movement between said spherical mirror and said laser in said directions.

4,797,895

SEMICONDUCTOR LASER APPARATUS

Yoshihiro Kokubo, and Wataru Susaki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1986, Ser. No. 881,260
Claims priority, application Japan, Jul. 2, 1985, 60-147446
Int. Cl.[4] H01S 3/19
U.S. Cl. 372—43 12 Claims



1. A semiconductor laser apparatus comprising:

a semiconductor laser chip including a resonator having a pair of oppositely disposed end faces, one of said endfaces having an antireflective coating and a second of said endfaces having a highly reflective coating;

a stem having a main surface onto which said chip is directly mounted with said pair of end faces being perpendicular to said main surface; and

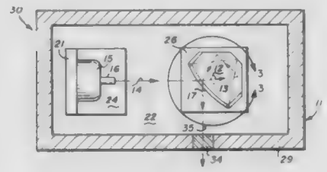
a photoelectric conversion device, a major surface of which absorbs a part of a laser beam emitted from said one end face, thereby to monitor intensity of said beam, and reflects the remaining part of said beam for practical use.

4,797,896

SOLID STATE OPTICAL RING RESONATOR AND LASER USING SAME

Thomas J. Kane, Palo Alto, Calif., assignor to Light Wave Electronics Co., Mountain View, Calif.

Continuation-in-part of Ser. No. 46,546, May 6, 1987, Pat. No. 4,749,842. This application Jul. 20, 1987, Ser. No. 75,565
Int. Cl.[4] H01S 3/083
U.S. Cl. 372—94 15 Claims



1. In a solid state non-planar optical ring resonator:

a member of optically transparent monolithic lasant material;

reflecting means defined by a plurality of facets of said member of material for reflecting optical energy internal to said member around in a non-planar closed ray path within said member to define an optical ring resonator;

coupler means at least partially defined by a coupler one of said facets of said reflecting means for coupling optical energy into and out of said ring resonator and through said coupler facet along divergent input and output ray paths; and

said facets of said reflecting means being oriented with respect to each other such that a ray coupled by said coupler means into said resonator is coupled out of said resonator, after traversing at least one trip around said closed ray path, along an output ray path which is angularly separate from said input ray path by an angle ψ in excess of 45 degrees.

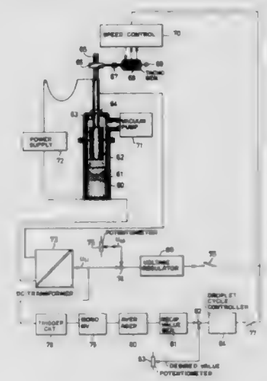
4,797,897

APPARATUS FOR CONTROLLING THE DISTANCE OF A MELTING ELECTRODE FROM THE SURFACE OF THE MELTED MATERIAL IN A VACUUM ARC FURNACE

Otto Stenzel, Gründau, and Friedrich-Werner Thomas, Gelnhausen, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

PCT No. PCT/DE87/00487, § 371 Date Aug. 10, 1987, § 102(e) Date Aug. 10, 1987, PCT Pub. No. WO87/03772, PCT Pub. Date Jun. 18, 1987
PCT Filed Nov. 29, 1986, Ser. No. 110,721
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544005
Int. Cl.[4] H05B 7/148
U.S. Cl. 373—105 11 Claims

1. In apparatus for controlling the arc distance between a melting elctrode and the surface of melted material in a vacuum arc furnace, wherein the short-circuits caused by the droplets between the melting electrode and the surface of the melted material are used as a control criterion, said apparatus comprising means for determining the short-circuits occurring within a given period of time, the so-called droplet rate; an averager (80), coupled to said short circuit determining means, for averaging of said droplet rate; and controller means, coupled to said averager, for controlling said arc distance in dependence upon the average droplets rate; the improvement comprising reciprocal value forming means (81), coupled to said averager (80), for producing a signal representing the reciprocal value of the droplet rate signal produced by said averager; desired value forming means for producing a signal representative of the desired average time between to consecutive droplet short circuits; and means coupled to said reciprocal value forming means and to said desired value forming means, for producing a signal representative of the difference between said reciprocal value and said desired value, said controller means being responsive to said difference signal.

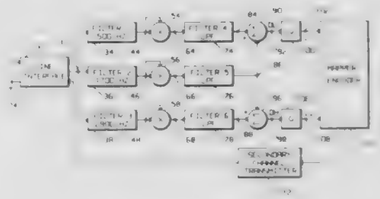


4,797,898

METHOD AND APPARATUS FOR EQUALIZATION OF DATA TRANSMISSION SYSTEM

Aldo A. Martinez, Miami, Fla., assignor to Racal Data Communications Inc., Sunrise, Fla.

Filed Nov. 21, 1986, Ser. No. 933,654
Int. Cl.[4] H03H 3/40; H04B 3/14
U.S. Cl. 375—7 17 Claims



1. A data communication system, comprising:

a first and a second transceiver coupled together through a transmission

channel, said transmission channel having transmission characteristics;

said first transceiver including a first transmitter and a first receiver;

said second transceiver including a second transmitter and a second receiver;

said first transceiver comprising:

measurement means, coupled to said first receiver, for measuring the effects of said transmission characteristics upon a known training signal transmitted from said second transmitter, to said first receiver, said known training signal having predetermined spectral characteristics known to said first receiver;

mapping means coupled to said measurement means, for

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mapping said measured transmission characteristics to a predetermined code; and

means for transmitting said code from said first transmitter to said second receiver;

said second transceiver comprising;

filtering means for providing a plurality of predetermined filter characteristics for use in filtering signals to be transmitted by said second transmitter; and

decoding means for receiving said code and for selecting an unique one of said predetermined filter characteristics corresponding to said transmitted code for use by said second transmitter.

4,797,899

INTEGRATED DUAL CHARGE PUMP POWER SUPPLY INCLUDING POWER DOWN FEATURE AND RS-232 TRANSMITTER/RECEIVER

Roger W. Fuller, Scotts Valley, and David Bingham, San Jose, both of Calif., assignors to Maxim Integrated Products, Inc., Sunnyvale, Calif.

Filed Dec. 15, 1986, Ser. No. 941,373
Int. Cl.[4] H04B *1/38*; H02M *7/25*
U.S. Cl. 375—7 5 Claims



1. A circuit, integrateable on a single piece of semiconductor substrate material, for providing a bipolar voltage output at substantially double the voltage of a unipolar voltage input source, including:

first and second voltage input terminals,

first and second positive transfer capacitor connection terminals,

a first set of semiconductor switches for selectively connecting said first voltage input terminal to said first positive transfer capacitor connection terminal and said second voltage input terminal to said second positive transfer capacitor connection terminal,

first and second positive reservoir capacitor connection terminals, said first positive reservoir capacitor connection terminal connected to said second voltaqe input terminal,

a second set of semiconductor switches for selectively connecting said first voltage input terminal to said second positive transfer capacitor connection terminal and said first positive transfer capacitor connection terminal to said second positive reservoir capacitor connection terminal,

first and second negative transfer capacitor connection terminals,

a third set of semiconductor switches for selectively connecting said first positive reservoir capacitor connection terminal to said first negative transfer capacitor connection terminal and said second positive reservoir capacitor connection terminal to said second negative transfer capacitor connection terminal,

first and second negative reservoir capacitor connection terminals, said first negative reservoir capacitor connection terminal connected to said first positive reservoir capacitor connection terminal,

a fourth set of semiconductor switches for selectively connecting said first negative transfer capacitor connection terminal to said second negative reservoir capacitor connection terminal and said second negative transfer capacitor connection terminal to said first negative reservoir capacitor connection terminal,

selection circuitry for selectively activating said first, second, third and fourth sets of semiconductor switches,

means for clamping said second positive reservoir capacitor connection terminal to a voltage approximately equal to the voltage appearing on said first voltage input terminal,

means for clamping said second negative reservoir capacitor connection terminal to a voltage approximately equal to the voltage appearing on said second voltage input terminal,

means for inhibiting latch-up of forward biased four layer devices created as a result of layout of said circuit on a single piece of semiconductor substrate material, and

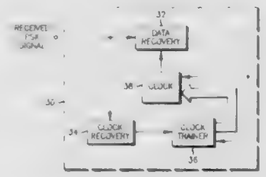
means for selectively deactivating said selection circuitry such that selected ones of said first, second, third and fourth sets of semiconductor switches remain on while the remainder of said semiconductor switches remain off.

4,797,900

MODEM WITH IMPROVED CLOCK CONTROL AND METHOD THEREFOR

Steven L. Anderson, Huntsville, Ala., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1987, Ser. No. 91,489
Int. Cl.[4] H04L *5/16*, *7/04*
U.S. Cl. 375—8 5 Claims



1. An improved clock positioning method for modems which have pattern sensitivities comprising the steps of:

determining a normal clock phase position for the clock in said modem during initial training which precedes the transmission of data;

selecting a first set of data patterns which do not have substantial group delay relative to the normal clock phase position and a second set of data patterns which have substantial group delay relative to the normal clock phase position;

using the normal clock phase position upon the recovery of patterns in said first set;

using another clock phase position upon the recovery of a certain pattern in said second set, said another clock phase position being selected to provide phase compensation for the corresponding group delay of said certain pattern, thereby minimizing pattern sensitivities due to different group delays of the data patterns.

4,797,901

CIRCUIT ARRANGEMENT FOR TESTING A PASSIVE BUS NETWORK WITH THE CARRIER SENSE MULTIPLE ACCESS WITH COLLISIONS DETECTION METHOD

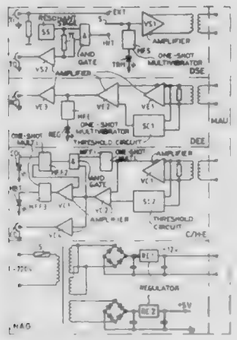
Jan Goerne; Joseph Kozlick, and Steven Moustakas, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 22, 1986, Ser. No. 898,994
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1985, 3530262
Int. Cl.[4] H04J *3/02*
U.S. Cl. 375—10 6 Claims

1. A circuit arrangement for testing a passive bus network system which comprises a plurality of stations each connectible to a coaxial cable segment via a respective media adapter unit, the stations operable for data packet exchange via the coaxial cable segment in accordance with the carrier sense multiple access with collision detection access method to detect a collision state and a heartbeat state, said circuit arrangement comprising:

a data transmitter including a first amplifier unit means comprising an output coupled DC free to the respective media adapter unit and an input, a data packet generator including a resonator and a trigger circuit connected to said resonator for generating data packets with a defined bit rate, an external data input for receiving data packets having an arbitrary data packet pulse sequence and an arbitrary bit rate, and a switch connected to said input of said first amplifier unit means and operable to selectively connect said data packet generator and said external data input to said first amplifier unit means;

a data receiver including a first amplifier means including an input coupled DC free to the respective media adapter and an output, second amplifier means including a first input connected to said output of said first amplifier means, a second input and an output, a data output, third amplifier means including an input connected to said output of said second amplifier means and an output connected to said data output, and a first threshold circuit including an input



connected DC free to the respective media adapter unit and an output connected to said second input of said second amplifier means and operable to suppress noise pulses; and

status receive means including first amplifying stage means including an input coupled DC free to the respective media adapter unit and an output, second amplifying stage means including a first input connected to said output of said first amplifying stage means, a second input and an output, a second threshold circuit including an input coupled DC free to respective media adapter unit and an output connected to said second input of said escond amplifying stage means and operable to suppress noise pulses; and

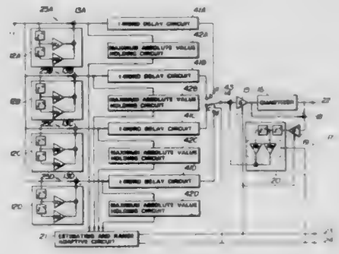
status receive means operable to monitor the data packet reception with respect to the collision state and the heartbeat state producing respective collision and heartbeat signals and further comprising a collision display device, a heartbeat display device, a collision output, a decision stage connected between said output of said first amplifying stage means and said output of said second amplifying stage means and said collision display device and heartbeat display device, and a third amplifying stage means including an input connected to said output of said second amplifying stage means and an output connected to said collision output.

4,797,902

DIGITAL SIGNAL TRANSMISSION DEVICE

Masayuki Nishiguchi, Tokyo, and Kenzo Akagiri, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP85/00721, § 371 Date Aug. 29, 1986, § 102(e) Date Aug. 29, 1986, PCT Pub. No. WO86/04198, PCT Pub. Date Jul. 17, 1986
PCT Filed Dec. 26, 1985, Ser. No. 905,391
Claims priority, application Japan, Dec. 29, 1984, 59-278501; Jul. 5, 1985, 60-147938
Int. Cl.[4] H04B *14/04*
U.S. Cl. 375—27 6 Claims



1. In a digital signal transmission device having means for forming serial input digital signals into a block after each predetermined number of words, the combination comprising;

a filter unit connected to receive said digital signals and adapted to obtain an estimated error for the signals of each block,

said filter unit consisting of a plurality of filters having a multiplier for multiplying one of a plurality of coefficients for adjusting the response of said filter,

means for comparing, with each other, the abeolute values in the signals from said filters, and

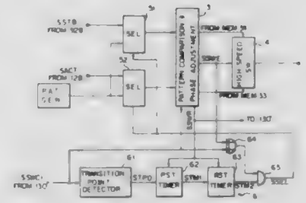
means for selecting a filter that gives the smallest of said maximum abeolute values and for connecting the signals from the selected filters to an output terminal, said connected signals forming said block.

4,797,903

CHANNEL SWITCHING SYSTEM WITHOUT INSTANTANEOUS SIGNAL LOSS

Hideaki Itoh, Chofu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 20, 1987, Ser. No. 51,640
Claims priority, application Japan, May 23, 1986, 61-118509
Int. Cl.[4] H04B *7/02*
U.S. Cl. 375—40 18 Claims



1. A channel switching system for a data communication system including, a standby transmission channel transmitter at a second end, and an active transmission channel having an active receiver at the first end, containing the channel switching system and a fault detector for detecting a fault and a

recovery of the active transmission channel, and an active transmitter at the second end, the standby transmitter at the second end being capable of transmitting a signal which is the same as that from the active transmitter at the second end, the fault and recovery detector detecting a fault or recovery of the active transmission channel in accordance with a signal output from the active or standby transmitter at the second end, said channel switching system comprising:

control means for generating a switching control signal in response to one of a fault and a recovery signal from said fault and recovery detecting means;

phase adjustment means, operatively connected to said control means, for receiving a signal from said active receiver and another signal from said standby receiver, for adjusting phase between both received signals in response to said switching control signal, and for outputing a switch energizing signal and two phase adjusted signals;

switch means, operatively connected to said phase adjustment means including a unipolar high speed switching circuit, for switching the two phase adjusted signals from said phase adjustment means in response to receiving said switch energizing signal; and

switching means, operatively connected to said phase adjustment means, for switching signals sent from said another end and supplied to said phase adjustment means in response to receiving said switching control signal,

said phase adjustment means adjusting a phase of one received signal to another phase of another received signal in response to receiving said switching control signal,

said phase adjustment means outputting said switch energizing signal to said unipolar switching circuit when a phase coincidence is obtained before a predetemined time lapse from an output of said switching control signal so that said unipolar switching circuit outputs the signal phase adjusted by said phase adjustment means in response to receiving said switch energizing signal,

said switching means energizing said unipolar switching circuit, when the phase coincidence is not obtained during said predetermined time, to output one signal of said phase adjusted signals in response to receiving said switch energizing signal.

4,797,904

TRANSMITTER FOR ISDN S-BUS INTERFACE CIRCUIT

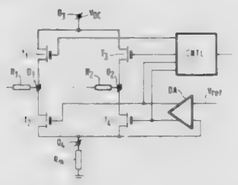
Hendrikus J. Dekker, and Johannes H. M. Velthof, both of Hilversum, Netherlands, assignors to AT&T and Philips Telecommunications B.V., Hilversum, Netherlands

Filed May 22, 1987, Ser. No. 53,231

Claims priority, application Netherlands, May 26, 1986, 8601331

Int. Cl.⁴ H04L *27/00*

U.S. Cl. 375—60 **3 Claims**



1. A transmitter for an ISDN S-bus interface circuit for transmitting digital signals via a transmit line of a full-duplex four-wire line to one or a plurality of subscriber sets, which transmitter includes a bridge circuit formed by semiconductor switching elements each having a control input connected to a digital control circuit for cross-wise rendering selected ones of the switching elements conductive or non-conductive for transmitting a binary "zero" or rendering all the switching elements non-conductive for transmitting a binary "one", said bridge circuit including first and second transverse branches whose ends are connected between adjacent ones of said switching elements, said first transverse branch of the bridge circuit including the primary winding of a transformer to the secondary winding of which the transmit line is connected, said second transverse branch including a voltage source, characterized in that the second transverse branch includes a measuring resistor in series with said reference potential, that in addition the transmitter includes a differential amplifier a first input of which is maintained at a reference voltage and a second input of which is connected to said measuring resistor in said second transverse branch and a first output of which is connected to a control input of one of the switching elements and a second output of which is connected to a control input of one of the further switching elements for maintaining the current through the measuring resistor at a substantially constant value.

4,797,905

X-RAY GENERATOR INCORPORATING DOSE RATE CONTROL

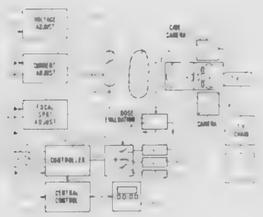
Rudolf Ochmann, and Robert H. Zimmermann, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1987, Ser. No. 1,305

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1986, 3600464

Int. Cl.⁴ H05G *1/34*

U.S. Cl. 378—108 **3 Claims**



1. In an X-ray generator which includes adjustment means for at least X-ray tube current and X-ray tube voltage, controller means which act on the adjustment means in response to an actual value of X-ray dose rate and a reference value of X-ray dose rate, at least one measurement device for measuring the actual value of the X-ray dose rate, and a selection device which can be activated by an operator and which defines a type of X-ray examination as well as the reference value of the dose rate, the improvement wherein the controller means is a controller which controls the adjustment means during each of a series of sample intervals and includes a microprocessor, first memory means (**148, 166**) in which sampling frequency and the adjustment functions are stored for the various types of examination, and second memory means; and wherein, the controller calculates, in accordance with an adjustment function and a program stored in the second memory means (**148, 166**), adjustment values for each sampling interval and controls the adjustment means accordingly.

4,797,906

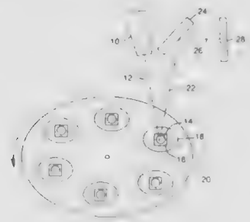
NONDESTRUCTIVE METHOD FOR ANALYZING TOTAL POROSITY OF THIN SECTIONS

Michael P. Smith, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Sep. 28, 1987, Ser. No. 101,880

Int. Cl.⁴ G01N *23/223*

U.S. Cl. 378—44 **6 Claims**



1. A method for determining total porosity of a rock sample comprising:

stimulating an impregnated rock sample with X-ray electromagnetic radiation and detecting and measuring resulting X-ray fluorescence,

the rock sample having been impregnated with a fluid under conditions effective for introducing the fluid into both macropores and micropores, and

the fluid containing elements effective for fluorescing when stimulated by X-ray electromagnetic radiation;

stimulating a sample comprising only the fluid containing elements effective for fluorescing and detecting and measuring the resulting fluorescence; and

producing a measure of total effective porosity from the fluorescence resulting from the stimulated impregnated rock sample and fluorescence resulting from the sample comprising only the fluid.

4,797,907

BATTERY ENHANCED POWER GENERATION FOR MOBILE X-RAY MACHINE

Richard L. Anderton, West Jordan, Utah, assignor to Diasonics Inc., San Francisco, Calif.

Filed Aug. 7, 1987, Ser. No. 83,625

Int. Cl.⁴ H05G *1/10*

U.S. Cl. 378—101 **4 Claims**

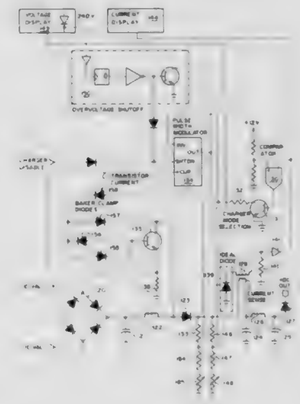
1. An apparatus having a X-ray emitter and a receptor for providing an image of a X-ray exposure, comprising: input coupling means for coupling said apparatus to an external power source.

a high-voltage generation means for generating voltage and current needed to generate X-rays for said X-ray exposure;

a battery coupled to said high-voltage generation means for providing battery electrical power to generate said voltage and current by said high-voltage generation means;

a charger coupled to said input coupling means, high-voltage generation means and battery for providing additional electrical power to said high-voltage generation means during periods of said X-ray exposure by converting said external power;

said charger recharging said battery during periods when said additional electrical power is not required by said high-voltage generation means; and



wherein a combination of said battery electrical power and said additional power provide for an improved image from said X-ray exposure.

4,797,908

VOLTAGE-RESONANCE TYPE POWER SUPPLY CIRCUIT FOR X-RAY TUBE

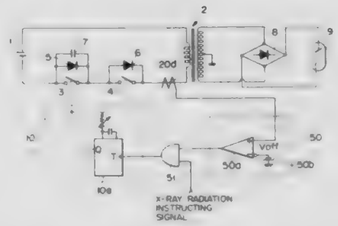
Shigeru Tanaka, Ootawara, and Fumio Ishiyama, Nishinasuno, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 6, 1985, Ser. No. 773,208

Claims priority, application Japan, Sep. 14, 1984, 59-194113; Sep. 14, 1984, 59-194114; Dec. 5, 1984, 59-258142

Int. Cl.⁴ H02M *3/315;* **H05G** *1/12, 1/20, 1/32*

U.S. Cl. 378—105 **6 Claims**



1. A power supply circuit for supplying a high DC voltage between an anode and a cathode of an X-ray tube, comprising:

transformer means having a primary winding for connection to a DC source and a secondary winding;

rectifier circuit means coupled to said secondary winding of said transformer means for supplying the high DC voltage between said anode and said cathode of said X-ray tube;

first switching means;

a parallel combination of a capacitor and a first diode, connected in parallel with said first switching means, said capacitor forming a resonance circuit with said primary winding of said transformer means;

second switching means, series-connected with said first switching means;

a second diode connected in parallel with said second switching means;

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said first switching means and said second switching means being connected in series with both said DC source and said primary winding of said transformer means, said first diode and second diode being connected across said first switching means and said second switching means respectively in polarity relationship opposite to the polarity of the DC source;

current detection means, coupled to said primary winding of said transformer means, for detecting when AC current flowing through said primary winding of the transformer means reaches a predetermined level and for detecting the end of a cycle of the resonance waveform of the AC current flowing through said primary winding of said transformer means; and

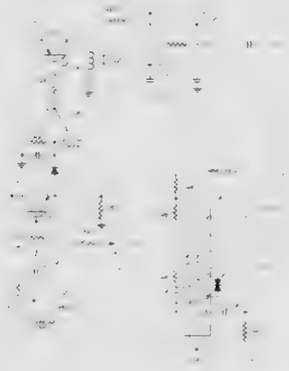
driving means for simultaneously driving said first and second switching means to turn on in response to the detection of the end of cycle of the resonance waveform of the current flowing through said primary winding of said transformer means by said current detection means and for turning off said first switching means at times when said AC current flowing through said primary winding reaches said predetermined level.

4,797,909

REMOTELY PROGRAMMABLE TELEPHONE ANSWERING SYSTEM WITH IMMEDIATE VERIFICATION UPON ENTRY

John F. Mastromoro, 3603 Brompton Ct., Liverpool, N.Y. 13090; Richard W. French, 609 Vine St., Liverpool, N.Y. 13088, and Samuel S. Strobert, 5892 Sutton Dr., Clay, N.Y. 13041

Filed Mar. 6, 1986, Ser. No. 836,768
Int. Cl.[4] H04M *1/64*
U.S. Cl. 379—67 11 Claims



1. An automatic telephone answering system for transmitting to a caller a message formed by a plurality of message segments, the sequency of the segments being pre-selected by a user through the keypad of either the local telephone to which the system is connected or any remote telephone in communication with the local telephone, a unique electrical signal being associated with each key on the telephone keypad, said system comprising:

(a) means for connecting said system to the incoming leads of a conventional, local telephone;

(b) a voice synthesizer containing a plurality of individual, pre-recorded message segments for transmission in a predetermined sequence determined by a series of electrical signal inputs to said synthesizer, each of said signal inputs being uniquely associated with a corresponding one of said message segments;

(c) a random access electronic memory device adapted to receive and store a sequence of said unique electrical signals from the individual keys of said keypad in the order pressed by the user, each of said unique electrical signals corresponding to a unique memory location of said memory device, and to generate said sequence of electrical signal inputs in response to a ring signal received at said local telephone;

(d) a tone decoder integrated circuit connected between said incoming leads and said memory device, and adapted to emit a binary coded signal corresponding to each of said electrical signals, said tone decoder being connected to said memory device by a plurality of separate lines, each corresponding to a digit position in said binary coded signal;

(e) circuit means connecting said memory device with said synthesizer for input to the latter of said signal inputs;

(f) means electrically connecting the output of said voice synthesizer to the speaker of said local telephone;

(g) means for generating a system reset pulse of short duration in response to a ring signal at said local telephone; and

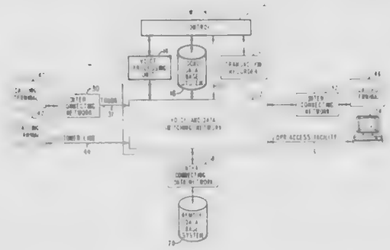
(h) a plurality of individual, integrated circuit, flip flop means to which said reset pulse is connected, including a write flip flop and an extended memory flip flop, each adapted to generate a clock pulse in response to said reset pulse.

4,797,910

AUTOMATED OPERATOR ASSISTANCE CALLS WITH VOICE PROCESSING

Abraham N. Daudelin, Colts Neck, N.J., assignor to American Telphone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 7, 1986, Ser. No. 860,651
Int. Cl.[4] H04M *3/38, 3/50, 3/56;* H04Q *3/70*
U.S. Cl. 379—67 32 Claims



1. In a telecommunications switch offering operator assistance services, a method of serving an operator assistance call, comprising the steps of:

connecting a calling customer terminal to an automatic voice processing system in response to a receipt of signals from a calling customer terminal identifying said call as an operator assistance call, said signals from said calling customer comprising signals specifying a directory number of a called customer terminal;

analyzing a voice command received from said calling customer terminal by said automatic voice processing system to identify the class of said operator assistance call;

generating and transmitting a request to an interconnection network to set up a connection from said telecommunications switch to said called customer terminal in response to said identification;

detecting an answer from said called customer terminal; and

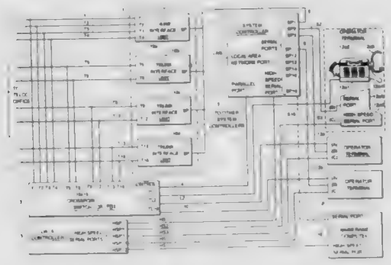
connecting said calling customer terminal to an operator position after said step of detecting an answer.

4,797,911

CUSTOMER ACCOUNT ONLINE SERVICING SYSTEM

Aleksander Szlam, Norcross; James W. Crooks, Jr., Marietta, both of Ga., and Curtis G. Marks, Minneapolis, Minn., assignors to Inventions, Inc., Norcross, Ga.

Filed Jun. 16, 1987, Ser. No. 62,944
Int. Cl.[4] H04M *1/274, 11/10*
U.S. Cl. 379—67 73 Claims



29. Apparatus for online updating of data on customer accounts contained in an information storage system, comprising:

dialing means for placing an outgoing call by dialing a telephone number on a telephone trunk;

call progress monitoring means connected to said telephone trunk for monitoring said telephone trunk and providing a status on said telephone trunk;

an operator terminal comprising a data terminal and an audio communications means;

trunk switching means for selectively connecting said telephone trunk to said audio communications means;

control means for obtaining said data on at least one said customer account from said information storage system, extracting a customer telephone number from said data for a selected said customer account, providing said customer telephone number to said dialing means monitoring said status of said telephone trunk and, if said outgoing call is answered, causing said trunk switching means to connect said telephone trunk to said audio communications means, and providing at least a predetermined portion of said data on said selected said customer account to said data terminal;

whereby said data terminal provides data entries made at said data terminal to said information storage system; and

said information storage system updates said data for said selected said customer account by incorporating said data entries into said data for said selected said customer account.

4,797,912

TELEPHONE ANSWERING DEVICE HAVING PUSHBUTTON CONTROLLED STANDBY MODE

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 682,856
Claims priority, application Japan, Dec. 21, 1983, 58-241706
Int. Cl.[4] H04M *1/65*
U.S. Cl. 379—79 7 Claims

7. An automatic telephone answering and recording device operative in different operating modes and having a function button for selecting said modes, the device comprising:

means responsive to a receipt of a calling signal from a calling party for forming a closed circuit;

means for playing back a previously recorded outgoing message to the calling party;

means for recording incoming messages of the calling party; and

means for selecting among said different modes of operation of said device, including a microcomputer programmed to measure a time duration that said function button is pushed and, in response to select a particular mode of operation.



4,797,913

DIRECT TELEPHONE DIAL ORDERING SERVICE

Murray Kaplan, Cherry Hill, and Robert W. Humes, Moorestown, both of N.J., assignors to Science Dynamics Corporation, Cherry Hill, N.J.

Filed Aug. 4, 1987, Ser. No. 81,670
Int. Cl.[4] H04M *11/00*
U.S. Cl. 379—91 12 Claims



1. A system providing for automated ordering of products or services by a calling customer by direct telephone dialing and providing customer, vendor and product identification for use within a Local Access and Transport Area (LATA) switching network having Feature Group D service utilizing the 15 digit domestic dialing plan with Feature Group D and interexchange carrier designations in the first 5 digits and providing Automatic Number identifications (ANI) for the calling customer comprising:

data processing means within the LATA assigned an interexchange carrier number and interconnected to the LATA switching network to receive calls at a point of termination as an interexchange carrier based upon the first 5 digit designation and wherein the data processing means is programmed to receive and process the final 10 digits of the 15 digit call for determination of variables such as vendor, product, grade and the like designations; and

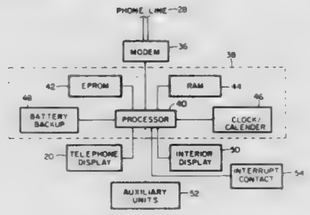
wherein the data processing means is further programmed to receive and process the ANI information,

4,797,914

TELEPHONE DISPLAY

Donald B. Vaello, San Antonio, Tex., assignor to North American Industries, Inc., San Antonio, Tex.

Filed Jun. 17, 1987, Ser. No. 64,315
Int. Cl.[4] H04M *11/00*
U.S. Cl. 379—96 15 Claims



11. A display unit for a telephone, comprising:
a primary display panel attached to a visible, exterior portion of said telephone;
a secondary display panel distant from said telephone;
a modem for receiving a character string transmitted over telephone lines, said modem located within said telephone, and said character string having one or more messages embedded therein;
a central processor connected to said modem and said primary and secondary display panels, for decoding a plurality of clock commands associated with said one or more messages embedded in said character string and displaying said one or more messages on said primary and secondary display panels continuously and repeatedly in a time-dependent mode;
an erasable, programmable read-only memory connected to said central processor for storing program instructions for said processor;
a random-access memory connected to said central processor for storing said character string; and
an electronic clock/calendar connected to said central processor for providing information on present time and day.

4,797,915

COMMUNICATION SYSTEM HAVING AUTOMATIC CALL ROUTE SELECTION

Duane O. Bowker, Neptune City; Adrian A. Giuliasi, Aberdeen, and David F. Jones, Middletown, all of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Oct. 9, 1986, Ser. No. 917,202
Int. Cl.[4] H04M *3/42*
U.S. Cl. 379—216 15 Claims



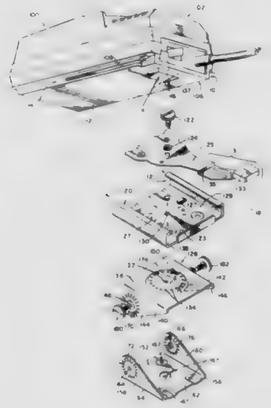
1. A communication system comprising
a common control unit connected to a plurality of communication lines arranged in a plurality of line groups and connected via a communication loop to a station set which is assigned to use two or more of said plurality of line groups, said common control unit including
means responsive to called party dialing digits generated by said station set for selecting an individual one of said two or more of said plurality of line groups assigned to said station set as a function of said called party dialing digits and for selecting a line from the identified line group over which to place a call.

4,797,916

TELEPHONE HANDSET CRADLE MOUNTING

Kazuo Kojima, Tokyo, Japan, assignor to Uniden Corporation of America, Indianapolis, Ind.

Filed Nov. 13, 1987, Ser. No. 120,045
Int. Cl.[4] H04M *1/11, 1/12;* F16M *11/12*
U.S. Cl. 379—454 5 Claims



1. Apparatus for mounting a mobile telephone handset cradle from the interior of a vehicle or the like, the apparatus comprising a base for mounting from the interior of the vehicle or the like, means for mounting the cradle, and means for rotatably mounting the means for mounting the cradle to the base, the rotatable mounting means providing substantially 360° relative rotation between the means for mounting the cradle and the base, a mobile telephone handset cradle, one of the cradle and the means for mounting the cradle including means for providing a pair of grooves, the other of the cradle and the means for mounting the cradle including means for providing a pair of opposed tongues, the tongues proportioned for engagement with the grooves for attachment of the cradle to the means for mounting the cradle.

4,797,917

MONOLITHICALLY INTEGRATABLE TELEPHONE CIRCUIT FOR SUPPLYING RINGING SIGNALS TO A SUBSCRIBER'S TELEPHONE LINE AND FOR DETECTING AN OFF THE HOOK CONDITION DURING RINGING

Mauro Pasetti, Milan, and Marco Siligoni, Vittuone (MI), both of Italy, assignors to SGS Microelettronica SpA, Milan, Italy

Filed Jul. 29, 1987, Ser. No. 79,157
Claims priority, application Italy, Jul. 29, 1986, 21284 A/86
Int. Cl.[4] H04M *3/06*
U.S. Cl. 379—253 6 Claims

1. A monolithically integratable telephone circuit for supplying ringing signals and for detecting an off the hook condition during ringing, and forming an interface between a subscriber's telephone line and a subscriber's line circuit under the control of exchange control components, comprises a circuit

means fof generating timing signals and a circuit means for supplying the telephone line, each having at least a first input terminal for connecting to exchange control components which generate a sinusoidal alternating signal having a frequency equal to the frequency of the ringing signal to be supplied to the line, said circuit means for generating timing signals generating a timing signal when an amplitude of a signal supplied to its first input terminal becomes zero during signal variations of the [signal]same kind, said circuit means for supplying the telephone line being coupled to said exchange control components, via a circuit means for supplying ringing signals having an enabling terminal, and also having an enabling terminal and a first and a second output terminal for connection to the terminals of the subscriber's telephone line; an enabling circuit means and a circuit means for controlling the detection of the off the hook condition each having at least a first and a second input terminal for connection to said circuit means for generating timing signals and to exchange components for generating control signals for supplying ringing signals to the line respectively, these exchange components being further connected to said enabling terminal of said circuit



means for supplying of the telephone line, said circuit means for controlling the detection of the off the hook condition further having at least a third input terminal for connection to the line via a circuit means for detecting a direct current on the line, said circuit means for detecting a direct current generating a signal when a direct current present on the line is greater than a predetermined current threshold, and having an enabling terminal, and at least a first and a second output terminal, said second output terminal being connected to exchange control components for receiving and processing signals indicating that an off the hook condition has taken place, said enabling circuit means further having at least a third input terminal for connection to exchange control components for generating control signals for causing a predetermined ringing rhythm, an inhibiting terminal connected to said first output terminal of the circuit means controlling the detection of the off the hook condition, and a first and a second output terminal connected respectively to said enabling terminal of said circuit means for supplying of ringing signals and to said enabling terminal of said circuit means for detecting of direct current on the line.

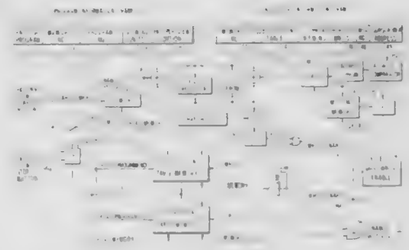
4,797,918

SUBSCRIPTION CONTROL FOR TELEVISION PROGRAMMING

Lin N. Lee, Potomac, and Neal D. Becker, Thurmont, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Continuation of Ser. No. 608,671, May 9, 1984, abandoned. This application Apr. 15, 1987, Ser. No. 39,524
Int. Cl.[4] H04N *7/167, 7/10*
U.S. Cl. 380—20 17 Claims

1. A method for one-way program subscription control for a plurality of program subscribers, each having a subscriber address, comprising the steps of:
coding program identification information, including first memory address, program rate, and unique program number, according to preselected program characteristics;
concurrently transmitting said coded program identification information, repeated on a first periodic basis which period is substantially less than the duration of said coded program, and programming having said program characteristics to all program subscribers;
receiving and reading into a subscription table memory, being located at every subscriber address and being adapted to store an identification code for each progam, said coded program identification information;
coding individual program subscription information for each subscriber address, including second memory address, presubscribed program and credit information, according to programming selections made by such subscriber;
transmitting said program subscription information to all subscribers on a second periodic basis which period is substantially greater than the duration of said coded program;



receiving and writing said program subscription information into said subscription table memory at each subscriber address which corresponds to that subscriber address coded with said program subscription information being transmitted at a given time;
comparing said program identification information which has been read into said subscription table memory with said program subscription information which has been written in said subscription table memory;
enabling individual subscriber program receivers so that each said subscriber is able to receive programming then being transmitted in response to correspondence of said program subscription information and said program identification information, and decrementing said credit information stored in said subscription table memory on said first periodic basis when said comparison program identification information and said program subscription information results in said receiver being enabled.

4,797,919

RECEIVER HAVING AN INTERFACE WITH A SUB-SYSTEM

Bruce Murray, Wokingham, England; Louis Guillou, Bourgbarre, France, and Francoise M. R. Controt, Liffre, France, assignors to U.S. Philips Corporation, New York, N.Y.; Etablissement Public de Diffusion de France and Etat Francais, both of, France

Filed Nov. 25, 1986, Ser. No. 934,872
Claims priority, application United Kingdom, Nov. 25, 1985, 8529003
Int. Cl.[4] H04L *9/04*
U.S. Cl. 380—20 6 Claims

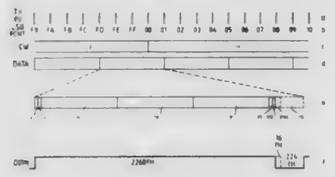
4. A receiver having an interface arrangement for connection between said receiver and a conditional access sub-system and comprising a bus having a first line for conveying clock signals at television line frequency rate from said receiver to said sub-system, a second line for conveying data with a bit rate corresponding to that of the clock signal and with 8 bits per byte from said receiver to said sub-system during a first part of a bus cycle period and from said sub-system to said

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receiver during the remaining part of said bus cycle period, and a third line for conveying a direction signal indicating to said sub-system the direction of data travel on said second line, the bus cycle period having a duration equal to four television frame periods, the data on said second line during the first part of each bus cycle period including sequentially:

i. an address block of 1 byte containing the unique address of the sub-system with which said receiver is in communication,

ii. a status block of 1 byte providing status information for the following and remaining individual blocks in the first part of the bus cycle period,



iii. three data blocks each of 93 bytes and each containing an entitlement message,

iv. a keying block of 1 byte conveying keyboard or remote control commands, and

v. a further block of either ½ byte or 2½ bytes conveying either the least significant bits of the frame count (4 bits) or the 256-frame count (20 bits),

while the data on said second line during the second part of each bus cycle period comprises a data block of either 30 or 28 bytes, depending on the length of said further block, comprising information for said receiver from said sub-system.

4,797,920

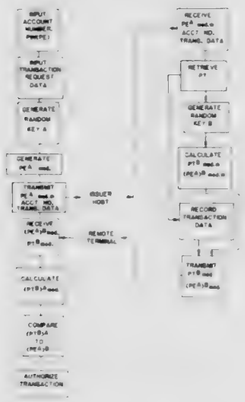
ELECTRONIC FUNDS TRANSFER SYSTEM WITH MEANS FOR VERIFYING A PERSONAL IDENTIFICATION NUMBER WITHOUT PRE-ESTABLISHED SECRET KEYS

Theodore Stein, New Rochelle, N.Y., assignor to MasterCard International, Inc., New York, N.Y.

Filed May 1, 1987, Ser. No. 44,887

Int. Cl.[4] H04L *9/00*; **G07D** *7/00*

U.S. Cl. 380—24 **7 Claims**



1. A method of operating an electronic funds transfer of the type having at least one remote terminal and at least one issuer host terminal, comprising the steps of:

(a) accepting at the remote terminal account identification data and a personal identification number PE from a user;

(b) providing a first key A at the remote terminal;

(c) encrypting PE using encryption key A to derive A(PE);

(d) transmitting A(PE) to the host terminal;

(e) providing a second key B at the host terminal;

(f) encrypting A(PE) at the host terminal using encryption key B to derive B(A[PE]);

(g) providing at the host terminal the value of B(PT) which is the correct personal identification number PT encrypted using an encryption key B;

(h) transmitting B(A[PE]) and B(PT) from the host terminal to the remote terminal;

(i) encrypting B(PT) at the remote terminal using encryption key A to derive the value A(B[PT]);

(j) comparing the value of A(B[PT]) to B(A[PE]);

(k) executing an electronic funds transaction responsive to the values of A(B[PT]) and B(A[PE]) being the same;

wherein each encrypting step is executed with the same algorithm, and wherein the algorithm effects a transformation such that, with two successive encryptions using two different keys the result is the same irrespective of the order of encryption.

4,797,921

SYSTEM FOR ENCIPHERING OR DECIPHERING DATA

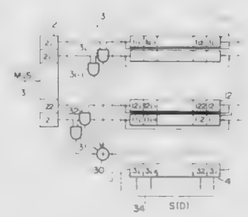
Takayoshi Shiraishi, Chigasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 12, 1985, Ser. No. 796,753

Claims priority, application Japan, Nov. 13, 1984, 59-239243; Dec. 26, 1984, 59-272909

Int. Cl.[4] H04K *1/00, 9/00*

U.S. Cl. 380—28 **3 Claims**



1. A system for enciphering or deciphering i binary digit data comprising:

first store means for temporarily storing input data to be enciphered or deciphered;

second store means for storing a matrix formed by a plurality of streams of i binary digit random numbers, each stream corresponding to a respective digit of said first store means; and

output means for outputting a signal as encryption or decryption data for said input data, said signal being obtained by performing mod 2 addition of the streams of random numbers, among a plurality of streams stored in said second store means, which correspond to those digits of the input data store in said first store means and having a "1" bit, said addition operation being performed independently for each digit of said random numbers;

wherein said plurality fo streams of random numbers to be stored in said second store means respectively correspond to i element consecutive in power number and selected from the (2^i-1) elements of an i order irreducible primitive polynomial in the Galois field $GF(2^i)$.

4,797,922

METHOD OF, AND APPARATUS FOR, TRANSFORMING A DIGITAL DATA SEQUENCE INTO AN ENCODED FORM

James L. Massey, Zürich, and Rainer A. Rueppel, Wetzikon, both of Switzerland, assignors to Borer Electronics AG, Biberist, Switzerland

Filed Oct. 28, 1985, Ser. No. 791,715

Claims priority, application Switzerland, Nov. 2, 1984, 05249/84

Int. Cl.[4] H04L *9/04*

U.S. Cl. 380—46 **18 Claims**



1. Apparatus for generating a complex first pseudo-random digital sequence, said apparatus comprising:

(a) generating means for generating at least second and third periodic, pseudo-random digital sequences;

(b) summing means for receiving as inputs at least said second and third periodic, pseudo-random digital sequences and an auxiliary digital sequence for providing an output as a digital sum of said inputs, said digital sum output comprising a sequence of pluralities of bits, each of said pluralities of bits forming the integer sum of the corresponding bits of at least said second and third pseudo-random digital sequences and of said auxiliary digital sequence, each of said pluralities of bits comprising a selected one bit and the remaining bits, a sequence of said selected one bits forming said first pseudo-random digital sequence, and

(c) feedback means for receiving and feeding back said remaining bits as said auxiliary digital sequence to said summing means, whereby said first pseudo-random digital sequence is rendered more complex than said second and third pseudo-random digital sequences.

4,797,923

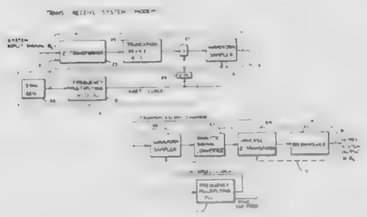
SUPER RESOLVING PARTIAL WAVE ANALYZER-TRANSCEIVER

William L. Clarke, 2221 Aralia St., Newport Beach, Calif. 92660

Filed Nov. 29, 1985, Ser. No. 802,980

Int. Cl.[4] G10L *1/00*

U.S. Cl. 381—31 **49 Claims**



1. In a signal processing system having a system input, a signal transmission channel, and a system output, an improved apparatus for receiving a high resolution signal at the system input and recovering a corresponding high-resolution information signal at the system output, said apparatus comprising:

means for producing a summation of wave functions representing said input signal;

means for truncating said summation of wave functions to produce a corresponding summation of partial wave functions;

means for transmitting the truncated summation of partial wave functions through the signal transmission channel;

means for detecting the transmitted truncated summation of partial wave functions;

means responsive to said detecting means for producing a partial wave spectrum from the detected summation of partial wave functions; and

means for deconvolving said partial-wave spectrum to the values of said system input signal.

4,797,924

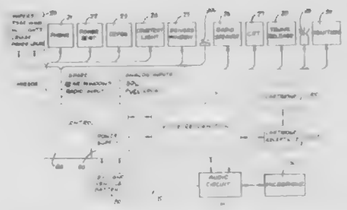
VEHICLE VOICE RECOGNITION METHOD AND APPARATUS

Michael J. Schaars, Haslett; Darrel A. Dolph, Big Rapids, both of Mich., and Yu-Jih Liu, Wharton, N.J., assignors to Nartron Corporation, Reed City, Mich.

Filed Oct. 25, 1985, Ser. No. 791,373

Int. Cl.[4] G10L *5/06*

U.S. Cl. 381—43 **4 Claims**



1. A voice actuated system for controlling motor vehicle operations comprising:

a microphone mounted to the vehicle for converting speech from a vehicle operator into input signals representative of an operator enunciated command;

controller means for monitoring said input signals from the microphone, said controller means including a memory interface for accessing pre-recorded voice profile signals and comparing said pre-recorded voice profile signals with the input signals from the microphone,

an interchangeable memory module that can be coupled to the memory interface of the controller means for storing pre-recorded voice profile signals that are unique for a specific vehicle operator and that maintain said pre-recorded voice profile signals in memory whether or not the memory module is coupled to the memory interface; said memory module including a pre-recorded data representation of an operator pronunciation of one or more motor vehicle control commands, and

interface means responsive to control outputs from the controller means for activating one or more vehicle control operations in response to sensing of a correspondence between the input signal representation of the operator enunciated command and voice profile signals.

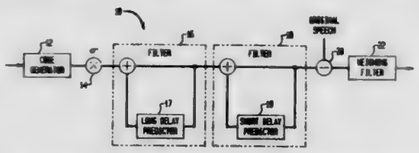
VOL 1098 ISS 2 JA 10 1989 UMI

4,797,925

METHOD FOR CODING SPEECH AT LOW BIT RATES

Daniel Lin, Montville Township, Morris County, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Sep. 26, 1986, Ser. No. 911,776
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—36 **8 Claims**



6. A method for coding and decoding a speech signal comprising the steps of,

dividing the speech signal into blocks, each block comprising a plurality of samples,

for each block of speech signal to be coded, generating a set of related code sequences, each succeeding code sequence being generated from the preceding code sequence by removing one or more elements from the beginning of and adding one or more elements to the end of the preceding sequence,

processing each code sequence by multiplying each code sequence by an amplitude factor and passing each sequence through at least one digital filter with time varying filter coefficients,

comparing each processed code sequence with the actual block of speech signal to be coded to determine which processed code sequence is closest to the actual block of speech signal,

transmitting to a receiver an identification number of the closest code sequence and information relating to said amplitude factor and filter coefficients, and

receiving said identification number and said information at said receiver, and in response thereto, regenerating said code sequence identified by said number, multiplying said regenerated code sequence by said amplitude factor and passing said regenerated code sequence through at least one digital filter whose filter coefficients are determined using said received information, thereby regenerating the coded speech signal.

4,797,926

DIGITAL SPEECH VOCODER

Edward C. Bronson, Lafayette, Ind.; Walter T. Hartwell, St. Charles, Ill.; Willem B. Kleijn, Batavia, Ill., and Dimitrios P. Prezas, Park Ridge, Ill., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 11, 1986, Ser. No. 906,523
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—36 **30 Claims**

1. A processing system for encoding human speech comprising:

means for segmenting the speech into a plurality of speech frames each having a predetermined number of evenly spaced samples of instantaneous amplitudes of speech;

means for calculating a set of speech parameter signals defining a vocal tract for each frame;

means for calculating frame energy per frame of the speech samples;

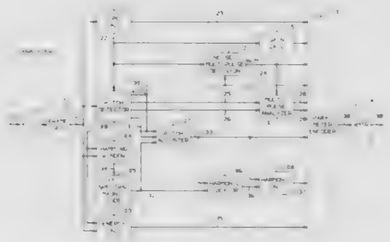
means for performing a spectral analysis of said speech samples of each frame to produce a spectrum for each frame;

means for detecting the fundamental frequency signal for each frame from the spectrum corresponding to each frame;

means for determining harmonic freequency signals for each frame from the spectrum corresponding to each frame;

means for adjusting the detected fundamental frequency signal so that the harmonic frequency signals are evenly distributed around integer multiples of the adjusted fundamental frequency signal by analysis of peaks within said spectrum representing said fundamental and harmonic frequency signals;

means for determining offset signals representing the difference between each of said harmonic frequency signals and integer multiples of said fundamental frequency signal for each frame; and



means for transmitting encoded representations of said frame energy and said set of speech parameters and said fundamental frequency and said offset signals for subsequent speech synthesis.

4,797,927

VOICE RECOGNITION PROCESS UTILIZING CONTENT ADDRESSABLE MEMORY

Scott Schaire, San Remo, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 30, 1985, Ser. No. 792,994
Int. Cl.[4] G10L *5/06*
U.S. Cl. 381—42 **10 Claims**



1. A voice recognition method comprising:

(a) an initializing phase including the steps:

converting a preset vocabulary list of spoken words to digitized form;

performing time compression of the digitized words to standardize the length of each word wherein the compressed word has a corresponding digital score;

formatting a main memory with addresses directly corresponding to each score, the data at each address being the position of the respective word in the vocabulary; and

(b) wherein the recognition phase includes the steps:

converting a spoken word to a digitized form;

performing time compression of the digitized word to standardize the length of each word wherein each compressed word has a corresponding digital score;

addressing the main memory at the location directly corresponding to the score;

reading out, from main memory, the position of the word in the vocabulary;

addressing a vocabulary memory at a memory location corresponding to the position of the word in the vocabulary; and

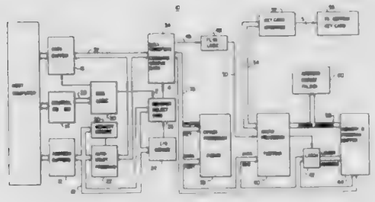
reading out a word stored at the vocabulary memory location, corresponding to the word spoken during the recognition phase.

4,797,928

ENCRYPTION PRINTED CIRCUIT BOARD

John Dykes, West Valley, Utah, assignor to MIU Automation, Salt Lake City, Utah

Filed Jan. 7, 1987, Ser. No. 1,206
Int. Cl.[4] H04L *9/00*
U.S. Cl. 380—49 **9 Claims**



1. An encryption/decryption apparatus for a host computer having expansion slots for an expander board comprising:

an expander board for connection to a host computer's expansion slot, said expander board including:

an address storage means, a control read/write means, and a data storage means for operative connection to a host computer, the address means for storing addresses for a block of data received from the host computer for ciphering and the read/write control means for receiving ciphering operational commands from the host computer including memory read, I/O read, I/O write, and enable control signals;

an auto-start means connected to the address storage means, control read/write means, and data storage means for coordinating the data addresses of the host computer with addresses for the expander board;

a register selector means connected to the auto-start memory means and to the control read/write means for outputting register selector signals;

a register means including a data input register connected to the control read/write means and data storage means and responsive to an I/O read enabling signal for storing the host computer's data for ciphering, a read/write command status register connected to the control read/write means and responsive to an I/O write signal for storing the host computer's command status signals, and a data output register connected to a microprocessor's enable terminal and data storage means and responsive to an enable signal for reveiving ciphered data; a cipher processor connected to the register means for receiving data for encryption or decryption selectively;

a microprocessor connected to the register means and to the cipher processor, the micropressor including an instruction means, and an instruction execution means for cycling through an I/O port read bus cycle, a memory-read bus cycle;

a data storage means connected to the cipher processor and to the microprocessor for storing the ciphered data output of the cipher processor; and

a key card interface means connected to the microprocessor, the key card interface means for connection to a key card reader for obtaining key information for the cipher processor;

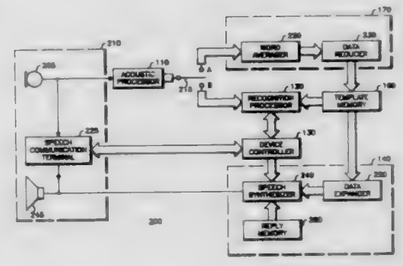
whereby the microprocessor upon command of the host processor fetches key information from the key card interface means for user authentication and cipher processor code selection and responsive to an authentication signal cycling through an I/O port read bus cycle each time an IN instruction is executed, a memory-read bus cycle for fetching instructions and data for ciphering by the cipher processor, and I/O port write bus cycle each time an OUT instruction is executed for writing data to a specific I/O port address in the I/O address space of the microprocessor storage means, and a memory-write bus cycle each time an instruction is executed to write data to a valid memory location.

4,797,929

WORD RECOGNITION IN A SPEECH RECOGNITION SYSTEM USING DATA REDUCED WORD TEMPLATES

Ira A. Gerson, Hoffman Estates; Brett L. Lindsley, and Philip J. Sasanski, both of Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1986, Ser. No. 816,161
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—43 **29 Claims**



1. A method for processing speech information in a speech recognition system, wherein the information is represented by a sequence of frames, said speech recognition system being capable of comparing a given frame set to a template, and having template memory to store said template, said processing method comprising the steps of:

(a) combining contiguous acoustically similar frames of a previous frame set into representative frames to form a reduced template;

(b) storing said reduced template in template memory; and

(c) comparing frames of said given frame set to said representative frames of said reduced template according to the number of frames combined in said representative frames of said reduced template to produce a measure of similarity between the given frame set and the template.

4,797,930

CONSTRUCTED SYLLABLE PITCH PATTERNS FROM PHONOLOGICAL LINGUISTIC UNIT STRING DATA

Kathleen M. Goudie, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 3, 1983, Ser. No. 548,400
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—52 **13 Claims**

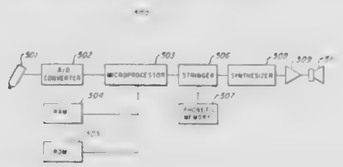
1. A speech producing apparatus comprising:

input means for receiving a sequence of input data, said sequence of input data including a first part containing a sequence of phonological linguistic unit indicia and a second part including primary stress indicia indicative of primary stress, secondary stress indicia indicative of secondary stress, base pitch indicia indicative of a base pitch and rise/fall indicia indicative of a rising or falling intonation;

control means connected to said input means for converting said sequence of input data into a sequence of speech synthesis control parameters including pitch control parameters for control of speech pitch by selection of one of a plurality of predetermined pitch patterns for each syllable grouping of phonological linguistic unit indicia in accordance with said second part of said sequence of input data, said control means including

phonemic memory means for storing speech synthesis parameters corresponding to each of said phonological linguistic unit indicia,

pitch parameter generating means for generating pitch parameters for syllable groupings of said sequence of phonological linguistic unit indicia dependent upon said second part of said sequence of input data,



recall means operably associated with said phonemic memory means for recalling speech synthesis parameters corresponding to said sequence of phonological linguistic unit indicia, and

concatenation means operably associated with said recall means and said pitch parameter generating means for combining said recalled speech synthesis parameters and said generated pitch parameters corresponding to syllable groupings of said sequence of phonological linguistic unit indicia; and

speech synthesis means connected to said control means for generating one or more audible words of human language corresponding to said speech synthesis control parameters.

4,797,931

AUDIO FREQUENCY SIGNAL IDENTIFICATION APPARATUS

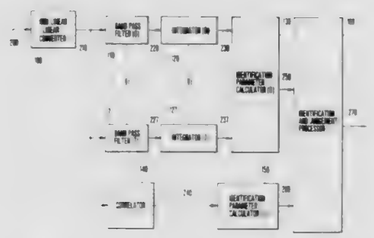
Yasuo Furukawa; Katsuyuki Yamazaki; Takemi Hosaka, and Akira Fukui, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd. and NEC Corporation, both of, Japan

Filed Feb. 26, 1987, Ser. No. 19,421

Claims priority, application Japan, Mar. 4, 1986, 61-47596

Int. Cl.[4] H04R *29/00*

U.S. Cl. 351—56 **4 Claims**



1. An audio frequency signal identification apparatus for identifying a signal type of an audio frequency signal presented in unit analysis times of multiplexed frames, comprising:

a correlator for calculating a full band power component first and second order autocorrelation coefficients of a digital audio frequency signal to be identified for each unit analysis time;

a plurality of band pass filters, provided for predetermined bands, for filtering the audio frequency signal to be identified in the respective bands;

a plurality of integrators, which are connected to said plurality of band pass filters in a one to one correspondence, for full wave rectifying and integrating the outputs from said band pass filters for the unit anlysis time so as to obtain individual band power components;

first identification parameter calculation means for calculating a maximum power component, a minimum power component, a frequency band F yielding the maximum power component, a bandwidth B, a difference between the individual band power component in the respective analysis times from the individual band power components output from said plurality of integrators;

second identification paramter calculation means for calculating a difference between two values of the first order autocorrelation coefficient outputted from said correlator for different unit analysis times, a difference between two values of the second order autocorrelation coefficient outputted from said correlator for the difference unit analysis times, and a difference between respective values of the first and second order autocorrelation coefficients for a same unit analysis time; and

identification and judgement processing means for judging a signal type of the audio frequency signal to be identified in accordance with which of a plurality of predetermined judgement conditions the identication parameters obtained from said first and second identification parameter calculation means and the full band power component of the digital audio frequency signal correspond and if they satisfy a condition of continuity.

4,797,932

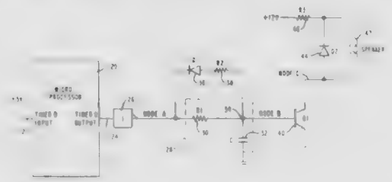
SPEAKER VOLUME CONTROL APPARATUS AND METHOD

John J. Rohulich, and John B. Keys, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 23, 1987, Ser. No. 124,329

Int. Cl.[4] H04N *7/04;* **G01H** *1/46;* **G08B** *3/00*

U.S. Cl. 381—104 **14 Claims**



9. A method for controlling the volume of a speaker comprising the following steps:

setting the maximum counts of first and second registers in a timer;

applying counting pulses to a counter which is controlled by first one and then the other of said registers to provide a repeating pulsed output signal from said timer having a first pulse width at one logic level representing the value stored in said one of said registers and a second pulse width at a second logic level representing the value stored in said other of said registers;

controlling the commencement and termination of operation of the counter to control said output signal;

buffering and inverting said output signal from said timer;

integrating the buffered and inverted signal;

applying said integrated signal to a signal translating device to control the on and off states of said signal translating device; and

applying an output of said signal translating device to a speaker to control the volume of a tone produced by said speaker.

4,797,933

BASS AMPLIFIER WITH HIGH FREQUENCY RESPONSE

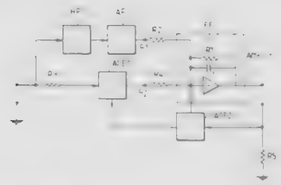
Göran Hahne, Enbacken, Svia, Uppsala, Sweden S-755 90

Filed Mar. 2, 1987, Ser. No. 20,437

Claims priority, application Sweden, Mar. 20, 1986, 8601308

Int. Cl.[4] H04R *3/00*

U.S. Cl. 381—96 **3 Claims**



1. An amplifier comprising:

(a) an input port;

(b) an output port;

(c) a low-pass filter having a break-point frequency, connected to said input port, for producing low-pass signals at a phase;

(d) a power amplifying circuit connected to said low-pass filter for receiving said low-pass signals, and said output port;

(e) a current feed-back circuit, connected to said output port, said low-pass filter and said power amplifying circuit, for effecting an output port impedance which substantially consists of a negative resistance;

(f) a high-pass filter, connected to said input port, having a break-point frequency substantially equal to the break-point frequency of said low-pass filter, for producing a high-pass signal at a phase; and

(g) a phase shifting circuit, connected in series with said high-pass filter and further connected to said power amplifying circuit, for shifting the phase of said high-pass signals to substantially the same phase as the phase of said low-pass signals.

4,797,934

SPEAKER HEADREST

Fred M. Hufnagel, 11567 Ridge Rd., Nevada City, Calif. 95959

Filed Aug. 27, 1987, Ser. No. 90,122

Int. Cl.[4] H04R *1/02;* **A47C** *7/36, 7/38*

U.S. Cl. 381—188 **6 Claims**



1. A speaker headrest comprising

a frame having a front surface for supporting a user's head, and

a pair of members flanking said frame, each of said flanking members having a housing structure containing speakers and a lever plate and being connected to said frame rotatably around an axis such that said flanking members swing around said axes to hold said speakers against the user's head as said lever plates are pushed toward said front surface of said frame.

4,797,935

SPEAKER SYSTEM WITH INDEPENDENTLY SUPPORTED TOP PLATE

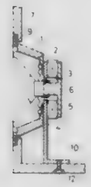
Fujio Tanaka, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,406

Claims priority, application Japan, Feb. 24, 1986, 61-24502[U]

Int. Cl.[4] H04R *1/02*

U.S. Cl. 381—205 **4 Claims**



1. A speaker system, comprising:

a cabinet having a baffle board facing a principal sound propagation direction and other wall members;

a voice coil passing a sound current therethrough;

a vibration plate to which said voice coil is attached;

a magnetic circuit interacting with said voice coil and including a top plate supporting said magnetic circuit and extending away from said magnetic circuit and connected to at least one of said other wall members but not to said baffle board;

a frame for supporting said vibration plate, said frame being fixed to said top plate; and

an elastic member disposed between said baffle board and said frame.

4,797,936

WAVEFORM SEQUENCE TRIGGER SYSTEM

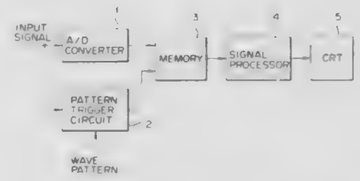
Kenji Nakatsugawa, Kanagawa; Aiichi Katayama, Ischara; Hitoshi Sekiya, and Shoji Hiratsuka, both of Atsugi, all of Japan, assignors to Auritsu Corporation, Tokyo, Japan

Continuation of Ser. No. 786,243, Oct. 9, 1985. This application Nov. 16, 1987, Ser. No. 120,729

Claims priority, application Japan, Oct. 15, 1984, 59-215861

Int. Cl.[4] G06K *9/00*

U.S. Cl. 382—1 **10 Claims**



1. A waveform sequence trigger system comprising:

comparing means for comparing an analog waveform input signal received with a predetermined threshold voltage to produce a serial analog signal having a high or low level;

sampling means, connected to said comparing means, for sampling said serial analog signal with a predetermined clock to produce a serial digital signal;

converting means, having serial shift registers of a predeter-

mined bit number connected to said sampling means, for storing a predetermined bit portion of said serial digital signal while shifting it for each bit in accordance with a predetermined clock, and for converting data of a predetermined bit portion stored in said serial shift registers to a parallel digital signal;

reference data setting means connected to said converting means, for presetting reference data corresponding to a waveform sequence of a desired time interval, to be triggered, of said analog waveform input signal received by the comparing means;

first determining means, connected to said converting means and said reference data setting means, for determining a coincidence between said parallel digital signal and said reference data, and for counting a coincidence bit number as a result of a determination to thereby generate data representing said coincidence bit number;

weight setting means for presetting a predetermined weighting coefficient associated with said coincidence bit number; and

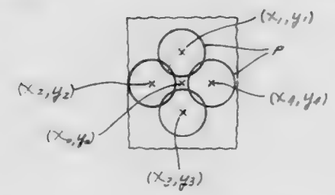
second determining means, connected to said first determining means and said weight setting means, for comparing said data representing said coincidence bit number with said predetermined weighting coefficient, and for generating a waveform sequence triggering signal when said coincidence bit number is equal to, or greater than, said predetermined weighting coefficient.

4,797,937

APPARATUS FOR IDENTIFYING POSTAGE STAMPS

Joji Tajima, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 9, 1987, Ser. No. 59,934
Int. Cl.[4] G06K 9/00
U.S. Cl. 382—1 18 Claims



1. An apparatus for identifying postage stamps, comprising:

scanning means for scanning a postage stamp to deliver color component signals having a level representative of intensity of respective color components;

means for calculating color distribution signals for respective color components by respectively convoluting said color component signals with weights determined in correspondence with a predetermined two-dimensional region;

a plurality of delay means for sequentially delaying said color distribution signals to produce a plurality of delayed color distribution signals, said plurality of delayed color distribution signals corresponding to color distribution signals of predetermined two-dimensional regions located at different positions at a generally central portion of the scanned postage stamp;

feature pattern extracting means for extracting a feature pattern corresponding to a color design of said scanned postage stamp, said feature pattern being a feature vector defined by at least three color distribution signals including said color distribution signals delivered from said calculating means and said plurality of delayed color distribution signals delivered from said plurality of delay means; and

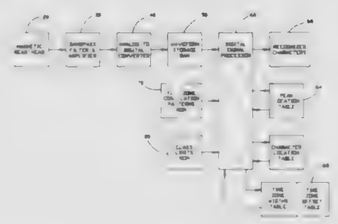
identifying means for comparing said feature vector produced by said feature pattern extracting means with a prestored dictionary feature vector for each of a plurality of known stamps so as to identify said scanned postage stamp.

4,797,938

METHOD OF IDENTIFYING MAGNETIC INK (MICR) CHARACTERS

Terry A. Will, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 787,391, Oct. 15, 1985, abandoned. This application Mar. 31, 1988, Ser. No. 178,793
Int. Cl.[4] G06K 9/00
U.S. Cl. 382—7 8 Claims



1. A method for identifying a character printed on a document comprising the steps of:

generating an analog signal representative of said character as the document passes a read element;

digitizing and storing values representing said analog signal for said character;

locating positive and negative peaks associated with said analog signal for said character;

testing the peaks associated with said character against a first plurality of repeating patterns, having different combinations of period and offset between positive and negative peaks, to determine which of said first plurality of repeating patterns best fit the peaks stored for said character;

using the one of said plurality of repeating patterns which best fits the peaks to select at least some of the stored digitized values and,

testing said selected stored digitized values against a second plurality of patterns representing the set of characters which can be identified, to identify the character.

4,797,939

PATTERN MASKING METHOD AND AN APPARATUS THEREFOR

Tetsuo Hoki; Tetsuo Sano; Ryuji Kitakado, all of Kyoto; Yoshinori Senzaki, Itami; Tomiji Hotta, and Hironobu Yano, both of Kyoto, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Oct. 2, 1986, Ser. No. 914,863
Claims priority, application Japan, Oct. 4, 1985, 60-222454; Jul. 5, 1986, 61-158458
Int. Cl.[4] G06K 9/00
U.S. Cl. 382—8 9 Claims

1. A pattern masking method for masking through-hole patterns comprising:

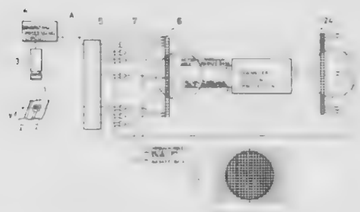
an image data creating step of inputting binarized image data of an inspected object having through-holes in a time-series manner along a main scanning direction to sequentially create a binarized image data group for a plurality of pixels arrayed in a sub-scanning direction;

a pattern discriminating step of judging whether of not the pattern of an inputted image corresponds to a standard through-hole pattern on the basis of said sequentially created binarized image data group, said pattern discriminating step including:

a diameter measuring step of measuring through-hole diameters on the basis of through-hole data continuous from a central pixel position of said binarized image data group created in said image data creating step along the sub-scanning direction,

an area judging step of calculating a through-hole area by sequentially cumulatively adding said measured through-hole diameters in order along the main scanning direction and comparing said calculated through-hole area with maximum and minimum allowable area values to judge whether or not said through-hole area is included in an allowable range, and

a diameter judging step of comparing measured through-hole diameters sequentially with maximum and minimum allowable diameters in order along the main scanning direction when said calculated through-hole area is judged to be within said allowable range to judge whether or nor said measured through-hole diameters are included



in said allowable range, thereby to judge that said pattern of said inputted image corresponds to said standard through-hole pattern when a determination is made that all of said measured through-hole diameters are within said allowable range;

a masking data creating step of sequentially creating through-hole diameter masking data, in order, along the main scanning direction when said pattern of said inputted image is judged to correspond to said standard through-hole pattern, said masking data creating step including a step of creating through-hole diameter masking data identical in diameter with said measured through-hole diameters; and

a masking processing step of sequentially performing masking processing on said binarized image data group of said inspected object arrayed in the sub-scanning direction on the basis of said through-hole masking data.

4,797,940

OPTICAL CHARACTER READER

Koji Sato; Masahiro Kurakake, and Kazuo Fujiwaki, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 2, 1987, Ser. No. 20,994
Claims priority, application Japan, Feb. 28, 1986, 61-41474
Int. Cl.[4] G06K 9/22, 9/34
U.S. Cl. 382—9 5 Claims

1. An optical character reading comprising:

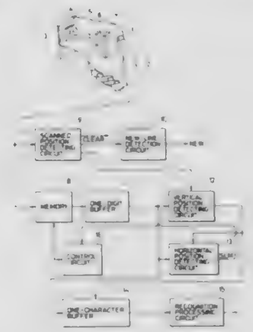
a hand-held image sensing means for simultaneously scanning a plurality of characters on a line of print and producing analog signals in response thereto that correspond to image elements sensed;

binary signal generating means for generating binary data responsive to said analog signals which are received from said image sensing means;

scanned position detecting means for determining whether the characters scanned were completely within the field of vision of said scanning means, said scanned position detecting means including means for truncating the binary data if said scanned position detecting means determines that some of the characters are not fully within the field of vision of the sensing means so that further processing of the truncated binary data does not occur and processing speed is increased;

memory means for storing said binary data;

one character pick out means for separating binary data from said memory means corresponding to n individual characters; and



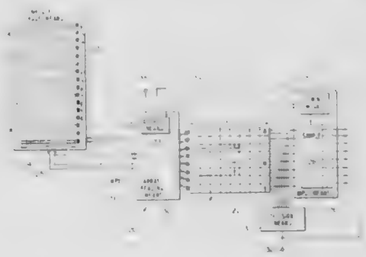
recognition processing means for identifying the individual character separated by said pick out means, whereby an entire printed line of characters, N being a predetermined number of individual characters, may be scanned and identified without having to move the scanner from one character to another.

4,797,941

PATTERN DETECTION IN TWO DIMENSIONAL SIGNALS

Peter G. Lloyd, 3 Apple Hill Road, Bale d'Urfé, Quebec, Canada H0X 3G5, and David A. Dadley, 7, Holmesdale Road, Sevenoaks, TN13 3XL, England

Filed Jul. 1, 1986, Ser. No. 880,995
Claims priority, application United Kingdom, Jul. 2, 1985, 8516867
Int. Cl.[4] G06K 9/64
U.S. Cl. 382—27 14 Claims



1. A method of detecting a pattern feature in a two-dimensional electrical signal applied to a coordinate array of storage cells comprising, in a preliminary step, storing a plurality of template words, each template word being a plurality of storage cell address words, individual ones of which are associated with the individual values of one coordinate direction of the array and represent address values in the other coordinate direction, of cell locations coincident with a template, defining the pattern feature, mapped onto the array, and operationally applying a two-dimensional signal to said array of storage cells, extracting a stored template word addressing simultaneously a set of cells, one at each value of said one coordinate direction,

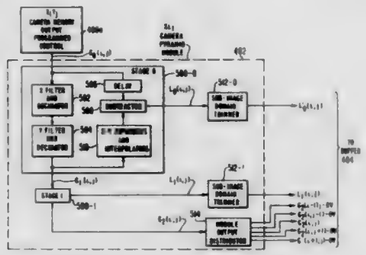
at address values of said other coordinate direction defined by the template word, reading the signal levels of the addressed cells, determining whether substantially all of the levels of the addressed cells are characteristic of the levels of a pattern feature template, and in response to a successful determination, providing an indication that the pattern feature has been detected in the two dimensional electrical signal.

4,797,942

PYRAMID PROCESSOR FOR BUILDING LARGE-AREA, HIGH-RESOLUTION IMAGE BY PARTS

Peter J. Burt, Princeton, N.J., assignor to General Electric, Princeton, N.J.

Filed Mar. 2, 1987, Ser. No. 20,818
Int. Cl.[4] G06K *9/36*
U.S. Cl. 382—41 **19 Claims**



1. A pyramid-processing method for deriving, substantially without the introduction of spurious spatial-frequency image artifacts, the spatial-frequency spectrum analysis of a single high-resolution image extending over the entirety of a relatively-large-area two dimensional field of view and comprised of pixels having a given pixel density; said deriving being done from an array of relatively-small-area, high resolution sub-images each of which also has said given pixel density and extends over a mutually exclusive two dimensional portion of said two dimensional field of view; said method comprising the steps of:

(a) pyramid-processing said array to derive a separate set of Laplacian-output pyramid levels $L'_0 \ldots L'_{K-1}$ lower than a certain pyramid level K, where K is a given positive integer, for each individual one of said sub-images, wherein Laplacian-output pyramid level L'_0 has said given pixel density and each Laplacian output pyramid level above L'_0 has a pixel density smaller than its immediately preceding Laplacian-output pyramid level;

(b) pyramid-processing said array to derive a single Gaussian-output pyramid level G_K for the entirety of said relatively large area, wherein said Gaussian-output pyramid level G_K has a pixel density which is smaller than the pixel density of said Laplacian-output pyramid level L'_{K-1}; and

(c) separately storing respective pixels of each separate set of Laplacian-output pyramid levels $L'_0 \ldots L'_{K-1}$ and respective pixels of said single Gaussian-output pyramid level G_K.

4,797,943

GRADATION DATA PROCESSING APPARATUS

Noboru Murayama, Machida, and Hiroshi Shimura, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Nov. 20, 1986, Ser. No. 933,021
Claims priority, application Japan, Nov. 29, 1985, 60-268927; Nov. 30, 1985, 60-270212
Int. Cl.[4] G06k *9/40*
U.S. Cl. 382—54 **13 Claims**

1. A device for converting gradation data representative of the density level of a picture element of an original scanned image into extended gradation data for use in reproducing the original image, said original image being divided into an array of adjacent picture elements and being line-scanned from top to bottom, said device comprising:

first means for extracting (a) binary gradation data D comprised of a digital word of predetermined length and representative of a selected picture element, (b) binary gradation data Du representative of a pucture element located above and adjacent to said selected picture element, and (c) binary gradation data D1 representative of a picture element located immediately to the side of said selected picture element;

second means for executing the following calculations in order to obtain a binary gradation date D' consisting of digital words having more bits than said gradation data D;

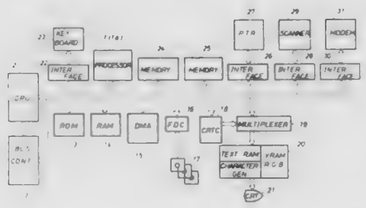
(a) $D'=2\cdot D+(Du+D1)$ when $T_2<\delta<T_1$;

(b) $D'=D_{max}$ when $T_1<\delta$; and

(c) $D'=D_{min}$ when $\delta<T_2$;

wherein $\delta=2\cdot D-(Du+D1)$, T_1 is a first predetermined threshold value, T_2 is a second predetermined threshold value smaller than T_1, D_{max} is a predetermined maximum gradation value, and D_{min} is a predetermined minimum gradation value; and

third means for delivering the calculated binary gradation data D' representative of the density level of the selected picture element as extended gradation data for use in reproducing the original image.

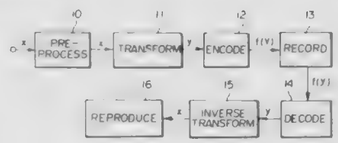


4,797,944

IMAGE SIGNAL ENCODING METHOD BY ORTHOGONAL TRANSFORMATION

Nobuyuki Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 27, 1987, Ser. No. 7,143
Claims priority, application Japan, Jan. 27, 1986, 61-15265; Mar. 17, 1986, 61-58803
Int. Cl.[4] G06K *9/44*
U.S. Cl. 382—56 **7 Claims**



1. A method of image signal encoding by orthogonal transformation wherein the orthogonal transformation is conducted on each block of two-dimensional image signals on the basis of a predetermined orthogonal function, and the transformed signals obtained by the orthogonal transformation are put side by side in the order of sequency of said orthogonal function in the block and are respectively encoded with an intrinsic code length,

wherein the improvement comprises the steps of:

(i) predicting code length allocation suitable for a block adjacent to said block, which has already been subjected to said encoding, on the basis of encoded signals and code length allocation in said block already subjected to said encoding, and

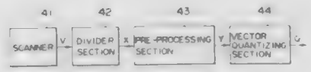
(ii) encoding respective transformed signals in said adjacent block in accordance with said predicted code length allocation.

4,797,945

IMAGE DATA CODING APPARATUS

Yoshiyuki Suzaki, Kawasaki; Masahiro Funada, Yokohama; Mamoru Sato, Tokyo, and Yukio Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1986, Ser. No. 940,421
Claims priority, application Japan, Dec. 13, 1985, 60-281630; Dec. 13, 1985, 60-281640; Dec. 13, 1985, 60-281641
Int. Cl.[4] G06K *9/36, 9/46*
U.S. Cl. 382—56 **26 Claims**



1. An image data coding method comprising the steps of:

dividing an image having gray levels into a plurality of blocks, each consisting of a plurality of pixels;

detecting a density and the presence/absence of an edge in each block; and

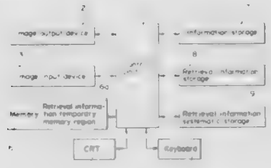
encoding an image of each block in accordance with the detected density and the presence/absence of the edge in the image.

4,797,946

INFORMATION RECORD/RETRIEVAL DEVICE

Yuji Katsuta, Yamatokoriyama; Sumio Kita; Sakuharu Takano, both of Nara, and Hiroshi Kamada, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 11, 1986, Ser. No. 940,411
Claims priority, application Japan, Dec. 11, 1985, 60-278451; Dec. 11, 1985, 60-190678[U]
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—61 **4 Claims**



1. An information record/retrieval device for registering stored information according to retrieval data associated therewith and retrieving desired information by searching the retrieval data register in response to input retrieval data, comprising:

image input means for optically inputting information to be stored and coded retrieval data associated therewith;

information storage means for storing said information;

retrieval storage means for storing retrieval data associated with information stored in said information storage means;

retrieval systematic storage means for storing retrieval data corresponding to coded retrieval data;

image output means for outputting desired information;

display means for displaying input information and output information;

keyboard means for inputting retrieval data and commands for executing a registration operation or a retrieval operation;

memory means for receiving information from said image input means during said registration operation and from said information storage means during said retrieval operation, and for receiving retrieval data from said retrieval systematic storage means in response to the input of coded retrieval data during said registration operation and from said retrieval storage means during said retrieval operation; and

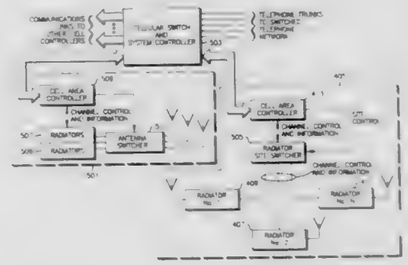
central processing unit (CPU) control means for matching stored information with input retrieval data during said retrieval operation and for transferring matched information from said information storage means to said memory means, controlling the output of matched information on said image output means from said memory means, and controlling the operation of information transfer among said image input means, memory means, information storage, retrieval storage, and retrieval systematic storage means.

4,797,947

MICROCELLULAR COMMUNICATIONS SYSTEM USING MACRODIVERSITY

Gerald P. Labedz, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1987, Ser. No. 44,920
Int. Cl.[4] H04M *11/00*; H04Q *7/00*
U.S. Cl. 455—33 **39 Claims**



1. A communications system having a plurality of electromagnetic coverage areas created by electromagnetic radiators each radiator controlled by an area controller and serving a plurality of remote stations within each coverage area, comprising:

a first radiator transmitting a first electromagnetic signal during at least a first one of a plurality of time slots on a first electromagnetic frequency into at least a first portion of the electromagnetic coverage area;

a second radiator transmitting a second electromagnetic signal during at least a second one of said plurality of time slots on said first electromagnetic frequency into at least a first portion of the electromagnetic coverage area;

means at a remote station for selecting between said first and second electromagnetic signals and communicating said selection to the area controller; and

means at the area controller for selecting, in response to said communication of said selection between said first and second electromagnetic signals, a third one of said plurality of time slots on said first electromagnetic frequency for transmission of at least a portion of a first message to said remote station.

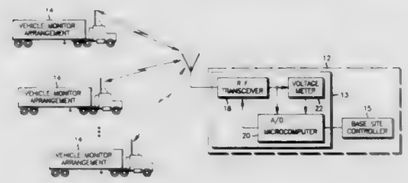
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4,797,948

VEHICLE IDENTIFICATION TECHNIQUE FOR VEHICLE MONITORING SYSTEM EMPLOYING RF COMMUNICATION

Gary W. Milliorn, and Steven D. Bromley, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 22, 1987, Ser. No. 76,580
Int. Cl.[4] H04B 1/00; G08B 5/22
U.S. Cl. 455—54 16 Claims



1. In a communication system having a communication channel for transmitting data between a base station and a plurality of mobile units, wherein each unit has a unique identification (ID) code and wherein transmissions from each unit to the base station include the unit's ID code, a method for identifying which units are within communication proximity of the base station, comprising the steps of:

(a) transmitting a range message, including a low ID code parameter and a high ID code parameter, from the base station over the channel to elicit a response from any mobile units having an ID code between said low and high ID code parameters;

(b) determining whether any of said units transmitted a message in response to said range message; and

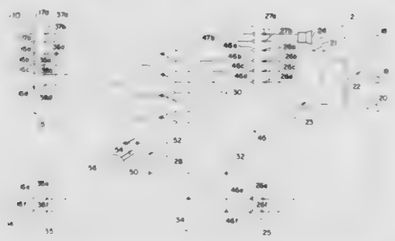
(c) storing, at the base unit and responsive to said transmission by any of said units, a signal representative of the respective ID code parameter assigned to such transmitting units.

4,797,949

SUPERVISORY CONTROL OF MOBILE TELECOMMUNICATIONS

George M. Stites, III, Hopatcong, N.J., assignor to G. M. Holding Corp., Sparta, N.J.

Filed May 1, 1986, Ser. No. 857,943
Int. Cl.[4] H04B 1/06, 1/10
U.S. Cl. 455—230 11 Claims



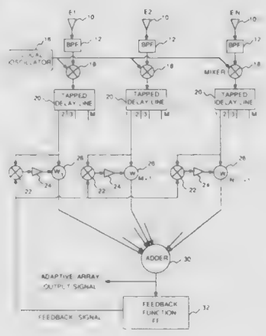
1. A method of providing supervision to prevent operator-induced disruption of a telecommunication system including a mobile unit having operator-adjustable controls for altering operating parameters of said mobile unit which control receipt of messages by said mobile unit, the method comprising the steps of disabling said operator adjustable controls and fixing said operating parameters of said mobile unit which control receipt of messages by said mobile unit to maintain the mobile unit in operation for receipt of messages despite attempted adjustment of said operator-adjustable controls.

4,797,950

MULTIPATH REDUCTION SYSTEM

Kenneth Rilling, 1190 Crestline Dr., Cupertino, Calif. 95014

Continuation-in-part of Ser. No. 928,839, Nov. 10, 1986, Pat. No. 4,736,460. This application Oct. 2, 1987, Ser. No. 103,939
Int. Cl.[4] H04B 7/08
U.S. Cl. 455—276 22 Claims



1. A signal processing system for reducing distortion effects in communication receivers due to multipath, said system comprising:

adaptive array means having:

at least two antenna elements;

weighting means coupled to the antenna elements for selectively weighting the received signals by a selected weight factor; and

summing means for adding together the signals from the weighting means for generating an adaptive array output signal;

envelope detector means coupled to receive said adaptive array output signal for generating the amplitude envelope of said adaptive array output signal; and

first multiplier means coupled to receive the envelope detector means output signal and coupled to receive the adaptive array output signal for generating a feedback signal;

said adaptive array means also including a second multiplier means for each weighting means coupled to receive the feedback signal and coupled to receive the corresponding weighting means input signal, the output signal of which is coupled to a corresponding integrator means whose output signal is coupled to the corresponding weighting means for automatically redefining the weight factors.

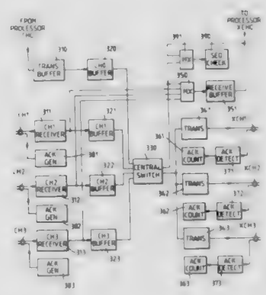
4,797,951

PARALLEL OPTICAL DATA TRANSMISSION SYSTEM

Colin M. Duxbury, Woodley, and Raymond Ystes, Manchester, both of Great Britain, assignors to International Computers Limited, London, England

Filed Oct. 20, 1986, Ser. No. 921,216
Claims priority, application United Kingdom, Nov. 23, 1985, 8528890
Int. Cl.[4] H04B 9/00
U.S. Cl. 455—608 9 Claims

1. Data transmission apparatus comprising a transmitter, a receiver and a plurality of optical fibres interconnecting the transmitter and receiver, the transmitter comprising means for transmitting messages as a sequence of groups of data bits, the bits of each group being transmitted in parallel over the fibres, each fibre carrying a signal encoded by means of a self-clocking code and means for preceding each message by a serial start pattern transmitted on each fibre, and the receiver comprising a plurality of decoder circuits for extracting separate clock and data signals from respective ones of said fibres, a plurality of start pattern detection circuits for independently detecting start patterns on respective ones of said fibres, a plurality of data buffers into which extracted data signals comprising the message body are clocked asynchronously by respective ones of said clock signals, and means for reading out the contents of all the buffers in parallel when start patterns have been detected on all the fibres.



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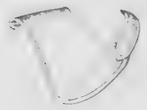
299,280
COSTUME
Sam B. Williams, P.O. Box 200, Walled Lake, Mich. 48088
Filed Feb. 13, 1986, Ser. No. 833,800
Term of patent 14 years
U.S. Cl. D2—30



299,281
COMBINATION SHIRT AND BOW TIE
Trevor I. Baptiste, 383 Grand Ave., Brooklyn, N.Y. 11238
Continuation-in-part of Ser. No. 739,814, May 31, 1985, Pat. No. Des. 295,227. This application Nov. 2, 1987, Ser. No. 115,187
Term of patent 14 years
U.S. Cl. D2—209



299,282
SHOULDER BIB
Brandi Winans, 1337 48th Ave., NE., St. Petersburg, Fla. 33703
Filed Mar. 24, 1986, Ser. No. 845,756
Term of patent 14 years
U.S. Cl. D2—226



299,283
SHOE UPPER
Lawrence Selbiger, Portland, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Feb. 17, 1988, Ser. No. 156,551
Term of patent 14 years
U.S. Cl. D2—314



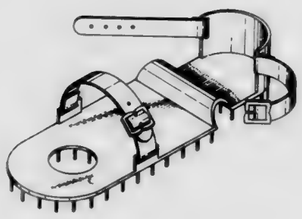


299,284
ATHLETIC SHOE UPPER
Paul D. Brown, Hingham, and Juan A. Diaz, Weymouth, both of Mass., assignors to Reebok Group International Ltd., Canton, Mass.
Filed Dec. 2, 1986, Ser. No. 937,128
Term of patent 14 years
U.S. Cl. D2—314



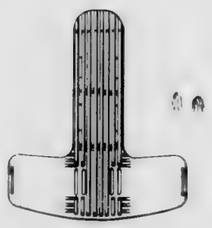
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299,285
ICE GRIPPING SHOE ATTACHMENT
Derrick Watson, P.O. Box 27, Rison, Ark. 71665
Filed Jan. 23, 1986, Ser. No. 821,815
Term of patent 14 years
U.S. Cl. D2—317

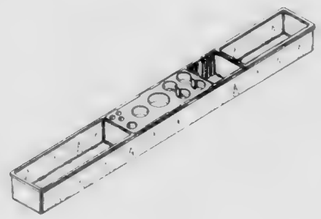


299,286
DIVER'S BUOYANCY COMPENSATOR BACKPACK SUPPORT
Mark Faulconer, Costa Mesa, and Scott E. Greatrake, Fountain Valley, both of Calif., assignors to U.S. Divers Company, Inc., Santa Ana, Calif.
Filed Aug. 26, 1985, Ser. No. 769,126
Term of patent 14 years
U.S. Cl. D3—32

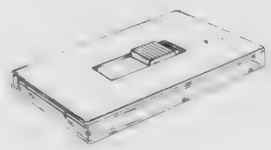




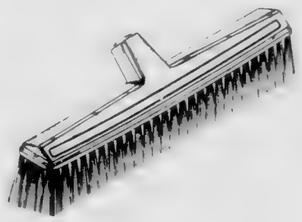
299,287
TRUCK CAB STORAGE COMPARTMENT
Bernard H. Gertler, 117 35th St., Newport Beach, Calif. 92663
Filed Sep. 26, 1985, Ser. No. 780,175
Term of patent 14 years
U.S. Cl. D3—40



299,288
BUSINESS CARD DISPENSER
David A. Stafford, 2751 N. Harbor Dr., Maineville, Ohio 45039
Filed Dec. 9, 1985, Ser. No. 806,372
Term of patent 14 years
U.S. Cl. D3—56



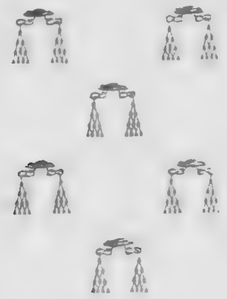
299,289
PUSH BROOM
Robert W. Machacek, Villa Park, Ill., assignor to The Drackett Company, Cincinnati, Ohio
Filed Apr. 22, 1986, Ser. No. 857,566
Term of patent 14 years
U.S. Cl. D4—134



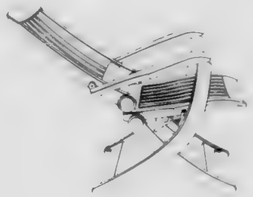
299,290
FLORIST FOIL OR SIMILAR ARTICLE
Dona L. Abbott, Boulder, Colo., assignor to Highland Supply Corporation, Highland, Ill.
Filed Aug. 9, 1985, Ser. No. 764,087
Term of patent 14 years
U.S. Cl. D5—46



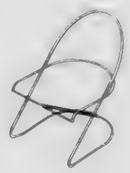
299,291
TEXTILE FABRIC
Giancarlo Utili, Via Faentina Nord, 27, 48026 Russi (Ravenna), Italy
Filed Nov. 6, 1985, Ser. No. 804,001
Term of patent 14 years
U.S. Cl. D5—61



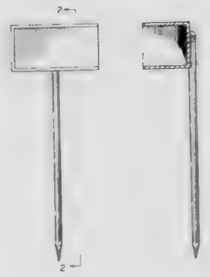
299,292
ADJUSTABLE ARMCHAIR
Raymond Grosfilliex, Oyonnax, France, assignor to Grosfilliex S.A.R.L., Oyonnax, France
Filed Mar. 28, 1986, Ser. No. 847,047
Claims priority, application France, Sep. 30, 1985, 854546
Term of patent 14 years
U.S. Cl. D6—367



299,293
CHAIR FRAME
Jonathan M. Nelson, 36 Butler St., Kingston, Pa. 18704
Filed Apr. 9, 1986, Ser. No. 851,356
Term of patent 14 years
U.S. Cl. D6—372

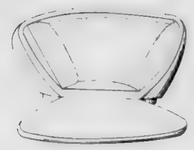


299,294
GARDEN TELEPHONE STAND
Arduino Paci, Box 360, R.D. #1, Rices Landing, Pa. 14357
Filed Jan. 6, 1986, Ser. No. 816,223
Term of patent 14 years
U.S. Cl. D6—417

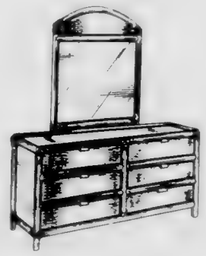


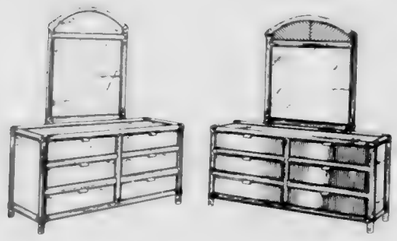
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299,295
CHEST
Patrick Diehl, 17 Rue des Dames, 10300 Sainte-Savine, France
Filed Mar. 31, 1986, Ser. No. 846,345
Claims priority, application France, Oct. 4, 1985, 85 4627
Term of patent 14 years
U.S. Cl. D6—434



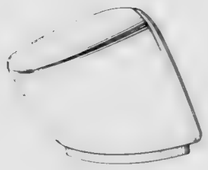
299,296
COMBINED DRESSER AND MIRROR
Bruce C. Lafko, 5126 Alta Canyada Blvd., La Canada, Calif. 91011
Filed May 5, 1986, Ser. No. 859,763
Term of patent 14 years
U.S. Cl. D6—444

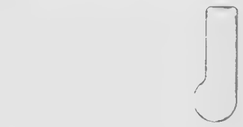






299,297
PRONE/SUPINE PILLOW
Howard Prager, 140 Wagon Wheel Rd., Sparta, N.J. 07871
Filed Jul. 14, 1986, Ser. No. 885,277
Term of patent 14 years
U.S. Cl. D6—601



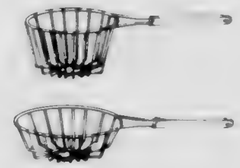




299,298
WINE GLASS OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510, Arques, France
Filed Jan. 8, 1986, Ser. No. 817,243
Term of patent 14 years
U.S. Cl. D7—11



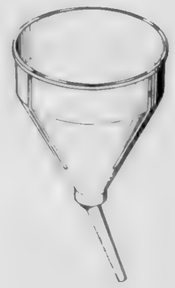
299,300
TORTILLA BASKET FRYER
Gunnar Lie, 6306 215th St. SW., Mountlake Terrace, Wash. 98043
Filed Feb. 19, 1986, Ser. No. 834,464
Term of patent 14 years
U.S. Cl. D7—43



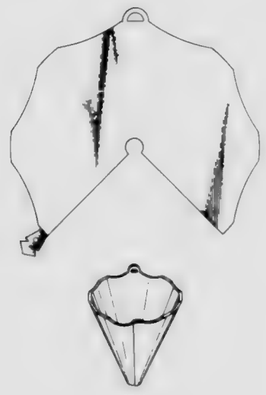
299,299
STEMMED WINE GLASS OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute 62510, Arques, France
Filed Nov. 13, 1985, Ser. No. 804,992
The portion of the term of this patent subsequent to Jan. 3, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—13



299,301
FUNNEL
Steven E. Wirth, Bloomington, Minn., assignor to The Worthington Trust, Minneapolis, Minn.
Filed Jan. 10, 1986, Ser. No. 817,600
Term of patent 14 years
U.S. Cl. D7—68



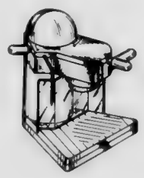
299,302
DISPOSABLE FUNNEL
Stephen W. Gray, 8835 Tobias Ave. #27, Panorama City, Calif. 91402
Filed Aug. 14, 1986, Ser. No. 896,251
Term of patent 14 years
U.S. Cl. D7—68



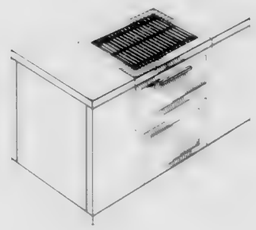
299,303
COMBINATION KITCHEN TOOL
Lucille C. Strobel, and Gerald E. Strobel, both of 120 Ocean Cove Dr., Jupiter, Fla. 33477
Filed May 1, 1986, Ser. No. 858,517
Term of patent 14 years
U.S. Cl. D7—104



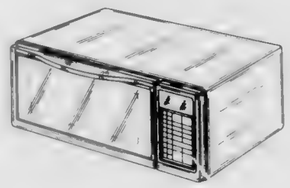
299,304
ESPRESSO MACHINE
Michael Kalchner, Offenbach am Main, and Manfred Lang, Wuppertal, both of Fed. Rep. of Germany, assignors to Rowenta-Werke GmbH, Fed. Rep. of Germany
Filed Mar. 12, 1986, Ser. No. 842,874
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1985, 5MR10625
Term of patent 14 years
U.S. Cl. D7—309



299,305
BARBEQUE GRILL
Jack B. Vollborn, 1841 E. Palmcroft Dr., Tempe, Ariz. 85282
Filed Mar. 6, 1986, Ser. No. 842,005
Term of patent 14 years
U.S. Cl. D7—332



299,306
MICROWAVE OVEN
Kenzo Yoshida, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 20, 1986, Ser. No. 922,111
Claims priority, application Japan, Apr. 22, 1986, 61-15406
Term of patent 14 years
U.S. Cl. D7—351

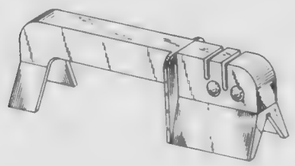




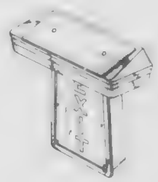
299,307
TOMATO PLANT SUPPORT TIE FOR ATTACHMENT TO A STAKE
Fred D. Finnigan, 4501 W. 23rd, Little Rock, Ark. 72204
Filed Nov. 7, 1986, Ser. No. 928,117
Term of patent 14 years
U.S. Cl. D8—1



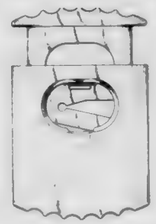
299,308
KNIFE SHARPENER
William A. Prindle, Santa Barbara, Calif., assignor to Corning Glass Works, Corning, N.Y.
Filed Sep. 28, 1987, Ser. No. 101,769
Term of patent 14 years
U.S. Cl. D8—93



299,309
SELF-SANITIZING DOOR HANDLE
Richard L. Brookes, 841 W. Boston, Detroit, Mich. 48202
Filed Feb. 7, 1986, Ser. No. 827,047
Term of patent 14 years
U.S. Cl. D8—300

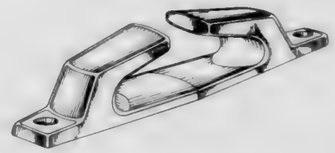


299,310
CORD LOCK
Gerhard Fildan, D-7250 Leonberg, Fed. Rep. of Germany
Filed May 16, 1986, Ser. No. 864,956
Term of patent 14 years
U.S. Cl. D8—356



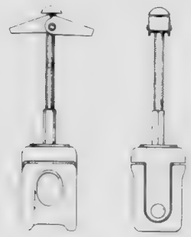


299,311
CHOCK FOR BOATS
Warwick M. Whitley, II, Lynn Haven, Fla., assignor to Attwood Corporation, Lowell, Mich.
Filed Apr. 21, 1986, Ser. No. 857,424
Term of patent 14 years
U.S. Cl. D8—356

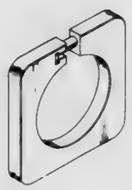




299,312
COMBINED HOOK AND BOLT THEREFOR
William B. Lacasse, Royal Oak, Mich., assignor to Ernest Eugene Green, Sterling Heights, Mich., a part interest
Filed Jul. 14, 1986, Ser. No. 885,545
Term of patent 14 years
U.S. Cl. D8—367



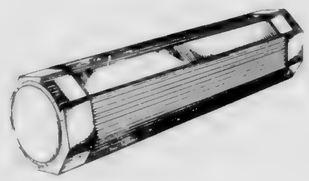
299,313
SHOWER CURTAIN HOLDER OR SIMILAR ARTICLE
Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Jan. 27, 1986, Ser. No. 822,546
Term of patent 14 years
U.S. Cl. D8—373



299,314
BOTTLE OR SIMILAR ARTICLE
Louis B. LeFevre, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.
Filed Dec. 23, 1985, Ser. No. 812,695
The portion of the term of this patent subsequent to May 3, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—370



299,315
PACKAGING CONTAINER
Thomas J. Kasanda, Ottawa, Canada, assignor to Keepsakes Time Capsules, Inc., Ottawa, Canada
Filed Aug. 19, 1985, Ser. No. 766,789
Claims priority, application Canada, Jun. 19, 1985, 19-06-85-6
Term of patent 14 years
U.S. Cl. D9—398



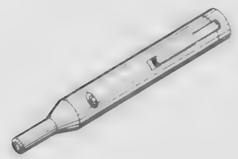
299,316
CLOCK
Dana L. Vickery, Gardner, Mass., assignor to Simplex Time Recorder Co., Gardner, Mass.
Filed Jan. 10, 1986, Ser. No. 817,710
Term of patent 14 years
U.S. Cl. D10—15



299,317
LEVEL
Dennis F. Dahle, 1127 SW. Spruce St., Palm City, Fla. 33490
Filed Apr. 14, 1986, Ser. No. 852,497
Term of patent 14 years
U.S. Cl. D10—69



299,318
ALTERNATING CURRENT SENSING DEVICE
John A. Chiang, 113 Belvedere Ct., Walnut Creet, Calif. 94598
Filed Jul. 25, 1986, Ser. No. 889,480
Term of patent 14 years
U.S. Cl. D10—78

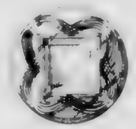


299,319
VASE OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute 62510, Arques, France
Filed Apr. 24, 1987, Ser. No. 42,005
Term of patent 14 years
U.S. Cl. D11—153



299,320
VASE OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510, Arques, France
Filed Apr. 24, 1987, Ser. No. 41,914
Term of patent 14 years
U.S. Cl. D11—153



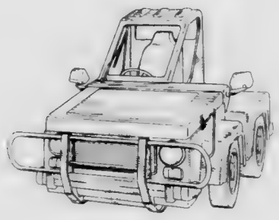


299,321
INSECT FIGURINE
Leal Smith, 4931 E. 40th, Indianapolis, Ind. 46226
Division of Ser. No. 4,696, Jan. 20, 1987, Pat. No. Des. 295,616, which is a division of Ser. No. 684,362, Dec. 20, 1984, Pat. No. Des. 289,270. This application Jan. 13, 1988, Ser. No. 143,152
Term of patent 14 years
U.S. Cl. D11—158

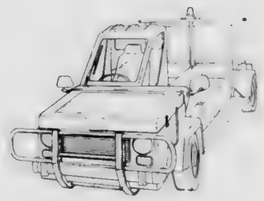


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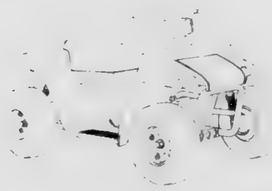
299,322
TOWING VEHICLE
Robert Page, 71 Dwyer Avenue, Little Bay, N.S.W. 2036, Australia
Filed May 9, 1986, Ser. No. 862,402
Term of patent 14 years
U.S. Cl. D12—14



299,323
TOWING VEHICLE
Robert Page, 71 Dwyer Avenue, Little Bay, N.S.W. 2036, Australia
Filed May 9, 1986, Ser. No. 862,403
Term of patent 14 years
U.S. Cl. D12—14



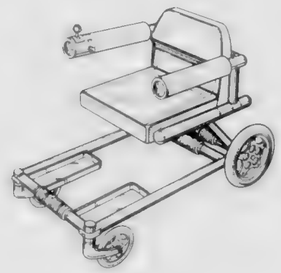
299,324
FOUR WHEELED VEHICLE
Yasuhiro Oba, Iruma; Mitsuru Yamamoto, Fujimi, and Akira Watanabe, Setagaya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 7, 1986, Ser. No. 850,378
Claims priority, application Japan, Oct. 14, 1985, 60-42939
Term of patent 14 years
U.S. Cl. D12—86



299,325
AUTOMOBILE
Toshi Oshika, Wako; Kazuhiro Ichinose, Shinjuku, and Yukio Kurosu, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 5, 1985, Ser. No. 741,673
Claims priority, application Japan, Jan. 23, 1985, 60-1947
Term of patent 14 years
U.S. Cl. D12—92



299,326
WHEELCHAIR
Lawrence A. Bernstein, 6456 Surfside Way, Malibu, Calif. 90265
Filed Oct. 30, 1986, Ser. No. 925,136
Term of patent 14 years
U.S. Cl. D12—131



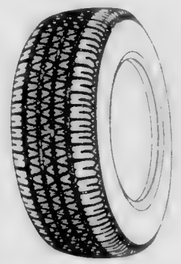
299,327
VEHICLE TIRE
Glynne D. Miller, Pickerington, Ohio, assignor to Kenda Rubber Industrial Co., Ltd., Yuanlin, Taiwan
Filed Mar. 31, 1986, Ser. No. 847,566
Term of patent 14 years
U.S. Cl. D12—140



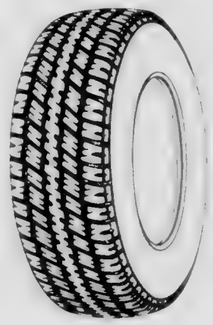
299,328
TIRE
William W. Lyle, Massillon, and Donald J. Sladky, Cuyahoga Falls, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jul. 21, 1986, Ser. No. 887,681
Term of patent 14 years
U.S. Cl. D12—146



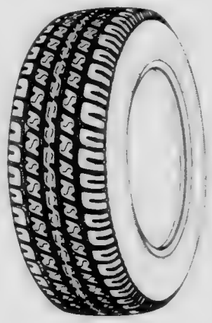
299,329
TIRE
Bill J. Wallet, Marshallville, and Ronald I. Clunk, Monroe Falls, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Oct. 20, 1986, Ser. No. 921,017
Term of patent 14 years
U.S. Cl. D12—146



299,330
TIRE
Bill J. Wallet, Marshallville, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jun. 12, 1986, Ser. No. 873,639
Term of patent 14 years
U.S. Cl. D12—147

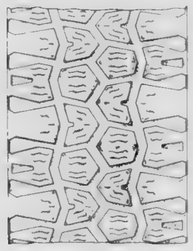


299,331
TIRE
Bill J. Wallet, Marshallville, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jun. 12, 1986, Ser. No. 873,563
Term of patent 14 years
U.S. Cl. D12—147

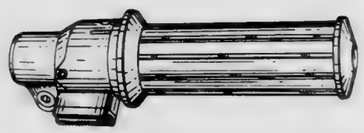


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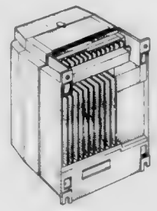
299,332
TIRE TREAD SURFACE PATTERN
Fredinando Carretta, Santo Andre Sao Paulo, Brazil, assignor to Pirelli S.A. Companhia Industrial Brasileira, Sao Paulo, Brazil
Filed Aug. 30, 1985, Ser. No. 771,067
Claims priority, application Brazil, Mar. 5, 1985, MI 4500176
Term of patent 14 years
U.S. Cl. D12—147



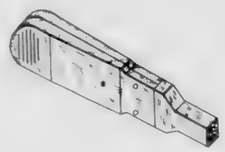
299,333
DERAILLEUR ACTUATING HANDLE UNIT
Maurice E. L. Cone, Feucherolles, France, assignor to Huret et ses Fils, S.A. of Chepy, Fesquieres en Vimeu, France
Filed Jun. 27, 1985, Ser. No. 749,874
Claims priority, application France, Dec. 27, 1984, 84 5832
Term of patent 14 years
U.S. Cl. D12—179



299,334
POWER INVERTER
Nobuyuki Kondo; Yoshinori Abe, both of Kamakura; Hideaki Tata, Nagoya; Eiji Ito, Nagoya; Katsuhiko Chonan, Nagoya, and Hideo Iizuma, Nagoya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 3, 1985, Ser. No. 740,323
Claims priority, application Japan, Dec. 3, 1984, 59-49660; Dec. 3, 1984, 59-49662; Dec. 3, 1984, 59-49663; Dec. 3, 1984, 59-49664
Term of patent 14 years
U.S. Cl. D13—4



299,335
MICROPHONE
Christopher D. Wiegel, Minneapolis, Minn., assignor to Telex Communications, Inc., Minneapolis, Minn.
Filed Nov. 24, 1986, Ser. No. 934,127
Term of patent 14 years
U.S. Cl. D14—225



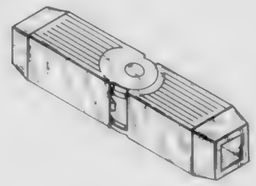
299,336
HAND MICROPHONE FOR TRANSCRIBER
Akira Osanai, Hachioji; Toshikazu Kato, Hino, and Yasuo Hattori, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan
Filed Sep. 26, 1986, Ser. No. 912,811
Term of patent 14 years
U.S. Cl. D14—225



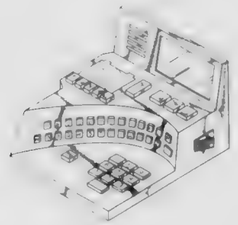
299,337
HEADSET
Christopher D. Wiegel, Minneapolis, Minn., assignor to Telex Communications, Inc., Minneapolis, Minn.
Filed Nov. 24, 1986, Ser. No. 934,123
Term of patent 14 years
U.S. Cl. D14—206



299,338
MICROPHONE BOOM HINGE
Christopher D. Wiegel, Minneapolis, Minn., assignor to Telex Communications, Inc., Minneapolis, Minn.
Filed Nov. 24, 1986, Ser. No. 934,129
Term of patent 14 years
U.S. Cl. D14—229

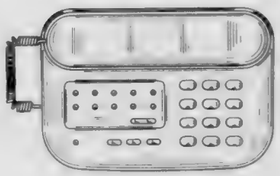


299,339
DIGITAL DIRECTORY
Joseph E. Wilson, 1106 Transcontinental Dr., Metarie, La. 70001
Filed May 22, 1985, Ser. No. 736,957
Term of patent 14 years
U.S. Cl. D14—241

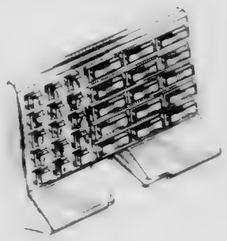


299,340
TELEPHONE
Nobuyuki Tani, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 17, 1987, Ser. No. 121,742
Claims priority, application Japan, May 27, 1987, 62-21031
Term of patent 14 years
U.S. Cl. D14—150



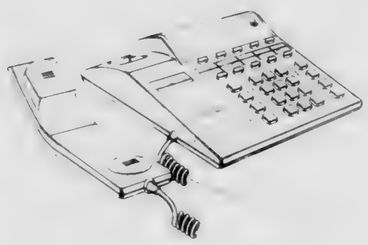


299,341
HOUSING FOR A KEY PAD, CARRIER SELECT AND CREDIT CARD BEZEL FOR COIN TELEPHONES
Gerald J. Yachabach, Lakeland, Fla., assignor to Protel, Inc., Lakeland, Fla.
Filed May 8, 1987, Ser. No. 47,068
Term of patent 14 years
U.S. Cl. D14—247

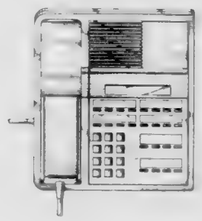


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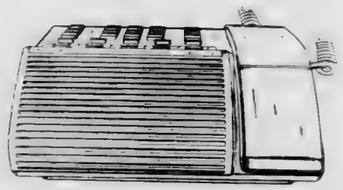
299,342
HANDSET TRANSCEIVER AND TELEPHONE DIALER STAND WITH DISPLAY PANEL
Karl Buchin, Berlin, Fed. Rep. of Germany, assignor to Krone AG, Berlin, Fed. Rep. of Germany
Filed Apr. 7, 1987, Ser. No. 35,306
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1986, 95-MR5668NZ
Term of patent 14 years
U.S. Cl. D14—151



299,343
TELEPHONE COMMUNICATION TERMINAL SET
Georg Friedrich, Kassel, Fed. Rep. of Germany, assignor to Deutsche Telephonwerke und Kabelindustrie Aktiengesellschaft, Berlin, Fed. Rep. of Germany
Filed May 27, 1987, Ser. No. 54,663
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1986, 95MR5700NZ
Term of patent 14 years
U.S. Cl. D14—151

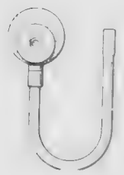




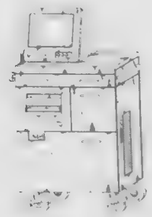


299,344
FOAM EAR CUSHION FOR TELEPHONE HEADSET OR SIMILAR ARTICLE
Toni R. Stevens, Felton, Calif., assignor to ACS Communications, Inc., Scotts Valley, Calif.
Filed Oct. 1, 1986, Ser. No. 913,961
Term of patent 14 years
U.S. Cl. D14—249

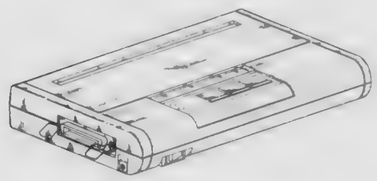




299,345
AUTOMOTIVE TEST TERMINAL
Hunter T. Foy, and Randall W. Martin, both of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jan. 17, 1986, Ser. No. 819,662
Term of patent 14 years
U.S. Cl. D14—102



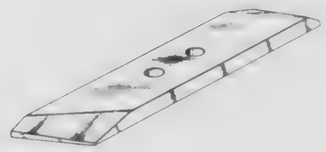
299,346
PRINTER FOR ELECTRONIC COMPUTER
David A. Lehman, Dayton, and Michael A. Walters, Kettering, both of Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 24, 1986, Ser. No. 857,591
Term of patent 14 years
U.S. Cl. D14—111



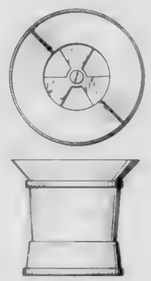
299,347
DISPLAY TERMINAL
Christian C. Landry, and Robert T. Faranda, both of Acton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Oct. 29, 1985, Ser. No. 792,703
Term of patent 14 years
U.S. Cl. D14—113



299,348
TURNABLE AND REPLACEABLE MEMBER FOR PLOWSHARE
Olav Nja, Kvernaland, Norway, assignor to Kverneland A/S, Kvernaland, Norway
Filed Jan. 3, 1986, Ser. No. 816,115
Claims priority, application Norway, Jul. 8, 1985, 66445
Term of patent 14 years
U.S. Cl. D15—11



299,349
HOUSING FOR LEAF SHREDDER
Joseph M. Canning, Cohasset, Mass., assignor to Armatron International, Inc., Mass.
Filed Dec. 29, 1986, Ser. No. 947,483
Term of patent 14 years
U.S. Cl. D15—28



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299,350
OVERCAP POINT FOR TILLAGE TOOL
Delmar D. Edmisson, Guymon, Okla., assignor to Adams Hard-Facing Company, Inc., Guymon, Okla.
Filed May 15, 1986, Ser. No. 863,540
Term of patent 14 years
U.S. Cl. D15—29





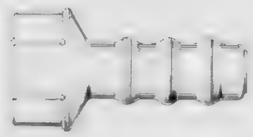
299,351
SHANK TIP INSERT FOR TILLAGE TOOL
Delmar D. Edmisson, Guymon, Okla., assignor to Adams Hard-Facing Company, Inc., Guymon, Okla.
Filed May 23, 1986, Ser. No. 867,289
Term of patent 14 years
U.S. Cl. D15—29

299,352
TORCH TIP
Richard A. Spaulding, Hanover, and Pearl A. Grant, Grantham, both of N.H., assignors to Thermal Dynamics Corporation, West Lebanon, N.H.
Filed Jun. 11, 1985, Ser. No. 742,291
Term of patent 14 years
U.S. Cl. D15—144



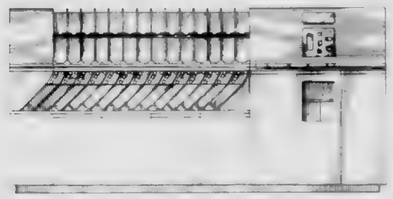


299,353
HANDLE FOR ROLL OF PLASTIC FILM
Joseph Goldstein, 1700 Palisades Dr., Pacific Palisades, Calif. 90272
Continuation-in-part of Ser. No. 913,218, Sep. 29, 1986. This application Oct. 23, 1986, Ser. No. 922,547
Term of patent 14 years
U.S. Cl. D15—145



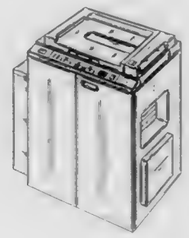


299,354
BILL SORTING MACHINE
Ugo Panini, corso Cosenza 18, Torino, Italy 10135
Filed Mar. 18, 1986, Ser. No. 844,999
Term of patent 14 years
U.S. Cl. D15—199





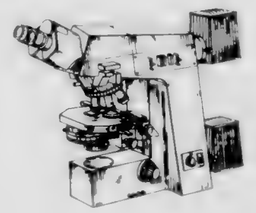
299,355
COPYING MACHINE
Mikio Kosako, and Hiroshi Nishibori, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Aug. 7, 1986, Ser. No. 894,355
Claims priority, application Japan, Feb. 7, 1986, 61-4238
Term of patent 14 years
U.S. Cl. D18—39



299,356
EYEGLASS RETAINER
Todd G. Lyons, Dayton, Ohio, assignor to Powder Bles U.S.A. Inc., West Carrollton, Ohio
Filed Aug. 28, 1986, Ser. No. 901,509
Term of patent 14 years
U.S. Cl. D16—123



299,357
MICROSCOPE
Rolf Garnich, Esslingen, and Hermann Leurs, Vluyn, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany
Filed Jul. 26, 1985, Ser. No. 759,146
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1985, MR 770
Term of patent 14 years
U.S. Cl. D16—131

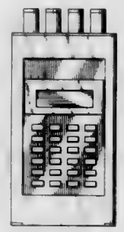


299,358
TYPEWRITER
Akira Tsukada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 22, 1986, Ser. No. 899,498
Claims priority, application Japan, Feb. 25, 1986, 61-6906
Term of patent 14 years
U.S. Cl. D18—1



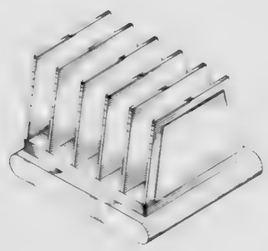
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299,359
PORTABLE DESK TOOL KIT
Ann S. Cain, Cincinnati, Ohio, assignor to 'Totes', Incorporated, Loveland, Ohio
Filed Oct. 30, 1985, Ser. No. 792,738
Term of patent 14 years
U.S. Cl. D19—75

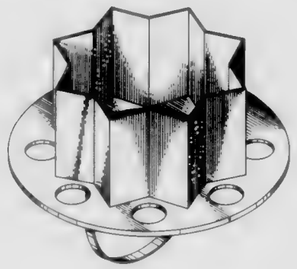


299,360
VERTICAL FILE OR THE LIKE
Gerald J. Klodt, Madison, Wis., assignor to W. T. Rogers Company, Madison, Wis.
Filed Oct. 1, 1985, Ser. No. 782,379
Term of patent 14 years
U.S. Cl. D19—90

299,361
LETTER SORTER
Arlan D. Lothe, Sun Prairie, Wis., assignor to Don Evans, Inc., DeForest, Wis.
Filed Dec. 23, 1985, Ser. No. 812,061
Term of patent 14 years
U.S. Cl. D19—90

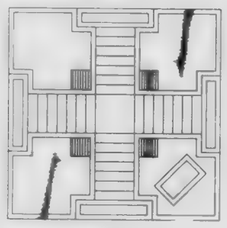


299,362
HEAD ATTACHED BALL CATCHER
Vincent Malfitano, 600 Duncan Ave. S., Clearwater, Fla. 33516
Filed Jun. 12, 1985, Ser. No. 744,037
Term of patent 14 years
U.S. Cl. D21—5

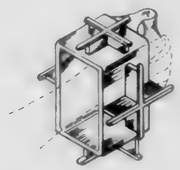


299,363
GAME BOARD
Steve Brooks, P.O. Box 307, 105 7th St., Grandfalls, Tex. 79742
Filed Apr. 28, 1986, Ser. No. 857,829
Term of patent 14 years
U.S. Cl. D21—31

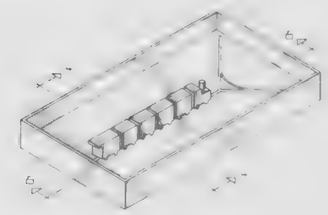
299,364
GAMEBOARD
William O. Jones, 3505 Brentwood, Odessa, Tex. 79762
Filed Apr. 18, 1986, Ser. No. 855,783
Term of patent 14 years
U.S. Cl. D21—34



299,365
HAND HOLDABLE AQUATIC EXERCISER
Patrick M. Greeley, 900 Avon St., Charlottesville, Va. 22901
Filed Mar. 3, 1986, Ser. No. 841,370
Term of patent 14 years
U.S. Cl. D21—191



299,366
PUZZLE
Merrill G. Arnold, 3201 Wenatchee Ave., Bakersfield, Calif. 93306
Filed Apr. 18, 1986, Ser. No. 855,785
Term of patent 14 years
U.S. Cl. D21—104



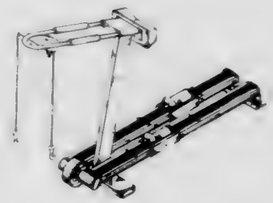
299,367
TOY VEHICLE
Ying K. Chan, Hong Kong, Hong Kong, assignor to Scientific Toys Limited, Chai Wan, Hong Kong
Filed Aug. 18, 1986, Ser. No. 897,669
Claims priority, application United Kingdom, Jun. 16, 1986, 1034804
Term of patent 14 years
U.S. Cl. D21—134



299,368
DOLL
Leslie D. Baker, 3522 N. Broadway St., #1 West, Chicago, Ill. 60657
Filed Nov. 27, 1985, Ser. No. 806,925
Term of patent 14 years
U.S. Cl. D21—171

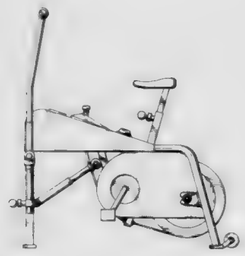


299,369
SKIING EXERCISER OR SIMILAR ARTICLE
David B. Smith, Bellevue; Larry J. Graf, Snohomish, and Randolph F. Miller, Mt. Vernon, all of Wash., assignors to Proser Incorporated, Bothell, Wash.
Filed Oct. 9, 1986, Ser. No. 915,645
Term of patent 14 years
U.S. Cl. D21—191

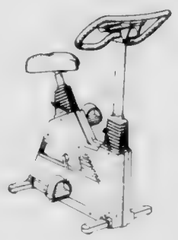


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299,370
EXERCISE CYCLE
Ronald A. McNeil, P.O. Box 14165, Tallahassee, Fla. 32317
Filed Nov. 5, 1985, Ser. No. 804,130
Term of patent 14 years
U.S. Cl. D21—194



299,371
BICYCLE EXERCISE
Sadaharu Tsuyama, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Osaka, Japan
Filed Feb. 18, 1986, Ser. No. 833,762
Term of patent 14 years
U.S. Cl. D21—194



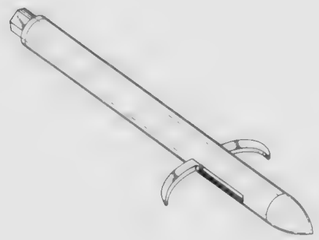
299,372
WEIGHT MASK
Jody Rhoden, and Troy Rhoden, both of P.O. Box 1165, Kerrville, Tex. 78029
Filed Aug. 8, 1986, Ser. No. 894,845
Term of patent 14 years
U.S. Cl. D21—196



299,373
EXERCISE WEIGHT
Matthew L. Parker, 1121 N. Olive Dr., West Hollywood, Calif. 90069, and Michael A. Hauser, 1347 N. Alta Vista Blvd., Los Angeles, Calif. 90046
Filed Jul. 14, 1986, Ser. No. 885,437
Term of patent 14 years
U.S. Cl. D21—196



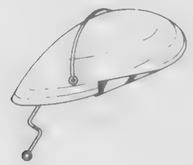
299,374
STAKE
Charlesworth C. Williams, M Division USS Savannah ADR-4 FPO, New York, N.Y. 23513
Filed Jul. 8, 1986, Ser. No. 883,090
Term of patent 14 years
U.S. Cl. D21—255



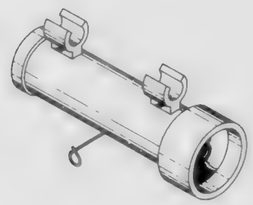
299,375
COMBINATION KNIFE
Kevin G. Pipes, P.O. Box 576, Sevierville, Tenn. 37862
Filed Apr. 16, 1986, Ser. No. 852,936
Term of patent 14 years
U.S. Cl. D22—118



299,376
FISHING LURE
Vernon R. Burrows, 548 Highway 50, Grand Junction, Colo. 81503
Filed Apr. 22, 1966, Ser. No. 857,443
Term of patent 14 years
U.S. Cl. D22—129



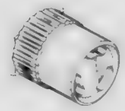
299,377
FISHING ROD LIGHT
Jose A. M. Garcia, 414 E. Hickory St., Midland, Tex. 79701
Filed Jun. 25, 1986, Ser. No. 878,477
Term of patent 14 years
U.S. Cl. D22—134



299,378
MINNOW BUCKET
Jeffery G. Martin, Kettering, Ohio, assignor to Frabill, Inc., Jackson, Wis.
Filed Apr. 29, 1986, Ser. No. 858,278
Term of patent 14 years
U.S. Cl. D22—136



299,379
AIR VALVE CLOSURE FOR INFLATABLE ARTICLE
Peter D. Haggerty, 3233 23rd Ave., W., Seattle, Wash. 98199, and Eric L. Rayl, 7625 S. Laurel St., Seattle, Wash. 98178
Filed May 2, 1985, Ser. No. 729,677
Term of patent 14 years
U.S. Cl. D23—249



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JANUARY, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
Beard, Lloyd R., 4,797,777, Cl. 361-115.000.

Aamodth, Kjell: *See*—
Laerdal, Tore; Aamodth, Kjell; and Eikeland, Harald, 4,797,104, Cl. 434-265.000.

AB SKF: *See*—
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AB Tetra Pak: *See*—
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Kovaleski, Joseph G.; and Arms, Thomas H., 4,796,966, Cl. 350-96.200.
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Davey, Raymond G.; and Dees, Martin, Jr., 4,797,314, Cl. 428-167.000.
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Dry, Alan G., 4,796,515, Cl. 92-137.000.
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Nimmersjo, Gunnar, 4,797,805, Cl. 364-481.000.
Ashcraft, William D., to Rockwell International Coporation. Digital image interface system. 4,797,746, Cl. 358-140.000.
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Pope, Kevin T.; and Trimble, David C., 4,797,877, Cl. 370-62.000.
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Brown, Robert L.; and Richeson, Roger W., 4,796,469, Cl. 73-49.200.

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Kletecka, George; Lai, John T.; and Son, Pyong-Nae, 4,797,438, Cl. 524-100.000.
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Westell, William E., 4,797,745, Cl. 358-169.000.

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Carlin, Frank J.; and Wafford, Terrell F., 4,796,928, Cl. 285-334.000.
Halbardier, Floyd A., deceased, 4,796,707, Cl. 166-387.000.
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Nguyen, Tuan A., 4,796,772, Cl. 220-66.000.

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Sanders, Josef; Reiff, Helmut; Balle , Gerhard; and Dieterich, Dieter, 4,797,427, Cl. 521-159.000.

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Cowles, Richard A.; Georgalas, Nick; and Shah, Shailesh C., 4,797,444, Cl. 524-501.000.
Frentrup, Mark A.; Gibson, Joseph R.; Carson, James E.; and Davis, Pauls, 4,797,229, Cl. 252-345.000.
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Duncan, Howard C., IV; Gray, R. William; and Battista, Joseph P., 4,797,855, Cl. 364-900.000.

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Haas, Peter; and Kogelnik, Hans-Joachim, 4,797,430, Cl. 521-164.000.
Holmwood, Graham; Regel, Erik; Jager, Gerhard; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,797,499, Cl. 549-559.000.
Knobs, Hans-Joachim; Steinbeck, Karl; Buchel, Karl H.; Brandes, Wilhelm; and Reinecke, Paul, 4,797,412, Cl. 514-383.000.
Kopp, Richard; Grogler, Gerhard; Hess, Heinrich; Schafer, Hermann; and Rasshofer, Werner, 4,797,320, Cl. 428-316.600.
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Sanders, Josef; Reiff, Helmut; Balle , Gerhard; and Dieterich, Dieter, 4,797,427, Cl. 521-159.000.
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Baynes, Dennis, to General Motors Corporation. Closure latch. 4,796,930, Cl. 292-58.000.

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Tschudi, Christoph; and Wittwer, Fitz, 4,797,587, Cl. 307-646.000.

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Beard, Lloyd R., to A. B. Chance Company. Electronic sectionalizer and mounting structure for switchgear. 4,797,777, Cl. 361-115.000.

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Vorzimmer, Mark A.; and Beardslee, John, 4,797,657, Cl. 340-541.000.

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Gundlach, Hans-Werner; and Jacob, Friedrich, 4,796,688, Cl. 164-457.000.

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Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and Belkin, Naum S., administrator, 4,797,494, Cl. 548-374.000.

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Bussey, Howard E., Jr.; Giacopelli, James N.; and Marcus, William S., 4,797,880, Cl. 370-60.000.
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Bendig, Thomas J.; and Bendig, Donna A., 4,796,416, Cl. 56-16.900.

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Nguyen, Van T.; Chateignon, Claude; and Deschamps, Georges, 4,797,582, Cl. 307-475.000.

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Seidel, Rudolf, 4,797,254, Cl. 422-49.000.

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Benuzzi, Gino, deceased; and Benuzzi, Lidia, Heiress-at-law, 4,796,500, Cl. 83-277.000.

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Funahashi, Masaya; Miyata, Teruhisa; Inoue, Kenichi; Miyake, Akira; and Norimatsu, Kohji, 4,797,321, Cl. 428-328.000.

Inoue, Masami: *See*—
Hagimoto, Hakumi; Kashima, Yutaka; Kondo, Norio; and Inoue, Masami, 4,797,031, Cl. 405-133.000.

Inoue, Saburo: *See*—
Nakayama, Takeo; Inoue, Saburo; and Sakamoto, Takurou, 4,797,449, Cl. 525-217.000.

Inoue, Shoji: *See*—
Nakako, Takefumi; Inoue, Shoji; and Takezoe, Akinobu, 4,796,797, Cl. 228-144.000.

Inoue, Tadashi; Ohkoba, Akira; Sakashita, Kunio; Utsunomiya, Akira; Shinozaki, Takeki; and Ieda, Minoru, to Mitsui Toatsu Chemicals, Inc. Process for the production of highly concentrated phosphoric acid. 4,797,265, Cl. 423-320.000.

Inoue, Yasuhiko; Matsuda, Masaaki; and Akiyoshi, Yoshirou, to Sumitomo Chemical Company, Limited. Recovery of metals adsorbed on chelating agents. 4,797,264, Cl. 423-7.000.

Inoue, Yoshinori: *See*—
Yamada, Tetsuo; Inoue, Yoshinori; Miura, Sinji; Endo, Masao; Kaneda, Setsuo; and Yoshida, Yashutoshi, 4,796,439, Cl. 62-159.000.

Instant Security Systems, Inc.: *See*—
Vorzimmer, Mark A.; and Beardslee, John, 4,797,657, Cl. 340-541.000.

Institut Francais du Petrole: *See*—
Degobert, Paul; Goldenberg, Emmanuel; Nadaud, Yvon; and Molinier, Michel, 4,796,590, Cl. 123-489.000.

Institut Francais du Petrole & Compagnie Generale De Geophysique: *See*—
Laurent, Jean; Naville, Charles; and Paterna, Rene, 4,796,723, Cl. 181-102.000.

Intel Corporation: *See*—
Lee, Winston K. M.; Oto, Duane H.; and Tam, Simon M., 4,797,856, Cl. 365-185.000.
Nanda, Sunil, 4,797,852, Cl. 364-900.000.

International Business Machines Corporation: *See*—
Brenza, James G., 4,797,814, Cl. 364-200.000.
Bui, Vu Q.; Chan, Kevin K.; Hoffarth, Joseph G.; and Malueg, Vicki J., 4,797,178, Cl. 156-643.000.
Nackman, Lee R.; and Srinivasan, Vijay, 4,797,842, Cl. 364-578.000.
Rockett, Leonard R., Jr., 4,797,804, Cl. 365-154.000.
Smith, Ted M., 4,796,357, Cl. 29-840.000.
Will, Terry A., 4,797,938, Cl. 382-7.000.

International Computers Limited: *See*—
Duxbury, Colin M.; and Yates, Raymond, 4,797,951, Cl. 455-608.000.

International Technidyne Corp.: *See*—
Mintz, Michael, 4,797,369, Cl. 436-69.000.

Inui, Keiichiro: *See*—
Yamamoto, Kiyoshi; Nakamura, Toshihiro; Ito, Tadao; and Inui, Keiichiro, 4,797,230, Cl. 252-364.000.

Inventions, Inc.: *See*—
Szlam, Aleksander; Crooks, James W., Jr.; and Marks, Curtis G., 4,797,911, Cl. 379-67.000.

Irvin Industries, Inc.: *See*—
Lobanoff, Mark; and Gavagan, James A., 4,796,944, Cl. 296-97.500.

Ishibashi, Koichiro; Minato, Osamu; Masuhara, Toshiaki; Sakai, Yoshio; Yamanaka, Toshiaki; Hashimoto, Naotaka; Hanamura, Shoji; Moriwaki, Nobuyuki; Honjyo, Shigeru; and Ueda, Kiyotsugu, to Hitachi, Ltd. Semiconductor memory device. 4,797,717, Cl. 357-23.100.

Ishida, Masako: *See*—
Saito, Masato; Fukuyama, Keiji; Ishida, Masako; Watanabe, Keiji; Kamata, Toyokazu; and Sano, Kinjiro, 4,797,593, Cl. 313-346.00R.

Ishida, Noboru: *See*—
Matsuura, Tooru; Ishida, Noboru; and Kawamura, Mitsuyoshi, 4,796,576, Cl. 123-90.430.

Ishiguro, Masanori: *See*—
Akao, Mutsuo; Endo, Hisao; Sata, Toshio; and Ishiguro, Masanori, 4,796,823, Cl. 242-71.800.

Ishikawa, Hiromi, to Fuji Photo Film Co., Ltd. Optical scanning device. 4,796,965, Cl. 350-6.800.

Ishikawa, Masao; Koboshi, Shigeharu; Miyaoka, Kazuyoshi; and Kuse, Satoru, to Konishiroku Photo Industry Co., Ltd. Method for processing silver halide color photographic materials. 4,797,351, Cl. 430-387.000.

Ishikawa, Minoru, to Fuji Photo Film Co., Ltd. Heat developing device. 4,797,710, Cl. 355-27.000.

Ishikawajima-Harima Heavy Industries Co., Ltd.: *See*—
Kobayashi, Masahiro; Matsushita, Akitake; Nakamura, Hitoshi; Tanaka, Shinji; and Furuya, Shuji, 4,796,653, Cl. 137-341.000.

Ishimoto, Shoji, to NEC Corporation. Output circuit with improved timing control circuit. 4,797,573, Cl. 307-269.000.

Ishiyama, Fumio: *See*—
Tanaka, Shigeru; and Ishiyama, Fumio, 4,797,908, Cl. 378-105.000.

Ishizuka, Ichiro: *See*—
Sumimoto, Shinzaburo; Ishizuka, Ichiro; Kai, Hiroyuki; Ueda, Shiro; and Takase, Akira, 4,797,492, Cl. 548-245.000.

Isohata, Shigeru; and Tsukakoshi, Masao, to AMP Incorporated. Electrical connector having a movable contact guide and lance-maintaining member. 4,797,116, Cl. 439-141.000.

Israel, Benjamin, to Jardin, Inc. Solarium with muntinless exterior. 4,796,395, Cl. 52-86.000.

Istac, Incorporated: *See*—
MacDoran, Peter F.; and Spitzmesser, Donovan J., 4,797,677, Cl. 342-352.000.

Ito, Hiromasa: *See*—
Inaba, Fumio; Ito, Hiromasa; Onodera, Noriaki; and Mizuyoshi, Akira, 4,797,890, Cl. 372-46.000.

Ito, Hiromichi: *See*—
Shuto, Satoshi; Ito, Hiromichi; Fukukawa, Kiyofumi; Sakakibara, Hideo; and Tsujino, Masatoshi, 4,797,479, Cl. 536-27.000.

Ito, Hiroshi: *See*—
Hishinuma, Yasuo; and Ito, Hiroshi, 4,796,661, Cl. 137-487.500.

Ito, Keizo: *See*—
Ohtaka, Hiroshi; Yoshida, Kenji; Sukuzi, Kenji; Shimohara, Koichi; Tajima, Sigeru; and Ito, Keizo, 4,797,400, Cl. 514-255.000.

Ito, Ken: *See*—
Kuroki, Junsuke; Takahashi, Tohru; and Ito, Ken, 4,796,911, Cl. 280-689.000.

Ito, Kenzi: *See*—
Nakanishi, Nobuyasu; Noguchi, Noboru; Aizawa, Hideyuki; and Ito, Kenzi, 4,797,612, Cl. 324-173.000.

Ito, Masao: *See*—
Yamada, Kunio; and Ito, Masao, 4,796,961, Cl. 350-6.800.

Ito, Masayoshi: *See*—
Yoshimura, Shoji; Tani, Yoichiro; Matsuzaki, Youzi; Ito, Masayoshi; Shitori, Yoshiyasu; and Ogawa, Tomoya, 4,797,477, Cl. 536-18.500.

Ito, Tadao: *See*—
Yamamoto, Kiyoshi; Nakamura, Toshihiro; Ito, Tadao; and Inui, Keiichiro, 4,797,230, Cl. 252-364.000.

Ito, Toshio; Miwa, Takashi; and Yamagishi, Fujio, to G-C Toshi Kogyo Corporation. Measuring tool for the selection of artificial teeth. 4,797,096, Cl. 433-26.000.

Itoh, Hideaki, to Fujitsu Limited. Channel switching system without instantaneous signal loss. 4,797,903, Cl. 375-40.000.

Itoh, Mitsuru. Garment. 4,796,305, Cl. 2-97.000.

Itoh, Taichi: *See*—
Takita, Masaaki; Tsuru, Yoshikazu; Uchihara, Masaharu; Itoh, Taichi; and Tanaka, Masumi, 4,797,690, Cl. 346-105.000.

ITT Corporation: *See*—
Feamster, Kim L., 4,797,118, Cl. 439-264.000.

Itzel, Hanshelmut: *See*—
Kauth, Hans-Herbert; and Itzel, Hanshelmut, 4,796,381, Cl. 43-124.000.

Ivanov, Mikhail G.; Golov, Veniamin G.; Kuzmin, Vladimir N.; Alyakrinskaya, Aida I.; Mushy, Roman Y.; Kovalev, Alexei D.; Shutova, Nadezhda V.; Rodionov, Jury A.; Molev, Igor I.; Yakovleva, Ljudmila S.; Berezin, Vitaly B.; Petrashko, Alexei I.; Shuev, Gennady M.; Bukin, Boris A.; Belkina, Tamara M., deceased; and by Belkin, Naum S., administrator. Carbamic acid derivatives and method for preparing same. 4,797,494, Cl. 548-374.000.

Iwahashi, Haruo; and Nakazawa, Kazuhiro, to Konica Corporation. Image forming apparatus. 4,797,707, Cl. 355-14.00R.

Iwamatsu, Noboru: *See*—
Kawada, Shigeki; Amemiya, Yoichi; Sogabe, Masatoyo; and Iwamatsu, Noboru, 4,796,352, Cl. 29-596.000.

Iwase, Nobuo, to Kabushiki Kaisha Toshiba. Ceramic circuit substrates and methods of manufacturing same. 4,797,530, Cl. 219-121.850.

Iwata, Takeshi: *See*—
Fujii, Noriaki; Iwata, Takeshi; and Oikawa, Toshihiro, 4,796,574, Cl. 123-90.230.

Izaki, Takeshi: *See*—
Hatta, Naoyuki; Yoshihara, Hideo; Izaki, Takeshi; Sawada, Akihiro; Yamamoto, Takemi; and Sangyoji, Kazuo, 4,797,107, Cl. 434-408.000.

J. E. Morgan Knitting Mills, Inc.: *See*—
Kemp, Philip, 4,797,311, Cl. 428-92.000.

J. M. Voith GmbH: *See*—
Schiel, Christian, 4,796,452, Cl. 72-245.000.
Schiel, Christian; and Bauder, Albrecht, 4,796,525, Cl. 100-93.0RP.

Jabco Manufacturing, Inc.: *See*—
Bryant, James A., 4,797,420, Cl. 514-643.000.

Jack, Richard A.: *See*—
Hinman, Edmund R.; and Jack, Richard A., 4,797,189, Cl. 204-224.00M.

Jackson, David M.: *See*—
Brooker, Ronald W.; Cohen, Bernard; and Jackson, David M., 4,797,318, Cl. 428-283.000.

Jackson, Derek H. A., to Amicon Wright Ltd. Adjustable distribution cell apparatus. 4,797,209, Cl. 210-656.000.

Jackson, Michael C., to General Electric Company, p.l.c., The. Digital mixing apparatus which attenuates the sum frequency of the mixed signals. 4,797,844, Cl. 364-724.010.

Jacob, Friedrich: *See*—
Gundlach, Hans-Werner; and Jacob, Friedrich, 4,796,688, Cl. 164-457.000.

JacTac, Inc.: *See*—
Hoopengardner, Merle R., 4,797,170, Cl. 156-71.000.

Jagenberg Aktienbesellschaft: *See*—
Martini, Norbert; and Naudascher, Peter, 4,796,879, Cl. 271-218.000.

Jager, Gerhard: *See*—
Holmwood, Graham; Regel, Erik; Jager, Gerhard; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; Brandes, Wilhelm; and Paul, Volker, 4,797,499, Cl. 549-559.000.

Jahn, Helmut; and Karger, Waldemar, to Hoechst Aktiengesellschaft. Measuring device for the measurement of the deformability of red blood corpuscles. 4,797,606, Cl. 324-71.100.

Jahn, Robert E.: *See*—
Owen, Dave L.; and Jahn, Robert E., 4,796,405, Cl. 53-222.000.

Jahoda, Peter: *See*—
Oliver, Dell B.; and Jahoda, Peter, 4,797,317, Cl. 428-204.000.

James, Larry S. Multifluid heat pump system. 4,796,437, Cl. 62-79.000.

James River II, Inc.: *See*—
Schutz, Rudolph W.; and Schultz, William, 4,796,832, Cl. 242-55.300.

Jameson, Ian: *See*—
Aubrey, David R.; and Jameson, Ian, 4,797,775, Cl. 361-93.000.

Jamieson, Robert E. Beaver control siphon apparatus. 4,797,028, Cl. 405-108.000.

Jandacek, Ronald J.; and Letton, James C., to Proctor & Gamble Company, The. Compositions containing novel solid, nondigestible, fat-like compounds. 4,797,300, Cl. 426-549.000.

Jardin, Inc.: *See*—
Israel, Benjamin, 4,796,395, Cl. 52-86.000.

Jaussi, Francois: *See*—
El-Nashar, Ibrahim; Jaussi, Francois; Kirchhofer, Hubert; Komauer, Christian; Mayer, Andreas; Perevuznik, Josef; and Spinnler, Fritz, 4,796,595, Cl. 123-559.200.

Jeffries, Alfred T., III, to Olin Hunt Specialty Products, Inc. Light-sensitive 1,2-naphthoquinone-2-diazide-4-sulfonic acid monoesters of cycloalkyl substituted phenol and their use in light-sensitive mixtures. 4,797,345, Cl. 430-165.000.

Jehanno, Nicole: *See*—
Junino, Alex; Lang, Gerard; Jehanno, Nicole; and Vandenbosche, Jean J., 4,797,129, Cl. 8-407.000.

Jensen, Leif M., to Rockwool International A/S. Method of preparing a melt for the production of mineral wool. 4,797,142, Cl. 65-2.000.

Jerr-Dan Corportion: *See*—
Shoup, Gary L.; Coffman, Allen B.; and Fix, Robert L., 4,797,057, Cl. 414-563.000.

Jidosha Kiki Co., Ltd.: *See*—
Ebina, Akimitsu, 4,796,485, Cl. 74-866.000.

Jiumr, Fanchan J. Physical training apparatus. 4,796,882, Cl. 272-72.000.

Job, Eduard J. Glass bulb for sprinkler heads. 4,796,710, Cl. 169-38.000

John Hopkins University: *See*—
Karweit, Michael J., 4,797,750, Cl. 358-335.000.

Johnson, David A.: *See*—
Zweifel, Terry L.; and Johnson, David A., 4,797,674, Cl. 340-968.000.

Johnson, David W., Jr.: *See*—
Gyorgy, Ernst M.; Hellman, Frances; and Johnson, David W., Jr., 4,797,386, Cl. 505-1.000.

Johnson, E. A.: *See*—
Tworoger, Peter C.; and Johnson, E. A., 4,797,055, Cl. 414-283.000.

Johnson, James N. Micro-abrasive finishing device. 4,796,387, Cl. 51-62.000.

Johnson & Johnson Orthopaedics, Inc.: *See*—
Kammerer, Gene W.; and Barcan, Donald, 4,797,309, Cl. 428-35.300.

Jolson, Joseph D.: *See*—
Schneider, Alan A.; Stewart, David A.; Jolson, Joseph D.; Auel, RaeAnn M.; and Price, John F., 4,797,180, Cl. 204-1.00T.

Jones, Charles E.: *See*—
Amick, David R.; Jones, Charles E.; and Hughes, Kathleen A., 4,797,223, Cl. 252-174.230.

Jones, David F.: *See*—
Bowker, Duane O.; Giuliani, Adrian A.; and Jones, David F., 4,797,915, Cl. 379-216.000.

Jones, Frank L.: *See*—
Austin, Richard L.; Otto, Herbert J.; and Jones, Frank L., 4,797,619, Cl. 324-409.000.

Jones, Joel F.: *See*—
Edwards, Wallace L.; Jones, Joel F.; and Thompson, Howard G., Jr., 4,797,075, Cl. 418-48.000.

Jones, Joseph S.: *See*—
Swann, Peter R.; and Jones, Joseph S., 4,797,261, Cl. 422-102.000.

Jones, Paul C.: *See*—
Nichelson, William; Groff, Gordon H.; and Jones, Paul C., 4,796,878, Cl. 271-10.000.

Jones, Robert L. Retractable arrow launch ramp with compound crossbow. 4,796,598, Cl. 124-25.000.

Jonner, Wolf-Dieter; and Zechmann, Jurgen, to Robert Bosch GmbH. Clutch actuation device. 4,796,739, Cl. 192-13.00R.

Jorgensen, Jorgen A.: *See*—
Dalquist, H. David; Jorgensen, Jorgen A.; Keleny, Lloyd G.; Nygren, Donald W.; and Taylor, John N., 4,796,776, Cl. 220-203.000.

Jorgensen, Paul R., to Durgo AG. Circuit arrangement and resonant label, and a process for its production. 4,797,785, Cl. 361-402.000.

Jorgenson, Michael W.: *See*—
Myerly, Richard C.; Jorgenson, Michael W.; and Critchfield, Frank E., 4,797,501, Cl. 556-445.000.

Joyner Engineers & Trainers, Inc.: *See*—
Joyner, Luther L., 4,797,670, Cl. 340-825.170.

Joyner, Luther L., to Joyner Engineers & Trainers, Inc. Redundant signal selector system. 4,797,670, Cl. 340-825.170.

Juki Corporation: *See*—
Nukushina, Masanori, 4,796,551, Cl. 112-266.100.

Junash, Viktor M.: *See*—
Bozhko, Valery P.; Yatsenko, Sergei V.; Strizhenko, Vitaly E.; Losev, Alexei V.; Pleshkov, Viktor I.; and Junash, Viktor M., 4,796,867, Cl. 266-51.000.

June, George: *See*—
Pierce, William W.; June, George; Meadows, James M.; and Cheek, Albert G., 4,797,291, Cl. 426-63.000.

Junino, Alex; Lang, Gerard; Jehanno, Nicole; and Vandenbosche, Jean J., to L'Oreal. Dye compositions for keratinous fibres containing 2-nitro-metaphenylenediamines. 4,797,129, Cl. 8-407.000.

Kabel, Terry D., to Halliburton Company. Dual seal valve. 4,796,858, Cl. 251-171.000.

Kabelitz, Hans-Peter: *See*—
Deters, Ludger; Englander, Heinrich; Kabelitz, Hans-Peter; and Schutz, Gunter, 4,797,062, Cl. 415-90.000.

kabelmetal electro Gesellschaft mit beschrankter Haftung: *See*—
Chahabadi, Ziaedin; and Prenner, Christian, 4,797,874, Cl. 370-16.000.
KabiVitrum AB: *See*—
Gustavsson, Stig I.; and Arielly, Salo, 4,797,472, Cl. 530-331.000.
Kabushiki Kaisha Daikin Seisakusho: *See*—
Fukushima, Hirotaka, 4,796,740, Cl. 192-30.00V.
Kabushiki Kaisha Tohken: *See*—
Kashi, Motofumi; and Shimoe, Hiroaki, 4,797,738, Cl. 358-101.000.
Kabushiki Kaisha Toshiba: *See*—
Aketagawa, Tokio; and Shimano, Osamu, 4,797,732, Cl. 358-28.000.
Ando, Hideo, 4,797,868, Cl. 369-44.000.
Baldwin, David R.; and Sata, Shingo, 4,797,755, Cl. 360-49.000.
Furuhashi, Takeshi; and Kamei, Yoshio, 4,797,801, Cl. 363-43.000.
Igarashi, Tetsu, 4,797,813, Cl. 364-200.000.
Inokuchi, Haruhisa; and Sakai, Takami, 4,797,799, Cl. 363-37.000.
Iwase, Nobuo, 4,797,530, Cl. 219-121.850.
Kihara, Jyunichi, 4,797,812, Cl. 364-200.000.
Kuroda, Fumihiko, 4,797,371, Cl. 437-2.000.
Munakata, Tadashi, 4,797,061, Cl. 414-744.500.
Okouchi, Satoshi, 4,797,017, Cl. 400-59.000.
Okubo, Yasuo; and Hirasawa, Masataka, 4,797,574, Cl. 307-269.000.
Sugiyama, Fumio; and Dachiku, Kenshi, 4,797,742, Cl. 358-141.000.
Takiguchi, Toshio, 4,797,192, Cl. 204-412.000.
Tanaka, Shigeru; and Ishiyama, Fumio, 4,797,908, Cl. 378-105.000.
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Kabushiki Kaisya Advance Kaihatsu Kenkyujo: *See*—
Kawai, Yasuo; Yazawa, Kazunaga; Suegara, Nobuo; and Shimohashi, Hirotaka, 4,797,278, Cl. 424-93.000.
Sasaki, Minoru, 4,796,638, Cl. 128-696.000.
Kabushikigaiaha Tokyo Kikai Seisakusho: *See*—
Okamura, Yuuichi, 4,796,549, Cl. 101-350.000.
Kadokura, Hidekimi; Sawara, Kenichi; and Yako, Tadaaki, to Sumitomo Chemical Company, Ltd. Purification of organometallic compounds. 4,797,500, Cl. 556-1.000.
Kadota, Koji: *See*—
Tsuta, Toshio; Kadota, Koji; Matsui, Shigetomo; Matsumura, Hiroyuki; Hasegawa, Hisao; Nakamura, Hiromichi; Noma, Tetsuro; Miyazaki, Hisahiko; and Furugen, Munekatsu, 4,796,798, Cl. 228-146.000.
Kai, Hiroyuki: *See*—
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Kajimura, Takashi: *See*—
Uomi, Kazuhisa; Yoshizawa, Misuzu; Ono, Yuichi; Chinone, Naoki; and Kajimura, Takashi, 4,797,891, Cl. 372-46.000.
Kajiwara Kogyo Kabushiki Kaisha: *See*—
Kajiwara, Tokuji, 4,796,747, Cl. 198-535.000.
Kajiwara, Tokuji, to Kajiwara Kogyo Kabushiki Kaisha. Foodstuff delivery machine. 4,796,747, Cl. 198-535.000.
Kakhramanov, Khalid T.: *See*—
Rasi-Zade, Artur T. O.; Kurbanov, Nariman G. O.; Sutovsky, Pavel M.; Shikhlinsky, Talat M. O.; Kakhramanov, Khalid T.; Rabinovich, Avraam M.; Karaev, Islam K. O.; Timofeev, Vladimir I.; and Ibragimov, Oktai I. O., deceased, 4,796,799, Cl. 228-155.000.
Kali und Salz Aktiengesellschaft: *See*—
Kuppers, Helmuth; and Knauer, Hans-Jurgen, 4,797,201, Cl. 209-127.400.
Kallman, Robert; and Henderson, Mark. Dust ruffles for a bed. 4,796,317, Cl. 5-493.000.
Kalman, Jeffrey M.: *See*—
Spirk, John W.; Nottingham, John R.; and Kalman, Jeffrey M., 4,796,784, Cl. 222-80.000.
Kamada, Hiroshi: *See*—
Katsuta, Yuji; Kita, Sumio; Takano, Sakuharu; and Kamada, Hiroshi, 4,797,946, Cl. 382-61.000.
Kamata, Toyokazu: *See*—
Saito, Masato; Fukuyama, Keiji; Ishida, Masako; Watanabe, Keiji; Kamata, Toyokazu; and Sano, Kinjiro, 4,797,593, Cl. 313-346.00R.
Kameda, Ryo: *See*—
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Kamei, Kiyohiro: *See*—
Sakuramoto, Takahumi; Asoshina, Eishi; Tominaga, Takashi; Ijichi, Ichiro; Kamei, Kiyohiro; and Konishi, Toshiharu, 4,797,251, Cl. 419-9.000.
Kamei, Yoshio: *See*—
Furuhashi, Takeshi; and Kamei, Yoshio, 4,797,801, Cl. 363-43.000.
Kamiya, Yoji: *See*—
Ohta, Takeshi; Kamiya, Yoji; Nakashima, Kunimichi; and Taniguchi, Mitsuyoshi, 4,797,052, Cl. 414-744.300.
Kamiyama, Kozi: *See*—
Sunagawa, Hiroshi; and Kamiyama, Kozi, 4,797,867, Cl. 369-45.000.
Kammerer, Gene W.; and Barcan, Donald, to Johnson & Johnson Orthopaedics, Inc. Foil pouch. 4,797,309, Cl. 428-35.300.
Kanai, Hiroshi: *See*—
Ezaki, Joichiro; and Kanai, Hiroshi, 4,797,765, Cl. 360-110.000.
Kanai, Takao: *See*—
Yamaguchi, Katsumi; Yokoi, Syouichiro; Kanai, Takao; and Yoshikawa, Kikuo, 4,797,758, Cl. 360-85.000.
Kanai, Yutaka: *See*—
Koano, Tetsuro; Kanai, Yutaka; and Fujita, Tetsuya, 4,797,695, Cl. 346-160.000.
Kanao, Shiro. Pressure-withstanding pipe. 4,796,672, Cl. 138-154.000.
Kanbe, Junichiro: *See*—
Kaneko, Shuzo; Toyono, Tsutomu; and Kanbe, Junichiro, 4,796,980, Cl. 350-350.00S.
Kane, Thomas J., to Light Wave Electronics Co. Solid state optical ring resonator and laser using same. 4,797,896, Cl. 372-94.000.
Kanebo, Ltd.: *See*—
Ohtaka, Hiroshi; Yoshida, Kenji; Sukuzi, Kenji; Shimohara, Koichi; Tajima, Sigeru; and Ito, Keizo, 4,797,400, Cl. 514-255.000.
Kaneda, Setsuo: *See*—
Yamada, Tetsuo; Inoue, Yoshinori; Miura, Sinji; Endo, Masao; Kaneda, Setsuo; and Yoshida, Yashutoshi, 4,796,439, Cl. 62-159.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Nasu, Shogo; and Saiki, Koji, 4,797,330, Cl. 428-694.000.
Yamamoto, Kenji; Nakayama, Takehisa; and Tawada, Yoshihisa, 4,797,527, Cl. 219-69.00E.
Kaneko, Shinichi: *See*—
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Nakako, Takefumi; Inoue, Shoji; and Takezoe, Akinobu, to Nisshin Steel Co., Ltd. Method for making thin-walled metal pipes. 4,796,797, Cl. 228-144.000.

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Kawai, Yasuo; Yazawa, Kazunaga; Suegara, Nobuo; and Shimohashi, Hirotaka, 4,797,278, Cl. 424-93.000.
Yazawa, Nobuyoshi, to Olympus Optical Co., Ltd. Imaging apparatus for endoscope. 4,797,737, Cl. 358-98.000.
Yecheskel, Herzel B.; Alon, Gad; and Beck, Eliezer. Treatment of cotton. 4,796,334, Cl. 19-0.270.
Yenser, Barbara A.: *See*—
Durfor, Charles N.; Bowers, Mark L.; and Yenser, Barbara A., 4,797,181, Cl. 204-1.00T.
Yissum Research and Development Company of the Hebrew University of Jerusalem: *See*—
Barenholz, Yechezkel; and Gabizon, Alberto, 4,797,285, Cl. 424-450.000.
Yokoi, Syouichiro: *See*—
Yamaguchi, Katsumi; Yokoi, Syouichiro; Kanai, Takao; and Yoshikawa, Kikuo, 4,797,758, Cl. 360-85.000.
Yokota, Akira: *See*—
Nakamura, Yoichi; Yamamoto, Shirushi; Komine, Takashi; Yokota, Akira; and Nakane, Hisashi, 4,797,348, Cl. 430-326.000.
Yokota, Hajime: *See*—
Nakaya, Rintaro; Okamura, Noboru; Kawashima, Takuji; Saito, Minoru; Yanai, Nabuya; Toida, Tomohiro; and Yokota, Hajime, 4,797,389, Cl. 514-54.000.

Yokota, Hiroshi: *See*—
Chida, Kazunori; Yokota, Hiroshi; Kyoto, Michihisa; Sato, Hisao; Watanabe, Minoru; and Yoshioka, Naoki, 4,797,143, Cl. 65-3.120.
Yokoyama, Henry; Hsu, Wan-Jean; Poling, Stephen M.; and Hayman, Ernest P., to United States of America, Agriculture. Method of increasing biomass in plants. 4,797,153, Cl. 71-121.000.
Yokoyama, Masaru: *See*—
Ikuta, Shiro; Suyama, Eizo; Yokoyama, Masaru; and Yoshimura, Takeshi, 4,796,694, Cl. 165-152.000.
Yokoyama, Nobuaki: *See*—
Imazeki, Kazuyoshi; and Yokoyama, Nobuaki, 4,797,636, Cl. 331-48.000.
Yokoyama, Toshio; Shimane, Iwao; and Konno, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Method of manufacturing a position sensor for detecting angular position. 4,796,354, Cl. 29-608.000.
Yoon, Hyun-Nam: *See*—
Leslie, Thomas M.; Yoon, Hyun-Nam; DeMartino, Ronald N.; and Stamatoff, James B., 4,796,976, Cl. 350-330.000.
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Yoshida, Kenji: *See*—
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Kondo, Hiroshi; Kusunoki, Toshimasa; and Kameda, Ryo, 4,796,519, Cl. 98-97.000.
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Yoshida, Shigeo; Kitagawa, Satoshi; Harada, Shozo; Koide, Tetsuya; and Hasegawa, Manabu, to National House Industrial Co., Ltd.; and INAX Corporation. Glazed cement product and method for manufacturing thereof. 4,797,319, Cl. 428-312.400.
Yoshida, Yashutoshi: *See*—
Yamada, Tetsuo; Inoue, Yoshinori; Miura, Sinji; Endo, Masao; Kaneda, Setsuo; and Yoshida, Yashutoshi, 4,796,439, Cl. 62-159.000.
Yoshihara, Hideki; and Warner, Nicholas M., to Unisys Corp. Method for positioning head in disk drive deriving "position" offset from "quadrature" signals. 4,797,756, Cl. 360-77.020.
Yoshihara, Hideo: *See*—
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Yoshimura, Shoji; Tani, Yoichiro; Matsuzaki, Youzi; Ito, Masayoshi; Shitori, Yoshiyasu; and Ogawa, Tomoya, to Mect Corporation. Process for preparing sialic acid derivatives. 4,797,477, Cl. 536-18.500.
Yoshimura, Takeshi: *See*—
Ikuta, Shiro; Suyama, Eizo; Yokoyama, Masaru; and Yoshimura, Takeshi, 4,796,694, Cl. 165-152.000.
Yoshimura, Tsuyoshi, to Ricoh Company, Ltd. Scanning apparatus using a rotary polygon mirror. 4,796,963, Cl. 350-6.800.
Yoshimura, Yoshinobu: *See*—
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Young, John S.; Kruis, Peter; and Blewitt, William D., to GTE Communication Systems Corporation. Data format conversion circuit. 4,797,654, Cl. 341-50.000.
Yu, Edward K.; and Rogers, David W., to Acurex Corporation. Chaff dispenser system. 4,796,536, Cl. 102-505.000.
Yuen, Yeong H.: *See*—
Pao, Liem T.; Yuen, Yeong H.; and Wu, Dan T., 4,796,821, Cl. 241-101.200.
Yuken Kogyo Kabushiki Kaisha: *See*—
Hishinuma, Yasuo; and Ito, Hiroshi, 4,796,661, Cl. 137-487.500.
Yukihiko, Suzaki: *See*—
Suzuki, Yoshio; and Yukihiko, Suzaki, 4,797,828, Cl. 364-431.040.
Yunan, Malak E., to ETI Explosives Technologies International Inc. Primer assembly. 4,796,533, Cl. 102-322.000.
Zacher, H. Method of controlling a bowl-mill crusher. 4,796,817, Cl. 241-18.000.
Zahnradfabrik Friedrichshafen AG: *See*—
Binger, Bernhard; Eickhoff, Hans J.; Maier, Paul; Engstler, Anton; and Grolig, Herbert, 4,796,486, Cl. 74-606.00R.
Zahuranec, Emery J.: *See*—
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Zakai, Avi, to Mamtirim, Dan. Rotary irrigation sprinkler. 4,796,810, Cl. 239-222.170.
Zebco Corporation: *See*—
Councilman, Richard R., 4,796,828, Cl. 242-84.50A.
Zechmann, Jurgen: *See*—
Jonner, Wolf-Dieter; and Zechmann, Jurgen, 4,796,739, Cl. 192-13.00R.
Zelinka, Robert: *See*—
Hagin, Faust; Seethaler, Franz; Zelinka, Robert; and Stiglmaier, Manfred, 4,796,488, Cl. 74-713.000.
Zeyher, Craig H. Method of imparting energy to liquids. 4,796,427, Cl. 60-398.000.
Ziegler, Frederick J. Hinge mask. 4,796,330, Cl. 16-251.000.
Zillmer, Roger C.: *See*—
Sandiford, Burton B.; and Zillmer, Roger C., 4,796,700, Cl. 166-270.000.
Zimmer, Mark D., to Halliburton Company. Acoustic well logging system having multiplexed filter digitizing. 4,797,668, Cl. 340-857.000.
Zimmerman, Morris: *See*—
Finke, Paul E.; Zimmerman, Morris; Doherty, James B.; Ashe, Bonnie Mae; and Dorn, Conrad P., 4,797,396, Cl. 514-210.000.
Zimmermann, Robert H.: *See*—
Ochmann, Rudolf; and Zimmermann, Robert H., 4,797,905, Cl. 378-108.000.
Zinnen, Hermann A., to UOP Inc. Process for separating mono-, di-and triglycerides. 4,797,233, Cl. 260-428.500.
Zipperian, Thomas E.: *See*—
Chaffin, Roger J., deceased; Dawson, Ralph; Fritz, Ian J.; Osbourn, Gordon C.; and Zipperian, Thomas E., 4,797,716, Cl. 357-22.000.
Zucchi, Dario: *See*—
Bini, Dante; Bogliari, Domenico; Lomoro, Sandro; Minozzi, Daniele; Pietrogrande, Stefano; and Zucchi, Dario, 4,796,389, Cl. 52-2.000.
Zuniga, Gerardo: *See*—
Aguillen, Domingo V., Jr.; Casares, Pete P.; DeForrest, John E.; Green, Kevin C.; Kavanagh, Rocque A.; Wilkinson, Bryan; Marks, Marc K.; and Zuniga, Gerardo, 4,796,347, Cl. 29-280.000.
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Nelson, Hilding E.; Brown, Jeffrey O.; and Zurn, Shayne M., 4,797,838, Cl. 364-551.010.
Zweifel, Terry L.; and Johnson, David A., to Honeywill Inc. Flight guidance system for aircraft in windshear. 4,797,674, Cl. 340-968.000.
Zwicker, Fred. Safety retainer clip. 4,796,925, Cl. 285-114.000.
Zwirkoski, Lori J., to American Hospital Supply Corporation. Method and apparatus for in vitro calibration of oxygen saturation monitor. 4,796,633, Cl. 128-634.000.
Zyma SA: *See*—
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JANUARY, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Advanced Dental Technology, Inc.: *See*—
Bushway, Geoffrey C., Re. 32,824, Cl. 433-221.000.

American Cyanamid: *See*—
Fu, Yun-Lung; and Wang, Samuel S., Re. 32,827, Cl. 252-61.000.

Bushway, Geoffrey C., to Advanced Dental Technology, Inc. Premade reinforcement device. Re. 32,824, Cl. 433-221.000.

Cerberus A.G.: *See*—
Mudge, Philip H., Re. 32,828, Cl. 250-342.000.

Dahlby, Larry C., to S. C. Johnson & Son, Inc. Apparatus and method for segregating parts. Re. 32,823, Cl. 209-616.000.

E. I Du Pont de Nemours and Company: *See*—
Linder, Karen E., Re. 32,826, Cl. 424-1.100.

Fu, Yun-Lung; and Wang, Samuel S., to American Cyanamid. Neutral hydrocarboxycarbonyl thionocarbamate sulfide collectors. Re. 32,827, Cl. 252-61.000.

General Instrument Corp.: *See*—
McCann, T. Michael, Re. 32,829, Cl. 361-436.000.

Green, Glen R.: *See*—
Hodges, Joseph L.; and Green, Glen R., Re. 32,822, Cl. 83-402.000.

Hodges, Joseph L.; and Green, Glen R. Potato strip cutter. Re. 32,822, Cl. 83-402.000.

Hull, Michael N.; and Yasnovsky, Vacheslav M., to International Paper Company. Process for the electrochemical reductive bleaching of lignocellulosic pulp. Re. 32,825, Cl. 162-50.000.

International Paper Company: *See*—
Hull, Michael N.; and Yasnovsky, Vacheslav M., Re. 32,825, Cl. 162-50.000.

Linder, Karen E., to E. I Du Pont de Nemours and Company. Cationic technetium complexes useful as radiodiagnostic agents. Re. 32,826, Cl. 424-1.100.

McCann, T. Michael, to General Instrument Corp. Rectifier with slug construction and mold for fabricating same. Re. 32,829, Cl. 361-436.000.

Mudge, Philip H., to Cerberus A.G. Passive infrared intrusion detection system. Re. 32,828, Cl. 250-342.000.

S. C. Johnson & Son, Inc.: *See*—
Dahlby, Larry C., Re. 32,823, Cl. 209-616.000.

Wang, Samuel S.: *See*—
Fu, Yun-Lung; and Wang, Samuel S., Re. 32,827, Cl. 252-61.000.

Yasnovsky, Vacheslav M.: *See*—
Hull, Michael N.; and Yasnovsky, Vacheslav M., Re. 32,825, Cl. 162-50.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Billmayer, Charles E.; and Koch, Robert P., to Leisure Life Limited. Manually powered boat. B1 4,668,196, 1-10-89, Cl. 440-26.000.

Boyd, Douglas P., to Leland Stanford, Jr. University, The Board of Trustees of. Position sensitive X-ray or γ-ray detector and 3-D tomography using same. B1 4,075,491, 1-10-89, Cl. 378-19.000.

Breckner, Raymond A. Apparatus and method for handling solids in liquid. B1 4,517,099, 1-10-89, Cl. 210-741.000.

Fuji Photo Film Co., Ltd.: *See*—
Mukai, Kazuo; Honjoh, Akira; and Nakata, Shuji, B1 4,656,790, Cl. 51-141.000.

Honjoh, Akira: *See*—
Mukai, Kazuo; Honjoh, Akira; and Nakata, Shuji, B1 4,656,790, Cl. 51-141.000.

Koch, Robert P.: *See*—
Billmayer, Charles E.; and Koch, Robert P., B1 4,668,196, Cl. 440-26.000.

Leisure Life Limited: *See*—
Billmayer, Charles E.; and Koch, Robert P., B1 4,668,196, Cl. 440-26.000.

Leland Stanford, Jr. University, The Board of Trustees of: *See*—
Boyd, Douglas P., B1 4,075,491, Cl. 378-19.000.

Mukai, Kazuo; Honjoh, Akira; and Nakata, Shuji, to Fuji Photo Film Co., Ltd. Burnishing method and apparatus for magnetic disk. B1 4,656,790, 1-10-89, Cl. 51-141.000.

Nakata, Shuji: *See*—
Mukai, Kazuo; Honjoh, Akira; and Nakata, Shuji, B1 4,656,790, Cl. 51-141.000.

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Abbott, Dona L., to Highland Supply Corporation. Florist foil or similar article. 299,290, 1-10-89, Cl. D5-46.000.

Abe, Yoshinori: *See*—
Kondo, Nobuyuki; Abe, Yoshinori; Tata, Hideaki; Ito, Eiji; Chonan, Katsuhiko; and Iinuma, Hideo, 299,334, Cl. D13-4.000.

ACS Communications, Inc.: *See*—
Stevens, Toni R., 299,344, Cl. D14-249.000.

Adams Hard-Facing Company, Inc.: *See*—
Edmisson, Delmar D., 299,350, Cl. D15-29.000.
Edmisson, Delmar D., 299,351, Cl. D15-29.000.

Armatron International, Inc.: *See*—
Cunning, Joseph M., 299,349, Cl. D15-28.000.

Arnold, Merrill G. Puzzle. 299,366, 1-10-89, Cl. D21-104.000.

Attwood Corporation: *See*—
Whitley, Warwick M., II, 299,311, Cl. D8-356.000.

AVIA Group International, Inc.: *See*—
Selbiger, Lawrence, 299,283, Cl. D2-314.000.

Baker, Leslie D. Doll. 299,368, 1-10-89, Cl. D21-171.000.

Baptiste, Trevor I. Combination shirt and bow tie. 299,281, 1-10-89, Cl. D2-209.000.

Bernstein, Lawrence A. Wheelchair. 299,326, 1-10-89, Cl. D12-131.000.

Brookes, Richard L. Self-sanitizing door handle. 299,309, 1-10-89, Cl. D8-300.000.

Brooks, Steve. Game board. 299,363, 1-10-89, Cl. D21-31.000.

Brown, Paul D.; and Diaz, Juan A., to Reebok Group International Ltd. Athletic shoe upper. 299,284, 1-10-89, Cl. D2-314.000.

Buchin, Karl, to Krone AG. Handset transceiver and telephone dialer stand with display panel. 299,342, 1-10-89, Cl. D14-151.000.

Burrows, Vernon R. Fishing lure. 299,376, 1-10-89, Cl. D22-129.000.

Bussell, Vanda J. Shower curtain holder or similar article. 299,313, 1-10-89, Cl. D8-373.000.

Cain, Ann S., to 'Totes', Incorporated. Portable desk tool kit. 299,359, 1-10-89, Cl. D19-75.000.

Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See*—
Garnich, Rolf; and Leurs, Hermann, 299,357, Cl. D16-131.000.

Carretta, Fredinando, to Pirelli S.A. Companhia Industrial Brasileira. Tire tread surface pattern. 299,332, 1-10-89, Cl. D12-147.000.

Chan, Ying K., to Scientific Toys Limited. Toy vehicle. 299,367, 1-10-89, Cl. D21-134.000.

Chiang, John A. Alternating current sensing device. 299,318, 1-10-89, Cl. D10-78.000.

Chonan, Katsuhiko: *See*—
Kondo, Nobuyuki; Abe, Yoshinori; Tata, Hideaki; Ito, Eiji; Chonan, Katsuhiko; and Iinuma, Hideo, 299,334, Cl. D13-4.000.

Clunk, Ronald I.: *See*—
Wallet, Bill J.; and Clunk, Ronald I., 299,329, Cl. D12-146.000.

Conoco Inc.: *See*—
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Corning Glass Works: *See*—
Prindle, William A., 299,308, Cl. D8-93.000.

Coue, Maurice E. L., to Huret et ses Fils, S.A. of Chepy. Derailleur actuating handle unit. 299,333, 1-10-89, Cl. D12-179.000.

Cunning, Joseph M., to Armatron International, Inc. Housing for leaf shredder. 299,349, 1-10-89, Cl. D15-28.000.

Dahle, Dennis F. Level. 299,317, 1-10-89, Cl. D10-69.000.

Deutsche Telephonwerke und Kabelindustrie Aktiengesellschaft: *See*—
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Diaz, Juan A.: *See*—
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Diehl, Patrick. Chest. 299,295, 1-10-89, Cl. D6-434.000.

Digital Equipment Corporation: *See*—
Landry, Christian C.; and Faranda, Robert T., 299,347, Cl. D14-113.000.

Don Evans, Inc.: *See*—
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Drackett Company, The: *See*—
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Durand, Jean-Jacques. Wine glass or similar article. 299,298, 1-10-89, Cl. D7-11.000.

Durand, Jean-Jacques. Stemmed wine glass or similar article. 299,299, 1-10-89, Cl. D7-13.000.

Durand, Jean-Jacques. Vase or similar article. 299,319, 1-10-89, Cl. D11-153.000.

Durand, Jean-Jacques. Vase or similar article. 299,320, 1-10-89, Cl. D11-153.000.

Eastman Kodak Company: *See*—
Walters, Michael A., 299,346, Cl. D14-111.000.

Edmisson, Delmar D., to Adams Hard-Facing Company, Inc. Overcap point for tillage tool. 299,350, 1-10-89, Cl. D15-29.000.

Edmisson, Delmar D., to Adams Hard-Facing Company, Inc. Shank tip insert for tillage tool. 299,351, 1-10-89, Cl. D15-29.000.

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Landry, Christian C.; and Faranda, Robert T., 299,347, Cl. D14-113.000.

Faulconer, Mark; and Greatrake, Scott E., to U.S. Divers Company, Inc. Diver's buoyancy compensator backpack support. 299,286, 1-10-89, Cl. D3-32.000.

Fildan, Gerhard. Cord lock. 299,310, 1-10-89, Cl. D8-356.000.

Finnigan, Fred D. Tomato plant support tie for attachment to a stake. 299,307, 1-10-89, Cl. D8-1.000.

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Wallet, Bill J., 299,331, Cl. D12-147.000.

Foy, Hunter T.; and Martin, Randall W., to International Business Machines Corp. Automotive test terminal. 299,345, 1-10-89, Cl. D14-102.000.

Frabill, Inc.: *See*—
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Friedrich, Georg, to Deutsche Telephonwerke und Kabelindustrie Aktiengesellschaft. Telephone communication terminal set. 299,343, 1-10-89, Cl. D14-151.000.

Garcia, Jose A. M. Fishing rod light. 299,377, 1-10-89, Cl. D22-134.000.

Garnich, Rolf; and Leurs, Hermann, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Microscope. 299,357, 1-10-89, Cl. D16-131.000.

Gertler, Bernard H. Truck cab storage compartment. 299,287, 1-10-89, Cl. D3-40.000.

Goldstein, Joseph. Handle for roll of plastic film. 299,353, 1-10-89, Cl. D15-145.000.

Graf, Larry J.: *See*—
Smith, David B.; Graf, Larry J.; and Miller, Randolph F., 299,369, Cl. D21-191.000.

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Gray, Stephen W. Disposable funnel. 299,302, 1-10-89, Cl. D7-68.000.

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Greeley, Patrick M. Hand holdable aquatic exerciser. 299,365, 1-10-89, Cl. D21-191.000.

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Grosfillex, Raymond, to Grosfillex S.A.R.L. Adjustable armchair. 299,292, 1-10-89, Cl. D6-367.000.

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Grosfillex, Raymond, 299,292, Cl. D6-367.000.

Haggerty, Peter D.; and Rayl, Eric L. Air valve closure for inflatable article. 299,379, 1-10-89, Cl. D23-249.000.

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Hauser, Michael A.: *See*—
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Highland Supply Corporation: *See*—
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Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Ichinose, Kazuhiro: *See*—
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Iinuma, Hideo: *See*—
Kondo, Nobuyuki; Abe, Yoshinori; Tata, Hideaki; Ito, Eiji; Chonan, Katsuhiko; and Iinuma, Hideo, 299,334, Cl. D13-4.000.

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Ito, Eiji: *See*—
Kondo, Nobuyuki; Abe, Yoshinori; Tata, Hideaki; Ito, Eiji; Chonan, Katsuhiko; and Iinuma, Hideo, 299,334, Cl. D13-4.000.

Jones, William O. Gameboard. 299,364, 1-10-89, Cl. D21-34.000.

Kato, Toshikazu: *See*—
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Keepsakes Time Capsules, Inc.: *See*—
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Kenda Rubber Industrial Co., Ltd.: *See*—
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Klodt, Gerald J., to W. T. Rogers Company. Vertical file or the like. 299,360, 1-10-89, Cl. D19-90.000.

Knochner, Michael; and Lang, Manfred, to Rowenta-Werke GmbH. Espresso machine. 299,304, 1-10-89, Cl. D7-309.000.

Kondo, Nobuyuki; Abe, Yoshinori; Tata, Hideaki; Ito, Eiji; Chonan, Katsuhiko; and Iinuma, Hideo, to Mitsubishi Denki Kabushiki Kaisha. Power inverter. 299,334, 1-10-89, Cl. D13-4.000.

Kosako, Mikio; and Nishibori, Hiroshi, to Sharp Corporation. Copying machine. 299,355, 1-10-89, Cl. D18-39.000.

Krone AG: *See*—
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Kverneland A/S: *See*—
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446 4,796,535
505 4,796,536

CLASS 104

37 4,796,537

CLASS 105

224 4,797,036
377 4,796,538

CLASS 106

20 4,797,157
74 4,797,158
89 4,797,159
96 4,797,160
[illegible] 4,797,161
498 4,797,162

CLASS 108

55.1 4,796,539
55.3 4,796,540
111 4,796,541

CLASS 109

[illegible] 4,796,542

CLASS 110

173 R 4,796,543
196 4,796,544
216 4,796,545
4,796,546
263 4,796,547
343 4,796,548

CLASS 111

87 4,796,550

CLASS 112

266.1 4,796,551
[illegible] 4,796,552

CLASS 114

39.1 4,796,554
4,796,555

CLASS 116

173 4,796,553

CLASS 118

46 4,796,556
62 4,796,557
74 4,796,558
210 4,796,559
211 4,796,560
500 4,796,564
657 4,796,561
725 4,796,562

CLASS 119

28 4,796,563
101 4,796,565
124 4,796,566
[illegible] 4,796,567

CLASS 122

4 D 4,796,568
6 A 4,796,569
7 R 4,796,570

CLASS 123

41.12 4,796,571
41.42 4,796,572
90.16 4,796,573
90.23 4,796,574
90.43 4,796,576
90.44 4,796,575
[illegible] 4,796,577
336 4,796,579
339 4,796,580
373 4,796,581
378 4,796,578
4,796,582
4,796,583
403 4,796,584
409 4,796,585
425 4,796,586
440 4,796,587
479 4,796,588
489 4,796,589
4,796,590
492 4,796,591
502 4,796,592
518 4,796,593
531 4,796,594
559.2 4,796,595
593 4,796,596

CLASS 124

25 4,796,598
41 A 4,796,597

CLASS 126

30 4,796,599
59.5 4,796,602
273 H 4,796,600
299 R 4,796,601

CLASS 128

4 4,796,607
6 4,796,604
24 A 4,796,608
4,796,613
57 4,796,616
74 4,796,609
80 C 4,796,610
87 R 4,796,611
92 YF 4,796,612
200.14 4,796,614
202.27 4,796,615
204.19 4,796,619
204.25 4,796,617
204.26 4,796,618
206.23 4,796,621
303.1 4,796,622
305 4,796,623
316 4,796,624
325 4,796,625
334 R 4,796,626
337 4,796,627
344 4,796,629
360 4,796,628
419 D 4,796,630
421 4,796,631
633 4,796,636
634 4,796,633
653 4,796,635
658 4,796,637
662.01 4,796,634
662.03 4,796,632
696 4,796,638
[illegible] 4,796,620
719 4,796,639
736 4,796,640
748 4,796,641
760 4,796,644
772 4,796,642
785 4,796,643
899 4,796,603

CLASS 130

27 HA 4,796,645

CLASS 132

[illegible] 4,796,646
320 4,796,647

CLASS 135

102 4,796,649

CLASS 137

8 4,796,651
78.3 4,796,654
[illegible] 4,796,655
106 4,796,656
116.3 4,796,652
119 4,796,657
312 4,796,658
341 4,796,653
443 4,796,650
487.5 4,796,661
492 4,796,659
504 4,796,660
515.5 4,796,663
595 4,796,664
596.16 4,796,662
614.13 4,796,665
625.17 4,796,666
629 4,796,667

CLASS 138

65 4,796,648
96 T 4,796,668
97 4,796,669
4,796,673
110 4,796,670
140 4,796,671
154 4,796,672

CLASS [illegible]

13 R 4,796,674
452 4,796,675

CLASS 141

83 4,796,676
88 4,796,677
206 4,796,678
[illegible] 4,796,679

CLASS 144

2 R 4,796,680
212 4,796,681
371 4,796,682

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CLASS 148
2 4,797,164
12.7 A 4,797,165
13.1 4,797,166
111 4,797,167

CLASS 149
88 4,797,168

CLASS 152
209 R 4,796,683

CLASS 156
64 4,797,169
71 4,797,170
322 4,797,171
425 4,797,172
498 4,797,173
616.1 4,797,174
630 4,797,177
643 4,797,178
644 4,797,175
647 4,797,179

CLASS 160
330 4,796,684

CLASS 162
50 Re.32,825
135 4,797,176

CLASS 164
203 4,796,685
287 4,796,686
455 4,796,687
457 4,796,688
503 4,796,689

CLASS 165
67 4,796,690
104.16 4,796,691
129 4,796,692
133 4,796,693
152 4,796,694
159 4,796,695
169 4,796,696

CLASS 166
55.6 4,796,709
90 4,796,697
135 4,796,698
250 4,796,699
270 4,796,700
278 4,796,701
308 4,796,702
312 4,796,703
317 4,796,704
323 4,796,705
380 4,796,706
386 4,796,708
387 4,796,707
437 4,797,163

CLASS 169
38 4,796,710

CLASS 171
1 4,796,711

CLASS 172
7 4,796,712

CLASS 174
48 4,797,507
68.5 4,797,508
84 C 4,797,509
94 R 4,797,510
110 PM 4,797,511
135 4,797,512
153 G 4,797,513

CLASS 175
96 4,796,713

CLASS 178
18 4,797,514

CLASS 180
143 4,796,714
4,796,715
176 4,796,716
197 4,796,717
4,796,718
219 4,796,719
234 4,796,720
294 4,796,721
297 4,796,722

CLASS 181
102 4,796,723
106 4,796,724
123 4,796,726
142 4,796,725

CLASS 182
168 4,796,727

CLASS 188
18 A 4,796,728
71.6 4,796,730
71.7 4,796,729
196 D 4,796,731
282 4,796,732
291 4,796,733

CLASS 191
1 4,796,734
109 4,796,735

CLASS 193
4 C 4,796,736
13 R 4,796,739
18 R 4,796,737
20 4,796,738
30 V 4,796,740
53 E 4,796,741
67 P 4,796,742
98 4,796,743

CLASS 196
397 4,796,744
407 4,796,745
463.4 4,796,746
535 4,796,747
711 4,796,748
851 4,796,749

CLASS 200
38 R 4,797,515
51 R 4,797,516
60 4,797,517
61.89 4,797,518
144 B 4,797,522
226 4,797,519
295 4,797,520

CLASS 204
1 T 4,797,180
4,797,181
14.1 4,797,182
16 4,797,183
59 R 4,797,184
129 4,797,185
4,797,186
180.2 4,797,187
224 M 4,797,189
296 4,797,190
411 4,797,191
412 4,797,192
414 4,797,188
416 4,797,193
425 4,797,194

CLASS 206
37.4 4,796,750
223 4,796,751
315.3 4,796,752
387 4,796,753
434 4,796,754
444 4,796,755
454 4,796,756
509 4,796,757
545 4,796,758
554 4,796,759
606 4,796,760

CLASS 208
59 4,797,195
4,797,196
131 4,797,197
181 4,797,198
262.1 4,797,199
308 4,797,200

CLASS 209
127.4 4,797,201
166 4,797,202
211 4,797,203
237 4,797,204
616 Re.32,823

CLASS 210
86 4,797,205
169 4,797,206
198.2 4,797,207
242.3 4,797,210
321.84 4,797,211
606 4,797,208
614 4,797,212
651 4,797,213
4,797,214
656 4,797,209
658 4,797,215
741 B1 4,517,099

CLASS 211
11 4,796,761
64 4,796,762
133 4,796,763
184 4,796,764

CLASS 212
205 4,796,765

CLASS 218
1 C 4,796,766
11.1 4,796,767
207 4,796,768
232 4,796,769
252 4,796,770
253 4,796,771

CLASS 219
10.55 E 4,797,521
4,797,523
10.69 4,797,524
10.79 4,797,525
69 E 4,797,527
69 W 4,797,526
70 4,797,528
99 4,797,529
121.67 4,797,531
121.74 4,797,532
121.85 4,797,530
225 4,797,533
326 4,797,534
338 4,797,535
494 4,797,536
528 4,797,537

CLASS 220
22 4,796,773
66 4,796,772
90.4 4,796,774
92 4,796,775
203 4,796,776
4,796,777
315 4,796,778

CLASS 221
36 4,796,779
45 4,796,781
154 4,796,780

CLASS 222
57 4,796,782
64 4,796,787
80 4,796,783
4,796,784
94 4,796,788
131 4,796,785
256 4,796,786

CLASS 224
202 4,796,789
253 4,796,790
275 4,796,791

CLASS 228
72 4,796,792

CLASS 227
156 4,796,794

CLASS 228
20 4,796,795
37 4,796,796
144 4,796,797
146 4,796,798
155 4,796,799

CLASS 229
5.7 4,796,800
104 4,796,801
108 4,796,802

CLASS 235
1 D 4,797,538
85 R 4,797,539
380 4,797,542
383 4,797,540
449 4,797,541
492 4,797,543

CLASS 236
49 4,796,803

CLASS 239
1 4,796,804
2.2 4,796,805
11 4,796,806
102.2 4,796,807
175 4,796,808
205 4,796,809
222.17 4,796,810
4,796,811
303 4,796,812
425 4,796,813
430 4,796,814
477 4,796,815
501 4,796,816

CLASS 241
18 4,796,817
69 4,796,820
85 4,796,818
92 4,796,819
101.2 4,796,821
275 4,796,822

CLASS 242
55.3 4,796,832
55.53 4,796,825
71.8 4,796,823
76 4,796,824
84.5 A 4,796,828
86.5 R 4,796,826
96 4,796,827
100 4,796,829
117 4,796,830
212 4,796,831

CLASS 244
3.12 4,796,833
3.16 4,796,834
3.29 4,796,835
23 R 4,796,836
122 R 4,796,837
135 A 4,796,838
158 R 4,796,839
215 4,796,840

CLASS 248
60 4,796,841
71 4,796,848
168 4,796,843
186 4,796,842
222.2 4,796,844
243 4,796,845
286 4,796,846
441.1 4,796,847
619 4,796,849
674 4,796,850

CLASS 249
91 4,796,851

CLASS 250
201 4,797,545
214 R 4,797,546
221 4,797,544
4,797,547
4,797,548
227 4,797,549
4,797,550
4,797,559
234 4,797,551
251 4,797,552
287 4,797,554
327.2 4,797,553
336.1 4,797,555
342 Re.32,828
551 4,797,556
561 4,797,557
572 4,797,558
578 4,797,560
4,797,561
4,797,562

CLASS 251
129.05 4,796,853
129.07 4,796,854
129.15 4,796,855
149.5 4,796,856
171 4,796,857
173 4,796,85 .
297 4,796,860

CLASS 252
8.551 4,797,216
42.7 4,797,217
47.5 4,797,218
56 D 4,797,219
61 Re.32,827
82 4,797,220
95 4,797,221
105 4,797,225
174.21 4,797,222
174.23 4,797,223
181 4,797,224
182.2 4,797,226
194 4,797,227
299.63 4,797,228
345 4,797,229
364 4,797,230
547 4,797,231
629 4,797,232

CLASS 256
8 B 4,796,861
134.3 FT 4,796,865
277 4,796,862
337 4,796,863
425 4,796,864

CLASS 154
59 4,796,866

CLASS 260
428.5 4,797,233

CLASS 264
4.1 4,797,234
22 4,797,235
40.1 4,797,236
45.3 4,797,237
45.5 4,797,239
46.4 4,797,240
63 4,797,241
65 4,797,238
108 4,797,242
126 4,797,243
266 4,797,244
328.4 4,797,245
504 4,797,246

CLASS 266
51 4,796,867
4,796,868
271 4,796,869

CLASS 267
35 4,796,870
64.11 4,796,871
103 4,796,872
136 4,796,873
140.1 4,796,874
4,796,875
4,796,876

CLASS 269
87.2 4,796,877

CLASS 271
10 4,796,878
218 4,796,879
311 4,796,880

CLASS 272
72 4,796,881
4,796,882
93 4,796,883
113 4,796,884

CLASS 273
26 R 4,796,885
29 A 4,796,886
51 4,796,887
58 R 4,796,888
73 J 4,796,889
144 B 4,796,890
153 S 4,796,891
183 E 4,796,892
201 4,796,893
244 4,796,894

CLASS 277
4 4,796,895
19 4,796,793
181 4,796,896
211 4,796,897
216 4,796,898
228 4,796,899

CLASS 279
123 4,796,900

CLASS 280
5 A 4,796,901
16 4,796,902
87.02 W 4,796,903
91 4,796,904
154.5 R 4,796,905
4,796,906
220 4,796,907
615 4,796,908
651 4,796,909
689 4,796,911
715 4,796,910
736 4,796,912
751 4,796,913
757 4,796,914
802 4,796,915
803 4,796,916
804 4,796,917
806 4,796,918
808 4,796,919

CLASS 283
34 4,796,920
91 4,796,921

CLASS 285
26 4,796,922
27 4,796,923
39 4,796,924
114 4,796,925
181 4,796,926
190 4,796,927
334 4,796,928

CLASS 290
54 4,797,563

CLASS 292
28 4,796,929
58 4,796,930
92 4,796,931
112 4,796,932
265 4,796,933
336.3 4,796,934

CLASS 293
128 4,796,935

CLASS 294
31.2 4,796,936
4,796,937
55 4,796,938
67.1 4,796,939
171 4,796,940

CLASS 296
3 4,796,941
39.2 4,796,942
65.1 4,796,943
97.5 4,796,944
100 4,796,945
146 4,796,946
223 4,796,947

CLASS 297
259 4,796,949
284 4,796,948
302 4,796,950
337 4,796,951
340 4,796,952
400 4,796,953
452 4,796,954
4,796,955

CLASS 299
69 4,796,956

CLASS 303
113 4,796,958
116 4,796,957
119 4,796,959

CLASS 307
43 4,797,566
66 4,797,567
87 4,797,570
119 4,797,564
141 4,797,568
269 4,797,572
4,797,573
4,797,574
272.1 4,797,575
4,797,576
297 4,797,569
4,797,577
303 4,797,578
311 4,797,571
443 4,797,579
450 4,797,565
451 4,797,580
475 4,797,581
4,797,582
4,797,583
594 4,797,584
4,797,585
603 4,797,586
646 4,797,587

CLASS 310
54 4,797,588
68 D 4,797,590
103 4,797,591
154 4,797,592

CLASS 312
305 4,796,960

CLASS 313
346 R 4,797,593
488 4,797,594
493 4,797,595

CLASS 315
5.13 4,797,596
39 4,797,597
85 4,797,598
194 4,797,599

CLASS 318
254 4,797,600
443 4,797,601

CLASS 322
10 4,797,602

CLASS 324
60 CD 4,797,603
65 R 4,797,604
4,797,605
71.1 4,797,606
96 4,797,607
4,797,608
158 D 4,797,609
158 F 4,797,610
173 4,797,612
208 4,797,611
220 4,797,613
236 4,797,614
309 4,797,615
4,797,616
322 4,797,617
326 4,797,618
409 4,797,619
458 4,797,620
533 4,797,621
537 4,797,622
556 4,797,623

CLASS 328
114 4,797,624
133 4,797,625

225 4,797,626

CLASS 330
2 4,797,627
54 4,797,628
253 4,797,631
258 4,797,629
264 4,797,630
285 4,797,634
297 4,797,633

CLASS 331
4,797,637
12 4,797,634
17 4,797,635
48 4,797,636
117 D 4,797,638
158 4,797,639

CLASS 332
7.51 4,797,640
4,797,641

CLASS 333
22 R 4,797,642
115 4,797,643

CLASS 335
230 4,797,645
301 4,797,646

CLASS 336
175 4,797,647
192 4,797,648

CLASS 337
140 4,797,649

CLASS 340
146.2 4,797,650
4,797,651
4,797,652
521 4,797,655
539 4,797,656
541 4,797,657
551 4,797,658
572 4,797,659
583 4,797,660
606 4,797,666
664 4,797,661
677 4,797,662
691 4,797,663
693 4,797,664
710 4,797,665
781 4,797,667
825.170 4,797,670
825.300 4,797,672
825.490 4,797,671
857 4,797,668
870.40 4,797,669
904 4,797,673
4,797,674

CLASS 341
50 4,797,654
51 4,797,653

CLASS 342
28 4,797,675
176 4,797,676
352 4,797,677
4,797,678
387 4,797,679

CLASS 343
705 4,797,680
786 4,797,681
844 4,797,682
872 4,797,683
895 4,797,684
912 4,797,685

CLASS 344
1.1 4,797,686
4,797,687
75 4,797,688
76 PH 4,797,689
105 4,797,690
4,797,691
140 R 4,797,692
4,797,693
160 4,797,694
4,797,695

CLASS 355
1.1 4,796,973
6.8 4,796,961
4,796,962
4,796,963
4,796,964
4,796,965
96.10 4,796,967
96.15 4,796,968
96.18 4,796,969
96.2 4,796,966
96.23 4,796,970
96.34 4,796,971
99 4,796,972
247 4,796,974
320 4,796,975
330 4,796,976
331 R 4,796,977
337 4,796,978
350 S 4,796,979
4,796,980
353 4,796,981
356 4,796,982
376 4,796,983
444 4,796,984
523 4,796,985

CLASS 351
56 4,797,931
57 4,796,986
158 4,796,987
169 4,796,988
212 4,796,989
245 4,796,859

CLASS 352
89 4,796,990

CLASS 354
4 4,797,696
75 4,797,697
246 4,797,699
271.1 4,797,700
275 4,797,698
288 4,797,701
413 4,797,702

CLASS 355
3 DD 4,797,703
4,797,704
10 4,797,644
14 CH 4,797,705
14 R 4,797,706
4,797,707
15 4,797,708
27 4,797,709
4,797,710
32 4,797,711
38 4,797,712
77 4,797,713
4,797,714

CLASS 356
125 4,796,991
347 4,796,992
350 4,796,993
358 4,796,994
368 4,796,995
372 4,796,996
376 4,796,997
4,796,998
394 4,796,999
436 4,797,000

CLASS 357
17 4,797,715
22 4,797,716
23.1 4,797,717
23.4 4,797,718
23.6 4,797,719
23.7 4,797,721
34 4,797,722
39 4,797,720
4,797,723
42 4,797,724
4,797,725
70 4,797,726
79 4,797,727
4,797,728

CLASS 358
13 4,797,729
17 4,797,731
19 4,797,730
4,797,732
29 4,797,733
55 4,797,734
4,797,735
93 4,797,736
98 4,797,737
4,797,738
133 4,797,739
136 4,797,740
138 4,797,741
4,797,746
141 4,797,742
149 4,797,743
164 4,797,744
169 4,797,745
217 4,797,747
257 4,797,748
4,797,749
335 4,797,750
4,797,751
342 4,797,752

CLASS 360
27 4,797,753
48 4,797,754
4,797,755
77.02 4,797,756
77.08 4,797,757
4,797,758
92 4,797,759
95 4,797,760
4,797,761
4,797,762
4,797,769
104 4,797,763
110 4,797,765
113 4,797,766
121 4,797,767
132 4,797,768
135 4,797,764

CLASS 361
42 4,797,772
58 4,797,773
4,797,774
88 4,797,771
93 4,797,775
103 4,797,776
115 4,797,777
4,797,778
154 4,797,779
321 4,797,780
332 4,797,781
4,797,782
4,797,783
395 4,797,784
4,797,785
419 4,797,786
421 4,797,787
436 Re.32,829
525 4,797,789
540 4,797,788

CLASS 362
4,797,790
72 4,797,791
4,797,792
4,797,793
199 4,797,796
226 4,797,794
233 4,797,795
348 4,797,797
413 4,797,798

CLASS 363
37 4,797,799
4,797,800
43 4,797,801
4,797,802
4,797,803

CLASS 364
4,797,808
4,797,809
4,797,810
4,797,811
4,797,812
4,797,813
4,797,814
4,797,815
4,797,816
4,797,817
4,797,818
4,797,819
4,797,820
4,797,821
4,797,822
4,797,823
424.05 4,797,824
4,797,825
426.02 4,797,826
426.04 4,797,827
431.03 4,797,828
434 4,797,829
464.03 4,797,830
474.07 4,797,831
478 4,797,832
481 4,797,805
483 4,797,833
510 4,797,834
513 4,797,835
518 4,797,836
519 4,797,837
551.01 4,797,838
554 4,797,839
557 4,797,840
571.04 4,797,841
4,797,842
713 4,797,843
724.01 4,797,844
724.07 4,797,807
724.1 4,797,845
724.17 4,797,846
725 4,797,847
754 4,797,848
765 4,797,849
900 4,797,806
4,797,850
4,797,851
4,797,852
4,797,853
4,797,854
4,797,855

CLASS 365
154 4,797,804
185 4,797,856
189 4,797,001
203 4,797,857
230 4,797,858

CLASS 366
25 4,797,002
101 4,797,003
186 4,797,004
343 4,797,005

CLASS 367
31 4,797,859
47 4,797,860
50 4,797,861
143 4,797,862
157 4,797,863

CLASS 368
111 4,797,864

CLASS 369
39 4,797,865
43 4,797,866
4,797,868
45 4,797,867
75.2 4,797,869
100 4,797,870
4,797,871
4,797,872
270 4,797,873
291 4,797,770

CLASS 370
3 4,797,879
16 4,797,874
60 4,797,880
62 4,797,876
4,797,877
63 4,797,589
88 4,797,881
92 4,797,875
94 4,797,882
96 4,797,878
109 4,797,883

CLASS 371
9 4,797,884
19 4,797,885
27 4,797,886
43 4,797,887

CLASS 372
38 4,797,888
39 4,797,889
43 4,797,895
46 4,797,890
4,797,891
50 4,797,892
66 4,797,893
92 4,797,894
94 4,797,896

CLASS 373
105 4,797,897

CLASS 374
130 4,797,006
143 4,797,007

CLASS 375
4,797,898
4,797,899
8 4,797,900
4,797,901
27 4,797,902
40 4,797,903
4,797,904

CLASS 376
232 4,797,041

CLASS 410
4,797,042
145 4,797,043

CLASS 411
51 4,797,044
107 4,797,045
448 4,797,046
512 4,797,047

CLASS 412
11 4,797,048

CLASS 414
217 4,797,054
283 4,797,055
4,797,049
4,797,050
467 4,797,056
563 4,797,057
4,797,058
590 4,797,059
4,797,051
687 4,797,060
744.3 4,797,052
24 4,797,920
28 4,797,921
46 4,797,922
49 4,797,928

CLASS 381
31 4,797,923
36 4,797,925
4,797,926
42 4,797,927
43 4,797,924
4,797,929
52 4,797,930
96 4,797,933
104 4,797,932
188 4,797,934
205 4,797,935

CLASS 382
1 4,797,936
4,797,937
7 4,797,938
8 4,797,939
9 4,797,940
27 4,797,941
41 4,797,942
54 4,797,943
56 4,797,944
4,797,945
61 4,797,946

CLASS 383
109 4,797,010

CLASS 384
13 4,797,011
45 4,797,012
49 4,797,008
100 4,797,009
462 4,797,013
490 4,797,014
580 4,797,015

CLASS 400
59 4,797,017
237 4,797,016
249 4,797,018

CLASS 483
133 4,797,019
231 4,797,020
407.1 4,797,021
408.1 4,797,022

CLASS 494
16 4,797,024
28 4,797,026
90 4,797,025

CLASS 495
92 4,797,027
108 4,797,028
125 4,797,030
133 4,797,031
152 4,797,032
170 4,797,029
202 4,797,033
4,797,034
205 4,797,035
255 4,797,037
291 4,797,023

CLASS 496
138 4,797,038

CLASS 607
4,797,039

CLASS 608
241 R 4,797,040

CLASS 409
232 4,797,041

CLASS 410
261 4,797,248
279 4,797,249
4,797,247
293 4,797,250

CLASS 378
19 B1 4,075,491
44 4,797,906
4,797,907
4,797,908
108 4,797,905

CLASS 379
67 4,797,909
4,797,910
4,797,911
4,797,912
4,797,913
4,797,914
216 4,797,915
253 4,797,917
454 4,797,916

CLASS 380
20 4,797,918
4,797,919
744.5 4,797,061
749 4,797,053

CLASS 415
90 4,797,062
116 4,797,063

CLASS 416
134 A 4,797,064
220 R 4,797,065
230 4,797,066

CLASS 417
43 4,797,067
4,797,068
222 4,797,069
380 4,797,070
410 4,797,071
423.2 4,797,072
461 4,797,073

CLASS 418
41 4,797,074
48 4,797,075
142 4,797,076
201 4,797,077
206 4,797,078

CLASS 419
9 4,797,251

CLASS 420
42 4,797,252

CLASS 422
28 4,797,255
49 4,797,254
58 4,797,256
65 4,797,257
4,797,258
101 4,797,259
4,797,260
102 4,797,261
142 4,797,262
176 4,797,263

CLASS 423
7 4,797,264
320 4,797,265
328 4,797,266
329 4,797,267
574 R 4,797,268
600 4,797,269
625 4,797,270
4,797,271

CLASS 424
1.1 Re.32,826
59 4,797,272
4,797,273
76.1 4,797,274
78 4,797,275
94 4,797,276
85.8 4,797,277
93 4,797,278
4,797,279
118 4,797,280
133 4,797,281
422 4,797,282
443 4,797,283
449 4,797,284
450 4,797,285
456 4,797,286
464 4,797,287
476 4,797,288

CLASS 425
140 4,797,079
203 4,797,080
275 4,797,081
356 4,797,082
378.1 4,797,083
405.2 4,797,085
533 4,797,084
589 4,797,086

CLASS 426
43 4,797,289
4,797,290
63 4,797,291
285 4,797,292
330.3 4,797,293
330.4 4,797,294
421 4,797,295
433 4,797,296
483 4,797,297
548 4,797,298
549 4,797,300

CLASS 427
8 4,797,301
107 4,797,302
131 4,797,303
208.6 4,797,304
236 4,797,305
261 4,797,306
386 4,797,307

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CLASS 428		434	4,797,353	**CLASS 437**		207	4,797,385	164	4,797,430	351	4,797,474
15	4,797,308	567	4,797,354	2	4,797,371	**CLASS 926**		**CLASS 523**		387	4,797,473
35.3	4,797,309	**CLASS 431**		41	4,797,108	1	4,797,386	116	4,797,431		4,797,475
71	4,797,310	10	4,797,087	60	4,797,373	**CLASS 516**		172	4,797,432	**CLASS 534**	
92	4,797,311	15	4,797,088	034	4,797,372	18	4,797,471	**CLASS 524**		727	4,797,476
117	4,797,312	28	4,797,089	129	4,797,374	23	4,797,388	3	4,797,433	**CLASS 536**	
156	4,797,313	290	4,797,090	187	4,797,375	54	4,797,389	60	4,797,434	18.5	4,797,477
167	4,797,314	**CLASS 433**		**CLASS 439**		103	4,797,390	89	4,797,435		4,797,478
	4,797,315	14	4,797,091	15	4,797,109	120	4,797,391	97	4,797,436	27	4,797,479
	4,797,316	95	4,797,092	55	4,797,112	171	4,797,402	100	4,797,437		4,797,480
196	4,797,253	**CLASS 435**		74	4,797,113	185	4,797,392		4,797,438	116	4,797,481
204	4,797,317	5	4,797,093	79	4,797,114	188	4,797,393	188	4,797,439	**CLASS 544**	
283	4,797,318	22	4,797,094	83	4,797,110	192	4,797,394	189	4,797,440	33	4,797,482
312.4	4,797,319		4,797,095	125	4,797,115	206	4,797,395	190	4,797,441	89	4,797,483
316.6	4,797,320	26	4,797,096	141	4,797,116	210	4,797,396	347	4,797,443	215	4,797,484
328	4,797,321	64	4,797,097	200	4,797,117	212	4,797,387	394	4,797,442	223	4,797,485
355	4,797,322	98	4,797,098	264	4,797,118		4,797,397	901	4,797,444	250	4,797,486
389	4,797,323	169	4,797,099	395	4,797,119	237.5	4,797,398	588	4,797,445	279	4,797,487
411.1	4,797,324	221	Re.32,824	578	4,797,120	253	4,797,399	860	4,797,446	295	4,797,488
473.5	4,797,325	222.1	4,797,100	579	4,797,121	255	4,797,400	**CLASS 525**		331	4,797,489
552	4,797,326	229	4,797,101	589	4,797,122		4,797,401	92	4,797,447	**CLASS 546**	
600	4,797,327	**CLASS 434**		717	4,797,123	259	4,797,403	106	4,797,448	290	4,797,490
621	4,797,328	147	4,797,102	719	4,797,124	288	4,797,404	217	4,797,449	291	4,797,491
623	4,797,329	211	4,797,103	729	4,797,125		4,797,405	326.7	4,797,450	**CLASS 548**	
694	4,797,330	265	4,797,104	755	4,797,111	299	4,797,406	332.9	4,797,451	245	4,797,492
	4,797,331	408	4,797,105	843	4,797,126	315	4,797,408	338	4,797,452	312	4,797,493
CLASS 429			4,797,106	**CLASS 440**		345	4,797,409	397	4,797,453	374	4,797,494
103	4,797,333		4,797,107	26	B1 4,668,196	346	4,797,407	476	4,797,454	420	4,797,495
104	4,797,332	**CLASS 435**		**CLASS 455**		356	4,797,410	504	4,797,455	544	4,797,496
CLASS 430		6	4,797,355	33	4,797,947	357	4,797,411	531	4,797,456	**CLASS 549**	
5	4,797,334	7	4,797,356	54	4,797,948	383	4,797,412	534	4,797,457	245	4,797,497
35	4,797,335	34	4,797,357	230	4,797,949	432	4,797,413	**CLASS 526**		800	4,797,498
57	4,797,336	68	4,797,359	276	4,797,950	443	4,797,414	194	4,797,458	559	4,797,499
58	4,797,337	105	4,797,360	608	4,797,951	464	4,797,415	209	4,797,459	**CLASS 556**	
	4,797,338	176	4,797,358	**CLASS 501**		473	4,797,417	281	4,797,460	1	4,797,500
65	4,797,299	198	4,797,361	12	4,797,376	485	4,797,416	348.6	4,797,461	445	4,797,501
109	4,797,339	221	4,797,362	39	4,797,377	521	4,797,418	**CLASS 528**		**CLASS 558**	
	4,797,340	235	4,797,363	95	4,797,378	588	4,797,419	12	4,797,462	52	4,797,502
114	4,797,341	243	4,797,364	**CLASS 502**		643	4,797,420	60	4,797,463	359	4,797,503
137	4,797,342	256	4,797,365	101	4,797,379	644	4,797,421	110	4,797,464	**CLASS 560**	
138	4,797,343	264	4,797,366	159	4,797,380	912	4,797,422	176	4,797,465	4	4,797,504
	4,797,344	313	4,797,367	202	4,797,381	914	4,797,423	185	4,797,466	021	4,797,505
165	4,797,345	320	4,797,368	245	4,797,382	**CLASS 521**		203	4,797,467	121	4,797,506
192	4,797,346	**CLASS 436**		338	4,797,383	53	4,797,424	354	4,797,468	**CLASS 600**	
311	4,797,347	69	4,797,369	**CLASS 503**		64	4,797,425	**CLASS 530**		18	4,796,606
326	4,797,348	518	4,797,370	200	4,797,384	93	4,797,426	324	4,797,469	22	4,796,605
372	4,797,349					137	4,797,428	331	4,797,470		
380	4,797,350					159	4,797,427		4,797,472		
387	4,797,351					163	4,797,429				
421	4,797,352										

CLASSIFICATION OF DESIGNS

D2—	30	299,280		801	299,297	D9—	370	299,314			299,331	D15—	11	299,348
	209	299,281	D7—	11	299,298		398	299,315			299,332			299,349
	226	299,282		13	299,299	D10—	15	299,316			299,333		29	299,350
	314	299,283		43	299,300		69	299,317	D13—	4	299,334			299,351
		299,284		68	299,301		78	299,318	D14—	102	299,345		144	299,352
	317	299,285			299,302	D11—	153	299,319		111	299,346		145	299,353
D3—	32	299,286		104	299,303			299,320		113	299,347		199	299,354
	40	299,287		309	299,304		158	299,321		150	299,340	D16—	123	299,356
	56	299,288		332	299,305	D12—	14	299,322		151	299,342		131	299,357
D4—	134	299,289		351	299,306			299,323			299,343	D18—	1	299,358
D5—	46	299,290	D8—	1	299,307		86	299,324		225	299,335		39	299,355
	61	299,291		93	299,308		92	299,325			299,336	D19—	75	299,359
D6—	367	299,292		300	299,309		131	299,326			299,338		90	299,360
	372	299,293		356	299,310		140	299,327		241	299,339			299,361
	417	299,294			299,311		146	299,328		247	299,341	D21—	1	299,362
	434	299,295		367	299,312			299,329		249	299,344		31	299,363
	444	299,296		373	299,313		147	299,330						

D22—	34	299,364											
	104	299,366											
	134	299,367											
	171	299,368											
	191	299,365											
		299,369											
	194	299,370											
		299,371											
	196	299,372											
		299,373											
	255	299,374											
D22—	118	299,375											
	129	299,376											
	134	299,377											
	136	299,378											
D23—	249	299,379											

CLASSIFICATION OF PLANTS

P.—	7	6,517	37	6,520		6,523		6,525		6,532	6,530
	9	6,518	68	6,521		6,528		6,526			
	34	6,519		6,522	69	6,524		6,527	74	6,531	88 6,529

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
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PATENTS

01 :	4,796,333		4,796,809		4,797,536		4,797,289		4,796,657		4,796,794
	4,796,464		4,796,813		4,797,544		4,797,355		4,796,711		4,796,806
	4,796,833		4,796,827		4,797,569		4,797,503		4,796,720		4,796,892
	4,797,900		4,796,832		4,797,575		4,797,538		4,796,745		4,796,897
04 :	4,796,572		4,796,835		4,797,614		4,797,627		4,796,756		4,796,938
	4,796,612		4,796,837		4,797,616		4,797,796		4,796,788		4,796,975
	4,797,121		4,796,838		4,797,619	09 :	Re.32,827		4,796,803		4,797,093
	4,797,220		4,796,843		4,797,626		Re.32,828		4,796,859		4,797,109
	4,797,317		4,796,886		4,797,630		4,796,339		4,796,899		4,797,111
	4,797,654		4,796,891		4,797,633		4,796,467		4,796,920		4,797,114
	4,797,663		4,796,893		4,797,643		4,796,526		4,797,055		4,797,133
	4,797,674		4,796,894		4,797,652		4,796,527		4,797,067		4,797,137
	4,797,806		4,796,909		4,797,656		4,796,556		4,797,099		4,797,158
05 :	4,797,103		4,796,919		4,797,672		4,796,621		4,797,128		4,797,176
	4,797,208		4,796,940		4,797,677		4,796,627		4,797,424		4,797,185
06 :	4,796,314		4,796,960		4,797,681		4,796,687		4,797,460		4,797,195
	4,796,347		4,796,964		4,797,682		4,796,826		4,797,685		4,797,196
	4,796,348		4,796,987		4,797,693		4,796,966		4,797,815		4,797,224
	4,796,350		4,796,990		4,797,730		4,797,064		4,797,818		4,797,233
	4,796,383		4,797,016		4,797,746		4,797,186		4,797,878		4,797,363
	4,796,384		4,797,033		4,797,752		4,797,189		4,797,893		4,797,441
	4,796,389		4,797,040		4,797,756		4,797,190		4,797,898		4,797,470
	4,796,393		4,797,053		4,797,762		4,797,214	13 :	4,796,361		4,797,497
	4,796,426		4,797,056		4,797,763		4,797,227		4,796,610		4,797,565
	4,796,466		4,797,069		4,797,767		4,797,244		4,797,087		4,797,588
	4,796,469		4,797,085		4,797,774		4,797,298		4,797,115		4,797,590
	4,796,471		4,797,094		4,797,792		4,797,305		4,797,318		4,797,604
	4,796,479		4,797,105		4,797,793		4,797,323		4,797,555		4,797,618
	4,796,504		4,797,118		4,797,803		4,797,365		4,797,680		4,797,642
	4,796,510		4,797,125		4,797,817		4,797,379		4,797,876		4,797,697
	4,796,536		4,797,126		4,797,830		4,797,394		4,797,911		4,797,753
	4,796,537		4,797,134		4,797,834		4,797,403	15 :	4,796,542		4,797,779
	4,796,562		4,797,145		4,797,836		4,797,486	16 :	4,796,820		4,797,784
	4,796,609		4,797,147		4,797,841		4,797,490		4,797,773		4,797,786
	4,796,615		4,797,153		4,797,848		4,797,511	17 :	Re.32,829		4,797,802
	4,796,618		4,797,168		4,797,850		4,797,533		4,796,306		4,797,820
	4,796,620		4,797,170		4,797,852		4,797,609		4,796,329		4,797,929
	4,796,623		4,797,175		4,797,856		4,797,613		4,796,332		4,797,947
	4,796,632		4,797,187		4,797,877		4,797,683		4,796,356	18 :	4,796,322
	4,796,633		4,797,207		4,797,881		4,797,832		4,796,397		4,796,429
	4,796,640		4,797,260		4,797,896		4,797,840		4,796,450		4,796,451
	4,796,648		4,797,261		4,797,899		4,797,859		4,796,460		4,796,484
	4,796,651		4,797,276		4,797,923	10 :	4,797,489		4,796,461		4,796,532
	4,796,654		4,797,277		4,797,934		4,797,553		4,796,507		4,796,762
	4,796,656		4,797,283		4,797,950	11 :	4,796,790		4,796,530		4,796,841
	4,796,684		4,797,303		4,075,491		4,797,804		4,796,552		4,796,870
	4,796,700		4,797,312	08 :	4,796,372	12 :	4,796,325		4,796,577		4,796,946
	4,796,706		4,797,356		4,796,472		4,796,473		4,796,614		4,796,958
	4,796,734		4,797,407		4,796,599		4,796,477		4,796,645		4,797,007
	4,796,738		4,797,416		4,796,727		4,796,553		4,796,731		4,797,081
	4,796,758		4,797,454		4,796,772		4,796,624		4,796,736		4,797,256
	4,796,783		4,797,475		4,796,845		4,796,630		4,796,742		4,797,272
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Oct. 26, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 14, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,563,776 through 4,564,955
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 12, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,309,774 through 4,310,924
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED OCTOBER 30, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,479,268	06/381,559	10/30/84
4,479,270	06/310,639	10/30/84
4,479,276	06/291,702	10/30/84
4,479,278	06/351,857	10/30/84
4,479,281	06/460,670	10/30/84
4,479,285	06/310,209	10/30/84
4,479,287	06/361,896	10/30/84
4,479,288	06/456,375	10/30/84
4,479,295	06/248,486	10/30/84
4,479,300	06/475,279	10/30/84
4,479,302	06/514,558	10/30/84
4,479,317	06/424,529	10/30/84
4,479,318	06/447,540	10/30/84
4,479,321	06/441,612	10/30/84
4,479,323	06/462,317	10/30/84
4,479,334	06/331,535	10/30/84
4,479,335	06/521,153	10/30/84
4,479,344	06/363,813	10/30/84
4,479,347	06/409,413	10/30/84
4,479,348	06/435,888	10/30/84
4,479,353	06/419,268	10/30/84
4,479,358	06/498,866	10/30/84
4,479,362	06/448,560	10/30/84
4,479,365	06/521,427	10/30/84
4,479,374	06/469,137	10/30/84
4,479,377	06/478,319	10/30/84
4,479,379	06/497,902	10/30/84
4,479,382	06/365,593	10/30/84
4,479,384	06/494,208	10/30/84
4,479,401	06/314,287	10/30/84
4,479,403	06/504,239	10/30/84
4,479,406	06/583,614	10/30/84
4,479,414	06/419,984	10/30/84
4,479,420	06/348,105	10/30/84
4,479,423	06/553,979	10/30/84
4,479,427	06/498,892	10/30/84
4,479,438	06/463,233	10/30/84
4,479,449	06/484,912	10/30/84
4,479,452	06/420,284	10/30/84
4,479,457	06/435,985	10/30/84
4,479,460	06/443,601	10/30/84
4,479,465	06/490,456	10/30/84
4,479,487	06/501,114	10/30/84
4,479,491	06/401,845	10/30/84
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4,479,522	06/405,830	10/30/84
4,479,524	06/425,179	10/30/84
4,479,533	06/267,537	10/30/84
4,479,546	06/461,991	10/30/84
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4,479,630	06/466,254	10/30/84
4,479,632	06/375,053	10/30/84
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4,480,327	06/559,167	10/30/84
4,480,332	06/374,124	10/30/84
4,480,334	06/389,051	10/30/84

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,622,959, Re. S.N. 273,270, Filed Nov. 18, 1988, Cl. 128/92 YZ, MULTI-USE FEMORAL INTRAMEDULLARY NAIL, Randall E. Marcus, Owner of Record: *Inventor,* Attorney or Agent: Roy F. Hollander, Ex. Gp.: 331

4,623,076, Re. S.N. 272,525, Filed Nov. 17, 1988, Cl. 222/482, REFILLABLE CONTAINER WITH DEPRESSURIZATION MEAN, David Karpal, Owner of Record: *Inventor,* Attorney or Agent: Bernard L. Kleinke, Ex. Gp.: 311

4,637,693, Re. S.N. 258,839, Filed Oct. 12, 1988, Cl. 350/536, MICROSCOPE INSPECTION SLIDE, Vance C. Mitchell, Owner of Record: *ICL Scientific, Fountain Valley, Calif.,* Attorney or Agent: Edward S. Irons, Ex. Gp.: 350

4,673,458, Re. S.N. 271,710, Filed Nov. 16, 1988, Cl. 156/695, METHOD FOR PREPARING A PRINTED CIRCUIT BOARD, Katsukiyo Ishikawa, et al., Owner of Record: *Nippon Paint Co. Ltd., Osaka, Japan,* Attorney or Agent: John T. Miller, Ex. Gp.: 131

4,693,124, Re. S.N. 260,590, Filed Oct. 21, 1988, Cl. 73/863.11, A TEMPERATURE CONTROLLING APPARATUS FOR USE WITH PORE VOLUME AND SURFACE AREA ANALYZERS, Graham R. Killip, et al., Owner of Record: *Micromeritics Instrument Corp., Norcross, Ga.,* Attorney or Agent: Jeffrey E. Young, Ex. Gp.: 265

4,746,081, Re. S.N. 275,095, Filed Nov. 22, 1988, Cl. 244/89, AIRCRAFT, Alessandro Mazzoni, Owner of Record: *Industrie Aeronautiche E. Rinaldo Piaggio S.P.A., Enova, Italy,* Attorney or Agent: Robert M. Hessin, Ex. Gp.: 315

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,379,696, Reexam. No. 90/001,658, Requested: Dec. 1, 1988, Cl. 434/98, LATEX MYLAR CHIP, Stanley Lerner, Owner of Record: *Color Communications Inc., Chicago, Ill.,* Attorney or Agent: John F. Flannery, Ex. Gp.: 150, Requester: Owner

4,503,095, Reexam. No. 90/001,655, Requested: Dec. 1, 1988, Cl. 427/265, HEAT-SENSITIVE COLOR TRANSFER RECORDING MEDIA, Tadao Seto, et al., Owner of Record: *Fuji Kagokushi Kogyo Co., Osaka, Japan,* Attorney or Agent: R. J. Kubovcik, Ex. Gp.: 150, Requester: James J. Brown, Rockville, Md.

4,574,859, Reexam. No. 90/001,659, Requested: Dec. 5, 1988, Cl. 152/410, RIM ASSEMBLY, William T. Smith, Owner of Record: *Dotson Wheel Corp., Inc., Saltville, Va.,* Attorney or Agent: William J. Waugaman, Ex. Gp.: 310, Requester: Owner

4,618,332, Reexam. No. 90/001,656, Requested: Nov. 30, 1988, Cl. 474/80, DERAILLEUR FOR A BICYCLE, Masahi Nagano, Owner of Record: *Bank of New England, Boston, Mass.,* Attorney or Agent: Stevens, Davis, et al., Ex. Gp.: 350, Requester: Shimano Industrial Co., Osaka, Japan

4,653,360, Reexam. No. 90/001,657, Requested: Dec. 1, 1988, Cl. 82/18, CNC TURNING MACHINE, Ronald E. Compton, Owner of Record: *The Cross Co., Fraser, Mich.,* Attorney or Agent: R. J. Eifler, Ex. Gp.: 320, Requester: Owner

Registration to Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on Oct. 12, 1988 were mailed to 460 candidates. The following list contains the names of persons who successfully passed the examination. Persons entitled at this time to receive provisional recognition pursuant to 37 CFR 10.9(a) have been given the same to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR 10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before Feb. 12, 1989.

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CAMERON WEIFFENBACH,
Dec. 21, 1988 *Director, Office of Enrollment and Discipline.*

National Inventors Expo

The Patent and Trademark Office, the National Council of Intellectual Patent Law Associations and the National Inventors Hall of Fame Foundation, Inc. will sponsor the Seventeenth Annual National Inventors Expo in the Public Search Rm. on Saturday, Feb. 11, 1989 from 1:00 to 5:00 p.m. and Sunday, Feb. 12, 1989 from 10:00 to 5:00 p.m. The Public is invited to view the exhibits on these days. Inventors will be inducted into the National Inventors Hall of Fame on Sunday, Feb. 12 at 2:00 p.m.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 10, 1989 at 5:00 p.m. The removal of all personal property from the Search Room would be appreciated.

DONALD J. QUIGG,
Dec. 22, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

Department of Commerce
Patent and Trademark Office
37 CFR Part 10

[Docket No. 81146-8246]

Exhaustion of Administrative Remedies in Patent and Trademark Office Disciplinary Proceedings

Agency: Patent and Trademark Office, Commerce
Action: Notice of Proposed Rulemaking
Summary: This notice of proposed rulemaking sets forth proposed amendments to 37 CFR 10.155 and 10.157. The purpose of the amendments is to clarify that a respondent dissatisfied with the initial decision by the administrative law judge in a Patent and Trademark Office (PTO) disciplinary proceeding must exhaust available administrative remedies, i. e., appeal to the Commissioner of Patents and Trademarks, before seeking judicial review under 35 U.S.C. §32. Interested parties are invited to comment on the proposed amendments.
Dates: Written comments must be received on or before Feb. 27, 1989 to ensure consideration. No oral hearing will be conducted.
Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231, marked to the attention of Harris A. Pitlick.
For Further Information Contact: Harris A. Pitlick by telephone at (703) 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231
Supplementary Information: It is possible that present rules may be interpreted not to explicitly require a respondent dissatisfied with the desicion of the administrative law judge (initial decision) in a PTO disciplinary proceeding to file an appeal with the Commissioner of Patents and Trademarks as a condition precedent to filing a petition for review in the United States District Court for the District of Columbia under 35 U.S.C. §32.

Under present 37 CFR 10.154(a), in the absence of an appeal to the Commissioner, the initial decision will, without further proceedings, become the decision of the Commissioner thirty (30) days therefrom. Under 35 U.S.C. §32, Local Rule 213 of the United States District Court for the District of Columbia and present 37 CFR 10.157, review of the final decision of the Commissioner may be obtained by filing a petition in that court within 30 days of the date of final agency action. Thus, as presently constituted, the rules could be construed to permit a respondent dissatisfied with the initial decision to bypass review by the Commissioner and directly seek judicial review within 60 days of the date of the initial decision.

The purpose of 37 CFR 10.154-10.157 is to outline the steps for seeking review of an initial decision in a disciplinary proceeding. There is no provision for bypassing a determination by the Commissioner unless both parties accept the decision and do not desire any further review of the initial decision. 37 CFR 10.155 amd 10.157 are propsed to be amended to clarify that a respondent must exhaust available administrative remedies by appeal to the Commissioner before judicial review can be considered ripe.

Section 10.155 is proposed to be amended by adding a new paragraph (d), which provides that absent an appeal by the Director, failure by the respondent to appeal under the provisions of this section shall be deemed to be both an acceptance of the initial decision and a waiver of the right to further administrative or judicial review.

Section 10.157 is proposed to be amended by making paragraph (a) thereof subject to paragraph (d) of 37 CFR 10.155.
Other Considerations: The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. §3501 *et seq.*

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The General Counsel has certified to the Chief Counsel for Advocacy, Small Business Administration that this proposed rule change is not expected to have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354).

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in costs or prices for consumers, individual industries, Federal, State or local government agencies, or geographic regions. There will be no adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no federalism implications affecting the relationship between the national govenment and the States as outlined in Executive Order 12612.

This proposed rule change does not contain a collection of information subject to the Paperwork Reduction Act of 1980, 44 U.S.C. §3501 *et seq.*

List of Subjects in 37 CFR Part 10

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Trademarks.

For the reasons set out in the preamble, it is proposed to amend 37 CFR Part 10 as follows wherein removals are indicated by brackets and additions by arrows:

PART 10-REPRESENTATION OF OTHERS BEFORE THE PATENT AND TRADEMARK OFFICE

1. The authority citation for 37 CFR Part 10 would continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

2. Section 10.155 is proposed to be amended by adding new paragraph (d) as follows:

§10.155 Appeal to the Commissioner.

* * * * *

►(d) In the absence of an appeal by the Director, failure by the respondent to appeal under the provisions of this section shall be deemed to be both acceptance by the respondent of the initial decision and waiver by the respondent of the right to further administrative or judicial review.◄

3. Section 10.157 is proposed to be amended by revising paragraph (a) as follows:

§10.157 Review of Commissioner's final decision

(a) Review of the Commissioner's final decision in a disciplinary case may be had ►, subject to §10.155(d),◄ by a petition filed in the United States District Court for the District of Columbia. See 35 U.S.C. 32 and Local Rule 213 of the United States District Court for the District of Columbia.

Dec. 21, 1988

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 17, 1989

Re. 32,719	4,728,057	4,752,485	4,760,884
4,399,430	4,730,074	4,752,647	4,760,956
4,514,145	4,731,317	4,752,733	4,761,382
4,514,692	4,731,420	4,753,082	4,761,523
4,561,145	4,731,662	4,753,314	4,762,009
4,581,834	4,731,795	4,753,717	4,762,061
4,598,289	4,732,368	4,753,732	4,762,557
4,616,702	4,732,600	4,754,155	4,762,645
4,624,203	4,733,091	4,754,182	4,763,280
4,626,738	4,735,608	4,754,648	4,763,359
4,631,331	4,737,695	4,755,259	4,763,568
4,666,813	4,737,794	4,755,558	4,763,818
4,672,126	4,737,974	4,755,595	4,763,956
4,673,282	4,738,630	4,755,617	4,763,967
4,673,596	4,738,697	4,755,870	4,764,035
4,674,058	4,738,789	4,756,034	4,764,452
4,680,214	4,738,798	4,756,267	4,764,790
4,686,352	4,739,438	4,756,373	4,765,106
4,690,939	4,739,491	4,756,408	4,765,136
4,691,069	4,739,624	4,756,415	4,765,602
4,695,835	4,740,243	4,756,494	4,766,205
4,698,242	4,741,227	4,757,029	4,766,319
4,699,470	4,741,455	4,757,154	4,766,567
4,701,277	4,741,503	4,757,617	4,766,701
4,701,393	4,742,364	4,757,700	4,766,818
4,702,652	4,742,455	4,757,997	4,767,185
4,703,955	4,742,518	4,758,024	4,767,188
4,704,862	4,743,908	4,758,035	4,767,264
4,705,320	4,744,219	4,758,138	4,767,580
4,705,378	4,747,706	4,758,500	4,768,060
4,707,689	4,747,833	4,758,605	4,768,351
4,708,997	4,747,898	4,758,651	4,769,369
4,709,273	4,748,159	4,758,957	4,769,474
4,709,942	4,748,958	4,759,202	4,769,519
4,711,963	4,749,756	4,759,251	4,769,558
4,712,172	4,750,048	4,759,656	4,769,715
4,718,929	4,750,229	4,760,121	4,770,263
4,720,787	4,750,527	4,760,183	4,771,176
4,721,162	4,750,631	4,760,189	4,771,357
4,723,052	4,750,776	4,760,229	4,771,380
4,723,232	4,750,949	4,760,446	4,771,736
4,724,417	4,750,988	4,760,570	4,771,884
4,724,827	4,751,083	4,760,635	4,772,007
4,726,316	4,752,313	4,760,706	4,772,278
4,727,524	4,752,378	4,760,743	4,772,489

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Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to Reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

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	Columbus: Ohio State University Libraries	(614) 292-6286
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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	Milwaukee Public Library	(414) 278-3247

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 17, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-17-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-15-85
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-28-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-17-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	11-10-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	7-7-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-22-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during December 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,624,839 to 3,631,538, inclusive
Plant Patents ..... None

REEXAMINATIONS

JANUARY 17, 1989

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

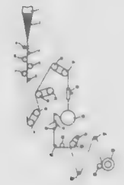
B1 4,096,226 (992nd)
INTEGRATED SPIN-DRAW-TEXTURIZING PROCESS FOR MANUFACTURE OF TEXTURIZED POLYAMIDE FILAMENTS

Wolfgang Martin, Ludwigshafen; Dieter Herion, Frankenthal; Dimiter Bayew, Mannheim, and Wolfgang Bauer, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland, Pfalz, Fed. Rep. of Germany

Reexamination Request No. 90/001,269, Jun. 26, 1987.
Reexamination Certificate for Patent No. 4,096,226, issued Jun. 20, 1978, Ser. No. 796,169, May 12, 1977.
Continuation-in-part of Ser. No. 320,481, Jan. 2, 1973, abandoned.

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1972, 2200064

Int. Cl.[4] **D01D** *5/22, 5/12*
U.S. Cl. 264—168



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2, 3 and 7 are cancelled.

Claim 1 is determined to be patentable as amended.

Claims 4–6, dependent on an amended claim, are determined to be patentable.

New claim 8 is added and determined to be patentable.

1. In an integrated process for the manufacture of a texturized *nylon 6* yarn by [a] *the* continuous melt-spinning, drawing and texturizing of [a fiber-forming synthetic linear high molecular weight polymer selected from the group consisting of poly-ε-caprolactam and polyhexamethylene adipamide] *nylon 6 having a relative viscosity, measured on a solution of 1 g of nylon 6 in 100 ml of 96% sulfuric acid at 25° C., of between 2.4 and 3.2* wherein the steps of spinning, drawing and texturizing are combined in immediate succession, the improvement which comprises:

a. melt-spinning filaments of [said fiber-forming polymer] *nylon 6* at a temperature of between 260° C. and 295° C. and at a spin-draw melt attenuation ratio of between [1:10 and 1:60] *1:20 and 1:40;*

b. drawing the spun filaments only on forwarding elements for the development of a uniform tensile strength and modulus of elasticity, said spun filaments being collected as a bundle leaving the melt-spinning stage and directly wound on at least two forwarding elements, of which the initial elements have a surface temperature of between 50° C. and 120° C. and the final element has a surface temperature of between 80° C. and 350° C. at a draw ratio such that the drawn filaments on leaving the drawing stage, have an extensibility of between 10 and 50%; and

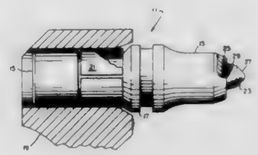
c. air-texturizing said filaments as a collected yarn leaving the drawing stage at a velocity of between 800 and 3,000 m/min, the overfeed in the texturizing stage being from [10 to 50%] *25 to 35%* at a filament temperature, prior to texturization, of between 50° C. and 180° C., the spinning drawing and texturizing yielding a yarn with a total final denier of from 100 to 3,600 dtex and an individual filament denier of from 3 to 30 detex.

B1 4,497,520 (993rd)
ROTATABLE CUTTING BIT

Randall W. Ojanen, Bristol, Va., assignor to GTE Products Corporation, Stamford, Conn.

Reexamination Request Nos. 90/001,242, May 18, 1987 and 90/001,451, Feb. 29, 1988.
Reexamination Certificate for Patent No. 4,497,520, issued Feb. 5, 1985, Ser. No. 489,990, Apr. 29, 1983.

Int. Cl.[4] **E21C** *35/18*
U.S. Cl. 299—86



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT.

Claims 1–3, 6, 11, 12, and 14 are determined to be patentable as amended.

Claims 4, 5, 7–10, 13 and 15, dependent on an amended claim, are determined to be patentable.

New claims 16–36 are added and determined to be patentable.

1. A rotatable cutting bit comprising a head portion, a shank portion depending from said head portion along a longitudinal axis, said head portion having a socket at the forward end, a hard insert having coaxially aligned and integral sections, said sections comprising a base section, a tip section, and an intermediate section contiguous said base and tip section, said base being fixedly mounted in said socket and having a first diameter, said tip section being conically shaped and having a maximum second diameter, said intermediate section having a maximum third diameter, said second and third diameters each being less than said first diameter,

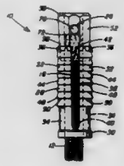
said intermediate section having a frusto-conical shape and tapering outwardly from the junction with the tip section to the junction with the base section, said intermediate section and said base forming a fillet at the juncture thereof whereby said base forms a shoulder with said intermediate section.

B1 4,516,885 (994th)

METHOD AND APPARATUS FOR COMBINING RESIN BONDING AND MECHANICAL ANCHORING OF A BOLT IN A ROCK FORMATION

Frank Calandra, Jr., Johnstown, Pa., assignor to Jennmar Corporation, Pittsburgh, Pa.

Reexamination Request No. 90/001,347, Oct. 8, 1987.
Reexamination Certificate for Patent No. 4,516,885, issued May 14, 1985, Ser. No. 602,204, Apr. 19, 1984.
Continuation of Ser. No. 497,113, Jul. 5, 1983, which is a division of Ser. No. 209,134, Nov. 21, 1980, Pat. No. 4,419,805.
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.[4] B23P *25/00*; **F16B** *13/06*
U.S. Cl. 405—261



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2–6** is confirmed.

Claim **1** is determined to be patentable as amended. Claims **7–9**, dependent on an amended claim, is determined to be patentable.

1. A method of anchoring a bolt in a bore hole comprising the steps of,

positioning a camming plug having an internally threaded bore and an outlet surface into the upper portion of an expansion shell with a portion of said camming plug outer surface in abutting relation with a portion of the inner surface of a plurality of fingers extending upwardly from a lower ring portion of said expansion shell,

positioning said expansion shell on the threaded end portion of said bolt and threadedly engaging said camming plug to the end of said threaded portion of said bolt in a manner that said camming plug is movable longitudinally on said bolt threaded portion,

inserting a bonding material into a bolt hole,

inserting said bolt with said camming plug threadedly engaged thereto into a bore hole,

rotating said [bore] *bolt* in a preselected direction while maintaining said camming plug in fixed relation with said expansion shell to thereby mix at least a portion of said bonding material, and

thereafter rotating said bolt in said same preselected direction and moving said camming plug on said bolt to expand the fingers of said expansion shell and apply a tension to said bolt in said bore hole.

B1 4,518,292 (995th)

METHOD AND APPARATUS FOR COMBINING RESIN BONDING AND MECHANICAL ANCHORING OF A BOLT IN A ROCK FORMATION

Frank Calandra, Jr., Johnstown, Pa., assignor to Jennmar Corporation, Pittsburgh, Pa.

Reexamination Request No. 90/001,348, Oct. 8, 1987.
Reexamination Certificate for Patent No. 4,518,292, issued May 21, 1985, Ser. No. 497,113, Jul. 5, 1983.
Division of Ser. No. 209,134, Nov. 21, 1980, Pat. No. 4,419,805.
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.[4] E21D *20/02*; **F16B** *13/00*; **B23P** *25/00*
U.S. Cl. 411—82

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

1. A bolt assembly for securing a bolt in a bore hole having a bonding material therein comprising,

bonding material adapted to be positioned in an unmixed condition in a bore hole,

a bolt having a threaded end portion,

a camming plug having an internally threaded bore and an outer surface, said camming plug threadedly engaged to the threads adjacent the end of said bolt threaded end portion, said camming plug positioned to move axially on said bolt upon rotation of said bolt in a preselected direction,

an expandable shell having a plurality of longitudinally extending fingers,

said fingers each having an inner surface and an outer surface, a portion of said inner surface abutting a portion of



said camming plug outer surface and a portion of said finger outer surface adapted to engage the wall of said bore hole,

said expandable shell fingers arranged to expand outwardly to engage said outer surface of said fingers to the wall of said bore hole by longitudinal movement of said camming plug relative to said bolt threaded end portion and said expandable shell,

means for mixing at least a portion of said bonding material in said bore hole upon rotation of said bolt in said preselected direction in said bore hole while maintaining said expansion fingers in an unexpanded condition, and

means for moving said camming plug axially on said bolt threaded end portion and relative to said expandable shell fingers upon rotation of said bolt in said same preselected direction to expand said fingers and anchor said bolt in said bore hole.

B1 4,560,604 (996th)

METHOD OF FLOCKING TREATMENT

Goro Shimizu, and Yosuke Kitagawa, both of Ohtsu, Japan, assignors to Matsui Shikiso Chemical Co., Ltd., Japan

Reexamination Request No. 90/000,975, Mar. 26, 1986.
Reexamination Certificate for Patent No. 4,560,604, issued Dec. 24, 1985, Ser. No. 643,054, Aug. 22, 1984.
Claims priority, application Japan, Aug. 24, 1983, 58-154384
Int. Cl.[4] B05D *1/06, 1/14*
U.S. Cl. 428—87

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–2** are cancelled.

[**1.** A method of flocking treatment characterized by entirely or partially coating a surface of a shaped material of a synthetic resin or fibers with an adhesive having incorporated therein a thermally color-changeable particulate material, the particulate material comprising three components enclosed in a high-molecular-weight compound, the three components being an electron donating chromogenic substance, an electron accepting substance corresponding to the chromogenic substance and a solvent having a boiling point of at least 150° C. and selected from the group consisting of alcohols, amides, esters and azomethines; and electrostatically flocking the resulting adhesive layer with colored or colorless short fibers.]

REISSUES

JANUARY 17, 1989

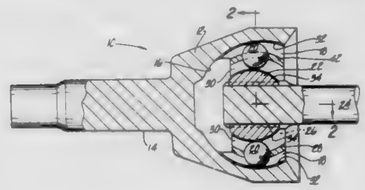
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,830

METHOD OF FORMING A PRECISION BALL TRACK

Daniel W. Hazebrook, Detroit, Mich., assignor to GKN Automotive Components Inc., Auburn Hills, Mich.

Original No. 4,611,373, dated Sep. 16, 1986, Ser. No. 801,494, Nov. 22, 1985. Continuation of Ser. No. 588,514, Mar. 12, 1984, abandoned. Application for reissue Jun. 29, 1987, Ser. No. 67,300
Int. Cl.[4] B21D *53/12*; **B21K** *1/04, 1/05*; **B23P** *13/02*
U.S. Cl. 29—148.4 C **18 Claims**



1. A method of forming a precision ball race groove track in a race member of a universal joint, said method comprising the steps of:

forming said race member with a formed ball race groove track and with a recess groove extending *substantially* along *the apex of* said formed ball race groove track, said recess groove having a base that will not come into contact with a finishing tool used to finish machine said ball race groove track; and

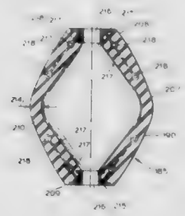
finish machining said formed ball race groove track to a predetermined precision shape to produce said precision ball race groove track by moving said ball race groove track into contact with the finishing tool such that the finishing tool contacts said ball race groove track to thereby finish machine said ball race groove track without coming into contact with said base of said recess groove extending along said formed ball race groove track.

Re. 32,831

APPARATUS FOR SEALING A WELL CASING

Clinton O. Shonrock, Los Alamos, N. Mex.; John O. Wambaugh, and Joachim A. Hoppe, both of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Original No. 4,554,973, dated Nov. 26, 1985, Ser. No. 544,658, Oct. 24, 1983. Application for reissue Apr. 26, 1987, Ser. No. 53,985
Int. Cl.[4] E21B *33/128*
U.S. Cl. 166—135 **18 Claims**



1. An elastomeric sealing element for a bridge plug for use within a well casing and production tubing, the diameter of the production tubing being smaller than the diameter of the well casing, comprising:

a generally tubular-shaped elastomeric member having first and second ends and a unitary wall portion therebetween;

the elastomeric member having a normal, unstressed configuration, wherein the diameter thereof varies along the longitudinal axis of the elastomeric member, with the diameter intermediate the ends of the elastomeric member being larger than the diameter at the ends of the elastomeric member;

the elastomeric member being elongatable along its longitudinal axis whereby the diameter intermediate the ends of the elastomeric member is substantially the same as the diameter of its ends so that the elastomeric member may pass through the production tubing; and

the elastomeric member being compressible along its longitudinal axis to a configuration where said ends of said elastomeric member are in contact with each other whereby said unitary wall portion sealingly conforms to the well casing.

10. A through-tubing bridge plug adapted to be lowered through a tubing string in a cased well bore and set in an interval thereof below the lower end of the tubing string comprising:

an elongated body;

packer means including a plurality of tubular elastomeric sealing members mounted around said body and cooperatively arranged with their intermediate portions respectively having an external diameter larger than the diameter of their upper and lower end portions when said sealing members are in a normal, unstressed configuration so that their intermediate portions will be doubled over and flattened together in response to oppositely-directed forces compressing their upper and lower end portions together for expanding said intermediate portions of said sealing members outwardly into sealing engagement with a well bore casing;

means releasably retaining each of said sealing members on said body in an initial longitudinally-elongated configuration to temporarily reduce the diameter of said intermediate portions of said sealing members to facilitate the passage of said bridge plug through a tubing string, said retaining means being operatively arranged to release said sealing members for outward expansion of their intermediate portions into sealing engagement with a well bore casing as their upper and lower end portions are compressed together by said oppositely-directed forces;

reinforcing means including upper and lower sets of opposed reinforcing members on said body above and below said packer means and respectively having petal-like projections disposed around said body and normally inclined outwardly therefrom, each set of said opposed reinforcing members having their respective projections angularly aligned with one another so that as said oppositely-directed forces move said reinforcing members toward said packer means, said projections will be swung away from said body through an arc of less than 90-degrees to laterally-extended positions where their opposed faces will be coengaged against one another for supporting said end portions of said sealing members against further longitudinal movement; and

upper and lower anchoring means cooperatively arranged on said body above and below said reinforcing means for movement into anchoring engagement with a well bore casing after said intermediate portions of said sealing members are expanded outwardly into sealing engagement therewith.

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Re. 32,832

TEMPORARY OBTURATION PANEL OF A PASSAGE INSIDE A VESSEL ACCESSIBLE ONLY THROUGH AN ORIFICE OF SMALLER SIZE

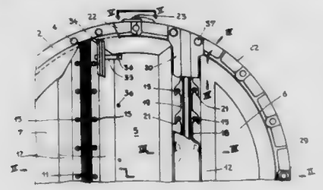
Jean Coussan, Paris, and Claude Lavaleric, L'Isle Adam, both of France, assignors to Framatome & Cie., Courbevoie, France

Original No. 4,600,115, dated Jul. 15, 1986, Ser. No. 667,192, Nov. 1, 1984. Application for reissue Apr. 13, 1987, Ser. No. 37,903

Claims priority, application France, Nov. 2, 1983, 83 17391

Int. Cl.[4] B65D *45/00*

U.S. Cl. 220—327 **4 Claims**



1. Temporary fluid-tight obturation panel for a passage into a vessel accessible only through an aperture of dimensions less than those of the passage to be obturated, the periphery of the passage to be closed comprising a support collar provided with threaded holes, said obturation panel being constituted by:

at least two panels articulated together by flexible fluid-tight hinges, the size and number of panels being determined to enable passage through the access aperture of the set of panels folded on one another, each panel comprising along its articulated edges a series of latching pins,

a set of stiffeners equal in number to that of the hinges of the panel, each stiffener comprising two lines of holes conjugate with the lines of the latching pins of two contiguous panels,

a frame in at least two parts articulated and foldable on one another, reproducing in folded position the contour of the support collar and comprising means to grip, with the interposition of a seal, the ends of the panels and of the stiffeners against the support collar, by screwing into the threaded holes.

Re. 32,833

SCREENING VACCINES AND IMMUNIZATION PROCESS

Mark I. Greene, Penn Valley, Pa., and Bernard N. Fields, West Newton, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Original No. 4,490,358, dated Dec. 25, 1984, Ser. No. 353,257, Mar. 1, 1982. Application for reissue Dec. 23, 1986, Ser. No. 4,172

Int. Cl.[4] A61K *39/395, 39/42;* **G01N** *33/54, 33/56*

U.S. Cl. 424—86 **12 Claims**

1. The method of immunizing a host mammal against an infectious organism having a site which binds specifically to a receptor site on a host cell which method comprises

providing a first monoclonal antibody which binds specifically to said organism site,

providing a second monoclonal antibody which binds specifically to the first, and

inoculating said mammal with an effective amount of said second antibody to [bind specifically to said receptor site and block binding of said organism thereto.] *immunize said mammal.*

Re. 32,834

AQUEOUS LIQUID FILLED POLYURETHANE GELS AND METHOD OF MAKING THE SAME

Howard P. Cordts, Grafton, and Joan E. Karloske, Saukville, both of Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.

Original No. 4,517,326, dated May 14, 1985, Ser. No. 487,507, Apr. 22, 1983. Continuation-in-part of Ser. No. 273,499, Jun. 15, 1981, abandoned. Application for reissue May 11, 1987, Ser. No. 48,726

Int. Cl.[4] C08L *75/08*

U.S. Cl. 524—310 **38 Claims**

1. A method for producing a thermoset article having a polyurethane elastomer continuous phase and having dispersed liquid-phase droplets as a discontinuous phase, comprising:

A. obtaining polyisocyanate prepolymer having an NCO—value of 2.5–3.0, formed from the reaction of organic di-isocyanate and organic polyether polyol, containing at least 40 percent by weight ethylene oxide adducts;

B. mixing said polyisocyanate prepolymer under reactive conditions with an aqueous reactant including 25 to 65 percent by weight water and 75 to 35 percent by weight of organic polyol, the weight of said aqueous reactant being from 3 to 20 times the weight of said polyisocyanate prepolymer;

C. after gelation of the mixture has commenced but before gelation has completed, forming the mixture into a desired shape until the mixture cures with discrete droplets of unreacted aqueous reactant homogeneously dispersed therethrough; and

D. recovering a homogeneous shaped article containing from 75 to 95 percent by weight of the said aqueous reactant.

Re. 32,835

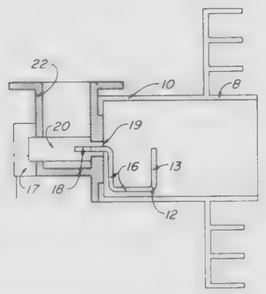
POLARIZED SIGNAL RECEIVER SYSTEM

H. Taylor Howard, San Andreas, Calif., assignor to Chaparral Communications, Inc., San Jose, Calif.

Original No. 4,414,516, dated Nov. 8, 1983, Ser. No. 322,446, Nov. 18, 1981. Application for reissue Nov. 6, 1985, Ser. No. 795,426

Int. Cl.[4] H01P *1/165*

U.S. Cl. 333—21 A **23 Claims**



16. A polarized signal receiver comprising:

first and second waveguides adapted to enable propagation therein along their respective longitudinal axes of signals comprised of polarized electric fields within a predetermined range of frequencies;

a launch probe in said first waveguide and a receiver probe in said second waveguide, each said probe oriented substantially normal to the direction of propagation of the signal comprised of the electric field in the respective waveguide; and

a conductive element interconnecting said probes and entering said second waveguide in one direction through a point of entry surrounded by a first interior wall surface, said first interior wall surface facing in said one direction, said conductive element having a first portion displaced laterally from said point of entry to overlie said first interior wall surface and extending toward a second interior wall surface to a point closer to said second interior wall surface than to said point of entry, said conducting element having a second portion overlying said second interior wall surface, said second interior wall surface facing inwardly of said second waveguide in a direction different than said one direction, said conductive element cooperating with each of said interior wall surfaces as the ground plane therefor such that said conductive element and said interior wall surfaces constitute a single wire above a ground plane transmission line within said second waveguide for said predetermined range of frequencies.

Re. 32,836
Patent Not Issued For This Number

Re. 32,837

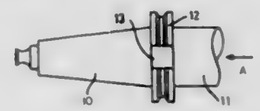
CODING SYSTEMS FOR ELEMENTS OF MACHINE TOOLS, PARTICULARLY OF THE NUMERICALLY CONTROLLED TYPE

Vittorio Corni, Modena, Italy, assignor to Comau S.p.A., Grugliasco, Italy

Original No. 4,533,823, dated Aug. 6, 1985, Ser. No. 457,277, Jan. 11, 1983. Application for reissue Aug. 3, 1987, Ser. No. 82,093

Int. Cl.[4] G06F *15/20*

U.S. Cl. 235—375 **15 Claims**



1. A storage system for elements of machine tools [, particularly] of the numerically controlled type, comprising *a plurality of different machine tool elements,* means (15) for storing [a] *said* plurality of different [said] elements, *a plurality of different "bar" codes comprised of* a different "bar" code (14) carried by each different element, a reading head (17) for reading the different codes, and a code detection sensor (18) adapted to be juxtaposed successively with the various different elements to sense the code on the elements and to transmit to the reading head signals representative of the identity of the said element with which said sensor is juxtaposed.

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PLANT PATENTS

GRANTED JANUARY 17, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,533

AFRICAN VIOLET PLANT NAMED LIBRA

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,413
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Libra, as described and illustrated, and particularly characterized by its single solid purple flowers; upright flower stems curving toward the center; profuse flowering; vigorous growth habit; very attractive girl-type leaves, round, slightly serrated with a small light green center; and long lasting and non-dropping flowering habit.

6,534

AFRICAN VIOLET PLANT NAMED CORINNA

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,414
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Corinna, as described and illustrated, and particularly characterized by its star-shaped, very large light pink flowers with wavy edges; strong upright flower stems, producing a nice bouquet; profuse flowering; vigorous growth habit; medium green oval leaves; and long lasting and non-dropping flowering habit.

6,535

AFRICAN VIOLET PLANT NAMED LOS ANGELES

Reinhold Koltkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,415
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Los Angeles, as described and illustrated, and particularly characterized by its deep blue, semi-double flowers; tight bouquet of flowers on strong peduncles standing free above medium green, strongly girl-type leaves with bright light green centers; vigorous growth habit; and long lasting and non-dropping flowering habit.

6,536

AFRICAN VIOLET PLANT NAMED CAROLYN

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,473
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Carolyn, as described and illustrated, and particularly characterized by its bright, relatively dark pink, violet-shaped single flowers; tight bouquet above the leaves on strong upright flower stems; profuse flowering; vigorous growth habit; dark green, sometimes serrated, velvety leaves; and long lasting and non-dropping flowering habit.

6,537

KENTUCKY BLUEGRASS 'BA 72-492'

Virgil D. Meier, and Eugene W. Mayer, both of Marysville, Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

Filed Mar. 17, 1987, Ser. No. 27,285
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. A variety of Kentucky bluegrass plant, substantially as shown and described, characterized particularly by a high level of resistance to diseases, a desirable green color throughout the growing season, a high quality persistent turf under a wide range of environmental conditions including shady conditions and a medium level of seed yielding capacity.

6,538

KENTUCKY BLUEGRASS—BA 70-139

Virgil D. Meier, and Eugene W. Mayer, both of Marysville, Ohio, assignors to The O.M. Scott & Sons Company, Marysville, Ohio

Filed Mar. 17, 1987, Ser. No. 28,424
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. A variety of Kentucky bluegrass plant, substantially as shown and described, characterized particularly by a high level of resistance to diseases, a desirable green color throughout the growing season, a high quality persistent turf under a wide range of environmental conditions including shady conditions, and a high level of seed yielding capacity.

6,539

PYRAMIDAL ENGLISH OAK NAMED ASJES *QUERCUS ROBUR*

Evert Asjes, Jr., 11601 Blue River Rd., Kansas City, Mo. 64131

Filed Dec. 11, 1986, Ser. No. 940,417
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of *Quercus robur* var. fastigiata and the parts thereof, substantially as herein shown and described, and being particularly distinguished by its fast growing, densely clothed fastigiate form and its very strong resistance to mildew.

6,540

PEACH TREE 'CHIYOHIMI'

Teruo Nishida, Tokyo; Masao Yoshida, Ibaraki; Hidetoshi Kyotani, Tokyo; Masami Yamaguchi, and Teruo Kozono, both of Ibaraki, all of Japan, assignors to Fruit Tree Research Station, Ministry of Agriculture, Forestry and Fisheries, Tsukuba, Japan

Filed Mar. 13, 1987, Ser. No. 25,707
Claims priority, application Japan, Mar. 31, 1986, 61-1893
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—42 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described herein, characterized over known peach trees by (A) having a moderate vigor, (B) being self-fertile with abundant pollen, (C) having a good bearing character and being productive with a low physiological fruit drop, (D) having pink, showy and large flowers, and (E) producing a clingstone fruit (a) having a good keeping quality, a round elliptic shape and sturdy and attractive skin having a white ground color with a bright red blush, (b) maturing early in the season, a few days later than 'Saotome' and a few days earlier than 'Nunomewase', and (c) having a melting flesh having a white color with some red pigment, which has a moderate

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firmness, is fine and juicy, has a moderate sweetness and a low acidity, and has a good taste for dessert.

6,541
NECTARINE TREE, SUMMER LION—TREE
Donald M. Serimian, 2961 McCall Ave., and Lionel M. Serimian, 11310 E. Manning, both of Selma, Calif. 93662
Filed Nov. 13, 1987, Ser. No. 120,495
Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—41 1 Claim

1. A new and distinct variety of nectarine tree to be denominated varietally as "Summer Lion—Three" substantially as illustrated and described and which is characterized principally as to novelty by its production of dark red fruit which are ripe for commercial harvesting approximately July 25 through August 5 in Selma, Calif., the fruit of the subject variety being further characterized as to novelty by having a large size, a superior shape, and being freestone by nature.

6,542
NECTARINE TREE, "MAY LION"
Donald M. Serimian, 2961 McCall Ave., and Lionel M. Serimian, 11310 E. Manning, both of Selma, Calif. 93662
Filed Nov. 13, 1987, Ser. No. 120,497
Int. Cl.[4] A01H 5/03

U.S. Cl. Plt.—41 1 Claim

1. A new and distinct variety of Nectarine Tree substantially as illustrated and described which is remotely similar to the Armking Nectarine Tree (U.S. Plant Pat. No. 2,943) and the Summer Grand Nectarine Tree (U.S. Plant Pat. No. 2,879) from which it was derived as a cross pollinated offspring but from which it is distinguished therefrom and characterized as to novelty by producing fruit which are mature for commercial harvesting approximately May 18 through May 25 in Fresno County, Calif. and which additionally produces a large early season fruit having a dark red skin color and a superior globose shape, and which further has a flesh color which is a uniform clear yellow from the skin to the pit, the fruit of the subject variety having no red coloration in the flesh at commercial maturity.

6,543
NECTARINE TREE, "SUMMER LION"
Donald M. Serimian, 2961 McCall Ave., and Lionel M. Serimian, 11310 E. Manning, both of, Selma, Calif. 93662
Filed Nov. 13, 1987, Ser. No. 120,498
Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—41 1 Claim

1. A new and distinct variety of nectarine tree substantially as illustrated and described which is somewhat similar to the May Grand Nectarine Tree (U.S. Plant Pat. No. 2,794), and the Red Lion Nectarine Tree (U.S. Plant Pat. No. 5,591) from which it was derived as a cross pollinated seedling but from which it is distinguished therefrom and characterized as to novelty by producing fruit which are mature for commercial harvesting approximately July 1 through July 12 in the San Joaquin Valley of central California and which additionally produces fruit which have a very large size, a clingstone nature, a dark red skin color and a flesh color which is amber-yellow; the fruit of the subject variety having noteworthy eating qualities.

6,544
NECTARINE TREE, "SUMMER LION — TWO"
Donald M. Serimian, 2961 McCall Ave., and Lionel M. Serimian, 11310 E. Manning, both of Selma, Calif. 93662
Filed Nov. 13, 1987, Ser. No. 120,499
Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—41 1 Claim

1. A new and distinct variety of nectarine tree substantially as illustrated and described which is somewhat similar to the May Grand Nectarine Tree (U.S. Plant Pat. No. 2,794), and the Red Lion Nectarine Tree (U.S. Plant Pat. No. 5,591) from which it was derived as a cross pollinated seedling but from which it is distinguished therefrom and characterized as to novelty by producing fruit which are mature for commercial harvesting approximately July 10 through July 19 in the San Joaquin Valley of central California and which additionally produces a very large globose shaped fruit which has a freestone nature, a dark burgundy red to a lighter cherry red skin color and a flesh color which is clear amber-yellow; the fruit of the subject variety having excellent eating qualities.

6,545
CHRYSANTHEMUM NAMED "REPIN"
Martinus van der Jagt, Ter Aar, Netherlands, assignor to Chrysantheum Breeders Association NV, Netherlands Antilles
Filed Sep. 30, 1986, Ser. No. 782,101
Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—74 1 Claim

1. A new and distinctive variety of Chrysanthemum named Repin as described and illustrated in the foregoing specification and accompanying drawings.

6,546
MINIATURE ROSE PLANT/MINAFCO
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 29, 1987, Ser. No. 43,809
Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of exhibition form, essentially orange in color, the petals on outside surface being darker orange than the orange on inside surface, and further characterized by a plant of compact well rounded shape; vigorous, with the main stems and shoots being of average thorniness, the said plant being easy to propagate from cuttings or by budding, with an abundance of small semi-glossy to matt foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

6,547
MINIATURE ROSE PLANT/MINAICO
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 29, 1987, Ser. No. 43,816
Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, climbing, bushy, upright, branched habit, substantially as illustrated and described, characterized by buds and flowers of exhibition form, essentially deep medium red in color, and further characterized by a plant of compact upright shape; vigorous, with the main stems and shoots being of average thorniness, the said plant being easy to propagate from cuttings or by budding, with an abundance of small semi-glossy to mat foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

6,548
HYBRID MINIATURE ROSE PLANT CV. MORPAPPLAY
Ralph S. Moore, Visalia, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.
Filed May 11, 1987, Ser. No. 48,446
Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—2 1 Claim

1. A new and distinct variety of climbing miniature rose plant cv. morPapplay and the parts thereof, of hardy, compact, prostrate and trailing, much-branched habit; being particularly characterized by its abundance of flowers, usually borne in clusters of 5 to 10 or more; its buds and flowers of pleasing form, the petals being a blend of red and yellow shades, essentially red on their top surface and yellow on the lower surface; its vigorous growth; its moderately thorny shoots and main stems; its abundance of small, semi-glossy to matt foliage; and its ease of propagation by cuttings or budding, substantially as described and illustrated herein.

PATENTS

GRANTED JAN. 17, 1989

ERRATA

For CLASS	See PATENT NO.
081-126	4,797,965
232-043	4,798,316
235-487	4,798,322
239-663	4,798,325
118-408	4,798,474
384-108	4,798,476
434-323	4,798,543
494-018	4,798,579
493-338	4,798,581
437-041	4,798,794
514-159	4,798,811
502-060	4,798,813
501-089	4,798,814
428-373	4,798,815
546-015	4,798,821
524-089	4,798,836
525-007	4,798,859
558-186	4,798,872
556-401	4,798,889
568-614	4,798,906
318-045	4,798,999
341-101	4,799,040
341-120	4,799,041
341-118	4,799,042
341-005	4,799,044
235-467	4,799,164

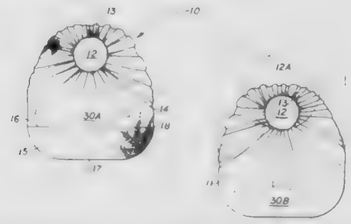
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PATENTS

GRANTED JANUARY 17, 1989

GENERAL AND MECHANICAL

4,797,952
THROWAWAY BIB
Grace Petrini, 4299 W. Carlin Rd., Stockton, Calif. 95206
Filed Sep. 15, 1987, Ser. No. 96,443
Int. Cl.[4] A41B *13/10*
U.S. Cl. 2—49 R 7 Claims



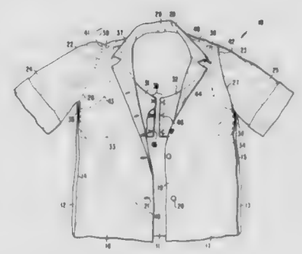
1. A disposable or few times rinsible protective bib comprising:
a substantially rectangular main panel having an upper transverse edge and a lower transverse edge, and being of two-ply construction, an outer sheet and an inner sheet the two sheets of said panel being coextensive, of flexible material, having a neck opening at the upper end thereof, said neck opening surrounded by a gathered portion to ensure a close fit to the wearer's neck;
and an optional pocket section having a transverse opening at the top thereof, extending up from the lower transverse edge of the main panel;
the front sheet being made of a few times rinsible water absorbent material, while the rear sheet is a non-permeable plastic film.

4,797,953
NURSING SHAWL
Rodger S. Dameron, 2408 Maxwell, Midland, Tex. 79705
Filed Jul. 27, 1987, Ser. No. 78,411
Int. Cl.[4] A41D *1/20*
U.S. Cl. 2—104 9 Claims



1. A nursing shawl of unitary design that can be worn by a mother nursing an infant, said shawl is symmetrical about a centerline, said shawl comprising a left panel spaced from a right panel, and a neck band, said right panel and said left panel are of general rectangular configuration and are joined together by said neck band at the upper center of the shawl;
the right and left panels have outer opposed edges, inner confronting edges, and upper edges spaced from lower edges; said neck band being a segment of an annulus having a circumference determined by spaced sides; the upper adjacent corners of said panels are cut obliquely and attached to said spaced sides of the neck band; said neck band is defined by concentric circles having oblique sides joined to the upper adjacent corners of said left and right panels; whereby:
said neck band is received across the back of a nursing mother, with the right panel extending from the right shoulder down over the right breast; and, with the left panel extending from the left shoulder down over the left breast with the panels jointly covering the entire front of the mother from the neck to the waist, and from one side to the other while the outer opposed edges hang down by the sides of the mother in a draped manner.

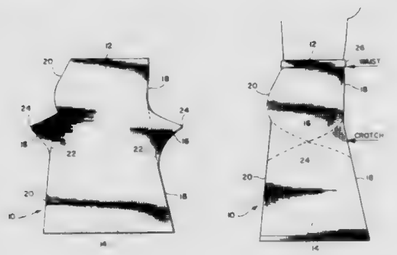
4,797,954
SHIRT WITH SECURITY CLOTH
Ruth L. Williams, 289 NE. 8th St., Linton, Ind. 47441, and Thelma M. Orman, 913 Lankford St., Clay City, Ind. 47841
Filed Oct. 5, 1987, Ser. No. 104,650
Int. Cl.[4] A41D *1/22*
U.S. Cl. 2—106 9 Claims



1. A shirt comprising:
a shirt main body configured to fit around a wearer's upper torso and having a front chest portion and a back portion joined together to completely encircle the wearer, said shirt main body including a pair of front panels and a pair of separable front edges, and further including first fastening means extending down said front chest portion on said separable front edges operable to allow the front edges to be separated when the shirt is being put on and taken off the wearer and to be closed together once the shirt is on the wearer, said shirt main body having two attachment areas separated by a first distance on said front panels when said front edges are closed together; and,
a security cloth enclosed within said main body and extending only partially around the wearer, said cloth having opposite ends fastened to said two attachment areas, said security cloth located inwardly of and extending only adjacent and across said front chest portion, immediately adjacent said fastening means and internally across said front edges to prevent the shirt main body from separating when the shirt is on the wearer located between and separating said security cloth and said back portion apart, said security cloth has a length between said opposite ends shorter than said first distance terminating forward of said back portion with the wearer's chest protruding forward against said security cloth pulling said back portion forwardly toward the wearer's back and isolating said front panels and fastening means from stress.

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4,797,955
COMBINATION PANT AND SKIRT GARMENT
Alfred G. Garrett, Box 5956, Hilton Head, S.C. 29938
Filed Jul. 22, 1987, Ser. No. 76,344
Int. Cl.⁴ A41D *1/14*
U.S. Cl. 2—213 **10 Claims**



1. A garment comprising:
a first portion extending upward from the crotch comprising a crotch section which passes between the legs of the wearer when the garment is worn; and
a second portion connected to said first portion and adapted to encircle the legs of the wearer when the garment is worn, whereby said first and second portions are adapted to serve as the outermost material of the garment, so that the garment has a pant-like appearance above the crotch and a skirt-like appearance below the crotch,
said first and second portions being formed from two side panels attached together along a front seam line and a rear seam line, each said side panel having two protrusions extending, respectively, from the front and back of the garment toward each other, said protrusions being attached to each other to form the crotch section of said garment.

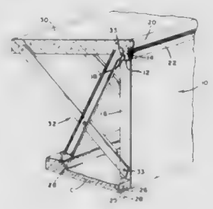
4,797,956
EYE SHIELD
Elvin L. Boyce, Salt Lake City, Utah, assignor to Professional Tape Converters, Inc., Salt Lake City, Utah
Filed Oct. 15, 1987, Ser. No. 108,925
Int. Cl.⁴ A61F *9/02*
U.S. Cl. 2—431 **18 Claims**

6. An eye shield for protecting a wearer's eyes against contamination from fluids or injury from objects, comprising:
an essentially flat, flexible transparent medium having an inner surface to be worn near the wearer's eyes, an outer surface, a bottom portion, and a top portion;
means for spacing the transparent medium away from the wearer's face such that the inner surface does not touch the wearer's eyes, said means for spacing being attached to said top portion;
first moldable stiffening means for conforming said transparent medium to the wearer's nose and cheeks and attached to said transparent medium along said bottom portion, said first moldable stiffening means being laterally disposed and bendable across the wearer's nose and cheeks when the eye shield is installed upon the wearer's face so as to transform the transparent medium from an essentially flat configuration to one which conforms to the contour of the wearer's nose and cheeks; and



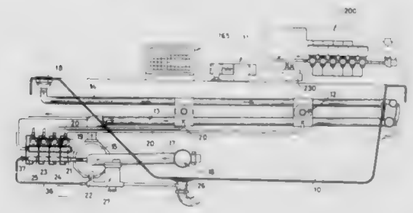
single band means for securing said eye shield to the wearer's head.

4,797,957
SWIMMING POOL WITH IMPROVED WALL STRENGTHENING MEANS
Donald H. Weir, York, and Charles F. Robinson, Felton, both of Pa., assignors to Fox Pool Corporation, York, Pa.
Continuation-in-part of Ser. No. 349,501, Feb. 17, 1982, abandoned. This application Mar. 22, 1984, Ser. No. 592,309
Int. Cl.⁴ F04H *3/18*
U.S. Cl. 4—506 **8 Claims**



1. A below-ground swimming pool comprising an assemblage of metal side wall panels having vertical reinforcing posts welded at intermittent locations along the length of the panel side, said panels being joined in end-to-end relationship and being braced in upright position to form the perimeter of the swimming pool, a cut-out at the top of said posts for receiving in said cut-out a stiffening member horizontally positioned within said cut-out so that the top of said stiffening member is inset within said cut-out and is not higher than the top of said wall panel and not higher than the top of the post and is positioned in said cut-out such that the stiffening member abuts against the back of the said wall panel at the upper edge of the wall panel, bracing members secured on vertical posts at points contiguous to the top and to the bottom of said vertical posts and extending outward from said wall panels and secured in a footing and a poured concrete deck formed around the outer periphery of the pool and embedding therein the top of said bracing members, the top of the vertical posts containing said cut-out, the top of said wall panels and said stiffening member.

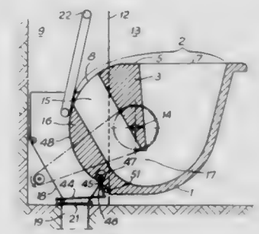
4,797,958
BATHTUB WITH IMPROVED HYDROMASSAGE SYSTEM
Virgilio Guzzini, Recanati, Italy, assignor to Teuco Guzzini S.r.l., Recanati, Italy
Filed Sep. 5, 1986, Ser. No. 904,004
Claims priority, application Italy, Sep. 17, 1985, 22165 A/85
Int. Cl.⁴ A61H *33/02, 9/00*
U.S. Cl. 4—542 **19 Claims**



1. A bathtub equipped with a water supply tap (**11**) and with a hydromassage system comprising a plurality of nozzles (**12**) mounted on the walls of the bathtub (**10**), water and air supply lines each connected to each of said nozzles, a pump (**15**) having an outlet connected to said water supply line and an inlet, a normally closed suction valve (**16**) connected to the interior of said bathtub, a suction line (**17**) connecting said suction valve (**16**) to the inlet of said pump, each of said nozzles comprise a water jet orifice connected to said water supply line and an annular air inlet orifice connected to said air supply line, said water jet orifice and said air inlet orifice being concentrically arranged such that the water jet entrains air through said annular air inlet to form an air-water mixture, each of said nozzles further having a movable plug mounted in said jet orifice to close both said water jet orifice and said annular air inlet and means for biasing said plug to said closed position so as to separate in a sealed manner the water and air supply lines to the interior of the bathtub, conduit means adjustably mounted with respect to said jet nozzle for regulating the flow of the air-water mixture to the interior of the bathtub, said nozzles including actuator means responsive to water pressure in said water supply line for moving said plug to an open position, an automatic outlet drain connected to the floor of said bathtub, said outlet drain having a normally open outlet valve therein, sensor means (**27**) responsive to predetermined levels of water in said bathtub and to water pressure in said water supply line for closing said outlet valve and controlling the operation of said tap (**11**) and pump (**15**) within predetermined safety ranges.

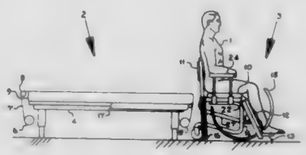
4,797,959
SANITARY UNIT
Jean-Claude Decaux, 88, boulevard Maurice Barres, 92200 Neuilly, France
Filed Apr. 13, 1987, Ser. No. 37,558
Claims priority, application France, Apr. 17, 1986, 8605524
Int. Cl.⁴ E03D *9/00*; A47K *17/00*
U.S. Cl. 4—662 **13 Claims**

1. A sanitary unit comprising an enclosure, partition means for separating said enclosure into a front usage zone accessible to a user and a normally inaccessible rear maintenance zone, a bowl juxtaposed with said partition means and mounted for pivoting between a utilization position in which said bowl projects generally horizontally from said partition means into said usage zone and a cleansing position in which said bowl is pivoted rearwardly at least partially past said partition means, cleansing means disposed in said maintenance zone for cleaning said bowl in said cleansing position, and drive means for pivoting said bowl between said utilization and cleansing positions, said bowl having a closed base, an outer wall defining an opening which is above said base in said utilization position of said bowl and a separating wall extending generally vertically when said bowl is in said utilization position and dividing said opening into a front utilization section and a rear evacuation section, the upper face of said separating wall cooperating with



said outer wall to define a rim surrounding said utilization section of said opening, and said separating wall cooperating with a rear part of said outer wall and with said base to define a passage between said utilization section and said evacuation section of said opening, said evacuation section being higher than said passage in said utilization position, whereby to contain the contents of the bowl, and being lower than said passage in said cleansing position, whereby to empty the contents of the bowl into said maintenance zone.

4,797,960
PATIENT TRANSFER ARRANGEMENT
Joseph G. Vaiana, Levittown; Paul Di Matteo, Dix Hills; Charles F. Chubb, Brookville, all of N.Y., assignors to Nova Technologies Inc., Hauppauge, N.Y.
Continuation-in-part of Ser. No. 731,533, May 7, 1985. This application Feb. 12, 1987, Ser. No. 13,687
The portion of the term of this patent subsequent to Jul. 14, 2004, has been disclaimed.
Int. Cl.⁴ A61G *7/08*
U.S. Cl. 5—81 R **20 Claims**

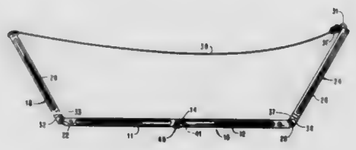


1. An invalid transfer arrangement comprising: a wheelchair removably positioned at the end of a bed; said wheelchair having wheels, a frame, a back rest and a seat; and a leg rest all movably attached to said frame; said back rest being removable from behind a person's back seated in the wheelchair; said leg rest being raisable from an inclined to a substantially level position; said bed having a mattress adjacent to and approximately the same height as said level position; a transport sheet extending across the mattress; roller means for moving said transport sheet and transporting a reclining person at a velocity across the mattress and onto said leg rest and seat of the wheelchair; motion means for moving at substantially said velocity a top surface on said leg rest and seat to transport the reclining person so that the persons' buttocks are placed over said seat; lift means for raising said reclining person to a sitting

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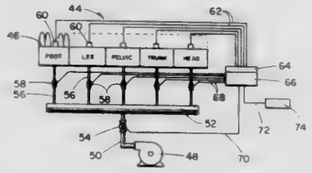
position on the seat; and means for inserting said back rest behind the person.

4,797,961
PORTABLE HAMMOCK SUPPORT
Mark A. Pasquariello, 1405 Thames Dr., Lexington, Ky. 40502
Filed Sep. 23, 1987, Ser. No. 100,272
Int. Cl.[4] A45F *1/00*
U.S. Cl. 5—127 20 Claims



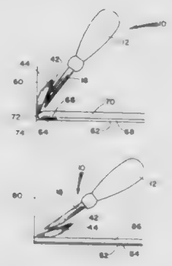
1. A portable hammock support including:
first ground support means for engaging the ground;
second ground support means for engaging the ground, said first ground support means and said second ground support means being spaced from each other;
first hammock support means pivotally connected to said first ground support means and said second ground support means for movement between a collapsed position in which said first hammock support means is disposed in the same plane as said first ground support means and said second ground support means and a raised operative position in which said first hammock support means is disposed at an angle to said first ground support means and said second ground support means;
second hammock support means pivotally connected to said first ground support means and said second ground support means for movement between a collapsed position in which said second hammock support means is disposed in the same plane as said first ground support means, said second ground support means, and said first hammock support means when said first hammock support means is in its collapsed position and a raised operative position in which said second hammock support means is disposed at an angle to said first ground support means and said second ground support means;
and a hammock extending between said first hammock support means and said second hammock support means when said first hammock support means said second hammock support means are in their raised operative positions.

4,797,962
CLOSED LOOP FEEDBACK AIR SUPPLY FOR AIR SUPPORT BEDS
Barry L. Goode, Humble, Tex., assignor to Air Plus, Inc., Harris Co., Tex.
Filed Nov. 5, 1986, Ser. No. 927,498
Int. Cl.[4] A47C *27/08*; F04B *49/00*
U.S. Cl. 5—453 13 Claims



1. In a low air loss air support convalescent bed having a plurality of low air loss air sacs that are maintained within a desired pressure range and are arranged for supporting various body sections of a patient, the improvement comprising:
(a) air supply means for supplying compressed air at a pressure in excess of said desired pressure range of any of said air sacs;
(b) air distributing means for distributing compressed air from said air supply means to said plurality of air sacs;
(c) pressure control means having a plurality of servo valves for conducting air at preset pressure ranges to individual air sacs;
(d) pressure monitoring means continuously monitoring the air pressure of each of said air sacs and providing pressure indicative signals; and
(e) feedback means receiving said pressure indicative signals and providing pressure signals to said pressure control means for each of said air sacs, said pressure control means adjusting said servo valves appropriately to maintain the proper pressure range in each of said air sacs, whereby the selected interface pressure between the air sacs and the patient is established.

4,797,963
CARPET FINISHING TOOL
Roy Gulino, 505 E. County Line Rd., Lakewood, N.J. 08701
Filed Apr. 15, 1988, Ser. No. 182,096
Int. Cl.[4] B25F *1/00*
U.S. Cl. 7—103 6 Claims

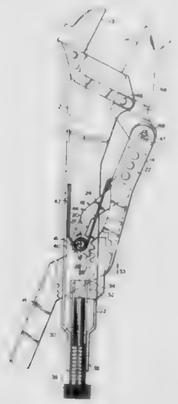


1. A carpet finishing tool comprising
a handle having a first end and a second end, said first end having a contoured gripping surface, said second end having longitudinally secured thereto a support shaft having a first end secured to said handle and a second end, said second end having a planer surface acutely angled with the axis of said support shaft;
a rotatable disk having a base and a top, truncated in cross sectional area defining a tapered surface from said base to said top, said base having rounded edges;
said rotatable disk mounted on said support shaft such that said base is parallel with said planer acutely angled surface of said support shaft.

4,797,964
COMPOSITIONS FOR FINISHING TEXTILES
Wolfgang Ritter, Hilden; Hans-Peter Handwerk, Duesseldorf; Kaspar Schlueter, Solingen, and Heinz Hasseljuergen, Korschenbroich, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
Filed Jun. 22, 1987, Ser. No. 65,232
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620679
Int. Cl.[4] D06M *15/00*
U.S. Cl. 8—115.6 13 Claims

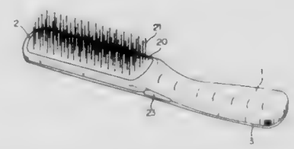
1. In a method of treating textiles with an aqueous emulsion polymer, the improvement wherein the textile is treated with an aqueous emulsion comprising:
(a) from about 40 to about 60% by weight of either a polymer of vinyl acetate, a copolymer of vinyl acetate and dibutyl maleate, or a mixture of the foregoing; and
(b) from about 2 to about 10% by weight of a polyethylene glycol having a molecular weight of from about 3,000 to about 50,000;
wherein the above percentages by weight are based on the weight of the aqueous emulsion, and wherein the aqueous emulsion is employed in a quantity sufficient to impart a soft and full feel to the textile.

4,797,965
WRENCH WITH RACK AND SEGMENT GEAR LINKAGE
Thomas J. Mazzone, 4016 Audubon Dr., Largo, Fla. 33541
Filed Apr. 21, 1988, Ser. No. 184,270
Int. Cl.[4] B25B *13/12*
U.S. Cl. 81—126 24 Claims



1. A wrench having pivotally connected handle members, comprising:
a first handle member having a fixed position jaw means formed on its proximal end;
a second handle member having a movable jaw means formed on its proximal end;
a pivot point where said handle members are pivotally connected to one another;
a rigid pivot arm extending from said second handle member;
a segment gear member integrally formed with said pivot arm;
a rack gear member that is slideably mounted with respect to said first handle member;
said rack gear member having a distal position and a proximal position and a plurality of positions therebetween;
said rack gear member being meshingly engaged with said segment gear member, said segment gear member being constrained to rotate when said rack gear member travels between its distal and proximal positions;
a bias means having a power sufficient to cause said jaw members to separate from one another, which movement effects sliding travel of said rack gear member in a proximal-to-distal direction;
said segment gear having an axis of rotation coincident with said pivot point so that pivoting of said second handle member under the influence of said bias means effects simultaneous and corresponding rotation of said segment gear;
and means for overcoming the bias provided by said bias means so that when said jaw members are closed, the power of said bias means is inadequate to separate them.

4,797,966
ANTI-ELECTROSTATIC BRUSH
James C. Fong, Taipei, Taiwan, assignor to Tong-Fong Brush Factory Co., Ltd., Taiwan
Filed Jun. 19, 1987, Ser. No. 63,890
Int. Cl.[4] A46B *9/08*
U.S. Cl. 15—186 15 Claims

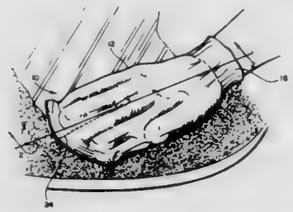


1. An anti-electrostatic brush comprising:
an electrically conductive bristle receiving means receiving a plurality of bristles thereon, said bristle receiving means being provided with a contact part;
a first housing part having a first opening at one end thereof and a first handle portion at the other end thereof, said first opening being slightly smaller than said bristle receiving means, said first housing part being provided with a first engagement means; and
a second housing part having a means for receiving said bristle receiving means at one end thereof and a second handle portion at the other end thereof, said second housing part being provided with a second engagement means to be engaged with said first engagement means securing the first and second housing parts together, wherein at least one of first and second housing parts has a second opening at the handle portion thereof, through which second opening said contact part of said bristle receiving means is exposed to the surface of said handle portion.

4,797,967
PADDED GENERAL PURPOSE MITTEN AND METHOD OF FABRICATING SAME
Hans L. Leugers, Charlotte, N.C., assignor to U.S. Textiles Corporation, Charlotte, N.C.
Filed Oct. 5, 1987, Ser. No. 105,406
Int. Cl.[4] A47L *13/18*
U.S. Cl. 15—227 15 Claims

1. A method of fabricating a padded mitten useful for polishing, cleaning and like uses, comprising the steps of providing a tubular length of fabric having one longitudinal end thereof closed, inserting padding means in a first lengthwise end portion of said fabric at its closed end, transversely closing said fabric at a medial location defining said first lengthwise end portion and enclosing said padding means therein, and everting the remaining lengthwise portion of said fabric over its first

lengthwise portion to form interior hand pockets therebetween at opposite sides of said first lengthwise portion for selective



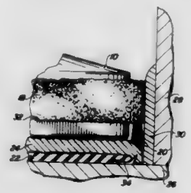
insertion of a user's hand at opposite sides of said padding means.

4,797,968

VACUUM CLEANER HEAD PROTECTOR AND DUSTER

Judy I. Wenzlick, 1516 W. St. John Rd., Phoenix, Ariz. 85023, and Judith E. Wenzlick, 6751 W. Topeka, Glendale, Ariz. 85308

Filed May 11, 1988, Ser. No. 192,602
Int. Cl.[4] A47L *9/00*
U.S. Cl. 15—246 **17 Claims**



1. A protective apparatus for use on the head of a vacuum cleaner, carpet sweeper, and the like, said head having a periphery including at least a front and first and second sides, said apparatus comprising:

a strip of fabric having upper and lower edges and first and second major surfaces, said strip having a length sufficient to extend along said periphery;

first means for detachably securing said strip of fabric to said periphery of said head; and

at least one brush removably coupled to said strip of fabric at a location which is adjacent at least one of said first and second sides when said strip is secured to said periphery.

4,797,969

BUILDING EXTERIOR CLEANING APPARATUS

Edward A. Cadaff, 258 W. Deer Park Rd., Gaithersburg, Md. 20877

Filed Jan. 9, 1987, Ser. No. 1,763
Int. Cl.[4] A47L *1/04*
U.S. Cl. 15—302 **19 Claims**

1. A vertical building exterior cleaning apparatus comprising:

a housing;

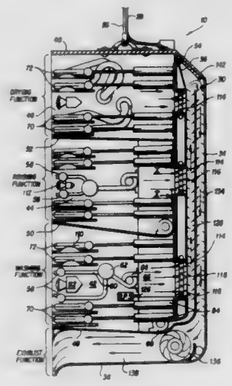
a washing chamber disposed in said housing, said washing chamber having means for impinging a cleaning fluid on the building exterior;

a rinsing chamber disposed in said housing, said rinsing chamber having means for impinging a rinsing fluid on the building exterior;

means for maintaining a negative pressure in the interior of said washing and rinsing chambers; and

means for regulating the negative pressure in said washing chamber and said rinsing chamber;

wherein said washing and said rinsing chambers have openings defined therein and said means for regulating the negative pressure in said washing chamber and said rinsing chamber comprises a plurality of vanes axially rotatably mounted in said openings for varying the size of said openings.

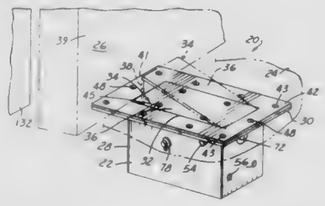


4,797,970

FOOT-OPERATED DOOR SECURITY DEVICE

John C. Charlton, 581 Middleside Road, Rte. 3,, Amherstburg, Ontario, Canada N9V 3R3

Filed Feb. 22, 1988, Ser. No. 158,561
Int. Cl.[4] E05F *5/00*
U.S. Cl. 16—82 **14 Claims**



1. A door stop comprising:

a stop member having a door-engaging surface and a camming surface;

a housing having an opening to closely receive said stop member;

a latching mechanism having a barrel and a spring-biased plunger within said barrel;

said latching mechanism further including a catch for retaining said plunger in a retracted position within said barrel;

said plunger having an end for engaging said camming surface of said stop member;

means for biasing said stop member in a first position in which at least a portion of said stop member projects out of said housing through said opening; and

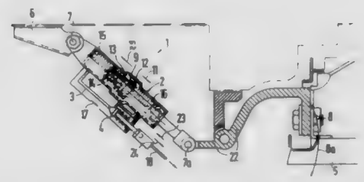
means responsive to pressure exerted on said stop member for pivoting said stop member between said first position and a second position, said stop member being substantially within said housing in said second position.

4,797,971

ADJUSTING DEVICE FOR A VEHICLE DOOR

Georg Eger, Hochdorf, and Rainer Srock, Leonberg, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jan. 27, 1987, Ser. No. 7,361
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1986, 3602405
The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.
Int. Cl.[4] E05F *5/02, 3/12*
U.S. Cl. 16—82 **9 Claims**



1. A control mechanism for a motor vehicle door that is actuated via an inside and outside handle and comprises a piston-cylinder unit arranged between a door post and the vehicle door, said piston-cylinder unit having a piston equipped with passage openings for a pressure medium, said piston interacting with an interior valve separating two working chambers of the cylinder with respect to one another, and the control mechanism being equipped with a blocking valve controlling the flow of medium, said blocking valve being arranged in a control circuit connecting the two working chambers of the cylinder so that said blocking valve acts against the flow direction and is controllable via control means at a door handle in such a way that the door is blocked in at least one intermediate position, wherein:

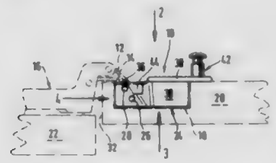
the cylinder has at least one overflow duct between the two working chambers, the flow-through of which is controlled by the piston of the unit, and in that the duct extends over a range into which the piston immerses during the initial opening of the door from the closed position and opens the duct between the working chambers.

4,797,972

SHEET METAL INSERT CUP FOR CABINET HINGES HAVING A MORTISE CENTERING MECHANISM

Karl Lautenschlager, Jr., Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Jan. 7, 1984, Ser. No. 618,131
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1983, 3327673
Int. Cl.[4] E05D *5/02*
U.S. Cl. 16—382 **4 Claims**



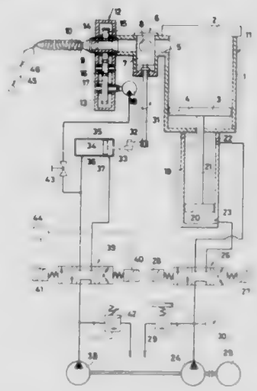
1. An insert cup to be fastened in a substantially cylindrical mortise provided close to an edge in the inside face of a door-leaf of a cabinet, and serving as a door-leaf related part of a cabinet hinge; said insert cup being a stamped and drawn piece of sheet metal having an elongated trough-like part for insertion into the mortise, a marginal flange at an upper edge of the trough-like part, said marginal flange having a sector-shaped flange section to fit matingly and flush within the mortise adjacent the edge, and also having a fastening flange section to lie on said inside face remote from said edge, and at least two guiding lugs integral with said sector-shaped flange section and respectively symmetrically on opposite sides of the longitudinal central plane of the elongated trough-like part, said lugs being bent downwardly from said upper edge at right angles to extend into the interior of the mortise so as to rest against a circumferential wall of the cylindrical mortise and center the insert cup in the mortise and securing the cup against displacements in the plane of the door-leaf.

4,797,973

BAGGING AND APPORTIONING MACHINE FOR SAUSAGES AND VARIOUS BAGGED PRODUCTS

Giovanni B. Righele, Zane, and Giuseppe Scorzato, Marano Vicentino, both of Italy, assignors to Risco Brevetti S.p.A., Italy

Filed Apr. 15, 1987, Ser. No. 38,769
Claims priority, application Italy, May 12, 1986, 20403 A/86
Int. Cl.[4] A22C *11/04*
U.S. Cl. 17—33 **4 Claims**



1. Bagging and apportioning machine for sausages and various bagged products comprising a container for a mass of product to be bagged, a pushing member included in said container to push the product toward an outlet orifice associated with said container, a filling spout communicating with said orifice and cutoff valve placed between said orifice and said filling spout characterized in that it comprises means for driving said pushing member to push the product continuously under constant pressure towards said output orifice and maintaining a constant pressure on said product, and means to alternately move said cutoff valve to an open and a closed position in accordance with predetermined adjustable timed intervals.

4,797,974

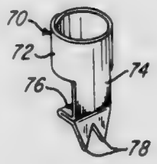
FISH FILLET RETAINER DEVICE

Jesse E. Smith, Jr., J & J Special Springs, P.O. Box 520, Waynesville, Ohio 45068

Filed Oct. 30, 1987, Ser. No. 114,728
Int. Cl.[4] A22C *25/06*
U.S. Cl. 17—45 **7 Claims**

1. A fish retainer device for filleting fish, the retainer device being adapted to be carried by a finger of a person's hand, comprising an annular band having an inside dimension substantially equal to the transverse dimension of a finger of a

person's hand, the band having a central axis, a stem attached to the band and having a portion extending longitudinally from the band and parallel to the central axis of the band, a pointed projection extending from the stem and within a plane parallel



to the central axis of the band, the pointed projection being engageable with a fish during filleting of the fish as pressure is applied upon the fish through the stem by a finger which is encompassed by the band.

4,797,975

PROCESS AND PLANT FOR THE TREATMENT OF MEAT OF CATTLE OR OTHER QUADRUPEDS

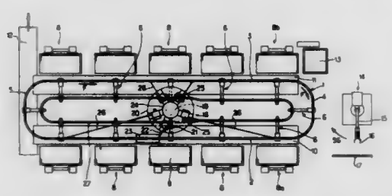
Marcel Soullard, and Victor Brochard, both of Cholet, France, assignors to Boca-Quest, Cholet, France

Filed Jan. 13, 1987, Ser. No. 2,910

Claims priority, application France, Jan. 13, 1986, 8600383

Int. Cl.[4] A22C *17/02*

U.S. Cl. 17—46 **30 Claims**



1. A method for semi-automatic processing quarters of bovine animal or other quadrupeds comprising the steps of:

a. vertically suspending the quarters by a hook means hanging on a first overhead rail assembly;

b. gripping an upper portion of the quarter still hanging by said hook;

c. severing a part of said upper portion of the quarter to free the quarter from said hook;

d. moving the quarter from said first overhead rail assembly to a second overhead rail assembly formed in a closed loop and having a plurality of means for suspending the quarter travelling continuously along said second rail assembly;

e. elevating the quarter until said upper portion can be clamped in one of said suspension means;

f. moving said quarter clamped on said suspension means along said closed loop in front of a plurality of processing stations arranged at intervals along said closed loop;

g. manually separating the muscles and meat from the bones by a plurality of operators without performing a substantial intermediate deboning operation while said quarter is moved along said closed loop, and while permitting a vertical movement in both directions controlled by each operator at each station; and

h. releasing the remaining skeleton from said suspension means at a last station so as to permit the clamping of a new quarter on said suspension means.

4,797,976

TEXTILE FIBER TUFT CLEANING APPARATUS

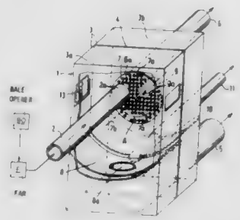
Ferdinand Leifeld, Kempen, and Hermann G. Selker, Mönchengladbach, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed May 7, 1987, Ser. No. 46,868

Claims priority, application Fed. Rep. of Germany, May 7, 1986, 3615416

Int. Cl.[4] D01G *9/08*

U.S. Cl. 19—200 **15 Claims**



1. In an apparatus for separating waste from textile fiber tufts including a substantially closed casing, a separating wall arranged in the casing for dividing the casing into a dust and waste collecting chamber and a fiber collecting chamber; said separating wall having a separating surface and being provided with apertures; air stream guide means for directing a fiber and waste-laden air stream through said apertures from the fiber collecting chamber to said waste collecting chamber; said apertures being sized to allow passage of dust and waste and to prevent passage of fibers; said air stream guide means and said separating wall being relatively movable with respect to one another; the improvement wherein said air stream guide means comprises a pressure conduit having an outlet end situated in the fiber collecting chamber at said separating wall, an air pressure generating means communicating with said pressure conduit for driving said fiber and waste-laden air stream through said pressure conduit and out of said outlet end towards said separating surface, and an air suction means including a suction conduit having an inlet opening situated in the waste collecting chamber at said separating wall; said suction conduit being arranged for guiding away dust passing through said apertures; and further wherein said pressure conduit is immovably supported and said separating wall is rotatable about an axis perpendicular to said separating surface of said separating wall; the improvement further comprising an air equalizing opening provided in a wall of said casing.

4,797,977

PICKER ASSEMBLY

David P. Napoleon, and Salvatore J. Centofanti, both of Philadelphia, Pa., assignors to General Felt Industries, Inc., Saddle Brook, N.J.

Filed May 11, 1988, Ser. No. 192,647

Int. Cl.[4] D01B *1/00*; D01G *19/00*

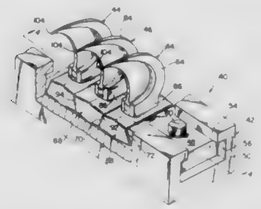
U.S. Cl. 19—97 **15 Claims**

1. A picker assembly comprising:

(a) a linearly extending picker bar having a top wall and a bottom wall, a linearly extending T-slot in said picker bar comprising a head space of a predetermined height between said top wall and said bottom wall and a linearly extending opening through said top wall,

(b) a plurality of picker teeth in said picker bar, each picker tooth having a blade outwardly of said picker bar, a base in said head space and a shank extending through said linear opening in said top wall, the height of said bases being less than the height of said head space, and

(c) means for maintaining each of said bases against one of said top wall or said bottom wall of said picker bar prior



to and upon said blade being subject to forces thereon when striking material.

4,797,978

MULTIPLE-CARD WITH TRANSFERRING, CARDING AND CLEANING CYLINDER

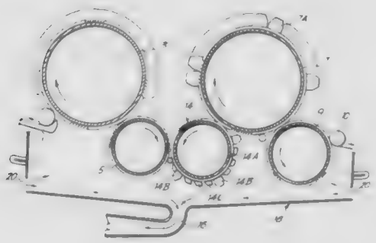
Marcello Giuliani, Via Cellerese No. 33, 50013 Campi Bisenzio, Italy

Filed Jul. 21, 1987, Ser. No. 76,019

Claims priority, application Italy, Jul. 24, 1986, 9445 A/86

Int. Cl.[4] D01G *15/40*

U.S. Cl. 19—98 **3 Claims**



1. A multiple-card, so called "tandem card" for cleaning fibers, comprising:

a first carding drum (3) and a second cascade-arranged carding drum (7), and including a first combing cylinder (doffer) (5) for the first carding drum, and a second combing cyliner (9) for the second carding drum,

transfer means between said first combing cylinder and said second carding drum consisting essentially of at least one cylinder (14) for further doffing, carding and cleaning fibers fed thereto,

said at least one cylinder (14) having a clothing (14A) for carding, thinning and cleaning and arranging said fibers in parallel and having cooperably associated therewith caps or flats (14B) and cleaning blades (14C),

said at least one cylinder (14) being disposed in a zone below said carding drums (3) and (7), at which zone cleaning of the fibers is effected by gravity and centrifugal force.

4,797,979

ARRANGEMENT FOR SUPPLYING A FIBER PROCESSING MACHINE

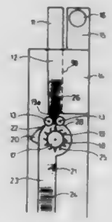
Paul Stäheli, Wilen b/Wil, and Fritz Knabenhans, Winterthur, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Jul. 6, 1987, Ser. No. 70,028

Claims priority, application Switzerland, Jul. 8, 1986, 02751/86

Int. Cl.[4] D01G *15/40*

U.S. Cl. 19—105 **11 Claims**



1. An arrangement for supplying a fiber processing machine, for example a card, with fiber flock material, comprising:

a feed device containing two feed rollers cooperating with one another to form therebetween a nip;

a rotatable substantially cylindrical opening roller having an outer surface and coacting with said two feed rollers;

said two feed rollers serving to feed fiber flock material to said rotatable substantially cylindrical opening roller;

said rotatable substantially cylindrical opening roller being provided with needles distributed over said outer surface thereof;

said needles extending outwardly from said outer surface of said substantially cylindrical opening roller;

a feed chute cooperating with said substantially cylindrical opening roller and having an entrance location;

said substantially cylindrical opening roller being located at the region of said entrance location of said feed chute;

said substantially cylindrical opening roller being provided with substantially strip-shaped vanes located between said needles on said outer surface of said substantially cylindrical opening roller;

said outer surface of said substantially cylindrical opening roller being defined by generatrices;

each of said substantially strip-shaped vanes having at least one lengthwise extending side;

said substantially strip-shaped vanes being fixedly secured to said outer surface of said substantially cylindrical opening roller along said at least one lengthwise extending side and extending outwardly from said outer surface of said substantially cylindrical opening roller and substantially parallel to said generatrices;

each of said needles having a predeterminate height from the outer surface of said substantially cylindrical opening roller;

each of said substantially strip-shaped vanes having a predeterminate height from the outer surface of said substantially cylindrical opening roller; and

the predeterminate height of said substantially strip-shaped vanes being less than the predeterminate height of said needles.

4,797,980

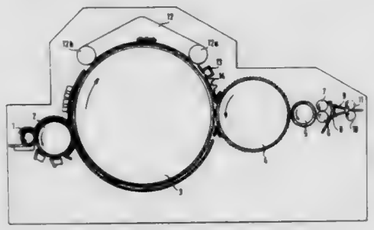
WASTE SEPARATOR FOR A CARD

Peter Jagst, Mönchengladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. Kg, Mönchengladbach, Fed. Rep. of Germany

Continuation of Ser. No. 688,893, Jan. 4, 1985, abandoned. This application Jun. 19, 1987, Ser. No. 67,411

Int. Cl.[4] D01G *15/80*

U.S. Cl. 19—107 **8 Claims**



1. In a card including a main carding cylinder having a direction of rotation, a doffer cooperating with the main carding cylinder and a waste separator situated above the doffer and adjacent the main carding cylinder; the waste separator including a knife blade situated close to the main carding cylinder and being oriented in a direction opposite said direction of rotation, a plate situated at a small radial distance from the main carding cylinder and having an edge defining a gap with the knife blade and a casing defining a suction chamber shrouding said gap; the improvement wherein said casing and said knife blade are formed of a single-piece component.

4,797,981

PROCESS FOR THE PRODUCTION OF SALT

Léon Ninane, and Claude Breton, both of Dombasle-sur-Meurthe, France, assignors to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Continuation of Ser. No. 721,803, Apr. 10, 1985, abandoned. This application Dec. 8, 1986, Ser. No. 940,220

Claims priority, application France, Apr. 16, 1984, 84 06097

Int. Cl.[4] B01D *9/00;* **C01D** *3/06*

U.S. Cl. 23—303 **9 Claims**

1. Process for the production of salt, comprising:

subjecting a sodium chloride brine to crystallization by evaporation under conditions which result in the formation of sodium chloride having the form of spheres; and

breaking up the spheres to provide said salt, which salt has a translucent and glassy appearance, a particle shape of broken spheres, a non-uniform particle size, and a mean diameter ranging from 1.00 to 2.50 mm.

4,797,982

POCKET CLIP FOR WRITING INSTRUMENTS

Dieter Eylers, and Hans Bamberger, both of Idar-Oberstein, Fed. Rep. of Germany, assignors to Gottlieb Roll GmbH & Co., Idar-Oberstein, Fed. Rep. of Germany

PCT No. PCT/EP87/00042, § 371 Date Aug. 6, 1987, § 102(e) Date Aug. 6, 1987, PCT Pub. No. WO87/04667, PCT Pub. Date Aug. 13, 1987

PCT Filed Jan. 30, 1987, Ser. No. 131,190

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1986, 3603876

Int. Cl.[4] B43K *25/00*

U.S. Cl. 24—11 R **6 Claims**

1. A pocket clip for a writing instrument, such as a ball-point pen, fountain pen cap, or the like, comprising: a clasp of spring-elastic strip material having a resilient tongue with a free end; an elongated facing disposed on said tongue, and stamped from thin metal material, said facing having a substantially planar elongated web and two low marginal flanges respectively formed on lateral margins of said web and extending away therefrom; at least one holding bead extending from each of said marginal flanges over a portion of the length of the respective marginal flange and bent toward the other holding bead; there being a free space between the web and the beads, said free space being approximately equal to or only slightly greater than the thickness of the resilient tongue and the width of the facing being slightly less than the free width between the marginal flanges, so that the free end of the tongue is insertable into the space between the web and the flanges; the facing



having an upper end to be fastened to the writing instrument, and two tabs at said upper end, formed on the flanges and having free ends bent to a position in which they point toward one another, said tabs having bottom transverse edges and being so disposed that in a fastening position of the clip the resilient tongue in locked against withdrawal from said facing by said edges; the width of the beads being such that a narrow, slot-like interstice remains therebetween, the tongue having at least one first projection which, in the fastening position, protrudes above and directly behind the bead opposite the end of insertion of the tongue, said first projection having a diameter greater than the width of the slot-like interstice.

4,797,983

CONNECTORS FOR INSERT MOULDING IN PANELS

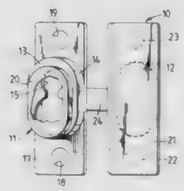
Barry R. M. Barnett, and David C. Ellis, both of Buckinghamshire, England, assignors to TRW United-Carr Limited, Inc., Buckinghamshire, England

Filed Feb. 24, 1987, Ser. No. 17,522

Claims priority, application United Kingdom, Feb. 25, 1986, 8604595; Jul. 29, 1986, 8618406

Int. Cl.[4] E04B *1/38;* **B62D** *27/04*

U.S. Cl. 24—289 **14 Claims**



1. A moulded plastics socket connector for insert moulding in a panel comprising a hollow boss having a substantially flat end wall and a continuous side wall, a slot in the end wall, a raised membrane of material overlying and closing the slot and a closure shaped and adapted to be press-fitted into the hollow boss to close the end of the boss opposite to the end wall.

4,797,984

SEAT BELT BUCKLE

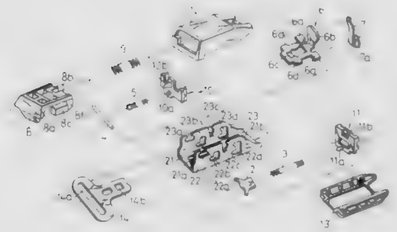
Toshiaki Seto, and Masaru Morinaga, both of Kanagawa, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1987, Ser. No. 68,344

Claims priority, application Japan, Jul. 7, 1986, 61-103115[U]

Int. Cl.[4] A44B *11/25*

U.S. Cl. 24—641 **7 Claims**



1. A buckle comprising:

a base having a bottom wall portion and side wall portions extending upright in a face-to-face relation from opposing side edges of the bottom wall portion respectively, said side wall portions defining substantially L-shaped holes therethrough, each of said substantially L-shaped holes having a horizontal portion which extends essentially parallel to the bottom wall portion, and a vertical portion which extends essentially perpendicular to the bottom wall portion;

a latch piece supported on the side wall portions of the base rockingly between a tongue latching position and a tongue non-latching position;

a holding member received at both end portions thereof in the substantially L-shaped holes, said holding member being displaceable between a holding position, where the end portions of the holding member are in the horizontal portions of the corresponding L-shaped holes so as to hold at the tongue latching position the latch piece which has been in the tongue latching position, and a non-holding position where the end portions of the holding member are in the vertical portions of the corresponding L-shaped holes so as to permit movement of the latch piece from the tongue latching position;

a first spring for biasing the holding member toward the holding position;

a release member slidably mounted on said base and displaceable between a non-operated position and an operated position and adapted to bring the holding member to the non-holding position and the latch piece to the tongue non-latching position when the release member assumes the operated position, said release member comprising a means for covering substantially an entire part of the vertical portion of at least one of the L-shaped holes so as to prevent the holding member form moving to the non-holding position when the holding member assumes the holding position; and

a second spring for biasing the release member toward the non-operated position.

4,797,985

METHOD OF APPLYING A METALLIC GUIDE BAND TO A THIN-WALLED PROJECTILE BODY

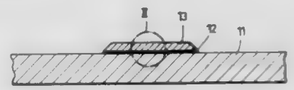
Jürgen Prochnow; Jörg Peters, both of Düsseldorf; Ulrich Theis, Mülheim, and Klaus D. Karius, Jüchen, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 6, 1986, Ser. No. 927,556

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1985, 35310

Int. Cl.[4] B21K *21/06*

U.S. Cl. 29—1.21 **22 Claims**



1. A method of applying a metallic guide band to a thin-walled projectile body of refined steel comprising the following steps:

(a) roughening a circumferential ungrooved surface portion of the projectile body by blasting said surface portion with a fine-grained material of greater hardness than the material of the projectile body;

(b) subsequent to the roughening step, applying a bonding layer of preheated fine solid particles to the ungrooved roughened surface portion;

(c) heating fine metal particles at a temperature effective to obtain solely a surface plastification of the fine metal particles; and

(d) subsequent to the step of applying the bonding layer, spraying the heated fine metal particles onto said bonding layer to form said guide band, bonded to said projectile body by said bonding layer.

4,797,986

SPUR GEAR MANUFACTURING PROCESS

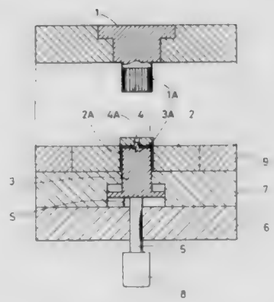
Michihiro Yokoyama, Aajyo, Japan, assignor to Kabushiki Kaisha Yokoyama Seisakusho, Aajo, Japan

Filed Jun. 18, 1987, Ser. No. 63,472

Claims priority, application Japan, Jun. 20, 1986, 61-145094

Int. Cl.[4] B21D *53/28*

U.S. Cl. 29—159.2 **1 Claim**



1. A manufacturing process for cold-press molding spur gears which comprises:

(a) loading a pre-punched workpiece having a top to bottom orientation on a counter which is located in a bore of a female die, said bore having a chamfer at one end and a tooth profile located on an interior portion of said bore;

(b) pressing the workpiece completely through the chamfer with a punch such that the punch descends into the die only part of the way through the die so that said counter

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does not make contact with a counter plate, said pressing step producing a primary product;

(c) extracting the primary product from the female die with the counter and reversing the counter's top to bottom orientation, thereby completing a first step;

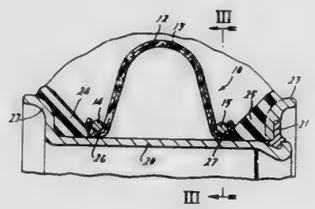
(d) loading said primary product on the counter, pressing the primary product with the punch into the female die and thereafter, removing a resultant high precision spur gear from the die with the counter.

4,797,987

METHOD OF ASSEMBLING A BEAD LOCK DEVICE AND PNEUMATIC TIRE

John W. Bush, Roseville, Mich., assignor to The Budd Company, Troy, Mich.

Division of Ser. No. 772,006, Sep. 3, 1985, Pat. No. 4,674,549. This application May 22, 1987, Ser. No. 53,276
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—433 14 Claims



1. A method of making a bead lock device for a pneumatic tire to be mounted on a wheel of a given diameter having outer flanges, said method comprising:

providing a plurality of general U-shaped flexible bows with reverse curl means at each end and a pair of flexible rods, attaching said reverse curl means of said plurality of generally U-shaped flexible bows to spaced locations on said pair of flexible rods, and joining opposite ends of said rods together to form hoops having a diameter slightly larger than the diameter of the wheel thereby providing an annular structure.

10. A method of assembling a pneumatic tire comprising:

providing a pneumatic tire having mounting beads, a wheel on which said pneumatic tire is to be mounted, the wheel having flanges, a plurality of generally U-shaped flexible bows, and a pair of flexible rods,

attaching opposite ends of said plurality of U-shaped flexible bows to spaced locations on said flexible rods;

joining opposite ends of said rods together to form hoops having a diameter slightly larger than the diameter of said wheel to provide an annular structure;

inserting said structure into said pneumatic tire; mounting said pneumatic tire with said structure onto said wheel; and

compressing said bows when said tire is assembled onto said wheel whereby the bows urge the tire beads against the wheel flanges.

4,797,988

METHOD AND TOOL FOR PREPARING MULTI-CONDUCTOR CABLE

Wade R. Bowden, Jr., Northport, and Yuliy Rashansky, Port Washington, both of N.Y., assignors to Slater Electric, Inc., Glen Cove, N.Y.

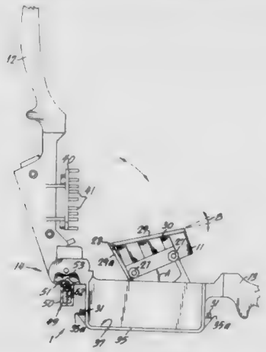
Filed Mar. 27, 1986, Ser. No. 844,841
Int. Cl.[4] H01R *43/04*
U.S. Cl. 29—566.4 14 Claims

1. A tool for slicing through the outer protective sheath of an electrical power cable and spreading apart individual conductors of the cable, said tool comprising:

a pair of arm members pivotally connected at one end and having hand-gripping portions near their other ends;

a cutter assembly mounted to one of said arm members, said cutter assembly including a pair of parallel cutter blades each having a principal cutting edge, with a spacer therebetween to maintain a predetermined spacing between the blades and a pair of triangularly shaped spreader/blade-support members both for mounting the blades to the tool about the spacer, and also for causing individual conductors of the cable to be spread away from its central ground during closure of said arms; and

an anvil member mounted to the other of said arm members for co-action with the cutter assembly when the tool is closed, said anvil providing a cable support surface for supporting the cable during the sheath slicing and conductor spreading operations, and said anvil including (i) means for locating the cable in proper orientation relative



to said cutter blades when said tool is closed, (ii) a central support rib extending parallel to the cable when properly located on said anvil to support a central conductor of the cable during the sheath slicing and conductor spreading operation, and (iii) slots on either side of said central support rib, said slots proportioned to permit the cutter blades and spreader/blade-support members to pass through the cable support surface while the cable remains supported thereon;

wherein said cutter assembly is mounted to the tool such that the principal cutting edges move past the anvil support surface at a gradually decreasing angle, in scissor-like manner, for a generally uniform force exertion over the slicing and spreading stroke of the tool

wherein each said spreader/blade-support member includes a base segment and a plurality of triangularly shaped segments upstanding therefrom, and wherein said spacer is formed integrally with the tool arm member to which said cutter assembly is mounted, such that said cutter assembly is mounted to the tool by direct attachment to the spacer.

4,797,989

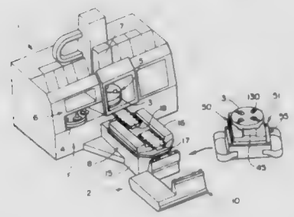
COMBINATION MACHINE TOOL APPARATUS AND PALLET CHANGING SYSTEM

Carl F. Cherko, Euclid, Ohio, assignor to Oerlikon Motch Corporation, Cleveland, Ohio

Filed Feb. 5, 1987, Ser. No. 11,146
Int. Cl.[4] B23Q *41/02, 7/00*
U.S. Cl. 29—568 53 Claims

1. In combination, a machine tool apparatus and pallet changing system, said machine tool apparatus including a work piece machining station and a tool storage station, and a tool spindle movable between said stations, and said pallet changing

system including a pallet changer having pallet support means for supporting pallets at opposite ends thereof, means for indexing said pallet support means to position either end thereof



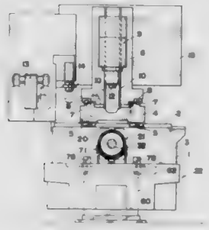
at either of said stations on said machine tool apparatus, and means for transferring pallets between said pallet changer and either of said stations.

4,797,990

VERTICAL MACHINING CENTER WITH A ROTARY PALLET CHANGER

Yoshinori Yamaguchi, Sakurai-shi; Soichi Nishiyama, Nagagun; Norihide Maeda, Kashiwara-shi, and Masuyasu Miyoshi, Yamatokoriyama-shi, all of Japan, assignors to Kabushiki Kaisha Mori Seiki Seisakusho, Nara, Japan

Filed Oct. 5, 1987, Ser. No. 104,383
Claims priority, application Japan, Oct. 24, 1986, 61-254299
Int. Cl.[4] B23Q *3/156;* B23C *1/14*
U.S. Cl. 29—568 2 Claims



1. A vertical machining center the vertical machining center comprising:

a machine bed having a front face;

a pallet clamp unit provided along the front face of the bed, the pallet clamp unit holding a pallet in a vertical position, and being capable of rotating around a horizontal axis;

a rotary pallet changer provided in front of the front face of the bed;

a saddle provided on an upper surface of the bed, the saddle being slidable along an X axis;

a column provided on a top surface of the saddle, the column being slidable along a Y axis;

a headstock provided on a front face of the column, the headstock being slidable along a Z axis;

a tool magazine and an automatic tool exchange device. arranged alongside the bed; and

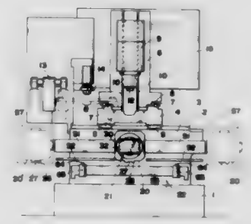
a numerical control unit for numerically controlling the saddle, the column, the headstock, the pallet clamp unit, the rotary pallet changer, the tool magazine and the automatic tool exchange device.

4,797,991

VERTICAL MACHINING CENTER

Yoshinori Yamaguchi, Sakurai-shi; Soichi Nishiyama, Nagagun; Norihide Maeda, Kashiwara-shi, and Masuyasu Miyoshi, Yamatokoriyama-shi, all of Japan, assignors to Kabushiki Kaisha Mori Seiki Seisakusho, Nara, Japan

Filed Oct. 5, 1987, Ser. No. 104,270
Claims priority, application Japan, Oct. 24, 1986, 61-254298
Int. Cl.[4] B23Q *3/156;* B23C *1/14*
U.S. Cl. 29—568 4 Claims



1. A vertical machining center comprising:

a bed including a substantially vertically extending front face;

a pallet clamp unit and a pallet conveyor unit arranged along the front face of the bed;

a saddle provided on an upper surface of the bed, the saddle being slidable along an X axis;

a column provided on a top surface of the saddle, the column being slidable along a Y axis;

a headstock provided on a front face of the column, the headstock being vertically slidable;

a tool magazine and an automatic tool exchange device, both being arranged alongside the bed; and

a numerical control unit for numerically controlling the saddle, the column, the headstock, the pallet clamp unit, the pallet conveyor, the tool magazine and the automatic tool exchange device.

4,797,992

METHOD OF MAKING A THIN FILM INTEGRATED MICROCIRCUIT

Vernon B. Powers, and Deborah C. Murphy, both of W. Melborne, Fla., assignors to Hercules Defense Electronics Systems Inc., Clearwater, Fla.

Division of Ser. No. 9,864, Feb. 2, 1987, Pat. No. 4,740,762. This application Dec. 28, 1987, Ser. No. 137,997
Int. Cl.[4] H01P *11/00*
U.S. Cl. 29—600 9 Claims

1. A method of fabricating a microwave integrated circuit comprising the steps of:

providing a planar substrate of insulating material,

boring a hole of predetermined diameter in said substrate,

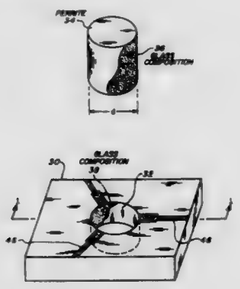
providing a planar disc of magnetically permeable material having a diameter substantially equal to said predetermined diameter and a circumferential perimeter,

coating said hole and said perimeter of said disc with a thermally fusable dielectric composition,

embedding said disc in said hole,

heating said substrate to a predetermined temperature for a time period sufficient to crystalize said composition and fuse said disc to said substrate,

polishing at least one face of said substrate and said disc to provide a planar surface, and



metalizing and selectively patterning said disc in regions of said face with a conductive material.

4,797,993

METHOD OF MAKING ELECTROWELDABLE SOCKETS

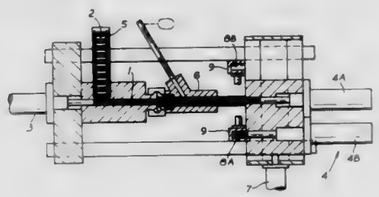
David M. A. Kenworthy, Barnsley; Eric Bridgstock, Derbyshire, and Edwin A. W. Deakey, Sheffield, all of England, assignors to Fusion Plastics Limited, Chesterfield, England

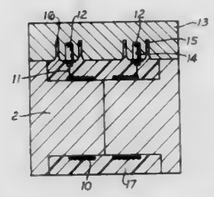
Filed Jul. 17, 1987, Ser. No. 74,949

Claims priority, application United Kingdom, Jul. 26, 1986, 8618285

Int. Cl.[4] H01C *17/02, 17/04, 17/28;* B23P *19/04*

U.S. Cl. 29—613 12 Claims





1. A method of manufacture of an electroweldable socket comprising, winding a length of electrical resistance wire on to a transversely-split bobbin-type mandrel with a body part between flanged ends, leaving the ends of the wire upstanding from the body part of the mandrel, passing the mandrel through the head of an extrusion plastic processing machine to deposit plastic material around the body part of the mandrel between the flanged ends, and to leave exposed the ends of the wire passing through the wall of the socket, and removing the split mandrel from within the socket after it has emerged from the extrusion head, leaving the winding of resistance wire embedded in the surface of the bore of the socket.

4,797,994

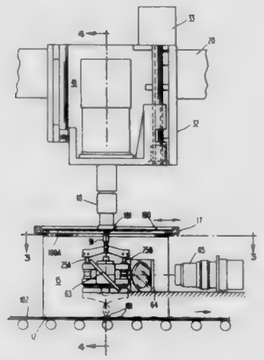
APPARATUS FOR AND METHODS OF DIE BONDING

Gerard H. Michaud, Furlong; James H. Graham, Pottstown, both of Pa., and Roger P. Stout, Chandler, Ariz., assignors to Kulicke & Soffa Industries, Inc., Willow Grove, Pa.

Continuation of Ser. No. 863,590, May 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 855,009, Apr. 22, 1986, abandoned. This application Mar. 21, 1988, Ser. No. 172,982

Int. Cl.[4] H05K *13/04*

U.S. Cl. 29—720 17 Claims



1. An apparatus for removing a die from a film mounted wafer containing a plurality of dice and bonding the die to a bond site on a substrate having a plurality of bond sites thereon, said apparatus comprising:

(a) component holding means for holding the wafer in a first plane and moving the wafer within said first plane so as to place the die at a pickup location;

(b) substrate holding means for holding the substrate in a second plane spaced from and parallel to said first plane and moving the substrate so as to place the bond site at a bond location;

(c) optical means for sensing the position of said die, including mirror means located between said first and second planes for directing light towards and away from said die; and

(d) a die bond head between said first and second planes rotatable about an axis parallel to said first and second planes, including a bond head housing and a die engaging tool movably mounted to said housing such that rotation of said housing does not interfere with said optical means.

4,797,995

METHOD OF FABRICATING A HOLLOW SQUARAX INNER CONDUCTOR

Stanley S. Chang, Palos Verdes Estates; Robert E. Jones, Woodland Hills, and Hui Bau, Hermosa Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 8, 1986, Ser. No. 939,322

Int. Cl.[4] H01R *43/00*

U.S. Cl. 29—825 12 Claims

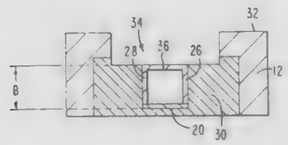
1. A method of fabricating a hollow rectangular tube having highly accurate first and second outer dimensions comprising the steps of:

removing material from a first surface of a metal base plate to form a first "u" shaped slot having the desired inner dimensions of said tube;

joining a cover plate having a thickness greater than the desired wall thickness of said tube to said slotted surface of said base plate;

removing material from the area of said cover plate covering said first slot to define a first wall of said tube having the desired thickness, said area being at least as wide as said first outer dimension;

removing material from said base plate and any remaining portion of said cover plate to form second and third "u" shaped slots on opposite sides of said first slot, said second and third slots being parallel to said first slot and spaced from each other to define respective second and third walls of said tube spaced at said first outer dimension and having the desired thickness, each of said second and third slots having a depth from said first wall greater than said second outer dimension of said tube;



casting a sacrificial metal into at least said second and third slots, said sacrificial metal having a melting point lower than the melting point of said base plate metal;

removing sufficient material from a second surface of said base plate opposite said first plate surface to form a fourth wall of said tube having the desired thickness and thereby exposing said fourth wall to a width of at least said first outer dimension; and

heating the remaining portion of said base plate and said sacrificial metal to remove unwanted portions of said base plate and sacrificial metal and thereby form said hollow rectangular tube.

4,797,996

DEVICE FOR CENTERING PREFORMED COMPONENTS FOR THE FLAT IMPLANTATION THEREOF BY MEANS OF AN AUTOMATIC SETTING MACHINE

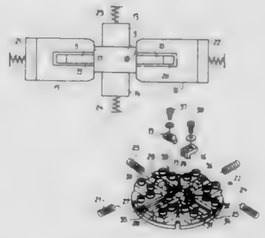
Claude Lobry, Genlis, and Didier Trutt, Auxonne, both of France, assignors to Societe Orega Electronique Et Mecanique, Paris, France

Filed Aug. 24, 1987, Ser. No. 88,310

Claims priority, application France, Aug. 25, 1986, 86 12042

Int. Cl.[4] B23P *19/04*

U.S. Cl. 29—740 5 Claims



1. A device for centering components encapsulated in a chip carrier having substantially parallelpipedic sides and having at least one connection pin or lug on at least one of the sides of the carrier other than the top and bottom thereof, comprising:

two mutually perpendicular pairs of jaws, each of said pairs of jaws being movable such that at least one surface of each jaw of said two pairs of jaws engages one of the sides of a component supported by a supporting means;

at least one recess formed in said at least one surface of each jaw of one of said pairs of jaws, each said recess having such a size and being formed at such a position on said at least one surface that said jaw does not engage a connection pin or lug extending from the side engaged by said at least one surface; and

means for moving said jaws, comprising a carriage guided by lateral rails perpendicular to each other two by two and carried by a plate.

4,797,997

DRY SHAVERS

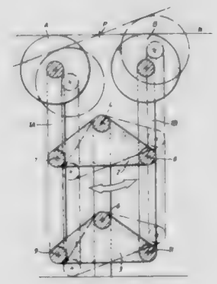
Charles C. Packham, Crowthorne; Robert White, Chelsey, and Steven Rogers, Hurstpierpoint, all of England, assignors to The Gillette Company, Boston, Mass.

Filed Nov. 4, 1987, Ser. No. 117,176

Claims priority, application United Kingdom, Nov. 7, 1986, 8626631

Int. Cl.[4] B26B *19/02*

U.S. Cl. 30—43.92 9 Claims



1. A dry shaver comprising a shaver frame, a pair of generally vertical, parallel side members mounted on said frame for vertical movement relative to each other and relative to said frame whilst constrained to remain parallel with each other, said side members being coupled together below their upper ends by at least one transverse link whose opposite ends are pivotally connected to the respective side member and which is pinned intermediate its ends to said frame for pivotal movement about an axis, and a pair of parallel, elongate shaver heads mounted on the respective upper ends of said side members, for movement relative to said shaver frame, each said shaver head comprising an outer foil and a reciprocating inner cutter mounted independently on said frame.

4,797,998

LOCKABLE PIVOTABLE RAZOR

Vincent C. Motta, West Norwalk, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 8, 1986, Ser. No. 936,435

Int. Cl.[4] B26B *21/14*

U.S. Cl. 30—87 35 Claims

1. A razor handle for mating with a pivotable razor cartridge comprising:

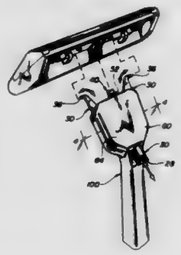
(a) a bottom frame;

(b) a top frame mated to said bottom frame;

(c) attachment means allowing pivotable movement of said cartridge in the direction of shaving in response to shaving forces on the cartridge bottom;

(d) biased cam follower means for engagement with a V-shaped cam on the cartridge bottom said cam follower,

said cam follower means linearally reciprocally moveable against said bias within said frame; and



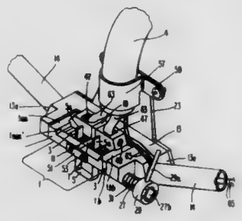
(e) locking means including a slideably mounted member within said frame for preventing cartridge pivoting.

4,797,999

CUTTING HEAD MEMBER FOR RESISTANCE-HEATED TIRE GROOVER

Guy A. Van Alstine, 27 West Cherry Ave., Trappe, Pa. 19426

Filed Sep. 11, 1987, Ser. No. 96,360
Int. Cl.[4] B29D *30/68*
U.S. Cl. 30—140 11 Claims



1. A cutting head member for holding the ends of a substantially U-shaped metal cutting blade in a resistance-heated tire groover, comprising:

a. a metal housing divided into a first subhousing and a second sub-housing, the first and second subhousings having a longitudinal channel formed therein, and the first and second sub-housings being adapted to be connected to an external source of electrical current;

b. at least one stationary insulator interposed between the first and second sub-housings so that the first and second sub-housings are electrically insulated from each other;

c. head holder means for holding the first subhousing rigidly in engagement with the second sub-housing with the stationary insulator interposed there between, so that the first and second sub-housings are electrically insulated from each other;

d. a plurality of metal clamping spacers slidably interposed within the longitudinal channel formed in the first and second sub-housings, for the purpose of engaging the ends of a substantially U-shaped cutting blade interposed between said metal clamping spacers;

e. a floating insulator slidably interposed within the longitudinal channel formed in the first and second subhousings, said floating insulator separating the plurality of metal clamping spacers so that the metal clamping spacers on one side of said floating insulator are electrically insulated from the metal clamping spacers on the other side of said floating insulator, in that the metal clamping spacers on one side of said floating insulator are in contact only with each other and with the first sub-housing, while the metal clamping spacers on the other side of said floating insulator are in contact only with each other and with the second sub-housing, thereby allowing electrical current from an external source to be conducted through a substantially U-shaped metal cutting blade having one of its ends interposed between the metal clamping spacers on one side of said floating insulator and the other of its ends interposed between the metal clamping spacers on the other side of said floating insulator; and

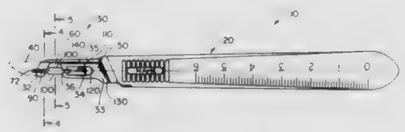
f. tightening means for tightening the metal clamping spacers and the floating insulator against each other and against the ends of a substantially U-shaped metal cutting blade so that one end of the substantially U-shaped metal cutting blade is rigidly retained between the metal clamping spacers on one side of the floating insulator and the other end of the substantially U-shaped metal cutting blade is rigidly retained between the metal clamping spacers on the other side of the floating insulator, thereby allowing electrical current from an external source to be conducted through the substantially U-shaped metal cutting blade to cause resistance heating therein.

4,798,000

CUTTING BLADE ASSEMBLY

Richard J. Bednar, 113 Smoke Rise Dr., Warren, N.J. 07060, and Emil Yerman, 2348 Terrace Ave., South Plainfield, N.J. 07080

Filed Feb. 13, 1987, Ser. No. 14,589
Int. Cl.[4] B26B *1/10*
U.S. Cl. 30—339 11 Claims



1. A cutting blade support assembly including

an elongated blade support member adapted to be carried in the hand, said blade support member having a rear end and a front end on which a cutting blade can be detachably supported,

said front end having a top surface on which a cutting blade can be seated, and

a blade locking member in the form of a wall extending along the front end of said blade support member generally parallel to the longitudinal axis thereof,

a portion of said wall of said blade locking member having a T-shaped cross section which is adapted to be engaged by a blade to hold the blade in place,

the T-shape including a vertical wall having an upper end from which a top horizontal surface extends and provides lips on either side of said vertical wall, said lips being adapted to be engaged by a blade, and

a slot in said front end of said blade support member and extending therethrough from said top surface thereof to the bottom surface thereof in alignment with said horizontal lips, said vertical wall extending longitudinally across said slot and said lips vertically overlying and lying across said slot,

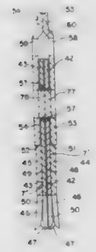
whereby said T-shaped locking member may be formed by a two-part mold including cooperating members forming said slot, said vertical wall and said locking member lips.

4,798,001

SAW BLADE FOR A SAW HAVING RECIPROCATING BLADES

Horst Grossmann, Hunfelden, and Ernst Staas, Brechen, both of Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.

Filed Oct. 30, 1987, Ser. No. 115,936
Claims priority, application European Pat. Off., Nov. 11, 1986, 86115651.1
Int. Cl.[4] B27B *19/02*
U.S. Cl. 30—355 8 Claims



1. A saw blade for a power saw having two such blades arranged adjacent and parallel to each other and reciprocating in opposite directions, said saw blade comprising;

an elongate blade member extending in a longitudinal direction and having a top edge, saw teeth along a bottom edge, an outside surface extending between said top and bottom edges on one side of said blade member, and an inside surface extending between said top and bottom edges on an opposite side of said blade member;

said outside surface being formed with a longitudinal shoulder partway between said top and bottom edges and extending in said longitudinal direction, said shoulder facing upwardly away from said bottom edge;

said teeth comprising first, second and third types of teeth;

said first type of teeth being located at said outside surface and being set outwardly to project beyond said outside surface;

said second type of teeth comprising non-set teeth located at said inside surface and being ground from bottoms thereof upwardly and outwardly with respect to said blade member;

said third type of teeth having upper roots located further outwardly towards said outside surface than roots of the second type of teeth, said third type of teeth being set inwardly but not projecting beyond the teeth of said second type, and

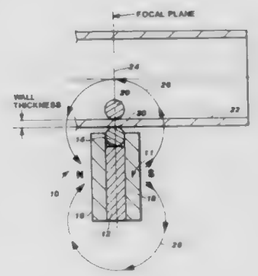
the three types of teeth cooperating when cutting a workpiece to bias said bottom edge to move in a direction from said outside surface towards said inside surface, the first type of teeth being subjected to forces acting outwardly away from said inside surface and the second and third types of teeth being subjected to forces acting inwardly towards said inside surface to produce a resultant force acting on all three types of teeth which is directed inwardly towards said inside surface.

4,798,002

WALL THICKNESS MEASURING METHOD AND APPARATUS

Leander J. Salzer, and Donald A. Bergren, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 6, 1987, Ser. No. 105,154
Int. Cl.[4] A45B *3/08*
U.S. Cl. 33—125 A 31 Claims



1. An apparatus for use in conjunction with an optical comparator to measure a nonmagnetic article having an aperture therein so as to determine the wall thickness of the article, the optical comparator having a support member which can be vertically displaced, the apparatus comprising:

support means for supporting said article:

a ball of known diameter for positioning within said aperture; and

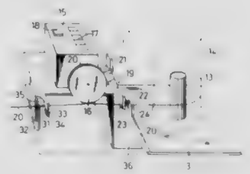
a magnet contiguous with said support means and producing a magnetic field sufficient to retain said ball positioned within said aperture directly above said support means.

4,798,003

THREAD MEASURING DEVICE

Ingvar Haglöf, Strömvägen 56, S-882 00 Långsele, Sweden

PCT No. PCT/SE86/00560, § 371 Date Jul. 22, 1987, § 102(e) Date Jul. 22, 1987, PCT Pub. No. WO87/03675, PCT Pub. Date Jun. 18, 1987
PCT Filed Dec. 9, 1986, Ser. No. 87,679
Claims priority, application Sweden, Dec. 16, 1985, 8505944
Int. Cl.[4] G01C *15/00*
U.S. Cl. 33—134 R 5 Claims



1. A thread meter comprising: a holder for a thread reel, a counter with a rotary measuring wheel and plural guides for a thread, and an outer casing with two portions to contain said reel, said counter and measuring wheel, and said guides, the improvement comprising: a first guide (19) of said plural guides for a thread (20) being located within said casing between said reel holder (13) and said measuring wheel (16); a second of said guides, guide (26) for the thread is formed by the two portions of said casing (4,6), a first portion (4) and a second portion (6), which are hingedly interconnected; said first portion (4) having an end wall with a top edge (27) and having a recess (26)

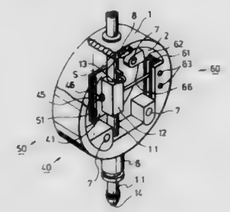
extending from said edge (27); and said second portion (6) of the casing being constructed, when said casing portions are hingedly closed, to bridge the opening (28) of the recess (26) along said edge (27), whereby said recess and said bridge form a hole with a closed periphery, and the periphery of said wheel (16) being located within said casing along a line extending between said two guides (19', 26, 30').

4,798,004

DISPLACEMENT DETECTING APPARATUS

Mitio Suzuki, Kawasaki, Japan, assignor to Mitutoyo Corporation, Tokyo, Japan

Filed Jun. 10, 1987, Ser. No. 61,070
Claims priority, application Japan, Jun. 13, 1986, 61-90939[U]; Jun. 13, 1986, 61-90940[U]; Jun. 18, 1986, 61-92819[U]
Int. Cl.⁴ G01B 3/22
U.S. Cl. 33—172 E 11 Claims



1. A displacement detecting apparatus comprising:
a case body;
a spindle having a measuring element slidably supported on said case body;
means for detecting a moving displacement of said spindle in the axial direction thereof, said detecting means including a first sensing member having predetermined patterns formed thereon and a second sensing member opposed to said first sensing member and integrally secured to said spindle;
a position checker provided on said second sensing member, including a through-hole having a reference line which extends in a direction parallel to the axial direction of said spindle, said position checker allowing visual inspection of the patterns of said first sensing member from a direction opposite to said first sensing member and ascertaining a positional relationship between said second sensing member and said first sensing member; and
said first sensing member being supported by said case body after said first sensing member is positionally adjusted with said second sensing member secured to said spindle.

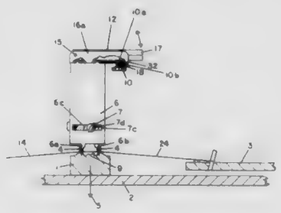
4,798,005

COMPONENT PIANO STRING ANGLE GAUGE

Thomas A. Lowell, 7482 Rapp Ln., Talent, Oreg. 97540

Continuation of Ser. No. 880,921, Jul. 1, 1986, abandoned. This application May 10, 1988, Ser. No. 191,713
Int. Cl.⁴ G01C 9/00
U.S. Cl. 33—366 6 Claims

1. A component piano string angle gauge, for piano strings which strings each comprise a front string, a bridge string segment where the piano string is in contact with a piano bridge, and a rear string, for use in the measurements of angles between the front strings and rear strings and a projected line between a pair of bridge string segment termination points, the bridge string segment termination points being the location of the intersection between the front and rear strings and the bridge string segment, said component piano string angle gauge comprising:
a. a base;
b. two gauging fingers, extending from the base, having string contacting bearing surfaces on their ends;
c. means for adjusting the relative distance between the two gauging fingers, whereby the relative distance between the gauging fingers may be increased or decreased so as to allow placement of the string contacting bearing surfaces



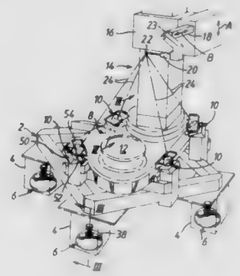
of the gauging fingers at the bridge string segment termination points;
d. angle measuring means mounted to said base; and
e. means for calibrating said angle measuring means relative to the position of the string contacting bearing surfaces of the gauging fingers.

4,798,006

VIBRATION ISOLATION MEANS

Anthony B. Barnaby, Leicester, England, assignor to Rank Taylor Hobson Limited, United Kingdom

Filed Feb. 24, 1987, Ser. No. 18,021
Claims priority, application United Kingdom, Feb. 25, 1986, 8604596
Int. Cl.⁴ G01B 21/00
U.S. Cl. 33—573 24 Claims



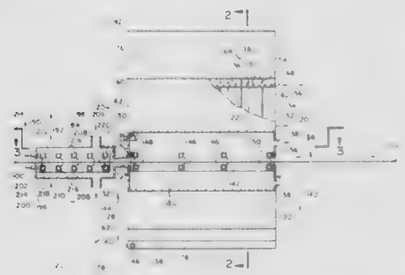
1. Apparatus for carrying out an operation on an object, comprising:
a base for supporting the object;
a device connected to said base for performing said operation in a defined zone of operation;
a plurlaity of base isolating mounts each having a higher stiffness in a first direction than in a second direction transverse to said first direction, said base isolating mounts being connected to said base so that said first directions of said base isolating mounts converge in said zone of operation; and
means for supporting said base isolating mounts on a floor so that said base is supported through said base isolating mounts.

4,798,007

EXPLOSION-PROOF, POLLUTION-FREE INFRARED DRYER

John E. Eichenlaub, 9426 Beverly La., Sanibel Island, Fla. 33957

Filed May 28, 1987, Ser. No. 54,999
Int. Cl.⁴ F28B 3/28
U.S. Cl. 34—4 36 Claims



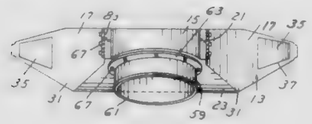
1. An explosion-proof, pollution-free infrared dryer for concentrated vaporization and removal of a combustible solvent from a newly coated product, comprising:
(a) a source of infrared radiation for vaporizing the combustible solvent from the product;
(b) a drying tunnel for surrounding and passing the product therethrough and having a radiation transmissive panel spaced from the source of infrared radiation and containing the combustible solvent vaporized by the infrared radiation applied through the panel and on to the product; and
(c) means producing a flow of combustion inhibiting atmosphere through the drying tunnel for mixing with the vaporized solvent to prevent ignition thereof and to carry the solvent from the drying tunnel away from the product and infrared source.

4,798,008

NOZZLE CONSTRUCTION

James A. Belanger; Robert J. Wentworth, both of Northville; Barry S. Turner, Livonia, and Graham J. Astley, Novi, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed May 4, 1987, Ser. No. 45,356
Int. Cl.⁴ F26B 19/00
U.S. Cl. 34—243 C 38 Claims



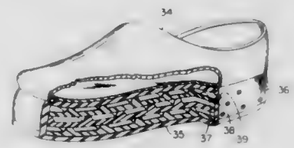
1. An air nozzle adapted for blowing water off a washed vehicle in a car wash comprising a unit nozzle housing of molded plastic material having a top wall, laterally diverging side walls, a substantially upright rear wall, an upper front wall portion inclined downwardly and outwardly of said rear wall, a lower front wall portion inclined downwardly and inwardly toward said rear wall, said walls and wall portions defining an air chamber of laterally increasing width from its top and with said side walls, said lower front wall portion and rear wall defining a laterally elongated throated air outlet, one of said upper front wall portion and rear wall having an air inlet opening therein, and an outwardly and laterally inclined downwardly converging hood upon each side wall communicating with said air chamber and terminating in an air outlet orifice for directing air laterally outward of said throated outlet and adapted for blowing water off the edges of a wider vehicle.

4,798,009

SPRING APPARATUS FOR SHOE SOLES AND THE LIKE

Richard C. Colonel, Box 2192, Renton, Wash. 98056, and Devere Lindh, 1910 Dogwood Dr. SE, Auburn, Wash. 98002

Continuation-in-part of Ser. No. 48,308, May 11, 1987, abandoned. This application Mar. 28, 1988, Ser. No. 174,035
Int. Cl.⁴ A43B 13/18
U.S. Cl. 36—28 17 Claims



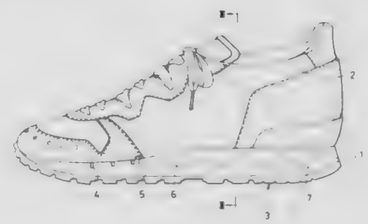
1. A spring for use in shoe soles and the like, said spring comprising at least first and second layers of resilient material, each of said first and second layers having a first smooth face and a second face having compression members formed on it, said compression members having spaces between them and tops, said first and second layers being adhesively attached with said tops on said first layer attached to said first side of said second layer with said compression members on said first layer positioned opposite said spaces on said second layer.

4,798,010

MIDSOLE FOR SPORTS SHOES

Yasunori Sugiyama, Hyogo, Japan, assignor to Asics Corporation, Japan

Continuation of Ser. No. 913,568, Sep. 29, 1986, abandoned, which is a continuation of Ser. No. 650,287, Sep. 12, 1984, abandoned. This application Apr. 4, 1988, Ser. No. 180,613
Claims priority, application Japan, Jan. 17, 1984, 59-6088
Int. Cl.⁴ A43B 13/12, 13/18
U.S. Cl. 36—30 R 10 Claims



1. A sports shoe comprising:
(a) a shoe upper;
(b) an outsole; and
(c) a midsole comprising a soft elastic member and a hard elastic member having a greater hardness than that of the soft elastic member, the hard elastic member being disposed at one of a foot-contacting side of the midsole and a ground-contacting side of the midsole in a portion of at least lateral edge area of a heel portion of the midsole, the soft elastic member having an upper surface to which said shoe upper is joined, a lower surface to which said outsole is joined, and a joint surface joined to a joint surface of the hard elastic member and extending between the upper surface and the lower surface so as to face to one of the

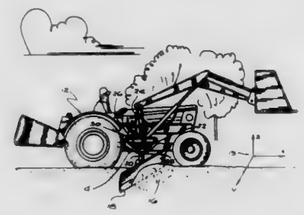
upper surface and the lower surface, the joint surface of the soft elastic member and the joint surface of the hard elastic member each having a complementary wavy configuration along a direction of longitudinal center axis line of the shoe for mollifying and reducing a strong reaction force produced by an impact to the shoe in a horizontal or oblique direction, the wavy configuration having at least two cycles of waves between a fore end of the heel portion and an aft end of the heel portion, the cycles of the waves having substantially the same wavelength and substantially the same amplitude.

4,798,011

VERSATILE TRACTOR SIDE BLADE MOUNT

Charles R. Sprinkle, 10580 Creek Rd., Ojai, Calif. 93023

Filed Dec. 3, 1987, Ser. No. 128,153
Int. Cl.[4] E02F *5/00*
U.S. Cl. 37—108 R **14 Claims**



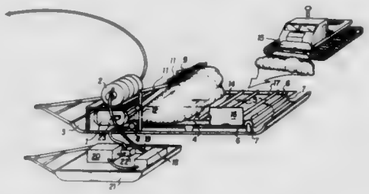
1. A versatile tractor side blade mount system for use with a tractor comprising:
- a control member including means for pivotally mounting said member on at least one side of said tractor;
- a grading blade;
- a blade holding bracket pivotally mounted on said control member;
- joint member means for mounting said blade at an adjustably predetermined angle on said bracket;
- means for rotating said blade holding bracket about its axis of rotation with respect to said control member;
- means for rotating said control member about its axis of rotation with respect to the tractor;
- the axis of rotation of said control member involving said means for pivotally mounting said control member being substantially parallel to the axis of rotation of said bracket with both of these axes extending in a predetermined direction, and said axes of rotation being spaced apart by a predetermined distance;
- the distance between the axis of rotation of said bracket and said joint means being of the same order of magnitude as said predetermined distance; and
- said control member having a significantly greater extent in the direction parallel to said predetermined direction than in the direction perpendicular to the plane defined by said two axes of rotation; and said bracket having a significantly greater extent in the direction parallel to said axes of rotation than in the direction perpendicular to the plane defined by the axis of rotation of said bracket and the point of securing said joint member means to said bracket;
- whereby said control member and said blade holding bracket may be rotated about their axes of rotation, and position said blade at a wide spectrum of angles, heights with respect to the tractor, and lateral distances from the body of the tractor.

4,798,012

PNEUMATIC PROCESS AND DEVICE FOR CONVEYING SNOW

Armand Pasquier, F-74000, Annecy, France, assignor to Etudes Techniques et Realisations (CdF Ingenierie) and Armand Pasquier, both of, France

Filed Apr. 8, 1987, Ser. No. 35,765
Claims priority, application France, Apr. 15, 1986, 86 05339
Int. Cl.[4] E01H *8/04*
U.S. Cl. 37—219 **19 Claims**



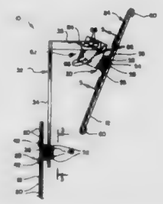
1. A device for conveying snow for snow application or snow removal, comprising:
- conveying means for conveying a pile of snow;
- first control means for controlling the rate of travel of the snow on said conveying means;
- second control means for controlling the height of the snow on said conveying means;
- a drawoff device for receiving the conveyed snow;
- an injecting device operatively connected to said drawoff device for receiving the snow from said drawoff device and injecting the snow into conveying ducts, said injecting device and said drawoff device forming a stationary unit;
- an air generator operatively connected to said injecting device for introducing air into said injecting device to produce a mixture of air and snow in said injecting device that is released into the conveying ducts;
- means for driving each of said conveying means, injecting device, drawoff device and air generator.

4,798,013

HEADER SIGN MOUNTING ASSEMBLIES FOR PRODUCT MERCHANDISING DISPLAYS

Anthony Sainato, Glenview, Ill., assignor to Creative Products Merchandising, Elk Grove, Ill.

Filed Jul. 14, 1986, Ser. No. 886,090
Int. Cl.[4] G09F *3/18*
U.S. Cl. 40—651 **6 Claims**



1. A header sign mounting assembly for a product merchandising display wherein the display includes a generally vertical pegboard support panel and at least one shelf for arranging products thereon, said mounting assembly comprising:
- (a) a header holder for holding a display sign; and
- (b) means for mounting said header holder on the pegboard support panel, said mounting means comprising:
  - (i) a support bracket for supporting said header holder,
  - (ii) an upright brace for supporting said support bracket relative to the pegboard support panel, said upright brace having lower and upper ends,
  - (iii) an attachment bracket for detachably connecting said upright brace with said pegboard support panel,
  - (iv) first means for connecting said upright brace with said attachment bracket at the lower end of said upright brace, and
  - (v) second means for connecting said upright brace with said support bracket at the upper end of said upright brace;

said attachment bracket comprising a pair of plates having leg portions adapted to be inserted into the pegboard support panel and then interengage therewith upon pivoting said plates into an overlapping relationship, said first connecting means comprising attachment means adapted to interfit with said plates and said lower end of said upright brace after said plates have been positioned in the overlapping relationship, engaging with said attachment means to secure said plates and said mounting assembly further including complementary means for said lower end of said upright brace together to maintain said leg portions of said plates interengaged with the pegboard support panel.

4,798,014

POINT-OF-PURCHASE DISPLAY

Charles A. Stoerzinger, Medford, and James Machlett, Holcombe, both of Wis., assignors to Tombstone Pizza Corporation, Medford, Wis.

Filed Feb. 13, 1987, Ser. No. 14,294
Int. Cl.[4] G09F *1/00*
U.S. Cl. 40—124.1 **12 Claims**



1. A point-of-purchase display assembled from a single, folded piece of two-dimensionally rigid material comprising:
- a. a vertical display member having a locking edge;
- b. a vertical support member adapted to be secured on a vertical mounting surface; and
- c. a tab comprising a slot and two fingers, said slot being cut between the two fingers, said slot and fingers being dimensioned such that, when assembled, said locking edge of said display member is positioned in said slot, with one of said fingers on either side of said display member.

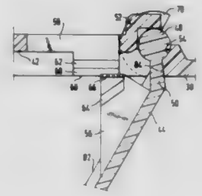
4,798,015

CONTAINER FOR A PILE OF PICTURES

Peter Ackeret, Kusnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

PCT No. PCT/EP86/00622, § 371 Date Jun. 11, 1987, § 102(e) Date Jun. 11, 1987, PCT Pub. No. WO87/03105, PCT Pub. Date May 21, 1987
PCT Filed Oct. 29, 1986, Ser. No. 59,874
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1985, 3539339
Int. Cl.[4] G09F *1/12*
U.S. Cl. 40—152.1 **18 Claims**

1. Container for a pile of substantially rectangular pictures of like format, having a housing with a viewing window and a slider member that can be pulled out of the housing, and a stand attached by a hinge to the housing base opposite the window, which stand has stop members which arrest the stand when it is folded out by coming up against complementary stop members on the housing, the stop members and the complementary stop members being arranged at a distance from the hinge of the stand in the direction towards the free end of the stand and the elements having the stop faces being designed and arranged in such a manner that as the stand is folded out they move apart with resilient deformation and when the stand is folded away they overlap one another.

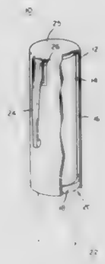


4,798,016

PICTURE PEN

Arthur P. Venditti, 2 Seneca Rd., Peabody, Mass. 01960, and William M. Martz, R.R. 2, Box 153A, West Point, Iowa 52656

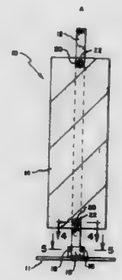
Filed Apr. 3, 1986, Ser. No. 848,029
Int. Cl.[4] G09F *3/00*
U.S. Cl. 40—334 **20 Claims**



1. An assembly for removably accommodating an image medium, comprising:
- a generally cylindrical element;
- a transparent sleeve removably disposable over said cylindrical element having an opening at a first end for receiving said element, and having an inner diameter slightly larger than the outer diameter of said element for defining a chamber to accommodate the image medium; and
- means for removably securing said sleeve with said cylindrical element including means for frictionally engaging said cylindrical element and said transparent sleeve relative to each other, said means for frictionally engaging being disposed on said cylindrical element to engage said transparent sleeve proximate said first end when said sleeve is disposed over said cylindrical element.

VOL 1098 ISS 3 JA 17 1989 UMI

4,798,017
TRAFFIC DIRECTING SIGN
George A. Giotis, 124 Timberline Dr., Williamsville, N.Y. 14221
Filed Dec. 5, 1986, Ser. No. 938,383
Int. Cl.[4] G09F *7/02*
U.S. Cl. 40—612 5 Claims



1. In a traffic directing sign device which includes in combination; a stabilizing base member having a post mounting means on the upper surface thereof, and a flat bottom surface whereby said sign device is adaptd to be set upon a highway surface in laterally slidable relation thereon; a post member detachably connected at its bottom end portion to said mounting means of said base member so as to extend vertically therefrom; and a traffic directing information carrying panel member formed of a flexible highly resilient normally flat sheet material detachably mounted along its vertical mid section upon said post member, whereby the opposite side portions of said panel are free to flex and allow wind gusts to slip around the post supported panel portion thereof while applying substantially reduced sign device toppling tending forces thereagainst; the improvement comprising:

said mounting means comprises a releasable clamping device; and

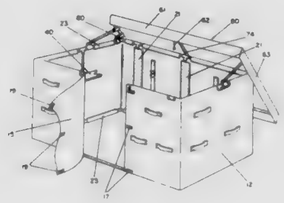
the opposite top and bottom end portions of said post member are similarly shaped and sectionally configured and dimensioned so that in event said post is broken off at its bottom end clamped connection to said base member the broken away part may be removed and said post member upended and readily reinserted into locked position within said clamping device.

4,798,018
MAGAZINE LOCKING MEANS FOR FIREARMS HAVING A MAGAZINE IN A PISTOL GRIP
Bertil Johansson, Brunnsgatan 3B, S-633, 47 Eskilstuna, Sweden
Filed Sep. 3, 1987, Ser. No. 92,462
Claims priority, application Sweden, Sep. 5, 1986, 8603734
Int. Cl.[4] F41C *25/06*
U.S. Cl. 42—7 9 Claims



1. Magazine locking means for firearms of the type having a pistol grip (2) or corresponding part which is grasped by the firing hand of a marksman and which includes a magazine guide (6) into which an exchangeable magazine (5) is introduced, and a magazine catch (9) mounted at the front side of the pistol grip (2) for movement between magazine locking and releasing positions, characterized in that said magazine catch (9) comprises a plate hingedly connected at its lower end to said pistol grip for pivotal movement between said locking and releasing positions and engageable in said locking position with a projecting part (17) at the front side of said magazine (5), said plate having grab parts (13 and 14) at the upper portion thereof projecting at opposite sides of said pistol grip (2), each of said grab parts (13 and 14) being usable independently of the other of said grab parts (13 and 14) to pivotally move said magazine catch (9) to said releasing position and release said magazine (5) from said magazine guide (6).

4,798,019
PORTABLE BLIND
Patty A. Sury, 5722 Second, NW., and James E. Wilkins, 171 Vineyard, NW., both of Albuquerque, N. Mex. 87107
Filed Feb. 9, 1988, Ser. No. 153,990
Int. Cl.[4] A01M *31/00*
U.S. Cl. 43—1 18 Claims



1. A portable blind comprising:

a frame comprising a closed perimeter base, a matching perimeter top having an open portion therein, and a plurality of uprights disposed between said frame perimeter base and said frame perimeter top;

a fabric cover fittable on said frame, said frame and said cover forming a stable structure, said cover comprising a door portion positionable over said open portion of said perimeter top whereby user ingress into said blind and egress out of said blind is accomplishable through said door portion of said cover and said open portion of said frame perimeter top; and

a pair of cinching straps disposed on said fabric cover, one said strap being positioned on each side of and adjacent to said door portion of said fabric cover, said straps extending vertically essentially between said top and base frame perimeters when said cover is in place on said frame, said cinching straps being adjustably tightenable to provide additional stability to said blind.

4,798,020
SYSTEM FOR HARVESTING CRAWFISH
Albert L. George, P.O. Box 3604, Lafayette, La. 70502, and Don Gooch, 875 Hoyt Rd., Boyce, La. 71409
Filed Jan. 21, 1987, Ser. No. 5,590
Int. Cl.[4] A01K *81/04*
U.S. Cl. 43—6.5 16 Claims

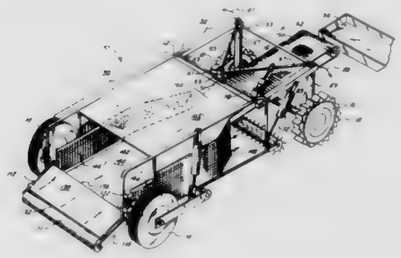
1. A vehicle for harvesting crawfish in their natural habitat, comprising:

a. a first primary frame portion;

b. means for advancing the frame portion forward through the water during harvesting;

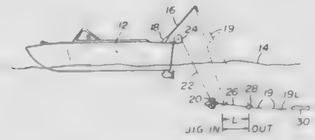
c. a rigid primary roller extending a distance of at least the width of the vehicle, for dislodging crawfish from their habitat in the water as the vehicle advances through the water;

d. means for directing the travel of and receiving the dislodged crawfish onto a first portion of the vehicle; and



e. means for conveying the crawfish received to a primary collection zone.

4,798,021
AUTOMATIC HORIZONTAL JIGGING DOWNRIGGER
Louis F. Miklos, Box 500, East Chicago, Ind. 46312
Filed Jun. 29, 1987, Ser. No. 68,119
Int. Cl.[4] A01K *91/00*
U.S. Cl. 43—19.2 8 Claims



1. An underwater horizontal jigging downrigger for being towed by a tow line from a fishing boat for use in trolling for fish with a fishing line having a lure comprising:

a streamlined housing having provision for being attached to a tow line for being towed behind a boat;

a propeller mounted to said housing for normally being turned as the housing is towed through the water;

a jigging line having a relase clamp for receiving a portion of a fishing line and holding that portion against normal forces encountered in trolling but releasing that line in response to higher forces such as result from a fish taking the line's lure;

a reel mounted on said housing for reeling in and allowing the reeling out of said jigging line;

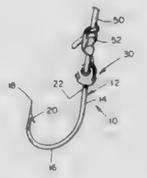
means for coupling said reel to said propeller so that the propeller drives the reel so as to reel in said jigging line and for decoupling said reel from said propeller so that the reel may "freewheel" and allow said jigging line to be unreeled by the flow of water against that line and any fishing line and lure attached thereto; and

fins mounted on said housing and being so arranged in said housing that, as the downrigger is towed through the water, the fins bias the movement of the downrigger in one direction perpendicular to the direction of travel;

wherein said downrigger is provided with a plurality of tow line attaching means so that the user may select different orientation and determining the particular direction of perpendicular bias so that the towed downrigger may be made to be towed directly

behind or to the left or right of the boat; and wherein the housing defines a chamber which may be selectively filled with air or more massive material to change the buoyancy, mass and underwater movement characteristics of the downrigger.

4,798,022
COMBINATION FISHHOOK AND SWIVEL
Dean Rhoades, 9041 Olin St., Los Angeles, Calif. 90034
Filed Jun. 27, 1988, Ser. No. 211,882
Int. Cl.[4] A01K *91/04*
U.S. Cl. 43—44.83 4 Claims



1. An apparatus comprising:

a. a fishhook;

b. said fishhook further comprising an elongated stem portion having a straight end and which stem portion extends into at least one arcuate portion terminating in a pointed tip;

c. a swivel;

d. said swivel further comprising a sphere nonremovably, movably and rotatably retained within a basket and arm members extending from the basket and including aligned eyes therein; and

e. the sphere of said swivel attached to the straight end of said elongated stem portion of said fishhook;

f. whereby a fishing line can be threaded through said eyes and thereby attached directly to said swivel and to said fishhook.

4,798,023
METHOD OF CONTROLLING ENVIRONMENTAL CONDITIONS IN THE PROXIMITY OF VEGETATION OR CROPS WITH THE AID OF PROTECTIVE SHEETING, PROTECTIVE SHEETING FOR USE IN THIS METHOD, AND A PROTECTIVE DEVICE COMPRISING SHEETING
Gerhardus H. Mormiakhof, Klimmen; Lubbertus Vogel, Uden, and Adrianus Leenheer, Dordrecht, all of Netherlands, assignors to Stork Perforated Products B.V., Boxmeer, Netherlands
Filed Feb. 17, 1987, Ser. No. 15,330
Claims priority, application Netherlands, Feb. 14, 1986, 8600377
Int. Cl.[4] A01G *13/02*
U.S. Cl. 47—26 18 Claims



1. As an article of manufacture, a protective sheet for use in the cultivation of plants for controlling environmental conditions in the proximity of said vegetation or crops, said protective sheet being fabricated of flexible translucent plastic material, said protective sheet having opposite sides and being provided with a plurality of microperforations, each of said microperforations having flaired end portions connected by a constricted middle portion and defined by a protruded rim which is curved on its interior and exterior sides for dispersing light and guiding water on said sheet, and wherein the diameter of the smallest section of each microperforation at the constricted middle portion has a value of between 50 and 2000 μm and the number of microperforations per unit area is between 25 and 40000 per cm^2.

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4,798,024

METHOD AND APPARATUS FOR DEBURRING THE INNER EDGE OF PART OF A WORKPIECE

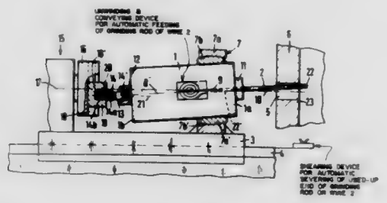
Hans Grimm, Esslingen, Fed. Rep. of Germany, assignor to Maschinenfabrik Gehring Gesellschaft mit beschränkter Haftung & Co. Kommanditgesellschaft, Ostfildern, Fed. Rep. of Germany

Continuation of Ser. No. 742,296, Jun. 27, 1985, abandoned. This application Jan. 14, 1987, Ser. No. 5,349

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1984, 3424918

Int. Cl.[4] B24B *9/00*

U.S. Cl. 51—33 R **7 Claims**



1. A method of deburring specifically only an inner edge of a bore especially that of a small diameter transverse bore or the like of a workpiece in which burrs are rather inaccessible to be removed even with brush-like tools, including the steps of introducing a tool connected with a grinding spindle unit with a direct drive for a grinding spindle into said bore, and then moving said tool in said bore angularly over the burr which is to be removed from the inner edge of the bore without danger of such burr being brushed or moved into an interior of the transverse bore; said method comprising the steps of:

providing a grinder unit for holding said tool, unwinding said tool from a roll, and feeding said tool to said grinder unit;

rotating at least one of said tool that is a grinding rod which with the grinding spindle unit and drive embodied as a drive turbine and said workpiece operate collectively relative to each other at high speed in a predetermined range of revolutions per minute; and

imparting both a wobbling movement and also an axial travel movement to at least one of said tool and said workpiece whereby the drive turbine and grinder spindle form a structural unit which is mounted universally pivotable on all sides and driven via an eccentric drive and as a consequence of said wobbling movement after the tool has been introduced into the workpiece bore which is to be deburred, at least one of said tool and said workpiece furthermore describes a circular path which is concentric to the axis of the bore and the diameter of which increases progressively in a direction toward a free end of the bore when the grinding rod describes a configuration of a truncated cone as a consequence of said wobbling movement during effectiveness in angularly deburring specifically only the inner edge of the small diameter transverse bore therewith.

4,798,025

ABRASIVE DISC SUPPORT

Roger C. Lokken, and John B. Young, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 29, 1987, Ser. No. 67,047

Int. Cl.[4] B24D *9/08*

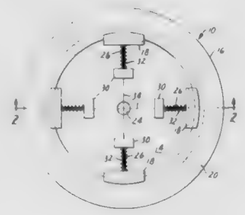
U.S. Cl. 51—168 **7 Claims**

1. A disc support adapted to grip and support an annular abrasive disc comprising:

a frame including a flat base and an upstanding annular rim;

at least one disc retainer for forcing said disc into and retaining said disc in contact with said annular rim;

means for biasing said retainer toward said annular rim; and



a cable attached to and extending between said retainer and the diametrically opposite portion of said annular rim and wherein movement of said cable toward said base causes movement of said retainer away from said annular rim.

4,798,026

THERMOSTABLE ABRASIVE DIAMOND-CONTAINING PRODUCT

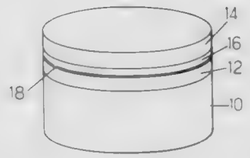
Jean-Michel Cercesu, Seyssinet, France, assignor to Societe Industrielle de Combustible Nucleaire, Annecy, France

Filed May 15, 1987, Ser. No. 50,027

Claims priority, application France, May 16, 1986, 86 07069

Int. Cl.[4] B24D *3/10*

U.S. Cl. 51—204 **15 Claims**



1. Abrasive product comprising a compact essentially consisting of diamond particles presention an amount of more than 80% by volume of the compact, each particle being directly bonded to its neighbors so as to form a polycrystalline structure, and a binder phase filling the voids between said diamond particles, said binder phase essentially consisting of silicon, iron and nickel in alloyed condition, wherein the amounts of nickel and iron in said binder phase are in a ratio of from 5/95 to 70/30 by weight.

4,798,027

METHOD OF AND APPARATUS FOR SANDBLASTING WORKPIECE

Shuji Hamada, Yokohama, Japan, assignor to Niigata Engineering Co., Ltd., Tokyo, Japan

Filed Sep. 1, 1987, Ser. No. 91,879

Int. Cl.[4] E06B *07/20*

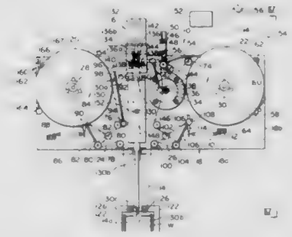
U.S. Cl. 51—310 **16 Claims**

1. An apparatus for masking a surface portion of an object comprising:

a masking tape;

intermittent tape traveling means operable to cause said masking tape to travel by a prescribed length to index a portion of said masking tape in the vicinity of said object intermittently, said intermittent tape traveling means comprising a base, a feed reel rotatably mounted on said base and having said masking tape wound therearound, a take-up reel rotatably mounted on said base in spaced relation to said feed reel, and winding means for winding said masking tape wound around said feed reel on said take-up reel; and

urging means operable to urge said portion of said masking tape into contact with said surface portion of said object to cover the same, said urging means including an urging rod having an urging member at one end thereof and disposed between said feed and take-up reels, and a drive cylinder including a piston rod having a foremost end and operably connected to the other end of said urging rod for moving said urging rod axially thereof to cause said urging member to urge said portion of said masking tape onto said portion of said object, said urging rod having a bore formed therein so as to extend axially thereof and opening



to an end face at said other end and a flange formed at said other end, said foremost end of said output shaft of said actuator being housed in said bore of said urging rod coaxially therewith for sliding movement longitudinally of said urging rod, a first spring disposed in said bore so as to act between said piston rod and said urging rod to urge said urging rod in a direction toward said object, stopper means fixedly secured on said base so as to be disposed intermediate said ends of said urging rod, and a second spring disposed around said urging rod so as to act between said flange portion of said urging rod and said stopper means to urge said urging rod in a direction away from said object.

4,798,028

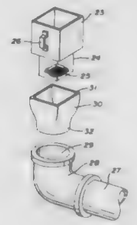
DOWNSPOUT TRAP AND CLEAN OUT

John A. Pinion, 1529 Oakdale NW., Warren, Ohio 44485

Filed Nov. 30, 1987, Ser. No. 126,423

Int. Cl.[4] E04D *13/08*

U.S. Cl. 52—16 **5 Claims**



1. In gutter and downpout drainage apparatus of the type communicating with a drain line; an improved downspout trap and clean out apparatus, the improvement comprising; a vertically disposed integral tubular body member formed in upper and lower portions of different lengths and different diameters, screen means in said lower portion, said upper portion being of a known diameter and length sufficient to telescopically engage over a lower end of said downspout in first and second positions and said lower portion being of a known diameter and length capable of being telescopically engaged in an upper end of said drain line in said first position, whereby said tubular body member may be moved vertically to said second position where said lower portion is free of said drain line so as to permit the tubular body member to be removed from said downspout.

4,798,029

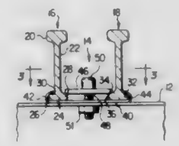
HOLD-DOWN CLAMP

Donald G. Carlton, Denton, Tex., assignor to Fibergrate Corporation, Dallas, Tex.

Filed Nov. 30, 1987, Ser. No. 126,882

Int. Cl.[4] B44D *5/08*

U.S. Cl. 52—177 **5 Claims**



1. A clamp for clamping a grate to a structural member is provided, the grate having parallel beams with a I-beam cross section, comprising:

a restraining clip extending between a pair of adjacent beams and about the outer portion of the base of each beam;

a hold-down clamp extending between the pair of adjacent beams proximate the restraining clip and contacting the inner portion of the base of each beam;

fastening means for fastening the grate to the structural member by urging the hold-down clamp toward the structural member, and thereby urging the bases of the pair of beams against the structural member, the restraining clip preventing separation of the pair of beams.

4,798,030

MODULAR SUPPORT FOR STAIRCASE STEPS

Roberto Molinazzi, Bologna, Italy, assignor to Indexstudio S.a.s. di Molinazzi Roberto & C., San Lazzaro Di Savena Bo, Italy

Filed May 14, 1987, Ser. No. 49,362

Claims priority, application Italy, Oct. 16, 1986, 3542 A/86

Int. Cl.[4] E04F *11/02*

U.S. Cl. 52—188 **3 Claims**



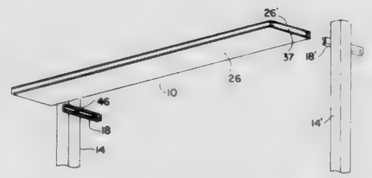
1. Modular support for staircase steps, comprising a box-like body,

a female cylindrical portion provided at one end of said box-like body and defining a concavity facing outwards with respect to said body,

a male cylindrical element provided at the opposite end of said body at a higher level with respect to said female portion,

said female portion and said male element being vertically parallel to each other,
a first headpiece projecting from the upper end of said female portion and provided with means for mounting a step thereon,
a second headpiece projecting from the lower end of said female portion,
vertical tooth means projecting outwards from said male element and inwards from said female portion, the tooth means of the male element being complementary to the tooth means of the female portion,
screw means being further provided traversing said headpieces and adapted to engage a male cylindrical element of an adjacent support inserted into said concavity between said headpieces to retain the tooth means of said element in engagement relationship with the tooth means of said female cylindrical portion.

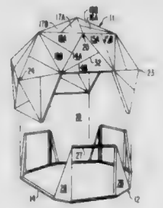
4,798,031
DOUBLE POLE SPANNER DISPLAY
Gary P. George, St. Louis, Mo., assignor to Stout Industries, Inc., St. Louis, Mo.
Filed Nov. 2, 1987, Ser. No. 115,990
Int. Cl.[4] E04C *1/00*
U.S. Cl. 52—309.11 **7 Claims**



1. For use in a wind-resistant elongated spanner, a display member for being supported longitudinally in display configuration, the display member comprising a thin beam configuration core of expanded polystrene presenting parallel, rectangular front and rear faces having a high aspect ratio, channel configuration top and bottom rails extending along top and bottom core faces, face panels of aluminum sheet material extending over the front and rear core faces, and layers of mist-activated laminating adhesive interposed between the face panels and respective front and rear core faces for securement of the face panels to the core, said laminating adhesive prior to application being a water-insoluble, thin liquid urethane propolymer solution having 78% non-volatiles, a vapor density greater than air, a boiling point of 104° F., based on methylene chloride), a vapor pressure of approximately 380 mm at 22° C., (based on methylene chloride), a specific gravity of 1.15, an evaporation rate (nBUOAc=1) of unity, and a solvent odor, opposite end faces of the core being uncovered, whereby the display member is sufficiently strong as to be wind-resistant when its opposite ends are supported by said upright structures.

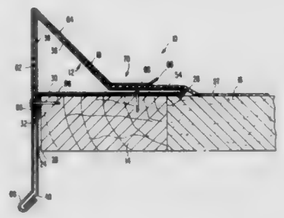
4,798,032
DOMICAL STRUCTURE AND METHOD FOR ITS MANUFACTURE
Benjamin L. Rose, Jr., Richmond, Va., assignor to American Geodesics, Inc., Richmond, Va.
Filed Feb. 22, 1988, Ser. No. 158,709
Int. Cl.[4] E04B *1/32*
U.S. Cl. 52—81 **8 Claims**

1. A domical structure made principally from a multiplicity of substantially flat triangular sections coming together at edges comprising: first and second substantially flat triangular subsections joined together along a dividing line to form each of said triangular sections with said dividing line running from an apex of said triangular section to an opposite divided side thereof; each of said first and second triangular subsections having a first and longer side forming one side of said triangular section, a second side of intermediate length which is the same length in both subsections and define the side where the



two subsections are joined together and a third and shorter side which forms part of said third divided side of the triangular section; and said sections third divided side arranged in the structure so that no dividing line throughout the entire structure is positioned to be aligned with another dividing line of an adjacent section at an edge between the adjacent sections.

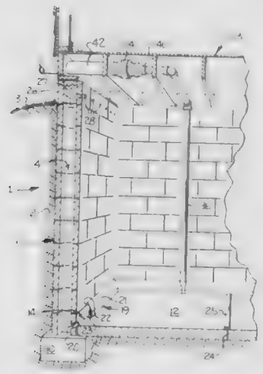
4,798,033
ROOF EDGE ASSEMBLY
David Weidl, Columbus, Ohio, assignor to F. O. Schoedinger, Inc., Columbus, Ohio
Filed Jul. 2, 1987, Ser. No. 69,166
Int. Cl.[4] E04D *13/00*
U.S. Cl. 52—94 **43 Claims**



17. For a horizontal or gently sloping roof having a roof edge, a raised roof edge assembly comprising: a nailer structure secured to the roof edge, the nailer structure having a nailer forward edge, a nailer upper surface, a nailer rear edge, and a nailer bottom edge; and a single-ply membrane positioned generally above the nailer structure, wherein the improvement comprises:
a water dam,
said water dam including a lower horizontal dam portion extending inwardly from the nailer forward edge and having a forward end and a rear end, a tab portion extending from said forward end of said lower horizontal dam portion and extending downwardly generally along the nailer front surface, an upper horizontal dam portion extending from said rear end of said lower horizontal dam portion and outwardly towards the nailer forward edge, a sloping dam portion extending upwardly and outwardly from said upper horizontal dam portion and extending above the nailer upper surface and towards the plane of the nailer front surface, and a generally vertical dam portion extending downwardly from said sloping dam portion and outside of said tab portion, and extending downwardly past the nailer upper surface and generally along the nailer front surface; and

a mechanical fastener fastening the single-ply membrane directly to said vertical dam portion.

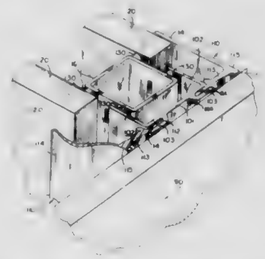
4,798,034
METHOD AND APPARATUS FOR COLLECTING AND DISCHARGING RADON GAS AND FLUIDS
Jerry D. Jarnagin, and Dennis W. Dawson, both of Canton, Ill., assignors to Safe Aire, Inc., Canton, Ill.
Filed Jan. 14, 1987, Ser. No. 3,138
Int. Cl.[4] E02D *19/00*
U.S. Cl. 52—169.5 **20 Claims**



1. Apparatus for collecting gas and fluids from the periphery of a subterranean enclosure having walls and a floor defining a junction region therebetween and for discharging the collected gas and fluids outside the enclosure, the apparatus comprising:
(a) collecting means disposed within the enclosure for collecting gas and fluids from predetermined zones outside the enclosure, said means being impervious to gas and fluids and defining a plurality of conduits in communication with said predetermined zones outside the enclosure, said means being generally disposed at the junction region;
(b) means for creating a lower than ambient air pressure in said collecting means so that gas and fluids have a tendency to flow from the predetermined zones outside the enclosure through the conduits and into the collecting means, and for venting the gas outside the enclosure; and
(c) means for draining the collected fluid from the collecting means and for disposing of the fluid.

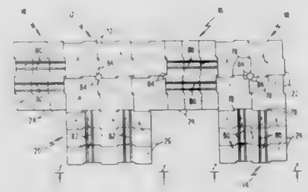
4,798,035
FLOOR-TO-CEILING WALL SYSTEM
Terry L. Mitchell, Jenison, and Lawrence J. Spoolstra, Byron Center, both of Mich., assignors to Architectural Wall Systems, Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 869,439, Jun. 2, 1986, Pat. No. 4,709,517. This application Oct. 14, 1986, Ser. No. 918,540
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—281 **27 Claims**

1. A floor-to-ceiling portion system comprising:
a partition for placement in proximity to an existing wall;
a rigid channel for mounting on an existing wall and including spaced rigid sidewalls engaging the opposite sides of said partition at the end thereof and a base wall joining said channel sidewalls;
a pair of flexible cover members, said rigid channel and said cover members including cooperating mounting means whereby one of said flexible cover members is mounted to cover each of the opposite sidewalls of said rigid channel;
said mounting means includes a slot at each side of said rigid channel being defined by a pair of back walls, jutting rearwardly from said base wall and then extending in a direction generally parallel to said base wall, and in opposite directions to one another, to thereby define at each side of said rigid channel a slot between each of said back walls and said base wall, and a prong flange on said flexible cover extending in one direction which is frictionally fitted into said slot; and
each of said cover members including an elongated flexible



cover flap, which is longer than each of said sidewalls of said rigid channel, whereby said flexible cover flap extends outwardly past the end of said partition and into engagement with a side of said partition to present to the viewer a generally flush, continuous appearance at the end of said partition in the vicinity of said pre-existing wall; said flexible cover flap having a resiliency which permits said cover flap to be resiliently pulled outward a significant amount so that access may be had to the covered end of said partition.

4,798,036
CONCRETE MASONRY FOOTER BLOCK FOUNDATION SYSTEM AND BLOCKS THEREFOR
Jorge Pardo, Reston, Va., assignor to National Concrete Masonry Association, Herndon, Va.
Continuation of Ser. No. 771,607, Sep. 3, 1985, abandoned. This application Jul. 8, 1987, Ser. No. 71,021
The portion of the term of this patent subsequent to Nov. 3, 2004, has been disclaimed.
Int. Cl.[4] E02D *27/32*
U.S. Cl. 52—293 **16 Claims**



1. A footing system for a structure, said structure being a wall resting upon and extending upwardly from the footing system comprising:
a footing including a plurality of footing blocks disposed in abutting relationship along a footing axis substantially parallel to the structure to be supported on said footing and so that said footing functions as a foundation system for the structure;
said footing blocks having protrusions and depressions in abutting sides thereof to provide a lateral interlocking and alignment between adjacent footing blocks;

said footing blocks having a lateral dimensions substantially perpendicular to said footing axis and longitudinal dimensions along said footing axis wherein said lateral dimensions are substantially larger than said longitudinal dimensions;

whereby said wall is supported on said abutting footing blocks and wherein said wall has a width dimension along said footing axis which is significantly less than the corresponding lateral dimension of said footing blocks, the wide lateral dimension of said footing blocks enabling the footing system to cope with the poor soil conditions while at the same time keeping the weight of the individual footing blocks relatively low to permit efficient manual handling, said footing blocks further enabling the footing to conform to uneveness of the substrate foundation by virtue of the ability of the footing blocks of relatively short longitudinal extent relative to their lateral extent to settle into firm supporting engagement with the substrate, thereby minimizing stresses within the footing which might otherwise result in breakage of the footing and weakening of the wall.

4,798,037

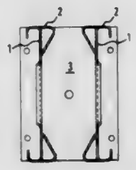
STEEL SOLDIER

John Collins, Nr. St. Albans, England, assignor to Mabey Hire Co., Limited, Reading, England

Continuation of Ser. No. 712,982, Mar. 18, 1985, abandoned. This application Mar. 23, 1987, Ser. No. 29,369

Int. Cl.[4] E04G *17/14*; E04C *3/09*

U.S. Cl. 52—731 **6 Claims**



1. A soldier comprising a pair of beam elements connected in substantially laterally spaced, opposite parallel relation by a tie plate at each end, wherein each beam element has an elongated web with opposite longitudinal edge extensions which enter within and are supportively attached to separately formed, asymmetrical, hollow profile chord plates, each chord plate, in conjunction with one face of each extension, defining a closed space of substantially triangular cross-section having a substantially right angle at the juncture of the edge of said extension and said chord plate and, on the opposite side of each extension, terminating in a flange which is spaced from and parallel to said extension.

4,798,038

CONTINUOUS BAND AND TRIM SEALING APPARATUS FOR POLY BAGS

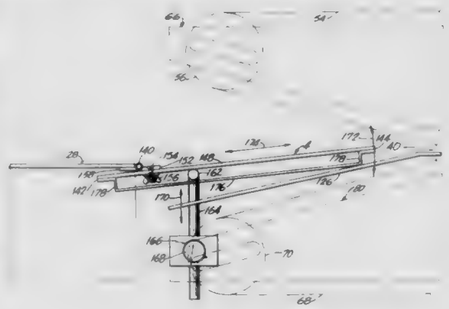
Irving L. Litt, Rockville Centre, N.Y., assignor to All Packaging Machinery & Supplies Corp., Ronkonkoma, N.Y.

Filed Feb. 4, 1988, Ser. No. 152,704

Int. Cl.[4] B65B *7/06, 51/18*

U.S. Cl. 53—372 **10 Claims**

7. An adjustable leveling platform for installation in a conveyorized band/trim sealing apparatus of the kind in which open top portions of conveyed product-filled bags remain supported on an upstream side wing of the apparatus until they are transported over a three-dimensional gap to a ramp-like entrance guide plate of a downstream band sealing and trimming machine of the apparatus, said platform comprising a rigid, planar, elongated rectangular member having a width substantially matching that of said side wing and a length substantially matching the distance between the downstream end of said side wing and the entrance of said band sealing and trimming machine, said platform being provided with two identical slots therethrough which run in parallel adjacency to respective ones of its longitudinal sides and which are adapted to receive fasteners for releasably connecting said platform to



one element of a two-element hinge whose other element is to be fixed to said downstream end of said side wing, thereby to allow slot-guided sliding adjustments to be made in the effective extension of said platform from said side wing and to allow the pitch attitude of said platform extension about said hinge to be varied.

4,798,039

PROCESS AND APPARATUS FOR FILLING CONTAINERS UNDER VACUUM

René Deglise, Pully, Switzerland, assignor to Ipatec S.A., Pully, Switzerland

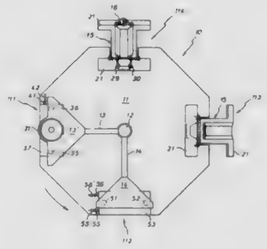
PCT No. PCT/FR86/00422, § 371 Date Aug. 3, 1987, § 102(e) Date Aug. 3, 1987, PCT Pub. No. WO87/03555, PCT Pub. Date Jun. 18, 1987

PCT Filed Dec. 5, 1986, Ser. No. 96,020

Claims priority, application Switzerland, Dec. 5, 1985, 5181/85

Int. Cl.[4] B65B *31/06, 1/32, 3/28*

U.S. Cl. 53—432 **27 Claims**



1. In an apparatus for vacuum filling containers with pulverulent or granular materials, including weighing means for weighing the materials, conveying means for conveying pulverulent or granular materials to said weighing means, dispensing means for dispensing weighed materials from the weighing means to containers, vacuum means for applying vacuum to the containers containing the materials, and sealing means for sealing the vacuum filled containers; wherein the improvement

comprises a turntable mounted for intermittent rotational movement relative to all the aforesaid means, said turntable having at its periphery a plurality of at least three support means for receiving respective ones of the containers, said support means being uniformly angularly spaced from one another, said conveying means, weighing means, dispensing means, vacuum means and sealing means being each arranged at one of two fixed stations proximate to the periphery of said turntable, said fixed stations having the same angular spacing between each other as the angular spacing between angularly adjacent ones of said support means.

4,798,040

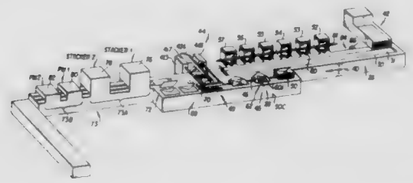
INSERTION MACHINE

Dave Haas, Schaumburg; Gary VanderSyde, Naperville; Paul Beatty, and Ren Roxas, both of Chicago, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Mar. 25, 1987, Ser. No. 30,015

Int. Cl.[4] B65B *5/04, 25/14, 5/14*

U.S. Cl. 53—460 **7 Claims**



1. A method of operating an insertion machine, said method comprising the steps of:

transporting at least one item to an insertion station;

transporting an envelope to an envelope opening station proximate said insertion station;

orienting shoving means so that said shoving means is in a first orientation whereat said shoving means is usable for inserting an item into an envelope;

reciprocating said shoving means along a path toward and away from said envelope opening station in a manner whereby said shoving means in said first orientation is in the path of said item and shoves the item at said insertion station into an envelope held open in said envelope opening station;

extending an entry finger into said envelope so that said item being shoved by said shoving means is on a first side of said entry finger;

permitting said entry finger to move in a direction away from said item when said item contacts said first side of said entry finger;

sensing when said entry finger extended into said envelope is moved a predetermined distance indicative of a jam; and,

orienting said shoving means, in response to said sensed jam, in a second orientation whereat said shoving means is out of the path of said item and inoperative for inserting an item into an envelope.

4,798,041

LINK BAG AND OPENING FIXTURE

Per Bentsen, Suffern, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Feb. 6, 1987, Ser. No. 11,926

Int. Cl.[4] B65B *43/12*

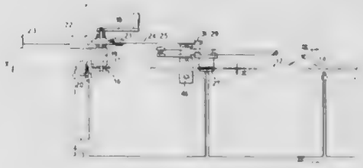
U.S. Cl. 53—468 **14 Claims**

1. An apparatus for processing a bag chain to fill individual reclosable bags with spaced sprocket openings along the top, comprising in combination:

an advancing sprocket wheel rotatable about a vertical axis and having peripheral teeth for engaging with correspondingly spaced sprocket holes along the top edge of a bag chain for vertically supporting the chain and for advancing the chain along a path;

first drive means for driving the wheel intermittently to advance the bag chain while continuing the vertical support;

spreader members engageable with opposed top edges of individual bags of said chain and being laterally relatively spreadable relative to said path for opening the top edges of a bag and again closable to release the top edges, said



spreader members each having idler sprocket wheels with peripheral teeth for engaging with the sprocket holes along the top edge of the bag for supporting the bag at a location spaced from said advancing sprocket wheel;

second drive means operating the spreader members;

and a closer having pressing elements applying a lateral force to the bag top for interengaging rib and groove elements on the bag to close the bag with the closer located in a position after said spreader members along said path.

4,798,042

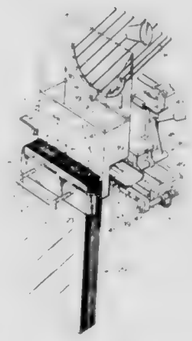
ARTICLE BAGGER

Robert Davis, 7305 Woodbine Avenue, Unit #519, Markham, Ontario, Canada L3R 3V7

Filed Nov. 5, 1987, Ser. No. 116,898

Int. Cl.[4] B65B *43/36, 43/44, 43/62, 39/02*

U.S. Cl. 53—572 **5 Claims**



1. A bagging machine comprising a bag support supporting a plurality of open topped bags stacked upright against one another, a bag opener for initiating opening of the bags individually at said bag support, a pair of flaps movable between an up and a down position, said flaps when in the down position fitting interiorly of and stretching the opening of the bags, feed means vertically feeding the articles to the stretched opened bags with said flaps providing both an article feed guide and sole support for the bags while being fed with such articles, a bag puller at one of said flaps only, bag puller control means for fitting said bag puller to a gripping position interiorly of the bags with said flaps in said down position, flap control means

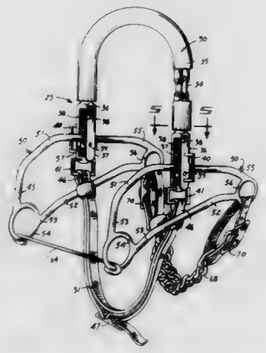
to move said flaps to the up position as said bag puller control means operates said bag puller to pull said bags sideways off of said bagging machine.

4,798,043

MECHANICAL HACKAMORE

Patrick E. Wyse, P.O. Box 695, Conrad, Mont. 59425

Filed Aug. 21, 1987, Ser. No. 88,136
Int. Cl.[4] B68B *1/04*
U.S. Cl. 54—6 R **10 Claims**



10. A mechanical hackamore adapted to fit over the muzzle of an animal such as a horse, comprising:

a nose band extending between ends and adapted to be received over a horse's nose bridge with the nose band ends being situated adjacent the cheek regions on opposite sides of the nose bridge;

a stabilizer strap operably connected to the nose band and adapted to be received under the chin region of the horse's head, thereby forming a loop with the nose band for transversely encircling the nose bridge, cheek and chin area of the horse;

a pair of elongated leverage frame means each forming an open framework with spaced bottom and top members extending between frame ends and mounted at pivots situated adjacent the ends of the nose band for pivotal movement in relation to the nose band and stabilizer strap and for substantially flush engagement with cheek surfaces on opposite sides of the horse's face;

wherein the leverage frame means extend from the pivots forwardly to forward frame ends adapted to mount reins, and rearwardly from the pivots to rearward frame ends;

wherein the pivots are situated substantially midway along the lengths of the frame means between the forward and rearward frame ends;

curb strap mounting means on each leverage frame means adjacent the rearward frame end thereof;

a curb strap extending between the curb strap mounting means of the leverage frame means, and adapted to be received under the horse's chin for movement toward and away from the horse's chin responsive to pivotal movement of the frame means; and

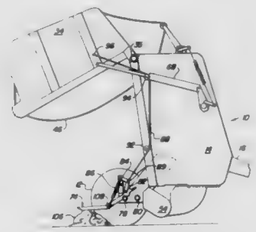
forward stabilizer means extending between the pair of leverage frame means adjacent the forward frame ends for transmitting lateral forces applied through reins to the leverage frame means on opposite sides of the horse's face so that one of the frame means will press against a side of the horse's face in the direction of a desired turn.

4,798,044

MACHINE FOR FORMING CYLINDRICAL BALES OF CROP

Jean Viaud, Sarraguemines, and Daniel Gunther, Morsbach, both of France, assignors to Deere & Company, Moline, Ill.

Filed Aug. 25, 1987, Ser. No. 89,282
Claims priority, application United Kingdom, Aug. 28, 1986, 8620799
Int. Cl.[4] A01F *15/00*; B30B *5/06*
U.S. Cl. 56—341 **9 Claims**



1. In a baling machine for forming cylindrical bales of crop including a bale chamber defined in part by a bale discharge gate pivotable about an upper front location thereof between a lowered closed position wherein it closes the chamber and a raised open position wherein it allows a completed bale to exit the chamber, a support extending beneath the bale discharge gate and being vertically pivotally mounted for movement between an elevated non-discharge position and a lowered discharge position wherein it forms a ramp for the bale to roll down, the improvement comprising: suspension means coupled between the support and the discharge gate and responsive to the discharge gate opening, only after the gate has opened a predetermined amount sufficient for permitting a bale to exit the chamber without fouling the gate, for lowering the support to its discharge position.

4,798,045

PROCESS FOR SPLICING FIBERS IN STRIPS, AND A MACHINE FOR FEEDING A TEXTILE MACHINE INCORPORATING SUCH A PROCESS

Teresio Bottarelli, 13096 Vigliano Biellese, Regione Barazzetto, 24, Italy, and Antonio Nulchis, 13014 Cossato, Viale Paietta, 5b, Italy

Filed Oct. 7, 1987, Ser. No. 105,531
Int. Cl.[4] B65H *69/06*; D01H *15/00*
U.S. Cl. 57—22 **15 Claims**



1. A machine (1) for feeding the drawing frame on a textile machine with a number of fiber strips (3); characterized by the fact that it comprises at least a first member (2) for collecting a supply strip (3); at least a second member (4) for collecting a standby strip (5); a channel (7) inside which said supply strip (3) runs and over which is suspended the initial portion (22) of said standby strip (5); releasable means (23) for supporting said portion of said standby strip (5); a sensor (27) for detecting the continuity of said supply strip (3) and located upstream from the inlet on said channel (7); an air-powered device (18) for splicing the overlapping fibers of said supply and said standby strips (3, 5); and a vertically-moving gripping device (9) supporting said means (23) supporting said standby strip, and said air-powered splicing device (18); said gripping device (9) being designed to move down inside said channel (7), so as to place said initial portion (22) of said standby strip (5) over the end (40) of said supply strip (3) portion located immediately downstream from said sensor (27), and to grip said strips between the bottom wall (20) of said channel (7) and the base (14) of said gripping device (9) itself.

4,798,046

OPENING CYLINDER FOR OPEN-END SPINNING MACHINES

Jörg Stauffer, Eigenrain 6, CH-4107 Ettingen, and Hans Riethmann, Jr., Breitestrasse 28, CH-8614 Bertschikon, both of Switzerland

Filed Jul. 7, 1986, Ser. No. 882,681
Claims priority, application Switzerland, Jul. 6, 1985, 02922/85
Int. Cl.[4] D01H *7/895*; D01G *9/14, 15/20, 15/26*
U.S. Cl. 57—408 **12 Claims**



1. An opening cylinder for open-end spinning machines, which comprises a cylindrical ring (1) serving as a needle support for needles and needle-carrying bores (3) which extend from an inner ring surface (1*a*) to an outer ring surface (1*b*), each of said needles comprising a point section (2*b*) of generally tapered shape and a shaft section (2*a*), said bores comprising an inner section (3*a*) receiving at least partially said shaft section of the corresponding needle with force fit and an outer section (3*b*) surrounding a portion (2*b'*) of said point section (2*b*) of the corresponding needle, said inner section (3*a*) of the bore having at least partially a diameter which is greater than the diameter of the outer section (3*b*) of the bore in the range of its orifice in the outer ring surface (1*b*), said outer section (3*b*) of the bore surrounding said portion (2*b'*) of said needle point section (2*b*) at a distance so as to form an annular groove (4) therewith.

4,798,047

PARTICULATE COLLECTION AND COOLING IN A TURBOMACHINE

Carl H. Geary, Greensburg, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Dec. 19, 1983, Ser. No. 562,614
Int. Cl.[4] F02G *3/00*
U.S. Cl. 60—39.092 **14 Claims**

1. A power recovery expander for use with a stream of hot gas with entrained particulates which comprises:

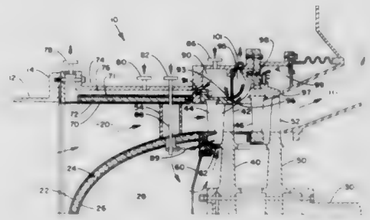
a rotor including a first stage of blades mounted in the stream of hot gas;

an annular collection means defining a receiving chamber located downstream and radially outward of the first stage of blades including an inlet positioned to receive particulates directed outwardly by the blades;

a series of first stator blades located upstream from the first stage of blades;

means for cooling the first stator blades including means defining a cooling chamber in heat exchange relationship with the first stator blades, said cooling chamber being connected to receive a cooling gas; and

outlet means defining a passageway extending from the cooling chamber to the receiving chamber to direct at least a portion of the flow of cooling gas into the receiving chamber whereby said portion of the flow of cooling gas acts to assist in displacing the particulates into the receiving chamber.

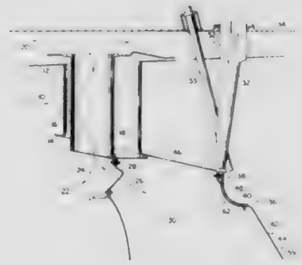


4,798,048

AUGMENTOR PILOT

Thomas R. Clements, Palm City, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1987, Ser. No. 135,773
Int. Cl.[4] F02K *3/10*
U.S. Cl. 60—261 **9 Claims**



1. In an afterburning gas turbine engine an augmentor duct arrangement comprising:

a duct confining gas flow;

a truncated diffuser tail cone located centrally within said

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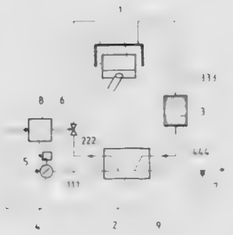
duct, and having an axial surface and a downstream facing surface;
a step change with respect to said axial surface at the outer periphery of said downstream facing surface forming a recirculating gas zone immediately downstream of said step change;
a plurality of radial spray bars extending from said duct to the downstream end of said tail cone;
each spray bar including a cooling air flow passage and a fuel flow passage; and
said fuel flow passage having a plurality of augmentor fuel injectors, and a pilot injector directing fuel into said recirculation zone.

4,798,049

INTERNAL COMBUSTION ENGINE WITH PRESSURE-WAVE SUPERCHARGER AND LAMBDA PROBE

Andreas Mayer, Niederrohrdorf, Switzerland, assignor to BBC Brown Boveri AG, Baden, Switzerland

Filed Jul. 2, 1987, Ser. No. 69,485
Claims priority, application Switzerland, Jul. 8, 1986, 2749/86
Int. Cl.[4] F01N *3/02*
U.S. Cl. 60—276 **6 Claims**



1. A circuit of an internal combustion engine supercharged by a pressure-wave supercharger, comprising an engine, a pressure-wave supercharger having a low-pressure exhaust gas line, and exhaust gas particle filter, a throttle valve and a starting valve, wherein a Lambda probe is fitted in the low-pressure exhaust gas line, the measuring signal of which probe acts via a computer unit on the throttle valve.

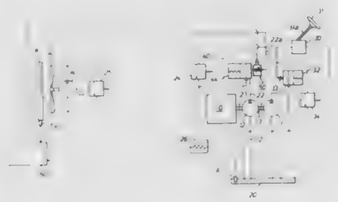
4,798,050

CONTROL SYSTEM FOR HYDRAULIC TANDEM PUMP IN MOTOR VEHICLE

Keiichi Nakamura; Tsuneo Tanaka; Yoshiharu Inaguma, all of Kariya, and Harunori Shiratori, Toyota, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 11, 1987, Ser. No. 60,525
Claims priority, application Japan, Jun. 11, 1986, 61-88897[U]
Int. Cl.[4] F16D *31/00*
U.S. Cl. 60—329 **3 Claims**

1. A control system for a hydraulic tandem pump assembly adapted for use in a motor vehicle, said tandem pump assembly including a primary pump for supplying fluid under pressure to a power-assisted steering device and a secondary pump for supplying fluid under pressure to a hydraulic motor of an engine cooling fan, which pumps are mounted on a common drive shaft for rotation therewith,
wherein the control system comprises:
an electrically operated flow quantity control valve disposed within a communication passage between said secondary pump and said hydraulic motor to bypass fluid under pressure discharged from said secondary pump into an inlet passage connecting a fluid reservoir to said secondary pump;
a first temperature sensor arranged to detect the temperature of hydraulic fluid stored in said fluid reservoir for producing therefrom an output signal indicative of the fluid temperature;
a second temperature sensor arranged to detect the temperature of cooling water flowing through a radiator of a prime engine of the vehicle for producing therefrom an output signal indicative of the cooling water temperature; and
an electric control apparatus connected to said first and second temperature sensors to control an electric current



applied to said flow quantity control valve in dependence upon values of the output signals from said temperature sensors in such a manner that said flow quantity control valve is conditioned to bypass a large part or the entirety of fluid under pressure discharged from said secondary pump into said inlet passage when the fluid temperature and the cooling water temperature are respectively below a predetermined value and conditioned to decrease the bypass flow quantity of fluid in accordance with rise of the fluid temperature and cooling water temperature higher than the predetermined value.

4,798,051

ROTARY ACTUATOR WITH TAILORED TORQUE OUTPUT

Eugene B. Foote, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 20, 1988, Ser. No. 208,531
Int. Cl.[4] F03G *7/06*
U.S. Cl. 60—527 **11 Claims**



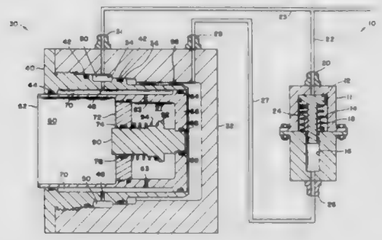
1. An apparatus for delivering torque through a selected angle of rotation, comprising:
a torsion member having a longitudinal axis and being made from a shape memory alloy, said member having a zero degree rotation about said longitudinal axis when said member is heated to a temperature above a predetermined temperature and having a predetermined angular rotation about said longitudinal axis when said member is at a temperature below said predetermined temperature; and
heat generating material surrounding said torsion member to selectively heat successive portions of said member to a temperature above said predetermined temperature to cause said member to rotate about said longitudinal axis in a predetermined fashion.

4,798,052

CONSTANT-CLEARANCE BRAKE PISTON SYSTEM WITH BRAKING PRESSURE INTENSIFIER

David D. McAfee, South Bend, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed May 8, 1987, Ser. No. 47,952
Int. Cl.[4] F15B *7/10;* **F16D** *55/02*
U.S. Cl. 60—572 **9 Claims**



1. A hydraulic brake adjuster and piston assembly, comprising a piston housing having therein a cavity with a cavity surface, a piston bushing disposed in the cavity and defining substantially with the cavity surface a pair of longitudinal pressure chambers, a piston with a recessed outer surface received in the piston bushing and defining therebetween an axial pressure chamber which communicates with one of the longitudinal pressure chambers, the piston having a substantially closed interior chamber with a piston valve disposed therein and extending through a rear opening in a rear wall of said piston, the piston rear wall defining with the bushing a portion of the other longitudinal pressure chamber, the substantially closed interior chamber communicating by means of an opening with the axial pressure chamber and the interior chamber normally isolated from the other longitudinal pressure chamber, the rear opening of the piston and the piston valve communicating with the other of the pair of longitudinal pressure chambers, and an exterior pressure device disposed separate from the piston and communicating with the other longitudinal pressure chamber, actuation pressure being communicated to the one longitudinal pressure chamber and exterior pressure device so that the exterior pressure device communicates a fluid pressure output to the other longitudinal pressure chamber.

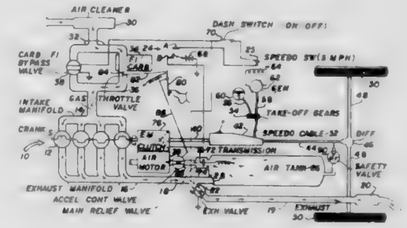
4,798,053

KINETIC ENERGY RECLAIMING SYSTEM FOR VEHICLE

Jimmy C. K. Chang, 215 Powell St., San Francisco, Calif. 94102

Continuation-in-part of Ser. No. 940,092, Dec. 10, 1986, abandoned. This application Sep. 28, 1987, Ser. No. 101,510
Int. Cl.[4] F01B *29/04;* **B60K** *3/00*
U.S. Cl. 60—712 **20 Claims**

1. A vehicle energy recovery system, comprising:
a vehicle having an engine which can convert a source of fuel to mechanical energy to drive said vehicle and which can compress a gas supplied to said engine if said engine is turned by the kinetic energy of said vehicle when said vehicle is coasting, said engine having an output pipe for conducting exhaust gas from said engine when it runs on said fuel and for conducting said compressed gas from said engine when it is turned by the kinetic energy of said vehicle,
a transmission arranged to connect a mechanical output of said engine to a drivetrain of said vehicle for driving said vehicle when said engine receives and is powered by said fuel, and for connecting said vehicle to said engine such that kinetic energy from movement of said vehicle can be coupled to said engine so as to cause said engine to turn and compress said gas supplied thereto when said vehicle is coasting,
a tank for receiving the compressed gas supplied by said engine,
exhaust valve means for selectively connecting said output pipe of said engine to either an exhaust outlet or to said tank,
a motor which can be run by said compressed gas,
connection means for connecting a mechanical output of said motor to power said vehicle,



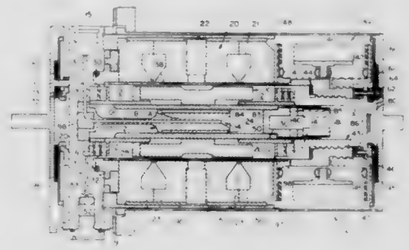
tank valve means for selectively supplying said compressed gas from said tank to said motor, and
control means for causing said exhaust valve means to connect said output pipe of said engine to said tank when said vehicle is moving under its own momentum, whereby the kinetic energy of said vehicle will be stored as compressed gas for later use in powering said vehicle and thereby saving fuel.

4,798,054

LINEAR DRIVE MOTOR WITH FLEXURE BEARING SUPPORT

Graham J. Higham, Ashland, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Oct. 8, 1987, Ser. No. 106,428
Int. Cl.[4] F25B *9/00*
U.S. Cl. 62—6 **8 Claims**

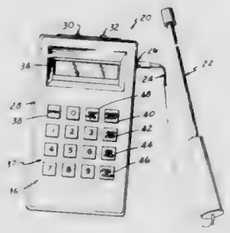


1. A cryogenic refrigerator comprising a gaseous working fluid which is alternately compressed and expanded to cool a portion of the working fluid to cryogenic temperatures by an armature driven by a linear drive motor, the linear drive motor comprising:
a magnetic armature reciprocating within a volume;
a housing surrounding the armature that hermetically seals the volume;
a coil assembly surrounding the housing;
a stationary piston attached at one end to the housing and forming a compression space with the armature at the other end, such that the armature alternately compresses and expands the fluid in the compression space; and

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support means for supporting the armature at both ends while said armature reciprocates.

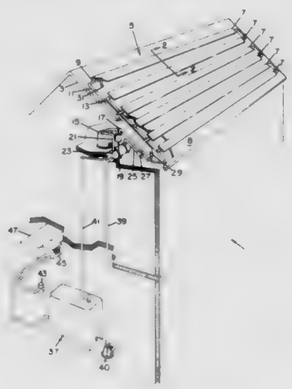
4,798,055
REFRIGERATION SYSTEM ANALYZER
Gary P. Murray, Montpelier; Ralph Lower, Bryan; Byron J. Dunham, Sherwood, and Don A. Bulla, Bryan, all of Ohio, assignors to Keat-Moore Corporation, Warren, Mich.
Filed Oct. 28, 1987, Ser. No. 113,654
Int. Cl.[4] F25B *49/00*; G01M *19/00*
U.S. Cl. 62—127 **27 Claims**



1. Apparatus for automatically analyzing a refrigeration system of the type which includes a compressor, condenser and evaporator means having inputs and outputs interconnected by conduit means in a refrigerant loop, said apparatus comprising:
means for reading temperature at a plurality of preselected points around said loop,
means for comparing said temperature readings to each other and to predetermined standards, and for diagnosing a pluarlity of fault conditions as a function of such comparisons,
means for displaying diagnosed fault condition,
a temperature probe constructed for manual placement at each of said preselected points in turn, and
an electronics and display package including said reading means, means for selectively storing each of said temperature readings in turn, said comparing means and said displaying means.

4,798,056
DIRECT EXPANSION SOLAR COLLECTOR-HEAT PUMP SYSTEM
James L. Franklin, Richland, Wash., assignor to Sigma Research, Inc., Redmond, Wash.
Division of Ser. No. 120,227, Feb. 11, 1980, Pat. No. 4,392,359, which is a continuation of Ser. No. 857,569, Dec. 5, 1977, abandoned. This application Dec. 16, 1982, Ser. No. 450,326
Int. Cl.[4] F25B *27/00*
U.S. Cl. 62—235.1 **5 Claims**

1. A combined solar collector-heat pump system comprising a heat absorbing panel, said panel comprising a single generally flat reflective surface member and a plurality of long, narrow, generally flat metallic plates, of substantially the same widths, said plates being generally parallel to each other and being laterally spaced apart and spaced from said reflective surface member by distances which are of the same order of magnitude as the widths of said plates, said metallic plates being directly exposed to the ambient atmosphere, each of said plates having a front face directly exposed to solar radiation and a rear face positioned to receive solar radiation reflected from said reflective surface member, both said faces being highly absorptive of solar radiation and said reflective member having an absorptivity for solar radiation which is low compared to that of said plates, conduit means for fluid in direct heat exchange relation with each of said metal plates, a compressor, an inlet line connecting a first end of each of said conduit means with the suction side of said compressor, a condenser, means for extracting heat from said condenser, an outlet line connecting the high pressure side of said compressor with a first end of said condenser, said inlet line serving to transfer the heat absorbed by said metal plates and fluid in the conduit means to the suction side of said compressor, and said outlet line serving to transfer the absorbed heat and the heat of compression to the first end of said condenser, a return line connecting the second



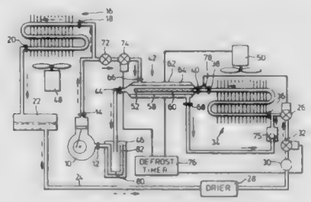
end of said condenser with the second end of said conduit means, a restriction means in said return line, and a working fluid filling said conduit means, inlet line, compressor, outlet line, condenser and return line, said working fluid having a boiling point such that it is vaporized in said conduit means and condensed in said condenser, said working fluid being the only solar-heat-absorbing fluid in said system.

4,798,057
REFRIGERATING APPARATUS AND CONTROL METHOD THEREOF
Hiroshi Okamoto, Fuji; Kimio Fushimi, Shimizu, and Susumu Suzuki, Numazu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 6, 1987, Ser. No. 22,816
Claims priority, application Japan, Mar. 28, 1986, 61-68674
Int. Cl.[4] F25B *1/00*
U.S. Cl. 62—228.3 **17 Claims**



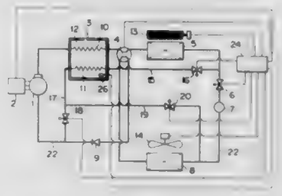
1. A refrigerating apparatus comprising:
refrigerant circuit means including a compressing section having a variable suction pressure, a heat discharging section and a heat absorbing section for communicating refrigerant therethrough; and
means for controlling the operation of the compressing section, the control means including:
means for stopping the operation of the compressing section when the suction pressure of the compressing section falls below a preset lower limit value, and
means for varying the lower limit value in response to the condensation temperature of the refrigerant in that heat discharging section.

4,798,058
HOT GAS DEFROST SYSTEM FOR REFRIGERATION SYSTEMS AND APPARATUS THEREFOR
Charles Gregory, 1348 #5 Highway, Burlington, Ontario, Canada L7R 3X4
Continuation-in-part of Ser. No. 834,524, Feb. 28, 1986, abandoned. This application Aug. 7, 1987, Ser. No. 82,707
Int. Cl.[4] F25B *47/00*
U.S. Cl. 62—278 **59 Claims**



10. A hot refrigerant fluid defrost system for use in a refrigeration system for defrost of a coil or coils thereof, the system comprising:
a controllable flow valve adapted for connection to the outlet of a compressor pump to receive hot compressed refrigerant fluid therefrom;
a coil to be defrosted having an inlet and an outlet; and
a liquid refrigerant vaporizer connected to the coil for vaporizing liquid fluid issuing from the coil outlet to prevent its delivery to the compressor inlet, the vaporizer comprising first inner, second middle and third outer pipes mounted one within the other to provide a first inner flow passage in the first inner pipe, a second annular flow passage between the first inner and second middle pipes, and a third annular flow passage between the second middle and third outer pipes;
wherein the first inner pipe is adapted for connection at one end to the coil outlet so as to receive the fluid exiting from the coil, is closed at the other end, and is provided in its wall with a plurality of bores distributed along its length so that the refrigerant fluid flowing therein exits therefrom through the bores to impinge against the inner wall of the second middle pipe for heat exchange therewith;
the total flow area provided by all of the said bores being between 0.5 and 1.5 times the cross-sectional flow area of the first inner flow passage;
wherein the second middle pipe is of heat conductive material, the first annular flow passage is closed at one end and is adapted for connection at its other end into the refrigeration system for delivery of the refrigerant fluid therefrom;
wherein the cross-sectional flow area of the said second annular flow passage is at least 0.5 times the cross-sectional flow are of the first inner flow passage; and
wherein the third annular flow passage has an inlet thereto and an outlet therefrom for the hot refrigerant fluid, the inlet and the outlet being spaced from one another for the hot refrigerant fluid to contact the outer wall of the second middle pipe for heat exchange therewith, the inlet being connected to the said controllable flow valve for the flow therethrough to be controlled by the valve, and the outlet being connected to the coil inlet for delivery of the fluid thereto.

4,798,059
AIR CONDITIONER WITH HEAT REGENERATION CYCLE
Keiichi Morita, Fujinomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 3, 1987, Ser. No. 92,540
Claims priority, application Japan, Jan. 30, 1987, 62-18643
Int. Cl.[4] F25B *27/00*
U.S. Cl. 62—228.4 **9 Claims**



1. An air conditioner having a refrigeration cycle comprising:
a variable-capacity compressor having a predetermined maximum capacity;
an indoor heat exchanger;
an expansion device;
an outdoor heat exchanger;
a refrigerant circulation means connecting all of said previously recited components thereby forming a closed circuit through which a refrigerant flows;
an indoor fan for introducing air into the indoor heat exchanger;
an outdoor fan for delivering air to the outdoor heat exchanger; and
regeneration means connected to the circulation means, at a point between the discharge side of the compressor and the expansion device, for storing residual heat of the refrigerant, whereby during an ordinary heating operation and during a regenerating operation heat from the compressor is stored into the regeneration means; and
drive means for, during the regenerating operation, stopping the indoor fan and driving the compressor at a capacity that is less than the predetermined maximum capacity.

4,798,060
EVAPORATIVE COOLER APPARATUS
Carl K. Long, 8209 Willeta Ave., Las Vegas, Nev. 89123, and George E. Kozel, Las Vegas, Nev., assignors to Carl K. Long, Las Vegas, Nev.
Filed Dec. 29, 1986, Ser. No. 947,030
Int. Cl.[4] F28D *5/00*
U.S. Cl. 62—310 **4 Claims**

1. In a portable evaporative cooler comprising a housing having an air inlet and an air outlet port thereon, a water sump and sump pump means, the improvement comprising a rotatable impeller assembly comprising an evaporative pad and a frame on which said pad is supported, means for rotatably driving said impeller assembly, and a shroud around said impeller assembly, said shroud including an air/water separator extending into said sump for directing excess water from said impeller assembly and deflecting sump water away from said impeller assembly during wave action, said sump pump delivering water from said sump to said evaporative pad, whereby

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said impeller assembly is rotatably driven thereby creating a partial vacuum to force outside air into said cooler through



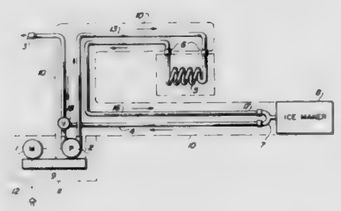
said air inlet port and outwardly therefrom through said outlet port.

4,798,061

PRE-COOLER APPARATUS AND METHOD FOR INCREASING ICE MAKER OUTPUT

Dennis B. LaConte, 113 Spring Lake Dr., Debary, Fla. 32713

Filed Mar. 15, 1988, Ser. No. 168,400
Int. Cl.[4] F25C *1/00*
U.S. Cl. 62—348 4 Claims



1. An apparatus for pre-cooling water for ice makers to be used in combination with a pre-existing, self-contained beverage system having an ice bank, said apparatus comprising:
an electrically-driven water pump having an inlet line from the ambient water supply and an outlet line;
a coiled tube immersed in the ice bank of the beverage system, which is connected at its intake end to the outlet tube from the water pump, and at its discharge end to a water feedline of an ice maker; and
a return water line from the ice maker to the inlet tube of the water pump for recirculation of the water.

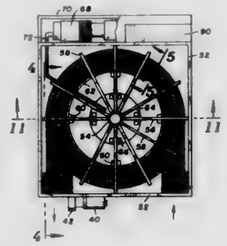
4,798,062

PORTABLE FOOD FREEZER WITH INTERNAL HELICAL CONVEYOR

Thomas L. Lipinski, Plymouth, and Joseph L. Goedker, St. Cloud, both of Minn., assignors to Checker Machine, Inc., New Hope, Minn.

Filed Apr. 28, 1988, Ser. No. 187,294
Int. Cl.[4] F25D *25/02*
U.S. Cl. 62—381 16 Claims

1. An apparatus for serially treating items for a predetermined time as they are transported within a controlled environment, said apparatus including:
an enclosed housing including a base, a top, and an upright side wall means joining the base and top;
an upright support means inside the housing and fixed with respect to the housing;
a plurality of elongate, substantially rigid carrier members having a substantially uniform cross-section, said carrier members being fixed with respect to said support means and arranged in a helical path about a substantially vertical axis, with each carrier member generally radially disposed;
a first elongate carrier band, substantially rigid in the vertical direction and having a plurality of band apertures formed horizontally therethrough and at least generally conforming to said carrier member cross-section in size and shape, adjacent ones of said band apertures spaced apart from one another an amount corresponding to a first arcuate distance between adjacent ones of said carrier members at a predetermined first radius, whereby said carrier members cooperate to support said band in a substantially helical configuration along said helical path, each carrier member extended through an associated one of said band apertures;



a generally flat endless conveyor means for supporting and serially conveying a plurality of items, said conveyor means supported by gravity above and with respect to said carrier band in spaced apart relation to said carrier members;
an inlet and an outlet formed through said housing at respective first and second locations along said conveyor means and near opposite ends of said helical path, and a moving means mounted with respect to said housing for moving said conveyor means relative to said carrier band and support means, to transport said items serially along said helical path from said inlet to said outlet at a predetermined velocity; and
a control means for controlling the environment inside of said housing to effect a selective treatment of said items as they are transported along said helical path.

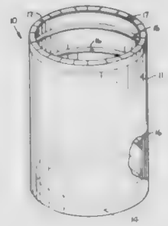
4,798,063

BEVERAGE COOLER

James Rimmer, Rte. 1, Arkona, Ontario, Canada N0M 1B0

Filed Nov. 23, 1987, Ser. No. 123,727
Int. Cl.[4] F25D *3/08*
U.S. Cl. 62—457 1 Claim

1. A cooling device for use in cooling cylindrical vessels positionable therein comprising,
a plural walled container formed of rubber-like material of varying density for limiting heat flow through said walls, and
a cap means formed of a series of individual flexible flap portions defining and entrance of said container integrally formed to said container for firstly securing and accommodating an exterior surface of a vessel positionable within said container and for secondly sealing and engaging said exterior surface to thereby limit heat flow to the interior of said container, and
wherein the pluraled walls comprise three walls wherein said exterior wall is of greatest density, said central wall is of intermediate density, and said interior wall of least density wherein the exterior wall maintains the integrity of the configurational shape and the central and interior walls discourage heat flow through the walls, and



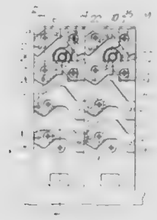
wherein a plurality of spaced continuous circumferential ribs are positioned and integrally formed onto the inner wall along the length thereof for providing air pockets against a vessel positionable within said container, and
wherein a flexible membrane is secured to a defined floor of the container wherein said membrane has positioned therein a refrigerant.

4,798,064

CAM SEGMENT FOR A KNITTING MACHINE

Martin Elsässer, Stuttgart, and Erwin Schäberle, Gäufelden, both of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 952,329, Oct. 18, 1978, abandoned. This application Aug. 29, 1980, Ser. No. 175,927
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746725
Int. Cl.[4] D04B *15/32*
U.S. Cl. 66—57 2 Claims



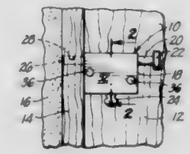
1. A cam device for being mounted on a cam base plate of a knitting machine, comprising: a group of first elements including a plurality of first cam parts, each first element having an opening and being made by stamping and having a first element assembly surface and a first outer surface on opposed sides thereof; a second element for being stationary mounted on a knitting machine, said second element being made by stamping and having a first receiving assembly surface for the stationary and interchangeable mounting of at least one of said first elements at at least one location on the cam device with said first assembly surfaces facing each other; a fastening element for fastening said first element on the cam device at said location and projecting with play through said opening of said first element; and cooperating first positioning means for positioning said first element on said second element before fastening said fastening element, said first positioning means including associated members, one of said members being a recess being defined in one of said first assembly surfaces and the associated member being at least one raised portion for engaging said recess and rising above the other one of said first assembly surfaces, said recess and said raised portion being made by stamping and in one piece with said elements during manufacture thereof and being of such configuration, that said first element may be accurately orientated and held on said second element in a selected needle guidance position at said location before fastening said fastening element, and wherein said second element has at least one spacing disc being defined on said first receiving assembly surface for spacing the first element assembly surface from said first receiving assembly surface in the assembled condition of said first and said second element, said spacing disc being made by stamping and in one piece with said second element during manufacture thereof.

4,798,065

LOCK HAVING A REVERSIBLE RIGHT AND LEFT HAND BOLT

William DeForrest, Sr., 1825 Via Burton, Anaheim, Calif. 92806

Filed May 26, 1987, Ser. No. 53,843
Int. Cl.[4] E05B *65/06*
U.S. Cl. 70—129 17 Claims



1. A lock mechanism which comprises:
a mechanism body, said mechanism body having an outside surface, said body including first and second openings located in said outside surface of said body in opposing positions distal to one another on said body;
said body having a continuous elongated essentially straight bolt passageway extending between said first opening and said second opening;
an elongated essentially straight bolt having ends, said bolt movably located in said bolt passageway to slide back and forth in said bolt passageway, said bolt of a size longer than said bolt passageway whereby said bolt can be positioned in said bolt passageway in a first orientation with one of said ends of said bolt extending exterior of said outside surface of said body beyond said first opening and said bolt can be further positioned in said bolt passageway in a second orientation with one of said ends of said bolt extending exterior of said outside surface of said body beyond said second opening;
bolt movement limiting means operatively associated between said bolt and said body for limiting movement of said bolt between first and second limits in said bolt passageway in both of said first and second orientations;
a lock means for locking and unlocking, said lock means including an operator means for locking and unlocking said lock means, said lock means positioned in said body such that said operator means is positioned in association with said surface of said body so as to be accessible from the exterior of said body; and
a bolt detent member for retaining said bolt in a locked position in said bolt passageway, said bolt detent member located in said body in operative association with said lock means and moved both rotationally and translationally by said lock means between a first position wherein said bolt detent member interacts with said bolt to retain said bolt in said locked position in said bolt passageway and a second position wherein said bolt detent member does not

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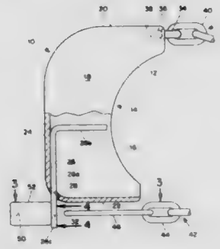
interact with said bolt and said bolt is free to slide between said limits in said bolt passageway.

4,798,066

AUTOMOBILE IGNITION LOCK COVER WITH CHAIN AND BRACKET MOUNTING

Joseph E. Solow, Plainview, N.Y., assignor to Wolo Manufacturing Corporation, Deer Park, N.Y.

Filed Feb. 5, 1988, Ser. No. 152,636
Int. Cl.[4] B60R 25/02
U.S. Cl. 70—212 **8 Claims**



1. An automobile steering column ignition lock cover comprising:

a cover housing having upper and lower ends defined by top, bottom, and back walls, and further having a pair of opposed sidewalls, wherein the top and bottom walls and sidewalls form an open front side, wherein the sidewalls have edges adapted to rest against an automobile steering column, wherein the housing has a hollow interior for fitting over a steering column-mounted ignition lock; and wherein the housing has a slot in the lower end adjacent to the back wall;

a bracket member having a first portion disposed in said interior and being affixed to said back wall and an outside bracket portion which extends through said slot to the exterior of said housing, said outside bracket portion having means for engaging an adjustable shackle and lock assembly;

a flexible tension bearing element having first and second ends;

means for attaching the first end to the upper end of the cover housing;

an adjustable shackle and lock assembly means for releasably securing the second end of the flexible tension bearing element to said outside bracket portion, wherein said assembly includes a U-shape shackle and a lock housing means for receiving the shackle and for securing the shackle at a plurality of axial positions for adjusting the position of said second end relative to said bracket.

4,798,067

STEERING WHEEL LOCK FOR MOTOR VEHICLES

Karl Peitzmeier, Neuhausen, and Gottfried Schremmer, Tamm, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 30, 1987, Ser. No. 79,521
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1986, 3626925
Int. Cl.[4] B60R 25/02
U.S. Cl. 70—252 **13 Claims**

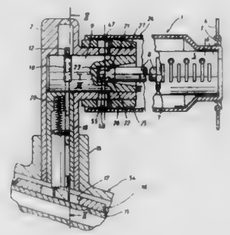
1. Steering wheel lock for motor vehicles with a steering column of adjustable inclination, comprising

a detent pin housing connected to an outer tube surrounding a steering column,

a locking cylinder housing adjoining the detent pin housing and having a locking cylinder, a locking cylinder housing end piece surrounding a key insertion orifice arranged in a percoration of a vehicle dashboard, said locking cylinder housing having one end located in the dashboard so as to be displaceable in an axial direction only,

wherein the detent pin housing is pivotably connected for movement about at least one connecting axis relative to the locking cylinder housing, by a gimbal coupling connecting the housings such that a shaft stressed by a rotor of the locking cylinder is engaged with a control shaft acting on a detent pin by a gimbal connection,

wherein the control shaft is mounted rotatably in the detent pin housing and, in an angled position, is arranged firmly in the latter so as to be pivotable relative to the locking cylinder housing,



wherein the locking cylinder housing forms a square tube at least in the end region pointing towards the detent pin housing, said square tube engagably surrounding a square housing part connected to the detent pin housing, wherein the square tube is connected pivotably, on two parallel first side faces at two points through which a first axis runs perpendicularly, to the first side faces to opposite respective parallel first side faces of the housing part, and

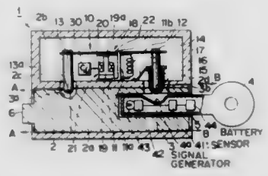
wherein second side faces of the square tube, which are aligned approximately perpendicularly to these first side faces, and second side faces of the housing part are at a distance from one another which allows pivoting about the first axis.

4,798,068

ELECTRICALLY CONTROLLED TYPE CYLINDER FOR LOCKS

Shunsaku Nakauchi, Mitaka, Japan, assignor to Kokusai Gijutsu Kaihatsu Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1987, Ser. No. 124,249
Claims priority, application Japan, Nov. 27, 1986, 61-282455; Sep. 22, 1987, 62-145016[U]
Int. Cl.[4] E05B 47/00
U.S. Cl. 70—276 **10 Claims**



1. A cylinder for locks containing an outer barrel and an inner cam with a keyhole such that a rotating operation of said inner cam can be carried out inside said outer barrel by means of an operating means which is to be inserted in the said keyhole in the said inner cam, said cylinder comprising:

an arm component which is installed in an inner space of said outer barrel by a supporting member and supported such as to allow free see-saw or pivot action,

a through hole defined in said outer barrel,

an engaging hole placed in the said inner cam such that when said inner cam and said outer barrel are in the correct position both said through hole and said engaging hole are in alignment,

a pin component mounted on said arm component, said pin component being for prohibiting relative motion of said inner cam to said outer barrel when said pin component is inserted into said engaging hole through said through hole,

a spring means for urging said arm component in a direction where said pin component is withdrawn from said engaging hole,

a driving mechanism for driving said pin component into the said engaging hole overcoming the opposing force provided by the said spring means in response to a prescribed operation of said operating means and,

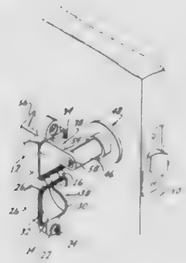
a holding mechanism for holding a condition where said pin component is engaged into said engaging hole without consuming electric power when said pin component enters a predetermined state with respect to the engaging hole, said holding mechanism being capable of releasing said pin component from the held position when an electric signal is received.

4,798,069

PROTECTING DEVICE FOR LEVER HANDLE DOOR LOCKS

William DeForrest, Sr., 1825 Via Burton, Anaheim, Calif. 92806

Filed Jan. 19, 1988, Ser. No. 145,387
Int. Cl.[4] E05B 17/14
U.S. Cl. 70—428 **2 Claims**



1. In a protection device of the type having first and second protector halves hingedly associated with each other, said first and said second halves joining together along a substantially planar junction, said halves when associated together along said planar junction substantially forming a hollow united body, said united body having a closed bottom wall and a substantially cylindrical circumferential wall, said body having a top wall, locking means adapted to releasably secure said first and said second halves together maintaining said first and said second halves as a united body, said locking means including first and second lugs respectively secured to said first and said second halves on said circumferential wall the improvement consisting of:

said top wall including an opening opening into the hollow interior of said united body, said opening formed in said first and said second halves such that a portion of said opening is located in one of said first or said second halves and the remaining portion of said opening is located in the other of said first or said second halves and together said portions form a singular opening in said top wall when said halves are associated together along said planar junction to form said united body;

said opening sized and shaped to receive an outwardly extending shank of a lever handle door lock, said shank portion including a cylindrical lock located therein;

said circumferential wall including an elongated rectangular opening into the hollow interior of said body, the elongated dimension of said rectangular opening located essentially parallel to said top wall;

said rectangular opening sized and shaped so as to accept the lever portion of a lever handle door lock;

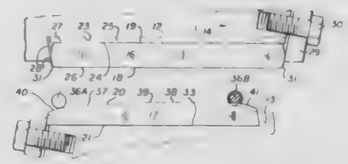
said protection device fitting over said lever handle door lock by passing said handle portion of said lever handle door lock through said rectangular hole and positioning said opening in said top wall of said protection device around the shank of said lever handle door lock whereby when said halves of said protection device are associated together to form a united body the shank portion of said lever handle door lock including said cylinder lock located therein are located within the interior of said body with a portion of said lever section of said lever handle door lock extending from the interior of said body through said rectangular opening to the exterior of said body.

4,798,070

COMBINED THREAD ROLLING DIES

Robert J. Hlavaty, Avon Lake, Ohio, assignor to Colt Industries Operating Corporation, W. Hartford, Conn.

Filed Jul. 1, 1983, Ser. No. 509,932
Int. Cl.[4] B21H 3/06
U.S. Cl. 72—88 **7 Claims**



1. A thread rolling die set consisting of only first, second, and third dies for use in a thread rolling machine having only a single pair of dies therein at any one time to roll threads on a workpiece, comprising, in combination:

said first die having first and second opposed faces,

thread forming ridges on said first face having the crest thereof lying parallel to said second face;

said second die having first and second opposed faces with said second face being a flat plane adapted to engage a die holder in the thread rolling machine which is non-adjustable as to tilt;

said second die first face having thread forming ridges thereon with the crests of a first longitudinally tapered portion thereof being at a slight angle to said second die second face and with the crests of a second longitudinal dwell portion thereof being parallel to said second die second face, said first faces of said first and second dies cooperating to roll threads on a workpiece when said first and second dies are mounted in a thread rolling meachine;

said second face of said first die including thread forming ridges the crests of which lie parallel to said first die first face;

said third die having first and second opposed faces with said second face being a flat plane and with said third die first face having thread forming ridges thereon with the crests of a first longitudinally tapered portion thereof being at a slight angle to said third die second face and with the crests of a second longitudinal dwell portion thereof being parallel to said third die second face, said first die being reversible face-to-face in the thread rolling machine and said second die being removable from the machine;

said first face of said third die cooperating with said second face of said first die to roll threads on a workpiece when

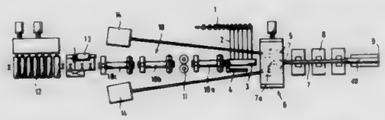
said first and third dies are mounted in a thread rolling machine.

4,798,071

SEAMLESS TUBE PRODUCTION

Karlhans Staat, 4030 Ratingen 8, and Hermann Möltner, 4048 Grevenbroich 2, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Filed Jun. 17, 1987, Ser. No. 63,298
Int. Cl.[4] B21B *19/04*
U.S. Cl. 72—97 **20 Claims**



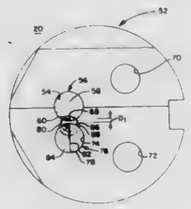
1. Process for seamless tube production comprising
(a) heating an ingot to rolling temperature;
(b) piercing said ingot to form a hollow tube in a pass opening having an axis defined by a mandrel and rolls in a skew rolling mill;
(c) reversing the direction of rotation of said rolls and stretching said hollow tube by passing said hollow tube in reverse direction through said same rolling mill and along said same axis to form a tube bloom;
(d) said stretching taking place immediately after piercing during the same heat.

4,798,072

SPRING COILING MACHINE WITH DUAL ARBORS

Peter Vanmeggelen, Mississauga, Canada, and John Jacobson, Southington, Conn., assignors to Newcomb Spring Corp., Southington, Conn.

Filed Jul. 31, 1987, Ser. No. 80,638
Int. Cl.[4] B21F *3/10, 11/00*
U.S. Cl. 72—132 **19 Claims**



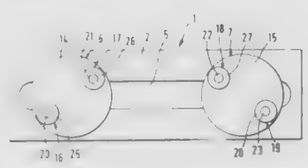
1. A spring coiling machine having a front panel including a coiling station, comprising:
(a) a form arbor having a nose projecting from the panel;
(b) a block wire guide in close vertical spaced relation to the form arbor;
(c) a coiling point in close side spaced relation to the form arbor;
(d) a pitch tool in close side spaced relation to the form arbor, opposite the coiling point;
(e) means for feeding a supply of wire between the wire guide and the form arbor, between the coiling and the form arbor and against the pitch tool, such that during said feeding the wire is plastically deformed into a coil having a series of adjacent generally helical turns;
(f) blade means operative downstream of the coiling point for severing a coil from the supply of wire;
(g) means for controlling the position of the coiling point during coil formation, to produce a coil having turns of different diameter;
(h) a retractable cutting arbor situated between the form arbor and the blade means, the cutting arbor operative in a retracted position within the panel during the forming of small diameter turns, and movable to an active position projecting from the panel into a large diameter turn to provide a cutting mandrel against which the blade means can sever said large diameter turn from the supply of wire, the timing of the retracting motion of the cutting arbor being responsive to the means for controlling the position of the coiling point; and
wherein the form arbor nose has an arcuate, tapered portion in contact with the feed wire, and a flat profile portion facing the cutting arbor.

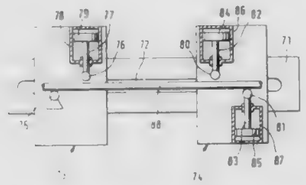
4,798,073

BENDING MACHINE FOR BENDING BARS, CHANNELS, SECTIONS AND THE LIKE

Helmut Dischler, Droste-Heuelshoff-Str. 9, D-4040 Neuss, Fed. Rep. of Germany

Filed Dec. 15, 1986, Ser. No. 941,650
Int. Cl.[4] B21D *11/04*
U.S. Cl. 72—218 **17 Claims**





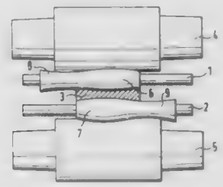
1. A bending machine, comprising:
(a) support means;
(b) first and second spaced cooperating bending means displaceably associated with said support means;
(c) each of said bending means comprises first and second spaced cooperating bending components and the components of said first and second bending means define a first axis extending between said bending means and further define second and third axes extending generally transverse to said first axis and about which a length to be bent may pivot and each of said second and third axes is disposed between the components of one of said bending means and said components of each bending means being sufficiently spaced apart to receive therebetween a length to be bent which extends also between said bending means on said first axis;
(d)
drive means operably associated with at least one of the components of each of said bending means for causing displacement thereof relative to said first axis; and,
(e) guide means operably associatd with said support means and with each of said bending means so that displacement of said components by said drive means causes said components to move relative to said first axis and to engage a length to be bent extending between said bending means and received between the associated components and further causes said bending means to move along said guide means relative to each other so that the length pivots about said second and third axes and is bent intermediate said bending means.

4,798,074

ROLLING MILL STAND, ESPECIALLY FOR ROLLING STRIP

Hugo Feldmann, Alsdorf; Friedrich Hollmann, Grevenbroich; Horst Gärtner, and Gerd Beisemann, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 20, 1987, Ser. No. 75,376
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1986, 3624241
Int. Cl.[4] B21B *31/18, 27/02*
U.S. Cl. 72—247 **8 Claims**



1. A strip-rolling mill comprising a multiplicity of rolls including a pair of working rolls defining a rolling gap between them in which strip having opposite longitudinal edges is rolled, and at least one pair of other rolls bracing said working rolls, at least the rolls of one of said pairs being shiftable in opposite axial directions relative to one another, each of said rolls having a roll body of a length greater than a width of said strip between said edges and pins extending from opposite ends of the respective body with which the respective roll is journaled and driven, the bodies of at least said one of said pairs of rolls having contours with a constant curvature from one roll body end to an opposite roll body end with a bulging portion tapering to one roll body end and a concave portion diverging to an opposite roll body end so that said portions are complementary to one another and said contours are complementary to one another, one of the roll bodies having said contours having one of its ends aligned and coplanar with one of said longitudinal edges of said strip and the other of the roll bodies having said contours having its opposite end aligned and coplanar with the other of said longitudinal edges of said strip.

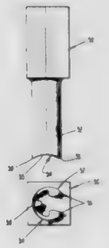
4,798,075

METHOD AND APPARATUS FOR MAKING A BOWED EXTERNAL SPRING RETAINING RING OF THE E-SHAPED TYPE

Edmund F. Killian, Merrick, and Wallace H. Berliner, Woodside, both of N.Y., assignors to Waldes Truarc Inc., Long Island City, N.Y.

Division of Ser. No. 650,662, Sep. 14, 1984, abandoned. This application Jul. 23, 1986, Ser. No. 888,468
Int. Cl.[4] B21D *28/02*
U.S. Cl. 72—327 **4 Claims**

1. A punch for making a bowed external spring retaining ring of the E-shaped type of generally U-shaped cross section and symetrically bowed about a line transverse to its longitudinal axis and comprising an open-ended spring steel ring which includes a middle section **32**, a pair of end sections **34**, and a pair of intermediate sections **36** which interconnect the end sections **34** with the middle section **32**, the end sections **34** each including lugs **37** which are spaced apart to define an opening **38** located opposite the middle section **32**, a middle prong **39** projecting radially inwardly from the middle section **32** having flats **40, 41** formed in the middle section **32** and the end sections **34** to define the trailing and leading ends of the ring the flats **40, 41** being mutually coplanar, the punch comprising a shank having a cross section shaped in the manner of the ring cross section and an end face including a portion bowed concavely to form the bow in the ring and planar straight portions (**56, 58**) inclined away from the end of the punch by a small angle forming the straight leading and trailing ends (**59, 61**) of the ring.

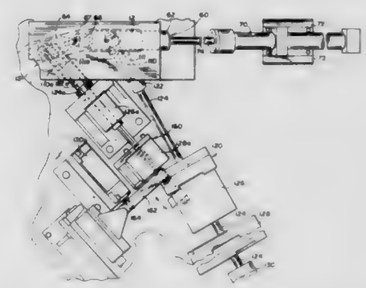


4,798,076

NIPPLE FORMING APPARATUS

Donald R. Rigsby, Jenison; James R. Dehlinger, Ada, and David A. Passmore, Wayland, all of Mich., assignors to Benteler Industries, Inc., Grand Rapids, Mich.

Filed Feb. 26, 1988, Ser. No. 160,780
Int. Cl.[4] B21D *31/00, 22/00*
U.S. Cl. 72—352 **12 Claims**



1. Nipple drawing apparatus for forming a lateral nipple around a lateral opening in an elongated exhaust manifold tubular body comprising:
a mandrel for insertion axially into the tubular body, said mandrel having at least one generally cylindrical recess oriented transversely of said mandrel;
a forming die in said recess, movably guided by said recess to enable extension of said die transversely of said mandrel to form a nipple on the tubular body around said lateral opening;
a drawing rod for rotary interlock with said forming die;
rotary interlock means on said rod and said die for temporary interlock thereof and subsequent release thereof;
a transfer actuator connected to said drawing rod, axially actuable to transfer said rod toward said die into engagement with said die and subsequently away from said die for retracting said rod from said die;
a rotary actuator for said rod for actuating said rotary inter-

lock means and thereby rotationally interlocking said rod to said die when engaged, and for subsequent rotational release therefrom; and

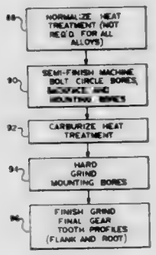
a forming actuator connected to said rod, axially actuable in the opposite direction as the engagement direction of said transfer actuator, to move away from the tubular body, for forcefully drawing said rod and die away from the tubular body to form the nipple, and then toward the tubular body to return the die.

4,798,077

METHOD FOR PRODUCING A FAMILY OF FORGED RING ROLLING PREFORMS AND FORGING DIE THEREFOR

James R. Douglas, Mentor, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 12, 1987, Ser. No. 14,428
Int. Cl.[4] B21J *1/06*; B21D *22/00*
U.S. Cl. 72—360 **13 Claims**



1. A method for forging a series of ring rolling preforms, each preform of said series to be ring rolled into a ring shaped forging blank for precision forging into a near net ring gear forging of known outside diameter, toe diameter and total volume, at least one of said outside diameter, toe diameter and total volume of the near net ring gear forging to be produced by each member of said series of preforms being different than the outside diameter, toe diameter and total volume of the near net ring gear forging to be produced by the other members of said series of ring rolling preforms, said method comprising:

providing a preform forging die having a die cavity comprising a substantially toroidal shaped portion of given volume and of given cross-sectional interior diameter, a disc shaped portion extending radially inwardly from said generally toroidal shaped portion and an overflow portion extending radially outwardly from said generally toroidal shaped portion, said overflow portion in cross-section being generally traingular shaped and defined by flat surfaces extending from said toroidal shaped portion radially outwardly and tangentially toward the parting surface of said die to define an included angle therebetween; and

forging preforms utilizing said preform forging die if the volume of the near net ring gear forging to be produced therefrom is in the range of eighty percent (80%) to one hundred percent (100%) of the volume of said toroidal cavity portion.

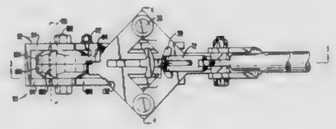
4,798,078

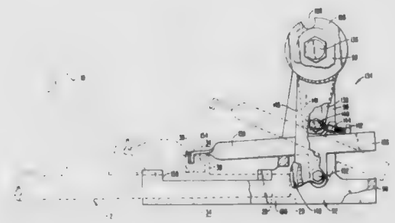
REBAR CUTTING AND BENDING MACHINE

Leonard J. Schweitzer, 3272 Susileen Dr., Reno, Nev. 89509

Filed Jun. 8, 1987, Ser. No. 59,703
Int. Cl.[4] B21D *9/10*, *43/28*
U.S. Cl. 72—389 **32 Claims**

1. Apparatus for cutting a metal bar for use in conjunction with and activation by a bar-bending machine having an elongated base for supporting the machine on the ground, a bar-bending mechanism at a first end of the base including a linearly reciprocable slide adapted to apply a bending force to the bar during the bending operation, guide means connected with the base for guiding the slide during its linear movements, and handle means pivotally attached to the base and operatively coupled to the slide for linearly moving the slide in the guiding means between first and second positions in response to corresponding pivotal movements of the handle means so that the slide protrudes from the guide means when it is in the second position, the apparatus comprising a generally L-shaped support frame defined by generally transverse, interconnected legs, a first leg including holding means for mechanically engaging the base of the bending machine adjacent the first end thereof to prevent relative movements between the bending machine and the frame at least in the direction of linear movements of the slide in the guide means, first and second bar





cutting discs having opposing faces in substantial contact with each other and mounted to the frame for relative pivotal movement about an axis substantially perpendicular to the direction of movement of the slide in the guide means, each disc including an aperature and the aperatures and the discs being positioned so that they can be axially aligned means preventing pivotal movements of the first disc, and an actuating arm protruding from the second disc, the arm being arranged relative to the base of the bending machine so that an end of the slide protruding from the guide means engages the arm and moves it to thereby pivotally move the second disc relative to the first disc when the handle means is operated to move the slide towards the second position, whereby a bar placed in the disc aperatures while the aperatures are in mutual alignment is cut when the slide is moved from the first to the second position.

4,798,079

FASTENER INSTALLATION APPARATUS

Michael Miles, Stevenage, and Stephen R. Tarling, Harpenden, both of England, assignors to Avdel Limited, a British Company, Welwyn Garden, England

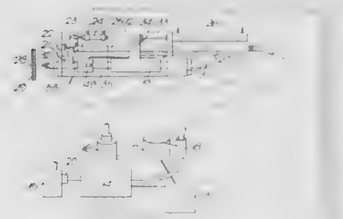
Filed Apr. 7, 1987, Ser. No. 35,189
Claims priority, application United Kingdom, Apr. 11, 1986, 8608817
Int. Cl.[4] B21J *15/28*
U.S. Cl. 72—391 **11 Claims**

1. Fastener installation apparatus for installing fasteners, which comprises:

fastener installation means including an aperture into which part of a fastener to be installed thereby is inserted;

vacuum means, connected to the aperture, for drawing air in through the aperture; and

vacuum level detection means communicating with a region



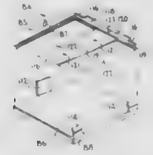
subject to a vacuum drawn by said vacuum means for detecting whether the level of vacuum in said region corresponds to the presence of a fastener in the aperture of the installation means.

4,798,080

PORTABLE TESTER FOR MEASURING SLIP RESISTANCE

Robert J. Brungraber, 409 S. 21st St., Lewisburg, Pa. 17837

Division of Ser. No. 60,302, Jun. 10, 1987, Pat. No. 4,759,209.
This application Apr. 7, 1988, Ser. No. 178,640
Int. Cl.[4] G01N *19/02*
U.S. Cl. 73—9 **2 Claims**



1. A foot plate assembly for a slip testing machine comprising a foot plate carrier having connection means for attaching same to a lower portion of the machine for pivotal movement about a first axis, a combination foot plate and friction pad, and attachment means providing a clip-on connection between the carrier and the combination foot plate and pad with the facility for the combination foot plate and pad to tilt about a second axis perpendicular to the first axis.

4,798,081

HIGH TEMPERATURE CONTINUOUS VISCOMETRY COUPLED WITH ANALYTIC TEMPERATURE RISING ELUTION FRACTIONATION FOR EVALUATING CRYSTALLINE AND SEMI-CRYSTALLINE POLYMERS

Lonnie G. Hazlitt, Lake Jackson, and Daniel G. Moldovan, Danbury, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

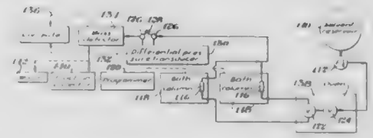
Continuation-in-part of Ser. No. 802,354, Nov. 27, 1985, abandoned. This application Dec. 22, 1987, Ser. No. 137,118
Int. Cl.[4] G01N *11/00*
U.S. Cl. 73—53 **32 Claims**

1. A method for analyzing a solution of a crystalline or a semi-crystalline polymer sample comprising the steps of:

(a) precipitating the polymer sample solution over a cooling temperature gradient to produce a precipitated polymer sample, said precipitated polymer sample being precipitated as a function of its crystallinity or branching configuration or density;

(b) eluting said precipitated polymer sample over a heating temperature gradient to produce successive fractions of a fractionated polymer sample solution;

(c) successively measuring the instantaneous concentration of the successive fractions of said fractionated polymer sample solution, at a first temperature in excess of a precipitation temperature of said fractionated polymer sample solution, to produce instantaneous concentration c data;



(d) successively measuring the instantaneous specific viscosity of the successive fractions of said fractionated polymer sample solution, at a second temperature in excess of a precipitation temperature of said fractionated polymer sample solution, to produce instantaneous specific viscosity Spv data; and

(e) determining the instantaneous intrinsic viscosity Intv of the successive fractions of said fractionated polymer sample solution in accordance with said instantaneous concentration c data from step (c) and said specific viscosity Spv data from step (d).

4,798,082

CONTROL-DISPLAY DEVICE FOR AN ENGINE-EQUIPED APPARATUS

Tetsuzo Fujikawa, Kobe; Yoichi Yamaguchi, and Akira Takahashi, both of Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 25, 1987, Ser. No. 101,185
Claims priority, application Japan, Sep. 29, 1986, 61-230870
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—117.3 **10 Claims**



1. A control-display device for an engine-equipped apparatus, said apparatus including analog signal generating circuits and a control mechanism for controlling the operation of the engine, said device comprising computing circuits for converting said analog signals to digital form, digital means for generating a control signal in digital form, means for converting said control signal from digital form to analog form, and coupler means connectable to said analog signal generating circuits and

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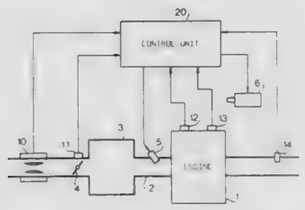
connected to said computing circuits in said device, said coupler means further being connected to said control mechanism and to said converting means and carrying said control signal in analog form, whereby said coupler means is located midway along those circuit of the wiring routes between the engine-equipped apparatus and said display device at which the signals are in analog state, whereby said display device is positionable at a location selectively on or separated from the engine-equipped apparatus.

4,798,083

SYSTEM FOR MEASURING INTAKE AIRFLOW RATE IN AN ENGINE

Yoshiyuki Sogawa, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1987, Ser. No. 43,430
Claims priority, application Japan, May 6, 1986, 61-104412
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—118.2 **6 Claims**



1. A system for measuring intake airflow rate in an engine for a motor vehicle having an intake passage to the engine, and a throttle valve in the intake passage, the intake passage including a first intake passage upstream of the throttle valve and a second intake passage between the throttle valve and cylinders of the engine, the system comprising:

an airflow meter disposed in the first intake passage for measuring a first intake airflow rate of flow passing in the first intake passage;

first means for calculating a second intake airflow rate of flow into said second intake passage not entering into the cylinders during opening or closing of the throttle valve; and

second means for producing a signal representing intake airflow rate of flow actually admitted into the cylinders in accordance with the difference between the first intake airflow rate and the second intake airflow rate;

the first means comprises third means for calculating the second intake airflow rate based on opening degree of the throttle valve.

4,798,084

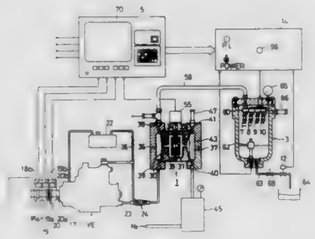
MEASURING DEVICE FOR MEASURING A FUEL INJECTION QUANTITY

Takeshi Takahashi; Naoyuki Tsuzuki; Hidetaka Nohira, all of Toyota; Yukinitsu Omori, and Akio Takamura, both of Tokyo, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Ono Sokki Co., Ltd., Tokyo, both of, Japan

Filed Dec. 9, 1986, Ser. No. 939,981
Claims priority, application Japan, Dec. 9, 1985, 60-276537; Dec. 9, 1985, 60-276538; Dec. 13, 1985, 60-281425; Dec. 13, 1985, 60-281426; Dec. 26, 1985, 60-298212; Dec. 26, 1985, 60-298213; Jan. 7, 1986, 61-132198
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—119 A **13 Claims**

1. A measuring device for measuring a fuel injection quantity, comprising:

fuel volume sensing means including a fuel injection chamber connected to a fuel injection valve and receiving said fuel injection quantity therefrom, a back pressure chamber which faces said fuel injection chamber, bulkhead means located between said fuel injection chamber and said back pressure chamber as an intercept therebetween and responsive to said fuel injection quantity for generating a displacement, sensing means for sensing said displacement of said bulkhead means, and pressure means for holding a pressure of the back pressure chamber to be of a constant value,



fuel injection quantity computing means responsive to said sensing means for determining a fuel injection quantity,

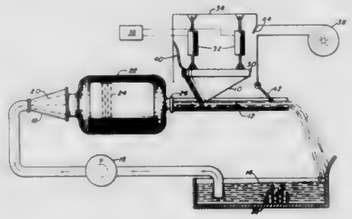
discharging means including fuel discharging means for discharging said injected fuel quantity from said fuel injection chamber to its exterior, discharging quantity computing means responsive to said fuel injection quantity computing means for computing a discharged quantity, and discharge control means responsive to said discharging quantity computing means for controlling said fuel discharging means so as to control said discharged quantity.

4,798,085

TEST RIG FOR EXAMINING SEAL FINGER WEAR

Alexander Malakhoff, Arlington, Va., and Sydney Davis, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 29, 1982, Ser. No. 403,263
Int. Cl.[4] B63B *9/08*; G01M *10/00*
U.S. Cl. 73—148 **1 Claim**



1. An apparatus for testing a seal finger for an air cushion vehicle comprising:

a reservoir of water;

a pump for pumping water from said reservoir;

a diffuser connected to the output of said pump to prevent turbulence in the flow of water from said pump;

a nozzle connected to said diffuser having a narrow opening for producing a high speed flow of water;

a shallow channel for receiving said high speed flow of a water from said nozzle, said channel returning the water to said reservoir;

means for holding said seal finger;

means for moving said means for holding so that said seal finger moves into and out of contact with said flow of water;

means for controlling said means for moving so as to simulate the motion of a ship moving through waves whereby the forces encountered by said seal finger in contact with said water flow simulate the forces encountered in actual use;

an enclosure for covering said means for holding, said means for moving and said seal finger;

a fan for forcing air into said enclosure so as to pressurize the interior of said enclosure;

flexible means for connecting the walls of the enclosure with said means for holding so as to prevent pressurized air from escaping the enclosure except through the seal finger which is thereby inflated;

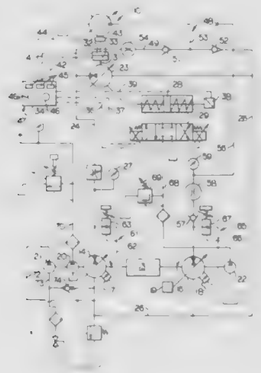
whereby the seal finger is caused to wear in a manner similar to actual use so that accurate testing of the material is accomplished.

4,798,086

TEST BENCH FOR TESTING HYDRAULIC PUMPS AND MOTORS

John Styfhoorn, Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 23, 1987, Ser. No. 29,498
Int. Cl.[4] F04B *51/00*; F15B *19/00*
U.S. Cl. 73—168 **8 Claims**



1. A test bench for testing hydraulic pumps and motors comprising:

a primary power source;

a first variable displacement hydraulic device mechanically connected to the power source;

a second variable displacement hydraulic device having a drive shaft connectable to one of a hydraulic pump and a hydraulic motor to be tested;

a conduit interconnecting the first and second variable displacement hydraulic devices;

means for communicating the discharge fluid from the test pump to the conduit when the drive shaft is connected to the test pump;

means for controlling the displacement of the second variable displacement hydraulic device to maintain a preselected constant speed of the drive shaft; and

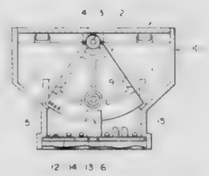
means for adjustably controlling the displacement of the first variable displacement hydraulic device to control the fluid pressure in the conduit.

4,798,087

INCLINATION DETECTOR

Tamio Takeda, Tama, and Minoru Take, Iwaki, both of Japan, assignors to Kabushiki Kaisha Kenwood, Japan

Filed Aug. 20, 1987, Ser. No. 87,192
Claims priority, application Japan, Aug. 22, 1986, 61-127090[U]
Int. Cl.[4] G01C *9/06*
U.S. Cl. 73—649 **4 Claims**



1. A vibration detector comprising a frame;

a fan-shaped plate pivotably mounted with respect to said frame, the plate including a plurality of slits aligned along the peripheral edge thereof;

a photo-coupler including a light-emitting element and light-sensitive element, the two elements being arranged so that the slits are positioned between them where said light-sensitive element produces detection pulses in response to movement of the slits between the two elements due to vibration of said frame; and

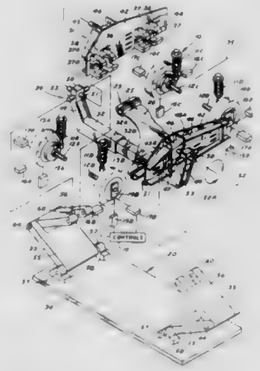
a detection sensitivity changeover circuit connected to said photo-coupler, the changeover circuit including a filter and means for adjusting the time constant of the filter to reduce detection of erroneous detection pulses.

4,798,088

VEHICLE RESTRAINT SYSTEM

Steven R. Haeg, Shorewood, and Mark T. Knabel, Minneapolis, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Mar. 21, 1988, Ser. No. 170,757
Int. Cl.[4] G01M *17/00*
U.S. Cl. 73—669 **11 Claims**



4. A support and guidance system for vehicles to be tested, wherein the vehicle has a longitudinal axis comprising a fixture to restrain such a vehicle in selected directions positioned at the lateral sides thereof, said fixture including:

a base;

means for securing said vehicle relative to the base; and

support means for the means for securing comprising sup-

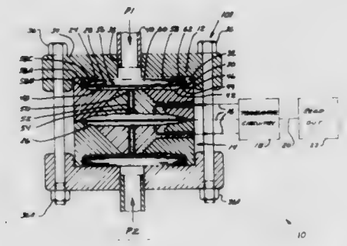
port members mounted to the base relative to which the vehicle will be tested, said support means permitting free movement along an axis in direction perpendicular to said longitudinal axis and restraining movement of the vehicle body parallel to the longitudinal axis.

4,798,089

ISOLATOR APPARATUS

Roger L. Frick, Chanhassen, and Donn S. Pierce, St. Paul, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Mar. 12, 1987, Ser. No. 24,981
Int. Cl.[4] G01L *7/08, 9/00, 13/02*
U.S. Cl. 73—706 **17 Claims**



1. Apparatus for isolatingly coupling a pressure from a fluid in an input member to a pressure sensor providing an output as a function of the pressure, comprising:

an inlet port disposed in the apparatus for receiving the fluid from the input member;

isolation means disposed in the inlet port and having an active region bounded by an outer border for isolatingly coupling the pressure from the fluid to the pressure sensor;

sealing means disposed in the inlet port around the isolation means for sealingly coupling the fluid from the input member to the isolation means; and

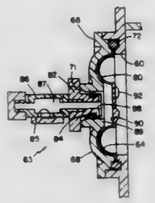
support means disposed in the inlet port for supporting the sealing means to overlie at least a portion of the isolation means adjacent the outer border and spacing at least the portion of the sealing means away from the active region, such that an effective area of the active region is improved.

4,798,090

APPARATUS FOR USE WITH FLUID FLOW TRANSFER DEVICE

Gary B. Heath, Aurora; William G. Palsulich, Boulder; Keith J. Maaiea, Littleton, and Jack C. Swan, Jr., Boulder, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Division of Ser. No. 748,545, Jun. 25, 1985, Pat. No. 4,666,598.
This application Feb. 11, 1987, Ser. No. 13,353
Int. Cl.[4] G01L *7/08;* **B01D** *35/00*
U.S. Cl. 73—715 **8 Claims**



1. Apparatus for sensing the pressure of a liquid comprising means defining a first chamber having an inlet and an outlet for liquid flowing through said first chamber, said means defining a first chamber including a rigid wall having a first opening therethrough,

an impermeable flexible diaphragm sealably covering said opening, said diaphragm including a corrugated portion formed symmetrically about a center portion of said diaphragm, said diaphragm forming means for moving in either direction without stretch or friction so that equal pressures result on opposite sides thereof,

means defining a second chamber sealed around said diaphragm on the other side of said diaphragm from said first chamber, and

a pressure transducer communicating with said second chamber to sense pressure in it,

said first chamber being provided by a cassette that is removably mounted on a machine,

said pressure transducer being mounted on said machine, and

said means defining a second chamber comprising a portion surrounding said transducer mounted on said machine, and a rigid retainer covering said diaphragm, carried by said cassette and having a second opening adapted to sealably engage said portion surrounding said transducer,

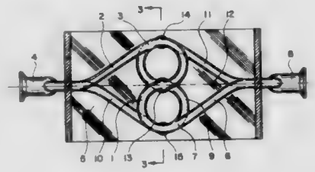
said retainer having an inner surface having the same shape as said corrugated portion, whereby said shape allows the region between said inner surface of said retainer and said diaphragam to have a small volume.

4,798,091

DUAL S-TUBE CORIOLIS FORCE FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 725,986, Apr. 22, 1985, Pat. No. 4,628,744. This application Dec. 15, 1986, Ser. No. 941,352
Int. Cl.[4] G01F *1/84*
U.S. Cl. 73—861.38 **4 Claims**



1. An apparatus for measuring flow rate comprising in combination:

(a) a frame;

(b) a first sinuous conduit disposed on a first plane and secured to said frame at two extremities thereof, said first sinuous conduit including a first smooth bend adjacent to one extremity of said first sinuous conduit turning about a first direction; a second smooth bend adjacent to said first smooth bend turning about a second direction opposite to said first direction; a third smooth bend adjacent to said second smooth bend turning about said first direction and a fourth smooth bend intermediate said third smooth bend and the other extremity of said sinuous conduit turning about said second direction, wherein the combination of said first and second smooth bends and the combination of said third and fourth smooth bends are axisymmetric to one another about a first axis perpendicular to said first plane and passing through midsection of said first sinuous conduit;

(c) a second sinuous conduit disposed on a second plane parallel to said first plane and secured to said frame at two extremities hereof, wherein said second sinuous conduit and said first sinuous conduit providing two flow passages connected to a common inlet and outlet are axisymmetric to one another about a second axis located half way between said first and second planes and substantially intersecting said first axis in perpendicular angle;

(d) means for exerting oscillatory force to said first and second sinuous conduits at midsections thereof, wherein said means vibrates said first and second sinuous conduits relative to one another in directions transverse to the planes including said first and second sinuous conduits, and thus creating oscillatory flexural movements of opposite signs for said first and second sinuous conduits; and

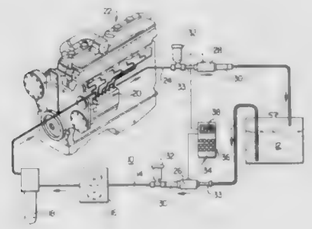
(e) at least a first means disposed at a section of said second smooth bend adjacent to said first smooth bend, and at least a second means disposed at a section of said third smooth bend adjacent to said fourth smooth bend for measuring difference in said oscillatory flexural movements between the combination of said first and second smooth bends and the combination of said third and fourth smooth bends as a measure of mass flow rate of fluid moving through said first and second sinuous conduits.

4,798,092

FLOWMETER FOR USE IN A FLOW MONITORING SYSTEM

Peter J. Lagergren, and David J. Roh, both of Arlington, Tex., assignors to Pandel Instruments, Inc., Grand Prairie, Tex.

Filed May 28, 1987, Ser. No. 55,176
Int. Cl.[4] G01F *1/12*
U.S. Cl. 73—861.77 **7 Claims**



1. A flowmeter for measuring the flow rate of a fluid in a fluid path, comprising:

a look-up table having a plurality of addressable storage locations therein, each of the addressable storage locations including a predetermined flow rate value stored therein equal to a predetermined number of pulses per unit volume of the fluid at a given flow rate;

means for generating a pulse signal having a plurality of pulses, each of the pulses having a pulse width proportional to instantaneous flow rate of the fluid;

control means for receiving the pulse signal and in response thereto determining the pulse width of each pulse therein and for generating a pulse width count in clock cycles proportional to the pulse width of each pulse;

means responsive to each pulse width count in clock cycles for directly selecting one of the plurality of addressable storage locations in the look-up table;

means for retrieving the predetermined flow rate value from the selected addressable storage location; and

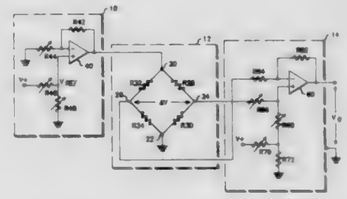
means for averaging one or more flow rate values retrieved from the selected addressable storage locations over a predetermined time period to generate a flow rate signal from the stored flow rate values instead of the pulse signal.

4,798,093

APPARATUS FOR SENSOR COMPENSATION

Robert Keaoun, Morton Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 6, 1986, Ser. No. 872,345
Int. Cl.[4] G01L *7/08, 9/04, 19/04*
U.S. Cl. 73—708 **14 Claims**



1. A pressure sensing apparatus of the type which automatically compensates for temperature variance, and which may be mounted about a flexible member such that the resistance of one or more strain gauge resistors mounted thereon changes as pressure is exerted upon the flexible member, the pressure sensing apparatus comprising:

pressure sensing means for sensing pressure, said pressure sensing means having:

an input terminal for receiving an input voltage,

at least one first strain gauge resistor mounted on the flexible member,

at least one substantially fixed value resistor having a value based on, at least in part, the rate of change over temperature of said at least one strain guage resistor, and

at least one output terminal at which a voltage is developed which changes as pressure is exerted upon the flexible member; bridge control means coupled to said input terminal; and

an additional strain gauge resistor situated such that it experiences temperature variations which correspond to temperature variations experienced by said first strain gauge resistor, and coupled with said bridge control means such that the voltage at said input terminal is controlled by said bridge control means to compensate for temperature induced variances in said bridge means.

4,798,094

HYDROSTATIC PRIMARY FORCE STANDARD

Donald H. Newhall, Norfolk, Mass.; Charles D. Bullock, Cosowingo, and James O. Pilcher, Edgewood, both of Md., assignors to The Unites States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 11, 1988, Ser. No. 142,893
Int. Cl.[4] G01L *1/02, 25/00*
U.S. Cl. 73—862.58 **7 Claims**

1. Apparatus for delivering a precisely determined force to a load, comprising:

a base;

a cylinder having an axis, one end closed by the base, and an opposite open end;

a piston which is slidably disposed within the cylinder for limited movement therein along the cylinder axis, the piston including

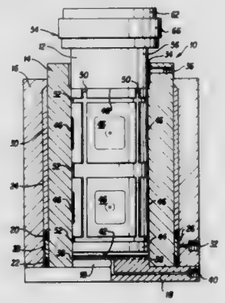
an axis,

a loading end which extends from the open end of the cylinder for engagement with the load, and

an opposite inner end having a precise radial leakage clearance with the cylinder when the piston and cylinder axes coincide;

first fluid supply means for supply fluid under a first prese-

lected pressure to the cylinder between the inner end of the piston and the base;
jacketing means for providing an annular cavity extending circumferentially about a portion of the cylinder adjacent the piston inner end;
second fluid supply means for supplying fluid under a second preselected pressure to the annular cavity to contract the cylinder portion radially within the limits of elasticity to maintain the precise radial leakage clearance between the piston inner end and the cylinder; and
piston centering means for maintaining the cylinder and piston axes coincident, including



two axially-spaced circumferential arrays of hydrostatic bearing recesses disposed intermediate the loading end and the inner end of the piston, each array including at least three hydrostatic bearing recesses disposed at equal intervals about the piston circumference, each hydrostatic bearing recess forming with the cylinder a hydrostatic bearing, and
third fluid supply means for supplying fluid under a third preselected pressure to each hydrostatic bearing of the two arrays.

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APPARATUS FOR DISTRIBUTING LIQUID SAMPLES AMONG TEST TUBES AND FOR DIVIDING THE TEST TUBES INTO GROUPS

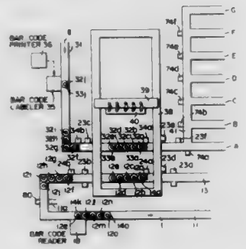
Teruaki Itoh, 5-25, Kogaiboamachi, Kumamoto-shi, Kumamoto-ken, Japan

Filed Apr. 20, 1987, Ser. No. 39,952

Claims priority, application Japan, Apr. 30, 1986, 61-66703[U]; Apr. 30, 1986, 61-66704[U]; Apr. 30, 1986, 61-66705[U]; Apr. 30, 1986, 61-66706[U]; Apr. 30, 1986, 61-66707[U]

Int. Cl.⁴ G01N *35/06, 35/04*

U.S. Cl. 73—863.01 6 Claims



1. A liquid-distributing apparatus comprising:
a sample-transporting means including holders for holding containers, a conveyor for conveying the holders, and guide means for guiding the holders to a first position where liquid samples will be sucked from some of the containers held by some of the holders, each holder being a hollow cylinder having at least two annular grooves cut in its outer periphery, said guide means having guide edges insertable in the first of said two annular grooves of the holder;
data-reading means for reading, from each of the containers containing a liquid sample, data showing items for which the sample will be analyzed and data showing the identity of the sample;
means for transporting the holders holding empty containers in the same number as the items of analysis to a second position where each liquid sample will be distributed among the empty containers;
means for distributing the liquid sample in small quantities from each of the containers located in said first position, among the containers located in said second position, in accordance with the data read by the data-reading means; and
means for dividing the containers containing the small quantities of the liquid samples into groups in accordance with the data read by the data-reading means.

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APPARATUS FOR CHECKING HOLLOW GLASS CONTAINERS

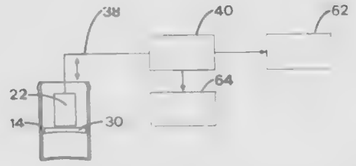
Hans-Ulrich Bogatzki, Zürich, Switzerland, assignor to Elpatronic AG, Switzerland

Filed Sep. 9, 1987, Ser. No. 94,686

Claims priority, application Switzerland, Oct. 10, 1986, 04054/86

Int. Cl.⁴ G01N *3/08*

U.S. Cl. 73—12 2 Claims



1. An inspection apparatus for large mouth glass containers comprising:
a sensing device movable toward and away from the interior bottom wall of a glass container to be inspected, said device including a housing and a support rod for the housing, means for moving the support rod to position the housing inside a glass container at an inspection position, said device including a pressure plate movably mounted to said housing for limited movement toward and away from said housing, said housing including at least one proximity switch having a sensing face to detect movement of said plate from a normal position towards said housing at least when said device is in its inspection position, said inspection position for said housing and said normal position for said plate providing a positive test for a glass container, said plate movement toward said housing being caused by contact between said plate and a defect in a glass container being inspected, said housing including a sleeve member, a bottom wall for the sleeve member, said proximity switch secured in the bottom wall of the sleeve member so that its sensing face is provided in generally co-planar relationship with the lower face of the sleeve bottom, said pressure plate having a lower face that this contoured to correspond closely to the convex contour of a satisfactory glass container bottom wall to be inspected, said pressure plate provided with a central opening to receive a threaded screw, said screw being received loosely in a bore provided for it in the bottom wall of said housing sleeve, said screw having a head adapted to engage a shoulder on the sleeve bottom to define a normal displacement between the sleeve bottom and the upper surface of the plate.

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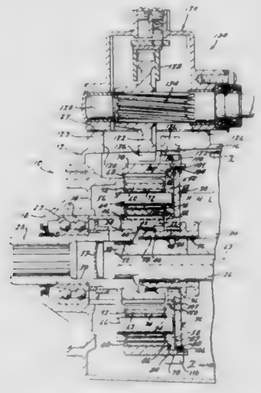
TRANSFER CASE PLANETARY WITH ANNULUS GEAR POWER TAKEOFF

Richard E. Eastman, Central Square, N.Y., and Anand M. Jagani, Sepulveda, Calif., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Filed May 23, 1988, Ser. No. 197,245

Int. Cl.⁴ F16H *37/8, 3/44*

U.S. Cl. 74—15.88 2 Claims



1. In a transfer case apparatus including a housing having an end wall defining an opening, said housing having outer wall means extending in an inboard direction from said end wall, axial bearing means journally supporting an input shaft in said end wall opening, said input shaft having one end terminating within said housing in an annular end flange portion joined by an intermediate stepped radially extending flange portion, said input shaft annular end flange portion formed with external helical gear teeth defining an integral sun gear, an output shaft journally supported in said housing, said output shaft having a clutch collar axially slidable thereon by means of collar internal splines engaged with external splines on said output shaft, said input shaft having an axial counter-bore formed in said input shaft annular end flange, internal clutch teeth formed in said input shaft counter-bore, external clutch teeth formed on said clutch collar slidable engageable with said input shaft counter-bore internal teeth when said clutch collar is moved axially into a high-range drive position, a helical dual planetary gear assembly comprising a carrier having outboard and inboard axially spaced carrier rings, said carrier rings journally supporting first inner and second outer sets of planet pinion gears rotably supported on first and second sets of respective pins journalled between said carrier rings at first and second radial distances, respectively, outward from said central axis, wherein said first distance is a predetermined lesser distance than said second distance, each said first set pinion gear in meshing engagement with said sun gear teeth and each said second set pinion gear in meshing engagement with internal teeth of an annulus gear concentrically disposed around said second set pinion gears, said carrier outboard ring fixed to said housing, said carrier inboard ring extending radially outwardly a predetermined distance beyond said second set of pinion gears, said annulus gear including an axially extending inboard cylindrical extension formed with an internal annular shoulder juxtaposed the outer periphery of said inboard carrier ring, said annulus gear extension formed with internal splines, an annulus plate positioned on the inboard side of said inboard carrier ring having its outer periphery formed with external splines engaged with said annulus gear extension internal splines, said annulus plate formed with a central hub portion extending outboard from said annulus plate, said hub portion having an axial internally splined bore concentrically encircling said clutch collar, said hub portion internally splined bore adapted to be engaged by said clutch collar external splines upon said clutch collar being moved axially to low drive range position, said inboard ring formed with an axial bore encircling said annulus plate hub portion defining an annular clearance therebetween, an annular bushing interposed in said annular clearance concentrically positioning said annulus plate for rotation about the principal axis of said output shaft, said annulus gear extension having external power takeoff helical gear teeth thereon, said housing outer wall means including an aperture radially aligned with said annulus gear power takeoff teeth, mounting means on said outer wall means for supporting a power takeoff gear box unit thereon including an helical toothed power takeoff input gear splined to an axially extending power takeoff shaft, a portion of said takeoff input gear adapted to extend through said housing aperture for axial travel on said takeoff shaft into selective meshing engagement of its helical gear teeth with said annulus gear external power takeoff teeth, whereby with said power takeoff gear in meshing engagement with said annulus gear power takeoff teeth said transfer case input shaft operative, upon being rotated, to transfer power to said power takeoff gear.

4,798,098

CONNECTION DEVICE FOR GEARSHIFT CABLE

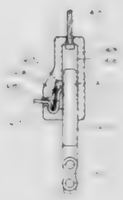
Josef Keller, and Werner Steser, both of Schweinfurt, Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 912,181, Sep. 25, 1986, abandoned, which is a continuation of Ser. No. 529,967, Sep. 7, 1983, abandoned. This application Feb. 4, 1988, Ser. No. 154,501

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233433

Int. Cl.⁴ G05G *1/00, 11/00*; F16C *1/10*

U.S. Cl. 74—470 5 Claims



1. A speed change system for a bicycle or the like comprising:
(1) a speed shift member (**18**), said speed shift member (**18**) being movable through a plurality of shift member positions responsible for a corresponding plurality of gear ratios;
(2) abutment means (**20**) defining a basic shift member position of said speed shift member (**18**);
(3) shift member biasing means (**19**) urging said speed shift member (**18**) towards said basic shift member position;
(4) a manually operable switch unit (**21**) including a switch handle movable through a plurality of handle positions corresponding to said shift member positions, said handle positions including a basic handle position corresponding to said basic shift member position;

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(5) a flexible pulling member assembly (1, 2) transmitting motion from said switch handle of said switch unit (21) to said shift member, said pulling member assembly (1, 2) including a first pulling member (1) connected to said switch unit (21) and a second pulling member (2) connected to said speed shift member (18);

(6) a coupling assembly interconnecting said first pulling member (1) and said second pulling member (2), said coupling assembly including

(a) a female coupling unit (5) connected with one of said first and said second pulling members (1, 2) and being provided with an elongated receiving channel (6) having a rectilinear axis extending in the elongated direction and a terminal opening extending transversely of the axis;

(b) a male coupling unit connected with the other (2) of said first and second pulling members (1, 2) and being provided with a male coupling member (3) telescopically movable through the terminal opening into and slidably movable within said receiving channel (6) in the direction of the rectilinear axis thereof;

(c) locking means (7, 3*a*) locking said male coupling member (3) within said receiving channel (6);

(d) manually operable lock releasing means (7*c*) in operative engagement with said locking means for releasing said locking means (7, 3*a*);

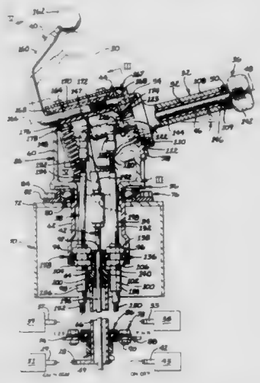
said female coupling unit (5) comprising a housing elongated in the direction of said elongated receiving channel and laterally enclosing the receiving channel in the elongated direction, said housing having a first end and a second end spaced apart in the elongated direction with said second end forming said terminal opening, said male coupling member (3) being telescopically and rectilinearly movable through the terminal opening into said receiving channel (6) along said axis, said male coupling member being axially slidably insertable into said receiving channel without manually operating said lock releasing means, and said male coupling member (3) being movable out of said receiving channel toward the terminal opening of said receiving channel (6) only after manually releasing said lock releasing means (7*c*), said flexible pulling member assembly (1, 2) being tensioned between said speed shift member and said switch unit when said male coupling member (3) is moved into said receiving channel (6) and locked by said locking means (7, 3*a*), said shift member biasing means (19) acting on said speed shift member being of such strength in said basic shift member position of said speed shift member (18) that a considerable expenditure of strength is required acting on said switch unit through said coupling assembly from said first pulling member to said second pulling member for overcoming said shift member biasing means and displacing said speed shift member (18), said locking means (3, 7*a*) comprising a plurality of teeth (3*a*) along said axis on said male coupling member (3) and one single teeth engagement member (7) on said female coupling unit (5), said teeth engagement member (7) being mounted within said housing of said female coupling unit (5) for displacement into and out of engagement with said teeth (3*a*), a biasing spring (8) being housed wholly within said housing of said female coupling unit (5) and biasing said teeth engagement member (7) into engagement with said teeth (3a), said lock releasing means in engagement with said teeth engagement member (7) being provided with an unlocking handle (7*c*) extending through an opening in said housing outwardly of said housing, said teeth engagement member (7) and said plurality of teeth (3*a*) acting as a one-way pawl-ratchet system allowing free inward movement of said male coupling member (3) into said receiving channel (6) and locking outward movement of said male coupling member (3) out of said receiving channel (7), a pocket being shaped within the housing of said female coupling unit (5), said pocket being open towards said receiving channel (6) and substantially closed to the exterior of said housing, said pocket receiving said teeth engagement member (7) and said biasing spring (8) with said handle extending outwardly from said pocket through the opening in said housing, said teeth engagement member (7) being established by a bent material strip (7), said bent material strip (7) having a first end (7*a*) for engagement with said teeth (3*a*) and a second end (7*c*) forming said handle (7*c*), an intermediate section of said bent material strip (7) being cylindrically curved, said cylindrically curved intermediate section being in bearing engagement with a cylindrical concave side face of said pocket, said biasing spring (8) being a leaf spring supported by a further side face of said pocket and acting onto said material strip adjacent the first end (7*a*) thereof.

4,798,099

CONTROL MECHANISM FOR OPERATING A VEHICLE

George F. Alexander, Pekin; Alan R. Coatant, Chillicothe; David M. Fee, Groveland, and Craig W. Riediger, Pekin, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 30, 1987, Ser. No. 139,888
Int. Cl.[4] B62D *11/04*; G05G *9/00*
U.S. Cl. 74—473 R 19 Claims



1. A control mechanism for operating a vehicle having an element mounted on the vehicle for swinging movement about an upstanding first axis, and a tiller arm extending outwardly from the element along a second axis and controlling steering of the vehicle by swinging the element about the first axis, comprising:

first actuator means for controlling the direction of longitudinal movement of the vehicle including a directional actuating member; and

second actuator means for controlling the speed range of the vehicle including a speed actuating member, the directional and speed actuating members being arranged on the tiller arm for independent rotation about the second axis.

4,798,100

AUTOMATIC ADJUSTMENT DEVICE FOR CABLE CONTROL SYSTEMS

John M. Baumgarten, Saline, Mich., assignor to Babcock Industries Inc., Fairfield, Conn.

Filed Sep. 18, 1987, Ser. No. 98,235
Int. Cl.[4] F16C *1/10*
U.S. Cl. 74—501.5 R 6 Claims

1. An automatic control device for cable control systems comprising

a first member adapted to be fixed,

a second member adapted to be connected to a conduit of a cable control system,

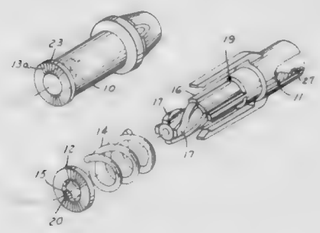
a third member interposed between the first and second members,

means between said first member and said third member defining a one-way clutch,

spring means interposed between said third member and said second member,

said second member including circumferentially spaced helical teeth that engage complementary grooves in said first member,

said second member further including circumferentially spaced longitudinally extending ribs having ends aligned



with ends of the helical teeth wherein said ribs engage circumferentially spaced grooves of said third member,

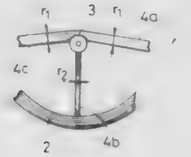
such that when the device is released, the force of the spring means urges the second member axially away from the first member and the one way clutch permits the second member to rotate relative to the first member in one direction only and prevents the second member from moving axially inwardly relative to said first member.

4,798,101

CORE MATERIAL FOR STEERING WHEELS MADE OF LONG FIBER-REINFORCED RESIN

Yasushi Yamazawa; Masaki Terada, and Yasuhiro Tsuchiya, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jan. 29, 1987, Ser. No. 8,255
Claims priority, application Japan, Jan. 30, 1986, 61-11963[U]
Int. Cl.[4] B62D *1/04*
U.S. Cl. 74—552 9 Claims



1. A steering wheel core, comprising:

a boss portion adapted to be connected to the upper end of a steering column;

a ring portion spaced upwardly from the upper end of said boss and steering column, said boss portion being centrally disposed relative to said ring portion;

first, second and third radial spoke portions extending at respective projection angles to the axis of said boss portion and said ring portion and connecting said boss portion to said ring portion,

said first and third spoke portions being angularly spaced from each other at a selected radial angle,

said second spoke portion being spaced at a radial angle intermediate said first and third spoke portions,

said first, second and third spoke portions including resin reinforced fibers wound to form each said spoke portion to have a selected cross-sectional area,

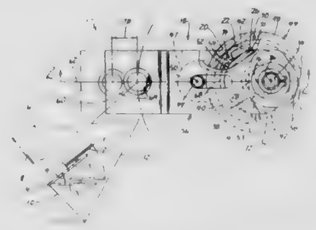
said selected cross-sectional area of said resin reinforced fibers of said second spoke portion having a maximum cross-sectional area less than a minimum cross-sectional area of said resin reinforced fibers of said first and third spoke portions for causing said second spoke portion to deform in a direction to change the projection angle between said second spoke portion and the axis of said boss and ring portions more readily than the projection angles between said first and third spoke portions and the axis of said boss and ring portions in response to downward pressure on said ring portion substantially central of said first and third spoke portions.

4,798,102

CRANK ARM ASSEMBLY FOR WINDSHIELD WIPER DEVICE

Jeffrey J. Buschur, Beavercreek; David R. Paulick, Kettering, and Roy C. Schoen, West Milton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 21, 1987, Ser. No. 52,478
Int. Cl.[4] B60S *1/24*
U.S. Cl. 74—600 3 Claims



1. In combination with an electric motor including a motor shaft supported on a housing of said motor for rotation in opposite first and second directions about a main axis of said motor, a crank arm assembly comprising:

means defining a crank pin rotatable as a unit with said motor shaft in a circular inside orbit around said main axis,

a control member supported on said housing for rotation about said main axis independently of said motor shaft,

an intermediate link disposed in a plane perpendicular to said main axis and pivotally connected at one end to said crank pin and including a link ball rigidly connected thereto at the other end,

means on said intermediate link and on said control member defining a slidable pivot fulcrum therebetween located between said ends of said intermediate link,

said intermediate link having a folded position relative to said motor shaft defined by linear alignment of said link ball and said crank pin and said main axis with said link ball and said crank pin on opposite sides of said main axis,

said intermediate link having an unfolded position relative to said motor shaft defined by linear alignment of said link ball and said crank pin and said main axis with said link ball and said crank pin on the same side of said main axis,

said crank pin being operative when said control member is immobilized relative to said housing and in response to rotation of said motor shaft in either of said first and said second directions through substantially 180 degrees to move said intermediate link between said folded and said unfolded positions,

means defining a drive lug rotatable as a unit with said crank pin and engageable on said intermediate link in said folded position of said intermediate link when said motor shaft rotates in said first direction whereby said intermediate link is captured between said crank pin and said drive lug and rotated as a unit with said drive lug and said crank pin

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about said main axis so that said link ball traverses a circular outside orbit around said main axis,

means on said motor housing defining an inner cylindrical wall centered around said main axis, hub means on said motor shaft defining an outer cylindrical wall centered on said main axis and rotatable as a unit with said motor shaft, said inner and said outer cylindrical walls defining an annular space therebetween centered around said main axis,

a coil torsion spring disposed in said annular space and including a first hook-like formation at one end and a second hook-like formation at the other end angularly spaced from said first hook-like formation,

said spring having an unflexed condition frictionally engaging said inner cylindrical wall and a flexed condition remote from said inner cylindrical wall,

means defining a skirt on said control member disposed between said first and said second hook-like formations, and

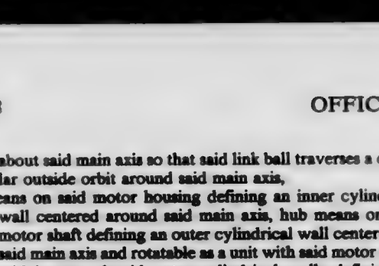
means on said hub means defining a tang engageable on said first hook-like formation of said spring when said motor shaft rotates in said first direction and operative to torsionally flex said spring to said flexed condition and separable from said first hook-like formation at the onset of rotation of said motor shaft in said second direction so that said spring torsionally unflexes to said unflexed condition and thereby immobilizes said control member by capturing said skirt between said first and said second hook-like formations.

4,798,103

AUTOMATIC TRANSMISSION WITH ADD-ON OVERDRIVE

Richard E. Eastman, Central Square, and Stewart J. Woodcock, Fayetteville, both of N.Y., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Continuation of Ser. No. 7,871, Jan. 28, 1987, abandoned. This application Dec. 11, 1987, Ser. No. 133,159
Int. Cl.[4] F16H *37/04*
U.S. Cl. 74—740 2 Claims



1. An overdrive unit for use with an automatic transmission, said transmission having an extended output shaft extending rearwardly therefrom through the forward open end of an overdrive outer casing and aligned on the longitudinal axis thereof, said overdrive unit comprising:

a planetary gear set concentrically disposed about said longitudinal axis and including a sun gear, an annulus gear and a carrier with fore and aft carrier rings supporting a plurality of planetary pinion gears in meshing engagement with said sun gear and said annulus gear, said aft carrier ring concentrically engaged with the transmission output shaft;

a one-way clutch including inner and outer concentrically disposed races with coupling means located therebetween, said one-way clutch positioned rearward of said aft carrier ring, said annulus gear having a rearwardly projecting portion surrounding a portion said outer race concentrically engaged therewith;

said inner race concentrically engaged with the transmission output shaft and said outer race concentrically engaged with an overdrive output shaft disposed coaxial with the transmission output shaft;

an outer sleeve surrounding a forward portion of said annulus gear and concentrically engaged therewith;

an inner sleeve concentrically journalled on said transmission output shaft, said inner sleeve having a rearwardly extending portion formed with external gear teeth defining said planetary gear set sun gear;

clutch spool means located forward of said fore carrier ring and concentrically disposed intermediate said inner and outer sleeves, compression spring means located in axial compression between said spool means and abutment means fixed said inner sleeve;

a first direct-drive clutch pack adapted for coupling said outer sleeve to said spool means;

a second overdrive clutch pack adapted for coupling said overdrive casing to said spool means;

a bulkhead sealingly enclosing said casing forward open end, said bulkhead defining a concentrically disposed annular cylinder on its rearwardly facing portion, a central piston slideably received in said cylinder operative when said cylinder is pressurized to be stroked rearwardly, said piston moving said spool means rearwardly thereby compressing said spring means;

said spring means operative to normally bias said spool means forwardly engaging said first direct drive clutch pack and disengaging said second overdrive clutch pack locking said outer and inner sleeves together wherein the driving torque of the transmission output shaft is delivered to said one way clutch inner race thus coupling said inner race to said outer race for direct drive of said overdrive output shaft obviating torque transfer through said direct drive clutch pack;

whereby upon said cylinder being pressurized said piston is stroked rearwardly compressing said spring means thereby disengaging said first direct drive clutch pack and engaging said second overdrive clutch pack, wherein said annulus gear is free to rotate relative to said inner sleeve and said sun gear teeth allowing said outer race to overdrive said inner race uncoupling said one-way clutch such than an overdrive gear ratio is transmitted from the transmission output shaft to said planetary gear set aft carrier ring, said planetary gears, and thence via said annulus gear and said outer race to said overdrive output shaft; and

said clutch spool means in the form of a dual walled clutch spool having cylindrical outer and inner walls concentric with said transmission output shaft, said outer and inner walls connected at their forward ends by a radially extending base wall, and said spring means in the form of a single coil compression spring concentrically disposed about said transmission output shaft intermediate said spool outer and inner walls so as to be compressed between said spool base wall and said abutment means fixed to said inner sleeve.

4,798,104

OSCILLATORY TOOTH AND NEEDLE GEAR TRANSMITTING DEVICES

Shixian Chen, 68 Xiao Wei St.; Hung S. Wang, 37 Xue Yuan Rd., and Linai Chang, 227 Nan Xiao St., all of Beijing, China

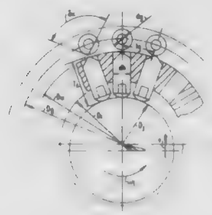
Continuation-in-part of Ser. No. 850,726, Apr. 11, 1986, abandoned. This application Oct. 30, 1987, Ser. No. 115,047
Claims priority, application China, Apr. 12, 1985, 85200606
Int. Cl.[4] F16H *1/28*
U.S. Cl. 74—804 19 Claims

1. An oscillatory tooth and needle gear transmitting device comprising three basic components:

a wave-actuator J including an eccentric disk,

an oscillatory tooth wheel H including a wheel body defining holes therein and a set of oscillatory teeth which reciprocate substantially radially in the holes, said wheel body and oscillating teeth assembled together in an oscillatory tooth disk, said wheel body surrounding the eccentric disk so that the is positioned to engage the oscillating teeth at their inward end to reciprocate the teeth in forward and backward strokes, and

a stationary needle gear G including an annular needle tooth frame and a set of needle teeth fitted circumferentially onto the needle tooth frame, said needle teeth being distributed evenly defining a pitch t_g, the radially outward end of the oscillating teeth for engaging the needle teeth in order to accomplish motion and power transmission;



wherein the relationship between the width of said oscillatory teeth d_h, the diameter of said needle teeth d_g and the pitch of said needle teeth t_g is

$$d_h > t_g - d_g;$$

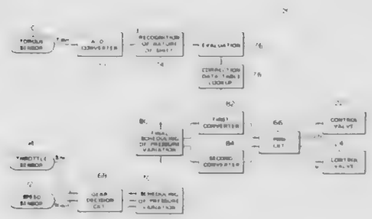
providing continuous transmission with constant speed ratio for the wave-actuator, the tooth wheel and the needle gear and the forward and backward strokes of the oscillating teeth are achieved by the meshing between tooth profiles of said oscillatory teeth and needle teeth.

4,798,105

CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION PRODUCING SHOCK-FREE SHIFT

Sadao Takase; Hitoshi Takeda, both of Yokohama, and Osamu Isobe, Omiya, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Aug. 18, 1986, Ser. No. 897,475
Claims priority, application Japan, Aug. 16, 1985, 60-180156
Int. Cl.[4] B60K *41/06*
U.S. Cl. 74—866 11 Claims



1. A control system for an automatic transmission, comprising:

torque sensor means for detecting an output shaft torque of the automatic transmission which varies in a pattern in effecting shifting in the automatic transmission;

a control unit including means for recognizing the pattern of variation of the output shaft torque detected by said torque sensor means, means for evaluating the pattern of variation recognized, and means for determining a variation of fluid pressure to be supplied to a friction element in response to the result of the evaluation of the pattern of variation recognized; and

means for regulating a fluid pressure supplied to said friction element in response to said variation of fluid pressure determined,

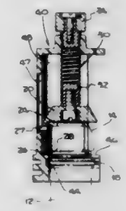
whereby said fluid pressure supplied to the friction element is appropriately adjusted to alleviate substantial shift shock in effecting the same shifting by said friction element subsequently.

4,798,106

CHAMPAGNE BOTTLE CORK PULLER AND INSERTING APPARATUS

Milton E. Foster, 2735 Almendra Ct., Fallbrook, Calif. 92028

Filed Dec. 12, 1986, Ser. No. 941,206
Int. Cl.[4] B67B *7/02*
U.S. Cl. 81—3.29 4 Claims



1. A champagne bottle cork puller and inserting apparatus comprising:

engaging means for engaging a champagne bottle cork, said engaging means including a semicircular shell defining a first opening adapted to engage the head of said cork, said shell also including a ridge defining a second opening adapted to engage the stem portion of said cork, and pin means, attached to said engaging means and adapted to slide along a body means, for maintaining said first and second openings exposed;

means, concentrically positioned and attached to said engaging means, for raising and lowering said engaging means; and

body means for engaging said bottle and said raising and lowering means, said body means including a single part body including a groove which is adapted to securely fit around a champagne spout rim.

4,798,107

NAIL HOLDING ATTACHMENT FOR A HAMMER

Thomas Furey, 218 Middlesex Ave., Voorhees, N.J. 08043

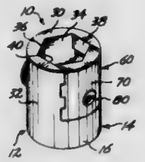
Filed May 8, 1987, Ser. No. 47,266
Int. Cl.[4] B25C *1/00*
U.S. Cl. 81—23 7 Claims



1. A nail holding attachment for a hammer having an elongate handle and a transverse head, said attachment comprising a closed loop of stretchable elastic fabric engageable about a

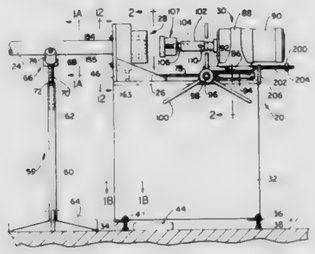
hammer handle coaxially with the handle, a strap having one end connected to said loop for extension therefrom over the hammer head, fastener means connecting the other strap end to said loop, and at least one nail head receiver on said strap for hoding a nail to be started.

4,798,108
ADJUSTABLE SOCKET-FORMING DEVICE
Dennis W. Wilson, Sumner, Wash., assignor to Designs Unlimited, Inc., Federal Way, Wash.
Filed Apr. 30, 1984, Ser. No. 605,467
Int. Cl.[4] B25B *13/16*
U.S. Cl. 81—170 5 Claims



1. An adjustable socket-forming device, comprising:
a body comprising a base adapted for connection to a source of rotary motion and a fixed gripping member having the approximate form of a hollow cylinder having a portion of one side removed, the interior surface of the hollow cylinder being shaped so as to define a first pair of faces and a pair of mutually parallel side faces disposed on opposite sides of the first pair of faces;
a movable gripping member shaped so as to define a second pair of faces, the movable gripping member being slidably mounted between the side faces for movement along a first direction towards and away from the first pair of faces, the side faces and the movable gripping member including means for mounting the movable gripping member between the side faces for sliding movement along the first direction; and
means for securing the movable gripping member at a selected position with respect to the body, to thereby form a socket of a selected size between the groups of faces.

4,798,109
MACHINE FOR FORMING A CHAMFERED EDGE ON A WORKPIECE
Joseph F. Berns, 1171 Georgia Lane, Cincinnati, Ohio 45215
Filed Sep. 23, 1987, Ser. No. 100,013
Int. Cl.[4] B23B *3/00*
U.S. Cl. 82—2 R 4 Claims



1. A machine for forming a chamfer on an end portion of a workpiece which comprises a table, a chuck having an axis and mounted on the table for holding a selected portion of the workpiece in symmetrical relation to said axis with an end portion of the workpiece supported in position for chamfering, track means mounted on the table and extending parallel to the axis of the chuck, a carriage running on the track means, a motor carried by the carriage, a cutter head driven by the motor, cutter blade means mounted on the cutter head, the axis of the cutter head being aligned with the axis of the chuck, a first guide ring on the chuck, a second guide ring on the cutter head, the first and second guide rings being engageable for maintaining axes of the cutter head and the chuck in alignment as the carriage moves, and means for moving the carriage, the motor and the cutter head toward the chuck whereby the cutter blade means forms a chamfer on the workpiece having an axis coincident with the aligned axes of the cutter head and the chuck.

4,798,110
METHOD FOR POSITIONING TOOLS
Masatoru Tokuno, Hyogo; Tetsuya Sawata, Kyoto, and Yasuharu Mori, Hyogo, all of Japan, assignors to Rengo Co., Ltd., Osaka, Japan
Filed Nov. 4, 1981, Ser. No. 318,042
Claims priority, application Japan, Nov. 13, 1980, 55-160317; Feb. 24, 1981, 56-27377; Sep. 1, 1981, 56-138095
Int. Cl.[4] B26D *7/26*; G05B *19/28*; B23D *19/06*
U.S. Cl. 83—13 11 Claims



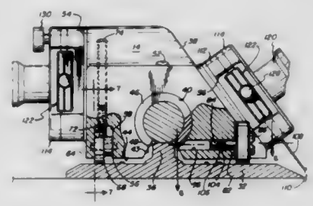
1. A method for positioning tools selectively in apparatus having a plurality of movable tools, a stand-by reach for storing the tools, a positioning reach in which the tools are selectively and operatively positioned and an origin located between said stand-by and positioning reaches, in which method the tools are aligned in the stand-by reach in a row extending from the origin and then a selected number of the aligned tools are advanced into the positioning reach and positioned at selectively spaced locations therein, characterized by the steps of
(a) successively moving to the origin the aligned tool in the stand-by reach disposed nearest to the origin,
(b) temporarily stopping the tool so moved at the origin,
(c) then moving the tool which had been moved to and stopped at the origin into the positioning reach by a selected distance,
(d) said selected distance being equal to a desired distance between the tool so moved from the origin and the next successive aligned tool in the stand-by reach, and
(e) as each successive tool from the stand-by reach is moved from the origin into the positioning reach by its selected distance, simultaneously advancing tools previously positioned in the positioning reach by a distance equal to said selected distance by which the said successive tool is moved from the origin, whereby all tools in the positioning reach are maintained at selected distances from each other as successive tools are moved into the positioning reach.

4,798,111
SOCKET-WRENCH HAND TOOL
Charles D. Cheeseman, 18 S. Maple St., Greens Fork, Ind. 47345
Filed Aug. 3, 1987, Ser. No. 81,030
Int. Cl.[4] B25B *23/16*
U.S. Cl. 81—124.4 14 Claims



1. A hand tool for applying rotational torque to a work object, comprising, in combination:
a shank member having an inner end and an outer end substantially spaced apart;
a handle member for the shank member;
connection means connecting the handle member and the shank member adjacent the inner end of the shank member;
a plurality of socket members, each having a hollow bore, adapted to be sleeved onto and carried by the shank member in a series arrangement on the shank member;
the shank member being provided adjacent its outer end with a releasable connector means but devoid of any abutment at or adjacent the shank member's outer end which would prevent passage of the socket members onto and along the shank member, the shank member thus permitting all of the socket members to be manually pushed onto the shank member and into said series arrangement sleeved thereupon by entrance onto the shank member's outer end and relatively moved along the shank member toward the shank member's inner end, and with all of the socket members except the outermost one, which is the one to be used for torque-application effect, having been ensleevedly moved along said shank member and past the shank member's releasable connector means;
the shank member being provided with an outwardly-facing abutment means blocking movement of a socket member inwardly thereof, and defining a specific distance between the shank member's releasable connector means and the shank member's abutment means;
the length of the said socket members being operatively uniform, and such that the total length of all the socket members, minus one-half of a length of one of the socket members, is generally equal to the said specific distance between the shank member's releasable connector means and shank member's abutment means;
each of the socket members being provided with a releasable connector means "located centrally within the socket member" and co-operative with the shank member's releasable connector means to releasably retain the outermost one of the socket members from freely moving outwardly of the shank member "forming a releasable connection therebetween";
rotation-blocking means operable between the outer end of the shank member and the outermost socket member to provide that as the user applies rotational torque to the handle member, the torque, as will be then transmitted to the shank member by the connection means which connect the handle member to the shank member, will be transmitted to the outermost socket member;
the shank member's abutment means providing a means for the transmission of axial force through all of the socket members carried on the shank member, by its engagement with the innermost one of the socket members, all the socket members thus being active in such force transmission;
and said releasable connection formed between the shank member's releasable connector means and the outermost socket member's releasable connector means being too weak to retain the outermost socket member from being forced inwardly toward the handle member by the reaction by the work object against the axial force applied to the shank member by the user in using the tool, that retention being wholly by force transmission operative from the said abutment means and through the socket members including and inwardly of the outermost socket member as are carried on the shank member.

4,798,112
HEAD ASSEMBLY FOR MAT CUTTING MACHINE
Vincent T. Kozyraki, Plainville, and Alan R. Peters, Milford, both of Conn., assignors to The Fletcher-Terry Company, Farmington, Conn.
Continuation-in-part of Ser. No. 13,578, Feb. 11, 1987. This application Nov. 20, 1987, Ser. No. 123,397
Int. Cl.[4] B26D *7/26*
U.S. Cl. 83—455 19 Claims

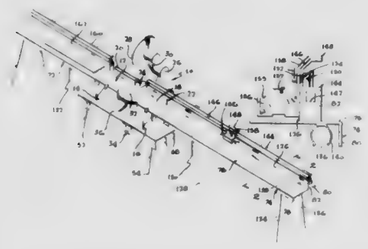


1. A head assembly for a mat cutting machine, comprising: a body having a bottom surface with at least one planar area thereon, a rectilinear channel extending from end-to-end through said body and opening on said bottom surface along the entire length thereof, a first surface portion along one side of said body disposed at an acute angle to said planar area and extending substantially parallel to the axis of said channel; a first wheel subassembly including a first wheel, and first means for mounting said first wheel on said body for rotation about an axis perpendicular to said channel axis, with at least a rim portion of said first wheel extending beyond said bottom surface at a location adjacent said one side of said body, said first mounting means including an axle member mounted for pivoting on an axis perpendicular to said channel axis, and locking means for securing said axle member in each of a multiplicity of angularly displaced positions pivoted on said axis of pivoting, said axle member having a support portion for supporting said first wheel for rotation about an eccentric axis parallel to said axis of pivoting and offset therefrom, the amount of such first wheel rim portion extension thereby being variable by pivoting of said axle member about said axis of pivoting, both said axle member and also said locking means being disposed on said body so as to permit ready access, for convenient manipulation thereof; and a second wheel subassembly, including a second wheel and second means for mounting said second wheel on said body for rotation about an axis perpendicular to said channel axis, with at least a rim portion of said second wheel extending beyond said bottom surface at a location

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spaced to the opposite side of said channel opening from said one side of said body, said second mounting means being adapted to permit variation of the amount of such second wheel rim portion extension.

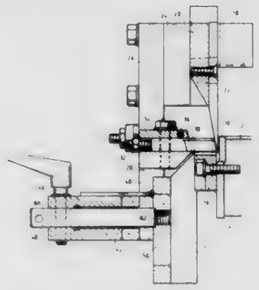
4,798,113
EXTENSION TABLE APPARATUS FOR POWER SAW
John P. Viazanko, 15034 Chase St., Sepulveda, Calif. 91343
Filed Apr. 14, 1986, Ser. No. 851,712
Int. Cl.[4] B27B *5/18*
U.S. Cl. 83—471.3 **35 Claims**



1. An extension table apparatus for a power saw having a table and a fence, comprising:
a base;
power saw mounting means on said base for supporting a power saw thereon;
extension table mounting means on the power saw table and for demountably interengaging with an extensions table, engagement means on the power saw fence;
an extension table demountably mounted on said extension table mounting means for demounting with respect thereto and mounting with respect to said mounting means on both the saw table, a fence on the extension table for detachable engagement with said engagement means of the power saw fence;
wheels on said base for providing transport for said base from one site to another; and
demountable legs on said base for supporting said base above the floor in a position where said wheels are above the floor so that said legs can be demounted so that said base can rest on its wheels.

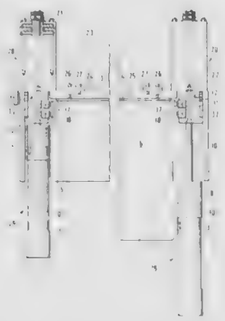
4,798,114
CUTTING UNIT FOR A MEAT SLICING APPARATUS
Juergen Hager, Hueckeswagen; Walter Vieth, Wermelskirchen, and Werner Manderla, Remscheid, all of Fed. Rep. of Germany, assignors to Magurit Gefrierschneider GmbH, Remscheid-Lennep, Fed. Rep. of Germany
Filed May 21, 1987, Ser. No. 52,948
Claims priority, application Fed. Rep. of Germany, May 22, 1936, 8613821[U]
Int. Cl.[4] B26D *1/09*
U.S. Cl. 83—522 **11 Claims**

1. An apparatus for cutting meat into strips comprising:
a substantially horizontal table for supporting a meat block to be cut, said table having an end edge forming a counter cutting edge,
a cutting unit mounted relative to said table so as to be reciprocable along a path extending substantially vertically and including:
a main blade having a cutting edge extending substantially parallel to said counter cutting edge and a plurality of transverse blades having cutting edges extending substantially transverse to said main blade cutting edge and at a side thereof facing away from said table end edge,
said apparatus further comprising a stationary slice support mounted adjacent said table and beneath said transverse blades, said slice support having a plurality of projections extending outwardly away from said table defining a plurality of gaps along said slice support into which said transverse blades extend as said cutting unit reciprocates



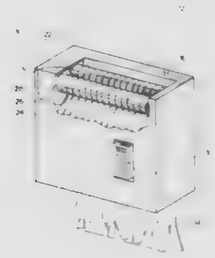
along its vertical path toward and away from its lowermost position, said cutting unit further including a stop assembly having a plurality of stop elements confronting said gaps and displaceable in a substantially horizontal direction so that each stop element engages an allocated gap.

4,798,115
PNEUMATIC DRIVE FOR PUNCHING, CUTTING AND STAMPING DEVICES
Alfred Schmeck, Biedenkopf, Fed. Rep. of Germany, assignor to Kraemer & Grebe GmbH & Co. KG Maschinenfabrik, Biedenkopf-Wallau, Fed. Rep. of Germany
Filed Jun. 5, 1987, Ser. No. 58,469
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1986, 3619811
Int. Cl.[4] B26D *5/12, 5/04*
U.S. Cl. 83—639 **13 Claims**



1. In a pneumatic drive for punching, cutting and stamping devices comprising two tool parts which can be relatively moved toward and away from one another and of which at least one of said tool parts is fixedly connected to a machine frame, the improvement wherein at least one pneumatic cylinder is secured on a movable tool part, wherein a first piston rod is provided in said pneumatic cylinder, wherein a locking means is provided for locking said first piston rod in at least one end position thereof to said pneumatic cylinder, wherein at least one pressure clamping element is provided which has a second piston rod secured to said first piston rod exiting from said pneumatic cylinder, said pressure clamping element consisting of at least two piston cylinder units operatively connected with said second piston rod, said piston cylinder units including a fluid circuit means connecting said piston cylinder units in series so that an additive force is outputted on said second piston rod, whereby when said first piston rod is locked in said one end position, said piston cylinder units can be activated by supplying fluid to said fluid circuit means to cause said additive force to be outputted to said second piston rod, thereby causing said first piston rod, which is locked to said pneumatic cylinder, and said movable tool part, which is connected to said pneumatic cylinder, to be moved together toward said fixed tool part.

4,798,116
DOCUMENT SHREDDING MACHINE
Marc L. Silver, 1418 W. Princeton La., Schaumburg, Ill. 60193, and John Pizzolato, 1017 Rene Ct., Park Ridge, Ill. 60068
Continuation-in-part of Ser. No. 93,049, Sep. 4, 1987, abandoned. This application Apr. 22, 1988, Ser. No. 186,769
Int. Cl.[4] B02C *19/12;* **B26D** *1/03*
U.S. Cl. 83—858 **17 Claims**



1. A document shredding machine comprising:
a frame member;
first and second engaging conveyor rollers rotatively mounted to said frame member and having a plurality of paired transverse slits defined therein;
means for driving said rollers; and
cutting means fixed to said frame member and protruding through said slits in said rollers and arranged to present a cutting edge proximate the point of engagement of said rollers, whereby documents are conveyed by said rollers past said cutting means to cause shredding.

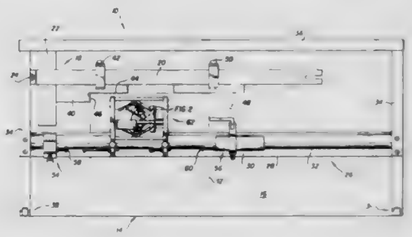
4,798,117
METHOD OF PRODUCING BRICK-LIKE FACING ELEMENTS
Jan U. Aronsson, Vaxjo, Sweden, assignor to Hegri, B.V., Arnhem, Netherlands
Continuation of Ser. No. 741,700, Jun. 6, 1985, abandoned. This application Nov. 5, 1987, Ser. No. 117,471
Claims priority, application Sweden, Jun. 6, 1984, 8403035
Int. Cl.[4] B27F *1/18*
U.S. Cl. 83—870 **2 Claims**

1. A method of producing facing elements comprising the steps of providing a piece of particle board the length and width dimensions of which correspond with the same of a brick having generally parallel sides, locating said piece of particle board between two cutting tools, moving one of said cutting tools towards the other cutting tool to split the particle



board along a plane parallel to its sides into two facing elements having rough brick-like surface.

4,798,118
APPARATUS FOR CUTTING V-GROOVES IN MATS
Charles H. Carithers, Jr., 5752 A Gallant Dr., Jackson, Miss. 39239
Filed Feb. 26, 1988, Ser. No. 161,042
Int. Cl.[4] B26D *3/06;* **B27M** *1/00*
U.S. Cl. 83—875 **25 Claims**



1. An apparatus for cutting V-grooves in a mat board or the like comprising:
a flat base;
a positioning means for positioning the mat board on said base;
a cutting unit, said cutting unit including
(a) a frame,
(b) a pair of cutting blade holders, each said blade holder having a cutting blade positioned therein with an exposed tip, and
(c) a holder moving means attached to said frame for moving said blade holders between lowered position relative to said frame where said tips are adjacent one another while planes of said blade intersect at the tips to form a V-pattern and a raised position relative to said frame;
a guide mounted to said base adjacent said positioning means; and
a frame mounting means for mounting said frame of said cutting unit for precise movement along said guide whereby a V-groove is precisely cut in the mat board positioned by said positioning means when said cutting unit is moved along said guide and said holder moving means is moved to the lowered position where said tips engage the mat board.

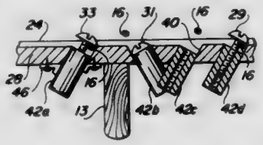
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4,798,119

FIXED FINGERING DEVICE FOR FRETTED STRINGED MUSICAL INSTRUMENT

Eric S. Leifheit, 7541 E. 34th St., Tucson, Ariz. 85710

Filed Oct. 27, 1987, Ser. No. 113,053
Int. Cl.[4] G10D *3/14*
U.S. Cl. 84—314 R 7 Claims



1. On a fretted stringed musical instrument having a vibrational length of string stretched between two points overlying a plurality of frets on the instrument fretboard surface, a positioner mechanically fingering the string to selectively vary the string vibrational pitch comprising:

means to secure the string at a selected position to selectively vary the vibrational length of the string, said means including an insert fixedly attached to the fretboard of the stringed instrument proximate the string, said insert having a central threaded opening therethrough, said threaded opening angled at an angle less the 90-degrees with respect to said fretboard; and

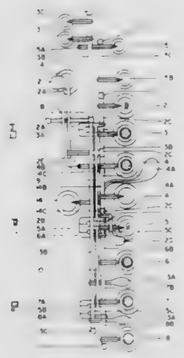
a machine screw threadably received by said insert threaded opening, said machine screw having a head with an underside, said machine screw adapted to secure the string in a locked downward "V" catch to hold the string against the fretboard whereby the pitch of the string, when vibrating, may be selectively changed from the pitch it vibrates at between the two points.

4,798,120

BÖHM MECHANICAL SYSTEM FOR A WOODWIND

Lathier J. Brögger, Stoltenbergagade 1, 1576 Copenhagen, Denmark

Filed Aug. 18, 1986, Ser. No. 897,215
Claims priority, application Denmark, Jan. 6, 1986, 36/86
Int. Cl.[4] G10D *9/04*
U.S. Cl. 84—380 R 1 Claim



1. In a Böhm-system for a woodwind instrument having rotating fixed keys movable in a rocking motion on the instrument body the improvement comprising,

a fixed nonrotating main axle mounted on the instrument body,

said keys being rotatably mounted upon said fixed nonrotating main axle,

first and second coupling rods parallel to said main axle interconnecting some of the keys for transferring rocking movement from one key to another,

tubular charniers rotatably mounting said keys upon said main axle,

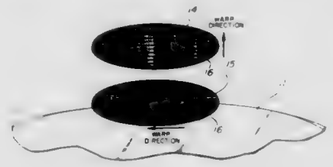
and a plurality of like loop clutches fitted to said tubular charniers for transferring rocking motions to said keys mounted on said main axle from other keys mounted on said instrument body.

4,798,121

IMPACT RESISTANT DRUMHEAD

David G. Donohoe, Springville, Calif., assignor to Aquarian Accessories Corporation, Anaheim, Calif.

Filed May 27, 1987, Ser. No. 54,840
Int. Cl.[4] G10D *13/02*
U.S. Cl. 84—414 27 Claims



1. A head for drums and related percussion instruments comprising:

(a) a circular base sheet,

(b) a first, lower overlay sheet of woven synthetic plastic material, said overlay sheet having a circular shape of substantially smaller diameter than said base sheet and adhered to the upper impact surface of said base sheet at the geometric center thereof, and

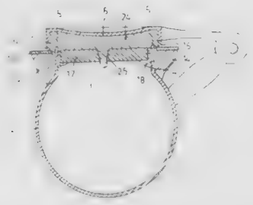
(c) a second, upper overlay sheet of woven synthetic plastic material, said upper overlay adhered concentrically within the perimeter of said lower overlay sheet in a cross-laminated relationship to said lower overlay sheet, with the woof directions of said first and second overlay sheets oriented at an angle with respect to one another.

4,798,122

WIND INSTRUMENT AND PROCESS OF MAKING SAME

Barbara Gisler, Mauerbach, and Werner Tomasi, Vienna, both of Austria, assignors to Walter Wretschitsch, Vienna, Austria, a part interest

Filed Oct. 3, 1986, Ser. No. 893,547
Claims priority, application Austria, Dec. 4, 1984, 3850/84; Dec. 4, 1984, 3849/84
Int. Cl.[4] B29C *43/18;* G10D *9/04*
U.S. Cl. 84—385 P 27 Claims



9. A process for the manufacture of a wind instrument that

has at least one pitch-determining hole and a key for selectively closing the hole, comprising:

(a) inserting a disk into the key, the disk being provided on its front with a flexible covering and having a space therebetween;

(b) placing a plastic compound into the space between the disk and the flexible covering before or after the insertion of the disk into the key, the plastic compound being capable of solidifying to form a nonrigid elastic plastic;

(c) applying the key to the hole to close the hole;

(d) allowing the plastic compound to solidify, whereby the elastic plastic forms a seal inlay within the key which is applied against the rim of the hole when the key is in the closed position.

20. A wind instrument comprising:

(a) at least one pitch-determining hole;

(b) a key for selectively closing the hole; and

(c) a seal inlay provided within the key for contacting the rim of the hole when the key closes the hole,

wherein the inlay comprises a disk provided with a flexible covering and a pad layer made of plastic that is hardened in situ between the flexible covering and the disk, and

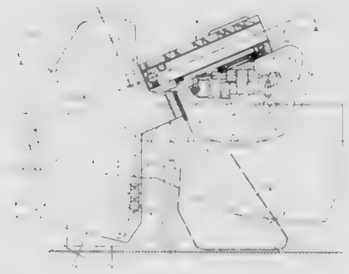
wherein the flexible covering is attached to the disk on at least one of its front rim, its circumferential face, and on its side facing away from the pad layer.

4,798,123

MAGAZINES

Rune Svanström, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Apr. 10, 1987, Ser. No. 37,304
Claims priority, application Sweden, Apr. 10, 1986, 8601605
Int. Cl.[4] F41D *10/22*
U.S. Cl. 89—34 9 Claims



1. In a rapid-fire automatic gun a magazine apparatus comprising:

a first magazine for a substantially small number of rounds;

a second magazine for a substantially large number of rounds;

a first round advancement means for advancing said rounds in said first magazine, said first means being controlled by the automatic gun such that the round advancement speed in said first magazine is dependent upon rate of fire of the automatic gun;

a second round advancement means for advancing rounds in said second magazine;

a driving means for driving said second round advancement means at a maximum speed smaller than the maximum round advancement speed in said first magazine;

a transfer means for transferring rounds from said second magazine to said first magazine, said transfer means being adapted to provide formation of a gap in the row of rounds being advanced in said first magazine when a difference occurs in the advancement speeds in said first and second magazines, said transfer means including a packing member having a plurality of inclined surfaces for cooperation with respective rounds,

a round grasping means located adjacent the breech of the automatic gun for grasping each respective round from a predetermined advancement position and transferring said round to a ramming bay; and

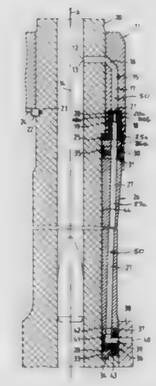
a disabling means for disabling said round grasping means during advancement of said gap in the row of round in said first magazine.

4,798,124

GAS REMOVAL APPARATUS FOR AN AUTOMATIC FIRING WEAPON CONTROLLED BY THE GAS PRESSURE

Ernst Hürlemann, Zurich, and Hans Hilfeli, Döttingen, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Mar. 16, 1987, Ser. No. 26,304
Claims priority, application Switzerland, Mar. 20, 1986, 01 121/86-9
Int. Cl.[4] F41D *5/04*
U.S. Cl. 89—193 17 Claims



1. A gas removal apparatus for an automatic firing weapon controlled by gas pressure, comprising:

a weapon barrel having an outer surface and a lengthwise axis;

said weapon barrel being provided with a gas removal location;

a weapon housing;

said weapon barrel being replaceably secured in said weapon housing;

a gas receiving channel provided in said weapon housing;

said gas removal location provided for said weapon barrel being positioned, as viewed in the direction of the lengthwise axis of the weapon barrel, at a distance upstream of said gas receiving channel in said weapon housing with respect to a predeterminate direction of gas flow between the gas removal location and the gas receiving channel;

an outwardly-open groove provided at said outer surface of said weapon barrel and extending in the longitudinal direction of said weapon barrel between said gas removal location and said gas receiving channel;

a gas rail having oppositely situated ends and arranged in said outwardly-open groove;

said gas rail being held at said oppositely situated ends in said outwardly-open groove;

a shrunk-fitted ring provided for said weapon barrel;

said gas rail and said shrunk-fitted ring conjointly defining a gas removal channel structure flow communicating said

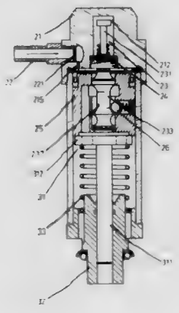
gas receiving channel in said weapon housing and said gas removal location in said weapon barrel;
a gas throughflow element inserted into said gas removal channel structure;
said gas throughflow element being located in said gas removal channel structure in a transition region between said shrunk-fitted ring and said gas rail; and
a gas deflection insert postioned in said gas rail between said gas receiving channel and said gas rail.

4,798,125

PNEUMATIC TYPE OF HYDRAULIC STRUCTURE

Fung M. Chang, No. 11, Lane 58, Tz Li Rd., Chung Ho; Chien C. Hsu, No. 18, Lane 89, Tung Hsin St. Nanking District, Taipei, and Wen C. Chen, No. 4, Alley 29, Lane 147, Chung Hsiao Rd., La Chou Village, all of Taiwan

Filed Nov. 3, 1987, Ser. No. 116,206
Int. Cl.[4] F15B *31/02*
U.S. Cl. 91—49 **1 Claim**



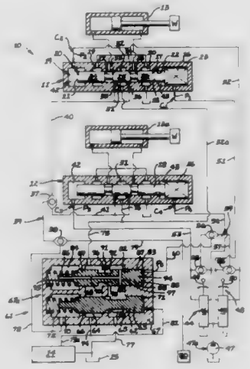
1. A pneumatically actuated hydraulic system comprising:
a hollow elongated body column member having threads formed on opposing ends thereof;
pneumatic means for actuating said hydraulic system, said pneumatic means including a lid body member having a first open end where said threads are engaged and a second closed end, said second closed end having a chamber formed therein, a position screw positionally located within an opening of said chamber, an inlet screw hole formed through a sidewall of said chamber having an air inlet passage hole positioned at a lower end of said air inlet screw hole;
a working lever member including a front end portion having a predetermined diameter and a rear end portion having an outer diameter greater than said front end portion diameter, said front end portion defining a convex edge located at one end of said front end portion and further including a front convex edge, a rear convex edge and a middle convex edge located respectively at a front, rear and central position near a rear section of said rear end portion, and including an air inlet engagement member located between said front convex edge and said middle convex edge of said rear edge, an air exhaust engagement member located between said middle convex edge and said rear convex edge, said position screw member positioned between said front convex edge of said front end portion of said working lever and said front convex edge of said rear end portion enabling said front end portion of said working lever to reciprocally move on said position screw, said position screw being secured onto said lid body member, a spring member is housed on a frontal end of said position screw of said front end portion;
a working body having a hollow chamber within which is located said working lever, said hollow chamber having an interior convex edge located at an extreme end of said hollow chamber to serve as a termination point for said working lever, an air exhaust ring groove located within said hollow chamber having a plurality of air exhaust holes fluidly connected with said ring groove, and placement holes formed within a lateral sidewall of said working body for placement of steel ball members;
an air inlet joint secured within said inlet screw hole serving as an inlet of air including a filtering net member mounted therein for filtering air;
hydraulic means for providing displacement of said hydraulic system, said hydraulic means including an hydraulic lever defining a lever composed of a lever portion and a pressing plate member located at a front end of said lever portion, passage holes located on said pressing plate member for exhausting air and contiguously interfacing with said working body of said pneumatic means;
a hollow housing body within which is contained said lever portion of said hydraulic lever, said hollow housing body having a convex edge located substantially near the central portion of said housing body, a spring location member secured at a frontal section of said convex edge and a joining thread located at an outer edge which may be threadedly secured with said threads of said main body member and further including a plurality of air release holes formed beneath said convex edge on said inverted groove of said location portion; and,
a working spring member located within said lever portion of said hydraulic lever having an upper section pressed against a lower portion of said pressing plate of said hydraulic lever and an opposing end located within said housing body.

4,798,126

LOAD RESPONSIVE SYSTEM USING LOAD RESPONSIVE PUMP CONTROL OF A BYPASS TYPE

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 23, 1987, Ser. No. 29,001
Int. Cl.[4] F15B *13/02*
U.S. Cl. 91—518 **18 Claims**



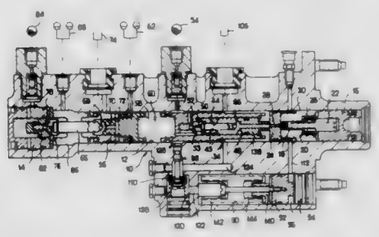
1. A fluid power load responsive system comprising an actuator, a system pump, reservoir means and at least one direction and flow control valve means, said direction and flow control valve means having a variable inflow metering orifice means operably connected to said actuator, spring biasing means operable to bias said inflow metering orifice means towards a closed position and first actuating means having first force generating means responsive to a control signal and operable to vary the flow area of said inflow metering orifice means above a certain first predetermined energy level of said control signal, bypass throttling means operable to maintain a relatively constant control pressure differential between the discharge pressure of said system pump and pressure downstream of said inflow metering orifice means above said first predetermined energy level of said control signal, and deactivating means of said bypass throttling means having second force generating means responsive to said control signal and operable to deactivate said bypass throttling means below a certain second predetermined energy level of said control signal, said first predetermined energy level of said control signal being higher than said second predetermined energy level whereby discharge pressure of said system pump can be maintained below the level of said relatively constant pressure differential when said control signal drops below said second predetermined energy level.

4,798,127

TANDEM BRAKE PRESSURE CONTROL VALVE WITH PRESSURE-FAILURE-COMPENSATING PARALLEL PISTON

Roland Levrai, Stains; Pascal Picot, Bonnevil sur Marne, and Christian Riquart, Paris, all of France, assignors to Bendix France, Drancy, France

Filed May 26, 1987, Ser. No. 54,453
Claims priority, application France, May 28, 1986, 86 07619
Int. Cl.[4] B60T *13/14, 15/02;* F15B *17/02*
U.S. Cl. 91—530 **7 Claims**



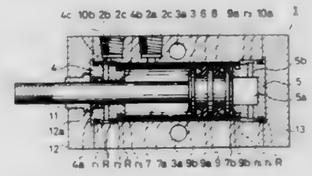
1. A hydraulic assistance device, comprising a body having a first bore in which first and second piston means are mounted slidably, the first piston means displaceable under the effect of the actuation of a third piston mounted slidably in the bore, the second piston means displaceable by means of a hydrostatic connection formed in a working chamber defined between the first and second piston means, there being associated with the first and second piston means respective piston valve means in respective hydraulic circuits between a fluid source under pressure and a respective brake circuit, a first chamber defined in the bore between the first piston means and third piston and connected to a tank of fluid under low pressure through valve means which closes after a predetermined displacement of said third piston, a second bore in which a fourth piston is mounted slidably in order to define together with a closed first end of said second bore a second chamber in hydraulic communication with said first chamber, a second end of said second bore being in hydraulic communication with the low pressure tank through second valve means controlled by fluid pressure of the fluid source under pressure, said fourth piston being displaceable by the fluid pressure in the first chamber, and the fourth piston biased by first spring means.

4,798,128

DOUBLE ACTING CYLINDER UNIT

Tatsumi Mita, Higashiyamato, Japan, assignor to Koganei Ltd., Japan

Filed Jul. 14, 1987, Ser. No. 72,860
Claims priority, application Japan, Jul. 16, 1986, 61-108904[U]
Int. Cl.[4] F01B *29/04*
U.S. Cl. 92—59 **4 Claims**



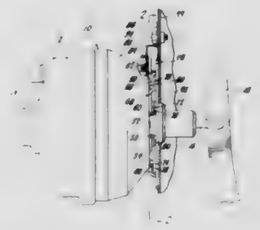
1. A double acting cylinder unit having a front end and a rear end, comprising:
concentric inner and outer cylinder tubes forming there between a fluid path;
a piston positioned in the bore of said inner cylinder tube partitioning said inner cylinder tube into first and second spaces;
a pair of feed-exhaust ports located near one end of said outer cylinder tube;
a first pair of communication passages for communicating one of said feed-exhaust ports with said first space and the other of said ports with said second space when said outer cylinder tube is oriented with said feed-exhaust ports proximal the front end of said unit; and
a second pair of communication passages for communicating the other of said feed-exhaust ports with said first space and said one port with said second space when said outer cylinder tube is oriented with said feed-exhaust ports proximal the rear end of said unit.

4,798,129

CAM AND LOCK VACUUM BOOSTER MOUNT WITH INVERSE ARC SECURING TAB ARM

Vincent M. Staab, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 9, 1987, Ser. No. 1,697
Int. Cl.[4] F01B *11/02, 29/00;* B25G *3/16*
U.S. Cl. 92—128 **2 Claims**



1. In an arrangement for rotatably mounting and dismounting a brake booster about the brake booster axis to and from a fixed panel, mechanism selectively securing the brake booster in its mounted position against rotation about its axis relative to the fixed panel, said mechanism comprising:
a bracket secured to the brake booster and providing a part of the brake booster mounting and dismounting arrangement, said bracket having an annular main body provided

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with rotatable camming means thereon which are adapted to cooperate with mating camming means on the fixed panel to mount the brake booster, said bracket further having an arm extending therefrom so as to have its outer end positioned radially outward of said bracket annular main body but terminating short of the maximum radius of the brake booster so as to be at least partially protected thereby during handling;

said bracket arm outer end being formed with a reverse arc flange bent from said arm so as to extend toward the brake booster, the center of the arc radius of said flange being positioned outwardly of said arm to provide the reverse arc;

and a plate-like tab having an arcuate slot formed in one end complementary with said reverse arc flange and receiving said flange therethrough, said tab slot having the center of its arc radius located at an intermediate part of said plate-like tab and, when said flange is extending therethrough, being coincident with the center of the arc radius of said flange, said plate-like tab further having an opening formed in its other end;

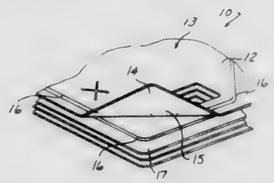
and means extending through said tab other end opening, said means securing said tab to the fixed panel against movements relative thereto, the reverse arcs of said tab slot and said bracket arm flange preventing rotational movement of said bracket and the brake booster in either arcuate direction relative to the fixed panel about the rotational mounting and dismounting axis of the brake booster.

4,798,130

DOOR WATER DEFLECTOR AND VENT

Alfred R. Dixon, 4023 Far Hill, Bloomfield Hills, Mich. 48013

Filed Dec. 3, 1987, Ser. No. 128,062
Int. Cl.[4] B60H *1/26*
U.S. Cl. 98—2.18 **15 Claims**



1. An automobile body panel liner useful for maintaining a water and air barrier between the interior and exterior of said automobile body panel in an automobile body, said liner comprising:

(a) a waterproof liner sheet formed to the dimensions of a particular automobile body panel and having first and second faces, said first face of said liner being for engagement with said automobile body panel and having a surface characteristic which ensures adhesion of an adhesive, and said second face being for facing the interior of said automobile body and having a surface characteristic which ensures release of any adhesive contacting said surface; and

(b) an adhesive bead applied to said first face for mounting said liner sheet to said automobile body panel,

wherein a plurality of such liners may be pre-glued and stacked, one upon another, said adhesive adhering to said first face and said second face serving as a release surface to facilitate simple pick-up and press-in-place installation of the liner onto said body panel.

8. The apparatus of claim 1 further comprising:

(a) means forming at least one aperture disposed on the liner sheet for allowing the passage of air therethrough, and positioned on said sheet so as to coincide with similar, but slightly larger, body apertures formed in said automobile body panel;

(b) a Mylar sheet flap for covering each of said apertures and configured to be slightly larger than each of said apertures, said Mylar sheet having memory characteristics which cause it to return to its original position following non-deformable bending; and

(c) attaching means at the top edge of each Mylar flap for fixedly attaching said flap to said first face of said sheet so as to cover each air passage aperture,

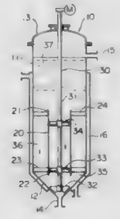
wherein said Mylar flap is operable in a hinge-like manner to move from a first closed position where said Mylar flap is closed over said air passage aperture to a second open position where said flap allows air passage through said air passage aperture, in only one direction, when air pressure is increased within said automobile body, and wherein said Mylar flap is returnable to its original flat position over said air passage apertures to prevent air passage in a second direction.

4,798,131

METHOD AND APPARATUS FOR TARTARS SEPARATION

Naotake Ohta, Takarzuka; Masahiro Yotsumoto, Ibaraki; Haruo Nishino, Takatsuki; Hiroshi Tanahashi, Osaka; Hajime Kato, Toyonaka; Toshiaki Tazawa, Ibaraki; Hideo Noda, and Yuzuru Wakabayashi, both of Amagasaki, all of Japan, assignors to Suntory Limited, Osaka and Kansai Chemical Engineering Co., Ltd., Amagasaki, both of, Japan

Filed Sep. 19, 1986, Ser. No. 909,329
Claims priority, application Japan, Sep. 24, 1985, 60-208914
Int. Cl.[4] C12F *1/00*
U.S. Cl. 99—277.2 **12 Claims**



1. An apparatus for removing tartar from wine or grape juice, said apparatus comprising:

(a) a closed cylindrical crystallizing vessel,

(b) a draft tube open at its bottom and its top and positioned inside said cylindrical crystallizing vessel, said draft tube being centered in the bottom half of said cylindrical crystallizing vessel by supporting members mounted on said cylindrical crystallizing vessel, said draft tube and said cylindrical crystallizing vessel together defining an annular zone therebetween, said draft tube having a height of ¼ to ½ the height of said cylindrical crystallizing vessel, the cross sectional area of said draft tube being smaller than the cross sectional area of the annular zone between said cylindrical crystallizing vessel and said draft tube;

(c) a stirrer disposed within said draft tube, said stirrer being sized, shaped, and positioned to make a downward flow inside said draft tube during use of said apparatus;

(d) a cooling jacket in thermal contact with the exterior of said cylindrical crystallizing vessel,

(e) the section of said cylindrical crystallizing vessel above said draft tube defining a calming section; and

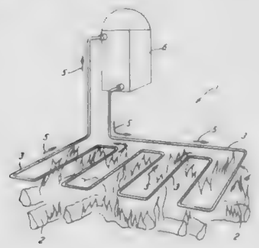
(f) said cylindrical crystallizing vessel having an inlet at the bottom thereof and an outlet at the top thereof so as to overflow liquid in said claming section as fresh liquid is introduced through said inlet.

4,798,132

CONTROLLABLE TEMPERATURE GRID ASSEMBLY FOR FOOD

Hing W. Chan, Tsuen Wan, Hong Kong, assignor to Hing Wah Housewave Manufactory Ltd., Hong Kong

Filed Sep. 17, 1986, Ser. No. 908,294
Claims priority, application United Kingdom, Sep. 19, 1985, 8523173
Int. Cl.[4] A47J *27/026, 37/06, 43/18*
U.S. Cl. 99—331 **8 Claims**



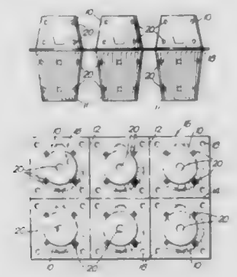
1. A controllable temperature grid assembly on which food can be cooked, including an array of spaced tubular members interconnected to form a generally planar grid on which food is placed for cooking by means of a high-temperature heat source below the grid, said tubular members comprising a single tube having a rectangular serpentine configuration and having hollow interiors interconnected to form a circulation flow path for a heat exchange medium, and heat exchange means in fluid flow communication with said hollow interiors for extracting heat from said medium, so that in operation when food is cooked on said grid, heat is extracted from the tubular members by said heat exchange medium flow, to cool said members and thereby reduce the tendency of food to stick to said members during cooking, the extracted heat being removed from the heat exchange medium during flow through the heat exchange means, and the cooled heat exchange medium recirculated through the hollow interiors of said tubular means.

4,798,133

PACKAGE AND CONTAINER FOR EGGS

William N. H. Johnson, 2, Mulberry Clove, Hampstead, London NW 3, United Kingdom

Continuation-in-part of Ser. No. 739,321, May 30, 1985, abandoned. This application Jan. 13, 1986, Ser. No. 874,126
Claims priority, application United Kingdom, Oct. 16, 1985, 8525498
Int. Cl.[4] B65D *85/32*
U.S. Cl. 99—440 **4 Claims**



1. A package for eggs, comprising:

a plurality of containers detachably connected to one another, each of the plurality of containers being comprised of an upper portion and a lower portion,

wherein the upper portion and the lower portion each have:

(a) the form of a cup configured to define a chamber therein suitable for holding an egg when the upper portion and the lower portion are engaged with one another,

(b) a rim part comprised of a planar flange and means for retaining the planar flange of the upper portion engaged with the planar flange of the lower portion,

(c) at least one perforation defined therethrough to permit ingress and egress of water when the package is immersed in water to boil eggs contained therein, and

(d) a composition which is capable of withstanding the temperature of boiling water without losing structural integrity, which composition is comprised of a plastic material, and

wherein each lower portion has a side wall, which side wall has one of vertically extending flutes and vertically extending corrugations configured to grip an egg positioned therein and effective to provide thermal insulation between the egg and a person supporting the lower portion by hand from outside, and

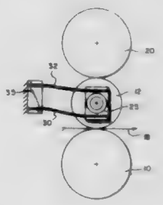
wherein the detachable connection of the plurality of containers is achieved by providing between adjacent containers one of lines of weakening and lines of perforations whereby each of the plurality of containers may be detached so that the lower portion thereof may function as an egg cup.

4,798,134

PRESSURE COMPENSATED SINGLE NIP THREE-ROLL PRESS

Jack Beery; Erik K. Nelson, both of Centerville, Ohio, and John J. Shelton, Tuttle, Okla., assignors to The Mead Corporation, Dayton, Ohio

Filed Sep. 11, 1987, Ser. No. 95,372
Int. Cl.[4] B30B *3/02*
U.S. Cl. 100—171 **8 Claims**



1. In a three-roll press calender useful for the pressure fixing of toner images and the pressure development of microencapsulated latent images on web material in which one of a pair of parallel cylindrical pressing rolls, forming a pressing nip therebetween is loaded by a pressure roll by the application of a uniformly distributed force so as to urge said one pressing roll into engagement with the other said pressing roll along said nip under load and causing said pressing rolls to bend along common deflection curves and in which said pressing rolls are wider than said web material, wherein the improvement comprises:

means for matching the deflection curve of said one pressing roll to that of the other pressing roll at the edges of such web therebetween,

said means including means applying a constant biasing force to said one pressing roll urging the ends thereof toward said pressure roll by an amount proportional to the internal moment at locations corresponding to the edges of said web on said other pressing roll.

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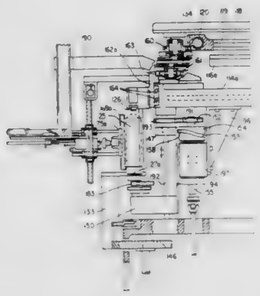
PROCESS AND A MACHINE FOR PRINTING ON ARTICLES BY SILK SCREENING

Steven A. Meredith, West Newbury, Mass., assignor to Imtran of Canada, Brampton, Canada

Division of Ser. No. 842,843, Mar. 19, 1986, Pat. No. 4,750,419. This application Apr. 20, 1988, Ser. No. 183,881

Int. Cl.[4] B41F *17/22*

U.S. Cl. 101—40 **18 Claims**



1. A machine for printing articles by silk screening at at least one print station, comprising:

a circular track;

means for moving articles to be printed and at least part of which are cylindrical continuously along said track about a track axis with the articles positioned with the surface to be printed perpendicular to the plane of movement along said track;

means for mounting a squeegee substantially linearly along the cylindrical part of the article parallel with the cylindrical axis of the article and for moving said squeegee about said track axis in the same direction as the article that is to be printed;

means for rotating the article around the cylindrical axis thereof;

means for mounting a silk screen stencil with the stencil between the squeegee and the article and in line contact with the cylindrical part of the article parallel to the cylindrical axis thereof for permitting the article and the squeegee to move along said stencil in the direction of the longitudinal dimension of the image pattern of the silk screen stencil for printing the image pattern on the cylindrical part of the article; and

means for moving said silk screen stencil for pivoting said silk screen stencil for maintaining the line of contact of the silk screen stencil with the article being printed upon on a radius of said circular track through the article being printed upon during movment of the article along said circular track during the printing process.

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COLOR PRINTING METHOD AND ARRANGEMENT

Udo Tittgemeyer, and Thomas Litterst, both of Arnsberg, Fed. Rep. of Germany, assignors to Interprint Rotationsdruk GmbH & Co. KG, Arnsberg, Fed. Rep. of Germany

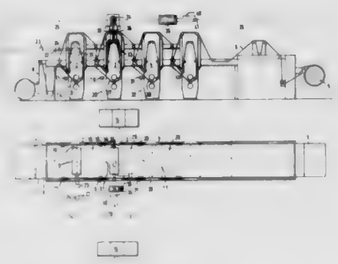
Continuation-in-part of Ser. No. 485,633, Apr. 18, 1983. This application Nov. 5, 1986, Ser. No. 927,885

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 3214001

Int. Cl.[4] B41F *5/06, 23/00, 13/02*

U.S. Cl. 101—181 **25 Claims**

1. A printing method, comprising the steps of conveying an image carrier along a predetermined path which extends through a first printing station, and a second printing station located downstream of said first station, said carrier having a pair of edges which are spaced transversely of said path; measuring the width of said carrier upstream of said first station by sensing both edges; imprinting a predetermined region of said carrier in said first station; remeasuring the width of said carrier between said first and second stations by sensing both edges; comparing the widths obtained during the measuring



and remeasuring steps; adjusting said carrier when the widths obtained from the measuring and remeasuring steps differ significantly from one another, comprising substantially equalizing the widths obtained during the measuring and remeasuring steps; and imprinting said region in said second station.

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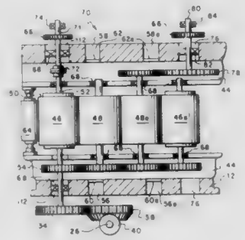
CONVERSION OF LETTERPRESS TO OFFSET PRINTING

Carl J. Hermach, Gulfport, Fla., and Duane H. Hoby, Dallas, Tex., assignors to Publishers Equipment Corporation, Dallas, Tex.

Continuation of Ser. No. 685,226, Dec. 27, 1984, abandoned, which is a continuation of Ser. No. 32,240, Apr. 20, 1979, abandoned. This application Jun. 18, 1986, Ser. No. 876,293

Int. Cl.[4] B41F *5/06, 5/16, 5/22*

U.S. Cl. 101—211 **31 Claims**



1. A method for converting an existing web fed printing press unit operable only in a letterpress mode into a press unit operable in an offset mode, said press unit having a main frame comprising a pair of spaced apart parallel walls defining plural pairs of aligned bores, a pair of first cylinders comprising plate cylinders each rotatably supported in spaced apart relation upon bearings disposed in a pair of said aligned bores and a pair of second cylinders comprising impression cylinders each rotatably supported in spaced relation upon bearings disposed in a pair of said aligned bores, and each disposed for rolling contact with one of said plate cylinders, the steps comprising:

(a) removing from said press unit said pair of second cylinders which are impression cylinders, and substituting a pair of second cylinders which are blanket cylinders;

(b) adding to said press unit a cylinder receiving means for rotatably supporting at least one of said blanket cylinders, said means being positioned such that at least a portion thereof is disposed externally of said bores in said main frame;

(c) supporting said cylinder receiving means upon said main frame;

(d) rotatably supporting said plate and blanket cylinders upon one of said main frame and cylinder receiving means with said blanket cylinders each disposed for rolling contact with the other and with one of said plate cylinders;

(e) including the step of eliminating the rotatable support of the bearings of at least one of said second cylinders from at least one pair of said aligned bores in said main frame and rotatably supporting the bearings of said at least one of said second cylinders on said cylinder receiving means upon such portion thereof as is external to said pairs of aligned bores in said main frame.

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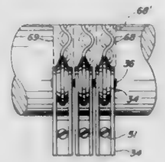
LIQUID DISTRIBUTION SYSTEM

George R. Brodie, 1015 N. Alexander St., Mt. Dora, Fla. 32757

Filed Jan. 12, 1988, Ser. No. 142,994

Int. Cl.[4] B41F *31/12*

U.S. Cl. 101—365 **20 Claims**



1. Liquid distributing apparatus, comprising:

a reservoir containing liquid to be distributed;

a first rotatable roll having an outer surface and a portion immersed in the liquid in said reservoir for picking up a film of the liquid onto said outer surface;

a second rotatable roll having an outer surface and being spaced laterally from and disposed parallel to said first roll;

a plurality of thin roller elements having radially-compressible resilent outer surfaces;

means mounting said roller elements in side-by-side relationship in contact with the outer surfaces of both of said first and second rolls; and

means for individually adjusting the position of each roller element relative to said first and second rolls to selectively set the contact pressure between the outer surface of each roller element and the outer surfaces of said rolls;

whereby ink brought up onto the first roll from said reservoir will be transferred to said second roll by said roller elements in the form of bands of ink, with the width of the bands of ink being determined by the settings of the contact pressures between the roller element outer surfaces and the roll outer surfaces.

4,798,139

SOLENOID-OPERATED DEVICES

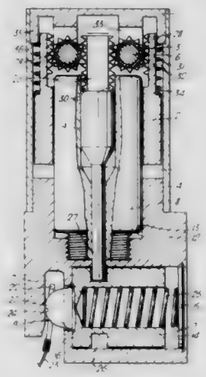
Dennis Griffin, Surrey, England, assignor to Frazer-Nash Limited, Kingston-upon-Thames, England

Filed Nov. 25, 1983, Ser. No. 559,039

Int. Cl.[4] F42C *15/24*

U.S. Cl. 102—216 **25 Claims**

1. A solenoid-operated device subject to inertial forces, comprising a solenoid having an armature mounted for rectilinear movement to and fro in the body of the device between operative and inoperative positions, a counterbalancing mass mounted for rectilinear movements to and fro along the same axis as the armature, and coupling connections between the armature and the counterbalancing mass such that when either



moves the other is driven to move in synchronism but in the opposite direction.

4,798,140

SAFETY FUSE FOR A SPINNING-TYPE PROJECTILE

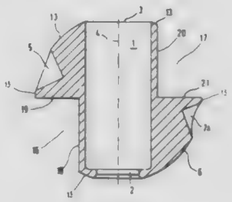
Walter Winterhalter, Teanenbroan, and Andreas Halasig, Denkingen, both of Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Division of Ser. No. 773,400, Sep. 12, 1985, Pat. No. 4,691,635. This application Aug. 31, 1987, Ser. No. 90,975

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1984, 3435402

Int. Cl.[4] F42C *15/26*

U.S. Cl. 102—251 **6 Claims**



1. In a safety mechanism for a fuse of a spinning-type projectile, said safety mechanism being of the type comprising a housing having a spherical cavity therein defined by a spherical surface, a spherical rotor rotatably disposed in said spherical cavity, said spherical rotor having a through-chamber therein carrying a detonator, said through-chamber defining a longitudinal axis and including first and second orifices at opposite longitudinal and second sides separated by a reference plane containing said longitudinal axis, said first and second orifices disposed on said spherical rotor periphery of said spherical rotor in substantially diametrically opposite relationship, said housing including a detonating passage leading to a detonable charge, said spherical rotor including a locking recess engaged by a releasable projection in said housing to lock said spherical rotor in a safety position wherein said first orifice is spaced from said detonating passage in the circumferential direction, said projection disposed diametrically opposite said detonating passage, a first empty cut-out formed in said spherical rotor periphery adjacent said first orifice to

reduce the mass of said spherical rotor, the improvement wherein a second empty cut-out is provided in said spherical rotor periphery adjacent said second orifice to further reduce the mass of said spherical rotor, said first and second cut-outs being arranged and configured such that no portion thereof overlies said detonating passage when said spherical rotor is in said safety position, said first and second cut-outs lying on said first and second sides, respectively, said locking recess disposed between said first cut-out and said second orifice on said first side of said spherical rotor, and a passage-covering portion of said spherical rotor periphery being disposed diametrically opposite said locking recess, said passage-covering portion being positioned between said second cut-out and said first orifice on said second side of said spherical rotor, said passage-covering portion arranged to overlie said detonating passage in said safety position of said rotor, said spherical periphery of said spherical rotor including a first surface area positioned between said passage-covering portion and said first orifice and a second surface area positioned between said passage-covering portion and said second cut-out, said first and second surface areas making surface area contact with said spherical surface of said spherical cavity to block communication between said detonating passage and said first and second orifices when said spherical rotor is in said safety position, said first and second cut-outs being separated from said through-chamber by walls defined by portions of said rotor, each of said first and second cut-outs being formed by a pair of walls extending parallel to said reference plane and the other of said walls extending perpendicular to said reference plane, said other walls lying in a common plane containing a center of said spherical rotor.

4,798,141

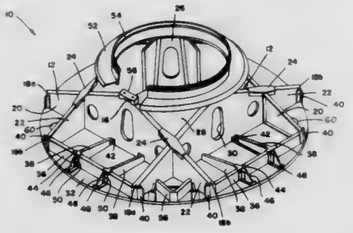
MISSILE EQUIPMENT SECTION STRUCTURE

Daniel Cunha, Felton; Wayne M. Brown, San Jose; James E. Pool, Saratoga, and Thomas M. Sheperd, Cupertino, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 31, 1987, Ser. No. 82,777

Int. Cl.[4] F42B *15/00*

U.S. Cl. 102—293 9 Claims



1. A missile structure for providing structural support for equipments mounted on an upper stage of a multistage missile, said structure being mounted within the circular outer shell of said missile, which comprises:

(a) a circular aft panel, said aft panel having a circumference adapted to abut the circular shell of said missile;

(b) four main stiffening beams, said four main stiffening beams being fixed to the forward side of said aft panel, said four main stiffening beams being disposed to intersect at right angles to form a central square structure with intersecting walls, said intersecting walls extending outward from the central square structure to the missile shell; and

(c) four diagonal stiffening beams, said diagonal beams being fixed to forward side of said aft panel and to said main stiffening beams, said diagonal beams disposed within the central square structure across the corners of said central square structure, said four diagonal beams and said four main beams forming a central octagonal structure.

4,798,142

RAPID BURING PROPELLANT CHARGE FOR AUTOMOBILE AIR BAG INFLATORS, ROCKET MOTORS, AND IGNITERS THEREFOR

J. B. Canterberry, Taft, Tenn., and David A. Flanigan, Ogden, Utah, assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Aug. 18, 1986, Ser. No. 908,763

Int. Cl.[4] C06D *5/06*

U.S. Cl. 102—290 7 Claims



1. A propellant charge comprises a reticulated substrate having a quantity of interconnected ligaments and a coating of solid propellant material on said ligaments, said coating has a thickness such that interstices are between coated ligaments which interstices define propellant surface area for combustion.

4,798,143

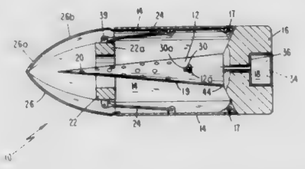
GAS DISPENSING PROJECTILE

Douglas Graham, Box 478, Riyadh, Saudi Arabia

Filed May 6, 1987, Ser. No. 46,921

Int. Cl.[4] F42B *13/32, 13/46*

U.S. Cl. 102—370 28 Claims



28. A projectile, comprising an elongate piercing member and stop means connected to the piercing member for deployment, in response to movement of the piercing member through a material being pierced, from a retracted position wherein the stop means extends generally along a longitudinal axis of the piercing member to an extended position wherein the stop means moves outwardly from the longitudinal axis into a maximum diameter position to arrest and cause abrupt lodgement of the projectile in said material, said stop means being a plurality of panels defining an outer casing establishing the projectile body.

4,798,144

HOLLOW CHARGE SHELL CONSTRUCTED AS DRILL AMMUNITION

Horst Apholt, Hagen, Fed. Rep. of Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Sep. 5, 1986, Ser. No. 904,031

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, 353224112

Int. Cl.[4] F42B *13/20, 13/22*

U.S. Cl. 102—445 16 Claims

1. A wing-stabilized hollow charge shell which is constructed as drill ammunition and has a tail unit of the same

caliber comprising a shell case having a front and a rear explosive chamber, and an end face adjacent the front explosive chamber and being provided at the end face of the shell case with a detonator rod, characterized in that the entire shell case,



including the detonator rod (4), is formed by parts which consist of the same metallic material and which are undetachable and fixedly connected together by friction welding and at least one of said front explosive chamber, rear explosive chamber and said detonator rod is produced by forging.

4,798,145

HOLLOW CHARGE AND LINER ASSEMBLAGE

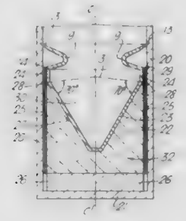
John S. McVeagh, Seaview, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom, London, England

Filed Dec. 3, 1982, Ser. No. 450,439

Claims priority, application United Kingdom, Dec. 8, 1981, 8136923

Int. Cl.[4] F42B *11/22*

U.S. Cl. 102—476 10 Claims



1. A hollow charge and liner assemblage including:

a tubular casing having a closed rear end and an open front end;

a hollow charge container slideable within the casing comprising a hollow charge liner peripherally attached to a rearwardly extended tubular sleeve;

a charge assemblage contained within the container including an explosive charge having a hollow forward face in contact with the liner, and a rearwardly extended portion protrusive beyond the sleeve; and

a compression means located within the casing forward of the container and operative between the casing and the container so as to urge the container rearwardly relative to the casing thereby axially compressing the charge assemblage between the liner and the rear end of the casing.

4,798,146

SUSPENSION MEANS FOR A RUNNING RAIL OF A SUSPENSION RAILWAY

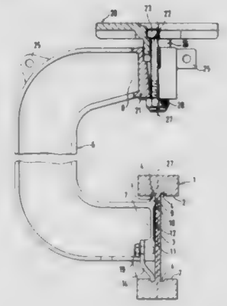
Hartmut Roetzel, Rameldange, Luxembourg, assignor to Cleveland Tramrail International S.A., Clervaux, Luxembourg

Filed May 30, 1986, Ser. No. 868,730

Claims priority, application Luxembourg, May 31, 1985, 85923

Int. Cl.[4] E01B *25/24*

U.S. Cl. 104—111 19 Claims



1. Suspension means for a running rail of a suspension railway comprising a running rail which is formed as double T profile with horizontal chords and a vertical web connecting the chords, grooves extending parallel to the web in the facing inner sides of the chords and a suspension arm having at the lower free end a suspension plate, and means for pressing the suspension plate onto the running rail, characterized in that the suspension plate engages with its upper edge into the groove of the upper chord and that at least one securing claw is provided which is offset with respect to the vertical axis of the suspension plate and which engages with its lower edge into the groove of the lower chord and which by at least one securing means is firmly pressed together with the side of the suspension plate remote from the web.

4,798,147

DRIVE WHEEL ADJUSTER FOR DRIVERLESS VEHICLE

Roger A. Pyle, Wind Gap, and Per E. Lindovist, Easton, both of Pa., assignors to SI Handling Systems, Inc., Easton, Pa.

Filed Apr. 22, 1987, Ser. No. 41,176

Int. Cl.[4] B61B *13/12*

U.S. Cl. 104—166 7 Claims

7. A driverless vehicle which is propelled by a drive tube and having support wheels for guiding the vehicle over a track which includes a drive tube following a curve, comprising:

a platform,

said support wheels being mounted so as to swivel relative to said platform,

at least two drive wheels yieldingly biased to a predetermined angular orientation relative to the platform and adapted for frictional contact with said drive tube such that the angular orientation of each drive wheel with respect to the drive tube varies as the vehicle negotiates the track curve, and

means for controllably pivoting at least one, but less than all of said drive wheels so as to vary the angular orientation thereof with respect to the platform as the vehicle negotiates the track curve such that the angular orientation of

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the drive wheel with respect to the drive tube substantially matches the angular orientation of the other of the





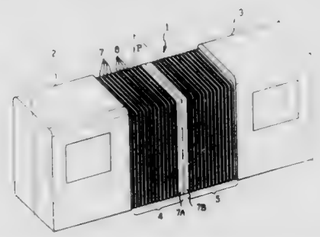
two drive wheels with respect to the drive tube as the vehicle negotiates the track curve.

4,798,148

DEVICE FOR INTERCOMMUNICATION BETWEEN COUPLED VEHICLES IN WHICH PASSENGERS CAN WALK FREELY, ESPECIALLY RAILWAY CARS OR ROAD VEHICLES

Jean-Michel Girard, Paris Défense, France, assignor to A.N.F. Industrie, Crespin-Blanc-Misseron (Nord), France

Filed Dec. 1, 1987, Ser. No. 127,087
Int. Cl.[4] B61D *17/22*; B60D *5/00*
U.S. Cl. 105—17 **12 Claims**



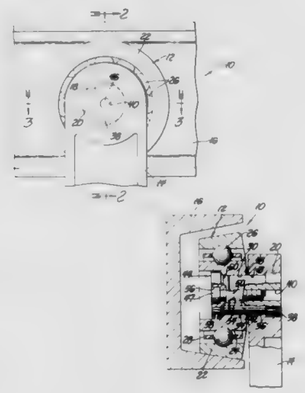
1. A device for intercommunication between two oppositely-facing open ends of two coupled vehicles in which passengers can walk freely, in particular railway cars, road vehicles such as articulated buses or trolley buses or else specialized vehicles such as passenger bridges of the type used in large airports, said device comprising a series of rings of generally rectangular shape which consist alternately of rigid rings and flexible rings suitably attached to each other so as to form a flexible intercommunication tunnel having a longitudinal axis, ends of the tunnel being adapted to be attached respectively to the aforementioned open ends of said vehicles and wherein each rigid ring is constituted by two rigid-ring segments assembled together, said rigid ring segments defining a pair of annular channels formed in an abutting surface thereof, wherein the flexible rings are of elastomer and each has a flexible intermediate portion provided along the longitudinal axis of the tunnel with each end thereof comprising a membrane terminating in a bulge in the form of a substantially cylindrical-strip member, said members being imprisoned in said annular channels.

4,798,149

WHEEL LOCK ASSEMBLY

Frank F. Hoffmann, St. Clair, Mich., assignor to Florkey's Conveyor Service, Inc., Warren, Mich.

Filed Dec. 2, 1982, Ser. No. 446,195
Int. Cl.[4] F16C *33/60*
U.S. Cl. 105—155 **9 Claims**



6. A wheel lock assembly for reversibly rotatably mounting a wheel assembly comprising an inner race and an outer race and bearings disposed therebetween on a trolley arm including a central bore having a central axis and having a substantially annular recess eccentric relative to the central bore, said assembly comprising:

an axle member including a cylindrical body portion having a longitudinal axis and an enlarged substantially annular head portion eccentric relative to said longitudinal axis;

a cap member; and

fastening means for fastening said cap member to an end of said body portion to draw said cap member into frictional engagement with the inner race and to draw said head portion into mating engagement with the recess of the trolley arm.

4,798,150

APPARATUS FOR HANDLING ASH

Dale W. Pressnall; Michael R. Keller, and Robert E. Schwartz, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Nov. 25, 1987, Ser. No. 125,249
Int. Cl.[4] F23J *1/02*
U.S. Cl. 110—171 **22 Claims**

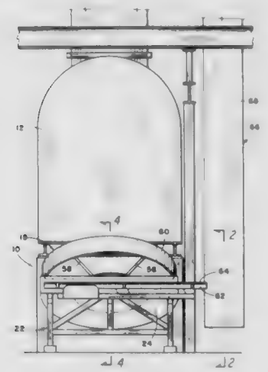
1. Ash handling apparatus comprising:

a container having a substantially planar surface formed therein, said container being filled with liquid for receiving ash when said apparatus is in operative condition;

an elongate paddle element for sweeping across said planar surface thereby collecting such ash along the front thereof, said paddle element being pivotally mounted on said planar surface;

means for rotating said paddle element;

means for reversing the direction of rotation of said paddle element; and



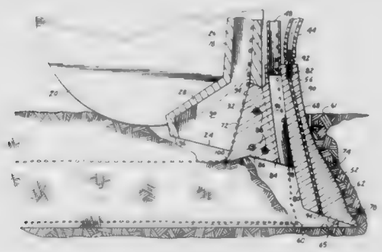
means adjacent said container for receiving ash collected along the front of said paddle element.

4,798,151

FURROW OPENING POINT

John G. Rodrigues, Jr., and Gale Rettkowski, both of Wilbur, Wash., assignors to R & R Innovations, Inc., Wilbur, Wash.

Filed Sep. 1, 1987, Ser. No. 92,180
Int. Cl.[4] A01C *5/08, 23/02*
U.S. Cl. 111—73 **6 Claims**



1. A fertilizer furrow opening device for attachment to a seed boot of a seed drill in which the seed boot has a seed passageway extending downward therethrough terminating in a seed drop opening along a lower profile, said opening device comprising:

an elongated body including a soil engaging portion, for extending from below a soil level when the seed drill is in a soil working position to form a deep, narrow two-tier furrow in front of the seed boot, said elongated body also extending upward to a fertilizer receiving portion, above the soil level to receive both a liquid fertilizer conduit and a dry granular fertilizer conduit;

wherein the soil engaging portion has an upper soil engaging section that extends downward from the fertilizer receiving portion for forming an upper segment of the two-tier furrow to receive seed from the seed drop opening along a seed line formed at a base of the upper segment of the two-tier furrow;

wherein the soil engaging portion has a lower knife section that extends downward and forward from the upper soil engaging section terminating in a bottom edge having a leading tip for forming a narrow lower segment of the two-tier furrow to receive both liquid and dry granular fertilizers therein substantially below the seed line at a base of the lower segment of the two-tier furrow;

wherein the upper soil engaging section and the lower knife section of the furrow opening device have leading faces for initially opening the soil, in which the leading face of the lower knife section has a substantially thinner horizontal front profile than the leading face of the upper soil engaging section so that the lower segment of the two-tier furrow is substantially narrower than the upper segment of the two-tier furrow; and

wherein the upper soil engaging section includes a rear face and the lower knife section includes a trailing face opposite to the leading faces;

said elongated body having a mounting bracket portion extending rearward of the soil engaging portion for mounting the furrow opening device to the seed boot with the lower knife section extending substantially forward and below the seed drop opening;

said elongated body having a fluid passageway formed therein extending from the fertilizer receiving portion through the soil engaging portion to the bottom edge of the lower knife section for communicating with the fluid fertilizer conduit and directing the fluid fertilizer down through the elongated body including the lower knife section and exiting from an opening in the bottom edge of the lower knife section to deposit the fluid fertilizer into the lower segment of the two-tier furrow forward of the seed drop opening and below the seed line; and

said elongated body having a dry granular fertilizer passageway formed therein extending from the fertilizer receiving portion through a dry granular fertilizer subsection of the device and terminating in a dry granular fertilizer opening adjacent the trailing face of the lower knife section to direct dry granular fertilizer from the dry granular fertilizer conduit through the elongated body to the dry granular fertilizer opening and into the lower segment of the two-tier furrow along the trailing face of the lower knife section.

4,798,152

DYNAMIC TEST SYSTEM FOR SEWING THREADS

Frank H. Simons, and Benjamin A. Ferguson, both of Charlotte, N.C., assignors to Celanese Fibers, Inc., New York, N.Y.

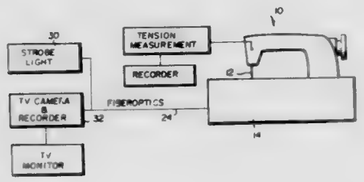
Filed Jul. 27, 1987, Ser. No. 78,423
Int. Cl.[4] D05B *81/00, 79/00*
U.S. Cl. 112—262.1 **15 Claims**

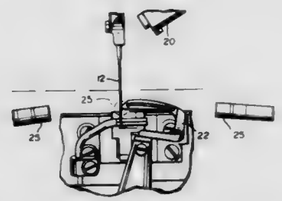
11. A method for viewing the region of stitch formation within the bed of a sewing machine, comprising the steps of:

disposing a first fiberoptic bundle within the bed of the sewing machine with one end thereof disposed opposite said stitch formation region;

transmitting light from a strobe light along said first fiberop-

tic bundle and through said one end thereof to periodically illuminate said stitch formation region; and





providing visual images of the stitch formation region from information transmitted from said region along said first fiberoptic bundle.

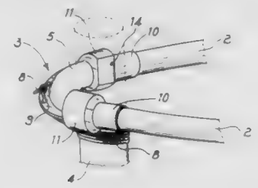
4,798,153
STABILIZED HULL SWATH VEHICLE
Terrence W. Schmidt, Santa Clara, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Aug. 23, 1984, Ser. No. 643,428
Int. Cl.[4] B63B *1/12*
U.S. Cl. 114—61 **2 Claims**



1. A hull stabilized, low water plane area, twin hull vessel having a design waterline, said vessel comprising: a plurality of substantially tubular shaped lower hulls for providing buoyancy support for said vessel, an upper hull, a plurality of struts, each strut connecting a lower hull to said upper hull, said struts mounting the said lower hull at an acute angle to said design waterline wherein the vertex of said acute angle is forward of said vessel.

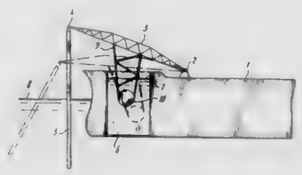
4,798,154
COUPLING ELEMENT OF THE BOOM TO THE MAST OF A SMALL SAILING CRAFT
Enzo Scaglia, 20, Via Monterosa, Milan, Italy
Filed Nov. 19, 1986, Ser. No. 932,723
Claims priority, application Italy, Nov. 22, 1985, 23945/85[U]
Int. Cl.[4] B63B *15/00*
U.S. Cl. 114—98 **14 Claims**

1. Apparatus for connecting the boom to the mast in a sailing craft which comprises a coupling member secured to the boom and having a seating section for receiving a portion of the mast; at least one predominantly cylindrical support for the mast, the cylindrical support being rotatably attached to the coupling member adjacent the seating section and having a substantially



flat surface constantly in contact with the mast whatever the coupling position of the mast and the boom.

4,798,155
MOORING DEVICE
Leendert Poldervaart, La Turbie, France, assignor to Single Buoy Moorings, Inc., Marly, Switzerland
Filed May 3, 1984, Ser. No. 606,515
Claims priority, application Netherlands, May 3, 1983, KN01558
Int. Cl.[4] B63B *21/50*
U.S. Cl. 114—230 **14 Claims**

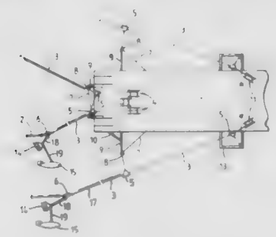


1. In a mooring device comprising a tanker floating on the surface of a body of water and having an arm pivotably connected to the vessel at one point on the arm, a tension-resistant connecting member connected to said arm at a second point spaced from said one point and extending toward the bottom of the body of water and connected to a bottom anchor, and a body having positive buoyancy in water and whose buoyancy exerts an upward force to maintain said connecting member under tension; the improvement in which the ship has a hull that has interior side walls that laterally surround a protected space that contains a liquid in which said body is at least partially submerged and has positive buoyancy, said body having large clearance with respect to said side walls, said protected space extending above and below the surface of said body of water.

4,798,156
ARRANGEMENT FOR DEPLOYMENT OF SEISMIC CABLES
Jan-Age Langeland, Garnes; Einar Gjestrum, Boverbu, and Rolf Bjerkoy, Melsomvik, all of Norway, assignors to Geco A.S., Sandvika, Norway
Filed Jul. 9, 1987, Ser. No. 71,353
Claims priority, application Norway, Jul. 17, 1986, 862885
Int. Cl.[4] B63B *21/56*
U.S. Cl. 114—242 **10 Claims**

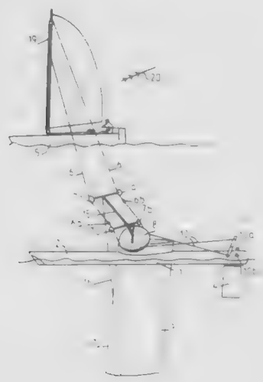
1. An arrangement for deployment and towing of a plurality of seismic streamers behind a vessel in parallel at mutually spaced distances comprising for each seismic streamer:
a winch barrel rotatably mounted on the vessel;
an inner cable member connected to the seismic streamer and wound on said winch barrel for towing the seismic streamer at variable distances from the vessel;

a derrick means mounted on the vessel;
a guide pulley line extending from the vessel over said derrick means;
a guide pulley means suspended on said guide pulley line, said inner cable member running through said guide pulley means;



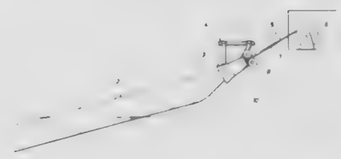
means for adjusting the disposition of said guide pulley means relative to the vessel for adjusting the position of said guide pulley means and said inner cable member relative to the vessel and said derrick means; and
paravane control means attached to said inner cable member for controlling the lateral disposition of the seismic streamer and said inner cable member when the seismic streamer is deployed for use.

4,798,157
DROGUE ASSOCIATED WITH A GUIDANCE SYSTEM
Jean Duret, 27 rue de la Double Haie, 60300 Senlis, France
Filed Jan. 30, 1987, Ser. No. 945,059
Claims priority, application France, Apr. 2, 1985, 8504965
Int. Cl.[4] B63B *1/24*
U.S. Cl. 114—253 **7 Claims**



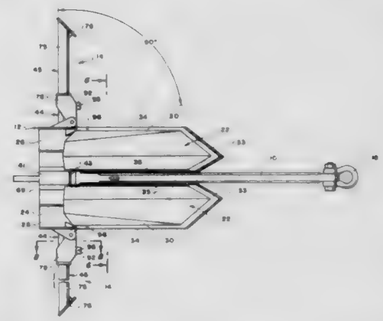
1. A guidance system comprising:
a craft,
a drogue towed by said craft,
a rope connected to said drogue and said craft for towing said drogue,
said drogue including a float, a centerboard, and steering means including a wheel connected to said rope, an axis of said wheel coinciding with a yaw axis of said float and said drogue having static stability about its center of gravity; and
lateral stability about a roll axis of said float being provided by means of an arm which is free to rotate about said axis of said wheel and an end of said arm being connected to said centerboard by a length of cord.

4,798,158
SEISMIC FLOAT RECOVERY SYSTEM
Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 810,621, Dec. 19, 1985, abandoned. This application Jan. 30, 1987, Ser. No. 68,813
Int. Cl.[4] B63B *21/16*
U.S. Cl. 114—253 **3 Claims**



1. A method for retrieving a seismic float from waves alongside a tow vessel to onboard the tow vessel, comprising:
providing a docking means rigidly affixed to the tow vessel, the docking means being a cone and a connection means passing from the tow vessel through the cone;
storing the cone in an upward position on the tow vessel, then rotating the cone around an axis not perpendicular to the axis of the cone to a downward position to receive the seismic float, and connecting the front end of the seismic float to the connection means;
rotating the around an axis not perpendicular to the axis of the cone to an intermediate position to elevate the front end of the seismic float beside the tow vessel for eventual retrieval; and
thereby allowing the rear end of the seismic float to submerse beneath the water, and damping up and down movement of the seismic float with wave action.

4,798,159
ANCHOR WITH FOLDING SELF-DEPLOYING STABILIZERS
Robert J. Taylor, and Daniel G. True, both of Camarillo, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 25, 1988, Ser. No. 147,967
Int. Cl.[4] B63B *21/26*
U.S. Cl. 114—295 **18 Claims**



1. In a mooring anchor having a shank assembly and a pivot-

able fluke assembly for general use in a variety of seafloor materials, the improvement being self-deploying roll stabilizes comprising:

a. a pair of stabilizer assemblies each consisting of a fixed component and a movable component; said stabilizer assemblies being affixed to opposite sides of the pivotable fluke assembly, respectively;

b. said fixed components being mounted on respective opposite sides of the fluke assembly, approximately along the pivot axis of said fluke assembly;

c. each of said movable components being elongated and being connected at one end thereof by hinge means adjacent to an outer end of a respective said fixed component; said movable components capable of being fooled in a forward direction for stowage along the general direction of the anchor shank longitudinal axis and for being opened to extend outwardly in a direction along the fluke pivot axis to a fully operable anchor roll stabilizing position;

d. plow means mounted at outer ends of said movable components; each said plow means comprising a force reaction surface means positioned at an acute angle to the anchor shank longitudinal axis when said elongated movable component is in the stowed position for reacting against various materials which the anchor moves through in a marine environment; said plow means being operable to cause said movable components to swing about said hinge means and deploy said movable components to the fully operable roll stabilizing position.

4,798,160

SHIFT-LEVER POSITION INDICATING DEVICE FOR AUTOMATIC POWER TRANSMISSION

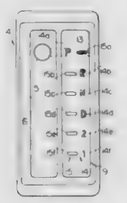
Haruo Mochida, Kanagawa, and Yasushi Asano, Toyohashi, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Continuation of Ser. No. 290,737, Aug. 6, 1981, abandoned. This application Dec. 30, 1983, Ser. No. 567,131

Claims priority, application Japan, Aug. 26, 1980, 55-121034

Int. Cl.⁴ G09F *9/00*

U.S. Cl. 116—28.1 **8 Claims**



1. A shift-lever position indicating device for indicating selected positions of a shift lever of an automatic power transmission system wherein said shift lever is pivotally movable to a plurality of positions including a parking-gear position, comprising

a casing structure formed with an elongated slot for permitting the shift lever to move therethrough, the casing structure having an illuminating chamber defined therein,

a light source located within said illuminating chamber and operative to emit light in the illuminating chamber,

said casing structure including an indicator plate carrying thereon a mark indicative of said parking-gear position of said shift lever and a series of marks respectively indicative of the remaining positions of the shift lever,

said indicator plate having a light pervious portion located in conjunction with the mark indicative of the parking-gear position of the shift lever and light pervious portions located respectively in conjunction with the marks indicative of said remaining positions of the shift lever,

the light pervious portions located in conjunction with the marks indicative of said remaining positions of the shift lever being arranged in a predetermined relationship in said indicator plate and the light pervious portion located in conjunction with the mark indicative of the parking-gear position of the shift lever being located unconformably to said relationship with respect to the remaining light pervious portions such that said remaining portions are disposed in a line and said and said light pervious portion located in conjunction with the mark indicative of the parking-gear position of the shift lever is offset from said line, and

a pointer element secured to said shift lever and movable in said illuminating chamber, the pointer element having a first light pervious portion movable between said light source and said light pervious portion located in conjunction with the mark indicative of the parking-gear position of the shift lever and a second light pervious portion movable between said light source and said remaining light pervious portions, the first and second light pervious portions differing in color from each other.

4,798,161

DISPLAY DEVICE, IN PARTICULAR FOR AN AUTOMATIC GEAR BOX

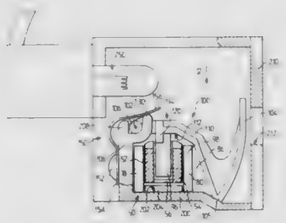
André Lazareff, Clichy, France, assignor to Jaeger, France

Filed May 10, 1988, Ser. No. 192,226

Claims priority, application France, May 13, 1987, 87 06736

Int. Cl.⁴ B60K *20/00*

U.S. Cl. 116—28.1 **11 Claims**



1. A display device comprising:

a control member;

a carriage displaced along a predetermined path by the control member; and

a plurality of flaps distributed at a constant pitch along the path of the carriage, with each flap being equipped with a cam suitable for engaging the carriage in order to displace the associated flap from a rest position to an operated position, said cams being positioned in predetermined different positions relative to the corresponding flaps in order to define a predetermined relationship between carriage displacement and the successive instants at which the flaps are moved.

4,798,162

EASTER EGG DECORATING DEVICE

Robert T. Nelson, 321 Bay Ave., Huntington, N.Y. 11743

Filed Jul. 20, 1987, Ser. No. 75,105

Int. Cl.⁴ B05C *3/02*

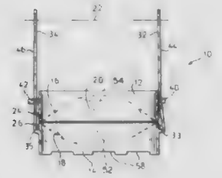
U.S. Cl. 118—26 **2 Claims**

1. An Easter egg decorating device which securely holds an egg so that the entire surface thereof may be colored in a coloring bath and which is used in conjunction with a pattern which leaves an area of the egg defined by the pattern uncolored, said device comprising:

(a) a substantially oval shaped first cylindrical segment having a cheesecloth diaphragm covering one open mouth thereof;

(b) a substantially oval shaped second cylindrical segment having a cheesecloth diaphragm covering one open mouth thereof; said cheesecloth diaphragms being permeable to the coloring fluid in the coloring bath, and each having a skirt portion overhanging the respective cylindrical segment releasably secured to the segment by a rubberband which engages the skirt portion of the diaphragm and clamps it to the segment;

(c) means interconnecting said first and second cylindrical segments so that they are substantially axially aligned with the diaphragm covered mouths thereof facing each other,



said means comprising first and second straps hingedly connected to the outer surface of said first cylindrical segment and oppositely disposed from one another, ears axially aligned with said straps extending from the outer surface of said second cylindrical segment and having openings therein for receiving said respective straps, and ratchet-like serrations extending along each strap and an engagement cam associated with each ear which engages said serrations for releasable and adjustable engagement of said straps with said ears, so that the egg may be held between the diaphragms with sufficient force that the pattern is pressed against the egg so as to exclude the coloring bath therefrom.

4,798,163

SLIT NOZZLE

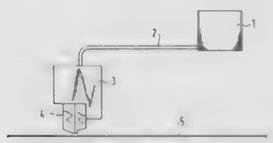
Henning J. Claassen, Lüneburg, Fed. Rep. of Germany, assignor to Meltex Verbindungs-Technik GmbH, Lüneburg, Fed. Rep. of Germany

Continuation of Ser. No. 934,963, Nov. 25, 1986, abandoned. This application May 5, 1988, Ser. No. 190,725

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1985, 3541784

Int. Cl.⁴ B05C *5/02*

U.S. Cl. 118—410 **4 Claims**



1. A nozzle for a liquid adhesive applicator comprising:

first and second members having interfacing surfaces defining an adhesive exit slit therebetween,

a spreading chamber in one of said interfacing surfaces of one of said members, and

a supply passage opening through the interfacing surface of the other said member into said spreading chamber at an angle relative to said exit slit, said supply passage comprising the only opening through said interfacing surface of said other member and having a relatively narrow cross-section compared to the cross-sectoin of said spreading chamber, said exit slit emanating from said spreading chamber with said supply passage on one side of said exit slit and said spreading chamber entirely on the other side of said exit slit.

4,798,164

APPARATUS FOR APPLYING GLAZE AS GRANULES TO TILES MAINTAINED AT A HIGH TEMPERATURE

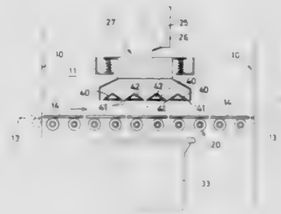
Filippo Marazzi, Sassuolo, Italy, assignor to Ceramica Filippo Marazzi S.p.A.

Filed Jun. 9, 1987, Ser. No. 61,108

Claims priority, application Italy, Aug. 1, 1986, 21363 A/86

Int. Cl.⁴ B05C *19/00*

U.S. Cl. 118—308 **13 Claims**



1. An apparatus, for applying glaze in granular form to tiles maintained at a high temperature, comprising a tile conveyance system above which is a glaze dispenser unit, wherein the dispenser unit comprises at least an elongated glaze pouring edge which extends proximal to, and in a manner substantially transversal to, a path along which the tiles travel and which includes a terminal edge of an inclined surface, and means for depositing glaze on said inclined surface, the inclined surface comprising a forced-circulation cooling system which is located between the conveyance system and the dispenser unit so that the glaze when in said glaze dispenser unit is unaffected by said high temperature.

4,798,165

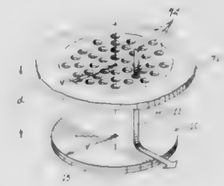
APPARATUS FOR CHEMICAL VAPOR DEPOSITION USING AN AXIALLY SYMMETRIC GAS FLOW

Wiebe B. deBoer, Amersfoort, Netherlands; Klavs F. Jensen, Minneapolis, Minn.; Wayne L. Johnson, Phoenix, Ariz.; Gary W. Read, Chandler, Ariz., and McDonald Robinson, Paradise Valley, Ariz., assignors to Epsilon, Tempe, Ariz.

Continuation of Ser. No. 784,738, Oct. 7, 1985, abandoned. This application Jan. 25, 1988, Ser. No. 147,100

Int. Cl.⁴ C23C *16/00*

U.S. Cl. 118—715 **11 Claims**



1. Apparatus for deposition of material onto a substrate, comprising:

a circular substrate; and

an apparatus for directing a flow of gas carrying a deposition material perpendicular to the circular substrate, said appa-

ratus comprising a member having a plurality of gas flow apertures passing therethrough for maintaining said flow of gas perpendicular to said substrate and creating a stagnation point flow at a center of said circular substrate, said member being disposed parallel to said circular substrate and adapted so that a distance between said apparatus and said circular substrate may be varied, said plurality of gas flow apertures being disposed in a generally circular configuration having a radius substantially equivalent to a radius of said circular substrate wherein said plurality of gas flow apertures and said circular substrate are coaxially aligned such that said flow of gas generally has an axial symmetry with respect to the center of said substrate.

4,798,166

APPARATUS FOR CONTINUOUSLY PREPARING A LIGHT RECEIVING ELEMENT FOR USE IN PHOTOELECTROMOTIVE FORCE MEMBER OR IMAGE-READING PHOTOSENSOR

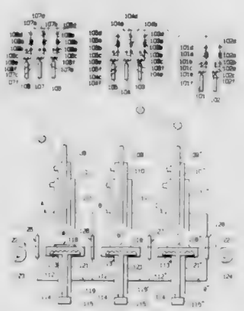
Masaaki Hirooka, Toride; Shunichi Ishihara, Ebina; Junichi Hanna, and Isamu Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1986, Ser. No. 943,756

Claims priority, application Japan, Dec. 20, 1985, 60-287347; Dec. 21, 1985, 60-288213

Int. Cl.[4] C23C *16/00*

U.S. Cl. 118—719 **2 Claims**



1. An apparatus for continuously preparing a light receiving element comprising a substrate and a silicon-containing non-single-crystal semi-conductor layer formed by chemically reacting a first gaseous substance, capable of being a constituent of the layer but essentially incapable of contribution to the formation of the layer in its original energy state, and a second gaseous substance capable of electronically oxidizing the first gaseous substance for use in a photoelectromotive force member or image-reading photosensor; said apparatus comprising a plurality of reaction chambers for forming respective constituent layers of the semiconductor layer, said reaction chambers being continuously connected to each other via opening and shutting gates and a substrate conveying belt moving through said reaction chambers; each of said reaction chambers having a film-forming space, a raw material gas feed means extending through an upper wall of the reaction chamber and opening into said film-forming space, an exhaust means provided at the bottom portion of the reaction chamber, and a substrate supporting means having an upwardly and downwardly shiftable arm for supporting the substrate through said substrate conveying belt, and an electric heater for heating the substrate; said gas feed means comprising a concentric triplicate conduit terminating adjacent the substrate; said concentric triplicate conduit having an inner gas transporting conduit for transporting the first gaseous substance and two surrounding gas transporting conduits for transporting the second gaseous substance and a third gaseous substance, respectively; each of said gas transporting conduits having a respective outlet, and the outlet of said inner gas transportation conduit being encircled by the two outlets of said two transportation conduits, forming a reaction region adjacent the substrate.

4,798,167

APPARATUS FOR PREPARING A PHOTOELECTROMOTIVE FORCE MEMBER HAVING A CONCENTRIC TRIPLICATE CONDUIT FOR GENERATING ACTIVE SPECIES AND PRECURSOR

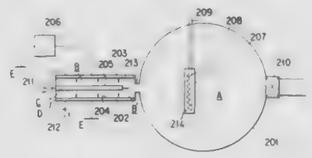
Shunichi Ishihara, Ebina; Keishi Saito, Nabari; Shunri Oda, Tokyo, and Isamu Shimizu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 843,304, Mar. 24, 1986, Pat. No. 4,689,093. This application May 1, 1987, Ser. No. 44,778

Claims priority, application Japan, Mar. 28, 1985, 60-64241

Int. Cl.[4] C23C *16/50*

U.S. Cl. 118—723 **7 Claims**



1. An apparatus for the preparation of a photoelectric conversion layer for a photoelectromotive force member comprising:

(a) a film-forming chamber having an inner space in which a substrate holder for a substrate is provided;

(b) an exhaust pipe connected to said film-forming chamber and through a main valve to an exhaust pump;

(c) a concentric triplicate conduit connected through a nozzle means to said film forming chamber; said concentric triplicate conduit comprising:

(i) an outer passage for introducing a gaseous raw material and being formed by a circumferential wall and an inner wall having a plurality of gas liberation holes;

(ii) a middle passage for applying microwave energy to said gaseous raw material to generate an active species and having a mixing region at the downstream side before the nozzle means, and

(iii) a central passage situated horizontally within said middle passage (ii) for introducing a gaseous precursor and for transporting said gaseous precursor toward the film-forming chamber and being open at an end positioned in the mixing region and leaving a predetermined distance to the nozzle means; said middle passage (ii) being formed by the inner wall of said outer passage and a circumferential wall of the central passage (iii);

(d) a feed pipe for introducing said gaseous raw material to said outer passage (i);

(e) a microwave power source for generating said microwave energy; and

(f) a feed pipe for introducing said gaseous precursor to said central passage (iii).

4,798,168

ARRANGEMENT FOR FARMING OF FISH, SHELLFISH AND OTHER MARINE BEINGS

Ragnar Vadseth, Gartnervn. 43, 3478 Naersnes, and Arne Vadseth, Vardevn. 26, 3470 Slemmestad, both of Norway

Filed Mar. 5, 1987, Ser. No. 22,714

Int. Cl.[4] A01K *63/04*

U.S. Cl. 119—3 **6 Claims**

1. A fish farming arrangement comprised of a liquid impervious enclosure for containing marine life, said enclosure being submerged in surrounding water, means attached to a curved side wall of said enclosure for supporting said enclosure submerged within the surrounding water, and means for pumping water at a predetermined depth from said surrounding water into an upper portion of said enclosure tangentially to said curved side wall and in a horizontal plane, such that within said enclosure a constant circulating current is maintained against which said fish swim and position themselves in parallel



formation, said means for pumping water being comprised of a pump connected to a vertically-oriented hose having an inlet in a flexible end in said surrounding water and an outlet connected to said side wall, and a diffuser for injecting one or both of air and oxygen into water flowing within said hose, and further comprised of means disposed at the bottom of said enclosure for collecting debris and pumping said debris to a cleaning station for purification.

4,798,169

PLANT FOR FISH FARMING IN THE OPEN SEA

Johnny Rosén, Höllviksnäs, and Pär Wulff, Falsterbo, both of Sweden, assignors to Triflex Biomarin AB, Trelleborg, Sweden

PCT No. PCT/SE85/00033, § 371 Date Oct. 2, 1985, § 102(e) Date Oct. 2, 1985, PCT Pub. No. WO85/03411, PCT Pub. Date Aug. 15, 1985

PCT Filed Jan. 28, 1985, Ser. No. 787,792

Claims priority, application Sweden, Feb. 2, 1984, 8400533-9

Int. Cl.[4] A01K *61/00*

U.S. Cl. 119—3 **9 Claims**



1. Plant for fish farming in the open sea, comprising a container of netting to be submerged into the water, a plurality of elongated tubular float bodies to be horizontally disposed on the sea surface, said bodies being closed at their ends, said ends having flattened end portions, means interconnecting the float bodies in pairs to form floating units, the float bodies of each pair extending in parallel one beside the other, the flattened end portions thereof extending substantially horizontally, and means interconnecting adjacent ends of the float bodies at said flattened end portions thereof for pivotal relative movement of the interconnecting float bodies about a substantially horizontal transverse axis, said connecting means being flexible to allow limited relative movement of the float bodies about the longitudinal axis thereof, said float bodies forming a closed configuration around the container of netting suspended therefrom.

4,798,170

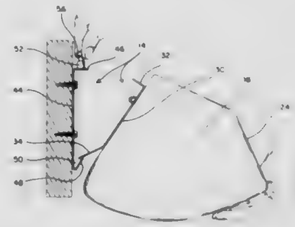
ANIMAL FEEDER

Edward F. DePiazzy, 1105 Mayberry Pl., Raleigh, N.C. 27609

Filed May 26, 1987, Ser. No. 53,716

Int. Cl.[4] A01K *5/01*

U.S. Cl. 119—61 **9 Claims**



1. An animal feeder compriaing: a feed bowl; a mounting frame secured to said feed bowl and formed from a rectangular plate, the upper edge of said plate being bent along a line extending parallel to the upper edge thereof to form a perpendicular flange portion, said plate further being bent along a line extending parallel to the lower edge thereof to form an angled portion; a support frame formed from a rectangular plate for mounting on the wall of an enclosure, said support frame being bent along a line extending parallel to the upper edge thereof to form a second perpendicular flange portion, the lower edge of said support frame being turned upwardly to define an upwardly opening channel for receiving the angled portion of said mounting frame; said first flange portion being disposable adjacent said second flange portion when said angled portion of said mounting frame is inserted into said upwardly opening channel defined by said upturned portion of said support frame; and spring-biased retaining means for securing said first flange portion to said second flange portion when said angled portion of said mounting frame is inserted into the upwardly opening channel defined by the upturned portion of said support frame.

4,798,171

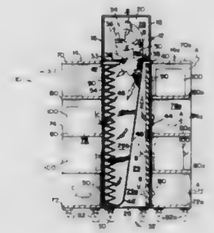
ANIMAL ISOLATOR

William F. Peters, Eden Prairie, and Randall C. Buchanan, Brooklyn Park, both of Minn., assignors to Nu Aire, Inc., Plymouth, Minn.

Filed Jul. 9, 1987, Ser. No. 71,414

Int. Cl.[4] A01K *1/03*

U.S. Cl. 119—15 **8 Claims**



6. An animal station comprising a filter cabinet having a plurality of walls defining an interior, said plurality of walls including a first vertical wall and a spaced apart second vertical wall having first and second openings therethrough, respectively, in air flow communication with said interior;

a first filter medium disposed to filter particulate matter from air flowing from said first opening;

a second filter medium disposed to filter particulate matter from air flowing through said second opening, said second filter medium selected to filter particulate matter finer than particulate matter filtered by said first filter medium;

said housing including an enclosed blower chamber having a blower disposed within said blower chamber, said chamber in air flow communication with an interior of said housing;

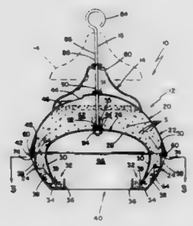
a pressure plenum connecting an outlet of said blower to said second filter medium with an inlet of said blower maintaining an interior of said housing on a suction side of said first filter medium at a pressure less than ambient pressure exterior of said housing;

at least one movable animal cage rack sized to abut said housing with an interior of said rack in air flow communication with either of said first opening and said second opening when said at least one rack is disposed in a first and second position, respectively, relative to said housing.

4,798,172
BIRDFEEDER

Stephen G. Clarke, Coventry, Conn., assignor to Clarke Products Co., Inc., Mansfield Depot, Conn.

Continuation-in-part of Ser. No. 860,053, May 6, 1986, abandoned. This application Sep. 16, 1986, Ser. No. 908,400
Int. Cl.[4] A01K *39/01*
U.S. Cl. 119—52 R 16 Claims



8. A birdfeeder comprising:

a body extending along a vertical axis, said body having

an axially extending shell having upper and lower wall portions, said upper wall portion having a convexly curved exterior surface extending around said axis and toward said lower portion,

an axially extending wall means inside said shell,

said upper wall portion of said shell and said wall means defining an axially extending reservoir therebetween,

said lower wall portion of said shell and said wall means defining an axially extending chute therebetween,

a transversely extending feed tray inside said shell,

said chute communicating between said reservoir and said tray, and

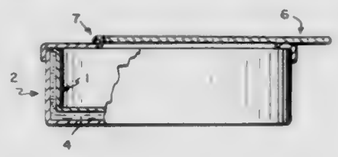
spacing means disposed between an inner surface of said lower wall portion and an outer surface of said wall means to maintain a space sufficient to allow seed to pass through said chute, and

an access opening in said lower wall portion of said shell, said access opening communicating between the exterior of said shell and said tray.

4,798,173
FREEZABLE PET DISH

Thomas J. Wilgren, 9 Battery St., Apt. No. 2, Boston, Mass. 02113

Filed Jul. 1, 1987, Ser. No. 68,458
Int. Cl.[4] A01K *7/00*
U.S. Cl. 119—61 4 Claims



1. A freezable pet dish for a pet food, comprising: a double walled container having an inner shell which has formed in the top surface thereof a concave depression adapted to contain a pet food, and an outer shell connected to the inner shell along the periphery of said concave depression to form an enclosed coolant space between the outer shell and the inner shell which substantially surrounds the concave depression on the bottom and sides thereof;

the outer shell being provided with a coating which has a lower heat conductivity than the outer shell thereby to prevent rapid heat gain from the surrounding environment;

coolant means contained within said coolant space for storing heat or cold; and

a cover for the concave depression including:

rim means adapted to mate with the double walled container for removably securing the cover to the double-walled container; and

a lid in the cover for providing access to a pet food in the depression and having a portion thereof adapted to be lifted by a pet;

at least a part of the lid being constructed from a transparent material so as to provide for disclosure of the dish's contents to a pet; and

the lid being connected to the rim means by a hinge and having an edge which protrudes beyond the periphery of the bowl so that the pet can lift the lid and gain entry to the bowl.

4,798,174
COLLAR FOR A PET

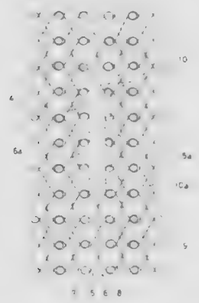
Yoshiya Tachi, Kuwana, and Noriyuki Hotta, Ikoma, both of Japan, assignors to Hotta Co., Ltd. (Hotta Kabushiki Kaisha), Osaka, Japan

Filed Jun. 17, 1987, Ser. No. 63,213
Claims priority, application Japan, Apr. 10, 1987, 62-55062[U]
Int. Cl.[4] A01K *27/00*
U.S. Cl. 119—106 4 Claims

1. A collar for a pet comprising:

a belt-like collar proper, said collar proper having first and second ends, said collar proper being a warp-knitted fabric, said warp-knitted fabric having a plurality of only substantially unidirectional threads, at least one pair of said plurality of only substantially unidirectional threads being a pair of hole-defining chain stitches, each thread of said pair of hole-defining chain stitches being alternately interlocked and noninterlocked with the other thread of said pair of hole-defining chain stitches for defining a plurality of interlocked and noninterlocked segments along the length of said belt-like collar proper, each hole of said plurality of holes being defined by a non-interlocked segment of said plurality of interlocked and noninterlocked segments of said pair of hole-defining chain stitches;

a buckle attached at said first end of said belt-like collar proper; and

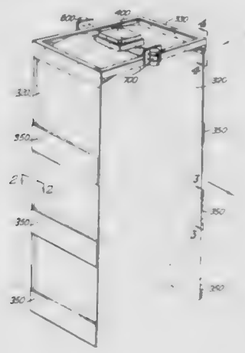


a pin having first and second ends, said first end of said pin being attached to said buckle, said second end of said pin being insertable into each said hole of said plurality of holes defined by said pair of hole-defining chain stitches.

4,798,175
ELECTRONIC IDENTIFICATION SYSTEM

Ted H. Townsend, Kansas City; Clinton L. Moore, Parkville, and John T. Machnicki, Kansas City, all of Mo., assignors to Alfa-Laval Agri, Inc., Kansas City, Mo.

Filed Oct. 9, 1986, Ser. No. 917,034
Int. Cl.[4] A01K *5/02*; G08B *13/24*
U.S. Cl. 119—155 10 Claims



1. An electronic identification system for identifying an object moving through a portal structure comprising:

at least one generating means for generating a multi-directional electromagnetic field in a plurality of different angular relations to the direction of movement of the object through the portal structure;

at least one first receiving means for attachment to the object for receiving and storing energy from the electromagnetic field;

at least one transmission means for attachment to the object for transmitting identifying data after the at least one first receiving means has received energy from the electromagnetic field;

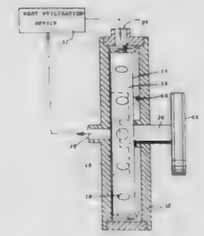
at least one second receiving means for receiving the identifying data from the object; and

a flexible curtain secured to the portal structure, wherein the at least one generating means and the at least one second receiving means comprise an antenna loop secured to the flexible curtain.

4,798,176
APPARATUS FOR FRICTIONALLY HEATING LIQUID

Eugene W. Perkins, Rte. 1, Box 1837, Dawsonville, Ga. 30534

Filed Aug. 4, 1987, Ser. No. 81,312
Int. Cl.[4] F22B *3/06*
U.S. Cl. 122—26 7 Claims



1. Apparatus for heating liquid comprising:

a. an impeller for disposition within a closed housing defining a reservoir for containing a heat transfer liquid said impeller comprising:

i. a cylindrical rotor having external surface including a peripheral surface said external surface being arranged for frictional engagement with liquid in said housing;

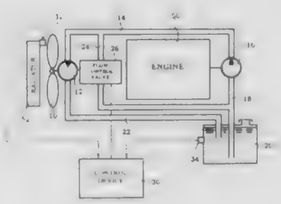
ii. a central outlet cavity; and

iii. fluid passages leading from said peripheral surface into said outlet cavity; said passages being arranged relative to the axis of rotation of said rotor that upon rotation thereof in a predetermined direction liquid is forced to flow from the peripheral surface of said rotor into said outlet cavity; and restricted orifices in said fluid passages to cause liquid to be heated as it flows through said passages into said outlet cavity.

4,798,177
SYSTEM FOR CONTROLLING ROTATIONAL SPEED OF HYDRAULICALLY DRIVEN COOLING FAN OF INTERNAL COMBUSTION ENGINE, RESPONSIVE TO ENGINE COOLANT AND ALSO FAN PROPELLANT TEMPERATURE

Seiji Oomura; Kashiroo Fukami, both of Toyota; Masao Inagaki, and Tooru Hamamoto, both of Okazaki, all of Japan, assignors to Toyota Jidoosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 4, 1987, Ser. No. 116,340
Claims priority, application Japan, Nov. 12, 1986, 61-268938
Int. Cl.[4] F01P *7/02*
U.S. Cl. 123—41.12 1 Claim



1. In a system for controlling the rotational speed of a hydraulically driven cooling fan for an internal combustion engine, the fan being driven by a flow of propellant hydraulic

fluid, the system including (a) means for sensing a value representing an operating temperature of the engine; (b) means for sensing an operating temperature of the propellant hydraulic fluid; and (c) means for controlling the flow of propellant hydraulic fluid so as to increase the rate of flow of propellant hydraulic fluid when said means for sensing the value representing the operating temperature of the engine indicates increased operating temperature of the engine, and also for increasing the rate of flow of propellant hydraulic fluid when the means for sensing the operating temperature of the propellant hydraulic fluid indicates increased operating temperature of the propellant hydraulic fluid, wherein said means for controlling the flow of propellant hydraulic fluid comprises

means for coordinating a second quantity with the operating temperature of the propellant hydraulic fluid; and

means for multiplying said first and second quantities to determine the rate of flow of propellant hydraulic fluid, wherein said means for coordinating the second quantity with the operating temperature of the propellant hydraulic fluid performs the coordination so that the second quantity is a relatively low constant value when the operating temperature of the propellant hydraulic fluid is below a relatively low first temperature, increases uniformly in accordance with increasing temperature of the propellant hydraulic fluid from said first temperature up to a relatively high second temperature, and is a relatively high second constant value when the temperature of the propellant hydraulic fluid is above said second temperature.

4,798,178

COMPOUND CAMSHAFT AND METHOD OF MANUFACTURING THE SAME

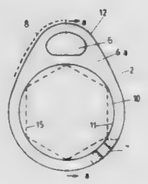
Walter Greulich, Uhwiesen; Karl Gut, Benken; Klaus Hornung, Stein am Rhein, all of Switzerland, and Günther Schulte, Volkertshausen, Fed. Rep. of Germany, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

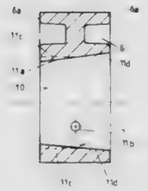
Filed Feb. 27, 1986, Ser. No. 833,558

Claims priority, application Switzerland, Mar. 6, 1985, 1009/85

Int. Cl.⁴ F01L *1/46*; **F16H** *53/00*

U.S. Cl. 123—90.6 46 Claims





1. A method of manufacturing a compound camshaft comprising the steps of:

casting a predetermined number of elements;

pre-fabricating a camshaft body;

said step of casting said predetermined number of elements entailing the step of providing each said cast element with an opening and an internal contour having a predetermined axial length which bounds said opening which is configured over at least a predeterminate portion of said predetermined axial length in accordance with the type of connection to be made between said element and said camshaft body;

said internal contour of each one of said cast elements not being mechanically treated at least over a predominant portion of said internal contour;

said internal contour of each one of said cast elements and when seated upon said camshaft body being situated in sufficiently close proximity to said camshaft body so as to define an intervening space extending substantially over the predetermined axial length of the cast element providing a capillary action for a bonding agent for fixedly connecting said predetermined number of cast elements with said camshaft body;

placing a bonding agent at one end region of said intervening space of each of said predetermined number of cast elements for fixedly connecting said predetermined number of cast elements with said camshaft body; and

fixedly connecting said predetermined number of cast elements with said camshaft body by means of said bonding agent by causing said bonding agent placed at said one end region of said intervening space of each of said predetermined number of cast elements to flow towards an opposite end region thereof along the predetermined axial length of each cast element under the effect of said capillary action at the region of said internal contour of each one of said cast elements which have not been mechanically treated at least over said predominant portion of said internal contour.

4,798,179

HYDRAULIC OIL FOR USE IN SEALED-TYPE, LASH ADJUSTERS

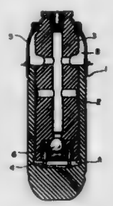
Masayasu Sakata, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1987, Ser. No. 62,889

Claims priority, application Japan, Jun. 17, 1986, 61-140878

Int. Cl.⁴ F01L *1/14*

U.S. Cl. 123—90.52 3 Claims



1. A sealed-type lash adjuster comprising:

body means;

plunger means;

diaphragm means cooperating with said body means and plunger means to define an oil cavity; and

hydraulic oil filling said cavity, said hydraulic oil being engine oil based and comprising

mineral oil as a principal component, and

3% or less by weight of an additive which includes at least one of

an anti-oxidant,

a detergent-dispersant,

a rust preventive, and

an anti-foaming agent.

4,798,180

SELF-CONTAINED HYDRAULIC LASH ADJUSTER

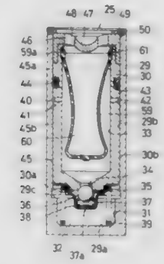
Yoshio Okabe; Fumio Arai, both of Kariya, and Hisashi Kodama, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Dec. 5, 1980, Ser. No. 213,519

Claims priority, application Japan, Dec. 17, 1979, 54-175133[U]

Int. Cl.⁴ F01L *1/24*

U.S. Cl. 123—90.58 2 Claims



1. A self-contained hydraulic lash adjuster comprising

a cylinder member having a closed end portion,

a plunger slidingly mounted in said cylinder member,

a reservoir chamber located in said plunger,

a pressure chamber defined between said plunger and said closed end portion of said cylinder member,

a check valve for allowing fluid flow only from said reservoir chamber to said pressure chamber through a passage in said plunger,

a return spring stretched between said plunger and said closed end portion of said cylinder member for urging said plunger in the upward direction,

a leakage clearance formed between an inner surface of said cylinder member and an outer surface of said plunger,

a first annular groove provided on said outer surface of said plunger,

radial hole means extended through said plunger in communication with said first annular groove to connect said leakage clearance to said reservoir chamber,

a second annular groove provided on said outer surface of said plunger above said first annular groove,

a sealing member fitted in said second groove for providing fluid-tight seal between said plunger and said cylinder member,

said sealing member having a first pair of lips facing outwardly of said second groove with each of said first pair of lips having an edge portion in contact with said cylinder member and the combined width of said first pair of lips being less than the width of said groove,

said sealing member having a second pair of lips facing inwardly of said second groove with the combined width of said second pair of lips being greater than the width of said second groove,

a seat member for closing an open upper end portion of said plunger and for transmitting the thrust of a push rod to said plunger,

an elastomeric bag member having a generally tubular shape with a closed bottom end and an open upper end portion, an interior of said bag member being normally disposed in communication with atmospheric pressure through hole means in said seat member and an outer surface of said bag member in fluid contact with operating fluid in said reservoir chamber, and

a metal ring fixedly mounted in said open upper end portion of said bag member for fixing said open upper end portion of said bag member to an upper end portion of said reservoir chamber.

4,798,181

VALVE GUIDANCE FOR AN EXHAUST GAS VALVE OF AN INTERNAL COMBUSTION ENGINE

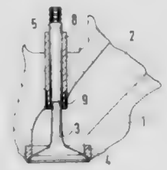
Michael Beer, Wimsheim; August Hofbauer, Pforzheim, and Erwin Knoll, Weissenhorn, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.f. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 27, 1987, Ser. No. 30,564

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610534

Int. Cl.⁴ F01L *3/08*

U.S. Cl. 123—188 GC 14 Claims



1. A valve guidance for a disk valve of an internal combustion engine used for the control of an exhaust gas channel, comprising a guide body means having good heat-conducting and slide properties for the valve stem of the disk valve longitudinally guided in said guide body means, the guide body means having a hard metal coating means which defines an uninterrupted cylindrical surface therewith in the area thereof protruding into the exhaust gas channel for scraping oil carbon from said valve stem.

4,798,182

PORTABLE ENGINE

Takanori Ebinuma; Hiroshi Kato, and Mitsuko Sakurai, all of Tokyo, Japan, assignors to Komatsu Zenoah Co., Japan

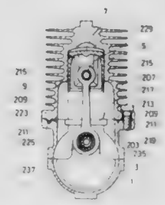
Division of Ser. No. 917,033, Oct. 9, 1986, Pat. No. 4,744,337.

This application Mar. 6, 1987, Ser. No. 22,887

Claims priority, application Japan Nov. 12, 1985, 60–172940; 60–172942; Nov. 27, 1985, 60–181460

Int. Cl.⁴ F02F *7/00*

U.S. Cl. 123—195 R 6 Claims



1. A portable engine including an engine cylinder having a cylinder flange and a crankcase having a crankcase flange, said cylinder flange being held on said crankcase flange by bolts, comprising:

positioning pieces cast integrally with the cylinder flange of said engine cylinder; and

positioning holes cast integrally with the crankcase flange of said crankcase, said positioning holes of said crankcase flange receiving said positioning pieces of said cylinder flange respectively, to accurately position said crankcase with respect to said engine cylinder when said engine cylinder and said crankcase are assembled in such a man-

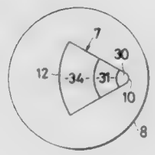
ner that said cylinder flange and said crankcase flange are fitted face to face, wherein positioning between the cylinder flange and the crankcase flange is performed not only in the radial direction but also in the circumferential direction of said flanges.

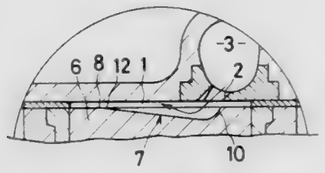
4,798,183

SWIRL CHAMBER TYPE COMBUSTION CHAMBER FOR DIESEL ENGINE

Kiyoshi Hataura, and Masahiro Nagahama, both of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed May 21, 1987, Ser. No. 53,338
Claims priority, application Japan, May 23, 1986, 61-119682
Int. Cl.⁴ F02F *3/26*
U.S. Cl. 123—279 **15 Claims**





1. In a swirl chamber type combustion chamber for a Diesel engine having a swirl chamber connected to a main combustion chamber through an injection passage provided at an offset position with respect to the main combustion chamber for injecting combustion gas into said combustion chamber, said injection passage having right and left sides, an inlet opening into said swirl chamber and an outlet, the longitudinal axis of said passage being directed obliquely to the main combustion chamber, the right and left sides of said injection passage being formed so as to gradually spread the lateral portions of the stream of combustion gas, expanded in the swirl chamber, at an angle gradually spreading towards the main combustion chamber, comprising: a piston head in said chamber defining a concavity which guides the stream of combustion gas injected from the swirl chamber into the main combustion chamber at the top dead center of the piston stroke, said concavity being formed in a substantially triangular configuration with an inlet end and an outlet end and configured spreading right and left progressing from the inlet end to the outlet end thereof, the inlet end of said concavity being located to face the outlet of the injection passage.

4,798,184

EXTENDED EXPANSION DIESEL CYCLE ENGINE

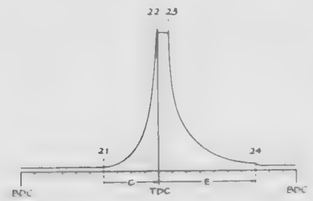
Sandor Palko, P.O. Box 8139, Honolulu, Hi. 96830-0139

Filed Nov. 17, 1986, Ser. No. 931,536
Int. Cl.⁴ F02D *39/06*; F01L *1/44*
U.S. Cl. 123—316 **13 Claims**

1. An extended expansion method of operating a diesel cycle engine, said engine including at least one reciprocating piston-cylinder-combustion chamber-fuel injection means-venting valve means system, said method of operation comprising;

operating said venting valve means and valve timing means to provide air venting communication from said combustion chamber by maintaining said venting valve means in an open position during an initial portion of the compression stroke, as said piston travels in said cylinder from bottom dead center toward top dead center, until said piston reduces the cylinder swept volume to a predetermined pre-compression swept volume which is no less than substantially one-third of the work producing expansion swept volume of said engine and no greater than substantially five-sixths of said work producing expansion swept volume;

closing said venting valve means when said cylinder swept volume has been reduced to said predetermined pre-compression swept volume, thus sealing said combustion chamber, so that said piston is enabled to perform adiabatic compression of the air in said combustion chamber on the remainder of said compression stroke, the minimum



combustion chamber volume being limited with respect to said predetermined pre-compression swept volume so as to ensure a substantial compression ratio essential for compression ignition in said diesel cycle engine;

providing fuel injection timing for operating said fuel injection means to commence delivery of fuel into said combustion chamber when said piston is substantially at top dead center of said compression stroke, and to continue delivery of fuel for a predetermined period thereafter, substantially until conditions sustain rapid burning of the injected fuel, said work producing expansion swept volume providing said extended expansion for the combustion gases, as said piston travels toward bottom dead center; and

commencing exhaust discharge when said piston has reached the limit of said expansion swept volume, marking the end of the work producing expansion and the start of the respective aspiration means for said engine.

4,798,185

STRESS-LIMITING FLEXIBLE THROTTLE LEVER APPARATUS FOR A GASOLINE ENGINE DRIVEN POWER TOOL OR THE LIKE

Bernard M. Driggers, Shreveport, La., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Dec. 17, 1987, Ser. No. 134,223
Int. Cl.⁴ F16C *1/10*
U.S. Cl. 123—400 **29 Claims**

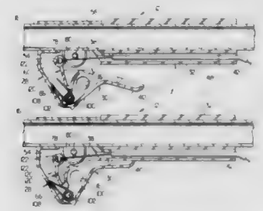
1. A control system comprising:

a controlled component having an operating member movable through an operating distance to control the operation of said component; and

actuating means for selectively moving said operating member through said operating distance, said actuating means including an actuating member having a body portion supported for movement relative to said operating member through a stroke distance and a flexible portion secured to said body portion and defining a portion of said actuating member, and substantially inextensible linkage means, interconnected between said operating member and said flexible portion of said actuating member, for

moving said operating member through said operating distance in response to movement of said actuating member through said stroke distance, said flexible portion being adapted to be resiliently flexed relative to said body portion when said flexible portion exerts a predetermined force on said linkage means during movement of said actuating member through said stroke distance,

said linkage means having a permissible dimensional tolerance range related to said stroke distance in a manner such that in at least a portion of said dimensional tolerance range said stroke distance is greater than that required to move said operating member, via said linkage means, through said operating distance and move-



ment of said actuating member through said stroke distance causes said flexible portion of said actuating member to exert said predetermined force upon said linkage means, thereby causing said flexible portion to resiliently flex relative to said body portion in a manner limiting the actuating force transmitted through said linkage means to a predetermined magnitude, whereby the maximum actuation stresses imposable upon said actuating member body portion, said linkage means and said operating member by movement of said actuating member through its full stroke distance are automatically limited to predetermined magnitudes without the necessity of otherwise compensating for dimensional variations in said linkage means.

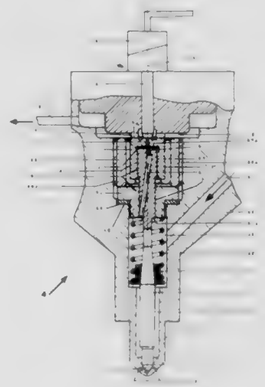
4,798,186

FUEL INJECTOR UNIT

Marco A. Ganser, Zürich, Switzerland, assignor to Ganser-Hydromag, Zürich, Switzerland

Filed Sep. 25, 1987, Ser. No. 100,949
Claims priority, application Switzerland, Sep. 25, 1986, 3836/86
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—467 **9 Claims**

1. Fuel injector for intermittently injecting fuel into the combustion chamber of an internal combustion engine (2), comprising a housing (44) with a valve seat (56) and at least one discharge orifice (58), an elongated injector valve member (52) provided with a piston member (60) and mounted within the housing (44) for engagement with the valve seat (56) for closing the discharge orifice (58), said injector valve member (52) being shiftable in its axial direction to be momentarily lifted from the valve seat (56) to open the discharge orifice (58) to allow for the injection of a desired quantity of fuel into the combustion chamber of the related internal combustion engine (2), a control chamber (72) being in connection with a fuel supply line (12, 42); the fuel pressure in said control chamber (72) acting upon the piston member (60) of said injector valve member (52) forcing the latter against said valve seat (56), means (67, 70, 74, 76) to quickly reduce and quickly restore the fuel pressure in said control chamber (72) to allow for the momentary axial movement of said injector valve member (52), said means to quickly reduce and restore the fuel pressure in said control chamber (72) comprising a first orifice (67) and a second orifice (70) communicating with one another and opening into said control chamber (72) and electromagnetically controlled valve means (76) for closing and temporarily opening one end of said second orifice (70); said valve piston (60) comprising a first, upper section (69) and a second, lower section (63) integral with said first, upper section (69), the outer diameter of the upper section (69) being bigger than the outer diameter of the second, lower section (63), said second, lower section (63) being guided with a close fit in said injector housing (44), said first, upper section (69) being surrounded by a member (71) and guiding said member (71) in a close fit, said first upper section (69) being movable relative to said member (71), said member (71) being unguided at its circumference (71*b*)and being provided with said second orifice (70), said control chamber (72) being defined by said member (71) and



the end surface (69*a*) of said first, upper section (69) of said piston member (60), said piston member (60) being provided with a bore (65) extending from the second, lower section (63) to the first, upper section (69), said bore (65) connecting at one end to said first orifice (67) provided in said first, upper section (69), and at the other end being in communication with a chamber (46, 54) provided in said housing (44), said chamber (46, 54) being connected to a high pressure fuel supply line (23, 42), the opening and closing motion of said injector valve member (52) being controlled by the pressure acting upon the bigger end surface (69*a*) of the first, upper section (69) and the smaller end surface (63*a*) of the second, lower section (63) independent of the fuel pressure in said chamber (46, 54).

4,798,187

LOW PROFILE FUEL INJECTION RAIL

Sharon J. Hudson, Jr., Lambertville, Mich., assignor to Sharon Manufacturing Company, Lambertville, Mich.

Filed Nov. 7, 1986, Ser. No. 928,046
Int. Cl.⁴ F02M *55/02*
U.S. Cl. 123—469 **16 Claims**



1. A low profile fuel injection rail assembly comprising: an elongated fuel rail beam having a plurality of spaced apart nodular sections connected in series by narrow tubular sections, each of said nodular sections having interior wall sur-

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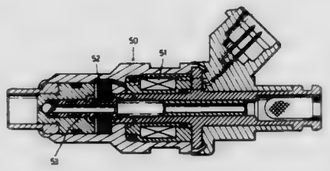
faces which define a fuel sump chamber having a bottom end, tubular fuel injector socket members projecting into said sump chambers from said bottom ends, each of said socket members having an open bottom entrance end for holding a top portion of a fuel injector in fluid tight communication with said sump chamber, said nodular sections and said sockets being formed such that the lower interior wall surfaces of each of said nodular sections and the exterior wall surfaces of each of said sockets jointly define an annular well which extends below the adjacent outer bottom surface portions of said narrow tubular members, fitments for connecting the fuel rail beam to a fuel supply system, and a stub section extending longitudinally from at least one end nodular section of said series, said stub section having a cross sectional open interior area which is larger than that of said tubular section and smaller than that of said nodular sections, and said fuel system connector fitments are attached thereto.

4,798,188

METHOD OF CONTROLLING INJECTOR

Shoji Ito, and Mikio Mimoura, both of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Nov. 30, 1987, Ser. No. 126,638
Claims priority, application Japan, Dec. 4, 1986, 61-289603
Int. Cl.[4] F02M *51/08*; H01L *41/08*
U.S. Cl. 123—478 **4 Claims**



1. The method of controlling a fuel injector intermittently injecting liquid fuel to an engine comprising the steps of supplying a pulse signal to an actuator for reciprocating a valve body, varying the stroke of said valve body by a voltage signal applied to a stroke limiting member; changing the width of said pulse signal to thereby control the open time of said injector, and varying the voltage applied to said stroke limiting member to thereby control the stroke of said valve body.

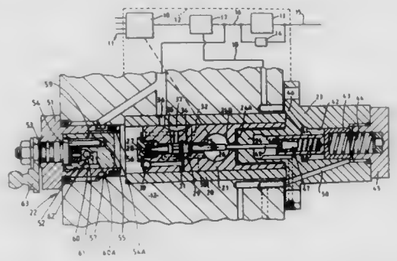
4,798,189

FUEL INJECTION PUMP

Ian R. Thornthwaite, Gillingham, and Robert S. Bond, Maidstone, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Aug. 18, 1987, Ser. No. 86,893
Claims priority, application United Kingdom, Sep. 9, 1986, 8621668
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—502 **9 Claims**

1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine comprising a pumping plunger located in a bore, cam means and cam follower means, a drive shaft coupled to one of said means for driving the cam means and cam follower means relative to each other to impart inward movement to the plunger in the bore, a piston member slidable within a cylinder, means for moving the piston member angularly within the cylinder and port means in the piston member and cylinder whereby in one angular position of the piston member in the cylinder the fluid pressures applied to each end of the piston member are equal and in an angular position the pressure applied to one end of the piston member will be higher than the fluid pressure applied to the other end of the piston member to cause said piston member to move



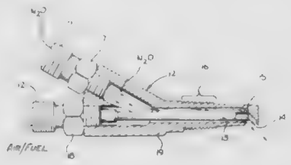
away from one end of the cylinder, and means transmitting the movement of said piston member to the other of said means.

4,798,190

NOZZLE

Dale L. Vaznaian, and Michael J. Thermos, both of Huntington Beach, Calif., assignors to Nitrous Oxide Systems, Inc., Cypress, Calif.

Filed May 30, 1986, Ser. No. 868,938
Int. Cl.[4] F02M *69/08, 23/00*
U.S. Cl. 123—531 **21 Claims**



1. In an internal combustion engine, a device for introducing fuel and an oxidizing agent into a combustion chamber, wherein said oxidizing agent is under substantially greater pressure than said fuel, said device comprising:

a housing having first and second input ports and an output port, said housing having formed therein a cavity extending from the first input port to the output port, said first input port receiving therethrough said oxidizing agent and said second input port receiving therethrough said fuel, and a tubular fuel line connected at one end to said second input port, with its other end terminating adjacent to said output port such that said fuel is constrained to travel in said fuel line and is isolated from said cavity.

4,798,191

METHOD AND APPARATUS FOR HANDLING FUEL

Harvey M. King, Taylors, S.C., assignor to Robert A. Brown, Jr., Greenville, S.C.

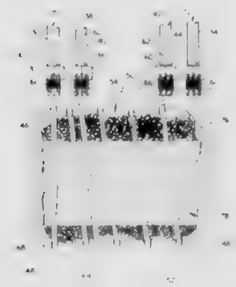
Filed Jan. 15, 1988, Ser. No. 144,879
Int. Cl.[4] F02M *31/00, 31/10*
U.S. Cl. 123—557 **18 Claims**

1. An apparatus for improving the combustibility of a liquid fuel prior to combustion thereof in an engine, the apparatus being supplied the liquid fuel from a fuel supply source, the apparatus comprising:

flow passage means for receiving the liquid fuel; said flow passage means defining a flow passage therethrough for carrying the liquid fuel and a fuel inlet in fluid communication with said flow passage, said fuel inlet being adapted for receiving liquid fuel from the fuel supply source;

a polytetrafluoroethylene material disposed within said flow passage means for contact with the liquid fuel prior to the liquid fuel being supplied to the engine for combustion;

heating means associated with said flow passage means for heating the liquid fuel to a point below which causes the liquid fuel to vaporize; and



said flow passage means defining a fuel outlet in fluid communication with said flow passage, said fuel outlet being adapted for supplying the liquid fuel from said flow passage means after the liquid fuel has been exposed to said polytetrafluoroethylene material, said fuel outlet supplying the liquid fuel for subsequent combustion in the engine.

4,798,192

FAR-INFRARED RADIATING SYSTEM

Saburo Maruko, Yamato, Japan, assignor to Nippon Chemical Plant Consultant Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1987, Ser. No. 100,057
Claims priority, application Japan, Sep. 24, 1986, 61-223844
Int. Cl.[4] F24C *3/00*
U.S. Cl. 126—91 A **9 Claims**



1. A far-infrared radiating system comprising:

a primary-radiating element for radiating far-infrared rays having short wavelengths upon being heated, said primary-radiating element being a metallic conduit through which a catalytic-combustion-gas flow can pass to heat the same and a first far-infrared radiating element adhered closely to an outer periphery of said conduit, and

a secondary-radiating element comprising a metallic plate and a second far-infrared radiating element adhered to one surface of said plate, said secondary-radiating element having a wider surface area than that of said primary-radiating element and being spaced apart and oppositely disposed from said primary-radiating element,

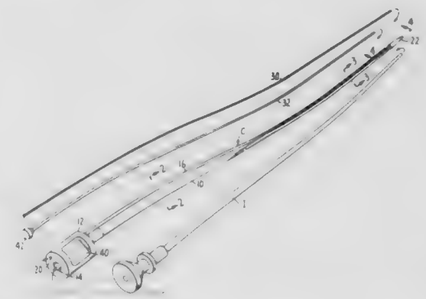
wherein far-infrared rays having long wavelengths are radiated upon heating said secondary-radiating element by receiving said far-infrared rays having short wavelengths from said primary-radiating element.

4,798,193

PROTECTIVE SHEATH INSTRUMENT CARRIER

Jerry D. Giesy, Portland, Oreg.; George D. Hermann, Palo Alto, Calif., and Matthew W. Hoskins, Beaverton, Oreg., assignors to Thomas J. Fogarty, Palo Alto, Calif.

Filed May 18, 1987, Ser. No. 51,862
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—7 **15 Claims**



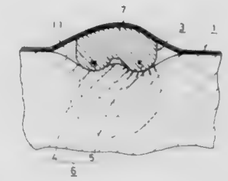
1. A carrier for placing an instrument in a body passage to shield the passage from brasion by the instrument, said carrier comprising: an open ended sheath in the form of a thin flexible membrance collapsible upon itself, said sheath having an interior of a diameter greater than the cross-section of the instrument to be placed; guide wire accommodating means secured to said sheath to enable said sheath to be slid over a guide wire and into place within a body passage and isolate the guide wire from obstructing the passage of an instrument through the interior of the sheath; column strength imparting means operatively associated with the guide wire accommodating means to apply pressure thereto to draw the sheath along a guide wire and into a body passage within which the wire is placed.

4,798,194

MAGNETIC THERAPEUTIC DEVICE

Shigeaki Amishima, Himeji, Japan, assignor to Aso Pharmaceutical Co., Ltd., Kikuchi, Japan

Continuation of Ser. No. 779,729, Sep. 24, 1985, abandoned. This application May 19, 1987, Ser. No. 953,523
Claims priority, application Japan, Nov. 12, 1984, 59-171834[U]
Int. Cl.[4] A61N *1/42*
U.S. Cl. 128—9 **11 Claims**



1. A magnetic therapeutic device comprising a sheet having a sticking surface, a permanent magnetic body having a first side and a second side, said first side being opposite to said second side, said first side being mounted on said sticking surface of said sheet, said second side being adapted to contact

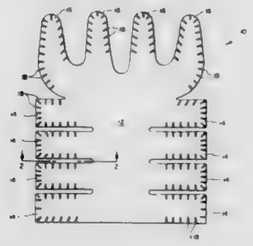
a human body part, said magnetic body having a first portion and a second portion, said first portion being defined partially by said first side and said second portion being defined partially by said second side, said first and second portions being disposed on opposite sides of a bisecting plane disposed generally midway between said first and second sides, said first portion being non-magnetized, said second portion being magnetized and containing a north pole and a south pole in side-by-side relationship and facing said second side such that said second side is thereby magnetized and substantially all of the magnetic lines of force from said magnetized second side pass outwardly of said second side, whereby substantially all of the magnetic lines of force from said permanent magnetic body pass outwardly of said second side and penetrate into said human contacting part.

4,798,195

MOLDABLE RETRACTOR FOR USE IN SURGERY

William J. Seare, Jr., 1321 Harvard Ave., Salt Lake City, Utah 84105

Filed Nov. 7, 1986, Ser. No. 928,539
Int. Cl.[4] A61B *17/02*
U.S. Cl. 128—20 **25 Claims**



1. A one-piece retractor for use in surgery comprising:
a generally planar plate constructed of a material capable of flexing having an interior body portion and at least two arms extending generally outwardly from said body portion wherein said arms are constructed of a material of a thickness capable of being positioned into a plurality of positions without renitency both within the plane of the plate and in various planes above or below the plane of the plate, said planar arms having a plurality of slots disposed along their outer edges such that surgical stays may be held within said slots.

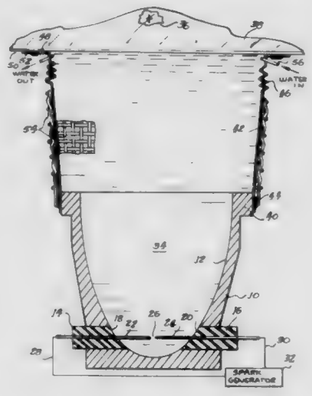
4,798,196

SHROUD FOR COUPLING KIDNEY STONE DISINTEGRATOR TO HUMAN BODY

Christopher Nowacki, Arlington Heights, and Alfred G. Brisson, Kildeer, both of Ill., assignors to Trutek Research, Inc., Lake Zurich, Ill.

Filed Dec. 16, 1986, Ser. No. 942,394
Int. Cl.[4] A61B *17/22*
U.S. Cl. 128—24 A **2 Claims**

1. An extracorporeal kidney stone disintegrator comprising an upwardly opening ellipsoidal reflector having a first focus point therein and a second focus point disposed above the reflector, said reflector having an open upper end, means providing a spark gap in said reflector at the first focus point thereof, a flexible waterproof shroud fixed to said open upper end of said reflector having an outwardly extending integral peripheral flange at an upper end of said shroud, means securing and sealing said flange directly to the skin of a human body containing a concretion such as a kidney stone to be disintegrated, and a body of water filling said reflector and said shroud and in direct contact with the skin of said human body, said reflector being positioned relative to said body so that the concretion is at the second focus point of the reflector, generation of a spark across said spark gap causing generation of a shock wave focussed on said concretion and coupled to said



concretion by said body of water and by the tissues of said human body, and an external support surrounding and embracing said shroud.

4,798,197

SAFETY FEATURES FOR CONTINUOUS MOTION THERAPY SYSTEM

Robert H. Nippoldt, Newport; Gary A. Rocheleau, Maple Grove, both of Minn., and Thomas C. Wright, Longmont, Colo., assignors to Empi, Inc., Fridley, Minn.

Filed Mar. 10, 1987, Ser. No. 24,232
Int. Cl.[4] A61H *1/02*
U.S. Cl. 128—25 R **24 Claims**



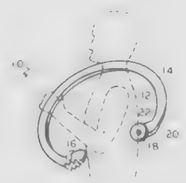
1. A continuous motion system for providing continuous motion therapy to a patient's limb, including:
a carriage for supporting a patient's limb;
drive means for driving the carriage through a range of reciprocal angular movement;
neuromuscular stimulation (NMS) means for applying electrical stimulation to muscles of the patient's limb; and
control means for controlling the drive means and the NMS means, the control means including:
ON/OFF switch means having ON and OFF states for controlling the application of power to the control means;
NMS switch means having ON and OFF states for controlling the NMS means; and
NMS safety circuit means coupled to the ON/OFF switch means, the NMS switch means and the NMS means for disabling the NMS means and thereby preventing the application of electrical stimulation when the ON/OFF switch means is is in its ON state until after the NMS switch means has been switched from its OFF state to its ON state.

4,798,198

BODY MASSAGER FOR ALTERNATIVELY APPLYING ROLLING PRESSURE OR DIRECT PRESSURE

William T. Wright, 41 Sandy Neck Rd., East Sandwich, Mass. 02537

Filed Jan. 7, 1988, Ser. No. 141,634
Int. Cl.[4] A61H *7/00, 15/00*
U.S. Cl. 128—57 **3 Claims**



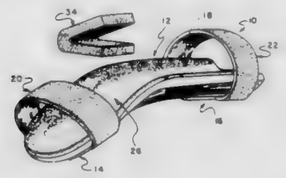
1. A body massage apparatus for the selective application of two different kinds of pressure to portions of a user's body, which apparatus comprises:
(a) a circular, generally flat, body-encircling element having a circumference greater than about sixty percent (60%) of a circle and characterized by an opening therein to permit the placement of the trunk of the user's body within the body-encircling element, the body-encircling element having a one end and an other end;
(b) the said one end having end means tapered toward said opening to provide for the application of direct pressure to selected portions of the body of the user; and
(c) the other end having a rotatable wheel means to provide for the alternative application of a rolling-type pressure to selected portions of the body of the user whereby the user places the trunk portion of his body within the body-encircling element, grasps the element with both hands and applies the one or the other end of the element against a selected body portion for the application of pressure thereto.

4,798,199

ARTERIAL WRIST SUPPORT

Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to Tecnol, Inc., Fort Worth, Tex.

Continuation of Ser. No. 579,774, Feb. 13, 1984, abandoned.
This application Jan. 21, 1986, Ser. No. 821,225
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—87 R **13 Claims**



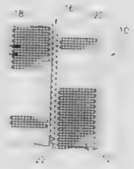
1. Apparatus for supporting a patient's hand, wrist, and at least a portion of the forearm in order to expose the radial artery to receive an arterial line, comprising:
a substantially rigid, unitary body adapted to underlie the posterior of the patient's hand, wrist and forearm, said body including:
a substantially concave, spoon-shaped forward portion for mating engagement with the posterior surface of the hand, between the wrist and the distal ends of the fingers, said concave shape extending upwards around the medial and lateral sides of the hand towards the anterior side thereof to prevent rotation of the hand about the wrist joint, and
a substantially concave forearm support portion being integrally connected to the end of said forward portion proximate the wrist for receiving the patient's forearm,
said forearm portion having a traversely arcuate channel formed therein and extending along said forearm portion from said forward portion at the wrist towards the elbow for receiving the portion of the patient's forearm cooperating with the wrist, the transverse shape of said forearm portion being concave for preventing rotation of the forearm about the wrist,
said forward portion and said forearm portion being of unitary construction,
said forward portion being oriented at an angle relative to said rear portion so that the patient's wrist is supported at an obtuse angle such that the hand is rotated about the wrist away from the anterior side to expose the radial artery to receive an arterial puncture; and
releasable fastening means for attaching said body to the hand and forearm to provide immobilizing support to the wrist and the arterial line, said fastening means comprising means for securing the palm of the hand below the thumb to said forward portion and means securing the forearm substantially above the wrist to said forearm support portion, a wrist region between said means for securing the palm and said means for securing the forearm remaining free for the insertion of said arterial line thereat.

4,798,200

SELF-ADHERING ORTHOPEDIC SPLINT

William P. Warthen, Spartanburg, and Mohammed I. Akhawala, Simpsonville, both of S.C., assignors to Millikes Research Corporation, Spartanburg, S.C.

Filed Dec. 9, 1987, Ser. No. 130,588
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—89 R **6 Claims**



1. A self-adhering, orthopedic splint capable of being conformed to the contours of a limb, which comprises: an elongated, inelastic, warp knit fabric having relatively stiff, inelastic monofilaments in the width direction and relatively flexible, inelastic yarns in the length direction, said monofilaments being interrupted by at least one hinged section running in the lengthwise direction; said fabric having firmly anchored to at least one surface thereof a layer of normally tacky, pressure sensitive adhesive.

4,798,201

SURGICAL ADHESIVE DRESSING

David A. Rawlings, Stansted Mountfitchet, and William D. Potter, Stortford, both of United Kingdom, assignors to Smith and Nephew Associated Companies p.l.c., United Kingdom

Continuation of Ser. No. 539,098, Oct. 5, 1983, abandoned. This application Dec. 30, 1986, Ser. No. 947,613

Claims priority, application United Kingdom, Apr. 13, 1983, 8309993

The portion of the term of this patent subsequent to Jun. 17, 2003, has been disclaimed.

Int. Cl.[4] A61L *15/00*

U.S. Cl. 128—156 19 Claims

1. A surgical dressing which consists essentially of a film which carries an adhesive layer for securing the dressing to the human body, wherein,

(a) the film is continuous and comprises a polyurethane polyether polyamide block copolymer or a polyether polyester block copolymer which in contact with water has a higher MVP than when in contact with moisture vapor but not water,

(b) the adhesive layer is porous such that the pores account for 10% to 50% of the area of the adhesive, and the adhesive allows access of water to the film when water is in contact with the adhesive layer so that,

(c) said surgical dressing has an MVP of not less than 2500 g/m^2 when the adhesive layer is in contact with water and has an MVP of not more than 2000 g/m^2 when the adhesive layer is in contact with moisture vapor but not water; whereby the dressing is suitable for use on exuding wounds and non-exuding wounds.

4,798,202

COMPRESSED-AIR BREATHING APPARATUS FOR UNDERWATER DIVING

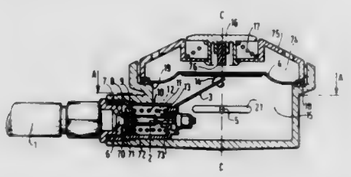
Bernard Chambonnet, Vence, France, assignor to La Spirotechnique Industrielle et Commerciale, Carros Cedex, France

Filed Feb. 12, 1987, Ser. No. 13,876

Claims priority, application France, Feb. 21, 1986, 86 02367

Int. Cl.[4] A62B *7/04*

U.S. Cl. 128—204.26 9 Claims



1. In a compressed air breathing apparatus, in particular for underwater diving, comprising an expansion chamber for expanding the compressed air, compressed air supply means, a valve through which said compressed air supply means communicates with said chamber, means for controlling the opening and closing of said valve responsive to an inhaling effort on the part of the user, a mouthpiece including a conduit for putting said expansion chamber in communication with said mouthpiece and consequently the mouth of the user, said conduit including means for forming an obstacle to the free flow of the air from said expansion chamber to the mouth of the user, said obstacle means being so arranged that a depression required for opening said valve is between −6 millibar and +6 millibar for a rate of flow of air of 400 liters/min; the improvement comprising means for bodily shifting the position of said obstacle means while maintaining the shape of said obstacle means thereby to alter the inhaling effort required of the user according to the bodily shifted position of said obstacle means.

4,798,203

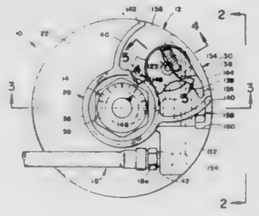
PORTABLE EMERGENCY BREATHING APPARATUS

Josef A. Bartos, Diamond Bar, Calif., assignor to Respirator Research, Ltd., Willoughby, Ohio

Continuation-in-part of Ser. No. 858,705, May 2, 1986, Pat. No. 4,724,833. This application Nov. 20, 1986, Ser. No. 932,562

Int. Cl.[4] A62B *7/00*

U.S. Cl. 128—205.22 40 Claims



1. Portable emergency breathing apparatus comprising, breathing gas supply container means having an axis, axially spaced apart open and closed ends, and cylindrical side wall means between said ends, housing means mounted on said open end of said container means, gas flow passageway means in said housing means having an inlet end in communication with the interior of said container means and an outlet end for connection to user utilization means, pressure gauge means in said housing means in communication with said passageway means between said inlet and outlet ends for measuring the pressure in said container means, indicator means for indicating the pressure of gas in said container means measured by said pressure gauge means, valve means in said housing means for opening and closing passageway means between said pressure gauge means and said outlet end to control the flow of gas from said container means to said outlet end of said passageway means, operating means for said valve means, said operating means including operating member means in part exterior of said housing means and manually displaceable between first and second positions to cause said valve means to respectively open and close said passageway means to flow therethrough, said housing means having axially outer and inner end surfaces with respect to said axis, said outer end surface providing said apparatus with an axially outermost end surface, said housing means having a radially outer peripheral side surface between said outer and inner end surfaces, said outer end surface including recess means therein, and said indicator means and said operating member means in said first and second positions thereof being supported in said recess means and axially within said outer end surface and radially within said outer peripheral side surface, whereby said indicator means and operating member means are protected from engagement with objects contacting said outer end surface and said outer peripheral side surface.

4,798,204

METHOD OF LASER-SCULPTURE OF THE OPTICALLY USED PORTION OF THE CORNEA

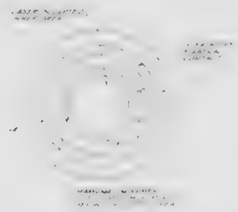
Francis A. L'Esperance, Jr., Englewood, N.J., assignor to LRI L.P., New York, N.Y.

Continuation-in-part of Ser. No. 049,333, May 13, 1987, which is a continuation-in-part of Ser. No. 748,358, Jun. 24, 1985, Pat. No. 4,665,913 Ser. No. 891,169, Jul. 31, 1986, and Ser. No. 891,285, Jul. 31, 1986, said Ser. No. 748,358, Pat. No. 4,732,148 is a continuation-in-part of Ser. No. 552,983, Nov. 17, 1983, abandoned, said Ser. No. 891,169, is a continuation-in-part of Ser. No. 780,335, Sep. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 740,276, Jun. 3, 1985, abandoned, which is a continuation of Ser. No. 552,983, abandoned, which is a continuation-in-part, said Ser. No. 891,285, is a continuation-in-part of Ser. No. 778,801, Sep. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 742,225, Jun. 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 552,983,. This application Jul. 29, 1987, Ser. No. 80,398

The portion of the term of this patent subsequent to May 19, 2004, has been disclaimed.

Int. Cl.[4] A61F *9/00*

U.S. Cl. 128—303.1 10 Claims



1. The method of improving optical properties of an eye by operating essentially only upon the optically used area of the anterior surface of the cornea of the eye, which method comprises a one-step procedure of tissue-ablating laser radiation of the anterior surface of the cornea in a volumetric removal of corneal tissue and with minimum depth penetration into the stroma and to a predetermined curvature profile, said step being one of selectively distributing the tissue-ablating radiation to exposed corneal tissue within said area to achieve the predetermined curvature profile essentially only by volumetric removal of Bowman's membrane tissue, and terminating said procedure upon achieving the predetermined curvature profile.

4,798,205

METHOD OF USING A SUBPERIOSTEAL TISSUE EXPANDER

Donald J. Bonomo, Olympia Field, Ill., and Robert C. Paulson, Goleta, Calif., assignors to Cox-Uphoff International, Carpinteria, Calif.

Division of Ser. No. 861,059, May 8, 1986, Pat. No. 4,719,918. This application Oct. 23, 1987, Ser. No. 113,228

Int. Cl.[4] A61M *29/02*

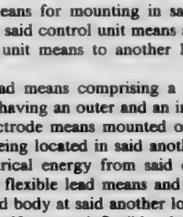
U.S. Cl. 128—344 8 Claims

1. A method for forming an enlarged subperiosteal channel along the alveolar ridge of the mandible or maxilla, comprising the steps of:

making an incision in the mucoperiosteum on the alveolar ridge;

creating a subperiosteal channel leading from said incision along the alveolar ridge;

introducing an expandable tube into said channel; expanding said tube; and



leaving said tube in said channel until said mucoperiosteum has stretched or grown so that an enlarged channel remains after removal of said tube.

4,798,206

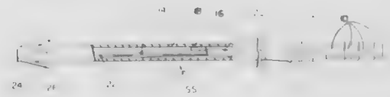
IMPLANTED MEDICAL SYSTEM INCLUDING A SELF-POWERED SENSING SYSTEM

David S. Maddison, Wollstonecraft; Michael Skalsky, Waverley; Zoran Milijasevic, Elanora Heights; Stephen G. Perry, Gisborne; Lorraine K. Holley, Rockdale; Gerhard R. Gotthardt, Castle Hill, and Garry T. Richardson, Carlingford, all of Australia, assignors to Telectronics N.V., Curacao, Netherlands Antilles

Filed Oct. 28, 1986, Ser. No. 923,875

Int. Cl.[4] A61N *1/36*

U.S. Cl. 128—419 P 28 Claims



1. An implantable medical system for use in the control of the operation of a part of a body comprising:

control unit means for mounting in one location of a body;

control circuit means in said control unit means for controlling the operation of the control unit means;

battery means in said control unit means for supplying electrical energy to said control unit means and said control circuit means;

flexible lead means for mounting in said body and being connected to said control unit means and extending from said control unit means to another location inside said body;

said flexible lead means comprising a continuous flexible hollow tube having an outer and an inner surface;

stimulation electrode means mounted on said flexible lead means and being located in said another location for receiving electrical energy from said control unit means through said flexible lead means and applying electrical energy to said body at said another location;

self-contained, self-powered, flexible, electrical signal generating means mounted in a portion of said flexible lead means in spaced relationship to said stimulation electrode means for self-generation of electrical control signals solely by mechanical movement induced solely by flexible movement of said flexible lead means in said another location caused by action of and conditions in the body and without any electrical connection to and supply of electrical energy from any other source;

a fixed support secured to said inner surface;

said self-contained, self-powered, flexible, electrical signal generating means mounted for cantilever action on said fixed support; and

electrical control signal transmitting means, connected to said self-contained, self-powered, flexible, electrical signal generating means and said control circuit means, to transmit the generated electrical control signals to said control circuit means.

4,798,207

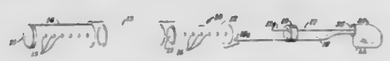
DEVICE FOR ENABLING TIME-INTEGRATED MEASUREMENT OF SUBSTANCES IN BIOLOGICAL FLUIDS

Stephen E. Wade, 1720 So. Marshall Rd., #50, Boulder, Colo. 80303

Division of Ser. No. 492,705, May 9, 1983, Pat. No. 4,594,326. This application May 2, 1986, Ser. No. 858,736

Int. Cl.[4] A61B *5/00*

U.S. Cl. 128—632 **18 Claims**



1. A device for maintaining controlled diffusion of chemical substances of interest, comprising:

wall means defining a compartment, said wall means being provided with one of a diffusion port and diffusion ports of limited permeability, said ports providing a region which is generally permeable to diffusion of said chemical substances of interest, the remainder of said wall means of said compartment being substantially impermeable to diffusion of said chemical substances of interest, the distribution of the surface area of said ports being of a scattered nature such that no more than one-half of said surface area of said ports is contained in a square region as small as one-tenth of the entire surface area of said wall means.

4,798,208

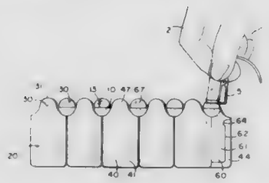
DIAGNOSTIC ELECTRODE

Adrian L. Faasse, Jr., 10499 Braska, SE., Middleville, Mich. 49333

Filed Dec. 9, 1987, Ser. No. 129,831

Int. Cl.[4] A61B *5/04*

U.S. Cl. 128—640 **16 Claims**



1. A diagnostic electrode adapted to be affixed to a patient's body for medical testing, wherein said electrode comprises:

a flexible polymeric foam backing layer provided with a body and a tab portion projecting from one end thereof;

a tin foil layer provided with a body and a tab portion projecting from one end thereof, and bonded to said backing layer in an overlying relationship such that said tin foil tab portion overlies and is bonded to said backing layer tab portion to thereby define a tab of said electrode; and

a sticky conductive gel coated on and adhered to a first surfaces of said body of said tin foil layer for engaging the patient'body;

a lead clip, having teeth, gripping said tab potion of said polymeric foam backing layer and said tin foil tab portion, said foam backing layer being sufficiently soft and flexible that said teeth of said clip bite into and securely grip said foam backing layer at said tab to preclude accidental dislodging of said clip from said tab portion of said foam backing layer or said tab portion of said tin foil layer which is bonded to said foam backing layer tab portion.

4,798,209

METHOD AND APPARATUS FOR NON-CONTACTING IDENTIFICATION OF THE TEMPERATURE DISTRIBUTION IN AN EXAMINATION SUBJECT

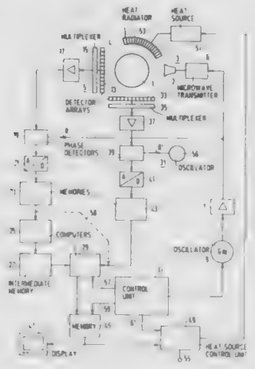
Klaus Klingenbeck, Hesedorf, and Rudolf Schittenhelm, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 9, 1987, Ser. No. 1,980

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1986, 3601983

Int. Cl.[4] A61B *5/05*

U.S. Cl. 128—653 **23 Claims**



1. A method for non-contacting identification of a three-dimensional temperature distribution in a patient comprising the steps of:

subjecting said patient to microwave radiation having a phase and amplitude from a microwave source;

detecting the three-dimensional phase and amplitude of microwave radiation attenuated by said patient;

computing the three-dimensional dielectric constant distribution in said patient from the detecting three-dimensional phase and amplitude values;

computing the characteristic thermal radiation of a selected location of said patient from selected phase and amplitude values of microwave radiation attenuated by said patient; and

computing the three-dimensional temperature distribution of said patient from said three-dimensional dielectric constant distribution and said characteristic thermal radiation of said selected location.

4,798,210

THREE-DIMENSIONAL IMAGING SYSTEM

Robert S. Ledley, Silver Spring, Md., assignor to National Biomedical Research Foundation, Washington, D.C.

Continuation-in-part of Ser. No. 594,277, Mar. 28, 1984, Pat. No. 4,747,411. This application Sep. 29, 1986, Ser. No. 913,065

Int. Cl.[4] A61B *10/00*

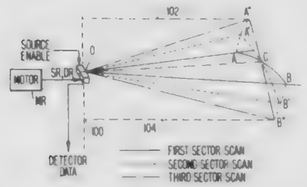
U.S. Cl. 128—660.01 **9 Claims**

1. A three-dimensional imaging system for obtaining a three-dimensional image of a three-dimensional object, comprising:

source means disposed at a given point displaced from the three-dimensional object for performing a first sector scan of the three-dimensional object by transmitting ultrasonic energy from the given point toward the three-dimensional object in successive directions in a first scanning plane, each successive direction having an angular orientation, with respect to a reference direction in the first scanning plane, which is greater than the angular orientation with respect to the reference direction of any preceding direction, one of the successive directions defining an axis between the given point and the three-dimensional object, said source means performing successive sector scans of the three-dimensional object of repeating the transmission of ultrasonic energy from the given point toward the three-dimensional object in successive directions in successive scanning planes, wherein each successive scanning plane has an angular orientation, measured along the axis and with respect to said first scanning plane, which is greater than the angular orientation of any preceding scanning plane as measured along the axis and with respect to the first scanning plane;

detector means for receiving reflected energy reflected from material of the three-dimensional object, and for converting said reflected energy to electrical signals; and

processor means connected to said detector means for receiving said electrical signals, and for processing said



electrical signals to develop reconstructed image data of the three-dimensional object, said processor means generating control signals;

wherein said detector means is disposed in an image plane displaced from the three-dimensional object, the image plane being perpendicular to the first scanning plane, the image plane being divided into a left image plane and a right image plane, said reconstructed image data developed by said processor means corresponding to forward projections of the three-dimensional object into said left image plane to form a first image and into said right image plane to form a second image, said first and second images forming a stereo pair;

said system further comprising processor-controlled rotating means connected to said processor means and responsive to said control signals from said processor means for rotating said source means about said axis by a certain angular value after each said sector scan is performed, and display means for displaying said first and second images compositely, thereby displaying said three-dimensional image of the three-dimensional object.

4,798,211

DIAGNOSTIC METHODS AND APPARATUS EMPLOYING MONITORING OF MYOCARDIAL ISCHEMIA

Daniel Goor, Rehov David Hemelech 47. Tel Aviv; Raphael Mohr, Rehov Hameshorer 10, Kiryat Krinitzi, Ramat Gan, both of Israel; Ihsan A. Haddad, 375 Lexington Rd., Concord, Mass. 01742, and William R. Oliver, 13 Country Club Dr., Chelmsford, Mass. 01824

Filed Apr. 25, 1986, Ser. No. 856,502

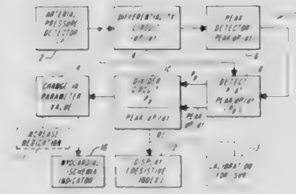
Int. Cl.[4] A61B *5/02*

U.S. Cl. 128—668 **13 Claims**

1. A method for monitoring the onset of a myocardial ischemic event during the induction of anesthesia in a subject comprising the steps of

monitoring values of a parameter corresponding to systemic vascular resistance of the subject, and

detecting the onset of myocardial ischemic events during the induction of anesthesia when said monitored parameter



value changes in accordance with a selected numerical amount.

4,798,212

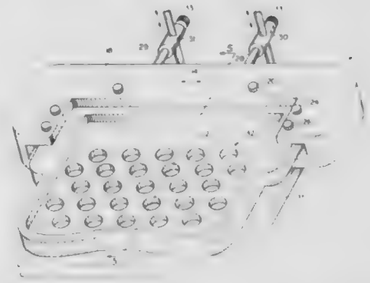
BIOPSY PADDLE WITH ADJUSTABLE LOCATOR PLATE

Thomas Arana, 89 Bloomfield St., Lexington, Mass. 02173

Filed Nov. 17, 1986, Ser. No. 930,918

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—749 **7 Claims**



1. An adjustable biopsy paddle for compressing tissue to be examined and assisting localization of a needle relative to a nonpalpable lesion, comprising:

a locator plate having a thickened rim and a plurality of tissue access holes of generally uniform diameter and generally uniform spacing between laterally adjacent holes;

a bracket for receiving and laterally, slidably supporting said plate; and

guide means including slot means located in said rim and pin means located on said bracket for engaging said plate with said bracket and constraining the direction of movement of said plate to the lateral direction and limiting the amount of lateral movement in said lateral direction.

4,798,213

BONE BIOPSY APPARATUS

Samuel H. Doppelt, 18 Wadsworth Rd., Sudbury, Mass. 01776

Filed Sep. 9, 1987, Ser. No. 94,503

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—754 **20 Claims**

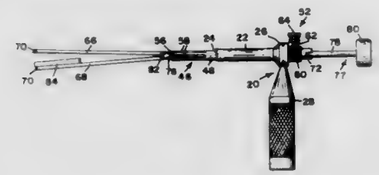
1. A drill for bone biopsy comprising:

(a) an outer cylindrical retaining sheath having a first open end and a second open end with cutting teeth,

(b) an inner cylindrical retaining sheath which is slidably mounted longitudinally within said outer retaining sheath, said inner retaining sheath having a first end and a second

open end with cutting teeth, said inner retaining sheath comprising two separable longitudinal halves,

(c) clamping means for releasably locking said inner and outer retaining sheaths together as a single drilling unit,



(d) means for rotating said drill about its central longitudinal axis, and

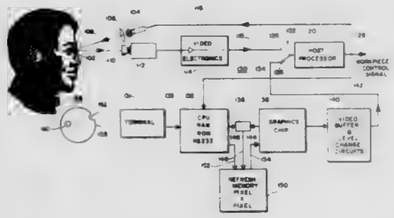
(e) means for removing said inner retaining sheath through the second open end of the outer retaining sheath.

4,798,214

STIMULATOR FOR EYE TRACKING OCULOMETER

Michael W. Haas, Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 24, 1987, Ser. No. 125,633
Int. Cl.[4] A61B *13/00*
U.S. Cl. 128—745 **21 Claims**



1. Signal sourcing apparatus for actuating an eye tracking oculometer system, said apparatus comprising the combination of:

means for generating a first sequence of electrical signals representative of an artificial optical background area;

means for generating a second sequence of electrical signals representative of an artificial first optical image disposed on said background area;

means for generating a third sequence of electrical signals representative of an artificial second optical image disposable on either said first optical image or on said background area;

memory means including a plurality of memory elements, means for addressing said memory elements, and means for writing in said memory elements, for storing said first, second, and third sequence electrical signals;

means for reading said first, second, and third sequence of stored electrical signals in predetermined arrangement from said memory elements and for generating a composite video signal therefrom; and

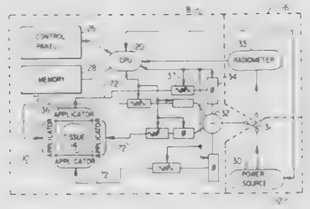
means for conveying said composite video signal to a data input port of said oculometer system.

4,798,215

HYPERTHERMIA APPARATUS

Paul F. Turner, North Salt Lake, Utah, assignor to BSD Medical Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 590,030, Mar. 15, 1984, Pat. No. 4,638,813, which is a continuation-in-part of Ser. No. 405,947, Aug. 6, 1982, Pat. No. 4,672,980, which is a continuation-in-part of Ser. No. 136,506, Apr. 2, 1980, Pat. No. 4,462,412. This application Nov. 28, 1986, Ser. No. 935,936
Int. Cl.[4] A61N *5/00*
U.S. Cl. 128—804 **16 Claims**



1. A hyperthermia treatment apparatus comprising:

a combined transmitter/receiver means for selective operation in a coherent heat mode and a coherent heat measuring mode, said combined transmitter/receiver means including a transmitter means for inducing electromagnetic energy in an electric field summing manner to a selected subcutaneous area of body tissue for heating, and a noninvasive receiver means for coherently combining blackbody radiation energy emitted from the selected subcutaneous area of the body tissue at depth indicating frequencies for measurement wherein the temperature of the selected subcutaneous area of body tissue being heated is monitored.

4,798,216

CLEANSING FLOSS FOR PIERCED EAR LOBES

John D. McCarty, and Linda M. McCarty, both of 13385 Dronfield Ave., Sylmar, Calif. 91342

Filed Feb. 19, 1985, Ser. No. 702,629
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—321 **7 Claims**



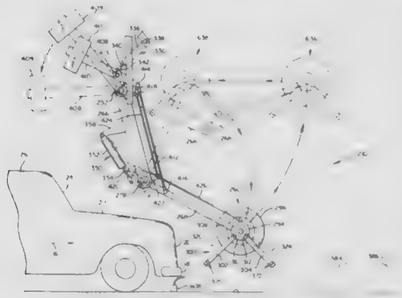
1. A method for cleaning and disinfecting pierced ear lobes comprising: providing an elongated floss-like member having sufficient rigidity to permit it to be inserted into and through the pierced ear lobe and having substantial absorbency; soaking the member in an astringent until it becomes impregnated with the astringent; and then inserting the member into and through a pierced ear lobe and pulling the member back and forth to clean and disinfect the ear lobe.

4,798,217

FRONT, TOP AND REAR APPLICATOR FOR A VEHICLE WASH

Daniel C. Hanna, 1133 SW. Rivington Dr., Portland, Oreg. 97201

Filed Oct. 1, 1986, Ser. No. 913,957
Int. Cl.[4] B60S *3/04*
U.S. Cl. 134—57 R **13 Claims**



1. A vehicle washing apparatus for cleaning an exterior surface of a vehicle as the vehicle moves along a travel path of movement, said apparatus comprising:

a cleaning element for cleaning said surface of said vehicle, said cleaning element being movable between a lower position in said path of movement and an upper position above said path of movement;

biasing means for biasing said cleaning element to said upper position;

power-operated cleaning element positioning means for moving said cleaning element independent of the bias of said biasing means toward and away form said surface;

at least one pivotal suspension member for supporting said cleaning element and moving said cleaning element between said lower and upper positions; and

a frame support to which said suspension member is mounted, said suspension member comprising a primary arm and a secondary arm, said primary arm being pivotally mounted to said support, said secondary arm being pivotally mounted to said primary arm, said cleaning element being mounted to said secondary arm for movement toward and away from said surface;

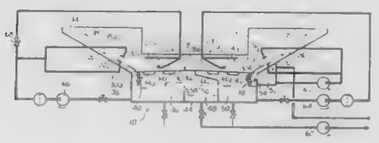
said biasing means being operable to move said cleaning element to a position above said path in the absence of power to said positioning means.

4,798,218

CLEANING APPARATUS FOR ELECTRONIC COMPONENTS AND/OR PRECISION PARTS OF MACHINERY

Gérard Sauvan, Cagnes sur Mer, France, assignor to Outillages Scientifiques et de Laboratoires O.S.L., Paris, France

Filed May 28, 1986, Ser. No. 867,766
Claims priority, application France, May 28, 1985, 85 07979
Int. Cl.[4] B08B *3/00, 3/12, 7/04*
U.S. Cl. 134—74 **7 Claims**



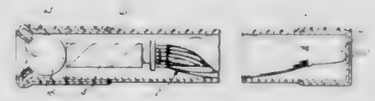
1. Dual mode cleaning apparatus for selectively cleaning articles by a first spray cleaning mode, a second ultrasonic cleaning mode, or a combination of said first and second modes comprising, an enclosure having an inlet and an outlet, a conveyor extending through said enclosure from said inlet to said outlet for carrying said articles therethrough, a shallow solvent storing tank within said enclosure beneath said conveyor, said conveyor inclining downwardly from said inlet toward said solvent storing tank, extending generally horizontally across said tank, and including upwardly from said tank to said outlet, said tank having a bottom and opposite end walls, said end walls including portions inclining upwardly beneath said conveyor toward said inlet and said outlet, the top of said end wall at said inlet being lower than the top of said end wall at said outlet whereby solvent flows toward and over said inlet end wall counter to the displacement direction of said conveyor when said tank contains a bath of solvent in said second cleaning mode, means for cleaning said articles in said first mode including spray means positioned to spray solvent against said articles from above and below said conveyor, a solvent reservoir within said enclosure beneath said tank for receiving solvent dripping from said articles after being emitted from said spray means and solvent flowing over said inlet end wall, drain means in said tank for selectively draining solvent from said tank into said reservoir, and ultrasonic generator means disposed beneath said tank bottom for ultrasonically cleaning said articles moving through said bath of solvent within said tank in said second mode, said spray means including a final rinsing unit positioned over said upwardly inclining portion of said conveyor whereby solvent with the lowest impurities content drains onto the associated incline portion of the end wall and into the corresponding end of said tanks.

4,798,219

UMBRELLA PACKAGE

Liam Forde, Sungib Industrial Building, 20th Floor, Flats 3 & 4, 53 Wong Chuk Hang Road, Aberdeen, Hong Kong

Filed Oct. 16, 1986, Ser. No. 801,575
Int. Cl.[4] A45B *3/00, 25/18;* B65D *65/00;* A47F *13/06*
U.S. Cl. 135—16 **17 Claims**



1. An umbrella package comprising:

a tube;

a cap closing one end of said tube;

a golf ball pick-up device at the other end of said tube such device comprising a cylindrical element extending coaxially from the tube with an annular resilient lip extending inwardly to a radius less than that of the tube, wherein the umbrella in collapsed form is housed within the tube; and

an opaque removable sleeve covering said tube.

4,798,220

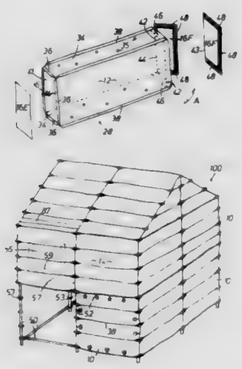
THERMO BLANKET

Dragomir Smoljo, Box 1285, Gravenhurst, Ontario, Canada POC 1JO

Filed Jun. 3, 1986, Ser. No. 870,181
Int. Cl.[4] B62D *63/04;* E04B *1/34;* E04D *1/34*
U.S. Cl. 135—115 **16 Claims**

1. An insulating flexible panel capable of being releasably joined to like panels in adjacent side by side relationship for use with scaffold means, each said panel including spaced inner and outer surfaces joined to side surfaces so as to define an enclosure, one of said side surfaces including flap means, insulating bat material freely moveable into and out of said enclosure when said flap means is in an open position, and wherein

said insulating bat material fills said enclosure and is not stitched to said surfaces when said flap means is in a closed position, one of said inner or outer surfaces presenting a first border and a second border, said second border extending generally outwardly beyond said side surfaces so as to overlap



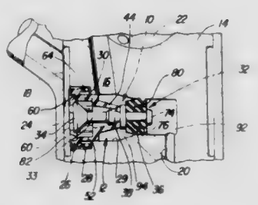
the first border of an adjacent panel, whereby said side surfaces of said panel and said adjacent panel engage said scaffold means therebetween and releasable fastening means associated with said first and second border for releasably fastening said first border of one panel to said second border of another panel.

4,798,221

SELF SEALING ANTI-KNOCK DIVERTER VALVE

Dennis W. Crawford, Pontiac, and Larry G. Turner, Clarkston, both of Mich., assignors to Masco Corporation of Indiana, Taylor, Mich.

Filed Jul. 27, 1987, Ser. No. 78,382
Int. Cl.[4] F16K *11/02*
U.S. Cl. 137—119 **12 Claims**



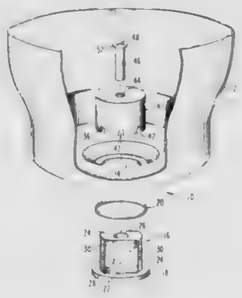
1. A diverter valve assembly for a faucet characterized by:
a valve seat member positionable in a valve chamber within a faucet body;
said valve chamber having a first outlet, a second outlet, and an inlet;
said valve seat having an integrally formed peripheral lip portion for sealingly abutting a side wall of said valve chamber between said inlet and said first outlet;
a valve element movably mounted to one of a closed or open position with respect to said valve seat such that when in said open position, fluid is allowed to flow from said inlet to said first outlet and when in said closed position, fluid does not flow from said inlet to said first outlet;
a pressure responsive means for moving said valve element between said closed and open positions with said pressure responsive means being responsive to a pressure differential between said inlet and said second outlet such that when a lower pressure is at said second outlet, said pressure responsive means moves said valve element to said closed position such that flow from said inlet is directed through said second outlet;
a resilient biasing means for biasing said valve element to said open position when the pressure at said second outlet is not lower than the pressure at said inlet by a predetermined amount;
said resilient biasing means including axially extending and resiliently flexible prongs depending from said valve seat member and having a second frictionally engaging a tapered surface of a spool connected to said valve element for biasing said spool and for damping motion of said spool;
said peripheral lip portion also abuts a shoulder in said valve chamber for axially positioning said valve seat in said chamber;
an annular recess located adjacent said peripheral lip portion and in communication with fluid pressure at said inlet to radially bias said lip portion outwardly against said side wall;
an end portion of said valve seat member toward said first outlet having circumferentially spaced notches therein to allow fluid flow radially outward therefrom,
said end portion abutable against a spout base of said faucet to fix the position of said valve member in conjunction with said lip portion and shoulder.

4,798,222

VALVE ASSEMBLY PARTICULARLY USABLE WITH A COFFEE BREWING BASKET

William Kauffman, 63 Robbinsville-Allentown Rd., Robbinsville, N.J. 08691

Filed Nov. 6, 1987, Ser. No. 118,070
Int. Cl.[4] A47J *31/02*
U.S. Cl. 137—132 **15 Claims**



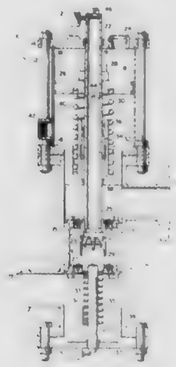
1. A valve assembly, particularly usable with a coffee brewing basket having a brewing aperture defined therein, comprising:
a. a valve body member positioned immediately below the coffee brewing basket and adjacent the brewing aperture, said valve body member including:
1. a head section positioned below the coffee brewing basket adjacent the brew aperture defined therein, said head section being sealed with respect to the underside of the coffee brewing basket to prevent fluid flow therebetween, said head section defining an exit bore extending therethrough;
2. a main section integral with respect to said head section and extending upwardly therefrom through the brewing aperture defined in the brewing basket, said main section defining a central flow bore extending longitudinally therethrough and in fluid flow communication with respect to the interior of the brewing basket and with respect to said exit bore defined in said head section, said main section including a threaded side section and at least one truncated side section;
b. a siphon cap means defining a central chamber therein, said siphon cap means including a threaded section adapted to be secured with respect to said threaded side section of said main section, said central chamber being positioned adjacent said truncated side section of said main section to define a siphon flow channel means, said siphon cap means defining slot means therein in fluid flow communication with respect to said siphon flow channel means and with respect to the interior of the brew basket, said siphon cap means further defining a main flow aperture in fluid flow communication with respect to said central flow bore of said main section; and
c. a main flow tube defining a main flow conduit extending therethrough, said main flow tube being positioned extending downwardly through said main flow aperture defined in said siphon cap means and through said central flow bore defined in said valve body member to facilitate movement of brewed coffee from the brew basket downwardly through said main flow aperture, said main flow conduit, said central flow bore and said exit bore.

4,798,223

DOUBLE BLOCK AND VENT VALVE SYSTEM

Richard A. Mitchell, and Joseph R. Buchanan, both of Portland, Conn., assignors to Skotch, Inc., Portland, Conn.

Filed Nov. 9, 1987, Ser. No. 118,602
Int. Cl.[4] F16K *1/44*
U.S. Cl. 137—312 **15 Claims**



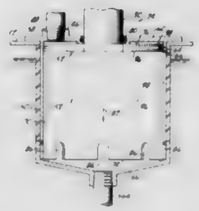
1. A unitary valve assembly for use in the passage sage of fluids which may include volatile, flammable or poisonous gases, said valve assembly comprising:
a valve structure having an inlet duct and an outlet duct which controls the flow of fluid therein
an actuator structure connected with said valve structure for generating motion to said valve structure,
said valve structure including cage means interposed between said inlet and said outlet ducts, said cage having first and second annular shoulder members,
vent means operative within said cage means for purging residual gases remaining within said cage means and said outlet duct member,
shaft means operatively connecting said actuator structure with said valve structure, said vent means being integral with said shaft means and said shaft means including first and second shaft members,
each of said first and second shaft members being biased by separate biasing means,
said first shaft member being connected with first valve plug assembly means and said second shaft member being connected with second valve plug assembly means, each of said separate biasing means cooperative with said first and second shaft members and respectively biasing said first and said second valve plug assembly means into a closed sealing engagement with said respective first and said second annular shoulder members,
said first shaft member and said second shaft member being mechanically bridged by a receiver member outwardly extending from one end of said first shaft member and telescopically receiving an outwardly extending plunger member formed on one end of said second shaft member.

4,798,224

AUTOMATIC HOT WATER RECOVERY APPARATUS

Spencer K. Haws, Mesa, Wash., assignor to Alternative Energy Resources, Inc., Mesa, Wash.

Filed Jan. 29, 1988, Ser. No. 150,072
Int. Cl.[4] F16K *49/00*
U.S. Cl. 137—337 **16 Claims**



1. Water heater apparatus for use with a pressurized plumbing system having separate hot and cold water lines and conduit means, interconnected between the hot and cold water lines, for enabling cold water to pass from the cold water line into the hot water line, said water heater apparatus comprising:
tank means for containing a volume of water under pressure greater than atmospheric pressure, said tank means including an outlet configured for coupling to said hot water line;
heating means for heating water contained in said tank means; and,
water inlet means, having fitting means for coupling to a cold water supply line and said cold water line, for introducing water to and withdrawing water from said tank means, said water inlet means including piston means for displacing water within said tank means to both enable hot water, heated in said tank means, to flow into the hot water line from the tank means and hot water, from the hot water line, to return into said tank means, said water inlet means further including means for exerting atmospheric pressure on a portion of the piston means.

4,798,225

SEPERABLE VALVE ASSEMBLY INCLUDING A VALVE MOUNT AND A VALVE BODY

Hsin I. Hsiao, No. 120-1, Shin-Rong Road, Chiayi City, Taiwan

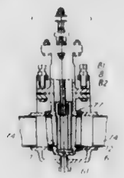
Filed Sep. 18, 1987, Ser. No. 99,340
Int. Cl.[4] F16K *51/00*
U.S. Cl. 137—454.2 **3 Claims**

1. A separable valve assembly comprising;
a valve mount and a valve body, wherein said valve mount is structured in a concavity form defining two inclined inner planes oppositely disposed therein, each said inclined inner plane including a respective inclined surface part of said valve mount, and said valve body has two inclined surface parts defining two correspondingly contoured external planes of said valve body, said two inclined external planes of said valve body being in registry

with said two inclined inner planes of said valve mount, such that said valve body can be fitly wedged into said concavity of said valve mount,

a pair of fixing boards removably mounted on the top of said valve mount, with a valve body pushing bolt provided at the center of each said fixing board, each said valve body pushing bolt being used to push said valve body into tight engagement with said valve mount in assembly;

groove means on said valve body in the vicinity of said surface parts thereof;



sealing elements provided in said groove means for preventing leakage between said inclined surface parts of said valve body and said inclined surface parts of said valve mount in assembly; and

a valve-body lifting bolt placed at the bottom of said valve mount to abut against the bottom of said valve body, for pushing said valve body upward for separation of the two for disassembly when said valve-body lifting bolt is rotated to progress upward.

4,798,226

CHARGING VALVE

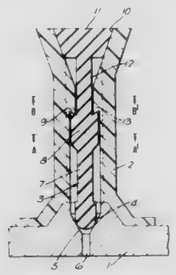
Helmut Struth, Ingelheim am Rhein, Fed. Rep. of Germany, assignor to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Feb. 11, 1988, Ser. No. 154,725

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1987, 3705363

Int. Cl.[4] F16K *15/14*

U.S. Cl. 137—512.4 **1 Claim**



1. A valve assembly, comprising:

a. a valve sleeve having a longitudinally running through bore;

b. a first valve seat at or near an inlet end of said bore;

c. a second valve seat at or near an outlet end of said bore; and,

d. a valve spindle in said bore, having a first end which is adapted to be pushed outwardly into sealing relationship with said first valve seat, a second end which is adapted to be pulled inwardly into sealing relationship with said second valve seat, an anchoring portion which is fixedly secured to the inside of said bore, a resiliently yieldable portion between said first spindle end and said anchoring portion which provides compressive stress for pushing said first spindle end into sealing relationship with said first valve seat, and a resiliently yieldable portion between said second spindle end and said anchoring portion which provides tensile stress for pulling said second spindle end into sealing relationship with said second valve seat.

4,798,227

VALVE FOR A PATIENT SUPPORT STRUCTURE

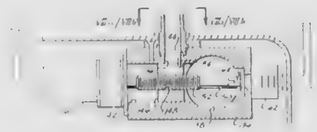
Vernon L. Goodwin, Charlotte, N.C., assignor to SSI Medical Services, Inc., Charleston, S.C.

Division of Ser. No. 814,610, Dec. 30, 1985, Pat. No. 4,745,647.

This application Apr. 28, 1987, Ser. No. 43,618

Int. Cl.[4] F16K *37/00, 31/04, 31/50*

U.S. Cl. 137—554 **14 Claims**



1. A multi-outlet, variable flow gas valve comprising:

(a) a housing defining an inlet and a passageway, said inlet communicating with said passageway;

(b) at least two cylinder chambers defined within said housing and communicating with said passageway, each said chamber having a longitudinal centerline therethrough;

(c) a discrete outlet defined in said housing for each said cylinder chamber and communicating therewith, said outlet being disposed perpendicularly to said longitudinal centerline of said cylinder chamber; and

(d) means for variably controlling communication of said inlet with each said outlet through said passageway and each said cylinder chamber, said variable communication control means comprising:

(i) a piston slidably received within each said cylinder chamber, said piston blocking all communication between each said outlet and said inlet when said piston is oriented at at least one predetermined location within said cylinder chamber, said piston permitting maximum communication between said outlet and said inlet through said cylinder chamber when said piston is oriented at another predetermined location within said cylinder chamber, said piston permitting a predetermined degree of communication between said outlet and said inlet through said cylinder chamber depending on the orientation of said piston within said cylinder chamber; and

(ii) means for orienting said piston at a predetermined location within said cylinder chamber, said means for orienting said piston comprising:

(i') a threaded opening extending through said piston and concentric with said longitudinal center line thereof;

(ii') a rotatable shaft having a threaded exterior portion engaging said threaded opening of said piston;

(iii') means for rotating said shaft whereby rotation of said shaft causes displacement of said piston along said shaft in said cylinder chamber, the direction of said displacement depending on the direction of rotation of said shaft; and

(iv') means for precluding full rotation of said piston, said rotation preclusion means comprising a projection associated with said piston and having a free end extending into each said outlet of said housing.

4,798,228

MULTI-LIQUID CONTROL VALVE SYSTEM, PARTICULARLY FOR FLEXOGRAPHIC INK OF DIFFERENT COLORS

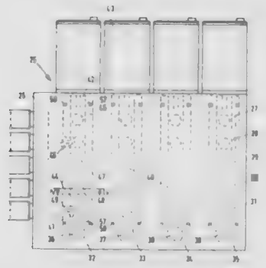
Franz X. Gollinger, St. Petersto, and Georg Bock, Augsburg, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Oct. 28, 1987, Ser. No. 114,212

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1986, 3638607

Int. Cl.[4] F16K *11/08*

U.S. Cl. 137—625.47 **20 Claims**



1. Multi-liquid control valve system to selectively control flow of differently colored printing ink, and washing liquid from a plurality of supply lines (**11–14, 15**) to a plurality of receiving lines (**17–20, 21**) for use in a multi-color printing machine having a plurality of printing systems or stations (**1–4**), each having a plurality of plate cylinders (**16**), and

means (**24**) for selectively applying printing ink of a selected color, or washing liquid, to respectively selected cylinders comprising

a valve housing (**26**);

a plurality of essentially parallel bores (**32–35**) formed in the housing;

a plurality of elongated faucet or cock or plug valve elements (**41**), one each located in a respective one of said bores (**32–35**),

and wherein

each of said valve elements (**41**) is formed with an axial bore (**44**),

and is further formed with a plurality of radial bores (**45–48, 49**), in fluid communication with said axial bore,

said radial bores being, each, axially staggered with respect to each other along said valve element (**41**);

a plurality of first fluid connection duct means (**36–39**) formed in the housing, each respectively hydraulically coupled to a respective axial bore (**44**) of a respective valve element (**41**);

a plurality of second fluid duct connection means (**27–30, 31**) formed in the housing;

a plurality of coupling ducts (**40**) formed in the housing and positioned for alignment with selected radial bores (**45–48, 49**) in the respective valve elements, for hydraulically coupling one of said plurality of the second fluid connection duct means (**27–30, 31**) for connection with a selected radial bore (**45–48, 49**) of the valve elements,

the radial bores (**45–48, 49**) of the valve elements (**41**) being circumferentially offset relative to each other;

means for connecting said first connection duct means (**36–39**) to one of said plurality of lines;

means for connecting said second connection duct means (**27–30, 31**) to the other of said plurality of lines; and

means (**42, 43**) for rotating said valve elements (**41**)

to selectively establish flow connection between selected supply lines and selected receiving lines by establishing a connection between a selected second fluid connection duct means (**27–30, 31**), a selected radial bore (**45–48, 49**) in the valve element (**41**), through a coupling duct (**40**) in alignment with the selected radial bore, the axial bore (**44**) in the valve element and one of the first connection ducts (**36–39**).

4,798,229

GAS FLOW CONSTRICTION MODULE

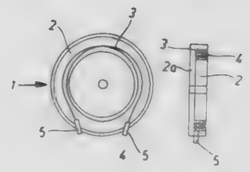
Börje Rantala, Helsinki, Finland, assignor to Instrumentarium Corp., Finland

Filed Feb. 12, 1987, Ser. No. 14,012

Claims priority, application Finland, Mar. 19, 1986, 861140

Int. Cl.[4] F15D *0/00*

U.S. Cl. 138—42 **4 Claims**



4. A gas flow constriction module for the distribution and control of a fluid in a respiratory monitoring device, comprising a body having a bottom and a side wall and defining and internal chamber, a thin plastic constriction tube disposed in coiled form within said chamber and supported by said bottom, said side wall having a pair of openings, a pair of rigid tubular connectors extending outwardly from said body and each having an internal passage communicating with the respective opening, the ends of the tube extending through the respective openings and disposed within the corresponding passages, and means for securing the ends of the tube within the passages of said couplings.

4,798,230

HEATABLE PLASTIC HOSE

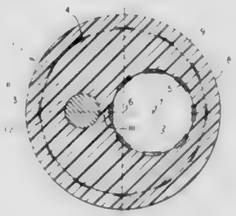
Siegfried Hopperdietzel, Selb, Fed. Rep. of Germany, assignor to Rehau AG + Co., Rehau, Fed. Rep. of Germany

Filed Aug. 21, 1987, Ser. No. 88,963

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1986, 8622603[U]

Int. Cl.[4] F16L *11/12*

U.S. Cl. 138—103 **12 Claims**



1. A heatable plastic hose for transporting fluids, said hose having only a single longitudinal cavity defined therein, comprising:

a tubular hose wall having a cross-sectional center point which defines, along the inner surface thereof, only a single longitudinal cavity having a cross-sectional center point which is laterally offset from the cross-sectional center point of the tubular hose wall, the tubular hose wall

having, in cross-section, a first wall portion and a second wall portion, the first wall portion being thicker than the second wall portion; and

a heating conductor wire which is longitudinally coextensive with and parallel to the tubular hose wall and is completely embedded in the first wall portion.

4,798,231

METHOD AND DEVICE FOR CONNECTING AT LEAST TWO RODS

Heinrich Glass, Niederwangen; Peter Lehmann, Kirchdorf; Hans Joehr, Kehrsatz, and René Freiburghaus, Bern, all of Switzerland, assignors to Styner & Bienz AG, Niederwangen, Switzerland

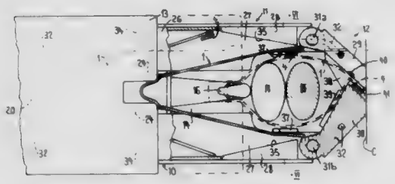
PCT No. PCT/CH86/00133, § 371 Date May 22, 1987, § 102(e) Date May 22, 1987, PCT Pub. No. WO87/01753, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 24, 1986, Ser. No. 67,740

Claims priority, application Switzerland, Sep. 24, 1985, 4115/85

Int. Cl.[4] B21F *15/04*

U.S. Cl. 140—119 **21 Claims**



1. A method for binding at least two rods, comprising the steps of:

providing a binding apparatus having a rotatable grabbing means;

providing a wire clamp having a pair of leg portion ends provided with complementary locking means;

positioning said wire clamp around the rods from a first side thereof whereby said leg portion ends extend to a second opposite side of said rods;

engaging said complementary locking means on said second side;

grasping said wire clamp from said first side with said grabbing means

rotating said grabbing means to thereby twist said wire clamp and bind said rods.

4,798,232

AUTOMATIC CONTROL SYSTEM FOR FILLING BEVERAGE CONTAINERS

William F. Stembridge, College Park; W. Frank Stembridge, East Point, both of Ga., and James C. Sturrock, Espanola, N. Mex., assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 684,215, Dec. 10, 1984, abandoned, which is a continuation-in-part of Ser. No. 629,397, Jul. 10, 1984, abandoned. This application Feb. 9, 1987, Ser. No. 12,908

Int. Cl.[4] B65B *3/04*

U.S. Cl. 141—1 **18 Claims**

1. An apparatus for automatically filling a container with a beverage comprising:

(a) an ultrasonic energy transmitter for transmitting ultrasonic energy down toward a container supporting surface located below a beverage dispensing nozzle;

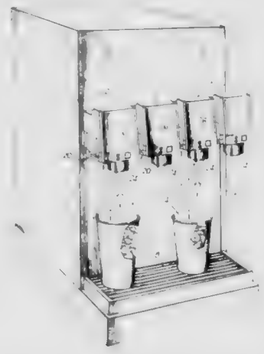
(b) an ultrasonic energy receiver, separate from and spaced apart from said transmitter and positioned for receiving ultrasonic energy reflected back up from the direction of said surface and for generating corresponding signals;

(c) control circuit means for automatically using said generated signals for detecting the presence of a container placed on said surface and below said nozzle;

(d) said control circuit means including means for controlling the filling of said container with beverage from said nozzle;

(e) said control circuit means including means for detecting said surface, a lip of a container placed on said surface, and one of a bottom of said container or the level of any ice in said container;

(f) said control circuit means including means for detecting a container lip and a second surface located at least 0.1 inch above said surface and also located at least 0.25 inch below said lip, prior to initiating the filling of a container located on said surface;



(g) said control circuit means including logic circuit means for generating a container lip signal indicative of the presence of a lip of a container only when two signals are received and are within 0.1 inch out of a set of five pulses;

(h) said logic circuit means also including means for generating a stable lip distance signal only when five consecutive container lip signals, separated by approximately sixteen milliseconds and that correspond to within 0.2 inch, have been detected; and

(i) said logic circuit means including means, after said stable lip distance signal has been received, for generating an ice level signal if an additional surface is detected that is more than 0.1 inch above said surface and that is also more than 0.25 inch below said lip.

4,798,233

PORTABLE COMPRESSED AIR DELIVERY UNIT FOR TIRES WITH BUILT-IN ANTIFREEZE CAPABILITY

Brian J. Mooney, 210 W. Jefferson, Grand Ledge, Mich. 48837

Filed Mar. 2, 1987, Ser. No. 20,727

Int. Cl.[4] B65B *31/00*

U.S. Cl. 141—38 **4 Claims**

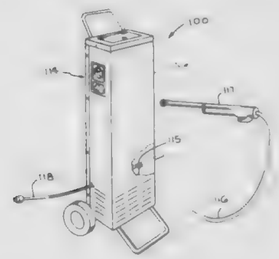
1. In a portable compressed air delivery unit having a built-in antifreeze capability whereby an antifreeze liquid supply tank is adapted to selectively deliver an antifreeze vapor to the air compressor so that a compressed air-antifreeze vapor mixture is delivered from the air compressor to the flexible compressed air outlet tire delivery tube so as to prevent freeze-up of normal compressed air condensation therein during outdoor use in freezing weather, the combination comprising:

a portable support frame;

an air compressor provided on said frame, said air compressor having a compressor air intake assembly extending upwardly therefrom, said air intake assembly having an opening, said air compressor provided with an antifreeze vapor inlet between the opening of said air intake assembly and said air compressor, said air compressor provided with an air compressor compressed air-antifreeze vapor mixture outlet;

an antifreeze liquid supply tank provided on said frame above said air compressor, said antifreeze liquid supply tank having a antifreeze liquid supply tank air intake assembly extending upwardly therefrom, said antifreeze liquid supply tank air intake assembly adapted to selectively introduce air into the lower portion of said antifreeze liquid supply tank beneath the surface of the antifreeze liquid contained in said supply tank, said antifreeze liquid supply tank provided with an antifreeze vapor outlet in the upper portion of said antifreeze liquid supply tank;

an antifreeze vapor delivery tube in operative engagement at one end thereof with said antifreeze tank vapor outlet, said antifreeze vapor delivery tube adapted for operative engagement at the opposite end thereof with said air compressor antifreeze vapor inlet so as to provide selective on demand delivery of antifreeze vapor to said air compressor;



a compressed air-antifreeze vapor mixture tire delivery tube provided in operative engagement at one end thereof with said air compressor compressed air-antifreeze vapor mixture outlet, said tire delivery tube provided with a tire-engaging compressed air valve assembly at the opposite end thereof for selective delivery of compressed air into a vehicle tire; and

a coin-operated timer assembly provided on said frame in operative electrical engagement with said air compressor, said coin-operated timer assembly provided with an external power cord adapted for selective engagement with an external electrical power source, said coin-operated timer assembly adapted to selectively actuate said air compressor so as to automatically draw antifreeze vapor from said antifreeze liquid supply tank into said air compressor so as to selectively deliver a compressed air-antifreeze vapor mixture through said tire delivery tube to said tire-engaging compressed air valve assembly for selective delivery to a vehicle tire so as to prevent freeze-up of normal compressed air condensation in said tire delivery tube during outdoor use in freezing weather.

4,798,234

CAN FILLING SYSTEM

Larry M. Dugan, Boulder, Colo., assignor to Adolph Coors Company, Golden, Colo.

Division of Ser. No. 881,649, Jul. 3, 1986, Pat. No. 4,718,465. This application Nov. 27, 1987, Ser. No. 126,112

Int. Cl.[4] B65B *35/10*

U.S. Cl. 141—165 **7 Claims**

1. A can filling system for minimizing damaged cans during filling comprising:

rotating filler wheel means having support means for supporting a plurality of cans, each of said cans having a longitudinal axis extending in a vertical direction;

each of said cans having a bottom portion, a body portion having a cylindrical outer surface, an open top rim portion and a neck portion between said body portion and said open top rim portion;

said cylindrical outer surface of said body portion having a lower portion and an upper portion;

said rotating filler wheel means transporting said cans in a horizontal circular path;

first pocket means on said rotating filler wheel means located adjacent to but spaced from said support means for positioning said cans on said support means;

said first pocket means having at least one arcuate surface having a longitudinal axis extending in a vertical direction;

can filler units supported on said rotating filler wheel means each of said can filler units having a generally cylindrical outer surface having a longitudinal axis aligned with the longitudinal axis of said first pocket means;

each of said can filler units having tulip means having a cylindrical inner surface and mounted for reciprocation over said outer surface of said can filler units for moving into and out of sealing engagement with one of said cans on said support means;

said tulip means having a longitudinal axis aligned with said longitudinal axis of said first pocket means;

second pocket means for cooperating with said first pocket means in positioning said cans;

mounting means for mounting each of said second pocket means on each of said tulip means for movement therewith;



said second pocket means having at least one arcuate surface having a longitudinal axis extending in a vertical direction and aligned with said longitudinal axis of said tulip means;

star wheel means for transporting said cans to said rotating filler wheel means;

star wheel pocket means for transferring each of said cans onto said support means said lower portion of said cylindrical outer surface in contact with said arcuate surface of said first pocket means and said upper portion of said cylindrical outer surface in contact with said arcuate surface of said second pocket means with portions of said longitudinal axis of each of said cans coinciding with said longitudinal axis of said arcuate surface of said first and second pocket means;

means for moving each of said tulip means into sealing engagement with each of said cans and at the same time moving said second pocket means over said outer surface of said each of said cans; and

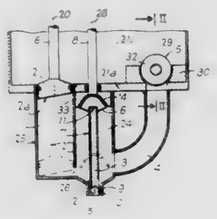
force applying means for applying a force to each of said cans during said movement of said tulip means and said second pocket means to maintain the contacting relationship between said upper and lower portions of said cylindrical outer surface of said can body and the arcuate surfaces of said first and second pocket means.

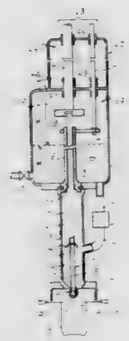
4,798,235

METERING AND DISPENSING DEVICE FOR THE PACKING OF LIQUIDS PRODUCTS

Roland Torterotot, Saint Arsoult en Yvelines, France, assignor to Societe a Responsabilite Limitee: Erca Holding, Les Ulis, France

Filed Jun. 4, 1987, Ser. No. 58,281
Claims priority, application France, Jun. 5, 1986, 86 08138
Int. Cl.[4] B67D *5/34*
U.S. Cl. 141—258 **16 Claims**





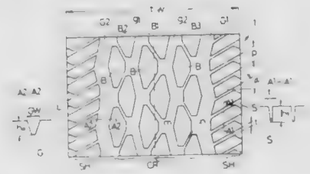
1. Metering and dispensing device for packing liquid products, such as food products, in pots or similar containers, comprising a reservoir for a product, metering means including a cylindrical metering chamber connected via an admission valve with said reservoir and a piston movable between high and low positions in said metering chamber, dispensing means equipped with a downwardly facing tubular nozzle, said nozzle having an upper inlet orifice and a lower ejection orifice and being movable longitudinally, said dispensing means including a dispensing chamber which communicates with the metering chamber and with the exterior of the device through the tubular nozzle, and a closing member operationally coupled to said nozzle, and actuating means for actuating the piston and the nozzle is such a way as to lower the nozzle before filling each container with liquid introduced via said nozzle under delivery action of the piston, an enclosure receiving the metering chamber and the dispensing chamber; the tubular nozzle has a transit channel with a lower end which is permanently closed by a transversal plug; at least one lower nozzle-ejection orifice opening laterally through said nozzle from said transit channel just above said transversal plug, the enclosure which receives the metering and dispensing chambers having a bottom with a guiding neck receiving the tubular nozzle which is mounted therein in a tight manner in such a way as to be slidable therein between a high position in which the ejection orifice is contained inside the guiding neck and is isolated from the exterior of the device, and the inlet orifice of the nozzle is situated in the dispensing chamber which receives the entire nozzle above the ejection orifice, and a low position in which most of the nozzle projects downwardly from the guiding neck with the inlet orifice situated in the dispensing chamber; and a gas bubble trap overlying the inlet orifice of the tubular nozzle, said gas bubble trap being fast with the tubular nozzle above the inlet orifice and defining a downwardly opening cavity about and immediately above said inlet orifice for interception and entrapment of bubbles for passage into said inlet orifice and discharge through said nozzle, said bubble trap having a smaller contour than the dispensing chamber in order to prevent any significant pumping effect in response to movement of the nozzle.

4,798,236

HIGH PERFORMANCE TIRE TREAD

Kenichi Fujiwara, Miki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Japan

Filed Apr. 4, 1986, Ser. No. 848,280
Claims priority, application Japan, Apr. 12, 1985, 60-78885
The portion of the term of this pateat subsequent to Nov. 15, 2005, has been disclaimed.
Int. Cl.[4] B60C *11/03*
U.S. Cl. 152—209 R **4 Claims**



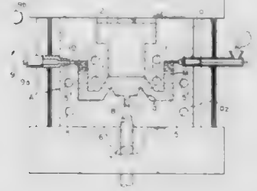
1. In a heavy duty pneumatic radial tire comprising:
a pair of bead cores disposed in beads of the tire, respectively:
a carcass, extending across the beads, and having at least one carcass ply of rubberized metal cords of a radial or semi-radial construction, both edges of the carcass ply turned up around the bead cores from the axially inside to the outside of the bead core to form turned up portions axially outside the bead cores and a main portion therebetween;
a tread and a pair of sidewalls on the carcass;
a bead apex rubber stock, disposed between the main portion and the turned up portion the carcass ply, and extending radially outwardly from its base adjacent to each bead core;
a reinforcing layer of rubberized steel cords disposed axially outside said turned up portion of the carcass ply;
a protective layer of organic fiber cords disposed axially outside the reinforcing layer, said turned up portion and said apex rubber stock adjacent to the reinforcing layer;
a belt layer, including at least three plies of rubberized parallel metal cords, and disposed between the carcass and the tread, for providing stiff reinforcement beneath the tread, said parallel metal cords in each ply being arranged at a relatively small angle with respect to the circumferential direction of the tire so as to cross with one another,
the improvement comprising:
said tread having two main longitudinal grooves extending circumferentially in a zigzag or wavy line to divide the tread into two shoulder parts and a crown part therebetween; said crown part being centered on the equatorial plane of the tire and having width of about 30 to 65% of the tread width and further including at least one central row of blocks;
each tread shoulder part having a plurality of generally axially extending narrow cut grooves to form circumferentially separated blocks therein;
a volume index of the narrow grooves being in a range of 2.5 to 15; and
a circumferential stiffness index in each shoulder part being in a range of 30 to 70,
wherein the volume index and the circumferential stiffness index are defined as follows:
Volume Index={V/(SXd)}X100
V: total volume of the narrow grooves in the shoulder part
S: surface area of the shoulder part
d: depth of the main longitudinal groove
Circumferential Stiffness Index=(Kpt/Kpo)X100
Kpt: circumferential stiffness in the shoulder part after the narrow grooves are provided
Kpo: circumferential stiffness in the shoulder part before the narrow grooves are provided
Circumferential Stiffness=F/y
F: tangential force in the circumferential direction of the tire at the ground contacting surface of the shoulder part
y: variation of the ground contacting surface in the circumferential direction of the tire.

4,798,237

MOLDING DIE FOR USE IN CASTING

Akio Nakano, 14-1, Ichikawaminami 3-chome, Ichikawa-shi, Chiba-ken, Japan

Filed Nov. 25, 1986, Ser. No. 934,657
Claims priority, application Japan, Nov. 30, 1985, 60-270480; Nov. 30, 1985, 60-270482
The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.
Int. Cl.[4] B22D *27/15*
U.S. Cl. 164—255 **4 Claims**



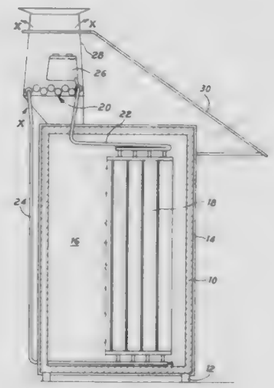
1. A molding die for use in casting, comprising:
a male die;
a female die associated with the male die so as to define an inner molding chamber therebetween;
at least one of said male and female dies being made of a ceramics material;
a pressuring insert associated with one of said male and female dies for applying pressure to a molten material in said molding chamber, said pressurizing insert formed of a ceramics material;
a heating mechanism disposed in both of said male and female dies;
a cooling mechanism disposed in both of said male and female dies;
a degasing plug movably assembled with the other of said male and female dies in opposing relation to said pressurizing insert and in fluid communication with said molding chamber, said degasing plug formed of a porous ceramics material; and
a depressurizing mechanism connected between said male and female dies and in fluid communication with said molding chamber to reduce gas pressure in said molding chamber.

4,798,238

SHELTER FOR THERMALLY CONDITIONING ELECTRONIC APPLIANCES

Alberto Ghiraldi, Milan, Italy, assignor to D.S.D.P. - S.p.A, Milan, Italy

Filed May 27, 1981, Ser. No. 267,519
Int. Cl.[4] H01L *23/46*; F28D *15/00*
U.S. Cl. 165—32 **5 Claims**



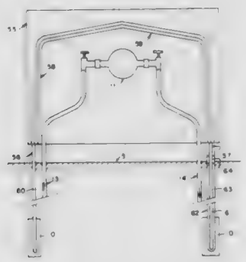
1. A self-contained shelter providing a thermally conditioned environment in a well defined temperature range for an apparatus, said shelter comprising:
a closed box having a ceiling, a floor and thermoinsulating walls defining an internal environment for housing the apparatus;
at least one heat accumulator means for taking up heat within the internal environment, said heat accumulator means containing a heat transfer liquid in heat exchange relationship with the internal environment of the box;
at least one heat exchanger means for circulating the heat transfer liquid from the heat exchange relationship with the internal environment to a heat exchange relationship with an external environment outside of the box;
said heat exchanger means being located in a position higher than that of said heat accumulator means and connected thereto by a single closed heat transfer loop for allowing a thermosiphon circulation of the liquid contained in said accumulator means to the heat exchanger means only when the fluid temperature within said heat exchanger means is lower than that within said heat accumulator means;
said heat accumulator means extending vertically from the ceiling to the floor of the box so as to provide a water head as high as possible between said heat accumulator means and said heat exchanger means in order to enhance the circulation speed of said heat transfer liquid; and
said heat exchanger means is connected to an expansion tank.

4,798,239

DEVICE FOR THE PROTECTION AGAINST FREEZING OF INSTALLATIONS FOR THE STORAGE OR THE SUPPLY OF A FREEZING LIQUID, IN PARTICULAR WATER

Paul H. Persohn, and Philippe Persohn, both of Le Rey, 33430 Bazas, France

Filed Jan. 6, 1984, Ser. No. 568,961
Claims priority, application France, Jan. 6, 1983, 83 00245; Aug. 26, 1983, 83 13744
Int. Cl.⁴ F24J *3/08*; E03B *7/12*; F28D *15/00*
U.S. Cl. 165—45 **3 Claims**



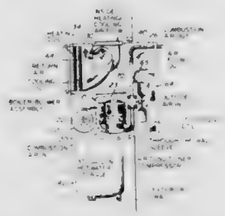
1. A device for protection of a liquids installation susceptible to freezing comprising two heat pipes each having a lower part underground at a depth sufficient to insure a temperature always above 0° C., said lower part having a fin type heat recovery system and each said heat pipe having an internal system for distribution of condensate drip, and an upper part of each said heat pipe being located in the immediate vicinity of a part of a liquids installation exposed to a danger of freezing and joined to an inside face of a stationary cabinet of a thermal insulating material covering said liquids installation.

4,798,240

INTEGRATED SPACE HEATING, AIR CONDITIONING AND POTABLE WATER HEATING APPLIANCE

Joseph Gerstmann, Framingham; George M. Celorier, Jr., Milford, and Wayne S. Hill, Boston, all of Mass., assignors to Gas Research Institute, Chicago, Ill.

Filed Mar. 18, 1985, Ser. No. 712,863
Int. Cl.⁴ F25B *29/00*
U.S. Cl. 165—48.1 **17 Claims**



12. An integrated water heating and space heating and cooling appliance comprising:

a housing having a lower water storage section, a middle burner section, and an upper internal air handling section in an internal portion, and having a side external air handling section extending from the internal portion to pass through a building wall;

an insulated hot water storage tank in the lower section of the housing;

a burner and burner heat exchanger in the middle section for heating a liquid heating medium;

a liquid to air heat exchanger in the upper section;

a heat transfer fluid circuit means for selectively directing heating medium from the burner heat exchanger in the middle section into heat exchange relationship with hot water in the hot water storage tank in the lower section to heat potable hot water or to the liquid to air heat exchanger in the upper section to heat hot air and for returning the heating medium to the burner heat exchanger;

an air conditioner evaporator in the upper section adjacent to and in face to face relationship with the liquid to air heat exchanger;

a blower in the upper section for blowing space conditioning air past the liquid to air heat exchanger and the evaporator for heating the air by the heat exchanger or cooling the air by the evaporator;

an air conditioner condenser in the side section;

a compressor operatively connected by conduit means to said compressor and evaporator to form a refrigeration system; and

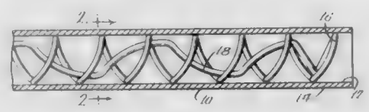
a blower in the side section for blowing external air past the condenser.

4,798,241

MIXED HELIX TURBULATOR FOR HEAT EXCHANGERS

Frank N. Jarrett, and John E. Munch, Jr., both of Racine, Wis., assignors to Modine Manufacturing, Racine, Wis.

Filed Apr. 4, 1983, Ser. No. 482,018
Int. Cl.⁴ F28F *13/12*
U.S. Cl. 165—109.1 **8 Claims**



1. A turbulator and conduit structure for use in heat exchangers comprising:

an elongated conduit formed of a good heat conductor such as copper, brass or aluminum through which a fluid to be subject to a heat exchange process is adapted to be passed and having inner and outer walls;

a first outer twisted wire winding having a predetermined pitch within said tube in substantial abutment with said inner wall; and

a second inner twisted wire winding having a predetermined pitch within said tube and at least partially within said first winding, said second winding having an open center;

the pitch of said first winding being substantially different than the pitch of said second winding.

4,798,242

HEAT EXCHANGER FOR RECOVERING HEAT FROM EXHAUST GASES

Masahiro Kito, Nagoya, Japan; Katsuhiro Mori, Hove, England, and Takashi Mitsumoto, Kassel, Fed. Rep. of Germany, assignors to Aisin Seiki Kabushiki Kaisha Co., Ltd., Kariya, Japan

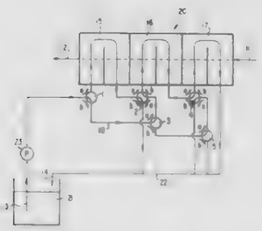
Filed May 30, 1986, Ser. No. 868,530
Claims priority, application United Kingdom, May 30, 1985, 8513535
Int. Cl.⁴ F27D *17/00*; F28F *19/00, 13/00*
U.S. Cl. 165—103 **4 Claims**

1. A heat exchanger for recovering heat form exhaust gases, comprising:

a plurality of separately divided chambers for the exhaust

a plurality of independently fluid passage means disposed within said chambers for the heat recovery fluid;

means for interconnecting and controlling said plurality of independent fluid passage means and which includes bypass means for bypassing each of said chambers and a plurality of valve means selectively operating said plural-



ity of independent fluid passage means and said bypass means; and

discharge means for independently discharging fluid from one or more of said plurality of chambers wherein at least one of said valve means is connected to each of said independent fluid passage means, said bypass means and said discharge means.

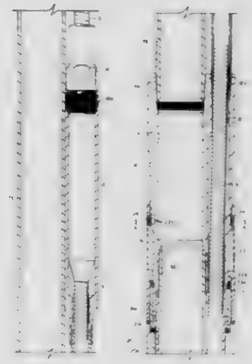
4,798,243

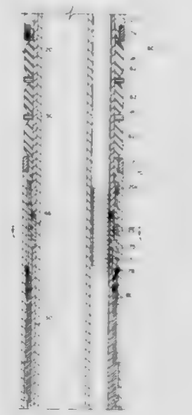
PACKER WITH ELECTRICAL CONDUIT BYPASS

Alfred R. Curington, The Woodlands, and Napoleon Arizmendi, Houston, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Nov. 12, 1987, Ser. No. 119,714
Int. Cl.⁴ E21B *33/128, 33/129*
U.S. Cl. 166—65.1 **8 Claims**

1. A packer for a subterranean well conduit providing an electrical conduit bypass through the packer comprising, in combination: a top sub having a cylindrical exterior configuration and defining a plurality of eccentrically disposed longitudinal passages; one said passage having upper and lower ends and having means at its upper end for connection to a tubing string; another of said passages being designed to accommodate an electrical conduit; means for sealingly inserting said electrical conduit through said another of said passages; a tubular packer body assemblage; shearable means for securing the upper end of said tubular body assemblage to the bottom end of said top sub; annular packing means surrounding one part of said tubular body assemblage; an abutment ring secured to said tubular body assemblage adjacent one axial end of said annular packing means; said packing means being expandable into sealing engagement with the well conduit bore by axial compression thereof against said abutment ring; a plurality of peripherally spaced slip elements surrounding another part of said tubular body assemblage; axially shiftable upper and lower cone elements cooperable with said slip elements to expand same into engagement with the well conduit bore; a cylinder sleeve cooperable with said tubular body assemblage to define an annular fluid pressure chamber; an annular piston cooperating with said annular fluid pressure chamber; port means in said top sub and said tubular packer body assemblage for supplying pressured fluid from the tubing string to said annular fluid pressure chamber; means operatively connecting said cylinder sleeve and said annular piston to said packing means and said upper cone element to packoff the packer in the well conduit; a hollow mandrel secured to the bottom end of said one of said passages and extending downwardly through said tubular body assemblage; an upper cylindrical support ring mounted in the bore of said tubular packer body assemblage; said upper support ring having eccentric passages to receive said mandrel and the electrical conduit therein; a lower cylindrical support ring; means for securing said lower support ring to said mandrel adjacent to and concentric with said lower cone element; said support ring defining an eccentric passage to accommodate an extension of the electric conduit, whereby





only said top sub and said cylindrical support rings have to be revised to accommodate any selected sizes of said mandrel and the electrical conduit.

4,798,244

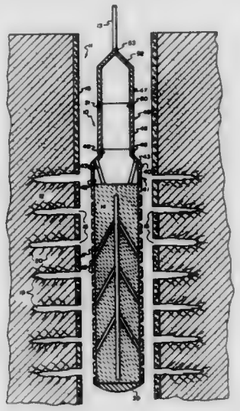
TOOL AND PROCESS FOR STIMULATING A SUBTERRANEAN FORMATION

Stephen A. Trost, 7120 S. Nut Tree, Salt Lake City, Utah 84121

Filed Jul. 16, 1987, Ser. No. 74,223
Int. Cl.⁴ E21B *43/263*
U.S. Cl. 166—250 **35 Claims**

1. A tool for stimulating a subterranean formation comprising, an elongate propellant stack constructed from propellant material modules that are formed from a combination of propellant materials such that the propellant module combination will have a desired burn rate, propellant modules of a center portion to have identical convex and concave surfaces as the respective top and bottom faces thereof with end propellant modules to form the propellant stack ends each having an end face to fit within or over one of said center portion propellant modules convex or concave faces; adhesive means containing grains of a propellant or explosive mixed therein to provide a burn rate that is approximately that of the propellant stack for bonding said selected propellant modules together, said adhe-

sive means to burn with the propellant stack; means for supporting and lowering said propellant stack into a well bore to



a subterranean formation to be stimulated; and means for igniting said propellant stack.

4,798,245
METHOD OF TREATING HETEROGENEOUS FORMATION WITH POTASSIUM HYDROXIDE
Jeffrey E. Frank, Rockford, Ill., assignor to Marathon Oil Company, Findlay, Ohio
Filed Sep. 3, 1987, Ser. No. 94,194
Int. Cl.[4] E21B *43/12*
U.S. Cl. 166—281 **25 Claims**

1. A process of stabilizing clays in a water-sensitive, stratified subterranean sandstone formation containing migratable fine particles which interact with aqueous solutions having ionic makeup distinct from connate water to reduce permeability of the formation and flow of water therethrough, the formation being penetrated by a wellbore in fluid communication therewith and wherein the formation is composed of at least two different stratum having substantially different permeabilities and wherein an aqueous solution comprised of potassium hydroxide is contacted with the fine particles for a time sufficient to effectively render the fine particles relatively insensitive to the aqueous solution having an ionic makeup distinct from the connate water, the process comprising injecting sequentially:

(a) an aqueous presoak solution containing about 0.1 to about 20 wt % of potassium chloride in a volume amount sufficient to displace divalent cations away from the formation to be treated and to cause the clays surrounding the wellbore to assume a smaller volume, the potassium chloride is solubilized in water that may contain salts that are nondamaging to the process and are compatible with the fine particles,

(b) an effective amount of a solid potassium chloride into the formation to substantially reduce the permeability of the highly permeable stratum, the potassium chloride being dispersed in a carrier fluid substantially insoluble to the potassium chloride and containing less than 10 ppm of divalent cations, and

(c) injecting the aqueous potassium hydroxide solution into the lesser permeable stratum to effect treatment of the formation with the aqueous potassium hydroxide solution.

4,798,246
PIPE SCRAPER
David M. Best, P.O. Box 14273, Houston, Tex. 77221
Filed Apr. 22, 1987, Ser. No. 41,230
Int. Cl.[4] E21B *37/02*; B08B *9/02*
U.S. Cl. 166—311 **44 Claims**



1. A scraper for scraping the interior of pipe comprising scraping teeth on scraper blades, said scraping teeth having outer arcuate edges which form, prior to wear of said scraper teeth, a generally circular scraper assembly of an original outer diameter supported on a mandrel for radial expansion from said original outer diameter that is defined by a predetermined fully radially collapsed position of said circular scraper assembly adjacent said mandrel to an expanded position forming a second outer diameter radially outward relative to said original outer diameter and means to adjust and maintain said scraper blades radially outwardly relative to said mandrel so that as said arcuate scraper teeth wear, the scraper assembly maintains substantially said original outer diameter when said scraper blades are in said fully radially collapsed position and the scraper assembly also maintaining said second outer diameter when said scraper blades are in the expanded position until said scraping teeth are worn down substantially to said scraper blade.

12. In a scraper for scraping the interior of pipe from substantially the drift diameter to at least maximum internal diameter of the pipe, wherein the scraper includes scraper blade means with projecting scraper surface means thereon, the invention comprising: mandrel means including support means to support said scraper blade means for the same amount of radial movement of said blade means relative to said mandrel means from a first position defined by a substantially collapsed position adjacent the pipe drift diameter to second position defined by a substantially extended position to at least the pipe maximum internal diameter; and means to reposition the cutter blade means outwardly relative to said mandrel means as said scraper surface means wear to maintain the scraper surface means projecting from said mandrel means for scraping contact with cement, scale, burrs and the like from adjacent the pipe drift diameter to at least the pipe maximum internal diameter as the scraping surface means wear off to substantially their full extent.

4,798,247
SOLENOID OPERATED SAFETY VALVE AND SUBMERSIBLE PUMP SYSTEM
Thomas M. Deaton, Dallas, and Donald H. Perkins, Carrollton, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed Jul. 15, 1987, Ser. No. 73,762
Int. Cl.[4] E21B *34/06*
U.S. Cl. 166—373 **33 Claims**



1. A submersible pump and solenoid operated safety valve system for use in a borehole, comprising:

a submersible pump driven by an electric motor positioned down in a borehole and connected to conduit means to produce a flow of well fluids within the borehole toward the surface;

a solenoid operated safety valve connected to interrupt the flow of well fluids toward the surface in response to the interruption of current to the solenoid holding said safety valve in an open condition;

a surface control unit;

a downhole control unit positioned down in the borehole and connected to said surface control unit and to the motor of said pump by means of an electrical cable;

means for supplying AC electrical power from said surface unit down the conductors of said cable; and

means mounted within said downhole control unit for providing electric current for operating said solenoid to open said safety valve.

27. A method for supplying power to a submersible pump and a solenoid operated safety valve in a petroleum production well completion within a borehole, comprising:

selectively supplying electric power with a surface control unit at a pair of different operating frequencies, the lower frequency power being capable of driving a motor for said pump and the higher frequency power being incapable of driving said motor for said pump;

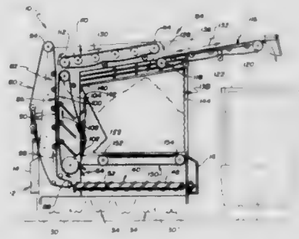
actuating a solenoid in response to said higher frequency power with a downhole control unit to open said safety valve;

producing a signal in response to the open condition of said safety valve with a downhole control unit;

providing a cable interconnecting said surface control unit and said downhole control unit for conducting power at both frequencies downhole and conducting a signal uphole indicative of the open or closed condition of said safety valve; and

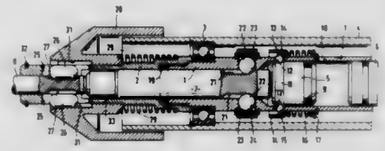
first connecting the higher frequency power to said cable with the surface control unit and then, in response to a valve open condition signal from the downhole control unit, connecting the lower frequency power to said cable with the surface control unit to drive the motor for said pump.

4,798,248
METHOD OF HARVESTING BEETS
Wayne J. Schwitters, Clara City, Minn., assignor to WIC, Inc., Shelly, Minn.
Division of Ser. No. 773,118, Sep. 6, 1985, Pat. No. 4,699,218. This application Aug. 24, 1987, Ser. No. 88,243
Int. Cl.[4] A01D *25/04*, *61/00*
U.S. Cl. 171—1 **18 Claims**



1. A method of harvesting sugar or red beets comprising the steps of traversing a field of row-planted beets in one direction, removing the beets from certain of the rows in said field while traveling in said one direction, directing the removed beets to one side of the harvester, elevating the beets at said one side of the harvester to a predetermined height, shifting the elevated beets at generally said predetermined height to a location intermediate said one side and the opposite side of said harvester and shifting at least some of said elevated beets from said intermediate location to said opposite side for discharge into a transport vehicle adjacent said opposite side.

4,798,249
LOCKABLE STRIKING MECHANISM FOR HAMMER DRILL
Hans-Jürgen Hoereth, Lasgenbach, and Anton Neumaier, Fürstenfeldbruck, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft
Filed Oct. 5, 1987, Ser. No. 105,084
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1986, 3633675
Int. Cl.[4] B25D *17/06*
U.S. Cl. 173—14 **4 Claims**



1. Hammer drill with a striking mechanism having a striking direction and a front end arranged to hold a tool, comprising a guide cylinder having an axis extending in the striking direction, said striking mechanism located within said guide cylinder for delivering percussive force in the striking direction to the tool, said striking mechanism includes a free piston slidably displaceable in a reciprocating manner within said guide cylinder in the striking direction, means for securing said free piston in a locked position so that said free piston is unable to perform reciprocating movements within said guide cylinder, said free piston having an axially extending outer surface, a recess formed in said outer surface, balls mounted in said guide cylinder, said securing means comprises spring means for biasing said balls inwardly into the recess for securing said free piston in the locked position, wherein the improvement comprises that said guide cylinder has openings therethrough with said

balls each mounted in one of said openings, and said spring means comprises a ring encircling said guide cylinder and disposed in contact with said balls, and a spring in contact with said ring for pressing said ring against said balls and biasing said balls radially inwardly.

4,798,250

BALANCE WITH WIND GUARD

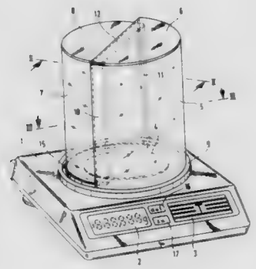
Erich Knothe, Eddigehausen; Franz-Josef Melcher, Hardegsen; Günther Maaz, Uslar; Klaus Dardat, Drausfeld, and Walter Södler, Göttingen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Dec. 14, 1987, Ser. No. 132,187

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1986, 3642842

Int. Cl.[4] G01G *23/18, 21/28*

U.S. Cl. 177—181 **8 Claims**



1. Balance with a wind guard which comprises at least two cylindrically curves wall elements which can be shifted towards each other for opening and closing, the improvement wherein each wall element is connected to a corresponding top segment of a circular covering surface to allow loading from above when said wall elements are opened.

4,798,251

ELECTRONIC BALANCE WITH SCALE ON TOP AND CORNER-LOAD ADJUSTMENT

Günther Maaz, Uslar; Eduard Bierich, Hann-Münden, and Eberhard Stadler, Göttingen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

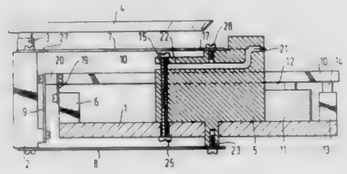
Filed Apr. 1, 1988, Ser. No. 176,630

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1987, 3710997

Int. Cl.[4] G01G *3/08, 23/14*

U.S. Cl. 177—229 **6 Claims**

1. In an electronic balance with a scale on top, a balance scale (4), a balance scale carrier (2), two identical guide rods (7,8) which connect in an articulated manner the balance scale carrier and the balance scale in the form of a parallel guide to a system carrier (1/5) fixed to the housing and with at least one corner-load adjustment lever (22,22',22'') which is connected to the system carrier via thin area (21,24,30/31) and which carries a support point in the vicinity of this thin area for the end of a guide rod on the system carrier, comprising that the



corner-load adjustment lever (22,22',22'',22''') is bent at right angles between the support point of the guide rod (7) and the thin area (21,24,30/31) to the system carrier (1/5) in such a manner that the moving joint (16,17) of the guide rod (7) and the thin area (21,24,30/31) are at the same height.

4,798,252

DRYING BALANCE WITH TEMPERATURE CONTROL

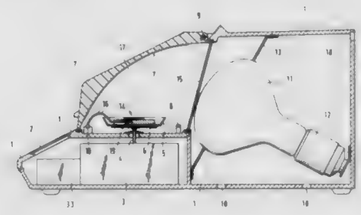
Erich Knothe, Eddigehausen; Günther Maaz, Uslar, and Volker Handwerk, Bovenden, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Feb. 12, 1988, Ser. No. 155,600

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1987, 3706609

Int. Cl.[4] G01G *19/00, 21/28;* **G01N** *25/56*

U.S. Cl. 177—245 **8 Claims**



1. Drying balance scale with a radiation source for heating and drying a substance distributed on a balance scale, with a temperature sensor for monitoring and controlling the output of the radiation source and with electronic evaluating circuitry for evaluating the measured sensed temperature values of the balance scale and for controlling the radiation source, characterized in that a temperature gauging disk with another temperature sensor built in is connected to the drying balance scale.

4,798,253

ELECTRIC POWER STEERING APPARATUS

Hiroshi Naito, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 21, 1987, Ser. No. 77,187

Claims priority, application Japan, Jul. 22, 1986, 61-172091

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—79.1 **7 Claims**

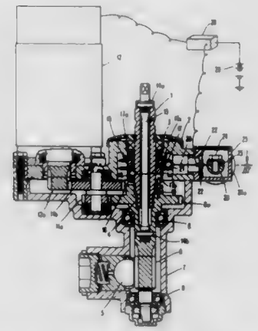
1. An electric power steering apparatus comprising:

an axial conversion means for converting the relative rotation between an input shaft and an output shaft to an axial deviation;

the axial conversion means including an axially moveable slider element;

a first sensing means for sensing the axial deviation of the slider and including a lever with torque sensing means, the lever being fixed at one end to a housing and supported at the other end by the slider;

a second sensing means for sensing the direction and torque of rotation of a steering wheel;



a controller means for obtaining a comparison value by comparing output signals from the first and second sensing means and controlling the direction and torque of rotation of an electric motor which contributes to the steering force and for stopping the motor when the comparison value is outside a predetermined range.

4,798,254

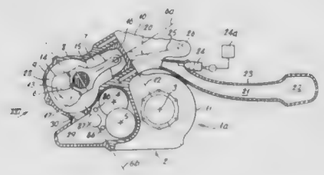
COMPONENTS IN OR FOR SELF-POWERED VEHICLES

Geoffrey P. Lisga, Bourne, England, assignor to National Research Development Corporation, London, England

Filed Mar. 10, 1987, Ser. No. 24,080

Int. Cl.[4] B60K *5/04*

U.S. Cl. 180—58 **14 Claims**



1. In or for a self-powered vehicle, a power unit comprising:

a casing structure for said power unit;

a reciprocating piston internal combustion engine comprising a plurality of pistons working in a plurality of cylinders disposed in line, whereby the axes of said cylinders are parallel and lie in a common first plane, a crankcase, and a crankshaft rotatable within said crankcase about an axis and driven by said pistons;

a transmission system comprising a plurality of gearcarrying shafts including an input shaft, and two coaxial output shafts adapted respectively to drive two wheels located to opposite sides of said power unit, said axes of said output shafts being substantially parallel to said crankshaft axis, and said input shaft being in driving communication with said crankshaft;

a second plane lying at right angles to said common first plane and including said crankshaft axis, said transmission system being arranged alongside said cylinders and so that said input shaft, said output shafts and said cylinders all lie to the same side of the said second plane;

said casing structure including a casing part within which said cylinders are located, in which a first plane joint face is presented by said casing part and is substantially co-planar with said axis of said output shafts, and including a cylinder head adapted to engage with said first plane joint face.

4,798,255

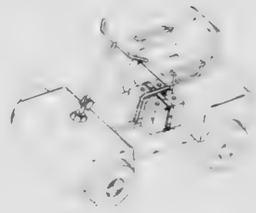
FOUR-WHEELED T-HANDLEBAR INVALID CARRIAGE

Donald P. H. Wu, No. 169, Kou Tzu Ku, Shang Kou Tsun, Hsin Feng Hsiang, Hsinchu County, Taiwan

Filed Oct. 29, 1987, Ser. No. 113,983

Int. Cl.[4] B62B *9/00*

U.S. Cl. 180—65.1 **2 Claims**



1. An invalid carriage comprising:

a rigid seat support frame for supporting a seat for rotation about a substantially vertical axis;

a seat, rotatable about a substantially vertical axis, supported on said seat support frame;

locking means for releasably locking said seat supported on said seat support frame in a predetermined rotational position;

a laterally extending rotatable rear axle journally supported on said seat support frame for rotation about a substantially horizontal lateral axis, said rotatable rear axle having a first end and a second end;

a pair of rear wheels, each of said rear wheels fixed to a respective end of said rotatable rear axle for rotation therewith;

power supply means mounted on said seat support frame for providing motive power for rotation of said rear axle about said substantially horizontal lateral axis;

transmission means, interconnecting said power supply means and said rotatable rear axle, for rotating said rear axle about said substantially horizontal lateral axis upon provision of motive power from said power supply means;

a laterally extending rod pivotally mounted on said seat support frame for pivotal movement about a substantially horizontal longitudinal axis, said laterally extending rod having a first end and a second end, said laterally extending rod being spaced longitudinally forwardly of said rear axle;

a pair of front wheels, each rotatable about a substantially horizontal axis;

mounting means for fixing said pair of front wheels to respective ends of said laterally extending rod for rotation about said substantially horizontal axis, said mounting means being pivotally connected to said laterally extending rod for pivotal movement about a substantially vertical axis;

steering means, for causing pivotal movement of said mounting means about said substantially vertical axis said steering means including a T-handlebar mounted on said seat supports frame by a sleeve member;.

front wheel oscillation restriction means, mounted on said sleeve member, for yieldably resisting pivotal movement

of said laterally extending rod about said substantially horizontal longitudinal axis beyond a predetermined extent.

4,798,256

HYDROSTATIC AUXILIARY STEERING DEVICE

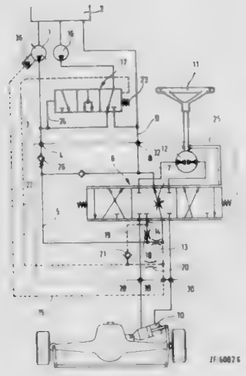
Rolf Fassbender, Mutlangen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 23, 1987, Ser. No. 111,820

Claims priority, application European Pat. Off., Nov. 11, 1986, PCT/EP86/00647

Int. Cl.[4] B62D *5/08*

U.S. Cl. 180—133 **3 Claims**



1. In a hydrostatic auxiliary steering system for a motor vehicle having a steering wheel (11) and steerable wheels, a metering unit (12) driven by said steering wheel (11), control valve means (6) connected to the steering wheel for displacement from a neutral position in two manipulation directions when the steering wheel is turned, a first high pressure pump (1) having a flow control device (36), a steering servo motor (10) connected to the vehicle steerable wheels and having opposing pressure chambers, a reservoir (12), a return line (9) connecting said reservoir to the control valve means, a pressure line (3, 4, 14) interconnecting said control valve means with said first high pressure pump, said control valve means in the neutral position conducting flow to the metering unit (12) while blocking flow to the servo motor and responsive to displacement thereof from the neutral position for opening a flow path to the metering unit (12) while conducting flow to one of the pressure chambers of the servo motor (10) as the other of the pressure chambers is connected by the return line (9) to the reservoir (2), a first metering orifice (13) conducting flow from the first high pressure pump (1) to the metering unit (12), a first control line (15) connecting the first metering orifice (13) downstream of the first high pressure pump to said flow control device (36) controlling the flow from the first high pressure pump (1) to the control valve means (6), and a second high pressure pump (16) connected to the control valve means (6) in parallel with the first high pressure pump (1), the improvement residing in a second metering orifice (18) located in the pressure line (3, 4, 14) between the first high pressure pump (1) and the metering unit (12), a connecting line (19) interconnecting the first and second metering orifices (13, 18) downstream of the first high pressure pump, a third metering orifice (20) connected to the first metering orifice (13) downstream thereof, a check valve (21) in the connecting line (19) downstream of the second metering orifice (18) conducting pressure medium in one direction therefrom, a second control line (22) connected to the connecting line (19) between the third metering orifice (20) and the check valve (21) and flow dividing valve means (17) connected to said second control line (22) for controlling flow from the second high pressure pump (16) to the metering unit (12).

4,798,257

ENERGY RECOVERY APPARATUS FOR TURBO COMPOUND ENGINE

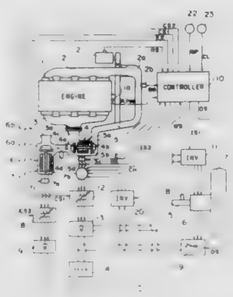
Hideo Kawamura, Samukawa, and Katsuyuki Tamai, Yokohama, both of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Oct. 17, 1986, Ser. No. 920,133

Claims priority, application Japan, Oct. 19, 1985, 60-233937; Oct. 19, 1985, 60-233939

Int. Cl.[4] B60K *13/00*

U.S. Cl. 180—165 **6 Claims**



1. An energy recovery apparatus in a turbo compound engine having a turbocharger operable by exhaust gases emitted from an internal combustion engine mounted on a vehicle, said energy recovery apparatus comprising:

(a) a first rotary machine disposed in said turbocharger;

(b) a second rotary machine disposed on a wheel axle driven by said engine;

(c) a third rotary machine disposed in an exhaust turbine disposed in an exhaust pipe of said internal combustion engine, and operable as a generator for converting exhaust energy from the internal combustion engine to electric energy for energy recovery;

(d) means for detecting the speed of rotation of said engine;

(e) means for detecting the load on said engine;

(f) means for operating said first rotary machine as a generator while said engine is idling; and

(g) means for charging a battery with electric power generated by said first rotary machine.

4,798,258

THROTTLE CONTROL ASSEMBLY FOR A VEHICLE SPEED CONTROL UNIT

Jack O. Otteson, Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Division of Ser. No. 712,542, Mar. 15, 1985, Pat. No. 4,637,485, which is a continuation-in-part of Ser. No. 603,494, Apr. 24, 1984, abandoned. This application Dec. 30, 1986, Ser. No. 947,724

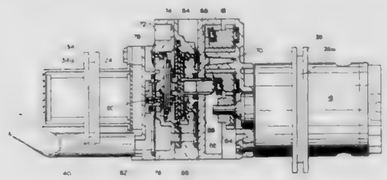
Int. Cl.[4] B60K *31/06*

U.S. Cl. 180—175 **14 Claims**

1. In a speed control unit for controlling the actual speed of a vehicle at a desired speed, the vehicle including an engine having a throttle movable in two directions respectively to increase and decrease the speed of the vehicle and the speed control unit including means for generating a signal representing the desired speed of the vehicle, means for generating a signal representing the actual speed of the vehicle, and means responsive to said desired speed signal and said actual speed signal for generating a control signal when the actual speed of the vehicle is less than the desired speed, a throttle control assembly installable as a unit in an engine compartment of said vehicle and comprising:

an electric motor; and

a vacuum pump operatively connected to said motor to generate a vacuum when said motor is energized so as to move said throttle and increase the actual speed of the vehicle to said desired speed, said vacuum pump including a pump chamber, a rotatably mounted swash plate, a reciprocably mounted plunger including a rod portion having one end in engagement with the swash plate and an enlarged head portion disposed at the other end of the rod



portion and within the pump chamber, a flexible pumping diaphragm in the pump chamber operatively associated with the plunger head portion, a spring in the pump chamber biasing said diaphragm and plunger toward said swash plate, a vacuum chamber, a first pair of one-way valves associated with the pump chamber on one side of said diaphragm, and a second pair of one-way valves associated with the pump chamber on the other side of said diaphragm, one valve of each pair permitting one-way flow of air from the pump chamber to atmosphere, and the other valve of each pair permitting one-way flow of air from the vacuum chamber to the pump chamber.

4,798,259

FRONT WHEEL SPEED-UP MECHANISM FOR A FOUR WHEEL DRIVE VEHICLE WHEN TURNING

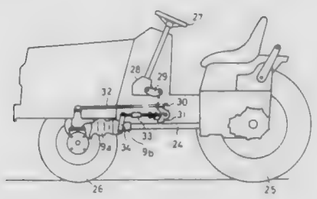
Toshiro Azuma, Minoo, and Toshiyuki Hasegawa, Ashiya, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Amagasaki, Japan

Filed Dec. 11, 1987, Ser. No. 132,061

Claims priority, application Japan, Jun. 25, 1987, 62-159107

Int. Cl.[4] B60K *17/34*

U.S. Cl. 180—233 **7 Claims**



1. A front wheel speed-up mechanism for a four wheel drive vehicle when turning comprising:

a speed-up bevel gear shaft provided perpendicularly to the utmost end of a front wheel driving shaft,

speed-up bevel gears freely sleeved onto both axial ends of said bevel gear shaft,

said speed-up bevel gears engage with a front wheel pinion bevel gear provided at the rear end of a front wheel pinion shaft, and a braking bevel gear freely sleeved onto the outer periphery of said front wheel driving shaft,

a braking bevel gear boss at said braking bevel gear freely sleeved onto the outer periphery of said front wheel driving shaft,

friction plates interposed between said braking gear boss and an actuator supported within a bearing case and being rotatable at a fixed angle to said bearing case and slidable axially of said front wheel driving shaft,

said friction plates abut at one end against a pressure receiving surface formed in said bearing case,

whereby said friction plates can be urged at their other end by a speed-up shifter toward an urging member fixed to said actuator,

said speed-up shifter, when said vehicle travels straight forward, retains said braking bevel gear boss integrally with said front wheel driving shaft, and slides in association with turning of a steering handle of said vehicle in the direction of releasing retainment between both said braking bevel gear boss and said front wheel driving shaft, thereby releasing said friction plates after said shifter moves in the releasing direction away from said urging member, and

said actuator rotates by friction caused by said friction plates and balls which are disposed in cam grooves constituted between said bearing case and said actuator so as to slide said urging member in the direction of urging said friction plates toward said pressure receiving surface.

4,798,260

STEERING APPARATUS FOR A FRONT WHEEL DRIVE TRACTOR

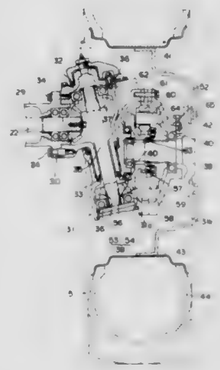
Masaru Nakata, Sakai, and Yuichi Kitso, Ashiya, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Nov. 7, 1986, Ser. No. 928,124

Claims priority, application Japan, Mar. 27, 1986, 61-70301; Apr. 4, 1986, 61-78970

Int. Cl.[4] B60K *17/30*

U.S. Cl. 180—253 **11 Claims**



1. A steering apparatus for a front wheel drive tractor comprising, at each of opposite lateral sides thereof,

a first front axle,

a front axle case housing said first front axle and defining an upper boundary of a free space in a lower position of the tractor,

a kingpin,

a transmission case provided in an outer end region of said front axle case to accommodate said kingpin, said transmission case including a stationary case connected to said front axle case, and a rotatable case connected to said stationary case to be pivotable about said kingpin, said rotatable case defining a lateral boundary of said free space,

a second front axle attached to said movable case and includ-

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ing means for attaching a rim of a front wheel to said second front axle, said means for attaching said rim to said second front axle lies in a plane along an outer surface of said front wheel, and substantially the length of said kingpin is confined within an inner boundary of said front wheel with a lower end of said kingpin between a center line of said front wheel and an inner boundary of said front wheel,

a first transmission operatively connecting said kingpin to said first front axle, and

a second transmission operatively connecting said second front axle to said kingpin,

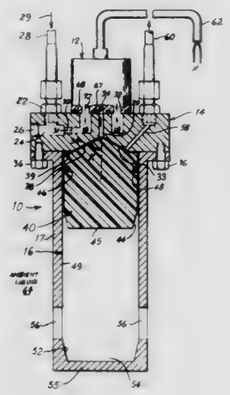
wherein said front wheel has a substantially zero camber angle, and said kingpin is inclined such that said movable case is substantially entirely disposed inside an inner boundary of said rim of said front wheel.

4,798,261

SMALL POWERFUL HYDRO GUN

Paul Chelminski, Norwalk, Conn., assignor to Bolt Technology Corporation, Norwalk, Conn.

Filed Jul. 3, 1986, Ser. No. 881,911
Int. Cl.[4] G01V *1/38*
U.S. Cl. 181—120 **14 Claims**



1. An impulse generating hydro gun for generating an acoustical energy impulse in liquid having a steeply rising pressure followed by an abrupt pressure drop comprising:

a cylinder wall having first and second ends with discharge port means in said cylinder wall near the second end for admitting liquid into a cylinder within said cylinder wall when said hydro gun is submerged in liquid and for discharging liquid from said cylinder through said discharge port means when said hydro gun is fired,

a piston mounted for free movement in said cylinder,

said piston initially being positioned within said cylinder near said first end of said cylinder wall,

the region within said cylinder near said first end of said cylinder wall being the head end of the cylinder,

a solenoid valve for firing said hydro gun and having at least one inlet port and an outlet port,

chamber block means secured to said first end of said cylinder wall and being positioned between the head end of said cylinder and said solenoid valve,

said chamber block means having an annular firing chamber therein communicating with said inlet port of said solenoid valve,

said chamber block means having a discharge passage in communication between said outlet port of said solenoid valve and said head end of said cylinder,

means for charging said annular firing chamber with pressurized gas,

means for actuating said solenoid valve for abruptly releasing said pressurized gas from said firing chamber through said discharge passage into the head end of the cylinder for propelling said piston along said cylinder toward the second end of said cylinder wall for thereby discharging liquid from the cylinder through said discharge port means,

said piston effectively blocking said discharge port means when said piston nears said second end of the cylinder wall for suddenly interrupting the discharge of liquid through said discharge port means for creating at least one cavity in the surrounding liquid which collapses by hydrostatic pressure for generating said acoustical impulse in liquid,

means for slowing and stopping said piston as it nears said second end of the cylinder wall, and

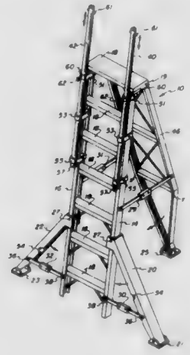
said hydro gun having vent means communicating with the head end of the cylinder for connection to a vent line extending to the atmosphere above the liquid surface for venting to the atmosphere the expanded pressurized gas from the cylinder after said piston has been propelled toward the second end of said cylinder wall for enabling the hydrostatic pressure of liquid entering into the cylinder through said discharge port means to return said piston to the initial position at the head end of the cylinder near said chamber block means.

4,798,262

TRIPODAL SUPPORT

Paul Margolies, 1350 Spanish River Rd., Boca Raton, Fla. 33432

Filed Sep. 12, 1986, Ser. No. 906,719
Int. Cl.[4] E06C *1/14, 1/383, 7/18*
U.S. Cl. 182—106 **7 Claims**



1. A tripodal support ladder for stable placement on a support surface comprised of:

a pair of spaced apart parallel side rails having at least two horizontally disposed ladder rungs connected therebetween including an upper rung;

a rear support member hingedly connected at its upper end to said upper rung and providing at its lower end a first ground engaging support point means;

said rear support member being moveable between an open position and a closed position and being maintained rigidly in said open position by collapsible strap means pivotably connected between at least one of said side rails and said rear support member;

a pair of extendable and retractable lateral support leg member means hingedly connected one to each of said side rails, said support leg member means hinged near their upper end portions to said side rails and each having a single ground engagement support point means at their lowermosts ends which comprise second and third ground engaging support point means;

each of said lateral support leg member means being rigidly maintainable in a fixed in-use position by way of collapsible strap means pivotably connected between said lateral support leg member means and said side rails;

said lateral support leg member means movable between a fully extended and a fully retracted position, said lateral support leg member means being constrained to swinging motion in a single plane;

said first, second and third ground engaging support point means providing the only ground engagement points of the tripodal support each contacting said support surface at a point equidistant from the other two when said lateral support leg member means are in the fully extended position.

4,798,263

LADDER STABILIZER

David H. C. Harvey, Poynings, and Ian G. Menelaus, Burgess Hill, both of Great Britain, assignors to Stabilad Limited, Burgess Hill, England

Filed May 21, 1987, Ser. No. 52,789
Claims priority, application United Kingdom, Oct. 2, 1986, 8623702
Int. Cl.[4] E06C *5/36, 7/42*
U.S. Cl. 182—107 **13 Claims**



1. A stabiliser device for attachment to a stile of a ladder, said stabiliser device comprising an attachment portion adapted to be removably coupled to a stile of a ladder and a leg portion connected to and extending outwardly from the attachment portion to a surface engaging end, the attachment portion being provided with two pins extending outwardly therefrom, said pins each having an axis, said pin axes being generally parallel to one another, said pins being received in holes in said attachment portion so as to be axially moveable, said pins being positioned such that the stile can pass freely therebetween when the axis of the stile, the axes of the pins, and a line joining pin axes are generally mutually perpendicular, said pins being spaced such that they engage the respective edge faces of the stile when the stabiliser device is rotated about an axis generally parallel to the axes of the rungs of the ladder, said device further comprising means for clamping said pins into the desired axial position.

4,798,264

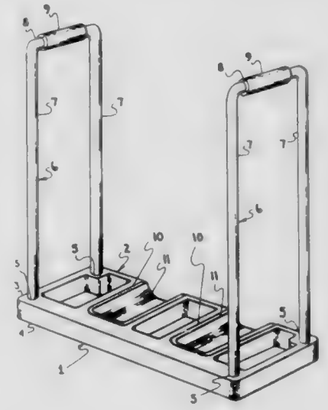
KNEELING AID

Jack V. Miller, and Ruth Ellen Miller, both of 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Dec. 28, 1987, Ser. No. 138,651
Int. Cl.[4] A47C *9/00, 13/00*
U.S. Cl. 182—230 **9 Claims**

1. A kneeling aid to facilitate kneeling including:

a generally planar and generally rectangular, elongated horizontal platform having a lower surface and an upper surface, the upper surface being provided with a recessed socket at each corner of each end of the platform, said recessed sockets in the upper surface terminating at, and bonded to the lower surface of the platform;



an inverted U-shaped strut at each end of the platform and having a pair of depending legs engaged into the respective recessed sockets at each end of the rectangle; and

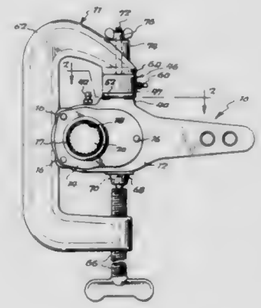
a cushion means on the upper surface of the platform.

4,798,265

SLACK ADJUSTER LUBRICATOR AND METHODS OF USE

Daniel F. Gibes, Niagara Falls, N.Y., assignor to Ivan's Idiosyncrasy, Inc., Niagara Falls, N.Y.

Filed Nov. 5, 1987, Ser. No. 117,474
Int. Cl.[4] F16N *3/00*
U.S. Cl. 184—105.1 **9 Claims**



1. A method of lubricating the interior and exterior surfaces of a locking collar mechanism of a vehicular slack adjuster, which comprises the steps of encasing the locking collar mechanism with a pressurizable lubrication chamber, sealing the lubrication chamber with a surface of the slack adjuster surrounding the locking collar mechanism without being in sealing engagement with said locking collar mechanism when said locking collar is elevated, and charging said chamber with lubricant under sufficient pressure to deliver lubricant to said interior and interior surfaces of the locking collar mechanism.

4,798,266

HYDRAULIC HOIST PLATFORM

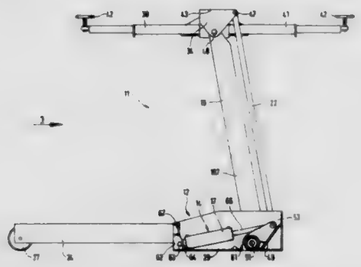
Gerhard Finkbeiner, Kaernerstrasse 6, 7290 Freudenstadt, Fed. Rep. of Germany

Filed Feb. 20, 1987, Ser. No. 17,766

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1986, 3605650

Int. Cl.[4] B66F 7/08

U.S. Cl. 187—8.71 16 Claims



1. Hydraulic hoist platform for vehicles in the size range of passenger motor vehicles, such as passenger cars, passenger car trailers and the like, comprising:

a floor group that is stationary when in use and supports static and dynamic loads on a floor,

said floor group comprising two floor group halves that are spaced from one another by a distance greater than the width of a passenger motor vehicle,

each of said floor group halves have two spaced-apart side members,

a parallelogram device for each of said floor group halves, each of said parallelogram devices being movable up and down parallel to one another in a vertical plane, each comprosing a carrier arm and a guide rod having a first end region with first and second horizontal bearings at which said carrier arm and said guide rod are articulated to their respective floor group halves, said first horizontal bearing being spaced a smaller distance from the floor than said second horizontal bearing,

said parallelogram devices having a second end region having a support device for the passenger vehicle,

said first horizontal bearing is a bearing of said carrier arm and said second horizontal bearing is a bearing of said guide rod,

each of said first horizontal bearings comprises a horizontal bearing body highly loadable at least by torsion, which has two rotational bearing surfaces spaced from one another in axial direction and rotatably supported by said spaced apart side members each of the respective floor group halves,

each of said bearing bodies have an inner region and an outer region between its bearing surfaces,

each of said carrier arms is secured rigidly to said inner region of the respective bearing body,

a lever device is secured rigidly to said outer region of each of said bearing bodies,

said lever device is angularly offset from said carrier arm in the direction of lifting in relation to the direction of said carrier arm,

a hydraulic unit for each of said floor group halves, each of said hydraulic units having a hydraulic cylinder having a first horizontal bearing half and a piston rod having an end having a second horizontal bearing half that is parallel to said first horizontal bearing half,

each of said hydraulic units is arranged substantially horizontally in each of said floor groups, and

one of said bearing halves of said hydraulic unit is provided on said lever device and the other of said bearing halves of said hydraulic unit is provided on said floor group.

4,798,267

ELEVATOR SYSTEM HAVING AN IMPROVED SELECTOR

Michael M. Foster, and Kermit L. Racely, both of Memphis, Tenn., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Jan. 20, 1987, Ser. No. 5,554

Int. Cl.[4] B66B 1/34

U.S. Cl. 187—28 19 Claims



1. In an elevator system including a car vertically displaceable between landings, a selector comprising:

a metal tape vertically supported relative to said landings, said tape including longitudinal edges and a plurality of holes spaced from said edges and vertically aligned, a first set of strip magnets for identifying each landing, and a second set of strip magnets for indicating door zone position at each landing, said first and second sets of magnets lying on opposite sides of said holes inwardly from the respective edges; and

a selector unit including a selector housing mounted on the elevator car, guide means on said housing for engaging the edges of said tape for guiding said tape for maintaining precise horizontal positioning relative to the selector unit, a first bar magnet, and a first magnetic sensor means, means for mounting said bar magnet and first sensor means on opposite sides of said tape, in opposed relation to one another and in registry with said holes, second magnetic sensor means mounted on said housing in vertical alignment with said first set of strip magnets, and third magnetic sensor means mounted on said housing in vertical alignment with said second set of strip magnets, wherein said first sensor means produces a signal when aligned with any of the holes, and wherein said holes are elongated in the lateral direction for producing a sharp, strong magnetic signal in said first sensor means compared to holes of round configuration.

4,798,268

MULTIPLE DISC BRAKE

Eric Fargier, Neuilly-Plaisance, and Jean-Claude Mery, Pavillons-sous-Bois, both of France, assignors to Bendix France, Drancy, France

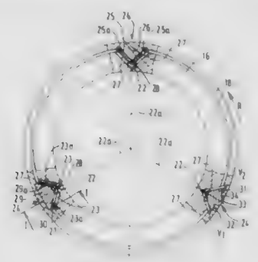
Filed Oct. 21, 1987, Ser. No. 111,942

Claims priority, application France, Oct. 29, 1986, 86 15044

Int. Cl.[4] F16D 55/36

U.S. Cl. 188—71.5 4 Claims

1. A multiple disc brake, comprising a first rotary disc fixed to a hub connected to a rotating member to be braked and a second rotary disc capable of sliding axially relative to the hub and to the first rotary disc while at the same time being integral in terms of rotation with the first disc, the axes of the hub and discs coinciding with one another, and a set of friction blocks having friction linings capable of being laid against faces of the discs by means of an actuating device, characterized in that a first axial guide sleeve fixed to the first rotary disc is arranged coaxially relative to a second axial guide sleeve fixed to the second rotary disc and is connect to the second axial guide sleeve by means of several axial guide tracks which are uniformly distributed angularly over the sleeves, the guide tracks having matching rolling surfaces between which rolling members are interposed, the rolling members comprising cylindrical bearings of small diameter arranged transversely relative to a sliding axis of the second axial guide sleeve, the guide tracks being of a groove-and-projection type wherein faces of each groove disposed in one of the sleeves interact, for transmitting braking torque to the second rotary disc, with opposite faces of a corresponding projecting axial rib on the other sleeve in



order to form V-shaped sets of rolling surfaces, branches of the respective V-shaped sets of rolling surfaces having different inclinations relative to a radial plane extending substantially midway through the guide tracks, a branch of lesser inclination and nearest a radius of the coaxial sleeves being the branch which makes torque-transmitting contact during braking in one direction of disc rotation, the grooves disposed in an outer surface of the radially inner sleeve and the axial ribs on an inner surface of the radially outer sleeve, and the V-shaped sets of rolling surfaces having at least one of the associated grooves and axial ribs comprising surfaces of high hardness and abrasion resistance.

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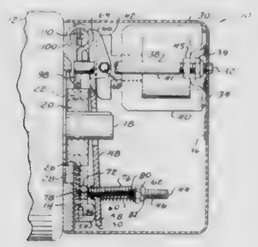
DIRECT LEVER ACTING SOLENOID RELEASED BRAKE MECHANISM

Bernard J. Lindner, Waukesha, and Harold Lorenz, Greenfield, both of Wis., assignors to PT Components, Inc., Indianapolis, Ind.

Filed Aug. 6, 1986, Ser. No. 893,694

Int. Cl.[4] B60T 13/04; F16D 11/06; H02K 7/10; H02P 3/00

U.S. Cl. 188—171 30 Claims



1. An improved brake mechanism for selective stopping and permitting rotation of a shaft journaled in a motor frame comprising

friction disc means secured to said shaft for rotation therewith

end plate means secured to the motor frame and having a disc engaging surface,

non-rotatable brake shoe means mounted for movement toward and away from said disc means,

bearing plate means disposed radially outwardly from said brake shoe means between outer ends thereof and secured to said end plate means on an outermost circumferential surface thereof,

support lever means having one end pivotally abutting against said bearing plate means,

compression spring means disposed adjacent said one end of said support lever means for urging said lever means against said bearing plate means, said compression spring means being adaptable to be interchanged with compression spring means having different torque ratings,

adjustment means disposed adjacent said one end of said support lever means having an inner end urging said brake shoe means against said friction disc means,

solenoid means directly secured to said end plate means on an outermost circumferential surface thereof diametrically opposite from said bearing plate means, said solenoid means being adaptable to be interchanged with solenoid means having different torque ratings, and

reciprocally movable plunger means of said solenoid means pivotally connected to said support lever means at its other end, said plunger means being adaptable to return to a deenergized position without the aid of gravity so that said end plate means may be mounted on the motor frame in any preselected position of circular angulation thereabout

whereby energization of said solenoid means is effective to permit rotation of said shaft and deenergization of said solenoid means is effective to stop rotation of said shaft.

4,798,270

HYDRAULICALLY ACTUATED SLIDING-CALIPER DISC BRAKE

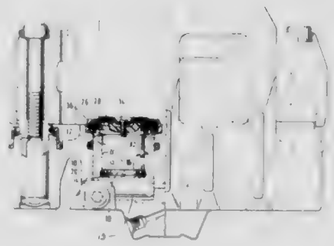
Wilhelm Schneider, Steinsburgweg, and Roland Keller, Leimen, both of Fed. Rep. of Germany, assignors to Deutsche Perrot-Bremse GmbH, Mannheim, Fed. Rep. of Germany

Filed Dec. 3, 1987, Ser. No. 128,191

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1986, 3641181

Int. Cl.[4] F16D 65/847

U.S. Cl. 188—264 G 15 Claims



1. An actuator for a hydraulically actuated caliper disc brake having a housing, a brake shoe, a cylinder in the housing, and an actuator mounted in the cylinder and operated by hydraulic fluid pressure for engagement with and operation of the brake shoe comprising:

a cup-shaped actuating piston slidably mounted in the housing cylinder for displacement toward the brake shoe by the hydraulic fluid;

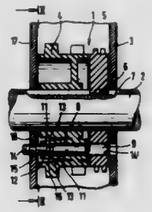
an internal cylindrical wall and base in said piston forming a hollow interior in said piston;

a cylindrical core of heat insulating material slidably mounted in said hollow interior and having an outer end

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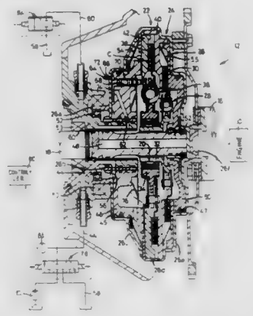
face adjacent to the brake shoe, an inner end face adjacent said base and a peripheral surface;
a longitudinal bore extending completely through said core;
means for releasably retaining said core in said piston;
a plurality of annular disc members on said end face of said core for reducing heat transfer from the brake shoe to said actuating piston;
a removable cover member over said end face and said disc members for retaining said disc members on said end face; and
removable fastening means extending through said cover member fixedly engageable only with said longitudinal bore in said core through the central openings in said annular disc members for removably retaining said cover member on said core, whereby removal of said fastening means allows access through said bore to the inner end face of said core for pressurizing a space between said end face and base to remove said core from said piston.

4,798,271
COMBINATION NORMAL-SOWING AND FINE-SOWING WHEEL WITH INTEGRAL STOP
Bernd Gattermann, Hude I.O.; Bernhard Steenken, Sogel; Franz Grosse-Scharmann, Hude I.O., and Horst Müller, Georgsmarienhütte, all of Fed. Rep. of Germany, assignors to Amazonen Werke, H. Dreyer GmbH. Co. KG, Hasbergen-Gaste, Fed. Rep. of Germany
Filed Aug. 1, 1986, Ser. No. 893,123
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1985, 3527759; Jan. 22, 1986, 3605768
Int. Cl.[4] A01C 7/12; F16D 67/02
U.S. Cl. 192—18 R **16 Claims**



1. In a sowing machine having a combination normal-sowing and fine-sowing wheel said normal-sowing wheel having a central bore and being freely rotatably mounted on a sowing shaft passing through the central bore for rotation relative thereto in a sowing housing of the machine, said fine-sowing wheel also having a central bore and being fixedly mounted on the sowing shaft with said sowing shaft passing through the central bore of the fine-sowing wheel, said fine-sowing wheel being disposed adjacent to the normal-sowing wheel in the sowing housing, means for coupling the normal sowing wheel to the fine-sowing wheel for rotation therewith comprising a coupling bolt, means slidably mounting the coupling bolt on the normal-sowing wheel, means on the fine-sowing wheel for coacting with the coupling bolt to rotatably couple the two wheels and means for securing the bolt in one operating position wherein the two wheels are rotatably uncoupled with said normal-sowing wheel being fixed to said housing and another operating position wherein the two wheels are rotatably coupled, the improvement wherein the mounting means comprises means forming a second bore on the normal-sowing wheel for slidably receiving the coupling bolt and wherein the securing means comprises means forming at least one stop is wherein the means forming the at least one stop and the means forming the second bore are in one piece with each other and made out of plastic.

4,798,272
HYDRAULICALLY OPERATED FRICTION CLUTCH HAVING AUTOMATIC WEAR COMPENSATING VALVE
Kiyohito Murata, Susono, and Fumihiro Ushijima, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Apr. 3, 1987, Ser. No. 33,616
Claims priority, application Japan, Apr. 4, 1986, 61-78845
Int. Cl.[4] F16D 13/75, 25/063
U.S. Cl. 192—70.25 **13 Claims**



1. A hydraulically operated friction clutch, comprising:
a driving rotary member;
a driven rotary member frictionally engageable with said driving rotary member;
a movable member disposed coaxially with said driving and driven rotary members, and axially movable for frictional engagement of said driving and driven rotary members with each other;
means for defining a cylinder bore;
an actuator piston axially slidably received within said cylinder bore, and cooperating with said cylinder bore to define a pressure chamber;
a first control valve for selectively applying a hydraulic pressure to said pressure chamber and thereby moving said actuator piston from a first stable position to move said movable member for the frictional engagement of said driving and driven rotary members;
means for defining a discharge passage leading to a drain;
said actuator piston having a through-hole, and a control passage which communicates at opposite ends thereof with said pressure chamber and said discharge passage;
a shut-off valve disposed in operative association with said actuator piston and said movable member, said shut-off valve including a shaft member slidably received within said through-hole, and a closure member which is movable relative to said actuator piston and which has a first position for closing said control passage, and a second position for opening said control passage, said closure member being placed in said second position when said actuator piston has been moved to a second stable and ready-to-operate position which is a predetermined first distance away from said movable member;
one of opposite ends of said shaft member projecting a predetermined second distance from a surface of said actuator piston facing said movable member, when said closure member is placed in said first position, said first distance being smaller than said second distance;
a second control valve disposed in said discharge passage, for selectively closing said discharge passage such that said actuator piston can move to a third stable position; and
a controller generating electric signals for controlling said first and second control valves.

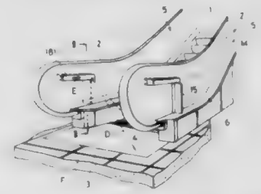
4,798,273
PARKING METER ANCHOR
Seth Ward, II, Little Rock, Ark., assignor to POM Incorporated, Russellville, Ark.
Filed Nov. 6, 1986, Ser. No. 927,375
Int. Cl.[4] G07F 9/00
U.S. Cl. 194—350 **3 Claims**



1. A parking meter for mounting on a hollow post, comprising:
a head including a parking time indicator and an opening for receiving coins and the like;
a vault chamber mounted below said head for receiving the coins and the like received in said opening and including an openable door;
a tapered mounting base extending from said vault chamber and received in the hollow post, said mounting base including a plurality of beveled surfaces and an opening extending through said mounting base and opening into an interior of the hollow post;
a mounting bolt extending through said opening in said mounting base, said mounting bolt including means for rotating said mounting bolt from within said vault member;
an anchor nut threadably received on the portion of said mounting bolt extending into the interior of the post; and
a plurality of expansion wedges of substantially rectangular shape mounted on said anchor nut for restricted longitudinal movement and for free radial movement, said plurality of expansion wedges being flat and including a plurality of angular teeth on first and second opposite sides of said expansion wedges, said first and second opposite sides being urged against and in engaging contact with an inside surface of the post, a top edge of respective ones of said expansion wedges being in contact with said plurality of tapered surfaces of said mounting base to urge said angular teeth on opposite sides of said expansion wedges against said inside surface and prevent removal of said parking meter from the hollow post.

4,798,274
BALUSTRADE FOR A PASSENGER CONVEYOR
Cyuichi Saito, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 15, 1986, Ser. No. 907,093
Claims priority, application Japan, Sep. 20, 1985, 60-206514; Nov. 29, 1985, 60-267167
Int. Cl.[4] B65G 15/00
U.S. Cl. 198—324 **11 Claims**

5. A balustrade for a passenger conveyor comprising:
a deck cover provided in said conveyor on an opposite side to a plurality of steps arranged endlessly for conveying passengers from one landing to another landing;
a transparent balustrade panel supported on said deck cover and having an inner surface opposite to said steps and an outer surface opposite to said inner surface;
a handrail;
a handrail guide frame, fixed to an upper edge of said balustrade panel, for guiding said handrail moving in synchronism with said steps;
an illumination device fixed directly to said outer surface of said balustrade panel so as to be spaced from said handrail by a distance thereby providing upper and lower transparent portions of said balustrade panel around one of said landings, said illumination device being higher than the middle of said balustrade panel between said handrail guide frame and said deck cover;

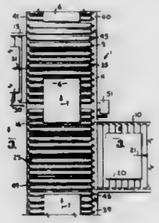


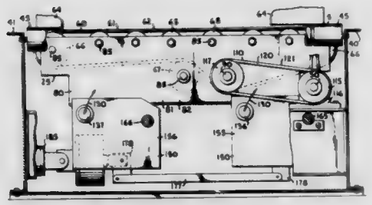
a decorative member provided on said balustrade panel on the opposite side to said illumination device;
a display portion provided in said decorative member, said display portion including a light-permeable portion which is illuminated by light from said illumination device; and
a supporting pole disposed between said deck cover and said illumination device, said supporting pole having a channel with substantially U-shaped walls when viewed in a direction perpendicular to the axial direction of said supporting pole, and holding lead wires of said illumination device, said supporting pole with said transparent panel providing a sole support for said illumination device.

4,798,275
LINE-SHAFT CONVEYOR DIVERTER
Hendrik Leemkuil, Pickerington, and Robert E. Slyh, Jr., Mt. Sterling, both of Ohio, assignors to Versa Corporation, Mount Sterling, Ohio
Filed Jun. 30, 1986, Ser. No. 879,993
Int. Cl.[4] B65G 47/53
U.S. Cl. 198—372 **19 Claims**

1. A diverter assembly for use with a conveyor to divert objects from a transfer surface of the conveyor; said diverter assembly comprising:
(a) a stationary frame portion and a portion lift portion;
(b) diverter means mounted on said frame lift portion;
(c) a powered drive wheel mounted on said stationary frame portion;
(d) a power transfer wheel mounted on said frame lift portion;
(e) a drive loop mounted on said powered drive wheel and said powered transfer wheel to transfer power from said power drive wheel to said transfer wheel to rotate same;
(f) drive means transferring power from said transfer wheel to said diverter means to power same from energy derived from said powered drive wheel;
(g) said frame lift portion being mounted on said stationary frame portion for vertical movement between a first recessed position and a second diverting position;
(i) said first position having said diverter means oriented with an upper engagement portion thereof recessed below the transfer surface of the conveyor and out of potential diverting engagement with objects on the conveyor transfer surface;
(ii) said second position having said upper engagement portion of said diverter means raised above the transfer surface of the conveyor for selected diverting engagement with an object thereon; and

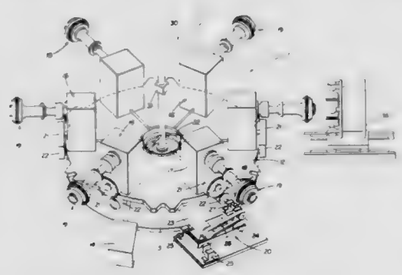
(h) lift means for selectively moving said frame lift portion between said first and second positions;
(i) said lift means including arc movement means providing that movement of said frame lift portion occurs along a substantially arcuate path while maintaining a substantially constant distance between said powered drive wheel and said power transfer wheel during arcuate movement;





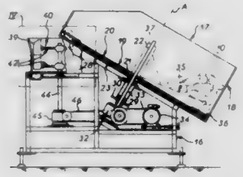
(i) whereby an object upon the conveyor transfer surface may be selectively diverted by actuation of said lift means to lift said diverter means into engagement with the object; the object, once engaged, being selectively diverted by means of power derived from said powered drive wheel.

4,798,276
SHAPING TURRET
Earl F. Loeffler, Uniontown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jan. 17, 1983, Ser. No. 458,680
Int. Cl.⁴ B65G *17/32*
U.S. Cl. 198—378 **1 Claim**



1. An apparatus for shaping a tire, comprising:
(a) turret means adapted to be rotated about an index axis;
(b) a plurality of drive units affixed to said turret means and adapted to be rotated therewith about said index axis and positioned at a plurality of workstations about said turret means having control means associated with at least one of said drive units which is responsive to the workstation at which said drive unit is positioned, wherein a drive member is associated with at least one of said drive units which frictionally engages a drive member at the workstation at which said drive unit is positioned;
(c) tire retaining means associated with said drive units; and
(d) loading means for placing a tire on one of said tire retaining means at one of said workstations.

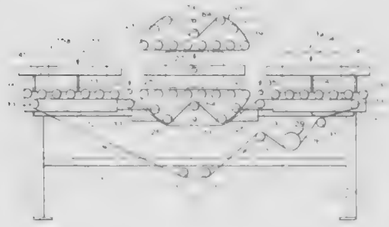
4,798,277
DISTRIBUTION DEVICE FOR DELIVERING VERTICALLY DISPOSED OBJECTS ONE BY ONE TO A CONVEYOR
Jean-Louis Dubuit, Paris, and Eric Rouly, Pontault Combault, both of France, assignors to Machines Dubuit, Paris, France
Filed Jan. 27, 1987, Ser. No. 7,086
Claims priority, application France, Jan. 27, 1986, 86 01077
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 198—397 **30 Claims**



1. Distribution device for delivering in vertical orientation objects one by one to a horizontal conveyor, comprising a hopper adapted to receive the objects randomly and having an inclined axis, an inclined disk constituting the bottom of said hopper and adapted to rotate about said axis, a plurality of openings at the periphery of said disk each adapted to receive one object, an inclined plate beneath and parallel to said disk, a release opening in an upper part of said plate aligned with the path of movement of said openings as said disk rotates, a plurality of vertical chute members between said hopper and said conveyor adapted to move under said release opening and each adapted to receive the objects one by one and orient them vertically, said vertical chute members being through chute members each having an inlet end and an outlet end with said outlet end being adapted to be in immediate overlying relation with said conveyor to transfer objects to said conveyor, and an endless loop intermediate conveyor carrying said chute members and adapted to be driven synchronously with said disk, said intermediate conveyor having one part passing under said upper part of said plate and another part passing over said conveyor.

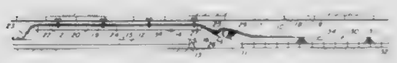
4,798,278
CONVEYOR FOR TURNING PACKAGES UPSIDE DOWN
Vincent Cornacchia, Paramus, N.J., assignor to General Machine Design, Inc., Saddle Brook, N.J.
Filed Jul. 23, 1987, Ser. No. 76,703
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 198—399 **11 Claims**

1. An in-line conveyor type machine for turning at least one package upside down, said machine comprising:
a feed conveyor means, including a drive means for said feed conveyor means;
a first gate means interconnected with said feed conveyor means;
means for activating said first gate means for closing and opening said first gate means;
a rotatable turning means including conveying means thereof operatively interconnected with said first gate means, wherein said first gate means admits at least one package into said turning means upon opening of said first gate means, said conveying means presenting a first moving surface and a drive means therefor;
a discharge conveyor means including a drive means for said discharge conveyor means;
a second gate means interconnected with said discharge conveyor and interconnected further with said turning means and with said first gate means; and



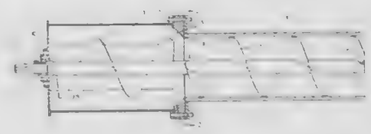
means for intermittent rotational operation of said turning means interconnected with said first and second gate means, said means for intermittent rotational operation including a drive means presenting a second moving surface, said second moving surface engaging said first moving surface for tumbling said turning means in said intermittent rotational operation;
said drive means for said feed and discharge conveyor means further being interconnected with said drive means for said first moving surface of said conveying means of said turning means.

4,798,279
MINE HAULAGE METHOD AND APPARATUS
Richard E. Doerr, Margaret A. Roberts, both of Morgantown, and Harry J. Brown, Barrackville, all of W. Va., assignors to Consolication Coal Company, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 822,100, Jan. 24, 1986, abandoned. This application Dec. 5, 1986, Ser. No. 935,290
Int. Cl.⁴ B65G *15/26*
U.S. Cl. 198—594 **2 Claims**



1. A method for conveying material along a curvilinear path for continuously transporting mined material for a determined distance from a continuous mining machine in a mine having a roof and a floor, comprising:
(a) installing a fixed, extendable length conveyor in said mine along a floor, said fixed conveyor extending to said continuous mining machine less said determined distance;
(b) installing an overhead rail supported conveyor along and above said fixed and extendable length conveyor having at least a length equal to said determined distance, said overhead rail supported conveyor likewise including a pivotal feed;
(c) installing a tramming conveyor having a length at least equal to said determined distance, between the said pivotal feed of said overhead rail supported conveyor and said mining machine;
(d) pivoting said feed end of said overhead rail supported conveyor downward to couple to said tramming conveyor and receive discharges from said tramming conveyor;
(e) progressively moving said tramming conveyor along with said coupled overhead rail supported conveyor said determined distance to a first position;
(f) pivoting said feed end of said overhead rail supported conveyor to a height where said overhead rail supported conveyor will clear said fixed conveyor;
(g) moving said overhead rail supported conveyor to a second position where it is suspended entirely over said fixed conveyor;
(h) extending said fixed conveyor an additional determined distance; and,
(i) moving said overhead rail supported conveyor back to said first position; and
(j) repeating steps (d), (e) and (f) until a desired amount of mining is completed.

4,798,280
MEASURING DEVICES
Hubert L. Hornhardt, Beverley, and Geoffrey G. Nuske, Cheltenham, both of Australia, assignors to Alf. Hannaford & Co. Pty. Ltd., Beverley, Australia
Filed Aug. 31, 1983, Ser. No. 528,263
Claims priority, application Australia, Aug. 31, 1982, PF5657
Int. Cl.⁴ B65G *33/32*
U.S. Cl. 198—666 **3 Claims**

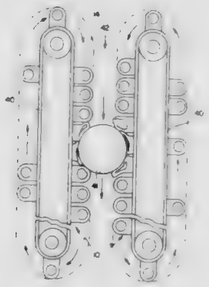


1. Measuring apparatus including a measuring conduit having a measuring cylindrical bore, a measuring auger within the cylindrical bore and having an axial shaft coaxial with the bore, the outer edge of the measuring auger closely fitting within the bore and extending continuously along a measuring length, the measuring length commencing at an inlet end of the bore, and terminating at an outlet end of the bore, the measuring auger at the inlet end of the bore having an abruptly inclined edge approaching the auger edge closest to the said inlet end of the bore, a feed auger supported by the said axial shaft and constrained to rotate therewith, the pitch of the feed auger being greater than the pitch of the measuring auger, the feed auger being located with an outlet end adjacent and axially spaced from the inlet end of the bore, and the housing and the feed auger being shaped and otherwise arranged so as to allow particulate material, where this is being urged toward the inlet end of the measuring bore, to be diverted from between the measuring bore and the feed bore, where excess to any take-up of such particulate material by the measuring auger exists.

4,798,281
CARRIER FOR USE ON A DRAG CHAIN CONVEYOR
Walter C. Egger, Zurich, Switzerland, assignor to VT-Verpackungstechnik Zurich, Zurich, Switzerland
Continuation-in-part of Ser. No. 603,247, Apr. 23, 1984, abandoned. This application May 15, 1986, Ser. No. 864,092
Claims priority, application Switzerland, Apr. 26, 1983, 2215/83; Mar. 5, 1984, 1078/84
Int. Cl.⁴ B65G *15/44*
U.S. Cl. 198—698 **9 Claims**

1. A carrier member for use on a drag chain conveyor arranged to convey generally elongate articles, the carrier member comprising:
a holder adapted to be connected to a link of the chain conveyor, the holder having a plate;
a resilient gripper member having an axis which is substantially perpendicular to the direction of conveyance of the drag chain conveyor and substantially parallel to the axes

of the elongate articles and adapted to be conveyed by the carrier member, the gripper member having a hollow open-ended tubular portion with the axis thereof being substantially perpendicular to the direction of conveyance and a base portion engaging the plate and a gripping surface on the tubular portion, the gripper member being adapted to deform so as to substantially conform to and



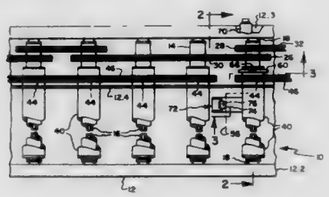
engage the area of an article it contacts, such deformation being facilitated as a result of the hollow open-ended tubular portion, with the area of contact being substantially increased as a result of deformation of the gripper member; and

securing means for securing the gripper member to the holder such that the securing means are unable to come into direct contact with the elongated articles.

4,798,282
ZONING CONVEYOR

Bernard D. Sperduti, Amherst, and James A. Cerankowski, West Seneca, both of N.Y., assignors to HiTech Robotics Ltd., Buffalo, N.Y.

Filed Nov. 17, 1987, Ser. No. 121,650
Int. Cl.[4] B65G *13/06*
U.S. Cl. 198—781 12 Claims



1. A zoning conveyor comprising

frame;

a plurality of drive rollers mounted on said frame;

drive means mounted on said frame and capable of driving said rollers in such a manner that all rollers are driven at the same rotational speed;

a sleeve journalled about each of said rollers, each sleeve normally rotating with the roller about which it is journalled by frictional contact therewith, but each sleeve being capable of being held from rotation during rotation of the roller about which it is journalled;

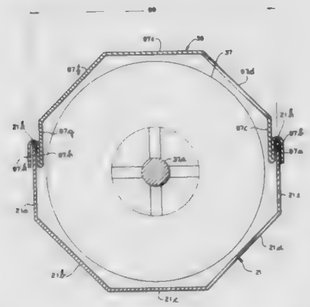
connecting means interconnecting selected sleeves within a selected zone in such a manner that the selected sleeves within the zone all have the same rotational speed; and

stop means mounted on said frame and capable of stopping at least one of said selected sleeves within said zone from rotating whereby all selected sleeves within that said zone are caused to be stopped from rotation by said connecting means.

4,798,283
BREADING MACHINE

Raymond E. Booth, Sandusky, and Michael E. Miller, Bellevue, both of Ohio, assignors to Stein Associates, Inc., Sandusky, Ohio

Division of Ser. No. 421,169, Sep. 22, 1982, Pat. No. 4,496,084. This application Sep. 10, 1984, Ser. No. 648,813
Int. Cl.[4] B65G *21/00*
U.S. Cl. 198—860.5 6 Claims



1. A vertical joint structure extending longitudinally of a housing enclosing a generally vertical screw conveyor having an axial driving shaft adapted for forming part of a larger machine; comprising a housing of generally octagonal section composed of two hollow half portions, each generally C-shaped in section and each composed of three full sides of said generally octagonal section plus a portion of each of two more sides, said portions of each of two sides being equal in size for each of said half portions and all parallel with each other and parallel with the axis o said driving shaft; said half portions assembled with their open sides mutually meeting and joining along two longitudinal zones approximately diametrically opposed in said housing and parallel to said axis of said driving shaft, and said housing having a central longitudinal axis coinciding with said shaft axis; means closing the open top and bottom of said housing; said housing half portions consisting of formed sheet material; there being openings in said housing near the top and the bottom thereof for inlet and outlet of material moved by said conveyor and said housing being otherwise generally imperforate; each of said longitudinal joints comprising, in a first of said half portions, a straight sheared edge of said sheet material parallel with said shaft axis, said sheared edges being the terminal edge of said C-shape and forming a first linear sealing surface; each of said longitudinal joints, in a second of said half portions, comprising at each terminal edge of said C-shape, a U-shaped trough parallel with said shaft axis and the full axial length of said second half portion, said trough being formed by first bending said sheet material at said terminal edge one hundred eighty degrees outward from said terminal edge to form a first planar surface perpendicular to a plane running axially along said shaft axis, said first planar surface also being parallel to said shaft axis, then again bending said sheet material outward one hundred eighty degrees to form a second planar surface a moderate fraction of an inch separated from said first planar surface and parallel with said first planar surface thus forming a second linear sealing surface at the bottom of the trough; and means for releasably clamping said housing half portions with said first and second sealing surfaces tight together.

4,798,284
BOX FOR STORING THIN OBJECTS

Thomas C. V. Wakelin, Bramcote, 1 Norris Close, Whitehill, Bordon, Hampshire GU35 9EG, United Kingdom

Filed Jun. 4, 1987, Ser. No. 58,193
Claims priority, application United Kingdom, Jun. 5, 1986, 8613705; Jun. 5, 1986, 8613706; Jun. 5, 1986, 8613707; Nov. 4, 1986, 8626348
Int. Cl.[4] B65D *85/57*
U.S. Cl. 206—45.15 23 Claims



1. a box in combination with thin objects, comprising:

a plurality of thin objects forming a stack capable of fanning out at their top portions from being compressed at their lower portions

means supporting said stack of said objects in a substantially upright position for selection amongst them, said support means including a support surface disposed beneath said objects at least when said stack is arranged substantially upright;

means for compressing said stack of thin objects at the level of lower portions thereof to cause them to fan out at upper portions thereof, said compression means including:

a movable member spaced from and movable crosswise of said support surface to bear at one side of said stack against an outside one of said stack of objects for compression of them, and

a reaction member positioned to bear at the other side of said stack against an outside one of said stack of objects for reacting said compression of said objects caused on movement of said movable member, a lower portion of said movable member moves toward said reaction member to decrease the distance therebetween and compress said objects.

11. A box for storing thin compressible objects, comprising:

an outer part and an inner part connected to said outer part, said outer part covering said objects in a closed position of said box and supporting said inner part at a leaning back inclination in an open position of said box;

means for supporting a stack of said objects in a substantially upright position for selection amongst them, said support means including a support surface disposed beneath said objects at least when said stack is arranged substantially upright;

means for compressing said stack of thin objects at the level of lower portions thereof to cause them to fan out at upper portions thereof, said compression means including:

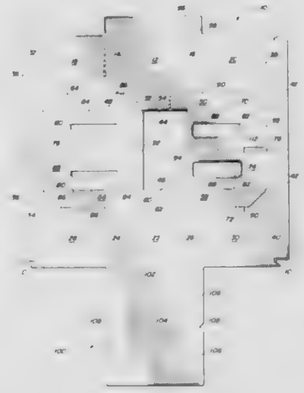
a reaction member positioned to bear at one side of said stack against an outside one of said stack of objects, and

a movable member spaced from and movable crosswise of said support surface to bear at the other side of said stack against an outside one of said stack of objects for compression of them, said movable member having side wings, said side wings of said movable member including means for pivoting said movable member to said inner part for movement into a compression position compressing said lower portions of said objects between said movable and reaction members; said inner part having pair of side members adjacent said side wings; pivotal limitation means operatively connecting said side wings and said inner part for limiting forwards pivotal movement of said movable member to said compression position.

4,798,285
BASKET-TYPE CARRIER FOR ELONGATED ARTICLES

Kenneth J. Hernandez, Monroe, La., assignor to Manville Corporation, Denver, Colo.

Filed Dec. 7, 1987, Ser. No. 129,567
Int. Cl.[4] B65D *75/00*
U.S. Cl. 206—180 10 Claims



1. A basket-type article carrier, comprising:

a bottom panel having side edges;

side panels foldably connected to the side edges of the bottom panel and having end edges;

end panels foldably connected to the end edges of the side panels;

riser panels connected to the end panels centrally of the end panels;

a center support panel connected to and extending between the riser panels;

at least one partition strap extending between the center support panel and each side panel to divide the carrier on either side of the center support panel into cells for receiving articles to be carried, the cells having a depth corresponding to the distance between the center support panel and the side panels and a width corresponding to the distance between the partition straps and the end panel nearest thereto;

the partition straps being connected by fold lines to the center support panels and to the associated side panel; and

the distance between the fold lines connecting the partition straps to the center support panel and the end panel nearest thereto being substantially less than the length of the partition straps, whereby the cells are adapted to receive articles having an elongated transverse cross-sectional shape.

4,798,286
BOTTLE HOLDER

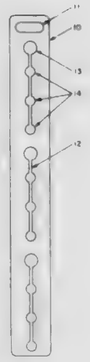
Peter R. Muscanelli, 238 Cherry St., Schenectady, N.Y. 12306

Filed Aug. 24, 1987, Ser. No. 88,906
Int. Cl.[4] B65D *71/00*
U.S. Cl. 206—150 3 Claims

1. A bottle holder comprising a long, flat strap made of plastic material of uniform thickness and having an upper end from which the strap is adapted to be supported, a handle opening in the upper end of the strap for carrying the bottle holder or suspending it from a support, a longitudinal slot in the strap for receiving the necks of a plurality of bottles and

supporting the plurality of bottles in a row, one above the other, in generally perpendicular relation to the plane of the strap and an enlarged opening slightly wider than the slot and the neck of the bottle to be supported, said opening being spaced beneath the handle opening and the upper end of the slot and being in open communication with the upper end of the slot for the insertion of the neck of a bottle, which is then displaced downwardly and guided into the narrow portion of the slot to grip the neck tightly and support it from the strap.

2. A bottle holder comprising a long strap having an upper



end from which the strap is adapted to be supported, a longitudinal slot in the strap for receiving the necks of a plurality of bottles and supporting the plurality of bottles in a row, one above the other, in generally perpendicular relation to the plane of the strap, an enlarged opening communicating with the upper end of the slot for the insertion of the neck of a bottle, which is then displaced downwardly into the narrower portion of the slot to grip the neck tightly and support it from the strap and spaced-apart neck locating-openings in the slot separated by narrow portions of the slot to position the bottles and space them one above the other.

4,798,287

SYSTEM FOR INTRODUCING FLOWABLE ADDITIVE INTO A CLOSED CONTAINER

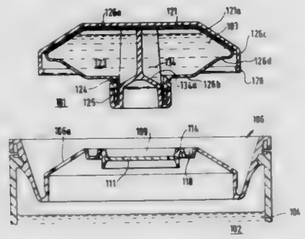
Michael H. Groves; Digby R. Redshaw, both of Warwick, and Michael R. Cane, Stockton, all of England, assignors to Imperial Chemical Industries plc, London, England

Filed Jun. 12, 1987, Ser. No. 61,423

Claims priority, application United Kingdom, Feb. 12, 1987, 8703205

Int. Cl.[4] B65D *25/08*

U.S. Cl. 206—219 **19 Claims**



1. A system for introducing a flowable additive to paint, varnish, woodstain or the like contained in a closed container wherein the system comprises:

(a) a closed container containing paint, varnish, woodstain or the like, the container being provided with an inlet which is closed by an inlet closure, but which is openable by a force exerted on the inlet closure,

(b) a closed capsule separate from the closed container, which capsule comprises a chamber which defines a volume, which contains a flowable additive and which chamber can be opened to create an opening in the chamber, which opening can communicate with the inlet into said container after the inlet has been opened,

(c) means for use in positively expelling additive from the chamber through the opening by contracting the volume defined by the chamber and,

(d) co-operable locating means provided on the container and capsule which can at least assist in locating said opening created in the chamber in communication with the inlet into the container,

wherein the container and the capsule are provided with one of co-operable snap fit sealing means and co-operable press fit sealing means, which can co-operate to provide a replacement closure for the container inlet so as to prevent spillage from the container after the inlet closure has been opened.

4,798,288

PLASTIC PACKING HAVING MULTIPLE COMPARTMENTS FOR SOLID AND LIQUID PRODUCTS

Günter Holzner, Carouge, Switzerland, assignor to Firmich SA, Geneva, Switzerland

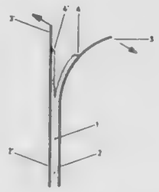
PCT No. PCT/CH82/00005, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/02700, PCT Pub. Date Aug. 19, 1982

PCT Filed Jan. 14, 1982, Ser. No. 432,917

Claims priority, application Switzerland, Feb. 5, 1981, 758/81

Int. Cl.[4] B65D *25/08*

U.S. Cl. 206—222 **5 Claims**



1. Plastic packing having multiple compartments for liquid and solid materials, characterized in that it comprises a joint common to both compartments constituted by at least two sheets of polymer material, one of which is polymer foam material and ruptures internally along a longitudinal axis without the external walls of the packing rupturing, when an external pressure is applied to one of the compartments.

4,798,289

LOCKING TROLLEY FOR GARMENT BAG WITH HANGER RETAINING PADS WHICH INHIBIT UNINTENDED HANGER WITHDRAWAL

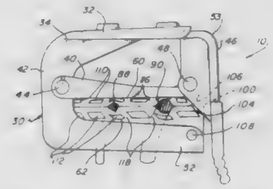
Lawrence R. Mobley, Aurora, Colo., assignor to Samsonite Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 754,617, Jul. 12, 1985, Pat. No. 4,640,414, which is a continuation-in-part of Ser. No. 673,353, Nov. 23, 1984, Pat. No. 4,618,058. This application Oct. 10, 1986, Ser. No. 917,409

The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.

Int. Cl.[4] B65D *85/18*

U.S. Cl. 206—287 **13 Claims**



1. In a trolley for suspending and retaining the hooked ends of clothes hangers in a luggage piece, comprising a substantially rigid frame member generally of a C-shaped configuration which has a rear portion extending downward and a lower portion extending forward from the rear portion and which defines an opening extending into the frame member from a front location thereof, the rear and lower portions generally surrounding the opening at rear and lower locations respectively, a pair of gripping structures, means for operatively connecting the gripping structures to the frame member within the opening in an oppositely facing relationship and between which the hooked ends of hangers are inserted and removed from the front location, a lower one of the gripping structures extending generally along the lower portion and terminating at the front location, the lower gripping structure including an edge which contacts the hanger ends and a plurality of internal holes formed into the lower gripping structure at locations spaced longitudinally between the front and rear locations, the holes defining and separating a plurality of ribs, each rib extending toward the edge and rearwardly away from the front location, and the lower gripping structure including a lip which curves upward and forward at the termination of the gripping structure at the front location.

7. A trolley for suspending and retaining the hooked ends of clothes hangers in a luggage piece, comprising:

a substantially rigid frame member which defines an opening extending into the frame member from a front location thereof;

a pair of gripping structures;

means for operatively connecting the gripping structures to the frame member within the opening in an oppositely facing relationship and between which the hooked ends of hangers are inserted and removed from the front location; and

each gripping structure further including a continuous edge which contacts the hanger ends and which extends from the front location into the opening toward a rear location of the trolley, at least one of said pair of gripping structures further including a plurality of longitudinally spaced holes formed transversely through the gripping structure and separated by ribs of resilient flexible material, the ribs of said one gripping structure are angled such that as the ribs extend toward the edge the ribs also extend toward the rear location of the trolley, the angle of the ribs operatively creating a pawl-like resistance effect at the edge contacting the hanger end to inhibit the withdrawal of the hanger end from between the gripping structures.

10. In a trolley for suspending and retaining the hooked ends of clothes hangers in a luggage piece, comprising a substantially rigid frame member which defines an opening extending into the frame member from a front location thereof, a pair of gripping structures being formed of resilient and flexible material, said gripping structures further having an edge extending therealong which contacts the hanger ends, means for operatively connecting the gripping structures to the frame member within the opening in an oppositely facing relationship and between which the hooked ends of hangers are inserted and removed from the front location, an improvement in combination therewith comprising:

means structurally integral with and extending internally from the edge of the gripping structures for creating a resistance at the edge to the removal of the hanger ends from between the gripping structures, which resistance is created from the resiliency of the gripping structures and is greater upon movement of the hanger ends toward the front location than upon movement of the hanger ends rearwardly away from the front location, and wherein said means comprises a plurality of ribs of resilient flexible material, said ribs extending internally of the gripping structure from said edge and with the ribs creating the resistance.

13. A trolley for suspending and retaining the hooked ends of clothes hangers in a luggage piece, comprising a substantially rigid frame member generally of a C-shaped configuration which has a rear portion extending downward and an upper and lower portion extending forward from the rear portion and which defines an opening extending into the frame member from a front location thereof, the rear and lower portions generally surrounding the opening at rear and lower locations respectively, a pair of gripping structures, means for operatively connecting the gripping structures to the frame member within the opening in an oppositely facing relationship and between which the hooked ends of hangers are inserted and removed from the front location, a lower one of the gripping structures extending generally along the lower portion and terminating at the front location, the lower gripping structure including an edge which contacts the hanger ends and a plurality of internal holes formed into the lower gripping structure at locations spaced longitudinally between the front and rear locations, the holes defining and separating a plurality of ribs, each rib extending toward the edge and rearwardly away from the front location, the other gripping structure extending generally along the upper portion and including a plurality of holes formed thereinto at locations spaced longitudinally between the front and rear locations, the holes in the upper gripping structure defining and separating a plurality of upper ribs, each upper rib extending toward the lower gripping structure and rearwardly away from the front location, and wherein the lower gripping structure includes a lip which curves upward and forward at the termination of the lower gripping structure at the front location.

4,798,290

ELECTROSTATIC DISCHARGE CARTON

Judson A. Bradford, Holland, Mich., assignor to Bradford Company, Holland, Mich.

Filed Dec. 10, 1987, Ser. No. 130,900

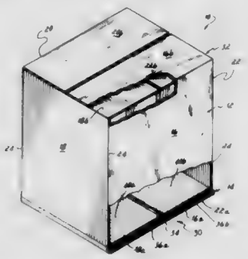
Int. Cl.[4] B65D *73/02, 85/42*

U.S. Cl. 206—328 **30 Claims**

1. A six-walled container for protecting electronic goods contained therein from damage due to electrostatic discharge constructed from a flat blank, said blank having four side walls and a pair of closure walls formed by flaps of said side walls, said side walls and flaps being joined together collectively to present a six-walled container defining a cavity for the electronic goods, and

at least one electrostatic discharge pad having one portion

residing on one side of one of said closure walls and a second portion of said pad extending between said flaps of



said one closure wall to the opposite side of said one closure wall.

4,798,291

DISPLAY CARRIER FOR ARTICLES

Robert G. Carver, Ashland, Ohio, assignor to Coburn, Inc., Ashland, Ohio

Filed Aug. 24, 1987, Ser. No. 88,907
Int. Cl.[4] B65D *85/44*
U.S. Cl. 206—426 **27 Claims**



1. A display carrier for articles, the carrier comprising:

opposing top and bottom walls having opposing pairs of transverse and lateral edges, said top and bottom walls each having a center line generally equidistantly spaced between their respective transverse edges;

opposing side walls hingedly attached to said lateral edges of said top and bottom walls to form a sleeve; and

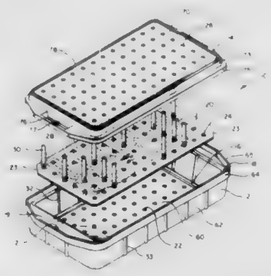
retaining means for releasably engaging an end of an article in said carrier, said retaining means having a hinged extension including deflection means hingedly extending from at least one transverse edge of said bottom wall, transversely hingedly attached to said bottom wall inside said carrier at a location between said bottom wall center line and the transverse edge at which said retaining means is hinged, and two generally transverse hinges disposed between said hinged extension and hinged attachment for deflection of said retaining means toward said bottom wall for: (i) withdrawing an article from said carrier; and (ii) inserting an article into said carrier.

4,798,292

STERILIZATION, STORAGE, AND PRESENTATION CONTAINER FOR SURGICAL INSTRUMENTS

Dennis R. Hauze, Bountiful, Utah, assignor to BioMedical Laser Industries, Houston, Tex.

Filed Apr. 3, 1987, Ser. No. 34,821
Int. Cl.[4] B65D *81/18*
U.S. Cl. 206—439 **23 Claims**



1. A container for the sterilization and storage of surgical instruments and materials and for the subsequent presentation of said surgical instruments and materials during a surgical procedure, which container comprises:

a tray comprising a bottom with spaced, permanent apertures, a peripheral shelf around the bottom, surrounding sidewalls, and a marginal flange around the upper periphery of said sidewalls;

a cover removably mounted on said tray and defining an interior chamber therewith, said cover being carried on said marginal flange of said tray and having a plurality of spaced, permanent apertures;

a removable insert board having a plurality of spaced, permanent apertures for admitting a sterilizing medium into intimate contact with said surgical instruments and materials;

and support means on said insert board for releasably supporting said surgical instruments and materials in a readily accessible manner comprising pegs configured a hollow tubes for the passage of sterilizing medium, each peg having an upper end and a bottom end, said bottom end terminating in a stop and having longitudinal slots extending an incremental distance toward said upper end, said slots forming legs in said hollow tube, said pegs being adapted to being inserted upwardly through said spaced apertures until said stop engages the bottom surface of said insert board with said legs providing a resilient engagement of said pegs in said apertures.

13. A container for the sterilization and storage of surgical instruments and materials and for the subsequent presentation of said surgical instruments and materials during a surgical procedure, which container comprises:

a first tray comprising a bottom with spaced, permanent apertures; a raised lower shelf surrounding said bottom; raised sidewalls; and an upper, raised shelf on the upper edge of said sidewalls, said raised shelf being formed as a marginal flange;

a cover adapted to be removably mounted on said first tray and defining an interior chamber therewith, said cover being carried on said marginal flange of said first tray and having a plurality of spaced, permanent apertures and forming a second tray when inverted; and

removable support means for said surgical instruments and materials comprising a first insert board having means for removing said first insert board from said first tray and from said second tray of said cover, said first insert board comprising a planar element having a plurality of peg-receiving apertures and a plurality of pegs for removable

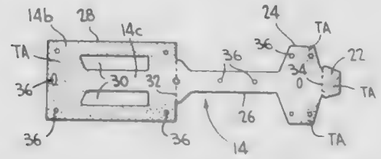
placement in at least a portion of said peg-receiving apertures, said pegs being configured as hollow, tubular elements, each peg having an upper end and a bottom end, the bottom end terminating in a stop, said peg including a plurality of longitudinal slots extending an incremental distance from said stop and thereby forming legs in said peg, said peg including a circumferential ridge spaced from said stop and adapted to contact an upper surface of said first insert board when said peg is inserted upwardly through said peg-receiving aperture and said stop is engaged against a bottom surface of said first insert board, said slots extending above said upper surface and allowing the passage of sterilizing medium through said slots.

4,798,293

SHIRT FOLDING AND PACKAGING METHOD AND APPARATUS

Ronald Carstens, 209 Edith Point, Anacortes, Wash. 98211

Continuation of Ser. No. 869,713, Jun. 2, 1986. This application Apr. 28, 1988, Ser. No. 188,198
Int. Cl.[4] B65D *73/00*
U.S. Cl. 206—495 **13 Claims**



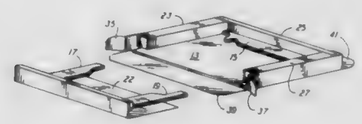
1. A collar board for use in packaging a shirt comprising an elongate collar band-encircling portion and a shorter shirt-front portion extending at an angle from one end of the collar band-encircling portion for encircling substantially an entire shirt collar band, the shirt front portion having a first notch adjacent the collar band encircling portion for engaging a collar button of the shirt, and a second notch spaced from the first notch for engaging another button on the shirt front adjacent the collar button wherein at least the collar band-encircling portion is coated on both surfaces with a transient adhesive wherein the adhesive consists essentially of about 5–25% (w/v) sol of a polyvinyl pyrollidone (PVP) in an organic solvent having a boiling point less than 90° C. under normal atmospheric conditions, said PVP having a molecular weight ranging from about 30,000 to about 90,000 the resulting composition being a transient cohesive.

4,798,294

SHIPPING TRAY ASSEMBLY FOR AN ARTICLE HAVING CASTERS

Richard Bodi, Knoxville, Tenn., assignor to North American Phillips Corp, New York, N.Y.

Filed Aug. 31, 1987, Ser. No. 91,673
Int. Cl.[4] B65N *19/42*
U.S. Cl. 206—600 **10 Claims**



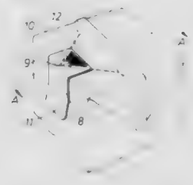
1. A shipping tray assembly for use in shipping an article having casters extending below its bottom, said tray assembly comprising a first surface, a first raised segment on said surface for supporting a first portion of the bottom of such an article, a second raised segment on said surface for supporting a second portion of the bottom of such an article, said raised segments being high enough so that when such an article is supported on them its casters are out of contact with said surface, and holding means holding said first and second segments in fixed relationship to one another, said holding means being releasable whereby said fixed relationship can be changed, said holding means upon being released enabling said second raised segment to be removed from said tray assembly thereby providing an opening in said assembly whereby an article with casters extending below its bottom and located inside said tray assembly can have its casters lowered onto said surface and can be rolled out of said assembly through said opening.

4,798,295

PACKING CONTAINER FOR LIQUID CONTENTS

Hans Rausing, Wadhurst Park, England, assignor to AB Tetra Pak, Lund, Sweden

Filed Oct. 30, 1987, Ser. No. 115,056
Claims priority, application United Kingdom, Nov. 13, 1986, 8627150
Int. Cl.[4] B65D *5/54*
U.S. Cl. 206—621.6 **6 Claims**



1. A packing container for liquid contents manufactured of a packing material of plastic-coated cardboard and which comprises:

a container body with an inside and at least one straight side wall and an upper end wall which is joined to the side wall along a folding line so as to form a relatively sharp transition between the package side wall and the upper end wall;

a hole arranged in the upper end wall, which hole extends up to the folding line;

two weakening lines which extend from opposite edges of the hole in divergent directions over the upper end wall of the packing container up to a crease line in the upper end wall;

the hole is covered from the inside of the package by a thin thermoplastic film which constitutes the inner plastic coating of the packing material;

a cover strip is arranged over the hole and at least over parts of the upper end wall between the weakening lines and which cover strip is sealed to the thermoplastic film exposed in the hole and to the outside of the upper end wall between the weakening lines.

4,798,296

PACKING CONTAINER PROVIDED WITH A RECLOSABLE OPENING ARRANGEMENT

Jan Lagerstedt, and Kjell Mårtensson, both of Malmö , Sweden, assignors to AB Tetra Pak, Lund, Sweden

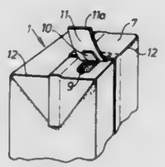
Filed Mar. 18, 1987, Ser. No. 27,569
Claims priority, application Sweden, Mar. 26, 1986, 8601396
Int. Cl.[4] B65D *5/70*
U.S. Cl. 206—631.2 **8 Claims**

1. An opening arrangement in a packing container wall comprising:

a weakened area formed by two connected lines of weakening, said weakened area defining a tongue movable away from the packing container wall during an opening opera-

tion to at least partially define the area of an opening in the packing container wall and movable toward the packing container wall during a re-closing operation to at least partially reclose the opening, and

a cover strip positioned over said tongue and sealed to the



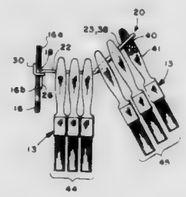
packing container wall around the weakened area, the area of the opening being covered from the underside with a thin liquid-tight plastic film which is sealed to the inside of the container, the cover strip being sealed to the plastic film within an area of the opening adjacent said weakened area.

4,798,297

MERCHANDISING SYSTEM FOR PAINT BRUSHES AND THE LIKE

Robert L. Weiss, Wooster; Charles Jestes, Smithville, and Richard J. Crowell, Wooster, all of Ohio, assignors to The Wooster Brush Company, Wooster, Ohio

Filed Aug. 1, 1984, Ser. No. 636,735
Int. Cl.[4] A47B 81/02
U.S. Cl. 211—65 10 Claims



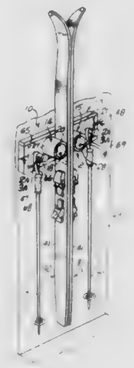
1. A merchandising system for paint brushes or the like comprising: an upstanding aperture panel; at least one display hanger mounted to said aperture panel for hanging support of a plurality of paint brushes or the like from said aperture panel, said display hanger comprising a wire body bent intermediate its length at an acute angle to form a rear article storage portion and an angled front article display portion, said wire body having a rear end, attachment means at said rear end of said wire body for removably yet securely mounting said wire body to the aperture panel at an aperture therein with said storage portion extending substantially horizontally and forwardly from said panel and said display portion upwardly inclined in the vertical plane of said storage portion, each of said storage portion and said display portion being of sufficient length to accommodate and support a plurality of such brushes in axially spaced relation along each such length, and a soft resilient covering on said display portion over substantially the length thereof, said covering being operative to effect a wedging or binding action at a hole in each handle of a plurality of such brushes threaded thereon for holding each such brush upwardly inclined for easy viewing and removal; a plurality of paint brushes hanging in vertical disposition in stacked relationship from said storage portion; and a plurality of additional paint brushes supported on said display portion in stacked relationship at an upward tilt effected by a wedging or binding action of said covering at a hole in each handle of said additional brushes, which hole has a diameter slightly greater than the outer diameter of said covering on said display portion.

4,798,298

APPARATUS FOR GRIPPING SKIS OR LIKE

Chris H. Ursetta, 5800 Owensmouth #79, Woodland Hills, Calif. 91367

Filed Oct. 30, 1987, Ser. No. 114,507
Int. Cl.[4] A47F 5/08
U.S. Cl. 211—70.5 20 Claims



1. In an article supporting apparatus including a support, at least one revolvable gripping member eccentrically mounted to said support to cooperate with a second gripping member mounted to said support and between which the article is to be supported, said revolvable member having a wall facing said support,

the improvement characterized by a means for biasing said revolvable member towards a position defining a minimal width between said gripping members,

said biasing means comprising

(a) a curved slot formed in the wall of said revolvable member and about its eccentric mounting,

(b) a spring mounted in said slot, and

(c) a pin mounted in said support and extending into said slot to engage said spring.

4,798,299

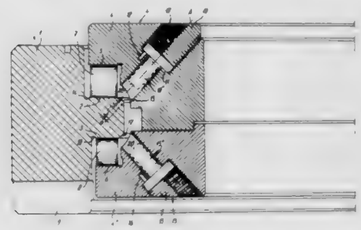
PIVOT RING

Antonius L. Bayer, Rumpt; Bernhardus A. L. Bles, Woerden; Godfrey Hands, Vianen, and Dag A. Hovden, Utrecht, all of Netherlands, assignors to SKF Industrial Trading and Development Co. B.V, Nieuwegein, Netherlands

Filed Nov. 13, 1986, Ser. No. 930,699
Claims priority, application Netherlands, Dec. 19, 1985, 8503517
Int. Cl.[4] B66C 23/84
U.S. Cl. 212—157 9 Claims

1. In a pivot ring assembly comprising first and second annular members, one of which is mounted within the other, said first and second annular members having first and second spaced apart races, respectively, that face one another, and rolling elements positioned to roll on said races between said first and second annular members; the improvement wherein an aperture is provided in said first annular member for receiving an ultrasonic probe, said aperture being directed toward a

critical area of said assembly, whereby an ultrasonic probe mounted in said aperture can scan said area upon relative



rotation of said annular members for detecting subsurface material defects in said assembly.

4,798,300

BOTTLE WITH INTEGRAL CAP-REMOVING RECESS

Asim Ghosh, Willowdale, and Aram H. Toukmanian, Toronto, both of Canada, assignors to Carling O'Keefe Breweries of Canada Limited, North York, Canada

Filed Mar. 2, 1988, Ser. No. 162,964
Claims priority, application Canada, Mar. 3, 1987, 531005
Int. Cl.[4] B65D 23/00, 41/12
U.S. Cl. 215—10 13 Claims



1. A bottle, comprising:

a mouth,

a neck adjoining the mouth, the neck having helical rib means on the outside adjacent the mouth to permit application of a peripherally indented, screw-on crown,

a main body portion having a base,

an upward recess centrally in the base, the recess being substantially circular when seen in bottom plan,

and a plurality of inwardly projecting, substantially identical ribs around the periphery of the recess, each rib being convexly rounded and devoid of points, and having two concavely rounded shoulder portions on either side, whereby to minimize stress concentration,

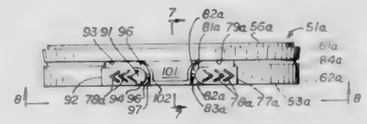
the recess being sized to receive a peripherally indented crown of the same size as that receivable on the neck, such that the ribs register in at least some of the peripheral indentations, whereby one bottle can serve as a crown remover for another.

4,798,301

TAMPER-RESISTANT CAP FOR WIDE MOUTH JAR

Joseph J. Bullock, Atherton; Wayne L. Hatch, Gilroy, and George Tackles, San Jose, all of Calif., assignors to Cap Snap Co., San Jose, Calif.

Filed Dec. 14, 1987, Ser. No. 132,793
Int. Cl.[4] B65D 41/48
U.S. Cl. 215—256 11 Claims



1. A tamper-evident cap comprising a top disk,

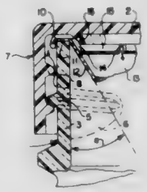
an outer skirt depending from said top disk having internal upper and lower locking bead means and a horizontal score line extending substantially circumferentially of said outer skirt intermediate said upper and lower bead means, said outer skirt being cut away adjacent its lower edge to form a horizontally elongated tear tab, said tear tab being radially outwardly offset relative to the outer circumference of a major portion of said outer skirt to provide a space inside said tear tab for insertion of a finger or fingernail to grasp said tear tab.

4,798,302

CLOSING DEVICE FOR A HOLDER AND DIAPHRAGM FOR SUCH A DEVICE

Cornelis Killestijn, Prinsenbeek, Netherlands, assignor to Skillpack B.V., Etten-Leur, Netherlands

Filed Mar. 28, 1988, Ser. No. 174,205
Claims priority, application Netherlands, Apr. 13, 1987, 8700871; European Pat. Off., Jan. 20, 1988, 88200101.9
Int. Cl.[4] B65D 39/12, 53/00
U.S. Cl. 215—271 7 Claims



1. Closing device (7, 37, 67) for closing a holder opening (6) comprising at least a cover (2, 32, 62) arranged over said opening (6) and a diaphragm (1, 31, 61) arranged between an edge (11) of said holder opening (6) and said cover (2, 32, 62), said diaphragm being essentially elastically and/or plastically deformable in its plane, and/or having a shape which in unloaded state deviates essentially from the flat form, whereby a space (15, 45) present between cover (2, 32, 62) and diaphragm (1, 31, 61) is in contact with the atmosphere via at least one passage (14, 60), characterized in that said diaphragm (1, 31, 61) has on the upper side of its edge (10, 57) at least one groove (14, 60) for placing said space (15) present between cover (2, 32, 62) and diaphragm (1, 31, 61) in contact with the atmosphere, and that present between holder (4, 34, 64) and cover (2, 32, 62) are active connecting means (5, 8, 68), each of which are releasable.

4,798,303

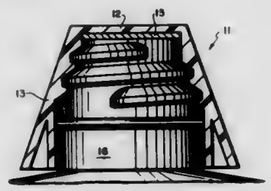
CONTINUOUS THREAD CLOSURE ASSEMBLY

Donald L. Arnold, Madison, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 038,685, Apr. 15, 1987, abandoned. This application Jan. 14, 1988, Ser. No. 143,794

Int. Cl.[4] B65D *41/04*

U.S. Cl. 215—329 **4 Claims**



1. A continuous thread closure assembly which comprises:

(a) a container having only about two full turns of a continuous thread finish of a Type A, Type B or modified buttress profile thereon which has a progressively increasing thread diameter in a direction away from the outlet of the container at a conical angle of at least about 40°; and

(b) a screw cap having a top with a counterpart thread configuration to that of the container on the inside surface thereof which directly engages with the thread finish on the container in such a manner that the lowest thread of the cap passes the uppermost thread on the container and is engageable with the next lower thread course on the container to allow for less than one turn of the cap to give two full turns of thread engagement between the container and cap.

4,798,304

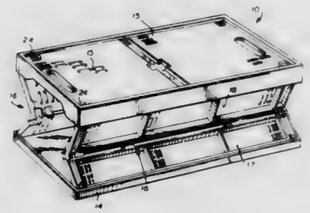
COLLAPSIBLE BOX

Helmut Rader, McLean, Va., assignor to Monoflo International, Inc., McLean, Va.

Filed Oct. 8, 1987, Ser. No. 105,573

Int. Cl.[4] B65D *7/24*

U.S. Cl. 220—6 **9 Claims**



1. A collapsible container movable from a collapsed to an operative position, and vice versa, and comprising:

two sides; two ends; an open top form comprising two side bars and two end bars; and a bottom panel; interconnected to form a generally rectangularly shaped structure;

said two sides each composed of first and second panels, said first and second panels pivotally connected at a center portion of the sides to each other, and said first panel being pivotally connected to said bottom panel, and said second panel being pivotally connected to a side bar of said top form, so that said first and second panels are pivotal with respect to each other and said top form and bottom panel about parallel side axes;

said two ends comprising end panels each of which span the distance between said bottom panel and top form when in said operative position to maintain said container in said operative position; said end panels each pivotally connected to an end bar of said top form for rotation about an end axis generally perpendicular to said side axes;

said sides, end, top form, and bottom panel all comprising plastic components;

pivotal means for pivotally connecting all of said components together, said pivotal means consisting essentially of plastic pivot pins integral with said plastic components, and means defining pivot pin receiving openings in said plastic components for receipt of said plastic pivot pins;

said pivotal means including four flexible arms extending downwardly from each of said first panels when said container is in said operative position, each of said flexible arms having a pivot pin extending outwardly therefrom, each pivot pin having a tapered free end so that the length of said pin is least nearest the bottom of said first panel; and

a pair of said arms adjacent each end of said first panel, the pivot pins of each pair of arms facing away from each other;

said bottom panel comprising a bottom plate and upstanding side walls; said pivotal means for connecting each of said first panels to said bottom panel further comprising a plurality of closed end pivot pins connected at both ends thereof to part of said first panel; and said means for receiving said closed end pivot pins comprising said bottom panel and a hooked bottom flange cantilevered to a side wall of said bottom panel.

4,798,305

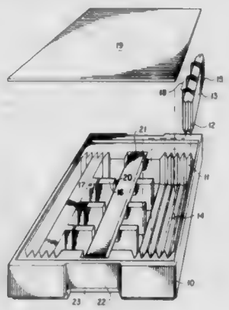
ADJUSTABLE SHIPPING TRAY

Gerald C. Laverty, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 16, 1987, Ser. No. 120,881

Int. Cl.[4] B65D *85/30*

U.S. Cl. 220—22.3 **4 Claims**



1. An adjustable tray for holding bundles of material, comprising:

a tray having an planar, solid interior bottom surface, and a first and second pair of opposing vertical walls, each wall having an interior and exterior face; and

a moveable partition with first and second vertical sides, top and bottom sides, and first and second vertical ends; and

a pattern of alternating vertical grooves and projecting teeth formed on the first and second vertical ends and the bottom side of the moveable partition, and on the interior faces of at least one pair of opposing vertical walls and the interior bottom surface of said tray; whereby, the moveable partition is held within the tray by the interlock of the pattern on the first and second vertical ends with the pattern on the interior faces of the opposing vertical walls, where the alternating verticle grooves and projecting teeth are of an intermeshing triangular shape.

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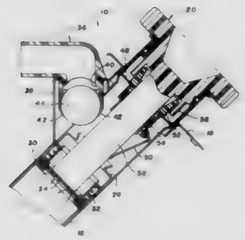
FUEL TANK VENTING

Roy A. Giacomazzi, Washington Township, and Rolland D. Giampa, Clarkston, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 4, 1987, Ser. No. 21,765

Int. Cl.[4] B01D *53/04*

U.S. Cl. 220—86 R **3 Claims**



1. In a vehicle fuel system having a fuel tank with a filler pipe having an upper end closable by a removable cap, said upper end opening to the atmosphere when said cap is removed, said system also having a fuel vapor storage canister to which said fuel tank is connected, a venting means that prevents pressurized fuel vapors generated in said tank when said filler pipe is closed from reaching the atmosphere as said cap is removed, said venting means comprising,

a valve located inside said filler pipe downstream from said filler pipe upper end, said valve being movable from a closed position blocking said filler pipe to an open position,

a fitting opening through said filler pipe intermediate said valve and said upper end, said fitting being connected to said vapor storage canister,

valve actuation means on said cap adapted to hold said valve in its closed position when said cap is in place and to allow said valve to move to its open position as said cap begins to be removed, and

seal means engageable with said cap intermediate said fitting and said filler pipe upper end, said seal means remaining engaged with said cap after said valve opens and as said cap is removed until said cap is fully removed, whereby when said cap is in place, said pressurized fuel vapors are prevented by said valve from reaching the atmosphere and also prevented from reaching said fitting, whereas when said cap begins to be removed, said valve is allowed to open and said pressurized fuel vapors are prevented from reaching the atmosphere by said seal means, and are directed instead through said fitting so as to be substantially stored in said canister by the time said cap is fully removed and said filler pipe opened to the atmosphere.

4,798,307

COMPARTMENTED CLEANING BUCKET

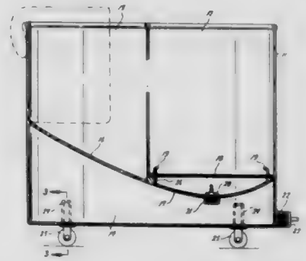
William E. Evrard, SS Rte., Box 312-W, West Plains, Mo. 65775

Filed Jan. 14, 1988, Ser. No. 143,757

Int. Cl.[4] A47L *13/14*

U.S. Cl. 220—20.5 **2 Claims**

1. A bucket for handling cleaning liquids, comprising, a discharge storage reservoir, for containment of dirty cleaning liquid, located at the bottom of said bucket, a clean liquid reservoir, for containment of cleaning liquid, said reservoir located in a portion of the remaining volume of said bucket above and controllably connected to said discharge storage reservoir through a shaped collection floor, and further having a perforated protective shelf affixed within said clean liquid reservoir above said collection floor, and a discharge transfer compartment located in the remaining volume of said bucket above said discharge storage reservoir not occupied by said clean liquid reservoir, and adjoining said clean liquid reservoir



by means of a common wall between the two, and further having a drain floor at its bottom connecting it with said discharge storage reservoir by means of drain holes located in said drain floor adjacent to said common wall, said drain floor further sloping down from a high point on the outer wall of said bucket to a lower level on said common wall.

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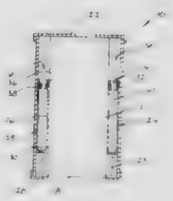
WATER HEATER CONSTRUCTION AND METHOD OF MAKING SAME

Thomas E. Nelson, 11102 Ridge Rd., Anchorage, Ky. 40223

Filed Aug. 6, 1987, Ser. No. 82,324

Int. Cl.[4] B65D *90/04*

U.S. Cl. 220—445 **14 Claims**



1. A water heater device comprising:

a water tank;

an outer shell concentriclaly located over the water tank defining an annular space therebetween;

an annular pocket having an annular open top within the annular space, the annular pocket comprising an inner annular pocket wall circumferentially overlaying at least a portion of the length of the exterior wall surface of the water tank, an outer annular pocket wall circumferentially overlaying at least a portion of the length of the interior wall surface of the outer shell, and an annular bottom end wall across the space between the water tank and outer shell; and,

an insulation material filling the annular pocket.

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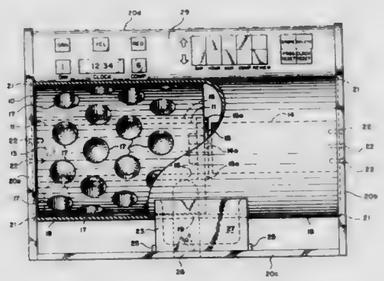
PROGRAMMABLE DISPENSING APPARATUS FOR PILLS OR THE LIKE

Forrest D. Stone, Salt Lake City, Utah, and John M. Trondsen, 7521 32nd NE., Seattle, Wash. 98115, assignors to John M. Trondsen, Seattle, Wash.

Continuation-in-part of Ser. No. 841,198, Mar. 19, 1986, abandoned. This application May 7, 1987, Ser. No. 46,729

Int. Cl.[4] B65D *83/04*

U.S. Cl. 221—4 **5 Claims**



1. Apparatus for dispensing a multiplicity of items in sequence, comprising an elongate cylindrical container element; means mounting said container element for simultaneous rotation and axial movement on a substantially horizontal axis so that any point on its circumferential surface executes progressive spiral travel; means for effecting said rotation and axial movement comprising a reversible stepper electric motor and along which said container element moves concentrically back and forth during its spiral travel; a series of recesses in said container element opening into the outer circumferential surface thereof and extending along the length thereof in spiral formation on item-receiving compartments; an item-retaining shell within which said container element is closely fitted for said rotation and axial movement, said shell having a dispensing opening substantially corresponding to a compartment opening, said dispensing opening being located within the path of spiral travel of the series of compartment openings; and a programmable information storage and control system including microprocessor means for operating the means for effecting rotation and axial movement of the container element on a sequentially timed basis; said electric motor having a power output shaft with a hub that is provided with oppositely extending lugs, the container element being provided internally with longitudinal slots engaged by said lugs, respectively, said lugs and said slots comprising back and forth guiding means.

4,798,310

ARTICLE STORAGE CONTAINER

Kikuo Kassi, Tokyo; Kinio Kodera, Saitama, and Mitsuo Maki, Tokyo, all of Japan, assignors to Platinum Pen Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1987, Ser. No. 5,276

Claims priority, application Japan, May 20, 1986, 61-113682

Int. Cl.[4] G07F *11/00*

U.S. Cl. 221—87 **9 Claims**

1. An article-storage container for at least one elongated article having an inner end, an outer end and a sidewall extending therebetween, with a first retaining means provided externally on the sidewall of the article,

said article-storage container comprising:

a case including means defining at least one article-accommodation chamber for removably telescopically receiving, inner end first, a respective said article,

said article-accommodation chamber having an opening through said case at an end of said article-accommodation chamber, said article-accommodation chamber being closed at an opposite end by means including an article retainer;

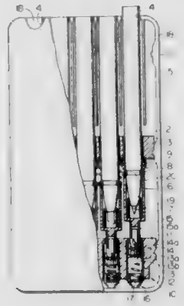
said article retainer being mounted in said case for limited axial movement towards and away from said opening;

resilient means mounted in said case and normally urging said article retainer towards said opening;

said article retainer including second retaining means adapted to engage with said first retaining means for removably retaining said article in said articleaccommodation chamber; and

a change-over mechanism including a shiftable spring-biased camming means, said change-over mechanism being mounted and disposed in said case, being operatively associated with said article retainer and said resilient means and being arranged:

for disposing said article retainer in an axially outer position with said second retaining means poised for retainingly coacting with said first retaining means when said article has been inserted in said article-accommodation chamber sufficiently to bring said first retaining means into engagement with said second retaining means and



for permitting said article retainer, against restoration force becoming stored by said resilient means, to permit said article retainer to be forcibly retracted to an intermediate position as said article is further inserted into said article-accommodation chamber, until a condition is reached at which said first retaining means is retainingly engaged with said second retaining means, said outer end of said article is approximately flush with said case perimetrically of said opening and said article retainer is cammed, by said spring-biased camming means of said change-over mechanism, in said intermediate position, against axially outward movement towards said axially outer position, and

for permitting said article retainer when latched in said intermediate position to be pushed further inwards, by a pushing force manually applied on said outer end of said article, for shifting said spring-biased camming means so that said resilient means may push said article outwardly of said articleaccommodation chamber so that a portion of said article adjacent said outer end protrudes out of said case through said opening and is available to be grasped for removing said article from said article-accommodation chamber.

4,798,311

CONTAINER PROVIDED WITH A CLOSURE

Donald J. Workum, Küssnacht, Switzerland, assignor to Hafina Treuhand AG, Baar, Switzerland

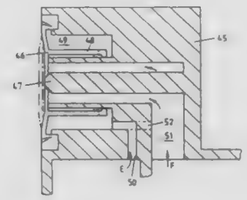
PCT No. PCT/CH85/00109, § 371 Date Jun. 4, 1986, § 102(e) Date Jun. 4, 1986, PCT Pub. No. WO86/01489, PCT Pub. Date Mar. 13, 1986

PCT Filed Jul. 8, 1985, Ser. No. 865,724

Claims priority, application Switzerland, Aug. 23, 1984, 4034/84

Int. Cl.[4] B65D *37/00*

U.S. Cl. 222—131 **16 Claims**



1. An apparatus, comprising:

a flexible container for a flowable product which can be dispensed in portions by the application of pressure to the container, said container having a first opening; and

a closure for the container, said closure being positioned over said opening and including an outlet valve which can be actuated by pressure from within said container, said closure with said outlet valve comprising:

a first member including a plug having a face with a sealing surface, and a support structure for said plug;

a second member having a second opening aligned with said plug, said plug being receivable in said second opening;

means defining a product flow path extending from said first opening to a position adjacent said plug such that communication with said second opening is blocked by said plug when said plug is received in said second opening;

means for moving said first and second members relative to each other from a position in which said plug is in engagement with said second opening to block said communication to a position in which said plug is spaced from said second opening to allow communication between said product flow path and said second opening such that said product can flow from said container, said moving means permitting one of said first and second members to move, and means defining a pressure flow path extending from said container to a position adjacent said movable member for transmitting pressure from said container to said movable member to space said plug from said second opening, said moving means causing said pressure flow path and said product flow path to be completely separate from each other when said plug is engaged in said second opening and when said plug is spaced from said second opening.

4,798,312

FLUID DISPENSER

John G. Schelber, 4252 N. Rangeline Rd., Huntington, Ind. 46750

Filed Jan. 12, 1987, Ser. No. 2,456

Int. Cl.[4] B67D *5/06*

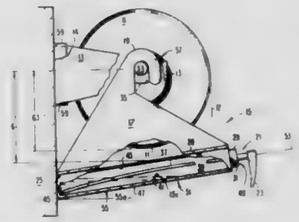
U.S. Cl. 222—180 **12 Claims**

1. A fluid dispensing device suitable for attachment to a paper roll dispenser comprising:

fluid container means;

suspending means attached to said fluid container means to suspend said fluid container means from the paper roll dispenser; and

fluid dispenser means on said container means arranged to pump fluid from said container means, wherein said suspending means has hinge means secured to said fluid container means for collapsing said suspending means for storage, wherein said suspending means includes a first arm and a second arm, said first arm having a first upper



end, said second arm having a second upper end, wherein said first upper end is spaced a distance from said second upper end, said distance greater than the width of the paper roll to be dispensed by the paper roll dispenser to allow said first arm and said second arm to hang on each side of the paper roll.

4,798,313

ELASTOMERIC BLADDER FOR DISPENSING ICE CREAM

Brent L. Farley, 4215 Connecticut Ave., Baltimore, Md. 21229

Filed Jul. 27, 1987, Ser. No. 78,176

Int. Cl.[4] B65D *35/28*

U.S. Cl. 222—192 **6 Claims**



1. A progresive fluid dispensing system for continuously feeding thawing frozen confection, comprising: a resilient container having an open end and a closed end; said resilient container having a first, expanded configuration in which said frozen confection maintains the resilient container in the expanded configuration, and a second configuration in which the resilient container progressively contracts as the frozen confection thaws, whereby, thawing frozen confection flows from said open end of the container at a rate proportional to the rate of thawing of said frozen confection within said resilient container; a hollow member attached to and disposed within the open end of said resilient container and having means for whistling when a user blows air into an opening in said hollow member, and valve means at the inner end of said hollow member for preventing air from entering into said resilient container when a user blows into said hollow member.

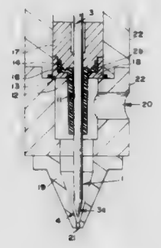
VOL 1098 ISS 3 JA 17 1989 UMI

4,798,314

DISPENSING VALVE WITH TUBULAR SEAL

John N. Worth, Bolnhurst, England, and Jorn Steffensen, Helsingor, Denmark, assignors to W. R. Grace & Co., Lexington, Mass.

Filed Aug. 26, 1987, Ser. No. 89,388
Claims priority, application United Kingdom, Sep. 5, 1986, 8621470
Int. Cl.[4] F16K *41/00*
U.S. Cl. 222—542 5 Claims



1. A dispensing means for dispensing liquid compositions comprising a dispensing chamber having an inlet and an outlet, a longitudinally movable valve means intimately fitting into the outlet for sealing off the outlet, an actuating means for selectively moving the longitudinally movable valve means, a sealing means between the valve means and the actuating means to prevent egress of liquids to the actuating means, the sealing means having a first end adjacent the actuating means, the first end having a disc-like portion which is clamped to the dispensing chamber adjacent to the actuating means, the sealing means having a second end remote from the first end, the sealing means having an internal bore from the first end to the second end through which the valve means extends, the internal bore having a tapered cross section with a larger cross section near the first end and a narrower cross section near the second end and the valve means being intimately gripped by the internal bore of the sealing means at the second end.

4,798,315

CASTING NOZZLE CONSISTING OF SEVERAL PARTS FOR FEEDING MOLTEN METAL INTO THE MOLD OF A CONTINUOUS CASTING MACHINE

Wilhelm F. Lanener, Geriafingen, Switzerland, assignor to Larex AG, Recherswil, Switzerland

Filed Apr. 23, 1987, Ser. No. 41,468
Claims priority, application Switzerland, Apr. 30, 1986, 01787/86; Aug. 25, 1986, 03411/86
Int. Cl.[4] B22D *11/10*
U.S. Cl. 222—591 15 Claims



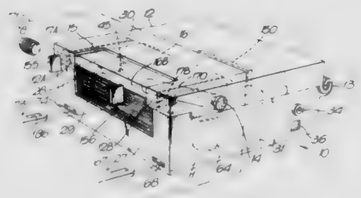
1. A casting nozzle for introducing molten metal into a mold of a continuous casting machine, comprising a mouthpiece, a tundish and a connecting part comprising tubes, the connecting part being positioned between the mouthpiece and the tundish, the mouthpiece and the connecting part being held together by pulling rods under a tension caused by elastic elements.

4,798,316

SHEET STORE

Harvey G. Martin, West Sussex; Roger Pilling, and Steven M. Hosking, both of Hampshire, all of England, assignors to De La Rue Systems, Limited, England

Filed Oct. 7, 1987, Ser. No. 106,103
Claims priority, application United Kingdom, Oct. 8, 1986, 8624192; Jan. 13, 1987, 8700704; Jan. 21, 1987, 8701253
Int. Cl.[4] B65D *91/00*
U.S. Cl. 232—43.1 12 Claims



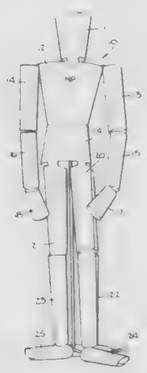
1. A sheet store comprising a container defining an opening through which sheets can pass; a pressure member in said container; biasing means, said biasing means causing said pressure member to urge sheets in said container towards said opening and being adapted to apply one of two bias forces; and control means to control the bias force applied by said biasing means.

4,798,317

MANNEQUIN FORMED OF SHEET MATERIAL

John Lonczak, 430 W. 24th St., New York, N.Y. 10011

Filed Oct. 1, 1987, Ser. No. 103,388
Int. Cl.[4] A41H *5/00*; A63H *3/08*
U.S. Cl. 223—66 6 Claims



1. An animatable mannequin providing a model of a figure having a plurality of tubular members, said mannequin being created from a single blank of flexible sheet material having paper-like qualities formed of non-woven, synthetic plastic fibers which are bonded together to form a sheet, said blank being die-cut to define a predetermined pattern of interconnected sections which are joined together by junctions functioning as living hinges, each of which is contoured to provide when the section is rolled the tubular form of a particular member of the figure including arm, leg and feet members and includes locking tabs projecting from one edge thereof and complementary slots adjacent the opposing edge to receive the tabs, whereby each section is convertible into a locked tubular element by rolling the section and inserting the tabs thereof into the slots, the sizes and shapes of the resultant tubular elements being such as to simulate the members of the figure which because they are interhinged may be moved relative to each other.

4,798,318

CARRIER BAG ASSEMBLY FOR BICYCLE HANDLEBARS

David Irwin, Newtown, Conn., assignor to Cannondale Corporation, Georgetown, Conn.

Filed Oct. 6, 1986, Ser. No. 915,813
Int. Cl.[4] B62J *7/06*
U.S. Cl. 224—32 R 14 Claims



1. A handlebar carrier bag assembly for bicycles comprising a bracket having a generally vertical plate portion and a pair of generally horizontal support arms extending from the back of the plate portion, means for fastening an end of each of said arms of the bracket immovably to bicycle handlebars, a bag of durable flexible material having front and back walls, side walls and a bottom wall permanently joined to each other and a top wall permanently joined to one of the front, back and side walls and adapted to be releasably joined to the others of the front, back and side walls, a substantially rigid unitary three-dimensional frame received within the bag and including a back portion having a perimeter substantially co-extensive with the perimeter of the back wall of the bag and side portions having perimeters substantially co-extensive with the perimeters of the respective side walls of the bag, a substantially rigid attachment sleeve affixed to the back portion of the frame externally of the bag and defining with a part of said frame back portion a downwardly open cavity that releasably receives from below in close-fitting relation the plate portion of the bracket, whereby the frame is mounted substantially immovably against downward and lateral movement on bicycle handlebars.

4,798,319

BALL CADDY

Virtlous James, Jr., 1946 W. Romley, Phoenix, Ariz. 85041

Filed Sep. 25, 1987, Ser. No. 101,268
Int. Cl.[4] A45F *5/00*
U.S. Cl. 224—251 1 Claim

1. A ball magazine apparatus including means for attachment to an individual utilizing said apparatus comprising,

a tubular magazine means including a closed first end and an open second end to define an exit opening, for housing a plurality of balls, and

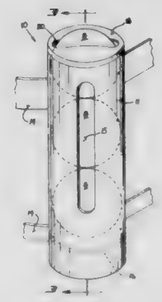
a biasing means for directing said balls towards an exit opening with a tubular magazine means, and

resilient opening means positioned over said exit opening for enabling manual sequential grasping of said ball through said resilient opening means enabling removal of said balls from said magazine means, and

said resilient opening means including a flexible membrane sheet securable over said exit opening,

said membrane sheet formed with a central circular opening including a plurality of diametrically opposed relief opening for acceptance of an individual's fingers therethrough for grasping of an uppermost ball in said magazine means,

the width of the opening defined by said relief openings and said central opening being less than that of said exit opening, and



said biasing means includes a rigid planar elevator plate means positioned over said biasing means for upwardly biasing said balls to said exit opening, and

said biasing means is captured between said first end and said elevator plate means, and

wherein said means for attachment includes spaced integral loops secured to said tubular magazine means for acceptance of spaced belt means therethrough for securement about said individual, and

wherein said central circular opening is of a diameter substantially less than that of said tubular magazine means, and

wherein an indicator relief opening is axially oriented within a wall of said tubular magazine means for visual indication of the presence or absence of balls within said magazine means.

4,798,320

CERAMIC-METAL BRAZED JOINT FOR TURBOCHARGERS

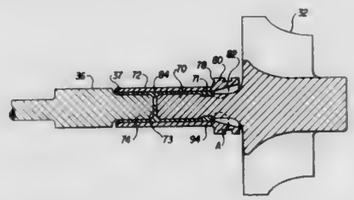
Ho T. Fang, Scottsdale, Ariz., assignor to Allied-Signal Inc., Morristown, N.J.

Division of Ser. No. 778,479, Sep. 20, 1985, Pat. No. 4,722,630.
This application Sep. 15, 1987, Ser. No. 96,688
Int. Cl.[4] B23K *1/12*
U.S. Cl. 228—122 11 Claims

7. The method of reducing the compressive forces acting on

a ceramic shaft by a surrounding sleeve member comprising the steps of:

forming an annular relief about said ceramic shaft;



brazing the sleeve member to said ceramic shaft such that only a portion of said relief is brazed to said sleeve member.

4,798,321

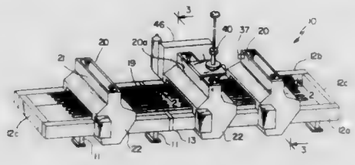
PANELIZING MACHINE AND METHOD FOR USE

Edward Moran, 54 Keefer Road, Thorold, Ontario, Canada

Filed Jul. 6, 1987, Ser. No. 70,380

Int. Cl.[4] B23K *5/22, 31/02*

U.S. Cl. 228—213 **17 Claims**



10. A panelizing machine for clamping and welding a plurality of elongated structures, the machine comprising:

(a) an elongated main frame including dual elongated parallel frame members and at least two connecting cross members, each frame member being provided with a rail extending along the upper side of the frame member;

(b) at least three bed plates extending transversely across said main frame and spaced apart from each other, each said bed plate being supported by one of said cross members and each bed plate having a plurality of notches provided on the plate upper side, and adapted for receiving a plurality of elongated tubular structures in the notches;

(c) three carriages extending transversely across and supported by said main frame, each said carriage having dual end plates which have extension portions adapted to extend below the frame members and being longitudinally movable along the main frame by rollers running on said rails; and

(d) at least two vertically movable contoured clamping plates provided within each said carriage, each said clamping plate being attached on its upper side to a pressurizable hydraulic piston means, and having a plurality of notches provided on the plate lower side in vertical alignment with the notches provided on the upper side of each said bed plate, and adapted for clamping and retaining a plurality of elongated tubular structures onto the main frame; and

(e) a robot welding device mounted on the upper portion of the central of said carriages, said welding device being adapted to be positioned for making a plurality of spaced apart welds on the clamped tubular structures.

4,798,322

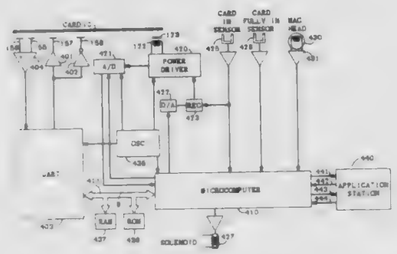
CARD READER/WRITER STATION FOR USE WITH A PERSONAL MEMORY CARD USING DIFFERENTIAL DATA TRANSFER

Howard L. Bernstein, Freehold; Thomas M. Grill, Perth Amboy, both of N.J., and Ronald Silver, Philadelphia, Pa., assignors to American Telephone and Telegraph Company, New York, N.Y.; AT&T Bell Laboratories, Murray Hill and AT&T Information Systems Inc., Morristown, both of, N.J.

Filed Apr. 28, 1986, Ser. No. 856,205

Int. Cl.[4] G06K *7/08, 7/01*

U.S. Cl. 235—487 **19 Claims**



1. A card reader/writer station for use with a portable data card, the card reader/writer station including memory means for storing data and processor means for processing data and comprising:

input/output means for communicating with at least one portable data card, the input/output means being operably connected to and communicating with the processor means and memory means and including capacitive coupling means for differentially transferring data from the reader/writer station to the data card and from the data card to the reader/writer station;

energy coupling means for transmitting magnetic energy from the reader/writer station to the data card, the magnetic energy providing operating power for the data card at a constant level predetermined by the memory means, the energy coupling means including energy sensing means for sensing the level of magnetic energy being transferred to the data card and energy control means operably responsive to the memory means and the sensing means for providing the constant level of operating power to the data card; and

the capacitive coupling means and the energy coupling means providing in combination a complete communication interface between the reader/writer station and the data card.

4,798,323

WEDGE SHAPE CARTON AND BLANK

Ronald Platt, Chicago, Ill., assignor to Crane Carton Company, Chicago, Ill.

Filed Nov. 9, 1987, Ser. No. 118,443

Int. Cl.[4] B65D *5/02*

U.S. Cl. 229—115 **7 Claims**

1. A blank for forming a wedge shape carton having a hinged cover, said blank comprising:

a triangular bottom panel having a base side and two converging sides extending from opposing ends of said base side,

a rectangular first side wall including opposed elongate base side and opposed short end sides connecting adjacent ends of said opposed elongate base sides, one of said opposed elongate base sides being hingedly connected to one of said two converging sides,

a generally triangular top panel having a base side and two converging sides, one of said top panel converging sides being hingedly connected to the other of said opposed elongate base sides on said rectangular first side wall along at least a greater portion of its length,

a rectangular second sidewall including opposed elongate base sides and opposed short end sides connecting adjacent ends of said opposed second sidewall elongate base sides, one of said second sidewall opposed elongate base sides being hingedly connected to said base side of said triangular bottom panel,

a generally triangular cover panel having a base side and two converging sides extending from opposing ends of said cover panel base side, said base side of said cover being hingedly connected to the other of said opposed elongate base sides on said rectangular second side wall,



a rectangular third sidewall including opposed elongate base sides and opposed short end sides extending from the other of said two converging sides on one of said triangular bottom panel and said generally triangular top panel, and

a generally rectangular fourth sidewall including opposed elongate base sides and opposed short end sides extending from the other of said two converging sides on the other of said triangular bottom panel and said generally triangular top panel for being positioned in juxtaposed lapped relation with said third rectangular sidewall and being fixed thereto.

4,798,324

VALVE AND GONTAINERS INCORPORATING THE SAME

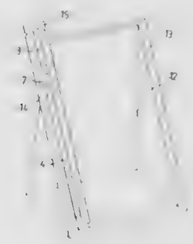
Raymond Gannon, Farnborough, United Kingdom, assignor to FGL Projects Limited, Londos, United Kingdom

Filed Aug. 5, 1987, Ser. No. 82,079

Claims priority, application United Kingdom, Aug. 5, 1986, 8619126

Int. Cl.[4] B65D *5/42*

U.S. Cl. 229—125.35 **16 Claims**



1. A valve comprising a conduit, formed by bonding a first sheet of flexible material to a second sheet of resilient material, one of the sheets being provided with a discrete shoulder extending towards the other sheet, the conduit being closed by reason of the shoulder and the other sheet being normally maintained in close intimate contact, and means to separate the shoulder and the other sheet under resilient deforming pressure whereby to open the conduit, the means to separate maintaining the shoulder and the other sheet apart under resilient deforming pressure while the conduit is open.

4,798,325

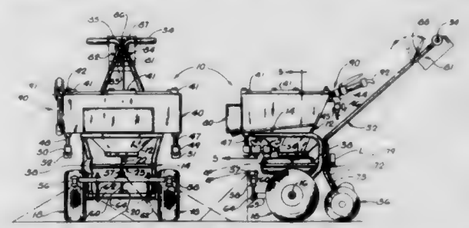
METHOD AND APPARATUS FOR APPLYING LIQUID AND DRY LAWN TREATMENT MATERIALS

Robert E. Block, Prarieview, Ill., assignor to Robert F. Parmley, Lindenhurst and Marino D. Florenzi, Park Ridge, both of, Ill.

Filed Apr. 20, 1987, Ser. No. 40,298

Int. Cl.[4] A01C *15/00, 19/04;* **B05B** *1/20*

U.S. Cl. 239—663 **7 Claims**



1. A self-contained, manually propelled apparatus for applying wet and dry lawn treatment materials comprising: hopper means for containing a load of dry treatment material, frame means undersupported on ground engaging wheels for carrying said hopper means in an elevated position and including manually engageable handle means whereby to manually propel the apparatus over the terrain; rotatably driven impeller means mounted beneath said hopper means for receiving dry materials discharged therefrom, means for rotatably driving said impeller means in response to manual propulsion of the apparatus; said impeller means being operable to centrifically broadcast dry materials in a generally horizontal pattern above the level of said wheels; selectively operable means for controlling discharge of dry materials to said impeller means; sealed pressure tank means supported on and extending about the outer periphery of said hopper means for storing liquid and having liquid inlet and outlet means, electrically driven pump means carried by said frame means for pressurizing said liquid and having hydraulic circuit communication with said inlet and outlet means, plural laterally spaced spray nozzles supported on said frame means forwardly of said impeller and wheels and in hydraulic circuit communication with said pump means; said nozzle means being individually operable to spray liquid treatment materials in selected patterns forwardly in advance of the apparatus and beneath the discharge pattern of dry materials broadcast from said impeller means; electrically operated valve means for independently controlling the discharge of liquid from each of said nozzle means, and plural electrical switch means for electively controlling said valve means for individual and simultaneous operation.

4,798,326

MAIL DELIVERY SIGNALING DEVICE

Kenneth R. Kirry, 39 Pleasant St., Apt. 15, Northboro, Mass. 01532, and Joseph V. Visconti, 36 N. Main St., Sherborn, Mass. 01770

Filed Jan. 21, 1988, Ser. No. 146,424

Int. Cl.[4] B65D *91/00*

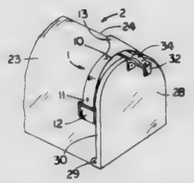
U.S. Cl. 232—34 **9 Claims**

1. A delivery signaling device for use in conjunction with a standard rural mailbox of the type that is generally tubular in shape, having a bottom wall, two side walls, a curved top wall,

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and an open end, and having a pivotally mounted door capable of movement from a closed to an open position for the insertion and retrieval of mail from said box, said door having a flange that overlaps the edges of said walls at said open end when said door is in the closed position, said device comprising a resilient member adapted to resiliently bend in a plane transverse to said mailbox from a signal position, in which said member stands upright, to a set position, in which said member is bent into a curved shape conforming to the curved top wall of said box, and

further comprising a clip member to which the lower end of said resilient member is attached, said clip member being inherently resilient and comprising an outer member, to which said resilient member is attached and which is adapted to remain on the outside surface of said box, and an inner member joined to said outer member at a bend region, said inner and outer members and bend region shaped and positioned to permit said clip member to be



slid onto a side wall of said box with said inner and outer members providing a gripping force on said side wall to retain said clip member on said box, and

wherein said resilient member has a display region at its free end, said display region being sized and positioned so as to be visible to the user from a distance, thereby to provide an indication that mail has been delivered to said box, and

wherein said resilient member has a tab portion extending from its free end in the direction of said door and a downwardly directed portion adapted to extend over an edge of one of said walls when said resilient member is in said set position, said tab portion being shaped and positioned so as to be confined between said door and the edge of said wall so long as said door remains closed, and so as to be released from confinement when said door is moved to said open position, and

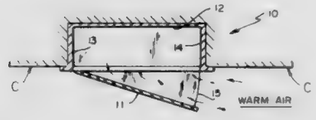
wherein said resilient member is a sheet material with its thin dimension generally normal to said walls of said box.

4,798,327

CONVECTION LOCK-VENT

George R. Arnold, 5 Hope Dr., Sutherland, Va. 24594

Filed Jan. 29, 1985, Ser. No. 696,033
Int. Cl.[4] F24D *5/00*
U.S. Cl. 237—50 4 Claims



1. A device for the redistribution of warm air across levels of a building having a higher level and a lower level comprising:

(1) a warm air collecting means located in a warm portion of a buliding, said warm portion being located in the lower levels of said building;

(2) conduit means connected to said warm air connecting means and extending into a cool portion of the building said cool portion being located in the higher portion of said building;

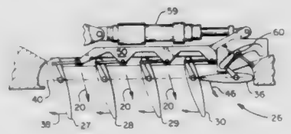
wherein said warm air collecting means comprises a ceiling portion which is located within the ceiling of the warm portion of the building and a protruding portion which is connected to the ceiling portion and which extends downwardly from the ceiling of the warm portion of the building, said protruding portion having an opening for the entrance of warm air from the warm portion of the building into the warm air collecting means, said opening oriented toward a heat source within the warm portion of the building and wherein said warm air is moved through said warm air collecting means and said conduit means by convection current, and wherein the protruding portion of said warm air collecting means is pivotably connected to the ceiling portion of said warm air connecting means so that the protruding portion of the warm air collection means may be rotated upwardly into the ceiling portion of the warm air collecting means, thereby disabling the device.

4,798,328

AREA CONTROLLED, THRUST VECTORING VANE CASCADE WITH NUTATING CONTROL VANE

Edward B. Thayer, Jupiter; Philip R. Scott, Lake Park, both of Fla., and Thomas A. Roach, Mauldin, S.C., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 22, 1987, Ser. No. 53,282
Int. Cl.[4] B64C *15/02*
U.S. Cl. 239—1 3 Claims



1. An exhaust gas thrust vectoring vane cascade having a plurality of individual cascade vanes pivotable in unison about a corresponding plurality of parallel pivot axes, the cascade vanes being pivotable over a thrust vectoring range of motion, including

a first forward thrust position, wherein the cascade vanes are pitched for discharging the exhaust gas rearwardly,

a second, lateral thrust position, wherein the cascade discharges the exhaust gas normally with respect to the cascade, and

a third, rearward thrust position, wherein the cascade vanes are pitched for discharging the exhaust gas forwardly;

the cascade vanes further being pivotable over an adjacent stowing range of motion defined between the first forward thrust position and a stowed position wherein each vane in the cascade contacts each adjacent vane thereto in an overlapping relationship, the stowed adjacent vanes collectively blocking off the cascade gas flow;

means for providing a constant collective gas flow area through the vane cascade over the thrust vectoring range of motion, comprising:

a first flow regulating vane disposed adjacent one end vane of the plurality of cascade vanes and pivotable about an axis parallel to the pivot axes thereof,

means for pivoting the first flow regulating vane responsive to the pivoting of the cascade vanes, wherein,

the first flow regulating vane pivots counter-rotationally with respect to the cascade vanes over the thrust vectoring range of motion, such that

the first flow regulating vane is oriented chordally parallel to the one end vane when the cascade vanes are in the first and third thrust vectoring positions, and the first flow regulating vane is oriented substantially perpendicular to the one end vane when the cascade vanes are in the second, lateral thrust position, and

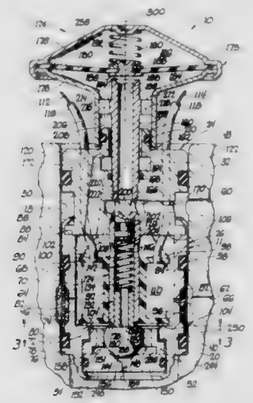
wherein the first flow regulating vane pivots co-directionally with the cascade vanes over the stowing range of motion between the first and stowed positions, such that the first flow regulating vane achieves an overlapping relationship with the adjacent one end vane when the cascade vanes are in the stowed position.

4,798,329

COMBINED FUEL INJECTOR AND PRESSURE REGULATOR ASSEMBLY

Gerhard Mesenich, Bochum, Fed. Rep. of Germany, assignor to Colt Industries Inc., New York, N.Y.

Filed Mar. 3, 1987, Ser. No. 21,231
Int. Cl.[4] B05B *1/30, 1/14;* C11D *9/18;* F16K *15/00*
U.S. Cl. 239—5 18 Claims



18. A duty-cycle type electromagnetic injector assembly, comprising a housing, a valve having an electrical coil therein, and cooperating valve seat within said housing, said valve being positioned away from or against the valve seat depending upon whether said electrical coil is energized, and a fluid pressure regulator forming a portion of said injector assembly in a manner to enable establishment, by separate adjustments of said pressure regulator with respect to said housing, the static and the dynamic rates of liquid flow metered by said injector assembly.

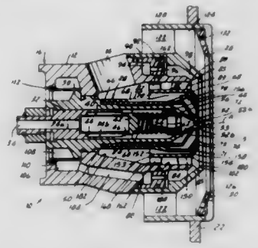
4,798,330

REDUCED COKING OF FUEL NOZZLES

Alfred A. Mancini, Farmington Hills; James W. Sager, Union Lake, and Theodore R. Koblish, Birmingham, all of Mich., assignors to Fuel Systems Textron Inc., Zeeland, Mich.

Filed Feb. 14, 1986, Ser. No. 829,269
Int. Cl.[4] F23D *11/00*
U.S. Cl. 239—8 18 Claims

1. In a fuel nozzle useful for a gas turbine engine and having a nozzle face, the combination of fuel supply means on the nozzle, said fuel supply means including an annular fuel discharge body converging in a downstream direction toward a longitudinal central axis of the nozzle and terminating in a downstream fuel discharge orifice substantially on the central axis for discharging fuel from the orifice for mixing with air downstream of the nozzle face, air supply means on the nozzle for discharging air from the nozzle face, and means on the nozzle around the fuel discharge body cooperating with the air supply means for controllably discharging sufficient air flow with locally reduced swirl strength over the fuel discharge body to establish a recirculation zone spaced away from the



nozzle face downstream thereof a sufficient distance to substantially reduce coking on the nozzle face.

4,798,331

ARTIFICIAL SNOW PRODUCTION APPARATUS

Nagaichi Saga, Tokyo, Japan, assignor to Saga Test Instruments Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,716
Claims priority, application Japan, Dec. 24, 1986, 61-310436
Int. Cl.[4] A01H *15/00*
U.S. Cl. 239—14.2 3 Claims



1. In an artificial snow generating apparatus having a vertical inner cylinder for generating and growing snow and an outer tank surrounding the inner cylinder and including means for cooling the air in the outer tank for thereby cooling said inner cylinder, the improvement comprising:

an ice crystal quantitative feeder for generating and feeding a predetermined quantity of ice to a lower part of the inner cylinder and having a cooled spray chamber connected to said inner cylinder, a spray producing nozzle means in said spray chamber, a feed water tank connected to said spray producing nozzle means, a saturation tank containing water connected to said spray producing nozzle means, a compressed air means connected to said saturation tank for directing compressed air through the water in said saturation tank and into said spray chamber through said nozzle means to produce a spray of water into said spray chamber from said feed water tank, and means for periodically blowing humidified air through said spray chamber to blow ice particles into the inner cylinder; and

a cloud-forming water quantitative feeder for generating and feeding a predetermined quantity of particles of cloud-forming water having a predetermined particle size to the inner cylinder at a position above said ice crystal quantitative feeder and having a particle classification pipe connected to said inner cylinder, a further spray producing

nozzle means in said particle classification, a further feed water tank connected to said particle classification pipe, a further saturation tank containing water connected to said further spray producing nozzle means, a further compressed air means connected to said further saturation tank for directing compressed air through the water in said further saturation tank and into said classification pipe through said further nozzle means to produce a spray of water particles into said classification pipe from said further feed water tank, said particle classification pipe including means for separating particles larger than a predetermined size from the spray of water particles and for passing the remainder of the water particles into the inner cylinder.

4,798,332

LIQUID ATOMIZER

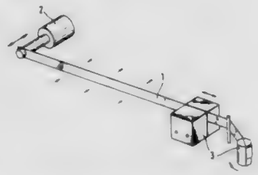
Ernst-Günter Lierke, Schwalbach; Rudolf Grossbach, Camberg; Wolfgang Heide, Darmstadt; Karl Flügel, Todtnau, and Martin Junger, Grafenberg, all of Fed. Rep. of Germany, assignors to Battelle-Institut E.V., Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 2,652, filed as PCT EP86/00307 on May 21, 1986, published as WO86/06985 on Dec. 4, 1986, abandoned. This application May 2, 1988, Ser. No. 191,773

Claims priority, application Fed. Rep. of Germany, May 23, 1985, 3518646

Int. Cl.[4] B05B *3/14*

U.S. Cl. 239—102.2 **18 Claims**



1. Liquid atomiser comprising a narrow linear bending strip (1) on which bending waves with several essentially parallel, closely spaced nodal lines can be generated, means to deliver a liquid to be atomised along the linear dimension of said narrow linear bending strip, excitation means (2) at one end of said narrow linear bending strip to impart an ultrasonic excitation thereto, and at least one mechanical fixing means (3) at the other end of said narrow linear bending strip to support said narrow bending strip, said narrow linear bending strip (1) having a comparatively small thickness such that it does not have sufficient inherent dimensional stability for linear alignment when in a horizontal plane said dimensional stability of the narrow bending strip being achieved by said at least one mechanical fixing means (3).

4,798,333

PORTABLE SPRAYER WITH IMPROVED COMBINATION OF PISTON AND DIAPHRAGM PUMP

Pedro W. Luchsinger, Panamericana 445, Lagos de Moreno, C.P. 47400, Jalisco, Mexico

Continuation-in-part of Ser. No. 845,631, Mar. 28, 1986, Pat. No. 4,768,714, which is a continuation-in-part of Ser. No. 616,012, May 31, 1984, abandoned. This application Jul. 24, 1987, Ser. No. 77,352

The portion of the term of this patent subsequent to Sep. 6, 2005, has been disclaimed.

Int. Cl.[4] B05B *9/43*

U.S. Cl. 239—142 **20 Claims**

1. A liquid dispensing sprayer and liquid agitator for spraying insecticides, herbicides and the like including suspensions of wettable powders, comprising:

a container adapted to be carried on the back of a person,

a pressure vessel mounted within said container, and dual pump means connected to the container and pressure vessel for pumping liquid from said container into said pressure vessel and for agitating contents of said container, said pump means comprising:

a piston housing section,

a diaphragm housing section connected to one end of said piston housing section,

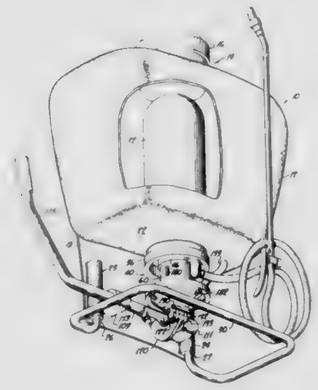
a housing cover connected and sealed to said diaphragm housing section and cooperating therewith to partly define an operating pump chamber,

a diaphragm extending across said pump chamber and having a peripheral edge captured and sealed between said cover and diaphragm housing section, said diaphragm cooperating with said diaphragm housing section to define an agitator pump chamber, and

a piston assembly secured to said diaphragm and slidably mounted within said piston housing section, said piston assembly comprising:

a piston body having a closed end,

a skirt retainer fixed to said piston body and having an outer annular surface,



a sealing skirt mounted on said outer surface of said skirt retainer, and

resilient means interposed between said sealing skirt and said skirt retainer for urging said skirt radially outwardly of said retainer,

valve means for connecting the interior of said piston housing section with the interior of said pressure vessel and with the interior of said container,

a discharge tube connected with the pressure vessel for spraying liquid under pressure,

an agitator conduit having a nozzle end in fluid communication with the interior of said container and having a pump end in fluid communication with said agitator pump chamber, and

means for concomitantly driving said piston assembly and diaphragm, whereby liquid under pressure is pumped from the container into the pressure vessel by the piston assembly, and the diaphragm draws liquid from the container into the agitator pump chamber and projects liquid from the agitator pump chamber back into the container in a high velocity stream.

4,798,334

APPARATUS FOR SPRAYING A LIQUID IN A VESSEL

Max G. Harrington, Citrus Heights, Calif., assignor to New West Engineering, Ltd., Citrus Heights, Calif.

Filed Sep. 25, 1987, Ser. No. 100,827

Int. Cl.[4] B05B *13/06, 3/18*

U.S. Cl. 239—227 **8 Claims**



1. An apparatus for directing a liquid spray against the interior walls of a vessel from a nozzle spray means comprising:

(a) a housing mounted externally on said vessel:

(b) a carrier assembly slidably mounted within said housing;

(c) a nozzle support assembly slidably mounted to said carrier assembly;

(d) door means on said housing for sealing said housing from the interior of said vessel and allowing entry of said carrier assembly into said vessel;

(e) nozzle spray means mounted on the end of said nozzle support assembly;

(f) a fluid delivery system passing within said housing terminated at said nozzle;

(g) means for extending said carrier assembly and said nozzle support assembly with said vessel at different rates using a single power drive means.

4,798,335

ROTATING SPRAYING TYPE COATING APPARATUS

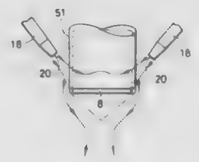
Kazuyuki Tachi; Chikaaki Okuda; Katsunori Yamada; Yoichi Oyama, and Shoichi Suzuki, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Sep. 16, 1987, Ser. No. 97,651

Claims priority, application Japan, Sep. 16, 1986, 61-218914

Int. Cl.[4] B05B *1/28, 3/10*

U.S. Cl. 239—296 **7 Claims**



1. A rotating spraying type coating apparatus, comprising:

a rotating drive device having a rotating shaft,

a spraying head attached to the rotating shaft of said rotating drive device, said spraying head having a proximal end on the side of said rotating shaft and a distal end on the side of an article to be coated,

a paint supply passage connected to said spraying head,

a paint radiating portion for radiating paint particles formed at the distal end of said spraying head,

at least one partition member disposed outside said spraying head, and

air jetting means comprising at least one pair of air outlet ports spaced from and provided outside said at least one partition member, prolongations of central axes of said at least one pair of air outlet ports intersecting an outer peripheral surface of said at least one partition member at a predetermined angle, for jetting air towards the outer peripheral surface of said at least one partition member and for forming air streams spreading in the circumferential direction along the outer peripheral surfaces of said at least one partition member and said spraying head, wherein said air streams from each of said at least one pair of air outlet ports collide with each other at substantially intermediate points on the outer peripheral surface of the spraying head, said air streams having a circumferential velocity component in addition to an axial velocity component such that paint particles radiated centrifugally from said spraying head are prevented from being diffused centrifugally and the spray pattern of said paint from said spraying head is of an eliptical or dumbbell shape.

4,798,336

CONTROL MEANS FOR SPRAYING APPARATUS

Jan Ilott, 24 Montague Hill, Kingsdown, Bristol, United Kingdom

PCT No. PCT/GB85/00186, § 371 Date Nov. 26, 1986, § 102(e) Date Nov. 26, 1986, PCT Pub. No. WO86/05718, PCT Pub. Date Oct. 9, 1986

PCT Filed Mar. 27, 1986, Ser. No. 948,356

Claims priority, application United Kingdom, Mar. 27, 1985, 8507956

Int. Cl.[4] B05B *7/24, 7/06*

U.S. Cl. 239—337 **16 Claims**

1. In a gas-operated spraying apparatus having a body, a nozzle mounted at a forward end of said body, a needle located coaxially of said nozzle, said needle being retractable in said nozzle to dispense media to be sprayed, medium feed means and propellant feed means, an operating member, and control means manipulated by said operating member for controlling the retraction of said needle and hence of the dispensation of the medium to be sprayed, the improvement wherein said control means comprises:- coupling means supporting said operating member, said coupling means comprising a first support member wherefrom said operating member is pivotally suspended at a first location, and a second movable, support member, said second support member serving, on movement in a first direction, to effect retraction of said needle, said operating member being pivotally suspended from said second support member at a second location spaced from said first location, whereby said operating member is in suspension between said first and second support members, said suspension permitting both arcuate movement of said operating member to move said second support member in said first direction to retract said needle, and linear movement of said operating member perpendicular to the axis of said needle, in which movement of said second support member is minimized.

4,798,337

LIQUID FILLING NOZZLE

Masao Shimokawa, Tokushima, Japan, assignor to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Jul. 20, 1987, Ser. No. 75,468

Claims priority, application Japan, Jan. 23, 1987, 62-14845

Int. Cl.[4] B05B *1/32*; F16K *31/12*

U.S. Cl. 239—570 **5 Claims**

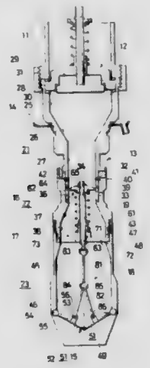
1. A liquid filling nozzle comprising:

a vertical tubular nozzle main body having a first large diameter portion, an intermediate portion, a reduced diameter portion and a second large diameter portion, said portions being directly connected in the above order, the second large diameter portion having a lower end to discharge liquid therefrom, and the reduced diameter portion being substantially shorter than the total length of the other portions;

a damper pivotally attached at the lower end of the nozzle main body to open and close the lower end;

a resistant member positioned within the reduced diameter portion of the nozzle main body being movable upward

and downward for acting against liquid flowing downward;



a member connecting the damper to the resistant member; and

a resilient member urging the resistant member upward.

4,798,338

APPARATUS FOR THE ELECTRO-KINETIC CHARGING OF POWDERED MATERIALS

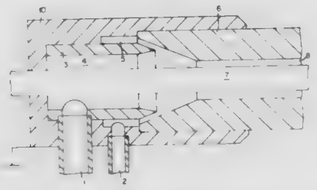
Helmut Bauch; Wolfgang Kleber, and Dieter Auerbach, all of Dresden, German Democratic Rep., assignors to VEB Infrarot-Anlagen Oranienburg, Oranienburg, German Democratic Rep.

Continuation of Ser. No. 691,805, Jan. 15, 1985, abandoned. This application Dec. 5, 1986, Ser. No. 939,257

Claims priority, application German Democratic Rep., Feb. 8, 1984, 2599262

Int. Cl.[4] B05B 5/00

U.S. Cl. 239—692 6 Claims



1. Apparatus for the electro-kinetic charging of a powder, which comprises a housing, a first input channel for the introduction of the powder dispersed in a gas flow, a second input channel for the introduction of another gas flow, a central rod of an insulating material extending throughout the length of the apparatus, a semiconducting annular electrode having anti-sticking properties for generating passive electrostatic ionization and having a conical edge-shaped end and an inner and an outer surface and being connected from ground potential, said semiconductive annular electrode being disposed about said central rod and defining a first annular chamber between the inner surface of said semiconductive annular electrode and said central rod, the first input channel terminating in said first annular chamber, said housing and the outer surface of said semiconductive annular electrode defining a second annular chamber therebetween, said second input channel terminating in said second annular chamber, said first and second annular chambers merging with each other past the edge-shaped end of said semiconductive annular electrode, a pipe of an insulating material disposed concentrically about said central rod, and defining an annular flow channel between the central rod and said pipe, one end of said annular flow channel being disposed adjoining the terminations of said first and second annular chambers.

4,798,339

SUBMERGED JET INJECTION NOZZLE

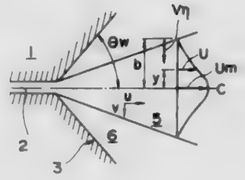
Kenji Sugino, Uozu; Katsuya Yanaida, Shiga; Hiroshi Sugino, Nishinomiya; Masao Nakaya, Karobe; Nobuo Nishida, and Kensaku Eda, both of Toyama, all of Japan, assignors to Sugino Machine Limited, Toyama, Japan

Continuation of Ser. No. 695,897, Jan. 29, 1985, abandoned. This application Oct. 22 1986, Ser. No. 921,969

Claims priority, application Japan, Feb. 13, 1984, 59-25681

Int. Cl.[4] B05B 1/02

U.S. Cl. 239—601 3 Claims



1. A liquid jet injection nozzle for positive production of cavitation when submerged in a liquid, said nozzle consisting essentially of:

(a) an orifice section having a tubular bore of uniform cross-sectional area in communication with a pressurized liquid supply means producing a high velocity jet stream of liquid from said liquid supply means; and

(b) a divergent nozzle exit section extending from the downstream end of said orifice section, said exit section having a length in the range of 5 to 12 times the diameter of the bore of the tubular orifice section and an inlet diameter equal to the diameter of said tubular bore and increasing in diameter along its axis at an angle with respect to the axis thereof in the range of 20 to 60 degrees.

4,798,340

ELECTROSTATIC DEVICE FOR POWDER SPRAYING WITH TRIBOELECTRIC POWDER CHARGING

Gerhard F. Vöhringer, Markdorf, and Kurt Pfeifer, Salem-Beuren, both of Fed. Rep. of Germany, assignors to ESB Elektrostatische Spruh- und Beschichtungsanlagen G.F. Vohringer GmbH, Meersburg, Fed. Rep. of Germany

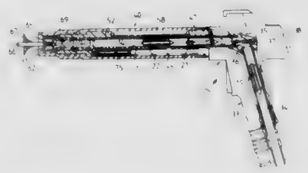
PCT No. PCT/DE87/00004, § 371 Date Sep. 11, 1987, § 102(e) Date Sep. 11, 1987, PCT Pub. No. WO87/04088, PCT Pub. Date Jul. 16, 1987

PCT Filed Jan. 9, 1987, Ser. No. 112,840

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1986, 3600808

Int. Cl.[4] B05B 5/02

U.S. Cl. 239—692 24 Claims



1. Electrostatic device for spraying powder particles with

triboelectric charging by means of a powder pipe surrounding a delivery channel which constitutes part of a flow channel for the spray powder and of at least one displacement body mounted in the flow channel in order to increase the flow velocity, whereby the powder pipe is grounded on its outside and provided at least on its inside with a triboelectric material which is arranged at a distance from the powder particles to be sprayed, the improvement comprising an aftercharging device for the triboelectrically charged powder particles having the same polarity as that polarity induced during the electrostatic charging, and the aftercharging device also has aftercharger electrodes arranged inside the powder pipe.

23. Electrostatic device for spraying powder particles with triboelectric charging by means of a powder pipe surrounding a delivery channel which constitutes part of a flow channel for the spray powder and a plurality of displacement bodies mounted in the flow channel in order to increase the flow velocity, whereby the powder pipe is grounded on its outside and provided at least on its inside with a triboelectric material which is arranged at a distance from the powder particles to be sprayed, characterized by an aftercharging device for the triboelectrically charged powder particles having the same polarity as that polarity induced during the electrostatic charging, and wherein several of said displacement bodies being fixedly arranged one after another in a powder flow direction each have a plurality of axial guide ribs which lie in staggered rotation from one another about a flow axis of the powder pipe and so that none of the guide ribs are in axial alignment with another guide rib.

4,798,341

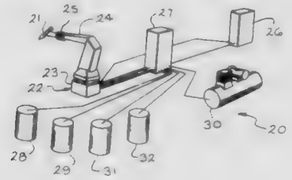
SPRAY GUN FOR ROBOT MOUNTING

James J. Gimple, Oregon, Ohio, assignor to The DeVilbiss Company, Toledo, Ohio

Filed Sep. 28, 1987, Ser. No. 101,881

Int. Cl.[4] B05B 5/08, 5/02

U.S. Cl. 239—694 6 Claims



1. A spray gun for mounting on a robot, said spray gun comprising a housing having first and second ends, means for attaching said first housing end to such robot, a valve manifold attached to said second housing end, said housing defining a passage for fluid conduits between said first and second housing ends, said valve manifold having a first surface outside said housing and a second surface opening into said housing, a spray head including a trigger valve and means for discharging on atomized liquid in response to the application of pilot air to said trigger valve, said spray head having a body removably attached to said first manifold surface, said manifold defining separate passage means between said first and second manifold surfaces for supplying liquid, atomization air, pattern shaping air and pilot air to said spray gun, normally closed first valve means located in said atomization air passage means responsive to pilot air for supplying atomization air to said spray head, normally closed second valve means located in said pattern shaping air passage means responsive to pilot air for supplying pattern shaping air to said spray head, and normally closed actuating valve means in said spray gun responsive to an electric signal for supplying pilot air simultaneously to said first and second valve means and for supplying pilot air to said trigger valve.

4,798,342

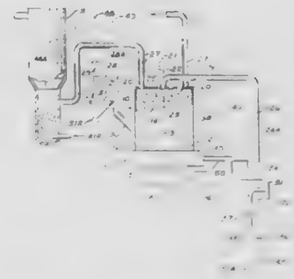
FUEL PROCESSING SYSTEM FOR CONTROL OF NITROUS OXIDE EMISSIONS

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Jan. 11, 1988, Ser. No. 141,831

Int. Cl.[4] B02C 23/34

U.S. Cl. 241—18 12 Claims



1. In a system for processing cola in a roller mill grinding zone to pulverize the coal as a fuel for use in a burner, and for controlling the emission of nitrous oxide on combustion of processed coal, the improvement comprising:

(a) means supplying coal to the roller mill for pulverizing the coal therein;

(b) means for supplying air into the roller mill for sizing and moving the pulverized coal; and

(c) means in the coal processing system for transporting the pulverized coal to the burner and simultaneously decoupling a portion of the air moving the pulverized coal, whereby the air-to-coal ratio going to the burner is substantially correct for limiting the nitrous oxide emission.

4,798,343

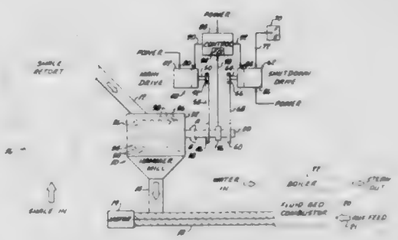
LOW SPEED SHUT DOWN APPARATUS AND METHOD FOR HIGH TEMPERATURE HAMMER MILLS

Mitchell J. Berndt, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Sep. 30, 1987, Ser. No. 102,861

Int. Cl.[4] B02C 25/00

U.S. Cl. 241—36 13 Claims



1. In a high temperature hammer mill having high speed drive means connected to a drive shaft so as to cause said shaft to rotate at a relatively high speed, a low speed shutdown apparatus comprising:

a. shutdown drive means for providing a low drive shaft rotational speed relative to the speed at which the hammer mill drive shaft is driven by the high speed drive means at normal operating conditions, at a high torque relative to the torque provided to the drive shaft by the high speed drive means at normal operating conditions; and

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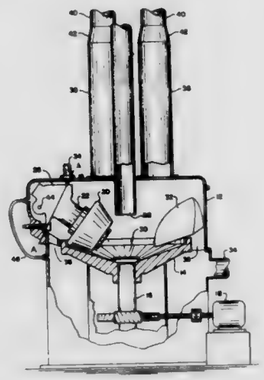
b. operating means for disengaging said high speed drive means from said shaft and for engaging said shutdown drive means with said shaft so as to enable said shaft to be turned at said relatively low speed.

4,798,344

MILL EXHAUST SYSTEM

John D. Fishburn, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 4, 1984, Ser. No. 617,000
Int. Cl.[4] B02L *23/32*
U.S. Cl. 241—79.1 3 Claims



1. A pulverizing mill for pulverizing material and for delivering the pulverized material to a process through a transport line comprising:

a housing;

a rotatable bowl within the housing, said bowl having an upper surface;

means for rotating the bowl;

means for depositing material to be pulverized on the upper surface of the bowl;

a grinding roll supported within the housing cooperating with the upper surface of the bowl to perform pulverizing therebetween;

means for supplying air to the housing for entraining pulverized material therein; and

a vertical gravity separator means for classifying the pulverized material and for returning the more coarse pulverized material to the surface of the bowl, the vertical separator means comprising:

a substantially cylindrical conduit extending upwardly from the top of the housing defining a flow passage duct for conducting the pulverized material entrained in air from the housing, the passage duct having a greater cross-sectional area than the transport line and being of a length and cross-sectional area relative to the airflow therethrough to classify the pulverized material entrained in the airflow, the length to diameter ratio of the conduit being at least 5 to 1, and

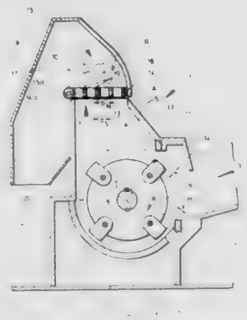
a reduced section between the conduit and the transport line having an inlet and an outlet, the inlet having the same cross-sectional area as the conduit and the outlet having the same cross-sectional area as the transport line, whereby the finer pulverized particles entrained in the airflow entering the conduit pass into the transport line thence to the process.

4,798,345

HAMMER BREAKER

Manfred Adolph, Langenfeld, Fed. Rep. of Germany, assignor to Lindemann Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 815,754, Dec. 31, 1985, abandoned, which is a continuation of Ser. No. 531,813, Sep. 13, 1983, abandoned. This application Sep. 21, 1987, Ser. No. 99,666
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234298
Int. Cl.[4] B02C *13/286*
U.S. Cl. 241—186.2 8 Claims



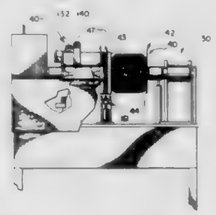
1. In a hammer breaker for breaking and crushing scrap material, such as metal scrap, to different lump sizes, said hammer breaker comprising a housing, a hammer rotor mounted within said housing for rotation about a horizontal axis, said rotor having a plurality of hammers pivotally mounted thereon rotating in a hammer impact circle, an inlet to said housing for the material to be broken and crushed, an upwardly extending shaft defined by said housing aligned above said rotor and adapted to receive broken and crushed material thrown tangentially upwardly from said rotor, said shaft having an open top end defining a material outlet spaced upwardly from said hammers, and a material classifying grate covering said outlet, wherein the improvement comprises that said shaft has a plurality of sides defining an open space which is free of obstacles between said rotor and said outlet, said hammer rotor rotates in one direction only past said shaft, anvils located within said housing adjacent the hammer impact circle and located downstream from said shaft relative to the movement of said hammers along the hammer impact circle, said housing forming a discharge passageway located along and extending from said classifying grate to a discharge opening for discharging the scrap material out of said hammer breaker after it passes through said classifying grate, said classifying grate is adjustably pivotally mounted relative to said shaft about a pivot axis extending transversely of the upward direction of said shaft and located along one side of said shaft spaced upwardly from the hammer impact circle, said grate is spaced upwardly a distance from the hammer impact circle considerably greater than the distance between the hammer impact circle and said anvils, drive means is provided for adjusting said grate about the pivot axis, said classifying grate having invariable grate openings therethrough for the passage of the broken and crushed scrap material from said shaft to said passageway and discharge opening, and said classifying grate being pivotally movable about said pivot axis as a unit along another side of said shaft opposite said pivot axis between a first position where the maximum area of said grate openings is presented to said shaft and a plurality of second positions spaced angularly from the first position where as the angular displacement from the first position increases the area of said grate openings presented to said shaft decreases, and in and between said first and all of said second positions said classifying grate extends to said another side and substantially covers said material outlet so that the broken and crushed material is discharged only through said grate openings, said drive means also selectively setting said grate in said first and said plurality of second positions.

4,798,346

METHOD OF AND APPARATUS FOR TAKING UP LIGHTGUIDE FIBER

Daryl L. Myers, Lawrenceville, and James G. Wright, Jr., Roswell, both of Ga., assignors to American Telephone and Telegraph Company - AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Dec. 5, 1986, Ser. No. 938,657
Int. Cl.[4] B65H *67/056*
U.S. Cl. 242—18 A 27 Claims



1. A strand winding apparatus in which strand such as optical fiber is wound, said apparatus comprising:

rotatably drive take-up means; and

a strand storage and clamping assembly mounted rotatably coaxially of and closely adjacent to the take-up means and comprising portions moveable relative to each other for receiving therebetween coils of an end portion of strand material to be wound on the take-up means adapted to store and protect from damage the coiled end portion of the strand and to clamp the coils laterally of planes of the coils with forces which are applied parallel to the axis of the coils.

4,798,347

METHOD FOR WINDING FILAMENT YARNS

Heinz Schippers, and Siegmar Gerhartz, both of Remscheid, Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Aug. 14, 1987, Ser. No. 85,849
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1986, 3627879; Oct. 24, 1986, 3636151
Int. Cl.[4] B65H *54/02, 54/28, 54/38*
U.S. Cl. 242—18 R 14 Claims



1. In a method of winding a textile yarn onto a supporting core to produce a finished yarn package having a total yarn thickness, and which comprises the steps of winding the yarn about the core at a substantially constant rate and such that the rotational speed of the package gradually decreases, while guiding the yarn onto the core by a traversing yarn guide, the improvement therein comprising the steps of

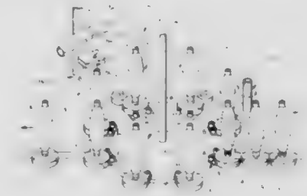
winding an initial portion of the total yarn thickness while maintaining the traversing speed at a value having no fixed relationship with the spindle speed and so as to produce a random wind, and then winding a subsequent portion of the total yarn thickness while decreasing the speed of the traversing yarn guide in proportion to the decreasing rotational speed of the package to define a substantially constant winding ratio during each of a series of sequential steps of the winding cycle, rapidly increasing the speed of the yarn traversing guide at the end of each sequential step to produce a stepped precision wind and so as to define upper and lower limits of the yarn traversing speed during each sequential step.

4,798,348

YARN END FINDING DEVICE

Isamu Matsui, Kyoto, and Noboru Sekitani, Otsu, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 19, 1986, Ser. No. 909,495
Claims priority, application Japan, Sep. 24, 1985, 60-210593
Int. Cl.[4] B65H *54/00*
U.S. Cl. 242—35.6 E 12 Claims



1. A yarn end finding device for finding a yarn end on a yarn layer wound on a spinning bobbin comprising:

a bobbin processing station having means for separating said yarn end from said yarn layer wound on said spinning bobbin,

a bobbin rotating and driving device for rotating said spinning bobbin in a first direction of rotation relative to said bobbin processing station and in a second direction of rotation relative to said bobbin processing station, and

a discriminating device for discriminating the winding direction of said yarn layer wound on said spinning bobbin,

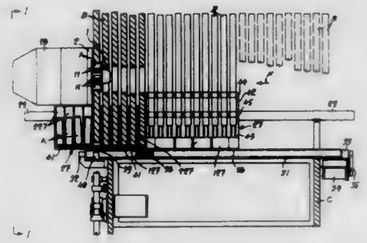
control means for controlling said bobbin rotating and driving device in response to said discriminating device so that the rotating direction of said spinning bobbin relative to said bobbin processing station is controlled according to the winding direction of said yarn layer wound on said spinning bobbin.

4,798,349

AUTOMATIC DEVICE FOR FEEDING BOBBINS OF A WRAPPING MATERIAL WEB, PARTICULARLY BOBBINS OF CIGARETTE PAPER

Renato Manservisi, Bologna, Italy, assignor to SASIB S.p.A., Italy

Filed Oct. 6, 1987, Ser. No. 104,951
Claims priority, application Italy, Nov. 14, 1986, 12580 A/86
Int. Cl.[4] B65H *19/12, 19/18*
U.S. Cl. 242—58.1 17 Claims



1. An apparatus for feeding bobbins, each having a tubular core and a web of wrapping material thereon, to a mandrel having a substantially horizontal axis, comprising:

advancing means for advancing the bobbins, one after another and one step at a time, in the axial direction of the mandrel, said avvancing means comprising an intermittently slidable bobbin carrying cradle, said cradle having a plurality of lower peripheral surfaces, each surface adapted to receive a bobbin resting thereon in a position with its bobbin axis generally parallel to the axis of the mandrel and generally axially aligned with the mandrel,

the mandrel having a plurality of radially extendable and retractable jaws spaced about its periphery, such that in the radially retracted position the jaws loosely and freely receive a bobbin core, and in the radially extended position the jaws tightly engage the inside of the core of a bobbin, the mandrel and its jaws being positioned, relative to the advancing means, such that as the advancing means advances the bobbins one step, the leading bobbin is received on the mandrel, about the jaws, while the jaws are in their retracted position,

the axis of the mandrel being located eccentrically upwards relative to the axis of a bobbin resting on its lower peripheral surface, with respect to a bobbin having the maximum allowable outside diameter permitted by the said cradle,

whereby, the eccentricity of the mandrel, the outside diameter of the jaws in the retracted position and the inside diameter of the bobbin cores are so selected, for a bobbin of appropriate outside diameter for use with the apparatus, that as a bobbin is moved onto the mandrel and its retracted jaws, and the jaws are radially extended to tightly engage the bobbin case, the bobbin is trued, that is, its axis is made coaxial with the mandrel axis, and the bobbin is raised above its lower peripheral surface.

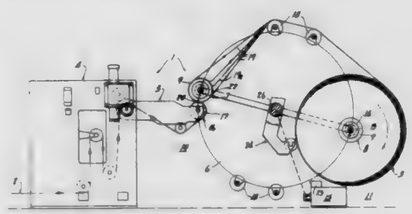
4,798,350

WEB REWIND APPARATUS WITH CUTLESS WEB TRANSFER

Allen R. Jorgensen, Abrams; Larry P. Belongia, Oconto; Kenneth A. Gordon, Sobieski, and John L. La Haye, Green Bay, all of Wis., assignors to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed May 29, 1987, Ser. No. 55,697
Int. Cl.[4] B65H *18/08*
U.S. Cl. 242—64 12 Claims

5. A web transfer apparatus having a thin flexible web passed through at least one work station and rewound into a processed web roll, a winding station for receiving of said web, comprising a rotating first support means having means adapted to receive the free end of a web at said winding station for winding of the web upon itself into a roll, means to drive said support means for winding of the web into said roll, means to transfer said support means from said winding station with said web being maintained adjacent said winding station, means to locate a second support means at said winding station in operative engagement with the surface of said web, means to independently rotate said second support means, clamp means movable into engagement with the second support means, control means operable to simultaneously drive said second support means relative to said first support means and with said



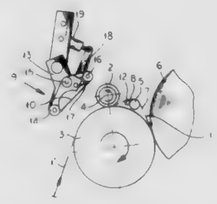
first and second support means rotating at different speeds whereby said web forms a slack loop between said first and second support means, means causing said slack web to move into the nip between said second support means and said clamp means and control means coupled to said first and second support means and including brake means for substantially reducing rotation of said first support means and thereby creating a rapid tension and snap action force on the slack web between said nip of said second support means and said clamp means resulting in a rapid and essentially continuous lateral separation of said web adjacent said clamp means for separation of said web and transfer of said web from said first support means to said second support means along any portion of said web present at the clamp means at the time of transfer.

4,798,351

APPARATUS FOR COILING A FOIL WEB, ESPECIALLY A SYNTHETIC RESIN FOIL WEB

Hartmut Halter, Troisdorf-Eschmar; Paul H. Zimmermann, Lohmar, and Norbert Achterwinter, Hilden, all of Fed. Rep. of Germany, assignors to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Filed Sep. 8, 1987, Ser. No. 94,229
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1986, 3630572
Int. Cl.[4] B65H *19/28, 19/26*
U.S. Cl. 242—65 3 Claims



3. An apparatus for winding a foil web, especially a synthetic resin foil web, on a roll core as a step in the coiling of said foil web into a foil web coil with the help of a foil web winding machine comprising:

a contacting foil;

a roll core receiver;

a cross cutter for said foil web, said roll core being positioned in said roll core receiver being placeable on said contacting roll with said foil web intervening and running to a downstream one of said foil web coils and said foil web being cuttable with the aid of said cross cutter between said roll core and said downstream foil web coil, and a leading end piece formed by cutting said foil web with said cross cutter being receivable by said roll core;

pivot means for mounting said foil web press device above said roll core, and;

a foil web press device mounted above said foil core received by said roll core receiver, said foil web press device being engagable on said foil core by a pivot motion and having a press belt travelling along with said press device in said pivot motion, said press belt embracing said roll core on the side of said roll core facing away from said contacting roll and forming a wedge-shaped outlet space for said roll core , said press element having a contact angle between 120° and 180° with respect to said roll core, said press belt being held by at least one guide roller holder and provided with tension by a plurality of guide rollers mounted on said guide roller holder and one of said guide rollers being mounted on a pivotable lever arm of said guide roller holder and on setting said press belt on said roll core said press belt is adjustable to a predetermined contact angle; and

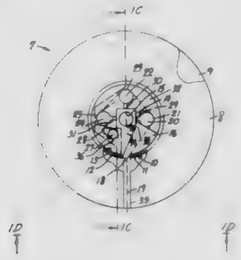
an air blower tube located between said entrance wedge space and said cross cutter below the next following uncut one of said foil webs, the blower air stream from said air blower tube being directed in said wedge-shaped outlet space substantially parallel to the engaging direction of said wedge-shaped outlet space.

4,798,352

FILM REEL HAVING FILM-THREADABLE FILM-RETAINING CORE

Michael Naso, 2512 Leslie Street, Union, N.J. 07083, and Frank Naso, 476 Clark Place, Union, N.J. 07083

Filed Nov. 9, 1987, Ser. No. 118,654
Int. Cl.[4] B65H *75/28, 75/18*
U.S. Cl. 242—74 23 Claims



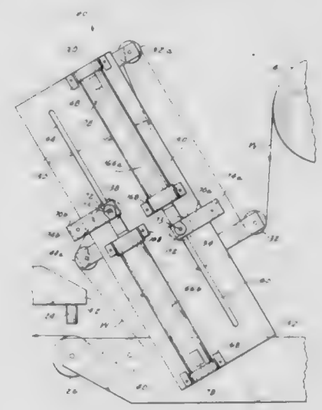
1. In a film reel having an upper face and an opposite-side lower face, in combination having a film-threadable film-retaining core (a) that has an outer collar with an outer collar radially-inwardly positioned wall-surface and with an outer collar radially-outwardly positioned wall-surface, (b) that has an inner collar with an inner collar radially-inwardly positioned wall-surface and with an inner collar radially-outwardly positioned wall-surface, defining a film-threading space between said outside collar's inside wall surface and said inside collar radially-outwardly positioned wall surface, (c) that has a collars's-anchoring floor connecting with at-least a major portion of each of the inner collar radially-outwardly positioned wall-surface and the outer collar radially-inwardly positioned wall-surface, (d) that has a radially extending core-anchoring wall radially-extending between and connecting-together said inner and outer collars, (e) a film-threading slot that extends-radially through said outside collar, and (f) the film-threading space extending from an open slot that extends-radially through said outside collar, the film-threading space extending substantially around said inside collar to terminate at said core-anchoring wall, and (g) said inner collar radially-inwardly positioned wall surface being a spindle-receptacle structure forming a spindle-receiving space of said opposite lower face; the improvement being in said core additionally as a part of said combination comprising: (1) said inner collar radially outwardly-positioned wall-surface including a plurality of wall structures each extending radially outwardly a predetermined distance to end as a wall structure distal-end defining a film-threading gap between said wall structure distal-end and said outer collar's radially-inwardly extending wall-surface; and (2) a film-anchoring post means for reversing direction of threaded film to be wrapped there-around to reverse the film-threading direction, said film-anchoring post means being located within said film-threading space extending upwardly from said collars's-anchoring floor, and said film-anchoring post means being positioned and spaced-away-from each of said core-anchoring wall, the inner collar radially-outwardly positioned wall surface and the radially-inwardly positioned wall surface.

4,798,353

WEB SLITTING SYSTEM AND SLACK INDUCING APPARATUS AND METHOD USEFUL THEREIN

Jack Peugh, Marietta, Ga., assignor to Printpack, Inc., Atlanta, Ga.

Filed Feb. 5, 1987, Ser. No. 10,912
Int. Cl.[4] B65H *23/16*
U.S. Cl. 242—75.3 22 Claims



1. Apparatus for inducing a controlled quantity of slack in a web travelling along a travel path from a web supply roll to a web slitter, comprising:

(A) first and second support means movable relative to one another;

(B) first and second sets of rollers secured to said first and second support means, respectively, said first set of rollers remaining at all times to one side of said second set of rollers, said rollers together defining at least a portion of a travel path for the web from a web supply roll to a seb slitter; and

(C) control means responsive to an external signal for moving each of said first and second support means relative to one another a predetermined distance under positive control in such a manner as to effect relative movement of

said first and second sets of rollers, thereby to vary the length of said travel path and induce slack by shortening the length thereof.

4,798,354

FISHING REEL WITH WEAR-RESISTANT LINE GUIDE

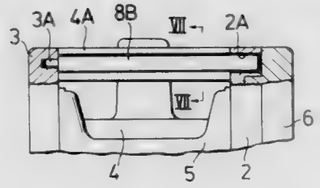
Kazuya Nanbe; Nobuyuki Yamaguchi, and Kaoru Masubuchi, all of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 943,256

Claims priority, application Japan, Dec. 20, 1985, 60-196286[U]; Oct. 29, 1986, 61-166043[U]

Int. Cl.⁴ A01K *89/04*

U.S. Cl. 242—84.1 R **4 Claims**



1. A double bearing tupe fishing reel comprising a frame body having first and second spaced apart, opposed side frames, a plurality of supports extending between said first and second side frames, said frame body, side frames, and supports being integrally constructed of a synthetic resin, there being a line-carrying spool extending between said side plates for axial rotation, a line provided on said spool for winding and unwinding movement thereabout, at least one of said supports being positioned for normal travel thereacross of said line during winding and unwinding movement, a hard wear-resistant member operatively associated with said at least one support, said wear-resinstant member extending between said first and second side frames, means engaging said wear-resistant member at the opposite ends thereof to said first and second side frames, said wear-resistant member being a rod over which said line travels, said rod extending between said side frames and presenting for exposure to said line between said side frames a constant diameter, said diameter preventing said line when tensioned from coming into contact with said at least one of said supports, the rod being rotatably jornalled at opposite ends in said side frames, the rod thereby protecting the adjacent said at least one of said supports from wear-damaging engagement with said line, the reel including an outer side plate extending externally across one of said side frames, said one of the side frames being apertured by a through-hole for receiving a corresponding first end of the rod, the other end of the rod being received by a blind aperture, the outer side plate extending across and covering the through-hole, whereby the outer side plate keeps the rod from coming out through the through-hole.

4,798,355

FISHING REEL

Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko Inc., Tokyo, Japan

Filed Mar. 19, 1987, Ser. No. 28,098

Claims priority, application Japan, Apr. 11, 1986, 61-54397[U]

Int. Cl.⁴ A01K *89/00*

U.S. Cl. 242—218 **3 Claims**

1. A fishing reel having oppositely disposed bearings, a handle and a shaft connected to the handle, said reel comprising:

a spool shaft having an engagement portion; a spool fixedly connected to the spool shaft;

left and right side plates of said reel for rotatably supporting the spool shaft;

a pinion detachably fitted to the engagement portion of said spool shaft;

a driving gear disposed on the shaft of the handle and engaged with said pinion;

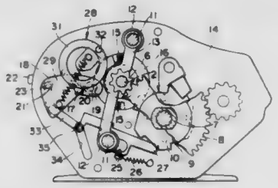
a clutch piece engaged with said pinion;

a spring for biasing said clutch piece to engage said pinion with said engagement portion of said spool shaft;

a clutch cam rotatably disposed around said spool shaft and rotated therearound so as to press said clutch piece in the direction of an axis of said spool shaft and detach said pinion forms aid engagement portion of said spool shaft;

an operation member;

a pivoting plate, pivotally mounted on one of the side plates at a rear end portion thereof and having one side which is



connected to said clutch cam for movement relative thereto and another side which is connected to the operation member;

a tension coil spring connected to said pivoting plate and to said one side plate for bi-directionally biasing and pivotally moving said pivoting plate in pivoting directions which are opposite to one another relative to a dead point of said tension coil spring;

a kick member disposed on said handle shaft;

a kick plate moved by the kick member to engage with and pivotally move said pivoting plate until said pivoting plate passes the dead point of said tension coil spring; and

means for ordinarily retaining said kick plate out of a locus of said kick member, said means retaining said kick plate in the locus of said kick member during a clutch-disengaging period.

4,798,356

FLEXIBLE FRAME FASTENING SYSTEM FOR KITES

Frank Alonso, Pacoima, Calif., assignor to Spectra Star Kites, Pacoima, Calif.

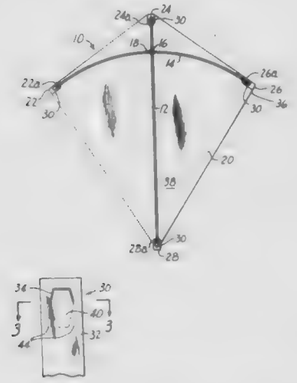
Filed Aug. 17, 1987, Ser. No. 86,263

Int. Cl.⁴ B64C *31/06*

U.S. Cl. 244—153 R **11 Claims**

1. Low cost, flexible, frame anchoring structure for kites having a sail and a supporting frame of rods arranged for corner connection of their ends to said sail, said anchoring

structure comprising a web secured to said sail and locally cut free to define a flexible pocket between said web and said sail



for anchoring of said frame rod ends, said structure web being secured to said sail circumferentially about said flexible pocket.

4,798,357

GOLF BAG FIXING SUPPORTER

Sung C. Cho, Seoul, Rep. of Korea, assignor to Haidon Industrial Co., Ltd., Yongin, Rep. of Korea

Filed Dec. 21, 1987, Ser. No. 135,846

Claims priority, application Rep. of Korea, Oct. 16, 1987, 17627[U]

Int. Cl.⁴ A63B *55/00*

U.S. Cl. 248—96 **1 Claim**



1. A golf bag supporter for installation on a golf bag having an inner cylindrical case and an outer cover, comprising a fixing piece mounted to the cylindrical case between the case and cover; a sliding plate having a cam surface, increasing outwardly in a downward direction slidably mounted to said fixing piece; a fixing collar mounted to said fixing piece on each side of said sliding plate; a rotatable shaft having an inner end and an outer end inserted through each fixing collar; a leg affixed to the outer end of each rotatable shaft; an operating lever affixed to the inner end of each rotatable shaft, each said operating lever having an opening therethrough at a distal end thereof; a sliding shaft inserted through both of said operating lever openings and bridging said cam surface and a cam roller surrounding said sliding shaft in the region bridging said cam surface; an operating bar connected to said sliding plate and having a lower end projecting from the bottom of the golf bag; and a spring means for urging said sliding plate downwardly, whereby placement of the golf bag on the lower end of the operating bar causes upward sliding of said sliding plate against the force of said spring means, and consequent outward pivoting of said legs.

4,798,358

VERTICALLY ADJUSTABLE SWIVEL CHAIR SUPPORTING COLUMN

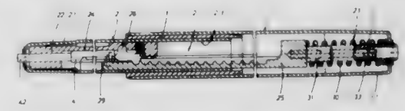
Egon Brüning, Weil am Rhein, Fed. Rep. of Germany, assignor to Protoned B.V., Netherlands

Continuation of Ser. No. 734,772, May 16, 1985, abandoned. This application Jul. 6, 1987, Ser. No. 73,366

Claims priority, application Switzerland, May 30, 1984, 2677/84

Int. Cl.⁴ F16M *13/00*

U.S. Cl. 248—161 **3 Claims**



1. A vertically adjustable swivel chair support post having a vertical pipe, the bottom end of which can be secured to the pedestal of a swivel chair; a support pipe telescopically movable with respect to the vertical pipe; a swivel chair seat mounted to the top end of said support pipe; a length adjusting element installed inside said support pipe and vertical pipe, and between their outer ends, the length adjusting element capable of being locked in position with a substantially stationary part supported and centered in the vertical pipe by a spring loaded connecting member and a guide busing; and a sliding part in the support pipe, wherein the improvement comprises:

A. said sliding part being received at its upper end by a guide and mount member fastened to the top end of the support pipe;

B. said support pipe having a central opening at its top end wherein said opening is bordered by a rolled-in rim shoulder and houses a stepped diameter centering projection which extends from said guide and mount member;

C. said guide and mount member being detachably connected to the support pipe by a fastening means which engages said centering projection exterior of said shoulder;

D. said vertical pipe having at its bottom end a base means with a central bore for securing a rotating end portion of said guide bushing of the spring loaded connecting member; and

E. said guide bushing being detachably fastened to the vertical pipe by a connecting means which engages said end portion of the guide bushing exterior of the supporting base.

4,798,359

FURNITURE GLIDE

Richard I. Ball, Round Lake, Ill., assignor to Johnson Industries, Inc., Elgin, Ill.

Filed Jul. 14, 1983, Ser. No. 513,625

Int. Cl.⁴ F16M *11/20*

U.S. Cl. 248—188.3 **12 Claims**

1. A self-adjusting furniture support for use with a piece of furniture having a bottom base surface comprising in combination

a shaft means adapted to be mounted to said base of a piece of furniture with said shaft extending in a vertical direction,

an upper member rotatably mounted on said shaft and having a downwardly facing inclined ramp surface,

abutment means concentric with said shaft means for spacing said upper member from said base surface and permitting relative rotational movement between said upper member and said base surface,

a lower foot member mounted to said shaft and having an upwardly facing inclined ramp surface abutting said ramp surface on said upper member, and



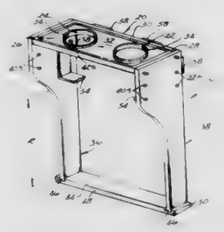
coil spring means mounted in coaxial relationship with said shaft in a compressed state between said upper and lower members to apply a torque between said members and to exert a force in a direction to push said members apart.

4,798,360

BEVERAGE CADDY APPARATUS

Sheldon Alter, 84 Butterworth Dr., Attleboro, Mass. 02703

Filed Jul. 17, 1987, Ser. No. 74,577
Int. Cl.[4] A47K *1/08*
U.S. Cl. 248—311.2 12 Claims



1. Beverage container support apparatus particularly adapted for automotive vehicles having center consoles in which are disposed vehicle related controls and having a floor mounted transmission lever comprising,

a tray portion extending transversely across and in front of a portion of the center console and having a depth sufficient to accommodate a beverage container receiving aperture, at least one container receiving aperture in the tray portion,

stop surface means mounted on the apparatus to limit downward movement of a container received in the at least one beverage container receiving aperture, the stop surface means including a generally "L" shaped member, a cross member attached to the top of the "L" shaped member, a mount member mounted on the apparatus having first and second intersecting grooves formed therein, means to bias the cross member into the first groove to maintain the "L" shaped member in one rotational orientation, the "L" shaped member being movable against the bias so that the cross member can be moved out of the first groove enabling it to be rotated until the cross member is received in the second groove in a second rotational orientation,

a pair of side members, one at each transverse end of the tray portion and connected thereto, the side members having a height sufficient to extend from a floor portion of the vehicle adjacent to and aligned with the console to place the tray portion within the field of vision of an operator of the vehicle looking through a windshield of the vehicle,

base means connected to the bottom portion of the side members and adapted to be placed on the said floor portion of the vehicle, and

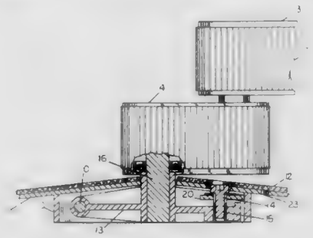
attachment means disposed on the apparatus adapted to engage and attach the apparatus to the dash portion of the vehicle, the tray portion, side members and base means defining an open area therethrough to allow access to vehicle related controls behind the support apparatus, and the side members and base means being configured to provide access to the floor mounted transmission lever.

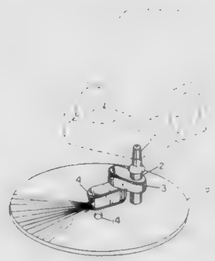
4,798,361

MULTI-SWIVEL CHAIR

William H. Fawcett, 3730 Southview Dr. #437, San Diego, Calif. 92117

Filed Oct. 27, 1987, Ser. No. 112,881
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—415 3 Claims





1. An articulated multi-swivel-chair rotatable 360 degrees horizontally having a vertical axis centrally mounted on a circular floor pad, the chair carried by jointed arms rotating around the axis wherein the improvement comprises

a. the central axle being a vertical axle rotating in a sleeve bearing;

b. the sleeve bearing mounted upon a horizontal base plate;

c. a horizontal bearing shaft through one end of the base plate;

d. a vertical threaded hole on a longitudinal center line at the other end of the base plate;

e. a horizontal rectangular frame centrally fastened to the bottom of the circular floor pad;

f. the rectangular frame enclosing the base plate;

g. a bearing rod transversely through the walls of the rectangular frame engaging the horizontal shaft in the base plate;

h. a horizontal plate fastened to the rectangular frame above the vertical threaded hole in the base plate;

i. a clearance hole in the horizontal plate aligned with the threaded hole in the base plate; and,

j. an allen bolt through the clearance hole in the horizontal plate engaging the threaded hole in the base plate.

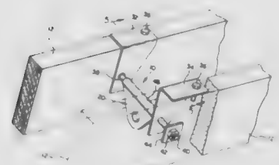
4,798,362

ADJUSTABLE CROSSARM SPACER AND UTILITY LINE HANGER APPARATUS

Arthur L. Troutner, Boise, Id., assignor to Trus Joist Corporation, Boise, Id.

Filed Dec. 15, 1983, Ser. No. 561,683
Int. Cl.[4] H02G *7/00*
U.S. Cl. 248—62 20 Claims





1. Adjustable spacer and hanger apparatus for supporting an electrical utility line, comprising:

a pair of bracket members adapted for attachment to a pair of spaced elongated support members, each bracket member including a bracket plate and a threaded connector provided on said plate;

fastening means for attaching said bracket members to said support member;

rotatable hanger means for supporting the electrical utility line on said support members; and

adjustable connector means for connecting said hanger means to the two threaded connectors on said pair of bracket members so that the spacing between said bracket members can be adjusted by rotation of said hanger means about an axis of rotation to accommodate changes in the spacing between the pair of support members.

4,798,363

CONTAINER WITH LINING BAG DISPENSER

Roy L. Cortesi, P.O. Box 453, Greenville, Miss. 39502

Filed Oct. 23, 1987, Ser. No. 111,634
Int. Cl.[4] A63B *55/04*
U.S. Cl. 248—97 1 Claim



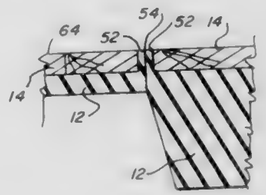
1. A wastebasket for using easily replaced inner liners to receive material, said wastebasket comprising an elongate sidewall forming an elongate enclosure, said enclosure being open at opposed ends, said sidewall comprising a lower edge having portions for engaging and resting on a generally flat floor and portions forming openings between said lower edge and said floor, a lower wall extending substantially completely across said enclosure and spaced from said lower edge by a distance less than that between said lower wall and an upper edge of said sidewall, said lower wall being convex with respect to said upper edge and comprising means forming a slot therein, said slot being centrally located in said lower wall with respect to one transverse dimension of said enclosure and extending a majority of the way across said lower wall in a perpendicular transverse dimension, one axle for revolvingly mounting a roll of said inner liners, and mounting means for removably mounting opposed ends of said axle, wherein said mounting means is located between said lower wall and said lower edge, and a lid for removably covering said end formed by said upper edge.

4,798,364

REINFORCED FORM LINER FOR SURFACE TEXTURING OF CONCRETE STRUCTURES

Samuel C. Scott, 2519 Walnut St., Denver, Colo. 80205

Filed Jan. 22, 1987, Ser. No. 6,013
Int. Cl.[4] E04G *9/05, 9/10*
U.S. Cl. 249—189 4 Claims



1. A flexible surfaced plywood concrete form liner which can be used to form a textured surface in concrete wall construction, said form liner comprising:

(a) a flat planar sheet of relatively thick plywood material, said plywood sheet material being precisely sized for use in concrete wall construction;

(b) a layer of relatively thin, flexible, waterproof, elastomeric material, said elastomeric material being cast around and bonded to said plywood sheet, said elastomeric material forming a continuous integral coating covering one completed planar side of said plywood material and all edges of said plywood material leaving the opposite side exposed, the elastomeric material along the edges having a thickness within the range of $\frac{1}{8}$th to $\frac{1}{4}$ths inch to provide a flexible seal between forms and yet have sufficient rigidity to prevent concrete blow-out at the joint;

(c) the outer surface of said layer of elastomeric material opposite said plywood material having a negative impression textured surface which is intended for texturing the surface of the finished concrete; and

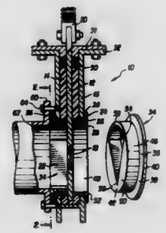
(d) said elastomeric material completely seals one side and all edges of said plywood material to prevent any possible absorption of the concrete or moisture into the lamination of the plywood material during use to greatly extend the useful life of the form.

4,798,365

THROTTLING GASKET INSERT FOR USE WITH KNIFE GATE VALVE

John Mayhew, Salem, Va., assignor to Alphabet, Inc., Warren, Ohio

Filed May 20, 1987, Ser. No. 52,106
Int. Cl.[4] F16K *3/32, 3/02*
U.S. Cl. 251—205 3 Claims



1. A throttling gasket insert to be used for converting any one knife gate valve of a plurality of knife gate valves of different sizes and tolerances into a throttling configuration in which it can be used for more finely controlling flows of fluids through a flow passage, said throttling gasket inserts being used to sealingly attach said any one knife gate valve to a pipe string, said plurality of knife gate valves being of a type comprising a gate blade being longitudinally movable in a frame to open and close a lateral flow passage through the frame, said knife-gate valves each defining an annularly-shaped facing surface on an outer surface of the frame surrounding the passage for making sealing contact with pipe flange and a flow-passage bore extending into said mouth of said flow passage, said bore having a standard fixed diameter, said throttling gasket insert comprising a single piece of resilient polymer plastic gasket material of a type to be clamped between flanges of two flow members for forming a seal therebetween, said throttling gasket insert comprising:

a washer-shaped flange portion of a size for being placed between said facing surface surrounding said flow passage and a pipe flange of a pipe to be attached to said knife gate valve at said facing surface, said washer-shaped flange having a generally circular outer perimeter;

a tubular portion being formed as one piece with said flange portion and protruding outwardly from one side of said flange portion said tubular portion having a generally circular-in-cross-section outer surface which is coaxial with, but substantially smaller than the generally circular outer perimeter of said circular washer-shaped flange, said outer surface being of a size and shape for snugly extending into said flow passage, said tubular portion having a flat inner-end throttling seat facing away from said flange portion for being immediately adjacent a knife gate blade when it is in a closed position, said tubular portion having an axial passage therethrough which is V-shaped in cross section, said V-shaped passage extending from said inner end throttling seat over at least substantially half the complete axial length of said tubular portion;

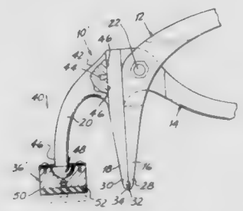
whereby said tubular portion of said throttling gasket insert can be inserted into the lateral flow passage, with said flange portion being seated against the facing surface thereof and said inner-end throttling seat being immediately adjacent said longitudinally-movable gate blade, said throttling gasket insert being formed of one piece of material so that its inner-end throttling seat can be cut away to shorten the length of said tubular portion and a circumferential surface of said tubular portion can be cut away to shorten the length of said tubular portion and a circumferential surface of said tubular portion can be cut away so that it will fit into a smaller flow passage without changing the characteristics of said v-shaped passage therethrough thereby adapting said throttling gasket to sealingly attach to any one of said plurality of different size knife-gate valves having lateral flow passages therethrough, into pipe strings to allow said knife gate valves to be used in said pipe strings as V-shaped passage throttling valves.

4,798,366

SHAKE NAIL PULLER

Victor I. Pearson, and George Spector, both of 233 Broadway, RM 3615, New York, N.Y. 10007

Filed Nov. 13, 1984, Ser. No. 671,088
Int. Cl.[4] B25C *11/00*
U.S. Cl. 254—22 3 Claims



1. A nail puller pliers comprising:

(a) a first arm having a first end formed with a handle and a second end formed with a first jaw having a free end;

(b) a second arm having a first end formed with a handle and a second end formed with a second jaw having a free end;

(c) a fulcrum lever mounted on said second end of said second arm having a free end;

(d) a resilient pad mounted to said free end of said fulcrum lever;

(e) a pivotal connection between said first and second arms providing a first axis for rotating said jaws towards and away from each other, wherein said lever is mounted rotatably about an axis perpendicular to the first said axis whereby said lever is moveable to transverse displaced positions parallel to said first axis including further means to lock said fulcrum lever in any one of said displaced positions whereby said pad can be located at various positions parallel to said first axis.

4,798,367

APPARATUS OF COOLING STEEL STRIP IN CONTINUOUS HEAT TREATING LINE

Sachihiro Iida, Kurashiki, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Division of Ser. No. 842,136, Mar. 20, 1986, Pat. No. 4,713,125.
This application Sep. 1, 1987, Ser. No. 91,718
Claims priority, application Japan, Mar. 22, 1985, 60-56093
Int. Cl.[4] C21D *11/00*
U.S. Cl. 266—80 5 Claims

1. An apparatus for cooling a steel strip which has been cooled through a final cooling zone in a continuous heat treating line comprising

a cooling tank containing cooling water;

one or more sink-rolls arranged in the cooling water to guide the steel strip in the cooling tank;

a guide roll provided at the inlet of the cooling tank for guiding the steel strip from the outlet of the final cooling zone to the first one of the sink-rolls in the cooling water;

means for detecting the temperature (Tw) of the cooling water in which said first sink-roll is immersed;

means for detecting the temperature (Ts) of the steel strip at the inlet of the cooling tank; and

a processing unit adapted for operating one or more controllers to cool the steel strip immersed in the cooling water prior to reach to the first sink-roll to such a lower temperature as to prevent evaporation of a water film interposed between surface of the first sink-roll and the surface of the strip around the first sink-roll in accordance with the following formula:

$$l \geq \frac{\rho \cdot Cp \cdot v \cdot d}{2\alpha} \cdot \ln\left(\frac{Ts - Tw}{120 - Tw}\right)$$

here,

l is the cooling length from the surface of the cooling water to the sink-roll (m)

Ts is the temperature of the steel strip at the inlet of the cooling tank (°C.)

Tw is the temperature of cooling water (°C.)

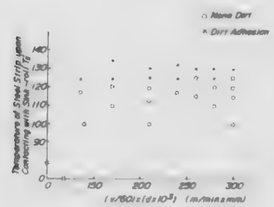
Cp is the specific heat of the steel strip (Kcal/kg°C.)

v is the feed speed of the steel strip (m/hr)

d is the thickness of the steel strip (m)

α is the coefficient of heat transfer (Kcal/m^{2}hr°C.)

ρ is the density of the steel strip (kg/m^3).

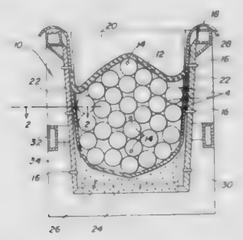


4,798,368

APPARATUS FOR CONTROLLED SLOW COOLING OF STEEL TUBULARS

Joseph F. Colin, Darlington; Leo T. Kaercher, Beaver Falls, and Charles D. Roberts, Gibsonia, all of Pa., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 30, 1987, Ser. No. 79,843
Int. Cl.[4] C21D *9/08*
U.S. Cl. 266—259 8 Claims



1. An apparatus for treating hot steel stock after it is milled, comprising:

a container having insulated side walls, insulated end walls, a bottom wall and an open top;

insulation means in said container over said bottom wall for insulating the bottom of said container;

a flexible, removable blanket of insulating material for covering the open top of said container to cover a load of hot steel stock in said container to control the rate of cooling of the hot steel stock; and

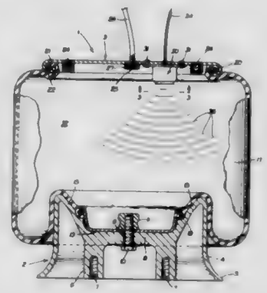
sling means lining said container on which steel stock is engagable for facilitating the removal of steel stock from said container.

4,798,369

ULTRASONIC AIR SPRING SYSTEM

Wayne H. Geno, Cicero, Ind., and David A. Weitzenhof, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 3, 1987, Ser. No. 116,189
Int. Cl.[4] B60G *17/04, 17/08*
U.S. Cl. 267—64.11 6 Claims



1. An ultrasonic air spring leveling system including:

(a) an end plate and a piston member located in a generally axial spaced relationship when in an at-rest position, said end plate and piston member being adapted to be mounted on spaced portions of a vehicle and movable towards and away from each other upon said vehicle encountering road shocks to absorb said shocks and to maintain said spaced vehicle portions at a predetermined spaced relationship when in said at-rest position;

(b) a fluid pressure chamber formed between said end plate and piston member by a flexible elastomeric sleeve having opposed open ends sealingly connected to said end plate and piston member;

(c) an ultrasonic transducer mounted on an inside surface of the end plate and located within the fluid pressure chamber for transmitting ultrasonic signals through the pressure chamber to the piston member and for picking up ultrasonic signals reflected from the piston member;

(d) electronic circuit means operatively connected to the transducer responsive to the picked up signals for generating a control signal; and

(e) a source of pressurized fluid connected to the fluid pressure chamber and controlled by the control signal for regulating the amount of fluid within said pressure chamber to maintain a predetermined axial separation between the end plate and piston member when in said at-rest position.

3. An improved method for regulating the spacing between an end plate and a piston member sealingly mounted within the open ends of a flexible elastomeric sleeve of an air spring of a suspension system including the steps of:

(a) forming a pressurized fluid chamber within the elastomeric sleeve and between the end plate and piston member;

(b) transmitting ultrasonic signals from a transducer located within the chamber and mounted on an inside surface of said end plate towards the piston member;

(c) detecting a portion of the transmittal signals which are reflected from the piston member;

(d) determining the spacing between the end plate and piston member in response to the detected, reflected signals;

(e) generating a control signal in response to the determined spacing between the end plate and piston member; and

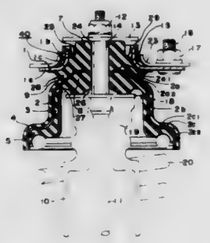
(f) regulating the amount of pressurized fluid within the fluid chamber in response to the control signal for adjusting the spacing between said end plate and piston member.

4,798,370

UPPER SUPPORT FOR A SUSPENSION OF A VEHICLE

Yutaka Isezaka, Nishio, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Apr. 11, 1988, Ser. No. 180,138
Claims priority, application Japan, Apr. 15, 1987, 62-55941[U]
Int. Cl.[4] F16F *9/32*; B60G *15/06*
U.S. Cl. 267—220 **15 Claims**



1. An upper support for a suspension including a shock absorber and a coil spring located between a vehicle body and a wheel, the upper support being attached to said shock absorber between upper and lower retainers located on opposite sides of a collar coupled to an absorber rod of said shock absorber, said upper support, said shock absorber and said coil spring having a common axis, said upper support comprising:

a first generally annular rigid member including a substantially cylindrical portion and a flange portion extending radially outward from a lower end portion of said substantially cylindrical portion;

a second generally annular rigid member arranged below said first rigid member in an axial direction and including: a substantially flat portion extending perpendicular to said axis of said upper support and having an inner diameter smaller than an inner diameter of said first rigid member; a substantially conically extending portion extending obliquely downward from a radially outer end portion of said substantially flat portion and having an outer diameter larger than the inner diameter of said first rigid member; a substantially cylindrical portion extending downward from a lower end portion of said substantially conically extending portion; and a spring seat portion extending generally radially outward from a lower end portion of said substantially cylindrical portion;

an elastic generally annular member elastically connecting said first and second rigid members, and having a radially inner slidable surface for slidably contacting the collar coupled to the absorber rod of the shock absorber, said elastic member including: a first portion provided between said first rigid member and said substantially conically extending portion of said second rigid member in the axial direction and fixed to said first and second rigid members; a second portion provided above and fixed to said substantially flat portion of said second rigid member, said second portion being compressed in the axial direction between said substantially flat portion of said second rigid member and the upper retainer coupled to the absorber rod; and a third portion provided below and fixed to said substantially flat portion and said substantially conically extending portion of said second rigid member, said third portion being compressed in the axial direction between said substantially flat and substantially conically extending portions of said second rigid member and the lower retainer coupled to the absorber rod; each of said first, second and third portions being used in a compression direction; and

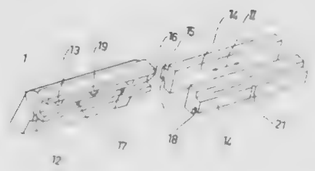
an elastic seat fixed to a lower surface of said spring seat portion of said second rigid member to receive loads from the coil spring.

4,798,371

CHUCKING DEVICE, IN PARTICULAR A VISE

Klaus Wallinger, Haafwiesenstrasse 17, 7060 Schorndorf, Fed. Rep. of Germany

Filed Sep. 24, 1987, Ser. No. 100,393
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, 3632496; Mar. 24, 1987, 3709566
Int. Cl.[4] B25B *1/24*
U.S. Cl. 269—283 **3 Claims**



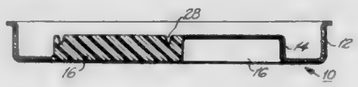
1. A chucking device, in particular a vise, comprising two chuck jaws secured parallel to one another on stable supporting elements movable relative to one another in a direction of a clamping force exerted thereby, at least one of the two jaws having first and second parts, a first pedestal part secured to the respective supporting element and a second interchangeable part replaceably joined to the first pedestal part for gripping a workpiece, both said parts having sides facing one another provided with rail guide means transverse to the direction of the clamping force, said rail guide means being adapted to allow a longitudinal displacement of the interchangeable part from the pedestal part for removal and replacement thereof, the rail guide means being provide with a U-shaped cross section on one part of a respective jaw serving as a receiving recess for a T-shaped cross section of a base portion of the other parts, said T-shaped cross-section being adapted to protrude into said receiving recess, said U-shaped cross-section including upper and lower inner leg surfaces from at least the lower of which inner leg surface pin-like protrusions extend, said protrusions being adapted to engage a corresponding groove provided on an opposing face portion of the base of the second interchangeable part to retain same from unintentional disengagement.

4,798,372

CUTTING TRAY

Joseph R. Tingle, 328 S.E. 17th Pl., Cape Coral, Fla. 33990

Filed Sep. 8, 1987, Ser. No. 93,729
Int. Cl.[4] B23Q *1/00*
U.S. Cl. 269—89.5 **12 Claims**



1. A cutting tray comprising:

a molded, rectangular pan having a peripheral upright rim forming four sides;

a raised rectangular platform support integrally formed with said pan positioned within and displaced from said four sides;

said platform support having an upper surface having a plurality of spaced receptacles therein;

a dense molded rectangular cutting platform having a cutting surface area and said platform removeably secured to said platform support; and

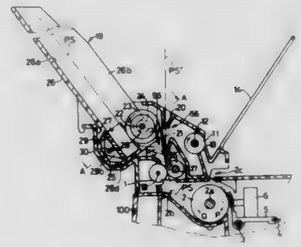
said cutting platform having an under surface having a plurality of spaced protuberances positioned to mate with said spaced receptacles.

4,798,374

SWITCHABLE AUTOMATIC OR MANUAL MODE PAPER FEEDING DEVICE HAVING A BIDIRECTIONALLY OPERATED MOTOR FOR A PRINTER

Noritagu Ito, Chita, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 3, 1986, Ser. No. 925,977
Claims priority, application Japan, Nov. 8, 1985, 60-251647
Int. Cl.[4] B65H *1/14*, *5/26*
U.S. Cl. 271—9 **20 Claims**



20. A paper feeding device for a printer, comprising:

a paper stacker for storing a stack of paper sheets;

a feed roller disposed for contact with a top of said stack of sheets and rotatable for feeding a top sheet of said stack from said paper stacker;

drive means for rotating said feed roller;

first passage means for defining a first paper path for directing said top sheet fed by said feed roller to said printer;

second passage means for defining a second paper path which has a paper inlet through which another sheet of paper is manually inserted into said printer, without said another sheet passing from said feed roller; and

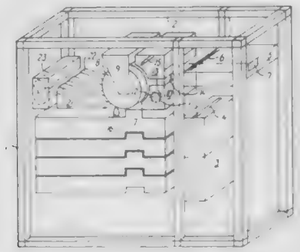
an electrically conductive partition wall which is connected to a ground and which is disposed between said first and second paper paths, so as to separate said first and second paper paths from each other, said first and second passage means guiding said top sheet and said another sheet along said first and second paper paths such that said top sheet and said another sheet contact said partition wall.

4,798,373

SHEET FEEDING DEVICE FOR USE IN AN ELECTROPHOTOGRAPHIC INFORMATION PRINTER

Hans C. Hyltoft, Vaerlose, Denmark, assignor to Mercante International A/S AF 1986, Glostrup, Denmark

Division of Ser. No. 662,553, Oct. 19, 1984, Pat. No. 4,605,215.
This application Nov. 25, 1985, Ser. No. 802,156
Claims priority, application Denmark, Nov. 3, 1983, 5047/83; Sep. 14, 1984, 4388/84
The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.
Int. Cl.[4] B65H *3/44*
U.S. Cl. 271—9 **7 Claims**



1. In an electrophotographic information printer with a xerographic system controlled by a program-controlled unit, a sheet feeding device for advancing individual sheets of a printing material from a sheet supply to an image transfer device arranged in operational cooperation with a movable photoconductor, said sheet feeding device comprising

a collecting roller arranged for engagement with the upper sheet in the sheet supply,

a pair of advancing rollers including a driven roller,

individual drive means including an electronic stepping motor being mechanically coupled to said collecting roller and said driven advancing roller through transmission members, the collecting roller being coupled with the stepping motor through a transmission member allowing free-wheeling with opposite direction of the stepping motor relative to the direction prescribed for the operation of the collecting roller, and

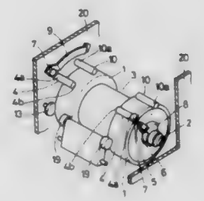
a device responsive to the program-controlled unit for supplying to the stepping motor a predetermined number of pulses at a controlled pulse frequency to operate the stepping motor in an operational sequence for said information printer, whereby the collecting roller and the driven advancing roller are rotated with controllable rotational speed, direction and duration.

4,798,375

DEVICE FOR FEEDING PHOTOSENSITIVE MATERIAL

Yuji Yamamoto, Wakayama, Japan, assignor to Noritsu Keakyu Center Co., Ltd., Wakayama, Japan

Filed Jun. 15, 1987, Ser. No. 61,517
Claims priority, application Japan, Jun. 16, 1986, 61-92158; Jun. 23, 1986, 61-96602; Jul. 14, 1986, 61-108407
Int. Cl.[4] B65H *5/00*
U.S. Cl. 271—82 **3 Claims**

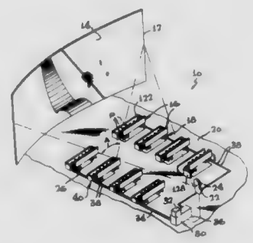


1. A device for use with a photographic processor to feed a web of photosensitive material comprising:

a cylindrical feed drum rotatable about a horizontal axis;
at least one head presser bar movably mounted on a peripheral surface of said cylindrical feed drum so as to be movable toward and away from the axis of said feed drum;
at least one tail presser bar pivotally mounted on said peripheral surface of said cylindrical feed drum about a pivot axis extending radially outwardly from the cylindrical surface of the feed drum, said tail presser bar being circumferentially spaced from said head presser bar, and pivotal movement of said tail presser bar moving it between a first position parallel to said drum axis and a second position so as to move one end thereof toward and away from said drum surface;
means operable in synchronism with rotation of said feed drum to move said head presser bar away from said surface at a first rotational position of said drum to accept a head end of said web, fed from a first unit of said photographic processor, between said head presser bar and said drum surface, and thereafter to move said head presser bar toward said surface to press and hold said web head end thereagainst;
means operable in synchronism with further rotation of said feed drum to raise and pivot said tail presser bar away from said drum surface at a second rotational position of said drum so as to receive a tail end of said web between said tail presser bar and said drum surface, and thereafter to lower and pivot said tail bar toward said surface so as to press and hold said web tail end against said surface;
further rotation of said drum moving said web head end to a second unit of said photographic processor, circumferentially remote from said first unit of said photographic processor, said second unit having means positioned near said drum to receive said head end of said web and draw said web into said second unit; and
means operable in synchronism with rotation of said feed drum for moving said head presser bar and said tail presser bar away from said drum surface to release said head end and said tail end, respectively, adjacent said second unit receiving means.

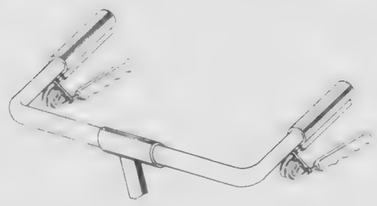
4,798,376
AMUSEMENT RIDE APPARATUS WITH A PLURALITY OF INDIVIDUALLY TILTABLE FRAMES
Douglas Trumbull, Santa Monica; David Collins, Westlake Village; Wayne Smith, Los Angeles, all of Calif., and Robert Spickelmier, Vaduz, Liechtenstein, assignors to Showscan Film Corporation, Culver City and Intamin Corp. Inc. Est., Berkely, both of, Calif.
Continuation of Ser. No. 811,104, Dec. 19, 1985. This application Nov. 16, 1987, Ser. No. 121,122
Int. Cl.[4] A63G *31/16*
U.S. Cl. 272—18 **2 Claims**

1. An amusement ride apparatus comprising:
means for holding a plurality of passengers;
image means including a screen viewable by said passengers and means for forming a predetermined motion picture image on said screen with at least a portion of said image representing the view from a moving vehicle;
drive means for moving said passenger holding means in synchronism with said motion picture image to simulate, at least partially, forces that would be experienced by passengers in said moving vehicle;
said means for holding passengers comprising a plurality of passenger-holding frames, said drive means comprising a plurality of sets of actuators, each said set of actuators associated with a different one of said frames and controllable to move the corresponding frame, and aid drive means includes means for controlling said sets of actuators in synchronism;
each said passenger-holding frame includes a plurality of seats positioned to hold seated passengers facing in a predetermined forward direction towards said screen;
each said set of actuators is constructed to tilt said seats about an axis (**12**) that extends primarily horizontally and perpendicular to said forward direction;
said screen is substantially stationary;
said plurality of seats of each said passenger-holding frame



are arranged in at least one row containing a plurality of seats spaced substantially parallel to said axis; and
each said frame being tiltable about its own individual said axis with said axis of one of said frames spaced further from said screen than said axis of a second of said frames.

4,798,377
BICYCLE HANDLE BAR GRIP WITH EXERCISE
James P. White, 8040 S. Yale, Chicago, Ill. 60620
Filed Nov. 16, 1987, Ser. No. 120,642
Int. Cl.[4] A63B *5/00;* **B62K** *21/26*
U.S. Cl. 272—67 **3 Claims**



1. A bicycle handle bar exercise grip comprising:
(a) a coil spring with both ends extended longitudinally about a pivot axis, said coil spring ends having a given cross sectional area throughout their length,
(b) an elongated handle with finger receiving portions along the bottom surface, and with an orifice above said portions extending longitudinally into said handle to allow insertion by one of said coil spring ends,
(c) an elongated handle bar grip with an upper orifice extending longitudinally into said handle bar grip for insertion by bicycle handle bar, and a smaller rigid orifice, below said upper orifice, extending longitudinally into said handle bar grip parallel to the upper orifice, said smaller orifice having a stabilizing means to prevent the other said coil spring end from rotating when inserted into the smaller orifice,
(d) said elongated handle and said elongated handle bar gri providing a variable gripping means for the hand of a bicycle rider,

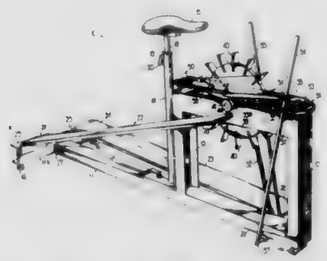
(e) said coil spring having a spring constant K large enough to stabilize said elongated handle and said elongated handle bar grip in the open position when gripped by a partially open hand, whereby the bicycle handle bar exercise grip can be mounted on a bicycle hand bar and provides a variable grip and hand muscle exercise.

4,798,378
ROWING MACHINE
Robert S. Jones, 2943 North Hackett Ave., Milwaukee, Wis. 53211
Continuation-in-part of Ser. No. 754,719, Jul. 15, 1985, abandoned. This application Jul. 28, 1986, Ser. No. 891,439
Int. Cl.[4] A63B *69/06*
U.S. Cl. 272—72 **26 Claims**



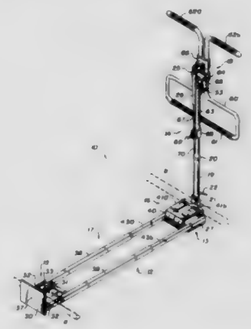
1. A rowing exerciser, comprising:
a horizontal frame;
a seat mounted for movement along the frame;
stationary foot rests on the frame;
a flywheel rotatably mounted adjacent the frame;
handle means for rotating the flywheel;
an eddy current brake coupled to the flywheel to resist rotation of the flywheel by the handle means; and
said eddy-current brake comprises a nonmagnetic conducting rim on said flywheel and stationary means adjacent said rim for creating a magnetic field through which the rim rotates.

4,798,379
EXERCISE MACHINE
John W. Jenkins, Hampton, Ga., assignor to Bellwether, Inc., Atlanta, Ga.
Filed Aug. 7, 1987, Ser. No. 82,742
Int. Cl.[4] A63B *21/00, 1/00*
U.S. Cl. 272—73 **3 Claims**



1. An exercise machine comprising:
a rotatable device for dissipating energy;
a pair of foot treadles pivotally mounted in predetermined relation to said rotatable device and operatively interconnected for alternating reciprocable movement causing movement of each foot treadle in a first direction in response to movement of the other foot treadle in a second direction, and vice versa;
means operatively interconnecting said foot treadles to impart continuous rotary motion to said rotatable device in response to alternate reciprocation of the foot treadles by a user of the exercise machine;
a pair of hand levers mounted in predetermined relation to said rotatable device and operatively interconnected for alternating reciprocal movement causing movement of each hand lever in a first direction in response to movement of the other hand lever in a second direction by the user, and vice versa;
means operatively interconnecting said hand levers to impart continuous rotary motion to said rotatable device in response to alternate reciprocation of the hand levers by the user, so that the user can expend energy in driving the rotatable device by using feet or hands, or both feet and hands;
said operative interconnection between the hand levers comprising a flexible link connected with both said hand levers and passing over a pulley which reverses the direction of the flexible link, so that one hand lever is moved in a direction toward the user when the other hand lever is moved in a direction away from the user, and vice versa;
said operative interconnection between the foot treadles comprising a flexible link connected with both said foot treadles and passing over a pulley which reverses the direction of the flexible link, so that one foot treadle is raised by the last-mentioned flexible link when the other foot treadle is depressed by the user, and vice versa; and
means operatively interconnecting the foot treadles with the hand levers so that reciprocation of either treadle causes reciprocation of both hand levers, and vice versa,
whereby the energy expended by the user in alternately reciprocating the foot treadles or the hand levers drives the rotary device at a substantially constant rate throughout the movement of each foot treadle or hand lever and is there dissipated.

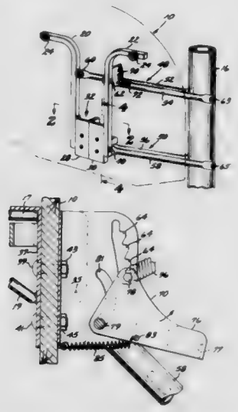
4,798,380
STOWABLE EXERCISING APPARATUS
Edward Manyk, C55-Padgett Rd., Powell River, British Columbia V8A 4Z2, Canada
Filed Jun. 16, 1987, Ser. No. 63,209
Int. Cl.[4] A63B *23/00*
U.S. Cl. 272—93 **7 Claims**



1. A stowable exercising apparatus adapted to be mounted to the frame of a bed, comprising:
means for securing said apparatus to said bed frame comprising a pair of adjustable securing brackets adapted to be secured at opposite sides of said bed frame, said securing brackets being connected by means of an adjustable framework extending from one bracket to the other;
supporting means for supporting said apparatus on said adjustable framework and adapted for alidable movment on said adjustable framework; and
exercising means mounted to said supporting means and

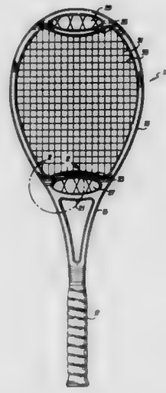
adapted to be movable from a vertical operating position along said be to a horizontal resting position under said bed wherein said supporting means comprises a base slidably mounted on said framework and has pivoting means for connecting said exercise means to said base to permit said exercising means to be pivoted to a horizontal position and then slidably moved to said resting position.

4,798,381
BASKETBALL GOAL HEIGHT ADJUSTMENT APPARATUS
Bensaali H. Dadbeh, Seal Beach, Calif., assignor to Harvard Sports, Inc., Compton, Calif.
Filed Jul. 6, 1987, Ser. No. 69,882
Int. Cl.[4] A63B *63/08*
U.S. Cl. 273—1.5 R **14 Claims**



1. A basketball backboard adjustment apparatus for varying the height of a basketball backboard and hoop comprising:
first and second frame members each secured at one end to the rear surface of said backboards;
first and second sets of parallelogram bars respectively disposed on opposite sides of said and pivotally coupled to said first and second frame members respectively, each set of parallelogram bars comprising first and second bar members;
a bracket assembly having first, second and third portions, said first portion being secured to the rear surface of said basketball backboard, said second portion being affixed to said first frame member and said third portion being affixed to said second frame member; said bracket assembly including a member having an opening and extending in a direction away from said first portion of said bracket assembly, said opening having a plurality of notches formed therein;
a bifurcated member having two arm portions separated by a gap;
a pin member extending between said bifurcated arm members through said opening; and
means for pivotally securing said bifurcated member to one bar of said first set of parallelogram bars and a corresponding bar of said second set of parallelogram bars.

4,798,382
DOUBLE INVERTED BRIDGE TENNIS RACKET
Richard Janes, Belchertown, Mass., assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Jan. 16, 1987, Ser. No. 3,687
Int. Cl.[4] H63B *51/10*
U.S. Cl. 273—73 C **5 Claims**

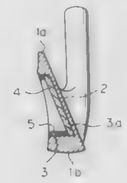


1. A tennis racket comprising
a substantially oval head including a plurality of main strings and cross strings;
a handle;
a throat interconnecting said head and said handle, said head, throat, and handle lying in a common plane;
a first arcuate bridge connected to said oval head adjacent said throat and extending within said oval head and lying in said common plane;
a second arcuate bridge connected to said head and extending within said head opposite said first arcuate bridge and lying within said common plane;
a preselected number of grommets extended through each of said first and second arcuate bridges; and
a preselected number of said main strings passing through said grommets in said first and second arcuate bridges and supported at said frame, a selected number of said preselected main strings being crisscrossed between said first arcuate bridge and said frame and between said second arcuate bridge and said frame.

4,798,383
GOLF CLUB HEAD
Yoichi Nagasaki; Itsushi Nagamoto; Toyohiko Tadokoro, and Masaki Fujimura, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan
Filed Jan. 21, 1986, Ser. No. 821,029
Claims priority, application Japan, Jan. 29, 1985, 60-15145; Sep. 9, 1985, 60-199034; Sep. 27, 1985, 60-214297
Int. Cl.[4] A63B *53/04*
U.S. Cl. 273—167 H **2 Claims**

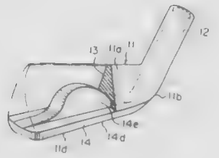
1. An improved golf club head comprising:
a main body constructed of metal and having a face side section of substantially uniform thickness and providing a planar face side surface for striking golf balls, said main body having a rear opening extending therein towards said face side surface between upper and lower edges of said body to an end wall provided by a rear side surface of said face side section,
a fiber reinforced plastic plate of substantially uniform thickness in the range of 5.0 mm or less fixed to said end wall parallel to said face side surface, the upper and lower edges of said body forming said opening extending beyond

the thickness of said fiber reinforced plastic plate, said fiber reinforced plastic plate being formed as a solid planar body having uniform density throughout, the density of



said fiber reinforced plastic plate being such that it provides a lighter mass than would otherwise be present if said fiber reinforced plastic plate were made of the same material as that of said main body.

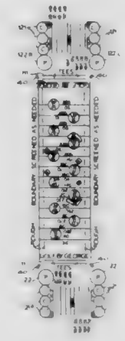
4,798,384
CLUB-HEAD
Masashi Kobayashi, Matsudo, Japan, assignor to Maruman Golf Co., Ltd., Tokyo, Japan
Division of Ser. No. 837,981, Mar. 10, 1986, Pat. No. 4,590,408.
This application May 27, 1987, Ser. No. 55,803
Claims priority, application Japan, Mar. 14, 1985, 60/49378
Int. Cl.[4] A63B *53/04*
U.S. Cl. 273—172 **3 Claims**



1. A club-head for a gold club made of metal comprising an outer shell which includes the striking face of the club head and is made of a first metal and a core body made of a second metal, said first metal having different specific weight from said second metal, said core body having a sole and a protrusion extending integrally and upwardly from said sole into said outer shell, said sole being exposed outside of substantially the whole bottom of said outer shell, said protrusion being embedded in said metal of said outer shell and having a size and upward extent such that the weight of said core body is concentrated at substantially the center of the hitting portion of said club head, said core body being integrally secured to said outer shell substantially by said embedded protrusion.

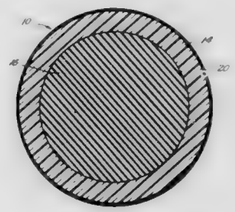
4,798,385
DOUBLE ENDED GOLF COURSE
Harold G. Tegart, 9147 Foothill Blvd., Sunland, Calif. 91040
Division of Ser. No. 814,601, Dec. 30, 1985, Pat. No. 4,696,474, which is a continuation-in-part of Ser. No. 431,567, Sep. 30, 1982, Pat. No. 4,572,512. This application May 4, 1987, Ser. No. 20,563
Int. Cl.[4] A63B *69/36, 67/02*
U.S. Cl. 273—176 A **5 Claims**

1. A double ended compact golf course comprising a common fairway region of at least 300 yards in length;
a plurality of range markers positioned along said common fairway region, at least some of said range markers visible to players at each end of said double ended compact golf course;
a set of tees, each located at opposite ends of said common fairway region and aimed thereat;
the range markers of said common fairway region positioned to display the range from each of the sets of tees;



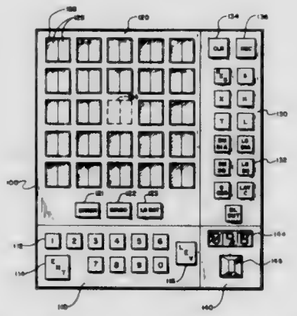
target means on said common fairway region for the golfers at each end of said double ended compact golf course; and
actual greens adjacent to said tees at each end of said fairway region for chipping and putting after completion of fairway play.

4,798,386
GOLF BALL WITH FLUORESCENT COVER
Raymond A. Berard, Portsmouth, R.I., assignor to Acushnet Company, New Bedford, Mass.
Continuation of Ser. No. 946,105, Dec. 22, 1986, abandoned, which is a continuation of Ser. No. 786,131, Oct. 2, 1985, abandoned, which is a continuation of Ser. No. 383,379, May 28, 1982, abandoned. This application Feb. 11, 1988, Ser. No. 154,533
Int. Cl.[4] A63B *37/12*
U.S. Cl. 273—235 R **5 Claims**



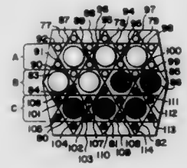
1. A golf ball comprising a core and a fluorescent cover, said cover having a fluorescent material admixed therein, said fluorescent material being selected from the group consisting of 2.0 to 6.0% by weight of the cover of fluorescent pigments and 0.04 to 0.4% by weight of the cover of fluorescent dyes, the outermost surface of said golf ball having a transparent coat on the outer surface of said fluorescent cover, said golf ball having greater appearance durability than it would otherwise have in the absence of said fluorescent material, and higher gloss than it would otherwise have without said transparent coating.

4,798,387
MULTIPLE BINGO GAMING BOARD
John Richardson, San Diego, Calif., assignor to Selectro-Vision, Ltd., San Diego, Calif.
Continuation of Ser. No. 441,771, Nov. 15, 1982, abandoned, Continuation-in-part of Ser. No. 079,807, Sep. 28, 1979, Pat. No. 4,365,810. This application Jan. 5, 1987, Ser. No. 4,294
Int. Cl.[4] A63F 3/06
U.S. Cl. 273—237 15 Claims



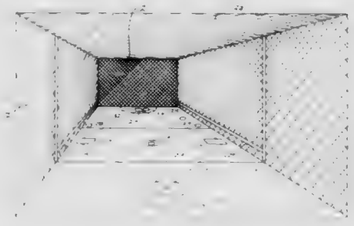
1. A hand held chance based gaming board comprising:
electronic display means for visually displaying a plurality of symbols from a predetermined array of symbol display locations;
computer means including a control program stored in a memory means, data processor means controlled by said control program, data storage means including a plurality of symbol storage locations, and means for generating control signals;
means for storing a predetermined array pattern;
input switch means for selecting any one of a plurality of symbols;
means for visually indicating a pattern match between said predetermined array pattern and the pattern of symbols stored in said predetermined array of symbol display locations;
means for selecting a first loading mode;
said computer means, in response to said first loading mode, generating control signals causing the present state of said input switch means to be sensed, causing said data storage means to store said selected symbols in a predetermined sequence in said symbol storage locations, and causing said display means to display said selected symbols in corresponding symbol display locations;
means for selecting a second playing mode, said second mode being independent of said first mode;
said computer means, in response to said second playing mode, generating control signals causing each actuation of an input switch means to be sensed, causing each symbol storage location in which said sensed symbol is stored to be identified, causing said identified symbol display location to be compared with said predetermined pattern, and causing said pattern match indicating means to be actuated if a match is detected;
timing means for limiting the length of time of said first game mode;
shut-off means for deactivating said input switch means and said means for selecting said second playing mode; and
said computer means, in response to said first loading mode, generating control signals causing the present state of said timing means to be periodically sensed, and causing said shut-off means to deactivate said input switch means and said means for selecting said second playing mode when a limited time allocated for said first loading mode has expired.

4,798,388
GAME BOARD
Marvin A. Nelson, 801 E. Decker St., Viroqua, Wis. 54665
Division of Ser. No. 765,942, Aug. 15, 1985, Pat. No. 4,684,134. This application Jun. 11, 1987, Ser. No. 60,685
Int. Cl.[4] A63F 3/02, 3/00
U.S. Cl. 273—261 18 Claims



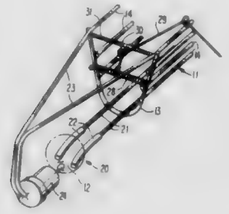
11. A game board adapted for a game playing involving two opposing players equipped with an opposing set of major game playing pieces and an opposing set of minor playing pieces, said game board comprising a plurality of hexagonal spaces horizontally positioned and aligned in rows upon the game board and a plurality of triangular spaces abutting the sides of the hexagonal spaces so as to provide in combination with said hexagonal spaces an arrangement of a plurality of hexagrams, said plurality of hexagrams being arranged upon said game board in a first outer row of horizontally aligned hexagrams, a second outer row of horizontally aligned hexagrams of an equal number of hexagrams as contained in said first outer row and an inner row which contains at least one hexagram, said inner row being further characterized as containing a greater number of hexagonal spaces than said first outer row and said horizontally aligned hexagonal spaces of said inner row are positioned upon said game board in diagonal alignment with the hexagonal spaces of said first outer row and said second outer row, with said hexagonal playing spaces affording upon said game board playing spaces for the emplacement and game play thereupon by the opposing set of major playing pieces and the triangular spaces affording playing spaces for the emplacement and game play thereupon by the opposing set of minor playing pieces.

4,798,389
APPARATUS FOR PLAYING INDOOR BASEBALL INDOOR SOFT BALL OR INDOOR TEE-BALL
Geoffrey E. Long, Leeming, Australia, assignor to Long Enterprises Pty. Ltd., West Perth, Australia
Filed Mar. 24, 1987, Ser. No. 29,548
Claims priority, application Australia, Mar. 27, 1986, PH 5239
Int. Cl.[4] A63B 67/00
U.S. Cl. 273—411 6 Claims



1. Apparatus for the playing of indoor baseball, indoor softball or indoor tee-ball by a plurality of players of opposing teams comprising a batting team and a fielding team, said batting team being comprised of batters and said fielding team being comprised of fielders and at least one pitcher for pitching a ball, said apparatus comprising: an arena having a playing area provided with a circuit defined by a plurality of bases including a home base; wall means surrounding said playing area and roof means overlying said playing area above said wall means; said playing area being defined by at least four boundary lines at least two dividing lines extending between at least two of said boundary lines such that said playing area is divided into a least three zones comprising a first zone, a second zone, and a third zones with one of said dividing lines separating said first zone and said second zone and said third zone; at least separating said second zone and said third zone; at least one base of said plurality of bases, not being said home base, being located in said second zone and at least one of said fielders being allocated to said base located in said second zone; one of said batters being positionable in said third zone to take pitched balls from said pitcher; wherein said dividing line separating said first zone and said second zone defines the closest permissable approach to the said base located in said second zone prior to said pitcher pitching said ball to said batter on each occasion that said batter strikes the ball, such that said fielder will be positioned outside said second zone until said pitcher pitches said ball to said batter on each occasion that said batter strikes the ball.

4,798,390
VOLLEYBALL SPIKING TEE
James E. Dooley, 3020 Minnesota Dr., #3, Anchorage, Ak. 99503
Filed Sep. 8, 1986, Ser. No. 905,063
Int. Cl.[4] A63B 69/00
U.S. Cl. 273—411 4 Claims



1. A volleyball spiking tee for use in feeding a volleyball to a spike point, said tee comprising:
feed means for receiving and controllably discharging a volleyball; and
support means, coupled to said feed means, for supporting a volleyball discharged by said feed means, said support means comprising means for contacting a discharged volleyball at three points lying in a roughly horizontal plane and supporting the volleyball without obstructing a vertical plane passing through the center of the volleyball and extending below the volleyball.

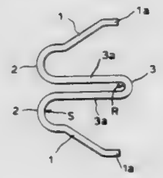
4,798,391
THREE-PIECE OIL-RING WITH A SLOT
Yoshihige Maeda, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Continuation of Ser. No. 783,643, Oct. 3, 1985, abandoned. This application May 18, 1987, Ser. No. 51,169
Claims priority, application Japan, Dec. 28, 1984, 59-179390; Dec. 30, 1984, 59-180874
Int. Cl.[4] F16J 9/06, 9/20
U.S. Cl. 277—139 6 Claims



1. A three-piece oil-ring for deposition in an oil-ring groove of a piston reciprocally positioned in a cylinder comprising:
a pair of axially spaced side rails;
an expander disposed between said side rails to expand said side rails, said expander extending in a circumferential direction and having waves in a radial direction, said expander including radially inner portions, radially outer portions, and radially intermediate portions extending between and connecting said radially inner and radially outer portions, each said radially inner portion including a substantially flat portion extending in the circumferential direction of said expander and curved portions connecting said substantially flat portion with adjacent radially intermediate portions, said radially intermediate portions being substantially flat so as to extend substantially straight between a said curved portion of a said radially inner portion and a said radially outer portion, said expander having paired side rail engaging portions integrally formed at axially opposite sides of radially inner portions of said waves so as to contact an inner side of said paired side rails, said side rail engaging portions being formed solely along said substantially flat portions of said radially inner portions, said expander also defining at least one slot in an axially central portion of said expander, solely in said radially inner portions of said waves, between at least one of said paired side rail engaging portions, such that radially outer portions of said waves are substantially imperforate, said paired side rail engaging portions having a circumferential length less than the circumferential length of said substantially flat portions of said radially inner portions and said slot having a circumferential length at least as great as the length of said substantially flat portions of said radially inner portions so as to provide a means for allowing each side rail engaging portion of said pair to move substantially freely, radially, relative to the other, said expander further having a rib extending from one side of said slot to the other side of said slot at a longitudinally central portion of said slot corresponding to said paired side rail engaging portions, at a ratio of a width of said rib to a thickness of said expander being between 1 and 3.

4,798,392
HOLLOW METALLIC SEALING RING
Michael J. C. Toner, Northumberland, England, assignor to Heat Transfer Technology Ltd. (Jersey), Jersey, Channel Islands, Channel Islands
Continuation-in-part of Ser. No. 045,438, May 4, 1987, abandoned. This application Oct. 23, 1987, Ser. No. 112,315
Claims priority, application United Kingdom, Apr. 28, 1987, 8710042
Int. Cl.[4] F16J 15/08
U.S. Cl. 277—200 8 Claims
1. A hollow metallic sealing ring of serpentine radial cross-

section, comprising of a pair of divergent limbs which are contiguous with a loop formation having at least one straight-sided loop, wherein the transition curve between the sides of



said loop and said divergent limbs being of constant radius, and wherein the free ends of said limbs being straight and substantially parallel.

4,798,393

RIDER-CONTROLLED WORKING MACHINE WITH FOUR-WHEEL STEERING SYSTEM

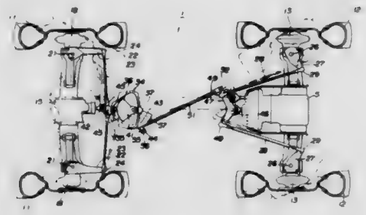
Tutomhiko Mitsra, and Hiroshi Uno, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 767,861, Aug. 21, 1985, Pat. No. 4,613,009, and a continuation of Ser. No. 811,727, Dec. 20, 1985, abandoned

Claims priority, application Japan, Dec. 20, 1984, 59-268786; Dec. 20, 1984, 59-268787; Dec. 20, 1984, 59-268788; Dec. 20, 1984, 59-193381[U]; Dec. 20, 1984, 59-193382[U]; Dec. 20, 1984, 59-193383[U]

Int. Cl.[4] B62D *3/02*

U.S. Cl. 280—91 **13 Claims**



1. A rider-controlled working machine with an earth working unit coupled thereto, comprising:

a steering wheel;

front wheels and rear wheels, said front and rear wheels having respective axles and said axles having longitudinal axes extending transversely of said working machine;

a steering link mechanism operatively interconnecting said steering wheel and said front wheel and rear wheels for steering the front and rear wheels simultaneously such that said rear wheels are steered in a direction opposite to that in which front wheels are steered when the steering wheel is turned through a relatively large angle, and said rear wheels are either not steered or steered in the same direction as that in which the front wheels are steered once said steering wheel is turned through a relatively small angle;

said steering link mechanism including steering means for steering those of said front and rear wheels which are closer to the earth working unit so that when said steering wheel is turned through the relatively large angle, the center of turning movement of the working machine is positioned between said longitudinal axes of the axles of said front and rear wheels, and when said steering wheel is turned through the relatively small angle, the center of turning movement of the working machine is positioned between an extension of a transverse axis of said earth working unit and the longitudinal axis of said axis of said those wheels, whereby said earth working unit is prevented from meandering while said working machine is moving substantially along a straight path; and

said steering means comprising a crankshaft having an eccentric first pivot portion and a second pivot portion operatively coupled to said those wheels and the other wheels, respectively, and a planetary gear mechanism cooperating with said crankshaft to define movements of the crankshaft.

4,798,394

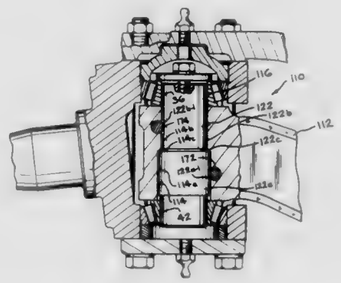
KINGPIN ASSEMBLY FOR A VEHICLE STEERING AXLE

Paul R. Pollock, and Larry P. Stoneburner, both of Fort Wayne, Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Oct. 15, 1986, Ser. No. 919,888

Int. Cl.[4] B62D *7/18*

U.S. Cl. 280—96.1 **29 Claims**



12. A steerable axle assembly comprising:

an axle member including a bore extending therethrough, said bore having a surface extending between a bottom and a top of said axle member;

a kingpin including an intermediate portion having a surface, said kingpin being positioned in said bore of said axle member in at least partial surface-to-surface contact therewith;

a steering knuckle having a wheel carrying spindle portion and an upper yoke arm, said upper yoke arm having an aperture formed therethrough which surrounds at least a part of said kingpin; and

a steering arm including an end portion, said end portion of said steering arm being attached to said upper yoke arm of said steering knuckle to cover said aperture.

26. A steerable axle assembly comprising:

an axle member including a bore extending therethrough, said bore having an upper cylindrical portion defining a first diameter and a lower cylindrical portion defining a second diameter, said second diameter being larger than said first diameter so as to define a shoulder extending about said bore between said upper and lower portions;

a kingpin including an upper cylindrical end defining a first diameter and a lower cylindrical end defining a second diameter, said second diameter being larger than said first diameter so as to define a shoulder extending about said kingpin between said upper and lower ends, said shoulder of said kingpin engaging said shoulder of said bore to prevent upward movement of said kingpin within said bore; and

means for preventing relative rotational movement between said kingpin and said axle.

4,798,395

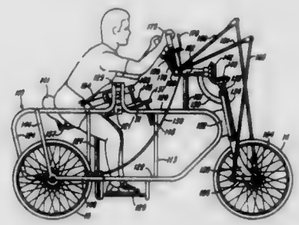
CYCLE APPARATUS HAVING THERAPEUTIC AND UTILITY ASPECTS

Don T. Shaffer, 5968 Calzean Dr., Apts. 1620, Trotwood, Ohio 45426, and Emmert Milyard, Box 11, Brookville, Ohio 45309

Division of Ser. No. 618,193, Jun. 7, 1984, Pat. No. 4,619,462. This application Aug. 18, 1986, Ser. No. 897,383

Int. Cl.[4] B62M *1/14*

U.S. Cl. 280—240 **12 Claims**



1. An exercising, recreational and utilitarian apparatus comprising a mobile chassis having forward and rearward ends referenced to a normal direction of motion, a chassis mounted support for mid and upper portions of the body of a person using the apparatus, means for positioning said support in said chassis in an inclined attitude of use in which a forward end thereof is elevated relative to a rearward end, a substantially forwardly facing seat at the rearward end of said support, a substantially upwardly facing body rest member on said support forwardly of said seat, a person using the apparatus straddling said support and inclining forwardly with a mid body section resting on said body rest member and said seat backing up buttock body portions, and apparatus controls accessible to the hands of a person so situated, wheels supporting said chassis, said wheels being disposed so that one portion thereof is in a longitudinally spaced relation to another, one of said wheels including a portion thereof supported on and in connection with a shaft bearing for rotation in and relative to bearing support means in connection with said chassis, control means for said portion of said one wheel, said control means including hand operable lever means at least a portion of which is mounted for rotation on and relative to said chassis adjacent and forwardly of said body support, said lever means being operatively connected to said shaft for drive thereof and said portion of said one wheel thereby to effect a propulsion of said chassis.

10. An exercising, recreational and utilitarian apparatus comprising a mobile chassis having forward and rearward ends referenced to a normal direction of motion, a chassis mounted support for mid and upper portions of the body of a person using the apparatus, means for positioning said support in said chassis in an inclined attitude of use in which a forward end thereof is elevated relative to a rearward end, a substantially forwardly facing seat at the rearward end of said support, a substantially upwardly facing body rest member on said support forwardly of said seat, a person using the apparatus straddling said support and inclining forwardly with a mid body section resting on said body rest member and said seat backing up buttock body portions, and apparatus controls accessible to the hands of a person so situated, said support including a relatively extensible portion mounting said seat, and means for extending and retracting said extensible portion to set and reset said seat more distant from and more closely to said body rest member according to the requirements of a user.

4,798,396

WHEEL SUSPENSION SYSTEM FOR AUTOMOBILES

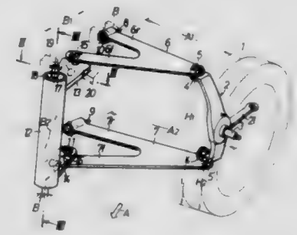
Masaaki Minakawa, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1987, Ser. No. 65,731

Claims priority, application Japan, Jan. 27, 1986, 61-151130; Feb. 5, 1987, 62-25102

Int. Cl.[4] B60G *3/00*

U.S. Cl. 280—673 **7 Claims**



1. A wheel suspension system for an automobile, comprising:

a pair of upper and lower control arms each having a leading end and a base end, the leading ends of the control arms being connected to a knuckle carrying a vehicle wheel;

a pivot shaft fixedly supported on a vehicle body;

a support shaft rotatably supported on said pivot shaft by elastic members;

a pair of upper and lower support arms projecting from respective upper and lower portions of said support shaft, wherein the base ends of said control arms are each diverged into front and rear arm portions spaced apart from each other in a longitudinal direction of the vehicle body, such that one of the front and rear arm portions of said base ends are vertically swingably pivoted to the vehicle body, while the other of said front and rear arm portions of the base ends of the control arms are connected to said pair of upper and lower support arms.

4,798,397

VEHICLE SUSPENSION MECHANISM

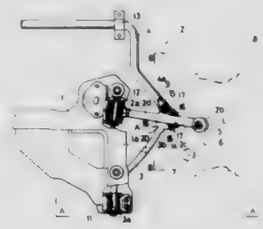
Katsuyuki Kouiya, Higashihiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed May 26, 1987, Ser. No. 53,745

Claims priority, application Japan, May 27, 1986, 61-80578

Int. Cl.[4] B60G *7/00, 3/00*

U.S. Cl. 280—690 **7 Claims**



5. In a vehicle suspension mechanism including a lower arm, an assist link, a control link and a stabilizer, said lower arm comprising an elongated arm symmetrical about a longitudinal axis, a rubber bushing fixed to one end of said elongated arm and defining a pivoting axis transverse to said longitudinal axis of said elongated arm, a ball joint fixed to the other end of said arm, a mid-portion of said elongated arm defining a pair of

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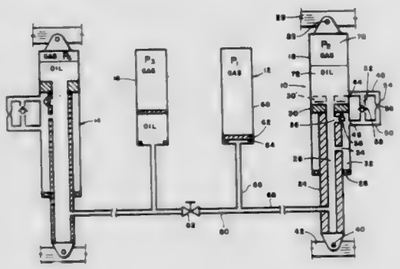
projections disposed on opposite sides of said longitudinal axis, said pair of projections being symmetrically shaped and disposed relative to said longitudinal axis, and said elongated arm defining at least three bores, two bores being symmetrically defined in said pair of projections and a third bore defined coincident with said longitudinal axis and longitudinally spaced from said two bores, said assist link comprising an elongated link, a rubber bushing fixed to one end of said assist link, the other end of said assist link defining at least three through bores spatially disposed to align and register with the at least three bores defined in said lower arm, and fastening means cooperating with said bores for fastening said lower arm and assist link together, said control link being formed with an elongated rod portion extending substantially perpendicular to said lower arm and connected to said lower arm at one end and to said stabilizer at the other end, and said stabilizer comprising an arcuate rod connected at an end portion to said other end of said control link at a substantially right angle.

4,798,398

DUAL RATE EQUALIZER SUSPENSION

Nolan W. Cummins, Bristow, Okla., assignor to Unit Rig & Equipment Co., Tulsa, Okla.

Filed Aug. 12, 1987, Ser. No. 84,681
Int. Cl.[4] B60G *11/26*
U.S. Cl. 280—708 8 Claims



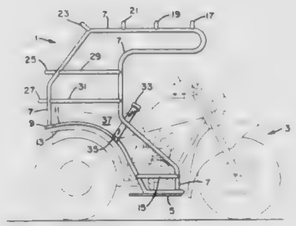
1. A suspension strut for a vehicle having a frame and an axle which comprises:
- a housing having a closed end and connectable at the closed end to said frame, the other end of said housing having an opening;
- a plunger extending through said opening, an axial passage extending axially within said plunger;
- a piston connected to the end of said plunger which is in said housing, said piston having a passage therethrough which is aligned with the passage of said plunger;
- a first and second orifice in the wall of said plunger and a check valve in one of said orifices;
- a first and second orifice longitudinally spaced apart and in the wall of said housing;
- a first bypass conduit means connecting said first and second housing orifices;
- a second bypass conduit means connecting the first and second housing orifices;
- an orifice in one of said bypass conduits;
- a check valve in one of said bypass conduits.

4,798,399

COMBINATION SAFETY CAGE FOR ALL TERRAIN VEHICLE

William M. Cameron, Rte. 4, Box 320, Florence, S.C. 29501

Filed Apr. 18, 1988, Ser. No. 182,415
Int. Cl.[4] B60R *22/00, 27/00*
U.S. Cl. 280—756 4 Claims



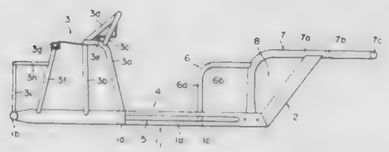
1. A combination safety cage for attachment to support structure of and for use with an all terrain vehicle (ATV) to contain and keep the driver of the ATV physically and totally within said safety cage, to prevent the driver, in the event the ATV overturns or rolls over, from being thrown out of the ATV, to prevent the driver from sustaining bodily injury regardless of the direction the ATV overturns or rolls over, or in the event the ATV collides with a fixed object, to physically prevent the driver from putting either of his feet on the ground to get caught by a moving rear wheel of the moving ATV, and to lower the center of gravity of the ATV to improve its operational stability; said combination safety cage comprising a heavy bottom plate, side and head rails, wheel guards, horizontal rails, top overhead rails, rear horizontal rails, laterally projecting rails and a seat belt; said heavy bottom plate being disposed in transverse relationship with respect to said ATV, said heavy bottom plate lowering the center of gravity of said ATV to improve its operational stability, said side and head rails being serpentine-shaped, and having front portions, top-most portions and rearward portions, said front portions of said side and head rails being upstanding from said bottom plate, said top-most portions of said side and head rails extending rearwardly from said upstanding front portions of said side and head rails, said rearward portions of said side and head rails depending downwardly from said top-most portions of said side and head rails, said ATV having rear-wheel fenders, said wheel guards extending rearwardly from said side and head rails, and over said ATV's rear-wheel fenders, said upstanding front portions of said side and head rails and said wheel guards carrying therebetween said horizontal rails, said top-most portions of said side and head rails carrying said top overhead rails therebetween, said downwardly depending rearward portions of said side and head rails carrying said rear horizontal rails therebetween, said downwardly depending rearward portions of said side and head rails and said upstanding front portions of said side and head rails carrying said laterally projecting rails therebetween, said bottom plate, upstanding front portions of said side and head rails, wheel guards and horizontal rails physically preventing the ATV driver from putting either of his feet on the ground to get caught by a moving rear wheel of said moving ATV, said ATV having a seat, said seat belt having remote ends, said safety cage carrying said seat-belt remote ends, said seat belt harnessing the driver to said ATV seat to contain and keep the driver physically and totally within said safety cage to prevent the driver, in the event the moving ATV overturns or rolls over, from being thrown out of the ATV, to protect the driver from bodily injury regardless of the direction in which the ATV overturns or rolls over, and to protect the driver in the event the ATV collides with a fixed object.

4,798,400

LIGHT-WEIGHT AND STRONG VEHICLE FRAME FOR A FOUR WHEELED BUGGY OPERATED BY A SEATED DRIVER

Hideyoshi Kosuge, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Jul. 2, 1987, Ser. No. 69,238
Claims priority, application Japan, Jul. 11, 1986, 61-163322
Int. Cl.[4] B62D *21/02*
U.S. Cl. 280—796 2 Claims



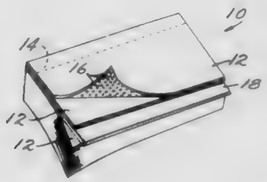
1. A vehicle frame for a four wheeled buggy having a steering wheel to be operated by a seated driver comprising:
- a generally flat main frame having a narrower front portion;
- a support frame for providing a steering apparatus, disposed upright on the front part of said main frame;
- a flat floor frame portion situated behind said support frame;
- a pair of step frames fixed horizontally to said main frame on each side of said floor frame;
- a seat frame fixed upright to said main frame behind said floor frame;
- a propulsion apparatus support frame connected to said seat frame and fixed upright to a rear end of said main frame behind said seat frame;
- an oblique frame connected to an upper intermediate portion of said engine supporting frame and to the rear end of said main frame; and
- an accommodating space for accommodating propulsion apparatus, said space situated below said propulsion apparatus support frame and said seat frame.

4,798,401

MULTIPLE COPY NOTE PAD

Walter G. Greig, Lewiston, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Mar. 5, 1987, Ser. No. 29,710
Int. Cl.[4] B41L *1/20, 1/24;* B42D *9/00;* B32B *7/06*
U.S. Cl. 282—9 R 19 Claims



1. A multiple copy pad comprising:
- a plurality of sheets arranged in a stack for receiving a writing;
- an image transfer system arranged between each of the plurality of sheets for transferring a writing on one of said sheets to another of said sheets; and
- a divider means, inserted underneath a selected number of said plurality of sheets, for blocking transfer of an image to a remaining number of said plurality of sheets thereunder;

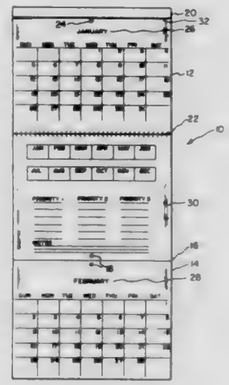
wherein at least each of said plurality of sheets has a side with a repositionable adhesive strip means for maintaining the stack together.

4,798,402

PRIORITY PLANNER CALENDAR

Joseph M. Pazical, 105 Fairview Rd., Pittsburgh, Pa. 15116

Filed Aug. 22, 1986, Ser. No. 899,238
Int. Cl.[4] G09D *3/04;* B42D *5/04*
U.S. Cl. 283—2 6 Claims



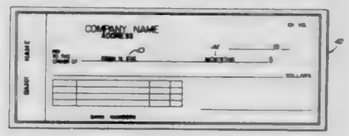
1. A calendar comprising a bound collection of leaves containing a plurality of double length leaves, each double length leaf having a display of an entire calendar month contained within one-half the surface area thereof, each double length leaf being attached at one of its ends to an interleaf binding, each double length leaf being, in a first position thereof, detachably attached at the other of its ends to said interleaf binding wherein said double length leaf is folded in half, whereby each double length leaf may be repositioned, from said first position to a second position, in which second position each double length leaf is attached to said interleaf binding by only one of its ends and in which second position each double length leaf is positioned above said interleaf binding in an unfolded position, and further whereby the same display of said entire calendar month remains visible in entirety when said double length leaf is positioned in either said first position or said second position.

4,798,403

PERSONAL IDENTIFICATION METHOD

Frederic P. Nelson, 17 S. First St., Apartment 1402A, Minneapolis, Minn. 55401

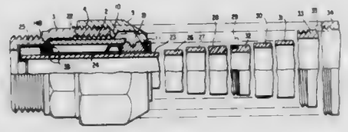
Continuation of Ser. No. 705,205, Feb. 25, 1985, abandoned.
This application Sep. 24, 1987, Ser. No. 100,605
Int. Cl.[4] G06K *3/00, 5/00;* B42D *15/00*
U.S. Cl. 283—70 2 Claims



1. A method of verifying the identity of an authorized person in possession of a valuable document without necessarily alerting such person to the happening of such verification procedure, the method including the steps of:

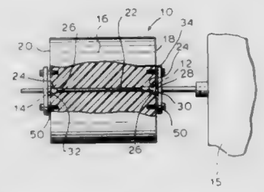
(a) developing a coding system whereby observable personal characteristics of persons and descriptions of accessories worn, used or carried by such persons can each be reduced to a readable form which will be unintelligible to persons not having access to the coding system;
(b) obtaining, as a result of visual observation, information about a person who is to be authorized to process a valuable document, such information relating to observable characteristics of such person and to accessories worn, used or carried by the person;
(c) using the coding system, encoding such obtained information in such readable, nominally unintelligible form and entering said encoded information onto the valuable document before giving possession of the document to such authorized person;
(d) providing access to the coding system to all individuals who may have occasion to verify as to whether the person in possession of such encoded valuable document is the authorized person;
(e) scrutinizing each person presenting the valuable document to one of such individuals and comparing that person's observed characteristics and accessories with the personal characteristics and described accessories as indicated in coded form on the document; and
(f) challenging any person possessing the document who cannot be verified as being the authorized person.

4,798,404
PIPE COUPLING
Andrzej T. Iyzaicki, Östrandsvägen 72, S-122 43 Enskede, Sweden
PCT No. PCT/SE83/00288, § 371 Date Mar. 23, 1984, § 102(e) Date Mar. 23, 1984, PCT Pub. No. WO84/00796, PCT Pub. Date Mar. 1, 1984
PCT Filed Aug. 11, 1983, Ser. No. 598,327
Claims priority, application Sweden, Aug. 11, 1982, 8204648
Int. Cl.⁴ F16L *19/06*
U.S. Cl. 285—12 **1 Claim**



1. A pipe coupling comprising:
(a) a coupling housing (3) having:
(i) a first axial end and a second axial end;
(ii) a stepped axial bore comprising a small diameter portion opening at the first axial end of said coupling housing and a large diameter portion opening at the second axial end of said coupling housing;
(iii) internal threads (2) in said large diameter portion of said stepped axial bore; and
(iv) external threads (4) at the second axial end of said coupling housing (3);
(b) a guide and sealing ring (22) having a first axial end which, in use, bears against an elastic seal (13B) which in turn bears against the step (14B) in said stepped axial bore in said coupling housing (3) and a second axial end;
(c) a first clamping ring (21) having:
(i) a through bore which, in use, receives a pipe;
(ii) a first axial end which, in use, bears against the second axial end of said guide and sealing ring (22);
(iii) a second axial end; and
(iv) an external annular sloping guide surface at the second end of said first clamping ring (21), said external annular sloping guide surface tapering from a larger diameter in the direction of the first axial end of said first clamping ring (21) to a smaller diameter in the direction of the second axial end of said first clamping ring (21); and
(d) a coupling member (5) having an axial through passageway and comprising:
(i) a first portion having internal threads sized, shaped, and position to engage the external threads (4) on said coupling housing (3);
(ii) a first radially inwardly projecting annular flange sized, shaped, and positioned to bear against the second axial end of said coupling housing (3); and
(iii) a second radially inwardly projecting annular flange (10) sized, shaped, and positioned to bear against the external annular sloping guide surface at the second axial end of said first clamping ring (21).

4,798,405
ASSEMBLY FOR ELECTRICALLY NON-CONDUCTIVELY INTERCONNECTING TUBE ENDS
Clarence C. Hon, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Sep. 22, 1987, Ser. No. 99,853
Int. Cl.⁴ F16L *19/00*
U.S. Cl. 285—53 **6 Claims**



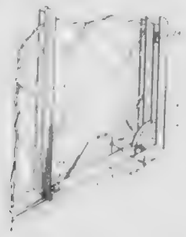
1. Connector assembly for electrically nonconductively interconnecting electrically conductive tube ends in a high pressure fluid flow circuit, said assembly comprising:
a block of electrically non-conductive material defining an electrically insulative barrier between the electrically conductive tube ends, said block having opposed end faces and a through bore extending between said end faces, said through bore at the ends thereof including enlarged entrant sections for receiving the electrically conductive tube ends, the bore run between the entrant sections being of substantially uniform diameter in correspondence to the inner diameter of the tube ends;
ferrules of a deformable material and having a tapered external body part closely encircling the electrically conductive tube ends, the ferrule tapered body parts being closely fittable with companion tapered surfaces in said bore entrant sections; and
force applying means mounted to the block end faces and movably engageable against the ferrules for urging said ferrules axially inwardly in the block entrant sections to compressively deform the ferrules against the electrically conductive tubes and the block companion tapered surfaces and thereby create an electrically non-conducting high pressure resistant fluid seal at the bore entrant sections, said force applying means being mounted to the block end faces at plural individual locations thereon to uniformly distribute at corresponding individual plural locations on said block end faces, the reactive loading applied to the block structure during force application to the ferrules.

4,798,406
MODIFIED FRICTION LOCKING RING
Michael J. Buller, Herts, England, assignor to Rolls-Royce plc, London, England
Filed Aug. 18, 1987, Ser. No. 86,474
Claims priority, application United Kingdom, Sep. 10, 1986, 8621739
Int. Cl.⁴ F16L *39/00*
U.S. Cl. 285—320 **8 Claims**



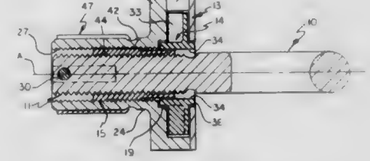
1. A locking member for insertion into a radial gap between radially inner and outer components which are fixed relative to each other and which rotate together for the purpose of restricting relative rotational movement between the components, said member comprising a plurality of levers located around an axis of rotation of the components, each lever having a first and a second limb, one of which is at an angle relative to the other and thereby defines a fulcrum at the intersection of the two limbs, said fulcrum of each lever being positioned so that, in use, it contacts an inner facing circumferential surface of the outer component, and said limbs being shaped so that, in use they contact an outward facing circumferential surface of the inner component at circumferentially spaced regions between the fulcrums, the product of the mass of the first limb of each lever with its moment about the respective fulcrum being greater than the corresponding product for the second limb of each lever so that, in use, centrifugal forces acting on each first limb cause the levers to rock about their respective fulcrums and thereby urge the second limbs radially inwards into engagement with the inner component.

4,798,407
SLIDING GLASS DOOR LATCH BAR
Richard A. Miller, Box 253-1 Rte. 4, Fort Atkinson, Wis. 53538
Filed Sep. 25, 1987, Ser. No. 101,270
Int. Cl.⁴ E05C *3/04*
U.S. Cl. 292—229 **2 Claims**



1. A sliding glass door latch bar mechanism for use in combination with a sliding glass door and a stationary glass door relatively movable to one another within a perimeter framework wherein said latch bar mechanism comprises,
a latch bar including a first and second end, and
a pivotal means securing said first end within an upstanding framework, and
a locking mechanism positioned within said framework proximate said first end, and
a biasing means positioned between said framework and proximate said first end of said latch bar to bias said latch bar upwardly, wherein said latch bar is securable in a first horizontal position against the biasing force of said biasing means and secured and positioned by means of said locking mechanism, and
said latch bar securable in a second vertical position by a second "U" shaped biasing means comprising spaced spring fingers for receiving said latch bar to define a "U" shape, and
wherein said framework includes a pair of vertically positioned upstanding flanges positioned on either side of said latch bar, and
wherein a locking projection of a lesser width than said latch bar is positioned proximate said second end of said latch bar to cooperate with said spring clip to secure said latch bar in a second vertical position, and
said locking mechanism includes a pivotal latch lever means formed with a first pivoted end extending through and exteriorly of one of said flanges in a first position and extending interiorly of said flanges formed with a second end to selectively abut an upper surface of said latch bar in said first horizontal position, and said latch lever means operative to disengage said surface to release said latch bar upon pivoting said first pivotal end to a second position.

4,798,408
ADJUSTABLE LATCHING MECHANISM
Raymond E. Harmon, Orange; William R. E. McCown, Montclair, and Frank A. Zankich, San Pedro, all of Calif., assignors to Rexnord Inc., Brookfield, Wis.
Continuation of Ser. No. 854,978, Apr. 23, 1986, abandoned.
This application Sep. 4, 1987, Ser. No. 93,307
Int. Cl.⁴ E05C *21/02*
U.S. Cl. 292—341.18 **16 Claims**



1. An adjustable latching mechanism constructed and arranged for securing a first structure relative to a second structure, said mechanism comprising:
a connecting element for joining a first structure to a second structure, said connecting element having a portion with threads thereon;
an assembly for adjusting the position of said connecting element relative to the structures;
said assembly including a rotatable element tool-operable for rotation about an axis, a fixture constructed and arranged for securement to one of the structures, said fixture having a first portion containing a threaded through-hole therein of pre-determined length and diameter, and a second portion, forward of said first portion, constructed and arranged to contain said rotatable element in a manner permitting a pre-determined range of movement along said axis, said rotatable element having a central portion with a through-hole therein,
said assembly further including means, separate from said rotatable element, for translating rotational movement of said rotatable element into linear movement of said connecting element, said means including a first forward portion constructed and arranged for interfitting mounting in said rotatable element through-hole, a second rearward portion having outer threads permitting threaded

engagement within said fixture threaded through-hole, and a threaded through-hole of a size permitting threaded engagement of said connecting element threaded portion therein; and

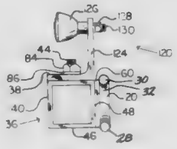
means for preventing rotational movement of said connecting element within said assembly as said rotatable element is rotated.

4,798,409

VEHICLE BUMPER, ACCESSORIES ATTACHABLE THERETO AND COMBINATION

Robert Miller, 67-A Greenpond Rd., Sherman, Conn. 06784

Filed Oct. 6, 1986, Ser. No. 915,402
Int. Cl.[4] B60R *19/48, 9/00*
U.S. Cl. 293—117 **6 Claims**



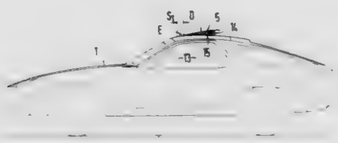
1. In combination, a supplemental bumper attached to a pre-existing bumper of a vehicle, and an accessory releasably attached to said supplemental bumper, said supplemental bumper comprising a generally rectangular bumper face facing upwardly, and first and second accessory engaging means including first and second generally cylindrical surfaces, respectively, interrupting said bumper face and spaced from each other longitudinally of said bumper face, and said accessory comprising a base plate having a generally rectangular base plate face overlapping said bumper face, and first and second bumper engaging means including first and second generally cylindrical surfaces, respectively, interrupting said base plate face and spaced from each other longitudinally of said first base plate face, said cylindrical surfaces of one said engaging means being provided by studs projecting from the face interrupted thereby, and said cylindrical surfaces of the other said engaging means being provided by holes in communication with the face interrupted thereby, said studs being located in said holes.

4,798,410

LIFTING SLIDING ROOF FOR VEHICLES

Klaus Weller, Bopfingen; Walter Braun, Sindelfingen, and Harry Neanemann, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1987, Ser. No. 108,647
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1986, 3636029
Int. Cl.[4] B60J *7/047, 7/22*
U.S. Cl. 296—217 **18 Claims**



1. A lifting sliding roof for vehicles comprising:

a vehicle roof;

a cover means for selectively closing and at least partially exposing a roof opening in said vehicle roof;

a rear edge means of said cover means being tiltable vertically from said roof opening to create lateral side air gaps and a rear air gap between said cover means and said roof opening; said cover means being slidable from a tilted position adjacent a front edge of said roof opening toward the rear of the vehicle to create a front air gap between said cover means and said front edge of said roof opening to allow air flow into said vehicle;

sealing frame means movable into abutment with said cover means for preventing air flow through said lateral side and rear air gaps into said vehicle while allowing air to flow through said front air gap into said vehicle when said cover means is both vertically tilted and slid away from said front edge of said roof opening; and

said sealing frame means being retractable out of abutment with said cover means to allow air flow through said lateral side and rear gaps when said cover means is only vertically tilted.

4,798,411

COLLAPSIBLE COMBINED TABLE AND CHAIR ASSEMBLY

Pao C. Lin, No. 35, Lane 221, Sung-Chiang St., San-Min District, Kaohsiung City, Taiwan

Filed Jul. 8, 1987, Ser. No. 71,219
Int. Cl.[4] A47B *83/02*
U.S. Cl. 297—170 **14 Claims**



1. A collapsible combined table and chair assembly comprising:

a front U-shaped support having a front transverse rod and two front legs;

a rear U-shaped support having a rear transverse rod and two rear legs;

a telescopic strut having a lower end portion connected fixedly to said rear transverse rod and extending upwardly and forwardly to an upper end portion thereof, said telescopic strut further having an upstanding support extending from said telescopic strut between said upper and lower end portions;

a first strut having a lower end fixed to said front transverse rod, and an upper end hinged to said telescopic strut;

a plate bracket of substantially U-shaped cross-section which has a base plate portion secured to said telescopic strut at a location higher than that at which said upstanding support is located and including two parallel flanks at opposite sides of the base plate to confine a space for receiving and to serve as supports for hinging said first strut at a first pivot axis;

a locking means for preventing said upper end of said first strut from pivoting relative to said telescopic strut;

a table unit connected hingedly to said upper end portion of said telescopic strut; and

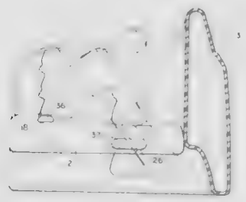
a chair unit connected hingedly to said upstanding support.

4,798,412

TWO PIECE BOOSTER SEAT WITH MULTIPLE SEAT HEIGHTS

Louis M. Kohus, and John V. Mariol, both of Cincinnati, Ohio, assignors to KohusMariol, Inc., Cincinnati, Ohio

Filed Dec. 21, 1987, Ser. No. 136,136
Int. Cl.[4] A47D *1/10*
U.S. Cl. 297—250 **15 Claims**



1. A booster seat for accommodating a child in one of a plurality of selected height positions, comprising:

(a) an open-sided base with side and back supports, each side support having a forward channel with a set of vertically spaced substantially level ledges and a back channel with a set of vertically spaced substantially level ledges, each ledge of said forward set of ledges vertically offset from each corresponding ledge in the back set of ledges; and

(b) a removable seat piece dimensioned to fit in the open-sided base and rest on the forward and back set of ledges in a substantially horizontal position, wherein each side of the seat piece has a forward protrusion and a back protrusion vertically offset from one another, each of said back protrusions dimensioned to slide in the back channels of the open-sided base when said seat piece is held in a plane substantially perpendicular to the horizontal until a ledge at a selected height is reached whereupon pivotable movement of the seat piece towards a horizontal plane causes each back protrusion to rest upon the ledges at the selected height and each forward protrusion to move downwardly in the forward channels until each rests upon one of the ledges such that the seat piece is substantially horizontal and secured in the open-sided base at the selected height.

4,798,413

TRAY DEVICE

Edward J. Capelli, 7317 31st Ave., Kenosha, Wis. 53142

Continuation of Ser. No. 788,937, Oct. 17, 1985, abandoned. This application May 1, 1987, Ser. No. 48,514
Int. Cl.[4] A47C *7/62*
U.S. Cl. 297—194 **10 Claims**



1. A tray device for attachment to a supporting structural member such as the arm of furniture:

a base member adapted to be connected to said supporting structural member;

a tray member;

said base member and said tray member including an undercut portion and a raised portion on one of said base or tray members and a flange for fitting between said undercut portion and said raised portion on the other of said base or tray member to provide a combined snap-fit and pivotal means arranged to permit the tray member to be interconnected to said base member in a swivel manner without substantial longitudinal movement with respect to said arm and any additional fastening elements; and

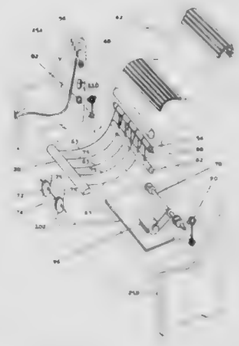
a hollow cup or glass receiving compartment extending oppositely from said flange member when said flange is placed between said undercut and raised portion.

4,798,414

PHYSIOTHERAPEUTIC CHAIR LIKE DEVICE

Vincent Hughes, 2022 18th Ave., San Francisco, Calif. 94116

Continuation-in-part of Ser. No. 2,787, Jan. 13, 1987, abandoned. This application Feb. 22, 1988, Ser. No. 161,352
Int. Cl.[4] A47C *7/46;* **A61H** *7/00*
U.S. Cl. 297—284 **9 Claims**



1. A physiotherapeutic chair-like device, comprising:

(a) left and right hand structural side support assemblies being vertical and parallel and containing curved channeled passage ways on their inside surfaces, and

(b) said structural side support assemblies being joined together by fixed transverse members whose ends are attached to the inside surface of the structural side support assemblies by screws or mortise and tenon joints, and

(c) an array of elastic tension cords, suspended from a transverse front fixed member or seat lip, said elastic tension cords running to the rear and upward in parallel are wrapped over a transverse roller shaft whose ends are journaled in ball bearings captured in the inside surface of the said left and right structural side support assemblies then said elastic tension cords running vertically downward and attached by end hooks to threaded eyes which pass through holes in a transverse tension shaft whose ends are captured and contained in vertical slots in the inside surfaces of the said left and right structural side support assemblies, said eyes having hex nuts or thumb nuts attached to their lower ends for means to adjust the tension in the said individual tension cords of the array, and

(d) a seat and back assembly composed of rigid elongated elements or bars, interconnected by means of, spherical beads and elastic elongated elements, so assembled for means of forming a plurality of articulated curved shapes, said seat and back assembly floating on and supported by said array of elastic tension cords underlying and located in the rear of the seat and back assembly, and

(e) said seat and back assembly in which the length of the bars being longer than the separation of the parallel structural side support assemblies allow the edges of the seat and back assembly to protrude into and be contained by

the channeled passage ways located on the inside surfaces of the left and right structural side support assemblies, and

(f) a plurality of oval shaped cams located in the rear and behind the lower back area of the seat and back assembly, said cams having pulley like grooves on one edge serving as guides for elastic tension cord passage and flat surface on other edge in contact with the rear of the seat and back assembly, the said cams being maintained in contact with the rear of the seat and back assembly by the individual tension cord of the said array on which they are mounted, and

(g) each said cam having a reverse curved passage way in the lower portion through which the cam mounted elastic tension cord is laced prior to attachment to the seat lip, the lacing arrangement of the elastic tension cord through the cam resulting in a force couple being set up within the cam which causes a torsional moment about the centroid of the cam rotating the cam against the rear of the seat and back assembly whereby providing a means for automatic curve shaping in the lower lumbar and part of the thorax section of the back in accordance with the weight and body bulk disposition of the occupant when the chair is used in the static mode, and

(h) said cams being joined together by two transverse, parallel members located on the major axis of the oval shaped cams forming a cam spool assembly whereby providing a means for the cams to act in unison, and

(i) said cam spool assembly having the ends of a plurality of elastic tension cords attached between the said upper transverse member and the seat lip whereby providing a means to supplement the automatic curve shaping by causing rotation of the cam spool assembly toward and against the rear of the seat and back assembly plus translational movement of the cam spool assembly when activated by the weight of the occupant, and

(j) said cams having one or more pivot holes in which a transverse elastic tension cord passes being perpendicular to the cams and the structural side support assemblies and secured to the structural side support assemblies by end hooks attached to eyes on the inside surfaces of the side support assemblies whereby providing means for the cams to rotate about the pivot and the said transverse elastic tension cord when the chair is used in the dynamic mode, the transverse elastic tension cord being disengaged from the side supports when the chair is used in the static mode, and

(k) a motor located within the chair and below the seat, said motor connected to a transverse crank shaft by a pulley and belt drive train, said crank shaft located above the motor and having its ends journaled in ball bearings located in the left and right structural sides, the crank shaft in turn connected to the said transverse tension shaft, located above the crank shaft, by connecting rod assemblies, said connecting rod assemblies located one at each end of the tension shaft, whereby providing a means to activate the tension shaft in a vertical, reciprocating motion which in turn causes up and down and forward and backward movement of the seat and back assembly by the alternate stretching and contracting of the tension cords working in combination with the rotating cams to produce passive exercise to the knee joints, hip joints, pelvic areas, back joints and shoulders.

4,798,415

DEVICE FOR ADJUSTING ELEVATIONAL POSITION OF HEAD REST

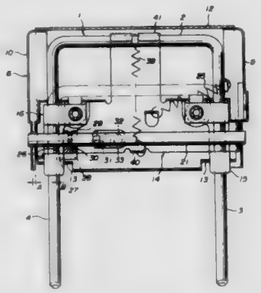
Masaharu Tanino, Toyota, and Takemi Hattori, Anjo, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisen Seiki Kabushiki Kaisha, both of, Japan

Filed Jan. 20, 1988, Ser. No. 146,185

Claims priority, application Japan, Jan. 26, 1987, 62-9506[U]

Int. Cl.[4] A47C 1/10

U.S. Cl. 297—410 **5 Claims**



1. A device for adjusting the elevational position of a head rest located on a seat back of a seat for a vehicle, said device comprising: a stay formed with a plurality of grooves along an elevational direction, and a locking mechanism mounted in a shell of the head rest for engaging or disengaging the grooves of the stay by means of lateral movements of the head rest, said stay having right and left vertical rods integrally coupled at the upper portions thereof to a lateral rod, a bracket member being provided in the shell and coupled with the two vertical rods of the stay through two cylindrical supporting members slidably supported on the two vertical rod of the stay, a rod penetrating laterally through the shell and the bracket member to b secured to the shell but movably engaged with the bracket member in such a manner that the shell is urged either leftward or rightward with respect to the bracket member with a gap formed at one side thereof, the grooves being formed in the vicinity of the bracket member on at least one vertical rod of the stay, a locking plate being formed in the vicinity of the bracket member and rotatably coupled with the rod to be urged toward engagement with any one of the grooves of the vertical rod of the stay, whereby an engaging distance between the locking plate and the groove is equal to or substantially smaller than the gap formed at one side thereof.

4,798,416

SEAT, PARTICULARLY A VEHICLE SEAT

Eberhard Faust, Stuttgart; Heinz Bossert, Holzgerlingen; Kurt Niethammer, Jettingen-U, and Otto Ohlhausen, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

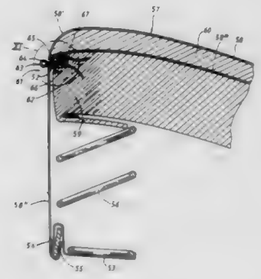
Filed Jul. 10, 1987, Ser. No. 72,169

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1986, 3623634

Int. Cl.[4] A49C 7/02

U.S. Cl. 297—452 **28 Claims**

1. A seat, particularly a vehicle seat, having a supporting frame; a spring system that is fastened at the supporting frame; an upholstered part having side edges and a dimensionally stable upholstery means arranged above the spring system; a cover means having an upper portion covering the upholstered part; said cover means having a lower portion fastened with a first fastening means at said supporting frame, wherein it is tensioned at a border of the supporting frame for producing a spring preloading on the seat; the cover means having an additional fastening means located above its first fastening means for fastening the upper portion of the cover means to the dimensionally stable upholstery means at a transition area between the upholstered part and the spring system to thereby define a junction of said upper and lower portions of the cover



means; and wherein the cover means in the transition area between the upholstered part and the spring system defines a preload force absorbing means for absorbing said spring preloading without allowing the force due to the spring loading to be applied to the upper portion of the cover means that surrounds said side edges of the upholstered part.

4,798,417

METHOD OF SEPARATING THE UPPER COAL IN SEAMS

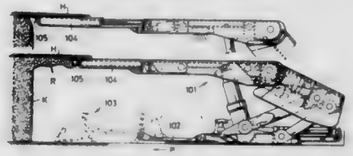
Günter Blumenthal, Herten-Westerholt; Gustav Neu, Bochum; Karl-Heinz Berger, Gelsenkirchen, and Siegmar Block, Essen, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhütte Heintzmann GmbH & Co. HG

Filed Sep. 14, 1987, Ser. No. 96,678

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1986, 3531069

Int. Cl.[4] E21D 23/16, 23/22

U.S. Cl. 299—1 **5 Claims**



1. A method for separating the upper coal of a seam from the roof during the advancement of an upper sliding cap of a shield-type support frame, wherein a front edge of the cap is forced in a plane of the cap between the upper coal to be separated and the rock from which the coal is to be separated, and wherein the shield-type support frame is connected to a support conveyor through walking legs comprising moving the sliding cap backwardly and forwardly for several times during the advancement of the sliding cap, so that the cap is thrust between the upper coal and the rock during several successive advance movements of the cap and the steps of:

(a) determining the relative position between walking legs and sliding cap by means of distance sensors and an electronic circuit, and

(b1) if the determined relative position corresponds to a desired value or a desired value range, carrying out a distance synchronization between sliding cap and walking legs, or

(b2) if the determined relative position does not correspond to the desired value or the desired value range, carrying out a cyclical forward and backward movement of the sliding cap, wherein the cyclical forward and backward movement is effected by the electronic circuit.

4,798,418

VEHICLE WHEEL

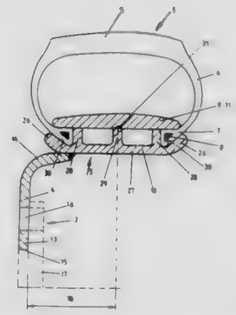
Helmut Kempf, Schaffhausen, and Hans Kopp, Uhwiesen, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Mar. 5, 1987, Ser. No. 22,029

Claims priority, application Switzerland, Mar. 14, 1986, 1050/86

Int. Cl.[4] B60B 21/00, 21/10

U.S. Cl. 301—31 **14 Claims**



1. A vehicle wheel for mounting of a pneumatic tire having tire beads, particularly for commercial vehicles, comprising:

a rim having an outer-situated rim part possessing a radially inner circumference against which bear the tire beads of the pneumatic tire;

said rim being provided with a respective groove for receiving an associated tire bead of the pneumatic tire;

said outer-situated rim part comprising an external, circumferentially closed ring,

said rim further including an internal rim ring cooperating with said external circumferentially closed ring;

said grooves being formed conjointly by said external circumferentially closed ring and said internal rim ring;

said external circumferentially closed ring being separate from but engaging said internal rim ring and being separately insertable into said pneumatic tire;

an attachment flange fixedly connected to said internal rim ring; and

said internal rim ring together with said attachment flange being circumferentially separated and comprising three segments.

4,798,419

ANTI-JACKNIFING VALVE

William E. Barnes, 317 Pier A Naples Land Yacht Harbor, Naples, Fla. 33962

Filed Jul. 27, 1987, Ser. No. 78,580

Int. Cl.[4] B60T 13/00

U.S. Cl. 303—7 **3 Claims**

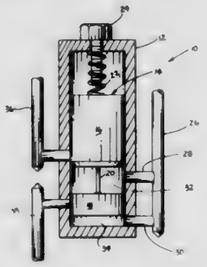
1. A new and improved braking systems for a tractor having a first set of brakes and a trailer towed thereby having a second set of brakes, said system being designed to prevent jackknifing between said tractor and said trailer and essentially comprising a valve means which facilitates a selective controlling of pressurization and flow of hydraulic braking fluid to said first and second set of brakes in an independent manner, whereby said second set of brakes is applied prior to an application of force to said first set of brakes, and

wherein said valve means includes a substantially fluid-tight

housing means having a brake fluid delivery conduit in fluid communication therewith, a first brake fluid outflow conduit communication therewith and operably controlling said first set of brakes, and

a second brake fluid outflow conduit in fluid communication therewith and operably controlling said second set of brakes, and

further including a piston means slidably retained within said housing means and being movable in response to fluid



pressure delivered through said brake fluid delivery conduit, said piston means serving to selectively open and close said first and second brake fluid outflow conduits, and

wherein said piston means includes a first piston head and a second piston head spaced therefrom and fixedly secured thereto, said first piston head serving to control a delivery of fluid to said first brake fluid outflow conduit and second piston head serving to control a delivery of fluid to said second brake fluid outflow conduit.

4,798,420

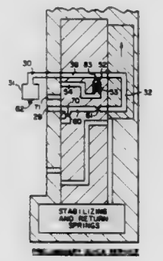
FLUID BRAKE CONTROL SYSTEM FOR RAILROAD VEHICLES

Walter E. Rojecki, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Nov. 16, 1987, Ser. No. 121,378

Int. Cl.[4] B60T *17/04*

U.S. Cl. 303—38 **20 Claims**



1. A fluid pressure brake control system for a railway train having a normally charged brake pipe, a brake motor and a control valve device for each car of the train wherein the the control valve device has an improved service valve device comprising:

(a) service slide valve means having passages governing a first stage of quick service preliminarily effective upon sensing a pressure reduction in the brake pipe for venting fluid from the brake pipe to atmosphere through a quick service volume,

(b) said slide valve means having other passages governing a second stage of quick service effective when the service valve is in a service position for initially charging the brake motor from the brake pipe to a predetermined limited pressure,

(c) said slide valve means having still further passages governing a third stage of quick service effective when the service valve is in a service position for substantially continuously venting fluid from the brake pipe to atmosphere at a controlled rate comparable to a service rate of reduction in the brake pipe.

4,798,421

PLUNGER SYSTEM FOR MODULATING A BRAKE PRESSURE

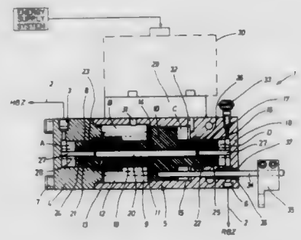
Wolfgang Bernhardt, Korntal, and Michael Tischer, Abstatt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1987, Ser. No. 106,831

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3638980

Int. Cl.[4] B60T *8/42*

U.S. Cl. 303—115 **23 Claims**



1. A plunger system in a brake line between a master brake cylinder and a wheel brake cylinder of a vehicle for modulating a brake pressure in the event of any danger, detected by a sensor, of locking or spinning of wheels of the vehicle which comprises, a housing, a blind bore in said housing, an end closure for said housing, a plunger axially displaceable in said blind bore, a first variable pressure chamber formed by an end of said plunger and said end closure and a second variable pressure chamber formed between an end of said plunger and said housing, said first variable pressure chamber having a connection with a master brake cylinder and said second variable pressure chamber having a connection with a wheel brake cylinder, an axial bore in said plunger, a rod fixedly secured within said axial bore between said housing end of said blind bore and said end enclosure, said rod having a diameter which is less than said axial bore and means for closing one end of said axial bore in the event of a danger of wheel locking, as well as in the event of impermissible drive slip whereby fluid flow from said master brake cylinder to said wheel brake cylinder is blocked.

4,798,422

HYDRAULIC BRAKE SYSTEM FOR AUTOMOTIVE VEHICLES

Horst P. Becker, Frankfurt am Main, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 17, 1987, Ser. No. 63,619

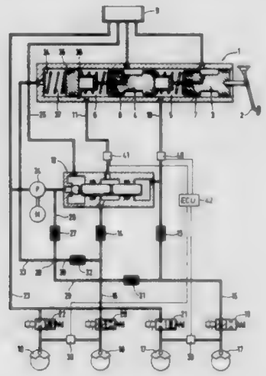
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622556

Int. Cl.[4] B60T *8/32*

U.S. Cl. 303—115 **1 Claim**

1. A hydraulic brake system for automotive vehicles, said system comprising a master brake cylinder directly operable

by a brake pedal, at least one wheel brake in communication with the master brake cylinder, a motor-driven pump capable of being connected or disconnected to the wheel brake, a brake valve for controlling the pump pressure, the brake valve being operable by pressure in the master brake cylinder, a brake skid control means comprising a valve arrangement coupled ahead of the wheel brake, said valve arrangement being operative so that the wheel brake can be connected to the pump or to a nonpressurized reservoir, wherein the pressure decrease in the wheel brake is effected by driving the valve arrangement, a bottom end of the master brake cylinder including a piston separating the master cylinder chamber from a reserve pres-



sure chamber, means for connecting or disconnecting the reserve pressure chamber to the outlet of the pump, a fixed stop in said master cylinder for precluding the piston from moving into the master cylinder chamber, a check valve which blocks the return flow to the master brake cylinder, said check valve being provided in the outlet of the master brake cylinder leading to the wheel brake, pressure sensors for sensing pressure in the wheel brake and on the outlet of the master brake cylinder, and a control means provided to detect and compare the pressure values measured by the sensors and for pulsatedly driving a pressure relief valve of the valve arrangement to adapt the wheel brake pressure to the master cylinder pressure at a ratio predetermined by the brake valve.

4,798,423

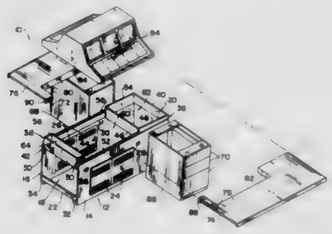
MODULAR DESK SYSTEM

Paul M. LaCour, Ridgewood, N.J., assignor to LaCour Incorporated, Ridgewood, N.J.

Continuation-in-part of Ser. No. 794,128, Nov. 1, 1985, abandoned. This application Jan. 7, 1987, Ser. No. 1,036

Int. Cl.[4] A47B *21/00*

U.S. Cl. 312—195 **30 Claims**



1. A desk system, comprising a core having an interior raceway, a substantially open top, a first face panel on one side of said core and a second face panel on an opposite side of said core; a first work top extending outwardly from said one side of said core, said first work top having an inner edge which is directly supported by said first face panel; a second work top extending outwardly from said opposite side of said core, said second work top having an inner edge which is directly supported by said second face panel such that said second work top is arranged in substantially back-to-back relationship with said first work top, whereby said first and second work tops define a pair of back-to-back work stations, said core being common to both of said work stations; first supporting means extending downwardly from said first work top for supporting an outer portion of said first work top; second supporting means extending downwardly from said second work top for supporting an outer portion of said second work top; and covering means for covering said top of said core, said covering means including a turret which is common to both of said work stations and which is partially sunk into said raceway through said top of said core, said turret including housing means for housing computer data monitors such that at least one of said computer data monitors faces one of said work stations and at least another of said computer data monitors faces the other of said work stations and such that each of said computer data monitors extends below said first and second work tops to thereby reduce the distance that said turret projects above said work tops.

4,798,424

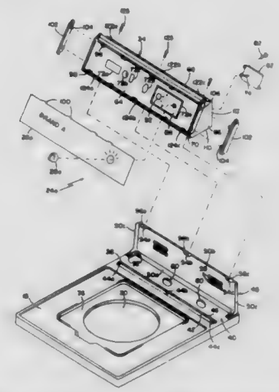
REVERSIBLE CONTROL CONSOLE

Donald A. Costes, Green Lake; Philip J. Maethel, and Max D. Allen, both of Ripon, all of Wis., assignors to Speed Queen Company, Ripon, Wis.

Filed Sep. 28, 1987, Ser. No. 101,475

Int. Cl.[4] D06F *1/02*

U.S. Cl. 312—257 R **10 Claims**



1. A control console housing adapted for mounting on an appliance top panel in first and second alternate orientations comprising:

a substantially rectangular control mounting panel having ends;

a pair of end panels connected perpendicular to respective ones of said ends of said control mounting panel, each of said end panels having a first edge for seating on the top said appliance top panel and supporting said control mounting panel in said first mounting orientation, each of said end panels further having a second edge for seating on the top said appliance top panel and supporting said control mounting panel in said second mounting orientation wherein said control mounting panel is inverted from

said first mounting orientation, said first and second edges having different angles with respect to said control mounting panel wherein said control mounting panel is supported at different angles with respect to said appliance top panel in said first and second orientations; and

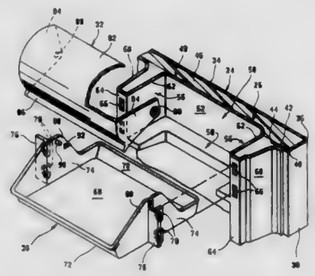
means for securing said housing to said appliance top panel in both said first and second mounting orientations.

4,798,425

COMPARTMENT ASSEMBLY FOR A REFRIGERATOR

William J. Armstrong, and Richard A. Stich, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Feb. 22, 1988, Ser. No. 158,717
Int. Cl.[4] A47B *88/00*
U.S. Cl. 312—328 8 Claims



1. A compartment assembly for a refrigerator comprising:

a panel on the inside of a refrigerator door, said panel having a recess area with a rear wall, a top wall and at least two spaced apart vertical dikes directed outwardly from the rear wall, said recess area having at the bottom thereof an inwardly projecting lip, said dikes having a side wall and a front face, said each front face having a slot,

a tray having a bottom walls and integrally formed rear wall, front wall, and side wall, said side walls each having a flange projecting outwardly perpendicular to the side walls, said flanges each having a rearwardly projecting hook shaped element parallel to the side walls, said tray having a length such that the hook shaped elements cooperate with the slots in the vertical dikes for engagement and a horizontal depth such that the front wall projects outwardly from the dikes and the rear wall extends to the rear wall of the recess and rests on the projecting lip, and

a removable cover having a body portion and end portions pivotly secured at the end portions to the side walls of the tray, said assembled tray and cover having a vertical height relative to the vertical height of the recess area between the projections lip and top wall less than the vertical distance necessity to withdraw the book shaped elements from engagement with the slots in the vertical dikes, whereby the hook shaped elements on the tray cannot be disengaged from the slots in the dike without first removing the cover from the tray.

4,798,426

HOLOGRAPHIC OPTICAL ELEMENT FOR INSTRUMENT PANEL DISPLAYS

Richard E. Malcolm, Oakville, and Frank Neuperger, St. Catherines, both of Canada, assignors to Astronautics Corporation of America, Milwaukee, Wis.

Continuation of Ser. No. 915,631, Oct. 6, 1986, abandoned. This application Dec. 22, 1987, Ser. No. 136,464
Claims priority, application Canada, Oct. 7, 1985, 492407
Int. Cl.[4] G02B *5/32;* G03H *1/22*
U.S. Cl. 350—3.7 17 Claims



1. A holographic optical system comprising:

a hologram superimposed with and positioned on or adjacent an existing instrument of an instrument panel and reflecting an image generated at a place other than said panel; and

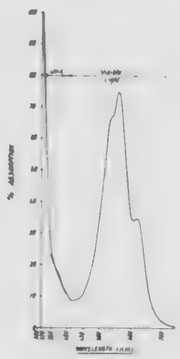
means for producing an image at a position away from the instrument panel and for projecting the image onto the hologram.

4,798,427

APPARATUS FOR USE IN SUNBATHING

John Sear, Coalville, England, assignor to Sevendart Limited, A Limited Company of U.K., Manchester, United Kingdom

Continuation of Ser. No. 640,882, Aug. 15, 1984, abandoned, which is a continuation-in-part of Ser. No. 439,539, Nov. 5, 1982, abandoned. This application Jun. 10, 1986, Ser. No. 872,648
Claims priority, application United Kingdom, Mar. 24, 1982, 8208633
Int. Cl.[4] G02B *5/22;* G21F *1/10*
U.S. Cl. 350—1.1 15 Claims



1. A radiation filter for use in sunbathing comprising: a screen of a plastic material; said plastic material being substantially transparent to the safe UV-A wavelengths of solar radiation and substantially transparent to visible wavelengths of solar radiation; said screen containing at least one first agent which absorbs at least 80% of incident solar UV-B radiation and at least one second agent which prevents transmittal of a biologically significant proportion of above 50% of incident visible solar radiation and incident IR solar radiation of wavelength in the ranges 450 to 700 nm and 7000 to 15000 nm respectively through said screen;

said first agent and said second agent being substantially uniformly dispersed throughout said screen; said screen being transmissive of at least 80% of solar radiation in the UV-A wavelengths, and being transmissive of at least approximately 50% of incident visible and IR solar radiation

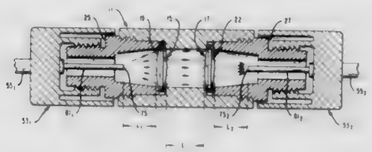
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4,798,428

FIBER OPTIC COUPLING SYSTEM

Mohammad Karim, Kettering, Ohio, and Madhu C. Patel, Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 14, 1986, Ser. No. 918,744
Int. Cl.[4] G02B *6/32*
U.S. Cl. 350—96.18 2 Claims



1. A fiber optic coupling system for optically coupling a first fiber end of a first fiber optic cable, having a first core surrounded by a first cladding, to a second fiber end of a second fiber optic cable, having a second core substantially equal in diameter to the first core surrounded by a second cladding, said optical coupling system comprising:

a housing having first and second housing portions and first and second housing segments respectively disposed within said first and second housing portions;

a first connector for terminating said first fiber optic cable and adjustably connected to said first housing portion to enable said first fiber end of said first fiber optic cable to protrude into said first housing portion;

a second connector for terminating said second fiber optic cable and adjustably connected to said second housing portion to enable said second fiber end of said second fiber optic cable to protrude into said second housing portion,

a first biconvex lens having a first diameter and a second biconvex lens having a second diameter respectively supported face-to-face in said first and second housing segments;

said first fiber end is located within a first distance from said first lens, said first distance being determined as a function of the diameters of said core of said first fiber optic cable and said first lens;

said second fiber end is located within a second distance from said second lens to enable said second lens to converge all of the light passing through said second lens onto said second fiber end; and

said first lens substantially collimating diverging light transmitted from said first fiber end, said second lens substantially converging the substantially collimated light from said first lens onto said second fiber end to complete a light path between said first and second fiber optic cables.

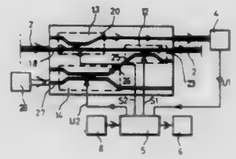
4,798,429

OPTOELECTRIC CONNECTION DEVICE

Anders G. Djupsjöbacka, Solna, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Dec. 17, 1985, Ser. No. 809,936
Claims priority, application Sweden, Feb. 11, 1985, 8500615
Int. Cl.[4] G02B *6/28*
U.S. Cl. 350—96.14 9 Claims

1. An optoelectric connection device for connecting transmission and reception means to a line for optical information transmission, said device comprising first and second directional couplers each having two respective inputs and outputs, said device having an input for a line and at last one reserve input both connected to the inputs of said first directional coupler, said device further having an output for the line and at least one reserve output both connected to the outputs of said second dirctional coupler, optical connection means between a



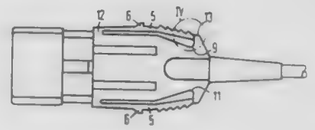
first output of the first directional coupler and a reception means and further optical connection means between a first input of the second directional coupler and a transmission means, a second output of the first directional coupler being optically connected to a second input of the second directional coupler and means for selectively enabling or disabling the directional couplers together or individually.

4,798,430

LIGHTWAVE GUIDE CONNECTOR WITH RELEASE LEVERS

Alfred H. Johnson, Poughkeepsie, N.Y.; Peter Pohl, Krailling, Fed. Rep. of Germany; Heinz Prauer, and Dietmar Schulz, both of Munich, Fed. Rep. of Germany, assignors to Siemens AG, Berlin and Munich, Fed. Rep. of Germany and IBM, Armonk, N.Y.

Filed Jun. 8, 1987, Ser. No. 58,974
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 1 Claim



1. A connector for lightwave guides having a connector casing and connector counterparts, said casing having narrow sides and having attached at the narrow sides of the connector casing spring-loaded release levers which actuate detents which are released from a locking plate of said counterparts when lateral pressure is applied on the release levers and which are engaged with said locking plate in a plugged position of said connector casing in the connector counterparts when the connector casing is connected to said counterparts, the improvement comprising:

said narrow sides of said connector casing having recesses therein;

said release levers each having an actuating area inside one of said recesses;

separate boundary elements attached to said connector casing for holding each release lever in a preloaded rest position thereby externally limiting the path of movement of the release levers when said connector casing is in an unplugged position with respect to said counterparts.

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4,798,431

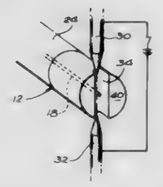
OPTIC FIBER CONTACT

Kenneth M. Clark, Irvine; Leslie M. Borsuk, Los Alamitos, and Bruce Coutts, Costa Mesa, all of Calif., assignors to ITT Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 937,575, Dec. 4, 1986, and a continuation-in-part of Ser. No. 2,883, Jan. 13, 1987. This application Dec. 7, 1987, Ser. No. 129,797

Int. Cl.[4] G02B *6/36, 7/26*

U.S. Cl. 350—96.20 **8 Claims**



1. Optic fiber connection apparatus comprising:

a contact having forward and rearward end portions, opposite sides, and an axis, and having a hole extending along said axis for receiving an optical fiber which has a front end, said contact forward end portion having a cross-aperture which extends substantially perpendicular to said axis and which intersects said hole to receive a lens lying at the front end of an optic fiber which extends through said hole, said contact forward end portion including a front end for coupling to an external optical device;

said cross-aperture extending through said contact between its opposite sides to pass an electric arc that can melt the end of an optic fiber to form a lens;

said contact forward end portion being formed of a dielectric material having a melting temperature above 1600° C., to allow an arc to pass through most of the length of the cross-aperture without shorting out the arc or melting the contact.

4,798,432

STORAGE CONTAINER FOR A SECTION OF A LIGHT CONDUCTING FIBRE

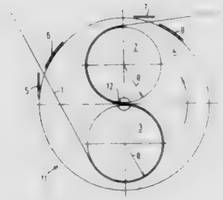
Johann A. Becker, Overath, and Detlef M. Boehm, Neunkirchen-Seelscheid, both of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 8, 1986, Ser. No. 905,220

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, 3532313

Int. Cl.[4] G02B *6/36*

U.S. Cl. 350—96.20 **12 Claims**



1. A storage container for a section of a light conducting fibre comprising:

a winding part in the form of a circular turntable supported for rotation, said winding part including an S-shaped winding surface for supporting said light conducting fibre and a peripheral toothed edge; and

a flat storage housing having a width greater than the thickness of said light conducting fibre, enclosing said winding part, said storage housing having first, second and third openings, said toothed edge of said turntable being accessible through said third opening, said conducting fibre extending through said first opening about said S-shaped winding surface and then through said second opening, whereby rotation of said winding part winds said light conducting fibre about said S-shaped winding surface retracting ends of said light conducting fibre into said storage housing.

4,798,433

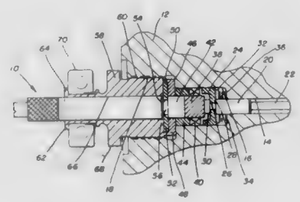
OPTICAL PRESSURE SEALING COUPLING APPARATUS

Timothy B. Irvin, Woodland Hills, and Richard E. French, Simi Valley, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 16, 1988, Ser. No. 156,518

Int. Cl.[4] G12B *6/38*

U.S. Cl. 350—96.21 **16 Claims**



1. Optical pressure sealing and coupling apparatus for coupling together a probe measuring section disposed in a high pressure cryogenic environment for measuring data therein and a probe monitoring section disposed in an ambient pressure environment for monitoring the data received from the measuring section, said apparatus comprising means defining a housing, an axial passageway inside the housing extending between an end at said high pressure environment to an end at said ambient pressure environment, means in said passageway for receiving and supporting said measuring section at the high pressure end, locating means in said passageway for grasping and axially capturing said measuring section and for urging said measuring section toward said ambient pressure end, an annular seal in said passageway having an outer periphery in sealable engagement with the periphery of the passageway, a rigid optical coupler comprising fused coherent glass fibers disposed in sealing engagement by the inner periphery of said annular seal and abutting an axial end of said monitoring section, axially adjustable means in said passageway adjacent the ambient pressure end for receiving and supporting the monitoring section of said probe, capturing means in said passageway intermediate said coupler and said adjustable means for grasping and axially capturing said monitoring section, and said adjustable means abutting said capturing means for axially disposing an end of said monitoring section in abutment with said coupler remote from the measuring section.

4,798,434

OPTICAL POLARIZATION REGULATOR HAVING A WAVE-GUIDE STRUCTURE

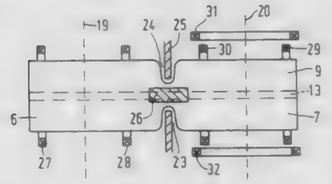
Hans O. B. Dammann, Tangstedt; Elke B. Pross, Hamburg; Gert Rabe, Pinneberg; Wolfgang F. M. Tolkadorf, Tornesch, and Manfred B. Zinke, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 9, 1987, Ser. No. 94,574

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1986, 3630741

Int. Cl.[4] G02B *6/12, 5/30, 27/28*

U.S. Cl. 350—96.11 **18 Claims**



1. An optical polarization regulator having a wave-guide structure for converting the state of polarization of an optical beam passing through and comprising devices for adjusting the coupling constants K of the TE and TM modes of the optical beam and for adjusting the difference $\Delta\beta$ of the propagation constants β_{TE} and β_{TM} of these modes, characterized in that the wave-guide structure is a layered magnetooptical element, and in that the coupling constant (K) is adjustable by a magnetic field acting upon the wave-guide structure and the difference ($\Delta\beta$) is adjustable by a mechanical deformation force exerted on the wave-guide structure.

4,798,435

OPTICAL SWITCH CIRCUIT

Masahiko Fujiwara; Akira Ajisawa, and Shuji Suzuki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 16, 1985, Ser. No. 734,725

Claims priority, application Japan, May 17, 1984, 59-99120; Jun. 22, 1984, 59-128715; Apr. 5, 1985, 60-72153; Apr. 10, 1985, 60-76304

Int. Cl.[4] G02B *6/10*

U.S. Cl. 350—96.13 **17 Claims**



1. An optical switch circuit configured as a matrix having (m×n) crosspoints where m denotes the number of input optical channels and n denotes the number of output optical channels (m and n being a positive integer), wherein when the coordinates of an arbitrary crosspoint are expressed as (i, j) (i=1, 2, . . . m and j=1, 2, . . . n), there are arranged on the (m×n) crosspoints,

(a) optoelectric means for converting an input light signal transmitted via each of said input optical channels into an electric signal,

(b) electric circuit means responsive to a control signal to output an electric signal corresponding to an output electric signal from said optoelectric means, and

(c) light modulating means responsive to said electric signal from said electric circuit means to produce a modulated light signal, and wherein the optical switch circuit comprises:

(i) first means for distributing each of the m number of input light signals into the n number of optoelectric means defined by fixing the i-component of said coordinates of the arbitrary crosspoint, and

(ii) second means for optically combining each of light outputs from the m number of light modulating means defined by fixing the j-component of said coordinates of the arbitrary crosspoint.

4,798,436

OPTICAL FUSED COUPLERS

David B. Mortimore, Felixstowe, England, assignor to British Telecommunications, plc, London, England

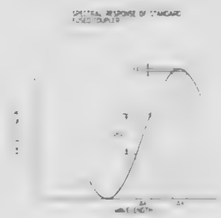
PCT No. PCT/GB86/00445, § 371 Date Mar. 20, 1987, § 102(e) Date Mar. 20, 1987, PCT Pub. No. WO87/00934, PCT Pub. Date Feb. 12, 1987

PCT Filed Jul. 25, 1986, Ser. No. 33,102

Claims priority, application United Kingdom, Jul. 30, 1985, 8519183

Int. Cl.[4] G02B *6/26*

U.S. Cl. 350—96.15 **26 Claims**



11. An optical coupler formed by the method of forming an optical fibre coupler in which light propagating in one fibre is arranged to be coupled into one or more other fibres within a coupling region and at a predetermined coupling ratio comprising the steps of:

a. preselecting said optical fibres such that the propagating constant of said one fibre within the coupling region is slightly different from the other of said fibres,

b. increasing the length of said coupling region,

c. monitoring the coupler being formed during the increase in the length of the coupling region; and

d. stopping the increase in length when the coupling ratios for two preselected wavelengths are first equal, the optical fibres being such that the coupling ratio at said two preselected wavelengths is equal to said predetermined coupling ratio.

4,798,437

METHOD AND APPARATUS FOR PROCESSING ANALOG OPTICAL WAVE SIGNALS

Robert H. Rediker, Watertown; Frederick J. Leonberger, Lexington, and Darryl P. Greenwood, Westford, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 600,028, Apr. 13, 1984, abandoned. This application Sep. 9, 1986, Ser. No. 906,593

Int. Cl.[4] G02F *1/01*

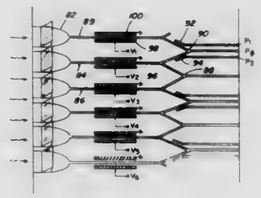
U.S. Cl. 350—96.14 **30 Claims**

4. An analog optical wave signal processor comprising:

a light source for generating an optical wave signal;

a transmitting waveguide array for collecting discrete seg-

ments of the optical wave signal from the light source in individual waveguides across the optical wave signal and for directing a transmitted wave signal to a distant object;
a receiving waveguide array for collecting discrete segments of a reflected optical wave signal, reflected by the distant object, in individual waveguides extending across the reflected optical wave signal, the receiving waveguide



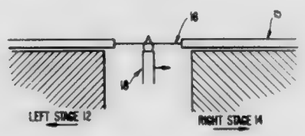
array comprising waveguide interferometers for combining adjacent segments of the received reflected optical wave signal to provide a wavefront analysis of the received optical wave signal; and
means for controlling the phase delays of individual segments of the optical signal in the transmitting array and of the optical signal in the receiving array to maximize the interferometer outputs.

4,798,438

METHOD OF MAKING A SINGLE-MODE EVANESCENT-WAVE COUPLER HAVING REDUCED WAVELENGTH DEPENDENCE

Douglas Moore, Buffalo Grove, Ill., and Mark E. Marcus, Scottsdale, Ariz., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 15, 1986, Ser. No. 918,966
Int. Cl.[4] G02B *6/42*
U.S. Cl. 350—96.15 **13 Claims**



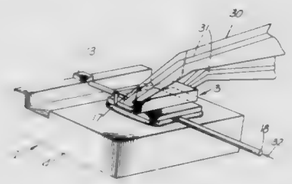
1. A method of making a single-mode evanescent-wave coupler having reduced wavelength dependence comprising the steps of:
(a) providing first and second single-mode optical fibers having substantially identical propagation constants;
(b) heating the first optical fiber along a first longitudinal segment thereof while stretching the first optical fiber to reduce the diameter of the first longitudinal segment, the reduced diameter being substantially uniform along the first longitudinal segment and different from the diameter of the second single-mode optical fiber;
(c) maintaining the first and second optical fibers in parallel juxtaposition with one another along a portion of the first longitudinal segment; and
(d) fusing together the portions of the first and second optical fibers maintained in parallel juxtaposition to form a coupling region.

4,798,439

OPTICAL COMPONENT MOUNTING

Keith Preston, Ipswich, England, assignor to British Telecommunications, plc, London, England

Filed Mar. 21, 1986, Ser. No. 842,230
Claims priority, application United Kingdom, Mar. 29, 1985, 8508280
Int. Cl.[4] G02B *6/26*
U.S. Cl. 350—96.20 **13 Claims**



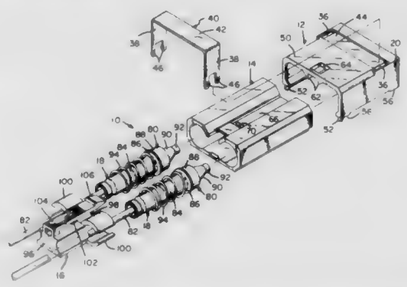
1. A method of mounting an optical component on a substrate, the method comprising the steps of:
(a) fixing the optical component to a carrier plate;
(b) providing the carrier plate with dedicated heating means comprising a miniature resistor fixed to the carrier plate;
(c) providing a localized heating effect to the carrier plate with said miniature resistor; and
(d) fixing the carrier plate to the substrate with solder, wherein the carrier plate and solder are heated locally by the dedicated heating means.

4,798,440

FIBER OPTIC CONNECTOR ASSEMBLY

John C. Hoffer, and Ronald R. Schaffer, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 24, 1983, Ser. No. 460,230
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 **10 Claims**



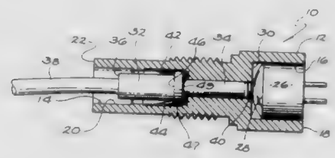
1. A fiber optic connector assembly of the type for positioning fiber optic connectors relative to light-emitting and light-sensing members comprises a receptacle mountable onto a printed circuit board and in which the light-emitting and light-sensing members are disposed, and a housing in which fiber optic connectors terminated onto fiber optic transmission members are mounted along with springs in a spring-biased condition and which housing is latchably connected to the receptacle, characterized in that:
said fiber optic connectors are mounted in a connector-carrying member which is latchably secured in said housing placing the fiber optic connectors under spring tension thereby forming a fiber optic plug which is disposed in the receptacle; and
a latches member on the fiber optic plug latching the fiber optic plug to the receptacle with the fiber optic connectors positioned adjacent the light-emitting and light-sensing members.

4,798,441

FIBER OPTIC DEVICE COUPLING

Kenneth M. Clark, Irvine, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 9, 1987, Ser. No. 23,176
Int. Cl.[4] G02B *6/42*
U.S. Cl. 350—96.2 **6 Claims**



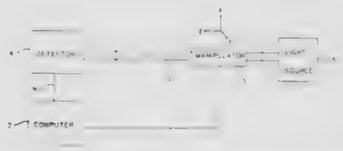
1. A fiber optic device coupling for connecting an optical fiber cable to an electro-optical device comprising:
a housing having a passage therethrough opening at the opposite ends of said housing;
one end of said passage being adapted to receive an electro-optical device therein having an active face disposed toward the other end of said passage;
a fiber optic contact mounted in the opposite end of said passage, said contact having a forward mating end face and a rear end, said rear being adapted to be connected to a fiber optic cable;
radially movable, resilient contact retention means extending between said contact and the wall of said passage for releasably retaining said contact in said passage;
a forwardly facing shoulder on said contact;
a shoulder on the wall of said passage facing said contact shoulder and spaced therefrom; and
resilient means compressed between said shoulders serving to prevent said forward mating end face of said contact from forcibly engaging the active face of an electro-optical device mounted in said one end of said passage, said compressed resilient means having sufficient resilience to substantially prevent longitudinal rattle of said contact within said passage.

4,798,442

METHOD OF ALIGNING TWO OPTICAL FIBER ENDS FOR FRONTAL CONTACT

Helmut Feilhauer, Urach, and Josef Steimle, Alimersbach i.T., both of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Jul. 13, 1987, Ser. No. 72,704
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1986, 3623619
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.21 **3 Claims**



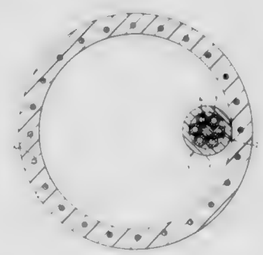
1. A method of aligning the ends of two optical fibers so that light which is fed into one of the two optical fibers is coupled over to the other optical fiber with a minimum amount of attenuation, one optical fiber end being displaced by means of a manipulator in at least one direction transverse to a longitudinal axis of the two optical fibers until a position is located where a coupled-over light power (P) from one fiber to the other fiber is maximized, comprising the steps of:
(a) moving the manipulator parallel to the longitudinal axis, in a plurality of steps to move the end of the one fiber toward the end of the other fiber;
(b) transversely displacing the manipulator after each step;
(c) recording a change in the coupled-over light power (P) as a function of transverse displacement after each step; and
(d) stopping displacement of the manipulator in the longitudinal direction as soon as the fiber ends reach a relative longitudinal position (z_0) in which further transverse displacement of the manipulator produces nearly no change in the coupled-over light power (P).

4,798,443

OPTICAL CABLE

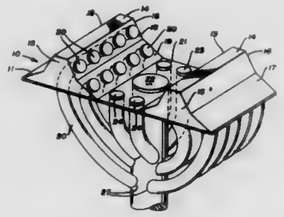
Charles D. Knipe, Rainford, and Edward L. Mather, Liverpool, both of Great Britain, assignors to BICC Public Limited Company, London, Great Britain

Filed Jan. 9, 1982, Ser. No. 386,532
Claims priority, application United Kingdom, Jan. 17, 1981, 8118586
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 **19 Claims**



1. An optical cable adapted to be freely supported in long length from spaced supports along a location subject to electrical interference, comprising an optical cable element comprising a plurality of separately formed tubes of plastics material in at least one of which is loosely housed at least one optical fibre and, surrounding the tubes, an outer protective sheath; and, loosely surrounding the optical cable element, an outer protective sleeve which has an inner diameter substantially greater than the overall diameter of the optical cable element and which has embedded in the sleeve at least one layer of circumferentially spaced elongate non-metallic reinforcing members which extend substantially lengthwise of the sleeve, each of the reinforcing members having, in the member, undulations that serve to improve the mechanical bonding of the member within the sleeve and the flexibility of the cable, wherein the optical cable element comprises a plurality of separately formed tubes of plastics material in at least one of which is loosely housed at least one optical fibre and, surrounding the tubes, an outer protective sheath and wherein the optical cable element is loosely housed within and extends helically throughout substantially the whole of the length of the sleeve and is contiguous with the internal surface of the sleeve at least spaced positions along the length of the sleeve.

4,798,444
SOLAR COLLECTION DEVICE
Bret L. McLean, 510 Bonnie Brae, Niles, Ohio 44446
Filed Jun. 12, 1987, Ser. No. 61,421
Int. Cl.[4] G02B 6/04
U.S. Cl. 350—96.24 4 Claims



1. A solar collection device comprising a plurality of fiber optic bundles of a pre-determined size, a main support frame having oppositely disposed angularly aligned upstanding portions in spaced relative relation to one another, pairs of angularly arranged panels are positioned on each of said upstanding portions of said main support frame, a main fiber optic bundle and secondary fiber optic bundles are positioned between said upstanding portions on said main support frame on the same horizontal plane, some of said fiber optic bundles are arranged in aligned spaced relation in said angularly arranged panels on said upstanding portions, a convergent lens in spaced relation to said plurality of fiber optic bundles, means for interconnecting said plurality of fiber optic bundles with said main fiber optic bundle.

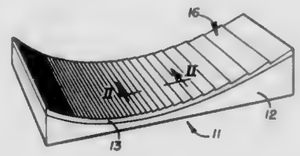
4,798,445
PLASTIC OPTICAL FIBER AND PROCESS FOR PRODUCING THE SAME
Takashi Yamamoto, Hiroshima; Katsuhiko Shimada, Otake; Ryuji Murata, Otake; Yasutaro Tahara, Otake; Hiromu Terada, Otake, and Kenichi Sakuraga, Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed Apr. 3, 1986, Ser. No. 847,515
Claims priority, application Japan, May 17, 1985, 60-103876
Int. Cl.[4] G02B 6/16
U.S. Cl. 350—96.34 13 Claims



1. A plastic optical fiber comprising polycarbonate as its core material and a polymer, as its cladding material, having a refractive index lower than that of the core material, which is formed by a melt-spinning step, wherein said core material of polycarbonate is supplied to the melt-spinning step in the form of a powder which has not been heated to a temperature exceeding its crystalline melting point at any step other than the melt-spinning step, wherein the relationship between light transmission loss, L_{500} (dB/km), of said fiber as measured at a wavelength of 500 nm and light transmission loss, L_{660} (dB/km), of said fiber measured at a wavelength of 660 nm is expressed by the following relation (I):

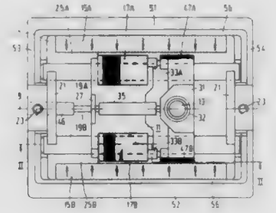
$$L_{500} < L_{660} + 4{,}000 \text{ dB/km} \quad \text{(I)}.$$

4,798,446
APLANATIC AND QUASI-APLANATIC DIFFRACTION GRATINGS
Michael C. Hettrick, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 14, 1987, Ser. No. 95,715
Int. Cl.[4] G01B 5/18
U.S. Cl. 350—162.23 10 Claims



1. A grazing incidence diffraction grating for focusing intercepted x-rays from a first region into an image at a substantially normal incidence focal surface located at another region, said grating having a concave surface formed of reflective material and having a plurality of transverse grooves in said concave surface which define a series of diffraction zones along said concave surface, wherein the spacing of corresponding points in successive ones of said grooves progressively varies along at least a portion of said concave surface and wherein the change of spacing at successive grooves establishes substantially similar magnification along all ray paths from said grating to said focal surface.

4,798,447
LENS MOUNTING FOR AN ELECTRODYNAMIC DEVICE FOR RECORDING ON AND/OR SCANNING OPTICAL DISCS BY MEANS OF A RADIATION SPOT, AND METHOD OF MANUFACTURING SUCH A LENS MOUNTING
Gerardus L. M. Jansen, and Henricus J. Saulders, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 666,024, Oct. 29, 1984, abandoned.
This application May 20, 1987, Ser. No. 53,602
Claims priority, application Netherlands, Sep. 12, 1984, 8402777
Int. Cl.[4] G02B 7/02
U.S. Cl. 350—255 1 Claim



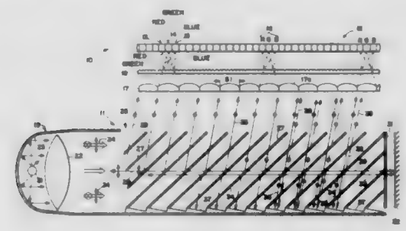
1. A method of manufacturing a movable lens mounting for an electrodynamic device for recording and/or scanning optically readable discs by means of a radiation spot, the device compriaing a frame having supporting means for guiding movement of the lens on a rectilinear path, the lens mounting comprising a first part having supporting surfaces which engage the supporting means, a second part having a mount for a lens system for focusing a radiation beam to form the radiation spot, and blade springs which connect the first and second parts so that the second part can move relative to the first part along the optical axis of the lens and perpendicular to said rectilinear path, each spring having opposite ends fixedly embedded in respective first and second parts, the method comprising the steps of:

providing a mold comprising first and second dies, said first die having first molding portions for molding the supporting surfaces of the first part which engage the supporting means and a second molding portion for molding the lens mount of the second part,

arranging the blade springs in the mold, said mold, when closed, forming discrete cavities connected only by said springs,

closing the mold and injecting a thermosetting material into the cavities to form the first and second parts connected only by said springs.

4,798,448
HIGH EFFICIENCY ILLUMINATION SYSTEM FOR DISPLAY DEVICES
John A. van Raalte, Princeton, N.J., assignor to General Electric Company, Fairfield, Conn.
Filed Feb. 16, 1988, Ser. No. 156,060
Int. Cl.[4] G02F 1/13
U.S. Cl. 350—345 18 Claims



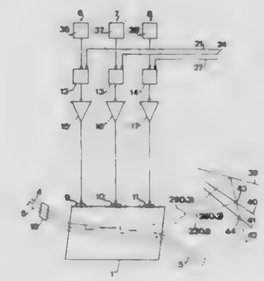
1. An illumination system for a display device having a screen composed of multicelled pixels for producing the primary colors of light, and a light source for illuminating said screen, said illumination system comprising:

means for separating incident light into separate components in accordance with the polarization of said incident light whereby the separate components have different polarizations, and for rotating one of said polarizations whereby all of said pixels receive light having the same polarization; and

means for focusing light onto said pixels.

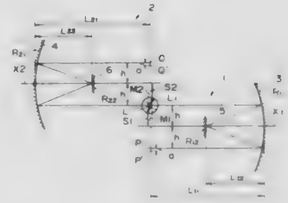
4,798,449
POLYCHROMATIC ACOUSTO-OPTICAL DEFLECTOR
Didier Vichon, Orsay; Dominique Bardon, Paris, and Christian Encrenaz, Gif-sur-Yvette, all of France, assignors to Societe Francaise d'Equipments pour la Navigation Aerienne & Societe Automates et Automatismes, France
Filed Apr. 21, 1987, Ser. No. 40,905
Claims priority, application France, Apr. 25, 1986, 86 06001
Int. Cl.[4] G02F 1/11, 1/33; G02B 27/14
U.S. Cl. 350—358 3 Claims

1. An acousto-optical deflector for separating at least two deflected emerging rays from a beam composed of a plurality of rays at different wavelengths, and for directing said deflected rays collinearly, the deflector comprising: at least one optical crystal through which said beam passes, said beam having a main optical axis and the emerging rays of different wavelengths having respective secondary optical axes; and a reflecting mirror placed on each of the secondary optical axes, said mirrors being situated one behind another going away from the crystal to constitute at least one intermediate mirror and a most distant mirror which is furthest away from the crystal, said most distant mirror reflecting a corresponding one of said emerging rays along an axis intersecting the other emerging rays or rays, and each intermediate mirror being a holographic mirror having a reflection waveband centered on



the wavelength of a corresponding one of said other emerging ray or rays deflected by the crystal, and being disposed and oriented to reflect said corresponding emerging ray collinearly with the ray reflected by said most distant mirror.

4,798,450
IMAGING OPTICAL SYSTEM
Akiyoshi Suzaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 742,789, Jun. 10, 1985, abandoned.
This application Jan. 11, 1988, Ser. No. 144,645
Claims priority, application Japan, Jun. 14, 1984, 59-122302
Int. Cl.[4] G02B 17/06
U.S. Cl. 350—505 9 Claims



1. An imaging optical system, comprising:

a first off-axis optical system, having a first optical axis, for receiving light from an object disposed at a predetermined height from the first optical axis, and for emitting the light, said first off-axis optical system producing astigmatism; and

a second off-axis optical system, having a second optical axis, disposed for receiving the light emitted from said first optical system to form an image of the object at a predetermined height from the second optical axis, the first optical axis of said first optical system being spaced from the second optical axis of said second optical system, said second optical system producing astigmatism that minimizes the astigmatism produced by said first off-axis optical system,

whereby the image formed by said second optical system is substantially completely free of astigmatism within the predetermined height from the second optical axis of the second off-axis optical system.

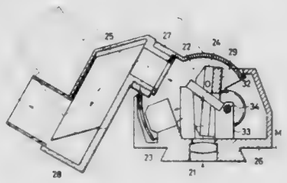
VOL 1098 ISS 3 JA 17 1989 UMI

4,798,451

BINOCULAR TUBE WHOSE ANGLE OF INCLINATION IS ADJUSTABLE

Hiroshi Fujiwara, Hachioujl, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1987, Ser. No. 57,176
Claims priority, application Japan, Jun. 5, 1986, 61-130961
Int. Cl.[4] G02B *21/20*
U.S. Cl. 350—522 14 Claims



1. A binocular tube whose angle of inclination is adjustable, comprising:
- a stationary tube unit;
- a movable tube unit rotatably secured to said stationary tube unit;
- an ocular tube unit rotatably mounted on said movable tube unit;
- first deflector means mounted on said stationary tube unit for deflecting the light advancing toward said ocular tube unit to turn the light backwardly in the direction of its initial course of travel, said first deflector means being located at a point intermediate the path of travel of the light beam from the object being observed to said ocular tube unit; and
- second deflector means rotatably supported on said stationary tube unit for deflecting the light emitting from said first deflector means so as to advance along the optical axis of said ocular tube unit.

8. A binocular tube whose angle of inclination is adjustable, comprising:
- a stationary tube unit;
- a movable tube unit rotatably mounted on said stationary tube unit;
- an ocular tube unit rotatably mounted on said movable tube unit;
- first deflector means mounted on said movable tube unit for deflecting the light advancing toward said ocular tube unit to turn the light backwardly in the direction of its initial course of travel, said first deflector means being located at a point intermediate the path of travel of the light beam from the object being observed to said ocular tube unit; and
- second deflector means mounted on said stationary tube unit for deflecting the light emitting from said first deflector means to advance along the optical axis of said ocular tube unit.

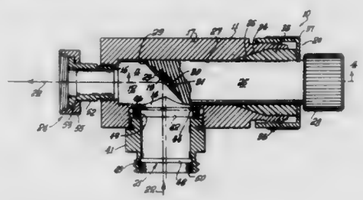
4,798,452

AUTOCLAVABLE LASER BEAM MANIPULATOR

Robert C. Erb, 433 Brocksnoot Dr., Glendale, Calif. 91202

Filed Oct. 4, 1985, Ser. No. 784,379
Int. Cl.[4] A61B *17/36, 1/06;* G02B *7/18*
U.S. Cl. 350—632 11 Claims

1. An autoclavable laser beam manipulator comprising an aircraft grade aluminum housing having a chamber and ingress and egress ports,
- an aircraft grade aluminum gimballing system mounted to and in the chamber of said housing,
- a laser grade uncoated molybdenum mirrored element secured to said gimballing system within the housing's chamber, and



- a glass-filled plastic member forming an adjusting means for said mirrored element.

4,798,453

EYEGLASS FRAME AND PROCESS FOR INJECTION MOLDING SAME

Kaoru Tokunaru, Fukui, Japan, assignor to Yugen Kaisha Tokunaru Kogyo, Sakai, Japan

Filed Nov. 23, 1987, Ser. No. 124,085
Claims priority, application Japan, Aug. 21, 1987, 62-207478
Int. Cl.[4] C02C *11/02*
U.S. Cl. 351—41 24 Claims

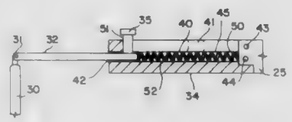
1. An eyeglass frame comprised of an injection molded synthetic resin whose principal material is polyarylate resin.

4,798,454

INTEGRAL REAR VIEW MIRROR FOR EYEGLASSES

Kwang H. Hyun, 914 S. Ardmore St., Los Angeles, Calif. 90005

Filed Oct. 23, 1987, Ser. No. 112,249
Int. Cl.[4] G02C *7/14*
U.S. Cl. 351—50 6 Claims



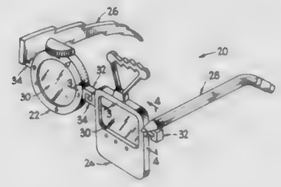
6. An eyeglass comprising:
- a frame;
- a pair of lenses supported within said frame;
- a pair of temple pieces each defining an elongated channel, a notch and a front opening;
- a pair of hinges securing said temple pieces to said frame;
- a pair of elongated rods supported within said elongated channels within said temple pieces in extended or withdrawn positions and having portions extending outwardly therefrom through said front openings and defining lock tabs;
- a pair of mirrors;
- a pair of mirror hinges pivotally attaching said mirrors to said outwardly extending portions of said elongated rods; and
- a pair of springs received within said channels and captivated therein to urge said elongated rods to their extended positions.

4,798,455

USER RECONFIGURABLE NOVELTY GLASSES

Craig S. Yoe, Dundee; Michael R. Gibson; Dennis J. O'Patka, both of Chicago, and Wayne A. Kuna, River Forest, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 5, 1988, Ser. No. 152,446
Int. Cl.[4] G02C *11/02*
U.S. Cl. 351—51 4 Claims



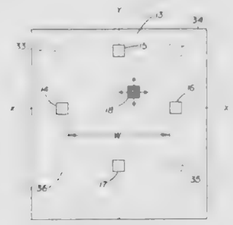
1. User reconfigurable novelty glasses comprising in combination:
- a set of eye frames;
- a set of temple pieces;
- a first eye frame, selected from the set of eye frames;
- a second eye frame, selected from the set of eye frames;
- a frame temple piece selected from the set of temple pieces;
- a second temple piece selected from the set of temple pieces; and
- means for combining the first eye frame, the second eye frame, the first temple piece and the second temple piece such that the first eye frame may be used for either the user's right or left eye and the second eye frame may be used for either the user's right or left eye, the first temple piece may be used for either the user's right or left ear and the second temple piece may be used for either the user's right or left ear.

4,798,456

METHOD FOR EVALUATING METAMORPHOPSIA

Jay M. Enoch, Moraga, and Richard A. Knowles, Berkeley, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 23, 1987, Ser. No. 29,313
Int. Cl.[4] A61B *3/02*
U.S. Cl. 351—222 10 Claims



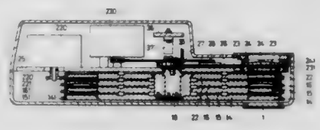
1. A method for evaluating metamorphopsia comprising the steps of
- displaying at least two first spots in fixed and spaced relationship relative to each other on a display screen having imaginary intersecting and perpendicular X and Y axes,
- displaying a second spot on said display screen between said first spots,
- selectively moving said second spot in the direction of one or both of said X and Y axes relative to said first spots for observation and comment by a patient,
- recording said patient's observation and perception of the center position and alignment of said second spot relative to said first spots, and
- measuring and recording the relative separation distances between said second spot and said first spots and the displacement of said second spot relative to an imaginary line intersecting said first spots to determine spatial distortion and evaluation of metamorphopsia.

4,798,457

SELF-CONSCIOUS TYPE EYE EXAMINING APPARATUS

Kazuo Morohashi, Tokyo; Nobuyuki Miyake, Yokohama, and Tsuneni Gonda, Yamato, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 816,992, Jan. 9, 1986, abandoned, which is a continuation of Ser. No. 526,794, Aug. 26, 1983, abandoned. This application Sep. 1, 1987, Ser. No. 93,158
Claims priority, application Japan, Sep. 3, 1982, 57-152759
Int. Cl.[4] A61B *3/02*
U.S. Cl. 351—235 5 Claims



1. An eye examining apparatus comprising:
- a base plate having a view field window on an observation optical axis of an eye to be examined;
- a cross cylinder member at a position opposite to said view field window and including a series arrangement of a first cylindrical lens and a second cylindrical lens, the first and second cylindrical lenses having powers with equal absolute values and with different polarities and each of the two cylindrical lenses being rotatable about said observation optical axis;
- a spherical lens member having power of $C_1/2$ at a position opposed to said view field window;
- instruction means for producing first and second instructions alternately, said first instruction designating the creation of cylindrical powers of C_1+C and $-C$ on first and second mutually perpendicular axes, respectively, and said second instruction designating the creation of cylindrical powers of C_1-C and C on said first and second axes, respectively, each of said first and second axes being perpendicular to said observation optical axis; and
- actuating means for producing a relative rotation between said first and second cylindrical lenses in response to said instruction means, said actuating means arranging said first and second cylindrical lenses to a first positional relation in response to said first instruction to create, by a combination of said first and second cylindrical lenses, cylindrical powers of $+((C_1/2)+C)$ and $-((C_1/2)+C)$ on said first and second axes, respectively, and arranging said first and second cylindrical lenses to a second positional relation in response to said second instruction to create, by a combination of said first and second cylindrical lenses, cylindrical powers of $+((C_1/2)-C)$ and $-((C_1/2)-C)$ on said first and second axes, respectively, where c is a constant.

4,798,458

ANOMALOSCOPE

Hartmut Gehrung, Ostfildern; Hermann Krastel, Neckargemuend, and Rainer Kirchhuebel, Wetzlar, all of Fed. Rep. of Germany, assignors to Oculus Optikgeraete GmbH, Dutenhofen, Fed. Rep. of Germany

Filed May 7, 1986, Ser. No. 860,637
Claims priority, application Fed. Rep. of Germany, May 7, 1985, 3516285
Int. Cl.[4] A61B *3/06*
U.S. Cl. 351—242 16 Claims



1. In an anomaloscope for testing the human color sense, comprising an optical device for producing a stimulus field including a red/green light mix and light of a yellow spectral color, a device for the mixing of the spectral colors green and red by apportioning them, such that upon strengthening one of them, the respective other one is reduced correspondingly, and comprising intensity control and indicating means for the spectral colors as well as for the portions of green and red determining anomal quotient values, the improvement wherein for mixing the red and yellow spectral colors and for creating the stimulus field with a red/green light mix and a field of yellow spectral color, said optical device is provided with a partially translucent beam-splitting means having a beam-splitter plane arranged at approximately 45° relative to the optical axis of said anomaloscope, wherein the first spectral color yellow and the second spectral color (green or red) illuminates said beam-splitter plane from one side approximately parallel to the optical axis, wherein the third spectral color illuminates said beam-splitter plane from the other side in the same area as the second spectral color, and wherein the path of rays of the third spectral color strikes said beam-splitter plane perpendicularly relative to the path of rays of the second spectral color.

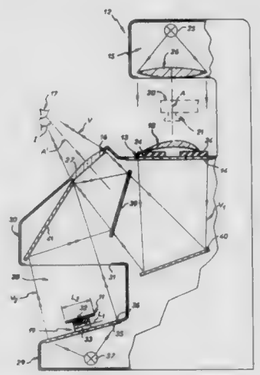
4,798,459

OPHTHALMIC LENS CENTERING DEVICE

Christian Joncour, Saint-Maurice, France, assignor to ESSILOR INTERNATIONAL Cie Generale d'Optique, Creteil, France

Filed Nov. 20, 1987, Ser. No. 123,318
Claims priority, application France, Nov. 26, 1986, 86 16464
Int. Cl.[4] G01B *9/00*
U.S. Cl. 356—127 8 Claims

1. Ophthalmic lens centering device comprising a frame and on said frame a translucent support plate adapted to receive an ophthalmic lens to be centered, a frosted screen at the base of said first support plate, a projector system above said first support plate adapted to project an image of said ophthalmic lens onto said frosted screen, a first observation channel and an opening in said frame enabling an operator to view said frosted screen, a second support plate adapted to receive a template with which said ophthalmic lens is to be compared, a second observation channel adapted in conjunction with said opening in said frame to enable said operator to view said second support plate, said first and second observation channels sharing a common emergent section of which said opening in said frame forms part, and a recess in said frame opening onto a front



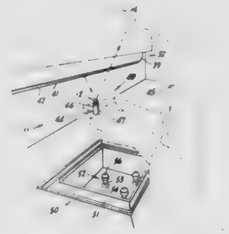
surface thereof by means of which said second support plate is disposed at the front of said frame.

4,798,460

METHOD AND APPARATUS FOR DETECTING AND MODIFYING PERIPHERAL CURVES AND JUNCTION RIDGES IN CONTACT LENSES

Robert D. Buffington, 3806 Winding Creek Rd., Sacramento, Calif. 95825, and Joseph Y. Lilley, 1415 40th St., Sacramento, Calif. 95819

Filed Nov. 7, 1986, Ser. No. 928,481
Int. Cl.[4] G01B *9/00*
U.S. Cl. 356—124 6 Claims



1. Apparatus for directly observing contour of the ocular surface of a contact lens, comprising:

a light source including a lamp and a light transmitting sheild provided with at least one light-obscuring band;

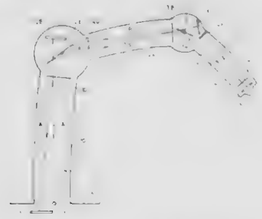
means for selectively positioning the lens relative to the light source, with the ocular surface of the lens inclined toward and in proximity to said at least one band, whereby the ocular surface reflects the image of said band, which image is modified by peripheral ridges and curves on the surface.

4,798,461

SYSTEM FOR MONITORING THE GEOMETRY OF A MECHANICAL STRUCTURE

Cyrille F. Pavlin, Septeuil, and Marc Prevost, Saint Maurice, both of France, assignors to Bertin & Cie., Plaisir, France

PCT No. PCT/FR86/00246, § 371 Date Mar. 6, 1987, § 102(e) Date Mar. 6, 1987, PCT Pub. No. WO87/00268, PCT Pub. Date Jan. 15, 1987
PCT Filed Jul. 8, 1986, Ser. No. 34,426
Claims priority, application France, Jul. 8, 1985, 85 10435
Int. Cl.[4] G01D *11/16, 11/27, 5/00*
U.S. Cl. 356—138 13 Claims



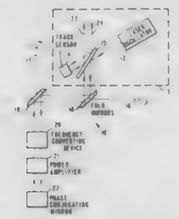
1. A system for monitoring the geometry of a mechanical structure comprising a plurality of interconnected rigid elements, said system including means for detecting and measuring on a permanent basis the relative positions of said elements, including for each element first and second light beams directed along each element at least between its junctions with the adjacent element, said first and second light beams being directed in opposite directions, photodetector means associated with each element and positioned to receive at least fractions of said light beams, and means associated with each element for directing a fraction of one of the light beams towards an adjacent element of the structure to constitute the corresponding first light beam of said adjacent element.

4,798,462

AUTO-BORESIGHT TECHNIQUE FOR SELF-ALIGNING PHASE CONJUGATE LASER

Robert W. Byren, Hermosa Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 20, 1985, Ser. No. 811,793
Int. Cl.[4] G01B *11/26*
U.S. Cl. 356—152 7 Claims



1. A method for automatically boresighting a self-aligned phase conjugate laser having a laser oscillator, a laser amplifier, and a phase conjugation mirror in order to produce an automatically boresighted output beam including the steps of:

pointing a sensor mounted on a stabilized platform in the general direction of a target in order to develop an image of said target and locate a desired aimpoint on said target;

generating a reference laser beam using a laser oscillator mounted on said stabilized platform;

conveying a portion of said reference laser beam to said sensor in order to locate a position corresponding to a location of said output beam generally at said desired aimpoint;

calculating an angle subtended by said reference beam and said target; and

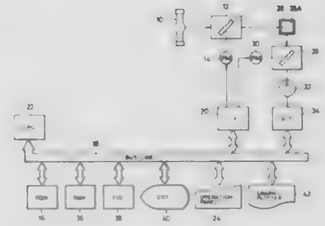
adjusting the position of said platform in order to cause said angle to equal zero.

4,798,463

SPECTROFLUOROPHOTOMETER

Hiroyuki Koshi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1987, Ser. No. 77,174
Claims priority, application Japan, Aug. 1, 1986, 61-179967
Int. Cl.[4] G01J *3/44;* G01N *21/64*
U.S. Cl. 356—318 8 Claims



1. A spectrofluorophotometer comprising a light source, an excitation side spectroscope for separating a light ray from the light source, a sample cell having a sample to be irradiated with excitation light from the excitation side spectroscope, a fluorescence side spectroscope for separating a fluorescence generated from the sample by irradiating with the excitation light, detecting means for detecting the intensity of the fluoreacence from the fluorescence side spectroscope, and calculation means for processing signals from the detecting means, wherein when a standard sample representing at least two Raman spectral lines is disposed in the sample cell, said detecting means detects the intensity for each Raman spectral line and provides output signals thereof, the calculation means including means for obtaining a ratio of the Raman spectrum in accordance with the at least two Raman spectral lines and for calculating a correction coefficient in accordance therewith, the calculating means further including means for correcting the intensity of the fluoreacence detected by the detecting means when a sample to be measured is provided in the sample cell in accordance with the correction coefficient of the ratio of the Raman spectrum.

4,798,464

SCANNING ARRAY SPECTROPHOTOMETER

Roy E. Boostrom, Elmhurst, Ill., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 704,356, Feb. 21, 1985, Pat. No. 4,692,883. This application Mar. 12, 1986, Ser. No. 838,858
Int. Cl.[4] G01J *3/08, 3/10, 3/36*
U.S. Cl. 356—328 34 Claims

1. A spectrophotometer system comprising, in combination:

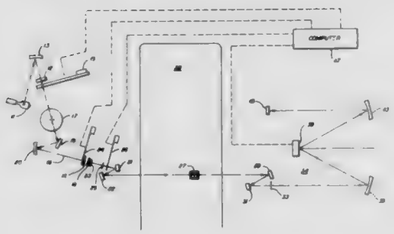
a photodiode array acting as an output detector for said spectrophotometer;

two or more light sources each delivering a useful range of radiant wavelengths to the optical beam of said spectrophotometer, said useful ranges covering in combination the whole of the total spectrophotometric range of the spectrophotometer;

a plurality of shutter means located to interact with said optical beam, and being capable when closed of intercepting all the radiant energy in said beam from one or more of said sources;

fixed and movable filter means locate in said optical beam for providing radiant energy level adjustment to prevent photodiode array response overload over selected wavelength ranges;

a monochromator comprising dispersion means for forming a radiant energy spectrum extended along the whole



receiving photosensitive region of said photodiode array in a fixed predetermined spatial relationship thereto;

computer means including command means for actuating said shutter means and said movable filter means; and

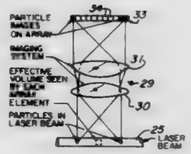
said computer means including means for computational initiation, processing and display of scan generated data correlated with associated spectrum wavelength values.

4,798,465

PARTICLE SIZE DETECTION DEVICE HAVING HIGH SENSITIVITY IN HIGH MOLECULAR SCATTERING ENVIRONMENT

Robert G. Knollenberg, Boulder, Colo., assignor to Particle Measuring Systems, Inc., Boulder, Colo.

Filed Apr. 14, 1986, Ser. No. 851,477
Int. Cl.[4] G01N *15/02, 21/00*
U.S. Cl. 356—336 **20 Claims**



1. A particle size detection device capable of operation with high sensitivity in a high molecular scattering environment, said device comprising:

first means for enabling a mixture of gas and particles to be passed through a predetermined sensing region such that a high molecular scattering background is present at said sensing region;

second means for illuminating said sensing region so that particles in said sensing region cause light scattering; and

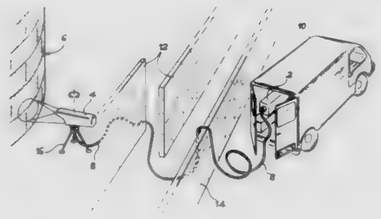
detecting and processing means for receiving light scattered at said sensing region, said detecting and processing means being configured to reduce noise due to background light from molecular scattering occurring within said sensing region to a level that enables detection and processing of light scattered by particles within said sensing region having a diameter of at least as small as 0.1 micron and larger, said detecting and processing means providing an electrical signal output indicative of the presence of such particles sensed in said sensing region.

4,798,466

DEVICE FOR THE NON-DESTRUCTIVE INSPECTION OF A PART BY MEANS OF OPTICAL HOLOGRAPHY

Jacques Bouteyre, Saint Medard en Jalles, and Christian Le Floc'H, Blanquefort, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jan. 20, 1987, Ser. No. 5,694
Claims priority, application France, Jan. 20, 1986, 86 00701
Int. Cl.[4] G01B *9/025*
U.S. Cl. 356—347 **1 Claim**



1. Device for the non-destructive inspection of a part (6) by means of optical holography comprising:

a source (2) emitting a laser beam;

a holographic camera (4) placed at a particular distance from the said source (2), this camera (4) including at least:

an input for the laser beam (28),

means (44) for creating a reference beam (43) and an object ray (45) by separation of the laser beam and

means for creating a hologram from the reference beam (43) and object ray (45) and

means for carrying the laser beam of the source (2) as far as the said input,

wherein the said carrying means include a bundle of sequenced optical fibers (8) each fiber having a core, said bundle being suitable for transmitting a high power laser beam with monomode propagation through the core of each fiber, whilst maintaining the coherence of time and space of this laser beam.

4,798,467

HETERODYNE LASER INSTANTANEOUS FREQUENCY MEASUREMENT SYSTEM

Richard W. Wyeth, Livermore; Michael A. Johnson, Pleasanton, and Michael A. Globig, Livermore, all of Calif., assignors to The United States Department of Energy, Washington, D.C.

Filed Sep. 24, 1986, Ser. No. 911,023
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—349 **8 Claims**

1. A laser beam frequency diagnostic system comprising:

a first pulsed laser for generating a first short time duration pulsed laser beam having a pulse length duration of approximately 10–100 nanoseconds, the instantaneous frequency of which is to be determined,

a second reference laser for generating a second laser beam having a predetermined frequency,

means for heterodyning said first and second laser beams to form a beat signal representative of the difference between said first and second frequencies,

means for processing said beat signal to determine the instantaneous frequency of said first laser beam,

means for normalizing said beat signal,

means for determining the relative phase between said beat signal and an assumed constant frequency average beat signal, and



means for determining the derivative of said relative phase versus time.

4,798,468

INTERFERENCE APPARATUS FOR DETECTING STATE OF WAVE SURFACE

Chidane Ohuchi, Hino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1986, Ser. No. 864,148
Claims priority, application Japan, May 28, 1985, 60-114730
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—351 **8 Claims**



1. An interference apparatus for detecting the state of a wave surface comprising:

optical means for supplying a test-sample light and a reference light;

monitoring means for picking up a portion of a light beam composed of said test-sample light and said reference light and for detecting the intensity of the picked-up portion of the light beam;

light dividing means for dividing the light beam composed of the test-sample light and the reference light so as to form a first light beam composed of the test-sample light and the reference light and a second light beam composed of the test-sample light and the reference light;

phase differentiating means disposed in the path of at least one of said first and second light beams and capable of causing a difference between the phase difference between said test-sample light and said reference light in said first light beam and that in said second light beam;

first interference means for effecting interference between said test-sample light and said reference light in said first light beam;

second interference means for effecting interference between said test-sample light and said reference light in said second light beam;

first photoelectric conversion means for receiving he light from said first interference means and converting the received light into a signal;

second photoelectric conversion means for receiving the light from said second interference means and converting the received light into a signal; and

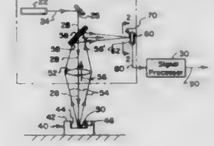
means for detecting the state of wave surface of said test-sample light in accordance with the signals from said first and second photoelectric conversion means and a signal from said monitoring means.

4,798,469

NONCONTACT GAGE SYSTEM UTILIZING REFLECTED LIGHT

Victor B. Burke, 1692 Kingsley Ave., Akron, Ohio 44313

Filed Oct. 2, 1985, Ser. No. 783,344
Int. Cl.[4] G01B *11/08, 11/24*
U.S. Cl. 356—376 **35 Claims**



1. A noncontact gaging system for ascertaining information about features of an object, comprising:

(a) light source means for directing light along an optical path from the light source means onto selected surface portions of an object wherein the selected surface portions lie within a predetermined range of measurement, and for forming an illuminated area on said selected surface portions with the illuminated area being of circular shape, with the illuminated area being of relatively small size, and with the illuminated area retaining an essentially constant diameter over a range of measurement;

(b) optical means for receiving a cone of light that has been reflected along an axis from the illuminated area, and for directing received light along a path to converge toward a real optical image or diverge from a virtual image, said optical means having a front focal plane, and,

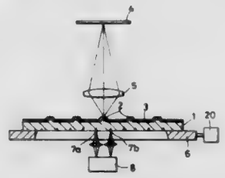
(c) light sensitive detector means disposed along said path at a point in fixed relation to said optical means and unrelated to any one image plane from said light for intercepting received non-imaged and unfocussed light that has been directed along the path by the optical means and for providing an output signal that has been derived at least in part from information of the angular spread of light at said focal plane provided by the intercepted light, and that is representative of a characteristic of said selected surface portions of the object.

4,798,470

PATTERN PRINTING METHOD AND APPARATUS

Shigeo Moriyama, Tama; Toshiei Kurosaki, Kodaira; Tsuneo Terasawa, Hachioji; Shinji Okazaki, Urawa, and Yoshio Kawamura, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 7, 1986, Ser. No. 927,939
Claims priority, application Japan, Nov. 14, 1985, 60-253686; Nov. 14, 1985, 60-253687
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—401 9 Claims



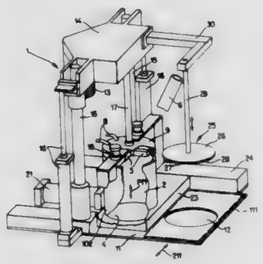
1. A pattern printing method comprising the steps of:
providing a wafer adapted to have a pattern printed on one side and having a target mark provided on a surface that is on the other side opposite said one side;
detecting said target mark to provide data concerning the precise location of said wafer; and
adjusting the position of the wafer relative to the position of an apparatus for printing said pattern in accordance with the data resulting from detecting said target mark.

4,798,471

APPARATUS FOR MAKING MOLDING SAND

Joachim Laempe, Gewerbegebiet Griesmatt, D-7860 Schopfheim, Fed. Rep. of Germany

Filed May 18, 1987, Ser. No. 51,717
Claims priority, application Fed. Rep. of Germany, May 20, 1986, 3616894
Int. Cl.[4] B28C *5/08*
U.S. Cl. 366—65 47 Claims



1. Apparatus for mixing sand with flowable binder material, such as clayey matter, pulverized wood, pulverulent iron oxide and the like, for the making of molding sand, comprising a housing defining a substantially cylindrical mixing chamber; means for admitting into the chamber metered quantities of sand and binder material; and means for mixing the contents of the chamber, including at least one mixing tool operative to mix the contents at least substantially over the entire cross-section of the chamber, and means for moving the mixing tool at least once in the axial direction of the chamber.

4,798,472

EXTRUDER SCREW WITH BALANCED FLIGHTS OF DIFFERENT FUNCTIONAL SECTIONS

Harry Chan, 89 Lakia Ave., Markham, Ontario, Canada L3P 5M6, and Basilio Yi, 35 Hoover Dr., Thornhill, Ontario, Canada L3T 5M6

Filed Jan. 14, 1988, Ser. No. 143,745
Int. Cl.[4] B01F *7/08*; B29B *1/06*
U.S. Cl. 366—89 2 Claims



1. A plasticating extruder for preparing a plasticated material from solids introduced into the extruder, the latter having a screw placed into an elongate barrel, said screw including:
functional sections having a feed section, a transition section and a metering section in a downstream direction;
a longitudinal axis;
a first primary flight and a second primary flight, the primary flights passing through the transition section and defining channels for continuously conveying the material in the downstream direction as the material is melted within the channels, each said flight having a leading face facing downstream and a trailing face facing upstream, and each said channel extending between the leading and trailing faces, the primary flights in the transition section being opposite one another about the longitudinal axis such that radial forces conveyed to the material in the channels of the transition section are substantially balanced;
two secondary flights, each of them being associated with one of said primary flights for segregating the already plasticated material from the solids in the corresponding channel, the secondary flights being located only in the transition section and being opposite one another about the longitudinal axis such that radial forces conveyed to the material in the transition section are substantially balanced;
the improvement wherein the first primary flight is located only in the feed and transition sections, and the second primary flight is located only in the transition and metering sections, the primary flights being thus spaced apart from one another along the longitudinal axis on a length of substantially one section, and the first primary flight in the feed section and the second primary flight in the metering section being spaced circumferentially apart from one another about the longitudinal axis such that radial forces conveyed to the material in the feed section balance radial forces conveyed to the material in the metering section.

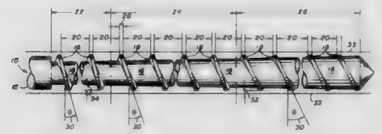
4,798,473

EXTRUDER SCREW

Christiaan J. Rauwendaal, 12693 Roble Veneno La., Los Altos, Calif. 94022

Continuation of Ser. No. 489,759, Apr. 29, 1983. This application Feb. 15, 1985, Ser. No. 701,670
Int. Cl.[4] B29B *1/06*
U.S. Cl. 366—89 4 Claims

1. A single extruder screw apparatus comprising:
a screw shaft to operate within a housing barrel and having a feed section for accepting particles of plastic material for placing said particles in contact with the screw shaft and one metering section for propagating molten high viscosity plastic material, the screw shaft having a diameter which progressively increases from said feed section through said metering section so that the distance from the periphery of the screw shaft to the inner wall of said housing barrel progressively decreases from said feed section to said metering section; and



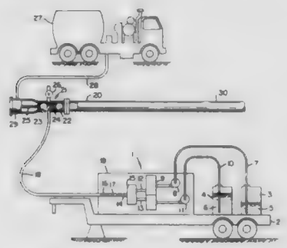
a screw flight spirally positioned about the screw shaft, the screw flight having a screw flight width that is narrower at its periphery in said metering section than in said feed section and having a helix angle which is greater, relative to a perpendicular to the axial centerline of the screw shaft, in said metering section than in said feed section.

4,798,474

IN-SITU PIPELINE COATING SYSTEM

Joseph V. Daily, Spring, Tex., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 22, 1987, Ser. No. 111,509
Int. Cl.[4] B05C *3/02*; B01F *15/04*
U.S. Cl. 118—408 24 Claims



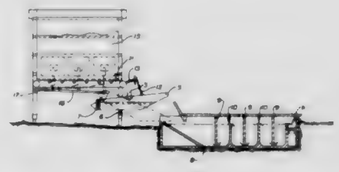
1. An apparatus for the proportioning and mixing of two part coating compositions for injection into a pipeline for the in situ coating of the internal surface thereof comprising:
(a) a plural component proportioning device adapted to continuously receive separate amounts of each component of said two-component coating composition, and to discharge predetermined amounts of each component for mixing prior to injection into the pipeline to be coated, said device being self contained so as to preclude solvent vapor discharge and liquid component spills or drips therefrom;
(b) separate storage means for each component of said two component coating composition;
(c) separate conduit means for passing each said component from the storage means to said plural component proportioning device;
(d) means for creating a positive pressure in each separate conduit means to facilitate the passing of each said component from its storage means to said plural component proportioning device;
(e) separate discharge conduit means for passing predetermined amounts of each said component from said plural component proportioning device;
(f) an in line mixer adapted for receiving and mixing the predetermined amounts of said components to form said two component coating composition without exposure to air; and
(g) conduit means for passing the two component coating composition from the in-line mixer to the pipeline to be coated, whereby the separate components of the coating composition can be continuously proportioned, mixed and delivered to the pipeline to be coated in a self contained system without solvent vapor exposure, liquid spills, drips, or undesired air bubble formation in the coating composition.

4,798,475

DEVICE FOR PROVIDING LIME TO ACIDULATED WATERS

Anders Strandberg, Boxholm, Sweden, assignor to Boxholmskogsult AB, Boxholm, Sweden

Filed Nov. 26, 1986, Ser. No. 935,436
Claims priority, application Sweden, Nov. 26, 1985, 8505584-6
Int. Cl.[4] B01F *5/06, 15/02*
U.S. Cl. 366—160 6 Claims



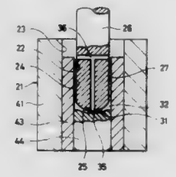
1. Apparatus for wetting and adding to a flowing stream of water in proportion to the level of water flowing in the stream, a succession of doses of an aqueous solution of a particulate, at least partially dissolvable solid material such as lime,
said apparatus comprising:
a counterweighted vessel having an inlet opening and a pour spout;
means eccentrically suspending the vessel, so that when the vessel is empty and is being filled through the inlet opening, the vessel rests in a level condition in which water and material will accumulate in the vessel, but when a predetermined amount of water and material have accumulated to constitute a single dose, the vessel will temporarily tilt, empty the dose out through said pour spout, and reassume its level condition;
inlet means connecting the flowing stream with the inlet opening of the vessel for supplying the vessel with successive dosage-quantums of water from the stream at a rate which is proportional to the level of water flowing in the stream;
a hopper for particulate at least partially dissolvable solid material such as lime, said hopper having an inlet and an outlet;
conveyor means extending between said outlet of said hopper and said inlet opening of said vessel for supplying said particulate material to said vessel; and
conveyor operating means operatively connected with said vessel for indexing said conveyor means forwards one step for each cycle of tilting and reassumption of level condition of said vessel, whereby one dosage quantum of particulate material from the hopper become mixed with each dosage quantum of water from the stream in the vessel prior to each tilting and emptying of the vessel; and
outlet means for connecting the pour spout of the vessel, when tilted, with the flowing stream, for thereby successively adding to the stream the doses of the aqueous solution after each is made in the vessel.

4,798,476

DYNAMIC PRESSURE TYPE FLUID BEARING

Ikunori Sakatani, Fujisawa; Katsuhiko Tanaka, Yamato, and Masaru Tanaki, Hiratsuka, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1985, Ser. No. 724,485
Claims priority, application Japan, Apr. 27, 1981, 56-59790[U]; May 6, 1981, 56-64366[U]
Int. Cl.[4] F16C *17/10, 32/06*
U.S. Cl. 384—108 7 Claims



1. A hydrodynamic preasure type fluid bearing comprising:
a housing provided with a cylindrical hole having a cylindrically shaped inner peripheral surface and a bottom surface;
a shaft disposed in said cylindrical hole and having cylindrical-shaped outer peripheral surface opposed to and cooperative with said bottom surface to bear thrust load;
means for forming a pressure chamber between the bottom surface of the housing and the end surface of the shaft;
hydrodynamic pressure generating means including a spiral groove formed in the outer peripheral surface of the shaft for generating a flow of pressurized fluid to said pressure chamber to form a hydrodynamic pressure therein for bearing the thrust load of said shaft when relative rotation is occurred between the shaft and the housing;
means for supplying fluid to the hydrodynamic pressure generating means;
passage means including a circulation passage through the shaft for returning the pressurized flow from the pressure chamber to said fluid supply means, the passage means including an entrance opening formed in the end surface of the shaft so that a fluid flow from the pressure chamber to the circulation passage may be restricted; and
means for closing the entrance opening from the pressure chamber when the hydrodynamic pressure in the pressure chamber is below a predetermined value including an annular portion of said end surface of the shaft which surrounds said entrance opening and a portion of said bottom surface which contacts with said annular portion of the end surface when the hydrodynamic pressure in said pressure chamber is below the predetermined value.

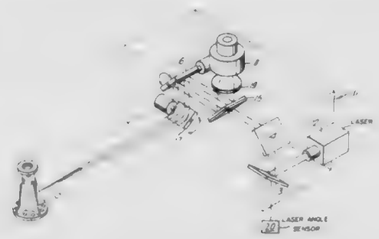
4,798,477

APPARATUS AND METHOD FOR STATIC STRESS MEASUREMENT IN AN OBJECT

David S. Mountain, Waterlooville, United Kingdom, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom

PCT No. PCT/GB85/00403, § 371 Date Jun. 24, 1986, § 102(e) Date Jun. 24, 1986, PCT Pub. No. WO86/01893, PCT Pub. Date Mar. 27, 1986
PCT Filed Sep. 9, 1985, Ser. No. 865,726
Claims priority, application United Kingdom, Sep. 11, 1984, 8422873
Int. Cl.[4] G01N *21/17, 25/00*
U.S. Cl. 374—45 13 Claims

1. A method for indicating static stress in a predetermined part of an object comprising the successive steps of:
(a) applying a measured pulse of electromagnetic energy to a predetermined surface part of the object;
(b) measuring the temperature of the predetermined surface part of the object;
(c) determining from said temperature measuring step the



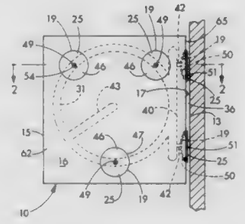
temperature rise of the predetermined surface part of the object and a local specific heat; and
(d) deriving an indication of local static stress from the local specific heat.

4,798,478

SELF-ALIGNING FLUID BEARING

Kevin R. Crystal, Verona, Wis., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Feb. 16, 1988, Ser. No. 155,918
Int. Cl.[4] F16C *32/06, 23/04*
U.S. Cl. 384—12 15 Claims



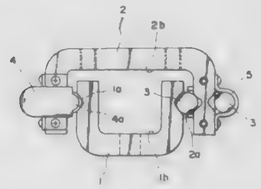
1. A self-aligning fluid bearing for supporting a moving part and allowing that part to move along at least one flat support surface substantially without friction comprising:
(a) a body including at least one face which is substantially planar and having at least one spheroidal concave depression therein;
(b) means within the body for directing pressurized fluid to each depression;
(c) one planoconvex diak for each depression, each diak including a convex spheroidal surface with a spherical radius which is approximstely equal to that of the corresponding concave depression, and an oppositely facing planar surface, the diak having at least one first passageway between the convex surface and the planar surface through which pressurized fluid can pass and being suspended within a cushion of fluid while located largely within the corresponding depression between and in spaced relation to a surface of the depression and to the flat support surface, the concave depression surface and convex surface forming therebetween a second passageway through which pressurized fluid can pass to an outside environment, and the planar surface on the diak forming with the flat support surface a third passageway therebetween through which the pressurized fluid can pass from the first passageway to the outside environment.

4,798,479

SHEET-METAL TYPE ENDLESS RECTILINEAR MOTION ROLLING GUIDE UNIT

Kunihiko Morita, Kagamei, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1988, Ser. No. 169,894
Claims priority, application Japan, Apr. 14, 1987, 62-56203[U]
Int. Cl.[4] F16C *29/06*
U.S. Cl. 384—45 2 Claims



1. A sheet-metal type endless rectilinear motion rolling guide unit in which two track members made of sheet-metal plates each having a U-shaped cross section are arranged such that bottom surfaces (1*b* and 2*b*) of said track members face each other and first and second track grooves (1*a* and 2*a*) of said track members face each other, and a number of rolling members (3) are inserted between said track grooves (1*a* and 2*a*), thereby relatively rectilinearly moving the track members, wherein:
the first track groove (1*a*) is formed in each of outside walls of a bed (1) serving as one of said two track members in the longitudinal direction of said bed (1);
the second track groove (2*a*) is formed in each of inside walls of a table (2) serving as the other track member in the longitudinal direction of said table (2) so as to face said first track groove (1*a*) formed in the bed (1);
a return passage side plate (5) having a U-shaped cross section and forming a return passage (5*a*) of the rolling members (3) is attached at the opposing free edges and in parallel with the second track groove (2*a*) to each of outside walls of the table (2) on the back side of the second track groove (2*a*) formed in the inside wall of the tabie (2); and
an end cap (4) formed with a direction turning passage (4*b*) to couple the second track groove (2*a*) and the return passage (5*a*) is attached to each of both ends of the track groove portion in a slide direction of the table (2).

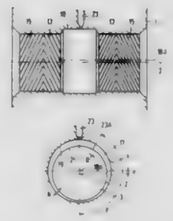
4,798,480

BEARING SYSTEM WITH ACTIVE RESERVOIR BETWEEN TWO AXIALLY SPACED HYDRODYNAMIC BEARINGS

Anton Van Beek, Zoetermeer, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1987, Ser. No. 108,405
Claims priority, application Netherlands, Oct. 13, 1986, 8602565
Int. Cl.[4] F16C *32/06*
U.S. Cl. 384—114 12 Claims

1. A liquid-lubricated bearing system, comprising:
an outer body;
a shaft rotatable relative to said outer body about an axis of rotation;
a pair of axially spaced hydrodynamic bearings comprising cooperating bearing surfaces on said shaft and said outer body, one of the bearing surfaces of each hydrodydnamic bearing having a pattern of bearing grooves for building up pressure in a liquid lubricant present between said bearing surfaces during bearing operation for centering and supporting said shaft in said housing; and
a single annular reservoir between said hydrodynamic bearings for storing said liquid lubricant comprising a pair of opposing cylindrical wall portions of said shaft and said housing, one cylindrical wall portion being eccentric with said axis of rotation or defining a variable radial gap between said cylindrical wall portions such that for relative



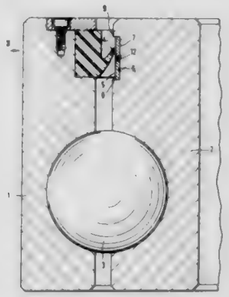
rotation of said shaft and housing said cylindrical wall portions cooperate to increase pressure in the liquid lubricant in the region where said variable gap is the smallest for pumping said liquid lubricant in an axial direction to said hydrodynamic bearings.

4,798,481

ROLLING BEARING SLEWING RING

Hubertus Frank, Hochstadt, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Jan. 16, 1987, Ser. No. 3,939
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1986, 3602051
Int. Cl.[4] F16C *33/76;* F16J *15/00*
U.S. Cl. 384—477 10 Claims



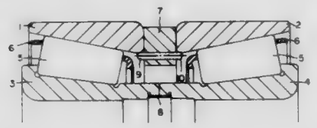
1. A rolling bearing slewing ring comprising two mutually concentric bearing rings between which rolling elements roll, a first bearing ring having a seal in sliding engagement with a cylindrical seal contact surface on a second bearing ring, characterized in that the seal contact surface (5) is a finite band (6) forming a union of its mutually facing ends (10,11) and being of a wear resistant material secured to a retention surface (7,16,22,30,40) of the second bearing ring.

4,798,482

DOUBLE-ROW ROLLER BEARING ASSEMBLY

Stanislaw Kruk, Vastra Frolunda, Sweden, assignor to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 24, 1987, Ser. No. 65,788
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1986, 3621381
Int. Cl.[4] F16C *33/36, 43/04*
U.S. Cl. 384—571 5 Claims



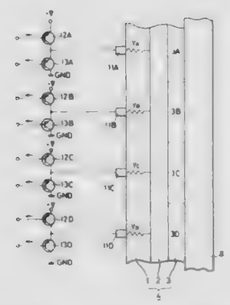
1. Roller bearing assembly comprising a pair of inner ring members and a pair of outer ring members, radially spaced to define bearing spaces therebetween, the rings of each pair having peripherally extending confronting surfaces faced radially toward said bearing spaces, a fastening member connecting one pair of said rings, at least one rigid spacer element disposed between axial end faces of the other pair of rings, and roller elements preventing axially outward movement of said other pair of rings, said spacer having axial projections cooperatively confronting and engaging one pair of said confronting surfaces of said one pair of rings to provide a positive form locking connection in the radial direction, said fastening member and spacer being disposed radially within the inner and outer peripheral surfaces of said bearing assembly.

4,798,483

ELECTROTHERMAL PRINTING APPARATUS WITH ELECTRODES USABLE AS CURRENT SUPPLY OR RETURN

Katsuharu Isobe, Ome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 29, 1987, Ser. No. 78,962
Claims priority, application Japan, Jul. 31, 1986, 61-178906
Int. Cl.[4] B41J *3/20*
U.S. Cl. 400—120 4 Claims



1. In an electrothermal printing apparatus including an ink ribbon having a resistive layer, a conductive layer and an ink layer and a printing head provided with a plurality of printing electrodes for locally heating the ink layer to transfer ink from the ribbon to a recording paper when printing current is passed through the printing electrodes, printing electrode driver means comprising:

(a) a plurality of first switching means each connected to each printing electrode, for supplying printing current to the ribbon when activated;

(b) a plurality of second switching means each connected to each printing electrode, for returning the printing current from the ribbon when activated; and

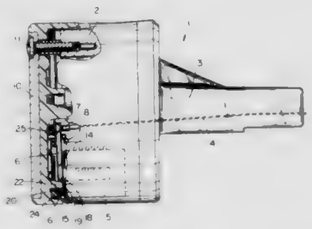
(c) means for supplying a printing current to the ink ribbon via at least one first switching means connected to at least one printing electrode and for returning from the ink ribbon via at least one second switching means connected to at least one other printing electrode, to selectively heat the ink ribbon at ink areas adjoining to the printing electrodes through which the printing current is supplied or returned.

4,798,484

DOT MATRIX PRINT HEAD

Mario Gaiardo, Ivrea, Italy, assignor to Microlys S.p.A., Turin, Italy

Filed Jul. 6, 1987, Ser. No. 69,985
Claims priority, application Italy, Jul. 25, 1986, 53690 B/86
Int. Cl.[4] B41J *3/12*
U.S. Cl. 400—124 5 Claims



1. A dot matrix print head comprising:

an elongated support body slidably carrying a plurality of print needles;

a cover for said support body rigidly connected thereto;

respective drive electromagnets for actuating said print needles, the electromagnets being disposed in a circular configuration and each having a first and a second pole of opposite sign adjacent to each other;

a plurality of striker elements disposed in a ring and made of ferromagnetic material, each able to be attracted by the first pole of a respective one of said electromagnets to strike with its first end the head of an associated said needle in such a way as to produce translation thereof; and

support means for resiliently supporting a second end of said striker elements, opposite the first end; wherein, in combination:

(i) each of said striker elements having an intermediate portion corresponding with and operating as a fulcrum upon a fulcrum edge of a flat front delimitation surface of the second poles of the said electromagnets;

(ii) said electromagnets being disposed with their said first poles positioned radially inward of their second poles;

(iii) said support means for the second end of each of said striker element comprising:

a pin formed integrally with and perpendicularly projecting from said cover, said pin being positioned with clearance within the interior of a hole formed through said second end of each striker element, immediately adjacent said intermediate portion thereof; and

a biasing element disposed between said second end of each striker element and said cover, in such a way as to oppose separation of said second end from the associated second pole of the respective electromagnet;

(iv) said second end of each of said striker elements is shaped on the side facing the corresponding second pole of the associated said electromagnet in such a manner as to be displaced, with respect to the associated said fulcrum so as to determine between it and the frontal flat surface of the associated said second pole an axial clearance, each striker element between its second end and its fulcrum at said fulcrum edge being shaped to engage said biasing element and maintain clearance over said second pole.

4,798,485

ELECTRONIC TYPEWRITER WITH A DETECTOR SWITCH

Hiroshi Osoda, Kariya; Kenji Sakakibara, Ichinomiya, and Michitoshi Akao, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 17, 1987, Ser. No. 27,188
Claims priority, application Japan, Mar. 25, 1986, 61-67523; Mar. 25, 1986, 61-67524; Jul. 18, 1986, 61-169999
Int. Cl.[4] B41J *29/38*
U.S. Cl. 400—54 11 Claims



1. A typewriter with a keyboard, a frame, a carriage relatively movable along a platen installed in the frame, and a lid for operatively covering the frame, comprising:

a detector switch provided on the frame alternatively being in a first state or a second state;

a first stimulator provided on the lid for changing the detector switch to the first state when the lid is closed and for changing the detector switch to the second state when the lid is opened;

a second stimulator provided on the carriage, and being shiftable between a normal rest position and a shifted position, for changing the detector switch to the second state when the carriage is at an original position along the platen and the second stimulator is in the shifted position and for changing the detector switch to the first state otherwise; and

means for shifting the second stimulator from the normal rest position to the shifted position if the detector switch is in the first state after the typewriter is turned on or when the lid is closed after once opened.

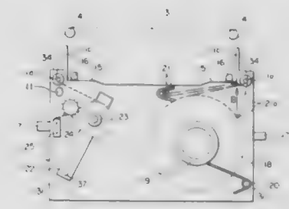
4,798,486

INK RIBBON CASSETTE HAVING MOUNTING MEANS, SLACK PREVENTING MEANS AND MULTIPLE RIBBON SHIFTING MEANS

Masanori Kaneko, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1986, Ser. No. 854,862
Claims priority, application Japan, Apr. 26, 1985, 60-88994
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208 3 Claims

1. An ink ribbon cassette, which houses an ink ribbon supplied from a casing and taken up therein after passing through a recording section, and which is detachably mounted on a carriage of a recording apparatus, comprising first positioning means for positioning said ink ribbon cassette in a first direction when said ink ribbon cassette is mounted on said carriage, and second positioning means for positioning said ink ribbon cassette in a second direction when said ink ribbon cassette is mounted on said carriage, and a tension spring for preventing slackening of the ink ribbon wherein at least one of said first and second positioning means is elastically engaged with positioning means of said carriage, and first and second ink-ribbon guide members disposed at ink-ribbon exit and entrance opening portions, respectively, each member including a linearly elongated portion whose length is substantially equal to the width of the ink ribbon and inclined end portions diverged conically toward the ends thereby when the ink ribbon between said first ink-ribbon guide member and said second ink-ribbon guide member is moved in the widthwise direction of the ink ribbon with respect to said ink ribbon cassette, slackening of the ink ribbon otherwise caused by the widthwise movement being absorbed by twisting the ink ribbon, the twisting causing the ink ribbon to bend.

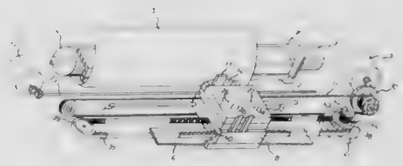


4,798,487

THERMAL PRINTER HAVING RIBBON TAKE-UP MECHANISM UTILIZING CARRIAGE MOVEMENT

Shigenori Hattori, Aichi, and Koshiro Yamaguchi, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed May 4, 1987, Ser. No. 45,413
Claims priority, application Japan, May 10, 1986, 61-70382[U]; May 13, 1986, 61-71496[U]
Int. Cl.[4] B41J *33/22*
U.S. Cl. 400—223 11 Claims



1. A thermal printer for thermal printing on a recording medium via a print ribbon, comprising:

a generally elongate platen for supporting said recording medium;

a carriage reciprocatingly movable in a longitudinal direction of said platen;

carriage drive means for moving said carriage;

a thermal print head mounted on said carriage, and operable in pressed contact with said recording medium through said print ribbon, for effecting a printing operation on said recording medium;

a take-up spool rotatably supported on said carriage, for winding thereon said print ribbon after the ribbon has passed between said print head and said recording medium;

a generally elongate, longitudinally movable member disposed parallel to said longitudinal direction of the platen;

means for applying a frictional resistance corresponding to

the rotational load applied to said take-up spool when said print ribbon has a suitable tension to said

a power transmitting mechanism supported on said carriage, and engageable with said movable member, said mechanism being activated due to a relative movement between said carriage and said movable member, for rotating said take-up spool, whereby said movable member is movable at a speed lower than a moving speed of said carriage, so as to maintain said suitable tension.

4,798,488

DOT MATRIX PRINT HEAD

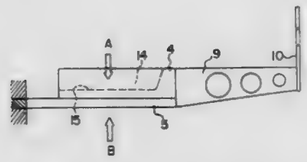
Koji Uozumi, Yokohama, Japan, assignor to NHK Spring Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 769,846, Aug. 26, 1985, abandoned. This application May 7, 1987, Ser. No. 48,999

Claims priority, application Japan, Aug. 27, 1984, 59-178116; Sep. 3, 1984, 59-184953

Int. Cl.[4] B41J *3/12*

U.S. Cl. 400—124 **3 Claims**



1. A dot matrix print head comprising a magnetic circuit including a permanent magnet, a magnetic core, a solenoid and a magnetic gap defined by a first pole surface and a pair of second pole surfaces extending orthogonally relatively the first pole surface, a sheet spring rigidly connected at one end to the magnetic core, an armature fixedly secured to a free end of the sheet spring, an arm connected to the armature, and a wire fixedly attached to the other end of the arm, the wire being axially driveable by the restoring force of the sheet spring by interruption and cancellation of the magnetic flux of the permanent magnet with the magnetic flux of the solenoid,

the armature having an open cavity therein in the region where the density of magnetic flux is relatively small, said open cavity facing away from the free end of said sheet spring, said free end of the sheet spring being attached to the face of the armature opposite to the face in which the cavity is formed, said attachment being made by laser welding applied to the bottom surface of the cavity.

4,798,489

INK RIBBON CONTROL APPARATUS FOR LOCATING REPLACEMENT CARTRIDGE COLOR BAND IN A COLOR PRINTER

Keiichi Shiota, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 25, 1986, Ser. No. 899,593

Claims priority, application Japan, Aug. 29, 1985, 60-190311

Int. Cl.[4] B41J *35/16*

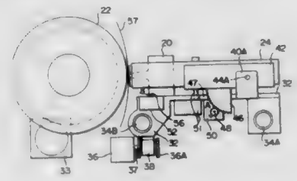
U.S. Cl. 400—216.1 **9 Claims**

1. An ink ribbon control apparatus for a color printer of the type that has a printing head and uses a ribbon cartridge having housed therein an ink ribbon divided in a lateral direction into a plurality of color bands, the control apparatus comprising:

supporting means for supporting the ribbon cartridge, said supporting means permitting selective movement of the ribbon cartridge in the lateral direction of the ink ribbon;

detecting means for generating a first detection signal indicating that the ribbon cartridge is disposed at an initial position which serves as a reference position for changing the color bands and a second detection signal indicating that the ribbon cartridge has been replaced; and

drive means, responsive to said detecting means, for driving said supporting means to move the ribbon cartridge in response to the first and second detection signals, said drive means moving the ribbon cartridge toward the



initial position in response to the second detection signal and moving the ribbon cartridge by a required distance in response to the first detection signal to set a previously selected color band at the same position relative to the printing head of the printer as the color band of the previous ribbon cartridge prior to cartridge replacement.

4,798,490

METHOD FOR USING AND REUSING CORRECTION TAPE ASSEMBLY

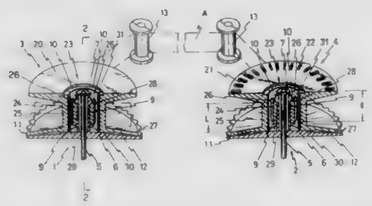
Hiroaki Watanabe, Yokohama, Japan, assignor to Fuji Kagokuhi Kogyo Co., Osaka, Japan, a part interest

Continuation of Ser. No. 922,160, Oct. 23, 1986, abandoned, which is a continuation of Ser. No. 685,326, Dec. 24, 1984, abandoned. This application Jun. 2, 1987, Ser. No. 57,286

Claims priority, application Japan, Dec. 28, 1983, 58-203223

Int. Cl.[4] B41J *29/36*

U.S. Cl. 400—697.1 **3 Claims**



1. A method for dispensing and winding a correction tape in a typewriter equipped with a first support shaft member on a tape-dispensing side and second support shaft member on a tape-winding side for the correction tape, said first and second support shaft members being of substantially the same shape and size, the method comprising the steps of:

(1) mounting a first reel containing a full length of wound correction tape on said first support shaft member so that the first reel is rotatable therewith and prevented from accidental slip-off from said first support shaft member;

(2) mounting a second, empty reel which is designed to receive said length of the correction tape on said second support shaft member so that the second reel is rotatable therewith and prevented from accidental slip-off from said second support shaft member, each of said first and second reels having a boss section, said boss section having a first means for preventing a relative rotation between each reel and each support shaft member in cooperation with a first locking pawl (8) erected on a base flange (6) of each support shaft member whether each reel is in normal position or in inverted position; and a second means for frictionally engaging and preventing accidentally slip-off of each reel from each support shaft member in cooperation with a second locking pawl (10) connected to said base flange, said second locking pawl resiliently engaging said second means at the same height above said base flange whether each reel is in normal position or in inverted position, the boss section (23) of each reel comprising an inner sleeve (24) and an outer sleeve (25) integrated together by ribs, the inner sleeve being shorter than the outer sleeve, said outer sleeve having an upper flange (20) and a lower flange (27) which extend integrally from the upper and lower ends thereof, respectively, said outer and inner sleeves and ribs defining therebetween a space which extends through said upper and lower flanges to receive said first locking pawl through either flange, said defined spaced being said first means, the upper and lower ends of said inner sleeve providing engaging portions which are in the form of inwardly inclined tapered surfaces, respectively, said engaging portions being said second means, said first means being engaged with said first locking pawl and said second means being engaged with said second locking pawl when said first and second reels are mounted on said first and second support shaft members;

(3) dispensing the correction tape from said first reel and winding said tape up on said second reel until said second reel contains the full length of the correction tape;

(4) forcing said first reel and said second reel to be detached from said first support shaft member and said second support shaft member, respectively;

(5) inverting said second reel, containing the full length of the correction tape, and mounting the inverted second reel on said first support shaft member so that the second reel is rotatable therewith and prevented from accidental slip-off from said first support shaft member;

(6) inverting said first reel which is empty and mounting the inverted first reel on said second support shaft member so that the first reel is rotatable therewith sand prevented from accidentally slip-off from said second support shaft member;

(7) dispensing the correction tape from said second reel and winding said tape up on said first reel until said first reel again contains the full length of the correction tape; and

(8) repeating the procedures of steps (1) to (7) as many times as permitted by the effectiveness of said correction tape.

4,798,491

RING BINDER MECHANISM

Edwin Lässle, Langenau, Fed. Rep. of Germany, assignor to Robert Krause GmbH & Co. KG, Espelkamp, Fed. Rep. of Germany

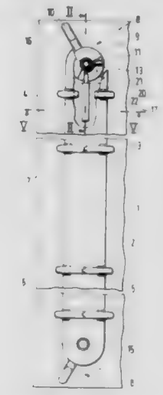
Filed Jun. 3, 1987, Ser. No. 57,587

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1986, 3621576

Int. Cl.[4] B47F *3/04*

U.S. Cl. 402—39 **17 Claims**

1. A ring binder mechanism for perforated material comprising a resilient mechanism cover, ring rail means comprising two ring rail members mounted on said resilient mechanism cover for pivotal movement between an open and a closed position, ring portions secured to each of said ring rail members such that when said pair of ring rail members are in said closed pivotal position, said ring portions form closed rings to retain said perforated material and when said ring portions are in said open position, said ring portions form open rings which are able to receive said perforated material, actuating means operably engaged with said ring rail means for pivoting said two ring rail members between said open and said closed position, said resilient mechanism cover being elongated and having a longitudinally extending central face, said actuating means being pivotably mounted on said resilient mechanism



cover and being pivotal about an axis perpendicular to said central face.

4,798,492

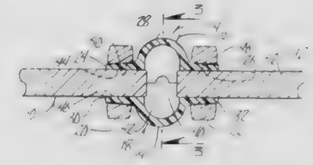
SHAFT COUPLING AND METHOD FOR USING SAME

Thomas R. Smith, 710 W. 11th St., South, Newton, Iowa 50208

Filed Dec. 7, 1987, Ser. No. 129,245

Int. Cl.[4] F16D *1/00*

U.S. Cl. 403—223 **16 Claims**



1. A flexible coupling for joining a first rotatable drive shaft and a second rotatable driven shaft together, each of said shafts having a distal end, a longitudinal axis, and an outer surface, said coupling comprising:

a coupling body comprising a first end hub having an integrally formed tapered outer surface, a second end hub having an integrally formed tapered outer surface, and a central web therebetween, said first and second end hubs each comprising an inner bore, said inner bores of said first and second end hubs being sized to frictionally receive said distal ends of said first and second shafts, respectively;

at least portions of said first end hub, said second end hub, and said central web being integrally formed with one another;

first and second nuts, each having a threaded bore extending therethrough, said threaded bore being tapered along its length so as to conform to said tapered outer surface of said first and second end hubs, respectively;

said first and second nuts surrounding and being directly threaded upon said outer tapered surfaces of said first and second end hubs, respectively, to a lock position wherein said first and second nuts exert an inward radial force on said first and second end hubs, respectively;

said first and second end hubs and said central web all being comprised of an elastomeric plastic material which permits said first and second end hubs to be compressed radially inwardly to reduce the size of said bores therein in

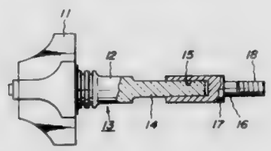
response to said inward radial force caused by said nuts being threaded to said lock position, whereby threading of said first and second nuts to said lock position when said first and second shafts are frictionally received within said bores of said first and second end hubs respectively causes said first and second end hubs to grip and tightly hold said first and second shafts against movement relative to said coupling body.

4,798,493

CERAMIC-METAL COMPOSITE BODY

Isao Oda, and Takao Soma, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed May 1, 1986, Ser. No. 857,976
Claims priority, application Japan, Jan. 12, 1985, 60-126294
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—404 **11 Claims**



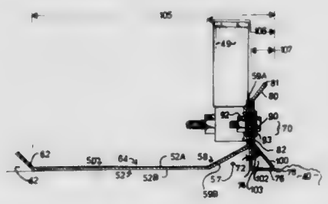
1. A ceramic-metal composite body comprising a ceramic member having a projection formed thereon and a metallic member having a structural feature selected from the group consisting of a depression and a through hole formed therein, said ceramic member being fitted to said metallic member by fitting the projection of the ceramic member into said structural feature, wherein a difference between an outer diameter of said projection of the ceramic member and an inner diameter of said structural feature after extraction of said projection from said structural feature is not less than 0.2% of the outer diameter of the extracted projection.

4,798,494

FLOATING VIBRATIONAL SCREED

J. Dewayne Allen, Paragould, Ak., assignor to Allen Engineering Corporation, Paragould, Ak.

Filed Oct. 28, 1987, Ser. No. 114,668
Int. Cl.[4] E01C *19/30*
U.S. Cl. 404—114 **21 Claims**



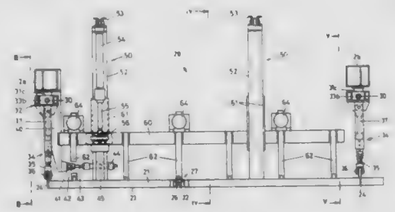
1. A floating screed for finishing plastic concrete with or without forms, said screed comprising:
an elongated, buoyant pan adapted to float upon plastic concrete, said pan comprising a generally planar flotation surface portion adapted to contact concrete, an interior, and an integral terminal portion;
an elongated blade assembly having a leading edge adapted to initially contact rough concrete during operation of said screed, said blade assembly rigidly coupled to said pan terminal portion and defining a buoyancy flotation volume adjacent said leading edge, said blade assembly comprising:
a rigid L-bracket having a substantially horizontal portion oriented substantially parallel with said pan and terminating in said leading edge, and an integral substantially vertical portion adapted to be fastened to said pan terminal portion; and,
a face plate comprising a central substantially vertically oriented portion adapted to be rigidly secured to said L-bracket and a lower angled portion extending forwardly downwardly into substantial contact with said leading edge whereby to define said flotation volume between said L-bracket and said face plate;
a pair of opposite ends between which said pan and said blade assembly longitudinally extend;
handle means operatively associated with said screed for enabling manual control and manipulation thereof, said handle means coupled to said screed between said opposite ends thereof; and,
vibrator means for vibrating said screed.

4,798,495

APPARATUS FOR INSERTION OF REINFORCEMENT RODS IN A CONCRETE ROAD SURFACE

Heinrich Lüsuppl, Graenichen, and Paul Rapp, Erlenbach, both of Switzerland, assignors to Erhard Thoma, Gartringen, Fed. Rep. of Germany

Filed Mar. 26, 1987, Ser. No. 30,880
Claims priority, application Switzerland, Mar. 27, 1986, 1243/86
Int. Cl.[4] E01C *23/04*
U.S. Cl. 404—100 **4 Claims**



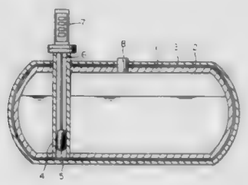
1. Device for insertion of reinforcing rods (22) at locations for transverse joints in a newly-laid concrete road surface (6), encompassing a support (2*a*), a longitudinal guide (30) attached to the support (2*a*), a slide (32) which is movable along the longitudinal guide (30), a plate (21) attached to the slide (32), adjustable in height with respect to the slide (32), with slots (26) in the plate disposed parallel to the guide (30), and with holding means (27, 28) for the reinforcing rods (22) attached to the plate 921) in the vicinity of the slots (26), and with a vibration beam (60) which can be displaced vertically above the plate (21) with forks (62) to vibrate the reinforcing rods (22) during insertion, unique in that the plate (21) can be moved horizontally, transversely with respect to the guide (30) by a first piston element (44) attached to support (2*a*) and disposed transverse to the direction of the slots, the plate (21) can be raised by a second piston element (37), and the slots (26) have a lowermost portion at the underside of the plate and an adjacent portion above the lowermost portion, the lowermost slot portion being wider in the direction transverse to the guide (30) than the adjacent slot portion, wherein following insertion of the rods into the newly-laid concrete surface at a first joint location the plate (21) is moved transversely to smooth over the surface where the rods are inserted, the widened slots facilitating such smoothing, and the plate is then raised by the second piston element (37) above the road surface for transport to the next joint location.

4,798,496

UNDERGROUND TANK WITH LEAK DETECTION MECHANISM

Koji Sawada, Tokyo, Japan, assignor to Nippon Engineer Service Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1987, Ser. No. 91,037
Claims priority, application Japan, Feb. 10, 1987, 62-27098; May 13, 1987, 62-114873
Int. Cl.[4] B65G *5/00*
U.S. Cl. 405—53 **4 Claims**



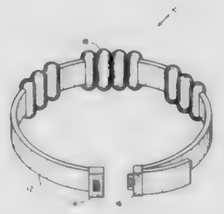
1. An underground tank assembly and a leak detection mechanism therefor, said tank assembly comprising an inner tank in which a liquid is to be contained but which is susceptible to leakage; an outer tank covering said inner tank with a narrow gap therebetween, each of the tanks comprising an upper side and a lower side, and a first conduit (8) defining a fill port for said inner tank extending through said outer tank and said inner tank and through said gap therebetween; said leak detection mechanism comprising a second conduit (4) extending down through said upper sides of said outer tank and said inner tank and through said gap therebetween, through said inner tank and through said lower side of said inner tank and opened into said gap between said inner tank and said outer tank; a float provided in said second conduit (4) responsive to the level of any leaked liquid which has flowed into said second conduit (4) from said gap; and means in said second conduit (4) for detecting the position of said float to thereby provide an indication of leakage of liquid from said inner tank.

4,798,497

DIVING BELT

Joseph A. Blooe, 779 N. 14th St., San Jose, Calif. 95112

Filed Sep. 8, 1987, Ser. No. 93,767
Int. Cl.[4] B63C *11/02*
U.S. Cl. 405—186 **1 Claim**



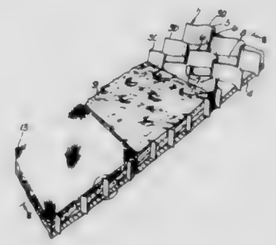
1. A new and improved weight belt, comprising:
an elongated flexible plastic belt impregnated with a phosphoresecent material;
cooperating quick release fasteners provided at opposite ends of said belt;
a plurality of weights attached to said belt;
each of said weights comprising a generally cylindrical lead body having hemispherical end portions and provided with a longitudinal slot through which said belt is received;
frictional engagement of said belt in said slots being sufficient to maintain said weights in adjusted position;
and
each of said weights encapsulated in a plastic material impregnated with a phosphoresecent substance.

4,798,498

DEVICE FOR STABILIZING BULK MATERIAL

Carl R. Hallberg, Kongsberg, Norway, assignor to A/S Platou, Notodden, Norway

Continuation-in-part of Ser. No. 13,786, Feb. 12, 1987, abandoned. This application May 12, 1987, Ser. No. 48,821
Claims priority, application Norway, Feb. 24, 1986, 860684; Feb. 24, 1987, 870764
Int. Cl.[4] E02D *17/20*; E02B *3/12*
U.S. Cl. 405—258 **18 Claims**



1. A device, especially for stabilizing bulk material to a support surface, wherein an initially relative thin, substantially flat web having a top side and a bottom side and in a first direction is provided with rows of consecutively arranged slit means extending between said sides; said rows of slit means are staggered relative to each other in said first direction so that the web by stretching in a second direction which is angled to said first direction, forms oppositely undulating strips which in turn define rows of side by side arranged cells or pockets between a top side portion of the web adjacent one side of the slit means with a bottom side portion of the web adjacent another side of the slit means; and wherein the cells or pockets in one row are offset in said first direction from the cells or pockets in an adjacent row; and further wherein the web has a "thermal memory" or an introductory stretching which is effected during the production of the web when the web is still soft and hot, and which will initiate the direction in which the strips are to undulate during the final stretching.

4,798,499

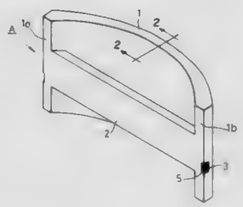
RETAINING PANEL

Kunimitsu Yamada, Yokosuka, Japan, assignor to Kensetsukiso Engineering Co., Ltd. and Okabe Co., Ltd., both of Tokyo, Japan

Filed May 15, 1986, Ser. No. 863,307
Claims priority, application Japan, May 17, 1985, 60-105447; Jul. 31, 1985, 60-169126
Int. Cl.[4] E02D *29/02*
U.S. Cl. 405—286 **5 Claims**

1. For use in stabilizing a steep earthen slope, a concrete revetment comprising a plurality of concrete sections, each of which includes an arcuate member having a convex back face, a concave front face and vertical extremities and a front cordal member interconnecting the vertical extremities of the arcuate member; said cordal member being adapted to encase a tension rod passing longitudinally therethrough; means to tension said tension rod to compress said cordal member to tension said arcuate member; means to stack said sections in vertical rows

and to align said sections in horizontal rows, the convex sides of said arcuate members being positioned to face toward said



steep earthen slope and means to anchor each said section to said steep earthen slope.

4,798,500

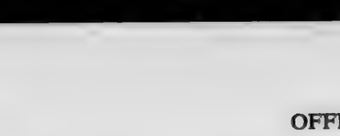
METHOD OF LAUNCHING LONG PIPELINES

Arthur W. Morton, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Continuation of Ser. No. 313,873, Oct. 22, 1981, abandoned, which is a continuation-in-part of Ser. No. 258,909, Apr. 30, 1981, abandoned. This application Dec. 12, 1983, Ser. No. 547,290

Int. Cl.[4] F16L *1/04*

U.S. Cl. 405—158 **11 Claims**



1. A method of launching a pipeline from an onshore site into a body of water, said method comprising the steps of:

supporting said pipeline at said onshore site with a plurality of ground engaging movable support means spaced along a length of said pipeline, said support means of said plurality of support means being connected together by a support connecting line;

positioning a launch vessel to a seaward end of said pipeline;

positioning an intermediate floating vessel offshore from said site, deploying a main launching line seaward from a seaward end of said intermediate floating vessel, and providing sufficient buoyancy means to hold said main launching line above said floor of said body of water;

connecting a pipeline launch line between a landward end of said floating vessel and said seaward end of pipeline;

connecting a support means launch line between said landward end of said intermediate floating vessel and said seaward end of said support connecting line;

connecting a seaward end of said main launching line to said launch vessel;

moving said launch vessel seaward and thereby towing said pipeline and said support connecting line into said body of water; and

applying a retarding force to said pipeline and thereby maintaining a tension force in said pipeline, as said pipeline is towed into said body of water, sufficient to hold said pipeline above a floor of said body of water.

4,798,501

FLEXIBLE ROCK ANCHOR

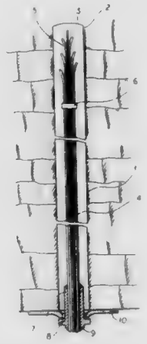
Klaus Spies, Aachen-Schmithof, Fed. Rep. of Germany, assignor to Rudolf Hausherr & Sohne GmbH & Co. KG, Sprockhovel, Fed. Rep. of Germany

Filed Aug. 26, 1987, Ser. No. 89,739

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1986, 3629365

Int. Cl.[4] E21D *20/02, 21/00*

U.S. Cl. 405—260 **12 Claims**



1. A flexible rock anchor which is insertable in a bore in the ground to a certain depth and is attachable to the walls of said bore at its end facing the deepest portion of said bore by an adhesive means, comprising:

a plurality of lamella cut in a continuous manufacturing process from a plurality of sheet metal strips in close contact with each other and slidable against each other, said width and said thickness of said lamella and the inclined lateral edges of said lamella being such that an optimum circular outer surface is approached, said lamella having a spread portion at the end of said anchor located in said bore shaped to increase the adhering surface for said adhesive and improve the formlocking connection between said anchor and said adhesive;

a ring provided around said lamella adjacent said spread portion to hold together said lamella; and

a sleeve connected by welding with said lamella positioned on the chamber end of said lamella having a head which allows said sleeve to rotate said anchor in an easy way with an outside tool, the heat being produced by said welding being used to give said chamber end of said lamella a cylindrical shape by engaging a tool thereon from the exterior.

4,798,502

CORNER GROUTING NOZZLE

John F. Trout, St. Charles, Ill., assignor to Lily Corporation, Aurora, Ill.

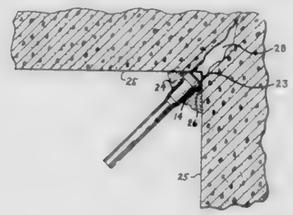
Continuation of Ser. No. 746,051, Jun. 18, 1985, abandoned. This application Aug. 21, 1987, Ser. No. 88,999

The portion of the term of this patent subsequent to Apr. 9, 2002, has been disclaimed.

Int. Cl.[4] B65B *3/04;* **B29F** *1/00;* **E02D** *5/18;* **E04G** *23/02*

U.S. Cl. 450—269 **1 Claim**

1. A nozzle for injecting sealant into a crack at a corner of two adjoining walls, said nozzle comprising a shank having proximal and distal ends, said shank having an axial bore therethrough communicating with its said proximal and distal ends, said nozzle distal end defining a head having a collar and an integral protruding tip, said tip and at least a portion of said collar being formed by substantially V-shaped converging surfaces adapted for a complemental fit into said corner adjacent said crack, said converging surfaces at said tip forming a thin walled means for minimizing blow-back of said nozzle upon injection of said sealant into said crack, said converging



surfaces at said collar forming oppositely disposed contact means for accommodating an adhesive to secure said nozzle to said adjoining walls at said corner with said tip positioned over said crack.

4,798,503

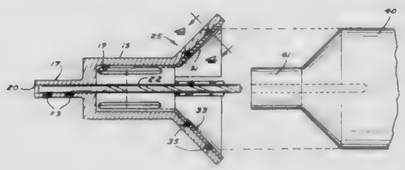
TENON FORMING TOOL

Brian M. Huju, 1650 Deer Lake Way, Grand Rapids, Minn. 55744

Filed Feb. 5, 1988, Ser. No. 152,881

Int. Cl.[4] B23B *51/00*

U.S. Cl. 408—211 **2 Claims**



1. A tenon forming tool as an attachment for a powered hand drill, having in combination,

an elongated cylindrical body portion,

a shank of reduced diameter relative to said body portion being integral therewith and extending rearwardly thereof,

a bore in said body portion of a diameter to receive a tenon to be formed and having a depth corresponding at least to the length of a tenon to be formed,

a counterbore in said shank extending from said bore in said body portion and communicating therewith,

a face portion of said body portion extending forwardly thereof and flaring outwardly thereof,

a plurality of radial slots in said face portion,

a cutting blade mounted adjacent each slot position to have the blade cuttings discharged therethrough,

a pilot drill disposed axially of said bore and extending into said counterbore,

a plurality of slots spaced about said body portion, and

means in connection with said shank securing said drill.

4,798,504

WORKPIECE MACHINING APPARATUS AND METHOD

Piepke Erwin; Willhaf Paul, both of Friedrichshafen, and Gundhir Subhash, Immenstaad, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

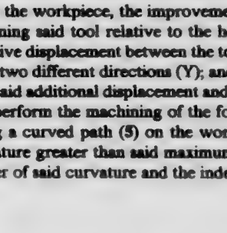
PCT No. PCT/EP85/00391, § 371 Date Apr. 10, 1986, § 102(e) Date Apr. 10, 1986, PCT Pub. No. WO86/01136, PCT Pub. Date Feb. 27, 1986

PCT Filed Aug. 3, 1985, Ser. No. 855,622

Claims priority, application European Pat. Off., Aug. 17, 1984, PCT/EP84/00253

Int. Cl.[4] B23F *5/26*

U.S. Cl. 409—2 **16 Claims**



1. In apparatus for performing machining operations on a workpiece (1), including a frame (16), a tool (7) engageable with the workpiece, drive means (10,12) effecting programmed displacement of the tool relative to the workpiece through operational strokes in different directions (X,Y,Z) for machining formations thereon, a work holder (2) indexable about an axis (3) the workpiece being mounted thereon and positioning means imparting relative displacement between the tool and the work holder with respect to said indexing axis (3) in synchronism with said programmed displacement for spacing said formations along a predetermined path (5) on the workpiece having a center of curvature (4), the improvement residing in said positioning means including auxiliary drive means (17,18) for radially and tangentially realigning the tool relative to the holder and means (21,24) effecting additional relative displacement between the tool and the holder in one of the directions (Y) for the machining of the formations along said path (5) on the workpiece having the center of curvature (4) thereof radially spaced from the indexing axis (3).

12. In a method of machining a workpiece (1) by means of a tool (7) displaced through operational strokes in at least two different directions (X,Y) relative to the workpiece while positioned on a holder (2) having an indexing axis (3) limiting the operational stroke of the tool in one of the two directions (Y) to a maximum radial distance from said axis, said displacement of the tool through the operational strokes being synchronized with programmed relative displacement between the tool and the holder to machine formations at spaced locations (6,6A) on the workpiece, the improvement including the steps of: realigning said tool relative to the holder; imparting additional relative displacement between the tool and holder in said one of the two different directions (Y); and synchronously programming said additional displacement and the realignment of the tool to perform the machining of the formations at said locations along a curved path (5) on the workpiece having a radius of curvature greater than said maximum radial distance when the center of said curvature and the indexing axis do not coincide.

4,798,505

PROCESS AND APPARATUS FOR REMOVAL OF DUST AND CHIP MATERIAL AT THE MACHINING STATION OF A MACHINE TOOL

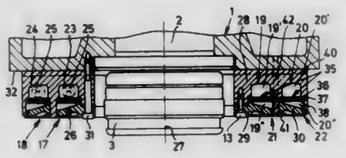
Anton Anseeder, Rorschach, Switzerland, assignor to Starrfräsmaschinen AG, Rorschacherberg, Switzerland

Filed Jul. 15, 1986, Ser. No. 885,950

Claims priority, application Switzerland, Jul. 16, 1985, 3090/85; Jan. 17, 1986, 245B/86

Int. Cl.⁴ B23Q *11/12*

U.S. Cl. 409—136 **10 Claims**



1. Apparatus for removing dust and chips from the working point of a machine tool having a spindle, said apparatus comprising:

first and second hollow annular channels concentrically disposed in adjacent relationship about the spindle, said channels sharing a common wall portion, said first and second channels respectively constitute first and second hollow horizontal rings, the first ring being an outer ring and having an outer wall, the second ring being an inner ring and having an inner wall, said common wall portion defining an inner wall for the first ring and an outer wall for the second ring, each ring having a corresponding separate annual clearance defining a corresponding endless nozzle whereby there are two nozzles, and

means for introducing a pressurized fluid into both channels, said fluid being discharged from each nozzle as a separate closed fluid curtain which is substantially cylindrical with entrained dust and chips whereby two concentric spaced apart curtains are discharged.

4,798,506

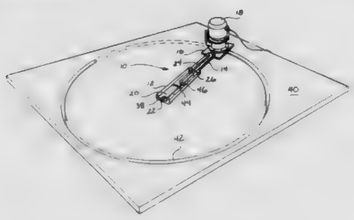
APPARATUS FOR FORMING PRECISELY ARCUATE CUTS IN A WORKPIECE

Earl F. Kulp, Jr., 320 Lincoln St., Charlotte, N.C. 28203

Filed Jan. 21, 1988, Ser. No. 146,329

Int. Cl.⁴ B23C *1/20*

U.S. Cl. 409—179 **11 Claims**



1. Apparatus for forming precisely arcuate cuts in a workpiece selectively of any desired arcuate degree up to a full 360° circular cut and of a range of varying radii, said apparatus comprising:

a base;

means for affixing said base rotatably to the workpiece centrally of a desired arcuate cut to be made in the workpiece to define an axis for rotational movement of said base with respect to the workpiece through a full 360° range of movement;

an extensible arm mounted to said base for unitary movement with said base rotationally about said axis and for selective movement relative to said base radially with respect to said axis; and

mounting means affixed to said extensible arm for supporting a cutting tool in cutting relation to the workpiece for forming an arcuate cut in the workpiece during rotational movement of said base.

4,798,507

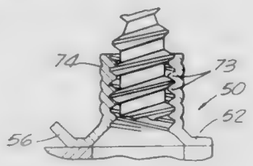
SHEET METAL U-NUT

Benjamin Oiak, Santa Fe Springs, Calif., assignor to California Industrial Products, Inc., Santa Fe Springs, Calif.

Filed Jul. 18, 1985, Ser. No. 756,850

Int. Cl.⁴ F16B *37/02, 37/04*

U.S. Cl. 411—175 **1 Claim**



1. A sheet metal U-nut formed from a single flat piece of metal, comprising:

a first portion having a generally cylindrical sleeve drawn therefrom;

a second portion integral with said first portion having a hole formed therein for passage of a sheet metal screw which is aligned with the sleeve centerline axis;

a third portion interconnecting the first and second portions and holding them in spaced apart relation;

a retainer ring partly sheared from the second portion to form the hole in the second portion and angularly bent toward the first portion with its free end formed to extend angularly of the plane of the remainder of the retainer ring;

a double thread formed in the interior of the sleeve for at least two full revolutions by roll-form tapping with a tap having thread shaped with a flattened root at the apex of the tap thread angle.

4,798,508

MACHINE AND METHOD FOR OPENING A FILLED BAG, EMPTYING THE BAG, AND DISPOSING OF THE EMPTY BAG

John W. Lewis, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 25, 1988, Ser. No. 172,929

Int. Cl.⁴ B65G *65/04;* **B65B** *69/00*

U.S. Cl. 414—412 **7 Claims**

1. A machine for slitting a filled bag to divide the bag into sections, emptying the contents of the bag, and disposing of the empty bag sections, the machine comprising:

a first gripper unit and a second gripper unit:

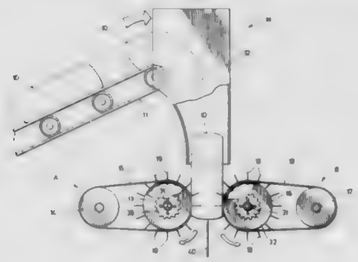
each gripper unit includes a rotatable spiked drum having an outside wall surface, the drums being spaced apart, several rows of rigid spikes being fastened to each drum, the spikes extending outwardly from the outside wall surface of each drum, the spikes in each row being spaced apart, and each row of spikes being spaced from an adjacent row:

each gripper unit further includes a belt means and an idler roller, with each belt means connecting the rotatable spiked drum to the idler roller, each belt means having openings therein, with the spikes on each drum extending through these openings and beyond the belt means:

a drive means for simultaneously rotating the spiked drums in each gripper unit, each drum being rotated in a direction opposite from that of the other drum;

a guide means positioned adjacent to the rotatable drums in each gripper unit, for guiding a filled bag into the space defined between the rotatable drums:

a cutter means positioned adjacent to the rotatable drums in each gripper unit and in direct alignment with the space defined between said drums, the cutter means being



adapted to engage a filled bag and cut the bag into sections, and the rotational direction of each drum being such that the filled bag is moved into contact with the cutter means;

wherein, in operation, the filled bag enters the space between the rotating spiked drums and becomes impaled on the spikes, the rotating drums move the impaled bag against the cutter means, the cutter means slits the bag to divide it into sections, the contents of the bag fall away from the rotating drums, and each bag section is carried on the spikes of one of the rotating drums to a point where the moving belt means causes the bag section to be released from each drum.

4,798,509

TOWING APPARATUS

Leslie Bubik, Toronto, Canada, assignor to Vulcan Equipment Company, Ontario, Canada

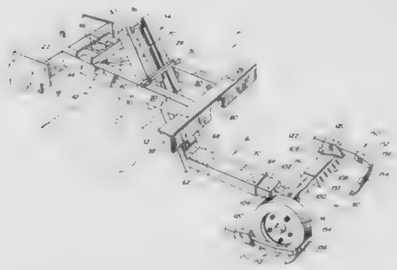
Division of Ser. No. 752,980, Jul. 8, 1985, Pat. No. 4,637,623.

This application Jun. 6, 1986, Ser. No. 872,137

The portion of the term of this patent subsequent to Jan. 20, 2004, has been disclaimed.

Int. Cl.⁴ B60P *3/12*

U.S. Cl. 414—563 **11 Claims**



1. A wheel-lift vehicle towing device comprising:

spaced apart generally parallel supports mountable on the frame of a towing vehicle;

an axle, each end of which is attached to one of the supports;

a column mounted rotatably on the axle and movable through an arc about the axle;

a lever arm fixed at one end to the column above the axle and at the other end to a hydraulic actuator positioned between the spaced apart supports;

an inner column member one end of which is slidably mounted inside the column, the other end of which is external to the column;

a boom, one end of which is attached to the lower end of the inner column member and forms an obtuse angle with the inner column;

a transverse beam pivotally fixed to the end of the boom spaced from the inner column members;

a collar pivotally mounted on each end of the transverse beam;

means for supporting a vehicle wheel removably engageable with each collar.

4,798,510

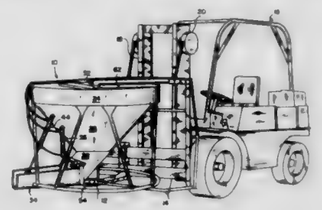
CONCRETE BUCKET ASSEMBLY RIGIDLY MOUNTED FOR VERTICAL TILTING AND ROTATIONAL MOVEMENT TO A FORKLIFT VEHICLE

James E. Lazenby, 808 Daisy St., Monroeville, Ala. 36461

Filed Jan. 14, 1988, Ser. No. 143,749

Int. Cl.⁴ B65G *69/00*

U.S. Cl. 414—607 **11 Claims**



1. A concrete bucket assembly disposed for vertical and rotational movement comprising:

a lifting apparatus having support means thereon disposed for vertical and tilting movement;

a concrete bucket having an upper open portion to receive a concrete mixture therein and a lower funneled portion for discharging said concrete mixture;

closure means operable for retaining and directing said mixture into and out of said bucket;

actuating means carried by said lifting apparatus and disposed for actuating said support means for the vertical and tilting movement thereof and for actuating said closure means for opening and closing thereof; and

ball and socket means carried by said bucket and said support means and disposed in substantially axial alignment at said upper and lower portions of said bucket to permit rotational movement thereof.

4,798,511

METHOD AND APPARATUS FOR ATTACHING A LOADER TO A TRACTOR

Edward T. Kaczmarczyk, Welland; Rory Rae, Port Colborne, and Roger A. Noyes, Niagara Falls, all of Canada, assignors to Deere & Company, Moline, Ill.

Filed Dec. 23, 1986, Ser. No. 946,221

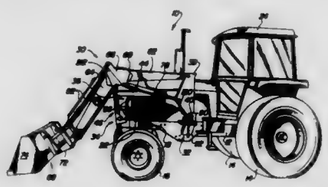
Int. Cl.⁴ E02F *3/627*

U.S. Cl. 414—686 **29 Claims**

1. A method of detachably mounting an implement such as a loader to a tractor, the implement including a fore-and aft extending frame and a hydraulically operated boom pivotally connected to the frame, said method comprising the steps of:

securing a slotted bracket to the tractor;
providing a pin at the aft end of the frame;
positioning the pin in the slotted bracket;
rotating the forward end of the frame upwardly about the pin;
securing the upwardly rotated forward end of the frame to bracket structure located at the forward end of the tractor;
moving the pin in the slot; and
positioning a block against the pin to secure the pin in the slot.

18. In a loader adapted for mounting on and dismounting from a tractor having a fore-and-aft extending tractor frame, the loader including a mast having transversely spaced fore-and-aft extending mast beams, upright beams fixed to the aft ends of the respective mast beams, and a forward frame member connecting the forward ends of the mast beams, a boom pivotally connected to the upright beams and extending for-



wardly therefrom to a ground-engaging tool such as a loader bucket, and cylinder means for pivoting the boom with respect to the upright beams, attaching structure for connecting the loader to the tractor, comprising:

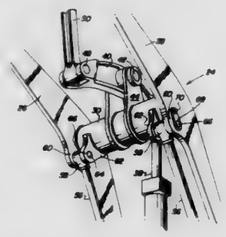
a pair of brackets connected to the sides of the tractor frame, the brackets each including an elongated slot with a pocket located at one end of and offset from the slot, said upright beams including pin means adapted for receipt by the respective slots for pivotally connecting the mast to the tractor frame, said pin means movable along the slots, means for rotating the mast to move the pin means from the slots and into said pockets, said brackets further comprising spring wedge means for automatically securing the pin means in the respective brackets as the pin means move into the pockets, and means for securing the forward end of the mast to the tractor frame to thereby restrict rocking of the mast with respect to the tractor frame.

4,798,512

LOADER BOOM CONSTRUCTION

Dwayne J. Istveld, Hazel Green, Wis., assignor to Deere & Company, Moline, Ill.

Filed Sep. 11, 1987, Ser. No. 96,419
Int. Cl.[4] E02F *3/36*
U.S. Cl. 414—722 **6 Claims**



1. In a material handling machine having a main frame that pivotally supports a vertically swingable boom having a pair of transversely spaced boom arms that are rigidly interconnected by at least one transverse tube extending between the arms and a pair of parallel hydraulic cylinders respectively having one end connected to the frame and an eye member having a transverse bore and mounted on the other end, the combination therewith of improved means for connecting said respective other ends of the cylinders to the boom comprising:

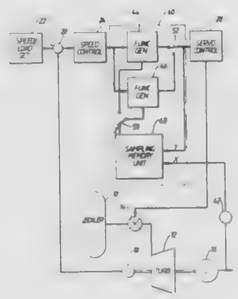
a cylinder mounting area integral with each boom arm adjacent to and offset from the opposite ends of the cross tube;
a pair of tabs respectively rigidly mounted on and adjacent to the opposite ends of the cross tube, the tabs being respectively spaced from the respective arms approximately the same distance as the width of the respective eye members;
a transverse bore through the respective boom arm mounting areas and cross tube tabs, the eye members of the respective cylinders being disposed between the respective mounting areas and cross tube tabs with the eye member bore aligned with the bores in the mounting areas and tabs;
and a pair of removable pins respectively extending through the bores in the mounting areas, eye members and tabs to connect the ends of the cylinders to the boom.

4,798,513

TURBINE CONTROL DEVICE

Youichi Tone, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 31, 1987, Ser. No. 91,026
Claims priority, application Japan, Sep. 9, 1986, 61-210750
Int. Cl.[4] F01D *17/06*
U.S. Cl. 415—17 **11 Claims**



1. A device for controlling a turbine which is driven by a flowing fluid, the device comprising:

means for determining a desired flow rate of the fluid;
a valve for controlling the flow rate with a variable degree of opening;
means for producing a signal indicative of a degree of opening of the valve;
means for producing a signal indicative of flow rate;
means for sampling the degree of opening signal and the flow rate signal and memorizing a plurality of points each indicative of a sampled flow rate and an actual degree of opening of the valve for producing the sampled flow rate;
means for converting the desired flow rate into a valve degree of opening command signal based on the memorized points; and
means for operating the valve according to the valve degree of opening command signal.
wherein the means for converting the desired flow rate into a valve degree of opening command signal comprises: first and second function generators each having an operational mode for converting the desired flow rate into the valve degree of opening command signal based on a pres-

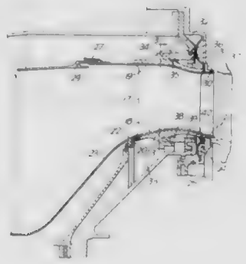
ent function and a presetting mode for presetting a function baed on the memorized points; and means for controlling one of said function generators to be in the operational mode and the other functional generator to be in the presetting mode, and switching over the first and second function generators between the operational mode and the presetting mode.

4,798,514

NOZZLE GUIDE VANE STRUCTURE FOR A GAS TURBINE ENGINE

George Pask, Stanton-by-Bridge, England, assignor to Rolls-Royce Limited, London, England

Continuation-in-part of Ser. No. 903,703, May 4, 1978, abandoned. This application Jun. 24, 1980, Ser. No. 165,953
Claims priority, application United Kingdom, May 5, 1977, 18782/77; France, Apr. 28, 1978, 78 12740; Italy, Apr. 28, 1978, 22829 A/78; Fed. Rep. of Germany, May 5, 1978, 2819808
Int. Cl.[4] F01D *5/14*
U.S. Cl. 415—115 **10 Claims**



1. A nozzle guide vane assembly for a gas turbine engine comprising:

fixed engine structure;
inner and outer platform rings, both of said inner and outer platform rings being made substantially entirely of a thin relatively flexible porous sheet material having tortuous passages therethrough whereby cooling air may pass through each of said rings from one surface to the other surface thereof;
a plurality of aerofoil portions extending between said rings and having inner and outer extremities extending through and out of said rings, said aerofoil portions receiving substantially all of any loads on said platform rings; and
mounting means directly connected to said inner and outer extremities of each of said aerofoil portions for mounting said aerofoil portions from said fixed engine structure, said mounting means directly supporting said aerofoil portions from said fixed engine structure and indirectly supporting said inner and outer rings through said aerofoil portions from fixed engine structure whereby operational loads on said aerofoil portions and loads on said rings received by said aerofoil portions are transferred to said fixed engine structure.

4,798,515

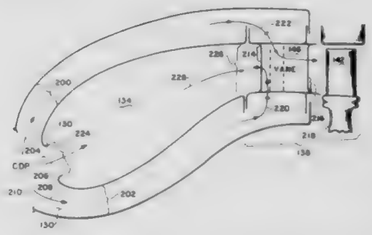
VARIABLE NOZZLE AREA TURBINE VANE COOLING

Edward S. Hsia, Cincinnati; John H. Starkweather, West Chester, and William K. Koffel, Cincinnati, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 19, 1986, Ser. No. 895,016
Int. Cl.[4] F04D *29/38*
U.S. Cl. 415—115 **17 Claims**

1. Variable nozzle area movable vane apparatus for an axial flow hot fluid turbomachine comprising:

a hollow interior vane member having leading and trailing edge portions orientable partially crosswise of the annularly disposed hot fluid stream of said turbomachine, said vane member including open centered innermost and outermost trunnion portions radial axis disposed of said annular stream and located adjacent the inner and outer extremeties of said annular fluid stream;
a first thinwalled impingement cooling baffle insert member received via a first of said open centered trunnion portions in said vane hollow interior, said first baffle insert including impingement cooling fluid apertures disposed adjacent the interior surface of said vane leading edge portion;
a second thinwalled impingement cooling baffle insert member received via a second of said open centered trunnion portions in sand vane hollow interior, said second baffle



insert including impingement cooling fluid apertures disposed adjacent the interior surface of said vane trailing edge portion;
a first source of pressurized coolant fluid communicating via said first vane trunnion portion with the centrum of said first impingement cooling baffle insert member;
a second source of pressurized coolant fluid communicating via said second vane trunnion portion with the centrum of said second impingement cooling baffle insert member; and
means coupled with at least one of said vane trunnion portions for rotating said vane about said radial axis in variation of said crosswise orientation and for effecting rotational deflection of vane impinging portions of said hot fluid stream.

4,798,516

BLOWER-CONVEYOR FOR TEXTILE FIBER TUFTS IN A CLEANING LINE AND METHOD

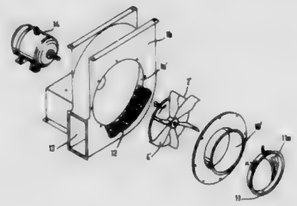
Peter Jagst, Moenchen-Gladbach, and Axel Thannheiser, Hof/S.-Moechendorf, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Moenchen-Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 641,257, Aug. 16, 1984, abandoned. This application Jul. 18, 1986, Ser. No. 887,058
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1983, 3330199
Int. Cl.[4] F04D *29/00*; B07B *7/06*
U.S. Cl. 415—121 A **6 Claims**

1. In a fiber processing line formed of a plurality of fiber processing machines connected by a conveyor duct, a blower-conveyor arranged for driving fiber tufts in an air stream through said conveyor duct; the blower-conveyor including a discharge housing, a rotary impeller supported in said discharge housing; means defining an inlet opening in the discharge housing for drawing the fiber material into the blower axially with respect to said impeller; said inlet opening being connected to said duct; said discharge housing including a housing wall generally circumferentially surrounding the impeller and bounding a blower outlet connected to said duct; the improvement comprising waste separating means integrated in said blower-conveyor; said waste separating means including throughgoing openings in said housing wall for providing

passages for waste from the fiber tufts upstream of the outlet opening as viewed in a direction of advance of the fiber tufts; said openings being sized to be sufficiently large to allow passage therethrough of waste larger than dust particles and sufficiently small to prevent passage of fiber tufts therethrough.

6. In a method of pneumatically conveying fiber tufts in a conveyor duct consecutively connecting to one another a plurality of fiber processing machines, including the step of generating an air stream by an impeller of a blower-conveyor



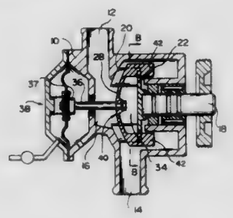
having a low pressure side and a high pressure side connected to said duct, whereby the air stream and the fiber tufts therein pass through said blower-conveyor; the improvement comprising the step of separating waste from the air stream within the blower-conveyor by centrifugal forces applied to the waste by the impeller; the step of separating waste including the step of passing the waste through openings in a curved discharge housing accommodating the impeller; the openings being sized to be sufficiently large to allow passage therethrough of waste larger than dust particles and sufficiently small to prevent passage of fiber tufts therethrough.

4,798,517

PUMP

Takehiko Katsumoto, Kyoto, and Kunio Kikuchi, Odawara, both of Japan, assignors to Mitsubishi Jidousha Kogyo Kabushiki Kaisha, Japan

Filed Sep. 30, 1987, Ser. No. 102,671
Claims priority, application Japan, Sep. 30, 1986, 61-148768[U]
Int. Cl.[4] F01D 7/00
U.S. Cl. 415—131 **6 Claims**



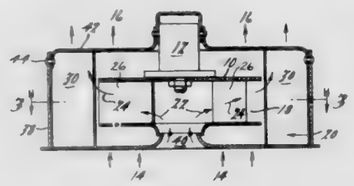
1. A pump comprising:
- a casing housing a working chamber and an impeller, said impeller being mounted in said casing on a rotational shaft; said impeller comprising:
  - a blade wheel mounted on said rotational shaft for rotation therewith;
  - a plurality of pumping blades extending axially from the periphery of said blade wheel;
  - a cover mounted within said casing and fitted over said blade wheel for rotation therewith, said cover having an end face member defining one side of said working chamber and a cylindrical skirt portion depending from the periphery of said end face member and encircling said blade wheel, whereby a hollow interior space is defined between said end face member and said blade wheel, said end face member having a plurality of slots through which said blades extend into said working chamber; and
  - a plurality of pockets formed in the interior surface of said cylindrical skirt portion of said cover, each of said pockets defining a mating surface for that portion of one of said blades extending into the interior of said impeller whereby said blade portion is flush against said mating surface during pumping; and
- actuator means for moving said blade wheel relative to said cover.

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FAN UNIT FOR USE WITH DUCT SYSTEMS

Vinzenz Holzberger, Gailldorf, and Friedrich Koger, Neuenstein, both of Fed. Rep. of Germany, assignors to Wilhelm Gebhardt GmbH, Waldenburg, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,492
Int. Cl.[4] F04D 29/44
U.S. Cl. 415—211 **15 Claims**



1. A fan unit comprising a housing, a radial flow impeller arranged within said housing to be driven by a motor, so as to draw in a gaseous medium which is expelled from the impeller in a radial indirection, and a guide radially enclosing and adjacent to the impeller, the guide being mounted inside the housing which is of substantially uniform cross-section, and having a plurality of axially extending blades arranged to direct the medium flow emerging from the impeller into an axial direction, the guide blades being inclined in a circumferential direction in relation to the axis of rotation of the impeller, and each guide blade having an arcuate profile, in radial section, extending axially beyond blades of the impeller at both ends thereof and having its radially outer edge in proximity or adjacent to said housing.

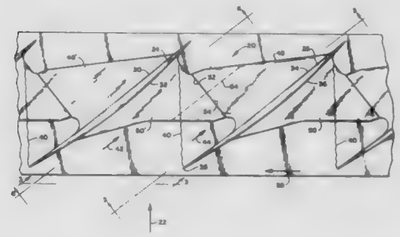
4,798,519

COMPRESSOR PART SPAN SHROUD

Robert H. Zipps, East Hartford; Kent A. Lyons, East Haddam, and Evans E. Griffin, Colchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 24, 1987, Ser. No. 88,776
Int. Cl.[4] F01D 5/22
U.S. Cl. 416—191 **7 Claims**

1. A compressor blade assembly for compressors operating at transonic or supersonic blade speeds comprising:
- a rotor shaft;
- a plurality of circumferentially spaced coplanar airfoil blades mounted on said shaft, each having a pressure surface side and a suction surface side;
- an intermediate part span shroud for resisting twisting and for damping vibration of said blades;
- said shroud comprising a circumferentially extending fin on each of each blade, the fins of adjacent blades in abutting relationship;
- said fins of elongated streamlined shape and extending at an angle with the axis of said rotor shaft in the direction of airflow; and



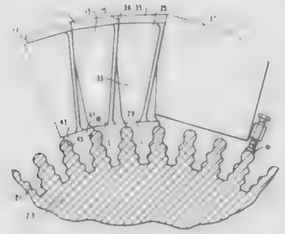
- said fins having a greater angle toward the pressure surface side of each blade and a lesser angle toward the suction surface side of each blade.

4,798,520

METHOD FOR INSTALLING INTEGRAL SHROUD TURBINE BLADING

Albert J. Partington, Winter Springs, Fla., and David A. Hornberger, Waxhow, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 22, 1987, Ser. No. 53,246
Int. Cl.[4] F01D 5/32
U.S. Cl. 416—219 R **10 Claims**



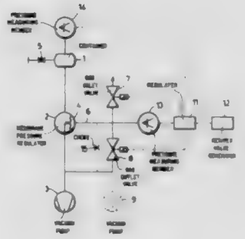
1. A method of installing a row of blades on a turbine rotor with a blade anchor, each of the blades having a root portion, a blade portion extending from the root portion, a platform interposed between the root portion and the blade portion and an integrally fromed shroud segment extending from the blade portion, each shroud segment including a leading edge and a trailing edge, the blade anchor having a blade support member extending from a root portion and an end portion with a trailing surface positionable against the leading edge of a blade shroud segment, the rotor having a plurality of steeple shaped grooves circumferentially disposed about the rotor for receiving the root portion of the blades and the root portion of the blade anchor, said method comprising the steps of:
- installing a removable blade anchor in a first groove;
- installing a plurality of turbine blades circumferentially about the rotor by sequentially wedging each of the blades in registry with a corresponding one of the grooves so that each shroud segment tightly abuts an adjacent shroud segment and all shroud segments are forced toward the blade anchor, the installation beginning at a groove closest to the trailing surface of the blade anchor end portion and ending prior to the installation of a blade in the remaining vacant groove next to the anchor blade support;
- rewedging a first portion of the plurality of blades extending from the trailing surface of the blade anchor end portion to force shroud segments on the first portion of blades away from the blade anchor while each shroud segment remains in tight abutment with each adjacent shroud segment so that the blade anchor may be removed without disturbing the tight abutment between shroud segments;
- removing the anchor blade after rewedging the first portion of blades; and
- installing additional blades in the rotor to form a complete row of blades.

4,798,521

SYSTEM AND METHOD FOR REGULATING PRESSURE IN A CONTAINER

Lothar Schmidt, Kerpen-Sindorf, and Hans-Joachim Schumbert, Wesseling, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed May 4, 1987, Ser. No. 45,492
Claims priority, application European Pat. Off., May 2, 1986, 86106040.8
Int. Cl.[4] F04B 49/06; F16K 31/12
U.S. Cl. 417—295 **9 Claims**



1. In a system for regulating pressure in a container and having a membrane pressure regulator with a reference pressure chamber containing a reference pressure and a vacuum pump connected to the container via the membrane pressure regulator, the improvement comprising:
- a gas inlet valve connected to said reference pressure chamber for increasing the reference pressure;
- a pressure decreasing means connected to said reference pressure chamber for decreasing the reference pressure; and a
- regulator means connected to said gas inlet valve and said pressure decreasing means for actuating said valve and said pressure decreasing means, said regulator means including a desired value generating input means for generating a desired pressure value for said container and measuring means including a first measuring member connected to the container for measuring the pressure in the container and a second measuring member connected to the reference pressure chamber for measuring the pressure in the reference pressure chamber.

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JOINT STRUCTURE FOR FLUID SUPPLY PUMP AND FLUID SUPPLY PIPE

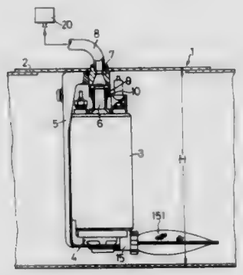
Hideki Kaga, Kariya, and Hisanori Kobayashi, Chita, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 4, 1986, Ser. No. 938,145
Claims priority, application Japan, Dec. 4, 1985, 60-273094
Int. Cl.[4] F04B 39/12
U.S. Cl. 417—363 **10 Claims**

1. A joint structure for a fluid supply pump and a fluid supply pipe comprising:
- an outlet pipe projecting from a pump housing of said fluid supply pump;
- a cylindrical retaining member fitted on an outer periphery of said outlet pipe, the length of said cylindrical retaining member being less than the length of said outlet pipe, thereby exposing a tip end portion of said outlet pipe;

a O-ring closely fitted on an outer periphery of said tip end portion of said outlet pipe so that said cylindrical retaining member contacts said O-ring at its upper end, and contacts an upper end surface of said pump housing at its lower end; and

a cylindrical joint member to which one end of a fluid supply pipe is connected and communicating with said supply



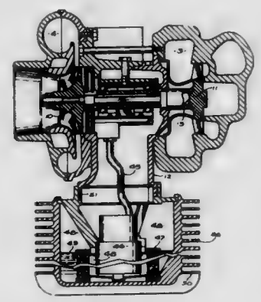
pipe; said outlet pipe being pressed into said joint member; said joint member having an inner diameter that is larger than the outer diameter of said outlet pipe and the outer diameter of said O-ring so that an outer periphery of said O-ring closely contacts an inner periphery of said joint member while said O-ring is retained by and in contact with said cylindrical retaining member when said outlet pipe is pressed into said joint member.

4,798,523

TURBOCHARGER BEARING AND LUBRICATION SYSTEM

Jerry Glaser, Playa del Rey, and David G. Elpern, Los Angeles, both of Calif., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 19, 1986, Ser. No. 944,498
Int. Cl.[4] F04B *17/00, 35/04*
U.S. Cl. 417—407 **27 Claims**



1. A turbocharger comprising:

a turbine, having a turbine wheel within a turbine housing;

a compressor, having a compressor wheel within a compressor housing;

a shaft extending between said turbine wheel and said compressor wheel;

a center housing disposed between said turbine housing and said compressor housing and disposed around said shaft and including bearing means, supported by a bearing bore, to rotatably support said shaft;

lubrication means, separate from said internal combustion engine lubrication system, to lubricate said bearing means, and

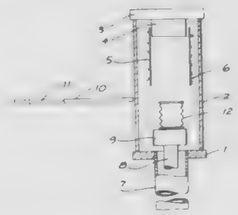
air ventilation means comprising an inner race, surrounding said shaft, an air slinger, mounted on said inner race, freely rotatable within said main housing and a multiplicity of ribs, mounted in the annular space between said shaft and said inner race, and parallel to the axis of said shaft, to allow air flow longitudinally along said shaft in the annular space between the outer surface of said shaft and the inner surface of said inner race, said inner race having one or more apertures near the end of said shaft opposite said air slinger, to permit entry of air into the annular space between said shaft and said inner race, to facilitate air flow for cooling said shaft.

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APPARATUS FOR FORMING CERAMICS

Eric J. Ramm, Lilli Pilli, Australia, assignor to Australia Nuclear Science & Technology Organisation, Australia

Filed Dec. 1, 1986, Ser. No. 936,161
Claims priority, application Australia, Nov. 29, 1985, PH03649
Int. Cl.[4] B29C *43/52*
U.S. Cl. 425—77 **11 Claims**



1. An apparatus for hot uniaxial pressing of heat resistant metal canisters containing synthetic rock components, the canisters having a generally cylindrical wall incorporating bellows-like formations, the apparatus characterised by a hydraulic press having an upwardly acting ram with a refractory facing thereon for supporting the bottom of the canister, a fixed top abutment, a heating zone immediately below the abutment and adapted to surround the canister during the hot uniaxial pressing process and a retractable platen adapted to be inserted laterally into the press below the heating zone such that a canister can be placed on the refractory facing and partially compressed at ambient temperature by upward displacement of the hydraulic press, the platen being removable to permit the press to be displaced upwardly to a higher level whereby the bellows-like canister is inserted within the heating zone and abuts against the top abutment.

4,798,525

CASTING INSTALLATION

Kimitera Sato, and Haruyuki Ito, both of Kitakyushu, Japan, assignors to Toto Ltd., Kitakyushu, Japan

Filed Aug. 5, 1987, Ser. No. 81,748
Claims priority, application Japan, Aug. 8, 1986, 61-186242
Int. Cl.[4] B28B *1/26*
U.S. Cl. 425—84 **16 Claims**

1. A casting installation for casting slip into a ceramic product, said casting installation comprising:

a pressure container,

an inner surface of said pressure container defining an opening extending through said pressure container,

at least one casting mold adapted to be located in said opening of said pressure container so as to establish a space which surrounds said at least one casting mold,

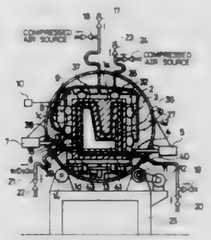
said casting mold being composed of a plurality of separate mold parts each having a plurality of channels therein and having its respective outer face treated to be fluid-tight,

an inner molding surface of said mold parts, when assembled, being dimensioned to define a molding cavity of said at least one casting mold,

said space being in communication with said molding cavity of said at least one casting mold,

means for firmly clamping said at least one casting mold,

means operatively connected to said channels of said mold parts for depressurizing said mold parts,



a source of slip operatively connected to said molding cavity of said at least one casting mold,

a source of fluid operatively connected to said space surrounding said at least one casting mold, and

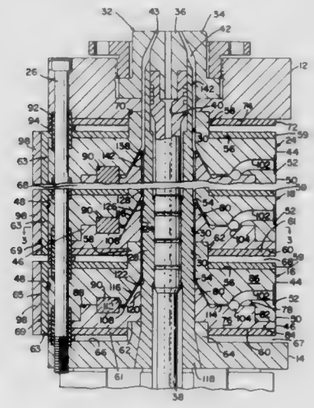
auxiliary slip supply reservoir means connected between said space surrounding said at least one casting mold and said molding cavity for supplying additional slip to said molding cavity.

4,798,526

MODULAR EXTRUSION HEAD

Milton Briggs, York, Pa., and Erich O. Teutsch, Marietta, Ga., assignors to General Electric Company and Graham Engineering Corporation

Continuation of Ser. No. 886,734, Jul. 17, 1986, abandoned, and a continuation of Ser. No. 878,701, Jun. 26, 1986, abandoned.
This application Oct. 23, 1986, Ser. No. 922,198
Int. Cl.[4] B29C *47/06, 47/26, 47/28, 47/78*
U.S. Cl. 425—113 **36 Claims**



1. A modular extrusion head for extruding parisons of synthetic, polymeric resins, which comprises;

(A) a plurality of die block modules assembled in a stack having first and second ends to form a die body for the head, each of the die block modules comprising:

(1) an upper die plate, having

(i) an upper surface;

(ii) a lower surface;

(iii) a peripheral edge defining the outer perimeter of the plate and extending between the upper surface and the lower surface; and

(iv) a bore providing open communication between the upper and lower surfaces; and

(2) a lower die plate, having

(i) an upper surface;

(ii) a lower surface;

(iii) a peripheral edge defining the outer perimeter of the lower die plate and extending between the upper surface and the lower surface; and

(iv) a bore providing open communication between the upper surface and the lower surface of the lower die plate;

the lower surface of the upper die plate and the upper surface of the lower die plate being adapted by size and configuration to mate with each other and form therebetween a thermoplastic resin melt distribution channel;

said upper die plate and lower die plate being removably assembled together whereby the channel is formed and the bore of the upper die plate is in axial alignment with the bore of the lower die plate, forming a segment of an extrusion channel of substantially uniform diameter piercing the die block assembly;

the segments of the plurality of assembled modules together forming a continuous extrusion channel of substantially uniform diameter, open at top and bottom of the module assembly and open into each distribution channel of each module in the assembled modules through an annular orifice about the aperture;

each of said resin melt distribution channels being radially disposed about the periphery of the extrusion channel segment and extending distally from the periphery of the extrusion channel to a line describing a circle;

(B) melt supply means between a melt source and each distribution channel for supplying melted, synthetic, thermoplastic, polymeric resin to the channel under uniform pressure;

(C) temperature control means associated with each module for maintaining a pre-determined resin temperature in each module;

(D) means for maintaining the plurality of stacked modules in sealing association with each other;

(E) a first terminal die plate for capping a first end of the stack;

(F) a second terminal die plate for capping the second end of the stack;

(G) a mandrel fixed in the extrusion channel and having a first end, a second end and a tapered body joining together the first and second ends thereof, said tapered body being spaced apart from the modules forming the extrusion channel to form an extrusion passageway in open communication with the annular orifice opening into each distribution channel; and

(H) fluid conduit means passing through the central portion of the mandrel.

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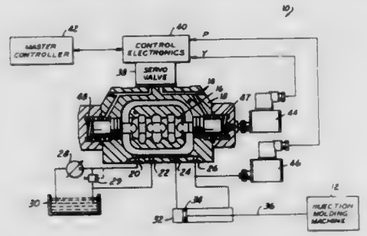
CONTROL SYSTEM FOR INJECTION MOLDING MACHINE

Rajamouli Gauda, Rochester Hills, Mich., assignor to Vickers, Incorporated, Troy, Mich.

Filed Mar. 7, 1988, Ser. No. 164,957
Int. Cl.[4] B29C *45/77, 45/82*
U.S. Cl. 425—145 **16 Claims**

1. An electrohydraulic servo system for controlling pressure of fluid in a cavity of undetermined volume, said system comprising:

valve means including a valve element, means for supplying fluid to said cavity as a function of position of said valve element, and means responsive to electronic valve control signals for controlling position of said valve element, and electronic valve control means including means for providing a pressure command signal Pc as a function of desired pressure of fluid in said cavity, means coupled to said valve means for providing an electronic pressure feedback



signal P as a function of fluid pressure in said cavity, means for varying said pressure feedback signal as a function of a gain Kp, means for providing said valve control signal as a function of a difference between said pressure command signal Pc and said varied pressure feedback signal multiplied by a gain Ke, means for determining volume V of said cavity, and means for varying said gain Ke as a function of volume of said cavity.

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EXTRUDING DIE STRUCTURE FOR PLUNGER MOLDING MACHINE

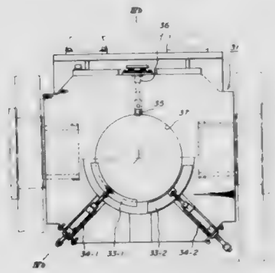
Isao Hattori, Nagoya, and Hitao Noiri, Gifu, both of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Continuation of Ser. No. 917,542, Oct. 10, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 149,949

Claims priority, application Japan, Oct. 21, 1985, 60-159847[U]

Int. Cl.[4] B29C 47/00

U.S. Cl. 425—190 **1 Claim**



1. An extruding die structure for a plunger molding machine, comprising: an extruding die structure body detachably mounted on an extruding die mounting portion of said plunger molding machine and having an extruding die at its front end, said extruding die structure body having a fixing groove formed in an outer circumference of said die body structure for fixing said extruding die structure body to said extruding die mounting portion and a positioning groove formed in an outer circumference of said die body structure for positioning said extruding die structure body in phase with said extruding die mounting portion, the positioning groove being located between said fixing groove and said extruding die, keys engaging said positioning and fixing grooves for positioning and fixing the structure body, and key driving means provided in the extruding die mounting portion for engaging and disengaging said keys from said positioning and fixing grooves of said extruding die structure body.

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APPARATUS AND METHOD FOR BRIQUETTING FIBROUS CROP OR LIKE MATERIALS

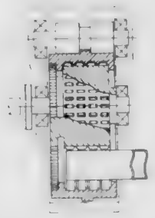
Wilfred E. Klinner, Milton Keynes, England, assignor to National Research Development Corporation, London, England

Filed Apr. 9, 1986, Ser. No. 849,942

Claims priority, application United Kingdom, Apr. 9, 1985, 8509061

Int. Cl.[4] B29C 43/08

U.S. Cl. 425—289 **14 Claims**



1. For forming fibrous crop or like materials into self-supporting products, an apparatus comprising:

first and second rotary compression members arranged so that opposed annular closing faces of the compression members cooperate to define the principal pressure-generating surfaces of a compression space for a charge of the materials;

a plurality of axially-aligned longitudinal rib protrusions extending radially from the closing face of a first one of said compression members to abut the closing face of the second one of said compression members and to define axially parallel first walls of the compression space;

a plurality of axially-spaced circumferential rib protrusions extending radially from the other of said opposed closing faces to abut the closing face of said first compression member and to define axially transverse second walls of the compression space;

at least some respective rib protrusions of one of said plurality of axially-aligned longitudinal rib protrusions and said plurality of axially-spaced circumferential rib protrusions being interrupted at corresponding sites along the length thereof to provide a plurality of rows of gaps, and respective rib protrusions of the other of said plurality of axially-spaced circumferential rib protrusions and axially-aligned longitudinal rib protrusions extending through respective ones of said rows of gaps;

generally tapering projections extending into the space bounded by said longitudinal and circumferential rib protrusions, but to a lesser extent that said protrusions; and

drive means operative to rotate the two compression members in opposite rotational senses to one another;

said longitudinal and circumferential rib protrusions being tapered towards their radially outer edges so as, in operation of the apparatus, to combine with said closing faces of the compression members and with said generally tapering projections to apply pressure having components in three mutually orthogonal directions at and within the perimeter of the charge, thereby to produce in the charge zones of relatively high bond strength which limit subsequent relaxation of the charge to maintain a relatively high charge density.

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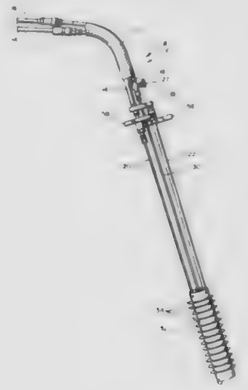
NOZZLE ASSEMBLY FOR HOT AIR TORCH

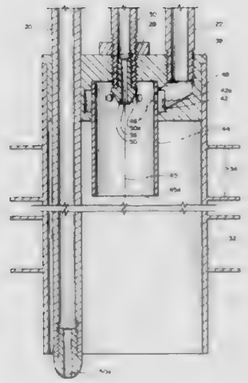
Arvo M. Sestrap, 212-1521 Blackwood Street, White Rock, B.C., Canada V4B 3V6

Filed Apr. 21, 1987, Ser. No. 40,875

Int. Cl.[4] F23D 13/62

U.S. Cl. 431—354 **12 Claims**





1. A nozzle assembly having a longitudinal center axis, a front end and a back end particularly adapted for use in a hot air torch wherein the hot air torch utilizes a source of compressed air and a source of gaseous fuel comprising:

(a) a base structure;

(b) a circumferential housing having a front open end and a rear end, the housing having a lengthwise axis which is aligned with the longitudinal center axis of the nozzle assembly, the housing comprising a circumferential side wall which extends around the longitudinal axis and defines a primary combustion chamber;

(c) a nozzle member located at the rear end of the housing and centered on the longitudinal axis of the nozzle assembly, the nozzle member having a front forwardly facing portion with a center through opening, the opening having a front end which faces from the nozzle member in a forward direction along the longitudinal axis of the nozzle assembly so as to discharge fuel in a forward direction through the combustion chamber, the nozzle member being characterized in that the nozzle member has a generally frusto-conical exterior side surface which slopes inwardly and forwardly to terminate at the front end of the center through opening;

(d) an annular air discharge structure located at the rear end of the housing and defining an annular plenum chamber to receive pressurized air therein, the structure having a plurality of radially inwardly directed air jet openings positioned circumferentially around the nozzle member to direct air from the plenum through the air jet openings in a converging radially inward direction toward the nozzle member; and

(e) the nozzle member and the air discharge structure being positioned such that air jets discharged from the air jet openings converge at and impinge upon the frusto-conical exterior side surface of the nozzle member, with the air jets being a primary source of combustion air for the fuel discharged from the nozzle member,

whereby as air is directed from the air discharge structure through the air jet openings and flows radially inwardly toward the nozzle member and as gaseous fuel flows from the nozzle opening, the air strikes the frusto-conical exterior side surface of the nozzle member in a manner that the air combines effectively with the gaseous fuel to mix the air with the gaseous fuel providing effective combustion.

7. A method of providing effective combustion in a hot air torch with a nozzle assembly, the nozzle assembly having a longitudinal center axis, a front end and a back end wherein the hot air torch utilizes a source of compressed air and a source of gaseous fuel, comprising the steps of:

(a) providing a base structure;

(b) providing a circumferential housing having a front open end and a rear end, the housing having a lengthwise axis which is aligned with the longitudinal center axis of the nozzle assembly, the housing comprising a circumferential side wall which extends around the longitudinal axis and defines a primary combustion chamber;

(c) providing a nozzle member;

(d) positioning the nozzle member at the rear end of the housing and centering the nozzle member on the longitudinal axis of the nozzle assembly;

(e) providing the nozzle member with a front forwardly facing portion with a center through opening, the opening having a front end which faces from the nozzle member in a forward direction, the nozzle member being characterized in that the nozzle member has a generally frusto-conical exterior side surface which slopes inwardly and forwardly to terminate at the front end of the opening;

(f) providing an annular air discharge structure defining an annular plenum chamber to receive preasurized air therein, the air discharge structure having a plurality of radially inwardly directed air jet openings positioned circumferentially around the nozzle member to direct air from the plenum through the air jet openings in a converging radially inward direction toward the nozzle member;

(g) positioning the annular air discharge structure at the rear end of the housing;

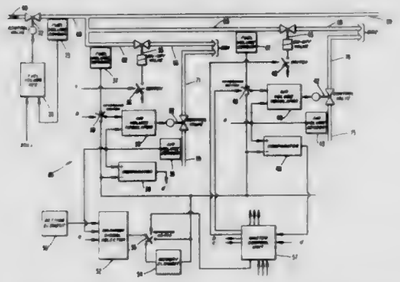
(h) positioning the nozzle member and the air discharge structure such that air jets discharged from the air jet openings converge at and impinge upon the frusto-conical exterior side surface of the nozzle member;

(i) directing air from the air discharge structure through the air jet openings whereby the air flows radially inwardly toward the nozzle member with the air jets being a primary source of combustion air for the fuel discharged from the nozzle member; and

(j) directing gaseous fuel flow from the source of gaseous fuel whereby air strikes the frusto-conical exterior side surface of the nozzle member and combines effectively with the gaseous fuel to mix the air with the gaseous fuel providing effective combustion.

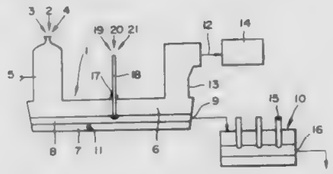
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4,798,531
PROCESS AND APPARATUS FOR THE CONTROL OF THE AIR AND FUEL SUPPLY TO A PLURALITY OF BURNERS
Kurt Brockner, Wallhängen, Fed. Rep. of Germany, assignor to Eckardt AG, Stuttgart, Fed. Rep. of Germany
Filed Jul. 28, 1987, Ser. No. 78,909
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1986, 3638410
Int. Cl.[4] F23N *1/02*
U.S. Cl. 431—12 **2 Claims**



1. A process for controlling the supply of air and fuel to at least three burners, comprising the steps of:
(A) providing separate fuel lines for said burners and a common fuel supply conduit means which supplies fuel to all of said fuel lines, the volume of fuel supplied through said common fuel supply conduit means being regulated by a fuel volume regulator,
(B) providing separate air-carrying lines for said burners, the volume of air supplied through said air-carrying lines being regulated by respective adjustable air volume regulators for said air-carrying lines,
(C) supplying a predetermined volume of fuel and a predetermined volume of air to a first of said burners through a first fuel line and a first air-carrying line, respectively, said fuel volume being regulated by said adjustable fuel volume regulator, and said air volume being regulated by a first of said adjustable air volume regulators, with remaining ones of said fuel lines being kept closed,
(D) thereafter providing a signal to said first adjustable air volume regulator in accordance with the actual volume of fuel supplied to said first burner to accordingly adjust the volume of air supplied to said first burner,
(E) thereafter providing a signal to a second of said adjustable air volume regulators in accordance with the adjusted volume of air supplied to said first burner to supply to a second of said burners a volume of air substantially the same as the volume of air being supplied to said first burner,
(F) thereafter opening a second of said fuel lines for said second burner and actuating said fuel volume regulator to conduct double said predetermined volume of fuel through said fuel supply conduit means, whereby said predetermined volume of fuel is supplied to each of said first and second burners, with remaining ones of said fuel lines other than said first and second fuel lines being kept closed,
(G) thereafter providing a signal to said second adjustable air volume regulator in accordance with the actual volume of fuel supplied to said second burner to accordingly adjust the volume of air supplied to said second burner,
(H) thereafter providing a signal to at least one additional adjustable air volume regulator in accordance with the largest of said adjusted volumes of air supplied to said already-ignited burners to supply to an additional one of said burners a volume of air substantially the same as said largest volume,
(I) thereafter opening said fuel line for said additional burner and actuating said fuel volume regulator to supply triple said predetermined volume of fuel through said fuel supply conduit means, whereby said predetermined volume of fuel is supplied to each of said first, second, and additional burners, and
(J) thereafter providing a signal to said additional adjustable air volume regulator in accordance with the actual volume of fuel supplied to said additional burner to accordingly adjust the volume of air supplied to said additional burner.

4,798,532
FLASH SMELTING FURNACE
Takayoshi Kimura; Yasuo Ojima, and Yoshiaki Mori, all of Niihama, Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan
Continuation of Ser. No. 900,698, Aug. 27, 1986, abandoned. This application Oct. 26, 1987, Ser. No. 113,400
Claims priority, application Japan, Sep. 5, 1985, 60-197433
Int. Cl.[4] F26B *3/00*; F27B *19/02*
U.S. Cl. 432—210 **2 Claims**

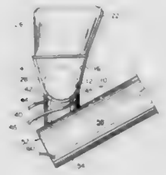


1. In a flash smelting furnace for producing matte from a copper or nickel sulfide ore comprising a reaction shaft, a concentrate combustion device disposed at a top of said reaction shaft, means for supplying oxidizing gas to said top of said reaction shaft, means for supplying powdered copper or nickel sulfide ore concentrate to said top of said reaction shaft, a settler for containing melt formed in said reaction shaft and having opposite first and second ends and a ceiling, said first end of said settler being connected to a lower part of said reaction shaft, and an uptake connected to said second end of said settler, the improvement wherein said flash smelting surface includes at least one consumable lance pipe extending downwardly through the ceiling of said settler between said furnace shaft and said uptake, means for supplying powdery raw material which includes copper or nickel sulfide ore concentrate to each of said lance pipes for discharge against said melt in said settler, means for simultaneously supplying a reaction gas to each of said lance pipes for discharge against said melt in said settler, and means connected to each of said lance pipes to move the associated lance pipe downwardly into said settler as a lower end thereof in said settler is consumed.

4,798,533
ASPHALT RECYCLING CONVEYOR
Jerry R. Collette, P.O. Box 1482, Englewood, Fla. 34295-1482
Filed Jun. 6, 1988, Ser. No. 202,453
Int. Cl.[4] F27D *3/00*
U.S. Cl. 432—227 **11 Claims**

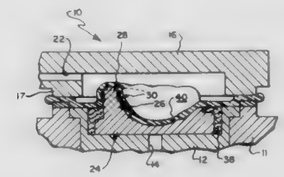
1. An asphalt recycling conveyor system comprising:
a laterally extending, horizontally disposed, collecting trough having a semicircular bottom, a front wall, a back wall and end walls;
a collecting trough hopper secured to said bottom of said collecting trough at one end thereof;
an auger having a shaft rotatably mounted in said collecting trough;
said auger having a thread directed to move asphalt in said collecting trough toward said collecting trough hopper;
a drive operably connected to said auger for rotation thereof;

a plurality of heating lines substantially coextensive with said collecting trough in heat transfer relationship with said bottom of said collecting trough;
a layer of thermal insulation on said bottom of said collecting trough;
a protective cover over said layer of thermal insulation;
a back deflecting plate upwardly extending from said back wall;



end deflecting plates upwardly extending from said end walls; and
spaced guard rails extending across said collecting trough, whereby partially cooled asphalt can be deposited in said trough through said guard rails from a dump truck and caused to pass through said collection hopper for recycling.

4,798,534
METHOD OF MAKING A DENTAL APPLIANCE
Peter R. Breads, Buffalo, N.Y., assignor to Great Lakes Orthodontic Laboratories Inc., Tonawanda, N.Y.
Continuation of Ser. No. 637,577, Aug. 3, 1984, abandoned. This application Oct. 24, 1986, Ser. No. 922,758
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—6 **9 Claims**



1. A method of making a dental appliance comprising:
providing a dental model formed from an impression taken from the mouth of the patient, said model including a teeth simulating portion and a tissue simulating portion;
positioning an auxiliary member in relationship to said model so that a substantial and continuous portion of said auxiliary member is spaced a predetermined distance from a surface of said model along said tissue simulating portion and another portion of the auxiliary member acts on said tissue simulating portion of said model to maintain the spacing of said substantial and continuous portion from said model surface along said tissue simulating portion so that a gap separates said substantial and continuous portion from said model surface along said tissue simulating portion, said substantial and continuous portion being uncoated;
applying only heated thermoplastic material to said model so as to overlie said model and said auxiliary member, said thermoplastic material being pliable while in its heated condition;
shaping said heated thermoplastic material so that said material conforms to the shape of said model and portions of said material are urged to flow around said spaced portion of said auxiliary member and join together to encapsulate said spaced portion for a substantial distance along its length, said thermoplastic material being of the type which normally must be urged into said gap separating said substantial and continuous portion from said model surface; and
permitting said thermoplastic material to cool to a hardened condition whereby said auxiliary member is firmly secured to the cooled thermoplastic material.

4,798,535
FOOT REGULATOR, ESPECIALLY FOR DENTAL EQUIPMENT
Benny S. Nielsen, Pilegaardsv10 nge 191, DK-2635 Ishoj, Denmark
Filed Mar. 24, 1986, Ser. No. 843,111
Int. Cl.[4] A61C *1/02*
U.S. Cl. 433—101 **4 Claims**



1. A foot regulator of substantially cylindrical shape, for controlling multiple operations upon adjustment; said foot regulator comprising:
(a) concentric control means (2) including a control member mounted for selective rotation about a vertical axis and for selective horizontal displacement, in all radial directions normal to said vertical axis, from a center position;
(i) said control member having a plurality of radially-spaced openings (10) therein and a plurality of spring members, at least one each of which is mounted in each radiallyspaced opening;
(ii) said control member having an upper side with a central recess therein;
(b) rotational sensing means for sensing rotational positioning of said control means relative to said vertical axis;
(c) horizontal displacement sensing means constructed and arranged to detect horizontal displacement of said control member from said center position;
(i) said horizontal displacement sensing means including a ball positioned within said central recess;
(ii) said foot regulator including a housing having a throughhole therein; said throughhole being aligned coaxially with said control means central recess;
(iii) said horizontal displacement sensing means including a pressure switch in communication with said ball by means of said through-hole; and,
(d) a plurality of pins mounted in said regulator, at least one each of which extends into one each of said radially-spaced openings in said control member;
(i) said spring members mounted to extend between said pins and said control member to selectively bias said control member into said center position;
(e) whereby as said control member is horizontally displaced, said ball is displaced at least partially from said recess to activate said pressure switch, said pressure switch being usable to control a first operation; and,
(f) whereby rotational positioning of said control member can be measured by said rotational sensing means for control of a second operation.

4,798,536

HIGH STRENGTH FELDSPATHIC DENTAL PORCELAINS CONTAINING CRYSTALLINE LEUCITE

Sigmund Katz, West Orange, N.J., assignor to American Thermocraft Corp., East Orange, N.J.

Continuation-in-part of Ser. No. 80,011, May 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 945,834, Dec. 23, 1986, abandoned. This application Dec. 1, 1987, Ser. No. 124,459

Int. Cl.[4] A61C *13/08, 13/083;* C03C *10/10*

U.S. Cl. 433—212.1 13 Claims

7. A translucent feldspathic dental porcelain restoration exhibiting a minimum crystalline leucite content of about 45% by weight, wherein said leucite crystallites exhibit a size of less than about 35 microns; a compressive strength of at least about 125,000 p.s.i.; a diametral tensile strength of at least about 6,000 p.s.i.; and a flexural strength of at least about 16,000 p.s.i.; said restoration consisting essentially of a translucent feldspathic dental porcelain comprising:

Component	Percentage (by weight)
SiO_2	55–70
Al_2O_3	16–20
CaO	0.5–5.0
MgO	0.5–5.0
Li_2O	1.0–5.0
Na_2O	2.0–5.0
K_2O	12.5–22.5
Ce_2O_3	0–1.0

4,798,537

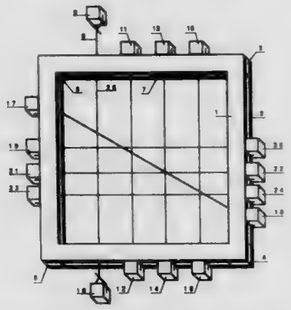
MOVABLE GRID DRAWING FRAME

Perry N. Ragouzis, 1030 Gregory Road, Fort Collins, Colo. 80524

Filed Feb. 29, 1988, Ser. No. 161,679

Int. Cl.[4] G09B *11/00*

U.S. Cl. 434—90 3 Claims



1. A movable grid drawing frame comprising:

a flat drawing frame unit made up of two identical four sided flat frames; four thin spacers positioned at the four corners of said individual flat frames so as to separate the frames enough to provide a narrow slot between them, said slot being uninterrupted along the full length of each edge of said drawing frame unit, except at the corners where the thin spacers connect the individual flat frames together into a single unit.

a number of individual elastic grid strings inserted through the narrow slots created between the two individual flat frames, said elastic grid strings to span, vertically and horizontally, the open area contained by the four inside edges of the drawing frame unit;

two sliders, bead or button like units, per installed grid string, one attached to each end of each individual grid string so that all grid strings are stretched under slight tension between the outside edges of the drawing frame unit, said sliders riding on the outside edges of said drawing frame unit.

4,798,538

ABDOMINAL RESPIRATION TRAINING SYSTEM

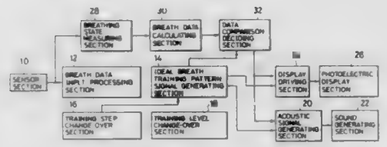
Hiroshi Yagi, Toyama, Japan, assignor to Elco Co., Ltd., Toyama, Japan

Filed May 26, 1987, Ser. No. 53,760

Claims priority, application Japan, May 27, 1986, 61-121853

Int. Cl.[4] A61B *5/02*

U.S. Cl. 434—262 6 Claims



1. An abdominal respiration training system comprising:

a sensor which is attached to an abdominal region of a person to be examined and detects the motion of the abdominal wall by an abdominal respiration;

a training pattern generating means for generating an ideal pattern of an inspiration time and/or an expiration time on the basis of ideal values of a respiration ratio, a respiration depth, and a number of respiration times, so as to obtain a relaxation state in which an alpha wave mainly appears;

a breath pattern calculating means for calculating an actual breath pattern of the person to be examined from a detection signal of said sensor;

a comparison deciding means for comparing the pattern calculated by said breath pattern calculating means with the ideal breath training pattern from said training pattern generating means, and for deciding a degree of similarity between said calculated pattern and said ideal breath training pattern; and

an informing means for informing said ideal breath training pattern and an output of said decision indicative of the degree of similarity to the person to be examined by an acoustic output and/or photoelectric display.

4,798,539

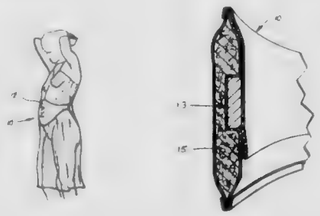
PRENATAL LEARNING DEVICE AND METHOD

Verlyn Henry, and Danise Henry, both of 8130 Kendaville Rd., Lakeview, Mich. 48850

Filed Mar. 26, 1987, Ser. No. 30,344

Int. Cl.[4] G09B *50/004*

U.S. Cl. 434—319 25 Claims



1. A method for educating and communicating with a fetus in its mother's womb comprising:

mounting a sonic source means for transmitting a communication to a fetus in its mother's womb in a support and positioning means, and securing said support and positioning means to a mother with said sonic source means located adjacent to and in sonic vibration transmitting relation to the mother's womb; and

transmitting a desired communication in sonic wave form into the womb from said sonic source means.

4,798,540

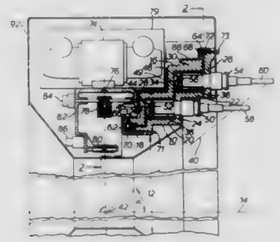
INTEGRATED CT SCANNER GANTRY

Richard T. Bernardi, Prospect Heights, Ill., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Division of Ser. No. 494,104, May 12, 1983. This application Mar. 3, 1988, Ser. No. 163,805

Int. Cl.[4] G03B *41/16;* H01R *39/10*

U.S. Cl. 439—22 3 Claims



1. A gantry assembly comprising:

a. a stator having:

i. first and second cylindrical band sections coaxial to the axis of rotation of said assembly and offset from one another along said axis of rotation, said first band section having a smaller diameter than said second band section, yet having a diameter sufficient to encircle a patient positioned along said axis of rotation; and

ii. first and second disc sections lying in planes perpendicular to said axis of rotation, said first disc section extending from one edge of said first band section to one edge of said second band section, and said second disc section extending from the other edge of said second band section in a direction away from said axis of rotation;

b. a rotor having:

i. first and second cylindrical band sections aligned with and coaxial to said first and second band sections of said stator, respectively, the diameters of said first and second band sections of said rotor being greater than the diameters of said first and second band sections of said stator, respectively, to form respective first and second annular cavities therebetween with said first disc section of said stator closing off one side of said first cavity and said second disc section of said stator closing off one side of said second cavity; and

ii. first and second disc sections lying in planes perpendicular to said axis of rotation, said first disc section extending from one side of said first band section of said rotor to close off the other side of said first cavity and said second disc section extending from the other edge of said first band section of said rotor to one edge of said second band section of said rotor to close off the other side of said cavity;

c. a bearing assembly located between said stator and said rotor to rotatably support said rotor on said stator; and

d. first and second slip ring means mounted in part on said stator and in part on said rotor and extending into said first and second cavities, respectively, for effecting high voltage connection from said stator to said rotor while permitting continuous rotation of said rotor.

4,798,541

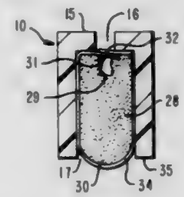
RIGHT ANGLE ELECTRICAL CONNECTOR

Warren W. Porter, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 2, 1987, Ser. No. 92,860

Int. Cl.[4] H05K *1/00*

U.S. Cl. 439—67 9 Claims



1. A right angle connector for connecting a mother board to a daughter board comprising:

a housing defining a chamber and having a first slot therein communicating with said chamber;

an elastomeric member, having a second slot therein in register with said first slot, disposed in said chamber and having a portion extending out of said chamber; and

flexible circuit means folded around said elastomeric member having its free ends located in said second slot; such that, electrical contact is made between edge connector pads on the daughter board inserted into said first and second slots and the conductors on said flexible circuit, and electrical contact is made between connector pads of the mother board and a portion of said flexible circuit surrounding said extending portion of said elastomeric member extending from the housing as said housing is fastened to the mother board compressing said elastomeric member making a tight engagement therebetween.

4,798,542

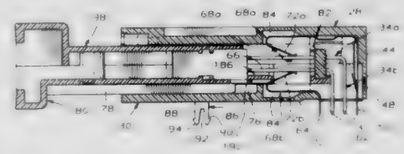
SWITCHING CONNECTOR

John C. Asick, Harrisburg; John M. Landis, Camp Hill, and Stephen M. Yingst, Hummelstown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 39,559, Apr. 16, 1987, abandoned. This application Apr. 18, 1988, Ser. No. 183,548

Int. Cl.[4] H01R *13/627*

U.S. Cl. 439—188 9 Claims



1. A connector system comprising:

a header assembly having a mounting face and an insulative housing defining a cavity;

a plurality of pin contacts having a first end extending from the mounting face and a second end extending into the cavity;

a receptacle assembly having a mating face and an insulative housing;

a plurality of terminals mounted in the receptacle assembly, said terminals mounted in the receptacle assembly, said terminals having a mating portion directed toward the mating face for mating with said pin contacts, and a terminating portion directed away from the mating face for terminating conductors of a cable; and

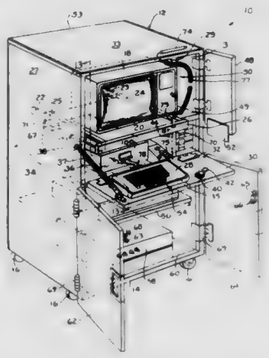
a plurality of spring contacts in said header assembly, said spring contacts having a first end and a second end, said first end extending from the mounting face and capable of being connected to independent circuits, each of said second ends in biased engagement with said second end of only one corresponding pin contact when the header assembly and a receptacle assembly are not mated, said second end of said spring contacts deflected out of engagement with said second end of a corresponding pin contact by said receptacle housing when the header assembly and receptacle assembly are mated, whereby upon mating of said header and receptacle assemblies, said receptacle assembly housing causes said second end of said spring contacts to break electrical engagement with said second end of corresponding pin contacts, which disconnects the independent circuits from the pin contacts.

4,798,543

INTERACTIVE TRAINING METHOD AND SYSTEM

Rickey J. Spiece, Park Ridge, Ill., assignor to Bell & Howell Company, Skokie, Ill.

Filed Mar. 31, 1983, Ser. No. 481,090
Int. Cl.[4] G09B *5/00*
U.S. Cl. 434—323 **33 Claims**



1. Interactive information apparatus comprising:
program control means for controlling the presentation of information and for receiving inputs from operators;
first operator entry means for inputting response information to said program control means and being accessible to a first category of instructor users of the apparatus; and
second entry means for inputting information to said program control means and being accessible to a second category of learner users and wherein said first operator entry means is inaccessible to said second category of learner users, said second entry means including operable entry means and means for limiting access to said operable entry means.

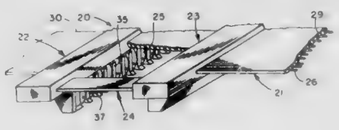
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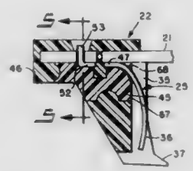
LOW PROFILE CLIP CONNECTOR WITH INTEGRAL CONTACT SUPPORT INSERT

John Hartman, Painesville, Ohio, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 816,415, Jan. 6, 1986, Pat. No. 4,726,115.
This application Oct. 23, 1987, Ser. No. 112,815
Int. Cl.[4] H01R *9/07, 11/20*
U.S. Cl. 439—404 **23 Claims**

1. An electrical connector comprising an electrical cable including plural electrical conductors, and at least one connector body including therein plural electrical contacts having exposed contacting portions for engaging electrical leads of an external electrical device and coupling portions for piercing the cable insulation to become electrically connected at cable insulation displacement junctions to said conductors of said cable, said body including insert means for supporting thereagainst said contacts in proper position and balance forming body means molded to at least a part of each of said insert means, contacts and cable to form therewith an integral structure and securely to hold said contacts to said insert means in proper position , said contacts having base portions joining together respective contacting and coupling portions, said base portions being supported against said insert means at parts thereof extending between said contacting and coupling portions in a direction generally perpendicular to said coupling portions, and said coupling portions extending away from said insert means.



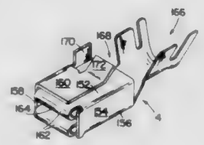


4,798,545

ELECTRICAL TERMINAL RECEPTACLE AND ELECTRICAL COMPONENT HOUSING ADAPTED FOR THE SAME

Dhirendra C. Roy, Canton; Roosevelt Johnson, Detroit, and Gregory J. Balazich, Westland, all of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Sep. 23, 1987, Ser. No. 100,155
Int. Cl.[4] H01R *13/64*
U.S. Cl. 439—677 **12 Claims**



1. A unitary electrical terminal receptacle constructed to receive a mating terminal and to be secured within a mating terminal housing constructed to receive said receptacle and a bus bar, comprising:
(a) a multi-panel, open-ended generally rectangular receptacle having an interior upper panel being adjacent to a first side panel, a lower panel being adjacent to the first side panel and opposing the interior upper panel, a second side panel being adjacent to the lower panel and opposing the first side panel, and an exterior upper panel being adjacent to the second side panel and overlapping the interior upper panel;
(b) the lower panel and the interior upper panel each having contact spring members which extend inwardly into the receptacle so as to form a contact area of the receptacle providing means for contacting and restraining the mating terminal;
(c) at least one of said panels having means connected thereto for making electrical connections and with a cut-out located between the contact area and the means for making electrical connections;
(d) a polarizing tab projecting outwardly from at least one of said panels to insure that the contact area of the receptacle is oriented correctly in a receiving cavity located in the mating housing adapted to receive said receptacle and defining a visible polarizing alot adapted to receive the polarizing tab;
(e) a resilient locking tab extending outwardly at an angle away from at least one of said panels, whereby the resilient locking tab may engage a wall defining a complementary recessed channel of said housing; and
(f) a bus bar shaped to provide an electrical current path to said receptacles located in preselected cavities and a power lead terminal connected to the bus bar.

4,798,546

BIFURCATED FUSE CLIP

William G. Herbert, Ellisville, Mo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Dec. 3, 1987, Ser. No. 127,980
Int. Cl.[4] H01H *85/16*
U.S. Cl. 439—830 **26 Claims**



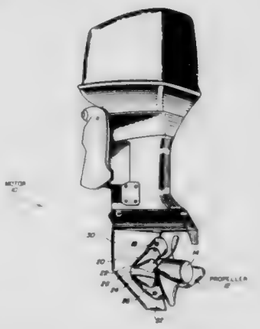
1. A fuse holder for a fuse of the type having two generally flat, parallel, spaced-apart, oppositely disposed, electrical contacts, comprising:
(a) an insulated block having a fuse accepting aperture defined by two generally vertical walls and a bottom wall disposed between said two vertical walls, said bottom wall having a fuse clip accepting aperture therein; and
(b) a fuse clip which is formed from a single strip of electrically conducting material and which is carried by said fuse clip accepting aperture in said insulated block, said fuse clip having:
(i) an elongated base member which fits within said fuse clip accepting aperture in said bottom wall and which has two opposite ends;
(ii) a pair of spaced apart base arms joined to one end of said base member, said base arms being adapted to fit within said fuse accepting aperture adjacent said bottom wall, each base arm extending upwardly and outwardly from said one end of said base member; and
(iii) a pair of springingly loaded generally elongated fuse accepting contacts, each contact having one end joined to one of said base arms and having the opposite end flaring upwardly and outwardly toward the top of said vertical walls when said fuse clip is inserted in said insulated block, said fuse accepting contacts having a flat fuse contacting section which is located adjacent said base arms and which is generally equal in length to the flat electrical contacts of the fuse, and having a fuse accepting section which has one end joined at an angle to said fuse contacting section and which has an opposite end which is adapted to be disposed adjacent the top of said vertical walls when said fuse clip is inserted in said insulated block, the length of said fuse accepting section and said angle being such that when said fuse clip is inserted into said block, said fuse contacting sections are disposed generally parallel to each other.

4,798,547

FUEL EFFICIENT PROPULSOR FOR OUTBOARD MOTORS

Walter S. Gearhart, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1987, Ser. No. 68,995
Int. Cl.[4] B63H *5/16*
U.S. Cl. 440—66 **2 Claims**



1. A fuel efficient propulsor for a motorboat moving in a fluid, comprising:
an outboard motor including a horizontal shaft having a propeller mounted thereon; and
a vane assembly mounted forward of said propeller, said assembly comprising a plurality of stationary vanes applied to only one half of the fluid inflow to the propeller covering the inflow to the left hand side of the propeller looking forward, to produce a swirl in the fluid counter to the swirl generated at said propeller.

4,798,548

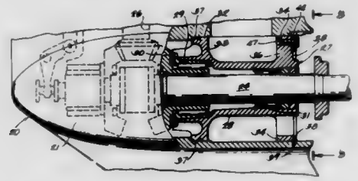
PROPELLER SHAFT BEARING HOUSING RETENTION SYSTEM

Jeffrey P. Higby, Waukegan; Kennedy K. McElroy, Lindenhurst, both of Ill., and Philip A. Zore, St. Joseph, Mich., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 11, 1988, Ser. No. 142,006
Int. Cl.[4] B63H *21/28*
U.S. Cl. 440—78 **18 Claims**

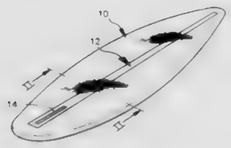
1. A marine propulsion device comprising an internal combustion engine and a lower unit including a rotatably mounted propeller shaft drivingly connected to said internal combustion engine and a propeller mounted on said propeller shaft, said lower unit further including a gearcase housing having an interior groove and a locating shoulder, a propeller shaft bearing housing within said gearcase housing engaging said locat-

ing shoulder, and a beveled retaining ring received in said interior groove and engaging said propeller shaft bearing hous-



ing to bias said propeller shaft bearing housing against said locating shoulder.

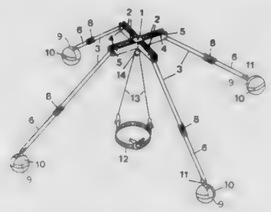
4,798,549
SURFBOARD AND METHOD OF MAKING SAME
Mark D. Hirsch, 1233 Oak Avenue, Carlsbad, Calif. 92008
Filed Jun. 8, 1987, Ser. No. 59,326
Int. Cl.[4] B63H *9/06*
U.S. Cl. 441—74 **20 Claims**



1. A surfboard comprising:
an elongated stringer having a forward end, a rear end, and upper and lower surfaces curved generally to the longitudinal profile of a surfboard;
a passage formed into and extending along substantially the length of said stringer;
outlet ports spaced along said stringer and communicating with said passage;
a fin box formed in said stringer at the rear end thereof and communicating with said passage;
said passage, said ports, and said fin box being constructed and arranged for the introduction of at least one of foam and steam therethrough for introduction into a space adjacent said stringer; and
a three dimensional body formed around said stringer and having top and bottom outer surfaces defining a surfboard configuration.

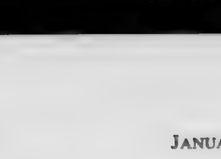
4,798,550
FLOATING DEVICE FOR SUPPORTING A SWIMMER FLOATING ON THE WATER EVEN IN RESTING POSITION
Cesare Biancacci, Via Verdi, 4, 63022 Falerone (AP), Italy
Filed Oct. 15, 1986, Ser. No. 918,969
Int. Cl.[4] A63B *31/00*
U.S. Cl. 441—129 **4 Claims**

1. A floating device for supporting a swimmer on the water surface and in a resting position, comprising,
an upper cross with four arms which each have two parallel rigid plates;
four tubular elements each being hinged between the two rigid plates forming one of said arms;
four lock elements inserted in said arms so as to keep said tubular elements in positions where they together define a truncated-pyramidal form when the device is in use, said lock elements being removable for collapse of the device to allow the upward folding of said tubular elements;
four telescopic elements which are telescoped on said tubular elements for transport and storing and are extendible for use of said device, a transverse pin for locking each telescopic element to its respective tubular element;
four float means for floating on the water surface, said float means being mounted in containing structures which are connected to the lower ends of said telescopic elements,



a jacket or belt that is worn by the swimmer, a suspension pin placed in the center of said cross, and suspension means for suspending the jacket or belt from the suspension pin, said suspension means being at a level which keeps the jacket or belt worn by the swimmer at the level of the float means which are floating on the water surface.

4,798,551
FLOATABLE BABY CARRIER
Gary W. Dumonceaux, R.R. #2, Box 57, Rochester, Ill. 62563; Edwin R. Weber, R.R. #1, Box 311, Pawnee, Ill. 62558, and James D. Gibbs, 222 John St., Farmer City, Ill. 61842
Filed Oct. 19, 1987, Ser. No. 109,323
Int. Cl.[4] B63C *9/08*
U.S. Cl. 441—130 **8 Claims**

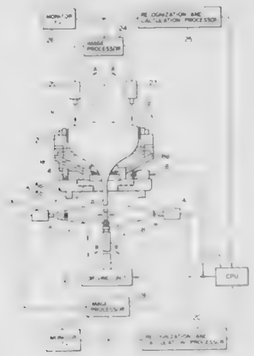


1. A floatable carrier for supporting a baby upright either in a body of water or on a generally flat support surface, comprising interior walls forming a baby receiving cavity, exterior walls fastened to said interior walls and forming a buoyancy space therebetween, a non-fluid buoyant material in said space, said interior walls including a bottom wall, belts secured to at least one of said walls for retaining a baby in said cavity, and a ballast made of solid material secured to and extending downwardly from said bottom wall.

4,798,552
APPARATUS FOR PRODUCING PICTURE TUBE
Koichi Yasuda, Yotsukaido, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 24, 1987, Ser. No. 17,535
Claims priority, application Japan, Mar. 19, 1986, 61-59156; Mar. 19, 1986, 61-59159; Mar. 20, 1986, 61-60535; Mar. 20, 1986, 61-60537
Int. Cl.[4] H01J *9/18, 9/42*
U.S. Cl. 445—64 **4 Claims**

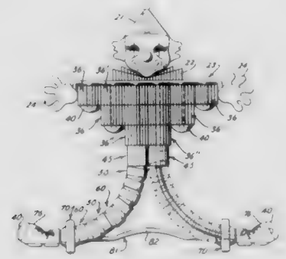
1. An apparatus for producing a picture tube comprising:
bulb holding means for rotatably holding in a circumferential direction a glass bulb having at least a phosphor screen

on the inner surface thereof and a shadow mask fitted therein;
first detection means for detecting the horizontal axis of said phosphor screen inside said glass bulb;
a mount pin to which an electron gun mounted to a stem on the same axis as said glass bulb is mounted in such a manner as to be driven both vertically and circumferentially;



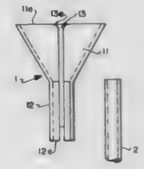
second detection means for detecting an in-line horizontal axis of the aperture center of said electron gun;
calculation means for outputting a "same" signal or "not same" signal by calculating the detection signal by said first detection means and the detection signal by said second detection means; and
a sealing machine for sealing a glass bulb neck portion to said stem in accordance with said "same" signal.

4,798,553
ANIMATED TOYS
David G. Genties, 1115 Ringwood Ave., Haskell, N.J. 07420, and Mary A. Genties, 68 Day St., Bloomfield, N.J. 07003
Filed Oct. 7, 1987, Ser. No. 105,736
Int. Cl.[4] A63H *3/16, 17/25*
U.S. Cl. 446—99 **19 Claims**



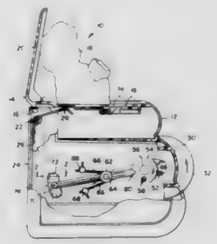
11. A toy apparatus of comprising a skeletal frame, said skeletal frame having an elongated generally curvilinear central portion having a head means formed at one end thereof and a tail means formed at the other end thereof, at least two of said spaced shaft means extending generally perpendicularly outwardly from said central portion of said skeletal frame so as to be generally perpendicular with respect thereto, at least one flexible gear means mounted to each of said outwardly extending shaft means, means for securing each of said gear means in rotational relationship with respect to said shaft means, each of said gear means having outermost lands and grooves defining intermeshing surfaces for meshing with an adjacent one of said gear means whereby motion or rotation of one of said gear means will cause rotation and motion with respect to the other of said gear means.

4,798,554
BALLOON HOLDER
David C. Nelson, 1585 S. Cleveland-Massillon Rd.; Michael J. Frank, 3448 Copley Rd., both of Copley, Ohio 44321, and Herbert Mueller, Herznach, Switzerland
Continuation of Ser. No. 023,546, Mar. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 838,516, Mar. 11, 1986, Pat. No. 4,715,841. This application Apr. 19, 1988, Ser. No. 185,291
Int. Cl.[4] A63H *3/06*
U.S. Cl. 446—222 **7 Claims**



1. A funnel-shaped, one piece balloon holder, open at both ends and comprising:
(a) an open cup comprising a base, an outer edge, and a sloping sidewall which slopes inwardly from said outer edge to said base,
(b) a hollow cylindrical stem extending longitudinally from the base of said cup on the outside thereof,
(c) a longitudinal slit for insertion of the neck of a balloon into said balloon holder, said slit extending the entire length of said balloon holder form the outer edge of the cup to the outer end of said stem; and
(d) a short slot at one end of said balloon holder for engaging said neck and thereby securing said balloon to said cup.

4,798,555
TOY POP-UP FIGURE
Bernhard Schaub, East Aurora, N.Y., and Steven Taylor, Minnetonka, Minn., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 17, 1986, Ser. No. 920,691
Int. Cl.[4] A63H *13/16, 5/00*
U.S. Cl. 446—310 **17 Claims**



1. A pop-up figure toy comprising:
a body having a first surface with an opening therethrough;
cylindrical means rotatably supported by the body on an axis parallel to said surface of said body;
said cylindrical means having a surface portion extending through said opening;

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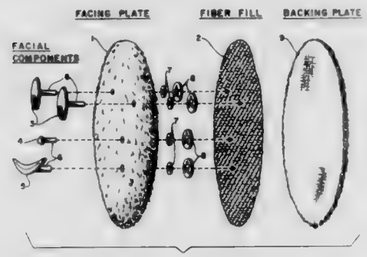
cover means movably mounted on the body, the cover means supporting a figure and movable between a normal closed position in which the figure is hidden within the body, and a pop-up position in which the figure is displayed;
resilient means for biasing the cover means to its pop-up position;
means for latching the cover means in its closed position; and
means coupling the cylindrical means to the cover means, whereby rotation of the cylindrical means will intermittently release the latching means causing the cover means and figure to be rapidly moved by the resilient means to its pop-up position.

4,798,556

ARTICLE HAVING A CHANGEABLE-EXPRESSION FACE

Paul D. Vicars, Fairborn, Ohio; Roy J. Hendricks, Fairfax, Va., and Eugene F. Goubeaux, Jr., Dayton, Ohio, assignors to U.S. Creative Concepts, Fairborn, Ohio

Filed Jul. 30, 1986, Ser. No. 891,787
Int. Cl.[4] A63H *3/36, 3/38*
U.S. Cl. 446—391 **14 Claims**



1. An article having a changeable-expression face, said article comprising:
a facing plate having a front side and a back side;
three facial components each independent moveable, one component having a feature part with the appearance of a mouth, shaped to convey at least one mood disposition in one direction of movement for positioning thereof and also further mood dispositions in other direction of movement for positioning thereof, and two having a feature part with the appearance of an eye, that is offset from center positioning thereof, said facial components being non-detachably rotatably mounted on said facing plate, with said facial components each having a feature part disposed on said front side of said facing plate, and a securing part that extends through said facing plate to said back side thereof, and whereby rotation of said facial components changes the expression of said article;
fastening means disposed on said securing parts of said facial components, remote from said front side of said facing plate, for providing non-detachable rotatable mounting of said facial components on said facing plate; and
a backing plate secured to said facing plate in such a way as to cover said back side of the latter, said securing parts of said facial components, and said fastening means.

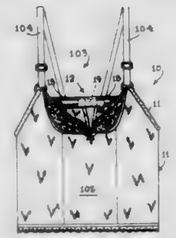
4,798,557

CAMISOLE UNDERWIRE BRA GARMENT

Lacretia M. Scott, 12633 Burbank Blvd., #208, North Hollywood, Calif. 19607

Filed Sep. 22, 1987, Ser. No. 99,855
Int. Cl.[4] A41C *3/08*
U.S. Cl. 450—31 **5 Claims**

1. A camisole underwire bra garment comprising:
a camisole unit having a generally scooped neck and a plurality of camisole strap elements; and
an underwire bra unit including a pair of underwire bra cups operatively attached to one another wherein the bra cups are provided with at least one bra strap member for encircling the underwire bra unit around a woman's chest, and wherein the upper portion of the underwire bra unit is



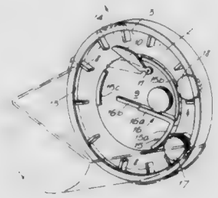
only operatively attached to the upper portion of the camisole unit along the edges of their common upper portions whereby the camisole unit is suspended from the upper portion of said underwire bra unit.

4,798,558

COIN DISPENSING APPARATUS WITH EJECTING MEMBER

Robert D. Bellis, Lancashire, England, assignor to Coin Controls Limited, Lancashire, England

Filed Jun. 24, 1987, Ser. No. 65,927
Claims priority, application United Kingdom, Oct. 24, 1986, 86-25531
Int. Cl.[4] G07D *1/00*
U.S. Cl. 453—32 **17 Claims**



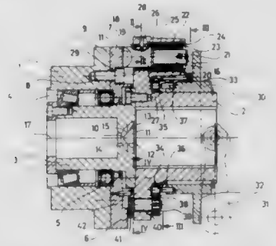
1. A coin dispensing apparatus comprising:
a coin source;
a rotary member;
a plurality of projections disposed around the rotary member to define receptacles;
means for feeding coins from the coin source into the receptacles;
means for rotating the rotary member to move coins in the receptacles along an annular coin path;
a coin outlet disposed radially to one side of the annular coin path;
a movable ejector member positioned on the side of said coin path opposite said one side; and
means for biasing said ejector member radially of the coin path toward said coin outlet, said ejector member being spaced from said coin outlet such that said ejector member is moved against the action of said biasing means by a coin in a receptacle as the coin approaches the outlet, the biasing means being operative when the coin reaches the outlet to cause the ejector member to eject the coin radially of the coin path and through the outlet;
said projections and ejector member being so arranged and dimensioned that each projection passes unimpeded between the ejector member and the outlet upon rotation of the rotary member.

4,798,559

AUTOMATIC OVERLOAD CLUTCH STRUCTURE

Ruprecht Maurer, and Karlheinz Tlatzer, both of Bad Homburg, Fed. Rep. of Germany, assignors to Ringspann Albrecht Maurer KG, Bad Homburg, Fed. Rep. of Germany

Filed Jan. 20, 1987, Ser. No. 5,483
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1986, 3602282
Int. Cl.[4] F16D *7/04*
U.S. Cl. 464—38 **23 Claims**



1. Compact overload disconnect clutch having
a pair of clutch parts (1, 2; 44, 54, 55, 73, 74),
one clutch part being adapted to be coupled to a driving shaft providing driving torque and another clutch part being adapted to be connected to a coaxial driven shaft subject to a loading torque, said clutch parts being formed with facing surfaces (6, 7) including means defining tooth elements (11) associated with one clutch part (2) and means defining tooth receiving tooth gap elements (10) on the other clutch part,
said tooth and tooth gap elements having matching interengaging flat flanks (12, 13, 14, 15) defining flank surfaces which extend radially and at an inclination with respect to the axis (17, 60) of the clutch to define generally V-shaped flank surfaces,
wherein
the clutch parts (1, 2; 44, 54, 55, 73, 74) are positioned to be axially immovable with respect to each other;
at least one of said elements comprises movable bolt elements (16, 61) positioned parallel to the axis of rotation (17, 60) of the clutch and being axially shiftably located on one (2) of said clutch parts, said bolt elements being formed with one of said tooth and tooth gap elements (10, 11) at a side proximate to the facing surface of the other (1) clutch part;
force biasing means (22)are provided acting on the bolt elements (16, 61) located on said one (2) of said clutch parts and urging said bolt elements in a direction towards the other clutch part (1); and
wherein at least one (2) clutch part and said at least one of said tooth and tooth gap elements includes
means for positioning said at least one of said tooth and tooth gap elements in said one (2) of said clutch parts for limited longitudinal sliding movement therein and for controlled limited rotation about the longitudinal bolt axis by a limited angle, which limited angle extends up to slightly above a relative angle of rotation of said clutch parts with respect to each other upon disengagement of the tooth element from the tooth gap element.

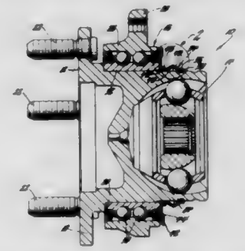
4,798,560

UNITIZED WHEEL BEARING ASSEMBLY

Robert C. Farrell, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1985, Ser. No. 702,919
Int. Cl.[4] F16C *33/00*; F16D *3/23*
U.S. Cl. 464—178 **2 Claims**

1. A wheel bearing assembly for a motor vehicle comprising;
a wheel hub which has wheel mounting means and an annular shoulder at one end and a tubular part at the other end, which forms an outer drive member of a constant velocity universal joint by which drive is transmitted to the wheel hub,
a bearing assembly having an outer ring which has means for securing the outer ring to a vehicle support and an inner ring which is mounted on the wheel hub against the annular shoulder; and
means for retaining the inner ring on the wheel hub, said means comprising;
a retaining ring having an inner margin disposed in an annular groove in the tubular part of the wheel hub and,
a load ring encircling the wheel hub between the retaining ring and the inner ring of the bearing assembly,



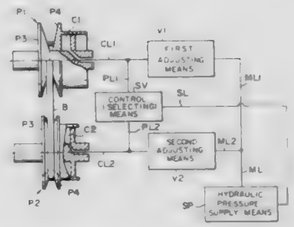
said load ring having a band of concavo-convex cross section which is plastically deformed radially inwardly so that the inner ring is biased against the annular shoulder under a substantial axial preload provided by the load ring,
said load ring having a flange at the end of the load ring which is adjacent the inner ring of the bearing assembly to increase the radial stiffness so that said end at least maintains diameter when the concavo-convex band of the load ring is plastically deformed radially inwardly,
the concavo-convex cross section of the band being V-shaped and the flange at the end of the load ring having a circular rim at its outer end which extends toward the other end of the load ring.

4,798,561

HYDRAULIC CONTROL APPARATUS FOR STEPLESS TRANSMISSION

Katsuhiko Hattori, Nagoya; Hideyuki Suzuki, and Takeo Ogasawara, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Nov. 24, 1986, Ser. No. 933,783
Claims priority, application Japan, Nov. 29, 1985, 60-269090
Int. Cl.[4] F16H *11/02*
U.S. Cl. 474—28 **21 Claims**



1. A hydraulic control apparatus for a stepless transmission wherein endless belt means is stretched or pushed between and wrapped around a pair of pulleys, and the wrapping radius defined in each pulley for wrapping said endless belt means is carried to effect a change of rotational speed between said pulleys by the hydraulic pressure, comprising:
(a) hydraulic pressure supply means comprising pressure

control means for automatically controlling the level of hydraulic pressure supplied therefrom;

(b) first adjusting means for adjusting the hydraulic pressure supplied form said hydraulic pressure supply means to a required level and supplying adjusted hydraulic pressure to a cylinder chamber of either one of said pair of pulleys through a first control circuit;

(c) second adjusting means for adjusting the hydraulic pressure supplied from said hydraulic pressure supply means to a required level and supplying adjusted hydraulic pressure to a cylinder chamber of either one of said pair of pulleys through a second control circuit; and

(d) control means for detecting the hydraulic pressure through said first and second control circuits and for controlling said pressure control means of said hydraulic pressure supply means on the basis of the higher of the output pressures of either said adjusting means in order to supply a hydraulic pressure which is equal to or higher than said higher adjusted hydraulic pressure, whereby the hydraulic pressure generated by said hydraulic pressure supply means is minimized to reduce the power consumption.

4,798,562

TENSIONING DEVICE FOR FLEXIBLE DRIVE ELEMENT

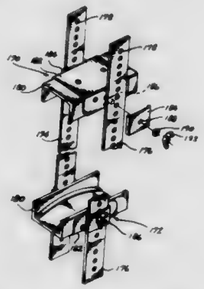
Les Matson, Selah, and Richard Sola, Yakima, both of Wash., assignors to Morse Innovations Corporation, Morse City, Wash.

Continuation-in-part of Ser. No. 821,295, Jan. 22, 1986, Pat. No. 4,662,862. This application Jan. 20, 1987, Ser. No. 2,336

The portion of the term of this patent subsequent to May 5, 2004, has been disclaimed.

Int. Cl.[4] F16H 7/08

U.S. Cl. 474—101 5 Claims



1. A tensioning device for a drive system having a flexible, endless chain drive element, the tensioning device comprising:

a first tensioning member having a first contact surface for contacting the drive element;

a second tensioning member having a second contact surface for contacting the drive element, wherein the first and second contact surfaces are stationary with respect to the respective tensioning members; and

positioning means for securing the first and second tensioning members to one another, the positioning means comprising at least one connecting member extending between the first and second tensioning members, the connecting member securing the tensioning members in spaced relationship to one another with the first and second contact surfaces facing one another and spaced apart by a distance sufficient to permit first and second runs of the drive element to pass between the tensioning members in contact with the first and second contact surfaces, respectively, the connecting member including a plurality of openings, and at least one tensioning member including a projection adapted to pass through one of said openings in the connecting member for connecting the tensioning member to the connecting member to thereby permit adjustment of the spacing between the contact surfaces by permitting at least one tensioning member to be secured to the connecting member at a plurality of positions,

whereby the positioning means holds the tensioning members a fixed distance from one another during operation of the drive system, such that when the tensioning device is in contact only with the drive element, the tensioning device can respond to fluctuations in load on the drive element by moving in a direction parallel to the drive element at the points of contact between the drive element and the tensioning members.

4,798,563

SELF-CONTAINED TYPE AUTOMATIC BELT TENSIONER

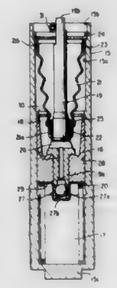
Yoshio Okabe, Chiryu; Yukimori Kobayashi, Gamagori; Makoto Ishikawa, Mishima; Tamotsu Kamiya, Susono, and Tomiaki Atsumi, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 8, 1987, Ser. No. 130,180

Claims priority, application Japan, Dec. 8, 1986, 61-290457

Int. Cl.[4] F16H 7/08

U.S. Cl. 474—110 7 Claims



1. A self-contained type automatic belt tensioner for automobiles comprising:

a body having an axially extending blind bore therein with an opening at one end, a closed wall at the other end;

a plunger slidably mounted in said blind bore of said body;

a reservoir chamber located in said plunger;

a pressure chamber disposed between said plunger and said closed wall of said body;

a rod member fixed at one end thereof to said plunger and protruding at the other end thereof from said opening of said body;

a bellows shaped elastic diaphragm located in said reservoir chamber with one end thereof being fixed to said rod member and the other end being fixed to said body;

a fluid passage connecting said reservoir chamber and said pressure chamber with each other;

a check valve disposed in said fluid passage so as to allow a fluid flow only from said reservoir chamber to said pressure chamber; and

a return spring interposed between said plunger and said closed wall of said body so as to bias said plunger in the direction of said opening of said body.

4,798,564

DOUBLE BELT TENSIONER

Robert B. Benedict, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 8, 1987, Ser. No. 95,007

Int. Cl.[4] F16H 7/12

U.S. Cl. 474—134 2 Claims

1. In a vehicle in which first and second belts driven from the vehicle engine are used to power accessories mounted at varied locations to the vehicle, so that the belts wind through

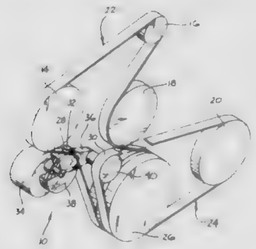
differing paths with differing lengths, and are therefore subject to differing amounts of stretch, a single belt tensioner to continuously maintain the proper tension in each belt, said tensioner comprising,

a primary arm pivoted at one end of said vehicle,

a single resilient means operable between said vehicle and said primary arm to continually forcibly swing said arm about said one end in one direction,

a secondary arm freely pivoted intermediate its two ends to the other end of said primary arm,

a first idler pulley on said secondary arm engageable with the outside of a run of said first belt, and,



a second idler pulley on said secondary arm engageable with the inside of a run of said second belt,

whereby said single resilient means will push said first idler pulley into said first belt run while simultaneously pulling said second idler pulley into said second belt run, thereby tensioning each of said belts simultaneously, with any differential in the stretching of said two belts being compensated for automatically by the secondary arm pivoting relative to the primary arm in either direction so that either pulley may move up or down from its original position as said primary arm swings.

4,798,565

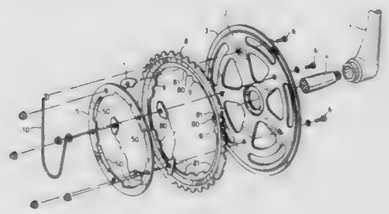
CHAIN WHEEL ASSEMBLY

Winnett Boyd, 107 Victoria Place, R.R. No. 1, Bobcaygeon, Ontario, Canada K0M 1A0

Filed Jul. 9, 1987, Ser. No. 72,026

Int. Cl.[4] G05G 1/14

U.S. Cl. 474—158 6 Claims



1. A lost motion chain wheel assembly for a pedal operated vehicle comprising a chain wheel centre for fixed mounting to a pedal crank, an externally toothed annular chain wheel rim retained concentrically on the chain wheel centre for limited rotation relative thereto, and bias spring means acting between the chain wheel centre and the chain wheel rim to bias the rim forwardly relative to the centre in relation to the intended direction of forward rotation of the chain wheel, the chain wheel rim defining on its inner periphery a plurality of peripherally spaced concave recesses, and the chain wheel centre having a journal supporting the inner periphery of the chain wheel rim on a circumference much nearer to the outer periphery of the rim than to an actual centre of rotation of the assembly, as well as a plurality of peripherally spaced convex projections entering the recesses, the projections being of lesser peripheral extent than the recesses whereby to provide for said limited relative rotation.

4,798,566
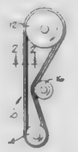
POWER TRANSMISSION BELT

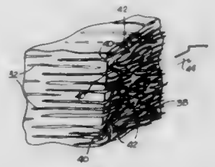
Douglas R. Sedlacek, Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Nov. 19, 1987, Ser. No. 122,989

Int. Cl.[4] F16G 5/08

U.S. Cl. 474—238 18 Claims





1. In a power transmission belt of the raw edge type with oppositely facing friction driving surfaces and having discontinuous fibers dispersed in and oriented transversely of an elastomeric body portion wherein improvements in the driving surfaces comprises:

portions of fiber protruding from the body at the driving surfaces, the fiber portions bent against the body in such a manner as to expose lateral side portions of fiber which define part of the friction driving surface.

4,798,567

POWER TRANSMISSION BELT

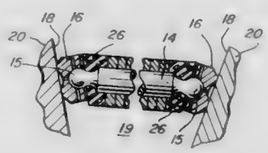
Takeshi Hoshiro, Hyogo; Mu Matsuo, Shizuoka, and Hiroshi Takano, Hyogo, all of Japan, assignors to Mitsuboshi Belting, Limited, Japan

Filed Mar. 3, 1988, Ser. No. 163,657

Claims priority, application Japan, Mar. 4, 1987, 62-50961; Jun. 15, 1987, 62-149781

Int. Cl.[4] F16G 1/22, 5/18

U.S. Cl. 474—242 27 Claims



1. A chain-type power transmission V-belt for use with a pulley having a groove defining converging opposite sidewalls, said V-belt comprising:

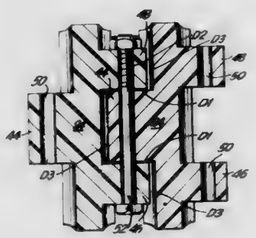
a plurality of links each having opposite ends provided with a through opening;

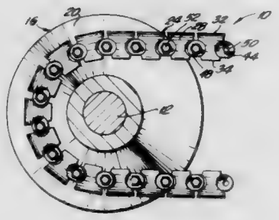
a plurality of pins for retaining said links in side-by-side relationship to define a longitudinally continuous flexible chain arrangement having a flatwise extent, said pins extending through aligned ones of said through openings and defining opposite ends;

a plurality of side elements each defining an outer surface and an inner surface, said side elements having means associated therewith for freely adjustably mounting the side elements one each on said opposite ends of said plurality of pins, with said outer surfaces disposed outermost laterally of the chain arrangement for engaging the sidewalls of a pulley groove; and

positioning means for causing the side elements to have said outer surfaces adjustably disposed at an angle to said flatwise extent of said chain arrangement corresponding to the angle of said sidewalls of the pulley being engaged by the outer surface of the side elements.

4,798,568
LINK BELT DRIVE
Joery McSwain, Rte. 4, Box 475, Albemarle, N.C. 28001
Filed Jul. 23, 1987, Ser. No. 76,778
Int. Cl.[4] F16G *1/24*
U.S. Cl. 474—242 22 Claims





1. A drive belt comprising:

a plurality of interconnected links, each of said links having a main portion, first and second drive surfaces on opposite ends of said main portion, first and second longitudinal side surfaces extending between said drive surfaces, each of said side surfaces having a longitudinal recess surface,

at least one hinge member on each of said recess surfaces, each of said hinge members having a longitudinal bore,

the hinge member of each link extending into the recess of an adjacent link,

a pin extending through said bores of said hinges of adjacent links to provide axial alignment of hinge members of adjacent links,

said axis of said bores being equidistant between said recesses of said adjacent links,

said hinge members of adjacent links being longitudinally spaced from one another to provide a first predetermined gap.

4,798,569
COUPLING KIT
Earl L. Alderfer, 3629 Logan Ave., Ft. Wayne, Ind. 46803
Division of Ser. No. 542,348, Oct. 17, 1983. This application Apr. 28, 1988, Ser. No. 187,509
Int. Cl.[4] F16G *3/07, 11/05*
U.S. Cl. 474—255 2 Claims



1. A coupling assembly comprising:

a line means including a tubular end;

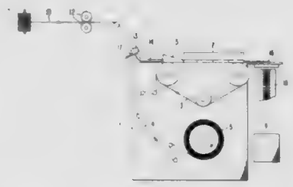
a connector member having an elongate rigid body member with opposite end portions;

a plurality of individual rigid barb members circumferentially disposed on one of said end portions, said barb members being separate and axially spaced apart and having respective maximum outer transverse dimensions greater than the inner diameter of the tubular end, the respective maximum outer transverse dimensions of said barb members decreasing in dimension from the axially outermost one of said barb members to the axially innermost of said barb members to facilitate insertion of said end portion into said tubular end;

said one end portion adapted to be forcibly received in said tubular end and said barb members frictionally engaging the inner surface of said tubular end; and

an attachment means on the other of said end portions and adapted to be securely attached to a support object, whereby said line means is securely coupled to the object.

4,798,570
PROCESS FOR PREPARING FILTER RODS
George Jurkiewitsch, Conyers, Ga., assignor to Hercules Incorporated, Wilmington, Del.
Filed Dec. 9, 1982, Ser. No. 448,138
Int. Cl.[4] A24D *3/02*
U.S. Cl. 493—44 4 Claims

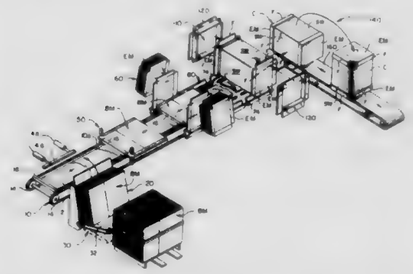


1. A method for preparing a synthetic polymer fiber filter rod from uncrimped tow of low bulk denier which comprises

passing bulked or texturized yarn tow of continuous synthetic filaments having a bulk denier of about 6,000–10,000 through a fluid bulking or texturizing jet under temperature and pressure conditions sufficient to obtain bulked yarn having a bulk index increase of about 25–75%; and

guiding and feeding the resulting bulked yarn directly from the egress of the said fluid bulking or texturizing jet into the garniture of a downstream-positioned filter rod-making apparatus, the velocity ratio of said bulked yarn at the egress of said fluid texturizing jet-to-velocity at filter rod take-off of the filter rod-making apparatus being about 15:1 to 25:1, whereby overfed bulked yarn is continuously randomly compacted within the garniture of said filter rod-making apparatus prior to wrapping and cutting.

4,798,571
CONTAINER FORMING APPARATUS AND METHOD
Wayne F. Everman, Cedar Falls; Randy J. Klug, Dike, and Raymond L. Russell, Cedar Falls, all of Iowa, assignors to Container Corporation of America, Clayton, Mo.
Filed Oct. 19, 1987, Ser. No. 109,998
Int. Cl.[4] F16H *7/14*
U.S. Cl. 493—114 15 Claims



1. Apparatus for automatically forming a three-piece bulk shipping container from a pair of top and bottom end members, each having an end wall with flanges foldably joined to side edges thereof, and a collapsed tubular body member, having a plurality of side walls, said apparatus comprising:

(a) conveyor means, for moving said members between operating stations, including a horizontally extending conveyor;

(b) a body member feeding station including body member feeding means disposed adjacent one side of said conveyor for storing said body members in collapsed condition and for placing them, one at a time, horizontally across said conveyor;

(c) an end member feeding station including end member feeding means disposed at opposite sides of said conveyor for storing said top and bottom end members, and for positioning them vertically in channels at opposite sides of said conveyor;

(d) an adhesive applying station located between said body member and end member feeding stations and including means for applying adhesive to end areas of said body members;

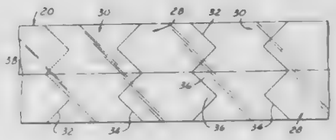
(e) a container forming station including:

(i) body member erecting means for converting said body members from flat collapsed to tubular erected condition;

(ii) container assembly means for pushing both of said end members snugly against opposite ends of said body member at the same time and for folding said flanges against the side walls thereof.

4,798,572
COLLAPSIBLE BAG AND METHOD
Arthur E. LaFleur; Arnie LaFleur, and Lee LaFleur, all of Manistee, Mich., assignors to Custom Packaging Systems, Inc., Manistee, Mich.
Division of Ser. No. 58,924, Jun. 5, 1987. This application Feb. 17, 1988, Ser. No. 157,211
Int. Cl.[4] B31B *33/64, 33/68, 37/16*
U.S. Cl. 493—195 24 Claims

1. A method of making a plurality of collapsible bags which when expanded have a pair of spaced apart generally square ends interconnected by four generally rectangular side walls comprising; forming from an elongate web of a flexible material a plurality of substantially identical tubular blanks, each blank having a circumferentially continuous central portion and four substantially identical isosceles triangular portions adjacent each end thereof and each of which is integral with the central portion and without producing any substantial amount of waste material of the web between adjacent ends of adjacent blanks by severing the web along a zig zag line having substantially straight segments defining the sides of the isosceles triangular portions with said sides of each triangular portion being substantially at a right angle to each other, on each end of each tubular blank connecting together adjacent sides of adjacent triangular portions along connection lines extending from the central portion toward the apexes of the associated



triangular portions at least one third of the length of such adjacent sides to provide when the bag is filled substantially square ends of the bag, and in at least one square end terminating each such line of connection short of the apexes of its associated triangular portions so as to form an opening through such one square end adjacent the center thereof, whereby when each bag is filled with material it has a pair of generally square ends interconnected by generally transversely extending side walls and when empty can be collapsed into a configuration having a pair of generally flat overlying panels with a generally hexagonal shape and a pair of folded gusset panels extending inwardly between the flat panels.

4,798,573
MACHINE FOR THE MANUFACTURE AND STACKING OF BAGS, POUCHES AND THE LIKE MADE FROM A THERMOPLASTIC MATERIAL
Georges Lagnia, Enghien-les-Bains, France, assignor to FMC Corporation, Chicago, Ill.
Filed Apr. 16, 1987, Ser. No. 39,055
Claims priority, application France, Apr. 18, 1986, 8605657
Int. Cl.[4] B31B *1/64*
U.S. Cl. 493—204 10 Claims

1. A machine for the manufacture and stacking of bags, pouches and the like made from a flattened sheath of thermoplastic material, the machine of the type generally comprising upper and lower sheath transporting roller means intermittently driven for intermittently advancing the sheath between upper and lower welding jaw means intermittently opening and closing in timed relation to the intermittently advancing sheath for advancing the sheath having a welded closed end by a bag length to a stacking table in the jaw open position and for welding the advanced welded closed end sheath deposited on the stacking table in the jaw closed position for the start of a second welded closed end, clamping means for clamping the deposited welded closed end sheath to the stacking table and for flexing and tensioning a segment of the clamped sheath extending from the closed jaws to the clamping means prior to cutting by an intermittently driven knife means mounted on an endless timing belt, the knife means activated in timed relation to the closing of the jaws and the clamping of the sheath to the stacking tablee and when activated the knife means passing crosswise through the segment for cutting and forming an open ended bag with the welded closed end supported on the stacking table, pin means for impaling the cut segment of the formed bag thereon and for forming a uniform stack of bags on the stacking table, means for unpinning the stack of bags after a predetermined number of bags have been pinned and uniformly stacked on the stacking table, and conveyor means for removing the unpinned uniform stack of bags from the stack-

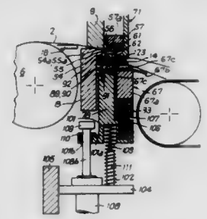
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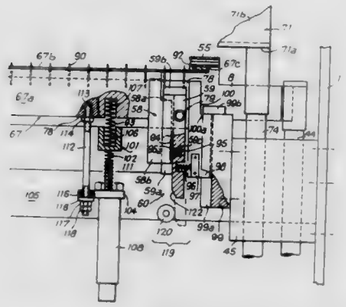
ing table for the start of a new stack of pinned bags, wherein the improvement comprises:

a braking means (5) upstream of the upper and lower roller means (7,6) for intermittently halting the advancing sheath in timed relation to the roller means intermittently stopping the advancement of the sheath to the upper and lower jaws (9,8) concurrent with the jaws closing on the sheath and forming the welded closed end of the bag; and wherein,

the lower welding jaw (8) is slidably mounted to the machine (45, 44) for vertical movement from a set low position to a set high position and the upper welding jaw (9) is slidably mounted by a lost motion connection (80, 81, 82, 85) to the clamping means (71) for vertical downward movement therewith from a set raised position to the low position and for vertical upward movement through the lost motion connection to the high position under the action of the lower jaw independent of the clamping means; and,

the clamping means is slidably mounted to the machine (74, 45) for vertical movement from a set raised position above





the level of the upper welding jaw in the open position to a set lowered position below the level of the lower welding jaw in both the low and high positions thereof, and the lower jaw having a shoulder means (53) extending toward the clamping means (71) for holding fast the segment (88) of the sheath to be cut in the closed condition of the jaws in both the low and high positions of the lower jaw, the shoulder means having a resilient transversely extending pin engaging pad (92) mounted to a horizontal projecting underside (54) thereof, and having a transversely extending horizontal groove (55) forming a counter blade for the knife means (56) mounted on the timing belt (61), and the clamping means having a belt guiding means (57) for positioning the knife means for entry into the counter blade groove in the low position of the lower jaw and in the set lowered position of the clamping means and for guiding the knife means in a horizontal path through the counter blade groove and cutting the segment of the sheath; and wherein,

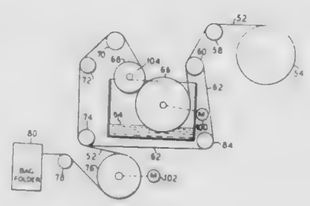
the pin means (90) is mounted to a carrier (78) slidably mounted to the machine (98, 99, 45) for vertical movement from a set raised position where the pin means pass through holes (91) in the stacking table (67b) and engage with the resilient pad mounted to the underside of the shoulder of the lower jaw means to a set lowered position where the pin means is below the stacking table, and the stacking table is resiliently connected by biasing means (93) to the pin carrier and is slidably connected to the pin carrier by a ratchet and pawl means (60) for incrementally lowering the stacking table independently of the pin carrier by the action of the clamping means clamping the successive sheaths deposited on a resilient transversely extending sheath receiving pad (67c) mounted to the top of the stacking table which is vertically aligned with the clamping means and is longitudinally spaced from the underside of the shoulder on the lower jaw and from the holes in the stacking table so that the pin engaging pad on the underside of the shoulder rests on the tips of the pin means in the low position of the lower jaw without exerting any pressure thereon and the immediate cut segment unflexed under the shoulder in the high position of the lower jaw is deposited on the tips of the pin means in the set raised position of the pin means.

4,798,574

METHOD OF MAKING A BAG WITH A BARRIER MATERIAL

Ronald Marsik, Willow Springs, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Filed Dec. 9, 1987, Ser. No. 130,618
Int. Cl.[4] B31B *1/74, 29/16;* B05D *1/32*
U.S. Cl. 493—267 12 Claims



1. A method of coating paper for use in making paper bags with a barrier material, comprising the steps of:

(a) continuously removing in a direction of travel a strip of paper from a source of paper at a predetermined speed;

(b) masking with a liquid impervious mask at least one longitudinal portion of said strip of paper in said direction of travel;

(c) routing said strip of paper and said mask through a bath of liquid barrier material, said liquid barrier material substantially saturating said strip of paper except for said masked portion;

(d) removing said mask from said strip of paper after moving out of said bath of liquid barrier material; and

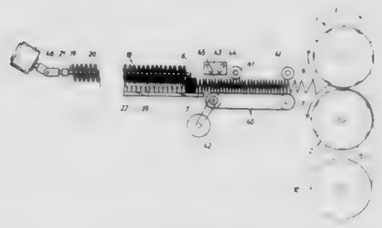
(e) forming a selected length of said strip of paper into the bag.

4,798,575

METHOD AND APPARATUS FOR THE MANUFACTURE OF FILTERS

Per-Erik Siversson, Munkedal, Sweden, assignor to Flodins Filter AB, Lysekil, Sweden

PCT No. PCT/SE86/00300, § 371 Date Feb. 20, 1987, § 102(e) Date Feb. 20, 1987, PCT Pub. No. WO86/07580, PCT Pub. Date Dec. 31, 1986
PCT Filed Jun. 19, 1986, Ser. No. 32,728
Claims priority, application Sweden, Jun. 20, 1985, 8503078
Int. Cl.[4] B05B *1/14*
U.S. Cl. 493—346 3 Claims



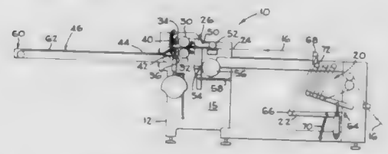
1. An apparatus for manufacturing a pleated filter from a continuous band of filter material, said apparatus comprising a folding device for folding a continuous band of filter material into a folded band of filter material with folds having creases across the band and lateral edges lengthwise of the band; a supporting surface for receiving the folded band of filter material so that one side of the folded band is turned towards the supporting surface and the other side of the folded band is turned away from the supporting surface; at least one screw means above the supporting surface and having threads for spacing the creases on the side of the band turned away from the supporting surface at predetermined distances from each other; two conveyor means respectively arranged laterally of the screw means for feeding and for attaching strips to the lateral edges while said screw means threads are engaged to spaced the creases of the band to thereby secure the folds in position at the distances at which they are spaced by the screw means; and means for rotating the at least one screw means and for advancing the two conveyor means in synchronism with each other.

4,798,576

BAG MAKING MACHINE

Rene F. DeBin, Aalst, Belgium, assignor to FMC Corporation, Chicago, Ill.

Filed May 1, 1987, Ser. No. 45,955
Int. Cl.[4] B31B *23/02*
U.S. Cl. 493—196 1 Claim



1. In a bag making machine having an upstream constant web feed section and a downstream intermittent web feed section defined by the path of a web moving therethrough, a combination of a first dancer having dancer arms supporting multiple rolls along the web path downstream of the constant web feed section and a second dancer having at least one roll, wherein the improvement comprises:

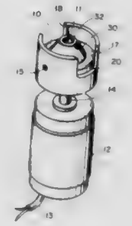
the second dancer having a pair of arms each pivotally mounted at one end adjacent the constant web feed section of the bag making machine and each having a swingable end carrying the one roll therebetween and extending a distance greater than the length of the dancer arms of the first dancer in a direction toward the intermittent web feed section of the bag making machine, the one roll positioned below and along the web path downstream of the first dancer having the multiple rolls, means for resiliently urging the swingable ends of the arms downwardly away from the first dancer, and at least one idler roll interposed along the web path between the one roll and the intermittent web feed section for directing the web in a horizontal path to the intermittent web feed section of the bag machine.

4,798,577

SEPARATOR DEVICE AND METHOD

Allen J. Brenneman, Elkhart; Harvey B. Buck, Jr., Indianapolis; Jerry T. Pugh, and Steven P. Robertson, both of Elkhart, all of Ind., assignors to Miles Inc., Elkhart, Ind.

Filed May 12, 1986, Ser. No. 862,301
Int. Cl.[4] B04B *1/04*
U.S. Cl. 494—67 7 Claims



1. Centrifugal device for use in fractionating and separating finely divided solid particulate material suspended in a liquid having upper and lower portions forming an inner cavity for retaining said liquid, wherein the upper and lower portions are rigid and joined together such that an elongated capillary passageway extends outwardly radially from the inner cavity of the centrifuge device to an outer cavity at the end of the elongated capillary passageway opposite said inner cavity and in which the outer cavity contains a chamber for retaining solid particulate material separated during fractionation, wherein:

said capitally passageway is between 5 and 30 thousandths of an inch in diameter;

said upper portion is sloped at an acute angle greater than about 30° to vertical;

said lower portion has conical portion forming an acute angle of 60° to 120°; and

wherein the elongated capillary passageway contains a barrier at the junction of said passageway and the inner cavity which extends transversely completely across said passageway and prevents particulate material present in the elongated capillary passageway from remixing with liquid in the inner cavity upon the completion of fractionation.

4,798,578

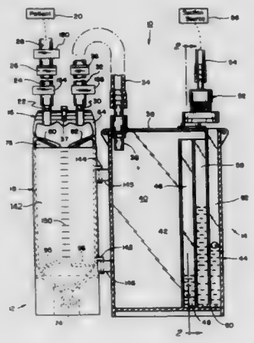
AUTOTRANSFUSION DEVICE

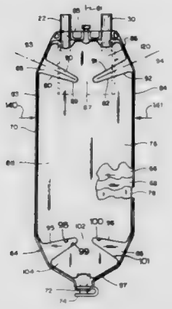
Alan B. Ranford, St. Louis, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Feb. 13, 1987, Ser. No. 14,508
Int. Cl.[4] A61M *1/03*
U.S. Cl. 604—4 18 Claims

1. A body fluid collection device comprising a collapsible bag assembly including a bag having a pair of opposed sidewalls and an inlet in fluid communication with the interior of

said bag for receiving body fluid, and a pair of relatively stiff flexible members respectively connected to said sidewalls, said members having portions between the opposed side edges thereof bendable outwardly in opposite directions from each other to expand said bag in response to the application of a





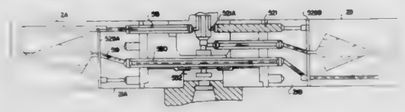
force tending to move said opposed side edges generally toward each other, each of said members having a pair of slots adjacent each of the opposite ends thereof, each of said slots having spaced opposed sidewalls, each pair slots extending inwarding from the opposed side edges of the member adjacent each of the opposite ends thereof.

4,798,579

ROTOR FOR CENTRIFUGE

Harry A. Penkasi, Cupertino, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 30, 1987, Ser. No. 115,217
Int. Cl.[4] B04B *5/02, 9/00, 11/00*
U.S. Cl. 494—18 **10 Claims**



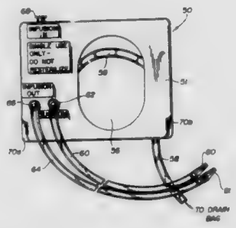
1. An improved rotor for a centrifuge that operates by centrifugal elutriation comprising,
a unitary chamber assembly having at least one separation chamber, a rotating fluid seal, and tubes for passing fluid from and to said chamber through said rotating seal,
a generally flat disk assembly with at least one recess, said recess having walls, said separation chamber positioned in said recess, whereby said walls physically hold said chamber assembly, and
a quick release mechanism connecting said chamber assembly and said disk assembly.

4,798,580

DISPOSABLE PERISTALTIC PUMP CASSETTE SYSTEM

Deborah A. DeMeo, Hatboro; Robert M. Bross, Ivyland, and Kenneth P. Cook, Blue Bell, all of Pa., assignors to Site Microsurgical Systems, Inc., Horsham, Pa.

Filed Apr. 27, 1987, Ser. No. 43,120
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—30 **18 Claims**



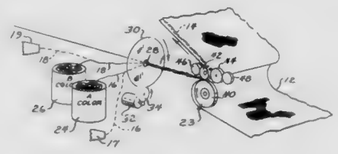
1. A microsurgical irrigation/aspiration system, comprising:
roller head means for performing peristaltic pumping and axially extending from the outermost panel of an irrigation/aspiration instrument, including a plurality of rollers located in a plane offset from and parallel to the plane of said outermost panel; and
removable cassette means for retaining a tubing section which cooperates with said roller head means in the performance of peristaltic pumping, including said tubing section, said cassette means having an aperture passing therethrough for engaging said roller head means so that said cassette is located in said plane and the outer dimensions of said cassette completely radially surround said rollers of said roller head means with said tubing section located between said roller head means and an interior wall of said cassette defining said aperture; said cassette further including a selectable occludable infusion line passing therethrough.

4,798,581

APPARATUS FOR FORMING A VISUALLY DETECTABLE ELEMENT

James L. Jessup, Elk Grove Village, Ill., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 867,000, May 20, 1986, which is a continuation of Ser. No. 379,683, May 19, 1982, abandoned. This application Oct. 26, 1987, Ser. No. 112,343
Int. Cl.[4] A61B *19/00;* **D01H** *7/02;* **B29C** *47/04;* **B29D** *7/00*
U.S. Cl. 493—338 **2 Claims**



1. An apparatus for forming a surgical sponge comprising an elongated visually detectable element on a sheet of absorbent material, comprising:

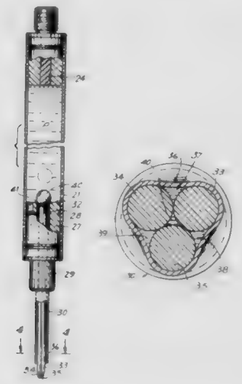
means for forming the entire portion of a pair of different colored strands by extrusion;
means for twisting said strands together into the elongated element;
means for placing the element on said sheet; and
means for bonding the element to the sheet.

4,798,582

NEEDLE CARTRIDGE

Alan Sarath, Teaneck, N.J., and James A. Mawhirt, Brooklyn, N.Y., assignors to Permark Corp. c/o Sci/Med Advances Corp., Teaneck, N.J.

Filed Oct. 27, 1987, Ser. No. 113,947
Int. Cl.[4] B43K *5/00;* **A61F** *2/64*
U.S. Cl. 604—47 **6 Claims**



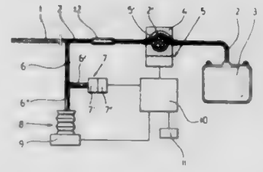
1. A needle cartridge assembly for a surgical operating pen or tatooing instrument, comprising
(a) elongated cylindrical tube means;
(b) an upper end cap means generally closing the top end of said tube means;
(c) adapter means associated with said upper end cap means for mounting said needle cartridge within an operating instrument; said adapter means including an orific for air flow;
(d) a lower plug means closing the bottom end of said tube means and forming a pigment reservoir;
(e) liquid pigment filling said reservoir;
(f) a thin cylindrical discharge tube passing through said lower plug means;
(g) a tri-needle assembly comprising elongated tatooing needles supported in and projecting outwardly from said discharge tube;
(h) a steel ball adapted to be seated in a first mode upon the upper end of said discharge tube to prevent flow of pigment from said reservoir to said needle assemble and adapted to be displaced and moved within said reservoir in a second operating mode;
(i) a portion of said delivery tube proximate to its bottom end being crimped about and into contact with the outer surfaces of said needles thereby retaining said needles in intimate contiguous contact and cooperating therewith to define four discrete passages for pigment flow.

4,798,583

METHOD AND APPARATUS FOR ASPIRATING SECRETED FLUIDS FROM A WOUND

Walter Beck, Obere Hirtlhochstr. 87, CH-8700 Klosterli; Siegfried Berger, Wernau, and Margrit Werner, Philipp-Wasserburg-Str. 30, 6500 Mainz-Gonsenheim, all of Fed. Rep. of Germany, assignors to Walter Beck and Margrit Werner, both of, Fed. Rep. of Germany

Division of Ser. No. 798,844, Nov. 18, 1985, Pat. No. 4,713,052. This application Jul. 22, 1987, Ser. No. 76,343
Int. Cl.[4] A61M *31/00*
U.S. Cl. 604—48 **12 Claims**



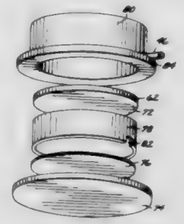
1. A method for aspirating secreted fluids from a post-operative wound by means of a controllable negative pressure source to which a drain is connected by means of a tube, a container for collecting the aspirated secreted fluid, a negative pressure measuring device and a regulator which controls the negative pressure source with inputs for the actual value determined by the negative pressure measuring device and for the prescribed set point values of the negative pressure, comprising the step of adjusting the negative pressure effective at the drain according to a selectable pressure/time diagram, wherein the negative pressure effective at the drain is lowered by reducing the volume in which the negative pressure prevails.

4,798,584

SELF-SEALING INJECTION RESERVOIR

John C. Hancock; William R. Dubrul, both of Santa Barbara, and Charles J. Heyler, III, Thousand Oaks, all of Calif., assignors to McGhan Medical Corporation, Santa Barbara, Calif.

Division of Ser. No. 781,865, Sep. 30, 1985, Pat. No. 4,738,657. This application Mar. 14, 1988, Ser. No. 167,394
Int. Cl.[4] A61M *25/00;* **A61B** *19/00*
U.S. Cl. 604—93 **12 Claims**



1. A self-sealing injection reservoir adapted to be punctured by a hypodermic needle, the reservoir comprising:
a body defining a chamber for holding liquid, said body including a base;
a sheet of resilient elastic substance which has a tendency to curl into a natural configuration of a wall of a cylindrical tubing, the sheet being forcibly held in a flattened configuration relative to the aforesaid natural configuration whereby the interior side of the sheet is under compression, the convex wall of the natural configuration facing

towards the interior of the chamber, the sheet comprising at least an interior wall of the chamber and being disposed in a location of the chamber which is adapted to be punctured by the hypodermic needle;

duct means for conducting liquid out of the chamber, and

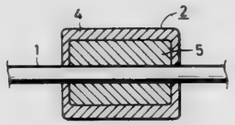
guard means incorporated in the chamber for preventing accidental puncture of the base with the hypodermic needle.

4,798,585

SUPPORT FOR BIOMEDICAL IMPLANT DEVICE

Masahide Inoue; Takeshi Ichitsuka; Yasuhiko Hirayama; Shozo Koshikawa, all of Tokyo; Tateki Kitaoka; Nobuo Nakabayashi, both of Chiba; Tatsumichi Takeda, Tokyo, and Osamu Misoo, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1987, Ser. No. 59,445
Claims priority, application Japan, Jun. 6, 1986, 61-131570
Int. Cl.[4] A61M *11/00*
U.S. Cl. 604—93 17 Claims



1. A biomedical implant device for implantation within tissue of a body, comprising: a support having a surface layer to be contacted with said tissue and composed of a biocompatible calcium phosphate material; and a medically operative part at least partially enclosed by said surface layer.

4,798,586

METHOD AND APPARATUS FOR AIDING DILATATION CATHETERIZATION

Robert C. Stevens, Williston, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Apr. 9, 1987, Ser. No. 36,223
Int. Cl.[4] A61M *29/00*
U.S. Cl. 604—96 9 Claims



4. A catheter system for cannulizing a blood vessel to increase blood flow through said blood vessel comprising:

(a) a flexible dilatation catheter having

(i) a balloon at its distal end for expanding the blood vessel,

(ii) an intermediate sheath defining a center passageway in communication with the blood vessel interior, and,

(iii) a proximal fitting outside a patient body having a first input in communication with the center passageway and a second input in fluid communication with the balloon;

(b) a drive catheter for insertion into the intermediate sheath of the flexible dilatation catheter and having a distal end defining a rotatable head for opening a lumen through deposits in the blood vessel, an elongated drive wire attached to the rotatable head for rotating the head, a sleeve for rotatably supporting the drive wire, a seal carried by the sleeve for impeding fluid entering a distal end of the sleeve from flowing out a proximal end of the sleeve and a coupling attached to a proximal end of said drive wire to rotate the drive wire;

(c) an adapter to mate with the dilatation catheter fitting and route the drive catheter into the central passageway of the dilatation catheter, said adapter including a seal to prevent fluid in the central passageway from leaking out the adapter along an outer surface of the drive catheter;

(d) drive means for rotating the drive catheter coupling to effect a rotation of the rotating head; and

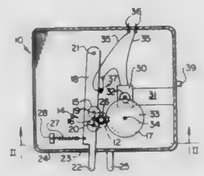
(e) means for inflating the balloon by directing a fluid into said balloon through said second input after the balloon is pushed into the lumen formed by the rotating head.

4,798,587

DEVICE FOR REMOVING NEEDLES OR NEEDLE/SHEATH COMBINATIONS FROM HYPODERMIC SYRINGES

Graham M. Willoughby, 20 Ruskin Row, Winnipeg, Manitoba R3M 2R7, Canada

Filed Nov. 24, 1987, Ser. No. 124,575
Claims priority, application Canada, Sep. 18, 1987, 547225
Int. Cl.[4] B65F *1/16*
U.S. Cl. 604—110 18 Claims



1. A device for removing a hypodermic needle or a hypodermic needle and sheath combination from a hypodermic syringe, which comprises:

releasable gripping means for releasably gripping said needle or needle and sheath combination, said releasable gripping means being such that said needle or needle and sheath combination may move freely away from said gripping means when released; and

drive means associated with said gripping means for rotating said needle or needle and sheath combination when gripped by said gripping means.

4,798,588

CENTRAL VENOUS PRESSURE CATHETER AND METHOD FOR USING

Rene Aillon, 86 Crofut St., Pittsfield, Mass. 01201

Continuation-in-part of Ser. No. 855,927, Apr. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 677,519, Dec. 3, 1984, Pat. No. 4,601,706. This application Mar. 27, 1987, Ser. No. 31,258
The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.
Int. Cl.[4] A61B *5/02*
U.S. Cl. 604—122 8 Claims

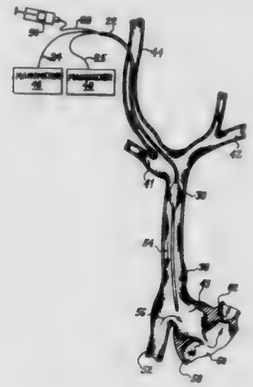
1. A central venous pressure catheter for insertion in the cava vein of a patient to prevent air aspiration through cut veins of the head or neck during surgery on the patient in an upright position comprising:

(a) an elongated flexible tube containing a plurality of lumens adapted for insertion into the superior cava vein of a patient via a jugular or subclavian vein;

(b) one distal port in a side wall of said tube and within 1 centimeter of the tip end of said tube, said one distal port being connected to a first of said lumens;

(c) a pneumatically or hydraulically inflatable balloon

mounted about and on the outside of said tube at a distance of from 5 to 12 centimeters away from said one distal port; and



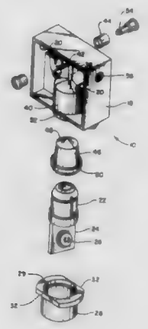
(d) a proximal port in said catheter side wall located on the other side of said balloon from said distal port.

4,798,589

DIAPHRAGM PUMP CASSETTE

Gus G. Tseo, San Diego, Calif., assignor to Fisher Scientific Group Inc., San Diego, Calif.

Filed Jun. 15, 1987, Ser. No. 62,488
Int. Cl.[4] A61M *5/20*
U.S. Cl. 604—152 8 Claims



1. A cassette for use in a volumetric infusion pump comprising:

a cassette body having a volumetric chamber disposed therein, said chamber including an opening such that a piston of corresponding size is capable of sliding into the chamber through the opening, said cassette body further comprising a base surrounding said opening;

a piston which is capable of reciprocating within said volumetric chamber;

means for allowing fluids to enter and leave the volumetric chamber in response to the reciprocating movement of the piston;

a diaphragm disposed between the piston and the volumetric chamber;

a cuff formed around the periphery of said diaphragm for attachment to said cassette body; and

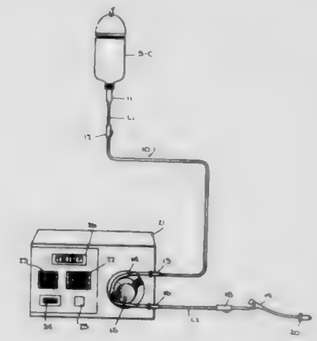
a diaphragm casing twistingly engageable with said cassette body by inserting said diaphragm casing into a first position and rotating said casing approximately 90 degrees into a second position for securing said cuff of said diaphragm between said casing and said base of said cassette body.

4,798,590

INTRAVENOUS INFUSION PUMPING SYSTEM INCLUDING INDEPENDENT PUMP SET

William J. O'Leary, Huntington; Thomas J. Hartnett, Jr., Greenlawn, both of N.Y., and Richard G. Jones, Lebanon, N.J., assignors to Medical Technology Products, Inc., Huntington, N.Y.

Filed Nov. 22, 1983, Ser. No. 554,617
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—153 6 Claims



1. An intravenous infusion system for supplying a therapeutic solution from a container therefor to a patient, said system comprising:

A. an independent pump set having a flow line extending from the container to the patient, said line having interposed therein a pump chamber constituted by a flexible tube terminating in an inlet connector and a transparent outlet connector each having a circular flange, the inlet connector flange being thicker than the outlet flange;

B. a rotor assembly block having a circular cavity within which is seated a rotor carrying a pair of diametrically-opposed rollers, the tube being looped in the cavity against an arcuate stator wall thereof, the flange of the inlet connector being seated in a matching slot of an inlet channel socket in the block leading to the cavity, and the flange of the outlet connector being seated in a matching slot of a parallel outlet channel socket in the block leading to the cavity which is dimensioned to accept only the outlet connector, thereby precluding reversal of the pump chamber, the rollers pressing the tube against the wall to occlude the tube and thereby trap the fluid therein;

C. a motor driving the rotor, whereby as the rotor turns, the points of occlusion are advanced to propel the fluid toward the outlet connector;

D. a light beam detector constituted by a light beam source disposed on one side of the transparent outlet connector to project a light beam therethrough and a photo sensor disposed on the opposite side of the outlet connector to intercept said beam to produce a control signal only when air passes through the outlet connector; and

E. a motor control circuit coupled to said motor and responsive to said signal to arrest said motor to prevent air embolism.

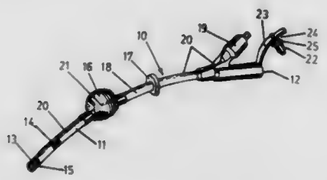
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4,798,591
CATHETER OBTURATOR
Yosuke Okada, Mori, Japan, assignor to Sherwood Medical Company, St. Louis, Mo.
Filed Dec. 17, 1986, Ser. No. 943,273
Claims priority, application Japan, Dec. 18, 1985, 60-284729
Int. Cl.[4] A61M 5/00
U.S. Cl. 604—164 5 Claims



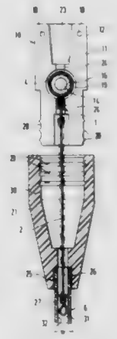
1. An improved combination of a catheter, having a specified internal diameter, and a catheter obturator, having a resilient obturator tube with an external diameter that is at least the catheter internal diameter when said obturator tube is in a relaxed state and is less than the catheter internal diameter when said obturator tube is in an elongated state, a stopper attached to a proximal end of said obturator tube, and manipulating means connectable to said stopper for selectively elongating and relaxing said obturator when said obturator tube is disposed within said catheter with the catheter internal and obturator external diameters aligned.

4,798,592
GASTROSTOMY FEEDING DEVICE
Stephen K. Parks, Sunnyvale, Calif., assignor to Medical Innovations Corporation, Milpitas, Calif.
Continuation of Ser. No. 670,381, Nov. 5, 1984. This application Oct. 13, 1987, Ser. No. 107,117
The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.
Int. Cl.[4] A61M 25/02
U.S. Cl. 604—49 19 Claims



1. A gastrostomy catherter device for feeding into a patient's stomach, comprising:
a. an elongate feeding tube having a feeding inlet end and a perforated outlet end for discharging food, the feeding tube extending outwardly from the patient's stomach to support external components of the device;
b. an expandable structure mounted on the tube near the outlet end;
c. means to expand the expandable structure;
d. a closure plug for the feeding inlet and secured to the feeding tube by an integral band;
e. an adjustable ring slidably mounted along the feeding tube, and medially thereof, and sized to frictionally engage the tube; whereby:
i. when the expandable structure is deflated, the feeding tube may be inserted through a stoma and into the patient's stomach;
ii. when the expandable structure is inflated, it is adapted to form a seal within the patient's stomach and adjacent the stoma;
iii. securement of the ring to the tube being provided solely by frictional engagement therebetween, the ring and tube both being made of silicone material, to secure the device within the patient's body and to prevent undesirable movement of the ring along the tube, whether in the dry state or when lubricated by body fluids, the locking ring being manually adjustable along the tube to accommodate to the size of the patient, and the expandable structure and ring both functioning to maintain the device in place in the patient;
iv. retraction of the ring along the feeding tube away from the patient's body being entirely against frictional engagement forces between the ring and tube to enable the stoma and adjacent areas to be cleaned; and,
v. when the expandable structure is deflated, retraction of the feeding tube enables the device to be removed from the patient.

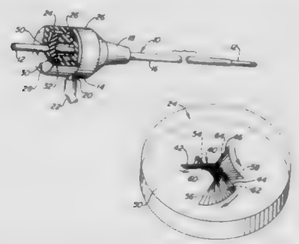
4,798,593
STIFFENING OF PROBES
Peter Iwatschenko, Neunkirchen, Fed. Rep. of Germany, assignor to Pfrimmer-Viggo GmbH+Co. KG, Erlangen, Fed. Rep. of Germany
Continuation of Ser. No. 806,739, Dec. 9, 1985, abandoned. This application Mar. 10, 1987, Ser. No. 23,992
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1984, 3444935
Int. Cl.[4] A61M 5/18
U.S. Cl. 604—164 8 Claims



1. A guide for the stiffening of probes which are made of flexible material and in which the guide is disposed during insertion of the probe into a body cavity and is withdrawn from the probe after the probe has been inserted into the body cavity, comprising a single elongated wire guide element adapted to be inserted into and withdrawn from said probe, a coating on said wire guide element made of a biocompatible material of which at least the surface is hydrophilic, a connector fastened to an outer end of said wire guide element, said connector having a first coupling means for coupling said connector to said probe, and a second coupling means for coupling a lubricant-introducing device to said connector, said connector further having a passage providing communication between said first and second coupling means.

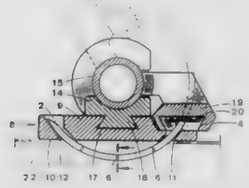
4,798,594
MEDICAL INSTRUMENT VALVE
Richard A. Hillstead, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Sep. 21, 1987, Ser. No. 99,139
Int. Cl.[4] A61M 25/00
U.S. Cl. 604—167 27 Claims

1. A medical instrument comprising a housing, said housing including a valve for receiving and sealing and elongated member which penetrates said valve, said valve comprising an elastomeric partition member having a first face and a second opposed face and adapted for securement in a housing, the improvement comprising, in combination:
a slit extending through said valve between said first and



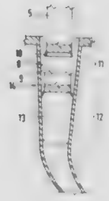
second faces, said slit defining a first line on said first face and a second line on said second face, said first line and said second line having a similar configuration but being in non-alignment with each other with a generally helical slit section extending between said first line and said second line.

4,798,595
INJECTION DEVICE
Ingvar Andersson, Pl 80, S-450 34 Fiskebäckskil, and Jan Wadstein, Jaktvarvsvägen, S-133 00 Saltsjöbaden, both of Sweden
PCT No. PCT/SE86/00396, § 371 Date Apr. 29, 1987, § 102(e) Date Apr. 29, 1987, PCT Pub. No. WO87/01292, PCT Pub. Date Mar. 12, 1987
PCT Filed Sep. 9, 1986, Ser. No. 51,958
Int. Cl.[4] A61M 5/32
U.S. Cl. 604—174 2 Claims



1. An injection arrangement comprising an injection needle which is curved so that at least one part of it is shaped in a circular arc with a certain radius of curvature, said needle having a solid cutting tip and a central duct extending therethrough to said solid cutting tip, said needle having a plurality of openings on the circular arc shaped part communicating with the duct;
a base plate having two curved ducts passing through the plate at an angle to one another with the same radius of curvature as the needle;
a cradle supported by the base plate, to which the needle is attached, said cradle having the ability to move in the base plate in such a way that the needle is able to move in a normal plane to the plane of the base plate in a reciprocating fashion about the center of the radius of curvature, whereby during forward movement, the tip of the needle moves from a first end position down through the first curved duct and then up through the second duct to a second end position.

4,798,596
APPLICATOR SYRINGE FOR A DENTAL COMPOUND
Ernst Mühlbauer, Elbgaustrasse 248, Hamburg, Fed. Rep. of Germany
PCT No. PCT/EP86/00570, § 371 Date May 29, 1987, § 102(e) Date May 29, 1987, PCT Pub. No. WO87/01929, PCT Pub. Date Apr. 9, 1987
PCT Filed Oct. 6, 1986, Ser. No. 60,245
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1985, 8528512[U]
Int. Cl.[4] A61C 5/04
U.S. Cl. 604—218 7 Claims

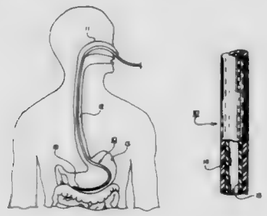


1. A disposable applicator syringe for a dental compound, comprising:
a tubular member made from an elastically yielding polymeric material having a rear entrance end portion, a front discharge end portion, an intermediate portion between the end portions, and a continuous, substantially cylindrical central channel extending from the entrance end portion to the discharge end portion through the intermediate portion, the channel at least in the intermediate portion having a smaller diameter than the channel in the entrance end portion, and the intermediate portion being adapted for receiving a predetermined quantity of dental compound to be discharged through said discharge end portion; and
a piston in the form of an elongated rod having a head portion, the piston adapted to be manually advanced through the entrance end portion and the intermediate portion into contact with the dental compound, the head of the piston having a useful stroke in the intermediate portion while advancing the compound through the channel, said useful stroke being equal to at least about ten times the diameter of the channel in the intermediate portion, the diameter of the piston head being less than the diameter of the channel in the entrance end portion, and approximately equal to the diameter of the channel at the transition from the entrance end portion to the intermediate portion, and the channel being continuously tapered at least through the entrance and intermediate portions.

4,798,597
FLEXIBLE COMPOSITE INTUBATION TUBE
Vincent L. Vaillancourt, 30A Ridgedale Ave., East Hanover, N.J. 07936
Filed Apr. 29, 1987, Ser. No. 43,865
Int. Cl.[4] A61M 25/00
U.S. Cl. 604—270 16 Claims

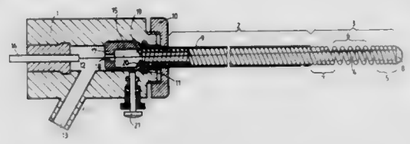
1. A flexible composite intubation tube for connection to a bolus comprising
a relatively thin outer layer of plastic material characterized in being pliable and flexible; and
an inner concentric layer of plastic material defining a flow path for a fluid, said inner layer having an inner diameter of 0.080 inches and being made of a hydrophilic polymer characterized in being stiff in a dry state and in being very soft and flexible in a wetted state; said layers forming a tube characterized in being sufficiently pliable and self-

supporting to be inserted per se into a naso-gastric passage and in being soft and flexible in a wetted state within the



naso-gastric passage to avoid creating pressure points therein and without closing said lumen.

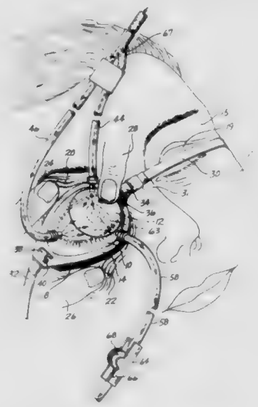
4,798,598
GUIDE FOR A CATHETER
Philippe Bonello, Geneva, and Maurice Jeanmonod, Meyrin, both of Switzerland, assignors to Sarcem S.A., Meyrin, Switzerland
Filed Apr. 28, 1987, Ser. No. 42,651
Claims priority, application Switzerland, May 23, 1986, 2083/86; Jan. 28, 1987, 289/87
The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.
Int. Cl.[4] A61M *21/00*
U.S. Cl. 604—280 9 Claims



1. In a catheter guide comprising a head formed by a coil spring having a central zone wherein the coils are spaced apart and two zones on opposite sides of said central zone wherein the coils of the spring abut each other, said head having a closed free end and a tubular element connecting said head to a control housing to which said head is removably secured, a control device for bending the head comprising a control member sliding in the housing and connected to a traction member passing through said housing and through the tubular element and the coil spring and eccentrically connected to said free end, and a cutter for the traction member carried by said control housing; the improvement in which the tubular member is comprised along at least a portion of its length by a coil spring having abutting coils covered by a fluid tight coating of plastic material.

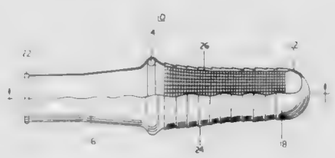
4,798,599
EYE WASHING METHOD AND APPARATUS
George Thomas, 10611 99th St. S.W., Tacoma, Wash. 98498
Filed Jan. 3, 1984, Ser. No. 567,646
Int. Cl.[4] A61M *7/00*
U.S. Cl. 604—290 9 Claims

1. A method for washing an eye comprising:
providing an eyecup having a rim portion that complementarily fits to the orbit portion which surrounds an eye on the face of a person;
placing the eyecup over the eye to form a liquid confining chamber adjacent the eye;
drawing the skin above and below the eye away from the eye;
pushing the eyecup against the skin such that the rim portion of the eyecup puts pressure on said skin above and below the eye for holding the eye open;
delivering liquid eyewash into the chamber and against a



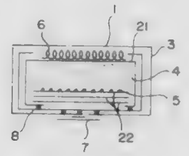
surface of the eye which is spaced a distance from the corneal portion of the eye to produce a washing action; and
draining the eyewash from the chamber.

4,798,600
CONDOM DEVICE AND METHOD FOR USING SAME
Michael E. Meadows, 37 James Rd., Hatboro, Pa. 19040
Filed Jun. 12, 1987, Ser. No. 61,890
Int. Cl.[4] A61F *5/44*
U.S. Cl. 604—347 36 Claims



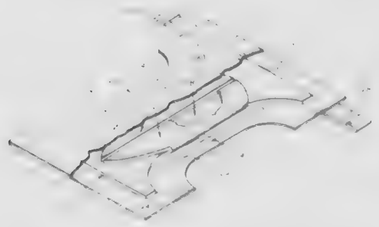
1. A condom to be worn by a male during sexual intercourse with a second partner comprising
a flexible sheath having an interior surface, an exterior surface, an open-ended external to the second partner male portion, a closed-ended female portion and, centering means being provided intermediate the ends of the sheath, separating the male portion and the female portion;
said male portion having means to attach to a penis and to seal said open end;
said female portion being bodily inserted up to but not including said centering means and remaining relatively stationary during intercourse; and
said male portion being adapted to fold, allowing the penis to move into and out of the female portion of said sheath during intercourse.

4,798,601
SANITARY NAPKIN
Toshihiro Shirose, and Akira Sakurai, both of Utsunomiya, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed May 26, 1987, Ser. No. 53,677
Claims priority, application Japan, May 26, 1986, 61-79396[U]; Jul. 25, 1986, 61-114336[U]
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—368 7 Claims



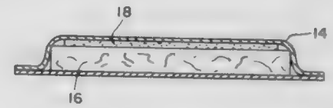
1. A sanitary napkin which comprises a liquid-permeable surface material, a liquid-impermeable leakproof material and an absorber inserted between said surface material and said leakproof material, said absorber comprises a first absorber and a second absorber having been placed on said first absorber and having a smaller width than said first absorber, said leakproof material covering at least the bottom surface, both side surfaces and a portion of the top surface of said first absorber and a portion of the side surfaces of said second absorber, and said surface material covering at least a portion of said leakproof material and the top surface of the second absorber and wherein fixation is made between (a) said first absorber and said second absorber, (b) said surface material and said leakproof material and (c) said leakproof material and said first or second absorber.

4,798,602
DISPOSABLE LIQUID-ABSORBENT PRODUCTS
Guy G. Lass, Rixensart, Belgium, assignor to Exxon Chemical Patents Inc., Linden, N.J.
Filed Mar. 4, 1986, Ser. No. 836,261
Int. Cl.[4] A61F *13/16, 13/18, 13/20*
U.S. Cl. 604—372 3 Claims



1. A disposable liquid absorbent garment comprising in combination
(a) a liquid impervious outer layer comprising a blend of
(i) 25 to 55 parts by weight of Ethylene Propylene (EPM) or Ethylene Propylene Diene (EPDM) elastomer having an ethylene content of 45 to 80 weight percent;
(ii) 35 to 55 parts by weight of a thermoplastic ethylene-vinyl acetate copolymer having a vinyl acetate content of 9 to 40% by weight;
(iii) 5 to 25 parts by weight of a normally liquid hydrogen process oil, the oil being an aromatic, highly aromatic napthenic or paraffinic or extender oil;
(iv) 0 to 30 parts by weight of calcium carbonate filler, and
(v) 0 to 2% by weight, based on the total composition, of a film processing adherent;
the blend composition containing at least 4.5% by weight vinyl acetate blend upon the total weight of the blend composition and the blend composition having a melt index at 190° C. (2.16 kg load) of 0.5 to 15 g/10 min.;
(b) a liquid permeable liner; and
(c) an intermediate absorbent layer having one side in contact with the liquid impervious outer layer and its opposite side in contact with the liquid permeable liquid liner.

4,798,603
ABSORBENT ARTICLE HAVING A HYDROPHOBIC TRANSPORT LAYER
Stephen C. Meyer, Cobb County; Roger L. Lance, Gwinnet County, both of Ga.; Connie L. Hetzler, Winnebago County, Wis.; Cedric A. Dunkerly, II, Outagamie County, Wis.; Thomas H. Roessler; David L. Zenker, both of Winnebago County, Wis., and Michael A. Sciaraffa, Outagamie County, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 16, 1987, Ser. No. 109,784
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—378 52 Claims



1. An absorbent article, comprising:
an absorbent body composed of a substantially hydrophilic material which is capable of absorbing liquid;
a liquid permeable topsheet layer superposed in facing relation with said absorbent body and having an effective average pore size therein;
a liquid permeable transport layer located between said topsheet layer and said absorbent body, and composed of a material which is less hydrophilic than said absorbent body, said transport layer having an effective average pore size therein which is smaller than said topsheet layer pore size.

4,798,604
CONTOURED FILM
Andrew J. Carter, Saffron Walden, United Kingdom, assignor to Smith and Nephew Associated Companies p.l.c., United Kingdom
PCT No. PCT/GB86/00504, § 371 Date Apr. 15, 1987, § 102(e) Date Apr. 15, 1987, PCT Pub. No. WO87/01029, PCT Pub. Date Feb. 26, 1987
PCT Filed Aug. 26, 1986, Ser. No. 52,855
Claims priority, application United Kingdom, Aug. 24, 1985, 8521254
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—383 29 Claims

1. A water permeable, contoured polymeric film which comprises a film containing apertures and which has a pattern of raised areas therein, in which the film is formed from elastomeric polymer and in which the ratio of apertures to raised areas is greater than unity.

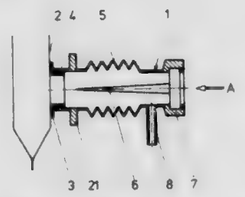
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4,798,605

DEVICE FOR CONNECTING AND DRAINING A POUCH

Roland Steiner, Thun, and Eugène Van Mair, Fribourg, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Jul. 21, 1987, Ser. No. 76,177
Claims priority, application European Pat. Off., Aug. 1, 1986, 86110670.6
Int. Cl.[4] A61B *19/00*
U.S. Cl. 604—411 7 Claims



1. A device which is adjustable and for being affixed to a joint affixed to a pouch containing liquid for continuously draining the pouch comprising:

an end-piece of the device displaced from an end portion of the device, the end portion being capable of being affixed to a joint affixed to a pouch containing liquid to be dispensed;

means connecting the end-piece with the affixing end portion for reciprocation of the end-piece in a direction towards and in a direction away from the affixing end portion, the end-piece, the reciprocation means, the affixing end portion and the joint defining a void for liquid from a pierced pouch to flow towards the end-piece;

a needle affixed to the end-piece and extending within the void, the needle being affixed to the end-piece for having an axis of symmetry substantially corresponding with an axis of symmetry of the void, being tapered to a point in a direction from the end-piece to the affixing end portion, having a length such that when the end-piece is at a reciprocated position away from the affixing end portion, the point of the needle is displaced away from the pouch but having a length sufficient for penetrating through the joint for piercing the pouch when the end-piece is at a reciprocated position towards the affixing end portion and having a diameter smaller than a diameter of the void; and

a pipe positioned between the end-piece and the reciprocation means for dispensing liquid flowing from a pierced pouch via the void about the needle towards the end-piece.

4,798,606

REINFORCING STRUCTURE FOR CARDIOVASCULAR GRAFT

Leonard Pinchuk, Miami, Fla., assignor to Corvita Corporation, Miami, Fla.

Division of Ser. No. 705,782, Feb. 26, 1985, Pat. No. 4,629,458. This application Aug. 27, 1986, Ser. No. 900,776
Int. Cl.[4] A61F *2/06*
U.S. Cl. 623—1 21 Claims



1. A method of forming a reinforced cardiovascular graft comprising the steps of:

extending a segment of a monofilament between the chucks of a lathe;

rotating the lathe chucks to rotate the monofilament;

spraying the rotating monofilament with a continuous fluid polymer strand in a predetermined manner to form a fibrous layer that provides a textured surface to the monofilament;

winding the textured surface monofilament around a mandrel to form a coil with predetermined pitch and inner diameter;

placing the coil around a silicone rubber rod;

inserting the rod with the coil thereon into the body of an animal where collagen can grow around the rod and between turns of and into the coil;

after ingrowth of collagen between turns of and into the coil to form a collagen sleeve incorporating said coil, removing the rod with collagen sleeve therearound; and,

pulling the graft comprising the collagen sleeve with reinforcing monofilament therein off the silicone rubber rod.

4,798,607

PROCESS OF CROSSLINKING A POLYURETHANE PROSTHESIS WITH A HALOALKYLISOCYANTE

Ian P. Middleton, 15, Tinway Drive, West Derby, Liverpool, United Kingdom L12, 4YR, and Jerzy Paprotny, ul. Mewy 5/41, 44-100 Gliwice, Poland

Filed Jan. 15, 1987, Ser. No. 61,758
Claims priority, application United Kingdom, Jul. 4, 1986, 8616416
Int. Cl.[4] A61F *2/06*
U.S. Cl. 623—1 12 Claims

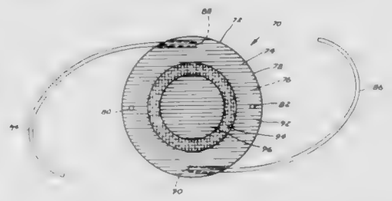
1. A process for producing a medical prosthesis, comprising forming the prosthesis from an uncross-linked polyurethane and then at least partially cross-linking the polyurethane with a cross-linking agent, by treating the prosthesis with a vaporizable halo alkyl isocyanate and reacting said isocyanate with said polyurethane by vaporizing the isocyanate at a temperature below that temperature at which the polyurethane in its uncross-linked form tends to degrade and soften.

4,798,608

LAMINATED ZONE OF FOCUS ARTIFICIAL LENS

Dennis T. Greendahl, 2070 Shoreline Dr., Orono, Minn. 55416

Filed Aug. 24, 1987, Ser. No. 88,428
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 8 Claims



1. A laminated zone of focus lens for use with an eye comprising:

a. two or more optical lamination elements including a first lamination element encompassing a first area of said lens;

b. a second lamination element encompassing a second area of said lens;

c. said first lamination element, in combination with said second lamination element serving to create an image of a first distinct portion of the retina;

d. said second lamination element serving to simultaneously create an image on a second distinct portion of the retina which is different from said first portion; and,

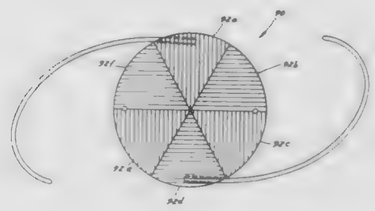
e. at least two of said lamination elements being of different colors.

4,798,609

RADIALLY SEGMENTED ZONE OF FOCUS ARTIFICIAL LENS

Dennis T. Greendahl, 2070 Shoreline Dr., Orono, Minn. 55416

Filed Aug. 24, 1987, Ser. No. 88,249
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 18 Claims



1. A zone of focus lens for use with an eye comprising:

a. a plurality of pie-shaped optical elements joined at the sides to form a unitary lens structure having a front surface, a rear surface and a circular periphery;

b. each of said pie-shaped elements serving to create an image on a distinct portion of the retina;

c. at least two of said elements having different powers whereby objects at different distances from the eye are simultaneously brought to a focus on distinct portions of the retina; and

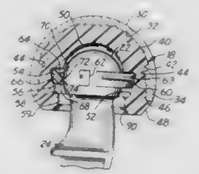
d. at least two of said pie-shaped optical elements are of different colors.

4,798,610

PROSTHETIC IMPLANT DEVICE

Robert G. Averill, Ringwood, and Alex Khowaylo, Allendale, both of N.J., assignors to Osteonics Corp., Allendale, N.J.

Filed Sep. 29, 1982, Ser. No. 427,010
Int. Cl.[4] A61F *2/34*
U.S. Cl. 623—22 4 Claims



1. In an implantable prosthetic joint for use in replacement of the ball end of a biological joint, said prosthetic joint having a spherical head for insertion into and seating in the natural socket of the joint, a bearing in said spherical head, said bearing including an inner spherical dome having an entrance end and an outwardly extending recess located axially between the entrance end and the inner spherical dome, the recess extending circumferentially around the bearing and having a laterally outwardly extending upper end wall and an outer wall extending downwardly from said upper end wall and sloping downwardly and inwardly toward the entrance end, a ball-shaped member for being seated in said inner spherical dome of said bearing, the relative dimensions of the ball-shaped member and the entrance end enabling the ball-shaped member to be inserted into and selectively released from the bearing through the entrance end, and a radially-expansible ring placed between the bearing and a portion of the ball-shaped member when the ball-shaped member is seated in the inner spherical dome for capturing the ball-shaped member in the bearing, the ring having an upper end wall confronting the upper end wall of the recess, an outer wall sloping downwardly and inwardly for contacting said outer wall of said recess and an arcuate wall for contacting said ball-shaped member when the ball-shaped member is urged downwardly against the ring by downward forces tending to disengage the ball-shaped member from the inner spherical dome, the length of the outer sloping wall of said ring being substantially shorter than the length of the outer sloping wall of said recess for permitting said ring to slide upwardly toward an upper position wherein the ring will expand in said recess in response to contact with the ball-shaped member as the ball-shaped member is inserted through the entrance end into the bearing toward the inner spherical dome, until said ball-shaped member can pass through said ring to permit said ring to slide downwardly in said recess away from said recess upper end wall and between said outer sloping wall of said recess and said ball-shaped member, beneath the ball-shaped member, upon the application of downward forces to said ball-shaped member, the improvement wherein:

the recess includes a laterally inwardly extending lower end wall confronting the upper end wall of the recess and spaced axially downwardly from the recess upper end wall a distance great enough to permit movement of the ring independent of the ball-shaped member in axial directions between said upper position and a lower position wherein contraction of the ring beneath the ball-shaped member by contact with the outer wall of the recess will capture the ball-shaped member in the bearing, between the inner spherical dome and the arcuate wall of the ring, and to permit said ring to be pushed selectively by a disengagement tool upwardly toward said upper position in said recess independent of the ball-shaped member so that said ring will be expanded outwardly sufficiently for said ball-shaped member to be withdrawn through said ring and said entrance end to be released selectively from said bearing; and

the ring includes a lower end wall confronting the lower end wall of the recess such that movement of the ring downwardly beyond the recess lower end wall and consequent disengagement of the ring from the recess will be precluded by contact between at least portions of the ring lower end wall and the recess lower end wall, thereby preventing inadvertent disengagement of the ball-shaped member from the spherical head.

4,798,611

ENHANCEMENT OF XENOGENEIC TISSUE

Donald C. Freeman, Jr., Newport Beach, Calif., assignor to Hancock Jaffe Laboratories, Irvine, Calif.

Filed Oct. 14, 1986, Ser. No. 918,280
Int. Cl.[4] A61F *2/54*
U.S. Cl. 623—66 8 Claims

1. The method of preparing a xenogeneic tissue from animal tissue structures such as tendons, ligaments, pericardial membrane, skin, umbilical cord, and the like, without disintegration or comminution and reconstitution, for implantation comprising the steps of:

(a) removing excess tissue and fat from a tissue structure of an animal;

(b) cutting the tissue structure to a desired size and configuration;

(c) treating the tissue structure resulting from the preceding steps (a) and (b) with a chemical cross-linking reagent to effect cross-linking of the tissue constituents; and, thereafter

(d) irradiating the tissue structure resulting from step (c) with high energy X-radiation or gamma radiation with from about two times to about five times the amount of such radiation as is necessary to sterilize said tissue structure, said amount of radiation being sufficient to sterilize the tissue structure but less than the amount of radiation which significantly (i) reduces shrink temperature T_s, (ii) increases the extractability of degradation products, and (iii) decreases the tensile strength of the tissue structure, and which renders the tissue structure more flexible and compliant, and less antigenic than the unirradiated tissue structure.

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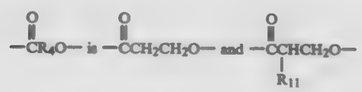
4,798,612

MODIFIED SUCCINIMIDES (X)

Frank Plavac, Novato, and Robert H. Wollenberg, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 820,188, Jan. 17, 1986, Pat. No. 4,680,129.
This application Jul. 14, 1987, Ser. No. 73,024
Int. Cl.[4] C10L *1/22, 1/18*
U.S. Cl. 44—63 14 Claims

1. A fuel composition comprising a hydrocarbon boiling in the gasoline or diesel range and from about 10 to about 10,000 parts per million of a polyamino alkenyl or alkyl succinimide wherein one or more of the nitrogens of the polyamino moiety is substituted with:



wherein R_4 is alkylene of from 1 to 6 carbon atoms excluding R_4 groups wherein



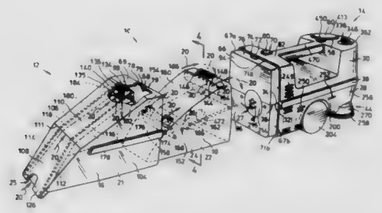
wherein R_{11} is the remainder of the R_4 group; m is an integer of from 0 to 2; R_5 is alkylene of from 2 to 5 carbon atoms; p is an integer of from 1 to 100; R_6 is selected from the group consisting of hydrogen and hydrocarbyl of from 1 to 30 carbon atoms; and with the proviso that if m is one or two, then R_6 is hydrogen.

4,798,613

SURFACE CLEANING APPARATUS

Michael W. Hetherington, Cedar Valley; David P. Garner, Niagara Falls, and Allan D. Millman, Toronto, all of Canada, assignors to Ionx Appliances Inc. and Appareils Ionx Inc., both of Welland, Canada

Filed Sep. 2, 1986, Ser. No. 902,591
Claims priority, application Canada, Sep. 5, 1985, 490105
Int. Cl.[4] B01D *19/00*
U.S. Cl. 55—52 52 Claims



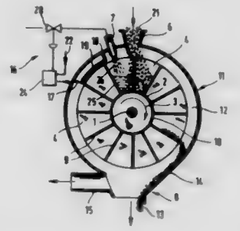
1. In a vacuum surface cleaning apparatus an elongated passageway having an inlet at one end and an outlet at the other end and a recovery chamber portion having a top opening therein in communication with said elongated passageway intermediately of the extent thereof, said elongated passageway including a first section extending from said inlet to an elevated region thereof remote from said inlet and above said recovery chamber portion, an intermediate section in communication with said first section in said elevated region thereof and extending therefrom to overlie and communicate with said top opening of said recovery chamber portion with the flow path cross sectional area of said intermediate section exceeding the flow path cross sectional area of said first section, and a third section in communication with said intermediate section in the region thereof above said top opening and extending therefrom toward said outlet.

4,798,614

PROCESS AND DEVICE FOR COOLING

Nestor Aubry, Brussels; Armand Cousin, Zaventem, and Andre Weverbergh, Overijse, all of Belgium, assignors to Messer Griesheim GmbH, Frankfurt, Fed. Rep. of Germany

Filed Mar. 23, 1987, Ser. No. 29,258
Claims priority, application Belgium, Mar. 25, 1986, 904485
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—374 11 Claims



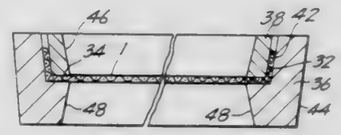
1. In a device for cooling, expecially deep freezing, of products such as foodstuffs and industrial products by means of a refrigerant liquid, the improvement being in a transport mechanism, said transport mechanism comprising a drum rotatably mounted on an axle in a particular direction, a plurality of radially extending partitions in said drum dividing said drum into a number of compartments, a product loading device disposed above said drum for feeding the products to be cooled into said compartments as said drum is rotating, a refrigerant liquid loading device for feeding refrigerant liquid into said compartments to mix with the products therein, and a removal device downstream from said loading devices for receiving the cooled products discharged from said drum before said drum makes a complete revolution.

4,798,615

PROCESS FOR MAKING A FILTER FOR MOLTEN METAL HAVING A HIGH MELTING POINT

Shigemi Fukuta, Osaka; Toshinori Asaikawa; Ken Ugata, both of Nara, and Shoichi Yoshino, Osaka, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Oct. 17, 1986, Ser. No. 919,962
Claims priority, application Japan, Oct. 19, 1985, 60-235032; Feb. 10, 1986, 61-18618[U]; Apr. 14, 1986, 61-56445[U]
Int. Cl.[4] B01D *29/36;* D03D *15/04*
U.S. Cl. 65—4.4 4 Claims



1. A process for producing a filter in the form of a woven net of SiO_2-containing glass fibers for filtering molten metal comprising the steps of:

(a) weaving glass yarns into a netlike filter, each of the glass threads being prepared by bundling and twisting together glass fibers composed cheifly of silica,

(b) subjecting the netlike filter to an acid treatment to in-

crease the SiO_2 content of the glass fibers to at least 75 wt. % and

(c) thermally curing the resulting filter to contract the pores in the glass fibers until a shrinkage of 2.5 to 15% is obtained, said shrinkage being expressed by

$$(l-l')/\times 100\ \%$$

wherein l is the length of the fiber before the thermal cure, and l' is the length of the thermally cured fiber.

4,798,616

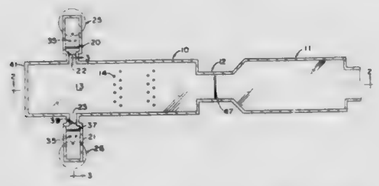
MULTI-STAGE PROCESS AND APPARATUS FOR REFINING GLASS OR THE LIKE

Leonard A. Knavish, Plum Boro, Pa., and David R. Haskins, Cumberland, Md., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 914,228, Oct. 2, 1986, abandoned. This application Aug. 31, 1987, Ser. No. 91,178

Int. Cl.[4] C03B *5/10*

U.S. Cl. 65—135 **18 Claims**



1. In a method of making glass or the like wherein batch material is liquefied in a first vessel from which the liquefied material flows in an incompletely melted condition and is passed to a separate refiner vessel in which a volume of the material is gathered and heated so as to refine the material, and the refined material is withdrawn from an outlet at one end of the refiner, the improvement comprising receiving the incompletely melted material from the liquefying vessel in an intermediate vessel, heating the material in the intermediate vessel so that the material is passed from the intermediate vessel to the refiner at a temperature between the highest and lowest temperatures of the material in the refiner, maintaining a high temperature zone of the material in the refiner at a location between the outlet and an opposite rear end, maintaining a decreasing temperature gradient between the high temperature zone and the rear end so as to induce a rearward surface flow of material from the high temperature zone toward the rear end thereby establishing a horizontally elongated recirculating flow pattern that serves to extend the residence time of the material in the refiner, passing the material from the intermediate vessel into the refiner at a location between the high temperature zone and the rear end so as to enter directly into the rearward surface flow.

11. Apparatus for making glass or the like comprising:

a liquefying vessel having means for feeding pulverulent batch material into the vessel, means for heating the interior of the vessel to a liquefying temperature of the batch material, and a batch support surface extending to a drain opening;

a channel aligned with the drain opening adapted to receive liquefied material from the liquefying vessel, means for heating the liquefied material in the channel;

a refining vessel communicating with the channel so as to receive molten material from the channel, the refining vessel having a substantially greater area than the channel, means for heating the material in the refining vessel adapted to provide a relatively high temperature zone in a portion of the material in the refiner, and an outlet opening for withdrawing molten material from the refining vessel at a location spaced from the channel;

wherein the refining vessel has a longitudinal dimension extending horizontally from a back wall toward the outlet opening with side walls extending substantially in the longitudinal direction, and the channel communications with the interior of the refining vessel through an opening in a side wall portion between the back wall and the high temperature zone.

4,798,617

METHOD OF FORMING A PARISON IN THE MANUFACTURE OF HOLLOW ARTICLES OF GLASSWARE

Thomas V. Foster, Doncaster; Stanley P. Jones, Tickhill, both of England, and David L. Alderson, Simsbury, Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

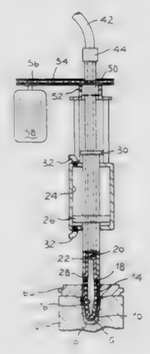
Continuation of Ser. No. 821,636, Jan. 23, 1986, Pat. No. 4,682,996. This application Mar. 26, 1987, Ser. No. 31,072

Claims priority, application United Kingdom, Jan. 26, 1985, 8501991

The portion of the term of this patent subsequent to Jul. 28, 2004, has been disclaimed.

Int. Cl.[4] C03B *11/12*

U.S. Cl. 65—25.1 **15 Claims**



1. A method of forming articles of glassware comprising:

introducing a gob of molten glass into a blank mold cavity having the shape desired for the external surface of a parison,

inserting a plunger into the blank mold cavity to cause the gob to conform to the blank mold cavity forming a hollow parison between the plunger and the blank mold cavity,

removing the formed parison and transferring it to a finish mold in which each parison will be blown to the shape of the required article, and

maintaining the initial heat within the parison by providing a gaseous layer having sufficient insulation properties to limit the heat transfer from the highly heated parison to said plunger to reduce the consequent temperature drop of the parison before it is transferred to the blank mold cavity.

4,798,618

NOVEL CHLOROACETANILIDE DERIVATIVES AND HERBICIDES CONTAINING THE SAME FOR USE IN PADDY FIELD

Shinzo Someya, Tokorozawa; Rokuro Akahira, Tokyo; Hiroshi Horino, Yokohama; Michihiro Okuaka, Yokohama, and Takashi Kiuchi, Yokohama, all of Japan, assignors to Agro-Kanesho Co., Ltd., Tokyo, Japan

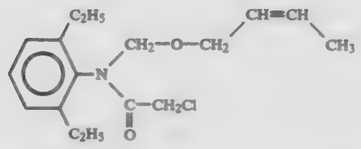
Filed Dec. 7, 1982, Ser. No. 447,651

Claims priority, application Japan, Dec. 10, 1981, 56-199058; Oct. 12, 1982, 56-178699

Int. Cl.[4] A01N *43/48, 37/18*

U.S. Cl. 71—92 **3 Claims**

1. A herbicide for paddy fields containing 2/, 6/-diethyl-N-[(2-cis-butenoxy) methyl]-2-chloroacetanilide represented by the formula



as its active ingredient.

2. A herbicide composition for paddy fields containing 2/, 6/- diethyl-N- [(2-cis-butenoxy) methyl]-2-chloro-acetanilide and 1,3-dimethyl-4-(2,4-dicholorobenzoyl) -5-pyrazolyl-4-toluenesulfonate as its active components.

4,798,619

2-(2-IMIDAZOLIN-2-YL)-PYRIDINES AND QUINOLINES AND USE OF SAID COMPOUNDS AS HERBICIDAL AGENTS

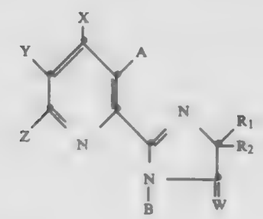
Mariana Los, Pennington, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Division of Ser. No. 382,041, May 25, 1982, Pat. No. 4,638,068, which is a continuation-in-part of Ser. No. 252,704, Apr. 8, 1981, abandoned, and a continuation-in-part of Ser. No. 155,909, Jun. 2, 1980, abandoned, and a continuation-in-part of Ser. No. 155,910, Jun. 2, 1980, abandoned, and a continuation-in-part of Ser. No. 155,867, Jun. 2, 1980, abandoned, and a continuation-in-part of Ser. No. 155,908, Jun. 2, 1980, abandoned, and a continuation-in-part of Ser. No. 155,865, Jun. 2, 1980, abandoned. This application Apr. 10, 1986, Ser. No. 850,192

Int. Cl.[4] A01N *43/40, 43/42*; C07D *213/30, 215/14*

U.S. Cl. 71—66 **61 Claims**

32. A method for the control of monocotyledonous and dicotyledonous annual, perennial and aquatic plant species comprising: applying to the foliage of the plants or to soil or water containing seeds or other propagating organs thereof, a herbicidally effective amount of a compound having a structure:

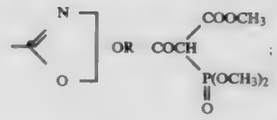


wherein

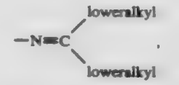
R_1 is C_1–C_4alkyl;

R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl; and when R_1 and R_2 are taken together with the carbon to which they are attached they may represent C_3–C_6 cycloalkyl optionally substituted with methyl;

A is $COOR_3$, $CONHR_6$, CHO, CH_2OH, $COCH_3$, COC_6H_5, CN, CH_3, CH=NOH, CH_2COOH, CONHOH, CH_2CH_2COOH, CHR_8OH,



R_3 is hydrogen,



C_1–C_{12} alkyl optionally substituted with one of the following groups: C_1–C_3 alkoxy, halogen, hydroxyl, C_3–C_6 cycloalkyl, benzyloxy, furyl, phenyl, halophenyl, loweralkylphenyl, loweralkoxyphenyl, nitrophenyl, carboxyl, loweralkoxycarbonyl, cyano or triloweralkylammonium halide;

C_3–C_{12} alkenyl optionally substituted with one of the following groups: C_1–C_3 alkoxy, phenyl, halogen or loweralkoxycarbonyl or with two C_1–C_3 alkoxy groups or two halogen groups;

C_3–C_6 cycloalkyl optionally substituted with one or two C_1–C_3 alkyl groups;

C_3–C_{16} alkynyl; or

A cation;

R_6 is hydrogen, hydroxyl, C_3-alkenyl, C_3-alkynyl or C_1–C_4 alkyl optionally substituted with one hydroxyl or one chlorine group;

B is H, COR_4 or SO_2R_5, provided that when B is COR_4 or SO_2R_5, A is CH_3, CN, or $COOR_3$ in which R_3 is other than H or a cation, W is O; and Y and Z are not alkylamino, hydroxyl, or hydroxyloweralkyl;

R_4 is C_1–C_{11} alkyl, chloromethyl or phenyl optionally substituted with one chloro, one nitro or one methoxy group;

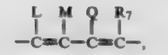
R_5 is C_1–C_4 alkyl or phenyl optionally substituted with one methyl group;

W is O or S;

R_8 is C_1–C_4-alkyl or phenyl;

X is hydrogen, halogen, hydroxyl or methyl, with the proviso that when Y and Z are taken together to form a ring and YZ is represented by the structure: $-(CH_2)_x-$, where n is 3 or 4, x is hydrogen;

Y and Z are each hydrogen, halogen, C_1–C_6 alkyl, hydroxyloweralkyl, C_1–C_6 alkoxy, C_1–C_4 alkylthio, phenoxy, C_1–C_4 haloalkyl, nitro, cyano, C_1–C_4 alkylamino, diloweralkylamino or C_1–C_4 alkylsulfonyl group, or phenyl optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; and, when taken together, Y and Z may form a ring in which YZ are represented by the structure: $-(CH_2)_x-$, where n is an integer of 3 or 4, provided that X is hydrogen; or



where L, M, Q and R_7 are each hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkyl, NO_2, CN, phenyl, phenoxy, amino, C_1–C_4 alkylamino, diloweralkylamino, chlorophenyl, methylphenyl, or phenoxy substituted with one Cl, CF_3, NO_2 or CH_3 group, with the proviso that only one of L, M, Q or R_7 may represent a substituent other than hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy;

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and the N-oxides thereof when W is O and A is CN, CH_3 or $COOR_3$, provided that in the N-oxides R_3 cannot be unsaturated alkyl and Y and Z cannot be alkylamino, dialkylamino or alkylthio; and when R_1 and R_2 represent different substituents, the optical isomers thereof, and, except when R_3 is a cation, the acid addition salts thereof.

4,798,620

BENZOXAZINES AND HERBICIDAL USE

Toyohiko Kume; Toshio Goto; Atsumi Kamochi, and Shigeki Yagi, all of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

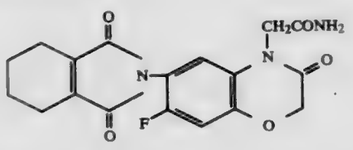
Continuation-in-part of Ser. No. 88,921, Aug. 24, 1987. This application Apr. 29, 1988, Ser. No. 187,713

Claims priority, application Japan, Sep. 6, 1986, 61-210725; May 9, 1987, 62-111696; Oct. 2, 1987, 62-27194; Feb. 2, 1988, 63-21359

Int. Cl.[4] A01N *43/84*; C07D *413/04*

U.S. Cl. 71—95 3 Claims

1. 2-[4-Carbamoylmethyl-7-fluoro-2H-1,4-benzoxazin-3-(4H)-3(4H)-on-6-yl]-4,5,6,7-tetrahydro-2H-isoindole-1,3-dione of the formula (I)



(1)

3. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of the compound according to claim 1.

4,798,621

SELECTIVE METHOD-OF-USE OF OXABICYCLOALKANES

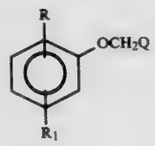
Robert C. Ackerson, Wilmington, Del., and Takeshi Yuyama, Toride, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 918,163, Oct. 10, 1986, abandoned. This application Aug. 31, 1987, Ser. No. 90,056

Int. Cl.[4] A01N *43/10*, *43/16*

U.S. Cl. 71—90 16 Claims

1. The method for controlling the growth of undesired vegetation in a paddy rice crop which comprises applying to the locus of the paddy rice crop an effective amount of a compound of the formula:

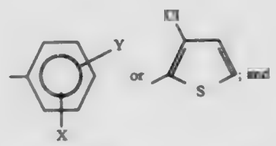


wherein

R is CH_3 or CH_2CH_3;

R_1 is CH_3, CH_2CH_3 or $CH(CH_3)_2$;

Q is



X and Y are independently H, F, Cl or CH_3.

4,798,622

PREPARATION OF FACETTED NODULAR PARTICLES

Bernard J. Pingand, Vincennes, France, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP86/00052, § 371 Date Oct. 8, 1986, § 102(e) Date Oct. 8, 1986, PCT Pub. No. WO86/05026, PCT Pub. Date Aug. 28, 1986

PCT Filed Feb. 1, 1986, Ser. No. 6,656

Claims priority, application France, Feb. 19, 1985, 85400284.7

Int. Cl.[4] C01G *49/06*

U.S. Cl. 75—0.5 AA 8 Claims

1. A process for preparing facetted, nodular particles having at least six faces, said process comprising (a) adding an aqueous solution of ferrous salt to an aqueous solution of alkaline hydroxide while avoiding substantial local excesses of the ferrous salt, and subjecting the ferrous salt solution to reducing conditions to reduce ferric ion contaminants present therein to ferrous ions, before or during the addition thereof to the alkaline hydroxide solution, to thereby form an aqueous dispersion of ferrous hydroxide particles, and (b) oxidizing the ferrous hydroxide particles, to thereby form delta ferric oxide hydrate particles, the oxidizing being in the presence of an iron complexing agent that is soluble in the reaction medium and capable of selectively forming ferric ion complexes that are soluble in such reaction medium.

4,798,623

METHOD FOR PRODUCING FINE COBALT METAL POWDER

Michael J. Cheresnowsky, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 19, 1988, Ser. No. 157,669

Int. Cl.[4] B22F *9/26*

U.S. Cl. 75—0.5 AA 4 Claims

1. A method for producing fine cobalt powder, said method comprising:

(a) adding to a solution of cobaltous chloride, sodium hydroxide in an amount equal at least to the stoichiometric amount required to form a precipitate of the major portion of the cobalt as cobaltous hydroxide and a mother liquor containing the balance of the starting cobalt;

(b) separating said precipitate from said mother liquor;

(c) water washing said precipitate to remove essentially all of the sodium therefrom; and

(d) reducing said precipitate to fine cobalt metal powder having a FSSS of from about 0.5 to about 2.0.

4,798,624

METHOD FOR THE MELT REDUCTION OF IRON ORES

Karl Brotzmann; Hans-Georg Fassbinder, both of Salzbach-Rosenberg, Fed. Rep. of Germany, and Richard E. Turner, deceased, late of Applecross, Australia (by Trenna R. Turner, executor), assignors to Kloeckner CRA Technologie GmbH, Duisburg, Fed. Rep. of Germany

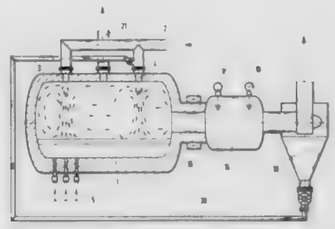
Filed Mar. 9, 1987, Ser. No. 23,369

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1986, 3607775

Int. Cl.[4] B23K *7/10*; C21B *13/00*

U.S. Cl. 75—38 17 Claims

1. A method for melt refining iron ore comprising reducing and melting down the iron ore by introducing carbonaceous fuel into a first reaction zone and at a point beneath the surface of the melt, introducing an ore-free oxidizing gas in the form of a first afterburning gas jet from a first point above the surface of the melt and impinging upon the surface of the melt and introducing an oxidizing gas and at least a portion of the iron ore in the form of a second afterburning gas jet from a second point above the surface of the melt which is spaced from the first point with the second jet impinging upon the surface of the melt at a location which is different from and further from the first reaction zone than the location at which the first jet impinges upon the surface of the melt.



4,798,625

SUPERALLOY WITH OXIDE DISPERSION HARDENING HAVING IMPROVED CORROSION RESISTANCE AND BASED ON NICKEL

Peter Jongenburger, Baden, and Robert Singer, Untersiggenthal, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Aug. 28, 1987, Ser. No. 90,346

Claims priority, application Switzerland, Sep. 8, 1986, 3593/86

Int. Cl.[4] C22C *29/12*

U.S. Cl. 75—235 7 Claims

1. A superalloy with oxide dispersion hardening having improved corrosion resistance and based on nickel, which consists essentially of:

Cr=17–18% by weight,

Al=6–7% by weight,

Mo=2–2.5% by weight,

W=3–3.5% by weight,

Ta=2–2.5% by weight,

Zr<0.2% by weight,

B<0.02% by weight,

C<0.1% by weight,

Y_2O_3=1–1.5% by weight,

Ni=remainder.

4,798,626

SOLUTIONS AND CREAMS FOR SILVER PLATING AND POLISHING

Lawrence M. Perovetz, Stanmore; Jack Pickthall, deceased, late of Angmering-On-Sea, and by Terence Pickthall, executor, Earls Colne NR Colchester, all of England, assignors to Lamerie, N.V., Jersey, Channel Islands

Filed Sep. 30, 1986, Ser. No. 913,491

Int. Cl.[4] C23C *3/02*

U.S. Cl. 106—123 32 Claims

1. A non-toxic solution for polishing and silver plating a base metal or for restoring silver removed from a silver plated article by previous polishing comprising: (1) a silver generating compound selected from the group consisting of silver nitrate, silver oxide, silver chloride, silver carbonate and silver phosphate; (2) a reducing compound for said silver generating compound which is selected from the group consisting of potassium hydrogen tartrate, sodium sulfite and sodium metabisulfate; (3) a polyoxyalkylene ester surfactant; (4) a humectant selected from the group consisting of diethylene glycol, dipropylene glycol and triethylene glycol; (5) a diatomaceous earth as a polishing component; (6) a compound to maintain the diatomaceous earth in suspension in the solution; (7) water.

4,798,627

DAMPENING AGENT FOR OFFSET PRINTING

Dieter Schmitt, Darmstadt, and Manfred Urban, Weiterstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 14, 1986, Ser. No. 918,245

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1985, 3536485

Int. Cl.[4] C09D *5/20*; B32B *9/00*

U.S. Cl. 106—2 32 Claims

1. In an aqueous dampening agent useful in offset printing and containing a humectant and a pH regulator, said dampening agent having a pH of about 3–6, the improvement wherein said agent includes an amount of copper ion which is anticorrosively effective.

4,798,628

SETTABLE MINERAL CLINKER COMPOSITIONS

Peter S. Mills, Burton-on-Trent, and Geoffrey R. Long, Kent, both of United Kingdom, assignors to Blue Circle Industries PLC, Aldermaston, Great Britain

Continuation of Ser. No. 792,746, Oct. 30, 1985, abandoned. This application Jul. 23, 1987, Ser. No. 77,021

Claims priority, application United Kingdom, Oct. 30, 1984, 8427456; May 20, 1985, 8512675

Int. Cl.[4] C04B *7/32*

U.S. Cl. 106—104 10 Claims

1. A mineral clinker composition containing $4CaO.3Al_2O_3.SO_3$, in an amount of from 15 to 68%, and not more than 45.6% of $2CaO.Al_2O_3.SiO_2$, the balance, if any, of the composition being composed essentially of at least one component selected from the group consisting of not more than 1.0% of free lime, less than 25% of $CaO.2Al_2O_3$, not more than 10% of $12CaO.7Al_2O_3$, less than 5% of $CaO.TiO_2$, less than 10% of ferrite phase, up to 60% of $CaO.Al_2O_3$, and up to 4.1% of $CaSO_4$; the said percentages being by weight of the mineral clinker composition.

4,798,629

SPIN-ON GLASS FOR USE IN SEMICONDUCTOR PROCESSING

Thomas E. Wood, Chandler, and Henry G. Hughes, Scottsdale, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 22, 1987, Ser. No. 111,316

Int. Cl.[4] C09K *3/00*

U.S. Cl. 106—287.16 20 Claims

1. A spin-on glass for use in processing semiconductor devices, said spin-on glass comprising:

a first compound of tetraethoxysilane, methyltriethoxysilane, and dimethyldiethoxysilane combined in a 2/1/1 ratio;

ethanol;

hydrochloric acid; and

water.

4,798,630
PROCESS FOR SURFACE TREATING CLAY MINERALS AND REACTIVE INTERMEDIATES PRODUCED BY SAID PROCESS

Weyman H. Dunaway, and Jorge E. Salinas, both of Sandersville, Ga., assignors to E.C.C. America Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 493,357, May 10, 1983, abandoned. This application Jun. 17, 1986, Ser. No. 875,273
Int. Cl.[4] C09K 3/00
U.S. Cl. 106—287.1 10 Claims

1. A method for chlorinating and functionalizing an aluminosilicate clay mineral starting composition, comprising:

reacting a said clay mineral composition selected from one or more members of the group consisting of clays of the halloysite, illite, kaolinite, montmorillonite, and polygorskite groups in substantially dry particulate form with gaseous $SiCl_4$ to activate the surface of said composition, thereby forming a reactive chloride intermediate, said reaction being conducted at temperatures in the range of from about 56° C. to below 300° C.; maintaining said intermediate in a substantially dry state until used for further reaction; and thereafter functionalizing said intermediate with an active organic group.

4,798,631
METALLIC SEMI-FINISHED PRODUCT, PROCESSES FOR ITS PREPARATION AND ITS USE

Hans-Joachim Fleischer, Velbert; Klaus Lobscheidt, Krefeld; Dieter Görres, Hasa, and Friedrich Bohr, Essen, all of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm August Thyssen-Hutte, Duisburg, Fed. Rep. of Germany

Filed Feb. 25, 1987, Ser. No. 18,545
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1986, 3606804
Int. Cl.[4] C21D 9/00
U.S. Cl. 148—3 13 Claims

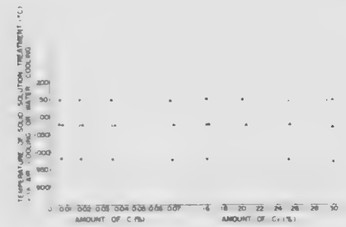


1. A process for the preparation of a metallic semi-finished product based on iron and/or nickel and/or cobalt and containing 2 to 16% of aluminum, 12 to 30% of chromium and 0.01 to 4% of at least one highly reactive element from the group consisting of Y, Zr, Ti, Ce, Sm, Hf, La, Th, U, V, W, Ta, Nb. Mo. Gd, Si, Mg, Ca and/or their dispersed oxides, and normal steelmaking impurities, containing metallic columnar cystals formed at least in the surface region of the semi-finished product and columnar crystals consisting predominantly of aluminum oxide and/or chromium oxide growing out of the said metallic columnar crystals, the axes of the two types of columnar crystals being predominantly at right angles to the geometric surface of the semi-finished product, comprising solidifying a melt of the corresponding composition in a front predominantly parallel to the geometric surface at a cooling rate of 10^3 to 10^6 K/s, and then annealing, initially at a temperature of 800° to 1000° C. for a short time in CO_2 under the resulting reducing conditions, and then in the temperature range from 800° to 1000° C. for up to 25 hours in air.

4,798,632
NI-BASED ALLOY AND METHOD FOR PREPARING SAME

Toshio Yonezawa, Takasago; Noritake Yamaguchi, Kobe, and Yasutaka Okada, Amagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 20, 1987, Ser. No. 4,410
Claims priority, application Japan, Jan. 20, 1986, 61-9491; Jan. 20, 1986, 61-9492; Jan. 20, 1986, 61-9493; Jan. 20, 1986, 61-9494
Int. Cl.[4] C22F 1/10
U.S. Cl. 148—12.7 N 19 Claims

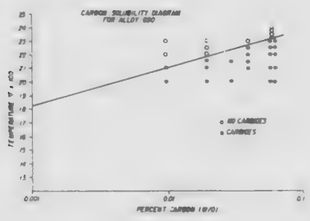


15. A method for preparing a high-strength Ni-based alloy excellent in resistance to stress corrosion cracking in high-temperature high-pressure pure water, principally characterized by subjecting, to a hot working at 850 to 1,250° C. at a draft percentage of 20% or more, said alloy consisting essentially of, in terms of weight ratio, 0.08% or less of C, 0.15% or less of Si, 0.1 to 1% of Mn, 15% or less of Fe, 20 to 30% of Cr, 0.76–3.5% of Ti, 2% or less of Al, 7% or less of Nb and the balance of Ni; heating and maintaining said alloy at 980° to 1,200° C.; cooling said alloy; and subjecting said alloy once or more to an aging treatment of additionally heating and maintaining it at 550° to 850° C. whereby said alloy has at least one of a γ′ phase and γ″ phase in a base and semicontinuously predominantly precipitating $M_{23}C_6$ in grain boundaries.

4,798,633
NICKEL-BASE ALLOY HEAT TREATMENT

James M. Martin, Proctorville, Ohio; James R. Crum, Oak, W. Va.; William L. Mankins, and Jeffrey M. Sarver, both of Huntington, W. Va., assignors to INCO Alloys International, Inc., Huntington, W. Va.

Filed Sep. 25, 1986, Ser. No. 911,474
Int. Cl.[4] C22F 1/10
U.S. Cl. 148—162 10 Claims



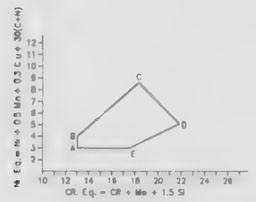
1. A process of heat treating nickel-base tubing characterized by good resistance to stress-corrosion cracking in high purity water nuclear reactor environments, including deaerated caustic solutions such as can be found in PWR secondary water environments, notwithstanding that it is given only a short duration thermal heat treatment, which comprises subjecting tubing formed from an alloy consisting essentially of

about 28 to 32% chromium, about 6 to 13% iron, up to 0.06% carbon, up to about 0.5% each of silicon, manganese and copper and the balance essentially nickel, to treatment in a continuous annealing furnace within the temperature range of about 1750° to 2150° F. for about ½ to 1 hour, and thereafter subjecting the tubing to a thermal treatment over the range of about 1300° to 1700° F. for a period of time at least sufficient to precipitate carbides at the grain boundaries, the period not exceeding about 2 hours.

4,798,634
CORROSION RESISTANT WROUGHT STAINLESS STEEL ALLOYS HAVING INTERMEDIATE STRENGTH AND GOOD MACHINABILITY

Harry E. McCune, III, and Charles A. Divine, Jr., both of Fredonia, N.Y., assignors to Al Tech Specialty Steel Corporation, Dunkirk, N.Y.

Continuation of Ser. No. 827,969, Feb. 10, 1986, abandoned. This application Aug. 10, 1987, Ser. No. 84,321
Int. Cl.[4] C22C 38/40
U.S. Cl. 148—325 13 Claims



1. A wrought martensitic-ferritic stainless steel alloy consisting essentially of maximum elemental weight percentages of about 0.08C, 0.08N, 2.0Mn, 0.06P, 1.0Si, 2.5Mo, 4.0Cu, 0.10Al, 0.10Ta, 0.10Ti, 0.10Cb with the sum of said Cb, Al, Ta and Ti being at most about 0.15 weight percent, about 0.1 to 0.6 weight percent S, about 16.0 to 20.0 weight percent Cr, about 3.0 to 7.0 weight percent Ni, the remainder being Fe and including at least about 10 vol. % ferrite, said stainless steel alloy having good hot workability, good machinability, corrosion resistance superior to a S41600 stainless steel alloy and intermediate tensile strength.

4,798,635
FERRITIC-AUSTENITIC STAINLESS STEEL

Sven-Olov Bernhardsson; Hans F. Eriksson, both of Sandvikes; Sven P. Norberg, Gävle; Lars O. H. Forssell, and Nils R. Lindqvist, both of Sandvikes, all of Sweden, assignors to Santrade Limited, Lucerne, Switzerland

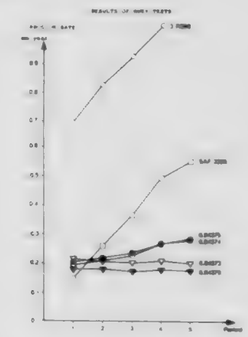
Filed Apr. 1, 1985, Ser. No. 718,291
Claims priority, application Sweden, Mar. 30, 1984, 8401768; May 9, 1984, 8401768
Int. Cl.[4] C22C 38/20, 38/22
U.S. Cl. 148—325 25 Claims

1. Ferritic-austenitic steel alloy having high resistance to corrosion and good weldability, the austenite phase of which beign stable towards cold deformation in the range between 10 and 30% said steel consisting essentially of the following elements by weight:

C, a maximum of 0.06%
Si, 1.5%
Mn, 2.0%
Cr, from 21.5% to 24.5%
Ni, from 2.5% to 5.5%
Mo, from 0.01% to 1.0%
Cu, from 0.01% to 1.0%
N, from 0.05% to 0.3%

the remainder of said composition iron and normal impurities, the contents of said elements being balanced so that following conditions are fulfilled:

ferrite content, α, is between 35% and 65%
percentage of ferrite % $\alpha \leqq 0.20 \times (\%\ Cr / \%\ N) + 23$ to obtain good properties after welding
(% Cr + % Mn)/% N shall be >120 to avoid porosities during casting

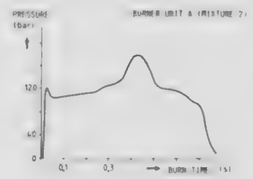


22.4×% Cr+30×% Mn+22×% Mo+26×% Cu+110×% N>540 to maintain austenite stability,
% Mo+% Cu≧0.15 whereby % Cu shall be at least 0.05%, and
precipitated carbides and nitrides are essentially avoided.

4,798,636
COMPOSITE SOLID PROPELLANT

Ruediger Strecker, Waldkraiburg, Fed. Rep. of Germany, assignor to Bayern-Chemie Gesellschaft fuer flug-chemische Antriebe mbH, Aschau, Fed. Rep. of Germany

Filed Feb. 3, 1988, Ser. No. 152,311
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1987, 3704305
Int. Cl.[4] C21D 1/568
U.S. Cl. 149—19.9 7 Claims



1. A composite solid propellant, comprising: an oxidizer, a hardenable binder selected from the group consisting of telomeric polybutadiene, polymers of butadiene and acrylonitrile having functional groups located at polymer chain terminal positions or statistically distributed along the polymer chains, polyethers, and polyesters; a burn moderator comprising a metallic compound having a melting temperature not less than 2400° C. and including soot; and additives including softeners and burn catalysts; said metallic compound of said burn moderator being selected from the group consisting of a nitride, a carbonitride, and a boride of zirconium, titanium, tungsten, hafnium, tantalum, and niobium.

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4,798,637

COMPOSITE SOLID PROPELLANTS CONTAINING BITETRAZOLES

Roger R. Hendrickson, Bear River City, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Mar. 3, 1983, Ser. No. 471,618
Int. Cl.[4] C06B 45/08
U.S. Cl. 149—20 4 Claims

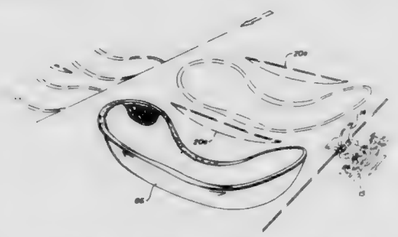
1. In a composite solid propellant containing ammonium perchlorate as oxidizer, the improvement comprising at least one bitetrazole compound in an amount effective to reduce the burning rate of said propellant.

4,798,638

METHOD FOR HEAT SEALING A FACING SHEET ONTO A PLASTIC FOAM SHELL

Philip J. Marbach, Doylestown, Pa., assignor to Personal Products Company, Milltown, N.J.

Filed Aug. 15, 1986, Ser. No. 897,172
Int. Cl.[4] B65B 7/00, 7/16
U.S. Cl. 156—69 4 Claims



1. A method for attaching a porous facing sheet onto a non-planar surface of a plastic foam sheet, comprising:
(a) providing formed plastic foam shells integrally attached to a foam sheet, each said shell having a central cavity depth of at least about 0.5 inch and a downwardly curved non-planar upper surface;
(b) applying a porous facing sheet onto the curved non-planar surface of the formed foam shell by intermittently slitting the facing sheet at spaced intervals transverse to the sheet length and intermediate the formed shells;
(c) moving the shell and facing sheet together near a heating and sealing unit having a heating plug member, and contacting the combined facing sheet and adjoining foam shell with the heating unit and forcing at least a portion of said facing sheet downwardly into contact with the downwardly curved non-planar upper surface of the shell; and
(d) rapidly heating the facing sheet and shell upper surface with the heating plug member at the softening temperature of the foam shell and heat sealing the facing sheet onto the perimeter of the foam shell upper surface, so as to provide a covered flexible shell product.

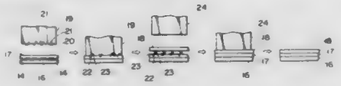
4,798,639

METHOD OF LAMINATING PLASTIC RESIN SHEETS

Akira Yamaguchi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1988, Ser. No. 168,014
Claims priority, application Japan, Mar. 16, 1987, 62-059034
Int. Cl.[4] B29C 27/08
U.S. Cl. 156—73.1 6 Claims

4. A method of laminating three or more thermoplastic resin sheets successively by sonic bonding comprising;
(1) superposing a first thermoplastic resin sheet on a second thermoplastic resin sheet, at least one of said thermoplastic resin sheets having an embossed surface facing the other thermoplastic resin sheet,
(2) pressing an ultrasonic horn having a pressure face having projections onto said first thermoplastic resin sheet to bond it to the second thermoplastic resin sheet and to provide the pressed surface of the first thermoplastic resin sheet with recesses and projections,
(3) superposing a third thermoplastic resin sheet of which both surfaces are flat onto said pressed surface of the first thermoplastic resin sheet, and



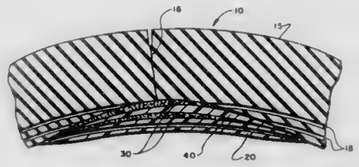
(4) pressing an ultrasonic horn onto said third thermoplastic resin sheet to bond it to the first thermoplastic resin sheet whereby ultrasonic energy is concentrated in the projections of the pressed surface of the first thermoplastic resin sheet.

4,798,640

TIRE REPAIR BY "PATCH ONLY" METHOD

Russell W. Koch, Hartville, Ohio, and Douglas D. Snyder, Tempe, Ariz., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 913,421, Sep. 30, 1986, Pat. No. 4,732,196, which is a continuation of Ser. No. 767,998, Aug. 21, 1985, abandoned, which is a continuation of Ser. No. 584,426, Feb. 28, 1984, abandoned. This application Dec. 14, 1987, Ser. No. 133,097
Int. Cl.[4] B32B 35/00; B60C 21/02
U.S. Cl. 156—95 18 Claims



1. A process for repairing a cured reinforced elastomer article having crack therethrough comprising the steps of:
applying a treating agent to a patch area, said patch area located on the interior side of the article and in the vicinity of said crack, said elastomer having unsaturated groups therein, said treating agent selected from the group consisting of N-halohydantoins, N-haloamides, N-haloimides and combinations thereof;
applying an amine curable polymer or prepolymer system to said patch area;
and applying a patch to said patch area; and
curing said amine curable polymer or prepolymer at ambient temperature.

4,798,641

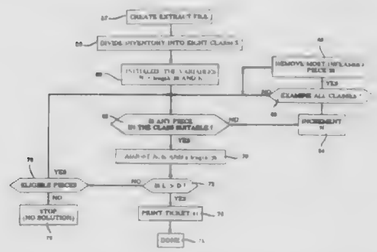
METHOD OF FABRICATING A CABLE

Michael R. Murr, Hopewell Township, Mercer County; Jay R. Rajasekera, Mercer County, both of N.J., and Bruce C. Vrieland, Norcross, Ga., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Sep. 15, 1986, Ser. No. 907,288
Int. Cl.[4] B65H 69/06
U.S. Cl. 156—158 9 Claims

1. A method for fabricating a transmission media, comprising the steps of:
selecting a plurality of pieces of transmission media from an inventory containing pieces having different lengths, different loss per unit length and different variation in loss; and
joining the selected pieces end-to-end, characterized in that said pieces are selected so that the median loss per unit length of the pieces remaining in inventory after selection remains substantially the same after selection, said selecting step including the steps of:
(a) establishing different classes of pieces within the inventory based on whether:

(1) each piece is longer or shorter than the average length of the pieces in the inventory;
(2) each piece has a loss per unit length above or below a desired loss per unit length of the transmission media to be fabricated; and
(3) each piece has a variation in loss above or below a predetermined value;



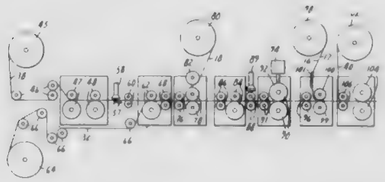
(b) successively examining each class to determine if any of the pieces therein are suitable for fabricating the transmission media based on the characteristics of said any piece and of those previously selected pieces; and
(c) repeating the step of successively examining the classes until the cumulative length of the pieces selected is at least equal to the desired length of the transmission media to be fabricated.

4,798,642

METHOD OF MAKING A BIOMEDICAL ELECTRODE

Lawrence W. Craighead, and Clarence A. Niven, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 865,520, May 21, 1986, Pat. No. 4,727,881, which is a continuation of Ser. No. 551,068, Nov. 14, 1983, abandoned. This application Nov. 17, 1987, Ser. No. 121,538
Int. Cl.[4] A61B 5/04; B32B 31/18
U.S. Cl. 156—252 6 Claims



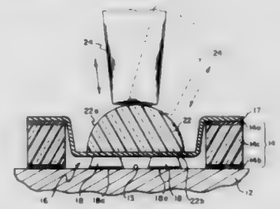
1. A method of manufacturing biomedical electrodes comprising the steps of:
a. cutting apertures at predetermined locations along the length of a first release liner;
b. laminating a medical tape comprising a backing having a pressure-sensitive adhesive coating on at least one major surface thereof to the release liner whereby the adhesive-coated surface of said tape is adhered to the release liner;
c. cutting said medical tape transversely between each of said apertures;
d. laminating a series of retainer sheets having upper and lower major surfaces bound together by an edge surface to said medical tape through each of said apertures in said first release liner whereby said retainer sheets are adhered through said apertures to said adhesive-coated surface of said tape;
e. cutting an aperture through said retainer sheets and on through said medical tape;
f. locating an electrical terminal member comprising a base having upper and lower major surfaces and an upstanding post integral with said upper major surface of said base in each aperture in each retainer sheet and in the medical tape by extending said post of said terminal member through said aperture until said upper major surface of said base contacts the lower surface of said retainer sheet;
g. laminating an ionically conductive layer to the lower surface of said each base and the lower surface of each retainer sheet through said apertures in said first release liner;
h. laminating a second release liner to said conductive layers opposite said base and said retainer sheets;
i. laminating a protective sheet, comprising a pressure-sensitive adhesive adhered to a backing, to said first release liner opposite said medical tape and to said second release liners opposite said conductive layers whereby each of said second release liners is secured to said first release liner; and
j. cutting said first release liner and said protective sheet transversely at predetermined locations along the length of said first release liner and protective sheet to form a strip containing a multiplicity of electrodes thereon.

4,798,643

SELF-ALIGNING BONDING TECHNIQUE

Dino E. Argentini, Danvers, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 8, 1985, Ser. No. 721,243
Int. Cl.[4] B32B 31/12
U.S. Cl. 156—295 7 Claims



1. A method for providing a uniform bond between a pair of members with a first member disposed over the second member includes the steps of:
providing a plano-convex member having a plane surface over an upper portion of the second member with the plane surface of the member disposed adjacent the upper portion of the second member; and
applying a force to a portion of the member opposite to the plane portion of the member to provide a substantially uniformly distributed pressure to the plane portion of the member.

4,798,644

METHOD OF MAKING A CARPET

Richard L. Scott, Cohutta, Ga.; John J. Martin, Hixson, Tenn., and Landon Smith, Roswille, Ga., assignors to Polysar Financial Services, S.A., Fribourg, Switzerland

Filed Mar. 24, 1988, Ser. No. 172,437
Int. Cl.[4] B32B 31/12, 31/20
U.S. Cl. 156—324 11 Claims

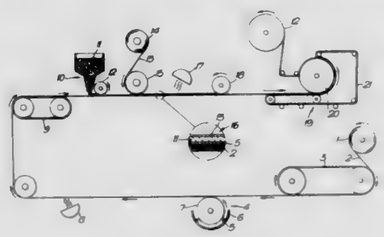
1. A process for producing a laminate foam backed carpet which comprises adhering over a foam backing a non-woven scrim material having a cohesive strength less than the cohesive strength of said foam backing, said process comprising:
(a) applying from about 30 to about 70 ounces per square

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yard of a foamed latex compound to a pre-coated carpet, said foamed compound comprising per 100 parts by weight of one or more rubbery polymers selected from the group consisting of:

(i) polymers comprising: from about 20 to about 80 parts by weight of a C_8–C_{12} vinyl aromatic monomer which is unsubstituted or substituted by a C_1–C_4 alkyl radical or a chlorine or bromine atom and from about 20 to about 80 parts by weight of a C_4–C_6 conjugated diolefin which is unsubstituted or substituted by a chlorine atom; and

(ii) polymers comprising co or homo polymers of C_{4-6} conjugated diolefins which are unsubstituted or substituted by a chlorine atom and up to about 200 parts by weight of at least one filler selected from the group



consisting of calcium carbonate, glass microspheres, dolomite, talc, barytes, clay and aluminum trihydrate, a gelling system and a cure paste;

(b) applying said non-woven scrim material over said foamed compound thus forming a laminate carpet material,

(c) subjecting said foamed compound to a heat treatment to a temperature of from about 70° to about 85° C. for a period of from about 1 to about 5 minutes to gell said foam;

(d) compressing said laminate carpet material;

(e) vulcanizing and drying said compressed laminate carpet material by subjecting it to a temperature of from about 100° to about 150° C. for a period of from about 10 to about 30 minutes.

4,798,645

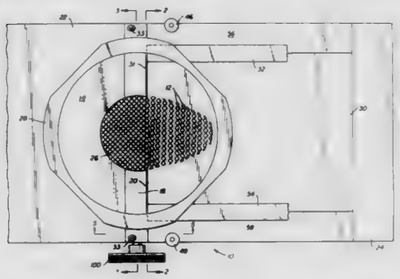
WAFER SEGMENT SEPARATOR AND METHOD

Chong-Il Pak, 3610 Bassett St. #5, Santa Clara, Calif. 95050

Continuation of Ser. No. 896,655, Aug. 13, 1986, Pat. No. 4,702,365, which is a continuation-in-part of Ser. No. 649,080, Sep. 10, 1984, Pat. No. 4,607,744. This application Oct. 26, 1987, Ser. No. 113,009

Int. Cl.[4] B32B *31/18*

U.S. Cl. 156—344 **6 Claims**



3. In a method of separating integrated circuit chips from a flexible carrier to which the chips are adhesively attached, the steps of: positioning the carrier with the integrated circuit chips attached thereto on a supporting surface having a separator edge extending along one side thereof, drawing the carrier across the separator edge to separate the integrated circuit chips from the carrier, receiving the chips on a conveyor as they are separated from the carrier, and advancing the conveyor to carry the separated chips away from the separator edge.

4,798,646

FILM PEELING APPARATUS HAVING FILM END DETECTOR

Shigeo Sumi, Saitama, Japan, assignor to Somar Corporation, Tokyo, Japan

Filed Nov. 12, 1986, Ser. No. 929,463

Claims priority, application Japan, Nov. 12, 1985, 60-253434; Nov. 27, 1985, 60-266490; Feb. 5, 1986, 61-23179

Int. Cl.[4] B32B *31/16*

U.S. Cl. 156—364 **6 Claims**



1. A film peeling apparatus for peeling and discharging a film adhered to a board comprising:

(a) conveying means for carrying the board through the apparatus;

(b) film lifting means for initially separating the film to be peeled from a bonding surface of the board, said film lifting means being comprised of a projected press mechanism having a cylindrical needle-like press member with a substantially conical end portion extending therefrom and mechanical means for bring said end portion in contact with the film and its bonding surface at an angle therewith to create a gap at an interface therebetween whereby said lifting means applies film separating energy to an interface between the film and the bonding surface up to a predetermined distance from a forward end of the board;

(c) film end detecting means for detecting the forward edge of the film and positioning said film lifting means at the forward edge of said film to separate said film;

(d) film peeling means for raising the film from its surface after the film has been initially separated therefrom by said film lifting means; and

(e) film discharging means for receiving the film from said film peeling means and discarding the film.

4,798,647

RELEASABLE MOUNTING ASSEMBLY FOR TIRE BUILDING DRUM

Herbert G. Haas, 1650 Perry Dr., Canton, Ohio 44708

Filed Jan. 25, 1988, Ser. No. 148,292

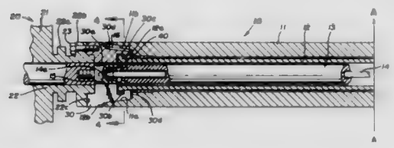
Int. Cl.[4] B29D *30/24*

U.S. Cl. 156—414 **18 Claims**

1. A mounting assembly for a tire building drum, said drum having a mounting hub on at least one axial end for attachment to a drum driving shaft of a tire building machine, said assembly comprising:

(a) a tapered plug attachable to a projecting end of the mounting hub;

(b) a chuck secured to the hub and disposed interiorly of said tapered plug; and



(c) attachment means for releasably interconnecting said chuck to the drum driving shaft.

4,798,648

ARTICLE FEEDING DEVICES FOR LABELLERS

Michael Freeman, Clacton-On-Sea, England, assignor to John Waddington PLC, England

Filed Mar. 13, 1987, Ser. No. 25,411

Claims priority, application United Kingdom, Mar. 18, 1986, 8606628

Int. Cl.[4] B65C *9/02*

U.S. Cl. 156—542 **3 Claims**



1. In an article labelling machine comprising:

(a) a feed scroll arranged with its axis horizontal for feeding articles held between the flights in the direction of the feed scroll axis and in fixed pitched relationship;

(b) guide means for holding the articles between the feed scroll flights;

(c) a label applicator drum arranged with its axis vertical;

(d) a star wheel having pockets which are pitched similar to the pitching of the flights of the scroll, said star wheel being arranged with its axis vertical and cooperating with the applicator drum so that labels can be applied to the articles from the drum whilst the articles are held in the star wheel pockets, the improvement comprising that the scroll overlaps the star wheel so as to cooperate intimately therewith; lies slightly within and parallel to the tangent of the star wheel relative to the applicator drum; and extends to opposite sides of the star wheel, and the guide means are at opposite sides of the star wheel whereby the scroll, star wheel and guide means keep a holding control on the articles to maintain the pitching thereof as the articles move towards, into and out of the star wheel pockets.

4,798,649

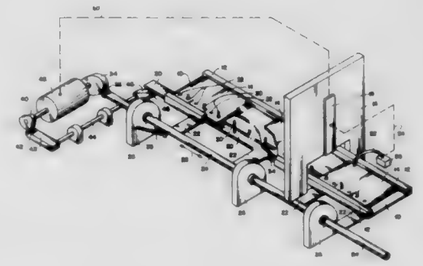
DISCRETE STRIP TAPER

John P. Ross, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 463,790, Feb. 4, 1983, abandoned. This application Dec. 28, 1984, Ser. No. 685,609

Int. Cl.[4] B32B *31/00*

U.S. Cl. 156—552 **6 Claims**



1. Apparatus for applying a securing tape to a lead frame having longitudinal locator hole rows arrayed along the edges thereof, said apparatus comprising:

a feeding means for advancing discrete pieces of lead frame into a tape-applying portion of said apparatus;

taping means located at said tape-applying portion for applying securing tape elements to said lead frame;

a guide and support surface adapted to accept said discrete pieces of lead frame thereon for sliding support, said lead frame pieces being guided thereby into position in the tape applying portion said guide and support surface including a plurality of slots located in registry with the locator holes associated in the lead frame being transported;

pin means comprising a plurality of pins adapted to extend through said slots and enter said locator holes in said lead frame pieces, said pins being substantially smaller than the locator holes they enter, so as to maintain a clearance between the pins and the locator holes;

pin support means holding said pins at spacings corresponding to the spacings of every other hole in the lead frame pieces; and

means for moving said pin support means so that said pins can be moved into and out of the plane of said lead frame pieces and so that said pins can be translated along the direction of said locator hole rows;

actuating means connected to move said pin support means, and thus said pin means, first into the holes in the lead frame pieces, then along said guide and support surface a distance equal to the sum of the spacing between the holes in the lead frame pieces and the clearance between the pins and the edges of the holes, so as to move the lead frame pieces toward the tape applying portion, then in the reverse direction along said guide a distance substantially equal to the clearance between the holes and the pins therein, thereby to establish clearance between the lead frame holes and the pins, then out of the holes in the lead frame pieces, and then in the reverse direction a distance equal to the spacing of the holes so as to be in a position to reenter the holes, upon repeat of the movement cycle, without contacting the edges of the holes.

4,798,650

METHOD OF DRY ETCHING ALUMINUM

Moritaka Nakamura, Yokohama, and Takashi Kurimoto, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 28, 1988, Ser. No. 174,348
Claims priority, application Japan, Mar. 27, 1987, 62-071737
Int. Cl.[4] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 5 Claims



1. A method of reactive ion etching of aluminum or aluminum alloy characterized in that a substrate having an aluminum or aluminum alloy layer is maintained at a temperature of 60° C. or less by cooling the substrate during etching, so that said layer is taperingly etched to form conductor lines having sloped sidewalls.

4,798,651

PROCESS FOR PREPARING PULP FOR PAPER MAKING

Bohuslav Kokta, Three Rivers, Canada, assignor to Stake Technology Ltd., Oakville, Canada

Filed Jul. 31, 1987, Ser. No. 79,928
Claims priority, application Canada, Mar. 24, 1987, 523871
Int. Cl.[4] D21B *1/36*; D21C *3/00, 3/04*
U.S. Cl. 162—22 23 Claims

1. A process for making paper making pulp comprising the step of:

(1) thoroughly impregnating wood fragments having fibers suitable for paper making in the substantial absence of air with an alkaline aqueous liquor including at least one agent acting to provide hydrophilic groups and as an antioxidant to impregnate enough of said agent throughout the wood fragments to protect the wood fragments from acidic hydrolysis and oxidative degradation during subsequent cooking;

(2) steam cooking the impregnated chips in direct contact with saturated steam in the substantial absence of air at superatmospheric pressure and a temperature within the range of about 170° C. to 210° C.;

(3) subjecting the wood fragments to explosive decompression to give wood fragments that are softened and partially defibrated;

(4) without undue delay that would result in brightness loss, refining the softened and defibrated chips to provide pulp.

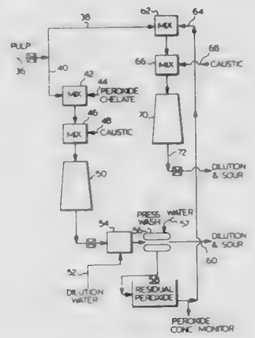
4,798,652

PEROXIDE BLEACHING OF MECHANICAL PULPS

Peter Joyce, 5344-6th Avenue, South Delta, British Columbia, Canada V4M 1L5, and David M. Mackie, 686 Crystal Court, North Vancouver, British Columbia, Canada V7R 2B5

Filed Oct. 19, 1987, Ser. No. 110,179
Int. Cl.[4] D21C *3/00*
U.S. Cl. 162—60 19 Claims

1. A process for peroxide bleaching of mechanical pulp comprising washing a first and second pulp to reduce the amount of heavy metal ions in said first and second pulp to provide a first and second washed pulp, mixing peroxide in an amount of the equivalent of at least 1½% peroxide as hydrogen peroxide based on the oven dry weight of said pulp with said first washed pulp to disperse said peroxide uniformly throughout said first washed pulp while maintaining the pH of said peroxide less than 7 to form a mixture of said first pulp and said peroxide mixing an aqueous solution of caustic with said mixture of said first pulp and said peroxide to uniformly mix said caustic into said mixture, said caustic being present in an amount of at least 50% by weight of the amount of peroxide added based on NaOH as the caustic, reacting said caustic with said peroxide to produce perhydroxyl ions in situ in said first pulp and reacting said perhydroxyl ions with said first pulp to provide a brightened first pulp brightened to the desired degree substantially solely by said perhydroxyl ions produced in



situ in said first pulp and a residual liquor containing bleaching chemical equivalent to at least 35% of said peroxide added, separating said residual liquor from said brightened first pulp and utilizing said separated residual liquor to brighten said second pulp to the desired degree.

4,798,653

RETENTION AND DRAINAGE AID FOR PAPERMAKING

John D. Rushmere, Wilmington, Del., assignor to Procomp, Inc., Marietta, Ga.

Filed Mar. 8, 1988, Ser. No. 165,634
Int. Cl.[4] D21H *3/58, 3/78*
U.S. Cl. 162—168.3 10 Claims

1. In a papermaking stock including cellulose fibers in a concentration of at least about 50% by weight of such fibers in an aqueous medium the improvement comprising:

a cationic component comprising a colloidal silica sol compound selected from the group consisting of colloidal silicic acid sol, colloidal silicic acid sol modified with at least one surface layer of aluminum atoms,

an anionic component selected from the group consisting of polyacrylamide prepared by the hydrolysis of polyacrylamide, polyacrylamide prepared by the copolymerization of acrylic acid with acrylamide, and polyacrylamide derived from the copolymerization of acrylamide with methacrylamide,

said cationic component being present in the stock in a concentration between about 0.01 to about 2.0 weight percent based on the solids content of the stock,

said anionic component being present in said stock at a concentration from about 0.01 to about 1.0 weight percent based on the solids content of the stock,

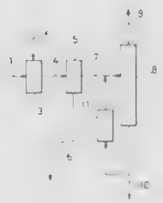
whereby said stock is rendered effectively resistant to destruction of its retention and dewatering properties by shear forces incurred by said stock in the course of forming of the stock into a paper web.

4,798,654

PROCESS FOR PREPARING BISPHENOL A

Shigeru Iimuro; Takashi Kitamura, both of Nagoya, and Yoshio Morimoto, Tokai, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 21, 1988, Ser. No. 184,181
Claims priority, application Japan, May 6, 1987, 62-108964
Int. Cl.[4] B01D *3/10*; C07C *37/74*
U.S. Cl. 203—94 9 Claims



1. A process for preparing 2,2-bis(4-hydroxyphenyl)propane comprising:

(a) feeding an adduct of 2,2-bis(4-hydroxyphenyl)propane and phenol to a distillation column a;

(b) distilling the adduct and removing phenol from the top of the distillation column and a stream containing 2,2-bis(4-hydroxyphenyl)propane from the bottom of the distillation column; and

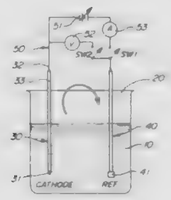
(c) recycling a portion of the stream containing 2,2-bis(4-hydroxyphenyl)propane removed from the bottom of the distillation column and combining said portion with the adduct being fed to the distillation column.

4,798,655

MULTIPARAMETER ANALYTICAL ELECTRODE STRUCTURE AND METHOD OF MEASUREMENT

Howard Diamond, 121 Huronview Blvd., Ann Arbor, Mich. 48103

Filed Mar. 19, 1987, Ser. No. 27,846
Int. Cl.[4] G01N *27/46, 27/48, 27/50*
U.S. Cl. 204—1 T 16 Claims



1. The electrochemical method of simultaneously or sequentially measuring in a liquid both a dissolved ionic species and a dissolved gas including the steps of:

(a) providing a single polarographically active working electrode having an electrochemically active, base metal/-metal oxide surface having the property of providing a stable electrochemical potential that is a quantitative measure of said ionic species and acting as a catalyst for electron transfer allowing for a quantitative polarographic or amperometric measure of said dissolved gas;

(b) providing a reference electrode;

(c) measuring the open circuit voltage generated by the electrode pair;

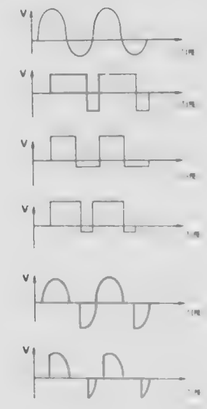
(d) measuring the closed circuit current flow either in driven mode or in self-generated mode, and comparing said voltage and current values with predetermined voltage and current reference standards to provide multiple values of parameters representative of concentrations of said ionic species and dissolved gas.

4,798,656

PROCESS FOR ELECTROLYTICALLY DYEING AN ANODIC OXIDE LAYER ON ALUMINUM OR ALUMINUM ALLOYS

Jean-Francois Paulet, Sibiingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 12, 1988, Ser. No. 142,945
Claims priority, application Switzerland, Jan. 16, 1987, 145/87
Int. Cl.[4] C25D *5/50*
U.S. Cl. 204—37.6 11 Claims



1. A process for electrolytically dyeing an anodic oxide layer on aluminum or aluminum alloys by means of direct or alternating current in an electrolyte containing at least one metal salt comprising pretreating the oxide layer prior to dyeing by means of asymmetric alternating current.

4,798,657

CATHODIC PROTECTION SYSTEM

Richard J. Kochilla, Cleveland, and Otto J. Esterle, Medina, both of Ohio, assignors to Corrpro Companies, Inc., Medina, Ohio

Filed Jan. 20, 1987, Ser. No. 4,901
Int. Cl.[4] C23F *13/00*
U.S. Cl. 204—147 9 Claims

1. A protection apparatus adapted to limit the corrosive effects of a liquid stored in a metallic tank, said apparatus comprising:

a cylindrical tank having a sidewall;

a plurality of elastic support members extending generally radially inwardly from the sidewall;

a first hoop structure peripherally supported at selected portions and joined with the sidewall by the support members;

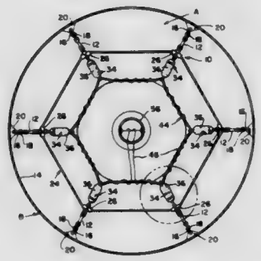
a second hoop structure disposed radially inward from the first hoop structure and generally below the first hoop structure in generally concentric relation therewith;

anode means operatively associated with the second hoop structure to carry an impressed current and produce an electrolytic effect countering the corrosive effects of the liquid; and,

anode level compensator means positioned above the second hoop structure, the anode level compensator means hav-

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ing generally neutral buoyancy when completely submerged in the liquid and including a plurality of hollow members with apertures through which liquid flows for



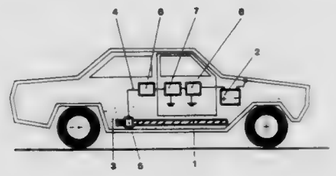
varying the apparent weight of the compensator means as the liquid level in the tank changes whereby the anode means remains submerged in the liquid.

4,798,658

DEVICE FOR THE CATHODIC CORROSION-PROTECTION OF METAL PARTS

Reinhold Herzog, Graz; Reinhard Pudinger, St. Johann o.H.; Hans-Peter Rainer, Graz, and Helmo Schober, St. Radegund, all of Austria, assignors to D 3 Cathodic Products-Korrosionsschutzprodukte Gesellschaft m.b.H., Austria

PCT No. PCT/AT86/00048, § 371 Date Apr. 24, 1987, § 102(e) Date Apr. 24, 1987, PCT Pub. No. WO87/00558, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 14, 1986, Ser. No. 37,352
Claims priority, application Austria, Jul. 12, 1985, 2063/85
Int. Cl.[4] C13F *13/00*
U.S. Cl. 204—147 23 Claims



1. Device for the cathodic corrosion-protection of metal parts, in which a potential difference is generated between the metal parts to be protected and any electrolyte located on the metal part, so that at places to be protected on the metal surface a direct current enters from the electrolyte into the metal surface, which counteracts the migration of positive metal ions from the metal surface, wherein for the protection of the surface of metal parts not buried in the ground, said device comprises means for applying an essentially constant potential difference between the electrolyte and the metal surface over large areas of said metal surface, comprising an electrode and at least one voltage source, the electrode coming into electrical connection with the electrolyte being applied linearly and/or superficially over wide regions of the surface to be protected.

4,798,659

ADDITION OF CALCIUM COMPOUNDS TO THE CARBOTHERMIC REDUCTION OF SILICA

Vishu D. Dosaj, Midland; Daniel H. Flisinger, Bay City, both of Mich., and James E. Trunzo, Eugene, Oreg., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 22, 1986, Ser. No. 944,733
Int. Cl.[4] C01B *33/02*
U.S. Cl. 204—164 5 Claims

1. In a process for the preparation of silicon from the reduction of silicon dioxide with a solid carbonaceous reducing agent, said process comprising:

(A) passing electrical energy into a reaction zone of a silicon furnace;

(B) feeding silicon dioxide and solid carbonaceous reducing agents into the reaction zone;

(C) recovering molten silicon from the reaction zone; and

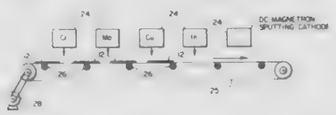
(D) handling by-product gases from the reaction zone, the improvement comprising controlling and maintaining a calcium level in a range from a range from about 0.2 to 2.0 weight percent in the reaction zone of the silicon furnace by monitoring the calcium level in the molten silicon and feeding a calcium compound separately from the silicon dioxide and the carbonaceous reducing agents to supplement calcium content of the silicon dioxide and solid carbonaceous reducing agents, said calcium compound being selected from a group consisting of calcium oxide, calcium carbonate, and calcium fluoride.

4,798,660

METHOD FOR FORMING CU IN SE_2 FILMS

James H. Ermer, Los Angeles, and Robert B. Love, Chatsworth, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 755,649, Jul. 16, 1985, abandoned. This application Dec. 22, 1986, Ser. No. 942,918
Int. Cl.[4] C23C *14/38*
U.S. Cl. 204—192.17 7 Claims



1. A method for fabricating a copper indium diselenide semiconductor film comprising:

in a single vacuum chamber sequentially depositing a film of copper on a substrate by DC magnetron sputtering from a first cathode and depositing indium on said film of copper by DC magnetron sputtering from a second cathode to form a composite film of copper and indium; and

heating said composite film of copper and indium in the presence of a source of selenium at a temperature and for a time selected to cause interdiffusion of copper, indium and selenium to form a copper indium diselenide film.

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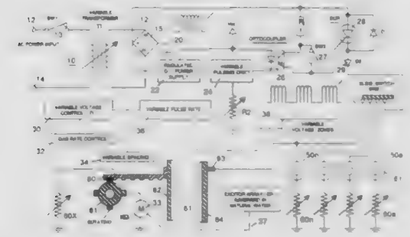
GAS GENERATOR VOLTAGE CONTROL CIRCUIT

Stanley A. Meyer, 3792 Broadway Blvd., Grove City, Ohio 43123

Filed Mar. 25, 1985, Ser. No. 715,749
Int. Cl.[4] C25B *9/04, 15/02*
U.S. Cl. 204—228 41 Claims

1. In a generator for producing a mixture of hydrogen and oxygen and other dissolved gas from natural water which generator includes at least a pair of plate exciters within a water containing vessel, a variable voltage source for applying a pulsating predetermined potential difference between the plates and wherein the rate of production of the mixture of gasses is controlled by varying at least one of the amplitude of

the voltage and the pulse repetition rate of the pulsating potential difference applied to the plate exciters, and in which said variable voltage source includes a means for restricting the current flow between the plate exciters to a minimum value relative to a predetermined potential difference applied to the plates, the improvement in the means for restricting said current flow comprising: variable voltage source means for converting an input voltage potential to unipolar d.c. voltage



pulses that are applied to the exciter plates and have a pulsating potential difference when measured from an arbitrary ground, said means further including means for regulating the voltage pulses in a repetitive frequency to inhibit the current flow caused by electron leakage between the plate exciters resulting from the amplitude of the applied voltage potential whereby said current flow is inhibited from exceeding a first minimum level.

4,798,662

CATHODE FOR ELECTROLYSIS AND A PROCESS FOR THE MANUFACTURE OF THE SAID CATHODE

Jacques Clerc-Renaud, La Mulatiere; Francis Leroux, Brignais, and Dominique Ravier, Lyons, all of France, assignors to Atochem, France

Filed Mar. 26, 1987, Ser. No. 31,086
Claims priority, application France, Apr. 3, 1986, 86 04767
Int. Cl.[4] C25B *11/00*
U.S. Cl. 204—290 R 5 Claims

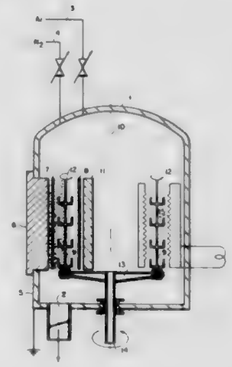
1. A cathode especially useful in the electrolysis of aqueous solutions of alkali metal halides consisting essentially of an electrically conducting substrate and a heterogeneous coating; said heterogeneous coating consisting of at least two coats a and b, coat a being in contact with the substrate and containing at least one of the constituents selected from precious metals, precious metal oxides, or mixtures of precious metal oxides and at least one oxide selected from the oxides of nickel, cobalt, iron, titanium, hafnium, niobium, tantalum or zirconium, and coat b in contact with the electrolyte and with a coat a and is a metal selected from nickel, cobalt, iron, their alloys, or the alloys of the former containing an atomic proportion of less than 15% phosphorous, boron, or sulfur, such that the ratio between the projected surface of the coat b and the projected surface of the substrate is greater than 95%.

4,798,663

SPUTTERING INSTALLATION FOR THE REACTIVE COATING OF A SUBSTRATE WITH HARD MATERIALS

Günther Herklotz, Bruchköbel, and Hans Eligehausen, Hanau, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

PCT No. PCT/EP86/00045, § 371 Date Sep. 30, 1986, § 102(e) Date Sep. 30, 1986, PCT Pub. No. WO86/04616, PCT Pub. Date Aug. 14, 1986
PCT Filed Jan. 31, 1986, Ser. No. 927,671
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1985, 3503398
Int. Cl.[4] C23C *14/34*
U.S. Cl. 204—298 13 Claims



1. Sputtering apparatus for the reactive coating of substrates with hard substances, especially with titanium nitride or titanium carbide, which has an evacuable housing at ground potential with a feed line for a reaction gas and a noble gas, and in which the sputtering surface of a magnetron serving as sputtering unit as well as at least one mounting for the substrate are disposed, the substrates being positionable in front of the sputtering surface by means of the mounting, characterized in that the mounting for the substrates is disposed in an ionization system with at least two electrodes of which the one electrode is operable as an electron emitter and the other electrode is at positive potential with respect to the emitter electrode, and wherein the substrate mounting itself is at a negative voltage with respect to the ground, and in which at least one magnet system prolonging the path of the electrons leaving the emitter electrode is disposed in the housing, which magnet system is disposed opposite the sputtering surface of the magnetron and the substrate and the electrodes are disposed between the sputtering surface and the magnet system.

4,798,664

ION SENSOR

Shuichiro Yamaguchi, Fuji; Norihiko Ushizawa, Fujinomiya, and Takeshi Shimomura, Fujinomiya, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1986, Ser. No. 946,089
Claims priority, application Japan, Dec. 25, 1985, 60-290812; Dec. 28, 1985, 60-299000; Jan. 21, 1986, 61-10737
Int. Cl.[4] G01N *27/30*
U.S. Cl. 204—418 47 Claims

1. An ion sensor comprising:

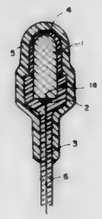
an electrically conductive substrate;

an electrically polymerized redox layer having a redox function covering a surface of said electrically conductive substrate; and

an ion-selective layer exhibiting ion selectivity covering a

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surface of said redox layer wherein said ion selective layer contains the following ingredients (a) - (d):



(a)	a polyvinyl chloride	100 parts by weight
(b)	ion carrier material	6–30 parts by weight
(c)	electrolytic salt	0–3.6 parts by weight
(d)	plasticizers	40–665 parts by weight.

4,798,665

COMBINATION PROCESS FOR THE CONVERSION OF A DISTILLATE HYDROCARBON TO MAXIMIZE MIDDLE DISTILLATE PRODUCTION

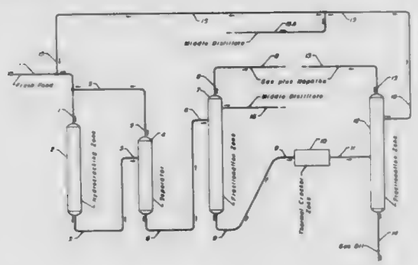
Michael J. Humbach, Wilmette, Ill., and John G. Hale, Egham, United Kingdom, assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 772,795, Sep. 5, 1985, Pat. No. 4,662,238. This application Apr. 27, 1987, Ser. No. 43,079

The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.

Int. Cl.[4] C10G *69/06*

U.S. Cl. 208—61 **16 Claims**



1. A process for the conversion of an aromatic-rich, distillable gas oil charge stock which is essentially free from asphaltenic hydrocarbons and possesses an aromatic hydrocarbon concentration greater than about 20 volume percent to selectively produce large quantities of high quality middle distillate while minimizing hydrogen consumption which process comprises the steps of:

(a) reacting said charge stock with hydrogen, in a catalytic hydrocracking reaction zone, at hydrocracking conditions including a maximum catalyst bed temperature in the range of about 60° F. (315° C.) to about 850° F. (454° C.) selected to convert at least a portion of said charge stock to lower-boiling hydrocarbon products including middle distillate and to convert at least about 10 volume percent of the aromatic hydrocarbon compounds contained in said charge stock to provide an increased concentration of paraffin hydrocarbon compounds in the resulting hydrocracking reaction zone effluent;

(b) separating said resulting hydrocracking reaction zone effluent to provide a middle distillate product stream and a paraffin-rich hydrocarbonaceous stream boiling at a temperature greater than about 700° F. (371° C.);

(c) recovering said middle distillate product stream;

(d) reacting said paraffin-rich hydrocarbonaceous stream recovered in step (b) in a non-catalytic thermal reaction zone at mild thermal cracking conditions including an elevated temperature from about 700° F. (371° C.) to about 980° F. (526° C.), a pressure from about 30 psig (207 kPa gauge) to about 1000 psig (6895 kPa gauge) and an equivalent residence time at 900° F. (482° C.) from about 1 to about 60 seconds to provide a non-catalytic thermal reaction zone effluent; and

(e) separating said non-catalytic thermal reaction zone effluent to provide a fraction boiling in the range from about 300° F. (149° C.) to about 700° F. (371° C.)

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HYDROCRACKING CATALYST FOR MIDDLE DISTILLATES

Stephen L. Parrott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 763,592, Aug. 8, 1985, Pat. No. 4,720,472. This application Oct. 15, 1987, Ser. No. 109,641

Int. Cl.[4] C10G *47/20*

U.S. Cl. 208—111 **19 Claims**

1. A hydrocracking process comprising the step of contacting

(A) a substantially liquid hydrocarbon containing feed, which has an initial boiling point under atmospheric pressure conditions in excess of about 400° F., with

(B) a free hydrogen containing gas and

(C) a catalyst composition comprising a support material consisting essentially of silica/titania on alumina which support material has been promoted with at least one compound of nickel,

at least one compound of molybdenum and at least one compound of phosphorus,

under such hydrocracking conditions as to obtain at least one liquid hydrocarbon-containing product stream having a lower initial boiling point and a higher API[60] gravity than said hydrocarbon containing feed;

wherein said catalyst composition contains about 0.1 to about 5 weight percent nickel and about 1 to about 15 weight percent polybdenum.

4,798,667

HYDROCARBON CONVERSION POLYMERIZATION CATALYST AND METHOD OF MAKING AND USING SAME

Russell S. Drago, and Edward E. Getty, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Division of Ser. No. 921,688, Oct. 22, 1986, Pat. No. 4,719,190. This application Jan. 11, 1988, Ser. No. 113,996

Int. Cl.[4] C10G *11/08*

U.S. Cl. 208—117 **2 Claims**

1. In a hydrocarbon conversion process wherein at least one hydrocarbon is contacted with a conversion catalyst under conversion conditions, the improvement comprising contacting said hydrocarbon with a catalyst prepared by reacting an adsorbent solid containing surface hydroxyl groups with a Lewis acid selected from a group consisting of aluminum halides, antimony halides and mixtures thereof and a halogenated organic solvent selected from the group consisting of CCl_4, $CHCl_3$ and mixtures thereof at temperature and for a time sufficient for said Lewis acid to react with at least a portion of said surface hydroxyl groups.

4,798,668

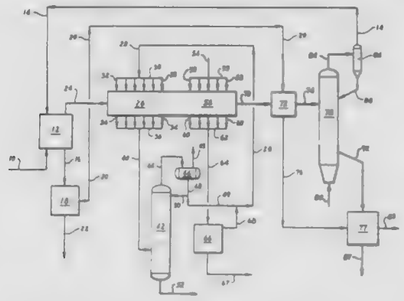
EXTRACTION OF HYDROCARBON-CONTAINING SOLIDS

Philiman N. Ho, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 824,832, Jan. 31, 1986, Pat. No. 4,695,373, which is a continuation of Ser. No. 694,009, Jan. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 599,480, Apr. 12, 1984, abandoned. This application Sep. 2, 1987, Ser. No. 92,376

Int. Cl.[4] C10G *1/00, 1/04*

U.S. Cl. 208—428 **20 Claims**



1. A process for recovering hydrocarbon liquids from oil shale solids which comprises:

(a) heating said solids in a nonoxidizing atmosphere to a temperature between about 550° F. and about 900° F. in the absence of an added liquid organic solvent to produce heat treated oil shale solids;

(b) extracting hydrocarbons from said heat treated oil shale solids by contacting said solids in an extraction zone with a liquid organic solvent passed downwardly through said heat treated oil shale solids in such quantities that said solvent trickles through said solids so that there is a discontinuous liquid phase in contact with said solids through the entire extraction zone; and

(c) recovering said extracted hydrocarbons from said liquid organic solvent as said hydrocarbon liquids.

4,798,669

SYSTEM FOR TREATING WATER WITH OZONE

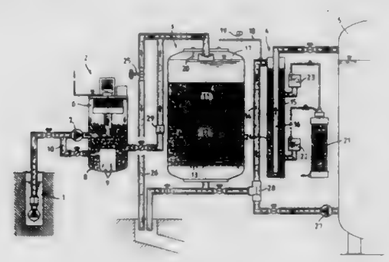
Bruno Bachhofer, Saentisstrasse 86, and Anton Locher, Bergstrasse 6, both of 7980 Ravensburg 1, Fed. Rep. of Germany

Filed Jan. 11, 1988, Ser. No. 141,867

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1987, 3711407

Int. Cl.[4] C02F *1/78*

U.S. Cl. 210—109 **5 Claims**



1. Water treatment system having an apparatus for the intensive pretreatment of untreated water with ozone, having a filter downstream comprising a filter tank, partly filled with filter materials having a reducing action, through which the pretreated water flows from top to bottom, in which process the residual ozone contained in the water is decomposed, and having an apparatus for the post-treatment of the water with ozone for the purpose of post-disinfection, wherein the excess ozone which accumulates in the upper part (17) of the filter tank and which added to the water during the pretreatment is fed anhydrously into the apparatus for the post-treatment of the filtered water.

4,798,670

SKIMMER VACUUM FILTER APPARATUS

William E. Troese, Upper Montclair, N.J., assignor to Hayward Industries, Inc., Elizabeth, N.J.

Filed Oct. 7, 1987, Ser. No. 105,878

Int. Cl.[4] E04H *3/20*

U.S. Cl. 210—169 **15 Claims**



1. Apparatus useful in connection with the performance of a swimming pool vacuuming operation, said apparatus comprising, in combination, a skimmer assembly, said skimmer assembly including a skimmer well having first mounting means for mounting a strainer basket in said skimmer well during the performance of a swimming pool skimming operation and an outlet which communicates with a primary filter; a vacuuming assembly, said vacuuming assembly including a lid mounted across said skimmer well and a vacuum hose attached to said lid; a secondary filter removably mounted in said skimmer well in place of the strainer basket such that said secondary filter is interchangeable with the strainer basket, said secondary filter including a housing mounted directly below said lid by said first mounting means, said housing having an inlet end which is substantially open and an outlet end which is substantially closed, filtering means for filtering fine and coarse debris from water flowing through said filtering means, and positioning means for removably positioning said filtering means inside said housing such that fine and coarse debris are removed from water vacuumed from the swimming pool as the water passes through said filtering means while flowing from said inlet end of said housing to said outlet end of said housing, wherein said apparatus permits said secondary filter to perform a prefiltering function during a swimming pool vacuuming operation and permits the strainer basket to be used in place of said secondary filter to perform a straining function during a swimming pool skimming operation.

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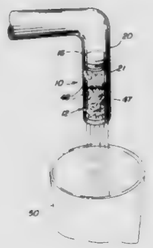
4,798,671
DEVICE FOR INWARD SUCTION OF LIQUID
Jan W. M. Mijers, and Johannes E. Steenbuizen, both of Veerweg, Netherlands, assignors to Dupher International Research B.V., Weesp, Netherlands
Filed Mar. 24, 1987, Ser. No. 29,642
Claims priority, application Netherlands, Mar. 27, 1986, 8600784
Int. Cl.[4] B01D *27/08*
U.S. Cl. 210—238 9 Claims



1. A device for taking liquid from a reservoir by inward suction with simultaneous filtration, comprising a flexible tube having at one end a filtering unit, which can be immersed in the liquid through an opening in the reservoir, and having a mouthpiece at another end, characterized in that (i) the mouthpiece is connected to the tube in a sealing manner via a flexible hollow member which forms a fluid connection between said tube and said mouthpiece, (ii) said mouthpiece tapering externally over at least a part of its length in the direction of the open front end remote from the tube, (iii) the flexible hollow member is connected to the tube by means of a connection means which externally comprises a radially outwardly projecting collar having an upright circumferential edge facing the mouthpiece, on which or to which edge a protective cap is connected in a sealing but detachable manner, (iv) the upright circumferential edge of the collar of the connection means has an outside diameter which is smaller than the cross-section of the opening in the reservoir, and (v) the end of the circumferential edge facing the mouthpiece comprises a radially outwardly projecting flange having a larger outside diameter than said opening in the reservoir.

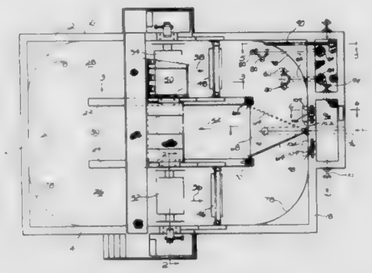
4,798,672
CHARCOAL WATER FILTER/STRAINER
Val R. Knight, 176 Ocean Ave., Apt. 5, Jersey City, N.J. 07305
Filed Jul. 24, 1987, Ser. No. 77,665
Int. Cl.[4] B01D *27/02*
U.S. Cl. 210—282 3 Claims

1. A charcoal water filter, comprising, a cylindrical cartridge, a rubber fitting secured to said cartridge, for rendering said cartridge secure in a water discharge outlet of a faucet, activated charcoal received in said cartridge, for removing toxic substances, a first mesh screen and a second mesh screen receiving said cartridge, for removing and retaining foreign particles from the water outlet, and a pair of aeration disks received in said cartridge for introducing oxygen into said water, and a plurality of openings angularly disposed and peripherally formed in said cartridge for entry of air into the interior of the cartridge at low water pressure discharge and to provide for a spray of water at high water pressure discharge with the water passing through said openings in an upward and



arcuate path for rinsing articles, as well as out of a bottom of said cartridge.

4,798,673
SEQUENCING CHANNEL WASTE WATER REACTOR
Clyde Huntington, Elgin, Ill., assignor to Lakeside Equipment, Bartlett, Ill.
Filed Jul. 6, 1987, Ser. No. 69,863
Int. Cl.[4] C02F *3/14*
U.S. Cl. 210—629 13 Claims



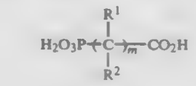
7. A method of treating waste water in a single vessel comprising:
(a) providing in said vessel three side by side, elongated channels, interconnected at their opposed ends such that there exists a central channel flanked by two outer channels;
(b) flowing waste water in a closed loop through said central channel and one of said outer channels while isolating one end of the other outer channel from the closed loop;
(c) introducing oxygen into the waste water as it flows in said closed loop;
(d) removing clarified waste water from said other outer channel near said one end thereof;
(e) thereafter flowing waste water in a second closed loop through said central channel and said other outer channel while isolating one end of said one outer channel from said second closed loop;
(f) introducing oxygen into the waste water as it flows in said second closed loop;
(g) removing clarified waste water from said one outer channel near said one end thereof; and
(h) sequentially repeating steps (b), (c) and (d) followed by steps (d), (f) and (g).

4,798,674
SEPARATION OF ORGANIC LIQUIDS
Mordechai Pasternak, Spring Valley; Craig R. Bartels, and John Reale, Jr., both of Wappinger Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Mar. 10, 1988, Ser. No. 166,575
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—640 9 Claims

9. The method comprising:
concentrating a charge solution containing methanol and either dimethyl carbonate or methyl t-butyl ether oxygenate by,
maintaining a membrane of non-porous separating layer of cast polyvinyl alcohol which has been crosslinked with an aliphatic polyaldehyde containing at least three carbon atoms including those in said aldehyde groups;
maintaining a pressure drop across said non-porous separating layer of polyvinyl alcohol;
passing a charge aqueous solution containing methanol and either dimethyl carbonate or methyl t-butyl ether oxygenate into contact with the high pressure side of said non-porous separating layer of polyvinyl alcohol having properties which enable at least a portion of said methanol in said charge solution and a lesser portion of oxygenate to pass by pervaporation through said non-porous separating layer of polyvinyl alcohol as a lean mixture containing more methanol and less oxygenate than are present in said charge solution and said charge solution is converted to a rich liquid containing less methanol and more oxygenate than are present in said charge solution;
recovering as permeate from the low pressure side of said non-porous separating layer of polyvinyl alcohol said lean mixture containing more methanol and less oxygenate than are present in said charge solution, said lean mixture being recovered in vapor phase at a pressure below the vapor pressure thereof; and
recovering as retentate from the high pressure side of said non-porous separating layer said rich liquid containing a lower methanol content and a higher oxygenate content than are present in said charge solution.

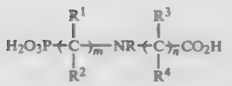
4,798,675
CORROSION INHIBITING COMPOSITIONS CONTAINING CARBOXYLATED PHOSPHONIC ACIDS AND SEQUESTRANTS
Richard J. Lipinski, Aurora, and Kelvin Y. Chang, Solon, both of Ohio, assignors to The Mogul Corporation, Chagrin Falls, Ohio
Filed Oct. 19, 1987, Ser. No. 110,138
Int. Cl.[4] C02F *5/14*
U.S. Cl. 210—700 14 Claims

1. A composition for inhibiting mineral scale and corrosion of metals in water which comprises from about 2 to 30 parts by weight per one million parts by weight of water of a carboxylated phosphonic acid having either formulae:



I

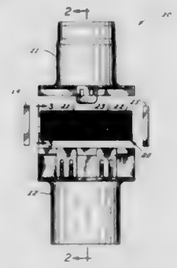
or



II

wherein m is from 1 to 6; n is from 0 to 6; R^1, R_2, R^3, and R^4, independently, is —H, an alkyl having from 1 to 12 carbon atoms, an aryl or an alkyl substituted aryl having from 6 to 15 carbon atoms, —OH, —SH, —NH_2, —PO_3H_2, —$CH_2PO_3H_2$, —CO_2H, —CH_2CO_2H, —halogen, —SO_3H; and R is —H, an alkyl having from 1 to 12 carbon atoms, an alkenyl having from 2 to 12 carbon atoms, an alkynyl having from 2 to 12 carbon atoms, a cycloalkyl having from 3 to 16 carbon atoms, an aryl or an alkyl substituted aryl having from 6 to 15 carbon atoms, methylene phosphonic acid, or methylene carboxylic acid; and from about 2 to 30 parts by weight per million parts by weight of water of a sequestrant selected from the group consisting of tartaric acid, citric acid, gluconic acid, and sulfur-containing lignosulfonates.

4,798,676
LOW PRESSURE DROP BACTERIAL FILTER AND METHOD
Vlado I. Matkovich, Glen Cove, N.Y., assignor to Pall Corporation, East Hills, N.Y.
Continuation of Ser. No. 943,492, Dec. 19, 1986, abandoned. This application May 18, 1988, Ser. No. 196,896
Int. Cl.[4] B01D *35/02*
U.S. Cl. 210—767 4 Claims

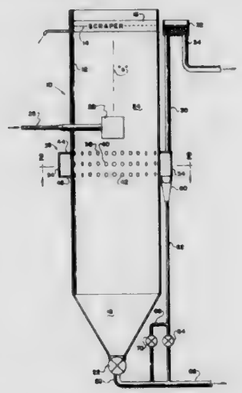


1. A method of filtering bacteria from exhaled human breath in a pulmonary function apparatus comprising passing the exhaled human breath through a housing disposed in close proximity to the mouth,
the housing having an inlet, an outlet, and a filter medium disposed therebetween, the inlet and the outlet being sized relative to the housing to result in flow of exhaled breath through the inlet, through the filter medium, and out of the outlet at substantially the same velocity as when exhaled from the mouth,
the filter medium having a nominal pore size in the range of about 50 microns to about 200 microns, the surface of the filter medium being dipsoed at an angle of at least about 160° relative to the direction of the breath approaching the filter medium whereby substantially all saliva droplets and aerosols impact upon and are retained by the filter medium.

4,798,677
FILTERATOR FOR SEPARATOR
David C. Irwin, 2900 North Grand, Amarillo, Tex. 79107
Filed Jul. 24, 1987, Ser. No. 77,613
Int. Cl.[4] B01D *17/02, 21/02*
U.S. Cl. 210—799 18 Claims

1. In a method of separation involving a separator having
a. an elongated cylindrical container having
b. vertical axis,
c. liquid in the container with
d. a liquid surface level near the top thereof,
e. scraper means in the container for removing tallow from the liquid surface level,
f. a sump in the bottom of the container with
g. a sump line and
h. a sump valve for draining solids which have settled from the liquid,
i. a quiescent zone of liquid between the scraper means and sump,
j. an inlet conduit for flowing a liquid mixture of at least water, tallow, and solids into the quiescent zone of the separator at

k. an inlet diffuser,
kk. a plenum ring having top, bottom, and outer plates encircling the container at the quiescent zone,
l. an outlet pipe connected into the top plate of the plenum ring having a cross sectional area taking liquid from the quiescent zone;
m. wherein the improvement comprises:



n. withdrawing liquid from the quiescent zone from a plurality of holes in a band around the container, thereby
o. minimally disturbing the quiescent zone, and
p. withdrawing the liquid from a plurality of holes into the plenum which has cross sectional area many times greater than the cross sectional area of the outlet pipe, thereby having a gentle flow of the liquid within the plenum.

4,798,678

HYDROCARBON CONTAINING ANTI-OXIDANT SYSTEM

Christopher S. Lin, Poughkeepsie; Larry D. Grina, Wappingers Falls, and Maria M. Kapuscinski, Carmel, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 27, 1987, Ser. No. 43,014
Int. Cl.[4] C10M *141/06*
U.S. Cl. 252—50 **20 Claims**

1. An anti-oxidant composition comprising
(i) a hindered phenol; and
(ii) a piperazine.

11. A lubricating oil composition comprising
(i) a major portion of a lubricating oil; and
(ii) a minor effective anti-oxidant portion of, as additive a hindered phenol and a piperazine or substituted piperazine.

4,798,679

CONTROLLED SUDSING STABLE ISOTROPIC LIQUID DETERGENT COMPOSITIONS

Artemio Castro, Fairfield, and Michael S. Showell, Cincinnati, both of Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Filed May 11, 1987, Ser. No. 48,155
Int. Cl.[4] C11D *3/12, 9/36, 17/08*
U.S. Cl. 252—174.15 **13 Claims**

3. A stable isotropic liquid detergent composition having a controlled suds pattern, comprising:
(a) a suds suppressing amount of a suds controlling agent consisting essentially of:
(i) polydimethylsiloxane fluid having a viscosity of from about 20 cs. to about 1500 cs. at 25° C.;
(ii) from about 5 to about 70 parts per 100 parts by weight of (i) of non-crystalline silica selected from the group consisting of siloxane resin composed of $(CH_3)_3SiO_{\frac{1}{2}}$ units and SiO_2 units in a ratio of $(CH_3)_3SiO_{\frac{1}{2}}$ units to SiO_2 units of from about 0.6:1 to about 1.2:1; solid silica gel; and mixtures thereof;
(b) from about 1% to about 60% by weight of a sudsing detergent surfactant selected from the group consisting of anionic, nonionic, zwitterionic, ampholytic, and cationic surfactants and mixtures thereof; and
(c) from 0% to about 95% by weight of water, and
(d) cyclomethicone dispersing agent which is premixed with the suds controlling agent prior to adding the suds controlling agent to the detergent composition.

4,798,680

OPTICALLY ACTIVE COMPOUND, PROCESS FOR PRODUCING SAME AND LIQUID CRYSTAL COMPOSITION CONTAINING SAME

Hiroyuki Nohira; Masanao Kamei; Shinichi Nakamura, all of Urawa; Kazuo Yoshinaga, Machida; Mariko Kai, Saitama, and Kazuharu Katagiri, Tama, all of Japan, assignors to Canon Kabushiki Kaisha and Yamakawa Yakuhin Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Oct. 16, 1986, Ser. No. 919,376
Claims priority, application Japan, Oct. 18, 1985, 60-232886; Feb. 26, 1986, 61-40793
Int. Cl.[4] C09K *19/52*; C07C *31/34*
U.S. Cl. 252—299.01 **21 Claims**

1. An optically active 2-fluoro-1-alkanol compound represented by the formula (Ia):



(Ia)

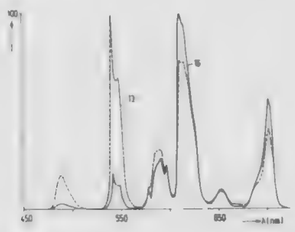
wherein R is an alkyl group having 1–16 carbon atoms, and C* is an asymmetric carbon atom.

4,798,681

LUMINESCENT QUARTZ GLASS, METHOD OF PREPARING SUCH A GLASS AND LUMINESCENT SCREEN PROVIDED WITH SUCH A GLASS

Gerrit Oversluizen; Joseph G. Van Lierop, and Anne-Marie A. Van Dongen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 7, 1987, Ser. No. 105,922
Claims priority, application Netherlands, Oct. 8, 1986, 8602519
Int. Cl.[4] C03C *3/06, 3/095*; C09K *11/08*
U.S. Cl. 252—301.4 F **7 Claims**



1. A luminescent quartz glass activated by a rare earth metal and consisting essentially of glass matrix oxides: SiO_2 and from 0 to 0.15 mol of MO per mol of SiO_2 in which MO represents at least one of the oxides selected from the group consists of Al_2O_3, B_2O_3, P_2O_5, ZrO_2, Sc_2O_3, Y_2O_3, La_2O_3, Gd_2O_3, Lu_2O_3, the alkali metal oxides and the alkaline earth metal oxides,

characterized in that the glass further consists essentially of at least one of the oxides selected from the group consisting of Tb_2O_3 and Ce_2O_3 as activator oxides in a quantity of 1 to 15 mol% calculated with respect to the glass matrix oxides.

4,798,682

OIL-IN-WATER EMULSIONS WITH INCREASED VISCOSITY UNDER SHEAR STRESS

Achim Assmann, Hilden, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 6, 1986, Ser. No. 872,306
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1985, 3521713
Int. Cl.[4] B01J *13/00*; C08L *1/26*; A61K *7/06*
U.S. Cl. 252—312 **20 Claims**

1. An oil-in-water emulsion having increased viscosity under shear stress comprising a continuous aqueous phase and a discontinuous oil phase, wherein said continuous aqueous phase contains a combination of hydrocolloids consisting essentially of:
(a) at least one water-soluble nonionic cellulose ether; and
(b) at least on water-soluble salt of a crosslinked acrylic acid polymer or acrylic acid copolymer having a weight average molecular weight of about 1,000,000 to 5,000,000,
in a ratio a:b by weight of about 9:1 to about 1:9.

4,798,683

METHOD FOR CONTROLLING CORROSION USING MOLYBDATE COMPOSITIONS

Bennett P. Boffardi, Bethel Park, and Susan P. Rey, Corsopolis, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Apr. 21, 1988, Ser. No. 184,239
Int. Cl.[4] C23F *11/00*
U.S. Cl. 252—389.54 **2 Claims**

1. A method for inhibiting corrosion in an aqueous system comprising adding to said system an effective amount of a corrosion inhibiting composition comprising:
(a) a molybdate ion source; and
(b) a water-soluble component selected from the group consisting of polymaleic anhydride; amine adducts of polymaleic anhydride; polymers prepared by polymerizing maleic anhydride with dimethyl diallyl ammonium chloride or homologs thereof; polymers prepared from 50–70%, by weight, acrylic acid or methacrylic acid, 10–40%, by weight, 2-acrylamido-2-methylpropyl sulfonic acid or 2-methyacrylamido-2-methylpropyl sulfonic acid and 10–30%, by weight, of a polyalkyleneoxide compound; salts of the above described polymers; phosphonates selected from the group consisting of 2-phosnphonobutane-1,2,4 tricarboxylic acid and hydroxyphosphono acetic acid; phosphino carboxylic acids; polyphosphoric acid and polyhydroxy esters of polyphosphoric acid; wherein the weight of (a):(b), on an active basis, ranges from about 10:1 to about 1:10.

4,798,684

NITROGEN CONTAINING ANTI-OXIDANT COMPOSITIONS

Mary F. Salomon, Cleveland Heights, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 9, 1987, Ser. No. 59,884
Int. Cl.[4] C10M *135/22*
U.S. Cl. 252—47.5 **42 Claims**

1. A composition of matter which is the amine terminated reaction product obtained from a secondary aromatic monoamine with a beta-thiodialkanol wherein the equivalents of the beta-thiodialkanol are greater than the equivalents of the secondary monoamine.

35. A lubricating composition comprising a major amount of an oil of lubricating viscosity and a minor amount of the composition of claim 1.

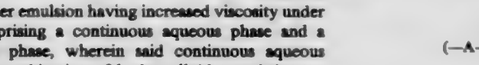
4,798,685

PRODUCTION OF BASE-TYPE CONDUCTING POLYMERS

Stuart I. Yaniger, Palmdale, Calif., assignor to Lockheed Corporation, Calabasas, Calif.

Filed Oct. 20, 1986, Ser. No. 920,474
Int. Cl.[4] H01B *1/00, 1/06*
U.S. Cl. 252—500 **18 Claims**

1. A process for producing a conductive polymer which comprises reacting a base-type non-conductive polymer containing carbon-nitrogen linkages and having the formula:



where A comprises an aryl group, and y is an integer ranging from about 1 to about 1,000, with an R^+ donor compound selected from the group consisting of RX and R_3OX, where R is selected from the group consisting of alkyl containing 1 to 20 carbon atoms, and aryl, and X is selected from the group consisting of halogen, PF_6^-, $SbCl_6^-$ and benzene sulfonate, said R group being capable of covalently binding to the nitrogens of said polymer, the molar proportions of R^+ donor compound to non-conductive polymer ranging from about 0.01 to about 2 R^+ groups per nitrogen, and forming an electrically conductive polymer containing said R groups covalently linked to the nitrogen atoms of the polymer.

4,798,686

ORGANIC POLYMERS WITH ELECTRICAL PROPERTIES

Jürgen Hocker, Bergisch-Gladbach; Ludwig Rottmaier, Odenthal-Gloebusch; Klaus Reinking, Wermelskirchen; Jürgen Kirsch, Cologne, and Heinz-Josef Fillmann, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 18, 1986, Ser. No. 932,077
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1985, 3542231
Int. Cl.[4] H01B *1/00*
U.S. Cl. 252—500 **6 Claims**

1. An electrically conductive organic polymer comprising an organic polymer selected from thermoplastics, thermosetting resins, elastomers and lacquers and 5–80% by weight based on the total weight of the electrically conductive polymer of a sulfur-containing pyropolymer wherein said pyropolymer is obtained by pyrolysis of a sulfur-containing condensation product of aromatic compounds and sulfur or sulfur-releasing compounds.

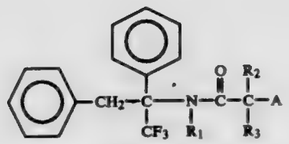
4,798,687

2-AMINO-N-[1,2-DIPHENYL-1-(THIFLUOROMETHYL-)ETHYL]ACETAMIDE DERIVATIVES

Ronald C. Griffith, Pittsford, and James J. Napier, Rochester, both of N.Y., assignors to Penwalt Corporation, Philadelphia, Pa.

Filed Feb. 6, 1987, Ser. No. 11,816
Int. Cl.[4] C07C *103/50*
U.S. Cl. 260—501.1 **6 Claims**

1. The compound



where R_1, R_2 and R_3 are hydrogen or methyl and A is amino, C_1–C_4 monoalkylamino, C_2–C_8 dialkylamino, cyclopropylamino, 1-pyrrolidinyl, 1-piperidinyl, or 4-morpholinyl or the pharmaceutically acceptable acid salts thereof.

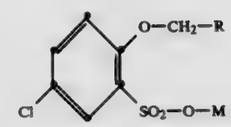
4,798,688

2-ALKOXY-5-CHLORO-BENZENESULPONATES USEFUL FOR THE PREPARATION OF 2-ALKOXYBENZOSULPONAMIDES

Franz-Josef Jaeggi, Baton Rouge, La., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 836,288, Mar. 5, 1986, Pat. No. 4,709,092. This application Aug. 26, 1987, Ser. No. 90,261
Int. Cl.[4] C07C *143/40*
U.S. Cl. 260—512 R 7 Claims

1. A 2-alkoxy-5-chlorobenzosulfonic acid alkali metal salt of formula V



(V)

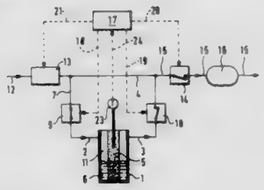
wherein R is chloromethyl, methoxymethyl, C_1–C_4alkyl or trifluoromethyl and M is a sodium or potassium atom.

4,798,689

ARRANGEMENT FOR CONTROLLING A VAPORIZER BY MEANS OF PRESSURE FLUCTUATIONS

Ulrich Heim, Lübeck, and Scato Alberda, Gross Scheinkenberg, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Jan. 25, 1988, Ser. No. 147,449
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702136
Int. Cl.[4] A61M *16/18*
U.S. Cl. 261—39.1 5 Claims



1. An arrangement for generating a gas mixture, the arrangement comprising:

supply means for supplying a carrier gas;

a user supply line for conducting a gas mixture to a user;

a vaporizer line starting at said supply means and opening into said user supply line;

a vaporizer for vaporizing a medium, said vaporizer having an input and an output for connecting said vaporizer into said vaporizer line;

a bypass line bridging said vaporizer line and connecting said supply means to said supply line;

primary switching means for alternately interrupting said vaporizer line at said input and at said output; and,

ancillary switch means for interrupting said user supply line when said vaporizer line is interrupted at said output.

4,798,690

MOLDING A GLASS-PLASTIC COMPOSITE LENS

Sheldon L. Levy, Prairie Village, Kans., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 3, 1986, Ser. No. 926,617
Int. Cl.[4] B29D *11/00*
U.S. Cl. 264—1.7 4 Claims

1. A method for producing a molded optical lens comprising an optical glass substrate bonded to a thermoplastic element, comprising the steps of:

providing a heated composite of said substrate in contact with said thermoplastic element at a temperature sufficient to soften said thermoplastic element for a molding operation;

juxtaposing said heated composite in a mold cavity characterized by a predetermined surface configuration, said cavity being at a temperature in the range of about 40°–50° C., whereby said composite is cooled and molded into said configuration to form said optical lens whereby said mold remains essentially isothermal;

removing said molded optical lens from said cavity.

4,798,691

CAPSULE-SHAPED POLYMER PARTICLES AND PROCESS FOR THE PRODUCTION THEREOF

Kiyoshi Kasai, Yokkaichi; Masayuki Hattori, Ama; Hiromi Takeuchi, and Nobuo Sakurai, both of Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

PCT No. PCT/JP85/00544, § 371 Date May 23, 1986, § 102(e) Date May 23, 1986, PCT Pub. No. WO86/02017, PCT Pub. Date Apr. 10, 1986
PCT Filed Oct. 2, 1985, Ser. No. 871,416
Claims priority, application Japan, Oct. 3, 1984, 59-206172
Int. Cl.[4] A61J *5/00*; B01J *13/02*; B32B *25/00, 27/00*
U.S. Cl. 264—47 14 Claims

1. A process for producing capsule-shaped polymer particles, comprising the steps of:

dispersing finely-divided particles of a polymer in water;

adding a polymerizable monomer component comprising (i) a cross-linkable monomer and a hydrophilic monomer, and (ii) an oil substance to the water dispersion, whereby the monomer component and the oil substance are absorbed in the finely-divided polymer particles and said polymer particles are soluble in said polymerizable monomer component; and

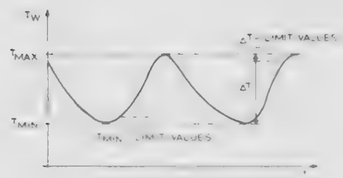
polymerizing said monomer component to produce capsule-shaped polymer particles containing said oily substance on the inside thereof, wherein said polymer is different than said capsule-shaped polymer resulting from said polymerizing step.

4,798,692

METHOD FOR CONTROLLING AND/OR REGULATING THE INJECTION MOLDING IN INJECTION MOLDING MACHINES

Eberhard Biersch, Stuttgart; August Burr, Schwäbisch Gmünd, and Klaus Hofmann, Waiblingen-Beinstein, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE85/00219, § 371 Date Mar. 11, 1986, § 102(e) Date Mar. 11, 1986, PCT Pub. No. WO86/00563, PCT Pub. Date Jan. 30, 1986
PCT Filed Jun. 28, 1985, Ser. No. 857,741
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1984, 3425459
Int. Cl.[4] B29C *45/78*
U.S. Cl. 264—40.6 5 Claims



1. A method of controlling and/or regulating an injection molding of a mass through measurement of temperature in an injection molding tool of an injection molding machine, the injecting molding including providing an injection molding tool with a bore, and a mold pocket with a surface, subjecting the tool to a temperature and a mass to be injection molded to a temperature, cyclically injecting the mass into the mold pocket so as to thereby produce temperature jumps in the mold pocket, the method comprising the steps of:

feeding only one thermosensor into the bore of the injection molding tool to a position between 1 mm and 2 mm inclusive from the mold pocket surface;

recording the temperature jumps through the thermosensor so as to produce measurement results;

monitoring the measurement results with respect to predetermined maximum permissible temperature deviations;

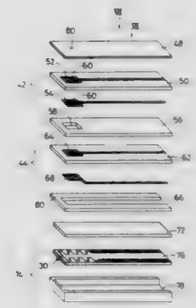
using the measuring results to control the mass temperature and the tool temperature, the step of monitoring the measurement results including monitoring a minimum temperature T_{min} and a temperature difference ΔT with respect to predetermined maximum permissible temperature deviations, the temperature difference representing the temperature jump as recorded through the thermosensor and being the difference between a maximum and the minimum temperatures $T_{max}-T_{min}$, the step of using the measuring results including using the minimum temperature T_{min} to regulate the tool temperature and using the temperature difference ΔT to regulate the mass temperature; and indicating when a temperature recorded through the thermosensor exceeds the predetermined maximum permissible temperature deviations, the indicating including actuating a signal for controlling quality control or for turning off the machine.

4,798,693

METHOD OF MANUFACTURING AN ELECTROCHEMICAL DEVICE

Syunzo Mase, Ama, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 725,672, Apr. 22, 1985, abandoned. This application Aug. 3, 1987, Ser. No. 81,631
Claims priority, application Japan, Apr. 26, 1984, 59-84677
Int. Cl.[4] G01N *27/46*
U.S. Cl. 264—44 10 Claims



1. A method of manufacturing an electrochemical device which has a planar electrochemical cell structure including a planar solid electrolyte body and at least two electrodes disposed in contact with the solid electrolyte body, the device also including a heating element, comprising the steps of:

forming a first unfired ceramic layer on a first side of an unfired electrochemical cell structure, said first unfired ceramic layer being given a porous structure by firing thereof;

forming a second unfired ceramic layer on a second side of said unfired electrochemical cell structure, such that said second unfired ceramic layer does not contact either of said at least two electrodes, said second unfired ceramic layer being made of an electrically insulating material and being given a porous structure by firing thereof, said second unfired ceramic layer cooperating with said first unfired ceramic layer to prevent warpage of the planar electrochemical cell during co-firing of the unfired structure and unfired layers of the electrochemical cell;

forming an unfired heater layer for the heating element, said unfired heater layer being embedded in said second unfired ceramic layer;

forming a gas-tight unfired ceramic layer on one of the opposite sides of the second unfired ceramic layer which is remote from said first unfired ceramic layer, said gas-tight layer protecting the heater layer from exposure to a gas to be analyzed using said device; and

co-firing said unfired electrochemical cell structure, said first unfired ceramic layer, said second unfired ceramic layer, said unfired heater layer, and said gas-tight unfired ceramic layer to form said electrochemical device.

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METHOD FOR PRODUCING COMPOSITE MATERIALS

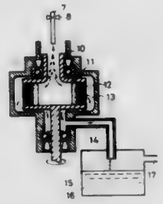
Hiroyuki Sugata, Atsugi; Kouhei Nakata, Yokohama; Nobutoshi Mizusawa, Sagamihara; Satoshi Yuasa, Yokohama; Masahiro Haruta, Tokyo; Takashi Hamamoto, Yokohama, and Kuniji Osabe, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1986, Ser. No. 893,815

Claims priority, application Japan, Aug. 9, 1985, 60-174283; Aug. 9, 1985, 60-174285; Aug. 9, 1985, 60-174286; Aug. 9, 1985, 60-174287; Aug. 26, 1985, 60-185767; Aug. 26, 1985, 60-185768; Aug. 26, 1985, 60-185769; Aug. 26, 1985, 60-185770; Sep. 25, 1985, 60-210283; Sep. 25, 1985, 60-210284; Sep. 25, 1985, 60-210285; Sep. 25, 1985, 60-210286

Int. Cl.[4] B28B *1/28*; B29B *7/30*; B29C *41/04, 41/22*

U.S. Cl. 264—60 14 Claims



1. A process for producing a composite material comprising:

(a) mixing a plurality of different particulate constituents in a fluid to form a mixture, the mixing ratio of the different particulate constituents being varied over a period of time;

(b) feeding the mixture into a central portion of a rotating molding vessel having an interior cavity and filter material aroung the circumference which allows for fluid communication between said interior cavity and the exterior of said molding vessel said feeding step taking place over said period of time to deposit said different particulate constituents in a ratio therebetween varying in the rotation radius direction and in correspondence with the mixing ratio;

(c) applying a sufficient rotational speed to said molding vessel to applying a centrifugal force to said mixture to force the fluid from the particulate constituents and through said filter material;

(d) controlling said rotational speed so as to vary the thickness of said layers; and

(e) fixing the deposited particulate constituents.

4,798,695

PROCESS FOR THE PRODUCTION OF LAMINATED GLASS PLATES

Dieter G. Rodel, Industriestr 18, Waldmohr, Fed. Rep. of Germany

Filed Apr. 7, 1987, Ser. No. 35,503

Claims priority, application European Pat. Off., Apr. 8, 1986, 86104785.0

Int. Cl.[4] B29C *51/00*

U.S. Cl. 264—164 7 Claims

1. Process for the production of multilayer glass plates of a plurality of panes spaced from one another in a frame with hardenable synthetic material and shaped bodies in the intervening space between the panes, said process comprising the steps of:

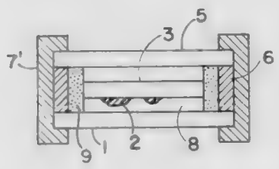
applying synthetic material onto a horizontally positioned first pane of glass, the synthetic material being applied before hardening while in a viscous state at selected places and in uneven thickness,

putting shaped bodies onto or between the surface portions which are covered with synthetic material,

laying a second pane at a spaced interval over the first pane such that the synthetic material is not touched,

surrounding the packet consisting of the two panes with the frame,

rotating the packet through 180°,



maintaining the packet in the rotated position while the viscous synthetic material flows downwardly with a formation of threads or drops joining the two panes, and

bonding the two panes together by the threads or drops of hardened synthetic material.

4,798,696

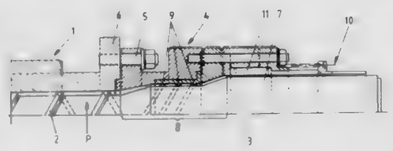
METHOD FOR EXTRUSION OF PLASTIC TUBES, AND AN APPARATUS FOR CARRYING OUT SAID METHOD

Boen Per, Fredrikstad, Norway, assignor to A/S Sonnichsen Rorvalseverket, Oslo, Norway

Filed May 8, 1987, Ser. No. 47,781

Int. Cl.[4] B29C *47/24*

U.S. Cl. 264—209.2 3 Claims



1. A method for extrusion of plastic tubes by a screw extruder having a screw line and a tube molding head comprising an external stationary nozzle and a mandrel supported against a nozzle wall by means of ribs or spoke, the method comprising the steps of;

rotating plastic to be extruded in the same direction as the rotation of said screw extruder to form screw line shaped strips; and

flow welding said strips to form a tube.

2. Apparatus for extrusion of plastic tubes comprising a screw extruder having a screw line and a tube molding head including an external stationary nozzle having a passage corresponding to an external contour of a tube to be extruded;

a rotatable mandrel having a cross-section corresponding to the internal contour of said tube;

ribs for supporting said mandrel within said nozzle, said ribs extending along a screw line and being attached to said nozzle, external faces of said ribs being in supporting contact with said mandrel, said screw line of said ribs having a direction opposite that of said extruder screw whereby plastic to be extruded is rotated in the same direction as the rotation of said screw extruder to form screw line shaped strips; and

means for flow welding said strips to form a tube.

4,798,697

PROCESS FOR PREPARATION OF INJECTION MOLDED BODY OF OLEFIN/VINYL ALCOHOL COPOLYMER

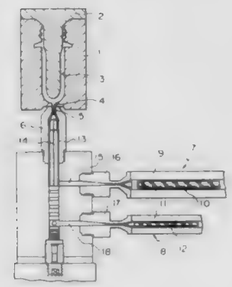
Shigeso Nohara, Yokohama; Sadao Hirata, Kamakura; Junichi Matuo, Yokohama; Masami Hirano, Yokohama, and Isao Tanikawa, Ayase, all of Japan, assignors to Toyo Seikan Kaisha, Tokyo, Japan

Filed Mar. 31, 1987, Ser. No. 32,646

Claims priority, application Japan, Mar. 31, 1986, 61-71236

Int. Cl.[4] B29C *45/16, 45/46*

U.S. Cl. 264—255 9 Claims



1. A process for the production of an injection-molded body of an olefin/vinyl alcohol copolymer, which comprises melt-kneading in the presence or absence of a radical generator a composition comprising (i) a high-molecular-weight olefin/vinyl alcohol copolymer having a melt flow rate of 0.4 to 6.0 g/10 min as determined at 190° C. and a vinyl alcohol content of 40 to 80 mole % and (ii) a low-molecular-weight olefin/vinyl alcohol copolymer having a melt flow rate of 3.0 to 60 g/10 min as determined at 190° C., which is higher by at least 0.5 g/10 min than that of the high-molecular-weight ethylene/vinyl alcohol copolymer (i), and a vinyl alcohol content of 45 to 85 mole % at a weight ratio of from 98/2 to 40/60, and injecting the melt-kneaded composition into a mold through a nozzle to thereby form a layer of an olefin/vinyl alcohol copolymer having an increased molecular weight and a weight average molecular weight (Mw) of at least 80,000.

4,798,698

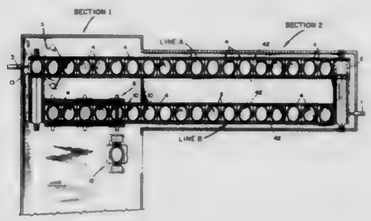
CLOSED LOOP SYSTEM FOR THE MANUFACTURE AND HANDLING OF CONCRETE PIPE

Carl R. Joelson, 2501 Bayshore Rd., Nokomis, Fla. 33555

Continuation of Ser. No. 853,205, Apr. 17, 1986, abandoned. This application Dec. 18, 1987, Ser. No. 135,542

Int. Cl.[4] B28B *21/14, 21/56*

U.S. Cl. 264—271.1 1 Claim



1. A closed single level loop process for manufacturing and handling large, heavy reinforced concrete pipe comprising moving intermittently a reinforcing cage from a starting station on a single level to a molding station on the same level, freshly molding a reinforced concrete pipe around said reinforcing cage, while holding the freshly molded concrete pipe only by ends of the pipe, curing said held freshly molded pipe by intermittently moving said pipe through a curing station on the same level as said molding station, intermittently moving said cured held pipe to said starting station from said curing station, releasing the pipe and repeating the cycle.

4,798,699

WEAR SLEEVE FOR A CONTROL ROD END PLUG

Samuel Ceral, Churchill Boro; John F. Wilson, Murrysville Boro, and Robert K. Gjertsen, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 26, 1984, Ser. No. 634,725

Int. Cl.[4] G21C *7/10*

U.S. Cl. 376—327 3 Claims



1. In a nuclear reactor including at least one guide thimble and at least one control rod received in said guide thimble and supported for movement relative thereto, said control rod having an elongated tubular cladding member and an end plug attached to an end of said member which extends into said guide thimble and is subject to vibratory contact with a portion of said guide thimble, the improvement which comprises:

a wear sleeve surrounding an upper portion of said end plug adjacent said end of said cladding member of said control rod and disposed above a lower tip portion of said end plug so as to provide a contact interface between said end plug and said guide thimble portion, said wear sleeve having a cross sectional shape concentric with that of said end plug upper portion, said wear sleeve having means forming a connection with complementary means on said end plug for attaching said wear sleeve to said end plug upper portion and being composed of material similar to that of said thimble and dissimilar from that of said end plug.

4,798,700

CERAMIC INSTALLATIONS

Claus Elter, Bad Duerkheim; Edgar Hornischer, Mannheim; Herrmann Schmitt, Wiesweiler, and Josef Schoesing, Hambruecken, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Fed. Rep. of Germany

Filed Jan. 21, 1987, Ser. No. 5,656

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1986, 3601750

Int. Cl.[4] G21C *7/08, 7/22*

U.S. Cl. 376—338 11 Claims

1. In combination with a gas-cooled high temperature reactor having discrete absorber material elements for shutting down said reactor and a core filled with spherical fuel elements,

a graphite side reflector comprising at least one nose-shaped projection protruding radially into the reactor core from said graphite side reflector,

said at least one nose-shaped projection comprising: (a) at least one vertically disposed cavity adapted to receive said discrete absorber material elements, (b) a vertically dis-

posed, continuous opening which forms a passageway for communication between said cavity and the core of the reactor, and (c) blocking means cooperatively engaged with said projection and positioned within said continuous opening for preventing direct communication between said cavity and the core of the reactor,



said opening having a maximum width adjacent said cavity which is less than the minimum dimension of said discrete absorber elements in order to prevent passage of said elements into said continuous opening for said cavity.

4,798,701

METHOD OF SYNTHESIZING AMORPHOUS GROUP IIIA-GROUP VA COMPOUNDS

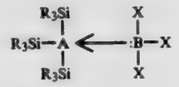
Lawrence D. David, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1987, Ser. No. 72,486
Int. Cl.[4] C22C *28/00, 21/00*; C01B *25/08, 21/06*
U.S. Cl. 420—528 **38 Claims**

1. A method of synthesizing amorphous Group IIIA-Group VA compounds comprising the steps of:

(a) mixing equimolar amounts of a tris(trialkylsilyl) compound of a Group IIIA element with a halide of a Group VA element in a non-protic, non-active hydrogen containing dried, deoxygenated organic solvent wherein the Group IIIA element is selected from the group consisting of aluminum, boron, gallium, indium, and mixtures thereof and the Group VA element is selected from the group consisting of antimony, arsenic, nitrogen, phosphorus, and mixtures thereof;

(b) reacting the components of the mixture of step (a) to form an adduct of the general formula:



wherein

R=an alkyl group;

A=aluminum, boron, gallium, indium, or mixtures thereof;

B=antimony, arsenic, nitrogen,

phosphorus, or mixtures thereof; and

X=bromine, chlorine, fluorine, or iodine,

thereinafter which is formed a Group IIIA-Group VA compound having the general formula AB and a halide by-product having the general formula R_3SiX; and

(c) removing the R_3SiX by-product to recover the AB stoichiometric condensed phase, wherein said phase contains less than about 10% by volume crystallinity.

4,798,702

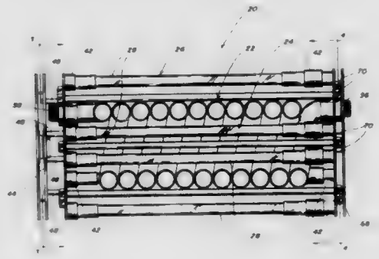
STERILIZER UNIT FOR FLUID MEDIA AND PROCESS

Robert E. Tucker, P. O. Box 414, Florissant, Mo. 63032

Filed Sep. 10, 1986, Ser. No. 906,030
Int. Cl.[4] G01N *23/10, 23/12*
U.S. Cl. 422—24 **14 Claims**

1. A process of sterilizing a fluid media comprising the steps of:

(a) providing a length of thin walled corrugated pipe in the shape of a helix coiled around an ultraviolet germicidal radiation source, said corrugated pipe being formed of a tough, flexible fluorinated polyalkylene resin which is resistant to buildup of film on the inner surface thereof, which remains transparent to ultraviolet rays over an extended period of time and which is capable of being used without sidewall support;



(b) passing fluid media through the corrugated pipe; and,

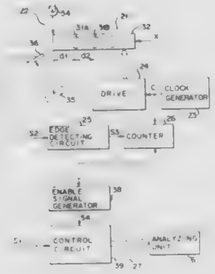
(c) simultaneouly exposing the fluid media to ultraviolet germicidal radiation by irradiating the fluid media through the walls of said corrugated pipe with said germicidal radiation source.

4,798,703

PHOTOMETRIC APPARATUS IN AUTOMATIC CHEMICAL ANALYZER

Tomiharu Minekane, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 6, 1985, Ser. No. 805,617
Claims priority, application Japan, Dec. 7, 1984, 59-257406
Int. Cl.[4] G01N *35/04*
U.S. Cl. 422—65 **14 Claims**



1. A photometric apparatus in an automatic chemical analyzer, comprising:

photometric means including light-projecting means for projecting light and light-receiving means for obtaining a signal including a photometric signal from incident light projected by said light-projecting means, said light-projecting and light-receiving means forming a light path therebetween for measurement;

a cell assembly including a holder having an optical edge for obstructing said light path and a plurality of cells containing samples to be analyzed, said cells being spaced apart in said holder in a conveying direction and one of said cells being adjacent said optical edge, each of said cells having an analyzing portion located at a preselected position therein, said analyzing portions of adjacent cells being separated by a first predetermined distance and said analyzing portion of said cell adjacent said optical edge being separated from said optical edge by a second predetermined distance;

drive means for causing relative movement between said cell assembly and said light path at a predetermined speed in said conveying direction for positioning said cells successively in said light path between said light-projecting means and said light-receiving means;

edge detecting means responsive to said light-receiving means for detecting the passage of said optical edge of said holder through said light path;

signal generating means responsive to said drive means and to the detection of said optical edge of said holder by said edge detecting means for generating an enable signal for measurement of said cells at said analyzing portions, said signal generating means including means for generating said enable signal upon detection of said optical edge and at succeeding intervals determined by a relationship between at least one of the predetermined distances between said optical edge and said adjacent portion of an adjacent cell and respective analyzing portions of adjacent cells, and said predetermined speed of movement of said cell assembly;

means for analyzing said photometric signal obtained by said light-receiving means from incident light projected by said light-projecting means and passing through said cells; and

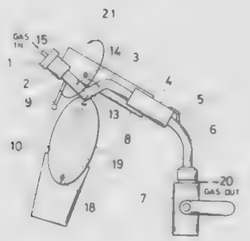
control means responsive to said enable signal from said signal generating means for transmitting said photometric signal obtained by said light-receiving means to said analyzing means for photometric analysis of said cells at times when said analyzing portions of said cells appear in said light path.

4,798,704

PREHEATING APPARATUS EMPLOYED IN ANALYSIS OF HYDROGEN AND CARBON

Keiji Saito, Okayama; Yoshiro Takizawa, Chiba, and Isao Takagi, Okayama, all of Japan, assignors to Kawasaki Steel Techno-Research Corporation, Tokyo, Japan

Filed Oct. 6, 1986, Ser. No. 915,554
Claims priority, application Japan, Oct. 7, 1985, 60-223276
Int. Cl.[4] G01N *33/20*
U.S. Cl. 422—99 **4 Claims**



1. A preheating apparatus for removing moisture and carbon adhering to a solid sample before the sample is transferred into a furnace in which the sample is heated to extract hydrogen and carbon in gaseous forms for conducting an analysis of the thus-extracted hydrogen and carbon, comprising

a tube including a bend adapted to receive and retain a solid sample placed in said tube when said bend is downwardly-directed and to discharge said sample from said tube when said bend is upwardly-directed;

means for rotating said tube about a longitudinal axis of said tube from a sample receiving and retaining position to a sample discharging position,

infrared heating means, and

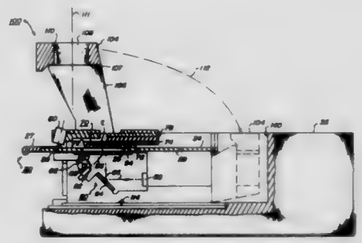
means for focusing said infrared heating means on said tube so that when said tube is in said sample receiving and retaining position said infrared heating means is focused on said bend in said tube to heat said retained sample.

4,798,705

COMPACT ANALYZER

Raymond F. Jakubowicz, Rush, and John S. Larcher, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 813,286, Dec. 24, 1985, abandoned. This application Feb. 6, 1987, Ser. No. 13,223
Int. Cl.[4] G01N *27/26, 21/25*
U.S. Cl. 422—63 **9 Claims**



1. In an analyzer including a dispensing station and means for detecting a colorimetric or a potentiometric change in a test element on which a test liquid is dispensed at said dispensing station, said dispensing station including a pipette support for orienting a pipette to dispense the liquid at said dispensing station, said analyzer having an overall top surface;

the improvement wherein said analyzer further includes means for movingly connecting said pipette support to the analyzer to permit said support to move into and out of an operative position on said analyzer associated with said dispensing station, and out of and into, respectively, a withdrawn position in said analyzer, removed from said dispensing station;

and wherein said withdrawn support position is at or below said top surface, and said operative pipette support position is above said top surface,

so that when said pipette support is moved into the analyzer, the height of said analyzer is reduced compared to said height when said support is in said operative position.

4,798,706

DEVICE FOR HOLDING HORIZONTAL ARRAY OF LIQUID ALIQUOTS

David J. Brigati, Hummelstown, Pa., assignor to Fisher Scientific Co., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 775,864, Sep. 13, 1985, Pat. No. 4,731,335. This application Mar. 31, 1987, Ser. No. 32,875
Int. Cl.[4] C12M *1/18*; B01L *3/00*
U.S. Cl. 422—102 **11 Claims**

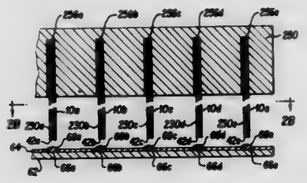
1. A device for holding a horizontal array of discrete aliquots of treating liquid consisting essentially of:

(a) a horizontally-extending rigid base,

(b) a horizontally-extending elastomeric member on the horizontally-extending rigid base, the elastomeric member having a substantially planar horizontally-extending upper surface, and

(c) a plurality of recesses formed in the elastomeric member, each recess being sized to receive internally only microliter quantities of a treating liquid and opening to the horizontally-extending upper surface, the elastomeric member having at its upper surface a material sufficiently incom-

patible with an aqueous treating liquid for a discrete aliquot of treating liquid of small volume greater than the



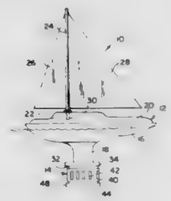
internal volume of a recess to form a convex shape extending from within a recess above the plane of the adjacent upper surface of the elastomeric member.

4,798,707

SAIL BOAT CHLORINE DISPENSER

Barry G. Thomas, 2308 E El Parque Dr., Tempe, Ariz. 85282, and George Spector, 233 Broadway, Rm 3815, New York, N.Y. 10007

Filed Apr. 9, 1987, Ser. No. 36,387
Int. Cl.[4] B01F *1/00*
U.S. Cl. 422—264 **2 Claims**



1. A chlorine dispenser comprising a sailboat in combination with dispensing means secured to said sailboat, said dispensing means comprising means responsive to sailboat movement through a fluid to adjust the rate of dispensing chlorine to predetermined areas of said dispenser, said means responsive to sailboat movement comprising:

(a) a partial cylindrical hollow housing with spaced longitudinal ends having a plurality of first vertical slots between said ends;

(b) a hollow sleeve mounted in said housing and rotatable therein and having a plurality of second vertical slots therethrough and a plurality of recesses on an outer peripheral surface therebetween whereby said recesses hold the chlorine therein; and

(c) a plurality of fins, each of said fins pivotable in one of said recesses in said sleeve, said fins spring biased to fan outwardly therefrom so as to catch water movement in a pool to rotate said sleeve until said fins are pushed backward into said recesses by said housing whereby chlorine is dispensed from said recesses when each fin is clear of said housing permitting outward pivotal fin movement.

4,798,708

PROCESS FOR RECOVERING CHROMIUM AND OTHER METAL VALUES FROM CHROMIUM BEARING MATERIAL

Judith A. Ladd, Sayre, and Michael J. Miller, Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 16, 1988, Ser. No. 157,756
Int. Cl.[4] C01G *37/00*
U.S. Cl. 423—55 **12 Claims**

1. A process for recovering metal values from chromium bearing material comprising one or more metal values selected from the group consisting of cobalt, nickel, molybdenum, tungsten, iron, tin and aluminum, said process comprising:

(a) atomizing said material to produce a flowable powder;

(b) fusing said powder in an oxidizing atmosphere with a sufficient amount of an alkali metal hydroxide at a temperature sufficient to form a nonmagnetic fused material in which said chromium and any tungsten, or molybdenum contained therein are present as water soluble salts;

(c) slurrying said fused material with a sufficient amount of water to dissolve the water soluble compounds contained therein and form a leachate containing said soluble compounds;

(d) adjusting the pH of said leachate to from about 9.2 to about 9.6 with an acid to allow insolubles to form which contain any cobalt, and nickel which is present in said leachate and the major portion of any iron, tin and aluminum which is present in said leachate;

(e) separating said insolubles from the resulting first liquor;

(f) adjusting the pH of said first liquor to from about 0 to about 2 with an acid;

(g) adding to the resulting pH adjusted first liquor, methyl alcohol in an amount sufficient to reduce said chromium to the trivalent state;

(h) adding to the resulting methyl alcohol treated solution, activated carbon in an amount sufficient to form a carbon-containing suspension wherein essentially all of any molybdenum and tungsten contained therein are adsorbed by said carbon;

(i) separating said carbon with the adsorbed molybdenum and tungsten from the resulting chromium-containing second liquor;

(j) adjusting the pH of said second liquor to from about 5.0 to about 8.5 with a base to form a precipitate containing essentially all of said chromium; and

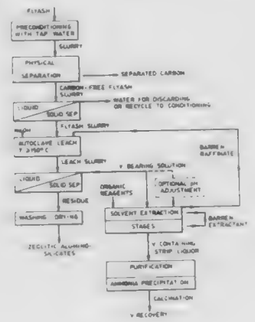
(k) separating said chromium containing-precipitate from the resulting spent liquor.

4,798,709

PROCESS FOR TREATMENT OF FLYASH

Vaikuntam I. Lakshmanan, Mississauga; Dzinsars Melnbardis, Rexdale, and Robert A. Geisler, North York, all of Canada, assignors to Carbovan Inc., Mississauga, Canada

Filed Jun. 8, 1987, Ser. No. 59,363
Claims priority, application Canada, Sep. 8, 1986, 517717
Int. Cl.[4] C01G *31/00*
U.S. Cl. 423—63 **8 Claims**



1. A process for the recovery of vanadium from flyash and similar heat treated carbon-bearing vanadium containing particles, comprising the steps of:

(a) wetting of carbon bearing heat treated vanadium containing particles, then subjecting the wetted particles to a physical separation step to yield a fine carbon product and a substantially carbon free aqueous slurry;

(b) leaching said slurry at over-atmospheric pressure in an aqueous alkali metal hydroxide solution of less than 5 moles per liter concentration, at temperatures between 110° to 300° C., to yield a vanadium-containing leach slurry comprising a vanadium-depleted residue;

(c) subjecting the leach slurry to liquid-solid separation to obtain a vanadium containing leach liquor and a vanadium depleted leach residue;

(d) contacting said leach liquor with an extractant in an organic solvent carrier, said extractant comprising at least a quaternary amine and an oxine derivative, and thereafter contacting said loaded organic solvent extractant with an aqueous solution to produce a vandium containing aqueous strip liquor and a substantially barren organic solvent extractant; and

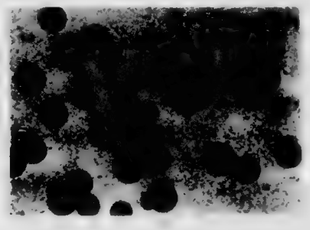
(e) recovering vanadium containing compounds from said vanadium containing strip liquor.

4,798,710

PROCESS FOR THE MANUFACTURE OF A POWDER FOR CERAMIC MATERIALS, CONTAINING AT LEAST ONE METAL OXIDE

Franz Legrand, Quaregnon, and Patricia De Bruycker, Brussels, both of Belgium, assignors to Solvay & Cie (Société Anonyme), Brussels, Belgium

Filed Sep. 15, 1987, Ser. No. 96,526
Claims priority, application France, Sep. 15, 1986, 86 12968
Int. Cl.[4] C01G *25/02*
U.S. Cl. 423—69 **7 Claims**



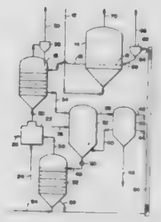
1. A process for the manufacture of a powder for ceramic materials, said powder containing at least one metal oxide, comprising the steps of treating an organic solution of at least one metal alcoholate with water under conditions adapted to precipitate at least one metal oxide as a powder, said step of treating including a first stage where a fraction of the quantity of water is added to the alcoholate with the resultant reaction mixture being subjected to maturing, and a second stage where the remainder of the quantity of water is added to the mixture; and collecting said powder, wherein the molar ratio of the quantity of water to the quantity of metal alcoholate employed is between about 0.5 and about 0.95 times the valency of the metal in the metal alcoholate.

4,798,711

PROCESSES FOR REMOVING NITROGEN OXIDES, SULFUR OXIDES AND HYDROGEN SULFIDE FROM GAS STREAMS

Lewis G. Neal, Danville, Calif.; John L. Haslbeck, Paducah, Ky., and Hsiaopin Tseng, Kansas City, Mo., assignors to Nozzo Corporation, Library, Pa.

Division of Ser. No. 905,138, Sep. 9, 1986, Pat. No. 4,755,499, which is a continuation of Ser. No. 699,996, Oct. 12, 1984, abandoned. This application Aug. 21, 1987, Ser. No. 88,121
Int. Cl.[4] B01D *53/02*; B01J *8/00*; C01B *21/00, 53/34*
U.S. Cl. 423—239 **8 Claims**



1. A process for the removal of nitrogen oxides and/or sulfur oxides from a gas containing nitrogen oxides and /or sulfur oxides which comprises contacting said gas with a sorbent, said sorbent comprising:

(a) a gamma alumina substrate having a surface area between 100 m^2/g and 500 m^2/g and a pore volume between 0.4 and 0.8 cc/g, said gamma alumina substrate having a bimodal pore size distribution comprising micropores and macropores, said micropores having an average pore diameter d_1 in the range of between 30 and 400 Angstroms and said macropores having an average pore diameter d_2 in the range of between 80 and 3000 Angstroms,

(b) an alkali metal component, said substrate impregnated with said alkali metal component and the amount of said alkali metal component being between 50 and 400 μg per m^2 of said substrate.

4,798,712

HOMOGENEOUS MIXTURES OF POLYPHOSPHATES

John A. Peterson, Niagara Falls, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Mar. 4, 1985, Ser. No. 707,989
Int. Cl.[4] C01B *15/16, 25/26*
U.S. Cl. 423—315 **1 Claim**

1. A process for preparing a homogenous, particulate mixture of sodium pyrophosphate and sodium tripolyphosphate, said process consisting essentially of the steps of:

(a) forming an aqueous solution of monosodium phosphate and disodium phosphate having a sodium to phosphorus mole ratio in the range of from 5:3 to 6:3,

(b) flash drying the solution at a temperature in the range of from about 150° C. to about 250° C. to form phosphate particles,

(c) calcining the dried particles at a temperature of from about 350° C. to about 550° C. to convert monosodium phosphate and disodium phosphate particles into homogenous polyphosphate particles, and

(d) recovering said homogenous polyphosphate particles, said particles containing from about 75% to about 85% by weight of sodium pyrophosphate and from about 15% to about 25% by weight of sodium tripolyphosphate.

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4,798,713

METHOD OF SELECTIVE REDUCTION OF HALODISILANES WITH ALKYLTIN HYDRIDES

John J. D'Errico, Fenton, and Kenneth G. Sharp, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 28, 1987, Ser. No. 138,620
Int. Cl.[4] C01B *33/08*
U.S. Cl. 423—342 18 Claims

1. A method of reduction of a silicon-halogen bond of a halodisilane to a silicon-hydrogen bond wherein each halogen of the halodisilane is independently selected from the group consisting of fluorine, chlorine, bromine, and iodine, and wherein when there are two or more different halogens present, the halogen with the highest atomic weight is preferentially reduced by contacting said halodisilane with a trialkyltin hydride or dialkyltin dihydride of the formula R_3SnH or R_2SnH_2, respectively, wherein R is an alkyl group containing 1 to 10 carbon atoms.

4,798,714

PROCESS FOR THE PREPARATION OF SILICON NITRIDE LOW IN CARBON CONTENT

Lothar Schlenfelder, and Gerhard Franz, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 6, 1986, Ser. No. 915,403
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1986, 3608352
Int. Cl.[4] C01B *21/063, 33/06*
U.S. Cl. 423—344 8 Claims

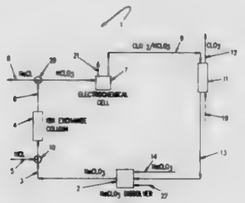
1. In the process for preparation of silicon nitride powder by treating silicon nitride powder with an atmosphere containing chlorine gas, the improvement comprises treating silicon nitride powder with an atmosphere containing chlorine gas at temperatures from 600° to 1050° C. and subsequently treating said silicon nitride with an atmosphere containing gaseous oxygen.

4,798,715

PRODUCING CHLORINE DIOXIDE FROM CHLORATE SALT

Kenneth L. Hardee, Middlefield, and Anthony R. Sacco, Mentor, both of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Filed Feb. 5, 1988, Ser. No. 152,709
Int. Cl.[4] C01B *11/02*
U.S. Cl. 423—478 16 Claims



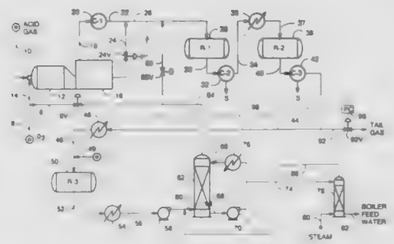
1. The method of producing chlorine dioxide, whereby said chlorine dioxide is provided from a soluble chlorate salt, which method comprises:
(a) establishing a solution of said chlorate salt in aqueous medium;
(b) providing an ion exchange zone including a cation exchanging resin reactable with the cation of said chlorate salt;
(c) feeding said aqueous solution of chlorate salt into the ion exchange zone and maintaining said salt within said zone for a time sufficient to react chlorate salt with cation exchange resin and produce chloric acid product;
(d) providing an electrochemical cell including an electrocatalytic cathode capable of converting chloric acid to chlorine dioxide;
(e) passing said chloric acid product from said ion exchange zone to said electrochemical cell; and
(f) electrochemically converting said chloric acid product in said cell, and thereby providing an aqueous solution containing chlorine dioxide.

4,798,716

SULFUR RECOVERY PLANT AND PROCESS USING OXYGEN

John W. Palm, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 857,009, Apr. 29, 1986, abandoned, which is a continuation of Ser. No. 605,498, Apr. 30, 1984, abandoned. This application Dec. 7, 1987, Ser. No. 134,574
Int. Cl.[4] C01B *17/04*
U.S. Cl. 423—574 R 6 Claims



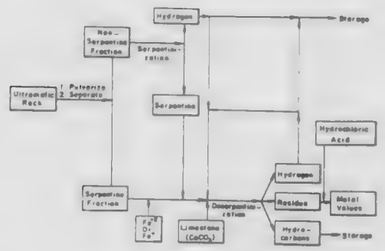
1. Process for the recovery of sulfur from a gaseous stream containing hydrogen sulfide, said process comprising the steps of:
(a) introducing a thermal reaction mixture comprising (1) said gaseous stream containing hydrogen sulfide, and (2) an oxygen-enriched stream of air or pure oxygen into a combustion zone of a Claus furnace;
(b) combusting said thermal reaction mixture in said Claus furnace to thereby produce hot combustion gases comprising hydrogen sulfide, sulfur dioxide, carbon dioxide, water, and elemental sulfur;
(c) introducing said hot combustion gases into a Claus catalytic reactor;
(d) subjecting said hot combustion gases in said catalytic reactor to Claus reaction conditions in the presence of a Claus catalyst to thereby produce a Claus plant gaseous effluent stream comprising hydrogen sulfide, sulfur dioxide, carbon dioxide, water, and elemental sulfur;
(e) introducing said Claus plant gaseous effluent into a condenser to thereby produce liquid sulfur, which is recovered, and a gaseous condenser effluent, which compriaes hydrogen sulfide, sulfur dioxide, carbon dioxide and water;
(f) converting substantially all sulfur species in said gaseous condenser effluent to hydrogen sulfide, to thereby form a condenser effluent comprising hydrogen sulfide, carbon dioxide and water;
(g) removing water form the condenaer effluent from step (f); and
(h) moderating the temperature in said Claus furnace by returning at least a portion of the dried condenser effluent from step (g), as a diluent stream, to a combustion zone of the Claus furnace in step (a) above.

4,798,717

PRODUCTION OF ELEMENTS AND COMPOUNDS BY DESERPENTINIZATION OF ULTRAMAFIC ROCK

Maurice Morency, St-Lambert, Canada, assignor to Ultramafic Technology Inc., Kansas City, Mich.

Continuation-in-part of Ser. No. 886,696, Jul. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 775,283, Sep. 12, 1985, abandoned. This application Apr. 13, 1987, Ser. No. 35,620
Int. Cl.[4] C01B *3/02*
U.S. Cl. 423—648.1 30 Claims



1. A process for forming hydrogen from comminuted ultramafic rock material comprising:
(a) contacting comminuted ultramafic rock material containing a substantial unserpentinized fraction and less than about 9 percent by weight structural water, with water at a temperature and pressure for a period of time to cause serpentinization of the unserpentinized fraction and consequent formation of serpentine and production of hydrogen; and
(b) subjecting the material treated in step (a) to a temperature and pressure for a period of time to cause deserpentinization and consequent formation of hydrogen and a solid residue.

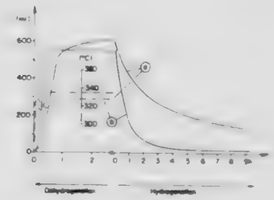
4,798,718

METHOD OF PREPARING ACTIVE MAGNESIUM-HYDRIDE OF MAGNESIUM HYDROGEN-STORER SYSTEMS

Borislav Bogdanovic, Mülheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle, GmbH, Mulheim/Ruhr, Fed. Rep. of Germany

Division of Ser. No. 782,605, Sep. 30, 1985, which is a continuation of Ser. No. 548,055, Nov. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 500,070, Jun. 1, 1983, Pat. No. 4,554,152, which is a continuation-in-part of Ser. No. 433,078, Oct. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 187,907, Sep. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 8,739, Feb. 2, 1979, abandoned. This application Mar. 27, 1987, Ser. No. 32,133
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247360
Int. Cl.[4] C01F *5/00*
U.S. Cl. 423—647 19 Claims

1. Magnesium hydride which can reversibly give off and take up H_2, produced by contacting finely divided magnesium hydride with a solution of a transition metal organic compound, said transition metal being of Subgroups IV–VIII of the Periodic Table, and then removing the solution.

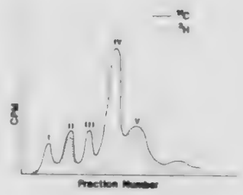


4,798,719

METHOD FOR SELECTION OF ANTIGENS SUITABLE AS IN VIVO TARGETS FOR ANTIBODIES

Byron T. Ballou, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Sep. 11, 1986, Ser. No. 906,161
Int. Cl.[4] A61K *49/02;* G01N *33/53*
U.S. Cl. 424—1.1 7 Claims



1. A process for the selection of antigens suitable as targets for antibodies which localize in tumors in animals in vivo comprising:
(a) preparing antibodies distinguishable from those present in the animal in which tumor targeting is to occur and that bind to antigens present in the tumor in said animal;
(b) injecting the prepared antibodies into a non-tumor-bearing animal and into a tumor-bearing animal to permit biofiltration of the antibodies;
(c) recovering the biofiltered antibodies from both the non-tumor-bearing animal and the tumor-bearing animal;
(d) identifying antigens whose antibodies are not retained in vivo in the non-tumor-bearing animal, but are retained in vivo in the tumor-bearing animal using the recovered biofiltered antibodies; and
(e) screening the antibodies that are not retained in vivo by the non-tumor-bearing animal and the antibodies that are not retained in vivo by the tumor-bearing animal to determine those antibodies that are actually retained in vivo in the tumor-bearing animal and to identify the antigens corresponding to those antibodies retained in the tumor-bearing animal.

4,798,720

NAIL POLISH DRYING COMPOSITION

William L. Holder, 341 Deverglen Dr., Antioch, Tenn. 37013

Filed Nov. 18, 1986, Ser. No. 932,089
Int. Cl.[4] A61K *7/043*
U.S. Cl. 424—61 2 Claims

1. A nail coating composition,
said composition having a solid material comprising about

25% by weight of said composition and a solvent content comprising about 75% by weight of said composition, and said composition being a combination of a colorless nail polish, an acrylic nail powder, an acrylic nail primer and cyanoacrylate adhesive.

4,798,721

HAIR COSMETIC COMPOSITION COMPRISING SUBMICRON POLYMER PARTICLES

Kazuyuki Yahagi, Tokyo, and Toshio Suzuki, Ichikawa, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Sep. 2, 1986, Ser. No. 902,651
Claims priority, application Japan, Sep. 13, 1985, 60-202898
Int. Cl.[4] A61K *4/06, 7/09*
U.S. Cl. 424—70 10 Claims

1. A hair cosmetic composition comprising from 0.01 to 10% by wt. of a particulate latex polymer of water-insoluble monomers, said polymer selected from the group consisting of polystyrenes, copolymers of styrene with at least one vinyl monomer other than styrene, polyamides, polyurethanes, epoxy resins, and polymethyl methacrylates, wherein said particulate polymer has a weight average diameter of from 0.005 to 0.2 microns, particule size distribution such that greater than 95% by weight of the particles have a diameter ranging from 0.005 to 0.2 microns, and wherein said particulate ploymer has a glass transition temperature greater than 300 ® K.

4,798,722

PERMANENT WAVING COMPOSITION

Walter W. Edman, and Ernest J. Klemm, both of Westport, Conn., assignors to Zotos International, Inc., Darien, Conn.

Filed Nov. 12, 1986, Ser. No. 929,723
Int. Cl.[4] A61K *7/09*
U.S. Cl. 424—72 17 Claims

1. A permanent waving composition for providing longer lasting curl retention, manageability ease, and improved hair feel and appearance, said composition comprising, in addition to conventional permanent waving compounds formulated for breaking and rebonding the hair fibers' disulfide bonds, the following additives:

A. between about 0.001 and 2% by weight/volume of a strong hydrogen bonding amino acid compound
   a. formed from hydrolyzed silk protein, and
   b. having a mean molecular weight which enables the molecules to penetrate the cuticle in undamaged hair and enter the matrix in the cortex area of the hair fiber, and

B. between about 0.001 and 2% by weight/volume of a water soluble or emulsifiable silicone-based compound.

4,798,723

AGRICULTURAL PRODUCTS FROM *PSEUDOMONAS CEPACIA* STRAINS AND METHODS OF PREPARATION

Peter J. Dart, Fadden, and K. Prakash Hebbar, Canberra, both of Australia, assignors to Lubrizol Genetics, Inc., Wickliffe, Ohio

Continuation of Ser. No. 891,212, Jul. 28, 1986, abandoned. This application Oct. 5, 1987, Ser. No. 106,986
Int. Cl.[4] A01N *63/00*
U.S. Cl. 424—93 22 Claims

1. A method of protecting a plant from disease caused by a fungus comprising inoculating said plant with a strain of *Pseudomonas cepacia* type Wisconsin.

10. A bacteria-containing agricultural inoculum suitable for inoculating a plant in the field comprising:

(a) a suitable carrier that is non-phytotoxic, non-bacteriostatic and non-bacteriocidal; and

(b) a bacterial strain having the distinguishing characteristics of *Pseudomonas cepacia* type Wisconsin, which strain colonizes leaves or roots of said plant.

4,798,724

SOLID, STABLE DOSAGE FORMS WITH AN ELASTIC FILM COATING

Satish C. Khanna, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 16, 1986, Ser. No. 874,772
Claims priority, application Switzerland, Jun. 24, 1985, 2664/85
Int. Cl.[4] A01N *25/10*; A61K *31/78*
U.S. Cl. 424—480 8 Claims

1. A solid, stable dosage form consisting of a core and an elastic film coating on said core, said core comprising at least one medicament and at least one pharmaceutically acceptable excipient, said core being moisture- or temperature- or both moisture- and temperature-sensitive; said elastic film coating being a coating which decomposes in aqueous solution, which coating comprises

(a) 20–60% by weight of a water soluble component,

(b) 25.5–80% by weight of a water-insoluble, but dispersable component, and

(c) 0.54–5% by weight of further pharmaceutically acceptable adjuvants,

said water soluble component consisting of hydroxypropyl cellulose having an average molecular weight of 75,000; said water-insoluble, but dispersable component consisting of

(I) 5–20% by weight, based upon the total film coating, of an acrylic resin selected from
   (A) a 70:30 ethyl acrylate/methyl methacrylate copolymer having a molecular weight of 80,000 and
   (B) a 30:70–70:30 methyl acrylate/methyl methacrylate copolymer having an average molecular weight of 500,000;

(II) 20–60% by weight, based on the total film coating, of a pharmaceutically acceptable lubricant;

(III) 0.5–5% by weight, based on the total film coating, of a pharmaceutically acceptable wetting agent; and

(IV) 0–5% by weight, based on the total film coating, of a pharmaceutically acceptable plasticiser.

4,798,725

SUSTAINED RELEASE CAPSULE

Vikram S. Patel, Norwich, N.Y., assignor to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Jun. 16, 1986, Ser. No. 874,732
Int. Cl.[4] A61K *9/64*
U.S. Cl. 424—456 14 Claims

1. A sustained release pharmaceutical capsule for oral administration comprising a particulate mixture, in a capsule shell which is soluble in a gastrointestinal juice, said particulate mixture comprising:

(a) from about 0.01% to about 90% of an active drug ingredient which is a weak acid, neutral, or a weak base;

(b) from about 5% to about 96% of polyvinylpyrrolidone; and

(c) from about 4% to about 40% of carboxyvinylpolymer; wherein said polyvinylpyrrolidone and said carboxyvinylpolymer occur substantially entirely in separate particles of said particulate mixture.

4,798,726

PROCESS FOR THE TREATMENT OF MILK FOR CHEESEMAKING

Gilles Lagarde, Paris, France, assignor to Sanofi, Paris, France

Filed May 8, 1987, Ser. No. 47,259
Claims priority, application France, May 15, 1986, 86 07002
Int. Cl.[4] A23C *19/032, 19/05*
U.S. Cl. 426—40 7 Claims

1. In a process for making cheese from milk which includes the steps of rennet addition, coagulation, draining and ripening, wherein the improvement comprises accelerating ripening by adding to milk, prior to adding rennet, an amount of protoplasts of cheese ripening bacteria which are sufficient to accelerate cheese ripening as compared to ripening with corresponding bacteria containing cell walls.

4,798,727

SOLID ANIMAL FEED SUPPLEMENT AND METHOD FOR ITS PRODUCTION

Alex E. Miller, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 7, 1986, Ser. No. 828,149
Int. Cl.[4] A23K *1/22*
U.S. Cl. 426—69 17 Claims

1. A method for providing a solid, molasses-based animal feed supplement having a hardness of less tahn about 80 in 0.1 millimeter penetrometer units and a phosphorus content between 1 and 2 percent by weight, which comprises:

(a) adjusting the phosphorus content of a molasses seleted from the group consisting of cane molasses and beet molasses and havign a BRIX of at least 75° by combining said molasses with a concentrated orthophosphoric acid solution to provide a first molasses solution comprising phosphorus in an amount sufficient to provide from 1 to 2 weight percent phosphorus in the solid feed supplement;

(b) then combining under conditions of agitation (i) from about ½ to about 3 volumes of a second molasses solution comprising calcium chloride dissolved in a molasses selected from the group consisting of cane molasses and beet molasses with (ii) I volume of said first molasses solution, magnesium chloride being dissolved in the first and second solutions, to provide a reactant solution having a pH within the range from about 1.75 to about 3.75 except when the amount of added dissolved magnesium is less than 1.5 weight percent, the pH is from about 2.75 to about 3.75 the phosphorus, dissolved magnesium, and dissolved calcium present in said first and second solutions being sufficient in concentrations such that said reactant solution comprises from 1 to 2 percent by weight phosphorus, 0.5 to 2 percent by weight of dissolved magnesium, and as sufficient amount of dissolved calcium so that the weight ratio of the total weight of dissolved calcium to the the weight of dissolved magnesium in said reactant solution is between about 1.5 and 3;

(c) terminating said agitation;

(d) then curing said reactant solution at a temperature of from about 60° to about 110° F. for a sufficient time to form a solid, molasses-based animal feed supplement having a hardness of less than about 80 in 0.1 millimeter penetrometer units; and

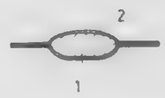
(e) recovering the solid, molasses-based animal feed supplement.

4,798,728

METHOD OF RETORT PACKAGING BROILED FISH AND PRODUCT THEREOF

Ko Sugisawa; Yasushi Matsumura, both of Nara; Hidefumi Okamoto, Osaka, and Kumiko Abe, Nara, all of Japan, assignors to House Food Industrial Company Limited, Higashiosaka, Japan

Filed Mar. 26, 1987, Ser. No. 30,348
Claims priority, application Japan, Mar. 26, 1986, 61-44516[U]
Int. Cl.[4] B65D *81/34*; A23L *3/00*; B65B *55/04*; A23B *4/00*
U.S. Cl. 426—129 6 Claims



1. A sterilized vacuumized retort package containing broiled fish selected from the group consisting of sardine, horse mackerel, pacific saury, mackerel, salmon, yellowtail, spaniah mackerel, herring, eel, conger eel, flatfish, sea beam, and pollack, the meat of said broiled fish having a hardness of 105 g to 1250 g, said package made of a flexible material in which said broiled fish is received, said broiled fish being vacuum-packaged such that the flexible material substantially conforms to the shape of the fish and then subjected to retort sterilization processing, said broiled fish thereby being packaged in said package with a very high degree of adhesion, with substantial prevention of breakage of the fish body and separation of the epidermis during retort sterilization and subsequent transportation, with substantial elimination of the formation of drips and hardening of the meat during sterilization, and being of excellent quality and appearance.

4,798,729

METHOD FOR DELAYING *CLOSTRIDIUM BOTULINUM* GROWTH IN FISH AND POULTRY

Robert J. Anders, Middleton; John G. Cerveny, and Andrew L. Milkowski, both of Madison, all of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Continuation of Ser. No. 808,319, Dec. 12, 1985, abandoned. This application Nov. 13, 1987, Ser. No. 120,769
Int. Cl.[4] A23B *4/14*
U.S. Cl. 426—326 11 Claims

1. A method for delaying *Clostridium botulinum* growth in a foodstuff selected from the group consisting of fish and poultry, the method consisting essentially of:

(a) adding a lactate slat to a fresh foodstuff selected from the group consisting of fish and poultry, said lactate salt being added in an amount of about 1% to about 7%;

(b) cooking the foodstuff at high humidity to a temperature sufficient to cook the foodstuff but not sufficient to sterilize the foodstuff;

(c) cooling the cooked foodstuff; and

(d) packaging the cooked foodstuff in a plastic barrier package.

4,798,730

HYDROLYSIS OF A PARTIALLY EXTRACTED ROASTED AND GROUND COFFEE

Eugene Scoville, East Brunswick; Evan J. Turek, Paramus, both of N.J.; Anthony Wragg, Banbury, England; Karlina D. Caonzo, Cliffside Park, and Marshall M. Rankowitz, Englishtown, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 1, 1987, Ser. No. 57,190
Int. Cl.[4] A23F *5/26*
U.S. Cl. 426—432 10 Claims

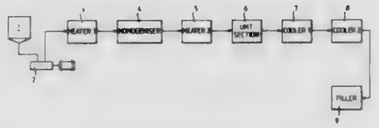
1. A method of solubilizing a partially extracted roasted and ground coffee, said coffee having a majority of the arabinogalactan extracted therefrom, which comprises:

contacting said partially extracted roasted and ground coffee with water at a temperature of about 380° F. to about 450° F. in a fixed bed reactor for a period of time such that the partially extracted roast and ground coffee residence time in the reactor is about 30 minutes to about 120 minutes and extract residence time in the reactor is about 7 minutes to about 45 minutes, said extract residence time being at all times significantly less than said coffee residence time to minimize degradation of soluble solids, the ratio of extract to coffee, the draw off factor, being at least 6, the superficial velocity of the extract as it flows through the coffee in the reactor ranging from 0.50 to 1.5, pressure being maintained within the reactor such that the water within the reactor does not flash,

said contact being effective to achieve hydrolysis of said partially extracted roasted and ground coffee and effective to remove at least 50% of the mannan fraction, and effective to achieve a soluble solids yield of about 55% to about 68% by weight based on the starting roasted and ground coffee.

4,798,731
HEAT TREATMENT OF FRESH LIQUID MILK PRODUCTS

Hevn M. P. Ranjith, and Yin C. Thoo, both of Telford, England, assignors to Milk Marketing Board, Surrey, England
Filed Sep. 3, 1985, Ser. No. 771,671
Claims priority, application United Kingdom, Sep. 3, 1984, 8422212
Int. Cl.[4] A23C 3/02
U.S. Cl. 426—522 16 Claims



1. A ultra-high temperature treatment process for the production of a liquid milk product whereby said milk product is substantially free from micro-organisms that would bring about spoilage during storage of the untreated product at 10° to 30° C., which process comprises the steps of
(a) heating a liquid milk product to a temperature not exceeding 105° C.,
(b) cooling said liquid milk product at a rate of at least 4.8° C. per second to a temperature above 105° C. and
(c) cooling said liquid milk product at a rate of at least 8.8° C. per second to a temperature below 110° C., the total time that said liquid milk product spends above 105° C. being such that the B^* value of the complete heat treatment regime is not more than 1.01 and not less than about 0.5 and the C^* value of the complete heat treatment regime is not more than 0.27.

4,798,732
METHOD OF STABILIZING COFFEE EXTRACT SOLUTION

Hide Osawa, Tokyo, Japan, assignor to Ajinomoto General Foods, Inc., Tokyo, Japan
Filed Nov. 12, 1987, Ser. No. 119,945
Int. Cl.[4] A23F 5/24
U.S. Cl. 426—542 4 Claims

1. A method of stabilizing a coffee extraction solution or a concentrated coffee extract solution which comprises adding to said concentrated and/or coffee extract solution, 0.005 to 20 weight percent of said solids content of said coffee extract solution in an anti-oxidizing substance obtained by extraction for about 5 to 30 minutes of an organic solvent defatted powdered raw coffee beans having an average particle diameter of 100 microns or less with a solvent consisting of hot water, the amount of hot water being five to thirty times by weight of the organic solvent defatted powdered raw coffee beans.

4,798,733
YEAST-FERMENTED FOOD MODIFIER

Tomiatsu Kaneko, Ichikawa; Kazuaki Yokoyama, Inba, and Hisashi Tsuruoka, Narashino, all of Japan, assignors to Miyoshi Oil & Fat Co., Ltd., Tokyo, Japan
Filed Apr. 1, 1987, Ser. No. 33,545
Claims priority, application Japan, Jul. 31, 1986, 61-180940
Int. Cl.[4] A21P 2/00
U.S. Cl. 426—549 8 Claims

1. A modifier for yeast-fermented foods comprising:
(a) 1 part by weight protein,
(b) 0.5 to 4 parts by weight of a first material selected from the group consisting of edible fats, oils and mixtures thereof,
(c) 3.5 to 13 parts by weight of water,
(d) 0.5 to 2 parts by weight of a second material selected from the group consisting of mashed potato powder, sweet potato powder and starches, and
(e) a third material selected from the group consisting of phosphates, cirtrates and mixtures thereof, said material being present in a range of 0.3 to 4.5% by weight based on the total weight of said protein, first material, water, and said second material.

4,798,734
PROCESS FOR PREPARING SOYBEAN FOOD PRODUCTS

Kichizo Kaneda, Kyoto, Japan, assignor to K. Biological Science Laboratory Co., Ltd., Kyoto, Japan
Continuation-in-part of Ser. No. 815,787, Jan. 3, 1986, abandoned, which is a continuation-in-part of Ser. No. 675,063, Nov. 26, 1984, abandoned. This application Jan. 16, 1987, Ser. No. 9,039
Claims priority, application Japan, Jul. 25, 1984, 59-153228
Int. Cl.[4] A23C 11/10; A23J 1/14
U.S. Cl. 426—565 2 Claims

1. A process for preparing a soybean-based frozen dessert, which comprises:
mixing 93.49–68.49% by weight of soybean aqueous infusion, 0.3% by weight of soy cellulose and 5–30% by weight of vegetable oil;
adding 0.2% by weight of alginic acid derivative, 0.1% by weight of sucrose fatty acid ester, 0.3% by weight of sucrose, 0.01% by weight of sodium polyphosphate, 0.3% by weight of anti-oxidant and 0.3% by weight of fruit brandy to the resultant mixture;
stirring the thus obtained mixture at a temperature not higher than 8° C. and cold-homogenizing at a pressure of 5–10K/cm^2 to obtain an emulsion;
aging the emulsion at a temperature not higher than 10° C. for 8–10 hours; and
freezing the aged emulsion at a temperature of about −20 C.

4,798,735
FOODSTUFFS CONTAINING STARCH OF AN AMYLOSE EXTENDER SUGARY-2 GENOTYPE

Robert B. Friedman, Chicago, Ill.; David J. Gottneid, Griffith, Ind.; Eugene J. Faron, Schererville, Ind.; Frank J. Pastek, Munster, Ind., and Frances R. Katz, Crown Point, Ind., assignors to American Maize-Products Company, Stamford, Conn.
Filed Jul. 2, 1987, Ser. No. 69,265
Int. Cl.[4] A23L 1/04, 1/195
U.S. Cl. 426—578 9 Claims

1. A thickened foodstuff for canning comprising a foodstuff, water and having as an essential ingredient therein an effective amount of a natural thin-thick starch, said starch extracted from a starch bearing plant having an amylose extender sugary-2 genotype, said starch providing no effective thickening characteristics to said foodstuff before canning while providing effective thickening characteristics to said foodstuff after canning.

4,798,736
PROCESS AND PRODUCT OF MAKING A VEGETABLE PROTEIN HYDROLYSATE FOOD SEASONING

Lothar Belohlawek, Freising, Fed. Rep. of Germany, assignor to Diamalt Aktiengesellschaft, Munich, Fed. Rep. of Germany
PCT No. PCT/DE86/00477, § 371 Date Jul. 22, 1987, § 102(e) Date Jul. 22, 1987, PCT Pub. No. WO87/03174, PCT Pub. Date Jun. 4, 1987
PCT Filed Nov. 22, 1986, Ser. No. 89,365
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1985, 3541802
Int. Cl.[4] A23J 1/12; A23L 1/237
U.S. Cl. 426—656 20 Claims

1. A dietetic food seasoning, comprising a vegetable protein hydrolysate preparable by hyrolyzing vegetable protein with 2 to 7.5 times its amount by weight of 15–30% by weight aqueous hydrochloric acid or phosphoric acid at 100° C. to 120° C., neutralizing the hydrolysate with 30–60% by weight aqueous potassium hydroxide solution until a pH value of 4–6.8 is reached,
allowing the neutralized hydrolysate to stand for at least two hours at 10° C. to 30° C., at a hydrolysate volume of 1.2 to 2.8 liters per kilogram of vegetable protein used whereby potassium salt precipitates, and then
filtering the neutralized hydrolysate.

4,798,737
PELLETIZATION OF LOW-TITER LIPIDS

Ellis W. Brantos; Denver J. Haynes, both of Wilkesboro, and William M. Ross, Jr., Moravian Falls, all of N.C., assignors to Balanced Energy Company, Wilkesboro, N.C.
Filed Apr. 7, 1987, Ser. No. 35,609
Int. Cl.[4] A23D 3/00
U.S. Cl. 426—602 29 Claims

1. In a method of forming solid pellets from low-titer lipids which are generally liquid or semisolid at room temperature, wherein an emulsion is formed of a coagulant present in an amount effective to induce coagulation in the presence of a hardening agent, water and a lipid, and the emulsion is then separated into discrete portions and the discrete portions are hardened by exposure to the hardening agent; the improvement comprising forming the emulsion by first admixing the coagulant and the lipid to form a suspension of the coagulant in the lipid; and then admixing the suspension with water.

4,798,738
MICRO SENSOR

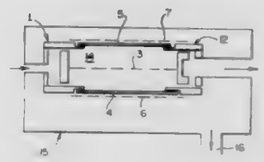
Masao Yafuso, El Toro, Calif., and Henry K. Hui, Irvine, Calif., assignors to Cardiovascular Devices, Inc., Irvine, Calif.
Filed Oct. 10, 1986, Ser. No. 917,913
Int. Cl.[4] A61R 49/00; B05D 5/06
U.S. Cl. 427—2 24 Claims

1. A process of forming a micro sensor which comprises:
selecting a quantity of finely divided water insoluble ionic permeable hydrophylic polymer having a plurality of attachment sites thereon;
reacting said attachment sites on said polymer with a quantity of an event sensitive dye so as to attach said dye to at least some of said attachment sites on said polymer to form a dye bearing polymer;
dissolving said dye bearing polymer in a solvent;
depositing a quantity of said solvated dye bearing polymer onto an optical fiber; and
regenerating said dye bearing polymer from said solvent to form a solid matrix on said optical fiber of said regenerated dye bearing polymer.

4,798,739
PLASMA-ASSISTED METHOD FOR THIN FILM FABRICATION

Jacques Schmitt, La Ville Du Bois, France, assignor to Solems, Palaiseau, France
Filed Oct. 21, 1986, Ser. No. 921,072
Claims priority, application France, Oct. 25, 1985, 85 15910
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—38 1 Claim

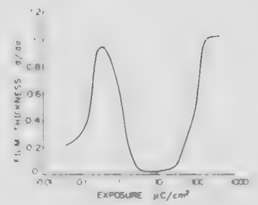
1. Process of forming thin films by means of a plasma assisted chemical deposit of the type having a non-airtight tank in which is enclosed at least one reagent gas, at least one substratum in the form of a support plate for the thin films, and at least one polarized plasma-generating electrode, the process comprising the steps of:
placing the tank inside an airtight chamber; and



maintaining lower pressure in the airtight chamber than in the tank wherein the reagent gas circulates.

4,798,740
POLYMERIZABLE FILM AND PATTERN FORMING METHOD BY USE THEREOF

Yoshinori Tomida, Atsugi; Kunihiro Sakai, Yamato; Hiroshi Matsuda, Atsugi; Haruki Kawada, Atsugi; Ken Eguchi, Atsugi; Toshiaki Kimura, Sagamihara; Kiyoshi Takimoto, Atsugi; Kenji Saitoh, Yokohama, and Toshihiko Miyazaki, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 26, 1987, Ser. No. 30,364
Claims priority, application Japan, Mar. 31, 1986, 61-73111; Mar. 31, 1986, 61-73112; Apr. 3, 1986, 61-77023
Int. Cl.[4] B05D 3/06; G03C 1/76, 1/71
U.S. Cl. 427—43.1 47 Claims



12. A polymerizable film, comprising a transition metal selected from the group consisting of manganese, chromium, iron, cobalt, nickel, and copper, and a polymerizable compound represented by the formula (I) shown below, and also having a solubility in a solvent which changes through a maximum and a minimum with increase in energy imparted for polymerization:

$$R—C{\equiv}C—C{\equiv}C—(R_1)_n—X \quad (I)$$

wherein R and R_1 are hydrophobic sites, X is a hydrophilic site, and n is 0 or 1.

42. A method of forming a pattern comprising providing on a substrate an intermediate layer and a layer comprising a monomolecular film of a polymerizable compound containing a transition metal or a built-up film thereof, the compound having a solubility in solvent which changes repeatedly through a soluble state and an insoluble state with increase in energy imparted, and imparting variations in energy to the layer to form a first insoluble site and a second soluble site.

4,798,741

PREPARATION OF MICROENCAPSULATED PIGMENT

Jeffrey W. Nelson, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 808,462, Dec. 13, 1985. This application Dec. 15, 1986, Ser. No. 941,793

Int. Cl.[4] B01J *13/02*; **B05D** *3/10*; **C09C** *1/56*

U.S. Cl. 427—213.33 **5 Claims**

1. A process for the preparation of a microencapsulated pigment comprising:

A. mixing pigment particles having a particle size of 20 μm or less in a gelatin solution,

B. coacervating the gelatin to coat the pigment particles,

C. cooling to set the gelatin,

D. adding formaldehyde to harden the particles,

E. sequestering unreacted formaldehyde with a bisulfite,

F. adding gelatin to coat the hardened particles,

G. precipitating the particles chemically or physically, and

H. washing the precipitate.

4,798,742

POLYAROMATICS

Denis G. H. Ballard, Runcorn; Paul A. Holmes, Malpas; Alan Nevin, Nr Warrington; Ian M. Shirley, Weaverham, and David L. Twose, Tarporley, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 20, 1987, Ser. No. 39,735

Claims priority, application United Kingdom, Apr. 23, 1986, 8609936

Int. Cl.[4] B05D *3/12, 3/02*

U.S. Cl. 427—240 **10 Claims**

1. A process for the preparation of a polyphenylene layer which process comprises at least the steps of:

(a) heating a solution of a poly(1,2-disubstituted-cyclohexa-3,5diene) in a suitable solvent therefor under first conditions such that a portion of the cyclohexene rings are aromatized:

(b) depositing a layer of the partially aromatized solution intermediate from step A onto a suitable substrate; and then

(c) treating the aforesaid layer under second conditions such that the residual cyclohexene rings are aromatized.

4,798,743

VAPOR DEPOSITION METHOD FOR THE GAAS THIN FILM

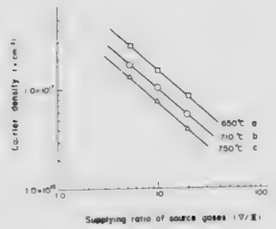
Seiji Kojima, Tokyo; Masakiyo Ikeda, Yokohama; Hiroshi Kikuchi, Tokyo, and Yuzo Kashiwayanagi, Yokosuka, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed May 14, 1986, Ser. No. 863,187

Claims priority, application Japan, May 16, 1985, 60-104626

Int. Cl.[4] C23C *16/30*

U.S. Cl. 427—255 **4 Claims**



1. A metal organic chemical vapor deposition method for the production of an n-type GaAs thin film, comprising the steps of

(i) supplying arsenic hydride gas and organic gallium gas to a heated substrate, wherein the supplying ratio of said gases is sufficient to produce a p-type conductive GaAs crystal, and

(ii) adding a gas comprising a compound of a group VI element to said arsenic hydride and said organic gallium gas to produce said n-type film, whereby said group VI element becomes a dopant in said n-type GaAs thin film, and

wherein said thin film has a carrier density of not less than $1\times10^{16}cm^{-3}$.

4,798,744

FIXATION OF POLYMERS RETAINING LIQUIDS IN A POROUS STRUCTURE

Guy Goldstein, Colmar, and Michel Pierre, Mulhouse, both of France, assignors to Beghin-Say S.A., Thumeries, France

PCT No. PCT/FR86/00257, § 371 Date Mar. 23, 1987, § 102(e) Date Mar. 23, 1987, PCT Pub. No. WO87/00438, PCT Pub. Date Jan. 29, 1987

PCT Filed Jul. 22, 1986, Ser. No. 44,500

Claims priority, application France, Jul. 23, 1985, 85 11256

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—389.9 **6 Claims**

1. A process for the deposition and fixation of insoluble hydrophilic polymers in or on a porous support, said polymers being obtained according to a "water-in-oil" reverse emulsion or suspension process comprising impregnating the porous support with said reverse emulsion in the liquid state as it is recovered from the polymerization reaction, and thereafter removing the suspending solvent from the support.

4,798,745

NON-YELLOWING COATING COMPOSITION BASED ON A HYDROXY COMPONENT AND AN ANHYDRIDE COMPONENT AND UTILIZATION IN A PROCESS OF COATING

Jonathan T. Martz, Glenshaw; James B. O'Dwyer, Valencia; Stephen J. Thomas, Aspinwall, and James A. Claar, Export, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 24, 1987, Ser. No. 88,327

Int. Cl.[4] B05D *1/36, 7/00*; **C08L** *35/00, 33/14*

U.S. Cl. 427—407.1 **25 Claims**

14. A method of coating comprising the steps of:

(I) coating a substrate with one or more applications of a pigmented basecoating composition to form a basecoat; and

(II) coating said basecoat with one or more applications of a transparent topcoating composition to form a transparent topcoat; wherein at least one application of said basecoating composition and said topcoating composition is a non-yellowing coating composition comprising

(A) a hydroxy component having at least two free hydroxyl groups per molecule; and

(B) an anhydride component having at least two carboxylic acid anhydride groups per molecule derived from a mixture of monomers comprising greater than or equal to 11 percent by weight of an ethylenically unsaturated carboxylic acid anhydride the balance of said mixture comprised of at least one vinyl comonomer, the molar ratio of said vinyl comonomer to said carboxylic acid anhydride being at least 1.0:1.0 and sufficient to provide a color standard number of less than 150 according to ANSI/ASTM test method D 1209-69 when an amount of component (B) sufficient to provide 27 grams of solids of said component is mixed with 1.0 gram of dimethylcocoamine and reduced with butyl acetate to a solids content of 22.5 percent by weight;

wherein the amounts of said hydroxy component and said anhydride component in said non-yellowing coating composition provide a ratio of equivalents of hydroxyl groups to equivalents of anhydride groups in a range of from 3:1 to 1:3.

4,798,746

BASECOAT/CLEARCOAT METHOD OF COATING UTILIZING AN ANHYDRIDE ADDITIVE IN THE THERMOPLASTIC POLYMER-CONTAINING BASECOAT FOR IMPROVED REPAIRABILITY

James A. Claar, Export; Stephen J. Thomas, Aspinwall, and Betty J. Kindle, Oakmont, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 24, 1987, Ser. No. 88,328

Int. Cl.[4] B05D *1/36, 7/00*; **C08L** *33/14, 35/00*

U.S. Cl. 427—407.1 **19 Claims**

1. A method of coating comprising the steps of:

(I) coating a substrate with one or more applications of a pigmented basecoating composition comprising a thermoplastic, non-crosslinked, film-forming polymer having at least two functional groups per molecule which functional groups are co-reactive with acid anhydride moieties, to which basecoating composition has been added within 24 hours prior to coating said substrate, a carboxylic acid anhydride component having at least two cyclic anhydride groups in an amount so as to provide a ratio of equivalents of anhydride groups to equivalents of said co-reactive functional groups of at least 0.10:1.00

to form a basecoat; and

(II) coating said basecoat with one or more applications of a transparent, crosslinking topcoating composition comprising a crosslinkable, film-forming material and a crosslinking agent for said crosslinkable, film-forming material

to form a transparent topcoat.

4,798,747

DISPOSABLE WARNING MARKER APPARATUS

Camille A. Laramee, 30 Andros Pl., Dania, Fla. 33004

Filed Oct. 13, 1987, Ser. No. 107,557

Int. Cl.[4] B65D *5/00*

U.S. Cl. 428—12 **5 Claims**



1. A semi-finished sheet for making disposable warning marker devices having first, second, and third essentially identical major panels, each major panel being trapezoidal in shape having parallel top and bottom portions, the second panel disposed intermediate the first and third panels, the first and third panels having inner and outer sides, a respective fold line separating the first and second panels and the second and third panels, the fold lines forming the respective inner sides, a locking tab projecting outwardly from the outer side of the first panel, a closure flap extending outwardly from the third panel, a slot formed in the closure panel along the outer portion of the third panel, the locking tab and the slot disposed the same distances from the top portion of the respective panel to which the tab and slot is associated, a minor panel extending outwardly from the bottom portion of the second panel, the minor panel being triangular in shape and having first and second free side portions, a fold line separating the minor panel from the second panel, a respective closure flap extending outwardly from the bottom portions of the first and second panels, a slot formed in each closure flap extending form the bottom portion a selected distance from the second panel, a locking tab projecting outwardly from each of the first and second free sides the selected distance from the second panel whereby the locking tab projecting from the first panel is lockably insertable in the slot formed in the closure flap extending from the third panel by folding the major panels on their respective fold lines and the locking tabs projecting from the free sides of the minor panel are lockably inserted in the respective slot formed in the closure flaps extending from the bottom portion of the first and second panels, each locking tab having a first portion with a length between first and second ends generally the same as the length of its respective slot and a second portion with a length greater than the length of its respective slot and extending beyond both first and second ends of the first portion, the second its respective panel being spaced from the first portion a distance generally equal to the thickness of the sheet.

4,798,748

ARTIFICIAL FUR

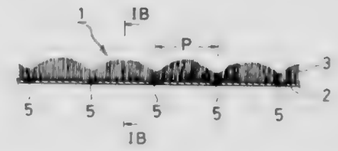
Hiroshi Kitamura, Kusatsu, and Seiichi Yamagata, Otsu, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Oct. 10, 1986, Ser. No. 917,590

Claims priority, application Japan, Oct. 25, 1985, 60-237478; Oct. 25, 1985, 60-237479

Int. Cl.[4] A41D *5/00*

U.S. Cl. 428—15 **20 Claims**



1. An artificial fur having an erect pile layer consisting of a number of erect fibers, wherein erect piles in different colors, which are substantially complementary with each other, are adjacent to each other in said erect pile layer said substantially complementary colored piles are colors which are selected from the group consisting of colors which are opposite each other, and either of the two colors which are adjacent to the opposite color, on a complementary color circle with a complimentary relationship as depicted by a color wheel having the colors, as viewed clockwise; yellow, green yellow, green, blue green, blue, purple blue (indigo), purple, red purple, red, yellow red.

4,798,749

ISOPENTANE AS BLOWING AGENT TO IMPROVE COFFEE RETENTION IN FOAM CUPS MOLDED FROM EXPANDABLE POLYSTYRENE

Paul E. Arch, Wayne, and Edwin H. Niemann, Downington, both of Pa., assignors to Arco Chemical Company, Newtown Square, Pa.

Filed Apr. 25, 1988, Ser. No. 184,926

Int. Cl.[4] B65D *23/00*

U.S. Cl. 428—36.5 **1 Claim**

1. A cup with enhanced coffee retention molded and foamed from a composition consisting of polystyrene particles having a blowing agent mixture consisting of of from 5 to 100 percent of isopentane and 0 to 95 percent of n-pentane.

4,798,750

RETORTABLE CONTAINERS WITH EXTERIOR MODIFIED POLYSTYRENE CAP LAYER

R. James Kersting, Houston, Tex., assignor to Rampart Packaging Inc., Williamsburg, Va.

Filed Oct. 29, 1987, Ser. No. 113,958

Int. Cl.[4] B65D *23/00*; **B37B** *27/08*

U.S. Cl. 428—36.7 **6 Claims**

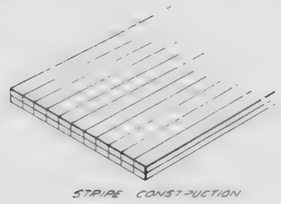
1. A multilayer structure comprising:

(a) inner and outer layers of a polystyrene polymer modified with a carboxylic acid or a carboxylic anhydride; and
(b) an intermediate layer of an ethylene vinyl alcohol copolymer.

4,798,751
HEAT SHRINKABLE MULTILAYER FILM FOR PRIMAL MEAT PACKAGING
Jeffrey M. Schuetz, Woodridge, Ill., assignor to Viskase Corporation, Chicago, Ill.
Filed May 28, 1987, Ser. No. 54,920
Int. Cl.[4] B32B 27/08; B65D 25/22
U.S. Cl. 428—34.9 **30 Claims**

1. A heat-shrinkable, biaxially stretched multilayer film suitable for packaging primal and sub-primal meat cuts and processed meats, said film containing a barrier layer comprising a blend of vinylidene chloride-methyl acrylate copolymer and vinylidene chloride-vinyl chloride copolymer having between about 2.9 and about 13.5 weight percent methyl acrylate, and between about 2.9 and about 11.6 weight percent vinyl chloride in said blend.

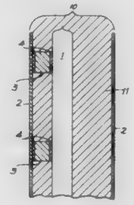
4,798,752
CURABLE SHEET
Robert H. McLoughlin, and Pushpkumar D. Changani, both of Swindon, England, assignors to Raychem Limited, London, England
Continuation of Ser. No. 583,459, Feb. 24, 1984, abandoned. This application Nov. 4, 1985, Ser. No. 794,911
Claims priority, application United Kingdom, Feb. 25, 1983, 8305312
The portion of the term of this patent subsequent to Mar. 8, 2005, has been disclaimed.
Int. Cl.[4] B27N 5/02; B32B 31/08
U.S. Cl. 428—36 **16 Claims**



1. An assembly comprising (a) a heat-recoverable article and (b) a curable sheet comprising a plurality of discrete regions of each of at least two mutually reactive polymeric components which components are fusion bonded to each other at least at the mutual edge interfaces of their respective sheet regions in a substantially fixed spatial arrangement such that the said two components will react together to effect curing of the sheet when said heat-recoverable article is heat-recovered thereon.

4,798,753
INSULATING PANELS CONTAINING INSULATING POWDERS AND INSULATING GASES
Nesim Abuaf, Schenectady, N.Y.; Robert W. Barito, and Kenneth L. Downs, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Continuation of Ser. No. 943,737, Dec. 19, 1986, abandoned. This application Feb. 11, 1988, Ser. No. 157,156
Int. Cl.[4] B32B 1/02, 9/00
U.S. Cl. 428—69 **5 Claims**

1. A slab of material for use as a thermal insulation comprising:
a. a compressed, particulate insulating material selected from the group consisting of precipitated silica, mixtures of precipitated silica and fly ash materials, said precipitated silica formed by the interaction of an alkaline water glass and a mineral acid to precipitate silica, followed by a drying action to form a dried, finely divided silica;



b. a gas and water tight envelope surrounding said particulate insulating material; and
c. an insulating gas within said gas and water tight envelope, said gas impregnating said particulate material.

4,798,754
OIL-ABSORBENT FLOOR MAT
Lawrence S. Tomek, Drake Creekside Two No. 320, 2629 Redwing Rd., Ft. Collins, Colo. 80526
Filed Aug. 10, 1987, Ser. No. 85,721
Int. Cl.[4] F16N 31/00
U.S. Cl. 428—74 **9 Claims**

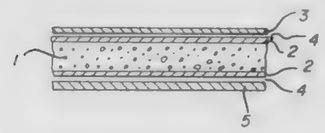


1. An absorbent floor mat for absorbing oil and grease drippings beneath a motor vehicle comprising:
a generally rectangular base layer composed of a thin, flexible, oil-impervious material; and
a plurality of upper oil-absorbent flexible plies superimposed on said base layer including means for securing said plies to one another, said absorbent plies being composed of a cellulose wadding material, and means for securing a lowermost of said plies to an upper surface of said base layer, said absorbent plies being of generally rectangular configuration and having an area no greater than said base layer, said means for securing said absorbent layers to said base layer operative to secure said absorbent layers in centered relation to said base layer.
5. An absorbent floor mat according to claim 1, an upper layer disposed over said absorbent plies and having outer peripheral edges in sealed relation to outer peripheral edges of said base layer, said upper layer provided with openings at spaced intervals therein, and hold-down means for securing said mat to a surface beneath the motor vehicle.

4,798,755
MAGNETIC RECORDING MEDIUM
Yasuyuki Yamada, and Hajime Miyatsuka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 1, 1986, Ser. No. 857,872
Claims priority, application Japan, May 1, 1985, 60-92189; May 13, 1985, 60-99496
Int. Cl.[4] G11B 5/716, 5/702
U.S. Cl. 428—141 **13 Claims**

1. A magnetic recording medium comprising a non-magnetic support having provided on one side thereof a magnetic layer comprising a binder having dispersed therein fine ferromagnetic particles and on the other side thereof a backing layer, wherein both said magnetic layer and said backing layer contain
(1) a vinyl chloride resin having $-SO_3M$ groups, wherein M is selected from Li, Na, and K, and epoxy groups, and
(2) polyurethane as binders, wherein said vinyl chloride resin contains from 0.1 to 2.0% by weight $-SO_3M$ groups, and from 0.2 to 10% by weight epoxy groups, based on the total weight of the resin; and wherein the weight of the fine ferromagnetic particles to the binder is in the range of from 100/13 to 100/45.

4,798,756
LAMINATE STRUCTURE OF INTERIOR FINISHING MATERIAL
Shigeyoshi Fukushima; Hidehiro Uno, both of Nagoya, and Shigetoshi Mimura, Toyota, all of Japan, assignors to Toyo Tire & Rubber Company Limited, Osaka, Japan
Filed Jan. 4, 1988, Ser. No. 140,771
Claims priority, application Japan, Jan. 9, 1987, 62-2210[U]; Jan. 9, 1987, 62-2211[U]
Int. Cl.[4] B32B 7/04, 3/26, 17/00
U.S. Cl. 428—198 **2 Claims**



1. A laminate structure of interior finishing material having suitable air permeability and sound absorbing properties, the laminate structure comprising a thermoplastic rigid polyurethane foam layer in the form of a platelike member, a reticular glass cloth layer provided on at least one surface of the foam layer, a nonwoven fabric layer provided on one surface of the assembly of the foam and cloth layers, and a facing layer provided on the other surface of the assembly, the fabric layer and the facing layer being individually provided on the different surfaces of the assembly and being adhered by heating to the assembly with a hotmelt adhesive film having a plurality of slits therein.

4,798,757
SOFT WATER-PERMEABLE POLYOLEFIN NONWOVENS HAVING OPAQUE CHARACTERISTICS
James P. Modrak, Rockdale County, and Owen P. Roberts, Franklin County, both of Ga., assignors to Hercules Incorporated, Wilmington, Del.
Filed Jun. 22, 1987, Ser. No. 64,363
Int. Cl.[4] B32B 27/14
U.S. Cl. 428—198 **34 Claims**

1. A polyolefin-containing nonwoven material comprising, in combination, at least one bonded fiber web, said nonwoven material containing not less than 25%, based on total web weight, of polyolefin filament having (a) a delta cross-sectional configuration, (b) and initial spun denier not exceeding about 4 dpf, and (c) a final drawn denier of not less than about 1 dpf.

4,798,758
FOAM GLASS HAVING CRUST LAYER AND METHOD OF PRODUCING SAME
Makoto Nagano; Akira Nakanishi, both of Takaishi; Tomoyoshi Hiraki, Osaka; Akira Ueno, Takaishi; Shoji Takahashi, Matsusaka; Shuhei Kobayashi, Tsu; Akihiro Yamamoto, Matsusaka, and Fumio Kodama, Ichikawa, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan
Filed Mar. 9, 1987, Ser. No. 23,854
Claims priority, application Japan, Mar. 10, 1986, 61-50302; Mar. 11, 1986, 61-51536; Mar. 20, 1986, 61-60960
Int. Cl.[4] B32B 3/26, 9/00, 18/00
U.S. Cl. 428—213 **20 Claims**

1. A foam glass comprising a foam layer consisting essentially of a glass selected from the group consisting of soda lime glass, borosilicate glass and aluminosilicate glass, and a crust layer which is unitary with the foam layer and covers at least one major surface of the foam layer, the crust layer consisting essentially of a glass selected from the group consisting of soda lime glass, borosilicate glass and aluminosilicate glass, and having an apparent specific gravity in the range from 0.8 to 1.7 and a thickness in the range from 1.5 to 20 mm, the the thickness of the crust layer being not more than ¼ of the whole thickness of the foam glass, wherein the difference between the apparent specific gravity of the foam layer is not more than 1.2.
4. A foam glass according to claim 1, wherein the total thickness of the foam layer and the crust layer is in the range from 30 to 125 mm.

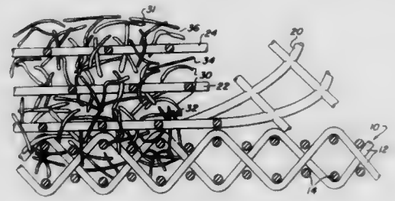
4,798,759
MULTI-LAYER POLYESTER FILM FOR MAGNETIC TAPE
Hermann Dallman, Wiesbaden-Naurod; Hartmut Hensel, Schlangenbad, and Werner Schäfer, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 13, 1987, Ser. No. 25,465
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610167
Int. Cl.[4] B32B 5/16, 27/36
U.S. Cl. 428—220 **17 Claims**

1. A thin, coextruded, biaxially oriented multilayer film having a superior modulus of elasticity comprising
(i) a first polyester film layer whose surface roughness R_a is 0.010 micron or less;
(ii) a second polyester film layer whose surface roughness R_a is greater than 0.010 micron, said polyester film containing (a) from 0.01 to 1% by weight of particles having an average particle size of from 0.001 to five microns and (b) from 0.01 to 5 weight percent of a nucleating agent,
with the proviso that said film have a thickness not greater than 10 microns and yet has a modulus of elasticity in the machine direction of at least 6,500 N/mm^2.

4,798,760
SUPERIMPOSED WET PRESS FELT
Michelle A. Diaz-Kotti, Johnston, S.C., assignor to Astex Group, Inc., Charleston, S.C.
Filed Sep. 9, 1987, Ser. No. 94,703
Int. Cl.[4] B32B 5/02
U.S. Cl. 428—234 **15 Claims**

8. A wet press felt comprising:
(a) a woven base fabric;
(b) a layer of a synthetic, polymeric resin netting having a mesh count per linear inch of between 4 and 64;

(c) said netting layer being contiguous with said base fabric; and



(d) a layer of batt material disposed upon said netting layer and affixed to both said netting layer and said base fabric.

4,798,761

EPOXY RESIN COMPOSITIONS FOR USE IN LOW TEMPERATURE CURING APPLICATIONS

Paul L. Wykowski, and Paul M. Puckett, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 3, 1987, Ser. No. 116,593
Int. Cl.⁴ C08G *63/00*
U.S. Cl. 428—272 **24 Claims**

1. A composition which comprises

(A) an epoxy resin composition containing, as the only epoxy-containing component in said composition, a mixture of

(1) at least one diglycidyl ether of a compound having 2 aromatic hydroxyl groups per molecule, said diglycidyl ether having an average of not more than 2 vicinal epoxy groups per molecule and an EEW of from about 170 to about 600;

(2) at least one polyglycidyl ether of a compound having an average of more than two aromatic hydroxyl groups per molecule, said polyglycidyl ether having an EEW of from about 150 to about 350; and

(3) a rubber or elastomer;

wherein components (1) and (2) are employed in amounts such that from about 20 to about 90 percent of the glycidyl ether groups are derived from component (1) and from about 10 to about 80 percent of the glycidyl ether groups are derived from component (2) and component (3) is employed in an amount of from 2 to about 20 percent by weight based on the combined weight of components (1), (2) and (3); and

(B) optionally, as a reactive diluent to lower the viscosity of the composition, a low viscosity monoglycidyl ether compound or a low viscosity polyglycidyl ether of a compound having two or more aliphatic hydroxyl groups per molecule; and

wherein component (B) is employed in an amount of from zero to about 25 percent by weight based on the combined weight of components (A) and (B).

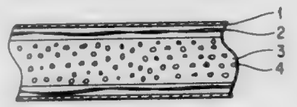
4,798,762

LAMINATE BOARD CONTAINING UNIFORMLY DISTRIBUTED FILLER PARTICLES AND METHOD FOR PRODUCING THE SAME

Reisuke Okada, and Hisaai Fujino, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 765,476, Aug. 14, 1985, Pat. No. 4,661,301. This application Jan. 20, 1987, Ser. No. 4,722
Int. Cl.⁴ B32B *15/04, 5/00*
U.S. Cl. 428—285 **3 Claims**

1. A copper clad laminate board for a printed circuit, having a thickness from 0.5 to 1.6 mm, comprising a center plate which consists of a thermosetting resin and hollow glass microspheres, uniformly distributed in said resin, the volume fraction of which ranges from 0.5 to 0.7, based upon the volume of the center plate, and sheets, provided on both sides of said center plate, which comprise a thermosetting resin and a reinforcing



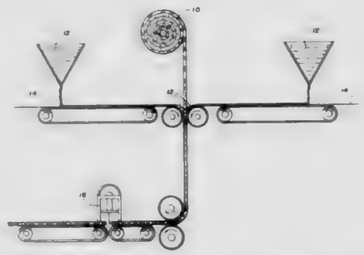
fabric, the specific gravity of the laminate board being from 0.8 to 1.3.

4,798,763

METHOD OF MOLDING A LAMINATED FOAMABLE SHEET

Hamid G. Kia, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 11, 1986, Ser. No. 884,785
Int. Cl.⁴ B29C *39/10, 67.22;* C08J *9/08*
U.S. Cl. 428—285 **3 Claims**



1. The method of molding a glass fiber reinforced polyurethane foamed article by first laminating a glass fiber mat wetted with a composition of urethane foam precursors containing a solid catalyst between two barrier sheets and then placing the laminate in a heated mold having two platens defining a cavity therein wherein heat activates said catalyst to start a rapid foaming reaction such that the laminate expands to fill the cavity, said method comprising the steps of:

(1) wetting a glass fiber mat with a composition of urethane foam precursors containing a solid catalyst of stearate salt inactive at temperatures below its melting temperature,

(2) placing said wetted glass fibers between two barrier sheets,

(3) compressing under suitable pressure said wetted glass fibers between said barrier sheets into a laminate,

(4) storing said laminate for a predetermined length of time not longer than 1 month,

(5) positioning said laminate into said heated mold, the temperature of said mold being at least that of the melting temperature of said solid catalyst,

(6) compressing said laminate in said heated mold under sufficient pressure and for a sufficient length of time, whereby said solid catalyst melts and causing said urethane precursors to foam in such a way that said laminate expands to fill the cavity of said mold,

(7) curing said foamed article in said mold under heat and pressure,

(8) removing said foamed article from said mold.

3. A glass fiber reinforced polyurethane foamed article molded by the process of claim 1.

4,798,764

ARSENATE DOPANT SOURCES AND METHOD OF MAKING THE SOURCES

Richard E. Tressler, Julian, and Herman J. Boeglin, State College, both of Pa., assignors to STEMCOR Corporation, Cleveland, Ohio

Filed Jun. 8, 1983, Ser. No. 502,262
Int. Cl.⁴ B05D *3/02;* B32B *19/00, 19/04*
U.S. Cl. 428—312.6 **16 Claims**

1. A dopant source for the vapor phase transport of arsenic dopant at elevated temperature comprising at least one compound of the group consisting of $AlAsO_4$, $YAsO_4$, $Mg_6As_2O_{11}$, $Mg_3As_2O_8$, $Ca_6As_2O_{11}$, $Ca_3As_2O_8$, $Ba_3As_2O_8$, $Ba_6As_2O_{11}$, $Sr_6As_2O_{11}$, and $Sr_3As_2O_8$, said compounds disassociating in the temperature range 500° C. to 1400° C. to release arsenic oxide vapors, wherein said compound is in solution.

3. A dopant source for the vapor phase transport of arsenic dopant at elevated temperature comprising at least one compound of the group consisting of $AlAsO_4$, $YAsO_4$, $Mg_6As_2O_{11}$, $Mg_3As_2O_8$, $Ca_6As_2O_{11}$, $Ca_3As_2O_8$, $Ba_3As_2O_8$, $Ba_6As_2O_{11}$, $Sr_6As_2O_{11}$, and $Sr_3As_2O_8$, said compounds disassociating in the temperature range 500° C. to 1400° C. to release arsenic oxide vapors, wherein said compound is deposited on a rigid, porous support structure.

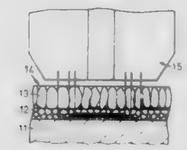
11. The method of preparing the compounds of the group consisting of $AlAsO_4$, $YAsO_4$, $Mg_6As_2O_{11}$, $Mg_3As_2O_8$, $Ca_6As_2O_{11}$, $Ca_3As_2O_8$, $Ba_3As_2O_8$, $Ba_6As_2O_{11}$, $Sr_6As_2O_{11}$, and $Sr_3As_2O_8$, comprising heating arsenic pentoxide in the presence of a compound selected from the group consisting of Al_2O_3, Y_2O_3, MgO, BaO, CaO, SrO and mixtures thereof.

4,798,765

PERPENDICULAR MAGNETIC RECORDING MEDIUM

Yasuo Ishizaka; Noboru Watanabe; Kazuo Kimura, all of Yokohama, and Eiichiro Imaoka, Sagamihara, all of Japan, assignors to Victor Company of Japan Ltd., Japan

Filed Mar. 25, 1986, Ser. No. 843,757
Claims priority, application Japan, Mar. 28, 1985, 60-64630; Jul. 17, 1985, 60-157908; Jul. 17, 1985, 60-157909
The portion of the term of this patent subsequent to Mar. 15, 2005, has been disclaimed.
Int. Cl.⁴ G11B *5/66*
U.S. Cl. 428—336 **6 Claims**



1. A perpendicular magnetic recording medium on which a signal is recorded and from which the signal is reproduced by a magnetic head, said perpendicular magnetic recording medium comprising:

a recording medium base;

a lower layer formed on the recording medium base; and

an upper layer formed on the lower layer,

said lower layer being made of a first material including cobalt, chromium and at least one of niobium and tantalum, said lower layer having an in-plane coercivity in a range of 10 to 220 Oe and a thickness of 0.15 micron or less said lower layer including a layer which is substantially magnetically-isotropic,

said upper layer being made of a second material including cobalt, chromium and at least one of niobium and tantalum such as is included in said lower layer,

concentrations of niobium and tantalum in said second material being less than concentrations of niobium and tantalum in said first material, respectively.

4,798,766

SURFACE MODIFIED CLAYS AND PROCESS OF MANUFACTURE

Camilla A. Rice, Sandersville, Ga., assignor to E.C.C. America Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 943,669, Dec. 17, 1986, Pat. No. 4,789,403, which is a continuation-in-part of Ser. No. 887,320, Jul. 22, 1986, abandoned, and a continuation-in-part of Ser. No. 933,083, Nov. 20, 1986, Pat. No. 4,690,868, which is a continuation-in-part of Ser. No. 699,014, Feb. 8, 1985, abandoned. This application Aug. 26, 1987, Ser. No. 89,510
Int. Cl.⁴ B32B *5/16;* C23C *16/00*
U.S. Cl. 428—404 **27 Claims**

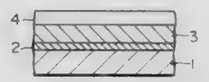
1. A particulate layered lattice silicate having the general formula $E_yM_xSi_yO_n(OH)_m$ where M is Al, Mg, or Fe, x=2 to 6, y=2 to 8, n=2 to 20, m=0 to 8, and E_r is one or more exchangeable ions, the surfaces of which have been modified by surface bound NH_2 groups and further reacted with an organic compound selected from the class consisting of monomers, co-monomers, and prepolymers which are condensible with the amine group.

4,798,767

OPTICAL INFORMATION RECORD MEDIUM

Tokuei Aoki; Junichiro Kudo, and Katsumi Kohno, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 107,342
Claims priority, application Japan, Oct. 14, 1987, 62-242136
Int. Cl.⁴ B32B *27/36;* C08G *63/62*
U.S. Cl. 428—412 **3 Claims**



1. An optical information record medium having an optical information recording layer wherefrom signals are optically read on a substrate made of a polycarbonate resin, wherein the quantity of a residual chlorine ion contained in said substrate is adjusted to be no more than 1.0 ppm.

4,798,768

LUMINESCENT ALUMINO-SILICATE AND/OR ALUMINO-BORATE GLASS COMPRISING LANTHANUM AND/OR GADOLINIUM AND LUMINESCENT SCREEN PROVIDED WITH SUCH A GLASS

Gerrit Oversluizen, and Anne-Marie A. Van Dongen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 7, 1987, Ser. No. 105,921
Claims priority, application Netherlands, Oct. 8, 1986, 8602518
Int. Cl.⁴ C09K *11/80*
U.S. Cl. 428—426 **4 Claims**

1. A luminescent alumino-silicate and/or alumino-borate glass comprising lanthanum and/or gadolinium and activated by a rare earth metal, characterized in that the glass is activated by at least one of the rare earth metals Tb^{3+} and Ce^{3+} has a composition comprising 35–85 mol% of SiO_2 and/or B_2O_3, 1–35 mol% of La_2O_3 and/or Gd_2O_3, 5–45 mol% of Al_2O_3 and 0.5–30 mol% of Tb_2O_3 and/or Ce_2O_3 in which the La_2O_3 and/or Gd_2O_3 are replaceable in amounts up to than 50 mol% by one or more of the oxides Y_2O_3, Sc_2O_3, Lu_2O_3, ZrO_2, P_2O_5 and the alkaline earth metal oxides, the rare earth metal oxides being at least 99.99% pure and the other oxides being at least 99.999% pure, the luminescent glass having a

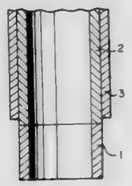
quantum efficiency of at least 46% when excited by 254 nm radiation.

4,798,769

ELECTRODE SUPPORTING CONDUIT TUBE FOR ELECTRICAL HEATING OF UNDERGROUND HYDROCARBON RESOURCES

Osamu Hayashi, Toyonaka; Sadamu Matsuda, Amagasaki; Ichiro Takahashi, Suita; Goro Okamoto, Itami, and Kazuo Okahashi, Toyonaka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 837,661, Mar. 7, 1986, abandoned, which is a continuation of Ser. No. 606,189, May 2, 1984, abandoned. This application Feb. 5, 1987, Ser. No. 14,207
Claims priority, application Japan, Jun. 17, 1983, 58-109649
Int. Cl.[4] B32B *15/08*; **F16L** *9/14*
U.S. Cl. 428—460 **3 Claims**



1. An electrode supporting conduit tube for electrical heating above 300° C. of underground hydrocarbon resources, which comprises:

a metal conduit tube; and

an insulating member adhered on and around the outer peripheral surface of said metal conduit tube, said insulating member being a laminated body of a web of glass fiber impregnated with water-dispersion varnish of PEEK, PPS or a combination thereof, that is hot-water resistant and is made up or particles ranging in size from 0.5 μm to 10 μm and a thermoplastic resin which is made up of particles ranging in size from 0.5 μm to 10 μm and a polyether/ether/ketone resin film, which is formed by first alternately winding said glass fiber web on said resin film on and around the outer peripheral surface of said metal conduit tube for a plurality of winding turns, and then subjecting both polyether/ether/ketone resin film and glass fiber web thus wound on and around said metal conduit tube to shaping under heat and pressure at a heating temperature of from 350° C. to 450° C. and under a pressure of from 10 kg/cm^2 to 200 kg/cm^2 and wherein the rate of impregnation of glass fiber by said water dispersion varnish is 30% by weight

wherein a final laminate structure is made of the metal conduit tube, PEEK and an impregnated glass cloth.

4,798,770

HEAT RESISTING AND INSULATING LIGHT ALLOY ARTICLES AND METHOD OF MANUFACTURE

Tadashi Donomoto; Mototsugu Koyama, and Masaaki Nagaoka, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 850,421, Apr. 7, 1986, abandoned, which is a continuation of Ser. No. 706,253, Feb. 28, 1985, abandoned, which is a continuation of Ser. No. 419,478, Sep. 17, 1982, abandoned. This application Nov. 6, 1987, Ser. No. 119,238
Claims priority, application Japan, Sep. 24, 1981, 56-151564
Int. Cl.[4] B22F *3/26*; **B23P** *17/00*
U.S. Cl. 428—547 **14 Claims**

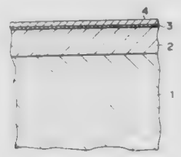
1. A heat-resisting and insulating light alloy article, comprising:

(a) a body of a light alloy selected from the group consisting of aluminum alloys and magnesium alloys,

(b) a composite fiber/light alloy layer formed on the body, wherein the composite layer is made essentially of a light alloy of the same type as the light alloy of which the body is made and heat-resistant fibers having a lower heat conductivity than the light alloy, said fibers being integrally bonded by the light alloy and being selected from the group consisting of Al_2O_3 fibers, ZrO_2 fibers, SiC fibers, Al_2O_3-SiO_2 fiber, glass fibers, carbon fibers, boron fibers, stainless steel fibers, SiC whiskers, Si_3N_4 whiskers, and potassium titanate whiskers,

(c) a first layer of a heat-remaining alloy sprayed onto said composite layer, which alloy is selected from the group consisting of Ni-Cr alloy, Ni-Cr-Al alloy and Ni-Cr-Al-Y alloy, and

(d) a second layer of a ceramic base material sprayed onto said first layer, which material is selected from the group consisting of ZrO_2, Al_2O_3, MgO, Cr_2O_3, and mixtures thereof, and wherein the heat-resisting alloy, of which the first layer is made, has a thermal expansion coefficient



which is higher than the ceramic material of said second layer, but lower than the composite fiber/light alloy layer.

8. A method for producing a heat resisting and insulating light-alloy article comprising the steps of

placing a preform of heat-resistant fibers at a given position in a cavity of a mold,

pouring a molten light alloy into the mold cavity,

subjecting the molten light alloy in the mold cavity to liquid metal forging, thereby causing the light alloy to fill up the space among the fibers of the preform

allowing the light alloy to solidify to form a block of the light alloy having a composite fiber/light alloy layer integrated on its surface,

removing the block from the mold,

spraying a heat-resisting alloy onto the composite fiber/light alloy layer on the block, and

further spraying a ceramic base material onto the sprayed layer of the heat-resisting alloy.

4,798,771

BEARINGS AND OTHER SUPPORT MEMBERS MADE OF INTERCALATED GRAPHITE

Ferdinand L. Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Filed Aug. 27, 1985, Ser. No. 770,293
The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.
Int. Cl.[4] B22F *7/04*; **C32B** *15/16*; **C10M** *103/02, 125/02*
U.S. Cl. 428—564 **17 Claims**

1. A bearing member consisting essentially of a shaped, compacted, load bearing, low friction body formed from an intercalated graphite which is stable in air and at an elevated temperature, and is produced by an intercalation reaction of graphite and an intercalating species, said intercalating species producing the stability in air and at elevated temperature of the intercalated graphite, said reaction causing the presence of oxidized carbon in the graphite and the presence of negatively charged molecules within the intercalating species.

4,798,772

STEEL SHEETS FOR PAINTING AND A METHOD OF PRODUCING THE SAME

Kusuo Furukawa, Tokyo, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 31, 1986, Ser. No. 948,122
Claims priority, application Japan, Jan. 17, 1986, 61-7769; Nov. 25, 1986, 61-278876
Int. Cl.[4] B21D *53/00*
U.S. Cl. 428—600 **3 Claims**



1. A steel sheet for painting, characterized in that a center-line average surface roughness Ra of said steel sheet is within a range of 0.3 to 3.0 μm and a microscopic shape constituting said surface roughness is comprised of trapezoidal mountain portions having a flat top surface, groove-like valley portions formed so as to surround a whole or a part of the mountain portion and middle flat portions formed between the mountain portions outside the valley portion so as to be higher than the bottom of the valley portion and lower than or equal to the top surface of the mountain portion and satisfies the following relations:

$$0.85 \leqq Sm/D \leqq 3.0$$

$$Sm - D < 450 \text{ (pm)}$$

$$30 \leqq do \leqq 500 \text{ (μm)}$$

$$20 \leqq \eta \leqq 95 \text{ (\%)},$$

wherein Sm is a mean center distance between the adjoining mountain portions, D is a mean diameter in the outer periphery of the valley portion, d_0 is a mean diameter in the flat top surface of the mountain portion, and η is a ratio of a sum of areas in the flat top surface of the mountain portion and areas in the flat surface of the middle flat portion to a whole area of the steel sheet.

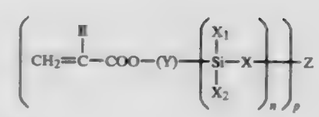
4,798,773

SOLID POLYMER ELECTROLYTE COMPOSITION

Eiki Yasukawa; Kunio Kihara, and Mayumi Tsuboi, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1987, Ser. No. 122,918
Claims priority, application Japan, Nov. 21, 1986, 61-278340; Nov. 21, 1986, 61-278341; Dec. 4, 1986, 61-289641
Int. Cl.[4] H01M *6/16*
U.S. Cl. 429—192 **12 Claims**

1. A solid polymer electrolyte composition comprising a matrix polymer comprising at least one kind of a macromer represented by the following formula (I) as a monomer component, and an electrolyte salt compound:



(I)

wherein:

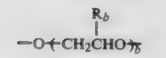
R represents a hydrogen atom or a methyl group;

Y represents a group represented by the formula



wherein R_a represents a hydrogen atom or a methyl group and a represents 0 to 60;

X represents a divalent polyene glycol residue represented by the formula



wherein R_b represents a hydrogen atom or a methyl group and b represents 2 to 60;

X_1 and X_2 each represents a monovalent polyalkylene glycol compound residue represented by the formula



wherein R_c represents a hydrogen atom or a methyl group, R′ represents a hydrogen atom, an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms and c represents 2 to 60;

Z represents a hydrogen atom, a monovalent alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, or a polyvalent alkyl group selected from ethylene, methyl ethylene and 1,2,3-propanetriyl residue, and

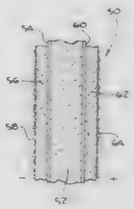
n and p each represents an integer of 1 to 3.

4,798,774

GAS PERMEABLE ELECTRODE FOR ELECTROCHEMICAL SYSTEM

Frank A. Ludwig, Rancho Palos Verdes, and Carl W. Townsend, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 14, 1987, Ser. No. 132,514
Int. Cl.[4] H01M *8/06*
U.S. Cl. 429—12 **28 Claims**



1. An electrode apparatus adapted for use in an electrochemical system having an anode compartment and a cathode compartment in which gasaand ions are produced and consumed in

said compartments during electrical current generation by said system, wherein said electrode apparatus comprises:

a membrane for separating said anode compartment from said cathode compartment, said membrane having a cathode side and an anode side and comprising ion permeable regions to provide transfer of ions between the cathode and anode sides of the membrane and gas-permeable regions to provide transfer of gases between the cathode and anode sides of the membrane;

cathode means located in the cathode compartment on said cathode side of the membrane and in contact with said membrane for generating electric current; and

anode means located in the anode compartment on said anode side of the membrane and in contact with said membrane for generating electric current wherein gas and ions generated at said cathode means and anode means migrate through said membrane to provide transfer of said gas and ions between said anode and cathode compartments.

4,798,775

PROCESS FOR PRODUCING SILVER HALIDE PHOTOGRAPHIC EMULSION

Toshihiko Yagi, Kanagawa, and Shinya Shimura, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 744,472, Jun. 13, 1985, abandoned. This application Feb. 2, 1987, Ser. No. 11,363

Claims priority, application Japan, Jun. 20, 1984, 59-127189

Int. Cl.[4] G03C *1/02*

U.S. Cl. 430—569 **5 Claims**

1. A process for producing a silver halide photographic emulsion by supplying a solution of water soluble silver salt and a solution of water soluble halide in the presence of a protective colloid, said process comprising, in sequence, the steps of:

(a) forming silver halide nuclear grains with a silver iodide content of 0 to 5 percent in a mother liquor, the pBr of the mother liquor being maintained at between 2.0 and −0.7 for at least the initial half of the time necessary to form said nuclear grains,

(b) forming monodispersed, substantially spherical, silver halide seed grains by ripening the nuclear grains formed in (a), in a mother liquor containing a silver halide in an amount of 10^{-4} to 5 moles per liter of mother liquor and,

(c) increasing the size of the seed grains by at least one method taken from the group consisting of (1) the addition of a solution of a water soluble silver salt and a solution of a water soluble halide and (2) the addition of fine silver halide grains.

4,798,776

LIGHT RECEIVING MEMBERS WITH SPHERICALLY DIMPLED SUPPORT

Mitsuru Honda; Atsushi Kolke, both of Chiba; Kyosuke Ogawa, Miye, and Keiichi Murai, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1986, Ser. No. 909,892

Claims priority, application Japan, Sep. 21, 1985, 60-209678; Sep. 25, 1985, 60-210257; Oct. 2, 1985, 60-219912; Oct. 8, 1985, 60-224460; Oct. 15, 1985, 60-227648; Oct. 16, 1985, 60-228737

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

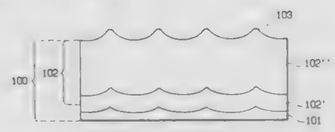
Int. Cl.[4] G03G *5/082, 5/10, 5/14*

U.S. Cl. 430—39 **45 Claims**

1. A light receiving member comprising:

(a) a support having an uneven-shaped surface of a plurality of spherical dimples; each of said spherical dimples having an identical radius of curvature R and an identical width D, wherein the ratio D/R of said width D to said radius of curvature R being from 0.03 to 0.07; and

(b) a light receiving layer having a free surface on the support; said light receiving layer being a multi-layered structure composed of an amorphous material containing silicon atoms as the main constituent, at least one kind selected from the group consisting of oxygen atoms, carbon atoms and nitrogen atoms, and at least one kind selected from the group consisting of hydrogen atoms and halogen atoms; and containing at least a layer region functioning as a photosensitive layer.



2. The light receiving member of claim 1, wherein said spherical dimples are formed by the impact of a plurality of rigid true spheres, each sphere substantially of an identical diameter, falling from substantially the same height.

4,798,777

ELECTROPHOTOGRAPHIC MEMBER CONTAINING VINYLENE BENZOCARAZOLE AS CHARGE TRANSPORTING MATERIAL

Takao Takiguchi, Tokyo; Masakazu Matsumoto, and Toshihiro Kikuchi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

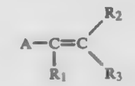
Filed Feb. 13, 1987, Ser. No. 14,855

Claims priority, application Japan, Feb. 19, 1986, 61-034775

Int. Cl.[4] G03G *5/10*

U.S. Cl. 430—59 **12 Claims**

1. An electrophotographic photosensitive member comprising a charge generating material and a charge transport material containing a compound represented by the formula (1) shown below:



(1)

wherein A represents 1,2-, 2,3- or 3,4-benzocarbazolyl group; R_1, R_2 and R_3, which may be the same or different, each represent hydrogen atom, alkyl group, aralkyl group, aryl group or heterocyclic group, with proviso that R_2 and R_3 cannot be hydrogen atoms at the same time.

4,798,778

LIQUID ELECTROSTATIC DEVELOPERS CONTAINING MODIFIED RESIN PARTICLES

El-Sayed Lyla M., West Chester, Pa.; Steven P. Schmidt, Greenville; Torence J. Trout, Wilmington, both of Del., and Robert D. Mitchell, Pittsford, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 3, 1987, Ser. No. 80,669

Int. Cl.[4] G03G *9/12*

U.S. Cl. 430—115 **60 Claims**

1. A positive-workinq liquid electrostatic developer consisting essentially of

(A) nonpolar liquid having a Kauri-butanol value of less than 30, present in major amount,

(B) thermoplastic resin selected from the group consisting of an ethylene homopolymer having a carboxylic acid substituent and copolymer of ethylene and at least one other monomer having a carboxylic acid substituent, the acid substituent being modified into a substituent selected from the group consisting of an ester. ester having substituents selected from the group consisting of hydroxyl, carboxyl, amine and alkyl of at least one carbon atom; amide, amide having substituent selected from the group consisting of hydroxyl, carboxyl, amine and alkyl of at least one carbon atom; and acid halide, the resin being in particulate form having an average particle size by

(C) nonpolar liquid soluble ionic or zwitterionic compound.

4,798,779

PROCESS FOR FORMING AN IMAGE BY SILVER SALT DIFFUSION TRANSFER

Yoshio Idota; Yukio Karino; Hiroshi Hayashi, and Hideki Tomiyama, All of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

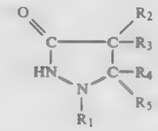
Filed Jan. 29, 1987, Ser. No. 8,452

Claims priority, application Japan, Jan. 30, 1986, 61-18400

Int. Cl.[4] G03C *5/54*

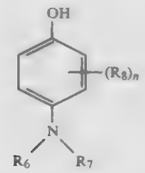
U.S. Cl. 430—202 **11 Claims**

1. A process for forming an image by silver salt diffusion transfer comprising developing a light-sensitive element, which element comprises a support having provided thereon a light-sensitive silver halide emulsion layer which has been imagewise exposed to light, by an alkaline processing composition in the presence of a silver halide solvent, so that at least a part of silver halide unexposed in said emulsion layer is converted to a transferable silver complex salt, and then transferring at least a part of said silver complex salt to an image-receiving layer containing a silver precipitating agent to form an image on said imagereceiving layer, wherein the concentration of said silver precipitating agent in said image-receiving layer is in the range of from 2×10^{-6} to 8×10^{-6} mol/m^2 and at least one of said light-sensitive element and said alkaline processing composition contains at least one of a compound represented by formula (I) or a compound represented by formula (II)



(I)

wherein R_1 represents a phenyl group or a phenyl group substituted by an alkyl group having 1 or 2 carbon atoms; R_2 and R_3 each represents a hydrogen atom, an alkyl group having from 1 to 3 carbon atoms, or a hydroxyalkyl group having from 1 to 3 carbon atoms; and R4 and R5 each represents a hydrogen atom, an alkyl group having from 1 to 3 carbon atoms, a phenyl group, a phenyl group substituted by an alkyl group having from 1 to 3 carbon atoms;



(II)

wherein R_6 and R_7 each represents a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms; R_8 represents an alkyl group having from 1 to 4 carbon atoms; and n represents an integer of from 1 to 3.

4,798,780

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE SYSTEMS COMPRISING A HYDRAZINE WHICH CONTAINS A GROUP UNDERGOING A CYCLIZATION REACTIONUPON CLEAVAGE FROM THE HYDRAZINE

Kevin P. Hall, Harlow, and Andrew W. Mott, Bishops Stortford, both of England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 29, 1987, Ser. No. 68,146

Claims priority, application United Kingdom, Jul. 16, 1986, 8617335

Int. Cl.[4] G03C *1/06*

U.S. Cl. 430—264 **21 Claims**

1. A silver halide photographic light sensitive emulsion containing a hydrazine of the general formula

$$R^3\text{-}NR^4\text{-}NR^5\text{-}G\text{-}X \quad (I)$$

in which:

R^3 represents an aryl group,

one of R^4 and R^5 is a hydrogen and the other is selected from hydrogen, aryl sulfonyl and trifluoroacetyl,

G represents carbonyl, sulfonyl, sulfoxy, phosphoryl or an N-substituted or unsubstituted imino group and

X is a moiety such that at a pH in the range of 9.5 to 12.5 in the presence of an oxidised hydroquinone a cylisation reaction takes place cleaving the moiety -G-X from the remainder of the molecule and forming a cyclic structure comprising atoms of the moiety -G-X in a ring of said cyclic structure.

12. A photographic element comprising a support bearing one or more layers of an emulsion as claimed in claim 1.

13. A method of recording an image which comprises image wise exposing an element as claimed in claim 12 and developing the exposed element in a developer having a pH in the range 9.5 to 12.5.

4,798,781

FABRICATION PROCESS OF OPTICAL RECORDING MEDIUM

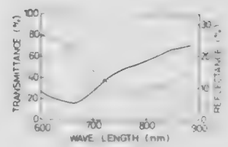
Sumio Hirose, Yokohama; Hiroshi Ozawa, Isehara; Kenji Abe, and Yoichi Hosono, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo and Yamamoto Chemicals, Inc., Yao, both of, Japan

Filed Jul. 31, 1986, Ser. No. 891,178

Claims priority, application Japan, Aug. 6, 1985, 60-171787

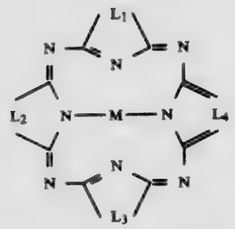
Int. Cl.[4] G11B *7/24;* **G01D** *9/00;* **G03C** *1/72, 5/16*

U.S. Cl. 430—270 **16 Claims**



1. A process for the fabrication of an optical recording medium permitting writing and reading-out of signals without any reflective layer made of an inorganic compound, which comprises:

(a) providing a phthalo/naphthalocyanine dye represented by the following formula (I):



(I)

wherein M is a metal, metal oxide or metal halide, and L_1, L_2, L_3 and L_4 are each a benzene or naphthalene ring skeleton which is unsubstituted or substituted by at least one monovalent substituent —Z selected from the group consisting of the following substituents: $—R^1$, $—OR^2$, $—SiR^3R^4R^5$, $—SR^6$, $—COR^7$, $—COOR^8$, $—CONHR^9$, $—NR^{10}R^{11}$, $—R^{12}OR^{13}$, and $—R^{14}X$ wherein R^1–R^{14} are each a hydrocarbon group having from 1 to 12 carbon atoms and X is a halogen atom, wherein at least one ring skeleton is substituted, and wherein the total number of carbon atoms in each and all of the substituent or substituents —Z contained per molecule is 20–48;

(b) dissolving the phthalo/naphthalocyanine dye in an organic solvent having a solubility parameter smaller than 8.5, thereby preparing a dye solution; and

(c) coating the dye solution on a transparent thermoplastic resin substrate surface having pregrooves, pits or holes which are formed from a thermoplastic resin for preformatting signals, thereby forming a vapor untreated optical recording layer comprising the phthalo/naphthalocyanine dye on the pregroove-, pit- or hole-defining surface of the resin substrate, and wherein the pregrooves, pits or holes in the substrate are formed with a thermoplastic resin.

4,798,782

POLY(ACETYLENE) FILMS HAVING LOCALIZED ZONES OF A LOW CONDUCTIVITY MATERIAL

Philip C. Allen, Feltham, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Jan. 15, 1987, Ser. No. 3,481

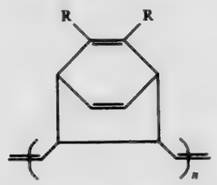
Claims priority, application United Kingdom, Feb. 8, 1986, 8603162; Feb. 13, 1986, 8603557

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—270 **5 Claims**

1. A coherent poly(acetylene) film having localized zones of a material other than poly(acetylene)

said coherent poly(acetylene) film is derivable from a poly(acetylene) precursor of formula (I):



(I)

where R is a substituent which is hydrogen or a group selected from an alkyl, a halo alkyl, an ester and combinations thereof, by selectively irradiating discrete areas of a film of poly(acetylene) precursor formula (I) and then heating so that upon heating the selectively irradiated areas form the localized zones and the nonirradiated areas transform into poly(acetylene),

and said material other than poly(acetylene) has modified optical and electrical properties which are different from that of conventional pristine poly(acetylene) film, said localized zones being integral with the poly(acetylene) film.

4,798,783

METHOD OF PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND PHOTOGRAPHIC COLOR DEVELOPING COMPOSITION

Takatoshi Ishikawa; Hiroshi Fujimoto; Nobutaka Ohki, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 6, 1987, Ser. No. 117,727

Int. Cl.⁴ G03C *5/24*

U.S. Cl. 430—372 **20 Claims**

1. A method of processing a silver halide color photographic material, which comprises processing an imagewise exposed photographic material with a color developer containing an aromatic primary amine color developing agent and a compound represented by the formula:



(I)

wherein

X represents a trivalent group necessary to an imagewise exposed complete a condensed ring;

R^1 and R^2 each represents an alkylene group, an arylene group, an alkenylene group, or an aralkylene group.

4,798,784

METHOD FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL INCLUDING A HYDROLYZABLE TYPE DIR COUPLER INCLUDING BLEACHING AND BLEACH-FIXING PROCESSING

Shinzo Kishimoto; Toshihiro Nishikawa; Akira Abe, and Junya Nakajima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 26, 1986, Ser. No. 935,494

Claims priority, application Japan, Nov. 26, 1985, 60-265915

Int. Cl.⁴ G03C *7/00, 5/38, 5/44, 7/32*

U.S. Cl. 430—382 **20 Claims**

1. A method for processing a silver halide color photographic material, which comprises color developing an exposed silver halide color photographic material containing an alkali hydrolyzable type DIR coupler, rapidly processing the developed silver halide color photographic material with a liquid having a bleaching ability, and subsequently with a liquid having a bleach-fixing ability, to thereby form a color image.

4,798,785

RECORDING ELEMENTS COMPRISING WRITE-ONCE THIN FILM ALLOY LAYERS

Kee-Chuan Pan; Yuan-Sheng Tyan, both of Webster, and Fridrich Vazan, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

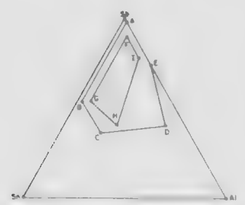
Filed Jun. 5, 1987, Ser. No. 58,721

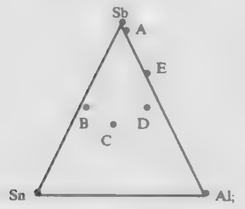
Int. Cl.⁴ G03C *1/72*

U.S. Cl. 430—495 **6 Claims**

1. A recording element comprising a write-once amorphous thin-film optical recording layer of an alloy having a composition within a polygon in a ternary composition diagram of antimony, aluminum, and tin; wherein

(a) the composition diagram is





and

(b) the polygon has the following vertices and corresponding coordinates in atom percent:

Vertices	Coordinates		
	[illegible]	[illegible]	Al
A	[illegible]	0	2
B	54	[illegible]	2
C	36	[illegible]	[illegible]
D	[illegible]	10	50
E	74	[illegible]	26

4,798,786

LIVING CELLS ENCAPSULATED IN CROSSLINKED PROTEIN

Thomas R. Tice, Birmingham, and William E. Meyers, Helena, both of Ala., assignors to Stolle Research and Development Corporation, Cincinnati, Ohio

Filed May 6, 1982, Ser. No. 375,710

Int. Cl.⁴ C12N *11/02, 11/10, 11/04, 5/02*

U.S. Cl. 435—177 **26 Claims**

1. A process for the encapsulation of living cells which comprises:

(a) dispersing living cells in an aqueous solution of a capsule wall-forming protein;

(b) forming aqueous droplets of said cell-containing dispersion in an aqueous-immiscible, cell compatible continuous processing medium;

(c) crosslinking said protein with a crosslinking agent which is soluble in said continuous processing medium but substantially insoluble in said aqueous droplets thus forming crosslinked capsules, and adding to the formed crosslinked capsules a capsule wall degradation enzyme for a time sufficient to enlarge pore sizes in said walls to a predetermined average size.

4,798,787

PEPTIDE ANTIBODIES AND THEIR USE IN DETECTING ONCOGENE PRODUCTS

Francis P. McCormick, Berkeley; Gail L. Wong, Oakland; Robin Clark, San Leandro; Norman Arnheim, Piedmont, and Danute E. Nitecki, Berkeley, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 652,752, Sep. 19, 1984, abandoned. This application Oct. 17, 1984, Ser. No. 661,909

Int. Cl.⁴ G01N *33/531;* **C07K** *7/00;* **B65D** *69/00*

U.S. Cl. 435—7 **23 Claims**

1. A polyclonal antibody preparation that binds selectively to a characteristic marker epitope encompassing amino acid position 12 of an activated form of p21 protein, wherein said polyclonal antibody preparation is specific for a particular amino acid at position 12 and does not bind the p21 protein encoded by the corresponding proto-oncogene.

23. A method for detecting an activated form of p21 protein encoded by an oncogene in a cellular sample of a patient which protein has a characteristic marker epitope encompassing amino acid position 12 which is not present in the p21 protein encoded by the corresponding proto-oncogene and which is not exposed in the undenatured protein, which method comprises:

(a) treating the sample with a protein denaturing agent that causes the epitope to be exposed and does not substantially inhibit binding of an antibody to the epitope of said protein,

(b) incubating the sample with the antibody of claim 1 under conditions that permit the binding of said antibody preparation to said epitope,

(c) incubating the sample with a labeled antibody which binds specifically to the antibody employed in step (b),

(d) washing the incubated sample to remove unbound labeled antibody, and

(e) detecting the presence of labeled immune complexes of the epitope with the antibodies employed in steps (b) and (c).

4,798,788

PROCESSES AND MATERIALS FOR CARRYING OUT MICROCHEMICAL AND MICROBIOLOGICAL TESTS

Thomas J. Sands, 40 Naseby Close, Wellingborough, Northants, NN8 3XB, England

PCT No. PCT/GB85/00278, § 371 Date Feb. 20, 1986, § 102(e) Date Feb. 20, 1986, PCT Pub. No. WO86/00341, PCT Pub. Date Jan. 16, 1986

PCT Filed Jun. 24, 1985, Ser. No. 833,389

Claims priority, application United Kingdom, Jun. 22, 1984, 8416044

Int. Cl.⁴ C12Q *1/12, 1/02, 1/04*

U.S. Cl. 435—37 **13 Claims**

1. A microbiological culture test process for detecting the presence of nitrate-reducing microorganisms in an inoculum sample, which comprises

(a) culturing a microorganism to be tested in the presence of substantially nitrate-free nitrate and of a diazotizable amino-containing fluorophor selected from the group consisting of coumarins and flavones, for a period sufficient to allow reduction of nitrate by said microorganism having the capacity to reduce nitrate to nitrite,;

(b) exposing the culture medium after culture to diazotizing acid conditions thereby to cause diazotization of the fluorophor to the extent of any nitrite present in the medium to form a diazonium derivative which is substantially less fluorescent at a predetermined wavelength at which said fluorophor is fluorescent than said amino-containing fluorophor when assessed for fluorescence under said acid conditions, and

(c) assessing the fluorescence of the culture medium as treated by step (b) at said predetermined wavelength under the acid conditions established in step (b), thereby

to detect presence of a nitrate-reducing microorganism by showing a reduction in fluorescence.

4,798,789

CDNA CLONES CODING FOR POLYPEPTIDES EXHIBITING MURINE INTERLEUKIN-2 ACTIVITY

Frank D. Lee; Takashi Yokota, and Ken-ichi Arai, all of Palo Alto, Calif., assignors to DNAX Research Institute of Molecular and Cellular Biology, Inc., Palo Alto, Calif.

Division of Ser. No. 658,183, Oct. 5, 1984. This application Dec. 17, 1986, Ser. No. 942,600

Int. Cl.⁴ C12P *21/00*; C12N *15/00, 1/20*; C07H *21/04*

U.S. Cl. 435—68 **16 Claims**

1. A process for producing a polypeptide exhibiting murine interleukin-2 activity, said process comprising the steps of:

providing a vector comprising a nucleotide sequence coding for said polypeptide, wherein the nucleotide sequence is capable of being expressed by a host containing the vector and wherein the nucleotide sequence is selected from the group of nucleotide sequences capable of encoding a polypeptide having an amino acid sequence defined by the formula:

Ala—Pro—Thr—Ser—Ser—Ser—Thr—Ser—
Ser—Ser—Thr—Ala—Glu—Ala—Gln—Gln—
Gln—Gln—Gln—Gln—Gln—Gln—Gln—Gln—
Gln—Gln—His—Leu—Glu—Gln—Leu—Leu—
Met—Asp—Leu—Gln—Glu—Leu—Leu—Ser—
Arg—Met—Glu—Asn—Tyr—Arg—Asn—Leu—
Lys—Leu—Pro—Arg—Met—Leu—Thr—Phe—
Lys—Phe—Tyr—Leu—Pro—Lys—Gln—Ala—
Thr—Glu—Leu—Lys—Asp—Leu—Gln—Cys—
Leu—Glu—Asp—Glu—Leu—Gly—Pro—Leu—
Arg—His—Val—Leu—Asp—Leu—Thr—Gln—
Ser—Lys—Ser—Phe—Gln—Leu—Glu—Asp—
Ala—Glu—Asn—Phe—Ile—Ser—Asn—Ile—
Arg—Val—Thr—Val—Val—Lys—Leu—Lys—
Gly—Ser—Asp—Asn—Thr—Phe—Glu—Cys—
Gln—Phe—Asp—Asp—Glu—Ser—Ala—Thr—
Val—Val—Asp—Phe—Leu—Arg—Arg—Trp—
Ile—Ala—Phe—Cys—Gln—Ser—Ile—Ile—
Ser—Thr—Ser—Pro—Gln.

incorporating the vector into the host; and

maintaining the host containing the vector under conditions suitable for expression of the nucleotide sequence into said polypeptide.

4,798,790

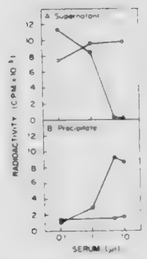
MONOCLONAL ANTIBODY SPECIFIC FOR A PIGMENTATION ASSOCIATED ANTIGEN

Timothy M. Thomson, New York; M. Jules Mattes, Flushing; Lloyd J. Old, New York, and Kenneth O. Lloyd, Bronx, all of N.Y.; Linda Roux, San Diego, Calif., assignors to Sloan-Kettering Institute, New York, N.Y.

Filed Jul. 18, 1985, Ser. No. 756,362

Int. Cl.⁴ G01N *33/53, 33/577*; C12N *5/00*; A61K *39/00*

U.S. Cl. 435—7 **9 Claims**



1. A hybridoma cell line designated TA99 and deposited with the ATCC under Accession Number HB 8704.

4,798,791

VECTOR FOR HIGH LEVEL GENE EXPRESSION

David M. Anderson, Rockville, and Jeffrey C. McGuire, Frederick, both of Md., assignors to Genex Corporation, Gaithersburg, Md.

Filed Nov. 16, 1984, Ser. No. 671,967

Int. Cl.⁴ C12P *21/00, 19/34*; C12N *5/00, 7/00*

U.S. Cl. 435—68 **23 Claims**

1. A method for expressing a gene encoding a desired protein in an *E. coli* host at elevated levels of expression, which comprises:

(a) inserting a structural gene encoding a desired protein and the trpt sequence of the *E. coli* tryptophan operon into a vector replicable in an *E. coli* host, such that said sequence is adjacent to and downstream from the translation termination codon of said structural gene;

(b) transforming said *E. coli* host with said vector; and

(c) expressing said structural gene in the thus transformed *E. coli* host.

4,798,792

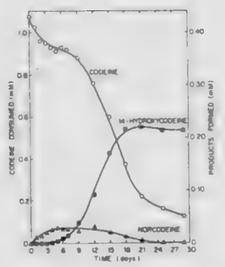
BACTERIAL HYDROXYLATION OF CODEINE

Patricia A. Harder, and Daniel A. Kunz, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 9, 1985, Ser. No. 774,026

Int. Cl.⁴ C12P *17/18*

U.S. Cl. 435—119 **15 Claims**



1. A process for preparing 14-hydroxycodeine which comprises: contacting codeine or a water-soluble salt thereof with bacteria of the genus Streptomyces for a period of at least about three days while said bacteria are being aerobically cultured in a rich medium in which the growth nutrients are supplied in excess; and recovering 14-hydroxycodeine from the medium.

4,798,793

IMMOBILIZED MUCOR MIEHEI LIPASE FOR TRANSESTERIFICATION

Peter Eigtved, Holte, Denmark, assignor to Novo Industri A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 707,792, Mar. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 646,752, Sep. 5, 1984, abandoned. This application Jul. 31, 1987, Ser. No. 80,214

Claims priority, application Denmark, Sep. 5, 1983, 4025/83

Int. Cl.⁴ C12P *7/64*; C12N *11/08, 9/20*; C12R *1/785*

U.S. Cl. 435—134 **9 Claims**

1. A method for production of an immobilized lipase preparation adapted for interesterification of fats, which comprises contacting an aqueous solution of *Mucor miehei* lipase with a particulate, macroporous, phenol-formaldehyde adsorbent resin having a particle size such that more than 90% of the resin particles have a size between 100 and 1000 µm, at a pH in range of 5–7 to bind said lipase to said resin to form said immobilized lipase whereby at least 75% of the lipase activity is removed from the aqueous lipase solution to form a spent aqueous solution, then separating the immobilized lipase from the spent aqueous solution and thereafter drying the separated immobilized lipase to a water content of between about 2 and 40%, the resulting preparation having an activity of at least 10 batch interesterification units (BIU) per gram dry basis, and at least 5000 lipase units (LU) per gram dry basis.

4,798,794

METHOD FOR MANUFACTURING DYNAMIC MEMORY CELL

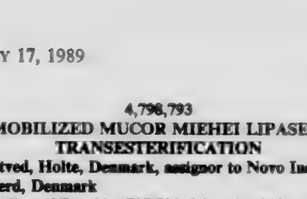
Mitsugi Ogura, and Fujio Masuoka, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 741,150, Jun. 4, 1985, Pat. No. 4,688,064. This application Jun. 2, 1987, Ser. No. 56,726

Claims priority, application Japan, Jun. 5, 1984, 59-114912; Jun. 5, 1984, 59-114913

Int. Cl.⁴ H01L *29/96*

U.S. Cl. 437—41 **10 Claims**



1. A method of manufacturing a dynamic memory cell, comprising the steps of:

forming a first semiconductor layer of a first conductivity type on a semiconductor substrate of the first conductivity type, the first semiconductor layer having an impurity concentration higher than that of said semiconductor substrate;

forming on a major surface portion of the first semiconductor layer a mask for forning at least one capacitor formation hole;

forming by use of the mask the hole in the major surface portion of the first semiconductor layer;

forming a second semiconductor layer of a second conductivity on the inner surface of the hole using as a mask the mask used for hole formation;

forming a capacitor formation insulating film on said second semiconductor layer and forming a cell insulating film on a separation area of said first semiconductor layer that insulates electrically the dynamic memory cell, the thickness of said cell insulating film being equal to or smaller than the thickness of said capacitor formation insulating film;

forming a capacitor electrode on the capacitor formation insulating film; and

forming a MOS transistor in the first semiconductor layer.

4,798,795

BIOTINYLATING AGENTS

Gerald F. Sigler, San Diego, Calif., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 15,324, Feb. 17, 1987, Pat. No. 4,709,037. This application Sep. 3, 1987, Ser. No. 92,783

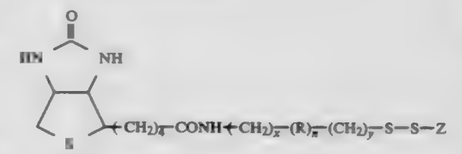
Int. Cl.⁴ C07K *15/00, 17/02, 17/06*

U.S. Cl. 435—177 **9 Claims**

1. A method of recovering a complex of target antigen and target binding biotin labeled protein from a mixture containing said target antigen, said method comprising:

providing a thiol containing binding protein for said target antigen;

preparing a biotin derivative of said thiol containing binding protein by contacting said binding protein in an aqueous buffer maintaining a pH within the range of 6 to 9 with a compound of the formula:



where x and y integers of 1 ot 5, n is 0 or 1, R is —CONH— or —CH(CO_2H)NHCO— and Z is a pyridyl group optionally substituted with one or more substituents of such type and in such position as to preserve the tautomerism of the thol-thione generated upon cleavage of the —S—S— group in an aqueous dipolar aprotic solvent;

contacting a mixture containing said target antigen with biotin derivatized binding protein to obtain a complex of target antigen and biotin derivatized binding protein;

contacting said complex with immobilized avidin to obtain avidin bound complex; and

treating said avidin bound complex with a thiol whereby said complex is released from said immobilized avidin.

4,798,796

CELL LINES AND THEIR USE FOR THE PRODUCTION PLASMINOGEN ACTIVATORS

Elaine L. Wilson, Newlands, South Africa, assignor to BIO-Response, Inc., Hayward, Calif.

Continuation of Ser. No. 754,798, Jul. 12, 1985, abandoned, which is a continuation of Ser. No. 566,467, Dec. 28, 1983, abandoned. This application Apr. 17, 1986, Ser. No. 854,729

Claims priority, application South Africa, Dec. 30, 1982, 82/9576; Jun. 22, 1983, 83/4576

Int. Cl.⁴ C12N *9/64, 9/48, 5/00*

U.S. Cl. 435—212 **10 Claims**

1. A process for producing tissue plasminogen activator, pro-tissue plasminogen activator, or mixtures thereof, comprising culturing, in a culture medium deprived of serum and exogenous macromolecular growth factors, cells of a human cell line, derived from the tissue plasminogen activator-producing human melanoma cell line Bowes, which cells are capable of reproducibly and indefinitely propagating in culture in a medium deprived of serum and exogenous macromolecular growth factors and which product tissue plasminogen activator and/or pro-tissue plasminogen activator, harvesting fluid from said culture, said isolating the activator or mixture from said harvested fluid.

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RETROVIRUS ASSOCIATED WITH LYMPHADENOPATHIES AND ADAPTED TO CONTINUOUS LINES OF LYMPHOBLASTOID B CELLS, CAPABLE OF PRODUCING RETROVIRUS CONTINUOUSLY AND PROCESS FOR THEIR PRODUCTION

Luc Montagnier, Le Plessis Robinson; Solange Chamaret, Paris, and Jacqueline Gruest, L'Hay Les Roses, all of France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 731,847, May 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 558,109, Dec. 5, 1983, abandoned, and a continuation-in-part of Ser. No. 706,562, Feb. 28, 1985, abandoned, and a continuation-in-part of Ser. No. 712,959, Mar. 18, 1985, abandoned. This application Oct. 24, 1986, Ser. No. 922,764

Claims priority, application France, May 9, 1984, 84 07151

Int. Cl.[4] **C12N** *7/00, 5/00;* **A61K** *39/00;* **C12Q** *1/70*

U.S. Cl. 435—235 **31 Claims**

1. A continuous cell line from a culture of human B lymphoblastoid cells, wherein the cells have the following characteristics:

(a) Lymphadenopathy Associated Virus (LAV) is not cytotoxic to the cells;

(b) When the cells are cultured, supernatant from the cells exhibits reverse transcriptase activity;

(c) The cells do not immunologically react with monoclonal antibodies to Leu-3 cells;

(d) When the cells are cultured in the absence of T cell growth factor (TCGF), infected cells continuously produce B-LAV retrovirus, which is a retrovirus having the essential antigenic characteristics of LAV.

19. A retrovirus termed B-LAV, which is comprised of antigen and the antigen is immunologically recognized by sera of a patient afflicted with Lymphadenopathy Syndrome (LAS) or Acquired Immune Deficiency Syndrome (AIDS), and wherein the retrovirus:

(a) exhibits reverse transcriptase activity with a strong affinity for poly(adenylate-oligodeoxy-thymidylate)[poly(A)-oligo$(dT)_{12-18}$] with Mg^{2+};

(b) exhibits tropism for T-lymphocytes;

(c) exhibits preferential tropism for Leu-3 cells;

(d) is cytopathic to Leu-3 cells infected with the retrovirus;

(e) induces the production of p25 viral protein of Lymphadenopathy Associated Virus (LAV) in T-lymphocytes infected with LAV;

(f) exhibits slight antigenic homology with the virus of infectious anemia of the horse (VAIC), in that antibody against VAIC immunoprecipitates p25 viral protein of LAV; and

(g) is capable of infecting continuous B lymphoblastoid cell lines having C.N.C.M. Deposit Accession Nos. I-300, I-301, I-302, and I-303, and of being replicated by said cell lines when cultured;

wherein the retrovirus is in biologically pure form.

4,798,798

APPARATUS FOR MONITORING A CHEMICAL PROCESS

David W. Mehnert, Lake Villa, and Robert C. Dinwoodie, Glenview, both of Ill., assignors to Kraft, Inc., Glenview, Ill.

Filed Aug. 17, 1983, Ser. No. 524,131

Int. Cl.[4] **C12M** *1/36, 1/34, 1/26, 1/12*

U.S. Cl. 435—239 **3 Claims**

1. Fermentation apparatus for conducting a microbiological fermentation in which microorganisms in an aqueous medium convert a substrate to a product and for monictoring said fermentation, comprising

reactor means for carrying out a microbiologial fermentation in which microorganisms in an aqueous medium convert a substrate to a product,

a vial comprising a circular bottom wall and an upstanding cyclindrical sidewall defining an interior region, said sidewall having an inlet port and an outiet port defining a flow path through said interior region of said vial, said inlet and outlet ports comprising spaced-apart tubular segments extending from said sidewall, said vial also having a sampling opening, said vial having an upper cylindrical neck positioned distally from said circular bottom wall and having external threads and an upper lip around said sampling opening,

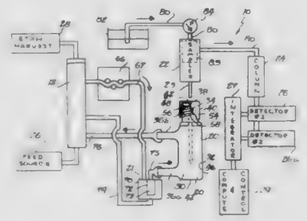
a self-sealing resilient polymeric septum closing said opening of said vial,

a cap having a cylindrical sidewall having interior threads for engaging the external threads of said vial for holding said septum in sealing relationship over said opening, and an orifice in said cap aligned with said opening,

conduct means for communicating said reactor means with said inlet port of said vial,

filter means in communication with said conduit means upstream of said vial for separating fermentation material into a first portion of clarified aqueous medium and a second portion containing cell mass, said filter means directing said first portion of clarified aqueous medium to said vial and diverting said second portion containing cell mass from said vial to said reactor means,

pump means for continuously conducting fermentation material from said reactor means and through said conduit



means to said filter means and for conducting said first portion of clarified aqueous medium through said flow path through said interior region of said vial such that said first portion of clarified aqueous medium conducted through said interior region substantially contemporaneously corresponds to the liquid portion of the fermentation material within said reactor means, and further including first return conduit means communicating said outlet port of said vial with said reactor means for returning said first portion to said reactor and wherein said pump means and said filter means include a second return conduit means for communicating said filter means with said reactor means for returning said second portion to said reactor means,

sampling means comprising a hollow sampling needle for periodically withdrawing an aliquot of said first portion from said interior region of said vial through said septum and means for aspirating the aliquot from said vial through said needle, and

HPLC analysis means for analyzing the contents of said withdrawn aliquot for multiple constituents of the clarified aqueous medium by high performance liquid chromatography.

4,798,799

PROCESS FOR PRODUCING DIOL AND FURAN AND MICROORGANISM CAPABLE OF SAME

Mohamad I. Farbood, West Windsor, and Brian J. Willis, Ramsey, both of N.J., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Continuation of Ser. No. 513,270, Jul. 13, 1983, abandoned. This application Aug. 29, 1986, Ser. No. 903,858

Int. Cl.[4] **C12N** *1/14;* **C12P** *7/18, 17/04;* **C12R** *1/645*

U.S. Cl. 435—254 **12 Claims**

1. A biologically pure culture of the microorganism *Hyphozyma roseoniger*, deposit number ATCC 20624.

4,798,800

PROCESS FOR ISOLATING HUMAN GLOBULAR DOMAIN NC1 OF BASAL MEMBRANE COLLAGEN FROM HUMAN TISSUE

Rupert Timpl, Gauting, and Dietrich Brocks, Hünfelden, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft Zur Foederung Der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Oct. 25, 1984, Ser. No. 664,538

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1984, 3410049

Int. Cl.[4] **C07K** *3/02, 3/22, 15/20*

U.S. Cl. 435—273 **7 Claims**

1. A process for isolating and purifying globular domain NC1 from basal membrane collagen comprising extracting globular domain NC1 containing tissue with guanidine hydrochloride to obtain a globular NC1 containing extract treating said extract with bacterial collagenase to degrade collagen fragments in said extract

separating the degradation products obtained from non-collagenous proteins by chromatography on a weakly basic anion exchanger,

treating the collagen degradation products a second time with collagenase at an elevated temperature and

purifying the globular domain NC1 by molecular sieve fractionation.

4,798,801

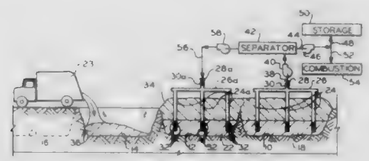
PRODUCTION OF METHANE BY ANAEROBIC FERMENTATION OF WASTE MATERIALS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 11, 1983, Ser. No. 540,952

Int. Cl.[4] **C12M** *1/04, 1/00*

U.S. Cl. 435—313 **10 Claims**



1. Apparatus for producing methane by anaerobic fermentation of waste material, comprising:

cavity means in the earth for holding a quantity of said waste material;

means for covering a quantity of said waste material in said cavity means and thereby separating said quantity of said waste material from the atmosphere;

first conduit means communicating between said waste material in said cavity means and a location remote from said cavity means for conveying gas comprising carbon dioxide and methane from said cavity means to said location;

gas separation means communicating with said first conduit means at said location for separating carbon dioxide from methane, said first conduit means including at least one pipe having a plurality of apertures therein and disposed in said cavity means extending into and in fluid flow communication with said waste material for receiving gas liberated by the anaerobic fermentation of said waste material and comprising carbon dioxide and methane,through said apertures therein for conveyance via said first conduit means to said gas separation means;

second conduit means communicating between said gas separation means and said waste material in said cavity means for conveying carbon dioxide from said gas separation means to said waste material; and

third conduit means communicating with said gas separation means for conveying methane from said gas separation means.

4,798,802

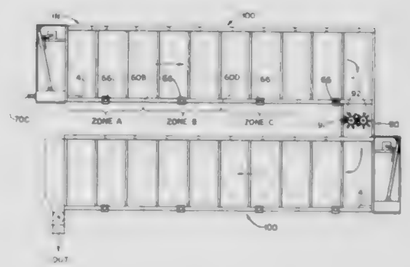
METHOD FOR ACCELERATING COMPOSTING OF ORGANIC MATTER AND COMPOSTING REACTOR THEREFOR

Richard M. Ryan, 37 Fairway Dr., Southgate, Ky. 41071

Filed Jul. 28, 1987, Ser. No. 78,567

Int. Cl.[4] **C12M** *1/00*

U.S. Cl. 435—313 **29 Claims**



1. A continuous plug-flow composting reactor for organic matter, said reactor comprising:

(a) a longitudinal hollow chamber having a floor, a pair of oppositely disposed side walls, and a top wall;

(b) said floor of said chamber further comprising a plurality of longitudinal slats slidably mounted for longitudinal reciprocation relative said side and top walls of said chamber and located in parallel relationship to one another along the longitudinal chamber;

(c) means for providing aeration gases to the interior of said chamber;

(d) means for exhausting said aeration gases from said chamber to ensure a predetermined flow of such gases through said chamber; and

(e) means for selectively longitudinally reciprocating said slats within said chamber, thereby imposing movement of organic wastes through said reactor within said longitudinal chamber without substantially compressing the organic wastes.

4,798,803

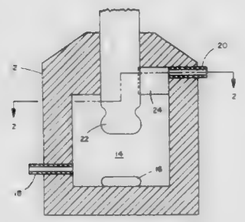
METHOD FOR TITRATION FLOW INJECTION ANALYSIS

Duane K. Wolcott; Ernest D. Graves, Jr., and David G. Hunt, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 512,797, Jul. 11, 1983, abandoned, and a continuation-in-part of Ser. No. 753,750, Jul. 10, 1985, abandoned. This application Nov. 19, 1986, Ser. No. 932,811

Int. Cl.[4] G01N *31/16*

U.S. Cl. 436—52 4 Claims



1. A method for determining the titration endpoints of at least two independent titratable species by peak width measurement flow injection analysis of a single sample, comprising the steps of:

continuously flowing a stream of carrier liquid;

introducing a multicomponent sample into the carrier stream;

flowing the sample into a mixing and detection cell at a defined carrier flow rate;

forming an exponential dilution gradient within the mixing and detection cell;

titrating with a reactant, each species of the sample mixture, in the mixing cell, to a plurality of end points;

measuring the peak width time of titrating each species to an equivalence point in the mixing chamber and calculating the concentration of each species of the sample in the mixing chamber using the multicomponent system relationship expressed as:

$$T \ln (RF_i) = t_i + T \ln C_i,$$

wherein:

$$t_i = Vm/Q[\ln(Va/Vm) - \ln C_i] + Vm/Q \ln (S\, n_i\, C_i),$$

and:

t_i are the times to titration endpoints;

V_s is the volume of the sample;

V_m is the mixing cell volume;

Q is the flow rate;

C_i are the molar concentrations of each titratable species in the sample;

n_i are the number of equivalents of each titratable species in the sample;

R is the ratio of sample volume to mixing cell volume:

T is the average cell residence time of titrant;

F_i are the sample concentration functions corresponding to the relationships between the concentrations of C_i, as controlled by the stoichiometry of the species/titrant reactions; and

C_t is the molar concentration of titrant.

4,798,804

SERUM PRETREATMENT IN DIGOXIN IMMUNOASSAY

Pyare Khanna, Fremont, and Fred Pearlman, Union City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 5, 1987, Ser. No. 10,934

Int. Cl.[4] G01N *33/00, 1/18, 33/53*

U.S. Cl. 436—94 20 Claims

1. A method for preparing a sample suspected of containing digoxin for determination of digoxin in said sample in an assay, which method comprises:

(a) contacting in a medium a sample with β-cyclodextrin in an amount and under conditions sufficient to allow a substantial portion of digoxin in said sample to bind to said β-cyclodextrin,

(b) separating β-cyclodextrin with digoxin bound thereto from at least one other component of the medium, and

(c) releasing said digoxin from said β-cyclodextrin.

4,798,805

APPARATUS AND PROCESS FOR PYROLYSIS AND ANALYSIS OF SAMPLES CONTAINING ORGANIC MATTER

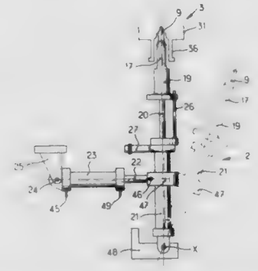
Olivier Issenmann, Lamorlaye, France, assignor to Geoservices, Societe Anonyme, Paris, France

Filed Mar. 28, 1986, Ser. No. 845,684

Claims priority, application France, Apr. 5, 1985, 85 05308

Int. Cl.[4] G01N *25/00, 31/12, 33/24*

U.S. Cl. 436—157 20 Claims



6. An apparatus for pyrolyzing and analyzing samples containing organic matter, comprising:

a flow through cartridge constructed and arranged for holding a sample therein, said cartridge including a lower end, an upper end, means defining an inlet in the lower end, and means defining an outlet in the upper end;

a casing;

heating and cooling means disposed within said casing;

supporting and transferring means disposed within said casing for removably supporting the lower end of the cartridge and transferring the upper end of the cartridge into and out of engagement with said heating means by pivoting the cartridge in a vertical plane from a loading position to a position in alignment with said heating means and moving the cartridge from a position at which the upper end of the cartridge is not in contact with the heating means to a position at which the upper end of the cartridge contacts the heating means so that the cartridge can be heated by rapid conductive heating;

carrier gas supply means for supplying a carrier gas to the inlet of the cartridge when the cartridge is supported by the supporting and transferring means;

conduit means for passage of vapors from the outlet of the cartridge when the upper end of the cartridge is held by said supporting and transferring means in contact with said heating means; and

ignition means in fluid communication with said conduit means for igniting a flame, and analysis means for analyzing the chemical composition of a combusted gas from such a flame and for recording the results of such an analysis.

4,798,806

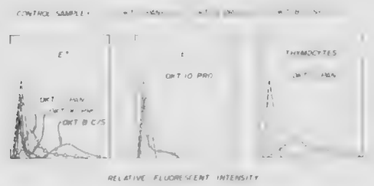
COMPOSITIONS AND METHODS USING A MONOCLONAL ANTIBODY TO A HUMAN T CELL ANTIGEN

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 432,457, Oct. 4, 1982, Pat. No. 4,614,727, which is a division of Ser. No. 110,510, Jan. 8, 1980, Pat. No. 4,364,937. This application Aug. 1, 1986, Ser. No. 892,019

Int. Cl.[4] G01N *33/54*

U.S. Cl. 436—548 7 Claims



1. A method for detection of a deficiency or excess of $OKT11^+$ cells in an individual which comprises reacting a lymphocyte composition from said individual with a diagnostically-effective amount of an antibody and measuring the percentage of the population which reacts with said antibody, wherein said antibody is a monoclonal antibody of class IgG produced by a hybridoma formed by a fusion of spleen cells from a mouse previously immunized with leukemic cells from a human with T-ALL and cells from a mouse myeloma line, which antibody:

(a) reacts with essentially all normal human peripheral T cells and with approximately 95% of normal human thymocytes, but not with normal human B cells or null cells;

(b) reacts with early, common and mature human thymocytes and with inducer and cytotoxic/suppressor human T cells, but not with human prothymocytes; and

(c) defines a T cell population which is lower than normal levels in myasthenia gravis and multiple sclerosis; higher than normal levels in acute graft versus host reaction, hyper IGE, acute infectious mononucleosis, and primary biliary cirrhosis; and completely absent in all stages of Hodgkins Disease and psoriasis.

4,798,807

MONOCLONAL ANTIBODIES AND METHOD FOR DETECTING DIOXINS AND DIBENZOFURANS

Martin Vanderlaan, San Ramon; Larry H. Stanker, and Bruce E. Watkins, both of Livermore; Nina Rogers Bailey, Berkeley, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 24, 1986, Ser. No. 877,909

Int. Cl.[4] G01N *33/53*

U.S. Cl. 436—548 2 Claims

1. Hybridomas deposited at the American Type Culture Collection under ATCC accession numbers as follows, identified as DD-1 (HB 9741); DD-3, (HB 9742); DD-4, (HB 9743); DD-5, (HB 9744); and DD-6, (HB 9745); which secrete monoclonal antibodies which bind dibenzo-p-dioxins and dibenzofurans.

4,798,808

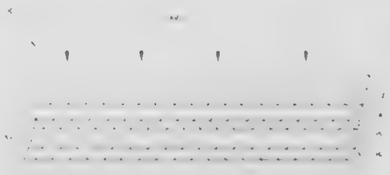
PHOTOCONDUCTIVE DEVICE COONTAINING ELECTROLESS METAL DEPOSITED CONDUCTIVE LAYER

Elliot Berman, Los Angeles, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 11, 1986, Ser. No. 838,737

Int. Cl.[4] H01L *31/18, 21/288*

U.S. Cl. 437—4 3 Claims



1. A process for the production of a photoconductive device which comprises:

applying a transparent conductive layer to a transparent insulating substrate;

applying a thin film silicon hydrogen alloy (TFS) photoconductor, the N layer of which comprises n+Si:H alloy, to said transparent conductive layer; and

applying a conductive metal layer to said N layer by immersing the resulting TFS photoconductor applied to a transparent conductive layer applied to a transparent insulating substrate in an electroless metal plating bath maintained at a pH in the range of about pH 7.5 to pH 8.5 at a temperature of about 80° to 95° Celsius for about 1 to 10 minutes, said n+Si:H alloy catalyzing the deposition of an electroless metal deposited film, and removing from said bath a photoconductive device containing a TFS photoconductor having a layer of metal of about 1,000 to 5,000 angstroms in thickness plated only upon said n+Si:H alloy.

4,798,809

PROCESS FOR PREPARING PHOTOELECTROMOTIVE FORCE MEMBER

Masaaki Hirooka, Toride; Shunichi Ishihara, Ebina; Junichi Hanna, and Isamu Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1986, Ser. No. 938,996

Claims priority, application Japan, Dec. 11, 1985, 60-277004

The portion of the term of this patent subsequent to Jun. 14, 2005, has been disclaimed.

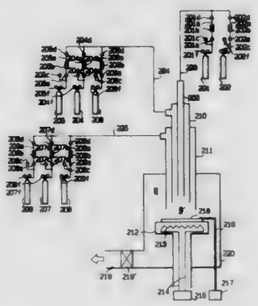
Int. Cl.[4] H01L *31/18, 21/20*

U.S. Cl. 437—4 6 Claims

1. In the process for preparing an improved photoelectric force member having a substrate having a conductive surface, a photoelectric conversion layer formed from a film of non-single crystalline semi-conductive material desposited on the conductive surface of the substrate and a conductive layer on said photoelectric conversion layer, the improvement which comprises:

(a) introducing via a first gas transportation conduit into an evacuated film-forming space having said substrate therein gaseous substance (i) capable of being a constituent for said film, but essentially incapable of contributing to the formation of said film in its original energy state; and separately through a second gas transportation conduit concentric with said first gas transportation conduit a gaseous substance (ii) capable of oxidizing the substance (i) said first and second concentric gas transportation conduits terminating adjacent said substrate;

(b) chemically contacting said gaseous substances (i) and (ii) in the absence of a plasma in the space adjacent the surface of said substrate; said substrate being maintained at an elevated temperature to generate a plurality of precursors containing excited precursors and to cause at least one of



said precursors to form the film constituting the photoelectric conversion layer; and

(c) maintaining the distance between the outlet of said first and second concentric gas transportation conduits and the surface of the substrate from 5 mm to 15 cm.

4,798,810

METHOD FOR MANUFACTURING A POWER MOS TRANSISTOR

Richard A. Blanchard, Los Altos, and Adrian Cogan, San Jose, both of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Filed Mar. 10, 1986, Ser. No. 838,217

Int. Cl.[4] H01L *21/265, 21/22*

U.S. Cl. 437—29 **19 Claims**

1. A process for manufacturing a transistor comprising the steps of:

forming a first insulating layer on a first semiconductor region, said first semiconductor region having a first conductivity type;

forming a conductive gate on said first insulating layer;

forming a second insulating layer on said conductive gate;

forming a mask above said second insulating layer and the portion of said first insulating layer not covered by said conductive gate, said mask having a first window region defining a portion of said second insulating layer and a second window region defining a portion of said first semiconductor region;

introducing impurities into said portion of said first semiconductor region defined by said second window region, thereby forming a second semiconductor region of a second conductivity type within said first semiconductor region, said second semiconductor region serving as a deep body region for said transistor;

forming a third semiconductor region of said second conductivity type within said first semiconductor region, said third semiconductor region being contiguous with said second semiconductor region;

forming a fourth semiconductor region of said first conductivity type within said third semiconductor region; and

forming an opening in said second insulating layer, said opening being defined by said first window said opening serving as a gate contact.

17. A process for manufacturing a transistor comprising the steps of:

forming an insulation layer on a first semiconductor region having a first conductivity type;

forming a conductive gate on said insulation layer;

forming a second semiconductor region having a second conductivity type within said first semiconductor region, said second semiconductor region serving as a transistor body region;

forming a third semiconductor region of said first conductivity type within said second semiconductor region;

forming a fourth semiconductor region of said second conductivity type within said first semiconductor region, said fourth semiconductor region laterally surrounding said transistor;

forming a fifth semiconductor region of said first conductivity type within said fourth semiconductor region; and;

forming a conductive layer over said fifth semiconductor region, said conductive layer being electrically connected to said first, fourth and fifth semiconductor regions, said conductive layer serving as an equipotential ring.

4,798,811

COMBINATION PREPARATION

Hans D. Lehmann, Hirschberg/Leutershausen; Rolf Kretzschmar, Gruenstadt, and Klaus-Juergen Hahn, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 917,049, Oct. 9, 1986, abandoned. This application Jan. 7, 1988, Ser. No. 141,535

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1986, 3535950

Int. Cl.[4] A61K *31/60, 31/61, /31/605, 31/615*

U.S. Cl. 514—159 **6 Claims**

1. A pharmaceutical composition for the treatment of circulatory disorders comprising a member selected from the group consisting of verapamil, gallopamil, anipamil, physiologically tolerated salts thereof and mixtures thereof and acetylsalicylic acid in the weight ratio of from 10:1 to 2:1.

4,798,812

METHOD FOR LIQUID PHASE EPITAXIAL GROWTH

Randall B. Wilson, Maplewood, N.J., assignor to Lytel Corporation, Sommerville, N.J.

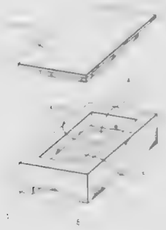
Filed Aug. 7, 1987, Ser. No. 83,649

Int. Cl.[4] H01L *21/208*

U.S. Cl. 437—119 **10 Claims**

1. A method of fabricating a solid state electronic device which includes a layer comprising chemically bound phosphorus and arsenic, said method including the step of exposing said device to a temperature and for a time to produce liquid phase epitaxial growth, said step being carried out in the presence of

first and second melts of phosphorus and arsenic in a manner to provide a partial pressure of phosphorus and arsenic respec-



tively to reduce the loss of phosphorus and arsenic from said layer during said step.

4,798,813

CATALYST FOR REMOVING NITROGEN OXIDE AND PROCESS FOR PRODUCING THE CATALYST

Yasuyoshi Kato; Kunihiko Kouishi; Toshiaki Matsuda; Meiji Ito; Taiji Kamiguchi; Nobue Teshima, and Hiroshi Akama, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1987, Ser. No. 69,305

Claims priority, application Japan, Jul. 4, 1986, 61-157448; Oct. 9, 1986, 61-240894; Nov. 14, 1986, 61-271533

Int. Cl.[4] B01J *21/06, 23/72, 29/04, 29/18*

U.S. Cl. 502—60 **14 Claims**

1. A catalyst for removing nitrogen oxides from exhaust gases comprising titania having a surface area of 20 m^2/g or less and a zeolite having between about 0.01 to about 20% by weight of copper supported thereon, wherein said zeolite has an average pore diameter of 10 Å or less and a silica/alumina molar ratio of 10 or more.

4,798,814

OXIDATION RESISTANT ALUMINA-SILICA ARTICLES CONTAINING SILICON CARBIDE AND CARBON

George F. Everitt; Terence P. Johnson, and Lien-Huong A. Pham, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 912,829, Sep. 26, 1986. This application Aug. 24, 1987, Ser. No. 88,903

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[4] C04B *35/56*

U.S. Cl. 501—89 **22 Claims**

1. A shaped article comprising a continuous alumina-silica or alumina-boria-silica matrix first phase, an in-situ generated discontinuous carbon second phase, and a discontinuous silicon carbide third phase, said article being stable to an oxidative atmosphere when heated at 1300° C. for at least 2 hours.

4,798,815

NESTED CERAMIC FIBERS AND PIGGYBACK MICRO-MOLD METHOD FOR PRODUCING SAME

Charles C. Fain, Clemson, S.C., assignor to Clemson University, Clemson, S.C.

Division of Ser. No. 004,617, Jan. 20, 1987. This application Sep. 23, 1987, Ser. No. 100,298

Int. Cl.[4] D02G *3/00;* **C04B** *35/02*

U.S. Cl. 428—373 **14 Claims**

1. A piggyback method of forming a dual fiber consisting essentially of a ceramic fiber and a micro-mold carrier fiber being a fiber other than a ceramic fiber and to which a wet chemical precursor adheres, by starting with a wet chemical precursor including a metal oxide and being capable of being sintered to form a ceramic material, and an elongated micro-mold carrier fiber having an elongated cavity therein defining a non-circular transverse cross-sectional perimeter, the method consisting essentially of the steps of:

wetting the cavity of the micro-mold carrier fiber with the wet chemical precursor;

setting the wet chemical precursor in the cavity of the carrier fiber until the wet chemical precursor nests in the cavity of the carrier fiber;

placing the carrier fiber with the nested chemical precursor into an oxygen-free environment;

heating the carrier fiber with the nested chemical precursor in the oxygen-free environment to a temperature sufficient to sinter the nested chemical precursor into a ceramic fiber.

4,798,816

PROCESS FOR INCREASING THE SELECTIVITY OF AN ALKYLATION CATALYST FOR MONOALKYLATION

Charles T. Ratcliffe, La Habra, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 19, 1986, Ser. No. 943,911

Int. Cl.[4] B01J *29/06, 29/02*

U.S. Cl. 502—62 **38 Claims**

34. A process for treating an alkylation catalyst comprising a molecular sieve having catalytic acitivity for alkylation and a porous, inorganic refractory oxide, said alkylation catalyst being substantially devoid of hydrogenation metal components, to increase the selectivity of said alkylation catalyst for monoalkylation by at least about 1.0 percentage point, the alkylation activity of said catalyst having been suppressed by the deposition of carbonaceous material thereon to form carbon-containing catalyst particles, which process comprises:

(a) contacting said carbon-containing catalyst particles with a gaseous oxidizing agent comprising between about 0.05 and about 5.0 volume percent oxygen at a temperature between about 750° F. and about 1100° F. to remove a portion of said carbonaceous material and produce a first set of catalyst particles having a reduced carbon content;

(b) increasing the oxygen content of said gaseous oxidizing agent by at least about 0.05 percentage point;

(c) contacting said first set of catalyst particles having a reduced carbon content with said gaseous oxidizing agent of increased oxygen content at about the temperature utilized in step (a) to remove a further portion of said carbonaceous material and produce a second set of catalyst particles having a reduced carbon content as compared with said first set of catalyst particles; and

(d) contacting said second set of catalyst particles with said gaseous oxidizing agent at a temperature between about 850° F. and about 1200° F. that is higher than the temperature used in step (a) while maintaining the oxygen concentration in said gaseous oxidizing agent at about the value used in step (c) until substantially all of said carbonaceous material is removed from said catalyst particles.

4,798,817

SELECTIVE CATALYTIC REDUCTION CATALYST CONSISTING OF IRON SULFATE, CERIA AND ALUMINA

E. Robert Becker, and Hyun J. Jung, both of Wayne, Pa., assignors to Johnson Matthey, Inc., Malvern, Pa.

Division of Ser. No. 874,153, Jun. 13, 1986, Pat. No. 4,695,438. This application Jun. 30, 1987, Ser. No. 69,696

Int. Cl.[4] B01J *27/053, 23/10;* **C01B** *21/00*

U.S. Cl. 502—217 **4 Claims**

1. A catalyst consisting essentially of iron sulfate carried by a mixture of ceria and alumina on a support, the ceria comprising from 2–60% by weight of said mixture and the iron sulfate comprising from 0.5–50% by weight of said mixture.

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4,798,818

CATALYST COMPOSITION AND PROCESS FOR ITS PREPARATION

William X. Bainer; Robert L. Bixler, Jr.; Michael D. Meddaugh, all of Midland, and Antony P. Wright, Mills Township, Gladwin County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 27, 1987, Ser. No. 125,901
Int. Cl.[4] B01J *27/12, 27/128, 27/132, 27/135*
U.S. Cl. 502—228 18 Claims

1. A process for preparing a catalyst, said process comprising

(A) providing aluminum fluoride, said aluminum fluoride having been prepared at a temperature less than about 500° C.;

(B) mechanically mixing, without water, the aluminum fluoride with a transition metal compound selected from a group consisting of compounds of cobalt, chromium, iron, manganese, nickel, titanium, and vanadium; and

(C) contacting the mechanical mixture of aluminum fluoride and the transition metal compound with sufficient gaseous anhydrous hydrogen fluoride to convert the transition metal compound to a transition metal fluoride, said mechanical mixture being heated to a temperature greater than about 150° C. in the presence of anhydrous hydrogen fluoride.

4,798,819

CATALYST FOR CONTROL OF EMISSION OF SULFUR OXIDES

Paul H. Lewis, Groves; Eugene P. Dai, Port Arthur, and Edward H. Holst, Nederland, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 750,213, Jul. 1, 1985, Pat. No. 4,626,419.
This application Mar. 28, 1986, Ser. No. 845,721
The portion of the term of this patent subsequent to May 26, 2004, has been disclaimed.
Int. Cl.[4] B01J *21/04, 23/10, 23/16, 23/26*
U.S. Cl. 502—304 7 Claims

1. A composition of matter comprising a porous refractory support bearing as a first component (i) at least one compound containing bismuth, chromium, or a rare earth, said first component being in the form of crystals of oxide of crystal size less than about 90 Angstrom Units, and as second component (ii) at least one alkali metal.

4,798,820

THERMOSENSITIVE RECORDING MATERIAL

Hiroshi Yaguchi, and Hiroshi Sakamoto, both of Numazu, Japan, assignors to Ricoh Company Ltd., Tokyo, Japan

Filed Jul. 30, 1986, Ser. No. 890,554
Claims priority, application Japan, Aug. 10, 1985, 60-176382
Int. Cl.[4] B41M *5/26*
U.S. Cl. 503—207 14 Claims

1. A thermosensitive recording material capable of yielding images thereon by image-wise application of heat thereto comprising:

(a) a support material;

(b) a plurality of undercoat layers overlaid on said support material, each undercoat layer being different and being selected from the group consisting of an undercoat layer (A) comprising a finely-divided filler having an average particle size of 5 μm or less, and a binder agent, and an undercoat layer (B) comprising a wax or wax-like material which can be plastically formed when pressure is applied thereto, and a binder agent; and

(c) a thermosensitive recording layer formed on said undercoat layer, said thermosensitive recording layer comprising one or more leuco dyes and a color developer capable of inducing color formation in said leuco dye when heat is applied thereto.

4,798,821

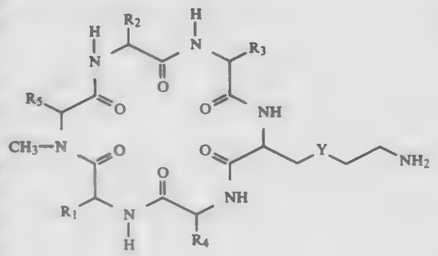
ANTIHYPERTENSIVE THERAPY FOR DIABETICS

John F. Hartmann, Princeton Junction, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

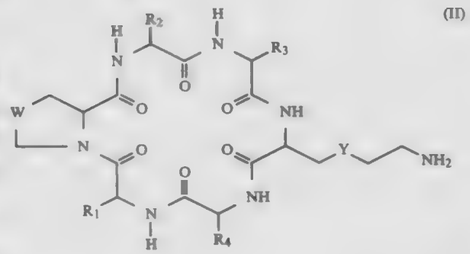
Filed Mar. 2, 1987, Ser. No. 20,611
Int. Cl.[4] A61K *37/02*; C07K *7/26*
U.S. Cl. 514—9 7 Claims

1. A method for reducing blood pressure in diabetic patients comprising administering to a diabetic suffering from elevated blood pressure, an antihypertensive amount of a cyclopeptide compound represented by the formula.

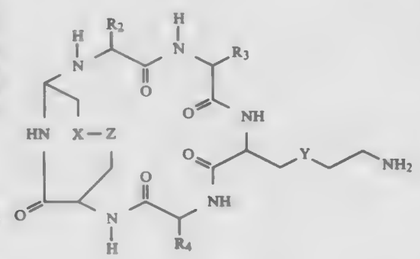
(I)



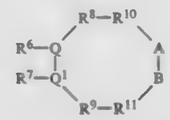
(II)



(III)



(IV)



and the pharmaceutically acceptable salts thereof, wherein in Formulas I, II and III

Y is $(CH_2)_m$ wherein m is 0, 1 or 2, or sulfur

W is $(CH_2)_n$ wherein n is 0, 1 or 2, or sulfur;

X and Z are independently sulfur or CH_2 provided that at least one of X or Z is sulfur

R_1 and R_2 are independently lower alkyl, benzyl, substituted benzyl wherein the substituent may be one or two of lower alkyl, halogen, hydroxy, amino, nitro or lower alkoxy; and lower alkyl substituted with a 5- or 6-membered heterocyclic ring with 1 or 2 hetero atoms selected from oxygen, nitrogen, and sulfur;

R_3 is 3-indolylmethyl or substituted 3-indolylmethyl

wherein the substituent may be lower alkyl, lower alkoxy or halogen;

R_4 is lower alkyl, hydroxy-lower-alkyl, benzyl, carboxy-lower-alkyl, amino-lower-alkyl or substituted benzyl wherein the substituent may be lower alkyl, lower alkoxy, hydroxy, halogen, amino or nitro; and

R_5 is hydrogen, lower alkyl, benzyl, or substituted benzyl wherein the substituent is lower alkyl, lower alkoxy, hydroxy, halogen, amino or nitro;

in Formula IV

A is (D)-Trp

B is Lys

Q is Cys or Asn; and

Q^1 is Cys or when Q is Asn and R^6 and R^7 are absent is Gaba

R^6 is (D)-Phe, $CH_3(CH_2)_8CO$(D)Phe, or is absent;

R^7 is Thr or is absent or is NH_2, (D)Ser(NH_2), (D)Thr(NH_2), Ser(ol), Phe(ol), (D)Thr(ol), or Thr(ol);

R^8 and R^9 are independently Phe or is absent;

R^{10} is Phe or Thyr; and

R^{11} is Val or Thr;

wherein

Trp is a residue of tryptophan

Lys is a residue of lysine

Cys is a residue of cysteine

Asn is a residue of asparagine

Gaba is a residue of α-aminobutyric acid

Phe is a residue of phenylalanine

Thr is a residue of threonine

Thr(ol) is a residue of threoninol

Ser is a residue of serine

Tyr is a residue of tyrosine

Val is a residue of valine

and (ol) and (NH_2) refer to the alcohol or amine corresponding to the amino acid.

4,798,822

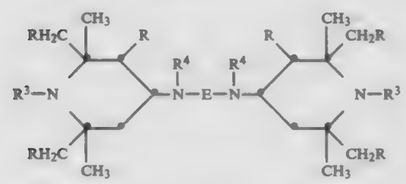
SELECTED 3,9-DI(2,2,6,6-TETRAMETHYL-4-PIPERIDYL)-2,4,8,10-TETRAOXA-3,9-DIPHOSPHASPIRO [5,5]UNDECANES

Michael Rasberger, Riehen; Peter Hofmann, Basle; Hans R. Meier, and Paul Dubs, both of Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 702,994, Feb. 19, 1985. This application Jan. 29, 1987, Ser. No. 8,433
Claims priority, application Switzerland, Feb. 29, 1984, 964/84
Int. Cl.[4] C07F *9/65*
U.S. Cl. 546—15 3 Claims

1. A compound of formula II

II



wherein

E is a divalent group of formula III

III

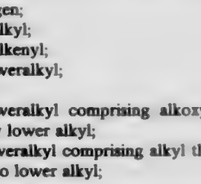


R is hydrogen or methyl,

R^3 is hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, C_7–C_9-aralkyl, C_2–C_{12}-alkanoyl, C_3–C_6-alkenoyl, benzoyl or cyanomethyl, and

R^4 is C_1–C_{20}-alkyl, C_3–C_{14}-alkoxyalkyl, C_4–C_{12}-dialkylaminoalkyl, C_7–C_9-aralkyl, C_6–C_{10}-aryl, C_7–C_{20}-alkaryl, C_5–C_{12}-cycloalkyl or a group of formula IV

IV



where R^1 is hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, C_7–C_9-aralkyl, C_2–C_{12}-alkanoyl, C_{13}–C_6-alkenoyl, benzoyl or cyanomethyl.

4,798,823

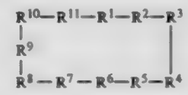
NEW CYCLOSPORIN ANALOGS WITH MODIFIED "C-9 AMINO ACIDS"

Bruce E. Witzel, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

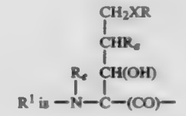
Filed Jun. 3, 1987, Ser. No. 57,196
Int. Cl.[4] A61K *37/02*; C07K *5/12*
U.S. Cl. 514—11 19 Claims

1. A compound of formula

I



wherein



where X, R, R_d and R_e are as defined below;

R is

(1) hydrogen;

(2) loweralkyl;

(3) loweralkenyl;

(4) haloloweralkyl;

(5) aryl;

(6) oxyloweralkyl comprising alkoxy lower alkyl and hydroxy lower alkyl;

(7) thioloweralkyl comprising alkyl thio lower alkyl and mercapto lower alkyl;

(8) heteroaryl;

the aryl or hetoroaryl group can be substituted with one or more functional groups selected from a group consisting of

(a) C_{1-6} alkyl,

(b) C_{1-6} alkanoyl;

(c) C_{1-6} haloalkyl;

(d) halo;

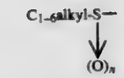
(e) cyano;

(f) hydroxy C_{1-3} alkyl;

(g) C_{1-6} alkoxy;

(h)

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where n is 0, 1 or 2;

(i) —NR_bCOR_c wherein R_b and R_c independently are H or C_{1-6} alkyl;
(j) —NO_2;
(k) —NR_bR_c;
(l) —OR_b;
(m) —$CONR_bR_c$
(n) —COR_b;
(o) —$NR_bCONR_bR_c$;
(p) —NR_bCOR_c;
(q) —$OCOR_b$;
(r) —$SCOR_b$; or
(s) —OCH_2O—; and

x is S, SO, SO_2, or NR_6.
R_a is loweralkyl;
R_e is loweralkyl; loweralkylphenyl; or aryl;
R^2 is L-2-aminobutyryl; norvalyl; L-threonyl; or R^1;
R^3 is sarcosyl; α-(methylmercapto)-sarcosyl; N-methyl-D-alanyl; N-methyl-L-alanyl; or D-prolyl;
R^4 is N-methyl-L-leucyl;
R^5 is L-valyl; or norvalyl;
R^6 is N-methyl-L-leucyl;
R^7 is L-analyl; L-2-aminobutyryl; or L-phenylalanyl;
R^8 is D-alanyl or L-alanyl;
R^9 is N-methyl-L-leucyl; or N-methyl-L-valyl;
R^{10} is N-methyl-L-leucyl; or L-leucyl; and
R^{11} is N-methyl-L-valyl; L-valyl; N-methylleucyl; or L-2-aminobutyryl.

4,798,824

PERFUSATE FOR THE PRESERVATION OF ORGANS

Folkert O. Belzer, and James H. Southard, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 3, 1985, Ser. No. 784,435
Int. Cl.[4] A61K *31/715, 37/26*
U.S. Cl. 514—60 **8 Claims**

1. A perfusate for the preservation of organs intended for implantation in a patient requiring such implantation, including:

5% hydroxyethyl starch having a molecular weight of from about 200,000 to about 300,000
25mM KH_2PO_4
3mM glutathione
5mM adenosine
10mM glucose
10mM HEPES buffer
5mM magnesium gluconate
1.5mM $CaCl_2$
105mM sodium gluconate
200,000 units penicillin
40 units insulin
16mg Dexamethasone
12mg Phenol Red
pH 7.4–7.5

wherein the hdroxyethyl starch is substantially free of ethylene glycol, ethylene chlorohydrin, sodium chloride and acetone; and the perfusate has an osmolality of about 320 mOSm/1.

4,798,825

PYRETHRUM STABILIZATION BY INACTIVATION OF NATURAL ACETYLENIC IMPURITIES

April J. Evans, Glen Ellyn, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 639,118, Aug. 9, 1984, abandoned. This application Sep. 21, 1987, Ser. No. 98,849
Int. Cl.[4] A01N *65/00*
U.S. Cl. 514—65 **12 Claims**

1. A composition comprising: a mixture of naturally occurring pyrethroid substances and derivatives of naturally occurring polyacetylenic substances wherein said derivatives of polyacetylenic substances are formed by substantially inactivating the acetylenic functional groups to promote the stability of the pyrethroid substances.

4,798,826

BENZODIAZEPINE TRANQUILIZER COMBINATIONS AND THE USE THEREOF

Anthony W. Peck, Bromley, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 644,145, Aug. 24, 1984, Pat. No. 4,571,395, and a continuation of Ser. No. 226,256, Jan. 19, 1981, abandoned. This application Nov. 6, 1985, Ser. No. 795,612
Claims priority, application United Kingdom, Jan. 21, 1980, 8001910
Int. Cl.[4] A61K *31/54, 31/135*
U.S. Cl. 514—221 **5 Claims**

1. A method for the treatment in humans of mixed anxiety and depression comprising the concomitant administration to a human of an effective anxiety treatment amount of a drowsiness-inducing benzodiazepine tranquillizer and m-chloro-α-t-butylamino propiophenone or a pharmaceutically acceptable salt thereof in an amount sufficient to prevent drowsiness caused by the tranquillizer, wherein the benzodiazepine tranquillizer is bromazepam; chlordiazepoxide and pharmacologically and pharmaceutically acceptable salts thereof; chlorazepate and pharmacologically and pharmaceutically acceptable salts thereof; diazepam; medazepam and pharmacologically and pharmaceutically acceptable salts thereof; oxazepam; or prazepam.

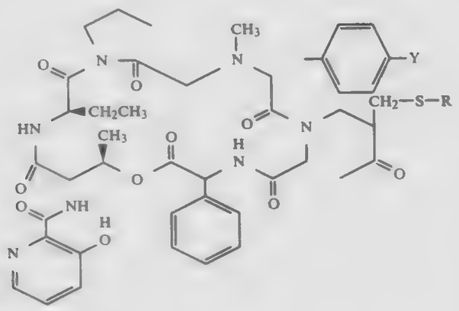
4,798,827

SYNERGISTIN DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS WHICH CONTAIN THEM

Jean-Claude Barriere, Massy; Claude Cotrel, Paris, and Jean-Marc Paris, Vaires sur Marne, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed May 21, 1987, Ser. No. 52,371
Claims priority, application France, May 22, 1986, 86 07270
Int. Cl.[4] A61K *37/02, 31/42;* **C07K** *5/12;* **C07D** *498/14*
U.S. Cl. 514—183 **7 Claims**

1. A synergistin of the formula:



in which Y is hydrogen or dimethylamino and R is 3- or 4-quinclidinyl, in the form of an isomer or a mixture thereof, and its pharmaceutically acceptable salts.

6. A pharmaceutical composition useful in the treatment of infections of bacterial origin which contains an effective amount of at least one synergistin as claimed in claim 1, in combination with one or more diluents or adjuvants which are compatible therewith and pharmaceutically acceptable.

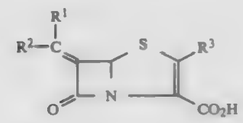
4,798,828

HETEROCYCLIC-METHYLENE-PENEMS

Neal F. Osborne, Rusper, England, assignor to Beecham Group p.l.c., Middlesex, England

Filed Jan. 24, 1985, Ser. No. 694,607
Claims priority, application United Kingdom, Jan. 26, 1984, 8402085; Jul. 11, 1984, 8417659; Oct. 12, 1984, 8425889
Int. Cl.[4] C07D *499/00;* **A61K** *31/425*
U.S. Cl. 514—192 **40 Claims**

1. A compond of formula I:



I

or a pharmaceutically acceptable salt or in vivo hydrolysable ester thereof in which

one of R^1 and R^2 is hydrogen,

the other of R^1 and R^2 is a unsubstituted or substituted five-membered hetero-aromatic ring bonded through a carbon atom thereof and having oen hetero-atom selected from nitrogen, oxygen and sulphur and additionally having from one to three nitrogen atoms, wherein one or more substituents are (a)(C_{1-6})alkanoyl, (b) (C_{1-6})alkanoyloxy, (c) heterocyclyl, (d) amino, (e) (C_{1-6})alkanoylamino, (f) (mono or di)-(C_{1-6})alkylamino, (g) hydroxy, (h) (C_{1-6})alkoxy, (i)sulpho, (j)mercapto, (k) (C_{1-6})alkylthio, (l)(C_{1-6})alkylsulphinyl, (m) (C_{1-6})alkylsulphonyl, (n) heterocyclylthio, (o) arylthio, (p) sulphamoyl, (g) carbamoyl, (r) amidino, (s) guanidino, (t) nitro, (u) halogen, (v) carboxy, (w) pharmaceutically acceptable carboxy salts, (x) pharmaceutically acceptable carboxy esters, (y)arylcarbonyl or (z) heterocyclylcarbonyl groups, and (aa)unsubstituted or substituted (C_{1-6})alkyl, (C_{2-6})alkenyl, (C_{2-6})alkynyl, aryl, and aryl(C_{1-6})alkyl groups, wherein one or more substitutents for said (aa) groups are (C_{1-6})alkanoyl, (C_{1-6})alkanoyloxy, heterocyclyl, amino, (C_{1-6})alkanoylamino, (mono or di)-(c_{1-6})alkylamino, hydroxy, (C_{1-6})alkylsulphinyl, (C_{1-6})alkysulphonyl, heterocyclylthio, arylthio, suphamoyl, carbamoyl, amidino, guanidino, nitro, halogen, carboxy pharmaceutically acceptable carboxy salts, pharmaceutically acceptable carboxy esters, arylcarbonyl or heterocyclylcarbonyl groups, and

R_3 is hydrogen, (C_{1-10})alkyl or (C_{1-10})alkylthio, or substituted (C_{1-10})alkyl or substituted (C_{1-10})-alkylthio, wherein the substituent is hydroxy, (C_{1-6})alkoxy, (C_{1-6})alkanoyloxy, halogen, mercapto, (C_{1-6})alkylthio, heterocyclylthio, amino, (mono or di)-(C_{1-6})alkylamino, (C_{1-6})alkanoylamino, carboxy, or (C_{1-6})alkoxycarbonyl,

wherein heterocyclyl is aromatic or non-aromatic, having single or fused, rings having up to four hetero-atoms in each ring selected form oxygen, nitrogen and sulphur which rings are unsubstituted or substituted by up to three groups selected from halogen, (C_{1-6})alkyl, (C_{1-6})alkoxy, halo(C_{1-6})alkyl, hydroxy, amino, carboxy, (C_{1-6})alkoxycarbonyl, (C_{1-6})alkoxycarbonyl(C_{1-6})alkyl, aryl, (C_{1-6})alkylthio, arylthio, mercapto and oxo groups, and said aryl is phenyl or naphthyl, wherein each is unsubstituted or substituted by to give groups seleicted form halogen, (C_{1-6})alkyl, phenyl, (C_{1-6})alkoxy, halo(C_{1-6})alkyl, hydroxy, amino, nitro, carboxy, (C_{1-6})alkoxycarobnyl, (C_{1-6})alkoxycarbonyl(C_{1-6})alkyl, (C_{1-6})alkylcarbonyloxy, (C_{1-6})alkylcarbonyl, (C_{1-6})alkylthio, arylthio and mercapto groups.

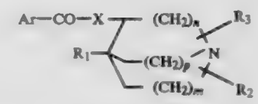
4,798,829

1-AZABICYCLO[3,2,2]NONANE DERIVATIVES HAVING 5-HT RECEPTOR ANTAGONIST ACTIVITY

Francis D. King, and Karen A. Jotner, both of Harlow, England, assignors to Beecham Group plc., Brentford, Middlesex, England

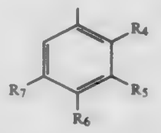
Filed Aug. 14, 1986, Ser. No. 896,664
Claims priority, application United Kingdom, Aug. 16, 1985, 8520616
Int. Cl.[4] A61K *31/55;* **C07D** *487/08*
U.S. Cl. 514—214 **13 Claims**

1. A compound of frmula (I) or a pharmaceutically acceptable salt thereof:



(I)

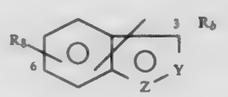
wherein:
n is 2 and m and p are both 1
X is NH; or O when Ar is of formula (a) and R_4 is hydrogen or when Ar is a group of formula (b);
R_1, R_2 and R_3 are independently hydrogen, C_{1-6} alkyl, phenyl or phenyl-C_{1-6} alkyl, which phenyl moieties may be substituted by C_{1-6} alkyl, C_{1-6} alkoxy or halogen;
Ar is a group of formula (a):



(a)

wherein either R_4 is C_{1-6} alkoxy and one of R_5, R_6 and R_7 is hydrogen and the other two are selected from hydrogen, halogen, CF_3, C_{1-6} alkylthio, C_{1-7} acyl, C_{1-10} carboxylic acylamino, C_{1-6} alkyl S(O)n wherein n is 0, 1 or 2, nitro or amino, aminocarbonyl or aminosulphonyl optionally substituted by one or two groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl C_{1-4} alkyl or phenyl C_{1-4} alkyl groups any of which phenyl moieties may be substituted by one or two groups selected from halogen, CF_3, C_{1-6} alkyl or C_{1-6} alkoxy; or R_4 is hydrogen and R_5, R_6 and R_7 are independently selected from hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio or halo; or any two on adjacent carbon atoms together are C_{1-2} alkylenedioxy and the third is hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy or halo;

or Ar is a group of formula (b):



(b)

wherein

Z is CH_2, O, S or NR_9 wherein R_9 is hydrogen, C_{1-6} alkyl, C_{2-7} alkenyl, phenyl or phenyl C_{1-4} alkyl either of which phenyl moieties may be substituted by one or two of halogen, CF_3, C_{1-6} alkoxy or C_{1-6} alkyl; and Y is CH or N; or Z is CH or N and Y is NR_a or CHR_a where R_a is as defined for R_9 above;

R_b is present when the COX linkage is attached at the phenyl ring, and is selected from hydrogen, halogen, CF_3, hy-

droxy, C_{1-6} alkoxy or C_{1-6} alkyl; R_8 is hydrogen, CF_3, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{1-7} acyl, C_{1-7} acylamino, C_{1-6} alkylsulphonylamino, N-(C_{1-6} alkylsulphonyl)-N-C_{1-4} alkylamino, C_{1-6} alkylsulphinyl, hydroxy, nitro or amino, aminocarbonyl, aminosulphonyl, aminosulphonylamino or N-(aminosulphonyl)-C_{1-4} alkylamino optionally N-substituted by one or two groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl C_{1-4} alkyl, phenyl or phenyl C_{1-4} alkenyl groups or optionally N-disubstituted by C_{4-5} polymethylene.

4,798,830

PLATELET AGGREGATION INHIBITORY AGENTS AND INTERMEDIATES THEREFOR

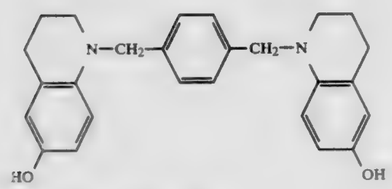
Andrew Lasslo, Memphis; Ronald P. Quintana, Germantown; Marion Dugdale, and Randy W. Johnson, both of Memphis, all of Tenn., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 571,326, Mar. 5, 1984, Pat. No. 4,634,209, which is a division of Ser. No. 368,863, Apr. 15, 1982, Pat. No. 4,443,450. This application Sep. 18, 1986, Ser. No. 909,135

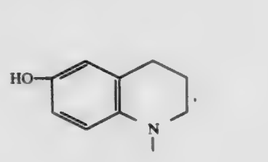
Int. Cl.[4] C07D *401/10, 215/20*; A61K *31/47*

U.S. Cl. 514—314 **7 Claims**

1. A compound having the structural formula:



(A)



(B)

wherein

R_4 is

R_5 is H or R_4,

n=4 or 8 when R_5 is H, and

n=8 when R_5 is R_4;

(C) Addition salts thereof with pharmaceutically acceptable acids.

2. A method for the inhibition of blood platelet aggregation comprising administering to an animal in need thereof a blood platelet aggregation inhibiting amount of a compound of claim 1.

4,798,831

5SUBSTITUTED THIENO[2,3-B]FURAN-2-SULFONAMIDES AS ANTIGLAUCOMA AGENTS

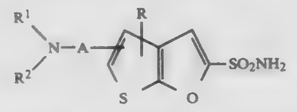
John D. Prugh, Chalfont; George D. Hartman, Lansdale, and Wasyl Halczenko, Hatfield, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 162,545, Mar. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 97,003, Sep. 16, 1987, abandoned. This application May 4, 1988, Ser. No. 190,183

Int. Cl.[4] A61K *31/38*; C07D *495/02, 403/00, 421/00*

U.S. Cl. 514—253 **14 Claims**

1. A compound of structural formula:



or pharmaceutically acceptable salt thereof wherein

A is C_{1-8} alkylene, either straight or branched chain and either unsubstituted or substituted with C_{1-3} alkoxy or hydroxy; and

R is hydrogen or C_{1-6} alkyl either straight or branched chain;

R^1 and R^2 are independently:

(1) hydrogen,

(2) C_{1-6} alkyl, either unsubstituted or substituted with one or more of

(a) C_{1-3} alkoxy,

(b) C_{1-3}alkoxy-C_{2-4}alkoxy,

(c) hydroxy,

(d) phenyl, or

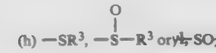
(e) halo,

(f) pyridyl, pyrimidinyl, pyazinyl or imidazolyl, or

(g) $-NR^3R^4$ wherein R^3 and R^4 are independently selected from

(i) hydrogen and

(ii) C_{1-6} alkyl, either unsubstituted or substituted with one or more of C_{1-3} alkoxy, hydroxy or phenyl, or



(h) $-SR^3$, $-S-R^3$ or $-SO_2R^3$;

(3) taken together with the nitrogen atom to which they are attached form a 5 to 7-membered heterocycle.

4,798,832

PYRIDO[1,2-A]PYRIMIDINE COMPOUNDS, CORRESPONDING INTERMEDIATES AND USE AS SRS-A ANTAGONISTS

Naoto Matsuishi, Kawaguchi; Yoshio Nakagawa, Kasukabe; Michiaki Amano, Koganei; Norihiko Kakehi, Yokohama; Toshio Kawashima, Washimiya, and Shigeki Omura, Tokyo, all of Japan, assignors to Tokyo Tanabe Company, Limited, Japan

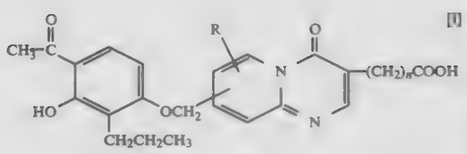
Filed Apr. 13, 1987, Ser. No. 37,786

Claims priority, application Japan, Apr. 16, 1986, 61-86034

Int. Cl.[4] C07D *471/04*; A61K *31/505*

U.S. Cl. 514—258 **45 Claims**

1. A pyrido[1,2-a]pyrimidine compound of the formula



[I]

where R is a hydrogen atom, a halogen atom or methyl group, and n is 0, 1 or 2, or a physiologically acceptable salt thereof.

4,798,833

GUANINE DERIVATIVE

Karl N. Johansson, Enhörna; Björn G. Lindborg, Södertälje, and Jan-Olof Norén, Grödinge, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sweden

Continuation of Ser. No. 681,313, Dec. 13, 1984, abandoned. This application Feb. 6, 1987, Ser. No. 15,481

Claims priority, application Sweden, Dec. 20, 1983, 8307051; Dec. 20, 1983, 8307052

Int. Cl.[4] C07D *473/18*; A61K *31/52*

U.S. Cl. 514—262 **3 Claims**

1. A compound having the formula 9-[4-hydroxy-2-(hydroxymethyl)butyl]guanine or a physiologically acceptable salt or an optical thereof.

4,798,834

OPTIONALLY SUBSTITUTED (3β-9,10-DIDEHYDRO-2,3-DIHYDRO ERGOLINE AS SEROTONERGIC FUNCTION ENHANCEMENT

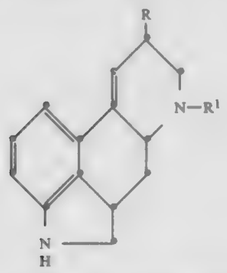
Leander Merritt, and John S. Ward, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 31, 1987, Ser. No. 91,462

Int. Cl.[4] A61K *31/48*; C07D *457/00*

U.S. Cl. 514—288 **27 Claims**

1. A method of enhancing serotonergic function in the nervous system of a mammal in need thereof comprising administering to said mammal a therapeutically effective amount of a compound of the formula:



(I)

wherein R is methyl, hydroxymethyl, methylene, methylthiomethyl, phenylthiomethyl, pyridylthiomethyl, cyanomethyl and methoxycarbonyl; and R^1 is methyl, ethyl or n-propyl.

27. The compound (3β)-2,3-dihydrolysergine.

4,798,835

DL-5-[(2-BENZYL-3,4-DIHYDRO-2H-BENZOPYRAN-6-YL)METHYL]THIAZOLIDINE-2,4-DIONE AS AN ANTI-ATHEROSCLEROSIS AGENT

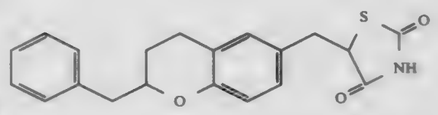
Michael N. Krupp, Old Saybrook, and Archie C. Swindell, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 2, 1987, Ser. No. 127,858

Int. Cl.[4] A61K *31/425*

U.S. Cl. 514—369 **5 Claims**

1. A method for lowering serum cholesterol levels in a mammal in need thereof which comprises administering to said mammal a serum cholesterol level lowering amount of a compound of the formula



(I)

or a pharmaceutically acceptable cationic salt thereof.

4,798,836

BIS-(2,2,6,6-TETRAMETHYL-PIPERIDYL) DIIMIDES AS LIGHT STABILIZERS FOR SYNTHETIC POLYMERS

Motonobu Minagawa, Koshigaya; Yutaka Nakahara, Okegawa; Bunji Hirai, Kuki, and Kazuo Sagibuchi, Tokyo, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

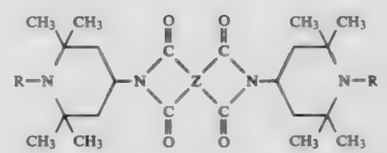
Filed Oct. 26, 1987, Ser. No. 113,296

Int. Cl.[4] C08K *5/34*; C07D *401/04*

U.S. Cl. 524—89 **16 Claims**

1. Bis-(2,2,6,6-tetramethyl-piperidyl)diimides having the formula:

I



in which R is selected from the group consisting of hydrogen; oxyl; alkyl and alkenyl having from one to about eighteen carbon atoms; epoxy and hydroxyalkyl having from two to about eight carbon atoms; acyl having from two to about eight carbon atoms; and phenalkyl having from seven to about twelve carbon atoms; and Z is a tetravalent aliphatic or cycloaliphatic hydrocarbon group having from two to about eighteen carbon atoms.

4,798,837

BENZOYLPHENYLUREAS

Jozef Drabek, Oberwil, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

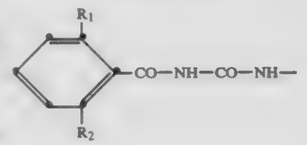
Continuation of Ser. No. 786,418, Oct. 10, 1985, abandoned. This application Jun. 4, 1987, Ser. No. 58,631

Claims priority, application Switzerland, Oct. 18, 1984, 4993/84; Nov. 8, 1984, 5361/84; May 14, 1985, 2048/85; Aug. 14, 1985, 3502/85

Int. Cl.[4] C07C *127/22*; A01N *47/34*

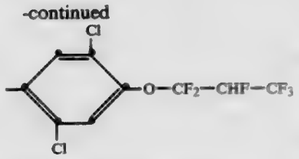
U.S. Cl. 514—594 **13 Claims**

1. A compound of formula I



(I)

-continued



wherein R_1 and R_2 are fluorine, chlorine or methoxy or R_1 is hydrogen and R_2 is chlorine.

4,798,838

CERTAIN PYRIDINYL OR IMIDAZOLINYL-4-THIAZOLYL-PHENOXY ALKANOIC ACID DERIVATIVES HAVING LIPID LOWERING ACTIVITY

Tadao Kojima, Saitama; Shunji Kageyama; Minoru Okada, both of Tokyo; Isao Obata, and Noboru Sato, both of Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

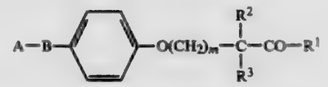
Division of Ser. No. 623,174, Jun. 21, 1984, abandoned. This application Sep. 30, 1986, Ser. No. 913,722

Claims priority, application Japan, Jun. 24, 1983, 58-113988; Oct. 27, 1983, 58-201639; Dec. 26, 1983, 58-248928

Int. Cl.[4] C07D *417/04*; A61K *31/425, 31/44*

U.S. Cl. 514—342 **9 Claims**

1. A phenoxy compound of the formula



wherein A is a 1- or 4-imidazolyl group, a pyridyl group; B is a 4-thiazolyl group which may be substituted with a lower alkyl group; m is 0 or n integer of 1 to 6; R^1 is a hydroxyl group or a lower alkoxy group and R^2 and R^3 which may be the same or different each is a hydrogen atom or a C_{1-3} alkyl group; or a pharmaceutically acceptable salt thereof.

9. A method of lowering lipid activity in a subject in need of such treatment, which comprises administering to said subject a lipid activity lowering amount of a compound of claim 1.

4,798,839

SYNERGISTIC INSECTICIDAL COMPOSITIONS

Hafez M. Ayad, Cary, N.C., assignor to Rhone Poulenc Nederlands B.V., Amstelveen, Netherlands

Continuation-in-part of Ser. No. 363,830, Mar. 31, 1982, abandoned. This application Mar. 7, 1984, Ser. No. 586,961

Int. Cl.[4] A01N *37/34, 43/30, 43/46, 47/28*

U.S. Cl. 514—351 **2 Claims**

1. A synergistic insecticidal composition comprising:

(1) an effective amount of a substituted benzoyl urea compound which is N-(2,6-difluorobenzyl)-N'-[3,5-dichloro-4-(3-chloro-5-trifluoromethylpyridyl-2-oxy)phenyl]urea; and,

(2) an effective amount of a methylenedioxyphenyl compound which is alpha-[2-(2-butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyltoluene wherein the weight proportion ratio of the substituted benzoyl urea compound to the methylenedioxyphenyl compound is from about 1:0.05 to about 1:3000 parts by weight respectively.

4,798,840

CORONARY-ACTIVE FLUORINE-CONTAINING 1,4-DIHYDROPYRIDINES

Egbert Wehinger; Horst Meyer; Andreas Knorr, and Stanislav Kazda, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

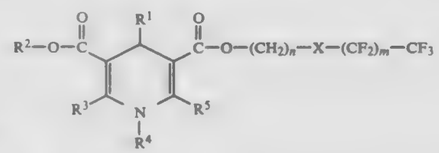
Filed Dec. 4, 1986, Ser. No. 937,764

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544211

Int. Cl.[4] A61K *31/455*; C07D *211/90*

U.S. Cl. 514—356 **11 Claims**

1. A compound of the following formula



in which

R^1 represents phenyl, pyridyl or benzoxadiazolyl, these ring systems being substituted by 1 or 2 identical or different substituents from the group consisting of chlorine, trifluoromethyl, nitro and cyano,

R^2 represents a straight-chain, branched or cyclic hydrocarbon radical which has up to 8 carbon atoms and which is optionally interrupted by an oxygen atom in the chain and or which is optionally substituted by fluorine, cyano, acetoxy, phenyl, phenoxy or α-, β- or γ-pyridyl, or by an amino group, this amino group carrying two identical or different substituents from the group comprising alkyl with up to 4 carbon atoms and benzyl,

R^3 and R^5 are identical or different and each represent a straight-chain or cyclic alkyl radical with up to 6 carbon atoms,

or one of the substituents R^3 or R^5 represents alkyl radical which has up to 4 carbon atoms and is substituted by acetoxy, hydroxyl, phthalimido, amino, phthalimidoethoxy or aminoethoxy,

or one of the substituents R^3 or R^5 represents the formyl or nitrile group,

R^4 represents hydrogen or the morpholinoethyl radical, n is greater than/equal to 1 and m is greater than/equal to 1, and the sum of n and m representing an integer from 5 to 15, and x represents a single bond or the group —N(CH-$_3$)O_2S—,

or a pharmaceutically acceptable acid addition salt thereof.

4,798,841

TETRAHYDROPYRIDINE OXIME CHOLINERGIC AGENTS AND METHOD OF TREATMENT

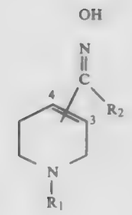
David A. Downs; Walter H. Moos; David W. Moreland, and Haile Tecle, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 31, 1987, Ser. No. 32,839

Int. Cl.[4] A61K *31/44*; C07D *213/04*

U.S. Cl. 514—357 **12 Claims**

1. A method of treating the symptoms of cognitive decline in the elderly comprising administering a cholinergically effective amount of a compound having the formula



wherein

R_1 is hydrogen;

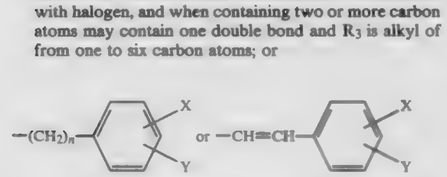
straight or branched alkyl of from one to six carbon atoms unsubstituted or substituted with hydroxy or alkoxyl of from one to four carbon atoms;

straight or branched alkenyl of from one to six carbon atoms unsubstituted or substituted with hydroxy or alkoxyl of from one to four carbon atoms;

straight or branched alkynyl of from one to six carbon atoms unsubstituted or substituted with hydroxy or alkoxyl of from one to four carbon atoms;

cycloalkyl of from three to eight carbon atoms;

where A is a bond or is a hydrocarbon chain of from one to four carbon atoms, unsubstituted or substituted with halogen, and when containing two or more carbon atoms may contain one double bond and R_3 is alkyl of from one to six carbon atoms; or



where n is zero to four and X and Y are independently selected from

hydrogen,

fluorine,

chlorine,

bromine,

hydroxy,

straight or branched alkyl of from one to three carbon atoms, or

alkoxyl of from one to four carbon atoms;

R_2 is selected from

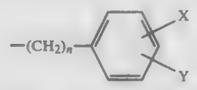
hydrogen;

straight or branched alkyl of from one to six carbon atoms unsubstituted or substituted with hydroxy or alkoxyl of from one to four carbon atoms;

straight or branched alkenyl of from one to six carbon atoms unsubstituted or substituted with hydroxy or alkoxyl of from one to four carbon atoms;

straight or branched alkynyl of from one to six carbon atoms unsubstituted or substituted with hydroxy or alkoxyl of from one to four carbon atoms;

cycloalkyl of from three to six carbon atoms;



where n is zero to four and

X and Y are independently selected from

hydrogen,

fluorine,

chlorine,

bromine,

hydroxy,

straight or branched alkyl of from one to three carbon atoms, or alkoxyl of from one to four carbon atoms;

or a pharmaceutically acceptable acid addition salt thereof.

4,798,842

INHIBITORS OF SLOW REACTING SUBSTANCE OF ANAPHYLAXIS

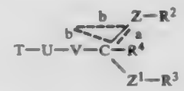
Anil K. Saksena, Upper Montclair; Jesse K. Wong, Union, both of N.J., and Pietro Mangiaracina, Monsey, N.Y., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 866,996, May 19, 1986, Pat. No. 4,758,594, which is a division of Ser. No. 632,143, Jul. 18, 1984, abandoned. This application Nov. 17, 1987, Ser. No. 121,558

Int. Cl.[4] C07C *59/245*

U.S. Cl. 514—381 **6 Claims**

1. A compound having the structural formula III



III

wherein

T is a straight or branched chain alkyl having from 7–15 carbon atoms which may contain from 1–3 noncumulative double or triple bonds;

U is —C≡C—;

V is a straight or branched chain alkylene having from 1 to 4 carbon atoms or is a direct bond;

R^2 and R^3 may be the same or different and are independently selected from CH_2OR^c {wherein R^c is hydrogen, carboxylic acyl having from 1 to 6 carbon atoms, tetrahydropyran-2-yl or $COCH_2CH_2CO_2H$}, CHO, 2-tetrazolyl, COR^d }wherein R^d is hydroxy, alkoxy having from 1 to 6 carbon atoms, $OCH_2OC(O)C(CH_3)_3$ or NHR^e and wherein R^e is hydrogen, alkyl having from 1 to 6 carbon atoms or CH_2CO_2H} or SO_3H, with the proviso that at least one of R^2 and R^3 is 2-tetrazolyl or carboxyl;

Z and Z^1 may be the same or different and are independently selected from straight or branched chain alkylene having from 1 to 12 carbon atoms which may contain from 1 to 3 noncumulative double or triple bonds; and

R^4 is hydrogen, hydroxyl, or is combined with Z to form a double bond as indicated by the dashed line "a" or a cyclopropyl ring as indicated by the dashed lines "b".

4,798,843

2-MERCAPTOIMIDAZOLE DOPAMINE-β-HYDROXYLASE INHIBITORS

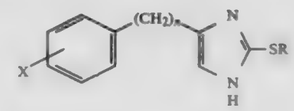
Lawrence I. Kruse, Tewin, England, assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jul. 9, 1987, Ser. No. 71,515

Int. Cl.[4] A61K *31/415*; C07D *233/84*

U.S. Cl. 514—392 **18 Claims**

15. A method of inhibiting dopamine-β-hydroxylase activity in mammals that comprises administering an effective amount of a compound of the formula:



in which:

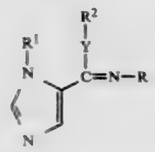
X is H, F, Cl, Br, I, C_{1-4} alkyl, CN, NO_2, SO_2NH_2, COOH, OH, CHO, C_{1-4} alkoxy, CH_2OH, CH_2OC_{1-4} alkyl, CF_3, C_2F_5, C_3F_7, SO_2CH_3, SO_2CF_3, or $CO_2C_aH_{2a+1}$ wherein a is 1–5, or any accessible combination thereof of up to 5 substituents;
R is H or C_{1-4} alkyl; and
n is 0–5; or
any pharmaceutically acceptable salt or hydrate thereof.

4,798,844
CHEMOTHERAPEUTANT COMPOSITION
Takayuki Fujita, Matsushige; Yoshiya Iwasaki, Kitajima, and Hiroko Yabe, Tokushima, all of Japan, assignors to Shikoku Chemicals Corporation, Kagawa, Japan
Filed Apr. 14, 1987, Ser. No. 38,006
Claims priority, application Japan, Feb. 20, 1987, 62-38750; Apr. 4, 1987, 62-82224
Int. Cl.[4] A61K *31/415*
U.S. Cl. 514—399 **10 Claims**

1. A chemotherapeutic process for remedying infectious diseases caused by pathogenic true fungi or pathogenic bacteria which comprises administering a composition comprising 1-(4-chlorophenyl)-2-(1H-imidazolyl)-3-(2,4-dichlorophenyl)-2-propen-1-one hydrochloride as the effective ingredient and a pharmaceutical additive to a man or animal infected with a pathogenic true fungus or pathogenic bacterium, the amount administered of the effective ingredient being 1 to 300 mg/kg of the body weight per day.

4,798,845
IMIDAZOLE DERIVATIVES, THEIR PREPARATION AND THEIR USE AS FUNGICIDES
Roger B. Pettman, Wychling, and Nicholas S. Wells, London, both of England, assignors to Shell Internationale Research Maatschappij, B.V., The Hague, Netherlands
Filed Jul. 9, 1987, Ser. No. 71,454
Claims priority, application United Kingdom, Jul. 14, 1986, 8617083
Int. Cl.[4] C07D *233/66;* **A01N** *43/50*
U.S. Cl. 514—400 **9 Claims**

1. A compound of formula



I

or a salt thereof, in which R represents a group of formula



where X is a substituent selected from the group consisting of halogen atoms, trifluoromethyl, methoxy and nitro groups and n is 1 or 2; R^1 represents a C_{1-8} alkyl group; R^2 represents a group of formula $-(CR^4R^5)_m-C{\equiv}C-R^6$ where m is 1 to 4 and each of R^4, R^5 and R^6 represent a hydrogen atom or a C_{1-8} alkyl group, provided that, when m is 1, R^4 is a hydrogen atom; and Y represents an oxygen or sulphur atom.

7. A method of combating fungus at a locus, which comprises treating the locus with a compound of formula I or a salt thereof as defined in claim 1.

4,798,846
PHARMACEUTICAL COMPOSITIONS
John B. Glen, and Roger James, both of Macclesfield, United Kingdom, assignors to Imperial Chemical Industries PLC, London, England
Continuation of Ser. No. 834,292, Sep. 19, 1977, Pat. No. 4,452,817. This application Apr. 4, 1983, Ser. No. 497,768
The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.
Int. Cl.[4] A61K *31/05*
U.S. Cl. 514—731 **8 Claims**

1. A sterile pharmaceutical composition of the oil-in-water emulsion type, for use as an anaesthetic by parenteral administration to a warm-blooded animal, which comprises in parenterally sterile admixture:
(i) as the oil phase an anesthetically-effective amount of the compound 2,6-diisopropylphenol either alone or dissolved in an oil water-immiscible solvent, said 2,6-diisopropylphenol comprising 1 to 2% by weight of the total composition;
(ii) water; and
(iii) a surfactant of a type and in a sufficient amount to form a homogeneous emulsion of the oil phase and the water, said composition further characterized as being isotonic with the blood.

4,798,847
PROCESS FOR THE PREPARATION OF HYDROPHILIC MEMBRANES AND SUCH MEMBRANES
Hendrik D. W. Roesink; Cornelis A. Smolders, both of Hengelo; Marcellinus H. V. Mulder, Enschede, and Dirk M. Koenhen, Dedemsvaart, all of Netherlands, assignors to X-Flow B. V., Enschede, Netherlands
Filed Sep. 21, 1987, Ser. No. 99,110
Claims priority, application Netherlands, Sep. 23, 1986, 8602402
Int. Cl.[4] C08G *65/00*
U.S. Cl. 521—50 **13 Claims**

1. Process for the preparation of hydrophilic membrane of a polymer matrix comprising
obtaining a membrane matrix from a solution of at least one hydrophobic polymer, at least one hydrophilic polymer, and a suitable solvent medium,
subjecting the membrane matrix to a coagulation medium,
converting the membrane matrix into an essentially non-swollen membrane matrix, and
cross-linking the hydrophilic polymer which is present in or on the essentially non-swollen membrane matrix such that the hydrophilic polymer is fixed in or on the polymer matrix.

4,798,848
HOT-FOAMABLE, THERMOSETTING EPOXY RESIN MIXTURE
Hermann Diethelm, Giffers, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 5, 1988, Ser. No. 190,326
Claims priority, application Canada, May 13, 1987, 1836/87
Int. Cl.[4] C08J *9/10*
U.S. Cl. 521—89 **11 Claims**

1. A hot-foamable, thermosetting epoxy resin mixture containing (a) an epoxy resin or a mixture of epoxy resins with an average epoxide content of 4.4 to 5.0 equivalents/kg and an average epoxide functionality of more than 2.0, (b) a novolak with a hydroxyl equivalent weight of 90 to 120, 0.8 to 0.95 hydroxyl equivalents of component (b) being present in the epoxy resin mixture per 1 epoxide equivalent of component (a), (c) 0.1 to 1% by weight, based on the amount of components (a) and (b), of a curing accelerator, (d) 0.5 to 10% by weight, based on the amount of components (a) and (b), of a blowing agent which splits off nitrogen above 100° C. with decomposition, (e) 0.3 to 1% by weight, based on the total amount of the epoxy resin mixture, of an emulsifier, and if appropriate (f) foam modifiers.

4,798,849
ORGANIC POLYMERS CONTAINING DISPERSED LIQUID CRYSTALLINE FILLER POLYMERS
Oomman P. Thomas, and Robert B. Turner, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 73,038, Jul. 14, 1987, Pat. No. 4,745,135, which is a continuation-in-part of Ser. No. 878,460, Jun. 25, 1986, abandoned. This application Oct. 16, 1987, Ser. No. 109,547
The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—114 **12 Claims**

1. An organic bulk polymer having microscopically dispersed therein a liquid crystalline polymer in an amount sufficient to measurably improve the properties of the organic polymer relative to a like bulk polymer in the absence of the liquid crystalline polymer.

4,798,850
BLENDED-FIBRE FILTER MATERIAL
Richard C. Brown, Dore, England, assignor to National Research Development Corporation, London, England
Filed Apr. 27, 1987, Ser. No. 43,205
Claims priority, application United Kingdom, May 19, 1986, 8612070
Int. Cl.[4] C08L *9/00*
U.S. Cl. 521—134 **16 Claims**

1. A filter material which comprises a blend of (i) clean polyolefine fibers and (ii) clean fibers of an addition polymer comprising one or more halogen-substituted hydrocarbons.

4,798,851
PROCESS FOR THE PREPARATION OF ELASTIC, NONCELLULAR OR CELLULAR POLYURETHANE- OR POLYURETHANE-POLYUREA MOLDED ARTICLES
Frank Werner, Neustadt; Joachim Streu, Wachenheim, and Herbert Mueller, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Apr. 9, 1987, Ser. No. 36,875
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613650
Int. Cl.[4] C08G *18/30*
U.S. Cl. 521—137 **5 Claims**

1. A process for the preparation of an elastic, noncellular and/or cellular isocyanate addition polymer molded article comprising reacting:
(a) An organic polyisocyanate;
(b) A high molecular weight polyester polyol;
(c) A chain extending agent in the presence of;
(d) A catalyst
wherein the polyester polyol (b) is liquid at room temperature, has a hydroxyl number from about 25 to 100, an acid number less than about 2 and is produced through the polycondensation of organic dicarboxylic acids and/or anhydrides and polyoxytetramethylene glycol mixtures having a molecular weight of from about 200 to 300.

4,798,852
ULTRAVIOLET CURABLE COATINGS FOR OPTICAL GLASS FIBER
John M. Zimmerman, Des Plaines, and Timothy E. Bishop, Algonquin, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 792,465, Oct. 29, 1985, abandoned. This application Jan. 28, 1987, Ser. No. 7,456
Int. Cl.[4] C08F *2/50, 20/36;* **G02B** *6/16, 6/22*
U.S. Cl. 522—96 **28 Claims**

1. A radiation-curable oligomer having a plurality of ethylenically unsaturated terminal groups which contains a plurality of urethane and urea groups and which is formed from components which include: (1) amine functional polymer having a molecular weight of from about 300 to about 4000 and an amine functionality of 3 or 4, or a mixture thereof; (2) hydroxyl or amine functional polymer having a molecular weight of from about 200 to about 4000 and a functionality of two; (3) a monohydric monethylenically unsaturated compound; and (4) organic diisocyanate in an amount sufficient to react with all of the reactive groups in components (1), (2) and (3), said monohydric monoethylenically unsaturated compound being used in an amount to react, via said diisocyanate, with all of the reactive groups on said component (1) less from 10% to 80% of the last reactive group thereon, said components (1) and (2) being present in a molar ratio of from 2:1 to 8:1, and said diisocyanate bonding said polymer components (1) and (2) to provide an oligomer having more than two amine terminated branches which are capped with said monohydric monoethylenically unsaturated compound via said diisocyanate to which said monohydric compound is bonded by a urethane group.

4,798,853
KRATON G THERMOPLASTIC ELASTOMER GEL FILLING COMPOSITION FOR CABLES
Dale L. Handlin, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 687,066, Dec. 28, 1984, abandoned. This application Jan. 20, 1987, Ser. No. 6,287
Int. Cl.[4] H02G *15/00*
U.S. Cl. 523—173 **4 Claims**

1. A fast forming, thermally reversible encapsulating gel composition for filling hydrophone cables consisting essentially of:
from about 2 percent by weight to about 15 percent by weight styrene-ethylene-butene-styrene block copolymers and from about 85 percent by weight to about 98 percent by weight of a naphthenic or paraffinic oil, or solvent where said oil or solvent has an aromatic content of from about 15 percent by weight to about 25 percent by weight.

4,798,854
PROCESS FOR THE PRODUCTION OF A COMPOSITE MATERIAL BASED ON A POLYMER MATRIX
Mario Visca, Alessandria; Giancarlo Boero, Asti, and Daria Lenti, Alessandria, all of Italy, assignors to Montedison S.p.A., Milan, Italy
Filed Feb. 26, 1987, Ser. No. 19,255
Claims priority, application Italy, Apr. 5, 1985, 20262 A/85; Australia, Apr. 4, 1986, 55676/86; Canada, Apr. 4, 1986, 505873; European Pat. Off., Apr. 4, 1986, 86302517; Japan, Apr. 4, 1986, 76847; Spain, Apr. 4, 1986, 554180; Japan, Aug. 7, 1986, 51-184361
Int. Cl.[4] C08J *3/20, 5/02;* **C08K** *7/02;* **C08L** *27/12*
U.S. Cl. 523—334 **29 Claims**

1. A process for the production of a composite material based on a polymeric matrix comprising homogeneously dispersed therein an organic and/or an inorganic filler, said process comprising mixing together the single components in an aqueous phase, and then coagulating the aqueous composite dispersion thus obtained, characterized in that the single components are in the form of aqueous dispersions in which the

particles have a surface charge of the same sign and a "zeta potential" (in absolute value) between 10 and 100 mV, and the ratio (in absolute value) between the "zeta potentials" of the particles of each dispersion is between 0.2 and 5.

4,798,855

THERMOPLASTIC MOLDING MATERIALS

Dietrich Lausberg, Ludwigshafen; Gerd Blinne, Bobenheim; Peter Ittemann, Ludwigshafen; Gerhard Heinz, Weisenheim; Erhard Seiler, Ludwigshafen, and Manfred Knoll, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed May 13, 1987, Ser. No. 49,226

Claims priority, application Fed. Rep. of Germany, May 24, 1986, 3617501

Int. Cl.⁴ C08L *63/02, 77/00, 81/06*

U.S. Cl. 523—435 **11 Claims**

1. A thermoplastic molding material containing, as essential components,

(A) from 2 to 97.9% by weight of a nylon,

(B) from 2 to 97.9% by weight of a polyaryl ether sulfone,

(C) from 0.1 to 30% by weight of a polymeric component having hydroxyl groups said polymeric component being selected from the group consisting of (i) polycondensates of aliphatic or aromatic diols or polyhydric alcohls with epihalohydrins, (ii) polymers and copolymers of vinylphenyl carbinols and vinylphenyldimethyl carbinols, (iii) polymers of vinylphenols, (iv) OH group-containing nylons said nylons being different than the nylons of component (A), (v) OH group-containing polyaryl ether sulfones said sulfones being different than the polyaryl ether sulfones of component (B) and (vi) phenyl/formaldehyde polycondensates and in addition

(D) from 0 to 50% by weight of a rubber impact modifier and

(E) from 0 to 60% by weight of reinforcing fillers.

4,798,856

PIGMENT DISPERSION IN RESIN

Jorge A. Ayala; George A. Joyce, both of Monroe, La., and David Crabbe, St. Louis, Mo., assignors to Columbian Chemicals Co., Atlanta, Ga.

Filed Nov. 6, 1987, Ser. No. 118,216

Int. Cl.⁴ C08K *3/10, 5/05, 9/04;* **C08J** *3/20*

U.S. Cl. 524—386 **12 Claims**

1. A pigment concentrate of enhanced dispersibility in plastics comprising a dispersion in a resin carrier of inorganic pigment of the type having a hydrophilic surface selected from the group consisting of divalent ferrite pigment and iron oxide pigment, said pigment including a surfactant selected from the group consisting of trimethylol ethane and trimethylol propane which is functional as a dispersant in a relatively nonpolar matrix and which is present on the surface of the pigment in an effective amount.

4,798,857

COMPLEXES OF BISMUTH OR ANTIMONY HALIDES WITH AMINES, SUITABLE AS FLAME RETARDANTS FOR POLYMERS, AND POLYMER COMPOSITIONS CONTAINING SAME

Guido Bertelli, Ferrara; Patrizia Busi, Portomaggiore, and Renato Locatelli, Ferrara, all of Italy, assignors to HIMONT Incorporated, Wilmington, Del.

Filed Dec. 30, 1987, Ser. No. 139,420

Claims priority, application Italy, Dec. 30, 1986, 22887 A/86; Dec. 30, 1986, 22888 A/86

Int. Cl.⁴ C08K *5/34, 5/31;* **C07F** *9/90, 9/94*

U.S. Cl. 524—93 **20 Claims**

1. Complexes of bismuth and antimony halides with amines having formula:

$$R_e(MeX_3)_y \qquad (I)$$

where

R is an amine selected from the group consisting of 2-guanidinobenzimidazole, isophoronediamine, dicyandiamide, guanamine, melamine, piperzine, all of which may be optionally substituted with an alkyl, aryl or acyl group and a compound prepared from dicyandiamide or melamine having from 2 to 9 triazine rings condensed or linked to each other through at least a —NH— group;

Me is bismuth or antimony;

X is chlorine or bromine; and

y is a number comprised from 0.3 to 4.

9. A polymer composition having flame self-extinguishing properties, comprising by weight:

(a) 85–99.7% of a thermoplastic polymer,

(b) 0.3–15% of a complex or a mixture of complexes of claim 1, and

(c) from 0 to 1% of a free radical promoter provided that when (c) is 0%, component (b) is present in an amount of at least 3% by weight.

4,798,858

FLAME RETARDANT POLYETHERIMIDE ESTER ELASTOMERS

Russell J. McCready; Nan-I Liu, and John A. Tyrell, all of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 4, 1987, Ser. No. 21,822

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—100 **50 Claims**

1. A flame retardant composition comprising:

(i) at least one polyetherimide ester resin; and

(ii) a flame retardant effective amount of at least one melamine compound.

4,798,859

POLYHYDROXYL COMPOUNDS CONTAINING ESTER AND ETHER GROUPS AS REACTIVE DILUENTS

Peter Höhlein, Kempen; Eberhard Kreiss; Franz Mory, both of Krefeld, all of Fed. Rep. of Germany, and Bernd Riberi, Pittsburgh, Pa., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 14, 1987, Ser. No. 95,928

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, 3632358

Int. Cl.⁴ C08L *67/06, 67/02, 67/08*

U.S. Cl. 525—7 **6 Claims**

1. In an alkyd resin-based or oil-free polyester-based lacquer system containing a reactive diluent, the improvement comprises said reactive diluent being the esterification product of

(A) polyols containing on average at least 3 hydroxyl groups per molecule and, per hydroxyl group, an average of 0.5 to 15, but in total no more than an average of 20 ether groups per molecule and

(B) 0.05 to 1.0 equivalent, based on hydroxyl groups of A, of aliphatic saturated or unsaturated monocarboxylic acids containing 8 to 24 carbon atoms per molecule,

with the proviso that the esterification products of A and B have an acid number of at most 5, a hydroxyl number of from 5 to 800 and, on average, from 0.1 to 5 hydroxyl groups per molecule, and a viscosity of at most 1063 mPa.s at 20° C.

4,798,860

FLAME RESISTANT ORGANIC SUBSTANCES CONTAINING POLYMERIC FLAME RETARDANTS

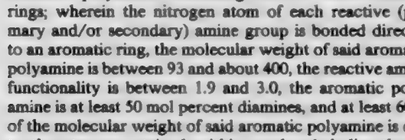
William J. Parr, Naperville, Ill., assignor to Akzo America Inc., New York, N.Y.

Filed Aug. 21, 1987, Ser. No. 88,166

Int. Cl.⁴ C08G *61/02;* **C08L** *65/04*

U.S. Cl. 524—409 **13 Claims**

1. A flame resistant organic substance comprising a synthetic polymer having in intimate contact therewith, by means of melt blending, a flame retarding amount of a flame retardant compound of the formula:



wherein each x is independently Cl, or Br, each Z in independently Cl, Br, or H and n is at least 500.

4,798,861

SURFACE TREATMENT OF POLYMERS

Ian M. Johnson; Ian M. Moody, and Peter Flesher, all of West Yorkshire, England, assignors to Allied Colloids Limited, England

Filed Nov. 24, 1986, Ser. No. 934,157

Claims priority, application United Kingdom, Nov. 27, 1985, 8529198

Int. Cl.⁴ C08F *2/16, 8/00*

U.S. Cl. 524—458 **9 Claims**

1. A process for making polymer particles that are water soluble or swellable and that are cross linked preferentially at their surfaces, the process comprising suspending aqueous droplets of water soluble ethylenically unsaturated monomer or monomer blend and dissolved water soluble cross linking agent in a water immiscible organic solvent containing dissolved solvent-soluble, polyvalent metal, cross linking agent that is soluble in the organic solvent but insoluble in water in an amount sufficient to give at least 40% water, based on the weight of water plus polymer, polymerizing the monomer or monomer blend by reverse phase suspension polymerization to form gel polymer particles the surfaces of which have been reacted with the dissolved solvent-soluble cross linking agent, and then completing the cross linking reaction and drying the particles by azeotropic distillation.

4,798,862

POLYUREAS PREPARED FROM A MIXTURE OF POLYAMINES AND POLYISOCYANATE

Herbert R. Gillis, Jr., Sterrebeek, Belgium, assignor to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 893,165, Aug. 1, 1986, abandoned. This application Jul. 9, 1987, Ser. No. 67,919

Int. Cl.⁴ C08G *18/32*

U.S. Cl. 524—783 **27 Claims**

1. A blend of polyamines which consist essentially of

(i) from 25 to 60% by weight of an isocyanate-reactive aromatic polyamine containing one or more aromatic rings; wherein the nitrogen atom of each reactive (primary and/or secondary) amine group is bonded directly to an aromatic ring, the molecular weight of said aromatic polyamine is between 93 and about 400, the reactive amine functionality is between 1.9 and 3.0, the aromatic polyamine is at least 50 mol percent diamines, and at least 60% of the molecular weight of said aromatic polyamine is due to the atoms contained within, or bonded directly to, aromatic rings; and

(ii) from 75 to 40% by weight of an aliphatic polyamine containing acyclic, linear or branched, chains of atoms between isocyanate-reactive (primary and/or secondary) amine groups; wherein the nitrogen atom of each reactive amine group is bonded directly to aliphatic carbon atoms, the molecular weight of said aliphatic polyamine is between 170 and about 500, the reactive amine functionality of said aliphatic polyamine is between 1.9 and 2.5, and at least 50 mol percent of reactive amine containing species in said aliphatic polyamine are diamines,

wherein, in said blend, at least 85% of the active hydrogen-containing groups are primary and/or secondary amine based on the total number of active hydrogen-containing groups in components (i) and (ii), said blend being use as an active hydrogen composition in the manufacture, by a reaction injection molding process, of a polyurea resin having a flexural modulus greater than 200,000 psi.

4,798,863

ZINC TITANATE IN POLY (ARYLENE SULFIDE) COMPOSITIONS

John E. Leland, and Robert J. Martinovich, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 21, 1984, Ser. No. 612,537

Int. Cl.⁴ C08K *3/24*

U.S. Cl. 524—413 **7 Claims**

1. A composition comprising poly(arylene sulfide) and zinc titanate.

4,798,864

ELASTOMER POLYOLEFIN BLENDS

Barry Topcik, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 874,450, Jun. 16, 1986, abandoned. This application Oct. 7, 1987, Ser. No. 105,233

Int. Cl.⁴ C08L *51/06, 23/26*

U.S. Cl. 525—71 **9 Claims**

1. An elastomer blend consisting essentially of:

(a) a polyolefin selected from the group consisting of (i) polyethylene; (ii) a hydrolyzable copolymer of ethylene and silane; and (iii) a hydrolyzable silane modified polyethylene; and

(b) an ethylene-propylene-diene terpolymer rubber, with or without silane modification, said terpolymer when silane modified being hydrolyzable, provided that, when component (a) is polyethylene, the terpolymer is silane modified,

the blend of components (a) and (b) containing no more than about 40 percent by weight of component (a) based on the combined weight of components (a) and (b) and having the following properties:

(i) Secant Modulus in the range of about 100 psi to about 10,000 psi;

(ii) 100% Modulus in the range of about 100 psi to about 1500 psi; and

(iii) Shore A hardness in the range of about 10 to about 100.

4,798,865

THERMOPLASTIC POLYAMIDE—POLYPHENYLENE ETHER COMPOSITIONS

Thomas S. Grant, Vienna; Ronald L. Jalbert, Woodland Park, and David Whalen, Parkersburg, all of W. Va., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Division of Ser. No. 805,644, Dec. 6, 1985, Pat. No. 4,732,938. This application Jun. 11, 1987, Ser. No. 60,600

Int. Cl.⁴ C08L *53/02, 71/04*

U.S. Cl. 525—92 **2 Claims**

1. A composition comprising from 5 to 95 wt % of a polyamide and, correspondingly, from 95 to 5 wt % of a carboxylated phenylene ether resin, and an impact modifier for polyphenylene ether resins, said carboxylated resin being the product of melt-mixing a mixture consisting essentially of 100 parts by weight phenylene ether resin and an ethylenically unsaturated carboxylic acid compound, said impact modifier comprising a hydrogenated styrene-butadiene-styrene block copolymer.

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4,798,866

BRANCHED ALPHA-OLEFIN POLYMER COMPOSITION AND PROCESS FOR ITS PRODUCTION

Junichi Yoshitake, Kasuga; Hiroaki Kitani, Waki; Norio Kashiwa, Iwakuni; Takeshi Muranaka, Ichihara; Kenichi Tominari, Iwakuni, and Shigeki Nagamatsu, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 13, 1987, Ser. No. 72,670

Claims priority, application Japan, Jul. 14, 1986, 61-163564; Jul. 7, 1987, 61-167892

Int. Cl.[4] C08L *23/18*; C08F *210/14*

U.S. Cl. 525—191 **10 Claims**

1. A branched alpha-olefinic polymer composition comprising

[I] a branched alpha-olefinic polymer composed substantially of 80 to 100 mole % of (A) recurring units derived from a branched alpha-olefin containing 5 to 10 carbon atoms and having a branch at the 3-position or a position of a higher number and 0 to 20 mole % of (B) recurring units derived from a linear alpha-olefin containing 2 to 20 carbon atoms and having an intrinsic viscosity $[\eta]_H$, determined in decalin at 135° C., of 5 to 30 dl/g, and [II] a branched alpha-olefinic polymer composed substantially of 80 to 100 mole % of (A) recurring units derived from a branched alpha-olefin containing 5 to 10 carbon atoms and having a branch at the 3-position or a position of a higher number and 0 to 20 mole % of (B) recurring units derived from a linear alpha-olefin containing 2 to 20 carbon atoms and having an intrinsic viscosity $[\eta]_L$, determined in decalin at 135° C., of 1 to 10 dl/g;

wherein

the $[\eta]_H/[\eta]_L$ ratio is from 2 to 30, the weight ratio of the polymer [I] to the polymer [II] is from 1/99 to 60/40, said composition has an intrinsic viscosity measured in decalin at 135° C., of 1 to 20 dl/g, and the ratio of the melt flow rate of said composition measured at 260° C. under a load of 5 kg [$MFR^{5kg}{}_{260°C}$] to its melt flow rate measured at 260° C. under a load of 1 kg [$MFR^{1kg}{}_{260°C}$] is from 10 to 30.

4,798,867

IMPACT RESISTANT THERMOPLASTIC RESIN COMPOSITION

Yoshio Nakai, Iwakuni, and Masamitsu Tateyama, Yamaguchi, both of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Division of Ser. No. 726,977, Apr. 25, 1985, Pat. No. 4,740,557. This application Dec. 29, 1987, Ser. No. 139,303

Claims priority, application Japan, Apr. 28, 1984, 59-85112

Int. Cl.[4] C08F *8/00*, *33/02*

U.S. Cl. 525—196 **9 Claims**

1. An impact resistant thermoplastic resin composition comprising a graft copolymer II obtained by:

(i) emulsion-polymerizing a monomer mixture (a) comprising 51% to 99% by weight of an alkyl acrylate having 2 to 8 carbon atoms in the alkyl group and 49% to 1% by weight of 1,3-butadiene to obtain a rubbery copolymer I in the form of a latex;

(ii) enlarging the particles of the rubbery copolymer I to an enlarged rubber copolymer I' by adjusting adjust the average particle size to 0.12 to 0.4 μm by the addition of:

(A) an acid group-containing copolymer in the form of a polymer latex obtained by emulsion polymerizing a monomer mixture (b) comprising 3% to 40% by weight of at least one unsaturated acid monomer selected from the group consisting of acrylic acid, methacrylic, crotonic acid, cinnamic acid and sorbic acid, 97% to 35% by weight of an alkyl acrylate having 1 to 12 carbon atoms in the alkyl group, and 0% to 40% by weight of other copolymerizable monomer, according to an at least two stage polymerization process including the stages of first polymerizing a portion occupying 5% to 90% by weight of the monomer mixture (b) but not containing the unsaturated acid monomer and subsequently polymerizing the remaining portion occupying 95% to 10% by weight of the monomer mixture (b) and containing the unsaturated acid monomer, and

(B) at least one salt of an oxyacid having a central element selected from the group consisting of the elements of Groups III, IV, V, and VI of the periodic table, said elements belonging to the second and third periods, with a metal selected from the group consisting of alkali metals, alkaline earth metals, zinc, nickel, and aluminum,

the total amount of the acid group-containing copolymer (A) and the oxyacid salt (B) being in the range of 0.1 to 5 parts by weight based on 100 parts by weight of the solid polymer constituent in the latex of the rubbery copolymer I and the proportion of the acid group-containing copolymer (A)/the oxyacid salt (B) being 1/(0.01 to 10) by weight; and

(iii) polymerizing in the presence of 100 parts by weight of the solid polymer constituent in the latex of the enlarged rubbery copolymer I' 10 to 1000 parts by weight of a monomer mixture (c) comprising 50% to 100% by weight of at least one monomer selected from the group consisting of methyl methacrylate and styrene and 50% to 0% by weight of other monofunctional copolymerizable monomer.

4,798,868

TERNARY BLENDS OF POLYVINYL CHLORIDE

Frank E. Lordi, West Chester, Pa., and Peter J. Vanderpool, Cherry Hill, N.J., assignors to Arco Chemical Company, Newtown Square, Pa.

Filed Aug. 6, 1987, Ser. No. 82,260

Int. Cl.[4] C08L *35/06*, *39/04*

U.S. Cl. 525—207 **4 Claims**

1. A moldable polyblend comprising 60 to 70 wt-% based on total polyblend of a polyvinyl chloride resin and 20 to 30 wt-% based on total polyblend of a non-equimolar copolymer of less than 50 mole-percent of an unsaturated dicarboxylic acid moiety and at least 50 mole-percent of at least one monomer copolymerizable therewith, and 10 to 20 wt-% based on total polyblend of interfacial modifier.

4,798,869

PROCESS FOR THE PRODUCTION OF THERMOPLASTIC COMPOSITIONS AND COMPOSITIONS PRODUCED THEREBY

Harald Sturm; Rolf-Walter Terwonne, and Dieter Thunig, all of Marl, Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Nov. 7, 1986, Ser. No. 927,985

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1985, 3539414

Int. Cl.[4] C08F *265/04*, *267/06*

U.S. Cl. 525—305 **21 Claims**

1. A process for the production of a thermoplastic composition for molded parts having improved impact resistance, transparency, surface gloss, and weatherability and formed of a hard inner core of crosslinked polystyrene, a rubber-elastic intermediate layer of crosslinked polyacrylic ester, and an outer layer of polyvinyl chloride,

wherein the inner core thereof is produced by the steps of:

(a) forming a mixture, before or after addition of an initiator effective to initiate polymerization, under polymerization conditions in the presence of an emulsifier, of 0.01–5.0% by weight of an acrylic acid or methacrylic acid alkyl ester with a crosslinking component whereby polymerization is effected, and thereafter

(b) adding to the mixture, 20–70% by weight of a mixture of an aromatic vinyl monomer with a crosslinking component and, simultaneously therewith in a separate stream, a solution of an organic complexing agent and

of an emulsifier in water, and emulsion polymerizing the resultant mixture;

wherein the intermediate layer thereof is produced by adding, to the inner core produced in step (b),

(c) 79.99–25% by weight of a mixture of an acrylic acid alkyl ester with a crosslinking component and simultaneously therewith an aqueous emulsifier solution, under emulsion polymerization conditions;

wherein said amounts in steps (a), (b) and (c) are based on the total amount of the composition resulting from said steps; and

wherein the outer layer thereof is formed on the thus-produced core/shell polymer by adding, to 50 to 2 parts by weight thereof,

(d) 50 to 98 parts by weight of vinyl chloride or a monomer mixture containing predominantly vinyl chloride,

wherein the amounts of said core/shell polymer and said monomer or mixture of step (d) are based on the total amount thereof,

with agitation, and in the presence of an initiator effective to initiate polymerization, the agitating temperature and period selected so that polymerization occurs with a conversion, based on the monomer mixture or, respectively, the vinyl chloride, up to 10% by weight, and thereafter continuing the polymerization by heating to the polymerization temperature, to a vinyl chloride conversion of 65–95%.

4,798,870

REACTIVE SURFACE FOR DECONTAMINATION

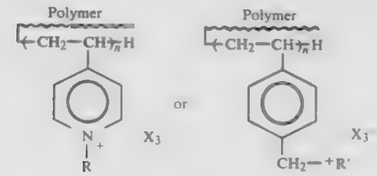
Robert E. Lyle, Jr., San Antonio, and Henry F. Hamil, New Braunfels, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 659,183, Oct. 9, 1984, abandoned. This application Dec. 4, 1986, Ser. No. 937,911

Int. Cl.[4] C08F *8/18*

U.S. Cl. 525—327.1 **11 Claims**

1. A regenerative reactive article comprising a polymer surface having attached thereto a hydrohalide-polyhalide or quarternary halide-perhalide salt corresponding to the formula:



wherein X is Br or I; n is an integer of about 5 to 1,000; R is H or a C_1–C_3 alkyl radical, and R' is a tertiary amine.

4,798,871

COMPOSITIONS CONTAINING HIGH MOLECULAR WEIGHT POLY(VINYLAMINES) FOR ENHANCED OIL RECOVERY

Ta-Wang Lai, Allentown, and Bheema R. Vijayendran, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 914,046, Oct. 1, 1986. This application Jun. 19, 1987, Ser. No. 64,967

Int. Cl.[4] C08F *8/12*

U.S. Cl. 525—328.2 **13 Claims**

1. An enhanced oil recovery composition consisting essentially of sea water containing 500 to 2500 ppm by weight poly(N-vinylamide) of at least 10^6 average molecular weight and greater than 50% hydrolyzed to vinylamine units, the composition having a 5 to 25 cps Brookfield viscosity at 7.9 sec^{-1} and 90° C.

4,798,872

ALKYLENE PHOSPHONATE ACID ESTER POLYOLS

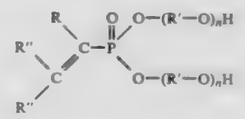
Anil B. Goel, and Bian-Hung Chang, both of Worthington, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 28, 1986, Ser. No. 856,550

Int. Cl.[4] C07F *9/40*; C08G *18/00*

U.S. Cl. 558—186 **2 Claims**

1. An alkenyl phosphonic acid ester polyol composition having the formula



wherein n represents a number of from 1 to 50, R is an alkyl group having from 1 to 10 carbon atoms or a phenyl group, R' is an alkylene group having from 2 to 4 carbon atoms and R'' independently represents hydrogen or an alkyl group having from 1 to 10 carbon atoms.

4,798,873

POLYOLEFINECARBOXYLIC ACIDS, THEIR PREPARATION AND THEIR USE FOR PREPARING POLYOLEFINE-POLYCARBONATE BLOCK COPOLYMERS

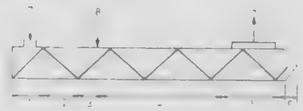
Kurt P. Meurer; Helmut Waniczek, both of Cologne; Gerd Sylvester, Leverkusen, and Josef Witte, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 14, 1987, Ser. No. 50,165

Claims priority, application Fed. Rep. of Germany, May 31, 1986, 3618378

Int. Cl.[4] C08F *10/00*

U.S. Cl. 525—333.7 **5 Claims**



1. A poly-(c_2-C_{10}-α-olefine)carboxylic acid having a molecular weight $\overline{M}w$ ($\overline{M}w$ determined by coupling of gel permeation chromatography and viscometry) of 2,000 to 350,000.

4,798,874

THERMOPLASTIC BLENDS COMPRISING POLYCARBONATE RESIN AND AMORPHOUS POLYAMIDE

Louis M. Maresca, Pittsfield; Donald C. Clagett, Lincoln, and Uwe S. Wascher, Pittsfield, all of Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 812,433, Dec. 23, 1985, abandoned. This application Apr. 11, 1988, Ser. No. 183,308

Int. Cl.[4] C08L *69/00*, *77/00*

U.S. Cl. 525—425 **10 Claims**

1. A blend of thermoplastic resins consisting essentially of:

(i) at least one aromatic polycarbonate resin; and

(ii) at least one amorphous polyamide resin having no distinct melting point.

4,798,875

BIAXIALLY ORIENTED POLYESTER FILM

Kuniyoshi Itoyama; Norihiro Horita; Shigemi Seki, and Satoyuki Minami, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

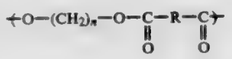
PCT No. PCT/JP86/00158, § 371 Date Dec. 1, 1987, § 102(e) Date Dec. 1, 1987, PCT Pub. No. WO87/05919, PCT Pub. Date Oct. 8, 1987

PCT Filed Apr. 1, 1986, Ser. No. 141,340

Int. Cl.[4] C08L *67/02*

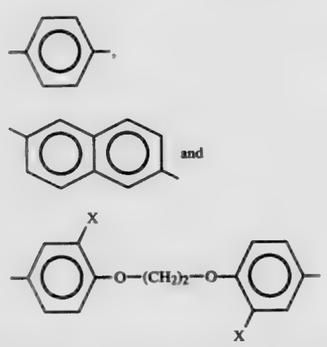
U.S. Cl. 525—444 **11 Claims**

1. A biaxially oriented polyester film composed mainly of a polymer blend comprising [A] a polyester having recurring units of the following general formula (I);

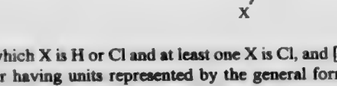


(I)

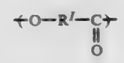
wherein n is 2, 4 or 6 and R is at least one member selected from the group consisting of



and

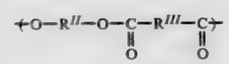


in which X is H or Cl and at least one X is Cl, and [B] a copolyester having units represented by the general formula (I) and units represented by the following general formula (II) and/or the following general formula (III):



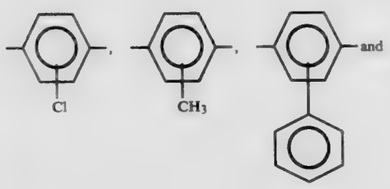
(II)

and/or

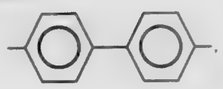


(III)

wherein R^I, R^{II} and R^{III} stand for at least one member selected from the group consisting of 1,3-phenylene, 1,4-phenylene, 2,6-naphthalene, 2,7-naphthalene,



-continued



and having a flow-initiating temperature not higher than 350° C. and a melt anisotropy-forming capacity, the molar ratio of the units represented by the general formula (II) and/or the general formula (III) being 0.5 to 18 mole % based on the total polyblend, wherein one plane of the crystal of the polyester [A] is plane-oriented in the film surface, the in-plane orientation index is 0.75 to 0.95, and the crystal size in said crystal plate direction is 35 to 75 Å.

4,798,876

HYDROPHILIC POLYURETHANE COMPOSITION

Francis E. Gould; Ellen K. Morgan, both of Princeton, and Stephen D. Reduker, Somerset, all of N.J., assignors to Tyndale Plains-Hunter Ltd., Princeton, N.J.

Filed Nov. 12, 1985, Ser. No. 797,407

Int. Cl.[4] C08F *283/04*

U.S. Cl. 525—457 **7 Claims**

1. A water absorptive polyurethane composition comprising by weight a physical blend of A. about 25% to about 75% of a hydrophilic polyether polyurethane which is the reaction product of diethylene glycol and a polyoxyethylene glycol having a molecular weight of about 1000 to about 8000 with a polyisocyanate and B. about 75% to about 25% of a hydrophobic polyester polyurethane which is the reaction product of a polyfunctional polyester, derived from the condensation of a polyol with a polybasic acid, with a polyisocyanate.

4,798,877

RADIATION-CURABLE RESINS

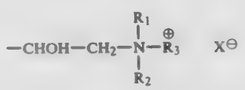
Dwight K. Hoffman; Robert F. Harris, both of Midland, Mich., and Richard A. Hickner, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 8, 1985, Ser. No. 720,769

Int. Cl.[4] C08F *283/10*

U.S. Cl. 525—531 **13 Claims**

1. A water-compatible, radiation-curable, resinous composition comprising (1) molecules containing ester groups resulting from the esterification of an epoxy compound and an unsaturated carboxylic acid having a dissociation constant of at least 1×10^{-7} and (2) molecules containing groups of the reaction product of an epoxy compound, a secondary or tertiary amine and an acid and having the structure:



wherein R_1 and R_2 are independently hydrocarbon or inertly substituted hydrocarbon having 1 to 12 carbon atoms; R_3 is hydrogen or hydrocarbon or inertly substituted hydrocarbon and X is the anion of an inorganic or organic acid.

4,798,878

SYNTHETIC RESIN COMPOSITIONS SHELF-STABLE UNDER EXCLUSION OF MOISTURE

Bernd Brinkmann, Nordkirchen, and Hermann-Josef Lucas, Ascheberg-Herbern, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

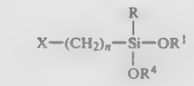
Filed Jul. 19, 1985, Ser. No. 756,626

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1984, 3426987

Int. Cl.[4] C08L *91/00*

U.S. Cl. 528—28 **21 Claims**

1. A polymer which is the product of polymerizing a polyether urethane containing free NCO groups with an ether alkoxysilane of the general formula



wherein

X is —SH, or —NHR^2,

R is $—CH_3$, $—C_2H_5$, or —OR^1,

R^1 is $—(CH_2—CH_2—O)_mR^3$,

R^2 is H, $—CH_2—CH_2—NH_2$ or a $C_{1\text{-}10}$-aliphatic, $C_{3\text{-}10}$-cycloaliphatic or $C_{6\text{-}10}$ aromatic, hydrocarbon group of 1–10 carbon atoms,

R^3 is $C_{1\text{-}10}$-alkyl or hydrocarbon $C_{6\text{-}10}$-aryl,

R^4 is $C_{1\text{-}4}$-alkyl or one of the R^1 groups,

n is 1–6

m is 1–30.

4,798,879

CATALYZED FAST CURE POLYURETHANE SEALANT COMPOSITION

Steven L. Hannah, Chagrin Falls; Maureen R. Williams, Warrensville Hts., and Thomas W. Greenlee, Shaker Heights, all of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Mar. 25, 1987, Ser. No. 30,773

Int. Cl.[4] C08G *18/81, 18/08, 18/10*

U.S. Cl. 528—45 **10 Claims**

1. A curable polyurethane composition, comprising, a polyurethane prepolymer component, said polyurethane prepolymer component made from a polyester polyol, a polybutadiene polyol, or a poly(oxyalkylene) polyol and an aromatic polyisocyanate, said alkylene group of said poly(oxyalkylene) polyol having from 2 to 6 carbon atoms said polyurethane prepolymer having blocked isocyanate groups,

a curing agent component, said curing agent component comprising an amine curing agent containing at least two primary amines, and an effective amount of a bicyclic amidine catalyst or a derivative thereof capable of unblocking said blocked isocyanate groups.

4,798,880

SPANDEX FORMED WITH A MIXTURE OF DIAMINES

Gary A. Lodoen, Fishersville, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1987, Ser. No. 139,841

Int. Cl.[4] D02G *3/00*

U.S. Cl. 528—63 **4 Claims**

1. An improved shaped article of a spandex polymer formed from polyalkaneether glycol that was capped with tertiary aralkyl diisocyanate and then chain extended with diamine, wherein, for increased heat-settability, the improvement comprises

the chain-extending diamine being a mixture that consists essentially of

25 to 80% of hydrogenated m-phenylenediamine,

10 to 50% of hydrogenated p-phenylenediamine and

10 to 30% of tetrachloro-p-xylylenediamine, all percentages being molar percent.

4,798,881

NOVEL POLY(ARYLENE ETHER-AMIDE) POLYOLS AND THEIR APPLICATION IN POLYURETHANE POLYMERS

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 48,711, May 12, 1987, Pat. No. 4,739,031. This application Feb. 1, 1988, Ser. No. 150,852

Int. Cl.[4] C08G *18/28, 18/77*

U.S. Cl. 528—73 **11 Claims**

1. The process for preparing a polyurethane comprising copolymerizing a mixture of poly(arylene ether-amide), produced by the reaction of a bicyclic amide acetal and a polyphenolic compound, and a polyisocyanate.

4,798,882

BRANCHED POLYCARBONATE FROM METHYLENE-BIS-NAPHTHALENE COMPOUND

Alberto Petri, Milan, assignor to Enichem Tecnoresine S.p.A., Milan, Italy

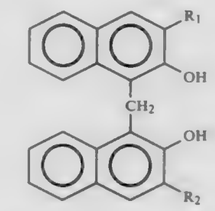
Filed Jul. 17, 1987, Ser. No. 75,042

Claims priority, application Italy, Jul. 23, 1986, 21233 A/86

Int. Cl.[4] C08G *63/62*

U.S. Cl. 528—190 **17 Claims**

1. Thermoplastic, blow moldable, branched polycarbonate derived from at least one aromatic dihydroxy compound, phosgene, and a branching agent methylene-bis-naphthalene compound having the formula:



(I)

wherein R_1 and R_2, are the same or different from each other, and represent —COOH or COCL.

4,798,883

MODIFIED POLYETHYLENE NAPHTHALATE

William C. T. Tung, Tallmadge, and Merry E. Floyd, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 1, 1988, Ser. No. 176,555

Int. Cl.[4] C08G *63/02*

U.S. Cl. 528—272 **19 Claims**

1. A polyester consisting essentially of repeat units which are derived from (a) a naphthalene dicarboxylic acid and (b) a diol component which is comprised of (1) at least one glycol containing from 2 to 12 carbon atoms and (2) from about 1 to about 12 weight percent of at least one polyester glycol based upon the total weight of the polymer wherein said polyether glycol has the structural formula:

wherein A is an alkylene group containing from 2 to about 8 carbon atoms and wherein n is an integer from 2 to about 400.

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4,798,884

PROCESS FOR THE WORKING-UP OF ETHYLENE/CARBON MONOXIDE ALTERNATING COPOLYMERS

Hearicus M. J. Bross, and Maarten M. Geuze, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1986, Ser. No. 945,594
Claims priority, application Netherlands, Dec. 23, 1985, 8503545
Int. Cl.[4] C08G *67/02*
U.S. Cl. 528—491 **9 Claims**

1. A process for working up a linear alternating copolymer of carbon monoxide and ethylene which process comprises washing the copolymer in the absence of molecular oxygen with an organic solvent selected from the group consisting of aliphatic alcohols, ketones, ethers, nitriles and saturated hydrocarbons, separating the copolymer from the solvent and drying the copolymer at a temperature of at least (T-30)°C., wherein T is the boiling point of the solvent at room pressure, in the absence of molecular oxygen and in the absence of water.

4,798,885

COMPOSITIONS OF HORMONALLY ACTIVE HUMAN AND PORCINE INHIBIN CONTAINING AN α CHAIN AND 62 CHAIN

Anthony J. Mason, and Peter H. Seeburg, both of San Francisco, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 827,710, Feb. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 783,910, Oct. 3, 1985, abandoned. This application Dec. 31, 1986, Ser. No. 906,729
Int. Cl.[4] C07K *13/00*
U.S. Cl. 530—350 **24 Claims**

1. A composition comprising hormonally active human inhibin as a product of recombinant host cell expression, the human inhibin containing an α chain and a β chain wherein the α chain has the amino acid sequence

Ser Thr Pro Leu Met Ser Trp Pro Trp Ser Pro Ser Ala Leu Arg Leu Leu Gln Arg Pro Pro Glu Glu Pro Ala Ala His Ala Asn Cys His Arg Val Ala Leu Asn Ile Ser Phe Gln Glu Leu Gly Trp Glu Arg Trp Ile Val Tyr Pro Pro Ser Phe Ile Phe His Tyr Cys His Gly Gly Cys Gly Leu His Ile Pro Pro Asn Leu Ser Leu Pro Val Pro Gly Ala Pro Pro Thr Pro Ala Gln Pro Tyr Ser Leu Leu Pro Gly Ala Gln Pro Cys Cys Ala Ala Leu Pro Gly Thr Met Arg Pro Leu His Val Arg Thr Thr Ser Asp Gly Gly Tyr Ser Phe Lys Tyr Glu Thr Val Pro Asn Leu Leu Thr Gln His Cys Ala Cys Ile

and the β chain is selected from the βA chain sequence

Gly Leu Glu Cys Asp Gly Lys Val Asn Ile Cys Cys Lys Lys Gln Phe Phe Val Ser Phe Lys Asp Ile Gly Trp Asn Asp Trp Ile Ile Ala Pro Ser Gly Tyr His Ala Asn Tyr Cys Glu Gly Glu Cys Pro Ser His Ile Ala Gly Thr Ser Gly Ser Ser Leu Ser Phe His Ser Thr Val Ile Asn His Tyr Arg Met Arg Gly His Ser Pro Phe Ala Asn Leu Lys Ser Cys Cys Val Pro Thr Lys Leu Arg Pro Met Ser Met Leu Tyr Tyr Asp Asp Gly Gln Asn Ile Ile Lys Lys Asp Ile Gln Asn Met Ile Val Glu Glu Cys Gly Cys Ser

or the βB chain sequence

Gly Leu Glu Cys Asp Gly Arg Thr Asn Leu Cys Cys Arg Gln Gln Phe Phe Ile Asp Phe Arg Leu Ile Gly Trp Asn Asp Trp Ile Ile Ala Pro Thr Gly Tyr Tyr Gly Asn Tyr Cys Glu Gly Ser Cys Pro Ala Tyr Leu Ala Gly Val Pro Gly Ser Ala Ser Ser Phe His Thr Ala Val Val Asn Gln Tyr Arg Met Arg Gly Leu Asn Pro Gly Thr Val Asn Ser Cys Cys Ile Pro Thr Lys Leu Ser Thr Met Ser Met Leu Tyr Phe Asp Asp Glu Tyr Asn Ile Val Lys Arg Asp Val Pro Asn Met Ile Val Glu Glu Cys Gly Cys Ala;

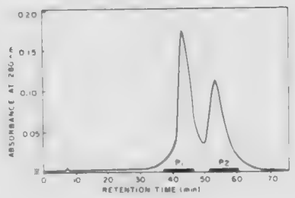
and hormonally active, substantially homologous amino acid sequence variants of said human inhibin other than porcine inhibin.

4,798,886

MUTUAL SEPARATION OF PROTEINS

Koichi Kato, Kawabe; Takao Yamada, Matsubara, and Kenji Kawahara, Izumi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 12, 1987, Ser. No. 25,269
Claims priority, application Japan, Mar. 24, 1986, 61-066399
Int. Cl.[4] C07K *3/18*
U.S. Cl. 530—416 **17 Claims**



1. A method of mutually separating a protein or a Met-protein from a mixture comprising the protein and Met-protein, which comprises subjecting the mixture to a separation procedure utilizing the difference in the affinity for hydroxyapatite between the protein and the Met-protein.

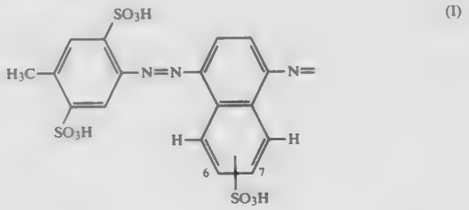
4,798,887

AZO DYES OF METHYLANILINE DISULFONIC ACID COUPLED WITH NAPHTHYLAMINE SULFONIC ACID

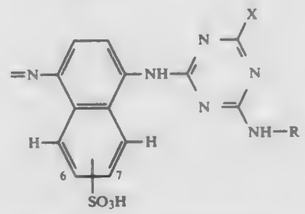
Heinz Krueger, Limburgerhof; Hartmut Lardon, Ludwigshafen, and Manfred Patsch, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Apr. 29, 1986, Ser. No. 857,051
Claims priority, application Fed. Rep. of Germany, May 14, 1985, 3517366
Int. Cl.[4] C09B *62/09, 62/513;* **D06P** *1/382, 3/66*
U.S. Cl. 534—637 **1 Claim**

1. A compound which, in the form of the free acid, is of the formula (I):



(I)



wherein X is chlorine; and R is hydrogen, vinylsulfonylphenyl, β-sulfatoethylsulfonylphenyl, vinylsulfonylbenzyl, sulfophenyl or β-sulfatoethylsulfonylbenzyl, and wherein the sulfo groups are in the 6-position of the naphthalene radicals.

4,798,888

DRY POLYMERS

Kenneth C. Symes, and Peter Flesher, both of West Yorkshire, United Kingdom, assignors to Allied Colloids Ltd., England

Continuation-in-part of Ser. No. 609,681, May 11, 1984, Pat. No. 4,571,422, which is a continuation-in-part of Ser. No. 552,591, Nov. 16, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 719,671
Claims priority, application United Kingdom, Oct. 19, 1984, 8426529
Int. Cl.[4] C08B *37/00*
U.S. Cl. 536—123 **15 Claims**

1. A process of making a powdered microbial polysaccharide comprising spray drying an emulsion in a non-aqueous liquid of an aqueous solution of the said microbial polysaccharide and thereby producing the powdered microbial polysaccharide substantially free of non-aqueous liquid.

8. Spray dried, powdered, microbial polysaccharide having an average particle size below 250 microns and at least 90% by weight of the powder having a particle size range extending over not more than 100 microns.

4,798,889

METHOD FOR STABILIZING UNSATURATED ORGANOSILICONE COMPOSITIONS

Edwin P. Plueddemann, Midland, and Howard M. Bank, Freeland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 13, 1987, Ser. No. 120,256
Int. Cl.[4] C07F *7/8*
U.S. Cl. 556—401 **58 Claims**

1. A method for stabilizing an organosilicone, selected from alkoxysilanes having a reactive organic group bearing at least one radical selected from the group consisting of acryloxy, methacryloxy, acrylamide, methacrylamide, styryl and vinylbenzyl radicals, said method comprising adding to said organosilicone a stabilizing amount of a hydroxylamine compound selected from the group consisting of those having the general formula

Q_2NOH

in which Q independently denotes an alkyl radical having 1 to 12 carbon atoms, a cycloalkyl group having 5 to 12 carbon atoms or an aryl group having 6 to 9 carbon atoms, and those having the formula



in which G denotes a hydrocarbyl group having 5 to 11 carbon atoms.

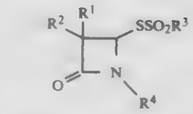
4,798,890

PROCESS FOR PREPARATION OF AZETIDINONE DERIVATIVES

Sigeru Torii; Hideo Tanaka, both of Okayama; Michio Sasaoka, and Takashi Shiroi, both of Tokushima, all of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

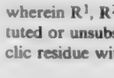
Continuation of Ser. No. 680,722, Dec. 12, 1984, abandoned. This application Apr. 21, 1988, Ser. No. 186,693
Claims priority, application Japan, May 8, 1984, 59-92397
Int. Cl.[4] C07B *45/00;* **C07D** *205.08, 401/06, 403/12*
U.S. Cl. 540—358 **6 Claims**

1. A process for preparing an azetidinone derivative represented by the formula

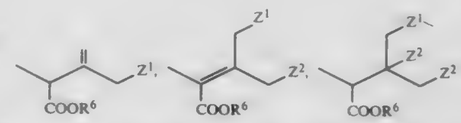


(I)

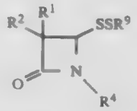
wherein R^1 is hydrogen, halogen or lower alkoxy, R^2 is hydrogen, a halogen, lower alkoxy, amino or a group



(in which R^5 is substituted or unsubstituted phenyl, substituted or unsubstituted phenylmethyl, substituted or unsubstituted phenoxymethyl, or substituted or unsubstituted benzoyl), or R^1 and R^2, when taken together with the carbon atom in the azetidinone ring, are carbonyl, R^3 is substituted or unsubstituted phenyl, and R^4 is hydrogen or one of the following groups



(in which R^6 is hydrogen or a carboxy protecting group, and Z^1 and Z^2 are the same or different and represent hydrogen, a halogen, C_1–C_4 alkylthio, phenylthio optionally substituted with 1 to 5 nitro groups or halogen atoms on the phenyl ring, 2-pyridylthio, 2-benzothiadiazolylthio, 1,3,4-thiadiazol-5-ylthio, 1,2,3,4-tetrazol-4-ylthio, O-ethyldithiocarbonate, N,N-diethyldithiocarbamate, phenyl-sulfonyl, p-methylphenylsulfonyl, hydroxy, C_1–C_4 alkoxy, C_1–C_4 acyloxy, benzoyloxy, nitrosoxy, diphenylphosphonyloxy, methanesulfonate, diphenylmethyloxy, di(C_1–C_4 alkyl)amino or piperidin-1-yl), the process consisting essentially of reacting a dithioazetidinone derivative represented by the formula



(VI)

wherein R^1, R^2 and R^4 are as defined above and R^9 is a substituted or unsubstituted nitrogen-containing aromatic heterocyclic residue with a compound represented by the formula

R^3SO_2H (VII)

wherein R^3 is as defined above, said reaction being conducted in a reaction system consisting essentially of the dithioazetidinone derivative of formula (VI), the compound of formula (VII), and an organic solvent or a mixture of said organic solvent and water, the organic solvent being at least one selected from the group consisting of ketones, esters, aromatic hydrocarbons, halogenated hydrocarbons, ethers, nitroalkanes, nitriles and alcohols.

VOL 1098 ISS 3 JA 17 1989 UMI

4,798,891

VINYLOGOUS PORPHYRINS

Burchard Franck, and Martin Gosmann, both of Muenster, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

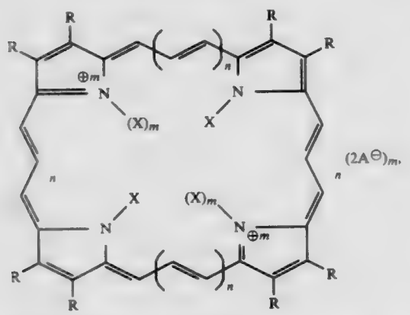
Filed Oct. 15, 1987, Ser. No. 108,706

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1986, 3635820

Int. Cl.[4] C07D *487/22*

U.S. Cl. 540—472 **3 Claims**

1. A compound of the formula I



(I)

where the symbols n independently of one another are each 1 or 2, or two n's are each 1 and the other two are each 0, m is 0 or 1, A^- is an anion, the radicals X independently of one another are each hydrogen, methyl or ethyl and the radicals R independently of one another are each C_1–C_{20}-alkyl, C_5–C_7-cycloalkyl, C_7–C_{10}-phenylalkyl, C_1–C_6-alkyl substituted by C_1–C_{12}-alkoxycarbonyl, or phenyl or phenyl substituted by chlorine, bromine, cyano, C_1–C_4-alkyl or C_1–C_4-alkoxy, or two adjacent radicals R may furthermore be alkylene or, together with the carbon atoms to which they are bonded, may form an unsaturated or aromatic ring.

4,798,892

2-HYDROXYPROPYLAMINE HETEROARYL ESTER DERIVATIVES

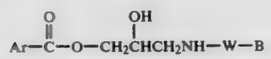
Sheung T. Kam, Chicago; William L. Matier, Libertyville; Ghanshyam Patil, Vernon Hills, and Khuong H. X. Mai, Waukegan, all of Ill., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 320,773, Nov. 12, 1981, Pat. No. 4,582,855. This application Apr. 14, 1986, Ser. No. 851,629

Int. Cl.[4] C07D *307/54, 333/38*

U.S. Cl. 544—146 **9 Claims**

1. A compound of the formula



wherein Ar represents a furyl or thienyl group which may be unsubstituted or substituted with lower alkyl from 1 to about 6 carbon atoms, alkenyl of from 1 to about 6 carbon atoms, alkynyl of from 2 to about 10 carbon atoms, alkoxy wherein the alkyl group contains from 1 to about 6 carbon atoms, halogen, acetamido, amino, nitro, phenoxy, alkylamino of from 1 to about 10 carbon atoms, hydroxy, hydroxyalkyl of from 1 to about 10 carbon atoms, and cyano, arylalkoxy wherein the alkyl group contains from 1 to about 6 carbon atoms and the aryl group represents phenyl which may be unsubstituted or substituted with lower alkyl from 1 to about 6 carbon atoms; W represents alkylene of from 1 to about 10 carbon atoms; and B represents $—NR_2COR_1$, $—NR_2CONR_1R_3$, $—NR_2SO_2R_1$, $—NR_2SO_2NR_1R_3$, oR $—NR_2COOR_1$ wherein R_1, R_2 and R_3 may be the same or different and may be hydrogen, alkyl, alkoxyalkyl, cycloalkyl, alkenyl, alkynyl, phenyl or aralkyl wherein the alkyl group contains from 1 to about 6 carbon atoms and the aryl group represents phenyl which may be unsubstituted or substituted with lower alkyl from 1 to about 6 carbon atoms; furyl or thienyl or R_1 and R_3 may together with N form a morpholino ring and except that R_1 is not hydrogen when B is $—NR_2SO_2R_1$ or NR_2COOR_1; and the pharmaceutically acceptable salts thereof.

4,798,893

PROCESS FOR PRODUCING 1-(5-SUBSTITUTED-2-ETHYNYLPHENYL)-2-PROPANONES

David A. Cherry, Ambler; Cynthia A. Maryanoff, Solebury Township; John E. Mills, Hatfield; Roy A. Olofson, State College, and James D. Rodgers, North Wales, all of Pa., assignors to McNeilab, Inc., Springhouse, Pa.

Filed Sep. 21, 1987, Ser. No. 99,427

Int. Cl.[4] C07D *251/16, 251/20;* **C07C** *69/78, 49/217*

U.S. Cl. 544—215 **13 Claims**

1. A process for the preparation of a 2-propanone of the following formula (I):



(I)

wherein

R^1 and R^2 are the same and are hydrogen or alkyl;

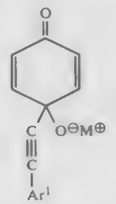
R^3 is hydrogen, alkyl or COR^4;

R^4 is alkyl, substituted alkyl, aryl or substituted aryl; and

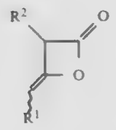
Ar^1 is phenyl or a 5- or 6-membered heterocyclic aromatic ring which rings may be independently substituted by one or more of alkyl, alkoxy, alkylthio, dialkylamino, carboxamido, halogen, fluoroalkyl or cyano,

which comprises the steps of:

(a) condensing a carbinol of the following formula (II) with a diketene derivative of the following formula (III):



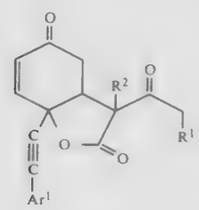
(II)



(III)

wherein

M is a metallic cation, to produce a lactone of the following formula (IV):



(IV)

and

(b) decarboxylating the lactone of formula (IV) in the presence of an R^3 source to produce the 2-propanone of formula (I).

4,798,894

GEM CYCLODIALKYLATION OF AMINES AND AMIDES

Duane C. Hargis, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 11, 1987, Ser. No. 48,585

Int. Cl.[4] C07D *473/34, 295/02*

U.S. Cl. 544—277 **20 Claims**

1. The process of converting an N,N-dialkylatable amino or amido group into an N,N-cyclodialkylated amino or amido group which comprises reacting a compound containing at least one N,N-dialkylatable amino or amido group with (a) an unstrained cyclic ether co-reactive therewith or (b) a polyol cyclizable to an unstrained cyclic ether co-reactive therewith in the presence of a viable titanium dioxide alkylation catalyst characterized by having prior to use a surface area of at least 70 square meters per gram as determined by the BET method and by having prior to use the capability of chemically adsorbing at 100° C. at least 35×10^{-4} millimoles of gaseous ammonia per square meter of surface area, so that at least one such N,N-dialkylatable amino or amido group is transformed into a N,N-cyclodialkylated amino or amido group, respectively.

4,798,895

PROCESS FOR PREPARING LEVOMEPROMAZINE HYDROGEN MALEATE

Christian Berger, Ecully, France, assignor to Rhone-Poulenc Sante, Courbevoie, France

Filed Jun. 24, 1987, Ser. No. 66,010

Claims priority, application France, Jun. 26, 1986, 8609261

Int. Cl.[4] C07D *279/28*

U.S. Cl. 544—41 **3 Claims**

1. A process for preparing levomepromazine hydrogen maleate from (±)-10-(3-dimethylamino-2-methyl-propyl)-2-methoxyphenothiazine, which comprises resolving (±)-10-(3-dimethylamino-2-methylpropyl)-2-methoxyphenothiazine with (−)-di(p-toluoyl)-L-tartaric acid using 0.25 to 0.5 mole of (−)-di(p-toluoyl)-L-tartaric acid per mole of (±)-10-(3-dimethylamino-2-methylpropyl) -2-methoxy-phenothiazine to produce the neutral salt of (−)-di(p-toluoyl) tartaric acid and (±)-10-(3-dimethylamino-2-methylpropyl) -2-methoxyphenothiazine and mother liquors containing (−)-10-(3-dimethylamino-2-methylpropyl)-2-methoxyphenothiazine, and the precipitating levomepromazine hydrogen maleate from the mother liquors by the action of maleic acid, and, optionally, isolating the unresolved racemic base and/or regenerating the (−)-di(p-toluoyl)-L-tartaric acid.

4,798,896

ANTIPSYCHOTIC GAMMA-CARBOLINE N-OXIDES

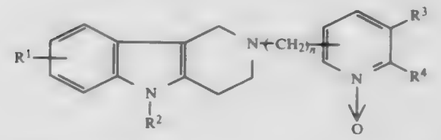
Magid A. Abou-Gharbia, Wilmington, Del.; John P. Yardley, Gulph Mills, and Cesario O. Tio, Coatesville, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 19, 1988, Ser. No. 145,426

Int. Cl.[4] C07D *471/04*

U.S. Cl. 546—87 **3 Claims**

1. A compound of the formula:



in which

R^1 is hydrogen, halogen, hydroxy, alkoxy of 1 to 6 carbon atoms, or alkyl of 1 to 6 carbon atoms;

R^2 is hydrogen, phenyl or phenyl substituted by a methyl, ethyl, methoxy, ethoxy, halogen, trifluoromethyl, cyano or nitro group;

R^3 and R^4 are hydrogen, or, when taken together, butadienylene; and

n is one of the integers 1, 2, 3, 4, 5, 6 or 7, or a pharmaceutically acceptable salt thereof.

4,798,897

ISOQUINOLINE DERIVATIVES

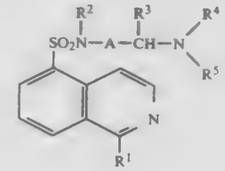
Hiroyoshi Hidaka, Tshu, and Anri Morikawa, Narashino, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 21, 1987, Ser. No. 40,828

Int. Cl.[4] C07D *401/12, 217/00*

U.S. Cl. 546—139 **13 Claims**

1. An isoquinoline derivative represented by the formula (I)



(I)

wherein

R^1 is selected from the group consisting of a hydrogen atom, a chlorine atom and a hydroxyl group;

R^2 is selected from the group consisting of an alkyl group having 1 to 8 carbon atoms and a benzyl group, or directly bonded with R^3 to form Z;

R^3 is selected from the group consisting of a hydrogen atom and an alkyl group having 1 to 8 carbon atoms, or directly bonded with R^2 to form Z;

said Z being selected from the group consisting of an unsubstituted ethylene group, an ethylene group substituted with an alkyl group having 1 to 8 carbon atoms, an unsubstituted trimethylene group, and a trimethylene group substituted with an alkyl group having 1 to 8 carbon atoms;

provided that where R^2 and R^3 are not directly bonded with each other, R^1 is a hydrogen atom, and

where R^2 and R^3 are directly bonded with each other to form Z, R^1 is selected from the group consisting of a hydrogen atom, a chlorine atom and a hydroxyl group;

R^4 and R^5 are independently selected from the group con-

sisting of a hydrogen atom, an alkyl group having 1 to 6 carbon atoms which is unsubstituted or substituted with a phenyl group, and a phenyl group, or R^4 and R^5 are each alkylene groups having 1 to 5 carbon atoms and bonded with each other directly or through an oxygen atom to form a heterocyclic ring in cooperation with the adjacent nitrogen atom, the total number of carbon atoms in the two alkylene groups not exceeding 6; and

A is an alkylene group having 1 to 5 carbon atoms which is unsubstituted or substituted with an alkyl group having 1 to 8 carbon atoms;

or a pharmacologically acceptable acid salt thereof.

4,798,898

ANTITUSSIVE AND MUCUS REGULATING 2-SUBSTITUTED THIAZOLIDINES

Carmelo A. Gandolfi; Silvano Spinelli; Odoardo Tofanetti; Raimondo Russo, and Sergio Tognella, all of Milan, Italy, assignors to Boehringer Biochemia Robin S.p.A., Milan, Italy

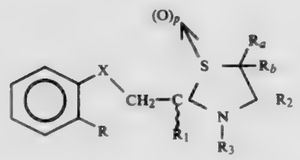
Filed Jul. 17, 1985, Ser. No. 755,834

Claims priority, application United Kingdom, Jul. 27, 1984, 8419254

Int. Cl.⁴ A61K *31/425, 31/38;* **C07C** *277/04*

U.S. Cl. 548—146 **15 Claims**

1. Compound of formula I



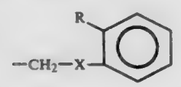
(I)

wherein:

X is a CH_2, O, S;

R is hydroxy, or an ester thereof of formula $R_c—CO_2—$, lower C_1–C_6-alkoxy, $CH_2=CH—CH_2O—$; $HC\equiv C—CH_2—O—$; methyl

R_1 is hydrogen or

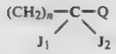


p is zero or 1 with the proviso that when X is sulfur p is zero;

both R_a and R_b are hydrogen or methyl;

R_2 is hydrogen and R_3 is, a C_1–C_2 alkylsulphonyl group, an unsubstituted or mono or polysubstituted phenylsulfonyl group or an acyl group of formula $R_dCO—$;

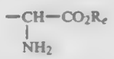
Rc and Rd, which are the same or different are: hydrogen, $—O—C(CH_3)_3$, $—(CH_2)_n—Q$ and



wherein n is 0 or an integer from 1 to 7;

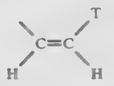
J_1, J_2, are both hydrogen or one of them is hydrogen and the other one is lower C_1–C_4 alkyl or phenyl and Q is selected from the group consisting of:

hydrogen; a C_3–C_4-branched alkyl; a C_3–C_7 cycloalkyl; free or esterified carboxy group; an halogen atom; SH; $—NH_2$; a mono or di-substituted amino, t-butoxy carbonylamino or C_1–C_2 acylamino group; an ether $—O—(CH_2)_m—T$ or thioether $—S—T$ chain, wherein T is an unsubstituted or mono- or polysubstituted phenyl ring or a group of formula $—(CH_2)_m—T_1$, wherein T_1 is selected from the group consisting of H, OH, $—OCH_3$, OC_2H_5, $HOCH_2—CH_2—$, free and esterified carboxy group, NH_2, a C_1–C_2-acylamino or mono- or disubstituted amino group, or a group of formula



wherein R_e is hydrogen, methyl or ethyl and m is an integer from 1 to 3; a phenyl, phenoxy or phenylthio ring unsubstituted or mono- or polysubstituted in the m, o, and p-positions;

a group of formula $—(CH_2)_m—SCO—(CH_2)_nJ$ wherein m and n have the above defined meanings and P_3 is a lower C_1–C_7 linear or branched alkyl chain, a C_3–C_6-cycloalkyl, a disubstituted amino group, a phenyl or phenoxy ring, optionally mono- or polysubstituted in the o, m and p-positions; an alkenyl chain of formula

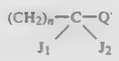


wherein T, in addition to the above defined meanings, is also hydrogen; or

R_2 is a free or esterified carboxy group; and

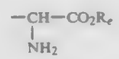
R_3 is hydrogen, a C_1–C_2 alkylsulphonyl group, an unsubstituted or mono or polysubstituted phenylsulfonyl group or an acyl group of formula R'_dCO';

wherein R'd is hydrogen, $—O—C(CH_3)_3$, $—(CH_2)_n—Q'$ and



wherein n is 0 or an integer from 1 to 7; J_1, J_2, are both hydrogen or one of them is hydrogen and the other one is lower C_1–C_4 alkyl or phenyl and Q' is selected from the group consisting of:

hydrogen; a C_3–C_4-branched alkyl; a C_3–C_7 cycloalkyl; free or esterified carboxy group; $—NH_2$; a mono or disubstituted amino, t-butoxy carbonylamino or C_1–C_2 acylamino group; an ether $—O—(CH_2)_m—T$ or thioether $—S—T$ chain, wherein T is an unsubstituted or mono- or polysubstituted phenyl ring or a group of formula $(CH_2)_m—T_1$, wherein T_1 is selected from the group consisting of H, OH, OCH_3, $—OC_2H_5$, $HOCH_2—CH_2—$, free and esterified carboxy group, NH_2, a C_1–C_2-acylamino or mono- or disubstituted amino group, or a group of formula

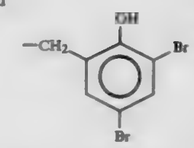


wherein R_e is hydrogen, methyl or ethyl and m is an integer from 1 to 3; a phenyl, phenoxy or phenylthio ring unsubstituted or mono- or polysubstituted in the m, o, and p-positions;

wherein the term "mono substituted amino group" means an amino group substituted by a C_1–C_6 linear or branched alkyl group or by groups having the formula:

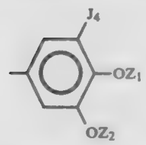
$—CH_2—CH_2—O—CH_2—CH_3$,
$—CH_2—CH_2—O—CH_2—CH_2—OH$,
$—CH_2—CH_2—NH—CH_2—CH_3$,
$—CH_2—CH_2—NH—CH_2—CH_2—OH$ or

-continued



wherein the substituents of a disubstituted amino group are linear or branched C_1–C_6 alkyl groups or:

and wherein the term "mono- or polysubstituted phenyl" means phenyl which is substituted by a fluorine atom in the para position, by chlorine atoms in the meta and/or para positions, or by a CF_3 group in the meta position, or a phenyl group of the formula:



wherein Z_1 is H or $COCH_3$ and Z_2 is H, CH_3 or $COCH_3$ and J_4 is hydrogen, aminomethyl, C_1–C_2-acylaminomethyl or a mono or disubstituted aminomethyl group, as above defined; or salts with non-toxic bases or acids thereof, enantiomers, diastereoisomers or mixtures thereof.

4,798,899

COMBATING FUNGI WITH NOVEL AZOLYL-TETRAHYDROFURAN-2-YLIDENE-METHANES

Hans-Ludwig Elbe, Wuppertal; Manfred Jautelat; Karl H. Büchel, both of Burscheid; Wilhelm Brandes, Leichlingen; Gerd Hänssler, and Paul Reinecke, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

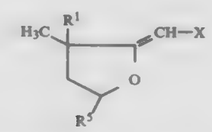
Division of Ser. No. 658,941, Oct. 9, 1984, Pat. No. 4,619,940. This application Jun. 27, 1986, Ser. No. 879,662

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336861

Int. Cl.⁴ C07D *249/08, 233/56*

U.S. Cl. 548—262 **5 Claims**

1. A substituted 2-methylene-tetrahydrofuran of the formula



in which

X represents chlorine, 1,2,4-triazolyl or imidazolyl, and

R^1, is methyl or ethyl,

R^5 is hydrogen, methyl or bromomethyl with the proviso that R^5 cannot represent hydrogen if R^1 is methyl.

4,798,900

PRODUCING BIS(ALICYCLIC) THIOETHERS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 10, 1986, Ser. No. 917,773

Int. Cl.⁴ C07D *209/48, 307/89;* **C07C** *51/36*

U.S. Cl. 548—461 **12 Claims**

1. A process of producing thioethers having two six-membered alicyclic rings in the molecule which comprises heating at a temperature in the range of 100° to 200° C. a reaction system composed of a 3,3'-thiobis(2,5-dihydrothiophene-1, 1-dioxide) and a reactive Diels-Alder dienophile so that cyclization occurs.

4,798,901

NOVEL PYRROLE DERIVATIVES

Jean Tessier, Vincennes; Jean-Pierre Demoute, Montreuil Sous Bois, and Laurent Taliani, Pavillons Sous Bois, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 765,317, Aug. 13, 1985, Pat. No. 4,737,513. This application Dec. 2, 1987, Ser. No. 127,922

Claims priority, application France, Aug. 14, 1984, 84 12791; Apr. 21, 1985, 85 06134

Int. Cl.⁴ C07D *207/325, 207/333*

U.S. Cl. 548—562 **2 Claims**

2. 1-(2-propynyl)-2-trifluoromethyl-3-pyrrol-methanol.

4,798,902

ZIRCONIUM CHELATES AND THEIR USE FOR CROSS-LINKING

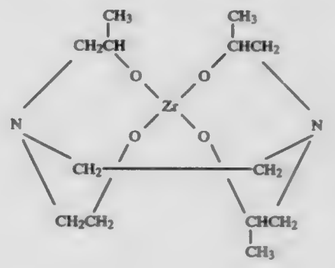
Donald E. Putzig, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 9, 1987, Ser. No. 12,404

Int. Cl.⁴ C07F *7/00*

U.S. Cl. 556—54 **6 Claims**

1. A zirconium diamine chelate represented by the formula:



4,798,903

OPTICALLY ACTIVE 3,3'-DISILYLBINAPHTHOL DERIVATIVES

Hisashi Yamamoto, Aichi, and Keiji Maruoka, Nagoya, both of Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

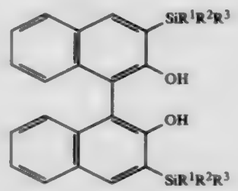
Filed Feb. 25, 1988, Ser. No. 160,258

Claims priority, application Japan, Mar. 10, 1987, 62-54857

Int. Cl.⁴ C07F *7/08*

U.S. Cl. 556—432 **5 Claims**

1. Optically active 3,3'-disilylbinaphthol derivatives which are represented by a general formula (I)



(I)

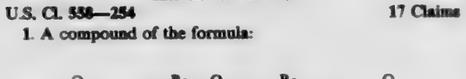
wherein R^1, R^2 and R^3 indicate mutually same or different lower alkyl groups and/or aromatic groups,
and the steric configuration of which is R form or S form.

4,798,904
CERTAIN [(LOWER ALKANOYL-THIO)METHYL-1-OXO-3-PHENYL PROPYL AMINO]BENZENE LOWER ALKANOIC ACID OR ESTER DERIVATIVES WHICH INHIBIT ENKEPHALINASE

Norma G. Delaney, Princeton; Eric M. Gordon, Pennington, and Miguel A. Ondetti, Princeton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 896,318, Aug. 13, 1986, Pat. No. 4,722,810, which is a continuation of Ser. No. 641,221, Aug. 15, 1984, abandoned, which is a continuation-in-part of Ser. No. 538,731, Oct. 3, 1983, abandoned. This application Nov. 13, 1987, Ser. No. 119,930
Int. Cl.[4] C07C *153/11*
U.S. Cl. 558—254 17 Claims

1. A compound of the formula:



including a pharmaceutically acceptable salt thereof wherein:

R_2 is $-(CH_2)_m-$ or $-(CH_2)_m-$ $(R_6)_r$;

R_3 is hydrogen, lower alkyl,

$-(CH_2)_m-$, $-(CH_2)_m-$ $(R_6)_r$;

R_4 is —OH or —OCH_3;
n is an integer from 1 to 15;
R_5 is lower alkyl,

$-(CH_2)_m-$, or $-(CH_2)_m-$ $(R_6)_r$;

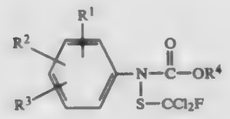
m is zero or an integer from 1 to 4;
R_6 is lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, hydroxy, Cl, Br, F or trifluoromethyl; and
r is an integer from 1 to 3 provided that r is more than one only if R_6 is hydroxy, methyl, methoxy, Cl, or F.

4,798,905
SULPHENYLATED CARBAMIC ACID ESTERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Engelbert Kühle, Bergisch Gladbach; Wilfried Paulus; Hermann Gerth, both of Krefeld; Paul Reinecke; Gerd Hänssler, both of Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 734,924, May 16, 1985, abandoned. This application Aug. 18, 1987, Ser. No. 87,056
Claims priority, application Fed. Rep. of Germany, May 17, 1984, 3418375
Int. Cl.[4] C07C *145/04*
U.S. Cl. 560—16 5 Claims

1. A N-sulphenylated carbamic acid ester of the formula



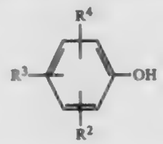
in which
R^1 to R^3 are identical or different and denote hydrogen, chloro or methyl and,
R^4 represents methyl.

4,798,906
PREPARATION OF ALKOXY HALIDES

Philip K. G. Hodgson, Walton-on-Thames, and Nevin J. Stewart, Guildford, both of England, assignors to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 850,568, Apr. 11, 1986, abandoned. This application Jul. 29, 1987, Ser. No. 83,942
Claims priority, application United Kingdom, Apr. 16, 1985, 85-09729
Int. Cl.[4] C07C *41/03, 41/22*
U.S. Cl. 568—614 8 Claims

1. A process for the production of an alkyl-, aryl- or alkylaryl-alkoxy halide which process comprises reacting an alcohol of formula R^1—OH, phenol or an alkyl phenol of formula



wherein R^1 is an alkyl group containing 1 to 24 carbon atoms,
R^2 is an alkyl group containing 1 to 24 carbon atoms and R^3 and R^4 are hydrogen atoms, or
R^2 and R^3 are both alkyl groups containing 1 to 12 carbon atoms and
R^4 is a hydrogen atom, or
R^2, R^3 and R^4 are each alkyl groups wherein the sum of the carbon number of the groups is in the range 3 to 24,
with ethylene oxide and/or propylene oxide to form an alkyl- aryl- or alkylaryl-alkoxy alcohol containing 1 to 15 alkoxy units per molecule,
wherein the alkoxylation reaction is carried out in the presence of a secondary amine as a catalyst and the alkoxyalcohol is directly reacted with a halogenating agent selected from the group consisting of thionyl chloride and sulphuryl chloride in the continuing presence of the amine catalyst.

4,798,907
CONTROLLED TEMPERATURE PROCESS FOR MAKING 2,2'-OXODISUCCINATES USEFUL AS LAUNDRY DETERGENT BUILDERS

Clifford L. MacBrair, Jr.; Daniel S. Connor; Herbert C. Kretschmar, all of Cincinnati, and James A. Cleary, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 26, 1988, Ser. No. 160,615
Int. Cl.[4] C07C *59/235*
U.S. Cl. 562—583 27 Claims

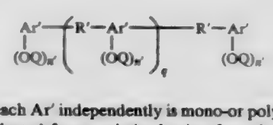
1. In an aqueous process for manufacturing 2,2'-oxodisuccinate by reacting starting-materials comprising the components:
I. an organic starting-material component comprising maleate;
II. a divalent metal cation component; and
III. an alkali component, to achieve the partial conversion of the organic starting-material component to 2,2'-oxodisuccinate, said process tending to form a fumarate byproduct, the improvement whereby a 2,2'-oxodisuccinate yield of about 80% or higher is secured, said improvement comprising:
A. selecting starting-materials which comprise:
I. an organic comprising maleate and preformed malate at a maleate:malate mole ratio in the range from about 0.7:1 to about 2.0:1;
II. a divalent metal cation component selected from calcium, magnesium and mixtures thereof at a divalent cation component:organic component mole ratio in the range from about 0.1:1 to about 0.95:1;
III. an alkali component selected from hydroxide and hydroxide-forming anions; and, additionally,
IV. a solubilizing monovalent cation component selected from sodium, potassium and mixtures thereof; and
B. conducting the process in a fluid, aqueous alkaline mixture of said starting-materials having the following net concentrations by weight:
water:
no more than about 75%;
alkali component III, expressed as net excess hydroxide:
at least about 0.0001%; and
solubilizing monovalent cation component IV:
at least about 1%; and
reacting said mixture B for a period sufficient to attain said 2,2'-oxodisuccinate yield at temperatures in the range from about 20° C. to about 110° C., and
arresting the reaction;
provided that the total duration of reaction is not less than about 12 hours an not more than about 400 days and further provided that:
the total time at any temperature above about 100° C. does not exceed about 1.5 hours and
the total time at any temperature above about 90° C. does not exceed about 4.5 hours and
the total time at any temperature above about 80° C. does not exceed about 13.5 hours and
the total time at any temperature above about 70° C. does not exceed about 1.7 days and
the total time at any temperature above about 60° C. does not exceed about 5.1 days and
the total time at any temperature above about 50° C. does not exceed about 15 days and
the total time at any temperature above about 40° C. does not exceed about 46 days and
the total time at any temperature above about 30° C. does not exceed about 137 days.

4,798,908
CURABLE AMIDOALKYLAROMATIC COMPOSITIONS

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 723,971, Apr. 16, 1985, Pat. No. 4,632,965, and a continuation-in-part of Ser. No. 301,170, Sep. 11, 1981, Pat. No. 4,517,131. This application Aug. 29, 1986, Ser. No. 901,842
Int. Cl.[4] C07C *103/00*
U.S. Cl. 564—153 5 Claims

1. A composition comprising a compound represented by the formula:

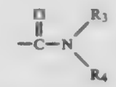


(A)

wherein each Ar' independently is mono-or polyvalent organic radical selected from moieties having from 1 to about 2 aromatic rings, n, is individually selected from 0, 1 or 2, with the proviso that at least one n, is not zero, q is at least 0.001; R' is independently a divalent hydrocarbon moiety having from 1 to about 3, carbon atoms or a



group, wherein z has a value of from zero to about 10 and Q is independently H or $(CR_1R_2)Y$ with the proviso that not all Q moieties are H; and Y is



wherein R_3 and R_4 are independently H or C_1–C_{10} alkyl; and wherein R_1 and R_2 are independently H or C_1–C_{10} alkyl.

4,798,909
PROCESS FOR RECOVERY OF POLYARYLPOLYAMINES

Efim Biller, Dufourstrasse 42, Zurich, Switzerland

Continuation of Ser. No. 95,023, Nov. 16, 1979, abandoned, which is a division of Ser. No. 914,814, Jun. 12, 1968, Pat. No. 4,250,114, which is a continuation of Ser. No. 792,951, May 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 690,341, May 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 474,302, May 30, 1974, abandoned. This application Nov. 23, 1983, Ser. No. 555,422
Claims priority, application Austria, Jun. 1, 1973, 4826/73; Sep. 17, 1973, 7991/73; Apr. 29, 1974, 3508/74; Switzerland, Nov. 11, 1975, 14618/75; May 5, 1976, 5854/76; Aug. 4, 1976, 10049/76; Nov. 6, 1976, 14011/76
Int. Cl.[4] C07C *87/50*
U.S. Cl. 564—334 6 Claims

1. In a process for the preparation of polyamines wherein an aryl amine is reacted with formaldehyde in the presence of an acid catalyst to form said polyamine, sufficient water is employed to cause separation of the reactant mixture during extraction of said mixture with the aryl amine into an organic phase and an aqueous phase and subsequently returning the aqueous phase to the reactor and recovering the resultant polyamine from the organic phase by known means, the improvement which comprises conducting the extraction at about room temperature and conducting the extraction in the

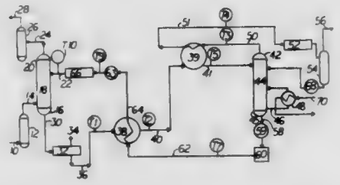
presence of a water soluble inorganic salt which is non-reactive with any of the components of the process.

4,798,910

PROCESS SEQUENCING FOR AMINE REGENERATION

J. Pearman Harris, 2703 Oak Bluff, San Antonio, Tex. 78230

Continuation-in-part of Ser. No. 696,253, Jan. 29, 1985, abandoned. This application Oct. 21, 1986, Ser. No. 921,630
Int. Cl.[4] C07C *85/26*
U.S. Cl. 564—497 3 Claims



1. A conventional amine regenaration process having at least a contactor, a first heat exchanger immediately downstream of said contactor, a stripper still, an overhead gas condenser, a lean amine cooler and a still reboiler comprising the additional steps of:

a first passing of rich amine liquid from the bottom of said contactor through said first heat exchanger said first exchanger not dispositioned on top of said stripper still;

transferring at least a portion of hot overhead gasses exiting the top of said stripper still to a second exchanger said second heat exchanger not dispositioned on top of said stripper still;

controlling by a temperature control means the temperature of a heated rich amine liquid into said second heat exchanger;

a second passing of said temperature controlled heated rich amine liquid through said second exchanger wherein said hot overhead gasses transfer thermal energy to said temperature controlled heated rich amine liquid resulting in a higher temperature rich amine and reduced temperature overhead gasses;

transferring said reduced temperature overhead gasses to said overhead gas condenser for separation into acid gasses and water;

a first transferring hottest lean amine from the bottom of said stripper still to a third heat exchanger;

a third passing of said higher temperature rich amine liquid through said third heat exchanger wherein said hottest lean amine from said bottom of said stripper still transfers thermal energy to said higher temperature rich amine liquid resulting in a highest temperature rich amine and hot temperature lean amine;

transferring said highest temperature rich amine liquid into said top of said stripper still for contacting steam generated within said still;

a second transferring said hot temperature lean amine to said first heat exchanger wherein said hot temperature lean amine transfers thermal energy to said rich amine liquid resulting in said heated rich amine liquid and a lower temperature lean amine;

a third transferring said lower temperature lean amine to said lean amine cooler;

said steps of first, second, and third transferring occurring in successive sequential order; and

said steps of first, second, and third passing occurring in successive sequential order, whereby a reduction in the heat requirement is obtained at said still reboiler.

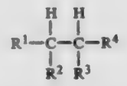
4,798,911

CATALYST COMPOSITION AND METHOD FOR SELECTIVE DEHYDROGENATION

Carl M. Lentz, Mt. Carmel; Bruce L. Gustafson, and Paul S. Wehner, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 20, 1987, Ser. No. 75,375
Int. Cl.[4] C07C *37/06, 39/12, 5/333, 5/367*
U.S. Cl. 568—747 23 Claims

1. A method for the selective dehydrogenation of a compound to produce an aromatic compounds or an acyclic olefin, said method, comprising dehydrogenating a compound of the formula



wherein each of R^1, R^2, R^3 and R^4 is independently selected from the group consisting of H, (C_1–C_{20}) alkyl, (C_3–C_{20}) cycloalkyl, (C_6–C_{20}) aryl, (C_7–C_{20}) alkylaryl, and (C_7–C_{20}) aralkyl groups, and substituted (C_1–C_{20}) alkyl, (C_3–C_{20}) cycloalkyl and (C_6–C_{20}) aryl, (C_7–C_{20}) alkylaryl and (C_7–C_{20}) aralkyl; each such group optionally substituted with —OR, wherein R is R^1, R^2, R^3 or R^4; and wherein R^1 and R^2 or R^3 and R^4 may be joined as part of a ring structure, at a dehydrogenation temperature in the presence of a catalyst comprising about 0.01 wt %–19.9 wt % Pd, and about 0.01 wt %–19.9 wt % Cu on a carbon support, wherein the total amount of (Pd+Cu) on the support is about 0.02 wt % to 20 wt %, the weight ratio of Pd:Cu is about 1:1 to 10:1, and the carbon support has a surface area of at least about 100 m^2/g and is essentially free of reactive sulfur.

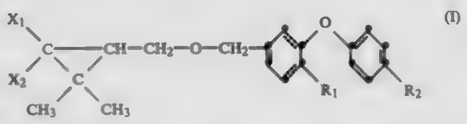
4,798,912

SUBSTITUTED PHENOXYBENZYL-(DIHALODIMETHYLCYCLOPROPYL-METHYL)ETHERS

Laurenz Goell, Basel, and Peter Ackermann, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 9, 1987, Ser. No. 118,816
Claims priority, application Switzerland, Nov. 19, 1986, 4619/86; Oct. 1, 1987, 3822/87
Int. Cl.[4] C07C *43/225*
U.S. Cl. 568—637 13 Claims

1. A compound of the formula I



(I)

in which

X_1 and X_2 each independently of the other represents fluorine, chlorine or bromine;

R_1 represents hydrogen or fluorine; and

R_2 represents hydrogen, fluorine, chlorine, bromine, methyl, trifluoromethyl or methoxy, and, if X_1 and X_2 have different meanings, the optical isomers of the compound of the formula I.

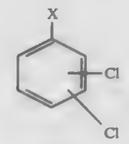
4,798,913

METHOD FOR SEPARATING A TRIHALOGENOBENZENE ISOMER

Kikuo Otomo; Masashi Yamaguchi; Masami Ito, and Hiroki Tokunaga, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1988, Ser. No. 140,991
Int. Cl.[4] C07C *17/38, 25/10*
U.S. Cl. 570—211 10 Claims

1. A method for separating a trihalogenobenzene isomer from a mixture of at least two trihalogenobenzene isomers selected from the group consisting of 1,2,3-, 1,2,4- and 1,3,5-substituted isomers among trihalogenobenzenes represented by the formula:



wherein X is Cl or Br, by means of a zeolite adsorber, characterized in that a ZSM-zeolite is used as the adsorber.

4,798,914

PROCESS FOR THE PRODUCTION OF VINYL CHLORIDE THROUGH THERMAL CRACKING OF 1,2-DICHLOROETHANE

Gerhard Link, Mainz; Walter Fröhlich; Reinhard Krumböck, both of Burgkirchen; Georg Prantl, and Iwo Schaffelhofer, both of Burghausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 8, 1987, Ser. No. 106,721
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1986, 3634550; Feb. 10, 1987, 3704028
Int. Cl.[4] C07C *17/34, 21/06*
U.S. Cl. 570—226 10 Claims

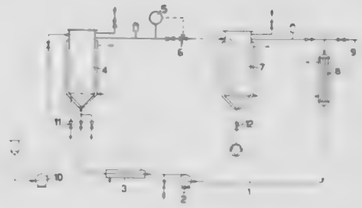
1. A process for the production of vinyl chloride through thermal elimination of hydrogen chloride from 1,2-dichloroethane in a cracking furnace, liquid 1,2-dichloroethane being warmed indirectly and evaporated using the hot, vinyl chloride-containing gas leaving the cracking furnace, and the gaseous 1,2-dichloroethane being introduced to the cracking furnace, which comprises warming the 1,2-dichloroethane to boiling in a first container with the vinyl chloride-containing gas and transferring said 1,2-dichloroethane from here into a second container in which it is partially evaporated, without further warming, under a lower pressure than in the first container, the evaporated 1,2-dichloroethane being fed into the cracking furnace and the nonevaporated 1,2-dichloroethane being fed back to the first container.

4,798,915

PROCESS FOR THE EXTRACTION OF PARAFFINS FROM MIXTURES THEREOF WITH ALKANE-SULFONIC ACIDS

Lucio Faggiss; Armando Marcotullio; Edoardo Platone, all of San Donato Milanese, and Emilio Picchi, Milan, all of Italy, assignors to Enitricerche S.p.A., Milan and Enichem Augusta S.p.A., Palermo, both of, Italy

Filed Mar. 18, 1987, Ser. No. 27,548
Claims priority, application Italy, Mar. 27, 1986, 19893 A/86
Int. Cl.[4] C07C *143/24*
U.S. Cl. 585—833 4 Claims



1. A process for extracting paraffins from a mixture of alkane-sulfonic acids, paraffins and sulfuric acid, said mixture being the product of the sulfoxidation of paraffins having from 12 to 18 carbon atoms, comprising adding one or more alcohols to said mixture, and contacting the mixture-alcohol combination with carbon dioxide under supercritical conditions of at least 32° C. and at least carbon dioxide critical pressure of 73.8 bars.

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4,798,916

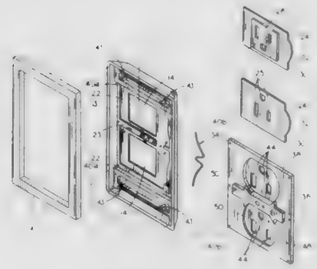
SAFETY PLATE FOR ELECTRICAL OUTLET

Stephen M. Engel, 512 N. Highland, and Wallace W. Weiger, 1005 W. 2nd, both of Pierre, S. Dak. 57501

Continuation-in-part of Ser. No. 91,722, Aug. 28, 1987, abandoned. This application Oct. 19, 1987, Ser. No. 109,758

Int. Cl.[4] H01R *13/453*

U.S. Cl. 174—67 8 Claims



1. A safety plate for a conventional electrical outlet of the type having a pair of receptacles, each receptacle having apertures therein for receiving the prongs of an electrical plug, comprising:

a cover plate having a pair of vertically aligned openings therethrough, the openings located so as to be centered over the receptacles of an outlet when the cover plate is fastened thereto;

said cover plate having a front surface, rearward surface, and a rearwardly projecting lip extending around the perimeter thereof;

the rearward surface of said cover plate having a pair of depressions therein for receiving slidable panels and a biasing means, the depressions surrounding the openings in said cover plate;

a pair of panels slidably mounted in the depressions in said cover plate;

said panels having a raised portion projecting forwardly through said cover plate openings so as to be flush with the front surface of said cover plate, said raised portion having dimensions to allow only horizontal slidable movement of the panel in said cover plate;

said panels further having apertures therein corresponding to the apertures in said receptacles, and in alignment therewith when said panels are in a use position;

biasing means connected to the rearward side of said cover plate adapted to bias said panels from their use position where the panel apertures are aligned with the receptacle apertures, to a non-use position where the panel apertures are misaligned from the receptacle apertures;

a back plate having apertures therethrough corresponding with said receptacle apertures and in alignment therewith when the cover plate is attached to the outlet, said back plate fastened to the rearward surface of said cover plate, and enclosing said slidable panels and biasing means within said depressions in the cover plate; and

means for removably attaching said cover plate to a conventional outlet.

4,798,917

KIT FOR PRODUCING FIREPROOF CABLE DUCTS

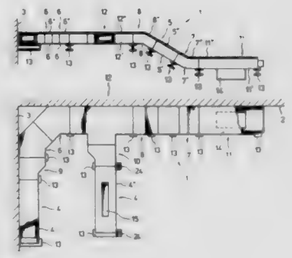
Horst W. Eiermann, Basel, Switzerland, and Christian Mühl, Nördl. Münchner Strasse 15B, D-8022 Grünwald, Fed. Rep. of Germany, assignors to PCT Pyrocheatek AG, Switzerland; Chemische Fabrik Grunau GmbH and Christian Mühl, both of, Fed. Rep. of Germany

Filed Oct. 31, 1986, Ser. No. 926,364

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1985, 3538844

Int. Cl.[4] H02G *3/04*

U.S. Cl. 174—72 R 23 Claims



1. A kit for producing a fireproof cable duct (1) from a plurality of parts, comprising:

a plurality of endwise connectable, self-supporting duct sections (4 to 12) made from thermally insulating material with substantially elongated reinforcements, the duct sections being prefabricated, and self-supporting when attached together, the duct sections (4 to 12) in each case having a trough section (4′ to 12′) made from thermally insulating material, the reinforcements externally reinforcing the trough sections and comprising longitudinally continuous sheet metal parts (16), the trough sections having a substantially U-shaped cross-section, and covers (4″ to 12″) fittable on the trough sections, the covers being made from thermally insulating material, the trough sections (4′ to 12′) being assemblable without the covers for cover-less laying of the duct (1) by connection of adjacent trough sections (4′ to 12′), and the covers (4″ to 12″) being detachably fixable to the trough sections, some of the duct sections being of different cross-sectional widths, and certain of the duct sections having widening and narrowing cross-sections for attachment thereto.

23. A kit for producing fireproof cable ducts for cables and lines, comprising:

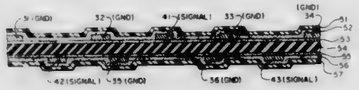
a plurality of prefabricated, self-supporting duct sections having trough sections made from thermally insulating material and longitudinally continuous sheet metal parts externally reinforcing the trough sections, the trough sections having a substantially U-shaped cross-section, the trough sections being endwise connectable and self-supporting when connected;

covers fittable on the trough sections, the covers also being made from thermally insulating material, the trough sections being self-supporting when connected apart from said covers; and

a plurality of cross-arms for supporting the trough sections in a vicinity of points of connection between end connecting faces of successive trough sections, the end connecting faces of the trough sections being perpendicular to adjacent bottom surfaces of the trough sections.

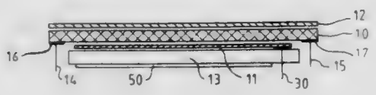
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4,798,918
HIGH DENSITY FLEXIBLE CIRCUIT
Ashok N. Kalnadi, Beaverton; Leonard O. Turner, and Michael T. White, both of Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Filed Sep. 21, 1987, Ser. No. 99,259
Int. Cl.[4] H01B *7/08*
U.S. Cl. 174—36 **15 Claims**



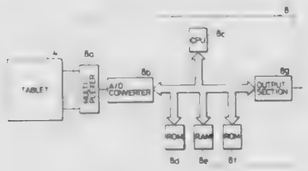
1. A circuit for coupling devices, comprising:
a strip of base material;
a first signal trace mounted on the top surface of said base material for carrying electrical signals, said first signal trace having a cross-sectional dimension D;
a first ground trace mounted on the top surface of said base material located on a first side of said first signal trace, said first ground trace having a cross-sectional dimension D;
a second ground trace mounted on the top surface of said base material located on a second side of said first signal trace, said second ground trace having a cross-sectional dimensional D;
a third ground trace mounted on the bottom surface of said base material located beneath said first signal trace, said third ground trace having a cross-sectional dimension D;
a fourth ground trace mounted on the bottom surface of said base material located adjacent to said third ground trace, said fourth ground trace having a cross-sectional dimension D.

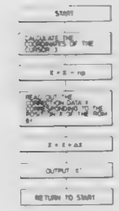
4,798,919
GRAPHICS INPUT TABLET WITH THREE-DIMENSIONAL DATA
Milan Miculer, Romsey, and Rafael Pascual, Winchester, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 11, 1988, Ser. No. 166,957
Claims priority, application United Kingdom, Apr. 28, 1987, 8710033
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 **10 Claims**



1. A graphics input tablet comprising a layer of electrically resistive material (10) supported co-extensively with a layer of electrically conductive material (11) to provide a flat tablet surface, the resistive material having the property that the electrical resistance between the layers in the region of localized pressure applied thereto changes monotonically with the applied pressure, first and second conductors (14,15) connected respectively to first and second portions of the resistive layer (18,19), said portions being spaced apart on a first notional line across the tablet surface, the construction and arrangement being such that with an electrical potential applied between the resistive layer and the conductive layer substantially no current flows through said first and second conductors, but with said localized pressure applied to said tablet surface currents flow through said first and second conductors, the relative magnitudes of the currents being related to the respective distances of the region of applied pressure from the first and second portions and the total current flowing between the resistive sheet and the conductive sheet being related to the magnitude of the applied pressure.

4,798,920
STYLUS COORDINATE DETERMINING DEVICE WITH DISTORTION COMPENSATION
Toshiyuki Makino, and Tsuyoshi Yamaguchi, both of Kanagawa, Japan, assignors to Hitachi Seiko, Ltd., Kanagawa, Japan
Continuation of Ser. No. 773,199, Sep. 6, 1985, abandoned. This application Mar. 9, 1987, Ser. No. 23,926
Int. Cl.[4] G01B *7/14*; G01N *27/72*; G01R *33/00*; G08C *21/00*
U.S. Cl. 178—19 **2 Claims**

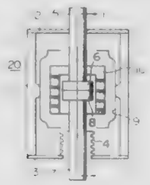




1. A stylus coordinate determining device comprising:
a tablet having a periodic pattern of conductors arranged thereon;
an exciting device adapted to be moved across a surface of said table and to be electromagnetically coupled to said conductors;
generator means for exciting said exciting device with a periodic waveform to generate a periodic output signal as said exciting device is moved on said surface of said tablet, said periodic output signal including a periodic distortion component having a magnitude dependent on the positional relationship on the tablet surface between the exciting device and the periodic pattern of conductors;
means for digitizing said periodic output signal to produce a periodic digital signal;
memory means for storing a periodic distortion compensation signal corresponding to said distortion component for each period of said periodic signal; and
arithmetic means for arithmetically combining said periodic digital signal and said periodic distortion compensation signal to produce a compensated output signal free from said periodic distortion component caused by the positional relationship on the tablet surface between said exciting device and said periodic pattern of conductors.

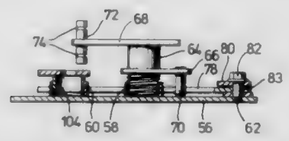
4,798,921
VACUUM CIRCUIT BREAKER
Hideo Watanabe, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed May 27, 1988, Ser. No. 199,711
Claims priority, application Japan, Jun. 5, 1987, 62-139783
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B **5 Claims**

1. A vacuum circuit breaker comprising a vacuum vessel, a pair of arc electrodes disposed opposite to each other in said vacuum vessel, a pair of rods supporting said arc electrodes thereon respectively and extending to the outside of said vacuum vessel, and means for moving one of said rods relative to the other rod to move one of said arc electrodes toward and away from the other arc electrode thereby closing and breaking a circuit, said vacuum circuit breaker further comprising a



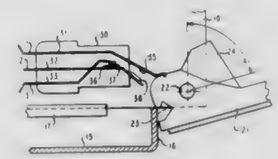
cup-shaped coil electrode mounted on one of said rods and surrounding said arc electrodes to form a gap between said coil electrode and said arc electrode mounted on the other rod not having any coil electrode, the dimension of said gap being selected to be smaller than that of a contact gap formed between said arc electrodes when said arc electrodes are moved away from each other to break the circuit.

4,798,922
SPRING ACTUATED LATCH, LOAD AND TRIP MECHANISM FOR SWITCHGEAR
Gerald B. Roberts, Paris, Mo., assignor to A. B. Chance Company, Centralia, Mo.
Filed Oct. 6, 1987, Ser. No. 106,546
Int. Cl.[4] H01H *1/42, 3/00, 5/10*; F16C *33/10*
U.S. Cl. 200—400 **16 Claims**



16. In electrical switchgear having a pair of mated, electrically conductive switch contacts adapted for selective engagement to complete an electrical circuit through the switchgear, one of said contacts being stationary, the other of said contacts being shiftable with respect to the one contact and being mounted upon a switchblade, said switchblade being supported on an elongated shaft for pivotal movement thereof in order to selectively engage and disengage said contacts, the improvement of low cost bearing structure for said switchblade shaft, said improved bearing structure comprising:
screw threading on one end of said shaft; and
a mounting element for threadably receiving the threaded end of said shaft, said mounting element being cooperatively threaded,
said shaft end and mounting element being cooperatively configured for permitting relative rotation therebetween and limited axial movement during pivotal movement of said switchblade, whereby said switchblade is pivotally supported by virtue of the threaded interconnection between said shaft end and mounting element.

4,798,923
LATCH/SWITCH FOR SECURING A CIRCUIT MODULES INTO A HOUSING WITH ACCOMPANYING CIRCUIT SWITCHING
Morris L. Barwick, Denville, and Ronald B. Praught, Freehold, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 22, 1987, Ser. No. 112,319
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—50 R **11 Claims**

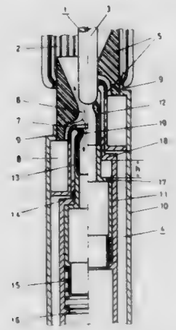


1. A circuit module including a latch/switch arrangement for inserting and securing the circuit module into an apparatus housing, comprising:
a latch pivotably mounted on the circuit module for inserting and securing the circuit module into the apparatus housing,
a switching arrangement mounted on the circuit module including first, second, and third conductive leaf springs,
the latch including a cam surface to engage and apply pressure to displace the first conductive leaf spring from a rest position, when the latch is rotated to secure the circuit module into the housing,
the second and third conductive leaf springs being situated to be conductively connected in an absence of displacement of the second conductive leaf spring,
the cam surface initially flexing the first conductive leaf spring as the latch is rotated causing the first and second conductive leaf springs to be conductively joined,
further rotation of the latch causing the cam surface to displace the first conductive leaf spring sufficiently to flex the second leaf spring causing it to disengage from the third conductive leaf spring.

4,798,924
COMPRESSED-GAS BREAKER
Ulrich Ackermann, Turgi, Switzerland, assignor to BBC Brown Boveri & Co., Ltd., Switzerland
Filed May 12, 1988, Ser. No. 194,019
Claims priority, application Switzerland, May 13, 1987, 1846/87
Int. Cl.[4] H01H *33/70*
U.S. Cl. 200—148 R **3 Claims**

1. Compressed-gas breaker having two contact members (3; 11, 12, 13) which can be brought into or out of engagement with one another along one axis, of which a first one (11, 12, 13) is constructed as a nozzle and exhibits contact fingers (12) elastically mounted on a tubular contact carrier (11), having an insulating nozzle (5) and having a heating volume (8) for storing switching-arc-generated compressed gas, in which, in the operated condition, a second one (3) of the two contact members (3; 11, 12, 13) is conducted through the constriction (6) of the insulating nozzle (5) and is inserted, with a free end, into the first contact member (11, 12, 13) whilst forming a contact force with the contact fingers (12), and in which, during interruption, compressed gas flows from the heating volume (8) through the insulating nozzle (5) and the first contact member (11, 12, 13) into an exhaust space, wherein the first contact member (11, 12, 13) exhibits a tubular body (13), which is axially displaceably conducted in the contact carrier (11), of

erosion-resistant contact material, and which forms, during interruption, the nozzle constriction (19) of the first contact



member (11, 12, 13) whilst under the action of a driving mechanism.

4,798,925

METHOD FOR MEASURING EFFECTIVE HEATING POWER FOR HIGH FREQUENCY HEATING

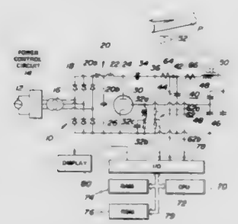
Yuji Ishizaka, Kanagawa, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Jul. 2, 1987, Ser. No. 69,400

Claims priority, application Japan, Jul. 4, 1986, 61-156229; Oct. 20, 1986, 61-247602

Int. Cl.[4] H05B *6/06*

U.S. Cl. 219—10.41 **9 Claims**



1. A method of controlling high frequency heating apparatus having a source of high frequency AC power connected through a conductor to a resonant circuit having a supply of high frequency AC power from the source for applying a high frequency AC power to a workpiece, comprising the steps of:

sensing a first current flowing through the conductor;

sensing a voltage appearing on the conductor;

sensing a sound current at a position in the resonant circuit;

sampling the sensed first current at predetermined time intervals to provide information on the waveform of the sensed first current;

sampling the sensed voltage at predetermined time intervals to provide information on the waveform of the sensed voltage;

sampling the sensed second current at predetermined time intervals to provide information on the waveform of the sensed second current;

calculating an effective value P_{HF} for the power supplied through the conductor to the resonance circuit from the sampled values of the sensed first current and the sampled values of the sensed voltage;

calculating an effective value I_f for the sensed second current from the sampled values of the sensed second current;

calculating a power loss W produced in components following the source as a function of the calculated effective value I_f;

calculating a value Pw as a $Pw=P_{HF}-W$; and

outputting the calculated value Pw as a measured value for an effective heating power applied to the workpiece at a position to be heated.

4,798,926

METHOD OF HEATING SEMICONDUCTOR AND SUSCEPTOR USED THEREPOR

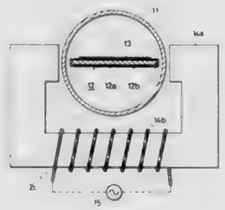
Takamasa Sakai, Kusatsu, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 6, 1987, Ser. No. 22,885

Claims priority, application Japan, Mar. 6, 1986, 61-047282

Int. Cl.[4] H05B *6/10*

U.S. Cl. 219—10.43 **6 Claims**



1. A heating apparatus for use in heating a plurality of semiconductor wafers for epitaxial growth processing, comprising:

a ferromagnetic susceptor for receiving a plurality of semiconductor wafers thereon;

a first quartz pipe within which said ferromagnetic susceptor is adapted to be located, said pipe being operable to enable said wafers to be removably positioned on said susceptor;

a semiconductor treatment atmosphere maintained within said first quartz pipe for isolating said ferromagnetic susceptor and said semiconductor wafers from an external atmosphere, said ferromagnetic susceptor inert to said treatment atmosphere;

a second quartz pipe disposed within said first quartz pipe;

a rotor within said second quartz pipe, said rotor having a periphery carrying a plurality of alternating magnetic poles for generating a magnetic flux; and

an electromotive source for rotating said rotor;

said susceptor encircling said second quartz pipe

whereby rotation of said rotor by said electromotive means through said magnetic flux induces corresponding eddy currents in said ferromagnetic susceptor, said eddy currents generating heat in said ferromagnetic susceptor, thereby heating said semiconductor wafers disposed thereon.

4,798,927

COMBINED MICROWAVE AND ELECTRIC OVEN WITH INTERMITTENT POWER SUPPLY TO BOTH MICROWAVE AND ELECTRIC HEATING ELEMENTS

Ikuyasu Kaminaka, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1987, Ser. No. 18,464

Claims priority, application Japan, Feb. 28, 1986, 61-45001

Int. Cl.[4] H05B *6/68*

U.S. Cl. 219—10.55 B **3 Claims**

1. A microwave oven, comprising:

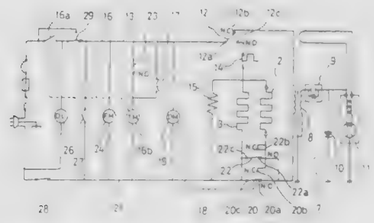
a heating chamber in which food is heated;

microwave heating means for supplying high frequency energy to the heating chamber;

a first thermal heater provided in an upper area of the heating chamber;

a second thermal heated provided in a lower area of the heating chamber;

selector switch means for selectively applying power to said microwave heating means or said first and second thermal heaters;



means for intermittently cutting off power to said microwave heating means when selected by said selector switch means, and for intermittently cutting off power to said first thermal heater when selected by said selector switch means; and

means for selectively bypassing said intermittent cutting-off means to permit continuous power to be supplied to said microwave heating means or said first thermal heater when selected by said selector switch means.

4,798,928

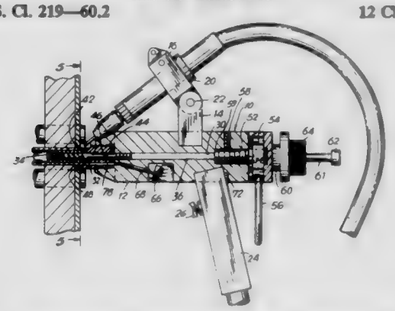
APPARATUS FOR TACK WELDING A TUBE TO A TUBESHEET

Lucas H. VanRhyn, Dansville, N.Y., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Mar. 26, 1987, Ser. No. 30,306

Int. Cl.[4] B23K *9/12*

U.S. Cl. 219—60.2 **12 Claims**



1. An apparatus for tack welding a tube to a tubesheet comprising:

a main frame;

a welding torch attached to the main frame;

a tube stop fixed with respect to the main frame and having a surface for abutting an end of a tube projecting through and beyond a tubesheet;

a tube projection gauge fixed with respect to the main frame and projecting a predetermined distance in a direction beyond the tube stop, the tube projection gauge having a surface for abutting the tubesheet;

a tube pilot attached to the main frame and projecting in said direction beyond the tube projection gauge, the tube pilot being adapted for insertion into and fixation within the tube; and

means to fix the tube pilot within the tube;

whereby the apparatus can be positioned so that the tube pilot is within the tube with the end of the tube abutting the tube stop, the tube pilot can be fixed within the tube to hold the tube in such position with respect to the apparatus, and the apparatus moved in said direction until the tube projection gauge contacts the tubesheet to properly position the tube with respect to the tubesheet for a tack weld upon actuation of the torch.

4,798,929

WIRE ELECTRIC DISCHARGE MACHINING APPARATUS

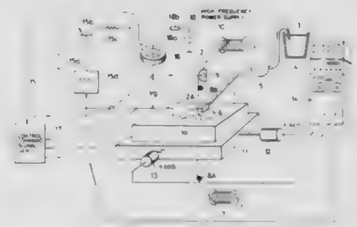
Tetsuroh Itoh, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1987, Ser. No. 57,201

Claims priority, application Japan, Jun. 3, 1986, 61-128722; Jun. 3, 1986, 61-128723; Jun. 3, 1986, 61-128724; Jun. 3, 1986, 61-128725; Jun. 3, 1986, 61-128726; Jun. 3, 1986, 61-128727; Jun. 3, 1986, 61-128728; Jun. 3, 1986, 61-128729; Jun. 3, 1986, 61-128730; Jun. 3, 1986, 61-128731; Jun. 3, 1986, 61-128732; Jun. 3, 1986, 61-128733; Jun. 3, 1986, 61-128734; Jun. 3, 1986, 61-128735; Jun. 3, 1986, 61-128736

Int. Cl.[4] B23H *7/02, 1/02, 1/10, 7/14*

U.S. Cl. 219—69 W **20 Claims**



1. An electric discharge machining apparatus comprising:

a wire-shaped electrode disposed in confronting relation to a workpiece with an insulative machining liquid provided therebetween;

means for applying a DC pulse voltage between said electrode and said workpiece to produce an electric discharge therebetween;

means for superposing a high-frequency AC voltage, different from said DC pulse voltage, in a quiescent time of the DC pulse voltage applied between said electrode and said workpiece;

detecting means for detecting the degree of insulation of said insulative machining liquid which is present between said electrode and said workpiece in accordance with said high-frequency AC voltage;

comparing means for comparing the degree of insulation as detected by said detecting means in a gap between said electrode and said workpiece with a predetermined reference value and providing an output signal accordingly;

gap condition determining means for determining the condition of the gap and issuing at least one output signal indicative of the gap condition based on the output signal form said comparing means; and

control means for modifying the gap condition between said electrode and said workpiece based on said at least one output signal from said gap condition determining means.

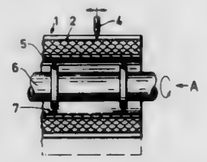
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4,798,930

PROCESS FOR PRODUCING A WELD-BUILT MEMBER

Max Geissler, Ettenhausen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 6, 1987, Ser. No. 35,095
Claims priority, application Switzerland, Apr. 9, 1986, 1403/86
Int. Cl.⁴ B23K *9/04*
U.S. Cl. 219—76.12 9 Claims



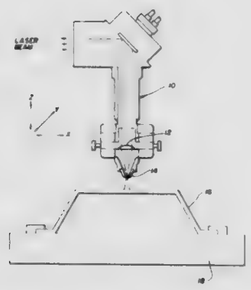
1. A process for producing a weld-built member comprising the steps of
establishing an electric arc between a parent member and at least one electrode;
melting build-up material in said arc under a set of welding parameters;
moving the parent member and the electrode relative to each other while depositing the melted material on the parent member;
varying at least one welding parameter in at least one predetermined zone of relative movement between the electrode and parent member to interrupt depositing of the material and form an open channel therein;
placing a former in the formed open channel to define a closed channel of predetermined cross-sectional shape; and
thereafter resuming the relative movement of the parent member and the electrode while depositing melted material under said set of welding parameters to close over the former and form a wall of predetermined thickness of build-up material on the parent member.

4,798,931

SIMULTANEOUSLY CUTTING AND WELDING SHEET METAL USING LASER ENERGY

Albert J. Hess, III, Westminster, Md., assignor to Laser Applications, Inc., Westminster, Md.

Filed Jul. 17, 1987, Ser. No. 74,864
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121.64 7 Claims



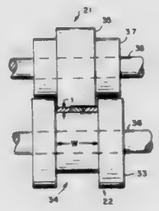
1. A method of simultaneously cutting and welding at least two sheets of metal, comprising the steps of overlaying said sheets of metal on each other, producing a focused beam of laser energy, subjecting the areas of said overlaid sheets along a line of progress where they are to be cut and welded to said focused beams of laser energy, providing a shield of inert gas around said laser beam; and selecting the operating parameters of at least said inert gas shield, said laser energy, and the speed of progress of said laser beam on said sheets along said line of progress with respect to at least the number, thicknesses and types of metals in said sheets so that a relatively narrow melt zone and cut is created along said line of progress, and so that surface tension on the molten metal in said melt zone after breakthrough will cause said molten metal in said melt zone on both sides of said line of progress to form smooth beads on the cut edges of said sheets on both sides of said line of progress.

4,798,932

SOLID PHASE EDGE BONDING OF METAL STRIPS

Paul A. Dion, North Attleboro, Mass., and Roderick L. Dair, Hope Valley, R.I., assignors to Polymetallurgical Corporation, Attleboro, Mass.

Continuation of Ser. No. 827,925, Feb. 10, 1986, abandoned.
This application Jul. 14, 1987, Ser. No. 73,852
Int. Cl.⁴ B23K *20/04*
U.S. Cl. 219—118 10 Claims



1. A method of solid-phase edge bonding a plurality of dissimilar metal strips comprising continuously feeding a plurality of thin flat strips of dissimilar metals into an edge-to-edge alignment in a single plane, said strips being substantially free from oxide and other contaminants, heating said strips to a solid-phase bonding temperature, and passing said heated and aligned strips between a pair of male and female reducing rollers, a plane of said aligned strips being maintained parallel to axes of said rollers, said rollers having coacting surfaces arranged to impart a thickness reduction to each of said strips of about 40 to 60% in a direction perpendicular to the axes of said rollers and to urge the adjacent side edges of said strips together by confining the lateral spread of said strips in a direction parallel to the axes of said rollers, thereby achieving a solid phase bonding of said strips only at said adjacent side edges.

4,798,933

SKI-BOOT HEATER

Giuseppe Annovi, Montebelluna, Italy, assignor to Dolomite S.p.A., Montebelluna, Italy

Filed Jun. 30, 1987, Ser. No. 68,087
Claims priority, application Italy, Jul. 3, 1986, 53595/86[U]
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—211 6 Claims

1. A ski-boot heater comprising:
at least one heating resistor and at least one storage battery for mounting in a boot;
a socket for mounting in the boot in a position accessible from the exterior for connection to a source of D.C. voltage external of said boot for recharging said battery, and
control circuit means connecting said socket, said battery and said resistor for controlling supply of current to the resistor, including a manually-operable switch for controlling the supply of current from the at least one battery to the resistor,

wherein the control circuit means include a control and recharging circuit for enabling the supply of direct current to the resistor even when the at least one storage battery is connected through the socket to an external AC or DC electrical supply for recharging it, and



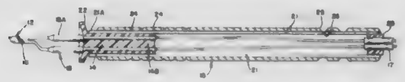
wherein the control circuit means are arranged to enable the heating resistor to be supplied with an electrical power greater than that normally supplied to the resistor as a result of the operation of the switch each time the at least one battery is being recharged.

4,798,934

ELECTRICAL VENTED HANDPIECE

Robert E. Boyer, 101 Patricia La., Prospect Heights, Ill. 60070

Filed Apr. 22, 1986, Ser. No. 855,077
Int. Cl.⁴ H05B *1/00, 3/00;* B23K *3/04*
U.S. Cl. 219—233 11 Claims



1. A hand-held device having an electrically heated tip for applying heat to an object, said device being selectively useful such as for decorative burning, etching, sealing, and cutting, and comprising in combination:
(a) an exposed metal electrical resistance heating element forming a wire tip,
(b) terminal electrodes affixed to the ends of said heating element, said electrodes being connected through suitable leads to a source of electrical power to provide electrical energy to heat said tip,
(c) a metallic elongated and tubular handle, said handle being open at its forward and rear ends,
(d) an insulator mounting receiving said electrodes in fixed relation and disposed in said forward end of said handle to position said electrodes and said tip adjacent said forward end of said handle with said tip extending forwardly of said forward end,
(e) said handle having a plurality of raised and relatively-spaced longitudinally-extending vanes formed on the inner surface thereof, thereby forming elongated air spaces between said insulator and the inner surface of said handle, said vanes extending longitudinally within the tubular handle between said open forward end thereof,
(f) the front end of said air spaces being open to allow a flow of air to enter said air spaces,
(g) a plurality of openings formed in the rear of said tubular handle communicating with elongated air spaces from by said internal vanes whereby residual heat generated by said tip is vented from the rear end of said handle through said rear openings by said air flow, and thereby tend to maintain the temperature of said handle at a more comfortable level when the device is being used, and,
(h) a plurality of said vanes extending forwardly of said tubular handle as prongs engageable by said insulator to advance said insulator a distance from the forward end of said handle.

4,798,935

DRIVER CIRCUIT

Constantine D. Pezaris, Nahant, Mass., assignor to Environmental Fragrance Technologies, Ltd., New York, N.Y.

Filed Jul. 8, 1987, Ser. No. 70,977
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—272 18 Claims



1. A driver circuit responsive to an input AC voltage for applying said input AC voltage for a predetermined duration to a load, said driver circuit comprising means for receiving an input AC voltage, means for providing a DC voltage related to said input AC voltage, timing means responsive to said DC voltage for generating a continuous control signal for a selected time period which has a duration greater than one cycle of said input AC voltage and corresponding in duration to said predetermined duration, and control means receiving said control signal over said selected time period for applying said input AC voltage to said load through said control means when said input AC voltage is in the positive portion of its cycle, said input AC voltage applied to said control means when said input AC voltage is in both the positive and negative portions of its cycle.

4,798,936

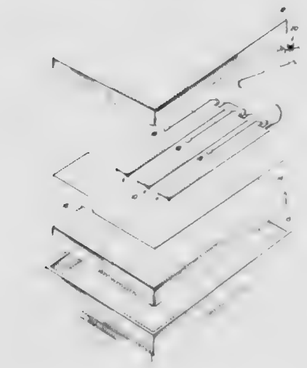
WATERBED HEATER

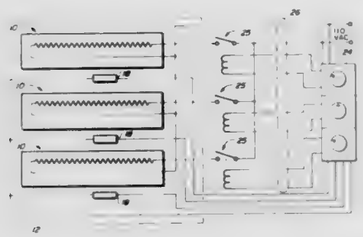
Arthur K. Johnson, Sr., 655 S. Mesa Dr., #1041, Mesa, Ariz. 85202

Filed Aug. 14, 1986, Ser. No. 896,770
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—217 35 Claims

9. A heating unit for placement under the mattress of a waterbed, said unit comprising:
a plurality of heating pads electrically interconnected in parallel with one another;
a plurality of heat sensors, one heat sensor associated with each heating pad, said sensors being electrically interconnected in series with one another;
a switch means connected in parallel to said heating pads, said switch means applying voltage to said heating pads when closed;
a thermostat connected in series to said heat sensors, said thermostat controlling energization of said switch means; and
a plurality of lead wires connecting said pads and said sensors to said thermostat and a power supply;

whereby electrical power is supplied to said heating pads only when all of said sensors detect that the temperature





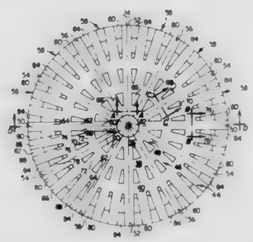
of the waterbed mattress has dropped below a predetermined value.

4,798,937

WARMER PLATE COVER

Raul Guerrero, 829 Leslie, Coppell, Tex. 75019

Filed Mar. 9, 1987, Ser. No. 23,536
Int. Cl.[4] H05B *3/74*
U.S. Cl. 219—433 5 Claims



1. In an automatic brewing device having an electrically heated warmer plate with a glass vessel supporting surface for maintaining a beverage at a constant elevated temperature and a spacer positioned intermediate the warmer plate and glass vessel to prevent excessive heating of the beverage in the glass vessel, the improvement comprising:

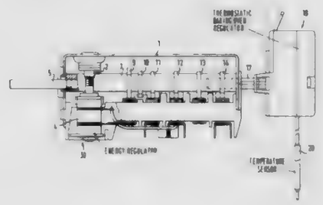
a warmer plate cover means of rigid, heat resistant plastic material having a softness sufficient for reducing substantially glass vessel breakage during use, said warmer plate cover forming a spacer between the warmer plate and glass vessel and including a body portion having first and second opposing surfaces, the first opposing surface corresponding to the glass vessel supporting surface of the warmer plate, and the second opposing surface including a substantially flat surface portion having a plurality of spaced, concentric grooves about a center portion for dividing the flat surface portion into a plurality of rings about the center portion, a plurality of spaced radial grooves extending from the groove defining the center portion for dividing each ring of the plurality of rings into a plurality of circle sector segments with said uniformly shaped circle sector segments of the ring adjacdnt to the Center portion having a preselected size defined by surrounding grooves, and each additional ring of circle sector segments having increasing numbers of radial grooves interconnecting adjacent ring forming grooves for dividing the rings of circle sector segments into increasing number of uniformly shaped circle segments, all of said grooves being in open communication with each other and coacting with a bottom of the glass vessel for forming hot air passages producing uniform heat distribution throughout the warmer cover plate for alleviating heat generated stresses within the glass vessel while maintaining the beverage temperature uniformly below the brewing temperature.

4,798,938

TEMPERATURE CONTROL APPARATUS FOR A BAKING OVEN

Julius Husslein, Vachendorf; Günther Wittauer, Traunreut; Helmut Knoll, Hufschlag, and Robert Dandl, Tacherting, all of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 770,693, Aug. 29, 1985, abandoned.
This application Dec. 9, 1987, Ser. No. 131,338
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1984, 3431740
Int. Cl.[4] A21B *1/00, 1/22*
U.S. Cl. 219—395 15 Claims



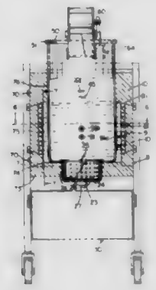
1. Temperature control apparatus for a oven having a baking heating element for heating the baking oven, said temperature control apparatus comprising a grill heating element disposed in the baking oven, a first thermostatic baking oven regulator manually settable to different temperatures for regulating said baking heating element, a second regulator manually settable to different heating stages for regulating said grill heating element, and a single setting device for setting and operating said first and second regulators, said setting device having a first control range in which said first regulator is adjustably controlled and a second control range in which said second regulator is adjustably controlled, said first and second control range being mutually exclusive, and said first and second regulators each being continuously variable within each range, and controlled mutually exclusively.

4,798,939

PRESSURIZED LIQUID COOKER WITH INTEGRATED RADIANT HEATING APPARATUS

Louis Nett, Cambridge, Wis., assignor to Gallina Corporation, Waukesha, Wis.

Filed Apr. 2, 1986, Ser. No. 847,161
Int. Cl.[4] F27D *11/02*
U.S. Cl. 219—438 13 Claims



1. A pressurized deep oil cooker comprising

an elongated cooking pot formed of a heat transmitting material and having a removable cover means, said pot being adapted to contain a cooking oil at a selected cooking temperature,

radiant heater means spaced from said cooking pot for heating of said cooking pot by radiant energy, and

a thermal insulating jacket encircling said heater means and having a side wall spaced from said pot and opposite end walls projecting inwardly abutting engagement with said pot and defining a transfer chamber between the jacket and the outer wall of said pot and operable to establish a heat level substantially greater than the selected cooking temperature and thereby heating the pot and oil in said pot, said thermal insulating jacket including a high temperature insulation having an inner surface of said side wall spaced from and directly exposed to said outer wall of said pot, said radiant heater means including a high temperature spiral wound coil having a plurality of coil turns, said coil being wound about said pot and spaced along the length of the pot to establish an essentially uniform heat input to said chamber and said coil turns embedded within said insulation and directly engaging said insulation with insulation filling the coil turns and having said coil turns exposed only at the inner surface of said insulation, and

control means to energize said heater means and raise the temperature in said chamber and of said pot and thereby raise the temperature of the cooking liquid to a preselected uniform cooking temperature.

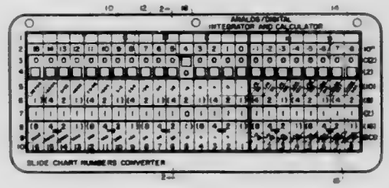
4,798,940

MANUAL CALCULATOR FOR ANALOG AND DIGITAL NUMBERS

Gaetano Salvo, 3748 Michigan Ave., Charlotte, N.C. 28215

Filed Aug. 19, 1986, Ser. No. 897,975
Int. Cl.[4] G06G *1/02*
U.S. Cl. 235—70 R 12 Claims

1. A manual calculator useful in registering numbers and converting whole and fractional numbers from one numbering system to another numbering system and comprising means for defining a cover having a predetermined configuration and a plurality of slide members arranged in an array within said cover means, each said slide member being movable relative to said cover means between first and second positions, said slide member each bearing indicia indicative of a selected one of two states, said cover means defining an elongate window in which the indicia borne by the slide members are visible in an array indicative of a selected number series in a first numbering system, and said cover means bearing a plurality of sets of indicia with each set having a predetermined correlation to number series expressed in a differing preselected numbering system, said sets of indicia being arranged relative to said window and said slide members with each set in a correspond-



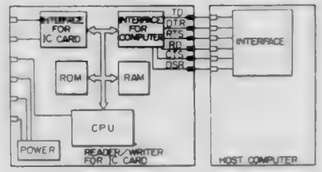
ing row parallel to said window and said plurality of sets in columns perpendicular to the direction of movement of said slide members and with numerical values in each said system aligned with a corresponding one of said slide members whereby the positioned of said slide members may be manipulated to indicate a number series in a first numbering system and corresponding number series in different numbering systems.

4,798,941

IC CARD

Hiroshi Watanabe, Kokubunji, Japan, assignor to 501 Toppan Moore Company, Ltd., Tokyo, Japan

PCT No. PCT/JP86/00126, § 371 Date Oct. 24, 1986, § 102(e) Date Oct. 24, 1986, PCT Pub. No. WO86/05613, PCT Pub. Date Sep. 25, 1986
PCT Filed Mar. 13, 1986, Ser. No. 932,212
Claims priority, application Japan, Mar. 14, 1985, 60-51015
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 13 Claims



1. An IC card having at least control means and storage means, wherein said storage means comprises:

a storage area for storing information thereon;

a secret identification number area for storing at least one predetermined secret identification number thereon; and

an error count area for storing the number of times of improper input of the secret identification number thereon, and wherein said control means comprises:

comparison means for comparing a supplied secret identification number with said predetermined secret identification number stored on said secret identification number area;

means for accessing said storage area when said comparison means indicates coincident as a result of comparison;

error count means for storing the number of times of discrepancy into said error count area when said comparison means indicates discrepancy as a result of comparison;

storage area lock means for inhibiting access to said storage

area when said error count means has counted a predetermined number of time; and

unlock means for invalidating the count of said error count area to release said storage area lock means, on the basis of at least one specific input signal after the count of said error count area has counted said predetermined number.

4,798,942

EASY ACCESS TICKET TRANSPORT MECHANISM

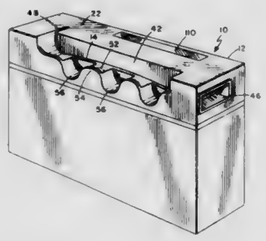
Kenneth R. Aubrey, San Diego, Calif., assignor to Cubic Western Data, San Diego, Calif.

Filed Feb. 21, 1986, Ser. No. 831,713

The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.

Int. Cl.[4] G06K *13/063, 13/07*

U.S. Cl. 235—384 **12 Claims**



1. A ticket transport mechanism for receiving and processing tickets from a patron, comprising:

ticket transport means for moving tickets at a predetermined speed along a ticket path through the mechanism;

the transport means having an open longitudinal slot comprising means for guiding a ticket along the ticket path with a portion of the ticket projecting out of the slot, the slot having an entry opening at one end for receiving tickets and further including ticket moving means for grasping a ticket at the entry opening and moving the ticket along the slot;

stop means for engaging an outer edge of the projecting portion of a ticket in the slot to restrict movement of the ticket transversely out of the slot; and

processing means for processing information from a ticket travelling along the slot.

4,798,943

METHOD AND SYSTEM FOR CONTROL OF A BAR CODE SCANNER THRESHOLD

Craig D. Cherry, Eugene, Oreg., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Sep. 30, 1986, Ser. No. 913,728

Int. Cl.[4] G06K *7/10*

U.S. Cl. 235—463 **13 Claims**

1. In a bar code scanner having a variable black/white scan signal processing transition threshold derived from a function of the reflected light levels received by the scanner, said variable threshold being subject to threshold decay, a method for controlling threshold to produce a substantially noise-free bar signal, comprising, monitoring selected scan signal characteristics and determining, electronically, whether sets of signal characteristics represent a bar code or extraneous noise, and if



a set of signal characteristics indicates noise, raising the black/white threshold value level until noise is no longer detected.

4,798,944

DOCUMENT ENCODING DEVICE WITH DOCUMENT READING STATION AND DOCUMENT VIEWING STATION

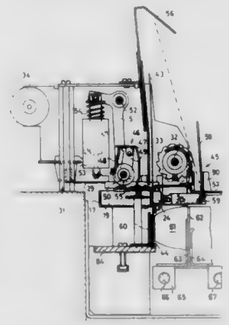
Horst Görner, St. Georgen, and Horst Dyma, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Mannesmann Kienzle GmbH, Villingen, Fed. Rep. of Germany

Filed Dec. 24, 1985, Ser. No. 812,969

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447429

Int. Cl.[4] G06K *13/00*

U.S. Cl. 235—475 **13 Claims**



1. Document encoding device with a reading station for the mechanical reading of pre-encoded marks, a viewing station following the reading station for stopping the document for the visual reading of handwritten marks, and at least one adjoining station following the viewing station for subsequent processing of said documents, transporting means for moving said documents between said reading, viewing and processing stations, wherein the improvement comprises that said transporting means comprises a first transporting means, a second transporting means, and a third transporting means, said document being moved by said first transporting means in a first transporting direction into said reading station, said documents being moved by said second transporting means in a second transporting direction transverse relative to said first transporting direction with the viewing and reading stations arranged one behind the other in a viewing direction generally transverse to the first transporting direction and with the viewing station arranged closer to a viewer relative to the reading station, and said third transporting means moving said documents from said viewing station to said at least one processing station.

4,798,945

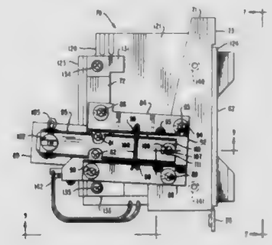
GRABBER MECHANISM FOR A BADGE READER TERMINAL

Ronald L. Bruckner, Longwood, and James W. Driscoll, Sanford, both of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 30, 1987, Ser. No. 8,793

Int. Cl.[4] G06K *13/00, 7/00*

U.S. Cl. 235—479 **11 Claims**



1. A grabber mechanism in a badge reader for grabbing a card to be read thereby, said grabber mechanism comprising:

a lever bar having a first end and a second end;

pivot means intermediate said first and second ends of said lever bar about which said lever bar may rotate from a first position to a second position;

a solenoid connected to said first end of said lever bar, said solenoid for moving said first end when energized such that said lever bar is moved from its first position to its second position;

grabber means having a proximate end attached to said second end of said lever bar, and a distal end;

spring means which normal urgency is overcome when said lever bar is rotated from its first position to its second position by said solenoid, and which urges said grabber means and moves said attached second end of said lever bar from its second position toward its first position when said solenoid is not energized; and

a fixed partition having a plane generally normal to said distal end of said grabber means and positioned at a location proximate to the location of said distal end when said lever bar is in its second position such that when said lever bar moves to its second position, said distal end moves away from said fixed partition allowing a card to be read to be slidably moved between said distal end and said fixed partition, and when said lever bar moves toward its first position from its second position the card to be read is grabbed and held between said distal end and said fixed partition responsive to the urging of said spring means.

4,798,946

PLASTIC PACKAGE FOR AN IC CARD

Noriaki Fujii; Mamoru Kitamura, both of Itami, and Akira Yamada, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 3, 1988, Ser. No. 151,982

Claims priority, application Japan, Apr. 9, 1987, 62-87802; Sep. 17, 1987, 62-230982

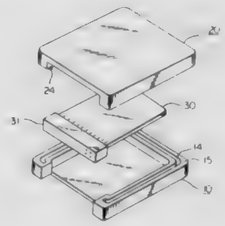
Int. Cl.[4] G06K *19/06*

U.S. Cl. 235—492 **16 Claims**

1. A plastic package for an IC card comprising:

a first package section which is made of plastic and has a flat base and a rim which projects upwards from one side of said base and extends along the periphery of said base, the top surface of said rim having formed therein a first engaging portion comprising at least one depression;

a second package section which is made of plastic and has a flat base and a rim which projects upwards from one side of the base of said second package section and extends along the periphery of the base of said second package section, the top surface of the rim of said second package section having formed therein a second engaging portion comprising at least one projection, said first and second



package sections being combined with one another with the top surfaces of said rims in intimate contact with one another and with said first and second engaging portions engaged with one another; and

a bonding agent which is applied to the depression of said first engaging portion before it is engaged with the projection of said second engaging portion, said first and second engaging portions being bonded together by said bonding agent.

4,798,947

FOCUSING TECHNIQUE FOR AN OPTICAL SENSING SYSTEM

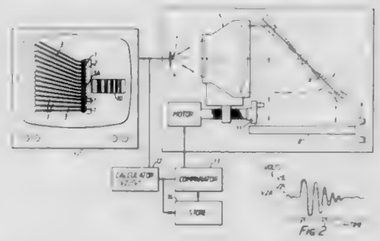
Ivor R. Baxter, Brentwood, England, assignor to The General Electric Company, p.l.c., Essex, England

Filed Oct. 19, 1987, Ser. No. 109,583

Claims priority, application United Kingdom, Oct. 18, 1986, 8625031

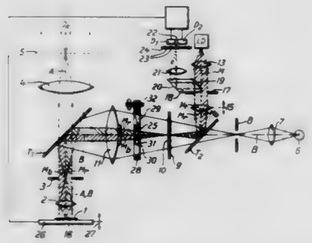
Int. Cl.[4] G01J *1/20*

U.S. Cl. 250—201 **5 Claims**



2. An optical sensing system comprising a focussing device for producing an image of a scene, sensing means arranged to receive the image, means for causing radiation emitted from the sensing means, after passing via the focussing means, to be reflected back through the focussing device to the sensing means; and control means for using the resulting output of the sensing means to control the focussing means.

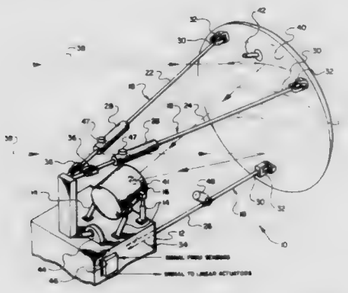
4,798,948
FIELD STOP FOR DARK FIELD ILLUMINATION IN AUTOFOCUS OPTICAL DEVICE
Burkhard Neumann, and Hans-Werner Stankewitz, both of Wetzlar, Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany
Filed Apr. 17, 1987, Ser. No. 39,249
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1986, 3614676; May 23, 1986, 3617421
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—201 **22 Claims**



1. In an incident light optical device capable of dark field illumination and including an incident light beam comprised of at least first and second partial beams which are coextensive in at least a central region of said incident light beam and which differ with regard to their respective wavelengths, or wavelength ranges, said second one of said partial beams comprising an autofocus measurement beam;

a one-piece field stop component, comprising a lens element means for insertion into the central region of the incident light-beam and for changing the beam cross-section (converging and diverging), said lens element means blocking the wavelength of said first partial beam and transmitting the wave length of said second partial beam; and means for selectively interposing said lens element means into the central region of said incident light beam.

4,798,949
LINEAR ACTUATED OPTICAL CONCENTRATOR
William W. Wilcox, Simi Valley, and Charles T. Kudija, Jr., Canyon Country, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Oct. 9, 1986, Ser. No. 917,339
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—203 R **20 Claims**

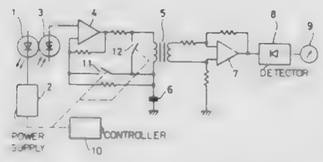


1. An apparatus for pointing an optical concentrator in a desired orientation to focal point equipment, in an extraterrestrial environment, comprising:

a base for rigidly supporting said focal point equipment; and

at least three support means for connecting said optical concentrator to said base and including actuation means for providing differential motion between said base and said optical concentrator, said support means further including gimballing means for accommodating said differential motion and independently gimballing the optical concentrator with respect to the focal point equipment.

4,798,950
RADIATION CHARACTERISTIC MEASURING APPARATUS FOR LASER DIODE
Takuya Hosoda; Shoji Adachi, and Atsushi Kudo, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan
Filed Sep. 4, 1986, Ser. No. 904,122
Claims priority, application Japan, Sep. 5, 1985, 60-196757
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—214 A **2 Claims**



1. Apparatus for measuring a radiation characteristic of a laser diode, in which an ac signal and a step-like dc voltage are applied to the laser diode and in which the radiant power output of said laser diode is received by a photodiode, comprising:

a first amplifier having two inputs one of which is connected to the output of the photo diode for amplifying the output signal of said photo diode;

a transformer including primary and secondary windings for extracting said ac signal, said primary winding being connected in series with the output of said first amplifier;

a capacitor connected in series with the preliminary winding;

an ac amplifier connected across the secondary winding of the transformer for amplifying ac signals derived from the secondary of the transformer;

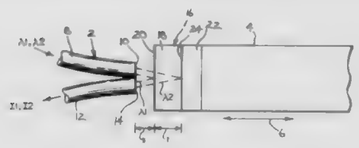
a first switch connected to the other input of the first amplifier and to a junction between the primary winding of the transformer and the capacitor; and

a second switch connected across the primary winding of a transformer and to the junction between the first switch and the capacitor; and

means for applying a stepped dc voltage signal superimposed with an ac signal to said laser diode for predetermined step periods and for simultaneously closing said first and second switches for a shorter time period than individual step periods thereby applying the dc voltage to the capacitor to charge it while the primary circuit of the transformer is short circuited.

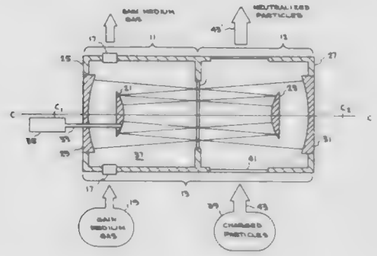
4,798,951
FIBER OPTIC DISPLACEMENT TRANSDUCER WITH DICHROIC TARGET
Frederick J. Walker, Bethel, Conn., assignor to Consolidated Controls Corporation, Bethel, Conn.
Filed Dec. 14, 1987, Ser. No. 132,409
Int. Cl.[4] G01B *11/00*
U.S. Cl. 250—227 **4 Claims**

1. A fiber optic displacement transducer comprising a target movable in an axial direction, a sender fiber optic cable having a light emitting end axially spaced from said target a receiver fiber optic cable having a light receiving end axially spaced from said target, optical filter means on said target having a first surface reflecting light of a first wavelength from said sender cable to said receiver cable, said optical filter means having a second surface axially spaced from said first surface by a fixed distance t and reflecting light of a second wavelength from said sender cable to said receiver cable, where I1 is the intensity of said first wavelength light in said receiver



cable and I2 is the intensity of said second wavelength light in said receiver cable, and wherein $I1(I2-I1)\times t$ varies linearly with axial separation s of said cable ends from said target over a given range of s, such that changes in transmitted light intensity due to optical disturbances in said sender cable cancel out of said fraction $I1/(I2-I1)$ whereby to prevent a false reading of s as measured by $I1/(I2-I1)\times t$, because t is fixed.

4,798,952
ASTABLE RESONATOR PHOTONEUTRALIZATION APPARATUS
Joel H. Fink, Hayward, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 19, 1987, Ser. No. 51,561
Int. Cl.[4] G01N *27/78*
U.S. Cl. 250—251 **29 Claims**



1. Apparatus for photoneutralization of an atomic or molecular beam of negatively charged particles, the apparatus comprising:

an optical cavity including first and second end walls, spaced apart and facing one another and having a longitudinal axis extending therebetween;

first and second, substantially identical, convex mirrors, spaced apart within the optical cavity and facing one another along the optical cavity longitudinal axis, with the first and second convex mirrors being adjacent to but spaced apart from the first and second end walls, respectively;

first and second, substantially identical concave mirrors, positioned at the first end wall and at the second end wall, respectively, within the optical cavity and facing one another along the longitudinal axis of the optical cavity;

an optical gain cavity that includes the first end wall and the first convex mirror;

a photoneutralization region that includes the second end wall and the second convex mirror, with the optical gain cavity being separated from the photoneutralization region by an optical window that provides a substantially gas-tight seal and is transparent to radiation of a predetermined wavelength $\lambda=\lambda_r$;

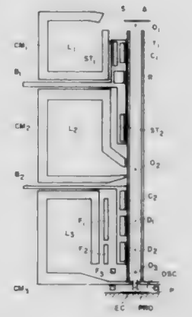
gas excitation means, operatively associated with the optical gain cavity, to excite a gas contained in this cavity;

optical gain gas source and inflow/outflow means, operatively associated with and adjacent to the optical gain cavity, to make gas available, admit gas into, and allow gas to exit from, the optical gain cavity, where the gas is chosen to permit emission of electromagnetic radiation of wavelength λ_r when the gas is excited by the gas excitation means;

an electromagnetic radiation beam source and beam input means, operatively associated with the optical cavity, to produce an electromagnetic radiation beam of wavelength substantially λ_r and to direct this beam into the optical cavity substantially parallel to the direction of the optical cavity longitudinal axis; and

a charged particle beam source and beam input means, positioned adjacent to the optical cavity and oriented to produce and direct a beam of negatively charged atomic or molecular particles through the photoneutralization region in a direction substantially transverse to the direction of the longitudinal axis of the optical cavity.

4,798,953
ELECTRONIC BEAM DEVICE FOR PROJECTING AN IMAGE OF AN OBJECT ON A SAMPLE
Emmanuel de Chambost, Moliereu, France, assignor to THOMSON-CSF, Paris, France
Filed Apr. 13, 1987, Ser. No. 37,343
Claims priority, application France, Apr. 15, 1986, 86 05363
Int. Cl.[4] G01N *23/00*
U.S. Cl. 250—310 **9 Claims**



1. An electronic beam optical device for projecting the image of an object onto a sample plane, said beam having an axis of symmetry, said device comprising:

a single insulating tube having an inner metalized face for protecting the path of the electron beam, said tube being continuous without interruption and empty of all apparatus, the tube having an axis which coincides with the beam axis;

a first lens arranged around said tube and having a pole piece and an optical center on the axis of the tube, said first lens being arranged between the object and the sample plane;

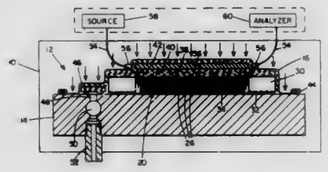
a second lens being arranged around said tube and having a pole piece and an optical center on the axis of the tube, said second lens being arranged between said first lens and said sample plane, for reducing the image of the object;

a third lens being arranged around said tube and having a pole piece and an optical center on the axis of the tube, said third lens being arranged between said first lens and said sample plane, for reducing the image of the object;

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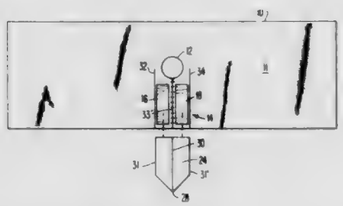
said first lens adjusting the image of the object in the optical center of said third lens; and
said tube extending from the object to the bottom of the pole piece of said third lens.

4,798,954
MONITORING TECHNOLOGY
William A. Stevenson, Concord, Mass., assignor to Foster-Miller, Inc., Waltham, Mass.
Filed Feb. 3, 1987, Ser. No. 10,306
Int. Cl.[4] G01N *21/35, 21/84*
U.S. Cl. 250—341 20 Claims



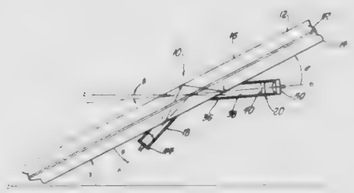
1. An infrared spectroscopy system for monitoring the processing of a polymeric material comprising
a source of infrared radiation for generating a beam of infrared radiation,
infrared spectrum analyzing means,
an infrared radiation transmission fiber that has a transmission portion and a sensor portion adapted to be embedded in the polymeric material to be monitored, and
means for coupling said transmission fiber to said source to transmit a beam of infrared radiation through said fiber to said sensor portion and for coupling said fiber to said infrared spectrum analyzing means for analyzing the resulting spectra as said polymeric material is processed to provide kinetic information on the processing of said polymeric material.

4,798,955
MEASUREMENT LOCATOR AND LIGHT SHIELD FOR USE IN INTERACTANCE TESTING OF BODY COMPOSITION AND METHOD FOR USE THEREOF
Robert D. Rosenthal, Gaithersburg, Md., assignor to Futrex, Inc., Gaithersburg, Md.
Filed Sep. 23, 1987, Ser. No. 100,226
Int. Cl.[4] G01N *21/01*
U.S. Cl. 250—341 7 Claims



1. A light barrier and probe location device for use with a near infrared radiation interactance probe for measuring body composition on the upper arm of an individual, the device comprising:
(a) a piece of drapable, flexible opaque material having an opening therein for receipt of the probe at a predetermined position, the material being sufficiently large to overwrap the arm of an individual to be tested,
(b) adjustable fastening means on the piece of opaque material for removably attaching the piece of opaque material around the upper arm of an individual and allowing it to be held in place to exclude light to a probe inserted into the opening during the test and to be separated for removal from the arm after the test, and
(c) a probe location member attached to the piece of opaque material in a position to determine the precise location of the probe opening when the opaque drape engages the individual's upturned arm, the probe location member locating on the inside of the elbow of the individual.

4,798,956
ELECTRO-OPTICAL WINDSHIELD MOISTURE SENSING
Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098
Filed Jul. 15, 1987, Ser. No. 73,496
Int. Cl.[4] G01N *21/41*
U.S. Cl. 250—341 28 Claims

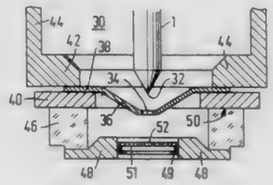


1. A sensing assembly (**10**) using radiant energy for indicating when moisture or other particles have accumulated on a window (**12**) having inside and outside surfaces (**16**) thickness (T) and of a material having an index of refraction (n) associated with the wavelength of the radiant energy, said assembly (**10**) comprising: emitter means (**18**) for disposition on the inside of the window (**12**) with gas therebetween to emit radiant energy to the window (**12**) on an ingress axis (A) at an incident angle (θ) relative to the inside surface (**14**), detector means (**20**) for disposition on the inside of the window (**12**) with gas therebetween to detect radiant energy from the window (**12**) on an engress axis (B) at a reflecton angle (θ') relative to the inside surface (**14**) and equal to said incident angle (θ), support means (**22**) for spacing said emitter means (**18**) and said detector means (**20**) such that the point (I) of intersection of the ingress axis (A) with the inner surface of the window (**12**) from the point (E) of intersection of the engress axis (B) with the inside surface (**14**) of the window (**12**) is a predetermined distance (D), said predetermined distance (D) determined by the formula:

$$D = 2\,T \cos\theta\,(n^2 - \cos^2\theta)^{-\frac{1}{2}}$$

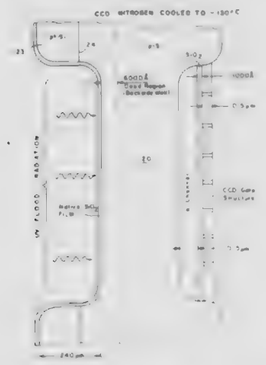
4,798,957
ELECTRON BEAM APPARATUS COMPRISING AN ANODE WHICH IS INCLUDED IN THE CATHODE/WEHNELT UNIT
Harm Tolner, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 818,153, Jan. 13, 1986, abandoned. This application Dec. 7, 1987, Ser. No. 131,252
Claims priority, application Netherlands, Mar. 28, 1985, 8500906
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—396 R 10 Claims

1. An electron beam apparatus comprising
cathode means for emitting an electron beam,
a Wehnelt cylinder electrode having an aperture for passing said electron beam,
wherein said cathode means and said Wehnelt cylinder electrode are disposed together as a separate unitary structure within the electron beam apparatus to pass said electron beam in a direction parallel to the longitudinal axis of the electron beam apparatus,
anode means for shaping said electron beam, said anode means including an anode holder and at least one anode plate having an anode bore, said anode bore providing a beam aperture for said electron beam, wherein said anode means operates with an anode voltage of at most 5 KV,
electrically insulating structural means between said anode means and said unitary structure for mounting said anode



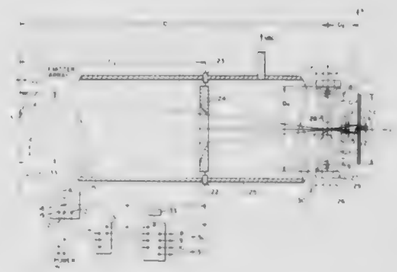
means integrally and rigidly to said unitary structure to form a composite structure of said cathode means, said Wehnelt cylinder electrode, and said anode means in said direction parallel to the longitudinal axis of the electron beam apparatus, wherein said electrically insulating structural means is a cylindrical structure,
and wherein said electrically insulating structural means is a ceramic ring, and
electron-optical means for aligning and modulating said electron beam.

4,798,958
CCD IMAGING SENSORS
James R. Janesick, La Canada, and Stythe T. Elliott, Sun Valley, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.
Continuation of Ser. No. 642,417, Aug. 20, 1984, abandoned. This application Mar. 27, 1987, Ser. No. 31,198
Int. Cl.[4] G01T *1/24;* H01L *29/78, 27/14;* G11C *11/34*
U.S. Cl. 250—370.01 11 Claims



1. A method for storing and reading out information in a buried channel charge-coupled-device imaging sensor having an oxide layer on the front side over an array of pixels in a layer of photosensitive semiconductor produced on a substrate material, and charge transfer gates for reading out image charges from wells of said array of pixels, comprising the steps of storing said analog information as positive states in said oxide layer created by ionization radiation in a desired pattern with conveys said information, and repeatedly reading out said information stored in said oxide layer by first clearing said charge-coupled-device pixel wells by using conventional charge transfer procedures for image readout from said charge-coupled-device, then driving the gate bias potential of every charge-coupled-device pixel well to a potential more negative than required for imaging and sufficient to reach an inversion level where excess charge current flows at sites of said positive states through the oxide layer into said pixel wells as leakage current in the stored pattern, and thereafter, having integrated excess charge current in said pixel wells, reading said analog information from said pixel wells by using conventional charge transfer procedures for image readout from said charge-coupled-device, thus clearing said pixel array for subsequent imaging in a conventional way.

4,798,959
SUPER SUBMICRON ELECTRON BEAM WRITER
Alvin M. Marks, Bigelow Rd., Athol, Mass. 01331
Filed Jan. 2, 1987, Ser. No. 1,330
Int. Cl.[4] H01J *37/30*
U.S. Cl. 250—492.2 16 Claims



1. In a submicron beam writer for the simultaneous inscription of multiple patterns onto a substrate surface, a first cylinder having an OZ axis in an OXYZ coordinate system, first and second planes normal to said axis at the ends of said cylinder spaced a distance D apart, a vacuum in said first cylinder, a plurality of emitters in an array at said first plane, a third plane between said first and second planes, said third plane being spaced a small distance D_o from said first plane and parallel thereto, a plurality of first anodes in said third plane, each said first anode being concentric with a said emitter, a substrate sheet having an Area A_1, a surface on said substrate sheet, said surface being coincident with said second plane, an electric power source of voltage V_1, said voltage V_1 being applied between said emitters and said first anodes causing the emission of an electron beam from each said emitter, a second anode, an electric power source of high voltage V_o applied between said emitters and said second anode, an electron optics lens, said lens projecting a demagnified image of said emitter array onto said substrate surface, main scanning means, subsidiary scanning means, said main scanning means causing a stop-go scanning motion of said demagnified image over said substrate surface, an Area A_3 surrounding each said emitter image, each said emitter image comprising a pixel, said subsidiary scanning means simultaneouly scanning each of said pixels over their corresponding Areas A_3 during the "stop" portions of the said main scan on said substrate surface, and blanking said images during said "go" portions of the said main scan, a microprocessor, a program, a pattern modulation voltage V_2 output from said microprocessor, said program controlling said voltage V_2, an amplifier, said voltage V_2 being applied to said amplifier, said voltage V_1 being modulated by said voltage V_2 during the "stop" portions of said main scan, said electron beams modifying the surface properties of the said surface, whereby a plurality of said patterns are inscribed on said substrate surface as variations in said properties.

VOL 1098 ISS 3 JA 17 1989 UMI

4,798,960

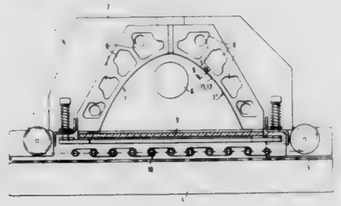
DEVICE FOR THE TREATMENT OF SUBSTANCES BY UV RADIATION

Heinz Keller; Martin Lehner, both of St. Gall, Switzerland; Reinhard Born, Bruchkobel, and Hans-Georg Lotz, Erlensee, both of Fed. Rep. of Germany, assignors to Ferd. Rueesch AG, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 887,554, Jul. 17, 1986, abandoned. This application Mar. 1, 1988, Ser. No. 165,426

Int. Cl.[4] G01J *1/00*; **G02B** *5/24*

U.S. Cl. 250—504 R **5 Claims**



1. A device for the treatment of material by UV radiation, comprising a housing having an upper section, an UV and heat radiating lamp in the upper section, the housing having an open lower section through which radiation from the lamp can pass, and a reflector in the housing and reflecting radiation from the lamp through the open lower section, the reflector having a polished metal reflecting surface having a heat-absorbing coating with an outermost surface formed of black chromium plating forming a dull surface, the heat-absorbing coating being covered by UV reflecting composite layers of vapor deposited layers of hafnium dioxide and silicon dioxide of which one is bonded to, said surface of the heat-absorbing coating.

4,798,961

DEVICE FOR RADIATION FIELD SHIELDING IN RADIOTHERAPY

Nils-Erik Augustsson, Fasanvägen 2, S-232 00 Åkarp, Sweden

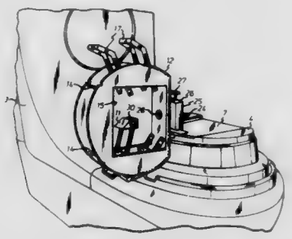
PCT No. PCT/SE86/00514, § 371 Date Jul. 9, 1987, § 102(e) Date Jul. 9, 1987, PCT Pub. No. WO87/02897, PCT Pub. Date May 21, 1987

PCT Filed Nov. 11, 1986, Ser. No. 81,006

Claims priority, application Sweden, Nov. 11, 1985, 8505315

Int. Cl.[4] H05G *1/02*

U.S. Cl. 250—515.1 **16 Claims**



1. A device for shielding the field of radiation in a radiotherapy apparatus (1) comprising a frame (2) and a rotary member (3) rotatable about a first axis (A) and a collimator unit (4) having a second axis (B) which is rotatable in its entirety about said first axis (A) spaced apart from said collimator unit (4), such that the collimator unit is rotatable about a patient to be subjected to radiation, said device (5) being mounted on the collimator unit (4) and comprising a holder (10) which supports at least one adjustable radiation shield means (11) spaced from the collimator unit (4), said device (5) having a shaft assembly (24) which is mounted on the collimator unit (4) and on which the holder (10) is mounted, characterized in that the shaft assembly (24) comprises two shafts (26, 28) having axes substantially at right angles to each other, the holder (10) being pivotable about one (26) of said shafts from a first position in front of the collimator unit (4), such that radiation passing through the collimator unit passes through an opening in the holder, to a second position in which the holder (10) is pivoted away from the collimator unit (4) and in which the holder is rotatable in its entirety about the axis of the other shaft (28).

4,798,962

MULTI-WAVELENGTH PROJECTION EXPOSURE AND ALIGNMENT APPARATUS

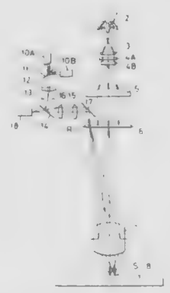
Koichi Matsumoto, Tokyo; Yutaka Suenaga, Kawasaki; Makoto Uehara, Tokyo, and Kiyoyuki Muramatsu, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Feb. 18, 1987, Ser. No. 16,120

Claims priority, application Japan, Feb. 24, 1986, 61-38852

Int. Cl.[4] G01B *11/00*

U.S. Cl. 250—548 **13 Claims**



4. A projection exposure apparatus for holding a wafer, which has a first alignment mark, and for holding a reticle, which is formed by a light transferring portion and a light shielding portion and has a second alignment mark and a pattern, comprising:

illuminating means provided with an illuminating optical system for illuminating said reticle by first light having a first wavelength through said illuminating optical system;

a projection optical system disposed between said reticle and said wafer; and

alignment means provided with an alignment optical system and alignment detecting means for illuminating said second alignment mark of said reticle by second light of a second wavelength through said alignment optical system and for detecting the relative positional relationship between said reticle and said wafer, said alignment detecting means detecting an image of said second alignment mark through said alignment optical system and detecting an image of said first alignment mark through said projection optical system and said alignment optical system, said second wavelength being longer than said first wavelength;

said projection optical system having two extremums of axial chromatic aberration as a function of wavelength of light, said first wavelength being substantially equal to the shorter one of two wavelengths corresponding to said two extremums, the value of axial chromatic aberration of the extremum corresponding to the shorter one of two wavelengths corresponding to said two extremums being substantially equal to zero, the value of axial chromatic aberration of said projection optical system corresponding to said second wavelength being substantially equal to zero.

4,798,963

APPARATUS FOR MONITORING AND MEASURING THE QUALITY OF RAIL WHEEL STILL MOUNTED BENEATH A RAIL VEHICLE WITHOUT DIRECTLY CONTACTING THE RAIL WHEELS

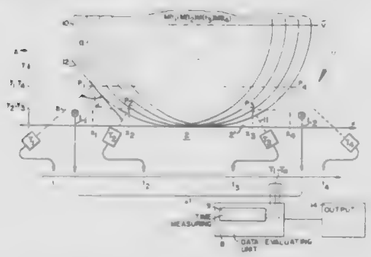
Helmut Wittkopp, Erkelenz; Helmut Grutesen, Wassenberg-Birgelen; Wilfred Coenen, Monchen-Gladbach, and Walter Elschenbroich, Erkelenz, all of Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Filed Aug. 4, 1986, Ser. No. 893,365

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1985, 3528875; European Pat. Off., Mar. 24, 1986, 86104028.5

Int. Cl.[4] G01N *21/86*

U.S. Cl. 250—560 **56 Claims**



1. An apparatus for measuring of wheels of rail vehicles, comprising a measuring range (X) provided along a rail track and having auxiliary rails (2, 16, 58, 112) forming running surfaces (2', 16', 68, 107) for said wheels, at least one wheel diameter measuring device (U) located in said measuring range for providing first electrical signals suitable for ascertaining the diameter of a wheel or wheels, a wheel tread profile sensing device (W) located in said measuring range (X) for providing second electrical signals suitable for ascertaining the quality of a wheel tread profile, wherein both devices (U and W) perform their function during a relative motion between the respective wheel (1, 18, 25) and the measuring apparatus, and data processing signal evaluating means connected to both devices (U, W) for providing an information output regarding the wheel diameter and regarding the wheel tread profile quality.

4,798,964

METHOD AND APPARATUS FOR THE CONTACTLESS MEASURING OF THE TREAD QUALITY OF RAILROAD

Harald Schmalfuss, Rodgau; Friedel Sinsel, Frankfurt, and Hubertus Kurpiella, Eschborn, all of Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Filed Aug. 4, 1986, Ser. No. 893,160

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1985, 3528873; European Pat. Off., Mar. 24, 1986, 86104027.7

Int. Cl.[4] G01V *9/04*

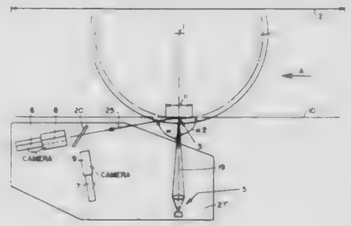
U.S. Cl. 250—560 **34 Claims**

1. A method for measuring in a contactless manner the tread quality of a circumferential tread surface of a railroad wheel having a rotational axis, comprising the following steps:

(a) illuminating the circumferential tread surface of said railroad wheel by directing light in an approximately radial direction onto said circumferential tread surface for producing a light section image of said wheel circumferential tread surface, said light section image extending substantially in parallel to said rotational axis of said railroad wheel,

(b) sensing said light section image for producing electrical analog signals representing said tread quality,

(c) digitizing said electrical analog signals for producing digital signals representing said tread quality, and



(d) evaluating said digital signals for providing information output signals representing said tread quality.

4,798,965

OPTICAL AUTOCOLLIMATION MEASURING APPARATUS

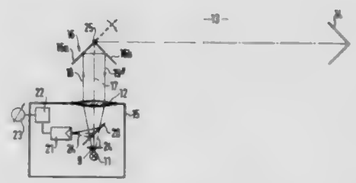
Günter Fetzer, Gundelfingen, and Klaus Smetana, Windenreute, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Jan. 24, 1987, Ser. No. 65,804

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1986, 3624380; Aug. 5, 1986, 3626524

Int. Cl.[4] G01N *15/06*

U.S. Cl. 250—573 **11 Claims**



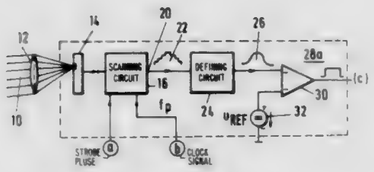
1. Optical autocollimation measuring apparatus, in particular transmission measuring apparatus, comprising a light transmitter-recciver arranged in a housing and having a light source which transmits a light beam via a beam divider and an optical system over a measurement path to a retroreflector with the retroreflector reflecting the incident light substantially back on itself to the light transmitter-receiver so that it falls on the beam divider and is deflected by the latter to a photoreceiver to which an electronic processing circuit is connected, which delivers from the electrical output signal of the photoreceiver an indication representative of the optical state along the measurement path, characterised in that a deflecting mirror (16) is arranged between the front objective (12) and the measurement path (13) and consists of two parts (16*a*, 16*b*) which adjoin one another along a straight line standing perpendicular to the optical axis (17), with the parts being pivotable relative to one another about a pivot axis coinciding with the straight line in such a way that by rotating one part (16*b*) relative to the other part (16*a*) the light incident on the mirror is retroreflected in one dimension.

4,798,966

OPTICAL SENSOR ARRANGEMENT

Wilhelm Duis, Hetlingen, Fed. Rep. of Germany, assignor to J. D. Möller Optische Werke GmbH, Wedel, Fed. Rep. of Germany

Filed Sep. 22, 1986, Ser. No. 910,206
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1985, 3536853
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—578 **6 Claims**



1. An optical sensor arrangement comprising

optical sensing means, including a plurality of identical sensor units arranged substantially equidistantly from one another in array;

means for issuing a clock signal;

a scanning circuit operative for scanning said sensor units and for producing a first signal in response to said clock signal in such a manner that the value of said first signal remains constant for a predetermined time interval following said clock signal;

defining means connected to said scanning circuit and receiving said first signal therefrom, said defining means including an integrating element and being operative for converting said first signal into a gradually changing converted signal having intermediate values between successive ones of the first signal values;

means for providing an additional clock signal having a frequency lower than that of said clock signal; and being connected to said scanning circuit; and

an evaluation circuit receiving said converted signal from said defining means and operative for generating from said converted signal a second signal indicative of the position of a light beam on said optical sensing means, said evaluation circuit including a comparator which compares the value of the converted signal with that of a reference signal and means issuing an output signal that changes its value when the value of the converted signal exceeds the value of said reference signal.

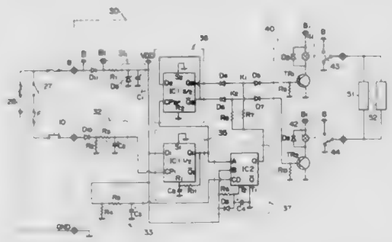
4,798,967

CONTROL SYSTEM FOR FOLDABLE OUTSIDE REARVIEW MIRROR

Tohru Yamana, Fujieda; Kiyoshi Nakayama, Shizuoka, and Kazuhiko Sato, Kyoto, all of Japan, assignors to Murakami Kaimeido Co, Shizuoka and Omuron Tateishi Electronics Co., Kyoto, both of, Japan

Filed Mar. 24, 1988, Ser. No. 173,154
Int. Cl.⁴ G02B *7/18;* **G05B** *19/10*
U.S. Cl. 307—10 R **9 Claims**

1. A control system for a foldable outside rearview mirror, comprising an electric motor having an electric motor circuit; an operation switch; trigger means connected with said operation switch for outputting a trigger pulse in response to actuation of said operation switch; timer means connected with said trigger means for outputting a pulse of a predetermined pulse width to drive said electric motor only for a set time upon receipt of the trigger pulse from said trigger means; polarity changing means having a pair of outputs of high and low level and formed for reversely switching said electric motor by inverting said pair of said outputs upon receipt of the trigger pulse from said trigger means; and switching means for switching a voltage applied to said electric motor to erect or fold a



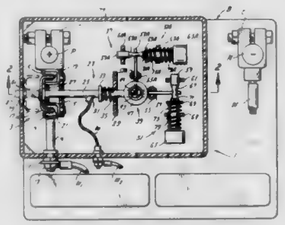
rearview mirror upon receipt of the output of said polarity changing means.

4,798,968

BATTERY DISCONNECT APPARATUS

James R. Deem, 1855 Belmont, Boise, Id. 83706

Filed May 15, 1987, Ser. No. 51,051
Int. Cl.⁴ H01H *71.46*
U.S. Cl. 307—10 BP **19 Claims**



1. In a vehicle having an electrical circuit for supplying power from a battery on the vehicle to one or more electrical components utilized on the vehicle, apparatus for interrupting the flow of power through said circuit, said apparatus comprising:

first and second female electrical connectors connected in said electrical circuit with said electrical circuit being open between said first and second female electrical connectors;

an electrically conductive bridging element having first and second male connectors respectively mating with said first and second female electrical connectors electrically coupling said first and second female electrical connectors together when said bridging element is in an open position;

switch means for holding said oridging element in its closed position and for moving said bridging element from its closed position to its open position; and

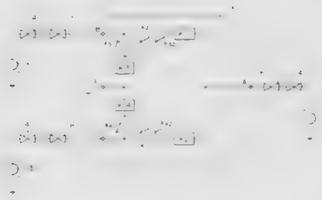
force responsive means for triggering said switch means to move said bridging element from its closed position to its open position in response to said vehicle being subjected to extraordinary forces such as occur during a crash.

4,798,969

POWER FEED SYSTEM IN TRANSMISSION LINE BETWEEN TERMINALS OF THREE-TERMINAL STATION

Yoshiyuki Inoue, Tokyo; Masaaki Takahashi, Yokosuka; Koichi Tatekura, Hiratsuka; Hitoshi Nishikawa, Tokyo; Hajime Ohta, Tokyo, and Yoshikazu Kogure, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki; Kokusai Denshin Denwa Co., Ltd. and NEC Corporation, both of Tokyo, all of, Japan

Filed Feb. 2, 1988, Ser. No. 151,619
Claims priority, application Japan, Feb. 2, 1987, 62-020458
Int. Cl.⁴ H02J *3/36;* **H04B** *3/44*
U.S. Cl. 307—112 **12 Claims**



1. A power feed system in a transmission line between terminals of a three-terminal station which is branched by a branching unit and has power fed between said terminals of said three-terminal station, said power feed system comprising:

switching means for switching power on a power feed line to a repeater between a both-end power feed mode and a single-end power feed mode; and

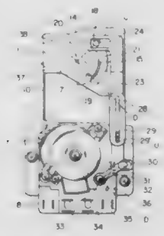
connection holding means for holding a power feed connection state without change upon an occurrence of a failure.

4,798,970

DEFROSTING CIRCUIT SWITCH UNIT FOR ELECTRONIC RANGE

Kenzo Okamoto, Osaka, and Fumihiko Kitada, Neyagawa, both of Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1987, Ser. No. 137,211
Claims priority, application Japan, Dec. 24, 1986, 61-197345
Int. Cl.⁴ H01H *43/00*
U.S. Cl. 307—119 **1 Claim**



1. A defrosting circuit switch unit for an electronic range comprising: a frame of said unit, said frame being provided with a shaft; a defrosting circuit switch lever provided in a case in which a time switch is incorporated; a connecting rod having its lower end portion connected with a free end portion of said lever, said connecting rod being slidably moved up and down; a rotary plate rotatably mounted on said frame through said shaft and provided with a stopper extending in a projecting manner, said stopper being received in an elongated hole of an upper portion of said connecting rod, said rotary plate being integrally formed with a projection and a sector cam, said projection abutting on a leaf spring mounted on said frame; and a tension spring mounted between said rotary plate and said frame so as to resiliently biasing said rotary plate, said tension spring being engaged with said rotary plate through an engaging hole provided in said rotary plate.

4,798,971

APPARATUS FOR CONTROLLING DEVICE START UP AND OFF/ON RUNNING PERIODS

Charles T. Gravely, Sachse, Tex., assignor to J & S Electronics, Inc., Garland, Tex.

Filed Apr. 14, 1987, Ser. No. 38,041
Int. Cl.⁴ H01H *7/00;* **G05F** *3/04*
U.S. Cl. 307—141 **10 Claims**



1. A control device for a system such as a forced air gas burning central heating system or the like comprising:

a. power means for producing ac voltage for operation of the system and converting ac power to dc power for a control means;

b. gate controlled semiconductor switch means connected to the power means for controlling the connection of ac power to a load; and

c. control means connected to the power means for receiving the dc power, and to the gate controlled semiconductor switch for controlling the operation of the switch means in response to the dc power, said control means including first timing means for producing an initial timing signal for the gate controlled semiconductor switch means to conduct ac power for a first preselected time, and a second timing means for producing alternately first and second timing signals for the gate controlled semiconductor switch after the initial signal to block the flow of ac power to the system for a preselected time, and to conduct ac power to the system for a preselected time, wherein the control means further includes a square wave generator connected to the ac power source for producing a plurality of square wave signals at the frequency of the ac source of power, a frequency divider connected to the square wave generator for producing square wave signals having a preselected frequency, the first timing means connected to the frequency divider for generating the initial timing signal for said first preselected time, and the second timing means includes a frequency counter means connected to the frequency divider for thereafter alternately generating said first timing signals for said preselected time periods and said second timing signals for said preselected time periods for the gate controlled semiconductor switch means.

10. A control device for regulating the combustion of gas in

a central heating system powered by an ac power source operating through a switch, comprising:

square-wave generator means connected to the ac power source for producing a plurality of square wave signals at the frequency of the ac source of power;

frequency counter/divider means for driving the power frequency into suitable clocking pulses for determining preselected timing signals;

decode counter/divider means connected to the frequency/-divider for outputting a plurality of time period indicating signals; and

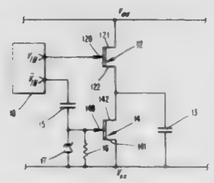
transistor means connected to the decode counter/divider for outputting timing signals to the switch, first to conduct ac power for a preselected time, and thereafter, alternately to block the working ac power for a first preselected time, and to conduct ac power for a second preselected time.

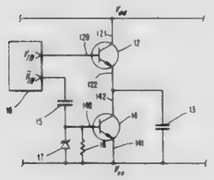
4,798,972

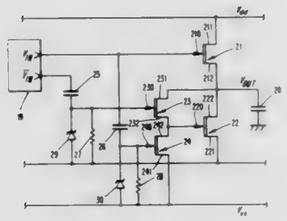
APPARATUS AND METHOD FOR CAPACITOR COUPLED COMPLEMENTARY BUFFERING

Ronald J. Melanson, Sunnyvale, and Ji L. Yang, Palo Alto, both of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 3, 1987, Ser. No. 21,251
Int. Cl.[4] H03K *17/10, 17/687, 19/003, 17/04*
U.S. Cl. 307—270 **26 Claims**







1. A semiconductor buffer circuit responsive to a digital input signal for driving a capacitive load to one of two binary states, comprising:

first transistor means having a first, second, and control electrode, the first electrode coupled to a first reference potential and the second electrode to be coupled to the capacitive load, for charging the capacitive load by current from the first reference potential through the first transistor means at times when the input signal is changing to a high level;

second transistor means having a first, second, and control electrode, the first electrode coupled to a second reference potential lower than the first reference potential and the second electrode to be coupled to the capacitive load, for discharging the capacitive load by current to the second reference potential through the second transistor means at times when the input signal is changing to a low level;

first coupling means for coupling the digital input signal to the control electrode of the first transistor means, for applying a voltage to the control electrode that increases the current between the first and second electrodes of the first transistor means at times when the input signal is changing to a high level, and decreases the current at times when the input signal is changing to a low level; and

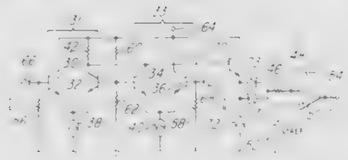
second coupling means for capacitively coupling the digital input signal to the control electrode of the second transistor means, for applying a voltage to the control electrode that decreases the current between the first and second electrodes of the second transistor means at times when the input signal is changing to a high level, and increases the current at times when the input signal is changing to a low level.

4,798,973

HIGH FREQUENCY CHARGE PUMP/INTEGRATOR CIRCUIT

John D. Morgan; William H. Giolma, both of Dallas, Tex., and Richard Boucher, Santa Clara, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 13, 1987, Ser. No. 49,632
Int. Cl.[4] H03K *3/01*
U.S. Cl. 307—296 R **12 Claims**



1. A charge pump circuit, comprising

a dropping resistor;

a current steering circuit having an output coupled to said dropping resistor and having a pair of inputs for receiving respective input signals, said current steering circuit being responsive to a first condition of said input signals for drawing no current through said dropping resistor, being responsive to a second condition of said input signals for drawing a first level of current through said dropping resistor, and being responsive to a third condition of said input signals for drawing a second level of current through said dropping resistor, wherein said second level of current is greater than said first level of current; and

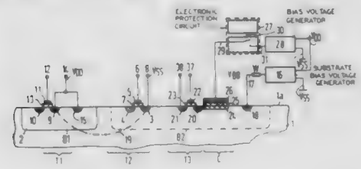
an integrator circuit having an input coupled to said dropping resistor for integrating a current caused by the voltage change across said dropping resistor, said voltage change being with respect to a voltage established by said first level of current flowing through said dropping resistor.

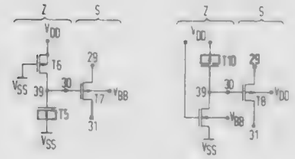
4,798,974

INTEGRATED CIRCUIT COMPRISING A LATCH-UP PROTECTION CIRCUIT IN COMPLEMENTARY MOS-CIRCUITRY TECHNOLOGY

Werner Reczek, Munich, and Josef Winnerl, Landshut, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 15, 1987, Ser. No. 108,630
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1987, 3700685
Int. Cl.[4] H01L *27/10;* **W03L** *1/00;* **H03K** *3/354, 3/013*
U.S. Cl. 307—296 R **15 Claims**





1. An integrated circuit, comprising:

a doped semiconductor substrate;

complementary MOS-circuitry in the substrate;

a substrate bias voltage terminal in the doped semiconductor substrate connected to an output of a substrate bias voltage generator;

a capacitor having first and second capacitor surfaces, the first capacitor surface being integrated in the doped semiconductor substrate, and the second capacitor surface being connected via an electronic protection circuit means to a capacitor bias voltage generator; and

said electronic protection circuit means interconnecting the second capacitor surface and the capacitor bias voltage generator following a delay time ΔT when the integrated circuit is switched on.

4,798,975

HIGH NOISE IMMUNITY INPUT LEVEL DETECTOR WITH HYSTERESIS

Thomas J. Walczak, Fox River Grove, and Michael P. Metroka, Algonquin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

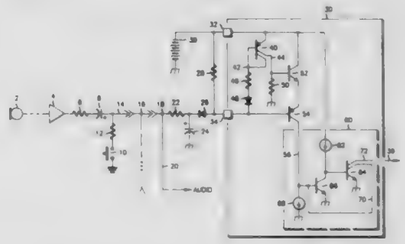
Filed Aug. 13, 1987, Ser. No. 85,444
Int. Cl.[4] H03K *5/153*
U.S. Cl. 307—350 **15 Claims**

1. In a system having an input control signal that assumes one of two states and an input information signal that makes instantaneous variations about a quiescent level, a circuit for detecting the state of the input control signal and for multiplexing the input information signal with the input control signal, comprising:

means for providing a multiplexed input signal having a control component and an information component, the control component assuming one of two levels according to the state of the input control signal and the information component varying, according to the instantaneous variations of the input information signal, about the level assumed by the control component;

threshold means for providing a threshold level which is set relative to a power supply level such that the threshold level tracks the power supply level;

comparison means for comparing the level assumed by the control component to the threshold level, including bipolar transistor means for providing a current signal indicative of the level assumed by the control signal, said comparison means having means for deterring junction breakdown in said bipolar transistor means;



standby power means for substantially reducing the operating power of said comparison means and said threshold means when the level assumed by the control component is approximately equal to said power supply level;

means, responsive to said current signal, for producing a logic output signal to indicate the status of the control component; and

means for maintaining a constant polarity, independent of the state of the input control signal, between the level of the control component and the quiescent level of the input information signal.

4,798,976

LOGIC REDUNDANCY CIRCUIT SCHEME

James J. Curtin, Fishkill; Jack A. Dorler, Holmes; George J. Jordy, Wappingers Falls, and Kenneth L. Leiner, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1987, Ser. No. 120,431
Int. Cl.[4] H03K *19/003*
U.S. Cl. 307—441 **17 Claims**



1. A redundancy circuit scheme, comprising:

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a plurality of pairs of circuit groups, each circuit group having a respective circuit node and a respective power control line; said each circuit group in a given pair for generating substantially the same electrical signal on its respective circuit node as the other circuit group in the given pair generates on its respective circuit node;

a plurality of isolation circuits having respective output nodes, with a different isolation circuit connected to the circuit node for each different circuit group, said isolation circuits being powered at all times during operation, each of said isolation circuits for providing an output signal on its output node indicative of the signal on the circuit node connected thereto, while isolating said connected circuit node from nets connected to said isolation circuit output node;

means for electrically connecting together, for bidirectional communication, the circuit nodes for each pair of circuit groups, prior to the connection to the isolation circuits associated therewith;

switching means connected to ecch of said power control lines associated with said plurality of pairs of circuit groups for providing power to one and only one circuit group in each pair of circuit groups; and

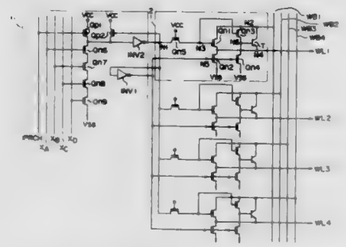
means for controlling, through said electrically connecting means, the electrical state at the isolation circuit output node of the circuit group in a given pair of circuit groups which is not powered by said switching means to have the same electrical state as the isolation circuit output node of the circuit group in the given pair of circuit groups which is powered by said switching means, so that both isolation circuit output nodes in said pair provide a correct electrical signal.

4,798,977

WORD LINE DRIVER FOR USE IN A SEMICONDUCTOR MEMORY

Koji Sakui, Tokyo, and Shigeyoshi Watanabe, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 8, 1987, Ser. No. 130,174
Claims priority, application Japan, Feb. 26, 1987, 62-41304
Int. Cl.[4] H03K *19/003, 19/01, 17/04, 4/58*
U.S. Cl. 307—446 **5 Claims**



1. An inverter comprising:

a first n-channel MOS transistor whose drain is connected to receive a potential at an "H" level, whose source is connected to an output terminal, and whose gate is used as a first input terminal;

a second n-channel MOS transistor whose drain is connected to said output terminal, whose source is connected to receive a potential at an "L" level, and whose gate is used as a second input terminal, for receiving an input signal which is complementary to an input signal supplied to said first input terminal;

an npn transistor whose collector is connected to the drain of said first n-channel MOS transistor, and whose emitter is connected to said output terminal;

a third n-channel MOS transistor whose drain is connected to the collector of said npn transistor, whose source is connected to the base of said npn transistor, and whose gate is connected to said first input terminal; and

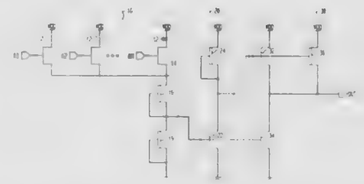
a fourth n-channel MOS transistor whose drain is connected to the base of said npn transistor, whose source is connected to receive a potential at the "L" level, and whose gate is connected to said second input terminal.

4,798,978

GAAS FET LOGIC HAVING INCREASED NOISE MARGIN

Gary M. Lee, High Bridge; Charles M. Lee, Murray Hill, and George S. LaRue, Flemington, all of N.J., assignors to Gain Electronics Corporation, Somerville, N.J.

Filed Apr. 30, 1987, Ser. No. 44,519
Int. Cl.[4] H03K *19/094*
U.S. Cl. 307—450 **12 Claims**



1. A multiple input logic gate for implementing the NOR function comprising:

an input stage including a plurality of enhancement mode FETs, said enhancement mode FETs having gate terminals for receiving logical input signals and a common source terminal, said input stage further including a depletion mode FET which is capable of level shifting the voltage present at said common source terminal, and

an inverter stage connected to said depletion mode FET, said depletion mode FET being coupled between said common source terminal and an input of said inverter stage.

4,798,979

SCHOTTKY DIODE LOGIC FOR E-MODE FET/D-MODE FET VLSI CIRCUITS

Gary M. Lee, Highbridge, N.J., and Andrzej Peczalski, Brooklyn Park, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 23, 1986, Ser. No. 910,545
Int. Cl.[4] H03K *19/017, 19/094, 19/20, 17/04*
U.S. Cl. 307—450 **15 Claims**

1. A digital logic circuit, connected to a source of electrical potential, consisting only:

an input node;

an output node;

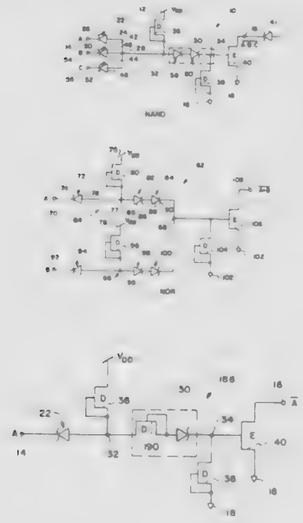
a voltage reference point;

a Schottky diode having an anode and a cathode, wherein said cathode is connected to said input node and said node is connected to a first node;

means for shifting the voltage level, wherein said means for shifting the voltage level is connected between said first node and a second node;

first and second means for drawing current, wherein said first means for drawing current is connected between said source of electrical potential and said first node, and said second means for drawing current is connected between said second node and said voltage reference point; and

means for controlling the flow of current between said output node and said voltage reference point, said means



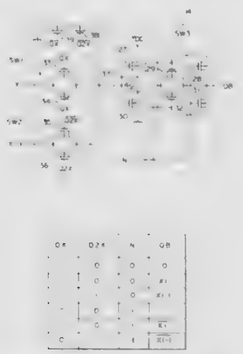
for controlling the flow of current being connected to said second node.

4,798,980

BOOTH'S CONVERSION CIRCUIT

Hisashi Sugiyama; Yasuhiro Sugimoto, both of Yokohama, and Yukio Kamatani, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 13, 1987, Ser. No. 49,141
Claims priority, application Japan, Jun. 11, 1986, 61-135162
Int. Cl.[4] H03K *19/21, 19/094, 19/017*
U.S. Cl. 307—471 **6 Claims**



1. A Booth's conversion circuit comprising:

a first switch circuit having an input terminal which is supplied with signal X_i of a logic level positioned in the i-digit position of a multiplicand X, and which is rendered conductive or nonconductive according to the logic level of a signal QX of logic 1 or logic 0;

a second switch circuit, having an input terminal which is supplied with signal X_{i-1} of a logic level positioned in the i-1 digit position of a multiplicand, having an output terminal which is connected to the output terminal of said first switch circuit, and which is rendered conductive or nonconductive according to the logic level of a signal Q2X of logic 1 or logic 0;

first and second transistors connected in series between the junction of said output terminals of said first and second switches and a reference potential, and which are rendered conductive or nonconductive according to the logic levels of signals QX, Q2X, the conductive and nonconductive states of said first and second switches being reversed from those of said first and second transistors; and

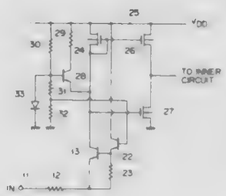
an exclusive logical sum circuit, having a first input terminal connected to said junction of said first and second switch circuits, and having a second input terminal supplied with a signal having a logic level 1 or 0.

4,798,981

INPUT CIRCUIT

Kazunori Tsugaru, and Yasuhiro Sugimoto, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 20, 1987, Ser. No. 28,385
Claims priority, application Japan, Mar. 31, 1986, 61-72843
Int. Cl.[4] H03K *19/097, 19/086*
U.S. Cl. 307—475 **5 Claims**



1. An input circuit driven by a single power supply for providing an output signal at a non-negative CMOS potential level to an inner circuit, comprising:

an input terminal for receiving an input signal at a negative ECL potential level;

means for providing the output signal at a non-negative CMOS potential level to the inner circuit;

a first transistor having an emitter, a collector, and a base, whose collector is coupled to the output signal providing means;

bias means coupled to the single power supply for applying a fixed bias voltage at a negative potential level to the base of said first transistor;

regulator means coupling the input terminal to the emitter of the first transistor, for regulating the amount of collector current of the first transistor; and

current-to-voltage converting means, coupling the output signal providing means and the collector of the first transistor to the single power supply, for generating the output signal at a higher non-negative potential level when the first transistor is turned off by the input signal and for generating the output signal at a lower non-negative potential level when the first transistor is turned on by the input signal.

4,798,982

ACTIVE SYMMETRICAL BALANCE HYBRID CIRCUIT

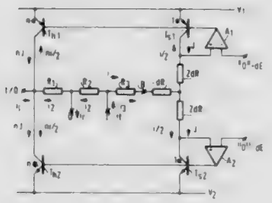
Johannes O. Voorman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1987, Ser. No. 94,226

Claims priority, application Netherlands, Sep. 15, 1986, 8602325

Int. Cl.⁴ H03K *5/08*

U.S. Cl. 307—490 **6 Claims**



1. A hybrid circuit comprising an input, an output and an in/output, at least one signal transistor, at least two auxiliary transistors for operation as current multiplexers in a circuit with an associated signal transistor and an impedance circuit incorporated in a circuit with an associated signal tranaistor, a junction point of the impedance circuit being connected to the output of the hybrid circuit, the impedance circuit having such an impedance related to the multiplication coefficient of the auxiliary transistor that the hybrid circuit fulfills a condition known as the line matching condition, characterized in that the impedance circuit is connected between the in/output and at least one virtual ground point of the hybrid circuit and has a further junction point connected to the input of the hybrid circuit, in that each signal transistor is connected between an associated virtual ground point and an associated supply line and in that two auxiliary transistors having the same multiplication coefficients are connected between an associated supply line and the in/output of the hybrid circuit and are incorporated in a current mirror circuit having said at least one signal transistor, with junction points in the impedance circuit determining partial impedances being selected such that a condition known as the hybrid balance condition is fulfilled.

4,798,983

DRIVING CIRCUIT FOR CASCODE BIMOS SWITCH

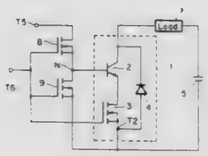
Satoshi Mori, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 21, 1987, Ser. No. 53,339

Claims priority, application Japan, Sep. 26, 1986, 61-228924

Int. Cl.⁴ H03K *17/60, 5/00, 3/01, 19/02*

U.S. Cl. 307—570 **1 Claim**



1. A driving circuit for driving a cascode type BiMOS switch including a bipolar transistor whose collector is connected through a load to a positive electrode of a power source and a field effect transistor whose drain is connected to an emitter of said bipolar transistor and whose source is connected to a negative electrode of said power source, said driving circuit comprising an n.p series body formed by connecting ann-channel field effect transistor in series relation with a p-channel field effect transistor, wherein a mid-point of said n.p series body is connected to a base of said bipolar transistor, and a drain and a source of said n-channel field effect transistor are connected to a D.C. power source and said mid-point, respectively, and a drain and a source of said p-channel field effect transistor are connected to said mid-point and said negative electrode of said power source, and a gate of said field effect transistor and gates of said n-channel and p-channel field effect transistors are connected to an input terminal, whereby said cascode type BiMOS switch is driven by a single positive or negative signal.

4,798,984

ELECTRIC MOTOR WITH EARTH PLATE PRESS FITTED TO MOTOR CASING

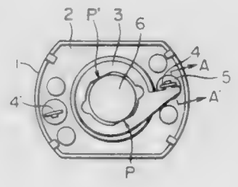
Satoshi Suzuki, and Ryoichi Someya, both of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Japan

Filed Aug. 20, 1987, Ser. No. 87,655

Claims priority, application Japan, Aug. 20, 1986, 61-126928[U]

Int. Cl.⁴ H02K *11/00*

U.S. Cl. 310—68 C **7 Claims**



1. An electric motor having a motor housing comprising a large casing part with an open end supporting a small casing part, the small casing part having at the center thereof a cylindrical bearing housing protruding outwardly of the motor housing and having at the edges thereof holes through which brush holders formed with holes receiving and supporting motor terminals extend, and an earth plate comprising a base having at a central part thereof a contacting and mounting hole into which the external surface of said bearing housing is inserted as a press-fit, a neck extending from said base flush therewith, an arm extending from a free end of said neck at right angles to the plane of said neck and being inserted into at least one of the motor terminals receiving holes on one of said brush holders, and a contacting curved portion making electrical contact with at least one of said motor terminals; said earth plate being installed on said small casing part by press-fitting said base from the outside on said bearing housing and press-fitting said arm into said motor terminal receiving hole so as to make electrical contact with said motor terminal.

4,798,985

LINEAR MOTOR WITH AIR-LIFT BEARING UNLOADING

Anwar Chitayat, P.O. Box 107, Northport, N.Y. 11768

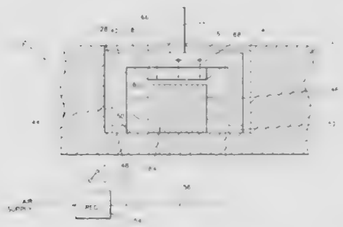
Filed Feb. 17, 1987, Ser. No. 15,680

Int. Cl.⁴ H02K *5/16*

U.S. Cl. 310—90 **23 Claims**

1. A positioning device comprising:
a stationary portion.
a movable portion;
one of said stationary portion and said movable portion including a plurality of permanent magnets affixed upon a surface thereof;
the other of said stationary portion and said movable portion including an armature affixed facing said plurality of permanent magnets;

said armature including a plurality of armature coils;
said armature further including a mass of magnetically attractive material, whereby a static attractive force exists between at least some of said plurality of permanent magnets and said mass of magnetically attractive material;
at least first and second cooperating bearing means for supporting said movable portion against said static attractive force;



said first cooperating bearing means being a contact-type bearing means; and
said second cooperating bearing means being of a type having a fluid forced between facing surfaces for supporting a first portion, but less than all, of said static attractive force, whereby said second cooperating bearing means is effective for supporting a remainder, less than all, of said static attractive force at all times during operation of said positioning device.

4,798,986

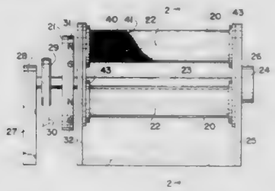
ELECTRIC GENERATOR HAVING STATIONARY INDUCTION COILS

Berry E. Smith, Jr., Star Rte. 1, Box 3921, Tallahassee, Fla. 32304

Filed Apr. 11, 1988, Ser. No. 180,192

Int. Cl.⁴ H02K *1/22*

U.S. Cl. 310—268 **16 Claims**



1. An electric generator including a plurality of stationary induction coils, a rotatable armature, and an elongated magnetically conductive core in each said coil; said coil comprising a plurality of turns of electrically conductive wire in a tubular shape around and closely encasing said elongated magnetically conductive core extending lengthwise through the central axis of said coil; said armature comprising a rotatable shaft and a disc structure mounted on said shaft with an even number of permanent magnets mounted circuferentially thereof in an arragement of alternating polarity with the axis of each magnet being parallel to said shaft; said coils being positioned in a spaced circumferential arrangement with one end of each coil adjacent to said disc structure and said core extending outwardly of said end to be in close proximity to said magnets, said coils being spaced apart such that any instant all of said cores are adjacently facing said magnets of the same polarity.

4,798,987

SURFACE ACOUSTIC WAVE GENERATOR

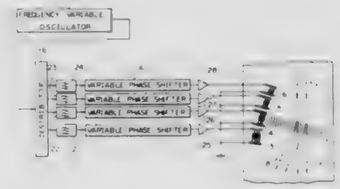
Kenji Nakamura, Hadano, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1987, Ser. No. 87,410

Claims priority, application Japan, Aug. 25, 1986, 61-197378; Aug. 25, 1986, 61-197379; Aug. 25, 1986, 61-197380

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—313 R **10 Claims**



1. A surface acoustic wave generator comprising:
a transducer array of a plurality of surface acoustic wave transducers having different center frequencies from each other;
a variable frequency oscillator for supplying an HF signal to drive said transducer array within a range which covers frequency bands of said transducers;
a distributor for distributing and inputting in parallel the HF signal supplied from said oscillator to each of said transducers of said transducer array; and
prevention means provided between each of said transducers and said distributor for preventing the HF signals reflected by said transducers from returning to said distributor.

4,798,988

OPTIMUM BIAS CIRCUIT FOR A CONVOLVER

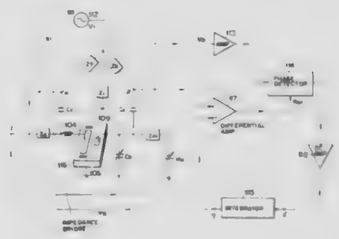
Syuichi Mitsutsuka, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1987, Ser. No. 87,694

Claims priority, application Japan, Aug. 22, 1986, 61-196594; Sep. 2, 1986, 61-207458; Sep. 19, 1986, 61-221576

Int. Cl.⁴ H01L *41/08;* **H03H** *9/30*

U.S. Cl. 310—313 R **25 Claims**



1. An optimum bias circuit for a convolver comprising:
(a) an impedance bridge which includes a plurality of fixed impedances, a reference impedance and a convolver having a gate;
(b) a first amplifier amplifying a first output from said bridge;
(c) a signal source which supplies a signal to said bridge;
(d) a second amplifier amplifying a second output from said bridge;
(e) phase detector means for detecting the phase of the

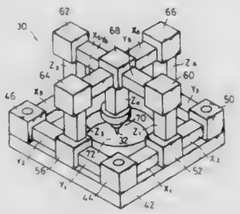
output of said first amplifier by using the output of said second amplifier as a reference signal;
(f) a DC amplifier amplifying the output of said phase detector means; and
(g) integrating means for integrating the output of said DC amplifier and for applying a signal thus obtained to said gate of said convolver.

4,798,989

SCANNING TUNNELING MICROSCOPE INSTALLED IN ELECTRON MICROSCOPE

Yasumichi Miyazaki, Sagamihara, and Yasunori Koga, Isehara, both of Japan, assignors to Research Development Corporation, Tokyo, Japan

Filed Sep. 24, 1987, Ser. No. 101,233
Claims priority, application Japan, Sep. 26, 1986, 61-226285; Sep. 26, 1986, 61-226286
Int. Cl.[4] H01L *41/08*; G01N *23/00*
U.S. Cl. 310—328 **5 Claims**



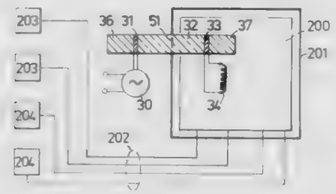
1. A mechanism for moving a sample, comprising:
a sample chamber;
a sample moving mechanism;
a sample position adjusting device;
a stage accommodated in said sample chamber of a scanning electron microscope for loading a sample thereon, said stage being movable in an X–Y plane driven by said sample position adjusting device and said stage being movable in a Z direction by said sample moving mechanism which is mounted on said sample position adjusting device;
a probe located in proximity to a surface of the sample, which is loaded on said stage, for detecting a tunnel current which flows between said surface of the sample and said probe;
a probe moving mechanism for finely moving said probe in the X–Y plane which is substantially parallel to the surface of the sample and in the Z direction which is perpendicular to the X–Y plane;
an image processor for image-processing a control signal associated with said probe moving mechanism;
a region of the surface of the sample which faces a tip of said probe being irradiated by an electron beam issuing from an object lens of said scanning electron microscope;
an upper clamper provided with a pair of first piezoelectric elements which are expansible and contractible in opposite direction to each other on a line extending in the X direction, and a pair of second piezoelectric elements expansible and contractible in opposite direction to each other on a line extending in the Y direction which is perpendicular to the X direction, said upper clamper being provided with the stage for loading the sample thereon;
a lower clamper provided with third piezoelectric elements similar to said first piezoelectric elements and fourth piezoelectric elements similar to said second piezoelectric elements, said lower clamper being connected to said upper clamper by a fifth piezoelectric element which is expansible and contractible in the Z direction perpendicular to the X and Y directions;
a guide for selectively fixing in place said upper and lower clamps by expanding said first and second piezoelectric elements and said third and fourth piezoelectric elements; and
a control device for controlling a voltage which is applied to each of said first to fifth piezoelectric elements, said control device applying a different voltage to each of the first to fourth piezoelectric elements which are provided in pairs;
said guide being fixed to a base.

4,798,990

DEVICE FOR TRANSMITTING ELECTRIC ENERGY TO COMPUTERS AND DATA NETS

Bengt Henoch, Backvindeln 90, 126 57 Hägersten, Sweden

Filed Sep. 1, 1987, Ser. No. 91,868
Claims priority, application Sweden, Sep. 11, 1986, 8603805
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—334 **14 Claims**



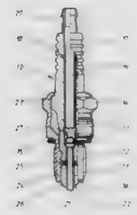
1. A device for transmitting electric energy to electric equipment, primarily computers and data nets, which device is intended to be connected between a voltage source and the electric equipment, comprising a generator, which is intended to be connected to said voltage source and capable to generate a high-frequency mechanical wave motion and comprising a transmission member capable to transmit said motion to a receiver, which transmission member comprises a non-magnetic and electrically insulating material, in which the mechanical wave motion can be conducted, and said receiver, which is intended to be connected to the electric equipment, is capable to convert said mechanical wave motion into an electrically varying voltage, and said generator and said receiver each comprises piezo-electric element, which are in mechanical connection with said transmission member, characterized in that said transmission member (12;32;72;110;11) has the shape of a bar or corresponding continuous member, that the piezo-electric element (31;33;73) of the receiver (13;14;33-35;73-75) is connected to the first end of the transmission member while the piezo-electric element (31;71) of the generator (10;11;30;31;70;71) is connected to the other, opposed end of the transmission member, that the piezo-electric element (31;71) of the generator is capable to generate longitudinal waves in the transmission member (12;32;72;110-111), that a bar-shaped element (36;37;76;77) is located on the opposite side of each of the piezo-electric elements (31;33;71;73) relative to the transmission member, which bar-shaped elements (36;37;76;77) are capable to acoustically adapt the piezo-electric elements to the transmission number, that said electric equipment is surrounded by a shield such as a metal net or a metal wall to form a Faraday's cage around the electric equipment through which shield the transmission member runs and that said piezo-electric elements consist of a flat, round element such as a disc or ring, provided with metal coats on its opposed side surfaces which coats constitute the two poles on the receiver side which coats are not in electrical contact with the Faraday's cage.

4,798,991

SURFACE-GAP SPARK PLUG FOR INTERNAL COMBUSTION ENGINES

Walter Benedikt, Kornwestheim; Gerhard Heess, Tamm; Werner Herden, Gerlingen; Karl-Hermann Friese, Leonberg; Helmut Reum, Stuttgart; Jürgen Schmatz, Mundelsheim, and Siegbert Schwab, Sindelfingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE86/00366, § 371 Date May 7, 1987, § 102(e) Date May 7, 1987, PCT Pub. No. WO87/01877, PCT Pub. Date Mar. 26, 1987
PCT Filed Sep. 13, 1986, Ser. No. 55,891
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1985, 3533124
Int. Cl.[4] H01T *13/38, 13/52*
U.S. Cl. 313—137 **17 Claims**



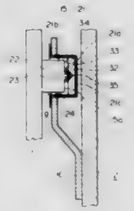
1. In a surface-gap spark plug for internal combustion engines, comprising an insulating body which has an end portion and carries a center electrode in said end portion which faces a combustion chamber side; a metal housing which partially encloses said insulating body, said metal housing carrying a ground electrode at an end thereof facing said combustion chamber side, said ground electrode annularly enclosing said center electrode at a distance therefrom, wherein an electrical field develops and a surface spark gap is formed between said center and ground electrodes along a slide path on a surface of said insulating body when voltage is applied between said electrodes, the improvement comprising said surface (**22**) of said insulating body (**10**) being shaped in such a way that it is penetrated by a plurality of lines of flux (**30**) of the electrical filed developing between said center and ground electrodes (**16**, **21**), and at least a portion of one of said electrodes (**16**, **21**) forming a cathode positioned behind said surface (**22**), as seen in the direction of the course of said lines of flux, with at least a constant spacing from and at a desired angle of inclination relative to said surface (**22**), said insulating body (**10**) being divided transversely and having an upper portion (**23**) formed of a material with relatively low dielectric constants, and lower portion (**24**) facing the combustion chamber side and carrying said surface and formed of a material with dielectric constants which are 5–50 times higher than that of said upper portion so as to promote a development of a surface charge on said surface.

4,798,992

COLOR CATHODE-RAY TUBE WITH ELECTRON BEAM SELECTION MASK SUPPORT STRUCTURE

Hiroshi Ichigaya, Saitama; Susumu Tagawa, Kanagawa; Yasuoshi Sugii; Masanori Ando, both of Tokyo; Jun Yamazaki, Aichi; Yasuo Kawada, Aichi; Tokuho Kinoshita, Aichi; Toshio Shirahama, Aichi; Yoshinori Ito, Tokyo, and Eiji Muramoto, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1987, Ser. No. 31,889
Claims priority, application Japan, May 14, 1986, 61-109998; Jul. 29, 1986, 61-178182
Int. Cl.[4] H02J *29/07*
U.S. Cl. 313—406 **7 Claims**



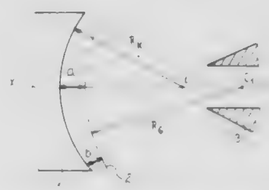
1. A color cathode-ray tube having an electron beam selection mask disposed through springs in a panel opposite to a color luminescent screen formed on the inner surface of said panel, said mask including an electron beam selection electrode composed of a thin metal plate with an array of electron beam transmission apertures and attached to a frame with tension, wherein positioning stud pins are fixed to said panel at points for attachment of said electron beam selection mask, and support springs to be engaged with said stud pins are anchored to said frame, each support spring having a cap engageable with the corresponding stud pin so as to cover the top of said stud pin, and a gap is formed about the entire periphery between said stud pin and the side wall of said cap, in the state of engagement.

4,798,993

ELECTRON GUN FOR ELECTRONIC TUBES

Robert Daret, Colgaleres Maurepas, and Georges Fleury, Gif Sur Yvette, both of France, assignors to Thomson-C.S.F., Paris, France

Filed Mar. 6, 1985, Ser. No. 708,691
Claims priority, application France, Mar. 9, 1984, 84 03640
Int. Cl.[4] H01J *29/46*
U.S. Cl. 313—447 **6 Claims**



1. In an electron beam generating device for an electron tube comprising a cathode whose emissive surface is in the form of a concave spherical skull cap with an essentially uniform radius of curvature with, in the vicinity of this cathode, a modulation grid also in the form of a concave spherical skull cap which may be subjected to two different potentials for power modulating the electron beam emitted by the cathode, wherein the

distance between the cathode and the modulation grid increases the closer to the axis of the tube completely around the axis.

4,798,994

LOW REFLECTANCE DISPLAY DEVICE

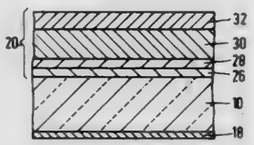
Johannes C. N. Rijpers, and Henricus M. De Vries, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1987, Ser. No. 93,460

Claims priority, application United Kingdom, Sep. 5, 1986, 8621468

Int. Cl.[4] H01J *29/88*; G02B *1/10*

U.S. Cl. 313—478 6 Claims



1. A display device having an optically transparent faceplate, an anti-reflection coating on an external surface of the faceplate, the anti-reflection coating comprising at least three layers of materials which are depositable at ambient temperature by evaporation and hardenable by subsequent annealing, said layers having been hardened by annealing, the material of one of said layers having a high refractive index with respect to that of the material of the faceplate and another one of said layers having a low refractive index with respect to that of the material of the faceplate.

4,798,995

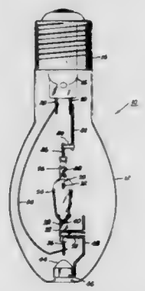
METAL HALIDE LAMP CONTAINING HALIDE COMPOSITION TO CONTROL ARC TUBE PERFORMANCE

Richard P. Gilliard, Mayfield Heights; Daniel M. Cap, Kirtland, and Timothy D. Russell, Parma, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 6, 1986, Ser. No. 915,370

Int. Cl.[4] H01J *17/20*, *61/22*

U.S. Cl. 313—638 8 Claims



1. A high intensity metal halide discharge lamp comprising:
an hermetically sealed vitreous light transmissive outer envelope;
first and second electrical terminal means secured into said outer envelope for making electrical connection from an external power source to the interior of said outer envelope;
first and second conductive lead means for making connection to respective ones of said terminal means;
an hermetically sealed sealed light transmissive vitreous arc tube envelope having respective first and second ends disposed within said outer envelope;
first and second electrodes comprising tungsten and thorium or thorium oxide disposed within said arc tube envelope and sealed into said first and second respective ends of said arc tube envelope;
first and second inlead means for passing through respective arc tube stems at said respective ends of said arc tube envelope and for connecting respective ones of said conductive lead means to respective ones of said first and second electrode means;
support means for supporting said arc tube envelope in a predetermined orientation relative to said outer envelope;
a discharge supporting medium disposed within said arc tube envelope and comprising a quantity of an amalgam of mercury containing 0 to 5 molar percent cadmium;
a quantity of an inert fill gas in said arc tube as a starting gas, and
a metal halide dose comprising a combination of metal halides, including thorium tetraiodide, present in said arc tube in an amount in excess of that amount vaporized during normal operation of the lamp wherein the amount of thorium tetraiodide present in the dose ranges from about 3.8 to 6.0 wt. % thereof and from about 0.9 to 1.5 milligrams per ampere of arc current to maintain a coating of thorium on at least the end portion or tip of said electrodes.

4,798,996

ELECTRONIC PHOTOFLASH CONTROL CIRCUIT

Sheir C. Lam, Tung Lung House 935, Tai Hang Tung Road, Kowloon, Hong Kong, Hong Kong

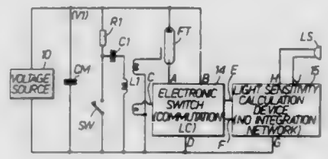
PCT No. PCT/GB84/00191, § 371 Date Jan. 16, 1985, § 102(e) Date Jan. 16, 1985, PCT Pub. No. WO84/04866, PCT Pub. Date Dec. 6, 1984

PCT Filed Jun. 1, 1984, Ser. No. 692,883

Claims priority, application United Kingdom, Jun. 1, 1983, 8315019

Int. Cl.[4] H05B *37/00*

U.S. Cl. 315—241 P 13 Claims



1. A control circuit for a photoflash gun, the circuit including a flash tube, a switch means in series connection with the flash tube, a switching circuit coupled to the flash tube and the switch means for initiating operation of the flash tube and turning on the switch means to permit current flow through the flash tube, the circuit comprising:
means for determining termination of the flash tube operation, the termination determining means including a resonant circuit having a capacitance and an inductance, the circuit being responsive to the initiation of the flash tube operation for causing current to flow through the inductance thereby developing a back emf, the back emf in turn producing a reverse voltage across the capacitance which is of a polarity such as to be able to reset the switch means; and
means for applying the reverse voltage at a desired time to the switch means for turning off the switch means, thereby terminating the flash tube operation.

4,798,997

LIGHTING DEVICE

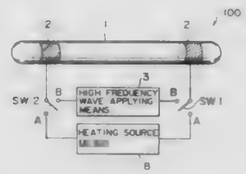
Hidemi Egami, Zama; Katsuo Saito, Yokohama, and Hiroshi Satomura, Hatogaya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,833

Claims priority, application Japan, Dec. 26, 1985, 60-294458; Apr. 18, 1986, 61-88318; Jul. 29, 1986, 61-176738

Int. Cl.[4] H01J *65/04*; H05B *6/80*

U.S. Cl. 315—115 21 Claims



1. A lighting device comprising:
an electrodeless discharge tube adapted to emit light by a high frequency electromagnetic field being applied thereto from outside;
an electrode provided in contact with or in proximity to an outer wall of said discharge tube; and
high frequency wave applying means for applying high frequency power to said electrode, said high frequency wave applying means having means for applying to said electrode, preparatory to causing a substantially complete discharge in said discharge tube, high frequency power of lower level than that applied during the use of said lighting device, for heating said discharge tube.

4,798,998

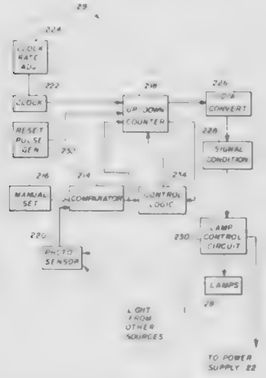
ELECTRONICALLY DIMMED POWER LIMITED LIGHTING SYSTEM

J. Marshall Hemphill, and Roy D. Hoffer, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 15, 1986, Ser. No. 941,596

Int. Cl.[4] H05B *41/36*

U.S. Cl. 315—297 8 Claims



1. A lighting system comprising:
(a) an electrical power source;
(b) at least one power supply connected to the electrical power source, said power supply containing a parallel connected power distributing means which provides electrical power to at least two separate independently operable power outputs;
(c) power limiting means connected within said power supply to individually limit the electrical power to at least two separate power output to a specific fire and/or shock hazard free predetermined value regardless of the electrical power available from the electrical power source;
(d) plural non-armored flexible cable means, each with plug and receptacle disconnect means, one end of each being connected to a power output of the power supply and a second end being connected to a gaseous discharge lighting means;
(e) the gaseous discharge lighting means operable from the limited power available from one power output of the power supply; and
(f) an electronic controller connected to the gaseous discharge lighting means and operating to control the level of its light output based upon the setting of a manual setting means connected to the electronic controller; said controller comprises;
(1) a photo sensor located to be affected by available light, including light from lamps being controlled by the lamp controller, and generating an electrical signal related to the quantity of light to which it is subjected;
(2) a manual setting means generating an electrical voltage related to the setting of a manual control;
(3) a signal comparator electrically connected to the photo sensor and to the manual setting means, receiving electrical signals from both, and generating an output of a command signal which varies with the relationship between the signals received from the photo sensor and the manual setting means;
(4) an electronic up-down counter electrically connected to the output of the signal comparator, receiving the command signal from the signal comparator, counting up or down in its register depending upon the command signal received, and generating an output signal varying with the level of the count on its register;
(5) a clock means electrically connected to the up-down counter and generating and feeding to the up-down counter a signal which repeats at a frequency determined by the clock means, the repeating signal acting upon the up-down counter to determine the rate at which the up-down counter changes the level of its count; and
(6) lamp control means; receiving electrical signals from the up-down counter and varying the electrical power applied to at least one lamp according to the level of the count of the up-down counter.

4,798,999

NUMERICALLY CONTROLLED ELECTROMECHANICAL PRECISION DRIVE SYSTEM

Jaroslaw Tecinsky, Kaiserdeckstr.35-37, D-1000 Berlin 12, Fed. Rep. of Germany

PCT No. PCT/DE85/00552, § 371 Date Sep. 11, 1986, § 102(e) Date Sep. 11, 1986, PCT Pub. No. WO86/04467, PCT Pub. Date Jul. 31, 1986

PCT Filed Dec. 20, 1985, Ser. No. 910,216

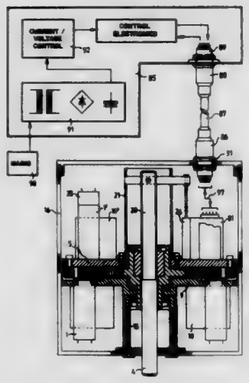
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1985, 3501477; Dec. 13, 1985, 3544669

Int. Cl.[4] H02P *7/68*

U.S. Cl. 318—45 10 Claims

1. An electromechanical precision drive means with a drive mechanism including drive shaft (4, 20) and a plurality of permanently magnetically excited, virtually inertia-free direct current motors (1, 1') with ironless armatures, wherein: each d.c. motor has a shaft with a pinion (2, 2') relatively small in diameter secured thereto; the shafts of said d.c. motors (1, 1') are parallel to said drive mechanism drive shaft (4, 20) of said drive means; said drive mechanism includes a middle gear (3) relatively large in diameter; said d.c. motors (1, 1') with their

identically designed pinions (2, 2') are equally distributed around the periphery of said middle gear (3) and said pinions engage said middle gear (3); said d.c. motors comprise a circular arrangement of a first group of motors (1) kept to one side of said middle gear (3) and a circulat arrangement of an equal sized second group of motors (1') kept to the other, opposite side of said middle gear (3); the two groups of motors (1, 1') are



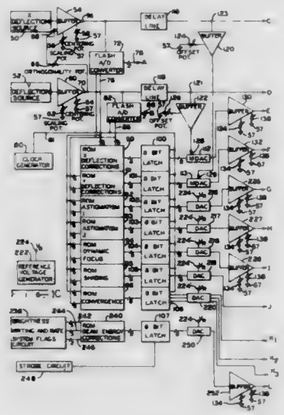
in staggered relation to each other such that one pinion (2) each of the first group lies between two pinions (2') of the second group of motors and vice versa; an independent voltage supply is provided for each d.c. motor enabling each d.c. motor (1, 1') to constitute a separately controlled and monitored autonomous motor unit; and means synchronously control all d.c. motors independently of each other.

4,799,000

DISPLAY CONTROL APPARATUS

Ernest F. Close, Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Sep. 30, 1986, Ser. No. 913,768
Int. Cl.[4] H01J 29/56
U.S. Cl. 315—371 15 Claims



1. Display control apparatus for use with a CRT having an electron gun beam and an electron beam activated screen, x and y analog signal sources for providing, respectively, horizontal and vertical deflection of the electron beam, and having at least one CRT display control member, that improvement comprising:

memory means for storing and addressing digital data;

first analog to digital converter means coupled between the x analog signal source and said memory means for converting the x analog deflection signal to a corresponding x digital deflection signal;

second analog to digital converter means coupled between the y analog signal source and said memory means for converting the y analog deflection signal to a corresponding y digital deflection signal;

sampling means coupled to said first and said second analog to digital converter means for simultaneously sampling each of the x and y digital signals, whereby an x, y digital sample set is provided from said first and said second analog to digital converter means; each of said sample sets corresponding to a respective predetermined point location on the screen; said point locations being spaced one from another over a predetermined portion of the entire viewed area of said screen;

said memory means for storing digital data relating to at least one CRT display control member for each of said digital sample sets; said memory means for using said x, y digital sample sets to address said digital data;

digital to analog converter means coupled to said memory means for converting said addressed digital data to corresponding analog signals;

coupling means for coupling said digital to analog converter means to the display control member;

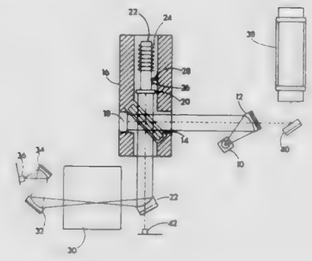
whereby each of said digital sample sets provides an address for respective digital data in said memory means to provide real time geometrically corrected analog signals to the display control member.

4,799,001

START OF SCAN CIRCUIT FOR FTIR SPECTROMETER

Robert V. Burch, Madison, Wis., assignor to Nicolet Corporation, Madison, Wis.

Filed Jul. 23, 1987, Ser. No. 76,916
Int. Cl.[4] G01B 9/02
U.S. Cl. 318—640 12 Claims



1. A start of scan circuit for an FTIR spectrometer which includes an interferometer with a moving mirror, a positioning laser also directed into the interferometer, and a laser detector for detecting in-phase pulses of laser light exiting from the interferometer and generating a digital output signal, the start of scan circuit connected through a servo circuit to control motion of the moving mirror, the start of scan circuit comprising:

a mode counter having a series of output lines which are clocked through a series of states, each state corresponding to a state of motion of the moving mirror, the mode counter output lines connected to the servo circuit to control the moving mirror motion;

a position counter circuit controllable selectively (i) to load a preselected numerical value into a position counter and (ii) to increment or decrement the numerical value therein;

physical position sensor means for detecting a position of the mirror; and

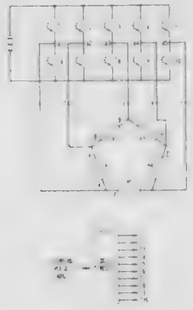
gating means for connecting the output lines of the mode counter selectively (i) to gate the digital output signal of the laser detector to the position counter to increment or decrement the numerical value therein and (ii) to actuate the position counter to load said preselected numerical value, the gating means also for connecting the output of the position counter to the input of the mode counter, the gating means is also connected so that the position counter sequentially: (1) is loaded with a value when the physical position sensor means detects the position, the value representing a distance the mirror is moved beyond the physical position sensor means; (2) counts until the mirror moves the distance; (3) counts a distance the mirror retreats as it is stopped; (4) counts back the distance the mirror retreated as it stopped; (5) is loaded with a value representing a distance until the start of scan; and (6) counts until the distance is reached.

4,799,002

METHOD OF DRIVING A FIVE-PHASE STEPPING MOTOR

Kenji Matsumoto, Kashiwa, Japan, assignor to Oriental Motor Co, Ltd., Tokyo, Japan

Filed May 15, 1987, Ser. No. 50,937
Claims priority, application Japan, May 20, 1986, 61-76152[U]
Int. Cl.[4] H02P 8/00
U.S. Cl. 318—696 6 Claims



1. A method of driving a five-phase stepping motor having phase windings connected in series with each other to form a ring and junctions between the phase windings connected to connections between pairs of switching means, wherein one of the pair of switching means is connected to a positive pole of a d.c. power source and the other of the pair of switching means to a negative pole of the power source, comprising the steps of:

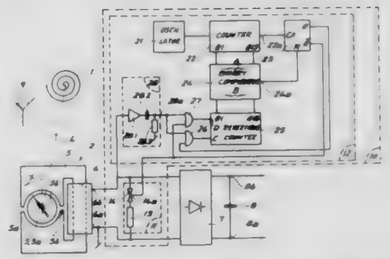
connecting two of said junctions to the positive pole of the power source with respective ones of said switching means, connecting two others of said junctions to the negative pole of the power source with respective others of said switching means, setting both switching means of remaining pairs to an off condition so that the junctions of said pairs are disconnected from the source, and switching the switching means in said pairs so that the disconnected junctions of one pair shifts to other junctions in response to every pulse and so as to energize all phase windings before and after the switching of said switching means.

4,799,003

MECHANICAL-TO-ELECTRICAL ENERGY CONVERTER

Xuan M. Tu, Rue de la Blancherie 34, CH-1022 Chavannes, and Dalso Taghezout, Rue du Tombet 20, CH-2034 Peseux, both of Switzerland

Filed May 28, 1987, Ser. No. 55,196
Int. Cl.[4] H02D 9/04
U.S. Cl. 322—29 11 Claims



1. A mechanical-to-electrical energy converter comprising:

an electrical energy generator having a rotor and means for generating said electrical energy in response to rotation of said rotor;

means for storing at least temporarily said electrical energy;

a mechanical energy source connected mechanically to the rotor and able to generate a mechanical driving torque for driving said rotor at a first speed greater than a predetermined set speed;

means for generating a periodic reference signal having a period equal to the ratio between a predetermined angle of rotation of said rotor and said set speed;

means for generating a control signal having first and second states including means for putting said control signal into one of said states at each one of a plurality of first periodic instants having a period equal to that of said reference signal, means for generating a comparison signal between the real position of said rotor at each first instant and the position the rotor would be in if it were to rotate at said set speed, and means for putting said control signal into the other of said states in response to said comparison signal; and

means for electrically braking said rotor responsive to said first state of the control signal for subjecting said rotor to a braking torque opposed to said mechanical driving torque and imposing on said rotor a second speed lower on average than said set speed, and responsive to said second state of the control signal for stopping the application to the rotor of said braking torque.

4,799,004

TRANSFER CIRCUIT FOR OPERATION TEST OF LSI SYSTEMS

Shojiro Mori, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 25, 1988, Ser. No. 148,385
Claims priority, application Japan, Jan. 26, 1987, 62-15816
Int. Cl.[4] G01R 15/12
U.S. Cl. 324—73 R 9 Claims

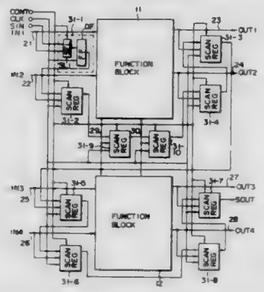
1. A transfer circuit for the operation test of an LSI system comprising:

mode setting means for selectively setting a first or second operation mode;

a plurality of first shift register means connected to function blocks of said LSI system and each including a plurality of scan registers which are connected to input terminals of a corresponding one of the function blocks to respectively latch input data of the corresponding function block in the

first operation mode and which are serially connected to shift the contents in the second operation mode;

a plurality of second shift register means connected to the function blocks of said LSI system and each including a plurality of scan registers which are connected to output terminals of a corresponding one of the function blocks to



respectively latch output data of the corresponding function block in the first operation mode and which are serially connected to shift the contents in the second operation mode; and

serial transfer means for serially connecting said first and second shift register means to constitute a shift register circuit.

4,799,005

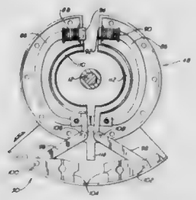
ELECTRICAL POWER LINE PARAMETER MEASUREMENT APPARATUS AND SYSTEMS, INCLUDING COMPACT, LINE-MOUNTED MODULES

Roosevelt A. Fernandes, 104 Raby Rd., Liverpool, N.Y. 13088

Division of Ser. No. 859,497, May 5, 1986, Pat. No. 4,709,339, which is a continuation-in-part of Ser. No. 484,681, Apr. 13, 1983, Pat. No. 4,689,752. This application May 11, 1987, Ser. No. 48,579

Int. Cl.⁴ G01R *21/133, 21/00*

U.S. Cl. 324—127 13 Claims



1. A sensor module for hot-stick mounting on and removal from an energized, high voltage power conductor volts, said module comprising, in combination:

(a) a first, generally cylindrical housing portion having a central axis and a metallic skin, and containing at least one electrical element responsive to the electromagnetic field associated with said energized conductor mounted within said first housing portion, said metallic skin being divided by an insulating member along at least one, complete, peripheral path to prevent an electrical short circuit loop extending entirely around said element, allowing said electromagnetic field to be coupled to said element;

(b) hot-stick mounting means and removal including hinge members for mounting said module upon said conductor with the latter extending along said central axis of said cylindrical housing portion and conductivity isolated from said metallic skin to sense voltage of said power conductor; and

(c) a second housing portion affixed to the exterior of said first housing portion and extending about said central axis thereof not more than about 150°, said second housing portion containing said hinge members.

4,799,006

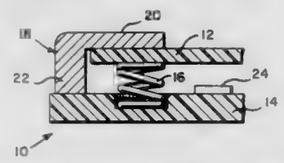
ATE TEST FIXTURE HAVING A SELF-SEALING VACUUM SKIRT

Heinz F. Strohschneider, deceased, late of Plymouth, Mass. (Strohschneider; Waltraud B., legal representative), assignor to Augat Inc., Mansfield, Mass.

Filed Jun. 11, 1987, Ser. No. 62,501

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—158 F 9 Claims



1. An automatic testing equipment test fixture having a self-sealing vacuum skirt for testing an electronic circuit device to be tested, comprising:

an electronic circuit device to be tested receiving face having a circumferential edge, a first rim close to the edge and confronting the electronic circuit device to be tested, and a second rim close to the edge that opposes the first rim;

a probe support board having a circumferential edge, and a first rim close to the edge and confronting the electronic circuit device to be tested receiving face;

means coupled between said face and said board for supporting said face and said board in spaced-apart relation that defines an open peripheral interface between said face and said board for relative movement reciprocally along an axis generally parallel to a perpendicular of said face and said board; and

a free-standing resilient skirt having a first portion for sealing with the first rim of the electronic circuit device receiving face and a second portion for sealing with at least the first rim of the probe support board, which said first and said second portions are integrally formed with said skirt and extend about the peripheral interface defined between said face and said board, the first portion for sealing with the first rim ofthe electronic circuit circuit device receiving face being a lip that seats against and is supported by the confronting surface of the first rim but does not seat against nor seal said second rim of said receiving face, the second portion for sealing with at least the first rim of the probe support board being a lip that seats against and is supported by the confronting surface of at least the first rim of said probe support board.

4,799,007

BENDABLE PIN BOARD TEST FIXTURE

Stephen J. Cook, and Michael L. Bullock, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 794,198, Nov. 1, 1985, abandoned. This application Jul. 14, 1987, Ser. No. 73,876

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—158 F 15 Claims

1. A board test fixture for interfacing electronic signals from a card having electronic devices mounted thereon at fixed predetermined locations, to test system interface having electrical contacts at fixed predetermined locations, the electronic devices including ends to be matched with, and electrically connected to the contacts, regardless of the disposition or alignment of the contacts relative to the ends of the electronic devices to be tested, the fixture comprising:

a perforate probe plate disposed intermediate the card and the test system interface and having a first plurality of spaced-apart holes at fixed predetermined locations thereon, said first plurality of holes being aligned in substantial registration with the ends of the electronic devices on the card;

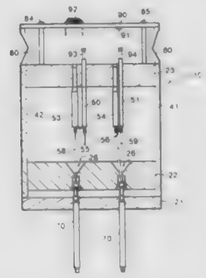
said probe plate further including a second plurality of spaced-apart holes at fixed predetermined locations thereon, said second plurality of holes being aligned in substantial registration with the electrical contacts of the test system interface;

said probe plate additionally including a third plurality of spaced-apart holes at fixed predetermined locations thereon, said third plurality of holes being axially offset relative to the electrical contacts of the test system interface;

each one of said second and third plurality of holes being generally disposed adjacent to, and substantially grouped with a corresponding one of said first plurality of holes;

probing means disposed partly within said first plurality of holes in said probe plate, and partly intermediate the card and said probe plate, in substantial alignment with corresponding ones of the ends of the electronic devices, for selectively establishing electrical contact therewith during the test;

interconnecting means connected to said probe plate, and engaging said second plurality of holes on said probe plate, adjacent said probing means, in substantial alignment with corresponding ones of the contacts, for establishing electrical connection therewith;



said interconnecting means further engaging said third plurality of holes on said probe plate, when said corresponding adjacent ones of said probing means are in substantial alignment with the oppositely positioned contacts on the test system interface;

electrical conducting means, connected between said generally adjacent probing means and interconnecting means, for providing a continuous electrical path therebetween;

said electrical conducting means being physically dimensioned to offset the separation between said probing means and said interconnecting means, for causing the ends of the electronic devices to be matched with, and electrically connected to corresponding ones of the contacts of the test system interface; and

actuating means for moving the card relative to said probe plate, for causing the ends of the electronic devices on the card to contact said probing means, in order to establish a continuous electrical path between the electronic devices and the test system interface.

4,799,008

AC LEVEL CALIBRATION APPARATUS

Shigeru Kannari, Gyoda, Japan, assignor to Advantest Corporation, Gyoda, Japan

Filed Apr. 7, 1987, Ser. No. 35,391

Claims priority, application Japan, Apr. 14, 1986, 61-86255

Int. Cl.⁴ G01R *31/28, 35/00*

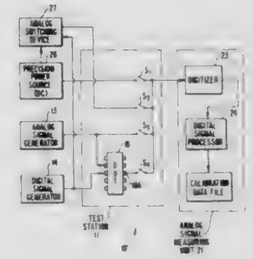
U.S. Cl. 324—73 R 5 Claims

1. An analog test system, comprising:

a DC power source for generating a DC reference voltage;

a digital signal generator for generating an alternating control signal which is a first level signal for a first time period, and a second level signal for a second time period;

an analog switching device, coupled to an output of said DC power source and an output of said digital signal generator, for interrupting the flow of the reference voltage based on the alternating control signal generated by said digital signal generator and for changing the reference voltage into an AC level calibration signal waveform;



a waveform digitizer, coupled to said analog switching device, for converting the AC level calibration signal into a digital data signal;

digital signal processing means, coupled to said waveform digitizer, for obtaining reference values from the digital data signal;

comparing means for comparing said reference values from the digital data signal with predetermined reference values and for obtaining an AC level error; and

compensating means for calibrating for said AC level error.

4,799,009

SEMICONDUCTOR TESTING DEVICE

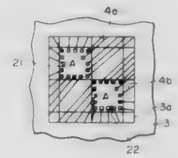
Tetsuo Tada, and Keisuke Okada, both of Hyogo, Japan, assignors to VLSI Technology Research Association, Kanagawa, Japan

Continuation of Ser. No. 200,354, Oct. 24, 1980, abandoned. This application Mar. 31, 1983, Ser. No. 479,117

Claims priority, application Japan, Oct. 25, 1979, 54-139156

Int. Cl.⁴ G01R *1/06, 31/02*

U.S. Cl. 324—158 P 2 Claims



1. A semi-conductor testing device comprising a prober adapted to receive a wafer to be tested, a probe card coupled to said prober, said probe card having a single rectangular window through which four identical semi-conductor chips on said wafer may be observed simultaneously, a first set of probes having free contact ends being mounted along two adjacent sides of said window with said free contact ends being disposed in a contact pattern adjacent one corner of said rectangular window and a second set of probes having free contact ends being mounted along the remaining two sides of said rectangular window with said free contact ends being disposed in an identical contact pattern adjacent a corner of said rectangular window diagonally opposite the first mentioned corner wherein said probes in each set are adapted to be connected to

a common set of lead wires whereby two semi-conductor chips can be tested simultaneously.

4,799,010

PROCESS FOR DETECTING DEFECTS ON A SURFACE BY EDDY CURRENTS AND DEVICE FOR CARRYING OUT SAID PROCESS

Jean-Louis Muller, Le Veulnet, France, assignor to Institut de Recherches de la Siderurgie Francaise, Maizieres-Les-Metz, France

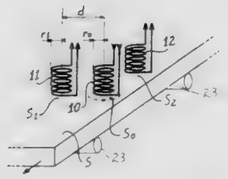
PCT No. PCT/FR85/00258, § 371 Date May 20, 1986, § 102(e) Date May 20, 1986, PCT Pub. No. WO86/01896, PCT Pub. Date Mar. 27, 1986

PCT Filed Sep. 20, 1985, Ser. No. 876,854

Claims priority, application France, Sep. 20, 1984, 84 14435

Int. Cl.⁴ G01N *27/90*

U.S. Cl. 324—240 **9 Claims**



1. A device for detecting defects having a general orientation on a surface of a semi-finished metallic product, said device comprising:

an emitter situated close to the surface of the product to be examined for generating a magnetic field to cause eddy currents to be generated within a predetermined region of said surface;

a receiver separate from said emitter and close to the surface of the product such that the receiver is aligned with the emitter in a direction corresponding to the general orientation of the defects to be detected on said surface, said receiver being spaced from said emitter so as to be outside the predetermined region and not affected by the eddy currents generated by the magnetic field produced by the emitter when the surface of the product is defect-free, and producing a significant signal when a defect in the surface of the product causes a deviation of the eddy currents in the direction of the receiver; and

means for providing relative movement between said surface and said emitter and receiver.

4,799,011

PROCESS AND DEVICE FOR DETECTING STRUCTURAL DEFECTS IN A PRODUCT UTILIZING DIFFERENTIAL DETECTION OF EDDY CURRENTS

Jean-Louis Muller, Le Veulnet, France, assignor to Institut de Recherches de la Siderurgie Francaise-IRSID, Maizieres-les-Metz, France

PCT No. PCT/FR85/00248, § 371 Date May 20, 1986, § 102(e) Date May 20, 1986, PCT Pub. No. WO86/01895, PCT Pub. Date Mar. 27, 1986

PCT Filed Sep. 17, 1985, Ser. No. 879,111

Claims priority, application France, Sep. 20, 1984, 84 14434

Int. Cl.⁴ G01N *27/82, 27/90*; G01R *33/12*

U.S. Cl. 324—233 **6 Claims**

3. A device for detecting, by eddy currents, typical defects on a surface of a product, particularly for the detection of cracks on a slab, said device comprising:

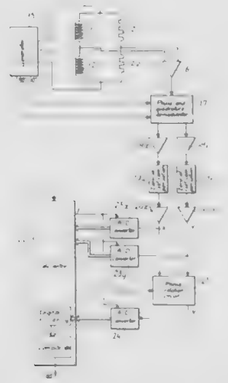
means for generating at least one alternating magnetic field to cause eddy currents to be produced on the surface of the product;

a first detector positioned in facing relationship with the surface of the product for generating a first signal representative of the eddy currents detected in a portion of the surface facing said first detector;

a second detector positioned in facing relationship with the surface of the product for generating a second signal representative of the eddy currents detected in a portion of said surface facing the second detector, said first and second detectors being spaced from each other in a direction of relative movement between said product and said detectors;

differential signal generating means for receiving said first and second signals and generating a differential signal representative of the difference between said first and second signals;

demodulating means for receiving said differential signal from said differential signal generating means and demodulating said differential signal, forming a demodulated differential signal;



calculating means connected to an output of said demodulating means for receiving said demodulated differential signal and automatically and periodically determining a phase angle at which a component of the demodulated signal relative to said phase angle has a minimum mean value;

providing and converting means for continuously providing the component of the demodulated signal at said periodically determined phase angle and converting same into a digital signal;

digital filter means having characterisnics predetermined as a function of a type of defect to be detected for receiving and filtering said digital signal to form a filtered digital signal; and

comparator means connected to an output of said digital filter means for generating a defect detection signal when the value of the filtered digital signal exceeds a predetermined threshold value.

4,799,012

MAGNETIC RESONANCE IMAGING SYSTEM

Masatoshi Hanawa, Ootawara, Japan, assignor to Kabushiki Kaishi Toshiba, Kawasaki, Japan

Filed Feb. 1, 1988, Ser. No. 151,210

Claims priority, application Japan, Feb. 2, 1987, 62-23160

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 **6 Claims**

1. A magnetic resonance imaging system comprising:

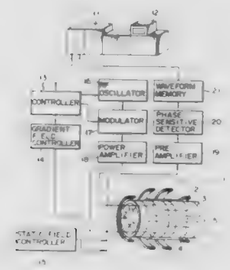
static magnetic field generating means for generating a static magnetic field to be applied to an object to be examined;

gradient field applying means for applying a predetermined gradient field to the object to be examined so as to be superposed on the static magnetic field;

high-frequency pulse applying means for applying a high-frequency pulse having a predetermined frequency and a predetermined frequency band to the object to be examined, the high-frequency pulse including a $\pi/2$ pulse;

detecting means for detecting a magnetic resonance signal from the object to be examined;

control means for controlling each of said static magnetic field generating means, said gradient field applying means, said high-frequency pulse applying means, and said detecting means in accordance with a predetermined sequence to cause the object to be examined to generate magnetic



resonance and to cause said detecting means to detect the magnetic resonance signal; and

data processing means for processing data based on the magnetic resonance signal detected by said detecting means to obtain image information,

wherein said control means includes local excitation control means for selectively exciting at least a pair of legions sandwiching a predetermined region to be examined including a portion of interest of the object to be examined by applying predetermined gradient fields having different polarities substantially simultaneously when a $\pi/2$ pulse is applied, erasing a transverse magnetization component of the adjacent regions, and then exciting the region to be examined.

4,799,013

METHOD FOR DETECTING AND PROCESSING MAGNETIC RESONANCE SIGNALS

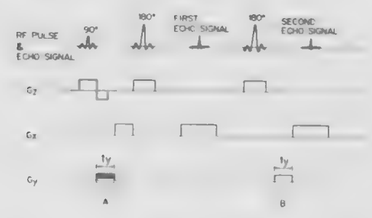
Masahiko Hatanaka, Ootawara, Japan, assignor to Kabushiki Kaishi Toshiba, Kawasaki, Japan

Filed Jan. 21, 1988, Ser. No. 147,157

Claims priority, application Japan, Jan. 26, 1987, 62-15727

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—312 **6 Claims**



1. A method for detecting and precessing magnetic resonance signals generated by applying a static magnetic field and RF pulse to a subject, the method comprising the steps of:

detecting a plurality of magnetic resonance echo signals by providing a plurality of different phase encoding data to the magnetic resonance echo signals;

correcting the amplitudes and phases of the magnetic resonance echo signals provided with the different phase encoding data, by using magnetic resonance echo signals when phase encoding data is 0; and

performing Fourier transform on the magnetic resonance echo signals whose amplitudes and phases have been corrected.

4,799,014

METHOD OF SETTING CONDITIONS OF HIGH-FREQUENCY MAGNETIC FIELD

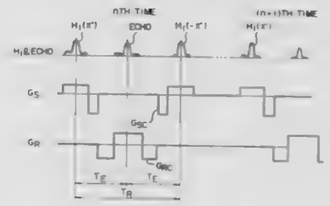
Kazuto Nakabayashi, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 11, 1987, Ser. No. 131,433

Claims priority, application Japan, Dec. 15, 1986, 61-296567

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—314 **5 Claims**



1. A method of setting the intensity of a high-frequency magnetic field in order to adjust and set a field intensity of the high-frequency magnetic field in a magnetic resonance imaging system, comprising the steps of:

(a) sequentially changing the amplitude of an excitation high-frequency magnetic field pulse,

(b) repeatedly performing magnetic resonance excitation and reading of a magnetic resonance signal, and

(c) utilizing as a reference in setting the intensity of the high-frequency magnetic field the amplitude of the high-frequency magnetic field pulse, which corresponds to one of the maximum and minimum values of the magnetic resonance signal obtained by a plurality of excitation cycles, and

(d) applying an opposite phase high-frequency magnetic field pulse, having the same amplitude as that of the excitation high-frequency magnetic field pulse, and having a carrier wave which is 180° out of phase with respect to that of the excitation high-frequency magnetic field pulse, to an object after reading of the magnetic resonance signal is completed and before the next excitation cycle started.

4,799,015

METHOD OF MAPPING THE NUCLEAR MAGNETIC PROPERTIES OF AN OBJECT TO BE EXAMINED

Raimo Sepponen, Helsinki, Finland, assignor to Instrumentarium Corp., Finland

Continuation of Ser. No. 794,485, Nov. 4, 1985, abandoned. This application Jul. 7, 1987, Ser. No. 70,658

Claims priority, application Finland, Nov. 21, 1984, 844561

Int. Cl.⁴ G01R *33/20*

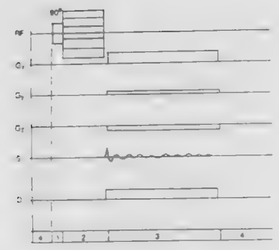
U.S. Cl. 324—314 **24 Claims**

1. A method for mapping the local distribution of the dependence of the relaxation time $T_{1\rho}$ of nuclei of a selected element in an object on the strength of a locking field B_1, termed the B_1-dispersion of the relaxation time $T_{1\rho}$, said nuclei having magnetic properties, said method comprising the steps of:

applying a main magnetic field B_o to the nuclei of the area of the object being examined;

subjecting the object to an excitation pulse which tilts the magnetization of the nuclei from the direction of the main field B_0;

applying a locking pulse B_1 of given magnitude to the object, said locking pulse having a magnetic component with a constant phase difference with respect to the tilted mag-



netization of the nuclei and under which the relaxation process characterized by the relaxation time $T_{1\rho}$ occurs;

applying a suitable magnetic resonance imaging method for obtaining relaxation time $T_{1\rho}$ data; and

repeating the foregoing steps with different magnitudes of the locking pulse B_1 for obtaining B_1-dispersion of the relaxation time $T_{1\rho}$ data.

4,799,016

DUAL FREQUENCY NMR SURFACE COIL

Behrooz Rezvani, Shorewood, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Jul. 31, 1987, Ser. No. 80,038

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—318 **5 Claims**

1. A dual frequency NMR radio-frequency (RF) coil comprising:

a first cylindrical cage coil having a first pair of conductive loop elements disposed in a spaced-apart relation along a central axis, and a plurality of first conductive segments electrically interconnecting the first conductive loop elements at points spaced along the periphery of each of said first conductive loop elements, and the first conductive segments include reactive elements which have values that cause the first cylindrical cage coil to resonate at a lower RF frequency; and

a second cylindrical cage coil which is electrically insulated from said first cylindrical cage coil, and having a second pair of conductive loop elements disposed in a spaced-apart relation along the central axis, and a plurality of second conductive elements electrically interconnecting the second conductive loop elements at points spaced along the periphery of each of said second conductive loop elements, and the second conductive segments include reactive elements which have values that cause the second cylindrical cage coil to resonate at a higher RF frequency.

4,799,017

BACKGROUND FIELD MAGNET FOR IMAGE GENERATING DEVICES USING NUCLEAR SPIN RESONANCE

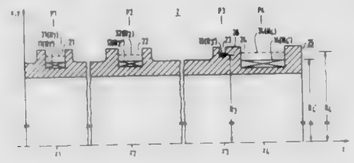
Horst Siebold, Erlangen, and Franz Strahwald, Ebermannstadt, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, München, Fed. Rep. of Germany

Filed Mar. 12, 1987, Ser. No. 24,814

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609226

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—319 **11 Claims**



1. A background field magnet for image generating devices using nuclear spin resonance comprising:

a. a coil support with a longitudinal axis; and

b. one of a first and second set of primary coils, wherein:

i. said first set of primary coils comprises at least a first, second and third primary coil pair disposed on said coil support, each coil pair comprising two coils, the coils of said first, second and third primary coil pair being symmetrically at a respective first, second and third distance from a plane of symmetry perpendicular to said longitudinal axis on said coil support, said coil pairs having a first preselected set of corresponding ampere-turns (N1, N2, N4), and cross-sections, said first set of primary coils producing a first homogenous field of a first intensity in response to a first current; and

ii. said second set of primary coils comprises at least a first, second, third and an additional primary coil pair disposed on said coil support, each coil pair comprising two coils, the coils of said first, second, third and additional primary coil pairs being disposed symmetrically at a respective first, second, third and fourth distance from said plane of symmetry, said first, second and third distances being substantially equal to the distances of the first, second and third coil pairs of said first set, respectively, to said plane of symmetry, said coil pairs of the second set having a second preselected set of corresponding ampere-turns (N1′, N2′, N4′ and N3′), and cross-sections, said second set of primary coils producing a second homogenous field of a second intensity lower than said first intensity in response to a second current.

4,799,018

AIR FUEL RATIO MEASURING SYSTEM

Norio Ichikawa, Mito; Takayuki Itsuji, and Masayuki Miki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Katsuta, both of, Japan

Filed Aug. 11, 1987, Ser. No. 84,077

Claims priority, application Japan, Aug. 27, 1986, 61-198890

Int. Cl.⁴ G01N *27/62, 27/66*

U.S. Cl. 324—465 **10 Claims**

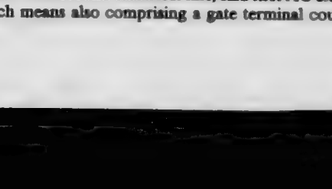
1. In an air fuel ratio measuring system that measures the air fuel ratio of fuel gas burned to produce an exhaust gas and that provides an output signal Vo that varies continuously corresponding to the air fuel ratio over all of the rich, stoichiometric and lean air fuel ratios, said system having a detecting element having a solid oxygen ion electrolyte, a reference electrode and a detecting electrode on the opposite sides of the electrolyte, respectively, a diffusion layer controlling a quantity of oxygen molecules arriving at the detecting electrode, and driving circuit means for impressing an interpole voltage between said electrodes so as to pump oxygen ions in one of two directions to detect a pump current between the electrodes, wherein the improvement is in said driving circuit comprising:

first source means generating a constant potential ground reference voltage $V_{P.G.}$;

first control means connected to said detecting electrode for controlling the voltage of said detecting electrode to approach $V_{P.G.}$, when the pump current is varied;

second source means generating a constant second reference voltage equal to the sum of said $V_{P.G.}$ and an applied voltage V_s;

second control means connected to said reference electrode for controlling the voltage of said reference electrode to approach said second reference voltage ($V_{P.G.}+V_s$) so



that the interpole voltage between the electrodes of said detecting element is controlled to said applied voltage V_s, and said second control means generating the output signal Vo that varies continouusly and is correlated to the air fuel ratio changes throughout lean stoichiometric and rich air fuel ratios;

first detecting means connected between said reference electrode and the output signal of said second control means for detecting the pump current corresponding to the air fuel ratio and outputting a continuous detecting signal that varies continuously and changes in sign from rich to lean air fuel ratios at the stoichiometric value; and

second detecting means connected to said first detecting means to receive said detecting signal for detecting the sign change of the pump current and outputting a step signal Vλ that changes in correlation to a change in pump current sign, whereby said continuous output signal V_O is delivered from said second control means and the step signal is delivered from the second detecting means over the full range of lean, stoichiometric and rich air fuel ratios.

4,799,019

ELECTRICAL CONTINUITY LOAD MONITORING CIRCUIT

Charles Cooley, 8766 Timber Point, San Antonio, Tex. 78250, and William Fenton, Jr., 70 Springwood Rd., South Portland, Me. 04106

Filed Mar. 2, 1987, Ser. No. 20,873

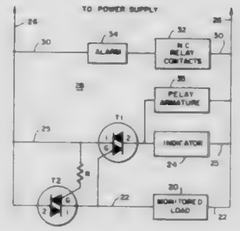
Int. Cl.⁴ G08B *21/00*; G01R *31/02*

U.S. Cl. 324—546 **16 Claims**

1. An improved electrical continuity load monitoring circuit for monitoring an AC electrical load coupled in a first electrical line including electrical indicating means in a second electrical line coupled in parallel with the first electrical line and load for monitoring the load comprising:

first AC electronic switch means comprising first and second electrode terminals coupled in series with the indicating means in the second electrical line, said first AC electronic switch means also comprising a gate terminal coupled to the first electrical line for delivering gate current and voltage to the first AC electronic switch means so that the first AC electronic switch means is conducting through the first and second electrode terminals in series with the indicating means when there is electrical continuity through the load and power is being supplied to the load and indicating means thereby actuating the indicator means in the second electrical line for indicating that power is supplied to the load with electrical continuity through the load;

reactance control means coupled in series with the load in the first electrical line for adjusting the phase angle of gate



current to voltage delivered to the first electronic switch means for turn on of the first electronic switch means said reactance control means comprising a second AC electronic switch means having first and second electrode terminals coupled in series with the electrical load in the first electrical line and a gate terminal, resistance means operatively coupling the gate terminal to the second electrical line so that the second AC electronic switch means is conducting through the first and second electrode terminals in series with the load when power is being supplied to the load and indicating means and the first electronic switch means is conducting.

4,799,020

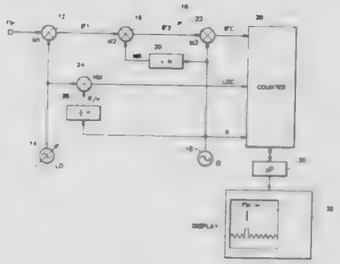
TIME VARIANT FREQUENCY CORRECTION TECHNIQUE

James D. English, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 6, 1987, Ser. No. 12,096

Int. Cl.⁴ G01R *23/14*

U.S. Cl. 324—79 R **2 Claims**



1. An instrument for measuring the frequency of an input signal, the instrument having a variable local oscillator and a reference oscillator, comprising:

means for deriving an intermediate frequency from the input signal frequency, the frequency of the local oscillator and the frequency of the reference oscillator;

VOL 1098 ISS 3 JA 17 1989 UMI

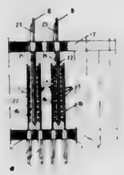
means for deriving an adjusted local oscillator frequency from the frequency of the local oscillator and the frequency of the reference oscillator; and means gated by the frequency of the reference oscillator for simultaneously counting the intermediate frequency and the adjusted local oscillator frequency, the frequency of the input signal being a function of the intermediate frequency and the adjusted local oscillator frequency.

4,799,021

METHOD AND APPARATUS FOR TESTING EPROM TYPE SEMICONDUCTOR DEVICES DURING BURN-IN

Lucio Cossi, Agrate Brianza, Italy, assignor to SGS Microelettronica S.p.A., Catania, Italy

Filed Jul. 15, 1987, Ser. No. 73,654
Claims priority, application Italy, Jul. 22, 1986, 83633 A/86
Int. Cl.[4] G01R *1/04, 31/00*
U.S. Cl. 324—73 R 6 Claims



1. An apparatus for functional testing and for determining the characteristics of EPROM type semiconductor devices during a burn-in heat treatment, comprising means for erasing the EPROM by U.V. light irradiation of the devices, means for programming the EPROMs means for verifying the programming of the EPROMs means for performing the burn-in of the programmed devices, means for verifying the retention of the programmed data, means for measuring parametric (DC) and dynamic (TAC) characteristics of the devices and means for classifying and handling the single devices,

characterized by the fact that it comprises essentially:

(a) at least a burn-in chamber provided, on at least a wall thereof, with a plurality of slots having automatic closing means and capable of receiving a card;

(b) a plurality of cards for mounting the devices to be tested, each card comprising a first part provided with a plurality of sockets, connected in parallel for plugging in the devices and a second part containing a microprocessor, a coupling body fitting into said slots being present between said first part and second part of the card, said second part of the cards remaining outside said chamber upon insertion of the card into one of said slots;

(c) a plurality of cards containing at least one U.V. lamp, each of said cards comprising a first part provided with at least one U.V. lamp and a second part containing switching and supply means for said lamp, a coupling body suitably fitting into said slots being present between said two parts of the card, the second part of the card remaining outside said chamber upon insertion of the card into one of said slots;

(d) a system's central processing unit (CPU) interfaced with the microprocessor of each of said cards for mounting the devices and with the switching means of each of said cards containing at least a U.V. lamp;

each of said U.V. lamps containing cards being functionally interposed between two cards of devices;

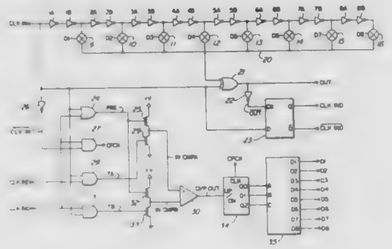
said microprocessors determining the performance of the following operations upon the devices: programming, verification of the programming, verification of retention of programmed data, classification of devices in terms of quality and identification of the devices under control of the system's central processing unit which coordinates the switching of said U.V. lamps for erasing operations.

4,799,022

FREQUENCY DOUBLER WITH DUTY CYCLE MONITOR MEANS

Simon J. Skierszkan, Nepean, Canada, assignor to Mitel Corporation, Canada

Filed Oct. 13, 1987, Ser. No. 108,264
Claims priority, application Canada, Nov. 7, 1986, 522,500
Int. Cl.[4] H03B *19/10, 5/20*
U.S. Cl. 328—20 14 Claims



1. A frequency doubler for receiving an input clock signal of predetermined frequency and generating an output signal at twice said frequency, comprised of:

(a) delay line means for receiving and delaying said input clock signal by a predetermined amount,

(b) an EXCLUSIVE OR gate having first and second inputs for receiving said input clock signal and said delayed input clock signal respectively, and generating said output signal at twice said predetermined frequency in response thereto, and

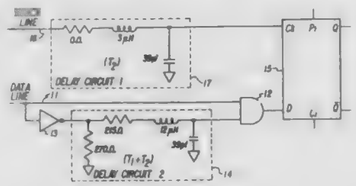
(c) control means for monitoring the duty cycle of said output signal and in the event said duty cycle is greater than fifty percent adjusting said delay line means to decrease said predetermined amount of delay, and in the event said duty cycle is less than fifty percent adjusting said delay line means to increase said predetermined amount of delay, whereby said output signal duty cycle is maintained at fifty percent.

4,799,023

CIRCUITS AND APPARATUS WHICH ENABLE ELIMINATION OF SETUP TIME AND HOLD TIME TESTING ERRORS

Kaaran Firoos; Vance R. Harwood; Robert C. Illick, Jr., and David T. Crook, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 318,529, Nov. 5, 1981, abandoned. This application Jul. 5, 1985, Ser. No. 753,366
Int. Cl.[4] H03K *5/22;* G01R *15/12*
U.S. Cl. 328—110 6 Claims



1. A circuit for use in a circuit tester, said circuit comprising:

a first input on which a data signal is to be applied;

a second input on which a detection signal is to be applied, said detection signal indicating the times at which detection of said data signal is initiated;

coincidence means, connected to the first and second inputs and responsive to the data signal and the detection signal, for detecting whether a time at which detection of the data signal is initiated occurs within a hold time prior to the initiation of a transition of the data signal or a setup time subsequent to the initiation of a transition of the data signal;

said setup time being the length of the interval immediately succeeding the initiation of a transition in the data signal in which accurate detection of the data signal cannot be made if the detection is initiated within that interval and said hold time being the length of the interval immediately succeeding the initiation of detection of the data signal in which accurate detection of the data signal cannot be made if the data signal makes a subsequent transition in thes hold time interval;

wherein each time at which said data signal is to be detected is indicated by a trigger edge in the detection signal and wherein said coincidence means comprises:

means, responsive to the data signal, for producing a first signal having at each transition of the data signal a pulse of duration equal to the sum of the setup and hold times; and

means for producing from the detection signal a delayed detection signal which has trigger edges delayed by a fixed amount relative to the trigger edges in the detection signal, said fixed amount of delay being selected so that a trigger edge of the delayed detection signal occurs during one of the pulses if and only if a trigger edge of the detection signal occurs within a setup time after a transition in the data signal or within a hold time begore a transition in the data signal; and

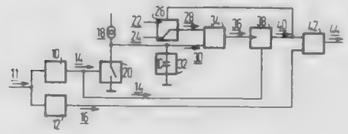
means, responsive to said first signal and responsive to the delayed detection signal, for detecting whether a trigger edge in the delayed detection signal occurs during one of the pulses in the first signal.

4,799,024

CIRCUIT ARRANGEMENT TO MONITOR THE TIME SPACING OF SIGNALS

Helmut Fischer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 636,756, Aug. 1, 1984, abandoned. This application Mar. 3, 1987, Ser. No. 21,598
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1983, 3329242
Int. Cl.[4] H03K *5/22, 5/153*
U.S. Cl. 328—110 25 Claims



1. A circuit arrangement to monitor the time spacing of first and second square-wave input signals exhibiting respective first and second levels, wherein said second square-wave input signal exhibits said first level when said first square-wave input signal exhibits said second level, said circuit arrangement including switch means responsive to said first square-wave and coupled between a constant current source and ground and including a capacitor coupled to said constant current source such that said capacitor is respectively not charged and charged by said constant current source responsive to said first square-wave input signal exhibiting said respective first level and said first square-wave input signal exhibiting a transition from said respective first level to said respective second level, the circuit arrangement further comprising:

a switching stage for generating a first threshold value and a second threshold value representative of the beginning and end, respectively, of an expectancy period or time interval of an expected level of the second square wave input signal;

a comparator having an output, having a first input coupled to an output of the switching stage, and having a second input coupled to said capacitor for comparing the generated threshold values with the charge level of said capacitor and for generating at said output of said comparator a signal representative of said comparing; and

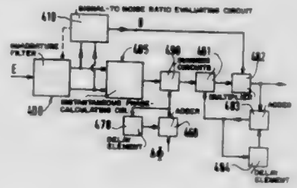
an output stage, coupled to receive the output of said comparator and said second square wave input signal, for generating an output signal when said second square wave input signal exhibits said first level during the expectancy period.

4,799,025

DIGITAL FM DEMODULATOR USING DIGITAL QUADRATURE FILTER

Marcel Le Queau, Ozoir-La-Ferriere, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 876,323, Jun. 19, 1986, abandoned. This application Sep. 21, 1987, Ser. No. 102,812
Claims priority, application France, Jun. 21, 1985, 85 09491
Int. Cl.[4] H03K *9/06*
U.S. Cl. 329—107 5 Claims



1. A frequency modulated digital signal demodulator comprising a digital quadrature filter comprising an odd number of n delay elements arranged in cascade, each delaying an input signal sample X by a value $T_E=1/F_E$, where F_E is the sample frequency of the input signal samples, a plurality of multipliers each multiplying its input signal by a given coefficient C, and means for connecting said multipliers with said delay elements to a first and a second summing circuit, such that the output signal S_{31} of the first summing circuit equalizes:

$\Sigma C_{n-1}X_{i+1}$, where $i=1,,3,5 \ldots n$ and the output signal S_{32} of the second summing circuit equalizes:

ΣC_iX_{i+1}, where $i=0,2,4, \ldots n-1$ X_{n+1} being the sample present at the filter input and X_{n+1-i} being the sample being delayed $i.T_E$, the demodulator comprising at the outputs of the first and second summing circuits a circuit for calculating the instantaneous phase ϕ_n of successive signal samples, and a circuit for evaluating the signal to noise ratio, which is connected to a control circuit supplying a control signal for modifying the coefficients of the quadrature filter such that its passband is narrowed when said ratio drops below a given threshold.

4,799,026

MULTIFUNCTION AMPLIFIER

Steven B. La Barge, and Leon J. Stanger, both of Grass Valley, Calif., assignors to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Sep. 16, 1987, Ser. No. 97,249
Int. Cl.[4] H03F *3/45*
U.S. Cl. 330—254 7 Claims

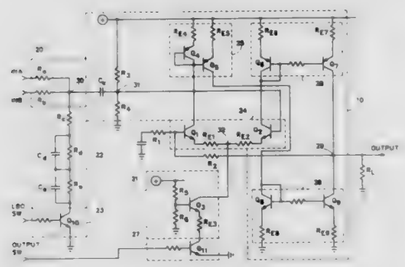
1. A multifunction amplifier comprising:

a finite transconductance amplifier having a high input impedance and a desired output impedance, the desired output impedance being a function of an input resistor, a feedback

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resistor and a finite transconductance for the finite transconductance amplifier; and

means for controlling the finite transconductance amplifier by turning on and off a current source supplying current



bias for the finite transconductance amplifier such that when turned off the finite transconductance amplifier has an essentially infinite output impedance and when turned on has the desired output impedance.

4,799,027

LOW-FREQUENCY AMPLIFIER

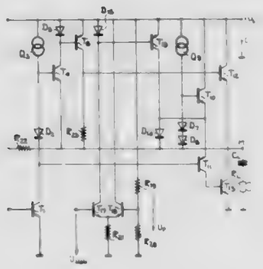
Johann Mattfeld, Oberursln, and Joachim Staderkauf, Kochersteinsfeld, both of Fed. Rep. of Germany, assignors to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Oct. 1, 1987, Ser. No. 103,405

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1986, 3633415

Int. Cl.⁴ H03F *3/30*

U.S. Cl. 330—267 **11 Claims**



6. A low-frequency amplifier for use with a power source which provides a supply voltage, comprising:

a transistorized push-pull class B final stage which receives power from the power source;

means for setting the quiescent current through the final stage at a predetermined small value of the means employing circuitry which requires a supply voltage of more than a predetermined voltage value for operation;

further means for setting the quiescent current through the final stage at another value which is larger than the predetermined small value, the further means being selectively actuatable and employing circuitry which does not require a supply voltage of more than the predetermined voltage value for operation; and

switchover means, responsive to the supply voltage, for actuating the further means when the supply voltage is too low for operation of the means.

4,799,028

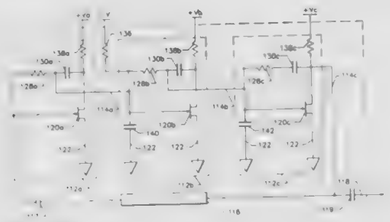
ZERO PHASE SHIFT ACTIVE MICROWAVE OSCILLATORS WITH RESISTIVE FEEDBACK IN FIELD EFFECT TRANSISTOR AMPLIFIERS

Gary R. Weaver, Manhattan Beach; Bryce M. Smith, Los Angeles; Gregory L. Horvath, Mountain View, and Bernard L. Walsh, Jr., Northridge, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 2, 1986, Ser. No. 881,438

Int. Cl.⁴ H03B *5/20*

U.S. Cl. 331—57 **20 Claims**



1. An oscillator circuit which receives power from a power source comprising:

a plurality of amplifier stages, at least one of the stages having its own phase shift at a selected oscillating frequency, the plurality of amplifier stages being coupled in series, at least one of the plurality of stages comprising:

at least one active component means for providing amplification, the at least one component means having an input and an output,

a resistive feedback path for providing negative feedback and phase shifting between the input and the output of the at least one component means,

means coupled to the output of the at least one component means for filtering noise and for introducing additional phase shifting of the at least active component means,

means coupled between the output of the at least one component means and the input of another stage of the plurality of amplifier stages for blocking DC voltages between the plurality of stages, and

means coupled between the power source and the input and the output of the at least one component means for biasing the at least one component means into an operating range of the at least one component means; and

transmission delay element means coupled with at least one of the plurality of amplifier stages for providing a second phase shift such that the total loop phase shift of the oscillator circuit is equal to zero at the oscillating frequency.

4,799,029

SAW OSCILLATOR WITH ATTENUATOR FOR PROTECTING SAW ELEMENT

Shinzoo Minomo, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 848,962, Apr. 7, 1986, abandoned. This application Nov. 19, 1987, Ser. No. 124,335

Claims priority, application Japan, Jun. 29, 1985, 60-143757

Int. Cl.⁴ H03B *5/30*

U.S. Cl. 331—107 A **2 Claims**

1. An oscillator comprising:

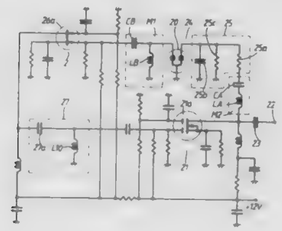
an amplifier means with an input and an output, said amplifier means exciting an oscillation and producing an output signal at its output;

a feedback path for feeding back said output signal of said oscillation exciting amplifier means to its input, said feedback path including:

an inductor and an attenuator connected in series to the output of said amplifier for attenuating the level of said output signal and for shifting the phase of said output signal by 180°;

a surface acoustic wave filter connected to receive the phase shifted output signal from said attenuator and inductor;

a second inductor connected between the output of said surface acoustic wave filter and ground for phase compensation of the original output from said surface acoustic wave filter;



a buffer amplifier means connected between the output of said surface acoustic wave filter and the input of said oscillation exciting amplifier means; and

a third inductor connected on one end to the output of said buffer amplifier means and on the other end to ground, wherein said buffer amplifier and said third inductor act to again shift the phase of said phase shifted output signal by 180°.

4,799,030

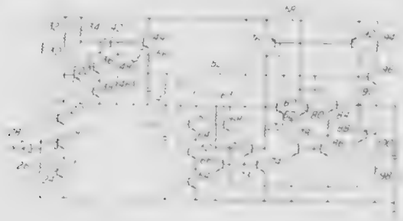
VOLTAGE CONTROLLED OSCILLATOR CLAMP CIRCUIT

Michael H. Haight, Plano, and William H. Giolma, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 12, 1987, Ser. No. 49,187

Int. Cl.⁴ H03B *5/08*

U.S. Cl. 331—117 R **12 Claims**



1. An oscillator circuit having a tank coil and capacitor, comprising:

a clamping resistor coupled to an alternating voltage end of said tank;

a clamp switch coupled between said clamping resistor and a source of high voltage operative in response to a first logic clamp input signal to close and shunt said coil with said clamping resistor so as to stop the oscillation and, in response to removal of said logic clamp signal, to open and permit oscillation to resume, wherein the coil current established when said clamp switch is closed is approximately equal to the peak tank current for the unclamped state, and wherein said clamp switch includes a transistor having an emitter connected to an alternating voltage end of said clamping resistor, means for biasing a d. c. end of said coil at a selected substantially fixed voltage above ground, means for biasing a base of said transistor at a selected voltage above said d. c. end of said coil in response to the logic clamp input signal.

4,799,031

WAVEGUIDE DEVICE FOR PRODUCING ABSORPTION OR ATTENUATION

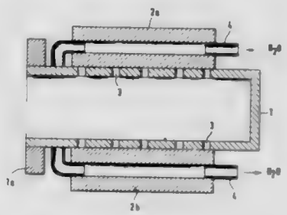
Manfred Lang, Taufkirchen, and Walter Höppler, Munich, both of Fed. Rep. of Germany, assignors to Spinner GmbH, Elektrotechnische Fabrik, Munich, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,841

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1986, 3641066

Int. Cl.⁴ H01P *1/22, 1/26*

U.S. Cl. 333—22 R **18 Claims**



1. A waveguide device for producing absorption or attenuation; comprising:

a waveguide section defining an axis and having an interior; and

absorbing means arranged externally along said waveguide section for absorbing or attenuating a wave propagating in said waveguide section in a direction of progation along said axis, said waveguide section being provided with a plurality of apertures for coupling said absorbing means with said interior, said apertures being spaced successively along the direction of wave propagation and being of a shape and dimension so that the wave is allowed to penetrate said absorbing means and a same amount of power is coupled out through each of said apertures.

4,799,032

DIRECTIONAL COUPLER

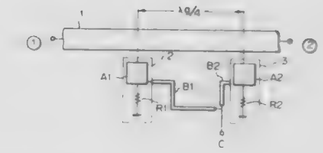
Hideo Sugawara, Otawara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 12, 1987, Ser. No. 84,190

Claims priority, application Japan, Aug. 12, 1986, 61-189083

Int. Cl.⁴ H01P *3/08*

U.S. Cl. 333—116 **9 Claims**



1. A directional coupler comprising:

a main line formed by a microstrip line;

a first series circuit including a first conductive pad and a first resistor connected in series, said first resistor having open end connected to the ground;

a second series circuit including a second conductive pad and a second resistor connected in series, said second resistor having one end connected to ground, said first

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conductive pad and said second conductive pad being placed adjacent to said main line so as to realize a desired loose coupling between said main line and said first or second conductive pads, and said first conductive pad and said second conductive pad being separated by a distance equal to λg/4, where λg is the wavelength of the signal supplied to said main line;

a first conductive pattern having a first end connected to said first conductive pad, having a second end, and having a width narrower than the width of said main line;

a second conductive pattern having a first end connected to said second conductive pad, having a second end and having a width narrower than the width of said main line, said first conductive pattern having a length different by λg/4 from the length of said second conductive pattern; and

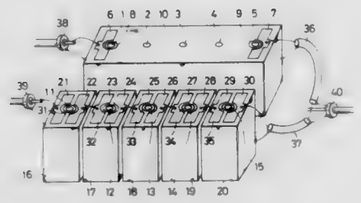
an output terminal directly connected to the second ends of said first and second conductive patterns.

4,799,033

MICROWAVE SEPARATOR

Saiao Igarashi, and Moriaki Ueno, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Mar. 19, 1987, Ser. No. 27,788
Claims priority, application Japan, Aug. 7, 1986, 61-185868
Int. Cl.⁴ H01P *5/12*
U.S. Cl. 333—134 **1 Claim**



1. In a microwave separator of the type having a first band pass filter connected between a signal input terminal and one end of a first coaxial cable for filtering a lower frequency band of an input microwave signal, a second band pass filter connected between a signal output terminal and one end of a second coaxial cable for filtering a higher frequency band of the input microwave signal, wherein the other ends of the first and second coaxial cables are connected in parallel to a common signal input/output source,

the improvement comprising

said first band pass filter being of the comb type having a plurality of inner conductors formed in a line through a dielectric block; and

said second band pass filter being of the coaxial type in which a plurality of coaxial type resonators are connected to one another in series through respective capacitances.

4,799,034

VARACTOR TUNABLE COUPLED TRANSMISSION LINE BAND REJECT FILTER

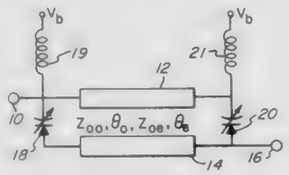
Lawrence H. Silverman, Dix Hills; Randy Teague, Syosset, and Richard Kasinsky, Dix Hills, all of N.Y., assignors to General Instrument Corporation, New York, N.Y.

Filed Oct. 26, 1987, Ser. No. 112,285
Int. Cl.⁴ H01P *1/203, 1/20*
U.S. Cl. 333—202 **9 Claims**

1. A tunable coupled transmission line band reject filter for use in the microwave frequency range comprising:

a coupled transmission line having first and second line sections, each line section having an input end and an output end, said transmission line exhibiting a natural notch at a particular frequency;

a first varactor coupled between the input ends of said first and second sections;



a second varactor coupled between the output ends of said first and second sections; and

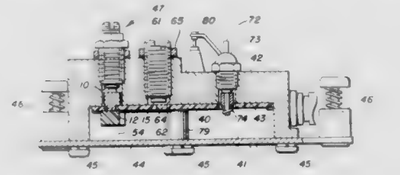
means for biasing said first and second varactors to change the capacitance thereof, thereby changing the frequency at which said natural notch occurs.

4,799,035

MICROWAVE DIODE TUNING CIRCUIT

Ronald L. Chilluffo, Coral Springs, and Ellis J. Gottlieb, Palm Beach, both of Fla., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 6, 1987, Ser. No. 117,597
Int. Cl.⁴ H01P *7/08, 3/08*
U.S. Cl. 333—223 **13 Claims**



1. A tuner for combining a microwave diode, a variable inductor and a variable capacitor into a resonant circuit, the impedance of which is matched to the impedance of a microwave transmission line, comprising

a microstrip transmission line including an insulating substrate, a conductive circuit track on one surface of said substrate and a ground plane on the surface of said substrate opposite said one surface thereof;

a microwave diode holder of coaxial form including an outer conductor, a center conductor and a sleeve extending partially over the length of said center conductor and supporting said center conductor axially within said outer conductor, said outer conductor being conductively connected to said ground plane,

said sleeve being conductively connected to said center conductor and said outer conductor and being longitudinally adjustable along the length of said center conductor;

a microwave diode having anode and cathode electrodes, one of said electrodes being conductively connected to that end of said center conductor within said outer conductor and extending beyond said sleeve;

impedance matching means having an impedance value intermediate between the impedance value of said diode and the characteristic impedance value of said circuit track for conductively connecting the other electrode of said diode to said circuit track; and

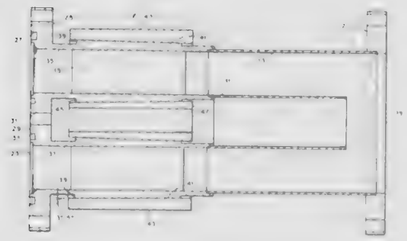
an adjustable capacitor connected between said ground plane and said circuit track at a point on said circuit track beyond said impedance matching means.

4,799,036

RADIO FREQUENCY COAXIAL FEEDTHROUGH

Thomas L. Owens, Kingston, Tenn., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 7, 1987, Ser. No. 129,209
Int. Cl.⁴ H01P *1/08, 5/00*
U.S. Cl. 333—260 **5 Claims**



1. A radio frequency coaxial transmission line feedthrough device for transmitting radio frequency energy between first and second coaxial transmission line regions of different pressure, comprising:

a coaxial transmission line segment having an inner cylindrical conductor formed of an electrically conductive material and an outer cylindrical conductor formed of an electrically conductive material and coaxially disposed about and spaced from said inner conductor, said coaxial transmission line segment being adapted for connection between said first and second coaxial transmission line regions;

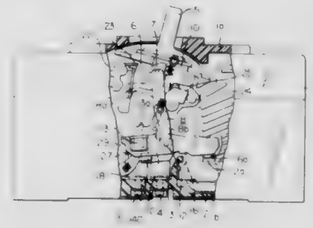
a least one pressure barrier means for sealably isolating said first and second coaxial transmission line regions and providing transmission of said radio frequency energy therethrough, including an annular right circular cylinder barrier disk formed of a rigid, impermeable, electrically insulating material coaxially disposed between and contiguous with said inner and outer conductors of said segment along the length thereof; a first radial force transmitting collar disposed about and contiguous with the outer surface of said outer conductor in axial alignment with said barrier disk; a sleeve formed of a material having a coefficient of expansion equal to or less than said barrier disk disposed about said first radial force transmitting collar to continually generate a radially inward force sufficient to form a gas-tight seal between the inner surface of said outer conductor and the outer diameter surface of said barrier disk; a second radial force transmitting collar disposed within and contiguous with the inner surface of said inner conductor in axial alignment with said barrier disk and a plug formed of a material having a coefficient of expansion equal to or greater than said barrier disk disposed within said second radial force transmitting collar to continually generate a radially outward force sufficient to form a gas-tight seal between the outer surface of said inner conductor and the inner diameter surface of said barrier disk, said first and second radial force transmitting collars having an axial thickness less than that of said barrier disk of an amount sufficient to prevent deformation of the radii of said outer and inner conductors at the edges of said barrier disk from the application of said inner and outer radial forces transmitted through said first and second radial force transmitting collars to the walls of said outer and inner conductors, respectively.

4,799,037

CIRCUIT INTERRUPTER

Tsukasa Iio; Yoshinori Mochizuki; Hiroshi Fujii; Yasusi Genba, and Hideaki Moriwaki, all of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Sep. 4, 1987, Ser. No. 92,944
Claims priority, application Japan, Sep. 9, 1986, 61-138777[U]
Int. Cl.⁴ H01H *75/00*
U.S. Cl. 335—46 **1 Claim**



1. A circuit interrupter comprising in a housing:

a movable contact assembly having a movable contact carrier and a contact arm supporting said movable contacat carrier;

a cross bar secured to said movable contact assembly allowing said movable contact assembly to rotate therewith; and

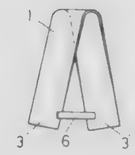
a bearing assembly secured to the housing and rotatably supporting said cross bar, said bearing assembly having a stop surface capable of being engaged by said movable contact assembly and determining the OFF position of said movable contact assembly.

4,799,038

SNAP-ACTION HEAT RESPONSIVE DEVICE

Shigeru Tabei, Tokyo, Japan, assignor to Toho Electric Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 68,076
Claims priority, application Japan, Jul. 4, 1986, 61-157532
Int. Cl.⁴ H01H *61/06*
U.S. Cl. 337—379 **33 Claims**



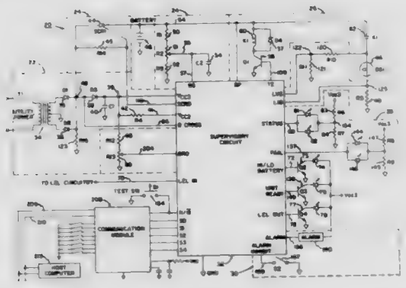
2. A snap-action temperature response device comprising a bimetallic strip, said bimetallic strip having a sprung unactuated state in which the metallic strip is bent over on itself to form a bent portion and two elongated leg portions extending from said bent portion, each of said leg portions having engaging means which are spaced from one another when said bimetallic strip is in said sprung unactuated state, and a stretch in said space between each of said engaging means of said two leg portions, said stretcher having pivot-support means engaging and pivotably supporting said engaging means of each of said leg portions, said leg portions being pivotal at said pivot-support means from said sprung unactuated state to a sprung actuated state in response to a temperature change of said bimetallic strip.

4,799,039

EMERGENCY LIGHTING SUPERVISORY SYSTEM

James E. Balcom, Newtown, Conn.; Edward P. Kozek, Beaconsfield, Canada, and Arnold N. Alderman, San Jose, Calif., assignors to Dual-Lite Manufacturing, Naguabo, P.R.

Continuation of Ser. No. 696,262, Jan. 30, 1985, abandoned. This application May 8, 1987, Ser. No. 48,530
Int. Cl.[4] G08B *29/00*
U.S. Cl. 340—333 **70 Claims**



1. An emergency lighting supervisory system for entering emergency mode operation that causes at least one emergency lamp to be energized from emergency battery power upon sensing an emergency condition such as utility power failure comprising:

A. a battery for providing emergency power:

B. a battery charger for maintaining the battery in a fully charged state; the battery charger comprising means for providing a constant current charging of the battery upon system installation or after the battery has provided emergency power, thereafter providing an equalization voltage to the battery having a value greater than the nominal charging voltage presented to the battery, wherein this equalization voltage is provided for a set period of time, and thereafter providing a float voltage having a value equal to the nominal charging voltage to the battery, such charging continuing until a transfer to emergency battery power is needed;

C. at least one lamp to be illuminated by the battery when emergency power is provided;

D. means, interconnected to the utility power, the battery and the lamp, for sensing the utility power voltage and for initiating the transfer from utility power to battery emergency power when utility power is not present, when the utility power voltage falls below a threshold value, or when self-testing of the emergency lighting system is performed;

E. means for performing periodic self-testing of emergency lighting supervisory system parameters, said means including

1. timer generating means including means for generating outputs which occur on a multi-day basis,

2. self-test control means responsive to said timing output for initiating a self-test for a period of time, said means including means for activating the transfer means so as to place the system in a simulated emergency operating mode, and

3. means for monitoring and displaying the status of system parameters when the self-test condition is activated, including means for determining current flow through the lamp so as to ascertain if the lamp is operating properly, said current flow means including means for visually annunciating the determination of an improperly operating lamp, means for determining if a battery induced voltage is applied to the lamp so as to determine if transfer of battery power has occurred, said applied voltage determining means including means for visually annunciating the determination of improper transfer of battery power to the lamp, and means for determining if the battery voltage is below a predetermined level indicative of a faulty battery condition, said battery voltage determining means including means for visually annunciating the determination of a faulty battery condition; and

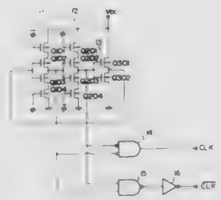
F. communication means for transfer of the status of the system parameters from the self-test procedure to an interconnected device as well as to provide for initiation of a self-test procedure upon receipt of a request from an interconnected device.

4,799,040

DATA CONVERSION CIRCUIT

Hisao Yanagi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 594,124, Mar. 28, 1984. This application Jan. 30, 1987, Ser. No. 9,567
Claims priority, application Japan, Mar. 30, 1983, 58-54465
Int. Cl.[4] H03K *13/24*
U.S. Cl. 341—101 **5 Claims**



1. A data conversion circuit for performing conversion between serial and parallel data comprising:

a plurality of flip-flop series having master/slave flip-flops, the number of said master/slave flip-flops equal to the number of bits of said parallel data, said flip-flops having terminals for serial data and parallel data, respectively, and said flip-flops being divided into predetermined plural numbers of groups to respectively form said plurality of flip-flop series; and

a clock signal generator circuit for generating clock signals, the phase number of said clock signals equal to the number of said plurality of flip-flop series and the respective phases of said clock signals not overlapping each other in phase, said clock signal generator circuit rendering to operate at the leading edge of said clock signals a master flip-flop and a slave flip-flop of the master/slave flip-flop contained in each of said flip-flop series, and also rendering said flip-flop series to operate in synchronization with each other;

in which said flip-flop series are made operative upon said clock signals thereby to perform a data conversion between said serial and parallel data.

4,799,041

RECIRCULATING ANALOG TO DIGITAL CONVERTER WITH AUTO-CALIBRATING FEATURE

James E. Layton, Ochelata, Okla., assignor to Applied Automation, Inc., Bartlesville, Okla.

Filed Oct. 6, 1986, Ser. No. 915,433
Int. Cl.[4] H03M *1/38*
U.S. Cl. 341—120 **11 Claims**

1. Apparatus for providing an analog-to-digital conversion of an analog signal wherein said analog-to-digital conversion is effected in a voltage recirculation loop and wherein a number of conversion iterations are included in a conversion cycle to resolve said analog signal into a number of binary bits, and wherein an auto-zero mode is introduced prior to an analog-to-digital conversion cycle, said apparatus comprising:

a first sample and hold circuit having an input and an output, wherein said first sample and hold circuit samples a voltage when a first switch means associated with said first sample and hold circuit is in a first position and wherein said first sample and hold circuit holds the voltage sampled when said first switch means was in said first position when said first switch means is switched to a second position;

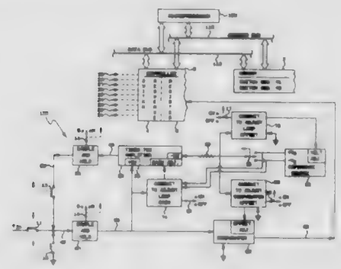
an operational amplifier having a non-invering input, an inverting input, a gain adjust input, and an output;

a feedback resistor connected from said output to said inverting input of said operational amplifier;

an input resistor, having essentially equal value of resistance as said feedback resistor and having a first terminal connected to said inverting input of said operational amplifier whereby the unadjusted voltage gain of said operational amplifier if the input voltage is applied to the non-inverting input is approximately equal to two and wherein the unadjusted voltage gain of said operational amplifier if the input voltage is applied to said second terminal of said input resistor is approximately equal to unity;

means for connecting said output of said first sample and hold circuit to said non-inverting input of said operational amplifier;

a reference voltage source including a positive and a negative reference voltage;



a second switch means having a first position and a second position, wherein said positive reference voltage is connected to said second terminal of said input resistor when said second switch menas is in said first position, wherein said negative reference voltage is connected to said second terminal of said input resistor when said second switch means is in said second position;

means for establishing an adjustment signal responsive to the voltage appearing at the non-inverting input of said operational amplifier and the voltage of said reference voltage source, and for connecting said adjustment signal to said gain adjust input of said operational amplifier so that the gain of said operational amplifier is adjusted in response to said adjustment signal;

a second sample and hold circuit having an input and an output, wherein said second sample and hold circuit samples a voltage when a third switch means associated with said second sample and hold circuit is in a first position and wherein said second sample and hold circuit holds the voltage sampled when said third switch means was in said first position when said third switch means is switched to a second position;

means for connecting said output of said operational amplifier to said input of said second sample and hold circuit;

a fourth switch means for connecting said output of said second sample and hold circuit to said input of said first sample and hold circuit;

a fifth switch means for applying said analog signal to said input of said first sample and hold circuit;

a first comparator means operatively connected to said output of said first sample and hold circuit for comparing said output of said first sample and hold circuit to a base voltage and for producing a first digital signal therefrom;

a storage register for receiving said first digital signal and for producing a first switching signal responsive to said first digital signal;

means for connecting said first switching signal to said second switch means and for operating said second switch means in response to said first switching signal;

computer means for generating a second, a third, a fourth, and a fifth switching signal; and

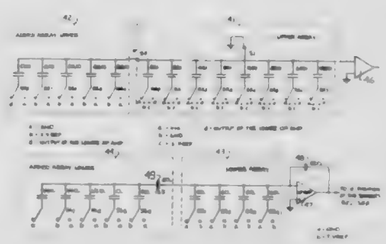
means for connecting said second, third, fourth and fifth switching signals to said first, third, fourth and fifth switch means respectively, wherein said first, third, fourth and fifth switch means are switched so as to effect a conversion of said analog signal to digital form in accordance with an iterative algorithm.

4,799,042

APPARATUS AND METHOD FOR OFFSET VOLTAGE CORRECTION IN AN ANALOG TO DIGITAL CONVERTER

Pierangelo Confalonieri, Cassole D'Adda, Italy; Daniel Sendorowicz, Berkeley, Calif., and Germano Nicollini, Piacenza, Italy, assignors to SGS Microelettronica S.p.A., Italy

Filed Dec. 1, 1986, Ser. No. 936,368
Claims priority, application Italy, Dec. 19, 1985, 23294 A/85
Int. Cl.[4] H03M *1/06*
U.S. Cl. 341—118 **4 Claims**



1. A method of correcting for error voltages, such as offset voltages present in circuitry of systems using voltage comparators, said method comprising the steps of:

(a) providing a successive approximation analog-to-digital converter provided with a primary capacitor array interconnected with a first switch means used for grounding a summing node on said converter and a second switch means for providing an input signal charge to said primary capacitor array, said input signal charge representing a chord value of said input signal charge;

(b) providing a dedicated offset voltage correction register for storing a digital representation of a correction signal;

(c) providing a first supplementary capacitor array for storing charges representing an analog of a major portion of a correction signal, said first supplementary capacitor array being provided in addition to said provided primary capacitor array;

(d) providing a third switch means between said first supplementary capacitor array and said provided primary capacitor array, said third switch being located to assure isolation of said first supplementary capacitor array from said provided primary capacitor array after performing a correction;

(e) storing a digital representation of a correction signal in said dedicated correction register;

(f) storing an input signal charge, representing a chord value

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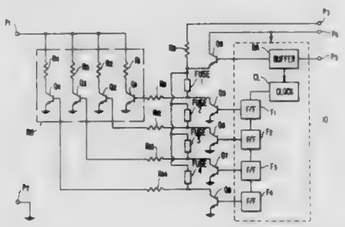
of said input signal, in said primary capacitor array through said second switch means;
(g) grounding said summing node of said successive approximation analog-to-digital converter through said first switch means;
(h) closing said third switch means between said first supplementary capacitor array and said primary capacitor array;
(i) performing a digital-to-analog conversion of said stored correction signal in said dedicated offset correction register, said conversion being performed simultaneous with said steps of storing said input signal and grounding said summing node and closing said third switch means;
(j) precharging said first supplementary capacitor array with a major portion of a correction signal charge equivalent to an analog value resulting from said performed digital-to-analog conversion step;
(k) opening said first switch means;
(l) raising the voltage potential at said summing node by an amount equivalent to said stored major portion of said correction signal charge in said first supplementary capacitor array;
(m) opening said third switch means in a timely manner and thereby isolating said first supplementary capacitor array from said primary capacitor array without affecting normal operation of said successive approximation analog-to-digital converter;
(n) grounding said primary capacitor array through said second switch means;
(o) combining an input voltage equivalent of said input signal charge and an offset voltage equivalent of said correction signal charge at said summing node and thereby providing a compensated input value at said summing node; and
(p) operating said successive approximation analog-to-digital converter.

4,799,043

CIRCUIT RESISTANCE ADJUSTING DEVICE

Kenji Ueda, Ohtsu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Division of Ser. No. 839,718, Mar. 14, 1986, Pat. No. 4,713,602. This application Jun. 29, 1987, Ser. No. 67,004
Claims priority, application Japan, Mar. 14, 1985, 60-52105
Int. Cl.[4] H03M *1/78*
U.S. Cl. 340—825.06 **9 Claims**



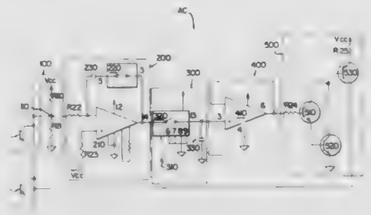
6. An apparatus for sensing a particular condition, said apparatus comprising:
a. sensing means,
b. first circuit means coupled to said sensing means for generating first and second signals,
c. second circuit means responsive to the signals generated by said first circuit means for adjusting the sensitivity of said sensor, said second circuit means comprising:
(i) resistance means including a plurality of resistances,
(ii) switching means coupled to said resistance means for selectively and sequentially connecting one or more of said plurality of resistances to produce a combined resistance,
(iii) patterning means, coupled to said switching means and responsive to said first signal generated by said first circuit means, for controlling said switching means to selectively connect said plurality of resistances in accordance with a predetermined pattern for adjusting the sensitivity of said sensor, and
(iv) holding means, responsive to said second signal generated by said first circuit means, for holding said patterning means and fixing the connection of said plurality of resistances so that said combined resistance is permanently fixed,
wherein said switching means includes a plurality of switching elements, which respectively correspond to said plurality of resistances, and a plurality of fuses respectively connected to said plurality of switching elements, said fuses are adapted to be selectively fused off upon the application of said second signal to said holding means.

4,799,044

PHOTOTRANSISTOR APPARATUS WITH CURRENT INJECTION AMBIENT COMPENSATION

Timothy E. Masters, Georgetown, and Wayne J. Wehrer, Austin, both of Tex., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 830,408, Feb. 18, 1986, Pat. No. 4,713,534. This application Aug. 6, 1987, Ser. No. 83,321
Int. Cl.[4] G08C *21/00*
U.S. Cl. 341—5 **6 Claims**



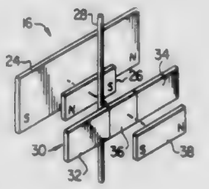
1. A coordinate detection touch input apparatus for determining the position of a stylus adjacent an electronic display in the presence of ambient light, comprising:
an array of light emitters and phototransistors disposable around the periphery of the electronic display, individual associated emitters and phototransistors aligned in emitter-phototransistor pairs;
means for sequentially activating emitter-phototransistor pairs, each phototransistor being activated for a longer time than the associated emitter, an activated phototransistor current being a function only of ambient conditions, including incident ambient light, when the associated emitter is unactivated;
a dynamic ambient compensation network comprising means for injecting a compensation current at the phototransistor collector during activation of the associated emitter, the compensation current being a function only of the current in the phototransistor due to ambient conditions, including incident ambient light; whereby
the presence of the stylus adjacent the electronic display is determined when light from activated emitters is not received by associated phototransistors.

4,799,045

METHOD OF DETECTING A LABEL USED IN AN ANTI-THEFT SURVEILLANCE SYSTEM

Edward R. Fearon, Richardson, Tex., and Robert E. Fearon, Tulsa, Okla., assignors to E.A.S. Technologies, Inc., Richardson, Tex.

Continuation of Ser. No. 828,541, Feb. 12, 1986, Pat. No. 4,682,154. This application Jul. 17, 1987, Ser. No. 74,956
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—572 **4 Claims**



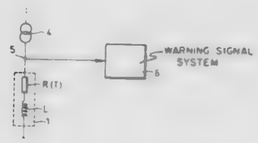
1. A method of detecting the unauthorized passage of an article through a zone of surveillance, comprising:
transmitting a pair of frequencies in about the range of 1–30 gigahertz within the zone of surveillance;
attaching a label to the article, said label having a magnetically biased element wherein said magnetic bias results from a magnetic field stronger than a magnetic field associated with the earth;
generating a frequency comprising the summation of the pair of frequencies from said label; and
detecting the summation frequency in the zone of surveillance and thereby detecting the unauthorized passage of the article therethrough, the summation frequency being detected to exploit and improve radiation achieved therewith.

4,799,046

METHOD AND CIRCUIT FOR DETECTING AND MONITORING THE TEMPERATURE OF A WINDING

Raymond Heinen, Cologne, Fed. Rep. of Germany, assignor to Leybold-heraeus GmbH, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 749,010, Jun. 26, 1985, abandoned. This application Jan. 30, 1987, Ser. No. 9,267
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1984, 3424873
Int. Cl.[4] G08B *17/00*; F16K *31/02*
U.S. Cl. 340—595 **9 Claims**



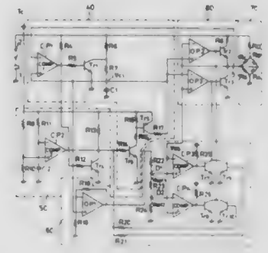
1. A method for monitoring the temperature of a winding of a coil, the winding having a temperature-dependent resistance, in which said coil is a magnet coil of a magnetic valve having a body comprising: supplying a holding current holding the body of the valve in a certain position, and
utilizing the holding current simultaneously as a measurement current.

4,799,047

LIQUID LEVEL DETECTING AND INDICATING SYSTEM WITH COIL TYPE MEASURING DEVICE

Mitsuhiro Saitoh, Oobu, Japan, assignor to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

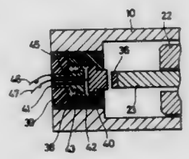
Filed Dec. 8, 1987, Ser. No. 130,326
Claims priority, application Japan, Dec. 17, 1986, 61-300726
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—618 **6 Claims**



1. A level detecting and indicating system for detecting a level of a measured object on the basis of a resistance changed in accordance with variation of the position of said measured object and indicating the level in response to a magnetic field produced to correspond to the resistance, comprising:
power supply means with switching means for supplying an electric power and stopping the power supply;
gauging circuit means coupled through said switching means to said power supply means and including a bridge circuit comprising at least variable resistor means and coil means, said variable resistor means being arranged such that its resistance is changed in accordance with the variation of the position of said measured object;
potential followup circuit means for detecting the voltage at one end of said variable resistor of said gauging circuit means, said potential followup circuit means including a capacitor which is coupled through said switching means to said power supply means and charged with first and second time constants so that its voltage becomes equal to the detected voltage at the one end of said variable resistor means, said first and second time constants being switched from each other in response to first and second charging signals;
timer circuit means including time measuring means for measuring a time period elapsed from a turning-on of said switching means, said timer circuit means generating said first charging signal to said potential followup circuit means before elapse of a predetermined time period from the turning-on of said switching means so that said capacitor is charged rapidly with said first time constant and generating said second charging signal thereto after the elapse of said predetermined time period so that it is charged slowly with second time constant;
disturbance detecting circuit means coupled to one end of said capacitor of said potential followup circuit means and the one end of said variable resistor means of said gauging circuit means for comparing the voltages thereof with each other to detect a abrupt variation of the voltage at the one end of said variable resistor means and generating a control signal in accordance with the result of the detection; and
potential control circuit means coupled to said disturbance detecting circuit means for controlling magnitude of the voltage at the end of said variable resistor means in response to said control signal from said disturbance detecting circuit to remove the abrupt variation of the voltage thereat.

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4,799,048
ACCUMULATOR
Takahiro Goshima, Kakamigahara; Yoshiyuki Hattori, Toyoake; Hiroji Kishara, Okazaki; Hiroaki Otsuki, Anjo; Yoshihisa Nomura, and Nobuyasu Nakanishi, both of Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Jidosha Kabushiki Kaisha, Toyota, both of, Japan
Continuation of Ser. No. 781,672, Sep. 30, 1985, abandoned. This application Jun. 10, 1987, Ser. No. 60,959
Claims priority, application Japan, Sep. 28, 1984, 59-204546; Oct. 19, 1984, 59-220670
Int. Cl.[4] G08B 21/00; F16K 37/00
U.S. Cl. 340—626 12 Claims

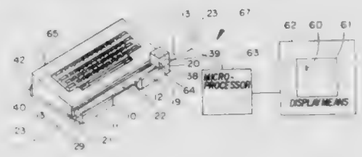


1. An accumulator comprising:
a casing having an inlet/outlet port;
a cylinder disposed in said casing;
a piston slidably disposed in said cylinder, said cylinder and one end of said piston jointly defining a reservoir of variable volume communicating with said inlet/outlet port and said piston having a coaxial recess extending from the other end of said piston to a bottom therein;
a piston ring held on an outer surface of said piston and lying in substantially the same plane as the inner surface of said bottom;
a piston rod axially movably disposed in said casing and having an end slidably fitted in said recess; and
a spring engaged with said piston rod for normally urging said piston rod toward said bottom to keep said end of said piston rod and said piston ring positioned in substantially the same position at all times with respect to a longitudinal axis of said piston to force said piston to reduce the volume of said reservoir.

5. An accumulator comprising;
a casing having an inlet/outlet port;
a cylinder disposed in said casing;
a piston axially slidably disposed in said cylinder, said cylinder and one end of said piston jointly defining a reservoir of variable volume communicating with said inlet/outlet port and said piston having a coaxial recess extending from the other end of said piston to a bottom therein;
a piston ring held on an outer surface of said piston, said piston ring and the inner surface of said bottom being located in substantially the same plane;
a piston rod axially movably disposed in said casing and having an end slidably fitted in said coaxial recess;
a spring engaged with said piston rod for normally urging said piston rod to keep said end of the piston rod and said piston ring positioned in substantially the same position at all times with respect to the longitudinal axis of said piston to force said piston into said reservoir; and
means for electrically detecting the position of said piston in said cylinder.

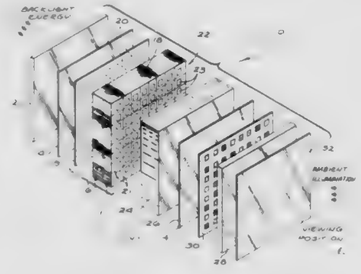
4,799,049
IMAGE POSITION CONTROL
Harold C. Avila, 5399 Sierra Vista Ave., Riverside, Calif. 92505
Filed Jan. 25, 1985, Ser. No. 694,816
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—709 12 Claims

1. A control that uses both rotational movement and sliding movement to position an image on a screen for use with means for detecting the movement where the means for detecting senses the movement and a microprocessor that interprets the movement detected to position said image on said screen and means for displaying said image on said screen, comprising:
a body having a concave surface defining a notch; and
a cylindrical bar having a bar axis, said bar being matingly situated in the notch of the body for rotatable and slidable



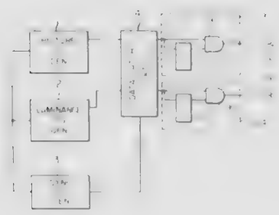
movement relative to the body, said bar being rotatable coupled to the body for movement about the bar axis and slidably coupled to the body for movement in a direction parallel to the bar axis, rotating movement of said bar causing said image to move in a first direction on said screen and sliding movement of said bar causing said image to move in a second direction on said screen.

4,799,050
FULL COLOR LIQUID CRYSTAL DISPLAY
John C. Prince, Kettleby, and James F. Farrell, Pickering, both of Canada, assignors to Litton Systems Canada Limited, Etobicoke, Canada
Filed Oct. 23, 1986, Ser. No. 922,186
Int. Cl.[4] G02F 1/13
U.S. Cl. 340—765 19 Claims



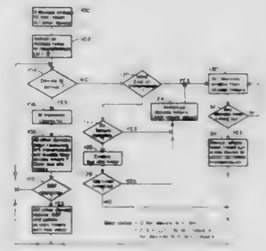
1. A display comprising, in combination:
(a) a plurality of adjacent light-conducting cells disposed in a planar array, each said cell having means associated with it for modulating the amount of visible light passing therethrough;
(b) a phosphor layer behind said cell array, said layer being capable of emitting visible light through said array when irradiated from behind with ultraviolet light;
(c) an ultraviolet light source behind said phosphor layer for irradiating said phosphor layer with ultraviolet light; and
(d) a fiber optic plate disposed behind said cell array and in front of said phosphor layer, said plate including a plurality of adjacent and parallel light-conducting pipes, each said pipe comprising a bundle of optical fibers and having a front end in light-conducting communication with one of said cells, and a rear end in light-conducting communication with said phosphor layer.

4,799,051
DISPLAY CONTROL APPARATUS
Noriaki Tanaka, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Jun. 5, 1987, Ser. No. 58,906
Claims priority, application Japan, Jun. 12, 1986, 61-136744
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—811 5 Claims



1. A display control apparatus comprising:
a picture signal generator which produces a picture signal of a character, pattern, or the like;
a luminance signal generator which produces a luminance signal;
a synchronizing signal generator which produces a synchronizing synchronizing the picture signal produced from said picture signal generator and the luminance signal produced from said luminance signal generator and causes the synchronized picture signal and synchronized luminance signal to rise and fall at the same time;
data latch circuit which produces a synchronized picture signal from the picture signal and the synchronizing signal and a synchronized luminance signal from the luminance signal and the synchronizing signal;
a first pulse width adjuster receiving the synchronized picture signal as an input and comprising a delay circuit which produces a delayed synchronized picture signal from the synchronized picture signal and a logic circuit which performs a logical operation on the synchronized picture signal and the delayed synchronized picture signal and produces an output picture signal;
a second pulse width adjuster receiving the synchronized luminance signal as an input and comprising a delay circuit which produces a delayed synchronized luminance signal from the synchronized luminance signal and a logic circuit which performs a logical operation on the synchronized luminance signal and the delayed synchronized luminance signal and produces an output luminance signal;
when one of the synchronized picture signal and the synchronized luminance signal is true and the other is false, the one of said first and second pulse width adjusters with the true signal as it input producing and output signal having a shortened true interval and the other of said first and second pulse width adjusters with the false signal as it input producing an output signal having a widened false interval with the shortened true interval falling within the widened false interval, thereby producing a predetermined desired display signal; and
when both the synchronized picture signal and the synchronized luminance signal are true or false,
said first and second pulse width adjusters producing output signals having shortened true intervals or widened false intervals of equal length and having phases in agreement, thereby producing a predetermined desired display signal.

4,799,052
METHOD FOR COMMUNICATING DATA ON A COMMUNICATION NETWORK BY TOKEN PASSING
Timothy P. Neer, Athens, Ga.; Joseph J. Clerl, Hood, and Kenneth M. Holst, Eariysville, both of Va., assignors to General Electric Company, Charlottesville, Va.
Filed Jan. 13, 1986, Ser. No. 818,222
Int. Cl.[4] H04Q 11/00; H04J 3/02, 3/24
U.S. Cl. 340—825.5 25 Claims

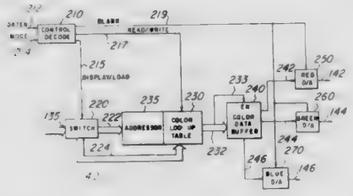


1. In a communication network, having a medium for receiving and transmitting data between a plurality of devices, the data comprising foreground messages and background messages, the foreground messages having a higher priority of transmission than background messages; each device having a receiver for receiving data from the medium; a transmitter for transmitting data to the medium; a medium access timer for controlling access to the medium a medium idle timer for detecting an idle condition on the medium; and a detecting means for detecting the transmission of a background message; a method of determining access to the medium by each device comprising the steps of:
(a) assigning each device a unique medium address number;
(b) loading each medium access timer of each device with a value representative of the unique medium address number of the device;
(c) starting a count on each medium access timer;
(d) selecting at least one device to start transmitting data on the medium, the data including the unique medium address number assigned to the transmitting device, a start of transmission condition, and an end of transmission condition;
(e) detecting the transmission of a background message by the detecting means;
(f) setting the detecting means for each device upon detecting the transmission of a background message;
(g) stopping the medium access timer of each device upon receiving the start of transmision condition from the transmitting device;
(h) loading the medium access timer of each device with a value representative of each device's own unique medium address number and the unique medium address of the transmitting device;
(i) starting a count on each medium access timer upon receiving the end of transmission condition from the transmitting device;
(j) comparing each medium access timer to a predetermined value;
(k) permitting access to the medium when the medium access timer of a device reaches a predetermined number;
(l) determining the state of the detecting means of the device upon obtaining access to the medium;
(m) transmitting data on the medium, the data including the unique medium address number assigned to the transmitting device, a start of transmission condition, and an end of transmission condition;
(n) inhibiting the transmission of background messages from the device if the detecting means is set; and

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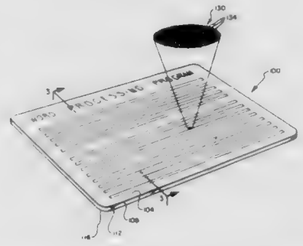
(o) resetting the detecting means at the end of transmitting data from the device.

4,799,053
COLOR PALETTE HAVING MULTIPLEXED COLOR LOOK UP TABLE LOADING
Jerry Van Aken, Sugarland, and Karl Guttag, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 28, 1986, Ser. No. 856,756
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—703 **22 Claims**



1. A color palette system comprising:
a controller having a data port;
a pixel map memory having a data port coupled to said controller data port and a data output, said pixel map memory having a plurality of pixel color codes defining a visual image, each pixel color code stored at a memory location corresponding to a video screen location;
a memory controller connected to said pixel map memory for sequentially applying memory addresses to said pixel map memory for recalling pixel color codes from said pixel map memory at said data output in a predetermined order corresponding to the raster scan of a video screen;
a switch having an input connected to said pixel map memory data output and having first and second outputs;
a color look up table having a first input connected to said switch first output for addressing said color look up table and having a second input connected to said switch second output for supplying data to be stored in said color look up table, said color look up table receiving said recalled pixel color codes at said first input, and said color look up table having a plurality of color registers having stored therein color data words;
a video signal generator connected to said color look up table for generating a video output signal having color characteristics corresponding to color data words recalled from said color registers; and
a mode control device connected to said color look up table and responsive to at least one mode control signal for causing said color look up table to operate in one of a normal mode and a color look up table load mode wherein each pixel color code received from said pixel map memory selects one of said color registers for recall of one of said color data words stored therein for transmission to said video signal generator during said normal mode and wherein a predetermined sequence of pixel color codes recalled from said pixel map memory at said data output are presented to said color look up table at said second input thereof and stored in said color registers thereby loading said color data words into said color registers during said color look up table load mode.

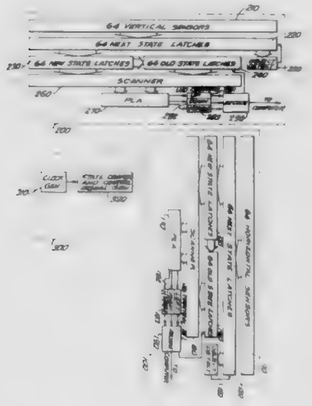
4,799,054
MOUSE OPERATING PAD
V. Dean House, Orem, Utah, assignor to Data Pad Corp., Provo, Utah
Filed Feb. 18, 1987, Ser. No. 15,945
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—710 **40 Claims**



1. A mouse operating pad for use on a work surface at a work station to permit high resolution operating of a mouse at the work station, the mouse operating pad comprising:
a control layer opposed first and second sides, said control layer being comprised of a first material;
a control surface, formed on said first side of said control layer, for contact by a tracking member of the mouse;
means for supporting said control layer and comprising first and second sides, one of which supports said control layer and the other side resting on said work station, said support means being comprised of a second material; and
said support means and said control layer being attached together over a relatively small area and separable over the remainder of their overlying area,
wherein said second material is relatively resilient in relation to said first material and wherein said first material is relatively hard in relation to said second material such that said first material is sufficiently resistant to deformation caused by moving or resting said mouse on the control surface to isolate said control surface from dimensional irregularities occurring at either of the first or second sides of said support means.

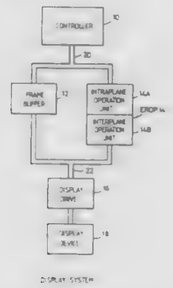
4,799,055
OPTICAL MOUSE
Eric Nestler, Acton, and Thomas F. Knight, Belmont, both of Mass., assignors to Symbolics Inc., Cambridge, Mass.
Filed Apr. 26, 1984, Ser. No. 604,111
Int. Cl.[4] G09G 3/02
U.S. Cl. 340—710 **17 Claims**

1. In a device for controlling the position of a visual display cursor, wherein the device is movable in a plane defined by two non-parallel axes and having a surface pattern of relatively light and dark areas separated by optical edges and having means responsive to the motion of the device on the surface pattern relative to the two non-parallel axes to produce signals representing a direction of motion for the cursor, the improvement wherein the means comprises:
means for optically sensing the surface pattern comprising a plurality (N) of prechargeable photon sensors disposed in a single row along each axis,
means for periodically sensing the presence of an edge in at least one preselected portion of each row of sensors to define a sensor state for each axis for each period, comprising means for precharging the sensors every period and object detecting means for storing the state of each of P groups of Q sensors in each period, where $P \times Q = N$, when R adjacent sensors in each of the P groups discharge below a given threshold and where $R < Q$ and
motion detecting means for each axis and independent of the other axis for determining if movement has occurred relative to each axis and comprising means for scanning the state of each set of S adjacent sensors in each of the P groups of Q sensors where $S < Q$, means for comparing



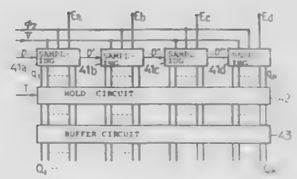
the sets of adjacent sensors for successive states and means for producing a separate direction signal for each axis from the comparisons.

4,799,056
DISPLAY SYSTEM HAVING EXTENDED RASTER OPERATION CIRCUITRY
Etsuo Hattori, Shiga; Tomoyuki Iwami, Yamato; Yoshihiro Miyazaki, Shiga, and Ryutaroh Ohbuchi, Tokyo, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 8, 1987, Ser. No. 35,955
Claims priority, application Japan, Apr. 11, 1986, 61-82275
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—799 **8 Claims**



1. A display system comprising:
a frame buffer for storing information representing one or more images, said information being organized into a plurality of memory planes;
a display device for visually displaying images stored in said frame buffer;
an extended raster operation circuit for performing logical operations on information in the frame buffer and for storing the results of the logical operations in the frame buffer; and
a controller for controlling the extended raster operation circuit;
characterized in that the extended raster operation circuit comprises:
an intraplane operation unit for performing intraplane logical operations specified by the controller on information in the frame buffer, each intraplane logical operation having at least one input operand and at least one output result, all operands and results of a given intraplane logical operation being in a single memory plane; and
an interplane operation unit for performing interplane logical operations specified by the controller on the results of the intraplane logical operations, each interplane logical operation having at least one input operand and at least one output result, the operands and results of a given interplane logical operation being in at least two memory planes.

4,799,057
CIRCUIT FOR DRIVING A MATRIX DISPLAY DEVICE WITH A PLURALITY OF ISOLATED DRIVING BLOCKS
Makoto Takeda, Tenri; Kunihiko Yamamoto, Nara; Nobuaki Matsuhashi, Tenri, and Hiroshi Take, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 18, 1985, Ser. No. 756,267
Claims priority, application Japan, Jul. 23, 1984, 59-155051
Int. Cl.[4] G09G 3/36
U.S. Cl. 340—811 **3 Claims**



1. A driving circuit for a matrix liquid crystal display device having a plurality of liquid crystal picture elements arranged in a matrix and a plurality of switching transistors each connected to a respective picture element, comprising:
a plurality of successive driving blocks for providing data signals to said plurality of switching transistors, each driving block including,
shift register means for receiving a data pulse signal at a first input terminal thereof, a clock signal at a second input terminal thereof, and outputting said data pulse signal at successive output terminals thereof in response to said clock signal,
a plurality of switching circuits each connected to a respective output terminal of said shift register means and a data voltage input terminal, and
sample-and-hold means for sampling and holding a data signal from said data voltage input terminal through said switching circuits for transmission to a respective switching transistor in response to a data pulse signal applied at a respective output terminal; and
control means for controlling the operation of said plurality of driving blocks including means for inhibiting said shift register means from receiving said clock signal, said control means providing control signals to said means for inhibiting such that only one driving block is operative to provide said voltage signals to said switching transistors at any one instant of time.

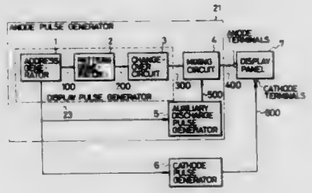
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4,799,058

DRIVING APPARATUS FOR A GAS DISCHARGE DISPLAY PANEL

Yukio Okamoto, Sagamihara; Shinichi Shinada, Kokubunji; Kenkichi Suzuki, Mobara, and Akihiko Kougami, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1985, Ser. No. 791,758
Claims priority, application Japan, Oct. 31, 1984, 59-227731; Dec. 17, 1984, 59-264472; May 29, 1985, 60-114079
Int. Cl.[4] G09G *3/28*
U.S. Cl. 340—811 6 Claims



1. A driving apparatus for a gas discharge display panel; said display panel comprising:
a plurality of parallel cathodes arranged on a substrate and connected by polyphase wiring;
a plurality of parallel barrier ribs disposed on said cathodes in such a manner as to cross said cathodes at right angles;
a plurality of parallel anodes disposed on a transparent face plate in parallel with said barriers;
a driving circuit comprising:
a cathode pulse generator providing cathode pulses at its output, said output being coupled to said cathodes;
an anode pulse generator providing anode pulses at its output, said output being coupled to said anodes, said anode pulse generator including a display pulse generator for generating display pulses;
an auxiliary discharge pulse generator for generating auxiliary discharge pulses; and
a mixing circuit mixing said display pulses and auxiliary discharge pulses, said display pulse generator including an address generator for generating a digital address signal, a pattern generator for converting said digital address signal to a digital pattern signal corresponding to a display pattern, and a changeover circuit for selecting one of said digital pattern signal and its inverted signal as said display pulses;
said changeover circuit including a switching circuit, a plurality of logic circuits each including a first AND gate, a second AND gate, an OR gate, a first inverter and a second inverter, said inverters having as respective inputs said digital pattern signal and a signal from said switching circuit, said first AND gate having as inputs said digital pattern signal and said signal from said switching circuit, and said second AND gate having as inputs the outputs of said first and second inverters, and said OR gate having as inputs the outputs of said first and second AND gates and providing said display pulses at its output.

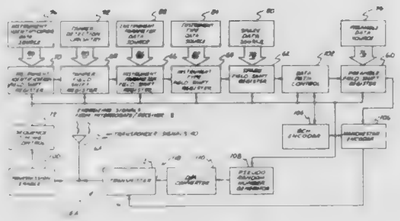
4,799,059

AUTOMATIC/REMOTE RF INSTRUMENT MONITORING SYSTEM

Mervin L. Grindahl, and Quentin S. Deanese, both of Waseca, Minn., assignors to EaScan, Inc., Minneapolis, Minn.

Filed Mar. 14, 1986, Ser. No. 839,889
Int. Cl.[4] G08C *17/00*
U.S. Cl. 340—870.03 32 Claims

1. An RF transponder suitable for use with an automatic/-remote instrument monitoring system wherein the transponder is one of a plurality of such transponders configured to operate with at least one of a plurality of parameter sensing instruments remotely located from an interrogate/receiver which transmits an RF activation signal to said transponders and which receives and processes RF transponder signals received from the transponders, said transponder comprising:
preamble field means for providing a preamble field of predetermined preamble data;
instrument parameter field means adapted for interconnection to a parameter sensing instrument for providing an instrument parameter fielf of instrument parameter data sensed by the instrument;
instrument identification field means for providing an instrument identification field of instrument identification data;
BCH error control coding means for error control coding at least a portion of the fields of data including the preamble field data, instrument parameter field data, and instrument identification field data, and for providing an error control code field of BCH error control code data;
transmission enable means for receiving an RF activation signal from an interrogate/receiver and for providing a transponder enable signal in response thereto;
sequence control means coupled to the transmission enable means, preamble field means, instrument parameter field means, instrument identification field means and BCH error control code means, for causing the fields of data to be assembled in a predetermined manner to produce a



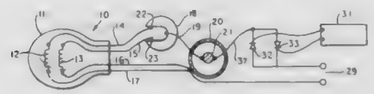
plurality of transponder information packets in which the BCH error control code field follows the instrument identification field, the instrument identification field follows the instrument parameter field, and the instrument parameter field follows the preamble field, in response to the transponder enable signal;
transmission encoding means for transmission encoding the transponder information packets and producing transmission encoded transponder information packets;
data path control means for causing the portion of the fields of data to be error control coded to be simultaneously transferred to the transmission encoding means and to the BCH error control coding means, and for causing the error control code field of data to be transferred to the transmission encoding means following the transfer to the transmission encoding means of the portions which have been BCH error control coded;
RF transmitter means operatively coupled to receive the transmission encoded transponder information packets for transmitting an RF transponder signal including the transmission encoded transponder information packets; and
frequency control means coupled to the RF transmitter means for actively varying a frequency of the RF transponder signal such that transponder information packets thereof can be transmitted at different frequencies within a predetermined frequency bandwidth.

4,799,060

TRAFFIC SIGNAL

Richard D. Brugger, 5433 Clinton Dr., Erie, Pa. 16509

Filed Jul. 20, 1987, Ser. No. 75,581
Int. Cl.[4] G08G *1/095*; B60Q *1/00*
U.S. Cl. 340—907 12 Claims



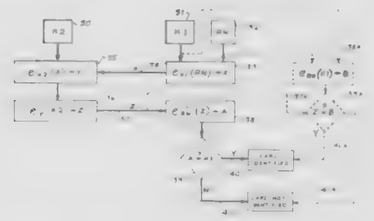
1. In combination a traffic signal including a bulb and a curved reflector,
said bulb having a major axis extending through said cruved reflector and an electronic circuit,
said bulb having at least two filaments,
means supporting said filaments in said bulb in spaced, generally aprallel, relation to each other and in a plan normal to said major axis whereby said curved reflector directs a predominant beam of light from each said filaments,
said electronic circuit having switching means to energize said filaments alternately for predetermined periods of time to project light from said reflector alternately at a first angle to said major axis and then at a second angle to said major axis, whereby said beam of light reflected from said curved reflector produces a visual image of scanning.

4,799,061

SECURE COMPONENT AUTHENTICATION SYSTEM

Dennis G. Abraham; Glen P. Double, both of Concord, and Steven W. Neckyfarow, Matthews, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 18, 1985, Ser. No. 799,367
Int. Cl.[4] G07D *7/00*; H04K *1/00*; H04L *9/00*
U.S. Cl. 340—825.34 9 Claims



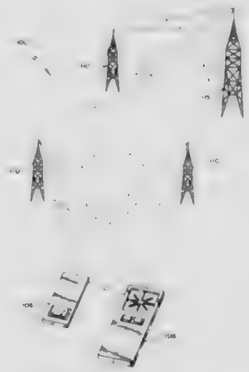
1. A method whereby a first terminal may authenticate a second terminal wherein the terminals each possess an encryption key and the second terminal is authenticated if the encryption keys are equal, the steps of the method comprising:
generating a first number at the first terminal and creating a second number by encrypting the first number using the encryption key of the first terminal;
transmitting the second number to the second terminal;
generating a third number at the second terminal by decrypting the second number using the encryption key of the second terminal;
generating a fourth number at the second terminal by encrypting the encryption key of the second terminal using the third number as the key;
transmitting the fourth number to the first terminal; and
verifying at said first terminal that said fourth number equals the encryption of said encryption key of said first terminal using said first number as key to thereby authenticate said second terminal.

4,799,062

RADIO POSITION DETERMINATION METHOD AND APPARATUS

H. Britton Sanderford, Jr.; Robert E. Rousselle, both of New Orleans, and James D. Arthur, Metairie, all of La., assignors to Axonn Corporation, New Orleans, La.

Filed Apr. 27, 1987, Ser. No. 42,838
Int. Cl.[4] G01S *03/02*
U.S. Cl. 342—450 22 Claims

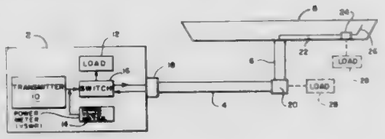


1. A method of radio position determination of an unknown position transmitter using a mobile-reference transceiver and a plurality of base repeater generating a slave grid synchronization pulse for time reference, located at known geographic locations in a geographic area and coupled to a central monitoring station generating a master grid synchronization pulse for time reference, comprising the steps of:
emitting by the unknown position transmitter located within the geographical area, a radio wave having modulation compensation for multipath which also serves as a coarse ranging modulation, and a modulated carrier with an identification code;
receiving by at least three base repeaters the radio wave emitted by the unknown position transmitter and measuring at the base repeaters the relative times-of-arrival of the radio wave with respect to the master grid synchronization pulse for deriving ranging times and therefore ranges from said base repeaters to said unknown position transmitter;
computing from the locations of said base repeaters and the measured times-of-arrival, hyperbolic lines of position for the unknown position transmitter;
computing a coarse-position fix of the unknown position transmitter from the hyperbolic lines of position using a least means squares algorithm;
dispatching a search team having a mobile reference transceiver to the coarse-position fix of said unknown-position transmitter;
transmitting from said mobile reference transceiver located within the coarse-position fix a reference signal having modulation compensation for multipath which also serves as a coarse ranging modulation;
receiving by the base repeaters the reference signal emitted by said mobile reference transceiver and computing a difference between the reference signal and the radio wave, for deriving a differential position vector from said mobile reference transceiver to said unknown position transmitter;
guiding the mobile reference transceiver to said unknown position transmitter using the differential position vector;
emitting a polling message by said mobile reference transceiver;

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emitting, in response to receiving the polling message, a reply message by said unknown position transmitter;
independently computing from the polling message and the reply message a local-time-of-flight and therefore the local range from the mobile reference transceiver to the unknown position transmitter; and
emitting an audible sound by said unknown position transmitter for assisting in locating the unknown position transmitter.

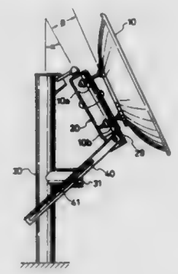
4,799,063
METHOD AND APPARATUS FOR ISOLATING FAULTS IN AN ANTENNA SYSTEM
Gordon S. Hill, Melbourne, Fla., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Sep. 14, 1987, Ser. No. 95,705
Int. Cl.[4] G01R *1/00*
U.S. Cl. 343—703 16 Claims



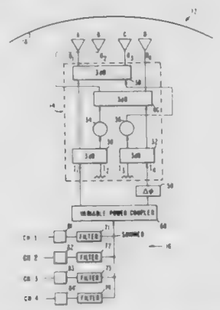
1. In a transmitting system having a transmitting means, waveguide transmission lines, an antenna having a given impedance and coupling means, the transmission lines and coupling means connecting the transmitting means to the antenna, a method of isolating faults in the system comprising the steps of:
(a) dividing the transmission lines and the coupling means into at least two sections;
(b) connecting an adapter means to one of the sections;
(c) mating a resistive load having an impedance substantially matching that of the antenna to the adapter means for intercepting and attenuating pulses sent from the transmitting means;
(d) sending a pulse from the transmitting means towards the resistive load;
(e) designating the path between the transmitting means and the adapter means as faultless if the sent pulse is substantially attenuated by the resistive load and not reflected back to the transmitting means; and
(f) designating the path between the transmitting means and the adapter means as faulty if the sent pulse is substantially reflected back to the transmitting means.

4,799,064
GYRATORY PARABOLIC ANTENNA DRIVING DEVICE
Kenichiro Nakamura, Shiga, Japan, assignor to Tsubakimoto Chain Company, Osaka, Japan
Filed Apr. 27, 1987, Ser. No. 43,143
Claims priority, application Japan, Apr. 30, 1986, 61-98171
Int. Cl.[4] H01Q *3/04*
U.S. Cl. 343—766 14 Claims

1. A gyratory device for mounting a parabolic antenna on a base frame comprising a stationary hollow housing adapted to be mounted on said frame a motor assembly mounted coaxially with said housing, a coaxial sleeve part mounted for rotation about its longitudinal axis on said stationary housing and enclosing said motor assembly, the outside of said housing and the inside of said sleeve being cylindrical, at least two anti-friction bearings positioned between the outside of said housing and the inside of said sleeve at spaced axial locations, said motor assembly being positioned within said hollow housing between said locations, means mounting said parabolic antenna on said sleeve, and driving connections from said motor assembly to said sleeve to rotate said sleeve on its axis and thereby the antenna upon actuation of said motor.

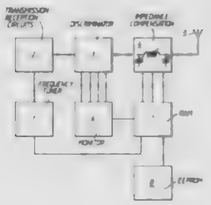


4,799,065
RECONFIGURABLE BEAM ANTENNA
James D. Thompson, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 476,087, Mar. 17, 1983, abandoned. This application Jul. 15, 1986, Ser. No. 885,981
Int. Cl.[4] H01Q *3/26*
U.S. Cl. 343—779 6 Claims



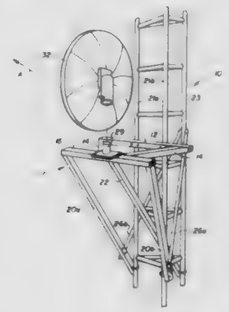
1. A reconfigurable beam antenna comprising:
input means for providing a plurality of input signals;
variable power coupling means operatively connected to said input means and having first and second output ports for selectively dividing said input signals into first and second signals at said first and second output ports respectively;
variable phase shifting means operatively connected to said second output port of said variable power divider for selectively shifting the phase of said second signal; and
feed network means for distributing said first signal and said phase shifted second signal between a plurality of antenna feeds.

4,799,066
IMPEDANCE MATCHING ARRANGEMENT
Malcolm J. Deacon, Chelmsford, England, assignor to The Marconi Company Limited, Middlesex, England
Filed Jul. 18, 1986, Ser. No. 887,057
Claims priority, application United Kingdom, Jul. 26, 1985, 8518967; Dec. 6, 1985, 8530158
Int. Cl.[4] H01Q *1/50*
U.S. Cl. 343—861 17 Claims



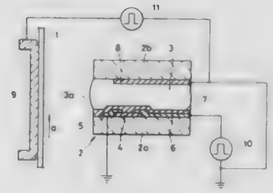
1. An impedance matching arrangement including signal processing means tunable to a selected one of a plurality of frequencies and operative in a mode in which certain of the frequencies occur repetitively, coupled to a frequency dependent impedance; impedance compensation means adapted to present to said signal processing means compensation for the impedance variation of said frequency dependent impedance; and means responsive to an impedance mismatch at a particular frequency for controlling the characteristics of said impedance compensation means when said particular frequency recurs so as to reduce said mismatch.

4,799,067
APPARATUS FOR SUPPORTING AN ELECTRONIC RECEIVING OR SENDING DEVICE ON A TRIPODAL TOWER
Gary L. Tekip, 4152 Waynesburg Rd., Carrolltoe, Ohio 44615, and Charles A. Mesko, 4747 W. Tuscarawas, Canton, Ohio 44708
Filed Nov. 9, 1987, Ser. No. 118,725
Int. Cl.[4] H01Q *1/12*
U.S. Cl. 343—890 12 Claims



1. An apparatus for supporting a sending or receiving device on a tripodal tower having two base posts and an apex post, said apparatus comprising a base bar adapted to be attached to said two base posts of said tower; two side bars and a front bar, said side bars each having a first end attached to opposed ends of said base bar and a second end thereof attached to said front bar to form a substantially planar geometrically shaped platform with said front bar being substantially parallel to said base bar, said platform being adapted to be attached to said tower at a substantially right angle and substantially horizontal to the ground; two side struts having a first end of each being attached to opposed ends of said front bar, and a second end of each being attached to opposed base posts of said tower at points below the plane of said platform; and a center strut having a first end attached to substantially the center of said front bar and a second end attached to the apex post of said tower.

4,799,068
THERMAL ELECTROSTATIC INK-JET RECORDING METHOD AND AN INK THEREFOR
Koichi Saito; Eiichi Akutsu; Yoshihiko Fujisawa, and Nanao Inoue, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jan. 8, 1987, Ser. No. 59,507
Claims priority, application Japan, Jan. 10, 1986, 134439
Int. Cl.[4] G01D *9/00*
U.S. Cl. 346—1.1 5 Claims



1. In the method of recording an image on a recording medium in which thermal energy is selectively applied locally to selected portions of an ink in response to image signals to heat said selected portions, and an electrostatic field is applied to said ink to cause ink to be jetted from the selectively heated portions onto a recording medium, the improvement comprising using as said ink an ink having an l value at 20° C. not larger than 100 and an l value at a temperature in the range between 70° C. and 200° C. not less than about three times said l value at 20° C., wherein

$$l = \frac{\rho}{\mu}\sqrt{\frac{\alpha a_0}{\rho'}}$$

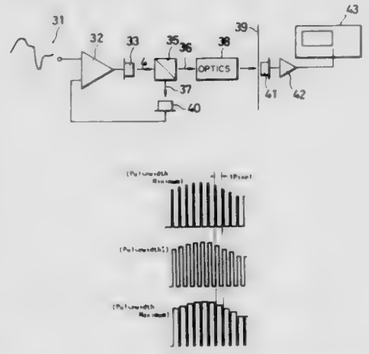
and ρ, μ and α represent, respectively, the density (kg/m^3), the viscosity ($n\text{-}sec/m^2$) and the surface tension (N/m) of the ink, a_0 represents the distance (m) of a gap to which the electric field is applied, and ρ' represents the density (kg/m^3) of air.

4,799,069
LASER RECORDING APPARATUS
Yoshikazu Sasaki, Sagamihara, and Naoya Misawa, Machida, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 14, 1987, Ser. No. 38,367
Claims priority, application Japan, Apr. 18, 1986, 61-91139; Apr. 18, 1986, 61-91140; Mar. 4, 1987, 62-49841; Mar. 4, 1987, 62-49842
Int. Cl.[4] G01D *9/42*; H04N *1/21*; H01S *3/13*
U.S. Cl. 346—108 17 Claims

1. A laser recording apparatus adapted to modulate a laser beam level in accordance with a multi-tone image signal level and to cause a laser beam to scan a recording medium transversely and to form images on recording mediums with dots, said apparatus comprising,
a laser light source for generating the laser beam;
drive means for driving said laser light source in accordance

with the multi-tone image signal level so as to modulate the laser beam level;

means for generating pixel pulses corresponding to each dot which forms an image to be recorded;



means for outputting the multi-tone image signals to said drive means in response to each of said pixel pulses; and

means for reducing said laser beam level for a certain time in each of said pixel pulses.

4,799,070

ION FLOW ELECTROSTATIC RECORDING PROCESS AND APPARATUS

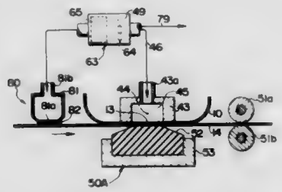
Mitsuji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Mar. 24, 1987, Ser. No. 31,028

Claims priority, application Japan, Mar. 26, 1986, 61-67940; Mar. 31, 1986, 61-71028

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—159 28 Claims



1. An ion flow electrostatic recording process comprising the steps of: disposing a plurality of split record electrodes on one surface of an insulating layer, a record signal being applied to a selected record electrode, forming openings so as to extent through the record electrodes and the insulating layer in a manner such that the record electrodes each surround the periphery of an associated one of the openings to thereby form an ion flow record head, disposing a source of corona ions on one side of the record head on which the record electrodes are located, disposing an electrostatic record paper in superimposed relationship with the other surface of the insulating layer, the record paper comprising a dielectric record layer on a conductive support layer, the dielectric record layer engaging the exposed insulating surface of said insulating layer, applying a record signal across a selected record electrode and the conductive support layer, thereby controlling the passage of a flow of corona ions developed by the source through an ion flow opening.

4,799,071

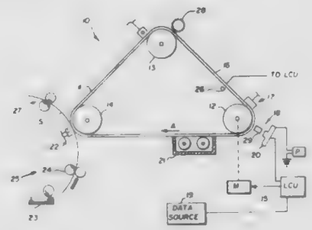
DOT PRINTER WITH AGE COMPENSATION MEANS

Eric K. Zeise, Pittsford, and Yee S. Ng, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1987, Ser. No. 99,424

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—160 2 Claims



1. A dot printer apparatus comprising:

a recording head having a plurality of recording elements for dot-recording on a recording medium during a production run;

driving means for driving each of said recording elements in accordance with respective image data signals for forming an image during the production run;

means for counting a number of prior activations of each recording element and providing correction signals for correction due to nonuniform aging of that recording element; and

means responsive to said correction signals for activating said recording elements during a non-production run.

4,799,072

SEPARATE-EXPOSURE PHOTOGRAPHING APPARATUS

Taizo Akimoto; Masahide Akisada; Takatoshi Seiki; Norio Ookawa; Tatsuo Yoshino, and Yuji Takamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 883,221, Jul. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 828,579, Feb. 11, 1986, Pat. No. 4,629,300, which is a continuation of Ser. No. 447,461, Mar. 21, 1983, abandoned. This application Jan. 19, 1988, Ser. No. 147,560

Claims priority, application Japan, Mar. 21, 1982, 57-45305

Int. Cl.[4] G03B *1/00, 29/00*

U.S. Cl. 354—76 19 Claims

1. A separate-exposure photographing system comprising:

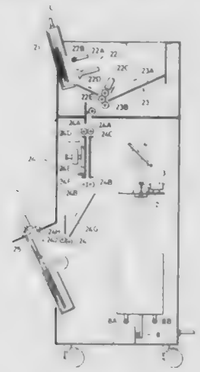
image display means for displaying an image to be photographed;

an optical system for projecting and focusing an image displayed on said image display means on to a film, a photographic lens positioned to received said displayed image, a shutter mechanism to transmit the image focused by said photographic lens and, a single reflecting mirror to project the focused image onto said film, said shutter mechanism comprising a pair of shutter members, a first of said shutter members being normally positioned in an optical path between said lens and said reflecting mirror to block transmission of said focused image and a second of said shutter members being normally positioned outside said optical path and movable a predetermined time following actuation of said first shutter member to block said optical path;

means for horizontally shifting the position of said image display unit and said optical system;

a film feeder for vertically feeding film to be exposed by said optical system, said film feeder comprising a film source magazine for storing a plurality of film units, a temporary

film storage member, and means for removing film from said film source magazine and transferring the film removed from said magazine to said temporary storage member, a film exposure section for receiving said image from said optical system, means for supplying a film unit from said magazine to said exposure section, a film unit



receiver magazine for storing exposed film units, and means for transferring an exposed film unit from said exposure section to said receiver section; and

means for inputting a plurality of photographing conditions for controlling said display means, said photographing conditions including a negative/positive conversion condition, a contrast condition, and a brightness condition.

4,799,073

LENS SHIFTING MECHANISM

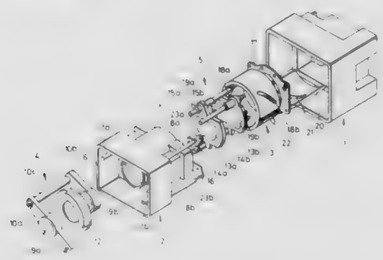
Seiji Asano, and Yasuhiko Tanaka, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 15, 1987, Ser. No. 133,727

Claims priority, application Japan, Dec. 15, 1986, 61-298020; Dec. 15, 1986, 61-298021

Int. Cl.[4] G03B *3/00*; **G02B** *15/00*

U.S. Cl. 354—195.12 10 Claims



1. A lens shifting mechanism incorporated in a camera for shifting a lens system having front and rear lens groups, comprising:

an outer lens barrel fixed to the body of said camera;

an inner lens barrel supported in said outer lens barrel for axial movement relative to said outer lens barrel,

a lens holder in said inner lens barrel holding said front lens group fixedly and said rear lens group movably relative to said inner lens barrel; and

means disposed in said inner lens barrel for causing axial movement of said rear lens group relative to said front lens group as a result of axial movement of said inner lens barrel.

4,799,074

CAMERA

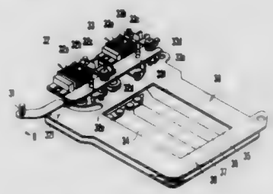
Masaharu Kawamura; Yoshihito Harada; Ryuichi Kobayashi; Masayuki Suzuki, all of Kanagawa; Tsunemasa Ohara, and Yoichi Tosaka, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 839,127, Mar. 12, 1986, abandoned. This application Mar. 3, 1988, Ser. No. 168,583

Claims priority, application Japan, Mar. 15, 1985, 60-053061

Int. Cl.[4] G03B *9/40*

U.S. Cl. 354—173.1 15 Claims



1. A camera comprising:

(a) detecting means for detecting a start of rewinding of a film;

(b) a shutter constructed with a leading blade group and a trailing blade group which are able to open and close an aperture area, said leading blade group being placed at a closed position of said aperture area in an exposure preparatory state and being caused to run from said closed position to an open position by first driving means which is initiated by a release for starting an exposure of said film, while said trailing blade group being placed at an opened position of said aperture area at least immediately before an exposure operation and being caused to run from said opened position to a closed position by second driving means which is initiated after said first driving means has been initiated, thus completing an exposure of said film; and

(c) control means responsive to an output of said detecting means representing an initiation of film rewinding, for running only the trailing blade group, said second driving means causing said trailing blade group of the shutter to run so that said trailing blade group is forced to run to said closed position of the aperture area during the film rewinding thus providing a light shielding for said aperture area.

4,799,075

FILM LOADING DATA DISPLAY DEVICE FOR CAMERA

Seimei Ushiro, Tokyo, and Hiromi Kaneko, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 7, 1986, Ser. No. 894,280

Claims priority, application Japan, Aug. 7, 1985, 60-172403

Int. Cl.[4] G03B *17/18*

U.S. Cl. 354—289.1 3 Claims

1. A film loading date display device for a camera, comprising

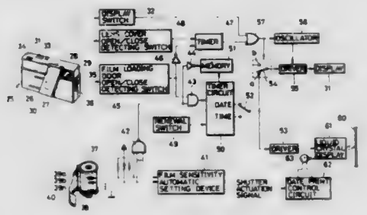
(a) a timer circuit (**50**) for counting current date information;

(b) a memory (**51**) for storing date information;

(c) means for transferring current date information from said timer circuit to said memory when film is loaded into the camera, whereby said memory stores the date on which the film is loaded, said transfer means including

(1) switch means (**45**) connected with a film loading door for producing a first signal when the film loading door is closed;

(2) at least one contact (39) in the film receiving chamber of the camera for producing a second signal when film has been loaded in the camera film chanber; and



(3) logic circuit means (43) connected with said switch means and said contact for activating said timer circuit to transfer current date information to said memory in response to said first and second signals; and

(d) means (31) for displaying said film loading date.

4,799,076

APPARATUS FOR AFFORDING ACCESS TO EXPOSED BUT UNDEVELOPED FILMS IN A DARK CHAMBER

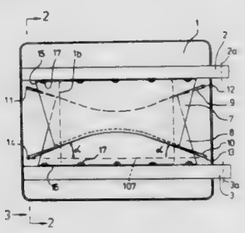
Helmut Zengenfeind, Puchheim; Günther Dünges, Deisenhofen, and Reinhart Würfel, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 21, 1987, Ser. No. 40,868

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, P3611054

Int. Cl.[4] G03D *17/00*

U.S. Cl. 354—308 **15 Claims**



1. Apparatus for manipulating exposed but undeveloped photographic films which are confined in containers, comprising a housing defining an internal chamber arranged to receive containers for undeveloped films and having a window affording access to said chamber; and first and second sealing means for preventing penetration of radiation into said chamber by way of said window, said sealing means being disposed in series and said first sealing means defining at least one sealable path which permits a hand to pass therethrough and to reach said second sealing means, said second sealing means including a curtain having an opaque upper panel and an opaque lower panel, one of aid panels overlying the other of said panels and at least one of said panels being movable by the hand extending along said path to permit entry of the hand into said chamber so that the hand can reach and manipulate, particularly withdraw film from, a selected container, each of said panels having a first marginal portion sealingly affixed to said housing, a second marginal portion and means for biasing the second marginal portion of said overlying panel to a predetermined position in which said panels at least partially overlap each other, the second marginal portion of said overlying panel being movable from said predetermined position against the opposition of said biasing means by the hand which extends along said path so that the hand can enter said chamber between said panels, said biasing means comprising an elongated elastic member having end portions affixed to said housing and second portions adjacent said end portions and flanking the second marginal portion of said one panel.

4,799,077

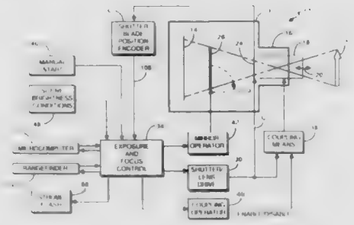
COMMON DRIVE FOR SHUTTER BLADES AND OBJECTIVE LENS ASSEMBLY

Jonathan I. Kaplan, West Newton, and Stephen M. Pero, Medford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 23, 1987, Ser. No. 124,033

Int. Cl.[4] G03B *3/00*

U.S. Cl. 354—400 **16 Claims**



11. A photographic camera comprising:

means defining a focal plane;

an adjustable lens for directing scene light along a given path to said focal plane, said lens including a movable element displaceable over a given operational range for adjustment of said lens to focus an image at said focal plane of a subject at a location determined in accordance with a subject distance signal;

an exposure control mechanism including at least one blade member displaceable over a select path to facilitate control of the passage of scene light to said focal plane;

drive means actuatable for displacing said blade member along its select path;

coupling means operable, responsive to a first signal, for coupling said movable lens element to said blade member for displacement therewith and, reasponsive to a second signal for decoupling said lens element from said blade member;

means for producing said first signal for coupling said lens element to said blade member, and for actuating said drive means for displacement of said blade member along its said select path for movement of said lens element therewith; and

means responsive to said subject distance signal for producing said second signal to decouple said lens element from said blade member when said lens element is displaced to a suitable location for focusing an image of a subject located at a distance represented by said subject distance signal.

4,799,078

CAMERA WITH SHUTTER ACTUATED BY PIEZOELECTRIC ELEMENT AND FLASH LIGHT EMITTING MEANS

Koh Hayama, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 17, 1988, Ser. No. 156,902

Claims priority, application Japan, Feb. 18, 1987, 62-36570

Int. Cl.[4] G03B *7/26, 15/05, 17/38*

U.S. Cl. 354—412 **5 Claims**

1. A camera, comprising:

a single chargeable means;

a boosting means for boosting a voltage of a power source to supply a high voltage to charge said chargeable means;

a piezoelectric actuator element for actuating the shutter of said camera;

a first voltage detecting means for detecting that said chargeable means is charged to a first voltage required to drive said piezoelectric actuator element;

a flash light emitting means;

a second voltage detecting means for detecting that said chargeable means is charged to a second voltage required



to drive said piezoelectric element and cause said flash light emitting means to emit light;

a light measuring means for measuring a brightness of an object; and

a selecting means operable in response to an output of said light measuring means for selecting said first voltage detecting means when the brightness of the object is higher than a predetermined brightness and for selecting said second voltage detecting means when the brightness of the object is lower than the predetermined brightness.

4,799,079

ELECTROSTATIC COPYING APPARATUS CAPABLE OF COPYING ON BOTH SURFACES

Koji Ujino, Osaka, and Tadashi Fujioka, Toyonaka, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 14, 1987, Ser. No. 49,818

Claims priority, application Japan, May 17, 1986, 61-111815; Nov. 21, 1986, 61-276499

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 SH **15 Claims**



1. In an electrostatic copying apparatus capable of both-surface copying and including a main copying system and a document sending device for conveying a document to be copied through an exposure area, said main copying system including copying paper conveying mans defining a copying paper conveying passage, image forming means for forming an image of a document to be copied on copying paper conveyed through said paper conveying passage, copying paper returning means defining a copying paper returing passage for returning copying paper having the image formed on one surface thereof, and paper re-feed means for receiving the copying paper returned through said paper returning passage and feeding it again to said paper conveying passage, the improvement wherein said document sending device comprises:

document feed means for feeding the document toward the exposure area;

document conveying means for conveying the document through the exposure area;

document returning means defining a document returning passage for conducting the document conveyed through the exposure area to the exposure area again; and

said document feed means comprising a document receiving stand for receiving a stack of documents, a first feed means for feeding documents placed on said document receiving stand one at a time from the uppermost document of the stack, and a second feed means for feeding the documents placed on said document receiving stand one at a time from the lowermost document of the stack.

4,799,080

ELECTROPHOTOGRAPHIC COPYING MACHINE HAVING EDITORIAL FUNCTION

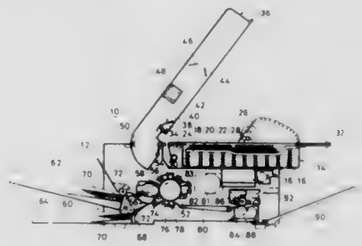
Masakatsu Fujiwara, Hyogo, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Oct. 14, 1986, Ser. No. 918,500

Claims priority, application Japan, Oct. 19, 1985, 60-234332; Nov. 13, 1985, 60-254141; Nov. 18, 1985, 60-258044

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—7 **28 Claims**



1. An electrophotographic copying machine having editorial function comprising:

an original table for placing an original with an original face to be copied facing upward, said original table including supporting means for supporting said original from under its original face, said supporting means being upwardly and downwardly displaceable relative to said original,

a tablet which is composed of a transparent or semitransparent material, and is disposed on said original face of said original placed on said original table, said tablet including a pen movable to specify position on said tablet, said tablet including means for generating positional data representing the position of said pen,

optical scanning means which has a movable light source and is for scanning said original face,

a photosensitive member which is exposed by light from said optical scanning means and forms an electrostatic latent image thereon, and

image forming means for forming a copied image in accordance with positional data from said tablet by means of an electrostatic latent image formed on said photosensitive member and said positional data.

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4,799,081

COPYING SYSTEM HAVING COPYING AND SERVICE PROGRAM MODES

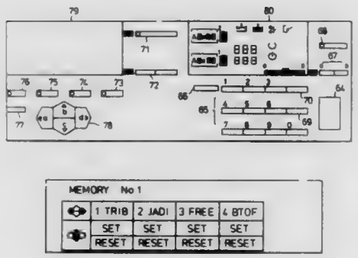
Mitsutoyo Kikuno, Machida; Tatsuo Hirose, Kawasaki; Yoshihiro Nakashima, Tatebi, and Hirobumi Yoshiso, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 24, 1987, Ser. No. 42,448

Claims priority, application Japan, Apr. 28, 1986, 61-100257

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 C **14 Claims**



1. A copying system for copying an image of an original onto a copying paper to make a copy of the original, said copying system having a copying mode for making the copy and a service program mode for adjusting parts of the copying system based on adjusting data, said copying system comprising:

a plurality of keys for selecting modes and for entering data;

input means for inputting the adjusting data for use in adjusting the parts of the copying system in the service program mode, said adjusting data being entered from said keys;

enabling and disabling means for selecting one of the copying and service program modes responsive to a manipulation of at least one of said keys;

service program mode setting means for setting an operation mode of the copying system to the service program mode responsive to a manipulation of at least one of the said keys when enabled by said enabling and disabling means, said enabling and disabling means enabling said service program mode setting means when the service program mode is selected by the keys of said enabling and disabling means and disabling said service program mode setting means when the copying mode is selected by the keys of said enabling and disabling means; and

control means for automatically resetting the adjusting data entered in one or a plurality of predetermined service program modes when the service program mode setting means is disabled by said enabling and disabling means.

4,799,082

ELECTROSTATIC REPRODUCING APPARATUS

Keiichiro Suzuki, 2469, Nagatsuta-Cho, Midori-Ku, Yokohama-Shi, Kanagawa, Japan

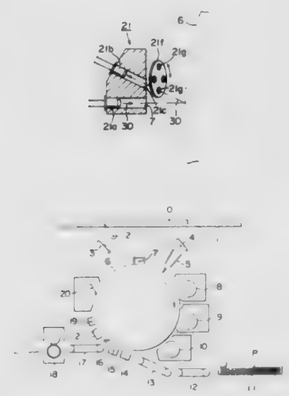
Continuation of Ser. No. 696,319, Jan. 30, 1985, abandoned. This application Mar. 18, 1987, Ser. No. 28,016

Claims priority, application Japan, Feb. 2, 1984, 59-15998; Jan. 29, 1984, 59-134505; Jan. 29, 1984, 59-134507; Nov. 22, 1984, 59-247372

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R **17 Claims**

1. In an electrostatic reproducing apparatus in which a plurality of color toners are employed and which comprises means for detecting paper jamming on an image retainer, said detecting means comprising a light source directing a light onto said image retainer and a light receiving means, the improvement characterized in that said light source emits a light



which does not contain a substantial spectral component having a high reflectance for any of said color toners.

4,799,083

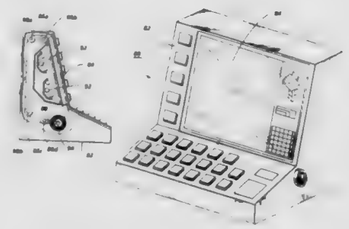
MACHINE-OPERATOR INTERFACE METHODS

Ruediger W. Knodt, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 22, 1987, Ser. No. 64,726

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R **1 Claim**



1. In a reproduction machine, a control panel having a display area for displaying information for operating the machine comprising:

a housing supporting the control panel,

a plurality of rolls, the rolls being secured to the housing for rotating therein,

a scroll, the scroll being entrained about the rolls and having a plurality of segmented sections, each of the sections providing machine control information,

illuminating means disposed within the housing, the illuminating means being positioned to project light toward the display area, a portion of the scroll being disposed intermediate the illuminating means and the display area,

scrolling means connected to scroll to sequentially position each of the segmented sections in the display area to progressively and selectively prompt the operator in machine operation and

a take-up roll, said take-up roll cooperating with said plurality of rolls to expand the number of said segmented sections.

4,799,084

IMAGE FORMING APPARATUS

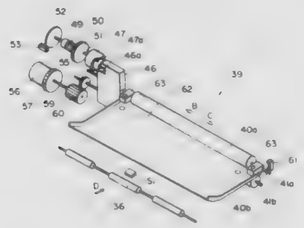
Michiro Koike, Kawasaki; Takashi Ozawa, Ichikawa; Yasuyoshi Yamamoto, Tokyo; Masashi Ohashi, Tokyo; Akiyoshi Kimura, Tokyo; Nobukazu Sasaki, Tokyo; Toshirou Kasamura, Yokohama; Atsushi Kubota, Machida; Tatsuya Shiratori, Yokohama, and Toshihiko Kuzumoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1986, Ser. No. 848,388

Claims priority, application Japan, Apr. 9, 1985, 60-74967; Apr. 10, 1985, 60-77314

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 SH **32 Claims**



1. An image forming apparatus, comprising:

an image forming station for conveying a sheet material along a stationary lateral reference position and for forming an image on the sheet material;

refeeding means for refeeding to said image forming station the sheet material on which the image has been formed in said image forming station;

means, provided in said sheet refeeding means, for shifting the sheet material in the lateral direction from the stationary lateral reference position by a predetermined amount, wherein the amount of the shift is predetermined on the basis of a change in a lateral dimension of the sheet material resulting from an image forming operation in said image forming station.

4,799,085

IMAGE RECORDING APPARATUS AND METHOD

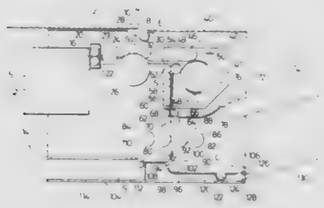
Akihiko Nagumo; Minoru Ishikawa, and Ken Kawada, all of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 3, 1987, Ser. No. 33,936

Claims priority, application Japan, Apr. 3, 1986, 61-77198; Apr. 16, 1986, 61-87701; Oct. 20, 1986, 61-248974

Int. Cl.[4] G03B *27/72*

U.S. Cl. 355—27 **12 Claims**



1. An image recording apparatus which employs a photo- and pressure-sensitive heat-developable material having a substrate and a layer formed on said substrate from a material which is photosensitive and heat-developable and which enables the developed image to be fixed by heat and pressure, said photosensitive material being adapted to be exposed and heated for development of the image formed by the exposure followed by pressurizing and heating for the purpose of fixing the developed image, at least part of said material being contained in common microcapsules, said apparatus comprising:

exposure means for exposing said photosensitive and pressure sensitive developable material to an original image to form a latent image on the surface of said photosensitive and pressure sensitive developable material;

heating developing means for setting the portion of said photosensitive and pressure-sensitive developable material carrying said latent image so as to produce a developed image;

a pair of pressing rolls for subjecting said photosensitive material to a sufficient pressure to rupture said common microcapsules; and

heating means for heating said pressing rolls.

4,799,086

TONER LAYER FORMING DEVICE

Ikuo Mori, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1987, Ser. No. 14,254

Claims priority, application Japan, Feb. 19, 1986, 61-32819

Int. Cl.[4] G03G *15/09*

U.S. Cl. 355—3 DD **14 Claims**



1. A toner layer forming device for an electrostatic image reproduction machine having a photosensitive latent image carrier, comprising:

fixed magnetic means including a plurality of spaced poles of opposite polarity;

non-magnetic sleeve means including a developing surface rotatable about the magnetic means for carrying a thin layer of toner particles and for transferring a portion of the layer to the carrier;

toner supply means for supplying a layer of toner particles onto the surface of the sleeve means;

pretrimming means for reducing the thickness of the layer of toner supplied to the sleeve means by the supply means upon rotation of the sleeve means, said layer of toner being reduced by said pretrimming means to a first selected thickness; and

restriction member means braced against the surface of the sleeve means for frictionally charging the toner particles on the surface, and for further reducing the thickness of the toner layer to a second selected thickness of predetermined value less than said first selected thickness for transfer to the carrier.

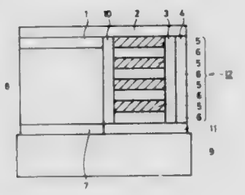
VOL 1098 ISS 3 JA 17 1989 UMI

4,799,087

FIELD EFFECT TRANSISTOR

Takao Matsuyama; Hisaki Tarui, both of Hirakata; Shinya Tsuda, Yawata; Shoichi Nakano, Hirakata, and Yukinori Kuwano, Katano, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jul. 10, 1987, Ser. No. 72,180
Claims priority, application Japan, Jul. 22, 1986, 61-172087
Int. Cl.[4] H01L *27/12*
U.S. Cl. 357—4 5 Claims



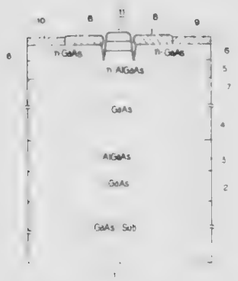
1. A field effect transistor comprising:
a source electrode,
a drain electrode,
a channel layer between said source electrode and said drain electrode,
a gate electrode for controlling electric current in said channel layer, and
a superlattice layer between said channel layer and said gate electrode, said superlattice layer including a plurality of constituent thin layers perpendicular to a direction of electric current in said channel layer.

4,799,088

HIGH ELECTRON MOBILITY SINGLE HETEROJUNCTION SEMICONDUCTOR DEVICES AND METHODS FOR PRODUCTION THEREOF

Satoshi Hiyamizu, Tokoyo, and Toshio Fujii, Kanagawa, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 27, 1981, Ser. No. 286,863
Claims priority, application Japan, Jul. 28, 1980, 55-103422
Int. Cl.[4] H01G *29/161*
U.S. Cl. 357—16 10 Claims



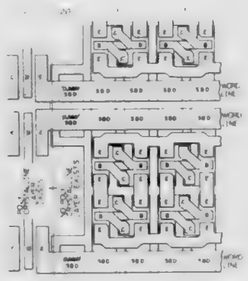
1. A high electron mobility heterojunction semiconductor device comprising:
a semi-insulating GaAs substrate;
an undoped AlGaAs layer grown on the semi-insulating GaAs substrate;
a GaAs layer grown on said undoped AlGaAs layer, said GaAs layer having a low N-type impurity concentration;
a N-type AlGaAs layer grown on said GaAs layer, and defining a heterojunction between said GaAs layer and said N-type AlGaAs layer;
at least one gate electrode formed on said N-type AlGaAS layer; and
a pair of source and drain electrodes arranged flanking said at least one gate electrode.

4,799,089

SEMICONDUCTOR MEMORY DEVICE

Hiroyuki Fukuma, and Masashi Sato, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 798,282, Nov. 15, 1985, abandoned. This application Feb. 4, 1988, Ser. No. 159,417
Claims priority, application Japan, Nov. 20, 1984, 59-243304
Int. Cl.[4] H01L *27/10, 27/15*
U.S. Cl. 357—45 7 Claims



4. A semiconductor memory cell device comprising:
a semiconductor substrate;
a plurality of bit lines;
a plurality of memory cells provided on a surface of said semiconductor substrate and separated from each other by an isolation region and connected to said plurality of bit lines, each of said memory cells including a transistor region and a load region, transistors in said transistor region being connected to said bit lines;
word drivers provided on the surface of said semiconductor substrate in a portion of the region in which said memory cells are formed;
word line layers, formed on the surface of said semiconductor substrate and extending along said load region, each of said word line layers connected to said respective word drivers and connected to said load region for forming Schottky barrier diodes; and
dummy Schottky barrier diode regions, provided between each of said memory cells and said word drivers, and operatively connected to said word line layers, for forming dummy Schottky barrier diodes for limiting a forward voltage of said Schottky barrier diodes in said load region.

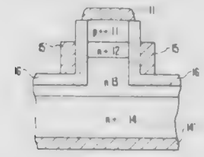
4,799,090

TUNNEL INJECTION CONTROLLING TYPE SEMICONDUCTOR DEVICE CONTROLLED BY STATIC INDUCTION EFFECT

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed Oct. 23, 1981, Ser. No. 314,496
Claims priority, application Japan, Oct. 28, 1980, 55-151849
Int. Cl.[4] H01L *29/88, 29/36, 29/20*
U.S. Cl. 357—12 27 Claims

1. A tunnel injection controlling type semiconductor device, comprising:
a highly-doped source semiconductor region having a first conductivity type for supplying carriers;
a highly-doped drain semiconductor region having a second conductivity type opposite to said first conductivity type for receiving said carriers;
a channel semiconductor region having said second conductivity type disposed between said source region and said drain region in which the portion adjacent to said source



region is highly-doped and the carrier concentration of the remaining part is lower than in said highly-doped portion of said channel region; and
a gate provided on said device for controlling tunnel current flow from said source region to said drain region.

4,799,091

QUANTUM DEVICE OUTPUT SWITCH

Mark A. Reed, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 626,806, Jul. 2, 1984, Pat. No. 4,581,621. This application Apr. 4, 1986, Ser. No. 848,674
The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.
Int. Cl.[4] H01L *29/225, 29/76, 29/88*
U.S. Cl. 357—12 7 Claims



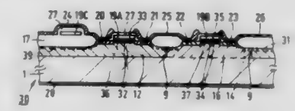
1. An electronic device comprising:
a plurality of quantum wells positioned and connected to embody a desired circuit function with tunneling barriers between adjacent ones of said wells;
a set of at least one trapping site, all of said at least one trapping sites within tunneling distance of an adjacent trapping site (if any) and a first of said at least one trapping sites within tunneling distance of one of said wells;
a high conductivity region passing near one of said at least one trapping sites and having cross-sectional dimensions thereat that confine carriers moving along said high conductivity region to the scattering range of a carrier confined to said one of said at least one trapping sites; and
a resistance sensor connected to said high conductivity region;
whereby the presence or absence of a carrier trapped in said one of said at least one trapping sites is detected by said resistance sensor as a change in the resistance of said high conductivity region.

4,799,092

INTEGRATED CIRCUIT COMPRISING COMPLEMENTARY FIELD EFFECT TRANSISTORS

Francois M. Klaassen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 052,129, May 1, 1987, abandoned, which is a continuation of Ser. No. 656,623, Oct. 1, 1984, abandoned. This application Nov. 5, 1987, Ser. No. 119,291
Claims priority, application Netherlands, Oct. 7, 1983, 8303441
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.12 8 Claims



1. An integrated circuit comprising a semiconductor body having a major surface, plural circuit elements located at said surface, the semiconductor body comprising, near the major surface, a first substrate region of a first conductivity type and a second substrate region of a second conductivity type, at least a first field effect transistor, the first substrate region comprising a source and a drain zone of the second conductivity type of said at least first field effect transistor, a first insulating layer, a first channel region extending between said source and drain zones and at the major surface being covered by said first insulating layer, a first gate electrode comprising semiconductor material on said first insulating layer, at least a second field effect transistor, the second substrate region comprising a source and a drain zone of the first conductivity type of said at least second field effect transistor, a second insulating layer, a second channel region extending between said source and drain zones and at the major surface being covered by said second insulating layer, and a second gate electrode comprising semiconductor material on said second insulating layer, the semiconductor material of the first gate electrode and the semiconductor material of the second gate electrode being of opposite conductivity types to each other, a thin surface layer in each of the first and second channel regions, located between and adjoining said source and drain zones and adjoining the insulating layer, which surface layers are each of the same conductivity type as the adjoining source and drain zones, the maximum doping level of said thin surface layers being sufficiently low such that said first and second field effect transistors are both of the normally-off depletion type, the minimum doping level per unit surface area in each of the thin surface layers being at least equal to the quantity of charge per unit surface area in the part of the channel region which is depleted if a voltage equal to the threshold voltage of the associated field effect transistor is applied to the associated gate electrode with respect to the source and drain zones of said associated field effect transistor and which adjoins the surface layer.

4,799,093

SEMICONDUCTOR MEMORY DEVICE HAVING A MOS TRANSISTOR AND SUPERPOSED CAPACITOR

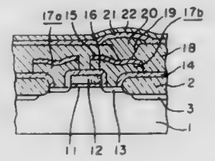
Masanobu Kohara, and Hiroshi Shibata, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 313,248, Oct. 21, 1981. This application May 22, 1984, Ser. No. 611,929
Claims priority, application Japan, Jan. 17, 1981, 56-6607
Int. Cl.[4] H01L *29/78, 27/02, 29/34, 23/48*
U.S. Cl. 357—23.6 5 Claims

1. A semiconductor memory device comprising:
a semiconductor substate of a first conductivity type having a surface;
an MOS transistor formed on said surface including a gate of

a thin oxide layer formed on said surface as polysilicon gate electrode located on said gate, source and drain regions of high impurity concentrations of a second conductivity type located within said surface, a first oxide layer located over said source region, said drain regions, said gate and said gate electrode, said first oxide layer having a contact hole over each of said source region and said drain region, a source electrode and a drain electrode being located on said first oxide layer and through said contact holes in electrical communication with said source and drain regions, respectively;

a second oxide layer located on said first oxide layer, said source electrode and said drain electrode, and having a through-hole with slanted sides over one of said source electrode and said drain electrode, said second oxide layer having a thickness of 2 μm or more so as to diminish a floating capacitance;



a first conductive layer connected to one of said source electrode and said drain electrode through said through-hole and extending on the surface of said second oxide layer so that the area of said first conductive layer on said surface of said second oxide layer is larger than the area of said first conductive layer where it contacts said one of said source electrode and said drain electrode;

a dielectric layer formed on the surface of said first conductive layer and on the surface of said second oxide layer;

a second conductive layer formed on said dielectric layer and over the area covered by said first conductive layer;

wherein said first conductive layer, said dielectric layer and said second conductive layer form a capacitor; and

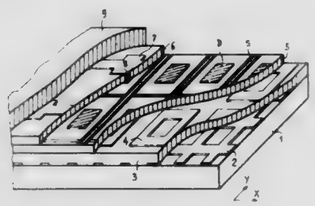
wherein said capacitor is located at least partially above said MOS transistor.

4,799,094

LARGE-FORMAT PHOTOSENSITIVE DEVICE AND A METHOD OF UTILIZATION

Henri Rougeot, St. Nazaire Les Eymes, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 16, 1985, Ser. No. 809,508
Claims priority, application France, Dec. 27, 1984, 84 19919
Int. Cl.⁴ H01L *27/14*
U.S. Cl. 357—30 **15 Claims**



1. A large-format photosensitive device, wherein said device comprises:

a semiconductor substrate of n-doped hydrogenated amorphous silicon, said substrate having a first face and a second face;

the first face of said semiconductor substrate supporting in turn the following superposed elements:

a first array of conductive pads of substantially rectangular shape with a central opening, which are arranged in rows and columns, said pads being formed of material which forms a rectifying junction with the semiconductor substrate for serving as a floating grid;

a layer of insulating material; and

a conductive network capacitively coupled to the conductive pads for forming a control grid;

the second face of said semiconductor substrate supporting in turn the following superposed elements:

a second array of conductive pads serving as drains which are located opposite the central openings of the first array of conductive pads and and a plurality of ladder-shaped electrodes serving as sources which circumscribe the drains and are disposed in columns; and

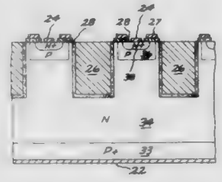
connections between the drains of a common row of all the columns of the array.

4,799,095

METAL OXIDE SEMICONDUCTOR GATED TURN OFF THYRISTOR

Bantval J. Baliga, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 6, 1987, Ser. No. 69,806
Int. Cl.⁴ H01L *29/74, 29/78, 29/06, 27/02*
U.S. Cl. 357—38 **25 Claims**



1. In a thyristor containing therein a plurality of semiconductor regions forming two, merged, but separately identifiable bipolar transistors, the collector of one transistor being coupled to the base of the second transistor and the base of the one transistor being coupled to the collector of the second transistor, the improvement comprising:

insulated gate means coupled to the base of one of said two bipolar transistors for interrupting the current path in the base of said one of said two bipolar transistors.

4,799,096

MONOLITHIC INTEGRATED CIRCUIT COMPRISING CIRCUIT BRANCHES PARALLEL TO ONE ANOTHER

Siegmar Koeppe, Lautzen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 3, 1987, Ser. No. 56,882
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1986, 3619064
Int. Cl.⁴ H01L *27/02, 27/10, 29/78*
U.S. Cl. 357—42 **5 Claims**

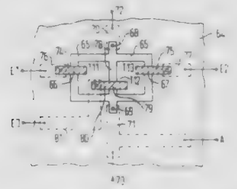
1. A monolithic integrated circuit comprising:

first and second circuit points;

at least two circuit branches extending parallel to one another between and connected to said first and second circuit points and each comprising a field effect transistor including a source, a drain and a gate;

each of said branches including self-contained, strip-shaped connecting zones each of which is interrupted only in the channel regions of said field effect transistors; and

a further strip-shaped connecting zone connected between said first and second circuit points and including a further field effect transistor including a source, a drain and a



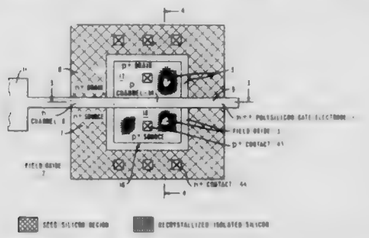
gate, said further strip-shaped connecting zone interrupted only in the channel region of said further field effect transistor.

4,799,097

CMOS INTEGRATED DEVICES IN SEEDED ISLANDS

Nicholas J. Szluk, and Jay T. Fukumoto, both of Albuquerque, N. Mex., assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 29, 1987, Ser. No. 78,959
Int. Cl.⁴ H01L *29/78, 27/02, 29/04*
U.S. Cl. 357—42 **8 Claims**



1. An integrated circuit structure having a first and second dielectrically separate field effect transistors on a common substrate, comprising:

a field dielectric region in the substrate;

a first active region of monocrystalline semiconductor substrate concentrially disposed about the dielectric region;

a second active region of recrystallized semiconductor disposed over the dielectric region; and

a gate electrode extending over the first and the second active regions to define within such first and second active regions respective first and second channel regions, and respective first and second source/drain regions bordering the first and second channel regions.

4,799,098

MOS/BIPOLAR DEVICE WITH STEPPED BURIED LAYER UNDER ACTIVE REGIONS

Takahide Ikeda, Tokorozawa; Atsuo Watanabe, Hitachiohta; Touji Mukai, Sanda; Masanori Odaka, Kodaira, and Katsumi Ogiue, Hinode, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 682,004, filed as PCT JP84/00133 on Mar. 26, 1984, published as WO84/03996 on Oct. 11, 1984, abandoned.
This application Apr. 10, 1987, Ser. No. 37,123
Claims priority, application Japan, Mar. 28, 1983, 58-53077
Int. Cl.⁴ H01L *27/02*
U.S. Cl. 357—43 **14 Claims**

1. A semiconductor device comprising:

a semiconductor substrate having a major surface, and comprising a semiconductor body having an N-type semiconductor epitaxial layer thereon, said epitaxial layer having a relatively low impurity concentration, a surface of the epitaxial layer forming the major surface;

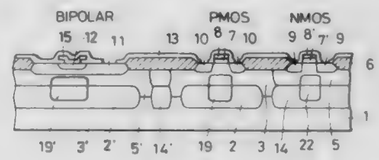
a vertical type NPN bipolar transistor formed in said epitaxial layer, said vertical type NPN bipolar transistor including a base, an emitter and a collector;

a P-channel MOS field-effect transistor formed in the epitaxial layer and adjacent to said vertical type NPN bipolar transistor, said P-channel MOS field-effect transistor including a source, a drain and a gate;

an N-channel MOS field-effect transistor formed in a P-type well of a low impurity concentration provided adjacent to said P-channel MOS field-effect transistor, said N-channel MOS field-effect transistor including a source, a drain and a gate;

first N-type buried layers, each having a relatively high impurity concentration, respectively formed in said semiconductor substrate under the base of said vertical type NPN bipolar transistor, and spaced from said base by a portion of the epitaxial layer, and formed under the P-channel MOS field-effect transistor, and spaced therefrom by a portion of the epitaxial layer;

a first P-type buried layer, having a relatively high impurity



concentration, formed in said semiconductor substrate under said N-channel MOS field-effect transistor and adjacent to said P-type well; and

second N-type buried layers, each having a relatively high impurity concentration, respectively formed in said semiconductor substrate under said emitter of said vertical type NPN bipolar transistor, and under the gate, and below the source and drain, of said P-channel MOS field-effect transistor, overlapping respectively in part with said first N-type buried layers and facing respectively to the emitter of said vertical type NPN bipolar transistor and the gate of said P-channel MOS field-effect transistor, the second N-type buried layers having a portion of the epitaxial layer between the respective second N-type buried layer and the base of the vertical type NPN bipolar transistor and the P-channel MOS field-effect transistor, the respective depth to said second N-type buried layers from the major surface of said semiconductor substrate being shallower than the depth to said first N-type buried layers from the major surface of said semiconductor substrate.

4,799,099

BIPOLAR TRANSISTOR IN ISOLATION WELL WITH ANGLED CORNERS

Douglas P. Verret, Sugar Land; Jeffrey E. Brighton, Houston; Deems R. Hollingsworth, Missouri City, and Manuel L. Torreno, Jr., Harris, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

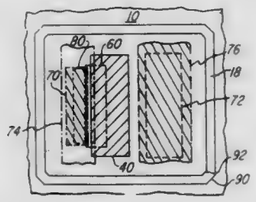
Continuation-in-part of Ser. No. 824,388, Jan. 30, 1986, abandoned. This application Nov. 19, 1986, Ser. No. 932,752
Int. Cl.⁴ H01L *27/04, 29/70, 29/46*
U.S. Cl. 357—50 **19 Claims**

1. A bipolar transistor formed on a face of a semiconductor body, comprising:

local isolation formed at said face to define spaced apart emitter-base and collector contact areas for said transistor, an extrinsic base region doped with impurity of a first conductivity type formed in a portion of said emitter-base area;

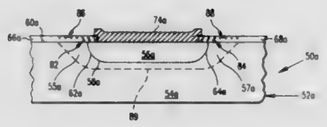
a conductive base contact layer formed over said local isolation and contacting said extrinsic base region, said base contact layer doped with the same impurity as the extrin-

sic base region and having a non-conductive spacer formed over a sidewall thereof to overlap said emitter-base area;
an intrinsic base region in said emitter-base area contiguous to said extrinsic base region;
an emitter region doped with impurity of a second conductivity type formed within said intrinsic base region, said emitter region having an edge adjacent to said extrinsic base region and aligned with an edge of said spacer;



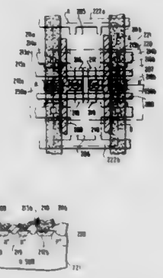
an emitter contact to said emitter region and separated from the base contact layer by the non-conductive spaces, said emitter contact doped with the same impurity as the emitter region; and
isolation means at least partly enclosing said transistor, and comprising a trench extending from said face into the semiconductor body, said trench, viewed in plan, having corners which are angled so that the trench has a substantially constant width.

4,799,100
METHOD AND APPARATUS FOR INCREASING BREAKDOWN OF A PLANAR JUNCTION
Richard A. Blanchard, Los Altos, and Adrian I. Cogan, San Jose, both of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.
Filed Feb. 17, 1987, Ser. No. 14,961
Int. Cl.[4] H01L *29/12, 29/40*
U.S. Cl. 357—52 **23 Claims**



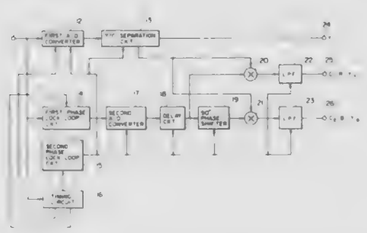
1. A semiconductor device comprising a substrate having a region of first conductivity type and a region of second conductivity type, together forming a junction which extends to a surface of the substrate;
an oxide layer portion on the surface of the substrate and covering the junction at the surface; and
a charged ion region in said oxide layer extending generally from adjacent to the junction at the surface of the substrate over a portion of the region of first conductivity type, the polarity of the ions in said ion region being the same as the polarity of the region of first conductivity type, wherein the charged ion region in said oxide layer is of greater concentration in a first portion thereof than in a second portion thereof.

4,799,101
SUBSTRATE BIAS THROUGH POLYSILICON LINE
Hirotaga Eguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 689,886, Jan. 9, 1985, which is a continuation of Ser. No. 579,283, Feb. 14, 1984, which is a continuation of Ser. No. 265,003, May 20, 1981. This application Dec. 23, 1986, Ser. No. 946,151
Claims priority, application Japan, May 16, 1980, 55-64752
Int. Cl.[4] H01L *29/46, 29/66, 29/90*
U.S. Cl. 357—59 **3 Claims**



1. A semiconductor integrated circuit, comprising:
a semiconductor substrate region of a first conductivity type said semiconductor substrate region having no ohmic contact through which any fixed voltage is applied thereto,
a first region, of said first conductivity type and of an impurity concentration higher than that of said substrate region, formed in said substrate region,
a polycrystalline silicon layer of a second conductivity type directly contacted to a surface of said first region with a reverse biased PN junction therebetween, and
means for supplying said polycrystalline silicon layer with a predetermined voltage to thereby continuously maintain said substrate region at said predetermined voltage through a leakage path of said reverse biased PN junction.

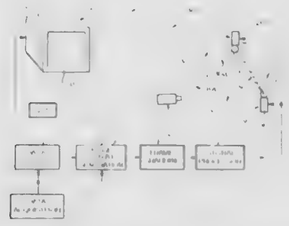
4,799,102
DIGITAL COLOR DEMODULATOR
Reiichi Kobayashi, Osaka, Japan, assignor to NEC Home Electronics Ltd., Osaka, Japan
Filed Aug. 26, 1987, Ser. No. 89,392
Claims priority, application Japan, Aug. 26, 1986, 61-199393; Oct. 7, 1986, 61-153214
Int. Cl.[4] H04N *9/64*
U.S. Cl. 358—23 **15 Claims**



1. A demodulator for a color composite video signal comprising:
means, receiving an analog composite video signal, for generating an internal system clock, phase-locked to a horizontal period of said analog composite video signal;
means, receiving said analog composite video signal, and synchronized to said internal system clock, for generating a digital luminance signal and a digital color signal modulated by a color subcarrier signal from the analog composite video signal;
means, receiving the analog composite video signal, synchronized to said internal system clock, for generating a digital subcarrier signal directly from the analog composite video signal; and
means, synchronized to said internal system clock, for orthogonally demodulating color difference signals based on said digital subcarrier signal and said digital color signal

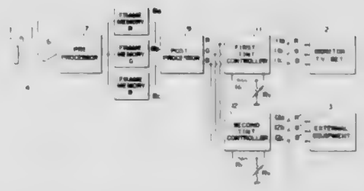
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4,799,103
THREE-DIMENSIONAL LASER DRIVEN DISPLAY APPARATUS
Myron C. Muckerheide, Port Washington, Wis., assignor to Seton Health Care Foundation, Milwaukee, Wis.
Filed Oct. 10, 1986, Ser. No. 917,493
Int. Cl.[4] H04N *13/02*
U.S. Cl. 358—88 **24 Claims**



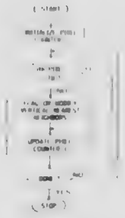
1. A three-dimensional laser driven display apparatus for the controlled projection, display and manipulation of laser generated images towards the creation of a three dimensional display, said three-dimensional display apparatus comprising:
image signal generation means for producing image control signals which correspond to said laser generated image to be displayed;
raster generation means operably and electrically connected to said image signal generation means, said raster generation means operating as a function of said image control signals produced by said image signal generation means to cause said laser generated image to be spatially encoded, said raster generation means thereby reflecting said spatially encoded laser generated image in a raster scanned pattern towards the formation of said complete three-dimensional display;
laser means for generating a coherent beam of light which is projected upon said raster generation means and reflected by said raster generation means towards the formation of said three-dimensional display;
varifocal mirror means upon which said spatially encoded laser generated image is reflected after being reflected by said raster generation means, said varifocal mirror means serving to, in turn, reflect and project said three-dimensional display such that said three-dimensional display is viewable in space standing off of the surface of said varifocal mirror means,
said varifocal mirror means including a reflective plate means and a motion control means where said reflective plate means is moved about an axis perpendicular to the plane formed by said reflective plate means, the movement of said reflective plate means being controlled by said motion control means such that said reflective plate means sweeps out an image space whereby said spatially encoded laser generated image projected thereon appears in successive planes as a function of the position of said reflective plate means at each instant in time thus spatially decoding said spatially encoded laser generated image to create said three-dimensional display.

4,799,104
VIDEO SIGNAL PROCESSOR FOR ENDOSCOPE
Takamasa Hosoya, Hachioji, and Kenji Kimura, Tachikawa, both of Japan, assignors to Olympus Optical Co., Ltd., Japan
Filed Dec. 14, 1987, Ser. No. 132,151
Claims priority, application Japan, Dec. 19, 1986, 61-303214; Dec. 22, 1986, 61-305691; Oct. 22, 1987, 62-267348
Int. Cl.[4] A61B *1/04, 1/06*; H04N *7/18*
U.S. Cl. 358—98 **15 Claims**



1. A video signal processor for endoscope comprising
means for converting a picture signal of an image being observed such as that of a coeloma into a television video signal;
output means in at least two systems for delivering the television video signal from the converting means;
and tint controlling means for allowing the tint of the television video signal of at least one system to be controlled either internally or externally and independently from the tint of the other system.

4,799,105
MODIFIED TECHNIQUE FOR SUPPRESSION OF FLICKER IN INTERLACED VIDEO IMAGES
Joan L. Mitchell, Ossining, and William B. Pennebaker, Carmel, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 589,603, Mar. 14, 1984, abandoned. This application Sep. 16, 1987, Ser. No. 97,371
Int. Cl.[4] H04N *5/14*
U.S. Cl. 358—160 **12 Claims**



1. A method for suppressing the perception of flicker in interlaced video images, comprising the steps of:
testing, each pixel in an image, for an intensity value;
comparing said intensity values to a first predetermined threshold value;
modifying, for only those tested pixels with an intensity value below said first predetermined threshold value, and intensity value representation for each nearest neighbor

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pixel along a first axis of said interlaced image having an intensity value exceeding a second predetermined threshold value greater than said first predetermined threshold value; and

displaying, on a video display device, an interlaced image generated by said steps of testing, comparing, and modifying, having a suppressed perception of flicker.

4,799,106

CONTROLLING IMAGE SIGNALS IN AN IMAGING APPARATUS

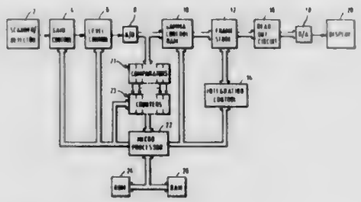
William T. Moore, Buckhurst Hill, and Kenneth J. Wallace, Woodford Green, both of United Kingdom, assignors to Rank Pullin Controls Limited, Loughton, England

Filed Aug. 19, 1986, Ser. No. 897,858

Claims priority, application United Kingdom, Aug. 22, 1985, 8521019

Int. Cl.⁴ H04N *5/235, 5/57*

U.S. Cl. 358—168 **18 Claims**



1. Imaging apparatus comprising:

means for producing electrical image signals of a given level representing a brightness for each of a number of pixels in a scene;

means for controlling the level of said signals;

digital means for determining if there is a difference between the number of said pixels in a high brightness band and the number thereof in a low brightness band; and

feedback means responsive to said difference for adjusting said level control means at least to reduce said difference.

4,799,107

AUXILIARY GAIN CONTROL APPARATUS FOR A TELEVISION RECEIVER

John W. Stoughton, Indianapolis, and Charles B. Neal, Zionsville, both of Ind., assignors to RCA Licensing Corporation, Princeton, N.J.

Filed Apr. 6, 1987, Ser. No. 34,444

Int. Cl.⁴ H04N *5/208, 5/57*

U.S. Cl. 358—169 **6 Claims**

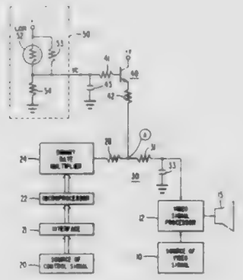
1. In a video signal processing system including an image display device having a viewing screen, apparatus comprising:

video signal processing means having a signal input for receiving a video signal, a control input for receiving a gain control signal to control the magnitude of said video signal, and an output coupled to said image display device;

translating means responsive to a clock timing signal and responsive to an input binary signal representative of a desired magnitude of said video signal, for providing at an output an output binary signal with a substantially constant amplitude and with a duty factor determined by said input binary signal, said duty factor representing a DC value of said output binary signal;

means for conveying a DC signal derived from said output binary signal to said control input of said video signal processing means;

ambient light responsive variable conduction means positioned with respect to said viewing screen such that substantially proportional amounts of ambient light strike said ambient light responsive means and said viewing screen; and



means for coupling said ambient light responsive means to said output of said translating means without influencing said input binary signal, for modifying said DC signal in response to ambient light conditions.

4,799,108

METHOD OF RECORDING AND STORING IMAGES IN RAPID SEQUENCE

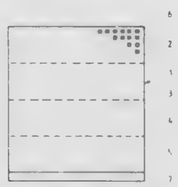
Rudolf Gerner, Berlin, Fed. Rep. of Germany, assignor to KAPPA messtechnik GmbH, Gleichen-Reinhausen, Fed. Rep. of Germany

Filed Aug. 19, 1987, Ser. No. 86,965

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1986, 3628147

Int. Cl.⁴ H04M *3/14*

U.S. Cl. 358—213.26 **6 Claims**



1. Method of recording and storing pictures in rapid sequence comprising the steps of: imaging the pictures by an optical system on a recording surface of a CCD picture recorded operating on the frame-transfer principle; transferring the imaged pictures in form of charge pictures into a memory of the CCD picture recorder; reading out the pictures from said memory line-by-line by a register; dividing the surface of the CCD picture recorder into a recording area and a memory area; subdividing the surface of the CCD picture recorder into a smaller subsidiary recording area and at least two subsidiary memory areas; transferring one picture in separate steps from said subsidiary recording area through said subsidiary memory areas in sequence and imaging every subsequent picture in the subsidiary recording area as said subsequent picture becomes free; and transferring said subsequent picture in separate steps to a respective subsidiary memory area as said subsequent picture becomes free until all the subsidiary areas of the CCD picture recorder are completely charged.

4,799,109

CHARGE COUPLED SENSOR ARRANGEMENT

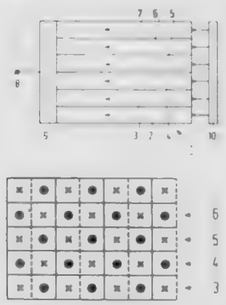
Leonard J. M. Esser, and Marcellinus J. M. Pelgrom, both of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 824,029, Jan. 30, 1986, abandoned. This application Jan. 27, 1988, Ser. No. 149,981

Claims priority, application Netherlands, Feb. 7, 1985, 8500337

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213.28 **5 Claims**



1. A charge coupled line transfer image sensor having improved resolution comprising:

a semiconductor body;

a plurality of adjacent parallel charge coupled devices formed at a surface of said body, each device of said plurality of devices forming a line of spaced-apart photosensitive elements;

a plurality of electrodes, each electrode associated with one of n-phases at a time, each photo-sensitive element lying at least partially under electrodes associated with a first phase and another phase;

means for selectively biasing the electrodes associated with said first phase during recording of a radiation image in a first mode selectively to create potential barriers in the body under said electrodes associated with the first phase between adjacent photo-sensitive elements in said line or in a second mode to create potential barriers in the body between said electrodes associated with said first phase whereby adjacent photosensitive elements can be selectively laterally shifted to improve the resolution of the image sensor.

4,799,110

IMAGE SIGNAL CODING APPARATUS

Katsutoshi Hisada; Nobuaki Kokubu, both of Tokyo; Shigeki Sakurai, Yokohama; Yukio Murata, Kawasaki, and Tatsuo Okano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1986, Ser. No. 888,493

Claims priority, application Japan, Aug. 2, 1985, 60-170803; Aug. 2, 1985, 60-170804; Aug. 2, 1985, 60-170805; Aug. 2, 1985, 60-170806; Aug. 2, 1985, 60-170807; Aug. 2, 1985, 60-170808; Aug. 2, 1985, 60-170809; Aug. 2, 1985, 60-170810

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—261.3 **45 Claims**

1. An image signal coding apparatus comprising:

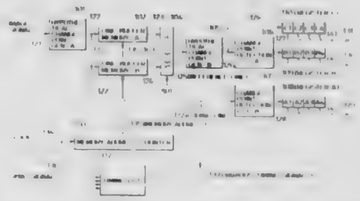
receiving means for receiving a serial reference line image signal in synchronism with a serial coding line image signal;

first converting means for inputting serial change point data representing a change point in the reference line image signal received by said receiving means and outputting parallel reference line change point data;

second converting means for receiving serial change point data representing a change point in the coding line image signal and outputting parallel coding line change point data;

means for monitoring output states of said first and second converting means;

means for counting the number of pixels between the change points in the coding line image signal; and



coding means for coding the coding line image signal in response to outputs from said monitoring means and said counting means.

4,799,111

VIDEO SIGNAL RECORDING AND/OR REPRODUCING APPARATUS WITH A FUNCTION FOR RE-RECORDING A SEARCH CONTROL-INDEX SIGNAL

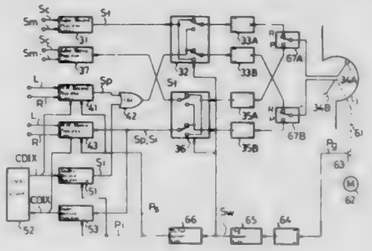
Yuji Ito, Kanagawa, Japan, assignor to Sony Corp., Tokyo, Japan

Filed Oct. 26, 1987, Ser. No. 112,513

Claims priority, application Japan, Oct. 27, 1986, 61-254968

Int. Cl.⁴ H04N *5/782*; G11B *27/30*

U.S. Cl. 360—14.3 **6 Claims**



1. An apparatus for recording and/or reproducing, in successive slant tracks on a record tape, an information signal comprised of at least an audio signal and an index signal for use in controlling transportation of the tape, comprising:

audio signal processing means for converting an input audio signal to a digitized form in which the audio data for a predetermined length of time is grouped as a plurality of data blocks;

transducer means scanning said successive slant tracks and being connected to said audio signal processing means for recording and/or reproducing said grouped data blocks containing the digitized audio signal for said predetermined length of time in a first part of a respective slant track on the tape;

index signal generating means including means for generating a coded index signal to indicate respective input information;

index area signal generating means for providing an index area signal in predetermined timed relation to said scanning by said transducer means of said first part of each said slant track;

switching means responsive to said index area signal for supplying said coded index signal to said transducer means for recording by the latter in a second part of said respec-

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tive slant track which is located adjacent an end of said first part of said respective slant track; and

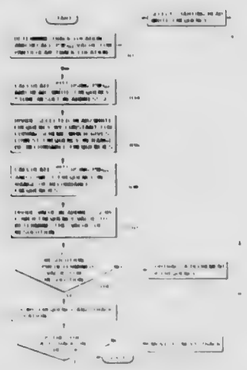
start code and end code generating means for inserting a predetermined coded pattern into a starting area and an ending area of said coded index signal recorded in said second part of said respective slant track.

4,799,112

METHOD AND APPARATUS FOR RECORDING DATA

Robert A. Brennan; Vladimir Kovner, both of Oklahoma City, Okla., and Dennis C. Stone, Simi Valley, Calif., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Feb. 19, 1987, Ser. No. 16,166
Int. Cl.[4] G11B *27/36, 5/09*
U.S. Cl. 360—31 27 Claims



1. A data storage device including a read/write head and a magnetic disk which form the disk to head interface, the magnetic disk capable of retaining data pulses recorded at various frequencies, the amplitude of the readback voltage of a pulse train varying as a function of the selected frequency, the amplitude of the readback voltage of a pulse train recorded at the selected frequency divided by the amplitude of the readback voltage of a pulse train recorded at a lower frequency yielding the resolution, the magnetic system manufactured with disks formatted by a process comprising the steps of:

determining a magnetic characteristic for the head to disk interface for each track on the magnetic disk; and

using the determined magnetic characteristic for each track to select a frequency for each track that will produce a substantially constant resolution in each track across the disk.

4,799,113

APPARATUS FOR PROCESSING DIGITAL DATA

Yoshihiro Murakami, Kanagawa, Japan, assignor to Sony Corp., Tokyo, Japan

Filed Sep. 3, 1987, Ser. No. 92,542
Claims priority, application Japan, Sep. 5, 1986, 61-209143
Int. Cl.[4] G11B *5/09*
U.S. Cl. 360—32 10 Claims

1. An apparatus for processing digital data comprising:

input circuit means for providing an input digital signal including word data and write addresses associated with respective words of said word data;

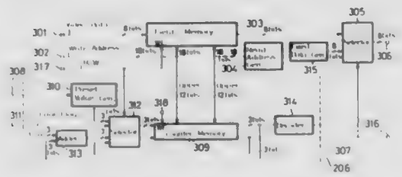
memory means connected to said input circuit means for storing said words of said word data from said input circuit means according to said respective write addresses;

read address generating means for generating read addresses and being connected with said memory means for reading out the stored words from the respective addresses of said memory means;

output circuit means for deriving an output signal;

word data generating means for generating word data having a predetermined pattern;

switching means connected to said memory means, said output circuit means and said word data generating means for selectively providing, as said output signal, the stored words which are read out from said memory means or said



word data having said predetermined pattern from said word data generating means; and

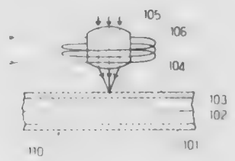
control means supplied with said write and read addresses for controlling said switching means to provide said output circuit means with said word data having said predetermined pattern from said word data generating means as said output signal instead of said stored words read out of said memory means when a stored word being read out has been read out of said memory means a predetermined multiple number of times.

4,799,114

THERMOMAGNETIC RECORDING CARRIER AND A METHOD FOR THERMOMAGNETIC RECORDING

Shigeru Tsunashima, Nagoya, Japan, assignor to Daidotokushuko Kabushiki Kaisha and Canon Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 908,934, Sep. 15, 1986, abandoned, which is a continuation of Ser. No. 644,143, Aug. 24, 1984, abandoned, which is a continuation-in-part of Ser. No. 315,467, Oct. 27, 1981, abandoned. This application May 15, 1987, Ser. No. 51,163
Claims priority, application Japan, Nov. 1, 1980, 55-154291
Int. Cl.[4] G11B *5/02*
U.S. Cl. 360—59 8 Claims



1. A thermomagnetically recordable and magneto-optically readable recording carrier comprising; a substrate; first and second layers being disposed on said substrate, said first layer possessing a higher coercive force and a lower Curie point relative to said second layer, at least said first layer possessing perpendicular magnetic anisotropy; and said first layer and said second layer being formed of amorphous alloys of lanthanide-transition metals, and said first layer and said second layer being exchangeably combined.

4,799,115

METHOD AND APPARATUS FOR TOLERATING TRACK MISREGISTRATION SYSTEMS IN TWIN TRACK VERTICAL RECORDING SYSTEMS

Lee S. Rogers, Raleigh, and Albert W. Vinal, Cary, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 27, 1986, Ser. No. 923,778
Int. Cl.[4] G11B *5/024, 5/265*
U.S. Cl. 360—66 2 Claims



1. An improved twin track magnetic data read-write head apparatus, comprising:

a twin track magnetic writing structure having two magnetically linked and magnetically permeable flux conductive legs, said legs being provided with a means of magnetic flux energization for writing data on a magnetic recording medium;

portions of said legs being positioned adjacent to said medium to magnetically write thereon, said portions of said legs having projected areas of exposure adjacent said medium which lie in two parallel recording paths on said medium, each said area having its longest dimension arranged colinear with the other and perpendicular to the longest axis of the desired recording path on said medium; and

an E-shaped magnetically permeable erase member having means for energizing said member with magnetic flux to generate erasure of said medium;

said E-shaped member being mounted in electrical and magnetic isolation from said magnetic writing structure and mounted commonly therewith to precede said magnetic writing structure along said recording paths on said medium, said E-shaped magnetically permeable member being arranged to have projections of its leg areas upon said magnetic medium lying adjacent to each side of each of said recording paths thereon.

4,799,116

APPARATUS FOR CONTROLLING AN AUTO-REVERSE TAPE RECORDER HAVING A MODE-CHANGING MECHANISM

Mitsuru Ida, Saitama, and Noriyuki Koga, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 3, 1986, Ser. No. 903,293
Claims priority, application Japan, Sep. 9, 1985, 60-199258; Oct. 14, 1985, 60-228187
Int. Cl.[4] G11B *15/44*
U.S. Cl. 360—74.1 24 Claims

1. An auto-reverse type tape recording apparatus, comprising:

a changeover mechanism for selectively changing the travel of a tape from a normal run to a reverse run by operation of changeover means;

a mechanism for detecting an end of the tape;

a shut-off mechanism for shutting off said travel of the tape at a tape end;

a mode changing mechanism for changing over an operating mode from a shut-off mode, in which said travel of the tape is shut off as soon as said tape end is detected after a normal run or after a reverse run or after a reverse run following a normal run, to a repeat mode, in which said travel of the tape is repeatedly performed from normal run to reverse run under the working of said shut-off mechanism; and

switch means including an operating lever, a mode changeover lever, and a manual changeover rod, wherein said



mode changeover lever is moved by operation of said manual changeover rod and said operating lever is moved by operation of said mode changeover lever, so that said operating mode is changed over to a repeat mode by operation of said changeover means during the time that said mode changing mechanism is in said shut-off mode.

4,799,117

MAGNETIC TAPE CASSETTE LOADING SYSTEM IN RECORDING AND/OR REPRODUCING APPARATUS

Masao Ohyama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 21, 1986, Ser. No. 865,282
Claims priority, application Japan, Jan. 7, 1985, 60-123697
Int. Cl.[4] G11B *15/00*
U.S. Cl. 360—96.5 25 Claims



1. A cassette loading system in a recording and/or reproducing apparatus for a magnetic tape cassette which has at least a sliding closure member openably closing a cut-out in a bottom surface of the cassette casing, which cassette loading system comprises:

cassette holding means for receiving and holding said magnetic tape cassette within a cassette receptacle defined therein, said cassette holding means being movable between an eject position, in which said cassette holding means can receive a cassette and allow a cassette to be removed, and a loading position at which cassette loading is completed; and

first means, associated with said cassette holding means, for moving said sliding closure member from a closed position to an open position in synchronism with movement of said cassette holding means from said eject position to said loading position.

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4,799,118

THIN FILM MAGNETIC HEAD

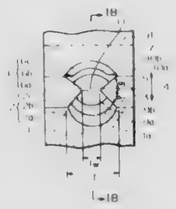
Masanichi Yamada; Masaaki Kurebayashi; Masakatsu Saito, all of Yokohama; Hitoshi Yanagihara, Kamakura; Katsuo Konishi, and Toshio Tsuchiya, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 918,338

Claims priority, application Japan, Oct. 14, 1985, 60-226748; Oct. 31, 1985, 60-242855

Int. Cl.[4] G11B *5/187, 5/31, 5/127*

U.S. Cl. 360—125 **12 Claims**



1. A thin film magnetic head comprising a non-magnetic substrate, a first core member formed on said non-magnetic substrate, a gap material layer formed on said first core member, and a second core member formed on said gap material layer, said first and second core members constituting a magnetic path for magnetic flux with which information is read/written on a magnetic recording medium, said first core member, said gap material layer and said second core member having first ends constituting a recording medium engaging end of said magnetic head, a surface of each of said first and second core members which faces said gap material layer to define a gap of said magnetic head having a width, as measured on a first plane containing a surface of said recording medium engaging end of said magnetic head in a direction parallel to said gap material layer, which is smaller than a width of a surface of each of said first and second core members as measured on a second plane parallel with and spaced from said first plane in a direction parallel with said gap material layer, a width of said first and second core members, as measured on said first plane in a direction parallel to said gap material layer, increasing in a direction perpendicular to and farther away from said gap material layer, and a surface of each of said first and second core members opposite to said gap material facing surface of each of said first and second core members, at least on said first plane containing the surface of said recording medium engaging end of said magnetic head, being not parallel with said gap material layer.

4,799,119

FLEXIBLE CIRCUIT MAGNETIC CORE WINDING FOR A CORE MEMBER

Renato V. Rossi; Steven F. Starcke, both of Rochester, Minn., and David A. Swagel, Portland, Oreg., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 10, 1986, Ser. No. 905,438

Int. Cl.[4] G11B *5/17*

U.S. Cl. 360—123 **9 Claims**

1. A flexible magnetic core winding for an integrally formed core member having a window, comprising:

a strip of flexible insulating material;

a plurality of substantially parallel conductors having connector pads wherein said connector pads are formed in a plurality of rows to maximize the size of said connector pads and the distance between said connector pad;

a plurality of leads on said strip attached to said connector pads;

a plurality of lead pads on said strip attached to said plurality of leads, wherein said lead pads are substantially larger than said connector pads;

wherein said connector pads are originating pads add terminating pads each of said terminating pads contacting the originating pad at the next adjacent conductor to form a multi-turn winding when the ends of said strip are brought together and said contacted pads are electrically connected.



4,799,120

GUARD PANEL FOR TAPE CASSETTES AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

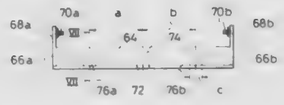
Yoshimi Sakai, and Yoshiki Satoh, both of Nagano, Japan, assignors to TDK Corporation, Japan

Filed Sep. 23, 1985, Ser. No. 778,620

Claims priority, application Japan, Sep. 25, 1984, 59-144772[U]

Int. Cl.[4] G11B *23/02*

U.S. Cl. 360—132 **13 Claims**



1. A guard panel for a tape cassette having a housing, said guard panel being pivotally mounted on the housing and comprising:

an elongated plate member having a front plate portion, an upper plate portion and side plate portions forming side walls of said plate member, said front and upper plate portions together forming a substantially L-shaped transverse cross section with an outer front surface and an inner back surface when viewed in a transverse direction;

wherein said upper plate portion has at least two sections which differ in thickness from another section of said upper plate portion, said at least two sections being spaced apart from each other with a central region of said upper plate portion being situated between them in a longitudinal direction thereof; and

wherein said at least two sections of said upper plate portion which differ in thickness from another section of said upper plate portion are constituted by recesses formed only in said back surface of said upper plate portion and terminating at a point away from an outermost edge of said upper plate portion situated away from juncture of said upper and front plate portions in said substantially L-shaped configuration at said back surface thereof to thereby mitigate deformation and cracking of said guard panel.

4,799,121

DISK CARTRIDGE HAVING SHUTTERS MOVED BY A RACK AND PINION APPARATUS

Kenji Takahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

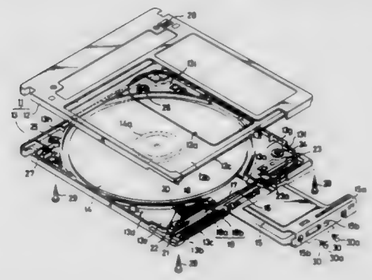
Filed Apr. 27, 1987, Ser. No. 42,733

Claims priority, application Japan, Apr. 30, 1986, 61-100043

Int. Cl.[4] G11B *23/03*

U.S. Cl. 360—133 **5 Claims**

1. A disk cartridge comprising a pair of cartridge halves forming said cartridge, at least one cartridge half having a window portion for exposing a part of a disk accommodated in said disk cartridge, a sliding shutter adapted to open and close said window portion, a sliding member slidably fitted to said one disk cartridge half and for supporting said sliding shutter for movement relative to said disk cartridge, a first rack provided on said sliding member, a second rack provided on a cartridge half and facing said first rack, a rotation axis body



having a step face and an engaging hole, a rotatable pinion being arranged on the axis body and supported by said step face in the axial direction, said pinion and body being positioned in the cartridge with the pinion being between said first rack and said second rack, and a torsion spring having one end engaged with said engaging hole and the other end being engaged with said cartridge half to urge the axis body and pinion along the second rack.

4,799,122

MOUNTING A DISC RECEIVER IN A DISC CARTRIDGE

Kimio Tanaka, and Haruo Shiba, both of Nagano, Japan, assignors to TDK Corporation, Japan

Filed Feb. 4, 1987, Ser. No. 10,896

Claims priority, application Japan, Feb. 10, 1986, 61-16790[U]

Int. Cl.[4] G11B *23/03*

U.S. Cl. 360—133 **11 Claims**



1. A disc cartridge, comprising:

a casing comprising an upper cover plate and a lower cover plate joined together to define a space in said casing;

a disc rotatably housed in said casing; at least one window provided in said casing to allow insertion of a disc driving element therethrough into said casing;

a shutter for operatively opening and closing said at least one window;

a pair of actuators arranged in said casing and engaged with said shutter to releasably lock said shutter;

a disc receiver arranged in said casing and operatively connected to at least one of said actuators to selectively receive therein a part of a peripheral portion of said disc;

a pivot pin on which said disc receiver is supported so as to be pivotally movable about said pivot pin, said pivot pin being mounted on one of inner surface of said upper and lower plates of said casing opposite to each other to inwardly project therefrom;

said pivot pin cooperating with the other of said inner surfaces to constantly form a gap in a thickness direction of said causing between said upper and lower plates which has a distance sufficient to ensure smooth movement of said disc receiver about said pivot pin;

wherein said gap is formed due to the engagement between a distal end of said pivot pin and said other inner surface of said casing.

4,799,123

DISC CARTRIDGE

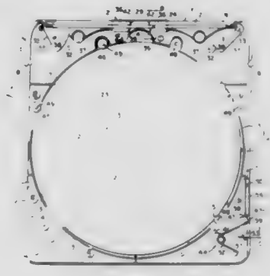
Yasunori Kanazawa, Hachioji; Haruo Arai, Mitsukaido, and Tadahiro Kawa, Ibaragi, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 659,783, Oct. 11, 1984, abandoned. This application Jul. 14, 1987, Ser. No. 73,855

Claims priority, application Japan, Oct. 14, 1983, 59-192816

Int. Cl.[4] G11B *23/04, 5/012*

U.S. Cl. 360—133 **13 Claims**



1. A disc cartridge comprising:

a disc case formed by the combination of a top half and a bottom half each provided with peripheral walls, a drive shaft insertion hole and a head insertion window, each half having a closed chamber formed in between said top and bottom halves by partition walls of said respective halves;

a disc rotatably accommodated in said chamber of said disc case;

a shutter mechanism for opening and closing said drive shaft insertion hole and said head insertion window;

clamping means for operatively clamping said disc when said disc is not in use, said clamping means including stationary clamping members and a movable clamping member movable between a clamped position for clamping said disc in a clamped state by engagement of a part of said movable clamping member, together with said stationary clamping members, against said disc and a released position for releasing said disc from the clamped state into a released state by disengagement of said movable clamping member from said disc; and

a slide slidably movable along a peripheral wall of said case, coupled with said movable clamping member so that clamping of said disc by said respective clamping members is operated by sliding of said slide independently of said shutter mechanism.

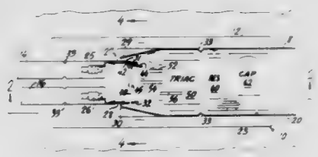
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4,799,124

SHOCK HAZARD PROTECTOR FOR HAIR DRYERS

David C. Taylor, Patterson, N.Y.; William E. Springer, Fairfield, Conn.; Loretta Goeller, Rowayton, Conn., and Daniel Smithouse, Stratford, Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Oct. 31, 1985, Ser. No. 793,598
Int. Cl.[4] H02H *5/04*
U.S. Cl. 361—42 4 Claims



1. An apparatus which opens two AC power lines simultaneously, said power lines comprising part of a two-line AC power circuit providing electrical power to an appliance, said apparatus comprising:

a first substantially parallel pair of spaced electrically conductive contacts, each having a proximate fixed end for being placed into electrical contact with a respective one of said two power lines and a distal end;

a second pair of resilient elongated, electrically conductive contacts, each connected at one end to the electrical operating components of said appliance and each having a first end opposite said one end and adjacent said distal ends of said first pair of contacts, said first ends being normally biased away from each other and movable in the plane defined by said distal ends and spaced from each other outwardly of said distal ends;

an insulator secured adjacent said first end of one of said second pair of contacts;

an intermediate conductor secured to said insulator;

a single electrically conductive biasing fusible means connected to said intermediate conductor and to the other of said second pair of contacts for biasing both of said second pair of contacts toward each other to cause each of said first ends of said second pair of contacts to be in electrical contact with a respective one of said distal ends of said first pair of contacts, said fusible means normally not conducting current therethrough;

at least one sensor operatively associated with said appliance for sensing the presence of water within said appliance and for providing an indication thereof;

a triac having two output pins and a gate input pin, the gate input pin of said triac electrically connected to at least one of said sensors, one output pin of said triac electrically connected to said intermediate conductor, the other output pin of said triac electrically connected to one of said power lines, said triac causing, upon the occurrence of said indication from at least one of said sensors, current to be conducted through said fusible means to melt same.

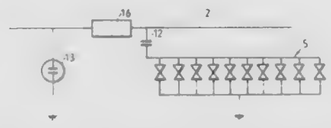
4,799,125

CIRCUIT PROTECTION ARRANGEMENT

David Crofts, Somerford Keynes, and Martin A. Wright, Swindon, both of England, assignors to Raychem Limited, Swindon, United Kingdom

Filed Sep. 3, 1987, Ser. No. 92,833
Claims priority, application United Kingdom, Sep. 5, 1986, 8621431
Int. Cl.[4] H02H *3/20*
U.S. Cl. 361—91 17 Claims

1. An arrangement for protecting an electrical circuit from a voltage transient having a fast rise time, which comprises a plurality of semiconductor threshold foldback switching elements that are connected in parallel with one another between a current carrying line of the circuit and earth, and a further non-linear circuit protection device connected in parallel with



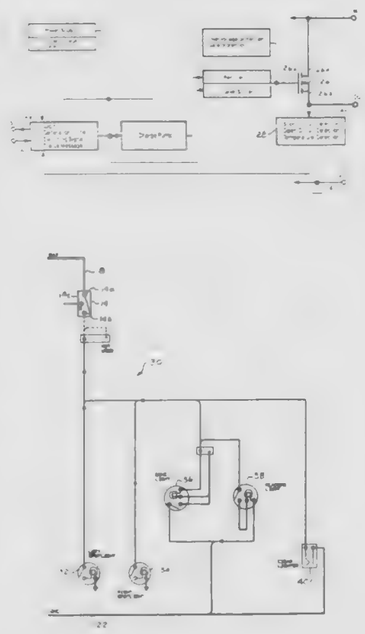
the switching elements to pass low frequency components of the transient to earth.

4,799,126

OVERLOAD PROTECTION FOR D.C. CIRCUITS

James W. Kruse, New Haven, Ind., and W. Eric Windle, Antwerp, Ohio, assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Apr. 16, 1987, Ser. No. 39,048
Int. Cl.[4] H02H *3/087*
U.S. Cl. 361—101 24 Claims



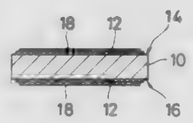
1. In a D.C. electrical distribution system comprising a D.C. power supply and a branch connected across said power supply, said branch comprising an electrical load, a switch, conductors, and an overload protector all serially connected, said switch being selectively operable to selectively control the current flow through the branch, said overload protector serving to sense overload associated with the flow of current in the branch and interrupt the current flow upon sensing overload to thereby protect the branch against overload, the improvement which comprises said switch and said overload protector being embodied in a solid state unit which comprises terminals via which it connects in the system, said unit comprising semiconductor structure which comprises a main controlled conduction path through the unit having a certain current/temperature rating and an associated overload protector for said main controlled conduction path responsive to incipient current or temperature exceeding said rating to protect said main controlled conduction path from potential damage, two of said terminals constituting external termination points for said main controlled conduction path via which said main controlled conduction path connects into the branch, at least one other of said terminals constituting an external termination point for connection to an input for selectively controlling the conductivity of said main controlled conduction path in accordance with said input thereby selectively controlling the conductivity of said main controlled conduction path to perform the switch function, said branch being free of separate overload protection devices external to said unit such that the current overload protection function within the branch is performed entirely by the protection of said main controlled conduction path within said unit by the associated overload protector.

4,799,127

SEMICONDUCTIVE CERAMIC COMPOSITION AND SEMICONDUCTOR CERAMIC CAPACITOR

Shuichi Ono; Shuichi Itagaki; Masahiro Yahagi; Kiyoshi Furukawa; Shinobu Fujiwara, and Yasunobu Oikawa, all of Akita, Japan, assignors to TDK Corporation, Nihonbashi, Japan

Filed Jul. 29, 1987, Ser. No. 79,018
Claims priority, application Japan, Jul. 29, 1986, 61-176632; Jul. 29, 1986, 61-176633
Int. Cl.[4] H01G *4/10*; C04B *41/14*; H01B *3/02*
U.S. Cl. 361—321 15 Claims



1. A semiconductive ceramic composition comprising:

a base material comprising $SrTiO_3$; and

an additive for semiconductivity comprising Y_2O_3 and Nb_2O_5;

said Y_2O_3 and Nb_2O_5 each being present in an amount of 0.1 to 0.4 mol % based on said composition.

4,799,128

MULTILAYER PRINTED CIRCUIT BOARD WITH DOMAIN PARTITIONING

Paul T. H. Chen, St. Paul, Minn., assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 811,188, Dec. 20, 1985, abandoned.
This application Apr. 10, 1987, Ser. No. 42,620
Int. Cl.[4] H05K *1/16*
U.S. Cl. 361—414 5 Claims

1. A multilayer printed circuit board comprising:

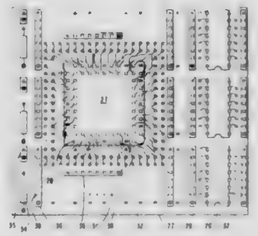
a plurality of substrates of insulating material bonded together forming the multilayer printed circuit board, each substrate having a surface on which is located a printed circuit comprising a pattern of lines of conductive material, said substrates being bonded in a mutually overlying relation, and each of said substrates being subdivided into equal surface areas in which each surface area has the same number and length of lines of conductive material;

a plurality of plated-through holes extending transverse to the substrates and positioned adjacent the lines of conductive material on said substrates, each of said equal surface areas containing at most a same predetermined number of plated-through holes;

a plurality of circuit elements including integrated circuit packages each having lead elements each of which is mounted within a plated-through hole and associated passive components mounted to the top surface of the circuit board, each of said equal surface areas is adapted to receive at most a same predetermined number of integrated circuit packages and at most a same predetermined number of associated passive components;

a plurality of monitor holes extending through the printed circuit board and located adjacent the lead elements of the circuit packages, each of said equal surface areas containing at most a same number of monitor holes;

a plurality of metallic bridge elements extending along the top surface of the circuit board connecting each of the lead elements of the integrated circuit package with a



monitor hole for testing electrical circuits located within the circuit board, said bridge elements being severable for isolating the electrical circuits located within the circuit board;

a plurality of metallic pad members located in the surface of each of said substrates engaging said plated-through holes for connecting selected lines of conductive material on a substrate, each of said pad members being formed in a square configuration having rounded corners in which a plated-through hole is located within the boundary of the pad member; and

a plurality of metallic segments mounted on the surface of said substrates adjacent said pad members and lines of conductive material, two of said metallic segments being connected to two adjacent rounded corners of each of said pad members and the same line of conductive material for transmitting signals between the pad members and the conductive material.

4,799,129

FLAT CABLE CONNECTING DEVICE

Satoaki Izumino, Tokyo, Japan, assignor to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1986, Ser. No. 945,810
Claims priority, application Japan, Apr. 7, 1986, 61-52003[U]
Int. Cl.[4] H02B *1/20*
U.S. Cl. 361—428 4 Claims

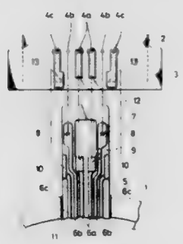
1. A flat cable connecting device, comprising:

a connector body;

a printed circuit board connected to the connector body, said printed circuit board having a plurality of connector pins disposed thereon;

a flat cable adapted to extend through a slit formed in a partition member, said flat cable comprising a plurality of printed wires formed thereon and at least one hole located at an end portion of the cable which receives therein at least one of said connector pins to establish mechanical and electrical connection between said flat cable and said printed circuit board, said at least one hole extending through one of said printed wires, said flat cable further

comprising a plurality of printed wire connecting sections located at said end portion of the flat cable along opposing lateral edges thereof and electrically connected to printed wires of the flat cable which do not have a hole extending therethrough;



said printed circuit board further comprising a plurality of conductor portions printed on said printed circuit board, said conductor portions electrically connecting the printed wire connecting sections to corresponding connector pins;

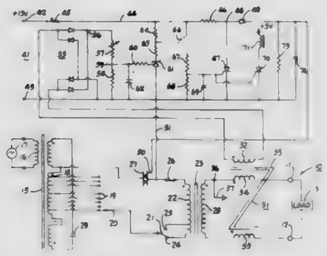
wherein said flat cable further comprises a body portion which is essentially as wide as the end portion thereof.

4,799,130

DIELECTRIC STRENGTH TESTER

Wayne C. Emerson, Black Creek, N.Y., assignor to Acme Electric Corporation, Olean, N.Y.

Filed Jul. 29, 1987, Ser. No. 79,129
Int. Cl.[4] H02H *00/00*; G08B *21/00*
U.S. Cl. 361—437 **14 Claims**



1. A high voltage, high volt-amperage dielectric strength tester for use with electrical equipment, comprising in combination:

a step-up transformer having a primary winding and a high voltage secondary winding of amperage capacity exceeding ten milliamps;

means to energize the primary winding of said step-up transformer through a first semiconductor switch;

means connecting a part of said secondary winding of said step-up transformer to ground;

first and second test terminals adapted to be connected to electrical equipment for dielectric tests;

means connecting said first and second test terminals to opposite ends of said secondary winding of said step-up transformer;

sensing means having an output winding and connected to be responsive to an imbalance of current flow through said first and second test terminals, and normally developing, without a ground fault, substantially zero current in said output winding; and

a control circuit connected to control the energization of said first semiconductor switch, said control circuit including input means from said output winding of said sensing means;

a second semiconductor switch having a control element and connected to control energization and de-energization of said first semiconductor switch; and

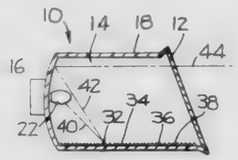
means connecting said input means to said control element of said second semiconductor switch to control the conduction condition thereof upon the current on said output winding of said sensing means exceeding a set point such as by a fault-to-ground on said step-up transformer secondary winding.

4,799,131

AUTOMOTIVE LIGHTING ELEMENT

Kenneth A. Aho, Chisago City; Jeffrey J. Melby, St. Paul, and Richard A. Miller, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 18, 1987, Ser. No. 121,947
Int. Cl.[4] B60Q *1/04*
U.S. Cl. 362—61 **10 Claims**



1. An automotive lighting element comprising a reflector defining an optical cavity having an optical window and a light source in said optical cavity, said reflector comprising:

a smoothly curved portion;

a structured surface portion having a plurality of ridges and grooves such that light emitted by said light source and striking said structured surface will be reflected a first time by said structured surface and a second time by said reflector prior to emerging from said optical cavity, said grooves having bases that are located in a plane.

4,799,132

MEANS FOR MOUNTING A MINI-FLASHLIGHT ON A WRITING INSTRUMENT

Leon Perlsweig, 23017 Gainford St., Woodland Hills, Calif. 91364

Filed May 20, 1988, Ser. No. 196,736
Int. Cl.[4] B43K *29/10*
U.S. Cl. 362—118 **5 Claims**



1. Mounting means for adjustably and removably supporting an illuminating device on a writing instrument comprising an elongated support member,

first clip means pivotally coupled to one end of said member, said first clip means being rotatable about said one end in the plane of said member and adapted to releasably frictionally engage an elongated writing instrument, and

second clip means pivotally coupled to the other end of said member, said second clip means being rotatable about said other end in a common plane with said member and said first clip means and adapted to releasably frictionally engage an elongated illuminating device,

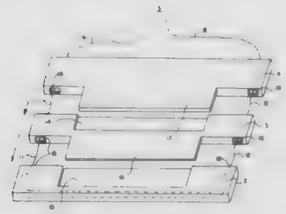
said first and second clip means extending from their pivotal couplings to said member in a direction substantially perpendicular to the longitudinal dimensions of writing instrument and illuminating device, respectively, when said clip means are in engagement with said writing instrument and illuminating device.

4,799,133

ILLUMINATED POINT-OF-SALE SHELF UNIT INSERT

Peter Strzalko, Langenfeld; Franz-Josef Walber, and Ulrich Wombacher, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 20, 1987, Ser. No. 123,484
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1986, 3639687
Int. Cl.[4] F21V *33/00*
U.S. Cl. 362—133 **11 Claims**



1. A device for inclusion in a point-of-sale shelf unit and for the illumination of sales articles offered on the device, comprising a substantially parallelepipedonal translucent housing of low height having at least one illuminating body which is located inside the region of the front longitudinal side surface and parallel thereto and which is in part bent backward at right angles into the interior of said housing in the region of laterally adjoining transverse side surfaces of said housing, said housing being assemblable in modular manner into a unitary unit having a planar support surface from individual bodies which are of equal length and height and matched one to the other, wherein said individual bodies in the region of their upper or lower side have depressions in at least a region thereof or have connecting tongues which protrude at the oppositely disposed longitudinal side and which are constructed to correspond with said depressions.

4,799,134

OPTICAL REFLECTOR SYSTEM FOR FLUORESCENT LIGHTING FIXTURES

David G. Pinch, Mesa, Ariz., and Spencer C. McGrath, 11055 N. 55th Ave., Glendale, Ariz. 85304, assignors to Spencer McGrath, Merced, Calif.

Filed Jul. 15, 1986, Ser. No. 885,656
Int. Cl.[4] F21S *3/00*; H01R *11/26*
U.S. Cl. 362—217 **3 Claims**

1. In a fluorescent lighting fixture of the type having at least two fluorescent light tubes within a housing, which housing has first and second conventional lamp holders disposed at opposite ends of the housing which receive connector pins at the end of said fluorescent light tubes, the improvement comprising:

(a) a pair of replacement lamp holders at the opposite ends of the lighting fixture at a location intermediate the location of the said first and second conventional lamp holders, each said replacement lamp holder having a body with a socket at an intermediate location adapted to receive the said pins of the lamp tube, each said replacement lamp holders further having first insert means adapted to be engaged with said first conventional lamp holder and



second insert means adapted to be engaged with said second spaced-apart conventional lamp holder, said socket and said first insert means being in electrical connection; and

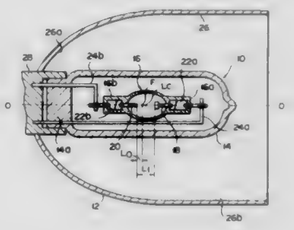
(b) reflector means positioned above said replacement lamp holders, said reflector means being provided in a general planar condition having a reflective surface and having predetermined flexibility whereby when installed in the fixture, said reflector will assume a generally parabolic shape established by the geometry of the fixture.

4,799,135

HEADLIGHT FOR VEHICLE

Shinji Inukai; Nobuyoshi Kuno; Hiroyoshi Takanishi, and Hiroki Sasaki, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 17, 1986, Ser. No. 920,063
Claims priority, application Japan, Oct. 18, 1985, 60-233073
Int. Cl.[4] F21V *7/00*
U.S. Cl. 362—296 **6 Claims**



1. A headlight for a vehicle adapted to be operated by a direct-current power source, comprising:

a high-pressure metal-vapor discharge lamp including a luminescent tube having at least sodium sealed therein as a luminescent metal, and including positive and negative electrodes having their respective distal ends spaced at a predetermined distance from each other and located in the luminescent tube; and

a reflector having a focus and reflecting a light beam, emit-

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ted from the discharge lamp, in a forward direction from the front of the vehicle,

said discharge lamp being positioned along a straight line connecting the respective distal ends of the positive and negative electrodes, said straight line being horizontal and passing through the focus, and said discharge lamp being arranged to fulfill the following requirement so that the luminescent region of reddish light radiated from said at least sodium is located at the same position as the focus:

$$0 \leq L0/L1 \leq 0.4,$$

where L0 is the distance between the focus and the distal end of the negative electrode, and L1 is the predetermined distance between the respective distal ends of the positive and negative electrodes;

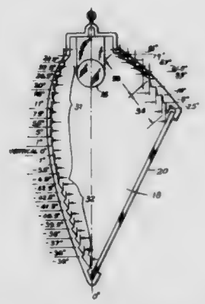
said discharge lamp in cooperation with said reflector producing a light beam having a luminous distribution pattern with reddish light, radiation from said at least sodium, being located at a center thereof and light of other colors being located around the reddish light.

4,799,136

LIGHTING FIXTURE HAVING CONCAVE SHAPED REFLECTOR AND IMPROVED ASYMMETRIC LIGHT REFLECTION SYSTEM

John P. Molnar, St. Louis, Mo., assignor to Guth Lighting Systems, Inc., St. Louis, Mo.

Filed May 29, 1987, Ser. No. 56,406
Int. Cl.[4] F21V *7/00*
U.S. Cl. 362—300 **7 Claims**



1. A lighting fixture adapted for uniformly illuminating a substantially vertical wall surface of a room having upper, central and bottom portions, the fixture comprising:

(a) an elongated housing having a lower side and adapted to be rigidly supported below a ceiling surface;

(b) an elongated reflector pivotably attached to said housing lower side, said reflector having a generally concave shape formed with dual inner facing walls, one of said walls being a major length rear portion and the other said wall a minor length front portion, side end plates and a front opening;

(c) multiple reflecting facet surfaces in said major length rear portion and said minor length front portion having varying acute angles measured relative to a central vertical plane through said reflector and said light source, said angles on said major length rear portion being measured toward said light source and said angles on said minor length front portion being measured away from said light source;

(d) a light source centrally located within said reflector so as to be substantially enclosed by said reflector and by said end plates; and

(e) a diffuser plate capable of filtering ultraviolet light covering said front opening of said reflector;

(f) said varying acute angles being chosen such that direct light emanating from said light source is reflected by said multiple reflecting facet surfaces;

(i) from an upper zone of said major length rear portion to the bottom and central portions of said wall surface;

(ii) from a lower zone of said major length rear portion to the central and upper portions of said wall surface;

(iii) from an upper zone of said minor length front portion to the central portion of said wall surface; and

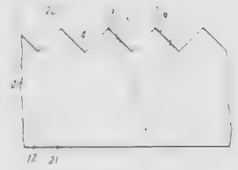
(iv) from a lower zone of said minor length front portion to said upper zone of said major length rear portion and then to the central portion of the wall surface; thereby illuminating said wall surface in an asymmetric pattern, so as to provide uniformly diffused light on said wall surface without producing hot spots, scallops or striations on said wall surface.

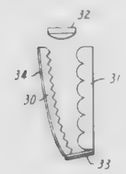
4,799,137

REFLECTIVE FILM

Kenneth A. Aho, Chisago City, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 24, 1987, Ser. No. 30,033
Int. Cl.[4] F21V *13/04*
U.S. Cl. 362—309 **13 Claims**





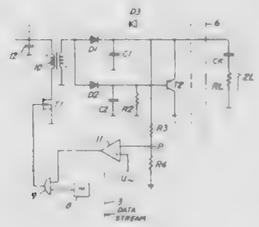
1. A light reflecting film formed of a transparent material, said film comprising first and second major surfaces, said first surface being a structured surface forming a plurality of triangular prisms, each of said prisms having first and second faces and said prisms forming a plurality of peaks and grooves and said second surface being second surface such that light entering one of said prisms through said prism's first face at less than a predetermined angle with respect to said second surface will be totally internally reflected by said prism's second face reflected by said light reflecting means and will emerge from said film through a different one of said prisms.

4,799,138

CIRCUIT FOR PRODUCING AN ALTERNATING VOLTAGE

Ziaedin Chababedi, Bad Münder; Martin Brahms, and Olaf Wittur, both of Hanover, all of Fed. Rep. of Germany, assignors to kabelmetal electro Gesellschaft mit beschränkter Haftung, Hanover, Fed. Rep. of Germany

Filed Sep. 17, 1987, Ser. No. 98,390
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632746
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 **9 Claims**



1. A circuit for producing an alternating voltage in an electronic device which is connected to a d.c. voltage via a remote feed, said circuit being located within the device and comprising:

an electronic system, and a current supply which produces a voltage for operating the electronic system and for supplying a current for at least one load external to the device;

a clock producing pulses, a transformer having a primary winding and a secondary winding, a first transistor having a control electrode and being located within a current path of the primary winding, and a control element connected to the control electrode of the transistor, the pulses of the clock being fed via the control element to the control electrode of the first transistor, current of said secondary winding being divided among a first current path and a second current path;

a first diode and a first capacitor disposed in said first current path of said secondary winding, and a second diode and a second capacitor disposed in said second current path of said secondary winding, an output terminal of said secondary winding being connected via said first and said second diodes respectively to said first and said second capacitors;

a second transistor having a control electrode connected to said second capacitor, a first resistor connected in parallel to said second capacitor, and wherein the load includes capacitive and resistive elements serially connected between terminals of the load, the load being connected in parallel with said first capacitor and being connectd via a current path to said second transistor for discharge of said capacitive element;

a comparator having a first input terminal and a second input terminal, a second resistor and a third resistor serially connected via a junction point to form a voltage divider; and wherein said voltage divider is connected in parallel to the first capacitor the junction point of the voltage divider being connected to the first input terminal of the comparator, an alternating voltage being fed as desired value to the second input terminal of the comparator; and wherein

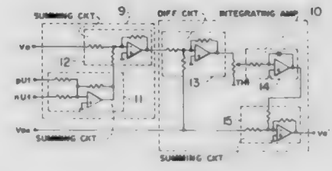
an output terminal of the comparator is connected to the control element, an output state of said comparator varies in accordance with amplitude of said alternating voltage to induce repetitive periods of excitation of said primary winding by said first transistor, said first resistor acting to discharge said second capacitor between periods of excitation of said primary winding, a discharge of said capacitor activating said second transistor to reduce voltage across the load, thereby to provide alternating states of voltage to the load.

4,799,139

VOLTAGE REGULATION FOR THREE-PHANE INVERTERS

Matti Kähkipuro; Urpo Stenman, both of Hyvinkää; Pekka Nummi, Nurmijärvi, and Pekka Hytti, Hyvinkää, all of Finland, assignors to Kone Elevator GmbH, Baar, Switzerland

Filed Mar. 16, 1987, Ser. No. 26,027
Claims priority, application Finland, Mar. 19, 1986, 861143
Int. Cl.[4] H02M *7/48*
U.S. Cl. 363—95 **8 Claims**



6. Apparatus for regulating the control voltage of a three-phase inverter supplying an a.c. motor having a power stage implemented using semiconductor switches, comprising:

three pulse width modulator means respectively associated with the three phases of said inverter;

means for regulating control voltages of respective ones of said pulse width modulatng means;

said voltage regulator means each comprising an actual value voltage forming means for deriving an actual value voltage from a voltage (Va) measured at a respective one of three outputs of said inverter; and

control voltage forming means for deriving said control voltage (Va') of the respective one of said pulse width modulators from said actual value voltage and a reference voltage (Va*), further including means for effecting full-wave rectification of a three-phase voltage to provide a pulsating d.c. positive voltage (pU1) and a pulsating d.c. negative voltage (nU1), said actual value forming means comprising first summing means for combining said positive voltage (pU1) and said negative voltage (nU1) to provide an a.c. voltage (VO) and second summing means for combining said voltage (Va') measured at said inverter output with said a.c. voltage (VO).

4,799,140

MAJORITY VOTE SEQUENCER

Ronald P. Dietz, and Jeffrey D. Johnson, both of Littleton, Colo., assignors to Orbital Sciences Corporation II, Fairfax, Va.

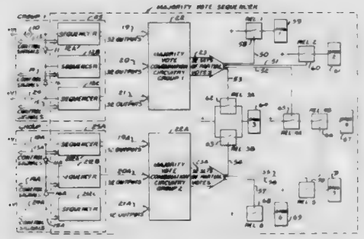
Filed Mar. 6, 1986, Ser. No. 837,059
Int. Cl.[4] G06F *11/08*
U.S. Cl. 364—140 **19 Claims**

1. A sequencer apparatus for controlling the timing and sequence in which a plurality of devices are electrically activated, comprising:

a plurality of sequencer means wherein each of said sequencer means sequentially generates at least one vote output signal having first and second states, wherein each of said vote output signals generated by each of said sequencer means corresponds to a vote output signal generated by each of the other of said sequencer means, and wherein each vote output signal generated by each of said sequencer means corresponds to at least one of the devices;

combining means for combining all of the corresponding

vote output signals from said plurality of sequencer means, each vote output signal being paired with each of the other corresponding vote output signals, said combining means generating one partial vote signal derived from each pair of corresponding vote output signals, a partial vote signal being in the first state when both vote output signals in the pair from which it is derived are in the first state, and a partial vote signal being in the second state when both vote output signals in the pair from which it is derived are not in the first state; and



a plurality of activating means responsive to the partial vote signals for activating the plurality of devices, at least one of said activating means corresponding to each of the devices, each of said activating means receiving only the partial vote signals derived from corresponding vote output signals, each of said activating means activating the device to which it corresponds when at least one partial vote signal received by it is in the first state.

4,799,141

ELECTRONIC CONTROLLER BASED ON THE USE OF STATE CHARTS AS AN ABSTRACT MODEL

Doron Drusinsky, Herzlia, and David Harel, Rehovot, both of Israel, assignors to Yeda Research and Development Company Limited, Rehovot, Israel

Filed Apr. 9, 1987, Ser. No. 36,526
Claims priority, application Israel, Apr. 18, 1986, 78542
Int. Cl.[4] G05B *11/01*
U.S. Cl. 364—141 **9 Claims**

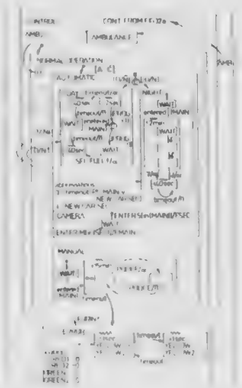
1. An electronic controller connectible to an external system comprising:

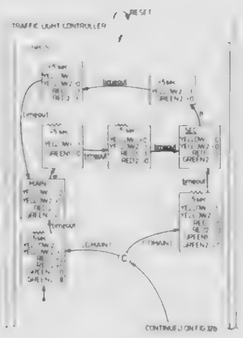
a plurality of logical networks each capable of assuming a plurality of different states and arranged according to a hierarchy of different networks according to a hierarchy of different states having a one-to-one mapping between states and networks such that any transition between two states affects the two associate networks and their respective lower-order networks;

each of said logical networks including a storage means for storing,its state, means for determining the next state, of the storage means and means for receiving control signals from, or for outputting control signals to, the immediately higher level logical network and the immediately lower level logical network for determining their respective states;

at least some of said logical networks including means for receiving control signals from, or for outputting control signals to, the external system;

said logical networks being disposed on a substrate;





and a plurality of electrical connections on the substrate connecting the logical networks to provide said one-to-one mapping between states and networks.

4,799,142

IRRIGATION CONTROLLER

Bernard Waltzer, Riverside, and Jeffery M. Moskin, Los Angeles, both of Calif., assignors to The Toro Company, Minneapolis, Minn.

Continuation of Ser. No. 883,467, Jul. 11, 1986, abandoned, which is a continuation of Ser. No. 574,397, Jan. 27, 1984, abandoned. This application Oct. 30, 1987, Ser. No. 117,441
Int. Cl.[4] G05B *11/1*; A01G *27/00*
U.S. Cl. 364—143 **2 Claims**

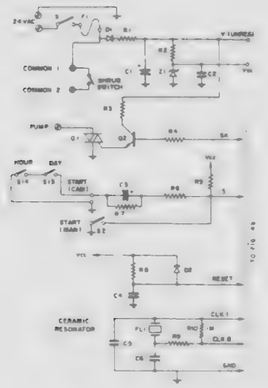
1. A low cost irrigation control system, comprising:

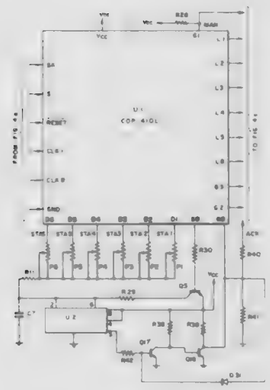
a plurality of irrigation stations;

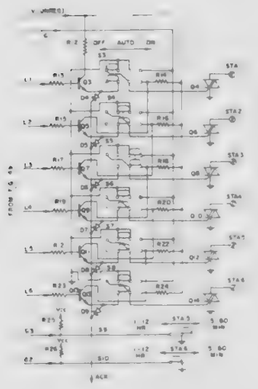
electronic controller means having a plurality of input terminals and a plurality of output terminals, said controller means including a counter means and an internal register means;

said electronic controller means providing to each of said stations a remote control dirve signal for selectively activating each of said stations according to a preprogrammed sequence, each station activated for a preprogrammed interval;

clock means connected to said input terminals of said controller means to establish a time standard for use by said internal register means and said counter means;







time selection means connected to said input terminals of said controller means for selecting a period of time during which an irrigation activity may take place, said time selection means including means for providing a start pulse to said controller;

time duration means including a variable resistor-capacitive network connected to said input terminals of said controller means for selecting a duration of time, determined by a time-constant of said resistor-capacitive network, said irrigation activity may occur, said time duration means providing an analog output signal to said controller, by way of a comparator means;

said counter means of said controller, using said time standard established by said clock means, incrementing a digital up-count for the duration of time set by the time duration means until the analog output signal is provided to said controller by said comparator means;

said terminal register means of said controller storing a final up-count that is a function of the time duration established by said time constant of said resistor-capacitive network of said time duration means;

a plurality of multi-position switching means, each having at least on, off, and automatic positions, and each connected between one of said output terminals of said controller means and each of said irrigation stations; when any of said switching means being set to said automatic position, said respective switching means providing a drive signal to said irrigation stations for a time duration that is a function of said final up-count stored in said internal register means and is substantially longer than the time constant of said resistor-capacitive network; and, switching means connected to said input terminals of said controller means to sense a selected position of said multi-position switching means;

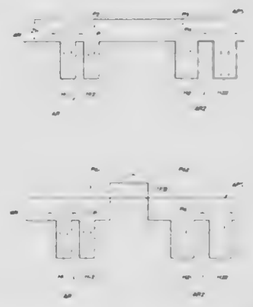
whereby said controller means adjusts its control to accommodate selected positions of said switch means and said controller may be informed as to when sequentially activated stations have commenced and ended operation so that an entire automated cycle may be executed.

4,799,143

NC DATA CREATION METHOD

Kunio Tanaka; Takashi Takegahara, and Yasushi Ouishi, all of Tokyo, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP86/00382, § 371 Date Mar. 23, 1987, § 102(e) Date Mar. 23, 1987, PCT Pub. No. WO87/00652, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 21, 1986, Ser. No. 43,347
Claims priority, application Japan, Jul. 22, 1985, 60-161574
Int. Cl.[4] G05B *19/00*
U.S. Cl. 364—191 **7 Claims**



1. An NC data creation method in an automatic programming apparatus having an auxiliary position input mode and in which NC data is created for moving a tool, after the tool has completed machining a first area of a workpiece, to a second area to subsequently perform predetermined machining at said second area, said method including the steps of:

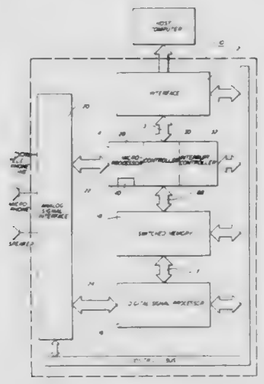
(a) determining if the auxiliary position input mode has been set;
(b) creating NC data in accordance with a predetermined rule for moving the tool from the first area to the second area if the auxiliary position input mode has not been set;
(c) initiating reception of an auxiliary position if the auxiliary position input mode has been set; and
(d) creating NC data for moving the tool to said second area via the auxiliary position if the auxiliary position input mode has been set.

4,799,144

MULTI-FUNCTION COMMUNICATION BOARD FOR EXPANDING THE VERSATILITY OF A COMPUTER

Bidyut Parrack, Hamden, and Hoshang D. Mulla, Trumbull, both of Conn., assignors to Alcatel USA, Corp., New York, N.Y.

Filed Oct. 12, 1984, Ser. No. 659,989
Int. Cl.[4] G06F *3/16*
U.S. Cl. 364—200 **23 Claims**



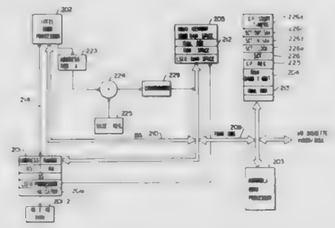
21. A multiple option computer card, said card comprising:
an onboard microprocessor having, as an integral part thereof, a dynamic RAM portion with an associated controller therefor, a ROM portion and an interrupt controller, said onboard microprocessor being controlled via an interface to a computer;
a digital signal processor connected to said onboard microprocessor and programmed thereby, said digital signal processor including a programmable read only memory and a random access memory;
means for accepting analog signals, said analog signal acceptance means having a plurality of switch means and interfacing with said onboard microprocessor and said digital signal processor; and
a switched memory including means for selectively coupling said switched memory to one of said onboard microprocessor and said digital signal processor, said means for selectively coupling being controlled by said onboard microprocessor, said random access memory exchanging information with said onboard microprocessor via said switched memory selectively coupled to one of said microprocessor and processor.

4,799,145

FACILITY FOR PASSING DATA USED BY ONE OPERATING SYSTEM TO A REPLACEMENT OPERATING SYSTEM

Gary J. Goss, Acton; Thomas S. Hirsch, Bedford, and Thomas O. Holtey, Newton, all of Mass., assignors to Honeywell Bull Inc., Minneapolis, Minn.

Continuation of Ser. No. 719,772, Apr. 3, 1985, abandoned. This application Sep. 21, 1987, Ser. No. 99,698
Int. Cl.[4] G06F *15/00, 9/00*
U.S. Cl. 364—200 **13 Claims**



1. In a computer system having at least first and second processors, a main memory coupled to said first processor, a second memory coupled to said second processor and an archival memory system such as disk memory, said first processor operating under a first operating system loaded into said main memory from said archival memory, apparatus for retaining information generated when said first processor is under control of said first operating system so that said information may be used by said first processor under control of a second operating system after being loaded into said memory from said archival memory, said retaining apparatus comprising:
(a) first means for storing information generated while said first processor is under the control of said first operating system, the information to be utilized by said first processor under control of said second operating system, said first means being volatile storage means storing such information after said first processor is restarted under control of said second operating system; and
(b) second means cooperating with said volatile first storage means for passing stored information to said first processor under control of said second operating system, said second means storing said stored information stored in said first means into said second memory as the main memory is reloaded with the second operating system,
wherein the information stored in the second memory is updated by the second processor until the updated information is return to the first means.

4,799,146

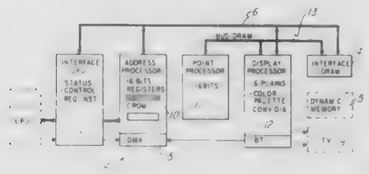
SYSTEM FOR DISPLAYING GRAPHIC INFORMATION ON VIDEO SCREEN EMPLOYING VIDEO DISPLAY PROCESSOR

Gerard Chauvel, Cagnes/Mer, France, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 19, 1985, Ser. No. 746,422
Claims priority, application France, Jun. 29, 1984, 84 10377
Int. Cl.[4] G06F *13/18*
U.S. Cl. 364—200 **5 Claims**

1. A system for displaying graphic information on a video screen, comprising:
memory means having a plurality of addressable memory locations in which said graphic information is to be stored;
a central processing unit for controlling the information to be displayed;
video display processor means for producing said graphic information and for storing said graphic information in said memory means;

communication bus means interconnecting said memory means, said central processing unit, and said video display processor means, said central processing unit presenting information on said communication bus means as time-multiplexed address and data fields, said address field defining an address space having first and second value ranges, said first value range of the address space defined by said address field corresponding to locations in said memory means addressable by said central processing unit, said second value range of the address space defined by said address field corresponding to a set of instructions for the video display processor means;
said video display processor means being connected to said memory means for accessing and modifying the contents of locations in said memory means containing said graphic information;
control circuit means connected to said central processing unit, said video display processor means and said memory means for controlling access to said memory means by said video display processor means and said central processing unit;
interpretation means connected to said communication bus means, said control circuit means and said video display



processor means for decoding the address fields presented by said central processing unit on said communication bus means;
said control circuit means being responsive to receiving a decoded address value in said first value range of said address space defined by said address field for enabling access between said central processing unit and said memory means, and being responsive to receiving a decoded address value in said second value range of said address space defined by said address field for controlling said video display processor means to execute an instruction corresponding to the value of said address field;
an address value providing access to said memory means from said central processing unit having a predetermined priority of operation over an address value defining an instruction to be executed by said video display processor means; and
said interpretation means interrupting the operation of one of said instructions being executed by said video display processor means in response to the reception of an address value in said first value range of said address space defined by said address field corresponding to an operation of higher priority.

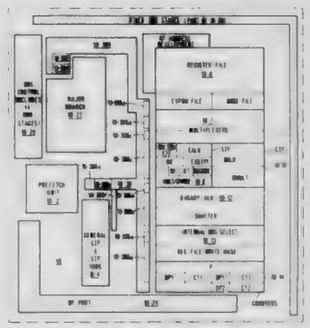
4,799,147

ON CHIP SIGNAL SELECTION METHOD AND APPARATUS

Peter M. Heslin, Natick, Mass., assignor to Honeywell Bull Inc., Waltham, Mass.

Filed Mar. 26, 1987, Ser. No. 31,318
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—200 **31 Claims**

1. A LSI microprocessor chip having an area including a plurality of functional areas containing a plurality of sources and on-chip apparatus for selecting signals from said plurality of sources, said on-chip apparatus comprising:
a plurality of decoder circuit means, each decoder circuit means being located at a different predetermined position on said chip, said different predetermined position being adjacent to at least one of said functional areas;
an access bus having a predetermined number of lines, said bus being distributed throughout said area of said chip as a function of said signals provided by the sources according to how said signals are concentrated on said chip;
a number of pluralities of transistor switching means, each plurality of said switching means being connected to one of said decoder circuit means located closest thereto, to said plurality of sources of an adjacent functional area and to selected ones of said access bus lines;
a control bus having a plurality of lines distributed and



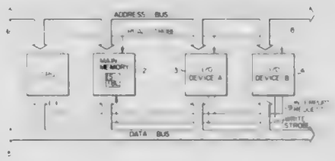
connected to each of said decoder circuit means for simultaneously applying a set of control signals to said plurality of decoder circuit means; and,
final selection circuit means connected to terminate said access bus lines, said selection circuit means being located adjacent to one of said functional areas which is to receive an output signal from said final selection circuit means, said plurality of decoder circuit means being simultaneously enabled by said set of control signals to transmit signals from said sources contained within said plurality of functional areas on said lines of said access bus to said final selection circuit means for accomplishing the final selection of an output signal.

4,799,148

INTERRUPT CONTROL SYSTEM HAVING A PROCESSOR FOR DETERMINING SERVICE PRIORITY AMONG A PLURALITY OF MODULES ACCORDING TO AN INTERRUPT STATUS TABLE

Syoji Nishioka, Fujinomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1985, Ser. No. 792,559
Claims priority, application Japan, Oct. 30, 1984, 59-228529
Int. Cl.[4] G06F *13/24*
U.S. Cl. 364—200 **8 Claims**



1. A data processing system comprising:
data processing means for controlling system operation;
a plurality of modules which request interrupts for requesting services from said data processing means;

memory means for storing information to be processed by said data processing means, said memory means including a plurality of memory locations assigned to each of said modules respectively;

each of said modules including writing means for writing interrupt status data to a corresponding one of said memory locations for requesting an interrupt for the writing module, and means for generating an interrupt request signal to notify said data processing means that an interrupt request has occurred in the system, concurrently with said writing interrupt status data;

an interrupt request line, connected to said modules and said data processing means, for wired-ORing said interrupt request signals output by any of said modules, and transmitting said wired-ORed request signals to said data processing means; and

said data processing means receiving said wired-ORed interrupt request signals and recognizing that any of said modules requests an interrupt, responsive to said recognition of said wired-ORed interrupt request signals, reading said interrupt status data from each of said memory locations to determine which of said modules is to be serviced.

4,799,149

HYBRID ASSOCIATIVE MEMORY COMPOSED OF A NON-ASSOCIATIVE BASIC STORAGE AND AN ASSOCIATIVE SURFACE, AS WELL AS METHOD FOR SEARCHING AND SORTING DATA STORED IN SUCH A HYBRID ASSOCIATIVE MEMORY

Gerhard Wolf, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

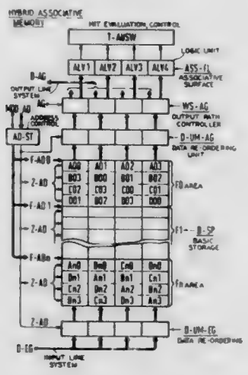
PCT No. PCT/DE84/00072, § 371 Date Nov. 15, 1984, § 102(e) Date Nov. 15, 1984, PCT Pub. No. WO84/03970, PCT Pub. Date Oct. 11, 1984

PCT Filed Mar. 29, 1984, Ser. No. 681,993

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311665; May 30, 1983, 3319581; Sep. 23, 1983, 3334536; Sep. 23, 1983, 3334515

Int. Cl.[4] G06F *7/02, 12/00*

U.S. Cl. 364—200 **62 Claims**



1. A hybrid associative memory, comprising:

(a) a non-associative basic storage means for storage of at least one group of data units wherein every data unit is subdivided into a constant plurality of data sub-units, the basic storage means being divided into data unit sections each formed of data unit sub-sections, the data unit sections storing the data units and the data unit sub-sections storing the data sub-units, the data unit sections being arranged vertically and being separated into a plurality of areas such as that each area has a plurality of the data unit sections associated therewith, the data units compared to one another within each area having respectively corresponding data sub-units, and said basic storage means having an offset storage of said data sub-units such that for adjacent data unit sections in each area, the respectively mutually corresponding data sub-unit of one data unit is laterally offset with respect to the mutually corresponding data sub-unit of the data unit lying vertically adjacent;

(b) addressing means connected to the basic storage means for creating respective area addresses for addressing the areas, for creating data unit section addresses for addressing data units in the data unit sections, and for creating selection addresses derived from the data unit section addresses for addressing data sub-units in the basic storage sub-unit sections;

(c) selection means connected with the addressing means for selection of a memory operating mode and, given a normal memory operating mode, for setting the addressing means for simultaneous selection of data sub-units of a given data unit, for in an alternate memory operating mode for selecting a set of said mutually corresponding data sub-units from said unit sections in a given area;

(d) re-ordering means connected to the basic storage means and addressing means for changing a sequence of the data sub-units of a respective data unit to be stored or to be read at least given said normal memory mode in order to recover a proper sequence when reading, or for producing a sequence required for ordering of the data sub-units in the memory with a determinant data unit section address for one of the data unit sections in a respective area;

(e) an associative surface connected to outputs of the data re-ordering means and comprising a plurality of logic units corresponding to the plurality of data sub-units that can be simultaneously read out from the basic storage means for a simultaneous associative check of the individual data sub-units supplied from the basic storage means; and

(f) a hit evaluation control means connected to and for sharing by all logic units.

4,799,150

INTERFACE SYSTEM BETWEEN A HOST COMPUTER AND A PERIPHERAL PROCESSOR WITH ADDRESS DETECTION CIRCUITRY

Le Bui, Fremont, Calif., assignor to Orchid Technology, Fremont, Calif.

Filed Jul. 29, 1985, Ser. No. 760,163

Int. Cl.[4] G06F *13/12, 12/00, 15/16*

U.S. Cl. 364—200 **10 Claims**

1. A computer interface system having an application mode of operation and an I/O mode of operation, for connection between a host computer and a peripheral processor which operate independently from one on another during the application mode of operation and which communicate with one another through the interface system during the I/O mode of operation, comprising:

peripheral bus means for connection to the peripheral processor, having a peripheral address portion for receiving instruction addresses from the peripheral processor, and having a peripheral data portion for transferring data from the peripheral processor to the interface system and from the interface system to the peripheral processor;

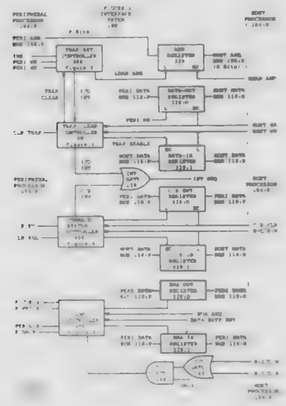
host bus means for connection to the host computer, having a host address portion for receiving instruction addresses from the interface system and having a host data portion for transferring data from the host computer to the interface system and from the interface system to the host computer;

instruction address detector means responsive to a predetermine pattern of binary values on at least a portion of the address bits within one instruction address at a time on the address portion of the peripheral bus means;

I/O set means responsive to the instruction address detector means for terminating the application mode of operation and initiating the I/O mode of operation;

I/O clear means responsive to a host clear signal from the host computer for terminating the I/O mode of operation and returning the interface system to the application mode of operation;

address transfer means for storing instruction addresses from the address portion of the peripheral bus means in response to a write signal from the peripheral processor, and for transferring the instruction addresses to the host computer on the host bus means in response to a read address signal from the host computer;



data-out transfer means for storing data from the peripheral bus means in response to a peripheral write signal from the peripheral processor, and for transferring the data to the host computer on the host bus means in response to a host data read signal from the host computer; and

data-in transfer means for storing data from the host bus means in response to a host write signal from the host computer, and for transferring the data to the peripheral processor on the peripheral bus means in response to a peripheral read signal from the peripheral processor.

4,799,151

MICROPROGRAM CONTROL CIRCUIT

Toshio Iwao, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 17, 1986, Ser. No. 942,785

Claims priority, application Japan, Dec. 20, 1985, 60-286934

Int. Cl.[4] G06F *9/22*

U.S. Cl. 364—200 **3 Claims**

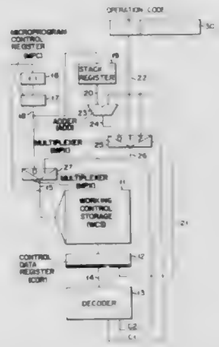
1. A microprogram control circuit, executing ones of a series of microinstructions, and comprising:

microinstruction storing means for storing the microinstructions including a return instruction having an offset designating field for designating an offset value from a return address in a pair program, one of the microinstructions being an executing microinstructions;

return address storing means for storing the return address in the main program, in response to a branch instruction in the main program;

adding means, connected to said return address storing means and said microinstruction storing means, for adding the offset value designated in the offset designating field and the return address stored in said return address storing means yielding an addition result, and for outputting the addition result, when the executing microinstruction in said microinstruction storing means is the return instruction; and

address supplying means, connected to said adding means and said microinstruction storing means, for supplying the addition result from said adding means to said microinstruction storing means, said addition result designating the one microinstruction in the series of microinstructions to be executed next.



4,799,152

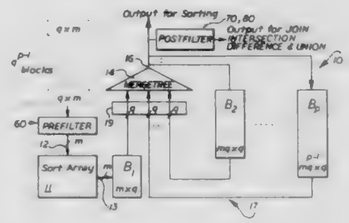
PIPELINE FEEDBACK ARRAY SORTER WITH MULTI-STRING SORT ARRAY AND MERGE TREE ARRAY

Henry Y. H. Chuang, Pittsburgh, Pa., and Guo He, Wuhan, China, assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Oct. 12, 1984, Ser. No. 660,465

Int. Cl.[4] G06F *7/36, 15/00*

U.S. Cl. 364—200 **9 Claims**



1. A pipeline feedback array sorter comprising:

(a) a multi-string sort array having m inputs and outputs, where m is the width of said array or the number of data strings and is greater than or equal to 2;

(b) a merge tree array having q leave nodes connected to the output of one of p buffer memories through a multiplexor for successively merging the columns of a buffer memory to fill subsequent buffer memory columns and having an output from the root node, where q is greater than or equal to 2 and p is greater than or equal to 1;

(c) a first buffer memory having m inputs connected to the corresponding m outputs of said multi-string sort array for filling said first buffer memory and q outputs, said first buffer memory having m×q memory units, each of said units for holding one data item, said first buffer memory having two dimensional data movements;

(d) p−1 buffer memories in feedback loops and having a single dimensional data movement, each of said p−1 buffer memories having an input connected with said output of said merge tree array and q outputs connected to said q leave nodes of said merge tree array, wherein each

VOL 1098 ISS 3 JA 17 1989 UMI

of said p buffer memories serve as input buffers to said merge tree array; and

(e) a multiplexor for controlling and filling from said first buffer memory and p−1 buffer memories electrically connected to the inputs to said merge tree, whereby merging the columns of the p-th buffer memory a final sort is obtained from said root node of said merge tree array.

4,799,153

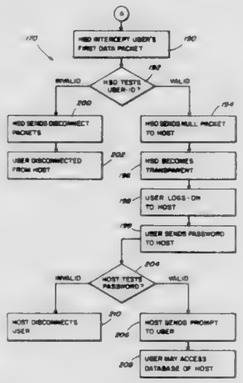
METHOD AND APPARATUS FOR ENHANCING SECURITY OF COMMUNICATIONS IN A PACKET-SWITCHED DATA COMMUNICATIONS SYSTEM

J. David Hann, Vienna, Va.; Theodore S. Holdahl, Bethesda, Md., and James C. P. Lam, Herndon, Va., assignors to Telenet Communications Corporation, Reston, Va.

Continuation of Ser. No. 681,751, Dec. 14, 1984, abandoned. This application Sep. 17, 1987, Ser. No. 97,278

Int. Cl.⁴ H04L *9/00*

U.S. Cl. 364—200 **9 Claims**



1. In a packet-switched data communications system having a network with at least one data entry and display terminal for system users and at least one host data processor having a stored database for communicating with said terminal via plural data transmission paths of said network, wherein communication and processing of data is accomplished according to a pre-established protocol and data format and with preprogrammed software and wherein any user may obtain access from a terminal to the database associated with a selected processor for a data communications session therewith, the security improvement comprising:

a terminal security means introduced into said system in data communicative relationship with said terminal and said network for generating an initial data packet including data identifying an authorized user and the address of the processor with the database to be accessed, in advance of at least one additional data packet containing message data to be processed by the addressed processor, said initial data packet generated in said format and compatible with said protocol but incompatible with said programmed software for processing by the addressed processor, said terminal security means including

means responsive to user-initiated data entry seeking access from a terminal for detecting whether the data entry includes user identify data, and

means responsive to said detection for transmitting said initial data packet and said at least one additional data packet to the addressed processor via said network; and

a host security means introduced into said system in data communicative relationship with said network to intercept and process said initial data packet for allowing or denying the requested access according to whether any user identity data contained in the intercepted initial data packet designates the initiating user as authorized or unauthorized, respectively, to obtain the requested access, said incompatibility of said initial data packet rendering it and immediately following data packets unsuitable for processing by the addressed processor, whereby neither data contained in the initial data packet nor the message data contained in additional data packets immediately following said initial data packet can be processed by the addressed processor should said host security means fail for any reason to intercept said initial data packet, said host security means including

means for processing the intercepted initial data packet to detect any such user identity data contained therein,

means responsive to detected user identity data for authenticating the authorization of the user therefrom, and

means responsive to authentication of user authorization for generating an artificial data packet in place of said initial data packet, to render the immediately following data packets compatible with both said protocol and said preprogrammed software to enable the addressed processor to process the message data contained in said at least one additional data packet and to provide the requested access for a communications session with the authorized user.

4,799,154

ARRAY PROCESSOR APPARATUS

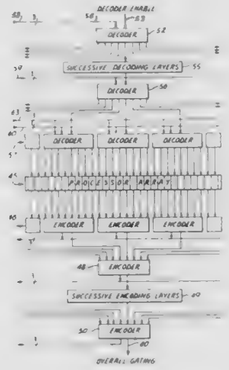
Kim N. Matthews, Romford, and Terence J. Fountain, Beckenham, both of England, assignors to National Research Development Corporation, London, England

Filed Nov. 15, 1985, Ser. No. 798,800

Claims priority, application United Kingdom, Nov. 23, 1984, 8429599

Int. Cl.⁴ G06F *9/06*

U.S. Cl. 364—200 **10 Claims**



1. Apparatus for processing an array of items of data comprising:

an array of processors, one processor for, and corresponding to, each item in the array of data items, each processor having an output terminal connected to an input terminal of at least one other processor in the array;

means for applying data to the processors and reading data therefrom;

priority encoder means, having input terminals with a priority order, for providing an output signal indicating which of said input terminals receives a signal having a predetermined value and has the highest priority; and

means for connecting the processors to the input terminals of the priority encoder means to give each processors a priority which depends on its position in the processor array,

wherein the encoder means comprises:

means for producing an output signal representing the position in the processor array of the highest priority processor having an output signal of said predetermined value, and a plurality of priority encoder circuits, each said priority encoder circuit having a plurality of input terminals, and a plurality of output address terminals, input signals applied to the input terminal of said priority encoder circuits being uniquely mapped to signals on the address output terminals.

4,799,155

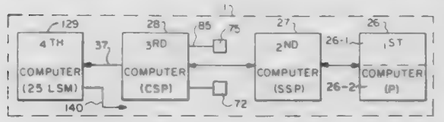
DATA PROCESSING SYSTEM HAVING A HIERARCHY OF SERVICE COMPUTERS INCLUDING A STATE DISPLAY

J. Chris Wilson, Santa Clara, and Arun Shah, Cupertino, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Dec. 31, 1986, Ser. No. 948,111

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 364—200 **25 Claims**



1. A data processing system comprising, a general-purpose, programmable first computer constructed from a plurality of first circuits, said first circuits having direct connections for accessing said first circuits in connection with the execution of a first program of instructions, said first circuits having first redundant connections for use in accessing said first circuits independently of said first program of instructions, said first computer including first scanner means for accessing said first redundant connections,

a programmable second computer constructed from a plurality of second circuits, said second circuits having direct connections for use in the execution of a second program of instructions using selected ones of said second circuits, said second circuits having second redundant connections for accessing said second circuits independently of said second program of instructions, said second computer including second scanner means for accessing said second redundant connections, said second computer connected to said first scanner means whereby said second program controls the accessing of said first circuits through said first redundant connection and independently of said first program of instructions,

a programmable third computer constructed from a plurality of third circuits, said third computer executing a third program of instruction, said third computer connected to said second scanner means whereby said third computer controls the accessing of said second circuits through said second redundant connections under control of said third program and independently of said second program, said third computer including means for continuously monitoring said second computer to determine if said second computer requires control by said third computer,

a display means for displaying scan data, and

a fourth computer coupled to said display means for controlling the display of scan data from said third computer.

4,799,156

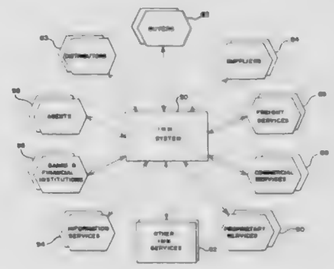
INTERACTIVE MARKET MANAGEMENT SYSTEM

Eyal Shavit, New York, N.Y., and Lester Teichner, Chicago, Ill., assignors to Strategic Processing Corporation, New York, N.Y.

Filed Oct. 1, 1986, Ser. No. 914,172

Int. Cl.⁴ G06F *15/21*

U.S. Cl. 364—401 **43 Claims**



1. A system for interactive online electronic communications and interactive on-line processing of business transactions between different types of independent users including at least a plurality of separate on-line sellers, and a plurality of buyers, wherein each user communicates with the system, the system comprising:

access means for providing selective access by users to a data base and for permitting selection of users by at least one other user;

processing means responsive to the access means for interactive on-line processing of a business transaction between one of the plurality of buyers and one of the plurality of online sellers wherein one party to the transaction is specifically selected by the other party via the access means.

4,799,157

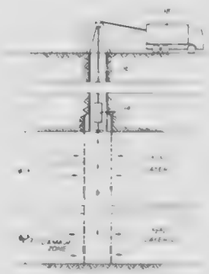
METHOD FOR UNIQUELY ESTIMATING PERMEABILITY AND SKIN FACTOR FOR AT LEAST TWO LAYERS OF A RESERVOIR

Fikri Kucuk, and Luis C. Ayestaran, both of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 648,113, Sep. 7, 1984, abandoned. This application Jan. 9, 1987, Ser. No. 62,324

Int. Cl.⁴ E21B *47/00*; G01F *13/00*

U.S. Cl. 364—422 **4 Claims**



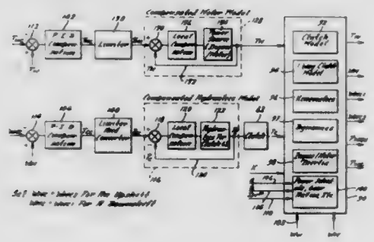
1. A well test method for estimating the permeability and skin factor of two layers in a reservoir comprising the steps of:

(1) positioning a logging tool in a first position at the top of the first layer of the reservoir;

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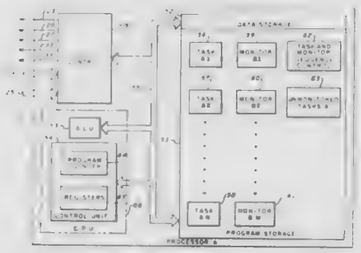
(2) changing the surface flow rate of the reservoir;
(3) measuring both the downhole fluid flow rate of the reservoir and pressure at said logging tool as a function of time;
(4) positioning said logging tool in a second position at the top of the second layer of the reservoir;
(5) repeating steps 2 and 3; and
(6) combining said measured fluid flow rates and pressures to estimate the permeability and skin factor of said layers.

4,799,158
SYSTEM FOR COMPUTER CONTROLLED SHIFTING OF AN AUTOMATIC TRANSMISSION
Prabhakar B. Patil, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 27, 1986, Ser. No. 867,177
Int. Cl.[4] B60K *41/06*
U.S. Cl. 364—424.1 **9 Claims**



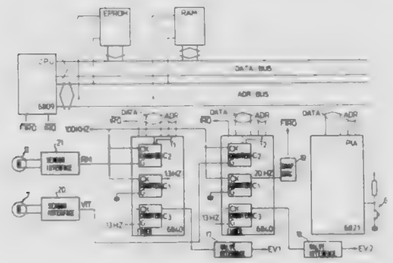
1. In a powertrain system for controlling the gear ratio changes of a multiple gear ratio automatic transmission having a gearset and a clutch whose pressure magnitude determines the gear ratio at which the transmission is operating, the transmission driveably connecting a power source and the drive wheels of a motor vehicle, a method for controlling the powertrain comprising the steps of:
modeling the kinematic and dynamic characteristics of the power source, gearset and clutches by formulating mathematically the output torque Tw of the transmission and the angular speed Wm of the power source for each of the gear ratios of operation and for the period during a gear ratio change as a function of an updated output torque Tm of the power source and an updated clutch torque Tc;
determining experimentally a first local compensation feedback required to produce the updated power source torque response to a power source torque command Tmc such that the torque response requirements of the system are realizable;
determining experimentally a second local compensation feedback required to produce the updated clutch torque response to a clutch torque command Tcc such that the torque response requirements of the system are realizable;
generating a first error Twe defined as the difference between the actual transmission output torque and a transmission output torque command;
determining the compensation required to produce the power source torque command Tmc as a function of the first error Twe;
generating a second error Wme defined as the difference between the actual power source speed and a power source speed command;
determining the compensation required to produce the clutch torque command Tcc as a function of the second error Wme;
converting the clutch torque command to a clutch pressure command Pcc;
generating a third error Tme defined as the difference between the updated power source torque and a power source torque command and producing as output from the first local compensation feedback the updated power source torque;
generating a fourth error Pce defined as the difference between the updated clutch pressure and a clutch pressure command and producing as output from the second local compensation feedback the updated clutch pressure Pc;
controlling the clutch torque by applying the updated clutch pressure to the clutch; and
controlling operation of the powertrain by issuing repetitively a transmission output torque command Twe and a power source speed command Wmc determined by use of the updated power source torque, the updated clutch pressure, and the formulation that relates said commands, said updated power source torque and said updated clutch pressure.

4,799,159
DIGITAL AUTOMATIC FLIGHT CONTROL SYSTEM WITH DISPARATE FUNCTION MONITORING
Dale D. Davidson, and Douglas G. Endrud, both of Glendale, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.
Filed May 30, 1985, Ser. No. 739,583
Int. Cl.[4] G06F *11/08, 15/50*
U.S. Cl. 364—424.06 **5 Claims**



1. An automatic flight control system for aircraft having sensor means for providing sensor signals in accordance with flight conditions experienced by said aircraft and having aircraft control means responsive to aircraft control command signals for controlling said flight conditions of said aircraft and for providing flight condition control signals to control aircraft functions affecting said flight conditions, one channel of said automatic control system comprising:
digital computer means having computer input means responsive to said sensor signals and said flight condition control signals, program memory means, and computer output means;
computer input coupling means for coupling said sensor signals and said flight condition control signals to said computer input means;
computer output coupling means for coupling said computer output means to said aircraft control means for providing aircraft control command signals thereto;
said digital computer means having a program stored in said program memory means comprising a plurality of first program segments for execution by said digital computer means such that said digital computer means operates responsively to said sensor signals by performing a plurality of tasks to provide said aircraft control command signals, which control said aircraft functions, to said computer output means;
said program further including a plurality of second program segments, correspondingly associated with said first program segments and responsive to said sensor signals, for respectively monitoring performance of said first program segments;
each said second program segment performing a disparate task over mutually disjoint computation paths with respect to said corresponding first program segment, said disparate tasks are arranged to test if said aircraft is performing in a manner prohibited by said aircraft functions controlled by said corresponding first program segment;
means for controlling repeated iterations of said program; and
means for assuring that all of said second program segments are executed during each iteration of said program.

4,799,160
CLUTCH AUTOMATION DEVICE
Yves Arbeille, Verrieres-le-Buisson; Yves Drutel, and Alain Viguier, both of Meudon-la-Foret, all of France, assignors to Renault Agriculture, Villacoublay, France
Filed Nov. 7, 1985, Ser. No. 795,943
Claims priority, application France, Nov. 7, 1984, 84 16959
Int. Cl.[4] G05D *16/20*; F16D *25/14, 47/06*
U.S. Cl. 364—424.1 **2 Claims**



1. A device for controlling engagement of a hydraulic clutch having a jack, said device comprising:
a first hydraulic control valve having a first solenoid for regulating fluid flow from a pressurized hydraulic fluid source to the jack to urge the clutch to engage;
a second hydraulic control valve having a second solenoid for regulating fluid from the jack to a reservoir to allow the clutch to disengage;
an actuating contact for providing a clutch operation signal indicating operation of the clutch;
a first pulse sensor for monitoring engine speed of a vehicle and providing an engine speed signal proportional to the monitored vehicle engine speed;
a second pulse sensor for monitoring wheel speed of a vehicle and providing a wheel speed signal proportional to the monitored vehicle wheel speed; and
electronic control circuitry responsive to the clutch operation signal for controlling the first and second hydraulic valves to cause the clutch to engage gradually, the electronic control circuitry including calculating means, valve control signal generating means, and means for regulating the valve control signal generating means; the calculating means receiving the engine speed signal and the wheel speed signal from the pulse sensors and calculating the vehicle engine speed and wheel speed therefrom, the valve control signal generating means generating first and second pulsed valve control signals having a common constant frequency and having current carrying times limited to vary between, but without reaching, a current carrying time causing constant energization of the solenoids and a current carrying time insufficient for energization of the solenoids, and the regulating means regulating the valve control signal generating means according to the engine speed and wheel speed of the vehicle as calculated by the calculating means to alternatively generate the first valve control signal with a relatively greater current carrying time than the second valve control signal, to cause the jack to be filled with fluid passed by the first control valve, or the first valve control signal with a relatively lesser current carrying time than the second valve control signal, to cause the jack to discharge fluid through the second control valve.

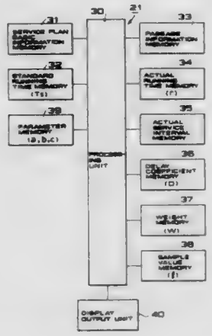
4,799,161
CONTROL APPARATUS FOR MAINTAINING TRACTION IN ELECTRIC ROLLING STOCK
Tetsuji Hirotsu; Kiyoshi Nakamura; Syoji Kasai; Hiroshi Yamaguchi, and Eiji Koza, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 7, 1986, Ser. No. 894,102
Claims priority, application Japan, Aug. 14, 1985, 60-177529
Int. Cl.[4] B61C *15/08*
U.S. Cl. 364—426.01 **16 Claims**



1. A control apparatus for electric rolling stock, comprising:
at least one electric motor for driving the rolling stock;
torque command generating means for generating a command Tp for a driving torque during power running of the rolling stock and for a braking torque during braking of the rolling stock, and for controlling said electric motor in accordance therewith;
first velocity detection means for detecting a peripheral velocity v_m of a wheel of the rolling stock, to which the driving or braking force F is applied;
second velocity detection means for detecting a velocity v_f of the rolling stock;
processing unit means for receiving signals representative of the velocities v_m and v_f produced by said first and second velocity detection means and for producing a re-adhesion control signal in accordance therewith, said processing unit means including means for comparing the velocities v_m and v_f and for producing an adhesion-state-relative signal v_r in accordance therewith, means for discriminating on the basis of the adhesion-state-relative signal v_r whether or not the wheels, to which the driving or braking force F is applied, are in a developing period of a nonadhesion state in which the force F remains larger than an adhesive force available at a location of a rail where the rolling stock is now running, and for producing, when it is discriminated that the nonadhesion state of the wheels is in the developing period on the basis of a calculation using the adhesion-state-relative signal v_r, the re-adhesion control signal Tf including a nonadhesion-independent component e_1 which is produced upon occurrence of the nonadhesion state of the wheels and changes in its magnitude independently from the adhesion-state-relative signal v_r and a nonadhesion-dependent component e_2 which changes in its magnitude in accordance with the adhesion-state-relative signal v_r, and for producing after it is discriminated that the developing period of the nonadhesion state is terminated and is in a nondeveloping period of nonadhesion, the re-adhesion control signal Tf including a component decreased with a certain time constant; and
control means, responsive to a torque reference obtained by correcting the torque command T_p based on the re-adhesion control signal Tf, for controlling the driving or braking torque produced by said at least one electric motor to

regulate the driving or braking force F applied to wheels of the rolling stock.

4,799,162
ROUTE BUS SERVICE CONTROLLING SYSTEM
Kiyoshi Shinkawa; Takeshi Kawahara; Hideki Hayakawa, and Masaru Mori, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 24, 1986, Ser. No. 923,093
Claims priority, application Japan, Oct. 25, 1985, 60-239056; Oct. 25, 1985, 60-239058; Oct. 29, 1985, 60-244544; Oct. 29, 1985, 60-244545; Nov. 6, 1985, 60-249611; Mar. 18, 1986, 61-62054
Int. Cl.[4] G06F *15/48*; G08G *1/01*
U.S. Cl. 364—436 **6 Claims**



1. A route bus service controlling system including a mobile radio unit equipped on a route bus, ground radio units installed at certain intervals of distance along the entire route of the bus, a central processor which calculates expected operational information for a specific section of said route based on passage information provided by said mobile radio unit and ground radio units, and a plurality of display units for displaying said expected operational information, wherein said central processor comprises:

(a) a memory for storing service plan basic information, passage information, actual running time in said specific section, standard running time, and actual service interval; and

(b) a processing unit which:

(1) adds a passage time of a bus under forecast at the arrival at a latest ground radio unit to a sum of expected running time for divided unit segments of route where the bus has not yet run,

(2) sets a finite time frame for providing the running time of buses which have run in the past,

(3) calculates an average movement value of a plurality of buses which have passed in said specific section before the bus under forecast by using a delay coefficient normalized for the standard running time and a weight value for the actual running time,

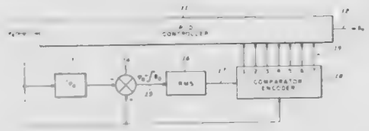
(4) determines a sample value showing an average movement value of each specific section for the bus under forecast from the calculated average movement value,

(5) calculates an expected running time in each specific section by multiplying said sample value by said standard running time, and

(6) calculates arrival time at a specific location by cumulating expected running time of each specific section in a portion of route where the bus has not yet run through a similar computational process; and

(c) wherein arrival time at a specific location and information of route bus operation calculated by said processing unit is displayed on display units provided in each location of the bus route and on each route bus.

4,799,163
AUTOPILOT WITH ADAPTIVE WEATHER ADJUSTMENT FOR MARINE VESSELS
Charles R. Wesner, Crozet, Va., assignor to Sperry Marine Inc., Charlottesville, Va.
Filed Feb. 2, 1987, Ser. No. 10,861
Int. Cl.[4] G06F *15/50*
U.S. Cl. 364—457 **6 Claims**



1. Heading keeping apparatus for a marine vessel autopilot having an adjustable gain comprising:

instantaneous yaw means for providing a signal representative of instantaneous yaw motion of said vessel,

RMS yaw means responsive to said instantaneous yaw means for providing a signal representative of RMS yaw motion of said vessel,

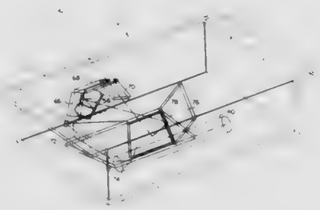
first comparator means responsive to said RMS yaw signal for providing a first gain step control signal in accordance with first threshold levels exceeded by said RMS yaw signal,

second comparator means responsive to said instantaneous yaw signal for providing a second gain step control signal in accordance with second threshold levels exceeded by said signal representative of said instantaneous yaw, and

selector means for selecting said first or said second gain step control signal in accordance with the highest gain associated therewith, thereby providing a selected gain step control signal,

said selected gain step control signal being utilized to adjust said autopilot gain.

4,799,164
SHALLOW BAR CODE SCANNER
Ronald A. Hellekson, Eugene; Jorge L. Acosta, Veneta, both of Oreg., and John S. Campbell, Palo Alto, Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.
Filed Sep. 12, 1986, Ser. No. 907,292
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—467 **34 Claims**



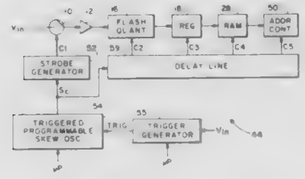
1. A low-profile laser scanner for reading bar codes positioned above the scanner, comprising:

a housing of shallow profile height, no more than about 13 cm in height, with a deck as a top surface;

a laser in the housing producing a beam to be scanned;

optical means within the housing, including a plurality of mirrors at least one of which is tilted downwardly to route said beam to a bottom mirror which then reflect said beam in an upward direction for producing a five-apparent-source scan geometry within an optimum scan volume above the desk, the scan geometry including a center horizontal scan line, two side horizontal scan lines and two generally vertical scan lines, all generated within scanning planes at different angular orientations, produced within the confines of the shallow profile height of the housing.

4,799,165
LEVEL DETECTING WAVEFORM SAMPLING SYSTEM
Allen L. Hollister, Beaverton, and Edward L. Reuss, Aloha, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Mar. 3, 1986, Ser. No. 835,417
Int. Cl.[4] G09G *1/00*; H01J *29/98*
U.S. Cl. 364—487 **9 Claims**



8. A method for determining a first time interval between a triggering event in a waveform and the moment that the magnitude of the waveform obtains a predetermined limit, the method comprising the steps of:

generating a periodic sampling control signal of a known frequency commencing at the end of an adjustable predetermined second time interval following a triggering even in a waveform;

sampling the waveform in response to each period of said periodic sampling control signal to produce a sequence of analog waveform samples representative of the magnitude of the waveform at the end of said predetermined second time interval and at regular intervals thereafter;

converting each said analog waveform sample into representative digital sample data;

generating an indicating signal when the digital sample data passes a predetermined limit;

providing a count of analog waveform samples produced; and

ascertaining the magnitude of said first time interval from the magnitude of said count at the moment said indicating signal is generated, from the frequency of the periodic sampling control signal, and from the duration of the second time interval.

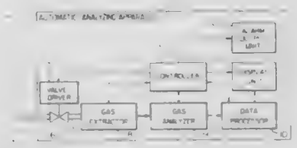
4,799,166
APPARATUS FOR AUTOMATICALLY ANALYZING GASES IN OIL
Katsumi Shiono; Hideo Shinohara; Sadao Naito, and Goroo Ikeda, all of Ako, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Continuation of Ser. No. 856,472, Apr. 28, 1986, abandoned. This application Mar. 2, 1988, Ser. No. 166,722
Int. Cl.[4] H02H *7/04*
U.S. Cl. 364—497 **1 Claim**

1. An apparatus for automatically analyzing gases in oil comprising:

a gas extractor for deriving a slight amount of oil from an oil-immersed equipment to extract combustible gases contained therein in accordance with a sampling rate;

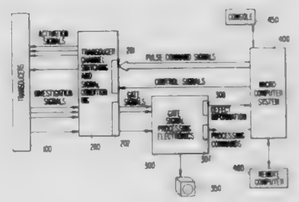
a gas analyzer for deriving the combustible gases extracted by the gas extractor to analyze the total quantity of the combustible gases or quantities of specified combustible gases; and

a data processor for storing results analyzed by the gas analyzer, for determining the trend of combustible gas quantities exceeding a predetermined value in the sample oil and the presence or absence of an abnormality in the



oil-immersing equipment thereby, for compensating for errors in the results of the gas analyzer by performing statistical processing in which dispersion of data is considered, and for automatically adjusting the sampling rate of oil sampling and analytical processing routines on the basis of an increasing or decreasing trend of the analyzed results.

4,799,167
ULTRASONIC 64 CHANNEL INSPECTION SYSTEM WITH MULTIGATE/MULTIMODE SELECTION SOFTWARE CONFIGURABILITY
Dennis P. Sarr, Kent, Wash., assignor to The Boeing Company, Del.
Filed Dec. 31, 1985, Ser. No. 815,044
Int. Cl.[4] G01N *29/04*
U.S. Cl. 364—507 **22 Claims**



19. A method of nondestructive ultrasonic testing of an object including the steps of:

sending ultrasonic energy to and receiving ultrasonic energy from said object;

transducing said received ultrasonic energy to form investigation signals;

selecting certain of said investigation signals to be gate signals;

processing said gate signals to obtain defect information; and

selecting certain of said defect information for subsequent processing.

4,799,168
DATA RECORDING APPARATUS FOR AN ULTRASONIC INSPECTION SYSTEM
Dennis P. Sarr, Kent, Wash., assignor to The Boeing Company, Del.
Filed Dec. 31, 1985, Ser. No. 815,050
Int. Cl.[4] G01N *29/04*
U.S. Cl. 364—507 **11 Claims**

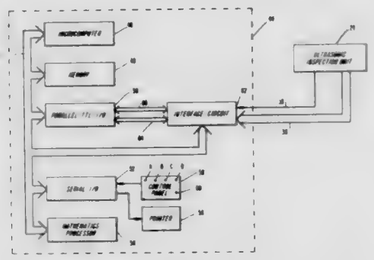
1. Ultrasonic inspection apparatus, comprising:

ultrasonic inspection means for generating ultrasonic inspection pulses, for supplying said pulses to a part being in-

spected, for producing an output signal proportional to the level of echo pulses received within a predetermined gate time window following generation of said inspection pulses, and for generating an alarm signal whenever said output signal exceeds a predetermined gate level;

means for storing a value of said output signal as a reference level;

means for receiving a plurality of operator-entered signals;



means for causing the currently produced value of said output signal to be stored as said reference level upon receipt of a first operator-entered signal and said alarm signal;

means for calculating the relationship between said reference level and said output signal upon receipt of a second operator-entered signal and said alarm signal; and

means for recording said relationship as an indication of a defect in a part being inspected.

4,799,169

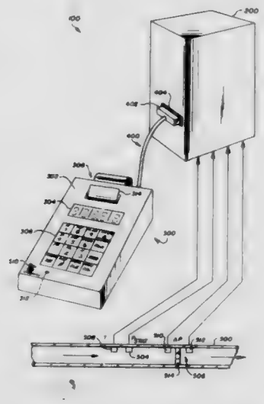
GAS WELL FLOW INSTRUMENTATION

Charles R. Mims, Sumrall, Miss., assignor to Mark Industries, Inc., Goshen, Ky.

Continuation of Ser. No. 56,271, May 26, 1987, abandoned, which is a continuation of Ser. No. 660,130, Oct. 12, 1984, abandoned. This application Feb. 24, 1988, Ser. No. 161,429

Int. Cl.[4] G01F *1/00*

U.S. Cl. 364—510 **15 Claims**



1. An apparatus for measuring gas flow comprising:

measuring means connected to a gas conduit at a fixed position thereof for producing periodic signals indicative of flow parameters of gas flowing through said conduit including means disposed within said conduit for restricting the cross sectional diameter thereof, having transducer means positioned on opposite sides of said restriction for producing periodic signals proportional to differential pressure across said restricting means;

computing means, connected to receive said periodic signals provided by said measuring means, for producing from said periodic signals indicia of the amount of gas flowing through said conduit over a first time interval greater than the periods of said periods signals and for producing indicia of the amount of gas flowing through said conduit over a plurality of different time intervals;

means for storing indicia of the amount of flow associated with each of said plurality of different time periods including means storing the values of numerical constants and measured gas flow characteristics used to produce said indicia of gas flow for each of said time periods to verify the accuracy of said produced indicia of gas flow; and

portable interrogating means, selectively connected to said storing means, and including means for initializing and calibrating said computing means to thereby assure accuracy of measurement and being selectively operable for extracting said stored indicia of the amount of flow associated with a selected one of said plurality of time intervals, and having means for selectively determining the length of each of said plurality of time intervals, said interrogating means including means for making a permanent digital record of said extracted indicia of the amount of flow.

4,799,170

METHOD OF MEASURING BY COORDINATE MEASURING INSTRUMENT

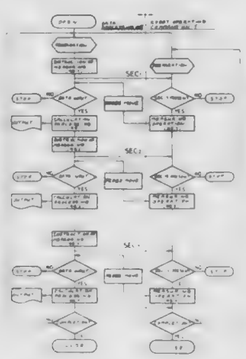
Tadao Nakaya, Utsunomiya, and Shinji Ide, Shimizu, both of Japan, assignors to Mitutoyo Mfg. Co. Ltd., Tokyo and Shimizu Kiden Co., Ltd., Shizuoka, both of, Japan

Filed Mar. 18, 1986, Ser. No. 841,104

Claims priority, application Japan, Mar. 19, 1985, 60-55092; Mar. 19, 1985, 60-55093

Int. Cl.[4] G06F *15/46*; G01B *5/20*

U.S. Cl. 364—513 **4 Claims**



1. In a method of measuring by a coordinate measuring instrument including a robot mechanism with driving means coupled to a detecting element for moving said detecting element in tri-dimensional directions to bring said detecting element into contact with a work to be measured rested on a mount, displacement detectors for detecting displacement values of said detecting element, and a data processing unit for processing an output signal from said displacement detectors in a predetermined manner to provide dimensions of said work, the method comprising the steps of:

uncoupling said detecting element from said driving means of said robot mechanism;

manually moving, during a detecting element moving step storing process, said detecting element along a sample of work to be measured rested on said mount in accordance with a predetermined measuring step program, including a plurality of steps preset in said data processing unit; while, a moving path of said detecting element is detected by said displacement detectors, output signals from said displacement detectors are outputted to a robot operating command unit of said robot mechanism, said robot mechanism being independent of a main body of said coordinate measuring instrument, to thereby store the moving path of said detecting element in said robot operating command unit;

coupling said detector element to said driving means of said robot mechanism;

replacing said sample of work with a work to be measured;

operating said robot mechanism so that said driving means thereof will bring, during a measured data fetch process said detecting element into contact with said work to be measured in accordance with moving path data recorded in said robot operating command unit in response to each of the steps of said measuring step program, and simultaneously feeding output signals of said displacement detectors into said data processing unit;

calculating, during a measured value calculating process, dimensions of said work on the basis of the measured data collected during said measured data fetch process and feeding a succeeding step exciting command to said robot operating command unit upon completion of the calculation; and

wherein said measured data fetch process and said measured data calculating process are repeated over all steps of said measuring step program so as to effect an automatic measuring task on different works to be measured.

4,799,171

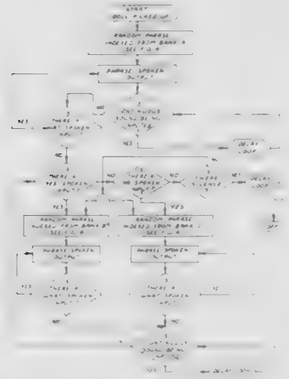
TALK BACK DOLL

Charles A. Cummings, Cincinnati, Ohio, assignor to Kenner Parker Toys Inc., Beverly, Mass.

Continuation-in-part of Ser. No. 506,132, Jun. 20, 1983, abandoned. This application Nov. 21, 1983, Ser. No. 553,922

Int. Cl.[4] G10L *5/00*

U.S. Cl. 364—513.5 **54 Claims**



1. A talk back doll or toy figure comprising a microphone, a speech recognition unit connected to said microphone responsive to a predetermined band of frequencies contained in speech signals from said microphone, a battery, a normally open acceleration switch for actuating said speech recognition unit when said switch is momentarily closed by movement of said toy figure to condition said speech recognition unit for reception of speech-derived signals from said microphone, a speech synthesis unit controlled by said speech recognition unit for producing output signals representative of various preselected words in general accordance with said predetermined band of frequencies contained in said speech-derived signals, and speaker means connected to said speech synthesis unit for producing voice sounds derived from said output signals and containing therein a phrase composed of some of said preselected words.

4,799,172

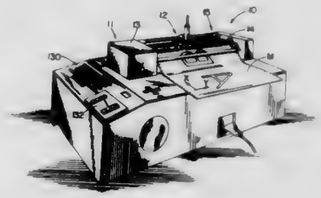
APPARATUS AND METHOD FOR AUTOMATIC LAYOUT OF SIGN TEXT

Kenneth O. Wood, Ellington, and David J. Logan, Glastonbury, both of Conn., assignors to Gerber Scientific Products, Inc., Manchester, Conn.

Filed Apr. 30, 1986, Ser. No. 857,849

Int. Cl.[4] G01D *9/38*

U.S. Cl. 364—518 **26 Claims**



1. A method for laying out a sign, said method comprising the steps of:

designating characters for first and second consecutive lines of sign text,

designating a height for each of said first and second lines of the sign text,

providing a spatial factor which corresponds to a general level of openness of the sign, and

spacing said first and second lines from one another by a spacing which is a function of the heights of said first and second lines of text and of said spatial factor.

4,799,173

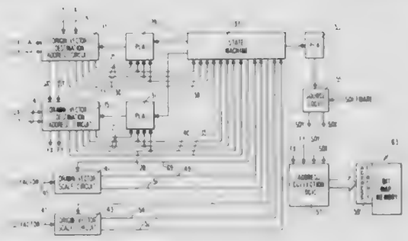
TRANSFORMATION CIRCUIT TO EFFECT RASTER OPERATIONS

Robert C. Rose, Hudson, and Ned C. Forrester, Falmouth, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 28, 1986, Ser. No. 834,600

Int. Cl.[4] G06F *3/00*

U.S. Cl. 364—518 **16 Claims**



1. A transformation circuit for reading a first plurality of pixel values corresponding to a source image from a first array of addresses in a bit map memory having rows and columns of addresses and writing a second plurality of pixel values corresponding to a transformed version of the source image into a second array of addresses in the bit map memory, each address

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consisting of an X address component identifying a column in the bit map memory and a Y address component identifying a row, the source image being formed by a plurality of parallel source fast vectors originating along a source slow vector perpendicular thereto, and the transformed image being formed by a plurality of destination fast vectors originating along a destination slow vector, each destination fast vector being a transformation of a corresponding source fast vector and the destination slow vector being a transformation of the source slow vector, each vector comprising pixel values stored at a sequence of addresses, an address circuit being connected to the bit map memory, the address circuit accessing a selected address in the bit map memory in response to address signals, wherein the transformation circuit comprises the following:

(a) slow vector destination address circuitry (13) for outputting a sequence of addresses at which the pixel values representing the destination slow vector are to be stored as a function of the X and Y components of the first address and the X and Y extents of the destination slow vector;

(b) fast vector destination address circuitry (15) connected to the slow vector destination address circuitry for outputting a sequence of addresses at which the pixel values representing a destination fast vector are to be stored as a function of the address output by the slow vector destination address circuitry and the X and Y extents of a destination fast vector;

(c) source logic circuitry (55) for outputting the first array of addresses in sequence;

(d) switching circuitry (29, 31, 53) connected to the slow vector destination address circuitry, the fast vector destination address circuitry and the source logic circuitry for outputting switching signals for determining the sequence of addresses output by the slow vector destination address circuitry, the fast vector destination address circuitry and the source logic circuitry respectively;

(e) control circuitry (37) connected to the switching circuitry, the slow vector destination address circuitry and the fast vector destination address circuitry for outputting contol signals to the switching circuitry in response to status signals from the destination address circuitry; and

(f) address collection circuitry (50) connected to the source logic circuitry (55), the fast vector destination address circuitry (15) and the address circuit (59) for multiplexing the addresses output by the source logic circuitry and the fast vector destination address circuitry to the address circuit (59).

4,799,174

MULTIPLE SET POINT CONDITION MONITORING SYSTEMS

L. Jonathan Kramer, Warminster, and Steven R. Petersen, Ambler, both of Pa., assignors to Drexelbrook Controls, Inc., Horsham, Pa.

Continuation of Ser. No. 839,794, Mar. 13, 1986, abandoned. This application Oct. 23, 1987, Ser. No. 113,358
Int. Cl.[4] G01F *23/26*
U.S. Cl. 364—550 **24 Claims**

1. A system for monitoring a specified condition of materials at multiple set points comprising:

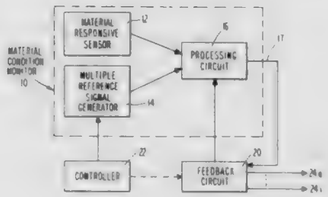
comparison means having a pair of inputs;

material sensing means comprising a single admittance probe coupled to one of the inputs of the comparison means for providing an admittance indicative of the condition of the materials;

sequential admittance generator means coupled to the other input of the comparison means for automatically and repeatedly providing a plurality of different admittance values, each admittance value corresponding to a different set point;

detector means coupled to the comparison means for detecting a difference between the admittance provided by the material sensing means and each of the admittances provided by the sequential admittance generator and providing an output indicative thereof;

storage means coupled to the detector means for storing indications of differences detected by the comparison means for each admittance value provided by the sequential admittance generator means;



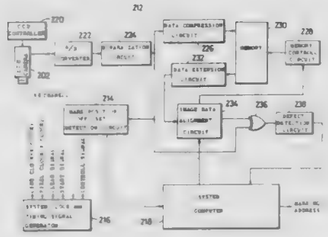
output means coupled to the storage means for providing a plurality of output signals, each output signal corresponding to at least one of the indications stored by the storage means; whereby each output signal represents a relationship between at least one of the multiple set points and the condition of the materials indicated by the material sensing means.

4,799,175

SYSTEM FOR INSPECTING PATTERN DEFECTS OF PRINTED WIRING BOARDS

Tetsuo Sano; Tetsuo Hohki, both of Kyoto; Eiji Kodama, Higashi-Osaka; Takumi Yoshida, Kusatsu; Masafumi Kawatani, Takatsuki, and Hiroyuki Tsujinaka, Kyoto, all of Japan, assignors to Dainippon Screen Mfg., Co., Kyoto, Japan

Filed May 10, 1985, Ser. No. 733,506
Claims priority, application Japan, Jan. 12, 1984, 59-120992
Int. Cl.[4] H04N *7/00*
U.S. Cl. 364—552 **17 Claims**



1. A method of inspecting pattern defects of printed wiring boards of the same type by comparing pattern data of said printed wiring boards, said method comprising the steps of:

placing a first printed wiring board having positioning marks being in prescribed positional relation to positioning marks of a wiring pattern on a table driven in a sub scanning direction;

reading said marks of said first printed wiring board to find the amount of deviation of said first printed wiring board with respect to a reference position in an inspection system and thereafter performing image acquisition of an inspected area of said first printed wiring board by sequential scanning thereby to store obtained pattern data in a memory unit;

placing a second printed wiring board having the same positioning marks as said marks on said table;

reading said marks of said second printed wiring board thereby to find the amount of deviation of said second printed wiring board with respect to said reference position in said inspection system in order to find an amount of relative misregistration between said second printed wiring board with respect to said first printed wiring board by comparing the read marks of said first and second printed wiring boards; and

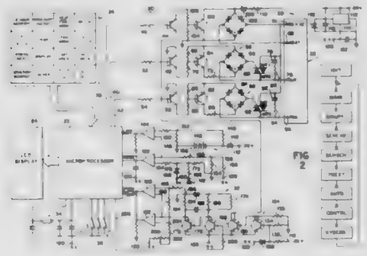
controlling reading of pattern data of said first printed wiring board stored in said memory unit on the basis of said amount of said relative misregistration when said inspected area of said second printed wiring board is subjected to image acquisition while controlling arrangement of said read pattern data thereby to compare both pattern data in pixel data correspondence on the basis of pattern data of said second printed wiring board obtained by sequential scanning.

4,799,176

ELECTRONIC DIGITAL THERMOSTAT

Joseph J. Caccistore, Westmont, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed Dec. 29, 1986, Ser. No. 946,830
Int. Cl.[4] F23N *5/20*; G06F *15/20*
U.S. Cl. 364—557 **15 Claims**



5. A programmable electronic digital thermostat for controlling a temperature conditioning system to maintain a scheduled set ambient temperature, said thermostat comprising:

controlled semiconductor switch means for selectively activating and deactivating the temperature conditioning system;

a microprocessor for storing a program and for performing logical control operations in accordance with said stored program;

temperature sensing means coupled to said microprocessor for providing a pulse width modulated PWM signal representative of ambient temperature in response to an enable control signal from said microprocessor said PWM temperature signal applied to said microprocessor;

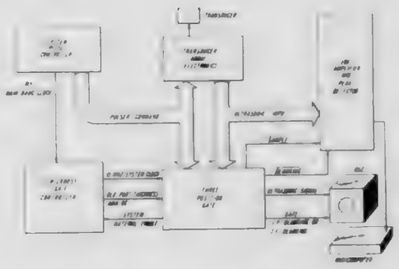
said microprocessor being cooled to said controlled semiconductor switch means and generating control signals for activating and deactivating said semiconductor switch means in response to a determined temperature difference between said PWM temperature signal and a dynamically adjusted temperature control signal, said dynamically adjusted temperature control signal being set to one of an initial minimum or maximum value relative to said scheduled set ambient temperature in response to each of said microprocessor generated control signals for activating and deactivating said semiconductor switch means, said temperature control signal being adjusted in discrete steps toward said set ambient temperature after an elapsed variable time interval.

4,799,177

ULTRASONIC INSTRUMENTATION FOR EXAMINATION OF VARIABLE-THICKNESS OBJECTS

Dennis P. Sarr, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 31, 1985, Ser. No. 815,038
Int. Cl.[4] G01N *29/00*
U.S. Cl. 364—563 **26 Claims**



1. An apparatus for ultrasonic inspection of a part comprising:

means for generating a transmission signal;

a plurality of transducer channels, coupled to said transmission signal generating means, for generating ultrasonic pulses for transmission into said part, for receiving portions of said ultrasonic pulses from said part, and for creating electrical reflection signals representing said portions, one of said transducer channels being a thickness transducer channel and including means for determining a part thickness value representing the thickness of a portion of said part adjacent said thickness transducer channel;

means, coupled to each of said transducer channels, for measuring the amplitude of said electrical reflection signals only during a time window corresponding to said part thickness value; and

thickness gating means, coupled to said measuring means, for automatically replacing said part thickness value with a subsequently determined part thickness value, and thereby adjusting said time window, according to electrical reflection signals received by said thickness transducer channel only if said subsequently determined part thickness value differs from said part thickness value by less than a predetermined difference value.

4,799,178

METHOD AND APPARATUS FOR DETECTING ROTATIONAL SPEED

Peter J. Spadafora, Kokomo; Jill G. Hersberger, Galveston; Myron H. Bell, Indianapolis, and Robert L. Harding, Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed May 26, 1987, Ser. No. 54,292
Int. Cl.[4] G01P *3/36*
U.S. Cl. 364—565 **6 Claims**

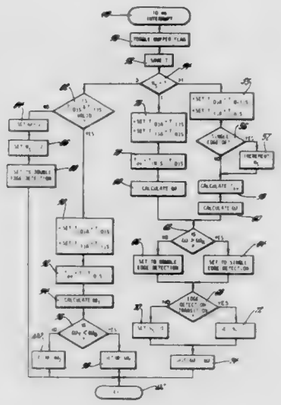
1. A system for measuring the speed of a rotating member, the system comprising, in combination:

means for generating a speed signal for each predetermined angular rotation of the member, the generated speed signals having a frequency directly proportional to the rotational speed of the member;

means for counting the number of speed signals generated during each of successive sampling intervals; and

means effective at the end of each sampling interval for (A) determining the elapsed time from the next-to-last speed signal generated in the prior sampling interval to the last speed signal generated, the elapsed time comprising a calculation interval and (B) dividing the calculation interval by one greater than the number of speed signals

counted during the sampling interval to obtain the average time between speed signals, the average time being a measure of the speed of the rotating member, whereby



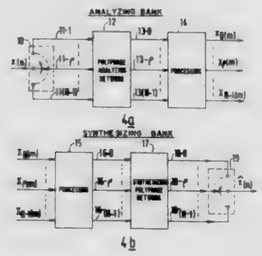
successive calculation intervals overlap so as to minimize the influence of one speed signal on successive determinations of the speed of the rotating member.

4,799,179

SIGNAL ANALYSING AND SYNTHESIZING FILTER BANK SYSTEM

Jacques L. R. Masson, Chatou, and Zdenek Picel, Velizy, both of France, assignors to Telecommunications Radioelectriques et telephoniques T.R.T., Paris, France

Filed Jan. 27, 1986, Ser. No. 822,503
Claims priority, application France, Feb. 1, 1985, 85 01429
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—724.1 **5 Claims**



4a

4b

1. A digital signal processing system comprising:

a. an analysing filter bank for dividing an incoming signal, sampled at a rate f_3 and occupying a frequency band limited to $f_e/2$, into N contiguous subband signals having respective bandwidths of $f_e/2N$ and which are sampled at a rate f_e/N, said analyzing filter bank comprising N prototype low-pass filters, one for each subband and arranged in parallel along N respective branches, each prototype filter:

i. having a same finite and symmetrical impulse response;

ii. having a beginning-of-attenuation-band frequency f_a less than $f_e/2N$; and

iii. satisfying the condition $H^2(f)+H^2(f_e/2N-f)=1$ in a band of frequencies f extending from 0 to f_a, where H(f) is the absolute value of the frequency response to each prototype filter; and

iv. comprising a modulation input for receiving a modulation signal, each modulation signal having:

A. a frequency $f_k=(2k+1)f_e/(4N)$, where k is an integer, running from 0 N−1, representing a respective one of the N subbands;

B. a phase α_k, such that α_0 is equal to one of $\pi/4$, $3\pi/4$, $5\pi/4$, and $7\pi/4$, and such that for two contiguous subbands represented by k and k−1, the difference $\alpha_k-\alpha_{k-1}$ is equal to one of $\pi/2$ and $-\pi/2$; and

C. a time delay $\tau=(N_c-1)/(2f_e)$, where N_c is a number of coefficients required for realizing the prototype filter; and

b. a synthesizing filter bank for recoverying said incoming signal from said subband signals, said synthesizing filter bank comprising N prototype low-pass filters which are the same as the prototype filters used in the analyzing filter bank, except that the phase of the modulation signals is $-\alpha_k$,

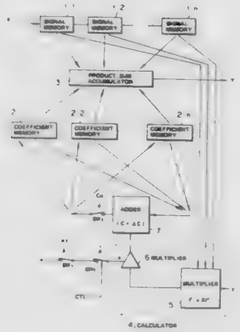
whereby the number N is any integer greater than or equal to 2 and whereby N_c is not constrained to be a multiple of N.

4,799,180

ADAPTIVE AUTOMATIC EQUALIZER

Mitsuo Suzuki, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1986, Ser. No. 924,808
Claims priority, application Japan, Oct. 31, 1985, 60-245204
Int. Cl.[4] G06F *15/31*
U.S. Cl. 364—724.2 **7 Claims**



1. An adaptive automatic equalizer comprising:

a plurality of signal memory means for delaying an input signal at a plurality of stages;

a plurality of coefficient memory means for storing weighting coefficients to be applied to said input signal at respective delay stages, each of said coefficient memory means corresponding to a respective one of said signal memory means;

product sum accumulating means for multiplying said input signal stored in each of said signal memory means with said weighting coefficients stored in respective ones of said coefficient memory means at respective delay stages, and for accumulating respective products thus obtained so as to produce a signal based on the result of the accumulation as a corrected input signal whose distortion is corrected;

calculating means for calculating at respective delay stages a correction value for said weighting coefficients stored in said coefficient memory means based on a difference signal between an output signal of said product sum accumulating means and a desired signal, wherein said calculating means includes a multiplier for multiplying a difference between said input signal corrected by said product accumulating means and said desired signal with a complex conjugate of the input signals stored in said signal memory means and the correction rate of said weighting coefficient at each delay state of said input signal, thereby obtaining a correction value of the weighting coefficient for each delay stage;

correcting means for correcting said weighting coefficients in accordance with the correction value calculated by said calculating means;

detecting means for detecting a rapid change of said input signal; and

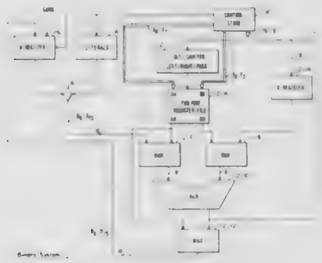
means for inhibiting a substantial correction of said weighting coefficients to be effected by said correcting means when said rapid change is detected by said detecting means during an interval between said rapid change of said input signal and return of said input signal to a stable state.

4,799,181

BCD ARITHMETIC USING BINARY ARITHMETIC AND LOGICAL OPERATIONS

Steven A. Tague, Billerica, and William E. Woods, Natick, both of Mass., assignors to Honeywell Bull Inc., Minneapolis, Minn.

Filed Sep. 30, 1986, Ser. No. 913,810
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—736 **36 Claims**



13. Apparatus for performing an arithmetic operation on binary coded decimal (BCD) operands comprising:

a control store for generating control signals, address signals and operands;

first means coupled to said control store and responsive to said control signals, said address signals and a first of said operands for converting each digit of a first BCD operand and a second BCD operand to a hexadecimal excess 3 digit to form a second operand and a third operand respectively;

second means coupled to said control store and said first means and responsive to said control signals and said address signals for adding corresponding hexadecimal excess 3 digits of said second and said third operands to generate a partial result;

third means coupled to said control store and said first and said second means and responsive to said control signals and said address signals for generating a first hexadecimal digit value in each digit position from which a carry resulted from the addition of said second and said third operands and generating a second hexadecimal digit value in each digit position from which no carry resulted; and

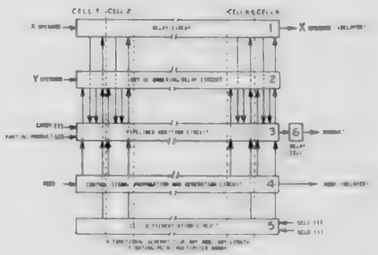
fourth means coupled to said control store, said second means and said third means and responsive to said control signals and said address signals for adding said first and said second hexadecimal digit values to corresponding digit positions of said partial result and adding binary ONE to generate a final result.

4,799,182

CELLULAR FLOATING-POINT SERIAL PIPELINED MULTIPLIER

Warren Marwood, Fairview Park, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU85/00249, § 371 Date Jun. 16, 1986, § 102(e) Date Jun. 16, 1986, PCT Pub. No. WO86/02474, PCT Pub. Date Apr. 24, 1986
PCT Filed Oct. 16, 1985, Ser. No. 882,935
Claims priority, application Australia, Oct. 16, 1984, PG7661
Int. Cl.[4] G06F *7/52*
U.S. Cl. 364—748 **11 Claims**



1. A cellular floating-point serial pipe-lined multiplier arranged to accept two synchronous digit serial data streams having bits representing mantissas and exponents of respective X and Y operands in floating-point format and to output one identically formated data stream which is the floating-point product of the synchronous X and Y operands, comprising:

an X operand delay circuit for delaying said X operand to provide a delayed X operand;

a bit re-ordering/delay circuit for reversing and storing a bit of a mantissa of said Y operand and delaying an exponent of said Y operand so as to be in time synchronism with the exponent of said delayed X operand;

pipe-lined addition means for adding the exponent of said delayed X operand and the delayed exponent of said Y operand in an addition mode and for multiplying the mantissa of said delayed X operand and the bit-reversed Y operand in a multiplication mode so as to produce said floating-point product; and

mode control signal propagation and generation means for identifying whether each received bit of said X and Y operands are mantissa or exponent bits and for outputting a mode signal for respectively placing said pipe-lined addition means and said bit re-ordering/delay circuit in said multiplication mode or said addition mode in response to said identification for each bit.

4,799,183

VECTOR MULTIPLIER HAVING PARALLEL CARRY SAVE ADDER TREES

Hiraku Nakano, and Hiroshi Murayama, both of Hadano, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Oct. 20, 1986, Ser. No. 920,600
Claims priority, application Japan, Oct. 24, 1985, 60-237884
Int. Cl.[4] G06F *7/52*
U.S. Cl. 364—760 **5 Claims**

1. A multiplier comprising:

(a) a multiplicand register for receiving a multiplicand;

(b) a multiplier register operable to store a plurality of bits, for receiving a multiplier;

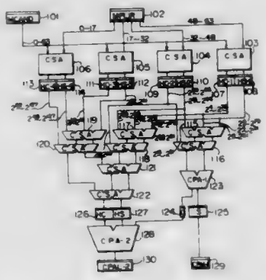
(c) a plurality of multiple generation means for generating a plurality of multiples of said multiplicand at the same time,

each of said plurality of multiple generation means connected to said multiplicand register and a different group of said bits of said multiplier register;

(d) carry save adder tree means for adding the outputs of said multiple generation means;

(e) low order arithmetic operation means connected to said carry save adder tree means for carrying out carry propagation addition of low order bits of a product of said multiplicand and said multiplier; and

(f) high order arithmetic operation means connected to said carry save adder tree means and said low order arithmetic means for carrying out carry propagation addition of higher order bits of the product of said multiplicant and said multiplier.



4,799,184

CONVOLVER ARANGEMENT WITH ACOUSTIC WAVES

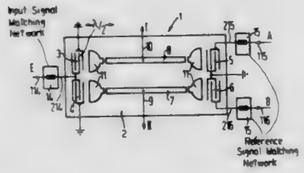
Hans P. Grassl, Zorneding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 20, 1986, Ser. No. 898,375

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1985, 3529902

Int. Cl.[4] G06G *7/195, 7/12;* **H01L** *41/08*

U.S. Cl. 364—821 **10 Claims**



1. A convolver arrangement in which acoustic waves run in a surface of a substrate member, comprising:

first and second integration electrodes with respective first and second input signal interdigital transducers arranged at one end of each of the respective first and second integration electrodes, and first and second reference signal interdigital transducers at respective opposite ends of the two integration electrodes, and wherein a single input signal is connected to a parallel connection of the first and second input signal interdigital transducers, and first and second reference signals are connected to the respective first and second reference signal interdigital transducers so that convolution of only one input signal with two reference signals is provided;

the first and second integration electrodes each having respective first and second convolution signal outputs;

each of the first and second input signal interdigital transducers having a same first input impedance, and each of the individual reference signal interdigital transducers having a same second input impedance;

the first and second input impedances being chosen such that an input impedance of the parallel connection of the first and second input signal interdigital transducers has approximately a same value as said same second input impedance of each of the individual reference signal interdigital transducers;

both the input signal and reference signal interdigital transducers having a fundamentally similar design structure except that the reference signal interdigital transducers are split-finger interdigital transducers with alternating finger pairs, whereas the input signal interdigital transducers are like split-finger interdigital transducers with finger pairs but wherein one of the fingers of each pair is provided as a floating finger through provision of an electrical interruption of the floating finger relative to a respective bus bar to which it would normally connect, but for the electrical interruption.

4,799,185

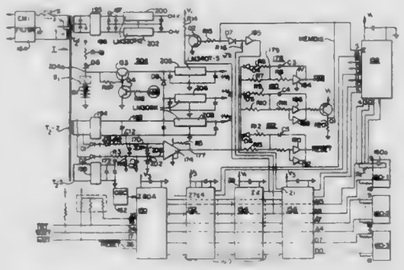
PROTECTIVE CIRCUIT FOR MEMORY DEVICES

Lawrence D. Taylor, Lansdale, Pa., assignor to Brandt, Inc., Bensalem, Pa.

Division of Ser. No. 699,055, Feb. 7, 1985. This application Mar. 27, 1986, Ser. No. 844,888

Int. Cl.[4] G06F *12/16*

U.S. Cl. 364—900 **15 Claims**



1. Apparatus for protecting the contents of a plurality of memory devices in a microprocessor system comprising a central processing unit, bus means and a plurality of memory devices communicating with said unit through said bus means, each of said memory devices having a power supply voltage input terminal and a disabling input terminal, said apparatus comprising:

a power source generating an A.C. output;

means for converting the output of said A.C. power source to a D.C. signal;

a D.C. battery source;

a common terminal for coupling D.C. power to the power supply voltage input terminal of at least one of said memory devices;

said D.C. signal being coupled to said common terminal;

said battery source being coupled to said common terminal through first switch means;

said switch means being normally open and including a control input for selectively coupling said battery to said common terminal;

first means responsive to the D.C. signal of said converting means for generating a first control signal, a first predetermined time interval after said D.C. signal has dropped to a predetermined level;

said control input being responsive to said first control signal for closing the normally open switch means;

second means responsive to said D.C. signal for generating a second control signal a second predetermined time interval after said D.C. signal has dropped to said predetermined level and means responsive to said second control signal for coupling the disabling input terminals of said memory devices to said battery source, said second predetermined time interval being greater than said first predetermined time interval whereby battery power is applied to said memory devices before said memory devices are disabled to permit said central processing unit to save operating information.

4,799,186

ELECTRONIC CIRCUIT CONSTITUTING AN IMPROVED HIGH-SPEED STABLE MEMORY WITH MEMORY ZONES PROTECT FROM OVERLAP

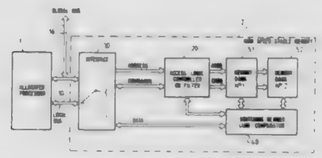
Florimond E. Ployette, Rennes, France, assignor to Inria Institut National de Recherche en Informatique et en Automatique, Le Chesnay, France

Filed Dec. 12, 1986, Ser. No. 941,212

Claims priority, application France, Dec. 12, 1985, 85 18437

Int. Cl.[4] G06F *12/00*

U.S. Cl. 364—900 **22 Claims**



1. A high-speed stable memory-type electronic circuit, comprising:

interface means having an address interface, a data input-/output interface, and a write and read command interface for connection to an external processor;

first and second memory assemblies, each of the assemblies being independent non-volatile read/write memory assemblies having address inputs, read/write control inputs, and data inputs/outputs;

access control means connected firstly to an address interface and to a write and read instruction interface, and secondly to the address inputs and to the read/write control inputs of the first and second memory assemblies in order to establish access authorization only to a designated portion of the first and second memory assemblies on each occasion that a designated read or write operation is to be performed, said access authorization being destroyed after said memory portion has been addressed;

the access control means comprising a logic controller and a first non-volatile auxiliary memory containing partitioning information suitable for splitting each of the memory assemblies identically into at least one level of disjoint sub-assemblies, referred to as "objects" and wherein

the logic controller splits each request for access to the memory from the external processor into one or more active access states, in each of which it verifies that a sequence of addresses applied to a memory assembly covers a complete subassembly (or object) as defined by the partitioning information, with any anomaly giving rise to the logic controller moving to an error state.

4,799,187

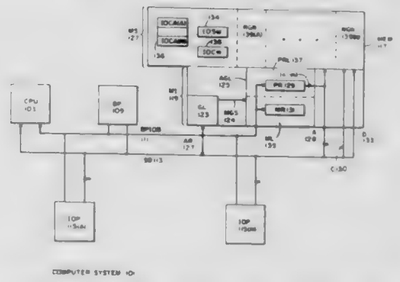
MEMORY ADDRESS GENERATOR WITH DEVICE ADDRESS TYPE SPECIFIER

Jeffrey W. Eisaman, Lowell, and Kin-Ling Cheung, North Andover, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Jul. 30, 1987, Ser. No. 80,722

Int. Cl.[4] G06F *12/00, 13/36*

U.S. Cl. 364—900 **9 Claims**



2. Address generating apparatus for generating n-bit addresses for use in a digital computer system in which a computer system memory and a plurality of devices are connected to a system bus having address lines for carrying addresses of at least n bits, the devices may contend for access to the system bus and access is granted thereto by bus grant logic, and first certain of the devices generate addresses containing m bits where $m<n$ and second certain of the devices generate addresses containing n bits,

the address generating apparatus comprising:

device address type specification means for specifying whether a given device generates m-bit addresses or n-bit addresses;

address prefix storage means coupled tot he system bus for storing an $(n-m)$-bit prefix for each of the devices; and

prefix outputting means connected to the address prefix storage means and responsive to the bus grant logic and to the device address type specification means for causing the prefix for the device which currently has access to the system bus to be output from the address prefix storage means to the address lines carrying the $(n-m)$ most significant bits of the memory address when the device address type specification means indicates that that device generates m-bit addresses.

4,799,188

ELECTRONIC DICTIONARY SYSTEM HAVING IMPROVED MEMORY EFFICIENCY FOR STORAGE OF COMMON SUFFIX WORDS

Motokazu Yoshimura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 18, 1986, Ser. No. 840,662

Claims priority, application Japan, Mar. 23, 1985, 60-58776

Int. Cl.[4] G06F *15/00, 13/00*

U.S. Cl. 364—900 **1 Claim**

1. A system for checking a spelling of an input English word comprising:

an input means for inputting an English word;

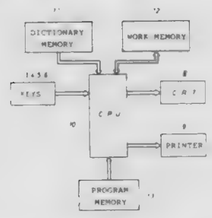
an electronic dictionary memory for storing English words in four groups, wherein every word in each group can have a common suffix and is stored without the suffix, and the four groups include a first group of words that can have a suffix "s"; a second group of words that can have a suffix "s", "ing", or "ed"; a third group of words that can have a suffix "ly"; and a fourth group of other words;

a search means for searching whether or not an input word exists in the dictionary memory;

a suffix judgement means for judging whether or not an

input word has one of the suffixes by which words in the dictionary memory are classified and, if the input word has one of the suffixes, for eliminating the suffix of the input word and for cooperating with the search means to search for word data in the dictionary memory coincident with a de-suffixed form of the input word within the group corresponding to the suffix,

wherein if the input word does not have one of the suffixes by which the words in the dictionary are classified, or if



word data coincident with the de-suffixed form of the input word does not exist within the group corresponding to the suffix, the search means searches for word data in the dictionary memory coincident with the input word; and

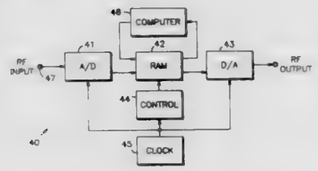
an output means for displaying the input word and, if word data coincident with the input word or de-suffixed form of the input word does not exist in the dictionary memory, for displaying the input word distinctively.

4,799,189

RESYNTHESIZED DIGITAL RADIO FREQUENCY MEMORY

R. Kent Grover, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 26, 1985, Ser. No. 759,216
Int. Cl.[4] G11C *27/00*
U.S. Cl. 364—900 **4 Claims**



1. A resynthesized digital radio frequency memory (DRFM) for accurately representing an RF input signal utilizing a short pulse sampling signal of insufficient width to represent the input signal frequency, said digital radio frequency memory comprising:

an analog-to-digital converter having an RF input, a clock input and an output;

memory means for storing a first digital pattern, a second digital pattern and an interpulse digital pattern, said memory means having a first input, a second input, a first output, a second output and a control line, said first input being coupled to said output of said analog-to-digital converter, said memory means operating to store said first, second and interpulse digital patterns contiguously from a starting address to stopping address;

a digital-to-analog converter having an input, a clock input and an RF output, said input being coupled to said first output of said memory means;

control means for controlling the starting and stopping addresses for said digital patterns stored in said memory means, said control means having a clock input and an output, said output being coupled to said control line of said memory means;

timing means for timing the resynthesized DRFM, said timing means having an output coupled to said clock input of said analog-to-digital converter, to said clock input of said digital-to-analog converter, and to said clock input of said control means, said timing means operating to produce a timing frequency signal for said sampling of said RF input at a fractional ratio; and

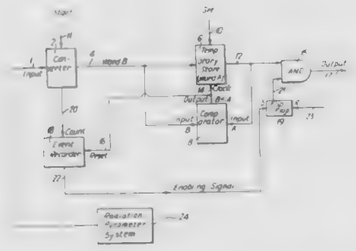
computer means for generating an interpulse digital pattern from said first digital pattern and finding and correcting errors resulting from said sampling at a fractional ratio of said RF input signal utilizing said timing frequency signal, said timing frequency signal and said RF input signal being non-multiples, said generating including comparing said interpulse digital pattern with said second digital pattern and altering said interpulse digital pattern so that said first digital pattern and said second digital patterns match bit-for-bit for correcting a phase relationship of said first and second digital patterns to accurately represent said RF input signal, said computer means having an input and an output, said input being coupled to said second output of said memory means and said output being coupled to said second input of said memory means.

4,799,190

DATA SELECTION CIRCUITS, SYSTEMS AND METHODS

Joseph Douglas, Belper, and Richard P. Jennings, Marlborough, both of England, assignors to ROLLS-ROYCE plc, London, England

Continuation of Ser. No. 777,572, Sep. 19, 1985, abandoned, which is a continuation of Ser. No. 139,276, Apr. 10, 1980, abandoned, which is a continuation of Ser. No. 847,803, Nov. 2, 1977, abandoned. This application Jan. 21, 1987, Ser. No. 6,342
Claims priority, application United Kingdom, Nov. 12, 1976, 47154/76
Int. Cl.[4] G06F *07/02*
U.S. Cl. 364—900 **3 Claims**



1. A radiation pyrometer system for measuring a radiance of at least a portion of an object moving repetitively through a field of view comprising:

means for detecting the radiance from at least a portion of said object as said object repetitively moves through said field of view;

means for converting said detected radiance to a series of data words, each of said data words representing the value of said detected radiance at a given time;

a temporary data store communicating with said converting means for storing said data words and being resettable to an initial state representing an initially stored data word of predetermined value, said temporary data store having an input and an output;

a controlling means communicating with the input and output of said temporary data store for controlling entry of input data words into said temporary data store from said converting means, said controlling means receiving from the output of said temporary data store the data word stored thereby, receiving from the input of said temporary data store each of said input data words and comparing, according to a predetermined criterion, the value of each input word with the value of the data words stored in said temporary data store and if the value of an input data word meets said criterion, said controlling means outputting a control signal to said temporary data store to cause said temporary data store to discard said stored data word and replace same with said input data word, said criterion being that said input data word is different from the stored word and that its difference be in a predetermined direction;

an AND gate for gating the data word stored in said temporary data store to said output;

a flip-flop connected to said AND gate for enabling said AND gate to pass said data word from said temporary data store to said output; and

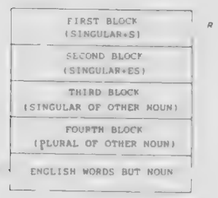
a resettable counter means for counting the number of input data words generated by said converting means and for enabling said gate means to control said flip-flop to output said stored data word, said resettable counter means being reset by said output control signal from said controlling means wherein said resettable counter means is reset to zero by said output control signal from said controlling means each time said control signal is outputted, said resettable counter means controlling said flip-flop to enable said AND gate whenever said resettable counter means counts the generation of a predetermined number of said input data words without being reset.

4,799,191

MEMORY SAVING ELECTRONIC DICTIONARY SYSTEM FOR SPELL CHECKING BASED ON NOUN SUFFIX

Motokazu Yoshimura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 18, 1986, Ser. No. 840,660
Claims priority, application Japan, Mar. 20, 1985, 60-56417
Int. Cl.[4] G06F *15/40*
U.S. Cl. 364—900 **3 Claims**



1. A system for checking a spelling of an input English noun word comprising:

an input means for inputting an English word;

a dictionary memory for storing a plurality of English words which are classified into a first group and a second group, said first group including noun words and said second group including non-noun words, the noun words being stored in a specified memory region storing only noun words in the dictionary memory, said memory region being divided into four blocks including a first block of words whose plural forms can have a common suffix "s"; a second block of words whose plural forms can have a common suffix "es"; a third block of other words of singular form; and a fourth block of words each of which is a plural form of each word in the third group;

a search means for searching whether or not an input word exists in the dictionary memory;

a suffix judgment means for judging whether or not an input word which does not exist in the dictionary memory has a possessive suffix and, if the input word has a possessive suffix, for searching through the first group in the dictionary memory to find, in cooperation with the search means, word data coincident with the input word without the possessive suffix; and

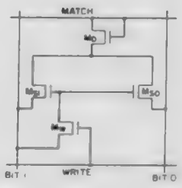
an output means for displaying the input word and indicating whether or not the input word is spelled correctly.

4,799,192

THREE-TRANSISTOR CONTENT ADDRESSABLE MEMORY

Jon P. Wade, Boston, and Charles G. Sodini, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 28, 1986, Ser. No. 901,514
Int. Cl.[4] G11C *15/04*
U.S. Cl. 365—49 **6 Claims**



1. A content addressable memory cell comprising:

a p-type storage transistor coupled to a first bitline and an n-type storage transistor coupled to a second bitline, the storage transistors having their gates connected in common for storing a potential thereon; and

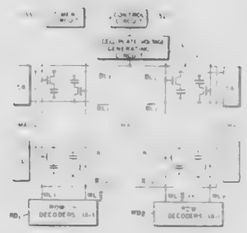
a write transistor coupled between the commonly connected gates of the storage transistors and one of the bitlines to transmit a potential, which is presented on said one of the bitlines for storage onto the gates of the storage transistors.

4,799,193

SEMICONDUCTOR MEMORY DEVICES

Fumio Horiguchi; Yasuo Itoh, both of Kawasaki; Mitsugi Ogura, and Masaki Momodomi, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 9, 1986, Ser. No. 917,042
Claims priority, application Japan, Oct. 9, 1985, 60-225353
Int. Cl.[4] G11C *11/24*
U.S. Cl. 365—149 **33 Claims**



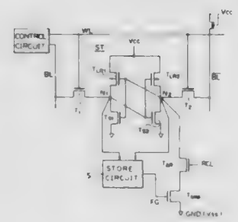
1. A semiconductor memory device, comprising:

at least one memory cell array block with a plurality of memory cells formed at the surface of a semiconductor substrate, each memory cell comprises a transistor and memory capacitor;

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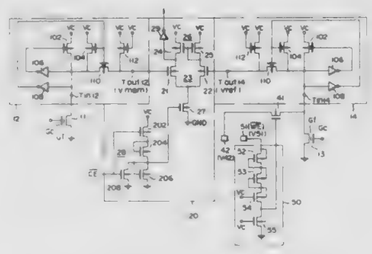
a plurality of word lines for addressing said memory cells;
a plurality of bit lines for reading from and writing to said memory capacitors;
at least one cell plate formed on said semiconductor substrate, said cell plate forming a common electrode of said memory capacitors;
cell plate voltage generating means for supplying a voltage of a level between a supply voltage and a ground voltage to said cell plate; and
control means for controlling an output impedance of said cell plate voltage generating means,
wherein said output impedance of said cell plate voltage generating means is lowered for a predetermined period, and a time constant of the cell plate voltage generating means during said predetermined time is smaller than thirty times as a cycle time of said memory cells.

4,799,194
SEMICONDUCTOR RANDOM ACCESS NONVOLATILE MEMORY DEVICE WITH RESTORE AND CONTROL CIRCUITS
Hideki Arakawa, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 20, 1987, Ser. No. 16,729
Claims priority, application Japan, Feb. 27, 1986, 61-042383
Int. Cl.[4] G11C *11/34, 7/00, 11/00*
U.S. Cl. 365—154 **9 Claims**



1. A semiconductor nonvolatile memory device comprising:
a pair of bit lines;
a plurality of word lines;
decoder means, coupled to said plurality of word lines, for selecting one of said word lines;
first and second transfer gate transistors having gates connected to one of said word lines;
a plurality of memory cells, each of said memory cells including:
a static memory cell including a flip-flop having first and second terminals connected between said pair of bit lines by way of said first and second transfer gate transistors; and
a nonvolatile memory cell connected to said first and second terminals of said flip-flop; and
a control circuit, operatively connected to said word lines, one of said bit lines and said decoder means, for selecting all of said word lines, turning on said first and second transfer gate transistors in said memory cells when information stored in said nonvolatile memory cell is recalled to said static memory cell, and supplying a predetermined potential to said flip-flop through said bit lines, said first and second transfer gate transistors making said flip-flop a predetermined state.

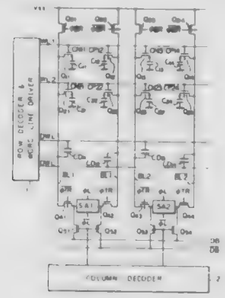
4,799,195
SEMICONDUCTOR MEMORY DEVICE WITH A SENSE AMPLIFIER
Hiroshi Iwahashi, Yokohama, and Masamichi Asano, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 822,205, Jan. 24, 1986, abandoned. This application Mar. 4, 1988, Ser. No. 168,560
Claims priority, application Japan, Jan. 26, 1985, 60-13069
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—185 **6 Claims**



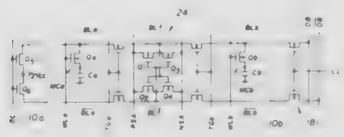
1. A semiconductor memory device comprising:
a memory cell including a first MOS floating gate transistor, a predetermined voltage being applied to a drain-source path of said first transistor and a first control signal being applied to a gate of said first transistor;
a dummy cell including a second MOS floating gate transistor, a predetermined reference voltage being applied to a drain-source path of said second transistor and a second control signal being applied to a gate of said second transistor;
a third MOS transistor having a drain-source path thereof coupled to said dummy cell and to a voltage source, and having a gate thereof supplied with a third control signal, said third MOS transistor transferring said predetermined reference voltage from said voltage source to said dummy cell in response to said third control signal; and
a sense amplifier for comparing a read out voltage from said memory cell with said predetermined reference voltage.

4,799,196
SEMICONDUCTOR MEMORY DEVICE COMPRISING DIFFERENT TYPE MEMORY CELLS
Yoshihiro Takemae, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Feb. 24, 1987, Ser. No. 17,652
Claims priority, application Japan, Feb. 28, 1986, 61-043083
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—190 **6 Claims**

1. A semiconductor memory device comprising:
a plurality of word lines and a plurality of bit lines;
a plurality of memory cells connected between one of said word lines and one of said bit lines, said plurality of memory cells including memory cells of a first type having an N channel type transfer gate transistor of a second type having a P channel type transfer gate transistor, each of said word lines being connected to at least one of said memory cells of said first type and at least one of said memory cells of said second type; and
applying means for applying a selection signal to a selected word line, the selection signal having one of two opposite polarities in accordance with an access to said first type memory cells and an access to said second type memory cells.

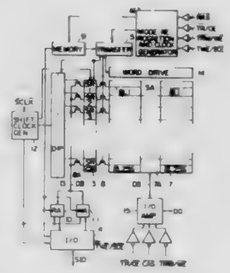


4,799,197
SEMICONDUCTOR MEMORY DEVICE HAVING A CMOS SENSE AMPLIFIER
Yukinori Kodama, Yokohama; Hirohiko Mochizuki, Kawasaki; Masao Nakano, Kasugai; Tsuyoshi Ohira, Kawasaki, and Hidenori Nomura, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa and Fujitsu VLSI Limited, Aichi, both of, Japan
Filed Sep. 1, 1987, Ser. No. 91,795
Claims priority, application Japan, Sep. 2, 1986, 61-206439
Int. Cl.[4] G11C *7/00, 11/24*
U.S. Cl. 365—205 **6 Claims**



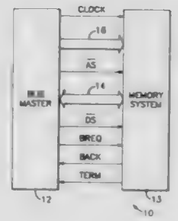
1. A semiconductor memory device comprising:
a memory cell array comprising memory cells;
a plurality of pairs of bit lines which are coupled to the memory cells and a data bus, each bit line being divided into at least two pairs of bit line parts;
at least one sense amplifier provided between said pairs of bit line parts in each of said pairs of bit lines, for sensing a difference in potential between bit line pairs in each pair, said sense amplifier being formed with complementary metal oxide semiconductor transistors; and
at least one pair of transfer gates provided between a non-data bus side and a data bus side of said sense amplifier;
wherein when a memory cell is selected, the transfer gate positioned on the side opposite to the selected memory cell is turned off in a state where the other transfer gate positioned on the same side as the selected memory cell is held in the on-state so that the difference in potential occurs between the pair of bit line parts on the same side as the selected memory cell, and thereafter the transfer gate positioned on the same side as the selected memory cell is turned off and the sense amplifier is activated, and wherein after the sense amplifier latches the difference in potential due to a datum stored in said selected memory cell, the transfer gate on the data bus side is turned on in a state where the transfer gate on the non-data bus side is held in the off-state, and thereafter the transfer gate on the non-data bus side is turned on.

4,799,198
IMAGE MEMORY
Junji Ogawa, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Apr. 11, 1986, Ser. No. 850,790
Claims priority, application Japan, Apr. 13, 1985, 60-77545
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—221 **10 Claims**



1. A video random access memory (Video RAM) having a plurality of RAM and shift register sets, said RAM being randomly accessed and said shift register being serially accessed, each RAM and shift register being connected by transfer gates in order to transfer read/write data, said Video RAM comprising; an input/output circuit operatively connected to said shift register and switched from an input side to an output side or from an output side to an input side in response to a direction of data transfer between said RAM and said shift register, and a transfer control means for controlling said switching of said input/output circuit and for controlling said direction of data transfer based on predetermined modes of input signals.

4,799,199
BUS MASTER HAVING BURST TRANSFER MODE
Hunter L. Scales, III, Austin; William C. Moyer, Dripping Springs, both of Tex., and William D. Wilson, Redwood City, Calif., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 18, 1986, Ser. No. 908,766
Int. Cl.[4] G11C *8/00, 11/40*
U.S. Cl. 365—230 **8 Claims**



1. A bus master for use with a memory capable of transferring operands in bursts of m in response to a burst request signal provided by the bus master, the operands being clustered modulo m about a selected access address provided by the bus master, where m is two (2) to the n power, n being an integer, the bus master comprising:
address register means for selectively storing the selected access address, and for incrementing modulo m a predetermined set of n bits of the selected access address in response to an increment signal; and

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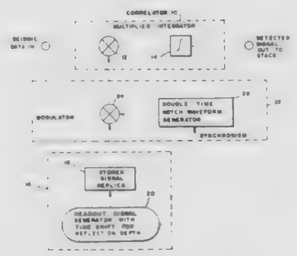
controller means for initially providing the burst request signal to the memory in response to a burst start signal, and, for m times thereafter, providing the burst request signal to the memory and the increment signal to the address register means in response to concurrently receiving from the memory both a burst acknowledge signal and a termination signal.

4,799,200
METHOD OF ACOUSTICALLY DETECTING FRACTURES IN A BOREHOLE
Philip S. Cheung, New Fairfield, Conn., assignor to Schlumberger Technology Corporation, Houston, Tex.
Filed Oct. 21, 1985, Ser. No. 789,533
Int. Cl.[4] G01V *1/24*
U.S. Cl. 367—30 **6 Claims**



1. A method of detecting fractures in earth formations penetrated by a borehole, the method comprising the steps of:
(a) moving a tool through the borehole, the tool possessing transducers for transmitting and for receiving acoustic energy with at least one given transmitter-to-receiver spacing;
(b) repetitively causing the tool to transmit acoustic energy as it is moved, and recording the acoustic energy received in the form of echo waveforms by a transducer together with the corresponding transmitter-to receiver spacing, these echoes resulting from acoustic coupling between the transducers and the earth formations through the fluid filling the borehole;
(c) selecting a window in the recorded waveform containing compression wave echoes and extracting therefrom a compression amplitude magnitude An, thereby providing at least one compression amplitude curve as a function of depth An(z), associated with a transmitter-to-receiver half-spacing sn;
(d) isolating from the compression amplitude curve amplitude peaks having a width close to a predetermined value thereby obtaining at least one amplitude peak curve; and
(e) determining the presence of fractures from the curves Pn(z+sn) and from the curve Pn(z−sn); wherein
step (a) consists in lowering down the borehole a tool suitable for operating simultaneously at a plurality m of spacings, where an designates the half-spacing (with n=1 to m);
step (b) includes selective recording of the waveforms received at each transmission of acoustic energy and at each spacing;
steps (c), and (d) are selectively executed at each spacing to supply a set of compression amplitude curves An(z) and then a set of amplitude peak curves Pn(z) respectively associated with each of the half-spacings sn; and
step (e) comprises determining two cross correlation coefficient curves T(z) and R(z) as a function of depth for the curves Pn(z+sn) and Pn(z−sn) respectively by determining the amplitude of the energy of the criss-cross patterns in relation to the amplitude or the energy of the direct echoes wherein the portions of the waveforms taken into account are those portions which are due to the compression waves, and which end at the first shear type wave or the first pseudo-Rayleigh type wave and wherein the processing relating to the criss-cross patterns includes summing the amplitudes taken from the waveforms and relating to the expected positions of the two arms of a criss-cross pattern within a window which covers the transmitter/receiver spacing in order in determine the total energy EX of the echoes on both arms of the criss-cross pattern, the presence of a fracture being determined on the basis of the difference between this total energy and zero.

4,799,201
METHODS AND APPARATUS FOR REDUCING CORRELATION SIDELOBE INTERFERENCE IN SEISMIC PROFILING SYSTEMS
David E. Nelson, Rochester, N.Y., assignor to Hydroacoustics, Inc., Henrietta, N.Y.
Filed Dec. 16, 1983, Ser. No. 562,269
Int. Cl.[4] G01V *1/36*
U.S. Cl. 367—41 **28 Claims**



1. In a marine seismic exploration system using primary sweeps of signals which change in repetition frequency over a frequency range during the duration of said sweeps and which are received at hydrophones, the method of reducing interference in reflection signals received at said hydrophones from interfering sweeps which are received at said hydrophones upon reflection from the first break interface between the surface of an earth formation and the water covering said formation in overlapping time relationship with the primary sweep signals from reflecting interfaces in said formation below the surface thereof, which comprises determining intervals of time much shorter than the duration of said sweeps where said interfering signals and replicas of said primary sweeps received at said hydrophones correlate with each other, indicating points of stationary phase and correlating said primary signals received at said hydrophones with replicas thereof, one of which is reduced in amplitude at said intervals.

4,799,202
COMPLEMENTARY INTERFEROMETRIC HYDROPHONE
Gerald L. Assard, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 27, 1982, Ser. No. 423,941
Int. Cl.[4] H04R *23/00*
U.S. Cl. 367—149 **8 Claims**

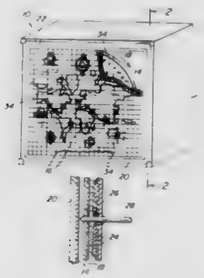
1. A concentric complementary interferometric hydrophone comprising:
a rigid cylindrical tube;
a first elastomer applied on the outside of said tube;

a first optic fiber wound around said first elastomer;
a second elastomer applied on the inside of said tube;
a second optic fiber wound inside said second elastomer; and



an axial aperture adapted to be free flooded located along the central axis of said second elastomer.

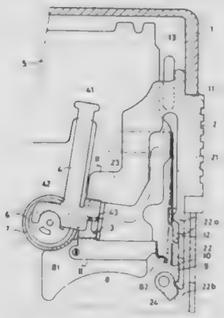
4,799,203
INTERNATIONAL WORLD CLOCK
Clifford Garland, 149 Van Brunt St., Brooklyn, N.Y. 11231
Filed Jun. 1, 1987, Ser. No. 58,505
Int. Cl.[4] G04B *19/22*
U.S. Cl. 368—27 **2 Claims**



1. An international world clock comprising a housing, a rectangular map panel secured in said housing, for indicating the major cities of the world, a rotatable removable circular time disk received in said housing, and a coupling means for said time disk secured to said time disk and a second disk, for driving said time disk behind said map panel and wherein said map panel is secured to a transparent pane secured in an opening in said housing, and a plurality of windows representing locations are provided through said top panel that align with time calibration imprinted on a face of said time disc, to provide the identical time comparison at all locations, and further comprising a pair of mating hook and loop pile fasteners, one of which is fixedly secured to a rear face of said time disk and another is similarly secured to a face of said second disk.

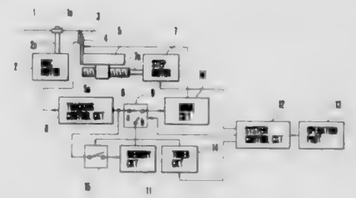
4,799,204
ALARM STOP DEVICE FOR A TIMEPIECE
Seiya Kitsoka, and Masao Hanya, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan
Filed Apr. 26, 1988, Ser. No. 186,284
Claims priority, application Japan, Apr. 27, 1987, 61-63794[U]
Int. Cl.[4] G04B *23/00*
U.S. Cl. 368—263 **1 Claim**

1. An alarm stop device of a timepiece comprising:
a slidable alarm stop lever;
an alarm stop switch actuatable by said alarm stop lever;
an engagement element provided on said alarm stop lever;
a control element which allows depression of such engagement element when said alarm stop switch is operative, and which inhibits depression of said engagement element when said alarm stop switch is not operative; and a snooze



switch which can be opened and closed by depressing said alarm stop lever.

4,799,205
APPARATUS FOR CAUSING A HEAD TO ACCESS A SELECTED ONE OF A PLURALITY OF TRACKS
Masaya Maeda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 906,650, Sep. 11, 1986, abandoned, which is a continuation of Ser. No. 554,839, Nov. 23, 1983, abandoned. This application Jun. 2, 1987, Ser. No. 58,600
Claims priority, application Japan, Nov. 25, 1982, 57-206361
Int. Cl.[4] G11B *21/10*
U.S. Cl. 369—43 **39 Claims**



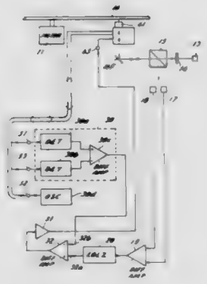
1. In a reproducing apparatus for reproducing recorded signals from a signal bearing medium, said medium having a plurality of tracks, each being recorded with a signal, wherein said apparatus includes selecting means for selecting any one of the plurality of tracks for reproduction, and
(A) transducer means for reproducing a signal from selected one of the tracks of said signal bearing medium;
(B) moving means for relatively moving said transducer means and said bearing medium so as to position the transducer means relative to said selected one of the tracks of the medium;
(C) adjusting means for adjusting the position of said transducer means relative to said selected track;
(D) control signal producing means for producing, on the basis of a reproduced signal obtained through said transducer means, a control signal for controlling said adjusting means so as to align the transducer means with said selected track;
wherein the improvement comprises
(E) memory means for memorizing said control signal produced from said control signal producing means; and
(F) signal providing means for providing said adjusting means with the control signal memorized in said memory means.

4,799,206

TRACKING CONTROL APPARATUS FOR RECORDING DISC REPRODUCING APPARATUS

Ryoichi Imanaka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP84/00065, § 371 Date Oct. 22, 1984, § 102(e) Date Oct. 22, 1984, PCT Pub. No. WO84/03387, PCT Pub. Date Aug. 30, 1984
PCT Filed Feb. 22, 1984, Ser. No. 667,485
Claims priority, application Japan, Feb. 22, 1983, 58-27912
Int. Cl.[4] G11B 7/08, 21/10
U.S. Cl. 369—44 18 Claims



1. A tracking control apparatus for a disc recording and/or reproducing apparatus, comprising:

(a) pickup means for reading information from tracks of a disc by using a light beam, said pickup means having a movable portion arranged to be displaced relative to said pickup means for effecting tracking control;

(b) tracking error detecting means associated with said pickup means for producing a tracking error signal indicative of a difference between a position of a track to be scanned and a scanning position of said light beam determined by a position of said movable portion;

(c) displacement detecting means for producing a displacement signal indicative of a displacement of said movable portion of said pickup means relative to said pickup means;

(d) signal processing means responsive to said tracking error signal and to said displacement signal from said displacement detecting means for producing a control signal, said signal processing means including first means for processing said tracking error signal, second means for processing said displacement signal to provide quicker response to and compensation for displacement of said movable portion than provided by said first means, and a circuit for combining said processed displacement signal with said processed tracking error signal for producing said control signal;

(e) said first means operable to prevent malfunctioning of said apparatus caused by defects of the disc surface and including means for limiting bandwith of said tracking signal for preventing malfunctioning caused by defects of the disc surface; and

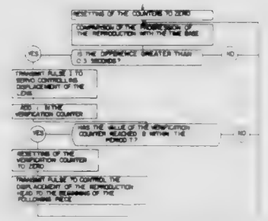
(f) actuating means responsive to said control signal for effecting said tracking control by moving said movable portion.

4,799,207

APPARATUS AND METHOD FOR MAINTAINING PROGRESSION OF RECOVERY OF RECORDED INFORMATION

Stephane D'Alayer de Costemor d'Arc, Brussels, Belgium, assignor to Staar, S.A., Belgium

Filed Aug. 6, 1986, Ser. No. 893,862
Claims priority, application Belgium, Aug. 14, 1985, 215475
Int. Cl.[4] G11B 27/36
U.S. Cl. 369—58 8 Claims



8. A method of monitoring and correcting the relative movement of a reproduction element and a carrier having information recorded along a track on the carrier, the information including primary information and real time information quantitatively and cumulatively representing progression of instantaneous positions of the primary information in real time from a starting point, said method comprising the steps of:

providing a time-based reference value;

automatically and continuously monitoring the rhythm of the progression of the real time information recovered from the track by the reproduction element by comparing each time interval between successive instantaneous positions with the reference value;

delivering a control signal when a difference of predetermined value indicates a break in the rhythm of the recovered real time information based upon the comparison; and

making a first adjustment in the relative movement between the carrier and the reproduction element so that the reproduction element follows the track beyond the break to restore the rhythm of the progression of the recovered real time information.

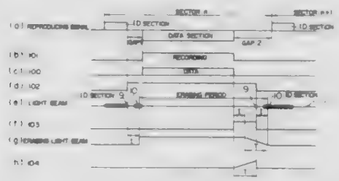
4,799,208

OPTICAL RECORDING AND REPRODUCING APPARATUS HAVING ERASING FUNCTION WITH CONTROLLABLE ERASING BEAM INTENSITY

Isao Satoh, Neyagawa; Makoto Ichinose, Sakai; Yoshihisa Fukushima, Osaka; Yuzuru Kuroki, Toyonaka, and Yuuji Takagi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 3, 1986, Ser. No. 915,576
Claims priority, application Japan, Oct. 8, 1985, 60-224548; Oct. 8, 1985, 60-224548
Int. Cl.[4] G11B 7/125
U.S. Cl. 369—100 9 Claims

1. A data recording and reproducing apparatus comprising means for radiating an erasing light beam and a recording-reproducing light beam sequentially on an optical disc to record and reproduce and erase data, means for recording and reproducing data with said recording-reproducing light beam, means for erasing data with said erasing light beam, said erasing means radiating a data recording section of said disc with said erasing light beam, and means responsive to the termination of a recording interval for reducing the average intensity of said erasing light beam during a period of time following



said recording interval termination after which period said erasing light beam is turned off.

4,799,209

CLAMPING DEVICE FOR CLAMPING AN OPTICAL DISC ONTO A DRIVE SPINDLE

Henri M. Grobben, Hasselt, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 23, 1987, Ser. No. 76,824
Claims priority, application Netherlands, Jul. 28, 1986, 8601938
Int. Cl.[4] G11B 17/04, 25/04
U.S. Cl. 369—75.2 7 Claims

4. A disc record player for playing a disc having a center hole, the player comprising

a housing having a front opening therein,

a first frame fixed in said housing and provided with guide means,

a drawer which is movable through said front opening along said guide means, between a slid-out and a slid-in position for bringing the disc into a playing position,

a second frame resiliently mounted to the first frame,

a turntable mounted in said second frame, said turntable being rotatable about an axis of rotation and having a centering member for reception in said hole,

a pressure element movably connected to said first frame, said pressure element being movable between a first position and a second position,

a holder carried by said pressure element, said holder comprising at least three resilient limbs, each limb having a fixed end and a free end, said free ends being collectively configured to journal a spindle for radial movement, and

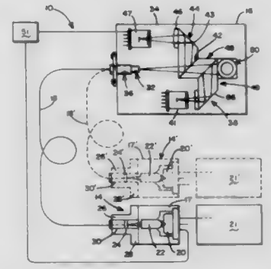
a pressure member having a central spindle journaled between said free ends of said resilient limbs and a centering wall configured to cooperate with said centering member, said pressure member being spaced from the turntable in the first position and cooperating with the turntable in the second position.

4,799,210

FIBER OPTIC READ/WRITE HEAD FOR AN OPTICAL DISK MEMORY SYSTEM

Mark L. Wilson, Vadnais Heights, and Bernard S. Fritz, Eagan, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 5, 1986, Ser. No. 927,213
Int. Cl.[4] G11B 7/12
U.S. Cl. 369—110 10 Claims



1. An optical storage system comprising a storage means, light source means for directing a light beam onto said storage means comprising laser means for producing a directed laser beam, first and second beam-splitting means, first and second monitoring means, optical conduit means coupled to said laser means for receiving and supplying said directed laser beam onto said first beam-splitting means which in turn directs a major portion of said directed laser beam onto said storage means, which produces a reflected directed beam from said storage means and a reflected portion of said reflected directed laser beam from said storage means onto said first monitoring means for monitoring said reflected directed laser beam and power control means coupled to said second monitoring means and said laser means wherein said second beam-splitting means directs a minor portion of said directed laser beam onto said second monitoring means before said directed laser beam is directed onto said storage means and said power control means adjusts to power of said laser means to control the power of said directed laser beam.

4,799,211

APPARATUS AND METHOD FOR STORING PERFORMANCE PARAMETERS OF LOCAL AREA NETWORK SYSTEM MEMBERS

Michael Felker, Rio Rancho, and Angelo Viverito, Albuquerque, both of N. Mex., assignors to Digital Equipment Corporation, Maynard, Mass.

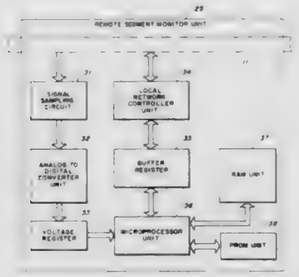
Filed Jul. 23, 1987, Ser. No. 76,724
Int. Cl.[4] H01J 1/16
U.S. Cl. 370—17 20 Claims

1. Apparatus for monitoring parameters of local area network system members, said monitoring apparatus coupled to a segment cable coupling said local area network members, wherein said local area network members apply transaction signal groups to said segment cable, said monitoring apparaus comprising:

sampling means for determining a value related to a magnitude of each transaction signal group on said segment cable;

decoding means for decoding selected portions of said transaction signal group, a one of said selected portions identi-

fying a network system member originating said transaction; and



storage means for storing said each transaction signal group magnitude in association with an originating system member identification.

4,799,212

CIRCUIT FOR CONTROLLING TWO SIGNALS APPROXIMATELY 90 DEGREE APART IN PHASE

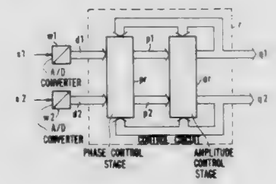
Soenke Mehrgardt, March, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 22,833

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1986, 86103522

Int. Cl.[4] H04J *11/00*

U.S. Cl. 370—20 35 Claims



1. A circuit for controlling first and second quadrature analog signals approximately 90° apart in phase so as to obtain two signal waveforms having a phase difference of exactly 90° and exactly equal amplitudes, said circuit comprising:

first and second analog-to-digital converters responsively coupled to receive said first and second quadrature analog signals, respectively, said first and second analog-to-digital converters providing respective first and second digital signals as outputs;

a digital control circuit responsively coupled to said first and second analog-to-digital converters, said digital control circuit receiving said first and second digital signals and generating first and second quadrature digital signals, said digital control circuit comprising:

a phase control stage that provides first and second phase-corrected digital signals, said phase control stage comprising:

a first multiplier having first and second inputs and an output, said first and second inputs connected to receive said first and second quadrature digital signals, respectively;

a low-pass filter having an input and an output, said input connected to said output of said first multiplier, said output of said low-pass filter being a phase control value;

a second multiplier having first and second inputs and an output, said first input connected to said output of said low-pass filter, said second input receiving one of said first and second digital signals, said one of said first and second digital signals also provided as the corresponding one of said first and second phase-corrected digital signal outputs of said phase control stage; and

an arithmetic unit having first and second inputs and an output, said first input connected to said output of said second multiplier, said second input connected to the other of said first and second digital signals, said output of said arithmetic unit provided as the corresponding other of said first and second phase-corrected digital signal outputs of said phase control stage; and

an amplitude control stage that adjusts the amplitudes of respective frequency components of said first and second quadrature digital signals to be substantially identical, said amplitude control stage receiving said first and second phase-corrected digital signals from said phase control stage and providing said first and second quadrature digital signals as outputs, said amplitude control stage comprising:

an amplitude comparator having a minuend input, a subtrahend input and an output, said minuend input of said amplitude comparator connected to one of said first and second phase-corrected digital signals, said one of said first and second phase-corrected digital signals further being provided as one of said first and second quadrature digital signals, said one of said first and second quadrature digital signals corresponding to said one of said first and second phase-corrected digital signals;

an averaging device having an input and an output, said input connected to said output of said amplitude comparator; and

a signal amplifier, said signal amplifier being a third multiplier having first and second inputs and an output, said first input connected to said output of said averaging device, said second input connected to the other of said first and second phase-corrected digital signals, said output of said third multiplier connector to said subtrahend input of said amplitude comparator, said output of said third multiplier further being provided as the quadrature digital signal output of said amplitude control circuit and said digital control circuit corresponding to said other.

4,799,213

DATA TRANSMISSION SYSTEM

John Fitzgerald, Gwent, Wales, assignor to Standard Telephones & Cables, London, England

Filed Sep. 7, 1984, Ser. No. 648,127

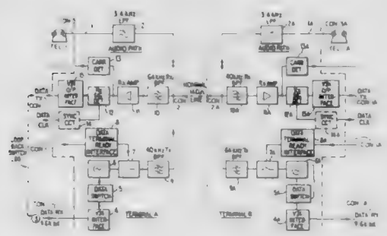
Claims priority, application United Kingdom, Sep. 10, 1983, 8324310

Int. Cl.[4] H04J *1/02*

U.S. Cl. 370—30 3 Claims

1. A transmission system in which data and voice signals can be transmission system in which data and voice signals can be transmitted independently yet simultaneously over a telephone line, the system comprising co-operating first and second terminals, each terminal having connections connectible to a respective data terminal unit, the telephone line, so that a data unit is connected to the telephone line via the associated terminal and to a respective telephone, the first terminal having means for generating a first carrier signal above voice frequency, the second terminal having means for generating a second carrier signal above voice frequency, the first and second carrier signal frequencies being substantially separated from each other and being permanently assigned to respective terminals, each of said terminals further comprising: first and second bandpass filters used for selecting respectively said first and second carrier signals in respective transmit and receive

circuits of the terminal, the receive pasaband of the first terminal and the transmit passband of the second terminal being centered on said second carrier frequency and the transmit passband of the first terminal and the receive passband of the second terminal being centered on said first carrier frequency; said transmit circuit including a modulator for modulating the respective carrier signal with data for transmission from the transmit circuit to the line via said connections; said receive circuit including a demodulator coupled to said second filter and used for recovering data from the respective carrier signal received from the line via said connections, and an amplifier used for amplifying the recovered data; a low pass filter coupled to said connections to receive both voice and carrier signals from the telephone line and having a passband effective



to pass only voice signals and thus isolate the voice and data signals and having a loss frequency characteristic effective to minimize the effects of low frequency interference signals affecting the data transmission, and wherein one of said terminals has a manually operable loopback switch connected to the connections connectible to the data terminal unit and having a first state in which normal transmission and reception takes place between the associated data terminal unit and the telephone line via said one terminal, and a second state in which data from the telephone line is looped back to the telephone line via said connections connectible to the telephone line and data from the associated data terminal unit is looped back to the data terminal unit via the connections connectible to the data terminal unit to facilitate a test procedure to test the system.

4,799,214

TWO-WIRE FULL DUPLEX FREQUENCY DIVISION MULTIPLEX MODEM SYSTEM HAVING ECHO CANCELLATION MEANS

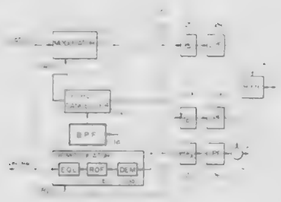
Takashi Kaku, Tama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 22, 1986, Ser. No. 944,508

Claims priority, application Japan, Dec. 23, 1985, 60-289966

Int. Cl.[4] H04B *9/00*

U.S. Cl. 370—32.1 8 Claims



1. A frequency division multiplex modem system, comprising:

first modem means for modulating first data to produce a first modulated signal having a first frequency band and for demodulating a second modulated signal having a second frequency band, said first and second frequency bands being adjacent and non-overlapping;

transmission line means, having a two-wire duplex line structure, for transmitting said fist and second modulated signals therethrough; and

second modem means for modulating second data to produce the second modulated signal, having said second frequency band and received by said first modem means, and demodulating said first modulated signal from said first modem means;

said first and second modem means each comprising:

modulating means for modulating transmission data to produce a modulated transmission signal using digital signal processing,

synthesizer means, operatively connected to said modulating means and said transmission line means, for synthesizing said modulating transmission signal and a modulating reception signal containing an echoed transmission signal using analog processing and for outputting said modulated transmission and reception signals to said transmission line means,

subtracter means, operatively connected to said synthesizer means, for subtracting a combined echo cancellation signal from said modulated reception signal to produce a result signal using analog processing,

demodulating means, operatively connected to said subtracter means, for demodulating said result signal to produce received data using digital signal processing,

echo canceller means, operatively connected to said modulating means and said subtracter means for receiving said modulated transmission and result signals therefrom and for using digital processing to generate said combined echo cancellation signal, supplied to said subtracter means, in dependence upon said modulated transmission signal and said result signal from said subtracter means, said combined echo cancellation signal including a first echo cancellation signal for cancelling said modulated transmission signal as output from said synthesizer means and a second echo signal for cancelling said echoed transmission signal in said modulated reception signal,

a digital-to-analog converter, operatively connected between said modulating means and said synthesizer means, for converting said modulated transmission signal from digital form to an analog signal, and

an analog-to-digital converter, operatively connected to said subtracter means, said demodulating means and said echo canceller means, for converting said result signal from said subtracter means to a digital signal.

4,799,215

HIGH-SPEED PACKET-SWITCHED COMMUNICATIONS SYSTEM WITH END-TO-END FLOW CONTROL AND RETRANSMISSION

Hiroshi Sazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 7, 1986, Ser. No. 916,429

Claims priority, application Japan, Oct. 7, 1985, 60-224430; Oct. 11, 1985, 60-226249; Oct. 11, 1985, 60-226250

Int. Cl.[4] H04Q *11/04*

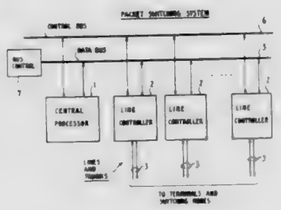
U.S. Cl. 370—60 15 Claims

1. A packet switched communications system comprising a plurality of terminals, a plurality of switching nodes for serving said terminals and a plurality of transmission links interconnecting said terminals and said switching nodes, each of said terminals being capable of returning an acknowledgement to a source terminal when a packet is correctly received therefrom, transmitting a series of packets without receiving said acknowledgement and retransmitting to a destination terminal a packet which has not been correctly received,

wherein each of said terminals includes means for effecting a determination of whether or not a packet to be exchanged

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between source and destination terminals is required to be retransmitted and effecting an omission of the retransmis-



sion of a packet which has not been correctly received when said packet is determined as not being required to be retransmitted.

4,799,216

DISTRIBUTED SWITCHING SYSTEM

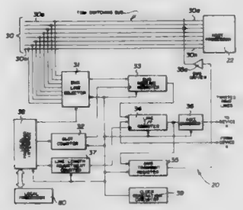
Charles B. Johnson, Dallas; Jeffrey L. Box, Farmers Branch, and David B. Hildebrand, Bedford, all of Tex., assignors to SRX Corporation, Dallas, Tex.

Continuation of Ser. No. 706,320, Feb. 27, 1985, Pat. No. 4,685,104. This application May 4, 1987, Ser. No. 46,233

The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.

Int. Cl.[4] H04Q *11/04*; H04J *3/02*

U.S. Cl. 370—67 **19 Claims**



1. In a communication system for the communication of voice and data having a local processor, a host processor, data devices having line interfaces and a distributed switching system interconnecting the processors and data devices, an improved switching bus providing for communication between the processors and communication between the data devices comprising:

a plurality of bus lines being time division multiplexed serial data streams and having time slots used for both transmit and receive directions and being connected to the host processor and the distributed switching system;

each of said bus lines having time slots which may be used for processor communication and time slots which may be used for transparent switching of voice and data; and

said plurality of bus lines comprising a single bidirectional bus used for both communication between the local processor and the host processor and for transparent switching of voice and data.

4,799,217

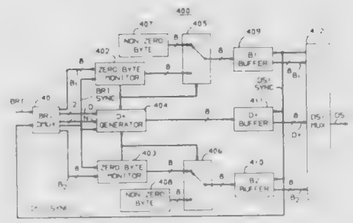
THREE TIME SLOT DIGITAL SUBSCRIBER LINE TERMINATION

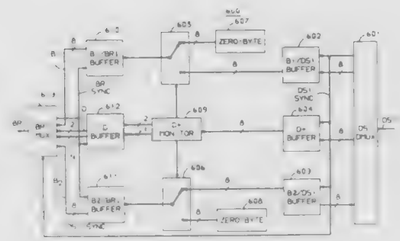
Rong-Chin Fang, North Andover, Mass., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 20, 1986, Ser. No. 898,697

Int. Cl.[4] H04Q *11/04*; H04J *3/06*

U.S. Cl. 370—68.1 **29 Claims**





1. Apparatus for interfacing a digital subscriber line of the type having a digital transmission format including at least one communication channel, comprising:

means for interrogating logical signals in bit positions of said at least one communication channel, said interrogating means generates an output signal indicating whether or not a predetermined bit pattern is present in said at least one communication channel having a first predetermined logical signal in all bit positions,

means responsive to said output signal from said interrogating means for controllably replacing said predetermined bit pattern in said at least one communication channel with a prescribed bit pattern having a logical signal other than said first predetermined logical signal in at least one bit position when said output signal indicates that said predetermined bit pattern is present and for yielding an at least one output communication channel,

means for generating a control channel having a plurality of bit positions, said means for generating being responsive to said output signal from said interrogating means for inserting a second predetermined logical signal into a first predetermined bit position of said control channel to indicate whether or not said predetermined bit pattern was replaced, and

means for combining said at least one output communication channel and said control channel for transmission over a digital transmission facility.

4,799,218

NETWORK SYSTEM

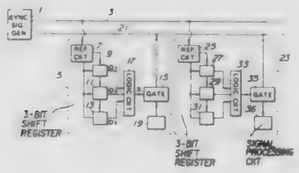
Atsushi Sakagami, Yokosuka; Toru Futami, Yokohama; Noriyuki Abe, Yokosuka, and Tadashi Suzuki, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 5, 1986, Ser. No. 836,623

Claims priority, application Japan, Mar. 28, 1985, 60-62099; May 17, 1985, 60-103942

Int. Cl.[4] H04J *3/02*

U.S. Cl. 370—85 **14 Claims**

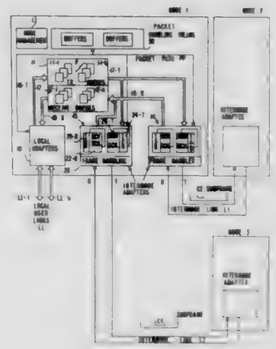


1. A network system, comprising:

(a) first means for generating and transmitting a periodic predetermined time series code string signal in synchronization with a synchronization signal generated thereby having a predetermined period;

(b) second means for receiving said periodic predetermined time series code string signal from said first means via an address clock line and for detecting whether one of a plurality of code patterns derived from the received predetermined time series code string signal coincides with a predetermined code pattern indicating an address of one data station and outputting a first signal indicating that said code pattern accords with said predetermined code pattern; and

(c) third means for carrying out at least one of transmission and reception of data constituted by a plurality of serial bits for a period of time determined by said number of bits constituting the data via a data transmission line to which others of said third means are connected, each bit of the data on the data transmission line being continuously transmitted until the end of the data transmission, a period of each bit being equal to the predetermined period in synchronization with the synchronization signal derived from said first means when said second means outputs said first signal.



internode adapting means (14, 15) which controls the generation and the reception of the frames to and from each internode link operating under the control of the node management means and which assigns on the call basis a set of at least one slot in the frames transported on the network link to a plurality of circuit users and which comprises for each of said links, transmit and receive control means (24-T, 26-T, 20-R, 22-R, 28),

said transmit control means comprising queue addressing means causing the queues of storing portions assigned to the said plurality of circuit users to be sequentially scanned and read and the read information corresponding to momentarily active users to be sent on the link during the assigned slots of successive frames together with a qualification bit set to a first value,

said receive control means comprising queue addressing means causing the information received in the slots assigned to the said plurality of users in successive frames to be written into the queues of storing positions assigned to said users, which are sequentially scanned, when the qualification bits are found equal to the first value.

4,799,219

PSEUDO SYNCHRONOUS TRANSPORT MECHANISM IN A COMMUNICATION NETWORK

Jean Calvignac, LaGaude, and Pierre Secondo, St Jeannet, both of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 24, 1987, Ser. No. 77,484

Claims priority, application European Pat. Off., Aug. 27, 1986, 86430029.8

Int. Cl.[4] H04J *3/26*

U.S. Cl. 370—94 **8 Claims**

1. Pseudo synchronous transportation apparatus to be used in a communication network comprising a plurality of nodes for exchanging non-character coded information NCI and character coded information on internode links in frames comprising circuit slots devoted to the transporation of non-character coded information, which slots are assigned to circuit users on the call basis under control of node management means (13), said slots being qualified by at least one qualification bit (Caq) which indicates when set to a first value (0) that the users are momentarily active and when set to a second value (1) that the users are momentarily inactive, said mechanism being characterized in that it comprises, in the nodes which may be connected to local users:

storing means (11, 12) comprising queues of storing positions

4,799,220

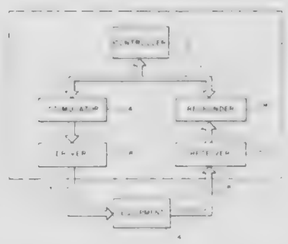
DYNAMIC SYSTEM FOR TESTING AN EQUIPMENT

Robert E. Nielsen, Farmingville, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 19, 1987, Ser. No. 16,685

Int. Cl.[4] G06F *11/06*

U.S. Cl. 371—25 **11 Claims**



1. In an instrument for testing the operational status of an

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equipment under test, an apparatus for stimulating the equipment and for receiving responses therefrom, the apparatus being connected to a controller for receiving instructions therefrom, the apparatus comprising:

stimulating means electrically connected to the controller for accepting therefrom instructions representative of stimulus signals;

means connected to the stimulating means and the equipment for fetching the stimulus signals and for providing the stimulus signals to the equipment, respectively;

means connected to the equipment for receiving from the equipment signals generated thereby in response to the stimulus signals;

means connected to the receiving means for comparing in real time the response signals inputted thereto from the receiving means with expected signals fed thereto from an expected memory means; wherein, if a response signal differs from an expected signal, the comparing means sends out an error signal for instantaneously indicating an improper operation by the equipment; and

means connected to the comparing means for storing data resulting from the real time comparison between the response signals and the expected signals, the storing means communicating with the controller;

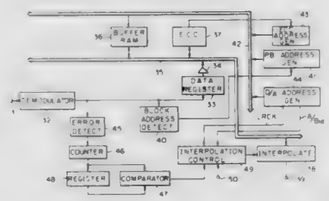
wherein, upon completion of the providing of the stimulus signals to the equipment, the controller can recall from the storing means a particular data representing the operational status of the equipment for a corresponding stimulus and expected signal comparison.

4,799,221

APPARATUS FOR REPRODUCING A DIGITAL SIGNAL

Tadashi Fukami; Shinya Ozaki, both of Kanagawa, and Kentaro Odaka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 3, 1987, Ser. No. 21,226
Claims priority, application Japan, Mar. 4, 1986, 61-46958; Mar. 7, 1986, 61-49744
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—38 7 Claims



1. An apparatus for reproducing a digital signal in which continous blocks of input data are supplied to said apparatus and each of said blocks consists of a PCM signal which was error correction coded and additional codes which were subjected to an error correction or detection coding process, said apparatus comprising:

means for error correcting each of said input data blocks using the error correction code and outputting error corrected data;

decoding means for decoding the additional codes using the error detection code or the error correction code;

interpolating means, which is supplied with output data of said error correcting means, for interpolation with respect to error corrected PCM data whose errors cannot be corrected and also with respect to error corrected PCM data designated by a pointer; and

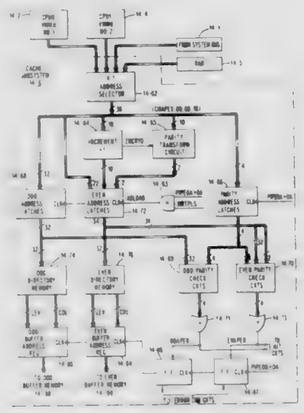
deciding means, which operates independently of the result of the correction by said error correcting means, for setting an error pointer to the error corrected PCM data which is supplied to said interpolating circuit in accordance wit the decoding state of said coding means.

4,799,222

ADDRESS TRANSFORM METHOD AND APPARATUS FOR TRANSFERRING ADDRESSES

George J. Barlow, Tewksbury, Mass.; James W. Keeley, Nashua, N.H., and Chester M. Nibby, Jr., Beverly, Mass., assignors to Honeywell Bull Inc., Waltham, Mass.

Filed Jan. 7, 1987, Ser. No. 1,124
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—51 20 Claims



1. A method of enabling the subsequent verification of the integrity of a transfer of an address received from any one of a number of sources through an address path including an incrementing circuit, said address including a number of integrity bits and said method comprising the steps of:

(a) separating said number of integrity bits from said address received from any one of said number of sources;

(b) storing said number of integrity bits;

(c) generating a number of transform bits as a function of whether or not said received address is being incremented by said increment circuit as said address is being passed through said incrementing circuit;

(d) storing said number of transform bits;

(e) complementing said integrity bits according to the states of said stored number of transform bits of step (d) to produce transformed integrity bits; and

(f) transferring said incremented address generated by said incrementing circuit together with said transformed integrity bits produced by step (e) to a utilization device for said subsequent verification.

4,799,223

SPLIT CONTACT PHASED ARRAY LASERS

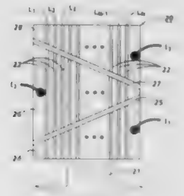
William Streifer, Palo Alto, Calif.; Robert D. Burnham, Wheaton, Ill., and Thomas L. Paoli, Los Altos, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 6, 1987, Ser. No. 82,774
Int. Cl.[4] H01S *3/10*
U.S. Cl. 372—24 2 Claims

1. In a split contact phased array laser comprising a plurality of parallel emitters under phase locked operation and productive of an output beam having a preferred emission wavelength and preferred far field mode of operation,

means to pump said laser and change the charge distribution profile therein to cause said output beam to deflect and scan in the far field,

the improvement wherein said laser is divided into at least three independently current pumped segments transversely of said emitters, and wherein at least one of said segments is current pumped above threshold level sufficient to primarily determine said emission wavelength and mode of operation of said laser while the current supplied



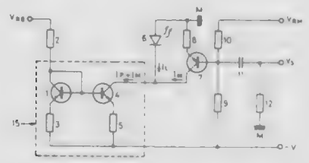
to the other of said segments is below said level and is varied relative to one another to cause said output beam to deflect and scan in the far field without substantial change to said emission wavelength and mode of operation established relative to said one segment to thereby provide effective control of the overall active region charge density.

4,799,224

DRIVER FOR A SEMICONDUCTOR LASER

Stefano Bottacchi, Milan, and Mauro Oselladore, Trieste, both of Italy, assignors to GTE Telecomunicazioni, S.p.A., Cassina de Pecchi, Italy

Filed Nov. 6, 1986, Ser. No. 927,621
Claims priority, application Italy, Dec. 10, 1985, 23160 A/85
Int. Cl.[4] H01S *3/00, 3/13*
U.S. Cl. 372—38 12 Claims



1. A driver circuit for a semiconductor laser comprising:

a bias current source, coupled in series with said semiconductor laser forming a junction therebetween; and

a modulating current source including a single transistor having a main conduction path coupled between said junction and a source of reference potential, said transistor further including a control electrode responsive to a modulating signal.

4,799,225

SEMICONDUCTOR LASER ARRAY DEVICE

Mototaka Taneya, Sakura; Sadayoshi Matsui, and Mitsuhiro Matsumoto, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

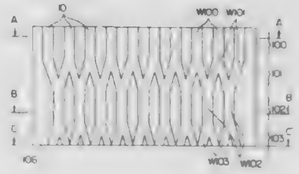
Filed Oct. 5, 1987, Ser. No. 104,865
Claims priority, application Japan, Oct. 7, 1986, 61-238240
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—44 2 Claims

1. A semiconductor laser array device with a waveguide structure comprising:

a first array portion which is composed of a plurality of waveguides in a parallel adjacent manner with an optical phase-coupling between the adjacent waveguides with a predetermined pitch,

a second array portion which is composed of a plurality of waveguides in a parallel manner with an optical phase-coupling between the adjacent waveguides at the position displaced half way between the position of each of the waveguides of the first array portion,

a third array portion which is composed of a plurality of symmetrically branching waveguides that optically connect the ends of the parallel waveguides of the first array portion with the ends of the parallel waveguides of the second array portion, and



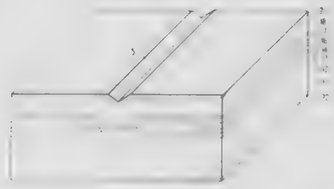
a fourth array portion which is composed of a plurality of symmetrically branching waveguides that are optically connected to the other ends of the parallel waveguides of the second array portion, the ends of said symmetrically branching waveguides of the fourth array portion meeting one laser-emitting face of said laser array device at which said symmetrically branching waveguides begin to be optically combined with the adjacent symmetrically branching waveguides, wherein the waveguide structure produces a near-field pattern at said light-emitting face with said near-field pattern having an optical intensity distribution exhibiting minimized ripple.

4,799,226

DISTRIBUTED FEEDBACK LASER DIODE COMPRISING AN ACTIVE LAYER PARTLY ADJACENT TO A WAVEGUIDE LAYER

Ikuo Mito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 1, 1987, Ser. No. 56,011
Claims priority, application Japan, May 30, 1986, 61-125467
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—45 5 Claims



1. In a semiconductor laser comprising a semiconductor substrate having a first conductivity type and a corrugated surface, an optical waveguide layer having said first conductivity type and a greater refractive index than said substrate, a first stack which comprises a current confining layer having a second conductivity type and a smaller refractive index than said waveguide layer and a current blocking layer of said first conductivity type and which has a pair of inwardly directed surfaces defining a groove therein and dividing said blocking layer and said confining layer into two current blocking parts and two current confining parts, respectively with an area of said waveguide layer exposed as a groove bottom, and a sec-

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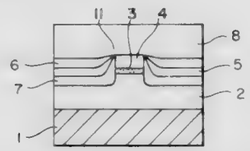
ond stack which consecutively comprises a first cladding layer having said first conductivity type and a smaller refractive index than said waveguide layer, an active layer having a greater refractive index than said waveguide layer, and a second cladding layer having said second conductivity type and a smaller refractive index than said waveguide layer, said waveguide layer being on said corrugated surface, said current confining layer being on said waveguide layer, said first cladding layer being on said current blocking parts, said inwardly directed surfaces, and said groove bottom.

4,799,227

SEMICONDUCTOR LASER DEVICE HAVING A BURIED HETEROSTRUCTURE

Shiaji Kaneiwa; Haruhisa Takiguchi, both of Nara; Toshihiko Yoshida, and Sadayoshi Matsui, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 830,857, Feb. 19, 1986, Pat. No. 4,692,206.
This application Jun. 26, 1987, Ser. No. 66,510
Claims priority, application Japan, Feb. 19, 1985, 60-33601
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—46 13 Claims



1. A semiconductor laser device having a structure comprising:

a multi-layer crystal structure which includes a striped mesa-portion disposed on a substrate, said striped mesa portion having an active layer for laser oscillation;

a three-layer structure formed on said multi-layer crystal structure, said three-layer structure including

a first semiconductor layer of a first conductivity type formed over the entirety of an upper face of said multi-layer crystal structure except for an upper face of said striped mesa-portion, wherein said first semiconductor layer is formed at both sides of said striped mesa-portion so as to form a heterojunction at each side of said active layer,

a second semiconductor layer of a second conductivity type opposite to the first conductivity type formed on an upper face of said first semiconductor layer, and

a third semiconductor layer of the first conductivity type formed on an upper face of said second layer; and

a burying layer of the second conductivity type formed on said upper face of said striped mesa-portion and an upper face of said third semiconductor layer.

4,799,228

TRANSVERSE-MODE STABILIZED SEMICONDUCTOR LASER DIODE WITH SLAB-COUPLED WAVEGUIDE

Hiroko Nagasaka, Yokohama; Gen-ichi Hatakoshi, Yokohama; Naohiro Shimada, Yokohama; Motoyuki Yamamoto, Kawasaki; Masaki Okajima, Kunitachi; Yoshio Iizuka, Yokohama; Hatsumi Kawata, Tokyo; Hideaki Kinoshita, Yokohama, and Nobuyuki Matsuura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 21, 1986, Ser. No. 898,706
Claims priority, application Japan, Aug. 23, 1985, 60-185531; Aug. 23, 1985, 60-185532
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—46 7 Claims

1. A semiconductor laser diode, comprising:

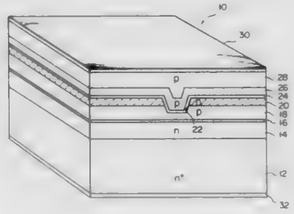
(a) a semiconductive substrate of a first conductivity type;

(b) first and second semiconductive cladding layers of first and second conductivity types, which are sequentially stacked on said substrate;

(c) an active layer of a semiconductor film sandwiched between said first and second cladding layers;

(d) a semiconductive current blocking layer of the first conductivity type formed on said second cladding layer, a channel groove being formed in said current blocking layer and said second cladding layer, to be deep enough to cause said current blocking layer to be divided into two parts;

(e) a semiconductive waveguide layer of the second conductivity type, for covering said channel groove and said current-blocking layer, to provide a slab-coupled waveguide structure for transverse mode oscillation;



(f) a semiconductive overcoating layer of the second conductivity type formed on said waveguide layer; and

(g) first and second conductive layers respectively formed on said substrate and said semiconductor overcoating layer to serve as electrodes of said laser diode;

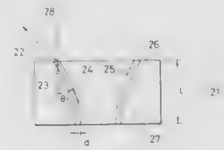
wherein said second cladding layer, said current blocking layer, and said waveguide layer are formed of a compound semiconductor containing aluminum with said current blocking layer containing aluminum in an amount larger than that contained in said waveguide layer to thereby improve lattice matching characteristics among said second cladding layer, said current blocking layer, and said waveguide layer.

4,799,229

SEMICONDUCTOR LASER ARRAY

Seiichi Miyazawa, Sagamihara; Toshitami Hara, Tokyo; Hidetoshi Nojiri, Isehara; Yoshinobu Sekiguchi, Yamato; Mitsutoshi Hasegawa, Yokohama, and Sotomitsu Ikeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1987, Ser. No. 49,165
Claims priority, application Japan, May 15, 1986, 61-112202; May 19, 1986, 61-114003; May 19, 1986, 61-114009; May 19, 1986, 61-114010
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—50 8 Claims



1. A semiconductor laser array, comprising:

a single substrate; and

a plurality of semiconductor laser elements monolithically formed on said single substrate, wherein each of said semiconductor laser elements comprises:

a plurality of semiconductor layers comprising a laser active layer;

first and second end faces formed by said plurality of semiconductor layers and comprising a pair of resonance planes from which laser light is emitted; and

a plurality of electrodes for supplying current to said plurality of semiconductor layers,

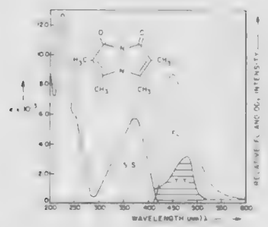
wherein an angle formed between the direction in which light is emitted from said first end face of each of said laser elements and the direction in which light is emitted from said first end face of an arbitrary reference one of said laser elements is different from an angle formed between the direction in which light is emitted from said second end face of said each of said laser elements and the direction in which light is emitted from said second end face of said arbitrary reference one of said laser elements, and wherein at least one of said angles is a non-zero finite angle.

4,799,230

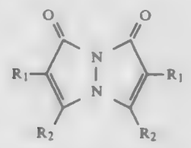
LASER DYES DERIVED FROM BIMANES

Theodore G. Pavlopoulos, San Diego, Calif., and Joseph H. Boyer, New Orleans, La., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 20, 1987, Ser. No. 125,646
Int. Cl.[4] H01S *3/20*
U.S. Cl. 372—53 20 Claims



1. A lasing media in which the lasing compound has the following structure:



wherein this compound is abbreviated as:

syn (R_1, R_2) bimane and R_1 and R_2 are chemical radicals.

4,799,231

LASER GAS ORIFICE INJECTION SYSTEM

Donald E. Smith, San Jose, Calif., and Michael W. Sasnett, Los Altos, Calif., assignors to Coherent General, Palo Alto, Calif.

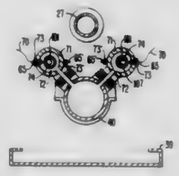
Filed Sep. 24, 1987, Ser. No. 101,130
Int. Cl.[4] H01S *3/22*
U.S. Cl. 372—58 19 Claims

1. A laser resonator system, including:

a laser resonator tube having a first longitudinal axis, said laser resonator tube also having a side wall including a first orifice through which gas flows into the tube;

a first elongated electrode, having a second longitudinal axis and a first end portion; and

means for mounting the first electrode at the first orifice so that the fist end portion is in electrical communication with gas flowing through the first orifice into the tube, and so that the projection of the first end portion on the plane of the first orifice is spaced from the center of the first orifice.



4,799,232

GAS LASER AND METHOD

Wolfgang Welsch, Baldham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 27, 1987, Ser. No. 78,185
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, 3632502
Int. Cl.[4] H01S *3/03*
U.S. Cl. 372—61 7 Claims



1. A discharge vessel for a gas laser, comprising:

a vacuum-tight glass bulb having an outer wall;

a laser capillary rigidly connected to said discharge vessel at a first end of said glass bulb;

a first optical part secured to a first mount, said first mount including a bore extending coaxially with said laser capillary;

an end piece closing said glass bulb at one end, said end piece having a bore coaxially aligned with said laser capillary, said end piece being of sintered glass having a low sensitivity to temperature fluctuations and being connected to said glass bulb in vacuum-tight fashion;

a second mount aligned with and positioned at an end of said capillary opposite to said first mount and bearing a second optical part; and

said first mount comprising a thin walled part connected to said end piece, said first optical part secured in said first mount being a mirror.

4,799,233

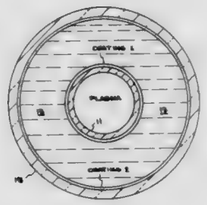
FLASHLAMP RADIATION RECYCLING FOR ENHANCED PUMPING EFFICIENCY AND REDUCED THERMAL LOAD

Kenneth S. Jancaitis, Pleasant Hill, and Howard T. Powell, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 23, 1986, Ser. No. 922,424

Int. Cl.[4] H01S *3/092*

U.S. Cl. 372—70 3 Claims



1. A method of decreasing the thermal load generated in the matrix of a solid state laser, when the matrix is irradiated by a flashlamp, wherein flashlamp radiation is produced within a pair of flashlamp envelopes, that are spaced apart from one another in a cylindrically concentric relationship, and that are each substantially transparent to the flashlamp radiation, with minimal loss in flashlamp pumping efficiency, where the laser may be pumped only for wavelengths λ less than an upper cut-off wavelength λ_{co}, the method comprising the steps of:

providing a first optical coating on either flashlamp envelope of the pair of flashlamp envelopes, that reflects a substantial portion of all radiation having wavelengths λ less than a first predetermined wavelength λ_c that lies in the range 0.35 μm $\leq\lambda_c\leq$0.7 μm; and

providing a second optical coating on the other flashlamp envelope of the pair of flashlamp envelopes, that reflects a substantial portion of all radiation with wavelengths greater than a second predetermined wavelength λ_d and transmits radiation having wavelengths satisfying $\lambda_c<\lambda<\lambda_d$, where $\lambda_d\approx\lambda_{co}$.

4,799,234

LASER TRANSMITTER INCLUDING AN EXTERNAL OPTICAL RESONATOR

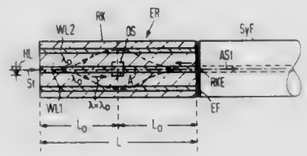
Klaus M. Haeussler, Munich; Julius Wittmann, Oberhaching; Gisela Gankel, Munich, and Franz Auracher, Baierbrunn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 14, 1987, Ser. No. 95,886

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1986, 3633077

Int. Cl.[4] H01S *3/082*; G02B *6/22, 6/26*

U.S. Cl. 372—97 5 Claims



1. A laser transmitter, comprising:

a semiconductor laser;

an external optical resonator in the form of a wavelength-selective fiber directional coupler, said wavelength selective fiber directional coupler being composed of a dispersive double core fiber,

a first core of said double core fiber being a first waveguide coupled to said semiconductor laser to receive radiant laser energy,

a second core of said double core fiber being a second waveguide having a defined coupling length relative to said first waveguide for coupling power between said first and second waveguides, said defined coupling length being of a size to provide that the radiant energy coupled over from said first waveguide to said second waveguide again couples over into said first waveguide at an end of said double core fiber opposite said semiconductor laser, said dispersive double core fiber providing complete crossover of laser energy from said first waveguide onto said second waveguide and complete crossover of the laser energy from said second waveguide to said first waveguide at an end of said double core fiber opposite said semiconductor laser, said laser energy being a desired wavelength for emission from said resonator;

a feedback device being supplied with a radiant laser energy that is coupled over from said first waveguide into said second waveguide over a coupling length, said feedback device enabling a portion of said coupled-over radiant energy to pass from said laser transmitter as output power, said feedback device being provided at least in an area of said first waveguide at said semiconductor laser; and

an optical absorber or sum interrupting said first waveguide and disposed inside said double core fiber.

4,799,235

APPARATUS FOR MEASURING DEW-POINT OF A GAS STREAM WITH LIGHT SCATTERING

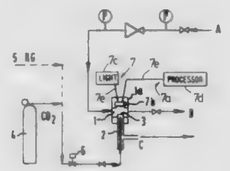
John L. K. Bannell; Arnold G. Dixon, and Trevor P. Davies, all of Chester, England, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 10, 1986, Ser. No. 872,570

Claims priority, application United Kingdom, Jun. 18, 1985, 8514584

Int. Cl.[4] G01N *25/68*

U.S. Cl. 374—18 25 Claims



1. An apparatus for measuring condensible components in a gas stream, said apparatus comprising:

a sensor cell which includes a pressurized chamber, a probe having a reflective surface located within said pressurized chamber, said reflective surface having a slightly roughened finish which reflects scattered light when dry and diverts directly reflected light in the presence of condensate; a means for cooling at least the surface of said probe; a depression of low angle in said surface of said probe a means for transmitting light to said surface of said probe in said pressurized chamber; a means for receiving returned light scattered from said surface of said probe which is positioned to receive scattered light, but is substantially out of alignment with the path of directly reflected light; and a means for determining the presence of condensate as a predetermined function of the reduction in scattered light intensity from said surface.

4,799,236

TELECOMMUNICATION SYSTEM COMPRISING A BUS CONDUCTOR AND TELECOMMUNICATION STATIONS CONNECTED TO THIS BUS CONDUCTOR THROUGH TRANSFORMERS

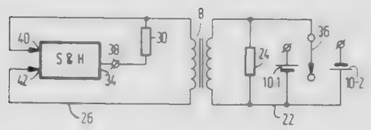
Daniël J. G. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed May 26, 1987, Ser. No. 53,987

Claims priority, application Netherlands, Jun. 18, 1986, 8601572

Int. Cl.[4] H04B *3/02*

U.S. Cl. 375—36 4 Claims



1. A telecommunication station for use in a telecommunication system comprising a plurality of such stations interconnected by a common bus conductor, each station including a coupling transformer having a plurality of windings at least one of which is coupled to the bus conductor; communication with any station being effected by transmission of a series of voltage pulses over the bus conductor which are received in the transformer winding coupled thereto and produce magnetizing current in such winding, such magnetizing current reaching a maximum value during each received voltage pulse and changing upon termination of such pulses as to generate a faulty voltage in such winding; such telecommunication station being characterized in that it comprises means connected to a winding of the coupling transformer thereof for generating a compensating current therein which changes upon termination of each received voltage pulse, such change corresponding to the maximum value of said magnetizing current and being in a direction opposite to the change in said magnetizing current upon termination of such voltage pulse; whereby the compensating current generates a voltage in the transformer winding coupled to said bus conductor substantially equal and opposite to the faulty voltage generated therein by the magnetizing current upon termination of a received voltage pulse.

4,799,237

CHANNEL-SYSTEM EXCHANGE SYSTEM FOR DIGITAL DATA RADIO-COMMUNICATION SYSTEM

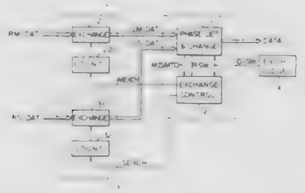
Hideaki Itoh, Chofu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 18, 1987, Ser. No. 98,239

Claims priority, application Japan, Sep. 20, 1986, 61-220902

Int. Cl.[4] H04K *1/00*; H04L *1/02*

U.S. Cl. 375—38 12 Claims



1. A channel-system exchange system for a digital radio-communication system including at least one main radio-communication channel system and a standby communication channel system, said channel-system exchange system being provided at a reception side of each main communication channel system each main radio-communication channel system having at a transmission side a first serial-to-parallel data converter (S/PC) converting serial data to be transmitted to first channel data on the basis of a modulation method, and said standby radio-communication channel system having second S/PC at the transmission side having the same construction as said first S/PC and converting said serial data to second channel data on the basis of said modulation method, said channel-system exchange system in each main radio-communication channel system comprising:

first exchange means for exchanging said first channel data received at the reception side of said main radio-communication channel system between main channels;

second exchange means for exchanging said second channel data received at the reception side of said standby radio-communication channel system between standby channels; and

switching control means, operatively connected to said first and second exchange means, for receiving said first channel data from said first exchange means and said second channel data from said second exchange means and for switching and outputting either said first channel data or said second channel data on the basis of a channel-system exchange mode,

said switching control means detecting a phase match between said first channel data and said second channel data, shifting either said first or second data as required by said channel-system exchange mode until predetermined bits of data are shifted when said phase match is not obtained, and activating either said first or second exchange means as determined by said channel-system exchange mode when said shifting of predetermined bits of data is terminated,

said activated exchange means delaying at least one channel of the channel data therein as defined by a first relationship based upon said modulation method by one bit and exchanging said channel data between the channels therein on the basis of a second relationship defined by said modulation method, and

said switching control means repeating said phase match detection for said exchanged channel data and switching between said first and second channel data on the basis of said channel-system exchange mode when the phase match is obtained.

4,799,238

DIFFERENTIAL PHASE SHIFT KEYING METHOD FOR THE TRANSMISSION OF DATA

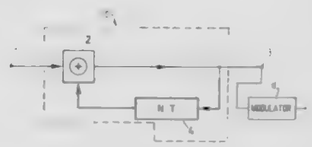
Walter Braun, Wettingen, and Walter Hagmann, Dättwil, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Jul. 15, 1987, Ser. No. 73,719

Claims priority, application Switzerland, Jul. 23, 1986, 2948/86

Int. Cl.[4] H04L *27/18*; H04B *13/00*

U.S. Cl. 375—56 6 Claims



1. Method for transmitting a sequence of symbols, comprising the steps of:

selecting symbols from the sequence of symbols at a data

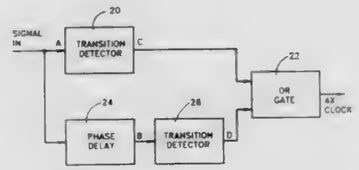
rate 1/T which is equal to a predetermined number N times a fundamental frequency f_G of a disturbance signal, where $1/T = N f_G$;
coding the selecting symbols by adding to each symbol a symbol which is displaced by a time interval NT, wherein the time interval NT is equal to N times a symbol duration T, said symbol duration T being equal to the inverse of the data rate 1/T;
modulating the coded symbols by differential phase shift keying (DPSK) onto a carrier signal of a frequency f_0, said frequency f_0 being equal to a predetermined harmonic of the fundamental frequency f_G;
demodulating the carrier signal into a baseband signal;
integrating the baseband signal over the period of one symbol duration T;
sampling the integrated baseband signal at a sampling rate which is equal to the data rate 1/T; and
forming a phase difference between the sampled baseband signal and the same sampled baseband signal displaced by the time interval NT.

4,799,239

PHASE-COHERENT FSK SIGNAL DEMODULATOR

Sheldon Pearlman, Stamford; Anatoly Fridland, Shelton, and Gunther J. Martin, Ridgefield, all of Conn., assignors to Kidde, Inc., Westlake, Ohio

Filed Apr. 28, 1986, Ser. No. 856,777
Int. Cl.[4] H04L *27/14*
U.S. Cl. 375—88 20 Claims



1. A system for receiving phase-coherent FSK signals having data and clock components comprising:
a plurality of subsystems;
means for carrying the data among the subsystems;
at least two of the subsystems being able to communicate by a means for transmitting and a means for receiving phase-coherent FSK signals in the subsystems;
the means for receiving including demodulation means for the data and clock components, the clock component demodulation means including a plurality of operatively parallel connected transition detectors which generate signals when the entering phase-coherent FSK data changes states and when a phase-delayed wave of the phase-coherent FSK data changes state, wherein the clock component demodulation means includes a means for combining the outputs of the transition detectors and is operatively connected thereto to form a signal which is a multiple of the clock component.

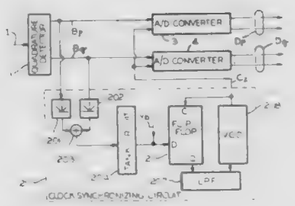
4,799,240

CLOCK SYNCHRONIZING CIRCUIT INCLUDING A VOLTAGE CONTROLLED OSCILLATOR

Yasuharu Yoshida, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 15, 1986, Ser. No. 863,771
Claims priority, application Japan, May 28, 1985, 60-114518
Int. Cl.[4] H04L *7/02;* H03D *3/24*
U.S. Cl. 375—110 21 Claims

1. A clock synchronizing circuit comprising:
first means for separating a clock component from a digital modulated wave and for filtering the clock component, thereby providing an analog clock component;
second means comprising a digital flip-flop circuit responsive to a clock signal for sampling the analog clock component provided from said first means to produce a two-level digital signal; and
voltage controlled oscillator means responsive to said two-level digital signal for generating said clock signal.

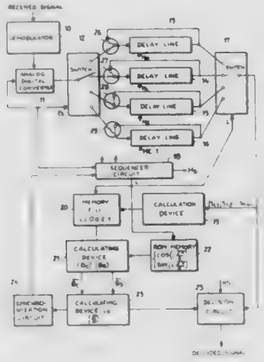


4,799,241

METHOD AND DEVICE FOR SYMBOL SYNCHRONIZATION AND THEIR APPLICATION TO THE SYMBOL DEMODULATION OF DIGITAL MESSAGES

Pierre A. Laurent, Bessancourt, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 22, 1987, Ser. No. 99,598
Claims priority, application France, Sep. 23, 1986, 86 13286
Int. Cl.[4] H04L *7/06*
U.S. Cl. 375—113 10 Claims



1. A method for symbol synchronization, for the symbol demodulation of a digital signal, a method wherein:
a signal is sampled to form E sequences of samples at intervals of the symbol period Ts (Si1 . . . Sij . . . SiN), i varying from 0 to E−1 and j varying from 1 to N, the samples of the same number j in two successive sequences of numbers i and i+1 being time-shifted with respect to one another by a fraction Ts/E of a symbol period Ts,
a value F (i)=F(Si1 . . . Sij, . . . , SiN) of a function F is calculated for each sequence of samples, F being chosen beforehand, according to the type of modulation used at emission, so that the nominal value of the function varies according to i and so that these variations can be identified wit those of a sine model in accordance with COS (i2π/E),
values F (i) are identified with the corresponding values of the model A+B COS ((i-io)2π/E) to determine io, io being characteristic of the synchronization time-shift to be applied to a synchronization signal of a decision circuit which performs the symbol demodulation.

4,799,242

MULTI-MODE DYNAMIC CODE ASSIGNMENT FOR DATA COMPRESSION

Johannes C. Vermeulen, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1987, Ser. No. 88,771
Int. Cl.[4] H04B *14/06*
U.S. Cl. 375—122 2 Claims



1. The combination comprising:
data input means for supplying ad seriatim bits of binary characters comprising information to be compressed;
predicting means responsive to said data input means for supplying a predicted bit and a value representative of the probability that said predicted bit is equal to a corresponding bit from said data input means;
encoding means responsive to said probability value for generating a binary code word having a number of bits proportional to said probability value;
means responsive to said data input means and to said predicting means for comparing said predicted bit to a corresponding bit from said data input means;
means coupled to said encoding means and responsive to said comparing means for applying said binary code word to a utilization device if said predicted bit is not equal to the corresponding bit from said data input means;
means responsive to said data input means for comparing successive characters of said information to be compressed; and,
means responsive to said character comparing means for causing said encoding means to generate successive unique code words of fixed length for each successive same character in said information to be compressed and for causing said applying means to apply the code word associated with the last same character when a different character is found by said character comparing means.

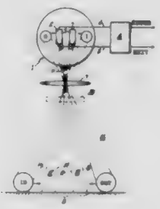
4,799,243

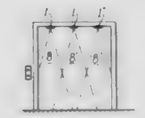
DIRECTIONAL PEOPLE COUNTING ARRANGEMENT

Bruce E. Zepke, Glastonbury, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Sep. 1, 1987, Ser. No. 91,622
Int. Cl.[4] G08B *13/18;* G06M *7/00;* G01J *5/08*
U.S. Cl. 377—6 11 Claims

1. An arrangement for detecting the passage of living beings through a surveillance region into and out of a controlled-access space, comprising at least three pyroelectric detector devices arranged side-by-side with respect to one another above an entryway to be surveilled such that the surveillance regions of said detector devices transversely span said entryway, each of said detector devices including two detector elements situated in succession in the direction of passage into the controlled-access space and each having an active area directly exposed to thermal radiation from the surveillance region and operative for converting thermal radiation energy received thereby into an electrical signal, said detector elements being coupled in such a manner that said electrical signal has one polarity for one of the detector elements and the opposite polarity for the other detector element;
means for so optically subdividing said surveillance region of each of said detector devices into two surveillance zones arranged in succession as considered in said direction that thermal radiation energy from a living being passing through the surveillance region reaches initially only one and subsequently only the other of said detector elements when such living being is entering, and initially only said other and subsequently only said one detector element when such living being is leaving, the controlled-access space, with attendant generation of said opposite polarity electrical signals by said detector device in one lead/lag time relationship for a living being entering, and in the opposite lead/lag relationship for a living being leaving, the controlled-access space through said surveillance region;





means for evaluating said electrical signals of said detector devices to provide an indication of the entry and/or exit of a living being through the respective ones of said surveillance regions from the then existing lead/lag relationship of said opposite polarity electrical signals, including at least three generating means each associated with a different one of said detector devices and operative for generating a first output signal when one of said opposite polarity signals leads the other; and further comprising a combination circuit receiving said first signals from all of said generating means and issuing a single output signal when said first signal is present from said generating means associated with the central one but not from either one of said generating means associated with the lateral ones of said detector devices, or from one but not from the other of said generating means associated with said lateral detector devices, and two output signals when said first signal is present from said generating means associated with both of said lateral detector devices.

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4,799,244

SURFACE ACOUSTICAL WAVE CHARGE TRANSFER DEVICE HAVING A PLURALITY OF STATIONARY CHARGE CARRIER STORAGE PORTIONS

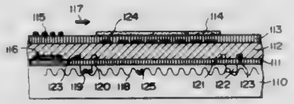
Nobuo Mikoshiba; Kazuo Tsubouchi, both of Sendai, and Makoto Nagao, Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 226,096, Nov. 11, 1981, abandoned, which is a continuation of Ser. No. 28,879, Apr. 10, 1979, abandoned. This application Jun. 30, 1986, Ser. No. 880,097

Claims priority, application Japan, Apr. 14, 1978, 53-43642; Apr. 14, 1978, 53-43868; Oct. 25, 1978, 53-165010; Dec. 18, 1978, 53-160812

Int. Cl.⁴ G11C *19/28;* **H01L** *29/78, 27/14, 31/00*

U.S. Cl. 377—58 **55 Claims**



1. An image pick-up device comprising a charge transfer device of the monolithic type in which charge carriers are transferred bunched in first travelling potential wells of a potential wave accompanying an acoustic wave propagating therein where at least some of the charge carriers are generated by image-wise light exposure of the charge transfer device, said charge transfer device including acoustic wave generating means for propagating said acoustic wave in a piezoelectric layer, means for establishing a transfer channel for transferring therethrough the charge carriers, said channel comprising a depletion layer in the vicinity of the surface of a semiconductor where said piezoelectric layer and said semiconductor may comprise the same member, a detecting means for detecting the transferred charge carriers, and means for establishing a plurality of discrete charge carrier storage portions in or close to the transfer channel for storing at least some of the charge carriers generated by said image-wise light exposure of the charge transfer device, said latter means including (a) at least one electrode means disposed in proximity to said transfer channel and (b) potential applying means for applying at least one potential to said electrode means to establish a first plurality of stationary potential wells respectively corresponding to said plurality of discrete charge carrier storage portions where each of said stationary potential wells is stationary with respect to said transfer channel while said travelling potential wells move along said transfer channel, and means for changing the relationship between said stationary potential wells and said travelling potential wells between at least (a) a first relationship where the charge carriers are stored in said stationary potential wells and not transferred by said travelling potential wells and (b) a second relationship where the charge carriers are transferred from the stationary potential wells to the travelling potentials wells to be transferred along said transfer channel to said detecting means.

4,799,245

INTEGRATED CT SCANNER GANTRY

Richard T. Bernardi, Prospect Heights, Ill., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed May 12, 1983, Ser. No. 494,104

Int. Cl.⁴ G03B *41/16*

U.S. Cl. 378—15 **12 Claims**

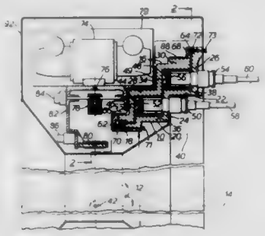
1. An integrated gantry assembly for an x-ray scanner comprising:

a. a stator having an opening along a longitudinal axis thereof of sufficient size to permit said stator to encircle a patient positioned along said axis;

b. a rotor having an opening along a longitudinal axis thereof of sufficient size to permit said rotor to encircle a patient positioned along said axis;

c. a bearing assembly located between said stator and said rotor to align said stator and rotor coaxially and to support said rotor rotatably on said stator;

d. slip ring means mounted in part on said stator and in part on said rotor and located between said rotor and stator for effecting high voltage connection from said stator to said rotor while permitting continuous rotation of said rotor, said stator and rotor defining between them first and second annular cavities each of which has a disc-shaped



opening lying in first and second planes, respectively, which planes are each perpendicular to said longitudinal axis of said stator and rotor, said first cavity having a smaller diameter than the diameter of said second cavity, one of said cavities housing a negative pancake electrode of said slip ring means an the other of said cavities and said pancake electrodes housing a positive pancake electrode of said slip ring means, said cavities being offset one from the other along said longitudinal axes of said stator and rotor; and

e. x-ray means mounted onto and supported solely by said rotor.

4,799,246

APPARATUS FOR MEASURING THE THICKNESS OF THIN LAYERS

Helmut Fischer, Industriestrasse 21, 7032 Sindelfingen, Fed. Rep. of Germany

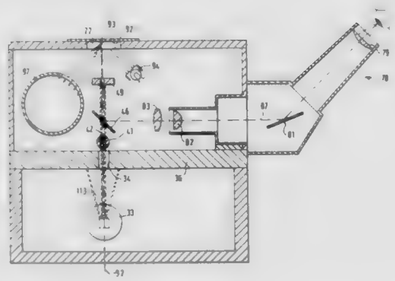
Division of Ser. No. 487,130, Apr. 21, 1983. This application May 2, 1986, Ser. No. 858,689

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1982, 3239379

The portion of the term of this patent subsequent to Jun. 24, 2003, has been disclaimed.

Int. Cl.⁴ G01B *15/02*

U.S. Cl. 378—50 **5 Claims**



1. In an apparatus for measuring the thickness of thin layers according to the X-ray fluorescence principle, having a source of an X-ray beam with a longitudinal geometrical axis, and a viewing arrangement with an optical path, for viewing the region of the layer on which said X-ray beam falls,

a deflecting mirror arranged to be positioned in said longitudinal geometrical axis of said X-ray beam and in said optical path between said viewing arrangement and said region of said thin layer on which said X-ray beam falls,

said mirror being composed of optically reflecting material and containing a hole which is arranged to be positioned in line with said longitudinal geometrical axis of said X-ray beam.

4,799,247

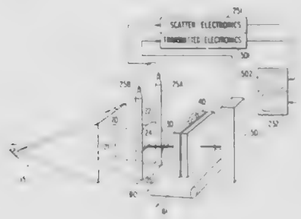
X-RAY IMAGING PARTICULARLY ADAPTED FOR LOW Z MATERIALS

Martin Annis, Cambridge, and Paul J. Bjorkholm, Sharon, both of Mass., assignors to American Science and Engineering, Inc., Cambridge, Mass.

Filed Jun. 20, 1986, Ser. No. 876,632

Int. Cl.⁴ G01N *23/201;* **G01T** *1/20*

U.S. Cl. 378—87 **8 Claims**



1. A projection imaging system for inspecting objects for highlighting low Z materials comprising:

(a) a source of penetrating radiation,

(b) means for forming radiation emitted by said source into a beam of predetermined cross-section and for repeatedly sweeping said beam across a line in space,

(c) means for moving said object to be imaged relative to said source in a direction perpendicular to said line in space,

(d) first radiant energy detector means located to be responsive to radiant energy penetrating said object and emerging from said object, substantially unchanged in direction, for producing first electrical signals,

(e) second radiant energy detector means located further from said source than said object and responsive to radiant energy scattered by said object for producing second electrical signals,

(f) third radiant energy detector means located closer to said source than said object and responsive to radiant energy scattered by said object for producing third electrical signals,

(g) display means responsive to at least a pair of said electrical signals for separately, independently and simultaneously displaying said pair of electrical signals as a function of time.

4,799,248

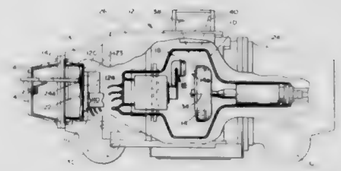
X-RAY TUBE HAVING MULTIPLE CATHODE FILAMENTS

Avery D. Furbee, Elmhurst; Salvatore G. Perno, Winfield, and James E. Burke, Villa Park, all of Ill., assignors to Picker International, Inc., Highland Heights, Ohio

Filed Aug. 6, 1987, Ser. No. 82,427

Int. Cl.⁴ H05G *1/56;* **H05J** *35/06*

U.S. Cl. 378—114 **9 Claims**



1. Apparatus comprising:

(a) X-ray generating means including a cathode and an anode mounted in an evacuated chamber, said cathode having multiple filaments for emitting electrons to impinge upon a target region of said anode;

(b) housing means enclosing the X-ray generating means in an enclosure containing an insulating fluid and including a flexible wall member in part defining said enclosure to accommodate variations in the volume of said insulating fluid with temperature, said housing means supporting said X-ray generating means in a position to direct X-rays through a region of interest;

(c) connector means coupled to the housing means for energizing the X-ray generating means and having two conductors for receipt of a filament energization voltage; and

(d) selector means immersed within said insulating fluid for electrically coupling the filament energization voltage at the connector means across a selected one of said multiple filaments while electrically isolating others of said multiple filaments from said filament energization voltage and having an actuator that includes a movable contact element in close proximity to said flexible wall which can be controlled from outside the housing means to energize different ones of said multiple filaments;

(e) said housing means including an opening for insertion of a tool to engage said flexible wall in the region of said selector means to cause said flexible wall to contact and to move the movable contact element and select a different one of the multiple filaments.

4,799,249

SELF-CLEANING ROTATING ANODE X-RAY SOURCE

Arvydas P. Paulikas, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 2, 1987, Ser. No. 56,825

Int. Cl.⁴ H01J *35/10*

U.S. Cl. 378—125 **6 Claims**

1. An x-ray source apparatus comprising:

a housing defining an enclosure and having an x-ray emission window therein;

means for evacuating said enclosure;

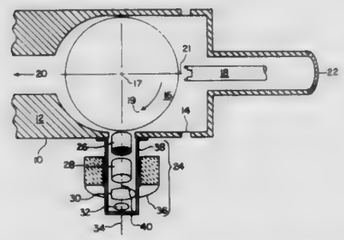
a rotatable anode means within said enclosure having a rotatable surface thereon;

a source of electrons;

means for attracting and causing movement of electrons from said source such that said electrons energetically impinge upon the rotatable surface in one region of the enclosure to produce x-rays;

means for producing ions capable of producing ions from residual particles in said enclosure, said means for producing ions located within said enclosure;

means for accelerating ions capable of accelerating ions produced by said means for producing ions such that said ions energetically impinge upon said rotatable surface in a



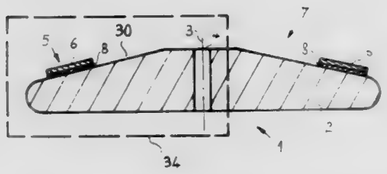
second region of the enclosure to sputter impurities from the surface of said anode means said means for accelerating ions located within said enclosure.

4,799,250

ROTATING ANODE WITH GRAPHITE FOR X-RAY TUBE

Jean M. Pennin, Les Essarts le Roi; Emile Gabbey, Paris, and Yves Delrieuwer, Charenton, all of France, assignors to Thomson-CGR, Paris, France

Filed Jan. 14, 1987, Ser. No. 3,142
Claims priority, application France, Jan. 17, 1986, 86 00654
Int. Cl.[4] H01J *35/10*
U.S. Cl. 378—144 **5 Claims**



1. A rotating anode of the composite type, comprising:
a first part comprising at least one target material which is capable of producing X-ray radiation upon being subjected to an electron beam; and
a second part made of graphite, said first and second parts being joined together by a bonding element comprising at least beryllium, wherein the bonding element enables the working temperature of said rotating anode to be increased.

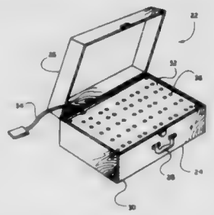
4,799,251

ESS EQUIPMENT TESTING DEVICE

Richard B. Smith, Lugoff, and Michael T. Tolson, Elgin, both of S.C., assignors to Bell South Corporation, Atlanta, Ga.

Filed Sep. 28, 1987, Ser. No. 101,670
Int. Cl.[4] H04M *1/24*
U.S. Cl. 379—1 **35 Claims**

1. A device to facilitate testing of communications systems having a number of predetermined test terminals, comprising;
a housing defining a plurality of recesses:
a plurality of electrodes mounted on said housing each electrode being positioned in a recess of said plurality of recesses, said recess being of a size sufficient for said electrode to engage a removable electrical connector;
means for connecting said plurality of electrodes to said number of predetermined test terminals; and



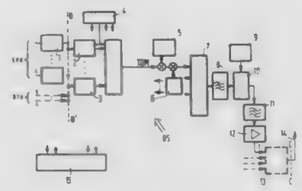
means for correlating said electrodes and said test terminals so that a selected electrode is an extension of a selected test terminal.

4,799,252

DIGITAL RADIO TRANSMISSION SYSTEM

Alfons Eizenhöffer, Altdorf, and Hans-Gorg Preller, Grossenseebach, both of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 891,936, Jul. 30, 1986, abandoned. This application Mar. 7, 1988, Ser. No. 168,620
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1965, 3527331
Int. Cl.[4] H01Q *7/04*
U.S. Cl. 379—59 **3 Claims**



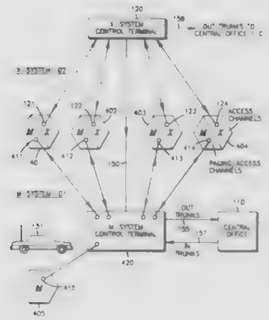
1. In a digital radio transmission system comprising a plurality of base stations and mobile stations arranged in a cellular network and wherein messages to be communicated between each base station and the respective mobile stations assigned thereto are transmitted over respective communication channels, the improvement characterized in that each base station comprises multiplexing means for multiplexing messages to be transmitted from such base station to the mobile stations assigned thereto by a combination of three different modes of multiplexing, such modes including time division multiplexing of respective time slots in successive time frames, code-division multiplexing of such time frames in accordance with respective codewords, and frequency-division multiplexing of such code division multiplexed time frames at respective carrier frequencies, the respective base stations being identified by employing respective combinations of said codewords and said carrier frequencies; and each mobile station comprises multiplexing means for multiplexing messages to be transmitted from such mobile station to the base station assigned thereto by at least one of said modes of multiplexing.

4,799,253

COLOCATED CELLULAR RADIOTELEPHONE SYSTEMS

Morton Stern, Skokie, and James Williams, Lombard, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 20, 1987, Ser. No. 75,914
Int. Cl.[4] H04Q *7/04*
U.S. Cl. 379—59 **13 Claims**



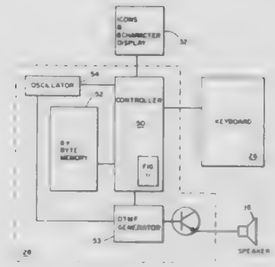
1. A method of processing radiotelephone calls in at least first and second radiotelephone systems and a central office for providing telephone service to radiotelephones located in a geographical area, said geographical area divided into a plurality of cells, each cell assigned a plurality of voice radio channels, at least one paging/access radio channel and/or at least one access-only radio channel which differ from those radio channels assigned to adjoining cells, said first radiotelephone system including a plurality of out trunks, a plurality of inter-office trunks and a plurality of fixed site radio apparatus each located in a different cell for communicating with said radiotelephones, and said second radiotelephone system including a plurality of in trunks, a plurality of out trunks, a plurality of inter-office trunks and a plurality of fixed site radio apparatus each located in a different cell for communicating with said radiotelephones, said method comprising the steps of:
coupling out trunks of said first radiotelephone system to the central office;
coupling in trunks and out trunks of said second radiotelephone system to the central office;
coupling interoffice trunks of said first radiotelephone system to inter-office trunks of said second radiotelephone system;
locating each fixed site radio apparatus of said second radiotelephone system with the fixed site radio apparatus of said first radiotelephone system in the same cell;
assigning for each cell at least one access-only radio channel and at least one of the plurality of voice radio channels for the cell to the fixed site radio apparatus of said first radiotelephone system located in the cell, and at least one paging/access radio channel and at least one of the plurality of voice radio channels for the cell to the fixed site radio apparatus of said second radiotelephone system located in the cell; and
directing a predetermined percentage of telephone calls originated by radiotelephones from said second radiotelephone system to said first radiotelephone system.

4,799,254

PORTABLE COMMUNICATION TERMINAL FOR REMOTE DATABASE QUERY

Douglas C. Dayton, Harvard, Mass.; Richard Bergeron, Londonderry, N.H., and Donald R. Skrinar, Harvard, Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Jun. 30, 1986, Ser. No. 880,438
Int. Cl.[4] H04M *11/00*
U.S. Cl. 379—97 **1 Claim**



1. A portable communications terminal comprising
a keyboard providing alphanumeric character keys for entering alphanumeric input signals corresponding to alphanumeric characters, and a Store key and a Send key for entering corresponding input signals,
storage means for storing digitally coded representations of characters corresponding to said alphanumeric character key input signals.
a DTMF tone generator,
output means connected to said generator, and
controller means connected to said keyboard, said storage means, and said tone generator, and responsive to an input signal coresponding to actuation of said Store key for storing digitally coded representations of alphanumeric characters corresponding to subsequent alphanumeric input signals in said storage means as a stored message string,
said controller means being thereafter responsive to an input signal corresponding to actuation of said Send Key for accessing said stored message string, and responsive to each successive digitally coded representation, for causing said generator to generate two successive DTMF tones to form a sequential pair uniquely corresponding to said corresponding alphanumeric character, for transmission by said output means,
said controller means being further responsive to actuation of said Send key for accessing said storage means and for deriving a representation of number of characters represented in said stored message string, and thereafter for causing said generator means to generate tone pairs uniquely corresponding to a start character and to a count header representing said derived representation of number.

4,799,255

COMMUNICATION FACILITIES ACCESS CONTROL ARRANGEMENT

Randy J. Billinger, Thornton; Laurel K. Dotter, Boulder, and Tommy D. Gasaway, Westminster, all of Colo., assignors to American Telephone and Telegraph Company - AT&T Information Systems, Holmdel, N.J.

Filed Jan. 30, 1987, Ser. No. 9,175
Int. Cl.[4] H04M *3/00*
U.S. Cl. 379—189 **5 Claims**

1. In a telephone communication system, a method of detecting repetitive dialing of invalid authorization codes by a calling

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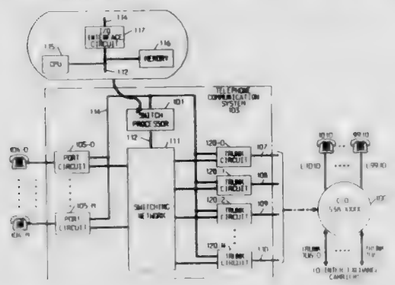
station in unauthorized attempts to access communication facilities comprising the steps of:

identifying the telephone number of said calling station for a call;

maintaining a permanent database of records based on telephone station numbers with each record comprising the number of calls made by an individual station that resulted in an unauthorized communication facility access attempt;

detecting the dialing of an invalid authorization code by said calling station in an unauthorized communication facility access attempt;

searching said database using the identified telephone number to determine if a record exists for said calling station;



creating a record in said database for said calling station upon the determination that no record exists for said calling station;

incrementing number of calls of said record for said calling station for the detected unauthorized communication facility access attempt;

comparing said number of calls of said record for said calling station to predetermined criteria; and

restricting all further access to said communication facility by said calling station for said present call and future calls when said number of calls of said record of said calling station satisfy said predetermined criteria.

4,799,256

TELECOMMUNICATION SIGNALLING ARRANGEMENT

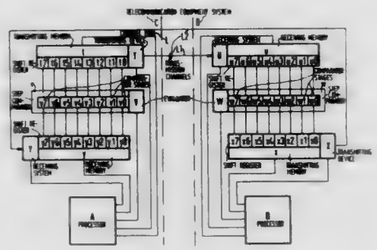
Renate Mattis; Günther Seidel, both of Munich; Heinrich Übelhack, Oberhaching, and Russel D. Homer, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 6, 1986, Ser. No. 826,691

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1985, 3511324

Int. Cl.[4] H04M *7/06;* **H04Q** *3/545*

U.S. Cl. 379—269 **11 Claims**



1. A circuit arrangement for telecommunication installations, in particular telephone exchange installations wherein there is sent ahead of each of a plurality of different communications to be transmitted corresponding type information about the type of communication actually existing, and wherein, depending on the possibly continuously varying operating situation of two telecommunication equipment systems adapted for the sending and/or receiving of communications and at least partially also for the processing thereof, one system is either ready or not ready to receive a communication to be emitted from the other system depending on the currently existing operating situation and depending on the announced type of communication, and wherein before a communication transmission a message concerning the readiness or non-readiness is transmitted in an opposite direction to the direction of transmittal of type information for the release or suppression of said communication transmission, and where, in said circuit arrangement message communications, information and messages are transmitted in bit portions of a uniform word format, characterized in that, simultaneously with type information going in the opposite direction, that is, from one telecommunication equipment system to the other system, an assortment of individual type-specific messages is transmitted concerning each of the different communication types of which each system signals to said other system the respective readiness or non-readiness individually, concerning each of the various possible communication types, and that a comparison of the type information with the respective type-specific messages in the other telecommunication equipment system leads to the release of the communication transmission or to the suppression thereof or respectively to a postponement, and that also a comparison of the type information with the respective type-specific message in the one telecommunication equipment system takes place, and that through the result thereof a next following reception of a respective communication is prepared for or skipped, and that in the latter case the reception of type information of a next following communication is prepared for.

4,799,257

WIRELESS TRANSMISSION SYSTEM FOR PM MODULATION SIGNAL

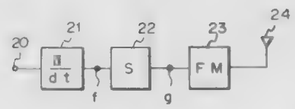
Masahichi Kishi, Tokyo; Seizo Seki, and Nobora Kaamuri, both of Kanagawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Continuation of Ser. No. 656,376, Oct. 1, 1984, abandoned. This application Nov. 5, 1987, Ser. No. 119,231

Claims priority, application Japan, Sep. 30, 1983, 58-180636; Sep. 8, 1984, 59-187277

Int. Cl.[4] H04K *1/04*

U.S. Cl. 380—9 **5 Claims**



1. A wireless transmission system for a phase modulation system using a frequency relocator means, comprising:

an input terminal for receiving an input signal to be transmitted;

a differential circuit coupled with said input terminal;

a frequency relocator coupled with an output of said differential circuit, for relocating the spectrum of input signals;

an FM modulator coupled with an output of said frequency relocator, wherein said differential circuit and said FM modulator combine to function as a phase modulation modulator and such that a modulation index of the phase modulation is not increased during said relocation of the spectrum; and

an antenna coupled with an output of said FM modulator.

4,799,258

APPARATUS AND METHODS FOR GRANTING ACCESS TO COMPUTERS

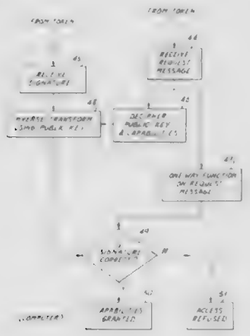
Donald W. Davies, Sunbury-on-Thames, England, assignor to National Research Development Corporation, London, England

Filed Feb. 7, 1985, Ser. No. 699,447

Claims priority, application United Kingdom, Feb. 13, 1984, 8403699; Jun. 26, 1984, 8416241

Int. Cl.[4] H04L *9/02*

U.S. Cl. 380—21 **24 Claims**



1. A method of granting access to a computer comprising:

as a first preliminary step, establishing; in an authentication apparatus, a stable record of both a) a first secret key of a public key encryption system a type of access which the computer will grant and a second public key corresponding to the secret key; and

as a second preliminary step, establishing a stable record of a third key used in enciphering said enciphered information;

and additional steps employed when access is granted:

obtaining a unique message for the authentication apparatus which is different in content from other unique messages used at other times;

using the authentication apparatus to form one part of an output message to include said enciphered information produced during said first preliminary step, including said type of access information and said second public key, as enciphered in said second preliminary step, and using the secret key to encipher the unique message to generate another part of the output message;

using the computer to decipher the enciphered information to obtain information including the deciphered public key, and to decipher the enciphered unique message of the output message using the deciphered public key; and

comparing digital signals representing the result of the deciphered unique message with digital signals indicative of the unique message and granting the predetermined access to the computer only if the digital signals compared are substantially the same.

4,799,259

MONOLITHIC RANDOM DIGITAL NOISE GENERATOR

Albert V. Ogrodski, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 10, 1986, Ser. No. 850,202

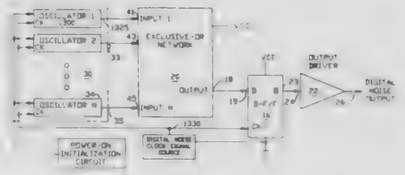
Int. Cl.[4] H04L *9/04;* **H03B** *29/00*

U.S. Cl. 380—46 **17 Claims**

1. A random digital signal generator circuit responsive to a clock signal from a clock signal source for outputting a sequential series of logic signals, each logic signal having at least a high and a low state at an output terminal comprising:

a flip-flop having a clock signal input terminal responsive to said clock signal, said flip-flop also having an input and output terminal and being further characterized to store the state of a signal at said input terminal and to provide a signal at said output terminal having a value corresponding to the state of the input signal concurrent with the clock signal until a subsequent clock signal is received in response to a clock signal;

an array of oscillator signal generators, each successive oscillator signal generator operating at a different frequency and having an output terminal and providing a periodic output signal at its respective output terminal, each respective oscillator signal generator operating asynchronously at a frequency above the frequency of said clock signal; the period of each oscillator frequency being further characterized to be different from each other



within a predetermined range and selected to obtain an irrational value for the period of each oscillator frequency;

an EXCLUSIVE-OR network means having an array of input terminals, each input terminal being coupled to the output terminal of a corresponding oscillator signal generator output terminal, for providing a random output signal at an output terminal, said EXCLUSIVE-OR means output terminal being coupled to said flip-flop input terminal;

whereby, said flip-flop responds to each said clock signal to sample the state of the random output signal at said flip-flop input terminal and to store and couple the state of said random output signal to said flip-flop output terminal until the next subsequent clock signal.

4,799,260

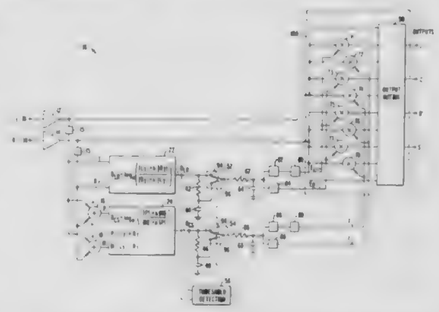
VARIABLE MATRIX DECODER

Douglas E. Mandell, Menlo Park; Craig C. Todd, Mill Valley; Ioan R. Allen, San Francisco, and Mark F. Davis, Pacifica, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 708,982, Mar. 7, 1985, abandoned. This application Feb. 26, 1986, Ser. No. 833,120

Int. Cl.[4] H04S *3/00*

U.S. Cl. 381—22 **38 Claims**



1. A decoder for decoding two or more channel signals in a directional information system wherein at least four input signals containing directional information are encoded into the two or more channel signals, said decoder comprising:

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first means for generating at least a first dominance signal indicative of the ratio of the amplitudes of a pair of the channel signals;

second means for generating at least a second dominance signal indicative of the ratio of the amplitudes of the sum of and the difference between said pair of the channel signals; and

matrix means responsive to said two or more channel signals and to said at least two dominance signals for generating a plurality of output signals for which directional effects of the output signals are enhanced, wherein the first dominance signal D_{LR} and the second dominance signal D_{CS} are given by:

$$D_{LR} = \log_a \frac{|L_T| + k|R_T|}{|R_T| + k|L_T|}$$

$$D_{CS} = \log_a \frac{|P| + k|M|}{|M| + k|P|}$$

where L_T, R_T are two channel signals

$$P = L_T + R_T,\ M = L_T - R_T,$$

and a, k are constants.

4,799,261

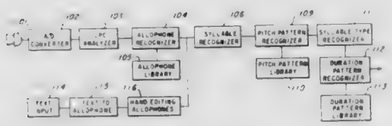
LOW DATA RATE SPEECH ENCODING EMPLOYING SYLLABLE DURATION PATTERNS

Kun-Shan Lin, and Kathleen M. Goudie, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 548,399, Nov. 3, 1983, abandoned. This application Sep. 8, 1987, Ser. No. 94,028

Int. Cl.[4] G10L 5/00

U.S. Cl. 381—36 **20 Claims**



1. A speech encoding apparatus comprising:

input means for receiving speech including one or more words of human language;

analysis means connected to said input means for analyzing said received speech, generating a sequence of phonological linguistic unit indicia corresponding to said received speech, grouping and phonological linguistic unit indicia into syllables, and generating duration data corresponding to the duration of said received speech for each phonological linguistic unit indicia, said analysis means including:

a linear predictive coding analyzer connected to said input means for providing linear predictive coding speech parameters including energy parameters, pitch parameters, and reflection coefficient parameters from the received speech,

phonological linguistic unit recognition means connected to said linear predictive coding analyzer for receiving said linear predictive coding speech parameters therefrom,

phonemic memory means having a plurality of templates of digital signals representative of phonological linguistic unit speech parameters and including standard durations corresponding to each of said phonological linguistic unit speech parameters, said phonemic memory means being connected to said phonological linguistic unit recognition means, and

said phonological linguistic unit recognition means producing speech parameters indicative of the sequence of phonological linguistic unit indicia in response to comparing said linear predictive coding speech parameters with said plurality of templates in said phonemic memory means to select the template from said phonemic memory means providing the best match to respective linear predictive coding speech parameters and generating said duration data as duration parameters based upon a standard duration of the corresponding phonological linguistic unit data stored in said phonemic memory means;

syllable recognition means connected to the output of said phonological linguistic unit recognition means and being responsive to the sequence of phonological linguistic unit indicia produced therefrom to determine syllables in which said phonological liguistic unit indicia are grouped;

duration pattern memory means storing a plurality of predetermined duration patterns corresponding to each syllable grouping of phonological linguistic unit indicia;

duration pattern recognizer means operably connected to said analysis means via said syllable recognition means and to said duration pattern memory means for selecting a duration pattern from said plurality of predetermined duration patterns for each syllable grouping of phonological linguistic unit indicia as generated by said analysis means, said duration pattern being selected in dependence upon said duration data corresponding to each syllable grouping of phonological linguistic unit indicia; and

transmission means operably connected to said analysis means and said duration pattern recognizer means for transmitting said speech parameters indicative of said phonological liguistic unit indicia and duration parameters indicative of duration pattern indicia corresponding to said selected duration patterns as encoded speech data from which audible synthesized speech having a duration contour approximating the duration contour of the original speech as received by said input means may be produced while employing a relatively low data rate.

4,799,262

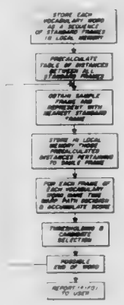
SPEECH RECOGNITION

Joel A. Feldman, Cambridge; William F. Ganong, III, Brookline, and Scott Bradner, Cambridge, all of Mass., assignors to Kurzweil Applied Intelligence, Inc., Waltham, Mass.

Filed Jun. 27, 1985, Ser. No. 749,582

Int. Cl.[4] G10L 5/00

U.S. Cl. 381—43 **3 Claims**



1. A method for electronically recognizing spoken words which comprises:

transducing acoustic speech waveforms to obtain a corresponding electric signal;

obtaining from said signal a sequence of digital values characterizing the waveforms, said digital signals representing, at a given sample time, a frame of speech information;

generating a representative list of standard frames represented by encoded indices;

precomputing and storing a table of difference values representing the distances between each standard frame in said list and all other standard frames in said list;

for each token word which is to be recognized, generating and storing in a first local memory a sequence of standard frame indices which represent that token word;

recognizing sample speech by, as each sample frame is generated,

finding a representative standard frame which best represents the sample frame,

extracting from the table those difference values which pertain to said representative standard frame and storing those extracted values in a second local memory,

for each token word in sequence obtaining from said second local memory the corresponding difference values which represent the token word relative to the representative sample frame and incrementing a respective accumulating value by a value which is a function of the respective difference value

whereby token words can be matched to the sample speech on the basis of the relative magnitudes of the respective accumulating values.

4,799,263

SPEAKING AND HEARING SYSTEM FOR BREATHING APPARATUS

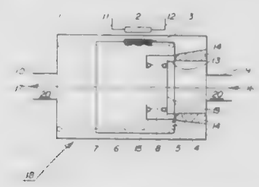
Fritz A. Bänziger, Gross Wesenberg, and Peter Klein, Delmenhorst, both of Fed. Rep. of Germany, assignors to Dragerwerk AG, Fed. Rep. of Germany

Filed Mar. 18, 1987, Ser. No. 27,344

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609097

Int. Cl.[4] H04M 9/00

U.S. Cl. 381—94 **8 Claims**



1. A device for regulating a voice communication system for a breathing apparatus which has at least one respiratory gas line through which breathing gases are passed for inhalation or exhalation or both, comprising a switching device located in the respiratory gas line and permitting a flow of gas therethrough, a member in said switching device in the gas flow movable in response to the gas flow, and an electrical breathing noise suppressant circuit connected to the voice communication system and associated with said member and actuated by movement of said member for suppressing breathing noises.

4,799,264

SPEAKER SYSTEM

Jan P. Plummer, 5104 Afton Way, Smyrna, Ga. 30080

Filed Sep. 28, 1987, Ser. No. 101,395

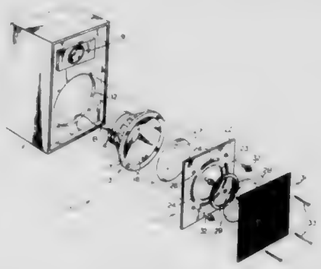
Int. Cl.[4] H04R 7/26

U.S. Cl. 381—158 **12 Claims**

1. A speaker system comprising a housing having an opening, at least one speaker including a driver and a cone responsive to said driver mounted for vibrating movement within said housing with the mouth of the cone located adjacent said housing opening whereby the driver may cause the cone to vibrate and generate sound waves having distortions inherent in sound produced by speaker cones that propagate out of the housing through the opening, and acoustical filter means mounted adjacent said cone mouth for intercepting the sound waves and reradiating them with the distortions attenuated;

wherein said filter means comprises a substantially rigid frame having an aperture formed therein and a first membrane mounted to a first side of said frame member covering said aperture;

wherein said first membrane has a resonant frequency of



vibration, and wherein said speaker system further comprises means for dampening membrane vibration at said resonant frequency; and

wherein said speaker system further comprises a second membrane mounted to a second side frame member covering said aperture and having a resonant frequency of vibration; said first and second membranes defining a confined air space there between and within said aperture whereby said second membrane vibrates synchronously with and in response to vibrations of said first membrane.

4,799,265

ELECTROSTATIC TRANSDUCER UNIT

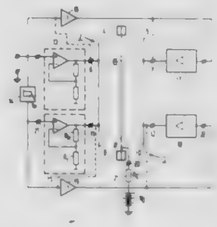
Johannes H. Streng, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 1, 1987, Ser. No. 68,868

Claims priority, application Netherlands, Jul. 8, 1986, 8601772

Int. Cl.[4] H04R 3/00

U.S. Cl. 381—116 **9 Claims**



1. A device for converting an electric signal into an acoustic signal, comprising an input terminal for receiving the electric signal, an amplifier unit having an input coupled to the input terminal, and an output, and an electrostatic transducer unit coupled to the output of the amplifier unit, the electrostatic transducer unit comprising N electrostatic transducers, N being larger than or equal to 2, characterized in that the diaphragms of the N electrostatic transducers form part of a diaphragm which is common to all transducers, in that the amplifier unit comprises N sub-amplifiers, in that the input terminal is coupled to a first input of the first electrostatic

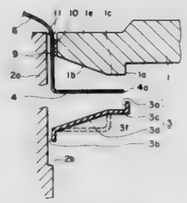
transducer via a first sub-amplifier, the input terminal is coupled to a first input of the (i+1)th electrostatic transducer via a series arrangement of an i-th low-pass filter and an (i+1)th sub-amplifier (in this order), which (i+1)th sub-amplifier is of the feedback type, i ranging from 1 to N−1 inclusive, and in that if N>2 a low-pass filter of a higher sequence number i has a lower cut-off frequency.

4,799,266

ELECTROACOUSTIC CONVERTER

Yoshio Sakamoto, Hachiohji, and Kaoru Yamazaki, Akikawa, both of Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Nov. 25, 1987, Ser. No. 125,205
Claims priority, application Japan, Nov. 25, 1986, 61-179694[U]; Nov. 26, 1986, 61-180562[U]
Int. Cl.⁴ H04R *7/18, 7/20*
U.S. Cl. 381—193 **3 Claims**



1. An acoustic converter comprising:
(a) a magnetic circuit including a center pole, a magnet and a top plate, an air gap being formed between an upper side surface of the center pole and an adjacent end of the top plate, the center pole including a ledge on a vertical surface thereof, and the top plate including an incision on a horizontal rear surface therof and a horizontal part adjacent to the incision;
(b) a diaphragm system including a dome-like diaphragm, a cylindrical bobbin on which a voice coil is wound and a brim-like suspension which extends from the bobbin; and
(c) a guide ring bridged between the ledge of the center pole and the incision of the top plate, the guide ring including a horizontal part on the periphery thereof;
wherein the periphery of the suspension of the diaphragm system is fixedly sandwiched between the horizontal part of the guide ring and the horizontal surface of the top plate.

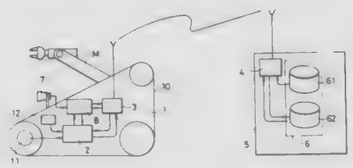
4,799,267

IMAGE PROCESSING APPARATUS AND PROCESSING METHOD

Kohji Kamejima, Chiyoda; Yoshiyuki Nakano, Hitachi; Masakatsu Fujie, Ushiku; Taro Iwamoto, Mito, and Hiroshi Yamamoto, Chiyoda, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 536,874, Sep. 29, 1983, abandoned. This application Dec. 24, 1986, Ser. No. 946,007
Claims priority, application Japan, Oct. 22, 1982, 57-184537
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—1 **9 Claims**

1. In an apparatus which processes three dimensional topographical information on the arrangement of roads, buildings, obstacles and the like, which are not necessarily located perpendicularly to a direction of movement of an automatic traveling object, for controlling movement of an automatic traveling object, an image processing apparatus comprising: image input means mounted on the automatic traveling object for viewing a surrounding landscape and providing an output signal representing a two dimensional intensity distribution of light reflected or emitted from roads, buildings, obstacles and the like; storage means for storing three dimensional map data as to the arrangement of the roads, building, obstacles and the like in an area where the automatic traveling object is to move; predicting means connected to said storage means for predicting an output of said image input means for a given location of the automatic traveling object by producing a signal representing a predictive two dimensional intensity distribution of light reflected or emitted from roads, building, obstacles and the like on the basis of said three dimensional map data; means for comparing an output signal representing an actual two dimen-



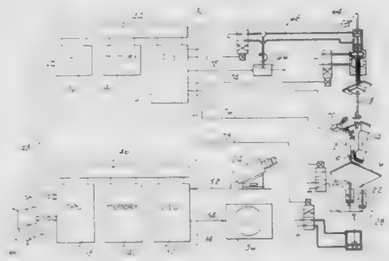
sional input intensity distribution of light reflected or emitted from roads, buildings, obstacles and the like from said image input means and the signal representing the predictive two dimensional intensity distribution of light reflected or emitted from roads, buildings, obstacles and the like and for obtaining a difference two dimensional intensity distribution of light reflected or emitted from roads, buildings, obstacles and the like; and correction means connected to said comparing means for updating map data in said storage means on the basis of said difference two dimensional intensity distribution of light reflected or emitted from roads, buildings, obstacles and the like.

4,799,268

LEAD SENSE SYSTEM FOR COMPONENT INSERTION MACHINE

Jean A. McLean, So. Hamilton, and Robert J. Duncan, Magnolia, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Nov. 12, 1985, Ser. No. 797,322
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—8 **11 Claims**



1. A machine for inserting electronic components, such as dip components, having a pair of rows of parallel leads, running from one end of a component to the other end and defining the sides of the component, into holes of a printed circuit board comprising:
means for inserting the parallel leads of a component into holes of the printed circuit board so that the leads extend beyond the bottom surface of the printed circuit board,
camera means,
means for mounting said camera means on one side of the leads at an angle to the rows of parallel leads selected so that said camera means will see the leads of one row spaced from the leads of the other row,

means for making each of the leads extending beyond the bottom surface of the printed circuit board appear dark to said camera means with the rest of the image seen by the camera appearing light including
light source means and
means for mounting said light source means at the opposite side of the leads to direct light toward the bottom surface of the printed circuit board proximate the leads so that it will reflect towards said camera means thereby presenting to said camera means a pattern of dark spots corresponding to the leads extending beyond the printed circuit board, and
means for comparing the pattern of dark spots seen by said camera means with the pattern which the camera would see if all the leads were present in the inserted component and stopping said machine if the patterns do not match.

4,799,269

TABLE LOOKUP ADDRESSING BY DICHOTOMY WINDOW GENERATION

Hungwen Li, Pleasantville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 18, 1987, Ser. No. 15,840
Int. Cl.⁴ G06K *9/56*
U.S. Cl. 382—27 **3 Claims**



1. A method for arbitrarily accessing a window of K×K pixels in a N×N array stored image, in a constant unit memory cycle, comprising the following steps:
decomposing the N×N pixel array image into M×M pixel array subimages of size N/M×N/M, each pixel of the subimage being identifiable by a pixel identifier number and each pixel having communication with each of a plurality of neighboring cells comprising the window via a receiving port and a sending port;
generating a dichotomy address by dividing a current pixel identifier number into a plurality of partial addresses;
manipulating said partial addresses to develop related addresses corresponding to the pixels comprising the window;
concatenating said partial addresses and said related addresses into an expanded address set;
providing a memory table of plural memory banks, each bank having a plurality of words; and
addressing said memory table by said expanded address set to extract from said memory table a plurality of words defining the bits of the window.

4,799,270

IMAGE CLASSIFIER

Boris F. Kim, Laurel, and Joseph Bokandy, Columbia, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 20, 1986, Ser. No. 841,658
Int. Cl.⁴ G06K *9/62*
U.S. Cl. 382—27 **13 Claims**

1. An imaging system comprising:
a. providing an image;
b. electronically processing the image to produce a digital image;
c. at least one level of identification, partitioning the image from the previous step into subarrays;
d. comparing the content of each subarray with memory elements of that level of identification;
e. assigning a symbol to each subarray, said symbol being the symbol of the memory element matching the content of the subarray, wherein the assigned symbol is a pixel element in a symbolic image for the next level;
f. repeating step e. until all subarrays have assigned symbols;



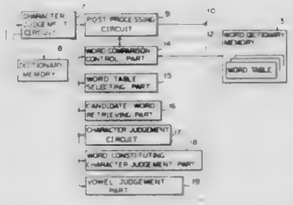
g. forming the symbolic image from the assigned symbols;
h. repeating recursively steps c. through g. until all levels of identification have been completed;
i. as a last level, forming a single subarray of pixel elements of the symbolic image formed in the preceding level;
j. comparing the content of the single subarray with the memory elements of the last level; and,
k. assigning a name to the subarray, said name being the name of the memory element in the last level matching the content of the single subarray and naming the image of step a.

4,799,271

OPTICAL CHARACTER READER APPARATUS

Hikoshi Nagasawa; Kazuo Ito; Shigeru Horii, and Katsuhide Tanoshima, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1987, Ser. No. 27,408
Claims priority, application Japan, Mar. 24, 1986, 61-63973
Int. Cl.⁴ G06K *9/03*
U.S. Cl. 382—40 **9 Claims**



1. An optical character reader apparatus comprising:
(a) an optical system for converting characters written on a

document card to an optical signal and for converting said optical signal to an electrical signal;

(b) a pre-processing circuit connected to said optical system for converting said electrical signal into a binary picture image signal, and for extracting a picture image corresponding to one character from said binary picture image signal;

(c) a feature extracting circuit connected to said pre-processing circuit for extracting features of said one character in conformity with a predetermined procedure;

(d) a character judgement circuit connected to said feature extracting circuit for effecting a comparison of said one character;

(e) a dictionary memory connected to said character judgement circuit for previously registering feature data of characters corresponding to character codes of said characters, and for further enabling said character judgement circuit to compare said feature data from said feature extracting circuit with said feature data registered in said dictionary memory and for delivering character codes of coincident characters in response to said comparison;

(f) a post-processing circuit connected to said character judgement circuit and an output terminal for effecting editing and output control corresponding to said judgement in said character judgement circuit;

(g) a vowel judgement part connected to said word comparison control part for judging whether or not respective constituent characters of the extracted words are vowels when said number of characters constituting the word extracted in said word constituting character number judgement part is greater than a prescribed number, and if so, eliminating a constituent character judged to be a vowel from among said constituent characters being compared; and

(h) a word comparison circuit connected to said post-processing circuit for effecting word comparison in cooperation with said circuit.

DESIGN PATENTS

GRANTED JAN. 17, 1989

ERRATA

For CLASS	See PATENT NO.
D17-020	299,453

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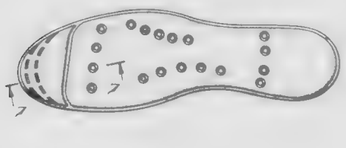
DESIGNS

JANUARY 17, 1989

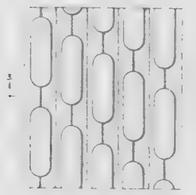
299,380
ADJUSTABLE HAT BUCKLING BELT
Li-Yu Wang, 38, Lane 479, Pei-Tun Road, Taichung City, Taiwan
Filed Jan. 14, 1986, Ser. No. 818,586
Term of patent 14 years
U.S. Cl. D2—261



299,381
INSOLE
James C. Hauser, Palos Verdes, Calif., assignor to Walk-on-Water, Inc., Los Angeles, Calif.
Filed Jul. 14, 1986, Ser. No. 885,276
Term of patent 14 years
U.S. Cl. D2—318



299,382
SHOE SOLE MATERIAL
Juan A. Diaz, Weymouth, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Jul. 16, 1987, Ser. No. 74,317
Term of patent 14 years
U.S. Cl. D2—320



299,383
NECKTIE OR SIMILAR ARTICLE
Robert Rosenbaum, 1043 Arbor La., Glenview, Ill. 60025
Filed Oct. 23, 1985, Ser. No. 790,396
Term of patent 14 years
U.S. Cl. D2—605







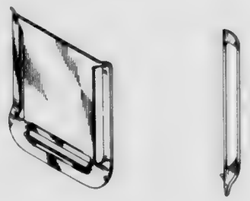


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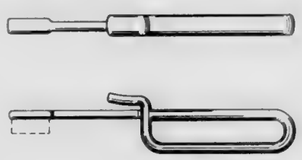
299,384
DIAPER BAG
Karen A. Donnor, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Aug. 2, 1985, Ser. No. 762,137
Term of patent 14 years
U.S. Cl. D3—53



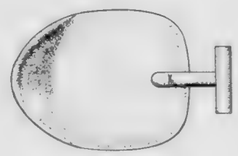
299,385
BELT MOUNTED RULE HOLDER
Edward C. Rutty, Portland, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Sep. 9, 1985, Ser. No. 773,469
Term of patent 14 years
U.S. Cl. D3—100



299,385
ARTHRITIC TOOTHBRUSH
Melissa N. Jacobs, 4807 Marlborough Way, Carmichael, Calif. 95608
Filed Mar. 3, 1986, Ser. No. 841,365
Term of patent 14 years
U.S. Cl. D4—104



299,387
COMBINED SWIVEL CHAIR AND FIREARM SUPPORT FOR A SPORTSMAN
Albert Ansaldo, c/o Sunshine Painting, 1020 Edison Dr., San Antonio, Tex. 78201
Filed Aug. 28, 1986, Ser. No. 901,454
Term of patent 14 years
U.S. Cl. D6—335



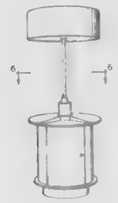
299,388
OTTOMAN
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company Limited Partnership, El Monte, Calif.
Filed Sep. 16, 1986, Ser. No. 908,141
Term of patent 14 years
U.S. Cl. D6—349



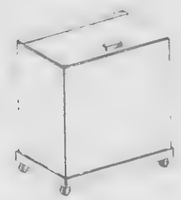
299,389
PAMPHLET HOLDER
Gerald J. Klodt, Madison, Wis., assignor to W. T. Rogers Company, Madison, Wis.
Filed Oct. 1, 1985, Ser. No. 782,361
Term of patent 14 years
U.S. Cl. D6—407



299,390
PHOTO FILM DROP STAND
Stephen W. Van Cleave, Kensington, Ohio, assignor to Tusco Manufacturing Company, Gnadenhutten, Ohio
Filed Jun. 23, 1986, Ser. No. 877,723
Term of patent 14 years
U.S. Cl. D6—436



299,391
MERCHANDISE COOLER
Kermit E. Meehan, Wayzata, Minn., assignor to The Mike Meehan Company, Minnetonka, Minn.
Filed Dec. 26, 1985, Ser. No. 813,402
Term of patent 14 years
U.S. Cl. D6—440





299,392
DISPLAY RACK
John D. Hunt, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 11, 1986, Ser. No. 743,257
Term of patent 14 years
U.S. Cl. D6—479

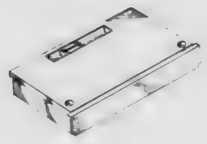


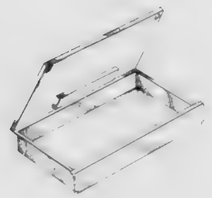
299,393
BED RAIL PAD
Donald E. Sands, 2701 Chapel Pike, Marion, Ind. 46952
Filed Feb. 7, 1986, Ser. No. 827,105
Term of patent 14 years
U.S. Cl. D6—503



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299,394
DRAWER WITH REFERENCE SHELF
Norman A. Hedstrom, Worcester, Mass., assignor to Wright Line, Inc., Worcester, Mass.
Filed May 12, 1986, Ser. No. 862,584
Term of patent 14 years
U.S. Cl. D6—510

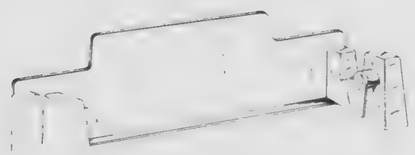




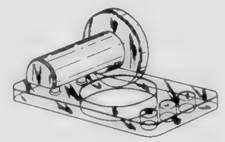
299,395
COUNTER TOP
Harry C. Osvold, 8405 Wesley Dr., Golden Valley, Minn. 55427
Filed May 15, 1986, Ser. No. 863,472
Term of patent 14 years
U.S. Cl. D6—511

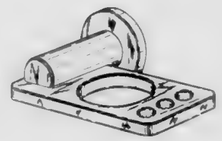


299,396
MAGNETIC-MOUNT PAPER TOWEL HOLDER
Stephen T. Meyer, Carmel, Ind., assignor to Deflecto Corporation, Indianapolis, Ind.
Filed Dec. 8, 1986, Ser. No. 939,013
Term of patent 14 years
U.S. Cl. D6—522

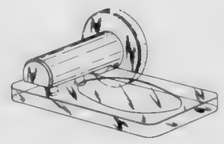


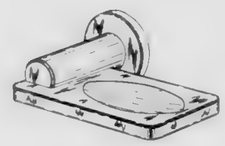
299,397
COMBINED TOOTHBRUSH AND TUMBLER HOLDER
Peter S. Fayerman, Bryn Mawr, and Leslie A. Meck, Blandan, both of Pa., assignors to Baldwin Hardware Corporation, Reading, Pa.
Filed Oct. 18, 1985, Ser. No. 789,172
The portion of the term of this patent subsequent to Nov. 29, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—531





299,398
SOAP DISH
Peter S. Fayerman, Bryn Mawr, and Leslie A. Meck, Blandan, both of Pa., assignors to Baldwin Hardware Corporation, Reading, Pa.
Filed Oct. 18, 1985, Ser. No. 789,167
Term of patent 14 years
U.S. Cl. D6—540



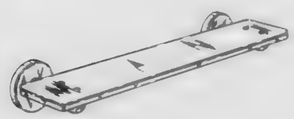


299,399
FLUID DISPENSER
Jerome Lippman, 3342 W. Smith Rd., Akron, Ohio 44313
Filed Apr. 28, 1986, Ser. No. 857,774
Term of patent 14 years
U.S. Cl. D6—545

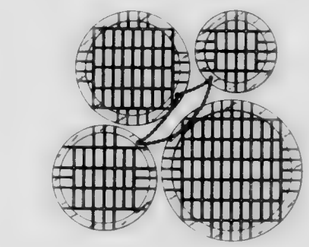


299,400
WALL SHELF
Peter S. Fayerman, Bryn Mawr, and Leslie A. Meck, Blandan, both of Pa., assignors to Baldwin Hardware Corporation, Reading, Pa.
Filed Oct. 18, 1985, Ser. No. 789,178
Term of patent 14 years
U.S. Cl. D6—572



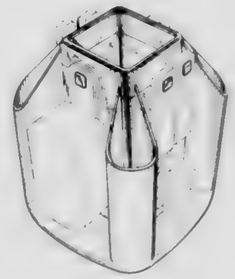


299,401
CAKE ICING MARKER SET
Ida M. Ryan, 327 S. High, Neosho, Mo. 64850
Filed Feb. 3, 1986, Ser. No. 825,759
Term of patent 14 years
U.S. Cl. D7—43



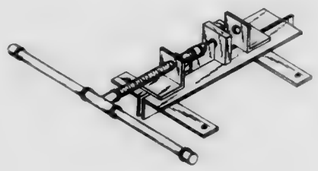


299,402
UTENSIL CADDY
Jane Ancona, and Bruce Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Jan. 15, 1988, Ser. No. 144,081
Term of patent 14 years
U.S. Cl. D7—73

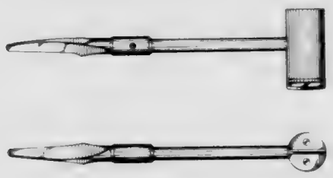


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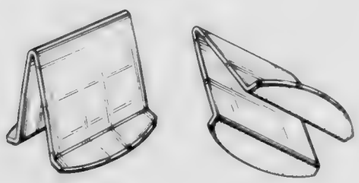
299,403
NUT CRACKER
Richard L. Walker, Rte. 2, Box 216, Seymour, Mo. 65746
Filed Jan. 22, 1986, Ser. No. 821,240
Term of patent 14 years
U.S. Cl. D7—98



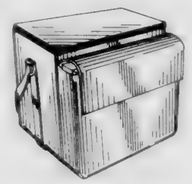
299,404
MODIFIED CRAB MALLET
John Demanczyk, Sr., 1321 Sycamore Ave., Elsmere, Del. 19805
Filed May 5, 1986, Ser. No. 859,745
Term of patent 14 years
U.S. Cl. D7—101

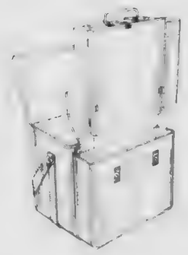


299,405
COFFEE FILTER LIFTER
William Bothmann, Star Route 1079, Trabuco Canyon, Orange, Calif. 92667
Filed May 12, 1986, Ser. No. 862,598
Term of patent 14 years
U.S. Cl. D7—105

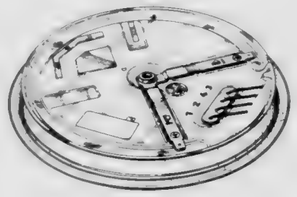


299,406
COMBINED INSULATED CONTAINER AND COLLAPSIBLE GRILL
Jeffrey M. Jacober, Walmsly La., South Kingston, R.I. 02874
Filed Sep. 22, 1986, Ser. No. 910,748
Term of patent 14 years
U.S. Cl. D7—332

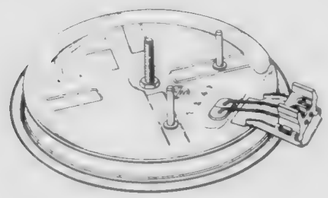




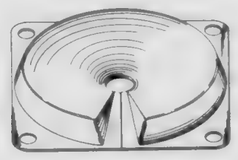
299,407
ELECTRIC HOTPLATE
Robert Kicherer, and Felix Schreder, both of Oberderdingen, Fed. Rep. of Germany, assignors to E.G.O. Elektro-Geräte Blanc u. Fischer, Fed. Rep. of Germany
Filed Oct. 6, 1986, Ser. No. 916,027
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, II/141
Term of patent 14 years
U.S. Cl. D7—367



299,408
ELECTRIC HOTPLATE
Robert Kicherer, and Felix Schreder, both of Oberderdingen, Fed. Rep. of Germany, assignors to E.G.O. Elektro-Geräte Blanc u. Fischer, Fed. Rep. of Germany
Filed Oct. 6, 1986, Ser. No. 916,028
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, MR II/141 BR
Term of patent 14 years
U.S. Cl. D7—367



299,409
SEEDLING PROTECTOR
Douglas R. Inglis, 4111 E. Packard Hwy., Charlotte, Mich. 48813
Filed May 22, 1986, Ser. No. 866,105
Term of patent 14 years
U.S. Cl. D8—1



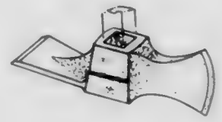
299,410
SCISSORS
Moris Baroni, Via Vittorio Alfieri 3/4, 40128 Bologna, Italy
Filed Jul. 20, 1987, Ser. No. 75,919
Term of patent 14 years
U.S. Cl. D8—52



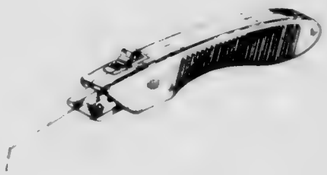
299,411
PNEUMATIC HAMMER
Dino C. Porcaro, Racine, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.
Filed Feb. 10, 1986, Ser. No. 827,754
Term of patent 14 years
U.S. Cl. D8—68



299,412
AXE
Ron Zaharte, 70 Alberta Terr., Walnut Creek, Calif. 94596
Filed Oct. 5, 1987, Ser. No. 104,490
Term of patent 14 years
U.S. Cl. D8—76



299,413
FOLDING POCKET SAW HANDLE
Joseph P. DeCarolis, Bristol, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Jul. 17, 1985, Ser. No. 755,919
Term of patent 14 years
U.S. Cl. D8—97



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299,414
AXE-TYPE COMBINATION TOOL
Stefan Bajza, 88 De France Way, Golden, Colo. 80401; Roger A. Strom, 8828 E. Florida, Denver, Colo. 80231, and Harriet G. Bajza, 88 E. France Way, Golden, Colo. 80401
Filed Mar. 28, 1986, Ser. No. 847,021
Term of patent 14 years
U.S. Cl. D6—105



299,415
HANDLE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,600
Term of patent 14 years
U.S. Cl. D8—302



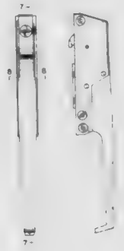
299,416
HANDLE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,601
Term of patent 14 years
U.S. Cl. D8—302





299,417
HANDLE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,604
Term of patent 14 years
U.S. Cl. D8—302



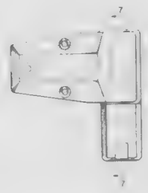


299,418
HINGE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,616
Term of patent 14 years
U.S. Cl. D8—323



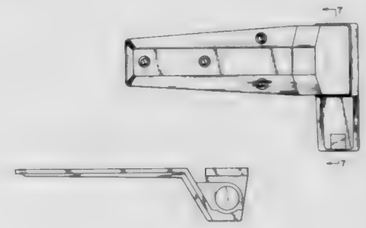


299,419
HINGE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,615
Term of patent 14 years
U.S. Cl. D8—329

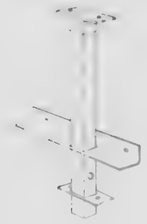




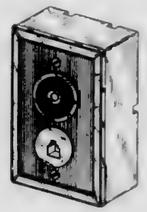
299,420
HINGE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,620
Term of patent 14 years
U.S. Cl. D8—329



299,421
SECURITY BAR FOR PROTECTION OF POOL TABLE COIN BOXES
Stanley W. Pearson, 1601 Cambridge Drive, Kinston, N.C. 28501
Filed Mar. 6, 1986, Ser. No. 842,000
Term of patent 14 years
U.S. Cl. D8—331



299,422
COMBINED ANNUNCIATOR AND TELEPHONE JACK WALL PLATE AND A JUNCTION BOX THEREFOR
William W. Williamson, Somerset, Wis., and Robert E. Brunius, St. Paul, Minn., assignors to Interactive Technologies, Inc., North St. Paul, Minn.
Filed Jun. 13, 1986, Ser. No. 874,363
Term of patent 14 years
U.S. Cl. D8—353

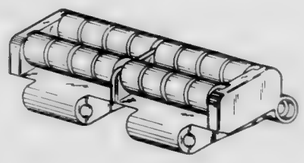


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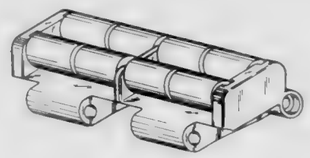
299,423
HOLDER FOR A SHOWER BRUSH OR SIMILAR ARTICLE
George T. Davis, P.O. Box 20675, Los Angeles, Calif. 90006
Filed Sep. 9, 1987, Ser. No. 94,851
Term of patent 14 years
U.S. Cl. D8—373



299,424
CHAIN LINK
Roger H. Schroeder, Hartland, and Wasyly G. Hodlewsky, Greendale, both of Wis., assignors to Rexnord Inc., Brookfield, Wis.
Filed Jun. 17, 1985, Ser. No. 745,092
The portion of the term of this patent subsequent to Jan. 17, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—499



299,425
CHAIN LINK
Roger H. Schroeder, Hartland, and Wasyly G. Hodlewsky, Greendale, both of Wis., assignors to Rexnord Inc., Brookfield, Wis.
Filed Jun. 17, 1985, Ser. No. 745,476
The portion of the term of this patent subsequent to Jan. 17, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—499



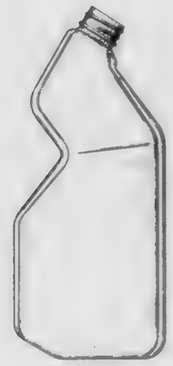
299,426
CAN
Arne Andersson, Sparres vag 53, and Lars-Eric Piltz, Konventsvag 3, both of S-240 10 Dalby, Sweden
Filed Mar. 21, 1985, Ser. No. 714,712
Claims priority, application Sweden, Sep. 25, 1984, 2550/84
Term of patent 14 years
U.S. Cl. D9—368



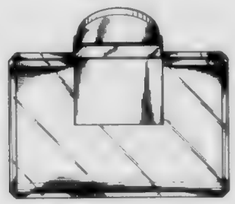
299,427
SOAP CARTRIDGE
Robert L. Steiner, Chicago, and Thomas Bajek, Berwyn, both of Ill., assignors to Steiner Company, Inc., Chicago, Ill.
Filed Apr. 22, 1985, Ser. No. 725,993
Term of patent 14 years
U.S. Cl. D9—370



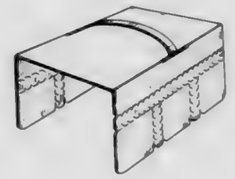
299,428
BOTTLE
Arthur E. Wilfond, Edison, N.J., assignor to Boyle-Midway Household Products, Inc., New York, N.Y.
Continuation of Ser. No. 736,721, May 22, 1985. This application Jul. 23, 1987, Ser. No. 77,070
Term of patent 14 years
U.S. Cl. D9—373



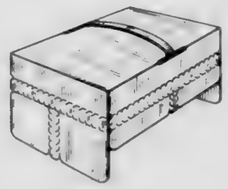
299,429
BOTTLE
Pierre Dinand, Levallois-Perret, France, assignor to Florbath - Profumi Di Parma, Parma, Italy
Filed Sep. 23, 1985, Ser. No. 779,028
Claims priority, application France, Mar. 21, 1985, 85 1320
Term of patent 14 years
U.S. Cl. D9—413



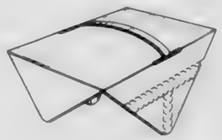
299,430
CARRIER/PACKAGE BLANK
Nils-Ake Gustafsson, Halmstad, Sweden, assignor to Sprinter Pack AB, Sweden
Filed Aug. 16, 1985, Ser. No. 766,850
Claims priority, application United Kingdom, Feb. 20, 1985, 1025153
Term of patent 14 years
U.S. Cl. D9—433



299,431
CARRIER/PACKAGE BLANK
Nils-Ake Gustafsson, Halmstad, Sweden, assignor to Sprinter Pack AB, Sweden
Filed Aug. 16, 1985, Ser. No. 766,899
Claims priority, application United Kingdom, Feb. 20, 1985, 1025152
Term of patent 14 years
U.S. Cl. D9—433

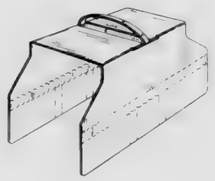


299,432
CARRIER/PACKAGE BLANK
Nils-Ake Gustafsson, Halmstad, Sweden, assignor to Sprinter Pack AB, Sweden
Filed Aug. 16, 1985, Ser. No. 766,900
Claims priority, application United Kingdom, Feb. 20, 1985, 1025154
Term of patent 14 years
U.S. Cl. D9—433



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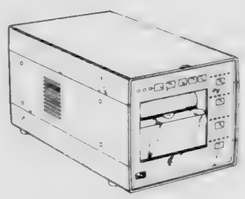
299,433
CARRIER PACKAGE BLANK
Nils-Ake Gustafsson, Halmstad, Sweden, assignor to Sprinter Pack AB, Sweden
Filed Aug. 13, 1986, Ser. No. 895,922
Claims priority, application Sweden, Feb. 21, 1986, 86-0444
Term of patent 14 years
U.S. Cl. D9—433



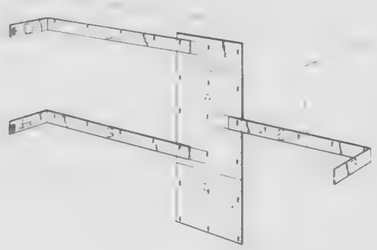
299,434
CLOSURE CLIP UNIT
Charles E. Burford, Dallas, Tex., assignor to Burford Corp., Maysville, Okla.
Filed Nov. 7, 1985, Ser. No. 803,924
Term of patent 14 years
U.S. Cl. D9—435



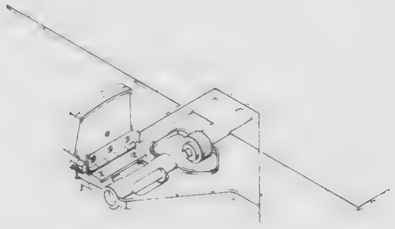
299,435
THERMAL RECORDER
Kazuhiro Kuwa, and Kiwamu Yoneda, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jul. 24, 1985, Ser. No. 758,019
Claims priority, application Japan, Apr. 25, 1985, 60-2343
Term of patent 14 years
U.S. Cl. D10—46



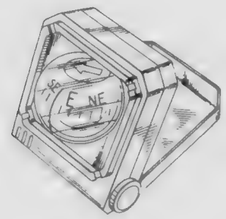
299,436
CLOSET SHELVING TAPE AND DRILL PATTERN
William H. Muth, Ocala, Fla., assignor to Clairson Corporation, Ocala, Fla.
Filed Dec. 20, 1985, Ser. No. 811,390
Term of patent 14 years
U.S. Cl. D10—62



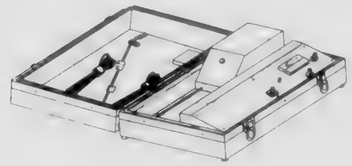
299,437
COMBINED SQUARE AND TAPE MEASURE
Andrew W. Kull, 157 Hughes Pl., Albertson, N.Y. 11507
Filed Jun. 26, 1986, Ser. No. 879,181
Term of patent 14 years
U.S. Cl. D10—62



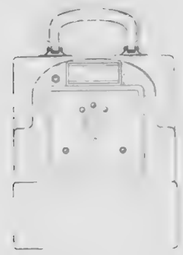
299,438
FLIP UP MODULAR COMPASS FOR AUTOMOBILE CONTROL PANELS
Marc R. Iacovelli; Pierre Chart, and Duke Kraai, all of Miami, Fla., assignors to Rally Manufacturing, Inc., Miami, Fla.
Filed May 7, 1986, Ser. No. 860,762
Term of patent 14 years
U.S. Cl. D10—68



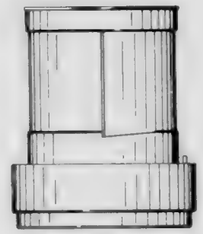
299,439
INSULATOR TESTER UNIT
John A. Farquhar, and Merrilyn J. Farquhar, both of 448 West 18th Avenue, Vancouver, B.C., Canada
Filed Oct. 15, 1985, Ser. No. 787,489
Term of patent 14 years
U.S. Cl. D10—75

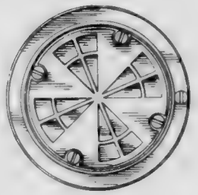


299,440
BARRICADE WARNING LIGHT TESTING DEVICE
Thomas W. Barker, 79 Pecan Valley Cir., San Antonio, Tex. 78223
Filed Apr. 28, 1986, Ser. No. 858,229
Term of patent 14 years
U.S. Cl. D10—77

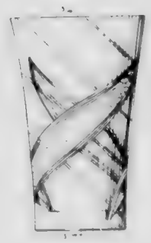


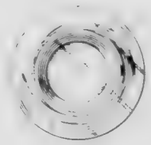
299,441
PLANT POT AND BASE COMBINATION
James E. McAlpine, Glasgow, Scotland, assignor to McAlpine & Company Limited, Glasgow, Scotland
Filed Sep. 2, 1986, Ser. No. 903,076
Term of patent 14 years
U.S. Cl. D11—152





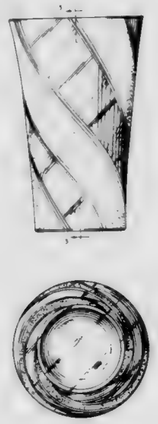
299,442
VASE OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510, Arques, France
Filed Apr. 24, 1987, Ser. No. 41,924
Term of patent 14 years
U.S. Cl. D11—153





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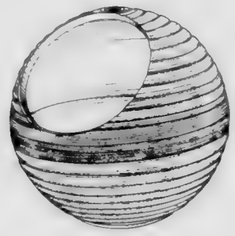
299,443
VASE OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510, Arques, France
Filed Apr. 24, 1987, Ser. No. 41,925
Term of patent 14 years
U.S. Cl. D11—153



299,444
VASE OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510, Arques, France
Filed Apr. 30, 1987, Ser. No. 44,118
Term of patent 14 years
U.S. Cl. D11—153

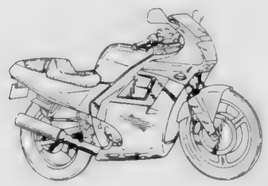


299,445
VASE OR SIMILAR ARTICLE
Chung S. Lee, Sanchung, Taiwan, assignor to Three-Ply Company, Ltd., Taiwan
Filed Nov. 9, 1987, Ser. No. 118,809
Term of patent 14 years
U.S. Cl. D11—153

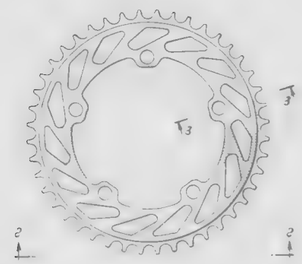


299,446
MOTORCYCLE
Mitsuyoshi Kohama; Toshiaki Kishi, and Nobuyuki Kyogoku, all of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 7, 1986, Ser. No. 842,011
Claims priority, application Japan, Sep. 9, 1985, 60-38032
Term of patent 14 years
U.S. Cl. D12—110

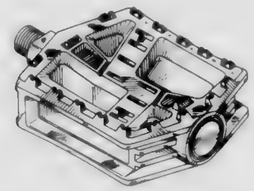
299,447
MOTORCYCLE
Tsutomu Sakuma, Saitama; Toshiaki Kishi, Tokyo; Tamotsu Miura, Kanagawa, and Takeshi Ooba, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 5, 1986, Ser. No. 904,253
Claims priority, application Japan, Mar. 5, 1986, 61-7749
Term of patent 14 years
U.S. Cl. D12—110



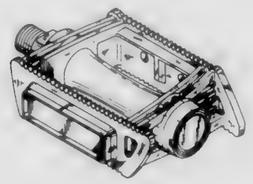
299,448
SPROCKET
Robert B. Haro, 730 Bonita Rd., Encinitas, Calif. 92024
Filed May 16, 1986, Ser. No. 864,130
Term of patent 14 years
U.S. Cl. D12—123



299,449
BICYCLE PEDAL
Yoshiya Chounan, Souka, Japan, assignor to Sakae Ringyo Co., Ltd., Japan
Filed Mar. 6, 1986, Ser. No. 837,361
Term of patent 14 years
U.S. Cl. D12—125



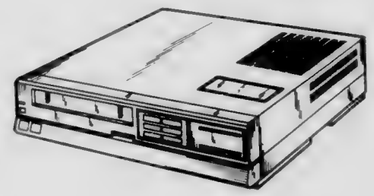
299,450
BICYCLE PEDAL
Yoshiya Chounan, Souka, Japan, assignor to Sakae Ringyo Co., Ltd., Japan
Filed Mar. 6, 1986, Ser. No. 837,362
Term of patent 14 years
U.S. Cl. D12—125



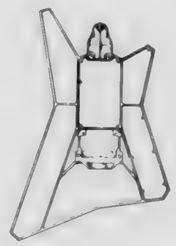
299,451
SPEECH SYNTHESIZER ACTIVATED BY READING OF A MAGNETIC CARD
Tameaki Ikeda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 22, 1985, Ser. No. 768,328
Claims priority, application Japan, Feb. 27, 1985, 60-7500
Term of patent 14 years
U.S. Cl. D14—158



299,452
VIDEO CASSETTE RECORDER
Doo S. Yang, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 9, 1986, Ser. No. 872,469
Claims priority, application Rep. of Korea, Dec. 10, 1985, 17460/1985
Term of patent 14 years
U.S. Cl. D14—135



299,453
GUITAR BODY
James W. Brunet, 215 Vana St., Syracuse, N.Y. 13206
Filed May 13, 1985, Ser. No. 733,325
Term of patent 14 years
U.S. Cl. D17—20



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299,454
HEADSET
Ng H. Kwong, Flat "Q", 9th Floor, Hopewell House, 175 Hip Wo Street, Kwun Tong, Kowloon, Hong Kong
Filed Sep. 18, 1985, Ser. No. 774,533
Claims priority, application United Kingdom, Mar. 18, 1985, 1025600
Term of patent 14 years
U.S. Cl. D14—205

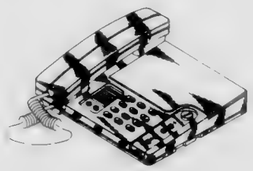


299,455
TELECOMMUNICATIONS HOUSING
Floyd J. Pushelberg, Ottawa, Canada, and James A. Rintala, Livonia, Mich., assignors to Northern Telecom Limited, Montreal, Canada
Filed Mar. 27, 1985, Ser. No. 716,494
Claims priority, application Canada, Dec. 21, 1984, 21-12-84-3
Term of patent 14 years
U.S. Cl. D14—240



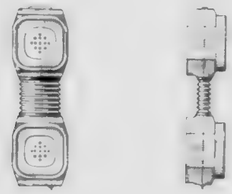


299,456
TELEPHONE SET
Pei Wen Kuo, 17-21 Bowhong Rd., Hsin Tien, Taiwan
Filed Apr. 17, 1987, Ser. No. 39,364
Term of patent 14 years
U.S. Cl. D14—151

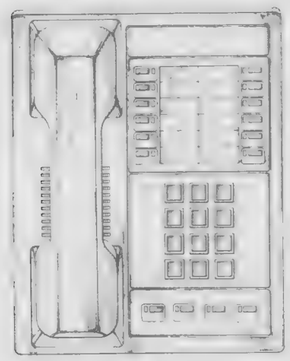


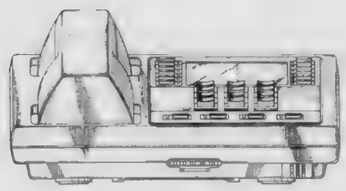


299,457
ACOUSTIC COUPLER FOR TRANSMITTING DATA BY WAY OF A TELEPHONE
Bernd D. Behnk, Berlin, Fed. Rep. of Germany, assignor to Coscom Datentechnik GmbH & Co. Computer KG, Berlin, Fed. Rep. of Germany
Filed Apr. 30, 1985, Ser. No. 728,926
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1984, 95-MR-5367NZ
Term of patent 14 years
U.S. Cl. D14—242



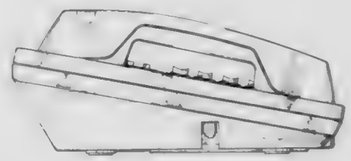
299,458
TELEPHONE SET
Joseph G. Aschauer, Newtown, and John Cuccio, Westport, both of Conn., assignors to TIE Communications, Inc., Shelton, Conn.
Filed Oct. 14, 1987, Ser. No. 108,573
Term of patent 14 years
U.S. Cl. D14—151





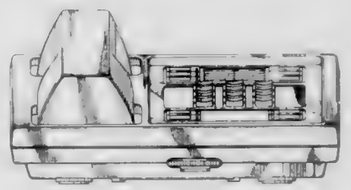
299,459
TELEPHONE SET
Joseph G. Aschauer, Newtown, and John Caccio, Westport, both of Conn., assignors to TIE Communications, Inc., Shelton, Conn.
Filed Oct. 14, 1987, Ser. No. 108,574
Term of patent 14 years
U.S. Cl. D14—151





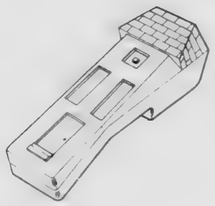
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TELEPHONE SET
Joseph G. Aschauer, Newtown, and John Cuccio, Westport, both of Conn., assignors to TIE Communications, Inc., Shelton, Conn.
Filed Oct. 14, 1987, Ser. No. 108,575
Term of patent 14 years
U.S. Cl. D14—151



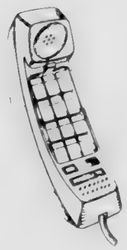


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299,461
HOUSING FOR A HANDSET TELEPHONE
Ruth Blewitt, 172 Conlins Road, Scarborough, Ontario, Canada (M1C 1C5)
Filed Jun. 2, 1987, Ser. No. 56,676
Term of patent 14 years
U.S. Cl. D14—248

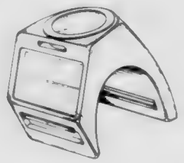


299,462
HANDSET TELEPHONE
Jack J. Sullivan, Danbury; Barry M. Haber, Westport, and James E. Butler, Bridgeport, all of Conn., assignors to Conair Corporation, Edison, N.J.
Filed Jul. 20, 1987, Ser. No. 75,322
Term of patent 14 years
U.S. Cl. D14—147





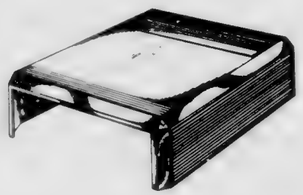
299,463
WRIST COMPUTER FOR DIVERS
Jurgen Hermann, Mauren, Liechtenstein, assignor to Divetronic AG, Mauren, Liechtenstein
Filed Feb. 10, 1986, Ser. No. 827,551
Claims priority, application World Int. Prop. O., Aug. 21, 1985, 005,722
Term of patent 14 years
U.S. Cl. D14—100



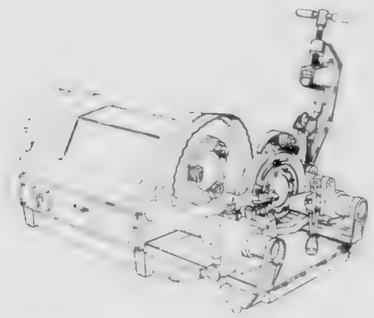
299,464
POCKET COMPUTER
Hajime Shiozawa; Kazumi Osaka, and Ken Kimata, all of Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed May 23, 1986, Ser. No. 867,733
Claims priority, application Japan, Nov. 28, 1985, 60-49862
Term of patent 14 years
U.S. Cl. D14—100



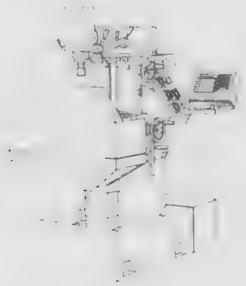
299,465
HOUSING FOR COMPUTER EQUIPMENT
Edmond J. Helstab, Ottawa, Canada, assignor to Northern Telecom Limited, Quebec, Canada
Filed Sep. 23, 1985, Ser. No. 779,362
Term of patent 14 years
U.S. Cl. D14—114



299,466
POWER DRIVEN THREADING MACHINE
Robert J. Hayes, Westlake, and James C. Redman, Amherst, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.
Filed Aug. 7, 1985, Ser. No. 763,203
Term of patent 14 years
U.S. Cl. D15—130



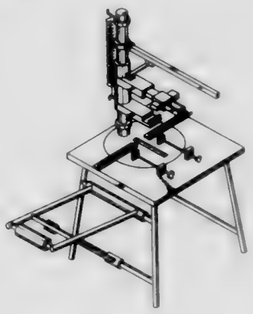
299,467
UNIVERSAL MILLING MACHINE
Josef Ritt, Oesterreich, Austria, assignor to Maier & Co., Austria
Filed Jul. 1, 1986, Ser. No. 881,016
Claims priority, application Austria, Feb. 20, 1986, 17633
Term of patent 14 years
U.S. Cl. D15—131



299,468
SHOCK ABSORBER
Jyrki Ronkainen, Helsinki, Finland, assignor to Tenet Oy, Helsinki, Finland
Filed Oct. 28, 1985, Ser. No. 792,125
Claims priority, application Finland, Apr. 26, 1985, 324/85
Term of patent 14 years
U.S. Cl. D15—141



299,469
FRAME FOR COMBINATION GRINDER AND SAW
Mark Schneider, and Theresa Schneider, both of 134 S. 8th St., Wakeney, Kans. 67672
Filed Jul. 8, 1986, Ser. No. 883,513
Term of patent 14 years
U.S. Cl. D15—141

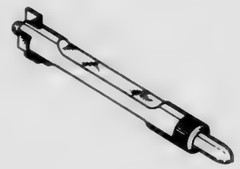


299,470
MARKING INSTRUMENT
Gerhard Möck, Kirchehrenbach, Fed. Rep. of Germany, assignor to Schwan-Stabilo Schwanhausser GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Nov. 8, 1985, Ser. No. 803,947
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1985, MR VII 213
Term of patent 14 years
U.S. Cl. D19—43

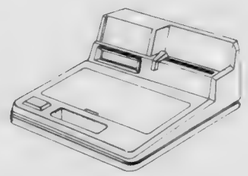


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299,471
FRISKET PEN
Leon Carver, and Ollis Carver, Sr., both of 5550 S. Dorchester St., Chicago, Ill. 60637
Filed Sep. 20, 1985, Ser. No. 778,429
Term of patent 14 years
U.S. Cl. D19—49



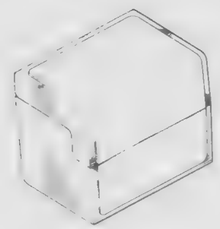
299,472
EDUCATIONAL TOY VIEWING DEVICE
Raymond C. Tilmsey, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 15, 1986, Ser. No. 919,309
Term of patent 14 years
U.S. Cl. D19—60

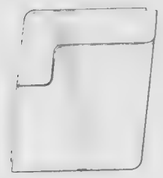


299,473
EDUCATIONAL TOY VIEWING DEVICE
Patrick J. Murphy, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 17, 1986, Ser. No. 920,870
Term of patent 14 years
U.S. Cl. D19—60

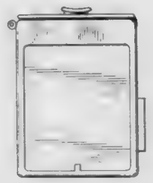


299,474
CARD FILE
Gerald J. Klodt, Madison, Wis., assignor to W. T. Rogers Company, Madison, Wis.
Filed Oct. 1, 1985, Ser. No. 782,363
Term of patent 14 years
U.S. Cl. D19—76

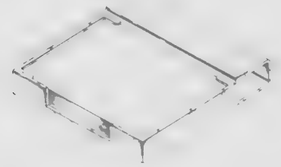




299,475
COMBINED GOLF CARD HOLDER AND INSERT THEREFOR
John H. G. Munnik, Margate, Natal 4275, South Africa
Filed Dec. 18, 1985, Ser. No. 810,250
Term of patent 14 years
U.S. Cl. D19—78



299,476
COMBINED PEN/PENCIL AND MEMO PAD HOLDER
Stephen H. Wolff, 222 E. 35th St., New York, N.Y. 10016
Filed Dec. 20, 1985, Ser. No. 811,381
Term of patent 14 years
U.S. Cl. D19—78

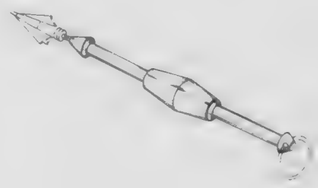


299,477
PENCIL CUP OR THE LIKE
Gerald J. Klodt, Madison, Wis., assignor to W. T. Rogers Company, Madison, Wis.
Filed Sep. 30, 1985, Ser. No. 782,528
Term of patent 14 years
U.S. Cl. D19—85

299,478
VERTICAL MESSAGE FILE OR THE LIKE
Gerald J. Klodt, Madison, Wis., assignor to W. T. Rogers Company, Madison, Wis.
Filed Oct. 1, 1985, Ser. No. 782,375
Term of patent 14 years
U.S. Cl. D19—90



299,479
ARROWHEAD PULLER
Jim M. Richardson, P.O. Box 393, Playas, N. Mex. 88009
Filed Feb. 14, 1986, Ser. No. 834,032
Term of patent 14 years
U.S. Cl. D22—199



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF JANUARY, 1989

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Roberts, Gerald B., 4,798,922, Cl. 200-400.000.

A.N.F. Industrie: *See*—
Girard, Jean-Michel, 4,798,148, Cl. 105-17.000.

A/S Platon: *See*—
Hallberg, Carl R., 4,798,498, Cl. 405-258.000.

A/S Sonnichsen Rorvalseverket: *See*—
Boen Per, 4,798,696, Cl. 264-209.200.

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Abe, Kenji: *See*—
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Abe, Kumiko: *See*—
Sugisawa, Ko; Matsumura, Yasushi; Okamoto, Hidefumi; and Abe, Kumiko, 4,798,728, Cl. 426-129.000.

Abe, Noriyuki: *See*—
Sakagami, Atsushi; Futami, Toru; Abe, Noriyuki; and Suzuki, Tadashi, 4,799,218, Cl. 370-85.000.

Abou-Gharbia, Magid A.; Yardley, John P.; and Tio, Cesario O., to American Home Products Corporation. Antipsychotic gamma-carboline N-oxides. 4,798,896, Cl. 546-87.000.

Abraham, Dennis G.; Double, Glen P.; and Neckyfarow, Steven W., to International Business Machines Corporation. Secure component authentication system. 4,799,061, Cl. 340-825.340.

Abuaf, Nesim; Barito, Robert W.; and Downs, Kenneth L., to General Electric Company. Insulating panels containing insulating powders and insulating gases. 4,798,753, Cl. 428-69.000.

Achterwinter, Norbert: *See*—
Halter, Hartmut; Zimmermann, Paul H.; and Achterwinter, Norbert, 4,798,351, Cl. 242-65.000.

Ackeret, Peter, to Licinvest AG. Container for a pile of pictures. 4,798,015, Cl. 40-152.100.

Ackermann, Peter: *See*—
Gsell, Laurenz; and Ackermann, Peter, 4,798,912, Cl. 568-637.000.

Ackermann, Ulrich, to BBC Brown Boveri & Co., Ltd. Compressed-gas breaker. 4,798,924, Cl. 200-148.00R.

Ackerson, Robert C.; and Yuyama, Takeshi, to Du Pont de Nemours, E. I., and Company. Selective method-of-use of oxabicycloalkanes. 4,798,621, Cl. 71-90.000.

Acme Electric Corporation: *See*—
Emerson, Wayne C., 4,799,130, Cl. 361-437.000.

Acosta, Jorge L.: *See*—
Hellekson, Ronald A.; Acosta, Jorge L.; and Campbell, John S., 4,799,164, Cl. 235-467.000.

Acushnet Company: *See*—
Berard, Raymond A., 4,798,386, Cl. 273-235.00R.

Adachi, Shoji: *See*—
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Adeka Argus Chemical Co., Ltd.: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Hirai, Bunji; and Sugibuchi, Kazuo, 4,798,836, Cl. 524-89.000.

Adolph Coors Company: *See*—
Dugan, Larry M., 4,798,234, Cl. 141-165.000.

Adolph, Manfred, to Lindermann Maschinenfabrik GmbH. Hammer breaker. 4,798,345, Cl. 241-186.200.

Advantest Corporation: *See*—
Kannari, Shigeru, 4,799,008, Cl. 324-73.00R.

Aerospatiale Societe Nationale Industrielle: *See*—
Bouteyre, Jacques; and Le Floc'H, Christian, 4,798,466, Cl. 356-347.000.

AGFA-Gevaert Aktiengesellschaft: *See*—
Zangenfeind, Helmut; Domges, Gunther; and Wurfel, Reinhart, 4,799,076, Cl. 354-308.000.

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Aho, Kenneth A.; Melby, Jeffrey J.; and Miller, Richard A., to Minnesota Mining and Manufacturing Company. Automotive lighting element. 4,799,131, Cl. 362-61.000.

Aho, Kenneth A., to Minnesota Mining and Manufacturing Company. Reflective film. 4,799,137, Cl. 362-309.000.

Aillon, Rene. Central venous pressure catheter and method for using. 4,798,588, Cl. 604-122.000.

Air Plus, Inc.: *See*—
Goode, Barry L., 4,797,962, Cl. 5-453.000.

Air Products and Chemicals, Inc.: *See*—
Lai, Ta-Wang; and Vijayendran, Bheema R., 4,798,871, Cl. 525-328.200.

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Ito, Shoji; and Minoura, Mikio, 4,798,188, Cl. 123-478.000.

Aisen Seiki Kabushiki Kaisha: *See*—
Tanino, Masaharu; and Hattori, Takemi, 4,798,415, Cl. 297-410.000.

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Okabe, Yoshio; Kobayashi, Yukimori; Ishikawa, Makoto; Kamiya, Tamotsu; and Atsumi, Tomiaki, 4,798,563, Cl. 474-110.000.

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Parr, William J., 4,798,860, Cl. 524-409.000.

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McCune, Harry E., III; and Divine, Charles A., Jr., 4,798,634, Cl. 148-325.000.

Albarda, Scato: *See*—
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Parruck, Bidyut; and Mulla, Hoshang D., 4,799,144, Cl. 364-200.000.

Alderfer, Earl L. Coupling kit. 4,798,569, Cl. 474-255.000.

Alderman, Arnold N.: *See*—
Balcom, James E.; Kozek, Edward P.; and Alderman, Arnold N., 4,799,039, Cl. 340-333.000.

Alderson, David L.: *See*—
Foster, Thomas V.; Jones, Stanley P.; and Alderson, David L., 4,798,617, Cl. 65-25.100.

Alexander, George F.; Coutant, Alan R.; Fee, David M.; and Riediger, Craig W., to Caterpillar Inc. Control mechanism for operating a vehicle. 4,798,099, Cl. 74-473.00R.

Alf. Hannaford & Co. Pty. Ltd.: *See*—
Hornhardt, Hubert L.; and Nuske, Geoffrey G., 4,798,280, Cl. 198-666.000.

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Alfred Teves GmbH: *See*—
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Allen, Ioan R.: *See*—
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Allen, J. Dewayne, to Allen Engineering Corporation. Floating vibrational screed. 4,798,494, Cl. 404-114.000.

Allen, Max D.: *See*—
Coates, Donald A.; Manthei, Philip J.; and Allen, Max D., 4,798,424, Cl. 312-257.00R.

Allen, Philip C., to British Petroleum Company p.l.c., The. Poly(acetylene) films having localized zones of a low conductivity material. 4,798,782, Cl. 430-270.000.

Allied Colloids Limited: *See*—
Johnson, Ian M.; Moody, Ian M.; and Flesher, Peter, 4,798,861, Cl. 524-458.000.
Symes, Kenneth C.; and Flesher, Peter, 4,798,888, Cl. 536-123.000.

Allied-Signal Inc.: *See*—
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Fang, Ho T., 4,798,320, Cl. 228-122.000.
Glaser, Jerry; and Elpern, David G., 4,798,523, Cl. 417-407.000.
McAfee, David D., 4,798,052, Cl. 60-572.000.

Alonso, Frank, to Spectra Star Kites. Flexible frame fastening system for kites. 4,798,356, Cl. 244-153.00R.

Alphabet, Inc.: *See*—
Mayhew, John, 4,798,365, Cl. 251-205.000.

Alps Electric Co., Ltd.: *See*—
Igarashi, Sadao; and Ueno, Moriaki, 4,799,033, Cl. 333-134.000.

Alter, Sheldon. Beverage caddy apparatus. 4,798,360, Cl. 248-311.200.

Alternative Energy Resources, Inc.: *See*—
Hawa, Spencer K., 4,798,224, Cl. 137-337.000.

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Fukuta, Shigemi; Amakasu, Toshinari; Ugata, Ken; and Yoshino, Shoichi, 4,798,615, Cl. 65-4.400.

Amano, Michiaki: *See*—
Matsuishi, Naoto; Nakagawa, Yoshio; Amano, Michiaki; Kakehi, Noribiko; Kawashima, Toshio; and Omura, Shigeki, 4,798,832, Cl. 514-258.000.

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American Geodesics, Inc.: *See*—
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American Home Products Corporation: *See*—
Abou-Gharbia, Magid A.; Yardley, John P.; and Tio, Cesario O., 4,798,896, Cl. 546-87.000.

American Maize-Products Company: *See*—
Friedman, Robert B.; Gottneid, David J.; Faron, Eugene J.; Pustek, Frank J.; and Katz, Frances R., 4,798,735, Cl. 426-578.000.

American Science and Engineering, Inc.: *See*—
Annis, Martin; and Bjorkholm, Paul J., 4,799,247, Cl. 378-87.000.

American Telephone and Telegraph Company: *See*—
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American Telephone and Telegraph Company, AT&T Bell Laboratories: *See*—
Barwick, Morris L.; and Praught, Ronald B., 4,798,923, Cl. 200-50.00R.
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American Telephone and Telegraph Company - AT&T Information Systems: *See*—
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American Telephone and Telegraph Company - AT&T Technologies, Inc.: *See*—
Myers, Daryl L.; and Wright, James G., Jr., 4,798,346, Cl. 242-18.00A.

American Thermocraft Corp.: *See*—
Katz, Sigmund, 4,798,536, Cl. 433-212.100.

Ameseder, Anton, to Starrfrasmaschinen AG. Process and apparatus for removal of dust and chip material at the machining station of a machine tool. 4,798,505, Cl. 409-136.000.

Amishima, Shigeaki, to Ajo Pharmaceutical Co., Ltd. Magnetic therapeutic device. 4,798,194, Cl. 128-9.000.

Amoco Corporation: *See*—
Evans, April J., 4,798,825, Cl. 514-65.000.
Palm, John W., 4,798,716, Cl. 423-574.00R.

AMP Incorporated: *See*—
Asick, John C.; Landis, John M.; and Yingst, Stephen M., 4,798,542, Cl. 439-188.000.
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Masters, Timothy E.; and Wehrer, Wayne J., 4,799,044, Cl. 341-5.000.

Anders, Robert J.; Cerveny, John G.; and Milkowski, Andrew L., to Oscar Mayer Foods Corporation. Method for delaying *Clostridium botulinum* growth in fish and poultry. 4,798,729, Cl. 426-326.000.

Anderson, David M.; and McGuire, Jeffrey C., to Genex Corporation. Vector for high level gene expression. 4,798,791, Cl. 435-68.000.

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Wood, Kenneth O.; and Logan, David J., 4,799,172, Cl. 364-518.000.

Gerhartz, Siegmar: *See*—
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Gerner, Rudolf, to KAPPA messtechnik GmbH. Method of recording and storing images in rapid sequence. 4,799,108, Cl. 358-213.260.

Gerstmann, Joseph; Celorier, George M., Jr.; and Hill, Wayne S., to Gas Research Institute. Integrated space heating, air conditioning and potable water heating appliance. 4,798,240, Cl. 165-48.100.

Getty, Edward E.: *See*—
Drago, Russell S.; and Getty, Edward E., 4,798,667, Cl. 208-117.000.

Geuze, Maarten M.: *See*—
Brons, Henricus M. J.; and Geuze, Maarten M., 4,798,884, Cl. 528-491.000.

Ghiraldi, Alberto, to D.S.D.P. - S.p.A. Shelter for thermally conditioning electronic appliances. 4,798,238, Cl. 165-32.000.

Ghosh, Asim; and Toukmanian, Aram H., to Carling O'Keefe Breweries of Canada Limited. Bottle with integral cap-removing recess. 4,798,300, Cl. 215-10.000.

Giacomazzi, Roy A.; and Giampa, Rolland D., to General Motors Corporation. Fuel tank venting. 4,798,306, Cl. 220-86.00R.

Giampa, Rolland D.: *See*—
Giacomazzi, Roy A.; and Giampa, Rolland D., 4,798,306, Cl. 220-86.00R.

Gibas, Daniel F., to Ivan's Idiosyncrasy, Inc. Slack adjuster lubricator and methods of use. 4,798,265, Cl. 184-105.100.

Gibbs, James D.: *See*—
Dumonceaux, Gary W.; Weber, Edwin R.; and Gibbs, James D., 4,798,551, Cl. 441-130.000.

Gibson, Michael R.: *See*—
Yoe, Craig S.; Gibson, Michael R.; O'Patka, Dennis J.; and Kuna, Wayne A., 4,798,455, Cl. 351-51.000.

Giesy, Jerry D.; Hermann, George D.; and Hoskins, Matthew W., to Fogarty, Thomas J. Protective sheath instrument carrier. 4,798,193, Cl. 128-7.000.

Gillette Company, The: *See*—
Packham, Charles C.; White, Robert; and Rogers, Steven, 4,797,997, Cl. 30-43.920.

Gilliard, Richard P.; Cap, Daniel M.; and Russell, Timothy D., to General Electric Company. Metal halide lamp containing halide composition to control arc tube performance. 4,798,995, Cl. 313-638.000.

Gillis, Herbert R., Jr., to ICI Americas Inc. Polyureas prepared from a mixture of polyamines and polyisocyanate. 4,798,862, Cl. 524-783.000.

Gimple, James J., to DeVilbiss Company, The. Spray gun for robot mounting. 4,798,341, Cl. 239-694.000.

Giolma, William H.: *See*—
Haight, Michael H.; and Giolma, William H., 4,799,030, Cl. 331-117.00R.
Morgan, John D.; Giolma, William H.; and Boucher, Richard, 4,798,973, Cl. 307-296.00R.

Giotis, George A. Traffic directing sign. 4,798,017, Cl. 40-612.000.

Girard, Jean-Michel, to A.N.F. Industrie. Device for intercommunication between coupled vehicles in which passengers can walk freely, especially railway cars or road vehicles. 4,798,148, Cl. 105-17.000.

Gisler, Barbara; and Tomasi, Werner, to Wretachitsch, Walter, a part interest. Wind instrument and process of making same. 4,798,122, Cl. 84-385.00P.

Giuliani, Marcello. Multiple-card with transferring, carding and cleaning cylinder. 4,797,978, Cl. 19-98.000.

Gjertsen, Robert K.: *See*—
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Gjestrum, Einar: *See*—
Langeland, Jan-Age; Gjestrum, Einar; and Bjerkoy, Rolf, 4,798,156, Cl. 114-242.000.

Glaser, Jerry; and Elpern, David G., to Allied-Signal Inc. Turbocharger bearing and lubrication system. 4,798,523, Cl. 417-407.000.

Glaus, Heinrich; Lehmann, Peter; Joehr, Hans; and Freiburghaus, Rene , to Styner & Bienz AG. Method and device for connecting at least two rods. 4,798,231, Cl. 140-119.000.

Glen, John B.; and James, Roger, to Imperial Chemical Industries PLC. Pharmaceutical compositions. 4,798,846, Cl. 514-731.000.

Globig, Michael A.: *See*—
Wyeth, Richard W.; Johnson, Michael A.; and Globig, Michael A., 4,798,467, Cl. 356-349.000.

Goedker, Joseph L.: *See*—
Lipinski, Thomas L.; and Goedker, Joseph L., 4,798,062, Cl. 62-381.000.

Goel, Anil B.; and Chang, Biau-Hung, to Ashland Oil, Inc. Alkylene phosphonate acid ester polyols. 4,798,872, Cl. 558-186.000.

Goel, Anil B., to Ashland Oil, Inc. Novel poly(arylene ether-amide) polyols and their application in polyurethane polymers. 4,798,881, Cl. 528-73.000.

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Taylor, David C.; Springer, William E.; Goeller, Loretta; and Santhouse, Daniel, 4,799,124, Cl. 361-42.000.

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Kung, Patrick C.; and Goldstein, Gideon, 4,798,806, Cl. 436-548.000.

Goldstein, Guy; and Pierre, Michel, to Beghin-Say S.A. Fixation of polymers retaining liquids in a porous structure. 4,798,744, Cl. 427-389.900.

Gollinger, Franz X.; and Bock, Georg, to M.A.N.-Roland Druckmaschinen AG. Multi-liquid control valve system, particularly for flexographic ink of different colors. 4,798,228, Cl. 137-625.470.

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Goodwin, Vernon L., to SSI Medical Services, Inc. Valve for a patient support structure. 4,798,227, Cl. 137-554.000.

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Gordon, Eric M.: *See*—
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Gordon, Kenneth A.: *See*—
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Gorner, Horst; and Dyma, Horst, to Mannesmann Kienzle GmbH. Document encoding device with document reading station and document viewing station. 4,798,944, Cl. 235-475.000.

Gorres, Dieter: *See*—
Fleischer, Hans-Joachim; Lohscheidt, Klaus; Gorres, Dieter; and Behr, Friedrich, 4,798,631, Cl. 148-3.000.

Goshima, Takahiro; Hattori, Yoshiyuki; Kinbara, Hiroji; Otsuki, Hiromi; Nomura, Yoshihisa; and Nakanishi, Nobuyasu, to Nippondenso Co., Ltd.; and Jidosha Kabushiki Kaisha. Accumulator. 4,799,048, Cl. 340-626.000.

Gosmann, Martin: *See*—
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Goss, Gary J.; Hirsch, Thomas S.; and Holtey, Thomas O., to Honeywell Bull Inc. Facility for passing data used by one operating system to a replacement operating system. 4,799,145, Cl. 364-200.000.

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Grass Valley Group, Inc., The: *See*—
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Grassl, Hans P., to Siemens Aktiengesellschaft. Convolver arangement with acoustic waves. 4,799,184, Cl. 364-821.000.

Gravely, Charles T., to J & S Electronics, Inc. Apparatus for controlling device start up and off/on running periods. 4,798,971, Cl. 307-141.000.

Graves, Ernest D., Jr.: *See*—
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Greenwood, Darryl P.: *See*—
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Gregory, Charles. Hot gas defrost system for refrigeration systems and apparatus therefor. 4,798,058, Cl. 62-278.000.

Greig, Walter G., to Moore Business Forms, Inc. Multiple copy note pad. 4,798,401, Cl. 282-9.00R.

Grendahl, Dennis T. Laminated zone of focus artificial lens. 4,798,608, Cl. 623-6.000.

Grendahl, Dennis T. Radially segmented zone of focus artificial lens. 4,798,609, Cl. 623-6.000.

Greulich, Walter; Gut, Karl; Hornung, Klaus; and Schulte, Guther, to Georg Fischer Aktiengesellschaft. Compound camshaft and method of manufacturing the same. 4,798,178, Cl. 123-90.600.

Griffin, Dennis, to Frazer-Nash Limited. Solenoid-operated devices. 4,798,139, Cl. 102-216.000.

Griffin, Evans E.: *See*—
Zippa, Robert H.; Lyons, Kent A.; and Griffin, Evans E., 4,798,519, Cl. 416-191.000.

Griffith, Ronald C.; and Napier, James J., to Pennwalt Corporation. 2-amino-n-[1,2-diphenyl-1-(thifluoromethyl)ethyl]acetamide. 4,798,687, Cl. 260-501.100.

Grill, Thomas M.: *See*—
Bernstein, Howard L.; Grill, Thomas M.; and Silver, Ronald, 4,798,322, Cl. 235-487.000.

Grimm, Hans, to Maschinenfabrik Gehring Gesellshaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Method and apparatus for deburring the inner edge of part of a workpiece. 4,798,024, Cl. 51-33.00R.

Grina, Larry D.: *See*—
Liu, Christopher S.; Grina, Larry D.; and Kapuscinski, Maria M., 4,798,678, Cl. 252-50.000.

Grindahl, Mervin L.; and Denzene, Quentin S., to EnScan, Inc. Automatic/remote RF instrument monitoring system. 4,799,059, Cl. 340-870.030.

Grobben, Henri M., to U.S. Philips Corporation. Clamping device for clamping an optical disc onto a drive spindle. 4,799,209, Cl. 369-75.200.

Grossbach, Rudolf: *See*—
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Grosse-Scharmann, Franz: *See*—
Gattermann, Bernd; Steenken, Bernhard; Grosse-Scharmann, Franz; and Muller, Horst, 4,798,271, Cl. 192-18.00R.

Grossmann, Horst; and Stass, Ernst, to Black & Decker Inc. Saw blade for a saw having reciprocating blades. 4,798,001, Cl. 30-355.000.

Grover, R. Kent, to Motorola, Inc. Resynthesized digital radio frequency memory. 4,799,189, Cl. 364-900.000.

Groves, Michael H.; Redshaw, Digby R.; and Case, Michael R., to Imperial Chemical Industries plc. System for introducing flowable additive into a closed container. 4,798,287, Cl. 206-219.000.

Gruest, Jacqueline: *See*—
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Grumman Aerospace Corporation: *See*—
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Gruteser, Helmut: *See*—
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Gsell, Laurenz; and Ackermann, Peter, to Ciba-Geigy Corporation. Substituted phenoxybenzyl-(Dihalodimethylcyclopropyl-methyl)ethers. 4,798,912, Cl. 568-637.000.

GTE Products Corporation: *See*—
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Guerrero, Raul. Warmer plate cover. 4,798,937, Cl. 219-433.000.

Gulino, Roy. Carpet finishing tool. 4,797,963, Cl. 7-103.000.

Gunda, Rajamouli, to Vickers, Incorporated. Control system for injection molding machine. 4,798,527, Cl. 425-145.000.

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Gut, Karl: *See*—
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Guzzini, Virgilio, to Teuco Guzzini S.r.l. Bathtub with improved hydromassage system. 4,797,958, Cl. 4-542.000.

Haas, Dave; VanderSyde, Gary; Beatty, Paul; and Roxas, Ren, to Bell & Howell Company. Insertion machine. 4,798,040, Cl. 53-460.000.

Haas, Herbert G. Releasable mounting assembly for tire building drum. 4,798,647, Cl. 156-414.000.

Haas, Michael W., to United States of America, Air Force. Stimulator for eye tracking oculometer. 4,798,214, Cl. 128-745.000.

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Haeg, Steven R.; and Knabel, Mark T., to MTS Systems Corporation. Vehicle restraint system. 4,798,088, Cl. 73-669.000.

Haeussler, Klaus M.; Wittmann, Julius; Gaukel, Gisela; and Auracher, Franz, to Siemens Aktiengesellschaft. Laser transmitter including an external optical resonator. 4,799,234, Cl. 372-97.000.

Hafeli, Hans: *See*—
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Hafina Treufinanz AG: *See*—
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Hager, Juergen; Vieth, Walter; and Manderla, Werner, to Magurit Gefriernschneider GmbH. Cutting unit for a meat slicing apparatus. 4,798,114, Cl. 83-522.000.

Haglof, Ingvar. Thread measuring device. 4,798,003, Cl. 33-134.00R.

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Hahn, Klaus-Juergen: *See*—
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Haidon Industrial Co., Ltd.: *See*—
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Hall, Kevin P.; and Mott, Andrew W., to Minnesota Mining and Manufacturing Company. Silver halide photographic light-sensitive systems comprising a hydrazine which contains a group undergoing a cyclization reactionupon cleavage from the hydrazine. 4,798,780, Cl. 430-264.000.

Hallberg, Carl R., to A/S Platon. Device for stabilizing bulk material. 4,798,498, Cl. 405-258.000.

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Halter, Hartmut; Zimmermann, Paul H.; and Achterwinter, Norbert, to Reifenhauser GmbH & Co. Maschinenfabrik. Apparatus for coiling a

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foil web, especially a synthetic resin foil web. 4,798,351, Cl. 242-65.000.

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Hancock, John C.; Dubrul, William R.; and Heyler, Charles J., III, to McGhan Medical Corporation. Self-sealing injection reservoir. 4,798,584, Cl. 604-93.000.

Handlin, Dale L., Jr., to Shell Oil Company. Kraton G thermoplastic elastomer gel filling composition for cables. 4,798,853, Cl. 523-173.000.

Hands, Godfrey: *See*—
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Hanna, Daniel C. Front, top and rear applicator for a vehicle wash. 4,798,217, Cl. 134-57.00R.

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Hardee, Kenneth L.; and Sacco, Anthony R., to Eltech Systems Corporation. Producing chlorine dioxide from chlorate salt. 4,798,715, Cl. 423-478.000.

Harder, Patricia A.; and Kunz, Daniel A., to Du Pont de Nemours, E. I., and Company. Bacterial hydroxylation of codeine. 4,798,792, Cl. 435-119.000.

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Harrington, Max G., to New West Engineering, Ltd. Apparatus for spraying a liquid in a vessel. 4,798,334, Cl. 239-227.000.

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Hartman, John, to Minnesota Mining and Manufacturing Company. Low profile clip connector with integral contact support insert. 4,798,544, Cl. 439-404.000.

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Harvard Sports, Inc.: *See*—
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Mitchell, Richard A.; and Buchanan, Joseph R., to Skotch, Inc. Double block and vent valve system. 4,798,223, Cl. 137-312.000.

Mitchell, Robert D.: *See—*
El-Sayed Lyla M.; Schmidt, Steven P.; Trout, Torence J.; and Mitchell, Robert D., 4,798,778, Cl. 430-115.000.

Mitchell, Terry L.; and Spoolstra, Lawrence J., to Architectural Wall Systems, Inc. Floor-to-ceiling wall system. 4,798,035, Cl. 52-281.000.

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Skierszkan, Simon J., 4,799,022, Cl. 328-20.000.

Mito, Ikuo, to NEC Corporation. Distributed feedback laser diode comprising an active layer partly adjacent to a waveguide layer. 4,799,226, Cl. 372-45.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujii, Noriaki; Kitamura, Mamoru; and Yamada, Akira, 4,798,946, Cl. 235-492.000.
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Mitsubishi Jidousha Kogyo Kabushiki Kaisha: *See—*
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Mitsubishi Rayon Company Ltd.: *See—*
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Mitsuboshi Belting, Limited: *See—*
Hoshiro, Takeshi; Matsuo, Mu; and Takano, Hiroshi, 4,798,567, Cl. 474-242.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Yoshitake, Junichi; Kitani, Hiroaki; Kashiwa, Norio; Muranaka, Takeshi; Tominari, Kenichi; and Nagamatsu, Shigeki, 4,798,866, Cl. 525-191.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
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Iimuro, Shigeru; Kitamura, Takashi; and Morimoto, Yoshio, 4,798,654, Cl. 203-94.000.

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Mitsutsuka, Syuichi, to Clarion Co., Ltd. Optimum bias circuit for a convolver. 4,798,988, Cl. 310-313.00R.

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Mitutoyo Mfg. Co. Ltd.: *See—*
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Miura, Tatsuhiko; and Uno, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Rider-controlled working machine with four-wheel steering system. 4,798,393, Cl. 280-91.000.

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Molinazzi, Roberto, to Indexstudio S.a.s. di Molinazzi Roberto & C. Modular support for staircase steps. 4,798,030, Cl. 52-188.000.

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Mooney, Brian J. Portable compressed air delivery unit for tires with built-in antifreeze capability. 4,798,233, Cl. 141-38.000.

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Morssinkhof, Gerhardus H.; Vogel, Lubbertus; and Leenheer, Adrianus, to Stork Perforated Products B.V. Method of controlling environmental conditions in the proximity of vegetation or crops with the aid of protective sheeting, protective sheeting for use in this method, and a protective device comprising sheeting. 4,798,023, Cl. 47-26.000.

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Oversluizen, Gerrit; and Van Dongen, Anne-Marie A., to U.S. Philips Corporation. Luminescent alumino-silicate and/or alumino-borate glass comprising lanthanum and/or gadolinium and luminescent screen provided with such a glass. 4,798,768, Cl. 428-426.000.

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Saksena, Anil K.; Wong, Jesse K.; and Mangiaracina, Pietro, to Schering Corporation. Inhibitors of slow reacting substance of anaphylaxis. 4,798,842, Cl. 514-381.000.

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Salvo, Gaetano. Manual calculator for analog and digital numbers. 4,798,940, Cl. 235-70.00R.

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Sanderford, H. Britton, Jr.; Rouquette, Robert E.; and Arthur, James D., to Axonn Corporation. Radio position determination method and apparatus. 4,799,062, Cl. 342-450.000.

Sands, Thomas J. Processes and materials for carrying out microchemical and microbiological tests. 4,798,788, Cl. 435-37.000.

Sano, Tetsuo; Hohki, Tetsuo; Kodama, Eiji; Yoshida, Takumi; Kawatani, Masafumi; and Tsujinaka, Hisayuki, to Dainippon Screen Mfg., Co. System for inspecting pattern defects of printed wiring boards. 4,799,175, Cl. 364-552.000.

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Sarr, Dennis P., to Boeing Company, The. Data recording apparatus for an ultrasonic inspection system. 4,799,168, Cl. 364-507.000.

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Comau S.p.A.: *See*—
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Cordts, Howard P.; and Karloske, Joan E., to Freeman Chemical Corporation. Aqueous liquid filled polyurethane gels and method of making the same. Re. 32,834, Cl. 524-310.000.

Corni, Vittorio, to Comau S.p.A. Coding systems for elements of machine tools, particularly of the numerically controlled type. Re. 32,837, Cl. 235-375.000.

Coussau, Jean; and Lavaleric, Claude, to Framatome & Cie. Temporary obturation panel of a passage inside a vessel accessible only through an orifice of smaller size. Re. 32,832, Cl. 220-327.000.

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GKN Automotive Components Inc.: *See*—
Hazebrook, Daniel W., Re. 32,830, Cl. 29-148.40C.

Greene, Mark I.; and Fields, Bernard N., to President and Fellows of Harvard College. Screening vaccines and immunization process. Re. 32,833, Cl. 424-86.000.

Hazebrook, Daniel W., to GKN Automotive Components Inc. Method of forming a precision ball track. Re. 32,830, Cl. 29-148.40C.

Hoppe, Joachim A.: *See*—
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Howard, H. Taylor, to Chaparral Communications, Inc. Polarized signal receiver system. Re. 32,835, Cl. 333-21.00A.

Karloske, Joan E.: *See*—
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Lavaleric, Claude: *See*—
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Schlumberger Technology Corporation: *See*—
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Shonrock, Clinton O.; Wambaugh, John O.; and Hoppe, Joachim A., to Schlumberger Technology Corporation. Apparatus for sealing a well casing. Re. 32,831, Cl. 166-135.000.

Wambaugh, John O.: *See*—
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TO WHOM

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Bauer, Wolfgang: *See*—
Martin, Wolfgang; Herion, Dieter; Bayew, Dimiter; and Bauer, Wolfgang, B1 4,096,226, Cl. 264-168.000.

Bayew, Dimiter: *See*—
Martin, Wolfgang; Herion, Dieter; Bayew, Dimiter; and Bauer, Wolfgang, B1 4,096,226, Cl. 264-168.000.

Calandra, Frank, Jr., to Jennmar Corporation. Method and apparatus for combining resin bonding and mechanical anchoring of a bolt in a rock formation. B1 4,516,885, 1-17-89, Cl. 405-261.000.

Calandra, Frank, Jr., to Jennmar Corporation. Method and apparatus for combining resin bonding and mechanical anchoring of a bolt in a rock formation. B1 4,518,292, 1-17-89, Cl. 411-82.000.

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Matsui Shikiso Chemical Co., Ltd.: *See*—
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341 4,798,044

CLASS 57

22 4,798,045
408 4,798,046

CLASS 60

39.092 4,798,047
261 4,798,048
276 4,798,049
329 4,798,050
527 4,798,051
572 4,798,052
712 4,798,053

CLASS 62

6 4,798,054
127 4,798,055
228.3 4,798,057
228.4 4,798,059
235.1 4,798,056
278 4,798,058
310 4,798,060
348 4,798,061
374 4,798,614
381 4,798,062
457 4,798,063

CLASS 65

4.4 4,798,615
25.1 4,798,617
135 4,798,616

CLASS 66

57 4,798,064

CLASS 70

129 4,798,065
212 4,798,066
252 4,798,067
276 4,798,068
428 4,798,069

CLASS 71

66 4,798,619
90 4,798,621
92 4,798,618
95 4,798,620

CLASS 72

88 4,798,070
97 4,798,071
132 4,798,072
218 4,798,073
247 4,798,074
327 4,798,075
352 4,798,076
360 4,798,077
389 4,798,078
391 4,798,079

CLASS 73

9 4,798,080
12 4,798,096
53 4,798,081
117.3 4,798,082
118.2 4,798,083
119 A 4,798,084
148 4,798,085
168 4,798,086
649 4,798,087
669 4,798,088
706 4,798,089
708 4,798,093
715 4,798,090
861.38 4,798,091
861.77 4,798,092
862.58 4,798,094
863.01 4,798,095

CLASS 74

15.88 4,798,097
470 4,798,098
473 R 4,798,099
501.5 R 4,798,100
552 4,798,101
600 4,798,102
740 4,798,103
804 4,798,104
866 4,798,105

CLASS 75

0.5 AA 4,798,622
4,798,623
38 4,798,624
235 4,798,625

CLASS 81

3.29 4,798,106
23 4,798,107
124.4 4,798,111
126 4,797,965
170 4,798,108

CLASS 83

2 R 4,798,109

CLASS 83

13 4,798,110
455 4,798,112
471.3 4,798,113
522 4,798,114
639 4,798,115
858 4,798,116
870 4,798,117
875 4,798,118

CLASS 84

314 R 4,798,119
380 R 4,798,120
385 P 4,798,122
414 4,798,121

CLASS 89

34 4,798,123
193 4,798,124

CLASS 91

49 4,798,125
518 4,798,126
530 4,798,127

CLASS 92

59 4,798,128
128 4,798,129

CLASS 98

2.18 4,798,130

CLASS 99

277.2 4,798,131
331 4,798,132
440 4,798,133

CLASS 100

171 4,798,134

CLASS 101

40 4,798,135
181 4,798,136
211 4,798,137
365 4,798,138

CLASS 102

216 4,798,139
251 4,798,140
290 4,798,142
293 4,798,141
370 4,798,143
445 4,798,144
476 4,798,145

CLASS 104

111 4,798,146
166 4,798,147

CLASS 105

17 4,798,148
155 4,798,149

CLASS 106

2 4,798,627
104 4,798,628
123 4,798,626
287.1 4,798,630
287.16 4,798,629

CLASS 110

171 4,798,150

CLASS 111

73 4,798,151

CLASS 112

262.1 4,798,152

CLASS 114

61 4,798,153
98 4,798,154
230 4,798,155
242 4,798,156
253 4,798,157
4,798,158
295 4,798,159

CLASS 116

28.1 4,798,160
4,798,161

CLASS 118

26 4,798,162
308 4,798,164
408 4,798,474
410 4,798,163
715 4,798,165
719 4,798,166
723 4,798,167

CLASS 119

3 4,798,168
4,798,169
15 4,798,171
52 R 4,798,172
61 4,798,170
4,798,173
106 4,798,174
155 4,798,175

CLASS 122

26 4,798,176

CLASS 123

90.52 4,798,179
90.58 4,798,180
90.6 4,798,178
188 GC 4,798,181
195 R 4,798,182
279 4,798,183
316 4,798,184
400 4,798,185
467 4,798,186
469 4,798,187
478 4,798,188
502 4,798,189
531 4,798,190
557 4,798,191

CLASS 126

91 A 4,798,192

CLASS 128

7 4,798,193
9 4,798,194
20 4,798,195
24 A 4,798,196
25 R 4,798,197
57 4,798,198
87 R 4,798,199
89 R 4,798,200
156 4,798,201
204.26 4,798,202
205.22 4,798,203
303.1 4,798,204
344 4,798,205
419 P 4,798,206
632 4,798,207
640 4,798,208
653 4,798,209
660.01 4,798,210
668 4,798,211
745 4,798,214
749 4,798,212
754 4,798,213
804 4,798,215

CLASS 132

321 4,798,216

CLASS 134

57 R 4,798,217
74 4,798,218

CLASS 135

16 4,798,219
115 4,798,220

CLASS 137

119 4,798,221
132 4,798,222
312 4,798,223
337 4,798,224
454.2 4,798,225
512.4 4,798,226
554 4,798,227
625.47 4,798,228

CLASS 138

42 4,798,229
103 4,798,230

CLASS 140

119 4,798,231

CLASS 141

1 4,798,232
38 4,798,233
165 4,798,234
258 4,798,235

CLASS 148

3 4,798,631
12.7 N 4,798,632
162 4,798,633
325 4,798,634
4,798,635

CLASS 149

19.9 4,798,636
20 4,798,637

CLASS 152

209 R 4,798,236

CLASS 156

69 4,798,638
73.1 4,798,639
95 4,798,640
158 4,798,641
252 4,798,642
295 4,798,643
324 4,798,644
344 4,798,645
364 4,798,646
414 4,798,647
542 4,798,648
552 4,798,649
643 4,798,650

CLASS 162

22 4,798,651
60 4,798,652
168.3 4,798,653

CLASS 164

255 4,798,237

CLASS 165

32 4,798,238
45 4,798,239
48.1 4,798,240
103 4,798,242
109.1 4,798,241

CLASS 166

65.1 4,798,243
135 Re.32,831
250 4,798,244
281 4,798,245
311 4,798,246
373 4,798,247

CLASS 171

1 4,798,248

CLASS 173

14 4,798,249

CLASS 174

36 4,798,918
67 4,798,916
72 R 4,798,917

CLASS 177

181 4,798,250
229 4,798,251
245 4,798,252

CLASS 178

18 4,798,919
19 4,798,920

CLASS 180

58 4,798,254
65.1 4,798,255
79.1 4,798,253
133 4,798,256
165 4,798,257
175 4,798,258
233 4,798,259
253 4,798,260

CLASS 181

120 4,798,261

CLASS 182

106 4,798,262
107 4,798,263
230 4,798,264

CLASS 184

105.1 4,798,265

CLASS 187

8.71 4,798,266
28 4,798,267

CLASS 188

71.5 4,798,268
171 4,798,269
264 G 4,798,270

CLASS 192

18 R 4,798,271
70.25 4,798,272

CLASS 194

350 4,798,273

CLASS 196

324 4,798,274
372 4,798,275
378 4,798,276
397 4,798,277
399 4,798,278
594 4,798,279
666 4,798,280
698 4,798,281
781 4,798,282
860.5 4,798,283

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CLASS 23

41.12 4,798,177

CLASS 200

50 R 4,798,923
144 B 4,798,921
148 R 4,798,924
400 4,798,922

CLASS 203

94 4,798,654

CLASS 204

1 T 4,798,655
37.6 4,798,656
147 4,798,657
4,798,658
164 4,798,659
192.17 4,798,660
228 4,798,661
290 R 4,798,662
298 4,798,663
418 4,798,664

CLASS 206

45.15 4,798,284
150 4,798,286
180 4,798,285
219 4,798,287
220 4,798,288
287 4,798,289
328 4,798,290
426 4,798,291
439 4,798,292
495 4,798,293
600 4,798,294
621.6 4,798,295
631.2 4,798,296

CLASS 208

61 4,798,665
111 4,798,666
117 4,798,667
428 4,798,668

CLASS 210

109 4,798,669
169 4,798,670
238 4,798,671
282 4,798,672
629 4,798,673
640 4,798,674
700 4,798,675
767 4,798,676
799 4,798,677

CLASS 211

65 4,798,297
70.5 4,798,298

CLASS 212

157 4,798,299

CLASS 215

10 4,798,300
256 4,798,301
271 4,798,302
329 4,798,303

CLASS 219

10.41 4,798,925
10.43 4,798,926
10.55 B 4,798,927
60.2 4,798,928
69 W 4,798,929
76.12 4,798,930
118 4,798,932
121.64 4,798,931
211 4,798,933
217 4,798,936
233 4,798,934
272 4,798,935
395 4,798 938
433 4,798,937
438 4,798,939

CLASS 220

6 4,798,304
20.5 4,798,307
22.3 4,798,305
86 R 4,798,306
327 Re.32,832
445 4,798,308

CLASS 221

4 4,798,309
87 4,798,310

CLASS 222

131 4,798,311
180 4,798,312
192 4,798,313
542 4,798,314
591 4,798,315

CLASS 223

66 4,798,317

CLASS 224

32 R 4,798,318
251 4,798,319

CLASS 228

122 4,798,320
213 4,798,321

CLASS 229

115 4,798,323
125.35 4,798,324

CLASS 232

34 4,798,326
43.1 4,798,316

CLASS 235

70 R 4,798,940
375 Re.32,837
380 4,798,941
384 4,798,942
463 4,798,943
467 4,799,164
475 4,798,944
479 4,798,945
487 4,798,322
492 4,798,946

CLASS 237

50 4,798,327

CLASS 239

1 4,798,328
5 4,798,329
8 4,798,330
14.2 4,798,331
102.2 4,798,332
142 4,798,333
227 4,798,334
296 4,798,335
337 4,798,336
570 4,798,337
601 4,798,339
663 4,798,325
692 4,798,338
4,798,340
694 4,798,341

CLASS 241

18 4,798,342
36 4,798,343
79.1 4,798,344
186.2 4,798,345

CLASS 242

18 A 4,798,346
18 R 4,798,347
35.6 E 4,798,348
58.1 4,798,349
84 4,798,350
65 4,798,351
74 4,798,352
75.3 4,798,353
84.1 R 4,798,354
218 4,798,355

CLASS 244

153 R 4,798,356

CLASS 248

62 4,798,362
96 4,798,357
97 4,798,363
161 4,798,358
188.3 4,798,359
311.2 4,798,360
415 4,798,361

CLASS 249

189 4,798,364

CLASS 250

201 4,798,947
4,798,948
203 R 4,798,949
214 A 4,798,950
227 4,798,951
251 4,798,952
310 4,798,953
341 4,798,954
4,798,955
4,798,956
370.01 4,798,958
396 R 4,798,957
492.2 4,798,959
504 R 4,798,960
515.1 4,798,961
548 4,798,962
560 4,798,963
4,798,964
573 4,798,965
578 4,798,966

CLASS 251

205 4,798,365

CLASS 252

47.5 4,798,684
50 4,798,678
174.15 4,798,679
299.01 4,798,680
301.4 F 4,798,681
312 4,798,682
389.54 4,798,683
500 4,798,685
4,798,686

CLASS 254

22 4,798,366

CLASS 260

501.1 4,798,687
512 R 4,798,688

CLASS 261

39.1 4,798,689

CLASS 264

1.7 4,798,690
40.6 4,798,692
44 4,798,693
47 4,798,691
60 4,798,694
164 4,798,695
168 B1 4,096,226
209.2 4,798,696
255 4,798,697
271.1 4,798,698

CLASS 266

80 4,798,367
259 4,798,368

CLASS 267

220 4,798,370

CLASS 269

59.5 4,798,372
64.11 4,798,369
283 4,798,371

CLASS 271

9 4,798,373
4,798,374
82 4,798,375

CLASS 272

18 4,798,376
67 4,798,377
72 4,798,378
73 4,798,379
93 4,798,380

CLASS 273

1.5 R 4,798,381
73 C 4,798,382
167 H 4,798,383
172 4,798,384
176 A 4,798,385
235 R 4,798,386
237 4,798,387
261 4,798,388
411 4,798,389
4,798,390

CLASS 277

139 4,798,391
200 4,798,392

CLASS 280

91 4,798,393
96.1 4,798,394
240 4,798,395
673 4,798,396
4,798,397
708 4,798,398
756 4,798,399
796 4,798,400

CLASS 281

9 R 4,798,401

CLASS 283

2 4,798,402
70 4,798,403

CLASS 285

12 4,798,404
53 4,798,405
320 4,798,406

CLASS 292

229 4,798,407
341.18 4,798,408

CLASS 293

117 4,798,409

CLASS 296

217 4,798,410

CLASS 297

170 4,798,411
194 4,798,413
250 4,798,412
284 4,798,414
410 4,798,415
452 4,798,416

CLASS 299

1 4,798,417
B1 4,497,520

CLASS 301

31 4,798,418

CLASS 303

7 4,798,419
38 4,798,420
115 4,798,421
4,798,422

CLASS 307

10 BP 4,798,968
10 R 4,798,967
112 4,798,969
119 4,798,970
141 4,798,971
270 4,798,972
296 R 4,798,973
4,798,974
4,798,975
441 4,798,976
446 4,798,977
450 4,798,978
4,798,979
471 4,798,980
475 4,798,981
490 4,798,982
570 4,798,983

CLASS 310

68 C 4,798,984
90 4,798,985
268 4,798,986
313 R 4,798,987
4,798,988
328 4,798,989
334 4,798,990

CLASS 312

195 4,798,423
257 R 4,798,424
328 4,798,425

CLASS 313

137 4,798,991
406 4,798,992
447 4,798,993
478 4,798,994
638 4,798,995

CLASS 315

115 4,798,997
241 P 4,798,996
297 4,798,998
371 4,799,000

CLASS 318

45 4,798,999
4,799,001
4,799,002

CLASS 322

29 4,799,003

CLASS 324

73 R 4,799,004
4,799,008
4,799,021
79 R 4,799,020
127 4,799,005
158 F 4,799,006
4,799,007
158 P 4,799,009
233 4,799,011
240 4,799,010
309 4,799,012
312 4,799,013
314 4,799,014
4,799,015
318 4,799,016
319 4,799,017
465 4,799,018
546 4,799,019

CLASS 328

20 4,799,022
110 4,799,023
4,799,024

CLASS 329

107 4,799,025

CLASS 330

254 4,799,026
267 4,799,027

CLASS 331

57 4,799,028
107 A 4,799,029
117 R 4,799,030

CLASS 333

21 A Re.32,835
22 R 4,799,031
116 4,799,032
134 4,799,033
202 4,799,034
223 4,799,035
260 4,799,036

CLASS 335

46 4,799,037

CLASS 337

379 4,799,038

CLASS 340

333 4,799,039
572 4,799,045
595 4,799,046
618 4,799,047
626 4,799,048
703 4,799,053
709 4,799,049
710 4,799,054
4,799,055
765 4,799,050
799 4,799,056
811 4,799,051
4,799,057
4,799,058
825.06 4,799,043
825.34 4,799,061
825.5 4,799,052
870.03 4,799,059
907 4,799,060

CLASS 341

5 4,799,044
101 4,799,040
118 4,799,042
120 4,799,041

CLASS 342

450 4,799,062

CLASS 343

703 4,799,063
766 4,799,064
779 4,799,065
4,799,066
4,799,067

CLASS 346

1.1 4,799,068
108 4,799,069
159 4,799,070
160 4,799,071

CLASS 350

1.1 4,798,427
3.7 4,798,426
96.11 4,798,434
96.13 4,798,435
96.14 4,798,429
4,798,437
96.15 4,798,436
4,798,438
96.18 4,798,428
96.2 4,798,441
96.20 4,798,430
4,798,431
4,798,432
4,798,439
4,798,440
96.21 4,798,433
4,798,442
96.23 4,798,443
96.24 4,798,444
96.34 4,798,445
162.23 4,798,446
255 4,798,447
345 4,798,448
358 4,798,449
505 4,798,450
522 4,798,451
632 4,798,452

CLASS 351

41 4,798,453
50 4,798,454
51 4,798,455
222 4,798,456
235 4,798,457
242 4,798,458

CLASS 354

76 4,799,072
173.1 4,799,074
195.12 4,799,073
289.1 4,799,075
4,799,076
400 4,799,077
412 4,799,078

CLASS 355

3 DD 4,799,086
7 4,799,080
14 C 4,799,081
14 R 4,799,082
4,799,083
14 SH 4,799,079
4,799,084
27 4,799,085

CLASS 356

124 4,798,460
127 4,798,459
138 4,798,461
152 4,798,462
318 4,798,463
328 4,798,464
336 4,798,465
347 4,798,466
349 4,798,467
351 4,798,468
376 4,798,469
401 4,798,470

CLASS 357

4,799,087
12 4,799,090
4,799,091
16 4,799,088
23.12 4,799,092
23.6 4,799,093
4,799,094
38 4,799,095
42 4,799,096
4,799,097
43 4,799,098
45 4,799,089
50 4,799,099
52 4,799,100
4,799,101

CLASS 358

23 4,799,102
4,799,103
98 4,799,104
160 4,799,105
168 4,799,106
169 4,799,107
213.26 4,799,108
213.28 4,799,109
261.3 4,799,110

CLASS 360

14.3 4,799,111
31 4,799,112
32 4,799,113
59 4,799,114
66 4,799,115
74.1 4,799,116
96.5 4,799,117
123 4,799,119
125 4,799,118
132 4,799,120
133 4,799,121
4,799,122
4,799,123

CLASS 361

42 4,799,124
91 4,799,125
101 4,799,126
321 4,799,127
414 4,799,128
428 4,799,129
437 4,799,130

CLASS 362

61 4,799,131
118 4,799,132
133 4,799,133
217 4,799,134
296 4,799,135
300 4,799,136
309 4,799,137

CLASS 363

21 4,799,138
95 4,799,139

CLASS 364

4,799,140
141 4,799,141
143 4,799,142
191 4,799,143
200 4,799,144
4,799,145
4,799,146
4,799,147
4,799,148
4,799,149
4,799,150
4,799,151
4,799,152
4,799,153
4,799,154
4,799,155
401 4,799,156
422 4,799,157
424.06 4,799,159
424.1 4,799,158
4,799,160
426.01 4,799,161
436 4,799,162

457 4,799,163
487 4,799,165
497 4,799,166
507 4,799,167
4,799,168
510 4,799,169
513 4,799,170
513.5 4,799,171
518 4,799,172
4,799,173
550 4,799,174
552 4,799,175
557 4,799,176
563 4,799,177
565 4,799,178
724.1 4,799,179
724.2 4,799,180
736 4,799,181
748 4,799,182
760 4,799,183
821 4,799,184
900 4,799,185
4,799,186
4,799,187
4,799,188
4,799,189
4,799,190
4,799,191

CLASS 365

49 4,799,192
149 4,799,193
154 4,799,194
185 4,799,195
190 4,799,196
205 4,799,197
221 4,799,198
230 4,799,199

CLASS 366

65 4,798,471
4,798,472
4,798,473
160 4,798,475

CLASS 367

30 4,799,200
41 4,799,201
149 4,799,202

CLASS 368

27 4,799,203
263 4,799,204

CLASS 369

43 4,799,205
44 4,799,206
58 4,799,207
75.2 4,799,209
100 4,799,208
110 4,799,210

CLASS 370

17 4,799,211
4,799,212
4,799,213
32.1 4,799,214
60 4,799,215
67 4,799,216
68.1 4,799,217
4,799,218
94 4,799,219

CLASS 371

25 4,799,220
38 4,799,221
51 4,799,222

CLASS 372

24 4,799,223
38 4,799,224
44 4,799,225
45 4,799,226
4,799,227
4,799,228
50 4,799,229
53 4,799,230
4,799,231
61 4,799,232
70 4,799,233
97 4,799,234

CLASS 374

4,799,235
45 4,798,477

CLASS 375

36 4,799,236
38 4,799,237
4,799,238
4,799,239
110 4,799,240
113 4,799,241
122 4,799,242

CLASS 376

327 4,798,699
338 4,798,700

CLASS 377

4,799,243
4,799,244

CLASS 378

15 4,799,245
4,799,246
4,799,247
114 4,799,248
125 4,799,249
4,799,250

CLASS 379

1 4,799,251
4,799,252
4,799,253
97 4,799,254
189 4,799,255
269 4,799,256

CLASS 380

4,799,257
21 4,799,258
46 4,799,259

CLASS 381

4,799,260
36 4,799,261
43 4,799,262
4,799,263
116 4,799,265
4,799,264
193 4,799,266

CLASS 382

4,799,267
8 4,799,268
27 4,799,269
4,799,270
40 4,799,271

CLASS 384

12 4,798,478
45 4,798,479
4,798,476
114 4,798,480
477 4,798,481
571 4,798,482

CLASS 400

54 4,798,485
120 4,798,483
124 4,798,484
4,798,488
4,798,486
216.1 4,798,489
223 4,798,487
697.1 4,798,490

CLASS 401

39 4,798,491

CLASS 403

223 4,798,492
4,798,493

CLASS 404

4,798,495
114 4,798,494

CLASS 405

53 4,798,496
158 4,798,500
4,798,497
258 4,798,498
4,798,501
261 B1 4,516,885
286 4,798,499

CLASS 406

211 4,798,503

CLASS 409

4,798,504
136 4,798,505
179 4,798,506

CLASS 411

B1 4,518,292
175 4,798,507

CLASS 414

412 4,798,508
563 4,798,509
4,798,510
4,798,511
722 4,798,512

CLASS 415

17 4,798,513
115 4,798,514
4,798,515
121 A 4,798,516
131 4,798,517
211 4,798,518

CLASS 416

191 4,798,519
219 R 4,798,520

CLASS 417

295 4,798,521
363 4,798,522
407 4,798,523

CLASS 420

4,798,701

CLASS 422

4,798,702
4,798,705
65 4,798,703
4,798,704
102 4,798,706
264 4,798,707

CLASS 423

55 4,798,708
63 4,798,709
69 4,798,710
239 4,798,711
315 4,798,712
342 4,798,713
344 4,798,714
478 4,798,715
574 R 4,798,716
647 4,798,718
648.1 4,798,717

CLASS 424

1.1 4,798,719
61 4,798,720
70 4,798,721
72 4,798,722
Re.32,833
93 4,798,723
456 4,798,725
480 4,798,724

CLASS 425

77 4,798,524
4,798,525
113 4,798,526
145 4,798,527
4,798,528
289 4,798,529

CLASS 426

4,798,726
4,798,727
4,798,728
326 4,798,729
432 4,798,730
522 4,798,731
542 4,798,732
4,798,733
565 4,798,734
578 4,798,735
602 4,798,737
656 4,798,736

CLASS 427

2 4,798,738
38 4,798,739
43.1 4,798,740
213.33 4,798,741
240 4,798,742
255 4,798,743
389 9 4,798,744
407.1 4,798,745
4,798,746

CLASS 428

12 4,798,747
15 4,798,748
34.9 4,798,751
36 4,798,752
36.5 4,798,749
36.7 4,798,750
4,798,753
74 4,798,754
87 B1 4,560,604
141 4,798,755
198 4,798,756
4,798,757
213 4,798,758
220 4,798,759
234 4,798,760
272 4,798,761
285 4,798,762
4,798,763
312.6 4,798,764
336 4,798,765
373 4,798,815
404 4,798,766
412 4,798,767
426 4,798,768
4,798,769
547 4,798,770
4,798,771
4,798,772

CLASS 429

12 4,798,774
192 4,798,773

CLASS 430

39 4,798,776
4,798,777
115 4,798,778
202 4,798,779
264 4,798,780
270 4,798,781
4,798,782
372 4,798,783
382 4,798,784
495 4,798,785
569 4,798,775

CLASS 431

4,798,531
354 4,798,530

CLASS 432

4,798,532
210 4,798,533
227 4,798,534

CLASS 433

4,798,535
101 4,798,536
212.1 4,798,537

CLASS 434

90 4,798,538
262 4,798,539
319 4,798,543
323 4,798,787

CLASS 435

7 4,798,790
4,798,788
4,798,789
4,798,791
119 4,798,792
134 4,798,793
177 4,798,786
4,798,795
212 4,798,796
235 4,798,797
239 4,798,798
254 4,798,799
273 4,798,800
313 4,798,801
4,798,802

CLASS 436

52 4,798,803
94 4,798,804
157 4,798,805
4,798,806
4,798,807

CLASS 437

4,798,808
4,798,809
29 4,798,810
41 4,798,794
119 4,798,812

CLASS 439

22 4,798,540
67 4,798,541
188 4,798,542
4,798,544
677 4,798,545
830 4,798,546

CLASS 440

66 4,798,547
78 4,798,548

CLASS 441

74 4,798,549
129 4,798,550
130 4,798,551

CLASS 445

4,798,552

CLASS 446

99 4,798,553
222 4,798,554
310 4,798,555
391 4,798,556

CLASS 450

31 4,798,557
4,798,502

CLASS 453

32 4,798,558

CLASS 464

38 4,798,559
178 4,798,560

CLASS 474

28 4,798,561
101 4,798,562
110 4,798,563
134 4,798,564
158 4,798,565
238 4,798,566
242 4,798,567
4,798,568
255 4,798,569

CLASS 493

44 4,798,570
114 4,798,571
195 4,798,572
196 4,798,576
204 4,798,573
267 4,798,574
338 4,798,581
346 4,798,575

CLASS 494

18 4,798,579
67 4,798,577

CLASS 501

4,798,814

CLASS 502

60 4,798,813
62 4,798,816
217 4,798,817
228 4,798,818
304 4,798,819

CLASS 503

4,798,820

CLASS 514

4,798,821
11 4,798,823
60 4,798,824
65 4,798,825
159 4,798,811
183 4,798,827
192 4,798,828
214 4,798,829
221 4,798,826
253 4,798,831
258 4,798,832
262 4,798,833
288 4,798,834
314 4,798,830
342 4,798,838
351 4,798,839
356 4,798,840
357 4,798,841
369 4,798,835
381 4,798,842
392 4,798,843
399 4,798,844
400 4,798,845
594 4,798,837
731 4,798,846

CLASS 521

50 4,798,847
89 4,798,848
114 4,798,849
134 4,798,850
137 4,798,851

CLASS 522

96 4,798,852

CLASS 523

173 4,798,853
334 4,798,854
435 4,798,855

CLASS 524

89 4,798,836
93 4,798,857
4,798,858
310 Re.32,834
386 4,798,856
409 4,798,860
413 4,798,863
458 4,798,861
783 4,798,862

CLASS 525

7 4,798,859
71 4,798,864
92 4,798,865
191 4,798,866
196 4,798,867
207 4,798,868
305 4,798,869
327.1 4,798,870
328.2 4,798,871
333.7 4,798,873
425 4,798,874
444 4,798,875
4,798,876
531 4,798,877

CLASS 528

28 4,798,878
45 4,798,879
63 4,798,880
73 4,798,881
190 4,798,882
272 4,798,883
491 4,798,884

CLASS 530

350 4,798,885
416 4,798,886

CLASS 534

637 4,798,887

CLASS 536

123 4,798,888

CLASS 540

358 4,798,890
472 4,798,891

CLASS 544

41 4,798,895
146 4,798,892
215 4,798,893
277 4,798,894

CLASS 546

15 4,798,822
4,798,896
139 4,798,897

CLASS 548

146 4,798,898
262 4,798,899
461 4,798,900
562 4,798,901

CLASS 556

4,798,902
401 4,798,889
432 4,798,903

CLASS 558

4,798,872
254 4,798,904

CLASS 560

4,798,905

CLASS 562

583 4,798,907

CLASS 564

153 4,798,908
334 4,798,909
497 4,798,910

CLASS 568

614 4,798,906
637 4,798,912
747 4,798,911

CLASS 570

211 4,798,913
226 4,798,914

CLASS 585

4,798,915

CLASS 604

4,798,578
4,798,580
47 4,798,582
48 4,798,583
49 4,798,592
93 4,798,584
4,798,585
96 4,798,586
110 4,798,587
122 4,798,588
152 4,798,589
153 4,798,590
164 4,798,591
4,798,593
167 4,798,594
174 4,798,595
218 4,798,596
270 4,798,597
280 4,798,598
290 4,798,599
347 4,798,600
4,798,601
372 4,798,602
378 4,798,603
383 4,798,604
411 4,798,605

CLASS 623

1 4,798,606
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66 4,798,611

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CLASSIFICATION OF DESIGNS

D2—	261	299,380		531	299,397		105	299,414			299,431		123	299,448			299,461
	318	299,381		540	299,398		302	299,415			299,432	D15—	125	299,449	D15—	130	299,466
	320	299,382		545	299,399			299,416			299,433			299,450		131	299,467
	605	299,383		572	299,400			299,417		435	299,434	D14—		299,463		141	299,468
D3—	53	299,384	D7—	43	299,401		323	299,418	D10—	46	299,435			299,464			299,469
	100	299,385		73	299,402		329	299,419			299,436		114	299,465	D17—	20	299,453
D4—	104	299,386		98	299,403			299,420			299,437		135	299,452	D19—	43	299,470
D6—	335	299,387		101	299,404		331	299,421			299,438		147	299,462		49	299,471
	349	299,388		105	299,405		353	299,422		75	299,439		151	299,456		60	299,472
	407	299,389		332	299,406		373	299,423		77	299,440			299,458			299,473
	436	299,390		367	299,407		499	299,424	D11—	152	299,441			299,459		76	299,474
	440	299,391			299,408			299,425		153	299,442			299,460		78	299,475
	479	299,392	D8—	1	299,409	D9—	368	299,426			299,443						299,476
	503	299,393		52	299,410		370	299,427			299,444		158	299,451			
	510	299,394		68	299,411		373	299,428			299,445		205	299,454			299,477
	511	299,395		76	299,412		413	299,429	D12—	110	299,446		240	299,455			299,478
	522	299,396		97	299,413		433	299,430			299,447		242	299,457	D22—	199	299,479

CLASSIFICATION OF PLANTS

P.—	2	6,548	41	6,541		6,544	69	6,533		6,536	88	6,537
	7	6,546		6,542	42	6,540		6,534				
	10	6,547		6,543	51	6,539		6,535	74	6,545		6,538

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
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Guam	14	New Jersey	34	West Virginia	54
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,798,510		4,798,460		4,799,260		4,798,533		4,798,735	25 :	4,798,016
	4,798,786		4,798,462		4,798,090		4,798,586		4,798,751		4,798,054
02 :	4,798,390		4,798,467		4,798,091		4,798,594		4,798,798		4,798,094
	4,798,494		4,798,473		4,798,207		4,798,606		4,798,825		4,798,135
04 :	4,797,968		4,798,497		4,798,234		4,798,667		4,798,852		4,798,173
	4,798,119		4,798,507		4,798,289		4,798,698		4,798,860		4,798,198
	4,798,319		4,798,523		4,798,364		4,798,747		4,798,892		4,798,212
	4,798,320		4,798,541		4,798,465		4,798,945		4,798,934		4,798,213
	4,798,629		4,798,549		4,798,537		4,798,986		4,798,975		4,798,240
	4,798,707		4,798,557		4,798,566		4,799,035		4,799,176		4,798,326
	4,798,936		4,798,579		4,798,754		4,799,063		4,799,245		4,798,360
	4,799,134		4,798,584		4,799,007	13 :	4,798,176		4,799,248		4,798,382
	4,799,159		4,798,589		4,799,023		4,798,232		4,799,249		4,798,437
	4,799,189		4,798,592		4,799,140		4,798,346		4,799,253		4,798,588
05 :	4,798,273		4,798,611		4,799,242		4,798,353	18 :	4,797,954		4,798,643
06 :	Re.32,835		4,798,612		4,799,255		4,798,379		4,798,021		4,798,874
	4,797,952		4,798,645		4,797,998		4,798,570		4,798,052		4,798,932
	4,797,995		4,798,649		4,798,112		4,798,603		4,798,111		4,798,935
	4,798,011		4,798,660		4,798,172		4,798,630		4,798,312		4,798,954
	4,798,022		4,798,668		4,798,223		4,798,644		4,798,369		4,798,959
	4,798,053		4,798,685		4,798,261		4,798,757		4,798,394		4,799,006
	4,798,065		4,798,711		4,798,303		4,798,766		4,798,569		4,799,055
	4,798,069		4,798,727		4,798,318		4,799,052		4,798,577		4,799,077
	4,798,106		4,798,738		4,798,344		4,799,264		4,798,834		4,799,145
	4,798,113		4,798,774		4,798,409	15 :	4,798,184		4,798,858		4,799,147
	4,798,121		4,798,787		4,798,519	16 :	4,798,362		4,799,000		4,799,173
	4,798,141		4,798,789		4,798,722		4,798,968		4,799,107		4,799,181
	4,798,153		4,798,795		4,798,835	17 :	4,798,013		4,799,126		4,799,187
	4,798,159		4,798,804		4,798,951		4,798,034		4,799,178		4,799,192
	4,798,190		4,798,807		4,799,039		4,798,040	19 :	4,798,492		4,799,217
	4,798,203		4,798,808		4,799,144		4,798,086		4,798,571		4,799,222
	4,798,216		4,798,810		4,799,172		4,798,093	20 :	4,798,690		4,799,247
	4,798,264		4,798,816		4,799,200		4,798,099	21 :	4,797,961		4,799,254
	4,798,298		4,798,885		4,799,202		4,798,116		4,798,308		4,799,262
	4,798,301		4,798,942		4,799,239		4,798,196		4,798,425		4,799,268
	4,798,305		4,798,949		4,799,243		4,798,205		4,798,802	26	Re.32,830
	4,798,334		4,798,952	10 :	4,798,621		4,798,245	22 :	4,798,020		4,797,987
	4,798,343		4,798,958		4,798,653		4,798,323		4,798,185		4,798,008
	4,798,356		4,798,972		4,798,792		4,798,325		4,798,285		4,798,035
	4,798,361		4,799,026		4,798,896		4,798,359		4,798,508		4,798,076
	4,798,376		4,799,028		4,798,902		4,798,377		4,798,688		4,798,100
	4,798,381		4,799,049	12 :	4,797,965		4,798,438		4,798,803		4,798,130
	4,798,385		4,799,065		4,797,992		4,798,455		4,798,856		4,798,149
	4,798,387		4,799,100		4,798,007		4,798,464		4,798,894		4,798,187
	4,798,408		4,799,132		4,798,048		4,798,502		4,798,900		4,798,208
	4,798,414		4,799,142		4,798,061		4,798,540		4,799,062		4,798,221
	4,798,431		4,799,150		4,798,137		4,798,543	24 :	4,797,969		4,798,233
	4,798,433		4,799,155		4,798,138		4,798,548		4,798,210		4,798,290
	4,798,441		4,799,223		4,798,262		4,798,551		4,798,313		4,798,306
	4,798,446		4,799,230		4,798,328		4,798,574		4,798,791		4,798,330
	4,798,452		4,799,231		4,798,372		4,798,581		4,798,931		4,798,527
	4,798,454		4,799,233		4,798,419		4,798,665		4,798,955		4,798,539
	4,798,456		4,799,259		4,798,520		4,798,673		4,799,270		4,798,545

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	4,798,560		4,798,553		4,798,790		4,798,647		4,798,749		4,799,045
	4,798,564		4,798,582		4,798,928		4,798,657		4,798,764		4,799,053
	4,798,572		4,798,597		4,798,976		4,798,661		4,798,778		4,799,091
	4,798,655		4,798,610		4,798,985		4,798,675		4,798,817		4,799,099
	4,798,659		4,798,619		4,799,005		4,798,679		4,798,831		4,799,157
	4,798,713		4,798,641		4,799,034		4,798,684		4,798,868		4,799,199
	4,798,763		4,798,670		4,799,071		4,798,715		4,798,871		4,799,216
	4,798,818		4,798,672		4,799,083		4,798,872		4,798,893		4,799,261
	4,798,841		4,798,730		4,799,095		4,798,879		4,798,998	49 :	4,797,956
	4,798,877		4,798,771		4,799,105		4,798,881		4,799,060		4,798,195
	4,798,889		4,798,799		4,799,124		4,798,883		4,799,152		4,798,215
	4,798,956		4,798,806		4,799,130		4,798,907		4,799,174		4,798,244
	4,799,158		4,798,812		4,799,156		4,798,995		4,799,185		4,798,292
27 :	4,798,025		4,798,821		4,799,201		4,799,067		4,516,885		4,798,309
	4,798,062		4,798,823		4,799,203		4,799,171		4,518,292		4,798,637
	4,798,088		4,798,842		4,799,220	40 :	4,798,150	44 :	4,798,386		4,799,054
	4,798,089		4,798,864		4,799,269		4,798,398	45 :	4,797,955	51 :	4,798,032
	4,798,171		4,798,876	37 :	4,797,967		4,798,666		4,798,191		4,798,036
	4,798,197		4,798,904		4,798,152		4,798,716		4,798,200		4,798,085
	4,798,248		4,798,923		4,798,170		4,798,801		4,798,399		4,798,304
	4,798,403		4,798,978		4,798,227		4,798,863		4,798,760		4,798,327
	4,798,503		4,798,979		4,798,258		4,799,041		4,798,815		4,798,365
	4,798,608	35 :	Re.32,831		4,798,506		4,799,112		4,799,251		4,798,880
	4,798,609		4,798,002		4,798,568	41 :	4,798,005	46 :	4,798,916		4,799,153
	4,798,642		4,798,019		4,798,737		4,798,193	47 :	4,798,142		4,799,163
	4,798,814		4,799,097		4,798,839		4,798,217		4,798,267		4,497,520
	4,799,059		4,799,211		4,798,940		4,798,918		4,798,294	53 :	4,798,009
	4,799,119	36 :	4,797,960		4,799,061		4,798,943		4,798,720		4,798,051
	4,799,128		4,797,988		4,799,115		4,799,020		4,798,830		4,798,056
	4,799,131		4,798,017	39 :	4,797,974		4,799,164		4,798,911		4,798,108
	4,799,137		4,798,038		4,797,989		4,799,165		4,799,036		4,798,151
	4,799,210		4,798,041		4,798,028	42 :	Re.32,833	48 :	4,797,953		4,798,224
28	4,798,118		4,798,066		4,798,033		4,797,957		4,797,962		4,798,293
	4,798,363		4,798,075		4,798,055		4,797,977		4,798,029		4,798,562
	4,799,169		4,798,097		4,798,070		4,797,994		4,798,081		4,798,599
29 :	4,798,031		4,798,103		4,798,077		4,797,999		4,798,092		4,799,167
	4,798,175		4,798,162		4,798,102		4,798,047		4,798,158		4,799,168
	4,798,307		4,798,265		4,798,109		4,798,080		4,798,199		4,799,177
	4,798,342		4,798,282		4,798,126		4,798,147		4,798,243	54 :	4,798,279
	4,798,546		4,798,286		4,798,129		4,798,368		4,798,246		4,798,865
	4,798,578		4,798,317		4,798,134		4,798,402		4,798,247	55 :	Re.32,834
	4,798,702		4,798,366		4,798,214		4,798,440		4,798,474		4,798,014
	4,798,922		4,798,401		4,798,275		4,798,526		4,798,500		4,798,241
	4,799,136		4,798,420		4,798,276		4,798,542		4,798,677		4,798,269
30 :	4,798,043		4,798,430		4,798,283		4,798,547		4,798,750		4,798,350
32 :	4,798,060		4,798,534		4,798,291		4,798,580		4,798,761		4,798,378
	4,798,078		4,798,555		4,798,297		4,798,600		4,798,819		4,798,388
34 :	4,797,963		4,798,590		4,798,341		4,798,616		4,798,849		4,798,407
	4,798,000		4,798,634		4,798,395		4,798,623		4,798,853		4,798,413
	4,798,107		4,798,674		4,798,412		4,798,638		4,798,870		4,798,424
	4,798,204		4,798,676		4,798,428		4,798,683		4,798,908		4,798,478
	4,798,222		4,798,678		4,798,444		4,798,699		4,798,910		4,798,512
	4,798,278		4,798,687		4,798,469		4,798,706		4,798,937		4,798,729
	4,798,322		4,798,701		4,798,515		4,798,708		4,798,971		4,798,824
	4,798,352		4,798,705		4,798,544		4,798,719		4,798,973		4,798,939
	4,798,405		4,798,712		4,798,554		4,798,741		4,799,019		4,799,001
	4,798,423		4,798,725		4,798,556		4,798,745		4,799,030		4,799,016
	4,798,448		4,798,753		4,798,633		4,798,746		4,799,044		4,799,103
	4,798,536		4,798,785		4,798,640						

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	299,386		299,459	18 :	299,393	34 :	299,428	39 :	299,390	55 :	299,389
	299,388		299,460		299,396	35 :	299,479		299,399		299,411
	299,405		299,462	20 :	299,469	36 :	299,384		299,466		299,422
	299,412	10 :	299,404	25 :	299,382		299,402	42 :	299,397		299,424
	299,423	12 :	299,436		299,394		299,437		299,398		299,425
	299,448		299,438	26 :	299,409		299,453		299,400		299,474
08 :	299,414	13 :	299,392	27 :	299,391		299,472	44 :	299,406		299,477
09 :	299,385	17 :	299,383		299,395		299,473	48 :	299,387		299,478
	299,413		299,427	29 :	299,401		299,476		299,434		

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06 :	6,541	6,543	6,548	39 :	6,537		
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226-863 O.G.-89-1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Oct. 26, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 21, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,564,956 through 4,566,135
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 19, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,310,925 through 4,312,075
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 6, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,480,350	06/483,038	11/6/84
4,480,352	06/472,938	11/6/84
4,480,358	06/446,587	11/6/84
4,480,359	06/454,322	11/6/84
4,480,364	06/519,823	11/6/84
4,480,373	06/423,655	11/6/84
4,480,382	06/401,313	11/6/84
4,480,384	06/351,098	11/6/84
4,480,387	06/341,783	11/6/84
4,480,388	06/490,561	11/6/84
4,480,389	06/512,903	11/6/84
4,480,395	06/440,836	11/6/84
4,480,397	06/503,863	11/6/84
4,480,400	06/503,785	11/6/84
4,480,401	06/460,896	11/6/84
4,480,402	06/300,614	11/6/84
4,480,403	06/518,198	11/6/84
4,480,405	06/394,931	11/6/84
4,480,410	06/418,280	11/6/84
4,480,415	06/389,488	11/6/84
4,480,416	06/437,462	11/6/84
4,480,417	06/289,144	11/6/84
4,480,421	06/349,528	11/6/84
4,480,429	06/476,590	11/6/84
4,480,430	06/447,982	11/6/84
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4,480,463	06/359,913	11/6/84
4,480,470	06/383,716	11/6/84
4,480,471	06/368,766	11/6/84
4,480,474	06/448,825	11/6/84
4,480,477	06/387,148	11/6/84
4,480,481	06/468,462	11/6/84
4,480,488	06/466,941	11/6/84
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4,480,529	06/289,206	11/6/84
4,480,532	06/338,741	11/6/84
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4,480,551	06/502,403	11/6/84
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4,480,660	06/400,961	11/6/84
4,480,662	06/382,607	11/6/84
4,480,668	06/447,686	11/6/84
4,480,670	06/221,148	11/6/84
4,480,680	06/520,749	11/6/84
4,480,681	06/412,491	11/6/84
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4,481,447	06/390,107	11/6/84
4,481,468	06/363,525	11/6/84
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REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,611,099, Re. S.N. 276,426, Filed Nov. 23, 1988, Cl. 379/24, CABLE ANALYZER WITH D.C. FUNCTIONS, Jimmy C. Ray, Owner of Record: *Communications Technology Corp., Dallas, Tex.*, Attorney or Agent: Carl A. Rankin, Ex. Gp.: 261

4,658,828, Re. S.N. 276,431, Filed Nov. 22, 1988, Cl. 128/660, APPARATUS FOR EXAMINING AND LOCALIZING TUMORS USING ULTRA SOUNDS COMPRISING A DEVICE FOR LOCALIZED HYPERTHERMIA TREATMENT, Jacques Dory, Owner of Record: *Inventor,* Attorney or Agent: William Drucker, Ex. Gp.: 335

4,724,318, Re. S.N. 273,354, Filed Nov. 16, 1988, Cl. 250/306, ATOMIC FORCE MICROSCOPE AND METHOD FOR IMAGINE SURFACES WITH ATOMIC RESOLUTION, Gerd K. Binnig, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Henry E. Otto, Jr., Ex. Gp.: 256

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,780,189, Reexam. No. 90/001,661, Requested: Dec. 8, 1988, Cl. 426/477, SWEETENING COMPOSITIONS AND METHOD FOR USE THEREIN, Don Scott, Owner of Record: *Nutra Sweet Co., Deerfield, Ill.,* Attorney or Agent: John Sanders, Ex. Gp.: 130, Requester: Holland Sweetner Co.

4,369,850, Reexam. No. 90/001,663, Requested: Dec. 12, 1988, Cl. 175/393.000, HIGH PRESSURE FLUID JET CUTTING AND DRILLING APPARATUS, Clark R. Barker, Owner of Record: *Curators of the University of Missouri, Columbia, Mo.,* Attorney or Agent: Ray E. Snyder, Ex. Gp.: 350, Requester: Valley Systems Inc., Canal Fulton, Ohio

4,719,920, Reexam. No. 90/001,662, Requested: Dec. 8, 1988, Cl. 128/419.0 PG, EXERCISE RESPONSIVE RATE-ADAPTIVE CARDIAC PACEMAKER, Richard Alt, et al., Owner of Record: *Intermedics Inc., Angleton, Tex.,* Attorney or Agent: Richard J. Egan, Ex. Gp.: 330, Requester: Cook Pacemaker Corp., Leechburg, Pa.

Patent Terms Extended Under 35 USC 156

Certificates extending the terms of the following patents were issued on Dec. 28, 1988.

Reissue Patent Re. 30,910, granted Apr. 20, 1982 to Alan H. Weigand, Owner of Record: Ciba-Geigy Corp., Title: REDUCING CHOLESTEROL LEVELS, Classification: 514–182, Product Trade Name: Deursil, Term Extended: 2 years

Patent No. 3,896,145, granted July 22, 1975 to Leo Berger, et al., Owner of Record: Hoffmann-La Roche Inc., Title: CARBAZOLES, Classification: 548–444, Product Trade Name: Rimadyl, Term Extended: 2 years

Patent No. 4,071,536, granted Jan. 31, 1978 to Kevin D. Barrow, et al., Owner of Record: Beecham Group p.l.c., Title: ANTIBIOTICS, Classification: 549–414, Product Trade Name: Bactroban, Term Extended: 2 years

Patent No. 4,278,689, granted July 14, 1981 to Keith C. Murdock, et al., Owner of Record: American Cyanamid Co., Title: 1,4-BIS(SUBSTITUTED-AMINO) - 5, 8 - DIHYDROXYANTHRAQUINONES AND LEUCO BASES THEREOF, Classification: 514–656, Product Trade Name: Novantrone, Term Extended: 2 years

Patent No. 4,284,647, granted Aug. 18, 1981 to Saul W. Brusilow, et al., Owner of Record: The John Hopkins University, Title: PROCESS FOR WASTE NITROGEN REMOVAL, Classification: 514–568, Product Trade Name: Ucephan, Term Extended: 2 years

Patent No. 4,298,607, granted Nov. 3, 1981 to Hideaki Natsugari, et al., Owner of Record: Takeda Chemical Industries, Ltd., Title: CRYSTALLINE SALT OF 7B-[2-AMINOTHIAZOL-4-YL)-(Z)-2-METHOWY-IMINOACETAMIDO] - 3 - [(1-METHYL-1H-TETRAZOL - 5 - YL)THIOMETHYL]CEPH - 3-EM - 4-CARBOXYLIC ACID AND HCL OR HBR, Classification: 514–206, Product Trade Name: Cefmax, Term Extended: 2 years

Patent No. 4,313,951, granted Feb. 2, 1982 to George Y. Lesher, et al., Owner of Record: Sterling Drug Inc., Title: 3-SUBSTITUTED-6-(LOWER-ALKYL)-5-(PYRIDINYL)-2-(1H)-PYRIDINONES, THEIR CARDIOTONIC USE AND INTERMEDIATES THEREOF, Classification: 514–334, Product Trade Name: Corotrope, Term Extended: 2 years

Patent No. 4,314,081, granted Feb. 2, 1982 to Bryan B. Molloy, et al., Owner of Record: Eli Lilly and Co., Title: ARYLOXYPHENYLPROPYLAMINES, Classification 564–347, Product Trade Name: Prozac, Term Extended: 2 years

Patent No. 4,358,449, granted Nov. 9, 1982 to Jan Heeres, et al., Owner of Record: Janssen Pharmaceutica N.V., Title: 1-(1,3-DIOXOLAN-2-YLMETHYL)-1H-1,2,4-TRIAZOLES AND COMPOSITIONS, Classification: 514–236.2, Product Trade Name: Terazol, Term Extended: 2 years

Patent No. 4,360,511, granted Nov. 23, 1982 to Ronald M. Baldwin, et al., Owner of Record: Medi-Physics, Inc., Title: AMINES USEFUL AS BRAIN IMAGING AGENTS, Classification: 424–1.1, Product Trade Name: Spectamine, Term Extended: 2 years

Patent No. 4,374,829, granted Feb. 22, 1983 to Elbert E. Harris, et al., Owner of Record: Merck & Co., Inc., Title: AMINOACID DERIVATIVES AS ANTIHYPERTENSIVES, Classification: 514–21, Product Trade Name: Prinivil, Term Extended: 676 days

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PATENT NOTICES

Certificates of Correction for the Week of Jan. 17, 1989

Re. 32,475	4,717,760	4,750,079	4,764,199
Re. 32,742	4,718,025	4,750,892	4,765,379
D. 297,452	4,720,677	4,752,078	4,765,764
4,486,118	4,720,716	4,752,375	4,766,025
4,516,330	4,720,912	4,752,445	4,766,030
4,529,669	4,721,952	4,752,488	4,766,147
4,550,584	4,722,003	4,753,304	4,766,216
4,580,407	4,723,173	4,753,845	4,766,228
4,610,382	4,725,663	4,754,600	4,766,594
4,618,813	4,726,891	4,754,805	4,766,761
4,620,238	4,727,549	4,755,013	4,767,071
4,622,422	4,729,440	4,755,174	4,767,085
4,623,786	4,729,577	4,755,947	4,767,152
4,633,315	4,729,919	4,756,044	4,767,205
4,638,741	4,732,727	4,756,341	4,767,206
4,639,602	4,733,591	4,757,002	4,767,212
4,644,670	4,734,334	4,757,042	4,767,314
4,651,688	4,735,702	4,757,485	4,767,383
4,652,122	4,735,788	4,757,573	4,767,776
4,660,214	4,736,770	4,758,097	4,767,891
4,661,916	4,736,793	4,758,340	4,768,008
4,664,599	4,737,432	4,758,608	4,768,409
4,670,540	4,738,811	4,759,805	4,768,468
4,673,213	4,739,420	4,759,944	4,768,675
4,675,424	4,740,440	4,760,051	4,768,695
4,681,610	4,742,070	4,760,060	4,768,947
4,684,942	4,743,154	4,760,119	4,769,348
4,685,398	4,743,493	4,760,142	4,769,371
4,688,972	4,743,660	4,760,524	4,769,601
4,691,171	4,744,679	4,760,820	4,769,607
4,698,496	4,744,732	4,761,220	4,769,942
4,699,624	4,744,828	4,761,394	4,770,061
4,700,966	4,745,414	4,761,506	4,770,103
4,701,671	4,746,632	4,761,676	4,770,387
4,703,864	4,746,936	4,762,083	4,770,717
4,705,191	4,747,100	4,762,221	4,770,797
4,705,982	4,747,123	4,762,812	4,771,222
4,706,182	4,747,902	4,762,994	4,771,493
4,708,767	4,747,977	4,763,051	4,771,614
4,712,169	4,748,111	4,763,059	4,772,373
4,712,601	4,748,285	4,763,357	4,772,511
4,713,717	4,748,506	4,764,007	4,776,682
4,716,879	4,749,495	4,764,040	4,777,449

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PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 17, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-17-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-15-85
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-28-87
DESIGN, GROUP 290—K. L. CAGE, Director	1-17-86
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	11-10-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	7-7-87
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	1-20-87
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-22-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during December 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,624,839 to 3,631,538, inclusive
Plant Patents . . . . . None

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REEXAMINATIONS

JANUARY 24, 1989

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,826,379 (997th)

METHOD AND MEANS FOR REDUCING THE EFFECT OF ELECTROSTATIC CHARGES ON PAPER IN A COPYING SYSTEM

Wayne E. Wright, 167 Wooded La., Villanova, Pa. 19085

Reexamination Request No. 90/001,403, Dec. 22, 1987.

Reexamination Certificate for Patent No. 3,826,379, issued Jul. 30, 1974, Ser. No. 336,816, Feb. 28, 1973.

Int. Cl.[4] B65H *31/02*

U.S. Cl. 271—208



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

New claims **7–22** are added and determined to be patentable.

1. A device to be used with a sheet stacking means which is associated with a sheet transport means and wherein sheets to be stacked therein hold electrostatic charges thereon comprising in combination: first electrical conducting means formed to wipe a sheet passing thereunder and disposed along said sheet transport means so as to wipe one surface of a sheet passing therealong; means connecting said first electrical conducting means to a first voltage potential source in order to cause electrical current to flow in response to a sheet being wiped by said first electrical conducting means; said means to hold sheets at rest to a second voltage potential source whereby charges are induced on said means to hold sheets at rest in response to the approach of a sheet which has been wiped by said first electrical conducting means so that the electrostatic attraction between charges remaining on a sheet approaching said means to hold sheets at rest and said induced charges positively urges said sheets toward said means to hold sheets at rest.

New claims **6** and **7** are added and determined to be patentable.

4. The barrette of claim **1** wherein the swivel means comprise a shaft extending from an end of one of the rib-like members, the shaft terminating in a ball, the other of the rib-like members having a slot formed in an end thereof and having depressions formed in the walls of the slot for receiving the ball, thereby to allow the rib-like members to swivel relative to each other.



B1 3,998,233 (998th)

BARRETTE WITH SWIVELED HINGE

Irene M. Dorr, 3819 Arbutus Ave., Baltimore, Md. 21207

Reexamination Request No. 90/001,128, Nov. 14, 1986.

Reexamination Certificate for Patent No. 3,998,233, issued Dec. 21, 1976, Ser. No. 615,525, Sep. 22, 1975.

Int. Cl.[4] A45D *8/24*

U.S. Cl. 132—48 A

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **3** are cancelled.

Claims **2** and **5** are determined to be patentable as amended.

Claim **4**, dependent on an amended claim, is determined to be patentable.

B1 4,101,703 (999th)

COATED CEMENTED CARBIDE ELEMENTS

Wilfried Schintlmeister, Reutte, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Reexamination Request No. 90/001,323, Sep. 3, 1987.

Reexamination Certificate for Patent No. 4,101,703, issued Jul. 18, 1978, Ser. No. 571,695, Apr. 25, 1975.

Continuation of Ser. No. 329,128, Feb. 2, 1973, abandoned. This application Sep. 3, 1987, Ser. No. 571,695

Claims priority, application Austria, Feb. 4, 1972, 896/72; Jul. 21, 1972, 6317/72

Int. Cl.[4] B22F *3/00;* **B32B** *9/04, 15/04*

U.S. Cl. 428—552

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** is confirmed.

New claims **20–24** are added and determined to be patentable.

1. An article of manufacture comprising a hard metal or sintered carbide substrate and an adherent wear-resistant multilayer coating, the composition of said coating varying through its depth or thickness, wherein

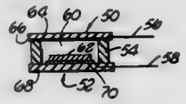
the substrate has carbon disposed in a region adjacent the surface thereof, said region being formed by carburizing said substrate to increase its carbon content,

the coating layer adjacent the carburized surface comprises titanium carbide formed by reacting the carburized surface with a gaseous mixture comprising titanium halide, a hydrocarbon gas and hydrogen, and

the coating layer overlying the titanium carbide layer comprises titanium nitride formed by reacting the surface of the titanium carbide layer with a gaseous mixture comprising a nitrogen compound, titanium halide and hydrogen.

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B1 4,314,227 (1000th)
ELECTRONIC PRESSURE SENSITIVE TRANSDUCER APPARATUS
Franklin N. Eventoff, 2351 Lakeview Ave., Los Angeles, Calif. 90039
Reexamination Request No. 90/001,431, Feb. 2, 1988.
Reexamination Certificate for Patent No. 4,314,227, issued Feb. 2, 1982, Ser. No. 78,323, Sep. 24, 1979.
Int. Cl.[4] H01C *10/10*
U.S. Cl. **338—99**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. A pressure responsive analog transducer comprising:
a first contact;
a second contact;
at least one semiconducting layer comprising at least a pressure sensitive semiconductor particulate material, the semiconducting layer disposed in normally spaced relationship with at least one of the first and second contacts, the semiconducting layer having a surface positioned in normally non-electically-conducting relationship with at least one of the first and second contacts, the surface having a multiplicity of microprotrusions extending therefrom, each providing a minute contact location, at least one of the first contact, second contact and semiconducting layer being resiliently responsive to an external pressing force for causing the multiplicity of microprotrusions extending from the surface of the semiconducting layer and at least one of the first and second contacts to variably press against one another to define a variably electrically resistive junction so that electricity conducts between the first and second contacts through the minute contact location of the microprotrusions on the surface so that the resistance across the variably electrically resistive junction decreases in response to an increase in the external pressing force and increases in response to a decrease in the external pressing force.

B1 4,514,473 (1001st)
METHOD OF MANUFACTURING AN ELECTRODE FOR AN ELECTROCHEMICAL CELL, AND AN ELECTRODE MANUFACTURED BY THE METHOD
John Atkin, St Médard en Jalles, and Marie-Thérèse Loustau, Bordeaux, both of France, assignors to Societe Anonyme Dite: SAFT, Romainville, France
Reexamination Request No. 90/001,449, Feb. 18, 1988.
Reexamination Certificate for Patent No. 4,514,473, issued Apr. 30, 1985, Ser. No. 575,566, Jan. 31, 1984.
Claims priority, application France, Feb. 8, 1983, 83 01923
Int. Cl.[4] H01M *4/36, 4/56;* **H05B** *5/00*
U.S. Cl. **429—221**

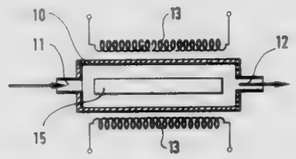
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2**, **3**, **8** and **9** are cancelled.

Claims **1**, **4** and **10** are determined to be patentable as amended.

Claims **5–7** and **11–13**, dependent on an amended claim, are determined to be patentable.

1. A method of manufacturing an electrode for an electrochemical cell, said electrode comprising an active material and a conductive metal powder, the method comprising the steps of:
preparing an intimate mixture of said *conductive metal* powder and said active material in granular form; **[**and**]**



integrating said intimate mixture with a metallic current collector; and
passing the *integrated* mixture *and, current collector* through **[**a pulsed**]** *an* alternating magnetic field, *induced by trains of current pulses in an inductor* for *exposure to a plurality of pulse trains separated by intervals, the frequency of said pulses lying between about 1 MHz and about 10 MHz,* the **[**pulse**]** duration *of each pulse train being greater than 0.05 second* and the interval between **[**pulses**]** *successive pulse trains* being **[**selected**]** *at least equal to the duration of one pulse train, such as* to heat the conductive metal powder sufficiently to sinter the powder without deteriorating the grains of active material.

B1 4,565,727 (1002nd)
NON-WOVEN ACTIVATED CARBON FABRIC
Robert D. Giglia, Rye, N.Y., and Edward A. Battistelli, Stratford, Conn., assignors to American Cyanamid Co., Stamford, Conn.
Reexamination Request No. 90/001,420, Jan. 11, 1988.
Reexamination Certificate for Patent No. 4,565,727, issued Jan. 21, 1986, Ser. No. 725,527, Apr. 23, 1985.
Int. Cl.[4] B32B *5/16, 7/14, 31/00*
U.S. Cl. **428—172**

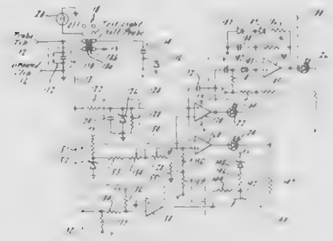
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–4** dependent on an amended claim, are determined to be patentable.

1. An air and water vapor permeable, toxic vapor absorptive, non-woven fabric material comprising a wet-laid sheet containing fibrillated acrylic fiber, activated carbon fiber and activated carbon particles *having a particle size ranging from about 0.1 μm to about 100 μm,* wherein the concentration of fibrillated acrylic fiber ranges from about 5–25% by weight based on the total weight of fibers and particles, the concentration of activated carbon fiber ranges from about 10–75% by weight, same basis, and the concentration of activated carbon particles ranges from about 15–80% by weight, same basis.

B1 4,634,971 (1003rd)
PORTABLE HAND-HELD VOLTAGE SENSOR WITH MANUALLY ADJUSTABLE REFERENCE VOLTAGE FOR COMPARISON WITH SENSED VOLTAGE
Robert C. Johnson, Dearborn; David L. Perry, Canton, and Bernd E. Peitsch, Sterling Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Reexamination Request No. 90/001,371, Nov. 16, 1987.
Reexamination Certificate for Patent No. 4,634,971, issued Jan. 6, 1987, Ser. No. 429,415, Sep. 30, 1982.
Int. Cl.[4] G01R *19/165, 15/08*
U.S. Cl. **324—133**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

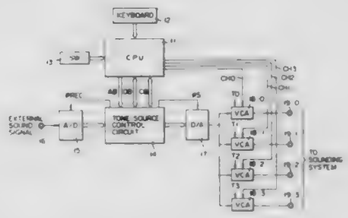
Claims **2** and **3** are cancelled.

Claims **1** and **4** are determined to be patentable as amended.

Claims **5** and **6**, dependent on an amended claim, are determined to be patentable.

1. A voltage sensor device comprising:
a portable housing suitably sized for hand-held use;
a first conductor means extending from one end of said housing for contacting a first voltage potential;
a second conductor means extending from said housing for connection to a ground potential;
means within said housing for providing a first adjustable reference D.C. voltage level;
means connected to said first adjustable reference voltage providing means for providing a second reference D.C. voltage level that is continuously less than said first reference voltage level by a predetermined amount;
thumbwheel means accessible on the outside of said portable housing for allowing manual adjustment of said first reference voltage level;
means connected to said first adjustable reference voltage level providing means, said second reference voltage level providing means and said first conductor means to compare the first voltage potential with both said first reference voltage level, for providing a first D.C. output signal when said first voltage potential is less than said first reference voltage level, for providing a second D.C. output signal when said first voltage potential is greater than said second reference voltage level, *for providing both said first and second output signals whenever the voltage potential at said first conductor means is both less than said first reference voltage level and greater than said second reference voltage level, and for providing a third output signal for a predetermined period of time whenever the voltage potential at said first conductor means increases from below to above said second reference voltage level;* and
means for distinctively indicating the presence or absence of any of said output signals.

B1 4,667,556 (1004th)
ELECTRONIC MUSICAL INSTRUMENT WITH WAVEFORM MEMORY FOR STORING WAVEFORM DATA BASED ON EXTERNAL SOUND
Kohtaro Hanzawa; Shigenori Morikawa; Hiroshi Morokuma, and Hiroyuki Sasaki, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Reexamination Request No. 90/001,557, Jul. 13, 1988.
Reexamination Certificate for Patent No. 4,667,556, issued May 26, 1987, Ser. No. 760,291, Jul. 29, 1985.
Claims priority, application Japan, Aug. 9, 1984, 59-167119
Int. Cl.[4] G10H *3/00, 7/00*
U.S. Cl. **84—1.01**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **7–14**, **16** and **17** is confirmed.

Claims **2** and **6** are cancelled.

Claims **1**, **3–5** and **15** are determined to be patentable as amended.

New claim **18** is added and determined to be patentable.

1. An electronic musical instrument, comprising:
analog-to-digital converting means for converting an analog external sound signal into a digital waveform signal which represents a waveform corresponding to the waveform of said analog external sound signal;
memory means for storing the digital waveform signal output from said analog-to-digital converting means;
digital-to-analog converting means for converting the digital waveform signal output from said memory means into an analog sound signal having a waveform determined by said digital waveform signal;
pitch designating means for designating a pitch of the sound produced based on the analog sound signal derived from said digital-to-analog converting means;
address control logic circuit means coupled to said memory means for designating memory addresses for writing and reading the digital waveform signal; and
control means coupled to said address control logic circuit means and to said pitch designating means for supplying to said address control logic circuit means record and reproduce commands for writing and reading said digital waveform signal in and from the memory means, and for instructing said address control logic circuit means to designate a memory address with a speed determined by said pitch designating means when the digital waveform signal is read out from said memory means, so that a sound having a waveform determined by the read out digital waveform signal and a frequency determined by said pitch designating means can be reproduced, *and*
wherein said address control logic circuit means includes temporary storage register means for storing addresses of said memory means; renewal means for renewing the content of said temporary storage register means; pitch register means for storing the pitch data for determining the renewal speed of

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said renewal means; end register means for storing the end address of said renewed content; comparing means for comparing the content of said temporary storage register means and the content of said end register means and for providing an end signal to said renewal means when the content of said temporary storage register means coincides with or exceeds the content of said end register means to control the continuation and stop of the renewal operation of renewal means; addressing means for generating address data comprised of an integer number portion and a decimal fraction portion; effecting means for effecting the writing and reading of waveform data by designating addresses of said memory means according to the integer number portion of said address data; and reading means including first forming means for forming interpolated data according to the decimal fraction portion of said address data and second forming means for forming a tone signal by combining said read out waveform data and said interpolated data.

B1 4,678,498 (1005th)

HERBICIDAL SULFONAMIDES

Steven P. Artz, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

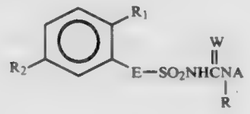
Reexamination Request No. 90/001,562, Jun. 24, 1988.
Reexamination Certificate for Patent No. 4,678,498, issued Jul. 7, 1987, Ser. No. 860,229, May 12, 1986.
Continuation-in-part of Ser. No. 743,955, Jun. 12, 1985, abandoned.
Int. Cl.[4] A01N *43/54*; **C07D** *236/69, 401/12, 413/12*
U.S. Cl. 71—87

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

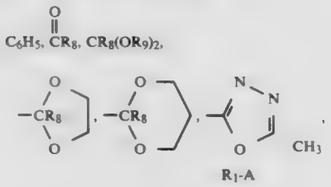
Claim **1** is determined to be patentable as amended.

Claims **2–24**, dependent on an amended claim, are determined to be patentable.

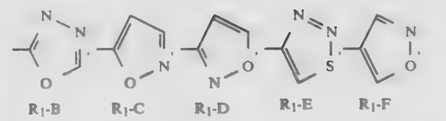
1. A compound of the formula:



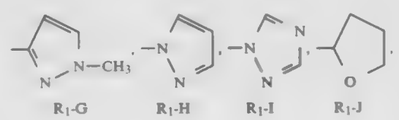
wherein
E is CH_2 or a single bond;
W is O or S;
R is H or CH_3;
R_1 is F, Cl, Br, NO_2, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_2–C_4 alkynyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, $OCH_2CH_2OCH_3$, C_1–C_4 haloalkoxy, C_3–C_4 alkenyloxy, C_2–C_4 haloalkenyloxy, C_3–C_4 alkynyloxy, CO_2R_3, $CONR_4R_5$, $SO_2NR_4R_5$, $SO_2N(OCH_3)CH_3$, $S(O)_nR_6$, OSO_2R_7, C_1–C_2 alkyl substituted with C_1–C_2 alkoxy, OH or C_1–C_2 alkylthio,



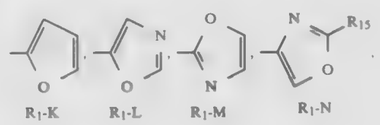
R_1-A



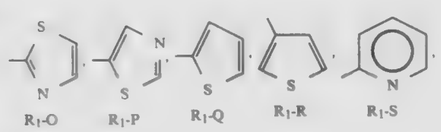
R_1-B R_1-C R_1-D R_1-E R_1-F



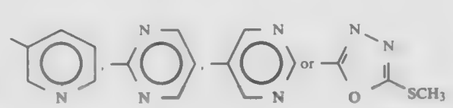
R_1-G R_1-H R_1-I R_1-J



R_1-K R_1-L R_1-M R_1-N

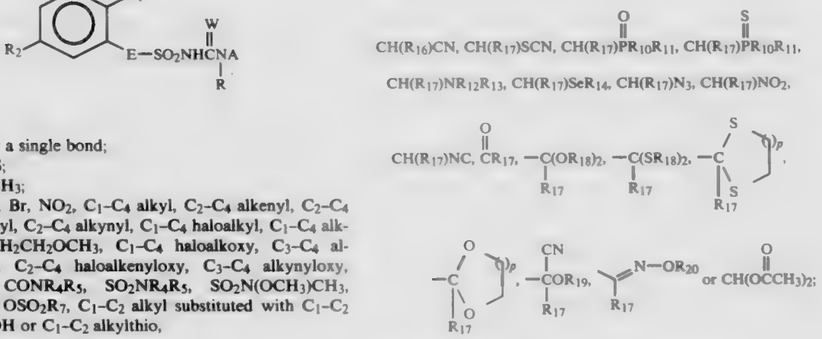


R_1-O R_1-P R_1-Q R_1-R R_1-S



R_1-T R_1-U R_1-V R_1-W

R_2 is



CH_2CN, C_6H_5, CR_8, $CR_8(OR_9)_2$,

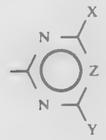
$CH(R_{16})CN$, $CH(R_{17})SCN$, $CH(R_{17})PR_{10}R_{11}$, $CH(R_{17})PR_{10}R_{11}$,

$CH(R_{17})NR_{12}R_{13}$, $CH(R_{17})SeR_{14}$, $CH(R_{17})N_3$, $CH(R_{17})NO_2$,

$CH(R_{17})NC$, CR_{17}, $-C(OR_{18})_2$, $-C(SR_{18})_2$,

CH_2CH_2Cl, CH_2CH_2F, or C_1–C_2 alkyl substituted with OCH_3 or SCH_3;
R_4 is C_1–C_3 alkyl;
R_5 is H or C_1–C_3 alkyl;
R_4 and R_5 may be taken together to form $(CH_2)_3$ or $(CH_2)_4$;

R_6 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$ or $CH_2C{\equiv}CH$;
R_7 is C_1–C_3 alkyl or $N(CH_3)_2$;
R_8 is H, C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkylnyl, CH_2CH_2Cl, CH_2CH_2F, C_1–C_2 alkyl substituted with OCH_3 or SCH_3 and C_3–C_6 cycloalkyl;
R_9 is C_1–C_2 alkyl;
R_{10} and R_{11} are independently C_1–C_2 alkyl, C_1–C_2 alkoxy, C_1–C_2 alkylthio, $NHCH_3$ or $N(CH_3)_2$;
R_{12} and R_{13} are independently H or C_1–C_2 alkyl;
R_{14} is C_1–C_3 alkyl;
R_{15} is H or CH_3;
R_{16} is H, C_1–C_2 alkyl or F;
R_{17} is H or C_1–C_2 alkyl;
R_{18} is C_1–C_2 alkyl;
R_{19} is H, $Si(CH_3)_3$ or C_1–C_2 alkyl;
R_{20} is H or C_1–C_2 alkyl;
p is 1 or 2;
n is 0, 1, or 2;
A is



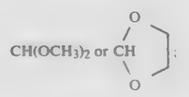
A-1

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, C_3–C_5 cycloalkyl, azido, cyano,



or $N(OCH_3)CH_3$;

m is 2 or 3;
Q_1 and Q_2 are independently O or S;
R_a is H or C_1–C_3 alkyl;
R_b and R_c are independently C_1–C_3 alkyl;
Z is CH, CCH_3, CC_2H_5, CCl or CBr;
and their agriculturally salts; provided that
(1) when X is halogen, then Z is CH and Y is OCH_3, OC_2H_5, NH_2, $NHCH_3$, $N(CH_3)_2$, OCF_2H or $N(OCH_3)CH_3$;
(2) when X or Y is C_1 haloalkoxy, then Z is CH;
(3) when W is S, then R is H, Z is CH and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$,



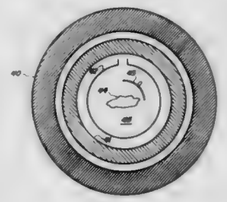
(4) when the total number of carbon atoms of X and Y is greater than four, then the combined number of carbons of R_1 and R_2 is less than or equal to six;
(5) when R_2 is $C(O)R_{17}$, then R_1 is other than C_1–C_4 haloalkyl or C_2 alkyl substituted with C_1–C_2 alkoxy, *OH* or C_1–C_2 alkylthio, and Y is other than cyclopropyl;
(6) when Y is C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl or C_2–C_5 alkylsulfonylalkyl, then R_2 is other than $CH(R_{17})NO_2$
(7) *when R_2 is $C(O)R_{17}$ then R_1 is other than $SO_2NR_4R_5$ and $SO_2N(OCH_3)CH_3$.*

B1 4,737,716 (1006th)

SELF-SHIELDED GRADIENT COILS FOR NUCLEAR MAGNETIC RESONANCE IMAGING

Peter B. Roemer, Schenectady, and John S. Hickey, Burnt Hills, both of N.Y., assignors to General Electric Company, Milwaukee, Wis.

Reexamination Request No. 90/001,511, May 25, 1988.
Reexamination Certificate for Patent No. 4,737,716, issued Apr. 12, 1988, Ser. No. 826,650, Feb. 6, 1986.
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—319



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **9** and **10** is confirmed.

Claim **6** is cancelled.

Claims **1**, **5**, **7** and **11–14** are determined to be patentable as amended.

Claims **2–4** and **8**, dependent on an amended claim, are determined to be patentable.

New claim **15** is added and determined to be patentable.

1. A gradient coil set for an MR apparatus comprising a plurality of radially disposed *fingerprint* coils adapted to be placed within a main field magnet, each of said coils adapted to provide a respective surface current distribution, the total magnetic field resulting from the coaction of said surface current distribution having a predetermined gradient in a predetermined single dimension within a predetermined area inside said coil set and a substantially zero value outside said coil set, whereby magnetic forces between said coil set and said field magnet are substantially eliminated.

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REISSUES

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,838

ELECTRONIC MUSICAL INSTRUMENTS

Hideo Suzuki, Kosai, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,237,764, dated Dec. 9, 1980, Ser. No. 807,894, Jun. 20, 1977. Application for reissue Feb. 6, 1987, Ser. No. 12,083

Claims priority, application Japan, Jun. 25, 1976, 51-75065; Jun. 25, 1976, 51-75066

Int. Cl.[4] G10H *1/02*

U.S. Cl. 84—1.24 12 Claims



1. An electronic musical instrument comprising key coder means for delivering key code signals identifying depressed keys, said key code signals having values which only identify depressed keys and which are not proportional to tone frequencies represented by said depressed keys, key code memory means for storing said key code signals, comparator means connected to said key coder means and to said key code memory means for comparing a first key code received from said key code memory means with a second key code received from said key coder means, calculation means responsive to the result of comparison in said comparator means for adding to or subtracting from the content of said key code memory means a predetermined value defining a semitone step repetitively at a predetermined clock rate to change said first key code in said key code memory means by successive semitone steps one after another to the next key code until said first key code in said key code memory means becomes equal to said second key code, and tone forming means connected to said key code memory means for forming a musical tone having a pitch determined by said key code in said key code memory means.

Re. 32,839

BALUSTRADE OF PASSENGER CONVEYOR

Cyuichi Saito, and Yoshihiko Sato, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,666,028, dated May 19, 1987, Ser. No. 797,470, Nov. 13, 1985. Application for reissue Dec. 21, 1987, Ser. No. 135,442

Int. Cl.[4] B66B *23/24*

U.S. Cl. 198—335 17 Claims

1. A passenger conveyor, comprising:

a main body frame;

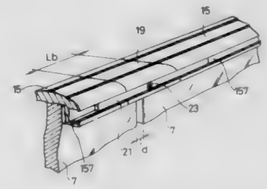
a plurality of steps supported by said main body frame, connected together and mounted on said frame to circulate endlessly;

a pair of handrails driven in synchronism with said steps and in the same direction as said steps;

transparent panels supported by said main frame and disposed on opposite sides of said steps to form side walls;

guide means for said handrail being provided on the upper portions of said panels, including a guide frame having a guide member support portion and leg portions, said leg portions defining therebetween a U-shaped recess;

adhesive means mounting said guide frame on the upper edge portion of said transparent panel to provide a panel assembly in which both ends of said panel axially project beyond the guide frame that is mounted on the panel;



a plurality of said panel assemblies being mounted on said body frame in an end-to-end relation thereby to form an axial gap between adjacent guide frames; and

coupling means, for coupling adjacent ones of said panel assemblies, said coupling means including a joint frame disposed in said gap.

Re. 32,840

LIQUID SPRAY JET ASSEMBLY AND A MINERAL MINING MACHINE CUTTING HEAD INCORPORATING SUCH ASSEMBLY

Garrick R. Bingham, Fishlake, Near Doncaster, England, assignor to Green & Bingham Limited, Doncaster, England

Original No. 4,199,107, dated Apr. 22, 1980, Ser. No. 910,672, May 30, 1978. Application for reissue Sep. 27, 1982, Ser. No. 424,646

Claims priority, application United Kingdom, Jun. 9, 1977, 24089/77

Int. Cl.[4] B05B *1/00*

U.S. Cl. 239—600 10 Claims



11. A liquid spray jet assembly comprising a rigid housing designed to be secured to a piece of apparatus, the housing have a passage opening into a chamber therein, a resilient seating within the chamber, a jet releasably fitted within the housing, the jet having an imaginary centerline and having a retaining part having opposed retaining portions and having a passage therethrough communicating with the passage into the housing for the passage of liquid therethrough, in which the housing and the jet are so shaped that the jet is a push fit into the housing through an opening therein and is removable from the chamber through said opening in the housing, the opening having a centerline and having opposed

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retaining sections the distance between which is less than a corresponding dimension of said opposed retaining portions of said retaining part of the jet, the resilient seating being made from a compressible material that is deformable to such extent during insertion of the jet to allow the jet to be angularly tilted with respect to said center line of said opening to allow one of said retaining portions to be moved under the corresponding one of said retaining sections and then allow the other of said retaining portions to be moved past said other of said retaining sections so that said retaining part is located partially beneath the opposed retaining sections, in which position the seating is compressed by the jet and the restoring force due to such compression biases the jet to engage the retaining part beneath the opposed retaining sections, such engagement being the sole region of engagement between the jet and the housing, thereby to hold the jet in position within the housing and effect a seal that directs liquid from the housing passage into the jet passage, and the seating further being deformable to allow tilting movement of the jet for disengagement within said region and removal of the jet from the housing through the opening therein, said tilting movements for engagement and disengagement being such as to cause the centerline of the jet to be angularly displaced with respect to the centerline of said opening within a plane containing both said centerlines.

Re. 32,841

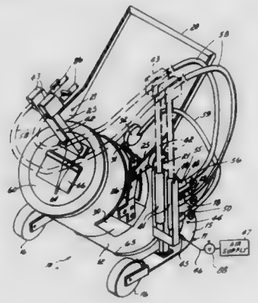
APPARATUS FOR TRANSFERRING POWDER FROM BULK DRUMS

Douglas C. Mulder, Wellington, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Original No. 4,505,623, dated Mar. 19, 1985, Ser. No. 419,166, Sep. 17, 1982. Application for reissue Mar. 4, 1987, Ser. No. 21,661

Int. Cl.[4] B65G *53/26*

U.S. Cl. 406—134 **5 Claims**



1. Apparatus for emptying a large drum of powdered material comprising,

a support for holding said drum with its axis at approximately 45°, *said drum in this attitude having a lower corner,*

said support including an arcuate band surrounding more than one-half the circumference of said drum and in intimate contact therewith,

a vibrator mounted adjacent said drum to vibrate said powdered material,

a cap for said drum,

said cap having at least one hole therein and a sleeve surrounding said hole, said sleeve being aligned with the lower corner of said drum,

a feed tube *having a lower end* and a guide tube surrounding said feed tube with a small clearance between said tubes, said tubes being slidable by gravity in said sleeve to *move said guide tube and the lower end of said feed tube to* the lower corner of said drum,

a vacuum pump on said feed tube, and

means supplying air under pressure to said vacuum pump to aspirate powder out of said drum when said feed and guide tubes are mounted in said sleeve, whereby atmospheric air is drawn into said drum through said clearance between said tubes to agitate and fluidize said powder adjacent the lower end of said feed tube.

Re. 32,842

ARBITRATION OF TENNIS BY CHANGE OF COLORS

Luis Wigoda, 345 North Shore Dr., Miami Beach, Fla. 33141

Original No. 4,538,811, dated Sep. 3, 1985, Ser. No. 457,933, Mar. 7, 1983. Application for reissue Aug. 25, 1987, Ser. No. 99,163

Int. Cl.[4] A63C *19/06*

U.S. Cl. 273—31 **1 Claim**



1. A tennis ball contact indicator in combination with a tennis court comprising:

a thin rectilinear conduit having a transparent and flexible top layer and a bottom layer of one color;

said top layer including a tear and wear resistant material in the form of a rectilinear line;

a [high density] fluid having a color different from said one color and being flowable upon movement of said top layer;

said top layer and bottom layer being separated [by one millimeter or more]; and

said conduit being affixed to said tennis court to define the boundary thereof and said top layer being movable towards said bottom layer to momentarily displace said fluid and expose said one color upon impact of a tennis ball with said top layer to indicate out of bounds of a tennis ball during play.

Re. 32,843

SILICON CARBIDE WHISKER REINFORCED CERAMIC COMPOSITES AND METHOD FOR MAKING SAME

George C. Wei, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Original No. 4,543,345, dated Sep. 24, 1985, Ser. No. 578,407, Feb. 9, 1984. Application for reissue Apr. 3, 1986, Ser. No. 847,961

Int. Cl.[4] C04B *35/56, 35/80, 35/10*

U.S. Cl. 501—95 **9 Claims**

1. A ceramic composite characterized by increased toughness and resistance to fracture, comprising a composite defined by a matrix of ceramic material, *wherein said matrix is selected from the group consisting of* A_2O_3, *mullite and* B_4C having homogeneously dispersed therein about 5 to 60 vol. % of silicon carbide whiskers, with said silicon carbide whiskers having a microcrystalline structure and [in] a size range of about 0.6 μm in diameter and a length of 10 to 80 μm *and which are characterized by cracking bridging pull-out from said matrix when said matrix is subjected to crack-forming stresses,* said composite being of a density greater than about 99% of the theoretical density.

Re. 32,844

CANOE CADDY

Justin Horowitz, 3276 Dutchtown Rd., Saugerties, N.Y. 12477

Original No. 4,538,829, dated Sep. 3, 1985, Ser. No. 610,907, May 16, 1984. Application for reissue Aug. 25, 1987, Ser. No. 89,667

Int. Cl.[4] B60P *3/10*

U.S. Cl. 280—641 **20 Claims**

8. A canoe caddy comprising:

a frame adapted to support a canoe thereon;

front ground-engaging wheel means;

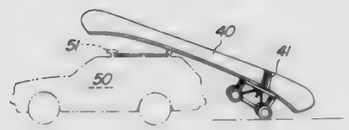
front arm means pivotally attaching said front ground-engaging wheel means to a front portion of said frame, said front ground-engaging wheel means being rotatably disposed along a first horizontal axis adjacent a bottom portion of said arm means;

rear ground-engaging wheel means;

rear arm means pivotally attaching said rear ground-engaging wheel means to a rear portion of said frame, said rear ground-engaging wheel means being rotatably disposed along a second horizontal axis parallel to said first horizontal axis;

first positioning means for selectively securing said front and rear arm means in a substantially vertical position for holding said frame in a full-height, substantially level position directly over said first and second wheel means thereby permitting a canoe while in an inverted position, to be strapped onto said frame and easily loaded onto a carrier rack disposed on top of a vehicle; and

second positioning means for selectively holding said frame in a lowered, inclined position with said arm means pivoted from their vertical positions wherein said frame is secured substantially over said front wheel means and said rear wheel means is secured outwardly of said frame, whereby the canoe, while in an upright position, can be supported and the canoe can be wheeled into the water.



Re. 32,845

PERIOD AND FREQUENCY MEASURING INSTRUMENT

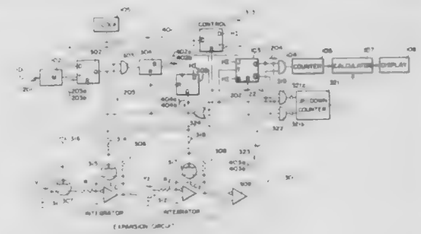
Mishio Hayashi, Saitama, Japan, assignor to Advantest Corporation, Gyoda, Japan

Original No. 4,544,884, dated Oct. 1, 1985, Ser. No. 531,711, Sep. 13, 1983. Application for reissue Feb. 10, 1987, Ser. No. 13,060

Claims priority, application Japan, Sep. 13, 1982, 57-159187

Int. Cl.[4] G01R *23/02*

U.S. Cl. 324—77 R **10 Claims**



1. An instrument for determining the period and frequency of an input signal, comprising

clock means for providing first and second clock signals,

first divider means for dividing said input signal by a predetermined division factor to output a divided signal having a minimum period, wherein a first fractional time is defined between a first output of said first divider means and the first clock pulse of said first clock signal thereafter, and a second fractional time is defined between the following output of said first divider means and the first clock pulse of said first clock [means] *signal* thereafter,

gate signal generating means for generating a gate signal synchronized with said first clock signal,

counter means for counting the clock pulses of said first clock signal during said gate signal,

expansion means for expanding each said fractional time, at least the expanded first fractional time being shorter than the minimum period of said divided signal, *less said first fractional time,*

up-down counter means *for counting said second clock pulses during the expanded first fractional time, and for counting in the opposite sense said second clock pulses during the expanded second fractional time,* for providing a count [of the clock pulses of said second clock signal] corresponding to the difference between the first and second expanded fractional times, and

calculator means for calculating the period and frequency of said input signal by adding the count from said counter means to a value corresponding to the count from the up-down counter means.

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PLANT PATENTS

GRANTED JANUARY 24, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,549

AFRICAN VIOLET PLANT NAMED LANAI

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,146
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Lanai, as described and illustrated, and particularly characterized by its single violet-shaped purple flowers, occasionally semi-double, with fine white edge, slightly frilled; strong upright flower stems, forming a tight bouquet above the leaves; profuse flowering; vigorous growth habit; medium green, serrated, spear-shaped leaves; and long lasting and non-dropping flowering habit.

6,550

AFRICAN VIOLET PLANT NAMED GISELA

Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,388
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Gisela, as described and illustrated, and particularly characterized by its beautiful white flowers with dark pink frilled edges; fully developed flower heads, producing a tight bouquet that is free standing; vigorous growth habit; medium to dark green, slightly serrated leaves; and long lasting, non-dropping flowering habit.

6,551

CHRYSANTHEMUM PLANT NAMED 24-KARAT

Peter S. Hesse, Bradenton, Fla., assignor to Ball Pan Am Plant Co., Parrish, Fla.

Filed Jun. 3, 1987, Ser. No. 56,982
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 24-Karat, as illustrated and described, and particularly characterized by its decorative form and relatively large inflorescence, intense deep yellow flower color, upright growth habit, and its 9 week flowering response.

6,552

CHRYSANTHEMUM PLANT NAMED MAJESTIC

Peter S. Hesse, Bradenton, Fla., assignor to Ball Pan Am Plant Co., Parrish, Fla.

Filed Jun. 3, 1987, Ser. No. 56,983
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Majestic, as illustrated and described, and particularly characterized by its medium to dark lavender flower color; vigorous growth habit; double flower form; dense and relatively large diameter capitulum, and its 9 week response period.

6,553

DWARF CARNATION PLANT LINDSEY

Kenneth L. Goldsberry, Larimer, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed May 4, 1987, Ser. No. 45,454
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—71 **1 Claim**

1. A new and distinct cultivar of *Dianthus caryophyllus*, Linn, identified as 85-215-98 and known as Lindsey and substantially as herein described and illustrated.

6,554

DWARF CARNATION PLANT MAROON BELLS

Kenneth L. Goldsberry, Larimer, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed May 4, 1987, Ser. No. 45,455
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—73 **1 Claim**

1. A new and distinct cultivar of *Dianthus carophyllus*, Linn, identified as 85-215-6 and known as Maroon Bells and substantially as herein described and illustrated.

6,555

DWARF CARNATION PLANT CRESTONE

Kenneth L. Goldsberry, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed May 4, 1987, Ser. No. 45,595
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct cultivar of *Dianthus caryophyllus*, Linn, identified as 85-230-3 and known as Crestone and substantially as herein described and illustrated.

6,556

LILY PLANT NAMED CHARLESTON

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Aurora, Oreg.

Filed May 18, 1987, Ser. No. 50,858
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinctive variety of Asiatic hybrid lily plant and parts thereof, substantially as herein shown and described, characterized by its large "starry" flower form having fluted tepal margins and a distinctive yellow/white/yellow color pattern: the excellence of its flower form, and its versatility both as a garden plant and as a cut flower producer from precooled bulbs forced out-of-season under glass.

6,557

LILY PLANT NAMED 'CRIMSON PIXIE'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Aurora, Oreg.

Filed May 18, 1987, Ser. No. 51,823
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinctive variety of Asiatic hybrid lily plant and parts thereof substantially as herein shown and described, characterized by its completely unspotted, broad tepalled, red to red-orange colored flowers, by its short stems, its longer and abundantly leaved foliage, and its upright flowering silhouette; and by the excellence of its flower form and versatility both as a garden plant and as a pot plant variety.

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6,558
STRAWBERRY PLANT CALLED 'MUIR'
Royce S. Bringhurst, Davis, and Victor Voth, Santa Ana, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.
Filed Apr. 30, 1987, Ser. No. 44,937
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—49 1 Claim

1. The new distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above together with the parts thereof.

6,559
MINIATURE ROSE PLANT NAMED 'ARIZONA SUNSET'
Nelson F. Jolly, P.O. Box 188 Gregg Neck Rd., Galena, Md. 21635
Filed Mar. 30, 1987, Ser. No. 32,431
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by brilliant orange and yellow blended flowers not heretofore reflected so vividly in the color range of the miniature rose class.

6,560
MINIATURE ROSE PLANT NAMED 'SWINGER'
Nelson F. Jolly, P.O. Box 188 Gregg Neck Rd., Galena, Md. 21635
Filed Mar. 30, 1987, Ser. No. 32,432
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by flowers of unusually brilliant golden yellow opening to a clear golden ivory flower with deeper yellow tones at base of inner petal; flower form is excellent on this vigorous, upright growing plant.

6,561
MINIATURE ROSE PLANT NAMED 'PROUD HERITAGE'
Nelson F. Jolly, P.O. Box 188, Gregg Neck Rd., Galena, Md. 21635
Filed Mar. 30, 1987, Ser. No. 32,433
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by dark crimson well-formed blooms that hold their color throughout the life of the flower; strong upright growing plant, taller than the average miniature with well-formed 2" flowers that cover the complete plant.

6,562
CHRYSANTHEMUM PLANT NAMED AMETHYST
Peter S. Hesse, Bradenton, Fla., assignor to Ball Pan Am Plant Co., Parrish, Fla.
Filed Jun. 3, 1987, Ser. No. 56,984
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—76 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Amethyst, as illustrated and described, and particularly characterized by its fully double, dark lavender flowers; very long and sturdy peduncles; and its 9 week response.

6,563
CHRYSANTHEMUM PLANT NAMED TANGELO
Peter S. Hesse, Bradenton, Fla., assignor to Ball Pan Am Plant Co., Parrish, Fla.
Filed Jun. 3, 1987, Ser. No. 56,985
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Tangelo, as illustrated and described, and particularly characterized by its daisy type flowers which have orange bronze ray florets and lime green disc florets, relatively short ray florets, long sturdy peduncles, and its 8 week flower response.

6,564
KALANCHOE PLANT NAMED HELGOLAND
Joachim Post, Kirchlinteln, Fed. Rep. of Germany, assignor to Fides Beheer B.V., De Lier, Netherlands
Filed Jun. 11, 1987, Ser. No. 60,673
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Kalanchoe plant named Helgoland, as described and illustrated, and particularly characterized by its light red flower color, strong growth habit, free branching habit, average 11 week flowering response, and its ability to adapt to production in 10–12 cm pots.

PATENTS

GRANTED JAN. 24, 1989

ERRATA

For CLASS	See PATENT NO.
029-822	4,4799,405
144-362	4,4799,447
220-260	4,4799,503
227-018	4,4799,611
227-121	4,4799,612
350-003	4,4799,739
414-331	4,4799,843
474-168	4,4799,909
514-015	4,4800,191
514-643	4,4800,235
369-067	4,4800,305
341-131	4,4800,364
341-119	4,4800,365
346-854	4,4800,385

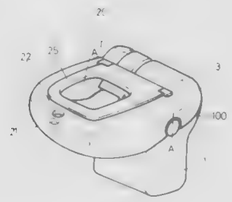
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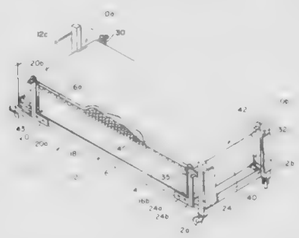
GENERAL AND MECHANICAL

4,799,272
ROLL-UP FLUSH TOILET
Weiyo Horng, No. 41, Yu Lo Street, Taoyuan, Taiwan
Filed Oct. 21, 1987, Ser. No. 111,993
Int. Cl.[4] E03D *11/12*
U.S. Cl. 4—312 **4 Claims**



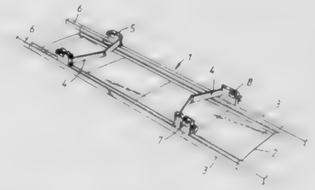
1. A flush toilet comprising:
a base having a discharge passage;
a body rotatably connected to said base, said body having a top and bottom face, said top face having a first recess for normal waste discharge when said body is in a level position and said bottom face having a second recess when said body is in an upright position for service as a urinal, said second recess being uncovered in said upright position; and
rotating means provided between body and base for selecting either level or upright position of said body;
said first and second recess body including passages for allowing said recess to communicate with said discharge passage of said base.

4,799,273
PATIENT MOVING MEANS FOR HOSPITAL BED
Karl H. Elze, 300 S. Carson Meadow Drive, 15, Carson City, Nev. 89701
Filed Jan. 15, 1988, Ser. No. 144,481
Int. Cl.[4] A61G *7/08*
U.S. Cl. 5—81 R **5 Claims**



1. An apparatus for moving a patient without lifting toward the head of a bed having a frame and a mattress thereupon, comprising:
a pair of head support brackets secured to said frame and extending upwardly therefrom,
a take-up bar rotatably mounted between said head support brackets,
turning means for said take-up bar,
an upper flexible sheet-like member having a first edge and a second edge, said first edge detachably secured to said take-up bar,
a pair of foot support brackets secured to said frame and extending upwardly therefrom,
a foot anchor bar detachably mounted between said foot support brackets,
a lower flexible sheet-like member disposed intermediate said upper flexible sheet-like member and said mattress, said lower sheet-like member having a head edge and a foot edge,
said foot edge detachably secured to said foot anchor bar, and
means providing tension upon said head edge to hold said lower flexible sheet-like member taut and wrinkle-free, whereby
longitudinal movement of said lower flexible sheet-like member is prevented as said turning means is manipulated to shift said upper sheet-like member toward said take-up bar.

4,799,274
FOLDING STRETCHER
Svein A. Dommerud, Nesbru, Norway, assignor to A/S Apotekernes Faellesindkjop, Oslo, Norway
PCT No. PCT/NO86/00076, § 371 Date Jun. 19, 1987, § 102(e) Date Jun. 19, 1987, PCT Pub. No. WO87/02886, PCT Pub. Date May 21, 1987
PCT Filed Nov. 17, 1986, Ser. No. 74,535
Claims priority, application Norway, Nov. 18, 1985, 854599
Int. Cl.[4] A61G *1/00*
U.S. Cl. 5—82 R **1 Claim**



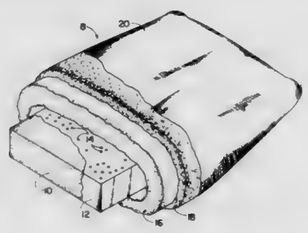
1. A foldable stretcher comprising:
(a) two longitudinal profiles for supporting a stretcher sheet;
(b) a pair of brackets mounted on each of said profiles and longitudinally spaced thereon, each bracket being opposite a bracket on the other of said profiles;
(c) two foldable transversal stiffening members each having two outer ends, each end secured to one of said opposing brackets;
(d) each of said brackets having a horizontal through opening and a vertical through opening, each opening being adapted to receive an elongated member for serving as a leg or an extension and a clamping screw for holding the leg or extension in place in either opening.

4,799,275
SHOCK-ABSORBING PILLOW
William B. Sprague, Jr., 2915 Arbor Dr., West Linn, Oreg. 97068
Filed Dec. 7, 1987, Ser. No. 129,292
Int. Cl.[4] A47G *9/00*
U.S. Cl. 5—431 **1 Claim**

1. A pillow for permitting unrestricted expansion of a person's chest or abdominal cavity in a manner which does not unduly stress a surgical site located therein when coupling, sneezing or hiccuping, comprising:
(a) a resiliently deformable central core;

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(b) an impervious membrane which encapsulates said core;
(c) means defined in said membrane for permitting the flow of air through said membrane at a controlled rate when said core is compressed and again when it expands after having been compressed;
a resiliently deformable cushion which surrounds said core and said membrane;

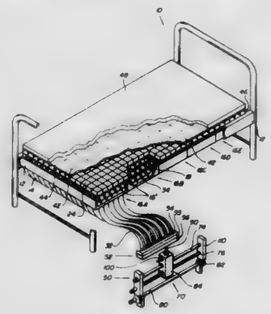


(e) a fiber retention layer which covers said cushion;
(f) ticking which covers said retention layer; and
(g) wherein said core and said cushion both comprise open-celled foam with the foam in said cushion being more easily deformed than the foam in said core.

4,799,276

BODY REST WITH MEANS FOR PREVENTING PRESSURE SORES

Eliud Kadish, 49945 Moshav Neve Yarak, Israel
Filed Sep. 11, 1987, Ser. No. 95,225
Claims priority, application Israel, Sep. 15, 1986, 80025
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—446 20 Claims

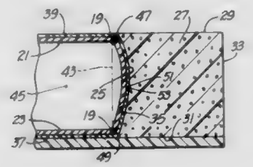


1. A body rest such as a bed or a chair seat with means incorporated for avoiding the development of pressure sores caused by prolonged local pressure against a patient's body, comprising:
a matrix of freely vertical displaceable support members, having head portions each constituting a fraction of a continuous couch surface of the body rest;
pressure responsive means associated with each head portion adapted to measure the pressure of the respective patient's body sections against its support member;
fluid chamber means provided underneath and floatingly supporting each of the support members;
valve means associated with and controlling the discharge of fluid from the chambers under the pressure of the respective support member;
valve actuator means for selectively opening any of the valve means;
fluid batching means for receiving a pre-determined, fixed amount of fluid discharged from the fluid chamber upon actuation of the valve means by the valve actuator means thereby partly relieving the pressure within the fluid chamber and causing the downward displacement of the respective support member;
means for venting the batching means after release of the valve by its actuating means; and
control means operatively associated with the pressure responsive means for actuating the valve means when the said prolonged local pressure exceeds a pre-determined amount.

4,799,277

HYBRID WATERMATTRESS HAVING CONCAVE SOFTSIDES

Clarke W. Goodale, Simi; Valley, Calif., assignor to American-National Watermattress Corporation, Anaheim, Calif.
Continuation of Ser. No. 899,842, Aug. 25, 1986, abandoned.
This application Mar. 21, 1988, Ser. No. 175,680
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—451 15 Claims



1. A hybrid watermattress comprising:
a bladder formed of flexible sheet material and adapted to be filled with water;
the sheet material including a major top panel, a major bottom panel, and at least one lateral panel connecting the top panel and the bottom panel, the lateral panel having an initial shape as the bladder is manufactured and assuming a convex shape when the bladder is filled with water, said initial and convex shapes being different;
a compressible sidewall extending laterally around the bladder and having a supporting surface which faces the lateral panel of the bladder;
the supporting surface of the sidewall in an uncompressed state having a concave shape generally complementary to the convex shape of the lateral panel; and
a mattress cover disposed to envelope the bladder and the sidewall of the watermattress.

4,799,278

MACHINE AND A METHOD FOR DYEING FABRICS WITH ALREADY KNOWN DYESTUFFS

Hans A. Beeh, Don Orione 568, Victoria (1644), Argentina
Filed Jun. 12, 1987, Ser. No. 62,455
Int. Cl.[4] D06B *3/12, 21/00, 23/00*
U.S. Cl. 8—151 7 Claims

2. An apparatus for dyeing fabrics in dyelots in which dyeing stages are performed during the passage of a fabric dyelot along a treatment path through treatment stations, the fabric dyelot having its ends secured to a leader to obtain an endless sheet-form loop capable of continuous translational movement in the same direction through the stations, the apparatus comprising a fabric accumulator from which the fabric is continuously fed in the same direction repeatedly through said treatment stations; said treatment stations comprising a single padder trough containing dyestuff which can be replaced or emptied during the passage of the leader therethrough, a foam applicator, a steamer and a wash box placed in the treatment path and arranged in succession one after the other.

6. A process for dyeing fabrics in which a fabric dyelot is passed from an accumulator along a treatment path extending through successive treatment stations including a padder for dyestuff and dye fixing means arranged in succession which process comprises the steps of: securing opposite ends of the dyelot to a leader to obtain an endless sheet-form loop; feeding



the loop continuously in the same direction through successive treatment stations repeatedly without stopping and, altering the operational condition of at least one of the stations for successive passes of the dyelot therethrough during the passage of the leader through the one station.

4,799,279

METHOD OF CONSTRUCTING THE APPROACH AND MAIN SPANS OF A CABLE STAYED SEGMENTAL BRIDGE

Jean M. Muller, Tallahassee, Fla., assignor to Figg and Muller Engineers, Inc., Tallahassee, Fla.
Continuation of Ser. No. 803,669, Dec. 2, 1985, abandoned. This application Sep. 25, 1987, Ser. No. 102,318
Int. Cl.[4] E01D *21/04*
U.S. Cl. 14—1 9 Claims

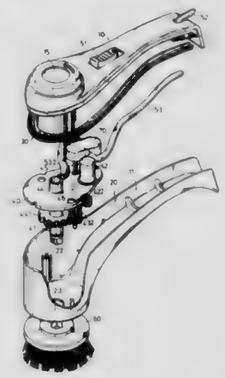


1. A method of constructing a segmental bridge from like concrete box girders, the bridge having a main span of a predetermined length, and a plurality of interconnected approach spans at opposite ends of said main span, each of said approach spans having a length substantially less than said predetermined length of said main span, and said main span being defined by a pair of longitudinally spaced apart main span piers, said approach spans being defined by pairs of longitudinally spaced apart approach span piers, a last of said approach spans being defined by one of said approach span piers and one of said main span piers, the method comprising the steps of:
(A) first constructing each of said approach spans toward said opposite ends of said main span, said constructing step for each of said approach spans comprising:
(a) extending a pair of transversely spaced apart assembly trusses between one of said pairs of approach span piers which define one of said approach spans, said trusses being movably supported on opposite sides of said one of said pairs;
(b) completely spanning the distance between said one of said pairs by loading precast concrete box girders one-at-a-time on to said trusses from one of said approach span piers which is located a greater distance from said main span compared to the spacing of the other of said approach span piers from said main span, each of said girders having transversely extending wings supported on said spaced trusses;
(c) sliding said box girders in succession in a direction toward said main span, after being loaded on to said trusses, until a first of said girders directly overlies said other approach span pier;
(d) connecting said first box girder to said approach span other pier;
(e) abutting the succeeding girders against said first girder and to each other and connecting all of said girders to one another;
(f) moving said assembly trusses so as to extend between another adjacent pair of said longitudinally spaced approach span piers which define another of said approach spans adjacent said one approach span, one of said another adjacent pair comprising said other approach span pier and the other of said another adjacent pair being spaced closer to said main span compared to said one pier of said another adjacent pair;
(g) repeating said steps (b), (c), (d) and (e) for said another approach span;
(h) repeating said steps (f) and (g) for further adjacent pairs of longitudinally spaced approach span piers defining further adjacent approach spans and for said last approach span at which said main span is reached;
(i) erecting permanent pylons at the locations of said main span piers;
(B) then from said last of said approach spans adjacent said main span,
(aa) cantilevering and connecting concrete box girders successively to each other, as a continuation of said last approach span, from said main span piers toward one another until the midpoint between said main span piers is reached; and
(bb) during step (aa), supporting said main span from each of said pylons by extending a plurality of permanent cable stays from each of said pylons to designated ones of said girders of each of said last approach spans.

4,799,280

MOTOR DRIVEN ROTARY BRUSH

Fu-Kuei Lee, P.O. Box 10780, Taipei, Taiwan
Continuation-in-part of Ser. No. 764,628, Aug. 12, 1985, abandoned. This application Jan. 5, 1987, Ser. No. 733
Int. Cl.[4] A46B *13/04*
U.S. Cl. 15—29 1 Claim

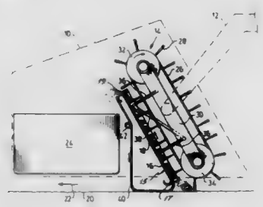


1. A motor driven rotary brush comprising:
a casing having upper and lower portions forming a hollow interior compartment;
a support plate mounted in said compartment and having a slide way formed as a track;
motor means and first idle gear means mounted on said support plate, said motor means including switch means to control the revolving direction of said motor means;

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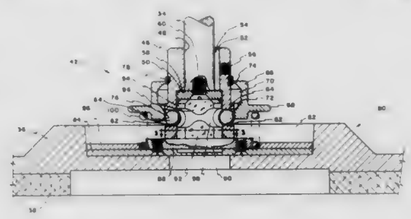
a pump means having a shaft and mounted on said support plate and having a gear mounted on the shaft end;
a hollow shaft mounted in said lower portion and having an upper end and a lower end, a gear fixed on said upper end and in engagement with said first idle gear means, and said lower end extending outside of said lower portion;
a moveable idle gear means having plural gears and mounted on a shaft positioned in the slide way formed by the slide way in the support plate and a cooperating slide way in the lower portion of the casing, said movable idle gear means being in driving engagement with said motor means and adapted to be moved to a certain position according to the revolving direction of said motor and allowing the plural gear to engage the gear of said pump means and another of said plural gears to engage a gear of said first idle gear means, or moved to another position that solely engages the gear of said hollow shaft;
a pipe means in said casing extending to said pump means and from said pump means to said hollow shaft;
a water supply means coupled to said casing and connected to said pipe means to discharge water through said hollow shaft, said water supply means having valve means to control the flow therethrough;
an additive container mounted on the upper casing portion, said container having means to discharge additive from said container to said pipe means to mix said additive with said water prior to discharge from said hollow shaft, said means to discharge including outlet means from the container and valve means to control said outlet means; and
a brush mounted on the lower end of said hollow shaft, said brush having a central opening mounting said brush on said hollow shaft and providing means for passage of water and additive through said brush to a work surface.

4,799,281
DEVICE FOR SWEEPER UNITS
Henry Sandström, 11, Vimpelgatan,, S-591 00 Motala, Sweden
Filed Nov. 20, 1987, Ser. No. 123,214
Claims priority, application Sweden, Dec. 18, 1986, 8605464
Int. Cl.[4] E01H *1/04*
U.S. Cl. 15—80 11 Claims



1. In a sweeper having an elevating mechanism including a chute which is inclined upwardly from a lower edge to an upper edge in the direction of travel of the sweeper and which along the upper surface thereof debris is transported by an endless carrier and wherein a space is created between the lower edge of the chute and the surface to be swept the improvement comprising, an endless flexible sheet means, said sheet means extending forwardly of said endless carrier in the direction of travel of the sweeper and being in contact with the surface to be swept, said sheet means extending upwardly from the surface to be swept through the space between the lower edge of the chute and along the upper surface of the chute, said endless carrier including a plurality of sweeper elements, said sheet means extending between said sweeper elements and the upper surface of the chute and over the upper edge of the chute and downwardly thereof to the surface to be swept, drive means for moving said endless carrier relative to said upper surface of the chute, said sweeper elements being engageable with the surface to be swept as said endless carrier is moved by said drive means, whereby said flexible sheet means prevents debris from being urged forwardly of the lower edge of the chute as said endless carrier is moved by said drive means.

4,799,282
PAD HOLDER RELEASE MECHANISM FOR FLOOR TREATING MACHINES
Ernest J. Fischer, Skokie, Ill., assignor to Breuer Electric Mfg. Co., Chicago, Ill.
Filed Oct. 19, 1987, Ser. No. 110,372
Int. Cl.[4] A47L *11/14*
U.S. Cl. 15—98 10 Claims

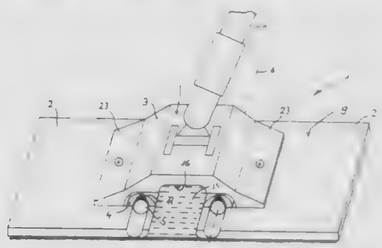


1. In combination, a floor treating machine having a frame and a rotary output shaft extending from said frame; a pad holder adapted to carry a floor treating pad; and means for releasably connecting said pad holder to an end of said shaft, said releasably connecting means comprising latch means on said pad holder and shaft, said latch means being operative in response to movement together of said pad holder and shaft to connect the same together for conjoint rotation, and manually manipulatable control means operatively connected to said latch means and movable to a release position to cause said latch means to disconnect said pad holder and shaft, said latch means including a tubular member on one of said pad holder and shaft, a post on the other of said pad holder and shaft and extendible into a passage in said tubular member when said pad holder and shaft are moved together, and releasable coupling means for connecting said tubular member to said post in response to sufficient extension of said post into said member, said control means to cause the same to same releasable coupling means to cause the same to disconnect said member and post when said control means is moved to said release position, said releasable coupling means including detent means comprising a groove in the periphery of said post and a ball carried by said tubular member, said ball extending partially into said groove upon sufficient extension of said post into said member to connect said member and post together, and further including means responsive to sufficient extension of said post into said member to yieldably urge said control means to a latch position whereat said control means blocks movement of said ball out of said groove to maintain said member and post connected together, said control means being manually movable against said yieldable urging means to said release position to free said ball for movement out of said groove to disconnect said post and member.

4,799,283
COLLAPSIBLE CLEANING IMPLEMENT
Susen J. Haydon, London, England, assignor to Interpat Ltd., London, England
Filed Nov. 6, 1987, Ser. No. 118,183
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1986, 3638225
Int. Cl.[4] A47L *13/11*
U.S. Cl. 15—229.1 16 Claims

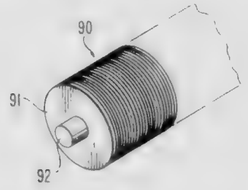
1. A cleaning implement, particularly a mop, comprising a support having first and second stops; a composite mop head

including substantially mirror symmetrical first and second sections, said first section having freedom of movement toward and away from said second section; and first and second hinges respectively connecting said first and second sections to said support for pivotal movement about discrete axes between extended positions in which said sections are substantially coplanar and respectively abut said first and second



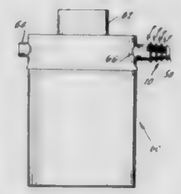
stops, and collapsed positions in which said sections are adjacent and confront each other, said sections having means for holding said sections against movement relative to the respective stops in extended positions of said sections, said holding means including recesses for said stops in the respective sections and at least said first hinge mounting said first section with limited freedom of movement substantially at right angles to the respective axis.

4,799,284
PLATE CLEANING APPARATUS AND CLEANING ROLLER THEREFOR
Masao Toriwaki, Otsu; Kinya Kawakami, Mitaka, and Tomoaki Ishino, Funabashi, all of Japan, assignors to Toyo Netsu Kogyo Kaisha, Ltd., Tokyo, Japan
Division of Ser. No. 038,827, Apr. 15, 1987. This application Mar. 21, 1988, Ser. No. 171,468
Claims priority, application Japan, Jun. 11, 1986, 61-133700; Jun. 11, 1986, 61-87746
Int. Cl.[4] B08B *1/02*
U.S. Cl. 15—230.12 1 Claim



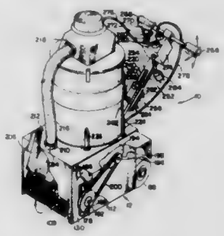
1. In a cleaning roller adapted for use in a plate cleaning apparatus arranged in a production line of miscellaneous plates, the improvement comprising;
a plurality of thin discs of nonwoven fabric bonded side by side with adhesive therebetween, said adhesive having substantially the same softness before it is applied to the nonwoven fabric, and
a longitudinal shaft extending through central holes provided in said thin discs,
said shaft and said nonwoven fabric being bonded together by said adhesive.

4,799,285
OUTLET PORT BAFFLE FOR EXHAUST AIR
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.
Filed Oct. 27, 1987, Ser. No. 114,079
Int. Cl.[4] A47L *5/00*
U.S. Cl. 15—327 R 11 Claims



1. An outlet port baffle for redirecting air or gas exiting from an outlet port comprising:
a tubular entrance section for being connected with an outlet port and for receiving air or gas flowing through the outlet port and for conducting air therethrough;
a tubular intermediate section communicating with and forming an extension from the entrance section for conducting air or gas therethrough, a plurality of apertures through the intermediate section arrayed over an arc extending only partially around the intermediate section, and all of the apertures being oriented and together covering an arc that is of a length that air or gas flowing through the apertures will exit in the same general direction over an arcuate pathway which is across the path of the air or gas that has passed into the entrance section and through the intermediate section; the apertures are arranged in a plurality of rows of the apertures, with each of the rows extending along the length of the intermediate section and the rows together defining the arcuate exit pathway for the fluid; and
an end section beyond the intermediate section for blocking passage of air or gas out the end of the intermediate section, for redirecting all of the air or gas out of the apertures of the intermediate section over the arcuate exit defined by the apertures;
the baffle being angularly movable in the outlet port to direct the air or gas from the apertures in a selected direction.

4,799,286
POWER DRIVEN VACUUM SWEEPER
Berl I. Rubin, 242 Erica St., Philadelphia, Pa. 19116
Filed Aug. 4, 1986, Ser. No. 892,591
Int. Cl.[4] A47L *5/34*
U.S. Cl. 15—361 7 Claims

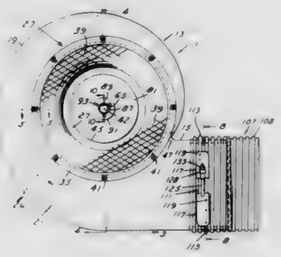


1. A floor sweeping apparatus comprising:
a unitary frame;

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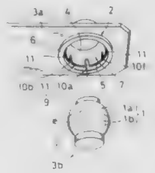
a lever, said lever being fixedly connected at one end to a first rear portion of said frame;
handlebars fixedly connected to the other end of said lever;
a cylindrical bristle broom rotatably mounted on a front end of said frame, the bristles of said broom supporting said frame in a spaced apart relationship with a floor;
power means mounted on said frame and connected to said broom to rotate it in a first rotatable direction;
wheels mounted on another rear portion of said unitary frame for rolling said frame along the floor, manual straight line movement of said unitary handlebars, lever and frame in a right to left direction being operable to rotate said wheels in a second opposite rotatable direction along the floor and thereby counteract the tendency of said floor engaging rotating broom to move said frame, lever and handlebars in an opposing direction and said wheels being juxtapositioned to said broom and said lever to provide a fulcrum at the rear portion of said frame about which an upward movement of said handlebars increases the pressure applied by said bristles against the floor and a downward movement of said handlebars decreases the pressure applied by said bristles against the floor a pin, said pin having one end fixed to said frame, a block, said pin having its other end extending through a passageway in said block to form a pivot about which said block is pivotally mounted on said frame, a second passageway in said block, a shaft extending through said second passageway, a different one on said wheels rotatably supported on opposite ends of said shaft, said pin and block connection providing a means to allow said wheels to be oscillated in a seesaw manner when they encounter an irregular floor surface and without transmitting said oscillating motion by way of said frame to said broom.

4,799,287
BLOWER HOUSING CONSTRUCTION
James A. Belanger; Robert J. Wentworth, both of Northville; Barry S. Turner, Livonia, and Graham J. Astley, Novi, all of Mich., assignors to Belanger, Inc., Northville, Mich.
Filed May 4, 1987, Ser. No. 45,331
Int. Cl.[4] A47L 5/14
U.S. Cl. 15—405 **14 Claims**



1. A blower assembly comprising a unit blower housing of molded plastic material having a generally circular outer wall and laterally spaced front and rear walls defining an impeller chamber of rectangular cross-section;
said housing terminating in an elongated tangential outlet arranged upon a first axis adapted to receive a flexible hose;
said elongated tangential outlet defining with an end portion of said outer wall a reverse curved cut off point extending substantially across the distance between said front and rear walls;
said front wall having a circular air inlet opening to said impeller chamber, arranged upon a second axis at right angles to and spaced from said first axis;
an air inlet cone projected through the inlet opening in said front wall, said inlet cone at one end having an annular mount flange overlying and secured to said front wall and at its other end terminating in an annular convex throated outlet;
an electric motor upon a support having a drive shaft extending along said second axis and projected through said rear wall and into said impeller chamber;
a circular mount flange on said motor coaxial of said drive shaft;
means for aligning said drive shaft with said second axis and for securing and mounting said rear wall upon said motor;
said aligning means including a motor pilot plate having a circular recess upon said second axis arranged upon the exterior of said rear wall;
said circular mount flange of said motor being axially nested and retained within the circular recess of said pilot plate; said
a power driven impeller nested within said impeller chamber axially mounted upon said second axis and secured to said drive shaft and having an air intake receiving the annular convex throated outlet of said air cone outlet;
said second axis being so arranged along with said first axis that said impeller defines with said cut-off point an optimum gap of reduced dimension for a maximum smooth non turbulent substantially noiseless air flow through said elongated tangential outlet;
a circular air screen mounted upon, spanning and secured to said inlet cone mount flange; and
said mount flange of said air inlet cone having an annular reverse turned anchor flange overlying said mount flange defining a channel, said circular air screen being peripherally nested and protectively anchored within said mount flange channel.

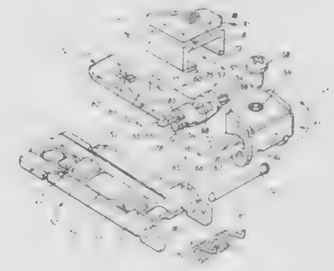
4,799,288
PIVOT BUSH
Toshihide Kimizawa, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Dec. 10, 1987, Ser. No. 131,122
Claims priority, application Japan, Dec. 15, 1986, 61-191713[U]
Int. Cl.[4] F16L 5/02
U.S. Cl. 16—2 **8 Claims**

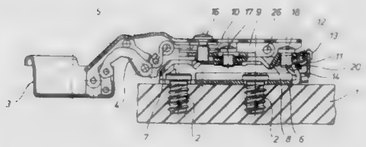


1. A pivot bush made of a plastic material for swingably holding upper and lower spherical surface portions with respect to an equator of a spherical pivot, said pivot bush comprising an upper concave spherical surface corresponding at least to a portion of the upper spherical surface portion above the equator of the spherical pivot, a main body connected onto said upper concave spherical surface to enclose the remaining portion of said spherical pivot under the equator and having therein a cylindrical surface with a lower end thereof opened up, and a bowl shaped elastic thin piece originating from a boundary between said upper concave spherical surface and said cylindrical surface and provided with an opening at the center of a lower portion thereof, an inner surface of the elastic thin piece forming a lower concave spherical surface corresponding to a part of said lower spherical surface portion under the equator of said spherical pivot, said elastic thin piece being split into a plurality of pieces by a plurality of slits which extend in the longitudinal direction and are formed by cutting

the elastic thin piece from the opening of the center of the lower portion thereof, said main body having at an outer periphery thereof an annular groove engageable with a marginal portion of a mounting hole of an arm along the boundary between said upper concave spherical surface and said cylindrical surface.

4,799,289
HINGE FRAME WITH EASILY-RELEASABLE ATTACHMENT OF THE FURNITURE-SIDE COVER BRACKET TO THE FURNITURE PIECE
Alfred Graes, Höchst, Austria, assignor to Alfred Graes Ges.m.b.H. Metallwarenfabrik, Austria
Filed Sep. 25, 1986, Ser. No. 911,462
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1986, 3607406; Jul. 19, 1986, 3624237
Int. Cl.[4] E05D 7/06, 7/12, 7/04
U.S. Cl. 16—236 **11 Claims**

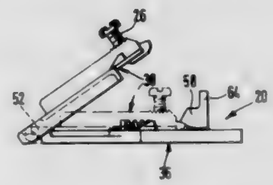




1. A quick release hinge frame attached to a furniture piece and a door communicating therewith comprising: mounting plate means secured to the furniture piece; a base plate having a detent engaging shoulder releasably secured to said mounting plate; a door connected cover bracket releasably secured to said base plate; detent means pivotally attached to said mounting plate means; and spring means urging said detent means into a spring loaded engagement with said detent engaging shoulders thereby releasably securing the door to the furniture piece.

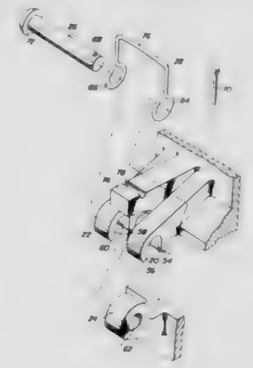
4,799,290
CABINET HINGE
Karl Lautenschläger, Jr., Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager GmbH & Co. KG Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany
Filed Jul. 15, 1986, Ser. No. 886,259
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1985, 3525279
Int. Cl.[4] E05D 7/06, 7/12
U.S. Cl. 16—237 **7 Claims**

1. A hinge for hanging a door on a carcase of a piece of furniture, said hinge having a door-related hinge part fastenable to a door, and a carcase-related hinge part, a linkage mechanism coupling said carcase-related hinge part to said door-related hinge part so as to be pivotable about a hinge pivot axis from an open to a closed position and vice versa, mounting plate means fastenable to a carcase, said mounting plate means comprising two parts separable from one another: a first mounting plate part having a face to be affixed to the carcase, and a second mounting plate part for adjustable holding said carcase-related hinge part, said first mounting plate part having adjacent said door-related hinge part at least one hook projection projecting from said face toward said door-related part, and at least one associated hook socket in said second mounting plate part, said at least one hook projection and hook socket having associated arcuate engagement surfaces of at least approximately the same radius, center of curvature of the



arcuate engagement surface of said hook projection being approximately the same point as the center of the path of movement of the arcuate engagement surface of said hook socket at the beginning of the movement from the open position in closing direction of said hinge, whereby said hook socket snaps into engagement with said hook projection and said second mounting plate part into engagement with said first mounting plate part during assembly, and a spring catch mechanism interconnecting said two mounting plate parts together, said spring catch mechanism having a handle remote from said door-related hinge part for unlocking said catch mechanism.

4,799,291
SELF-ALIGNING HINGE
Robert H. Ankum, Davenport, Iowa, and Jay H. Olson, Rock Island, Ill., assignors to Deere & Company, Moline, Ill.
Filed Oct. 31, 1983, Ser. No. 546,833
Int. Cl.[4] E05D 7/10
U.S. Cl. 16—259 **12 Claims**



1. A hinge for resiliently pivotally coupling a first member to a second member comprising the combination of:
a first lug arrangement adapted to be mounted on the first member and having at least one opening therein;
a second lug arrangement adapted to be mounted on the second member and having an opening therein;
a pin residing within the openings in the first and second lug arrangements, the pin being smaller than the at least one opening in the first lug arrangement to permit movement

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thereof relative to the first lug arrangement in a plurality of different directions; and

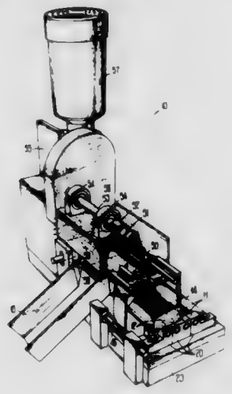
a resilient member coupled to the pin and adapted to be coupled to the first member.

4,799,292

GIZZARD PEELING APPARATUS

Grover S. Harben, III, Gainesville, Ga., assignor to Centennial Machine Company, Inc., Gainesville, Ga.

Filed Mar. 25, 1988, Ser. No. 173,191
Int. Cl.[4] A22C *21/00*
U.S. Cl. 17—11 **5 Claims**



1. Apparatus for removing the lining from a gizzard, comprising:

a pair of laterally aligned peeling rolls defining an elongate gizzard receiving region between the rolls;

means for counter-rotating the rolls from an end thereof;

tamping means located alongside the gizzard receiving region and mounted for selective reciprocating movement toward the gizzard receiving region; and

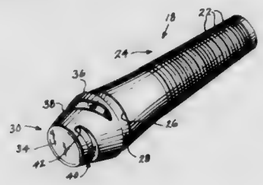
drive means operative independently from the rolls to reciprocate the tamping means toward and away from the gizzard receiving region, so that a gizzard disposed on the rolls is periodically urged into the gizzard receiving region without exerting a periodic load on the rolls.

4,799,293

QUICK MOUNT RESILIENT FINGER FOR POULTRY PLUCKING APPARATUS OR THE LIKE

Larry S. Dewberry, Marietta, Ga., and Richard H. Schlipp, Delafield, Wis., assignors to Waukesha Rubber Company, Inc., Waukesha, Wis.

Filed Feb. 9, 1988, Ser. No. 153,994
Int. Cl.[4] A22C *21/02*
U.S. Cl. 17—11.1 R **5 Claims**



1. A finger for use in a poultry processing apparatus or the like, said apparatus including one or more members adapted to receive one or more of said fingers through one or more openings provided therein, said finger being formed of a resilient material and comprising:

a shank portion having a distal end and a proximal end, said shank portion including a shoulder portion adjacent said proximal end having a transverse dimension greater than that of said opening;

a neck portion provided adjacent said shoulder portion and having a reduced transverse dimension relative thereto; and

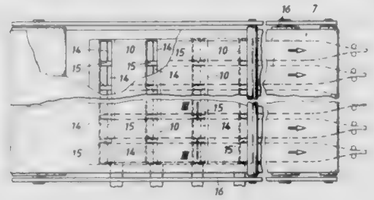
a substantially frusto-conical head portion provided adjacent said neck portion, said head portion including a resilient base portion adjacent said neck portion and a top portion spaced from said base portion, with a side portion extending between said base portion and said top portion, said resilient base portion having a transverse diension greater than that of said neck portion and at least slightly greater than that of said opening, said side portion being provided with one or more helical threads, said finger being adapted for mounting to said member by pushing said head portion through said opening so that said base portion deforms sufficiently to allow said head portion to pass therethrough, said neck portion thereafter being disposed within said opening with said shoulder portion engaging a surface of said member adjacent said opening, said base portion returning to its undeformed state after passing through said opening so that said member is gripped between said base portion and said shoulder portion so as to retain said finger on said member.

4,799,294

APPARATUS FOR MAKING SLIVERS FROM A LAP

Ernst Felrer, Auf der Gugl 28, A-4020 Linz, Austria

Filed Jan. 25, 1988, Ser. No. 147,885
Claims priority, application Austria, Jan. 30, 1987, 192/87; Apr. 9, 1987, 873/87
Int. Cl.[4] D01G *15/76*
U.S. Cl. 19—99 **4 Claims**



1. An apparatus for making slivers having a predetermined width from a lap, comprising

lap-feeding means for feeding a lap in a predetermined direction of travel,

a plurality of carding drums, which are closely laterally spaced apart in said direction of travel so that downwardly flaring triangular spaces are defined by the peripheral surfaces of adjacent ones of said carding drums and each of said carding drums which succeeds another constitutes a worker roller for cooperating with a preceding one of said carding drums,

said carding drums being operable to rotate in the same sense so that fibers are received by said carding drums from said lap-feeding means and said carding drums are adapted to throw fibers into said triangular spaces,

said apparatus further comprising

collecting means forming an air-permeable collecting surface, which extends below said carding drums, said collecting means being operable to continuously move said collecting surface in said direction of travel, and

ejection ducts communicating with respective ones of said triangular spaces and leading to said collecting surface,

the improvement residing in that

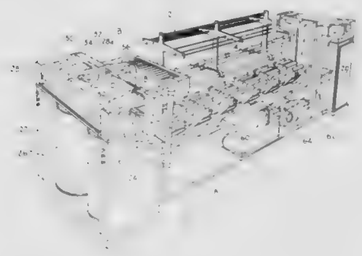
a vacuum is applied to said collecting surface adjacent to said ejection ducts only in discrete suction zones, which are spaced apart transversely to said direction of travel and have a width each which is equal to said predetermined width.

4,799,295

DRAWBOX AIR SHUT-OFF AND METHOD FOR DOFFING A TEXTILE COMBER

Dan W. Benfield, Easley, S.C., assignor to Platt Saco Lowell Corporation, Easley, S.C.

Filed Jul. 13, 1987, Ser. No. 72,328
Int. Cl.[4] B65H *54/80*
U.S. Cl. 19—159 R **11 Claims**



1. A method of controlling suction air to the drawbox of a textile comber during doffing of the type which includes a drafting element, a calender, a coiler having a coiler tube which deposits combed sliver into a delivery can below said coiler, a vacuum cleaning system which includes air suction nozzles disposed within said drawbox for cleaning said drafting element, calender, and coiler, said nozzles connected to suction line for removal of waste and air borne matter in the drawbox, said method controlling said suction air to facilitate entry of a new delivery of sliver into said coiler tube and coiler including:

placing a shut-off duct assembly in the suction line to said vacuum cleaning nozzles in said drawbox containing a valve for closing off said suction line to prevent air suction in said drawbox;

stopping said comber after coiling a prescribed amount of sliver in said delivery can;

doffing the full delivery can by replacement with an empty delivery can;

restarting said comber;

maintaining said valve in a closed position and said suction air shut-off during restart of said comber; and

opening said valve to permit air suction in said drawbox after a prescribed amount of sliver has been properly introduced into said coiler tube and into the delivery can without air interference and said comber has reached a high-speed operation.

4,799,296

CONNECTOR FOR RELEASABLE SECUREMENT TO THE FREE END OF A LIFTING STRAP

Donald D. Rasmussen, P.O. Box 250, Tualatin, Oreg. 97062

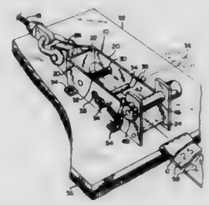
Filed Dec. 29, 1987, Ser. No. 139,579
Int. Cl.[4] A44B *21/00*
U.S. Cl. 24—68 R **8 Claims**

1. A connector comprising:

a body portion having opposite ends and a hollow interior,

stationary anchor means in said body portion arranged to receive a doubled and looped end of a strap thereover comprising free and lifting end portions and arranged to pinch the free end portion between it and the lifting end portion by a lift force on the latter,

and pin means removably mounted in said body portion arranged for insertion in the loop of the looped end of the strap for holding the latter in a secured position on said body portion with the free end of the strap pinched between said anchor means and the lifting end portion and also arranged for removal from the interior of said body portion to release the strap from the body portion.

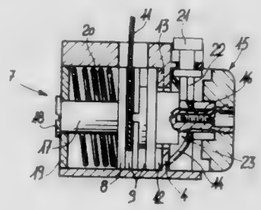


4,799,297

CLOSURE AND SECURING DEVICE, PARTICULARLY FOR SKI BOOTS

Giorgio Baggio, San Martino di Lupari, and Giuseppe De Bortoli, Montebelluna, both of Italy, assignors to Nordica S.P.A., Montebelluna, Italy

Filed Sep. 28, 1987, Ser. No. 102,182
Claims priority, application Italy, Oct. 9, 1986, 59450/86[U]
Int. Cl.[4] A43C *11/00*
U.S. Cl. 24—68 SK **10 Claims**



1. Closure and securing device, particularly for ski boots, comprising a lever having an end, said lever being associable with a ski boot and having at least one winding assembly, said winding assembly being adapted for winding at least one ski boot traction element and comprising an externally accessable knob, a pulley rotatably associated with said lever and being rigidly rotatively associated with said knob, a first gear rigidly rotatively associated with said pulley, a second gear rigidly associated with said lever, releasable engagement means adapted for mutually engaging said first gear and said second gear to prevent rotation of said pulley with respect to said lever, uncoupling means adapted for uncoupling said first gear and said second gear to allow said rotation of said pulley, a cylindrical hollow body arranged transversely with respect to said lever, proximate to said end thereof, said cylindrical hollow body being pivotally associable with a ski boot and defining a lateral shoulder, said lateral shoulder having an axial hole, said winding assembly being rotatably associated with said hollow body.

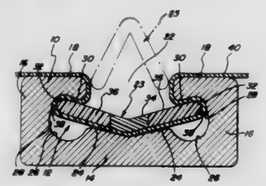
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4,799,298
STRAP RETAINER
Hiroshi Matobe, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jul. 31, 1987, Ser. No. 80,066
Claims priority, application Japan, Aug. 2, 1986, 61-118977[U]
Int. Cl.[4] A43C *5/00*; A41F *1/00*
U.S. Cl. 24—140 2 Claims



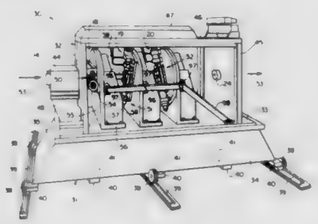
1. A strap retainer for retaining a strap to a substrate, comprising:
(a) a flexible plate adapted to be attached to the substrate and having a groove defined in an upper surface of said plate and extending along a peripheral edge of said plate for receiving therein a sewing thread;
(b) at least one retaining mound integral with said plate and raised above said upper surface of said plate so as to define therebetween a pair of laterally aligned apertures for the passage therethrough of the strap;
(c) a support ridge projecting from a bottom surface of said plate and extending along said peripheral edge of said plate, said ridge being disposed between said retaining mound and said groove immediately adjacent to said groove; and
(d) said plate further including at least one first ridge disposed between said support ridge and said retaining mound and extending parallel with said support ridge, and a second ridge disposed on said bottom surface thereof and extending in surrounding relation to said mound, said first and second ridges intersecting each other.

4,799,299
CLIP TRACK DEVICE FOR SECURING FLEXIBLE SHEETS
Ken L. Campbell, 11536 Humber Dr., Mira Loma, Calif. 91752
Filed Dec. 28, 1987, Ser. No. 138,709
Int. Cl.[4] A44B *21/00*; A47H *13/00*
U.S. Cl. 24—462 6 Claims



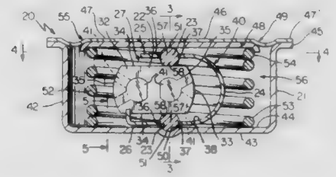
1. In combination, an improved track device and spline member used as a fastener system for securing flexible cover or sheet materials, wherein the combination comprises:
an elongated track having a base member, a pair of oppositely disposed side-wall members, and inwardly projecting rail members;
a channel defined by said base member, said side-wall members, and said rail members;
said base member being formed with a pair of inclined, inner-wall surfaces centrally positioned in said channel and having a V-shaped configuration, the outer marginal edges thereof being fluted to define oppositely positioned, recessed, longitudinal grooves;
said side-wall members being formed with inner, tapered wall surfaces, each inclined inwardly and upwardly of said channel;
said rail members being formed with inner, tapered wall surfaces that are inclined inwardly and downwardly of said channel;
a spline member having a central body member of semi-rigid material; and
a pair of wing members formed from a substantially rigid material and integrally formed with said central body member, whereby said wing members are readily repositioned to be inserted in said channel so as to lockingly engage the flexible sheet material interposed between said track and said spline.

4,799,300
APPARATUS FOR SHAVING ELONGATE METAL STOCK
Paul M. Phillips, 11844 Rancho Bernardo Rd., Ste. 120-165, San Diego, Calif. 92128
Continuation-in-part of Ser. No. 877,314, Jun. 23, 1986, abandoned, which is a continuation of Ser. No. 561,959, Dec. 16, 1983, abandoned, which is a continuation of Ser. No. 273,479, Jun. 15, 1981, abandoned. This application Mar. 17, 1987, Ser. No. 27,323
Int. Cl.[4] B23P *17/02*; B23D *1/20*
U.S. Cl. 29—33 F 17 Claims



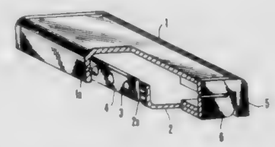
1. In an apparatus for shaving elongate metal stock such as rod, wire or the like, a plurality of radially variable segmental die assemblies through which the metal stock is longitudinally continuously passed, said die assemblies being axially spaced along the path of the metal stock and each comprising a support therefor, diametrically opposed carriages mounted on said support for radial movement toward and away from the path of the metal stock, diametrically opposed segmental shaving dies respectively secured to said carriages for common movement therewith out of and into the path of the metal stock for removing surface metal from diametrically opposed sides of the metal stock, and reciprocating drive means for moving said carriages radially inwardly and outwardly, each segmental die assembly including adjustable mechanical stop means for limiting radially inward movement of said carriages and hence the segmental dies, said reciprocating drive means including a piston-cylinder assembly connected to each carriage for effecting radially inward and outward movement of the carriage; said adjustable mechanical stop means including a stop collar on the piston of each piston-cylinder assembly and an abutment fixed in relation to the cylinder, and said abutment being in the path of said stop collar to limit the radially inward stroke of the piston-cylinder assembly.

4,799,301
METHOD OF MAKING AN OSCILLATING CRYSTAL FORCE TRANSDUCER
Douglas R. Scott; Peggy L. Goddard, and Joseph P. Wagner, all of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Mar. 14, 1988, Ser. No. 167,847
Int. Cl.[4] H01L *41/22*
U.S. Cl. 29—25.35 14 Claims



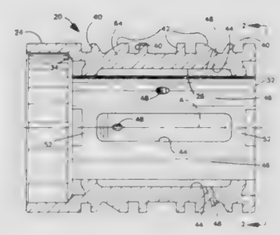
1. In a method of making an oscillating crystal force transducer comprising the steps of forming support means, providing a plate-shaped piezo-electric crystal having opposed sides and a peripheral edge means extending between said opposed sides, and forming two seating members to be carried by said support means and respectively engage said peripheral edge means of said crystal and arranged to apply a force to said crystal along a line extending through said crystal from one of said seating members to the other of said seating members, the improvement comprising the step of forming said support means to comprise a looped spring member having opposed end means spaced from each other to define the mouth of said looped spring member and respectively carry said seating members whereby said crystal is disposed in said mouth of said looped spring member between said seating members thereof.

4,799,302
METHOD OF MANUFACTURING HOLDING DEVICE OF ROLLER BEARING FOR RECTILINEAR MOTION
Yasunori Yokota, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan
Division of Ser. No. 863,691, May 15, 1986, Pat. No. 4,701,059. This application May 5, 1987, Ser. No. 46,269
Claims priority, application Japan, Sep. 18, 1985, 60-204197
Int. Cl.[4] B21D *53/12*
U.S. Cl. 29—148.4 C 3 Claims



1. A method of manufacturing a holding device of a rolling bearing for rectilinear motion in which a plurality of rolling members are rectilinearly arranged at predetermined regular intervals in track grooves or track surfaces, said method comprising the steps of:
preparing a molding die having a cavity with a substantially rectangular cross section;
disposing a plurality of window pins as cores into said cavity at predetermined positions at substantially regular intervals in the longitudinal direction of said molding die;
injecting and molding a plastic material into said cavity of the molding die at a high pressure and at a high temperature; and
thereafter, alternately pulling out said window pins one by one in their axial directions adjacent pins pulled in the opposite directions.

4,799,303
METHOD OF MAKING A VALVE SLEEVE
Thomas K. Prinz, St. Clair Shores, and Stephen A. Dier, Fraser, both of Mich., assignors to TRW Inc., Lyndhurst, Ohio
Filed Aug. 26, 1987, Ser. No. 89,599
Int. Cl.[4] B21D *53/10*
U.S. Cl. 29—157.1 R 12 Claims



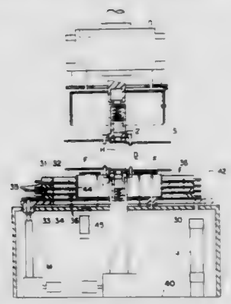
7. A method of manufacturing a valve sleeve comprising the steps of:
forming a plurality of grooves extending axially along an inner surface of a tubular member, which grooves extend through at least one end surface of the tubular member and have a base surface located between the inner surface of the tubular member and an outer surface of the tubular member;
displacing material of the one end surface of the tubular member adjacent each of the plurality of grooves radially inwardly to close the ends of the grooves and to locate a portion of the material radially inwardly of the inner surface; and
thereafter, moving at least a portion of the displaced material located radially inwardly of the inner surface radially outwardly and along the longitudinal axis of said member to form a seal land at the one end of each groove.

4,799,304
METHOD FOR ASSEMBLING A WHEEL FOR A BICYCLE
Akihiko Kosaka, Ibaragi, Japan, assignor to Araya Industrial Co., Ltd., Osaka, Japan
PCT No. PCT/JP86/00351, § 371 Date Feb. 25, 1987, § 102(e) Date Feb. 25, 1987, PCT Pub. No. WO87/00125, PCT Pub. Date Jan. 15, 1987
PCT Filed Jul. 10, 1986, Ser. No. 31,020
Claims priority, application Japan, Jul. 11, 1985, 60-153591; Jul. 11, 1985, 60-153592; Jul. 19, 1985, 60-160968; Feb. 1, 1986, 61-20478; Feb. 1, 1986, 61-20479
Int. Cl.[4] B21F *39/00*
U.S. Cl. 29—159.02 6 Claims

1. A method for assembling a wheel for a bicycle comprising:
aligning spokes mounted on a hub;
leasing the aligned spokes to form an assembly;
transferring the assembly of hub and leased spokes to a device for loosely tightening said leased spokes;
loosely tightening the spokes of the assembly of the hub and leased spokes; and
fastening the loosely tightened spokes to complete the tightening of the loosely tightened spokes;
the aligning step further comprising rotating the hub having two spoke mounting plates to thereby radially align the spokes mounted on each spoke mounting plate at the hub and retaining the spokes in an alignment by retaining means provided concentrically with the hub; said retain-

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ing means comprising a pair of retaining bodies opposing each other from the top and bottom of the hub, said retaining bodies being paired rotatably with respect to the hub, each said retaining body being composed of spacing-holding means which fit between adjacent aligned spokes, said spacing-holding means being positioned externally in the neighborhood of a spoke mounting plate of the hub, said spacing holding means projecting toward the spokes when the spokes are in the aligned state, thereby retaining the spoke aligned state in the assembly of the wheel;



the leasing step further comprising supporting first, second, third and fourth spokes on first, second, third and fourth supporting annuli in an initial position, lifting said first, second, third and fourth annuli, moving tentatively the first, second, third and fourth annuli until they are opposed to the second, first, fourth and third spokes respectively, lowering said first, second, third and fourth spokes onto said second, first, fourth and third annuli respectively, and moving relatively said first, second, third and fourth annuli to the initial position whereby the first and second spokes are crossed and the third and fourth spokes are crossed.

4,799,305

TUBE PROTECTION DEVICE

Michael G. Brunner, Penn Hills Township, Allegheny County, and Gregory L. Calhoun, Allegheny Township, Armstrong County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 686,805, Dec. 27, 1984, abandoned. This application Mar. 10, 1987, Ser. No. 23,947
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—265 8 Claims



1. Apparatus for protecting a region of a hollow tube, having interior and exterior wall surfaces and an open end, from deformation during withdrawal of the tube through an aperture in a support structure which frictionally engages the exterior wall surface of the tube, the interior wall surface of the tube having a predetermined diameter, comprising:

a generally cylindrical device of a metallic material and of a fixed, predetermined axial length and having first and second opposite ends, said device being insertable, beginning at said first end, fully into the tube to a predetermined position therein at which said first and second opposite ends of said device are contiguous to respective portions of the interior wall surface of the tube and span, therebetween, the region of the tube to be protected from deformation, said device comprising first and second gripper portions disposed at the corresponding, said first and second opposite ends of said device, said gripper portions defining the maximum diameter of the device and being elastically expansible from a first, relaxed condition, of a first outer diameter less than the predetermined diameter and thereby displaced from the interior wall surface of said tube during said insertion, to a clamped condition of a second outer diameter greater than the predetermined diameter at said predetermined position of said device and thereby releasably and frictionally engaging the respective, said contiguous portions of the interior wall surface of the tube, and an actuator comprising a first portion extending coaxially through said generally cylindrical device and having a first end disposed contiguous to the first end of said device and a second end extending outwardly from the second end of said device, and a second portion received on and rotatably relatively to the second end of the first portion, the actuator being operable through rotation of the second portion thereof, relatively to the first portion, in a first sense for actuating said first and second gripper portions to expand substantially simultaneously from said relaxed condition to said clamped condition and operable through rotation in a second, opposite sense to permit said first and second gripper portions to contract from said clamped condition to said relaxed condition;

an adjustable length mechanism, insertable into the tube from the open end thereof and comprising first and second ends, the mechanism being selectively connectable at its first end with said actuator for inserting the device into the tube to the predetermined position with the second end extending exteriorly of the open end of the tube and adapted for being driven at its second end selectively in rotation, and correspondingly, selectively rotating said second portion of said actuator in said first and second, opposite senses; and

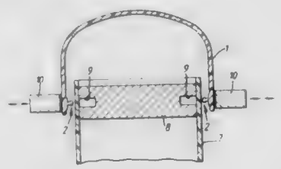
a holding device, disposed coaxially within and extending through said adjustable length mechanism and having a first end selectively connectable with the second end of the first portion of the actuator, the holding device having a second end at the exterior of the open end of the tube and being adapted for being restrained against rotation at its second end and correspondingly restraining the first portion of the actuator against rotation during selective rotation of the second portion of the actuator by the adjustable length mechanism.

4,799,306

METHOD OF SECURING HANDLES TO PLASTICS CONTAINERS

Malcolm G. Collins, Oxfordshire, and Christopher S. Parry, Hertfordshire, both of England, assignors to Metal Box plc, United Kingdom

Filed May 19, 1988, Ser. No. 196,154
Claims priority, application United Kingdom, Jun. 16, 1987, 8713964
Int. Cl.[4] B23P *11/02*
U.S. Cl. 29—453 6 Claims



1. A method of securing a handle to a preformed plastics container body, wherein the handle is in the form of an elongate strap having a lateral projection at at least one end thereof in the form of a spigot having a head portion at its free end and a shank connecting the head portion to the strap; the diameter of the shank being less than the diameter of the head portion, the method comprising the steps of:

(a) locally supporting the wall of the container body on the inside by means of a female die having a recess of diameter greater than that of the head portion of the spigot and opening against the wall of the container body;

(b) pushing the spigot into the die from the outside of the container body such that material from the container body wall is plastically deformed into the recess of the die around the spigot head portion to form a socket; and

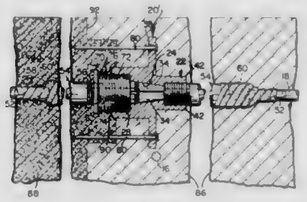
(c) squeezing the wall of the container body in the region of the socket such that material from the wall of the container body is plastically deformed into the annulus surrounding the shank of the spigot to retain the head portion of the spigot in the socket.

4,799,307

ANCHOR APPARATUS FOR A TENDON IN PRESTRESSED CONCRETE SLAB

Gordon H. Reigstad, North St. Paul; A. Norris Breivik, Forest Lake, and Hanley S. Reigstad, Sunburg, all of Minn., assignors to Tech Research, Inc., St. Paul, Mian.

Continuation-in-part of Ser. No. 870,654, May 30, 1986, abandoned, which is a continuation of Ser. No. 785,333, Oct. 7, 1985, abandoned. This application Oct. 7, 1986, Ser. No. 916,151
Int. Cl.[4] B21D *39/00*
U.S. Cl. 29—452 1 Claim



1. A method for using an anchor device to hold and protect a tendon in a stressed condition in a prestressed concrete slab, said tendon having a fixed end, said tendon having a corrosion resistant covering, said covering being incomplete in a region around where said device is attached to said tendon, said device including an anchor body having a central passage for receiving said tendon and a central section for receiving wedges to hold said tendon with respect to said body, said anchor body further having means for resisting longitudinal movement with respect to said slab, said anchor body additionally having a first portion on a first side of said resisting means and a second portion on a second side of said resisting means, said device further including a conduit having first and second end portions and means for sealingly attaching said first end portion to said first portion of said anchor body, said device also including means for sealing said second end portion of said conduit to said covering on said tendon, said device still further including means for sealingly closing said central passage at said second portion of said anchor body, said method comprising the steps of:

(a) attaching with said attaching means the first end portion of said conduit to said first portion of said anchor body, fixing said anchor body at a predetermined location, and passing said tendon through said conduit and the central passage of said anchor body;

(b) sealing the second end portion of said conduit to said covering on said tendon with said sealing means;

(c) casting concrete with respect to said anchor body and said tendon on said first side of said resisting means so that said central passage at said first portion of said anchor body is free of concrete;

(d) placing wedges in said central passage of said anchor body between a wall of said central passage and said tendon and stressing said tendon with respect to said fixed end of said tendon, said wedges holding said tendon in the stressed condition; and

(e) fitting a reducer to the second portion of said anchor body, said reducer having first and second ends, said first end sealingly attaching to said second portion of said anchor body;

(f) fitting a second conduit into said second end of said reducer, said second conduit having first and second end portions with said first end portion sealingly attaching to said second end of said reducer; and

(g) sealing the second end portion of said second conduit to said covering on said tendon with said sealing means;

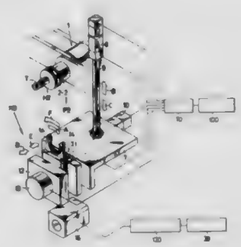
whereby said tendon is held in a stressed condition and sealed against corrosive fluids in said region around where said anchor body with said wedges attaches to said tendon.

4,799,308

AUTOMATIC TOOL CHANGER

Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Japan

Filed Aug. 27, 1987, Ser. No. 90,005
Claims priority, application Japan, Aug. 28, 1986, 61-199972
Int. Cl.[4] B23Q *3/157*
U.S. Cl. 29—568 8 Claims



1. An automatic tool changer for exchanging a plurality of tool holders for mounting on a machine tool spindle comprising:

transfer means for transferring a selected tool pot of a plurality of tool pots to a first transfer point, each of said tool pots being adapted to receive one of the plurality of tool holders, said plurality of tool holders being set in the tool pots in a fixed address manner so that the tool holders are returned to their original tool pots after use;

holding means, located between said first transfer point and the spindle, for holding one of the tool holders before and after use on the spindle;

a first changer, located between said first transfer point and said holding means, for exchanging a first selected tool holder set in the selected tool pot with a second tool holder held by said holding means and for returning said second tool holder to its original tool pot;

a second changer, located between said holding means and said spindle, for exchanging the selected tool holder held by said holding means for a tool holder mounted on the spindle, said second changer including a swing arm having a plurality of pawls, each of said pawls being adapted to engage and carry one of the tool holders for transfer between said holding means and the spindle, a movable block and a bar and wherein said swing arm is rotatably

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mounted on said movable block and said movable block is mounted on said bar for rotation relative to said bar; and

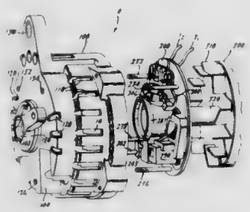
actuation means, for rotating and axially moving said bar, said actuation means including a first cam for moving said bar axially so as to shift the swing arm linearly and a second cam for rotating said bar about its axis so as to swing said swing arm, whereby said swing arm is rotated and linearly moved.

4,799,309

METHOD OF MAKING A RECTIFIER AND CONTROL MODULE FOR AN ALTERNATOR

Carl Cinzori, Dearborn Heights; Carl Williams, Jr., Livonia; Clair E. Mitchell, Detroit, and David L. Striker, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 24, 1987, Ser. No. 137,774
Int. Cl.[4] H02K *15/00*
U.S. Cl. 29—596 **10 Claims**



1. A method of assembling a rectifier circuit onto a conducting plate member for installation within the housing of a vehicle type alternator having a fixed set of stator windings and a rotor mounted field winding, including the steps of:

providing an electrically and heat conducting plate member;

coating a first predetermined pattern are of said plate member with an electrically insulating layer that leaves a second predetermined pattern area exposed;

masking a predetermined portion of said first predetermined pattern area to expose the remainder of said insulating layer;

depositing an electrically conducting film on the exposed surfaces of said plate member and said insulating layer in a third predetermined pattern to form conductor runs that are respectively and separately bonded to said conducting plate or said insulating layer;

providing a first predetermined number of like rectifier diode elements each having distinctive anode and cathode terminals disposed on opposite sides thereof;

bonding the anode terminals of a portion of said predetermined number of said rectifier diode elements directly to preselected ones of said conductor runs that are bonded to said conducting plate;

bonding the anodes of the remainder of said rectifier diodes directly to preselected ones of said conductor runs that are bonded to said insulating layer;

providing a second predetermined number of electrically conducting elements configured to extend from the cathode terminals, of rectifier diodes bonded to said conducting plate, to the preselected ones of said conductor runs bonded to said insulating layer;

electrically bonding an electrically conducting element to both the cathode terminal of each of said rectifier diodes bonded to said conducting plate and to a preselected conductor run onto which the anode terminal of a corresponding rectifier diode is bonded;

providing a common bus bar conductor formed to be connected to the DC output terminal of said alternator, having exposed portions and being mounted within an insulated means;

mounting said common bus bar conductor insulating means on said plate so that exposed portions of said bus bar conductor are adjacent the cathode terminals of said rectifier diodes bonded to said conductor runs bonded to said insulating layer; and

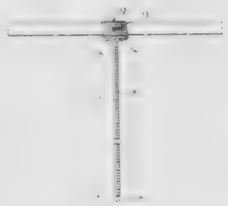
bonding said common bus bar conductor to said adjacent cathode terminals.

4,799,310

METHOD FOR MANUFACTURING A BAR ANTENNA

Atsushi Isobe, Kopofurukawa 102, 17-13, Haneda 3-chome, Ota-ku, Tokyo 144; Masahiko Isobe, Sakuraiso, 6306 Tsujido, Fujisawa-shi, Kanagawa 251, and Naoki Isobe, 27-11, Haneda 5-chome, Ota-ku, Tokyo 144, all of Japan

PCT No. PCT/JP85/00262, § 371 Date Dec. 30, 1986, § 102(e) Date Dec. 30, 1986, PCT Pub. No. WO86/06868, PCT Pub. Date Nov. 20, 1986
PCT Filed May 10, 1985, Ser. No. 15,372
Int. Cl.[4] H01F *41/06*
U.S. Cl. 29—605 **12 Claims**



1. A method of manufacturing a bar antenna having a magnetic core incorporated therein, characterized in that a covering material on each one end portion of parallel covered cords is removed, the parallel covered cords are separated from each other by a length required for winding on a magnetic core, the portions wherefrom said covering material is removed are connected together, a winding start position is set beforehand so that an end portion of the magnetic core can be matched in position with the winding end of a coil, one cord, a connecting portion and the other cord are wound in this sequence consecutively from said start position to the end portion of the magnetic core, starting from the base of the separated portions of the cords, so as to form the coil, and thereafter the coil thus formed is transferred to a prescribed position, while the portions of the parallel covered cords not separated from each other are used as an extension cord as they are.

4,799,311

APPARATUS FOR ATTACHING SUTURE TO SURGICAL NEEDLE

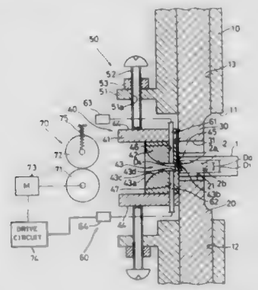
Kanji Matsutani, Tochigi, Japan, assignor to Matsutani Seisakusho Co., Ltd., Tochigi, Japan

Filed Feb. 23, 1988, Ser. No. 159,212
Claims priority, application Japan, Feb. 26, 1987, 62-41389
Int. Cl.[4] B21D *39/00*; **B41G** *1/06*
U.S. Cl. 29—209 **16 Claims**

1. An apparatus for attaching an end of a suture to a bore formed in a proximal end of a surgical needle and extending along an axis of the surgical needle, said apparatus comprising:

a pair of staking dies, at least one of said staking dies being movable toward and away from the other staking die;

guide means arranged adjacent a side surface of at least the other staking die, said guide means having a stopper surface with which a proximal end face of the surgical needle is engageable to position the surgical needle in a direction along the axis thereof, said guide means having a guide passage extending substantially perpendicularly to said stopper surface, for guiding the end of the suture, said guide passage having an inlet and an outlet, said outlet opening to said stopper surface in confronting relation to a space between said staking dies, said guide passage being provided with a tapered portion having a cross-sectional area decreasing toward said outlet; and



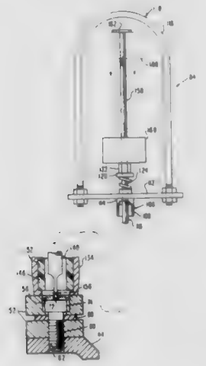
positioning means for positioning the proximal end of the surgical needle in a direction perpendicular to the axis of the surgical needle so as to bring the bore in the proximal end of the surgical needle substantially into alignment with said outlet of said guide passage of said guide means.

4,799,312

TOOL FOR REPLACING LOCKING SCREWS IN A NUCLEAR FUEL ASSEMBLY

John M. Shallenberger, Fox Chapel Borough, and Stephen J. Ferlan, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 870,584, Jun. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 762,733, Aug. 5, 1985, abandoned. This application Jul. 29, 1987, Ser. No. 79,208
Int. Cl.[4] B23D *19/00*
U.S. Cl. 29—723 **5 Claims**



1. A tool for straightening an arched pin into one of a pair of slots orthogonally defined in a screw head, comprising:

(a) an elongated positioning and forcetransmitting rod-like member;

(b) means mounted on one end of said rod-like member for applying an axially directed force to said member;

(c) an elongated sleeve mounting said rod-like member for reciprocal movement within said sleeve and having an end adapted to seat about said screw head;

(d) a tool handle mounted at one end of said sleeve adjacent said force-applying means on said one end of said rod-like member; and

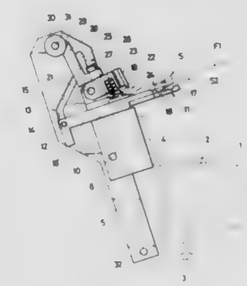
(e) a pin setting tool bit connected to an opposite end of said rod-like member being indexible with one of said slots in said screw head and for delivering said impact force to said arched pin in said other screw head slot.

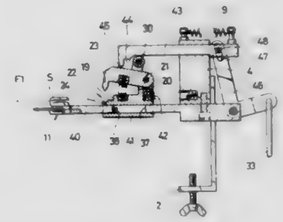
4,799,313

APPARATUS FOR THREADING A SLIDER ONTO OPPOSED STRINGERS FOR SLIDE FASTENER

Yoichi Horikawa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Feb. 2, 1988, Ser. No. 151,644
Claims priority, application Japan, Feb. 3, 1987, 62-24341
Int. Cl.[4] A41H *37/06*
U.S. Cl. 29—768 **15 Claims**





1. An apparatus for threading a slider onto a pair of stringers for a slide fastener, comprising:

(a) a slider holder disposed in a longitudinal path of the pair of stringers;

(b) aligning means disposed downstream of said slider holder in the longitudinal path for laterally aligning respective leading ends of the opposed stringers with each other which stringers have been threaded through the slider; and

(c) a clamp disposed between said slider holder and said aligning means for holding the opposed stringers in their relative position, said clamp and said slider holder being relatively movable away from each other along the longitudinal path of the stringers.

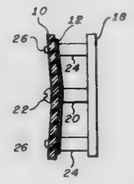
VOL 1098 ISS 4 JA 24 1989 UMI

4,799,314

METHOD OF MOUNTING A PRINTED CIRCUIT BOARD

Ralph Lake, Yorba Linda, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 2, 1987, Ser. No. 69,549
Int. Cl.[4] H05K *5/00, 3/36*
U.S. Cl. 29—846 **3 Claims**



1. A method for mounting a printed circuit board comprising:

providing a printed circuit board having an electrically conductive grounding path printed thereon, a hole centrally disposed within said board, and a plurality of peripheral holes engaging said grounding path and extending through said board;

providing a conductive base plate with a centrally disposed threaded stud aligned with said hole of said board, said stud having a first predetermined longitudinal dimension and said plate configured to face said electrically conductive grounding path,

providing a plurality of integrally formed supporting members on said mounting plate, said members formed orthogonal to said plate, and said members disposed at the periphery of said plate so as to cooperate with said peripheral holes of said board,

providing ones of said supporting members with a flange for accepting ones of said peripheral holes and a shoulder for supporting said board, said shoulder longitudinally disposed on said member at a second predetermined dimension greater than said first predetermined dimension; and

assembling said plate and said board by inserting a flange of at least one of said supporting members through a cooperating peripheral hole of said board, inserting a screw through said centrally disposed hole of said board and engaging said stud, and tightening said screw so that said board is compressively engaged against said supporting members, thereby electrically engaging said conductive grounding path and said conductive base plate.

4,799,315

KNIFE SUPPORT AND CUTTING GUIDE

Steven M. Ziegler, 5252 Wethersfield Rd., Jamesville, N.Y. 13078

Filed Jun. 8, 1987, Ser. No. 59,752
Int. Cl.[4] B26B *3/00*
U.S. Cl. 30—293 **8 Claims**

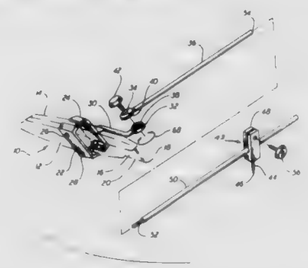
1. A knife support and guide adapted to hold a conventional mat knife having a handle and essentially flat blade of predetermined dimensions, said support and guide comprising:

(a) clamp means adapted to releasably engage and hold said knife handle in a fixed, predetermined orientation relative to said clamp means;

(b) an arm fixedly attached to said clamp means and having an axis lying in a first plane;

(c) an elongated rod having a linear axis lying in a second, vertical plane;

(d) means for releasably attaching said arm to said rod in adjustable angular orientations of said first and second planes, including first and second circular members fixedly attached to end portions of said arm and said rod, respectively, and means for releasably holding said circular members in superposed, contacting relation in an adjustable rotational orientation; and



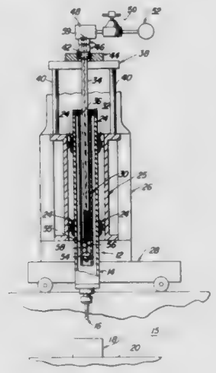
(e) a surface-engaging member engageable with said rod and including means for releasably fixing the position of said member at any desired position along the length of said rod.

4,799,316

COORDINATE MEASURING MACHINE WITH A PROBE SHAFT COUNTER BALANCE SYSTEM

John J. Tuss, Englewood, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Dec. 28, 1987, Ser. No. 139,532
Int. Cl.[4] G01B *5/20*
U.S. Cl. 33—503 **8 Claims**



1. A coordinate measuring machine (**10**) of the type including a probe shaft (**14**) supported for vertical movement over a horizontal surface (**20**) that is adapted to support an object (**18**) to be measured by the probe, and a counterbalance system for the probe shaft (**14**) that includes: a piston (**54,54***a*) and vertically extending cylinder (**30,30***a*) into which said piston (**54,54***a*) is fit, said cylinder having an upper end wall (**32,32***a*) to create a pressure chamber (**58,58***a*) above said piston (**54,54***a*), said pressure chamber (**58,58***a*) supplied from fluid pressure supply means (**48,48***a*); structure (**38,38***a*) relatively fixed with respect to said probe; and, means securing said relatively fixed structure (**38,38***a*) to said piston (**54,54***a*), so that fluid pressurizing of said pressure chamber (**58,58***a*) enables counterbalancing of the weight of the probe shaft (**14**), said counterbalance system characterized by:

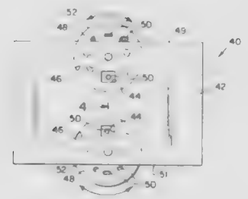
an elongated tube (**34,34***a*) entering into said cylinder (**30,30***a*) from the upper end thereof, extending along said cylinder (**30,30***a*) and terminating above said piston (**54,54***a*), said relatively fixed structure (**38,38***a*) mounting the upper end of said tube (**34,34***a*) protruding from said cylinder (**30,30***a*) allowing the introduction of pressurized fluid through said tube (**34,34***a*) to pressurize said chamber (**58,58***a*).

4,799,317

STENCIL DEVICE FOR POST CARDS

Felicia M. Christian, 1007 Dekalb St., Apt. 1A, Norristown, Pa. 19401, and George Spector, 233 Broadway, Rm 3815, New York, N.Y. 10007

Filed Nov. 2, 1987, Ser. No. 115,349
Int. Cl.[4] B43L *13/02*
U.S. Cl. 33—565 **2 Claims**



1. A stencil device for a post card and the like, which comprises:

(a) a thin rectangular body member having two spaced apart windows above two spaced apart bottom curved recesses, one of said windows and one of said recesses near top edge and other of said windows and other of said recesses near bottom edge with each of said windows extending through said body member into each of said recesses;

(b) two stencil wheels, each having a plurality of radially spaced apart and different geometric shaped openings, each of said wheels fit within each of said recesses of said body member so that each of said openings can line up with one of said windows while a portion of circumference of each of said wheels extend past top and bottom edges of said body member; and

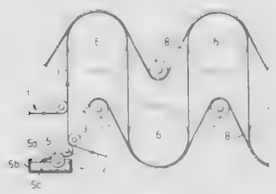
(c) two pivot pins, each extending through said body member and into center of one of said stencil wheels so that said stencil wheels can each be turned within said recesses to create different shapes on the post card and the like when a person outlines said openings in said stencil wheels through each of said windows with a writing instrument.

4,799,318

ARRANGEMENT IN THE DRYING SECTION OF A PAPER MACHINE

Torbjörn Hansson, Växjö , Sweden, assignor to Fläkt AB, Nacka, Sweden

Filed Mar. 18, 1987, Ser. No. 27,396
Claims priority, application Sweden, Mar. 19, 1986, 8601291
Int. Cl.[4] D06F *58/00*
U.S. Cl. 34—117 **20 Claims**



1. A paper drying apparatus comprising:

means for guiding a moving paper web along a path through said drying apparatus including web engaging drying cylinders mounted in said drying apparatus;

means for controlling shrinkage of said web, said means including at least one strap mounted for movement with said web, said strap including a first section for adhering attachment to an edge of said web and a second section for engagement with a co-acting means on said drying cylinders; and

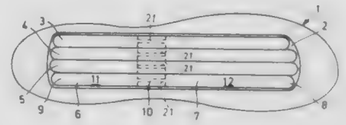
means for coating an adhesive layer between said strap and said web for adhering said strap to said edge of said web.

4,799,319

DEVICE FOR WARMING THE FOOT OF A WEARER

Max Zellweger, Alte Wollerauerstrasse 36, CH 8805 Richterswil, Switzerland

Filed Jun. 16, 1987, Ser. No. 62,676
Claims priority, application Switzerland, Jun. 18, 1986, 2459/86
Int. Cl.[4] A43B *07/02, 13/18*
U.S. Cl. 36—2.6 **10 Claims**



1. A device for warming the foot during walking comprising:

an inner sole defining a plurality of longitudinally communicating closed cavities which deform under compressive stress, said cavities each containing a fluid therein, and

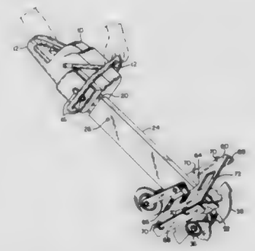
a flow restrictor located in a region of a arch of the foot and including at least one restrictive shutter whereby heat is generated as a fluid passes through said flow restrictor during alternating application of stresses on said cavities during walking.

4,799,320

APPARATUS FOR DIGGING SURFACE TRENCHES IN THE GROUND

Raymond M. West, 2807 NE. Brazee, Portland, Oreg. 97212, and Robert W. Steele, 1185 Hamilton Heights, Corvallis, Mont. 59828

Continuation of Ser. No. 001,914, Jan. 9, 1987, abandoned. This application Feb. 23, 1988, Ser. No. 161,403
Int. Cl.[4] E02F *5/02*
U.S. Cl. 37—80 R **1 Claim**



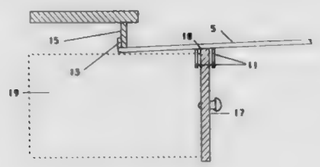
1. Apparatus for digging surface trenches in the ground comprising:

a power unit having operating handles and a laterally projecting output shaft,

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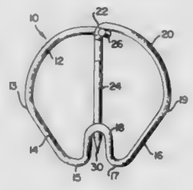
an elongated rigid bar secured to one end to said power unit and having an opposite free forward end,
an elongated housing secured to said bar and enclosing and reinforcing said bar forwardly of said power unit to said free end,
said housing being enlarged relative to said bar to form upper and lower longitudinal passageways therebetween and having a length so as to extend beyond the free end of said bar,
a sprocket wheel secured to said output shaft,
bearing means secured to the extended end of said housing and projecting laterally outwardly from said housing in spaced relation from the free end of said bar and supported fully by said housing.
a cross shaft journaled in said bearing means for support independently of said bar,
a sprocket wheel fixed to said shaft substantially in alignment with the bar and beyond the end of said bar,
a cross link motorcycle-type chain trained around said sprocket wheel and traveling longitudinally through said passageways,
digging means on said shaft for digging trenches when the power unit is operated,
a rigid arm having an inner end secured to said housing adjacent the other end of said housing,
a ground engaging wheel secured to said arm for engaging the ground for supporting the housing at an incline so that said digging means contact the ground when revolved,
an upright flexible guard secured to said housing adjacent said digging means between said digging means and said power unit to protect the operator from debris thrown by said digging means,
said guard being of a flexibility whereby to be self-sustaining and operative to protect the operator but at the same time to allow larger size debris portions to distort it and pass thereby,
forwardly projecting side flaps on said guard,
and a hand engaging aperture in an upper portion of said guard.

4,799,321
IRONING BOARD
Leo D. Johnson, 405 - 1445 W. 14th Ave., Vancouver, Canada V6H 1R5
Filed Jan. 16, 1987, Ser. No. 4,199
Int. Cl.[4] D06F *81/00*
U.S. Cl. 38—103 6 Claims



1. An ironing board that is adapted to be supported in a standard drawer having a vertical face piece comprising:
(a) an ironing board having an upper planar ironing surface with a first working end, a planar undersurface parallel to said upper surface, and a second end distant from said first end;
(b) a transverse ridge adjacent the second end of said ironing board distant from said first end and extending vertically from said upper ironing surface; and,
(c) two parallel ridges on the undersurface of said ironing board which together cooperate to form a groove adapted to receive the vertical face piece of the drawer.

4,799,322
TANGLE RESISTANT LOCK PIN
Robert A. Sardinskas, Bethany, Conn., assignor to Sarco Mfg. Co., Inc., Bethany, Conn.
Filed Sep. 25, 1987, Ser. No. 100,982
Int. Cl.[4] A44C *3/00*
U.S. Cl. 40—1.5 20 Claims



1. A lock pin for a badge shell having a round periphery and an inwardly bent skirt along said periphery forming an open back, said lock pin comprising:
a length of resilient wire having a fastening portion with a lower pointed end on the wire first free end adapted to extend at least partially across the open back of said badge shell to fasten said badge to a garment;
said wire having a shell securing portion, connected at a first end to the upper end of said fastening portion, extending in a closed generally planar path conforming at least partially to the curvature of the inner periphery of said badge shell completely around said fastening portion and terminating in the wire second free end comprising a locking tab extending outwardly from the plane of said shell securing portion for removably locking said second free end to said fastening portion upper end, said locking tab further adapted to bear against the inward side of the shell securing portion when the lock pin is inserted into said badge shell to resist removal of said lock pin from said badge shell.

4,799,323
MAGAZINE CARRIER FOR USE ON FIREARMS OR OTHER SUPPORT
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20818
Filed Apr. 14, 1988, Ser. No. 181,413
Int. Cl.[4] F41C *27/00*
U.S. Cl. 42—90 14 Claims



1. A carrier for a cartridge magazine, said carrier comprising: a housing adapted for slideably encompassing a magazine installed therein; means for attaching said housing to a supporting structure; pivotable latch means on said housing, said latch means adapted at a first orientation to prevent said magazine from sliding out of said housing; said latch means adapted at a second orientation to permit said magazine to slide out of said housing; and releaseable detent means adapted at a first position to prevent movement from said first to said second orientation, said detent means positioned on said latch means; said detent means adapted at a second position to permit said movement.

4,799,324
FIREARM RECOIL ATTENUATOR AND METHOD
Nicholas L. Nodo, Rte. 1, Box 39, Rice, Minn. 56367
Filed Jan. 11, 1988, Ser. No. 141,830
Int. Cl.[4] F41C *29/00*
U.S. Cl. 42—94 2 Claims



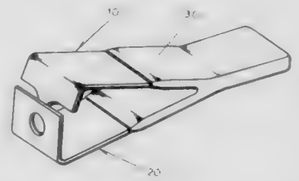
1. A firearm recoil attenuating device, comprising an elongated support platform member
a socket member of flexible non-stretchable material having a vertical back wall and having forwardly extending strap members having superposed angled end portions,
means securing said end portions to said support member, and
an elevating means upstanding from said support member to elevate a firearm into sighting position.

4,799,325
AUXILIARY RIFLE SIGHT
Raymond F. Booze, 8539 Cole St., Downey, Calif. 90242
Filed Nov. 10, 1987, Ser. No. 119,021
Int. Cl.[4] F41G *1/00, 11/00*
U.S. Cl. 42—100 26 Claims



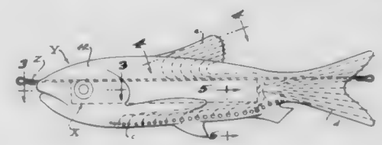
1. An auxiliary open rifle sight arrangement for replacing the telescope of a rifle having telescope mounting elements attached thereto or integral therewith at the receiver thereof for supporting a telescope relative to the rifle receiver at at least two spaced apart points generally corresponding to the front and rear portions of the telescope barrel, said arrangement comprising:
rear open sight means configured for fitting into coacting interengagement with the pre-existing geometrically configured rear portion of the telescope mounting element;
coupling means for coactingly engaging said rear sight means and existing portions of the rear portion of the telescope mounting elements; and
front open sight means configured, dimensioned and arranged for coacting engagement with and mounting to existing portions in the front portion of the telescope mounting elements of the rifle, said front sight means including a sighting member for alignment with the rear sight means for use as a rifle sight in lieu of the telescope.

4,799,326
FISH HOOK EYE CLEANER
Miles A. Mertens, P.O. Box 1753, Fond du Lac, Wis. 54935
Filed Dec. 8, 1986, Ser. No. 939,317
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—4 5 Claims



1. A work piece comprising a fishing jig having a generally circular eye to be cleared of obstruction, in combination with a device for clearing a projecting eye on a work piece, said eye being generally circular and having a center area intended to be open,
said clearing device comprising a tong-like device with two strip portions each having a free end and an end where the two strip portions are joined to each other and capable of approaching each other at their free ends,
an inner tab and an outer tab at the free ends of respective strip portions, each said tab being substantially perpendicular to the respective strip portion of which it is a part;
said tabs being positioned so that when said strip portions are pressed towards each other, the inner tab passes behind and substantially parallel to the outer tab at a distance equal to the distance to the center of said eye of said fishing jig;
said inner tab having a projecting point formed on its free edge sized to fit within said eye;
said outer tab having an opening through which the eye which is to be cleared may be inserted;
said opening being located in a plane including the path the point takes when it passes behind said outer tab;
whereby when said eye of said workpiece is in said opening and said strip portions are pressed towards each other, said point and said inner tab passes behind, substantially parallel to, and across the entire width of said opening and the said point passes through said eye inserted in said opening;
said strip portions being joined so that when said strip portions are released, said strip portions return to their original positions and said point located on said inner tab does not obstruct said opening in said outer tab.

4,799,327
BATTERY POWERED FIBER OPTIC FISH LURE
Mark A. Treon, 7085 Eastondale Ave., Long Beach, Calif. 90805
Filed Aug. 6, 1987, Ser. No. 82,272
Int. Cl.[4] A01K *85/01*
U.S. Cl. 43—17.6 9 Claims

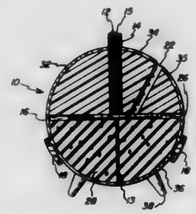


1. An illuminated fish lure in the form of sea life and the like, and including;
a light source module having an electric battery, a light emitting means and a manipulatable ON and OFF switch-

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ing means in series circuit through the battery and light emitting means.
a body in the form of said sea life and of depressible material encapsulating the light source module and with depressible sides, overlying said switching means for alternately opposite manipulaton of said switching means to ON and OFF positions, and the light emitting means being visible from the body,
and there being a leader extending from the body.

4,799,328
FISHING BOBBER WITH SCENT EMISSION
Jeffrey R. Goldman, 195 Lark St., Albany, N.Y. 12210
Filed Sep. 14, 1987, Ser. No. 95,769
Int. Cl.[4] A01K *93/00*
U.S. Cl. 43—42.06 5 Claims



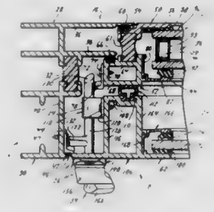
1. A fishing bobber with scent emission comprising:
a shell having upper and lower parts, the lower part containing at least one or more water receiving and discharging ports;
absorptive material within the shell;
a retention-pressure plate moveable between an advanced and retracted position, movement of said pressure plate to said advanced position depressing said absorptive material;
means for directing a fish-attracting substance into the absorptive material.

4,799,329
LURE WITH SKIRT OF PLIABLE FILAMENTS
Steven L. Paulsen, 1151 E. 16th St., McMinnville, Oreg. 97128
Filed Aug. 17, 1987, Ser. No. 87,329
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.28 2 Claims



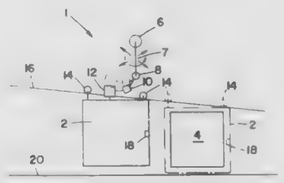
1. A fish lure comprising,
an elongate pliable body,
a hook carried by said body and adapted for attachment to a leader,
an elongate head of metallic material at one end of said body and having a bore lengthwise therethrough and a recess extending about said head, an end recess formed within one end of said head,
pliable strands having portions in place in said recess,
securement means extending about the strands and confining same in place in said recess whereby said portions of the strands located proximate the head of the lure will project outwardly from the head, and
said elongate pliable body including a forward end segment terminating forwardly within said end recess of said head.

4,799,330
SASH LOCKING AND SEALING ASSEMBLY
Timothy R. Hudson, Cassville, Mo., assignor to Efco Corporation, Monett, Mo.
Filed Jun. 8, 1987, Ser. No. 59,042
Int. Cl.[4] E05C *7/02*
U.S. Cl. 49—62 29 Claims



1. An assembly for holding an exterior sash and an interior sash of a window against movement away from a casing located about the exterior and interior sashes, the sashes being movably mounted to the casing so that the sashes can be positioned within the casing and the sashes can both be moved to the interior of the casing to open the window, the casing having an interior side and exterior side, the locking assembly comprising:
(a) means for latching, said latching means having means for locking the exterior sash to the interior sash so that the exterior and interior sash move together;
(b) said latching means having means for locking the interior sash to the casing to hold the interior sash within the casing;
(c) the latching means comprising a member having means for engaging the exterior sash to the interior sash and means for engaging the interior sash to the casing; and
(d) means for moving the exterior sash, the said means for moving being mounted between the exterior sash and the interior sash when the interior sash is locked to the casing, and sealing means positioned between the casing and the exterior sash when the interior sash is locked to the casing, wherein when the latching means releases the locking of the exterior sash to the interior sash, the interior sash forces the moving means to move the exterior sash into sealing relationship with the casing.

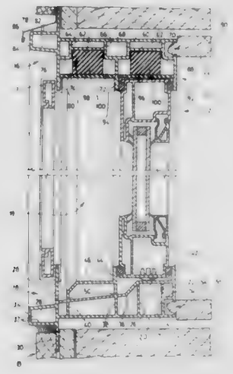
4,799,331
AUTOMATIC, GRAVITY-POWERED CLOSURE DEVICE
Darryl E. Laxo, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 681,526, Dec. 14, 1984, abandoned. This application Oct. 28, 1986, Ser. No. 923,946
Int. Cl.[4] E05F *15/20*
U.S. Cl. 49—31 1 Claim



1. A gravity actuated automatic closure device, comprising:
a closure for sealing an opening, said closure being roll mounted above said opening;
means for holding said closure in a ready position; and

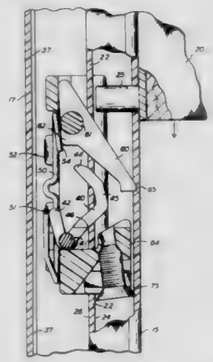
means for disengaging said holding means said means for disengaging further comprising:
(a) a pivotally mounted moment arm connected at its first end to said means for holding;
(b) a release weight at a second end of said moment arm; and
(c) a plurality of compression springs radially attached to said moment arm below a pivot point on said moment arm.

4,799,332
SLIDING WINDOW
Fred Haas, 12 Tollesbury Place, Unionville, Ontario, Canada
Filed Nov. 20, 1987, Ser. No. 123,364
Claims priority, application Canada, Jul. 23, 1987, 542833
Int. Cl.[4] E06B *7/14*
U.S. Cl. 49—408 6 Claims



1. A sliding window construction of extruded thermoplastic material, comprising;
a support frame with side members and top and bottom members;
inner and outer walls on said bottom and side members;
intermediate walls connecting said inner and outer walls of said side and bottom members forming closed tubes in section;
pairs of parallel guide walls on said inner walls of said side and bottom members;
a sloping drainage wall extending from said inner walls of said side and bottom members;
a frame support wall formed on said sloping drainage wall, co-planar with said inner wall of said bottom and side members and having drain opening means in said frame support wall of said bottom member;
said top frame member having a top frame outer wall, and top frame inner walls lying in a common plane and spaced from said top frame outer wall, junction walls extending between said top frame inner and outer walls defining parallel tubular spaces, inward extensions of said junction walls defining spaced parallel channels, top frame guide walls connected to said top frame inner and outer walls, forming two parallel channels;
glazing frames for receiving glazing, said glazing frames having glazing frame inner and outer walls, and side walls joining the same and forming a tube in section, and said outer walls defining a rectangular perimeter of a respective said glazing frame adapted to be received in said guide walls on said support frame, and there being on said glazing frame inner walls, inwardly extending ledge members, and said glazing frame inner walls and said ledge members defining generally L-shaped glazing spaces, and, engagement means adjacent said glazing spaces for reception of a glazing retaining strip.

4,799,333
LOCK SHOE SYSTEM FOR TAKE-OUT WINDOW
Norman R. Westfall; James A. Martini, and John I. Habbersett, all of Rochester, N.Y., assignors to Caldwell Manufacturing Company, Rochester, N.Y.
Filed Sep. 22, 1987, Ser. No. 99,894
Int. Cl.[4] E05D *15/22*
U.S. Cl. 49—446 38 Claims

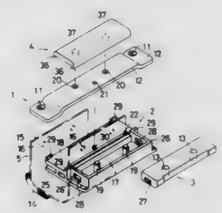


1. A lock shoe system for a take-out window having a take-out jamb liner formed of resin material having a slot opening into a vertically extending lock shoe channel within which a lock shoe moves vertically of said jamb liner, said system comprising:
a. a pair of fins extending laterally outward from opposite sides of said slot within said lock shoe channel;
b. said lock shoe being arranged to bear against and ride on a sash side of said fins;
c. said lock shoe having a pivotally mounted biter knife biased to pivot into biting engagement with a frame side of said fins to lock said lock shoe vertically in place; and
d. an arm of said biter knife being engaged by a pin extending from said sash into said slot for holding said knife clear of said fins whenever a free end of said sash pin engages said arm.

4,799,334
STABILIZER FOR AUTOMOBILE DOOR WINDOW GLASS
Youji Sato, Yokohama, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Dec. 10, 1987, Ser. No. 130,925
Claims priority, application Japan, Dec. 13, 1986, 61-192007[U]
Int. Cl.[4] E06B *7/16*
U.S. Cl. 49—493 1 Claim

1. A stabilizer for an automobile door window glass comprising a plate-like bracket having opposite end mounting portions, a spacer having a predetermined thickness and fitted on said bracket, a stopper having through pin holes, a stabilizer body having a recessed portion in which said stopper is fitted, and a mounting surface on which said bracket is fitted, said stabilizer body having pins projecting from the bottom of said recessed portion and inserted through said pin holes of said stopper, and a cloth member with fur having opposite end portions formed with holes for receiving said pins,
said spacer being fitted on said bracket fitted on said stabilizer body, said cloth member with fur with the engage-

ment holes in one of the end portions engaged on the pins projecting from the bottom of said recessed portion being wound on said stabilizer body by covering said spacer, the other end portion of said cloth member with fur being overlapped over said cloth member with fur on the bottom of said recessed portion with said engagement holes fitted on said pins, said stopper being fitted in said recessed portion with the pins projecting from the bottom of said recessed portion being engaged in said pin holes of said stopper, the overlapped end portions of said cloth member with fur being supported by said fitted stopper.

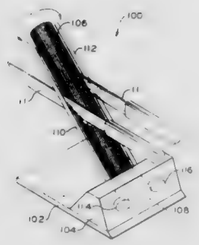


4,799,335

KNIFE SHARPENING DEVICE

Silvio R. Battocchi, 26 Pelham Rd., West Hartford, Conn. 06107

Filed May 20, 1987, Ser. No. 51,711
Int. Cl.[4] B24B *9/04;* B24D *15/08*
U.S. Cl. 51—102 1 Claim



1. A knife sharpening device comprising:

base means for forming a base supportable on a support surface;

sharpening means comprising a rotatable, generally longitudinally extending cylindrical sharpening surface having a central rotational axis extending from said base means at a generally oblique angle on the order of approximately 45 degrees relative to said support surface;

means for rotating said sharpening surface; and

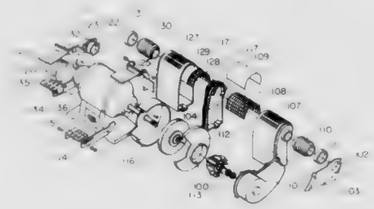
two generally parallel guide members connected to said base means in fixed relationship therewith and extending in generally parallel relationship to said rotational axis and lying on opposite sides of said sharpening surface in a common plane extending at said generally oblique angle to said support surface, each said guide member comprising a metal rod equidistantly spaced at a unique pre-established distance from said sharpening surface so that a knife blade inserted between a said guide member and the sharpening surface and engageable therewith engages the sharpening surface at an oblique angle relative to said axis to sharpen the blade at a pre-selected substantially constant sharpening angle as said sharpening surface is rotated and said blade is moved generally transversely across the sharpening surface and the said guide member in a direction generally parallel to said support surface.

4,799,336

DUST COLLECTING SYSTEM FOR BENCH GRINDER

Tai-Her Yang, 5-1 Taipin St., Si-Ru Town, Dzan-Hwa, Taiwan, R.O.C., Taiwan

Filed Mar. 26, 1987, Ser. No. 30,679
Int. Cl.[4] B24B *31/12*
U.S. Cl. 51—102 2 Claims



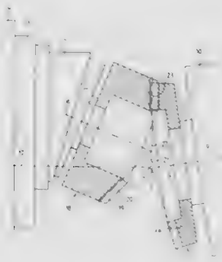
1. In combination with a bench grinder having a main housing including a motor provided with a motor shaft, an abrasive wheel on the shaft, and a guard housing secured to the main housing and surrounding the wheel, a dust collecting system comprising a fan housing secured to the guard housing laterally thereof, the guard housing having a lateral opening formed therein for communicating the guard housing with the fan housing, the motor shaft extending through the lateral opening in the guard housing and into the fan housing, a fan carried by the extending motor shaft in the fan housing, the fan housing having a portion extending rearwardly therefrom and substantially parallel to the guard housing, a filter housing secured to the main housing rearwardly thereof in close proximity to said motor, the bottom of said main housing and said filter housing being coplanar, conduit means connecting the rearwardly-extending portion of the fan housing with the filter housing, the filter housing having a plurality of air exhaust openings formed therein, and a filter supported within the filter housing inwardly of the air exhaust openings therein, whereby the fan draws the dust-laden air axially of the motor shaft and through the lateral opening in the guard housing away from said motor and said abrasive wheel and into the fan housing, and whereby the dust-laden air passes rearwardly into the rearwardly-extending portion of the fan housing and then through the conduit means and substantially parallel to the motor shaft and into the filter housing, and whereby the air thereafter passes through the filter and out of the air exhaust openings in the filter housing; wherein the filter housing has a top semi-cylindrical portion having the air exhaust openings formed therein, and wherein the filter is relatively-thin and substantially semi-cylindrical and is supported within the top semi-cylindrical portion of the filter housing substantially beneath the air exhaust openings formed therein, the axis of said semi-cylindrical filter housing being parallel to the shaft of the motor and abrasive wheel.

4,799,337

METHOD OF GRINDING THE TEETH OF BEVEL GEARS HAVING LONGITUDINALLY CURVED TEETH

Erich Kotthaus, Wallisellen; Ami Ginier, Bergdietikon, and Otto Hildinger, Schwerzenbach, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Dec. 1, 1986, Ser. No. 936,155
Claims priority, application Switzerland, Dec. 13, 1985, 5330/85; Aug. 11, 1986, 3195/86
Int. Cl.[4] B24B *19/00*
U.S. Cl. 51—287 6 Claims



1. A method of fabricating ground gear teeth on a bevel gear, comprising the steps of:

rough machining a bevel gear blank having a first axis of rotation and a first number of longitudinally curved teeth each having a longitudinally convex tooth flank and each having a longitudinally concave tooth flank while leaving a finish machining allowance on each said longitudinally concave tooth flank and on each said longitudinally convex tooth flank;

arranging said rough machined bevel gear blank with said first axis of rotation in a hypoidally displaced relationship to a second axis of rotation of a rotary form tool with said first and second axis defining an angle less than 90° or greater than 90° with respect to one another;

employing as said rotary form tool a rotary form tool having the configuration of a helical bevel gear with a second number of gear teeth hypoidally related to said longitudinally curved teeth of said rough machined bevel gear blank in correspondence with said hypidally displaced relationship of said first axis of rotation to said second axis of rotation and coated with an abrading medium on at least one tooth flank of said second number of gear teeth for removing said finish machining allowance;

meshing said second number of gear teeth of said rotary form tool with said first number of longitudinally curved teeth of said rough machined bevel gear blank;

positively and synchronously driving said rotary form tool about said second axis of rotation and said rough machined bevel gear blank about said first axis of rotation in the ratio of said first number of longitudinally curved teeth to said second number of gear teeth;

selecting said hypoidally displaced relationship of the first axis of rotation to the second axis of rotation and rotary speeds of said first axis of rotation and said second axis of rotation such that a relative sliding velocity arising between said longitudinally curved teeth and said gear teeth has a value within the range of predetermined surface speeds for abrading operations; and

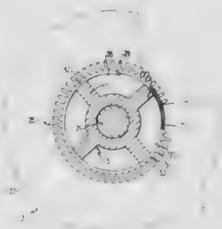
continuously abrading in a single operation at least a selected set of the set of all said longitudinally concave tooth flanks and the set of all said longitudinally convex tooth flanks while performing a predetermined feed motion of said rotary form tool relative to t he bevel gear blank.

4,799,338

BUFFING WHEEL

William M. Schaffner, Pittsburgh, Pa., assignor to Schaffner Manufacturing Company, Inc., Emsworth, Pa.

Filed Oct. 9, 1987, Ser. No. 107,398
Int. Cl.[4] B24B *9/02*
U.S. Cl. 51—334 7 Claims



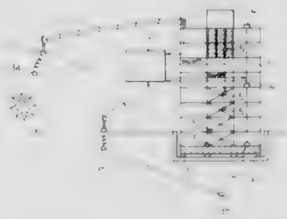
1. A buffing wheel including a ring having a circular body member from at least one of whose peripheral edges teeth extend, an annulus of fabric material for buffing extending from said ring, said annulus being secured to said ring by engagement with said teeth near the inner periphery of said annulus, and a strap mounted on said body member contiguous to said body member extending around substantially the whole periphery of said body member to prevent rupture of said buffing wheel by the centrifugal force developed in said ring in the use of said wheel.

4,799,339

METHOD OF CONTROLLING BUILDING AGAINST EARTHQUAKE

Takuji Kobori; Hiroo Kanayama; Mitsuo Sakamoto; Shunichi Yamada, and Shuichi Kunugata, all of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan

Filed May 13, 1987, Ser. No. 49,656
Claims priority, application Japan, May 16, 1986, 61-112025; May 16, 1986, 61-112026
Int. Cl.[4] E04B *1/98*
U.S. Cl. 52—1 19 Claims



1. The method of protecting an entire building against seismic tremors caused by an earthquake, comprising the steps of:

(a) sensing a seismic tremor near an earthquake center and remote from said building, before said seismic tremor reaches said building;

(b) sensing said seismic tremor in said building;

(c) analyzing said sensed tremors;

(d) providing selected structural members throughout said building with means to vary their respective rigidities; and

(e) selectively varying the rigidities of said selected structural members responsive to the analysis of said tremors.

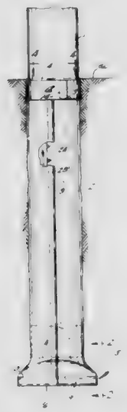
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4,799,340

BARRIER FOR UTILITY POLE

James W. Lichau; Patricia K. Lichau, both of 16426 Old Stage Coach Rd., Walton, Oreg. 97490, and Steven D. Hanson, Eugene, Oreg., assignors to James W. Lichau and Patricia K. Lichau, both of Walton, Oreg.

Filed Nov. 3, 1986, Ser. No. 926,258
Int. Cl.[4] E04B *1/70*
U.S. Cl. 52—170 1 Claim



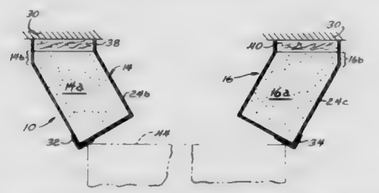
1. A barrier for application to an end segment of a pole or piling, said barrier comprising,
synthetic sheet material of a pliable nature having joined lapped vertical margins providing a seam to form the material into an elongate tubular sheath of circular section corresponding generally to the pole diameter,
said seam joined by a thermal weld,
an upper extremity of the sheet material defining an open area for pole reception,
said sheet material terminating downwardly and thereat forming closure means including multiple folds to prevent the passage of material iato or out of said barrier, said sheet material defining a chamber subjacent the end of a pole or piling therein and,
cinch means of synthetic material extending about the upper extremity of the sheet material to urge same into engagement with the pole or piling surface, said cinch means being thermally responsive to shrink in the presence of heat.

4,799,341

WEDGE SEAL FOR LOADING DOCK SHELTER

John A. Frommelt, Dubuque, Iowa, and Kenneth Lenz, East Dubuque, Ill., assignors to Frommelt Industries, Inc., Dubuque, Iowa

Filed Sep. 23, 1987, Ser. No. 100,127
Int. Cl.[4] E04H *14/00*
U.S. Cl. 52—173 DS 11 Claims



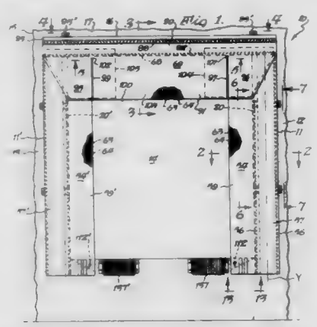
1. A loading dock shelter for use with a door opening in a wall and adapted to seal against the rear top and side edges of a truck backed against said loading dock shelter, said loading dock shelter comprising:
a resilient head pad mounted to the wall above the door opening therein and extending substantially the length of the door opening, said head pad having mitered end portions; and
resilient left and right side pads mounted to the wall adjacent respective lateral portions of the door opening therein, each of said side pads having respective mitered upper end portions, wherein each of the mitered end portions of said head pad are positioned in abutting contact with a respective complementary mitered upper end of one of said side pads;
wherein each of said pads includes an inner side extending from the wall inwardly toward the door opening, a first outer side extending from and disposed substantially transversely to the wall, a second outer side displaced from the wall and continuous with said first outer side and extending inwardly toward the door opening, and a distal side continuous with and disposed generally transversely to said inner side and said second outer side and adapted to engage the rear edge of a truck at an acute angle, such that when a truck engages the loading dock shelter the second outer sides of each of said head and side pads expand outwardly in a bulging manner to allow the pads to be displaced outward from the edges of the truck while the distal sides of said pads engage an outer periphery of the rear top and side edges of the truck in a sealed manner.

4,799,342

COMBINED DOCK SEAL AND SHELTER

Joseph P. H. Klevnjans, Corsopolis, Pa., assignor to Eriks Holding N.V., Alkmaar, Netherlands

Continuation of Ser. No. 680,898, Dec. 12, 1984, abandoned. This application Apr. 14, 1987, Ser. No. 42,633
Int. Cl.[4] E04F *10/04*; E06B *1/66*
U.S. Cl. 52—173 DS 31 Claims



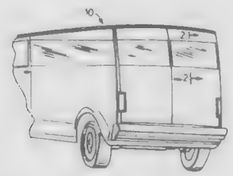
1. A combined dock seal and shelter for mounting on opposite sides of a doorway in a building wall comprising a pair of spaced side members including substantially parallel vertical elongated side pad members having longitudinal axes and compressible flexible resilient cores, first sides on said side pad members for placement in contiguous relationship to said building wall, second sides on said side pad members on the opposite sides of said side pad members from said first sides for placement in spaced relationship to said building wall, third sides on said side pad members facing each other and extending transversely to said first and second sides, securing means for securing said side pad members to said building wall, said cores having a first resistance to compression from a normal unstressed condition, elongated flexible resilient substantially planar sheet-like side flap members having a width which includes first and second portions which are continuations of each other, means securing said first portions on said second sides of said side pad members with said second portions extending beyond said second sides toward each other for providing spaces between said second portions and said building wall, said third sides intersecting said side flap members at the junctions of said first and second portions, said side flap members having a second resistance to deflection from a normal unstressed condition in a direction about said longitudinal axes throughout sufficient portions of said first and second portions which is greater than said first resistance to compression so that when forces are applied to said second portions of said side flap members along paths which are substantially parallel to said longitudinal axes said first and second portions of said side flap members will compress said elongated pad members primarily at the junctions of said second and third sides because said elongated side pad members have said first resistance to compression which is less than said resistance to deflection of said side flap members throughout said sufficient portions of said first and second portions.

4,799,343

WINDOW ASSEMBLY

Peter N. Gold, 465 North Wood Rd., Rockville Centre, N.Y. 11576

Filed Aug. 6, 1987, Ser. No. 82,048
Int. Cl.[4] E06B *3/00*
U.S. Cl. 52—208 9 Claims



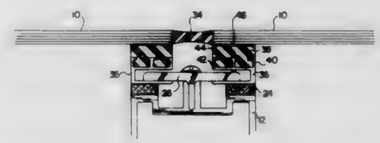
1. A sliding automotive window comprising:
a window frame having generally parallel upper and lower longitudinally extending portions, each having a generally Z-shaped flange having an inner leg and an outer leg connected by a cross leg, said inner and cross leg of said Z-shaped flange forming an inwardly facing generally V-shaped pocket having a first predetermined cross section;
a window pane having generally parallel upper and lower generally V-shaped edges having a second predetermined cross section defined by inner and outer legs of said V-shaped edge of said window pane, said second predetermined cross section being smaller than said first predetermined cross section, said window pane thereby being adapted to fit within said inwardly facing generally V-shaped pocket of each of said upper and lower portion of said Z-shaped flanges; and
a track member made of material having a predetermined thickness fixedly attached to said inner and outer legs of said edges of said window pane and disposed between said upper and lower generally V-shaped edges of said window pane and the generally V-shaped pocket of said Z-shaped flange, said first predetermined cross section being greater than the sum of said second predetermined cross section and said predetermined thickness of said track member mounted on said inner and outer legs of said edge of said window pane to provide a clearance between said track member and said inwardly facing V-shaped pocket sufficient to permit said window pane with said track member thereon to slide in said V-shaped pocket of said window frame.

4,799,344

MECHANICAL-ADHESION GLAZING

Geoffrey V. Francis, Brampton, Canada, assignor to Vision Engineering & Design, Inc., Oakville, Canada

Continuation-in-part of Ser. No. 749,655, Jun. 28, 1985, abandoned. This application Jun. 29, 1987, Ser. No. 68,034
Int. Cl.[4] E04B *2/28*
U.S. Cl. 52—235 23 Claims



1. A glass unit comprising:
a glass light having an inner surface;
an elastomeric, elongate gasket extending along edges of said glass light and located adjacent said inner surface;
a thin adhesive layer bonding said glass light to said gasket and located between said glass light and said gasket; and
an elongate supporting frame of rigid material extending along the same edges of said glass light and located on the side of said gasket opposite said glass light, said frame including integral flanges which extend into and are essentially non-removably, structurally united with the body of said elastomeric gasket for mechanically fastening said gasket to said frame;
said gasket being of sufficient flexibility to accommodate relative movement between said glass light and said frame, thereby reducing stresses to said adhesive layer.

4,799,345

REVERSIBLE COMPRESSION SEAL

Michael C. Rizza, 2863 Encina Camino, Walnut Creek, Calif. 94598

Filed Oct. 19, 1987, Ser. No. 109,966
Int. Cl.[4] E04C *11/10*
U.S. Cl. 52—396 12 Claims



1. A reversible seal for sealing abutting building surfaces, comprising:
a first surface;
a second surface having a plurality of face sections between lateral edges of said second surface such that said face sections define two parallel planes, each said face section separated by an indenting contour disposed in said second surface, a first of said planes closest to said first surface defined by said face sections lying between one of said lateral edges of said second surface and said indenting contour located nearest said same lateral edge, a second of said planes farthest from said first surface defined by said face sections in said second surface other than those said face sections defining said first plane, said first and second planes defining a region for accepting sealant material; and
a plurality of side faces joining said first and second surfaces so as to form a longitudinal hollow seal body.

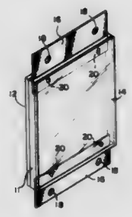
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4,799,346

LAMINATED GLAZING UNIT

Nelson P. Bolton, Quakertown, and W. Novis Smith, Jr., Philadelphia, both of Pa., assignors to Advanced Glass Systems Corp., Trumbauersville, Pa.

Filed Jul. 16, 1988, Ser. No. 886,301
Int. Cl.[4] E04C *1/40*
U.S. Cl. 52—509 18 Claims



1. A transparent laminate adapted for mounting to a support structure by attachment outside its periphery and transferring impact energy to said support structure, said laminate comprising:

at least two sheets of rigid transparent substrate layers;

at least one transparent resinous interlayer bonding together said substrate layers, said substrate layers and said interlayer having outside edges defining said laminate periphery, and

at least one attachment member mounting said laminate on a support structure embedded in said interlayer free of contact with said substrate layers and extending from the periphery of said laminate, said attachment member having means separate from said substrate layers and interlayer securing said laminate to a support in a manner to resist removal, securement means securing said laminate to said support structure and transferring impact energy to the support structure, and

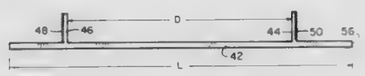
resistance means on said attachment means within said interlayer aiding in the prevention of removal of said attachment member from the laminate and in preventing delamination.

4,799,347

INSULATION SUPPORT TRUSS

Eli A. Byler, 63968 Co. Home Rd., Lore City, Ohio 43755

Filed Dec. 24, 1987, Ser. No. 137,576
Int. Cl.[4] E04B *3/24*
U.S. Cl. 52—712 8 Claims



1. A new and improved insulation support truss for insertion between floor joists with either of two different standard floor joist spacings, comprising:

thin elongated strip means formed from a flexible material;

said strip means having a length slightly greater than the larger of the two different standard floor joist spacings;

pointed tip means at opposite ends of said strip for engagement with side walls of the floor joists;

a pair of spaced legs transversely connected to said strip means;

said legs spaced apart a distance slightly greater than the smaller of the two different standard floor joist spacings; and

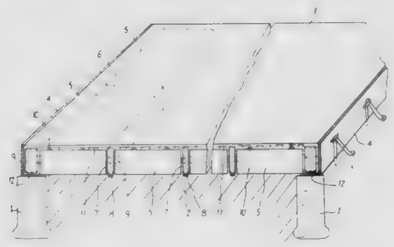
said legs each having a roughened outer surface.

4,799,348

METHOD AND EQUIPMENT FOR MAKING A RIGID SLAB ENABLING TO CARRY A BUILDING

Max Brami, 60 rue Saint-HonoréF-75001 Paris, and Pierre Mazarguil, 44 rue du Four, F-75006 Paris, both of France

PCT No. PCT/FR85/00159, § 371 Date Feb. 19, 1986, § 102(e) Date Feb. 19, 1986, PCT Pub. No. WO86/00358, PCT Pub. Date Jan. 16, 1986
PCT Filed Jun. 18, 1985, Ser. No. 847,408
Claims priority, application France, Jun. 19, 1984, 84 09595
Int. Cl.[4] E04B *1/00;* E04G *21/00;* E02D *27/02*
U.S. Cl. 52—742 8 Claims



1. Process for constructing a ribbed and rigid floor slab for supporting a construction, which comprises the following steps:

(a) forming pin-point foundations at least at the periphery of the floor slab to be formed;

(b) preparing flat and levelled ground at the level of the pin-point foundations;

(c) disposing recoverable shuttering elements on the ground thus prepared, at the periphery of the floor slab to be formed;

(d) disposing on the ground surface, within said recoverable peripheral shuttering elements, parallel rows of non-recoverable shuttering elements which engage the ground by their whole lower face, said rows of non-recoverable shuttering elements being intended to form the ribs of the floor slab to be formed;

(e) disposing between the rows of non-recoverable shuttering elements U-shaped spacing elements made of a sealing material and of which the lower face engages the ground;

(f) disposing a metal trellis work on the upper face of the non-recoverable shuttering elements for reinforcing the floor slab to be formed; and

(g) pouring concrete over the assembly thus formed.

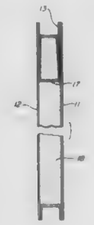
4,799,349

FIRE RESISTANT STEEL DOOR

John S. Luckanuck, Burlington, Canada, assignor to Radix-x/World Ltd., Ontario, Canada

Filed Feb. 9, 1987, Ser. No. 12,628
Claims priority, application Canada, Apr. 4, 1986, 505877
Int. Cl.[4] E04C *2/34*
U.S. Cl. 52—809 9 Claims

1. A steel door having steel sheets forming the outside surfaces of the door including a fire retardant core bonded to the inside surfaces of said steel sheets, said core being a stiff, high density bonded mineral fiber sheet sheet having a phenolic resin content of about 4 to about 10% by weight bonded to the inside surfaces of the steel sheets by a binder comprising a liquid alkali metal silicate admixed with a mineral powder in an amount sufficient that on said binder being subjected to high temperatures it intumesces to form a non-porous ceramic layer between the inside surfaces of the steel sheets and the mineral



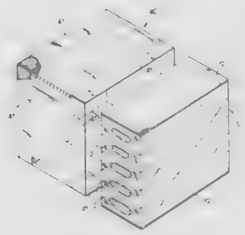
fiber sheet thereby protecting said mineral fiber sheet from said high temperature.

4,799,350

PROCESS FOR PACKAGING PANELS OF A COMPRESSIBLE MATERIAL AND THE PACKAGES PRODUCED BY THIS PROCESS

Jean-Claude Rias, Villennes sur Seine, France, assignor to Isover Saint-Gobain, France

Filed Jul. 30, 1982, Ser. No. 403,598
Claims priority, application France, Jul. 31, 1981, 81 14970
Int. Cl.[4] B65B *53/02, 63/02*
U.S. Cl. 53—399 7 Claims



1. Process for packaging compressible panels characterized by the following successive operations:

superposing a plurality of panels to form a pile;

applying an enclosure of shrinkable plastic material to the pile;

subjecting the enclosed pile to a first compression, perpendicularly to the side faces of the panels;

effecting shrinkage of the enclosure on the compressed pile to obtain a package of compressed panels;

stacking a plurality of identical packages of compressed panels in a pile;

applying a flat rigid element against each of the end faces of the pile to form a pile assembly of said elements and stacked packages;

subjecting the pile assembly to a second compression by applying a compression force to the outer sides of and perpendicularly to the planes of said flat rigid elements; and

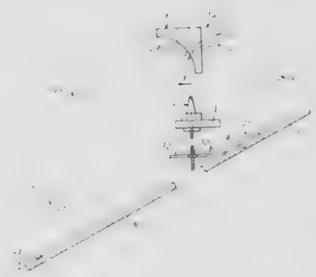
applying package fastening means to the pile assembly of compressed packages and flat rigid elements thereby providing an integrated package assembly incorporating the flat rigid elements at the end faces of the stacked packages.

4,799,351

PROCESS AND APPARATUS FOR TURNING HEAD TO FOOT AND PACKING DISSYMMETRICAL OBLONG BODIES

Guy Blanda, Guitres, France, assignor to Sanofi, Paris, France

Filed Sep. 3, 1987, Ser. No. 92,572
Claims priority, application France, Sep. 3, 1986, 86 12391
Int. Cl.[4] B65B *35/56, 35/54*
U.S. Cl. 53—446 17 Claims



1. A process for arranging a plurality of dissymmetrical oblong bodies, each body having a head and a foot, so that adjacent bodies are disposed in a head-to-foot relationship, comprising:

placing a plurality of bodies side by side on a table, all of said bodies being oriented in a single direction;

consecutively projecting pairs of said bodies from the table vertically and deflecting said pairs of bodies onto first and second guide members so that one of each of said pairs of bodies is oriented in a first direction on the first guide member, while the other of each of said pairs of bodies is oriented in a second and opposite direction on the second guide member;

guiding a first set of bodies from the first guide member and a second set of bodies from the second guide member side by side to a packing station; and

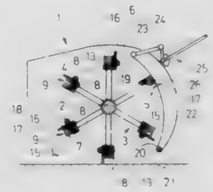
packing the bodies so that the bodies from the first set of bodies alternate with the bodies from the second set of bodies, with the bodies of the first set of bodies being oriented opposite to the bodies of the second set of bodies.

4,799,352

APPARATUS FOR CONDITIONING CUT HALMS

Jean-Pierre Amstutz, Birr, Switzerland, assignor to Bucher-Guyer AG, Niederweningen-Zurich, Switzerland

Continuation of Ser. No. 585,619, Mar. 6, 1984, abandoned, which is a continuation of Ser. No. 329,695, Dec. 11, 1981, abandoned. This application Aug. 13, 1984, Ser. No. 640,533
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048569
Int. Cl.[4] A01D *43/02, 88/00*
U.S. Cl. 56—364 1 Claim



1. An agricultural machine movable over the ground for

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conditioning cut agricultural crop material, said machine comprising:

(a) a rotor adapted for rotation about an axis parallel to the ground, said rotor having a periphery;

(b) a plurality of brushes extending along the periphery of said rotor in a direction parallel to said axis, ech of said brushes having a leading edge and a trailing edge relative to the direction of rotation of said rotor, each of said brushes comprising a plurality of bristles, each of said bristles having a free end which extends radially outward from the periphery of said rotor;

(c) a plurality of conveying prongs secured to the periphery of said rotor, each of said prongs having a free end which extends radially outward from the periphery of said rotor beyond the free ends of said bristles, at least one of said conveying prongs being located near the trailing end of each of said brushes, and

(d) channel-forming means located adjacent said rotor for forming a guide channel for said cut crop material, said channel-forming means including a curved surface approximately defined by the trajectory of said free ends of said bristles when said rotor is rotating, said channel-forming means including at least one slit therein for receiving the free ends of said prongs so that said channel-forming means does not impair the rotary motion of said rotor,

said pronga being adapted to convey said crop material into said channel-forming means, said brushes being adapted to condition said crop material in said channel-forming means.

4,799,353

METHOD FOR PIECING ROVINGS AND EXCHANGE ROVING BOBBINS IN A RING SPINNING FRAME AND WORKING MACHINE FOR CARRYING OUT THIS METHOD

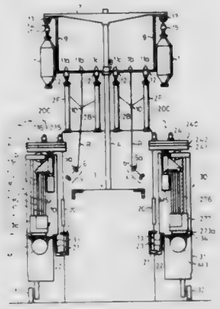
Yoshio Kawasaki; Tatsutake Horibe, both of Fujieda; Kenji Sasaki, Komaki, and Kazuo Yamada, Inazawa, all of Japan, assignors to Howa Machinery, Ltd., Aichi, Japan

Filed Aug. 25, 1987, Ser. No. 89,604

Claims priority, application Japan, Aug. 25, 1986, 61-197316

Int. Cl.⁴ D01H *9/18, 9/10, 15/00*

U.S. Cl. 57—281 11 Claims



1. A method for piecing rovings introduced from almost exhausted roving bobbins suspended by two rows of bobbin hangers mounted on a creel of a conventional ring spinning frame with rovings introduced from full packaged roving bobbins suspended by bobbin hangers of a supply rail arranged in front of said creel, and for exchanging said almost exhausted roving bobbins for said full packaged roving bobbins, comprising the following operations:

piecing rovings whereby when roving bobbins of said creel become almost exhausted, each end of rovings of two adjacent full packaged roving bobbins of said supply rail are simultaneously caught, said caught roving ends being pieced with a corresponding one of rovings introduced from two adjacent almost exhausted roving bobbins suspended by said front row bobbin hanger and said back row bobbin hanger, from which rovings are supplied to two adjacent draft parts, and separating rovings from said almost exhausted roving bobbins supplied to said draft parts, and

exchanging roving bobbins whereby after transferring said almost exhausted roving bobbins, suspended by said front bobbin hanger and said back bobbin hanger and having completed said roving piecing operation, to corresponding bobbin hangers of said supply rail simultaneously, said full packaged roving bobbins, having completed said roving piecing operation and supplying rovings to corresponding draft parts, are simultaneously transferred to corresponding bobbin hangers of the front row and back row from which said almost exhausted roving bobbins were taken off,

wherein said roving bobbin exchanging operation and said roving piecing operation are performed in parallel and at the same time, and said roving bobbin exchanging operation and said roving piecing operation are performed from one side to another side of said ring spinning frame, along a longitudinal direction thereof.

6. An apparatus for piecing rovings introduced from almost exhausted roving bobbins suspended by two rows of bobbin hangers mounted on a creel of a conventional ring spinning frame with rovings introduced from full packaged roving bobbins suspended by bobbin hangers of a supply rail arranged in front of said creel, and for exchanging said almost exhausted roving bobbins for said full packaged roving bobbins, comprising:

first means for piecing rovings introduced from two of said almost exhausted roving bobbins suspended by a front bobbin hanger and a back bobbin hanger, facing each other, with rovings introduced from two adjacent full packaged roving bobbins of said supply rail respectively,

second means for exchanging said two almost exhausted roving bobbins and said two full packaged roving bobbins, having completed said roving piecing:

means for displacing said first and second means from one side to the other side along a spindle alignment of said spinning frame and

means for actuating said first and second means,

wherein said first means comprises means for catching ends of rovings from said full packaged roving bobbins suspended by two adjacent bobbin hangers of said supply rail, means for piecing said ends of rovings introduced from full packaged roving bobbins with corresponding rovings introduced from almost exhausted roving bobbins supplying roving s to two adjacent draft parts, and means for separating said rovings introduced from said almost exhausted roving bobbins from being supplied to corresponding draft parts after piecing said ends of rovings introduced from said full packaged roving bobbins with said rovings introduced from said almost exhausted roving bobbins.

4,799,354

TURBOPROPELLER OR TURBOFAN GAS TURBINE ENGINE

Ronald A. Midgley, Derby, England, assignor to ROLLS-ROYCE plc, London, England

Filed Dec. 15, 1987, Ser. No. 133,484

Claims priority, application United Kingdom, Jan. 15, 1987, 8700806

Int. Cl.⁴ F02C *7/268*

U.S. Cl. 60—39.142 11 Claims

1. A gas turbine engine comprising a core engine having in flow series a compressor means, combustor means and turbine means, the turbine means and compressor means being coaxial and the turbine means being arranged to drive the compressor means,

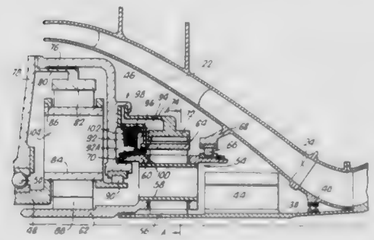
a rotor having a plurality of blades, the rotor being arranged coaxial with the turbine means,

shaft means and gear means, the turbine means being arranged to drive the compressor means via the shaft means, the turbine means being arranged to drive the rotor via the shaft means and the gear means,

the gear means comprising a first reduction gear assembly and a second reduction gear assembly,

the first reduction gear assembly comprising a first sun gear, a plurality of first planet gears, a first carrier means and a first annulus gear, the first sun gear being provided on and being driven by the shaft means, the plurality of first planet gears meshing with the first sun gear, the first annulus gear surrounding and meshing with the first planet gears, the first planet gears being rotatably mounted on the first carrier means,

the second reduction gear assembly comprising a second sun gear, a plurality of second planet gears, a second carrier



means and a second annulus gear, the second sun gear being provided on and being driven by the first carrier means, the plurality of second planet gears meshing with the second sun gear, the second annulus gear surrounding and meshing with the second planet gears, the second planet gears being rotatably mounted on the second carrier means, the second carrier means being drivingly connected to the rotor,

a starter means being arranged to drive the shaft means in order to start the core engine,

a clutch means being arranged to disengageably connect the first and second annulus gears, the clutch means being arranged to allow the turbine means to drive the rotor via the gear means when the core engine is running at or above a predetermined speed, and to prevent the turbine means driving the rotor via the gear means when the core engine is running below the predetermined speed or is at rest to allow easy starting of the core engine by the starter means.

4,799,355

BRAKE ACTUATION SYSTEMS FOR VEHICLES

Anthony W. Harrison, Selly Oak, England, assignor to Lucas Industries public limited company, Birmingham, England

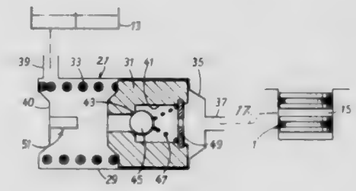
Filed Aug. 8, 1986, Ser. No. 894,858

Claims priority, application United Kingdom, Aug. 13, 1985, 8520280

Int. Cl.⁴ B60T *11/20*

U.S. Cl. 60—562 9 Claims

1. An actuation system for a brake comprising two pistons which are axially slidable in a common volume, the space between one end of the volume and one piston being connected to a primary power system to exert a force on said one piston, and the space between said pistons being connected to a secondary power system to exert a force on said second piston, said second piston acting to control the brake, said primary power system comprising a power system pump connected between a reservoir of pressure fluid and said space between said one of the volume and said one piston to draw pressure fluid from said reservoir and pump same into said space and when said power system is activated, a controller for monitoring the operation of said power pump to provide an indication to an operator when the primary power system is operational, and a flow detector located in the primary system and being monitored by said controller to provide an indication to an operator when fluid is flowing in said primary power system, said flow detector comprising an axially displaceable detector piston located within a cylindrical cavity said detector piston being responsive to fluid pressure from said power pump and having a bore extending axially therethrough, the bore being formed with a shoulder which forms a valve seat for a spring biassed valve closure member, an elongate projection located at one end of the cylindrical cavity extending axially thereof and being arranged to pass through the said bore to lift the valve closure member as said detector piston is moved axially under the action of pressure fluid against a spring, and detection means monitoring the movement of said detector piston.



4,799,356

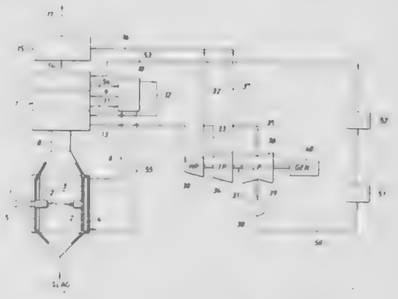
SYNTHESIS GAS GENERATION COMPLEX AND PROCESS

Egon L. Doering, Pasadena, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 28, 1986, Ser. No. 890,035

Int. Cl.⁴ F01K *17/00*

U.S. Cl. 60—648 6 Claims



1. A synthesis gas generation complex comprising

(a) a coal gasification plant, including at least one gasifier for the gasification of coal to produce synthesis gas at a temperature of about 2000° F. to 3000° F., the gasifier having heat exchange surfaces adapted for indirect heat exchange with steam and water;

(b) a heat exchange section comprising at least one heat exchanger in gas flow communication with said gasifier, said heat exchanger comprising at least one segment adapted to generate superheated steam, and lower temperature heat exchange segments;

(c) a gas cleanup section in flor communication with said

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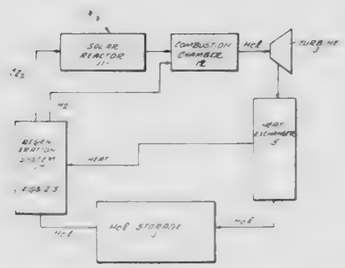
heat exchanger, said cleanup section comprising means for removing particulates and H_2S from said synthesis gas;
(d) a steam turbine adapted to receive and utilize superheated steam and produce a low temperature vapor, said steam turbine driving an electrical generator;
(e) means for providing superheated steam from said heat exchanger to said steam turbine;
(f) means for condensing low temperature vapor froms aid steam turbine to produce condensate, in flow communication with said steam turbine; and
(g) means for supplying condensate, from said means for condensing low temperature vapor, to a lower temperature heat exchange segment of at least one heat exchanger in said heat exchange section for indirect heat exchange of said condensate;
(h) means for recovering heated condensate from said lower temperature heat exchange section; and
(i) means for supplying heated condensate from said means for recovering heated condensate to the heat exchange surfaces of a gasifer in said gasification zone for indirect heat exchange generation of steam.

4,799,357

CLOSED LOOP REGENERATION SYSTEM FOR GENERATING MECHANICAL ENERGY AND THE METHOD THEREFOR

Robert J. Hanrahan, and Avinash K. Gupta, both of Gainsville, Fla., assignors to Solar Reactor Technologies, Inc., Miami, Fla.

Filed Apr. 16, 1986, Ser. No. 852,454
Int. Cl.[4] F01K *21/06*
U.S. Cl. 60—673 **12 Claims**



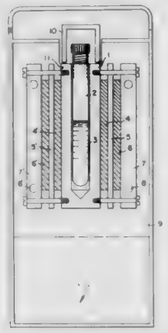
1. A closed loop regeneration system for generating mechanical and thermal energy comprising:
means for combining molecular chlorine and hydrogen to form hydrogen chloride at high temperatures and pressure;
means receiving said hydrogen chloride from said combining means for generating mechanical power;
means for extracting thermal energy from said hydrogen chloride;
means for converting said hydrogen chloride to molecular hydrogen and chlorine; said converting means comprising a first reactor containing copper and cuprous chloride;
means for passing said hydrogen chloride over said copper and cuprous chloride at a temperature of at least about 100° C. to thereby generate cuprous chloride, cupric chloride and molecular hydrogen;
a second reactor containing cuprous chloride and cupric chloride;
means for conveying said thermal energy from said extracting means to said second reactor to thereby generate copper, cuprous chloride and molecular chlorine; and
means for conveying said generated molecular chlorine and hydrogen to said combining means.

4,799,358

APPARATUS FOR COOLING AND DEEP FREEZING SAMPLES OF BIOLOGICAL MATERIAL ENCLOSED IN VESSELS

Ulrich C. Knopf, Freiburg, and Joseph Sieber, Zurich, both of Switzerland, assignors to Agrogen Stiftung, Freiburg, Switzerland

Filed Jan. 13, 1988, Ser. No. 143,646
Claims priority, application Switzerland, Jan. 19, 1987, 00164/87
Int. Cl.[4] F25B *21/02*
U.S. Cl. 62—3 **20 Claims**



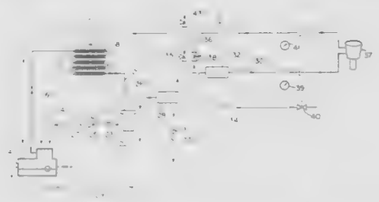
1. Apparatus for cooling and deep freezing samples of biological material enclosed in vessels, consisting of two parallel plate-like cooling elements which between them confine a cooling zone, characterized in that each of said cooling elements is a layered structure of at least two cooling layers stacked onto one another alternatingly with metal plates of high thermal conductivity, each of said cooling layers consisting of one or more blocks of Peltier elements arranged thermally in parallel, whereby the metal plates, which constitute the outer boundaries of the arrangement, are equipped with means for external cooling.

4,799,359

CRYOGENIC REFRIGERATOR COMPRESSOR WITH EXTERNALLY ADJUSTABLE BY-PASS/RELIEF VALVE

Harry G. Nicoll, Norwell, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Continuation of Ser. No. 126,343, Nov. 30, 1987, abandoned, which is a division of Ser. No. 834,201, Feb. 27, 1986, Pat. No. 4,718,442. This application May 13, 1988, Ser. No. 195,366
Int. Cl.[4] F25B *9/00*
U.S. Cl. 62—6 **10 Claims**



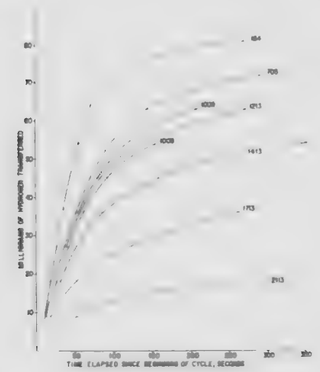
1. An improved cyrogenic refrigerator and compressor system in which helium is carried through a helium return line from a cryogenic refrigerator to a compressor pump where the helium is mixed with oil and compressed, and the helium is pumped to and through a heat exchanger, from said heat exchanger the helium and oil mixture is pumped to an oil separator, from which the oil is pumped back to the compressor and the helium is pumped back to the cryogenic refrigerator via a helium supply line, a helium connecting line is located between said helium supply and return lines, said connecting line has an in-line differential pressure relief valve which opens to allow helium to travel from the helium supply line into the helium return line if the pressure within the helium supply line exceeds a pre-determined value, wherein the improvement comprises:
an in-line differential pressure relief valve which is externally adjustable while connected to the helium connecting line.

4,799,360

METHOD OF BINDING A METAL HYDRIDE TO A SURFACE

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19382, and Paul K. Predecki, Denver, Colo., assignors to William B. Retallick, West Chester, Pa.

Division of Ser. No. 873,371, Jun. 12, 1986, abandoned. This application Oct. 26, 1987, Ser. No. 115,647
Int. Cl.[4] F28D *7/00*; F17C *11/00*
U.S. Cl. 62—48 **12 Claims**



1. A system for storing hydrogen in the form of a metal hydride, comprising a hydride-forming metal which is bound to a surface with a silicone rubber, the system defining a flow path for hydrogen, the hydrogen being directed along said flow path to and from the hydride-forming metal, the system including a water sorbent disposed to contact the hydrogen before the hydrogen contacts the silicone rubber, the water sorbent being disposed within said flow path:

4,799,361

METHOD FOR CRYOPREPARING BIOLOGICAL TISSUE FOR ULTRASTRUCTURAL ANALYSIS

John G. Linner, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 770,772, Aug. 29, 1985, Pat. No. 4,636,070, which is a continuation-in-part of Ser. No. 525,626, Aug. 23, 1983, Pat. No. 4,510,169. This application Nov. 4, 1986, Ser. No. 926,985
Int. Cl.[4] F24F *3/16*; F25D *17/02*
U.S. Cl. 62—64 **14 Claims**

1. A method for cryopreparing a biological tissue sample for ultrastructural analysis comprising:
(a) vitrifying a biological tissue sample;
(b) depressurizing the atmosphere surrounding said sample;
(c) bringing said vitrified tissue sample to equilibrium at a temperature of less than −140° C.; and



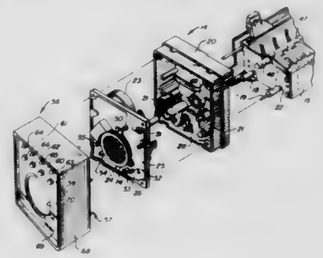
(d) dehydrating said vitrified tissue sample while said sample is maintained in a state of equilibrium.

4,799,362

MODULAR HOME ICE MAKER TEST APPARATUS

Paul B. Chestnut, Daviess County, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 21, 1987, Ser. No. 136,025
Int. Cl.[4] F25B *49/00*
U.S. Cl. 62—127 **19 Claims**



1. In an ice maker apparatus including a control mechanism having a control circuit for effecting automatic cyclical operation of the ice maker apparatus, said ice maker apparatus further including a plurality of electrical components, test means for testing the condition of the electrical components comprising:
a test circuit having electrical connectors arranged to have electrical connection to said electrical components as an incident of the test circuit being removably associated with the control mechanism while maintaining the arrangement of the control circuit to permit operation of the apparatus by the control mechanism;
switches in the test circuit for selective operation by a user; and
indicator means in the test circuit for indicating a condition of said electrical components, said indicator means being connected to said electrical connectors in said test circuit for selective indication of the operability of said electrical components when said electrical connectors are electrically connected thereto and said switches being operable to selectively energize said electrical components in the event a malfunction thereof is indicated by said indicator means.

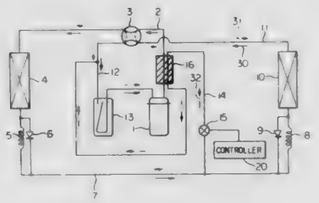
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4,799,363

ROOM AIR CONDITIONER

Takashi Nakamura, Wakayama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 71,077, Jul. 8, 1987, abandoned. This application Mar. 8, 1988, Ser. No. 168,534
Claims priority, application Japan, Jul. 17, 1986, 61-168405
Int. Cl.[4] F25B *13/00*
U.S. Cl. 62—160 **10 Claims**



1. A room air conditioner comprising:
a compressor having a suction side and a discharge side;
an accumulator having an intake side and a discharge side which is connected to the suction side of said compressor;
an outdoor heat exchanger having a gas side and a liquid side;
an indoor heat exchanger having a gas side and a liquid side;
liquid-side piping connected between the liquid side of said outdoor heat exchanger and the liquid side of said indoor heat exchanger;
discharge piping having one end connected to the discharge side of said compressor;
return piping having one end connected to the intake side of said accumulator;
a change-over valve connected to the other end of said return piping, to the other end of said discharge piping, to the gas side of said outdoor heat exchanger, and to the gas side of said indoor heat exchanger, said change-over valve being adapted to be switched between a cooling and defrosting setting in which the discharge side of said compressor communicates with said outdoor heat exchanger and the intake side of said accumulator communicates with said indoor heat exchanger, and a heating setting in which the discharge side of said compressor communicates with said indoor heat exchanger and the intake side of said accumulator communicates with said outdoor heat exchanger;
a by-pass for connecting said liquid-side piping with the intake side of said accumulator;
valve means disposed in said by-pass;
a heat exchanger disposed in said bypass and said discharge piping so as to be able to perform heat exchange therebetween; and
controller comprising first means for opening said valve means during defrosting operation and closing it at other times.

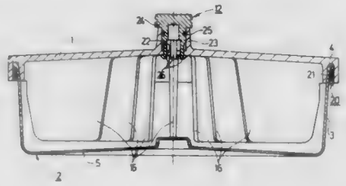
4,799,364

DISCOID COLD CARTRIDGE INSERTABLE INTO AN ICE-CREAM MAKER

Otto Meier, Keutschach; Kurt Sadek, Rain bei Ebenthal; Zvonko Sikoronja, Klagenfurt, all of Austria, and Johann Schröder, Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jun. 23, 1986, Ser. No. 877,563
Claims priority, application Austria, Jun. 26, 1985, 1905/85
Int. Cl.[4] A23G *9/12*
U.S. Cl. 62—342 **16 Claims**

1. A discoid cold cartridge insertable into an ice-cream maker and filled with a latent heat storage medium, comprising: a discoid main wall which cooperates with a scraper and stirrer tool of the ice-cream maker, said cold cartridge formed from at least two parts joined together, of which one part includes the discoid main wall facing the scraper and stirrer tool and the other part a through-shaped base, the discoid main wall which cooperates with the scraper and stirrer tool being made as a stable die-cast part whereby the formation of ice-cream on said main wall is uniformly scraped off, said discoid



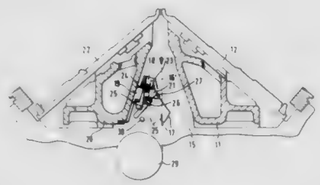
main wall also being provided with fins projecting into the cold cartridge for increasing the stability of said main wall and increasing the heat transfer rate between said main wall and heat storage medium whereby the uniform formation of ice-cream on said discoid main wall is promoted and obtained, at least one wall of the base being flexible so as to be adaptable to the change in volume of the latent heat storage medium in phase transition.

4,799,365

DEVICE FOR FLATBED KNITTING MACHINES FOR MONITORING THE KNITWEAR FOR FALLING-OFF

Ernest Goller, Reutlingen, and Fritz Walker, Kusterdingen, both of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Co., Reutlingen, Fed. Rep. of Germany

Filed Mar. 9, 1988, Ser. No. 168,081
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1987, 3707569
Int. Cl.[4] D04B *35/20*
U.S. Cl. 66—166 **7 Claims**



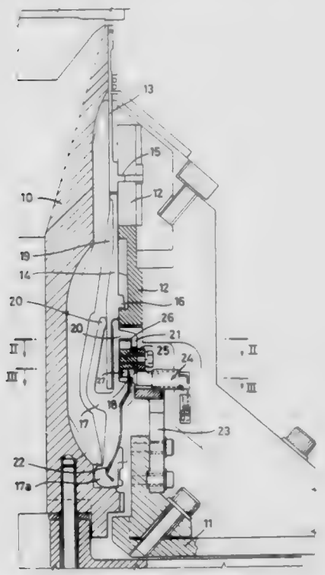
1. Device for flatbed knitting machines for monitoring the knitwear for falling-off, having at least one feeling lever which is supported on a support body adjustable in the longitudinal direction of the needle beds on a holding rail, which lever rests against the knitwear under pre-tension below the needle beds and which is coupled to a switching arm influencing an electric switching device, characterized in that the switching arm (**25**) is constructed as a contactless contactor which is arranged to be movable through a contact range of the electric switching device into an ineffective end position with a response movement of the feeling lever (**17**).

4,799,366

KNITTING OR HOSIERY MACHINE WITH ELECTRONIC-CONTROLLED, ELECTROMECHANICALLY ACTUATED SELECTION OF THE NEEDLES

Leopoldo Bertagnoli, Brescia, Italy, assignor to Orizio Paolo S.p.A., Rodengo Saiano, Italy

Filed Nov. 25, 1987, Ser. No. 125,570
Claims priority, application Italy, Aug. 4, 1987, 21586 A/87
Int. Cl.[4] D04B *9/10*
U.S. Cl. 66—219 **9 Claims**



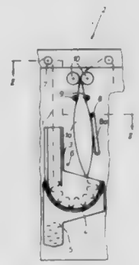
1. Knitting machine comprising (a) a holder component provided with a plurality of parallel slots, each of said slots receiving therein a needle, a needle pusher and a selection sinker, said selection sinker being coupled with said needle pusher for movement together with said needle pusher, perpendicularly to said slot, said needle and needle pusher being coupled for longitudinal movement inside the slot; (b) a support component needle and needle pusher control cams supported by the support component, the support component including a needle pusher lifting cam and a needle sinking cam; and (c) an electromechanical actuator for acting on the selection sinker; said needle, needle pusher selection sinker, said needle pusher control cams and electromechanical actuator being controlled to mutually move, the knitting machine being provided with a plurality of thread feed points, a stationary electromechanical actuator for each thread feed, said electromagentical actuator being associated with an extraction cam, a loading cam and a blanking-out cam, said selection sinker being equipped with an incorporated spring of ferrous material and said extraction cam being configured to act on a tooth formed along said selection sinker for extracting the selection sinker from its slot, said loading and blanking-out cams being arranged to act on the spring incorporated in the selection sinker, the electromagnetic actuator further including a demagnetizable region positioned between the loading cam and the blanking-out cam for selectively acting on the springs of the sinkers following the loading by said loading cam in accordance with signal input from an electronic control system.

4,799,367

APPARATUS FOR THE CONTINUOUS WET TREATMENT OF A LENGTH OF TUBULAR MATERIAL

Manfred Schnierer, Michelstadt, and Werner Koch, Wald-Michelbach, both of Fed. Rep. of Germany, assignors to Brückner Apparatebau GmbH, Fed. Rep. of Germany

Filed Nov. 28, 1986, Ser. No. 935,927
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1985, 3544837
Int. Cl.[4] D06B *5/08*
U.S. Cl. 68—13 R **10 Claims**



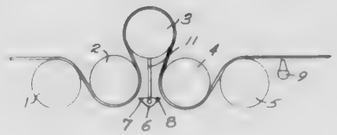
1. An apparatus for the continuous wet treatment of a length of material, wherein the apparatus has at least one accumulation chamber for storing a portion of the length of material and wherein the accumulation chamber has an accumulation chamber inlet an an accumulation chamber oulet, the apparatus comprising a changing device disposed immediately upstream of the accumulation chamber inlet, the changing device being capable of bodily shifting the entire width of the material from side to side relative to the width of the accumulation chamber inlet so as to cause the length of material to be evenly distributed within the accumulation chamber at the accumulation chamber inlet.

4,799,368

DEVICE FOR WASHING OF CARPETS

Osmo Tissari, Laaksopolku 1, SF-70910 Vuorela, Siilinjärvi, Finland

PCT No. PCT/FI85/00099, § 371 Date Aug. 8, 1986, § 102(e) Date Aug. 8, 1986, PCT Pub. No. WO86/03525, PCT Pub. Date Jun. 19, 1986
PCT Filed Dec. 10, 1985, Ser. No. 902,450
Claims priority, application Finland, Dec. 10, 1984, 844858
Int. Cl.[4] D06B *1/02, 15/02, 15/09, 23/04*
U.S. Cl. 68—19.1 **6 Claims**



1. An apparatus for washing carpets, particularly carpets having a nap on one side thereof, having a conveyance path along which carpets to be cleaned are conveyed, said apparatus comprising:
a supporting roll mounted along said conveyance path and having a longitudinal axis disposed transverse to a longitudinal axis of said conveyance path for supporting a carpet to be cleaned during a washing process of the apparatus;
a rinsing roll mounted along said conveyance path, downstream of said supporting roll, having a longitudinal axis

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disposed transverse to the longitudinal axis of said conveyance path, for supporting a carpet during a rinsing process of said apparatus;

a turning roll mounted intermediate said supporting roll and said rinsing roll, along said conveyance path, and spaced from a plane defined through said longitudinal axes of said supporting roll and said rinsing roll; and

a washing and rinsing apparatus mounted so as to be disposed intermediate and adjacent to said supporting roll and said rinsing roll, said washing and rinsing apparatus including means for conveying a washing fluid at high pressure to and directing said washing fluid toward said supporting roll and means for conveying a rinsing fluid at high pressure to and directing said rinsing fluid towards said rinsing roll,

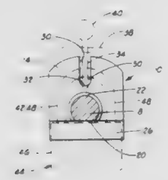
whereby a carpet conveyed along said conveyance path is disposed in a convex configuration on said supporting roll and in a convex position on said rinsing roll and whereby fluids conveyed and directed by said washing and rinsing apparatus are impinged upon said convex portions of said carpet.

4,799,369

LOCK PROTECTOR

Thomas A. Goodson, 2717 NW. 157th St., and Ronald D. Truelove, 2713 NW. 157th St., both of Edmond, Okla. 73013

Filed Jul. 30, 1987, Ser. No. 79,885
Int. Cl.[4] E05B *67/38*
U.S. Cl. 70—54 23 Claims



1. A lock protector for a padlock, said lock protector comprising:

a pair of spaced body members adapted for receiving a shackle connected to said padlock therebetween, for preventing tampering access to said shackle, said body members defining aligned transverse slots therethrough parallel to legs of said shackle and adapted for receiving a locking eye therethrough engagable by said shackle; and

a neck member integrally formed with said body members and extending between said body members and between said legs of said shackle.

4,799,370

VIDEOCASSETTE SECURITY-LOCK-BOX

George R. Cooper, 683-½ W. Moorland Cir., Grand Junction, Colo. 81504

Filed Aug. 12, 1987, Ser. No. 84,200
Int. Cl.[4] E05B *65/52*
U.S. Cl. 70—63 4 Claims

1. A videocassette security box adapted to be removably affixed to a doorknob or other enlarged mounting member comprising;

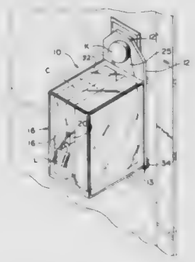
a substantially planar elongated unitary base having opposite lower and upper edges,

a substantially rectangular protective cover defining a box having an interior chamber and pivotally attached to said base adjacent said lower edge and adapted to house at least one videocassette,

said cover having a bottom and opposite top wall, an outer wall on said cover joining said bottom and top walls and provided with an orifice,

said base provided with a generally key-hole shaped opening including an enlarged portion communicating with a narrower elongated portion, said opening elongated portion disposed adjacent said base upper edge,

said cover closeable to a position with said top wall spanning said key-hole opening with at least a substantial part of said opening enlarged portion contained between said cover bottom and top walls and communicating with said interior chamber while at least a part of said opening elongated portion remains exposed exposed outside the bounds of said cover adjacent said top wall,



a lock extension member attached to and projecting from said base, said extension member having a free end provided with an opening adapted to receive securing means to retain said cover in a closed position whereby,

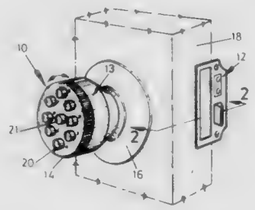
opening of said cover permits placement of said base opening enlarged portion over and behind a doorknob or other enlarged mounting member prior to movement of said plate to position said opening narrower elongated portion behind the doorknob or other enlarged mounting member following which closing of said cover blocks removal of said security box without first opening said cover to permit movement of said plate.

4,799,371

KEYLESS LOCK

Robert Duncan, Cambuslang, Scotland, assignor to Aardee Spring & Lock Co., Ltd., Glasgow, Scotland

Filed May 7, 1987, Ser. No. 47,874
Int. Cl.[4] E05B *37/16*
U.S. Cl. 70—214 19 Claims



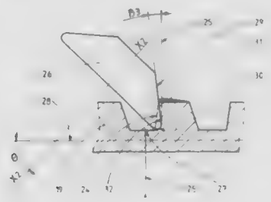
1. A keyless lock device comprising a housing having at least one lock release button disposed in a surface thereof and at least one lock element disposed on said surface, said lock release button being actuatable to define a plurality of lock positions and a plurality of lock release (position) positions and said lock element being operatively coupled to said lock release button, the arrangement being such that, in use, actuation of said lock release button a predetermined number of times attains one of said lock release positions whereby said keyless lock can be opened and actuation of said lock element actuates said lock release buttons to return to a locking position from said lock release position.

4,799,372

PROCESS FOR FORMING HELICAL SCREW THREADS HAVING A FLANK WITH ZERO OR NEGATIVE INCLINATION

Charles Marcon, 29, rue Letchworth Zac des Noirots, 71150 Chagny, and Jean Poullain, 32 avenue Boucicaut-La Verrerie, 71100 Chalon-sur-Saône, both of France

Filed Oct. 27, 1986, Ser. No. 923,215
Claims priority, application France, Oct. 28, 1985, 85 16324
Int. Cl.[4] B21H *03/00*
U.S. Cl. 72—102 18 Claims



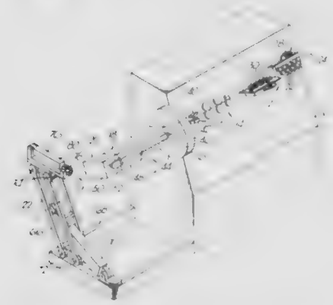
1. A process for forming on the wall of a rotationally symmetrical body, an inside or outside helical screw thread comprising a flank with zero or negative inclination, characterised by producing in a first phase, using a method such as machining, rolling or the like, a screw thread in which the flanks of each thread (**23**, **24**) have positive inclination and then in a second phase, using a forming means, producing plastic deformation without removing material of the thread flank (**24**) which will be load-bearing in use, said deformation imparting a zero or negative inclination (32) to said flank.

4,799,373

BENDING MACHINE

Ronald E. Benton, "Mount Royal", Liphook Road, Headley, Hampshire, GU35 8LL, England

Filed Jan. 23, 1987, Ser. No. 8,129
Claims priority, application United Kingdom, Jan. 29, 1986, 8602147; Nov. 3, 1986, 8626229
Int. Cl.[4] B21D *7/022*
U.S. Cl. 72—307 15 Claims



1. A bending machine for bending wire, tubing, or other elongate material, comprising a support structure, feed means mounted on the support structure and arranged to feed such material along a feed axis of the machine,

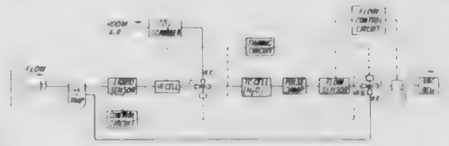
a support member supported by, and extending from, the support structure and rotatable about the feed axis, the member being substantially wholly to one side of the feed axis, a bending head supported by the support member and being rotatable therewith, the bending head being substantially wholly to one side of the feed axis and comprising a bending member cantilevered from the bending head and a reaction member cantilevered from the bending head and about which the material is bent by the bending member in a plane which plane contains the feed axis and which plane is fixed relative to the bending head and the support member, rotation of the support member allowing bending of the material in any selected plane containing the feed axis.

4,799,374

LIQUID SEPARATOR

Clayton J. Bossart, Monroeville; Glenn H. Fertig, Natrona Heights, and Albert L. Welker, Pittsburgh, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Nov. 13, 1987, Ser. No. 120,131
Int. Cl.[4] G01N *33/497, 21/84*
U.S. Cl. 73—1 G 4 Claims



1. A breath sampling system for measuring CO_2 in exhaled breath comprising:

a sampling conduit opening to an airway and a liquid trap having a substantially horizontal conduit with an inlet and an outlet, a reservoir chamber, a bottom outlet from the conduit opening to the reservoir chamber, a one-way valve means closing said bottom outlet and permitting flow only from the conduit to the reservoir chamber,

a liquid sensor having an outlet and an inlet interconnected by perfluorinated tubing to the trap outlet,

an infrared analyzer cell responsive to CO_2 having an outlet and an inlet connected to the liquid sensor outlet,

means to provide a constant flow through the liquid trap, liquid sensor and analyzer cell,

means responsive to the presence of liquid in the liquid sensor to direct the sample flow to the reservoir chamber and flow ambient air in a reverse direction through the analyzer cell and the liquid sensor to the reservoir.

4,799,375

INSTRUMENTED TEST HAMMER

Richard W. Lally, Clarence, N.Y., assignor to PCB Piezotronics, Inc., Depew, N.Y.

Filed Oct. 26, 1983, Ser. No. 545,625
Int. Cl.[4] G01M *7/00*
U.S. Cl. 73—12 19 Claims

1. An instrumented test hammer for use in exciting a test object, comprising:

a head assembly having an impact tip and having a transducer operatively arranged to sense the force of an impact between said tip and object and to covert such force into a proportional electrical signal;

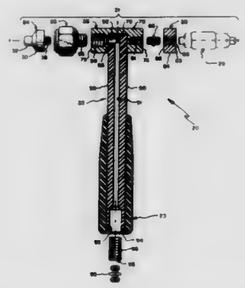
an elongated handle connected to said head assembly and extending away therefrom;

a cushioned grip surrounding a portion of said handle at a location spaced from said head assembly;

said grip being formed of a suitable material and said head assembly, handle and grip being so dimensioned and proportioned such that the node of the first translational resonant mode of said hammer, in the plane of the direction of impact and the handle axis, after impacting against said object, is located substantially proximate said head

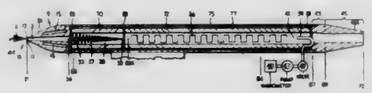
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assembly and substantially independently of the manner by which said grip is held;



thereby to substantially avoid the generation of spurious electrical signals due to post-impact vibration of said head assembly.

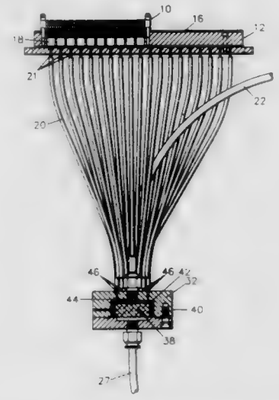
4,799,376
CLOUD WATER MEASUREMENT
Walter F. Siedlecki, Jr., West Chester, and Kenneth R. Horst, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Dec. 26, 1985, Ser. No. 813,359
Int. Cl.[4] G01N *31/00*
U.S. Cl. 73—29 **4 Claims**



1. In a system for measuring the liquid water, water vapor and ice content of a moving airstream under icing conditions, the improvement, comprising:
(a) inlet means for collecting a sample of the airstream; and
(b) means for maintaining the sample in a substantially isokinetic state with respect to the moving airstream, said means including a dew point measuring means for measuring the dew point of the sample, and adjustment means for adjusting flow through the inlet means in order to alter the dew point of the sample.

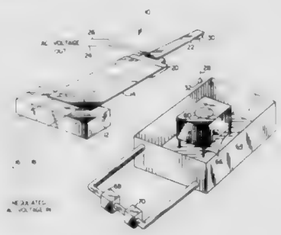
4,799,377
DETECTOR FOR LEAKS OR ORIFICES
Michael R. Strong, Midland, Mich.; Allen T. Puder, Los Altos, Calif., and Ronald W. Wieck, Bay City, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Feb. 5, 1988, Ser. No. 152,776
Int. Cl.[4] G01M *3/26*
U.S. Cl. 73—40 **8 Claims**

1. Apparatus for testing for the existence and magnitude of leaks or orifices in individual cavities in a component which comprises a multiplicity of cavities extending into said component from a surface thereof comprising:
a manifold provided with resilient means for sealingly engaging said surface, to hermetically seal said cavities from the environment
a plurality of deformation resistant apertures protruding through said resilient means, said apertures being geometrically arranged to correspond to the arrangement of said cavities so that one aperture is in alignment with the opening of each cavity,
each of said apertures being connected by a conduit to a pressure sensing means,
supply means for simultaneously introducing a gas under pressure to each of said apertures, and
valve means for severing the said supply of gas to permit measurement by said sensors of the rate of decay of pressure in said cavities and,



a plurality of manifolds, each of which is adapted to seal off from the environment a plurality of cavities, whereby a first leak detection test can be conducted to detect leaks in each group of cavities so sealed off, and in the event any such group is found to contain a leak, the first mentioned manifold can be employed to precisely locate the position and size of any such leak.

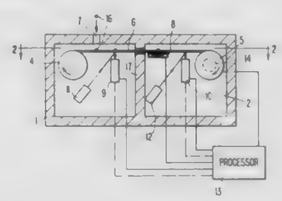
4,799,378
PIEZOELECTRIC VISCOMETER
Joseph L. Portman, Jr., San Antonio, and David J. Margraf, New Braunfels, both of Tex., assignors to Alcor, Inc., San Antonio, Tex.
Continuation-in-part of Ser. No. 931,660, Nov. 17, 1986, Pat. No. 4,697,657, which is a continuation-in-part of Ser. No. 789,515, Oct. 21, 1985, Pat. No. 4,623,030. This application Jul. 29, 1987, Ser. No. 79,684
Int. Cl.[4] G01N *11/16*
U.S. Cl. 73—54 **14 Claims**



1. A device for measuring the viscosity of a fluid comprising:
a base;
a piezoelectric driver anchored to, but electrically isolated from, said base;
a piezoelectric receiver mechanically linked to, but electrically isolated from, said piezoelectric driver, for receiving vibrations therefrom;

a probe mounted essentially perpendicularly to said piezoelectric receiver, for immersion in said fluid;
an AC voltage source electrically connected to said piezoelectric driver, whereby said piezoelectric driver vibrates and transmits said vibrations to said piezoelectric receiver, said AC voltage having a frequency near the resonant frequency of said receiver; and
means for receiving output signals from said piezoelectric receiver as vibrations are received from said piezoelectric driver, said output signal giving said viscosity of said fluid, said receiving means comprising:
offset gain means to zero out said output signals when said probe is immersed in a first calibration fluid of known high viscosity; and
gain amplifier means to maximize said output signals when said probe is immersed in a second calibration fluid of known low viscosity.

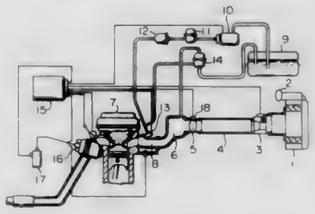
4,799,379
APPARATUS FOR MEASURING THE MOISTURE CONTENT OF SNOW PARTICLES
Nagaichi Suga, Tokyo, assignor to Suga Test Instrumenets Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1987, Ser. No. 136,634
Claims priority, application Japan, Dec. 24, 1986, 61-310437
Int. Cl.[4] G01W *1/14*
U.S. Cl. 73—76 **8 Claims**



1. An apparatus for measuring the moisture content of falling snow, comprising:
a sheet of water-absorbing material containing a material which generates a color upon having water added thereto;
means for moving said sheet from a snow receiving position to a first observation position and then to a heating position and then to a second observation position;
a first light receiving sensor in said first observation position and directed toward the surface of said sheet for measuring the area of color formed by absorption of moisture from snow particles received on the sheet when the sheet is in the snow receiving position;
a heater means at said heating position for heating said sheet to melt the snow particles thereon;
a second light receiving sensor in said second observation position and directed toward the surface of said sheet for measuring the area of color formed by the melted snow particles; and
calculating means connected to said light receiving sensors for calculating the ratio of the measured areas as a measurement of the moisture content of the snow particles.

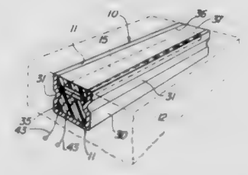
4,799,380
ENGINE ROTATION SPEED DETECTING APPARATUS
Toru Suzuki; Masahide Sakamoto, and Akihito Watanabe, all of Katsuta, Japan, assignors to Hitachi, Ltd. and Hitachi Automotibe Engineering, both of Tokyo, Japan
Filed Jan. 19, 1988, Ser. No. 145,234
Claims priority, application Japan, Feb. 2, 1987, 62-20548
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 **5 Claims**

1. An engine rotation speed detecting apparatus comprising means for sensing the state of operation of an engine, means for setting a plurality of respectively different masking periods of time, means for detecting an ignition signal lasting for a period of time longer than any one of said plural masking periods of time thereby detecting an ignition period defined between adjacent ignition signals, and means for computing the rotation



speed of said engine on the basis of said detected ignition period, one of said plural masking periods of time being selected according to the result of sensing by said operation state sensing means.

4,799,381
VEHICLE ROAD SENSOR
Corwin M. Tromp, Muskegon, Mich., assignor to CMI International, Inc., Southfield, Mich.
Filed Feb. 21, 1988, Ser. No. 155,496
Int. Cl.[4] G01G *3/14*; G01L *1/22*
U.S. Cl. 73—146 **18 Claims**



1. A vehicle road sensor for signaling the passage of a vehicle over a predetermined location on a roadway, comprising:
a force sensing resistor formed of a pair of overlapped nonconductive substrates, each having a controllable conductive coating, with the coatings being overlapped in adjacent surface to surface relationship;
at least one of said coatings being formed of a force responsive material characterized by normally resisting the passage of electrical current therethrough, but whose resistance decreases upon the application of pressure upon the coating;
and the second of said coatings having at least one area which precludes the passage of electrical current therethrough, and with said area being overlapped by a portion of the one coating so that said portion functions to shunt current across said area upon the application of pressure to said portion;
said substrates being completely embedded within a block formed of a resilient, rubber-like material;
said block having an upper, contact surface, with the substrates being embedded within the block beneath the contact surface so that vehicle pressure upon the contact surface is transmitted to the substrates;
means for normally applying an electrical potential to the second coating sufficient to induce the flow of current therethrough when the applied pressure reduces the electrical resistance of said portion;
means for detecting the flow of current through the second coating;
and the block forming material between the block contact

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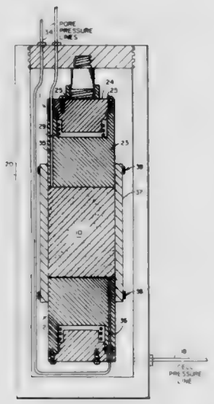
surface and the substrates being resiliently compressible under the weight of a vehicle for temporarily applying enough pressure to the portion of the one coating so that it temporarily functions as a shunt across the area which it overlaps so that electrical current temporarily flows through the second coating for indicating the temporary presence of a vehicle upon the block contact surface.

4,799,382

METHOD FOR DETERMINING RESERVOIR CHARACTERISTICS OF A POROUS MATERIAL

Eve S. Sprunt, Farmers Branch, and David P. Yale, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 1, 1987, Ser. No. 55,980
Int. Cl.[4] G01N *15/08*; E21B *49/02*
U.S. Cl. 73—153 **11 Claims**



1. A method for determining a measurement of reservoir characteristics of a core sample of a subsurface formation, comprising the steps of:

(a) surrounding said core sample with an elastic jacket,

(b) placing said sample in a confining pressure cell,

(c) cycling the pressure within the cell between a base pressure that is sufficient to reduce any cavity between said core sample and said elastic jacket and a plurality of successively increasing maximum pressures, and

(d) measuring the pore volume change between the base pressure and the maximum pressure for each pressure cycle.

4,799,383

VISUAL INDICATOR

Thomas C. Johnson, and Lenard W. Johnson, both of Roseau, Minn., assignors to LTJ Enterprises, Inc., Roseau, Minn.

Continuation-in-part of Ser. No. 910,231, Sep. 19, 1986, abandoned. This application Mar. 31, 1987, Ser. No. 33,064
Int. Cl.[4] G01F *23/00, 23/16*
U.S. Cl. 73—290 R **18 Claims**

1. A visual indicator, comprising:

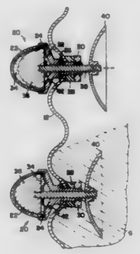
a transition mount:

an arcuate lens secured to one end of said transition mount, said lens having outside and inside surfaces;

a resilient, normally flat diaphragm secured between said lens and said transition mount to define a sealed chamber therein;

a filler plug disposed within said chamber and secured to said diaphram, said plug being movable with said diaphragm toward and away from said lens and being normally supported by said diaphragm in a position away from said lens;

said plug having an arcuate front side facing the opposite complementary inside surface of said lens, and a flat back side normally engaging said flat diaphragm over substantially the entire area of said diaphragm;



a substantially opaque liquid disposed within the chamber between said lens and said plug in order to normally block visibility of said plug; and

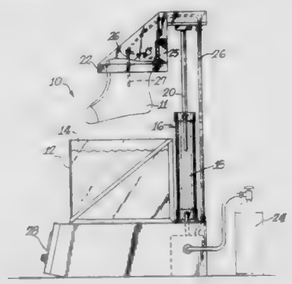
an actuator stem secured at one end to said diaphragm and plug and extending through a bore in said transition mount for actuating said plug toward said lens in order to displace said liquid and thereby visually expose the plug.

4,799,384

BOOTIE TESTING MACHINE

Gianpaolo Casali, via Galvani 6, Arbizzano-Verona, Italy (37020)

Filed Feb. 24, 1987, Ser. No. 17,832
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1986, 8632341[U]
Int. Cl.[4] G01M *3/06*
U.S. Cl. 73—45.5 **10 Claims**



1. Testing apparatus for detecting the leakage of air from an article of footwear comprising:

(a) a receptacle for containing liquid into which a footwear article to be tested is immersed;

(b) means for gripping the footwear article so that air introduced through a conduit into the opening of the footwear article and inflate the article without restraint whereby the means for gripping and conduit together provide a complete seal so that no air can escape, and;

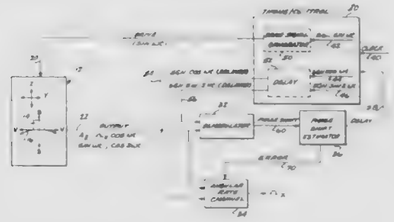
(c) a means to raise and lower the footwear article into said receptacle for testing.

4,799,385

ANGULAR RATE SENSOR WITH PHASE SHIFT CORRECTION

Rand H. Hulsing, Redmond, and Rex B. Peters, Woodinville, both of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Jul. 10, 1987, Ser. No. 72,235
Int. Cl.[4] G01P *9/04*
U.S. Cl. 73—505 **19 Claims**



15. A device for generating an angular rate signal representing the angular rate of rotation of a body, the device comprising:

an accelerometer assembly comprising an accelerometer having a force sensing axis and including means for producing an output signal indicative of acceleration along the force sensing axis, means for mounting the accelerometer such that the accelerometer can be vibrated along an arc that is tangent to a vibration axis normal to the force sensing axis, and drive means connected to receive a periodic drive signal having a first frequency and to vibrate the accelerometer along the arc at said frequency, such that the output signal includes a component at a second frequency equal to twice the first frequency;

timing/control means including means for generating the drive signal, means for generating a timing signal such that the timing signal represents a rate component at the first frequency in quadrature phase with respect to the drive signal and a phase shift component at the second frequency in phase with the drive signal, and means for delaying the timing signal by a time delay that is a predetermined function of a delay signal;

demodulation means including means for demodulating the output signal using the rate component to produce the angular rate signal representing the angular rate about an axis normal to the sensitive and vibration axes, and means for demodulating the output signal using the phase shift component to produce a phase shift signal; and

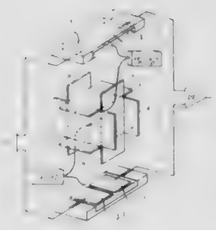
delay control means connected to receive the phase shift signal and including means for producing an offset signal representing the estimated difference, at the second frequency, between the phase shift corresponding to the time delay and the phase shift between the drive signal and the periodic components of the output signal, means for comparing the offset signal to the phase shift signal to produce an error signal representing the difference therebetween, and means responsive to the error signal for producing the delay signal such that the error signal is driven toward a null value.

4,799,386

ELECTROSTATIC ACCELEROMETER WITH DUAL ELECTRICAL CONNECTION TO ITS TEST MASS

Alain Bernard, Fresnes, and Pierre Touboul, Guyancourt, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon, France

Filed Dec. 30, 1986, Ser. No. 10,441
Claims priority, application France, Dec. 31, 1985, 8519469
Int. Cl.[4] G01P *15/125, 3/44*
U.S. Cl. 73—517 B **4 Claims**



1. Apparatus for sensing acceleration along an axis comprising:

a test weight suspended by electrostatic forces, the test weight having mutually insulated first and second planar electrodes extending at a right angle to the axis on opposite sides of a first center line of the test weight, the first center line being at a right angle to the axis;

means for applying equal amplitude but opposite polarity a.c. and d.c. voltages to the first and second electrodes on the test weight;

first and second sets of fixedly mounted planar electrodes extending at right angles to the axis, the sets of electrodes being spaced from the test weight, the electrodes of the first and second sets being divided into first and second elements positioned on opposite sides of a second center line of the test weight, the second center line being at a right angle to the first center line, whereby the elements of the first and second electrode sets form third, fourth, fifth and sixth electrodes and first, second, third and fourth capacitors are respectively established between the first and third electrodes, the second and fourth electrodes, the first and fifth electrodes and the second and sixth electrodes, the third and fourth electrodes being connected together, the fifth and sixth electrodes being connected together; and

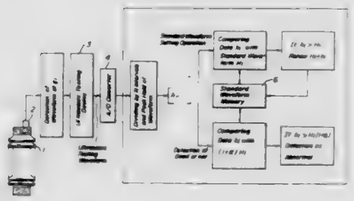
means responsive to voltages developed at the third, fourth, fifth and sixth electrodes for developing first and second restoring electrostatic forces and for applying the restoring electrostatic forces to the third, fourth, fifth and sixth electrodes, the amplitude of at least one of the restoring forces being a measure of the acceleration experienced by the test weight relative to the fixedly mounted electrodes; the means for developing and applying restoring forces comprising: means for deriving first and second signals respectively responsive to the a.c. voltages at the third and fourth electrodes and at the fifth and sixth electrodes, means combining the first and second signals for deriving first and second restoring voltages, and means for respectively supplying the first and second restoring voltages to the third and fourth electrodes and to the fifth and sixth electrodes; the combining means deriving the sum and difference of the values of the first and second signals to derive third and fourth signals respectively indicative of translational acceleration of the test body along the axis and of rotary acceleration of the test body about a reference point of the test body.

4,799,387

AUTOMATIC ULTRASONIC TESTING METHOD

Junichi Matsuo, Chita, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Dec. 1, 1987, Ser. No. 127,054
Claims priority, application Japan, Jan. 14, 1987, 62-6973
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—620 **3 Claims**



1. An automatic ultrasonic testing method for automatically detecting an internal flaw of articles in which ultrasonic noises are generated in an ultrasonic testing waveform at a number of detecting points, said method compriaing the steps of

(a) setting a standard waveform in a standard waveform memory by

effecting an ultrasonic test for a normal article having no internal flaws to obtain an ultrasonic testing waveform at a first detecting point,

dividing the ultrasonic testing waveform into a predetermined number of intervals along a time axis,

effecting a peak hold operation in all the intervals to obtain maximum data in every interval,

storing the maximum data in the standard waveform memory,

effecting the same peak hold operation at a next detecting point for all the intervals,

renewing the maximum data in the standard waveform memory by the peak hold data at the next detecting point if the data at the next detecting point is larger than that at the previous point, and

effecting the same processing steps for all the detecting points,

(b) effecting the ultrasonic test for an article to be tested at the same detecting points as those for the standard waveform setting step to obtain ultrasonic testing waveforms,

(c) comparing the ultrasonic testing waveform for the tested article either before or after processing of the waveform with the standard waveform successively at all the detecting points, and

(d) detecting the article to be tested as a normal one when a level of the ultrasonic testing waveform is not beyond that of the standard waveform at all the detecting points.

4,799,388

APPARATUS AND TECHNIQUE FOR METERING LIQUID FLOW

Robert M. Hunter, 320 S. Wilson Ave., Bozeman, Mont. 59715

Continuation-in-part of Ser. No. 846,516, Mar. 31, 1986, abandoned. This application May 19, 1987, Ser. No. 51,325
Int. Cl.[4] G01F *1/44*
U.S. Cl. 73—861.63 **23 Claims**

1. A method of metering the flow of liquid which is flowing by gravity in an elongated pipe that is open to atmosphere, comprising:

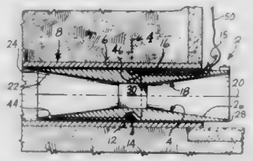
installing in the pipe a tubular venturi metering device which has an open-ended bore therethrough having an axis extending end-to-end thereof,

arranging the device in the pipe so that the axis of the bore is disposed substantially parallel to the longitudinal axis of the pipe and the bore thus has an end which is normally oriented upstream of the liquid flow in the pipe and an end which is normally oriented downstream of the liquid flow of the pipe,

the bore having an axially inwardly tapered entrance section adjacent the upstream end thereof which converges toward the axis of the bore in vertical planes paralleling the axis of the bore relatively toward the downstream end of the bore but terminates short of the axis of the bore so that a throat is formed in the bore which opens to the downstream end thereof,

forming a liquid seal between the device and the pipe at the outer periphery of the device so that the liquid in that section of the pipe disposed upstream from the upstream end of the bore of the device, is constrained to flow through the bore of the device, relatively toward the downstream end thereof,

determining the static pressure of the liquid in the aforesaid upstream section of the pipe when the liquid is flowing in



the pipe at a depth less than that adapted to fill the upstream section of the pipe, to meter the flow in the pipe for the less-than-full condition thereof,

configuring the cross-sectional area of the throat, relative to that of the upstream section of the pipe, transverse the respective axes thereof, so that the throat will fill with liquid substantially simultaneously with the upstream section of the pipe, when the liquid depth rises therein, and

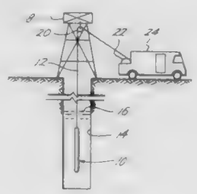
providing means whereby the static pressure of the liquid in the throat of the device and the upstream section of the pipe can be determined when both the upstream section of the pipe and the throat are filled, so that the difference between the latter two pressures can be determined to meter the flow in the pipe for the full condition thereof, and thereby enable the flow in the pipe to be metered for the full condition thereof as well as the less-than-full condition thereof and the transition therebetween.

4,799,389

TANDEM SAMPLER ACTUATION DEVICE

Owen T. Krauss, Dartmouth, and Norman G. Gruber, Halifax, both of Canada, assignors to Western Atlas International, Inc., Houston, Tex.

Filed Feb. 19, 1987, Ser. No. 16,335
Int. Cl.[4] G01N *1/16*
U.S. Cl. 73—863.31 **15 Claims**



1. An apparatus to trigger the closing of at least one spring-actuated valve within one end of a sampler, comprising in combination:

(a) a housing having a plurality of ports extending therethrough coupled to the end of said sampler;

(b) first means slideably received within said housing for engaging said spring-actuated valve;

(c) second means axially received by said first means for triggering said first means;

(d) bearing means disposed within said first means between said housing and said second means for partially engaging at least one of said plurality of ports extending through said housing, releasably locking said first means therein in a first position; and

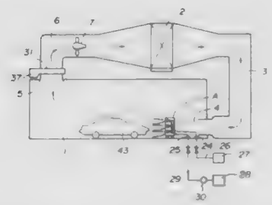
(e) means for driving said second means in a first direction within said first means, releasing said bearing means from partially within said at least one of said plurality of ports whereby said spring-actuated valve is allowed to close, driving said first means in a second direction.

4,799,390

SNOW-WEATHERING TEST APPARATUS FOR SELF-PROPELLED VEHICLE

Chugo Kimura, Tokyo, Japan, assignor to Kabushiki-Kaisha Toyo Seisakusho, Tokyo, Japan

Filed Mar. 11, 1987, Ser. No. 24,458
Int. Cl.[4] G01M *17/00*
U.S. Cl. 73—865.6 **7 Claims**



1. A snow-weathering apparatus for evaluating the reaction of a self-propelled vehicle to snow conditions, said apparatus comprising:

(a) a low-temperature testing chamber;

(b) a water spraying unit positioned on a movable truck supported by a plurality of wheels, said truck including at least a dual-fluid injection nozzle system comprising means for spraying water with an air jet in the form of a mist, said water spraying unit being movably positioned within said low-temperature testing chamber;

(c) a cooling unit and an air-feeding duct which connects the interior of said low-temperature testing chamber and said cooling unit, said duct comprising means for feeding cool air issued by said cooling unit to said low-temperature chamber;

(d) an air-return duct connected to both said low-temperature testing chamber and to said cooling unit, said air-return duct comprising means for conducting cooling air back to said cooling unit from said testing chamber; and

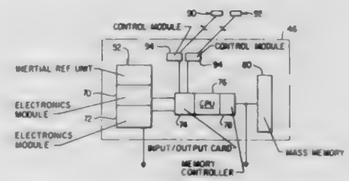
(e) a snow catching unit positioned within said air-return duct, said snow catching unit including a heating member, said snow catching unit comprising means for catching snow carried by cooling air from said low-temperature testing chamber, said heating member comprising means for melting snow caught by said snow catching unit, said snow catching unit further including an upper opening, a substantially endless movable belt for retaining said snow, and means for removing snow melted by said heating member from said snow catching unit.

4,799,391

METHOD FOR SURVEYING FLUID TRANSMISSION PIPELINES

Pedro F. Lara, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 944,308, Dec. 18, 1986, Pat. No. 4,747,317.
This application Mar. 31, 1988, Ser. No. 175,973
The portion of the term of this patent subsequent to May 31, 2005, has been disclaimed.
Int. Cl.[4] G01C *9/06*
U.S. Cl. 73—865.8 **10 Claims**



1. A method for determining a change in curvature of a fluid transmission pipeline comprising the steps of:

providing means comprising a pipeline pig having a body and support means for supporting said body in said pipeline in a predetermined position with respect to a longitudinal central axis of said pipeline, said pig including an inertial reference unit mounted on said body and including at least one of means for sensing accelerations normal to said longitudinal axis and means for sensing angular velocities normal to said longitudinal axis, means for generating signals related to at least one of said accelerations and said angular velocities, and means for recording further signals related to said signals generated by said means for generating signals;

reading signals generated by said at least one of said means for sensing accelerations and said means for sensing angular velocities at a rate which exceeds the natural frequency of vibration of said pig with respect to said pipeline; and

determining at least one of an acceleration and angular velocity, respectively, in at least one of a vertical plane and a tangential plane normal to said vertical plane, said planes passing through said longitudinal axis, and from said readings of said signals, respectively, for detecting a change in curvature of said pipeline.

4,799,392

METHOD FOR DETERMINING SILICON (MASS 28) BEAM PURITY PRIOR TO IMPLANTATION OF GALLIUM ARSENIDE

Syd R. Wilson; Robert P. Lorigan, and Richard L. Peterson, all of Phoenix, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Aug. 6, 1987, Ser. No. 82,410
Int. Cl.[4] G21K *5/00*
U.S. Cl. 73—865.9 **5 Claims**

1. A method for determining silicon (mass 28) beam purity prior to implanting a gallium arsenide substrate comprising the steps of:

forming a lattice disruption calibration scale;

implanting silicon (mass 28) in a monitor wafer of a substrate other than gallium arsenide;

analyzing lattice disruption caused to said monitor wafer by the implanted silicon; and

comparing lattice disruption in said monitor wafer to the lattice disruption of said lattice disruption calibration scale to find the purity of said beam.

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4,799,393

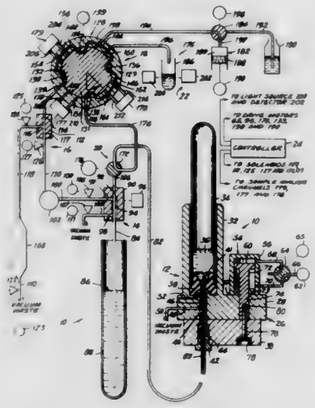
COMBINED CLOSED AND OPEN TUBE SAMPLING APPARATUS AND METHOD

Kenneth F. Uffenheimer, Chappaqua, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 771,895, Sep. 3, 1985, abandoned. This application Nov. 20, 1987, Ser. No. 124,352

Int. Cl.[4] B01L *3/02*

U.S. Cl. 73—864.22 **17 Claims**



6. In sampler apparatus which include sample supply means to supply samples from a closed sample container by introducing operatively connected sample aspiration means thereinto, and means to remove said sample aspiration means from said closed sample container following sample aspiration, the improvements comprising, rinse means operatively connected to said sample supply means and operable upon the removal of said sample aspiration means from said closed sample container following sample aspiration therefrom to flow a rinse through said sample supply means and said sample aspiration means against the direction of aspirated sample flow therethrough thereby backflushing said sample supply means and said sample aspiration means to remove aspirated sample residue therefrom, said sample aspiration means comprising a generally vertically oriented sampling needle having a sample aspirating opening at the upper portion thereof, and wherein said rinse means are operable to flow said rinse through the interior of said sampling needle and out of said sampling needle opening for free downward flow around the exterior of said sampling needle to thereby remove aspirated sample residue from both the interior and exterior of said sampling needle.

4,799,394

ANALYZER BLOCK FOR SEALING AND ISOLATING ANALYZER GAS SAMPLE FLOW

Daniel C. Barnett, Concord Twp., Lake County, and George R. Hall, II, Wickliffe, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 3, 1987, Ser. No. 92,495

Int. Cl.[4] G01N *1/24*

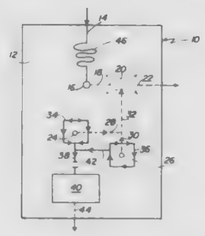
U.S. Cl. 73—864.81 **10 Claims**

1. A device for sealing and isolating analyzer gas sample flow in a system having an aspirator, the aspirator having gas sample inlet means for drawing a sample gas flow therein and supply air inlet means, and wherein the device comprises:

a plurality of plate members joined together into a rigid structure, said plate members having sealing surfaces;

seal means for sealingly engaging the sealing surfaces of the plate members together;

at least one of said plate members including flow channel means formed in the respective sealing surface for passing fluid flow along said sealing surface, the flow channel means including an air supply passage for passing air to the aspirator supply air inlet means, the channel means further including a sample gas passage for passing gas to be sampled to the aspirator gas sample inlet means, at least a portion of the air supply passage and a portion of the sample gas passage being formed on said sealing surface at spaced locations from each other, said portion of the sample gas passage having openings in said sealing surface, and said channel means further including a drain



passage having drain channels each of which encircles one of said openings of said portion of the sample gas passage in said sealing surface;

at least one of said plates including a cavity, at least one of said plates including restrictive passage means in fluid communication between the drain passage and cavity sized so as to provide a full drop in supply air pressure to ambient pressure conditions for fluid passing from the drain passage to the cavity; and

outlet means for exhausting fluid from the cavity to the atmosphere.

4,799,395

MOTOR VEHICLE GEARBOX WITH ONE-WAY CLUTCH IN FIRST GEAR

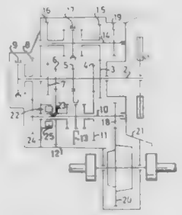
Grzegorz K. Janiszewski, Angered, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Jun. 2, 1986, Ser. No. 869,966

Claims priority, application Sweden, Jul. 1, 1985, 8503263-9

Int. Cl.[4] F16H *3/10*

U.S. Cl. 74—331 **3 Claims**



1. Motor vehicle gearbox, comprising a housing with at least one input shaft and at least one intermediate shaft having gears engaging gears on the input shaft, at least one gear in each pair of interengaging gears being releasable/from its shaft, characterized in that a one-way clutch is connected between only the releasable gear for a lowest forward gear speed and a member solid with the housing, said one-way clutch blocking the releasable gear for the lowest forward gear speed against rotation in a direction opposite the rotational direction for driving forward, said releasable gear for the lowest forward gear speed having a speed of rotation lower than that of said input shaft.

4,799,396

REDUCTION GEAR

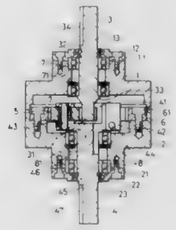
Takeshi Ito, Nagano, Japan, assignor to Machine Engineering Co., Ltd., Nagano, Japan

Filed Mar. 25, 1987, Ser. No. 29,516

Claims priority, application Japan, Mar. 25, 1986, 61-64822; Sep. 19, 1986, 61-222545

Int. Cl.[4] F16H *57/00, 1/28*

U.S. Cl. 74—410 **9 Claims**



1. A speed-change gear, comprising:

a housing;

a first annular internal gear fixed in said housing;

a first pinion disposed in said housing concentrically with said first internal gear;

a first shaft provided integrally with said first pinion and rotatably supported in said housing;

a plurality of first planet gears geared with said first pinion and said first internal gear;

a second shaft rotatably supported in said housing, said planet gears being supported by said second shaft with at least one circumferential inter-axes interval therebetween, said second shaft having at least two support portions respectively supporting said first planet gears and being circumferentially movable with respect to each other; and

first means for changing a size of said inter-axes interval of said first planet gears by circumferentially moving said support portions with respect to each other, wherein said first changing means includes a screw threaded in one of said support portions and having an axial end contactable with another of said support portions.

4,799,397

CONTROL DEVICE FOR A MOTOR VEHICLE GEARBOX

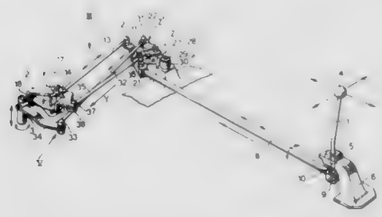
Corrado Egidi, and Riccardo Mongiano, both of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Dec. 4, 1987, Ser. No. 129,116

Claims priority, application Italy, Dec. 4, 1986, 67904 A/86

Int. Cl.[4] G05G *9/16*

U.S. Cl. 74—473 R **5 Claims**



1. A control device for a motor vehicle gearbox comprising a manual gear lever supported by the structure of the vehicle in a position remote from the gearbox and movable with a selection movement and a movement for engaging the speed ratios of the gearbox, an actuator member which is located at the input of the gearbox and is translatable and rotatable in response to the selection and engagement movements of the gear lever, and a transmission interconnecting the gear lever and the actuator member of the gearbox said transmission including a bar articulated to the gear lever and extending substantially along the longitudinal axis of the vehicle, a drive lever pivotable about a first substantially vertical axis which is rotatable about a second substantially vertical axis fixed relative to the structure of the vehicle, first and second rods extending substantially transverse the longitudinal axis of the vehicle and operated by the bar through the drive member to effect the translation and the rotation of the actuator member of the gearbox respectively, and a reaction tie rod connecting the pivotable drive member to the structure of the gearbox substantially in the direction of the two rods.

4,799,398

SAFETY DEVICE FOR CONTROL LEVER OF CONSTRUCTION MACHINES

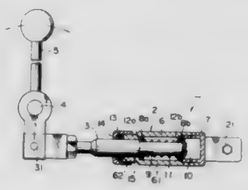
Akio Asano, Kuki, Japan, assignor to Mikasa Sangyo Co., Ltd., Japan

Continuation-in-part of Ser. No. 6,463, Jan. 16, 1987, abandoned. This application Jan. 13, 1988, Ser. No. 144,802

Claims priority, application Japan, Jan. 10, 1986, 61-087214

Int. Cl.[4] G05G *7/00;* **E01C** *19/26*

U.S. Cl. 74—473 R **3 Claims**



1. A safety device for the control lever of a construction machine having hydrostatic transmission which comprises:

a casing provided on the machine;

a control rod which is rotatably connected at one end portion thereof with the control lever associated with the hydrostatic transmission of the machine, said control rod being formed with a slender portion at the other end portion which is slidably accommodated by the casing, and said slender portion having a snap ring at the end thereof; and

a coil spring which is interposed on the slender portion, said coil spring being provided at each end thereof with a washer;

said casing being provided on the inner wall thereof with each engaging portion which engages with each of said washers, and said coil spring being stressed within the casing sufficiently to automatically return the control lever to neutral position; and, wherein said control rod is provided at the end of the casing with an annular friction member and is provided adjacent to the friction member with an adjusting member covering the friction member, said adjusting member being threadably mounted on the casing so that rotation of the adjusting member varies the slide speed of the control lever depending on compression of the friction member.

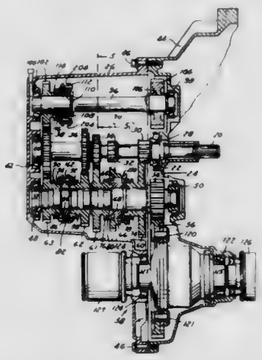
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4,799,399

MANUALLY CONTROLLED MULTIPLE SPEED RATIO TRANSMISSION

Robert W. Bruce, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 8, 1981, Ser. No. 299,905
Int. Cl.[4] G05G 5/10; F16H 3/08; B60K 20/10, 20/00
U.S. Cl. 74—477 4 Claims



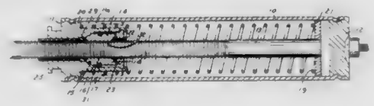
1. A multiple speed ratio manual transmission for an automotive vehicle comprising:
a power input shaft;
a first countershaft;
gearing defining multiple torque delivery paths including multiple pairs of gears carried by the input shaft and by the first countershaft;
first synchronizer clutch means engageable with one gear of each pair for connecting said one gear to the shaft on which it is carried;
a second countershaft;
a gear carried by the second countershaft meshing with one gear carried by the input shaft that is a member of one of the aforementioned gear pairs;
a second synchronizer clutch means for connecting the second countershaft to the gear carried thereon;
a differential mechanism;
torque output gearing connecting the differential to the first and second countershafts including a first output gear carried by the first countershaft a second output gear carried by the second countershaft, each output gear meshing with a final drive gear that drives the differential;
a gear ratio selector shaft mounted for linear movement along its axis and rotation about its axis;
a first selector block fixed to the selector shaft;
a relay lever mounted for rotation about and axial displacement along an axis that extends transversely with respect to the gear ratio selector shaft having one arm connected to the first selector block, whereby linear movement of the selector shaft produces rotation of the relay lever and rotation of the selector shaft produces linear movement of the relay lever;
a first shift rail mounted for rotation about and axial displacement along an axis that extends transversely with respect to the axis of the gear ratio selector shaft and connected to the relay lever;
first shift fork means carried by the first shift rail, engaged with the first synchronizer clutch means, selectively connectable to the first shift rail; and
a second shift rail selectively connectable to the first shift rail, mounted for linear movement along its axis:
second shift fork means carried by the second shift rail engaged with the second synchronizer clutch means selectively connectable to the first shift rail;
whereby rotation of the selector shaft connects either the first, or second shift fork means to the first shift rail and linear movement of the selector shaft after such connected is made produces a driving connection between one gear of each pair to the first countershaft or a driving connection between the second countershaft and the gear carried thereon.

4,799,400

SELF-ADJUSTING CABLE CONTROL DEVICE

John M. Pickell, Highland, Mich., assignor to Acco Babcock Inc., Fairfield, Conn.

Continuation of Ser. No. 832,526, Feb. 21, 1986, abandoned.
This application Nov. 6, 1987, Ser. No. 120,721
Int. Cl.[4] F16C 1/10
U.S. Cl. 74—502.6 10 Claims



1. A self-adjusting automatically compensating cable control device in a control cable system comprising
a termination member adapted to be connected at one end of a control cable and having longitudinally spaced serrations on the exterior thereof,
a connecting member adapted to be attached to an actuation member,
a plurality of collet members having longitudinally spaced serrations thereon normally engaging the serrations on said termination member,
spring means interposed between said termination member and said connecting member for moving the termination member longitudinally relative to the connecting member when the collet members are disposed from the termination member,
said connecting member having a portion forming an internal conical surface and a portion having an external conical surface,
said internal conical surface and said external conical surface on said connecting member being spaced longitudinally from one another in fixed relation on said connecting member,
said collet members being positioned longitudinally between said internal conical surface and external conical surface on said connecting member,
said collet members being movable radially outwardly to disengage the serrations on the collet members from the serrations on the termination member over the complete length of the serrations on the collet members,
said collet members having external conical surfaces adapted to engage said internal conical surface on the connecting member for engaging the serrations on the collet members with the serrations on the termination member,
the axial length of each said collet member between the external conical surface and internal surface thereon being less than the axial distance between said internal surface and said external surface on said connecting member,
said collect members having internal conical surfaces adapted to engage said external conical surface on the connecting member for disengaging the serrations on the collect members from the serrations on the termination member,
said collet members being movable longitudinally between a first position wherein the external surfaces of said collet members are in engagement with the internal surface of said connecting member and a second position wherein said internal surfaces of said collect members are in engagement with said external surface on said connecting member

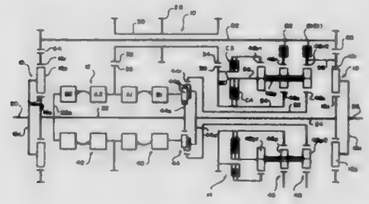
said collet members being in said first position wherein the internal surface of said connecting member and the external surfaces of said collet members are in engagement and with said serrations on said collet members in normal engagement with said serrations on said termination member when there is an external actuation force on said termination member and when the force on said termination member is reduced below a predetermined amount, said spring means acting on said termination member causes said termination member to move said collet members longitudinally to bring the collet members to said second position and cause said internal conical surfaces on said collet members to engage the external conical surface on said connecting member forcing the collet members to move radially outwardly and disengaging the serrations over the complete length of the serrations on said collet members from the serrations on the termination member allowing the spring means to move the termination member axially relative to the collet member and the connecting member until the force on the termination member is re-established to a predetermined amount.

4,799,401

EXTENDED RANGE HYDROMECHANICAL STEERING TRANSMISSION

Bradley O. Reed, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 18, 1987, Ser. No. 98,165
Int. Cl.[4] F16H 47/0
U.S. Cl. 74—677 14 Claims



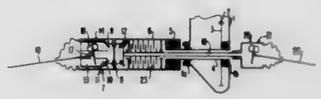
1. In a synchronous shifting, multi-range, split output hydromechanical transmission having a mechanical input drive train, a hydrostatic unit driven by said input drive train, and a set of combining gears for producing a transmission output, said set of combining gears including a first element connected to said hydrostatic unit such as to be driven hydrostatically to operate said transmission in a first range and a second element; a range changing mechanism comprising, in combination:
A. a compound planetary gear set including
(1) a planetary carrier,
(2) a first planetary gear including
(a) a first pinion gear set mounted on said planetary carrier,
(b) a first sun gear intermeshing with said first pinion gear set, and
(c) a first ring gear intermeshing with said first pinion gear set, and
(3) a second planetary gear including
(a) a second pinion gear set including a plurality of duplex pinion gears, each having common first and second drivingly interconnected gear sections, said second pinion gear set mounted on said planetary carrier,
(b) a second ring gear intermeshing with said first gear sections of said duplex pinion gears,
(c) a third ring gear intermeshing with said second gear sections of said duplex pinion gears, and
(d) a second sun gear intermeshing with one of said first and second gear sections of said duplex pinion gears;
B. first means drivingly connecting said third ring gear to said second element of said combining gear set;
C. second means drivingly connecting said input drive train to said compound planetary gear set;
D. third means drivingly connecting said hydrostatic unit to said compound planetary gear set; and
E. fourth means for selectively activating and inactivating elements of said compound planetary gear set such that, in response to the application of said mechanical and hydrostatic inputs to said compound planetary gear set from said input drive train and said hydrostatic unit, respectively, said first element of said combining gear set is hydrostatically driven and said second element of said combining gear set is hydromechanically driven in a manner to operate said transmission in at least two higher ranges in addition to said first range, said fourth means including a first brake for selectively inactivating said thrid ring gear to lock out said range changing mechanism and thus operate said transmission in said first range by the hydrostatic input applied to said first element of said combining gear set by said hydrostatic unit.

4,799,402

TRANSMISSION DEVICE FOR A FRONT WHEEL DRIVE VEHICLE

Jean Claude Van Dest, Saintry s/Seine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Apr. 27, 1987, Ser. No. 42,956
Claims priority, application France, Apr. 25, 1986, 86 06022
Int. Cl.[4] F16H 37/08
U.S. Cl. 74—701 20 Claims



1. A transmission device disposed between an output member of an engine-drive unit and transmission shafts connected to driving wheels of a motor vehicle, said device comprising a first hollow shaft drivingly connected to the coaxial with a second hollow shaft comprising an output member of the engine-drive unit, means comprising a pair of bearings disposed within a case of the engine-drive unit for supporting the second shaft, said first shaft being disposed outside of the case and outside of a space defined between the pairs of bearings, a differential mechanism disposed in said first hollow shaft and comprising an input element integral with the first hollow shaft and two coaxial output elements each connected to a joint associated with a respective one of said transmission shafts, one of the two output elements of the differential mechanism being connected to the associated joint through an intermediate shaft extending inside said first hollow shaft.

4,799,403

ADJUSTING GEAR IN MOTOR VEHICLES

Emil Dinkel, Coburg; Bernd Mann, Pfarrweisach; Günter Prieser, Coburg, and Gerhard Schneyer, Grosswalbur, all of Fed. Rep. of Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG, Coburg, Fed. Rep. of Germany

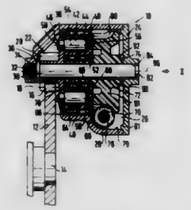
Filed Oct. 5, 1987, Ser. No. 104,078
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1986, 3634020
Int. Cl.[4] F16H 3/44, 57/10
U.S. Cl. 74—788 19 Claims

1. An adjusting gear for a motor vehicle, comprising essentially pot-shaped transmission housing means having a bottom, a bearing shaft in said transmission housing means, a plurality of elements mounted on said bearing shaft which, starting from the bottom of the pot-shaped housing means, include in sequence an output member, a planet gear carrier non-rotatable connected with the output member and having at least two planet gears supported on bearing pins, said planet gears mesh-

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ing with internal teeth in the transmission housing means, a sun gear also meshing with the planet gears, and a worm gear non-rotatably connected with the sun gear which meshes with a worm adapted to be driven by a driving motor, an end face of the planet gears opposite the pot bottom being provided with at least one orientation surface for oriented mounting on



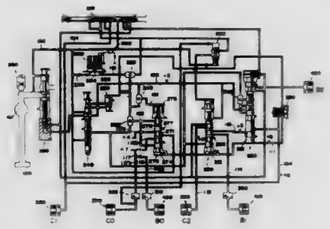
the bearing pins, the worm gear being provided on its end face opposite the pot bottom with at least one orientation surface for oriented mounting on the bearing shaft, and the end face of the planet gears being each provided with an abutment surface abutting at the backside of the worm gear which is disposed opposite the end side of the worm gear.

4,799,404

INTERMEDIATE SHIFT CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION

Masato Shimel, Nagoya; Shigeki Goto, Toyota, and Shigeo Takahashi, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 24, 1987, Ser. No. 29,606
Claims priority, application Japan, Mar. 24, 1986, 61-63946
Int. Cl.[4] B60K *41/06*
U.S. Cl. 74—869 21 Claims



1. A control apparatus for an automatic transmission connected to a hydraulic control circuit having a first changeover valve for switching a main transmission mechanism having at least two speed ratios between high and low speed ratios in dependence upon at least vehicle velocity, and a second changeover valve for switching an auxiliary transmission mechanism, which is provided in addition to the main transmission mechanism and has at least two speed ratios, between high and low speed ratios at a vehicle velocity higher than a changeover velocity of the first changeover valve,

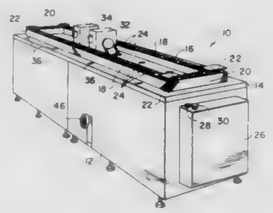
said control apparatus comprising a third changeover valve for switching the auxiliary transmission mechanism from the low to the high speed ratio at a vehicle velocity lower than the changeover velocity of the first changeover valve, and from the high to the low speed ratio when the vehicle velocity rises above the changeover velocity of the first changeover valve.

4,799,405

ASSEMBLY MACHINE CHASSIS

William E. Beezer, 73 N. Bayard La., and Earl F. Beezer, 24 Macoun Dr., both of Mahwah, N.J. 07430

Filed Apr. 9, 1987, Ser. No. 36,116
Int. Cl.[4] B23P *15/26*
U.S. Cl. 29—822 20 Claims



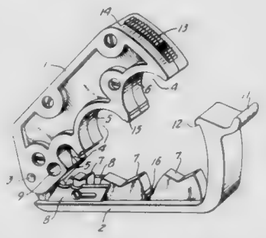
1. An assembly machine chassis comprising: a quadrangular guide way having opposite spaced apart side segments and opposite spaced apart end segments with four corners connected between said side and end engagements: a plurality of pucks slidably mounted along each segment of said guide way, each puck having a site for receiving and holding an object to be moved along said guide way by an by indexed length, each puck being shaped so as to be movable at said corners between a side segments and an end segment; a walking beam mounted for linear walking motion parallel to an adjacent one of each said side and end segment, each walking beam having an engagement position engaged with respective said segment by one index length to move each puck in its associated said segment by one indexed length, each walking beam having a non engagement position spaced from each associated one of said pucks of its associated said segment; and translator means connected to each walking beam for moving each walking beam from its non-engagement position to its engagement position, then along its segment by one indexed length and then back to its non-engagement position.

4,799,406

APPARATUS FOR STRIPPING ELECTRICAL WIRES AND THE LIKE

Pablo Diaz-De-Guerenu-Aguirrebeitia, Po martutene s/n C. Iru-Lagunak, San Sebastian, Spain

Filed Jun. 25, 1987, Ser. No. 66,855
Claims priority, application Spain, Jun. 25, 1986, 295.257[U]
Int. Cl.[4] H02G *1/12*
U.S. Cl. 81—9.4 10 Claims



1. Improved apparatus for stripping electric cables and the like, characterized by consisting of a main body bearing several cutting blades arranged substantially perpendicular to the body and protruding from several recesses formed by arcs of different radii in the body, corresponding supporting shapes extending from an arm articulated to said main body, the combination

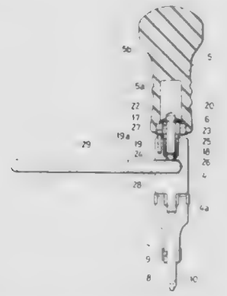
of the two permitting the lengthwise and crosswise stripping of cables, said articulated arm, at its end near the zone of articulation, defining a mounting zone for other knives which, corresponding to an opening in the main body, permit the final stripping of the inner conductors of the cable; said knives being capable of engaging a support of said main body provided with a suitable seat area to cut off said inner conductors.

4,799,407

RATCHET SCREWDRIVER

Yoshikazu Miyamoto, Higashiosaka, Japan, assignor to Rubicon Co., Ltd., Osaka, Japan

Filed Jul. 30, 1987, Ser. No. 79,533
Claims priority, application Japan, Aug. 26, 1986, 61-200343
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—58.3 5 Claims



1. A ratchet screwdriver, comprising:

a bit attaching section;

an operating section body which is connected to said bit attaching section through a ratchet mechanism and capable of turning the bit attaching section around the axis of the bit only in one direction, said operating section body having a contact surface;

a handle section which is movably connected to said operating section body on the turning axis, said handle section having a contact surface;

locking means connecting said operating section body to said handle section, for locking the handle section to the operating section body under a normal state so as to turn the two sections together, the two sections being freely turnable in relation to each other keeping their connected state when said locking means is disengaged; and

an auxiliary handle which disengages the locking means, by being inserted from a side of the operating section body thereinto, wherein:

said locking means comprises an operating pin which is disposed on a turning axis with its one end held in the handle section so as to be axially stationary while its other end is held in the operating section body so as to be axially movable, urging means which gives impetus to the handle section so as to contact the operating section body, and engaging means which engages the handle section with the operating section body on their contact surfaces so as not to be rotatable in relation to each other when they are in contact with each other by said urging means;

said handle section moving said operating pin against the impetus of the urging means when an auxiliary handle is inserted into said operating section body, and said handle section being disengaged from the operating section body according to movement of the operating pin; and

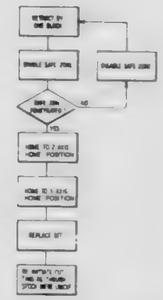
said auxiliary handle is inserted into an auxiliary handle receiving hole provided laterally on the operating section body so as to push a top end of the operating pin projecting into the auxiliary handle receiving hole and move the operating pin against the impetus of the urging means.

4,799,408

AUTOMATIC CUTTING BIT RECOVERY

Larisa A. Elman, Marblehead, Mass., assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 703,954, Feb. 21, 1985, abandoned. This application Aug. 18, 1986, Ser. No. 896,586
Int. Cl.[4] B23B *3/00*
U.S. Cl. 82—1 C 10 Claims



1. A method of positioning a cutting bit at a tool change position in a machining apparatus which drives the cutting bit along a first path in a first direction to machine a workpiece, comprising the steps of:

retracting the cutting bit along the first path in a second direction opposite the first direction;

determining whether the cutting bit has reached a predetermined safe zone boundary as the cutting bit is being retracted; and

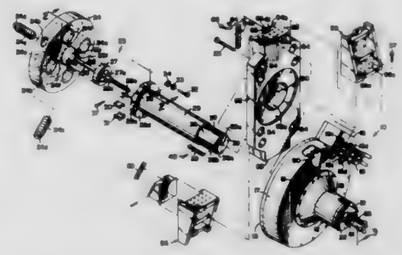
moving the cutting bit to the tool change position along a second path different from the first path when the tool has reached the safe zone boundary.

4,799,409

PORTABLE END PREPARATION APPARATUS

Donato L. Ricci, 834 Spring Creek Rd., Red Wing, Minn. 55066

Filed Dec. 29, 1987, Ser. No. 139,194
Int. Cl.[4] B23B *3/22*
U.S. Cl. 82—4 C 3 Claims



1. A portable pipe end preparation apparatus comprising:

(a) a housing having a motor access opening and a central bore;

(b) a motor cooperatively connected to said housing, said motor having a pinion gear for imparting a driving force;

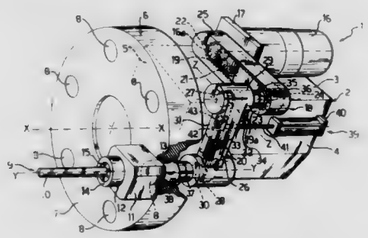
(c) a stationary mandrel assembly is positioned in said central bore, said mandrel assembly having a mandrel section and

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a base plate and said base plate having means to secure said base plate to an inner diameter of a pipe;
(d) a rotating drive member rotatably mounted on said mandrel section, said drive member comprising:
(i) a bull gear positioned to engage said pinion gear, said bull gear circuling said mandrel section;
(ii) a base member cooperatively connected to said bull gear;
(iii) first bearings means positioned between said mandrel section and said base member;
(iv) a head member releasably and cooperatively connected to said base member;
(v) second bearing means positioned between said drive member and said housing; and
(e) a tool module releasably mounted to said head member; and
(f) said mandrel assembly comprising:
(i) a base plate having a bore formed therein;
(ii) a spherical member having a central bore and positioned on said base plate;
(iii) a cylindrical shaft positioned in said bore of said base plate, said shaft having a bore;
(iv) a cylindrical sleeve mounted for rotation on said spherical member;
(v) a rod having a first end and an enlarged section end, said rod positioned in said bore of said cylindrical shaft, said enlarged end preventing said rod from exiting said bore of said cylindrical shaft;
(vi) a mandrel section having a flange and said flange connected to said base plate, said flange of said mandrel section having an inner opening which is positioned on said cylindrical sleeve, whereby tilting of said sleeve results in tilting of said mandrel section.

4,799,410
REVOLVING TURRET PARTICULARLY FOR LATHE MACHINING CENTERS

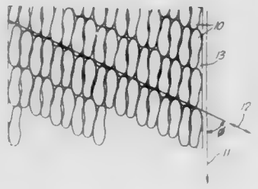
Franco De Bernardi, Busto Arsizio, Italy, assignor to Duplomatic S.p.A., Italy
Filed Sep. 10, 1986, Ser. No. 905,395
Claims priority, application Italy, Sep. 13, 1985, 22152 A/85
Int. Cl.⁴ B23B *29/00*
U.S. Cl. 82—36 A **2 Claims**



1. A revolving turret particularly for lathe machining centers, of a type which comprises:
a base body;
a tool head carried rotatably on the base body;
at least one chuck carried rotatably on the head;
a drive motor carried on the base body;
a drive train between the motor and chuck; and
clutch means at the end of said drive train for engagement with mating clutch means carried on said chuck;
characterized in that at least one element of said drive train, including at one end said clutch means, and at the opposite end, clutch means for engagement with mating clutch means carried on the remaining elements of the drive train, is mounted, in a hide-away shiftable fashion, as an arm hinged to the base body and being shiftable angularly about the hinge axis under the action of control means from a first or operative position where the clutch means and mating clutch means are engaged, to a second or inoperative position where the clutch means and mating clutch means are disengaged, the clutch means disengaging themselves from their corresponding mating clutch means during the arm movement, said arm extends parallel to the head axis of rotation when in its inoperative position.

4,799,411
RELATING TO THE REPETITIVE CUTTING OF WORKPIECE BLANKS

Roy P. Peake, Northants, England, assignor to Cox & Wright Limited, Rushden, England
Continuation of Ser. No. 774,356, Sep. 10, 1985, abandoned. This application May 7, 1987, Ser. No. 47,585
Claims priority, application United Kingdom, Sep. 11, 1984, 8422938; Oct. 16, 1984, 8426116
Int. Cl.⁴ B26D *3/00*
U.S. Cl. 83—50 **10 Claims**

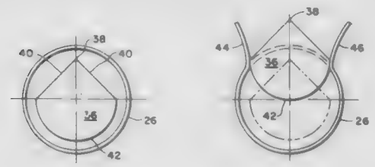


1. A method of repetitive cutting of large numbers of identical workpiece shapes from wide sheet or roll material by means of a travelling head press, the method comprising the steps of:
(i) providing a combination of a travelling head press and sheet material feeding means that is arranged for the cutting of rows of workpiece shapes from the sheet material at a variable bias angle and which is adjustable to change the bias angle without reorientation of the press base,
(ii) selecting and fitting to the press, a particular cutting tool for the stepwise cutting of a succession of desired workpiece shapes in a row across the entire width of the material,
(iii) computing the best bias angle for the particular workpiece shapes to be cut by the cutting tool selected,
(iv) adjusting the relative movements of the press and sheet feeding means such that the tool is moved along a fixed straight line at said bias angle relative to the sheet, and
(v) cutting an entire row of workpiece shapes along said fixed straight line at said bias angle relative to said sheet material.

4,799,412
METHOD FOR SEVERING THE ENDS OF TUBING

Randall L. Alexoff, Youngstown, Ohio, assignor to George A. Mitchell Company, Youngstown, Ohio
Filed Oct. 14, 1986, Ser. No. 918,143
Int. Cl.⁴ B23D *21/14*
U.S. Cl. 83—54 **8 Claims**

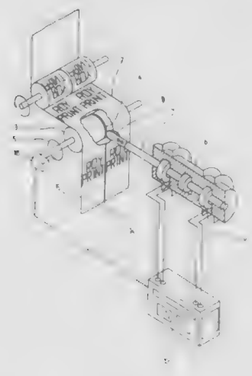
1. A method for severing the ends of tubing comprising feeding the end of a tube through a die such that the end of the tube to be sheared extends beyond the die, pressing a shear blade with a pointed end in the interior of said end of a tube, causing relative vertical movement between said shear blade and said tube to cause said pointed end to initially puncture and extend exteriorly of the tube wall adjacent said die, and thereafter shifting said shear blade from the puncture site about a tube wall shearing path generally tranverse to the length of the tube by laterally moving the shear blade from the puncture site



and then vertically moving the shear blade to shear a remaining portion of the tube wall.

4,799,413
CUTTING ARRANGEMENT FOR INTERMITTENT CUTTING OF WEB MATERIAL

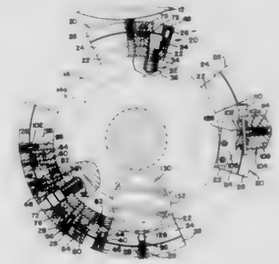
Ulf Soderqvist, Göteborg, Sweden, assignor to Roy Soderqvist Mekaniska Verkstad AB, Sweden
PCT No. PCT/SE86/00464, § 371 Date Jun. 19, 1987, § 102(e) Date Jun. 19, 1987, PCT Pub. No. WO87/02296, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 9, 1986, Ser. No. 68,269
Claims priority, application Sweden, Oct. 21, 1985, 8504925-2
Int. Cl.⁴ B26D *5/26*
U.S. Cl. 83—71 **1 Claim**



1. A cutting device for cutting an elongated moving web of material, such as a paper web, the web of material moving in the longitudinal direction thereof, the device resting on a support means, such as a floor and comprising
a motor driven cylinder provided with a peripheral groove extending around the cylinder, said moving paper web being directed to run over the cylinder;
a power device comprising a plurality of fixed electromagnetic coils of toroidal form, an arm made of magnetizable material extending through said coils, said arm extending horizontally with respect to the support means and having at one end a blade-like cutting member located directly in front of said groove on the cylinder and being nonrotationally fixed in a predetermined horizontal location with respect to the movement of the web;
an angular pulse generator located at the cylinder axis to measure certain angular positions during the rotation of the cylinder; and
a control unit connected to the angular pulse generator to determine the angular positions of the cylinder and actuate the power device to move the arm intermittently, linearly in a horizontal plane with respect to the support means between a first retracted position having said cutting edge spaced from the paper web and a second extended position in which the cutting member has its edge lying in the groove and engaged against the paper web for a predetermined portion of the angular rotation of that cylinder to permit the paper to move with respect to said cutting member so that cutting member cuts through the paper web for a predetermined longitudinal distance of the web to define an elongated cut extending longitudinally in the paper web and divide that paper web into at least two elongated tabloids which extend along the longitudinal direction of the web and which are separated from each other.

4,799,414
ROTARY CUTTER APPARATUS

Bruce A. Scheffer, Valparaiso, and Eric K. Lo, Portage, both of Ind., assignors to Scheffer, Inc., Merrillville, Ind.
Filed Nov. 16, 1987, Ser. No. 121,319
Int. Cl.⁴ B26D *1/62*
U.S. Cl. 83—103 **21 Claims**



1. A cutter assembly for use in a rotary web cutter apparatus or the like having rotatable anvil and knife cylinders defining a nip therebetween through which web material passes during generally transverse cutting thereof, said cutter assembly comprising a first block member adapted to be mounted on the periphery of a knife cylinder for rotation through the nip between the knife cylinder and an anvil cylinder, a second block member supporting an elongated knife blade thereon and being mounted on said first block member for pivotal movement about a pivot axis parallel to and spaced from said knife blade, and means cooperative with said first and second block members to bias said second block member about said pivot axis away from said first block member but enabling pivotal movement of said second block member toward said first block member when said cutter assembly is mounted on a knife cylinder and said knife blade engages an associated anvil cylinder during a web cutting operation.

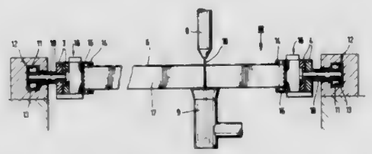
4,799,415
SUPPORT FOR STOCK IN A CUTTER

Erwin Gerdes, Edewecht/Portsloge, Fed. Rep. of Germany, assignor to MBB GmbH, Bremen, Fed. Rep. of Germany
Filed Sep. 9, 1986, Ser. No. 905,704
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1985, 3534096
Int. Cl.⁴ B26F *3/00*
U.S. Cl. 83—177 **6 Claims**

1. In an apparatus for cutting flat stock such as foil, strip, fiber-reinforced ribbons, or the like, a support structure for the stock to be cut comprising:
two endless chains running parallel to each other;
means for maintaining said chains at a predetermined distance from each other;

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said chains having chain link members, each member being provided with at least one holding element;
a plurality of pins uniformly distributed on the holding elements; and
a plurality of thin flexible elongated elements such as strips or wires, each of the elements looping around a plurality of said pins and extending from a holding element on a chain link member of one of the chains, to a holding element on a chain link member of the other chain and back to a further holding element on the member of the one



chain, thereby spanning a distance between the two chains, said all elements together establishing a support surface for flat stock, the element strips or wires oriented so that respective thinnest dimensions face a cutting tool.

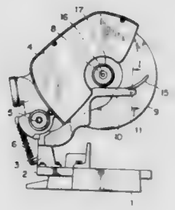
6. The support as in claim 1, in combination with a high pressure cutting nozzle, and a capturing container underneath, said capturing container being maintained in a fixed position relative to the cutting nozzle, the nozzle in the capturing container being respectively placed above and below the upper stringer of the chains.

4,799,416

GUARD-MOVING SYSTEM IN A CUTTING APPARATUS

Taiichi Kumasaka; Yasuyuki Hirano; Katsuhiko Ozaki, and Koichi Sawada, all of Katsuta, Japan, assignors to Hitachi Koki Company, Ltd., Tokyo, Japan

Filed Mar. 31, 1988, Ser. No. 176,340
Claims priority, application Japan, Apr. 3, 1987, 62-83450
Int. Cl.[4] B23D *45/04*; B27B *5/20*
U.S. Cl. 83—397 **3 Claims**



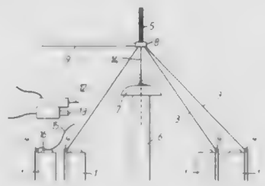
1. A cutting apparatus comprising:
working table means fixedly secured to a base;
cutter means is pivotally coupled through a first shaft to said working table means so as to be swingable about said first shaft between its raised resting position and its lowered cutting position cutting a work piece placed on said working table means, said cutter means including a motor-driven circular saw-blade fixedly mounted on a second shaft which is coupled to a drive shaft of a drive motor, a blade housing for partially encasing an upper side portion of said circular saw-blade and supporting said second shaft so that said circular saw-blade is rotatable about said second shaft in response to operation of said drive motor, and a movable blade guard disposed to be rotatable about said second shaft to expose and cover a portion of said circular saw-blade, said movable blade guard being biased by means of spring means in a direction to cover said portion of said circular saw-blade and having an engaging device at a portion of the outer surface thereof; and
an elongated arm member one end portion of which is fixedly secured to a stationary portion of said cutting apparatus and the other end portion of which is positioned near said engaging device provided on said movable blade guard, said elongated arm member having at the other end portion a third shaft which is engaged with said engaging device of said movable blade guard so that said movable blade guard is rotated about said second shaft in response to a swinging movement of said cutter means about said first shaft to expose a portion of said saw-blade when said cutter means is moving to the cutting position and to cover the portion thereof when moving to the resting position.

4,799,417

BRAIDED LINE

Paul D. Burgess, Hereford, Great Britain, assignor to Fly Fishing Technology Limited, Powys, Wales

Filed Jun. 29, 1987, Ser. No. 67,284
Claims priority, application United Kingdom, Jun. 28, 1986, 8615647
Int. Cl.[4] D04C *3/06, 1/12*
U.S. Cl. 87—11 **11 Claims**



1. Apparatus for tapering braided lines comprising a braiding machine of the carousel type in which filaments converge from an annular array of bobbins on the carousel to a common braid point co-axial with the array, and in which opposed interweaving motion of the bobbins causes the filaments to form a braided line leading from the braid point, and including means for severing a filament between a bobbin and the braid point and means for directing air flow in the vicinity of the braid point generally co-axially of the array and away from the braid point so as to encase the severed portion leading from the braid point within the intertwined remaining filaments.

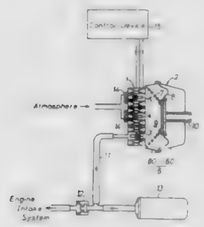
4,799,418

VACUUM ACTUATOR FOR VEHICLE SPEED CONTROL

Yoshikazu Takahashi, and Toshio Nishiyama, both of Kiryu, Japan, assignors to Mitsuba Electric Mfg. Co., Ltd., Gunma, Japan

Filed Aug. 21, 1987, Ser. No. 87,704
Int. Cl.[4] F15B *11/08*
U.S. Cl. 91—449 **4 Claims**

1. A pressure actuator comprising:
a solenoid valve unit incluidng a plurality of solenoid valves;
a diaphragm unit including a diaphragm defining a pressure chamber, air pressure within the pressure chamber being adjusted by selective activation of the solenoid valves which provide communication between the pressure chamber and pressure sources of different pressure levels;
a casing of the actuator defining an accommodating chamber for accommodating the solenoid valve unit, a wall surface of the accommodating chamber being provided with a rib for guiding and positioning the solenoid valve unit inside the accommodating chamber, the rib being disposed in a bottom wall of the accommodating chamber and adapted to be fitted into a gap between a pair of adjacent yokes of the solenoid valves; and
a port member provided in the front end of said solenoid valve unit, said port member adapted to be fitted into a hole provided in the bottom wall of the accommodating



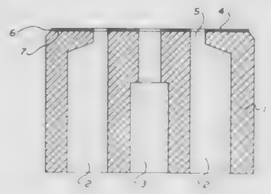
chamber of said casing, said hole provided with seal means to effect a seal between said port member and the hole, the fitting of said port member with the hole being facilitated by providing a tapering surface on at least a cooperating surface of said port member or the hole.

4,799,419

MULTI-CYLINDER HYDRAULIC PISTON DEVICE, A CYLINDER THEREFOR, AND ITS METHOD OF MAKING

Bernd Krause, Mainaschaff, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Mainaschaff, Fed. Rep. of Germany

Continuation of Ser. No. 294,514, Aug. 20, 1981, abandoned, which is a continuation of Ser. No. 22,839, Mar. 22, 1979, abandoned. This application Nov. 9, 1983, Ser. No. 549,974
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812417
Int. Cl.[4] F01B *3/00*
U.S. Cl. 91—499 **8 Claims**



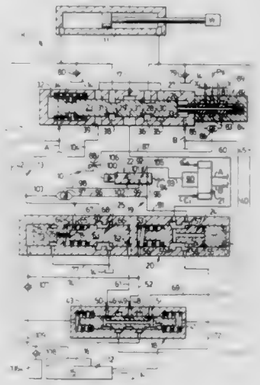
1. A process for producing a cylinder block for a multi-cylinder hydraulic axial piston device comprising the steps of forming a generally cylindrical steel cylinder block having a plurality of cylinder bores in said cylinder block each having an axis parallel to the axis of the cylinder block and opening into an end surface of the cylinder block transverse to the axis of the cylinder block and adapted to rotate in frictional contact with a valving surface, finishing the cylinder block to its final shape, electroplating a metal layer upon said end surface of said cylinder block and sintering an anti-friction metal layer onto said electrodeposited layer by simultaneously heating the metal material to a sintering temperature and applying pressure to said anti-friction metal material while sintering, said electrodepositd layer having a crystal lattice constant compatible with said sintered layer and the material of said cylinder block, and chemically treating said cylinder block by gas nitriding at a low temperature such that the tempering properties and the steel are not effected to form an in situ integral surface layer improving the wear characteristics of said cylinder block without reducing the sliding friction properties of said sintered layer.

4,799,420

LOAD RESPONSIVE CONTROL SYSTEM ADAPTED TO USE OF NEGATIVE LOAD PRESSURE IN OPERATION OF SYSTEM CONTROLS

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Inc., Peoria, Ill.

Filed Aug. 27, 1987, Ser. No. 89,878
Int. Cl.[4] F15B *13/08*
U.S. Cl. 91—529 **15 Claims**



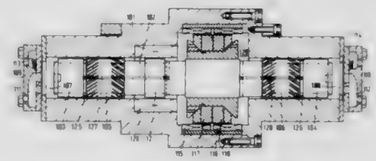
1. A load responsive control system comprising at least one actuator operable to control a positive and a negative load, exhaust means and a source of pressure fluid, first valve means operable to selectively interconnect said actuator with said exhaust means and said source of pressure fluid and to control fluid flow to and from said actuator, control means operable to provide energy to control the position of the first valve means to control fluid flow to and from said actuator, said control means having first energizing means operable to use energy from said source of pressure fluid to control the first valve means while said actuator controls a positive load, and second energizing means operable to use energy from said negative load to control the first valve means while said actuator controls a negative load.

4,799,421

HYDRODYNAMIC SPIRAL-GROOVED JOURNAL BEARING FOR ELECTROMAGNETICALLY ROTATED AND RECIPROCATED COMPRESSOR PISTON

Fridtjof Bremer, and Everhardus Muijderman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1986, Ser. No. 928,063
Claims priority, application Netherlands, Nov. 6, 1985, 8503037
Int. Cl.[4] F16C *31/00, 32/06*
U.S. Cl. 92—162 R **20 Claims**



1. An apparatus comprising a smooth walled circular cylinder and a piston having a pair of end faces that is reciprocable and rotatable in said cylinder and in which a working fluid is

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provided in said cylinder for being worked on by said piston during piston reciprocation or for working on said piston to reciprocate said piston in said cylinder, a fluid pressure difference existing across said piston during piston reciprocation which acts on said end faces,

the improvement comprising:

means for rotating said piston in said cylinder while said piston is reciprocating; and

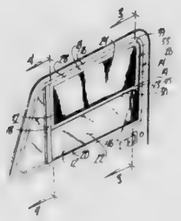
said piston comprising a bearing part having a pattern of grooves which cooperate with said cylinder wall and said fluid to dynamically support and center said piston in said cylinder for rotating and reciprocating piston movement, and a sealing part for reducing the pressure difference across said bearing part comprising a smooth circular cylindrical surface defining a gap between said sealing surface and said cylinder wall, the length of said surface and the size of said gap being chosen so that the pressure difference across said bearing surface is reduced to a level such that said piston is free of radial dynamic instability and remains stable in said cylinder during piston reciprocation and rotation.

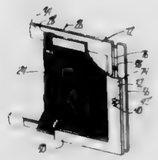
4,799,422

MOTOR VEHICLE WINDOW VENTILATOR

Robert M. Birt, 1308 Washington Ave., Ruthven, Iowa 51358

Filed Dec. 28, 1987, Ser. No. 138,554
Int. Cl.[4] B60H *1/26*
U.S. Cl. 98—2.13 9 Claims





7. A device for ventilating vehicles having windows which can be moved up or down within a window framework, said framework including channels to receive the edges of the window, comprising:

a ventilator frame having an outer perimeter closely conforming to the inside perimeter of the window framework;

a screen means secured in the ventilator frame for allowing air to pass;

flange means on at least a portion of the outer perimeter of the ventilator frame for matable insertion into corresponding portions of the channels of the window framework;

channel means on at least a portion of the outer perimeter of the ventilator frame for matable reception of the top edge of the window;

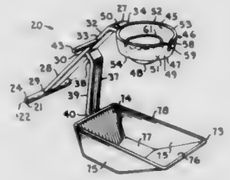
fitting means mounted by a spring on a portion of the perimeter of the frame, for matable insertion into a corresponding channel of the framework, said fitting means resiliently held by said spring and movable from a normal extended position away from the frame, to a retracted position adjacent the frame, said portion of said frame on which said fitting means is mounted having a portion extending laterally outwardly to cover said spring and a portion of said fitting means to allow insertion of the frame into the window framework, and the extension to completely cover the window opening.

4,799,423

EGG CONTENTS SEPARATING MECHANISM

Charles H. Willsey, Topeka, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Filed Jan. 19, 1988, Ser. No. 145,100
Int. Cl.[4] A23J *1/09*
U.S. Cl. 99—500 22 Claims



1. A mechanism for separating egg yolk and albumen contents, which comprises:

(a) a frame;

(b) a yolk cup assembly mounted on said frame and including:

(1) an annular funnel ring with upper and lower openings, said funnel ring including a lower rim defining said lower opening and lying in a plane;

(2) a concave retaining bowl mounted on said funnel ring and adapted to receive said yolk, said retaining bowl including a rim lying in a plane that slopes with respect to said funnel ring lower rim plane;

(3) said retaining bowl being positioned partly within said funnel ring lower opening; and

(4) said funnel ring and said retaining bowl defining a receptacle and being in partlyspaced relation whereby an opening to said receptacle is defined; and

(c) an albumen pan mounted on said frame in spaced relation below said yolk cup assembly, said albumen pan being adapted to receive albumen from said yolk cup assembly.

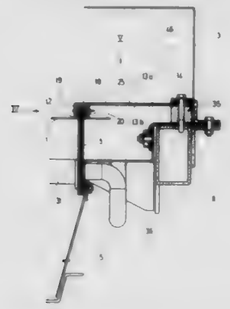
4,799,424

FLUID SEAL FOR MOVING BELTS

Gerhard Stübler, Murr, Fed. Rep. of Germany, assignor to Santrade Ltd., Luzern, Switzerland

Filed Sep. 29, 1987, Ser. No. 102,530
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1986, 3634274
Int. Cl.[4] F16J *15/16;* B30B *5/06;* B65G *15/60;* B08B *15/02*
U.S. Cl. 100—154 21 Claims

1. A sealing assembly for use in forming a fluid-tight seal against a moving belt, said sealing assembly comprising a plurality of spring plate means disposed in side-by-side relationship to form a row, each said spring plate means being anchored at one end and freely elastically movable at an opposite free end thereof, said free ends being movable relative to one another, an elongate flexible profile element extending generally parallel to said row and mounted on said free ends such that each said free end is mounted to a portion of said profile element, said profile element adapted to bear against a surface of a belt and flex as said free ends move relative to one another to conform to the configuration of that surface while maintaining a seal therewith, and an elongate strip extending generally parallel to said row and carried by said plurality of spring plate means at a location intermediate said profile element and said anchored ends in order to create a seal between adjacent ones of said spring plate means.

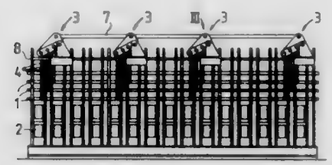


4,799,425

BOARD PRESS

Johan J. K. Hotma, Veikko, Finland, assignor to Raama-Repola Oy, Finland

Filed Sep. 26, 1986, Ser. No. 912,007
Claims priority, application Finland, Oct. 23, 1985, 854152
Int. Cl.[4] B30B *7/02*
U.S. Cl. 100—194 2 Claims



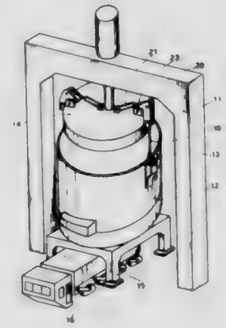
1. A board press comprising a plurality of press plates disposed one above the other, pressure cylinders operatively associated with said press plates for pressing said press plates together for pressing boards, and a single simultaneous apparatus interconnecting said press plates to maintain equal distances between the press plates during movement of the press plates, said single simultaneous apparatus comprising a plurality of pairs of lever units located at a plurality of points on both longitudinal margins of the press plates, each lever unit pair comprising a first lever arm pivotally mounted so that it is located at one of the longitudinal margins of said press plates and a second lever arm pivotally mounted so that it is located at the other longitudinal margin of said press plates, a rod pivotally connected to each press plate at said one longitudinal margin thereof and to said first lever arm, a rod pivotally connected to each press plate at said other longitudinal margin thereof and to said second lever arm, a transversal turning shaft common to said first and second lever arms, and longitudinal control rods disposed along said one and other longitudinal margins of said press plates, said first and second lever arms being respectively connected with a respective control rod, whereby said lever unit pairs are interconnected to constitute a single simultaneous apparatus.

4,799,426

SYSTEM AND METHOD FOR MOVING SKIPS AND PRESSING SCRAP IN A SKIP

Nonini Geremia, Buttrio, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Aug. 6, 1987, Ser. No. 82,319
Int. Cl.[4] B30B *15/32, 9/32*
U.S. Cl. 100—218 8 Claims



1. A system for pressing scrap in a skip, comprising

a skip for holding scrap to be pressed, comprising support pins;

a support with legs for supporting the skip;

a press for pressing scrap within the skip, said press comprising hooks for engaging the support pins of the skip to support the skip;

a vehicle comprising a vertically moveable platform, for transporting the support with legs and skip to and away from the press; and

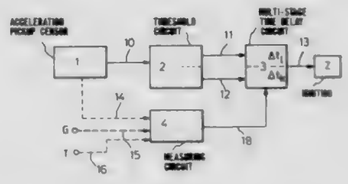
a cradle for supporting the skip during pressing of scrap, wherein the support with legs is replaced by the cradle when the skip is supported by said hooks.

4,799,427

PROJECTILE IGNITION DEVICE

Manfred Held, Aresing, and Horst Kirsche, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 4, 1988, Ser. No. 152,079
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1987, 3711698
Int. Cl.[4] F42C *11/06*
U.S. Cl. 102—215 8 Claims



1. An ignition device for a projectile penetrating into a target having electronic ignition delay means adjustable in accordance with sensor signals comprising:

threshold circuit means having an input coupled to receive an output signal from an acceleration sensor;

said threshold circuit means generating output signals which occur, depending on the amplitude of the output signal from the acceleration sensor, when a signal threshold is

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fallen short of or exceeded, and which activate a time delay circuit means generating a time delay having at least two delay ranges;

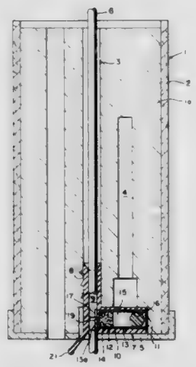
said time delay circuit means having an output signal which triggers the ignition of an active charge in the projectile, the mean duration of the delay time being short for high output signals from the acceleration sensor and longer for low output signals from the acceleration sensor.

4,799,428

EXPLOSIVE PRIMER UNIT FOR INSTANTANEOUS INITIATION BY LOW-ENERGY DETONATING CORD

Malak E. Yunan, Boonton Township, Morris County, N.J., assignor to Explosives Technologies International Inc., Wilmington, Del.

Filed Apr. 6, 1987, Ser. No. 35,004
Int. Cl.[4] C06C *5/04*; F42B *3/10*; F42D *1/08*
U.S. Cl. 102—322 **18 Claims**



14. An explosive coupler for arming a high-energy explosive primer to adapt it to be initiated instantaneously by low-energy detonating cord (LEDC), said coupler comprising:

(a) a plastic connecting block housing a coupling charge of granular detonating explosive in linear array in a sealed bore therein, said coupling charge being a high-velocity explosive adapted to initiate said primer along one or more of its surfaces, and said coupling charge also being shock-sensitive at least in an end segment of said linear array; and

(b) a pull-tab appendage on the exterior surface of said connecting block.

4,799,429

PROGRAMMING CIRCUIT FOR INDIVIDUAL BOMBLETS IN A CLUSTER BOMB

Edward V. LaBudde, Newbury Park, and Robert L. Kay, Calabasas, both of Calif., assignors to ISC Technologies, Inc., Lancaster, Pa.

Filed Mar. 30, 1984, Ser. No. 595,256
Int. Cl.[4] F42B *25/16*; F42C *11/06*
U.S. Cl. 102—393 **21 Claims**

1. In a cluster bomblet having a detonating mechanism and a transformer secondary winding for receiving bomblet address and detonation delay signals from a primary winding which is external to the bomblet and is pulled away when the bomblet is released, the improvement comprising a detonator control circuit which comprises:

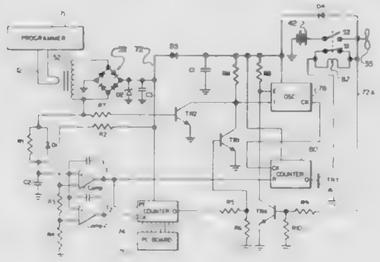
an address storage means having an adjustable bomblet address stored therein,

a programmable timing means connected to actuate the detonating mechanism after a programmed time delay,

a signal discriminator circuit connected to recognize bomblet address signals at the secondary winding,

means connecting the secondary winding to the timing means to transmit a detonator delay program signal to the timing means,

means connecting the discriminator circuit to the address storage means to adjust the address stored therein in re-



sponse to the discriminator circuit receiving a bomblet address signal, and

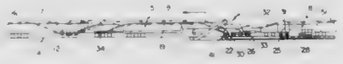
an enabling circuit connected to enable programming of the timing means by a detonation delay signal in response to the address stored in the address storage means being adjusted to a predetermined address, and to disable programming of the timing means at other times.

4,799,430

MOBILE BALLAST CLEANING APPARATUS

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 12, 1987, Ser. No. 13,709
Claims priority, application European Pat. Off., Apr. 2, 1986, 86200046.1
Int. Cl.[4] E01B *27/00*
U.S. Cl. 104—2 **11 Claims**



1. A mobile ballast cleaning apparatus mounted for mobility in an operating direction on a track supported on ballast, which comprises

(a) a first work vehicle having a front undercarriage and a rear undercarriage mounting the vehicle on the track

(1) a track lifting device mounted on the first work vehicle between the undercarriages, and

(2) a vertically adjustable ballast excavating and conveying chain mounted on the first work vehicle at a ballast excavating site between the undercarriage adjacent the track lifting device,

(b) a second work vehicle preceding the first work vehicle in the operating direction and having a front undercarriage and a rear undercarriage mounting the vehicle on the track,

(1) a ballast screening installation mounted substantially centrally on the second work vehicle for separating waste from cleaned ballast, and

(2) a waste conveyor means mounted on the second work vehicle for removing the waste,

(c) a conveyor means for conveying the excavated ballast from the ballast excavating and conveying chain to the ballast screening installation,

(d) a cleaned ballast conveying and redistributing installation

including a conveyor band mounted on the second work vehicle for receiving the cleaned ballast from the ballast screening installation, a first cleaned ballast conveying and redistributing means arranged to convey the cleaned ballast to an output end adjacent a first ballast redistributing outlet immediately rearwardly of the ballast excavating site, a second cleaned ballast conveying and redistributing means having an input end adjacent the output end of the first ballast conveying and redistributing means and leading to a second ballast redistributing outlet arranged rearwardly of the rear undercarriage of the first work vehicle, and a third cleaned ballast conveying and redistribution means arranged to convey any excess cleaned ballast to a predetermined distribution outlet,

(e) a ballast flow deflector mounted between the output end of the first cleaned ballast conveying and redistributing means and the input end of the second cleaned ballast conveying and redistributing means, and

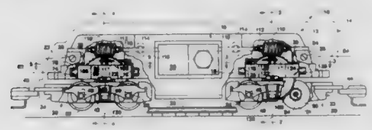
(f) a drive for selectively positioning the ballast flow deflector for directing the cleaned ballast solely to the first outlet for continuously forming a first layer of cleaned ballast as the mobile apparatus advances in the operating direction, solely to the second outlet for forming a second layer of cleaned ballast over the first layer, and into both outlets for simultaneously forming the first and second layers of cleaned ballast.

4,799,431

MODEL LOCOMOTIVE TRUCK MOUNTING MECHANISM

Clarence K. Edwards, Medford, and Lawrence D. Edwards, Eagle Point, both of Oreg., assignors to Kadee Metal Products Co., Medford, Oreg.

Filed Oct. 26, 1987, Ser. No. 112,938
Int. Cl.[4] B61D *17/00*
U.S. Cl. 105—1.5 **13 Claims**



10. In a model railroad locomotive for self-propelled movement over a pair of electrically conductive, spaced apart rails, the locomotive having an elongate chassis, and motor means, an improved truck mounting mechanism comprising:

at least two truck frames having wheel-bearing axles carried thereon;

first truck frame mounting means for providing two-axis movement of one truck frame relative to the chassis; and

second truck frame mounting means for providing three-axis movement of another truck frame relative to the chassis, including a gimbal mount secured to the chassis for movement about a roll axis, said roll axis being parallel to the longitudinal axis of the chassis, and a gimbal body fixed to the second truck frame, said gimbal body having articulation means thereon and said gimbal mount having receiver means for receiving said articulation means, said articulation means and receiver means being constructed and arranged to provide pitch and yaw movement of said gimbal body relative to said gimbal mount.

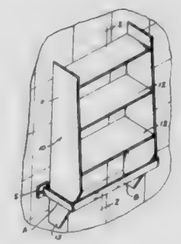
4,799,432

AUXILIARY TOWEL RACK SHELVES

Thomas W. Rickner, 1107 Shamrock Dr., Dublin, Ga. 32121

Filed Jun. 4, 1984, Ser. No. 617,191
Int. Cl.[4] A47B *23/00*
U.S. Cl. 211—105.1 **6 Claims**

1. A shelf assembly for use with and supportable within a wall mounted towel rack, said rack having spaced horizontal arms mounted on and extending outwardly from the wall and a bar extending between the arms and spaced outwardly from said wall, said shelf assembly comprising parallel side members providing an upper shelf supporting portion which is generally wider than the space between the bar and the wall, and a lower leg portion, the lower part of which is narrower than the space between the bar and the wall, received between the rack and the wall, one or more vertically spaced shelves extending between the side members of the upper shelf supporting por-



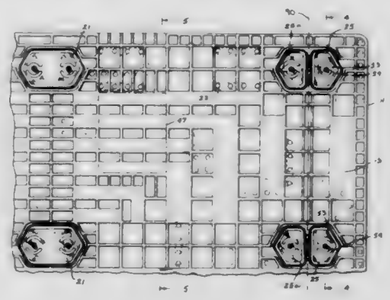
tion, the lower leg portion of each side member having a rear edge portion abutting the wall below the horizontal plane of the bar when the assembly is received within the rack, the side members at the upper region of each leg portion having a front edge portion extending outwardly from the plane of said rear edge portion and said wall into engagement with said bar, whereby the assembly may be lowered into the towel rack until the front edge portion engages the bar and the rear edge portion engages the wall, thereby securing the assembly within said rack.

4,799,433

LARGE CAPACITY SHIPPING PALLET ASSEMBLY

Lee T. Luft, Waukesha, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed Feb. 6, 1987, Ser. No. 12,147
Int. Cl.[4] B65D *19/00*
U.S. Cl. 108—51.1 **19 Claims**



1. A pallet assembly comprising a pallet deck having a generally planar deck surface and projecting pedestals that flank and define a portion of a forklift channel, wherein:

the pedestals comprise a pair of complete foot members comprising sidewalls extending downwardly from said deck surface and a bottom wall defining an end of said foot member interconnecting the sidewalls, each foot member attached at one of its sidewalls to a sidewall of another foot member and having interengaging means on said ends of said foot members opposite said deck surface for engagement in one instance with foot members of an

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indentical pallet deck and in another instance with a separate foot member to flank and define in both instances a forklift channel and

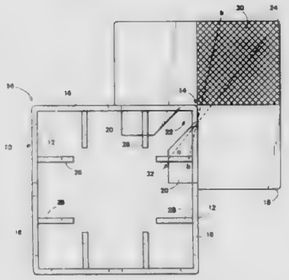
a cut-a-way portion extending through said attachment of said pair of foot members so that upon separation a smaller sized pallet deck results with a complete foot member.

4,799,434

OUTSIDE-CORNER SHELF ASSEMBLY

Gerald S. Moshofsky, Eugene, Oreg., assignor to Newood Products of Oregon, Inc., Eugene, Oreg.

Filed Jul. 2, 1987, Ser. No. 69,435
Int. Cl.[4] A47B *9/00*
U.S. Cl. 108—108 **12 Claims**



1. A shelf assembly comprising:

(a) a support structure having adjacent first and second substantially vertical wall members defining a substantially vertical outside corner;

(b) a substantially planar shelf member adapted to fit horizontally around said outside corner of said support structure;

(c) said first and second wall members respectively including first and second horizontal slots coplanar with each other; and

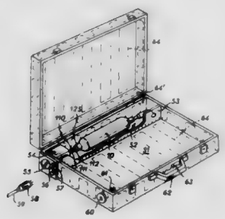
(d) said shelf member including first and second horizontally projecting tangs, coplanar with said shelf member, said tangs adapted to be substantially simultaneously inserted into said first and second slots, respectively, by movement of said shelf member along a horizontal axis bisecting said outside corner.

4,799,435

SECURITY DEVICE FOR TRANSPORTING DOCUMENTS OF VALUE

Marc Boutroy, 12 rue Corberie, 60110 Amblainville, France

Filed Mar. 4, 1987, Ser. No. 21,767
Claims priority, application France, Mar. 5, 1986, 86 03070
Int. Cl.[4] E05G *3/00*
U.S. Cl. 109—25 **38 Claims**



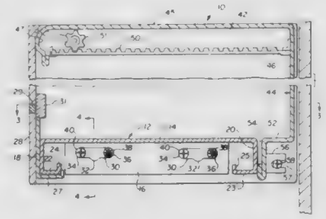
1. A security device for transporting documents of value such as bank notes, comprising an enclosure having a space for receiving the documents and housing a foam generating unit including a receptacle containing high wetting power marker liquid adapted to foam up and color documents, said receptacle having openable closure means, a reserve of compressed gas having means for releasing compressed gas, actuating means for controlling said means for releasing compressed gas, at least one movable wall disposed inside said receptacle between said marker liquid and said means for releasing compressed gas, a liquid/air mixing means connected downstream of said receptacle closure means for converting marker liquid into marker foam in response to compressed gas released from said reserve urging said movable wall to force liquid via said closure means to said liquid/air mixing means, and discharge means for carrying marker foam from said liquid/air mixing means to said space for marking said documents.

4,799,436

TAMPERPROOF CABINET

Steve F. Goodman, Wyoming, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 30,677, Mar. 26, 1987, Pat. No. 4,722,285, which is a continuation of Ser. No. 810,035, Dec. 17, 1985, abandoned. This application Dec. 4, 1987, Ser. No. 128,631
The portion of the term of this patent subsequent to Feb. 2, 2005, has been disclaimed.
Int. Cl.[4] E05G *1/04*; F47C *43/00*
U.S. Cl. 109—50 **9 Claims**



1. A storage cabinet adapted for mounting on a wall and including side panels, a top panel, a bottom panel, a back panel, and a door for closing an opening between said top panel, bottom panel, and side panels, all of said panels and door being joined together to define an enclosed space, said bottom panel is removably joined to said side panels through exposed fasteners outside said enclosed space and extending through said bottom panel and side panels, the improvement which comprises:

a slot in one of said bottom panel and said side panels for retaining said exposed fasteners when said bottom panel is in a forward position with respect to said side panels;

one of said exposed fasteners mounted in an end portion of said slot to prevent forward movement of said bottom panel with respect to said side panel, said one fastener being secured to the other of said bottom panel and side panels in a non-removable fashion by which said one exposed fastener cannot ordinarily be removed without evident damage to said other of said bottom panel and side panels; and

means including a locking flange on said door to prevent movement of said bottom panel from said forward position to said rearward position when said cabinet is assembled, said locking flange being movable vertically between positions engaging and nonengaging with respect to said bottom panel to lock and unlock respectively said door in closed position covering said opening;

whereby said bottom panel can be removed from said side panels in the absence of said locking flange in said engaging position by sliding said bottom panel rearwardly with respect to said side panels when all said fasteners except said one nonremovable fasteners are removed;

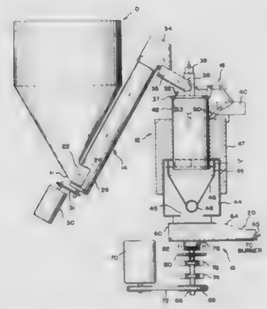
whereby said bottom panel cannot be removed from said side panels while said locking flange is in said engaging position without evident damage to the other of said bottom panel and said panels, thus preventing disassembly of said cabinet when said door is locked in said opening without evidence of tampering.

4,799,437

HEATING STOVE WHICH INCLUDES A PYROLYSIS GASIFIER

Frederick P. Beierle, Prosser, Wash.; Birdell T. Boyer, Mio, and Richard A. Suisse, Luzerne, both of Mich., assignors to Ablestien Industries, Inc., Prosser, Wash.

Division of Ser. No. 57,778, Jun. 3, 1987, Pat. No. 4,738,205. This application Feb. 22, 1988, Ser. No. 159,113
Int. Cl.[4] F23G *5/12*
U.S. Cl. 110—229 **4 Claims**



1. A blower apparatus for moving fuel gas produced by a gasifier into an exit pipe for transmission to a burner or the like and for simultaneously moving air through the gasifier, comprising:

housing means having an inlet for entry of fuel gas produced by a gasifier and an exit therefrom leading to a burner;

first fan means positioned in the housing for moving the fuel gas through the exit from the housing means and for drawing air through the gasifier;

a fan shaft upon which the first fan means is mounted, the fan shaft extending below said fan means and out of said housing, the fan shaft being hollow over a portion of its length, wherein the hollow portion is in communication with the environment;

means for rotating the fan shaft and hence the first fan means at high speed;

bearing means positioned so as to support said fan shaft; and

second fan means positioned on said fan shaft beneath the housing.

4,799,438

METHOD AND APPARATUS FOR CLAMPING AND MANIPULATING WORKPIECES DURING A SEWING OPERATION

John E. Hinckle, Richmond, Va., assignor to Apparel Machinery International, Ltd., Richmond, Va.

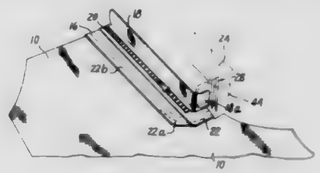
Filed May 28, 1987, Ser. No. 55,135
Int. Cl.[4] D05B *21/00, 3/12, 27/16*
U.S. Cl. 112—121.12 **27 Claims**

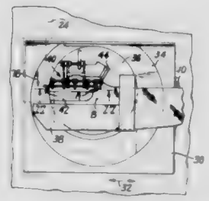
1. Apparatus for clamping and manipulating a plurality of clothing components relative to a sewing machine having reciprocating sewing needle means comprising:

(a) work table means operatively associated with the sewing machine;

(b) clamping means to hold the plurality of clothing components in a desired orientation on the work table means and;

(c) drive means operatively interconnected with the work table means to move the work table means with respect to the sewing machine means such that the plurality of clothing components are translated and rotated with respect to the reciprocating sewing needle means so as to attach the components together with a line of stitches, a portion of said line having at least a constant curved portion with a radius r .





4,799,439

DOUBLE PURPOSE LOOPER FOR OVERLOCKING SEWING MACHINE

Osamu Koshinaka, and Yoshikazu Suzuki, both of Osaka, Japan, assignors to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Filed Jul. 12, 1982, Ser. No. 397,079
Claims priority, application Japan, Jul. 14, 1981, 56-111569; Oct. 26, 1981, 56-161673[U]
Int. Cl.[4] D05B *1/20, 57/06, 1/10*
U.S. Cl. 112—162 **13 Claims**



1. An improved looper for an overlocking sewing machine including a sewing needle and a lower looper, each capable of carrying a thread, said needle, lower looper and improved looper being cooperatively operable to produce overlocked stitches, comprising:

a looper having a unitary distal portion having an upper looper portion and a spreader portion, said unitary distal portion being operable with said needle and lower looper for the selective production of overlocked stitches with

one needle and three threads or one needle and two threads;

said looper including an aperture in said distal portion capable of supporting a thread for movement therewith;

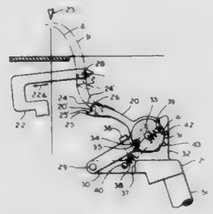
said upper looper of said unitary distal portion being operable to pick up the thread carried by said lower looper and to move a thread supported by said looper, with said unitary distal portion, in its aperture under the thread carried by the said lower looper to form an overlocked stitch with a third thread carried by said needle.

4,799,440

LOOPER CHANGEOVER DEVICE

Osamu Koshinaka; Yoshikazu Suzuki, and Yoshihide Yoneda, all of Osaka, Japan, assignors to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Filed Jul. 12, 1982, Ser. No. 397,072
Claims priority, application Japan, Aug. 11, 1981, 56-126087
Int. Cl.⁴ D05B *57/06*
U.S. Cl. 112—162 **7 Claims**



1. In a looper changeover device, for a sewing machine including a sewing needle, a lower looper, another looper, looper driving means, and holder means for securing said other looper to said driving means therefor, said needle, lower looper and other looper being cooperatively operable to produce overlocked stitches,

the improvement comprising manually operable, rotatable selector means for securing and selectively positioning said other looper with respect to said holder means between a first position wherein said looper is moved by said driving means therefor along a first path and a second position wherein said looper is moved by said driving means along a second path for the selective production of overlocked stitches with one needle and three threads or one needle and two threads,

said other looper having a distal portion having an upper looper portion and a spreader portion including a hook portion which are selectively movable along said first and second paths as determined by said selector means.

4,799,441

METHOD OF SEWING ELASTIC ABOUT A GARMENT OPENING

Ronald J. Boser, 711-3 Koehler Ave., Ronkonkoma, N.Y. 11779

Filed Jul. 5, 1988, Ser. No. 215,333
Int. Cl.⁴ D05B *97/00*; A41D *1/06*
U.S. Cl. 112—262.2 **3 Claims**

1. A method of sewing a discreet elastic length having opposite leading and trailing ends about a garment waist opening comprising the steps of sewing cooperating sides of a pattern of said garment to form side seams for said garment effective to provide a closed upper garment edge bounding said waist opening, attaching by sewing the leading end of said elastic length at a selected location on said upper garment edge other than at the locations of said side seams and at a selected distance below said upper garment edge, continuing the attaching by sewing to said upper garment edge of a remaining elastic length except for a portion thereof which is at a selected distance short of the trailing end, shifting the unattached trailing end of said elastic length below said upper garment edge, and attaching by sewing the shifted said elastic trailing : end, whereby the elastic leading which might contribute to an



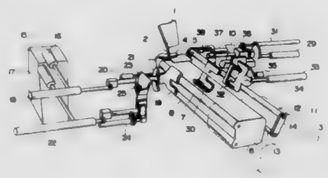
unsightly appearance are below said upper garment edge and the coinciding of the location of these ends with the location of the side seams which might contribute to bulk and discomfort is obviated.

4,799,442

METHOD OF AND APPARATUS FOR FEEDING FABRIC TO SEWING MACHINE

Toshio Nakatani, and Atsumi Ohshima, both of Aichi, Japan, assignors to Nakanihon Juki Co., Ltd., Nagoya, Japan

Division of Ser. No. 47,382, May 8, 1987, Pat. No. 4,760,809.
This application May 12, 1988, Ser. No. 193,056
Claims priority, application Japan, Jan. 7, 1987, 62-1386
Int. Cl.⁴ D05B *21/00, 1/00*
U.S. Cl. 112—262.2 **5 Claims**



1. A method of feeding a piece of fabric to a sewing machine, comprising the steps of:

a. sewing one edge of a piece of flat-shaped fabric to the opposite edge thereof so as to make said piece of fabric into a cylindrical shape;

b. inserting the inner periphery of said cylindrical piece of fabric around a holder extending from a sewing portion of the sewing machine from the side of said holder that is away from said sewing portion forward to said sewing portion so as to support said cylindrical piece of fabric around said holder;

c. first clamping left and right portions of the longitudinally forward portion of said cylindrical piece of fabric which is closer to said sewing portion respectively from the inside and outside and subsequently stretching the thus first clamped portions of said cylindrical piece of fabric from the inside toward the outside, so that the thus stretched portions are slightly expanded in the left and right directions;

d. second clamping left and right portions of a longitudinally intermediate portion of the outer periphery of said cylindrical piece of fabric onto said holder from the outside;

e. moving said stretched portions of said piece of fabric in the stretched state toward the thus second clamped intermediate portions until said stretched portions are disposed over the outside of said second clamped intermediate portions, so that said cylindrical piece of fabric is folded twice and the edge of said piece of fabric on the outermost side slightly projects longitudinally from the edge of an inner folded clamped portion of said piece of fabric;

f. first pressing left and right portions of the thus folded portion of said piece of fabric respectively from the inside and outside;

g. releasing the first clamping and then the stretching of said piece of fabric while said piece of fabric is being subjected to the first pressing;

h. moving the thus first pressed portion of said piece of fabric in the pressed state forwardly to said sewing portion in parallel with said holder;

i. second pressing an upper surface of said first pressed portion of said piece of fabric and a lateral portion of said first pressed portion of said piece of fabric onto said holder;

j. releasing the second clamping and then the first pressing of said folded portion of said piece of fabric; and

k. releasing the second pressing of said piece of fabric.

4,799,443

SWING SAIL BOAT

Ferdinand L. Vogel, Voorhees Rd.,RD 3, Whitehouse Station, N.J. 08889

Continuation of Ser. No. 743,752, Jun. 12, 1985, abandoned.
This application Dec. 19, 1986, Ser. No. 942,936
Int. Cl.⁴ B63H *9/06*
U.S. Cl. 114—39.1 **13 Claims**



1. A sailing vehicle including a hull structure having a fore and aft centerline; a mast having a lower end and an upper end, the lower end of the mast being stepped in the hull structure at the centerline such that the mast is maintained in substantially fixed upright relation with respect to the hull structure; and a sail having three corners constituting a head, a tack and a clew, an edge constituting a luff extending between the head and the tack, a foot extending between the tack and the clew, and a center of effort located approximately at the geometric center of the sail, wherein the improvement comprises:

means for supporting the sail including a luff boom having an upper end and a lower end, the head of the sail being attached to the luff boom near the upper end of the luff boom and the tack of the sail being attached to the luff boom near the lower end of the luff boom;

means for articulately connecting the luff boom to the mast so as to permit the luff boom to tilt with respect to the mast and to pivot at least partially around the mast, the connecting means being coupled to the mast adjacent to the upper end of the mast and being attached to the luff boom at a point above the center of effort of the sail;

means directly connecting the lower end of the luff boom to a fixed point with respect to the hull structure for controlling the tilt angle of the luff boom with respect to the mast in response to wind pressure on the sail and angle of heel of the mast with respect to a vertical position, said means for articulately connecting the luff boom to the mast and said means for controlling the tilt angle of the luff boom with respect to the mast being the only means respectively connecting the luff boom to the mast and directly to a point fixed with respect to the hull structure; and

means acting on the clew of the sail for controlling the angle of a line containing the clew and the tack of the sail with respect to a plane defined by the mast and the centerline of the hull.

4,799,444

RAIL CLAMP

Walter E. Lisowski, Chicago, Ill., assignor to Heim Products, Inc., Chicago, Ill.

Filed Oct. 1, 1987, Ser. No. 103,542
Int. Cl.⁴ B63B *9/00*
U.S. Cl. 114—221 R **5 Claims**



1. A rail clamp comprising a pair of substantially identical opposing side members, each side member having

(a) a parallel slidably interlocking means at one end of the side member having a receiving means and a hooking means wherein the hooking means includes a hooking lip which forms a hooking channel and the receiving means includes a receiving lip which forms a receiving channel such that the hooking lip and hooking channel of the first side member slidably interlocks with the receiving channel and receiving lip, respecitvely, of the second side member to prevent the side members from pivoting about a rail,

(b) a holding means for mounting auxiliary devices to the clamp at the other end of the side member,

(c) a semicircular portion disposed between the ends and adapted to surround approximately one half of the rail between each of the side members when positioned against the rail, and

(d) a means for fastening the individual side members together when the pair of side members have the slidably interlocked means interlocked together with a rail positioned between the respective semicircular portions.

4,799,445

MODULAR FLOAT DRUM SYSTEM

Jon D. Meriwether, Follansbee, W. Va., assignor to Follansbee Steel Corporation, Follansbee, W. Va.

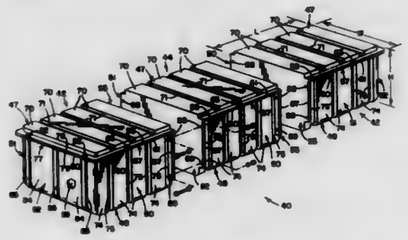
Filed Aug. 12, 1987, Ser. No. 84,159
Int. Cl.⁴ B63B *35/00*
U.S. Cl. 114—267 **50 Claims**

1. A modular float drum assembly for use in supporting a floating structure such as a floating dock, a swim float and the like comprising:

at least two one-piece float drum modules, each drum module having a top wall, a bottom wall and contiguous first, second, third and fourth side walls extending between said top and bottom walls to define a buoyant enclosure contained therein;

each drum module having a load bearing, rigidizing side flange at opposite sides of said top wall, said side flange including a generally flat top wall section, a generally flat bottom wall section, and a contiguous edge wall section at

the ends of said flange's top wall section and bottom wall section to provide a spacing therebetween whereby the rigidity of said side flange is increased, said first side wall of said drum module spaced inwardly from said edge wall of one of said flanges and contiguous with said bottom wall of one of said flanges, said second side wall of said drum module similarly spaced inwardly from said edge wall surface of the other flange and contiguous with said bottom wall surface of said other flange;



said third side wall of said drum module generally perpendicular with said drum module's top and bottom walls and extending continuously from said first side wall to said second side wall; and

module securing means for joining said third side wall of one drum module with said third side wall of another drum module so that said third side walls are substantially in face-to-face continuous contact throughout the surface thereof.

4,799,446

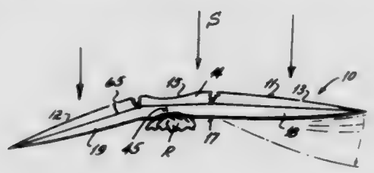
KAYAK CONSTRUCTION

Thomas G. Wilson, Rte. #1, Box 1391B, McKee, Ky. 40447

Filed Feb. 10, 1983, Ser. No. 465,438

Int. Cl.[4] B63B *35/71*

U.S. Cl. 114—347 **29 Claims**



1. A boat having a hull, deck and a cockpit opening disposed within a cockpit area of said deck and including:

a hull made of material having a first elongation factor;

a deck made of material having a similar elongation factor;

said hull and deck defining between them a space for receiving the legs of a user and extending forwardly therein from a position near said cockpit opening; and

a frangible cockpit area defining and comprising a part of said deck, forward of said cockpit opening, said cockpit area made of material having a second elongation factor, less than said first elongation factor, wherein said cockpit area has a tendency to break apart, as opposed to stretching, when said boat is subjected to a wrapping stress tending to bend said hull around an obstruction, thereby opening said frangible cockpit area of said deck when said boat is bent around an obstruction.

4,799,447

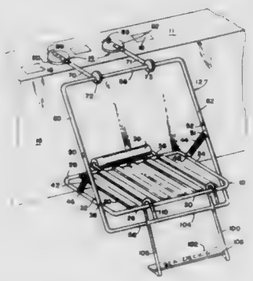
PORTABLE BOARDING PLATFORM

Gary Hebert, 9489 Affirmed La., Boca Raton, Fla. 33434, and Stacey Leone, 340 NE. 43rd Ct., Ft. Lauderdale, Fla. 33334

Filed May 6, 1987, Ser. No. 46,576

Int. Cl.[4] B63B *29/26;* **E01D** *1/00*

U.S. Cl. 114—362 **20 Claims**



1. A portable boarding platform for the side of a boat hull or boat transom comprising,

(a) A base platform defined by a rectangular tubular frame having a front section with a flat bar fixidly attached to its length, a back section having a second flat bar fixidly attached to its length, a first side section and a second side section, said side sections are shorter than said front and back sections, fixed planking spanning the distance between front and back sections, and

(b) a carrier bar defined by a rectangular tubular member having a top section, a bottom section and telescopically engaged first and second side sections with thru hole pins, whereby said carrier bar provides the support and adjusts the vertical distance of said base platform to the side of the boat hull or boat transom, and

(c) said base platform at the front portion of the first and second side sections are hingedly connected to the telescopic side sections of said carrier bar, a further connection is on the back portion of the side sections of said base platform being a pivotable hinge with its opposite ends attaching and being slidably locked to the pin connections on the telescopic side sections of said carrier bar, whereby said base platform is folded and unfolded within the framework of said carrier bar for convenient storage purposes,

(d) means for mounting and dismounting portable platform to the side of a boat hull or boat transom including a self locking, quick release assembly having adaptability to various boat designs of different boat manufacturers.

4,799,448

PORTABLE TRAFFIC MARKER

Wilhelm Junker, Reutlinger Strasse 14, D-1750 Backnang, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,389

Claims priority, application Fed. Rep. of Germany, May 31, 1986, 3618404; May 9, 1987, 8706706[U]

Int. Cl.[4] E01F *9/01, 9/02;* **G09F** *15/00*

U.S. Cl. 116—63 P **20 Claims**

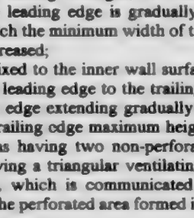
1. A portable traffic marker comprising:

a marker plate;

a footplate having a generally rectangular receiving portion;

means for securing a post in said receiving portion;

a post for supporting said marker plate, said post being made of metal or plastic and consisting essentially of two opposed, generally parallel longitudinal side segments and two longitudinal middle segments, each of said middle segments being joined along a back longitudinal edge to a respective back longitudinal edge of one of said side segments and extending from said back longitudinal edge to a front longitudinal edge located at approximately the midpoint of a line between the front longitudinal edges of said side segments, said middle segments being joined to each



other along their front longitudinal edges, whereby the cross-sectional profile of said side and middle segments generally resembles an M and whereby said post resists bending when subjected to lateral loads from such forces as wind surges or vehicle slipstreams while bending readily when subjected to higher lateral loads from such forces as the impact of a vehicle.

4,799,449

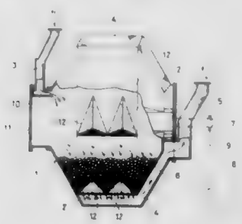
COATING APPARATUS

Katsuaki Miyata, Ikeda; Yutaka Sakuma, Toyono; Shinesu Motoyama, Asaka; Masakazu Gotou; Hiromu Shirakawa, both of Tokyo, and Takamoto Makino, Sakado, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Continuation of Ser. No. 725,317, Apr. 19, 1985, abandoned. This application Dec. 23, 1986, Ser. No. 946,135

Int. Cl.[4] B05C *5/00*

U.S. Cl. 118—19 **3 Claims**



1. A coating apparatus including a rotatable coating pan, said coating pan being provided on a peripheral sidewall thereof with ventilating areas, wherein said apparatus is further provided at positions covering said ventilating areas with baffle means including:

a leading edge having a pointed tapered shape relative to the rotational direction of the coating pan;

a trailing edge having a height, to which the minimum height of the leading edge is gradually increased and a width, to which the minimum width of the leading edge is gradually increased;

a bottom face fixed to the inner wall surface of the coating pan from the leading edge to the trailing edge;

an inclined side edge extending gradually from the leading edge to the trailing edge maximum height;

the baffle means having two non-perforated inclined surfaces and having a triangular ventilating opening at said trailing edge, which is communicated with ventilating apertures of the perforated area formed in the wall surface of the coating pan,

whereby articles treated in said coating apparatus are scooped up at the leading edge of said baffle means and tend to flow smoothly down said inclined surface and over said trailing edge as said coating pan is rotated.

4,799,450

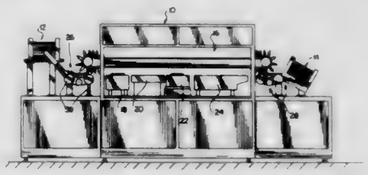
TINNING SYSTEM FOR SURFACE MOUNT COMPONENTS

J. Rene Cornellier, St. Julie, Canada, assignor to Corfin Technologies Inc., Chambly, Canada

Filed Mar. 27, 1987, Ser. No. 30,568

Int. Cl.[4] B05C *11/00*

U.S. Cl. 118—63 **10 Claims**



1. A tinning system for applying a hot solder coating to the leads of electronic components comprising:

(1) an endless closed loop conveyor having input and output positions;

(2) a plurality of processing stations intermediate said input and output positions;

(3) a plurality of vacuum gripping devices mounted on said conveyor, each vacuum gripping device comprising

(a) a body portion

(b) an inlet port

(c) an outlet port

(d) a passageway extending between said inlet port and said outlet port

(e) a valve member mounted in said passageway, said valve member being movable between a first open position to permit gas passage between the inlet port and outlet port, and a second closed position to seal said passageway;

(4) means for feeding individual ones of said electronic components in a synchronized relationship with said vacuum gripping devices to said input position such that when a vacuum gripping device is at said input position, a component is placed proximate said outlet port;

(5) vacuum creating means mounted in operative relationship to said vacuum gripping devices at said input position to create a vacuum at said inlet port of said vacuum gripping device and means for urging said valve from said first open position when said vacuum is applied to said closed position when said vacuum creating means are removed such that a vacuum is maintained in said passageway to retain said component at said outlet port during transportation through said processing stations.

4,799,451

ELECTRODE BOAT APPARATUS FOR PROCESSING SEMICONDUCTOR WAFERS OR THE LIKE

Steven J. Gardner, Scottsdale, Ariz., assignor to ASM America, Inc., Phoenix, Ariz.

Filed Feb. 20, 1987, Ser. No. 17,778

Int. Cl.[4] B05C *11/14, 13/00*

U.S. Cl. 118—500 **13 Claims**

1. In a chemical vapor processing apparatus for processing workpieces in a plasma reaction within an evacuable envelope for containing the chemical vapor and the workpieces, an electrode boat assembly removably insertable within the envelope, comprising:

a plurality of electrically conductive electrode plate members, each of said electrode plate members having a plurality of openings passing therethrough and each of said

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electrode plate members being interleaved with respect to each other such that correspondingly positioned openings in each of said plurality of electrode plate members are in axial alignment along a length of the electrode boat assembly thereby forming a plurality of sets of axially aligned openings;

a plurality of insulating support rod members, one of said plurality of insulting support rod members passing through one of said plurality of sets of axially aligned openings;

at least one conducting rod passing through at least one set of axially aligned openings in said plurality of electrode

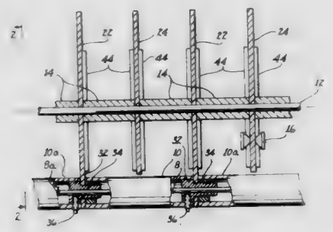


plate members, said conducting rod electrically contacting every other one of said plurality of electrode plate members; and

a plurality of insulating sleeve means disposed co-axially on each of said plurality of insulating rods and said at least one conductive rod and further disposed between interleaved pairs of said plurality of electrode plate members for supporting and spacing each of said plurality of electrode plate members, wherein said plurality of insulating rods, said at least one conductive rod, and said plurality of insulating sleeve means all have substantially the same coefficient of thermal expansion.

4,799,452

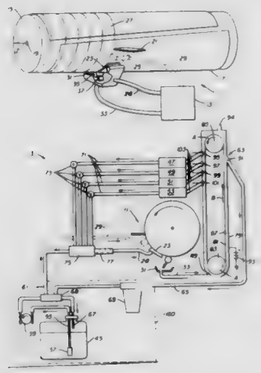
LIQUID TONER RECYCLING SYSTEM AND METHOD

Gene F. Day, Hillsborough, Calif., assignor to Precision Image Corporation, Redwood City, Calif.

Filed Jul. 23, 1987, Ser. No. 77,104

Int. Cl.⁴ G03G *15/10, 21/00;* **B03C** *5/02;* **B05C** *11/10*

U.S. Cl. 118—645 **31 Claims**



1. A system for recycling liquid toner comprising,

at least one tank of color concentrate containing charge-bearing solid pigment particles,

a supply tank of substantially particle-free fluid dispersant,

means communicating with said supply tank for supplying a stream of said dispersant from said supply tank,

means communicating with said at least one tank of color concentrate for selectively injecting an amount of color concentrate into said stream of dispersant and for mixing said color concentrate into said dispersant to form a stream of a toner fluid,

a toner fluid applicator communicating with said injecting and mixing means for receiving said stream of toner fluid and applying said toner fluid to a surface,

means disposed with respect to said toner fluid applicator for collecting excess toner fluid from said surface,

means communicating with said collecting means for electrically separating said charge-bearing solid pigment particles from said excess toner fluid leaving substantially particle-free fluid dispersant, said means for electrically separating said pigment particles including an electrical biasing source and a particle accumulating surface, said biasing source being in electrical communication with said excess toner fluid to cause said pigment particles to collect on said particle accumulating surface,

motion means for moving said particle accumulating surface to a location where said collected pigment particles may be removed therefrom,

means for removing said collected pigment particles from the particle accumulating surface,

means for returning said substantially particle-free fluid dispersant to said supply tank, and

means for returning said pigment particles removed from said particle accumulating surface to said at least one tank of color concentrate from which said particles originally came.

4,799,453

SOLIDIFICATION OF LIQUID FILMS

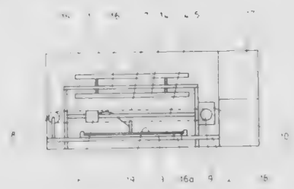
James H. Nobbs, Bardsey; Peter K. T. Oldring, and David Duerden, both of Morpeth, all of England, assignors to Thomas Swan & Co., Ltd., Durham, England

Filed Aug. 27, 1987, Ser. No. 90,066

Claims priority, application United Kingdom, Aug. 28, 1986, 8620807; United Kingdom, Nov. 4, 1986, 8626350

Int. Cl.⁴ B05C *11/00*

U.S. Cl. 118—665 **7 Claims**



1. An apparatus for monitoring the solidification characteristics of a solidifiable liquid film coated onto the surface of a substrate which apparatus comprises:

(i) a means of supporting the coated substrate whilst the film is solidifying,

(ii) a stylus mounted so as to penetrate the liquid film and contact the surface of the substrate,

(iii) a means of effecting relative movement between the stylus and the substrate so that the stylus moves with respect to the surface of the substrate and through the film whilst the film is solidifying, and

(iv) means of monitoring the resistance to movement of the stylus through the film to obtain a measure of the solidification characteristics of the film.

4,799,454

APPARATUS FOR FORMING A THIN FILM

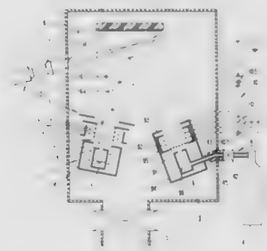
Hiroki Ito, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1987, Ser. No. 139,748

Claims priority, application Japan, Apr. 27, 1987, 62-101753

Int. Cl.⁴ C23C *14/48, 8/36, 16/48*

U.S. Cl. 118—723 **15 Claims**



1. An apparatus for forming a thin film comprising a vacuum chamber maintained at a predetermined degree of vacuum, an ion cluster beam device for jetting a vapour of a material to be deposited toward a substrate disposed in said vacuum chamber to ionize a cluster of said material to be deposited and accelerate the ionized cluster; and

a reactive gas supply means for supplying an inside of said vacuum chamber with the reactive gases reacting with said material to be deposited

for forming a thin film of said material to be deposited on said substrate by a reaction of said material to be deposited with said reactive gases, characterized by that an excimer laser beam emitting means for emitting the excimer laser beam toward the neighborhood of said substrate is provided.

4,799,455

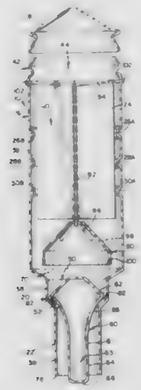
FARROWING CRATE CREEP FEEDER

Charles O'Kelley, Rte. 16 E., Shelbyville, Ill. 62565

Filed Mar. 2, 1987, Ser. No. 20,605

Int. Cl.⁴ A01K *5/00*

U.S. Cl. 119—51 R **18 Claims**



18. An animal feeding device for containing granular feed placed therein and dispensing selected amounts of said feed upon demand by an animal, said device comprising:

A. container means for forming an interior chamber adapted to contain said feed, said container means including a bottom port for dispensing feed from said chamber under gravity flow, said bottom port including a circular valve seat at said chamber and a narrower depending delivery tube terminating at a bottom edge;

B. control valve means freely floating at said bottom port for opening and closing said bottom port, said valve means having an undersurface normally engaging along substantially all of said circular valve seat to close said bottom port, and having a stem depending from said under surface and hanging in said dispensing tube to present a bottom end extending below said bottom edge of said dispensing tube, said undersurface remaining engaged with said valve seat upon movement of said stem bottom end laterally of said dispensing tube and disengaging from said valve seat upon movement of said stem bottom end longitudinally of said dispensing tube; and

C. umbrella means suspended at a fixed position in said chamber for carrying at least some of the weight of the feed adapted to be contained in said chamber that otherwise would bear on said control valve means.

4,799,456

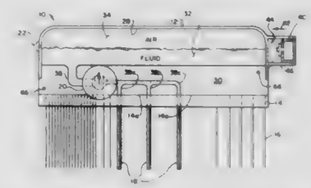
COMBINATION MEDICATION APPLICATOR AND PET GROOMING

Donald R. Young, 12859 Honeybrook Dr., Hudson, Fla. 33562, assignor to Donald R. Young and Ruth L. Young, both of Hudson, Fla.

Continuation-in-part of Ser. No. 9,672, Feb. 2, 1987, abandoned. This application Apr. 4, 1988, Ser. No. 178,865

Int. Cl.⁴ A01K *13/00*

U.S. Cl. 119—83 **20 Claims**



1. A combination tool of the type having utility as a brush in connection with pet grooming and having utility as an applicator of topical medication in connection with pet health care, comprising:

a base member having a hollow upper chamber and a solid lower portion;

a squeeze bulb means disposed in fluid communication with said hollow upper chamber;

said upper chamber retaining a predetermined quantity of topical medication in liquid form;

a passageway having plural, substantially parallel branches formed in said solid lower poriton;

said branches being longitudinally spaced along the extent of said lower portion;

a first end of said passageway confluent with said hollow chamber;

said first end of said passageway providing a drain means that permits said medication to flow from said upper chamber into said branches;

said drain means having a diameter substantially greater than the respective diameter of said branches;

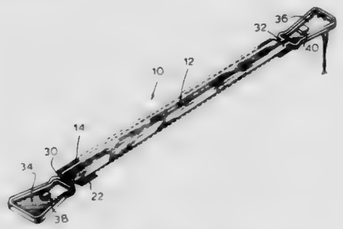
a first bristle and tube mounting means detachably secured to a bottom side of said base solid portion;

a plurality of tube members extending substantially normal relative to said mounting means, there being as many tube members as there are passageway branches;

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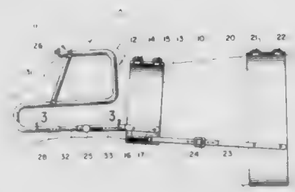
each of said branches confluent with an associated tube member;
a valve means formed in said lower portion for selectively opening and closing said drain means so that a fluid within said hollow chamber flows through said drain means and hence into said tube members when said valve means is open;
said valve means having a valve stem with an orifice formed therein, said orifice being rotationally and axially alignable with said drain means when said valve means is manipulated;
a plurality of bristle members mounted in said first mounting means and extending therefrom in substantial parallelism relative to said tube members, said bristle members and said tube members having a first common length;
said valve means being biased so that when said valve means is in its equilibrium position, said orifice is axially misaligned with said drain means;
said orifice being bell-shaped so that it substantially aligns with said passageway even when said orifice and valve means are slightly misaligned;
said drain means having a diameter equal to the largest diameter of said orifice and said branches having a diameter equal to the smallest diameter of said orifice.

4,799,457
GROOMING COMB FOR PETS
Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 11520
Filed May 14, 1987, Ser. No. 50,098
Int. Cl.[4] A01K *13/00*
U.S. Cl. 119—92 2 Claims



1. A comb for grooming animals comprising an elongated flexible strip of plastic material bendable into a tear-drop shape, and having a handle member at each end, each of said handle members being integrally formed with said strip to be substantially mirror images of each other, and having exterior and interior surfaces, one of said handles being formed on its interior surface with latch receiving means and the other of said handles being formed on its interior surface with a latch, said members being engageable with their interior surfaces in sliding contact so that said latch is removably inserted in the latch receiving means to hold said handle members together, said strip being formed along one edge with uniformly shaped and spaced V-shaped teeth having tip and bases rounded in the plane of said strip and transverse to the plane of said strip, and along its opposite edge with uniformaly shaped and spaced straight teeth parallel to each other said straight teeth having rounded tops and rounded bases, said bases meeting along a common line, said strip generating an electrostatic charge in the hair of the animal causing the hair to stand straight and raise dirt, loose hair and other impurities from the skin of the animal for easy removal.

4,799,458
ANIMAL RESTRAINT COLLAR
Jean Goshorn; L. David Loucks, and Terry K. Loucks, all of 7604 Wheatland, Sun Valley, Calif. 91352
Filed Sep. 8, 1987, Ser. No. 93,753
Int. Cl.[4] A01K *29/00*
U.S. Cl. 119—96 1 Claim

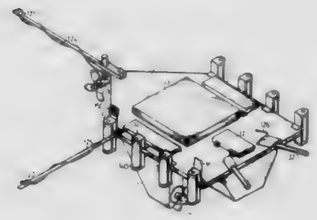


1. An animal head restraint comprising:
a neckband of sufficient width to substantially occupy the neck area of the animal's body;
a rigid head frame secured to said neckband having a front portion projected forwardly in a cantilevered deployment, opposite side portions extending about the opposite sides of the head and a cross portion extending across the forehead of the head having its opposite ends secured to said side portions respectively so as to define an open and unrestricted frontal area to accommodate the jaws and mouth of the animal;
a torso strap retained about the body of the animal in spaced apart relationship with respect to said neckstrap;
connection means joining said torso strap and said neckstrap together;
adjustment means carried on said head frame cross portion said side portions for transversely widening said frame and longitudinally lengthening said frame;
said side portions being a pair of tubular longitudinally adjustable side member joined together by said transversely adjustable cross portion;
brace means carried on each side member to reinforce, stabilize and maintain rigidity of said frame;
buckle means detachably joining opposing ends of said neckband together, detachably joining opposing ends of said torso strap together and detachably coupling said connection means together; and
said neckband and said strap being of semi-rigid composition.

4,799,459
ROBOT AGUA-FEEDER
Kao Yi-Tung, No. 75-10, Yi Choo Lii, Yen Sui Tseng, Tainai Shien, Taiwan
Filed Jul. 21, 1987, Ser. No. 76,115
Int. Cl.[4] A01K *61/02*
U.S. Cl. 119—51.11 5 Claims

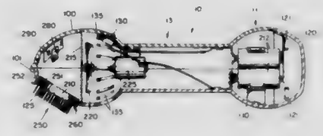
1. An automatic guiding, charging, and timed feed-spraying feeder system, which comprises:
a. a floatable main body; the body having sides and at each side thereof having a power box; batteries on the body; a propelling motor in each power box, the propelling motors connected with the batteries for being powered; the fore end carrying a steering motor; the steering motor being mounted in a direction perpendicular to the moving direction of the body;
b. a forward supporting member extending forward from the body and a first photoelectric sensor mounted thereon;
c. a sideward supporting member extending transversely from the body and a side photoelectric sensor mounted thereon;

d. a central photoelectric sensor mounted at a central portion of the body;
e. a control unit which is connected to the sensors to receive the signals from the photoelectric sensors and is connected to and controls the rotational speed of the motors;
f. a feed storage tank in the central portion of the body, a narrow opening provided at the bottom of the tank; a blower, a 3-way tube having two branches connected with the exterior of the tank, and a third branch connected to the blower, the blower being also connected to and under the command of the control unit;
B. an automatic charging device including:
a. fixed parts and a wharf which comprises two groups of floats movably and slidably attached to corresponding fixed posts, each of the posts being connected to a continuous tube extending along the wharf;
b. a plurality of pulleys; the pulleys being movable and rotatably provided at the two sides of the body for cooperation with the tubes of the wharf;
c. a charging post provided at the fore end of one side of the body; the charging post having two sides thereof on which are provided two conducting plates connected to the positive and negative poles of the batteries and an insulation cushion provided between the conductive plates;
d. an orienting post provided at the rear end of the one side of the body;



e. charging means comprising a set of conductive terminals which are connected to the positive and negative poles of the batteries and have arcuate shape, the charging means being attached to one of the floats and being arranged in the position corresponding to the conductive plates of the charging post;
f. a magnetically controlled positioning device which forms a gate which be opened at timed intervals to allow the body to pass;
g. a stop device engaging the body against backward movement and which comprises a one-way pin, a spring, and a directing tube, and which is in cooperation with the positioning device such that the conductive plates of the charging post can be positioned to contact the conductive terminals in carrying out the charging operation;
h. a stopping rod placed for being sensed by the central photoelectric sensor which can send a signal to the control unit which then can command all the power from the batteries to the motors to be cut off;
whereby, owing to the cooperation between the photoelectric sensors and the control unit for commanding the motors to control the moving direction of the body, automatic guidance and timed feed-spraying are achieved; and the batteries in the body are charged after each navigational turn of the body to obtain the capability of continuous navigation.

4,799,460
VACUUM CLEANER FOR PETS
Lynn Kuhl, 1225 Fern Lake Ave., Brea, Calif. 92621
Filed Sep. 25, 1987, Ser. No. 101,004
Int. Cl.[4] A01K *13/00*
U.S. Cl. 119—85 7 Claims

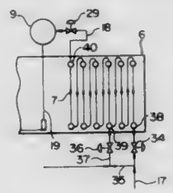


1. A pet vacuum cleaner apparatus comprising,
housing means,
said housing means includes at least an upper housing portion and a lower housing portion which housing portions are joined together to form said housing means,
prime mover means mounted within said housing means,
said housing means includes a relatively narrow, cylindrical middle section and a pair of relatively enlarge end sections
said prime mover means comprises a lightweight, low voltage motor which produces minimal noise during operation thereof,
power source means,
switch means mounted in said upper housing portion and connected between said power source means and said prime mover means to selectively energize said prime mover means via said switch means,
fan blade means connected to and driven by said prime mover means with said housing means,
intake means disposed in said housing means in order to provide an air passage through the wall of said housing means,
end caps means adapted to be attached to said upper and lower housing portions at the opposite end of said housing relative to the intake means,
brush means adapted to be mounted at said intake means,
said brush means is selectively detachable from said housing means whenever said housing may be emptied of accumulated debris,
said brush means includes an annular disk with a relatively large central aperture therethrough,
said brush means includes a plurality of pliant bristles mounted in and extending axially out of said annular disk, and
screen means mounted within said housing means between said fan blade means and said intake means.

4,799,461
WASTE HEAT RECOVERY BOILER
Toshinori Shigenaka, and Iwao Kasaka, both of Kure, Japan, assignors to Babcock Hitachi Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 2, 1988, Ser. No. 163,514
Claims priority, application Japan, Mar. 5, 1987, 62-48793
Int. Cl.[4] F22D *1/00*
U.S. Cl. 122—7 R 8 Claims

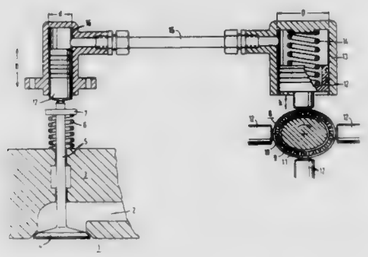
1. A waste heat recovery boiler comprising heat exchange rate switching means for controlling the rate of heat exchange between an exhaust gas and feedwater in a heat exchanger by changing the state of said feedwater in accordance with the concentration of sulfur oxides in said exhaust gas, thereby

maintaining the temperature at which low temperature corrosion due to said exhaust gas is prevented in a downstream



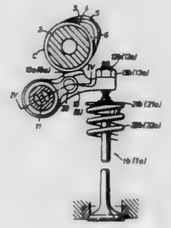
portion of said heat exchanger in the direction in which said exhaust gas flows.

4,799,462
HYDRAULIC VALVE DRIVE FOR INTERNAL COMBUSTION ENGINES
Gabriel Tittizer, Rösrath, and Ewald Jungbans, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Interatom GmbH, Bergisch-Gladbach, Fed. Rep. of Germany
Division of Ser. No. 827,290, Feb. 6, 1986, abandoned. This application May 18, 1987, Ser. No. 52,247
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1985, 3504639
Int. Cl.[4] F01L *9/02*
U.S. Cl. 123—90.12 **2 Claims**



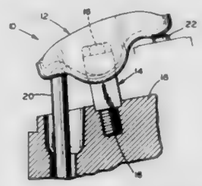
1. Valve drive for a combustion engine with a hydraulic tranmission system between a control member and a valve, comprising means for stepping up the hydraulic transmission, the valve having a first cylinder wherein a first piston displaceable by the control member slides and a second cylinder tightly connected by at least one line to said first cylinder and having a second piston slideable therein for moving the valve, the diameter of said first cylinder being larger than the diameter of said second cylinder, said first and second cylinder and said at least one line forming a closed system, the combustion engine having a crankshaft, and including an auxiliary shaft driven by the crankshaft and having at least a portion of the length thereof formed with a noncircular cross section, a rolling bearing mounted on said auxiliary shaft and having an outer race fixed in space and being forcibly deformed by rotation of said auxiliary shaft and stressing of said outer race only within elastic limits, and means for pressing said first piston against said outer race for eliminating relative motion therebetween during operation of the valve drive.

4,799,463
VALVE OPERATING MECHANISM FOR INTERNAL COMBUSTION ENGINES
Tsuneo Kouno, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 18, 1987, Ser. No. 122,080
Claims priority, application Japan, Nov. 18, 1986, 61-176880[U]
Int. Cl.[4] F01L *1/34, 1/04*
U.S. Cl. 123—90.17 **11 Claims**



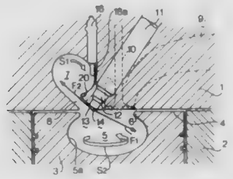
1. A valve operating mechanism for an internal combustion engine having cams rotatable in synchronism with a crankshaft, a pair of valves disposed in intake or exhaust ports of a combustion chamber, and means for transmitting lifting motion of said cams to said valves, characterized in that
said cams include two or more cams having different cam profiles corresponding to respective ranges of rotational speeds of the engine, said lifting motion transmitting means comprising four or more mutually adjacent members, and
switching means for selectively connecting and disconnecting the mutually adjacent members.

4,799,464
BOAT-TYPE ROCKER ARM ASSEMBLY
Ramanlal L. Patel, Minnetonka, Minn.; Meng-Sang Chew, Virginia Beach, Va.; Richard A. Marsh, Birmingham, Mich.; Richard C. Rosenberg, Romeo, Mich., and Henry Thomas, Jr., Grosse Pointe Woods, Mich., assignors to Toledo Stamping & Manufacturing Company, Toledo, Ohio and General Motors Corporation, Detroit, Mich.
Filed Mar. 3, 1983, Ser. No. 471,756
Int. Cl.[4] F01L *1/18*
U.S. Cl. 123—90.41 **19 Claims**



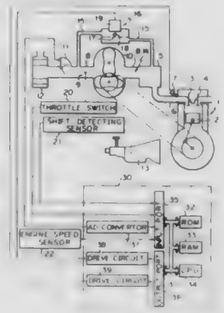
1. A boat-type rocker arm assembly comprising a pedestal having a fulcrum and a shank of generally rectangular shape in transverse cross section, said fulcrum extending outwardly beyond two opposite sides of said shank, said fulcrum having curved lower surfaces of a predetermined radius, an elongate boat-type rocker arm having a curved intermediate interior surface extending thereacross between its ends, said interior surface having a radius greater than the radius of said fulcrum, said interior surface being straight as viewed in cross section taken perpendicular to the longitudinal extent of said rocker arm, whereby said lower surfaces of said fulcrum engage said interior surface on substantially line contact extending perpendicular to the longitudinal extent of said rocker arm, said rocker arm having a rectangular opening centrally located in the intermediate surface through which said shank of said pedestal extends, said rectangular opening having transverse edges extending across said rocker arm and tapering downwardly and inwardly, said pedestal having opposite curved areas, as viewed in longitudinal section through said shank, on the other two opposite sides of said shank at the portions thereof which extend through said rectangular opening, the dimension between said opposite curved areas being slightly less than the corresponding dimension across said opening between said transverse edges, whereby the cooperation of said rectangular opening and said pedestal substantially prevents longitudinal movement of said rocker arm relative to said pedestal.

4,799,465
COMBUSTION CHAMBER FOR INTERNAL COMBUSTION ENGINES
Naoki Yanagisawa, and Yoshihiko Sato, both of Fujisawa, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan
Filed Mar. 12, 1987, Ser. No. 24,943
Claims priority, application Japan, Mar. 14, 1986, 61-55090
Int. Cl.[4] F02B *19/08*
U.S. Cl. 123—256 **8 Claims**



1. A combustion chamber for an internal combustion engine, comprising:
a main combustion chamber defined by a recess in the top of a piston of the engine, said main combustion chamber being formed with its opening diameter progressively enlarged downwards in the axial direction of said main combustion chamber, and a lip part formed along the periphery of the opening of said main combustion chamber, said lip part protruding radially and inwardly;
a swirl chamber formed inside a cylinder head of the engine;
a passage for connecting said main combustion chamber with said swirl chamber, said passage being defined in said cylinder head and having a wall portion tangentially aligned with a portion of the wall of the swirl chamber corresponding to the upstream end of said swirl chamber such that the compressed air introduced into said swirl chamber is substantially directed along said wall of said swirl chamber to swirl therein, said passage having a longitudinal axis generally directed to the central portion of said main combustion chamber; and
a fuel injection nozzle means for supplying fuel mist into said swirl chamber through said passage as well as into said main combustion chamber, said fuel injection nozzle means directing fuel mist into said swirl chamber substantially parallel to said tangential wall portion such that said fuel mist is carried by said compressed air directed along said tangential wall and revovled with said swirl chamber.

4,799,466
DECELERATION CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE
Yoshiaki Shibata, and Hideni Ohnuka, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Continuation of Ser. No. 800,347, Nov. 21, 1985, abandoned. This application Jul. 9, 1987, Ser. No. 73,316
Claims priority, application Japan, Nov. 29, 1984, 59-250396; Nov. 29, 1984, 59-250398
Int. Cl.[4] F02D *21/10*
U.S. Cl. 123—327 **12 Claims**



1. A deceleration control device of an internal combustion engine having an intake passage which has a throttle valve therein, said engine including a automatic transmission with at least a neutral and a drive position, said device comprising:
a bypass passage branched from a location in the intake passing upstream of the throttle valve to a location in the intake passage downstream of the throttle valve;
valve means arranged in said bypass passage for controlling a flow area of said bypass passage;
means for supplying fuel, arranged in said intake passage;
detecting means for detecting a deceleration state of the engine and producing an output signal representing said deceleration state;
fuel supply control means for controlling said fuel supply means in response to the output signal of said detecting means to produce a fuel cut signal to cut the supply of fuel from said fuel supply means when said deceleration state is a predetermined deceleration state; and
valve control means for controlling said valve means in response to said fuel cut signal to increase the flow area of said bypass passage when the supply of fuel from said bypass means is cut, wherein said valve means opens to increase the flow area of said bypass passage by a predetermined flow area when said fuel cut signal is produced, and said valve means closes to reduce the flow area of said bypass passage when the production of said fuel cut signal is stopped, said predetermined flow area being further changed in accordance with a shift range of said automatic transmission and being larger in said neutral position than in said drive position.

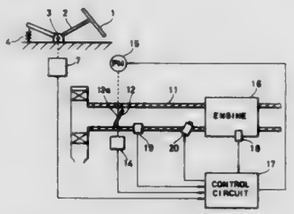
VOL 1098 ISS 4 JA 24 1989 UMI

4,799,467

THROTTLE VALVE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yoshikazu Ishikawa, and Kouji Yamaguchi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1987, Ser. No. 73,616
Claims priority, application Japan, Jul. 16, 1986, 61-168843; Jul. 16, 1986, 61-168845; Jul. 16, 1986, 61-168847; Jul. 16, 1986, 61-168848
Int. Cl.[4] F02D 9/02, 41/04
U.S. Cl. 123—399 7 Claims



1. A throttle valve control system for controlling the opening of a throttle valve disposed in an air induction system of an internal combustion engine when said throttle valve is in a position other than its idle position, comprising:

engine speed detection means for detecting the rotational speed of said internal combustion engine;

pressure detection means for detecting the actual pressure in an intake pipe of said air induction system, downstream of said throttle valve;

setting means for setting a target pressure in the intake pipe to attain a minimum fuel consumption rate of said internal combustion engine in accordance with said rotational speed detected by said engine speed detection means; and

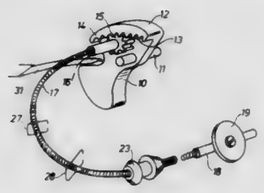
drive means for driving said throttle valve in a direction and by an amount selected to reduce the actual pressure in said intake pipe when the actual pressure in the intake pipe detected by said pressure detection means is higher than said target pressure set by said target pressure setting means and to increase the actual pressure in said intake pipe when the actual pressure detected by said pressure detection means is lower than said target pressure set by said target pressure setting means.

4,799,468

THROTTLE CONTROL DEVICE

George N. Farquhar, Alingsås, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Filed Oct. 23, 1986, Ser. No. 922,171
Claims priority, application Sweden, Oct. 31, 1985, 8505145
Int. Cl.[4] F02D 9/02
U.S. Cl. 123—400 8 Claims



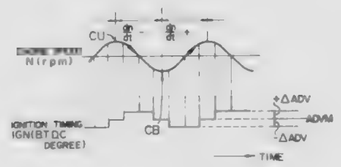
1. In a throttle control device for an i.c. engine supported by devibration elements in a member comprising a handle, said control device including a finger grip, a throttle on an axis and transferring means for transmitting movement between the finger grip and said throttle axis, the improvement wherein the finger grip is mounted to said member for pivotal movement, the transferring means includes a flexible shaft extending in a bow between the finger grip and the axis of said throttle, the finger grip being mounted to rotate the flexible shaft in response to pivoting movement thereof to transmit rotary movement to said throttle.

4,799,469

APPARATUS AND METHOD FOR CONTROLLING IGNITION TIMING FOR INTERNAL COMBUSTION ENGINE

Masami Nagano; Takeshi Atago, and Toshio Masaka, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1987, Ser. No. 446
Claims priority, application Japan, Jan. 8, 1986, 61-614
Int. Cl.[4] F02P 5/04, 5/08
U.S. Cl. 123—418 9 Claims



1. A method for controlling ignition timing comprising the steps of:

determining a fundamental ignition timing amount based on an engine operating condition;

determining a direction of change in an engine speed which indicates whether the speed is increasing or decreasing;

determining a correction ignition timing amount based on the direction of change in the engine speed, said correction ignition timing amount having a value which is substantially ineffective at an engine speed in the vicinity of a point at which the direction of change of the engine speed is inverted and is a maximum value at a time point at which the changing rate of the engine speed is maximum; and

determining ignition timing by adding or subtracting said correction ignition timing amount to or from said fundamental ignition timing amount.

4,799,470

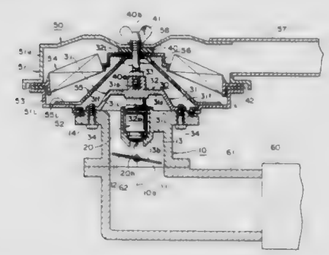
SUPPORTING STRUCTURE FOR AIR-CLEANED ASSEMBLY

Minoru Honda, Obu; Toshiaki Fukuta, Nagoya; Akihide Yamaguchi, Kariya, and Kenzi Ikuta, Hekinan, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 9, 1987, Ser. No. 106,517
Claims priority, application Japan, Oct. 13, 1986, 61-241556
Int. Cl.[4] F02M 39/00
U.S. Cl. 123—470 4 Claims

1. A supporting structure for supporting an air-cleaner assembly on a throttle body of an internal combustion engine provided with a fuel injector arranged at a center of an intake passage formed in said throttle body, said supporting structure comprising:

a bridge member having a joining portion and at least two legs, each of said legs having one end fixed to said throttle body and the other end extending radially inwardly toward a central axis of said intake passage, the other ends of said legs being joined to each other at said joining portion, said joining portion being abutted against an end of said fuel injector opposite to a fuel injection port thereof; and



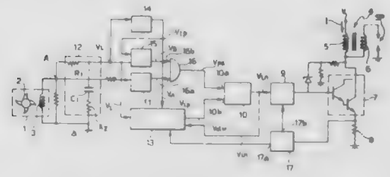
fixing means cooperating with said bridge member for fixing said air-cleaner assembly with respect to said throttle body.

4,799,471

ELECTRONIC SYSTEM FOR CONTROLLING THE IGNITION OF AN INTERNAL COMBUSTION ENGINE, PARTICULARLY FOR MOTOR VEHICLES

Diego Lasagna, Chieri, and Francesco P. Mandara, Turin, both of Italy, assignors to Marelli Autronica S.p.A., Milan, Italy

Filed Feb. 26, 1988, Ser. No. 160,875
Claims priority, application Italy, Feb. 26, 1987, 67137-A/87
Int. Cl.[4] F02P 1/00
U.S. Cl. 123—644 3 Claims



1. An electronic system for controlling the ignition of an internal combustion engine, comprising:

a magnetic pulse generator (1 to 3) for outputting a signal (A) having a frequency and amplitude substantially proportional to the rate of rotation (n) of the engine,

an ignition coil (4 to 6) the secondary winding (6) of which can be coupled selectively and cyclically to the plugs (SP) of the engine to generate the spark,

a switching transistor (7) connected to the primary winding (5) of the coil (4 to 6), and

an electronic control circuit (8 to 34) which is connected to the pulse generator (1 to 3) and to the switching transistor (7) and which, in order to cause a spark to be generated, is arranged to cause

a. the transistor (7) to become saturated at a first moment determined by the characteristics of the signal (A) from the pulse generator (1 to 3) to allow current to pass through the primary winding (5) of the ignition coil (4 to 6),

b. the transistor (7) to be desaturated immediately the current (I) has reached a predetermined value in order to limit the intensity of the current, and

c. the transistor (7) to be cut off at a second moment determined by the characteristics of the signal (A) from the pulse generator (1 to 3) to interrupt the current (I), characterised in that the control circuit (8 to 34) includes:

electrical sensor means (14) for providing a signal (V_{φ}) indicative of the rate of rotation of the engine, and

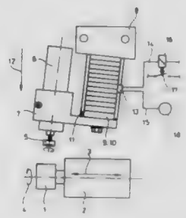
a circuit (C_2, 20 to 23) for regulating the desaturation time of the transistor (7), coupled to the electrical sensor means (14) and arranged to control the time for which the transistor (7) is conductive so that the length of the desaturation time of the transistor (7) is substantially nil when the rate of rotation of the engine is greater than the predetermined value (n_0).

4,799,472

METHOD OF AND ARRANGEMENT FOR DRESSING GRINDING WHEELS

Hans K. Tönshoff, Burgwedel; Thomas Grabner, Hanover; Harald Goesbruch, Hanover, and Jürgen Jendryschik, Hanover, all of Fed. Rep. of Germany, assignors to Ernst Winter & Sohn (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Aug. 19, 1987, Ser. No. 87,687
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1986, 3628143
Int. Cl.[4] B24B 53/053
U.S. Cl. 125—11 R 7 Claims



1. A method of dressing of grinding wheels with diamond or cubic crystalline boron nitride as grinding material, by means of a diamond tool connected with a piezoelectric element, comprising the steps of bringing a dressing tool in contact with a grinding wheel to be dressed; determining the contact between the dressing tool and the diamond wheel by measuring an electrical voltage of the piezoelectric element; stopping the dressing tool after establishing the contact between the dressing tool and the grinding wheel; and feeding the dressing tool after the stopping by applying an electrical voltage to the piezoelectric element and with a value corresponding to the applied electrical voltage.

4,799,473

GEARLIKE DRESSING TOOL

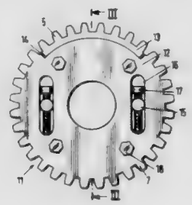
Manfred Erhardt, Puchheim, and Herbert Loos, Dorfen-Stadt, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Nov. 6, 1987, Ser. No. 118,194
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3638966
The portion of the term of this patent subsequent to Jul. 7, 2004, has been disclaimed.
Int. Cl.[4] B24B 53/06
U.S. Cl. 125—11 CD 5 Claims

1. In a dressing tool for dressing of abrasive gearlike precision-working tools, comprising a metallic, gearlike constructed base member which has plural teeth on its periphery, which teeth are coated with extremely hard abrasive grains, in particular diamond or cubic boron nitride, the improvement comprising wherein said coated teeth are provided in only one

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sector of the entire gear, wherein the remaining teeth are not coated and wherein the thickness of said uncoated teeth is at



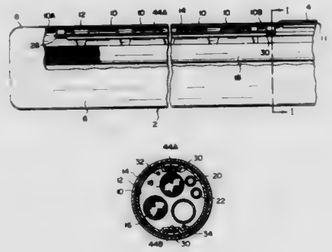
least approximately equal to the thickness of said coated teeth including said coating.

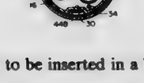
4,799,474

MEDICAL TUBE TO BE INSERTED IN BODY CAVITY

Yasuhiro Ueda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Mar. 9, 1987, Ser. No. 23,636
Claims priority, application Japan, Mar. 13, 1986, 61-55853; Jul. 16, 1986, 61-165662; Sep. 2, 1986, 61-206127
Int. Cl.⁴ A61B *1/00*; A61M *25/00*
U.S. Cl. 128—4 **16 Claims**





1. A medical tube to be inserted in a body cavity, comprising:

an outer tube having a front section; and

a drive member arranged at said front section, and having an elongated shape memory alloy adapted to have a transformation temperature which is set to be not less than 60° C. such that a memorized shape is restored at a temperature higher than a temperature of heat of 55° C. to 60° C. applied to said shape memory alloy during sterilization of said medical tube.

4,799,475

DEVICE PERMITTING A USER TO SIMULATE CRAWLING MOTIONS TO IMPROVE MOVEMENT OF THE TRUNCAL MUSCLES AND SPINE

John F. Iams, Poway; Robson L. Splane, Jr., Granada Hills, and John A. Drusch, III, Escondido, all of Calif., assignors to Superspine, Inc., Poway, Calif.

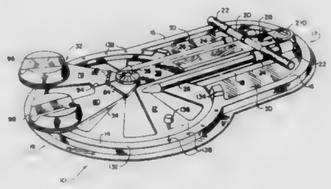
Filed Mar. 25, 1986, Ser. No. 844,073
Int. Cl.⁴ A61H *1/02*
U.S. Cl. 128—25 R **22 Claims**

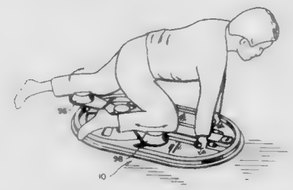
13. A device for bending the spine of a user kneeling on hands and knees, the device comprising:

a frame;

a stationary rest, fixed to the frame, for holding a one like pair of a kneeling user's hands and knees;

two moving rests, each pivotally mounted to pivot on a circular track on the frame, each for holding a one of the remaining like pair of the kneeling user's hands and knees and for permitting this one of the remaining like pair to move in a substantially level substantially circular arc independently of the other one of the remaining like pair;





wherein the movement in the circular arc of one like pair of the kneeling user's hands and knees while the other like pair is held stationary induces bending of the user's spine.

4,799,476

UNIVERSAL LIFE SUPPORT SYSTEM

Michael B. McGrady, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1986, Ser. No. 913,703
Int. Cl.⁴ A61B *9/00*
U.S. Cl. 128—202.11 **11 Claims**



6. A universal life support system for use by an occupant of an aircraft, said occupant wearing one of a plurality of distinct ensembles, the ensemble being worn being dependent upon a mission the craft is intended to perform, said system comprising:

a first connector attached to said craft, said first connector including switch means for producing one of a plurality of mission signals;

thermal control means for producing a conditioned ventilation gas, said thermal control means being connected to said first connector means;

anti-g valve means for supplying bleed air to said first connector means in response to acceleration conditions imposed on the craft;

a source of a breathable gas, said source being connected to said first connector means and being responsive to said plurality of mission signals;

a source of electrical power connected to said first connector means; and

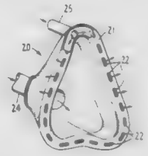
a plurality of distinct second connectors that mate with said first connector, each of said distinct second connectors being attached to a distinct one of said plurality of distinct ensembles, each of said second connectors actuating said switch means to produce said one of said mission signals, said one signal corresponding to the mission for which said distinct one of said ensembles is intended to perform, each of said second connectors further being adapted to receive said bleed air, said breathable gas, and said electrical power from said first connector and to communicate said conditioned ventilation gas with said first connector.

4,799,477

REBREATHING MASK

Ralph H. Lewis, 3083 Highway 175, Lakeport, Calif. 95453

Filed Mar. 28, 1988, Ser. No. 172,751
Int. Cl.⁴ A62B *18/02*
U.S. Cl. 128—206.24 **3 Claims**



1. A face mask for enclosing the nose and mouth of humans and defining a chamber from and into which a person may inhale and exhale gases comprising:

an inflatable bladder that encircles the chamber;

means for providing a substantially continuous barrier of breathable gas from said bladder, to surround the chamber, said means comprising perforations formed in said bladder and spaced therearound, certain of said perforations being elliptical in shape, the major axis of each elliptical perforation extending generally toward the major axis of adjacent perforations; and

means for introducing a breathable gas into said chamber and said bladder, the breathable gas introduced into said bladder escaping through said perforations to provide said substantially continuous barrier of breathable gas.

4,799,478

DEVICE FOR COAGULATION OF BIOLOGICAL TISSUES

Svyatoslav N. Fedorov, ulitsa Dostoevskogo, 21, kv. 32, Moscow; Sergei V. Krutov, poselok Klyazma, ulitsa Krylovskaya, 6, Moskovskaya oblast; Sergei A. Soloviev, ulitsa Podolskaya, 9, kv. 247, Moscow; Olga G. Alexandrova, ulitsa 1812 goda, 1, kv. 139, Moscow, and Nadezhda K. Korshunova, 3 Mikhalkovsky pereulok, 8, korpus 2, kv. 40, Moscow, all of U.S.S.R.

Filed Dec. 3, 1986, Ser. No. 937,317
Claims priority, application U.S.S.R., Dec. 16, 1985, 3990084
Int. Cl.⁴ A61B *17/38*
U.S. Cl. 128—303.1 **5 Claims**

1. A device for coagulation of biological tissue which is the object of treatment, comprising:

a casing having a working butt end for facing an object of treatment having biological tissue;

a heating element accommodated in said casing and having a working end protruding outside said working butt end of said casing for introduction into and acting on said biological tissue;

a hollow rod having two butt ends mounted for reciprocation in said casing;

said heating element being rigidly secured to one of said butt ends of said hollow rod;

an electric motor accommodated in said casing;

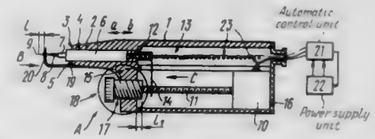
a shaft operatively connected with said electric motor and accommodated in said casing;

a connecting member secured to the other of said butt ends of said hollow rod and operatively connecting said hollow rod to said shaft;

a first limit stop having a dial gage, said first limit stop being mounted on said casing for engaging said connecting member in order to provide a predetermined depth of said introduction of said working end of said heating element;

a second limit stop having one end rigidly secured to said casing and another end coaxially surrounding said working end of said heating element for stabilizing said introduction depth of said working end of said heating element;

an automatic control unit connected to said electric motor



and heating element for automatically controlling the heating temperature of said heating element and the time of said acting on said biological tissue, said automatic control unit having inputs and outputs;

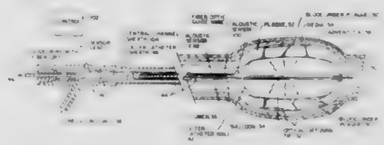
a power supply unit for supplying power to said electric motor for moving said shaft and to said heating element for its heating, the power supply unit having outputs connected to said inputs of said automatic control unit, said outputs of said automatic control unit being connected to an input of said power supply unit, said electric motor and said heating element.

4,799,479

METHOD AND APPARATUS FOR ANGIOPLASTY

J. Richard Spears, Boston, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Continuation of Ser. No. 664,156, Oct. 24, 1984, abandoned. This application Jan. 8, 1987, Ser. No. 4,780
Int. Cl.⁴ A61M *29/02*
U.S. Cl. 128—303.1 **65 Claims**



1. A method for preventing abrupt reclosure and restenosis in percutaneous transluminal coronary angioplasty comprising the steps of:

providing a balloon in the coronary artery at the region of coronary narrowing;

inflating the balloon with fluid; and

providing heat at the region surrounding the inflated balloon at a level sufficient to fuse together segments of tissue in said region and to coagulate blood trapped within dissection planes of tissue and within fissures created by wall fracture in said regions, said level being below the vaporization threshold of the tissues; and

deflating and removing said balloon thereby to provide a smooth cylindrically-shaped channel which prevents collapse of material into the coronary artery.

4,799,480

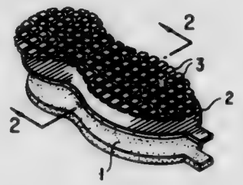
ELECTRODE FOR ELECTROSURGICAL APPARATUS

William W. Abraham, New Hartford, and John S. Gentelia, Madison, both of N.Y., assignors to Conmed, Utica, N.Y.

Filed Aug. 4, 1987, Ser. No. 81,154
Int. Cl.⁴ A61B *17/39*
U.S. Cl. 128—303.13 **8 Claims**

1. A skin current conducting electrode comprising a conduc-

tive element adapted to be connected to a current generating unit, an insulator having one surface thereof in contact with one entire surface of said conductive element, a plurality of discrete conductive elements disposed on the opposite surface



of said insulator whereby when said discrete conductive elements are disposed in contact with the skin of a patient each area of the skin of a patient contacted by the individual conductive element forms a largely independent current path.

4,799,481

SURGICAL HEMOSTATIC CLIPS

James A. Transue, Somerville; John N. Pyun, Whitehouse Station; Joseph D'Innocenzio, Kenilworth; Michael S. Thomas, Somerset, and Arthur A. Gertzman, Bridgewater, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Apr. 8, 1987, Ser. No. 36,037

Int. Cl.[4] A61B *17/12*

U.S. Cl. 128—325 3 Claims



3. A surgical hemostatic clip comprising first and second legs having applier contacting sides and tissue contacting sides which oppose each other when the clip is closed, said legs having distal ends and being joined at their proximal ends at a hinge location, said hinge location having a V-shaped depression in said tissue contacting sides of said legs to promote maximal closure of the clip, the apex of said V-shaped depression being generally aligned with the proximal ends of said legs, and the sides of said depression extending substantially linearly outward from said apex of said depression to the surfaces of said tissue contacting sides of said legs,

wherein said tissue contacting sides of said legs exhibit longitudinal grooves extending generally parallel to the longitudinal axes of said legs, said grooves intersecting the sides of said V-shaped depression in the vicinity of said hinge location, and

wherein said longitudinal grooves terminate before their extension to the distal ends of said legs.

4,799,482

STONE DISINTEGRATOR APPARATUS

Syuichi Takayama, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1986, Ser. No. 916,714

Claims priority, application Japan, Oct. 18, 1985, 60-233089; Oct. 18, 1985, 60-233090

Int. Cl.[4] A61B *17/22*

U.S. Cl. 128—328 15 Claims

1. A stone disintegrator apparatus comprising:

power source means;

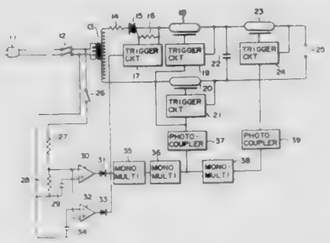
a main capacitor to be charged by power from said power source means;

charging means for charging said main capacitor;

means for discharging said main capacitor;

electrode means coupled to said discharging means for generating an arc discharge on the basis of a charge on said main capacitor so as to disintegrate a stone in an internal organ;

said discharging means including first switching means connected between said main capacitor and the electrode means for, when turned on, selectively leading charges



discharged from said main capacitor to said electrode means;

said charging means including means for isolating said power source means electrically from said discharge means by being off at least during discharge of the main capacitor; and

delay means for turning on said first switching means to pass current therethrough only after lapse of a predetermined time period from when said isolating means turns off to block current therethrough.

4,799,483

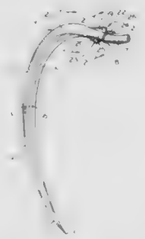
SUTURING NEEDLE WITH TAIL MOUNTED CUTTING BLADE AND METHOD FOR USING SAME

Manus C. Kraff, 5600 W. Addison, Chicago, Ill. 60634

Filed Feb. 11, 1988, Ser. No. 154,985

Int. Cl.[4] A61B *17/06*

U.S. Cl. 128—339 13 Claims



1. A curved surgical needle for tissue wound closure, and in particular, suturing tissue together both sides of an incision made in human or animal tissue, having an inner concave surface and an outer convex surface and having suturing material securely attachable thereto, said needle comprising:

a substantially curved body portion having first and second ends;

a point located at said first end of said body portion, for piercing said tissue on opposite sides of said incision and forming an axial passage in said tissue for said suturing material to pass through and thereby draw both sides of said incision together;

suture attachment means positioned at said second end of said body portion and adapted for receiving, securing and maintaining said suturing material upon said needle;

a tail portion proximate said body portion second end;

an intermediate portion between said point and said tail portion devoid of cutting surfaces; and

said tail portion having cutting edge means projecting radially outwardly therefrom for making at least one radial cut in said tissue extending from said axial passageway so as to facilitate the entry and passage of said suturing material through said tissue.

4,799,484

TAPERED I-BEAM SURGICAL NEEDLES

Daniel J. Smith, Manalapan Township, Monmouth County, and Dennis L. Furman, East Windsor, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Apr. 10, 1987, Ser. No. 36,723

Int. Cl.[4] A61B *17/04*

U.S. Cl. 128—339 12 Claims



1. A tapered surgical needle comprising a point section, a barrel section, and an intermediate body section joining the point and barrel sections, said point section exhibiting a rounded circumference at its terminus at the body section, said body section exhibiting, over a substantial portion of its length, a tapered region over which the shape of the needle undergoes a gradual transition from a rounded circumference at one end of said tapered region, to a rectangular cross-sectional shape at the other end of said tapered region, and a subregion intermediate said tapered region over which said tapered region exhibits a transition from a generally rectangular cross-sectional shape with four flat sides and rounded corners to a rectangular cross-sectional shape with sharp corners.

4,799,485

NEONATAL SUBGLOTTISCOPE SET

Andrew J. Furey, Philadelphia, and Frederic P. Rosenwald, Churchville, both of Pa., assignors to Pilling Co., Fort Washington, Pa.

Filed Jun. 11, 1987, Ser. No. 61,871

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—11 7 Claims



1. A neonatal subglottiscope set for emergency use comprising:

a plurality of elongated hollow tubes of different sizes, each being adapted to enter the larynx of a patient, each having a tubular wall, a central axis, a proximal end and a distal end, and each tube having light carrier passage means extending along its wall for removably receiving a fiberoptic light carrier, said light carrier passage means having an entrance opening adjacent to the proximal end of the tube, in which the radial distance from the entrance opening of the light carrier passage means of each tube to the central axis of the tube is different for each of the tubes;

a handle;

means for rigidly and removably attaching each of the tubes to the handle; and

a substantially rigid fiberoptic light carrier having a first portion adapted to enter the light carrier passage means of each of the tubes, coupling means for attachment of a light source to the light carrier, and a curved portion connecting the first portion to the coupling means;

said coupling means having a pin projecting therefrom in a direction parallel to the axis of the first portion, said handle having a hole for receiving said pin, and the light carrier passage means extending along the wall of each of the tubes having its entrance opening at a position on the wall of the tube such that, when any one of said tubes is connected to the handle by the attaching means, the entrance opening is at a predetermined distance from the hole of the handle and said pin and said entrance opening of said light carrier passage means being spaced at said predetermined distance such that the pin of the light carrier can enter the hole as the light carrier moves into the light carrier passage means.

4,799,486

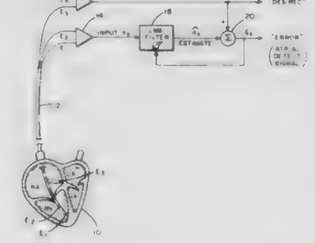
REFRACTORILESS ATRIAL SENSING IN DUAL CHAMBER PACEMAKERS

Robert A. DuFault, Roseville, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Mar. 13, 1987, Ser. No. 25,571

Int. Cl.[4] A61N *1/00*; H05G *00/00*

U.S. Cl. 128—419 PG 5 Claims



1. In a dual chamber cardiac pacer of the type having first electrode means disposed in the ventricle of the heart for detecting ventricular depolarization signals and second electrode means disposed in the atrium of the heart for primarily detecting atrial depolarization signals, atrial sensing means responsive to the signals on said second electrode means for suppressing those signals on said second electrode means due to said ventricular depolarizing signals comprising:

(a) an adaptive filter coupled to said first electrode means for receiving as an input signal said ventricular depolarizing signal;

(b) a summing circuit coupled to the output of said adaptive filter and to said second electrode means, said summing circuit producing an error signal proportional to the difference between the output of said adaptive filter and the signals on said second electrode means; and

(c) means coupling said error signal to said adaptive filter for continuously varying the parameters of said adaptive filter whereby said filter converges to the point where said error signal is minimized.

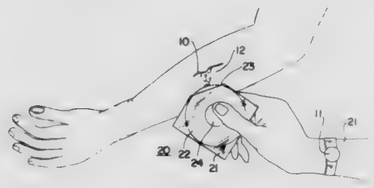
VOL 1098 ISS 4 JA 24 1989 UMI

4,799,487
REANIMATION DEVICE AND METHOD FOR TREATING THE PARALYZED FACE
Joel N. Bleicher, R.R. #2, Box 70, Council Bluffs, Iowa 51501
Filed May 11, 1987, Ser. No. 48,549
Int. Cl.[4] A61N *1/00*; H05G *00/00*
U.S. Cl. 128—419 R 12 Claims



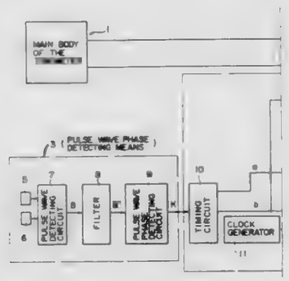
1. A re-animation device for a face paralyzed on one side only, comprising:
means for sensing muscle-stimulation signals from the muscles controlling a specific facial function on the non-paralyzed side of the face, said sensing means being adapted to transmit said signals;
means for receiving said muscle-stimulation signals, said receiving means being adapted to process said signals as needed by the muscles controlling said specific facial function on the paralyzed side of the face and adapted to transmit said processed signals; and
means for stimulating said muscles controlling said specific facial function on the paralyzed side of the face, said stimulating means being adapted to receive said processed signals.

4,799,488
MOVEABLE BLOTTER APPARATUS AND METHOD FOR USE IN BLEEDING-TIME TESTS
Michael D. Mintz, Edison, N.J., assignor to International Technidyne Corporation, Edison, N.J.
Filed Feb. 1, 1988, Ser. No. 151,067
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—637 10 Claims



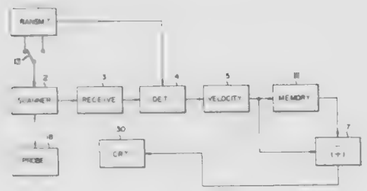
1. Apparatus for use in bleeding-time testing, comprising:
an envelope having an internal hollow and sealed at all sides, with an opening in at least one side,
a blotter member located in said hollow of said envelope and dimensioned so that a peripheral section of said blotter extends from said opening, said envelope having an aperture to enable a user to grasp said blotter member and to move said envelope with respect thereto to enable a different peripheral section of said blotter member to extend from said opening to enable a user to absorb blood from an incision at different peripheral sections of said blotter member with previous blots directed within the internal hollow of said envelope to thereby protect said user from contact with said blotted blood.

4,799,489
TONOMETER
Masayuki Hideshima, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 24, 1987, Ser. No. 124,835
Claims priority, application Japan, Nov. 27, 1986, 61-282476
Int. Cl.[4] A61B *3/16*
U.S. Cl. 128—648 6 Claims



1. A tonometer comprising
eye pressure measuring means including fluid discharging means for discharging a fluid toward an eye to be tested;
pulse wave phase detecting means for detecting a phase cycle of pulse wave due to pulse fluctuation of the eye to be tested;
pulse wave phase area establishing means for establishing whether or not an eye pressure measurement was carried out in any phase area of said pulse wave, according to an output pulse caused by a fluid discharge during the eye pressure measurement and an output of said pulse wave phase detecting means;
recognizing means for recognizing a measured eye pressure value corresponding to a phase area of the eye pressure measuring time according to the output of said pulse wave phase area establishing means.

4,799,490
DOPPLER ULTRASONIC DIAGNOSTIC APPARATUS
Kouroku Namekawa, Tokyo, Japan, assignor to Aloka Co., Ltd., Tokyo, Japan
Filed Mar. 2, 1987, Ser. No. 20,439
Claims priority, application Japan, Mar. 4, 1986, 61-045291; Mar. 4, 1986, 61-045292
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—661.09 4 Claims



1. A two-dimensional Doppler ultrasonic blood flow display device of the type wherein a velocity of moving reflective members in an organism to be examined is detected by transmitting ultrasonic waves into said organism and comparing a transmitting signal and a received signal, said device comprising:
a transmission circuitry means for producing two ultrasonic waves having different repetition periods in the same direction and alternately outputting said two ultrasonic waves;
a velocity calculator means for calculating the velocities of the moving reflective members from the respective received Doppler signals of said two ultrasonic waves;
a memory means for storing a first velocity signal obtained by said velocity calculator on the basis of the ultrasonic wave which has been transmitted first in said direction; and
an adder/subtractor means for calculating the difference between a second velocity signal obtained by said velocity calculator means on the basis of the next consecutive ultrasonic wave transmitted in said direction and said first velocity signal, thereby accurately obtaining the velocity of said moving reflective members.

4,799,491
BLOOD PRESSURE MONITORING METHOD AND APPARATUS
Joseph S. Eckerle, Redwood City, Calif., assignor to SRI International, Menlo Park, Calif.
Filed Nov. 6, 1986, Ser. No. 927,843
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—672 20 Claims

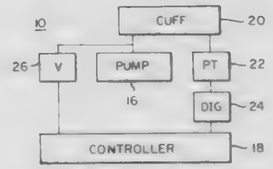


1. A machine implemented method for determining correct hold-down pressure to be applied to an external pressure transducer that includes a pressure sensitive element applied to a subject at a location overlying an artery, the determined correct hold-down pressure identifying the hold-down pressure to be employed to obtain correct blood pressure measurements using said transducer, said method comprising,
(1) obtaining a continuous measurement of blood pressure with the external pressure transducer while changing the hold-down pressure on the transducer over a range from where the underlying artery is substantially unflattened to where the artery is substantially occluded,
(2) obtaining from the blood pressure measurement of step 1 a set of at least one of the diastolic pressure, systolic pressure, and pulse amplitude values versus hold-down pressure over said range of hold-down pressures,
(3) fitting a polynomial to at least one set of values obtained in step 2,
(4) using the polynomial obtained in step 3, obtaining an indication of the correct hold-down pressure required for accurate blood pressure measurements, and
(5) setting the transducer hold-down pressure at substantially the indicated correct hold-down pressure obtained in step 4 in preparation for obtaining accurate blood pressure measurements from said transducer.

4,799,492
METHOD AND APPARATUS FOR INDIRECT BLOOD PRESSURE MEASUREMENT
Craig H. Nelson, Hillsboro, Oreg., assignor to SpaceLabs, Inc., Bothell, Wash.
Filed Jun. 17, 1986, Ser. No. 875,440
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—672 21 Claims

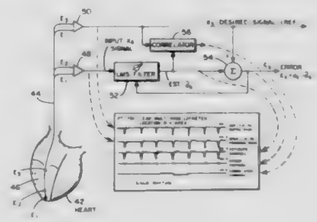
1. In an apparatus for the measurement of blood pressure in which a table of values is generated indicative of blood pressures corresponding to various values of pressure applied to a blood pressure cuff, a system for detecting spurious low values in said table, comprising:
means for comparing each of said values to the smaller of any adjacent values in said table; and
designating said value as spurious if said value is smaller than a predetermined percentage of said smaller adjacent value.

5. In an apparatus for the measurement of blood pressure in which a table of values is generated indicative of the blood pressure corresponding to various values of pressure applied to a blood pressure cuff, a system for detecting spurious high values in said table, comprising:
means for determining the two largest values in said table;



means for determining the difference between the cuff pressures corresponding to said two largest values with the larger of any adjacent value;
means for comparing the largest of said two largest values with the larger of any values adjacent to said largest value; and
means for detecting as a spurious high value if the cuff pressures corresponding to said two largest values are different from each other by more than a predetermined magnitude and the larger of the values adjacent to said largest value is less than a predetermined percentage of said largest value.

4,799,493
DUAL CHANNEL COHERENT FIBRILLATION DETECTION SYSTEM
Robert A. DuFault, Roseville, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.
Filed Mar. 13, 1987, Ser. No. 25,811
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—705 4 Claims



1. Cardiac monitoring apparatus for identifying a variety of cardiac arrhythmias comprising:
(a) a first pair of electrodes for sensing cardiac electrical activity at a localized site within a cardiac chamber;
(b) a second pair of electrodes for sensing cardiac electrical activity at a generalized site within said cardiac chamber and producing a reference signal proportional thereto;
(c) variable transfer function LMS adaptive filler means having an input and an output;
(d) means for receiving said reference signal and said output

from said variable transfer function LMS adaptive filter means for developing an error signal proportional to the difference between said reference signal and said output from said variable transfer function LMS adaptive filter means;

(e) means coupling said second pair of electrodes to said input to said variable transfer function LMS adaptive filter means; and correlator

(f) means for comparing the amplitude of the error signal emanating from said variable transfer function LMS adaptive filter means with a predetermined threshold value for discriminating between plural types of tachyarrhythmias and ventricular fibrillation.

4,799,494

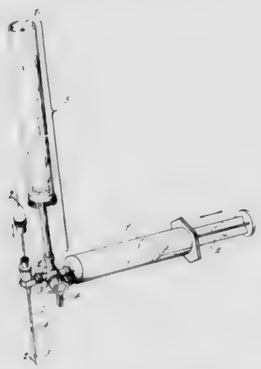
PERCUTANEOUS ASPIRATION LUNG BIOPSY NEEDLE ASSEMBLY

Ko P. Wang, 11006 Nacirema Ln., Stevenson, Md. 21153

Filed Oct. 22, 1986, Ser. No. 921,471

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—753 **9 Claims**



1. A needle assembly for obtaining biopsy tissue from the lung of a patient, said assembly comprising:

(a) an outer hollow needle;

(b) an inner hollow needle retractably disposed within said outer needle such that the tip of the inner needle protrudes from the tip of the outer needle when the inner needle is an extended position, and such that the tip of the inner needle is retracted within the tip of the outer needle in a retracted position,

the outer diameter of the inner needle closely matching the inner diameter of the outer needle;

(c) a stylet engaged with the proximal end of the inner needle, said stylet being of lesser diameter than said inner needle and extending from the proximal end of the inner needle through the length of the outer needle;

(d) means for sealing the proximal end of the outer needle, the stylet extending through said sealing means so as to allow retraction and extension of the inner needle within the outer needle while maintaining the seal; and

(e) means for applying a negative pressure within said outer needle via an opening along the proximal portion thereof.

4,799,495

LOCALIZATION NEEDLE ASSEMBLY

Irwin F. Hawkins; George A. Rafferty, Jr., both of Gainesville; Mark C. Hawkins, and Jeffrey S. Hawkins, both of Micanopy, all of Fla., assignors to National Standard Company, Niles, Mich.

Filed Mar. 20, 1987, Ser. No. 28,609

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—754 **13 Claims**



1. A localization needle assembly for pinpointing lesions within body tissue, including in combination:

an outer tubular cannula member having a distal end and a proximal end with said cannula member having an opening predeterminedly lcoated from said distal end,

an elongated inner needle member having a distal end portion and a proximal end portion, said inner needle member having a pointed tip and anchoring means at its distal end portion, said inner needle member being slidably mounted for movement within said outer cannula member between an extended position and a retracted position, and

said anchoring means having a mounting portion secured to said distal end portion of said inner needle member and a barb portion contained within said outer cannula member and extending towards said opening in said outer cannula member when said inner needle member is in its extended position and said barb portion moved outward of said outer cannula member through said opening predeterminedly located from the distal end of said outer cannula member to engage body tissue when said inner needle member is moved to its retracted position to lock the needle assembly within the body tissue.

4,799,496

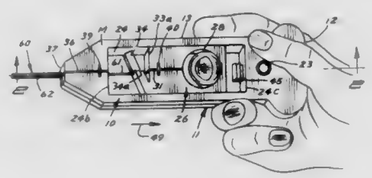
GUIDE WIRE HANDLE

Thomas E. Hargreaves, Mound, and Donald W. Hanson, Chanhassen, both of Minn., assignors to Lake Region Manufacturing Company, Inc., Chaska, Minn.

Filed Jun. 3, 1987, Ser. No. 57,108

Int. Cl.[4] A61M *25/00*

U.S. Cl. 128—772 **29 Claims**



1. For manipulating a medical device such as a guide wire or the like and mounting the proximal end portion of a guide wire wherein the guide wire includes a coil spring and a core wire which have distal end portions and the coil spring has a proximal terminal end portion and the core wire has a proximal end portion and an enlarged terminal end joined to the proximal end portion, a manipulator handle that includes a longitudinally elongated main body having a front and a rear end portion, a slide member longitudinally movably mounted on the main body for movement between a datum guide wire relaxed position to a guide wire stiffened rear position, one of the slide member and the main body having a latch member that is resiliently retained in its latching position and is resiliently

movable between a release position and a latching position latchingly engaging the other of the slide member and the main body to retain the slide member in its rear position, the other of the slide member and the main body having a portion to be latchingly engaged by the latch member for retaining the slide member in the slide member rear position, manually movable means joined to the latch member for moving the latch member to its release position, the slide member having coupling means for couplingly engaging the core wire enlarged end and moving the coil wire proximal end portion therewith when the slide member is moved toward the main body rear end portion and the main body having coil spring retaining means for engaging and blocking transverse and rearward movement of the coil spring proximal end portion when the coil spring proximal end portion is engaged thereby and the core wire enlarged end is couplingly engaged by the coupling means.

4,799,497

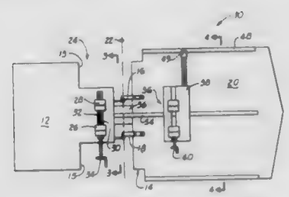
APPARATUS FOR MEASURING KNEE LAXITY

James W. Riley, II, 404 S. Main, Eureka, Ill. 61530

Filed Jan. 16, 1984, Ser. No. 570,864

Int. Cl.[4] A61B *5/00*

U.S. Cl. 128—774 **10 Claims**



1. Am apparatus for measuring knee laxity of a person comprising:

means for fixing a person's knee;

means for applying a force against the person's tibia along an axis substantially parallel to the lateral-medial plane of the tibia, said means for applying force against the person's tibia including:

a support surface,

means for supporting the person's ankle, said supporting means being rollingly mounted on said support surface, and

means for moving said supporting means relative to said surface; and

means for measuring the angular deflection of the tibia when such a force is applied thereto.

4,799,498

APPARATUS FOR DETECTING THE RESONANT FREQUENCY OF A BONE

Richard J. Collier, Canterbury, England, assignor to Kent Scientific and Industrial Project Ltd., both of Kent, England

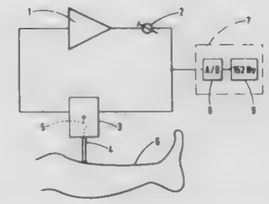
Filed Oct. 29, 1985, Ser. No. 792,470

Claims priority, application United Kingdom, Nov. 1, 1984, 8427602

Int. Cl.[4] A61B *5/10*

U.S. Cl. 128—774 **11 Claims**

1. Apparatus for detecting the resonant frequency of a bone including an electromechanical transducer, said transducer comprising a single probe for application to the external skin surface covering the bone and fixed frequency means for continuously resonating the bone via the probe said transducer being in a feed-back loop circuit with an audio amplifier means and a phase shifter, said audio amplifier means and said phase shifter providing unity gain and a predetermined phase of zero for the loop circuit when said transducer probe is resonating said bone, and a display means connected to receive output



signals from the loop circuit for displaying the bone resonant frequency.

4,799,499

IMPLANTABLE ELECTRODE WITH ACTIVE FIXATION MEANS

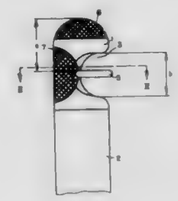
Hans-Jürgen Bisping, Tittardsheng 12, 5100 Aachen, Fed. Rep. of Germany

Filed Aug. 8, 1986, Ser. No. 894,877

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1985, 3529578

Int. Cl.[4] A61N *1/00*; H05G *00/00*

U.S. Cl. 128—785 **17 Claims**



1. A catheter lead assembly for intravenous implantation in a selected chamber of the heart of a patient to electrically stimulate the heart from a source of electrical energy, said lead assembly comprising

an electrode head having a longitudinal axis, a surface portion conducive to electrical stimulation of the heart, and a contour concentric with the axis except along a portion indented toward the axis to form a recess in the head, the head being adapted to be positioned with the said surface portion in electrically stimulating relationship with excitable cardiac tissue after introduction into the selected chamber of the heart,

a conductive lead including means fastened to the head for electrically connecting the said surface portion to said energy source to deliver electrical energy to said surface portion, the lead having a biocompatible insulating sheath and being adapted to be inserted intravenously into the heart, and

a rigid hook having a curved portion terminating at one end in means for fastening to the head and at the other end in a tissue-engaging tip, said one end of the hook being secured in fixed relationship to the head, the entire curved portion being configured to lie permanently, without flexing, substantially within the confines of the recess, and the tip being permanently immovable relative to the head and being configured relative to the curved portion of the hook to project slightly from the recess, whereby the lead is adapted to be inserted intravenously for introduction of the head into the selected chamber of the heart without

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restraint on any portion of the hook beyond said one end being secured to the head, and the tip is adapted, without further deployment, to engage tissue when the head is rotated about the axis by twisting the lead in the direction in which the tip is pointed, for securing the engaged tissue within the recess between the indented portion of the contour and the hook to maintain the said surface portion of the head positioned in stimulating relationship with excitable cardiac tissue in the selected chamber.

4,799,500

METHOD OF AND APPARATUS POR TREATMENT OF MUSCLE IMBALANCE

Renton D. Newbury, 108 David Street, Dandenong, Victoria 3175, Australia

Filed Sep. 30, 1986, Ser. No. 913,444
Claims priority, application Australia, Sep. 17, 1986, PH8081
Int. Cl.[4] A61F *5/56*
U.S. Cl. 128—859 **5 Claims**



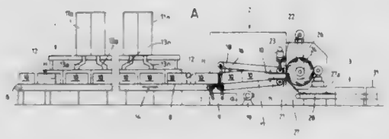
1. A splint for the lower jaw of a patient to prevent interlocking interdigitation of the molar teeth thereby allowing the muscles supporting the jaws to move the lower jaw in a preferred path, said splint comprising two arms and a bridge interconnecting the arms, each arm being generally U-shaped in transverse section with a dome-shaped central section separating two sides, the dome-shaped central section defining a contact surface for at least some of the molar teeth and the second premolar teeth and not for the first premolar teeth, the incisor teeth and the canine teeth of the upper jaw, the dome-shaped central section having a thickness to provide a selected spacing between the molar teeth of the upper and lower jaws, and the dome-shaped central section being formed so that there is point contact between each molar tooth of the upper jaw and the contact surface.

4,799,501

METHOD AND APPARATUS FOR MAKING TOBACCO SHREDS

Reinhard Liebe, Hamburg, and Waldemar Wochnowski, Hamburg-Meiendorf, both of Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Feb. 2, 1987, Ser. No. 9,474
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1986, 3603193
Int. Cl.[4] A24B *3/18*
U.S. Cl. 131—299 **28 Claims**



1. A method of transforming bodies of relatively dry compressed tobacco into shreds, comprising the steps of dielectrically heating the bodies; and directly converting the heated bodies into shreds without increasing the moisture content of tobacco subsequent to the heating and prior to the converting step.

4,799,502

WIG

Hisao Kobayashi, and Kousuke Mochizuki, both of Tokyo, Japan, assignors to Aderans Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,772
Claims priority, application Japan, Dec. 24, 1985, 60-197535[U]; Feb. 17, 1986, 61-21873[U]
Int. Cl.[4] A41G *3/00*
U.S. Cl. 132—53 **19 Claims**



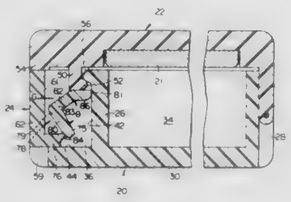
1. A wig comprising:
a wig base substantially entirely formed of a network having a convexly curved surface in conformity with a user's head contour;
hairs planted over the entire said convexly curved surface of said wig base;
said network having a front edge portion corresponding to a hairline at a user's forehead, said front edge portion being formed in a zigzag fashion; and
filament means stitched through said wig base at a location slightly behind said front edge portion, wherein
the network which forms the wig base defines a cut-out portion which corresponds to a location for forming a hair whirl, and wherein
said wig further includes an artificial skin which closes the cut-out portion of the network, said artificial skin being made of a sheet of flexible plastic and being substantially the same shape as the cut-out portion.

4,799,503

COMPACT COSMETIC CASE

Tomio Tahara, Tokyo, Japan, assignor to Kamaya Kagaku Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1987, Ser. No. 82,657
Claims priority, application Japan, Oct. 14, 1986, 61-157215; Jul. 3, 1987, 62-102403
Int. Cl.[4] A45D *33/00, 40/00, 40/22*
U.S. Cl. 220—260 **8 Claims**



1. A compact cosmetic case comprising:
a case body having bottom and peripheral walls defining a hollow in the case body, the peripheral wall having front and rear portions, the front portion having top and front faces and provided with a recess opening to both the top and front faces of the front portion, the recess having bottom and end surfaces, the end surface extending between the bottom surface of the recess and the top face of the front portion, the end surface of the recess having a first engaging member projecting therefrom;
a lid having an inner face and pivotally connected to the rear portion of the peripheral wall of the case body for opening and closing the hollow of the case body, the lid having a second engaging member disposed on the inner face of the lid, for engaging with the first engaging member of the case body so that the lid is fastened to the front portion of the peripheral wall of the case body when the lid is in its closed position; and
disengaging means received in the recess of the case body, for disengaging the first and second engaging members so that the lid is unfastened from the front portion of the peripheral wall of the case body, the disengaging means including: a sliding plate having inner surface, inner surface facing the end surface of the recess, said sliding plate having a lower edge and a ridge formed along said lower edge, the sliding plate being movable between outer and inner positions toward and away from the end surface of the recess; a hook-like resilient urging leaf interposed between the inner surface of the sliding plate and the end surface of the recess, for pushing the second engaging member upward so as to disengage the first and second engaging members, the urging leaf urging the sliding plate in its outer position away from the end surface of the recess; and a resilient strip disposed along the ridge of the sliding plate and interconnecting the ridge and the urging leaf, the urging leaf comprising:
a first leaf piece having upper and lower edges, the lower edge being connected to the ridge of the sliding plate by the resilient strip, the upper edge being spaced apart from the inner surface of the sliding plate by a clearance when the sliding plate is in its outer position, the first leaf piece having a larger thickness than the resilient strip; and
a second leaf piece having proximal and distal edges, the distal edge being in contact with the end surface of the recess, the proximal edge being connected to the upper edge of the first leaf piece so that the second leaf piece is inclined at an angle less than 180° with respect to the first leaf piece, the second leaf piece having a thickness substantially equal to the thickness of the first leaf piece, the distal edge of the second leaf piece being disposed at a level below the first engaging member when the sliding plate is in its outer position, the urging leaf being bent, when the sliding plate is brought into its inner position, in such a manner that the angle between the first and second leaf pieces is enlarged and then the distal edge of the second leaf piece is brought to a level generally equal to the first engaging member, the second leaf piece having a notch formed in the distal edge thereof for preventing the distal edge from butting against the first engaging member when the distal edge is brought to the level generally equal to the first engaging member.

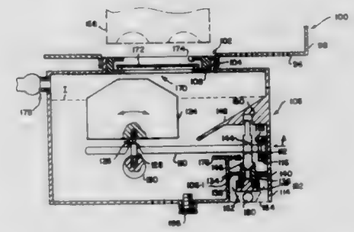
4,799,504

TANK CONSTRUCTIONS FOR CONTAINING FUEL, AND WATER SEPARATORS FOR FUEL FEED SYSTEMS

Edgar P. Scragg, and John E. Scragg, both of 60 Mulder St., Florida Park Extension 3, Florida, Transvaal Province, South Africa

Filed Jan. 12, 1987, Ser. No. 2,282
Claims priority, application South Africa, Jan. 17, 1986, 86/0378; Aug. 5, 1986, 86/5881
Int. Cl.[4] F16K *31/24*
U.S. Cl. 137—38 **7 Claims**

1. A fuel tank construction comprising a tank and a sump secured to the underside of the tank, an outlet from the sump, a float in the sump the specific gravity of which is such that it sinks in fuel but floats on any water which has accumulated in the sump, first normally closed valve which controls flow through said outlet and which opens upon the float detecting an increasing water level in the sump, and a second valve for controlling flow through said outlet which second valve is



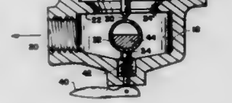
normally open and which is gravitationally biassed to its open position but which moves under gravitational forces to a closed position upon the tank construction being tilted sufficiently or inverted.

4,799,505

EARTHQUAKE TRIGGERED GAS VALVE

Homer Nowell, 1311 Breckenridge St., San Leandro, Calif. 94579

Filed May 20, 1988, Ser. No. 196,602
Int. Cl.[4] F16K *17/36*
U.S. Cl. 137—38 **9 Claims**



1. A gas valve automatically closed from a normally open position by a shock, said gas valve comprising:
a housing having having a gas inlet chamber and outlet chamber, said chambers being separated by a partition, said outlet chamber having a floor;
a valve seat in an opening in said partition;
a valve member mounted on a valve rod passing through the center of the valve seat opening and having a first end terminating in said outlet chamber, said valve member positioned to engage said valve seat to seal the opening between said inlet and outlet chambers; and
a hollow ball positioned between the floor of said outlet chamber and the first end of said valve rod for forcing said valve member out of said valve seat and to open the gas valve, said hollow ball containing a fluid having an inertia that will oppose a shock produced movement of said housing.

4,799,506

ADJUSTABLE SAFETY RELIEF VALVE

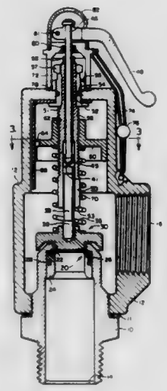
Wesley L. Taylor, 7417 NW. 19th St., Bethany, Okla. 73008

Continuation of Ser. No. 52,685, May 20, 1987, abandoned, which is a continuation of Ser. No. 800,992, Nov. 22, 1985, abandoned. This application Jan. 25, 1988, Ser. No. 148,080
Int. Cl.[4] F16K *17/06*
U.S. Cl. 137—469 **15 Claims**

1. An adjustable pressure relief valve comprising:
(a) a valve body having an inlet and an outlet,
(b) a valve seat associated with said inlet,

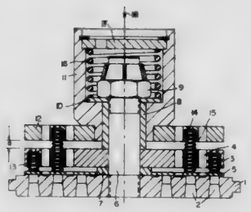
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(c) a valve member configured to seal off the flow of fluids through said valve at said valve seat,
(d) an adjustment screw supported in said valve body to allow rotational but not longitudinal movement of said adjustment screw with respect to said valve body,
(e) a compression member connected to said adjustment screw and mounted within said valve body such that rotation of said adjustment screw produces longitudinal



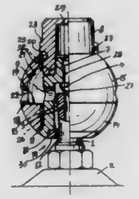
movement of said compression member with respect to said adjustment screw, and
(f) a resilient member biased between said compression member and said valve member;
(g) said adjustment screw extending sufficiently close to said valve member and including an abutting section adapted to provide a full-open stop position to limit the lift of said valve member.

4,799,507
ADJUSTABLE COMPRESSOR VALVE WHICH CAN ACCOMMODATE CHANGING OPERATING CONDITIONS IN THE COMPRESSOR TO WHICH IT IS ATTACHED
Hans Hrabal, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria
Filed Apr. 8, 1987, Ser. No. 35,927
Claims priority, application Austria, Apr. 16, 1986, 994/86
Int. Cl.[4] F16K *15/08*
U.S. Cl. 137—516.21 **9 Claims**



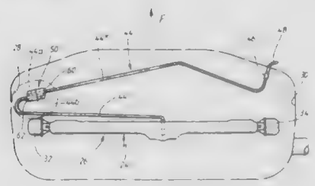
1. A compressor valve for a compressor through which a gaseous medium flows, said compressor valve comprising
a valve seat having opposite first and second sides and flow channels which extend therethrough from said first side to said second side, flow of gaseous medium passing through said flow channels from said first side of said valve seat to said second side,
a spring plate which is positioned in register with one of said first and second sides of said valve seat and is adjustably spaced therefrom,
a plug positioned between said spring plate and said valve seat, said plug being movable against said valve seat to block the flow channels therein or movable away from said valve seat to unblock said flow channels therein,
a catch positioned between said spring plate and said plug, said catch including connecting channels therein,
first spring means extending between said catch and said plug, and
second spring means extending between said spring plate and said plug,
the positioning of said spring plate relative to said valve seat determining the total spring force pushing said plug against said valve seat to thus accommodate the rotational speed of the compressor to which the compressor valve is attached and the specific weight of the gaseous medium passing therethrough.

4,799,508
PRESSURE REGULATING VALVE FOR PRESURE COOKER
Francesco Cuminale, Santo Andre, Brazil, assignor to Alcan Aluminio Do Brasil, S.A., Sao Paulo, Brazil
Continuation-in-part of Ser. No. 928,674, Nov. 7, 1986, which is a continuation of Ser. No. 758,095, Jul. 23, 1985, abandoned.
This application Aug. 3, 1987, Ser. No. 81,155
Int. Cl.[4] F16K *15/00*
U.S. Cl. 137—534 **6 Claims**



1. A pressure regulating valve for a pressure cooker comprising a tubular projection extending from the pressure cooker lid, and on the upper outlet of which is poised a needle, located inside a piece shaped as an inverted cup, inside which said tubular projection is housed, said inverted cup-shaped body having an upper threaded projection in which the head is screwed, said inverted cup-shaped body including steam escape openings and a lower downward turned aperture, surrounded by an internal flange and external ferrule, on which a first weight rests and on this latter a second weight, the weights being placed around the inverted cup-shaped body and the upper head, said weights being selectively used according to the working pressure desired for the cooker, characterized in that the bottom weight and top weight consist of ring pieces set around the inverted cup-shaped body, said weights having a frustum-spherical shape, forming as a whole a spherical valve body, said inverted cup-shaped body being internally provided with a plurality of regularly spaced longitudinal ribs which define longitudinal intermediate channels along which part of the steam escaping from a circumferential passage defined between a top opening of the tubualr projection and a needle circulates downwardly; and in which, at the bottom of said intermediate channels there are corresponding steam escape openings radially arranged on the inverted cup-shaped body and placed at a level above the upper surface of the bottom weight.

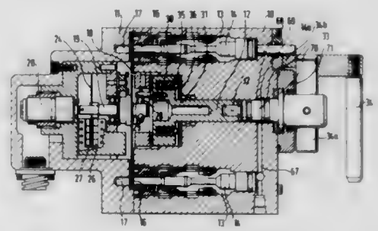
4,799,509
VENTING ARRANGEMENT FOR FUEL TANKS OF MOTOR VEHICLES
Helmut Wawra, Korb; Dieter Scheurenbrand, Wolfschlugen, and Wolfgang Kleineberg, Altbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Sep. 14, 1987, Ser. No. 95,780
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1986, 3631720; Jun. 13, 1987, 3719834
Int. Cl.[4] F16K *24/00*
U.S. Cl. 137—587 **19 Claims**



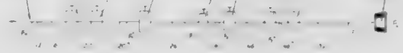
1. A fuel tank arrangement for motor vehicles comprising:
a fuel tank,
expansion tank means disposed above the maximum fuel level in the fuel tank during normal vehicle upright driving conditions and operatively connected with the interior of the fuel tank;
expansion line means for venting the expansion tank means to the atmosphere, said expansion line means including first and second line sections, said first line section extending substantially horizontally from the expansion tank means to a position adjacent the plane of a first fuel tank side wall, said second line section adjoining the first line section and having a discharge to the atmosphere, said expansion line means being operable in an inverted position of the fuel tank to prevent flow-out of fuel;
and an enlargement means in said expansion line means, said enlargement means including entrapment means for entrapping a predetermined gaseous volume during overturning of the fuel tank and siphoning means with fuel flow interruption means operable such that outflow of fuel through the discharge of the second line section to atmosphere effects a suction of a portion of the gaseous volume into the second line section downstream of the enlargement means and an automatic interruption of the fuel siphoning action and stoppage of fuel flow out the discharge.

4,799,510
VALVE FOR USE IN CONTROLLING THE FUNCTIONS OF MINE ROOF SUPPORTS
Richard Ward, Manchester, England, assignor to Gullick Dobson Limited, Wigan, England
Filed Mar. 30, 1987, Ser. No. 31,956
Claims priority, application United Kingdom, Apr. 3, 1986, 8608176
Int. Cl.[4] F15B *13/06*
U.S. Cl. 137—596.15 **16 Claims**

1. A valve for use in controlling a plurality of fluid operated functions, said valve comprising:
a plurality of valve means each including a valve member, valve seat means and valve port means for carrying out a fluid control function, each said valve means being movable independently along a respective first path from an inoperative position to an operative position by fluid pressure;
fluid supply means for supplying fluid simultaneously to all of said valve means;
interposer means for permitting at least one said valve means to move along said first path from said inoperative position to said operative position in response to a supply of fluid from said fluid supply means while at the same time preventing the remaining valve means from moving to said operative position, said interposer means being movable along a second path which intersects each of said first paths of said valve means; and
valve member receiving space for receiving at least one of said valve members upon movement of said valve members along said first path and through said second path, said valve member receiving space being disposed on one side of said second path, each said valve member in said inoperative position being disposed on the other side of said second path to said valve member receiving space, thereby enabling said valve means to be selectively operable.



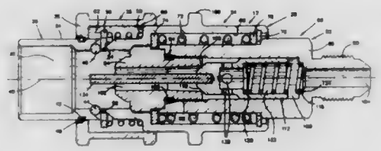
4,799,511
FLOW SYSTEM OF STATIC PARAMETERS
Naum Azimov, 300 Ocean Pkwy., Brooklyn, N.Y. 11218
Filed Oct. 2, 1981, Ser. No. 308,034
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—613 **9 Claims**



1. A flow system of static parameters comprising:
a. a supply means for introducing a fluid or gas at an unregulated rate of flow and an unregulated pressure Po into said system;
b. a conduit means for channeling the flow of said fluid or gas through said system;
c. a downstream pressure regulating means to establish and maintain a constant initial conduit line pressure P1 continuously;
d. a plurality of downstream pressure regulating means located in upstream relation to said downstream pressure regulator which maintains said initial constant pressure P1, to buffer and preserve said initial constant pressure P1 from fluctuations in said pressure Po;
e. a plurality of sensing means integrally connected to said conduit means and operatively responsive to changes in flow rates and pressures generated therein;
f. a means to regulate the flow of said fluid or gas;
g. an upstream pressure regulating means to establish and continuously maintain a second constant conduit pressure P2 located in downstream relation to said flow regulating means;
h. a plurality of upstream pressure regulating means located in downstream relation to said upstream pressure regulator which maintains said second constant conduit line pressure P2 to buffer and preserve said second pressure from fluctuations in discharge line pressures; and
i. a discharge means capable of dispensing said fluid or gas.

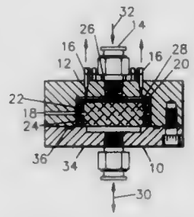
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4,799,512
COUPLING ASSEMBLY
Charles R. Sarson, Willoughby Hills, Ohio, assignor to Tuthill Corporation, Cleveland, Ohio
Filed Nov. 12, 1987, Ser. No. 119,853
Int. Cl.[4] F16L *37/28*
U.S. Cl. 137—614.04 11 Claims



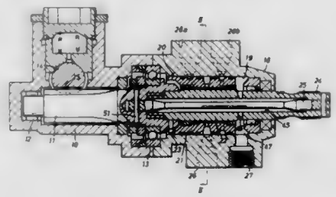
1. A coupling assembly for use in connecting a pair of conduits in fluid communication, said coupling assembly comprising a plug assembly, said plug assembly including a plug body having a leading end portion and a trailing end portion adapted to be connected with one of the conduits, a plug valve assembly disposed in said plug body, said plug valve assembly being operable between a closed condition blocking fluid flow through said plug body and an open condition in which said plug valve assembly is ineffective to block fluid flow through said plug body, and a socket assembly having a socket chamber which receives said leading end portion of said plug body, said socket assembly including a socket body in which said socket chamber is at least partially disposed, a movable locking element disposed on said socket body, said locking element being movable between a disengaged condition and an engaged condition in which said locking element is engageable with said plug body to hold said plug body against movement relative to said socket body, a locking sleeve extending around and movable relative to an outer side surface of said socket body, said locking sleeve being movable relative to the outer side surface of said socket body between a first position in which said locking element is in the engaged condition and a second position in which said locking element is in the disengaged condition, a socket valve assembly at least partially disposed in and movable relative to said socket body, said socket valve assembly including a socket valve body having an outer end portion adapted to be connected with one of the conduits and in inner end portion disposed in said socket body, said socket valve body being movable relative to said socket body between first and second positions, socket valve body spring means for urging said socket valve body toward the first position, a socket valve member disposed in said socket valve body, a socket valve seat disposed in said socket valve body, said socket valve member being movable relative to said socket valve body between an open position in which said socket valve member is spaced from said socket valve seat and a closed position in which said socket valve member is disposed in engagement with said socket valve seat, and socket valve spring means disposed in said socket valve body for urging said socket valve member toward its closed position, said leading end portion of said plug body including surface means for applying force against said inner end portion of said socket valve body to move said socket valve body relative to said socket body from the first position to the second position against the influence of said socket valve body spring means and to form a fluid tight seal between said leading end portion of said plug body and said inner end portion of said socket valve body during insertion of said leading end portion of said plug body into said socket chamber, said plug and socket valve assemblies including means for operating said plug valve assembly from the closed condition to the open condition during insertion of said leading end portion of said plug body into said socket chamber and for moving said socket valve member from its closed position to its open position during insertion of said leading end portion of said plug body into said socket chamber.

4,799,513
MULTI-PORT VALVE
Michael R. Stroug, Midland; James C. Sell, Jr., Saginaw, and David J. Cimbalik, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Feb. 5, 1988, Ser. No. 152,511
Int. Cl.[4] F16K *11/04*
U.S. Cl. 137—625.48 6 Claims



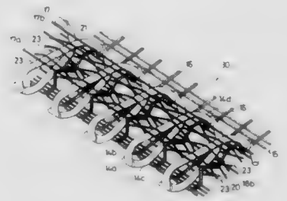
1. A valve capable of rapidly simultaneously closing a multiplicity of ports tightly enough to assure the absence of any leakage through the valve comprising
a stationary exterior structure enclosing a cavity,
a movable means located within said cavity, movable from a valve open position to a valve closed position and forming a chamber within said cavity,
a plurality of outlet ports and at least one inlet port extending through a surface of said exterior structure,
a resilient surface on said movable means adapted to tightly close said ports when said movable means travels to the closed position,
seal means to prevent flow of fluid from said chamber to the remainder of said cavity,
means urging said movable element toward a valve open position,
means comprising a fluid under high pressure for moving said movable means to a valve closed position, and,
means for turning off the supply of said high pressure to return said valve to the open position.

4,799,514
ROTARY SERVOVALVE FOR POWER-ASSISTED STEERING SYSTEM
Tsuneo Tanaka, and Katsuhisa Mori, both of Okazaki, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 25, 1988, Ser. No. 173,613
Claims priority, application Japan, Mar. 26, 1987, 62-72850
Int. Cl.[4] F15B *9/10*; F16K *11/00*
U.S. Cl. 137—625.23 2 Claims



1. A rotary servovalve adapted for use in combination with a hydraulic power cylinder of a power-assisted steering system, comprising:
a valve sleeve formed in a peripheral wall thereof with a supply port for connection to a source of fluid under pressure and distribution ports respectively for connection to opposite fluid chambers of said power cylinder, said valve sleeve being formed at the inner periphery thereof with circumferentially spaced sleeve channels respectively in open communication with said supply and distribution ports; and
a valve rotor coupled within said valve sleeve for relative rotation thereto, said valve rotor being formed thereon with circumferentially spaced control lands which are arranged to correspond with said sleeve channels when the servovalve is in a neutral position;
wherein said control lands corresponding with said sleeve channels in open communication with said distribution ports are each formed larger in width than said corresponding sleeve channel and smaller in height than said control land corresponding with said sleeve channel in open communication with said supply port to define a predetermined clearance for restricting the flow of fluid discharged from one of said distribution ports and supplied into the other distribution port when the servovalve is in the neutral position.

4,799,515
WOVEN SLIDE FASTENER STRINGER
Masaatsu Ohfusa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Dec. 28, 1987, Ser. No. 138,362
Claims priority, application Japan, Dec. 27, 1986, 61-199532[U]
Int. Cl.[4] A44B *19/40*
U.S. Cl. 139—384 B 3 Claims



1. A woven slide fastener stringer comprising:
(a) a tape woven of a plurality of foundation warp threads and a foundation weft thread and having a filament woven section defining a longitudinal edge portion;
(b) a continuous coil-shaped synthetic resin filament having a row of successive loops, each of said loops having a coupling head at one end thereof, upper and lower legs extending from the head in a common direction, and a heel portion remote from said coupling head and connecting said upper leg of each said loop and said lower leg of the next loop;
(c) a group of upper binding warp threads extending in parallel longitudinally of said tape and overlying said upper legs of said filament loops and interwoven with said foundation weft thread, and a group of lower binding warp threads extending in parallel longitudinally of said tape and underlying said lower legs of said filament loops and interwoven with said foundation weft thread, both said groups of binding warp threads running as a whole substantially along a straight path at the region which extends substantially from the midpoint of each of said upper and lower legs to said heel portions;
(d) a plurality of loop-clamping warp threads extending between said upper and lower binding warp threads and alternately overlying said upper legs and said foundation weft thread and underlying said lower legs and said foundation weft thread at every other adjacent loops;
(e) a gap-filling warp thread disposed between an outermost one of said upper binding warp threads and the next upper binding warp thread and also between an outermost one of said lower binding warp threads and the next lower binding warp thread and extending under said lower legs of said filament loops and alternately over and under said foundation weft thread so as to pull portions of said foundation weft thread between the outermost upper binding warp threads and the next upper binding warp thread toward a lower side of said tape substantially halfway between said upper and lower legs of the respective loops; and
(f) a pair of space-retaining warp threads disposed between the outermost upper binding warp thread and the next upper binding warp thread and also between the outermost lower binding warp thread and the next lower binding warp thread and extending alternately over said upper leg of one of said filament loops and said foundation weft thread and under said lower leg of the next filament loop and said foundation weft thread so as to clamp said filament loops.

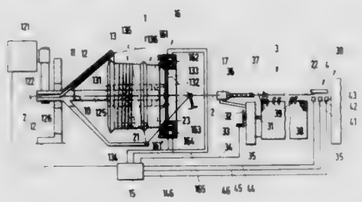
4,799,516
WEFF YARN FEED FOR A WEAVING LOOM
John D. Griffith, Boldon, England, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Division of Ser. No. 848,921, Apr. 7, 1986, Pat. No. 4,706,716, which is a division of Ser. No. 618,046, Jun. 7, 1984, abandoned.
This application Jul. 10, 1987, Ser. No. 72,152
Claims priority, application United Kingdom, Jun. 7, 1984, 8418046
Int. Cl.[4] D03D *47/36*
U.S. Cl. 139—435 5 Claims



1. A method of inserting weft yarn in a fluid jet loom having a main nozzle for inserting weft yarn into the warp shed, a pair of nip rollers located immediately upstream of the main nozzle and weft yarn guide means immediately upstream of the nip rollers, the guide means being movable to selectively introduce the weft yarn between the rollers for positively feeding the weft yarn to the main nozzle, wherein at the beginning of weft yarn insertion the guide means guides yarn directly to the nozzle and the nozzle is operated to accelerate the weft yarn and thereby activate insertion, the guide means is then operated to feed the yarn to the pair of nip rollers which causes the yarn to be inserted at a speed in excess of that dictated by the nozzle, the guide means is then operated at a predetermined time to disengage the yarn from the nip rollers causing the yarn to declerate to the speed of insertion dictated by the nozzle, and the nozzle is subsequently deactivated to complete the weft yarn insertion cycle.

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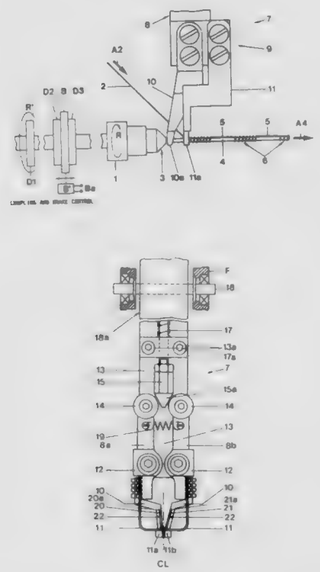
4,799,517
WEFT YARN STORE FOR A LOOM
Robert Bucher, Frick, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Apr. 22, 1987, Ser. No. 41,097
Claims priority, application Switzerland, Apr. 29, 1986, 01754/86
Int. Cl.[4] D03D *47/36*
U.S. Cl. 139—452 17 Claims



1. A method of operating a weft yarn store for feeding weft yarn for picking into a loom, the weft yarn being drawn off a package and, through the agency of a first winder, being received for intermediate storage on a drum in the form of a number of turns in a first winding zone as a first supply and being transferable by means of a second winder into a second supply in a second winding zone, characterized in that the rate of yarn removal from the first supply is reduced in accordance with a predetermined programme before the end of picking.

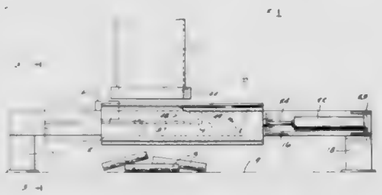
4,799,518
MACHINE FOR SEQUENTIAL MANUFACTURE OF INCANDESCENT LAMP FILAMENTS
Joachim Haug, Herbrechtingen, Fed. Rep. of Germany, assignor to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany
Filed Sep. 15, 1987, Ser. No. 96,938
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1986, 3632262
Int. Cl.[4] B21F *3/04*
U.S. Cl. 140—71.5 26 Claims

1. Machine for sequential manufacture of incandescent lamp filaments, in which a filament wire (2) is wrapped around a core wire (4) to form spiral filament sections (6);
said machine having
a frame (F);
means for supplying the filament wire;
a rotatable winding head (1) guiding the filament wire to the core wire (4) and wrapping the filament wire (2) about the core wire;
a core wire guide nozzle (3) maintaining the core wire on the axis of rotation of the winding head;
means for moving the core wire (4) axially through the winding head in a predetermined direction with essentially uniform speed; and
means for forming essentially straight axially extending separating zones (5) of filament wire (2) between two sequential wrapped filament sections (6) comprising
a pincer system (7) having two jaw means (8, 8*a*, 8*b*), each formed with end portions (9) movable essentially along said axis;
said core wire guide nozzle (3) guiding the core wire (4) between the end portions (9) of the jaw means;
operating means (14–19) coupled to said jaw means for selectively closing the end portions of the jaw means against the core wire, and opening the end portions of the jaw means for spacing them from the core wire; and
wherein said pincer system (7) comprises
a shaft (18) spaced by a distance from the core wire (4) which distance is large with respect to the length of said separating zones (5) said shaft pivotably supporting the jaw means (8) on the frame about an axis of rotation substantially perpendicular to the axis of the winding head, said end portions, upon closing against the core wire, being carried along by the core wire; and



wherein the end portion (9) of each jaw means (8) of the pincer system (7) comprise two arms (10, 11) relatively positioned longitudinally along the core wire (4).

4,799,519
WOOD SPLITTER
Curtis E. Forbes, N8346 State Highway 73, Randolph, Wis. 53956; Micheal M. Forbes, 405 W. James St., Columbus, Wis. 53925, and William L. Forbes, 60 E. Cedar St., Platville, Wis. 53818
Filed May 19, 1988, Ser. No. 195,799
Int. Cl.[4] B27L *7/00*
U.S. Cl. 144—366 8 Claims



1. A wood splitting machine comprising:
longitudinally extending laterally spaced apart stationary guide members,
support members mounted on said guide members for advancing and retracting in opposite longitudinal directions,
motive means operative to advance and retract said support members,
blade support means mounted to said support members for moving therewith,

a blade assembly mounted to said blade support means, said assembly including a primary blade having a laterally extending cutting edge for splitting a wood block in a horizontal plane and a plurality of laterally spaced apart secondary blades having cutting edges extending generally vertically below said primary blade for splitting said wood block vertically,
carriage means mounted to said support members such that said carriage means is advanced and retracted jointly with said blade support means in response to operation of said motive means, said carriage means including a generally horizontal plate means having a trailing end adjacent said blade assembly, said plate supporting pieces of wood that are to be split, and
stop means fixed over said plate means of said carriage in a position remote from said blade assembly when said assembly is retracted so that a block of wood deposited on said top plate means will be captured between said blade assembly and said stop means when said blade assembly is advanced to split said wood, said carriage being simultaneously advanced to remove the carriage plate from under said wood to allow the split pieces of wood to drop down below said carriage.

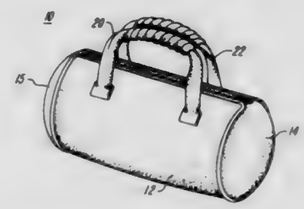
8. A method of splitting wood blocks comprising the steps of:
disposing one or more wood blocks on a horizontal carriage such that the block or blocks are between a fixed stop positioned above the plane of the carriage and the blade assembly including a horizontal blade whose cutting edge faces said wood and a plurality of vertical blades whose cutting edges face said wood,
next advancing said blades through the wood to split and suspend the wood while concurrently shifting the carriage plate out from under the wood so the wood can drop down when it is split, and then
retracting said carriage plate and blade assembly together.

4,799,520
COVER FOR CHRISTMAS TREES
James H. Blackburn, and Maureen T. Blackburn, both of 101 Chantilly, West Monroe, La. 71291
Filed Dec. 28, 1987, Ser. No. 138,055
Int. Cl.[4] B65D *81/00*
U.S. Cl. 150—52 R 19 Claims



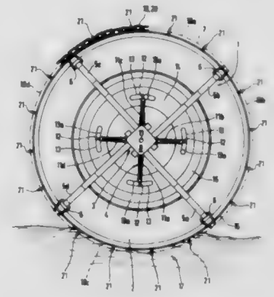
1. A cover for a Christmas tree comprising a sheath having a selected configuration; an opening provided in said sheath for receiving the trunk of the Christmas tree; a center drawstring provided in said sheath adjacent said opening for tightening said sheath around the trunk; a perimeter drawstring provided in the perimeter of said sheath for selectively closing said sheath over the top of the Christmas tree and substantially encapsulating the Christmas tree inside said sheath; and at least one radial drawstring provided in said sheath between said opening and said perimeter, with one end of said radial drawstring anchored to said sheath, whereby said sheath may be disposed beneath the Christmas tree as a decorative member responsive to manipulation of said radial drawstring and said sheath.

4,799,521
HANDLE FOR BAG
Lawrence A. Shick, Waquoit, Mass., assignor to Lifestyle International, Inc., Randolph, Mass.
Filed Nov. 12, 1987, Ser. No. 119,548
Int. Cl.[4] B65D *25/28*; A45C *11/32*
U.S. Cl. 150—107 9 Claims



1. A handle for a bag, comprising:
A. an elongated flexible sheet member having an attachment region at each of its distal ends adapted for attachment to said bag, and having an elongated, substantially rectangular intermediate region disposed midway between said attachment regions,
B. a welting member including an elongated sheet of relatively highly compressible and resilient material disposed adjacent to said intermediate region,
wherein said intermediate region is folded along its long principal axis with its long sides being mutually joined at a seam, and wherein said welting member is disposed between the two halves of said intermediate region on either side of said principal axis, and further comprising a plurality of seams joining opposing portions of said two halves along a corresponding plurality of substantially parallel axes extending transverse to said principal axis, said transverse axes being substantially equally spaced in the direction of said principal axis by a distance D, whereby said folded, seamed intermediate region and said welting member form an articulated grip portion.

4,799,522
SNOW CHAIN FOR VEHICLE WHEELS
Bengt E. Ilon, Lacerne, Switzerland, assignor to Autotyp S.A., Etagnieres, Switzerland
Filed Dec. 4, 1986, Ser. No. 938,160
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545529
Int. Cl.[4] B60C *27/20*
U.S. Cl. 152—213 R 5 Claims



1. A snow chain for vehicle wheels comprising:
(a) a plurality of arms, each arm having a first end mounted to a center member, each arm extending radially outward from the center member to a second end;

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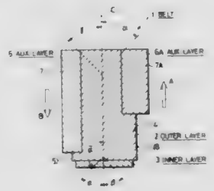
(b) means for retracting the arms to a position adjacent an end side of a vehicle wheel;
(c) a plurality of yokes, each yoke having a first end connected to the second end of an arm, and each yoke also having a second end with means for joining chain sections, each chain section extending between two yokes; and
(d) a pluralityof chain sections, each chain section comprising:
(1) two chain members for extending along a peripheral tread surface of a tire, each chain member having a pluarlity of chain links, at least one chain link of each chain member being detachable connected to at least one of the yokes;
(2) a plurality of tie bars extending along a transverse axis between the chain members and nonrotatably mounted to the chain members, each tie bar having a clamping portion comprising an edgeways open recess disposed between two members;
wherein two substantially parallel extending portions of a chain link are disposed within the open recess, one link portion engaging a bottom of the recess while the opposed chain link portion engages the two end members bent toward each other on the outside of the outermost chain link portions in the recess so a chain link of each chain member is non-rotatably connected to each tie bar.

4,799,523

PNEUMATIC RADIAL TIRE FOR MOTOCROSS

Junichi Kawajiri, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 5, 1987, Ser. No. 58,711
Claims priority, application Japan, Jun. 26, 1986, 61-96677[U]
Int. Cl.[4] B60C *9/18*
U.S. Cl. 152—535 5 Claims



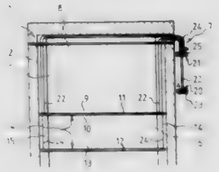
1. A pneumatic radial tire for motocross comprising:
a toroidal carcass formed by at least one ply of textile cords arranged substantially in a tire radial direction;
a belt formed by at least two radially inner and outer layers of textile cords arranged at an inclination angle with respect to a tire circumferential direction so as to reinforce a crown portion of the carcass, cords of the outer layer being laid upon those of the inner layer in intersectional relationship to each other;
a first auxiliary layer arranged on one side of the belt outer layer in such a way that textile cords of said first auxiliary layer intersect the textile cords of the belt outer layer; and
a second auxiliary layer arranged on the other side of the belt outer layer in such a way that textile cords of said second auxiliary layer are parallel to the textile cords of the belt outer layer.

4,799,524

PROTECTION AND/OR DECORATIVE DEVICE FOR APERTURES IN WALLS, WINDOWS AND THE LIKE

Claude Guermonprez, Saint Privaz 13790, Rousset, Bouches-du-Rhones, France

Filed Jul. 21, 1987, Ser. No. 75,962
Int. Cl.[4] E06B *3/94*
U.S. Cl. 160—84.1 15 Claims



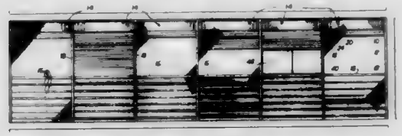
1. A device for covering an aperture in a wall, said device comprising:
a screen that is adapted to be raised and lowered, which screen comprises a first retractable blind and a second retractable blind, said first and second blinds being disposed adjacent to each other;
means for raising and lowering said screen, said raising and lowering means comprising first means for raising and lowering said first blind and second means for raising and lowering said second blind;
each of said first and second blinds comprising foldable structures having first and second opposed ends, wherein the first end of said first blind is attachable to an upper portion of an aperture in a wall, the second end of said first blind is connected to said first means for raising and lowering said first blind and is also attached to said first end of said second blind, and the second end of said second blind is connected to said second means for raising and lowering said second blind;
a common control means comprising at least a first control system that controls said first means for raising and lowering said first blind and a second control system that controls said second means for raising and lowering said second blind, wherein said common control means is adapted to control said first and second control system so as to selectively operate either control system independently, wherein said first and second blinds can be raised or lowered independently, and to selectively control said first and second control systems simultaneously, wherein said first and second control systems cooperate together to raise and lower said first and second blinds simultaneously;
said first control system comprising first means for applying a force to said first means for raising and lowering said first blind,wherein said first means for applying a force is connected at one end to said first means for raising and lowering said first blind and is conneted at a second end to a first handle means;
said second control system comprising second means for applying a force to said second means for raising and lowering said second blind, wherein said second means for applying a force is connected at one end to said second means for raising and lowering said second blind and is connected at a second end to said second handle means; and
wherein said first means for applying a force extends through said second handle means is sliding relation thereto.

4,799,525

MULTI-OPTION SHUTTER AWNING ASSEMBLY

William D. Seymour, 20505 E. Country Club Dr., N. Miami Beach, Fla. 33180

Filed Dec. 23, 1986, Ser. No. 945,534
Int. Cl.[4] E06B *9/08*
U.S. Cl. 160—133 21 Claims



1. A shutter assembly selectively positionable between a closed and an open position relative to an opening of a building or like structure, said assembly comprising:
(a) a barrier structure formed and constructed to be substantially rolled upon itself and extendable along its length in covering relation to at least a portion of a length of the building opening,
(b) storage means for at least partially supporting and retaining said barrier structure and comprising a support shaft rotatably mounted adjacent the building opening and secured to said barrier structure,
(c) a vertically oriented track assembly including two track elements disposed in spaced, parallel relation to one another and each disposed on an opposite side of the building opening and along the length thereof, each of said track elements disposed and configured to at least partially retain a correspondingly positioned edge of said barrier structure,
(d) said barrier structure comprising a primary portion having one end secured to said support shaft and an opposite free end disposable at various positions along the length of said track assembly and the building opening,
(e) said barrier structure further comprising at least one barrier segment detachably securable to said free end of said primary portion and selectively positionable along the length of said track assembly independently of said primary portion and in spaced relation to said free end of said primary portion and said support roller when not secured to said primary portion, and
(f) locking means disposed in interconnecting engagement between said track means and said one barrier segment for fixedly positioning said one barrier segment relative to said track assembly.

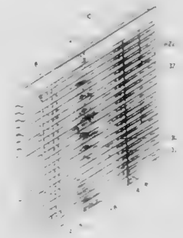
4,799,526

BLIND WITH LIGHT-TRANSMITTING SLATS

John R. Reeves, Brown Deer, Wis., assignor to Wausau Metals Corporation, Wausau, Wis.

Continuation-in-part of Ser. No. 879,270, Jun. 27, 1986, abandoned, which is a continuation of Ser. No. 494,427, May 13, 1983, abandoned. This application Apr. 9, 1987, Ser. No. 36,270
Int. Cl.[4] E06B *9/30*
U.S. Cl. 160—168.1 22 Claims

1. A blind having an interior side and an exterior side and comprising:
(a) a plurality of elongated slats made of lightweight, flexible and generally resilient polycarbonate plastic material having a thickness not greater than 0.062 inches and selected light-transmitting qualities, each slat being bent by means of cold-forming without the application of heat to provide a transverse cross-sectional configuration in which a first longitudinally extending portion and a second longitudinally extending portion of the slat intersect to form a selected angle of not more than 170°, the angled slat structure imparting sufficient stiffness to the slat so that the slat will not substantially sag between and beyond widely spaced suspension points, and wherein at least one of the first and second portions is transparent, said transparent slat portion transmitting visible light with a minimum of distortion; and
(b) means for suspending the slats in parallel relation, the suspension means being adapted to rotate the slats about their longitudinal axes between an inwardly facing position, in which first surfaces of the slats are presented at the interior side of the blind with the first portions of the slats lying substantially within a single plane, and an outwardly facing position in which the first surfaces of the slats are



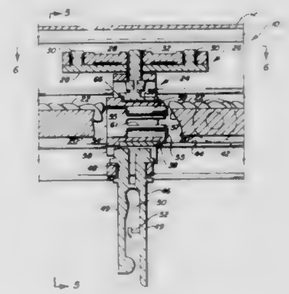
presented at the exterior side of the blind and the second portions of the slats lie generally within a single plane, the suspension means being further adapted to hold the slats at a distance from each other such that when the slats are in one of the inwardly facing and outwardly facing positions the portions of the slats not then co-planar extend sufficiently far toward the slat immediately adjacent thereto as to substantially prevent the passage of light in a direction generally normal to the co-planar portions of the slats without that light being interrupted by the slats.

4,799,527

VERTICAL BLIND ASSEMBLY

Joe D. Villoch, North Miami; Claudio U. Gatto, Miami, and Mike V. Oprisi, Miami Lakes, all of Fla., assignors to American Vertical Systems, Miami, Fla.

Filed Apr. 30, 1987, Ser. No. 49,653
Int. Cl.[4] E06B *9/30*
U.S. Cl. 160—168.1 19 Claims



1. A vertical blind assembly comprising a plurality of vertically oriented slats disposed in spaced apart relation to one another and independently rotated about their own longitudinal aixs and collectively positionable between an extended and a closed orientation relative to and along the length of a supporting header structure, an improvement comprising:
a. a plurality of carrier assemblies equal in number to the number of slats depending from said header structure and

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removably positionable along the length of said header structure,

b. connecting means for interconnecting said plurality of carrier assemblies to one another and for collective movement thereof along said header structure,

c. each carrier assembly comprising a base and a carrier element movably attached in depending relation to said base, said carrier element securable in supporting engagement with one of said slats,

d. an aperture means formed in said base and including a substantially central aperture; a drive rod having an elongated configuration and disposed to extend through each of said central apertures of each base,

e. each carrier assembly further comprising a drive element mounted on the respective base within said central aperture thereof and in surrounding, connected relation to said drive rod and rotatable therewith,

f. said drive element comprising an elongated annular configuration and a plurality of spaced apart body segments extending to one end thereof and formed of flexible material and having at least one longitudinally extending slot extending from our end of said drive element thereby allowing said one end to be forced into a constricted position of lesser diameter than said central aperture, whereby said drive element may be removably fitted within said central aperture,

g. a first gear structure fixedly mounted on said drive element and rotatable therewith, a second gear element fixedly mounted on said carrier element and rotatable therewith and connected in meshing engagement with said first gear structure, and

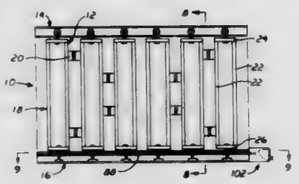
h. said drive rod and said, drive element, first and second gear structures and carrier element of each carrier assembly all cooperatively disposed and structured to concurrently rotate said slats upon rotation of said driving rod.

4,799,528

CLOSURE DEVICE

Richard Benitez, Apt. B, 9209 Connechusset Rd., Tampa, Fla. 33617

Filed Oct. 5, 1987, Ser. No. 104,429
Int. Cl.[4] E05D *15/26*
U.S. Cl. 160—199 **14 Claims**



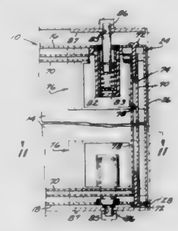
1. A closure device comprising at least one set of panels movable between an extended and retracted position to selectively secure a portal such as a door or window when said set of panels is in the extended position, said set of panels comprises at least two panel members hingedly attached to each other to permit selective extension and retraction of said set of panels on an upper and lower track, each said panel member comprising a pair of elongated panel elements held in substantially parallel spaced relation relative to each by an upper and lower plate coupled to opposite ends thereof, an upper and lower attachment device is coupled to said upper and lower plate respectively to operatively mount said set of panels between said upper and lower track and a lock means including a lock plate movable between a first and second position pivotally coupled to said lower track having a plurality of lock slots formed therein corresponding to each said lower attachment device disposed to engage each said lower attachment device when in said first position to secure said set of panels in the extended position to prevent entry through the portal and to disengage said lower attachment device when in said second position to permit movement of said set of panels to the retracted position to permit entry through the portal and a retainer member disposed to selectively engage said lock plate to maintain said lock plate in said first position.

4,799,529

WARDROBE DOOR

Thomas H. McAfee, Seal Beach, Calif., assignor to Charmac, Inc., Compton, Calif.

Filed Nov. 6, 1986, Ser. No. 927,544
Int. Cl.[4] E05D *7/08, 15/06;* **E04C** *2/38*
U.S. Cl. 160—286 **13 Claims**



1. A door structure comprising:

a panel having a central region and a parameter region, a plurality of frame members formed of channel stock having an internal longitudinal spline having a screw race and being substantially identical in cross-section disposed about said perimeter region of the panel and being connected together to form mitered corners, a solid block disposed within said frame members at one or more of said corners, and a door hinge connected to said solid block, said solid block being provided with grooves which receive said spline to hold said solid block within said frame member.

4,799,530

METHOD FOR RECOVERING CASTING REFRACTORY COMPOSITIONS FROM INVESTMENT CASTING SLURRIES

David H. Sturgis, Gladstone, and William W. Kemp, Milwaukie, both of Oreg., assignors to Precision Castparts Corp., Portland, Oreg.

Filed Feb. 8, 1988, Ser. No. 153,063
Int. Cl.[4] B02C *23/20;* **C01F** *17/00*
U.S. Cl. 164—5 **30 Claims**

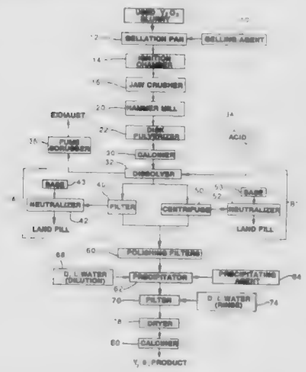
1. A process for the recovery of Y_2O_3 from a used investment casting slurry having Y_2O_3 in combination with a binder, said process comprising:

forming a solid mass from said slurry;

pulverizing said mass to form a powder;

forming a solution from said powder, said solution having yttrium dissolved therein, with said binder remaining undissolved,

separating said binder from said solution; and



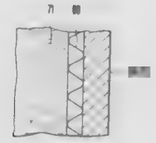
removing yttrium from said solution after said separating of said binder.

4,799,531

CASTING METHOD IN HIGH-PRESSURE CASTING

Tadashi Yamamoto, and Michiyuki Suzuki, both of Yamaguchi, Japan, assignors to UBE Industries, Inc., Ube, Japan

Filed Jul. 23, 1987, Ser. No. 77,122
Claims priority, application Japan, Jul. 31, 1986, 61-178747
Int. Cl.[4] B22D *17/00, 17/20*
U.S. Cl. 164—120 **20 Claims**



1. A method of pressure die casting molten metal including a casting sleeve and metal molds comprising the steps of:

disposing a thin-plate body having hollows adjacent to at least one inner wall surface of said casting sleeve;

pouring said molten metal into said casting sleeve;

injecting said molten metal from said casting sleeve into said metal molds; and

applying pressure to said molten metal in said casting sleeve and said metal molds, wherein said pressure is sufficient to exceed the permeation pressure of said thin-plate body having hollows;

whereby said molten metal infiltrates into said hollows and is substantially solidified upon contact with said inner wall surface of said casting sleeve.

4,799,532

METHOD OF MAKING A CRUCIBLE AND MELTING REACTIVE METAL ALLOYS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 834,727, Feb. 28, 1986, Pat. No. 4,723,764.
This application Nov. 19, 1987, Ser. No. 122,968
Int. Cl.[4] B22D *7/06*
U.S. Cl. 164—47 **4 Claims**

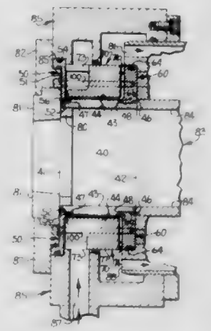
1. The method of making an active brazing alloy comprising the steps of forming a crucible of slip cast fused silica, coating the interior of the crucible with an yttria lining, firing ,the yttria-lined crucible, entering metals into the crucible, and heating the metals to cause them to melt and form the alloy.

4,799,533

HORIZONTAL CONTINUOUS CASTING MOLD

Max Ahrens, and Manfred Haissig, both of Irvine, Calif., assignors to Steel Casting Engineering, Ltd., Orange, Calif.

Filed Jun. 20, 1986, Ser. No. 876,845
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—137 **10 Claims**



10. A method for replacing in a horizontal continuous metal casting mold a mold tube having a damaged casting surface;

said mold including a mold tube having an inner casting surface, an outer casting surface, and input and output ends each providing a peripherally disposed surface perpendicular to the mold tube axis with a shallow peripheral groove formed therein, and first and second flanges respectively disposed peripherally about said input and output ends and in abutting, liquid-sealing relation therewith, said flanges each including a peripheral rim surface perpendicular to the flange axis with a knife-edged peripherally disposed protrusion formed therein and adapted to sealingly engage said groove, and tightenable removable securing means disposed axially of said mold at selected peripheral intervals for drawing together toward one another and first and second flanges and compressively captivating said tube therebetween to form a unitary assembly,

said method comprising the steps of:

disassembling said mold by removing said securing means and respectively parting said abutments between said mold tube and said first and second flanges;

replacing said mold tube with another mold tube having the same configuration and an undamaged casting surface;

positioning said first and second flanges respectively adjacent the input and output ends of the replacement mold tube such that the protrusions formed on said flanges respectively adjoin the grooves formed in the ends of said tube;

installing said removable securing means and drawing said first and second flanges toward one another so that they respectively abut said input and output ends of said replacement mold tube; and

tightening said securing means, thereby compressing said tube between said first and second flanges forcing said protrusions swageably into said grooves, respectively, and thus reestablishing said liquid-tight seals at the abutments at both ends of said replacement mold tube while at the same time interconnecting said first and second flanges and said replacement mold tube into a unitary assembly.

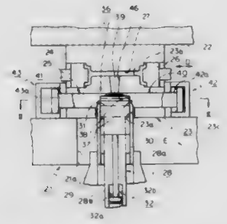
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4,799,534

VERTICAL DIE CASTING MACHINE

Toyoaki Ueno; Sadayuki Dansoura, and Masashi Uchida, all of Ube, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Mar. 2, 1987, Ser. No. 20,390
Claims priority, application Japan, Mar. 3, 1986, 61-44185; Mar. 3, 1986, 61-44186
Int. Cl.[4] B22D *17/12*
U.S. Cl. 164—314 **29 Claims**



1. A vertical die casting machine of a vertically clamping type, comprising:
stationary and movable platens;
a mold arrangement including lower stationary and upper movable molds which are clamped between said platens to define a die cavity;
a casting sleeve;
a plunger slidably disposed in said casting sleeve, said plunger having a plunger tip at the upper end thereof, which tip together with said sleeve defines a melt space wherein a melt is received for an upward injection of the melt by said plunger into said cavity through a melt passage, said melt passage being freely defined between said cavity and the surface of the melt received in said melt space;
an injection hydraulic piston-cylindrical for actuating said plunger therein to selectively inject melt into said die cavity during an injection operation; and
means for constricting said melt passage, said constricting means including at least two movable flat parting plates disposed between said sleeve and said stationary mold or in said stationary mold, each of said parting plates having a groove forming a semi-circle at the parting face thereof, said parting plate being clamped when the melt is injected to define a vertically extending through-hole formed by said semi-circular grooves, said through-hole having a cross sectional area at the upper end thereof smaller than that at the upper end of said sleeve, the upper end of said sleeve being in contact with said parting plates from below during the injection operation.

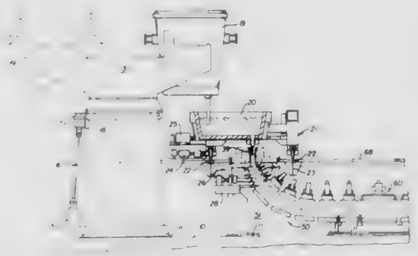
4,799,535

MODULAR CONTINUOUS SLAB CASTERS AND THE LIKE

Herbert Lemper, 130 Canterbury Rd., McMurray, Pa. 15317

Continuation of Ser. No. 36,407, Apr. 9, 1987, abandoned. This application Jan. 22, 1988, Ser. No. 147,222
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—416 **20 Claims**

1. A modular caster assembly for continuously casting molten steel comprising a foundation for supporting said assembly, a ladle turret module including a ladle supported by a ladle turret base having a rotatable ladle turret frame on the top of said base, a tundish module including tundish means movable into position beneath said ladle, a mold oscillator module including an oscillator base frame and a mold oscillator on said frame, an adjustable mold for molten steel removably fastened to said mold oscillator module, at least one segment module removably disposed beneath said mold for initially receiving steel from said mold, a straightening module for receiving steel from said segment module, a starting bar handling and charging module, and interconnecting module means carrying pre-



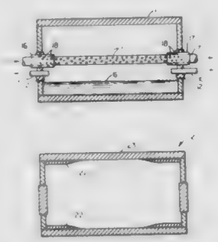
wired and preplumbed electrical and fluid lines with plug-in connectors matching corresponding plug-in connectors in each module of said assembly.

4,799,536

SHEET CASTER COOLING

John P. Ingalls, Centerburg; Robert E. Maringer, Worthington, and Ray D. Wood, Grove City, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Sep. 16, 1987, Ser. No. 97,488
Int. Cl.[4] B22D *11/06, 11/124*
U.S. Cl. 164—479 **8 Claims**



1. Apparatus for casting metal sheet from the melt comprising
a hollow, cylindrical casting drum having a casting surface on its exterior,
means for rotating the casting drum, about a substantially horizontal cylinder axis,
tundish means adjacent the casting surface for delivering a layer of molten metal to the casting surface,
a liquid coolant pool in the lower portion of the interior of the casting drum,
means for maintaining the coolant pool level below about the cylinder axis,
means for spraying a coolant liquid inside the casting drum against substantially the entire inside surface of the casting drum above the liquid level, and
shaped inserts attached to the inside surface of the casting drum at selected locations for selectively controlling the heat transfer from the casting drum to the coolant at the selected locations along the inside surface of the casting drum to create a selected thickness profile in the cast sheet.

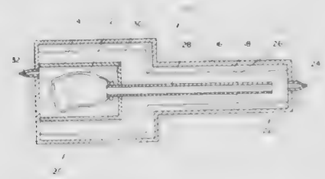
6. The method for sheet casting comprising rotating a hollow, cylindrical casting drum having an outer casting surface about a generally horizontal cylinder axis, delivering a molten metal layer to the outer casting surface, cooling the interior of the casting drum by admitting a liquid coolant therein, maintaining a coolant liquid level below about the cylinder axis and spraying a liquid coolant inside the casting drum onto substantially the entire surface of the drum above the coolant liquid level wherein the improvement comprises selectively controlling the heat transfer from the casting drum to the coolant at selected locations along the inside surface of the casting drum by spraying a first coolant liquid against preselected portions of the inside surface of the casting drum and a second coolant over preselected second portions of the inside surface to create a selected thickness profile in the cast sheet.

4,799,537

SELF REGULATING HEAT PIPE

Bryan C. Hoke, Jr., Lancaster, Pa., assignor to Thermacore, Inc., Lancaster, Pa.

Filed Oct. 13, 1987, Ser. No. 108,279
Int. Cl.[4] F28D *15/02*
U.S. Cl. 165—32 **4 Claims**



1. A heat pipe comprising:
a sealed hollow casing;
a quantity of vaporizable heat transfer fluid within the casing;
a quantity of non-condensible gas within the casing;
an expandable primary reservoir volume with an opening, the primary reservoir being located within the casing in a evaporator region of the casing to which heat is applied and acted upon by a force means which resists the expansion of the primary reservoir volume, wherein the force means is a secondary reservoir filled with a non-condensible gas, with the primary reservoir volume enclosed within the secondary reservoir; and
conduit means with one end attached to the opening of the primary reservoir, and the other end opening into a condenser region of the heat pipe from which heat is removed.

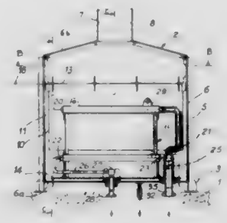
4,799,538

DEVICE FOR CONDENSING STEAM UNDER PRESSURE AND ITS APPLICATION TO THE COOLING OF A NUCLEAR REACTOR AFTER AN INCIDENT

Philippe Dagard, Marly le Roi, and Michel Couturier, Le Vesinet, both of France, assignors to Framatome, Courbevoie, France

Filed Jul. 1, 1986, Ser. No. 880,975
Claims priority, application France, Jul. 1, 1985, 85 10022
Int. Cl.[4] F22B *1/02;* **F28B** *1/02;* **G21C** *9/00*
U.S. Cl. 165—47 **3 Claims**

1. Device for condensing steam at a pressure significantly above atmospheric pressure, comprising a storage vessel (6) containing water, a distribution and exchange unit (15) fixed inside the storage vessel (6) and incorporating a set of substantially vertical exchange tubes (24) each connected at its upper end to a steam inlet manifold (20) and at its lower end to a condensate discharge manifold (29), and a means (30, 31) for supplying water to the storage vessel (6), and for holding the water in the vessel (6) at a substantially fixed level (16) wherein
(a) the upper part of the storage vessel (6) is connected to a steam discharge stack (7) operating by natural draught;
(b) a substantially horizontal tranquilizer grid (13) is arranged in the storage vessel (6), substantially at said fixed level, above the exchange unit (15) and under the discharge stack to prevent the entrainment of water by the steam to the stack (7);
(c) the device constituting a boiler-condenser operating in such a way that the fluid in contact with the outer surface of the tubes (24) consists of a two-phase mixture of water



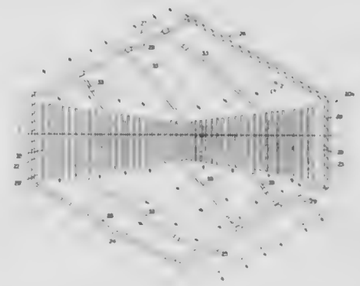
and of the steam produced by the heat of condensation of the pressurized steam and, by the heat of the condensate, from the water of the storage vessel (6), the circulation of the two-phase mixture being accelerated by density effect and by the draught of the stack (7).

4,799,539

THERMALLY EFFICIENT ROOM VENTILATOR

Howard S. Atkin, Harrogate, and Christopher J. Palmer, Leeds, both of United Kingdom, assignors to Advanced Design & Manufacture Limited, Bradford, England

Continuation-in-part of Ser. No. 836,341, Mar. 5, 1986, abandoned. This application Jun. 1, 1987, Ser. No. 56,607
Claims priority, application United Kingdom, May 12, 1985, 8506415
Int. Cl.[4] F28F *3/00*
U.S. Cl. 165—54 **11 Claims**



1. Apparatus for extracting stale air from inside a room and introducing fresh air into the room, the apparatus comprising:
an enclosure adapted to be mounted within a wall or window of the room with a first end open to the exterior of the room and a second end open to the interior of the room;
a fresh air inlet and a stale air outlet located at said first end;
a stale air inlet and a fresh air outlet located at said second end;
a first fan located adjacent said fresh air inlet and operable to introduce fresh air into the room.;
a second fan located adjacent said stale air outlet and operable to extract stale air from inside the room; and
a counter flow heat exchanger located between said first and second ends, the heat exchanger including two separate flow paths therethrough, one connecting the fresh air inlet

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with the fresh air outlet and the other connecting the stale air inlet with the stale air outlet, the two flow paths being substantially parallel to each other and extending perpendicularly to the wall in which it is adapted to be installed, and being separated from each other by a thermally conducting material across which, in use, counter flow heat exchange occurs between the fresh air and the stale air flowing in parallel but opposite directions.

4,799,540

HEAT EXCHANGER

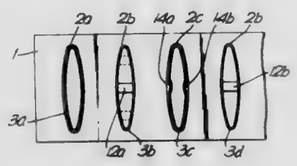
Dirk Pietzcker, Niederwaldstr. 5, D-3500 Kassel, Fed. Rep. of Germany

Division of Ser. No. 771,630, Aug. 30, 1985, Pat. No. 4,692,979. This application Jul. 1, 1987, Ser. No. 68,941

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3432073

Int. Cl.[4] F28D *1/04*; F28F *7/00*

U.S. Cl. 165—76 9 Claims



1. A heat exchanger comprising: a plurality of heat dissipating metal fins, said fins each having at least one oval or oblong shaped collar, said collars providing openings through said fins and having initial oval or oblong cross sections; at least one fluid conducting metal tube, said tube extending through the openings of said fins and having first similarly shaped wall portions at opposite ends of a major axis thereof and second similarly shaped wall portions at opposite ends of a minor axis thereof, and said tube being attached to said fins by merely at first providing said tube with outer cross section being similar but slightly smaller than said initial cross sections of said openings and by then expanding said tube into a plastically stretched condition and to a slightly greater cross section than said initial cross sections of said openings such that said collars are in an elastically expanded condition and thus pressed with elastical force against said tube; and at least one elongated spacer supporting said second wall portions at a preselected location thereof, said spacer extending through said tube, substantially having a breadth corresponding to the distance between said second wall portions at said preselected location in the plastically stretched condition of said tube, and preventing a shrink-back of said tube under the elastical forces of said collars.

4,799,541

CONICAL CONTACT HEAT EXCHANGER

Tibor Buns, Evergreen, and William H. Miller, Littleton, both of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Aug. 10, 1987, Ser. No. 83,364

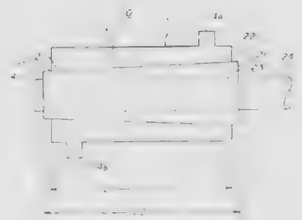
Int. Cl.[4] F28D *15/02*; F28F *5/00*

U.S. Cl. 165—78 11 Claims

1. A heat exchanger comprising:

a first member of predetermined length having an outer surface and a conical inner surface, with a predetermined cone angle, surrounding a hollow region extending for said predetermined length to provide first and second open ends; and

a second member of preselected length greater than said predetermined length having an outer conical surface with a cone angle equal to said predetermined cone angle, removably inserted in said hollow region such that said outer surface of said second member is in thermal contact with said inner surface of said first member and extends beyond said first and second ends, said preselected length and said predetermined length providing a length differential which, in cooperation with said predetermined cone



angle, provides a self adjustment to relative movements of said first and second members caused by thermal expansions and contractions, whereby thermal contact between said first and second members is maintained over said predetermined length.

4,799,542

HEAT EXCHANGER WITH THIN-FILM EVAPORATOR

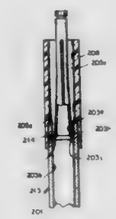
Hans Sladky, Wischhofstrasse 7, D-2000 Hamburg 65, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 628,017, Jul. 5, 1984, abandoned. This application Aug. 4, 1986, Ser. No. 892,947

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324330

Int. Cl.[4] F28D *3/02*

U.S. Cl. 165—118 11 Claims



1. A tube assembly for a falling film heat exchanger comprising:

a metal tube;

a synthetic resin sleeve fitted snugly over said tube and formed with an inwardly extending shoulder abutting an upper end of said tube, said sleeve being open upwardly over its entire cross section;

an insert received in said sleeve and said tube and having:

a frustoconical lower portion diverging outwardly toward and within an inner wall of said tube and defining therewith a narrow annular gap from which a liquid film can pass downwardly along said inner wall of said tube,

a solid cylindrical stem extending upwardly from said frustoconical lower portion, and

a plurality of angularly equispaced guide webs extending radially outwardly from said stem lying in respective axial planes, said stem having a free end extending above said webs and said sleeve, said guide webs having upper portions slidably engaging an inner wall of said sleeve for accurately positioning said edge relative to said inner wall of said tube, lower portions extending into said tube, and steps respectively between each upper portion and lower portion of each guide web engaging said shoulder for limiting the penetration of the insert into said tube, said insert being integrally molded from a synthetic resin and is separate from said sleeve, said frustoconical lower portion being formed with a downwardly widening conical cavity terminating in an outwardly extending bevel defining said edge.

4,799,543

MEANS FOR TEMPERATURE CONTROL OF HEATED SURFACES

Arthur H. Iversen, 15315 Sobey Rd., Saratoga, Calif. 95070, and Stephen Whitaker, Davis, Calif., assignors to Arthur H. Iversen, Saratoga, Calif.

Filed Nov. 12, 1987, Ser. No. 119,698

Int. Cl.[4] F28F *13/00*

U.S. Cl. 165—135 13 Claims



1. A heat sink structure including a heated surface and further including a heat exchange surface on the interior surface thereof, said structure providing means for enclosing said heat exchange surface in a fluid tight manner and including means for providing a flow of fluid to remove heat from said heat exchange surface, said heat sink structure having at least one of a variable wall thickness separating said heated surface from said fluid cooled surface and a variable distribution of heat flux on said heated surface, the improvement wherein said fluid cooled heat exchange surface includes:

means, disposed on said fluid cooled heat exchange surface in a variable manner commensurate with said variable wall thickness and said variable distribution of heat flux such that an approximately uniform temperature is achieved over said heated surface

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4,799,544

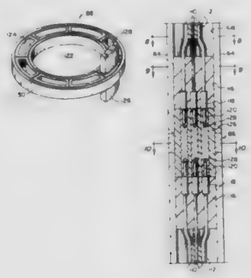
DRILL PIPES AND CASINGS UTILIZING MULTI-CONDUIT TUBULARS

Harry B. Curlett, Dallas, Tex., assignor to Pangaea Enterprises, Inc., Fort Worth, Tex.

Division of Ser. No. 730,831, May 6, 1985, Pat. No. 4,683,944. This application Jul. 10, 1987, Ser. No. 72,053

Int. Cl.[4] E21B *33/10*

U.S. Cl. 166—65.1 7 Claims



1. A seal adapted for use with a multi-conduit well tubular, or the like, comprising:

a plate with a plurality of fluid passages, each said passage corresponding to an opening of a conduit of said multi-conduit tubular, and a groove on said plate around each said passage; and

elastomer means partially embeddable into each said groove for sealing each said conduit of a tubular to a corresponding conduit of another similar tubular.

4,799,545

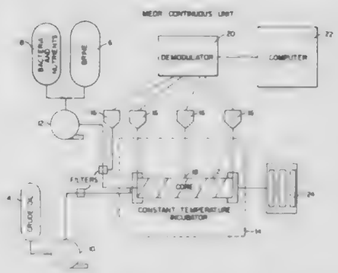
BACTERIA AND ITS USE IN A MICROBIAL PROFILE MODIFICATION PROCESS

Richard S. Silver, Allentown; Pamela M. Bunting, Cheswick, both of Pa.; William G. Moos, Newton, N.J., and Willard P. Acheson, Pittsburgh, Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 22,857, Mar. 6, 1987, abandoned. This application Dec. 29, 1987, Ser. No. 140,892

Int. Cl.[4] E21B *33/138*, *43/22*

U.S. Cl. 166—246 28 Claims



1. A process for enhancing oil recovery by improving the sweep efficiency of a water flood through an oil producing reservoir which has zones of relatively high permeability and saline connate water, comprising the steps of:

isolating a bacterium that has the following characteristics:

it is motile;

it is a facultative anaerobe;

it is at least halotolerant;

it is at least thermotolerant;

it produces an exopolymer; and

it sporulates;

preparing a suspension of said bacterial spores or cells or mixtures thereof;

injecting said suspension into an oil producing reservoir where said spores or cells may become lodged in zones of relatively high permeability; and

contacting said spores or cells with a nutrient solution to induce them to plug said zones of relatively high permeability, said nutrient solution comprises a source of phosphate nutrient as polyphosphate.

10. An enhanced oil recovery process comprising selectively plugging relatively high permeable zones within a petroleum reservoir using a biologically pure strain of *Bacillus licheniformis*, NRRL No. B-18179 or its spores or mixtures thereof.

4,799,546

DRILL PIPE CONVEYED LOGGING SYSTEM

Donald E. Hensley; E. Edward Raskin; Martin L. Tomek, all of Houston, and David M. Moody, Spring, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 23, 1987, Ser. No. 111,758

Int. Cl.[4] E21B *23/08*, *47/00*

U.S. Cl. 166—250 34 Claims

1. A method of logging highly deviated well boreholes comprising the steps of:

(a) rotatively attaching a logging tool on the end of a string of drill pipe;

(b) pushing the logging tool along the borehole past a zone

of interest in a deviated region wherein the logging tool is permitted to move against the low side of the well borehole;

(c) placing a weight along one side of the logging tool to enable the logging tool to be rotated by gravity relative to the low side of the deviated well borehole;

(d) pulling the logging tool past the zone of interest without rotating the logging tool during pulling relative to the low side of the borehole; and

(e) performing logging operations in the zone of interest by the logging tool with a fixed rotational position relative to the zone of interest.

28. An apparatus for logging a zone of interest beyond a deviated potion of a deviated well borehole, the apparatus comprising:

(a) means for rotatively mounting a logging tool on the end of a string of drill pipe;



(b) weight means along one side of the logging tool to enable the logging tool to be rotated by gravity relative to the low side of the deviated well borehole;

(c) standoff means adjacent to said logging tool to support said logging tool wherein the standoff means controllably permits rotation and wherein said standoff means includes a locked position and a freely rotating position for enabling said logging tool to be rotated by said weight means for alignment relative to the low side of the deviated well borehole;

(d) separate male and female connectors deployed on a logging cable and on said logging tool for controllable connection and disconnection to permit logging of the zone of interest by said logging tool wherein data from the logging tool is provided on the logging cable through said mated connectors during retrieval of said logging tool past the zone of interest.

4,799,547

A CO_2 DRIVE PROCESS FOR OIL RECOVERY EMPLOYING AN ALCOHOL ETHOXYCARBOXYLATE SURFACTANT

John K. Borchardt, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 909,754, Sep. 19, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 150,471

Int. Cl.[4] E21B *43/22*

U.S. Cl. 166—275 **19 Claims**

1. A process for enhancing the recovery of oil from a subterranean oil-containing reservoir having a temperature of at least about 40° C., which comprises steps for

(a) injecting into an injection well in the reservoir substantially liquid CO_2 and an aqueous mixture containing between about 50 and 10,000 parts per million by weight, calculated on the weight of the water, of one or more surfactants of the formula

$$R—(OCH_2CH_2)_x—Z$$

wherein R represents an alkyl group of about 8 to 16 carbon atoms, x is an integer having an average value of about 5 to 20, and Z represents either a —OCOOM formate group or a —OCH_2COOM acetate group, with M representing a mono-valent inorganic cation, to displace oil from the reservoir, and

(b) recovering the displaced oil from one or more recovery wells in the reservoir.

4,799,548

GELABLE COMPOSITIONS AND USE THEREOF IN STEAM TREATMENT OF WELLS

Naim A. Mumallah, and Peter H. Doe, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 6,821, Jan. 23, 1987. This application Apr. 22, 1988, Ser. No. 185,009

Int. Cl.[4] E21B *33/138, 43/24*

U.S. Cl. 166—288 **13 Claims**

1. A method of treating a subterranean formation penetrated by a well comprising:

(a) injecting a gelable composition into the well wherein the composition consists essentially of water, a water-dispersible polymer, a first water-dispersible crosslinker, and a second water-dispersible crosslinker wherein said first and second crosslinkers have differing temperature responsive crosslinking characteristics over the temperature range of about 70° F. to about 400° F. which enables crosslinking of said polymer and gelation of said composition over substantially the entire temperature range of about 70° F. to about 400° F.; and

(b) injecting steam into the well after step (a).

4,799,549

GEL-FORMING AQUEOUS MICROEMULSIONS FOR SOIL STABILIZATION

Bernard Vinot, Nice; Gerard Berrod, Villeurbanne, and Jean-Louis Brun, Lyons, all of France, assignors to Rhone-Poulenc Specialites Chimique, Courbevoie, France

Filed Feb. 13, 1986, Ser. No. 828,877

Claims priority, application France, Feb. 13, 1985, 85 02034

Int. Cl.[4] B01J *13/00;* **C09K** *17/00;* **F02D** *3/12*

U.S. Cl. 166—293 **8 Claims**

1. A stable, gel-forming composition of matter adopted for reversible soil stabilization, comprising an aqueous microemulsions of (i) an aqueous phase comprising an aqueous solution of a water-soluble alkali metal silicate, (ii) an organic phase comprising a gelling reagent therefor, said gelling reagent comprising an alkyl ester of a saturated or unsaturated aliphatic mono-, di- or polycarboxylic acid, an alkyl ester of a carbocyclic carboxylic acid, a dialkyl and/or trialkyl phosphate, a lactone, a lower alkylamide, or a ketoester, and (iii) at least one surface active agent for preparing the microemulsion of the organic phase and the aqueous phase.

6. A method for the sealing/consolidation of a soil formation, comprising injecting therein the composition of matter as defined by claim 1 and permitting same to harden/hardening same.

7. The method as defined by claim 6, said soil formation comprising an oil well.

4,799,550

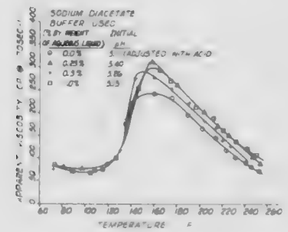
SUBTERRANEAN FORMATION TREATING WITH DELAYED CROSSLINKING GEL FLUIDS

Phillip C. Harris, and Joe M. Sandy, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 18, 1988, Ser. No. 182,625

Int. Cl.[4] E21B *33/138, 43/26*

U.S. Cl. 166—300 **20 Claims**



1. A method of treating a subterranean formation comprising:

(a) preparing an aqueous gel by admixing an organic carboxylated gelling agent with an aqueous liquid;

(b) combining a buffer with said aqueous gel in an amount sufficient to result in and maintain the pH thereof at a level of about 5 or above at ambient temperature;

(c) combining a zirconium IV-containing crosslinking compound with said aqueous gel in an amount sufficient to result in the delayed crosslinking of said gel; and

(d) introducing the aqueous gel mixture formed in step (c) into said subterranean formation whereby said mixture is heated by said formation and thereby caused to crosslink therein.

9. A method of fracturing a subterranean formation comprising:

(a) preparing an aqueous gel by admixing an organic carboxylated gelling agent with an aqueous liquid;

(b) combining a buffer with said aqueous gel in an amount sufficient to result in and maintain the pH thereof at a level of about 5 or above at ambient temperature;

(c) combining a zirconium IV-containing crosslinking compound with said aqueous gel in an amount sufficient to result in the delayed crosslinking of said gel;

(d) combining carbon dioxide with the aqueous gel mixture formed in step (c) in an amount in the range of from about 5% to about 96% by volume of the aqueous gel mixture and carbon dioxide; and

(e) introducing the resulting aqueous gel mixture and carbon dioxide into said subterranean formation whereby said aqueous gel mixture is heated by said formation and thereby caused to crosslink in said formation and said formation is fractured therewith.

4,799,551

ENHANCED OIL RECOVERY

Sándorné Bauer, Nagykanizsa; Zoltán Biró , Zalaegerszeg; Sándor Doleschall; Éva Farkas, both of Budapest; Gyula Milley, Nagykanizsa; Tibor Paál, Nagykanizsa; Antal Szittár, Zalaegerszeg; György Tiszai; Géza Udvardi, both of Nagykanizsa, and József Pásy, Budapest, all of Hungary, assignors to Magyar Szenhidrogenipari Kutato-Fejleszto Intezet, Szazhalombatta, Hungary

Continuation of Ser. No. 899,657, Aug. 25, 1986, abandoned. This application Sep. 4, 1987, Ser. No. 94,014

Claims priority, application Hungary, Aug. 29, 1985, 3260/85

Int. Cl.[4] E21B *43/22, 43/24*

U.S. Cl. 166—303 **5 Claims**

1. A process for the enhanced recovery of oil from oil bearing strata with gaseous or liquid form of carbon dioxide, the improvement which comprises prior to or simultaneously with the injection of carbon dioxide, injecting into the strata in a single slug or in a plurality of slugs a material consisting essentially of at least one compound which has a clay-effect inhibiting cation with a hydrated ion diameter of from about 0.136 to about 0.15 nm and a coordination number of 12, in a concentration of from about 0.001 mol to about 50 mol.

4,799,552

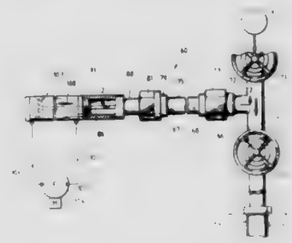
METHOD AND APPARATUS FOR INJECTING RADIOACTIVE TAGGED SAND INTO OIL AND GAS WELLS

Elick H. Acree, Webster, Tex., assignor to Gulf Nuclear, Inc., Webster, Tex.

Filed Jul. 9, 1987, Ser. No. 71,402

Int. Cl.[4] E21B *43/00;* **G01V** *5/00*

U.S. Cl. 166—305.1 **5 Claims**



1. An injection system for injecting radioactive tagged sand into fluids used in hydraulic well fracturing, or acidizing, operations of an earthen formation penetrated by a well bore, the fluid being pumped under pressure through piping into the well bore and earthen formation by a high pressure pump located on the surface of the earth, comprising:

means for forcing the radioactive tagged sand into the piping, the forcing means being disposed between the well bore and the high pressure pump, the forcing means including means for containing the radioactive tagged sand, wherein the forcing means includes a piston having a force transmitting surface in contact with the radioactive tagged sand, and the container means includes a mating cylinder having open ends, with a first end in communication with the piping and a second end receiving the force transmitting surface of the piston of the forcing means;

the forcing means and container means are disposed within a housing;

means for equalizing the pressure between the piping, the forcing means, and the container means, wherein the pressure equalizing means includes at least one flow path in communication between the piping and surface of the piston which is not in contact with the radioactive tagged sand, and the at least one flow path is disposed between the housing and the cylinder of the container means, whereby the radioactive tagged sand may be readily injected into the fluids in the piping without the necessity of overcoming the high pressure present in the piping, and the radioactive tagged sand will not contaminate the high pressure pump.

3. A method for injecting radioactive tagged sand into fluids used in hydraulic well fracturing, or acidizing, operations of an earthen formation penetrated by a well bore, the fluid being pumped under pressure through piping into the well bore and earthen formation by a high pressure pump located on the surface of the earth, comprising the steps of:

forcing the radioactive tagged sand from a means for containing the radioactive tagged sand, which is disposed between the well bore and the high pressure pump, into the piping;

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suspending the radioactive tagged sand in a gel, whereby the sand may be easily forced from the container means into the piping; and

equalizing the pressure between the piping and the container means, whereby the radioactive sand may be readily injected into the fluids in the piping without the necessity of overcoming the pressure present in the piping, and the radioactive tagged sand will not contaminate the high pressure pump.

4,799,553

PETROLEUM SULFONATE ADJUVANTS IN EPOXY RESIN CORROSION-INHIBITING COMPOSITION

Yulia Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 917,750, Oct. 10, 1986, Pat. No. 4,749,042, which is a division of Ser. No. 749,366, Jun. 27, 1985, abandoned, which is a division of Ser. No. 298,444, Sep. 1, 1981, abandoned. This application Apr. 14, 1988, Ser. No. 181,475

Int. Cl.[4] F21B *41/02*

U.S. Cl. 166—310 **15 Claims**

1. A method for treating the downwell metal surfaces comprising:

injecting a composition comprising an epoxy resin, a polyamine, a petroleum sulfonate and a hydrocarbon diluent into the downwell environment of a gas or oil well wherein said downwell environment is characterized by the presence of at least one of the following:

(a) hydrogen sulfide

(b) carbon dioxide

(c) organic acids

(d) water having a high electrolyte concentration

(e) high temperature and high pressure and allowing the composition to contact the downwell metal surfaces for a time sufficient to form a corrosion-inhibiting film thereon.

4,799,554

PRESSURE ACTUATED CLEANING TOOL

Timothy D. Clapp, Kenai, Ak., and William H. McCormick, Plano, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 37,176, Apr. 10, 1987, abandoned. This application Dec. 11, 1987, Ser. No. 131,847

Int. Cl.[4] E21B *37/00*

U.S. Cl. 166—312 **14 Claims**

1. Apparatus for cleaning flow conductors comprising:

a. first mandrel means and second mandrel means with a longitudinal flow passageway extending through each;

b. means for connecting one end of the first mandrel means to a source of cleaning fluid;

c. the second mandrel means slidably disposed within the first mandrel means and a portion of the second mandrel means extending from the other end of the first mandrel means;

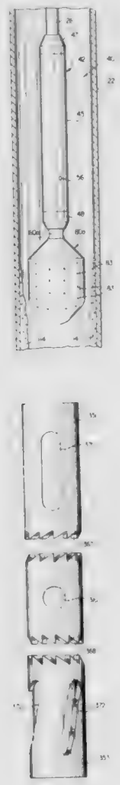
d. means for rotating the second mandrel means relative to the first mandrel means in response to fluid pressure changes within the longitudinal flow passageway;

e. means for attaching a cleaning tool to the portion of the second mandrel means extending from the first mandrel means;

f. piston means attached to the second mandrel means;

g. one side of the piston means exposed to fluid pressure within the longitudinal flow passageway and the other side of the piston means exposed to fluid pressure exterior to the first mandrel means whereby fluid pressure on the one side of the piston means will move the second mandrel means longitudinally to a further extended position relative to first mandrel means;

h. means for biasing the second mandrel means to retract from its further extended position; and



i. means for translating longitudinal movement of the second mandrel means into rotational movement.

4,799,555

CHISEL PLOW MOUNTING ASSEMBLY

Carl L. Badger, 8548 N. Elyria Rd., West Salem, Ohio 44287

Filed Jan. 28, 1987, Ser. No. 7,711

Int. Cl.[4] A01B *23/02*

U.S. Cl. 172—751 **6 Claims**

1. A mounting assembly for attaching a chisel plow share or the like to a plow standard, comprising:

(a) a first bracket releasably mounted over the projecting end of the standard with a portion of said bracket surrounding the standard and a portion thereof engaging a forward surface thereof;

(b) a second bracket movably and releasably mounted on the standard and engaging the rear surface thereof;

(b') a mounting support member secured to the share;

(c) first attachment means carried by said first bracket for releasable engagement with the mounting support member,

(d) second attachment means carried by said second bracket for releasable engagement with the mounting support member;

(e) first locking means for rigidly interconnecting said first bracket and the standard; and

(f) second locking means carried by the second bracket and being movable between locking and unlocking positions



by drawing said second bracket upwardly along the standard for locking said share to the standard.

4,799,556

DRILLING BOOM

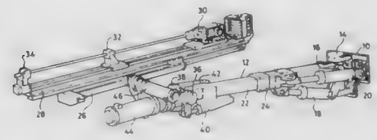
Bruce A. Foster, Retford, and Raymond Hedges, Worksop, both of United Kingdom, assignors to The Steel Engineering Co., Ltd., Roodepoort, South Africa

Filed Apr. 1, 1987, Ser. No. 32,636

Claims priority, application United Kingdom, Apr. 2, 1986, 8607997

Int. Cl.[4] E21C *5/00, 9/00*

U.S. Cl. 173—43 **7 Claims**



1. A drilling boom, comprising:

an arm articulated at one end on a carrier which stands on a floor;

a mounting for a drill feed beam articulated at the opposite end of said arm and offset to one side of said arm, said arm and said mounting being arranged so that a drill on a mounted drill feed beam can drill sufficient holes in a rock face, including holes at floor level; and

a roll-over unit between said mounting and said opposite end of said arm which allows said mounting to roll about a first axis which, in face drilling, will be parallel to the length of a drill on the mounted drill feed beam, said mounting including a rotation unit for rotating said drill feed beam through substantially 180° about a second axis offset from said first axis and perpendicular to the length of a drill on the mounted drill feed beam so that a drill on the mounted drill feed beam can operate in two mutually opposite directions.

4,799,557

ELECTROMAGNETIC PILE DRIVER

Georges Jacquemet, Caluire, France, assignor to Martelec - Societe Civile Particuliere, Caluire, France

Filed Apr. 17, 1986, Ser. No. 853,357

Claims priority, application France, Apr. 29, 1985, 85 06871

Int. Cl.[4] B25D *13/00*

U.S. Cl. 173—91 **22 Claims**

1. An electromagnetic impact pile driver adapted to drive an elongated element into the ground in a substantially vertical orientation, said electromagnetic pile driver comprising:

an upright vertically elongated body having a vertical channel;

an electromagnetic coil fixedly mounted on said body and surrounding said channel;

means for periodically storing a predetermined amount of electrical energy;

means for periodically applying said amount of electrical energy to said coil so that, for each application, said coil is traversed by a high energy current pulse and passes successively, under the effect of said current pulse, to an energized state and thereafter to a de-energized state;

a mobile electromagnet core having an upper end and forming an impact mass guided in said channel, said core being positioned with respect to said coil so as to be electromagnetically attracted and lifted in a direction opposite to the



elongated element at a predetermined levels, against gravity, in said energized state, and thereafter to free fall by gravity in said de-energized state, said upper end being located above said coil at said predetermined level;

means for controlling the amount of electrical energy stored and applied to said coil to vary said predetermined level to which said core is lifted with each of said energized states; and

a pile-driving anvil axially mobile with respect to the elongated body and adapted to be positionable on said elongated element, to receive an impact from said core in said de-energized state of the coil and to transfer this impact to said elongated element with sufficient energy to drive said element into the ground and to produce a significant displacement of this element.

4,799,558

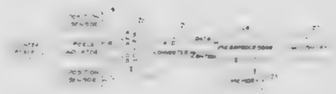
DIGITAL LOAD SHIFT COMPENSATION

Neil C. Griffes, Westerville, Ohio, assignor to Toledo Scale Corporation, Worthington, Ohio

Filed Jun. 12, 1987, Ser. No. 61,273

Int. Cl.[4] G01G *19/40, 3/14, 21/24*

U.S. Cl. 177—25.14 **21 Claims**

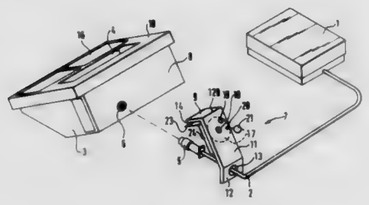


1. Weighing apparatus compensated for load position comprising a counterforce, transducer means on said counterforce for producing outputs representing the magnitudes of loads applied to said counterforce, load position sensing means mounted on said counterforce to produce outputs representing the positions in at least one of two mutually transverse direc-

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tions of loads applied to said counterforce, means for storing a mathematical expression for load compensated for load position as a function of load position and magnitude, and means for utilizing said expression and said load position outputs and said load magnitude outputs to provide load indications independent of the positions in at least said one direction of the loads applied to said counterforce.

4,799,559
MEASURING APPARATUS
Herbert Mürdter, Albstadt, and Adolf Ast, Meanstetten, both of Fed. Rep. of Germany, assignors to August Sauter GmbH, Albstadt, Fed. Rep. of Germany
Filed Mar. 24, 1988, Ser. No. 172,442
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1987, 3709717
Int. Cl.⁴ G01G *23/02*
U.S. Cl. 177—124 **20 Claims**



1. In a measuring apparatus including a sensor producing an output signal as a digital value directly representing the measured quantity and its units of measure, a separate readout device for the measured quantity disposed physically remote from the sensor, a signal line connecting the sensor to the readout device for conducting the output signal to the readout device, a visual display on the readout device for displaying the measured quantity and its units of measure, and an identification plate for displaying the technical measurement parameters of the sensor, the improvement wherein;

the identification plate is releasably mounted on the readout device; and

a connecting member is provided unremovably linking said identification plate to the sensor.

4,799,560
PORTABLE MAILING SCALE
Yukoh Kobayashi, 1118 S. Lake St., Apt. 8, Los Angeles, Calif. 90006
Filed Sep. 14, 1987, Ser. No. 95,762
Int. Cl.⁴ G01G *19/56, 1/02*
U.S. Cl. 177—148 **20 Claims**

1. A balanced weight-scale, comprising:

a body;

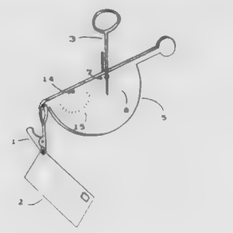
means for supporting said body in the air, while providing a fulcrum around which said body can rotate freely according to the gravitational force;

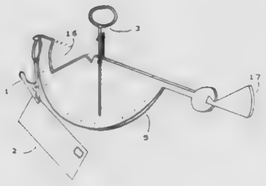
means for holding an object to weigh at one side of said body;

a legend whereon the weight of said object can be read; and

a pointer for pointing the weight of said object on said legend;

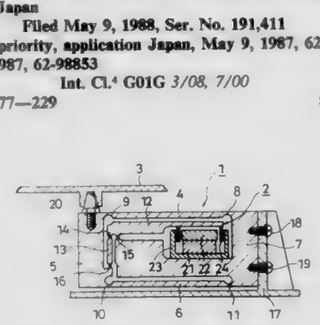
wherein said pointer is loosely fixed to said means for supporting the body of the scale when in use, whereby the zero-position of said pointer relative to said legend can be adjusted by

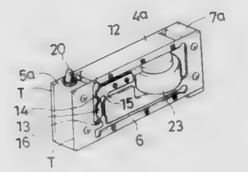




changing the pointing direction of said pointer at the fixed point.

4,799,561
ELECTRONIC BALANCE
Akira Komoto, Otsu, Japan, assignor to Shimadzu Corporation, Kyoto, Japan
Filed May 9, 1988, Ser. No. 191,411
Claims priority, application Japan, May 9, 1987, 62-113133; Jun. 26, 1987, 62-98853
Int. Cl.⁴ G01G *3/08, 7/00*
U.S. Cl. 177—229 **5 Claims**





1. An electronic balance comprising:

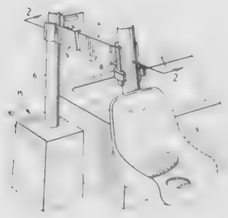
a weighing pan;

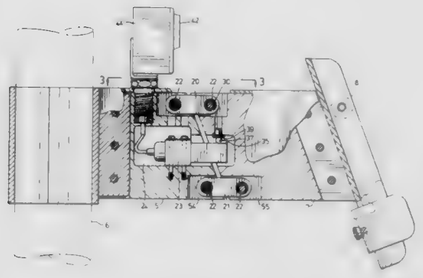
an electronic weight sensing means; and

a force transmitting means for transmitting a force due to a weight loaded on said weighing pan to said electronic weight sensing means, said force transmitting means being constituted in one metallic body from which are integrat-

edly cut out a Roberval mechanism, a lever and a connecting portion connecting said lever to said Roberval mechanism.

4,799,562
CANTILEVER WEIGHING APPARATUS
Donald L. Burrows, Utopia, and Edward J. Milne, Markham, both of Canada, assignors to Everest & Jennings Canadian Limited, Concord, Canada
Filed Dec. 24, 1987, Ser. No. 137,568
Int. Cl.⁴ G01G *3/08, 19/52*
U.S. Cl. 177—229 **41 Claims**





1. A cantilever arm weighing apparatus, comprising:

a first arm portion attached to a support structure;

a second arm portion attached to the first arm portion by two linkage members disposed in parallel one above the other, said linkage members being positioned within forks formed in the first and second arm portions;

means for attaching to the second arm portion a support an object to be weighed;

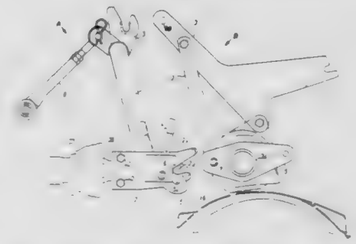
a load cell attached to the first arm portion and extending from the first arm portion to the second arm portion;

bearing means coacting with the load cell and the second arm portion for receiving a load from the second arm portion and transmitting it to the load cell; and

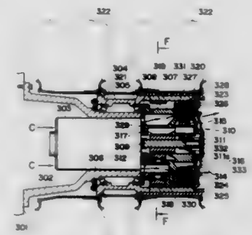
a readout device attached to the load cell, the device providing a readout in response to a load being applied to the load cell through the bearing means.

4,799,563
DEVICE FOR MOUNTING AN IMPLEMENT ON A TRACTOR
Hiroyasu Yukino, Chaya, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan
Filed Nov. 6, 1987, Ser. No. 117,581
Int. Cl.⁴ B60K *25/00*
U.S. Cl. 180—14.4 **5 Claims**

1. A device for mounting an implement on a tractor wherein a body of the tractor is provided with an upwardly and downwardly movable hitch having an upper hitch link and two horizontally spaced lower hitch links and an implement having attachment means for attachment to said upper hitch link and said spaced lower hitch links, characterized in that a drive shaft associated to the hitch and drivingly connected to a PTO shaft of the tractor is supported in substantial horizontal alignment with and substantially intermediate said lower hitch links by said hitch and is operable to transmit a power to an input shiaft of the implement through shaft coupling means.



4,799,564
ELECTRIC WHEEL DRIVE
Katsuhiko Iijima, and Kazuo Itami, both of Sagamihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan
Filed Jan. 27, 1987, Ser. No. 7,009
Claims priority, application Japan, Jan. 29, 1986, 61-15746; Mar. 20, 1986, 61-63049; Mar. 20, 1986, 61-63051; Mar. 24, 1986, 61-65150
Int. Cl.⁴ B60K *7/00*
U.S. Cl. 180—65.5 **3 Claims**



1. An electric wheel drive, comprising a drive housing having an interior side facing the wheeled body and an opposite exterior side facing away from the wheeled body, a drive motor in said drive housing having a drive shaft facing said exterior side, a second stage star-type reduction gear and a first stage planetary reduction gear connected to said drive shaft and located adjacent said exterior side, a hub surrounding said drive housing, bearing means rotatably supporting said hub located adjacent said motor closer to said interior side than said first and second stages, and a pressure-oil pump for lubrication directly mounted to a sun gear of said planetary reduction gear coupled to said drive shaft.

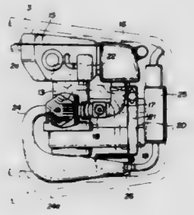
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4,799,565

FUEL SUPPLY SYSTEM FOR OFF-ROAD VEHICLE

Akio Hasuo; Eiji Hosoya; Kousei Mizumoto; Makoto Ishiwatari, and Takanori Okuma, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1987, Ser. No. 113,236
Claims priority, application Japan, Oct. 23, 1986, 61-162962[U]; Oct. 24, 1986, 61-253348; Oct. 24, 1986, 61-253349; Oct. 27, 1986, 61-255051; Oct. 27, 1986, 61-255052
Int. Cl.⁴ B60K *15/02*
U.S. Cl. 180—69.4 **13 Claims**



1. A fuel supply system in an off-road vehicle including a vehicle frame, front and rear wheels mounted on front and rear portions of the vehicle frame and having wide tires, respectively, an engine mounted on the rear portion of the vehicle frame, and an exhaust pipe extending from the engine and disposed on one side of the engine transversely of the vehicle frame, said fuel supply system comprising:

a fuel tank assembly disposed on the other side of said engine transversely of the vehicle frame and forwardly of a drive shaft of said rear wheels; and

an air cleaner case disposed rearwardly of said fuel tank assembly ;

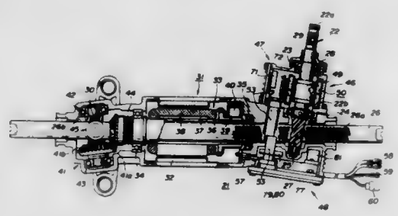
said engine being disposed adjacent to said drive shaft of said rear wheels, and the vehicle frame comprises a pipe frame.

4,799,566

MOTOR-OPERATED POWER STEERING APPARATUS

Yusuo Shimizu, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1988, Ser. No. 146,662
Claims priority, application Japan, Jan. 22, 1987, 62-13459
Int. Cl.⁴ B62D *5/04*
U.S. Cl. 180—79.1 **5 Claims**



1. A motor-operated power steering apparatus comprising:

a steering force transmitting a manual steering force applied to a steering wheel to a steerable road wheel;

an electric motor for generating assistive power;

an auxiliary power transmitting mechanism for transmitting the assistive power generated by said electric motor to said steering force transmitting mechanism;

motor control means for controlling operation of said electric motor in response to the manual steering force;

first direction detecting means disposed in said steering force transmitting mechanism for detecting the direction of said manual steering force and generating a signal indicative of said direction of the manual steering force;

second direction detecting means for detecting the direction of the assistive power generated by said electric motor and generating a signal indicative of said direction of the assistive power;

ascertaining means for ascertaining whether the direction of the manual steering force and the direction of the assistive power are the same as each other based on the signals from said first and second direction detecting means; and

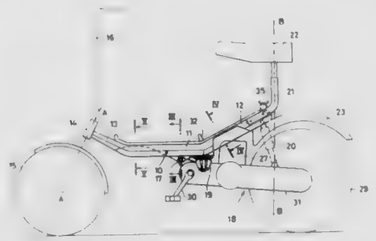
assistive power interrupting means for de-energizing said motor when the direction of the manual steering force and the direction of the assistive power are different from each other.

4,799,567

FRAME MOPED

Bruno Gaddi, Viale Giovanni Pisano, 60, 56100 Pisa, Italy

Filed Oct. 19, 1987, Ser. No. 109,765
Claims priority, application Italy, Oct. 24, 1986, 23480/86[U]
Int. Cl.⁴ B62K *11/00*
U.S. Cl. 180—205 **7 Claims**



1. A moped comprising a beam-type frame having a substantially horizontal central portion, to one end of which there is connected a hub support that carries the articulation of the front-wheel fork, and the other end of which extends rearwardly and diagonally upwardly at an angle of less than 45° to the horizontal thereby to form an inclined rear portion carrying at its upper end support elements for a saddle and a rear mudgard, the central portion having a generally flat upper surface adapted, as a result of its width and length, to constitute a footrest, and said inclined rear portion also having a generally flat upper surface approximately equal in size to that of said central portion, whereby as a result of its dimensions and inclination at an angle of less than 45°, said inclined portion is adapted selectively to constitute either a luggage carrier or a second footrest.

4,799,568

FRONT COVER FOR MULTI-WHEELED VEHICLES

Koichi Tanaka, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 894,350, Aug. 7, 1986, abandoned. This application Dec. 22, 1987, Ser. No. 136,533
Claims priority, application Japan, Aug. 7, 1985, 60-120999[U]; Oct. 4, 1985, 60-221588; Oct. 4, 1985, 60-221515
Int. Cl.⁴ B62J *17/06;* **B60K** *11/02*
U.S. Cl. 180—219 **12 Claims**

1. A multi-wheeled vehicle including a frame having a head pipe, a steering mechanism operatively mounted to said head pipe and connecting a handlebar to a vehicle front wheel, a headlight mounted on said frame for directing light forwardly of said head pipe, and a vehicle front cover attached to said frame, said vehicle front cover comprising:

a front panel overlying said front wheel;

a windshield positioned forwardly of said steering mechanism;

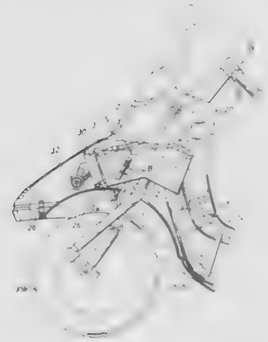
a light-pervious cover interposed between said front panel and said windshield forwardly of said headlight;

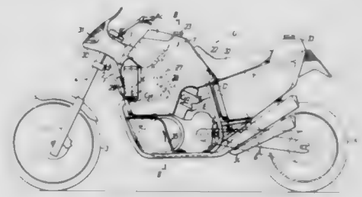
said front panel, said windshield and said light cover each being upwardly and rearwardly inclined to define substantially aerodynamically continuous surface means spaced forwardly of said frame;

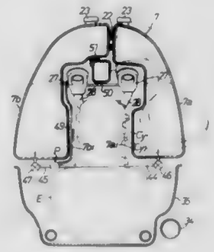
oppositely spaced side panels extending from lateral sides of said front panel, windshield and light cover to form an enclosure enclosing said head pipe, steering mechanism and said headlight;

means forming an instrument panel positioned forwardly of said steering mechanism and extending between said side panels, said means containing an opening accommodating passage of said steering mechanism; and

a removable rear panel interposed between said handlebar and said steering mechanism forming a barrier restricting air flow from said enclosure.







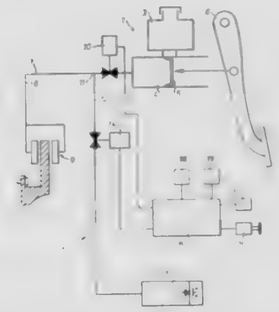
carburetor for the engine, said left and right side sections being connected together at upper parts thereof by hinge means such that at least one of the side sections is pivotable upwards around said hinge means.

4,799,570

ARRANGEMENT IN VEHICLE HYDRAULIC SERVICE BRAKE SYSTEMS

Lars Andersson, Sandbyberg, and Bengt Kamph, Stockholm, both of Sweden, assignors to Autostop AB, Lidingo, Sweden

Filed Oct. 22, 1986, Ser. No. 921,455
Claims priority, application Sweden, Oct. 22, 1985, 8504977
Int. Cl.⁴ B60K *28/00, 19/02;* **B60T** *7/12*
U.S. Cl. 180—275 **12 Claims**



1. In a vehicle having a hydraulic brake circuit in which a master cylinder is connected to wheel brakes of the vehicle for applying pressurized hydraulic fluid to the vehicle wheel brakes upon depression of a brake pedal of the vehicle, an arrangement for applying the vehicle wheel brakes when an obstacle is encountered in the path of the vehicle, said arrangement comprising:

means for detecting an obstacle in the path of the vehicle,

a hydraulic pressure accumulator linked to said hydraulic brake circuit by way of valve means, said valve means

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4,799,569

MOTORCYCLE

Shigeru Hattori, Tokyo, and Toshimitsu Asakura, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1986, Ser. No. 899,063
Claims priority, application Japan, Aug. 23, 1985, 60/185196; Oct. 7, 1985, 60/223097; Oct. 16, 1985, 60/230853
Int. Cl.⁴ B62J *35/00*
U.S. Cl. 180—219 **9 Claims**

1. A motorcycle comprising a body frame, an engine on the body frame and a fuel tank carried on and straddled over a main frame of the body frame, said main frame extending longitudinally of the body of the motorcycle, wherein said fuel tank is divided into left and right side sections which are hung down to a position sideward of a cylinder of the engine and a

having a normal condition for connecting said master cylinder to said wheel brakes and to said hydraulic pressure accumulator such that depression of said brake pedal causes application of the wheel brakes and hydraulic fluid pressure build up in said hydraulic pressure accumulator, and a second condition for preventing back-flow of hydraulic fluid into said master cylinder and connecting said hydraulic pressure accumulator to said wheel brakes such that the wheel brakes are applied by pressurized hydraulic fluid from said hydraulic pressure accumulator, and

control means responsive to said obstacle detecting means for switching said valve means from said normal condition to said second condition.

4,799,571

MOTOR VEHICLE TRANSMISSION MOUNTING SYSTEM

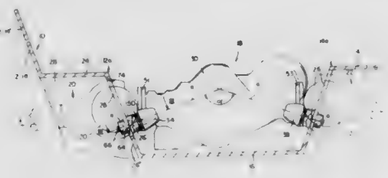
Stefan Bopp, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 9, 1987, Ser. No. 106,225

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1986, 3637522

Int. Cl.[4] B60K *5/04, 17/22*

U.S. Cl. 180—294 **21 Claims**



1. A motor vehicle axle transmission mounting system wherein a transmission is located within a trough-shaped self-supporting bodywork chassis between vehicle bodywork side walls located between driven wheels of a vehicle axle having independent wheel suspensions, wherein the axle transmission is secured solely by acceptance element means which are engaged in socket means of casing part means of the axle transmission and wherein said accepting element means are secured outside of the bodywork side walls and extend through openings therein, and wherein the casing part means are located between the bodywork side walls.

4,799,572

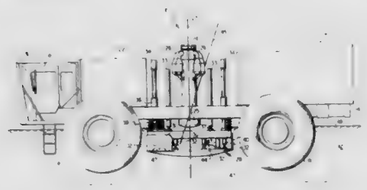
AMPHIBIOUS SEISMIC SOURCE

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 11, 1987, Ser. No. 48,332

Int. Cl.[4] G01V *1/04*

U.S. Cl. 181—114 **9 Claims**



1. Apparatus for generating seismic waves in the earth comprising:

(a) a transport vehicle adapted for navigation in a fluid environment;

(b) a target plate;

(c) a lift means adjustably secured between the vehicle and the target plate for alternately raising the target plate for transport and lowering the target plate to an impact position wherein the target plate is in continuous contact with a desired subsurface of such fluid environment;

(d) an impact mass;

(e) actuator means carried on the vehicle in operative engagement with the impact mass for propelling the impact mass from a firing position along a downward path to collide with the target plate in such impact position and for thereafter returning the impact mass to such firing position;

(f) resilient means interposed between the lift means and the target plate so as to provide limited freedom of movement to the target plate relative to the lift means along the downward path against the subsurface responsive to the collision between the target plate and the impact mass and for limiting upward movement of the target plate with respect to the lift means; and

(g) extensive fluid-barrier means secured between the vehicle and the target plate so as to isolate the space between the impact mass and the target plate from the fluid environment while accommodating the operation of the lift means and such limited movement of the target plate.

4,799,573

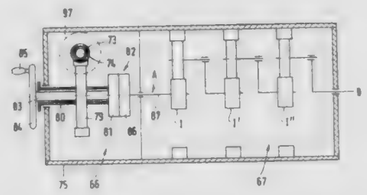
ADJUSTABLE PERSONNEL PLATFORM

Andrej Simnovec, Recklinghausen; Bernhard Meinken, Haltern, and Friedrich Schwing, Herne, all of Fed. Rep. of Germany, assignors to Friedrich Wilh Schwing GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 565,114, Dec. 23, 1983, abandoned. This application Oct. 2, 1987, Ser. No. 105,961

Int. Cl.[4] B66F *11/04*

U.S. Cl. 182—2 **7 Claims**



1. Apparatus for mounting an adjustable personnel platform to the end of the boom means of a lift device for maintaining the platform in a horizontal orientation over a wide range of movement of said boom means, said apparatus comprising:

a carrying arm (42) supporting the adjusting personnel platform (38);

a reversible motor (97);

a speed changing drive (66,67) mounted on the end of the boom means and interposed between said motor (97) and said carrying arm for rotating said carrying arm and platform with respect to the boom means by means of said motor, said drive having a worm gear input stage (66) driven by said motor (97), said input stage driving a planetary gear output stage (67) through a plurality of direction controlling couplings (81, 86) that arrest the rotation of the carrying arm (42) in both directions of rotation and that permit rotation of the carrying arm (42) in a respective one of the rotary directions of said motor (97) when driven in such direction by said motor; and

control means having inclination sensing means (92) for sensing the orientation of the platform, said control means being coupled to said motor for energizing same responsive to the sensed orientation of the platform.

4,799,574

LUBRICATION DEVICE

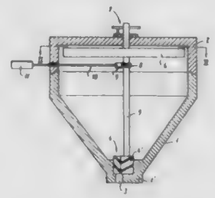
Johan C. M. Bras, Tricht, Netherlands, assignor to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

Filed Jun. 12, 1987, Ser. No. 61,696

Claims priority, application Netherlands, Jun. 25, 1986, 8601666

Int. Cl.[4] F16N *7/38*

U.S. Cl. 184—27.1 **5 Claims**



1. A device for controllably supplying a lubricant to a mechanism, comprising a container for holding a quantity of lubricant and having a first end and a second end opposite to the first end, said container having at its second end a discharge channel for the lubricant, and means for controllably expelling lubricant from the container through the discharge channel, said expelling means comprising:

a rotatably-mounted shaft extending within the container from the first to the second end and being accessible outside of the container first end,

a displacement pump wholly within the container adjacent the second end, said pump having a rotary part mounted in the discharge channel, said shaft at the container second end being drivingly coupled to the displacement pump such that rotation of the shaft in one direction causes rotation of the rotary part and expulsion of lubricant,

a spiral spring mounted within the container and having one end fixed to the container and its other end fixed to the shaft and when coiled by winding up in a direction opposite to said one direction being capable of rotating the shaft in the said one direction,

means connected to the shaft for releasably locking the shaft against rotation in the said one direction,

means on the outside of the first end of the container and connected to the shaft for coiling the spring in said opposite direction, said spring when coiled causing the shaft to rotate in said one direction when the shaft is unlocked, and

means accessible externally to the container and connected to the locking means for selectively unlocking and releasing the shaft whereby the coiled spring causes the shaft to rotate expelling lubricant by the action of the rotary part of the displacement pump through the discharge channel.

4,799,575

HYDRAULICALLY CONTROLLED DISK BRAKE WITH SERIAL FLUID FLOW

Wilhelm Kroniger, Friolzheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 3, 1987, Ser. No. 116,154

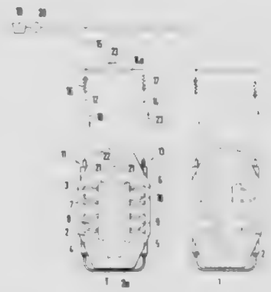
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1986, 3640056

Int. Cl.[4] F16D *55/02, 65/14, 65/78*

U.S. Cl. 188—71.6 **10 Claims**

1. A hydraulically controlled disk brake of a motor vehicle having a plurality of hydraulically actuable brake pistons that are arranged in a caliper and are guided in a plurality of respective cylinders, said brake comprising:

duct means for continuously and serially leading brake fluid from an inlet to a first of said plurality of cylinders and on to the last of said plurality of cylinders and from there to an outlet opening; and



first and second check valve means for said inlet and said outlet openings, one said check valve means being arranged in front of said first cylinder and another said check valve means being arranged behind said last of said cylinders.

4,799,576

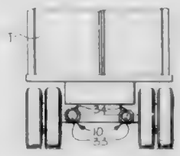
PROTECTIVE DEVICE TO PREVENT PROJECTION OF A HEAVY COILED SPRING AWAY FROM AN AIR BRAKE HOUSING

Timothy D. Walker, Wilkesboro, and Steven A. Dancy, Millers Creek, both of N.C., assignors to Carl Livingston Dancy, Sr., Millers Creek, N.C.

Filed Jun. 30, 1987, Ser. No. 68,624

Int. Cl.[4] F16D *63/00;* **F16F** *9/00, 1/06;* **F01B** *19/00*

U.S. Cl. 188—84 **6 Claims**



1. In a wheeled vehicle such as a tractor pulled trailer equipped with an air brake having an elongate housing generally disposed lengthwise of the trailer and containing a transversely disposed diaphragm in a medial portion thereof with air pressure communicating with the front side of the diaphragm and a heavy coiled spring positioned in opposition to the air pressure on the rear side of the diaphragm, the combination therewith of a protective device mounted adjacent to and rearwardly of said housing so as to be in the path of said coiled spring in the event of rupturing of the housing, as from corrosion, and releasement of the spring therefrom, to prevent the spring from being projected rearwardly away from the housing, and wherein said protective device includes a transversely disposed body portion and mounting means extending alongside of opposite sides of said body portion.

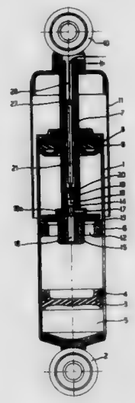
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4,799,577

TELESCOPIC HYDRAULIC SHOCK ABSORBER WITH TEMPERATURE SENSITIVE WIRE TO CONTROL DAMPING

Christian B. de Carbon, 64 Boulevard Maurice Barrés, F-92200 Neuilly-sur-Seine, France

Filed Feb. 17, 1987, Ser. No. 15,294
Claims priority, application France, Feb. 18, 1986, 86 02188
Int. Cl.⁴ F16F *9/52, 9/46;* **G05D** *15/00;* **F16K** *31/00*
U.S. Cl. 188—277 **9 Claims**



1. A telescopic hydraulic shock absorber with controlled damping, comprising a cylinder containing a reciprocable piston connected to an end of a hollow piston rod, the piston having at least one restricted flow passage, an elastic flap on the piston for controlling the flow passage, the piston having a further flow passage, a remote-controlled axially movable shut-off means associated with the further passage for controlling the flow of hydraulic fluid to pass from one side of the piston to the other during piston movement, a pusher rod connected to said shut-off means, actuating means located within said hollow piston rod and connected to said pusher rod for controlling the axial movement thereof, said actuating means comprising an elongate member axially movable within said hollow piston rod and connected at one end to said pusher rod, a stop having an opening and being fixed to said piston rod, said actuating member extending through the stop opening, an elongated wire of metallic memorizing material and capable of changing the length thereof at a predetermined conversion temperature, one end of said wire being connected to said stop such that a change of length of said actuating member extending through the stop opening controls the shut-off means.

4,799,578

APPARATUS FOR PREVENTING HEAT DAMAGE IN AN ELECTROMAGNETIC CLUTCH

Takashi Matsushita, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Feb. 3, 1987, Ser. No. 10,466
Claims priority, application Japan, Feb. 3, 1986, 61-14356; Feb. 28, 1986, 61-29875
Int. Cl.⁴ F16D *27/10*
U.S. Cl. 192—84 C **13 Claims**

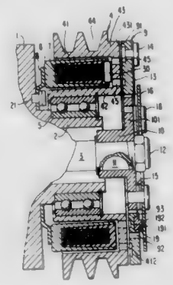
10. An electromagnetic clutch comprising:

a first rotatable member formed of magnetic material and rotatably supported on a bearing, said first rotatable member having an axial end plate member forming an axial end surface;

a second rotatable member comprising an armature plate formed of magnetic material and facing the axial end surface of said first rotatable member with a predetermined axial air gap therebetween;

an electromagnetic device disposed within said first rotatable member and associated with said first rotatable member for attracting said armature plate into contact with said axial end surface to transmit torque between said first rotatable member and said second rotatable member;

disconnecting means for disconnecting said electromagnetic device in response to the temperature of said electromagnetic clutch to separate said axial end surface and said armature plate so that torque cannot be transferred therebetween; and



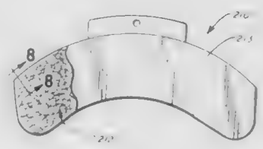
increasing means for increasing the size of said axial air gap in response to predetermined temperature of said electromagnetic clutch such that said electromagnetic device will be unable to attract said armature plate to said axial end surface if said disconnecting means reconnects said electromagnetic device.

4,799,579

CLUTCH AND BRAKE FRICTION ASSEMBLY AND METHOD OF MAKING SAME

Paul A. Myers, 2807 Country Club Rd., and Charles O. Jensen, 608 Indian Springs, both of Crawfordsville, Ind. 47933

Filed Nov. 18, 1985, Ser. No. 798,979
Int. Cl.⁴ F16D *69/04*
U.S. Cl. 192—107 M **3 Claims**



1. A clutch and brake friction assembly suitable for use on heavy duty vehicles such as over-the-highway trucks and the like comprising

(a) a metallic shoe having an exposed continuous planar backing surface;

(b) a first lamina overlying said backing surface and comprising a multitude of metallic fibers agglomerated in overlapping fashion and metallurgically fused to one another and to said backing surface so as to form a plurality of interstices and a multitude of protuberances outwardly-extending from said backing surface; and

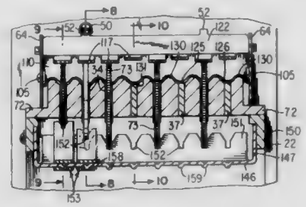
(c) a second lamina of friction material overlying said first lamina, juxtaposed portions of said second lamina filling said interstices and being mechanically interlocked with the outwardly-extending protuberances so as to secure said second lamina to said first lamina and said backing surface.

4,799,580

COIN CHUTE CONSTRUCTION

Mitchell A. Hall, Ft. Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.

Division of Ser. No. 623,574, Jun. 22, 1984, Pat. No. 4,640,405.
This application Nov. 10, 1986, Ser. No. 928,878
Int. Cl.⁴ *G07F 5/06*
U.S. Cl. 194—235 **9 Claims**



1. In a coin chute construction for a dispensing machine which requires at least one coin of predetermined size and valuation to initiate one operation of said machine for one item of goods or service, said construction comprising, a support body, a slider supported on said body for reciprocation in a rectilinear path between a fully retracted inoperative position and a fully advanced operative position thereof, at least one pocket in said slider for receiving said coin, said pocket being defined by surface means for supporting said coin so that upon moving said slider toward said operative position said coin is moved therewith to a test position and then toward said operative position, test means at said test position for testing said coin for acceptability as to valuation and genuineness and when acceptable allowing full movement of said slider to said operative position enabling said slider to initiate said one operation of said machine, means operative upon failure of said coin to satisfy the test provided by said test means at said test position to preclude said full movement to said operative position, and providing means for providing movement of said coin away from and then back toward said rectilinear path during movement of said slider from said inoperative position to said test position, said providing means comprising baffle means and cooperating yieldable spring means, the improvement in which said support body comprises a mounting plate, said baffle means has a first convoluted control surface, said slider comprises a second convoluted control surface spaced a precise close distance away from said first control surface while still allowing unobstructed reciprocation of said slider, said second convoluted surface meshes precisely with said first convoluted surface, and said convoluted surfaces serve to prevent shims from being used effectively to bypass the function of said test means.

4,799,581

APPARATUS FOR LOADING SPARE WHEELS ON VEHICLE BODIES

Hiroshi Fujii, Higashihiroshima, Japan, assignor to Mazda Motor Corporation, Japan

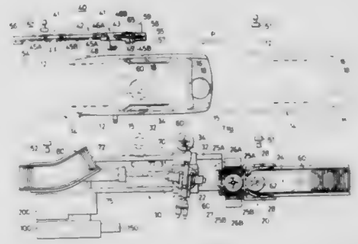
Filed Nov. 18, 1987, Ser. No. 122,184
Claims priority, application Japan, Nov. 19, 1986, 61-177987[U]
Int. Cl.⁴ B65G *43/00*
U.S. Cl. 198—341 **8 Claims**

1. An apparatus for loading a spare wheel on a vehicle body comprising;

a carrier for supporting and transporting the vehicle body including a hanger mounted on a conveyor of the overhead type for continuously conveying said vehicle body by said hanger.

a robot operating under predetermined working conditions to load the spare wheel on a predetermined portion provided in the vehicle body supported and transported by said carrier,

speed detecting means including a movable mechanism including an engaging means for temporarily engaging with said hanger on the vehicle body conveying device to move together with the carrier and for detecting a speed



of transportation of the vehicle body based on a speed of movement of the movable mechanism, said engaging means comprising a pair of engaging arms each provided with an end portion for contacting said hanger, said engaging arms facing each other with a portion of said hanger between respective end portions of said engaging arms upon engagement with said hanger,

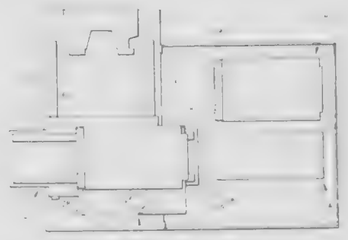
robot moving means for shifting said robot along a direction of transportation of the vehicle body at a speed determined in response to the speed of transportation of the vehicle body detected by said speed detecting means.

4,799,582

PALLET EXCHANGING APPARATUS FOR MACHINE TOOL

Saburo Itoh, Fukui, Japan, assignor to Matsuura Machinery Corporation, Fukui, Japan

Filed Aug. 12, 1987, Ser. No. 85,033
Claims priority, application Japan, Feb. 23, 1987, 62-037843
Int. Cl.⁴ B65G *47/00*
U.S. Cl. 198—346.1 **1 Claim**



1. A pallet exchanging apparatus for a machine tool in which the pallet loaded with the machined workpieces and placed on the table of said machine tool is exchanged with the pallet loaded with the workpieces to be machined and placed at the waiting position, comprising a transmission device connected to either of the table and the means for driving said table and adapted to output rotational movement and a speed-up device connected to said transmission device and adapted to provide

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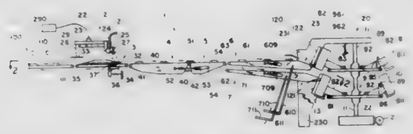
said pallet with the linear movement with higher speed and larger stroke than those of the linear movement of said table, said transmission device comprising a rack secured to a stationary member, an output gear operatively connected to said rack and a shaft rotatably and axially movably operatively supported by said table for supporting said output gear and for connecting with said speed-up device and said speed-up device comprising a lever arm secured to said output shaft and a roller supported by said lever arm and being engageable with the pallet.

4,799,583

AUTOMATIC DIRECT SOFT COOKIE LOADING APPARATUS

William J. Simelunas, Glen Rock; Henry N. Shofket, Rutherford, and Celso Espejo, Chatham, all of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 682,244, Dec. 17, 1984, Pat. No. 4,662,152.
This application Sep. 30, 1986, Ser. No. 913,845
Int. Cl.[4] B65G *47/26*
U.S. Cl. 198—418.1 **16 Claims**



1. An apparatus for handling lightweight articles comprising:

an accumulator station which receives articles, said accumulator station including a means for selectively releasing articles, whereby columns of articles are formed, a means for conveying articles from said means for selectively releasing articles, a means for conveying articles to said means for selectively releasing articles, a plenum located adjacent the means for selectively releasing articles and for directing air only on a foremost article in a column to force the foremost article downwardly against the means for conveying articles and to prevent hopping of the article over said means for selectively releasing articles, and a means for sensing articles accumulated by said means for selectively releasing articles;

whereby articles are selectively released to said means for conveying articles from said means for selectively releasing articles and air is directed on said lightweight articles to prevent bouncing or hopping relative to the means for conveying articles.

4,799,584

DRIVE MECHANISM FOR BUCKET ELEVATORS

Hendrik Hartsuiker, Clifton, N.J., and Dorcel W. Knapp, Fults, Ill., assignors to Continental Grain Company, New York, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,229
Int. Cl.[4] B65G *17/36, 23/44*
U.S. Cl. 198—709 **19 Claims**

1. A bucket elevator, for lifting a granular bulk material, having a material input point and a material discharge point above said material input point comprising,

a cylindrical head pulley mounted for rotation near said discharge point;

a cylindrical boot pulley mounted for rotation near said input point;

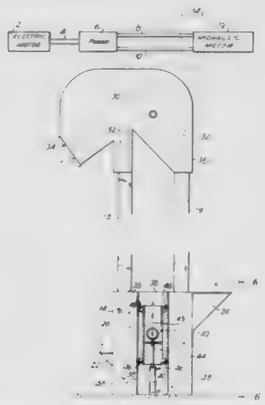
a boot housing enclosing said boot pulley;

a flexible belt entrained about said head pulley and said boot pulley;

a plurality of buckets attached to said belt;

a hydraulic drive motor mounted within said boot pulley for rotationally driving said boot pulley;

a pump fluidically connected to said hydraulic drive motor, wherein said pump is situated near ground level away from said bucket elevator outside said boot housing; and



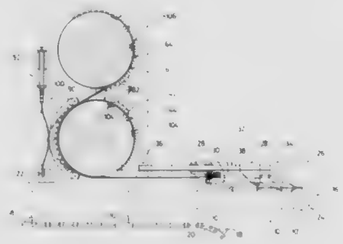
an electric drive motor connected to drive said pump, wherein said electric drive motor is situated near ground level away from said bucket elevator outside said boot housing.

4,799,585

CONVEYOR DEVICE FOR WORKPIECES

Peter Gysi, Bellikon, Switzerland, assignor to ELPATRONIC AG, Switzerland

Filed Jan. 2, 1987, Ser. No. 57,330
Int. Cl.[4] B65G *25/00*
U.S. Cl. 198—743 **10 Claims**



1. A conveyor device workpiece having

a catch carrier (**28**, **28'**) which is reciprocal along a guide (**32**),

at least one conveying catch (**30**) which is pivotably mounted on the catch carrier (**28**, **28'**), and

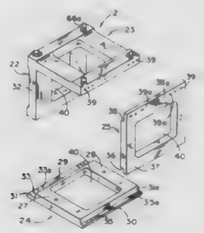
a transmission which connects the catch carrier (**28**, **28'**) to a rotary drive, characterized in that the transmission comprises at least one sheave (**44**, **64**) having a central axis and being reversibly rotatable in opposite directions about the axis means for reversibly rotating the at least one sheave about said central axis, and at least one flexibly resilient band (**42**, **62**) which is secured by one of its ends to the sheave, it wrapped partially around the sheave to move with the reversible rotations of the sheave and is secured by its other end to the catch carrier of the sheave and is catches whereby the carrier or catches are moved backward and forward on the guide with the reversible sheave rotations.

4,799,586

WORKPIECE SUPPORT FOR AUTOMATED TOOLING

Carl R. Kutzli, Highland, and James D. Rutter, Garden City, both of Mich., assignors to Agnew Machine Company, Highland, Mich.

Continuation-in-part of Ser. No. 637,861, Aug. 6, 1984, Pat. No. 4,598,816. This application May 7, 1986, Ser. No. 860,457
The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—803.01 **7 Claims**



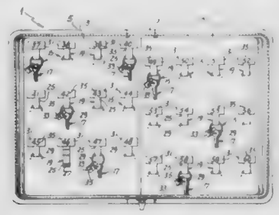
1. A fixture for supporting work pieces for automated machining, said fixture being cuboidal in shape and providing tool access on a plurality of sides, said fixture having a rigid primary body member having a pair of legs arranged at right angles to each other and forming two panels of the fixture; a second body member forming a third panel of said fixture; a third body member forming a fourth panel of said fixture; means detachably connecting said second and third body members to each other and to said primary body member for reinforcing said primary body member; work holder clamping means mounted on the inner face of one of the panels of said primary body member adjacent one edge thereof; work holder stop means mounted on the inner face of the same panel and adjacent an edge thereof opposite from said clamping means; said clamping means and stop means being the only means of locating and anchoring a workpiece to the fixture; locating and indexing means mounted on the exterior face of each of the legs of said primary body member and providing the only locating and positioning means for the fixture, said locating and indexing means being precisely spaced from the geometric center of the cuboidal fixture, said stop means being precisely located with respect to said locating and indexing means.

4,799,587

STORAGE CASE FOR KEYS WITH PLURAL VELCRO RETAINERS

David A. Desanto, 2205 Lydia Pl., Vienna, Va. 22180

Filed Jun. 17, 1986, Ser. No. 875,224
Int. Cl.[4] A45C *11/00*
U.S. Cl. 206—37.6 **5 Claims**



1. An improved storage case for keys comprising:

(a) a pair of rectangular members hinged together for pivotal movement between open and folded positions;

(b) means for securing the members in the folded position;

(c) each member including an internal support surface;

(d) a plurality of vertically and horizontally spaced retainers nondetachably secured to each support surface, each retainer for detachably securing an individual key holder;

(e) an individual key holder for detachable connection to each retainer;

(f) each retainer being defined by an elongate strap including a first end attached to the support surface and a free second end, and cooperating Velcro means carried by the first and second ends for permitting their overlapping detachable connection to define a loop for receiving and supporting the separate key holder, whereby the key holder may be quickly secured to or separated from the retainer through connection and disconnection of the first second ends; and

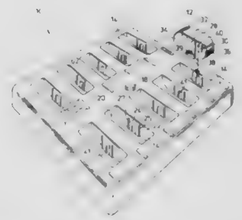
(g) first indicia means carried by each retainer and second indicia means carried by each separate key holder for permitting visual identification and correlation of each separate key holder with respect to its corresponding retainer.

4,799,588

PRESENTATION OR DISPLAY BASE

Klaus Trisl, Wiesbaden, Fed. Rep. of Germany, assignor to Uhrenhandelsgesellschaft mbH, Hamburg, Fed. Rep. of Germany

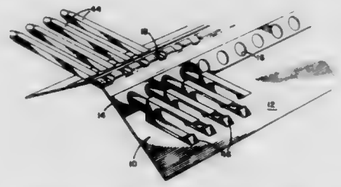
PCT No. PCT/EP86/00025, § 371 Date Oct. 1, 1986, § 102(e) Date Oct. 1, 1986, PCT Pub. No. WO86/04796, PCT Pub. Date Aug. 28, 1986
PCT Filed Jan. 23, 1986, Ser. No. 942,417
Claims priority, application European Pat. Off., Feb. 21, 1985, 85101879.6
Int. Cl.[4] B65D *1/34*; A47F *7/024*
U.S. Cl. 206—301 **21 Claims**



1. A presentation base having a plurality of recesses in the top surface thereof to receive objects, each recess having an internal wall, wherein each said object at least partially surrounds a display holder for mounting in one of said recesses, each display holder having a holding surface to hold said objects for display, said holding surface defined between a pair of edges, at least one projecting section depending from one of said edges, a guideway formed on the internal wall of at least one said recess, said projecting, depending section adapted to fit into a respective guideway, at least one sliding element beneath said top surface of said base, said sliding element adapted to interact with said at least one of said projecting, depending sections, whereby, when said object is arranged on said holding surface and said display holder is inserted in said recess, said object cannot be removed from the display holder.

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4,799,589
RESILIENT ELECTRONIC BANDOLIER CARRIER STRIP AND METHOD OF USING THE SAME
Anthony J. Peleckis, Fairfield, Conn., assignor to Bead Chain Manufacturing Co., Bridgeport, Conn.
Filed Aug. 7, 1987, Ser. No. 83,846
Int. Cl.[4] B65D *85/30*
U.S. Cl. 206—330 44 Claims



1. A bandolier for use in combination with a plurality of pin-like contact elements for facilitating plating and orientation thereof and delivery thereof to automated insertion apparatus comprising:
an elongated strip-like base member of flexible, resilient and non-conductive material with a layer of conductive material on a portion of at least one side thereof, said elongated base member having a plurality of pairs of spaced apertures spaced longitudinally therealong and in position to permit said base member to be flexed around its longitudinal center line to allow a pin-like element to be inserted through a selected pair of said plurality of pairs of apertures and achieve electrical contact with said layer of conductive material.

15. A bandolier for use in combination with a plurality of pin-like contact elements for facilitating plating and orientation thereof and delivery thereof to automated insertion apparatus comprising:
an elongated strip-like member of flexible, resilient material, said elongated member having a plurality of pairs of spaced apertures spaced longitudinally therealong, said plurality of pairs of spaced apertures are arranged in two rows whereby one member from each pair of spaced apertures is aligned in one row and the other member of each pair of spaced apertures is aligned in the other row, said spaced apertures in position to permit said elongated strip-like member to be flexed around its longitudinal center line to allow a pin-like element to be inserted through a selected pair of said plurality of pairs of apertures, said elongated strip-like member is made of a conductive material and has a layer of non-conductive material on at least one side thereof.

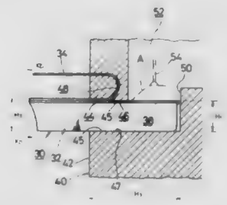
40. A method of preparing pin-like elements for use in an automated insertion apparatus comprising the steps of:
A. providing a bandolier carrier strip comprised of an elongated strip-like base member of flexible, resilient and non-conductive material with a layer of conductive material on a portion of at least one side thereof, said elongated base member having a plurality of pairs of spaced apertures spaced longitudinally therealong and in position to permit said base member to be flexed around its longitudinal center line to allow a pin-like element to be inserted through a selected pair of said plurality of apertures and achieve electrical contact with said layer of conductive material;
B. flexing at least a portion of said bandolier around its longitudinal center line to generally align a selected one of said pairs of apertures;
C. providing a pin-like element for insertion into said selected one of said pairs of apertures;
D. inserting said pin-like elements through said selected one of said pairs of apertures; and
E. releasing the flex in said base member whereby the natural flexural characteristics of said base member releasably retains said pin-like element in electrical contact with said layer of conductive material.

4,799,590
PACKAGE AND METHOD OF PACKAGING
Theodore J. Furman, 1935 Wenonah Ave., Berwyn, Ill. 60402
Filed Feb. 2, 1987, Ser. No. 9,763
Int. Cl.[4] B65D *83/04*
U.S. Cl. 206—390 9 Claims



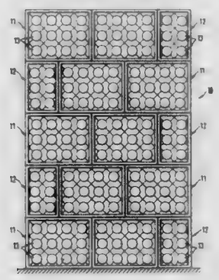
1. A package, comprising:
a base portion formed of a semi-rigid material so as to be self-supporting, said base portion having a plurality of receptacles each of which is individually separably joined to all adjacent receptacles by a connecting rim flange, said receptacles being disposed in a plurality of columns and rows in said base portion;
said receptacles each having an opening defined by said connecting rim flange and extending from said connecting rim flange on one side thereof;
a cover portion joined to said base portion for entirely covering said receptacle openings, said cover portion including a plurality of cover segments disposed in a plurality of columns and rows;
said cover segments each cooperating with said connecting rim flange of one of said receptacles, said cover segments each being individually separably joined to all adjacent cover segments;
each of said receptacles and cover segments defining a self-contained package unit, said receptacles and cover segments together defining a multi-unit package comprised of a plurality of said self-contained package units disposed in a plurality of rows and columns, each of said self-contained package units being individually separably joined to all adjacent self-contained package units;
said multi-unit package being disposed in a reverse-folded position such that said receptacles extend interiorly thereof in confronting relation with said cover portion facing exteriorly thereof such that remote rows of said receptacles are in closely adjacent relation;
each of said receptacles being tapered so as to be generally wedge-shaped for disposing said multi-unit package in said reverse-folded position, each of said receptacles being defined in part by a pair of tapered side walls joined by a bottom wall;
said receptacles in each of said columns being disposed with corresponding ones of said tapered side walls in common planes, said receptacles in adjacent ones of said columns being disposed with adjacent ones of said tapered side walls in planes intersecting substantially at the corresponding ones of said bottom walls and said bottom walls of adjacent ones of said receptacles being disposed in intersecting planes, said receptacles in each of said rows being disposed with adjacent edges of said bottom walls in abutting relation; and
means integrally associated with said cover portion for maintaining said multi-unit package in said reverse folded position as said self-contained package units are removed one-by-one one row at a time from said multi-unit package.

4,799,591
SHEET FILM PACKAGE AND METHOD AND DEVICE FOR LOADING SHEET FILM
Kenji Tajima, and Noboru Arai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 12, 1986, Ser. No. 906,471
Claims priority, application Japan, Sep. 12, 1985, 60-202441; Sep. 12, 1985, 60-202442; Sep. 20, 1985, 60-209762
Int. Cl.[4] B65D *81/30*
U.S. Cl. 206—455 15 Claims



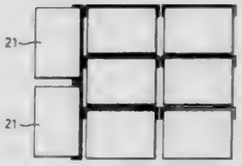
1. A sheet film package comprising:
a tray for storing a stack of sheet films, said tray having a film access opening; and
a flexible cover member peelably attached to said tray in covering relation to said film access opening for shielding the sheet films in said tray from extraneous light, wherein said cover member includes at a distal end a peeling off portion for engaging with a cover member peeling passage defined in an image recording apparatus, the arrangement being such that said cover member is peeled off said tray from said peeling off portion as said tray is inserted into said cover member peeling passage.

4,799,592
STACKABLE CRATES OF SYNTHETIC MATERIAL FOR BOTTLES, ESPECIALLY WINE BOTTLES
Gustav-Adolf Hessmert, Lüdenscheid, Fed. Rep. of Germany, assignor to Gustav Hessmert KG, Lüdenscheid, Fed. Rep. of Germany
Filed Nov. 30, 1983, Ser. No. 556,438
Int. Cl.[4] B65D *21/02, 1/24*
U.S. Cl. 206—504 8 Claims



1. A system of stackable crates of synthetic material for bottles, especially wine bottles, comprising a plurality of crates each having compartmental subdivisions each adapted for accommodating one bottle, each crate having opposing first supporting surfaces on opposite end walls for stacking the crates in superimposed arrangement in a vertical position, each crate further having second supporting surfaces at at least two opposite side walls for stacking the crates in a horizontal position, each compartment having portions of elastically deformable material adapted to engage a bottle wall at circumferentially spaced intervals, characterized in that two sizes of crates are provided, the outer periphery of smaller crates being half the length but the same width as the greater ones, the second supporting surfaces of the smaller crates each having interlocking means formed thereon, the second supporting surfaces of each of said greater crates each having pairs of interlocking means, one positioned contiguous to the outer periphery of said second supporting surfaces, the other spaced inwardly towards the center of said second supporting surface, the interlocking means of said pairs being spaced apart a distance equal to the spacing of the interlocking means of the smaller crates and configured to interlock with the interlocking means of the smaller crates so that the stacked crates are interlocked with each other to be restrained against relative horizontal movement and so that the smaller crates may respectively be supported on the supporting surfaces of both halves of either of the opposing side walls of the greater crates and the greater crates may respectively be stacked in a horizontal position while being respectively offset from each other by half a length.

4,799,593
PACKAGING CONSTRUCTION
Jack Lawrence, Longfield, England, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands
Filed Apr. 29, 1986, Ser. No. 856,983
Claims priority, application United Kingdom, Apr. 29, 1985, 8510849
Int. Cl.[4] B65D *85/30*
U.S. Cl. 206—585 7 Claims



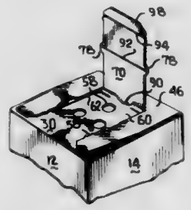
1. A pallet load or other assembly of secondary packs each comprising a single base panel terminating in a free front edge, a single vertical panel, having a free top edge, connected to the base panel by a fold line between the rear edge of the base panel and the bottom edge of the vertical panel, and two vertical flanges, each having one free side edge and free top and bottom edges, each directly connected to opposite side edges of said vertical panel by a fold line extending along a respective side edge of said vertical panel and a respective side edge of a vertical flange, said vertical flanges each having a side-to-side width between said free side edge and respective fold line side edge over at least part of the their top-to-bottom height less than the front-to-rear depth of said base panel, said pack being made of compressive load-bearing material so that said vertical panel and vertical flanges combine to resist deformation under vertical load, wherein each said secondary pack is filled with a group of primary packages and said packs are disposed in the assembly in tiers so that within each tier, the vertical panel of each secondary pack of a substantial number of said packs is adjacent the free front edge of the base panel of the next pack, the vertical panels and flanges of said secondary packs in a given tier combining to support the packs in the next tier with at most only partial reliance on load bearing by said primary packages.

4,799,594

VENDING AND RECLOSURE DEVICE FOR POWDER AND GRANULAR PRODUCTS

Stephen M. Blackman, Westmont, Ill., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 930,400, Nov. 14, 1986, Pat. No. 4,706,875. This application Oct. 26, 1987, Ser. No. 112,235
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] B65D *5/08, 5/16, 5/72*
U.S. Cl. 206—626 14 Claims



1. A resealable container comprising inner and outer panels disposed in overlapping relation, said inner panel defining a dispensing opening, said outer panel having formed therein a closure flap overlying said dispensing opening, said outer panel having spaced side edges, said closure flap being positioned between said outer panel side edges in spaced relation to said side edges, said closure flap having side edges and ends, said closure flap side edges being defined by lines of weakening, each of said lines of weakening being generally in the form of a straight line having an arcuate intermediate portion projecting transversely towards an adjacent one of said outer panel side edges, one of said ends being defined by a fold line and the other of said ends being separable from said outer panel, whereby said closure flap may be partially separated from and hinged relative to said outer panel to uncover said dispensing opening upon completely rupturing said outer panel along said lines of weakening, said arcuate intermediate portions of said lines of weakening defining along each side edge of said closure flap a projection having a curved outline, and said inner panel having a cut line therein underlying and being generally aligned with each of said lines of weakening with the exception of said arcuate intermediate portions, said cut lines defining on said inner panel shoulders behind which said closure flap projections are engageable in the resealing of said container.

4,799,595

APPARATUS FOR THE CLASSIFYING OF POWDERED BULK MATERIALS

Ulrich Binder, Ennigerloh, Fed. Rep. of Germany, assignor to O&K Orenstein & Koppel Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 944,342
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545691
Int. Cl.[4] B07B *4/00*
U.S. Cl. 209—135 4 Claims

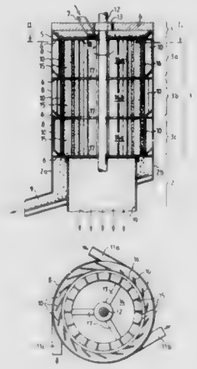
1. An apparatus operative with fine and course material for the classifying of powdered bulk materials, particularly ground clinker, limestone or cement raw material, by air sifting, the apparatus comprising

a material inlet, a cylindrical rotor having vertical rotor blades and a cover plate, a stationary vane ring spaced apart from and surrounding the rotor, a fan located outside of the rotor, a pipe for discharging fine material from the rotor, a separating device located down stream of the discharge pipe, a coarse material discharge for discharging coarse material from the rotor, said rotor and said vane ring defining a sifting space; and wherein

the material to be classified is fed via the material inlet to the cover plate of the cylindrical rotor and is charged into said sifting space, said sifting space having the shape of a cylindrical ring, which space extends between the rotor and the stationary vane ring, a bottom portion of said housing including a receiving ring disposed beneath and mating with said sifting space for receiving course material, said receiving ring encircling said fine material discharge pipe, said course material discharge extending from said receiving ring;

the sifting air is drawn-in through the sifting space approximately tangentially to a cylindrical surface thereof by the fan so that fine material contained in the material charged is conveyed, as a result of suction action which results from a difference between hydrostatic pressure of the fan and a radially outward directed hydrostatic pressure of the rotor;

the sifting air is drawn into the inside of the rotor, discharged through the pipe vertically downward and fed subsequently to the separating device for the separation of



fine material and sifting air, while coarse material descends in the sifting space and is discharged via the housing ring and the coarse material discharge;

the apparatus further comprises a cylindrical housing which encloses the rotor and receives the vane ring; and

the rotor and the cylindrical housing an the vane ring is assembled from a plurality of axial sections disposed one upon the other in axial alignment, the sifting space communicating between individual ones of said sections, there being at least one tangential air inlet connection operatively coupled to said housing at each said section; and wherein

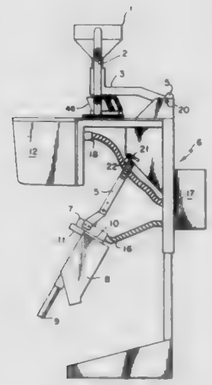
guide vanes of the vane rings of each section are arranged vertically, are each directed at the same acute angle to a respective tangent to a cylindrical surface of the housing, and each successive vane is constructed with a width which increases in the direction of flow, said cover plate being mounted on an uppermost one of said sections, and the sifting air is drawn in via the air inlet in each said section.

4,799,596

PROCESS AND APPARATUS FOR CONTROLLING A SORTING MACHINE

Jos P. Mallant, Hamburg, Fed. Rep. of Germany, assignor to Justus Technik GmbH Industrie-Anlagen, Hamburg, Fed. Rep. of Germany

Filed Mar. 10, 1987, Ser. No. 24,081
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1986, 3614400
Int. Cl.[4] B07C *5/342*
U.S. Cl. 209—580 18 Claims



1. Apparatus for sorting a product based on reflected light, comprising:

photoelectric means for receiving light reflected from said product and providing an output signal having value corresponding to a light level of said reflected light, wherein said photoelectric means includes a plurality of channels for parallel processing said product, each channel including a phtodetector for receiving light reflected from a corresponding product and for providing an output signal having a value corresponding to a light level of said reflected light;

a comparator for receiving said output signal from said photoelectric means and comparing it with a predetermined range of values, and for providing an eject signal when the value of said output signal is outside said predetermined range of values, wherein said comparator compares each one of the plurality of output signals from the plurality of photodetectors with a corresponding predetermined range of values from a plurality of predetermined range values;

a microprocessor, downstream from said comparator, for receiving said eject signal and providing an eject command corresponding thereto, wherein said microprocesor provides an eject command to eject means which eject the product whose corresponding output signal value is outside the corresponding predetermined range of values;

multiplexer means for receiving said plurality of output signals and providing a multiplexed signal corresponding thereto;

a sample and hold circuit coupled to said multiplexer means;

an analog-to-digital converter coupled to said sample and hold circuit;

a latch buffer coupled to said analog-to-digital converter, and providing an output said comparator; and

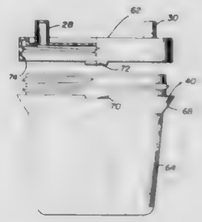
a serial-to-parallel converter coupled to said multiplexer means and to said comparator.

4,799,597

CONTAINER AND NON-REMOVABLE COVER

Ronald A. Mayes, San Anselmo, Calif., and Tipton A. Golias, Beaumont, Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Division of Ser. No. 12,900, Feb. 10, 1987, Pat. No. 4,736,859.
This application Dec. 4, 1987, Ser. No. 128,616
Int. Cl.[4] B65D *41/04*
U.S. Cl. 215—250 8 Claims



2. A container comprising:

a beaker having a body portion, said body portion including an upper periphery;

a cover having a top portion, said top portion including a downwardly extending skirt;

first inter-engaging means unitarily formed in said cover and second inter-engaging means unitarily formed on said beaker;

said second inter-engaging means formed on said beaker including a shoulder extending about said periphery, said shoulder including at least one indentation and further wherein said second inter-engaging means formed in said beaker includes formed threads about said periphery and above said shoulder;

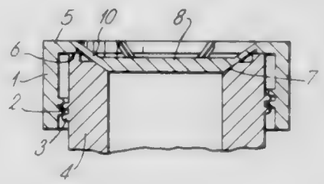
said first inter-engaging means formed in said cover including at least one boss extending downwardly from said skirt, said first inter-engaging means formed in said cover further including formed threads interior of said skirt and adapted to mate with the formed threads about the upper periphery of said beaker, said boss engagable with the at least one indentation so that said cover becomes non-removable without damage to said beaker and said cover when said cover is connected with said beaker.

4,799,598

SELF-SEALING CLOSURE

Robert C. McFadyen, Chester, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 118,681, Nov. 9, 1987, abandoned. This application Jun. 13, 1988, Ser. No. 206,984
Claims priority, application United Kingdom, Nov. 10, 1986, 8626765
Int. Cl.[4] B65D *51/16*
U.S. Cl. 215—260 10 Claims



1. A self-sealing container closure adapted to close an open-

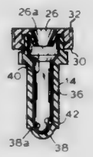
ing in a container, comprising a securing portion having a skirt, fastening means on the skirt which co-operates with fastening means on the container to secure the closure over the container opening, an inwardly extending flange at one end of the skirt and a sealing plug biased to a first position to seal the container and moveable to a second open position in a plane parallel to the first position, the plug being inwardly spaced from the flange to form a gap there between, a plurality of flexible spoke-like webs extending across the gap and attached at opposite ends to the plug and flange, the overall length of each of the webs being at least equal to the maximum distance between respective attachments as the plug moves between the first and second positions, the webs resiliently urging the plug from the second position to the first position.

4,799,599

SPECIMEN CUP AND CAP ASSEMBLY FOR CLINICAL ANALYZER

Raymond J. Herrmann, Westlake, Ohio, assignor to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Jul. 30, 1982, Ser. No. 404,477
Int. Cl.[4] B65D *51/16*
U.S. Cl. 215—307 18 Claims



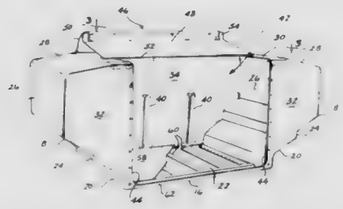
1. A specimen cup and cap assembly for a clinical analyzer apparatus comprising a strip-like cap formed as an arcuate strip segment, in plan, having a plurality of generally vertically extended spaced openings therethrough spaced lengthwise of said strip segment and in generally evenly spaced relation between the sides thereof, a plurality of separate specimen cups, and means on said cap and on each said cups for releasably attaching said cups to said cap as an assembly, whereby each of said openings provide access to the interior of a respective one said cups from exteriorly of said cap, said openings being adapted to provide access for an automatic probe of an associated clinical analyzer apparatus.

4,799,600

BAGGAGE AND CARGO CONTAINER

Erwin T. Gann, Seattle; John M. Bigler, Redmond, and Patrick J. Hamill, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 20, 1987, Ser. No. 39,701
Int. Cl.[4] B65D *87/14*
U.S. Cl. 220—1.5 22 Claims



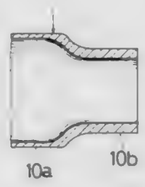
1. In a baggage and cargo container for storing baggage and cargo, the container having a bottom, a plurality of rigid sidewalls, and a top, the improvement comprising a region of said plurality of rigid sidewalls that horizontally circumscribes the container being weaker than the remainder of said sidewalls and, thus, collapsible while the remainder of said sidewalls are not collapsible when the container is subjected to a predetermined vertical compressive load.

4,799,601

TRANSLUCENT ALUMINA CERAMIC TUBE AND A PROCESS FOR MAKING SAME

Shunzo Shimai; Yoshio Saito; Yawara Ando, and Takashi Koseki, all of Togane, Japan, assignors to Toshiba Ceramics Co., Ltd., Japan

Filed Apr. 11, 1983, Ser. No. 483,697
Claims priority, application Japan, Apr. 26, 1982, 57-68665
Int. Cl.[4] C04B *35/64*
U.S. Cl. 220—21 R 6 Claims



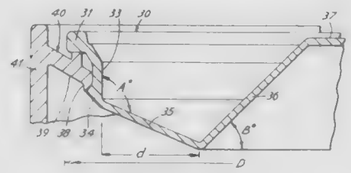
1. A lamp tube comprising: an elongated, tubular monolithic body of translucent alumina ceramic, said elongated tubular body having a central portion and end portions of diameter smaller than said central portion, said tube being produced by drain casting and having substantially the same wall thickness over its entire length.

4,799,602

PLUG LID FOR A CONTAINER

Malcolm G. Collins, Oxon, and Adrien P. Rayner, Wiltshire, both of England, assignors to Metal Box p.l.c., United Kingdom

Filed Mar. 30, 1988, Ser. No. 175,439
Claims priority, application United Kingdom, Apr. 8, 1987, 8708428
Int. Cl.[4] B65D *39/00*
U.S. Cl. 220—307 9 Claims



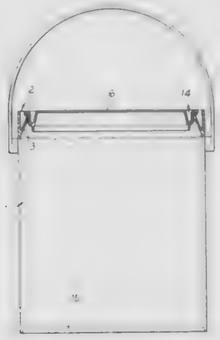
1. A plug lid for fitting in an aperture in a container, said plug lid comprising a peripheral flange, a plug wall extending from the inner periphery of the flange, a retaining bead protruding laterally from the plug wall at a distance from the flange, an annular portion extending inwardly from the plug wall, a frustoconical portion extending axially and inwardly from the annular portion to support a central panel in or near the plane of the peripheral flange, characterised in that, the annular portion joins the inside of the plug wall adjacent the retaining bead and extends inwardly and axially at an obtuse angle to the plug wall in the range 95° to 120° to join directly to the periphery of the frustoconical portion.

4,799,603

CONTAINER AND PLUG CLOSURE MEANS

Henryk Dudzik, Mansfield, United Kingdom, assignor to Mardon Illingworth Limited, Nottinghamshire, United Kingdom

Filed Nov. 23, 1987, Ser. No. 123,778
Claims priority, application United Kingdom, Nov. 28, 1986, 8628468
Int. Cl.[4] B65D *39/00*
U.S. Cl. 220—307 11 Claims



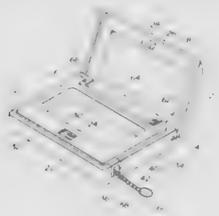
1. An injection molded container having a base, a side wall, an annular skirt within the side wall and defining the container mouth, the skirt being adapted to receive as a plug-fit a lid for the container, a lid received by the skirt in a plug-fit manner, a peripheral flange extending inwardly from the side wall and joined at one end to said side wall and its approximate end to said skirt, with the skirt being a continuation of the flange towards the mouth of the container, the flange extending from the side wall to the skirt in a direction towards the mouth at an oblique angle to the side wall as viewed in cross-section, said skirt having a radially extending convex, annular portion adapted to engage a complementary curved portion of the container lid.

4,799,604

VANITY CASE

Sumio Okojima, Inba, and Yukitomo Yuhara, Abiko, both of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1987, Ser. No. 81,733
Int. Cl.[4] A45D *40/00*; B65D *45/00*
U.S. Cl. 220—260 15 Claims



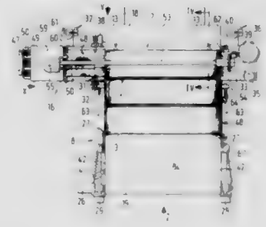
1. A vanity case comprising:
a box-like receptacle member;
a cover member hinged at the rear end thereof with said receptacle member;
a first latch member;
a second latch member formed on said cover member and adapted to engage with said first latch member whereby said cover member is maintained in a closed position with respect to said receptacle member; and
unlatch means movably secured in said receptacle member and including a pull member having an end portion extending beyond the wall of said receptacle member, and said unlatch means also including means for, upon movement thereof by drawing said pull member, releasing engagement between said first and second latch members.

4,799,605

MAGAZINE ASSEMBLY FOR LABELS OR THE LIKE IN A LABELING MACHINE

Hermann Kronseder, Regensburger Strasse 42, D-8404 Wörth/Donau, Fed. Rep. of Germany

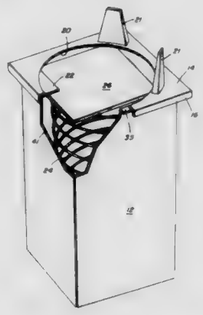
Continuation of Ser. No. 824,648, Jan. 31, 1986, abandoned. This application Sep. 11, 1987, Ser. No. 97,323
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1985, 3503621; Jul. 13, 1985, 3525035; Oct. 11, 1985, 3536294
Int. Cl.[4] B65H *1/30*
U.S. Cl. 221—11 40 Claims



1. A magazine assembly for supplying labels to a labeling machine comprising a main magazine for holding a supply of labels in a stack, first feed means for feeding the labels from the main magazine to a take-out location, a support connected to the main magazine for holding a supply magazine containing a stack of labels in alignment with said main magazine, second feed means for feeding the labels from an aligned supply magazine on the support to the main magazine, said support having an entry opening along one longitudinal side thereof for receiving full replaceable supply magazines and an exit opening for discharging empty supply magazines, a supply magazine feed device disposed adjacent said entry opening for supplying full replaceable supply magazines to said support, said feed device including a slideway extending laterally outwardly from the opening side of the support in a direction transverse to the label feed direction and the longitudinal side of the support, said slideway adapted to hold a plurlaity of full supply magazines in side-by-side and contacting relationship with one another, means for continuously feeding said full supply magazines while in said relationship along the slideway toward and onto said support in a direction transverse to the label feed direction, said magazine feeding means comprising a pair of pusher arms slideably mounted on either side of the slideway for displacement in the direction of movement of said magazines along the slideway and pivotally mounted between a position where each arm engages an end of the outermost supply magazine and a retracted position and drive means for moving said pusher arms toward and away from said entry opening, means for ejecting empty supply magazines from said support and stop means located on the longitudinal side of the support opposite from said opening side to arrest and align a full supply magazine on the support with the main magazine.

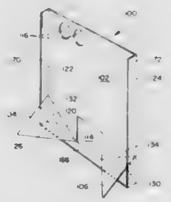
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4,799,606
DISH DISPENSING DEVICE
Daniel R. Vershbow, West Newton, Mass., assignor to Servolift-/Eastern Corporation, Boston, Mass.
Filed Aug. 3, 1987, Ser. No. 80,975
Int. Cl.[4] A47F *1/04*
U.S. Cl. 221—280 **4 Claims**



1. In a dispenser of individual ones of a stack of generally horizontally disposed articles, the combination of means for continuously biasing said stack of articles in a vertically upward direction toward an opening, stop means comprising a strip of flexible plastic material disposed atop said dispenser and having a surface overlying a portion of said opening and in contact with a selected first rim portion of the topmost one of said articles and normally maintaining similar selected first rim portions of said articles in close contact one with another, second rim portions of said articles opposite said selected first rim portions being urged apart by said biasing means, and means for mounting said strip of flexible material for relatively large downward deflection and relatively small upward deflection.

4,799,607
BULKHEAD AND LINING SYSTEMS FOR CARGO CONTAINERS
Victor T. Podd, 255 Beverly Avenue, Montreal, Quebec, Canada
Filed Oct. 16, 1986, Ser. No. 920,030
Int. Cl.[4] B65D *35/22;* **B67D** *3/00*
U.S. Cl. 222—94 **9 Claims**



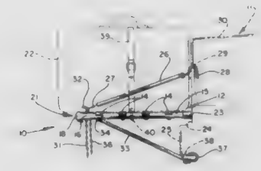
1. A moveable bulkhead comprising:
a rectangular, generally vertical and moveable wall member including
(i) a lower portion,
(ii) an outlet opening in the lower portion to conduct a cargo through the bulkhead, and
(iii) a bottom edge and first and second side edges, the bottom and first side edges forming a first lower corner, and the bottom and second side edges forming a second lower corner;
a first corner member connected to the wall member adjacent to the first lower corner for movement between a closed position wherein the first corner member is adjacent the wall member, and an open position wherein the first corner member slants outwardly downwardly away from the wall member and laterally downwardly from the first side edge and toward the outlet opening to guide the cargo downward thereto; and
a second corner member connected to the wall member adjacent to the second lower corner for movement between a closed position wherein the second corner member is closely adjacent and substantially parallel to the wall member, and an open position wherein the second corner member slants outwardly downwardly away from the wall member and laterally downwardly toward the outlet opening to guide the cargo downward toward the outlet opening; and wherein:
the wall member includes front and back sides;
the first corner member is connected to the front side of the wall member for pivotal movement about a first connecting line, between the open and closed positions of the first corner member;
the second corner member is connected to the front side of the wall member for pivotal movement about a second connecting line between the open and closed positions of the second corner member; and
the bulkhead further comprises
(i) first pulling means connected to the first corner member to pull the first corner member from its closed position to its open position,
(ii) second pulling means connected to the second corner member to pull the second corner member from its closed position to its open position,
(iii) a first access opening located between the first lower corner and the first connecting line to provide access to the first pulling means from the back side of the wall member,
(iv) a second access opening located between the second lower corner and the second connecting line to provide access to the second pulling means from the back side of the wall member,
(v) means to further connect the first corner member to the wall member to releasably hold the first corner member in its open position, and
(vi) means to further connect the second corner member to the wall member to releasably hold the second corner member in its open position.

4,799,608
TONER CARTRIDGE
Seiji Oka, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Sep. 16, 1987, Ser. No. 97,164
Claims priority, application Japan, Sep. 18, 1986, 61-143611[U]
Int. Cl.[4] B65D *25/38*
U.S. Cl. 222—505 **12 Claims**



1. A toner cartridge comprising:
a container storing toner therein and having an opening formed therethrough;
a seal member having a first portion which is stuck to said container to close said opening, and a second portion turned up to extend along and below said first portion;
a take-up means provided in said container for taking up said second portion of said seal member to thereby sequentially tear off said first portion of said seal member, thereby discharging the toner from said container;
a protective cover mounted on said container to be slidable along the opening of said container for protecting said seal member; and
a drive means separate from said take-up means for driving said take-up means in accordance with a sliding movement of said protective cover by an amount sufficient to allow said seal member to be fully removed from said opening of the container.

4,799,609
PORTABLE LUGGAGE CARRIER FOR AUTOMOBILES
Antonio J. Castilla, 3343 Lanarc, Plano, Tex. 75023
Filed Jan. 4, 1988, Ser. No. 141,405
Int. Cl.[4] B60R *9/06*
U.S. Cl. 224—42.07 **10 Claims**



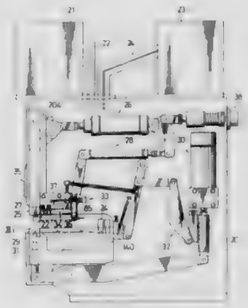
1. A luggage carrier for automobiles that fastens to the car trunk rear rim and the car rear bumper comprising: a generally coplanar carrier platform including a "U" shaped tubular assembly along with a plurality of cross tubes extended between and fastened to opposite side legs of the "U" shaped tubular assembly; resilient bumper pads mounted on front ends of the opposite side legs of the "U" shaped tubular assembly; a plurality of chain elements having forward end hooks that hook over a car trunk rear end rim and hook means connecting chain outer end sections to the rear tubular element of said "U" shaped tubular assembly; and an additional chain length having a front hook connectable to the bottom of said car rear bumper and a rear hook for connection to said rear tubular element of said "U" shaped tubular metal assembly.

4,799,610
CARRYING HOLDER
Wu H. Hsieh, No. 178, Chun-shan Second Road, Lu Chou Hsiang, Taipei Hsien, Taiwan
Filed Mar. 14, 1988, Ser. No. 167,579
Int. Cl.[4] G10G *5/00*
U.S. Cl. 224—266 **2 Claims**



1. A carrying holder of a musical instrument comprising a "T" bar (**1**) having an elongated central plate section attached perpendicularly to the first end of said central plate section, a pair of shoulder bars having a lower fastening end and an upper hook shaped portion (**2**), a belly plate (**3**) attached perpendicularly to the opposite end of said central plate section and fastening means on said belly plate for holding said musical instrument (**4**), characterized in that:
said pair of shoulder bars (**2**) comprising elongated rigid members each adapted to the positioned over a shoulder of the wearer each has a hole and an arc-like slot (**22**) aligned from an upper position to a lower position on said fastening end thereof; and
said "T" bar (**1**) has two longitudinally extending and parallel aligned slots aligned grooves (**113**) on each end thereof said slots further including an appropriate number of semi-circular holes (**114**) adjacent to an intersecting one side of each of said slots, said hole and arc-like slot in each respective shoulder bar being in alignment with said slots in each respective end of said center plate, bolt means slidable through each respective aligned holes and slots in said shoulder bars and lateral plate adjustably fastening said pair of shoulder bars (**2**) to said lateral plate (**11**) by bolting said bolts on a desired one of said semi-circular holes (**114**) and pivot said shoulder bars about said holes and arc-like slots.

4,799,611
APPARATUS FOR ASSEMBLING PAIRS OF GARMENT FASTENER ELEMENTS
Yukio Taga, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Aug. 5, 1987, Ser. No. 81,734
Claims priority, application Japan, Aug. 6, 1986, 61-184870
Int. Cl.[4] A41H *37/10*
U.S. Cl. 227—18 **17 Claims**



1. An apparatus for assembling a pair of fastener elements of a garment fastener with a garment fabric disposed between the two fastener elements, comprising:
(a) a frame;
(b) a pair of vertically aligned upper and lower units supported by said frame for receiving the respective fastener elements, said upper unit having a punch, said lower unit having a die, said punch and said die being reciprocally movable toward and away from each other to join the two fastener elements together with the garment fabric sandwiched therebetween;
(c) a first drive mechanism for reciprocating said punch, said first drive mechanism including a fluid-pressure actuator having a piston rod and a cylinder tube;
(d) a first pusher mechanism including first means supported by said frame and defining a first feed passage receptive of one fastener element, said first pusher mechanism also including a first pusher reciprocable within said first feed passage to push the one fastener element therethrough to said upper unit;
(e) a second drive mechanism for reciprocating said die;
(f) a second pusher mechanism including second means supported by said frame and defining a second feed pas-

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sage receptive of the other fastener element, said second pusher mechanism also including a second pusher reciprocable within said second feed passage to push the other fastener element therethrough to said lower unit; and

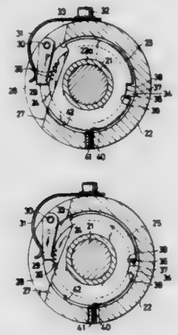
(g) a combined supporting and connecting mechanism for slidably and pivotably supporting said fluid-pressure actuator on said frame and also for operatively connecting said fluid-pressure actuator and said first pusher mechanism, said combined mechanism including a pivot lever rotatably mounted on said frame and pivotably connected at opposite ends with said cylinder tube and said first pusher mechanism, and a spring-biased slide rod slidably mounted on said frame and pivotably connected at its one end to said pivot lever adjacent to said cylinder tube, said slide rod being normally urged in a direction such that during a portion of the movement of said piston rod from said cylinder tube adjacent the fully retracted position of said piston rod, said pivot lever operates said first pusher mechanism to retract and advance said first pusher.

4,799,612

FOOT-OPERATED PRESS

Yoshiyuki Toishi, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 24, 1987, Ser. No. 88,408
Claims priority, application Japan, Aug. 27, 1986, 61-13084[U]
Int. Cl.[4] B21J *15/16, 15/28*
U.S. Cl. 227—121 9 Claims



1. A foot-operated press comprising:

(a) a frame having a horizontal shaft fixedly secured thereto;

(b) a foot pedal pivotably supported on said frame and angularly movable between an uppermost standby position and a lowermost clinching position, said foot pedal being normally urged toward said standby position;

(c) a punch vertically reciprocably supported on said frame; and

(d) a ratchet mechanism mounted on said shaft and operatively interconnecting said foot pedal and said punch, said ratchet mechanism including

(i) a housing secured to said shaft,

(ii) a ratchet wheel rotatably mounted on said shaft and connected to said foot pedal for movement in unison with said foot pedal, said ratchet wheel having a series of external ratchet teeth disposed in said housing and a pin extending parallel to the axis of said shaft,

(iii) a pawl pivotably mounted on said housing and normally urged toward said ratchet wheel, said pawl being lockingly engageable with said ratchet teeth to prevent backward movement of said ratchet wheel and hence said foot pedal connected thereto, and

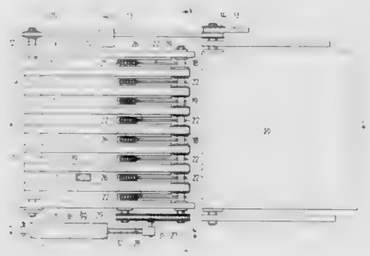
(iv) a cam disc rotatably disposed in said housing and having a recessed portion loosely receiving said pin and engageable with said pin to turn said cam disc together with said ratchet wheel, and further having a cam surface engageable with said pawl to urge the latter away from said ratchet teeth.

4,799,613

METHOD AND APPARATUS FOR SENSING THE PREFERRED SIDE OF GARMENT PORTIONS

Fletcher D. Adamson, Alexander City, Ala., assignor to Russell Corporation, Alexander City, Ala.

Filed Nov. 9, 1987, Ser. No. 118,557
Int. Cl.[4] A41H *43/02*
U.S. Cl. 223—39 20 Claims



1. Apparatus for processing fabric garment portions having a preferred side and a non-preferred side selected in accordance with the weave of the fabric comprising:

(a) first means for detecting whether said preferred side is face up or face down;

(b) second means for detecting the leading and trailing edge of said garment at a predetermined point as it moves along a conveyor;

(c) means for selectively inverting a garment as it is discharged from said conveyor; and

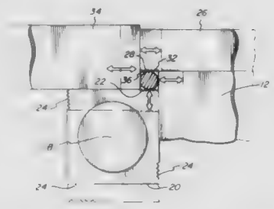
(d) control means responsive at selected time intervals to said first and second detecting means for controlling said inverting means.

4,799,614

APPARATUS FOR ULTRASONIC WELDING OF WIRES

Curtis Weiter, West Haven; Guillermo Coto, Monroe, and Michael Patrikios, Stratford, all of Conn., assignors to American Technology, Inc., Milford, Conn.

Filed Apr. 9, 1987, Ser. No. 36,477
Int. Cl.[4] B23K *1/06*
U.S. Cl. 228—1.1 13 Claims



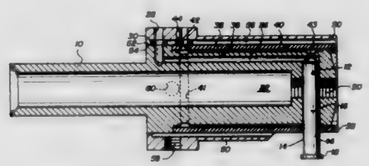
1. An ultrasonic welding tip adapted to be connected to an ultrasonic horn to weld wire ends together comprising several alternative worksurfaces about the periphery of the tip successively available by rotation for contact with the wire ends to be welded, said tip having the cross sectional shape of a convex polygon substantially free of concave surfaces and said worksurfaces being found at the corners of said convex polygon.

4,799,615

COLLET HOLDER

Michael L. Davenport, Rte. 6, Box 907, Leander, Tex. 78641

Filed Jun. 17, 1987, Ser. No. 63,064
Int. Cl.[4] B23K *37/04*
U.S. Cl. 228—44.7 7 Claims



1. A collet holder comprising:

a first cylindrical section which holds a cartridge heater and collet and provides a vacuum to the collet;

a second section concentrically surrounding and attached to the first cylindrical section to form a turbulent flow heat exchanger for providing a heated gas to the collet; and including a discharge orifice through which the collet extends, thereby heating the collet and minimizing entrainment of atmospheric gases; and

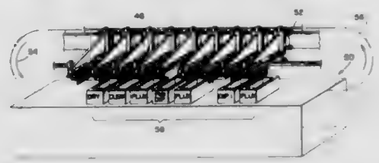
a third section concentrically surrounding the second section and attached to the rear portion of the first cylindrical section, thereby providing a heat shield to prevent radiant heat losses.

4,799,616

SOLDER LEVELING METHOD AND APPARATUS

John P. Simpson, Apalachin, N.Y.; Gary L. Newman, Little Meadows, Pa.; James M. Larnerd, Port Crane, N.Y., and Alan J. Emerick, Warren Center, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 873,318, Aug. 11, 1986, abandoned.
This application Oct. 6, 1987, Ser. No. 107,852
Int. Cl.[4] B23K *37/04;* H05K *3/34*
U.S. Cl. 228—125 13 Claims



1. A method of leveling solder on a circuitized substrate to produce substantially flush solder fill over pins recessed in the substrate comprising the steps of:

providing a rack supporting at least one circuitized substrate having mounting pins extending therethrough from recessed terminal regions of said substrate;

moving the rack from an inactive position distant from a vessel of molten solder to an active position at which the substrate is immersed in the molten solder;

agitating the substrate while it is in the active position by causing it to reciprocate at such an amplitude and frequency as to attain a maximum speed in the range of 10 to 50 inches per second;

return the rack to the inactive position;

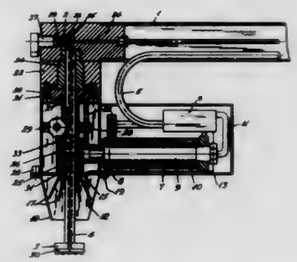
pivoting the rack to a pre-strike position raised above an impact anvil; and releasing the rack and thereby allowing it to swing downwardly and strike the anvil thereby dislodging excess solder from the substrate.

4,799,617

CONVECTION HEAT ATTACHMENT AND REMOVAL INSTRUMENT FOR SURFACE MOUNTED ASSEMBLIES

Gennady Frieshans, Randallstown, Md., assignor to Advanced Techniques Co., Inc., Huntingdon Valley, Pa.

Filed Oct. 9, 1987, Ser. No. 106,487
Int. Cl.[4] B23K *3/04*
U.S. Cl. 228—180.2 15 Claims



1. A method of positioning a surface mounted electronic component in a soldering position and for soldering metallic solder contacts on this component to corresponding solder contacts on a printed circuit board by means of hot gas applied to said solder contacts in a form of flow directed so as to pass by said contacts and distributed evenly along each perimeter side of said component, this method being the following sequence of operations:

attaching said component to a suction cup which has, in the plane of its bottom surface, the same rectangular shape and size as said component and is centrally located with respect to said flow so that said suction cup covers the whole top surface of said component;

moving said suction cup with the attached to it component until said solder contacts on the component touch the corresponding contacts on the printed circuit board on

heating the solder of said solder contacts on said component and said printed circuit board to the liquid state while simultaneously cooling said component by a flow of cool air delivered through said suction cup.

3. An apparatus for positioning a surface mounted electronic component in a soldering position or for soldering solder contacts on this component to corresponding solder contacts on a printed circuit board or for desoldering such contacts and removing said electronic component, where soldering and desoldering is accomplished by heating said contacts with hot gas, said apparatus comprising:

a thermal unit for heating gas passing through it, for delivering said heated gas to said solder contacts so that said heated gas forms a thin layer of turbulent flow directed substantially downward along the inside surfaces of nozzle conduit walls, for distributing said flow around the perimeter of said component;

a component holding extension for holding said component in a fixed position with respect to said flow of hot gas, for achieving desired angular alignment of said component and said flow of hot gas with respect to said printed circuit board and for protecting said component from overheating;

moving means for moving said component holding extension and said thermal unit into any desired vertical as well as horizontal position over said printed circuit board and for holding said component holding extension and said thermal unit in that position;

a printed circuit board handling unit for positioning and holding said printed circuit board in a generally horizontal position and for moving said printed circuit board in horizontal plane;

printed circuit board heater means for heating said printed circuit board and

means for creating vacuum or air flow to be delivered to the top surface of said electronic component interchangably to, respectively, hold said component or cool it.

4,799,618

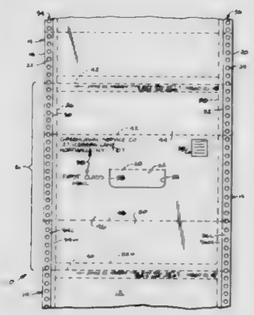
BIFOLDED MAILER WITH INSERT

Richard A. Jenkins, Wheeling, Ill., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 25, 1986, Ser. No. 911,412

Int. Cl.[4] B45D *27/04, 27/34*

U.S. Cl. 229—92.3 26 Claims



1. A bifolded mailer with insert, comprising:

a paper sheet having left and right edges, said paper sheet being folded twice in the same direction to provide a middle panel adjoining a head panel and a foot panel along respective transverse fold lines;

said head panel having a top edge which is lapped with a bottom edge of said foot panel intermediate the depth of said middle panel;

means securing said head panel to said foot panel marginally of said top and bottom edges, and means securing said paper sheet to itself, panel to panel marginally of said left and right edges in order to define a substantially completely enclosed pocket;

an insert body, separate from said paper sheet, contained within said enclosed pocket;

left and right end tear strip means defined on said paper sheet and adapted to permit respective left and right edge marginal portions to be severed from said paper sheet along the full depth of said paper sheet; and

transverse tear strip means cooperatingly defined in both said head and foot panels and extending from one to the other of said left and right edge marginal portions, so that after said left and right marginal portions have been severed from said paper sheet and said transverse tear strip means has been torn across said paper sheet, the resulting bifolded remainder of said paper sheet may be opened up for viewing of an inner face thereof and for gaining access to said insert body, said transverse tear strip means comprising two longitudinally spaced transverse perforation lines in said paper sheet including one provided in said head panel adjacent but longitudinally spaced from said top edge of said head panel and another provided in said foot panel adjacent but longitudinally spaced from said bottom edge of said foot panel.

4,799,619

DRINKING FLUIDS CARTON

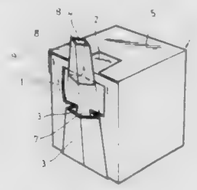
Ki-Seok Lee, 77-19, Yukchon-Dong, Eunpyung-ku, Seoul, Rep. of Korea

Filed May 27, 1987, Ser. No. 54,530

Claims priority, application Rep. of Korea, Mar. 25, 1987, 87-3789[U]

Int. Cl.[4] B65D *5/74*

U.S. Cl. 229—125.42 4 Claims



1. A hexahedral drinking fluids carton comprising:

a tapered outflow opening extending upwardly from a bottom portion of a side wall of the carton; and

an upwardly tapered diamond-shaped bendable guide part with two interior and two exterior contiguous surfaces, having an outflow mouth part at an upper portion of the guide part, said upper portion extending above a top wall of the carton and an access opening at a bottom portion of the guide part, said guide part is formed adjacent to the side wall of the carton with a portion of the interior surfaces fixed to the side wall such that said guide port seals the outflow opening, wherein the access opening communicates with the outflow opening, and wherein the outflow mouth part can be folded flat against the top wall of the carton and sealed by a removable protective covering portion applied above the outflow mouth part.

4,799,620

CORNER CONSTRUCTION OF STACKABLE CARDBOARD BOX

Antonio R. Vilella, Amposta, Spain, assignor to Daniel Aguilo Panisello S.A., Amposta, Spain

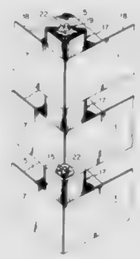
Filed Dec. 4, 1986, Ser. No. 937,985

Claims priority, application Spain, Jan. 29, 1986, 292.019

Int. Cl.[4] B65D *21/02*

U.S. Cl. 229—191 4 Claims





1. A stackable cardboard box construction comprising a sheet of corrugated cardboard grooved and folded to form a

bottom panel, opposite side walls and opposite lengthwise walls united with said bottom panel by grooved fold lines,

each of said side walls having at each end thereof an upwardly protruding tab and a flap separated from an upper edge of said side wall and joined with the respective tab by a grooved fold line for folding inwardly,

each of said lengthwise walls having at each end thereof an upwardly projecting tab of the same height as said tab of an adjoining side wall and first, second and third panels extending the respective tab, said first, second and third panels being joined with the respective tab and with one another by grooved fold lines for folding inwardly,

an end portion of each of said lengthwise walls including the respective tab forming one side of a column of right triangular cross section, said first panel being folded at right angles to said lengthwise wall to form a second side of said column, said second panel being folded at one hundred thirty five degrees to said first panel to form the hypotenuse of said column and said third panel being folded at one hundred thirty-five degrees to said second panel to underlie and reinforce an end portion of said lengthwise wall, an end portion of an adjoining side wall together with the respective tab overlying said first panel on said second side of said column and the respective flap being folded in at one hundred thirty five degrees to said end portion of said side wall to overly said second panel forming the hypotenuse of said column to form at each corner of said box a triangular hollow column having double walls on all sides and projecting up above said side walls and lengthwise walls,

a triangular plastic cap fitting over the upwardly projecting portion of each of said triangular columns, each of said caps having a stop plane engaging the upper end of the respective column, a table spaced above said stop plane, a plurality of reinforcing ribs resting on the upper end of said column and extending between said stop plane and said table and a frustoconical stud projecting up from said table,

said bottom panel having at each corner portion thereof an opening for reception of said studs of an under-disposed like box.

4,799,621

METHOD AND APPARATUS FOR SHIELDING CARGOES FROM CONDENSATE

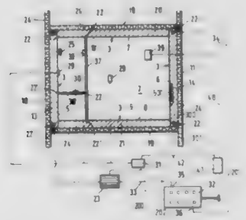
Johann-Stephan Reith, Palmaille 118, D-2000 Hamburg 50, Fed. Rep. of Germany

Continuation of Ser. No. 610,326, May 15, 1984, abandoned. This application Apr. 29, 1987, Ser. No. 45,699

Claims priority, application Fed. Rep. of Germany, May 16, 1983, 3317776

Int. Cl.[4] G05D *23/00*

U.S. Cl. 237—2 A 45 Claims



1. A method of conditioning the cargo area of a shipping conveyance, particularly a watercraft, wherein the cargo area is surrounded by walls which serve to confine cargo, especially bulk cargo, as well as moisture-containing air, comprising the step of maintaining the temperature of confined air as well as the temperature of the walls at a value such as to prevent condensation of moisture on the walls, including externally heating the walls at least in regions where the walls are adjacent the confined cargo so that the cargo area is heated by heat which is transmitted by the walls.

4,799,622

ULTRASONIC ATOMIZING APPARATUS

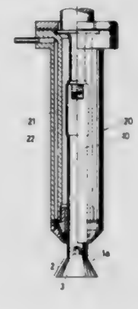
Kiyoe Ishikawa, Oi; Kakuro Kokubo, Atsugi; Hitoshi Kurokawa, Oi; Daijiro Hosogai, Kawashima, and Hirokazu Takesaka, Hachioji, all of Japan, assignors to Tao Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1987, Ser. No. 79,742

Claims priority, application Japan, Aug. 5, 1986, 61-182755; Aug. 8, 1986, 61-185308; Aug. 8, 1986, 61-185309; Aug. 8, 1986, 61-185310; Sep. 3, 1986, 61-207183; Sep. 12, 1986, 61-139408[U]

Int. Cl.[4] B05B *1/26, 3/14*

U.S. Cl. 239—102.2 29 Claims



1. An ultrasonic atomizing apparatus including an ultrasonic vibration generating means and an ultrasonic vibrator horn having a cylindrical section connected at one end of said ultrasonic vibration generating means and having a flared portion connected to the other end of the cylindrical section, said flared portion being flared and enlarged in diameter towards the tip end of the horn, said apparatus being adapted to atomized liquid material on said flared portion as the liquid material is supplied from liquid material supply means to the flared portion, characterized in that a hollow recess is formed in said flared portion, said hollow recess opening towards the tip of the horn, the geometry of said hollow recess being such that the cross-sectional area of the flared portion of the horn in any plane perpendicular to the longitudinal axis of the horn is substantially the same as the cross-sectional area of the flared portion in all other planes perpendicular to the longitudinal axis of the horn, the horn also having a single nodal point positioned above a boundary between said cylindrical section and the flared portion when said horn is ultrasonically excited.

4,799,623

VARIABLE CONVERGENT/DIVERGENT NOZZLE

Raymond J. Brachez, Jr., Lake Park; Gunther Eichhorn, Palm Beach Gardens, and Elliott C. Kiblinger, II, North Palm Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 4, 1987, Ser. No. 116,930

Int. Cl.[4] F02K *1/08*

U.S. Cl. 239—265.41 9 Claims

1. A variable area convergent divergent nozzle arrangement for a supersonic aircraft having a subsonic cruise condition and a supersonic flight condition comprising:

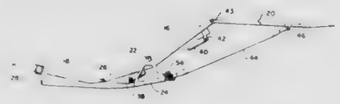
engine fixed structure;

a plurality of convergent flap supports fixed to said engine structure;

a plurality of upstream convergent flaps circumferentially

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disposed around the axis of said engine, each pivotally mounted on said convergent flap support;
positioning means for positioning said convergent flaps to a selected throat area condition;
a plurality of downstream divergent flaps circumferentially disposed around the axis of said engine, the upstream edge of said divergent flaps pivotally connected to the downstream edge of said convergent flaps;



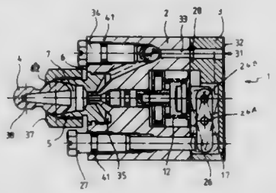
a divergent flap strut pivotally connected to each flap and pivotally connected to said engine fixed structure;
a lost motion connector associated with said strut and located between said divergent flap and said engine fixed structure; and
a biasing means for biasing lost motion connection toward one end of said lost motion connection in a direction to decrease the divergence of said divergent flaps.

4,799,624

SPRAY HEAD HAVING FLUID METERING SCREWS

Roland Fink, Winterbach, and Walter Klingenstein, Urbach, both of Fed. Rep. of Germany, assignors to Oskar Frech GmbH & Co., Schorndorf-Weiler, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 126,934
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1985, 3644184
Int. Cl.[4] B05B 7/12
U.S. Cl. 239—412 **12 Claims**



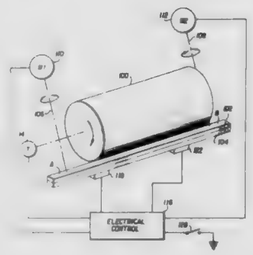
1. A spray head for spraying a spray medium onto molds and dies, comprising:
a nozzle body including:
a front side,
a rear side, and
first and second internal passage means for conducting spray medium and compressed air, respectively, and including first and second fluid inlet ports in said rear side to which spray medium and compressed air are supplied,
a spray nozzle mounted on said front side for emitting a mixture of spray medium and compressed air received from said first and second passage means,
first metering means for controlling the volume of spray medium supplied to said nozzle and including
a spray control valve,
a reciprocable piston operably connected to said valve for opening and closing said valve,
a stop reciprocable toward and away from said piston for adjusting the stroke length thereof,
a first metering screw disposed in said body and exposed for adjustment at said front side, and
actuating means for displacing said stop in response to rotation of said first metering screw, said actuating means arranged such that one end thereof acts against said stop and an opposite end thereof is engaged by said first metering screw, and
second metering means for controlling the volume of compressed air supplied to said nozzle and including a second metering screw disposed in said body and exposed for adjustment at said front side.

4,799,625

METHOD AND APPARATUS FOR ADJUSTING A SHEAR BAR RELATIVE TO A CUTTER HEAD

Marvin G. Weaver, Jr., Lititz; Carl E. Bohman, New Holland; Richard P. Strosser, Akron; John R. McClure, New Holland, and Mark K. Chow, Leola, all of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed May 5, 1987, Ser. No. 46,011
Int. Cl.[4] B02C 25/00
U.S. Cl. 241—30 **12 Claims**



1. In a cutting apparatus having an adjustably fixed shear bar cooperating with a rotating cutter head to cut material passing between the bar and head, the improvement comprising:
first and second bidirectional motors;
first means responsive to said first motor for moving a first end of said shear bar relative to said cutter head;
second means responsive to said second motor for moving a second end of said shear bar relative to said cutter head;
sensing means for sensing contact between said shear bar and said cutter head;
start control means; and,
electrical control means responsive to said start control means and said sensing means for controlling said first and second motors to adjust the position of said shear bar,
said electrical control means including means for alternately energizing one of said motors and then the other whereby one end and then the other end of said shear bar is moved until said shear bar is adjusted relative to said cutter head.

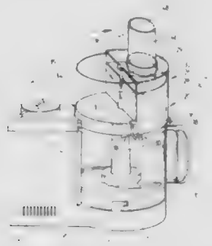
4,799,626

KITCHEN APPARATUS FOR PREPARING FOOD

Sigrun Hickel, Waldems, and Wolfgang Franke, Langen, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Oct. 13, 1987, Ser. No. 107,951
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3637169
Int. Cl.[4] A47J 43/046
U.S. Cl. 241—37.5 **18 Claims**

1. Feed apparatus for a kitchen apparatus for preparing food, said kitchen apparatus including open-topped vessel structure in which a food processing tool is adapted to be disposed for rotation about an axis,
said feed apparatus including lid structure adapted to engage the open top of said vessel,
a cover structure that has a receiving opening, and
a food receiving receptacle mounted on axle structure carried by said cover structure and extending substantially parallel to the axis of rotation of the processing tool in said vessel, said axle structure being located in approximately the same plane as the receiving opening of said cover structure,



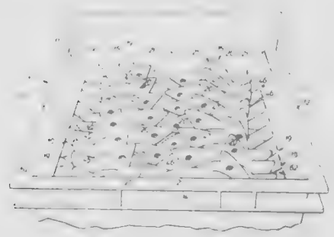
said receptacle being adapted to be swiveled about said axle structure between a first position outside of said cover structure and a second position in said cover structure.

4,799,627

MINERAL SIZERS

Alan Potts, Nottingham, Isle of Man, assignor to MMD Design and Consultancy Limited, Somercotes, England

Continuation of Ser. No. 824,301, Jan. 30, 1986, abandoned, which is a continuation of Ser. No. 532,821, filed as PCT GB82/00354 on Dec. 17, 1982, published as WO83/0287 on Jun. 23, 1983, abandoned. This application Jan. 16, 1987, Ser. No. 8,053
Claims priority, application United Kingdom, Dec. 19, 1981, 8138347
Int. Cl.[4] B02C 13/20
U.S. Cl. 241—236 **12 Claims**



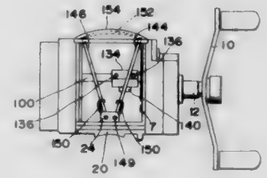
1. In a mineral breaker having at least a first breaker drum including a plurality of breaker teeth projecting radially from the drum and further including a plurality of opposed breaker teeth positioned so that on rotation of the drum mineral lumps to be broken are gripped between the leading face of the teeth of the drum and a pair of said opposed breaker teeth to thereby break the mineral lump gripped therebetween by a snapping action, the improvement of the breaker teeth mounted on the breaker drum each comprising a main tooth body in the form of a projection projecting from the drum and a sheath removably mounted on the tooth body, the sheath including a hollow tooth formation which defines the external shape of the tooth and which includes a pocket which is seated on and fully envelopes the tooth body, the shape of the tooth body and the pocket being complementary so that when the sheath is seated on the tooth body the leading and trailing faces of the tooth body and the respective facing internal walls of the pocket are in face contact with one another so that loadings applied to the tooth during said snapping action are transmitted through the sheath and onto the main tooth body.

4,799,628

LEVEL WINDER FOR DOUBLE-BEARING FISHING REEL

Masaru Watanabe, and Ichiro Tabei, both of Ashikaga, Japan, assignors to Copal Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1987, Ser. No. 62,830
Claims priority, application Japan, Jun. 23, 1986, 61-146637; Jun. 23, 1986, 61-146638
Int. Cl.[4] A01K 89/04
U.S. Cl. 242—84.42 **4 Claims**



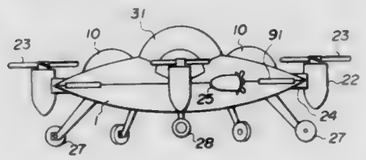
1. A double-bearing fishing reel comprising:
a casing;
a handle shaft rotatably attached to said casing;
a handle for rotating said handle shaft attached thereto;
a drive gear means mounted on said handle shaft;
a spool shaft rotatably and axially slidably mounted on said casing;
a spool and a spool gear means mounted on said spool shaft and meshable with said drive gear means;
an operating lever means attached to said casing for engaging said spool gear means with said drive gear means for causing seid spool to be driven by rotation of said handle and for disengaging said spool gear means from said drive gear means for causing said spool to be freely rotatable on said spool shaft;
a traverse cam shaft rotatably and axially slidably mounted on said casing;
a traverse cam and a traverse cam gear means mounted on said traverse cam shaft, said traverse cam gear means being meshable with said drive gear means;
a traverse cam guide cylinder mounted on said traverse cam;
a level winder including a level winder guide means mounted on and rotatable with said traverse cam guide cylinder, said level winder guide means being laterally reciprocal along said traverse cam cylinder, said level winder guide means having an integral slant arm, a line guide arm holder on said slant arm, and a pair of retractable pins reciprocally held in said line guide arm holder;
a pair of line guide arms, each said line guide arm having first and second ends, each said first end being rotatably attached to said casing, and each said second end being engageable by said pair of retractable pins for holding said pair of line guide arms in parallel when said level winder guide means is reciprocated along said traverse cam cylinder;
biasing means for biasing said pair of line guide arms apart to form a substantially V-shape when said pair of line guide arms are not held in parallel by said pair of said retractable pins; and
means for engaging and disengaging said traverse cam gear means with said traverse cam for reciprocally moving said level winder guide means along said traverse cam cylinder when said cam gear means meshes with said drive gear mean for rotation by said handle.

4,799,629

FLYING OBJECT FOR COLLECTING SOLAR RAYS

Kei Mori, 3-16-3-501, Kamiuoge, Setagaya-ku, Tokyo, Japan

Filed Nov. 10, 1987, Ser. No. 119,364
Claims priority, application Japan, Dec. 8, 1986, 61-292148
Int. Cl.[4] B64B *1/24*
U.S. Cl. 244—23 C **2 Claims**



1. A flying object for collecting solar rays and for treatment of personnel in said flying object with said collected solar rays comprising a generally disk-shaped flying body having an interior compartment, said flying body having an outer circumference, propelling means mounted on said body and extending outwardly of said outer circumference, said propelling means being operable to propel said flying object in a desired direction of flight and to maintain said flying object in a fixed airborne position, float means mounted on said body and operable to be deployed to impart a lifting force to said flying object, and solar ray collecting means mounted on said body for collecting solar rays and directing said collected solar rays into said compartment for effecting medical treatment of personnel within said compartment, whereby said flying object is operable to provide said medical treatment by being deployed airborne to an altitude above weather conditions which block solar rays to the earth's surface.

4,799,630

LANDING ATTACHMENT TO AIRCRAFT FOR AMPHIBIOUS LANDING

Edward Richards, 616 N. Beachwood Dr., Los Angeles, Calif. 90004

Continuation-in-part of Ser. No. 857,297, Apr. 28, 1986, abandoned. This application Jan. 12, 1988, Ser. No. 143,012
Int. Cl.[4] B64C *25/66*
U.S. Cl. 244—101 **5 Claims**



1. A landing attachment to aircraft for amphibious landing comprising a pair of spaced apart landing members located on opposite sides of the underbelly of an aircraft, each landing member comprising:

a. an elongated internal fairing member including a horizontal surface and a pair of sidewalls;

b. said horizontal surface of said elongated internal fairing member further comprising a multiplicity of openings spaced apart from each other;

c. a multiplicity of fairing and strut attachment members located along the length of said horizontal surface of said internal fairing and aligned with a respective one of the openings in said horizontal surface;

d. each fairing and strut attachment member receiving and supporting a wheel strut through a respective one opening in the horizontal surface of said internal fairing, with each wheel strut extending transversely within the elongated internal fairing for a portion of the height of the internal fairing sidewalls;

e. each wheel strut affixed to a yoke which in turn supports and carries a landing wheel;

f. an outer fairing enveloping said internal fairing and multiplicity of fairing and strut attachment members;

g. each landing wheel protruding below the lowermost tip of the internal fairing sidewalls and outer fairing for a portion of the landing wheel diameter; and

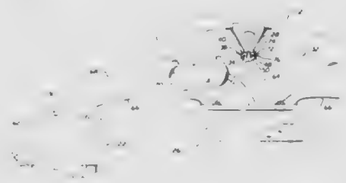
h. said outer fairing and enclosed internal fairing and multiplicity of fairing and strut attachment members attached to and along the length of one side of the underbelly of an aircraft.

4,799,631

AIRCRAFT SHELL MODULE

David R. Humphries, Clearwater; Donald C. Fetterhoff, St. Petersburg, and William R. Higgins, Clearwater, all of Fla., assignors to ATR International, Inc., Clearwater, Fla.

Filed Feb. 18, 1987, Ser. No. 15,839
Int. Cl.[4] B64C *1/14*
U.S. Cl. 244—118.5 **16 Claims**





1. A module for the interior of an aircraft fuselage containing a fuselage deck, the module comprising:

(a) contiguous pairs of arcuate port and starboard panels having a first and a second end;

(b) the first end of each panel mounted in multiple isolaters located within separate overhead support channels;

(c) multiple support brackets attached to a port and starboard side of the fuselage deck;

(d) an adjustable port support channel attached to the support brackets on the port side of the fuselage deck;

(e) an adjustable starboard support channel attached to the support brackets on the starboard side of the fuselage deck;

(f) multiple isolators mounted in the port and starboard channels for receiving and holding the second end of each arcuate panel; and

(g) the overhead support channels supported by an assembly attached to an overhead portion of the fuselage, the arcuate panels thereby being spaced apart from the fuselage of the aircraft.

4,799,632

SEAT FOR A VEHICLE, ESPECIALLY AN AIRCRAFT SEAT

Faruk Baymak, Hamburg, and Helmut Stueben, Gruenendeich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 5, 1987, Ser. No. 105,392
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1986, 3634839
Int. Cl.[4] B64D *11/06*
U.S. Cl. 244—122 R **10 Claims**



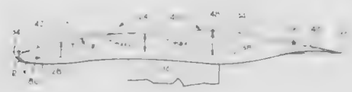
1. A vehicle seat, especially for an aircraft, comprising two uprights and rigid crossbar means interconnecting said two uprights to form a frame structure, double backrest means connected to said frame structure, first backrest cushion means on one side of said double backrest means, second backrest cushion means on the other side of said double backrest means, first seat means and first hinge means securing said first seat means to said vehicle seat for cooperation with said first backrest cushion means, second seat means and second hinge means securing said second seat means to said vehicle seat for cooperation with said second backrest cushion means, safety belt means secured to both sides of said vehicle seat to permit the use of the seat by two persons simultaneously facing in opposite directions, said vehicle seat further comprising first and second bracket means for mounting each of said first and second seat means to said frame structure, slide means slidably mounting said first and second seat means to said bracket means, said first and second hinge means connecting said first and second bracket means to a respective point of said frame structure, and further hinge means connecting said backrest means to said seat means and to said frame structure.

4,799,633

LAMINAR FLOW NECELLE

Daniel J. Lahti, and James L. Younghans, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 437,581, Oct. 29, 1982, abandoned. This application Jul. 27, 1987, Ser. No. 77,963
Int. Cl.[4] B64D *29/00*
U.S. Cl. 244—130 **25 Claims**



1. A nacelle for use on an aircraft comprising:

an annular leading edge and an annular trailing edge having a reference chord of length C extending from said leading edge to said trailing edge and;

an outer annular surface continuous from said leading edge to said trailing edge and including a forward portion, an intermediate portion and an aft portion, said outer surface being devoid of aerodynamic drag reducing holes, slots and active devices;

said outer surface having a profile defined by a relative thickness measured perpendicularly from said chord to said outer surface, said thickness increasing along said chord from said leading edge to a position of a maximum thickness at a first intersection joining said forward portion and said intermediate portion, said position of maximum thickness located greater than about 36% C, said thickness decreasing along said chord from said position of maximum thickness to a second intersection joining said intermediate portion and said aft portion and further decreasing from said second intersection to said trailing edge; and

said profile of said outer surface being effective for producing laminar flow along said forward portion and a pressure due to airflow thereover which decreases continuously at a negative gradient from said leading edge to said position of maximum thickness, and being effective for producing turbulent flow along said intermediate portion and said aft portion and a pressure due to airflow thereover which increases continuously at a positive gradient from said position of maximum thickness to said trailing edge.

4,799,634

HOOK FOR RELEASING PARACHUTE OR THE LIKE FROM A KITE

Nelson K. Beaulieu, 152, chemin de l'Aéroport, Thetford Mines, Quebec, Canada G6G 5R7

Filed May 13, 1987, Ser. No. 49,215
Int. Cl.[4] A63H *27/08*
U.S. Cl. 244—155 R **2 Claims**



1. A releasing hook member adapted to be fixed at the lower end of a kite frame, the said hook member comprises a U-shaped arm having a general circular contour adapted to frictionally slide into a slot provided in the said lower end of the kite frame, the said hook having a protuberant notch at one end for stopping said hook member in said slot.

4,799,635

SYSTEM FOR DETERMINING AUTHENTICITY OF AN EXTERNAL MEMORY USED IN AN INFORMATION PROCESSING APPARATUS

Katsuya Nakagawa, Kusatsu, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Dec. 23, 1985, Ser. No. 812,929
Claims priority, application Japan, Jun. 24, 1985, 60-138699; Jun. 28, 1985, 60-143026
Int. Cl.[4] G06F *7/58*
U.S. Cl. 364—900 **13 Claims**

1. A system for determining whether a videographics software program is authorized for use in an information processing apparatus, comprising:

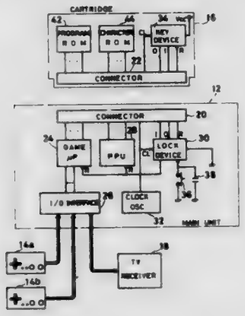
a main data processor unit for executing a videographics software program;

an external memory for storing the videographics software program and for removable connection to said main processor unit, said external memory and main processor unit together constituting the information processing apparatus for executing the videographics software program;

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a first authenticating processor device associated with said external memory for executing a first predetermined authenticating program to determine the authenticity of said external memory;

a second authenticating processor device which is installed in said main data processor unit for executing a second



predetermined authenticating program to determine the authenticity of said external memory; and

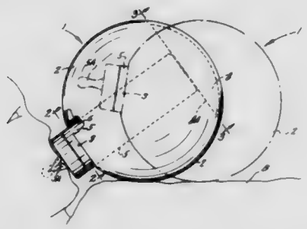
control means for resetting said main data processor unit unless the execution of said first authenticating program by said first processor device exhibits a predetermined relationship to the execution of said second authenticating program by said second processor device.

4,799,636

AUTOMATICALLY POSITIONED HOLDER FOR BABY BOTTLES

William M. Johnson, P.O. Box 70404, Eugene, Oreg. 97401

Filed Aug. 31, 1987, Ser. No. 91,381
Int. Cl.[4] A47D *15/00*
U.S. Cl. 248—102 6 Claims



1. A baby nursing bottle holder for use during the feeding of an infant and comprising in combination,

a bottle enclosure having a generally curved surface on which the holder may rest during feeding, said enclosure having an internal wall surface defining a bottle receiving opening for lengthwise frictional engagement with the bottle when the bottle is inserted into said enclosure, and

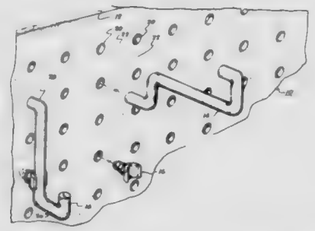
a weight of higher density material than said enclosure and housed in the enclosure and defining the end of the bottle receiving opening, said weight located in an offset manner from the center of gravity of the enclosure for imparting rotation to the enclosure and a baby bottle therein at the termination of infant feeding.

4,799,637

DEVICE FOR COUPLING HOOKS TO PEGBOARD

Thomas L. Fahringer, 105 Locust Dr., Brandon, Fla. 33511

Filed Jul. 8, 1987, Ser. No. 71,166
Int. Cl.[4] E04G *5/06*
U.S. Cl. 248—221.2 1 Claim



1. An attachment device for use in combination with a pegboard and a hook, the pegboard being of a predetermined thickness with holes of a predetermined diameter extending therethrough and the hook having a lower portion outwardly bent away from the pegboard for supporting articles, an upper portion inwardly bent toward the pegboard for being positioned through a hole in the pegboard, and an elongated central portion coupling the upper and lower portions, the attachment device including:

a screw constituting the inboard end of the device and being fastenable within a hole in the pegboard, the size of the screw being correlated to the thickness of the pegboard and the diameter of the hole such that crests of the screw are of a diameter larger than the diameter of the hole and the roots of the screw are of a diameter smaller than the diameter of the hole and with the surfaces of the screw which join the crests and roots being axially spaced a distance so that, upon being twisted into the hole, the screw and the device may be positively held in operative position solely by forces exerted by the surfaces of the screw on opposite sides of the pegboard at the peripheries of the hole without deforming the hole; and

a clip constituting the outboard end of the device and coupled to the screw for being positively fastened to the pegboard by the screw, the clip being formed of a pair of symmetrically shaped, resilient support arms which together form a generally semicircular cross sectional configuration in excess of 180 degrees with an opening between the arms on the side of the clip remote from the screw, the clip being of a size so that its opening will allow movement of the central portion of a hook therepast only upon the separating of the arms which thereby facilitates the receipt and releasable retention of a hook by the resilient force of the arms so that the device may effect a permanent attachment of a hook to a pegboard until the hook is physically withdrawn from the clip by overcoming the resilient retention force of the arms retaining the hook, the device being of a reduced size so that when operatively positioned on the pegboard it will extend outwardly form its supporting hole in a radial direction to a distance less than half the distance to all next adjacent holes in the pegboard.

4,799,638

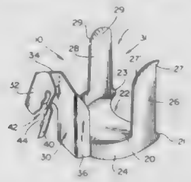
HOLDER FOR A BEVERAGE CONTAINER

Louis Allen, 166 E. 61 St., New York, N.Y. 10021

Filed Jul. 6, 1987, Ser. No. 69,847
Int. Cl.[4] A47K *1/08*
U.S. Cl. 248—311.2 15 Claims

1. A holder for a beverage container adapted for attachment to a chair having a seat frame and a leg member including a cross-bolt for connecting the seat frame to the leg member wherein an interstice is provided between the seat frame and

the leg member, said holder comprising a receptacle for accommodating selected articles, a saddle clip for removably securing the receptacle to the chair and strap means for connecting the receptacle to the saddle clip, said strap means



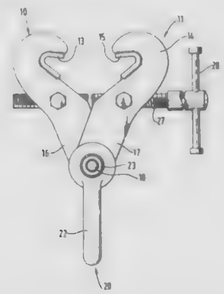
further including a collar portion generally conforming to and partially surrounding the leg member in non-gripping contact, said saddle clip further defining a notched opening for snap-fitting engagement over the cross-bolt wherein the saddle clip is rotatable about the cross-bolt for positioning the receptacle.

4,799,639

CLAMPS

Keith Riley, Fairways, 6, Wood Close, Roughlee, Nelson, Lancashire, England

Filed Mar. 18, 1987, Ser. No. 27,595
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—228 4 Claims



1. A clamp for attaching an item to an overhead flanged beam having first and second flanges said clamp comprising:

a. a first jaw having first and second ends, said first end being shaped for engagement with the first flange of said beam;

b. a second jaw having first and second ends, said first end being shaped for engagement with the second flange of said beam;

c. pivot means pivotally connecting together the second ends of the first and second jaws;

d. attachment means connected to said pivot means for attaching said item to said clamp;

e. first swivel means positioned on said first jaw intermediate said first and second ends thereof;

f. second swivel means positioned on said second jaw intermediate said first and second ends thereof;

g. connecting means extending between said first and second swivel means and threadedly engaged with said first and second swivel means, with the engagement with the first swivel means being a left hand thread and the engagement with the second swivel means being a right hand thread, said connecting means for pivoting said jaws towards one another to clamp a beam between the first ends of the jaws;

h. release means for releasing the swivel means from the jaws,

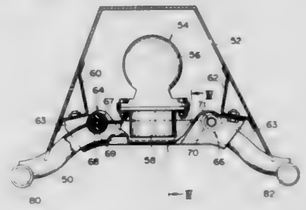
said first jaw being angled intermediate the first and second ends thereof toward the second jaw, and said second jaw being angled intermediate the first and second ends thereof toward the first jaw, to reduce the distance between the first and second swivel means.

4,799,640

VIBRATORY BODY MOUNTING STRUCTURE WITH A VIBRATION-CONDUCTION PREVENTING MECHANISM

Yoshio Fukai, 24-25-326, Asahi-cho, Segamihara-shi, Kanagawa-ken; Hitoshi Takagi, 611, Oaza-hozumi, Kitsuregwa-cho, Shioya-gun, Tochigui-ken, and Tatsuo Ozawa, 9-23, Yayoi-cho 5-chome, Nakano-ku, Tokyo, all of Japan

Filed Dec. 29, 1982, Ser. No. 454,331
Claims priority, application Japan, Mar. 10, 1982, 57-36635
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—559 12 Claims



1. A structure for mounting a vibratory body on a support, comprising:

(a) an elongated mounting member having an elasticity and vibratable in a bounce mode and a two-node transverse mode;

(b) means for resiliently connecting the mounting member to the support; and

(c) means for resiliently connecting the mounting member to the vibratory body;

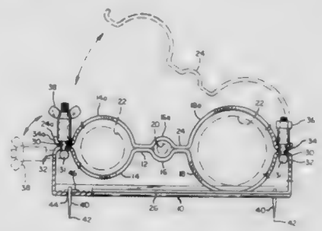
(d) the connection of the mounting member to the support being located at a position at which the phase of bounce-mode vibrations of the mounting member is opposite in sign to that of the two-node-mode transverse vibrations of the mounting member.

4,799,641

ANCHOR DEVICE FOR HOLDING HOSES AGAINST RETRACTING SLIDABLE MOVEMENT

Martin J. Koreski, P.O. Box 370, Goldendale, Wash. 98620

Filed Feb. 9, 1988, Ser. No. 153,950
Int. Cl.[4] F16L *3/22*
U.S. Cl. 248—68.1 3 Claims



1. An anchor device for holding hoses against retracting slidable movement comprising:

a base member having forward and rearward ends and a bottom surface arranged to support said base member slidably on a carpeted surface,

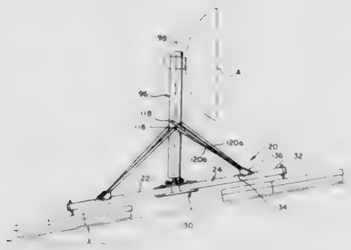
clamp means on the upper portion of said base member arranged to be releasably secured to a hose intermediate the ends of the latter,

and bottom prong means on said base member allowing said

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base member to slide forwardly on a carpeted surface but anchoring said base member and hose clamped therein against a retracting slidable movement on the carpet surface.

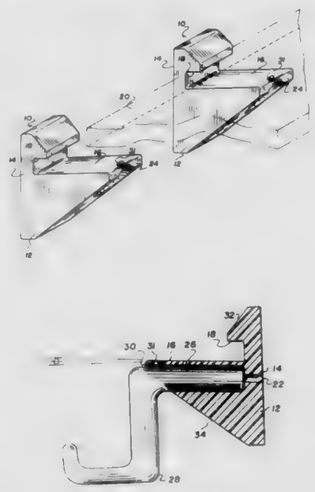
4,799,642
ANTENNA MOUNTING
George A. Wright, East Orange, N.J., assignor to RT/Katek Communications Group, Inc., East Orange, N.J.
Filed Feb. 3, 1987, Ser. No. 10,347
Int. Cl.[4] E04H *12/18*
U.S. Cl. 248—516 23 Claims



1. An antenna mounting for supporting an antenna above a surface comprising:
(a) base structure means for defining a base structure extending over the surface and securing said base structure to the surface;
(b) an elongated tubular mast having a mast axis, a bottom end and a top end;
(c) mast connection means for connecting said bottom end of said mast to said base structure so that said mast projects generally upwardly from said base structure;
(d) a plurality of elongated struts, each having a strut axis, a mast end and a base end; and
(e) strut connection means for connecting the base ends of said struts to said base structure at spaced apart locations thereon remote from the bottom end of said mast and connecting the mast ends of said struts to said mast remote from the bottom end of the mast so that said strut axes are tangential to said tubular mast, whereby said struts reinforce said mast against twisting about said mast axis and against tilting towards or away from said base structure.

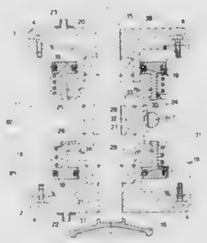
4,799,643
SHELF BRACKET
John S. Shepard, Windsor, Colo., assignor to SISU Shelving Corporation, Fort Collins, Colo.
Filed Aug. 13, 1984, Ser. No. 639,827
Int. Cl.[4] A47B *96/06*
U.S. Cl. 248—544 9 Claims

1. A shelf bracket comprising:
a rigid unitary body having a vertical back wall and side walls;
a flat and smooth platform defined in said body to project outwardly away from said back wall a given distance and inclined in the outward direction upwardly at an angle substantially between 1½ and 5 degrees with respect to a plane perpendicularly intersecting said back wall;
a flat and smooth ledge defined in said body to project outwardly away from said back wall generally parallel to said platform, said ledge being spaced above said platform by an amount to accommodate receipt of a shelf board inserted between said platform and said ledge;



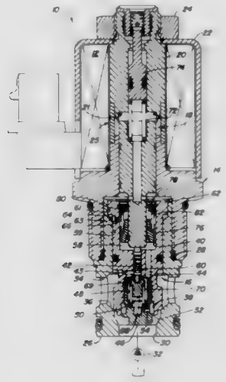
and means defined in said body for enabling securement of said body to a mounting surface.

4,799,644
ACTUATOR ACTIVATING ON-OFF VALVES
Umberto Gaianigo, Montecchio Maggiore, Italy, assignor to G.T.I. du Gaianigo Umberto & Co. Snc, Maggiore, Italy
Filed Jan. 12, 1988, Ser. No. 143,071
Claims priority, application Italy, Feb. 16, 1987, 85510 A/87
Int. Cl.[4] F16K *31/143, 31/54*
U.S. Cl. 251—14 14 Claims



1. An actuator device for the activation of no-off valves which comprises:
a supporting body,
a central shaft axially disposed within said supporting body,
a cogged wheel defined by hollow cylindrical walls and disposed within said supporting body coaxial with said central shaft and able to transmit its rotation to said central shaft,
a rack with associated pneumatic cylinders transversely disposed within said actuator device, said pneumatic cylinders activating said rack in its axial direction and in two directions, said rack engaging said cogged wheel,
a pair of free wheels disposed inside the hollow cylindrical wall of the cogged wheel, said pair of free wheels engaging themselves integrally and alternately in discordant directions with one of a plurality of rings which is integral with the central shaft of the actuator and such that each of the two free wheels, alternatively, is able to transmit to the central shaft of the actuator the rotation of the cogged wheel, in either one of the two directions, which in turn is caused by the movement of the rack.

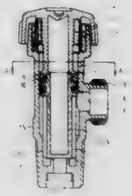
4,799,645
PILOT OPERATED HYDRAULIC CONTROL VALVE
Kenneth D. Kramer, and Gregory E. Sparks, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Jan. 19, 1988, Ser. No. 145,345
Int. Cl.[4] F16K *31/40*
U.S. Cl. 251—30.04 15 Claims



1. A pilot operated control valve comprising:
a housing defining an inlet and an outlet;
a main valve member movable in the housing and cooperating therewith to define a pilot chamber, pressure in the pilot chamber acting directly on the main valve member to move it to control fluid communication between the inlet and the outlet, the main valve member and the housing cooperating to define a damping chamber therebetween;
a damping orifice communicating the damping chamber with the pilot chamber, the damping orifice comprising a single passage which extends through a portion of the main valve member, there being no other passage communicated directly with the damping chamber; and
pilot valve means for controlling the pilot pressure, the pilot valve means including a pilot valve member movable with respect to the main valve member.

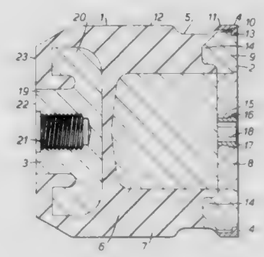
4,799,646
VALVE FOR A GAS CYLINDER OR THE LIKE
Marius Rollett, Ceyzeriat, France, assignor to Society said: ROVIP, Ceyzeriat, France
Filed May 29, 1987, Ser. No. 55,707
Claims priority, application France, Jun. 4, 1986, 86 08038
Int. Cl.[4] B16K *25/00, 31/50*
U.S. Cl. 251—88 1 Claim

1. Valve for gas cylinder or the like, comprising:
a valve body including a seat an inlet and an outlet;
a piston axially movable within said valve body, said piston including an end configured to bear against the seat of said valve body;
means for axially moving said piston, said moving means including a hand wheel and means for connecting the hand wheel to said piston while allowing a full and free rotation of the hand wheel relative to said piston for avoiding early wear of said piston when said piston bears against said valve seat; and
means on said piston for axially guiding said piston in said valve body while allowing gas flow therepast, said guiding means including fins extending substantialy radially



from and longitudinally of said piston while extending from said valve seat to said outlet and thereby communicating the gas flow from said inlet and along said guide fins to said outlet when said piston is moved away from said valve seat.

4,799,647
VALVE ASSEMBLY FOR CONTROLLING FLUID FLOW
Timothy Cook, Oakwood; Joseph G. Craigen, Denton Burn, and Clive A. Morgan, Orchard End, all of England, assignors to British Gas Corporation, England
Filed Jul. 26, 1982, Ser. No. 402,036
Claims priority, application United Kingdom, Aug. 27, 1981, 8126096
Int. Cl.[4] F16K *31/12*
U.S. Cl. 251—356 12 Claims



1. A valve assembly for controlling fluid flow in a fluid flow regulator, the assembly including a deformable plug having a cylindrical body with a longitudinal axis which is expanded radially about the longitudinal axis of said cylindrical body to restrict an annular clearance thereabout, said cylindrical body including a circumferential groove radially directed toward the longitudinal axis of said cylindrical body cylindrical.

4,799,648
TRAILER JACK USING FULL SIZED SPARE TIRE
David A. Holm, 8416 Dupont Ave. North, Brooklyn Park, Minn. 55444, and Wesley C. Deasult, 2815 39th Ave. South, Minneapolis, Minn. 55406
Filed Dec. 8, 1986, Ser. No. 939,528
Int. Cl.[4] B60S *9/02*
U.S. Cl. 254—420 18 Claims

1. An improved combination trailer jack and spare trailer wheel and tire carrier, comprising
(a) a raising mechanism having a post guide, a raising actuator movably mounted in a y direction in said mechanism,

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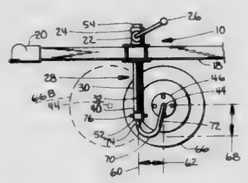
and securement means for securing the post guide and atuator to a trailer tongue;

(b) an elongate jack post operatively connected to the raising mechanism, said post being vertically movable up and down in the post guide and with respect to the securement means;

(c) a spare wheel axle mounted to and vertically co-movable with said post, said axle being generally perpendicular to said post, said axle being vertically positioned between a top and a bottom of said vertically movable post and being spaced upwards of the bottom of the post;

(d) a spare trailer wheel hub mounted on said axle, said hub having wheel mount means thereon for removably mounting thereon a full sized spare trailer wheel and tire in a plane generally parallel to and offset from said post and said guide, with an axis of said hub and the wheel and the tire being spaced upward of said post bottom, with said hub, spare wheel and tire being retractable upwards from below said post guide to a storage position alongside said vertically movable post and alongside and at the same level as said post guide; and

(e) offset structure extending from the post to the axle and providing an offset in an X direction from said post and said guide, said offset structure being movable up and down with the post and being vertically movable past said guide, at least in part.

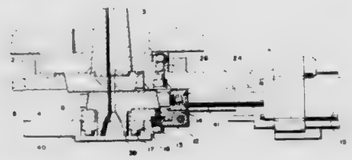


4,799,649

INJECTION VALVE COMPONENTS AND METHOD

Patrick D. King, Rantoul, Ill., assignor to Flo-Con Systems, Inc., Champaign, Ill.

Continuation-in-part of Ser. No. 885,873, Jul. 15, 1986. This application Feb. 17, 1987, Ser. No. 14,999
Int. Cl.[4] C21C 5/48
U.S. Cl. 266—45 18 Claims



1. A method of servicing an injection valve which includes a stationary plate having an orifice therein, a sliding injection plate having an orifice therein, and a carrier plate to which an injection valve is secured, all of which are serviced and actuated by means of a power means engaging the sliding injection plate which moves in combination with the carrier plate comprising the steps of,

at the termination of injection, converting the valve condition to shut-off and permitting the stationary plate orifice to form a sealed orifice,

thereafter removing the carrier plate and its associated sliding plate refractory, and replacing the same with a lance guide plate having a tapered opening therebeneath,

moving the lance guide plate into coaxial relationship with the sealed orifice portion of the stationary plate and the well block nozzle,

utilizing an oxygen lance to open the orifice in the stationary refractory plate and the well block nozzle,

replacing the lancing guide plate with a sliding injection plate and carrier assembly,

thereafter moving the sliding injection plate and carrier into the shut-off position,

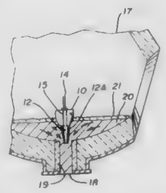
and thereafter inserting a bore fill into a orifice in the stationary plate and well block nozzle prior to charging the vessel with a molten metal.

4,799,650

SLAG RETAINING DEVICE WITH VORTEX INHIBITOR

Michael D. Labate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Sep. 23, 1987, Ser. No. 100,354
Int. Cl.[4] C21B 3/04
U.S. Cl. 266—227 6 Claims



1. An improvement in a device for the retention of slag during drawing off of molten metal from a vessel provided with a tap hole, the device comprising a circular closure of a size to effectively close said tap hole and having means for inhibiting the suction generated by the vortex formed above the tap hole to prevent mixture of the slag with the molten metal being discharged through the tap hole, wherein said means comprises an elongated tapered member of hexahedron shape extending downwardly from said closure and having several generally planar faces arranged circumferentially thereof whereby said closure and tapered member generally conform with the shape of the vortex throughout its length, said device having a specific gravity less than the specific gravity of said molten metal and greater than the specific gravity of said slag.

4,799,651

DEVICE FOR INTRODUCING SEPARATED FLUIDS THROUGH INDEPENDENT FLOW PATHS THROUGH BOTTOM TUYERES IN A ROTATING METALLURGICAL CONVERTER

Arturo Lazcano-Navarro; Miguel A. Alcantara, and Jose E. Hernandez-Ruiz, all of Saltillo, Coahuila, Mexico

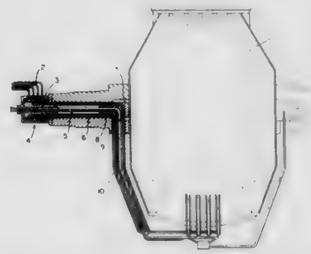
Filed Dec. 26, 1985, Ser. No. 813,566
Int. Cl.[4] C21C 5/48, 5/50
U.S. Cl. 166—268 5 Claims

1. A rotary joint apparatus for conveying fluid and powdered materials to a rotatable metallurgical converter from stationary sources, said apparatus comprising;

(a) outer stationary sleeve means having an axis and including a plurality of conduits extending substantially radially from the sleeve means relative to the axis and communicating with a source of flowable material and with an interior portion of the sleeve means through substantially radial ports in the sleeve means;

(b) inner rotatable sleeve means having an axis coaxial with the stationary sleeve means and rotatably carried within the stationary sleeve means, the rotatable sleeve means including a plurality of substantially radially extending ports communicating with respective axially extending passageways that terminate in respective outlets;

(c) rotatable trunnion means connected with the rotatable sleeves means for rotation therewith, the trunnion means having a plurality of internal axial openings communicating with respective ones of the axially extending passageway outlets of the rotatable sleeve means and with substantially radially extending conduits for connection with tuyeres carried by a rotatable metallurgical vessel carried by the trunnion means and communicating with the interior of the vessel; and



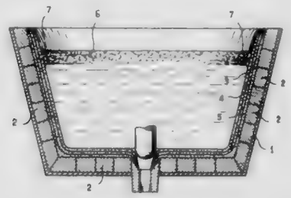
(d) a plurality of stationary annular chambers positioned in axially spaced relationship between the outer stationary sleeve means and the inner rotatable sleeve means, each annular chamber communicating with a source of flowable material through the substantially radial ports in the outer sleeve means and communicating with a respective one of the passageways in the rotatable sleeve means through a respective substantially radial port in the inner rotatable sleeve means.

4,799,652

LINING FOR PROTECTING THE INTERIOR OF A METALLURGICAL VESSEL AND A METHOD FOR FORMING SAID LINING

Jean-Charles Daussan, Marcel-Metz; Gérard Daussan, and André Daussan, both of Longeville-les-Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Filed Jul. 23, 1986, Ser. No. 888,484
Claims priority, application France, Jul. 24, 1985, 85 11327
Int. Cl.[4] C21B 3/00
U.S. Cl. 266—275 9 Claims



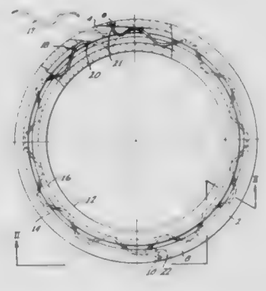
1. A tundish to be filled with molten metal, comprising a metal casing having a permanent refractory lining, the permanent lining having a temporary destructible refractory lining having an inner surface exposed to the interior of the tundish, said temporary lining being constituted by at least two layers of predetermined compositions and granular sizes applied one above the other in the interior of the tundish in the form of a slurry containing refractory inorganic particles, a binder, and a liquid, one of said layers being, when the tundish is filled with molten metal, in contact with said molten metal and the other layer being in contact with the permanent lining, said one layer having a predetermined composition and granular size of refractory inorganic particles which are such that said one layer is able to sinter throughout its mass under the action of the heat of the molten metal contained in the tundish, and said other layer having a predetermined composition and granular size of refractory inorganic particles which differ from both the composition and the granular size of particles of said one layer such that said other layer does not sinter or sinters only to a partial extent in order to remain friable even when said one layer has completely sintered.

4,799,653

RADIAL ATTENUATION

Bernhard Kramer, Markdorf, Fed. Rep. of Germany, assignor to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 11, 1987, Ser. No. 84,443
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1986, 3628586
Int. Cl.[4] F16F 1/02
U.S. Cl. 267—136 4 Claims



1. A device for attenuating radial impacts, shocks and vibrations comprising two radially spaced concentric inner and outer elements of annular construction, at least one wavy attenuating means interposed between the inner and the outer elements for axially holding the inner and outer elements in relation to each other and for engaging both of the inner and outer elements in multiple points of engagement thereby resiliently and radially supporting one of the inner and outer elements in relation to the other; there being openings in one of the inner and outer elements for receiving two ends of the wavy attenuating means; and including annular grooves in the inner and outer elements for receiving the wavy attenuating means.

4,799,654

FLUID FLOW FACILITATING ARRANGEMENT WHICH INCLUDES A CONED RING

Karl Eickmann, 2420 Ishiki, Hayama-machi, Kanagawa-ken, Japan

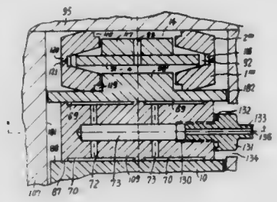
Continuation-in-part of Ser. No. 801,357, Nov. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 468,106, Feb. 22, 1983, abandoned, which is a continuation-in-part of Ser. No. 224,769, Jan. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 788,174, Oct. 16, 1985, Pat. No. 4,701,113. This application Jun. 16, 1987, Ser. No. 62,648
Int. Cl.[4] F16F 1/20, 1/34
U.S. Cl. 267—162 7 Claims

1. A fluid flow facilitating device with means for periodic alternating inflow and outflow of fluid over an inlet valve and an outlet valve into and out of an interior chamber inside of the coned portion of a coned ring,

comprising in combination, a first body, said coned ring and a second body with said coned ring inserted between said first and second bodies,

said coned ring comprising said coned portion between a radial inner and a radial outer portion with said interior space formed radially inwards of said coned portion;

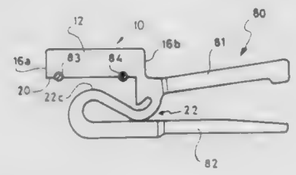
wherein said radial outer portion of said coned rings forms a seat face portion,
wherein one of said bodies forms a complementary face portion,
wherein a drive means is provided to subject said coned ring to periodic axial expansion and compression, said drive means includes a rotary shaft having a first axis with a relative to said axis accentrically located cylindrical guide face radially around said shaft and a piston with a piston shoe interposed between said coned ring and said eccentric guide face,
wherein a housing portion is provided to hold said shaft and said coned ring,
wherein said housing portion includes a cylindrical portion with a cylindrical inner face around a common axis, said common axis coincides substantially with the axis of said coned rings, said piston has a cylindrical outer face substantially slideably fitting in said cylindrical inner face,
wherein said second body forms said piston shoe provided between said eccentrically located cylindrical guide face



and said piston, while said piston is reciprocated in said cylindrical portion along said common axis and provided on one end of its axial ends with a bearing face to bear thereon a portion of said coned ring,
wherein said piston forms on its other axial end a bearing bed with a constant radius around a center while said piston shoe forms a pivot face with an equal constant radius around said center and a slide face of a part cylindrical configuration complementary to a portion of said eccentrically located cylindrical guide face, and;
wherein said part cylindrical face is laid onto said cylindrical guide face while said pivot face is laid into said bearing bed,
whereby said piston and said coned ring are substantially guided along said common axis to prevent radial departures of said coned ring and piston at compression and expansion of said coned ring away from said common axis, while said piston shoe is pivotably kept on said piston and said slide face of said piston shoe is slideably kept on said eccentrically located, cylindrical guide face.

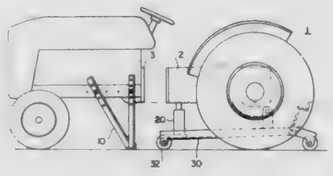
4,799,655
APPARATUS FOR ADAPTING A CONVENTIONAL TEMPLATE FOR USE IN MOUNTING BINDINGS TO A MONOSKI
Jean-Pierre Rigal, Meseguy, France, assignor to Salomon S.A., Annecy Cedex, France
Filed Jan. 19, 1987, Ser. No. 63,991
Claims priority, application France, Jan. 27, 1986, 86 09369
Int. Cl.⁴ B25B *3/00*
U.S. Cl. 269—2 **5 Claims**

1. An apparatus for adapting a conventional template for temporary positioning on a monoski for purposes of marking positions of mounting screws of a set of bindings comprising:
a. a plate having two parallel edges separated by a distance substantially equal to a width of a conventional ski; and
b. means for immobilizing said plate on an upper surface of a monoski adapted to abut against a lateral side of said monoski and grip a thickness in the region of said lateral side of said monoski, wherein said means for immobilizing comprises an elastically deformable arm extended beneath said plate from one of said parallel edges and cooperating with a lower surface of said plate to effect a gripping



action, said apparatus further comprising a grip having two levers connected to said plate and to said arm such that drawing said two levers towards each other causes the spacing of said arm with respect to said plate to vary.

4,799,656
ROLL-TRACTOR SPLITTER
Peter Puskarich, R.D. #5, Cadiz, Ohio 43907
Filed Jul. 9, 1987, Ser. No. 71,397
Int. Cl.⁴ B66F *5/04, 7/28*
U.S. Cl. 269—17 **27 Claims**

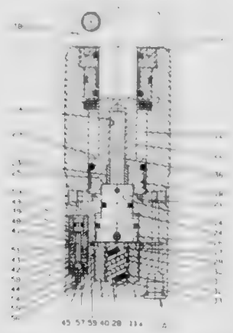


1. A tractor splitting stand for separating the front and rear halves of a frameless tractor when the transmission bellhousing is unbolted from the forward half of the tractor, said tractor having at least one tractor engagement hole located in the rear half, comprising:
an articulatable frame having first and second ends;
rolling means connected to said frame for moving said frame;
upright support means on said frame for engaging said tractor engagement holes by pinning said upright support means to said tractor engagement holes, said upright support means comprising a horizontal slide bar and movable upright supports which may be moved horizontally on said horizontal slide bar; and
means for articulating said frame whereby said first end is pivoted with respect to the second end, thereby raising the frame vertically and raising said upright support means.

4,799,657
SWING CLAMP
Douglas P. Miller, New Berlin, Wis., assignor to Applied Power Inc., Butler, Wis.
Filed Nov. 24, 1987, Ser. No. 125,008
Int. Cl.⁴ B23Q *3/08*
U.S. Cl. 269—24 **10 Claims**

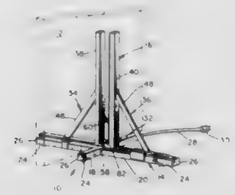
1. A powered work clamping device, comprising:
a housing having an upper and a lower chamber and an intermediate chamber communicating with said upper and lower chambers;
a plunger extending from the housing and adapted to support a work-engaging member at its extending end and an upper piston at its other end, said upper piston being

disposed within said upper chamber, said plunger mounted for relative movement about its longitudinal axis between first and second positions and for axial movement between extended and retracted positions;
a lower piston having a major diameter portion disposed in said lower chamber and a minor diameter section disposed in the intermediate chamber of said housing;
indexing means for rotating said plunger between said first and second position;
fluid inlet passageways communicating with said upper and lower chambers and including a first passageway;
a first actuating means communicating with said first passageway for admitting fluid to the upper chamber and below the undersurface of said upper piston and into the



intermediate housing chamber to the surface of said minor diameter section of said lower piston upon operation of said first actuating means;
check valve means;
a second passageway; and
a second actuating means communicating with said second passageway for admitting fluid to said upper chamber above the upper surface of said upper piston and to the lower chamber through said check valve means and below the major diameter section of said lower piston;
said check valve means adapted for restricting fluid from entering the lower chamber from the second actuating means and movable towards fluid restricting position upon non-operation of said first actuating means.

4,799,658
DOOR HOLDER AND ELECTRICAL CARPENTER'S AID
Felix C. Ponce, 6725 Bovey Ave., Reseda, Calif. 91335
Continuation of Ser. No. 798,888, Nov. 18, 1985, abandoned. This application Oct. 13, 1987, Ser. No. 107,907
Int. Cl.⁴ B23Q *3/02*
U.S. Cl. 269—133 **12 Claims**



12. In a carpenter's aid, for uprightly supporting an item, having large area sides and a relatively small thickness between the sides, by a clamp supported on a base and having first and second surface spaced from one another to define an entry for reception of the item, means for defining a movable connection between said first and second surfaces to enable respective opening and closing movements therebetween, and means positioned in said entry and coupled to said first surface for receiving the item and for enabling its weight to move the receiving means in a generally gravitationally downward direction and thereby to move said first surface towards said second surface and to clamp the item therebetween under pressure, the improvement comprising a ledge in said entry affixed to said second surface and positioned in the path of movement of the item and its receiving means to stop the movement and to limit the clamping pressure by said surfaces against the item, and in which said base comprises tubes having through passageways an affixed connection to said leg and articulating means coupled to said receiving means for enabling the movement, and electrical wiring extending through the passageways of said tubes, and an electrical plug and at least one electrical socket terminating said wiring and respectively extending from and terminating the passageways of said tubes, said base thereby acting both as a support for the carpenter's aid and as an electrical conduit for said electrical wires.

4,799,659
PIN INSERTION SUPPORT MEMBER FOR CIRCUIT BOARDS
Paul G. Donovan, Palm Beach Gardens, Fla., assignor to Northern Telecom Limited, Montreal, Canada
Filed Jul. 22, 1987, Ser. No. 76,226
Int. Cl.⁴ B23Q *3/00*
U.S. Cl. 269—289 R **6 Claims**

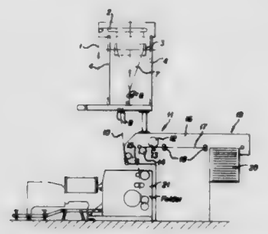


1. A support member for pin insertion in circuit boards comprising:
a carrier having a bottom surface and upstanding side walls;
a layer of closely packed filaments on said bottom surface within said side walls, said layer extending a short distance above a top surface of said side walls; and
locating means comprising retractable locating pine mounted in said side walls.

4,799,660
DEVICE FOR FEEDING A PAPER WEB TO A CROSS CUTTER
Wolfgang Pfizenmaier, Neckargemünd, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Continuation of Ser. No. 85,273, Aug. 10, 1987, abandoned, which is a continuation of Ser. No. 803,538, Dec. 2, 1985, abandoned. This application Mar. 21, 1988, Ser. No. 170,037
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1984, 3444150
Int. Cl.⁴ B42F *13/56*
U.S. Cl. 270—21.1 **1 Claim**

1. Device for feeding a paper web to a cross cutter which is located downstream from a rotary printing machine in a travel direction of a paper web and which delivers cut sections of the paper web in flat disposition, comprising draw rollers and a former disposed downstream from the rotary printing machine for respectively tensioning and folding the paper web in longitudinal direction thereof, additional draw rollers and register rollers located downstream from the first-mentioned draw rollers and said former in the travel direction of the paper web for feeding the longitudinally folded paper web to a cross cutter, a folding apparatus disposed for folding the longitudinally folded paper web adjacent to the cross cutter downstream from the rotary printing machine in the travel direction

of the paper web, said cross cutter and said folding apparatus being separate units independent of one another, and means located downstream from the first-mentioned draw rollers and

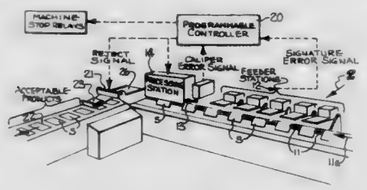


said former and upstream from said cross cutter and said folding apparatus for selectively feeding the folded paper web to said cross cutter and said folding apparatus alternatively.

4,799,661
APPARATUS FOR COMPILING SHEETS IN A BINDING LINE

James W. Nall, Gastonia, N.C., assignor to Craftsman Printing Company, Charlotte, N.C.

Filed Apr. 21, 1987, Ser. No. 40,613
Int. Cl.[4] B65H *39/02*
U.S. Cl. 270—54 **11 Claims**



1. An apparatus for compiling a plurality of differently printed groups of sheets into collated sets, with each of the printed sheets having an indicium thereon at a predetermined location, and with the predetermined location of the indicium on each of the printed sheets of each group being different from the predetermined location of the indicium on each of the printed sheets of the other groups of sheets, and which is characterized by the ability to accurately detect an improperly collated sheet as well as a missing sheet in each collated set, and comprising

a longitudinally directed conveyor means, and drive means for longitudinally advancing said conveyor means,

feeder means for sequentially depositing a sheet from each of said groups onto predetermined spaced locations of said advancing conveyor means and so as to form a set of overlying collated sheets at each of said spaced locations, said feeder means comprising a plurality of feeder stations positioned in longitudinally spaced apart relation along said conveyor means, with each of said feeder stations comprising

(a) sheet supporting means for supporting a stack of one of the groups of sheets,

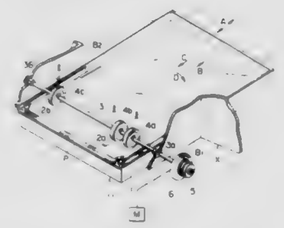
(b) sheet transport means for sequentially withdrawing the sheets from said stack, and conveying the same along a predetermined path of travel and onto said conveyor means, and

(c) sensor means mounted along said path of travel for detecting whether an indicium is present at the proper predetermined location on each of the withdrawn sheets, and whether a sheet is missing, and such that said sensor means is adapted to identify an improperly collated sheet as well as a missing sheet.

4,799,662
SHEET FEEDING DEVICE

Seiji Sagara; Hiroyoshi Maruyama, both of Yokohama; Hiroyuki Miyake, Inagi; Nobuhiro Kazuma, Yokohama; Shinichi Tanada, Machida; Kazuo Kagiura, Tokyo; Takaji Yonemori, Tokyo, and Yuji Hasegawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 856,845, Apr. 21, 1986, abandoned, which is a continuation of Ser. No. 534,666, Sep. 22, 1983, abandoned. This application Feb. 5, 1988, Ser. No. 154,508
Claims priority, application Japan, Sep. 29, 1982, 57-168437; Nov. 19, 1982, 57-202068
Int. Cl.[4] B65H *3/06*
U.S. Cl. 271—114 **12 Claims**



1. A sheet feeding apparatus comprising:

sheet supporting means for supporting at a determined position a set of sheets inserted in a predetermined direction;

a plurality of feed rollers for feeding one by one in said predetermined direction the sheets supported at said determined position;

a drive shaft for supporting said feed rollers at a position where the feed rollers contact the uppermost sheet when the set of sheets are inserted into said determined position to be supported thereat by said sheet supporting means; and

connecting -disconnecting means for disconnectably connecting said drive shaft to a drive source;

wherein said respective feed rollers are supported on said drive shaft such that the feed rollers may independently freely rotate by a predetermined amount, respectively both in said predetermined direction and in a reverse direction thereto when the feed rollers contact the uppermost sheet upon the insertion of the sheet set, whereby when a set of sheets is moved, upon insertion into the apparatus, the feed rollers follow the movement of the sheets, thus eliminating the possibility of friction between the uppermost sheet of the set of sheets and the feed rollers and therefore preventing sheet deviation to prevent creasing, wrinkling or tearing of the sheet.
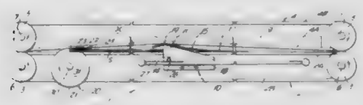
4,799,663
FEEDING MECHANISM

Roman M. Golicz, Clinton, Conn., assignor to G.B.R. Ltd., Chester, Conn.

Filed Jun. 26, 1986, Ser. No. 878,642
Int. Cl.[4] B65H *29/18*
U.S. Cl. 271—199 **26 Claims**

1. A feeding mechanism for stacking and moving sheets of paper and the like comprising means for moving said sheets along a transport path to a stacking area, said stacking area being substantially parallel to said transport path to a stacking area, said stacking area being substantially on the same plate as said transport path, means for holding said sheets stationary in said stacking area and accumulating said sheets in a stack

which is substantially on a plane parallel to said stacking area, means for releasing said stack after a predetermined number of sheets have accumulated in said stack to permit the stack to be moved from said stacking area, said moving means comprising a plurality of upper and lower transport belts located in transverse offset relationship to each other, means for supplying said sheets between said upper and lower belts to cause the

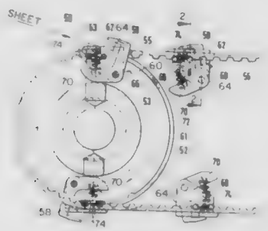


belts to grasp and move the sheets, a deflecting mechanism having an upper plane, said upper transport belt having a lower run in juxtaposed position adjacent said deflecting mechanism in a plane below the upper plane of the deflecting mechanism whereby the movement of a sheet past said deflecting mechanism will move the belt above the upper plane of the deflecting mechanism.

4,799,664
SHEET FEEDER FOR SHEET-PROCESSING MACHINES

Karl H. Burger, Wiesbaden, Fed. Rep. of Germany, assignor to Neue Rotoprint GmbH, Berlin, Fed. Rep. of Germany

Filed Feb. 19, 1987, Ser. No. 16,574
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1986, 3605534
Int. Cl.[4] B65H *5/02*
U.S. Cl. 271—277 **12 Claims**



1. A sheet feeder for sheet-processing machines, having a positively driven, belt means defining an endless revolving path of travel which travels over at least two wheels located at the opposite ends of the path of travel, said belt means has on the top thereof at least one sheet-transporting gripper which is opened or closed in the course of the revolving path,

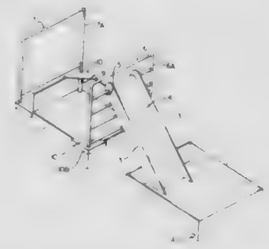
characterized in that said belt means includes a recess provided at one or more points along the longitudinal extension of said belt means into which recess a support body carrying a gripper mechanism is removably inserted;

each gripper mechanism including an actuating lever depending below said belt means, at least one of said wheels being provided with means defining a circumferential recess having a depth corresponding to the depending portion of said actuating lever which is actuated upon striking or leaving the surface defined by said circumferential recess means, wherein said support body includes a support plate which rests on the outside of said belt means, said support body passing through said belt means and being firmly clamped by means of at least two securing pins that rest on the inside of said belt means and which pass through said support body.

4,799,665
SANDBOX AND SWIMMING POOL PLAYSET

Julie A. Bracy, 3871 S. Fraser, Aurora, Colo. 80014

Filed Jul. 21, 1986, Ser. No. 887,426
Int. Cl.[4] A63B *17/04*
U.S. Cl. 272—1 R **3 Claims**



1. A playset apparatus comprising:

a first open-topped container, adapted for use as a sandbox and having a bottom and sidewalls;

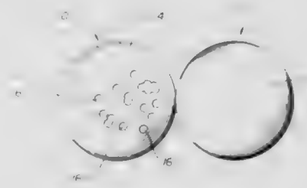
a second open-topped container, adapted for use as a wading pool and having a bottom and sidewalls, said second container being correspondingly shaped but slighly larger than said first container such that said second container can be inverted and telescoped over said first container; and

a pair of removable upstanding support means extending along opposed sidewalls of said first container, said first container including a plurality of socket means secured to the sidewalls thereof, the ends of said upstanding support means being inserted in and supported by said socket means, said upstanding support means being adapted to support said second container in inverted upwardly spaced disposition over said first container.

4,799,666
AMUSEMENT DEVICE HAVING CONTROLLED EXPLOSIVE SURFACES

Luis E. Obligio, Buenos Aires, Argentina, assignor to Omranco International Corporation, Agoura, Calif.

Filed Jan. 15, 1987, Ser. No. 3,485
Int. Cl.[4] F42B *4/04*
U.S. Cl. 272—8 N **12 Claims**



1. An amusement device comprising:

a. at least two ball members, at least one of the ball members having a hard surface and a coating of a material which can explode on impact with another ball member;

b. the coating comprising an oxidant and a combustible for creating an explosion, an inhibitor for inhibiting the explosion to a localized area on the surface the ball members, and an adhesive for adhering the oxidant, the combustible, the inhibitor and the adhesive on the surface of the ball members;

c. the adhesive and the inhibitor each comprises between

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10% and 14% casein glue and arabic gum by weight to the weight of the coating.

4,799,667

PHYSICAL EXERCISE APPARATUS

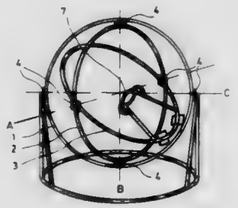
Helmut Sachy, Salzburg, Austria, assignor to Gyroteq Corporation, Minneapolis, Minn.

Continuation of Ser. No. 884,222, Jul. 10, 1986. This application Feb. 23, 1988, Ser. No. 159,233

Claims priority, application Austria, Aug. 7, 1985, 2308/85; Aug. 26, 1985, 2477/85

Int. Cl.[4] A63B *25/08*; A63G *1/00*

U.S. Cl. 272—36 **4 Claims**



1. A physical exercise apparatus comprising a first innermost ring (3) which is mounted rotatably about a first axis (A) in a second larger ring (2), and with a third outermost ring with respect to which the second ring (2) is in turn mounted rotatably about a second axis (B) pointing transversely to the first axis (A) and the third outermost ring (1) being mounted rotatably about a third axis (C) so that an occupant occupying the first innermost ring can assume any angular position in space solely by weight shifting or movement due to the mounting of gimbals effected thereby, characterized in that a support hoop (7) is disposed in the first innermost ring at the level of an occupant's hip, which is connected via rigid struts (8) to the innermost ring (3) said struts being positioned to provide the sole support for said support hoop so that the occupant may support himself for substantially effecting rotational movement solely by gripping the support hoop and may use the support hoop for introducing forces onto the innermost ring by movement of the occupant.

4,799,668

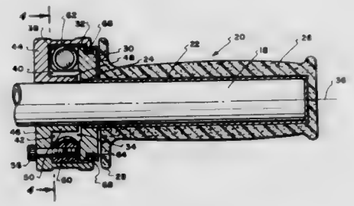
BICYCLE MOUNTED EXERCISING DEVICE

Martin B. Jansen, 29406 Promontory Pl., Agoura Hills, Calif. 91301

Filed Feb. 22, 1988, Ser. No. 158,602

Int. Cl.[4] A63B *21/00, 5/00*

U.S. Cl. 272—73 **6 Claims**



1. In combination with a bicycle, said bicycle having a cylindrical handlebar, said handlebar terminating at a pair of gripping areas, an exercising device connectable to said handlebar at either said gripping area, said exercising device comprising:

a sleeve mounted on a said gripping area, said sleeve having a longitudinal center axis, said sleeve located in a close conforming manner to said handlebar, said sleeve being rotatable relative to said handlebar;

a handgrip fixedly mounted on said sleeve, said handgrip to be graspable by a hand of a human being to affect rotation of said sleeve, said handgrip substantially totally covering said sleeve except for the inner edge of said sleeve;

a concentric disc secured to said inner edge of said sleeve, said concentric disc having a circumferential surface concentrically disposed relative to said handlebar, said concentric disc having an operating surface positioned substantially perpendicular to said longitudinal center axis, a narrow abutment attached to said operating surface and extending outwardly therefrom;

a pair of semi-cylindrically shaped members, fastening means attached to said members for securing together said members into tight engagement onto said handlebar, said members cooperating to form an annular spring chamber, spring means mounted in said annular spring chamber, a portion of said spring means being secured to one of said members, said narrow abutment being located within said spring chamber, rotation of said handgrip causes compressing of said spring means; and

means for interlocking said concentric disc and said pair of semi-cylindrically shaped members, said interlocking means preventing lineal movement of said semi-cylindrically shaped members relative to said concentric disc along said longitudinal center axis, and permitting rotation of said concentric disc relative to said semi-cylindrically shaped members.

4,799,669

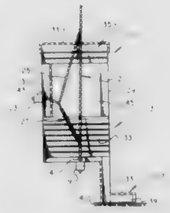
SWING

Appleton, Richard E., 303 S. 9th St., Midlothian, Tex. 76065

Continuation-in-part of Ser. No. 019,257, Feb. 26, 1987, abandoned. This application Sep. 25, 1987, Ser. No. 100,906

Int. Cl.[4] A63G *9/16*

U.S. Cl. 272—85 **10 Claims**



1. A balanced, tiltable swing swingingly suspended from an upper support and above a lower support comprising:

a. a main body portion having a seat for supporting at least one person occupant;

b. a foot support portion connected with said main body portion and extending downwardly such that said foot support portion will contact the lower support when the swing is tilted forward;

c. a main tilt beam traversing longitudinally of said main body support and disposed near the center of gravity of said main body support with said main body support substantially balanced thereover when unoccupied and operationally hung and such that said main body support can be tilted one of forward and backward with very little unbalancing force;

d. a plurality of main lineal support members, with at least one member being disposed at each end of said main tilt beam; said respective main lineal support members being respectively connected with the upper support and with said main tilt beam;

e. a back support means connected with said main body portion and disposed a predetermined distance above said seat;

f. a plurality of auxiliary lineal supporting members, disposed at least one at each end, connected with respective said lineal support members and with said back support beam; and

g. a biasing means connected intermediate respective said main lineal support member and said auxiliary lineal support member at each end for controlling the force required to tilt said swing backwardly by an occupant person and the degree of tilt;

such that an occupant person can step onto said foot portion and be seated in said main body portion, tilt said main body portion backwardly easily and swing by a simple oscillating movement of the head at the proper frequency.

4,799,670

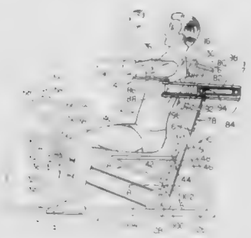
EXERCISE APPARATUS

Neil Williamson, 1814 E. Highway 14, Janesville, Wis. 53545

Filed Jun. 12, 1987, Ser. No. 60,821

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—117 **14 Claims**



1. An exercise apparatus for exercising the arm muscles and upper torso muscles of a user, said apparatus comprising:

a frame;

weighted means pivotally connected to said frame, said weighted means being positioned such that the user is permitted to lift said weighted means with the user's arms;

said weighted means including:

a first arm pivotally secured to said frame, said first arm having a proximal and a distal end;

a first loaded means secured adjacent to said distal end of said first arm for pivoting said first arm towards a first position thereof in which the user rests, said first loaded means being lifted by the user away from said first position such that said first arm pivots relative to said frame;

a second arm pivotally secured to said frame such that said first and second arms pivot about the same pivotal axis, said second arm having a proximal and a distal end;

a second loaded means secured adjacent to said distal end of said second arm such that the user is permitted to selectively lift one or both of said loaded means; and

user operated pedal release means for selectively changing the weight of said weighted means during use of the apparatus such that (in use of the apparatus) when the user has repeatedly lifted said weighted means a predetermined number of times, the user operates said release means to change the weight to be lifted so that the optimum stress is applied to the muscles being exercised.

4,799,671

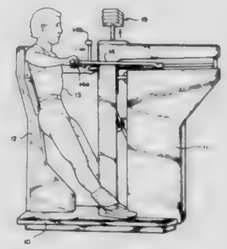
WEIGHT LIFTING EXERCISE APPARATUS

Lynn D. Hoggan, Sandy; Earl Van Wagoner, III, West Jordan, and Edward N. Balogh, Salt Lake City, all of Utah, assignors to Hoggan Health Industries, Inc., Draper, Utah

Filed Oct. 8, 1986, Ser. No. 916,641

Int. Cl.[4] A63B *21/06*

U.S. Cl. 272—118 **20 Claims**



1. Weight lifting apparatus for exercising the human body, comprising a stationary platform for receiving and supporting a stack of weights to be lifted; a framework providing a user accommodation location adjacent to said platform and supporting said platform at an elevated level, relative to a user sitting or standing at said user accommodation location and facing said stack, such that the position of the stack of weights will correspond approximately with the position of the user's head; weight carrier means including an elevator platform, and weight connection means rising substantially vertically from said elevator platform and extending in close association with said stationary platform and with the position of the stack of weights thereon so the user can conveniently select a desired number of weights from said stack for connection with said weight connection means; means operable by a user at said user accommodation location for attaching selected weights to said weight connection means; operating means arranged to be engaged by at least one body member of the user of the apparatus for muscle exercise; and forcetransmitting means interconnecting said operating means with said carrier means.

4,799,672

POWERLIFT COMPETITION SAFETY DEVICE

William L. Barrett, 295 Maplewood Ave., Whitehall, Ohio 43213

Filed Jan. 4, 1988, Ser. No. 140,622

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 **6 Claims**

1. A weightlifting apparatus operable to support a barbell comprising:

(a) a pair of spaced-apart, substantially parallel vertical support members, each having an upper end and a lower end;

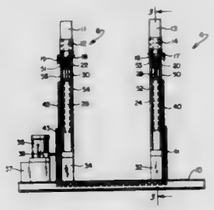
(b) a base supporting said support members;

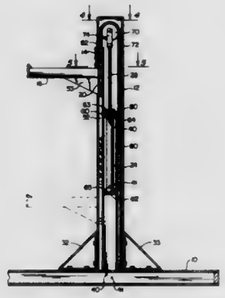
(c) each said support member bearing synchronously and selectively movable, horizontally projecting spotting arms which are disposed in substantially the same horizontal plane and are adapted to receive a barbell;

(d) a rod and cylinder assembly coupled to each of said spotting arms, said coupling substantially situated in said upper ends of each of said support member and said assemblies being fluid actuable for synchronous movement of said spotting arms, wherein said coupling means includes a weight support carriage affixed to each said spotting arm, a lift chain affixed to each said weight support carriage and each said support member, and a sheave affixed

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to each of said rods, said lift chain being trained about said sheave; and,





(e) an actuating means for said assemblies, said assemblies being fluid actuable for synchronous movement of said spotting arms.

4,799,673

BENCH PRESS SAFETY APPARATUS

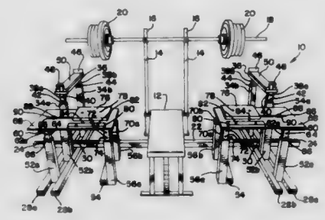
Robert W. Selle, 6157 Pershing, Downers Grove, Ill. 60516, assignor to Robert Selle, Downers Grove, Ill.

Filed Nov. 16, 1987, Ser. No. 121,133

The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 7 Claims



1. A bench press safety apparatus for weight lifters using a barbell with weight discs thereon, said apparatus comprising a connector beam, a left- and a right-hand safety support, each of said safety supports joined to said connector beam to secure said safety supports at a fixed distance apart and lend stability and rigidity thereto, each of said safety supports providing an upper horizontal surface to support the ends of said barbell in the event of a failed exercise or dropping of the barbell by a weight lifter using said apparatus, thus precluding injury to said weight lifter, a left- and a right-hand unloading shelf, each shelf providing a lower horizontal surface positioned at a lower level than said upper horizontal surface of said corresponding safety support and spaced laterally inwardly of said upper horizontal support for receiving and supporting said weight discs, means mounting each of said unloading shelves for selective lateral adjustment with respect to said weight discs whereby said weight lifter, having been protected from injury during a failed exercise or dropped barbell by said barbell ends falling on said safety supports, may then relocate said barbell and weight discs from a first position in which said safety supports support said barbell ends, to a second position in which said unloading shelves receive and support said weight discs to facilitate unweighting of the barbell and resumption of the exercise routine.

4,799,674

WEIGHT LIFTING SAFETY DEVICE

Douglas C. Ochab, P.O. Box 502, Chicago, Ill. 60690

Continuation-in-part of Ser. No. 816,625, Jan. 6, 1986, Pat. No. 4,711,449. This application Nov. 12, 1987, Ser. No. 119,639

The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 6 Claims



1. A weight lifting safety device adapted for use in bench-pressing exercises, said device comprising:

weight supporting bar means for grasping in a horizontal position by a user and for receiving weights on generally opposite ends thereof;

bar and weight support means depending vertically from said bar means adjacent opposite ends thereof for supporting said bar means adjacent opposite ends thereof for predetermined elevated position relative to a supporting surface;

an attachment assembly fixed to the upper end of each support means and extending horizontally thereof, each said attachment assembly having a sleeve, said bar means extending through said sleeve of each of said attachment assemblies and being rotatable therein;

each of said bar and weight support means includes a horizontal base plate and generally vertical support member means for joining said base plate and said attachment assembly;

rotation dampening means for dampening relative rotation between said weight supporting bar means and said attachment assembly; and

said rotation dampening means includes friction pad means for exerting radially directed friction forces between said attachment assembly and said weight supporting bar means.

4,799,675

ARM LOCKING DEVICE FOR WEIGHTLIFTERS

George L. Helmer, 4129 Claudia Ave., Rosemead, Calif. 91770

Filed Apr. 7, 1987, Ser. No. 35,394

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 9 Claims

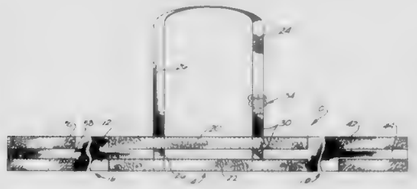
1. A arm locking device for use by weightlifters comprising:

An elongated flexible and foldable strap which is substantially non-stretchable in its axial dimension, the strap having a central portion for overlying the chest region of a weightlifter; a left end portion long enough to wrap around the left arm of the weightlifter by extending between the chest and the left elbow, behind the left triceps, over the left biceps, and then to an overlapping position on the central portion of the strap; and a right end portion long enough to wrap around the right arm of the weightlifter by extending between the chest and the right elbow, behind the right triceps, over the right biceps, and then to an overlapping position on the central portion of the strap;

a neck loop rigidly affixed to spaced apart positions on the central portion of the strap substantially equidistantly between the ends of the strap for extending away from the strap a sufficient distance to wrap around the neck of the weightlifter during use of the arm locking device;

elongated friction fastening means on the central portion of the strap extending substantially parallel to the axial dimension of the strap;

left fastening means comprising an elongated friction fastener on the left end portion of the strap spaced from the fastening means on the central portion of the strap and extending generally parallel to the axial dimension of the



strap for providing an infinitely adjustable and axially continuous means of attachment to the friction fastening means on the central portion of the strap to securely hold the left end portion of the strap in a fixed position wrapped in a loop of adjustable size around the left arm of the weightlifter; and

right fastening means comprising an elongated friction fastener on the right end portion of the strap spaced from the fastening means on the central portion of the strap and extending generally parallel to the axial dimension of the strap for providing an infinitely adjustable and axially continuous means of attachment to the friction fastening means on the central portion of the strap to securely hold the right end portion of the strap in a fixed position wrapped in a loop of adjustable size around the right arm of the weightlifter, so that the left and right arms of the weightlifter are held in a locked position with the fastened end portions of the non-stretchable strap keeping the elbows of the left and right arms close to the body by resisting outward movement of the left and right arms as weight is being lifted, with the flexibility of the strap in its fastened position being sufficient to offer substantially no resistance to the weightlifting exercise.

4,799,676

HYDRAULIC EXERCISING MACHINES

John H. Sheppard, 4 Edgehill Avenue, Llanishen, Cardiff, and Jonathan D. Moore, Timberleigh, West End, Magor, Gwent., both of Great Britain

Filed Aug. 25, 1986, Ser. No. 899,960

Claims priority, application United Kingdom, Aug. 29, 1985, 8521538

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—130 6 Claims

1. An exercising machine, comprising

(a) a frame;

(b) an exercise member connected with said frame for movement relative thereto;

(c) a hydraulic piston and cylinder unit connected between said frame and said member for providing a biasing force resisting movement of said member relative to said frame; and

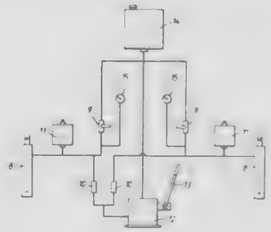
(d) hydraulic control means for controlling the biasing force of said piston and cylinder unit, said hydraulic control means including

(1) a pump for pumping hydraulic fluid to said piston and cylinder unit;

(2) a hydraulic line connecting said pump with said piston and cylinder unit, whereby said pump is operable to establish a predetermined starting pressure within said piston and cylinder unit;

(3) a pressure gauge connected with said hydraulic line for registering the hydraulic pressure therein; and

(4) pressure accumulator means incorporating a compressed gas and connected with said hydraulic line for



pressurization by said hydraulic fluid, said accumulator means comprising

(i) first and second accumulator units hydraulically connected in series, each of said units being connected with said hydraulic line;

(ii) an on/off valve arranged in the series connection between said units separate from said hydraulic line; and

(iii) a two-way valve link arranged in said hydraulic line between said pump and the line connections of said first and second accumulator units, said two-way valve link being selectively movable between a first position connecting said pump solely with said line connection to said first accumulator unit, and a second position connecting said pump solely with said line connection to said second accumulator unit, whereby the volume of said accumulator means communicating with said hydraulic lines may be selected in accordance with the selected positions of said on/off valve and said two-way valve link.

4,799,677

VIDEO GAME HAVING VIDEO DISK READ ONLY MEMORY

Jeffrey E. Frederiksen, Arlington Heights, Ill., assignor to Baily Manufacturing Corporation, Chicago, Ill.

Continuation of Ser. No. 529,046, Sep. 2, 1983, abandoned. This application Feb. 24, 1986, Ser. No. 832,903

Int. Cl.[4] A63F *9/22*

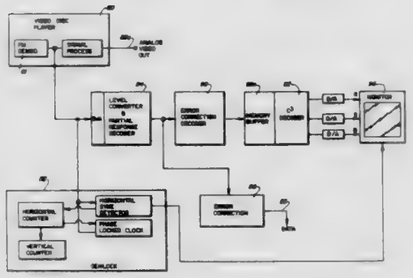
U.S. Cl. 273—1 E 16 Claims

1. In a video display system having means for displaying video imagery and an input means responsive to an operator for providing operator control signals, a storage and retrieval system comprising:

means for storing data representing digital video data signals for generating video imagery on the display means, said storage means including: means for compressing said digital video data signals, means for combining said compressed digital data signals with video control signals and

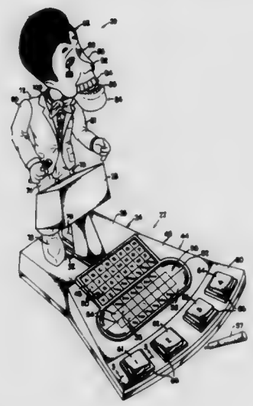
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means for converting to multi-level signals wherein said converted multi-level signals are stored as said data;
means coupled to said storage means, said input means and the display means for controlling the display of selected video imagery represented by the data stored in the storage means, said displayed video imagery being selected in response to said operator control signals;
means coupled to said storage means and said control means



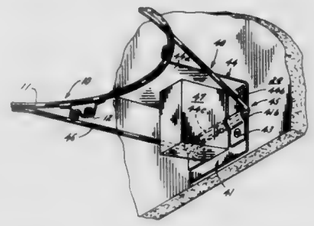
for recovering said video control signals to control the display of selected video images on the display means;
level converter means coupled to said storage means and said control means for converting the multi-level signals representing selected video imagery to binary signals;
a first decoding means for expanding said binary signals to transform said signals to said digital video data in uncompressed form, said video data being coupled to the display means for the display of the selected video imagery.

4,799,678
ELECTRONIC GAME WITH ANIMATED HOST
Reuben T. Terzian, Chicago; Jeffrey D. Breslow, Highland Park; Donald A. Rosenwinkel, Oak Park, and John V. Zarubo, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 6, 1987, Ser. No. 12,084
Int. Cl.[4] A63F *9/00*; A63H *13/00*
U.S. Cl. 273—1 E **13 Claims**



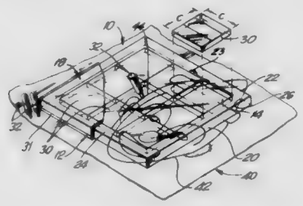
1. A game including:
a base;
an animated character mounted on the base;
player input means carried by the base;
the player input means including a first set of input means common to all players and a second set of input means individual to each player;
program means containing game play instructions;
audio means; and
means interfacing the animated character, player input means, program means and audio means so that the character effectively hosts play of the game including giving instructions on play of the game.

4,799,679
REFLEX MOUNTING ASSEMBLIES FOR A BASKETBALL GOAL
Hugo A. Obrist, 309 W. Walnut, Millington, Ill. 60537
Filed Oct. 22, 1987, Ser. No. 112,505
Int. Cl.[4] A63B *63/08*
U.S. Cl. 273—1.5 R **12 Claims**



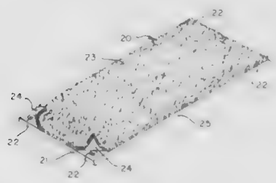
1. An assembly for reflexably mounting a normally horizontal basketball goal hoop to a vertical backboard, which reflex mounting assembly comprises:
(a) a base plate normally attached to the front face of said backboard;
(b) an L-shaped bracket which comprises a normally horizontal portion, to which a hoop is attached, and a normally vertical portion normally resting against the front face of the upper portion of said base plate;
(c) a hinge for pivotally connecting the lower edge of said normally vertical portion of said L-shaped bracket to an interior region of the front face of said base plate; and
(d) a preloaded resilient mass disposed between the lower face of said normally horizontal portion of said L-shaped bracket and the front face of the lower portion of said base plate.

4,799,680
TRANSPARENT PUZZLE
Deborah M. Weimar, 25 Macopin Ave., Upper Montclair, N.J. 07043
Filed Nov. 18, 1987, Ser. No. 121,936
Int. Cl.[4] A63F *9/10*; G09B *11/06*
U.S. Cl. 273—157 R **18 Claims**



17. A puzzle comprising: a plurality of transparent puzzle pieces; a base defining a puzzle recess dimensioned to receive the transparent puzzle pieces and a glue applicator means for removably placing glue on the puzzle pieces to define indicia thereon.

4,799,681
BASEBALL RUNNER PADS
Albert M. Pipik, Box 203, Main St., Allenport, Pa. 15412
Filed Sep. 8, 1986, Ser. No. 904,985
Int. Cl.[4] A63B *71/00*
U.S. Cl. 273—25 **5 Claims**



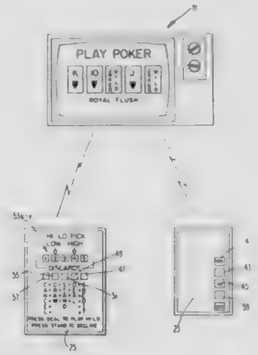
1. An auxiliary safety base pad particularly for the first base position of soft ball and baseball fields comprising a generally rectangular safety base pad member adapted to be fastened alongside the conventional base pad and extend across the running lane and adjacent first base whereby the runner can tag the rectangular safety base pad member instead of the conventional base and thereby reduce the danger of collision between the runner and the player covering first base, a concealed fastener means at each corner of the safety base pad adapted to engage the safety base pad and hold it fixed in place, said fastener means having at least one spike, said safety base pad having a base of hard rubber and a top cover of outdoor carpeting, said hard rubber base having metal grommet fixed therein at each corner to receive said spike, said top cover being loose at each corner sufficient to permit access to each grommet for inserting said spike and for concealing said spike.

4,799,682
HOCKEY STICK
Owen P. Hughes, 155 Messinger St., Canton, Mass. 02021
Filed Apr. 1, 1987, Ser. No. 34,032
Int. Cl.[4] A63B *59/00*
U.S. Cl. 273—67 A **5 Claims**



1. In a hockey stick having a handle, and an elongated blade extending from a heel portion at one end of said handle and terminating in a bifurcated toe portion at an end spaced from said heel portion, said blade defining a concavely curved forehand puck striking surface terminating in a fore toe segment and a backhand puck striking surface terminating in a back toe segment,
the improvement wherein
said backhand puck striking surface terminating in said back toe segment is concavely curved along at least a portion of its length, and
said fore toe segment and said back to segment are spaced apart, have an open space between them, define an acute angle between them, and are longer than they are thick so as to allow said toe segments to flex independently for improved puck control on the forehand and on the backhand.

4,799,683
INTERACTIVE VIDEO GAME OF CHANCE AND PLAYER CONTROLLED SUBSYSTEM THEREFOR
George M. Bruner, Jr., Willow Grove, Pa., assignor to Tekbilt, Inc., Oreland, Pa.
Filed Sep. 16, 1986, Ser. No. 908,049
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—138 A **3 Claims**



1. A remote control system for playing a game upon a color television receiver having red, green and blue video signal circuit means for driving at least one electron gun, means for amplifying an audio signal, means for generating a composite sync signal, and circuit means receiving the composite sync signal for controlling a color picture tube with at least a horizontal sync signal and a vertical sync signal, wherein a broadcast received by the color television receiver may be viewed interchangeably with the game, each without interference to the other, said remote control system comprising:
supervisory transmitter means for remotely transmitting a first signal having encoded thereon a first plurality of commands including a display command for selectively displaying the game or the broadcast;
player transmitter means for remotely transmitting a second signal having encoded thereon a second plurality of commands;
wherein said first and second signals comprise infrared signals;
means for receiving said first and second encoded signals;
a main enclosure, including a power supply, a solid-state logic board having programmable means for simulating the game in response to said first and second plurality of commands, and means coupled between said receiving means and said logic board for decoding said first and second encoded signals to produce said first and second plurality of commands; and
a transfer unit coupled between said main enclosure and the circuit means for controlling the color picture tube, said transfer unit being adapted to bypass the composite sync signal and further coupled to the video signal circuit means for driving the at least one electron gun in response

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to a third plurality of commands produced by said logic board responding to said first and second plurality of commands;

wherein said supervisory transmitter means and said player transmitter means each comprise:

a plurality of push buttons for respectively selecting said first and second plurality of commands;

integrated circuit means coupled to said plurality of push buttons for respectively outputting said first and second plurality of commands;

a transistor amplifier coupled to receive the commands output from said integrated circuit means; and

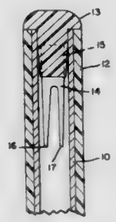
a pair of light emitting diodes coupled to said transistor amplifier and adapted to emit infrared light in response to said first and second plurality of commands.

4,799,684

GOLF PUTTER INCLUDING DIVOT REPAIR DEVICE

Joseph F. Rango, 74470 Fairway Dr., Palm Desert, Calif. 92260

Filed Oct. 23, 1987, Ser. No. 111,864
Int. Cl.[4] A63B *53/00*
U.S. Cl. 273—162 F **1 Claim**



1. A golf putter comprising a shaft having a hand grip at the end thereof which surrounds a hollow portion of said shaft, and a divot mending device positioned within the hollow end of said shaft and removable therefrom, said divot mending device comprising

(a) a tined strip which provides divot mending capability;

(b) a conical sleeve formed of resilient material the lower end of which surrounds and engages the upper end of said tined strip;

(c) the upper end portion of said conical sleeve being dimensioned to frictionally slide within and engage the interior wall of said hollow portion at the end of said shaft and become wedged therein under pressure;

(d) said conical sleeve being shaped at its upper extremity to form an end cap for said shaft.

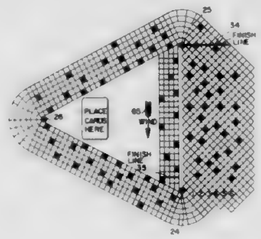
4,799,685

SAILBOAT RACING BOARD GAME

Galen W. Hoffman, Jr., 75 Cross St., Westerly, R.I. 02891

Filed Mar. 13, 1987, Ser. No. 25,645
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—246 **15 Claims**

1. A sailboat racing gameboard for a game played with sailboat game pieces which comprises a surface area marked off into a gridwork of squares; fixed indicia for indicating a fixed wind direction; a plurality of indicia on the surface for representing marker buoys, said marker buoy indicia being arranged in a configuration to form a race course having a plurality of connected legs in the area marked off into squares wherein the squares of each leg are contiguous; said legs being selected from the group consisting of broad reach legs, beam reach legs, upwind legs, downwind legs and combinations thereof; said course including at least one upwind leg and a downwind leg; said squares of the upwind and downwind legs being oriented in different directions; said squares of the upwind leg being formed by the intersection of two sets of generally parallel lines, each set of which is oriented in a direction which is diagonal with respect to the fixed wind direction so that sailboat game pieces can be tacked in an upwind direction which is diagonal with respect to the fixed wind direction but not diagonal with respect to the orientation of the squares; said squares of the downwind leg being formed by the intersection of one set of generally parallel lines which are generally parallel to the fixed wind direction and another set of generally parallel lines which is generally perpendicular to the fixed



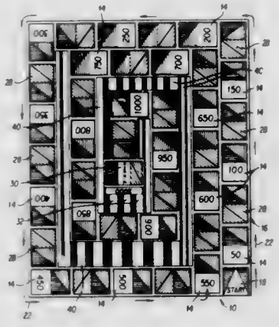
wind direction; and said squares of all other legs being formed by the intersection of one set of generally parallel lines which is generally parallel to the leg and another set of generally parallel lines which is generally perpendicular to the leg; and said surface area further comprising a set of distorted squares for connecting together the squares of different legs in which the squares are not oriented in the same direction with respect to the fixed wind so that all the squares on the board are contiguous.

4,799,686

BOARD GAME APPARATUS FOR A BANKING GAME

Eduardo S. Martinez, 2371 Collins Ave., Apt. B-338, Miami Beach, Fla. 33139

Filed Dec. 19, 1986, Ser. No. 943,501
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—249 **4 Claims**



1. A board game apparatus for playing of a banking game for two or more players, one player being designated banker, comprising:

a plurality of playing pieces, each piece representing each player and having means to distinguish said piece of one layer from the pieces of other players;

a generally rectangularly configured game board of substantially stiff, rigid materials:

a series of consecutive game stations indicated on the board from a start station to a winner station;

said series of consecutive game stations forming a game path between the start station and the winner station and arranged in a contoured pathway defining generally a spiral configuration progressing from a peripheral position of the game board toward the center thereof;

toy printed paper money;

selected ones of the series of game stations disposed in a fixed sequence having thereon numeric indication means for transacting specific amounts of money between players and with the banker, said amounts increasing in order from the start station toward the winner station;

selected ones of the series of game stations disposed in a fixed sequence, having no numeric indications thereon, interposed between said stations having numeric indications thereon;

a plurality of playing tokens, each token representing a player's ownership of one of the selected game stations having numeric indication means thereon;

said series of consecutive game stations adapted to receive said playing pieces and tokens thereon; and

at least one die to determine stations advanced by a player as players advance along the consecutive game stations toward the winner station.,

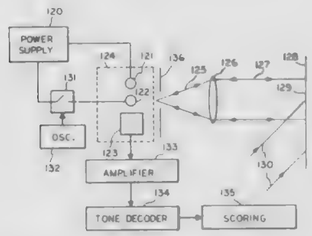
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4,799,687

PROJECTED IMAGE TAG GAME

Dennis W. Davis, and Russell D. Davis, both of 10740 Eland St., Boca Raton, Fla. 33433

Filed Feb. 18, 1987, Ser. No. 16,012
Int. Cl.[4] A63B *67/00*; **F41J** *9/14*
U.S. Cl. 273—312 **5 Claims**



1. A light projection tag game wherein players may attempt to accomplish a tag by causing the superposition of projected images on a gaming surface, said game comprising optical transceiver means for projecting said images onto said gaming surface and detecting said image light reflected from said gaming surface so as to sense superposition of said images, whereby said images are projected from multiple locations and caused to move in pursuit action across said gaming surface, said transceiver comprising:

a. A light-emitting device which projects a beam of light along a first optical axis;

b. a lens with focusing means incident to said beam for projecting an image on a distant surface along said first optical axis;

c. a lens and detector assembly located along a second optical axis for detecting light reflected from said distant surface, wherein said assembly has angular adjustment means for causing said second optical axis to intersect said first optical axis at the location of said projected image, said assembly having field of view adjustment means that allows said detector to receive light only from area of said projected image on said gaming surface;

d. electronic means for processing electronic signals resulting from optical detection of said received light and producing output indicative of said tag;

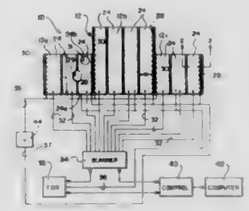
wherein said projected image can be caused to move across said gaming surface by manual pointing of said transceiver by said player, wherein said light-emitting device is an assembly emitting visible light and modulated infrared light, said modulated infrared light having modulation characteristic of particular said transceiver, said detector comprising an infrared detector, said processing means responsive to said modulation characteristic of an opponent transceiver, said modulated infrared light source and said infrared detector functions provided by a single lightemitting diode, said light-emitting diode having electronic means for alternating connection to transmitter power and to said detector processing means.

4,799,688

LIVE FIRE TARGET SYSTEM

George A. Kellman, Rochester; Richard E. Flower, Macedon, and Harvey L. Kidder, Geneseo, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 27, 1987, Ser. No. 7,211
Int. Cl.[4] F41J *1/08, 5/00*
U.S. Cl. 273—371 **28 Claims**



23. A target system comprising:

a dielectric support defining a target surface;

at least one electrically conductive strip disposed on said target surface;

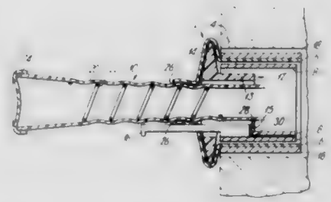
sensing means connected to said strip for generating a pulsed electrical effect so as to detect the size and location of any hits through said target.

4,799,689

WALL FEEDTHROUGH

Nolf, Jean M. E., Hamme-Mille, Belgium, assignor to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 13, 1987, Ser. No. 37,744
Claims priority, application United Kingdom, Apr. 15, 1986, 8609089
Int. Cl.[4] F16J *9/02*; **F16L** *3/04, 5/02*
U.S. Cl. 227—9 **6 Claims**



3. A device for forming a seal between a duct and a substrate carried by the duct, comprising:

a sealing member that can provide a seal between the duct and the substrate,

a biasing member that can be operated after positioning of the sealing member in the duct to provide a resiliently biased engagement between the sealing member and the duct; and

the sealing member comprising a first portion that can en-

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gage the substrate and a generally cylindrical portion that can be expanded by the biasing member to engage the duct

an insert which can be positioned between the substrate in the duct and the sealing member, through which insert the biasing member can be operated externally of the substrate,

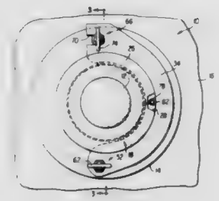
the insert member being annular and comprising a first portion having an external dimension such that is can be positioned within the biasing member and a second portion having an external dimension such that it projects beyond the edges of the duct.

4,799,690

SANITARY SHAFT SEAL ASSEMBLY

Valentino Gabriele, Baltimore, Md., assignor to J. C. Pardo and Sons, Baltimore, Md.

Filed Mar. 24, 1988, Ser. No. 172,555
Int. Cl.[4] F16J *15/54*
U.S. Cl. 277—9 **6 Claims**



1. A seal assembly for sealing a rotary shaft extending through a wall in both static and rotary modes and being capable of rapid assembly an disassembly for cleaning with out the use of tools, comprising:

support ring means fixed to the wall and having a bore formed therein, the shaft extending through the bore in said support ring means;

seal retainer means disposed at least partially within the bore of the support ring means, the seal retainer means having a bore extending therethrough, the longitudinal axes of the bores being coincidental, the shaft extending through the bore in the seal retainer means with sufficient clearance to rotate therewithin, the seal retainer means having a first seal race formed therein and facing the shaft and a second seal race formed therein and facing the portion of the support ring means, the seal retainer means having a groove formed therein in a portion thereof disposed exteriorly of the support ring means;

first and second sealing elements disposed respectively within the first and second seal races and sealing respectively against the shaft and the support ring means;

displacement means for holding the seal retainer means relative to the support ring means and the shaft and being manually displaceable to allow manual removal of the seal retainer means from the support ring means, the displacement means comprising a substantially C-shaped seal compression element having first and second end portions, the first end portion having an open slot formed therein and the second end portion having an aperture formed therein, at least portions of inner edge portions of the seal compression element fitting into at least portions of the groove formed in the seal retainer means when the displacement means occupies a position holding the seal retainer means relative to the support ring means; and,

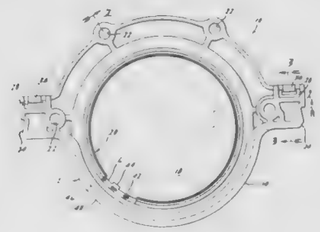
locking means for holding the seal compression element in place relative to the seal retainer means and the support ring means, the locking means being manually separable from the displacement means, at least portions of the locking means being received in the open slot formed in the first end portion of the seal compression element, displacement of the seal compression element away from the locking means causing the locking means to be moved out of the slot, thereby freeing the seal compression element from the locking means.

4,799,691

REAR CRANKSHAFT SEAL HOUSING WITH INTEGRALLY BONDED SEAL

Bernard G. Stritzke, Hanover Park, and Brian F. Rericha, Downers Grove, both of Ill., assignors to Microdot Inc., Darien, Conn.

Filed Feb. 22, 1988, Ser. No. 158,395
Int. Cl.[4] F16J *15/10*
U.S. Cl. 277—12 **4 Claims**



1. A seal housing with integrally bonded seal comprising

a seal housing comprising an annular body portion having an internal radially inwardly extending perforated flange defining a central longitudinal circular aperture; a plurality of bores extending longitudinally through said body portion; and a pair of diametrically opposed projections extending radially outwardly from said body portion, each of said projections having a bore extending transversely thereof within a plane normal to the longitudinal axis of the central aperture of said housing and having a cavity extending normally of the transverse bore and intersecting therewith;

an annular sealing element formed of an elastic material molded to the internal flange of said housing, said elastic material flowing through the perforations in the internal flange during such molding, whereby said sealing element is mechanically bonded to said housing; and

a female fastener element situated within each of the cavities of the projections of said housing, whereby a male fastener element advanced through the transverse bore of each projection is secured relative thereto by said female fastener element.

4,799,692

RADIAL PRESSURE FLANGE SEAL

Thomas H. Batzer, Livermore, and Wayne R. Call, Tracy, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 895,643, Aug. 12, 1986, abandoned.
This application Sep. 15, 1987, Ser. No. 96,756
Int. Cl.[4] B65D *53/00;* **F16J** *15/08;* **F16L** *17/00*
U.S. Cl. 277—34 **13 Claims**

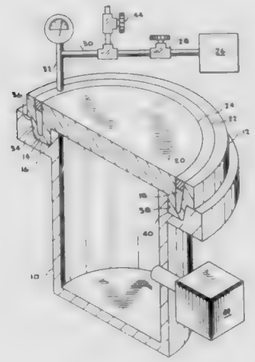
1. An apparatus for sealing a vacuum or pressure system with a seal being established between a first object and a second object and around an opening that leads to the vacuum or pressure system, comprising:

a flange attached to the first object so that a gas cannot pass between the flange and the first object, with part of the flange forming a metallic first sealing element;

a matching groove in the second object that substantially matches and mates with the flange, wherein the matching groove has a plurality of sides and wherein the sides are joined in an air-tight manner, and with part of one side of the matching groove forming a second sealing element, with the matching groove shaped to provide a thin gap between the first sealing element and the groove and the second sealing element and the flange so that as the flange is inserted in an axial direction into the groove the first sealing element does not touch the groove and the second sealing element does not touch the flange, and wherein the flange and groove surround the opening when the flange is inserted in the groove;

a closed fluid tight chamber within the flange;

means for guiding the flange in the axial direction into the groove and preventing the first sealing element from touching the groove and the second sealing element from touching the flange as the flange is inserted into the groove;



means for directing fluid into the fluid-tight chamber for creating fluid pressure in the fluid-tight chamber after the flange is inserted in the matching groove to radially press at least a portion of the first sealing element against at least a portion of the second sealing element to form the seal around the opening and between the first and second sealing elements;

means for directing fluid out of the fluid-tight chamber; and

wherein the flange comprises in inner wall, an outer wall and a connecting wall, which form the sides of the fluid-tight chamber, and wherein at least part of one of these walls forms the first sealing element; and wherein the groove comprises an inner side, an outer side and a connecting side, and wherein at least part of one of these sides forms the second sealing element.

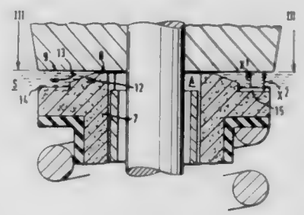
4,799,693

FACE SEALS WITH LIQUID PULSATION PUMPING FEATURE

David E. Johnston, Newcastle-upon-Tyne, United Kingdom, assignor to George Angus & Company Limited, Newcastle-upon-Tyne, England

PCT No. PCT/GB86/00491, § 371 Date Apr. 30, 1987, § 102(e) Date Apr. 30, 1987, PCT Pub. No. WO87/01170, PCT Pub. Date Feb. 26, 1987
PCT Filed Aug. 18, 1986, Ser. No. 47,018
Claims priority, application United Kingdom, Aug. 20, 1985, 8520860
Int. Cl.[4] F16J *15/34*
U.S. Cl. 277—96.1 **3 Claims**

1. A face seal having a sealing ring with an axially-directed annular sealing face to bear, under axial spring load, by a circular sealing contact band against a circular counter-face of a sealed relatively rotatable member, in which a peripheral margin of the contact band is made of frusto-conical form, to diverge from the plane of the contact-band so as to define an annular sealing region which enlarges in circumferential area radially towards the sealed side of the seal, and the sealing ring is provided at the sealed side with peripheral shoulder which is designed to have nonconstant axial clearance from the counter-face so that, on relative rotation, liquid pulsation is produced in the clearance to cause slight variation in the axial load of the sealing ring against the counter-face and consequent displacement pumping in the sealing region towards the sealed side.

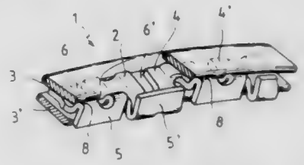


4,799,694

PISTON RING AND METHOD OF MAKING THE SAME

Bert Brauers, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Dec. 17, 1987, Ser. No. 135,522
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1986, 3643243
Int. Cl.[4] F16J *9/20;* **B23P** *15/06*
U.S. Cl. 277—140 **2 Claims**



1. In a piston ring assembly having an expander spring of sheet material bent into an annular configuration, said expander spring having a circumferential series of radially oriented tongues; each tongue having an approximately axially bent leg; said tongues and legs being defined by stamped-out slots provided in said expander spring in an alternatingly radially inwardly and radially outwardly oriented circumferential series; said expander spring having stamping burrs bounding said slots; said piston ring assembly further having two laminar oil scraper rings arranged generally concentrically with respect to said expander spring; said laminar oil scraper rings being axially supported by said tongues and being radially supported by said legs; the improvement wherein said burrs are situated such that they are submitted solely to compression forces derived from bending stresses generated as a result of bending the spring into the annular configuration.

4,799,695

METALLIC GASKET

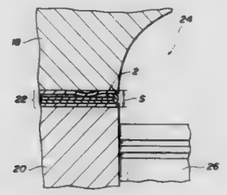
Nobuo Yoshino, Tokyo, Japan, assignor to Nihon Metal Gasket Kabushiki Kaisha, Saitama, Japan

Division of Ser. No. 827,837, Feb. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 725,142, Apr. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 493,174, May 10, 1983, abandoned. This application Oct. 29, 1987, Ser. No. 114,699

Claims priority, application Japan, May 17, 1982, 57-81530; May 17, 1982, 57-81531; Dec. 27, 1985, 60-292892; Dec. 27, 1985, 60-292893

Int. Cl.[4] F16J *15/08*

U.S. Cl. 277—231 **8 Claims**



1. A metallic gasket for creating a sealed engagement between the cylinder head and cylinder block of an internal combustion engine, comprising:

first, second and third elastic metal base plates disposed in overlying relationship with one another and being laminated together, said second base plate being interposed between said first and third base plates, and said base plates having a combustion chamber hole extending therethrough;

said first base plate having an annular bead formed therein and projecting axially thereof, said bead being spaced radially outwardly from said combustion chamber hole in concentric surrounding relationship thereto;

said second based plate being substantially flat and free of annular beads;

annular compensating means having a predetermined thickness and extending around said combustion chamber hole, said compensating means being disposed radially inwardly of said annular bead;

said annular compensating means including an inner annular edge part of one of said second and third base plates and being folded axially and radially outwardly through an angle of about 180°, said folded inner annular edge part defining said combustion chamber hole; and

said third base plate also being flat and free of annular beads, said folded annular edge part being defined on one of said second and third base plates and being folded around the inner annular edge part of the other of said second and third base plates.

4,799,696

CHUCK CLOSING MECHANISM FOR AUTOMATIC SCREW MACHINE

Charles F. Reed, Fairport, and Valery Parker, Pittsford, both of N.Y., assignors to Dover Industries, Inc., Hoffman Estates, Ill.

Filed Dec. 30, 1987, Ser. No. 139,787

Int. Cl.[4] B23B *31/20*

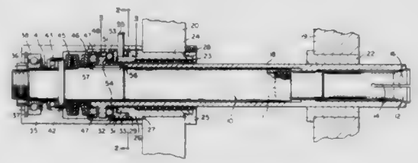
U.S. Cl. 279—50 **9 Claims**

1. In a chucking mechanism having an inner, collet supporting spindle mounted coaxially in the bore of an outer, tubular spindle for revolving therewith about a common spindle axis, and wherein one of said spindles is mounted for axial reciprocation relative to the other spindle selectively to open and close a collet that is supported against axial movement in the inner spindle, the improvement comprising

a movable camming member having thereon a camming surface surrounding said spindle axis and slidably engaged with a cooperating, stationary camming surface, said member being mounted for rotation about said spindle axis, and for limited axial movement relative thereto,

means for rotating said camming member to place its camming surface selectively into at least two different angular positions relative to said stationary camming surface,

resilient means interposed between said spindles and operative normally to urge said camming surface on said member into one of said two different angular positions, and at the same time resiliently to urge said one spindle axially to a first limit position in which said collet is in its closed position,



said camming surfaces being operative to shift said camming member axially from a first to a second limit position when said camming surface thereon is rotated from said one to the other of said two angular positions, and

means for transmitting the axial movement of said camming member to said one spindle thereby to shift said one spindle axially to its other limit position, and against the resistance of said resilient means, and thereby to place said collet in its open position, when said camming surface on said member is rotated to said other of its two angular positions.

4,799,697

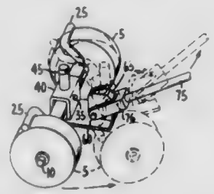
APPARATUS FOR MANUALLY MOVING LOADS

Calvin C. Williamson, and Joan Williamson, both of 1690 River Park Blvd., Napa, Calif. 94558

Continuation-in-part of Ser. No. 775,416, Sep. 12, 1985. This application Oct. 16, 1986, Ser. No. 919,655

Int. Cl.[4] B60K *9/00*

U.S. Cl. 280—3 **14 Claims**



1. Tow-hitch apparatus for manually moving trailers, vans and other mobile carriers intended for moving heavy loads along flat and inclined surfaces with substantially reduced power and increased maneuverability comprising:

a wheel assembly having a pair of spaced apart traction wheels each of which is mounted on opposite ends of a common axle,

a tubular housing arranged about and supporting said common axle,

a pair of control arm support means each independently mounted on a common fixed axis parallel to said common axle,

separate braking elements each comprising a control arm pivotally mounted on said fixed common axis and within each said control arm support means for restraining rotation of each said wheel by frictional engagement when said control arm is pressed firmly thereagainst,

a relatively long lever handle attached to said apparatus through which a horizontal oscillating force can be applied,

and means for pivotally attaching said handle to said apparatus to enable said mobile carrier to move when said oscillating force is applied alternately to said lever handle so that the first of said wheels moves in a given direction about a radius the axis of which approximates the location of said second wheel until said first wheel reaches a desired point and said second wheel is then moved in said given direction about a radius the axis of which is approximately the location of said first wheel.

4,799,698

AUXILIARY SUPPORT FOR THE TRANSPORT OF CAR TRAILERS OR TRUCK TRAILERS

Zdravko Markovic, Liegnitzer Strasse 6, D-8058 Erding, Fed. Rep. of Germany

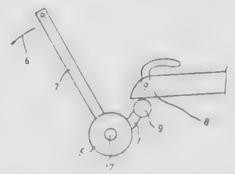
PCT No. PCT/EP86/00365, § 371 Date Feb. 27, 1987, § 102(e) Date Feb. 27, 1987, PCT Pub. No. WO87/00132, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 24, 1986, Ser. No. 19,280

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1985, 3523716

Int. Cl.[4] B62B *1/08*

U.S. Cl. 280—46 **1 Claim**



1. An auxiliary wheeled support for the transport of automobile trailers or truck trailers comprising an axle, axle-supporting wheels mounted respectively on opposite ends of said axle, a drawbar connected to said axle for effecting hand-propelled movement of the wheeled support over the ground, hitch post means mounted on said axle between said wheels for engagement with the hitch of a trailer to be moved, outrigger wheeled stabilizing means located at the side of said axle opposite said drawbar, having only a single ground-engaging wheel which is mounted for swiveling about an upright axis and rigidly connected to said axle for preventing tilting of said axle about the axis of said axle, and means connecting said outrigger wheel stabilizing means to said axle for enabling the degree of spacing between said outrigger wheeled stabilizing means and said axle to be adjusted or for detaching said outrigger wheeled stabilizing means from the axle at will to enable said drawbar to be tilted for tilting said hitch post means into engagement with or disengagement from the trailer hitch.

4,799,699

DOLLY FRAME

Robert C. Berfield, Jersey Shore, and Craig A. Seasholtz, Avis, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed May 6, 1987, Ser. No. 47,202

Int. Cl.[4] B62B *5/00*

U.S. Cl. 280—79.5 **19 Claims**

1. A dolly for movably supporting a tank having a curved side-wall, a closed bottom and a downwardly disposed bead on the side-wall at the bottom thereof, said dolly including:

a base, wheel means on said base for positioning the latter so that it is generally horizontal, arcuate groove means formed within the top surface of said base for receiving the downwardly disposed bead of said tank and fastening means for maintaining said downwardly disposed bead within said base thereby securing said tank to said base;

said base being constructed of synthetic elements connected in a generally T-shaped configuration;



a first of said elements constituting a crossarm and a second of said elements constituting a leg extending from one side of the crossarm at right angles thereto and generally at the center thereof;

said crossarm and said leg being engaged at an adjustable connection that permits limited movement therebetween in a direction longitudinally of said leg.

4,799,700

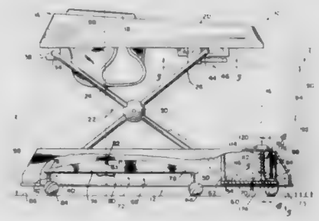
COLLAPSIBLE WALKER

Roy E. Knoedler, Boulder, Colo.; Kenneth P. Morton, East Aurora, N.Y., and Charles E. Schroer, Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.

Filed Oct. 8, 1987, Ser. No. 105,920

Int. Cl.[4] A47D *13/04*; **B62B** *7/06*

U.S. Cl. 280—87.051 **14 Claims**



1. A baby walker comprising

a base,

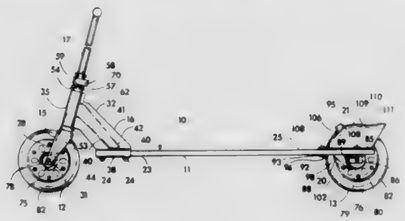
seat means for carrying a child,

frame means operably connecting the base and the seat means for permitting relative movement of the seat means and the base between a fully collapsed position and at least two elevated positions, the frame means including first and second leg members extending between the base and seat means and means for pivotably connecting the first and second leg members together in criss-cross relation to permit relative movement of the first and second leg members during movement of the seat means relative to the base, and

stop means coupled to the base for selectively engaging the first leg member during movement of the seat means form one of the at least two elevated positions toward the fully collapsed position to locate the seat means in the other of the at least two elevated positions to aid in preventing inadvertent movement of the seat means to its fully collapsed position.

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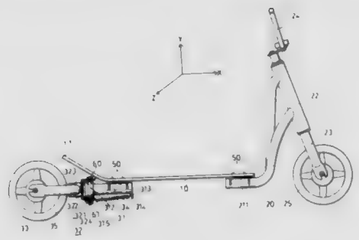
4,799,701
SCOOTER
Mark S. Lindau, 3100 Lake Mendota Dr., #302, Madison, Wis. 53705, and Howard Clay, 2292 Foliage La., Rockford, Ill. 61109
Filed Jul. 6, 1987, Ser. No. 70,310
Int. Cl.[4] B62K 9/00
U.S. Cl. 280—87.041 22 Claims



1. An improved scooter comprising:
(a) a flexible platform which can support the weight of an operator, the platform including a front and a back, the back forming a longitudinal central slot;
(b) a fork including a stem and two prongs descending therefrom, each prong terminating at an end;
(c) a rearwheel which is mounted to the platform at the back thereof so as to be located within the slot for rotation;
(d) a front wheel which is mounted between the prong ends of the fork for rotation;
(e) a yoke which connects the fork and plaform together so that the fork and front wheel can be directionally pivoted by the operator in relation to the platform, the yoke including:
(i) a bracket comprised of a single metal sheet and including a substantially cylindrical housing with a seam portion, the fork stem being pivotally mounted within the housing to allow the stem to pivot freely within the housing; two approximately vertical panels which extend generally rearwardly, outwardly and downwardly from the housing to a horizontal bottom of each panel; and two supports which each extend horizontally inwardly from one of the panel bottoms to provide a surface on which the front of the platform is mounted; and
(ii) a plate member comprised of a single metal sheet and including a flat portion which extends substantially horizontally between the two panels spaced above the supports to overlie and connect to the front of the platform so that the platform is fastened between the flat portion and the bracket supports, the plate member being affixed to the two panels; and
(f) a steering column which is connected to the fork stem to allow the operator to steer the scooter.

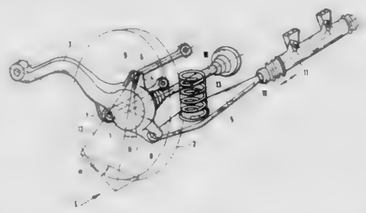
4,799,702
SCOOTER WITH TURNABLE REAR WHEEL
Tarrasa Wang, No. 2, Lane 143, Hsueh Shih Rd., Taichung City, Taiwan
Filed May 11, 1988, Ser. No. 192,488
Int. Cl.[4] B62K 9/00
U.S. Cl. 280—87.041 4 Claims

1. A scooter comprising:
a frame having a longitudinal foot board and a steering assembly including an upright handle extending in front of said foot board;
a front wheel operably connected to said steering assembly;
a rear wheel;
a flexible attachment means including a longitudinal horizontal rod fixedly secured to a bottom side of a rear portion of said foot board, said rod having a front end and a rear end, a joint member having a front portion pivotally connected to said rear end of said longitudinal horizontal rod for turning about a vertical axis, said front portion of said joint member having a restraining bar which is transverse to and attached securely to said front portion of said joint member, said restraining bar having two opposite ends both terminating at a point away from said front portion of said joint member, said joint member further



having a rear portion, a substantially U-shaped wheel carrying member for holding said rear wheel, said wheel carrying member having two arm members and an intermediate portion interconnecting said arm members, said intermediate portion being connected to said rear portion of said joint member, and a resilient means connected to said front end of said longitudinal horizontal rod and also connected to said ends of said restraining bar.

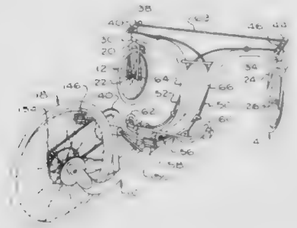
4,799,703
WHEEL SUSPENSION FOR REAR WHEELS OF MOTOR VEHICLES EQUIPPED WITH FRONT WHEEL STEERING, ESPECIALLY PASSENGER MOTOR VEHICLES
Rudolf Mueller, Dachau, and Ladwig Strasser, Ebersberg, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 3, 1988, Ser. No. 151,660
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1987, 3703198
Int. Cl.[4] B60G 3/18, 11/14; B62D 7/14
U.S. Cl. 280—91 15 Claims



1. A wheel suspension for rear wheels of motor vehicles equipped with front wheel steering, comprising a wheel carrier means for each rear wheel which is operatively connected with a relatively fixed vehicle part by way of wheel guide means, of which at least three wheel guide means are constructed as cross guide means extending at least approximately in the vehicle transverse direction, joint means operatively connecting the cross guide means with the wheel carrier means, two joint means being located below the wheel center and the third joint means above the wheel center or two joint means being located above the wheel center and the third joint means below the wheel center, support spring means for each rear wheel supporting the vehicle body, the support spring means being supported on the side of the wheel at one of the cross guide means, wherein with an arrangement having two

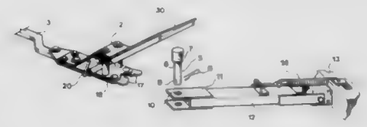
lower cross guide means the rear cross guide means supports the support spring means and with an arrangement having two upper cross guide means the forward support cross guide means supports the support spring means, the supporting cross guide means being operatively connected at its inner end with a thrust rod means for the limited steering of the rear wheel, adjusting means operatively connected with the thrust rod means, and the supporting cross guide means being displaceable in the vehicle transverse direction by the adjusting means.

4,799,704
THREE-WHEELED CYCLE
Peter R. Colarusso, 4779 Lehto La., Lake Worth, Fla. 33463
Filed Apr. 16, 1987, Ser. No. 39,106
Int. Cl.[4] B62K 5/08
U.S. Cl. 280—267 16 Claims



1. A three-wheeled cycle, comprising:
a frame;
first and second wheels, each rotatably mounted to the frame about substantially a horizontal axis and a vertical axis, said horizontal axis of rotation of said first and second wheels trailing behind the respective vertical axis of rotation, each of said first and second wheels being rotatably mounted about said horizontal axis to wheel mounting structure, the wheel mounting structure being substantially vertically mounted to the frame, and rotatable with respect to the frame about substantially a vertical axis;
a drive wheel rotatably mounted to the frame about a horizontal axis;
means for driving said drive wheel; and,
steering means for rotating at least one of said first and second wheels about their vertical axis.

4,799,705
TRAILER HITCHING AID
John B. Janes, R.R. No. 3, Lambeth, Ontario, Canada N0L 1S0, and Carson I. Anderson, R.R. No. 1, Muirkirk, Ontario, Canada N0L 1X0
Continuation of Ser. No. 808,467, Dec. 13, 1985, abandoned.
This application May 15, 1987, Ser. No. 50,164
Claims priority, application Canada, Dec. 2, 1985, 496711
Int. Cl.[4] B60D 1/02
U.S. Cl. 280—477 1 Claim



1. A trailer hitching aid for use between a tractor and a trailer, said tractor being of the type having a rearwardly projecting draw bar, and said trailer being of the type including a forwardly-projecting draw-tongue having upper and lower plate members each with a hole, the holes being substantially vertically aligned with each other, said hitching aid comprising:
a draw-pin having a shank portion for installation down into said holes and having a large bulbous head of diameter substantially greater than the diameter of said shank portion for resting against and protruding above said upper plate member when said shank portion is so installed; and
a hitch assembly for engaging the installed shank portion between said upper and lower plate members, said hitch assembly comprising:
a support member for attachment to said draw bar of said tractor;
a jaws member carried by said support member, said jaws member comprising two jaw elements pivoted about substantially vertical axes for movement towards and away from each other, for receiving said shank portion between said upper and lower plate members, and means for locking said jaws member to prevent release of said shank portion received;
an upwardly and rearwardly diverging channel member rigidly mounted on said support member, said channel member comprising a roof and two side walls and having a narrow throat end and a wider mouth end; said narrow throat end being only minimally larger than the diameter of said bulbous head of said draw-pin, said channel member being positioned with its narrow throat end proximate to said jaws member such that said jaws member receives said shank portion of said draw-pin between said upper and lower plate members as said bulbous head of said draw-pin passes through said narrow throat with the top of said bulbous head in contact with the underside of said roof of said channel member; said channel member includes a forward portion which is rigidly fastened to said draw bar, and an intermediate portion spaced above said jaws member; and
support means rigidly connected between said intermediate portion and said jaws member for rigidly maintaining said intermediate portion spaced above said jaws member.

4,799,706
DRAWBAR COUPLER
Thomas W. Myers, Bettendorf, and Earl C. Jacobson, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed May 1, 1987, Ser. No. 45,108
Int. Cl.[4] B60D 1/12
U.S. Cl. 280—504 18 Claims



1. A drawbar coupler for a work vehicle, comprising:
a drawbar mounted to the work vehicle;
a stud mounted on said drawbar;
a main bracket mounted to said drawbar between said stud and said work vehicle;
a strap pivotally coupled to said main bracket, said strap being pivotal between an engaged position in close proximity to an end portion of said stud and a disengaged position remote from said end portion; and
means for selectively locking said strap in said engaged and

disengaged positions, said locking means comprising a pin rotatably mounted in said main bracket and having a locking surface selectively engageable with corresponding surfaces on said strap to hold said strap in either of said engaged and disengaged positions and allowing said strap to pivot when said locking surface is disengaged from said corresponding surfaces.

4,799,707

GAS SUSPENSION SYSTEM FOR EASIER START-UP OF A COMPRESSOR

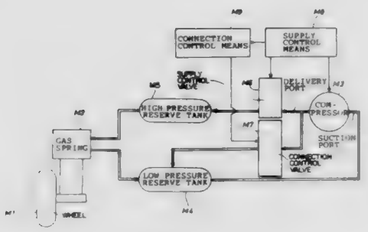
Shuuichi Bamu; Nobutaka Ohwa, both of Toyota; Osamu Takeda, Susono, and Toshio Aburaya, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Apr. 11, 1988, Ser. No. 179,767

Claims priority, application Japan, Apr. 14, 1987, 62-56323[U]

Int. Cl.[4] B60G *11/26*

U.S. Cl. 280—711 **6 Claims**



1. A gas suspension system comprising:
a gas spring (M2) provided for a wheel (M1) of a vehicle;
a high pressure reserve tank (M5) for holding gas to be supplied to the gas spring;
a low pressure reserve tank (M4) for receiving gas from the gas spring;
a compressor (M3) having a suction port and a delivery port for compressing the gas coming from the low pressure reserve tank via the suction port in order to supply high pressure gas to the high pressure reserve tank via the delivery port;
a supply control valve (M6) provided between the delivery port of the compressor and the high pressure reserve tank;
a connection control valve (M7) provided between the delivery port of the compressor and the low pressure reserve tank;
a supply control means (M8) for controlling the supply control valve to supply the gas compressed by the compressor to the high pressure reserve tank; and
a connection control means (M9) for controlling the connection control valve to connect the delivery port of the compressor with the low pressure reserve tank when the gas is not supplied by the supply control means.

4,799,708

OFF-ROAD VEHICLE

Akio Handa; Keiji Kasa; Eiji Hosoya, and Takerou Shibukawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

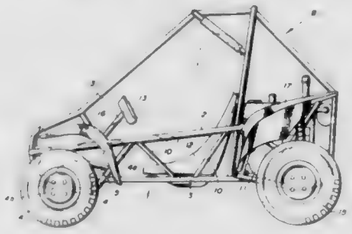
Filed Oct. 27, 1987, Ser. No. 113,861

Claims priority, application Japan, Oct. 27, 1986, 61-255055; Oct. 27, 1986, 61-255056; Oct. 27, 1986, 61-255058

Int. Cl.[4] B62D *21/00*

U.S. Cl. 280—796 **4 Claims**

1. An off-road vehicle comprising:
a vehicle frame including a pair of laterally spaced main pipes extending substantially longitudinally of the vehicle over the entire length thereof, and a pair of laterally spaced seat side pipes extending substantially parallel to each other below the main pipes, respectively, each of said main pipes and seat side pipes including a front rod progressively diverging outwardly in a rearward direction;
a pair of front wheels rotatably supported on a front portion of said vehicle frame;
a pair of rear wheels rotatably supported on a rear portion of said vehicle frame;
a framework disposed on each lateral side of said vehicle frame and including upper and lower pipes inclined upwardly in a forward direction and substantially parallel to each other, said lower pipe having a front inclined rod inclined upwardly in the forward direction and a rising rod contiguous to the front inclined rod, the rising rod progressively diverging outwardly and inclined upwardly in a rearward direction, said upper pipe progressively diverging outwardly in the rearward direction and having a rear end joined to the rising rod;



a front wheel suspension mechanism comprising a knuckle arm supporting each of the front wheels, a V-shaped upper arm having a base pivotally mounted on an upper portion of said knuckle arm and front and rear ends pivotally attached to said upper pipe at front and rear positions thereon, and a V-shaped lower arm having a base pivotally mounted on a lower portion of said knuckle arm and front and rear ends pivotally attached to said lower pipe at front and rear positions thereon;
a tie rod for turning said front wheels in response to turning movement of a steering handle; and
the suspension mechanism being such that when said off-road vehicle is viewed in side elevation, the distances from a vertical line passing through a center of the axle of the front wheel to the pivotal front ends of said V-shaped upper and lower arms are smaller than the distances from the vertical line to the pivotal rear ends of the V-shaped upper and lower arms.

4,799,709

SAFETY HARNESS

Robert M. Francois, 3105 Cloudcrest Rd., La Crescenta, Calif. 91214

Filed Nov. 19, 1987, Ser. No. 122,710

Int. Cl.[4] B60R *22/00*

U.S. Cl. 280—801 **3 Claims**

1. In combination, an all-terrain vehicle and a safety harness releasably attached to said vehicle and the legs of the rider thereof, wherein the combination comprises:
an all-terrain vehicle having a body section whereby said rider sits thereon; and
a safety harness including a belly strap which is secured about said body section of said vehicle, and a pair of leg restraints removably attached to said belly strap;
wherein each of said leg restraints comprises:
an elongated leg strap having an upper free end for releasably attaching said leg strap to said belly strap;
removable attaching means disposed between said belly strap and said free end of said leg strap;

stirrup means formed at the opposite end of said leg strap to support the foot of said rider; and
a calf strap slidably mounted on said leg strap for attachment to the leg of said rider to secure said leg strap



against said leg of said rider, and wherein the length of said leg strap between said belly strap and said stirrup means prevents said leg of said rider from extending downwardly and contacting the ground surface.

4,799,710

SKI ATTACHMENT FOR PROTECTING THE UPPER SURFACE OF THE REAR PORTION OF A SKI

Thomas R. Barnett, 7 Mountsfield Drive, London, Ontario, Canada N6C 2S3

Filed Nov. 9, 1987, Ser. No. 118,583

Int. Cl.[4] A63C *11/00*

U.S. Cl. 280—809 **7 Claims**



1. A combination of a ski having an upper surface and a rear end and an attachment secured to the upper surface of the ski adjacent the rear end thereof, said attachment comprising a rigid body of hard impact resistant material having a base secured to the upper surface of said ski, said body being generally triangular in side view with a substantially flat rear face extending upwardly and forwardly from a rear base edge at an ange in the range of from 35° to 50° to the upper surface of the ski to a vertical height above the upper surface of the ski in the range of from 0.375 to 0.875 inches.

4,799,711

TOW BAR AND METHOD OF USE THEREOF

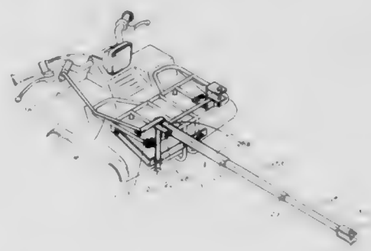
Dale C. Moore, Rte. 1, Box 63, Griggsville, Ill. 62340

Filed Dec. 11, 1987, Ser. No. 131,721

Int. Cl.[4] B62D *13/04*

U.S. Cl. 280—444 **18 Claims**

1. A tow bar mechanism suitable for towing a lightweight vehicle behind a towing vehicle, said tow bar mechanism comprising a mounting bracket assembly, a tow bar/tie rod assembly, and a steering mechanism attachment bracket; said mounting bracket assembly being installed on the front end of said towed vehicle; said tow bar/tie rod assembly being pivotally mounted in said mounting bracket assembly such that said tow bar may be engaged with said towing vehicle, said tow bar consisting of telescoping sections having relationship to each other such that when said tow bar is fully extended, it has a length sufficient to maintain desired separation between said towed vehicle and said towing vehicle and when it is fully telescoped, it may be conveniently rotated and stored on the towed vehicle thus permitting the towed vehicle to be operated without the necessity of removing the tow bar/tie rod assembly from the vehicle; and said steering mechanism attachment bracket being suitably mounted on the steering mechanism of said towed vehicle such that said bracket may receive the free end of the tie rod portion of said tow bar/tie rod assembly and permit positive steering of said towed vehicle such that the relationship between said towed vehicle and said towing vehicle will be maintained.



4,799,712

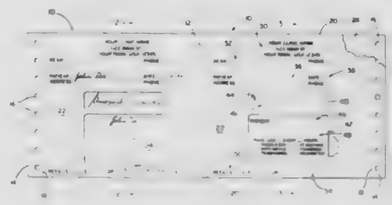
PRESCRIPTION SHEET AND MEDICATION DISTRIBUTION SYSTEM

Richard D. Biava, Gaithersburg, and Andrew J. Whelan, Germantown, both of Md., assignors to Physicians' Pharmaceutical Services, Inc., Rockville, Md.

Filed Nov. 18, 1986, Ser. No. 932,026

Int. Cl.[4] B41L *1/22*; B42D *15/00*

U.S. Cl. 282—1 A **13 Claims**



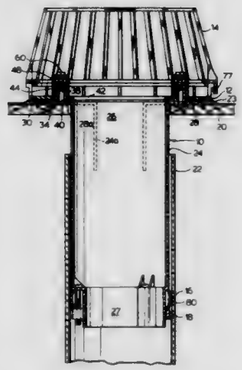
1. A unified prescription sheet and phamaceutical record system for authorizing distribution of a prescription drug to a patient, said prescription sheet comprising:
a backing sheet,
a cover sheet secured to said backing sheet, said cover sheet and said backing sheet including transfer means for transferring impressions made on said cover sheet to said backing sheet, and said cover sheet including preprinted regions for prompting entry of information required for dispensing of prescription drugs, one of said preprinted regions being a legend for prompting the signature of an individual authorized to prescribe prescription drugs, and
adhesive means for releasably securing at least a portion of said cover sheet to said backing sheet.

4,799,713

ROOF DRAIN COUPLING

Katharine A. Uglow, 72 Gibon Spring Dr., Rexdale, Ontario, Canada

Filed Feb. 18, 1988, Ser. No. 156,988
Claims priority, application Canada, Feb. 20, 1987, 530215
Int. Cl.[4] E04B *5/48*
U.S. Cl. 285—42 **10 Claims**



9. A roof drain assembly comprising:

a drain insert member having a tube portion with flange means extending outwardly about an upper opening of the tube portion,

removable clamp ring means overlying the flange means,

post means on the flange means extending upwardly from an upper surface of the flange means,

socket forming means on the clamp ring means extending upwardly beyond an upper surface of the clamp ring means,

a socket recess in each socket forming means to receive one of the post means therein through an access opening to the socket recess in a lower surface of the clamp ring member,

screw means extending downwardly through the socket forming means into the socket recess to engage the post means and urge the clamping ring means downward into clamping engagement on top of the flange means.

4,799,714

SLEEVE TYPE CASING HEAD ADAPTER

James R. Collet, 315 Lynn Dr., Lafayette, La. 70508

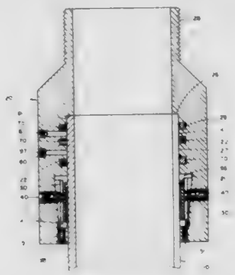
Continuation of Ser. No. 856,224, Apr. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 578,576, Feb. 9, 1984, abandoned. This application Sep. 28, 1987, Ser. No. 102,012
Int. Cl.[4] F16L *21/08*
U.S. Cl. 285—145 **5 Claims**

1. A removable casing head adapter, comprising:

a substantially cylindrical body having a central opening extending the length thereof defined by an internal continuous wall, said wall comprising a shoulder for positioning the casing head adapter atop a casing, and wherein secured position of the casing head adapter is insured by a force exerted by weight of the casing head adapter resting atop of the casing;

wedging means positionable in a lower interior portion of the casing head adapter for frictional engagement with an exterior surface of the casing, said wedging means comprising a plurality of curved wedges positionable in an annular groove formed in the lower interior portion of the casing head adapter and adapted for a limited vertical slidable movement within said annular groove,

and wherein said wedges have upwardly extending teeth adapted to frictionally engage the exterior surface of the casing and to increase their frictional engagement if an



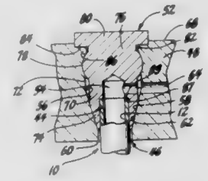
upwardly directed force attempts to disengage the casing head adapter from the casing.

4,799,715

HIGH PRESSURE TUBE ATTACHMENT MECHANISM

Carl E. Goubeaux, Troy, and Donald M. Flory, Arcanum, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 891,442, Jul. 28, 1986, abandoned. This application Jul. 21, 1987, Ser. No. 75,928
Int. Cl.[4] F16L *5/00*
U.S. Cl. 285—215 **2 Claims**



1. A high pressure tube attachment mechanism comprising:

a housing having an opening therein through which high pressure fluid may be conducted and fluid pressure transmitted;

a high pressure tube for conducting high pressure fluid therethrough and for transmitting fluid pressure therethrough, said tube having an inner cylindrical surface and an outer cylindrical surface respectively having an inner surface diameter and an outer surface diameter, said tube also having one open end positioned in said housing opening in fluid communication therewith so as to conduct high pressure fluid between said opening and the interior of said tube and to transmit fluid pressure between said opening and the interior of said tube;

and a securing device having means providing said fluid communication between said tube one open end and said housing, said securing device further having an axially extending tube-like first portion thereof received about said tube one end and within said opening in press fitted sealing relation to said tube one end and to said housing, an axially extending second portion extending inwardly of said housing opening, axially extending adjacent closed third and fourth portions having a reduced outer diameter area therebetween, said fourth portion defining the other end thereof axially opposite said first portion,

said housing opening having a first section defined by a right cylindrically formed wall surface and a second section extending from said first section, said second section having a wall surface with at least a portion thereof conically tapered with about a two degree decreasing diameter taper, said second section terminating at the one outer end of said housing opening from which said tube extends when secured in place, the minimum wall surface diameter of said housing opening being greater than the outer surface diameter of said tube one end, said tube one end extending axially into said opening outer end and at least through a major portion of the conically tapered portion of said housing opening second section;

said securing device first and second portions each having an outer surface the maximum outer diameter of which is less than the diameter of said housing opening first section wall surface, said securing device third and fourth portions each having an outer surface the maximum outer diameter of which is greater than the diameter of said housing opening first section wall surface, said securing device further having a stepped inner diameter bore formed through said first portion and into said second portion in part of which said but one end is slidably received prior to final assembly of said attachment arrangement, said securing device first portion having an end extending toward said outer end of said housing opening and fitting into said tapered second section of said housing opening, said securing device having been axially pressed to extend into said housing opening with said securing device first and third portions being press fitted in said housing opening, said first portion having been pressed to extend into said housing opening tapered second section and by press fit tapered deformation be outwardly press fitted to said housing opening tapered second section and also be inwardly press fitted to said tube one end to a sufficient extent to sealingly secure said tube one end to said housing so as to hold fluid pressure on the order of 5,000 p.s.i. and to hold said tube securely in said housing opening against axial and rotational removal forces tending to remove said tube from said housing, said third portion having been pressed into said housing opening first section and sealing same and said fourth portion having been pressed into engagement with said housing at the other outer end of said housing opening and deforming parts of said housing into said reduced diameter area between said third and fourth securing device portions to stake said securing device, said securing device having a shoulder formed in said securing device stepped inner diameter bore and said tube one end having a transverse end surface in abutting engagement with said shoulder during and after the press fitting action to provide axial location of said tube one end relative to said securing device and said housing opening.

4,799,716

PROTECTOR FOR PIPE CONNECTOR HUBS

Harry F. Kujawa, and Nelson A. Hinderer, both of Houston, Tex., assignors to Oteco Equipment Company, Houston, Tex.

Filed May 15, 1987, Ser. No. 50,086
Int. Cl.[4] F16L *25/00*
U.S. Cl. 285—334.2 **3 Claims**

1. A protector for the inner ends of pipe connector hubs having seats in their bores which are conically shaped to receive conically shaped outer faces of lips on each end of a seal ring to be held between the hubs, and flanges having conically shaped outer ends adapted to be engaged by clamping means to draw their inner ends toward one another in order to cause the seats to be sealably engaged by the faces of the lips of the seal ring, said protector comprising

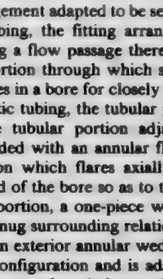
a cup shaped body of resilient material of relatively high heat resistance and having

a circular inner end wall disposable over the bore of the hub and across the inner end of the flange,

an annular side wall extending from the periphery of the end wall for disposal about the outer side of the flange, and

a conically shaped, annular outer end wall extending inwardly from the free end of the side wall for disposal over the full extent of the outer end of the flange of the hub,

said cup-shaped body having an inner face on each wall and being flexible about the intersection of its inner end wall and side wall to permit the inner periphery of its outer end wall to be spread to a position in which it may be moved over the outer side of the flange during assembly or disassembly of the protector, and whereby the inner periphery may be released during assembly, and when opposite the



outer end of the flange, to permit it to contract about the outer end of the flange in order to draw the outer end wall over the outer end of the flange, the side wall over the outer side of the flange and its end wall against the inner end of the flange, and

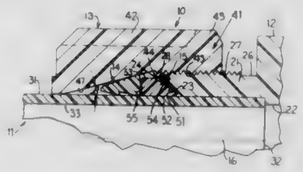
the body having means on the inner faces of its inner end wall, side wall and outer end wall which during welding of the outer end of the hub in a pipeline minimizes sticking of the inner faces to the flange.

4,799,717

TORQUE LOCK FITTING ARRANGEMENT

Kenji A. Kingsford, Devore, Calif., assignor to Mace Corporation, Upland, Calif.

Filed Sep. 2, 1987, Ser. No. 92,163
Int. Cl.[4] F16L *21/06*
U.S. Cl. 285—341 **8 Claims**



1. A fitting arrangement adapted to be sealingly joined to the end of a plastic tubing, the fitting arrangement including a plastic fitting having a flow passage therethrough, the fitting having a tubular portion through which said passage extends and which terminates in a bore for closely accommodating the free end of the plastic tubing, the tubular portion being externally threaded, the tubular portion adjacent the free end thereof being provided with an annular flared seat of frustoconical configuration which flares axially and radially outwardly from the end of the bore so as to terminate at the free end of the tubular portion, a one-piece wedge-shaped plastic ferrule disposed in snug surrounding relationship to the plastic tubing and having an exterior annular wedge surface which is of a frustoconical configuration and is adapted to wedgingly contact the flared seat on the tubular portion, the ferrule having an end face which is directed axially away from the fitting and which extends substantially perpendicularly relative to the axis of said plastic tubing, a one-piece plastic gripping sleeve

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positioned in close surrounding relationship to the plastic tubing and having one axial end surface thereof adapted to abuttingly engage the axial end face of the ferrule, the gripping sleeve having a frustoconical exterior surface which extends axially away from said one end surface in converging relation relative to said plastic tubing, the gripping sleeve being radially deformable and having axially-spaced radially inwardly extending projections adapted to grippingly deform the elastic tubing to axially secure the gripping sleeve relative thereto, and an annular one-piece nut disposed in concentric surrounding relationship to the gripping sleeve but being rotatable relative thereto, the nut having an internally threaded first bore opening axially inwardly from one end thereof so that the nut can be externally telescoped over and threadedly engaged with the tubular portion to effect axial compression of the gripping sleeve and ferrule therebetween, the nut also having a tapered second bore which coaxially communicates with the threaded bore and extends therefrom axially through the other end of the nut, said second bore converging as it projects toward said other end of the nut, comprising the improvement wherein:

said frustoconical exterior surface on said gripping sleeve being defined by a first angle of inclination relative to the axis of said plastic tubing, said tapered second bore in said nut being defined by a second angle of inclination relative to said axis, said first angle of inclination being greater than said second angle of inclination so as to define a predetermined differential angle therebetween, said differential angle being in the range of about 4° to about 10°, and said one axial end surface of said gripping sleeve being sloped at a small angle relative to a plane perpendicular to the tubing axis as said one end surface projects radially outwardly, said one end surface being sloped axially toward said other end of said gripping sleeve as it projects radially outwardly, the small angle defining the slope of said one end surface being substantially equal to said differential angle, whereby said one end face on said ferrule and said one end surface on said gripping sleeve project radially outwardly in diverging relationship relative to one another when the gripping sleeve is in a radially nondeformed condition, said gripping sleeve being radially inwardly deformed so that the projections thereon grip the plastic tubing when the nut is threaded onto the externally threaded tubular portion and also being axially torsionally distorted due to said differential angle so that said one end surface of said gripping sleeve distorts and becomes flat so as to abut against the opposed end face of said ferrule.

4,799,718
SABOTAGE-PROOF LOCK DEVICE WITH ELBOW-SHAPED LATCHES
Kuo S. Ing, 7 Fl., No. 88, Jong-Yi Street, Shilin Dist., Tapiel, Taiwan
Filed Aug. 13, 1986, Ser. No. 896,075
Int. Cl.⁴ E05C *5/02*
U.S. Cl. 292—36 **1 Claim**

1. A lock device comprising:

a fastening board having at least one elbow-shaped recess formation for guiding a respective latch;

for each elbow-shaped recess formation, one L-shaped latch, said L-shaped latch having an inner side;

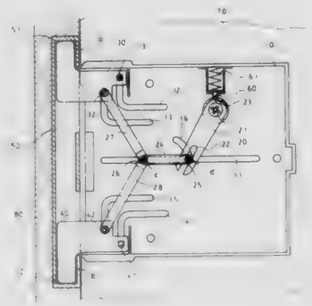
at least one pivot member positioned at the inner side of said L-shaped latch and in a respective elbow-shaped recess formation;

a transmission mechanism operatively connectable at said fastening board and accessible from the exterior of said fastening board to actuate said L-shaped latch to slide along its respective elbow-shaped recess formation; said transmission mechanism including:

a swing arm having a top end and a lower end, said lower end including a slot formation having a open end;

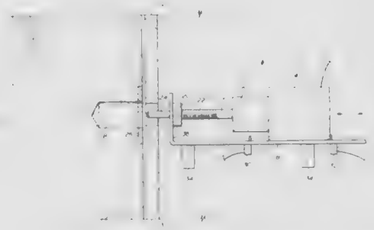
a shaft connected to said top end of said swing arm such that said top end is perpendicularly coupled to said shaft;

at least one linking arm pivotally connected to said L-shaped latch; and



a linking rod, of which one end is pivotally connected to said linking arm, and the other end is pivotally engaged in said slot formation at the lower end of said swing arm.

4,799,719
MOTOR OPERATED LOCK
George Wood, 7539 Thurow, Houston, Tex. 77087
Filed Jun. 18, 1987, Ser. No. 64,340
Int. Cl.⁴ E05C *1/06*
U.S. Cl. 292—144 **13 Claims**



1. An electrical lock for preventing relative movement between first and second closure members, comprising:

reversible electric motor having a rotatable shaft, for mounting on the first closure member;

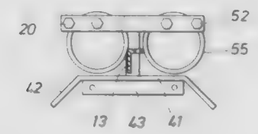
bolt means adapted and positioned to move from the first closure member to the second closure member;

bolt engagement means for mounting on the second closure member for the bolt means to engage to lock the second closure member in place relative to the first closure member;

means for converting rotational motion of said shaft to translational motion, said converting means connected to said bolt means and said motor shaft, so that when said motor shaft rotates, said bolt means moves translationally; and

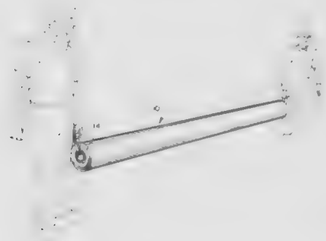
means for selectively activating said electric motor for selectively moving said bolt means into and out of engagement with said bolt engagement means for respectively locking and unlocking the closure members.

4,799,720
GRAVITY-OPERATED GATE LATCH APPARATUS
John P. Watson, 107 Mile Dr., College Station, Tex. 77840, and William P. Graff, 1809 Groesbeck, Bryan, Tex. 77803
Continuation of Ser. No. 768,237, Aug. 22, 1985, abandoned. This application Jun. 1, 1987, Ser. No. 58,596
Int. Cl.⁴ E05C *21/02*
U.S. Cl. 292—299 **16 Claims**



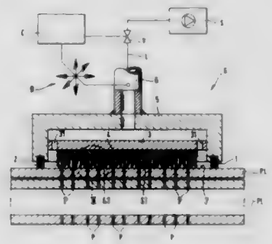
1. Latch apparatus for use in securing a gate or the like in a closed position, comprising: frame means including a pair of parallel, generally rectangular plate members; a pair of spacer members engaged between said plate members for holding said plate members a fixed distance apart, said spacer members each having a horizontal central axis, the said horizontal axes of said spacer members being located in the same horizontal plane; ring means pivotally carried on one of said spacer members, the other of said spacer members normally engaging the outer periphery of said ring means to provide a stop that prevents swinging movement of said ring means toward said other spacer member; latch bar means having a vertical dimension not substantially less than the mean radius dimension of said ring means; support means cooperable with said latch bar means for supporting the said latch bar means in said closed position, said support means having an upper surface that is located below the uppermost surface of said one spacer member a distance that is substantially equal to the mean diameter of said ring means; and means on said frame means for limiting movement of said latch bar means away from said ring means in said closed position.

4,799,721
MEANS TO FACILITATE HANDLING OF CORE MEMBERS AND ROLLS OF MATERIAL
James L. Hale, Smyrna, Ga., assignor to Amoco Corporation, Chicago, Ill.
Filed Feb. 24, 1987, Ser. No. 18,202
Int. Cl.⁴ B65G *7/12*; B65H *75/40*
U.S. Cl. 294—1.1 **6 Claims**



1. A roll of material having means to facilitate handling, said means comprising a core member having at least one material wound thereon and at least one strap-like element having a first section fixed to an axially extending outer end surface of the core member and said material overlies such fixed section whereby to further fix the element to the core member and a second section extending outwardly of the core member and free of said material whereby the element is adapted to receive a motive force to effect said handling.

4,799,722
APPARATUS FOR TRANSPORTING PERFORATED OBJECTS
Francesco Marzinotto, Zurich, Switzerland, assignor to Ciba-Giegy AG, Basel, Switzerland
Filed Nov. 10, 1987, Ser. No. 118,935
Claims priority, application Switzerland, Nov. 10, 1986, 4480/86
Int. Cl.⁴ B25J *15/06*; B66C *1/02*
U.S. Cl. 294—64.1 **27 Claims**



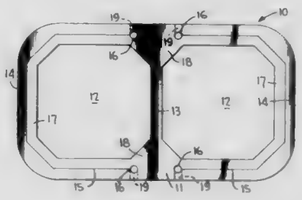
19. A gripper head used in a vacuum operated transport device for transporting perforated objects, comprising:

a base plate;

a plurality of side walls attached to said base plate to define a housing having a generally U-shaped cross-section;

a sealing device mounted in said housing and including a base and a plurality of naps which extend from said base, said naps being sized to penetrate into the perforations of said perforated object and effectively sell said perforations.

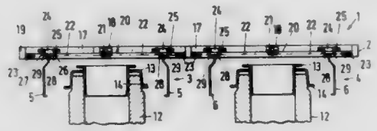
4,799,723
TWIN CUP CARRIER
John W. Mahaffy, Crystal Lake, Ill., assignor to The Continental Group, Inc., Norwalk, Conn.
Continuation-in-part of Ser. No. 169,531, Jul. 17, 1980, abandoned. This application Jul. 10, 1984, Ser. No. 629,372
Int. Cl.⁴ B65D *71/00*
U.S. Cl. 294—87.2 **14 Claims**



1. A carton carrier for a pair of tapered cartons, said carton carrier comprising a thin sheet of flat flexible material, said sheet having a greater length than width dimension, a pair of like carton receiving openings in said sheet separated by a relatively narrow portion of a transverse bar, and at least one C-shaped carrier strap defined by a single generally C-shaped cut line in said sheet partially around a respective one of said carton receiving openings and terminating at opposite ends of said transverse bar, said carrier strap having ends also terminat-

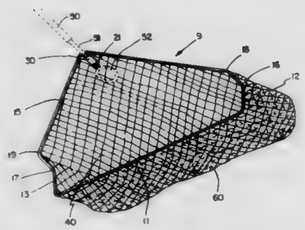
ing at opposite ends of said transverse bar at the ends of said single C-shaped cut line, said strap ends each being directly integrally joined to said transverse bar and having a transverse hinge area extending generally parallel to said transverse bar.

4,799,724
GRIPPING DEVICE
Karl Rekers, Spelle, Fed. Rep. of Germany, assignor to Firma Dipl.-Ing. Karl Rekers Maschinenbau, Spelle, Fed. Rep. of Germany
Filed Mar. 19, 1987, Ser. No. 27,772
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610130
Int. Cl.[4] B25J *15/10*; B66C *1/66*
U.S. Cl. 294—87.26 **12 Claims**



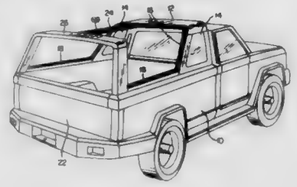
1. Gripping apparatus for gripping and supporting objects superimposed on the upper ends of upstanding pipes, comprising a support frame, a plurality of arm-support means mounted on said support frame, a plurality of gripping arm means, mounting means mounting each of said gripping arm means on said arm-support means for movement along said arm-support means, common drive means, and a plurality of resilient means operatively connecting each of said gripping arm means to said common drive means, said common drive means and said plurality of resilient means being operable to move said gripping arm means along said arm support means in a gripping direction toward said object to be gripped to engage said object, each of said resilient means being resiliently operable to permit each gripping arm means to move different distances in said gripping direction such that when the movement of one gripping arm means is arrested upon engagement with said object, other gripping means continue to move in said gripping direction until said other gripping arm means engage said object.

4,799,725
GOLF BALL RETRIEVER
Alf Anderson, Brooklyn Park, Minn., assignor to Surelab Superior Research Laboratories, Inc., St. Paul, Minn.
Filed Oct. 16, 1987, Ser. No. 113,252
Int. Cl.[4] A63B *47/02*
U.S. Cl. 294—19.2 **6 Claims**



1. A golf ball retrieving device for attachment to the shaft of a pole at a position spaced from an end thereof comprising a generally stiff frame defining an enclosed three-dimensional figure, the frame having a long straight horizontal side, two upright sides extending generally perpendicular from the horizontal side, and forming therewith a first plane, two converging sides extending from the upright sides and defining a second plane, the first and second planes intersecting each other at an obtuse included angle, attachment means carried by the frame for removably attaching the device to the shaft of a pole at a position spaced from its end, and a net attached to said frame for receiving and retaining golf balls.

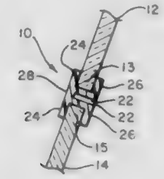
4,799,726
REMOVABLE CANOPY COVER
Gary M. Scott, Milwaukie, Oreg., assignor to Warn Industries, Inc., Milwaukie, Oreg.
Filed Mar. 21, 1988, Ser. No. 170,836
Int. Cl.[4] B60J *7/11*
U.S. Cl. 296—100 **8 Claims**



1. An open truck bed having a removable canopy thereon comprising;
a truck bed defining a load carrying area, said walls projected along the sides of said area extending from the front of said area to the rear of said area, a cap attached to the truck bed over the front of said area having rearwardly projected edge means configured substantially in the form of an inverted U, a rear hoop movably attached to the truck bed over the rear of said area and having forwardly projected edge means configured substantially in the form of an inverted U, a cover configured substantially of an inverted U and having a forwardly projected edge portion that is captured by the rearwardly projected edge means of the cap and a rearwardly projected edge that is captured by the forwardly projected edge means of the rear hoop, said side walls of the truck bed having upper edge means, said cover having lower edges that are respectively captured by the upper edge means of the side walls, said lower edges each standing the distance from the hoop to the cap, and sealing means engaging the captured edges of the cover and the respective edge means of the cap, hoop and side walls for enclosing the area of the truck bed, said cover being removable from capture by the respective edge means by rearward movement of the hoop to permit disengagement of the sealing means, and locking means locking said cover in place by locking the hoop against said rearward movement.

4,799,727
FOLDING AUTOMOBILE CONVERTIBLE TOP AND REAR WINDOW ASSEMBLY HAVING A FLEXIBLE HINGE
Mark R. Robbins, Santa Monica; Douglas W. Robbins, Malibu, and Roy P. Agosta, Southgate, all of Calif., assignors to Robbins Auto Top Co., Inc., Santa Monica, Calif.
Continuation of Ser. No. 781,145, Sep. 27, 1985, abandoned. This application Apr. 10, 1987, Ser. No. 37,114
Int. Cl.[4] E05D *1/02*
U.S. Cl. 296—107 **2 Claims**

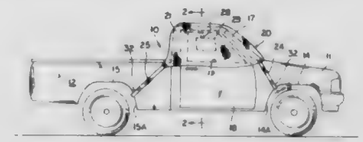
1. A folding automotive vehicle convertible top and rear window assembly, comprising:
a pair of substantially inflexible window panes;
an automotive vehicle convertible top including means for foldably supporting said window panes with a marginal edge of one of said panes disposed generally adjacent a marginal edge of the other of said panes, said convertible top being movable between a folded stored position and an unfolded upright position;
an elongated one-piece hinge member of a flexible heat curable silicon-based resin elastomer material having a cross-section defining a pair of generally U-shaped channel strips each defined by an elongated base wall and a pair of generally parallel sidewalls upstanding from the opposite side margins of said base wall, said pair of channel strips forming a respective pair of elongated recessed seats for respective reception of and connection to the adjacent marginal edges of the pair of window panes, and a hinge segment extending between said channel strips as a common continuation of said sidewalls at one side of said channel strips and spacing said channel strips from each other, said sidewalls of each of said channel strips having a height generally equal to the width of said base wall of that channel strip, and said hinge segment having a size and shape to permit relative swinging movement of said channel strips through approximately 180° between unfolded and folded positions substantially without significant swinging movement beyond said unfolded and folded positions;



said hinge segment being of substantially equal thickness to said sidewalls and forming with the two sidewalls a substantially planar top surface; and
adhesive means for connecting said adjacent marginal edges of said panes to said channel strips within said seat, said adhesive means comprising an adhesive material for bonding the inboard faces of said base wall and said sidewalls of each of said channel strips to a respective one of the marginal edges of said panes;
said hinge segment having sufficient flexibility to accommodate relative swinging movement of said panes between said unfolded position with said seats of said channel strips opening generally in opposite directions when said top is in said unfolded upright position and said folded position with said seats opening generally in the same direction when said top is in said folded stored position, said hinge member substantially isolating stresses incurred during such swinging movement from the connection interfaces between said channel strips and said panes.

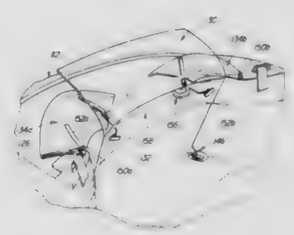
4,799,728
VEHICLE COVER
Cliff Akers, 336 Bangor Ave., San Jose, Calif. 95123, and Richard N. James, 4911 Kenson Dr., San Jose, Calif. 95124
Filed Feb. 8, 1988, Ser. No. 152,950
Int. Cl.[4] B60J *11/00*
U.S. Cl. 296—136 **2 Claims**

2. A cover for a vehicle body comprising:
a hood formed to fit over at least a portion of said vehicle body;
at least one elongated strap for holding said hood on said vehicle body and having two ends;
means attaching a first end of said strap to said hood;
a semipliable member about which the second end can be wound with the number of windings being determined by the desired length of the strap; and
a sheath sized to fit over said pliable member and wound strap second end to prevent the second end from unwinding from said pliable member whereby the hood is fitted over the vehicle body and the srap extended to a vehicle edge and bent therearound.





4,799,729
TONNEAU COVER MECHANISM FOR CONVERTIBLE AUTOMOBILES
Peter P. Muscat, 14980 Waterfall Rd., Northville, Mich. 48167
Continuation-in-part of Ser. No. 720,349, May 13, 1985, Pat. No. 4,687,247. This application Aug. 14, 1987, Ser. No. 85,407
Int. Cl.[4] B60J *7/20*
U.S. Cl. 296—136 **5 Claims**



1. In a convertible top automobile including a body structure defining a passenger compartment, and also defining a generally U-shaped storage space to the rear of said passenger compartment said storage space having a main portion and a pair of side wells on either side thereof, a foldable top adapted to be collapsed into said storage space, an interior body panel located at the rear of said passenger compartment defining in part said main storage space, said automobile also including in combination therewith an improved tonneau cover mechanism comprising:
hinge means pivotally mounting said interior body panel to be tilted from a normal generally upright position forwardly away from said storage space; a main tonneau panel fixedly cantilevered from the upper side of said interior body panel to form an integral angled panel structure configured to overlie said storage space with said interior body panel in said upright position, said main tonneau panel carried forward as said body panel is tilted forward from said upright position to uncover said storage space;

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a pair of substantially rigid side covers, each configured to overlie a respective side well;

means pivotally mounting each of said side covers to said body structure for rotation about an axis between a position overlying said respective side well and a position substantially inboard within said passenger compartment in which said side well portions are uncovered; and,

further including linkage means interengaging said integral angled panel structure and each of said side covers causing pivoting of each of said side covers between said overlying and inboard positions as said angled panel structure is tilted between said upright and forward positions, whereby both said main tonneau panel and said side covers are moved to cover and uncover said storage space by tilting movement of said interior body panel between said upright and forward tilted positions.

4,799,730

ARRANGEMENTS FOR FORMING REAR PARTIAL STRUCTURES OF VEHICLE BODY CONSTRUCTIONS

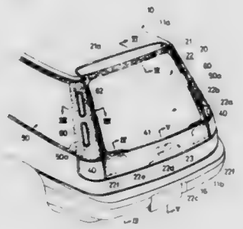
Hayatsugu Haraoaki, Tsukimi, Japan, assignor to Mazda Motor Corporation, Japan

Filed Jul. 22, 1987, Ser. No. 76,400

Claims priority, application Japan, Jul. 31, 1986, 61-181009; Jul. 31, 1986, 61-181010

Int. Cl.⁴ B62D *25/00*

U.S. Cl. 296—195 12 Claims



1. An arrangement for forming a rear partial structure of a vehicle body construction comprising,

a rear end portion of a vehicle body forming an opening therein,

a rear lamp assembly mounted on said rear end portion of the vehicle body so as to be disposed at a lower margin of said opening formed in said rear end portion of the vehicle body, and

a tailgate mounted on said rear end portion of the vehicle body to be operative to open and close said opening formed in said rear end portion of the vehicle body, said tailgate comprising a gate frame member which is attached through a hinge to said rear end portion of the vehicle body and a tailgate glass which is attached to said gate frame member and provided with an extended lower end portion incorporated therewith to extend outward beyond the lower edge of said gate frame member so as to cover therewith the outer surface of said rear lamp assembly when said tailgate is in a position for closing said opening formed in said rear end portion of the vehicle body.

4,799,731

STADIUM SEAT COVER

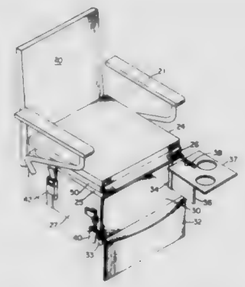
John T. Brown, Cincinnati, Ohio, assignor to Stadium Bags, Inc., Cincinnati, Ohio

Filed May 12, 1987, Ser. No. 48,887

Int. Cl.⁴ A47C *7/62*

U.S. Cl. 297—192 1 Claim

1. A stadium seat cover comprising a member sized and shaped to slide over a seat portion of a stadium type chair, a pouch attached to the member slidable over said seat portion, a top side to said pouch, depending sides attached to said top side, a back side secured to said top side and said depending sides, a bottom side secured to said back side and said depending sides, a pair of elastic strips secured to each depending side,



a slide member adapted to be removably positioned between either of said pair of elastic strips and its depending side, a holder removably positioned to said slide member, a front cover flexibly secured at its lower edge to said bottom side, and a slidable fastener secured to the front edge of said depending sides and the top side.

4,799,732

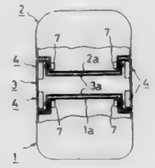
CHAIR SEAT INCLINING AND MOVING DEVICE

Kouichi Yamazaki, Yokohama, Japan, assignor to Okamura Corporation, Kanagawa, Japan

Filed Oct. 6, 1987, Ser. No. 105,558

Int. Cl.⁴ A47C *3/00*

U.S. Cl. 297—300 4 Claims



1. A chair seat inclining and moving device comprising:

a seat plate provided with stepped engaging portions at the rear part thereof;

a reclining seat back providing stepped engaging portions at the lower part thereof;

a connecting plate curved upwardly with a gentle obtuse angle and the front part of which is gently directs upwardly, the front portion of the front part and the upper portion of the rear part of said connecting plate having stepped engaging portions which fitted with the stepped engaging portions of said seat plate and the reclining back seat, respectively;

connecting means for pivotally fitting opposing sides of said stepped engaging portions of said seat plate and the stepped engaging portions of said connecting plate with one another, said connecting means allowing said connecting plate to move upwardly; and

connecting means for pivotally fitting opposing sides of said stepped engaging portions of said connecting plate and said stepped engaging portions of said reclining back seat with one another, said connecting means allowing said reclining back seat to move forwardly.

4,799,733

SEAT STRUCTURE HAVING A PIVOTABLE BACKREST AND IN PARTICULAR A FRONT SEAT STRUCTURE OF A MOTOR VEHICLE

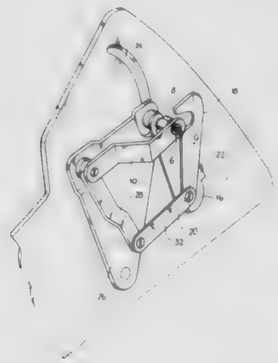
Serce Beley, Seloncourt, and Francois Fourrey, Montbeliard, both of France, assignors to Cycles Peugeot, France

Filed Aug. 28, 1986, Ser. No. 901,227

Claims priority, application France, Apr. 29, 1986, 86 06193

Int. Cl.⁴ B60N *1/02*

U.S. Cl. 297—379 6 Claims



1. A seat structure for a vehicle or the like, comprising a pivotable backrest having a frame (2) and a seat cushion having a frame (1) and, disposed on each side of the seat structure, a support side wall (14), a pivot pin (12) mounted on the side wall;

means for adjustably supporting the cushion frame (1) on the side wall (14) and comprising a pivotal member (26) pivotally mounted on said pivot pin (12), and a first pin (4) having a longitudinal axis and mounted on the pivotal member (26) at a distance from said pivot pin (12) whereby the first pin (4) is movable by the pivotal member (26) upwardly and forwardly about said pivot pin (12) in a first arc of a circle centered on said pivot pin (12) whereby the first pin and the cushion frame (1) are adjustable in height by pivoting the pivotal member (26) about said pivot pin (12);

means for permitting the backrest frame (2) to move forwardly in translation when swinging the backrest frame forwardly relative to the cushion frame (1) and comprising a link (10) having a first end pivotally mounted on said pivot pin (12) and a second end, and a second pin (6) pivotally connecting the backrest frame (2) to said second end of the link, said second pin (6) being movable upwardly and forwardly along a second arc of a circle identical to said first arc of a circle about said pivot pin (12) independently of the cushion frame (1) from a first position located at the rear of the pivot pin (12) relative to the forward pivoting of the backrest frame (2), which the second pin (6) occupies in the non-swung over position of the backrest frame (2);

means for providing an abutment for the second pin in a position of axial alignment with the first pin in a normal non-swung over position of the backrest frame and comprising a substantially semi-cylindrical semi-bearing fixed to the first pin and axially extending beyond the first pin (4) for receiving the second pin (6) while allowing the second pin (6) to freely move out of the semi-bearing (8) when the second pin is moved along said second arc of a circle away from the first pin;

and means for preventing the second pin from leaving the semi-bearing when it is required to maintain the first pin and second pin in axial alignment with each other and comprising a hook (18) and means for pivotally mounting the hook on the pivotal member (26) in such manner that the hook is pivotable selectively to a hooking position for hooking onto and locking the second pin (6) and preventing it from leaving the semi-bearing (8), and a retracted unlocking position allowing the second pin (6) to leave the semi-bearing.

4,799,734

LINEAR DEVICE FOR RAPIDLY ADJUSTING AND IMMOBILIZING A MOVABLE PART RELATIVE TO A FIXED PART

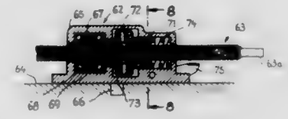
Pierre Périou, Cergy Pontoise, France, assignor to Rockwell-CIM, France

Filed Oct. 13, 1987, Ser. No. 107,605

Claims priority, application France, Oct. 13, 1986, 86 14178

Int. Cl.⁴ B60N *1/02, 1/08*; F16H *25/20*

U.S. Cl. 297—361 6 Claims



1. A linear device for the rapid adjustment and immobilization of a movable part relative to a fixed part, said device comprising:

at least one pair of elements consisting of a nut and a screw which are screw threadedly interengaged and cooperative with said fixed and movable parts;

said nut and screw having screw threads which have a helix angle large enough to ensure that the movement in translation is converted into movement in rotation with a slightly positive efficiency;

a housing for connection to said fixed part; said screw being movable in translation relative to said housing and provided for connection to said movable part, and extending through the nut which is located in said housing and fixed in translation and guided in rotation by said housing;

means for locking the nut relative to said housing;

said means for locking the nut comprising a set of teeth on the nut, a locking member, which is axially movably mounted in the housing coaxially around said screw and which is provided with a set of teeth which is complementary to said set of teeth on the nut for the purpose of locking the nut against rotation;

an elastically yieldable element inside the housing associated with said locking member for constantly biasing it to its locking position;

and means for retracting the locking member from the nut.

4,799,735

CHAIR OR ARMCHAIR

Just B. Meyer, Rhenen, Netherlands, assignor to Kembo B.V., Netherlands

Filed May 15, 1987, Ser. No. 50,244

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1986, 3622028

Int. Cl.⁴ A47C *7/00*

U.S. Cl. 297—440 16 Claims

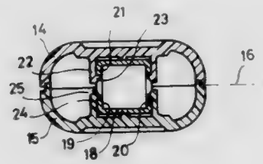
1. A chair or armchair including:

a seat (3) and a backrest (4) integral with said seat to constitute a cask, a plurality of hollow plastic legs (9, 10) extending below said seat to maintain the latter in a raised generally horizontal position, and metal tubes (17, 18) disposed within said legs to stiffen same;

each of said legs comprising first and second plastic halves (14, 15, 11, 12) which have a joining face (16, 13) extending generally parallel to a side of said chair;

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said plastic halves including inward projecting portions (**22, 24**) having snap-in edge formations (**23, 25**) which interact



with snap-in orifices (**21**) in the metal tubes (**17, 18**) for holding the latter and said plastic halves (**14, 15, 11, 12**) together as a unit.

4,799,736

CHILD'S SAFETY SEAT FOR USE IN AUTOMOBILES

Keiuzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

Continuation of Ser. No. 932,684, Nov. 18, 1986, abandoned. This application Dec. 22, 1987, Ser. No. 136,491
Claims priority, application Japan, Nov. 29, 1985, 60-269894
Int. Cl.[4] A47C *7/00*
U.S. Cl. 297—440 **5 Claims**



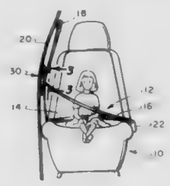
1. A child's safety seat for use in automobiles, comprising a chair type safety seat body made by a resin molding and having a seat portion, a backrest portion, and a pair of lateral wall portions rising upwardly and forwardly respectively from said seat portion and from said backrest portion, each of said lateral wall portions comprising an initially downwardly and rearwardly open channel forming an edge section of the respective lateral wall portion, said initially downwardly and rearwardly open channel having a contour with a U-shaped cross-section extending substantially continuously along said seat portion and along said backrest portion, said U-shaped cross-section having a first leg merging into the respective lateral wall portion and a second leg forming a downwardly and rearwardly directed free edge, initially separate outer lateral wall attachment panels made by a resin molding separately from said safety seat body, each of said initially separate attachment panels having an approximately forwardly facing rim contoured to match said contour of said initially open channel of the respective lateral wall portion, so that said second leg and said initially separate panels together form an outer chair surface extending substantially uninterrupted from said free edge to rear ends of said lateral wall portions, so that an outwardly facing surface of said second leg extends substantially in a same plane as an outwardly facing surface of the respective initially separate panel, and means for securing said initially separate outer lateral wall attachment panels to said safety seat body in such a position that said forwardly facing contoured rims of said initially separate attachment panels fit with the respective free edge of said second leg of said U-shaped cross-section of the respective lateral wall portion in said seat body to provide a substantially uninterrupted outer chair surface which substantially completely closes said initially open channel of said U-shaped cross-section.

4,799,737

SHOULDER BELT ADJUSTER

Marc B. Greene, 73 Market St., Venice, Calif. 90291

Filed Mar. 16, 1987, Ser. No. 26,105
Int. Cl.[4] B60R *22/10, 22/24*
U.S. Cl. 297—468 **3 Claims**



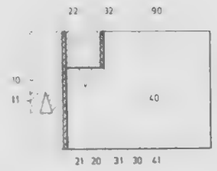
1. In a shoulder belt adjuster for a vehicle seat restraint system consisting of a shoulder belt having an outboard, upper point of attachment and an inboard, lower point of attachment and a lap belt cooperative with said shoulder belt, the combination of: rigid track means secured to an interior wall of said vehicle and having a plurality of vertically spaced turnkeys mounted thereupon; and a yoke member engageable with said shoulder belt between said upper and lower attachment points, said yoke member having openings therein for receiving said turnkeys whereby said yoke member can be removed from operative engagement with said turnkeys and engaged with others thereof to vertically adjust said yoke member and, thus, the intermediate portion of said shoulder belt.

4,799,738

MINING METHOD FOR WORKING LARGE-SCALE MINERAL DEPOSITS BY THE CAVING SYSTEM

András Solymos; Károly Barsi, both of Tatabánya, Hungary; László Kis-Tamás, Sandal Wakefield, United Kingdom; István Forisek, Tatabánya, Hungary; László Dörömbözi, Tatabánya, Hungary, and Ottó Lukonits, Tatabánya, Hungary, assignors to Tatabányai Szénbányák, Tatabánya, Hungary

Filed Nov. 1, 1982, Ser. No. 438,193
Claims priority, application Hungary, Nov. 3, 1981, 3276/81
Int. Cl.[4] E21C *41/00*
U.S. Cl. 299—11 **7 Claims**



1. A mining method for the underground extraction of large mineral deposits, comprising:
(a) forming a subsidiary road perpendicularly to the work face from which the mineral deposit is to be removed;
(b) forming a boundary road substantially perpendicular to said subsidiary road;
(c) forming a first mine tunnel by removing the mineral deposit from said work face, along said subsidiary road until said boundary road;

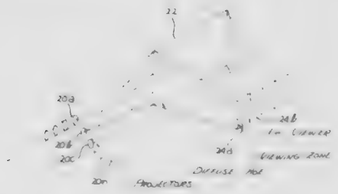
(d) collapsing the material around said first mine tunnel to fill the same along said subsidiary road;
(e) consolidating the collapsed matter along said subsidiary road; and
(f) forming a second mine tunnel along said subsidiary road.

4,799,739

REAL TIME AUTOSTEREOSCOPIC DISPLAYS USING HOLOGRAPHIC DIFFUSERS

Craig Newswanger, Sylmar, Calif., assignor to Advanced Dimensional Displays, Inc., Van Nuys, Calif.

Filed Aug. 10, 1987, Ser. No. 84,326
Int. Cl.[4] G02B *5/32, 27/22*
U.S. Cl. 350—3.7 **17 Claims**



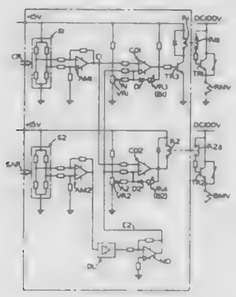
1. An autostereoscopic display comprising
a holographic diffuser means for directing light incident thereto from a point source toward and substantially only toward a viewing zone in a diffuse pattern, and
means for projecting a plurality of images onto said holographic diffuser means so as to overlie each other on said holographic diffuser means, each image being projected from a somewhat different direction selected so that the viewing zones of said plurality of images are each substantially contiguous to the viewing zones of adjacent images along the adjacent edges thereof.

4,799,740

ELECTROPNEUMATIC MASTER CONTROLLER FOR AN AIR BRAKE SYSTEM

Akihiro Iwaizako; Hiroshi Nishii, and Seiki Maruta, all of Kobe, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Dec. 15, 1987, Ser. No. 132,291
Claims priority, application Japan, Dec. 26, 1986, 61-314772
Int. Cl.[4] B60T *13/70, 13/68, 15/14*
U.S. Cl. 303—15 **10 Claims**



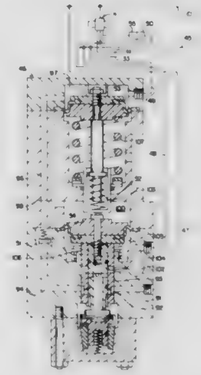
1. An electropneumatic master controller for a brake system of a railway vehicle comprising, a first sensor for converting the air pressure in a control line into a first equivalent electrical signal, the control line being pressurized by the braking operation of a brake valve and being exhausted by the releasing operation of the brake valve, a second sensor for converting the air pressure in a straight air line into a second equivalent electrical signal, the straight air line being pressurized by closing a release solenoid valve and by opening a brake solenoid valve and being exhausted by closing the brake solenoid valve and by opening the release solenoid valve, a delay circuit means receiving the second equivalent electrical signal from the second sensor and after a certain time delay producing an output representative of the second equivalent electrical signal, a first comparator means comparing the difference between the first equivalent electrical signal and the second equivalent electrical signal with a first set point for opening the release solenoid valve when the difference is less than the first set point and for closing the release solenoid valve when the difference is larger than the first set point, and a second comparator means comprising the difference with a second set point which is larger than the first set point for closing the brake solenoid valve when the difference is less than the second set point and for opening the brake solenoid valve when the difference is larger than the second set point.

4,799,741

PARKING BRAKE SYSTEM FOR RAILWAY VEHICLES

Thomas H. Eagle, Clayton, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Division of Ser. No. 932,418, Nov. 19, 1986, Pat. No. 4,746,171. This application Mar. 4, 1988, Ser. No. 164,033
Int. Cl.[4] B60T *17/04*
U.S. Cl. 303—60 **4 Claims**



1. A protective device for charging a handbrake release pipe from a brake pipe comprising;
(a) brake pipe, auxiliary reservoir and handbrake release pipe ports,
(b) cut-off, charging and exhaust pistons,
(c) a charging passage extending from the brake pipe port to the handbrake pipe port including a charging check valve and a chamber at one side of the cut-off piston,
(d) the charging passage also being connected to a chamber above the exhaust piston and below the charging piston, and
(e) graduating spring means biasing the respective pistons in opposition to fluid pressure in the chambers adjoining the respecting pistons.

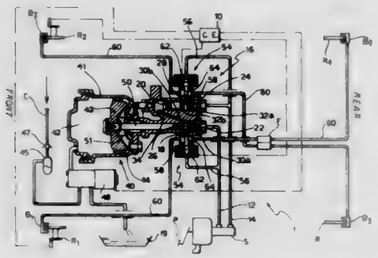
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4,799,742

FLUID PRESSURE DEVICE FOR OPERATING THE BRAKE MEMBERS OF A VEHICLE WITH A WHEEL ANTI-LOCKING FUNCTION

Pierluigi May, Milan, and Virginio Maggioni, Rosta, both of Italy, assignors to Industire Magneti Marelli S.r.l., Milan, Italy

Filed Apr. 13, 1988, Ser. No. 180,869
Claims priority, application Italy, Apr. 14, 1987, 67308 A/87
Int. Cl.[4] B60T *8/02*
U.S. Cl. 303—115 4 Claims



1. A device for the selective application to groups of brake members associated with the wheels of a vehicle of a fluid operating pressure generated by a source, wherein it comprises:

a fluid distributor member with a first chamber and a second chamber, each of which carries, for its connection to the source, an associated respective one-way flow valve which is adapted to prevent the propagation of fluid pressure from the source to the respective chamber, a piston being sealingly slidable in each chamber and dividing the chamber itself into a first space communicating with the one-way flow valve associated with respective chamber and a second space, the first space of the first chamber communicating with the second space of the second chamber; each piston carrying associated actuator means adapted to keep the one-way flow valve associated with the respective chamber in its open condition when the piston itself is in a position of advancement towards the first space of the respective chamber,

actuator means selectively operable to apply to the piston mounted in the first chamber a thrusting force directed so as to move the piston itself into a position of advancement towards the first space of the first chamber itself,

for each of the first and second chambers and for each group of brake members, a respective valve member with a first intake duct being connected to a source of pressurised operating fluid, a second intake duct communicating with the first space in the respective chamber, and at least one further duct communicating with the brake members of the group; the valve member including first obturator means interposed in the first intake duct and being normally open and second obturator means interposed in the second intake duct and being normally closed,

a braking control circuit with sensor means which detect the tendency of the wheels associated with the brake members of the group to lock, and which is adapted to, upon a manifestation of the tendency to lock, control in a selectively predetermined sequence:

the de-activation of the actuator means, with the cutting off of the thrusting force,

the closure of the first obturator means fo he respective valve member, and

the opening of the second obturator means of the respective valve member,

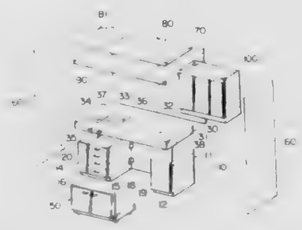
and wherein the actuator means include a fluid pressure actuator with a cylinder and a piston, in which the piston is operatively connected to the piston mounted in the first chamber of the fluid distributor member and divides the cylinder into two spaces of which the first is connected to a pressurised fluid source and the second contains a resilient biassing member which acts on the piston in the opposite sense from the thrust of the pressurised fluid, and a three-way solenoid valve member for controlling communication between the first chamber of the actuator and the pressurised fluid source in one condition and between the first chamber and a discharge in another condition, the solenoid valve member being piloted by the braking control circuit.

4,799,743

KITCHEN UNIT FOR PHYSICALLY HANDICAPPED PERSONS

Nobuaki Kikuchi, Hirakata; Hirohisa Fukuyama, Fukaeminamimachi; Tamio Hirabayashi, Hirakata, and Kouichi Imai, 8-15, Shimeien, Ibaraki-shi, Osaka, all of Japan, assignors to Kouichi Imai and Matsushita Electric Works, Limited, both of Osaka, Japan

Filed May 1, 1987, Ser. No. 44,620
Claims priority, application Japan, Nov. 10, 1986, 61-267148
Int. Cl.[4] A47B *77/06*
U.S. Cl. 312—228 1 Claim



1. A kitchen unit comprising:

a pair of base cabinets for fixedly mounting on the floor of a room;

a countertop extending horizontally across the top of the base cabinets and having mounted therein, adjacent one of its ends, a sink and, adjacent its other end, at least two surface cooking elements with a cooking workspace on said countertop therebetween;

said base cabinets being arranged in laterally spaced relation and defining therebetween a frontally accessible wheelchair space below said countertop and said cooking workspace thereon,

said wheelchair space having its bottom opened to the floor so as to permit entry therein of a wheelchair and the use of the kitchen unit by a physically handicapped person in the wheelchair,

said cooking elements being mounted in said countertop in a staggered relation with the surface cooking element located closest to the cooking workspace displaced rearward of the countertop and the surface cooking element located remotest from the workspace displaced forward of the countertop, and

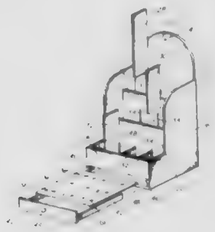
an auxiliary cabinet removably received in said wheelchair space for use of the kitchen system by non-handicapped persons, sad auxiliary cabinet being an L-shaped structure with a bottom plate and a front door frame upstanding from the front edge of the bottom plate, said bottom plate being provided with a set of rollers for rolling movement of the auxiliary cabinet on the floor into and out of said wheelchair space, and said front door frame being provided with a pair of hinged doors for closing the front of the wheel chair space and for providing access to the interior thereof when the auxiliary cabinet is selected in use to occupy the wheelchair opening.

4,799,744

COOK'S CADDY

Sylvia S. Toy, P.O. Box 1125, Paradise, Calif. 95967

Filed Dec. 24, 1987, Ser. No. 137,873
Int. Cl.[4] A47B *77/06*
U.S. Cl. 312—229 3 Claims



1. A multiple kitchen utensil holding caddy comprising:

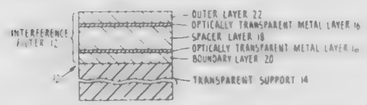
a substantially rectangular container structured for vertical positioning, upwardly arranged with an opened top, downwardly arranged terminally with a flat bottom, there being corner positioned supporting leg pads affixed externally under said flat bottom with said container compartmented for depository housing of kitchen utensils, there being an elongated, rectangular back section with a semicircular top edge containing a downwardly angled wall-hang aperture positioned centrally adjacent said top edge and said back section affixed with side walls extending upward from said bottom to the horizontal diametrical apex of said semicircle of said back section with said side walls having quarter rounded upwardly positioned frontal corners, there being two stepped down dividers paralleling said back wall between said side walls, the highest of said dividers nearest said back wall and the lowest of said dividers being a partial frontal wall section for said side walls, there being a box-like frontal extension of said side walls affixed with a shortened front member sufficiently sized to form a third step down divider in the back wall paralleling divider design, there being removable partitions sized for height and width fitting between said divider walls forming said compartments and said shortened front member accommodating a pull-out drip tray housed paralleling said bottom under downwardly terminal ends of said back wall paralleling dividers and said removable partitions, there being a drip pan member multi-apertured with funneling features slidably affixed immediately above said pull-out drip tray.

4,799,745

HEAT REFLECTING COMPOSITE FILMS AND GLAZING PRODUCTS CONTAINING THE SAME

Stephen F. Meyer, Los Altos, and Thomas G. Hood, San Francisco, both of Calif., assignors to Southwall Technologies, Inc., Palo Alto, Calif.

Filed Jun. 30, 1986, Ser. No. 880,797
Int. Cl.[4] G02B *5/28*; **C23C** *4/00*
U.S. Cl. 350—1.7 25 Claims



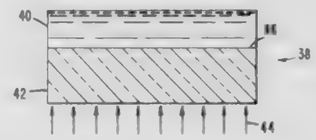
1. In a transparent, infrared reflecting composite film including a transparent metal layer-dielectric layer filter adhered to one side of a transparent support, the improvement comprising employing as the transparent metal layer-dielectric layer filter a visible light-transmitting infrared-reflecting Fabry-Perot interference filter which includes at least two separate discrete continuous sputter-deposited transparent metal layers separated from one another by a discrete continuous spacer layer of sputter-deposited inorganic metal oxide, compound or salt dielectric wherein each transparent metal layer is contiguous with and directly adherent to the adjacent spacer layer of dielectric without an intervening nucleation layer.

4,799,746

EFFICIENT HOLOGRAMS AND METHOD FOR MAKING SAME

John E. Wreede, Mourovia, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 27, 1985, Ser. No. 706,059
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[4] G03H *1/02*
U.S. Cl. 350—3.6 11 Claims



1. Method for making slant fringe holograms having increased efficiency comprising:

applying a single layer of light sensitive holographic recording medium to a single surface of a substrate;

treating said layer to reduce light sensitivity at only surface regions thereof adjacent said single surface of said substrate, said treating comprising exposing the medium to highly absorbed incoherent light; and

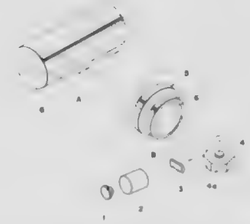
exposing the recording medium to coherent light to record a slant fringe pattern therein.

4,799,747

TILT ERROR CORRECTIVE SCANNING OPTICAL SYSTEM

Kazuo Yamakawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1987, Ser. No. 88,047
Claims priority, application Japan, Aug. 21, 1986, 61-196208
Int. Cl.[4] G02B *26/10*
U.S. Cl. 350—6.8 6 Claims



1. A tilt error corrective scanning optical system for a system having a image projection optical device for deflecting and reflecting a light beam, comprising:

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a linear image forming optical device for causing a light beam emitted from a light source to form a linear image on the surface of the deflection device; and

an image projection optical device for causing the deflected beam of the linear image to form a restored image on an objective surface while maintaining constant beam scanning speed, the image projection optical device consisting of a single toric lens having toric surfaces on the both sides thereof, the first toric surface faced to the deflection device being concave in both directions parallel and perpendicular to the scanning plane, the second toric surface opposite to the first toric surface being convex in both directions parallel and perpendicular to the scanning plane and the lens fulfilling following conditions:

$$r_1/r_2 \leqq 1 \quad (I)$$

$$0.3 < d_1/f < 0.5 \quad (II)$$

wherein r_1, and r_2, are radii of curvature of the first and second toric surfaces, respectively, in the direction perpendicular to the scanning plane, d_1 is an axial distance between the first and second toric surfaces and f is the total focal length of the toric lens in the direction parallel to the scanning plane.

4,799,748

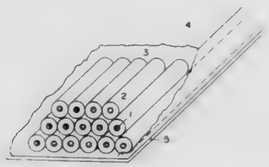
SLAB-DIFFUSER FIBER INCIDENT ENERGY CONCENTRATOR

David C. Brown, 4751 State Rte. 34, Winfield, W. Va. 25213

Continuation-in-part of Ser. No. 826,304, Feb. 5, 1986, Pat. No. 4,733,929. This application Apr. 7, 1986, Ser. No. 849,055

Int. Cl.[4] F24J *2/48*

U.S. Cl. 350—96.10 **8 Claims**



1. A radiant energy concentrator for radiation energy having a predetermined wave length, a dielectric slab wave guide means having an upper surface exposed to radiant energy to be concentrated, a bottom surface, means causing said bottom surface to be reflective, an edge for emitting concentrated radiant energy to a utilization device, said slab wave guide means comprising cylindric optical wave guide elements, each said wave guide element having coaxial diffuser means for internally scattering the incident radiation and causing a fraction of the scattered incident radiation to enter guide modes and become trapped within the cylindric optical wave guide while the untrapped portion of the initial scattered radiation is internally reflected by dielectric slab wave guide means and said bottom reflective surface, through other of said cylindric optical wave guide elements with coaxial diffuser means, thereby trapping an additional fraction of the initial untrapped portion of scattered radiation within cylindric optical wave guide element and by cumulative propagation of trapped incident radiation energy along the cylindric optical wave guide element lengths effect a concentration of incident radiation energy at said edge for emission to a utilization device.

4,799,749

INTEGRATED RESONATOR MATRIX FOR WAVELENGTH-SELECTIVE SEPARATION OR JOINING OF CHANNELS IN THE FREQUENCY DOMAIN OF OPTICAL COMMUNICATIONS TECHNOLOGY

Manfred Börner, Ulm; Reinhard Müller, Ingolstadt, and Gert Trommer, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

PCT No. PCT/DE86/00069 § 371

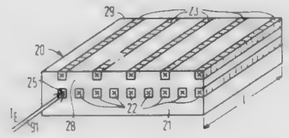
Date Oct. 14, 1986, § 102(e). Date Oct. 14, 1986, PCT Pub. No. WO86/04999, PCT Pub. Date Aug. 28, 1986

PCT filed Feb. 25, 1986, Ser. No. 924,848

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1985, 3506569

Int. Cl.[4] G02B *6/10*

U.S. Cl. 350—96.13 **48 Claims**



1. Arrangement of optical resonators which are composed of dielectric waveguides which are mirrored at their ends predominantly with reflectors having high reflection factors close to the value one and whose longitudinal extent between the reflectors is great in comparison to the transverse dimensions perpendicular thereto, characterized in that all optical resonators are integrated on a substrate to form a matrix-like arrangement, referred to as resonator matrix, being integrated such that two types of resonators can be distinguished, whereby the resonators of the first type are highly coupled to one another and act as coupled resonators (22, 221, 222), whereas the resonators of the second type act as wavelength-selective useful resonators (23, 231, 232) and, in comparison to the couplings between the resonators of the first type, are weakly coupled to one another or, respectively, to the resonators of the first type and form at least two useful resonator groups which are coupled to one another as little as possible, whereby a useful resonator group contains one or more useful resonators.

4,799,750

OPTICAL FUNCTION ELEMENT AND A METHOD FOR MANUFACTURING THE SAME

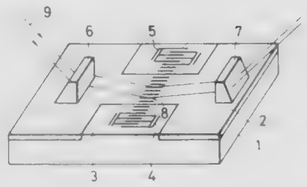
Mamoru Miyawaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1984, Ser. No. 667,165

Claims priority, application Japan, Nov. 4, 1983, 58-207773; Jan. 23, 1984, 59-010507; Jan. 23, 1984, 59-010508

Int. Cl.[4] G02B *6/10*

U.S. Cl. 350—96.13 **23 Claims**



1. In an optical function element comprising a substrate having a surface, a thin film optical waveguide formed by ion-exchange on a region of said surface of said substrate, and means for effecting one of modulation and deflection of light propagating in the optical waveguide by an electric field applied to defract light in the optical waveguide, wherein the improvement comprises said means for effecting one of modulation and deflection being provided at another region of said surface of said substrate than said region where said waveguide is formed.

4,799,751

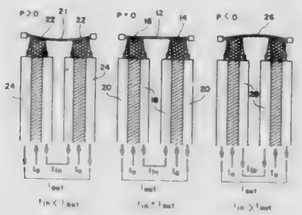
DETECTION DEVICE USING FIBER OPTIC TECHNIQUES

Vincent J. Tekippe, Des Plaines, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 16, 1983, Ser. No. 494,843

Int. Cl.[4] G02B *6/26, 6/02;* H01J *5/16;* H01R *39/46*

U.S. Cl. 350—96.15 **11 Claims**



1. A deflection detection device for monitoring deflection of a diaphragm, having a radium r comprising:

a first plurality of optical fibers having fiber ends concentrically disposed about a center of said diaphragm, said first plurality of optical fibers forming a circle having a radium r_1, where $r_1 < r$;

a second plurality of optical fibers having fiber ends concentrically disposed about the center of said diaphragm, said second plurality of optical fibers forming a circle having a radium r_2 where $r > r_2 > r_1$;

a third plurality of optical fibers having fiber ends concentrically disposed about the center of said diaphragm, said third plurality of optical fibers forming a circle having a radius r_3 where $r > r_3 > r_2$;

said ends of said first and third plurality of optical fibers are light capturing and said ends of said second plurality of fibers are light emitting, light from said second plurality of fibers being reflected off of said diaphragm into said firsts and third plurality of optical fibers in proportion to the amount of deflection of said diaphragm according to a predetermined ratio.

4,799,752

FIBER OPTIC GRADIENT HYDROPHONE AND METHOD OF USING SAME

Edward F. Carome, Cleveland, Ohio, assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sep. 21, 1987, Ser. No. 99,199

Int. Cl.[4] G02B *6/26;* G01D *5/34;* G01B *9/02;* H04R *17/00*

U.S. Cl. 350—96.15 **20 Claims**

1. A fiber optic gradient hydrophone for measuring acoustic pressure gradients in a fluid such as water, comprising:

a body configured to be neutrally buoyant in the fluid;

a fiber optic interferometer having a first light path and a second light path in the neutrally buoyant body;

means for introducing optical signals into the first and second light paths; and

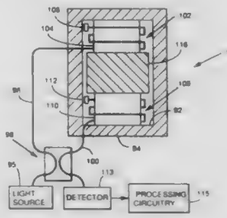
means for producing in the optical signals a phase change indicative of acoustic pressure gradients on the neutrally buoyant body.

11. A method for measuring acoustic pressure gradients in a fluid such as water, comprising the steps of:

forming a body to be neutrally buoyant in the fluid;

placing a fiber optic interferometer having a first light path and a second light path in the neutrally buoyant body;

introducing optical signals into the first and second light paths; and



producing in the optical signals a phase change indicative of acoustic pressure gradients on the neutrally buoyant body.

4,799,753

TERMINAL FOR A RADIATION CONDUCTOR

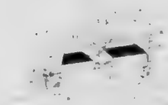
Friedrich-Wilhelm Breitbarth; Hans-Jürgen Tiller; Michael Grosch, all of Jena, German Democratic Rep.; Albert Schmidt, Bad Homburg, Fed. Rep. of Germany; Ralf Janda, Bad Homburg, Fed. Rep. of Germany, and Steffen Oppawsky, Bad Homburg, Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Weirheim, Fed. Rep. of Germany

Filed Apr. 21, 1986, Ser. No. 854,349

Claims priority, application German Democratic Rep., Apr. 25, 1985, 275544

Int. Cl.[4] G02B *6/32*

U.S. Cl. 350—96.18 **18 Claims**



1. Radiation conductor terminal providing uniform irradiation over a substantially rectangular field comprising:

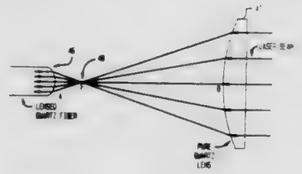
a radiation conductor having end means emitting radiation along the axis of the conductor;

transparent, longitudinal cylindrical lens body means with rectangular cross sections in planes perpendicular to the axis of the radiation conductor one side of which faces the end of said radiation conductor;

means for mounting said lens body means and the end of said radiation conductor with the axis of said lens body perpendicular to the axis of the radiation conductor; and

said lens body having a transverse trough-shaped recess axially symmetrical in cross section and opening with a continuously expanding width toward the end of said radiation conductor, the bottom thereof being perpendicular to the axis of the radiation conductor and perpendicular to the axis of said lens body, said trough being transverse to the rectangular cross sections of said lens body, whereby radiation emitted from the end of said radiation conductor is uniformly illuminated in a rectangular field of illumination radiation.

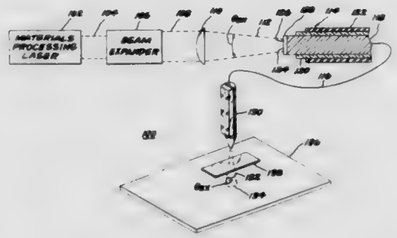
4,799,754
DELIVERY SYSTEM FOR HIGH-ENERGY PULSED ULTRAVIOLET LASER LIGHT
Tsvi Goldenberg, Allentown, Pa., assignor to Advanced International Systems, Inc., Costa Mesa, Calif.
Continuation-in-part of Ser. No. 779,844, Sep. 25, 1985, Pat. No. 4,732,448, which is a continuation-in-part of Ser. No. 679,538, Dec. 7, 1984, Pat. No. 4,641,912. This application May 6, 1986, Ser. No. 860,241
Int. Cl.[4] G02B *23/26*
U.S. Cl. 350—96.18 **23 Claims**



1. A system for the delivery of high energy pulsed laser light utilizing an optical waveguide, wherein said waveguide comprises an optical fiber having an energy-conducting core made of synthetic silica that is substantially free of metallic impurities and that is doped with a material that functions to repair inherent structural defects in the silica, and further including an energy coupler at one end of said fiber for enabling energy pulses to be coupled into said fiber while maintaining their energy level without damage to said fiber.

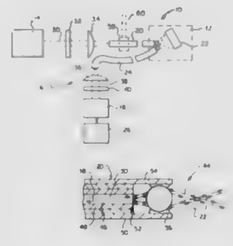
2. The delivery system of claim 1 wherein said energy coupler includes at least one lens for changing the diameter of a beam of laser light to be substantially the same as the diameter of said fiber.

4,799,755
LASER MATERIALS PROCESSING WITH A LENSLESS FIBER OPTIC OUTPUT COUPLER
Marshall G. Jones, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 21, 1987, Ser. No. 136,071
Int. Cl.[4] G02B *6/32*
U.S. Cl. 350—96.18 **12 Claims**



1. Laser materials processing apparatus, comprising:
a fiber optic for transmitting a materials processing laser beam, said fiber optic having a predetermined diameter;
lens means for focusing a collimated portion of the laser beam as a focused beam portion onto an input end of said fiber optic for transmission therethrough, the collimated laser beam having a predetermined beam divergence;
output coupling means for supporting an output end of said fiber optic;
a diverging portion of the laser beam emitted from said fiber optic output end having an exit cone angle approximately equal to an entry cone angle of the focused beam portion; and
said lens means having a focal length selected so that the diverging portion of the laser beam emitted from said fiber optic output end projects an unfocused beam spot onto a workpiece positioned at a predetermined working distance from said fiber optic output end, the projected unfocused spot having a power density sufficient to perform a predetermined laser materials processing task on the workpiece.

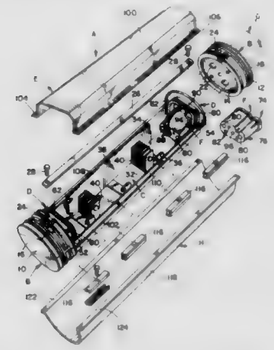
4,799,756
REMOTE MULTI-POSITION INFORMATION GATHERING SYSTEM AND METHOD
Tomas B. Hirschfeld, Livermore, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Division of Ser. No. 480,844, Mar. 31, 1983, Pat. No. 4,626,693, which is a continuation of Ser. No. 194,684, Oct. 6, 1980, abandoned. This application Nov. 1, 1985, Ser. No. 793,961
The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.
Int. Cl.[4] G02B *6/32*
U.S. Cl. 350—96.18 **22 Claims**



1. An optical fiber arrangements especially suitable for directing a beam of light into a given area adjacent a first location from a second location and/or for collecting newly generated fluorescent light emanating from a sample within said given area and directing it to said second location, said arrangement comprising: elongated optical fiber means having first and second opposite ends positioned at said first and second locations, respectively; a spherical lens having a focal point on each side thereof, whereby light at either one of said focal points is focused to the other by said lens; means for fixedly connecting said lens in confronting but spaced apart relationship with said first end of said optical fiber means such that one of the focal points of said lens is disposed at said first end and the other focal point is positionable within said given area, whereby light passing through said optical fiber means from its second end to its first end can be focused to a focusing point within said given area and light generated at said focusing point within said area can be focused into said first end of said fiber means for movement through latter to said second end; and means cooperating with said lens and designed to interact with said sample for altering the sample's fluorescent light emitting characteristics in a predetermined way.

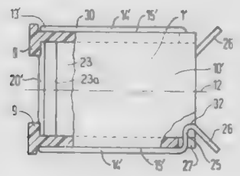
4,799,757
ENCAPSULATED FIBER OPTIC CLOSURE
Erwin H. Goetter, Chesterland, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio
Filed Apr. 21, 1987, Ser. No. 40,926
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 **16 Claims**

1. A closure assembly adapted for encapsulating an associated fiber optic cable, the closure assembly comprising:
first and second opposed end plates disposed in laterally spaced apart relation and defining a cavity therebetween, said first end plate having an opening therethrough adapted to closely receive an associated cable into said cavity;
a cover extending between said first and second end plates for enclosing said cavity; and,



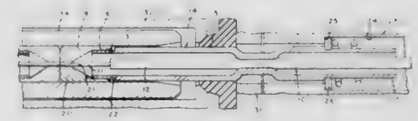
a resin cup having a first open end engaging said first end plate and a second generally closed end having an aperture adapted to closely receive the associated cable therethrough, said rein cup further including a fill port spaced from said aperture for receiving said resin therein whereby ingress of moisture to the central cavity is limited.

4,799,758
ADAPTOR FOR A LIGHT WAVEGUIDE PLUG CONNECTOR
Peter Pohl, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jul. 21, 1987, Ser. No. 75,993
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3625075
Int. Cl.[4] G02B *6/36, 6/38*
U.S. Cl. 350—96.2 R **8 Claims**



1. In an adaptor for a light waveguide connector having two pluggable parts, said adaptor having a housing with a pair of side walls, a top wall, a bottom wall, a first end, a second end, and a through-opening with an axis extending between the first and second ends, and spring means for engaging the plug parts to hold the parts in the through-opening, each of the side walls of the housing adjacent the second end being provided with a web extending inwardly into the opening, each of said webs merging with the top wall, said bottom wall having a recess adjacent the web so that the opposite ends of the webs are free ends that are freely accessible so that a pluggable part with channels can be inserted laterally transverse to the axis of the opening with the channels being received on said webs, the improvements comprising said spring means being a U-shaped spring clip having a bight portion interconnecting two legs, said spring clip being mounted on the housing with the legs extending along outer surfaces of the side walls of the housing with the bight portion being at the second end to extend across the free ends of said webs to hold the plug part thereon and the free ends of the legs being at the first end and forming interlocking means for engaging a plug part inserted into the first end and holding the plug part therein.

4,799,759
FIBER OPTIC CONNECTOR
Marik Balyasny, Van Nuys, Calif., assignor to G & H Technology, Inc., Santa Monica, Calif.
Filed Jan. 26, 1986, Ser. No. 855,401
Int. Cl.[4] G08B *6/38*
U.S. Cl. 350—96.21 **1 Claim**



1. In an optical fiber connector having first and second contacts for respectively holding first and second optical fibers to be interconnected, each said fiber having a bare fiber end portion with a faced-off end, the improvement comprising:
each contact including a tubular member having a bore of sufficient cross-sectional dimensions as to enable receipt of an optical fiber therewithin, said tubular member being constructed of a malleable material and having a part laterally crimped to clampingly engage the optical fiber carried therewithin;
tip means releasably enclosing one end of the tubular member and having an opening therein colinear with the tubular member longitudinal axis and of cross-sectional dimensions slightly larger than the diameter of a bare optical fiber, and an outer end surface faced off at substantially 90° to the tip means opening;
said tip means being cylindrical with an axially extending generally cylindrical bore open at one end and having an end wall closing off the other end, an opening being formed in the end wall colinear with the tip means cylindrical axis, and an inwardly directed flange on the tip means bore wall being received in a groove on the tubular member; and
a hollow terminus body within which the tubular member is resiliently mounted to extend outwardly of an end of the terminus body and a strength member termination means affixed to the other end of the terminus body, said terminus body having a bore extending therethrough with a first diameter region and a second diameter region smaller than the first diameter region, said tubular member other end portion being received through the hollow terminus body bore and including a washer of diameter greater than the second diameter region preventing withdrawal of the tubular member and coil spring means within the hollow terminus bore resiliently mounting the tubular member therewithin.

4,799,760
STRAIN RELIEF APPARATUS
Johnny W. Beatty, Denver, and Brian A. DiMarco, Taylorsville, both of N.C., assignors to Siecor Corporation, Hickory, N.C.
Filed Feb. 29, 1988, Ser. No. 161,678
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 **7 Claims**

1. A strain relief apparatus, comprising:
(a) first and second members each having (i) an outer surface, (ii) a first end, and (iii) an inner surface delimiting a

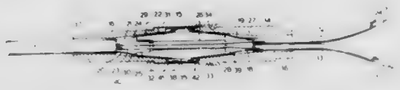
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central bore, the inner surface tapered so that the bore diameter decreases from the first end toward the middle portion of the member;

(b) a wedging member having (i) first and second ends, (ii) an outer surface tapering from wide to narrow from the wedging member middle portion toward the wedging member first and second ends, and (iii) a central bore, the wedging member first end inserted within the first member bore at the first member first end, and the wedging member second end inserted within the second member bore at the second member first end;

(c) a first tube and a second tube, the wedging member located between the first and second tubes;

(d) a plurality of first strength members within the interior of the first tube and extending between the wedging member outer surface and the first member inner surface;



(e) a plurality of second strength members within the interior of the second tube and extending between the wedging member outer surface and the second member inner surface;

(f) a first communications member extending from the interior of the first tube through the central bores of the first member, wedging member, and second member, respectively, and into the interior of the second tube; and

(g) urging means for urging the first and second members toward each other, whereby (i) the first strength members are tightly held between the wedging member outer surface and first member inner surface, and (ii) the second strength members are tightly held between the wedging member, outer surface and the second member inner surface.

4,799,761

PLASTIC OPTICAL TRANSMISSION MEDIUM, PROCESS FOR PRODUCING THE SAME AND ARRAY OF LENSES USING THE SAME

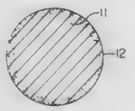
Takashi Yamamoto; Yoshihiko Mishina, and Masaaki Oda, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1987, Ser. No. 31,508

Claims priority, application Japan, Mar. 27, 1986, 61-67183; May 12, 1986, 61-106751; May 15, 1986, 61-111089

Int. Cl.⁴ G02B *6/18*

U.S. Cl. 350—96.31 **24 Claims**



1. A plastic optical transmission medium having a singular body in which the refractive index varies continuously, in a radial direction from the interior toward the surface of the body, said body having a layer formed under the surface thereof and containing a light-absorbing substance.

4,799,762

RESIN COMPOSITE

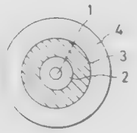
Tatsuya Kakuta, and Nobuhiro Akasaka, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 11, 1987, Ser. No. 60,613

Claims priority, application Japan, Jun. 13, 1986, 61-136219; May 22, 1987, 62-123917

Int. Cl.⁴ G02B *6/00, 6/10*

U.S. Cl. 350—96.34 **5 Claims**



1. A coated optical fiber comprising an optical fiber, first layer formed over said optical fiber and second layer formed over said first layer, said first and second layers being composed of a first resin having a negative coefficient of linear expansion and a second resin having a positive coefficient of linear expansion, respectively.

4,799,763

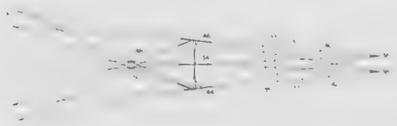
PARAXIAL STEREOSCOPIC PROJECTION SYSTEM

John R. Davis, Dublin, and Marlin O. Thurston, Columbus, both of Ohio, assignors to Canaby Technologies Corporation, Columbus, Ohio

Filed Mar. 27, 1987, Ser. No. 31,529

Int. Cl.⁴ G02B *27/24, 17/06, 27/10*

U.S. Cl. 350—137 **13 Claims**



1. A stereoscopic projection system for viewing from an eye station a stereoscopic image comprising:

a pair of image sources each having an image center which are spaced-apart from each other;

a concave spherical mirror segment having a center of curvature and located between said image source pair and said viewable stereoscopic image which also has an image center, and being disposed so that said image centers of said image source pair and said viewable stereoscopic image are located at said center of curvature;

image deflecting means disposed between each image source and said spherical mirror about the juncture whereat the aperture of the system is the smallest so that the image center of each of said image sources are located in spaced-apart relationship; and

beam splitter means interposed to reflect image projection between said deflecting means and said spherical mirror and to pass image projection between said spherical mirror and said eye station.

4,799,764

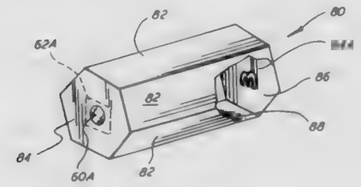
SPECTRAL IMAGE VIEWING DEVICE

Christopher S. Crowell, Old Lyme, Conn., assignor to Structural Graphics, Inc., Essex, Conn.

Filed Dec. 23, 1987, Ser. No. 137,421

Int. Cl.⁴ B44F *1/00;* **G02B** *27/04*

U.S. Cl. 350—162.18 **10 Claims**



1. A spectral image viewing device comprising:

a structure having first and second spaced apart panels and forming an enclosure, said first panel having a viewing aperture formed therein through which a user can peer, said second panel having an image producing aperture therein in a desired shape, said viewing aperture and said image producing aperture being aligned so that a direct line of vision of a user peering through said viewing aperture extends through said image producing aperture; and a semi-transparent prismatic device mounted within said enclosure between said viewing aperture and said image producing aperture in the direct line of vision of the user, whereby said semi-transparent prismatic device separates white light coming from the exterior of said enclosure and passing through the enclosure between said image producing aperture and said view aperture into an array of visually perceptible spectral images.

4,799,765

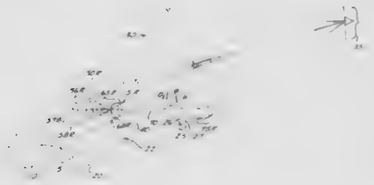
INTEGRATED HEAD-UP AND PANEL DISPLAY UNIT

John J. Ferrer, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 846,445, Mar. 31, 1986, This application Sep. 24, 1987, Ser. No. 105,527

Int. Cl.⁴ G02B *27/14, 5/18, 5/28*

U.S. Cl. 350—174 **23 Claims**



1. An integrated head-up and panel display system comprising:

a first image source for projecting a HUD image;

a second image source for projecting a panel image;

a combiner for directing HUD image light to a system exit pupil;

a panel screen for display of panel image light; and

optical selector means arranged to substantially reflect light from said first image source toward said combiner and to substantially transmit light therethrough from said second image source toward said panel screen.

4,799,766

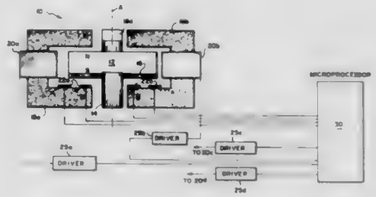
OBJECTIVE LENS SUPPORT AND POSITIONING SYSTEM

Marvin F. Estes, Oakfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1988, Ser. No. 168,209

Int. Cl.⁴ G02B *7/02*

U.S. Cl. 350—252 **7 Claims**



5. An objective lens support and positioning system comprising:

an objective lens having an optical axis;

a disk member of permanent magnet material affixed to said objective lens;

a disk wafer of electret material having an inherent charge affixed to said disk member;

a plurality of U-shaped pole pieces symmetrically positioned around the edges of said disk member;

a plurality of coils, each wound around the center of a corresponding pole piece;

a plurality of pairs of sensor plates, each pair affixed to a corresponding U-shaped pole piece adjacent said disk wafer of electret material; and

control means coupled to said pairs of sensor plates for sensing the strength of the charge of said electret material as a function of the distance between the pairs of sensor plates and said disk wafer and for providing current to said plurality of coils so as to position said objective lens at a desired position.

4,799,767

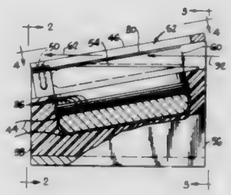
HIGH SPEED SHUTTER FOR A LASER BEAM

David C. Woodruff, Santa Clara, Calif., assignor to NM Laser Products, Inc., Sunnyvale, Calif.

Filed Apr. 5, 1988, Ser. No. 177,952

Int. Cl.⁴ G02B *26/02*

U.S. Cl. 350—269 **10 Claims**



1. A shutter mechanism for shuttering a laser beam directed along a path from a source comprising,

an electromagnet and flexible ferromagnetic blade mounted in narrow V-shaped relationship to one another at an end opposite from a light source, the electromagnet and blade lying with a light path passing between,

said electromagnet communicating with an electrical power supply and having a cylindrical core and a toroidal wind-

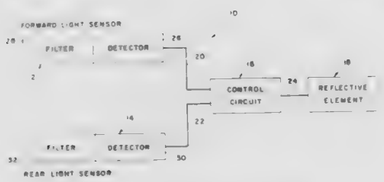
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ing about said core, said core having a lengthwise slice defining poles, a free end of said blade positioned to flex toward said poles when said electromagnet is active,
means for absorbing light reflected from said blade, and
means for dissipating heat from said absorbing means.

4,799,768
AUTOMATIC REARVIEW MIRROR WITH FILTERED LIGHT SENSORS

Edward A. Gahan, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.

Filed Apr. 27, 1987, Ser. No. 43,209
Int. Cl.[4] B60R *1/06*; G02B *5/08, 17/00*
U.S. Cl. 350—279 **11 Claims**

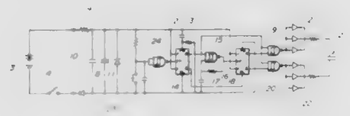


1. An automatic rearview mirror comprising:
a reflective element having a plurality of reflective states;
light sensor means for outputting a signal responsive to light directed onto said light sensor means, said light sensor means including a detector means for outputting the signal responsive to the intensities of electromagnetic wavelengths received by said detector means and a filter means for filtering the electromagnetic wavelengths reaching said detector means, the spectral response of said detector means and the spectral transmission of said filter means being such that together the spectral response of said light sensor means more closely approximates the spectral response of the human eye than does the unfiltered detector means; and
a control means responsive to at least the signal for controlling the reflective state of said reflective element.

4,799,769
LIQUID CRYSTAL ANTIDAZZLE MIRROR

Hiroshi Demura, Toyota, Japan; Akira Kawahashi, Stanford, Calif.; Kazumi Hayashi, Okazaki, and Sadao Kokubu, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 9, 1986, Ser. No. 883,881
Claims priority, application Japan, Jul. 9, 1985, 60-104583
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—331 R **3 Claims**

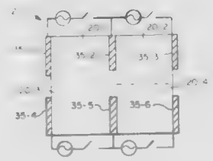


1. An antidazzle mirror including a liquid crystal layer disposed in front of the mirror and a drive control circuit for controlling the operating mode of the liquid crystal, the drive control circuit comprising:
a drive circuit for controlling a voltage applied to the liquid crystal to change the light transmission factor of the layer between a high transmission dazzle mode and a low transmission antidazzle mode;
a mode memory circuit connected to the drive circuit for delivering a command signal for selectively placing the mirror in one of the dazzle and antidazzle modes; and
a mode switching circuit connected to the mode memory circuit, the mode switching circuit having a manually operable switch for changing the mode memory circuit from the one mode to the other mode, wherein
a capacitor is connected across power supply lines in parallel with a power source between a power switch and the mode memory circuit so as to be charged when the power switch is closed, the capacitor having a predetermined capacity sufficient to continue to supply power to the mode memory circuit for a predetermined time after the power switch is opened, so as to maintain for said predetermined time the mode memory circuit in the mode in effect at the time of opening the power switch.

4,799,770
LIQUID CRYSTAL CELL FOR IMAGE PROJECTIONS AND METHOD OF OPERATING SAME

Frederick J. Kahn, Palo Alto; Elizabeth A. Nevis, Menlo Park, and Jerry Leff, Saratoga, all of Calif., assignors to Greyhawk Systems, Inc., Milpitas, Calif.

Continuation of Ser. No. 914,640, Oct. 2, 1986. This application Mar. 8, 1988, Ser. No. 169,097
Int. Cl.[4] G02F *1/13*; G11C *7/00, 13/04*
U.S. Cl. 350—331 R **22 Claims**

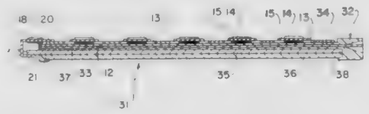


1. In a liquid crystal cell for a light control device, said liquid crystal cell being generally planar, having a surface area bounded by peripheral edges, and comprising a liquid crystal layer sandwiched between a first conductive layer and a second conductive layer and first means for applying a voltage difference between said conductive layers, the improvement wherein said surface area defines a plurality of mutually adjacent regions, each mutually adjacent pair of said regions defining therebetween a boundary line, said liquid crystal cell further comprising a plurality of busbars disposed along said peripheral edges and said boundary lines, and second means for applying a voltage difference between at least one mutually adjacent pair of said busbars.

4,799,771
LIQUID CRYSTAL DISPLAY WITH STOPPER PINS IN GUIDE MEANS

Koki Taniguchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 15, 1986, Ser. No. 819,023
Claims priority, application Japan, Jan. 22, 1985, 60-7837[U]; Apr. 15, 1985, 60-56493[U]
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—334 **7 Claims**



1. A liquid crystal display device comprising

a circuit substrate,
a flat back light having first and second edges,
first guide means attached to said circuit substrate for receiving said first edge of said flat back light,
second guide means, parallel to and spaced from said first guide means, attached to said circuit substrate for receiving said second edge of said flat back light, and
an electrode substrate secured to said first and second guide means by stopper pins.

4,799,772
UNIAXIALLY HIGH-ORIENTED POLYETHYLENE NAPHTHALATE FILM FOR LIQUID CRYSTAL PANEL SUBSTRATES

Shigeo Utsumi, Yokohama, Japan, assignor to Diafoil Company, Limited, Tokyo, Japan

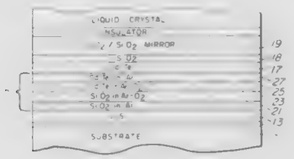
Filed Dec. 1, 1986, Ser. No. 936,311
Claims priority, application Japan, Dec. 9, 1985, 60-276647
Int. Cl.[4] G02F *1/13*; B32B *7/02, 29/00*
U.S. Cl. 350—339 R **7 Claims**

1. A uniaxially highly-oriented polyethylene naphthalate film useful for liquid crystal panel substrates, having an in-plane birefringence of more than 0.110 after said film is stretched and subjected to a heatset treatment ranging from 200° to 270° C.

4,799,773
LIQUID CRYSTAL LIGHT VALVE AND ASSOCIATED BONDING STRUCTURE

Rodney D. Sterling, Carlsbad, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 27, 1987, Ser. No. 90,053
Int. Cl.[4] G02F *1/135*
U.S. Cl. 350—342 **24 Claims**

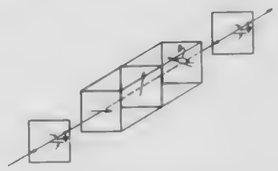


18. A structure for bonding cadmium telluride to a base layer comprising amorphous silicon, single crystal silicon or silicon dioxide, the structure comprising:
a silicon dioxide layer formed on said base layer;
an oxygen enriched silicon dioxide layer formed on said silicon dioxide layer;
an oxygen enriched cadmium telluride layer formed on said oxygen enriched silicon dioxide layer; and
a cadmium telluride layer formed on said oxygen enriched cadmium telluride layer.

4,799,774
ELECTROOPTICAL DISPLAY ELEMENT USING A SUPERTWIST LIQUID CRYSTAL HAVING SPECIFIED ELASTIC CONSTANTS

Güter Baur, Freiburg, Fed. Rep. of Germany; Bernhard Scheuble, Yokohama, Japan, and Waltraud Fehrenbach, Emmendingen, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP87/00135, § 371 Date Nov. 17, 1987, § 102(e) Date Nov. 17, 1987, PCT Pub. No. WO87/05714, PCT Pub. Date Sep. 24, 1987
PCT Filed Mar. 9, 1987, Ser. No. 130,388
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609141
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—346 **4 Claims**

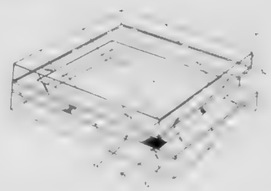


1. Method of improving the contrast effect of an electrooptical display element which can be multiplexed, has two support plates which, with an edging, form a cell containing a nematic liquid crystal material with positive dielectric anisotropy and at least one chiral additive, has a characteristic line of the transmission of light through the display element as a function of voltage applied across the cell, and has a small surface tilt angle and a twist angle with a value between 150° and 250°, characterized in that the ratio of the elastic constants for bending and twisting K_3/K_2 of the liquid crystal material and the twist angle are adjusted so that by using a liquid crystal material with the maximum possible ratio of the elastic constants K_3/K_1 for bending and spreading, the steepness of the characteristic line is improved but the characteristic line is bistable, or by using a liquid crystal material with the smallest possible ratio of the elastic constants K_3/K_1 for bending and spreading, the steepness of the characteristic line is improved but the characteristic line remains stable.

4,799,775
FERROELECTRIC LIQUID CRYSTAL CELLS HAVING A HELICAL LIQUID CRYSTAL STRUCTURE

William A. Crossland, Harlow; Anthony B. Davey, and Matthew F. Bone, both of Bishop's Stortford, all of England, assignors to STC PLC, London, England

Filed Mar. 31, 1987, Ser. No. 32,760
Claims priority, application United Kingdom, Apr. 1, 1986, 8607953
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—350 S **4 Claims**



1. A ferroelectric liquid crystal cell exhibiting bistability of operation, which cell has a smectic I* or F* phase liquid crys-

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tal layer confined between opposed electroded plates only one of those inward facing surfaces have been treated to promote planar alignment of the adjacent liquid crystal molecules in a selected direction, which plates serve to define the thickness of the liquid crystal layer, said thickness being in the range from 4 to 40 microns, and being of a sufficient magnitude such that a helical arrangement of the liquid crystal molecules of said liquid crystal layer is obtained when said layer is cooled in the absence of an applied electric field into said smectic I* or F* phase from a less-ordered phase that is not an inclined smectic phase.

4,799,776

FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE HAVING A SINGLE POLARIZER

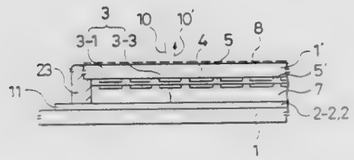
Shunpei Yamazaki, Tokyo; Takashi Inujima, Kanagawa; Akira Mase, Kanagawa; Toshimitsu Konuma, Kanagawa; Mitsunori Sakama, Kanagawa; Toshiji Hamatani, Kanagawa; Minoru Miyazaki, Kanagawa; Kaoru Koyanagi, Nagano, and Toshiharu Yamaguchi, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP86/00329, § 371 Date Mar. 2, 1987, § 102(e) Date Mar. 2, 1987, PCT Pub. No. WO87/00301, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 27, 1986, Ser. No. 34,165

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—350 S **15 Claims**



1. A liquid crystal device comprising:

a transparent substrate;

an opposite substrate;

a ferroelectric liquid crystal layer interposed between said transparent substrate and said opposite substrate; and

an electrode arrangement for inducing an electric field perpendicular to and across said crystal layer, said arrangement including a reflective electrode portion by which is reflected light passing through said transparent substrate and incident on said reflective electrode portion.

4,799,777

MULTI-FREQUENCY ACOUSTO-OPTIC MODULATION PROCESS AND APPARATUS

Bridoux Edouard; Camus Lievin; Bruneel Christian; Gazalet Marc, and Roger Torguet, all of Valenciennes, France, assignors to Centre National De La Recherche Scientifique, Paris, France

Filed Mar. 31, 1987, Ser. No. 32,349

Claims priority, application France, Apr. 2, 1986, 86 04710

Int. Cl.⁴ G02F *1/11, 1/33*

U.S. Cl. 350—358 **2 Claims**

1. In a process for acousto-optic modulation of a light beam comprising:

applying a composite electrical signal having a plurality of drive components at different specific modulation frequencies and having two compensation components one of which has a frequency lower than all the frequencies of all said drive components and the other of which has a frequency which is higher than all the frequencies of all said drive components to a transducer of an acousto-optic modulator, and

directing an entering monochromatic light beam into said acousto-optic modulator for delivery of deflected output beams,



the improvement consisting in servo-controlling the cumulated electric power of said two compensation components to maintain the total acoustic power applied to the modulator by said transducer at a substantially constant value and distributing said cumulated electric power equally between the two said compensation components.

4,799,778

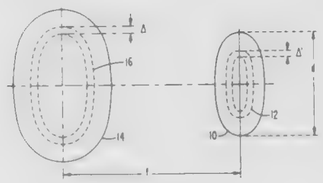
FRESNEL LENS CONCENTRATOR

Robert W. Jebens, Skillman, N.J., assignor to General Electric Company, Fairfield, Conn.

Filed Apr. 8, 1986, Ser. No. 849,437

Int. Cl.⁴ G02B *3/08*

U.S. Cl. 350—452 **10 Claims**



1. A Fresnel lens having a central optical axis passing through perpendicularly to the lens plane and comprising a plurality of concentric ring-like facets for converging light onto a target plane through which said central optical axis passes at least substantially perpendicularly to illuminate said target plane in a plurality n'_f in number of concentric ring-like areas about said axis, wherein successive groups of contiguous facets of said lens have respective consecutive ordinal numbers respectively from the center at the optical axis to the periphery of said lens, which successive odd-numbered groups of contiguous facets converge light onto successive ring-like areas of said target plane respectively from the periphery to the center of said target at said axis, which successive even-numbered groups of contiguous facets also converge light onto said successive ring-like areas of said target plane respectively from the periphery to the center of said target, wherein each ring-like area of said target plane receives substantially focussed light passing through a respective group of consecutive ring-like facets, said groups each containing a predetermined number of such facets according to a fraction of the total light as would pass through that group as through the entire leans under conditions of uniform illumination by light parallel to said optical axis so as to maintain a uniform light intensity over the surface of the target plane under such illumination conditions wherein each even-numbered group of said consecutive ring-like facets is arranged to converge its fraction of said light so as not to cross the optical axis before reaching the target plane and wherein each odd-numbered group of said consecutive ring-like facets is arranged to converge its fraction of said light so as to cross the optical axis before reaching the target plane.

4,799,779

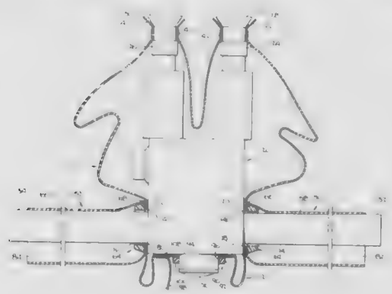
MICROSCOPE DRAPE

Jeffrey C. Mesmer, 4191 Deepwood La., Cincinnati, Ohio 45245

Filed Mar. 22, 1988, Ser. No. 171,682

Int. Cl.⁴ B65D *85/38, 65/02*

U.S. Cl. 350—585 **20 Claims**



1. A disposable microscope drape for covering an operating microscope having ocular and objective portions, and a support portion, said drape comprising,

(a) an elongated main body portion elongated in a longitudinal direction, for covering said support portion, said ocular portion and said objective portion of said microscope, said main body portion being formed of flexible sheet material and having opposite end portions, one of said end portions being open, the other said end portion being substantially closed for positioning at the ocular and objective portions of said microscope,

(b) at least one flexible sleeve member having a first sleeve end portion joined to said main body portion, said sleeve member having an opposite free end portion, and

(c) reinforcing means provided at the junction between said first sleeve end portion and said main body portion to strengthen the joint between said first sleeve end portion and said main body portion.

4,799,780

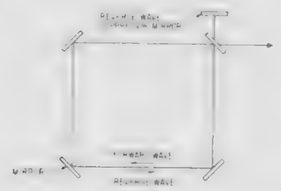
ABERRATED SUPPRESSOR MIRROR

Jay M. Bernard, Torrance; Richard A. Chodzko, Rancho Palos Verdes, and Timothy J. Bixler, Gardena, all of Calif., assignors to The Aerospace Corporation, El Segundo, Calif.

Filed Jan. 23, 1987, Ser. No. 6,413

Int. Cl.⁴ G02B *5/08*

U.S. Cl. 350—600 **3 Claims**



1. A reverse wave suppressor mirror apparatus, the improvement comprising mirror surface undulations of a periodic height and width wherein a reverse wave is effectively reinjected in the direction of a forward wave of the apparatus over a wide range of mirror tilt angles from approximately 50 microradians to at least 600 microradians.

4,799,781

EYEGLASSES WITH DETACHABLE LENSES

Karl Weber, Stuttgart, Fed. Rep. of Germany, assignor to Polaroid Corporation, Cambridge, Mass.

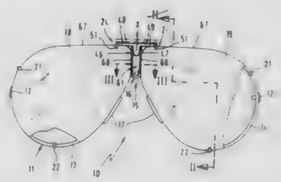
PCT No. PCT/EP87/00117, § 371 Date Oct. 30, 1987, § 102(e) Date Oct. 30, 1987, PCT Pub. No. WO87/05405, PCT Pub. Date Sep. 11, 1987

PCT Filed Feb. 27, 1987, Ser. No. 127,294

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1986, 8605669[U]

Int. Cl.⁴ G02C *1/00, 5/04*

U.S. Cl. 351—86 **9 Claims**



1. Eyeglasses, in which lenses are positioned on sockets connected by a bridge and retained by hook-shaped members attached to the sockets and extending over the lenses, characterized by the fact that the bridge **(16)** comprises at least one slidable member **(46)** preferably vertically slidable between open and closed positions provided with two hook members **(51)** at preferably two cantilever arms **(48, 49)** extending parallel to the bridge **16**, said hooks **(51)** of the slidable members each grasping a respective lens **(18, 19)** when the slidable member **(46)** is in its closed position.

4,799,782

ADJUSTABLE EYE GLASS FRAME

John Tuttle, Box 873212, Wasilla, Ak. 99687

Filed Jul. 6, 1987, Ser. No. 70,569

Int. Cl.⁴ G02C *5/20*

U.S. Cl. 351—118 **15 Claims**



1. An adjustable eyeglass temple, hingeably attached to an eyeglass frame, comprising

(A) a temple ahving a front hinge adjusting tube and a rear ear piece adjusting tube, said rear ear piece adjusting tube being slidably disposed within said front hinge adjusting tube such that said rear ear piece adjusting tube can telescopically expand therefrom and retract thereto;

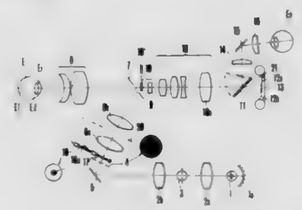
(B) adjusting means fixedly installed within said front hinge adjusting tube and removably installed within said rear ear piece adjusting tube such that the overall length of said temple can be shortened or lengthened by said adjusting means, said adjusting means being only accessible for adjustment from the front of said temple.

(C) concealment means removably disposed and installed to conceal said adjustment means from view during normal use of the eyeglasses;

(D) locking means disposed within said rear ear piece adjusting tube such that said locking means prevent the rotation of said rear ear piece adjusting tube to prevent inadvertent adjustment of the length of said temple.

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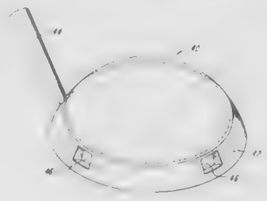
4,799,783
EYE FUNDUS CAMERA
Junichi Takahashi, and Yuji Itoh, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 842,769, Mar. 24, 1986, abandoned, which is a continuation of Ser. No. 782,180, Sep. 30, 1985, abandoned, which is a continuation of Ser. No. 668,700, Nov. 6, 1984, abandoned, which is a continuation of Ser. No. 352,761, Feb. 26, 1982, abandoned. This application Jun. 18, 1987, Ser. No. 65,072
Claims priority, application Japan, Mar. 9, 1981, 56-33562; Mar. 31, 1981, 56-47616
Int. Cl.[4] A61B *3/14*
U.S. Cl. 351—206 **34 Claims**



1. An eye fundus camera capable of selectively performing normal photography and fluorescein angiography comprising:
(a) photographic means for forming a photographic optical path and for photographing the fundus of the eye, said photographic means having a conjugate field stop to the fundus of the eye to be examined;
(b) illuminating means for forming an illuminating optical path and for illuminating the fundus of the eye, said illuminating means being provided with a conjugate ring slit to the front part of an eye to be examined with respect to an objective optical system confronting the eye;
(c) light selecting means cooperating with said photographic means for selecting a light forming a fluorescein image from among the light from the eye fundus;
(d) exciting means cooperating with said illuminating means for producing a light exciting fluorescein substance;
(e) a second field stop arranged in said illuminating optical path approximately conjugate with the eye fundus of the eye to be examined for reducing the illuminated area of the eye fundus; and
(f) means for making a diameter of the illuminated area of said second field stop smaller in connection with alteration from fluorescein angiography, with both said exciting means and said light selecting means in the optical path, to normal photography with both said exciting means and said light selecting means out of the optical path.

4,799,784
VISUAL VERTEX FINDER
Aran Safir, 3 Ellsworth Ave., Cambridge, Mass. 02139
Filed Jun. 23, 1986, Ser. No. 877,265
Int. Cl.[4] A61B *3/00, 3/10*
U.S. Cl. 351—212 **20 Claims**

7. A beam splitter for use in combination with a viewing instrument having an optical axis and a light source producing a collimated light beam coincident with the optical axis of the viewing instrument to locate a visual vertex of an eye fixated on the light source, a visual axis for the collimated light beam being defined between the fovea of the fixated eye and the light source wherein the visual vertex is the intersection point of the visual axis with the front corneal surface of the fixated eye, comprising:
an annular base portion for engagement with the front corneal surface of the fixated eye;
a curved mirror centrally disposed on said annular base portion distal to the front corneal surface of the fixated eye, and wherein said curved mirror is partially reflective and partially transmissive to the collimated light beam incident thereon;
said curved mirror and said base portion in combination defining an optical axis for said beam splitter, and wherein said curved mirror is structurally configured to cause the collimated light beam incident thereon to form a virtual image of the light source on the front corneal surface of the fixated eye at the visual vertex when said optical axis



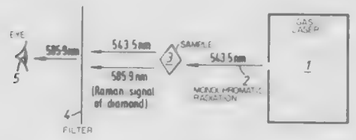
of said beam splitter is coincident with the visual axis of the fixated eye; and
means for moving said beam splitter on the front corneal surface of the fixated eye to align said optical axis of said beam splitter with the visual axis of the fixated eye thereby causing
the collimated light beam to form the virtual image of the light source on the front corneal surface of the fixated eye at the visual vertex and wherein the virtual image of the light source is located via the viewing instrument.

4,799,785
CORNEA CONTOUR MAPPING
Richard H. Keates, 264 N. Drexel Ave., Columbus, Ohio 43209, and Richard T. Schneider, 3550 N.W. 33rd Pl., Gainesville, Fla. 32605
Filed Oct. 17, 1986, Ser. No. 920,049
Int. Cl.[4] A61B *3/10, 5/10*
U.S. Cl. 351—212 **3 Claims**



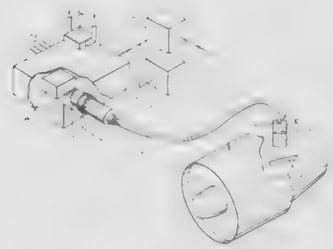
1. An apparatus for mapping the surface area of the cornea which comprises: probe means comprising a bundle of cylindrical pins reciprocally movable with respect to one another and having a forward end thereof adapted to measure the surface contour of a cornea, said bundle having a circular cross-section of at least 10 mm in diameter; means for locking said bundle of pins in a fixed position with respect to one another after said one end of the cylindrical pins is adapted to the shape of the cornea; detecting means for ascertaining the relative position of the ends of the pins to one another at the forward end of the bundle of pins; memory means for storing the relative position of each end of said pins; and graphing means for depicting the contour of the cornea on a surface based on the data stored in said memory means so as to permit observation by an operator.

4,799,786
METHOD OF DIAMOND IDENTIFICATION
Donald L. Gerrard, West Ewell, England, assignor to The British Petroleum Company p.l.c., London, England
PCT No. PCT/GB86/00340, § 371 Date Feb. 3, 1987, § 102(e) Date Feb. 3, 1987, PCT Pub. No. WO86/07457, PCT Pub. Date Dec. 18, 1986
PCT Filed Jun. 12, 1986, Ser. No. 9,364
Claims priority, application United Kingdom, Jun. 13, 1985, 8514992
Int. Cl.[4] G01J *3/44*; G01N *21/87*
U.S. Cl. 356—30 **4 Claims**



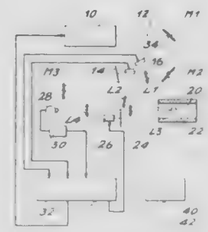
1. A method for distinguishing between diamonds comprising the steps of:
(a) irradiating a gem to be distinguished with a beam of monochromatic laser radiation, the laser radiation being produced by a low powdered laser and having a wavelength in the range about 450 to 550 nanometers;
(b) passing any resultant scattered Raman radiation from said gem through an optical filter adapted to pass only scattered Raman radiation of wavelength characteristic of diamond and,
(c) detecting said filtered radiation by the eye of an observer thereby to enable identification of said gem as a diamond or otherwise.

4,799,787
OPTICAL FIBRE RADIATION PYROMETER
Ronald A. Mason, Southampton, England, assignor to Smiths Industries Public Limited Company, London, England
Filed Nov. 25, 1987, Ser. No. 125,267
Claims priority, application United Kingdom, Dec. 10, 1986, 8629492
Int. Cl.[4] G01J *5/04, 5/08/5/14*
U.S. Cl. 356—43 **8 Claims**



1. An optical pyrometer comprising: an optical radiation receiving head; a flexible fibre optic cable having one end coupled with said receiving head such that said cable transmits radiation received by said receiving head; an optical detector assembly fixed with the other end of said cable, said optical detector assembly including a first rigid casing, a first mateable electrical connector device on said casing, an optical radiation detector device and amplifier means within said casing, said amplifier means having an input connected with said optical radiation detector device and an output connected with said first electrical connector device; and a processing unit, said processing unit including a second rigid casing, a second electrical connector device on said second casing, electrical circuit means within said second casing, said circuit means having an input connected with said second electrical connector device, said circuit means being arranged to process the output of the optical detector assembly, and said second electrical connector device being adapted to mate and engage directly with the first electrical connector device such that said optical detector assembly can be connected with said processing unit without the interposition of any cable between the respective first and second casings.

4,799,788
PROCESS FOR MEASURING THE TEMPERATURE OF A BODY BY OPTICAL DETECTION AND MODULATED HEATING
Olivier Berthet, Vanves; Jean-Jacques Greffet, Antony, and Yves Densyrolles, Le Vesinet, all of France, assignors to Electricite de France Service National, Paris and Ecole Centrale des Arts et Manufactures de Paris, Chatenay Malabry, both of, France
Filed Aug. 7, 1987, Ser. No. 82,549
Claims priority, application France, Aug. 8, 1986, 86 11542
Int. Cl.[4] G01J *5/06, 5/60*
U.S. Cl. 356—45 **3 Claims**



3. A process for measuring by optical detection the temperature of a body, comprising the steps of:
producing a modulated heating of a zone of said body;
varying the intensity of said modulated heating;
detecting the thermal radiation coming from said zone and providing an electric signal having a continuous component and a modulated component wherein said modulated component varies in accordance with said variation in the intensity of said modulated heating and wherein said variation of said modulated component comprises a linear term and a quadratic term with respect to the intensity of the modulated heating;
forming a first ratio of said quadratic term with respect to the intensity of the modulated heating;
forming a first ratio of said quadratic term to said linear term wherein said first ratio results in a function dependent on the temperature of the body but independent of the emissivity of the body;
forming a second ratio by detecting said thermal radiation in a second wavelength range different from said first wavelength range to thereby form a first and a second ratio respectively;
forming a third ratio consisting of said first ratio divided by said second ratio wherein said third ratio provides a quantity which depends only on the temperature of said body; and
computing the second derivative of the luminance of a black body;
computing by inversion of said second derivative of said luminance, and the value of said third ratio, the temperature of said body.

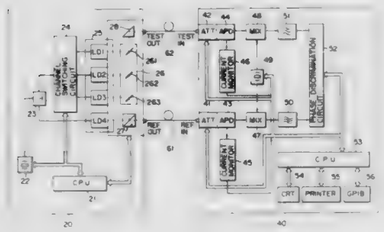
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4,799,789

CHROMATIC DISPERSION MEASURING SYSTEM FOR OPTICAL FIBERS

Takeshi Tsukamoto, Hadano; Takao Tanimoto, Sagamihara, and Hidetoshi Miyao, Yokohama, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Feb. 24, 1988, Ser. No. 159,888
Claims priority, application Japan, Feb. 27, 1987, 62-27436[U]; Mar. 9, 1987, 62-52130
Int. Cl.[4] G01N *21/84*
U.S. Cl. 356—73.1 25 Claims



1. A light signal transmission apparatus for measuring a chromatic dispersion of an optical fiber based on a baseband phase comparison method, said apparatus comprising:

n light source means for selectively generating optical signals having wavelengths corresponding to n wavelength points to be measured as measurement optical signals, one of said n light source means also serving to generate a reference optical signal;

modulation signal generating means for generating at least one modulation signal having a predetermined frequency;

first control signal generating means for designating said n light source means in a predetermined order in order to generate the measurement optical signals and the reference optical signal;

light source switching means, which is coupled between said first control signal generating means, said modulation signal generating means, and said n light source means, for selectively supplying the modulation signal to a specific one of said n light source means, which is designated by the first control signal to generate the measurement optical signal and to said light source means which also serves to generate the reference optical signal, or only to the light source which serves to generate both the measurement optical signal and the reference optical signal;

second control signal generating means for generating a second control signal having a predetermined synchronous relation with the first control signal; and

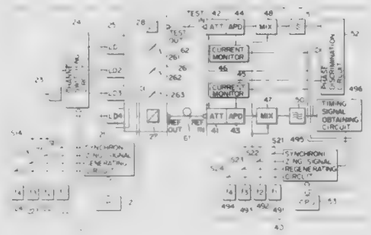
optical switch means, which has n optical signal inputs arranged in correspondence with said n light source means, a measurement optical signal output, and a reference optical signal output, for, in response to the second control signal from said second control signal generating means, commonly outputting, to the measurement optical signal output, the measurement optical signal which is output from the designated one of said n light source means and is selectively input to the n optical signal inputs, and outputting the reference optical signal generated by one of said n light source means to the reference optical signal output.

4,799,790

CHROMATIC DISPERSION MEASURING SYSTEM FOR OPTICAL FIBERS

Takeshi Tsukamoto, Hadano, and Takao Tanimoto, Sagamihara, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Feb. 24, 1988, Ser. No. 159,838
Claims priority, application Japan, Feb. 27, 1987, 62-44569
Int. Cl.[4] G01N *21/84*
U.S. Cl. 356—73.1 19 Claims



1. A light signal transmitter apparatus for measuring a chromatic dispersion of an optical fiber based on a baseband phase comparison method, said apparatus comprising:

light source means for selectively generating one of measurement optical signals having wavelengths corresponding to n wavelength points to be measured and a reference optical signal in a predetermined combination;

modulation signal generating means for generating at least one modulation signal having a predetermined frequency;

synchronizing signal generating means for generating a synchronizing signal having a predetermined frequency;

adding means, connected to said modulation signal generating means and said synchronizing signal generating means, for adding the synchronizing signal generated by said synchronizing signal generating means to the modulation signal generated by said modulation signal generating means;

first control signal generating means for designating the predetermined combination of one of the measurement optical signals and the reference optical signal;

light source switching means, which is coupled between said light source means, said adding means, and first control signal generating means, for selectively supplying the modulation signal added with the synchronizing signal to the light source means corresponding to the combination of one of the measurement optical signals and the reference optical signal designated in accordance with the first control signal;

second control signal generating means for generating a second control signal having a predetermined synchronous relation with the first control signal; and

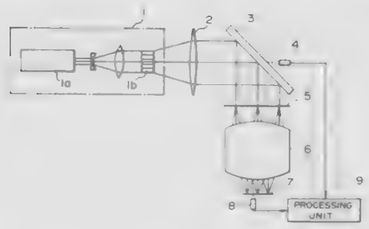
optical switch means, which has reference optical signal input and measurement optical signal inputs which are arranged in correspondence with said light source means, a measurement optical signal output, and a reference optical signal output, for, in response to the second control signal from said second control signal generating means, commonly outputting, to the measurement optical signal output, the measurement optical signal which is output from the designated one of said light source means and is selectively input to the measurement optical signal inputs, and outputting the reference optical signal from the reference optical signal input to the reference optical signal output.

4,799,791

ILLUMINANCE DISTRIBUTION MEASURING SYSTEM

Hiroshi Echizen; Masakatsu Ota, and Akiyoshi Suzuki, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 106,000, Oct. 7, 1987, abandoned, which is a continuation of Ser. No. 699,201, Feb. 7, 1985, abandoned. This application May 23, 1988, Ser. No. 198,587
Claims priority, application Japan, Feb. 13, 1984, 59-22892; Jan. 16, 1985, 60-5355
Int. Cl.[4] G01J *1/00*
U.S. Cl. 356—121 20 Claims



1. An illuminance distribution measuring apparatus, comprising:

first detecting means for detecting illuminance at each portion of an area irradiated by a light beam emitted from a light source, said first detecting means being movable along the area irradiated;

second detecting means fixedly secured at a predetermined position relative to the light source and the area to be irradiated, said second detecting means receiving a portion of the light beam emitted from the light source to irradiate the area to be irradiated to detect unsteadiness of the light from the light source; and

processing means for receiving outputs from said first and second detecting means and processing the outputs to measure the illuminance distribution on the area irradiated.

4,799,792

METHOD TO TEST THE POLISHING OF A MIRROR AND SYSTEM TO USE THIS METHOD

Alian Bouneau, Auteuil, and Jacques Paseri, Le Plessis Robinson, both of France, assignors to Societe d'Etudes Techniques et d'Entreprises Generales - Sodeteg, Le Pelessis Robinson, France

Filed Jul. 21, 1987, Ser. No. 75,980
Claims priority, application France, Jul. 22, 1986, 86 10616
Int. Cl.[4] G01B *9/00*
U.S. Cl. 356—124 22 Claims

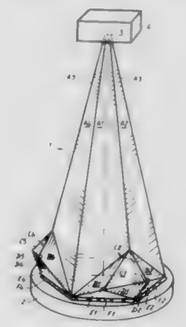
1. A method to test the polished surface of a mirror comprising:

placing said mirror on a support;

fixing said support at one end of a flexible shaped and/or folding chamber;

mounting a testing device at the other end of said flexible and/or folding chamber;

eliminating any residual air in said chamber;



then replacing said removed air by a fluid in which light is propagated homogeneously; and

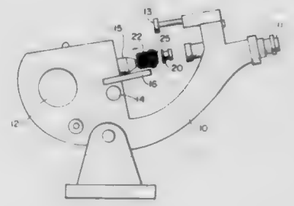
testing said mirror.

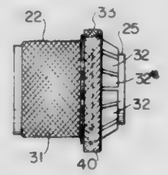
4,799,793

METHOD AND APPARATUS OF PLACING A LENS IN A TELESCOPIC LENS ASSEMBLY WHILE PROVIDING OPTICAL ALIGNMENT

Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.

Filed Sep. 15, 1986, Ser. No. 906,985
Int. Cl.[4] G01B *9/00*
U.S. Cl. 356—127 7 Claims





1. A method of providing spectacle correction on optical axis in a compound lens system by employing a lensometer having a lens stop assembly for positioning a lens on which measurements are to be made for aligning the lens in said compound lens system while employing said lensometer, comprising the seps of:

(a) placing said lens in a fixture to firmly hold the lens while allowing said lens to protrude from said fixture,

(b) placing said fixture and lens over said lens stop assembly of said lensometer,

(c) moving said compound lens system with respect to said lens to align the same along said axis to determine the proper position of said lens within said compound systems.

6. A collet assembly apparatus for holding a lens for assembly purposes, comprising:

a first tubular member section symmetrically disposed about an axis and having an opened top and bottom end, said member having an intermediate threaded peripheral section, with a series of surface slots directed from said opened top end and intersecting said threaded section to form a plurality of flanges between said slots with the outer ends of said flanges defining a spectacle lens accommodating aperture, a rotatably adjustable ring positioned over said threaded section and having a corresponding internal thread to allow said ring when adjusted to vary the spacing of said slots to thereby vary the diameter of said lens accommodating aperture to enable a spectacle lens emplaced within said aperture to be firmly grasped about the periphery thereof while allowing a predetermined portion of the lens to extend from said aperture.

4,799,794

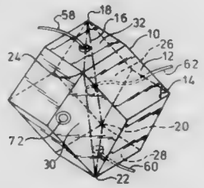
INTERIOR REFLECTIVE CHAMBER EMBODYING AN ORDERING PRINCIPAL FOR COLOR REFLECTORS THEREIN

Roy L. Myantt, 420 N. Hamilton, Ypsilanti, Mich. 48197

Filed Sep. 29, 1987, Ser. No. 102,119

Int. Cl.[4] G01N *21/03, 21/25*

U.S. Cl. 356—246 **21 Claims**



1. A chamber comprising a multifaceted rhombic dodecahedral interior wall, a plurality of the faces of the wall comprising reflective surfaces, the reflective surfaces each comprising distinct monochromatic reflective filters whereby distinct substantially monochromatic radiation is reflectable from each of said surfaces and wherein opposed surfaces are of primary and complementary radiative frequencies.

4,799,795

STATIONARY, ELECTRICALLY ALTERABLE, OPTICAL MASKING DEVICE AND SPECTROSCOPIC APPARATUS EMPLOYING SAME

William G. Fateley, Manhattan, Kans., assignor to D.O.M. Associates, Inc., Manhattan, Kans.

Continuation of Ser. No. 902,575, Sep. 2, 1986, abandoned, which is a continuation of Ser. No. 613,711, May 24, 1984, Pat. No. 4,615,619, which is a continuation-in-part of Ser. No. 590,999, Mar. 19, 1984, abandoned. This application Oct. 26, 1987, Ser. No. 115,639

The portion of the term of this patent subsequent to Oct. 7, 2003, has been disclaimed.

Int. Cl.[4] G01F *1/01;* **G01J** *3/28*

U.S. Cl. 356—310 **10 Claims**

6. A spectrophotometer, comprising:

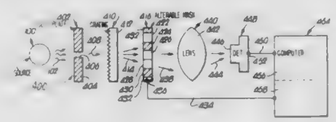
a source of radiation;

a stationary, fixedly mounted, electrooptical masking device including a body presenting a pair of opposed faces, zone-defining means carried by the body for dividing at least one of said faces into a plurality of discrete, selectively alterable zones;

means operably coupled with said body for selective, electrical alteration of each zone respectively between a condition where it is relatively transmissive for said radiation, and a condition where it is relatively opaque for said radiation,

said zone condition-altering means including means for successively and sequentially producing over the time of a single spectral analysis and in a predetermined fashion a number of different patterns of zones carried by the body which are rendered relatively transmissive and opaque, whereby different ones of said zones are predeterminedly rendered relatively transmissive and opaque at different times during said time of said single spectral analysis;

means for directing radiation from said source as continuous, unmodulated radiation onto a face of said masking device,



said zone condition-altering means being operable for passing of said radiation unmodulated through said zones when rendered relatively transmissive;

said radiation source and masking device being correlated such that the radiation from said source is of a wavelength which will pass unmodulated through the zones of said body when such zones are in said relatively transmissive condition;

detector means associated with said mask for successively and sequentially detecting certain of the radiation initially directed onto said one mask face during each predetermined mask pattern of relatively transmissive and opaque zones; and

means operably connected with said detector means for sucessively receiving and analyzing detected radiation information received from the detector means during each of said predetermined mask patterns, in order to provide a spectral analysis.

4,799,796

METHOD AND APPARATUS FOR MEASURING IMMUNOLOGICAL REACTION WITH THE AID OF PHASE-MODULATION OF LIGHT

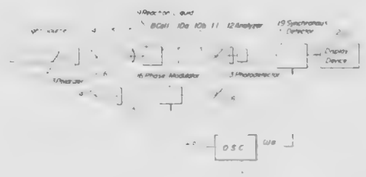
Toshimitsu Musha, Machida, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Dec. 12, 1986, Ser. No. 941,107

Claims priority, application Japan, Dec. 20, 1985, 60-285819

Int. Cl.[4] G01N *33/50, 21/21, 21/51, 15/02*

U.S. Cl. 356—336 **24 Claims**



1. A method of measuring an immunological reaction comprising the steps of:

emitting a polarized light beam;

dividing the polarized light beam into first and second polarized light beams;

projecting the first polarized light beam to a reaction liquid containing at least an antigen and an antibody;

phase-modulating said second polarized light beam with a given phase-modulating angular frequency to produce a phase-modulated light beam;

introducing said phase-modulated light beam and light scattered by particulate substances in the reaction liquid and having a polarization component whose polarization plane differs from that of the first polarized light beam, onto a photodetector to produce an output signal; and

processing said output signal of the photodetector on the basis of said phase-modulating angular frequency to measure the antigen-antibody reaction in the reaction liquid.

4,799,797

COHERENCE MULTIPLEXING OF OPTICAL SENSORS

Raymond W. Huggins, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 17, 1987, Ser. No. 121,467

Int. Cl.[4] G01B *9/02*

U.S. Cl. 356—345 **10 Claims**



1. An optical sensor system, comprising:

a common optical bus;

one or more optical sources, each source having a coherence length;

a plurality of sensors, each sensor comprising a sensor interferometer formed in substrate, the sensor interferometer comprising a sensing arm and a reference arm, each arm comprising an optical waveguide having first and second ends, the sensor interferometer further comprising means for coupling radiation from an associated one of the sources into the first ends of the arms and means for coupling sensor modulated radiation from the second ends of the arms into the optical bus, the arms of each sensor interferometer (i) having an optical path length difference LS(i) that is greater than the coherence length of the associated source and that differs from the path length difference LS(j) of the sensor interferometer of each other sensor by an amount greater than the coherence length of the source associated with path length difference LS(i), each sensor further comprising means for varying the optical path length of the sensing arm based on a sensed input parameter; and

a detection subsystem coupled to receive the sensor modulated radiation from the optical bus, the detector subsystem comprising detector interferometer means for causing separate portions of the sensor modulated radiation, for each path length difference LS(i), to travel along first and second optical paths that have a path length difference LD(i) that differs from LS(i) by an amount not substantially greater than the coherence length of the source associated with path length difference LS(i), and for combining the sensor modulated radiation that has traveled along the first and second optical paths to produce an optical output signal having an intensity that varies as the sensed parameter of the associated sensor varies.

4,799,798

METHOD OF AND AN APPARATUS FOR AN OPTICAL MEASURING OF A POSITION

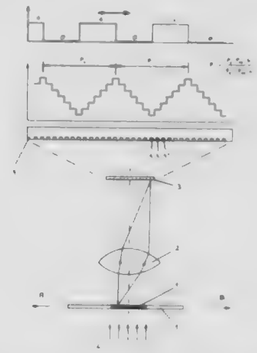
Karl J. Erb, Gossau, Switzerland, assignor to Mettler Instruments AG, Greifensee, Switzerland

Filed Feb. 5, 1987, Ser. No. 11,314

Claims priority, application Switzerland, Feb. 18, 1986, 641/86

Int. Cl.[4] G01B *11/00*

U.S. Cl. 356—374 **7 Claims**



1. A method of optically measuring the position between two elements, comprising:

forming a line grid of a photosensitive element having a plurality of photodiodes equidistantly spaced from each other and a corresponding plurality of digital switching elements each operative to generate signals from a respective one of said plurality of photodiodes, said photodiodes and digital switching elements being integrated on a common substrate;

displacing an optical scale having a predetermined line grid relative to said photosensitive element line grid to form a distance to be measured; and

projecting said optical scale onto said plurality of photodiodes such that the projected density of the lines of said scale differs from the line grid of said photosensitive element to generate an interference pattern representative of the distance between the two line grids.

4,799,799

DETERMINING INERT CONTENT IN COAL DUST/ROCK DUST MIXTURE

Michael J. Sapko, Finleyville, and Jack A. Ward, Jr., Oakmont, both of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 699,514, Feb. 6, 1985. This application Dec. 19, 1986, Ser. No. 943,347

Int. Cl.[4] G01N *21/55*

U.S. Cl. 356—446 **7 Claims**

1. A method of determining the inert content in a coal dust and rock dust mixture comprising the steps of: providing a transparent window at an end of a probe; pressing the transparent window of the probe against the mixture;

directing an infrared light beam from inside of the probe onto the mixture through the transparent window such that a portion of the infrared light beam is reflected from the mixture;

detecting the concentration of the reflected light;

generating a signal indicative of the reflected light;

determining a normalized value (ϕ) for the signal generated according to the relationship

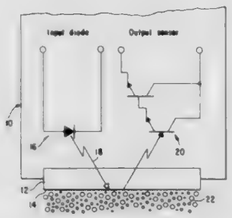
$$\phi = (\log i_c - \log i_{c0})/(\log i_{c100} - \log i_{c0})$$

where

i_{c0} = measured signal at 0% rock dust

i_{c100} = measured signal at 100% rock dust

i_c = measured signal of the mixture; and



correlating the normalized value to a predetermined relationship of ϕ to rock dust percentage to determine the rock dust content of the mixture wherein the correlating step includes the calculating of rock dust percentage (RD%) from the predetermined relationship.

$RD\% = 100 + 30 \log_e \phi$.

4,799,800

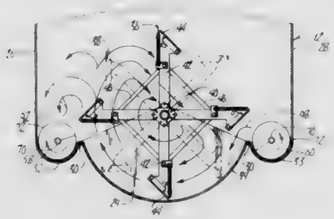
FEED MIXER

Dorland H. Schuler, Griswold, Iowa, assignor to Schuler MFG. & Equip. Co., Inc., Griswold, Iowa

Filed Oct. 28, 1986, Ser. No. 924,207

Int. Cl.[4] B01F *7/04*

U.S. Cl. 366—296 **13 Claims**



1. A feed mixing device, comprising:

a mixing chamber having forward and rearward end walls, a bottom wall and opposite side walls;

first and second rotatable mixing reels, each including an axle and a plurality of elongated mixing paddles operatively connected to the axle;

said reels being positioned within said chamber in an end-to-end relationship;

means for moving the feed longitudinally within said mixing chamber; and

means for rotating said first and second reels in opposite direction such that each reel moves the feed towards opposite side walls of the mixing chamber and thereby substantially maintaining the center of gravity of the feed being mixed midway between the side walls of said chamber; and a discharge port in said mixing chamber for discharging mixed feed from said chamber.

4,799,801

MIXING DEVICE FOR PASTY MULTICOMPONENT MATERIALS

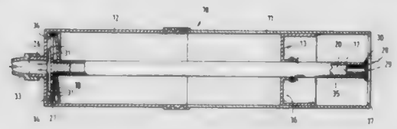
Werner Brüning, Engelskirchen, Fed. Rep. of Germany, assignor to Alfred Flachbach KG Kunststoff-SpritzguBwerk, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 169,248

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 3708803

Int. Cl.[4] B01F *15/02*

U.S. Cl. 366—255 **10 Claims**



1. A mixing device for pasty multicomponent materials comprising a tubular cartridge including first and second tubular portions each adapted to house an individual pasty material, mixing means axially displaceable in said tubular cartridge by a rod for admixing the individual pasty materials, said mixing means being a pair of relatively rotatable disks, means for preventing rotation of a first of said disks, aperture means in said disks, a second of said disks being connected to and rotatable by said rod, a piston in said tubular cartridge movable from a first position remote from an outlet end of said tubular cartridge toward a second position adjacent said outlet end whereby admixed pasty material passes through said disk aperture means incident to exiting said tubular cartridge at said outlet end, and said piston is mounted in sliding relationship to said rod.

4,799,802

DRAWER GUIDE

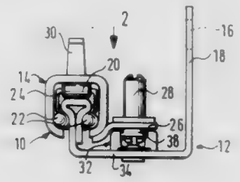
Horst Lautenschlager, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager GmbH & Co., KG, Reinheim, Fed. Rep. of Germany

Filed May 16, 1988, Ser. No. 194,451

Claims priority, application Fed. Rep. of Germany, May 20, 1987, 3716923

Int. Cl.[4] F16C *29/04*

U.S. Cl. 384—19 **9 Claims**



1. A drawer guide comprising: a shaped guide rail to be fastened to a carcase wall of a cabinet, a runner rail in the form of an inverted channel to be fastened to a drawer of the cabinet and engaged from below by the guide rail, tracks defined between the two rails, roller bearings rolling on said tracks in case of a longitudinal displacement of the runner rail relative to the guide rail, said guide rail having a substantially horizontally disposed web laterally beside the runner rail, a resiliently deformable brake element on said web, said runner rail having a lateral extension, and a projection on said extension and adapted to run onto the braking element to brake the runner rail.

4,799,803

BALL SPLINE LINEAR MOTION ROLLING GUIDE UNIT

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed May 9, 1988, Ser. No. 191,915

Claims priority, application Japan, Sep. 16, 1987, 62-231514

Int. Cl.[4] F16C *29/06*

U.S. Cl. 384—43 **3 Claims**



1. A ball spline linear motion rolling guide unit comprising:

a ball spline shaft (**1**) on which a plurality of first track grooves (**1a**) are formed in a longitudinal direction at predetermined positions on an outer peripheral surface;

a hollow outer cylinder (**2**) having a hollow hole into which the ball spline shaft (**1**) is slidably inserted;

a plurality of second track grooves (**2***a*) formed on an inner peripheral surface of said hollow hole so as to face the first track grooves (**1***a*) of the ball spline shaft (**1**); and

a number of balls (**6**) which are inserted between the first and second track grooves (**1***a* and **2***a*),

wherein a center of an arc of each of the second track grooves (**2***a*) formed on the outer cylinder (**2**) is slightly deviated to the side of the ball spline shaft (**1**) from a center of the ball (**6**) inserted between the first and second track grooves (**1***a* and **2***a*), an entrance portion of the second track groove (**2***a*) is formed by an arc surface having a diameter (d_1) which is slightly larger than a diameter (d) of the ball (**6**), thereby constructing a supporting portion (**2***c*) of the balls (**6**), and an almost V-shaped notched groove is formed in a bottom portion of each of the first and second track grooves (**1***a* and **2***a*), thereby forming a groove having an almost arrowhead-shaped cross section, and the portion near the edge of said arrowhead-shaped grooves serves as the track surface (**2***b*).

4,799,804

FOUR TRACK-TYPE ENDLESS RECTILINEAR MOTION GUIDE UNIT

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 178,028

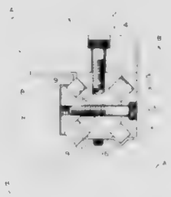
Claims priority, application Japan, Dec. 28, 1987, 62-330196

Int. Cl.[4] F16C *31/06*

U.S. Cl. 384—44 **4 Claims**

1. A four track-type rectilinear motion guide unit comprising a track rail member having a generally I-shaped cross section, a slide unit having an inner recess having an inverted U-shaped cross section and slidably straddling said track rail with said inner recess, and a plurality of cylindrical rollers arranged in a parallel fashion between the track surfaces of said track rail and the track surfaces of said slide unit,

said track rail member having, on each of the opposing elongated side walls, longitudinally extending recessed groove with inclined surfaces being formed along the laterally opposing edge portions thereof so as to form a pair of lower and upper rail-side trackway surfaces, while on the wall surface of the inner recess of said slide unit and facing said rail-side trackway surfaces are formed a pair of lower and upper slide-unit side trackway surfaces so that said facing two pairs together of the trackway surfaces form lower and upper load-carrying two trackways on each of the opposing wall surfaces of the inner recess of the slide unit, totalling four trackways in all, which form portions of endless circulation passages provided in said slide unit, the two endless circulation passages provided in each of the opposing sides of the slide unit being so arranged, as seen in a cross section thereof, that their longitudinal axes cross each other at right angles, while the two endless circulation passages differ in size from each other thereby providing a longer endless circulation passage having a larger cross section and a shorter endless circulation passage having a smaller cross section, which are arranged such that the longer circulation passage encompasses the shorter circulation passages within the loop but the lengths of the load-carrying trackway surfaces of said two circulation passages are the same.



4,799,805

FOUR TRACK-TYPE ENDLESS RECTILINEAR MOTION GUIDE UNIT

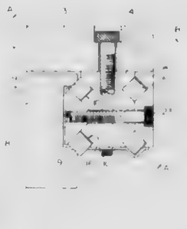
Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co. Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 178,027

Claims priority, application Japan, Dec. 28, 1987, 62-330195

Int. Cl.[4] F16C *31/06*

U.S. Cl. 384—44 **3 Claims**



1. A four track-type endless rectilinear motion guide unit comprising a track rail member having a generally I-shaped cross section, a slide unit having an inner recess having an inverted U-shaped cross section and slidably straddling with its recess on said track rail member, and a plurality of cylindrical rollers arranged in parallel with one another between the track surfaces of said track rail member and the track surfaces of said slide unit,

said track rail member having, on each of the opposing elongated sidewalls, longitudinally extending groove with inclined surfaces being formed along the laterally opposing edge portions thereof so as to form lower and upper rail-side trackway surfaces, while on each of the opposing surfaces of the inner recess of said slide unit are formed lower and upper slide-unit side trackway surfaces, facing

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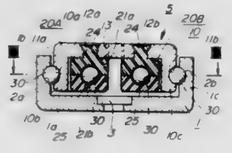
said lower and upper rail-side trackway surfaces respectively so that corresponding lower and upper trackway surfaces of the track rail member and the slide unit, respectively, form lower and upper load-carrying trackways between the track rail member and the slide unit, totalling four trackways in all, which form portions of endless circulation passages provided in said slide unit, the two endless circulation passages provided in each side of the slide unit being so arranged, as seen in a cross section thereof, that their longitudinal axes cross each other at right angles, while the longitudinal lengths of the two endless circulation passages differ from each other such that the longer circulation passage encompasses the shorter circulation passage within the loop, but the lengths of the load-carrying trackway surfaces of said two circulation passages are the same.

4,799,806

MINIATURE LINEAR GUIDE APPARATUS

Takahiro Seki, Maebashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1987, Ser. No. 124,883
Claims priority, application Japan, Nov. 28, 1986, 61-183096[U]; Jan. 19, 1987, 62-5762[U]
Int. Cl.⁴ F16C *29/06*
U.S. Cl. 384—45 **4 Claims**



1. A miniature linear guide apparatus comprising:
a guide rail extending in a longitudinal direction and having a U-shaped cross section, said U-shaped guide rail having a bottom horizontal surface and vertical walls extending upward therefrom forming a U-shaped recess, said vertical walls having ball rolling grooves formed respectively on inner surfaces thereof so that said ball rolling grooves oppose each other; and
a slider accommodated in said U-shaped recess of said guide rail, said slider comprising;
(a) a race member having an inverted U-shaped cross section, said inverted U-shaped race member having a top horizontal surface and vertical walls extending downward therefrom forming a U-shaped recess, and having ball rolling grooves respectively formed in outer surfaces of said vertical side walls, so that said ball rolling grooves of said guide rail respectively oppose corresponding ball rolling grooves of said race member; and
(b) first and second ball guide members accommodated in said U-shaped recess of said race member and respectively having ball rolling passages formed therein in parallel relationship to each other, each of said ball rolling passages being in communication with a corresponding ball rolling groove of said guide rail and said ball rolling groove of said race member;
multiple balls inserted rollably in said pairs of said ball rolling grooves of said guide rail and said race member, and in said ball rolling passages of said first and second ball guide members,
protruding portions formed on said first and second ball guide members at opposite longitudinal ends respectively protruding into and towards one of said ball rolling grooves of said guide rail, each of said protruding portions being formed with a curved ball passage having one end being in communication with one of said ball rolling grooves of said guide rail and said race member and having the other end being in communication with a ball passage of said first or second ball guide member,
a plurality of positioning protrusions provided on selected one of said race member and said first ball guide member and one of said race member and said second ball guide member, and
a plurality of positioning holes formed in the other of said first member and said race member and the other of said race member and said second ball guide member, thereby to secure said race member and said first and second ball guide members integrally by fitting said plurality of positioning protrusions into said positioning holes.

4,799,807

ROLLING BEARING WITH ROLLING RETAINERS

Kazuo Kuroiwa, 750-186, Shirane-cho, Yokahama-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 108,778, Oct. 15, 1987. This application Jan. 26, 1988, Ser. No. 150,547
Claims priority, application Japan, Oct. 15, 1986, 61-243071; Sep. 10, 1987, 62-226869; Nov. 19, 1987, 62-292782
Int. Cl.⁴ F16C *33/10, 19/20, 19/40*
U.S. Cl. 384—462 **11 Claims**





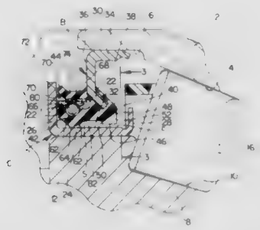
1. A rolling bearing in which a plurality of rolling members are interposed between an outer race and an inner race, further comprising:
a plurality of generally cylindrical rolling retainers, one disposed between each adjacent pair of the rolling members to keep them apart, each comprising a pair of annular grooves provided adjacent to either axial end thereof and a pair of circular flanges provided at either axial end thereof;
a pair of cover members, one located at each axial end of the rolling bearing and mounted to one of the two races to define a support rail coaxial with the rolling bearing, each of the support rails having a circumferential surface on the one radial side thereof on which the rolling retainers roll at their circular flanges;
a pair of free rings, each having a circumferential surface on the other radial side thereof on which the rolling retainers roll at their annular grooves; and
a lubricant ejection hole extending in an axial end portion of at least one of the rolling retainers from an opening in an axial end thereof to another opening in an outer circumferential surface thereof.

4,799,808

COMPACT SEAL

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Continuation-in-part of Ser. No. 79,175, Jul. 29, 1987, which is a continuation-in-part of Ser. No. 811,657, Dec. 19, 1985, abandoned. This application Nov. 23, 1987, Ser. No. 124,510
Int. Cl.⁴ F16C *33/78*
U.S. Cl. 384—481 **20 Claims**



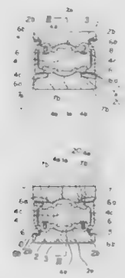
1. In combination with a sealing surface that exists around an axis of rotation and has a generally axially directed portion and a generally radially directed portion, a seal for establishing a barrier with the sealing surface so as to isolate a region generally between two components, one of which carries the seal and the other the sealing surface, when relative rotation about the axis of rotation exists between the two components, said seal comprising a labyrinth having a first face presented toward, yet spaced from the axially directed portion of the sealing surface and a second face presented toward the isolated region; a first dirt lip extended toward and bearing against the axially directed portion of the sealing surface; and a second dirt lip extended toward and bearing against the generally radially directed portion of the sealing surface, the first dirt lip being located between the labyrinth and the second dirt lip.

4,799,809

ROLLING BEARING WITH ROLLING RETAINER MEMBERS

Kazuo Kuroiwa, 750-186, Shirane-cho, Asahi-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Oct. 15, 1987, Ser. No. 108,778
Claims priority, application Japan, Oct. 15, 1986, 61-243071
Int. Cl.⁴ F16C *19/20, 19/40, 33/10*
U.S. Cl. 384—522 **10 Claims**



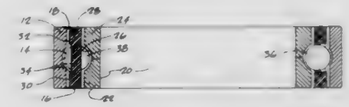
1. A rolling bearing, comprising:
(a) an inner race member;
(b) an outer race member;
(c) a plurality of rolling members disposed between said inner race member and said outer race member and rotatably supporting said inner race member and said outer race member relative to one another;
(d) a plurality of generally cylindrical rolling retainer members, one disposed between each adjacent pair of said rolling members, and each rolling on both of its said pair of adjacent rolling members and keeping them apart, each comprising:
(d1) an axially central rolling portion, in rolling contact with both of said pair of adjacent rolling members;
(d2) a pair of circumferential grooves, one proximate to each of its axial ends; and:
(d3) a pair of disk shaped end portions, one proximate to each of its axial ends;
(e) a pair of free rings, one at each axial end of said rolling bearing, and coaxial therewith; and:
(f) a pair of cover members, one at each axial end of said rolling bearing, and each defining a support rail coaxial with said rolling bearing and being mounted to one of said race members;
(g) said rolling retainer members each rolling on one radial side of said support rails by their disk shaped end portions, and on the other radial side of said free rings by their circumferential grooves into which said free rings are engaged;
(h) the central rolling portion of each of said rolling retaining members being concaved facing outwards and having a radius of curvature in a longitudinal direction which is less than the radii of curvature of the adjacent pair of said rolling members in the longitudinal direction.

4,799,810

VERY HIGH SPEED MARGINALLY LUBRICATED BALL THRUST BEARING

Robert B. Gilbert, Phoenix, Ariz., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 936,853, Dec. 2, 1986, Pat. No. 4,729,154. This application Aug. 26, 1987, Ser. No. 89,703
Int. Cl.⁴ F16C *33/44*
U.S. Cl. 384—606 **14 Claims**



1. A very high speed ball thrust bearing, said bearing comprising:
a radially inner ball race member, and a radially outer annular ball race member spaced radially outwardly of said inner ball race member, each said ball race member defining a respective annular ball race groove confronting the other ball race member, and each ball race member being fabricated of bearing quality steel;
means for operation in the range of DN numbers 5×10^5 and above, where D is the bore diameter of the bearing in millimeters and N is the design operating speed of the bearing in rotations per minute, while said bearing is only marginally lubricated in operation by liquid jet engine fuel,
said means comprising a plurality of like ceramic ball members captively disposed in both said ball race grooves radially between and spacing apart said ball race members and in rolling contact with both to provide low friction relative rotation thereof;
said means further comprising an annular separator member interposing radially between said ball race members and defining a matching plurality of circumferentially spaced apart ball-receiving openings therethrough, each of said ball-receiving openings receiving a respective one of said plurality of ball members, said separator member compris-

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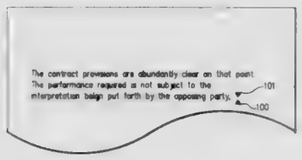
ing a selected weight percent greater than zero percent of solid lubricant therein.

4,799,811

AUTOMATIC RELOCATE ON CONTINUATION OF DOCUMENT PLAYOUT

James L. Beck, Versailles; Marguerite H. Doyle, Lexington; Roger W. Early, Lexington; Terrance W. Ringle, Lexington, and David R. Smith, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1986, Ser. No. 876,633
Int. Cl.[4] B41J *5/30*
U.S. Cl. 400—279 **4 Claims**



4. An electronic typewriter comprising:
operator entry input means;
print point positioning means;
first means to store data representing the position of the print point at the end of the printed text;
second means responsive to inputs from said operator entry means to operate said print point positioning means to bring said print point into text prior to said print point position at the end of the printed text;
third means, including logic means responsive to said first means to operate said print point positioning means to return the print point to the location of the print point at the end of the printed text; and
means including logic means responsive to a signal from said operator entry means, to respond to an operator entry to print by operating said third means to return to the location of the print point position at the end of the printed text, prior to printing.

4,799,812

COMPUTER PAGE PLACE MARKER

Amparo A. Warwick, 47 Beechwood Dr., Waldorf, Md. 20601

Continuation of Ser. No. 829,197, Feb. 14, 1986, abandoned. This application Feb. 12, 1988, Ser. No. 155,543
Int. Cl.[4] B41J *11/26, 11/64*
U.S. Cl. 400—616 **7 Claims**



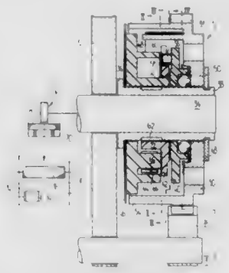
1. A place marker for a printed computer page having vertically positioned drive holes located adjacent opposite margins of the page, said place marker being characterized by:
a flexible, elongated marker member having at least one straight longitudinal marking edge, said flexible elongated marker member including at least two raised projections extending from the underside of said member;
said two raised projections being located adjacent one end of said elongated marker member and positioned in-line and in a direction perpendicular to said straight longitudinal marking edge at the said one end of said member and spaced at a distance corresponding to a distance between ones of said vertically positioned drive holes on one of said opposite sides of said printed computer page;
whereby, in use, said raised projections are placed in said drive holes of said printed computer page at specific locations on said page and said straight longitudinal marking edge is used to locate specific lines on said page.

4,799,813

COUPLING, ESPECIALLY FOR AN APPARATUS FOR FEEDING RECORDING CARRIERS TO THE PLATEN OF AN OFFICE MACHINE AND APPARATUS WITH SUCH COUPLINGS

Rene Steinmetz, Uetikon am See, Switzerland, assignor to Rutishauser Data AG, Stafa, Switzerland

Filed Nov. 18, 1986, Ser. No. 932,103
Claims priority, application Switzerland, Nov. 19, 1985, 04933/85
Int. Cl.[4] B41J *11/58, 13/10*
U.S. Cl. 400—629 **14 Claims**



1. A coupling apparatus for operation between a platen of a printing device rotatable in forward and reverse directions and a material recording medium carrier of the type having a magazine and a separating device for separating individual recording medium from a stack of media in the magazine, the apparatus comprising a gear means for connection to a rotary output riginating with the platen so as to be rotatable in the same sense as the platen, an output shaft for connection to the separating device, means for transmitting rotation of said gear means to said output shaft, said transmitting means including first disc means having starting means and entrainment means spaced apart from each other by a predetermined rotary angle, said transmitting means further including first movable driver means connected with said gear means and engageable with said starting means and said entrainment means for transmitting rotary motion from said gear means to said first disc means upon rotation of said gear means in the forward direction, said first disc means including second movable driver means for transmitting rotary motion thereof to said shaft with said first driver means being in engagement with said entrainment means, said transmitting means further including shifting means operable upon rotation of said gear means in a reverse direction to move said first driver means out of driving engagement with either one of said starting means or said entrainment means, said transmitting means further including a locking means engageable by said first driver means so as to be rotatable about said shaft in a sense corresponding to the rotation of said gear means and having means for disengaging from driving engagement with said first driving means upon rotation of said gear means in a reverse direction and for rotating said locking means upon reverse rotation of said gear means through an angle that exceeds said predetermined angle so that

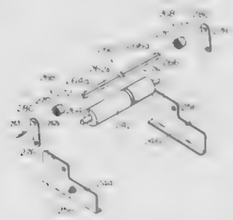
said first driver means will be prevented from driving engagement with said first disc means; said second driver means including a latch member movably carried by said first disc means and drivingly engaging said shaft upon forward rotation of said first disc means with said first driver means being in engagement with said entrainment means, said first disc means including at least two cam surface means, each said cam surface means having a forward steep portion and a rearward sloping portion relative to said direction of rotation said forward steep portions defining said starting means and said entrainment means, respectively, and said rearward sloping portion defining said shifting means.

4,799,814

PRINTER PAPER BAIL DEVICE

Toshimitsu Okubo, Shibata; Mamoru Takezawa, Yokohama; Mitsuyoshi Satoh, Shibata, and Kazuhiro Suzuki, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 12, 1986, Ser. No. 839,046
Claims priority, application Japan, Mar. 12, 1985, 60-49148; Mar. 12, 1985, 60-49149; Mar. 13, 1985, 60-49875; Mar. 13, 1985, 60-49876; Mar. 13, 1985, 60-49877; Apr. 3, 1985, 60-49824; Apr. 19, 1985, 60-84102; Jun. 27, 1985, 60-141406
Int. Cl.[4] B41J *13/20*
U.S. Cl. 400—639.1 **8 Claims**



1. A paper bail in a printer having a platen, comprising:
two bail levers movably mounted on said printer;
an elongate bail plate formed as a flat metal sheet having a substantially angle shaped section, angled shaped opposite ends of said bail plate fitting in correspondingly shaped slots of said bail levers;
at least one bail roller including bail roller mounting means cooperating with said angle-shaped section for mounting said bail roller on said bail plate; and
means for biasing said bail plate towards said platen, whereby said bail levers move in unison.

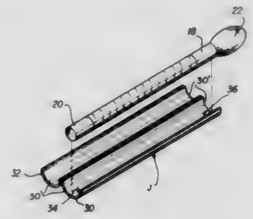
4,799,815

LIQUID DISPENSING SWAB APPLICATOR SYSTEM

William A. Barabino, North Reading, and Raymond S. Dean, Lynn, both of Mass., assignors to Triad Direct Incorporated, Placentia, Calif.

Filed Aug. 17, 1987, Ser. No. 85,771
Int. Cl.[4] A61M *35/00*
U.S. Cl. 401—132 **2 Claims**

1. A liquid dispensing swab applicator system for dispensing a liquid to a surface comprising:
a hollow applicator shaft containing a liquid therein,
said shaft having two ends hermetically sealed and bounding a medial area,
said liquid normally separated from both said ends and retained within the medial area of said shaft by respective air pockets within said shaft adjacent said two ends,
an absorbent tip mounted upon one said end of said shaft for externally receiving said liquid contained within said shaft,
elongated release means comprising a pair of hingedly joined substantially curved members having opposite ends linearly spaced apart a distance no less than the distance between said air pockets,
a puncturing element adjacent each said end of one said release means member, and
said pair of release members surroundable about said shaft with said puncturing elements juxtaposed those portions of said shaft ends containing said air pockets, whereby



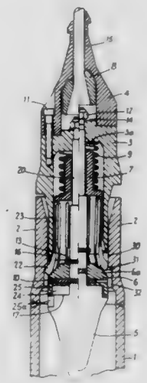
closing of said pair of release members with said shaft therebetween simultaneously forces said puncturing elements to pierce said shaft to provide openings therethrough to permit said liquid to migrate upon the external periphery of said shaft to said absorbent tip.

4,799,816

CONNECTION DEVICE FOR A GUIDE LINE OF AN UNDERSEA INSTALLATION

Alain Lechon, and Yves Le Lael, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed May 19, 1987, Ser. No. 52,235
Claims priority, application France, May 23, 1986, 86 07370
Int. Cl.[4] F16D *9/00*
U.S. Cl. 403—2 **8 Claims**



1. A disconnectable connection device for a guide line connecting a floating support to an undersea installation having a guide post sleeve, including in combination:
a connector body having a connection to said guide line and having an axially extending body chamber;
a rod carried by said body within said body chamber in axial relation thereto;
a locking jacket supported by said rod within said chamber;
resilient finger blades carried by said jacket and provided with locking fingers at the ends of said resilient blades;
a slidable ring carried by said rod below said jacket, said ring

having an external conical divergent face adjacent said locking fingers;

said guide post sleeve having an internal conical diverging face opposed to said conical face on said ring; said divergent faces on said ring and on said sleeve providing a space for receiving and housing said locking fingers when said connector body, rod, and jacket are in locked position in said guide post sleeve;

a releasable securing means for retaining said ring in locking position on said rod;

said conical faces on said ring and on said sleeve being movable away from each other for freeing said fingers from the space between said conical faces when said securing means is released for opening a passage for said fingers which, upon being so freed, cause the disconnection of the connector from the sleeve.

4,799,817

DOUBLE HOOKES JOINT

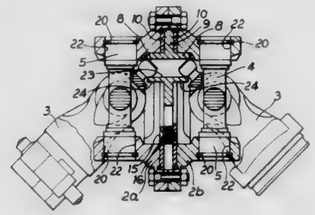
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Fed. Rep. of Germany

Filed Oct. 14, 1987, Ser. No. 108,715

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1986, 3636194

Int. Cl.⁴ F16D *3/00*

U.S. Cl. 403—57 **10 Claims**



1. A wide angle double Hookes joint comprising a double inner yoke; two outer yokes which are each pivotally connected to the inner yoke by a respective cross member, each cross member comprising a first pair of trunnions received in bearings in yoke arms of the outer yoke and a second pair of trunnions received in bearings in yoke arms of the inner yoke; a guide member having bearing means engaging said outer yokes to guide them to provide homokinetic torque transmission, said guide member being mounted in the inner yoke for radial movement relative to the axis of rotation thereof; a pair of guide plates in the inner yoke between which said guide member is radially movable with said bearing means engaged within identical radially extending slots in said guide plates, and said guide plates being rotatable about the axis of rotation of the inner yoke.

4,799,818

SYSTEM FOR MOUNTING AN ITEM TO A POST

Michael J. Sudimak, Shavertown, and Robert J. Cohn, Dallas, both of Pa., assignors to InterMetro Industries Corp., Wilkes-Barre, Pa.

Filed Mar. 23, 1987, Ser. No. 28,731

Int. Cl.⁴ F16B *7/10*

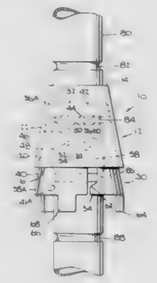
U.S. Cl. 403—107 **12 Claims**

1. A system for securing a member to a vertical column having outer surface, said system comprising:

a collar having an outer surface, formed to be associated with the member, and a frusto-conical inner surface;

an engagement pin mounted on said inner surface of said collar and extending inwardly therefrom; and

a sleeve having a frusto-conical outer surface formed to be rotatably mounted within said collar in mating engagement with said inner surface of said the outer surface of the vertical column thereby to engage the vertical column, said sleeve having a collapsible slit extending from its top to its base and being formed to receive said engagement pin in a locked position wherein said collar fits in



tight engagement on said sleeve closing said slit, and an unlocked position wherein said collar fits loosely on said sleeve permitting said slit to remain in an open relaxed configuration.

4,799,819

CONNECTOR FOR PROFILED STRUCTURAL MEMBERS

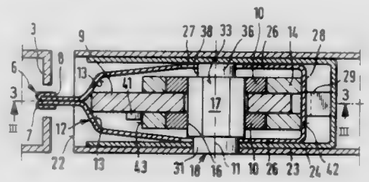
Hellmuth Swoboda, Tenniken, Switzerland, assignor to Connec AG Systembau-Technik, Zug, Switzerland

Filed Mar. 9, 1987, Ser. No. 23,654

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1986, 3607849

Int. Cl.⁴ F16B *7/04*

U.S. Cl. 403—252 **68 Claims**



1. A connector for separably securing at least one flange of a profiled member to a second member having an open front side adjacent the flange of the profiled member and a sidewall provided with a hole, comprising a support including a housing insertable into and removable from said second member by way of said front side; retaining means including at lest one retaining member disposed in said housing and movable between a first position of at least partial overlap with the one flange and a second position out of register with the one flange as well as back and forth between an extended position out of contact with and a retracted position of engagement with the one flange; an actuator rotatably mounted in said housing; displacing means for effecting a movement of said retaining member to said first position in response to rotation of said actuator; motion transmitting means interposed between said actuator and said retaining member for effecting a movement of said retaining member, in the first position of said retaining member, to said retracted position in response to rotation of said actuator, said motion transmitting means and said displacing means being disposed in said housing; and means for rotating said actuator relative to said second member and said

housing, comprising a shaft surrounded by said actuator and having an end portion in the hole of the sidewall of the second member, said shaft further having a coupling portion in torque transmitting engagement with said actuator.

4,799,820

ROAD-BUILDING MACHINE

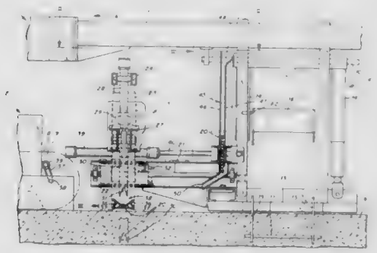
Heinrich Laeuppi, Gruenichen, and Bruno Fedrizzi, Winkel, both of Switzerland, assignors to Erhard Thoma, Gartringen, Fed. Rep. of Germany

Filed Apr. 3, 1987, Ser. No. 34,798

Claims priority, application Switzerland, Apr. 4, 1986, 1335/86

Int. Cl.⁴ E01C *23/04*

U.S. Cl. 404—100 **7 Claims**



1. Road-building machine (1) having a support (3) and a device (4) that is longitudinally movable along the support (3) for inserting cross studs (11) that are oriented parallel to the direction of motion of the machine (1) in positions for cross joints in a freshly-laid road covering (6) of concrete, characterized in that the machine (1) has, additionally, a device (5) carried by the machine for inserting longitudinal studs (20) that are oriented perpendicular to the direction of motion, in the position for longitudinal joints in the road covering (6), including means for synchronizing the cycle of device (5) with that of device (4) comprising first starting means for starting a cycle of the device (5) each time the machine (1) has traveled a predetermined distance, the cycles of device (5) continuing until a cross joint is reached, and second starting means for starting a cycle of device (4) when a cross joint is reached which second means interrupts the operation of device (5) and also generates a reference signal for the subsequent cycles of the device (5) so as to ensure placement of the longitudinal studs at predetermined spaced intervals from each other and the cross studs.

4,799,821

METHOD AND APPARATUS FOR CONTAINMENT AND/OR DIRECTING THE FLOW OF SPILLED HAZARDOUS LIQUIDS

John C. Brodersen, 1894 Meadowridge Rd., Prescott, Ariz. 86301

Filed Jul. 31, 1987, Ser. No. 79,950

Int. Cl.⁴ E02B *7/00*

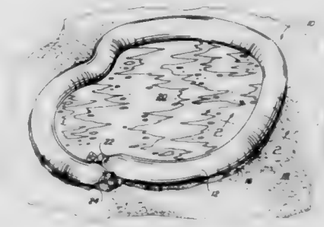
U.S. Cl. 405—115 **14 Claims**

1. A temporary emergency dike for restraining flow of a liquid along a surface upon which fluid has been or may be spilled, said dike comprising in combination:

(a) elongated means for contacting a strip of the suface, said contacting means being sufficiently pliable to conform with perturbations and undulations of the surface to restrain the flow of fluid between the surface and said dike;

(b) elongated means for extending above the surface, said elongated extending means, in combination with said elongated contacting means, defining an elongated envelope for receiving and retaining a quantity of water extending above and along the surface;

(c) means for introducing the water into said envelope; and



(d) means for manually knotting opposed ends of said envelope to retain the water introduced therein.

4,799,822

PROFILE ELEMENTS, PARTICULARLY FOR SUPPLY AND/OR REMOVAL OF SUBSTANCES FROM ENVIRONMENTAL AND/OR FLOW MATERIAL

Erich Wintermantel, Jahnallee 41,5300, Bonn 2, and Oswald Landwehr, Meckenheim, both of Fed. Rep. of Germany, assignors to Erich Wintermantel, Fed. Rep. of Germany

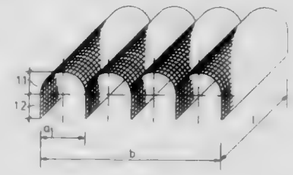
PCT No. PCT/EP86/00031, § 371 Date Sep. 2, 1986, § 102(e) Date Sep. 2, 1986, PCT Pub. No. WO86/04211, PCT Pub. Date Jul. 31, 1986

PCT Filed Jan. 17, 1986, Ser. No. 912,602

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1985, 3501748

Int. Cl.⁴ E02B *13/00*; **A01G** *25/00*

U.S. Cl. 405—46 **13 Claims**



7. Profile elements of the type employed for supply of fluid substances to or removal of fluid substances from granulated, fibrous, or crumbly soil-like material in an environment surrounding the profile elements comprising:

boundary walls shaped to define a multi-tubular construction of tubes integrally connected side-by-side in longitudinal array so as to have at least a portion of the walls common to adjacent ones of said tubes, said walls being formed from an apertured mesh-like fabric enabling fluid communication between the tube interiors and the surrounding environment.

8. A process of supplying fluid substances to or removal of fluid substances from granulated, fibrous, or crumbly soil-like material by use of profile elements that include a plurality of spaced apart webs and associated boundary walls that integrally connect the webs and are supported upon the webs so as to define a plurality of longitudinally arrayed side-by-side channels separated by respective ones of the webs, with each said web constituting a common side wall for adjacent channels, and with the boundary walls being shaped so as to provide an enlarged surface area as compared with planar walls extending over an equivalent base area; with the webs and the boundary walls being formed of an apertured mesh-like fabric to enable fluid communication both between the adjacent

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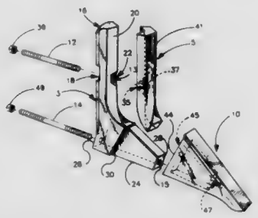
channels and with the surrounding environment, comprising the step of flowing said fluid substances through said profile elements.

4,799,823

PLOW WITH READILY REPLACEABLE WEAR PARTS ESPECIALLY ADAPTED FOR USE IN A VIBRATORY CABLE LAYING MACHINE

Thomas D. Williams, Star Rte., Hwy. 39 S., Aurora, Mo. 65605

Filed Jun. 18, 1987, Ser. No. 63,427
Int. Cl.[4] A01B *3/64, 23/02;* **F16L** *1/02*
U.S. Cl. 405—180 **25 Claims**



1. In a cable laying machine that includes a vehicle having a controllable arm to which a plow shank may be attached for ripping a trough in the ground and having a cable dispensing assembly that includes a spool of cable and a cable feed tube attached to said plow shank for laying the cable in the ground, the improvement comprising:

a nose/shank weldment including a front surface, a back surface having a recess and an exposed lower portion, a tapered nose, a shank stud borehole aligned with said recess and extending substantially longitudinally through said nose/shank weldment, and a point stud borehole aligned with said exposed lower back portion and extending substantially longitudinally through said tapered nose, said nose/shank weldment being attached to said shank;

a replaceable shank guard adapted to engage the front surface of said nose/shank weldment, said shank guard including a threaded passage substantially aligned with said shank stud borehole;

a shank stud for securing said shank guard to said nose/-shank weldment, said shank stud passing through said shank stud borehole and engaging said shank guard threaded passage such that an end of said shank stud is accessible through said recess;

a replaceable plow point adapted to engage said tapered nose, said plow point including a threaded aperture substantially aligned with said point stud borehole; and

a point stud for securing said plow point to said nose/shank weldment, said point stud passing through said point stud borehole and engaging said plow point threaded aperture such that an end of said point stud is accessible at said exposed lower portion of said nose/shank weldment.

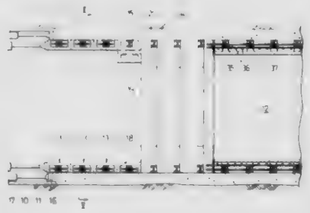
4,799,824

METHOD OF MAKING COVERING WALL OF TUNNEL MADE BY SHIELD TYPE EXCAVATOR

Fumitaka Kamei, and Yoshihiro Takano, both of Tokyo, Japan, assignors to Tekken Construction Co., Ltd., Japan

Filed Nov. 6, 1986, Ser. No. 927,361
Claims priority, application Japan, Jul. 25, 1986, 61-176194
Int. Cl.[4] E21D *9/06, 11/10;* **E04B** *1/16*
U.S. Cl. 405—146 **7 Claims**

1. A method of making a covering wall on a peripheral wall surface of a tunnel extending behind a shield type excavator, said method comprising the steps of preparing a plurality of form assemblies respectively comprising a form segment for use in casting concrete for forming a primary covering wall and a timbering member for reinforcing said primary covering wall, said step of preparing the form assemblies including the step of detachably coupling said form segment to said timbering member; installing a covering-wall form structure, said step of installing the form structure including the step of assembling the covering-wall form structure from said form assemblies with their timbering members opposed to said peripheral tunnel wall surface; casting concrete into a space defined between the peripheral tunnel wall surface and said covering-wall form structure to form the primary covering wall; and removing the form structure after said cast concrete has set, said step of removing the form structure including detaching the form segments from the timbering members but leaving the timbering members installed against the primary covering wall of the set concrete.

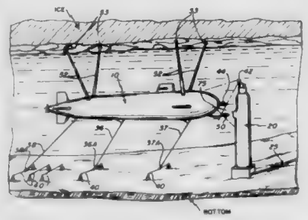


4,799,825

OIL TRANSFER SYSTEM

Shirley B. Meyerhoff, 400 Bellevue Ave., Newport, R.I. 02840, and Charles W. Quellette, 605 Mary Lane, Portsmouth, R.I. 02871

Continuation of Ser. No. 559,408, Dec. 8, 1983, abandoned, which is a continuation of Ser. No. 365,800, Apr. 5, 1982, abandoned. This application Jan. 11, 1985, Ser. No. 690,865
Int. Cl.[4] B63C *11/10*
U.S. Cl. 405—188 **30 Claims**



28. A submarine tanker liquid fuel transfer system for the transfer of liquid fuel at a location under an ice layer comprising;

an underwater station having means for receiving the liquid fuel for transfer to the submarine,

means at the ocean bottom defining an approach area and for guiding the submarine tanker in the direction of said underwater station,

means for decelerating the submarine tanker as it approaches the underwater station,

a liquid fuel transfer device on board the submarine tanker and having an extended position and a retracted position,

a first mooring member on board the submarine tanker,

said underwater station including a second mooring member for interlocking with said first mooring member, and means for receiving said liquid fuel transfer device in its extended position,

means for first locking in engagement said first mooring member with said secong mooring member,

means for thereafter moving said liquid level transfer device to its extended position to engage with said underwater station receiving means,

means for stabilizing the sumbarine tanker once the mooring members are interlocked to maintain the submarine tanker in a substantially horizontal lay,

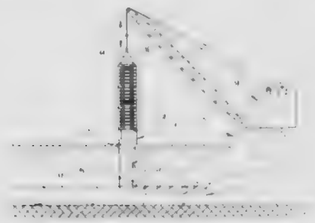
said first and second mooring members comprising a resilient member adapted to enable the members to move longitudinally to permit limited tanker movement, and a swivel means to enable the tanker to move vertically to a limited extent.

4,799,826

METHOD AND APPARATUS FOR CUTTING A SUBMERGED OBJECT INTO PIECES

Wallace Carline, 3201 Lake Palourde Dr., Morgan City, La. 70380

Filed Dec. 14, 1987, Ser. No. 132,031
Int. Cl.[4] B63C *11/00*
U.S. Cl. 405—191 **31 Claims**



1. Apparatus for cutting a submerged object such as a barge into pieces, comprising:

a floating vessel carrying a cable,

a blade carrier including vertical guide means, anchor means projecting downwardly from a lower end of said carrier, and suspending means for suspending said carrier from said cable over the submerged object so that said carrier can be impacted against the object in a manner causing said anchor means to engage the object in positionally constrained relationship therewith,

a cutting blade mounted in said guide means for vertical movement relative to said carrier, said blade including a lower cutting edge, and blade-actuating means for causing said blade to impact downwardly against the object to cut the object while said carrier is positionally constrained relative to the object by said anchor means,

said blade actuating means including means for repeatedly raising said blade and allowing said blade to free fall, and

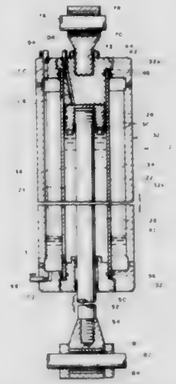
cable actuating means carried by said vessel for actuating said cable to relocate said blade carrier relative to said object for enabling repeated downward free-fall impacting of said cutting edge to make a cut line across the object which separates said object into separately salvageable pieces.

4,799,827

MODULAR RISER TENSIONER INCORPORATING INTEGRAL HYDRAULIC CYLINDER ACCUMULATOR UNITS

David L. Jaqua, Oak View, Calif., assignor to Vetco Gray Inc., Houston, Tex.

Filed Nov. 17, 1986, Ser. No. 931,321
Int. Cl.[4] E02D *21/00*
U.S. Cl. 405—195 **4 Claims**



1. A valveless tensioner unit for supporting a riser from a floating platform including means for supporting said tensioner unit on said platform and means for connecting said tensioner unit to said riser, the improvement comprising,

an inner cylinder,

a piston and piston rod reciprocal in said inner cylinder,

said means for connecting said tensioner unit to said riser being connected to said piston rod,

a single outer cylinder surrounding said inner cylinder and forming an accumulator and containing hydraulic fluid and gas under pressure,

means continuously communicating said hydraulic fluid under pressure to the rod side of said piston to provide the tensioned force on said riser so that said riser is always under tension,

said outer cylinder being otherwise out of fluid communication with said inner cylinder or any other apparatus,

the side of said piston opposite said rod free of hydraulic fluid from said accumulator at all times, and

means sealing said inner and outer cylinders to provide a self-contained tensioner unit.

4,799,828

OFF-SHORE-COMPLEX

Hans Georgii, Stockholm, Sweden, assignor to Hydro Betong AB, Stockholm, Sweden

Filed Apr. 23, 1986, Ser. No. 854,577
Claims priority, application Sweden, Apr. 24, 1985, 8501989
Int. Cl.[4] E02B *17/00*
U.S. Cl. 405—195 **6 Claims**

1. An offshore complex comprising a structure having a lower end and an upper end, said structure made essentially of concrete and comprising a large number of vertically extending, mutually permanently interconnected, cylindrical bodies;

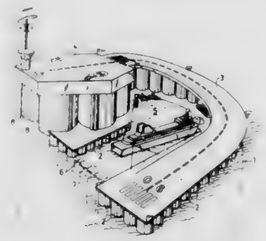
said cylindrical bodies arranged so as to encircle and completely surround an inner area of water within said structure;

the lower end of said structure resting on the seabed;

the upper end of said structure located above the surface of the water;

said cylindrical bodies incorporating ballast chambers which

can be filled with water to varying degrees so that the structure can be caused to float by pumping water out of said chambers;



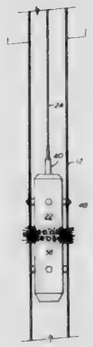
the upper end of said structure supporting an aircraft takeoff and landing runway climbing helically upwards along a part of the circumference of the structure.

4,799,829

METHOD AND APPARATUS FOR REMOVING SUBMERGED PLATFORMS

Patrick M. Kenny, 105 Eve St., Belle Chasse, La. 70037

Filed Oct. 17, 1986, Ser. No. 920,021
Int. Cl.[4] E02D *9/00*; **E21B** *29/02*; **B23D** *21/00*; **B26D** *3/16*
U.S. Cl. 405—195 **12 Claims**



2. A method for cutting piling and conductors extending into the sea floor from an offshore platform comprising the steps of:

a. lowering a cutter/pinning device with a support cable through a piling or conductor to a desired elevation of cut;

b. engaging the conductor or piling in close proximity to an elevation of cut above and below the elevation of cut;

c. cutting the piling or conductor;

d. maintaining the piling or conductor in substantially aligned and supported position after the piling or conductor has been cut so that the offshore platform remains structurally stable.

8. An apparatus for cutting piling and conductors extending into the sea floor from an offshore platform comprising:

a. a substantially cylindrical shell;

b. upper engaging means extendable from said substantially cylindrical shell to affix said substantially cylindrical shell to the piling or conductor;

c. lower engaging means extending from said substantially cylindrical shell to affix said substantially cylindrical shell to said piling or conductor, said upper and lower engaging means and said substantially cylindrical shell forming a stabilizing means for maintaining the piling or conductor in substantially erected position after cutting of the piling or conductor has been completed;

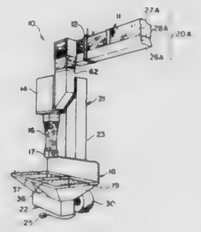
d. cutting means mounted within the substantially cylindrical shell between said upper engaging means and said lower engaging means.

4,799,830

AIR CONVEYOR DISPENSING AND RECYCLING SYSTEM

Gunter G. Fuss, San Mateo, Calif., assignor to Free Flow Packaging Corporation, Redwood City, Calif.

Filed Aug. 7, 1986, Ser. No. 893,999
Int. Cl.[4] B65G *53/60*
U.S. Cl. 406—117 **16 Claims**



1. An air conveyor and dispensing system for non-fluid fluent material adapted for recycling material, comprising:

(a) a conveyor system including a first air conveyor for routing a supply of non-fluid fluent material to at least a selected dispensing point;

(b) a dispensing system at said dispensing point comprising a reservoir for said material and a dispensing valve adapted for selectively opening and closing to dispense material from the reservoir;

(c) recycling means including a container disposed beneath the dispensing valve for collecting spilled material and a second air conveyor connected between the container and the reservoir for directing material from the container via the upper inlet into the reservoir;

(d) the reservoir further comprising lower and upper inlets communicating respectively with the first air conveyor and the second air conveyor and being of a selected small volume such that material in the reservoir selectively blocks the entry of material from the first air conveyor through the lower inlet; and

(e) blower ends for providing air under pressure to the first and second air conveyors for providing air flow therealong for transporting said material.

4,799,831

FLOWABLE SOLID PRODUCT APPLICATOR

Dan Arias, 7575 Tamra Dr., Reno, Nev. 89506

Filed Jun. 29, 1987, Ser. No. 68,094
Int. Cl.[4] B05B *5/08*
U.S. Cl. 406—136 **11 Claims**

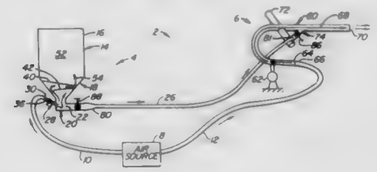
1. A supply hopper assembly for use with a flowable solid product comprising:

a hopper for holding a supply of the flowable solid product, the hopper having a hopper bottom, the bottom having a cuplike central portion and tapering walls extending upwardly and outwardly from the cuplike central portion, the cuplike central portion including a generally vertical sidewall and a bottom;

the cuplike central portion of the hopper having a product discharge opening through which the product passes out of the hopper;

a first baffle mounted to the tapering walls of the hopper bottom above the product discharge opening, the baffle including a baffle opening through which the product can pass;

a source of pressurized air; and



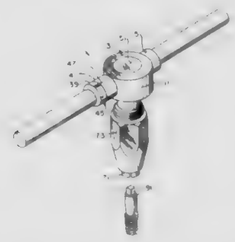
an air injector, connected to the pressurized air source, for introducing pressurized air downwardly towards the bottom of the cuplike portion at an acute angle to the vertical so to help fluidize the product within the hopper.

4,799,832

RATCHET TAP WRENCH

Neil M. Abbott, 5 Norton Pl., Kirkwood, Mo. 63122

Filed Jan. 12, 1987, Ser. No. 2,423
Int. Cl.[4] B23G *5/06*
U.S. Cl. 408—123 **17 Claims**



1. A compact, balanced, hand-held ratchet wrench capable of being held and operated with a single hand, the wrench comprising a ring base, a pair of diametrically opposed handles mounted to the base, a rotatable driven member carried within the base, and a ratchet mechanism means built into one of the handles for forming a ratcheting connection with the rotatable driven member selectively in either of two directions, the wrench being sized and shaped to permit both handles to be grasped and the ring base turned with a single hand and the ratchet mechanism means being sized and shaped to be operated with the hand holding the wrench without removing the hand's grip on the wrench, the ratchet mechanism means including an axial bore in one handle, a spring-loaded pawl in the bore, the pawl having a clutch face engaging the driven member, a locking pin extending through a transverse slot in the handle, and a collar rotatably mounted on the handle for turning the pawl through the locking pin, the collar rotating the pawl to positions for reversing the direction of ratcheting and for locking the chuck with respect to the base.

4,799,833

CLUTCH FOR POSITIVE FEED DRILL

Robert A. Pennison, Bellville, and Paul A. Biek, Houston, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 14, 1987, Ser. No. 132,324
Int. Cl.[4] B23B *45/00*; **F16D** *11/00*
U.S. Cl. 408—132 **19 Claims**

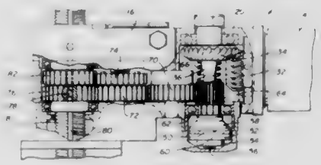
4. In a positive feed drill system, the combination comprising:

a drill housing;

a rotatable tool spindle mounted in the housing, and said spindle being capable of reciprocal movement in advancing and withdrawing;

a reversible motor included in the housing;

driving means located in the housing and operably interposed between the motor and the spindle for rotating and selectively advancing or withdrawing the spindle, said driving means having a forward mode and a reverse mode;



a reversible clutch included in the driving means, said clutch having a forward mode and a reverse mode corresponding in the forward and reverse modes of the driving means;

engaging means in said clutch for enabling the clutch to be in direct drive while in the forward mode;

reverse means in said clutch for engaging the clutch while in the reverse mode; and

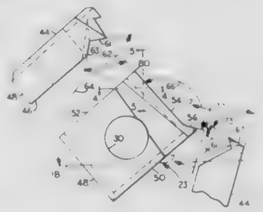
disengaging means in said clutch for disengaging the clutch when the clutch encounters excessive torque in the reverse mode.

4,799,834

CUTTER INSERT FOR KEVLAR

Wesley G. Wells, Hazelwood, Mo., assignor to McDonnell Douglas, Long Beach, Calif.

Filed Nov. 4, 1985, Ser. No. 794,646
Int. Cl.[4] B23B *51/10*
U.S. Cl. 408—200 **5 Claims**



1. A cutting insert, for use on a rotating holder as a countersinking tool to cut a work piece, said holder having an axis of rotation and a pocket to receive the insert, said pocket having a planar reference surface parallel to the axis of rotation, a first reference surface adjoining and perpendicular to said planar reference surface, and a second reference surface adjoining and perpendicular to said planar reference surface and adjoining and perpendicular to said first reference surface, said cutting insert comprising:

an inside surface for engaging said planar reference surface and seating said insert in the pocket of said holder;

a first peripheral edge, adjoining and perpendicular to said inside surface, for engaging said first reference surface and seating said insert in said pocket of said holder;

a second peripheral edge, adjoining and perpendicular to said inside surface and perpendicular to said first peripheral edge, for engaging said second reference surface and seating said insert in said pocket of said holder;

a third peripheral edge adjoining and perpendicular to said inside surface and perpendicular to said first peripheral edge and parallel to said second peripheral edge;

an outside surface parallel to said inside surface and joining

and perpendicular to said first peripheral edge, joining and perpendicular to said second peripheral edge and joining and perpendicular said third peripheral edge

means for releaseably holding said insert in said pocket of said holder;

a relief face adjoining said third peripheral edge and located between said second and said third peripheral edges, said relief face comprising a flat surface intersecting said inside surface at axial relief angle of 19 degrees plus or minus two degrees and at a radial relief angle of 23° plus or minus 2° ;

a primary rake face adjoining said third peripheral edge and located between said second and said third peripheral edges, said primary rake face comprising a flat surface intersecting said outside surface at an angle of 5 degrees plus or minus two degrees;

a chamfer cutting edge formed by the intersection of the relief face and the primary rake face, said chamfer cutting edge located 4 degrees positive to the centerline of the holder.

4,799,835

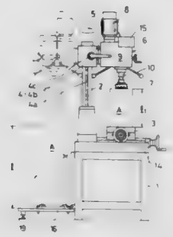
MACHINE TOOL

Katsumi Doi, 13-15, Kujyo 2-chome, Nishi-ku, Osaka, Japan

Filed May 29, 1987, Ser. No. 56,408

Int. Cl.[4] B23Q *1/06*

U.S. Cl. 409—219 **2 Claims**



1. In a machine tool having a pedestal for supporting the machine tool on a supporting surface, a column fixedly mounted on the pedestal and extending in a vertical direction, a workhead movably mounted to the column so as to be movable up and down along the column and around the column, an elevating means for moving the workhead up and down along the column, and a first worktable disposed on the pedestal below the workhead for supporting a workpiece,

the workhead including a spindle, a motor for driving the spindle, a reduction gear and a longitudinal feed gear,

the improvement comprising:

a second worktable hinged to the pedestal for supporting a workpiece,

said second worktable pivotable between a work position at which said second worktable is disposed below the first worktable and extends adjacent said supporting surface and a stowed position at which said second worktable is disposed against the pedestal and is away from the supporting surface,

feed means for moving a worktable operatively connected thereto in at least one direction extending perpendicular to said vertical direction; and

of said first and said second worktables, only said first worktable having said feed means operatively connected thereto.

4,799,836

METHOD AND APPARATUS FOR MACHINING THE SIDE EDGE SURFACE OF A WEB PLATE

Shingo Kurisu; Shunji Omori; Hiroyuki Takenaka; Tsuneo Egawa, all of Hiroshima; Takuro Mitsunaga, and Nobuo Kiyama, both of Mihara, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

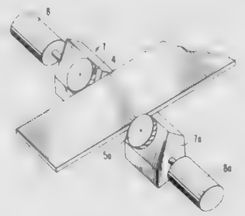
Division of Ser. No. 643,309, Aug. 22, 1984, Pat. No. 4,733,998.

This application Jun. 25, 1987, Ser. No. 66,736

Claims priority, application Japan, Oct. 24, 1983, 58-197577

Int. Cl.[4] B23C *3/12*

U.S. Cl. 409—138 **9 Claims**



1. Apparatus for machining at least one longitudinally extending side edge surface of a web plate comprising,

at least one cylindrical rotary cutter having a rotary axis and cutting edges on a radially outer peripheral surface of said cylindrical rotary cutter which are at a predetermined angle greater than 0 degrees with respect to the rotary axis of said cylindrical rotary cutter;

a rotary shaft fixedly attached to said cylindrical rotary cutter along said rotary axis;

means on which said rotary shaft is mounted for orienting said cylindrical rotary cutter with said rotary axis of said cylindrical rotary cutter inclined at a first angle other than 90 degrees with respect to said side edge of said web plate such that a second angle is formed between the cutting edges and the longitudinal corner edge of the longitudinally extending side edge surface of said web plate to be machined, said second angle lying in a plane containing said longitudinally extending side edge surface and being within the range of 55 degrees to 125 degrees, and for feeding said cylindrical rotary cutter toward the edge of the web plate;

means connected to said rotary shaft for rotating said shaft, whereby when the web plate is moved into contact with said radially outer peripheral surface of said cylindrical rotary cutter and past said cylindrical rotary cutter the side edge surface of the web plate can be machined by the cylindrical rotary cutter, the cylindrical rotary cutter having improved tool life due to more effective use of the cutting edges on the cylindrical rotary cutter.

4,799,837

MULTI-COMPONENT CHUCKING SYSTEM, PARTICULARLY FOR ROTARY MACHINE TOOLS, SUCH AS DRILLS, BORING TOOLS BORING MILLS AND THE LIKE

Rolf Vollmer, Tübingen, Fed. Rep. of Germany, assignor to Montanwerke Walter GmbH, Tubingen, Fed. Rep. of Germany

Filed Feb. 5, 1988, Ser. No. 152,913

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1987, 3711808

Int. Cl.[4] B23C *1/00*

U.S. Cl. 409—232 **11 Claims**

1. Multi-component chucking system, particularly for rotary tool elements (9) having

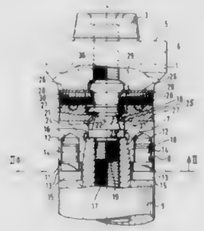
a coupling means (10, 10*a*, 18) secured to the tool element and including an axially extending retention stub (18, 10*a*),

a receiver body (1) adapted to rotate about an axis of rotation (2), said receiver body having a first end adapted for connection to a machine tool and a second end adapted to receive the coupling element means of the tool element,

said receiver body being formed with a tool element engagement surface (8) and a tool element receiving recess (7), for retaining the tool element on the body in an axially centered position;

locking means (27) engageable with the coupling element means (10, 10*a*, 18) for locking the tool element (9) on the receiver body (1): and

wherein in accordance with the invention



the retention stub (18, 10*a*) is formed with conical surface regions (21) all of which regions are concentric with the axis of rotation (2) and form an acute cone angle with the axis of rotation; and

said locking means include locking elements (27) radially movably retained in said receiver body (1), accessible from the outside of said receiver body, formed with conical locking surfaces thereon for engagement of the conical locking surfaces with said conical surface regions; and

moving means (29) engageable with said locking element (27) for moving and selectively locking said locking elements and retaining said locking elements in position in the body and engaging said conical locking surfaces with said conical surface regions, or releasing said retention stub from said locking elements.

4,799,838

MILLING CUTTER

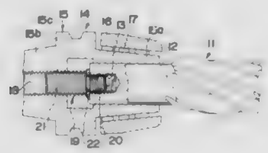
Haruaki Kubo, Osaka; Mitsuru Umeda, and Hiromitsu Iwakoshi, both of Hiroshima, all of Japan, assignors to Daishowa Seiki Co., Ltd., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Apr. 8, 1986, Ser. No. 849,418

Claims priority, application Japan, Apr. 16, 1985, 60-56733[U]

Int. Cl.[4] B23C *5/26*

U.S. Cl. 409—234 **3 Claims**



1. A milling cutter wherein an internal thread is provided at the center of an end face of the shank of said cutter for preventing accidental detachment thereof, said shank being inserted into a chuck cylinder of a chuck body and chucked at a desired position in an axial direction of said chuck cylinder by a tightening ring via a needle bearing, said tightening ring being provided on the outer circumferential surface of said chuck cylinder, and wherein an adapter is provided between said shank and chuck body, said adapter being provided at one end with a small-diameter threaded part which fits said internal thread and at the other end with a large-diameter threaded part which is adjustable in the axial direction of said chuck cylinder and fits an internal thread which is provided in said chuck body along the axis, and said internal threads and threaded parts being threaded so that they are screwed into each other in the same direction as the direction of the load of a cutting torque which is given to the blade of said cutter.

4,799,839

METHOD AND APPARATUS FOR PERFORMING A ROTARY BROACHING OPERATION PARTICULARLY ON WORK PIECES OF ROTATIONAL SYMMETRY

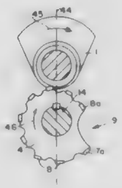
Garri Berstein, Erkelenz; Hans W. Obrig, Essen; Helmut Wittkopp, Erkelenz, and Hermann Wolters, Moenchengladbach, all of Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt GmbH, Erkelenz, Fed. Rep. of Germany

Filed Oct. 16, 1987, Ser. No. 109,932

Claims priority, application European Pat. Off., Oct. 21, 1986, 86 114 599

Int. Cl.[4] B23D *37/00*

U.S. Cl. 409—244 **23 Claims**



1. A method for a rotary broaching operation on work pieces in a broaching machine tool, comprising the following steps:

(a) using, in said machine tool, a tool carrier carrying a plurality of cutting tool edges;

(b) arranging said cutting tool edges along a first curved section on the tool carrier in a radial plane relative to a work piece, in such a way that a first cutting tool edge and a last cutting tool edge mark the beginning and end of said first curved section with cutting tool edges attached thereto and thereby also mark the beginning and end of a second section on said tool carrier free of cutting tool edges;

(c) continuously rotating said tool carrier while performing a sequence of broaching operations;

(d) sensing the presence of said second section free of cutting tool edges in a work piece exchange zone for providing respective control signals;

(e) loading a work piece into said machine tool when said second section free of cutting tool edges faces said work piece exchange zone without interrupting the motion of said tool carrier;

(f) unloading a finished work piece after the completion of a broaching operation by said last cutting tool edge when said second section free of cutting tool edges faces said work piece exchange zone,without interrupting the motion of said tool carrier; and

(g) controlling said loading and said unloading of a work piece in response to said control signals.

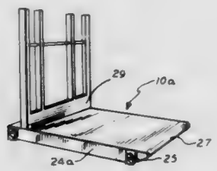
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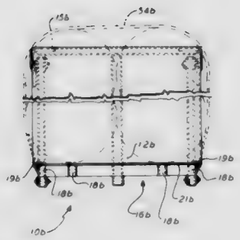
4,799,840

DRUM-RESTRAINING DEVICE

James Van Gompel, Fremont, Ind., and Jerry A. Hall, Bobcaygeon, Canada, assignors to NP Marketing Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 400,425, Jul. 21, 1982, abandoned. This application Oct. 22, 1986, Ser. No. 921,827
Int. Cl.⁴ B65D *19/26*
U.S. Cl. 410—42 **10 Claims**





1. A device for storing and restraining barrel-shaped containers having at least one rim comprising:

(a) a substantially-horizontal platform having a generally-continuous surface on which the containers can be placed,

(b) a vertical frame at one end of the said platform;

(c) means connected to said platform for spacing said platform a given uniform vertical distance from an underlying supporting surface; and

(d) means extendable from below said platform for engaging and firmly gripping said supporting surface;

(e) said horizontal platform being provided with an integral snub-nosed portion at the free edges of said platform, said portion being an extension of said platform projecting from said platform and curving smoothly about and extending below said horizontal part of said platform, and being retroverted but with said extension being spaced from said underlying supporting surface for said device; and

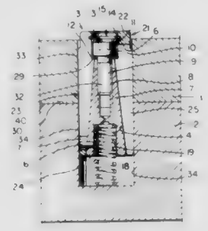
(f) bent rod means extending between the forward ends of the retroverted extensions at the side edges of said platform and the retroverted extension at the forward edge of said platform, said retroverted extensions defining hollow spaces and the ends of said bent rod means being received in said spaces, whereby the rims of containers on said platform can slide over said platform edges without significant damage to the rims of said containers, and whereby containers not loaded on said device will be protected form damage.

4,799,841

DOWEL-LIKE APPARATUS FOR LOCATING A COMPONENT ON A REFERENCE PART

Börje Ramsbro, Djursholm, Sweden, assignor to System 3R International ab, Villingby, Sweden

Filed Feb. 10, 1987, Ser. No. 13,042
Claims priority, application Sweden, Feb. 11, 1986, 8600599
Int. Cl.⁴ F16B *13/06*
U.S. Cl. 411—55 **13 Claims**



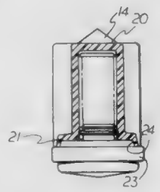
1. Apparatus for locating a component having a through-bore relative to a reference part such that a bore of the reference part having the same inside width as the through-bore is aligned thereto, the apparatus comprising a bushing which has a generally cylindrical exterior outline and is radially elastic at least over a portion of its length beginning from one end thereof, and has an axial passage therethrough which is, adjacent to said one end, radially conically extended and into which, adjacent the opposite end of the bushing, a first annular shoulder and an axially spaced second annular shoulder project radially inwardly for accommodating rotatably a bolt head between said annular shoulders, the bolt being adapted for moving axially a conical member disposed within the conical extension of the passage to expand said radially elastic portion into contact with the walls of said bores, the annular shoulders limiting axial movement of the bolt within the passage.

4,799,842

WELD STUD

Hans Kreider, Wettenberg, and Manfred Mueller, Wetzlar, both of Fed. Rep. of Germany, assignors to Emhart Enterprises Corp., Farmington, Conn.

Filed Apr. 21, 1987, Ser. No. 40,968
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1986, 36133973; Jun. 5, 1986, 36189022
Int. Cl.⁴ F16B *37/06*
U.S. Cl. 411—171 **3 Claims**



1. A weld stud with a protective cap nut which comprises:

a weld stud portion having an cylindrical section with a diameter larger than that of said cap nut wherein said cylindrical section can be contacted by gripping jaws of a stud welding gun;

an extension with a conical projection located on one side of said cylindrical section to form a subsequent welding point;

a shoulder formed with a chamfer located on the other side of said cylindrical section, opposite said extension, the shoulder having a diameter smaller than the diameter of the cylindrical section; and

a shank protruding from said shoulder having an externally threaded section and having a ridge axially spaced from the externally threaded section and formed like a thread for engaging an annular recess on the inside of said cap nut; and

a plastic cap nut portion having an internally threaded section threadably engaged to said weld stud portion and having a cylindrical body with an inside diameter sized to threadingly engage said threaded shank,

a flange located at an open end of said cap nut to which is attached a resilient lip which stretches to cover the chamfer of said stud when the cap nut is brought into contact with said shoulder, the outer diameter of said lip being smaller than that of said cylindrical section of said weld stud;

an annular recess inside said cap nut axially spaced from said internally threaded section to engage said ridge on said threaded shank;

a conical projection located at a closed end of said cap nut opposite said lip wherein said cap nut is automatically aligned coaxially with the stud welding gun as said projection is embraced by a holding arrangement inside the weld gun; and

fins located circumferentially about said body and sized so as not to protrude beyond the outer diameter of said cylindrical section of said stud.

4,799,843

LIFTING DOWN APPARATUS FOR A MULTI-STAGE SHELF ASSEMBLY

Akira Arase, and Ichiro Wada, both of Yokohama, Japan, assignors to Okamura Corporation, Yokohama, Japan

Filed Mar. 22, 1988, Ser. No. 271,788
Claims priority, application Japan, Mar. 31, 1987, 62-78770
Int. Cl.⁴ B65G *47/68*
U.S. Cl. 414—331 **6 Claims**



1. A lifting down apparatus for a multi-stage shelf assembly characterized by comprising:

a base;

foldable frames having a set of arms the lower ends of which are pivotally secured to said base to form a parallel link mechanism in which said base is a fixed link member and a connecting link mechanism for mutually connecting free ends of said arms with each other;

a plurality of rotary shelf assemblies one end of which is pivotally secured to one of said arms of said foldable frames at an interval in the longitudinal direction;

supporting members secured to the other arm to support the free ends of said, plurality of rotary shelf assemblies so that, when said foldable frames are being raised from the base, said plurality of rotary shelf assemblies separating sequentially, and when said foldable frames are lowered down on the base, said rotary shelf assemblies arrange in a line on the same plane; and

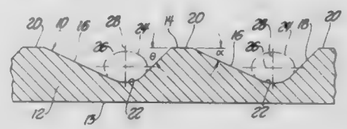
a driving means for pivotally moving said foldable frames at a predetermined angle.

4,799,844

ELLIPTICAL THREAD DESIGN

Jo-Yu Chuang, Sugarland, Tex., assignor to TRW Inc, Cleveland, Ohio

Filed Jan. 11, 1988, Ser. No. 142,789
Int. Cl.⁴ F16B *35/04*
U.S. Cl. 411—414 **6 Claims**



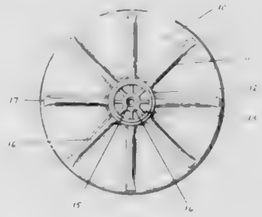
1. A screw structure (10) comprising: a cylindrical support member (12); at least one thread (14) extending helically along said cylindrical support member (12) in spaced thread turns, said thread (14) including a load bearing flank surface (16), a non-load bearing flank surface (18), and a crest portion (20) extending between said load bearing flank (16) and said non-load bearing flank (18); a root portion (22) extending between adjacent thread (14) turns; said screw structure (10) characterized by said root portion (22) having a curvature defined by a portion of an ellipse (24) having a major axis (26) and a shorter and perpendicular minor axis (28) with said major axis (28) extending axially of said cylindrical support member (12) and said ellipse (24) tangentially adjoining said load bearing flank (16) and said non-load bearing flank (18).

4,799,845

MEANS FOR ATTACHING SHEET MATERIAL TO A SUBSTRATE

Paul W. Hrysko, Ancaster, Canada, assignor to Dunlop Construction Products Inc., Canada

Filed May 18, 1987, Ser. No. 50,673
Claims priority, application United Kingdom, May 16, 1986, 8612003
Int. Cl.⁴ F16B *43/02*
U.S. Cl. 411—542 **19 Claims**



1. A fastening disk for use in attaching sheet material to a substrate, comprising

(a) a disk plate with a substantially discoid concave proximal surface for positioning facing the sheet material to be attached,

(b) concentric inner and outer tubular posts extending from the distal surface of the disk plate,

(c) radial struts connecting the inner and outer posts, and

(d) radial vanes on the distal surface of the disk plate between the outer post and the periphery of the disk plate, the disk being compressible to reduce the concavity of the disk plate.

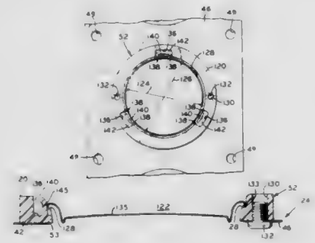
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4,799,846

TRANSFER BELT FOR CAN END CONVERSION PRESS

Terry L. Wissman, New Bremen, and Robert L. Schockman, St. Henry, both of Ohio, assignors to The Minster Machine Co., Minster, Ohio

Division of Ser. No. 936,466, Nov. 25, 1986, Pat. No. 4,723,882. This application Nov. 16, 1987, Ser. No. 121,043
Int. Cl.[4] B21D *51/44*
U.S. Cl. 413—66 17 Claims



11. In a press for producing can ends having multiple station tooling means for performing successive operations on can end workpieces, a transfer system for moving said can end workpieces through said press, said transfer system comprising:

an endless flexible belt, and

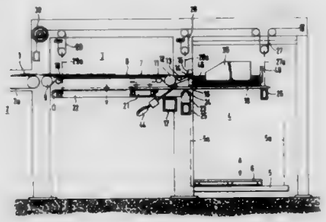
a plurality of can end carriers secured to and carried by said belt, each of said carriers comprising a shoulder adapted to support an outer edge of a can end workpiece and at least three cantilevered, generally vertical self-resilient fingers made from a material inherently capable of elastically flexing radially outwardly to receive a can end workpiece, said fingers having detent means therein for gripping the outer edge of a can end workpiece.

4,799,847

SHEET STACKER

Jakob Bodewein, Moenchen-Gladbach, Fed. Rep. of Germany, assignor to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 29, 1986, Ser. No. 913,811
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1985, 3535113
Int. Cl.[4] B65H *31/32*
U.S. Cl. 414—790.8 10 Claims



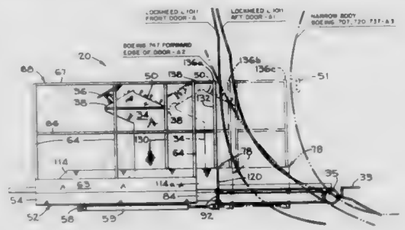
1. In a stacker for sheets such as paper, comprising a transfer table, means for conveying such sheets in overlapping manner to said transfer table, a stacking table to receive said sheets, means for raising and lowering said stacking table, means for conveying sheets from said transfer table to said stacking table along a conveying direction, a bar screen including a plurality of bars, and means for introducing the bar screen above the stacking table in the conveying direction between sheets which have already been stacked and sheets being conveyed to said stacking table, the improvement which comprises free spacers positioned below said transfer table, the free spacers receiving the bars of the bar screen at a level above the top of the stack on the stacking table, a first nozzle for blowing gas in the conveying direction of said sheets, said first nozzle being positioned adjacent the forward end of the transfer table below the level of supply, and a second nozzle for blowing gas, said second nozzle being positioned adjacent the forward end of the transfer table below the level of supply to blow gas downwardly toward the top of the stacked sheets, whereby the bar screen can be advanced to receive the new sheets for stacking while the stack therebelow is removed without reducing the conveying speeds.

4,799,848

ADJUSTABLE CONTROL STATION FOR AIRCRAFT LOADER

Margaret M. Buckley, Orlando, Fla., assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 30, 1987, Ser. No. 44,274
Int. Cl.[4] B60P *1/02*
U.S. Cl. 414—347 5 Claims



1. In an aircraft loader having a front platform with a power driven first conveyor thereon in container transfer position with a power driven second conveyor in an aircraft having aircraft conveyor control means therein adjacent the cargo opening of the aircraft, the improvement which comprises:

support means including a pair of elongated tubes extending longitudinally of the aircraft loader and being rigidly secured to said front platform;

slide means having spaced elongated beams slidably received within said elongated tubes;

connecting means for connecting adjacent ends of each beam together;

movable platform means having rollers journaled on one end thereof and rotatably supported on said tubes, said platform means having an end portion secured to said connecting means;

first power means operatively connected between said supporting means and said platform for reciprocating said platform relative to said tubes between a retracted and an extended position;

a first control means on said platform for controlling the direction of movement of said platform; and

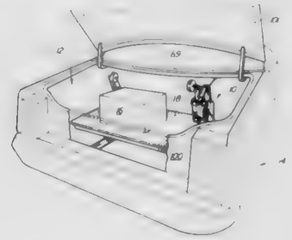
second control means on said aircraft for controlling said conveyor in said aircraft, said first and second control means being within reach of an operator on said aircraft loader to control the movement of the container while being conveyed by said first and second conveyors.

4,799,849

AUTOMOBILE TRUNK LOADING AND UNLOADING DEVICE

Donald L. Miller, 307 Steuben St., Horseheads, N.Y. 14845

Filed Oct. 30, 1987, Ser. No. 114,716
Int. Cl.[4] B60R *5/04*
U.S. Cl. 414—462 17 Claims



1. A lifting device for loading and unloading automobile trunks, comprising:

a floor frame;

a pair of platform supports attached to said floor frame, said pair of platform supports having a generally vertical orientation, said pair of platform supports being spaced apart in parallel relation to each other, each platform support of said pair of platform supports further having attached thereto a flange;

a pair of carriages, one carriage being reciprocably mounted to each said platform support, each carriage of said pair of carriages having attached thereto a plate, said plate having means mounted thereon for guiding said carriage along the flange of said platform support to which it is mounted;

a platform frame attached to said pair of carriages;

a platform mounted to said platform frame, said platform having a generally horizontal orientation; and

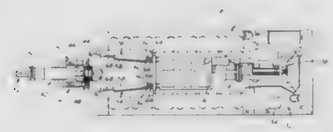
means for reciprocally moving said pair of carriages along said pair of platform supports thereby causing said platform to raise and lower in relation to said trunk.

4,799,850

MATERIAL HANDLING VEHICLE FOR USE IN A MINE

Angelo S. Petitto, Sr.; Angelo A. Petitto, and James L. Petitto, all of Morgantown, W. Va., assignors to Petitto Mine Equipment, Inc., Morgantown, W. Va.

Filed Dec. 3, 1987, Ser. No. 128,336
Int. Cl.[4] B60P *1/54*
U.S. Cl. 414—687 8 Claims



1. A material handling vehicle for use in a mine comprising,

a mobile body,

ground engaging traction means connected to said mobile body for propelling said mobile body in a mine along a floor of said mine,

a boom assembly extending from said mobile body,

said boom assembly having a first end portion adjacent said mobile body and a second end portion spaced from said first end portion,

a support post secured to said mobile body and extending upwardly therefrom,

a tubular member surrounding said support post, said tubular member being connected to said support post for rotational movement relative to said support post,

said boom assembly first end portion being connected to said tubular member for vertical pivotal movement relative to said tubular member,

first actuating means mounted on said mobile body and connected to said tubular member, said first actuating means being operable to rotate said tubular member relative to said support post,

first connecting means for securing said boom assembly first end portion to said tubular member to permit said vertical pivotal movement of said boom assembly first end portion relative to said tubular member,

a pair of second actuating means for pivoting said boom assembly first end portion in a vertical path relative to said tubular member, each said second actuating means positioned laterally of a longitudinal axis of said boom assembly,

one said second actuating means positioned laterally of said boom assembly first end portion with an end portion of said second actuating means connected for pivotal movement to said tubular member and an opposite end portion of said second actuating means pivotally received on a pivot pin fixed to a first side wall portion of said boom assembly first end portion, said pivot pin being located further out on said boom assembly from said mobile body than the connection of said second actuating means to said tubular member,

another said second actuating means positioned laterally of said boom assembly first end portion with an end portion of said second actuating means connected for pivotal movement to said tubular member and an opposite end portion of said second actuating means pivotally received on a pivot pin fixed to a second side wall portion of said boom assembly first end portion, said pivot pin being located further out on said boom assembly from said mobile body than the connection of said second actuating means to said tubular member,

said pair of second actuating means operable to effect said vertical pivotal movement of said boom assembly first end portion independently of the rotational movement of said tubular member relative to said support post,

extensible means for extending and retracting said boom assembly second end portion relative to said boom assembly first end portion, said extensible means having an end portion connected to said boom assembly first end portion and an opposite end portion connected to said boom assembly second end portion, and

material engaging means connected to said boom assembly second end portion for engaging material to be lifted and moved by said boom assembly.

4,799,851

LEVEL LIFT HYDRAULIC VALVE

William C. Swanson, 132 Ann St., Clarendon Hills, Ill. 60514

Filed Jan. 28, 1988, Ser. No. 149,377
Int. Cl.[4] B66F *9/00*
U.S. Cl. 414—700 3 Claims

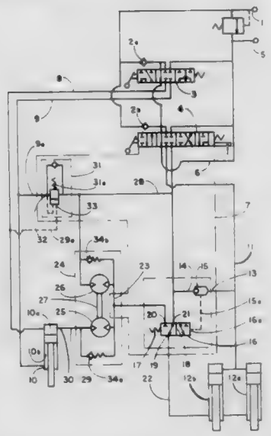
1. A hydraulic circuit apparatus, including conduit means and a source of hydraulic fluid, for providing level lift and lowering of an impliment pivotally supported on boom arms which in turn are pivotally supported on a supporting frame, the hydraulic circuit comprising:

a pair of boom actuating cylinders each pivotally attached at one end to said supporting frame and each pivotally attached at second ends to respective boom arms;

a pair of bucket actuating cylinders pivotally attached at one

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end to said boom arms and pivotally attached at their other ends to said implement respectively;
a four position four-way valve connected to said source of hydraulic fluid and said boom actuating cylinders;
a three position four-way valve connected to said source of hydraulic fluid, said bucket actuating cylinders and said four position four-way valve;
a directional flow control valve having a two position spool valve biased by a biasing spring to a first position and a shuttle check valve normally allowing the passage of hydraulic fluid when said spool valve is in said first position and preventing the passage of hydraulic fluid when said spool valve is in a second position;
a counterbalance valve connected by conduit means to said four position four-way valve and said pair of bucket actuating cylinders;



a rotary flow divider having primary and secondary positive displacement fluid transferring units connected together, said rotary flow divider having a port for communicating with said directional flow control valve, a pair of ports communicating through conduit means with said bucket actuating cylinders, said four position four-way valve and said counterbalance valve;
whereby said bucket actuating cylinders will receive a metered flow of hydraulic fluid from said rotary flow divider when said boom actuating cylinders are being raised and said three position four-way valve is open allowing hydraulic fluid flow through said conduit means for said source of hydraulic fluid and said bucket actuating cylinders will deliver a metered flow of hydraulic fluid to said rotary flow divider when said boom actuating cylinders are being lowered and said three position four-way valve is open allowing hydraulic fluid to flow through said conduit means to tank.

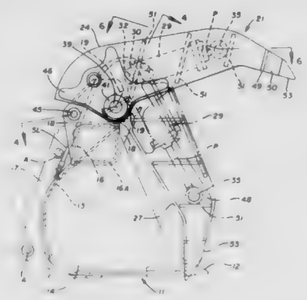
4,799,852

SELF-CONTAINED DEMOLITION BUCKET ATTACHMENT

John R. Ramun, Youngstown, Ohio, assignor to Allied Gator, Inc., Youngstown, Ohio

Filed Mar. 12, 1987, Ser. No. 24,969
Int. Cl.[4] B65F *9/18*
U.S. Cl. 414—724 **5 Claims**

1. Apparatus for attachment to a loading bucket of a construction vehicle for conversion thereof to a demolition device said loading bucket having an elongated body plate cross sectionally curved intermediate its ends and of a known length and having an upper portion defining a horizontal upper edge and having panels on its opposite ends, said apparatus comprising: a pair of oppositely disposed longitudinally extending cross sectionally V-shaped reinforcing members position on the opposite sides of said upper portion at said upper edge thereof so that said upper portion extends diagonally therebetween, at least a pair of upstanding apertured plates having first openings inwardly of one end thereof engaged on the oppositely disposed V-shaped reinforcing members inwardly of said panels of said bucket, a demolition bucket attachment having pivot means thereon for registry with curved notches in said upstanding apertured plates above said openings, said demoli-



tion bucket attachment having a pair of horizontally spaced jaws and a structural web positioned therebetween and secured thereto, said jaws and structural web of said demolition attachment being of a lesser width than said known length of said body plate of said bucket so that its opposite ends are spaced inwardly of said end panels, means positioned in said jaws and connected thereto and to said upstanding apertured plates for moving said jaws and structural web toward and away from said body plate of said bucket.

4,799,853

SELF-CENTERING END EFFECTOR

Edward J. Wrobbel, Fairport; Louis S. Canzoneri; Ronald P. Cocchiara, both of Rochester, and Nikhil C. Paul, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 6, 1986, Ser. No. 915,596
Int. Cl.[4] B66C *1/54*
U.S. Cl. 414—730 **8 Claims**



1. An apparatus for acquiring an individual article having a substantially cylindrical aperture therein from a supply of roughly aligned articles in a storage bin, including:
a fixedly mounted head assembly;
means for gripping the article, said gripping means comprising a cylindrical portion adapted to be interfit into the cylindrical aperture of the article, and a flange portion fixedly connected to and extending outwardly from one end of said cylindrical portion and adapted to abut against one end of the article when said cylindrical portion has been interfit into the cylindrical aperture of the article;

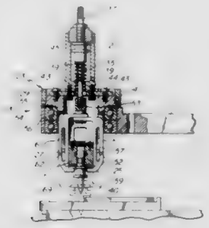
means for moving said gripping means into the cylindrical aperture of the article and retracting said gripping means with the article secured releasably thereto from the storage bin; and
means, associated with said head assembly, for receiving said gripping means and substantially aligning the longitudinal axis of the cylindrical aperture of the article substantially parallel with the longitudinal axis of said receiving means.

4,799,854

ROTATABLE PICK AND PLACE VACUUM SENSE HEAD FOR DIE BONDING APPARATUS

Gary G. Niskala, Garden Grove, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 20, 1987, Ser. No. 75,157
Int. Cl.[4] B66C *1/02*
U.S. Cl. 414—737 **27 Claims**



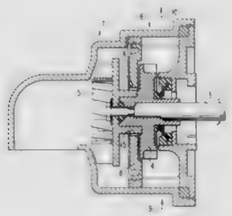
1. A pick and place apparatus for picking up and placing a die carrying electronic circuitry using collect means having a vacuum pickup, said apparatus comprising:
spindle means;
means for rotatably securing said spindle means with respect to said mounting head;
jaw means for grasping a said collet means; and
means affixed to said spindle means for slidably extending said jaw means in order to grasp said collet means therein and for thereafter retracting said jaw means and said collet means.

4,799,855

IMPELLER CONSTRUCTION FOR CENTRIFUGAL PUMP OF TWO-PUMP PUMP UNIT

Claudio Milocco; Ugo Favret, both of Pordenone, and Antonio Martegani, Trieste, all of Italy, assignors to Industrie Zanussi S.p.A., Pordenone, Italy

Filed Oct. 30, 1987, Ser. No. 115,032
Claims priority, application Italy, Nov. 27, 1986, 45753 A/86
Int. Cl.[4] F04D *23/00*
U.S. Cl. 415—143 **4 Claims**



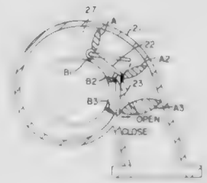
1. In a pump unit including first and second pumps having respective impellers and motor drive shaft means, fixed to said impellers of said first and second pumps, for alternately rotating said impellers in a first direction, during which only said first pump delivers a liquid, and an opposite second direction, during which only said second pump delivers a liquid, the improvement wherein:
said first pump comprises a peripheral outflow pump; and
said second pump comprises a centrifugal pump and said impeller thereof includes blades oriented forwardly with respect to said second direction.

4,799,856

VARIABLE CAPACITY RADIAL FLOW TURBINE

Nobuyasu Matsudaira; Michio Kyoya; Takashi Mikogami; Yoichiro Okazaki, all of Sagamihara; Eito Matsuo, and Nobuhiro Takahira, both of Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1987, Ser. No. 97,643
Claims priority, application Japan, Sep. 17, 1986, 61-142146[U]
Int. Cl.[4] F01D *17/16*
U.S. Cl. 415—155 **15 Claims**



1. A variable capacity radial flow turbine comprising:
a housing having therein a turbine wheel and a scroll-shaped passageway for passage of gas from an inlet of said housing to said turbine wheel;
means for adjusting the cross-sectional area of said passageway so that the flow rate of gas passing to said turbine wheel can be changed, said means comprising a plurality of pivotable blades pivotally mounted about respective pivot axes to said housing, a first one of said pivotable blades being located in said passage way upstream of a second one of said pivotable blades also located in said passageway, said first blade being pivotable from a closed position at which gas passes through said passageway only radially outwardly of said first blade to an open position at which gas passes through said passageway both radially inwardly and radially outwardly of said first blade, said second blade being pivotable in said passageway to vary the cross-sectional area of said passageway at a position downstream of said first blade.

4,799,857

CASING FOR FLUID FLOW MACHINES

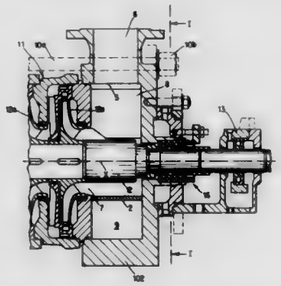
Gerd H. Bauer, Wattenheim; Armin Görisch, Offstein; Herbert Hartmüller, Ludwigshafen; Gerhard Meyer, Frankenthal; Alexander Nicklas, Dirmstein; Detlef Prokasky, Frankenthal, and Jürgen Schill, Weisenheim, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal/Pfalz, Fed. Rep. of Germany

Filed Nov. 20, 1987, Ser. No. 123,380
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1986, 3640894
Int. Cl.[4] F04D *29/42*
U.S. Cl. 415—185 **10 Claims**

1. In a fluid flow machine, particularly in a centrifugal pump, a rotor including a shaft arranged to rotate about a predetermined axis; and a casing having a fluid-admitting first portion extending substantially radially of said shaft and having a first outlet, and a second portion rigid with said first portion and comprising a substantially band-like arcuate wall spacedly

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surrounding said shaft and defining therewith a passage for reception of fluid from said first outlet, said wall having end portions flanking said first outlet and said passage having a substantially oval cross-sectional outline in a plane extending at



right angles to said axis, said second portion having a second outlet arranged to receive fluid from said passage and said rotor means further comprising at least one fluid conveying element provided on said shaft, adjacent said second outlet and arranged to convey liquid away from said wall.

4,799,858

CLIP-ON ELECTRIC FAN

Shao Shin-Chin, San-Chung, Taiwan, assignor to Holmes Products Corp., Holliston, Mass.

Filed May 19, 1986, Ser. No. 864,512

Int. Cl.[4] F04D *29/60*

U.S. Cl. 416—110 10 Claims



1. A portable electric fan comprising:

a. a base assembly

b. a yoke assembly movably mounted on the base assembly, and

c. a fan unit mounted on the yoke assembly,

d. the base assembly including a member having a concave top surface, the concave top surface having a plurality of dimples arranged in a circle,

e. the yoke assembly including a yoke and a concave stepping disc, the yoke including a cup shaped joint having an elongated slot, the concave stepping disc having a bottom surface having a plurality of circular projections arranged in a circle and a top surface having a raised portion, the concave stepping disc being disposed between the cup shaped joint and the concave top surface of the assembly base with the raised portion of the concave stepping disc being slidably movable from one end to the other in the elongated slot, the circle of projections on the stepping disc being aligned with the circle of dimples on the concave top surface.

g. whereby, the raised portion in the stepping disc moving in the elongated slot in the cup shaped joint enables the yoke assembly to be tilted back and forth relative to the base and the projections in the disk and the dimples in the boss enable the yoke assembly to be rotated relative to the base assembly in a stepping fashion.

4,799,859

HELICOPTER ROTOR BLADE CONTROL

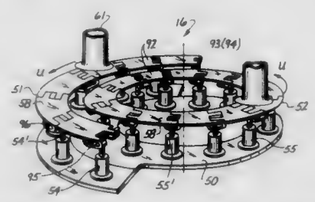
Herbert Zimmer, Friedrichshafen, Fed. Rep. of Germany, assignor to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 5, 1986, Ser. No. 927,656

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1985, 3539338

Int. Cl.[4] B64C *27/18*

U.S. Cl. 416—20 R 14 Claims



1. Circulation control for rotor system for helicopter type aircraft wherein blades of the rotor are provided with nozzle-like slots along leading edges and along trailing edges of the blades, there being a control provided for feeding pressurized gas to said slots, the improvement comprising:

gas feeder tubes with openings and leading to said slots for said feeding of pressurized gas from a plenum chamber;

a pair of annularly shaped, stationary control members in said plenum chamber, one of said members being a complete annulus, a second one of said members being at least a semi-annulus, and being respectively associated with and disposed in a path for the air flow to the trailing and leading edges of the blades and respectively cooperating with said openings of said gas feeder tubes for said feeder tubes to be at least partially covered by portions of the respective control member upon rotation of the feeder tubes relative to the control members in relation to each other pursuant to rotation of the blades; each of said annulus control member being composed of a plurality of individual control surfaces and sector segments; and

two pluralities of control means, respectively, connected to said annular control members such that individual ones of the control means are connected to individual ones of the segments, for rendering the control members separately and independently variable in direction of the periphery or transversely thereto such that the resulting variation locally varies respective control gaps between said feeder tube openings and the respective control surface but independently for the two annular members on account of the two pluralities of control means.

whereby the peripheral portion of said incoming high velocity gas stream is successively diverted by the perimetric border portion of said orifice plates with a concommitant reduction in velocity thereof and a change of direction toward substantially parallel relation with the longitudinal axis of said perimetric housing.

4,799,944

GAS FILTER

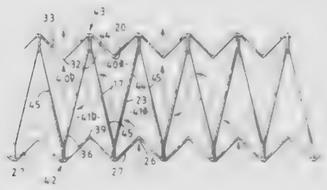
George Dixon, Sidmouth, England, and Henry W. Eaves, Gullane, Scotland, assignors to Binks Bullows Limited and Spencer & Co., Limited, both of, England

Filed Mar. 25, 1988, Ser. No. 173,087

Claims priority, application United Kingdom, Mar. 28, 1987, 8707482

Int. Cl.[4] B01D *45/00*

U.S. Cl. 55—446 6 Claims



1. A gas filter comprising a single continuous sheet of material folded along a plurality of parallel fold lines and interconnected at appropriate folds so as to produce an element having spaced front and rear faces and a plurality of partition walls extending between said front and rear faces and defining therebetween a plurality of chambers of wedge-shaped cross-section, the wedge-shapes of adjacent chambers being oppositely orientated, and said sheet being formed with apertures such that gas flows through the filter from an aperture in the front face to an aperture in the rear face and in so doing is constrained to pass through apertures in at least one partition wall so as to pass through at least two adjacent chambers.

4,799,945

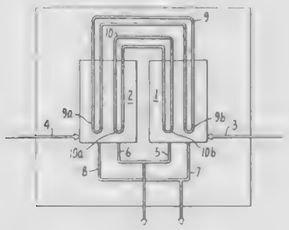
DUAL FREEZING CHAMBER SYSTEM AND METHOD FOR WATER PURIFICATION

Chung N. Chang, Los Altos, Calif., assignor to Polar Spring Corporation, Menlo Park, Calif.

Filed Oct. 27, 1987, Ser. No. 114,232

Int. Cl.[4] B01D *9/04*; C02F *1/22*

U.S. Cl. 62—532 37 Claims



1. A water purification system comprising:

a first chamber and

a second chamber, each having a generally vertically-oriented thermally-conductive wall;

heat transfer means having a first portion thermally coupled to the first chamber and a second portion thermally coupled to the second chamber, said first portion of said heat transfer means being thermally coupled to said wall for extracting heat through said wall from water within the first chamber to form a layer of ice adjacent said wall that grows in thickness inwardly from said wall; and

means for operating the heat transfer means in a mode to extract sufficient heat from the first chamber via the first portion to form a layer of ice adjacent said wall in the first chamber, and simultaneously to supply sufficient heat to the second chamber via the second portion to melt ice within the second chamber.

4,799,946

PREPARATION OF GLASS FIBRE

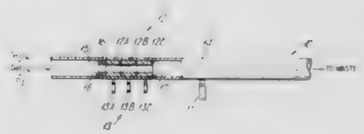
Benjamin J. Ainslie, and Susan P. Craig, both of Ipswich, England, assignors to British Telecommunications plc, London, England

Filed Mar. 20, 1987, Ser. No. 28,213

Claims priority, application United Kingdom, Apr. 24, 1986, 8610053

Int. Cl.[4] C03B *37/018*

U.S. Cl. 65—3.12 7 Claims



1. A method of making a source for providing metal compounds into MCVD, which method comprises:

(i) depositing a porous silica layer on the inner surface of a substrate tube by MCVD, said MCVD beihg performed at a temperature below the sintering temperature of the deposited silica,

(ii) soaking the product of the MCVD in a solution of a metal compound; and

(iii) evaporating the solvent of the solution whereby the porous layer is impregnated with the metal compound.

4,799,947

APPARATUS FOR CARRYING BOTTLES IN BOTTLE MAKING MACHINE

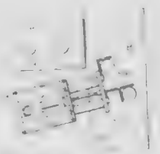
Hiroshi Miyagi, and Akihiko Ohno, both of Ogaki, Japan, assignors to Nihon Taisanbin Kogyo Kabushiki Kaisha, Gifu, Japan

Filed Oct. 28, 1987, Ser. No. 113,700

Claims priority, application Japan, Nov. 29, 1986, 61-285433

Int. Cl.[4] C03B *9/40*

U.S. Cl. 65—158 4 Claims



1. An apparatus for conveying bottles in a bottle making machine having a pusher for moving said bottles and a servomotor for reciprocally swinging said pusher within a predetermined angular displacement for moving said bottles along an archwise track onto a conveyor, comprising means for emitting signals for the start and stop of said servomotor at a predetermined time, servo-control means for supplying a drive cur-

4,799,863

VACUUM FLOW DEVICE

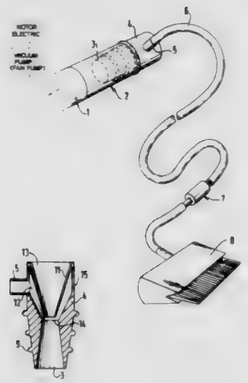
Raymond Gannon, London, England, assignor to FGL Projects Limited, London, England

Continuation of Ser. No. 881,219, Jul. 2, 1986, abandoned. This application May 9, 1988, Ser. No. 193,203

Claims priority, application United Kingdom, Jul. 3, 1985, 8516838

Int. Cl.[4] **F04B** *23/08;* **F04F** *5/44;* **A47L** *5/16*

U.S. Cl. 417—84 **10 Claims**



1. Vacuum device arrangement comprising a gaseous flow system including

a flexible suction intake conduit operatively connected to a vacuum fan pump,

a Venturi pump element having a main fixed size flow inlet, a restrictive flow inlet, a Venturi arrangement, and a common outlet, the main flow inlet and the restrictive flow inlet being arranged for communicating at the Venturi arrangement for intermingling of flow from the main inlet with flow from the restrictive inlet for exiting through the outlet, and the outlet being releasably flow connected to the suction intake conduit,

a member in which pressure is to be reduced, and

a flexible restrictive flow conduit flow connecting the member with the restrictive flow inlet of the Venturi pump element,

the main fixed size flow inlet having a selective main flow cross section and the restrictive flow inlet having a selective restrictive flow cross section which is smaller than the flow cross section of the main flow inlet, for controlled corresponding flow, into the main inlet from the exterior of the arrangement, and into the restrictive inlet through the restrictive flow conduit from the member in which pressure is to be reduced.

4,799,864

HYDRO-PNEUMATIC PUMPSETS

Stephen J. Hockley, Portsmouth, England, assignor to Action Pumping Services Ltd., England

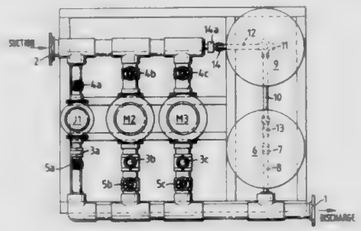
Filed Oct. 15, 1987, Ser. No. 108,798

Claims priority, application United Kingdom, Oct. 17, 1986, 8624953

Int. Cl.[4] **F04B** *41/06, 49/00*

U.S. Cl. 417—7 **5 Claims**

1. A packaged hydro-pneumatic pumpset system including a plurality of pumps connected to suction and discharge manifolds and arranged to be brought into operation sequentially when required in response to actuation of respective pressure switches, a footvalve in the suction pipe inlet to maintain a prime on the pumps and an hydraulic accumulator arranged to store water such as to maintain pressure in the system when the pumps are not operating, characterised in that a second hydraulic accumulator is included in the system and connected to the first accumulator via a non-return valve and to the suction



manifold of the pumps via means arranged to be actuated when all the pumps are inoperative, to maintain a reservoir of stored pressurised water in the suction manifold to assist the footvalve to form a positive seal by remaining closed on its seating.

4,799,865

INTERMITTENT SERVICE SCREW COMPRESSOR

Johnny Oscarsson, Gustavsberg, Sweden, assignor to Svenska Rotor Maskiner AB, Stockholm, Sweden

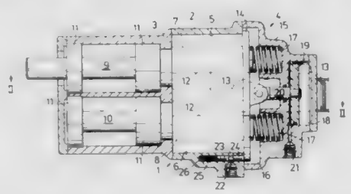
PCT No. PCT/SE86/00557, § 371 Date Aug. 3, 1987, § 102(e) Date Aug. 3, 1987, PCT Pub. No. WO87/03651, PCT Pub. Date Jun. 18, 1987

PCT Filed Dec. 8, 1986, Ser. No. 90,799

Claims priority, application Sweden, Dec. 10, 1985, 8505821

Int. Cl.[4] **F04B** *49/02;* **F04C** *18/16, 29/00*

U.S. Cl. 417—283 **4 Claims**



1. A continuously driven screw compressor adapted for intermittent compressor operation, comprising:

a compressor housing means (**1**) which comprises a casing wall means (**2**) which encloses at least two radially overlappping compression chambers (**5, 6**) each of which accommodates a respective helical rotor (**7, 8**), said helical rotors each being fixedly connected to a respective bearing shaft (**9, 10**);

said compressor housing means including a compressor inlet (**12**);

said housing means (**1**) having spaced apart end portions, and comprising at respective end portions thereof a high-pressure end wall means (**4**) at a high pressure end of the compressor, and a low-pressure end wall means (**3**) at a low pressure end of the compressor;

said casing wall means (**2**) having end surfaces at least in the vicinity of said high-pressure end wall means (**4**);

said high-pressure end wall means (**4**) including:

means defining a space (**16**) which is in communication with said compressor inlet (**12**) through a channel (**12'**); and

a movable wall plate means (**14**) which, in an active compression state of the compressor, is in sealing abutment with said end surfaces of said casing wall means (**2**) and which, for the purpose of deactivating the compressor, is movable in the axial direction of the compressor in said space (**16**) in said high-pressure end wall means so as to communicate said compression chambers (**5, 6**) with said compressor inlet (**12**) through said space (**16**) and said channel (**12'**);

auxiliary drive means (**20**) coupled to said movable wall plate means (**14**) for selectively moving said wall plate means (**14**) in said axial direction of the compressor;

said rotors (**7, 8**) being coupled with respective journals (**11**) via their respective bearing shafts (**9, 10**) solely at the low-pressure end of the compressor;

said movable wall plate means (**14**) having a sealing surface facing said end surfaces of said casing wall means (**2**), said sealing surface being imperforate and extending sealingly across said compression chambers;

oil injecting means (**22, 23**) for injecting oil into said compression chambers (**5, 6**); and

valve means (**24**) coupled to said oil injection means for throttling or interrupting a flow of oil to said compressor chambers when said movable wall plate means (**14**) is in its compressor deactivating position;

said valve means (**24**) being coupled to said movable wall plate means (**14**), and said valve means (**24**) being operable to a position for throttling or interrupting said flow of oil to said compression chambers responsive to movement of said movable wall plate means (**14**) to a position out of sealing abutment with said end surfaces of said casing wall means.

4,799,866

SPRAY PUMP WITH A MOTOR DRIVEN DRIVE ROD

Ulrich Faeser, Kronberg, and Dieter Mahn, Bad Homburg v.d.H., both of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

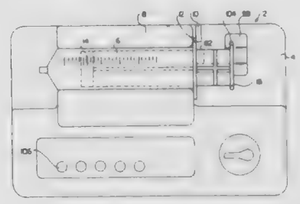
PCT No. PCT/DE85/00259, § 371 Date May 27, 1986, § 102(e) Date May 27, 1986, PCT Pub. No. WO86/01117, PCT Pub. Date Feb. 27, 1986

PCT Filed Aug. 1, 1985, Ser. No. 865,732

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1984, 3428655

Int. Cl.[4] **F04B** *13/00*

U.S. Cl. 417—415 **8 Claims**



1. An improved spray pump for metered delivery of a liquid from a spray cylinder by means of a spray piston, the spray pump having a housing, means for mounting the spray cylinder in the housing, a motor drive in driving connection with a threaded shaft mounted within the housing, and a gear unit for transmitting drive force from the threaded shaft to the spray piston, the gear unit having an axially movable drive rod extending through the wall of the housing, one end of the drive rod being engageable with the spray piston outside of the housing, the improvement comprising:

a translationally movable coupling arranged in a bearing block to connect the drive rod to the threaded shaft, the coupling having a coupling pin provided with a threaded section, the coupling pin being displaceably mounted on the bearing block and having a U-shaped recess extending transversely to the longitudinal axis of the coupling pin with the threaded section disposed on the side wall of the recess to engage the threaded shaft;

the drive rod being pivotably mounted around its longitudinal axis in the housing for actuating the coupling, the drive rod being at a distance from and parallel to the threaded shaft;

a control element fixed to the drive rod and located between the drive rod and the coupling pin, the control element having a cam which engages the coupling pin and which is disposed eccentric to the axis of rotation of the control element; and

a torsional locking rod being arranged parallel to and at a distance from the threaded shaft and the drive rod, the bearing block engaging and being movable along the torsional locking rod in a direction parallel to the longitudinal axis of the torsional looking rod.

4,799,867

VANE PUMP WITH BRITTLE VANES AND ROUGH FINISHED HOUSING SURFACE

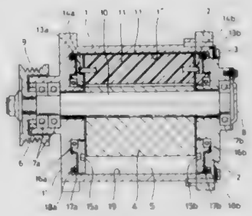
Hiroshi Sakamaki; Yukio Horikoshi, and Kenji Tazawa, all of Sakado, Japan, assignors to Eagle Industry Co., Ltd., Tokyo, Japan

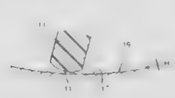
Filed Nov. 6, 1987, Ser. No. 118,100

Claims priority, application Japan, Nov. 21, 1986, 61-178289[U]

Int. Cl.[4] **F04C** *18/344, 29/00*

U.S. Cl. 418—1 **5 Claims**



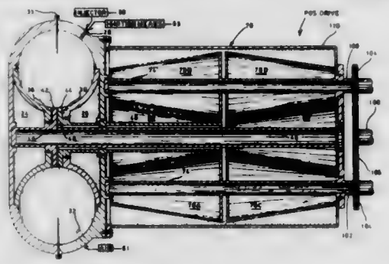


1. A method of operating a vane pump of the type having a housing with a rotor chamber having an inner peripheral surface, a rotor rotatably mounted in the rotor chamber and having an axis of rotatation which is eccentric relative to the axis of the inner peripheral surface of the rotor chamber, the rotor having a plurality of generally radially disposed vane slots, and a plurality of vanes slidable mounted in the vane slots and operable to define variable volume chambers for effecting a pumping action as the rotor rotates and the vanes move generally radially in and out of the vane slots, the method of operation comprising the steps of limiting the radial outward movement of said vanes from said vane slots to provide a minimal near-zero clearance between the outer radial ends of said vanes and the inner peripheral surface of said rotor chamber, providing a roughened surface on said inner peripheral surface of said rotor chamber, operating said vane pump with said minimal near-zero clearance between the outer radial ends of said vanes and the inner peripheral roughened surface of said rotor chamber, continuing to operate said vane pump over a prolonged period of time to the extent that wear occurs and that as a result of said wear, said minimal near-zero clearance between the outer radial ends of said vanes and the inner peripheral roughened surface of said rotor chamber is reduced to zero, and immediately abrading said outer radial ends of said vanes by contact with said roughened surface such that said

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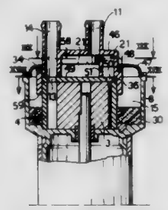
minimal near-zero clearance is reestablished between the outer radial ends of said vanes and the inner peripheral surface of said rotor chamber.

4,799,868
COMPRESSOR/PUMP
Clifford E. Wilson, 128 College St., Madisonville, Tenn. 37354
Continuation-in-part of Ser. No. 878,350, Jun. 25, 1986, Pat. No. 4,716,870. This application Dec. 30, 1987, Ser. No. 139,856
The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.
Int. Cl.[4] F04C *18/00*
U.S. Cl. 418—36 17 Claims



1. A compressor/pump, which comprises:
wall means defining at least one toroidal cylinder;
at least one pair of flywheels mounted for rotation with respect to said cylinder around a central axis thereof and with respect to each other;
piston means within said cylinder including a first pair of pistons mounted on one of said flywheels at selected locations, and a further pair of pistons mounted on another of said flywheels at selected locations, said pistons cooperating to define with said cylinder compressing/pumping and inlet chambers during rotation of said flywheels and said pistons attached thereto;
means for admitting a fluid for compressing/pumping into said inlet chambers through said wall means of said cylinder;
means for controlling the mode of operation of said piston means and said flywheels whereby said first and further pairs of pistons revolve in the same direction within said cylinder at varying angular velocities during cycles of said compressor/pump, said means for controlling said mode including
a. a first rotating shaft carrying said one of said flywheels,
b. a second rotating shaft carrying said another of said flywheels,
c. at least one first gear member carried on said first rotating shaft, said first gear member defining a substantially conically configured surface with a first end of a first selected diameter and a second end of a second selected larger diameter, said surface provided with first gear engagement means of a selected configuration,
d. at least one second gear member disposed proximate said first gear member having a conically configured surface with a first end of one selected diameter proximate said first end of said first gear member, said surface of said second gear member provided with further gear engagement means of a selected configuration operatively associated with said gear engagement means on said surface of said first gear means whereby said second grear means is rotatable in a direction opposite said first gear means, said configuration of said first and further gear engagement means of said first and said second gear members selected whereby intermeshing between said first and said second gear members reciprocates between ends of said gear members whereby said second gear member is rotated at said varying angular velocities with respect to said first rotating shaft, and
e. gear coupling means connected between said second gear means and said second rotating shaft to rotate said second rotating shaft at said varying angular velocities with respect to said first rotating shaft to thereby cause said pistons to define said compressing/pumping and inlet chambers within said cylinder during an engine cycle; and
rotary drive means connected to said mode controlling means for rotating said gear members.

4,799,869
PNEUMATIC VANE PUMPS WITH OIL SEPARATION
Ettore Cordiano, Turin; Pierino Garnero, Rosta, and Domenico Frigo, Vicenza, all of Italy, assignors to CORINT S.r.l. and GARRIG 4 S.a., both of, Italy
Division of Ser. No. 24,189, Mar. 10, 1987, abandoned. This application Mar. 28, 1988, Ser. No. 178,789
Claims priority, application Italy, Mar. 10, 1986, 67188 A/86; Feb. 2, 1987, 67065 A/87
Int. Cl.[4] F04C *29/02*
U.S. Cl. 418—97 2 Claims

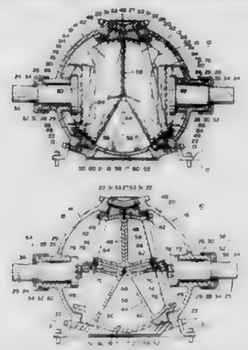


1. A pneumatic vane pump comprising a substantially cylindrical housing,
a cylindrical seat concentrically mounted within said housing and defining an oil reservoir chamber between said cylindrical seat and said housing,
an electric driving motor mounted in said housing,
a rotor coupled to said motor and mounted within said cylindrical seat for rotation about an axis eccentrically disposed relative to said cylindrical seat, said rotor having a plurality of recesses each having a vane movably mounted therein for contact with said cylindrical seat,
a plate mounted on one end of said cylindrical seat and having inlet and outlet openings therethrough,
cover means secured to said housing and having an end wall and a cylindrical wall defining a substantially cylindrical chamber between said cover means and said plate with said outlet opening disposed adjacent said cylindrical wall, said cover means having an outlet passage communicating the interior of said cylindrical chamber with the exterior thereof and an inlet passage extending through said cover means and communicating said inlet opening with the exterior of said cover means,
partition means secured to said cover means adjacent said outlet hole in said plate and spaced from said cylindrical wall of said cover means for forcing air from the outlet opening over the cylindrical wall of the chamber before entering said outlet passage for depositing transported oil on said cylindrical wall of the cylindrical chamber by centrifugal action.

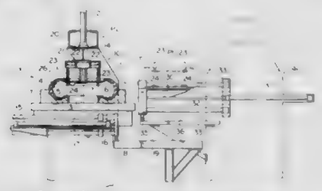
4,799,870
FLUID POWER TRANSFER DEVICE
Harold A. McMaster, 707 Riverside Dr., Woodville, Ohio 43469
Filed Jan. 23, 1987, Ser. No. 6,378
Int. Cl.[4] F01C *1/12, 3/08, 1/344*
U.S. Cl. 418—151 22 Claims

1. A fluid power transfer device comprising:
a pair of vanes;
a hinge for connecting the vanes;
a pair of shafts; and

a pair of linkages for coupling each of the vanes to its respective shaft, wherein each of the linkages allows its respective vane to oscillate about the hinge and constrains the hinge to rotate in a plane perpendicular to the shafts.



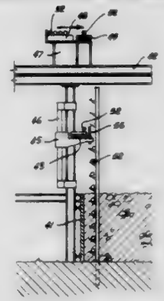
4,799,871
UNLOADER MECHANISM FOR USE WITH A VULCANIZING MACHINE
Yasuhiko Fujieda, Akashi; Itaru Amano, and Masahide Kanzawa, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Jan. 13, 1987, Ser. No. 2,939
Claims priority, application Japan, Jan. 16, 1986, 61-7364
Int. Cl.[4] B29C *35/00*
U.S. Cl. 425—38 3 Claims



1. A tire vulcanizing apparatus, comprising:
upper and lower molds;
a tire unloader;
a central bag well unit disposed coaxially in the lower mold for being vertically movable coaxially through the latter and having a bladder retractable thereinto;
a frame body horizontally movable and linearly reciprocable in parallel with the lower mold toward and away from a removing position wherein said frame body is vertically in alignment with an axis of the lower molds; and
piston actuator means fixedly mounted on said frame body and axially aligned with a grappling unit vertically movable by said actuator means toward and away from the lower mold along said axial of said lower mold and a tire coaxially received in the lower mold, and including finger means controllingly engageable with a radially inner edge of an upper bead portion of the cured tire for simultaneously removing said tire from said lower mold and central bag well unit and for substantially maintaining the same horizontal posture of said tire when in said mold.

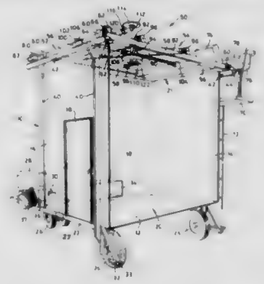
4,799,872
SLIPFORM APPARATUS FOR EMPLACING HORIZONTAL ARCUATE RE-INFORCING RODS
Paul A. Dowdle, "Twickenham", Manilla New South Wales 2346, Australia
Filed Nov. 9, 1987, Ser. No. 118,730
Claims priority, application Australia, Nov. 10, 1986, PH8880
Int. Cl.[4] E04G *11/22, 21/16;* B28B *21/56*
U.S. Cl. 425—63 7 Claims

1. A slip-form having formwork for defining at least one surface of a wall-space into which reinforcing rods are located at selected positions to form a reinforcing structure for a poured concrete structure, the slip-form further including a plurality of spaced apart upwardly extending members supporting said formwork, and roller assemblies releasably engaged with at least some of the members, with a plurality of said roller assemblies being horizontally aligned and spaced to form within said space a height adjustable horizontal race and at least one of said roller assemblies being vertically and horizontally spaced from an adjacent roller assembly to form an inclined race feeding down to said horizontal race, said inclined race being adapted to transport reinforcing rods onto the horizontal race for onward transport to a location adjacent to a selected position in the reinforcing structure.



4,799,873
METHOD AND APPARATUS FOR MANUFACTURING TRUCK BODIES
Roger J. Martin, Toronto, Canada, assignor to Diesel Equipment Limited, Toronto, Canada
Filed Jul. 11, 1983, Ser. No. 512,184
Int. Cl.[4] B29C *41/08*
U.S. Cl. 425—73 16 Claims

1. A machine for manufacturing a unitary glass fibre reinforced body shell comprising;
(a) a mold having a top forming wall and a pair of oppositely disposed side forming walls extending from opposite side edges of the top forming wall to form a mold cavity which is generally U-shaped in cross section, said cavity being longitudinally elongated and having a length at least equal to the length of the required shell,
(b) a carriage adapted for movement along said mold in the direction of its longitudinal extent, at least a portion of said carriage being arranged to extend into said mold cavity in use,
(c) a turntable mounted on said carriage for rotation about a first axis which extends in the direction of said longitudinal movement of said carriage in use,
(d) an arm slidably mounted on said turntable for movement in a radial direction with respect to said first axis,
(e) dispenser means mounted on said arm for rotation and radial movement with said arm with respect to said first axis, said dispenser being adapted to dispense glass fibre reinforced resin,



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(f) guide means communicating with said turntable and said arm, said guide means being adapted to cause said arm to reciprocate with respect to said turntable in said radial direction to maintain a substantially constant length of trajectory extending between the dispenser and the wall of the mold, and,

(g) drive means rotably driving the turret about said first axis under the control of said guide means thereby to cause the point of contact of the dispenser trajectory to travel along the mold surface at a constant speed to uniformly distribute the coating thereon.

4,799,874

EXTRUSION HEAD

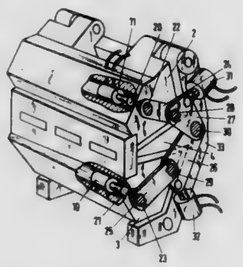
Klaus Bellmer, Rossenberg, and Gerd Capelle, Langenhagen, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 5, 1987, Ser. No. 116,885

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1986, 3638623

Int. Cl.[4] B29F *3/04*; B29C *47/12*

U.S. Cl. 425—131.1 **4 Claims**



1. An extrusion head suitable for producing tread strips for automotive vehicle tires from a plurality of rubber mixtures comprising a central head portion, upper and lower head portions disposed one on each side of said central head portion, said upper head portion and said central head portion and said lower head portion and said central head portion jointly defining at least two flow channels therebetween through which said rubber mixture is directed toward an extrusion nozzle, said flow channels being disposed above one another in a vertical plane, hydraulic means for pivoting each of said upper and lower head portions relative to said central head portion, said upper and lower head portions each including lateral portions extending substantially parallel to the direction of flow of said rubber mixtures through said extrusion head, hydraulically actuated locking means mounted on each said lateral portion and displaceable laterally outwardly in a direction substantially at right angles to said direction of flow, said locking means including locking members engageable with each said lateral portion and a locking arrangement for high-pressure locking of said upper and lower head portions, wherein said locking members are cylindrical and said locking arrangement includes tensioning link members, each said tensioning link member defining a recess for receiving one of said cylindrical locking members, common pivot means for pivotally mounting said locking arrangement for said upper head portion and said locking arrangement for said lower head portion disposed on the same lateral side of said head, and wherein each of said locking arrangements includes substantially triangular spacer members, and means for mounting said spacer members on each lateral portion of said upper and lower head portions about said common pivot point means, and further including separate hydraulically actuated piston and cylinder arrangements acting on each of said spacer members, each spacer member being pivotally connected to one of said tensioning link members.

4,799,875

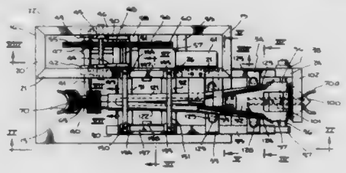
ARTICULATED BELT LIKE TOROID FORMING MACHINE

Daniel T. Thompson, 1141 Napoli Dr., Pacific Palisades, Calif. 92079

Filed Dec. 23, 1987, Ser. No. 138,836

Int. Cl.[4] A21C *9/08*

U.S. Cl. 425—329 **19 Claims**



1. An articulated, belt like toroid forming machine comprising:

a plurality of individual dough forming members;

conveyor means for mounting said members in a substantially continuous, belt like, array in a closed revolving loop with said members facing outwardly of said loop;

each of said members being uniformly flexible laterally across the width thereof in a direction which is generally perpendicular to the direction of revolution of the members on said conveyor means;

mandrel means positioned relative said conveyor means to allow passage of said members along a mandrel portion thereof with a dough strip positioned therebetween;

member shaping means positioned relative said mandrel portion and conveyor means for flexing said members into generally cylindrical configuration about said mandrel portion when conveyed thereby by said conveyor means whereby dough strips positioned therebetween are rollable into toroid form, and wherein:

each of said dough forming members comprises a body having outer ends which come into juxtaposition when said members are in said cylindrical configuration.

19. In a toroid forming machine having a plurality of individual forming members, conveyor means for mounting said members in a substantially continuous, belt like, array in a closed revolving loop, mandrel means positioned relative said conveyor means to allow passage of said members along a mandrel portion thereof with a dough strip positioned therebetween and member shaping means for flexing said members about said mandrel portion when conveyed thereby, the improvement comprising the provision of:

each of said members being sufficiently flexible laterally so as to be capable of assuming various configurations of their lateral extent in the range of substantially flat to substantially cylindrical;

an outwardly expanding tapered dough exit end on said mandrel portion; and

an outwardly expanding tapered dough exit shaping end on said member shaping means whereby dough toroids being formed between said mandrel and shaping means are expanded in size at the exit end of said mandrel means and shaping means relative an initial toroid size formed therebetween.

4,799,876

BLOW MOLDING APPARATUS

Donald L. Peters, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 22, 1988, Ser. No. 158,440

Int. Cl.[4] B29C *49/60*

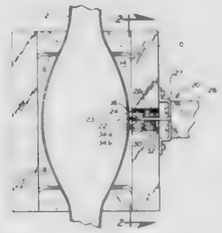
U.S. Cl. 425—536 **14 Claims**

1. A blow molding apparatus comprising:

mold means which includes a pair of movable mold halves which are adapted to receive a parison in a cavity defined therebetween;

blow means which includes a blow needle, having a longitudinal axis and a blow gas outlet end, which is adapted to puncture said parison with said gas outlet end and extend into the interior of said parison;

sealing means which includes a plurality of generally concentric projections, each said projection completely surrounding said needle and having a first end, with inner and



outer closed boundaries, and also a second end, wherein each said projection extends from said first end to said second end in a direction generally toward said cavity and generally parallel to said needle longitudinal axis, said sealing means being capable of assuming at least one position such that said projections extend into said cavity, whereby a parison can come into sealing contact with said projections at its exterior surface while said blow needle extends into the interior of said parison during blow molding thereof.

4,799,877

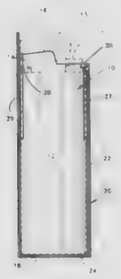
CHILD-PROOF ADAPTOR FOR DISPOSABLE BUTANE CIGARETTE LIGHTER

Jerry L. Bisbee, 38153 Erie Rd., #20B, Willoughby, Ohio 44094

Filed Jun. 13, 1988, Ser. No. 206,088

Int. Cl.[4] F23D *11/36*

U.S. Cl. 431—153 **4 Claims**



1. For a gas-fueled cigarette lighter, primarily of the disposable type comprising a fuel tank and a flame support with a fuel valve therebetween that is linked in operational relationship to a thumb lever, the depressing of which thumb lever allows the flow of fuel to the flame support where it may be ignited and burned, a safety device comprising a barrier adapted to engage the thumb lever to restrict the motion of the thumb lever relative to the body of the lighter, which barrier is carried and supported by a spring-loaded finger extending from a band that is adapted to at least partially surround and slidably engage the body of the lighter, wherein the sliding motion of the band on the lighter selectively causes engagement or disengagement of the barrier with the thumb lever, and wherein the sliding motion of the band on the lighter may be selectively prevented or allowed by the selective engaging or disengaging of a spring-loaded member having a laterally extending projection, as a pin or a tab for examples, adapted to fit into a pre-existing opening, a hole or a slot for examples, in the lighter's structure, wherein, to allow depressing of the thumb lever and thereby to permit gas flow to the flame support of the lighter, the projection on the spring-loaded member must first be held disengaged from its mating opening while the band is slid axially relative to the generally cylindrically-shaped lighter, thereby also moving the barrier from engagement with the thumb lever.

4,799,878

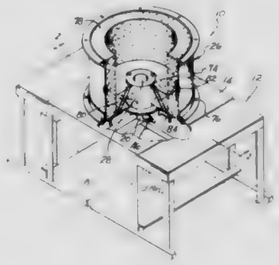
RICH FUME INCINERATOR

Thomas W. Schaeffer, 5431 Sylvania Petersburg Rd., Petersburg, Mich. 49270

Filed Nov. 16, 1987, Ser. No. 120,667

Int. Cl.[4] F23D *14/00*

U.S. Cl. 431—202 **13 Claims**



1. An incinerator for burning volatile organic gases, said incinerator comprising burner means including a combustion chamber for incinerating said volatile organic gases, said burner means in fluid flow communication with a fuel supply line and an organic gas material line, said volatile organic gases entering said burner means at an elevated temperature and constituting a mixture of volatile organic gases and ambient air wherein the heat of said volatile organic gases acts to heat said ambient air.

4,799,879

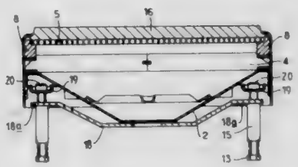
RADIANT BURNERS WITH A CERAMIC FRAME

Marc Laspeyres, Herlies, France, assignor to Solaronics Vaneecke, Armentieres, France

Continuation-in-part of Ser. No. 803,159, Dec. 2, 1985, abandoned. This application Feb. 29, 1988, Ser. No. 162,171

Int. Cl.[4] F23D *14/12*

U.S. Cl. 431—328 **10 Claims**

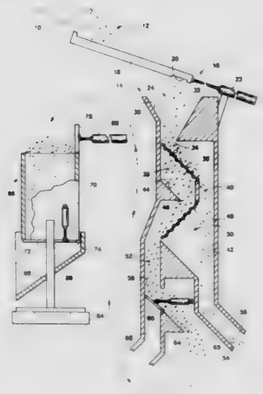


1. In a radiant burner of the type comprising a screen and at least one radiant plate enclosed by a peripheral band associated with a body defining a premixing chamber for the said burner, the improvement comprising:

an upper flange on the peripheral band,

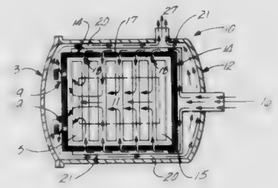
a ceramic frame underlying and extending downwardly from said upper flange on said peripheral band,
said ceramic frame having an internal peripheral structure which engages and support at least said screen and possibly said plate to be supported,
said internal peripheral structure permitting limited movement of said screen to minimize thermal and mechanical stresses thereon, and
a resilient means integrally affixing said peripheral band to said body.

4,799,880
METHOD AND APPARATUS FOR ANALYZING PRODUCT FLOW
Charles McCoy, P.O. Box 282, 560 E. Monroe, Huntington, Oreg. 97907
Filed Aug. 19, 1987, Ser. No. 87,024
Int. Cl.[4] F27B *14/00*
U.S. Cl. 432—13 6 Claims



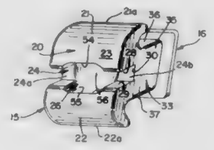
1. A method of controlling the sintering of a particulate product in a kiln, or the like, through monitoring the condition of the product comprising:
regularly and periodically diverting from a moving mass of the product leaving the kiln a flow of material and directing such flow of material into a flow system through which the material passes,
treating the flow of material by screening the flow of material in said flow system to produce a flow of sized material in the flow system having a particle size within a predetermined range,
collecting in said flow system from the flow of sized material a measured volume of material, weighing the measured volume to obtain a weight-related measurement,
electronically recording the weight-related measurement and time of measurement,
and controlling sintering conditions in response to the recorded time and weight-related measurements.

4,799,881
"TWIST-LOCK" GAS NOZZLE FOR A HEAT TREATING FURNACE
John K. Grier, Walnut, and Dane T. McGuire, San Dimas, both of Calif., assignors to Grier-McGuire Inc., Industry, Calif.
Continuation-in-part of Ser. No. 919,769, Oct. 16, 1986, abandoned. This application Aug. 5, 1987, Ser. No. 82,045
Int. Cl.[4] F27D *15/02*
U.S. Cl. 432—77 10 Claims



1. A heat treating furnace comprising:
a shell;
wall means disposed within said shell and defining a heating chamber inside of said shell;
means for heating workpieces in said chamber, there being a space between said shell and said wall means, holes extending through said wall means, nozzles disposed in said holes and establishing communication between said space and said chamber;
means for causing gas to flow from said space and said chamber through said nozzles; and
means allowing an internal end of said nozzles to be inserted and removed from inside the furnace and removed after initial heat up without damaging the end so that it can be re-used.

4,799,882
EDGEWISE BRACKET
Peter C. Kesling, LaPorte, Ind., assignor to TP Orthodontics, Inc., Westville, Ind.
Filed Nov. 17, 1987, Ser. No. 122,066
Int. Cl.[4] A61C *7/00*
U.S. Cl. 433—8 24 Claims



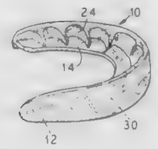
1. An orthodontic bracket of the edgewise type comprising, a body having a single tie wing, said tie wing having occlusal and gingival tie wing tips, a mesiodistally extending and labially opening archwire slot having occlusal and gingival walls, a scoopout opening to the labial and along said slot and intermediate the ends thereof, and said scoopout being sized to reduce the archwire contacting surfaces of the slot, whereby the sliding friction generated between the archwire and the bracket during movement of the bracket along the archwire is reduced thereby enhancing tooth movements and patient comfort.

4,799,883
ORTHODONTIC MIRROR IMAGE BRACKETS TO REMOVABLY RECEIVE THE END PORTIONS OF LINGUAL ARCH WIRES
Arnold E. Stoller, 2150 Shore Ave., Freeland, Wash. 09249, and John L. Stoller, 901 Sunset Dr., Blue Bell, Pa. 19422
Filed Mar. 25, 1987, Ser. No. 30,442
Int. Cl.[4] A61C *7/00*
U.S. Cl. 433—17 33 Claims



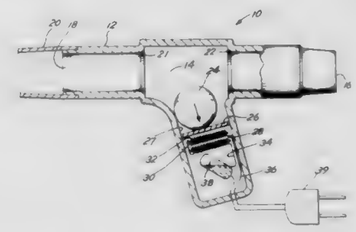
1. An orthodontic bracket for connection with an orthodontic wire, comprising:
a. a body including first and second spaced sidewall means, first and second spaced endwalls disposed therebetween and top and bottom surfaces;
b. a first slot disposed between said sidewall means and extending from said top surface and at least one of said endwalls of providing an entrance to said slot through said one endwall;
c. one of said sidewall means for attachment to a support;
d. means operably associated with the other of said sidewall means for permitting said other sidewall means to flex;
e. means extending from one of said sidewall means and into said first slot for overlying and thereby locking an orthodontic wire therein; and,
f. means operably associated with the other of said endwalls for engaging an orthodontic wire and preventing axial displacement thereof along said first slot.

4,799,884
EXPANSION/BUCCAL SHIELD APPLIANCE
Earl O. Bergersen, 950 Green Bay Rd., Winnetka, Ill. 60093
Filed Nov. 4, 1987, Ser. No. 116,672
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—6 14 Claims



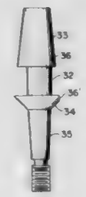
1. An orthodontic appliance for expansion of at least one of the upper or lower arches in a patient comprising generally U-shaped appliance comprising:
a buccal shield portion for overlying a labial-buccal surface of at least one of the upper or lower rows of the patient's teeth,
an interocclusal plate extending lingually of said shield,
a lingual flange to overlie a linual surface of the patient's incisors, and
a plurality of projections defining tooth receiving slots therebetween extending longitudinally from said buccal flange,
said projections being spaced to project between each of the posterior teeth of the patient.

4,799,885
AUTOMATIC HIGH VELOCITY EVACUATOR DENTAL SUCTION DEVICE
Dean R. Hussong, 10 Bradley Farm Rd., Tomahawk, Wis. 54487
Filed Jun. 1, 1987, Ser. No. 56,422
Int. Cl.[4] A61C *17/04*
U.S. Cl. 433—95 5 Claims



1. In a dental suction device of the type including a hand-held instrument with a throughbore having an inlet and an outlet, suction means connected to the outlet, and valve means for controlling fluid flow in the throughbore, the improvement comprising an orientation responsive switch means integral with the hand-held instrument for controlling the valve means and adapted to operate the valve means to permit suction of fluid and debris when aligned in a first operating position, and to prevent such suction and flow when said switch is aligned in a second standby position.

4,799,886
DENTAL SUBMERGED ENDOSSEOUS IMPLANT
Joachim Wimmer, Fort Lee, N.J., assignor to Park Dental Research Corp., New York, N.Y.
Filed Apr. 16, 1987, Ser. No. 39,537
Int. Cl.[4] A61C *8/00*
U.S. Cl. 433—176 4 Claims



1. A dental implant system comprising:
a one-piece integral submerged endosseous blade implant having as portions thereof, a thin substantially flat elongated blade portion having top and bottom edges; a cylindrical collar portion at least part of which extends above said top edge and having a smooth external wall, a screw-threaded bore and top and bottom ends; and a collar support portion extending from the bottom end of the collar portion to the blade portion;
a flat-headed screw healing plug which is screwed into said bore after the implant is positioned in a groove in the patient's bone;
and a metal abutment head assembly having a head portion and a screw-threaded shaft portion, the shaft portion being screwed into said bore after the patient's gum is opened and the healing plug removed;
wherein said head portion has a groove forming a top and a bottom head portion and the top head portion is bent at an angle to the bottom head portion at said groove, and wherein said groove is circumferential about the head and

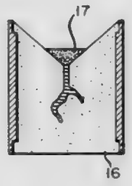
the top portion is bent at said groove in the range of 1 to 15 degrees.

4,799,887

GLASS CERAMIC DENTAL CROWN AND METHOD OF MANUFACTURING THE SAME

Yasuharu Hakamatsuka, and Kazuhiro Watanabe, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1986, Ser. No. 879,355
Claims priority, application Japan, Jul. 5, 1985, 60-147932
Int. Cl.⁴ A61C *13/08*; C03C *10/16*
U.S. Cl. 433—212.1 **7 Claims**



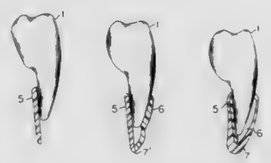
1. A glass ceramic dental crown prepared from a dental crown material comprising 7 to 11% by weight of Li_2CO_3, 18 to 28% by weight of SiO_2 and 10 to 15% by weight of Na_2SiF_6 and having 5–10% by weight of a spodumene crystal phase and 10–20% by weight of a mica crystal phase.

4,799,888

DENTAL PROCESS WITH TREATED FABRIC

Jeff E. Golub, 128 E. 71st St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 878,640, Jun. 26, 1986, Pat. No. 4,728,291. This application Nov. 6, 1986, Ser. No. 927,504
Int. Cl.⁴ A61C *5/00*
U.S. Cl. 433—215 **5 Claims**



3. The process for reshaping teeth as follows:
(a) apply soft orthodontic wax to approximate and mock-up the final restorations,
(b) pumice the teeth, etch them on all surfaces and then use standard lavage and drying techniques,
(c) cut cloth in ½ inch lengths measured as wide as the proximal incisal corners, less about ½ mm, from each edge, cut two for each tooth and hold aside,
(d) apply Silane-selected from the group consisting of vinyltriethoxy silane, vinyltrichloro silane, (gamma) g-amniopropyltriethoxy silane, (gamma) g-methacryloxy proplyn silane, to the cloth,
(e) affix the cloth about half way up the tooth even for a 1 or 2 mm. extension, for bruxers, even the tiniest requires a cloth wrap, so that the cloth will extend to within ½ mm. of the final bonded length,
(f) apply light-cured bonding liquid to the enamel surface and cure,
(g) apply a non-light cured luting agent,
(h) place a cellophane strip loosely adjacent to the lingual surface wrapping labially through the two interproximals, place autocured adhesive paste on the lingual surface of the enamel and onto the sides, wet the cloth thoroughly with the paste, compress the parts together with the cellophane strip insuring that the extended cloth is following the imaginary inclined plane of the lingual surface of the tooth, remove any paste adhesive which spills onto the labial surface,
(i) apply a new mix or adhesive paste on the labial surface of the enamel and on a second piece of cloth, compress again with a clear plastic strip,
(j) once set, reduce the cloth structure with a dry medium diamond stone to within ½ millimeter of the ultimate bonded length and width, check the occlusion,
(k) roughen any material which appears shiny and add light cured bonding adhesive to the cloth structure and to the remaining enamel surface and cure it,
(l) add composite resin, choosing a microfill for the lingual surface for strength and a microfill for the labial surface for polish and luster,
(m) sculpt and finish normally the outer bonding composite resin, should envelope the cloth entirely and should be firmly attached to the labial, lingual and proximal enamel surfaces, as well as to the cloth-resin complex,
(n) polish and finish.

4,799,889

STUFFED BEAR AS TEACHING AID

Patricia Yockey, 8514 Shadowood Dr., Everett, Wash. 98208

Continuation-in-part of Ser. No. 099,984, Sep. 23, 1987. This application Dec. 11, 1987, Ser. No. 131,507
Int. Cl.⁴ G09B *21/04*
U.S. Cl. 434—112 **7 Claims**



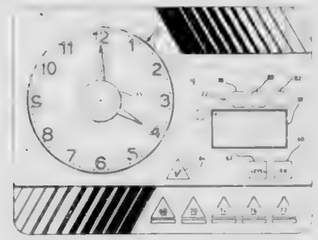
1. A stuffed animated object for use in teaching sign language, and communicating through signs and gestures, comprising:
a main body portion comprising a first side section and a second side section;
a pair of arms projecting from said main body portion, each of said pair of arms comprising a hollow, tubular arm member having a rearward circumferential edge surface and a forward circumferential edge surface, whereby an arm of a person may be passed through each of said pair of arms; each said forward circumferential edge surface being free from further connection, the interior volume of each said tubular arm communicating with the ambient air at both said forward and rearward circumferential edge surfaces;
each of said pair of arms having a length as taken between said rearward and forward circumferential edge surfaces less than the length of an arm of an average adult so that the hand of the arm may project beyond said forward circumferential edge surface to allow free movement to the hand for teaching sign language, or the like;
the circumference at each said edge surface being large enough to allow for the passage of an adult's hand and arm;
said rearward circumferential edge surface of each said pair of arms being secured to a respective side section of said main body portion along a fraction of the circumferential length thereof, said fraction of length comprising an upper peripheral section thereof, said fraction being between ¼ and ½ of the total length of said respective circumferential edge surface.

4,799,890

ELECTRONIC LEARNING DEVICE FOR TEACHING HOW TO TELL TIME

Barbara J. Thompson, 3032 Early Morning La., Knoxville, Tenn. 37922, and Ashok Dittakavi, Gwinnett County, Ga., assignors to Barbara J. Thompson, Knoxville, Tenn.

Filed Nov. 23, 1987, Ser. No. 123,729
Int. Cl.⁴ G09B *19/12*
U.S. Cl. 434—304 **12 Claims**



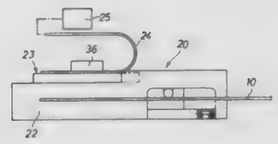
1. An electronic learning device comprising:
student input means for generating a code representative of time;
interrogation (visual and/or auditory) means responsive to said code generated by said student input means to request said student to engage in a selected time-identification problem;
comparison means responsive to reading a specific code generated by said input means in response to said request to determine if said specific code corresponds to a correct student response to said time-identification problem; and
a display means to effect said request and comment on the appropriateness of response by said student to time-identificatin problems.

4,799,891

DUAL-CONTACTING APPARATUS FOR CHIP-CARDS

Manfred Reichardt, Weinsberg, and Eberhard Raab, Untereisesheim, both of Fed. Rep. of Germany, assignors to Amphenol Corporation, Wallingford, Conn.

Filed May 11, 1987, Ser. No. 48,170
Claims priority, application Fed. Rep. of Germany, May 30, 1986, 3618091
Int. Cl.⁴ H01R *29/00*
U.S. Cl. 439—43 **21 Claims**



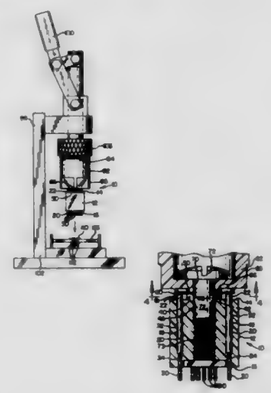
1. A dual-contacting apparatus for contacting selectively the card contacts of a chip-card of a first type or the card contacts of a chip-card of a second type, said apparatus having a set of contact elements which comprises:
insulating body means,
a plurality of contact elements supported by said insulating body means, wherein said contact elements form a first group of contact elements which are adapted for contacting the contacts of said chip-card of said first type, and wherein further said contact elements form a second group of contact elements which serve for contacting the card contacts of said chip-card of said second type.
means for connecting the contact elements with an electronic card processing means, wherein each contact element comprises a termination member adapted for connection with the card processing means and a contact member for contacting one of the card contacts, and
means for coupling corresponding ones of the contact elements of the first and second groups, such that the connecting means is either connected only to the termination members of the contact elements of said first group or only to the termination members of the contact elements of said second group.

4,799,892

METHOD AND APPARATUS FOR REMOVABLY ATTACHING SEMICONDUCTOR PACKAGES TO CIRCUIT BOARDS

William P. Hargreaves, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Oct. 13, 1987, Ser. No. 107,204
Int. Cl.⁴ H01R *23/72*
U.S. Cl. 439—72 **13 Claims**



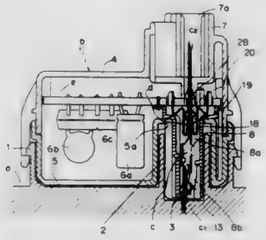
1. An apparatus for removably attaching the leads of a semiconductor package to the conductive pathways on a circuit board comprising:
a retaining member having a top, a bottom, and a plurality of bores extending therethrough from said top to said bottom;
a plurality of pressure pins each positioned within a different one of said bores, each pin comprising an upper section extending outwardly through the top of said retaining member, and a lower section extending outwardly through the bottom of said retaining member for engaging one of said leads of said semiconductor package; and
biasing means comprising a planar resilient member fixedly positioned adjacent said top of said retaining member and having a center portion, and a plurality of legs extending outward from said center portion, each leg being positioned adjacent and above said upper section of a corresponding one of said pins and communicating with said upper section of each pin for urging said pin in a downward direction independently of said other pins when said pin engages a lead of said semiconductor package.

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4,799,893
FUNCTION-PRESET WIRING DEVICE FOR AUTOMOBILES

Kikuo Ogawa, and Kikuo Kimura, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 28, 1987, Ser. No. 43,353
Claims priority, application Japan, May 2, 1986, 61-100900
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 439—76 **3 Claims**



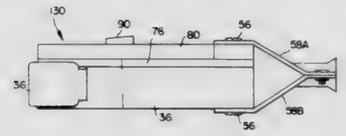
1. In a wiring device wherein a junction block, which is used for electric wiring of an automobile, and an electronic unit, which is provided with a case accommodating therein a printed circuit plate formed with a functional circuit for connecting signals between wire harnesses and which is also provided with a junction block coupling connector and an external coupling connector at an outer periphery of the case, said electronic unit and said junction block being removably connected by the junction block coupling connector, the improvement comprising:

a function-preset wiring device for an automobile comprising a through terminal which is formed with a junction block connecting portion at one end of a base plate and an external output terminal portion at the other end thereof, and a branch terminal having lead terminals associated with elastic sandwiching pieces for receiving said external output terminal portion of said through terminal, said external output terminal portion of said through terminal penetrating said printed circuit plate when said external output terminal portion is inserted between and held in contact with said elastic sandwiching pieces of said branch terminal fixed perpendicularly to said printed circuit plate by said lead terminals, thereby to protrude into said external coupling connector an end of said of external output terminal portion remote from said junction block connecting portion.

4,799,894
THREE WIRE GROUNDED, POLARIZED STAGE PLUG AND RECEPTACLE

Raymond M. Banigan, 13047 Garris Ave., Granada Hills, Calif. 91344

Filed Sep. 8, 1987, Ser. No. 93,990
Int. Cl.⁴ H01R *1/00*
U.S. Cl. 439—92 **18 Claims**



1. A polarized, grounded plug for use with AC, comprising:

a plug housing;

a first load carrying contact installed in said housing and exposed at one side of said housing at one end thereof;

a second load carrying contact installed in said housing and exposed at the other side of said housing at said one end thereof;

a thin insulating layer installed over the top of said housing, said thin insulating layer substantially covering the top of said housing;

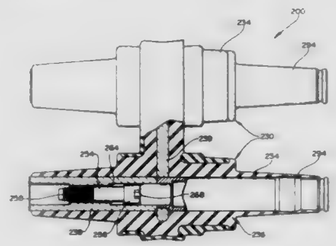
A T-shaped ground terminal retaining plate having a slot located on the bottom side thereof and an aperture extending therethrough in the central portion of the leg of the T, the leg of said T being narrower than the width of said housing; and

a ground terminal inserted into said slot on the bottom side of said ground terminal retaining plate, a portion of said ground terminal extending through said aperture in said ground terminal retaining plate to the top side thereof, said ground terminal retaining plate being secured over said thin insulating layer on the top side of said housing, thereby retaining said ground terminal between said ground terminal retaining plate and said thin insulating layer.

4,799,895
600-AMP HOT STICK OPERABLE SCREW-ASSEMBLED CONNECTOR SYSTEM

Alan D. Borgstrom, Hackettstown, N.J., assignor to Amerace Corporation, Parsippany, N.J.

Filed Jun. 22, 1987, Ser. No. 64,849
Int. Cl.⁴ H01R *13/53*
U.S. Cl. 439—183 **9 Claims**



1. A high voltage hot-stick operable screw-assembled connection system for selectively coupling together a source of high voltage and a high voltage cable comprising:

a support member;

an apparatus bushing mounted upon said support member and electrically coupled to a source of high voltage;

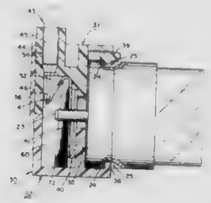
a high voltage cable mounted upon said support member and electrically insulated therefrom and a selectively applicable screw-operated link member when applied in a first arrangement joining said apparatus bushing to said cable to apply high voltage thereto or, when not applied between said apparatus bushing and said cable, providing a visible separation between said bushing and said cable;

said screw-operated link member comprising a first and a second housing assembly each containing a metallic insert, one of said first and said second housing assemblies screw coupled to said apparatus bushing and the other screw coupled to said high voltage cable and a conductive metal buss coupling said metallic inserts of said first and said second housing assemblies.

4,799,896
SOCKET FOR COMPACT FLUORESCENT LAMPS

Edwin Gaynor, Southport, and John C. Dinsdale, Stratford, both of Conn., assignors to Edwin Gaynor Co., Stratford, Conn.

Filed Oct. 26, 1987, Ser. No. 112,527
Int. Cl.⁴ H01R *33/02*
U.S. Cl. 439—232 **14 Claims**



1. A socket for a compact fluorescent lamp which includes two or more parallel tubes that share a common base, said base including at least two terminal pins and two retaining means for engagement with the socket, comprising:

a housing including a back wall, a front wall, with top and bottom walls and two side walls extending from said back wall and forward of said front wall each terminating in a forward edge, thereby defining a front opening for receiving said lamp base,

channel means formed in said housing enclosing conductive terminal means for receiving each of said terminal pins in electrically conductive engagement,

said front wall defining openings through which said terminal pins project for engagement with said conductive terminal means,

an inward facing rigid nonresilient latch fulcrum ledge formed on the forward edge of one of said top and bottom walls for engagement with a first one of said retaining means of said lamp base,

and an inward facing resilient latch formed on the forward edge of the other of said top and bottom walls

whereby engagement of said first one of said lamp base retaining means for pivoting movement about said rigid nonresilient latch fulcrum ledge, followed by angular pivoting movement of the lamp, advances the terminal pins angularly into the channel means until the second socket base retaining means latches with said resilient latch, thereby establishing reversible locking engagement of said socket with said retaining means of said lamp base.

4,799,897
IC TESTER SOCKET

Hiroyuki Mogi, and Kazuhisa Ozawa, both of Kawaguchi, Japan, assignors to Dai-ichi Seiko Kabushiki Kaisha, Kawaguchi, Japan

Filed Dec. 23, 1986, Ser. No. 946,584
Claims priority, application Japan, Dec. 30, 1985, 60-204384[U]; Sep. 1, 1986, 61-133941[U]
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 439—264 **10 Claims**

1. An IC tester socket, comprising:

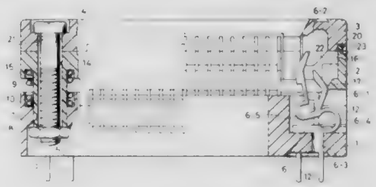
a socket body;

a number of contacting pins, each having a first spring portion of a predetermined resiliency and each extending from said socket body, the contacting pins being arranged to flex inwardly and outwardly relative to a central portion of the socket body and to mate respectively with a number of lead terminals of an IC package to be tested;

an urging member, mounted on said socket body for vertical movement above the socket body, the urging member having defined in its central portion, a cavity capable of accommodating said IC package and further having, along its peripheral portions, a number of jetties engaged respectively with said number of contacting pins in such a manner wherein the jetties can urge the contacting pins to flex inwardly while placing the first spring portion of each corresponding contacting pin in a strained state when the contacting pin is flexed inwardly; and

at least one spring, interposed between said socket body and said urging member, for elastically urging said socket body and said urging member to normally part away from each other with a predetermined interval therebetween,

wherein each of said contacting pins is provided with a leg portion fixedly inserted in said socket body, the first spring portion is formed above said leg portion in an arcuate shape and is contiguously joined to said leg portion, and wherein each of said contacting pins is further provided with: a second spring portion, joined contiguously to said first spring portion at a junction site and formed in an arcuate shape bulging in a direction opposite to the arcuate shape of said first spring portion; a first arm extending in a direction opposite to said leg portion from the junction site of said first spring portion and said second spring portion to engage its mating jetty so that the mating jetty can push inwardly aginst the first arm and thereby



urge the contacting pin to flex inwardly; and a second arm contiguously joined to said second spring portion and extending in a direction opposite to said leg portion for being brought into contact with its respective mating lead terminal of said IC package,

such that when said urging member is pushed downwardly against the force of said at least one spring, the first spring portion of each of said contacting pins is relieved at least partly from the strained state in which its corresponding first arm is pushed by a corresponding one of said jetties, to allow outward movement of each of said contacting pins by the resiliency of their corresponding first spring portions so that said IC package may be accommodated into said cavity, and

such that when the downward push on said urging member is relieved, said urging member is restored to its normally parted position relative to the socket body by said spring, said first arm is pushed inwardly by a corresponding one of said jetties, and said contacting pins are urged to flex inwardly against the resiliency of the first spring portion and to contact the lead terminals of said IC package which has been accommodated in said cavity.

4,799,898
FUSED PLUG

Henry Schick, Commack, N.Y., assignor to Gilbert Manufacturing Co., Long Island City, N.Y.

Filed Feb. 26, 1988, Ser. No. 160,660
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 439—418 **9 Claims**

1. A fused electrical plug for use with an insulated current carrying lead wire pair for connection to a power source outlet comprising:

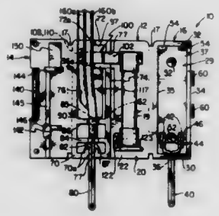
a first housing section of electrical insulating material having

(a) a first electrical terminal extending therefrom for insertion into said outlet and having a part within said housing section with a first barb thereon for piercing through the insluation of one of said lead wire pair to

make electrical connection with the current carrying wire therein,

(b) electrically conductive means for contacting one conductive part of an electrical fuse,

(c) terminal means electrically connected to said fuse contacting means and having a second barb thereon for piercing through the insulation of the other wire of said lead wire pair to make electrical connection with the current carrying wire therein,



a second housing section having:

(a) a second electrical terminal extensing therefrom for insertion into said outlet,

(b) electrically conductive means within said second housing section electrically connected to said second electrical terminal for contacting another conductive part of the electrical fuse when the second housing section is assembled to said first housing section.

4,799,899

CONNECTIVE STRUCTURE FOR CONDUCTIVE WIRES AND A METHOD OF MANUFACTURING THE SAME

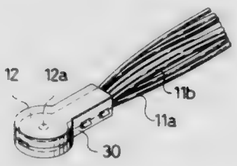
Takayoshi Endo, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Nov. 6, 1986, Ser. No. 927,514

Claims priority, application Japan, Nov. 6, 1985, 60-169800[U]

Int. Cl.⁴ H01R *5/04*

U.S. Cl. 439—502 8 Claims



1. A connective structure for wires, comprising:

a plurality of insulated conductive wires each having a stripped end, the stripped ends being bundled together;

a solid metallic compound applied to the bundle ends such that any empty spaces between the bundled ends are filled by the metallic compound, whereby oxidation and corrosion will be prevented and bonding strength improved therebetween; and

a single terminal integrally formed on the bundle ends by bonding.

4,799,900

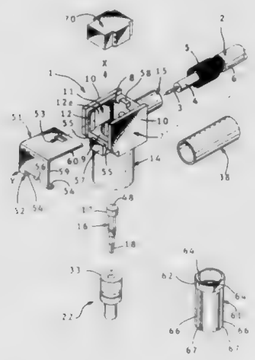
PUSH ON RIGHT ANGLE CONNECTOR

Randolph E. Capp, Mechanicsburg; Michael M. Johnescu, York; Ronald C. Laudig, Mechanicsburg; George W. Michael, Harrisburg, and Donald L. Smith, Middletown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 109,350, Oct. 15, 1987, Pat. No. 4,772,222. This application Apr. 4, 1988, Ser. No. 176,969

Int. Cl.⁴ H01R *17/18*

U.S. Cl. 439—585 4 Claims



1. In a connector comprising, a conductive shell having a tool receiving cavity, an electrical conductor within the shell, a cable holder extending from the cavity for receiving an electrical cable for connection to the shell and for connection within the interior of the shell to the electrical conductor and a cover for covering the cavity; the improvement comprising;

the conductive shell is constructed with opposite sides and additional converging sides that bridge between the opposite sides to define a tool receiving cavity open continuously toward two orthogonal directions, the cover has a length for covering the tool receiving cavity and extending along the two orthogonal directions, and a conductive auxiliary shell engages and is encircled by the first recited shell.

4,799,901

ADAPTER HAVING TRANSIENT SUPPRESSION PROTECTION

Douglas J. Pirc, 75 Black Walnut Dr., Etters, Pa. 17319

Filed Jun. 30, 1988, Ser. No. 213,643

Int. Cl.⁴ H01R *13/66*

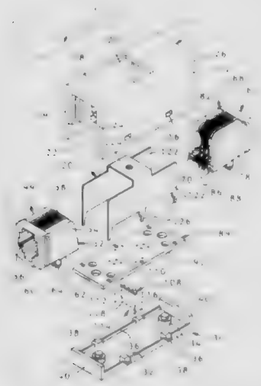
U.S. Cl. 439—620 20 Claims

1. An electrical adaptor providing transient suppression capabilities comprising:

a dielectric substrate member having a plurality of conductors thereon, said conductors having first, second and intermediate portions;

a first connector subassembly comprising a plurality of first terminal members having first and second connecting portions and a first dielectric support member, said first terminal members being disposed in said first support member, said first support member being configured to mate with a first complementary mating connector such that said first connecting portions of said plurality of first terminal members are electrically engaged with respective complementary terminal members, said first connector subassembly being mounted to said substrate member such that said second connecting portions of said first terminal members are electrically connected to respective first portions of said substrate conductors;

a second connector subassembly comprising a plurality of second terminal members having first and second connecting portions and a second dielectric second support member, said second terminal members being disposed in said second support member, said second support member being configured to mate with a second complementary mating connector such that said first connecting portions of said plurality of second terminal members are electrically engaged with respective complementary terminal members, said second connector subassembly being mounted to said substrate member such that said second connecting portions of said second terminal members are electrically connected to respective second portions of said substrate conductors, thus electrically interconnecting respective first and second terminal members of said first and second connector subassemblies;



electrical circuit component members which alter the voltage of an electrical signal going therethrough, said component members being mounted to said substrate member, each having first and second conductive portions with respective first conductive portions being in electrical engagement with said intermediate portion of a respective one of said substrate conductors;

means for grounding said component members, said grounding means being in electrical engagement with said second conductive portions of said component members; and

means for housing said substrate member, first and second connector subassemblies and said electrical circuit component members.

4,799,902

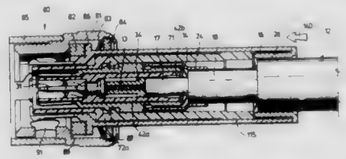
TRIAXIAL ELECTRICAL CABLE CONNECTOR

Ronald C. Laudig, Mechanicsburg, and Donald L. Smith, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 19, 1987, Ser. No. 87,134

Int. Cl.⁴ H01R *17/18*

U.S. Cl. 439—585 15 Claims



1. An electrical connector for terminating an electrical cable having a center conductor and a plurality of outer conductors comprising:

a center contact for electrical coupling to said center conductor of said cable;

an intermediate shell subassembly in the form of a first preassembled unit, said intermediate shell subassembly including an intermediate contact for electrical coupling to a first outer conductor of said cable, and an intermediate insulating member for electrically insulating said center contact from said intermediate contact, said intermediate insulating member being press-fitted within said intermediate contact so as to form said first preassembled unit;

an outer shell subassembly in the form of a second preassembled unit, said outer shell subassembly including an outer contact for electrical coupling to a second outer conductor of said cable, and an outer insulating member for electrically insulating said intermediate contact from said outer contact, said outer insulating member being press-fitted within said outer contact so as to form said second preassembled unit;

said intermediate contact and said intermediate insulating member comprising generally tubular-shaped members having axial passageways extending therethrough, said intermediate insulating member being positioned within said axial passageway of said intermediate contact, said intermediate insulating member having a first portion having an outside diameter which is less than the diameter of the axial passageway of said intermediate contact, and a second portion comprising an outwardly stepped portion having an inside diameter slightly greater than the inside diameter of said first portion, and having an outside diameter which is slightly greater than the diameter of said axial passageway in said intermediate contact, wherein only said second portion of said intermediate insulating member is press-fitted within said intermediate contact;

said outer contact and said outer insulating member also comprising generally tubular-shaped members having axial passageways extending therethrough;

said outer insulating member being positioned within said axial passageway of said outer contact;

said outer insulating member comprising a first front insulating section adapted to be easily received within said axial passageway o said outer contact, and a second rear insulating section adapted to be received within said axial passageway of said outer contact in press-fit relationship therewith;

first captivation means on said center contact and on said intermediate shell subassembly for securing said intermediate shell subassembly as a unit together with said center contact;

said first captivation means fixing the position of said center contact within said intermediate shell subassembly;

second captivation means on said intermediate shell subassembly and on said outer shell subassembly for securing said intermediate shell subassembly as a unit together with said outer shell subassembly as a unit;

said second captivation means fixing into position said intermediate shell subassembly within said outer shell subassembly;

an intermediate ferrule disposed between said first outer conductor and said outer shell subassembly for securing said first outer conductor to said intermediate shell subassembly;

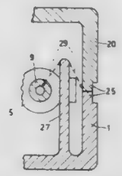
a bushing for securing said second outer conductor to said outer shell subassembly;

said second portion of said intermediate insulating member comprises a minor portion of said intermediate insulating member;

and said minor portion comprises an outwardly stepped portion also having an inside diameter which is slightly greater than the inside diameter of a major portion.

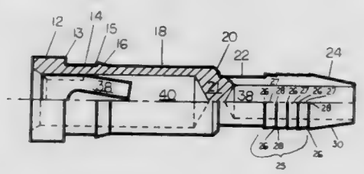
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4,799,903
ELECTRICAL CONNECTOR WITH SAFETY PARTITION
Johannis M. Deurloo, Enumen, Netherlands, assignor to N.K.F. Groep B.V., Rijswijk, Netherlands
Continuation of Ser. No. 321,846, Nov. 16, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 593,180
Int. Cl.[4] H01R *13/15*
U.S. Cl. 439—696 **2 Claims**



1. An electrical connector for making permanent electrical connection to one end of an insulated stranded conductor from which insulating material is removed to expose a predefined length of the conductor strands, said connector including:
(a) a housing for fully enclosing the exposed conductor strands, said housing comprising complementary insulating shells abutting each other at edges thereof;
(b) a contact member extending through an opening in a wall of the housing and having a connection portion, enclosed by the housing, including an open end for receiving the exposed conductor strands, said open end being disposed in proximity to the abutting edges of the insulating shells; and
(c) an insulating partition secured within the housing and establishing a barrier for preventing any exposed conductor strands not received within the contact member from extending between the abutting edges of the insulating shells, said insulating partition being disposed between the connection portion of the contact member and said abutting edges of the insulating shells, the insulating partition extending transversely of the abutting edges and being dimensioned such that the shortest distance from the open end of the connection portion around said partition to the abutting edges is longer than the predefined lengths of the exposed conductor strands.

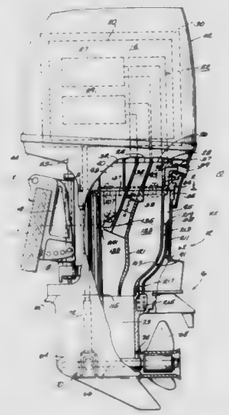
4,799,904
COMPLIANT TAIL CONNECTOR
Roger F. Sutcliffe, Northport, N.Y., assignor to Mill-Max MFg. Corp., Oyster Bay, N.Y.
Filed Jul. 29, 1987, Ser. No. 79,240
Int. Cl.[4] H01R *13/428*
U.S. Cl. 439—733 **20 Claims**



1. An electrical connector for insertion in a board mounting aperture having a coating, comprising;
an aperture engaging section having a plurality of barb like rings formed thereon;
the aperture engaging section having a cavity formed therein;
the aperture engaging section having an axially extending slot formed therein;
said aperture engaging section being forcibly and non-destructively engaged by the board mounting aperture coating such that a gas tight electrical connection is achieved without deforming the aperture coating.

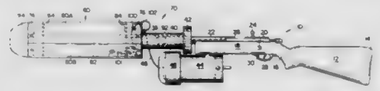
3. The connector claimed in claim 1 including further:
a cylindrical section formed axially above the barb like rings.

4,799,905
WATER JACKETED EXHAUST RELIEF SYSTEM FOR MARINE PROPULSION DEVICES
George L. Broughton, Waukegan, Ill.; Duane E. Rogers, Kenosha, Wis., and David W. Mate, McHenry, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Jun. 12, 1987, Ser. No. 62,435
Int. Cl.[4] B63H *21/26*
U.S. Cl. 440—89 **30 Claims**



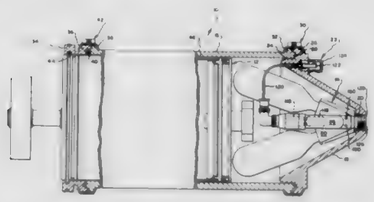
11. An inner exhaust gas housing adapted to be located within a drive shaft housing of a marine propulsion device, said inner exhaust gas housing including integral wall means defining an outer wall defining an open upper end, a first exhaust passage extending downwardly from said upper end and within said outer wall, a second exhaust passage extending downwardly from said upper end and within said outer wall, an expansion chamber adjacent said upper end and within said outer wall, first passage means communicating between said first and second exhaust passages and said expansion chamber, and second passage means communicating with said expansion chamber and with the atmosphere exterior to said inner exhaust gas housing.

4,799,906
RESCUE APPARATUS
Benjamin F. Perkins, Jr., Holyoke, Mass., assignor to Technical Equipment Associates of Florida, Inc., Palm Beach, Fla.
Filed Nov. 30, 1987, Ser. No. 126,401
Int. Cl.[4] B63C *9/26*
U.S. Cl. 441—85 **3 Claims**



1. Rescue apparatus comprising a launcher, a missile, a supply of line mounted on the launcher, the launcher being a non-lethal firearm adapted to fire a blank round and having a barrel with a bore closed at its muzzle end, the muzzle end having gas ports therein, the missile being sleevable on the barrel and having means for connecting the line thereto whereby when the firearm is discharged gas escapes from the bore through the gas ports to propel the missile into space carrying the line therewith, the missile being a launchable and hand-grippable and throwable article-carrier including a body for carrying rescue items and a tubular handle on the body and a rupturable transparent tubular sleeve for confining the rescue items, the handle being sleevable on the launcher barrel for launching or alternatively being grippable and throwable by hand.

4,799,907
SURVIVAL APPARATUS
Roman Jankowiak, Cheektowaga, N.Y., and John A. Latocka, Jr., Seminole, Fla., assignors to Conax Florida Corporation, St. Petersburg, Fla.
Filed Feb. 3, 1987, Ser. No. 10,455
Int. Cl.[4] B63B *21/52*
U.S. Cl. 441—42 **15 Claims**



2. Survival apparatus (10) comprising:
a cylindrical member (16) open at one end and closed at the other end;
a survival canister assembly (12) disposed within said cylindrical member;
maintaining means (74) engaging said cylindrical member and said survival canister assembly and capable of normally maintaining said canister assembly within said cylindrical member;
piston means (55) disposed within said cylindrical member between the canister assembly and the closed end of said cylindrical member; and
gas discharge means (14) including water activated condition responsive means (22, 16), said gas discharge means being capable in response to an accident which places the apparatus in water of driving said piston means away from the closed end of said cylindrical member to cause the canister assembly to be rapidly ejected from the cylindrical member, said water activated condition responsive means including a sensor (22), said sensor projecting outwardly of said cylindrical member.

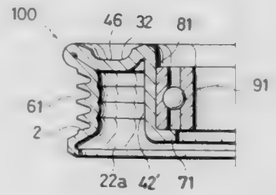
4,799,908
PERSONAL FLOTATION DEVICE WITH INNER MESH LAYER
John H. Lucius, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Feb. 26, 1987, Ser. No. 19,509
Int. Cl.[4] B63C *9/10*
U.S. Cl. 441—115 **7 Claims**

1. A personal flotation device comprising a back portion, right and left front portions, right and left shoulder portions connecting the back portion and the right and left front portions, and right and left side portions connecting the back portion and the right and left front portions, the back portion having an inner mesh layer adapted to lie against the back of the wearer of the personal flotation device and an outer layer of buoyant material, the inner mesh layer and the outer buoyant layer being connected together at the top and bottom thereof and being unconnected along at least a portion of the sides thereof, the length of the inner mesh layer between the top and bottom connections between the inner mesh layer and the outer buoyant layer being less than the length of the outer buoyant layer for spacing the outer buoyant layer away from



the inner mesh layer when the personal flotation device is worn whereby air can pass between the outer and inner layers.

4,799,909
SHEET METAL POLY-V PULLEY AND MANUFACTURING METHOD THEREOF
Masahiro Kanemitsu, Kobe, Japan, assignor to Kabushiki Kaisha Kanemitsu, Japan
Filed Jun. 17, 1987, Ser. No. 63,236
Int. Cl.[4] F16H *55/49*
U.S. Cl. 474—168 **3 Claims**



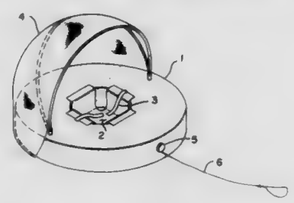
1. A sheet metal poly-V pulley adapted for rotation about an axis and having an annular bottom wall with a peripheral edge, a tubular peripheral wall integrally formed from the peripheral edge of the bottom wall and defining and open side of the peripheral wall opposite the bottom wall, and poly-V grooves formed in the peripheral wall, the poly-V pulley comprising:
a bearing fitting part having: a cylindrical portion projecting concentrically with the axis from the base wall toward the opening and terminating in an edge portion; and, an annular flange formed integrally with the cylindrical portion and projecting inwardly from the edge portion; and,
an annular bent part of the bottom wall, between the peripheral edge and the cylindrical portion, having a cross-section substantially throughout defining a convex surface facing the opening.

4,799,910
BABY RECREATIONAL FLOATING DEVICE
Dorothy Kellough, 36 Russell Ave., Beacon, N.Y. 12508
Filed Jun. 5, 1987, Ser. No. 58,409
Int. Cl.[4] B63C *9/00*
U.S. Cl. 441—131 **1 Claim**

1. A structure for floatation, supporting an infant in water, comprising a float circular foamed plastic float with symmetrical opening in the middle for child access; with supporting seat projecting downward a distance beneath said float;

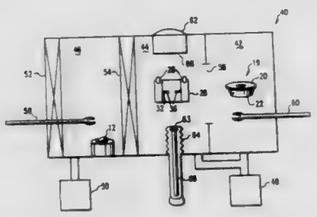
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said supporting seat means including a forward, side and rear upper portion connecting to said float;
said supporting seat means further including a pair of spaced leg openings through which an infant's leg may extend when the infant is seated in the structure;
said seat having a seat belt attached to prevent excessive forward movement and upward climbing of the infant;



wherein a collapsible hood canopy consisting of semi-circular lightweight hollow tubing is attached to frame anchors that are fixed embodiments of said floatation structure;
said hood canopy is encompassed with fabric and said fabric is stitched to the hood frame;
said fabric has an elastic hem provided, over which said canopy in an open position can be draped to enclose the lower portion of said floatation structure to provide shielding protection for an infant from the sun's rays.

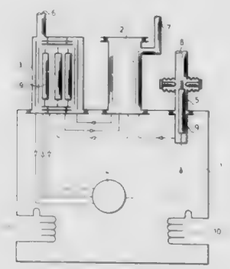
4,799,911
IMAGE INTENSIFIER TUBE WITH INTEGRAL CCD DIGITAL READOUT
Edward J. Relder, Garland, Tex., assignor to Varo, Inc., Garland, Tex.
Filed Jul. 13, 1987, Ser. No. 72,684
Int. Cl.[4] H01J *9/12, 9/26*
U.S. Cl. 445—14 **24 Claims**



1. An apparatus for bonding a photoelectronic device to an image tube housing comprising:
a first chamber for processing the image tube housing;
a second chamber connected to said first chamber such that each chamber can be evacuated independently of the other;
means for heating said first and second chambers;
means for evacuating said first and second chambers; and
means for placing the photoelectronic device in contact with the image tube housing to create a seal therebetween at temperatures which will not degrade the photoelectric device.

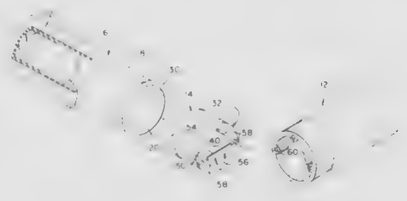
13. A method of bonding a photoelectronic device to an image tube, comprising the steps of:
processing the housing of the image tube in a first chamber at a high temperature;
heating and evacuating a second chamber operably connectable to said first chamber;
cooling said second chamber to a temperature at which the photoelectronic device will not be damaged;
placing the photoelectronic device in said second chamber after said cooling step;
evacuating said second chamber to a pressure substantially equal to the pressure in said first chamber;
placing the photoelectric device in contact with the image tube housing to create a seal between the image tube housing and the photoelectronic device.

4,799,912
METHOD AND APPARATUS FOR PRODUCING DISCHARGE TUBES FOR SODIUM VAPOR LAMPS
Tamás Saigó , Budapest, Hungary, assignor to Tungsram Részvénytársaság, Budapest, Hungary
Filed Jan. 23, 1987, Ser. No. 6,210
Claims priority, application Hungary, Feb. 12, 1986, 596/86
Int. Cl.[4] H01J *9/395, 9/40*
U.S. Cl. 445—26 **7 Claims**



1. In a process for the manufacture of an alumina discharge tube for sodium vapor lamps, wherein an end plug electrode and a current lead in conductor are first sealed into the discharge tube, dopant additive is introduced into the discharge tube, then the discharge tube is evacuated, then is filled with a gas, and is then second sealed, wherein the improvement comprises conveying said discharge tube between separate areas within an enclosable space for carrying out each of said steps of first sealing, introducing, evacuating, filling, and second sealing, said conveying being all carried out in an atmosphere of pure inert gas which is in common connection with each of said areas.

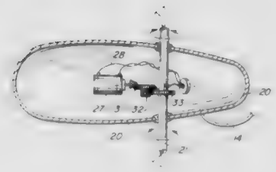
4,799,913
GAME CALL HAVING A TWO-DIAPHRAGM SOUNDER AND LIP STRUCTURE
Gilbert H. Wolfe, 412 W. 15th St., New Cumberland, Pa. 17070
Filed May 29, 1987, Ser. No. 55,460
Int. Cl.[4] A63H *5/00*
U.S. Cl. 446—193 **12 Claims**



10. A two diaphragm sound chamber for use in a game call including a hollow cylindrical body having opposed end walls, a diaphragm opening in each end wall, a diaphragm normally closing each opening, means for holding the diaphragms in place across the openings, each opening including a straight edge, said edges paralleling each other and said openings being located on opposite sides of the body, and a lip extending along one straight edge on the outside of the end wall and outwardly of the end wall for preventing the diaphragm from overlapping such end wall during vibration.

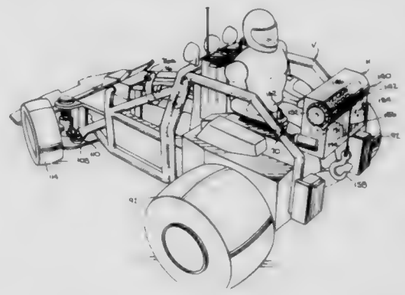
4,799,914
REMOTE CONTROL LIGHTER-THAN-AIR TOY WITH TETHER
Jack M. Hutchinson, 504 Corinth, Bay, St. Louis, Miss. 39520
Filed Feb. 9, 1987, Ser. No. 12,314
Int. Cl.[4] A63H *3/06;* **B64B** *1/02*
U.S. Cl. 446—225 **4 Claims**





1. A remote control lighter-than-air toy comprising:
an inflatable container having a predetermined shape for holding a lighter-than-air gas;
a gondola removably attached to said inflatable container, said gondola having a strip of hook and loop material attached thereto and said inflatable container having a strip of hook and loop material attached thereto for removably attaching said gondola to said inflatable container;
a shaft extending through said gondola and rotatably supported thereto;
a reversible electric motor attached to each end portion of said shaft, each electric motor having a propeller attached thereto for rotation upon actuation of the electric motor, each said electric motor and propeller being attached to said shaft;
a tether line formed of a plurality of flexible conductor wires, each wire connected at the distal end to one of said electric motors;
a control box having a plurality of controls thereon connected to the other end of each of said tether line electric wires for remotely controlling each said electric motor separately; whereby said lighter-than-air toy can be remotely controlled with two propellers; and
a third electric motor mounted in said gondola and coupled to said shaft and connected through said tether line to said control box for rotating said shaft responsive to the application of power thereto.

4,799,915
RADIO-CONTROLLED ROBOT OPERATOR FOR BATTERY-POWERED TOYS
Roger W. Lehmann, 18 Flintlock Ct., Bernardsville, N.J. 07924, and Michael I. Sattes, 4 Farmers Rd., Kings Port, N.Y. 11024
Filed Dec. 4, 1987, Ser. No. 128,628
Int. Cl.[4] A63H *13/00, 17/12, 17/25, 17/39*
U.S. Cl. 446—279 **6 Claims**



1. In combination, a battery-powered, radio-controlled robot and a battery-powered action toy having multiple action control means controlled by said robot, comprising:
a. a robot having movable arms, including hands, and battery-powered motor drive means for individually actuating said arms,
b. a power and control pack electrically connected to said motor drive means, and having means for removably attaching said power and control pack on said robot,
c. said power and control rack comprising battery-powered, radio-controlled control means for controlling said motor drive means of the robot and thereby individually actuating said arms,
d. said hands having engaging means for individually engaging the multiple action control means of said action toy,
e. whereby said radio-controlled control means is adapted to control the multiple action control means of the action toy by individually actuating the arms of the robot.

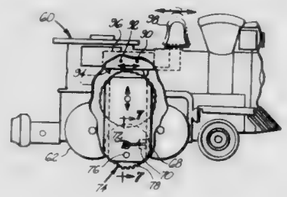
4,799,916
MOTORLESS TOY VEHICLE AND PROPELLING TRACK
Robert S. McKay, 7420 Beckwith Rd., Morton Grove, Ill. 60053, and Dennis R. Dahm, 632 Oriole Dr., Streamwood, Ill. 60107
Filed Jun. 13, 1988, Ser. No. 205,740
Int. Cl.[4] A63H *18/00, 19/28;* **B61B** *13/00;* **B61C** *11/00*
U.S. Cl. 446—444 **12 Claims**

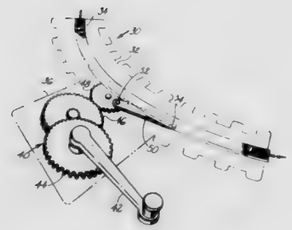
1. A toy vehicle and propelling track comprising:
a motorless toy vehicle including a gear housing having a drive system mounted therein:
said drive system including a drive gear mounted for rotation in said gear housing and a two way ratchet means for allowing said gear drive to rotate only in a first direction, only in a second direction opposite to said first direction, or to freely rotate in either direction;
a track adapted to support and to laterally direct said toy vehicle as it passes therealong;
said track having a coextensive rack slidably mounted therein, said rack adapted to freely move in at least a limited reciprocating back and forth motion within said track and having spaced apart upwardly disposed teeth;
said drive system adapted, within said toy vehicle, to engage said drive gear and said rack teeth when said toy vehicle is placed atop said track;
a rack drive operably connected to said rack and adapted to

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controllably reciprocate said rack back and forth within said track;

said toy vehicle propelled by said reciprocating rack in a first direction along said track when said ratchet means is positioned to allow said drive gear to rotate only in said first direction;





said toy vehicle propelled by said reciprocating rack in a second direction opposite to said first direction along said track when said ratchet means is positioned to allow said gear drive to rotate only in said second direction;

said toy vehicle moveable freely in either direction along said track when said ratchet means is positioned to allow said gear drive to freely rotate.

4,799,917

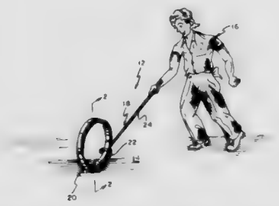
OSCILLATING HOOP AND STICK ASSEMBLY

Andrew O. Lentz, 1715 N. Bluff, Wichita, Kans. 67208

Filed Dec. 21, 1987, Ser. No. 135,671

Int. Cl.⁴ A63H *33/02*

U.S. Cl. 446—450 **8 Claims**



1. An oscillating hoop and stick assembly, comprising:

(a) an actuator stick assembly having a hoop actuator member and a dual hoop assembly to be rolled along a support surface by said hoop actuator member;

(b) said dual hoop assembly having interconnected first and second hoop members secured to each other against relative movement having a single common diameter and all other diameters in said first hoop member offset in varying angular degrees from all other diameters in said second hoop member; and

(c) said first and second hoop members each having outer contact surfaces, said second hoop member spaced a thickness of said first hoop member with respect to the support surface at the locations intersected by said common diameter to alternately engage the support surface to achieve a wobbling movement when rolling therealong.

4,799,918

GEAR WHEEL

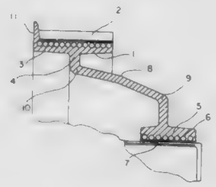
Stig Hallerbäck, Vastra Frolunda, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Oct. 27, 1987, Ser. No. 113,559

Claims priority, application Sweden, Oct. 27, 1986, 8604569

Int. Cl.⁴ F16H *55/00*

U.S. Cl. 474—161 **5 Claims**



4. A method for producing a gear wheel made of plastic having an annular rim and a helix of a material having a coefficient of thermal expansion similar to or identical to steel in the gear rim adjacent its peripheral surface consisting of the steps of inserting the helix into a mold having a somewhat smaller circumferential diameter than the helix and filling the mold with the plastic material until cured.

4,799,919

COGGED BELT WITH REINFORCING MEMBERS

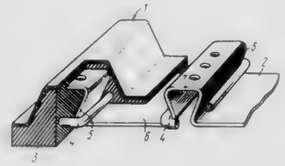
Gennady G. Kozachevsky, ulitsa Yakubovskogo, 18, korpus 2, kv. 271; Valery V. Guskov, ulitsa Kulman, 13, kv. 19; Vladimir P. Bofkov, ulitsa Ya.Kolasa, 139, kv. 172; Oleg I. Molodan, ulitsa Slavinskogo, 15, kv. 63, and Svetlana I. Sizova, ulitsa Ya.Kolasa, 139, kv. 172, all of Minsk, U.S.S.R.

PCT No. PCT/SU85/00078, § 371 Date May 4, 1987, § 102(e) Date May 4, 1987, PCT Pub. No. WO87/01779, PCT Pub. Date Mar. 26, 1987

PCT Filed Sep. 19, 1985, Ser. No. 82,863

Int. Cl.⁴ F16G *1/12*

U.S. Cl. 474—205 **4 Claims**



1. A cogged belt comprising an elastic base (3) which incorporates a carrying element and a reinforcing element (2, 10, 15) which reinforces cogs (1, 11, 16, 17) of the belt and is in the form of a corrugated strip corrugations of which are embedded in the cogs (1, 11, 16, 17) of the belt, wherein said reinforcing element (2, 10, 15) has a width substantially equal to the width of the cog (1, 11, 16, 17), the carrying element being formed by locks (4, 12, 20) disposed in the zone of the corrugations (5, 9, 18, 19) for power-locking said reinforcing element (2, 10, 15) interposed between said corrugations (5, 9, 18, 19).

4,799,920

MINERALS SEPARATOR

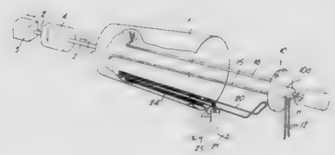
Richard H. Mozley, Falmouth, England, assignor to National Research Development Corporation, London, England

Filed May 20, 1987, Ser. No. 51,648

Claims priority, application United Kingdom, May 22, 1986, 8612498

Int. Cl.⁴ B04B *11/00*; B03B *5/32*

U.S. Cl. 494—23 **23 Claims**



1. A minerals separator comprising:

a body having a surface having the form of the inside of a cylinder arranged when rotating about its axis to have a force acting axially along it;

means for rotating the body about the axis of the cylinder to apply a centrifugal force exceeding g to said surface;

means for applying perturbations to the body;

means for applying a slurry of minerals-to-be-separated to the inside of the cylinder;

means for applying washing liquid to the inside of the cylinder; and

means for collecting separately fractions from different locations spaced axially along the cylinder comprising an assembly arranged to rotate within the cylinder at a relative speed therein which is small compared with the rotation speed of the body, the assembly and the body being equally subject to the perturbations and the assembly comprising a plurality of blade means each extending axially from an end of the cylinder to a respective desired location,

at least some of the means for applying the slurry and the washing liquid being mounted on the assembly.

4,799,921

METHOD FOR IMPLANTING RETAINERS AND IMPLANTS IN CATTLE

Ronald F. Johnson, 3652 Brocker, and Norman E. Nicklas, 5120 Hurd, both of Metamora, Mich. 48455

Continuation of Ser. No. 898,583, Aug. 21, 1986, abandoned, which is a continuation of Ser. No. 642,525, Aug. 20, 1984, Pat. No. 4,659,326. This application Nov. 24, 1987, Ser. No. 125,811

Int. Cl.⁴ A61M *5/18*

U.S. Cl. 604—51 **12 Claims**



9. A process for implantation of an implant in an animal comprising the steps of:

positioning a dissolvable implant and a retainer in a substantially abutting relationship;

injecting said dissolvable implant and said retainer into the animal such that said implant and retainer are disjoined from one another; and

enabling said implant to dissolve in said animal after a period of time.

4,799,922

BREAST PUMP INSERT

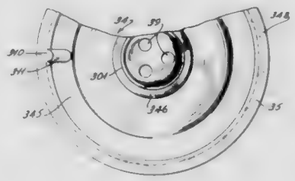
Christian Beer, Boniswil; Robert Riedweg, Lucerne, and Klaus Schlensog, Hünenberg, all of Switzerland, assignors to Ameda AG, Zug, Switzerland

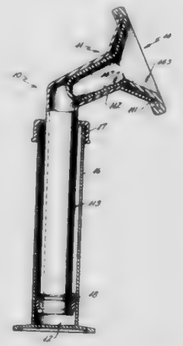
Filed Feb. 24, 1987, Ser. No. 17,864

Claims priority, application Switzerland, Feb. 28, 1986, 00825/86

Int. Cl.⁴ A61M *1/06*

U.S. Cl. 604—74 **6 Claims**





1. In a breast pump of the type comprising a milk reservoir, an essentially rigid suction bell having a flared open end, and a suction means for temporarily reducing an ambient pressure within said pump, the improvement consisting essentially of an insert:

having a funnel shape with a conical mouth portion for sealing contact with a nipple encompassing area of a mother's breast when ambient pressure is reduced within said pump and an apex section for directing milk into the milk reservoir;

said conical mouth portion comprising a deformable conical wall portion capable of deflecting for pressing against the mother's breast in the encompassed area around the encompassed nipple when ambient pressure is reduced within said pump;

said apex section being thimble shaped with an essentially tubular side wall and an apertured end face wall, both of which are non-deformable when ambient pressure is reduced within said pump;

said funnel shape insert thereby defining an enclosure around said nipple-encompassing areas when ambient pressure is reduced within said pump, said enclosure being subjected to the pressure changes whereby mother's milk becomes drawn from the nipple into said insert and flows out therefrom through said apertured end face wall; and

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means on said funnel shape insert for positioning said insert sealed and secured in said suction bell such that the outside surface of said conical wall portion thereof but not of said thimble portion thereof faces the non-varying ambient pressure outside of said suction bell, whereby operation of said suction means reduces ambient pressure inside said insert causing only said deformable conical wall portion thereof to deflect as aforesaid.

4,799,923

MEDICAL TUBE SECURING DEVICE

Myrna Campbell, 304 Acora Dr., Lafayette, La. 70507

Filed Sep. 15, 1986, Ser. No. 906,889
Int. Cl.[4] A61M *25/02*
U.S. Cl. 604—179 **4 Claims**



1. A securing device for a medical tube, a portion of which extends outwardly from a person's body, the device comprising:

a pouch means for receiving the upwardly extending portion of the tube and retaining it in a substantially stable position in relation to the person's body;

means for securing the pouch means in a substantially fixed relationship to the person's body, said means comprising an elongate flexible band having a front side, a back side, a first end and a second end, the ends being provided with mating fasteners adapted for securing the ends together in juxtaposed relationship and wherein the pouch means comprises a front portion and a back portion, the back portion being formed on the front side of the flexible band and the front portion being adapted for releasable fastening, in covering relationship, to the back portion, the back portion being provided with at least one opening for receiving the outwardly extending portion of the medical tube projecting therethrough; and

wherein the pouch means is securedly attached to the front side of the flexible band.

4,799,924

ASPIRATOR FOR COLLECTION OF BODILY FLUIDS

Richard Rosenblatt, 304 S. Oakhurst Dr., Beverly Hills, Calif. 90212

Division of Ser. No. 903,017, Sep. 2, 1986. This application Jun. 22, 1988, Ser. No. 209,836
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—181 **30 Claims**

1. An aspirator for removing bodily fluids through human suction and subsequent collection of the removed bodily fluids, comprising:

a. a container having a first separate chamber and a second separate chamber;

b. said first separate chamber being a vacuum creating chamber having a bottom wall, a generally circular side wall, and a top having an aperture therein;

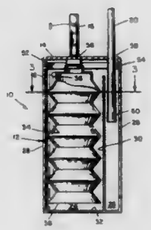
c. said second separate chamber being a mucus trap having a bottom wall, a generally circular side wall, and a top having an aperture therein;

d. the circular side wall of said vacuum creating chamber and the circular side wall of said mucus trap being tangent to each other along the location of an internal upstanding partition which extends from the bottom of the container to a distance between the bottom of the container and the two tops to a create a division opening between the vacuum creating chamber and the mucus trap to thereby permit gaseous communication but not liquid communication between the vacuum creating chamber and the mucus trap;

e. a first sidewall which is tangent to the cross sectional sidewall circles of said vacuum creating chamber and said mucus trap and serves to join the vacuum creating chamber and the mucus trap together along one side, the first sidewall further having a frangible score line along its length which may be broken to separate the vacuum creating chamber from the mucus trap;

f. a second sidewall which is tangent to the cross sectional sidewall circles of said vacuum creating chamber and said mucus trap and serves to join the vacuum creating chamber and the mucus trap together along the side opposite to the side joined by the first sidewall, the second sidewall further having a frangible score line along its length which may be broken to separate the vacuum creating chamber from the mucus trap;

g. a mating member comprising a housing having a central longitudinal passage extending through its length so as to provide two open ends in fluid communication with each other through said longitudinal passage, said mating member extending through said aperture in the top of said vacuum creating chamber such that a first open end of the mating member protrudes through and above said top of said vacuum creating chamber and the second open end of the mating member extends into the vacuum creating chamber;



h. a first hollow tube having two ends, with the first end attached to said first end of the mating member and the second end attached to a mouthpiece;

i. a flexible bellows member comprising an integrally formed flexible bellows and terminating in a sealed bottom at one end and affixed to a bellows cap at its other end;

j. said bellows cap further comprising an opening through which it is attached to the second end of said mating member to thereby provide a closed system permitting gaseous communication therethrough between the mouthpiece, the second hollow tube, the mating member and the bellows, and to further permit the flexible bellows to extend into said vacuum creating chamber such that the flexible bellows is in its fully expanded position when in its equilibrium state; and

k. a second hollow tube having two ends, with the first end inserted through said aperture in the top of said mucus trap such that said second hollow tube extends for a distance inside the mucus trap and the second end extends for a distance beyond said top of said mucus trap and further compriaes at least one opening adjacent its tip;

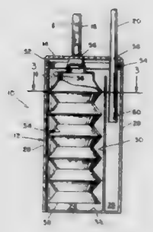
l. whereby in use, the second end of said second hollow tube is inserted into the patient from which bodily fluid is to be removed and the mouthpiece of the first hollow tube is sucked on by the person treating the patient, and suction through the mouthpiece will cause said flexible bellows to contract to thereby create a vacuum in the vacuum creating chamber which through gaseous communication with the mucus trap causes air and bodily fluids from the patient to be sucked into and remain in the mucus trap while the airtight system from the mouthpiece through the flexible bellows prevents any direct communication of air or bodily fluids between the patient and the person treating the patient.

4,799,925

ASPIRATOR FOR COLLECTION OF BODILY FLUIDS

Richard Rosenblatt, 304 S. Oakhurst Dr., Beverly Hills, Calif. 90212

Division of Ser. No. 903,017, Sep. 2, 1986. This application Jun. 22, 1988, Ser. No. 209,851
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—181 **30 Claims**



1. An aspirator for removing bodily fluids through human suction and subsequent collection of the removed bodily fluids, comprising:

a. a vacuum creating container having a bottom wall, a side wall, and a top having a first aperture and a second aperture spaced apart from the first aperture therein;

b. a mucus trap container having a bottom wall, a side wall and a top having a first aperture and a second aperture spaced apart from the first aperture therein;

c. means for removably fastening said vacuum creating container and said mucus trap container together;

d. a mating member comprising a housing having a central longitudinal passage extending through its length so as to provide two open ends in fluid communication with each other through said longitudinal passage, said mating member extending through said first aperture in the top of said vacuum creating container such that a first open end of the mating member protrudes through and above said top of said vacuum creating container and the second open end of the mating member extends into the vacuum creating container;

e. a first hollow tube having two ends, with the first end attached to said first end of the mating member and the second end attached to a mouthpiece;

f. a flexible bellows member comprising an integrally formed flexible bellows and terminating in a sealed bottom at one end and affixed to a bellows cap at its other end;

g. said bellows cap further comprising an opening through which it is attached to the second end of said mating member to thereby provide a closed system permitting gaseous communication therethrough between the mouthpiece, the second hollow tube, the mating member and the bellows, and to further permit the flexible bellows to extend into said vacuum creating container such that the flexible bellows is in its fully expanded position when in its equilibrium state;

h. a second hollow tube having two ends, with the first end inserted through said second aperture of said mucus trap container such that said second hollow tube extends for a distance inside the container and the second end extends for a distance beyond said top of said mucus trap container and further comprises at least one opening adjacent its tip; and

i. a tube having two ends, with one end inserted into said second aperture in the top of said vacuum creating container and the other end inserted into said first aperture in the top of said mucus trap container, to thereby permit gaseous communication between the two containers;

j. whereby in use, the second end of said second hollow tube is inserted into the patient from which bodily fluid is to be removed and the mouthpiece of the first hollow tube is sucked on by the person treating the patient, and suction through the mouthpiece will cause said flexible bellows to contract to thereby create a vacuum in the vacuum creating container which through gaseous communication with the mucus trap container causes air and bodily fluids from the patient to be sucked into and remain in the mucus trap container while the airtight system from the mouthpiece through the flexible bellows prevents any direct communication of air or bodily fluids between the patient and the person treating the patient.

4,799,926

SYRINGE, HAVING SELF-CONTAINED, STERILE, MEDICATION APPLYING SWAB

Terry M. Haber, Lake Forest, Calif., assignor to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Oct. 13, 1987, Ser. No. 107,676
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—187 **11 Claims**



1. A syringe comprising a hollow cylinder having distal and proximal ends, a hypodermic needle projecting outwardly from the distal cylinder end by which to administer an injection, a piston stem having a hollow, elongated body extending outwardly from the proximal cylinder and to be movable axially through said cylinder for expulsing the contents thereof and a flange interconnected with said body to control the movement of said stem through said cylinder, and means containing a supply of medication to be applied to a targeted tissue area of a patient prior to the administration of an injection at

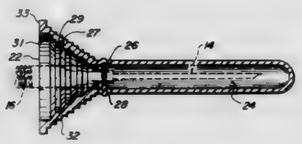
the target area, said medication containing means carried on the flange of said piston stem and movable into the hollow body of said stem through an opening located between said flange and said body.

4,799,927

NEEDLE GUIDE AND PUNCTURE PROTECTOR

Donald F. Davis, 7411 SW. 147 Ct., Miami, Fla. 33193; Stuart Brodsky, 1600 Catron SE., Albuquerque, N. Mex. 85710, and Jeffrey Houska, 7204 Bangor NW., Albuquerque, N. Mex. 87120

Filed Nov. 23, 1987, Ser. No. 123,829
Int. Cl.[4] A61M 5/32
U.S. Cl. 604—192 **4 Claims**



1. A one-piece needle cover of rigid plastic material to receive and jacket a medical injection needle extending from one end of a needle barrel, said cover comprising:

a. a generally tubular body having a closed end and an enlarged open end, said tubular body defining an elongate needle socket extending from the closed end a distance greater than the needle length to be received within said socket,

b. means on the tubular body to nestingly engage the barrel and to cooperate with companionate means on the barrel to maintain the needle in said socket,

c. said enlarged open end defining a mouth of at least about three centimeters in diameter, and

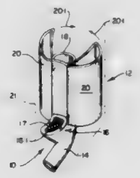
d. said tubular body defining a throat converging towards the socket, said throat having guide means on the surface thereof to guide a needle being inserted into the cover, and said throat being provided with a surface stepped in successive rings each of a lesser diameter than the adjacent ring progressing from an outer largest diameter to a smaller diameter located at the socket.

4,799,928

UROLOGICAL DEVICE

Ivan P. Crowley, Cape Province, South Africa, assignor to Femlib Medical Devices (Proprietary) Limited, East London, South Africa

Filed Dec. 3, 1986, Ser. No. 1,511
Claims priority, application South Africa, Dec. 6, 1985, 85/9367
Int. Cl.[4] A61F 5/44
U.S. Cl. 604—329 **7 Claims**



1. An incontinence device for a female user, which includes a drian tube having a mouth opening defined by the inner periphery of a thin delicate peripheral flange disposed transversely to the wall of the mouth opening, the flange being shaped to seat sealingly around the urethral meatus of a user; and

a vestibulo-vaginal insert extending away from the drain tube and being of resiliently flexible material expansible laterally in use within the vagina of the user, away from a medial plane to ensure that the mouth opening of the drain tube is held in register with the urethral meatus of the user, the vestibulo-vaginal insert comprising a central spine portion adjacent the drain tube mouth opening, and resilient lobe or wing portions of generally semi-circular section on either side of the spine portion, the lobe or wing portions being foldable in use inwardly from a relaxed shape against their inherent resilience to lie in laterally compressed shape against the spine portion, thereby providing the lateral expansibility to hold the drain tube mouth opening in register with the urethral meatus of the user.

4,799,929

CATAMENIAL APPLIANCE

Charlene G. Knowles, Rte. 6, Box 244, Elizabethtown, Ky. 42701

Continuation-in-part of Ser. No. 948,104, Dec. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 723,466, Apr. 15, 1985, abandoned. This application Sep. 11, 1987, Ser. No. 96,514
Int. Cl.[4] A61F 5/44
U.S. Cl. 604—331 **18 Claims**



1. A catamenial appliance comprising:

flexible ring means insertable into the vagina of a female and adaptable to surround the cervix of said female said flexible ring means being biased to expand slightly outwardly after insertion over said cervix and having a relatively small cross sectional area whereby contact with the vaginal walls of said female is limited to a generally narrow band of contact defined by the outer periphery of said small cross sectional area of said flexible ring means;

collecting sheath means attached to said flexible ring means and extending downwardly therefrom to contain and direct menstrual fluids downwardly from said cervix through said vagina of said female, said sheath means being of sufficient length to permit the distal end of said sheath means to protrude from said vagina;

flexible, generally flat collector pouch means detachably connectable to said distal end of said sheath means, said collector pouch means including leak-proof internal reservoir means incorporated within said collector pouch means to receive and contain said menstrual fluids, and having receiving means on said internal reservoir means detachably connectable to said distal end of said sheath means to receive said menstrual fluids and direct said menstrual fluids into said internal reservoir means; and

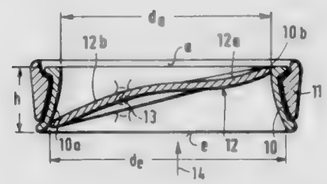
connecting means on said distal end of said sheath means and on said receiving means of said reservoir means of said collector pouch means to permit said collector pouch means to be easily detached to and from said sheath means.

4,799,930

CARDIAC VALVE PROSTHESIS

Martin Knoch, Aachen; Helmut Reul, Düren, and Günter Rau, Aachen, all of Fed. Rep. of Germany, assignors to B. Braun Melsungen AG, Melsungen, Fed. Rep. of Germany

Filed Jan. 20, 1988, Ser. No. 145,882
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1987, 3701755
Int. Cl.[4] A61F 2/24
U.S. Cl. 623—2 **8 Claims**



1. Cardiac valve prosthesis for controlling fluid flow comprising:

a valve ring having an inner face and in which at least one valvular closing body is pivotally supported,

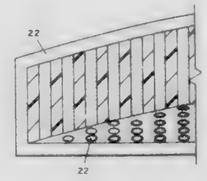
the inner face of the valve ring defining a nozzle channel having a cross section which smoothly, continuously and curvilinearly decreases in a direction perpendicular to the valve ring axis, whereby the inner face of the valve ring is continuously and increasingly constricted over its entire length in the direction of fluid flow.

4,799,931

INTRACORNEAL LENS

Richard L. Lindstrom, 1065 W. Feradale Rd., Wayzata, Minn. 55391

Filed May 14, 1986, Ser. No. 863,049
Int. Cl.[4] A61F 2/14
U.S. Cl. 623—5 **3 Claims**



1. Intracorneal lens comprising:

a. intracorneal lens optic of a high index of refraction polymer material selected from the group consisting of polysulfone, polyether ketone, or polycarbonate, the optic including a plurality of holes of a diameter in the range of 0.00001 mm to 1 mm; and,

b. a gas permeable biocompatible material coating on at least a portion of said lens and filling said holes, said coating and said filling material being selected from the group consisting of silicon, hydrogel or cellulose acetate butyrate.

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4,799,932

OILING AGENTS BASED ON SULFOSUCCINIC ACID MONOAMIDES

Hans-Herbert Friese, Monheim; Uwe Ploog, Haan, and Wolfgang Prinz, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 19, 1987, Ser. No. 64,894

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620780

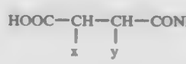
Int. Cl.[4] C14C *5/00*

U.S. Cl. 8—94.23 **18 Claims**

1. A method comprising imparting hydrophobicity and softness by

(A) treating said leather or skins by applying thereto minimally an oiling-effective amount of an agent consisting essentially of:

(1) at least one sulfosuccinic acid monoamide of the formula:



wherein

R and R′ are independently H or a C_{12-24} alkyl, and one of x or y is SO_3H and the other is H; or

an alkali or ammonium salt thereof.

4,799,933

PROCESS FOR THE TRICHROMATIC DYEING OF LEATHER

Fabio Beffa, Riehen, and Josef Koller, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

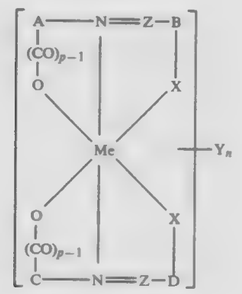
Filed Jan. 12, 1987, Ser. No. 2,361

Claims priority, application Switzerland, Jan. 21, 1986, 221/86

Int. Cl.[4] D06P *1/10, 3/30, 3/32*

U.S. Cl. 8—404 **19 Claims**

1. A process for the trichromatic dyeing of leather, comprising the step of contacting the leather with an aqueous dyebath which contains a red and a yellow dye, each of formula I



(I)

wherein

the substituents Z are each independently of the other nitrogen or a CH group,

A and C are each independently of the other a radical of the benzene or naphthalene series, which radical carries a hydroxyl or carboxyl group in the o-position to the azo or azomethine group,

B and D are each independently of the other the radical of a coupling component if Z is nitrogen, which coupling component carries the group X in the o- or alpha-position to the azo group, or are each independently of the other the radical of an o-hydroxyaldehyde if Z is the CH group,

the substituents X are each independently of the other oxygen or a group of the formula —NR—, in which R is hydrogen or a C_1–C_4alkyl group,

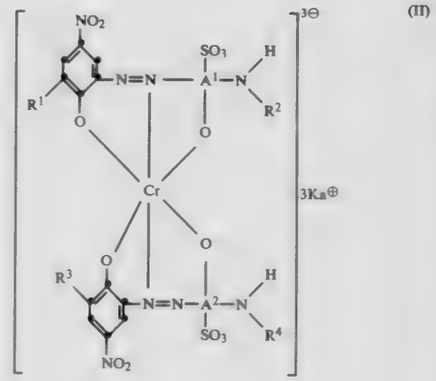
Me is chromium or cobalt,

Y is the SO_3H, COOH or PO_3H_2 group,

p is 1 or 2 and

n is an integer from 1 to 6,

and a grey dye of formula II



(II)

wherein

R^1 and R^3 are each independently of the other and at least one is sulfo,

A^1 and A^2 are each independently of the other the radical of 1-hydroxynaphthalene or 2-hydroxynaphthalene,

R^2 and R^4 are ech independently of the other hydrogen or a group of the formula —CO—$(O)_m$—E, in which E is C_1–C_5alkyl and m is 0 or 1, and

$Ka^{\oplus}$ is a cation.

4,799,934

SULFUR-CONTAINING NITROAMINOBENZENE DYES, PROCESS AND HAIR DYE COMPOSITIONS

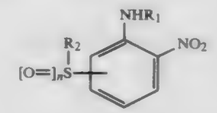
Mu-Ill Lim, Trumbull, and James S. Anderson, Danbury, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Oct. 30, 1987, Ser. No. 114,964

Int. Cl.[4] A61K *7/13;* **C07C** *149/42*

U.S. Cl. 8—414 **32 Claims**

1. A compound having the formula



I

and salts thereof, wherein

(a) R_1 and R_2 are the same or different and are selected from the group consisting of alkyl, hydroxyalkyl, polyhydroxyalkyl, aminoalkyl, and monoalkylaminoalkyl;

(b) n is 0, 1 or 2; and

(c) the group —S[=0]$_n$ occupies a position that is meta or para to the group NHR_1.

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4,799,935
METHOD FOR DYEING IN HIGH-BOILING NONIONIC SOLVENTS

James K. Davis, Greensboro; Robert S. Craycroft, Sophia, and Tina V. Lorenzo, Jamestown, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

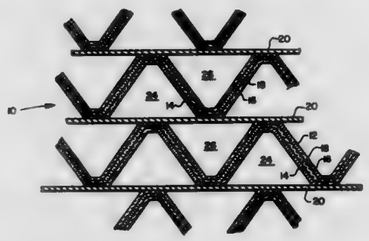
Filed Apr. 21, 1987, Ser. No. 40,825
Int. Cl.[4] C09B *67/10*
U.S. Cl. 8—922 24 Claims

1. A continuous process for dyeing textiles made of synthetic thermoplastic fibers at elevated temperatures in a non-aqueous organic medium comprising:
(a) contacting the textile made of synthetic thermoplastic fibers to be dyed with a non-aqueous dyeing medium composed of (1) a high-boiling, nonionic solvent admixed with (2) at least one lower-boiling solvent having a boiling point in the range of about 100° F. to about 400° F., the lower boiling solvent constituting at least 40% by weight of the non-aqueous dyeing medium, and (3) a tinctorial amount of at least one soluble dyestuff dissolved in the solvent media; and
(b) heating the fabric after step (a) to a temperature above the boiling point of the lower-boiling solvent, causing the lower-boiling solvent to evaporate leaving a highly-concentrated dyeing medium evenly distributed on the textile, and causing the non-aqueous dyeing the textile to a uniform shade.

4,799,936
PROCESS OF FORMING CONDUCTIVE OXIDE LAYERS IN SOLID OXIDE FUEL CELLS

Brian Riley, Willimantic, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 19, 1987, Ser. No. 63,883
Int. Cl.[4] H01M *8/12*
U.S. Cl. 29—623.1 2 Claims

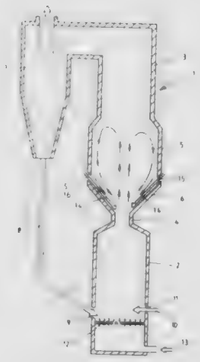


2. A method of forming a monolithic solid oxide fuel cell module comprising the steps of:
a. forming individual thin layers of cathode material, anode material, electrolyte material and inner connector material, each layer being in the unsintered state and containing a binder,
b. laminating said layers of cathode material, anode material and electrotyle material into a triplex layer and forming said triplex layer into a desired shape,
c. placing at least one said triplex layer in contact with at least one interconnected layer to form an unsintered module containing binder,
d. gradually heating said unsintered module with microwaves while preventing radiation cooling of the surfaces in said unsintered module so as to gradually raise the temperature of said unsintered module to a temperature at which said binder is removed and maintaining said temperature until said binder is substantially removed,
e. further gradually heating said unsintered module with microwaves while still preventing radiation cooling of said surfaces in said unsintered module so as to gradually raise the temperature of said unsintered module to a temperature at which said anode material, cathode material, electrolyte material and interconnector material are sintered, and
f. gradually cooling said sintered module to room temperature at a rate slow enough to prevent stresses by gradually reducing microwave power.

4,799,937
METHOD AND APPARATUS FOR GASIFYING CARBONACEOUS MATERIAL

Jorma J. Nieminen, Varkaus, Finland, assignor to A. Ahlstrom Corp., Varkaus, Finland

PCT No. PCT/FI87/00011, § 371 Date Sep. 22, 1987, § 102(e) Date Sep. 22, 1987, PCT Pub. No. WO87/04453, PCT Pub. Date Jul. 30, 1987
PCT Filed Jan. 21, 1987, Ser. No. 102,142
Int. Cl.[4] C10J *3/54, 3/56*
U.S. Cl. 48—62 R 13 Claims



1. A method of gasifying carbonaceous material in a circulating fluidized bed reactor having a lower chamber and an upper chamber interconnected by a throttled throat portion, the method comprising:
(a) supplying a solid carbonaceous material to a first fluided bed zone maintained in the lower chamber of the fluidized bed reactor;
(b) gasifying said carbonaceous material at a first temperature in said first zone by introducing a first gasifying agent and hot heat transfer particles into the lower chamber and producing a first zone gaseous effluent containing entrained particles;
(c) supplying said first zone effluent to a second fluidized bed zone of the spouting-type maintained in the upper chamber by passing the first zone effluent upwardly through the interconnecting throttled throat portion;
(d) gasifying unconverted carbon remaining in the entrained particles of the first zone effluent in the second zone at a second temperature which is higher than said first temperature by introducing a second gasifying agent and producing a product gas containing entrained hot particles;
(e) withdrawing said product gas from the upper chamber and separating the entrained hot particles from the product gas; and
(f) recycling the separated hot particles to the lower chamber for supplying the first zone with hot heat transfer particles.

10. A circulating fluidized bed reactor for gasifying carbonaceous material comprising:
a lower reactor chamber;
an upper reactor chamber including an upwardly and outwardly diverging bottom wall portion defining a spouting-type fluidized bed zone;
a throttled throat portion interconnecting the lower reactor chamber and the upper reactor chamber;
means for supplying a first gasifying agent and a carbonaceous material to said lower reactor chamber;
means for supplying a second gasifying agent to said upper reactor chamber in a downward direction along said diverging bottom wall portion;
means for exhausting product gases containing entrained particles from the upper reactor chamber; and
means for separating the particles entrained in the product gases exhausted from the upper reactor chamber and for recycling the separated particles to said lower reactor chamber.

4,799,938
α-AL_2O_3 ABRASIVE MATERIAL AND METHOD OF PREPARING THE SAME

Peter Janz, and Georg Gottschamel, both of Carinthia, Austria, assignors to Treibacher Chemische Werke AG, Treibach, Austria

Filed Sep. 22, 1987, Ser. No. 99,752
Claims priority, application Austria, Oct. 3, 1986, 2630/86
Int. Cl.[4] B24D *13/00*
U.S. Cl. 51—293 12 Claims

1. A method of preparing a sintered, microcrystalline abrasive material consisting essentially of α-Al_2O_3, said abrasive material consisting of at least 99.5%, by weight, of α-Al_2O_3 crystallites having a size of less than 2μ and the material having a density of at least 97% of the theoretical density, which comprises the steps of
(a) stirring a highly dispersed α-aluminum oxide hydrate into a dilute acidic solution until a suspension of the α-aluminum oxide hydrate has been formed,
(b) subjecting the suspension to a vacuum venting to remove occluded air therefrom,
(c) dispersing the vented suspension to disagglomerate the same,
(d) removing any residual coarse particles from the dispersed suspension,
(e) drying the dispersed suspension to obtain a dry material,
(f) comminuting the dried material, and
(g) sintering the dried material at a temperature between 1000° C. and 1500° C.

4,799,939
ERODABLE AGGLOMERATES AND ABRASIVE PRODUCTS CONTAINING THE SAME

Ulrich Bloecher, St. Paul, Minn., and Ernest J. Duwell, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 420,690, Feb. 26, 1987, Pat. No. 4,528,522. This application Mar. 19, 1987, Ser. No. 27,784
Int. Cl.[4] B24D *3/00*
U.S. Cl. 51—293 22 Claims

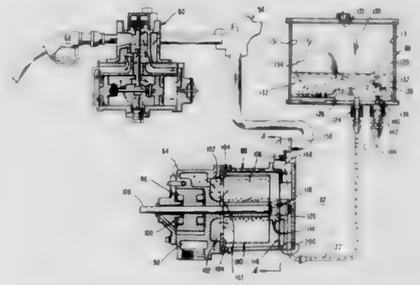


1. An abrasive article comprising erodable agglomerates comprising a multiplicity of individual grains of abrasive mineral randomly distributed in an erodable matrix comprising very small, erodable, crush resistant hollow bodies and an erodable binder.

4,799,940
CENTRIFUGAL SYSTEM WITH PUMP FOR SEPARATING AIR FROM FUEL

Joseph B. Millikan, Sophia, N.C., assignor to Gilbarco, Inc., Greensboro, N.C.

Continuation of Ser. No. 113,368, Oct. 21, 1987, abandoned, which is a continuation of Ser. No. 804,831, Dec. 5, 1985, abandoned. This application Jun. 8, 1988, Ser. No. 205,629
Int. Cl.[4] B01D *19/00*
U.S. Cl. 55—52 10 Claims



1. Apparatus for both pumping a liquid and removing air from the liquid to permit accurate measurement of the volume of liquid being pumped, comprising:
vane pump means for pumping a liquid, said vane pump means including an inlet port, a drive shaft, and an outlet chamber, and a rotor rigidly mounted upon said drive shaft, said drive shaft extending outward from said outlet chamber, said vane pump means producing a relatively high pressure liquid flow at said outlet chamber compared to said inlet port; and
Centrifuge means for separating air from said liquid, said centrifuge means including curved blade impeller means rigidly mounted upon the extension of said drive shaft from said vane pump means, a front baffle plate rigidly connected to said vane pump means and covering said outlet chamber thereof, said drive shaft extending through a centrally located hole in said front baffle plate, a centrifuge chamber casing rigidly attached to said front baffle plate and enclosing said impeller means, a liquid outlet port located on the side of said casing rearward from said front baffle plate, an end cap rigidly connecting across the back of said casing, and a rear baffle plate rigidly connected to said end cap between said end cap and said impeller means, sad rear baffle plate having a centrally located hole positioned opposite the end of said drive shaft and concentric with a centrally located vent hole in said end cap, said curved blade impeller means being arranged for causing the liquid and air to enter a relatively low pressure region within said centrifuge chamber casing in a direction parallel with and adjacent the longitudinal axis of said impeller means, said impeller means causing air to be separated from the liquid, the air being force at lowered pressured rearward along a central axial portion of said impeller for exiting into the hole in said rear baffle plate for entry into and venting from said vent hole of said end cap, the liquid substantially free of said air being forced at increased pressure against an inside wall of said centrifuge chamber casing for delivery to said liquid outlet port at relatively higher pressure than said air,
metering means coupled to said liquid outlet port for measuring liquid flowing from said outlet port substantially free of said air, and

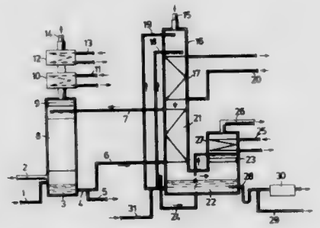
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sump means connected to said vent hole or said end cap of said centrifuge means for receiving both low pressure air and residual liquid from said centrifuge means, for completing the removal of air from said liquid by permitting the air to "bubble-up" and out of the residual liquid.

4,799,941
METHOD AND ARRANGEMENT FOR CONDENSING FLUE GASES

Mats O. J. Westermark, Tiby, Sweden, assignor to Scandiaconsult AB, Stockholm, Sweden

Filed Oct. 23, 1987, Ser. No. 111,760
Claims priority, application Sweden, Oct. 23, 1986, 8604524
Int. Cl.[4] B01D *47/00*
U.S. Cl. 55—90 **10 Claims**



1. A method for condensing flue gas in combustion plants, comprising the following combination of steps,
(a) cooling and humidifying flue gas by injecting water thereinto,
(b) cooling and condensing water vapour from the flue gas in a first condensing stage, by indirect heat exchange with return water from a hot water circuit,
(c) further cooling and condensing water vapour from the flue gas in a second condensing stage, by indirect heat exchange with water from a combustion air humidifier,
(d) heating and humidifying combustion air in the humidifier by direct contact with heated return water from the second condensing stage.

4,799,942
CRYSTALLINE GALLOPHOSPHATE COMPOSITIONS

Stephen T. Wilson, Shrub Oak; Naomi A. Woodard, Peekskill, and Edith M. Flanigen, White Plains, all of N.Y., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 811,282, Dec. 20, 1985, Pat. No. 4,690,808. This application May 26, 1987, Ser. No. 53,735
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—35 **8 Claims**

1. Process for separating molecular species having effective molecular diameter of less than about 10 Angstroms from admixture with less polar molecular species, which process comprises contacting a mixture of molecular species, said mixture of molecular species comprising at least a first species having a lesser degree of polarity and a second species having a greater degree of polarity, with at least one gallophosphate, said gallophosphate being at least partially dehydrated at the initiation of contact having a pore diameter large enough to adsorb said second molecular species, whereby molecules of said second molecular species are selectively adsorbed into the intracrystalline pore system thereof while molecules of said first molecular species are selectively excluded from said pore system, said molecular sieve being a crystalline gallophosphate composition having a framework structure whose chemical composition expressed in terms of mole ratios of oxides is

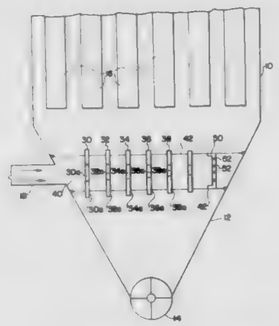
$$mR: Ga_2O_3: 1.0 \pm 0.2\ P_2O_5$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" has a value of from 0.02 to 0.3 and represents the moles of "R"; said framework structures being microporous in which the pores have nominal diameters within the range of about 3 to about 10 Angstroms.

4,799,943
GAS STREAM DIFFUSING AND DISTRIBUTION APPARATUS

Giambattista Ginetti, 50 The Fellsway, New Providence, N.J. 07974; Thomas V. Reinauer, 9 Dunnder Dr., Summit, N.J. 07901, and Raymond J. DeHont, 4 Brent Pl., Succasunna, N.J. 07876

Filed Jun. 17, 1987, Ser. No. 63,009
Int. Cl.[4] B01D *46/00*
U.S. Cl. 55—308 **11 Claims**



1. Apparatus for diffusing and distributing an incoming gaseous carrier having particulate matter entrained therein and a filtering device for separating said particulate matter for said gaseous carrier,
said filtering device including a gas impervious perimetric housing having a plurality of filters disposed in the upper portion thereof for effecting separation of said particulate matter from said gaseous carrier and a particulate matter collection hopper disposed in the lower portion of said housing and below said filters therein for reception of said particulate matter separated from said gaseous carrier by said filters,
the lower portion of said housing having an inlet opening therein disposed in fluid communication with a gas stream conveying conduit through which said gaseous carrier in the form of a confined high speed gas stream is introduced into said housing below said filters and in a direction substantially perpendicular to the longitudinal axis of said housing,
said diffusing and distributing apparatus comprising,
a plurality of perimetrically unconfined orifice plates disposed in parallel spaced apart relation in the path of the incoming high speed gas stream in substantially perpendicular relation to the direction of flow thereof;
the first of said plurality of orifice plates being disposed in separated spaced relation from said inlet opening and the remainder thereof extending substantially across the full extent of the lower portion of said housing,
means for supporting said plurality of orifice plates,
each of said orifice plates being a disc having a central aperture therein disposed in the path of said incoming high speed gas stream surrounded by a free standing and unconfined perimetric border portion of planar character disposed substantially perpendicular to the direction of incoming gas stream flow, and wherein
each of said apertures in said orifice plate being of progressively lesser open cross sectional area in the direction of gas stream flow,

4,799,860
WIND-ENERGY CONVERTER

Michael Martin, Darmstadt, Fed. Rep. of Germany, assignor to Herter Rotor Marketing Division & Co. Beteiligungsgesellschaft mbH, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP86/00190, § 371 Date Dec. 4, 1986, § 102(e) Date Dec. 4, 1986, PCT Pub. No. WO86/05846, PCT Pub. Date Oct. 9, 1986
PCT Filed Mar. 27, 1986, Ser. No. 5,441
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1985, 3512420
Int. Cl.[4] F03D *3/06*
U.S. Cl. 416—119 **4 Claims**

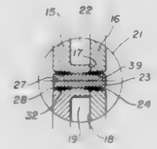


1. A wind energy converter, comprising:
a rotor rotatable about a vertical first axis,
at least one rotor arm projecting transversely outwardly from said rotor,
a substantially vertically oriented propulsive vane mounted adjacent an outer end of said rotor arm and arranged to react to air flow to produce rotation of said rotor in a direction of rotation, and
rotary coupling means connecting said vane to said rotor arm for free rotary movement relative thereto about a substantially vertical second axis,
said vane being configured asymmetrically about its chord and including a balance weight positioned ahead of said second axis with reference to said direction of rotation such that said vane defines a center of gravity disposed forwardly of said second axis with reference to said direction of rotation.

4,799,861
PUMP

James J. Paugh, Jr., Palmer, and Charles J. Hinckley, Ware, both of Mass., assignors to Warren Pumps, Inc., Warren, Mass.

Filed Oct. 29, 1987, Ser. No. 114,818
Int. Cl.[4] F04D *29/28*
U.S. Cl. 416—186 R **1 Claim**

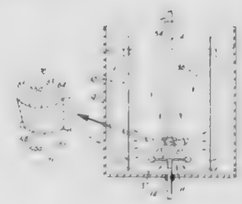


1. Pump comprising:
(a) a housing having a chamber,
(b) a spindle extending through the chamber, and mounted for rotation in bearings,
(c) an impeller mounted on the spindle for rotation therewith, the impeller consisting of two parts having facing surfaces, wherein the two parts are of generally disk-like shape with peripheries that are coaxial of the said spindle, the surfaces being accurately formed with open channels, the two parts being connected by a joint, so that the said channels combine to form passages, and
(d) pegs extending through bores in the two parts to form the said joint, wherein the pegs and bores are accurately formed to provide a close fit, wherein the pegs are joined by an electron beam weld in the said bores, wherein the bores are formed in both of the said parts, so that the parts are accurately located relative to one another, wherein the bores extend axially through the two parts, wherein each peg extends completely through a bore in one part and a congruent bore in the other part, wherein the ends of each peg are provided with bevels which lie in the outer entrance of both bores to define an annular groove of triangular cross-section between the peg and the bore at the said entrance, and wherein the electron beam weld is located in the said groove.

4,799,862
IMPELLERS

John F. Davidson; Keshavas Niranjan, and Aniruddha B. Pandit, all of Cambridge, England, assignors to National Research Development Corporation, London, England

Filed Jul. 15, 1987, Ser. No. 73,823
Claims priority, application United Kingdom, Jul. 18, 1986, 8617569
Int. Cl.[4] B01F *5/10*
U.S. Cl. 416—242 **10 Claims**



1. An impeller comprising:
a hub, adapted to rotate in a predetermined direction about an axis of rotation;
a plurality of blades radiating symmetrically from said hub; each said blade being of elongated shape and having a longitudinal axis, the length dimension of said each blade having opposite first and second ends;
said first end of each said blade being attached to said hub, and said second end constituting the tip of each said blade;
each said blade being of substantially uniform cross-section throughout said length;
each blade extending from said hub in a direction wherein said longitudinal axis thereof extends at an angle to said axis of rotation of said hub;
in which said longitudinal axis is curved;
and in which each said blade is so disposed relative to said hub that said curved longitudinal axis results in said blade having a first and swept-back curvature relative to said predetermined direction of rotation of said hub and visible when said blade is viewed in a direction parallel to said axis of rotation, and a second curvature visible when said blade is viewed in a direction normal to a radius to said axis of rotation at the point where said blade radiates from said hub.

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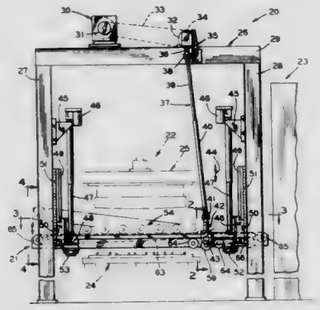
rent to said servomotor with a predetermined change of time in accordance with said start and stop signals for controlling the angular speed of said servo and for stopping the supply of said drive current to said servomotor when said servomotor is subject to an excess load and said drive current exceeds a predetermined value, said servomotor being an AC servomotor driven by said drive current of said servo-control means.

4,799,948

ADJUSTABLE BEARING RAIL APPARATUS FOR BENDING GLASS SHEETS

Allan T. Eak, and Charles H. Gerber, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Aug. 20, 1987, Ser. No. 87,210
Int. Cl.[4] C03B *23/033*
U.S. Cl. 65—286 **20 Claims**



1. An apparatus for supporting a plurality of conveyor rolls for conveying glass sheets through a bending station comprising:

a spaced pair of bearing rails adapted to support opposite ends of each of a plurality of glass sheet conveyor rolls:

a ground engaging framework;

a bracket attached to said framework for each and of each said bearing rail; and

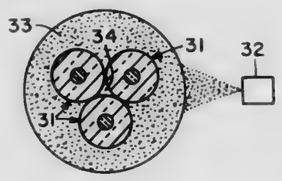
means coupled to said bracket for independently adjusting a position of each end of each said bearing rail with respect to said framework.

4,799,949

METHOD OF MAKING LOW LOSS FIBER OPTIC COUPLER

Donald B. Keck, Big Flats, N.Y.; Donald R. Lyons, Stanford, Calif., and Daniel A. Nolan, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 15, 1985, Ser. No. 765,652
Int. Cl.[4] C03B *37/027, 37/02, 37/018*
U.S. Cl. 65—3.12 **15 Claims**



1. A method of fabricating a fiber optic coupler comprising the steps of

forming a coupler preform having a plurality of spaced glass cores extending longitudinally through a single matrix of glass having a refractive index lower than that of said glass cores,

heating and stretching said preform to form a glass rod in which said cores are embedded in said single glass matrix throughout their lengths, the diameter of said glass rod and the diameters of said cores being substantially uniform throughout the length of said rod,

severing said rod into a plurality of units having two endfaces in which units the cores are flush with the endfaces of said units,

applying heat to the longitudinal central region of each of said units, and

pulling one end of each of said units relative to the other to elongate and taper inwardly the heated central region thereof, whereby the cores of said unit are more closely spaced and are of smaller diameter at said central region than they are at the ends of said unit.

4,799,950

PLANT GROWTH REGULATING COMPOSITION

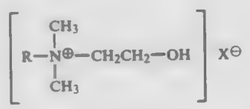
Akinori Suzuki, Chiba; Suong Be Hyeon, Urawa; Toshio Kajita, Yachiyo; Masakazu Furushima, Nagareyama, and Akinori Tanaka, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jan. 20, 1987, Ser. No. 5,279
Claims priority, application Japan, Jan. 21, 1986, 61-8978
Int. Cl.[4] A01N *43/08*
U.S. Cl. 71—89 **7 Claims**

1. A plant growth regulating composition for the promotion of growth, germination, root formation and thickening growth, said composition comprising as an active ingredient a combination of

(a) at least one gibberellin-type plant hormone selected from the group consisting of gibberellin A_3 and gibberellin A_4, and

(b) at leat one compound selected from the compounds of the general formula



(I)

wherein R represents a C_1–C_5 alkyl, C_2–C_5 alkenyl, C_2–C_5 alkynyl or benzyl group, and X represents a hydroxy group or chlorine or bromine atom,

wherein the weight ratio of the gibberellin type plant hormone to the compound of the above formula (I) is from 1:0.1 to 1:100.

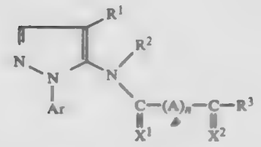
4,799,951

5-ACYLAMINO-PYRAZOLE DERIVATIVES, COMPOSITION CONTAINING THEM AND HERBICIDAL METHOD OF USING THEM

Jörg Stetter, Wuppertal; Otto Schallner, Monheim; Reinhold Gehring, Wuppertal; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach; Klaus Lürssen, Bergisch Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 26, 1987, Ser. No. 113,298
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, 3637710
Int. Cl.[4] A01N *43/56;* C07D *231/40*
U.S. Cl. 71—92 **9 Claims**

1. A 5-acylamino-pyrazole derivative



in which

R^1 represents hydrogen, nitro, fluorine, chlorine, bromine or iodine,

R^2 represents hydrogen, or represents straight-chain or branched alkyll with to 12 carbon atoms, or represents in each case straight-chain or branched alkenyl or alkinyl with in each case 3 to 8 carbon atoms, or represents cycloalkyl which has 3 to 8 carbon atoms and is optionally mono- or polysubstituted by identical or different C_1-C_4-alkyl radicals,

R^3 represents hydrogen, or represents straight-chain or branched alkyl with 1 to 8 carbon atoms, or represented cycloalkyl which has 3 to 8 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different C_1–C_4-alkyl radicals, or represents aryl which has 6 to 10 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl and alkoxy with in each case 1 to 4 carbon atoms,

Ar represents 2-pyridyl, 3-pyridyl or 4-pyridyl, or phenyl, 2-pyridyl, 3-pyridyl or 4-pyridyl, in each case monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy and alkoxycarbonyl with in each case 1 to 4 carbon atoms in the alkyl part, in each case straight-chain or branched halogenoalkyl and halogenoalkoxy with in each case 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, and a radical —S(O)m—R^8,

wherein

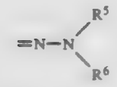
R^8 represents amino, or represents in each case straight-chain or branched alkyl, alkylamino, dialkylamino or halogenoalkyl with in each case 1to 4 carbon atoms in the individual alkyl parts and, in the case of halogenoalkyl, with 1 to 9 identical or different halogen atoms and

m represents the number 0, 1 or 2,

X^1 represents oxygen or sulphur,

A represents a straight-chain or branched alkylene bridge which has 1 to 6 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different substituents from the group consisting of phenyl, which is optionally monosubstituted or polysubstituted by identical or different halogen or C_1–C_4-alkyl radicals, and halogen,

n represents the number 0 or 1 and X^2 represents oxygen, or represents a radical =N—O—R^4, or represents a radical



wherein

R^4 represents hydrogen, or represents straight-chain or branched alkyl with 1 to 8 carbon atoms, or represents in each case straight-chain or branched alkenyl or alkinyl with in each case 3 to 8 carbon atoms, or represents in each case straight-chain or branched halogenoalkyl with 1 to 8 carbon atoms or halogenolkenyl with 3 to 8 carbon atoms and in each case 1 to 9 identical or different halogen atoms, or represents in each case straight-chain or branched alkoxyalkyl or alkylthioalkyl with in each case 1 to 4 carbon atoms in the individual alkyl parts, or represents aralkyl with 1 to 4 carbon atoms in the alkyl part or aryl, with in each case 6 to 10 carbon atoms in the aryl part and in each case monosubstituted or polysubstituted in the aryl part by identical or different substituents selected from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl or alkoxy with in each case 1 to 4 carbon atoms,

R^5 represents hydrogen, or represents straight-chain or branched alkyl with 1 to 6 carbon atoms and

R^6 represents hydrogen, or represents straight-chain or branched alkyl with 1 to 6 carbon atoms, or represents aryl which has 6 to 10 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different substituents, or represents a radical



possible substitutents on the aryl being those mentioned for R^4,

X^3 represents oxygen or sulphur and

R^7 represents hydrogen, or represents in each case straight-chain or branched alkyl, alkoxy, alkylamino or dialkylamino with in each case 1 to 8 carbon atoms in the individual alkyl parts.

8. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a 5-acylamino-pyrazole derivative according to claim 1.

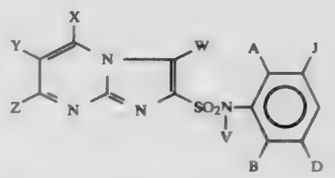
4,799,952

HERBICIDAL IMIDAZOLO(1,2-A)PYRIMIDINE-2-SULFONANILIDES

Norman R. Pearson, Walnut Creek; Shannon L. Bartley, Concord, and William A. Kleschick, Martinez, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 45,908, May 1, 1987, Pat. No. 4,731,446.
This application Oct. 30, 1987, Ser. No. 115,122
Int. Cl.[4] A01N *43/90, 43/54;* C07D *487/04*
U.S. Cl. 71—92 **53 Claims**

1. An imidazolo[1,2-a]pyrimidine-2-sulfonanilide compound of the formula



wherein

X and Z each, independently represents R, OR^3, SR^3, NR^1R^2, F, Cl, Br, or CN;

Y represents R, OR^3, F, Cl, Br, or CN;

W represents R, OR, SO_nR^3, NR^1R^2, F, Cl, Br, NO_2, CN, C(O)E, phenyl, phenoxy, or phenylthio, each phenyl, phenoxy and phenylthio optionally possessing 1 to 3 substituents selected from the group consisting of F, Cl, Br, CN, CF_3, NO_2, and CH_3;

A represents F, Cl, Br, C(O)E, C_1–C_4 haloalkyl, NO_2, CN, SOR^3, or SO_2R^3;

B represents F, Cl, Br, CN, R, OR^3, SR^3, NR^1R^2, phenyl, phenoxy, or phenylthio, each phenyl, phenoxy and phenylthio optionally possessing 1 to 3 substituents selected from the group consisting of F, Cl, Br, CN, CF_3, NO_2, and CH_3;

J and D each, independently represents R, F, Cl, Br, or C(O)E;

R represents H, C_1–C_4 alkyl or C_1–C_4 haloalkyl;
R^1 and R^2 each, independently represents H or C_1–C_4 alkyl;
R^3 represents C_1–C_4 alkyl or C_1–C_4 haloalkyl;
E represents R, OR, SR, NR^1R^2, or phenyl;
V represents H, $C(O)R^3$, or benzyl;
n represents an integer of 0, 1 or 2; and
when V represents H, the agriculturally acceptable salts thereof.

4,799,953

METHOD FOR REGULATING PLANT GROWTH USING SULFUR-CONTAINING ORGANIC ACIDS

Morris J. Danzig, Northbrook, and Alan M. Kinnersley, Bedford Park, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 8, 1987, Ser. No. 105,937
Int. Cl.[4] A01N *31/00, 37/00*; C07C *153/09, 53/00*
U.S. Cl. 71—98 **8 Claims**

1. A compound represented by the formula

I



where n is a small whole number from 1 to 10 and the Rs are the same or different and denote H or CH_3.

2. A method for increasing the rate of growth of a plant which comprises supplying to the plant an effective amount of one or more sulfur-containing acids selected from the group consisting of thiolactic acid, 2,2'-dithiobisacetic acid, 2,2'-dithiobispropanoic acid, and a compound represented by the formula

I



where n is a small whole number from 1 to 10 and the Rs are the same or different and denote H or CH_3.

4,799,954

RECOVERY OF SILVER FROM PHOTOGRAPHIC FILM WITH HIGH SHEAR AND CAUSTIC

Jerome Hochberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 14,711, Feb. 13, 1987, abandoned. This application Mar. 8, 1988, Ser. No. 168,541
Int. Cl.[4] C22B *11/04*
U.S. Cl. 75—118 P **5 Claims**

1. A process for the recovery of metallic silver from photographic film having a polymeric base, a surface coating which provides adhesion for a silver emulsion layer, and a silver emulsion layer containing gelatin, which process comprises:
(a) mixing pieces of the film with a caustic alkali solution heated to a temperature of about from 140° F. to 200° F.,
(b) subjecting the mixture to conditions of high shear for a period sufficient to remove the surface coating from the base and to substantially completely reduce the silver halides in the emulsion layer to metallic silver,
(c) separating the aqueous liquid containing the removed silver and surface coating from the film pieces, and
(d) acidifying the aqueous liquid to separate the metallic silver.

4,799,955

SOFT COMPOSITE METAL POWDER AND METHOD TO PRODUCE SAME

Melvin L. McClellan, Beaver Falls, Pa., assignor to Elkem Metals Company, Pittsburgh, Pa.

Filed Oct. 6, 1987, Ser. No. 105,274
Int. Cl.[4] B22F *1/00*
U.S. Cl. 75—247 **16 Claims**

1. A method for making a metal composite powder from a base iron powder and an alloying component comprising the steps of:
(a) milling said base iron powder and said alloying component for a period of time sufficient to embed said alloying component in said base iron powder to produce an intermediate milled product;
(b) annealing said intermediate milled product to produce a metal composite powder having a compressibility similar to that of said base iron powder prior to milling; and
(c) recovering said metal composite powder.

4,799,956

INTERCALATD GRAPHITE GASKETS AND PRESSURE SEALS

Ferdinand L. Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Continuation of Ser. No. 770,153, Aug. 27, 1985, abandoned. This application Feb. 17, 1987, Ser. No. 15,179
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.[4] C22C *29/00*
U.S. Cl. 75—243 **26 Claims**

1. A sealing member comprising a compacted body formed from an intercalated graphite powder which is stable in air and at elevated temperature, said body being essentially free of separately added copper, nickel, silver, molybdenum or tungsten metal powder.

4,799,957

INTERCALATED GRAPHITE CONTAINING ELECTRICAL MOTOR BRUSHES AND OTHER CONTACTS

Ferdinand L. Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Continuation of Ser. No. 770,155, Aug. 27, 1985, abandoned. This application Feb. 17, 1987, Ser. No. 15,164
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.[4] C22C *29/00*
U.S. Cl. 75—243 **20 Claims**

1. An electrical contact comprising a compacted body formed from an intercalated graphite which is stable in air and at elevated temperature, said body being essentially free of separately added copper, nickel, silver, molybdenum or tungsten metal powder.

4,799,958

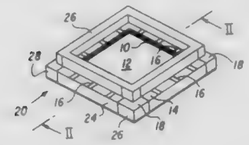
METALLIZING PASTE

Michael Morris, Sheffield, and John Vickers, Ulverston, both of England, assignors to Oxley Developments Company Limited, London, England

Filed Oct. 23, 1986, Ser. No. 924,302
Claims priority, application United Kingdom, Oct. 25, 1985, 8526397
Int. Cl.[4] H01B *1/06*; H01C *7/00*; C23C *30/00*
U.S. Cl. 106—1.12 **5 Claims**

1. A metallising paste comprising in combination
tugsten powder,
frit material consisting of equal proportions by weight of alumina, cerium fluoride, bismuth oxide and silica

20–50% by weight based on the total paste of an organic vehicle system;



the ratio to tungsten powder to frit in the paste being in an amount between 50 to 99 parts tungsten powder to 50 to 1 parts of frit material.

4,799,959

ANTICORROSION COATING COMPOSITION, PROCESS FOR APPLYING IT AND COATED THREADED COMPONENTS

Michel Fourez, 9, rue Jean-Jaures, Thiverny, 60160 Montataire; Michel Lonca, 303, route de Rantigny, Vaux sous Cambronne, 60290 Rantigny, and Patrick Pichant, 3 Alle des Charmes, 60300 Avilly St. Leonard, all of France

Continuation-in-part of Ser. No. 715,009, Mar. 22, 1985, abandoned. This application Mar. 6, 1987, Ser. No. 22,818
Claims priority, application France, Mar. 26, 1984, 84 04661
Int. Cl.[4] C04B *9/02*
U.S. Cl. 106—1.16 **15 Claims**

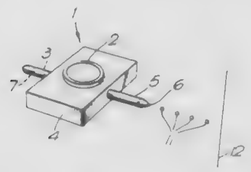
1. An aqueous anticorrosion coating composition for application to metal substrates, the composition, exclusive of lubricant, being provided by resin-free substituents including a phosphate-free hexavalent-chromium-providing component and particulate metal, while including organic liquid vehicle, which composition additionally contains lubricant comprising molybdenum disulfide, graphite, fluorinated polymer or their mixtures, and which lubricant is solid at the temperature of use of the substrate and is present in the coating composition in an amount sufficient to provide less than about 10 percent by volume of said lubricant in cured coating, and with the particulate metal of the composition being metal powder, metal flake or their mixtures, while being selected from the group consisting of zinc, manganese, aluminum, magnesium, their mixtures and their alloys.

4,799,960

INK COMPRISING WATER SOLUBLE TRIAZINE DYE FREE FROM CELLULOSE REACTIVE GROUPS

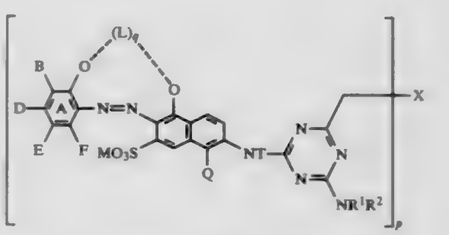
Anthony G. W. Baxter, Manchester; Stephen B. Bostock, Bury, and David Greenwood, Oldham, all of England, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 764,997, Aug. 12, 1985, Pat. No. 4,705,758. This application Nov. 10, 1986, Ser. No. 928,519
Claims priority, application United Kingdom, Aug. 24, 1984, 8421556; Mar. 19, 1985, 8507005; Mar. 21, 1985, 8507310
Int. Cl.[4] C09D *11/00, 11/02, 11/16, 11/18*
U.S. Cl. 106—22 **17 Claims**



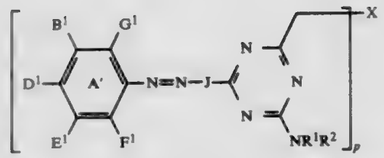
1. An ink comprising a liquid medium and a water soluble dye present in an amount ranging from 0.5 to 20% by weight, free from cellulose reactive groups, of the formula:

I



wherein
R^1 is $-(C_aH_{2a}O)_m(C_bH_{2b}O)_nH$,
R^2 is H or $-(C_aH_{2a}O)_m(C_bH_{2b}O)_nH$, or
R^1 and R^2 together with the nitrogen atom form a morpholine ring,
a and b are different and are from 2 to 8,
m is from 1 to 10,
n is from 0 to 9,
g is ½ or 1,
p is 1 or 2,
L is chromium, cobalt, copper or a mixture thereof,
M is H, ammonium, sodium, potassium or lithium,
Q is H or SO_3M,
T is H or C_{1-4}-alkyl,
D is a phenylazo or naphthylazo group each of which is unsubstituted or substituted by a group selected from sulphonate; carboxylate; C_{1-4}-alkyl; C_{1-4}-alkoxy; ureido; mono- and di-C_{1-4}-alkylamino aminosulphonyl; mono- and di-C_{1-4}-alkylaminosulphonyl; aminocarbonyl; mono- or di-C_{1-4}-alkylaminocarbonyl; phenylamino; C_{1-4}-alkylcarbonylamino; hydroxy, nitro and halogen,
E is H, C_{1-4}-alkyl, halogen and aminosulphonyl,
B and F are H,
provided that: when p=1
X is selected from (i) NR^1R^2; (ii) NR^3R^4; (iii) OR^3; and (iv) a monoazo chromophore, derived from a benzene or naphthalene diazo component and a benzene, naphthalene or mono-heterocyclic coupling component and linked to the triazine group through a group $—NR^5—$ in which R^5 is selected from H, C_{1-4}-alkyl and phenyl; and
R^3 and R^4 are each independently selected from H, C_{1-4}-alkyl, phenyl, naphthyl and phenyl or naphthyl substituted by a group selected from C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkyl-carbonylamino, ureido, mono- and di-C_{1-4}-alkylamino, nitro, phenylamino, halogen, carboxylate, sulphonate, hydroxy and unsubstituted and mono- and di-alkylamino-sulphonyl and carbonyl;
and when p=2
X is $—NR^3—Z—NR^3—$; and
Z is selected from C_{1-6}-alkylene; phenylene; biphenylene; C_{1-4}-alkylenephen-4-ylene; C_{1-6}-alkylene, phenylene, biphenylene or C_{1-4}-alkylenephen-4-ylene interrupted by a group selected from CH_2, O, S, NR^3 and SO_2; and C_{1-6}-alkylene; phenylene, biphenylene; C_{1-4}-alkylenephen-4-ylene interrupted by a group selected from CH_2, O, S, NR^3 and SO_2 and substituted by a group selected from C_{1-4}alkyl, C_{1-4}-alkoxy, C_{1-4}alkyl-carbonylamino, ureido, mono- and di-C_{1-4}-alkylamino, nitro, phenylamino, halogen, carboxylate, sulphonate, hydroxy $NH_2SO_2—$, $NH_2CO—$ and mono- and di-alkylaminosulphonyl and carbonyl.

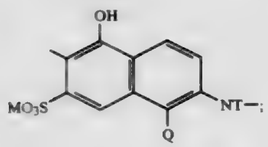
16. An ink comprising a mixture of the dye according to claim 1 and a dye of the formula:

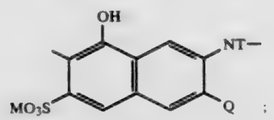


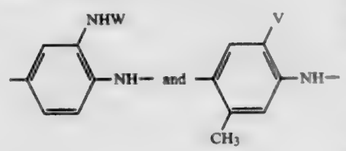
II

wherein R^1, R^2, p, Q, M and X are as defined in claim 1; B^1; D^1, E^1, F^1 and G^1, are selected from H; $—SO_3M$; $NHCOCH_3$; —COOM; mono- and di-C_{1-4}-alkylamino; C_{1-4}-alkyl; C_{1-4}-alkoxy; ureido; hydroxy; nitro and halogen or B^1 and D^1 form a second benzene ring fused to ring A which is unsubstituted or substituted by a group selected from H; $—SO_3M$; $NHCOCH_3$; —COOM; mono- and di-C_{1-4}-alkylamino; C_{1-4}-alkyl; C_{1-4}-alkoxy; ureido; hydroxy; nitro and halogen, provided that neither F^1 or G^1 is hydroxy; and

J is selected from:







wherein

T is H, alkyl or phenyl;

W is an acyl group selected from the group consisting of aminocarbonyl, aminosulphonyl, C_{1-4}-alkylcarbonyl, C_{1-4}-alkylsulphonyl, phenylcarbonyl and phenylsulphonyl; and

V is alkyl or alkoxy.

4,799,961

CEMENTUOUS FIBER IMPREGNATED CONSTRUCTION COMPOSITION AND PROCESS FOR FORMATION THEREOF

Walter R. Friberg, 831 N. Shore Dr., Bellingham, Wash. 98226

Filed Aug. 19, 1986, Ser. No. 897,860

Int. Cl.[4] C04B *14/38, 16/02*

U.S. Cl. 106—93 **4 Claims**

1. A method of preparing a moldable cementuous building composition containing wood fibers, comprising:

(a) forming a first slurry by boiling for at least two hours a first aqueous slurry comprising on a weight basis:

(1) about 0 to 20 percent fibrous material, at least part of which is processed wood fiber,

(2) about 20 to 50 percent calcium oxide,

(3) about 20 to 50 percent particulated silicious material chosen from the group consisting of diatomite, diatomaceous earth, tripolite and chert,

(4) water to 100 percent to form a fluidic slurry:

(b) allowing the first slurry to stand for at lease three days after formation;

(c) forming a second dry concentrate by ball milling for at least thirty minutes a mixture comprising on a weight basis

(1) about 10 to 25 percent calcium oxide,

(2) about 5 to 20 percent calcium chloride,

(3) about 0 to 20 percent of calcium sulfate,

(4) about 10 to 20 percent of particulated silicious material chosen from the group consisting of diatomite, diatomaceous earth, tripolite and chert,

(5) about 0 to 10 percent iron oxide, and

(6) about 0 to 10 percent Portland cement;

(d) mixing on a weight basis from about 10 to 50 percent of the first slurry and from about 3 to 10 percent of the second dry concentrate with from 40 to 80 percent of a third supplement mixture comprising on a weight basis:

(1) about from 5 to 40 percent Portland cement,

(2) about from 10 to 35 percent fiber, at least part of which is processed wood fiber, and

(3) about from 10 to 50 percent particulated silicious material chosen from the group consisting of diatomite, diatomaceous earth, tripolite and chert.

4,799,962

WATER-SOLUBLE POLYMER DISPERSION

Syed M. Ahmed, Wilmington, Del., assignor to Aqualon Company, Wilmington, Del.

Filed Dec. 24, 1987, Ser. No. 137,841

Int. Cl.[4] C08N *1/08*

U.S. Cl. 106—188 **14 Claims**

1. An aqueous dispersions comprising a particulte water-soluble polyer selected from the group consisting of polyacrylamide and polyacrylamide derivatives, polyvinylpyrrolidone and polyvinylpyrrolidone derivates, guar gum and guar gum derivatives, and cellulosic polymers, a low molecular weight polyethylene glycol, water and high molecular weight polyethylene glycol, all in amounts which result in a dispersion which is stable as made.

4,799,963

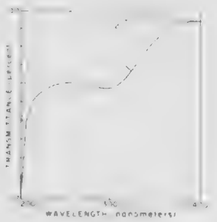
OPTICALLY TRANSPARENT UV-PROTECTIVE COATINGS

John D. Basil, Pittsburgh; Chia-Cheng Lin, Gibsonia, and Robert M. Hunia, Kittanning, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 3, 1986, Ser. No. 914,857

Int. Cl.[4] C09K *3/00;* **C04B** *14/00*

U.S. Cl. 106—287.13 **20 Claims**



1. An optically transparent coating composition which reduces transmission of ultraviolet radiation consisting essentially of:

a. a partially hydrolyzed alkoxide of the general formula $R_xM(OR')_{z-x}$ wherein R is an organic radical, M is selected from the group consisting of silicon, aluminum, titanium, zironium and mixtures thereof, R' is a low molecular weight alkyl radical, z is the valence of M and x is less than z and may be zero; and

b. colloidal cerium oxide.

4,799,964

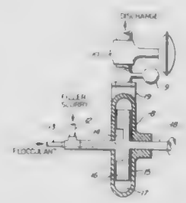
PREPARATION OF FILLER COMPOSITIONS FOR PAPER

Richard D. Harvey, and Robert E. Klem, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Continuation of Ser. No. 760,277, Jul. 29, 1985, abandoned. This application Apr. 29, 1987, Ser. No. 45,221

Int. Cl.[4] C04B *14/00*

U.S. Cl. 106—436 **7 Claims**



1. A process of forming a flocculated filler for use in making paper or paperboard which consists in continuously introducing an aqueous slurry of a non-flocculated paper filler material and an aqueous slurry of from 0.5 to 60% by weight of the filler material of a flocculating agent into a shear imparting device and imparting to the mixture within said device a shearing force sufficient to provide flocculated filler particles of a size adapted for use in papermaking without any additional treatment and continuously removing said flocculated filler particles from the shear imparting device.

4,799,965

METHOD FOR DEMINERALIZING BEET SUGAR THIN JUICE

Age Bakker, Oosterhout; Genesius J. J. M. Schepers, Noordhoek, and Kees Koerts, Driebergen, all of Netherlands, assignors to Cooperatieve Vereniging Suiker Unie U.A., Netherlands

Filed Sep. 10, 1987, Ser. No. 94,866

Claims priority, application Netherlands, Sep. 12, 1986, 8602318

Int. Cl.[4] B01D *59/30;* **C13D** *3/14*

U.S. Cl. 127—46.2 **3 Claims**

1. Method for demineralizing beet sugar thin juice with a solids content of 10 to 40% by weight by first passing said juice through a solid bed of a weakly acidic cation exchanger in hydrogen form and then passing said juice through a solid bed of a weakly basic anion exchanger in hydroxyl form in the same temperature range, at the same rate and for the same contact time, characterized in that the juice is passed through said weakly acidic cation exchanger at 10° to 40° C. at a rate of 10 to 180 bed volumes per hour and a contact time of 20 to 360 sec and is then passed through said weakly basic anion exchanger.

4,799,966

PROCESS FOR CONVERTING ALPHA TO BETA-LACTOSE

Frederick W. Parrish, Metairie, La., and Samuel Serota, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 18, 1987, Ser. No. 63,358

Int. Cl.[4] C13F *1/00, 1/02;* **C13K** *5/00*

U.S. Cl. 127—63 **5 Claims**

1. A process for converting alpha-lactose to beta-lactose which comprise contacting said alpha lactose with an aliphatic alcohol at a temperature from about 120° C. to about 150° C. and a pressure from about 150 to 200 psi, the ratio of said alpha-lactose to said aliphatic alcohol being about 1:8.

4,799,967

METHOD FOR CLEANING APPARATUS FOR FABRICATING REACTIVE MULTIPLE-COMPONENT MIXTURES CONTAINING ISOCYANATE

Jörg Hansdorf, Mörlenbach; Joachim Kindler, Weinheim, and Volker Siekermann, Fürth, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Filed Dec. 16, 1987, Ser. No. 133,310

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1987, 3713702

Int. Cl.[4] B08B *7/00;* **C23D** *17/00;* **C09D** *9/00;* **C11D** *7/50*

U.S. Cl. 134—38 **8 Claims**

1. A method of cleaning apparatus used in the manufacture of reactive multiple-component mixtures containing isocyanate comprising:

(a) flushing the apparatus with a cleaning agent comprising:

(i) 50 to 75 wt.-% of an ester of a short to medium chain length alkylsulfonic acid and a phenol or selected from the group consisting of diethyl phthalate or dioctyl phthalate, and

(ii) 25 to 50 wt.-% of a mineral oil fraction with a carbon number of 8 to 17 of an aliphatic, naphthenic or aromatic hydrocarbon, or mixtures thereof, the boiling range of the fraction being between 120° C. and 300° C.; and

(b) drying the apparatus by blowing air therethrough.

4,799,968

PHOTOVOLTAIC DEVICE

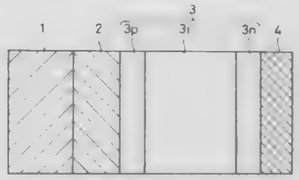
Kaneo Watanabe, Kyoto; Masayuki Iwamoto, Hyogo, and Koji Minami, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Sep. 21, 1987, Ser. No. 99,347

Claims priority, application Japan, Sep. 26, 1986, 61-228796; Jun. 3, 1987, 62-139232

Int. Cl.[4] H01L *31/06*

U.S. Cl. 136—258 **6 Claims**



1. A photovoltaic device comprising a semiconductor layer of hydrogenated amorphous silicon for photoelectric conversion which includes a sub-layer on its light incident side, wherein the proportion of silicon atoms bonded to two hydrogen atoms to all the silicon atoms is not less than 8% in said sub-layer and not more than 1% in the remaining region.

4,799,969

METHOD FOR IMPROVING MAGNESIUM OXIDE STEEL COATINGS USING NON-AQUEOUS SOLVENTS

Michael W. Howe, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Division of Ser. No. 45,490, May 4, 1987, Pat. No. 4,753,687. This application Apr. 1, 1988, Ser. No. 176,572

Int. Cl.[4] C23C *22/02*

U.S. Cl. 148—6.14 R **1 Claim**

1. A slurry for use in the initial coating of silicon steel prior

to high temperature annealing which results is a decrease in tight magnesia consisting essentially of: (a) 0.1-20%, by weight, magnesium oxide; and (b) the balance a non-aqueous solvent in which said magnesium oxide is insoluble wherein the solvent is selected from the group consisting of ethylene glycol mono butyl ether, ethylene glycol, and isopropyl alcohol.

4,799,970

SURFACE TREATMENT METHOD FOR IMPROVING CORROSION RESISTANCE OF FERROUS SINTERED PARTS

Takashi Koiso, and Satoshi Fujii, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 857,147, Apr. 29, 1986, abandoned. This application Jul. 16, 1987, Ser. No. 75,199
Claims priority, application Japan, Apr. 30, 1985, 60-94240
Int. Cl.[4] C23C 22/36
U.S. Cl. 148—6.2 **2 Claims**

1. A method for treating the surface of a ferrous sintered part having pores therein, consisting of the steps of treating said sintered part in a steam atmosphere heated to a temperature within the range of about 400° to 600° C. for several hours duration sufficient to form a dense film of iron oxide on the surface and in the interior of said sintered part, said dense iron oxide film sealing said pores in the surface layer of said sintered part; preparing a treating solution by dispersing in a liquid a mixture of at least one of zinc and aluminum, a hexavalent chromium providing substance, a reducing agent for said hexavalent chromium providing substance, and a surface active agent, applying said treating solution to the surface of said dense iron oxide film of said steam treated sintered part, heating said sintered part with the treating solution applied to said iron oxide film, at a temperature of 250° to 400° C. to remove volatile components from said treating solution to thereby form a coating film of particles of zinc and/or aluminum surrounded by polymers of trivalent chromium on said dense iron oxide film of said sintered parts, and impregnating at least said coating film by applying water glass or resin to said coating film for sealing said coating film.

4,799,971

TUBING FOR ENERGY ABSORBING STRUCTURES

Wallace R. McDougall, and James C. Seastone, both of Shelby, assignors to Copperweld Corporation, Pittsburgh, Pa.

Filed May 26, 1987, Ser. No. 53,946
Int. Cl.[4] C21D 8/06
U.S. Cl. 148—12 B **6 Claims**

1. The method of manufacturing tubing for use in energy absorbing structures which comprises forming flat ferrous metal into a tube which has a greater diameter than that of the finished tube, welding the edges of the tube, heating the tube to a temperature above the A_{c3} temperature, quenching the heated tube, reheating the tube to a temperature below the A_{c1} temperature, allowing the heated tube to air cool, and cold rolling the tube in a sizing mill to final diameter.

4,799,972

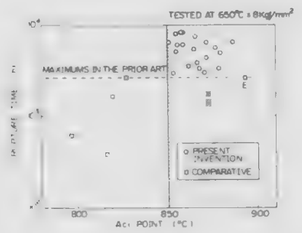
PROCESS FOR PRODUCING A HIGH STRENGTH HIGH-CR FERRITIC HEAT-RESISTANT STEEL

Fujimitsu Masuyama; Takashi Daikoku, both of Nagasaki; Hisao Haneda, Tokyo; Kunihiko Yoshikawa, Amagasaki; Hiroshi Teranishi, Amagasaki, and Atsuro Iseda, Amagasaki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 10, 1986, Ser. No. 917,502
Claims priority, application Japan, Oct. 14, 1985, 60-226993
Int. Cl.[4] C21D 6/00
U.S. Cl. 148—14 **4 Claims**

1. A process for producing a high-strength high-Cr ferritic, heat-resistant steel exhibiting improved high-temperature, long-term creep strength, which consists essentially of, by weight %:

C: not more than 0.2%,
Si: not more than 1.0%,
Mn: 0.1-1.5%,
P: not more than 0.03%,
S: not more than 0.03%,
Ni: not more than 1.0%,
Cr: 5.0-15%,
Mo: 0.02-3%,
W: not more than 4.0%,
sol. Al: 0.005-0.04%,
N: not more than 0.07%,
at least one of V: 0.01-0.4% and Nb: 0.01-0.3%,



B: 0-0.02%,
at least one of Ca, Ti, Zr, Y, La, and Ce: 0-0.2%, and
the balance Fe and incidental impurities,
the A_{c1} point defined by Formula (1) below being 820° C. or higher;

$$A_{c1}(°C.)=765-500C-450N+30Si-25Mn+2\text{-}5Mo+15W+11Cr+50V+30Nb-30Ni+30 \text{ sol. Al(weight \%)} \quad (1)$$

which comprises subjecting the steel having the above composition to normalizing at a temperature of the A_{c3} point thereof or higher, and then to tempering at a temperature of 810° C. or higher but not higher than the A_{c1} point.

4,799,973

PROCESS FOR TREATING COPPER-NICKEL ALLOYS FOR USE IN BRAZED ASSEMBLIES AND PRODUCT

Deepak Mahulikar, West Haven, and Eugene Shapiro, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 2, 1984, Ser. No. 596,182
Int. Cl.[4] C22F 1/08; B32B 15/20
U.S. Cl. 148—435 **23 Claims**

1. A process for providing a copper-nickel alloy capable of maintaining its bend formability properties and a relatively fine grain structure when exposed to elevated temperatures, said process comprising:

providing a copper-nickel alloy having a first thickness, a desired temper and a desired grain size, said alloy containing from about 5% to about 45% nickel; and

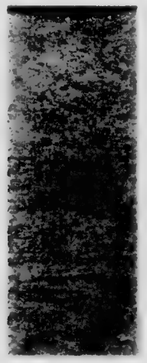
subjecting said alloy to a final working step prior to said exposure to elevated temperatures, said working step comprising reducing said thickness from about 4% to about 30%.

4,799,974

METHOD OF FORMING A FINE GRAIN STRUCTURE ON THE SURFACE OF AN ALUMINUM ALLOY

Murray W. Mahoney, Camarillo, and Amit K. Ghosh, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 27, 1987, Ser. No. 54,558
Int. Cl.[4] C22F 1/04
U.S. Cl. 148—12.7 A **5 Claims**



1. A method of forming a fine grain structure on the surface of an aluminum alloy, comprising the steps of:

providing an aluminum alloy having a precipitating constituent;

overaging the aluminum alloy;

plastically deforming the surface of the aluminum alloy without significantly deforming the center of the aluminum alloy; and

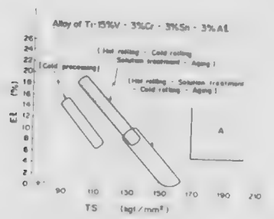
recrystallizing the surface of the aluminum alloy by heating it above its minimum recrystallization temperature.

4,799,975

METHOD FOR PRODUCING BETA TYPE TITANIUM ALLOY MATERIALS HAVING EXCELLENT STRENGTH AND ELONGATION

Chiaki Ouchi; Yohji Kohsaka; Hiroyoshi Suenaga, all of Tokyo; Hideo Sakuyama, and Hideo Takatori, both of Kanagawa, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Nippon Mining Co., Ltd., both of Tokyo, Japan

Filed Sep. 22, 1987, Ser. No. 99,537
Claims priority, application Japan, Oct. 7, 1986, 61-237140; Jan. 27, 1987, 62-15150
Int. Cl.[4] C22F 1/18; C22C 14/00
U.S. Cl. 148—12.7 B **20 Claims**



1. A method for producing β type titanium alloy materials having excellent strength and elongation, comprising a cold working at more than 30%, and intermediate solution treatment at a range of higher than β transus temperature, a final cold working between more than 3% and less than 30% and a final solution treatment and an aging treatment.

4,799,976

PROCESS FOR THE HEAT TREATMENT OF AL ALLOYS CONTAINING LI WITH A VIEW TO PRESERVING THEIR SURFACE HEALTH

Philippe Meyer, Voiron, France, assignor to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Filed Mar. 7, 1988, Ser. No. 165,008
Claims priority, application France, Mar. 9, 1987, 87 03581
Int. Cl.[4] C21D 1/74
U.S. Cl. 148—20.3 **3 Claims**



1. Process for the heat treatment of Al alloys containing Li with a view to preserving their surface condition, comprising heating above 300° C. in an atmosphere containing, in % by volume 5 to 95% CO_2, $5 \leqq \text{air} \leqq 95\%$ and the remainder H_2O.

4,799,977

GRADED MULTIPHASE OXYCARBURIZED AND OXYCARBONITRIDED MATERIAL SYSTEMS

John J. Rausch, Lake Bluff, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Sep. 21, 1987, Ser. No. 98,081
Int. Cl.[4] C21D 1/56, 1/74
U.S. Cl. 148—317 **16 Claims**

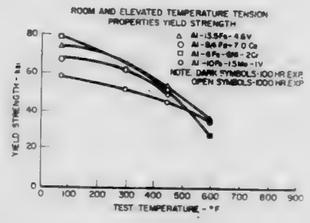


1. A multiphase graded material system comprising: a refractory metal alloy base having a major metal selected from the group consisting of Group V-B metals (columbium, tantalum and vanadium), and having at least one alloy metal selected from the group consisting of Group IV-B metals (titanium, zirconium and hafnium), Group VI-B metals (molybdenum, tungsten and chromium) and mixtures thereof; said base having a surface containing non-metallic pick-ups in phases coexisting with said refractory metal alloy in concentration of at least 1 mg/cm^2 at said surface and decreasing inwardly from said surface, said non-metallic pick-ups being selected from the group consisting essentially of: oxygen and carbon; oxygen, carbon and nitrogen; oxygen, carbon and boron; and oxygen, carbon, nitrogen and boron.

4,799,978
ALUMINUM ALLOY

Sharon L. Langenbeck, Newhall, Calif., and Gregory J. Hildeman, Murraysville, Pa., assignors to Lockheed Corporation, Calabasas, Calif.

Continuation of Ser. No. 871,191, Jun. 5, 1986, abandoned, which is a continuation-in-part of Ser. No. 714,765, Mar. 22, 1985. This application Oct. 2, 1987, Ser. No. 105,962
Int. Cl.[4] C22C *21/00*
U.S. Cl. 148—437 **2 Claims**



1. A hot worked aluminum base alloy powder article consisting essentially of 81 to 91.9 percent aluminum, 4-to 8 percent iron, 4 to 8 percent nickel, and 0.1 to 3 percent chromium.

4,799,979
HEAT GENERATION

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 757,606, Jul. 22, 1985, Ser. No. 707,656, Mar. 4, 1985, Ser. No. 685,910, Dec. 27, 1984, Ser. No. 643,782, Jul. 17, 1984, Ser. No. 584,538, Feb. 28, 1984, Ser. No. 559,334, Dec. 8, 1983, abandoned, Ser. No. 538,541, Oct. 3, 1983, Pat. No. 4,694,036, Ser. No. 507,174, Jun. 23, 1983, and Ser. No. 281,405, Jul. 8, 1981, Pat. No. 4,708,913, said Ser. No. 707,656, Ser. No. 685,910, Ser. No. 643,782, Ser. No. 584,538, and Ser. No. 559,334, each is a continuation-in-part of Ser. No. 554,441, Nov. 22, 1983, abandoned, said Ser. No. 685,910, Ser. No. 643,782, Ser. No. 584,538, Ser. No. 559,334, Ser. No. 538,541, and Ser. No. 554,441, each is a continuation-in-part of Ser. No. 531,444, Sep. 12, 1983, abandoned, said Ser. No. 507,174, is a continuation-in-part of Ser. No. 299,789, Sep. 4, 1981, abandoned. This application Feb. 19, 1986, Ser. No. 830,767
Int. Cl.[4] C06B *45/30*
U.S. Cl. 149—5 **6 Claims**

1. A heat-generating pyrotechnic article in the form of a carbon fiber web hot over about one millimeter thick, bent to provide portions that block the open radiation of heat from other portions sufficiently to increase the heat-generating time at least about 60% as compared to when the web is not bent.

4,799,980
MULTIFUNCTIONAL POLYALKYLENE OXIDE BINDERS

Russell Reed, Jr., 2026 Mono St., Ridgecrest, Calif. 93555

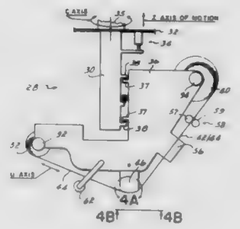
Filed Jan. 28, 1988, Ser. No. 149,283
Int. Cl.[4] C06B *45/10*
U.S. Cl. 149—19.4 **12 Claims**

1. In an energetic composition having a polyalkylene oxide binder and a nitrate ester plasticizer, the improvement comprising said binder being formulated from a polyalkylene oxide having a tri-star or a tetra-star configuration and having a molecular weight from about 12,000–27,000 daltons.

4,799,981
SPOOL SERVO CONTROL FOR TAPE WEB POSITIONING

Kirby L. Stone; R. W. Kneifel, II, and John P. Brockman, all of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 15, 1988, Ser. No. 168,361
Int. Cl.[4] G05B *19/10*
U.S. Cl. 156—64 **28 Claims**

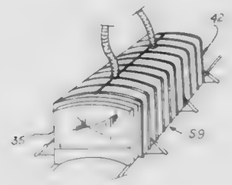


1. Apparatus for longitudinally positioning a tape web, comprising:
a frame;
means associated with said frame for rotatably supporting first and second spools adapted to contain opposite ends of a tape web;
an application member connected to said frame between the spools and over which the tape web is to be longitudinally positioned;
first drive means for applying a torque to the first spool;
second drive means for applying a torque to the said spool;
means for generating a position signal indicative of a desired longitudinal movement of the tape web over said application member;
means for generating a first dynamic torque signal in response to said position signal, said first dynamic signal being correlated to at least one of an inertial torque and a frictional torque of the first spool and said first drive means;
means for generating a second dynamic torque signal in response to said position signal, said second dynamic torque signal being correlated to at least one of (1) an inertial torque of the second spool and said second drive means, (2) a frictional torque of the second spool and said second drive means, and (3) a frictional force of the tape web being positioned over said application member;
means for generating a primary driving command signal correlated to at least (1) a following error difference between the desired longitudinal movement and an actual longitudinal movement of the tape web over said application member and (2) said first dynamic torque signal;
means for generating a secondary driving command signal correlated to at least said second dynamic torque signal;
means for coupling said primary driving command signal to said first drive means for applying torque to the first spool; and
means for coupling said secondary driving command signal to said second drive means for applying torque to the second spool whereby to longitudinally position the tape web over said application member.

4,799,982
METHOD OF MOLDING MONOLITHIC BUILDING STRUCTURE

Robert K. Vicino, San Diego, Calif., assignor to Charmasson & Holz, San Diego, Calif., a part interest

Continuation-in-part of Ser. No. 841,946, Mar. 20, 1986, abandoned. This application Dec. 7, 1987, Ser. No. 129,466
Int. Cl.[4] B28B *5/04, 7/32;* B32B *5/18;* E04B *1/16*
U.S. Cl. 156—71 **19 Claims**



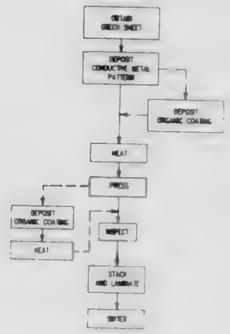
1. An assembly-line method for manufacturing a monolithic building structure at a plurality of stations comprising the steps of:
inflating an inflatable plug formed by an envelope comprising a plurality of rigid, foldable, panel sections joined by means of hinges;
installing blockouts commensurate with desired door and window openings on an outer surface of said plug;
applying a layer of gypsum material to said outer surface of said plug;
curing said layer of gypsum material;
surrounding said plug with a matrix formed by a plurality of movable panels joined together in a parallelly-spaced-apart position from said layer of gypsum material to define a space between said outer surface of said plug and said matrix;
covering said gypsum layer with mats of loosely packed filiform reinforcing elements, said mats being dimensioned to fill said space unoccupied by said blockouts between said plug and said matrix;
injecting a hardenable cementitious slurry between said plug and matrix and said into said mats;
allowing said slurry to cure into a hard shell;
separating said matrix panels from said hardened slurry;
deflating said plug to separate said rigid sections from said layer of gypsum material; and
moving said hard shell to a separate station for further processing.

4,799,983
MULTILAYER CERAMIC SUBSTRATE AND PROCESS FOR FORMING THEREFOR

Kamalesh S. Desai, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 20, 1987, Ser. No. 75,709
Int. Cl.[4] C04B *37/02, 33/02*
U.S. Cl. 156—89 **11 Claims**

1. A process for forming a multilayer ceramic substrate comprising the steps of:
obtaining a plurality of ceramic sheets in the green state, then
depositing a conductive metal pattern on at least one of the green ceramic sheets, then
heating the at least one green ceramic sheet so as to soften it, then
pressing the conductive metal pattern into the at least one green ceramic sheet, then

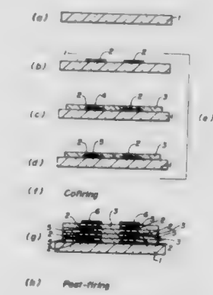


stacking and laminating the green ceramic sheets so as to form a substrate, and then
sintering the substrate.

4,799,984
METHOD FOR FABRICATING MULTILAYER CIRCUITS

Joseph R. Rellick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 18, 1987, Ser. No. 98,181
Int. Cl.[4] B32B *31/26*
U.S. Cl. 156—89 **21 Claims**



1. A method for the fabrication of multilayer circuits comprising the sequential steps of
(a) providing a dimensionally stable electrically insulative substrate;
(b) applying to the substrate a patterned conductive layer;
(c) laminating to the patterned conductive layer and exposed areas of the substrate a layer of dielectric green tape having vias formed therein; the vias being in registration with the patterned conductive layer of step (b);
(d) filling the vias in the laminated green tape with a conductive metallization;
(e) in the event the multilayer circuit requires more than two layers having conductive patterns, repeating the sequence of steps (i) through (iii) until the desired number of circuit layers has been obtained:
(i) applying a patterned conductive layer to the green tape side of the unfired assemblage from step (d) or (iii) in registration with the vias in the green tape;
(ii) laminating to the patterned conductive layer and exposed dielectric areas a layer of dielectric green tape

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having vias formed therein, the vias being in registration with the patterned conductive layer of step (i);
(iii) filling the vias in the laminated green tape with a conductive metallization;
(f) co-firing the multilayer assemblage from step (e);
(g) applying a patterned conductive layer to the ceramic tape side of the co-fired assemblage from step (f) in registration with the vias in the ceramic tape; and
(h) firing the patterned conductive layer.

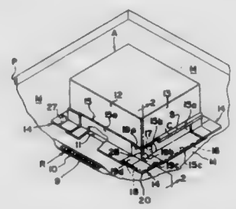
4,799,985
METHOD OF FORMING COMPOSITE FIBER BLENDS AND MOLDING SAME
Paul E. McMahon, Mountainside, and Tai-Shung Chung, Summit, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Continuation of Ser. No. 589,930, Mar. 15, 1984, abandoned. This application Apr. 28, 1986, Ser. No. 858,903
Int. Cl.⁴ B65H *81/00*; B32B *31/20*
U.S. Cl. 156—166 **19 Claims**



1. A process for preparing a composite article which comprises:
(a) forming a continuous tow of continuous non-thermoplastic reinforcing fibers;
(b) forming a continuous tow of continuous thermoplastic polymer fibers having a melting point of at least about 50° C.;
(c) uniformly and continuously spreading the thermoplastic polymer fiber tow to a selected width;
(d) uniformly and continuously spreading the non-thermoplastic reinforcing fiber tow to a width that is essentially the same as the selected width for the thermoplastic polymer fiber tow;
(e) intimately, uniformly and continuously intermixing the spread non-thermoplastic reinforcing fiber tow and the spread thermoplastic polymer fiber tow in a relatively tension-free state by employing a gas intermixing means which directs a generally perpendicular gas flow onto the fibers and by bringing the tows into simultaneous contact with each other in substantially the same area such that there is provided a substantially uniform distribution of the thermoplastic fibers and the non-thermoplastic reinforcing fibers within an intimately intermixed tow;
(f) continuously withdrawing the intimately intermixed tow;
(g) applying the intimately intermixed tow to a mold; and
(h) heating the intermixed tow to a temperature above the melting point of the thermoplastic fibers.

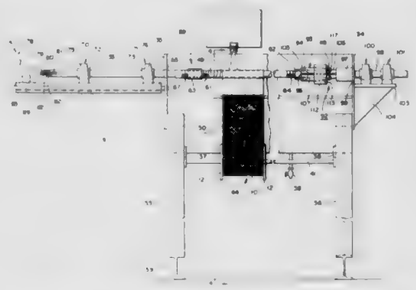
4,799,986
METHOD OF FABRICATING POLYMER-COATED FABRIC OUTSIDE CORNER PIECES FOR SINGLE-PLY POLYMER-COATED FABRIC CORE ROOF MEMBRANES
Albert S. Jansi, Saginaw, Mich., assignor to Duro-Last Roofing, Inc., Saginaw, Mich.
Filed Jul. 30, 1987, Ser. No. 79,586
Int. Cl.⁴ B32B *31/04*
U.S. Cl. 156—196 **15 Claims**

1. A method of fabricating polymer-coated, fabric-core, corner pieces, particularly for the integrated enclosures provided on single-ply, thermoplastic polymer-coated, fabric core roof membranes to partly cover large vertical structures projecting vertically from the roof which have vertical walls forming a corner, the corner pieces having base sections formed of membrane material and extending at an angle one to another to lie flatwise relative to and sealably secured to, the membrane, said base sections each having relatively angularly disposed vertical wall sections integrally joined along a vertical fold and adapted to fit said corner; the steps of:
a. forming a first membrane segment with a part-way side split interjacent its ends;
b. forming a second membrane segment with a generally triangularly-shaped corner portion;
c. spreading and retaining the split edges of said first segment by placing them in abutting relation with opposing sides of an elongate male die part;



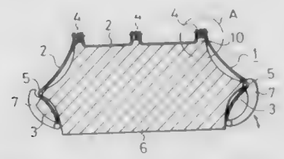
d. bowing said second segment to the general shape of a loop and placing it over said male die part such that said generally triangularly-shaped corner portion has its marginal edges lapping the spread split marginal edges of the first segment around said male die part;
e. placing an elongate female die part having flat welding edges to envelop said male die part such that said welding edges of the female die part engage said marginal edges of said second segment; and
f. applying energy to heat-weld said marginal edges of the second segment to said marginal edges of said first segment abutting said male die part.

4,799,987
PIPE TURNING APPARATUS
Harry P. Sullins, Blythewood, S.C., assignor to Richland Industries, Columbia, S.C.
Filed Apr. 10, 1987, Ser. No. 37,266
Int. Cl.⁴ B65H *81/06*
U.S. Cl. 156—425 **20 Claims**



1. An apparatus for turning an elongated pipe comprising:
frame means;
first chuck means for rotatably mounting and driving one end of said pipe;
drive means for causing rotation of said first chuck means;
second chuck means positioned opposite to said first chuck means for slidably receiving the other end of said pipe to rotatably mount said pipe between said first and second chuck means, said second chuck means comprising a plurality of resilient fingers defining a recess for slidably receiving a smooth end portion of said other pipe end, said fingers having an inner base portion and an outer gripping portion, said outer gripping portion of said fingers defining an internal transverse dimension of said recess which is less than a corresponding external transverse dimension of said smooth pipe end portion such that said outer gripping portion of said fingers are forced apart and thereby tensioned to resiliently grip said smooth pipe end portion upon sliding insertion of said other pipe end into said recess, said first and second chuck means being rotatably mounted on said frame means for rotation about the longitudinal axis of said rotatably mounted pipe; and,
reciprocation means for axially reciprocating said first chuck means towards and away from said one pipe end in the direction of the longitudinal axis of said rotatably mounted pipe, reciprocation of said first chuck means towards said one pipe end positioning said first chuck means for engaging said one pipe end to rotate said pipe by said drive means and causing said other pipe end to be retained in said recess of said second chuck means so as to mount said pipe for said rotation, and reciprocation of said first chuck means away from said one pipe end positioning said first chuck means for release of said one pipe end from said first chuck means and for slidable release of said other pipe end from said recess of said second chuck means.

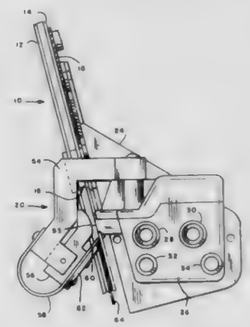
4,799,988
APPARATUS FOR MANUFACTURING AUTOMOTIVE SEATS
Makoto Shimada, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan
Filed Jul. 23, 1986, Ser. No. 888,795
Int. Cl.⁴ B32B *31/20, 31/04, 31/06*
U.S. Cl. 156—475 **3 Claims**



1. An apparatus for manufacturing an automotive seat comprising a shaping die having a shaping surface shaped to conform to a surface configuration of said seat, and a projected portion provided at a suitable position on said shaping surface of said shaping die for fixing a joint portions of a seat surface covering wherein said projected portion for fixation of said joint portions comprises a plate-like body which is provided in one side thereof with a leaf spring for gripping said joint portions of said seat surface coverings, and wherein said joint portions are fixed to said projected portion, and wherein further, said seat surface covering pressed against said shaping surface is connected to a cushion formed to conform to the configuration of said seat.

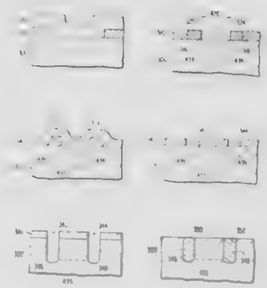
4,799,989
DOCUMENT MOISTENING DEVICE
Joseph H. Marzullo, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Oct. 30, 1987, Ser. No. 115,219
Int. Cl.⁴ B31F *1/00*
U.S. Cl. 156—442.1 **7 Claims**

1. A device for applying moisture to a flexible document containing a water-activated adhesive, comprising:
a reservoir for storing a source of water;
a supporting arm extending from said reservoir;
a pivotable hammer pivotably mounted to said supporting arm and extending toward said reservoir;
a moistening wick extending from said reservoir toward said pivotable hammer but spaced therefrom, the area between said moistening wick and said pivotable hammer defining a document path;
a flexible, one-way gate secured to a portion of said hammer for movement therewith, said gate having an end portion extending into said document path; and



a gate deflector secured to said gate and said hammer portion for movement therewith, wherein movement of a document along the document path from the gate deflector toward the pivotable hammer causes said gate to flex out of the document path and movement of a document along said document path from the pivotable hammer toward said gate deflector causes said gate to engage said document and bend around said gate deflector to thereby cause said hammer to pivot and urge said document against said wick, whereby moisture is applied to portions of said document urged against said wick.

4,799,990
METHOD OF SELF-ALIGNING A TRENCH ISOLATION STRUCTURE TO AN IMPLANTED WELL REGION
Michael L. Kerbaugh, Burlington; Charles W. Koburger, III, Essex; Jerome B. Lasky, Essex Junction; Paul C. Parries, Essex Junction, and Francis R. White, Essex Junction, all of Vt., assignors to IBM Corporation, Armonk, N.Y.
Filed Apr. 30, 1987, Ser. No. 44,374
Int. Cl.⁴ H01L *21/265, 21/308*
U.S. Cl. 156—636 **11 Claims**



1. A process for self-aligning an isolation structure to an implanted region, comprising the steps of:
providing on a surface of a semiconductor substrate, a mask-

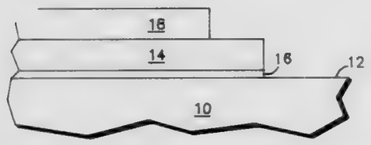
ing layer having at least one aperture formed therein, said aperture having sidewalls which are substantially perpendicular to the surface of said substrate;
implanting dopant ions into said substrate through said masking layer, so as to form a dopant region in said substrate;
defining sidewall spacers on said sidewalls of said aperture formed in said masking layer;
performing a sidewall image reversal process so that said sidewall spacers define trench apertures in a masking structure formed on said substrate;
etching isolation trenches into said substrate through said masking structure; and
wherein said step of implanting dopant ions is carried out immediately after said step of forming sidewall spacers on said sidewalls of said aperture is performed.

4,799,991

PROCESS FOR PREFERENTIALLY ETCHING POLYCRYSTALLINE SILICON

Jasper W. Dockrey, Pflugerville, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 2, 1987, Ser. No. 115,307
Int. Cl.[4] H01L *21/302*
U.S. Cl. 156—643 **14 Claims**



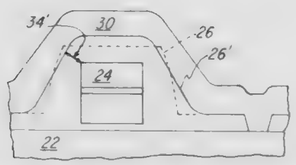
1. A process for etching polycrystalline silicon in preference to and in the presence of exposed monocrystalline silicon comprising the steps of:
providing a monocrystalline silicon substrate;
providing a patterned layer of polycrystalline silicon overlying said substrate and exposing a portion of said substrate;
anisotropically etching said patterned layer of polycrystalline silicon in a plasma comprising a noncarbonaceous compound of chlorine and oxygen as reactants;
controlling the composition of said reactants so that the surface of said monocrystalline silicon substrate is not substantially etched.

4,799,992

INTERLEVEL DIELECTRIC FABRICATION PROCESS

Kulipetnam V. Rao, Plano; Allan T. Mitchell, Garland, and James L. Paterson, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Del.

Filed Oct. 31, 1985, Ser. No. 793,593
Int. Cl.[4] B44C *1/22;* **B23P** *15/00;* **C03C** *15/00*
U.S. Cl. 156—643 **14 Claims**



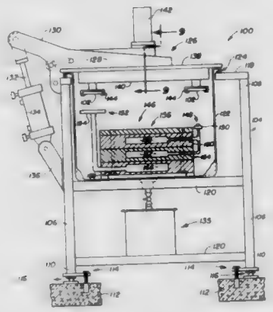
1. A process for fabricating integrated circuits, comprising the steps of:
providing a partially fabricated integrated circuit having a first patterned conductor layer thereupon;
depositing an interlevel dielectric overall;
anisotropicaly etching said interlevel dielectric to reduce its minimum thickness by at least 10 percent;
opening contact holes in said interlevel dielectric at a plurality of predetermined locations after said anisotropically etching step;
reflowing said interlevel dielectric, after said anisotropically etching step; and
forming a second patterned conductor layer in a predetermined pattern.

4,799,993

ROTARY DEVELOPER AND METHOD FOR ITS USE

Edward F. Hagan, Raleigh, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 10, 1988, Ser. No. 192,474
Int. Cl.[4] B44C *1/22;* **B29C** *37/00*
U.S. Cl. 156—644 **36 Claims**



27. A method for developing a portion of a layer comprising hardened and unhardened portions of an electronic part to form a via in the layer comprising the steps of:
loading the electronic part on a part holder rotatably mounted on a rotor;
spinning the rotor about an axis in a first direction;
orbiting the holder about the rotor axis;
rotating the holder about a holder axis;
spraying a liquid on the layer to wash out the unhardened portion to form a via;
drying the layer and the via; and
removing the part.

4,799,994

PROCESS FOR COOKING AND BLEACHING PULP

Pertti Rimpi, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Apr. 28, 1986, Ser. No. 856,416
Claims priority, application Finland, Apr. 29, 1985, 851703
Int. Cl.[4] D21C *11/00*
U.S. Cl. 162—29 **10 Claims**

1. A process for cooking and bleaching pulp, whereby the spent liquors from the cooking and the bleaching are recovered and their chemicals are regenerated to be recycled as cooking and bleaching chemicals, comprising the steps of:
A. cooking fibrous pulp material with a cooking liquor to form a cooked pulp and spent cooking liquor and spent cooking liquor,
B. separating said cooked pulp from said spent cooking liquor,
C. preparing chlorine dioxide and a secondary product containing sodium, sulfur and chlorine, by reacting a portion of $NaClO_3$, a portion of H_2SO_4 and a first stream of SO_2 gas,

D. bleaching said pulp with said chlorine dioxide and a NaOH source to form a bleached pulp, and an alkaline spent bleach liquor,
E. separating said bleached pulp, from said alkaline spent bleach liquor, and neutralizing a first portion of said alkaline spent bleach liquor to form a neutralized spent bleach liquor,
F. washing said cooked pulp with said neutralized spent bleach liquor, said washing step occurring prior to said step B to form spent washing liquors,
G. separating said spent washing liquors from said cooked pulp,
H. combining said secondary product with said spent washing liquors, burning the combined secondary product and liquors to form a melt and a stream of flue gases, containing solid material and separating said melt from said stream of flue gases,
I. dissolving said melt to form a concentrated, high sulphide, high chloride green liquor, and separating said green liquor into a first portion and a second portion,
J. causticizing said first portion of said green liquor to form said cooking liquor which is recycled to said step A for cooking fibrous pulp material,
K. clarifying said second portion of green liquor to form a clarified green liquor,
L. cooling said stream of flue gases and separating the cooled stream into a first cooled stream and a second cooled stream,



M. treating the clarified green liquor with said first cooled stream of flue gases to form a precarbonated green liquor,
N. treating said precarbonated green liquor with a $NaHCO_3$ containing solution to form a hydrogen sulphide-containing solution, a first sodium solution and a second sodium solution,
O. treating said first sodium solution with said second cooled stream of flue gases to form said $NaHCO_3$-containing solution, which is recycled to stpe N for treating said precarbonated green liquor,
P. burning said hydrogen sulphide-containing solution to form a SO_2 gas,
Q. separating said SO_2 into a first stream, which is passed to step C for preparing chlorine dioxide, and a second stream, which is converted to H_2SO_4 and exhaust gases, and said H_2SO_4 is passed to step C,
R. causticizing said second sodium solution with a source of CaO to form $CaCO_3$,
S. burning a first portion of said $CaCO_3$ to form CaO, which is recycled to step R as said CaO source,
T. evaporation crystallizing said causticized second sodium solution to form Na_2CO_2, solids Na_2SO_4 solids and a liquor of crystallization containing Na_2SO_4, and separating said Na_2CO_3 solids and Na_2SO_4 solids from said liquor of crystallization,
U. evaporation crystallizing a first portion of said liquor of crystallization of containing Na_2CO_3 to form NaCl crystals and a liquid containing NaOH,
V. separating said liquid containing NaOH into a first portion and a second portion, said first portion of said liquid containing NaOH is recycled to step D as said NaOH source for bleaching said pulp, and said second portion of said liquid containing NaOH is recycled to step J,
W. converting the NaCl crystals into $NaClO_3$, which is passed to step C as said portion of $NaClO_3$.

4,799,995

SCALE INHIBITION FORMULATIONS FOR KRAFT DIGESTERS

Druce K. Crump; Lance A. Cooper, both of Lake Jackson, and Thomas M. Hopkins, Kilgore, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 29, 1987, Ser. No. 79,307
Int. Cl.[4] C02F *5/14*
U.S. Cl. 162—76 **5 Claims**

1. In the process for inhibiting scale in pulp mill kraft digesters by the addition of an aminopoly(alkylenephosphonic acid) to the pulp liquor the improvement which comprises adding the aminopoly(alkylene phosphonic acid) in combination with one or more nonionic surfactants.

4,799,996

METALLIZABLE SUBSTRATE COMPOSITES AND PRINTED CIRCUITS PRODUCED THEREFROM

Robert Cassat, Ternay, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 11,359, Feb. 2, 1987, Pat. No. 4,714,653, which is a continuation of Ser. No. 666,036, Oct. 29, 1984, abandoned. This application Jul. 27, 1987, Ser. No. 78,166
Claims priority, application France, Oct. 28, 1983, 83 17507
Int. Cl.[4] D21H *1/48*
U.S. Cl. 162—136 **23 Claims**

1. A process for the production of a substrate composite, said composite including a central core layer comprising fibrous cellulosic material or flaked mica within a matrix of a thermosetting resin binder, said central core element having coextensively laminated to at least one of the face surfaces thereof, a lamina of a thermosetting resin comprising a particulate array of non-conductive metal oxide filler material distributed therethrough, at least a portion of said metal oxide being borohydride reduced to form unstable metal hydride intermediates into the depth of said lamina, said process comprising (i) preparing an aqueous papermaking slurry of a powder of said thermosetting resin and said fibrous cellulosic material or said flaked mica comprising said central core layer, (ii) papermaking a sheet member of same by removal of water therefrom, (iii) consolidating and drying said sheet member, (iv) coating at least one of the face surfaces of said sheet member with said thermosetting resin comprising non-conductive metal oxide filler material distributed therethrough, and (v) thence consolidating said coated sheet member.

4,799,997

SYSTEM FOR SENSING A DISCONTINUITY IN A PAPER WEB AND CONTAINING WEB PUNCTURING MEANS ACROSS THE WEB WIDTH

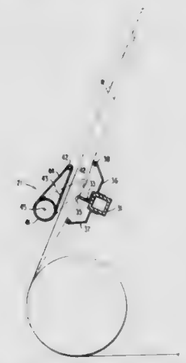
Robert H. Thompson, Hollins, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 6, 1987, Ser. No. 82,274
Int. Cl.[4] D21F *7/04*
U.S. Cl. 162—255 **3 Claims**

1. A web breakdown system in a papermachine having a normal production web route and web calendering means comprising:
(a) web continuity sensor means disposed adjacent said web route downstream of said calendering means for issuing a signal in the event of web discontinuity;
(b) web route displacement means disposed adjacent said

web route, on one side thereof, upstream of said calendering means;

(c) web puncturing means comprising a plurality of web puncturing elements disposed adjacent to and across substantially the entire width of said web route, said puncturing means being positioned on the other side of said web route from said displacement means and upstream of said calendering means;



(d) actuating means responsive to said web discontinuity signal for operating said web route displacement means and locally displacing the route of a moving web within said papermachine into penetrating engagement with said puncturing means; and,

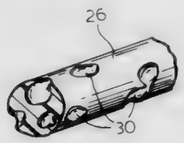
(e) said puncturing and deflection means being separated by distances sufficient to avoid injury to human body extremities present therebetween when said displacement means is operated by said actuating means.

4,799,998

PAPERMACHINE CLOTHING

William H. Dutt, Rensselaer, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,007
Int. Cl.[4] D21F *1/10*
U.S. Cl. 162—348 **1 Claim**



1. In papermachine clothing which comprises a plurality of synthetic, polymeric resin fibers and/or filaments in a cohesive fabric structure, the improvement which comprises; inclusion of porous fibers and/or filaments in the fabric structure.

4,799,999

DYNAMIC PRECIOUS METAL ASSAY METHOD

Boris Medvinsky, and Leonid Radomyshelsky, both of San Diego, Calif., assignors to Tri Electronics Company, Inc., San Diego, Calif.

Filed Mar. 31, 1987, Ser. No. 32,366
Int. Cl.[4] G01N *27/26*
U.S. Cl. 204—1 T **5 Claims**

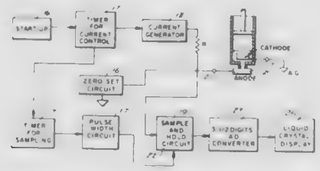
1. A dynamic precious metal assay method which comprises the steps of: Introducing an electrolyte onto a sample of precious metal,

creating a wet junction,

driving an electric current through said electrolyte,

anodizing said precious metal,

terminating said electric current,



monitoring a potential decay with respect to time of said precious metal sample at said wet junction,

comparing said potential decay with an empirical table of standards,

interpolating said potential decay by differentiating against said empirical table of standards, and

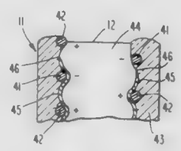
enunciating said interpolation.

4,800,000

LOW LEVEL MOISTURE MEASUREMENT SYSTEM AND METHOD

David A. Zatko, North Wales, Pa., and John F. Maguire, Riverton, N.J., assignors to Manufacturers Engineering Equipment Corp., Warrington, Pa.

Filed Jun. 3, 1987, Ser. No. 57,508
Int. Cl.[4] G01N *27/42*
U.S. Cl. 204—1 T **19 Claims**



1. An electrolytic cell for low level measurement of water in a gas, comprising the combination of:

a tubular conduit for a gas,

a gas inlet and a gas outlet in the conduit,

fittings on the inlet and outlet including channels therein for flow of the gas,

at least one pair of electrically isolated wires helically disposed in parallel on the interior wall of the conduit,

exterior leads connected to the wires,

said wires covering substantially the entire face of the interior wall exposed to the gas between the inlet and outlet, and

a water absorbent coating on the wires, said coating being electrically conductive only upon absorption of water in the gas, wherein portions of the wires adjacent the inlet and outlet, interior of the tubular conduit, are free of the absorbent coating.

2. A low level water measurement system comprising, in combination, the electrolytic cell of claim 1,

a power supply coupled to one of the exterior leads for providing electrical power to the cell,

a series resistor coupled to the other exterior lead for providing a current through the resistor equal to the current through the cell, and

voltage measurement means coupled to the resistor for measuring the voltage across the resistor, thereby providing a measure of the current through the resistor.

3. A process for determining the amount of water in a gas, which comprises passing said gas through the cell of claim 1 for a time sufficient to absorb the water therein into the coating on the electrode wires of said cell, electrolyzing said water, and recording the amount of water as a function of the current required to effect said electrolysis.

4,800,001

METHOD AND APPARATUS FOR CONTINUOUSLY GALVANIZING FLAT WORKPIECES, AND ESPECIALLY PRINTED CIRCUIT BOARDS

Rudi Ott, Sachsenheim, and Herbert Reith, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 30, 1987, Ser. No. 8,738
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1986, 3603856
Int. Cl.[4] C25D *7/00, 17/12, 17/28*
U.S. Cl. 204—15 **17 Claims**



1. Method of continuously galvanizing flat workpieces (12) each including electrically conductive material on at least a portion of the surface thereof,

comprising the steps of

feeding the flat workpieces in a nip formed between a pair of rotating rollers (7) having an electrically conductive surface, and being connected to a cathode terminal of an electrical source, and forming cathodic rollers;

then, downstream of said cathodic rollers (7), passing said workpieces between a pair of rotating rollers (8) connected to an anode terminal of the electrical source, and forming anodic rollers,

said anodic rollers having a surface (15) capable of accepting and carrying an electrolyte liquid, the surfaces of said anodic rollers being spaced slightly from the workpiece,

providing a spray hood (19) around said anodic rollers (8), said hood extending close to the surface of the workpiece (12) to prevent spraying of electrolyte onto the cathodic rollers, and spraying electrolyte within said hood (19) onto said electrolyte-accepting surface (15) of said anodic rollers, and

transferring electrolyte from said anodic rollers (8) to the workpieces (12) for electrochemical deposition of metal on the electrically conductive material of the workpiece in the gap between the surface of the workpiece and the surface of the anodic rollers while electrical current is being transferred to said electrically conductive material by continued engagement of said electrically conductive material with the cathodic rollers adjacent the anodic rollers.

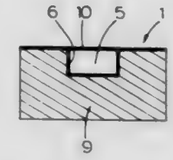
4,800,002

METHOD OF MAKING A DIAMOND HEAT SINK

Josephus A. M. Peters, Vortum-Mullem, Netherlands, assignor to Drukker International B.V., 's Cayk, Netherlands

Filed Mar. 21, 1988, Ser. No. 170,540
Claims priority, application Netherlands, Mar. 23, 1987, 8700673
Int. Cl.[4] C25D *5/02, 5/54*
U.S. Cl. 204—15 **10 Claims**

1. Method of making a diamond heat sink, wherein at least one diamond is metalized, the metalized diamond is attached to a base plate and the exposed surfaces of the diamond and the base plate are coated with a metallic layer, whereafter the base plate is removed from the diamond to obtain the diamond heat sink composed of the diamond and the metallic layer, wherein a thin solder metal layer is applied in the contact surface between the diamond and the base plate and the diamond is



attached to the base plate by supplying heat through the diamond to the contact surface between the diamond and the base plate.

4,800,003

PRODUCTION OF MAGNESIUM METAL FROM MAGNESIUM CONTAINING MATERIALS

John G. Peacey, Lancaster, and G. Bryn Harris, Kirkland, both of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Sep. 29, 1987, Ser. No. 102,377
Claims priority, application Canada, Nov. 21, 1986, 523608
Int. Cl.[4] C15R *3/04*
U.S. Cl. 204—70 **4 Claims**



1. A process for the production of Mg metal from impure Mg-containing materials comprising the steps of:

(a) reacting a slurry of impure Mg-containing material with a hot HCl-containing gas stream to produce an impure $MgCl_2$ slurry;

(b) purifying said $MgCl_2$ slurry to form a substantially pure $MgCl_2$ solution ;

(c) drying said substantially pure $MgCl_2$ solution to produce a $MgCl_2$ powder containing up to about 5% each of MgO and H_2O;

(d) dehydration melting of said $MgCl_2$ powder to produce molten anhydrous $MgCl_2$;

(e) performing electrolysis of said molten anhydrous $MgCl_2$ to produce Mg metal and Cl_2; and

(f) recycling all the Cl_2 produced during electrolysis to said dehydration melting step for converting MgO and H_2O present in said $MgCl_2$ powder into $MgCl_2$ and HCl and for producing said hot HCl-containing gas stream.

4,800,004

CONDUCTOR ROLL PROFILE ADJUSTMENT

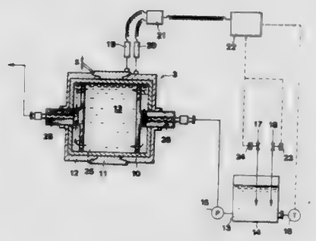
Kazuo Fujii, Chiba, Japan, assignor to Kawasaki Steel Corp., Hyogo, Japan

Filed Apr. 13, 1988, Ser. No. 181,326
Int. Cl.[4] C25D *7/06*
U.S. Cl. 204—28 **4 Claims**

1. A method for adjusting the profile of a conductor roll for

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electroplating, the conductor roll having an axis and a circumferential outer surface and being provided on the circumferential outer surface with a conductor ring at an intermediate and a pair of rubber linings at axially opposed sides of the conductor ring, a step being formed between the outer surfaces of the conductor ring and the rubber lining, the method comprising



cooling the conductor roll with a coolant passing through the interior of the roll, and

controlling the temperature of the coolant in response to the information indicative of the step to thereby control the step to a predetermined value.

4,800,005

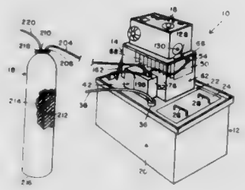
TREATMENT PLANT FOR RECOVERY OF METAL FROM HAZARDOUS WASTE

Gerson J. Rosenfield, 40 Edgelawn Ave., North Andover, Mass. 01845; Samuel Rosenfeld, deceased, late of Lexington,, Mass., and Rhoda Rosenfield, executrix, 6 Wheeler Rd., Lexington, Mass. 02173

Filed Aug. 14, 1987, Ser. No. 85,366

Int. Cl.⁴ C25C *1/20;* **C02F** *1/46;* **C25D** *17/00, 17/12*

U.S. Cl. 204—109 **35 Claims**



25. Process for the electrolytic recovery of silver from spent photo fix solutions in which the silver is dissolved comprising:

(a). providing spent photo fix solution to an electrolytic recovery operation at a predetermined fixed flow rate;

(b). subjecting a first predetermined increment of that spent solution to successive electrolytic recovery operations and then

(c). subjecting successive predetermined increments of the spent solution to the same successive electrolytic recovery operations.

4,800,006

ELECTROLYTIC FINISHING SYSTEM AND METHOD

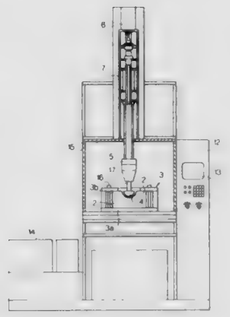
Youhei Kuwabara, Fukuroi; Teruo Asaoka, Kakegawa; Masayoshi Moriya, Shizuoka; Yasuhiro Iwasaki, Mori, and Haruki Sugiyama, Hamamatsu, all of Japan, assignors to Shizuoka Seiki Co., Ltd., Shizuoka, Japan

Filed Oct. 22, 1987, Ser. No. 111,237

Claims priority, application Japan, Oct. 30, 1986, 61-257071; Feb. 9, 1987, 62-027616; Apr. 23, 1987, 62-100291

Int. Cl.⁴ B23H *3/10, 11/00*

U.S. Cl. 204—129.43 **7 Claims**



6. A method for finishing a work having a three-dimensional surface comprising:

positioning an electrode to form a predetermined gap between the electrode and the surface of the work;

supplying electrolyte to an electrolyte tank so as to submerge the electrode and the work;

applying a pulse to the electrode;

injecting an electrolyte to the gap to expel the electrolyte in the gap after at least one pulse application;

discharging the electrolyte including residual products from the electrolyte tank;

cleaning the discharged electrolyte to produce clean electrolyte; and

repeating said method.

4,800,007

CORROSION PROTECTION FOR HEAT EXCHANGERS

Bertil Karlsson, Lund, and Leif Berthagen, Glumslöv, both of Sweden, assignors to Alfa-Laval Thermal AB, Lund, Sweden

PCT No. PCT/SE85/00341, § 371 Date May 8, 1986, § 102(e) Date May 8, 1986, PCT Pub. No. WO86/01837, PCT Pub. Date Mar. 27, 1986

PCT Filed Sep. 11, 1985, Ser. No. 862,494

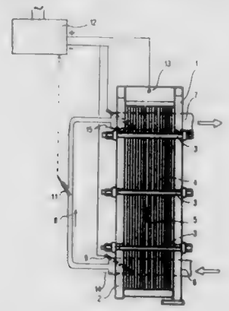
Claims priority, application Sweden, Sep. 19, 1984, 8404682

Int. Cl.⁴ C23F *13/00*

U.S. Cl. 204—196 **10 Claims**

1. A heat exchanger comprising means forming at least one flow way for a first fluid and a plurality of flow passages coupled in parallel for a second fluid, said means including metallic first elements arranged for heat transfer between fluids passing through said flow way and said flow passages, respectively, second elements forming an inlet channel and an outlet channel in communication with the respective ends of said flow passages, means for supplying a corrosive liquid to said inlet channel, separate cathodes in the inlet and outlet channels, respectively, a direct current source having a negative terminal connectd to said cathodes and having a positive terminal connected to said metallic first elements, a reference electrode arranged to sense a value related to the potential of said metallic first elements relative to corrosive liquid supplied through said inlet channel, a control unit connected to said reference electrode and said direct current source and operable

to change the current output of the current source in response to a difference between a preset value and said sensed value to obtain and maintain said potential within the passive range of a relevant polarization curve, said reference electrode being



located in spaced relation to said inlet and outlet channels , and means forming a separate passageway coupled in parallel with said flow passages and arranged for through flow of corrosive liquid supplied to said inlet channel, said reference electrode being located in said separate passageway.

4,800,008

ELECTROLYSER OF THE FILTER-PRESS TYPE

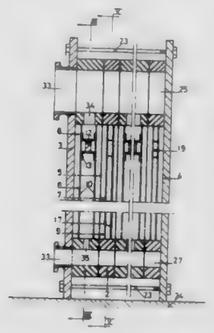
Jean-Paul Detournay, Frameire, and Emile Caberaux, Brussels, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Jul. 1, 1987, Ser. No. 68,842

Claims priority, application France, Jul. 9, 1986, 86 10143

Int. Cl.⁴ C25B *9/00, 9/02*

U.S. Cl. 204—253 **11 Claims**



1. Electrolyser of the filter press type comprising a stack of vertical frames defining electrolysis chambers, vertical electrodes in said chambers, rigid members at the ends of said stack and tension means for drawing said end members toward one another to compress said frames between them,

said frames being formed of elastically deformable material and freely surrounding respective electrodes to permit lateral expansion of said frames when compressed between said end members, and

means locally interconnecting said electrodes with respective frame, only at spaced intervals distributed around the peripheries of said electrodes to position said electrodes with respect to said frames while permitting lateral expansion of said frames.

4,800,009

ELECTROCHEMICAL CELL WITH MOVING ELECTRODE

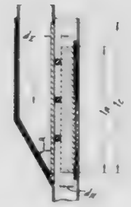
Aleksandar Despic, Vlajkoviceva 13, and Kosta Krunanovic, Dr. Nika Miljanica 7, both of 11000 Beograd, Yugoslavia

Filed Aug. 17, 1987, Ser. No. 86,313

Claims priority, application Yugoslavia, Apr. 24, 1987, 749/87

Int. Cl.⁴ C25D *17/10;* **C25B** *9/00;* **C25C** *7/02;* **H01M** *4/00*

U.S. Cl. 204—225 **20 Claims**



1. A plurality of electrochemical cells each having an anode, a support said anode, a cathode, and a support for said cathode, one of said anode and said cathode being movable with respect to the other of said anode and said cathode characterized in that said anode support has a partially beveled surface which slidingly support means provided on said cathode support of an adjacent cell to enable movement of said cathode support of said adjacent cell relative to said anode support and each of said cathodes carries spacers operative to maintain a predetermined spacing between said anode and said cathode of each of said cells.

4,800,010

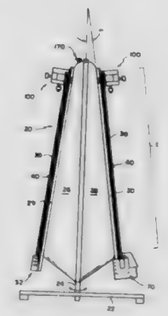
LOCKABLE, ROTATING ELECTROPHORESIS DEVICE

Robert R. Hellman, Jr., Southbury, Conn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1988, Ser. No. 187,117

Int. Cl.⁴ G01N *27/26*

U.S. Cl. 204—299 R **8 Claims**



1. In an electrophoresis device for electrophoretically separating charged compounds, the device comprising a support for mounting at least one gel plate assembly, a pair of buffer tanks for each gel plate assembly, means for mounting said pair of tanks at opposite ends of said each gel plate assembly, and means for applying a current at said opposite ends of said each plate assembly;

the improvement wherein said device further includes a base on which said support is mounted, means for rotating said support about said base about a generally vertical axis, and

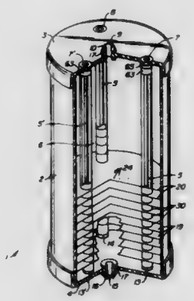
means for releasably locking said support in at least one position relative to said base.

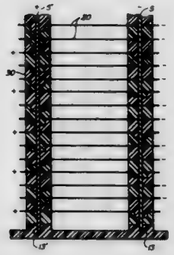
4,800,011

FLUID FILTER WITH IMPROVED ELECTRODE AND SPACER CONFIGURATION

Woodrow A. Abbott, 2930 Sunnyfield Dr., Whitegate Estates, Merced, Calif. 95340, and Leo J. Durossette, 1100 N. Central, Modesto, Calif. 95351

Filed Jul. 22, 1987, Ser. No. 76,463
Int. Cl.[4] B03C *5/02, 3/34, 3/40*
U.S. Cl. 204—302 **15 Claims**





1. A filter for removing particles from fluids comprising:
a housing defining a chamber and formed with an inlet and an outlet;
a plurality, including first and second sets, of plate-like electrodes disposed within said chamber and arranged in spaced parallel relationship;
a plurality of porous filter media disposed between said electrodes in said chamber so that fluid flowing from said inlet to said outlet passes through said porous filter media and through the regions between adjacent ones of said electrodes;
first and second conductive bus bars, each having a respective cross section, said bus bars extending generally perpendicular to said electrodes;
each of said first set of electrodes being formed with first and second apertures, said first aperture being sized to correspond to the cross section of said first bus bar, said second aperture being larger than the cross section of said second bus bar;
each of said second set of electrodes being formed with first and second apertures, said first aperture being sized to correspond to the cross section of said second bus bar, said second aperture being larger than the cross section of said first bus bar;
said electrodes being disposed with said first bus bar passing through the respective first apertures of said first set of electrodes and through the respective second apertures of said second set of electrodes; and
a plurality, including at least two types, of dielectric spacer elements associated with said first bus bar;
each of said spacer elements having a body portion formed with a bore sized to accommodate said first bus bar, said body portion having an axial extent corresponding to a separation distance between adjacent electrodes and having a transverse cross section larger than the second apertures of said second set of electrodes;
each of at least one of said types of said spacer elements further having a projecting portion formed with a bore sized to accommodate said frist bus bar, said projecting portion having a cross section commensurate with the second apertures of said second set of electrodes, thereby defining a shoulder between the body portion and the projecting portion;
each of at least another of said types of said spacer elements having its body portion formed with a cavity opening towards one end of the spacer element and acting to enlarge the bore of the spacer element, said cavity being sized to allow insertion of the projecting portion of another spacer element;
said spacer elements being axially aligned, with said first bus bar passing through the respective bores of said spacer elements so as to permit electrical contact between said first bus bar and said first set of electrodes, and with said projecting portions of said spacer elements passing through the respective second apertures of said second set of electrodes so as to prevent electrical contact between said first bus bar and said second set of electrodes.

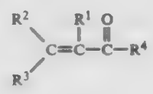
4,800,012

ELECTROCHEMICAL PROCESS FOR THE REPLACEMENT OF HALOGEN ATOMS IN AN ORGANIC COMPOUND

Steffen Dapperheld, Kriftel; Rudolf Heumüller, Bad Soden am Taunus, and Manfred Wildt, Brombachtal, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 16, 1988, Ser. No. 155,767
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1987, 3704915
Int. Cl.[4] C25G *3/00*
U.S. Cl. 204—73 R **9 Claims**

1. A process for the replacement of halogen atoms by hydrogen or deuterium atoms in an organic compound of the formula I



(I)

in which
R^1 is a hydrogen, deuterium or halogen atom or a methyl, deuteromethyl, nitrile, halogenomethyl or deuterohalogenomethyl group,
R^2 and R^3 independently of one another are hydrogen, deuterium or halogen atoms, and
R^4 is halogen, —OH, —OD, —OMe in which Me=an alkali metal ion, alkaline earth metal ion or NH_4^+ ion, C_1–C_{12}-alkoxy, nitrile or $—NR^5R^6$ in which R^5 and R^6 are identical or different and denote —H, —D, C_1–C_{12}-alkyl or phenyl,
at least one of the radicals R^1, R^2 or R^3 being a halogen atom, by means of electrochemical reduction, which comprises subjecting the compound of the formula I to electrolysis, in an undivided cell or a divided cell, in an electrolysis liquid composed of:
0 to 100% by weight of water or deuterium oxide,
100 to 0% by weight of an auxiliary solvent and

0 to 10% by weight of a salt of a metal having a hydrogen overvoltage of at least 0.25 volts relative to a current density of 300 mA/cm^2) and/or having dehalogeneting properties,
relative in each case to the total amount of electrolyte in the undivided cell or of the catholyte in the divided cell, at a temperature from −10° C. up to the boiling point of the electrolysis liquid and at a current density of 1 to 500 mA/cm^2, the cathode being composed of lead, cadmium, zinc, copper, tin, zirconium or carbon.

4,800,013

REFRIGERATOR OIL COMPOSITION

Ryozo Yamane, Funabashi; Takashi Kurihara, Ichihara; Hiroshi Kaise, Ouizumi; Takeo Komatsubara, Ashikaga, and Takashi Sunaga, Oura, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed May 13, 1987, Ser. No. 50,501
Claims priority, application Japan, May 26, 1986, 61-119090
Int. Cl.[4] C10G *71/00*
U.S. Cl. 208—19 **4 Claims**

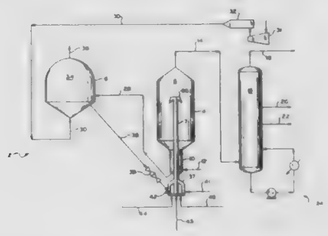
1. A refrigerator oil composition comprising 70 to 98 wt % of a paraffin base oil having a pour point of not more than −35° C., a sulfur content of not more than 50 ppm and a kinematic viscosity at 40° C. of 5 to 500 cSt, and 30 to 2 wt % of a naphthene base oil having a pour point of not more than −35° C., a sulfur content of 0.05 to 1 wt % and a kinematic viscosity at 40° C. of 5 to 500 cSt, wherein the sulfur content of the composition is 0.01 to 0.10 wt %.

4,800,014

CATALYTIC CRACKING PROCESS

George E. Hays; Richard H. Nielsen; Chester O. Bowen, and Floyd H. Holland, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 557,552, Dec. 2, 1983, Pat. No. 4,562,046.
This application Oct. 23, 1985, Ser. No. 790,580
The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.
Int. Cl.[4] C10G *11/18*
U.S. Cl. 208—157 **15 Claims**



1. A method for mixing a fluidized particulate catalyst and a liquid oil feedstock comprising:
introducing a stream of the liquid oil feedstock in admixture with an atomizing fluid generally axially into the mouth of a riser reactor from an atomization chamber generally in axial alignment with the riser; and
introducing the fluidized particulate catalyst into the mouth of the riser from substantially the entire circumference of the mouth of the riser, wherein the fluidized particulate catalyst is introduced into the mouth of the riser from a catalyst lift chamber annularly positioned around the atomization chamber and physically separated from the atomization chamber, and wherein the fluidized particulate catalyst flows into the oil feedstock with a substantially radially inward velocity component from the periphery of the stream of oil feedstock.

4,800,015

UTILIZATION OF LOW RANK COAL AND PEAT

John J. Simmons, P.O. Box 1971, Bismarck, N. Dak. 58502

Division of Ser. No. 848,166, Apr. 3, 1986, Pat. No. 4,705,533.
This application Jan. 17, 1987, Ser. No. 63,124
Int. Cl.[4] C10M *175/00*
U.S. Cl. 208—180 **1 Claim**

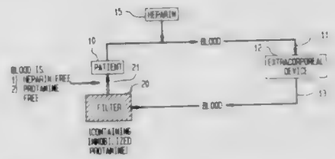
1. A method for utilizing waste oil to produce an enriched fuel and re-refined oil comprising:
(a) obtaining a previously used oil;
(b) immersing a low rank coal which has been previously crushed to a mean particle size of between about ¼ and 1½ inches in diameter in said oil;
(c) heating the oil coated mixture to a temperature of between about 300 to 400 degree F. (149–227 degrees C.) to dry said coal;
(d) screening and/or centrifuging the oil coated coal to allow excess oil to drain from said coal;
(e) heating the oil coated coat between about 350–500 degrees F. (177–260 degrees C.) to further reduce the oil content of the oil coated coal which is now an enriched fuel; and
(f) condensing the resulting water and oil vapors and separating the condensed products in a water-oil separator in order to obtain a rerefined condensed oil.

4,800,016

EXTRACORPOREAL BLOOD DE-HEPARINIZATION SYSTEM

Victor C. Yang, Ann Arbor, Mich., assignor to The University of Michigan, Ann Arbor, Mich.

Filed Nov. 24, 1986, Ser. No. 934,012
Int. Cl.[4] B01D *36/02*
U.S. Cl. 210—206 **7 Claims**



1. A system for extracorporeal treatment of blood of a living in an extracorporeal device having an inlet and an outlet, the system comprising;
means for adding heparin to an extracorporeal flow of the blood prior to the blood entering the inlet of the extracorporeal device; and
filter means formed of protamine for binding said heparin, said protamine being immobilized in a biocompatible polymer support material, said filter means being coupled to the outlet of the extracorporeal device prior to returning the blood to a living being, whereby the returned blood is substantially free of said heparin.

4,800,017

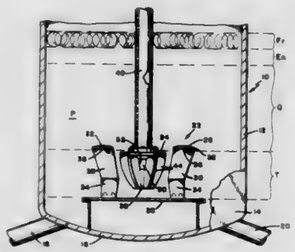
FLOTATION MECHANISM

Prem Krishnaswamy, Chagrin Falls, and Mark E. Hoyack, Maple Hts., both of Ohio, assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Apr. 16, 1987, Ser. No. 39,051
Int. Cl.[4] C02F *1/24*; B01F *3/04*
U.S. Cl. 210—219 **5 Claims**

1. An improved flotation mechanism suitable for flotation separation of materials from ore comprising an upstanding liquid tight receiving tank for receiving and processing a three phase slurry including intimately mixed finely ground solid liquid and air, a pump located within the cell defined by the

receiving tank and located in the lower region of the cell, the pump including rotor and stator members for creating a turbulent flow of the slurry for intimately mixed ground solids and for aerating the mixture, and means for directing the turbulent flow within the cell, said directing means comprising deflector vanes joining said stator members and having a predominantly horizontal orientation with a downwardly directed exit angle



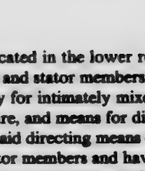
for receiving the flow of slurry from the rotor and redirecting that flow to a generally outward and downward direction so that turbulent flow within the cell is confined to the lower region of the cell while formation of an upwardly extending uniformly aerated quiescent zone above the turbulent zone is promoted and an enrichment zone and a froth zone for efficient flotation of mineral particles by attachment to carrier air bubbles for recovery at the froth zone are formed.

4,800,018

PORTABLE WATER PURIFICATION SYSTEM

Ronald T. Moser, c/o Northwestern Resources, Inc., P.O. Box 898, Anderson, Calif. 96007

Filed Mar. 30, 1987, Ser. No. 31,857
Int. Cl.[4] B01D *27/02*
U.S. Cl. 210—266 **5 Claims**



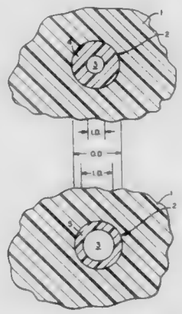
1. A water purification system comprising:
(a) a container with a wall having a tubular configuration; a base member covering one end of said container sealing said wall to form a water retaining structure;
(b) said wall being thickened adjacent said base member to provide a substantially centered support ledge inside the container;
(c) a removable disposable filter cartridge supported by said support ledge; the end of said container oppositely to said base being opened;
(d) said opened end of said container having a wall edge thereof fitted with a carrying rim; said carrying rim comprising
(e) a removable lid thereon; said container arranged for vertical use with said base downwardly and said carrying rim and removable lid upwardly;
(f) external support members affixed to said base for resting the container structure thereon;
(g) a crosswise handle diametrically disposed in a raised circular abuttment on said removable lid for twist attachment and detachment thereof from said carrying rim by cooperative threading therewith;
(h) said crosswise handle being apertured on sides by air vents cooperatively aligned with
(i) an internally positioned air venting straw;
(j) said container being partitioned in parallel alignment to said base and said removable lid substantially centrally by a removable and disposable filter cartridge;
(k) said centrally fitted disposable filter cartridge containing filtering materials retained therein by a flow-regulating apertured top cover, side walls of said disposable cartridge, and a flow-regulating apertured bottom;
(l) said filtering materials comprising a filter fabric upper covering, a purifying medium core, and a filter fabric lower covering encased in said disposable filter cartridge;
(m) said disposable filter cartridge dividing said container into an upper unfiltered water receiving compartment and a lower filtered water storage compartment, whereby unfiltered water induced into said upper compartment passes through said disposable filter cartridge for purification and disposition into said lower compartment;
(n) a manual spigot installed adjacent said base in the container side wall piped into said lower compartment for removal of said purified water therefrom;
said air venting straw centrally aligned through said filter cartridge housing and extending through said upper unfiltered water receiving compartment to said apertures in said crosswise lid handle;
whereby said air venting straw arrangement allows air passage through said removable lid via said crosswise lid handle apertures into said filtered water storage compartment for air displacement therein and permits water to gravitate freely through the disposable filter cartridge into said filtered water storage compartment with said spigot opened or closed and allows free-flow of water from the filtered water storage compartment when purified water is retrieved by opening said spigot.

4,800,019

TUBESHEET FOR SEMIPERMEABLE MEMBRANE DEVICES

Benjamin Bikson, Brookline, and Salvatore Gigila, Norwood, both of Mass., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 22, 1988, Ser. No. 184,799
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—321.8 **17 Claims**



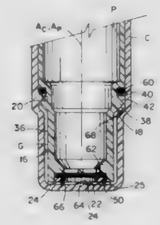
1. A fluid separation device comprising.
a bundle of selectively permeable hollow fibers;
a resinous potting agent forming a tubesheet for the end portions of said permeable hollow fibers;
said permeable hollow fibers having the ends of the inner bores thereof open; wherein the major portion of the bores of said permeable hollow fibers along a portion of their length embedded in said tubesheet has a larger inside bore diameter than the inside bore diameter of the section of said permeable hollow fibers not embedded in said tubesheet.

4,800,020

PISTON FILTERING DEVICE

Peter G. Savas, Concord, Mass.; Virginia S. Kiger, Old Bridge, N.J., and Ronald R. Boudreau, Fitchburg, Mass., assignors to Xydex Corporation, Bedford, Mass.

Filed May 21, 1987, Ser. No. 52,780
Int. Cl.[4] B01D *33/00*
U.S. Cl. 210—359 **26 Claims**



1. A filtering device comprising:
a hollow cylinder, open at one end and closed at the other, an interior length of the cylinder contiguous with the closed end having a cylindrical cross section of reduced internal diameter,
a hollow piston, open at one end and having an aperture at the other,
a length of the piston contiguous with the end with the aperture having a cylindrical cross section of reduced external diameter,
the reduced external diameter of the piston being smaller than the reduced internal diameter of the cylinder to create a cylindrical gap therebetween when the piston is inserted into the cylinder,
filter material located across the aperture of the piston, and
the piston being slidable in the cylinder with the end with the aperture movable toward the closed end of the cylinder and with the reduced diameter portion of the piston movable within the reduced diameter portion of the cylinder to reduce the volume of space between the piston and the cylinder at the closed end of the cylinder.

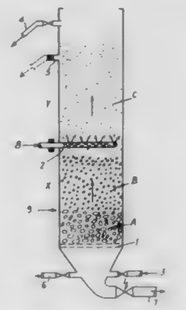
4,800,021

PROCESS FOR BIOLOGICALLY PURIFYING SEWAGE ON A BED OF GRANULAR MATERIAL

Gilbert Desbos, Maisons-Laffitte, France, assignor to OTV (Omnium de Traitements et de Valorisation), Courbevoie, France

Filed Sep. 25, 1987, Ser. No. 100,972
Claims priority, application France, Oct. 1, 1986, 86 13675
Int. Cl.[4] C02F *3/30*
U.S. Cl. 210—605 **5 Claims**

1. In a process for biologically purifying sewage with a biomass in a fixed multilayer bed of granular materials with at least partial aeration of the biomass and where the sewage to be treated flows upwardly in said bed, the improvement comprising using a single filtration reactor including a lower anaerobic zone and an upper aerobic zone, said zones being materially separated by an injection of oxygenated gas, said filtration reactor including, in an upward direction: a first layer having a grain size of between about 20 mm and about 60 mm over a height of at least 15 cm; a second layer having a grain size of between 6 mm and about 10 mm over a height of at least 40 cm; and an upper layer having a grain size of from about 21 mm to about 4 mm over a height of at least 50 cm; said injection of



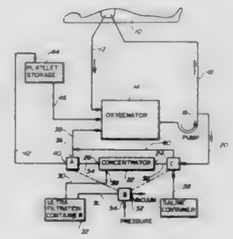
oxygenated gas being made in the lower part of the said upper layer.

4,800,022

PLATELET COLLECTION SYSTEM

Ronald J. Leonard, Harvard, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 711,145, Mar. 13, 1985, abandoned. This application Nov. 4, 1986, Ser. No. 926,865
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—636 **22 Claims**



10. A method of collecting platelets from whole blood from a patient comprising:
obtaining said whole blood from said patient;
selectively transporting said whole blood through a passageway defined by at least a first porous membrane;
selectively removing substantially only water from a boundary layer formed adjacent said porous membrane to concentrate said platelets; and
flushing said concentrated platelets from said boundary layer.

4,800,023

METHOD OF ASEPTIC TREATMENT OF WATER AND A STORAGE CONTAINER TO BE USED AT SUCH TREATMENT

Nils Arthun, Partille, and Peter Löfgren, Hovås, both of Sweden, assignors to Steridose Systems, Askim, Sweden

Filed Feb. 2, 1987, Ser. No. 9,739
Int. Cl.[4] B01D *13/00, 21/00*
U.S. Cl. 210—644 **9 Claims**

1. A method, comprising providing effective short term aseptic storage and treatment of water at a temperature as low as ambient, where produced water is supplied to a storage container and water is recirculated by means of a pump through a loop filter, including the steps of:

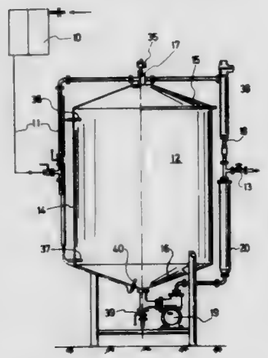
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recirculating water from the bottom of the container up to the top part thereof,

mixing a fresh supply of water and recirculated water in a mixing and deflector member at the top part, and

spreading the water mixture from said member in a thin layer along the inside of the top part of the container and the internal side walls above a temporary water level in the container.

2. A storage container comprising: an apparatus for providing effective short term aseptic storage and treatment of water at a temperature as low as ambient, provided with an inlet and an outlet, including,



a cylindrical casing having a conical top and bottom parts connected thereto, wherein at least said top conical part lacks internal moisture accumulation projections,

a mixing and spreading unit arranged centrally at the top part of the container,

a connection conduit connected to the unit and arranged for supplying produced water from the outside of the container,

a circulation conduit from the bottom of the container to a pump and a loop filter in said circulation conduit, and

a discharge conduit downstream of the loop filter.

4,800,024

REMOVAL OF HEAVY METALS AND HEAVY METAL RADIOACTIVE ISOTOPES FROM LIQUIDS

Geraldine S. Elfline, Morrison, Ill., assignor to Iso-Clear Systems Corporation, Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 849,152, Apr. 7, 1986. This application Aug. 4, 1986, Ser. No. 892,960

The portion of the term of this patent subsequent to Aug. 16, 2005, has been disclaimed.

Int. Cl.[4] G21F *9/10*

U.S. Cl. 210—665 **41 Claims**

1. A method of treating a heavy metal-bearing liquid to remove a substantial portion of the heavy metals therefrom without substantial sludge formation comprising:

contacting said liquid with a water-insoluble carboxylated cellulose and a water-insoluble heavy metal interactant in an amount sufficient to cause precipitation of a substantial portion of the heavy metals in the liquid.

4,800,025

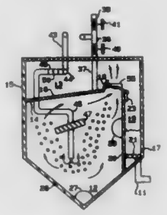
APPARATUS AND PROCESS FOR THE GAS FLOTATION PURIFICATION OF OIL-CONTAMINATED WATER

John A. Bibaeff, Lafayette, La., assignor to Pony Industries, Inc., New York, N.Y.

Filed Aug. 20, 1986, Ser. No. 898,293

Int. Cl.[4] C02F *1/24*

U.S. Cl. 210—703 **29 Claims**



1. A dispersed gas flotation apparatus useful for separating insoluble impurities from a liquid comprising:

(a) an elongate closed flotation vessel having an inlet end, an outlet end, a front sidewall, and a rear sidewall and defining a lower liquid flow zone and an upper gas collection zone, the direction from said inlet end to said outlet end defining a longitudinal direction,

(b) means for introducing a liquid contaminated with insoluble impurities into the inlet end of the vessel,

(c) means for removing at least partially decontaminated liquid from the outlet end of the vessel,

(d) at least one vertical baffle means disposed in said liquid flow zone substantially normal to said longitudinal direction for dividing said liquid flow zone into a plurality of flotation cells, said baffle means being substantially impervious to flow of said liquid except for a cutout adjacent one of said front and rear sidewalls for affording communication between adjacent flotation cells, thereby permitting said liquid to flow between said flotation cells,

(e) vertical screen means disposed in at least one flotation cell in a substantially parallel plane relative to said vertical baffle means, said screen means being adapted to aid in the separation of said insoluble impurities from said liquid,

(f) gas introduction means for introducing gas bubbles into an interior of at least one flotation cell, said gas bubbles rising upwardly through said liquid and contacting the insoluble impurities,

(g) contaminant collection means disposed longitudinally and horizontally in said vessel above said vertical baffle means and said screen means, and

(h) means communicating with said contaminant collection means for removing contaminants from said vessel;

wherein said cutout is positioned in said baffle means at a location minimizing a downward flow of liquid opposite said upward direction of said rising gas bubbles.

4,800,026

CURABLE AMINE FUNCTIONAL SILICONE FOR FABRIC WRINKLE REDUCTION

Timothy W. Coffindaffer, Loveland, and Louis F. Wong, Mason, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 64,954, Jun. 22, 1987, abandoned. This application Dec. 22, 1987, Ser. No. 136,586

Int. Cl.[4] D06M *00/00*; C08G *37/26*

U.S. Cl. 252—8.8 **23 Claims**

1. A liquid fabric care composition comprising: (1) a suitable curable amine functional silicone agent for wrinkle reduction, (2) an effective amount of a fabric softener, and (3) a suitable carrier to deposit an effective amount of said curable amine functional silicone on said fabric, and

wherein said curable amine functional silicone curves to form silicone-oxygen-silicone linkages; and wherein said fabric softener is selected from the group consisting of:

i. a quaternary ammonium compounds;

ii. a fatty amine fabric softening compounds;

ii. a fatty amide compounds; and

iv. mixtures thereof.

4,800,027

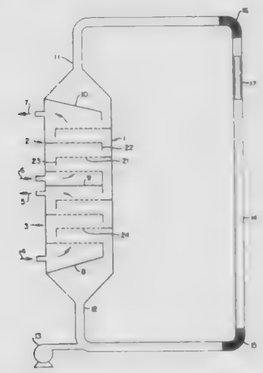
PROCESS FOR CONTINUOUS APPLICATION OF SOLID LUBRICANT TO MOVING BED PARTICLES

William E. BeVier, Kenmore; Charles F. Falls, deceased, late of Tonawanda, both of N.Y., and by Virginia N. Falls, executor, Seminole, Fla., assignors to UOP, DesPlaines, Ill.

Filed Jan. 27, 1987, Ser. No. 7,089

Int. Cl.[4] C10M *125/02, 125/00*

U.S. Cl. 252—18 **10 Claims**



1. A process for applying solid lubricant to moving bed particles comprising recirculating moving bed particles through a moving bed apparatus having an enclosure, enclosure outlet and inlet, and conduit means between the inlet and outlet so as to place the inlet and outlet in flow communication, and contacting recirculating moving bed particles with solid lubricant comprising at least some of the internal surface of said conduit means, thereby applying solid lubricant to the surface of said recirculating moving bed particles.

4,800,028

POLYMERS AND LUBRICANT ADDITIVES OF ALKYLENE DITHIOTHIADIAZOLES AND ALKYLENE CYANODITHIOIMIDOCARBONATES

Sameeh S. Toukan, Schuylkill, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 737,121, May 23, 1985, Pat. No. 4,678,592. This application Jul. 6, 1987, Ser. No. 69,910

The portion of the term of this patent subsequent to Jul. 7, 2004, has been disclaimed.

Int. Cl.[4] C10M *103/00, 149/00*

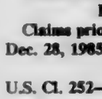
U.S. Cl. 252—25 **8 Claims**

1. A polymeric composition having the formula

$$[Y]_m[S-Z-S-R-(X)_p]_n$$

wherein

Z is any thiadiazolyl isomer and can be



if p is zero;

X is any dimercapto thiadiazolyl isomer;

R is selected from the group consisting of:

(a) alkylene of 2–10 carbons which can be straight or branched chain;

(b) cyclic hydrocarbon of 5–7 carbons;

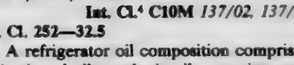
(c) aralkylene of 8–30 carbons;

(d) aromatic of 5–7 carbons;

(e) heterocyclic of 2–6 carbons; and

(f) any one of (a)–(e) above substituted with aralkyl of 8–30 carbons, cyclic hydrocarbon of 5–7 carbons, aromatic of 5–7 carbons, or heterocyclic groups of 2–6 carbons each;

Y is



p is zero or 1;

m is zero or 1 provided M is zero when p is 1; and

n is an integer of 4–1000.

4,800,029

LUBRICATING OIL COMPOSITION

Masashi Dozai, Ichihara, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1988, Ser. No. 168,931

Claims priority, application Japan, Apr. 11, 1987, 62-087933

Int. Cl.[4] C10M *129/74, 137/04*

U.S. Cl. 252—32.5 **4 Claims**

1. A lubricating oil composition comprising:

(A) a base oil having a naphthene content of at least 30%, an aromatic content of not more than 2%, and a kinematic viscosity at 100° C. of 1.5 to 30 cSt; and

(B) 0.01 to 5% by weight based on the total weight of the composition of a friction modifier.

4,800,030

REFRIGERATOR OIL COMPOSITION

Masato Kaneko; Hiroshi Nagakawa, both of Ichihara, and Kenichi Yamashita, Tokyo, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Dec. 18, 1986, Ser. No. 944,247

Claims priority, application Japan, Dec. 28, 1985, 60-299381; Dec. 28, 1985, 60-299382

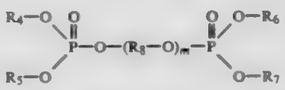
Int. Cl.[4] C10M *137/02, 137/04*

U.S. Cl. 252—32.5 **10 Claims**

1. A refrigerator oil composition comprising:

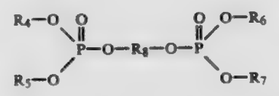
(1) mineral oil, synthetic oil or a mixture thereof; and

(2) at least one phosphorus compound selected from the group consisting of a phosphorus compound represented by the general formula:

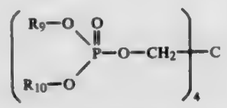


wherein R_4 to R_7 each represent a radical having 1 to 30 carbon atoms selected from an alkyl group, an alkylaryl group, a cycloalkyl group, an aryl group, an alkylcycloal-

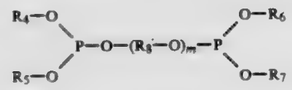
kyl group, an alkylhydroxy group, an oxyalkyl group and a thioalkyl group, R_8 represents a radical having 1 to 10 carbon atoms selected from an alkyl-substituted phosphate and an alkyl-substituted phosphite, and m represents a number of 1 to 4, a phosphorus compound represented by the general formula:



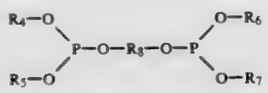
wherein R_4 to R_7 and R_8 are the same as defined above, a phosphorus compound represented by the general formula:



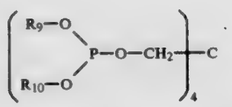
wherein R_9 and R_{10} each represent a radical having 1 to 30 carbon atoms selected from an alkyl group, an alkylaryl group, a cycloalkyl group, an aryl group, an alkylcycloalkyl group, an alkylhydroxy group, an oxyalkyl group and a thioalkyl group, a phosphorus compound represented by the general formula:



wherein R_4 to R_7, R_8 and m are the same as defined above, a phosphorus compound represented by the general formula:



wherein R_4 to R_7 and R_8 are the same as defined above, and a phosphorus compound represented by the general formula:



wherein R_9 and R_{10} are the same as defined above; wherein the amount of Component (2) added is from 0.001 to 10 parts by weight per 100 parts by weight of Component (1).

4,800,031

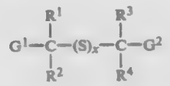
SULFUR-CONTAINING LUBRICANT AND FUNCTIONAL FLUID COMPOSITIONS

Stephen A. DiBiase, and Joseph W. Plalet, both of Euclid, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Nov. 7, 1986, Ser. No. 928,773
Int. Cl.[4] C10M *135/26, 135/22*
U.S. Cl. 252—47.5 **24 Claims**

1. A lubricant or functional fluid composition comprising a major amount of at least one oil of lubricating viscosity and a minor amount of:

(A) a sulfur compound characterized by the structural formula



(I)

wherein

R^1, R^2, R^3 and R^4 are each independently H or hydrocarbyl groups, or at least one of R^1 and R^3 is G^1 or G^2, or at least one combination of R^1 and R^2, or R^3 and R^4, together forms an alkylene group containing about 4 to about 7 carbon atoms;

G^1 and G^2 are each independently C(X)R, C≡N, R^5—C═NR^6, CON$(R)_2$ or NO_2, or G^1 is a CH_2OH group, or G^2 is COOR, wherein X is O or S, R^5 and each of R are independently H or a hydrocarbyl group, R^6 is H or a hydrocarbyl group; or

when both G^1 and G^2 are R^5C═NR^6, the two R^6 groups together form a hydrocarbylene group linking the two nitrogen atoms: or

when G^1 is CH_2OH and G^2 is COOR, a lactone is formed by intramolecular combination of G^1 and G^2; and

x is an integer from 1 to about 8; provided that when both G^1 and G^2 are C(O)R groups and R^1 and R^3 are H or hydrocarbyl groups, at least one R is a hydrocarbyl group.

4,800,032

ALIPHATIC HYDROCARBON SUBSTITUTED AROMATIC HYDROCARBONS TO CONTROL BLACK SLUDGE IN LUBRICANTS

John P. Murphy, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jul. 8, 1987, Ser. No. 71,003
Int. Cl.[4] C10M *133/44, 127/06*
U.S. Cl. 252—51.5 A **19 Claims**

1. In a lubricating oil composition which allows the accumulation of black sludge in a gasoline fueled internal combustion engine, the improvement which comprises incorporating into the lubricating oil composition a minor amount, effective to inhibit the accumulation of black sludge in said engine, of an aliphatic hydrocarbon substituted aromatic hydrocarbon which comprises of a composition of the formula

$$Ar—R—(Ar)_n \quad (I)$$

wherein each Ar is independently an aromatic nucleus having from 0 to 3 substituents, R is a hydrocarbyl group, and n is an integer ranging from 1 to about 6, with the proviso that n does not exceed the available valences of R.

4,800,033

PROCESS FOR THE NON-CUTTING RESHAPING OF METALS, AND LUBRICANT COMPOSITIONS FOR THIS PROCESS

Karl Stetter, Leibl-Str. 6, D-8200, Rosenheim, Fed. Rep. of Germany

PCT No. PCT/EP86/00318, § 371 Date Jan. 27, 1987, § 102(e) Date Jan. 27, 1986, PCT Pub. No. WO86/07087, PCT Pub. Date Dec. 4, 1986
PCT Filed May 27, 1986, Ser. No. 22,948
Claims priority, application Fed. Rep. of Germany, May 28, 1985, 3519078
Int. Cl.[4] C10M *107/02*
U.S. Cl. 252—55 **18 Claims**

1. A process for the non-cutting reshaping of metals comprising using, during said non-cutting metal reshaping, a lubricant which includes an effective lubricating amount of a synthetic lubricating agent which is at least one substance selected

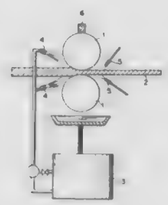
from the group consisting of air oxidized homopolymers of C_2–C_{18}-alkenes having a terminal double bond, air-oxidized copolymers of said C_2–C_{18}-alkenes, air-oxidized copolymers of said C_2–C_{18}-alkenes which include up to about 50% by weight of an oxygen-containing 1-olefin monomer, and esterification and/or saponification products of said air oxidized homopolymers or copolymers, and mixtures thereof, said air oxidized homopolymers or copolymers having an acid number of between 5 and 150 mg of KOH/g, a melt viscosity of between 5 and 100,000 mPa s at 160° C., a melting point above 90° C., and a dicarboxylic acid content of greater than 10% by weight.

4,800,034

COLD ROLLING OIL COMPOSITION FOR ALUMINUM AND ALUMINUM-CONTAINING ALLOYS

Masaru Akao, Utsunomiya; Yoshio Okamoto, Mouka; Akio Manba, and Takehiko Ichimoto, both of Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 13, 1987, Ser. No. 14,592
Claims priority, application Japan, Feb. 19, 1986, 61-34124
Int. Cl.[4] C10M *105/12, 105/24*
U.S. Cl. 252—56 S **6 Claims**



1. A water dispersible cold rolling oil composition for aluminum and aluminum-containing alloys, consisting essentially of (a) as lube oil component a mixture of a higher fatty alcohol having 8 to 22 carbon atoms and a higher fatty acid having 8 to 22 carbon atoms and (b) 0.1 to 10 wt.% of one or more dispersant components selected from the group consisting of a water soluble cationic polymer compound and a water soluble amphoteric polymer compound, both having at least 2 basic nitrogen atoms or cationic nitrogen atoms in their molecule and a molecular weight of 1,000 to 10,000,000.

4,800,035

LIQUID LAUNDRY DETERGENT COMPOSITION CONTAINING POLYPHOSPHATE

Guy Broze, Grace Hollogne, and Trazollah Ouhadi, Liege, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 597,793, Apr. 6, 1984, abandoned. This application Sep. 25, 1985, Ser. No. 781,189
Int. Cl.[4] C11D *7/56*
U.S. Cl. 252—99 **15 Claims**

1. A liquid heavy duty laundry detergent composition comprising a suspension of an alkali metal polyphosphate builder salt in a liquid nonionic surfactant, said composition containing an organic phosphorus compound having an acidic —POH group which is a partial ester of phosphoric acid or phosphorous acid with a mono- or polyhydric alcohol selected from the group consisting of hexylene glycol, ethylene glycol, diethylene glycol, triethylene glycol, higher polyethylene glycol, polypropylene glycol, glycerol, sorbitol, monoglyceride of fatty acid, diglyceride of fatty acid, said organic phosphorous compound being present in effective amount such that the yield value of said composition be at least about 1.6 Pascals.

4,800,036

AQUEOUS BLEACH COMPOSITIONS THICKENED WITH A VISCOELASTIC SURFACTANT

Gene D. Rose; Arthur S. Teot, and Kenneth L. Foster, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 732,013, May 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 715,304, Mar. 25, 1985, abandoned. This application Dec. 8, 1986, Ser. No. 939,338
Int. Cl.[4] A61L *2/18;* **C11D** *1/86, 3/395, 3/48*
U.S. Cl. 252—102 **22 Claims**

1. A method of thickening an aqueous bleach composition containing from about 1 to about 10 weight percent of a bleaching agent selected from the group consisting of hydrogen peroxide, potassium perchlorate, sodium hypochlorite, sodium peroxide, sodium chlorite, calcium hypochlorite, sodium hypobromite, and iodine nonionic surfactant complexes, comprising the step of contacting the composition with from about 0.05 to about 10 weight percent of a surfactant composition of onium surfactant ions and either aromatic sulfonate counterions or aromatic carboxylate counterions to form an aqueous solution under suitable solution conditions whereby the onium surfactant ions and aromatic counterions associate in the bleach composition to measurably increase the viscosity of the solution thereby forming a viscoelastic surfactant.

12. A thickened aqueous bleach composition made according to the method of claim 1 comprising from about 1 to about 10 weight percent of a bleaching agent selected from the group consisting of a hydrogen peroxide, potassium perchlorate, sodium hypochlorite, sodium peroxide, sodium chlorite, calcium hypochlorite, sodium hypobromite, and iodine nonionic surfactant complexes; from about 0.05 to about 10 weight percent of a surfactant composition of onium surfactant ions and either aromatic sulfonate counterions or aromatic carboxylate counterions, and water; the components of the composition being combined to form an aqueous solution under suitable solution conditions whereby the onium surfactant ions and aromatic counterions associate in the bleach composition to measurably increase the viscosity of the solution thereby forming a viscoelastic surfactant.

4,800,037

PROCESS FOR MAKING A HEAVY DUTY LIQUID DETERGENT COMPOSITION

Louis R. Mazzola, Mahwah, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 5, 1987, Ser. No. 58,298
Int. Cl.[4] C11D *9/10, 15/09*
U.S. Cl. 252—109 **11 Claims**

1. A process of mixing a color-stable heavy duty liquid detergent composition from a solvent component, an anionic detergent component in acid form, a fatty acid component, an alkali metal hydroxide component, a nonionic detergent component, a hydrotrope component, a builder component and a dye component, the process comprising:

(a) adding substantially all the solvent to a vessel,

(b) adding at least one component of the composition to the vessel to form a vessel mixture,

(c) neutralizing the anionic detergent in acid form to a salt form by combining in the vessel mixture the anionic detergent in acid form with the alkali metal hydroxide, and

(d) adding the remaining components to the vessel mixture in any order so long as the builder component is added to the vessel prior to neutralization of the detergent to salt form by the alkali metal hydroxide.

4,800,038

ACETYLATED SUGAR ETHERS AS BLEACH ACTIVATORS DETERGENCY BOOSTERS AND FABRIC SOFTENERS

Guy Broze, Grace-Hollogne, and Regis Lysy, Oins, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 21, 1988, Ser. No. 146,466
Int. Cl.[4] C11D *7/26, 3/395*
U.S. Cl. 252—174.17 **20 Claims**

1. A heavy duty laundry detergent composition comprising a nonionic surfactant, a bleaching agent and, as a bleach activator, detergency booster and fabric softener, an acetylated sugar ether containing at least two fatty acid chains.

4,800,039

FLOCCULATION OF SUSPENDED SOLIDS FROM AQUEOUS SOLUTIONS

Denis E. Hassick, Monroeville, and Joseph P. Miknevich, Corsopolis, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

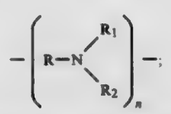
Filed Mar. 5, 1987, Ser. No. 22,179
Int. Cl.[4] C02F *5/10, 1/00*
U.S. Cl. 252—181 **4 Claims**

1. A composition for reducing turbidity in aqueous systems comprising:

(a) aluminum chlorohydrate; and (b) at least one water-soluble polymer selected from the group consisting of:

(i) water-soluble polyamines represented by structure (I)

(I)



wherein R_1 and R_2, which may be the same or different, are selected from the group consisting of straight or branched C_1–C_8 alkyl, substituted straight or branched C_1–C_8 alkyl and hydrogen; wherein R is selected from the group consisting of straight or branched C_1–C_8 alkyl and substituted straight or branched C_1–C_8 alkyl; and wherein n ranges from 2–50,000; and

(ii) water-soluble C_1–C_8 dialkyl diallyl ammonium polymers; wherein the weight ratio of (a):(b) is at least 20:1, on an active basis.

4,800,040

LOW TEMPERATURE, STORAGE STABLE MIXTURES OF PREPOLYMERS AND FLOW MODIFIERS

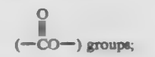
Fritz Hostettler, 200 Springhill Rd., Skillman, N.J. 08558

Continuation of Ser. No. 779,304, Sep. 23, 1985, abandoned, which is a continuation of Ser. No. 508,245, Jun. 27, 1983, abandoned. This application May 20, 1987, Ser. No. 53,591
The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.
Int. Cl.[4] C09K *3/00;* **H05B** *33/00*
U.S. Cl. 252—182.2 **19 Claims**

1. A stable, compatible liquid mixture which does not phase separate when stored for at least 100 hours at temperatures substantially below normal room temperature consisting essentially of:

(a) an isocyanato-containing prepolymer obtained from the reactin of (1) a diphenylmethane diisocyanate and (ii) a polyol of the group consisting of linear or slightly branched polyesterpolyols having hydroxyl equivalent weights of from about 400 to about 2250 and linear or slightly branched polyetherpolyols having hydroxyl equivalents of from about 60 to about 2250, said polyol having an average hydroxyl functionality of from 2 to about 3, said diisocyanate and said polyol being used in such quantifies so as to provide at least about 2.5 NCO equivalents per OH equivalent; and

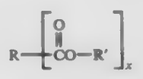
(b) from about 3 to about 35 parts by weight, per 100 parts by weight of said prepolymer, of a non-hydroxyl flow modifier, said flow modifier having the following characteristics: (i) a boiling point above about 150° C., (ii) normally liquid at 20° C. or relatively low melting solid which forms a compatible liquid mixture with said prepolymer, (iii) an average molecular weight of from 100 to approximately 1000, and (iv) consisting essentially of carbon and hydrogen atoms in the form of monovalent or polyvalent hydrocarbon groups or mixtures of such groups, and oxygen in the form of 1 to 3 ester



groups;

said flow modifier being selected from the group consisting of compounds of Formula I:

I



wherein each R', individually, represents a C_1–C_{18}alkyl, a C_2–C_{12}alkenyl, a C_5–C_7cycloalkyl, or a phenyl group; wherein x is an integer having a value of 1 to 3; and wherein R represents a hydrocarbon group having up to 17 carbon atoms and being selected from group of an alkyl, an alkylene, a C_5–C_7cycloalkyl, a C_5–C_7-cycloalkylene, a phenyl, or a phenylene group and compounds of Formula II:

II

wherein R', individually, has the meanings asigned to R' in Formula I above; and wherein R is a hydrocarbon group having up to 17 carbon atoms selected from the group of an alkylene, a C_5–C_7cycloalkylene, or a phenylene group.

4,800,041

SUSPENSIONS OF SHEET SILICATE MATERIALS AND PRODUCTS MADE THEREFROM

Thomas M. Tymon, and Shelly S. Nizsik, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 794,724, Nov. 4, 1985, abandoned. This application Oct. 3, 1986, Ser. No. 913,391
Int. Cl.[4] C04B *20/02, 20/06*
U.S. Cl. 252—378 R **17 Claims**

1. A composition comprising:

a 2:1 layered silicate material selected from the group consisting of mica and vermiculite having alkyl ammonium cations which correspond to the formula



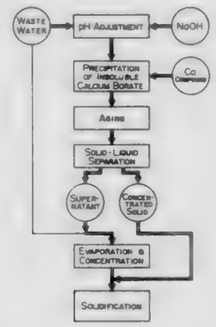
wherein R, R_1, R_2 and R_3 are independently selected from H or a C_{2-4} alkyl group, further providing that no more than two of R, R_1, R_2 and R_3 are hydrogen.

4,800,042

RADIOACTIVE WASTE WATER TREATMENT

Norimitsu Kurumada; Hiroshi Kuribayashi, both of Ibaraki; Setsuo Shibata, Yokohama; Toshikatsu Wakabayashi, Miyagi; Akira Hasegawa, Ibaraki, and Mamoru Shibuya, Aichi, all of Japan, assignors to JGC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 693,692, Jan. 22, 1985, abandoned. This application Jan. 27, 1987, Ser. No. 8,082
Int. Cl.[4] G21F *9/16, 9/08;* **F26B** *7/00;* **B01D** *1/00*
U.S. Cl. 252—628 **15 Claims**



6. A method of treating radioactive waste water containing boric acid consisting essentially of: adding caustic soda to a boric acid containing waste water until the pH is between 7.0 and 8.0; evaporating and concentrating the resultant mixture; adding a soluble calcium compound to the concentrated liquid in an amount sufficient to precipitate calcium borate salts; aging the mixture until the pH has risen to at least about 12; separating the aged mixture into supernatant and precipitate portions; solidifying the precipitate portion; and returning at least a portion of said supernatant portion to said untreated boric acid containing waste water to raise the pH to said waste water.

4,800,043

COLORANTS FOR BALL POINT PEN AND RIBBON INKS DERIVED FROM PARAROSANILINE PROCESS RESIDUE

Robert J. Allen; Louis Rolando de Alvare, and Floyd G. Spence, all of Holland, Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Feb. 24, 1987, Ser. No. 18,299
Int. Cl.[4] C09B *11/10, 29/01;* **C09D** *11/02, 11/18*
U.S. Cl. 260—391 **10 Claims**

1. A process for the manufacture of a colorant, comprising:

(a) synthesizing a pararosaniline family dyestuff in the presence of excess low boiling amine to form a dyestuff-containing crude product;

(b) separating substantially all of said dyestuff from said crude product by precipitation as the dyestuff salt followed by filtration;

(c) vacuum distilling the filtrate obtained from step (b) to remove substantially all excess low boiling aromatic amine;

(d) removing the bottoms formed during said distillation; and

(e) dissolving said bottoms into sufficient resinic acid to substantially dissolve said bottoms.

4,800,044

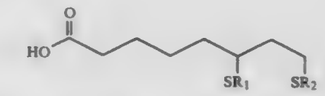
INTERMEDIATES FOR THE PRODUCTION OF 1,2-DITHIOLAN ACID (THIOCTIC ACID)

Guenes Giray, Kleinostheim; Klaus Huthmacher, Geinhausen; Axel Kleemann, Mühlheim, and Thomas Lied, Obertshausen, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 848,212, Apr. 4, 1986, Pat. No. 4,705,867. This application Jul. 15, 1987, Ser. No. 73,820
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1985, 3512911
Int. Cl.[4] C07C *149/40*
U.S. Cl. 260—399 **1 Claim**

1. A 6-mercapto-8-hydrocarbyl thiooctanoic acid of formula XII

XII



where R_1 is hydrogen and R_2 is phenyl or benzyl.

4,800,045

SULFITED FATS

Hans-Herbert Friese, Monheim; Friedrich Pieper, Langenfeld-Richrath, and Reinhard Bosse, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 26, 1987, Ser. No. 53,998
Claims priority, application Fed. Rep. of Germany, May 26, 1986, 3617691
Int. Cl.[4] C07C *143/90*
U.S. Cl. 260—400 **18 Claims**

1. A process for the sulfitation of fats having iodine numbers below about 100 comprising the steps of

(a) mixing together

(i) at least one fat having an iodine number below about 100, and

(ii) at least one fatty acid ester having an iodine number of from about 60 to about 100, containing from 12 to 24 carbon atoms in a linear or branched, natural or synthetic fatty acid residue, and wherein the ester residue is from a monofunctional C_1–C_5 alcohol, and wherein the ratio by weight of (i) to (ii) is from about 9:1 to about 1:4:

(b) oxidizing the above mixture at a temperature in the range of from about 70° to about 200° C. and

(c) reacting the oxidized mixture at a temperature in the range of from about 70° to about 110° C. with one or more of an alkali metal hydrogen sulfite, an ammonium hydrogen sulfite, an alkali metal sulfite, or ammonium sulfite.

4,800,046

WATER JET AERATOR WITH DIVERTER VALVE

Jack H. Malek, Northridge, and Stephen A. Markley, Santa Paula, both of Calif., assignors to KDI American Products, Inc., Moorpark, Calif.

Filed Nov. 17, 1987, Ser. No. 121,442
Int. Cl.[4] A61H *33/02;* **F04F** *5/44*
U.S. Cl. 261—50.3 **16 Claims**

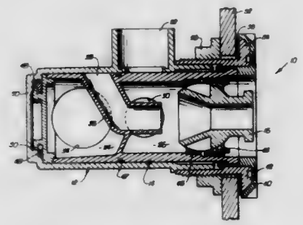
1. An improved water jet aerator, comprising:

an aerator housing having a water inlet conduit, a water outlet conduit and an air inlet conduit; and

a valve body rotatably positioned within the aerator housing, the valve body having an aeration chamber;

wherein as the valve body is rotated in one direction water flow from the water inlet conduit is diverted to the water outlet conduit and the air inlet is proportionally closed to the aeration chamber and as the valve body is rotated in

the other direction water flow from the water inlet conduit to the water outlet conduit is diverted to the aeration



chamber and the air inlet is proportionally opened to the aeration chamber.

4,800,047

GAS AND LIQUID CONTACT SHEET AND PACKING

Michel W. J. P. R. Monjole, Brussels, Belgium, assignor to Engetra S.A., Fribourg, Switzerland

Filed Feb. 25, 1988, Ser. No. 160,360

Claims priority, application European Pat. Off., May 13, 1987, 87870069.9

Int. Cl.[4] B01F 3/04

U.S. Cl. 261—112.2 **19 Claims**



1. A trickling sheet of rectangular form for a packing means for an installation used for bringing into contact a liquid and a gas flowing in counter-current, characterised in that it comprises, as considered along a first side (3), two zones of equal width the one zone corrugated (5) and the other zone, in comparison, being essentially flat (6), both provided with spacer bosses (7) situated, in the corrugated zone (5), on the crests (8) of the corrugations on both its faces and spaced in the same direction as the other second side (4) of the rectangle, defining the height of the sheet when in service, these bosses being situated, in the flat zone (6), symmetrically with the previously-mentioned bosses in the corrugated section (5) with respect to the median line (9) separating the two zones (5 and 6), the bosses (7) which correspond to one another projecting from the same side of the thickness of the sheet, and in that the plane (10a) of the flat zone (6) is parallel to the mean plane (10) of the sheet in its corrugated zone (5) and is offset by a distance such that the tops of all the bosses (7) of one of the two faces of the strip are in one and the same plane.

4,800,048

DIE DRAWING PROCESS AND APPARATUS FOR PIEZOELECTRIC POLYMER FILMS AND TUBES

Philip E. Bloomfield, Lower Merion; Richard A. Ferren, Lower Gwynedd, and Dean H. Wickwire, Glen Moore, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 835,500, Mar. 3, 1986, abandoned, which is a continuation of Ser. No. 590,106, Mar. 16, 1984. This application Nov. 30, 1987, Ser. No. 126,993

Int. Cl.[4] B29C 47/02

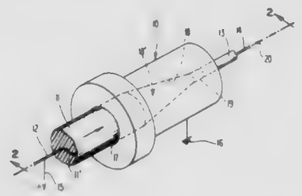
U.S. Cl. 264—22 **22 Claims**

1. A process for the production of a piezoelectric tubular polymer product having an electrically conductive central core and tube walls compriaed of the polymer by mechanical stretching and simultaneous electrical polarization, comprising:

(a) forming a polymer material tubular blank having a tube wall thickness that exceeds that of the polymer product and a central electrically conductive core;

(b) stretching the tubular blank while in a solidified state and reducing the thickness of the blank by pulling the blank between opposed converging stationary surfaces while maintaining the polymer material blank at a temperature below its melting point, said surfaces defining a stretching chamber having an entrance opening of a dimension substantially equal to or greater than the blank thickness and an exit opening of a dimension that is about equal to the product thickness, said converging stationary surfaces are the interior surfaces of a tapered, conically shaped die, said die having an entrance opening of a size that is substantially equal to or greater than the cross sectional size of the tubular blank with its core and the exit opening is of a size substantially equal to the cross sectional area of the tubular product;

(c) simultaneously, while stretching in (b), applying an electric field across the thickness of the tubular blank within the stretching chamber, said electric field having a direct current voltage that is below the breakdown voltage of the material but the voltage, in combination with the residence time of the blank within the chamber, is of sufficient intensity to provide the electrical polarization to



form the piezoelectric polymer product that is being pulled from the stretching chamber.

13. In combination, an apparatus for the production of a piezoelectric tubular polymer product having an electrically conductive central core and tube walls comprising the polymer from a solidified polymer material blank having a blank thickness that exceeds that of the polymer product, which comprises:

(a) a polymer drawing die having internal opposed converging surfaces that form a stretching chamber, said chamber having an entrance opening adapted to receive the blank that is about equal to or greater in cross sectional area than the material blank that it is adapted to receive and an exit opening adapted to discharge the product that is about equal to the cross sectional area of the polymer product, said converging stationary surfaces are the interior surfaces of a tapered, conically shaped die that is adapted to receive a tubular blank having a central wire core to provide a tubular product with a wire core;

(b) electrical field producing means adapted to subject the stretching chamber and a polymer material blank passing therethrough to a direct current electric field; and

(c) pulling means operatively associated with the die in (a) and adapted to pull a tubular polymer product from the exit opening of the stretching chamber of the die to provide simultaneous stretching and electrical poling to a polymer material blank while in a solidified state passing through the stretching chamber of the die.

4,800,049

PROCESS AND APPARATUS FOR OBTAINING PLASTIC MOLDED OBJECTS

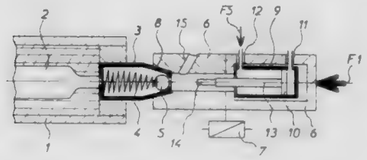
Elie Gras, Le Ronzon, France, assignor to Anver, Maisons Alfort, France

Filed May 12, 1987, Ser. No. 49,809

Claims priority, application France, May 26, 1986, 86 07446

Int. Cl.[4] B29C 45/06, 45/20, 39/42, 39/38

U.S. Cl. 264—26 **16 Claims**



1. A method of producing plastic molded objects, comprising the steps of :

positioning a mold having a first opening at a first end thereof, and a second opening at a second end opposite said first end, on a turntable, and said first and second openings of said mold each having a male insert ;

positioning said turntable so that said first end of said mold faces a female end of vacum-creating means, said female end of said vacuum-creating means being adapted to sealingly receive said male insert of said first opening, and said second end of said mold faces a female end of a plastisol injection means, said female end of said plastisol injection means being adapted to sealingly receive said male insert of said second opening ;

inserting said male insert of said first opening into said female end of said vacuum-creating means creating a vacuum at slightly less than atmospheric pressure within said mold through said male insert of said first opening ;

removing said male insert of said first opening from said female end of said vacuum-creating means while maintaining said vacuum within said mold ;

inserting said male insert of said second opening into said female end of said plastisol injection means ;

filling said mold by injecting a liquid plastisol at a pressure of less than 1 Mpa from said plastisol injection means through said male insert of said second opening and into said mold while maintaining said vacuum within said mold ;

subjecting said filled mold to high frequency heating and pressure ;

removing said male insert of said second opening from said female end of said plastisol injection means ;

cooling said filled and heated mold to form a plastic molded object ; and

removing said plastic molded object from said mold.

4,800,050

ADAPTIVE CONTROL PROCESS FOR FOAMING AND FUSING PLASTICS

Ortwin Hahn, Hüfferweg 9, Paderborn, Fed. Rep. of Germany (4790), and Johannes Hümmler, Finnentrop, Fed. Rep. of Germany, assignors to Ortwin Hahn, Paderborn, Fed. Rep. of Germany

Filed Nov. 20, 1986, Ser. No. 932,829

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1985, 3541258

Int. Cl.[4] C08J 9/22; B29C 67/22

U.S. Cl. 264—40.6 **19 Claims**

1. A control process for foaming and fusing plastics to be molded in a foaming and fusing device in which the control process operates in cycles, each cycle comprising the steps of:

(a) providing a steam mold;

(b) feeding a particulate foamable thermoplastic resin material into said mold;

(c) heating said resin material in said mold;

(d) cooling said foamed and fused article in said mold; and

(e) releasing said foamed and fused article from said mold;

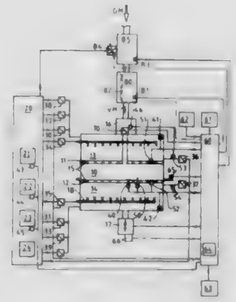
(f) providing control criteria, comprising a time period, one of a pressure and a temperature limit value for the conditions evolving in the device such control criteria belonging to a certain cycle comprising a control criteria set, and with each cycle quality values of predetermined characteristics determined by measurements taken from the respective plastic part or an agglomerate cake situated in the device;

(g) starting and completing a first cycle of each of said steps (b) through (e) in response to said control criteria;

(h) generating values indicative of the quality of said fused material from said cycle;

(i) starting and completing a second cycle of each of said steps (b) through (e) in response to further said control criteria;

(j) generating a new set of said control criteria for each new



cycle from prior said control criteria responsive to the quality values measured with such prior cycle of the control process,

(k) combining the quality values of each cycle to provide a deviation and storing said deviation together with the control criteria set of the respective cycle in a control device store up to a predetermined number of such stored sets,

(l) determinging criteria averages from each of the stored control criteria to determine an average of the stored quality deviations, and

(m) for each cycle, determining a new set of control criteria through statistical variations of one or more of the control criteria around their criteria average with a variance determined according to the average quality deviation, such new set of control criteria being preset for the control of the next working cycle and the related quality values,

(n) comparing said deviation being determined to the stored deviations and, if it is smaller than one of the stored deviations, replacing the set with the largest deviation in the store by the new one.

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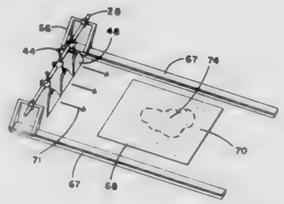
4,800,051
METHOD FABRICATING CERAMIC MATERIALS
Min F. Yan, Berkeley Heights, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 647,273, Sep. 4, 1984, abandoned, which is a continuation of Ser. No. 374,311, May 3, 1982, abandoned. This application Apr. 13, 1987, Ser. No. 37,074
Int. Cl.[4] C04B *35/64*
U.S. Cl. 264—56 19 Claims

1. A method of preparing bodies of ceramic material comprising at least one metal oxide selected from the group consisting of Al_2O_3, ZrO_2 and TiO_2, which comprises
preparing metal oxide(s) powder by hydrolysis technique including hydrolyzing suitable metal alkoxide(s), washing, drying, granulating and calcining,
ball milling the calcined metal oxide(s) powder as a slurry comprising an aqueous solution having pH selected to maximize the powder dispersion in the solution at least during the said ball milling,
compacting the dispersed powder from the ball-milled slurry into a powder compact, said compacting including drawing-off a supernatant liquid from the ball-milled slurry, forming powder from the supernatant liquid into at least one powder compact, and drying the powder compact(s), and
sintering the powder compact(s) at suitable, relatively low sintering temperatures.

4,800,053
INJECTION MOLDING PROCESS WITH REACTIVE GAS TREATMENT
Bernard D. Bonnaas, Coopersburg; David R. Ruprecht, Laurys Station; Paul D. Marsh, Allentown, and Mark A. Williams, Souderton, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation-in-part of Ser. No. 7,690, Jan. 28, 1987, Pat. No. 4,752,428. This application Apr. 26, 1988, Ser. No. 186,322
Int. Cl.[4] B29C *45/77*
U.S. Cl. 264—83 15 Claims

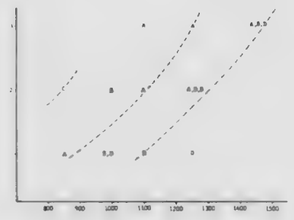
1. In a process for making shaped articles by injecting a thermoplastic or thermoset polymer into a mold cavity, the improvement for increasing coating adhesion and substrate bonding properties of the shaped articles which comprises:
maintaining in said mold cavity a reactive atmosphere containing between 0.1 mole % and 50 mole % F_2 and at least 20 ppm O_2 while said polymer is being injected into the mold cavity and injecting said polymer into the mold cavity at a rate such that any portion of the polymer contacts the reactive atmosphere for a period of time not exceeding 0.5 seconds.

4,800,054
METHOD FOR SHAPING A MOLDING COMPOUND APPLIED TO A SURFACE FOR MODIFYING THE SURFACE
Jerome R. Roestenberg, 11 Woodpecker La., Levittown, N.Y. 11756
Filed Jun. 5, 1987, Ser. No. 58,436
Int. Cl.[4] B28B *11/18*; B29C *37/02*; B32B *35/00*
U.S. Cl. 264—86 5 Claims



1. A method for modifying a surface within a selected area of a panel to a desired contour with a molding compound, the method comprising:
(a) applying to the surface to be modified, a sufficient amount of molding compound to enable filling voids and irregularities in the surface and to enable making the desired contour,
(b) locating a flexible mold plate, having a plurality of holes for releasing trapped fluids and molding compound through the mold plate, over the surface to be modified and the molding compound,
(c) applying pressure on mold plate, at a plurality of locations for deforming the mold plate in the region of the locations into the desired contour while releasing fluids from the molding compound and excess molding compound through the holes, and for forming the molding compound under the mold plate into the desired contour,
(d) removing the excess molding compound, and
(e) when the molding compound is hardened sufficiently to retain the desired contour, removing the mold plate to provide a contoured molded surface which requires little post finishing.

4,800,052
METHOD OF FABRICATING MOLTEN CARBONATE CATHODES
Thomas E. Swarr, South Windsor, and John C. Trocciola, Glastonbury, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.
Division of Ser. No. 812,218, Dec. 23, 1986, Pat. No. 4,708,917. This application Dec. 17, 1986, Ser. No. 943,232
Int. Cl.[4] C04B *35/64*
U.S. Cl. 264—65 2 Claims

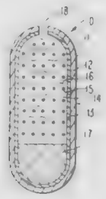


1. A method of fabricating a molten carbonate fuel cell cathode comprising:
(a) prefiring a composition comprising oxides of nickel and lithium salts in an oxidizing atmosphere at temperatures of about 600° C. to about 1000° C.;
(b) mixing barium salts with said prefired composition;
(c) forming said prefired composition into an electrode; and
(d) sintering said electrode in an oxidizing atmosphere at about 850° C. to about 1250° C.;
wherein said electrode has improved strength.

4,800,055
PROCESS FOR MAKING A GRANULAR PRODUCT CONTAINING SODIUM TRIPHOSPHATE
Helmut Klee, Hürth; Hans Haas, Swisttal; Werner Kowalski, Weilerswist, and Theo Dahmen, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Mar. 4, 1986, Ser. No. 835,894
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1985, 3509661
Int. Cl.[4] C01B *25/30*
U.S. Cl. 264—118 11 Claims

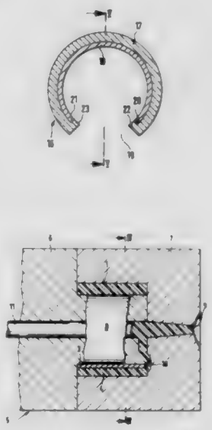
1. In the process for making a hydrated product consisting completely or partially of sodium triphosphate for use in detergent and cleaning compositions by initially mixing pulverulent sodium triphosphate containing less than 22 wt.-% water, alone or in admixture with at least one further pulverulent constituent of the detergent or cleaning composition, with water for hydrating the sodium triphosphate and compressing the mixture obtained; the improvement which comprises premixing a sodium triphosphate containing at least 91.8 wt.-% $Na_5P_3O_{10}$ having a phase-I content of at least 13 wt.-% and a particle size smaller than 0.3 mm with a quantity of water sufficient for hydrating the sodium triphosphate to a water content from about 8.5 to at most 22 wt.-%; admitting continuously the mixture obtained to a roller press; compressing in it the mixture under a linear pressure of 10,000–20,000 KN per cm roller length to a solid sheet and ultimately crushing the said solid sheet to desired fineness with the resultant formation of a dry final product having a content of water of crystallization from 13 to 22 wt.-%, a high abrasion resistance and a bulk density of from 700 to 1100 g/l.

4,800,056
PROCESS FOR MAKING DISPENSER WITH COOPERATING ELEMENTS
James B. Eckenhoff; Felix Theeuwes, both of Los Altos, and Joseph C. Deters, Mountain View, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Division of Ser. No. 591,824, Mar. 21, 1984, abandoned. This application Feb. 14, 1986, Ser. No. 829,356
Int. Cl.[4] A61K *9/24*, *9/28*; B29C *41/02*
U.S. Cl. 264—129 4 Claims



1. A process for manufacturing a dispenser for delivering a beneficial agent to a biological environment of use, wherein the dispenser comprises: a capsule comprising a composition dissolvable at least in part in a fluid present in the environment in use said capsule comprising a mouth, a cap for the capsule and an exterior wall on the capsule, and wherein the process comprises the step of:
(a) forming a layer comprising a hydrophilic composition into a shape corresponding to the internal shape of the mouth of the capsule;
(b) inserting the layer through the mouth to the bottom of the capsule;
(c) capping the mouth of the capsule with a cap designed to close the capsule to provide an assembled capsule;
(d) surrounding the assembled capsule with an exterior wall permeable to the passage of fluid and substantially impermeable to the passage of a beneficial agent; and,
(e) drilling a port through the wall and through the capsule distant from the layer for communicating with the interior of the dispenser.

4,800,057
METHOD OF PRODUCING A NOVEL STRUCTURAL ELEMENT
Jürgen Rabe, Auracktal, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany
Filed Oct. 5, 1987, Ser. No. 105,548
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1986, 3635247
Int. Cl.[4] B29C *45/14*
U.S. Cl. 264—229 2 Claims



1. A method of producing a structural element comprising a metallic sleeve provided with a continuous axial slot at a circumferential area and an outer surface completely surrounded by a polymeric jacket comprising producing a metallic sleeve (3,18) with an inner diameter corresponding to a maximum of the inner diameter of the finished structural element (1,16), placing said metallic sleeve on a core (8) in an injection molding apparatus (5), said core (8) receiving the metallic sleeve (3,18) and elastically widening the metallic sleeve (3,18) when placed on the core (8), closing the molding apparatus and injecting polymeric material into the molding apparatus, at least partially filling the slot (2,19) of the metallic sleeve (3,18) with the material of the jacket (4,17) during formation of the jacket (4,17) so that the boundary surfaces of the slot (2,19) of the metallic sleeve (3,18) are at least partially covered.

4,800,058
METHOD FOR THE PREPARATION OF RIGID CAST OR TRANSFER MOLDED THERMOSET POLYURETHANE MODIFIED POLYISOCYANURATE COMPOSITIONS
Usama E. Younes, Newtown Square, Pa., assignor to Arco Chemical Company, Newtown Square, Pa.
Filed Aug. 24, 1987, Ser. No. 88,455
The portion of the term of this patent subsequent to Mar. 15, 2005, has been disclaimed.
Int. Cl.[4] B29C *45/02*
U.S. Cl. 264—328.4 12 Claims

1. A method for the preparation of a rigid cast or transfer molded polyurethane modified polyisocyanurate thermoset polymer composition which comprises conveying from a mix-

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ing chamber into a mold cavity of the desired configuration, which may be compressed,to react at temperatures of from about ambient to about 140° C. a reaction mixture of an organic di- or polyisocyanate, from about 2 to about 50 parts by weight of a cyclic alkylene carbonate, and from about 2 to about 50 parts by weight of a polyether polyol, based on 100 parts of the isocyanate-carbonate-polyol composition, in the presence of a soluble adduct of a tertiary amine and a cyclic alkylene carbonate as catalyst at a concentration of from about 0.005 to about 5.0 weight percent based on the total composition.

4,800,059

PROCESS AND APPARATUS FOR LOADING A TIRE PRESS

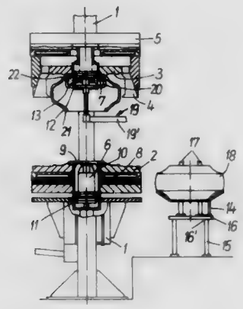
Günter Drewel, Seevetal; Horst Enoch, and Klaus Grotkasten, both of Hamburg, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschraukter Haftung, Essen, Fed. Rep. of Germany

Filed Jan. 30, 1987, Ser. No. 9,386

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1986, 3603076

Int. Cl.⁴ B29C *33/30, 35/00;* **B65G** *47/90*

U.S. Cl. 264—502 **6 Claims**



1. In a process for introducing into a heated tire press a tire blank to be vulcanized and having an upper and a lower bead, said tire press having at least two tire forming, said blank being introduced into the press from a tire blank stand, said process comprising engaging said tire blank by a loader, swinging said tire blank into position between said tire forming pieces of said heated tire press and engaging said upper bead of said tire blank with said heated tire press, then releasing and pivoting away said loader from said tire blank, closing said tire press so that said upper and said lower beads respectively contact on an upper and lower rim ring of said heated tire press, fixing said upper and lower beads thereon by air pressure and finally closing said tire forming pieces further, the improvement wherein said loader engages said tire blank on the inside of said upper bead of said tire blank from below upon insertion into the blank from below and directly mounts said tire blank on said upper rim ring of an upper one of said tire forming pieces of said heated tire press.

3. An apparatus for inserting a tire blank to be vulcanized having an upper and a lower bead into a heated tire press having at least two tire forming pieces from a tire blanks stand comprising:

an upper bead ring fixed in an upper one of said tire forming pieces;

a loader positioned adjacent said heated tire press and insertable from below into said tire blank;

means for pivoting said loader with said blank thereon into a position between said tire forming pieces from said tire blank stand and for affixing an upper bead of said blank, gripped from below by said loader, directly on said upper bead ring, said loader having a plurality of clamp jaws distributed around the circumference of said upper bead of said tire blank when said loader is positioned adjacent said tire blank, said clamp jaws being swingable between a centering position supporting said tire blank from below by said upper bead and a position inwardly of inner edges of said upper and lower beads, said loader and said clamps being insertable from below into a blank on said stand and retractable from below from a blank mounted on said upper bead ring; and

a frame member on said stand through which clamp jaws of said loader pass on being raised with said tire blank mounted thereon.

4,800,060

WINDOW ASSEMBLY FOR POSITRON EMITTER

Gvirol Goldring, Rehovot, Israel, assignor to Yeda Research & Development Co., Ltd., Rehovot, Israel

Filed Aug. 3, 1982, Ser. No. 404,851

Int. Cl.⁴ G21G *1/10*

U.S. Cl. 376—202 **10 Claims**



1. A system for the production and transportation of short lived isotopes, comprising:

accelerator means, having a vacuum chamber and a window, for directing an irradiating particle beam through said window;

container means for holding a material capable of being converted to short lived isotopes upon irradiation by the irradiating particle beam of said accelerator means, said container means comprising a hermetically sealed container having a window through which said irradiating particle beam can pass, said container window being separate and distinct from said window of said accelerator means.

4,800,061

APPARATUS FOR LOADING FUEL RODS INTO GRIDS OF NUCLEAR FUEL ASSEMBLIES

John M. Shallenberger, Fox Chapel Borough, and Stephen J. Ferlan, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 6, 1987, Ser. No. 46,475

Int. Cl.⁴ G21C *21/00*

U.S. Cl. 376—261 **14 Claims**

1. For use with a nuclear fuel assembly including a plurality of support grids having cells for receiving fuel rods and with detents disposed within the respective cells for resiliently engaging and laterally supporting the fuel rods received therein, an apparatus for facilitating scratchless insertion of each fuel rod into cells of said support grids, said apparatus comprising:

a thin-walled metallic tubular member which is long enough to extend through at least a majority of said plurality of support grids, and is positionable so as to have its thin wall interposed, during insertion of each fuel rod, between the latter and the detents within the cells receiving it, said thin-walled tubular member having a substantially uniform wall thickness of not more than about 0.008 inch, an as-formed inner diameter substantially equal to the outer diameter of said fuel rod, and a longitudinal slit formed in the wall of the tubular member so as to render said wall resiliently deflectable in a diameter-reducing sense, said longitudinal slit having a width sufficient to preclude overlapping of the edges of said wall along the slit, and insufficient for any of said detents to enter the slit when the wall of the tubular member is in position between said detents and said fuel rod.







4,800,062

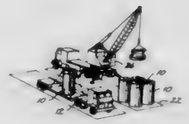
ON-SITE CONCRETE CASK STORAGE SYSTEM FOR SPENT NUCLEAR FUEL

Philip A. Craig, Federal Way; Richard T. Haelsig, Bellevue; John D. Kent, Gig Harbor, and Duane S. Schmoker, Federal Way, all of Wash., assignors to Nuclear Packaging, Inc., Federal Way, Wash.

Filed Feb. 23, 1987, Ser. No. 29,097

Int. Cl.⁴ G21C *19/40*

U.S. Cl. 376—272 **8 Claims**



1. A method of storing spent nuclear fuel assemblies including the steps of:

transferring the fuel assemblies from a spent-fuel pool to a moveable concrete storage cask located outside the spent-fuel pool;

maintaining a barrier between the fuel and the concrete in the cask to prevent contamination of the concrete by the fuel;

maintaining the concrete storage cask containing the spent fuel on site at the reactor complex for some predetermined period;

transferring the fuel assemblies from the concrete storage cask to a shipping container; and,

recycling the concrete storage cask.

4,800,063

PROCESS AND APPARATUS FOR DECONTAMINATING PLANT PARTS CONTAMINATED WITH RADIOACTIVE MATERIAL

Christian Mierswa, Binzen, and Friedrich Schmutz, Weil am Rhein, both of Fed. Rep. of Germany, assignors to Ernst Schmutz GmbH., Weil am Rhein, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,978

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402702

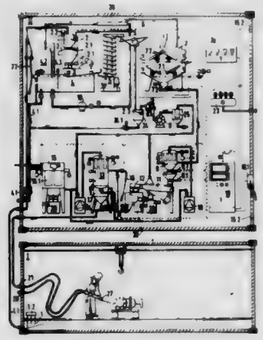
Int. Cl.⁴ B24C *1/00*

U.S. Cl. 376—316 **8 Claims**

1. A process for decontaminating parts of nuclear power plants which are contaminated with radioactive material, wherein surface layers are removed from said parts, said process comprising: treating the parts to be decontaminated with a jet of pressurized water which contains a granular water insoluble abrasive to form a mixed effluent, separating the mixed effluent of water, abrasive and detached particles into an aqueous phase and a sludge phase, drying the sludge phase to provide a substantially dry residue, separating the resulting dry residue into larger particles larger than a predetermined size and particles smaller in size, separating the larger particles into

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non-abrasive materials and reusable abrasive, recycling the reusable abrasive to the pressurized water for forming the part



treating jet of water under pressure, and disposing of the remaining separated particles and non-abrasive materials.

4,800,064

PROCESS FOR PRODUCING TUNGSTEN HEAVY ALLOY SHEET USING HYDROMETALLURGICALLY PRODUCED TUNGSTEN HEAVY ALLOY

Preston B. Kemp, Jr., Athens; Walter A. Johnson, Towanda, and Nelson E. Kopatz, Sayre, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 14, 1988, Ser. No. 143,864
Int. Cl.[4] B22F *1/00*
U.S. Cl. 419—36 **5 Claims**

1. A process for producing a sheet of tungsten heavy alloy, said process comprising:
(a) forming a solution of chemical compounds containing metal values of said alloy in the correct proportion as in said alloy;
(b) crystallizing said compounds from said solution and drying said compounds;
(c) reducing said compounds to their respective metals wherein each particle is an admixture of the alloy components;
(d) forming a slurry of said metals and a liquid medium;
(e) removing said liquid medium from said metals and forming a planar cake of said metals;
(f) drying said cake; and
(g) sintering said cake to a density equal to or greater than about 90% of the theoretical density of said alloy to form said sheet.

4,800,065

PROCESS FOR MAKING CERAMIC-CERAMIC COMPOSITES AND PRODUCTS THEREOF

Leonitos Christodoulou, Baltimore; Dennis C. Nagle, Ellicott City, and John M. Brupbacher, Catonsville, all of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 943,899, Dec. 19, 1986, Pat. No. 4,710,348, which is a continuation of Ser. No. 662,928, Oct. 19, 1984, abandoned. This application Nov. 18, 1987, Ser. No. 122,306
Int. Cl.[4] C22C *1/10, 32/00*
U.S. Cl. 420—129 **42 Claims**

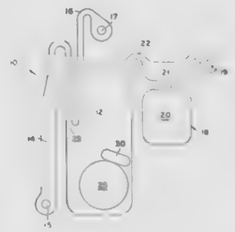
1. A method for the production of ceramic-ceramic composite materials comprising precipitating at least one ceramic phase in a ceramic precursor matrix by contacting ceramic forming reactants, in the presence of a non-reactive solvent ceramic precursor in which the ceramic forming reactants are more soluble than ceramic phase, at a temperature at which sufficient diffusion of the reactants into the solvent ceramic precursor occurs to cause reaction of the ceramic forming reactants, raising the temperature above the melting temperature of the solvent ceramic precursor to precipitate a substantially uniform distribution of the ceramic phase in the ceramic precursor matrix, thereby forming a composite material, reacting the ceramic precursor matrix of the composite material with a matrix reactive species to convert at least a portion of the ceramic precursor matrix to a ceramic matrix, and recovering a ceramic-ceramic composite.

4,800,066

END OF LIFE INDICATOR FOR AUTOMATIC TOILET CLEANING DEVICES

Richard G. Sinclair, and Sylvester Sowell, both of Columbus, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Jul. 21, 1986, Ser. No. 887,751
Int. Cl.[4] G01N *31/22*
U.S. Cl. 422—55 **8 Claims**



1. An end of life indicator for an aqueous solution containing an active component, and having a pH less than a predetermined value, comprising:
a core of water soluble dye, and
a coating completely surrounding said core, said coating being a polymer composition substantially resistant to an aqueous solution and hydrolyzable when the end of life indicator is within an aqueous media having a pH above a predetermined value, exhaustion of an active component being indicated by release of said dye upon hydrolysis of said coating.

4,800,067

DEVICE FOR DETECTING GASES WHICH MUST BE TREATED BEFORE TESTING

Johannes Heckmann, Luebeck, and Wolfgang May, Reinfeld, both of Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 2, 1987, Ser. No. 69,386
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 3625085
Int. Cl.[4] G01N *21/05, 21/78*
U.S. Cl. 422—86 **4 Claims**



1. Gas testing device comprising a transparent tube having

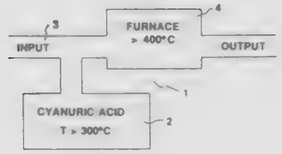
breakable tips at each end, which when broken, define an inlet and an outlet at the respective ends of said tube, a plurality of different material layers for detecting gases arranged in said tube in succession, at least two spacedapart retainer elements arranged between at least two of said material layers of different material and defining a valve space between said layers, one of said retainer elements being gas-permeable and the other of said retainer elements defining a communication passage between said valve space and an adjacent one of said layers of different materials, said communication passage having a closeable valve seat, a valve member in said valve space engageable with said valve seat and forming a valve therewith to close said passage, and biasing means biasing said valve member on said seat, said valve being openable when there is a gas flow through said tube in a direction opposite to said biasing means and being closeable by said biasing means to close off said passage in the communication between said layers of different material.

4,800,068

SYSTEM FOR NO REDUCTION USING SUBLIMATION OF CYANURIC ACID

Robert A. Perry, 524 Hazel St., Livermore, Calif. 94550

Division of Ser. No. 859,951, May 5, 1986, Pat. No. 4,731,231. This application Mar. 23, 1987, Ser. No. 28,985
Int. Cl.[4] F01N *3/10*
U.S. Cl. 422—173 **10 Claims**



1. A device useful for reducing the NO content of a gas stream comprising:
storage means containing a compound which upon sublimation generates HNCO;
means for subliming said compound in operation;
means for contacting said NO-containing gas stream with said generated HNCO;
means for raising the temperature of said gas contacted with HNCO to a level effective for heat induced decomposition of HNCO and resultant lowering of the NO content of the gas stream; and
output means for resultant gas stream containing a lowered content of NO.

4,800,069

ZINC RECOVERY FROM FURNACE DUST

Derek J. Fray, Trumpington, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 883,920, Jul. 10, 1986, abandoned. This application Sep. 21, 1987, Ser. No. 99,677
Claims priority, application United Kingdom, Jul. 24, 1985, 8518746
Int. Cl.[4] C01G *11/00, 21/16, 9/04*
U.S. Cl. 423—97 **11 Claims**

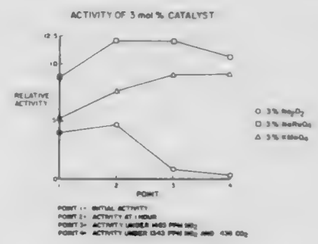
1. A process for recovering a metal selected from the group consisting of zinc, cadmium and lead from furnace dust, said process comprising the steps of:
adding to the dust a zinc compound selected from the group consisting of zinc oxide and zinc chloride unless the dust already contains a compound selected from the group consisting of zinc oxide and zinc chloride;
treating said dust at an elevated temperature with a halogen and an additional oxidant selected from the group consisting of air and oxygen; and
recovering the metal in the form of volatilized metal halide;
said elevated temperature being at least 624 degrees C when said halogen is iodine;
at least 650 degrees C when said halogen is bromine; and
at least 732 degrees C when said halogen is chlorine.

4,800,070

CATALYSTS FOR ABSORPTIVE AIR SEPARATION

Richard T. Carlin, Buffalo, N.Y., and Brian R. Dunbobbin, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 8, 1987, Ser. No. 94,637
Int. Cl.[4] C01B *13/00*
U.S. Cl. 423—210.5 **8 Claims**



1. In a method for separating oxygen from an oxygen-containing gas comprising reacting an oxygen acceptor consisting essentially of a molten salt solution of alkali metal nitrates and nitrites with said gas in an absorption reaction to produce an oxygen-depleted gas effluent, separately decomposing the oxidized acceptor to yield oxygen and regenerated oxygen acceptor, the improvement comprising adding to the oxygen acceptor a catalytic amount of a transition metal oxide selected from the group consisting of oxides of manganese, ruthenium, rhenium, osmium, rhodium, iridium and mixtures thereof.

4,800,071

FILTRATION AIDS FOR REMOVAL OF CALCIUM SOLIDS FROM AQUEOUS PHOSPHORIC ACID

Ralph W. Kaesler, Barrington, Ill.; Donald G. Robinson, Lakeland, Fla.; Wayne L. Moss, Columbia, S.C., and Brian K. Fallon, Wheaton, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed May 3, 1988, Ser. No. 189,870
Int. Cl.[4] C01B *25/16*; B01D *21/01*; B03D *3/00*; C02F *1/52*
U.S. Cl. 423—321 R **5 Claims**

1. A method for increasing the filtration rate for the removal of gypsum and gangue from phosphoric acid in a phosphoric acid production facility comprising the addition of a sulfonated acrylamide polymer containing at least about 1 mole percent sulfonate and having an RSV of at least 10, sulfonated polymer being selected from the group consisting of 2-acrylamido-2-methlpropanesulfonate/acrylamide, 2-acrylamido-2-methylpropanesulfonate acrylate/acrylamide and 2-acrylamidoethanesulfonate/acrylate/acrylamide.

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4,800,072

ANHYDROUS CEROUS NITRATE-AMMONIUM NITRATE COMPLEX AND A PROCESS FOR ITS PREPARATION FROM CERIC AMMONIUM NITRATE

Peter S. Gradeff, Pottersville, and Fred G. Schreiber, Highland Park, both of N.J., assignors to Rhone Poulenc, Inc., Monmouth Junction, N.J.

Filed Jan. 14, 1988, Ser. No. 143,978
Int. Cl.[4] C06B *1/04*
U.S. Cl. 423—396 15 Claims

1. A Process for preparing an anhydrous cerous nitrate complex comprising:

(a) contacting water-free ceric ammonium nitrate with a suitable reducing agent under anhydrous conditions; and

(b) maintaining contact for a period of time sufficient to reduce cerium (IV) to cerium III and form the anhydrous cerous nitrate complex.

15. Anhydrous cerous nitrate-ammonium nitrate-ammonia complex.

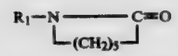
4,800,073

PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Erik Bengtsson, Sarte, and Ulf Andersson, Gothenburg, both of Sweden, assignors to EKA Nobel AB, Sarte, Sweden

Filed Mar. 21, 1988, Ser. No. 171,106
Int. Cl.[4] C01B *15/02*
U.S. Cl. 423—588 4 Claims

1. A process for the production of hydrogen peroxide by reduction and oxidation of an anthraquinone, characterized in that as solvent is used an alkyl substituted caprolaktam having the general formula



wherein R_1 is an alkyl group having from 6 to 12 carbon atoms.

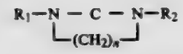
4,800,074

PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Erik Bengtsson, Sarte, and Ulf Andersson, Gothenburg, both of Sweden, assignors to EKA Nobel AB, Sarte, Sweden

Filed Mar. 21, 1988, Ser. No. 171,107
Int. Cl.[4] C01B *15/02*
U.S. Cl. 423—588 6 Claims

1. A process for the production of hydrogen peroxide by reduction and oxidation of an anthraquinone, characterized in that as solvent is used a cyclic urea derivative having the general formula



wherein n is 1 to 5 and wherein R_1 and R_2 are alkyl groups having from 1 to 22 carbon atoms.

4,800,075

FIXED-BED HYDROGEN PEROXIDE CATALYST

Colie L. Jenkins, Memphis, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1987, Ser. No. 132,475
Int. Cl.[4] C01B *15/02*
U.S. Cl. 423—588 5 Claims

1. In a cyclic process employing a fixed-bed reactor for the production of hydrogen peroxide involving hydrogenating a working solution comprising quinones dissolved in solvents in the presence of a hydrogenation catalyst, oxidizing the hydrogenated working solution, separating the hydrogen peroxide from the oxidized working solution and then recycling the working solution for further hydrogenation, the improvement comprising the use of a catalyst comprising palladium deposited on a catalyst support which contains alpha alumina, wherein the alpha alumina content is about 5 to 99 percent of the support and the surface area by BET measurement of the supported catalyst is from about 108 to 5 m^2/g.

4,800,076

SKIN CARE COMPOSITIONS

Gulganji B. Bhat, Ringoes; Elvin R. Lukenbach, Somerset, and Ralph C. Stutzman, Ringoes, all of N.J., assignors to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.

Filed Mar. 13, 1987, Ser. No. 25,453
Int. Cl.[4] A61K *7/35, 47/00*
U.S. Cl. 424—69 8 Claims

1. A skin care composition comprising a lotion, cream or anhydrous base containing non-volatile oils and waxes and talc wherein the ratio of the non-volatile ingredients to talc is from about 0.4:1 to 3.2:1.

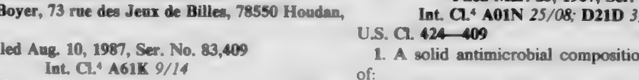
4,800,077

GUERBET QUATERNARY COMPOUNDS

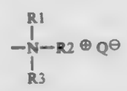
A. J. O'Lenick, Jr., and Wayne C. Smith, both of Lilburn, Ga., assignors to GAF Corporation, Wayne, N.J.

Filed Jan. 13, 1988, Ser. No. 143,570
Int. Cl.[4] A61K *7/09*
U.S. Cl. 424—70 11 Claims

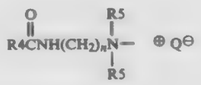
1. A compound conforming to the formula:



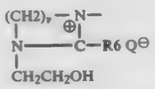
wherein;
R is C_6 to C_{20};
R′ is the same or different than R and is from C_6 to C_{20};
EO is an ethylene oxide residue;
PO is a propylene oxide residue;
x, y, z are integers and independently are from 0 to 10;
R″ is selected from;



R1, R2, and R3 are each independently selected from C_1 to C_{20};
Q is a anion needed for charge balance and is selected from halide or sulfate;
or R″ may be alkylamido conforming to the following structure;



R4 is C_6 to C_{20},
R5 is selected from methyl or ethyl,
n is an integer from 1 to 5;
Additionally R″ may conform the structure;



wherein

R6 is C_6 to C_{20} and v is an integer from 1 to 5.

4,800,078

IMMUNOTHERAPEUTIC METHOD OF TREATING RESPIRATORY DISEASE BY INTRANASAL ADMINISTRATION OF IGB

Gregory Prince; Robert Chanock, both of Bethesda, and Val G. Hemming, Gaithersburg, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed May 28, 1987, Ser. No. 55,008
Int. Cl.[4] A61K *39/42, 39/395*
U.S. Cl. 424—86 1 Claim

1. A method of treating respiratory disease caused by respiratory scintial virus (RSV), consisting essentially of administering into the lower respiratory tract of a host suffering from respiratory scintial disease of the lower respiratory tract, a single dose of about 0.025 to about 0.05 g/Kg body weight of purified human gamma globulin suitable for administration by intravenous route and containing respiratory scintial virus-neutralizing antibodies at a titer greater than 1:2000 to produce therapeutic effect against disease caused by RSV.

4,800,079

MEDICINE BASED ON FENOFIBRATE, AND A METHOD OF PREPARING IT

Jean-Francois Boyer, 73 rue des Jeux de Billes, 78550 Houdan, France

Filed Aug. 10, 1987, Ser. No. 83,409
Int. Cl.[4] A61K *9/14*
U.S. Cl. 424—482 7 Claims

1. Medicine in the form of granules with controlled release of fenofibrate, each granule comprising an inert core, a layer based on fenofibrate and a protective layer, wherein the improvement comprises the layer based on fenofibrate containing the fenofibrate in the form of crystalline microparticles of dimensions not greater than 30 microns, said microparticles being included in the pores of an inert matrix soluble in water.

4,800,080

CAPILLARY COSMETIC COMPOSITION FOR WASHING DISENTANGLING HAIR CONTAINING A PLANT EXTRACT CONTAINING SAPONINS

Jean-Francois Grollier, Paris, and Bernard Beauquey, Clichy, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation of Ser. No. 679,282, Dec. 7, 1984, abandoned, which is a continuation of Ser. No. 402,801, Jul. 28, 1984, abandoned, which is a continuation of Ser. No. 144,452, Apr. 28, 1980, abandoned. This application Aug. 18, 1986, Ser. No. 896,580
Claims priority, application Luxembourg, May 15, 1979, 81256
Int. Cl.[4] A61K *7/06, 7/09, 35/78*
U.S. Cl. 424—74 2 Claims

1. A capillary cosmetic composition for use in washing or disentangling greasy hair whereby rapid re-oiling of the hair either does not occur or occurs only very slightly, said composition comprising in an appropriate cosmetic vehicle (i) between 0.5 and 20 weight percent of a dry saponaria extract containing 40–50 percent saponins and (ii) between 0.05 to 3 weight percent, based on the total weight of said composition, of a cationic polymer, said polymer being a polymer of hydroxyethyl cellulose and epichlorohydrin quaternized with trimethylamine, said composition having a pH between 4 and 8.

4,800,081

METHODS AND COMPOSITIONS FOR TREATING VIRAL INFECTIONS

Thomas Albrecht, and Chan H. Lee, both of Galveston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 601,471, Apr. 18, 1984, Pat. No. 4,663,317. This application Jun. 5, 1986, Ser. No. 871,120
Int. Cl.[4] A61K *33/00, 31/55, 31/52, 31/47*
U.S. Cl. 424—129 31 Claims

1. A method for treating viral infections in an infected host comprising administering to the host an effective amount of a calcium influx blocker in combination with an effective amount of a cyclic nucleotide modulator.

4,800,082

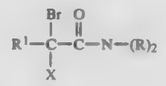
SUSTAINED RELEASE MICROBIOLOGICAL CONTROL COMPOSITION

Robert J. Karbowski, Sanford; Anita S. Erickson; Charles D. Gartner, both of Midland, all of Mich., and Kathleen A. Roy, Dunwoody, Ga., assignors to The Dow Chemical Company, Midland, Mich.

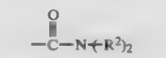
Filed Mar. 23, 1987, Ser. No. 29,017
Int. Cl.[4] A01N *25/08;* D21D *3/00;* C02F *1/76*
U.S. Cl. 424—409 28 Claims

1. A solid antimicrobial composition consisting essentially of:

(a) about 1 to about 90 percent by weight of a halogenated amide antimicrobial compound of the formula



wherein
X is hydrogen, halogen of a cyano radical;
each R group is independently hydrogen, a monovalent saturated hydrocarbon radical or an inertly substituted monovalent saturated hydrocarbon radical or the two R groups are, jointly, a divalent saturated hydrocarbon radical, or an inertly substituted divalent saturated hydrocarbon radical, which, taken with the adjacent nitrogen atom, forms a heterocyclic ring having from 4 to about 10 ring members; and
R^1 is a cyano radical or an amido radical having the formula:



wherein R^2 has the same meaning as R;

(b) about 10 to about 80 percent by weight of a suitable hydrophilic polymer selected from the group consisting of a natural water soluble cellulosic polymer, a synthetic water soluble cellulosic polymer, gelatin, maltodextrin, xanthan gum, carrageenan, carboxymethyl guar, hydroxypropyl guar and carboxymethyl galactomannose;

(c) about 0 to about 80 percent by weight of a compression agent; and

(d) about 0 to about 10 percent by weight of a mold release agent.

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4,800,083

SUSTAINED RELEASE METHOD AND PRODUCT

Foo S. Hom, Safety Harbor, and William R. Ebert, St. Petersburg, both of Fla., assignors to R. P. Scherer Corporation, Troy, Mich.

Filed Oct. 20, 1986, Ser. No. 921,069
The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.
Int. Cl.[4] A61K *9/52, 9/68*
U.S. Cl. 424—457 49 Claims

1. A filled, gelatin capsule comprising in combination, a shell formed from gelatin, a fill material contained within said shell, said shell being sized and shaped to be readily swallowable, said fill material comprising a masticatory substance and a medicament dispersed throughout said substance, said medicament being of a type that is desirably and effectively gradually released for absorption by the body over an extended period of time, said substance defining a cohesive matrix for said medicament, said gelatin shell being rapidly dissolved in said gastrointestinal juices, said masticatory substance matrix being substantially insoluble in the presence of gastrointestinal juices, said matrix being of a type that is capable of being subjected to substantially continuous random motion while in said juices while at body temperature and while under the influence of peristaltic movement in the gastrointestinal tract for substantially varying the exposed surface area of said fill, and said medicament being gradually released over an extended period as said exposed surface area is varied for ultimate absorption of said medicament by the body.

4,800,084

PHARMACEUTICAL PRODUCT IN THE FORM OF A PELLET WITH CONTINUOUS, DELAYED MEDICAMENT SUBSTANCE EMISSION

Horst Zerbe, Wilhelm-Busch-Str. 4, D-4282 Velen, Fed. Rep. of Germany

Continuation of Ser. No. 654,245, Jan. 24, 1985, abandoned. This application Aug. 13, 1987, Ser. No. 86,178
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403329
Int. Cl.[4] A61K *9/20, 9/28*
U.S. Cl. 424—458 10 Claims

1. In a pharmaceutical product in the form of a pellet, said product allowing a continuous, delayed, essentially complete emission of a pharmaceutically active agent over a predetermined period of time upon administration to a patient in need thereof, the improvement wherein said pharmaceutical product consists essentially of:

(a) a core consisting essentially of a pharmaceutically inert material that dissolves in gastric and intestinal juices,

(b) a layer comprising said pharmaceutically active agent and surrounding said core, and

(c) an outer pharmaceutically inert coating on said pharmaceutically active agent containing layer, said outer coating conrolling and causing the continuous delayed emission of said pharmaceutically active agent upon administration and,

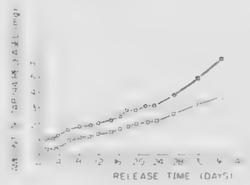
(d) an outer coating containing a pharmaceutically active agent unprotected against the influence of gastric and intestinal juices, and between said core of pharmaceutically inert material dissolving in the gastric and intestinal juices and said layer containing the active agent and surrounding said core, providing a pharmaceutically inert layer which is impermeable to gastric and intestinal juices and which forms a tight seal around said core.

4,800,085

SLOW-RELEASE COMPOSITE AND PROCESS FOR PRODUCING THE SAME

Masaru Yoshida; Masaharu Asano; Isao Kaetsu; Katsuyuki Nakai; Hidetoshi Yamanaka; Keizo Shida, all of Gunma, and Akira Shiraishi, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo; Keizo Shida, Gunma and Takeda Chemical Indus. Ltd., Osaka, all of, Japan

Division of Ser. No. 613,393, May 24, 1984, Pat. No. 4,652,443.
This application Nov. 20, 1986, Ser. No. 932,874
Claims priority, application Japan, Jun. 7, 1983, 58-101319; Jun. 7, 1983, 58-101320
Int. Cl.[4] A61K *67/02;* A01N *25/26*
U.S. Cl. 424—462 3 Claims



1. A slow-release composite consisting essentially of a core of pyroglutamyl-histidyl-triptophyl-seryl-tyrosyl-D-leucyl-leucyl-arginyl-proline ethylamide or a salt thereof, as active ingredient, encapsulated in a membranous form of polyethylene fluoride, which is produced by:

compressing said active ingredient into a shaped body; and encapsulating said shaped body with said polyethylene fluoride.

4,800,086

PREPARATION OF ASCORBIC ACID GRANULES

Volker Buehler, Wachenheim; Friedbert Hofmann, Neuhofen, and Robert Heinz, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 18, 1985, Ser. No. 810,372
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447422
Int. Cl.[4] A61K *9/16*
U.S. Cl. 424—497 2 Claims

1. A process for the preparation of ascorbic acid granules which have a stable color and which can be directly tableted hich comprises: mixing crystals or crystal fragments of ascorbic acid containing less than 0.3% water, with from 0.8 to 8% by weight of soluble polyvinylpyrrolidine, having a water content of 0.3 to 5% by weight, wherein not more than 40% by weight of said ascorbic acid crystals or crystal fragments have a longest particle diameter of less than 50 μm, and not more than 15% by weight have a longest particle diameter greater than 500 μm; compressing the mixture of ascorbic acid crystals or crystal fragments and polyvinylpyrrolidone to form a strand, and comminuting the strand to form granules of ascorbic acid and polyvinylpyrrolidone.

4,800,087

TASTE-MASKED PHARMACEUTICAL COMPOSITIONS

Atul M. Mehta, 252 E. Crescent Ave., Ramsey, N.J. 07446

Filed Nov. 24, 1986, Ser. No. 933,988
Int. Cl.[4] A61K *9/50, 9/58*
U.S. Cl. 424—497 15 Claims

1. A chewable taste-masked pharmaceutical compositon having controlled release characteristics, comprising:

(a) a microcapsule of about 10 microns to about 1.5 mm in diameter having a core including a pharmaceutically active agent and a polymer mixture coating having sufficient elasticity to withstand chewing;

(b) said polymeric mixture comprising

(i) at least aabout 5% by weight of a high temperature film forming copolymer comprising a rreaction porduct of poymethacrylic acid and at least one member of the group consisting of polymethyacrylic acid ester and acrylic acid ester, that forms a polymeric film at temperatures of at least about 30° C.; and

(ii) at least about 5% by weight of a low temperature film forming copolymer selected from the group consisting of methacrylic acid ester copolymers and styrene acrylate copolymers that form a polymeric film at temperatures less than about 25° C.

4,800,088

ANIMAL FEED SUPPLEMENT WITH FILLER AND METHOD OF PREPARING THE SAME

J. Wallace Sawhill, Canoga Park, Calif., assignor to Pacific Kenyon Corp., Long Beach, Calif.

Filed Apr. 13, 1987, Ser. No. 37,593
Int. Cl.[4] A23K *1/02, 1/14, 1/16, 1/22*
U.S. Cl. 426—69 34 Claims

1. In a method for the preparation of an animal feed supplement wherein an aqueous solution of sugar, protein, or mixtures thereof is solidified by the addition to said solution of calcium oxide or hydroxide in an amount from 2 to 5 percent as the oxide, and phosphoric acid or a soluble phosphate in an amount from 1 to 4 percent as phosphate, and the esulting mixture is permitted to solidify, the improvement comprising:

(a) incorporating in said mixture prior to its solidification:

(1) a protein meal in an amount from 2 to 20 weight percent; and

(2) a solid filler selected from the group consisting of bran, hulls, shells and screenings of grains and nuts in an amount from 16 to about 20 weight percent; and

(b) controlling the amounts of said protein meal and filler added in steps (a)(1) and (a)(2) to a combined total from 10 to 40 weight percent and adjusting the weight proportions of said meal to filler from 0.25 to 4, to produce a solid having a 24-hour hardness from 35 to 60.

4,800,089

PACKET WITH INTERNAL FILTER FOR COFFEE MACHINES

George W. Scott, 5701 San Vincente Blvd., Los Angeles, Calif. 90019

Filed Mar. 14, 1988, Ser. No. 167,650
Int. Cl.[4] B65B *29/02;* A23F *5/46;* A47J *31/06*
U.S. Cl. 426—78 3 Claims



1. A coffee packet for use in the receptacle of a coffee brewing machine comprising:

a. a porous paper outer housing having an approximate cylindrical shape, open top, pleated walls and a flat bottom, said housing being coated on its inside surfaces with an edible, air-impervious, low melting substance;

b. a premeasured quantity of ground coffee solids contained in said housing and resting on and against said coated inside surfaces;

c. an air-impervious circular plastic cover sheet hermetically and resealably joined to said pleated walls at their uppermost periphery such that the joined cover sheet holds the pleated walls under folded tension such that the diameter of the housing is reduced and a hoop stress is created in the pleated walls, the plastic sheet serving in conjunction with the coated inside surfaces as an air tight seal for said coffee solids;

d. a tab firmly attached to the plastic sheet, said tab being capable of freeing the plastic sheet from the top of the pleated wall when pulled;

whereby the coffee brewing machine can be operated as follows:

(i) the receptacle of the machine is opened and the said coffee packet is placed inside;

(ii) the tab is pulled to separate the plastic sheet, thus unsealing the packet and causing the pleated walls, by virtue of their hoop stress, to expand against the sides of the receptacle;

(iii) the receptacle is closed and the coffee brewing machine is started.

4,800,090

INFRARED AND MICROWAVE ENERGY TREATMENT OF FOOD

Joseph R. August, Jupiter, Fla., assignor to Musser's Potato Chips, Inc., Mountville, Pa.

Filed Mar. 11, 1987, Ser. No. 24,475
Int. Cl.[4] A23L *1/025*
U.S. Cl. 426—243 17 Claims

1. A process for preparing a cooked food product without the use of oil, said process consisting essentially of:

(a) subjecting food pieces to a sufficient amount of infrared energy to warm the exterior of said food pieces;

(b) exposing said food pieces to microwave energy for a period of time sufficient to warm the interior of said food pieces; and then

(c) exposing said food pieces to a sufficient amount of infrared energy to achieve browning of said food pieces.

4,800,091

CHEWING GUM COMPOSITIONS HAVING SEQUENTIAL ACID RELEASE

Michael Glass, Fairlawn; Joseph Hoholick, Hopatcong; Amy Dombroski, Budd Lake, and Steven M. Faust, Stanhope, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 25, 1986, Ser. No. 934,752
Int. Cl.[4] A23G *3/30*
U.S. Cl. 426—3 15 Claims

1. A chewing gum composition having prolonged juiciness and flavor by virtue of the incorporation of sequentially released non-encapsulated acids, said composition comprising a uniform composition of:

(a) a gum base;

(b) a sweetener;

(c) a flavor; and

(d) a mixture of at least three non-encapsulated organic acids resulting in a sequence of acid release rates, said mixture comprising: (i) citric acid having the earliest release time, (ii) one or more acids having a transitional release time with said acids being selected from the group consisting of malic acid and tartaric acid, and (iii) one or more acids having a late release time with said acids being selected from the group consisting of adipic acid and fumaric acid.

4,800,092

METHOD FOR PRODUCING A SOLID ANIMAL FEED SUPPLEMENT

Alex E. Miller, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 828,149, Feb. 7, 1986. This application Jun. 10, 1986, Ser. No. 876,993
Int. Cl.[4] A23K *1/22*
U.S. Cl. 426—69 **40 Claims**

1. A method for preparing an acidic, solid, sugar-based animal feed supplement block which comprises:

(a) forming an acidic liquid mixture under conditions of agitation by mixing a first solution containing a water-soluble phosphate-containing compound but substantially no sugar, calcium or magnesium with a second solution containing a sugar source and a sufficient amount of a water-soluble source of calcium and a water-soluble source of magnesium to react with said phosphate-containing compound, said second solution having been stored in a liquid state substantially ungelled, said water-soluble source of magnesium being present in a concentration sufficient to provide above about 0.5 weight percent total magnesium in said mixture, and the weight ratio of dissolved calcium to dissolved magnesium in said mixture being between about 1.5 and 3;

(b) allowing the liquid mixture to cure into an aeidic, solid, sugar-based animal feed supplement block product having a hardness less than about 80 in 0.1 millimeter penetrometer units; and

(c) recovering the product.

4,800,093

HIGH MOISTURE ANIMAL FOOD PRODUCT CONTAINING A FILAMENTOUS FUNGAL BIOMASS

William C. Hogan, Bridgeton, and Dennis O. Gierhart, High Ridge, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 829,885, Feb. 18, 1986, abandoned. This application May 28, 1987, Ser. No. 56,367
Int. Cl.[4] A23K *1/00*
U.S. Cl. 426—46 **13 Claims**

1. A process of producing pet food product having a moisture content greater than about 45% by weight of improved palatability comprising;

(a) forming a mixture of about 0.5 to 29% by weight meat solids on a dry basis and about 1 to 18% by weight filamentous fungal biomass solids on a dry basis, said biomas being formed by growth of a filamentous fungi selected from the genuses consist. ,f of Aspergillus and Rhizopus on a fermentation media consisting essentially of soybean whey at a pH of about 3.8 to 5.8 and a temperature of about 28°–32° C.;

(b) reducing the particle size of said mixture into pieces of a substantially uniform size;

(c) heating said mixture to a temperature sufficient to pasteurize the mixture to form an pet food product having improved palatability.

4,800,094

METHOD FOR PROCESSING A COOKED FOOD PRODUCT

Gerald Freda, Palatine; Joseph Bogacz, Chicago; Joseph Freda, Barrington Hills, and Dennis Olson, Elgin, all of Ill., assignors to C & F Packing, Inc., Chicago, Ill.

Division of Ser. No. 763,034, Aug. 6, 1985, Pat. No. 4,731,006. This application Sep. 15, 1986, Ser. No. 906,966
Int. Cl.[4] A22C *7/00*; A23P *1/12*
U.S. Cl. 426—513 **25 Claims**

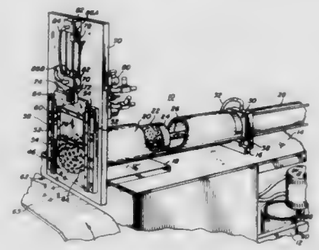
1. A method for forming, cooking and processing a meat or poultry containing food product comprising the steps of:

reducing the size of the food product by grinding, chopping, milling or comminuting said product to create a formable mass;

forming a defined product loaf from said formable mass;

cooking said product loaf through the application of heat;

positioning the cooked product loaf in an extrusion location on one side of an extrusion plate;



compressing at least a portion of said cooked product loaf to thereby extrude the cooked product loaf through said extrusion plate to form a plurality of irregularly shaped continuous lengths of cooked product; and

dividing said lengths of cooked product into a plurality of cooked product portions which have a hand-formed,randomly shaped irregular appearance and have a predetermined weight.

4,800,095

STABILIZED APM IN COMESTIBLES

Thomas J. Carroll, Oak Ridge, N.J., and Gary S. Keboe, Ridgefield, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 840,299, Mar. 14, 1986, which is a continuation-in-part of Ser. No. 717,630, Mar. 29, 1985, abandoned. This application Mar. 3, 1988, Ser. No. 162,400
Int. Cl.[4] A23G *3/30*; A23L *1/236*
U.S. Cl. 426—548 **17 Claims**

1. In an ingestible sugarless product which is other than chewing gum and comprising sweetness imparting amounts of L-aspartic acid derivative sweetening agent, bulking agent amounts of non-nutritive bulk sweeteners, and ≧2% moisture the improvement comprising the inclusion of cooked aqueous hydrogenated starch hydrolysate having a moisture content of 10±6% and in amounts effective to stabilize said L-aspartic acid derivative sweetening agent against decomposition during storage of 30% relative humidity and 100°–105° F. for 40 days, whereby at least 80% of said sweetening agent is retained in said composition in undecomposed form after said storage.

4,800,096

PECTIN GELLING COMPOSITION

David J. DiGiovacchino, Hightstown; Richard A. Carlson, Freehold; Rodger H. Jonas, Cranbury, and Sheila Marion, Lakewood, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 29, 1987, Ser. No. 56,619
Int. Cl.[4] A23L *1/06*
U.S. Cl. 426—577 **7 Claims**

1. A dry pectin gelling composition suitable for making jelly and jams utilizing a one-step process, said gelling composition, in unfavored form, consisting essentially of at least 96% by weight sugar, from 0.1 to 0.7% food acid and from 0.5 to 2.0% pectin having a DM of from 70 to 75, wherein the pectin gelling composition is produced by combining sugar particles and pectin particles, wherein the sugar particles have an average particle size in excess of 210 microns, wherein essentially all of the pectin particles will pass through a 200 mesh U.S. Standard Sieve and wherein said pectin particles are adhered to the surface of said sugar particles.

4,800,097

DRIED NUTMEAT AND STARCH FOOD PRODUCT AND PROCESS

Charles Morris, Brooklyn Park, and George Bateson, Roseville, both of Minn., assignors to Ogilvie Mills, Inc., Minnetonka, Minn.

Continuation of Ser. No. 678,923, Dec. 5, 1984, abandoned. This application Jul. 1, 1986, Ser. No. 881,487
Int. Cl.[4] A23L *1/36*
U.S. Cl. 426—632 **19 Claims**

1. A process for preparing a dried nutmeat and starch containing food product comprising:

(a) emulsifying a starch, nutmeat, and water mixture, wherein the mixture comprises from about 8 to about 65% of starch, to form a homogeneous emulsion wherein the starch is at least partially gelatinized starch and the nutmeat is comminuted, and then

(b) drying the emulsion produced in step (a) by drum drying or extrusion drying, to form a dried nutmeat and starch containing food product.

4,800,098

METHOD OF PRESERVING POTATOES

Sherry A. Galland, Caldwell, Id., assignor to J. R. Simplot, Boise, Id.

Filed Sep. 19, 1984, Ser. No. 652,109
Int. Cl.[4] A23L *1/216*
U.S. Cl. 426—637 **7 Claims**

1. A method of preparing frozen unpeeled whole potatoes for subsequent reheating for consumption, wherein the reheated potatoes have a taste and texture simulating whole unpeeled potatoes baked to completion from a raw state, said method comprising:

a. cooking the potatoes at a temperature between about 200° and 300° F. for a period of about 2 to 40 minutes by immersing the potatoes within a heated bath of edible oil, thereby maintaining a substantial and continuous coating of the edible oil on the entire surface of the potatoes during the cooking thereof; and

b. freezing the potatoes.

4,800,099

CANINE BISCUIT CONTAINING DISCRETE PARTICLES OF MEAT AND OTHER MATERIALS AND METHOD FOR MAKING SAME

Gary Gellman, Pomona, N.Y.; George A. Erfurt, Summit, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation of Ser. No. 736,375, May 21, 1985, Pat. No. 4,743,461, which is a continuation of Ser. No. 549,352, Nov. 7, 1983, Pat. No. 4,546,001, which is a continuation-in-part of Ser. No. 341,969, Jan. 22, 1982, Pat. No. 4,454,163. This application Oct. 30, 1986, Ser. No. 924,930
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.[4] A23K *1/00*
U.S. Cl. 426—641 **28 Claims**

1. Process for preparing dry, cohesive particles, which contain meat and/or meat by-product plus farinaceous material and/or textured vegetable protein plus seasoning or flavoring components, comprising:

(a) feeding an admixture of a portion of the meat in particulate form and/or the meat by-product in particulate form and the seasoning and/or flavoring component in particulate form into forming step (c);

(b) simultaneously feeding an admixture of the meat in particulate form and/or meat by-product in particulate form and the farinaceous material in particulate form and/or the textured vegetable protein in particulate form into forming step (c);

(c) forming a combination of admixtures (a) and (b) by mechanically working the mass at conditions of elevated temperature above about 212° F. and pressure for a time sufficient to convert the mass into a flowable substance and extruding the flowable substance through a restricted orifice;

(d) particulating the extrudate from step (c) into particles;

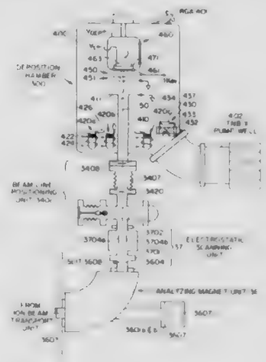
(e) drying the particles to form said dry, cohesive particles.

4,800,100

COMBINED ION AND MOLECULAR BEAM APPARATUS AND METHOD FOR DEPOSITING MATERIALS

Nicole Herbots, and Olof C. Hellman, both of Arlington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 27, 1987, Ser. No. 113,740
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—38 **49 Claims**



1. Apparatus for the deposition of materials on a substrate in a chamber comprising:

(a) a high vacuum reaction chamber;

(b) beam forming means coupled to said chamber for introducing a relatively high energy beam of ions of a first species into an area adjacent said substrate;

(c) a deceleration electrode within said chamber adjacent said beam forming means for decelerating said beam of ions;

(d) a suppressor electrode within said chamber and located adjacent said substrate and having an opening therein to permit said beam of ions to impinge on said substrate;

(e) a molecular beam source within said chamber for supplying a beam of a second species for deposition on said substrate.

4,800,101

METHOD FOR RESTORING AND MAINTAINING METAL MARKERS

Allen R. Knauer, 11375 N. 114th Dr., Youngtown, Ariz. 85363

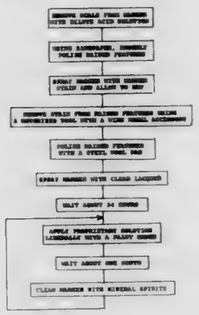
Filed Oct. 2, 1987, Ser. No. 88,374
Int. Cl.[4] B32B *35/00*
U.S. Cl. 427—142 **15 Claims**

1. A method for restoring and preserving a metal marker surface comprising the steps of:

(A) cleaning the surface; and

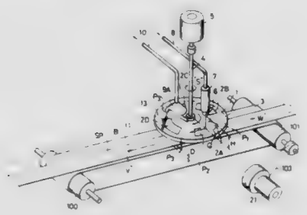
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(B) applying to the surface a preservative including, by weight:
paraffin: 5–20%



mineral spirits: 70–94%
lemon oil: 1–10%

4,800,102
POWDER SPRAYING OR SCATTERING APPARATUS AND METHOD
Koichiro Takada, Kanagawa, Japan, assignor to Nordson Corporation, Amherst, Ohio
PCT No. PCT/JP86/00609, § 371 Date Aug. 24, 1987, § 102(e) Date Aug. 24, 1987, PCT Pub. No. WO87/03226, PCT Pub. Date Jun. 4, 1987
PCT Filed Nov. 28, 1986, Ser. No. 83,783
Claims priority, application Japan, Jul. 28, 1985, 60-267971
Int. Cl.⁴ B05D *1/12*
U.S. Cl. 427—197 **8 Claims**



1. A powder spraying or scattering apparatus comprising:
material supply means for spraying or scattering a solid particulate powder material;
horizontal conveyor means disposed beneath said material supply means for supporting and conveying a substrate onto which the solid particulate powder material is to be sprayed or scattered at a predetermined position;
a flat disc member rotatable about a vertical axis and disposed below said material supply means and above said conveyor means and having an opening for passing therethrough the solid particulate powder material sprayed or scattered from said material supply means and applying the solid particulate powder material to said substrate at said predetermined position and a portion for blocking the passage of the solid particulate powder material;
scraper means disposed above and closely adjacent to said flat disc member in a position remote from said material supply means, said scraper means being effective to deflect said solid particulate powder material from the surface of said disc through said opening; and
a lower solid particulate powder material receiving member disposed beneath said scraper for collecting material deflected by said scraper through said opening.

4,800,103
INORGANIC FILLERS COATED WITH LATEX
David G. Jeffs, St. Austell, England, assignor to ECC International Limited, United Kingdom
Filed Aug. 29, 1986, Ser. No. 902,158
Claims priority, application United Kingdom, Aug. 3, 1985, 8521646
Int. Cl.⁴ C08K *3/34, 3/26, 9/04;* **B32B** *19/02*
U.S. Cl. 427—221 **3 Claims**

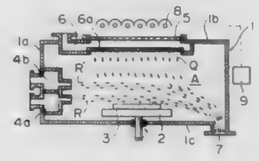
1. A process for preparing a coated inorganic filler which comprises adding to a particulate inorganic material selected from the group consisting of a kaolinitic clay, a calcined kaolinitic clay, a calcium carbonate, wollastonite, bauxite, talc, and mica, a natural or synthetic latex composition which comprises a suspension of polymer particles in water wherein the latex solids are selected from the group consisting of a natural rubber, a natural rubber which has been substituted with functional groups, a styrene butadiene rubber (SBR) and a poly(vinyl acetate), and dewatering and drying the resultant mixture, the amount of the natural or synthetic latex composition added being such as to provide from 1% to 10% by weight of latex solids based on the weight of dry inorganic material.

4,800,104
METHOD AND APPARATUS FOR THE INSPECTION OF TUBULAR MEMBERS
John S. Cruickshank, Inchture, Scotland, assignor to The L.B.P. Partnership C.P.I. Corporation, St. Louis, Mo.
Continuation-in-part of Ser. No. 786,322, Oct. 10, 1985, abandoned. This application Feb. 27, 1987, Ser. No. 20,323
Claims priority, application United Kingdom, Oct. 12, 1984, 8425870
Int. Cl.⁴ B05D *7/22;* **B24C** *3/00;* **B05C** *11/00;* **B24B** *7/00*
U.S. Cl. 427—230 **34 Claims**



1. A method of inspecting at least one of an inner circumferential surface and an outer circumferential surface of an elongate tubular member including the steps of:
(a) moving an apparatus along said tubular member, and during movement therealong said inspection apparatus in a single operation sequentially
(b) cleaning said at least one of the inner circumferential surface and the outer circumferential surface of the elongate tubular member
(c) optically scanning simultaneously the entire 360° circumference of at least one of the inner circumferential surface and the outer circumferential surface of the elongate tubular member that was cleaned during step (b) and
(d) effecting comparison checks where at least one of ovality and wall thickness deviation are to be determined.

4,800,105
METHOD OF FORMING A THIN FILM BY CHEMICAL VAPOR DEPOSITION
Izumi Nakayama, Hiratsuka; Akitoshi Suzuki, Chigasaki; Yoshiro Kusumoto, Chigasaki; Kazuo Takakuwa, Chigasaki, and Tetsuya Ikuta, Chigasaki, all of Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Kanagawa, Japan
Filed Jul. 17, 1987, Ser. No. 74,579
Claims priority, application Japan, Jul. 22, 1986, 61-172313; Jul. 22, 1986, 61-172314
Int. Cl.⁴ C23C *16/08, 16/30*
U.S. Cl. 427—253 **8 Claims**



1. An improved method of forming a thin film on a substrate by chemical vapor deposition comprising the steps of feeding a first reactive gas containing metal element and a second reactive gas containing no metal element, in a laminar flow condition substantially parallel to and limited to the surface of at least one substrate disposed in a reaction chamber under reduced pressure, feeding an inert gas or a gas containing the inert gas as a main component opposite to the surface of said substrate, so as to maintain the laminar flow condition of said first and second reactive gases and radiating a light beam from at least one heating lamp to said substrate in the reaction chamber to heat the substrate and thus produce chemical reaction on the surface of said substrate, thereby forming the thin film containing the metal element on the surface of said substrate.

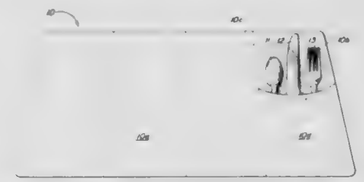
4,800,106
GLOSS ENHANCEMENT OF AUTODEPOSITED COATINGS
Ronald W. Broadbent, Ardsley, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
Filed Jun. 19, 1987, Ser. No. 64,966
Int. Cl.⁴ B05D *3/00, 3/02*
U.S. Cl. 427—388.1 **16 Claims**

1. A process of enhancing the gloss and maintaining the corrosion resistance of a non-glossy cured autodeposited resinous coating on a metallic surface comprising contacting an uncured autodeposited resinous coating present on a metallic surface with a reaction rinse containing from about 0.05 to about 5%/wt of an amphoteric surface active agent and from about 0.01 to about 2.5%/wt of an alkaline material, rinsing said coating with water, and then curing said coating.

4,800,107
DRY FOG SPRAYABLE LATEX PAINT
Frank A. Wickert, Olmsted Township, Hunterdon County, Ohio, assignor to The Glidden Company, Cleveland, Ohio
Filed Oct. 15, 1987, Ser. No. 108,766
Int. Cl.⁴ B05D *1/02*
U.S. Cl. 427—421 **3 Claims**

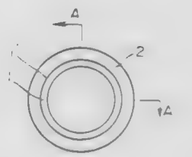
1. A method of dry fog spraying of pigmented latex paint to a substrate at ambient temperatures, comprising
providing a pigmented latex paint having between about 30% and 70% by weight total solids, the latex paint comprising on a dry solids volume basis between 20% and 40% film-forming polymeric latex binder, between 30% and 40% non-film forming polymeric particles, between 5% and 30% opacifying pigment, and between 0% and 25% inorganic non-opacifying pigment, where the pigment-volume-content of the latex paint is between 60% and 80%, and the volume solids of the latex paint is above 40%;
dry fog spraying of said latex paint to a substrate at ambient temperatures and causing a dry fog overspray relative to the substrate the latex paint applied to the substrate adapted to coalesce into a hardened paint film at ambient temperatures, and where the dry fog overspray dries tack free as a free fall non-adherent dust or powder where 85% to 100% by weight of the dry fog overspray is easily removed from surface surrounding the painted substrate.

4,800,108
COMBINATION NAPKIN AND TABLE SETTING HOLDER
Ralph E. Swartz, 880 98th Ave. N., Naples, Fla. 33963
Filed Mar. 24, 1988, Ser. No. 172,435
Int. Cl.⁴ B32B *3/08*
U.S. Cl. 428—43 **2 Claims**



1. A combination napkin and table setting holder made of paper comprising
a first sheet of absorbent paper in rectangular form having a single line of perforations running from the top edge to the bottom edge of the sheet parallel to the sides of the sheet which divides the sheet into a square paper napkin and a rectangular table setting holder, and
a second sheet of paper in rectangular form having the same width as the table setting holder of the first sheet and a height approximately two thirds that of the holder,
the two opposite sides and the lower edge of the second sheet of paper being bonded to the lower edge and opposite sides of the table setting holder of the first sheet to form an open-topped pocket between said sheets designed to receive an individual setting of eating utensils.

4,800,109
FLEXIBLE COMPOSITE HOSE
Katsushi Washiza, Sunto, Japan, assignor to Usui Kokusai Sangyo, Kabushiki Kaisha, Shizuoka, Prefecture Japan
Filed Feb. 2, 1987, Ser. No. 9,471
Claims priority, application Japan, Feb. 1, 1986, 61-13909[U]
Int. Cl.⁴ F16L *11/00*
U.S. Cl. 428—34.9 **3 Claims**



1. A flexible composite hose having high oil resistance, chemical resistance and pressure resistance which consists essentially of an inner tube that consists of a synthetic polyamide and an outer external tube of heat-shrunk material which consists of a fluoroplastic or chloroprene rubber, said inner tube being compressed by the shrinkage force of said outer external tube.

VOL 1098 ISS 4 JA 24 1989 UMI

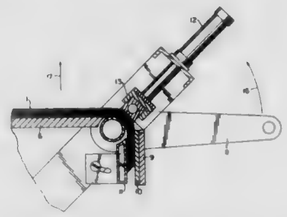
4,800,110
HOT MELT GLUE BINDER
Gerard M. DeCorday, 10871 Thorley Rd., Santa Ana, Calif. 92705
Filed Jul. 6, 1987, Ser. No. 69,772
Int. Cl.[4] B42D *3/00*; B42C *3/00*
U.S. Cl. 428—43 23 Claims



1. A method of binding and securing a protective cover to a group of document pages comprising the steps of:
forming a binder and rear protective cover having a back cover section, a spine section, and a narrow front cover attaching flange section, said spine section being interposed between said flange section and back cover section, defining first and second fold lines respectively between said spine section and said back cover section and between said spine section and said flange section,
securing a strip of pressure sensitive adhesive to a free edge of said narrow flange section with an inner edge of said adhesive at a distance from said second fold line,
securing a strip of temperature sensitive adhesive to said spine section,
inserting a plurality of document pages between said flange section and back cover section and abutting edges of said document pages against said temperature sensitive adhesive,
folding said back cover and flange section relative to said spine section along said first and second fold lines,
heating the spine section and the temperature sensitive adhesive secured thereto to melt the temperature sensitive adhesive and attach said document pages to the spine section,
forming a separate front protective cover of a size substantially the same as said document pages, with separate cover indicia thereon, and
pressing an edge portion of said separately formed front protective cover against the pressure sensitive adhesive strip of said narrow front cover attaching flange section to thereby separately and independently attach said front cover to the binder and rear protective cover at a position spaced from the spine section and the temperature sensitive adhesive thereon.

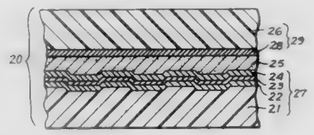
4,800,111
DEFORMABLE RESIN LAMINATE SHEET
Guenther Pfing, Vienna, and Georg Petershofer, Wiener Neudorf, both of Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria
Division of Ser. No. 99,556, Sep. 22, 1987, Pat. No. 4,750,961, which is a division of Ser. No. 708,373, Mar. 6, 1985, Pat. No. 4,744,846, which is a continuation of Ser. No. 441,429, Nov. 15, 1982, abandoned, which is a division of Ser. No. 915,577, Jun. 15, 1978, abandoned. This application Mar. 17, 1988, Ser. No. 169,374
Claims priority, application Austria, Jun. 20, 1977, 4317/77
Int. Cl.[4] B32B *3/04*; B31F *1/00*; C09J *3/14*; B29B *1/00*
U.S. Cl. 428—121 2 Claims

1. A product produced by the process for the heat shaping at an elevated deformation temperature of a heat shapable resin laminate sheet for producing a bent laminate having an edge zone of the sheet bent at an angle which retains its bent shape without being fixed on a support, the laminate being composed of several heat-bonded support webs impregnated with thermosetting binders and molded at an elevated temperature, the deformation temperature being higher than the temperature utilized in molding the laminate sheet, the laminate sheet having a thickness of greater than 1.2 mm and a decorative surface on at least one side and comprising a plurality of individual laminations, each of which is formed separately of one or more support webs impregnated with post-forming, thermosetting binders, and of thermoplastic binder layers arranged between the individual laminations and forming joints between them, the softening temperatures or the melting temperatures of the thermolastic binders being lower than the deformation temperature comprising (a) heating the heat shapable resin laminate sheet, the heat being applied at least over a deformation area of the sheet to a temperature higher than the softening temperature or higher than the melting temperature of the thermoplas-



tic binder, which deformation area is formed of a bending area and the edge zone to be bent at an angle, (b) thereupon bending the sheet within the bending area in a bending device around a cylindrical surface the radius of which is less than 8 times the thickness of the sheet whereby the laminations of the sheet shift relative to each other in the deformation area in the direction of the sheet surface to produce a stepped edge at one border of the bent edge zone, (c) cooling the sheet after termination of the bending process, provided that during and/or after shaping and at least until the binder solidifies again during cooling separation of the joints formed by the binder is prevented and (d) removing the stepped edge by trimming.

4,800,112
OPTICAL RECORDING MEDIUM
Nobuhiko Kano; Akira Aoyama, and Shinobu Kuzida, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 9, 1987, Ser. No. 36,240
Claims priority, application Japan, Apr. 10, 1986, 61-83010; May 28, 1986, 61-122767
Int. Cl.[4] G11B *7/24*
U.S. Cl. 428—163 18 Claims

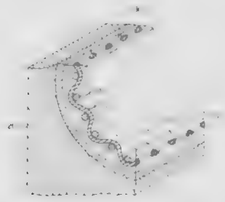


1. A recording medium having only one magneto-optic recording layer, comprising:
a first optical transmission substrate including a first base and at least a magneto-optic recording layer disposed on a portion of the first base;
a second optical transmission substrate for cooperating with the first substrate including a second base and at least a dielectric layer disposed on the portion of the second substrate in the region overlapping the recording layer when assembled,
wherein at least one of the first optical transmission substrate and the second optical transmission substrate is transparent; and
an adhesive layer provided between the first and second optical transmission substrates so that the bases are distal from the adhesive layer on opposite sides thereof.

4,800,113
FIBER REINFORCED THERMOPLASTIC ARTICLES AND PROCESS FOR THE PREPARATION THEREOF
James E. O'Connor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 672,762, Nov. 19, 1984, abandoned. This application Apr. 9, 1987, Ser. No. 36,622
Int. Cl.[4] B32B *7/00*
U.S. Cl. 428—175 39 Claims

7. A fabric containing a hybrid, low-twist yarn formed from a blend of individual continuous filaments of a poly(arylene sulfide) and individual continuous filaments of a fibrous reinforcement.

4,800,114
FIBER AND RESIN CONSTRUCTION
Michael F. Cichanowski, Box 247, Winona, Minn. 55987
Continuation-in-part of Ser. No. 896,833, Aug. 15, 1986, abandoned, and a continuation-in-part of Ser. No. 90,598, Aug. 28, 1987. This application Jan. 30, 1988, Ser. No. 214,059
Int. Cl.[4] B32B *1/00, 3/00*
U.S. Cl. 428—175 6 Claims



1. A panel structure of fiber and resin construction comprising: a panel of fabric arranged to exhibit a curved contour comprising a plurality of glass yarns and a plurality of yarns of organic composition aligned substantially transverse to said glass yarns and interweaved therewith; and a hardenable resinous composition arranged to encompass said yarns to yield a hardened unified stiff panel structure.

4,800,115
AGENT FOR IMPARTING ANTISTATIC CHARACTERISTICS TO A THERMOPLASTIC POLYMER AND A THERMOPLASTIC POLYMER COMPOSITION CONTAINING THE AGENT
Marvin R. Havens, Greer, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Oct. 14, 1986, Ser. No. 918,754
Int. Cl.[4] B32B *3/12, 27/08*; C08K *5/10*
U.S. Cl. 428—178 5 Claims

1. An antistatic film having one or more layers wherein at least one layer comprises a composition of a thermoplastic polymer in admixture with an antistatic agent, wherein said polymer is polyethylene and said antistatic agent is a mixture of both fatty acid ester of polyhydroxy alcohol and polyalkoxylated compound and said film will, after 88 hours abuse at 71° C. in a dry or humid oven as well as after 88 hours at 72° F. (22° C.) at 15% relative humidity, still exhibit antistatic characteristics by having a static decay time within 2000 milliseconds at low humidity less than about 15% relative humidity.

5. A multiply air cushion film having antistatic characteristics comprising at least the multilayer structure: polyethylene/-polyethylene wherein each polyethylene layer comprises polyethylene in admixture with an antistatic agent that is a mixture of both fatty acid ester of polyhydroxy alcohol and polyalkoxylated compound and said film will, after 88 hours abuse at 71° C. in a dry or humid oven as well as after 88 hours at 72° F. (22° C.) at 15% relative humidity, still exhibit antistatic characteristics by having a static decay time within 2000 milliseconds at low humidity less than about 15% relative humidity.

4,800,116
DIP MOLDING PROCESS AND ARTICLE
Joseph J. Ventimiglia, and Neville F. Vatcha, both of St. Louis, Mo., assignors to Sinclair and Rush, Inc., St. Louis, Mo.
Continuation of Ser. No. 706,152, Feb. 27, 1985, abandoned. This application Feb. 3, 1987, Ser. No. 10,207
Int. Cl.[4] B29C *67/22, 41/14, 41/22*
U.S. Cl. 428—215 9 Claims



1. A hot dip molded composite foamed plastic part consisting of
(a) a fused solid plstisol body portion which does not contain a blowing agent, and having a thickness of at least 30 mils, and
(b) a fused, foamed plastisol layer of uniform composition expanded from a thickness of at least 20 mils bonded thereto and covering substantially all of said body portion, said fused, foamed plastisol layer having uniform non-blistered outer surface.

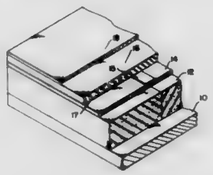
4,800,117
OVERFINISH FOR ZERO TWIST FABRIC
Robert M. Marshall, Chester, Va., assignor to Allied-Signal Inc., Morris Township, Morris Co., N.J.
Filed May 19, 1986, Ser. No. 864,350
Int. Cl.[4] B32B *7/00*; D03D *3/00*
U.S. Cl. 428—260 8 Claims

1. Synthetic multifilament yarn having deposited thereon a finishing composition comprising 0.1 to 0.5 weight percent, based on weight of the yarn, amide melamine wax formed by reacting melamine with a C_6 to C_{36} fatty acid, then reacting the resulting product with formaldehyde and heating the yarn to sufficiently crosslink said wax.

4,800,118
COMPOSITIONS AND METHODS FOR IMPARTING STAIN RESISTANCE TO TEXTILE ARTICLES
John W. Reed, and Richard D. Smith, both of Opelika, Ala., assignors to West Point Pepperell, West Point, Ga.
Filed Nov. 4, 1987, Ser. No. 117,175
Int. Cl.[4] C08G *8/14, 8/28*; D06M *15/41*; D06P *1/56, 5/12*
U.S. Cl. 428—270 50 Claims

1. A light stabile composition for imparting stain resistance to polyamide fiber-containing textile articles, comprising a halogenated aryl group-containing product of the condensation polymerization of a hydroxyaryl sulfonic acid, a dihydroxydiaryl sulfone, and an aldehyde.

4,800,119
RESILIENT, WEAR-AND WEATHER-RESISTANT COMPOSITE SURFACE MATERIAL
Richard A. Kolar, Redmond, Wash., assignor to Surface Technologies, Inc., Edmonds, Wash.
Filed Apr. 28, 1986, Ser. No. 856,826
Int. Cl.[4] B32B *3/26, 27/00, 5/16, 31/00*
U.S. Cl. 428—283 **21 Claims**



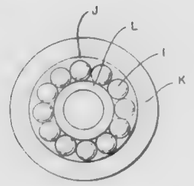
1. A resilient, shock-attenuating weather and wear-resistant, composite surface material suitable for playground use, comprising:
a resilient shock-attenuating layer, further comprised of a closed-cell, polymeric, elastomeric foam;
a binding layer further comprised of porous fabric thermally or adhesively bound to the resilient layer; and
a weather-resistant, wear-resistant layer attached to and saturating the binding layer, wherein the weather-resistant layer resists bonding to the resilient layer, and wherein the binding layer is mechanically bound to both the shock-attenuating layer and the weather-resistant layer, thereby connecting the shock-attenuating layer to the weather-resistant layer.

4. The composite surface material of claim 1 wherein the wear- and weather-resistant layer further comprises filler material.

4,800,120
STRUCTURAL COMPONENTS MADE FROM A FIBROUS REINFORCING SUPPORT AND RUBBER AND METHODS FOR THEIR MANUFACTURE
Hans Jadamus, and Klaus-Peter Richter, both of Marl, Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany
Filed May 13, 1987, Ser. No. 49,336
Claims priority, application Fed. Rep. of Germany, May 13, 1986, 3615965
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—286 **12 Claims**

1. A structural component, comprising:
(a) a support layer, comprising a fibrous reinforcing support which comprises uncut non-metallic fibers and a matrix which comprises a polyphenylene ether or a thermoplastic resin which contains a polyphenylene ether, and
(b) a vulcanized rubber layer, wherein said structural component is produced by covulcanization of said support layer and said rubber.

4,800,121
DRAWN POLYETHYLENE FILAMENT TENSILE MEMBER
Toshihiko Ohta, Shiga; Fujio Okada, Shiga, and Masahiro Hayashi, Kyoyo, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan
Division of Ser. No. 885,817, Jul. 21, 1986, which is a continuation of Ser. No. 686,958, Dec. 27, 1984, abandoned. This application May 29, 1987, Ser. No. 55,355
Claims priority, application Japan, Dec. 27, 1983, 58-248498
Int. Cl.[4] D02G *3/00*
U.S. Cl. 428—364 **14 Claims**



1. A drawn polyethylene filament having a viscosity average molecular weight of not less than 200,000, a tenacity of not less than 20 g/d, a tensile modulus of not less than 600 g/d, and a section area of not less than 0.018 mm^2.

4,800,122
SILOXANE-BASED TINTABLE COATING
Robert A. Sailavanti, Dalton, Pa.; Jeffrey L. Dalton, Dudley, Mass., and Sharon M. Olsen, Thompson, Conn., assignors to Gentex Corporation, Carbondale, Pa.
Filed Sep. 22, 1987, Ser. No. 99,390
Int. Cl.[4] B32B *27/36*
U.S. Cl. 428—412 **33 Claims**

1. An abrasion-resistant coating composition comprising a first component derived by partial hydrolysis from a hydrolyzable epoxysilane, said epoxysilane being at least about 40% hydrolyzed, and a second component derived by reaction of a non-silane-based aliphatic polyamine with a carbonyl-containing compound selected from the group consisting of ketones and aldehydes.

4,800,123
IN-MOLD SCRATCH RESISTANT COATING FOR PEROXIDE CURABLE URETHANE ELASTOMERS
Rudolph H. Boeckeler, Grafton, Wis., assignor to Freeman Chemical Corporation, Port Washington, Wis.
Filed Sep. 3, 1987, Ser. No. 92,609
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—424.2 **6 Claims**

1. A molded article prepared by
providing a mold having a plurality of mold surfaces;
coating at least one of said mold surfaces with a coating composition consisting essentially of a composition comprising at least one polyfunctional monomer having three of more acryloloxy groups per molecular and at least one N-vinyl imido group containing monomer and a catalyst selected from the group consisting of peroxide catalysts and photoinitiators;
curing said coating composition using heat if a peroxide catalyst is employed or ultra-violet light if a photoinitiator is employed;
injecting a peroxide curable urethane elastomer composition into said mold;
curing said peroxide curable urethane elastomer to harden same and to bond same to said coating; and
removing said coated article from said mold.

4,800,124
SILCONE ELASTOMER-FORMING COMPOSITIONS
James H. Davis, Sully, and Michael J. Dunn, Cardiff, both of Wales, assignors to Dow Corning, Ltd., Barry, Wales
Filed Jun. 25, 1987, Ser. No. 66,381
Claims priority, application United Kingdom, Jul. 10, 1986, 863616857
Int. Cl.[4] B32B *9/00;* **C08K** *3/34;* **C08G** *77/04*
U.S. Cl. 428—391 **6 Claims**

1. A composition curable to an elastomer and which comprises (1) a polydiorganosiloxane gum wherein at least 50 percent of the total organic substituents are methyl groups, up to 2.5 percent of the total substituents are vinyl groups and any remaining substituents are selected from phenyl and 3,3,3-trifluoropropyl groups, the gum having a Williams plasticity of at least 100 mm/100 at 25° C., (2) a reinforcing silica filler, (3) a copolymer of $R_3SiO_{0.5}$ units and SiO_2 units wherein each R represents a monovalent hydrocarbon group having less than 7 carbon atoms and the ratio of $R_3SiO_{0.5}$ units to SiO_2 units is in the range from 0.5:1 to 1.2:1, (4) mica and (5) an organic peroxide curing agent.

6. An insulated electrical conductor wherein at least a part of the insulation consists of the cured product of the composition claimed in claim 1.

4,800,125
COUPLING AGENT COMPOSITIONS
Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Division of Ser. No. 916,260, Oct. 7, 1986, Pat. No. 4,718,944. This application Aug. 24, 1987, Ser. No. 88,917
Int. Cl.[4] B05D *3/02;* **B32B** *9/04*
U.S. Cl. 428—405 **24 Claims**

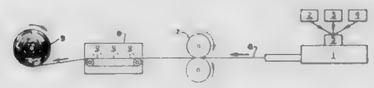
19. An article of manufacture formed by coating a substrate with the composition comprising
(A) the reaction product of about (i) 1.7 to 2 mole parts maleic anhydride with (ii) 1 mole part of a silane represented by the general formula

$$(RO)_{3-x}SiR''NHR'''NH_2$$
$$R'_x$$

wherein R denotes an alkyl radical with 1 to 6 carbon atoms or an alkoxyalkyl radical with 2 to 8 carbon atoms, R' denotes an alkyl radical with 1 to 6 carbon atoms, R'' and R''' denote alkylene radicals with 1 to 6 carbon atoms, or alkylarylene radicals, arylalkylene radicals, or arylene radicals with 6 to 10 carbon atoms and x is 0 or 1, and
(B) sufficient solvent to solubilize A.

24. The article of claim 19 wherein said substrate is a particulate filler.

4,800,126
ELECTRICALLY CONDUCTIVE POLYETHYLENE FOAM
Nicholas J. Leonardi, North Andover, Mass., assignor to Dynamit Nobel of America, Inc., Rockleigh, N.J.
Division of Ser. No. 857,301, Apr. 30, 1986, Pat. No. 4,719,039, which is a continuation of Ser. No. 688,413, Jan. 2, 1985, abandoned. This application Oct. 21, 1987, Ser. No. 110,875
Int. Cl.[4] B32B *7/04;* **H01B** *1/06*
U.S. Cl. 428—420 **15 Claims**

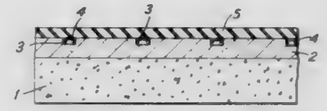


1. An electrically conductive polyethylene foam sheet which comprises a sheet having a closed cell foam structure with a smooth closed cell surface and exhibiting a surface resistivity of not more than 10^5 ohms/square; said sheet having been formed by heating an extruded, foamable, non-cross-linked sheet preform containing, per 100 parts by weight of a mixture containing about 100–0% by weight of polyethylene and about 100–0% by weight of an ethylene copolymer, 2 to 15 parts by weight of a chemical blowing agent, 0.5 to 1.5 parts by weight of a crosslinking agent and 12 to 20 parts by weight of conductive carbon black, said polyethylene having a melt index of about 10–40 and the ethylene copolymer having a melt index of about 10–40.

4,800,127
THERMAL SHOCK RESISTANT SILICONE COATING COMPOSITION
William T. Sand, Barrat Hills, and George F. Medford, Ballston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.
Filed Mar. 26, 1987, Ser. No. 30,954
Int. Cl.[4] B32B *19/02, 9/04;* **C08K** *3/34*
U.S. Cl. 428—447 **26 Claims**

1. An article of manufacture comprising:
(a) a substrate having applied to the surface thereof
(b) a coating compriaing the reaction products of a mixture of
(i) at least one silicone resin having reactive functional groups,
(ii) a thermal shock improving amount of at least one polydiorganosiloxane fluid having a viscosity between about 5 and 5,000 centipoise at 25° C. and having functional groups which will react with the reactive functional groups of the silicone resin,
(iii) a thermal shock improving amount of ground or flaked mica, and
(iv) an effective amount of catalyst, to cure the composition.

4,800,128
CHEMICAL ATTACK-RESISTANT, LIQUID-TIGHT LINING
Eckhard Schacht, Montabaur; Dieter Velte, Rausbach-Bausbach; Wolfgang Werner, Montabaur-Horressen, and Albert Wolf, Helligenroth, all of Fed. Rep. of Germany, assignors to Kernchemie GmbH, Siershahn, Fed. Rep. of Germany
Filed Jan. 4, 1987, Ser. No. 58,044
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1986, 3620976
Int. Cl.[4] B32B *9/04;* **B65D** *90/04;* **E04B** *5/48*
U.S. Cl. 421—448 **8 Claims**



1. A chemical attack-resistant, liquid-tight lining for catch basins, catch reservoirs or similar containers of concrete, comprising a continuous liquid-tight impervious layer of rubber or plastic material located above the surface of concrete, the improvement which comprises a porous intermediate layer of cement or plaster between the concrete and the impervious layer, and at least one sensor cable having at least two conductors placed in the intermediate layer, the cable being placed in the intermediate layer in such a pattern that any location of the intermediate layer is not more than a preselected maximum distance away from the cable, the cable being adapted for connection with an electrical monitoring unit.

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4,800,129
MULTI-LAYER PLASTIC CONTAINER
Gedeon I. Deak, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 26, 1987, Ser. No. 30,425
Int. Cl.[4] B32B *27/08, 27/34*
U.S. Cl. 428—474.4 9 Claims

1. A thermoformed multi-layer structure comprising at least a first and second layer, said first layer comprising a blend of 70–85% of an amorphous polyamide having a Tg greater than about 120° C. which is a hexamethylenediamine iso/terephthalamide with a ratio of iso- to tere- phthalamide in the range of about 60/40 to 100/0, with 15–30% of one or more semi-crystalline aliphatic polyamides and said second layer comprising one or more structural thermoplastic resins.

4,800,130
LAMINATE EXCELLENT IN SURFACE GLOSS AND SURFACE HARDNESS, AND PREPARATION PROCESS AND USE THEREOF
Katuyoshi Yonekura; Akira Uchiyama, and Akira Matsuda, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Ichihara, Japan
Division of Ser. No. 680,644, Dec. 11, 1984, Pat. No. 4,656,098.
This application Jan. 15, 1987, Ser. No. 3,713
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—517 4 Claims

1. A molded article formed of a laminate excellent in surface gloss and scratch resistance, which comprises a thermoplastic elastomer layer composed mainly of a composition comprising a polyolefin and an olefinic copolymer elastomer, at least one of which is partially crosslinked, and a layer of a partially neutralized ionomer resin or 1-olefin/(meth)a-crylate, acid copolymer resin having free carboxyl groups, both the layers being tightly bonded to each other and wherein up to 60% of the carboxyl groups of the partially neutralized ionomer resin are bonded to an alkali metal ion and/or an ion of a metal of the Group II of the Periodic Table.

4,800,131
CORED WIRE FILLER METALS AND A METHOD FOR THEIR MANUFACTURE
Claire B. Marshall, York; Frank B. Lake, Brodbecks, and Roger A. Bushey, Littlestown, all of Pa., assignors to Alloy Rods Global, Inc., Hanover, Pa.
Filed Dec. 20, 1984, Ser. No. 683,844
Int. Cl.[4] B22F *7/08*
U.S. Cl. 428—558 19 Claims

1. A method of making a cored wire filler metal comprising the steps of providing a core wire having a chemistry and then deforming a metal strip of a width having a different chemistry into a sheath enclosing the core wire, the sheath having a circumference of less than about 78% of the width of the metal strip.

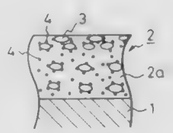
4,800,132
MECHANICAL PLATING WITH OXIDATION-PRONE METALS
John J. Grunwald, Ramat Gan; Igal Klein, Karmiel, both of Israel, and Bryan Whitmore, New Haven, Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.
Division of Ser. No. 921,961, Oct. 22, 1986. This application Sep. 23, 1987, Ser. No. 100,030
Int. Cl.[4] B22F *3/02;* B32B *15/16;* C23C *20/00*
U.S. Cl. 428—560 18 Claims

1. A mechanically plated article comprising:
a metal substrate and
a coating on said metal substrate which comprises adherent particles of aluminum and an immersion metal compound which coats the particles of the aluminum to minimize corrosion of the aluminum.

4,800,133
ALUMINUM ALLOY FOIL FOR CATHODE OF ELECTROLYTIC CAPACITORS
Kozo Arai; Takao Suzuki, and Syozo Umetsu, all of Osaka, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan
Continuation of Ser. No. 733,402, May 13, 1985, abandoned, which is a continuation of Ser. No. 305,855, Sep. 25, 1981, abandoned. This application Apr. 6, 1987, Ser. No. 35,246
Claims priority, application Japan, Sep. 30, 1980, 55-137367; Sep. 30, 1980, 55-137368
Int. Cl.[4] H01G *9/24*
U.S. Cl. 428—606 10 Claims

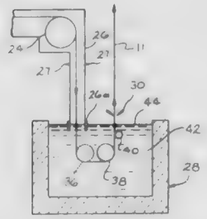
1. A cathod foil for an electrolytic capacitor which comprises an aluminum alloy foil having a capacitance of at least about 255 $\mu F/cm^2$ and produced by continuously casting an aluminum alloy in the form of a plate having a thickness of 25 mm or less using a twin roll continuous casting system, cold rolling and foil-forming rolling the plate into a foil, and acid-etching the foil, said aluminum alloy consisting essentially of aluminum having a purity of at least 99.7% and 0.03 to 0.5% copper.

4,800,134
HIGH CORROSION RESISTANT PLATED COMPOSITE STEEL STRIP
Teruaki Izaki; Makoto Yoshida; Masami Osawa; Seijun Higuchi, and Akinori Maruta, all c/o Nippon Steel Corporation Yawata Works, 1-1-1, Edamitsu, Yahatahigashi-ku, Kitakyushu-shi, Fukuoka, Japan
Filed Dec. 22, 1987, Ser. No. 136,842
Claims priority, application Japan, Apr. 13, 1987, 62-88693; May 9, 1987, 62-111684; Jun. 24, 1987, 62-155597; Jun. 24, 1987, 62-155598; Jun. 30, 1987, 62-161304
Int. Cl.[4] B32B *15/18*
U.S. Cl. 428—626 12 Claims



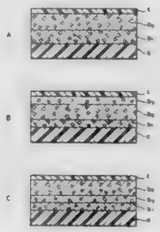
1. A high corrosion resistant plated composite steel strip comprising:
(A) a substrate consisting of a steel strip; and
(B) a corrosion resistant coating layer formed on a least one surface of the steel strip substrate and comprising a base electroplating layer which comprises (a) a matrix consisting of a member selected from the group consisting of zinc and zinc alloys; and (b) a number of dispersoid particles evenly distributed in the matrix and consisting of a mixture of (i) at least one type of substantially water-insoluble chromate fine particles, and (ii) at least one type of additional fine or colloidal particles consisting of a member selected from the group consisting of SiO_2, TiO_2, Cr_2O_3, Al_2O_3, ZrO_2, SnO_2 and Sb_2O_5.

4,800,135
HOT DIP ALUMINUM COATED CHROMIUM ALLOY STEEL
Farrell M. Kilbane, Centerville; Richard A. Coleman, Middletown; Frank C. Dunbar, West Chester, and Alan F. Gibson, Middletown, all of Ohio, assignors to Armco Inc., Middletown, Ohio
Division of Ser. No. 865,238, May 20, 1986, Pat. No. 4,675,214.
This application Feb. 20, 1987, Ser. No. 16,920
Int. Cl.[4] B32B *15/18*
U.S. Cl. 428—653 4 Claims



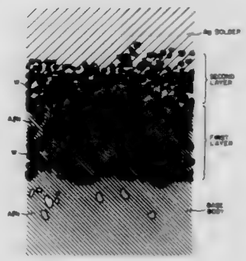
1. A ferrous base ferritic strip continuously hot dip coated with a coating metal; comprising: the strip including at least about 6% by weight chromium, the coating metal consisting essentially of aluminum, the coating layer on said strip being substantially free of uncoated areas and formed without a thick brittle Fe-Al alloy inner layer,
said coating layer being tightly adherent to said strip and resistant to crazing or flaking during bending.

4,800,136
RADIATION IMAGE STORAGE PANEL
Satoshi Arakawa; Junji Miyahara, and Kenji Takahashi, all of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Continuation of Ser. No. 803,772, Nov. 28, 1985, abandoned, which is a continuation of Ser. No. 586,707, Mar. 6, 1984, abandoned. This application May 13, 1987, Ser. No. 49,024
Claims priority, application Japan, Mar. 7, 1983, 58-37837
Int. Cl.[4] G03C *5/16*
U.S. Cl. 428—690 9 Claims



1. A radiation image storage panel comprising a support and phosphor layers provided thereon, each of said phosphor layers comprising a binder and a stimulable phosphor dispersed therein, wherein said phosphor layers comprise a first phosphor layer provided on the support and a second phosphor layer provided on the side nearer to the front surface of the panel than said first phosphor layer, and the mixing ratio of the binder to the stimulable phosphor in the first phosphor layer is larger than the mixing ratio of the binder to the stimulable phosphor in the second phosphor layer.

4,800,137
COMPOSITE LAYER ALUMINUM NITRIDE BASE SINTERED BODY
Akiyasu Okuno, Kasi; Masakazu Watanabe, Nagoya, and Kazuhiko Ikoma, Komaki, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Division of Ser. No. 869,792, Jun. 2, 1986, Pat. No. 4,695,517.
This application May 18, 1987, Ser. No. 50,388
Claims priority, application Japan, May 13, 1985, 60-119174; Jun. 13, 1985, 60-129023; Jun. 17, 1985, 60-131570
Int. Cl.[4] B32B *31/26;* C04B *35/58;* F27D *7/06*
U.S. Cl. 428—698 16 Claims



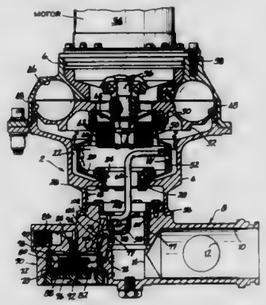
1. A process for producing a composite layer AlN-base sintered body which comprises following steps:
(a) providing an AlN-base material body
(b) forming a first layer on at least one surface of said material body,
said first layer consisting essentially of 100 parts by weight of at least one first component selected from the group consisting of W, Mo, borides thereof and carbides thereof, and
0.1–50 parts by weight of a second component consisting essentially of AlN,
(c) forming a second layer on said first layer to form a laminated body,
said second layer consisting essentially of at least one component selected from the group consisting of W, Mo, borides thereof and carbides thereof, and
(d) sintering said laminated body under such temperature and condition that AlN is sintered until the density of an AlN-base sintered body reaches at least 90% of the theoretical density.

4,800,138
SEPARATION OF GASEOUS HYDROGEN FROM A WATER-HYDROGEN MIXTURE IN A FUEL CELL POWER SYSTEM OPERATING IN A WEIGHTLESS ENVIRONMENT
William E. Romanowski, Rockville, and George T. Saljak, Vernon, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.
Filed Apr. 16, 1987, Ser. No. 39,038
Int. Cl.[4] H01M *8/18;* B04B *1/00, 11/00*
U.S. Cl. 429—19 3 Claims

1. For use in conjunction with a fuel cell power system which operates in a weightless environment, an assembly for separating product water and hydrogen from fuel cell exhaust gases, and for pumping the separated hydrogen back to the fuel cell power system, and removing and storing the separated water, said assembly comprising:
(a) a rotationally driven sump having a side well against which product water is centrifugally layered;
(b) passage means for delivering a mixture of condensed water droplets entrained in hydrogen gas from the fuel cell power system exhaust to said sump;

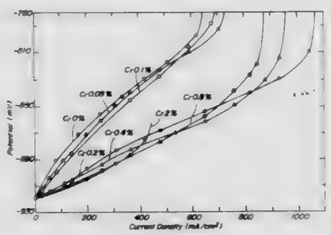
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(c) a hydrogen pump for pumping dewatered hydrogen from the sump back to the fuel cell power system;
(d) means interposed between said sump and said hydrogen pump for separating the water droplets from the hydrogen gas, said means for separating allowing hydrogen to flow to said hydrogen pump but blocking water droplets from leaving said sump;
(e) means in said sump adjacent said means for separating operable to transfer water droplets from said means for separating to said sump side well;
(f) a water discharge valve in said assembly and having a chamber operable to store product water and having valve means operable to periodically release the stored product water from said assembly;



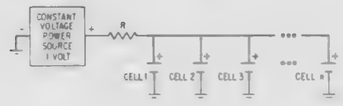
(g) first tube means operable to pick up water from adjacent said sump side well and deliver the water to said water valve chamber;
(h) second tube means operable to return water from said water valve chamber to said sump;
(i) first means operable to separate entrained gaseous hydrogen from the water in said first tube means in a weightless environment; and
(j) second means in said first tube means operable to bleed the separated gaseous hydrogen from said first tube means in the weightless environment whereby water entering said water discharge valve chamber is substantially free from entrained gaseous hydrogen.

4,800,139
METHOD OF PRODUCING HYDROGEN ELECTRODE AND USE THEREOF IN FUEL CELLS
Tadao Kenjyo, Noboribetsu, Japan, assignor to Muroran Institute of Technology, Muroran, Japan
Division of Ser. No. 800,415, Nov. 21, 1985, abandoned. This application Sep. 28, 1987, Ser. No. 105,953
Int. Cl.[4] H01M *4/86, 4/88*
U.S. Cl. 429—42 **12 Claims**



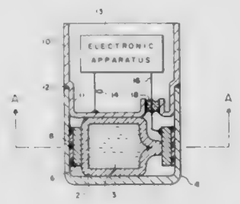
1. A method of producing a hydrogen electrode comprising a Raney nickel catalyst containing from about 0.2 to 2% by weight of chromium for use in an alkaline hydrogen-oxygen fuel cell, the method comprising mixing and kneading a powder of the Raney nickel catalyst, which Raney nickel catalyst would be subject to ignition if dry, and a suspension of polytetrafluoroethylene in a suspension medium to form a mixture, while drying the mixture at the same time at a temperature effective to remove the suspension medium, whereby the surface of the Raney nickel catalyst is stabilized and spontaneous ignition of the Raney nickel catalyst is prevented.

4,800,140
APPARATUS AND METHOD FOR PREVENTING DEGRADATION OF NICKEL HYDROGEN CELLS AND BATTERIES
Albert H. Zimmerman, and Charles C. Badcock, both of Torrance, Calif., assignors to The Aerospace Corporation, El Segundo, Calif.
Filed Oct. 2, 1987, Ser. No. 103,856
Int. Cl.[4] H01M *6/50*
U.S. Cl. 429—48 **1 Claim**



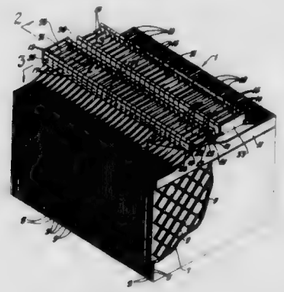
1. A method for preventing degradation of one or more nickel hydrogen cells, which comprises the steps of:
(a) continuously applying a controlled voltage of between 0.5 to 1.1 volts to a circuit from a controlled voltage means; and
(b) limiting a flow of current from the controlled voltage means to the nickel hydrogen cells.

4,800,141
RESERVE ACTIVATED ELECTROCHEMICAL CELL
William J. Eppley, Skippack, Pa., and Warren E. Hawkins, Brooklyn Park, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 17, 1987, Ser. No. 122,105
Int. Cl.[4] H01M *6/30*
U.S. Cl. 429—116 **6 Claims**



1. A reserve activated electrochemical cell comprising
a frangible electrolyte storage means,
a first means comprising a cylindrical metal cup-shaped shell,
a pair of cell electrodes located within said first means and
a second means comprising a cylindrical metal cup-shaped shell forming a contiguous extension of said first means and attached with a weld bead forming a fluid-tight seal joining said shells of said first and second means while providing separate electrical connections to the first and second electrodes wherein an electrical conductive coating on an inside surface of said shell of said first means constitutes a first one of said electrodes and where a second one of said electrodes comprises an electrically conductive ring electrically isolated from said shell of said first means.

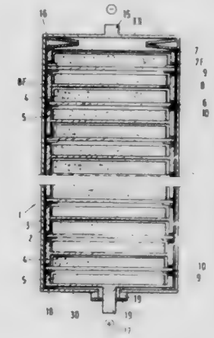
4,800,142
ELECTRIC STORAGE BATTERY
James R. Bish, Anderson; Charles P. McCartney, Jr., Yorktown, and Clarence A. Meadows, Muncie, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 859,364, May 5, 1986, Pat. No. 4,683,180. This application Jul. 13, 1987, Ser. No. 72,729
The portion of the term of this patent subsequent to Jul. 28, 2004, has been disclaimed.
Int. Cl.[4] H01M *2/28*
U.S. Cl. 429—130 **2 Claims**



1. An electric storage battery comprising: a container having a plurality of walls defining at least one cell compartment; a galvanic cell housed within said compartment, said cell comprising a stack of first polarity plates alternately interleaved with plates of the opposite polarity; an aperture in at least one of said walls; a lug projecting from each of said first polarity plates through said aperture and aligned with similar lugs projecting from the other first plates of said stack for electrically joining said first polarity plates to a terminal of said battery; a discrete, insulating collar tightly surrounding each said lug where it passes through said aperture, said collar abutting similar collars on said aligned lugs of said other plates and together therewith space said aligned lugs apart and substantially plug said aperture.

4,800,143
HIGH-TEMPERATURE STORAGE BATTERY
Friedrich Harbach, Heidelberg; Reinhard Knödler, Nussloch; Rudolf Krapf; Stefan Meanicke, both of Leimen, and Ludwig Weller, Heidelberg, all of Fed. Rep. of Germany, assignors to BBC Brown, Boveri Aktiengesellschaft, Mannheim-Käfertal, Fed. Rep. of Germany
Filed Nov. 30, 1987, Ser. No. 126,738
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1986, 3640749
Int. Cl.[4] H01M *6/46, 2/08*
U.S. Cl. 429—153 **10 Claims**

1. High-temperature storage battery, comprising a housing; a stack of storage cells disposed in said housing; each of said storage cells having flat components loosely disposed on top of one another in said stack; said components including an anode reactant chamber and a cathode reactant chamber, a planar ion-conducting solid electrolyte mutually separating said anode and cathode reactant chambers, and planar components each being in the form of a plate having flanges each extending to one of said solid electrolytes, said planar components serving as electrodes and bordering said anode chamber and said cathode chamber of two adjacent storage cells toward the outside; and at least one common resilient structural element



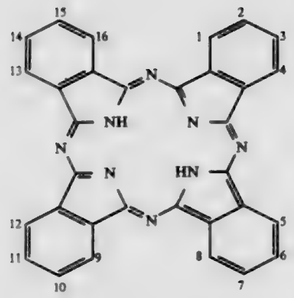
pressing said components of all of said storage cells together in a leakproof manner.

4,800,144
LAMINATED TYPE PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY COMPRISING A SUBSTRATE OF ALUMITE
Hideaki Ueda, Kawanishi; Shizuo Yuge, Toyokawa, and Katsutoshi Konishi, Toyono, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Nov. 3, 1987, Ser. No. 116,170
Claims priority, application Japan, Nov. 4, 1986, 61-263488; Nov. 4, 1986, 61-263489; Nov. 4, 1986, 61-263490; Nov. 4, 1986, 61-263491; Nov. 4, 1986, 61-263492; Nov. 4, 1986, 61-263493
Int. Cl.[4] G03G *5/10*
U.S. Cl. 430—58 **4 Claims**

1. A photosensitive member having at least a charge generating layer and a charge transporting layer on an aluminum substrate, wherein the charge generating layer is an organic pigment-dispersed resin layer, the aluminium substrate comprises an alumite layer, and the alumite layer has impedance of 1~200 KΩ and molar ratio of amorphous aluminum oxide to crystalline aluminum oxide of 50~1500.

4,800,145
SUBSTITUTED PHTHALOAYANINE PHOTOCONDUCTOR AND CHARGE TRANSPORT PHASE
Anthony J. Nelson, Stockport, and Peter J. Duggan, Rochdale, both of England, assignors to Imperial Chemical Industries, PLC, London, England
Filed Jul. 14, 1987, Ser. No. 73,193
Claims priority, application United Kingdom, Aug. 6, 1986, 8619238
Int. Cl.[4] G03G *5/06, 5/14*
U.S. Cl. 430—58 **10 Claims**

1. An organic photoconductor comprising an electrically conducting support, a charge generating phase comprising a charge generator and a charge transport phase characterized in that the charge generator is a phthalocyanine compound in which each of at least four of the peripheral carbon atoms numbered from 1 to 16 in the phthalocyanine nucleus shown below is linked, by an atom selected from the group consisting of oxygen, sulphur, selenium, tellurium, and nitrogen or a mixture thereof, to a carbon atom of an organic radical



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4,800,146

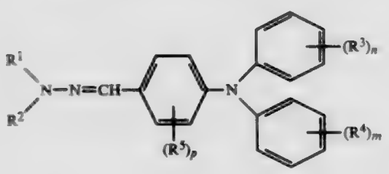
TRANSPARENT ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING SPECIFIC HYDRAZONE AND BENZIDINE COMPOUNDS AS PHOTOCONDUCTORS

Hiroaki Yokoya; Kenji Sano; Hiromichi Tachikawa, and Hideo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

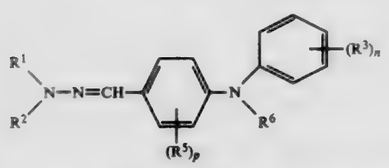
Filed Nov. 12, 1986, Ser. No. 929,315
Claims priority, application Japan, Nov. 11, 1985, 60-252516
Int. Cl.[4] G03G *5/06*
U.S. Cl. 430—73 **13 Claims**

1. An electrophotographic photoreceptor comprising a conductive support having provided thereon a photosensitive layer containing

at least one hydrazone compound represented by formula (I) or (II)



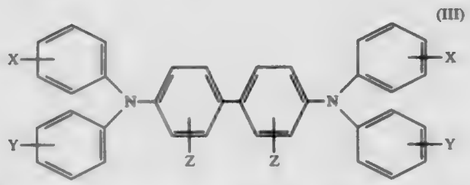
(I)



(II)

wherein R^1 and R^2 each represents an alkyl group selected from the group consisting of a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, an octyl group, a nonyl group, a dodecyl group, an isopropyl group, an isobutyl group, an isopentyl group, a 4-methyl-pentyl group, a sec-butyl group and a t-butyl group, or an aralkyl group selected from the group consisting of a benzyl group, a phenethyl group, a 1- and 2-naphthylmethyl groups, a 1-anthrylmethyl group and a benzhydryl group, or a substituted or unsubstituted aryl group selected from the group consisting of phenyl group, a 1- and 2-naphthyl groups, an anthryl group, a pyrenyl group, an acenaphthenyl group and a fluorenyl group; R^3, R^4, and R^5 each represents a hydrogen atom, a substituted or unsubstituted, straight or branched chain alkyl group having from 1 to 12 carbon atoms, a substituted or unsubstituted, straight or branched chain aralkyl group having from 7 to 20 carbon atoms, a straight or branched chain alkoxy group having from 1 to 4 carbon atoms, an aryloxy group, an acyl group, an alkoxycarbonyl group having from 2 to 5 carbon atoms, a halogen atom, a nitro group, a monoalkylamino group having from 1 to 4 carbon atoms in the alkyl group, a dialkylamino group having from 1 to 4 carbon atoms in each alkyl group, or an amido group; R^6 represent a substituted or unsubstituted, straight or branched chain alkoxy group having from 1 to 12 carbon atoms or a substituted or unsubstituted, straight or branched chain aralkyl group having from 1 to 12 carbon atoms; and n, m, and p each represents 1 or 2, and

at least one benzidine compound represented by formula (III)



(III)

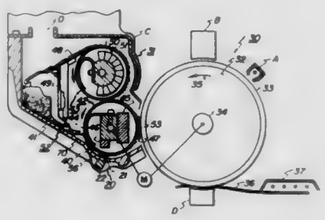
wherein X and Y each represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, or a halogen atom; and Z represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms.

4,800,147

XEROGRAPHIC PROCESS WITHOUT CONVENTIONAL CLEANER

Edward C. Savage, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1987, Ser. No. 81,080
Int. Cl.[4] G03G *21/00, 15/06, 15/00, 13/00*
U.S. Cl. 430—125 **1 Claim**



1. A non-synchronous electrophotographic imaging process comprising forming a first electrostatic latent image on an imaging surface of a photoconductive layer, developing said first electrostatic latent image with a conductive two-component developer having a conductivity between about 10^{-10} ohms-cm^{-1} and about 10^{-14} ohms-cm^{-1} in a development zone between said imaging surface and an electrically conductive developer applicator to form a toner image corresponding to said first electrostatic latent image, transferring most of said toner image to a receiving member with a residual toner image remaining on said imaging surface, forming a second electrostatic latent image on said imaging surface bearing said residual toner image, and simultaneously developing said second electrostatic latent image and removing said residual toner image by contacting said imaging surface in said development zone with conductive two-component developer while simultaneously maintaining the minimum distance between the photoconductive layer and said electrically conductive developer applicator in said development zone between about 0.025 inches and about 0.065 inches, charging said photoconductive layer between 350 volts and 450 volts, and supplying an electrical bias to said conductive developer applicator between 30 volts and 350 volts.

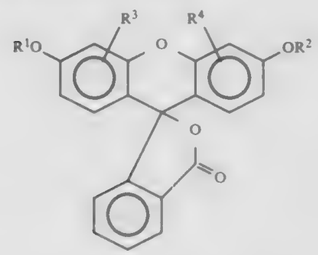
4,800,148

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND

Toru Harada, and Kozo Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 9, 1987, Ser. No. 59,989
Claims priority, application Japan, Jun. 9, 1986, 61-133091
Int. Cl.[4] G03C *5/54, 1/68*
U.S. Cl. 430—138 **6 Claims**

1. A light-sensitive material comprising a light-sensitive layer containing silver halide, a reducing agent, an ethylenic unsaturated polymerizable compound and a leuco dye provided on a support, wherein the leuco dye is a compound having the following formula (II):



(II)

in which R^1 and R^2 are the same groups selected from the group consisting of an alkyl group and a cycloalkyl group; R^3 and R^4 are the same groups selected from the group consisting of an alkyl group, a cycloalkyl group and an alkoxy group; and the sum of carbon atoms contained in the groups of R^1 and R^3 is not less than 5.

3. The light-sensitive material as claimed in claim 1, wherein the polymerizable compound and the leuco dye are contained in microcapsules which are dispersed in the light-sensitive layer, said leuco dye being dissolved in the polymerizable compound.

4,800,149

PHOTOHARDENABLE COMPOSITIONS CONTAINING A DYE BORATE COMPLEX AND PHOTOSENSITIVE MATERIALS EMPLOYING THE SAME

Peter Gottschalk, Centerville, Ohio, and Gary B. Schuster, Champaign, Ill., assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 917,873, Oct. 10, 1986, abandoned, which is a continuation-in-part of Ser. No. 800,014, Nov. 20, 1985, abandoned. This application Feb. 16, 1988, Ser. No. 156,254
Int. Cl.[4] G03C *1/72, 1/00*
U.S. Cl. 430—138 **12 Claims**

1. A photosensitive material comprising a support having a layer of microcapsules on one surface thereof, at least a portion of said microcapsules having an imageforming agent associated therewith and containing an internal phase including a photohardenable composition, said composition comprising a free radical addition polymerizable or crosslinkable compound and a cationic dye-borate anion complex, said complex being capable of absorbing actinic radiation and producing free radicals which initiate free radical polymerization or crosslinking of said compound.

4,800,150

SUPER-HIGH CONTRAST NEGATIVE TYPE PHOTOGRAPHIC MATERIAL

Kazunobu Katoh, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 3, 1987, Ser. No. 33,699
Claims priority, application Japan, Apr. 3, 1986, 61-77323
Int. Cl.[4] G03C *1/33*
U.S. Cl. 430—264 **23 Claims**

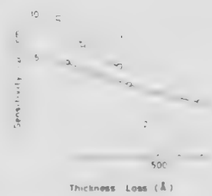
1. A super-high contrast negative type silver halide photographic material comprising a support having provided thereon at least one silver halide emulsion layer, said emulsion layer or layers or other hydrophilic colloidal layer or layers containing a hydrazine derivative, wherein said photographic material further contains (a) an acidic polymer incorporating not less than 20 mol% of a monomer unit containing an acid group and a crosslinkable monomer unit containing at least two copolymerizable ethylenically unsaturated groups, (b) a hydrophobic polymer incorporating not more than 20 mol% of a monomer unit containing an acid group and having a glass transition temperature of not more than 50° C.

4,800,151

RADIATION-SENSITIVE POSITIVE RESIST COMPRISING A FLUORINE-CONTAINING ALPHA-CHLOROACETATE COPOLYMER IN THE SPECIFICATION

Mutsuo Katsuka, and Atuto Tokunaga, both of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 20, 1987, Ser. No. 28,428
Claims priority, application Japan, Mar. 26, 1986, 61-65898
Int. Cl.[4] G03C *5/24, 1/495*
U.S. Cl. 430—270 **15 Claims**



1. A radiation-sensitive positive resist comprising a copolymer obtained by copolymerizing 2,2,2-trifluoroethyl α-chloroacrylate with 2,2,3,3-tetrafluoropropyl α-chloroacrylate at a weight ratio of between 90:10 and 50:50.

4,800,152

NEGATIVE RESIST COMPOSITIONS

Robert D. Allen, San Jose, Calif.; Jean M. J. Frechet, Ottawa, Canada; Robert J. Twieg, and Carlton G. Willson, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1987, Ser. No. 26,425
Int. Cl.[4] G03C *1/71*
U.S. Cl. 430—270 **2 Claims**

1. A heat stable negative resist composition comprising an onion salt photoinitiator, poly(vinylbenzyl acetate) and bisphenol-A.

2. A heat stable negative resist composition comprising an acid generating onium salt, trisacetoxy mesitylene and a polymer which contains multiple activated aromatic rings, said polymer being chosen so that following irradiation it reacts with said triacetoxy mesitylene to form crosslinking and also to generate acid.

4,800,153

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS AND A COLOR PHOTOGRAPHIC DEVELOPER COMPOSITION COMPRISING HYDROXYLAMINE AND STABILIZER

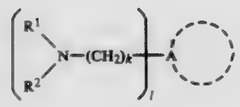
Kiyoshi Morimoto, and Takatoshi Ishikawa, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 17, 1987, Ser. No. 74,983
Claims priority, application Japan, Jul. 18, 1986, 61-168159
Int. Cl.[4] G03C *7/30*
U.S. Cl. 430—380 **30 Claims**

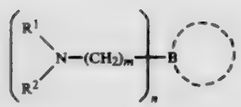
1. A method for processing a silver halide color photographic material having a color coupler associated therewith, which comprises processing the silver halide color photographic material which has been imagewise exposed to light with a color developer containing

(i) an aromatic primary amine color developing agent,
(ii) a compound represented by formula (I-1) or (I-2), and
(iii) a hydroxylamine compound represented by formula (II):

Formula (I-1)



Formula (I-2)



wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom, or a substituted or unsubstituted alkyl group, aryl group or heterocyclic group;

A and B are an organic group composed of atoms selected from the group consisting of carbon, oxygen, nitrogen and sulfur atoms, and each represents a saturated and unsaturated 5- to 6-membered ring, respectively, and each may contain a fused benzene ring or a fused heterocyclic ring;

k and m are integers of 1 to 6,

l and n are integers of 1 to 3, provided that m+n is 3 or greater; and

Formula (II)



wherein R^3 and R^4, which may be the same or different, each represents a substituted or an unsubstituted alkyl group or alkenyl group.

4,800,154

SILVER HALIDE PHOTOGRAPHIC EMULSION

Masaki Okazaki, and Haruo Takei, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 16, 1986, Ser. No. 919,418
Claims priority, application Japan, Oct. 16, 1985, 60-230826
Int. Cl.[4] G03C *1/08, 1/19, 1/24*
U.S. Cl. 430—570 **6 Claims**

1. A silver halide photographic emulsion comprising at least one compound represented by the following general formula (I):

Dye—J^1—CONH—J^2—NHNHG—R (I)

wherein Dye represents a dye residue capable of becoming a spectral sensitizing dye; J^1 represents a substituted or unsubstituted alkylene group, a substituted or unsubstituted arylene group, a substituted or unsubstituted aralkylene group, or a substituted or unsubstituted alkarylene group; J^2 represents a substituted or unsubstituted arylene group; R represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, or a substituted or unsubstituted aryloxy group; and G represents a carbonyl group, a sulfonyl group, a sulfoxy group, a phosphoryl group, or a substituted or unsubstituted iminomethylene group.

4,800,155

HUMAN MONOCLONAL ANTIBODY TO LUNG CARCINOMA AND HYBRIDOMA PRODUCING THE SAME

Masaru Taniguchi, 17-12, Konakadai 3-chome, Chiba-shi, Chiba; Hiroaki Saito, Chiba; Yutaka Yamaguchi, Chiba; Fumio Hiraoka, Chiba, and Ikuro Nakamura, Tokyo, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka and Masaru Taniguchi, Chiba, both of, Japan

Filed Feb. 9, 1987, Ser. No. 12,459
Claims priority, application Japan, Feb. 7, 1986, 61-26544; Mar. 10, 1986, 61-52264
Int. Cl.[4] G01N *33/53, 33/577;* C12N *5/00;* C07K *15/14*
U.S. Cl. 435—7 **5 Claims**

1. A human monoclonal antibody produced by a human-mouse hybridoma which is obtained by cell fusion of lymph node cells from patients with human squamous lung carcinoma and mouse myeloma cells, said human monoclonal antibody having the following characteristcs:

(1) It reacts with human lung squamous cell carcinoma cell line PC10 and humal lung adenocarcinoma cell line PC 14 but does not react with human adult skin-derived fibroblast cells;

(2) Among tumor slice specimens of tumor tissue removed by operation on a lung cancer patient, it reacts with tissue from lung squamous cell carcinoma, lung adenocarcinoma and lung large cell carcinoma but does not react with tissue from lung small cell cancer and other mediastinal tumors;

(3) It does not react with normal tissues except for trachea gland cells, bronchi gland cells, and kidney renal tubular cells and its does not react with benign tumors;

(4) It reacts with nonpulmonary tumor tissues derived from thyroid cancer, breast cancer, esophagus cancer, stomach cancer and extra hepatic bile duct cancer;

(5) It recognizes an antigen molecule having a molecular weight of about 200Kd as determined by the SDS-PAGE method and found in the soluble fraction on the surface of the cellular membrane of PC10 cells which is divided into components having molecular weights of about 65Kd as determined by the SDS-PAGE method under reducing conditions;

(6) The class of the antibody is IgM and the light chain is lambda.

4,800,156

ANAEROBIC GERMICULTURE RECEPTACLE

Sadayuki Yuhda, Kawanishi, Japan, assignor to Sankin Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 854,611, Apr. 22, 1986, abandoned. This application Jul. 2, 1987, Ser. No. 69,191
Claims priority, application Japan, Apr. 25, 1985, 60-89698
Int. Cl.[4] C12M *1/24*
U.S. Cl. 435—296 **2 Claims**

1. An anaerobic germiculture receptacle comprising:

a first cylindrical receptacle having one open end; a second cylindrical receptacle adapted to be accommodated in the first receptacle, the second receptacle having one open end;

a sealing plug for closing the open end of the first receptacle, the plug including a bore produced axially thereof and having a size enough to allow the passage of the second receptacle;

a pushing rod insertable in the bore; wherein the open end of the first receptacle is defined by a flat rim, said flat rim being provided with an annular bead projecting from said flat rim for sealing by said sealing plug; and

a lid including an aperture produced coaxially of the bore of the sealing plug, the lid being adapted to cover the sealing plug airtightly;

wherein the sealing plug includes a flat shoulder complimental with the rim of the first receptacle, the sealing plug includes a ring-shaped groove, and the lid includes a cylindrical inner wall fitted in the ring-shaped groove of the sealing plug; and

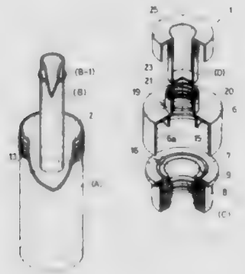
wherein the bore is defined by an inside wall including a plurality of ring-shaped projections.

4,800,157

PROCESS FOR PRODUCING THE A-21978C ANTIBIOTICS

Tom E. Eaton, Greenwood; Lynda M. Ford, Indianapolis; Otis W. Godfrey, Jr., Greenwood; Mary L. B. Huber, Danville, and Milton J. Zmijewski, Jr., Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 9, 1985, Ser. No. 773,916
Int. Cl.[4] C12P *21/04;* C12N *1/20;* C12R *1/465*
U.S. Cl. 435—71 **11 Claims**



1. In the process for producing A-21978C antibiotics, the improvement which comprises cultivating *Streptomyces roseosporus* NRRL 15998, or a variant, on a mutant thereof which retains the characteristic of enhanced A-21978C antibiotic production, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until A-21978C antibiotics are produced.

4,800,158

BACTERIAL METHOD AND COMPOSITIONS FOR LINALOOL DEGRADATION

Peter A. Vandenbergh, Sarasota, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Continuation-in-part of Ser. No. 496,140, May 19, 1983, abandoned. This application Mar. 20, 1986, Ser. No. 841,889
Int. Cl.[4] C12N *15/00, 1/20;* C07G *17/00;* C12R *1/40*
U.S. Cl. 435—172.1 **17 Claims**

1. A method for the degradation metabolism of linalool as a pure chemical or in a natural or impure form with a derived Pseudomonas species which comprises:

metabolizing linalool with a strain of Pseudomonas species as the derived Pseudomonas species containing plasmid pSRQ60 as carried in *Pseudomonas fluorescens* NRRL-B-18041, wherein pSRQ60 has been transferred to the derived Pseudomonas species from a parent Pseudomonas, wherein the Pseudomonas species has been cultured prior to being added to the linalool.

4,800,159

PROCESS FOR AMPLIFYING, DETECTING, AND/OR CLONING NUCLEIC ACID SEQUENCES

Kary B. Mullis, La Jolla; Henry A. Erlich, Oakland; Norman Arnheim, Woodland Hills; Glenn T. Horn, Emeryville; Randall K. Saiki, Richmond, and Stephen J. Scharf, Berkeley, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation of Ser. No. 828,144, Feb. 7, 1986, Pat. No. 4,683,195, which is a continuation-in-part of Ser. No. 824,044, Jan. 30, 1986, abandoned, which is a division of Ser. No. 791,308, Oct. 25, 1985, Pat. No. 4,683,202, which is a continuation-in-part of Ser. No. 716,975, Mar. 28, 1985, abandoned. This application Dec. 17, 1986, Ser. No. 943,948
The portion of the term of this patent subsequent to Jul. 28, 2004, has been disclaimed.
Int. Cl.[4] C12N *15/00;* C12P *19/34;* C07H *21/04*
U.S. Cl. 435—172.3 **6 Claims**

1. A process for cloning into a vector a specific nucleic acid sequence contained in a nucleic acid or a mixture of nucleic acids, which process comprises:

a. treating the nucleic acid(s) with one oligonucleotide primer for each strand of each different specific sequence being amplified, under conditions such that for each strand of each different sequence being amplified an extension product of wherein said primer or primers are selected so as to be sufficiently complementary to each strand of each specific sequence to hybridize therewith such that the extension product synthesized from one primer, when it is separated from its complement, can serve as a template for synthesis of the extension product of the other primer, and wherein said primer or primers each contain a restriction site on its 5' end which is the same as or different from the restriction site(s) on the other primer(s);

b. separating the primer extension products from the templates on which they were synthesized to produce single-stranded molecules;

c. treating the single-stranded molecules generated from step (b) with oligonucleotide primers such that a primer extension product is synthesized using each of the single strands produced in step (b) as a template, wherein depending on the particular sequence being amplified, steps (a) and (c) are carried out in the presence of from 0 to 10% dimethylsulfoxide or at a temperature of 35° C. to 45° C.

d. adding to the product of step (c) a restriction enzyme for each of said restriction sites to obtain cleaved products in a restriction digest; and

e. ligating the cleaved product(s) into one or more cloning vectors.

4,800,160

PROCESS AND APPARATUS FOR PRODUCING IMMOBILIZED ENZYME GRANULES

Seiya Iguchi, Tokyo; Takeaki Noguchi, Yokohama; Hiroshi Kimura, Kamakura, and Masayo Aihara, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemical, Incorporated, Tokyo, Japan

Filed Jul. 28, 1986, Ser. No. 889,764
Claims priority, application Japan, Aug. 6, 1985, 60-171786
Int. Cl.[4] C12N *11/02, 11/10, 11/04;* C12M *1/40*
U.S. Cl. 435—177 **9 Claims**

1. A process for the production of immobilized enzyme granules from droplets of an enzyme-containing liquid comprising the steps of:

(a) providing a substantially vertical column having therein at least one rotating disc surrounded by walls of the column and containing in a lower region thereof a reservoir of a gelling solution for gelling an enzyme-containing liquid;

(b) providing a supply of the gelling solution at an upper region of the column and allowing the gelling solution to flow downwardly as a layer on the column walls to the gelling solution reservoir;
(c) forming droplets of an enzyme-containing liquid by supplying the enzyme-containing liquid to said rotating disc disposed within the column and then allowing the supplied enzyme-containing liquid to be centrifugally radially expelled from the rotating disc towards the flowing layer of the gelling solution on the walls of the column, wherein the formed droplets come into contact with the flowing layer and are carried therewith to the gelling solution reservoir; and
(d) gelling the formed droplets in the gelling solution reservoir to form the immobilized enzyme granules therefrom.

4,800,161

PROCESS FOR THE MICROBIOLOGICAL PREPARATION OF ALDOSE-1-EPIMERASE

Wolfgang Ebeling; Harald Metz, both of Bickenbach; Wolfgang Brummer, Alsbach; Gunter Schmid, Muhltal, and Ulrich Behrendt, Bischel/Obb., all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Sep. 5, 1985, Ser. No. 772,979
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1984, 3432570
Int. Cl.[4] C12N *9/90, 1/20*
U.S. Cl. 435—233 **7 Claims**

2. A process for the microbiological preparation of aldose-1-epimerase, comprising cultivating a microorganism of the genus Acinetobacter in a nutrient medium, and subsequently releasing the aldose-1-epimerase from the resulting cells and isolating said aldose-1-epimerase.

4,800,162

METHOD FOR RESOLUTION OF STEROISOMERS IN MULTIPHASE AND EXTRACTIVE MEMBRANE REACTORS

Stephen L. Matson, Harvard, Mass., assignor to Sepracor, Inc., Marlborough, Mass.

Filed Apr. 1, 1987, Ser. No. 33,962
Int. Cl.[4] C12P *41/00*
U.S. Cl. 435—280 **157 Claims**

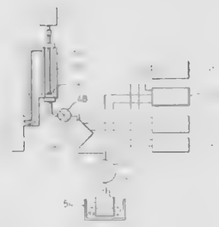
1. A method for resolving a racemic mixture comprising:
a. providing in a first fluid a racemic mixture having at least a first and second stereoisomer to one side of an enzyme activated membrane wherein said enzyme which activates said membrane catalyzes the reaction of the first stereoisomer into a chiral product having an altered chemical composition;
b. providing concurrently a second fluid, substantially immiscible in said first fluid, to the opposite side of said enzyme activated membrane,
whereby said racemic mixture is resolved with said chiral product of step a principally diffusing into said second fluid from said enzyme activated membrane so that said second fluid predominantly includes said chiral product and said first fluid predominantly includes said second stereoisomer.

4,800,163

FLOW CHAMBER AND ELECTRO-MANIPULATOR INCORPORATING SAME

Tadaaki Hibi; Miyoji Sugiura; Hiromi Kano, all of Tsukuba; Sigeyuki Kimura, Hino, and Takeshi Kazami, Tsukuba, all of Japan, assignors to Ntl. Inst. of Agrobiological Resources, Ibargi and Nihon Bunko Kogyo Kabushiki Kaisya, Tokyo, both of, Japan

Filed Dec. 15, 1987, Ser. No. 133,722
Claims priority, application Japan, Dec. 15, 1986, 61-297925; Dec. 15, 1986, 61-297926
Int. Cl.[4] C12M *1/00;* **C12N** *13/00*
U.S. Cl. 435—287 **8 Claims**



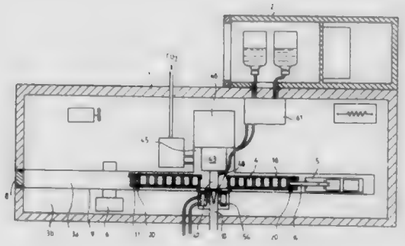
1. An electro-manipulator comprising:
a reservoir for storing a sample on which electrofusion or electro-transfection is to be conducted, said reservoir having an outlet from which said sample is discharged;
a flow chamber including a spacer made of an electrically insulating flat plate, said spacer having two flat opposing surfaces, said spacer having an opening formed between and through said flat opposing surfaces so as to in part form a chamber, a first flat electrode member placed on one of said flat opposing surfaces and a second flat electrode member placed on the other of said flat opposing surfaces with said spacer therebetween, an inlet, an outlet, and an operation port, said inlet, said outlet and said operation port communicating with said chamber formed by said spacer and said first and second electrode members;
a sample introducing passageway for connecting said outlet of said reservoir to said inlet of said flow chamber;
a downstream flow passage connected to said outlet of said flow chamber;
sample transferring means connected to said operation port of said flow chamber for decreasing the pressure in said flow chamber when said sample is to be introduced into said flow chamber and for increasing the pressure in said flow chamber when said sample is to be discharged from said flow chamber;
flow passage switch-over means for opening said sample introducing passageway while closing said downstream flow passage at said outlet of said flow chamber when the pressure in said flow chamber is decreased by said sample transferring means, and for closing said sample introducing means while opening said downstream flow passage when the pressure in said flow chamber is increased by said sample transferring means; and
means for carrying out electro-fusion or electrotransfection by the application of a voltage between said first and second electrode members of said flow chamber.

4,800,164

AUTOMATIC DEVICE FOR THE ANALYSIS AND CLONING OF CELLULAR CULTURES AS WELL AS FOR BACTERIOLOGICAL ANALYSIS

Jean-Claude Bisconte, Paris, France, assignor to Institut National de la Sante et de la Recherche Medicale-INSERM, Paris, France

Filed Jul. 2, 1985, Ser. No. 751,248
Claims priority, application France, Jul. 12, 1984, 84 11073
Int. Cl.[4] C12M *1/18*
U.S. Cl. 435—300 **32 Claims**



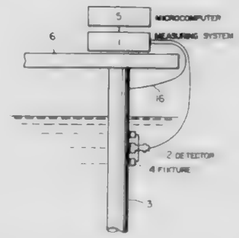
1. An automatic device for analyzing and cloning cellular cultures as well as for bacteriological analysis, comprising:
a first enclosure having isolating walls and divided into a first compartment and a second compartment surrounding the first compartment;
at least one microscopic device for observation of said cultures, which is integral with a ceiling and a floor of said first compartment,
access means for accessing an interior of said first compartment;
support means for supporting said first compartment within said second compartment;
a device for aspiration/injection of cell medium or cells fixed to a housing formed in said ceiling of said first compartment;
a plate including several micro-wells for receiving said cellular cultures and cell medium, said micro-wells being disposed in at least one concentric circular row, means for slidably supporting said plate inside said first compartment, said plate being provided with a central opening for access of said aspiration/injection device into a discharge and sterilization well fixed to the floor of said first compartment;
drive means located in said first compartment and comprising means for rotating said plate and means for moving said plate vertically and horizontally to thus orientate each micro-well with respect to said microscopic device;
means for providing homeothermic conditions inside said enclosure,
a second enclosure, disposed outside said first enclosure, said second enclosure including a plurality of reservoirs for containing nutritive media in one reservoir and at least one other product in at least one other reservoir, cooling means for preserving the contents of said reservoirs means, and means for selectively supplying said nutritive media and said at least one other product to said aspiration/injection device by means of valve means.

4,800,165

METHOD OF DETECTING CORROSION RATE OF MEMBER OF STEEL MATERIAL

Tomoki Oka; Hiroshi Kihira; Kazumi Matsuoka, and Satoshi Ito, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 9, 1987, Ser. No. 1,734
Claims priority, application Japan, Jan. 11, 1986, 61-3905
Int. Cl.[4] G01N *17/00, 31/00;* **G01R** *27/02*
U.S. Cl. 436—6 **3 Claims**



1. A method of detecting the rate of corrosion of an existing steel structure installed in a corrosive environment, said steel structure having a surface section to which a probe is to be attached for detecting said corrosion rate, said method comprising the steps of:
removing deposits from said surface section of said steel structure so that an AC impedance of said surface section, when electrochemically measured by application of potential variation thereto at a predetermined high frequency range, takes a first value within a range of 5 Ωcm^2 to 50 Ωcm^2;
measuring the impedance of said measurement surface by application of potential variation at a predetermined low frequency range to obtain a second AC impedance value;
calculating the difference between said first and second measured values to detect a corrosion-reaction resistance of said surface section; and
determining the rate of corrosion of said surface section on the basis of said detected corrosion-reaction resistance of said surface section and according to a precalculation relation between the rate of corrosion and the corrosion-reaction resistance;
whereby the corrosion rate can be determined directly on said surface section without the need for a separate corrodible testing means.

4,800,166

METHOD AND APPARATUS FOR MONITORING THE AUTOMATED SYNTHESIS OF PEPTIDES

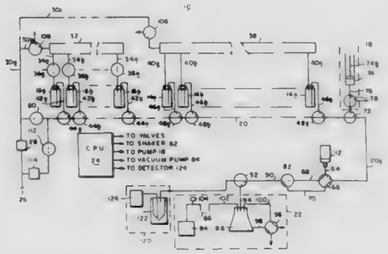
Marcus J. Horn, Cambridge, and Joanne Recchia, Norwood, both of Mass., assignors to Applied Protein Technologies, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 725,213, Apr. 19, 1985, Pat. No. 4,701,304. This application Jun. 6, 1986, Ser. No. 871,513
Int. Cl.[4] G01N *33/68*
U.S. Cl. 436—55 **16 Claims**

1. A process for monitoring a solid-phase peptide synthesis for free amino ends of unreacted peptide chains, comprising:
A. synthesizing a peptide chain by adding a blocked amino acid, comprising an amino acid bound to a blocking agent, to a peptide chain that is anchored to the solid-phase;
B. reacting the solid phase with a monitoring agent that forms a covalent bond with amino groups under reaction conditions that promote such covalent bonding.
C. washing the solid phase with a washing solution to remove non-covalently bound monitoring agent from the solid phase;
D. reacting the solid phase with a cleaving agent that selec-

tively removes the covalently bound monitoring agent from the amino ends of the unreacted peptide chains while leaving the blocked amino termini and the peptide chains intact, said monitoring agent not being the same as or similar to said blocking agent of the first step, such that said cleaving agent will cleave said monitoring agent but not said blocking agent;

E. measuring quantitatively the amount of the monitoring agent removed; and



F. depending upon the number of unreacted peptide chains, as determined by the quantitative measurement of said removed monitoring agent, either

1. repeating the process with the same blocked amino acid or;
2. removing the blocking agent from the terminal amino group and repeating the process with a subsequent blocked amino acid in the peptide sequence.

4,800,167

REAGENT AND PROCESS FOR THE DETERMINATION OF HEMOGLOBIN IN BLOOD

Mark W. Bailey, Highland Park, and Myrna G. Ulanday, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 10, 1987, Ser. No. 36,604
Int. Cl.[4] G01N *33/72*
U.S. Cl. 436—66 **9 Claims**

1. A reagent for determining the hemoglobin content of whole blood comprising:

an aqueous solution of polyvinylpyrrolidone of molecular weight from about 10,000 to about 360,000 at a pH greater than about 8.0 to denature hemoglobin in whole blood whereby, upon addition to a blood sample, all hemoglobin derivatives are solubilized to form a product having a maximum photometric absorbance at a wavelength of about 575 nm.

4,800,168

TWO REAGENT SYSTEM FOR THE COLORIMETRIC DETERMINATION OF CHLORIDE IONS IN BODY FLUIDS

Richard Kaufman, Belleville, and Alex Wesolowski, Florham Park, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 17, 1985, Ser. No. 788,280
Int. Cl.[4] G01N *33/483*
U.S. Cl. 436—124 **16 Claims**

1. A colorimetric method for measuring chloride ion concentration in a sample of body fluid which method comprises the steps of:

a. Mixing a sample of body fluid with a water soluble color reagent comprised of about 60 to 80 mmol per liter Fe^{+++}, about 1.75 to 2.75 mmol per liter Hg^{++}, and about 2.75 to 3.75 mmol per liter SCN^{-} ions;

b. Measuring the absorbance of the mixture of Step at from about 450 to 550 nm;

c. Adding an iron complexing reagent comprised of about 225 to 325 mmol per liter of a salt of EDTA to the mixture of Step a; and

d. Measuring the absorbance of said mixture of Step c at from about 450 to about 550 nm;

e. Determining the chloride ion concentration from Steps b and d,

wherein the difference between the second absorbance measurement and the first absorbance measurement is proportional to the chloride concentration in said sample.

4,800,169

TEST AIDS AND METHOD FOR THE PREPARATION THEREOF

Bruno Bömer, Berg.-Gladbach, and Karl-Erwin Piejko, Cologne, both of Fed. Rep. of Germany, assignors to Miles Inc., Elkart, Ind.

Filed Jul. 16, 1987, Ser. No. 74,238
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1986, 3625852
Int. Cl.[4] G01N *21/03*; C12Q *1/28*
U.S. Cl. 436—166 **6 Claims**

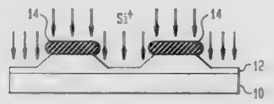
1. A method for preparing a test aid for detecting an analytical substance by means of a redox reaction which method comprises adding a decolorant consisting essentially of an oxidizable aromatic amino or hydrazino compound which does not couple with itself to a single-component indicator composition devoid of any coupling component capable of reacting with an oxidation product to form a dyestuff.

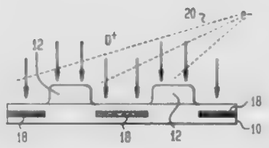
4,800,170

PROCESS FOR FORMING IN A SILICON OXIDE LAYER A PORTION WITH VERTICAL SIDE WALLS

Kailash C. Jain, Sterling Heights, and Bernard A. MacIver, Lathrup Village, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1987, Ser. No. 104,091
Int. Cl.[4] H01L *21/425, 21/467*
U.S. Cl. 437—24 **11 Claims**





1. A process of forming over a substrate a silicon oxide layer having a pattern of openings with substantially vertical side walls comprising the steps of:

forming a layer of silicon oxide over a surface of the substrate;

forming a mask over the silicon oxide layer leaving exposed the pattern desired in the silicon oxide layer;

partially removing by a wet etchant the silicon oxide exposed in the pattern, leaving sloped regions in the silicon oxide layer where it underlies the edges of the mask;

irradiating the substrate with high energy particles to damage selectively the silicon oxide layer; and

removing by a wet etchant the remainder of the exposed silicon oxide to form in the silicon oxide layer the desired pattern of openings with substantially vertical side walls.

7. The process of forming a patterned insulated layer buried in a silicon crystal substrate comprising the steps of:

forming a layer of silicon oxide over a surface of the substrate;

forming a mask over the silicon oxide layer leaving exposed the pattern desired in the silicon oxide layer;

partially removing by a wet etchant the silicon oxide exposed in the pattern, leaving sloped regions in the silicon oxide layer where it underlies the edges of the mask;

irradiating the substrate with high energy particles to damage selectively the silicon oxide layer;

removing by a wet etchant the remainder of the exposed silicon oxide to form in the silicon oxide layer the desired pattern of openings with substantially vertical side walls;

implanting ions through the patterned silicon oxide layer for forming a buried ion-rich layer in the silicon substrate; and

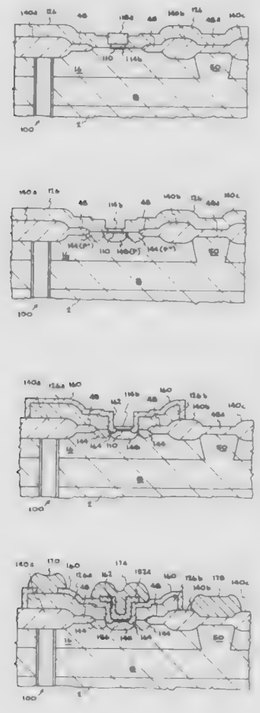
heating the substrate for converting the ion-rich layer into a buried insulating layer.

4,800,171

METHOD FOR MAKING BIPOLAR AND CMOS INTEGRATED CIRCUIT STRUCTURES

Ali Iranmanesh, San Antonio, Tex., and Mammen Thomas, San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 2, 1987, Ser. No. 104,459
Int. Cl.[4] H01L *21/365*
U.S. Cl. 437—31 **19 Claims**



1. An improved method of constructing one or more integrated circuit components including a bipolar transistor on a semiconductor substrate without damaging areas of the substrate wherein active elements of the integrated circuit components will be formed which comprises:

(a) forming one or more isolated regions in said substrate wherein an integrated circuit device may be formed which is isolated from other devices formed in adjacent regions;

(b) forming a collector well for a bipolar transistor in said substrate;

(c) forming field oxide portions in the surface of said substrate to further isolate said regions from one another and to isolate said collector well from other elements of said bipolar transistor;

(d) forming a buffer oxide layer over exposed portions of said substrate;

(e) forming a first nitride mask layer over said buffer oxide layer;

(f) forming a second oxide mask layer over said first nitride mask layer to permit selective etching of either mask layer;

(g) forming a patterned photoresist mask over said second mask layer comprising a different material than the material in said first and second mask layers;

(h) etching exposed portions of at least said second mask layer to leave one or more multilayer pedestals under said photoresist mask corresponding to one or more active regions to be formed in said substrate;

(i) removing said photoresist mask;

(j) forming a polysilicon layer over said structure;

(k) planarizing said polysilicon layer to expose the top of said multilayer pedestals;

(l) implanting dopant into portions of said polysilicon corresponding to base contact electrode portions for said bipolar transistor;

(m) removing said second mask portion of said multilayer pedestals by wet etching to expose sidewall portions of said planarized polysilicon adjacent said multilayer pedestals; and

(n) oxidizing said exposed sidewall portions of said polysilicon to provide an insulating layer of oxide between said polysilicon which will comprise a base contact electrode and a subsequently deposited conductive material which will function as an emitter contact electrode.

4,800,172

MANUFACTURING METHOD FOR CASCADED JUNCTION FIELD EFFECT TRANSISTOR

Jun-ichi Okano, Hyogo, and Kiyohito Matsumoto, Himeji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 4, 1988, Ser. No. 152,396
Claims priority, application Japan, Feb. 9, 1987, 62-26366
Int. Cl.[4] H01L *21/385, 29/80*
U.S. Cl. 437—51 **18 Claims**

1. A method for manufacturing cascaded junction type field effect transistors which comprises the steps of:

forming a channel region of a first conductivity type on a substrate of a second conductivity type;

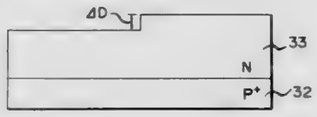
creating variations in the surface level on the surface of said channel region;

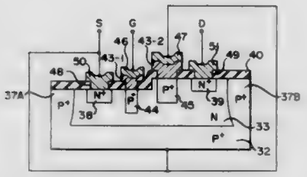
forming source and drain regions of the first conductivity type in the low and high level surface areas of said channel region, respectively;

forming an insulation film having first and second gate diffusion holes formed in a position corresponding to the low and high level surfaces of said channel region;

forming first and second junction gates in the low and high level surface areas of said channel region by simultaneously doping an impurity of the second conductivity

type into said channel region through said holes of said insulation film using the same diffusion source; and





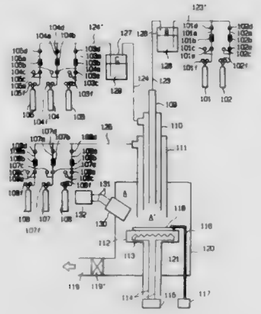
connecting said substrate to said second junction gate which is near said drain region, and to said source region.

4,800,173

PROCESS FOR PREPARING SI OR GE EPITAXIAL FILM USING FLUORINE OXIDANT

Masahiro Kanai; Junichi Hanna, and Isamu Shimizu, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1987, Ser. No. 15,951
Claims priority, application Japan, Feb. 20, 1986, 61-33925; Feb. 20, 1986, 61-33926; Feb. 27, 1986, 61-40334
Int. Cl.[4] H01L *21/205*
U.S. Cl. 37—081 **18 Claims**



1. A process for preparing an improved valence electron controlled functional epitaxial film on a substrate, comprising the steps of:

(a) introducing through a first gas transportation conduit into an evacuated film-forming space having said substrate therein; a gaseous raw material (i) containing hydrogen atoms and silicon atoms or gemanium atoms;

(b) separately through a second gas transportation conduit concentric with the first gas transportation conduit, introducing a gaseous material (ii) capable of oxidizing the raw material (i), said gaseous material (ii) comprising F_2 gas;

(c) separately, through a third gas transportation conduit concentric with the first and second gas transportation conduits, introducing a gaseous raw material (iii) capable of imparting a valence electron controlling element;

(d) providing a mixing and reaction region for said gaseous materials (i), (ii) and (iii) adjacent said film forming space at outlets of said first, second and third concentric gas transportation conduits;

(e) mixing and chemically reacting said three gaseous materials (i), (ii) and (iii) in the absence of a plasma and under reduced pressure in said mixing and reaction region surrounding the surface of said substrate, while controlling the volume ratio of said gaseous material (i) to said gaseous material (ii) to be from 1/20 to 100/1, and the volume ratio of said gaseous material (iii) to said gaseous material (i) to be from $1/1\times10^6$ to 1/10, respectively;

(f) maintaining said substrate at an elevated temperature to generate a plurality of precursors containing excited precursors and causing at least one of the precursors to form said film; and

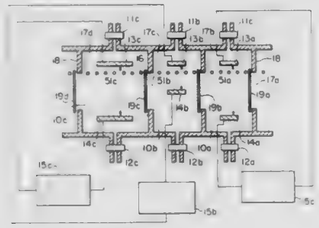
(g) maintaining the length between the outlets of said first, second and third concentric gas transportation conduits forming said mixing and reaction region and the surface of the substrate from about 5 millimeters to 15 centimeters.

4,800,174

METHOD FOR PRODUCING AN AMORPHOUS SILICON SEMICONDUCTOR DEVICE USING A MULTICHAMBER PECVD APPARATUS

Shinichiro Ishihara, Takatsuki; Masatoshi Kitagawa, Hirakata, and Takashi Hirao, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 18, 1987, Ser. No. 50,699
Claims priority, application Japan, May 20, 1986, 61-115254
Int. Cl.[4] H01L *21/205*
U.S. Cl. 437—101 **5 Claims**



1. In a method of producing an amorphous silicon semiconductor device having the steps of:

preparing a capacitance-coupled high-frequency glow-discharge semiconductor production apparatus which is equipped with a plurality of glow-discharge chambers each having a high-frequency electrode and a substrate holder opposing each other and means for supplying material gases to said glow-discharge chambers;

effecting, in a first one of said glow-discharge chambers, plasma reaction so as to deposit, on a substrate introduced into the first glow-discharge chamber, a first amorphous silicon layer or a first amorphous layer consisting mainly of silicon having a first conductivity type, and

effecting, after moving said substrate into a second one of said glow-discharge chambers, a plasma reaction of a material gas different from said material gas used in the first glow-discharge chamber, thereby forming a second amorphous silicon layer of a second conductivity type on said first layer;

the improvement comprising:

that said substrate with said first amorphous silicon layer or said first amorphous layer mainly consisting of silicon of said first conductivity formed thereon is moved from said first glow-discharge chamber to said second glow-discharge chamber after a predetermined gas atmosphere is formed in said first glow-discharge chamber;

that the distance between said electrode and said substrate holder is made smaller in that one of said first and second glow-discharge chambers which is designed for forming the thicker one of said first and second layers than in the other of said first and second glow-discharge chambers;

that the temperature of said substrate is set higher in that one of said first and second glow-discharge chambers which is designed for forming the thicker one of said first and second layers; and

that the pressure is set higher in that one of said first and second glow-discharge chambers which is designed for forming the thicker one of said first and second layers than in the other of said first and second glow-discharge chambers.

4,800,175

PHOSPHOROUS PLANAR DOPANT SOURCE FOR LOW TEMPERATURE APPLICATIONS

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois Television Products Inc., Toledo, Ohio

Filed May 29, 1987, Ser. No. 56,621
Int. Cl.[4] H01L *21/225*
U.S. Cl. 437—160 **18 Claims**

1. A doping composition for forming a dopant source wafer for doping by vapor phase transport of P_2O_5 a silicon wafer with phosphorus for low temperature applications, the compsoition consisting essentially of:

(a) finely divided particles of a polycrystalline ceramic having an average linear coefficient of thermal expansion of less than about $32\times10^{-7/°C.}$ from zero to 300° C. and consisting essentially of the following oxides in approximate mole percent;

OXIDE	MOLE PERCENT
P_2O_5	45–75
Al_2O_3	11–28
Ta_2O_5	6.5–13
SiO_2	0–20
La_2O_3	0–7

where $P_2O_5+Al_2O_3+Ta_2O_5$ is at least about 75 mole percent of the composition

(b) finely divided particles of Al_2O_3, and

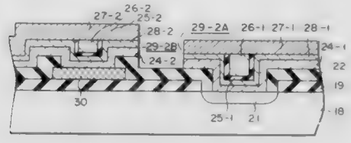
(c) H_3PO_4 in an aqueous solution for reaction with Al_2O_3 to form a binder for the ceramic particles.

4,800,176

METHOD FOR FORMING CONTACT PORTION IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Masakazu Kakumu, and Tetsuya Asami, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 19, 1988, Ser. No. 183,138
Claims priority, application Japan, May 29, 1987, 62-133797
Int. Cl.[4] H01L *21/283*
U.S. Cl. 437—193 **20 Claims**



1. A method of manufacturing semiconductor devices, comprising the steps of:

forming a first conductive layer on a semiconductor substrate;

forming a first insulation film on said first conductive layer;

forming at least one contact hole in said first insulation film formed on said first conductive layer;

forming a semiconductor layer on said first insulation film having said contact hole formed therein;

forming a second insulation film on said semiconductor layer;

forming a planarization film on said second insulation film;

selectively removing said planarization film by anisotropic etching, to leave part of said planarization film in, and filling, said contact hole;

removing a portion of said second insulation film exposed by the anisotropic etching;

forming a second conductive layer on substantially the entire surface of the resultant semiconductor structure; and

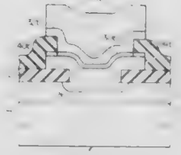
patterning said second conductive layer and semiconductor layer, to form a laminated structure of a wiring layer.

4,800,177

SEMICONDUCTOR DEVICE HAVING MULTILAYER SILICIDE CONTACT SYSTEM AND PROCESS OF FABRICATION THEREOF

Masahiko Nakamae, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 14, 1986, Ser. No. 840,317
Claims priority, application Japan, Mar. 14, 1985, 60-50911
Int. Cl.[4] H01L *21/283, 21/225*
U.S. Cl. 437—193 **4 Claims**



1. A process of fabricating a semiconductor device, comprising

(a) forming a heavily doped first semiconductor layer of a first conductivity type,

(b) forming a first protective layer of an insulating material on said first semiconductor layer and having an opening allowing a portion of the first semiconductor layer to be exposed therethrough,

(c) forming a second silicon layer partly on said first protective layer and partly on said portion of said first semiconductor layer,

(d) heavily doping said second silicon layer with a dopant of a second conductivity type opposite to said first conductivity type and thereafter annealing the doped second silicon layer to form in said first semiconductor layer an active region of said second conductivity type substantially aligned with said opening with enhanced ohmic contact provided between said active region and said second silicon layer,

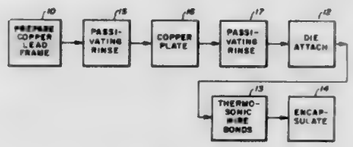
(e) forming a substantially non-doped third silicon layer on said second silicon layer,

(f) forming a second protective layer of an insulating material on said third silicon layer and having an opening allowing a portion of the third semiconductor layer to be exposed therethrough, the opening in the second protective layer being substantially aligned with the opening in said first protective layer across said second and third silicon layers,

(g) forming a layer of a refractory metal partly on said second protective layer and partly on said portion of said third silicon layer,

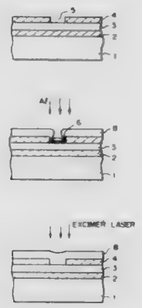
(h) heating the resultant structure to cause the refractory metal layer and the third silicon layer to react with each other for thereby forming a metal silicide layer of the refractory metal silicide,
(i) forming a barrier layer of at least one metal on said metal silicide layer, and
(j) forming an electrode layer including a highly conductive metal on said barrier layer.

4,800,178
METHOD OF ELECTROPLATING A COPPER LEAD FRAME WITH COPPER
Rajan J. Mathew, and Billy J. Lang, II, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Sep. 16, 1987, Ser. No. 96,987
Int. Cl.[4] H01L *21/60, 23/48*
U.S. Cl. 437—206 **5 Claims**



1. A process for treating a copper lead frame tape that is to be used in the tape assembly of semiconductor devices, said process comprising the steps:
cleaning said copper tape to remove surface contaminants;
electroplating a layer of copper on said cleaned copper tape;
passivating the surface of said electroplated layer by immersing it in a solution containing a weak organic acid;
rinsing said passivated copper tape;
bonding a semiconductor device to said tape; and
thermosonically bonding gold wires between said tape and said semiconductor device.

4,800,179
METHOD FOR FABRICATING SEMICONDUCTOR DEVICE
Ryoichi Mukai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Jan. 12, 1987, Ser. No. 60,923
Claims priority, application Japan, Jan. 13, 1986, 61-137509
Int. Cl.[4] H01L *21/04, 21/00*
U.S. Cl. 437—203 **6 Claims**



1. A method for fabricating a semiconductor device, which comprises:
forming a contact hole in an insulating film formed on a first wiring composed of first Al film;
covering the insulating film with a second Al film for a second wiring;
applying laser beam pulses of an intensity and a pulse width to the Al second film for the second wiring from above so as to remove any oxide or adsorbed material formed on the first Al film to the first wiring, and
patterning the second Al film to form the second wiring.

4,800,180
CERAMIC ARTICLES CONTAINING SILICON CARBIDE
Jerome W. McAllister, Hudson, Wis.; Lien-Hsong T. Pham, St. Paul, and Harold G. Sowman, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 26, 1986, Ser. No. 912,830
Int. Cl.[4] C04B *35/56*
U.S. Cl. 501—88 **14 Claims**

1. A shaped article consisting essentially of a ceramic matrix and dispersed therein 5 to 30 weight percent silicon carbide, said silicon carbide having a primary particle size of less than 0.1 micrometer and a modulus of elasticity (E) value greater than 690 GPa, and said article having a modulus of elasticity (E) value of at least 10 percent greater than the inherent modulus of elasticity (E) value of the fully dense host matrix.

4,800,181
SILICON CARBIDE REFRACTORY COMPOSITION
Perry B. Lassiter, Johnson City, and Larry B. Rea, Erwin, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Sep. 1, 1987, Ser. No. 91,698
Int. Cl.[4] C04B *35/56*
U.S. Cl. 501—89 **4 Claims**

1. A castable refractory mix composition comprising:
a. from about 10 to about 15% by weight of an aqueous slip of ground fused silica particles, comprising an aqueous dispersion of fine fused silica particles produced by wet grinding such that at least about 98% of said ground fused silica particles have a particle size less than 325 mesh;
b. from about 25 to about 32% by weight of alumina particles, at least about 99% of said alumina particles having a particle size less than 325 mesh;
c. from about 55 to about 65% by weight of silicon carbide refractory particles of a relatively large particle size;
d. from about 0.015 to about 0.04% by weight of a water-soluble wetting agent; and
e. from 0 to about 5% by weight added water.

4,800,182
SILICON NITRIDE-SILICON CARBIDE COMPOSITE MATERIAL AND PROCESS FOR PRODUCTION THEREOF
Kansei Izaki; Takamasa Kawakami; Kouichi Hakkei, and Kazuhiro Ando, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan
Filed Jan. 20, 1987, Ser. No. 4,476
Int. Cl.[4] C04B *35/56, 35/58*
U.S. Cl. 501—92 **6 Claims**

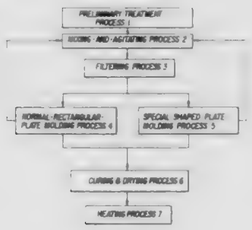


1. A sintered silicon nitride-silicon carbide composite material comprising substantially silicon nitride predominantly in β-phase and about 5 to 35% by weight of silicon carbide predominantly in β-phase, having a microstructure in which the silicon nitride is in the form of fine grains comprising elongated grains, 0.2 to 1.0 μm in length of minor axis and 1 to 10 μm in length of major axis, and equiaxed grains, 1 μm or below in average size, and the silicon carbide is in the form of equiaxed grains, 1 μm or below in average size, said silicon carbide grains being uniformly dispersed.

4,800,183
METHOD FOR PRODUCING REFRACTORY NITRIDES
Thomas C. Quinby, Kingston, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Apr. 9, 1986, Ser. No. 849,625
Int. Cl.[4] C01B *21/06;* **C01F** *7/00*
U.S. Cl. 501—96 **6 Claims**

1. A process for making metal nitride powders comprising:
combining Melamine and a soluble metal compound in a non-reacting solvent, said metal compound having a cation capable for reacting with said Melamine to form a metal-Melamine compound;
heating said Melamine and said metal compound in said solvent until in solution resulting in the formation of a metal-Melamine compound, said Melamine present in suitable excess to cause precipitation upon cooling and to minimize particle size of a metal nitride power reaction product;
cooling said solution until a precipitate of said metal-Melamine compound forms;
separating said precipitate from said solvent; and
calcining said precipitate in air at 600° to 700° C.

4,800,184
METHOD FOR PRODUCING SULFUR PLATES
Masaki Kawasaki, Fukuoka, and Kunio Mizukami, Yotsukaido, both of Japan, assignors to Kabushiki-Kaisha Yamaa, Fukuoka and Onoda Cement Company Limited, Onoda, both of, Japan
Filed Aug. 4, 1987, Ser. No. 81,932
Claims priority, application Japan, Aug. 6, 1986, 61-185890
Int. Cl.[4] C04B *35/60*
U.S. Cl. 501—140 **6 Claims**



1. A method for producing sulfur plates comprising:
(a) producing an aqueous mixture by mixing and agitating sulfur powder, inorganic powder, fibers and water,
(b) charging the aqueous mixture into a vacuum filtering machine which is provided with a belt-type filter and in the vacuum filtering machine continuously filtering the aqueous mixture and continuously forming the aqueous mixture into plates,
(c) molding the plates while dewatering,
(d) curing and drying the plates, and
(e) heating the plates at a temperature higher than the melting point of the sulfur.

4,800,185
REGENERATION OF METAL CONTAMINATED HYDROCARBON CONVERSION CATALYSTS
Frank J. Elvin, Kenner, La.; Jan-Erik Otterstedt, Sarte, Sweden, and Jin S. Yoo, Flossmoor, Ill., assignors to ChemCat Corporation, New Orleans, La.
Continuation of Ser. No. 895,130, Aug. 11, 1986, abandoned. This application Aug. 28, 1987, Ser. No. 90,645
Int. Cl.[4] B01J *38/66, 38/64, 29/38;* **C10G** *11/05*
U.S. Cl. 502—26 **17 Claims**

1. A process for treating a catalyst contaminated with at least one metal which was so contaminated while promoting cracking, in the substantial absence of added molecular hydrogen, of a hydrocarbon feedstock containing said metal, said catalyst comprising at least one synthetic crystalline material capable of promoting said conversion, said process comprising:
demetallizing said catalyst to reduce the amount of said metal on said catalyst and produce a demetallized catalyst; and at least one of the following:
(1) contacting said demetallized catalyst with ammonium ions to increase the ammonium ion content of said demetallized catalyst; and
(2) contacting said demetallized catalyst with rare earth metal ions to increase the rare earth metal ion content of said demetallized catalyst.

4,800,186
REGENERATION OF FLUOROCARBONSULFONIC ACID CATALYSTS
Emmett L. Tasset, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 28, 1987, Ser. No. 114,323
Int. Cl.[4] B01J *31/40, 49/00, 38/52;* **C07C** *43/11*
U.S. Cl. 502—33 **8 Claims**

1. A process for regenerating a fluorocarbon-sulfonic acid polymer catalyst which has been deactivated due to coking in an alkylation process, which comprises contacting the deactivated catalyst with heating to a temperature of from about 40° to about 100° C. for a period of time sufficient to restore the activity of said catalyst with a solvent combination of (1) at least one solvent which swells the structure of the polymer and (2) diphenyloxide as a diluent solvent to dissolve the deactivating components and reactivate the catalyst and wherein the swelling solvent is present in the solvent mixture in an amount of from about 5 to about 40 percent, the remainder being diphenyl oxide.

4,800,187
METHOD OF CRYSTALLIZING A ZEOLITE ON THE SURFACE OF A MONOLITHIC CERAMIC SUBSTRATE
Irwin M. Lachman, and Mallanagouda D. Patil, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Oct. 28, 1987, Ser. No. 113,475
Int. Cl.[4] B01J *29/06*
U.S. Cl. 502—64 **29 Claims**

1. A method of crystallizing a zeolite on the surfaces of a monolithic ceramic substrate, comprising
(a) providing a sintered monolithic substrate having an oxide composition consisting essentially of 45–75% by weight silica, 8–45% by weight alumina, and 7–20% by weight magnesia; and
(b) hydrothermally treating the substrate with an aqueous solution comprising sodium oxide or sodium hydroxide and alumina at a temperature and for a time sufficient to crystallize a zeolite on the surfaces of said substrate.

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4,800,188

METHOD FOR SUPPORTING METALLOPORPHYRINS ON POLYBENZIMIDAZOLE POROUS ARTICLES

James P. Shepherd, Springfield, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Mar. 20, 1987, Ser. No. 28,353
Int. Cl.[4] B01J *31/06;* **C08J** *9/36*
U.S. Cl. 502—159 **37 Claims**

1. A process for the production of a microporous polybenzimidazole article onto which a metalloporphyrin complex has been bound comprising:

(a) preparing a microporous polybenzimidazole shaped article;

(b) reacting the microporous polybenzimidazole article with a strong base to produce a polybenzimidazole anion on the surface of the article; and

(c) mixing the anionized polybenzimidazole article with a metalloporphyrin salt solution to form a microporous polybenzimidazole article supporting a metalloporphyrin complex.

4,800,189

MASS FOR REMOVAL, THROUGH CHEMICAL SORPTION, OF HOMOGENEOUSLY DISSOLVED IMPURITIES, PARTICULARLY OXYGEN, FROM GASES OR LIQUIDS

Manfred Eschwey, Duesseldorf, and Werner Schleser, Duisburg, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed May 27, 1987, Ser. No. 54,940
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1986, 3618942
Int. Cl.[4] B01J *20/30, 20/10, 20/06, 23/26*
U.S. Cl. 502—400 **4 Claims**

1. In a procedure for producing a chromium-containing mass usable for removing oxygen impurities by chemical sorption from a gas to be purified wherein the mass is formed by applying chromium to an oxidic carrier, then activating the carrier with oxygen at an elevated temperature and then subjecting the activated carrier to a reduction step by treatment with a reducing gas before bringing the mass into contact with the gas to be purified, the improvement being in subjecting the activated carrier to a second stage of reduction by treatment with a reactive process gas selected from the group consisting of monosilane, disilane, halogensilane, dichlorosilane, diborane, arsine, phosphine, trimethylgallium, trimethylaluminum, trimethylindium, ethylgallium, ethylaluminum, and trimethylindium and mixtures there-of with inert gases whereby the mass is capable of removing oxygen in amounts as low as trace amounts from the gas to be purified including a reactive process gas containing oxygen impurities as well as from a gas selected from the group consisting of nitrous oxide, hydrogen halides, hydrogen sulfide, sulfur dioxide, ammonia, carbon dioxide, and saturated and aromatic hydrocarbons and ether.

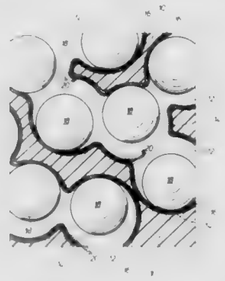
4,800,190

FILTER MATERIAL AND PROCESS FOR THE PRODUCTION THEREOF

Klaus Smolik, Gefrees, Fed. Rep. of Germany, assignor to Heiss-Werke Helmut Sandler GmbH & Co. KG, Gefrees, Fed. Rep. of Germany

Filed Sep. 11, 1987, Ser. No. 95,820
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1987, 3719418
Int. Cl.[4] B01J *20/02*
U.S. Cl. 502—416 **13 Claims**

8. A filter material comprising: an open-pore foam carrier; first adsorber particles adhesively secured to the surface of the foam carrier including in the open pores thereof, the size of the first adsorber particles being between 0.1 times and 0.9 times the mean pore diameters of the pores of the foam carrier; and second adsorber particles adhesively secured to the surface of the foam carrier including in the pores thereof, in the regions of aid surface which are between the locations at which said first adsorber particles are adhesively secured to said surface,



said second adsorber particles being of substantially smaller particle size than the first adsorber particles.

4,800,191

LHRH ANTAGONISTS

Andrew V. Schally, 5025 Kawanne Ave., Metarie, La. 70002, and Sandor Bajusz, 10501 Curran Blvd. #5W, New Orleans, La. 70127

Filed Jul. 17, 1987, Ser. No. 74,126
Int. Cl.[4] A61K *37/43;* **C07K** *7/20;* **C08F** *283/00*
U.S. Cl. 514—15 **19 Claims**

1. A peptide selected from the group of peptides having the formula:

$$X\text{-}R^1\text{-}R^2\text{-}R^3\text{-Ser-Tyr-}R^6\text{-Leu-Arg-Pro-}R^{10}\text{-}NH_2$$

wherein

X is an acyl group derived from straight or branched chain aliphatic or alicyclic carboxylic acids having from 1 to 7 carbon atoms,

R^1 is D- or L-Pro, D- or L-Δ^3-Pro, D-Phe, D-Phe(4-H1), D-Ser, D-Thr, D-Ala, D-Nal(1) or D-Nal (2),

R^2 is D-Phe or D-Phe(4-H1),

R^3 is D-Trp, D-Phe, D-Pal, D-Nal(1) or D-Nal (2),

R^6 is D-Cit, D-Hci, D-Cit(Q) or D-Hci(Q) and

R^{10} is Gly or D-Ala,

where Q2 is lower alkyl of 1–3 carbon atoms and H1 is fluoro, chloro or bromo,

and the pharmaceutically acceptable acid addition salts thereof.

4,800,192

HEAT-SENSITIVE RECORDING PAPER

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1987, Ser. No. 28,431
Claims priority, application Japan, Mar. 20, 1986, 61-62736
Int. Cl.[4] B41M *5/18*
U.S. Cl. 503—200 **14 Claims**

1. A heat-sensitive recording paper comprising a paper support having provided thereon a heat-sensitive color-forming layer wherein said paper support contains at least 10 wt % of a white pigment having an oil absorbency of no more than 150 cc/100 g in its interior, and also contains a polymer latex with an MFT (minimum film-forming temperature) of no higher than 40° C. in an amount of from 5 to 30 wt % based on the weight of the white pigment.

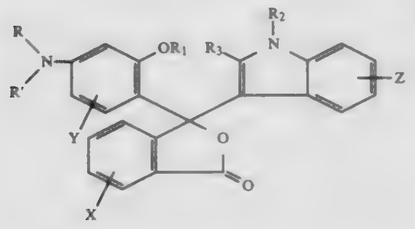
4,800,193

RECORDING MATERIAL

Keiso Saeki; Masanobu Takashima; Ken Iwakura; Takekatsu Sugiyama, and Masato Satomura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 28, 1987, Ser. No. 78,509
Claims priority, application Japan, Jul. 28, 1986, 61-177382; Jul. 30, 1986, 61-179444
Int. Cl.[4] B41M *5/16, 5/18, 5/22*
U.S. Cl. 503—217 **14 Claims**

1. A recording material comprising a support having provided thereon an electron-donating colorless dye and an electron-accepting compound, wherein said electron-donating colorless dye is represented by the following general formula (I):



(I)

wherein R and R′ each represents an alkyl group; R_1 represents an aralkyl group, or an alkyl group substituted with an alkoxy or aryloxy group; R_2 and R_3, which may be the same or different, each represents a hydrogen atom, an alkyl group, or an aryl group; and X, Y, and Z, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryloxy group, a halogen atom, or a substituted amino group.

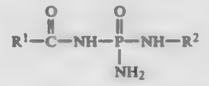
4,800,194

ACYLPHOSPHOROTRIAMIDES USEFUL AS LIPID-ALTERING AGENTS

Thomas J. Moorehead, and Allan V. Bayless, both of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Division of Ser. No. 761,992, Aug. 1, 1985, Pat. No. 4,668,667. This application Dec. 5, 1986, Ser. No. 938,195
Int. Cl.[4] A61K *31/675, 31/66, 31/05, 31/015*
U.S. Cl. 514—89 **10 Claims**

1. A compound of the class of acylphosphorotriamides which conform to the chemical structure:



wherein R^2 is H or straight or branched chain lower alkyl and R^1 is substituted phenyl, pyridyl or substituted pyridyl, furyl or substituted furyl, naphthyl or substituted naphthyl, benzyl or substituted benzyl, or phenyl(lower)alkyl or substituted phenyl(lower) alkyl; except such compounds wherein R^2 is H and R^1 is 3-pyridyl or 2-furyl or 2-naphthyl or cinnamenyl or benzyl or phenyl substituted by 3-nitro or 4-nitro or 4-halo or 4-amino or 4-(lower)alkoxy or 4-(lower)alkyl or 2-methyl or 2,3-dimethyl or 2,4-dimethyl or 2,4,6-trimethyl or 3-trifluoromethyl or 3-((4-aminophenyl)sulfanyl)amino or 4-cyano or 4-phenyl or 3-phenoxy.

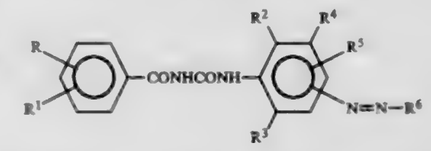
4,800,195

SUBSTITUTED AZO N-PHENYL-N'BENZOYLUREAS AND THEIR USE AS INSECTICIDES AND ACARICIDES

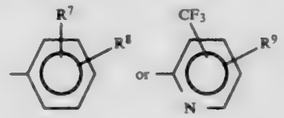
Michael J. Burgess, King's Lynn, England; Robert A. Sewell, MZ Axel, Netherlands, and David P. Clifford, King's Lynn,, England, assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1983, Ser. No. 541,768
Claims priority, application United Kingdom, Oct. 19, 1982, 8229874
Int. Cl.[4] C07C *127/22;* **A01N** *47/34*
U.S. Cl. 514—150 **5 Claims**

1. A N-phenyl-N'-benzoylurea of the general formula

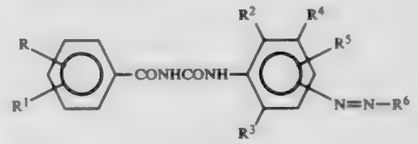


wherein R and R^1 are each independently a hydrogen or halogen atom, a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group; R^2 and R^3 are each independently a hydrogen or halogen atom or a C_1–C_4 alkyl group; R^4 and R^5 are each independently a hydrogen or halogen atom, or a C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_2–C_4 alkenyloxy, C_2–C_4 haloalkenyloxy or a C_2–C_4 alkynyl group; R^6 is

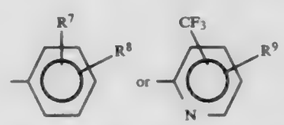


wherein R^7 and R^8 are each independently a hydrogen or halogen atom, or a nitro, C_1–C_4 alkyl, C_1–C_4 haloalkyl or cyano group and R^9 is a halogen atom or a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group.

3. A pesticidal composition which comprises as an active ingredient a compound



wherein R and R^1 are each independently a hydrogen or halogen atom, a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group; R^2 and R^3 are each independently a hydrogen or halogen atom or a C_1–C_4 alkyl group; R^4 and R^5 are each independently a hydrogen or halogen atom, or a C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_2–C_4 alkenyloxy, C_2–C_4 haloalkenyloxy or a C_2–C_4 alkynyl group; R^6 is



wherein R^7 and R^8 are each independently a hydrogen or halogen atom, or a nitro, C_1–C_4 alkyl, C_1–C_4 haloalkyl or

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cyano group and R^9 is a halogen atom or a C_1–C_4 alkyl or a C_1–C_4 haloalkyl group in intimate admixture with an inert diluent or carrier.

4,800,196

PHENYL SALICYLATE AND BENZYL SALICYLATE AS ACARICIDAL AGENTS

Yoshiharu Nomura; Shigemasa Aoki, and Akira Nishimura, all of Ako, Japan, assignors to Earth Chemical Co., Ltd., Hyogo, Japan

PCT No. PCT/JP85/00675, § 371 Date Mar. 27, 1987, § 102(e) Date Mar. 27, 1987, PCT Pub. No. WO87/00728, PCT Pub. Date Feb. 12, 1987

PCT Filed Dec. 6, 1985, Ser. No. 41,071

Claims priority, application Japan, Aug. 6, 1985, 60-173867; Aug. 6, 1985, 60-173868

Int. Cl.⁴ A01N *37/36*

U.S. Cl. 514—159 **4 Claims**

1. A method for killing mites on a material which comprises applying to said mites a composition containing a miticidal amount of phenyl salicylate or of benzyl salicylate.

4,800,197

ANTI-ACNE COMPOSITION

Alexandra Kowcz, Monroe, and Darrell G. Doughty, Derby, both of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Jul. 17, 1987, Ser. No. 74,821

Int. Cl.⁴ A61K *31/60, 31/615*

U.S. Cl. 514—162 **7 Claims**

1. A cosmetically acceptable composition for treating acne comprising:,

(a) from about 0.2 to about 5.0 weight percent of salicylic acid;

(b) from about 10 to about 60 weight percent of C_2H_5OH or C_3H_7OH;

(c) from about 30 to about 80 weight percent of water; and

(d) from about 0.2 to about 5.0 weight percent of sodium methyl cocoyl taurate or sodium methyl oleoyl taurate; the composition having a pH value of from about 2 to about 3.5.

4,800,198

METHOD OF INDUCING THE DIFFERENTIATION OF MALIGNANT CELLS WITH SECOSTEROL

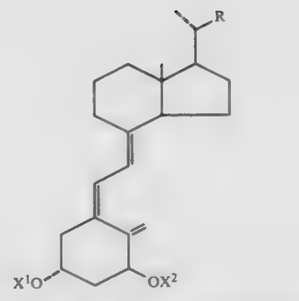
Hector F. DeLuca; Heinrich K. Schnoes, and Wan F. Lau, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 726,553, Apr. 23, 1985, abandoned. This application Apr. 30, 1987, Ser. No. 45,697

Int. Cl.⁴ A61K *31/59*

U.S. Cl. 514—167 **7 Claims**

1. A method for inducing cell differentiation in malignant cells which comprises exposing said cells to a compound having the structure



wherein R is selected from the group consisting of hydrogen, methyl, ethyl, and propyl and where X^1 and X^2 represent, independently, hydrogen or an acyl group, in an amount sufficient to induce differentiation.

4,800,199

3-[2-THIAZOLOAMINO]-8-OXO-7-SUBSTITUTED-5-THIA-1-AZABICYCLO-[4.2.0]OCT-2-ENE-2-CARBOXYLIC ACID AND SALTS THEREOF AND DIPHENYLMETHYL ESTERS THEREOF

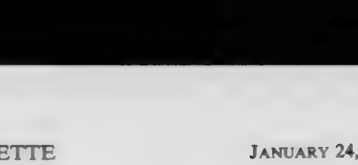
Robert Babine, Pomona, and Ving J. Lee, Monsey, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 20, 1986, Ser. No. 920,397

Int. Cl.⁴ C07D *501/16;* **A61K** *31/545*

U.S. Cl. 514—202 **20 Claims**

1. A compound selected from those of the formula:



wherein R_1 is hydrogen, alkyl(C_1–C_3), vinyl, acetyloxy or

where $R_4$is hydrogen or alkyl(C_1–C_6); $R_2$is alkyl(C_1–C_3), phenyl, carboxylic acid, (2,2,2-trichloroethoxy)carbonyl, [2-trimethylsilyl)ethoxy]carbonyl, phenylmethylamino carbonyl or ethoxycarbonyl; and R_3 is hydrogen or diphenylmethyl.

4,800,200

4,8-DIHYDRO-8-ARYLISOXAZOLO[4,3-E][1,4]-OXAZE-PIN-5(6H)-ONES

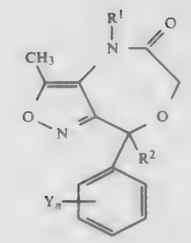
John J. Tegeler, Bridgewater, and Kirk D. Shoger, Piscataway, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Dec. 21, 1987, Ser. No. 135,763

Int. Cl.⁴ A61K *31/55;* **C07D** *498/04*

U.S. Cl. 514—211 **17 Claims**

1. A compound of the formula:



wherein R^1 is selected from the group consisting of hydrogen, loweralkyl, arylloweralkyl, aryloxyloweralkyl, cycloalkylloweralkyl, aminoloweralkyl, loweralkylaminoloweralkyl, diloweralkylamnioloweralkyl, and loweralkoxycarbonylloweralkyl; R^2 is hydrogen or loweralkyl; Y is independently loweralkyl, loweralkoxy, halogen, trifluoromethyl or nitro; and n is an integer having a value from 0 to 2 inclusive wherein aryl of both arylloweralkyl and aryloxyloweralkyl is phenyl substituted by up to 3 substituents each of which is independently loweralkyl, loweralkoxy, halogen, trifluoromethyl, nitro or cyano and cycloalkyl has 3 to 7 carbon atoms; the geometrical isomers; optical antipodes; or pharmaceutically acceptable acid addition salts thereof.

8. A method of reducing blood pressure in mammals comprising administering to a mammal requiring blood pressure reduction, a blood pressure reducing effective amount of a compound as defined in claim 1.

4,800,201

1,4-THIAZINE DERIVATIVE, AND CARDIOTONIC AGENT COMPRISING IT AS EFFECTIVE COMPONENT

Muneaki Takase; Kimitomo Yoshioka, both of Tokyo, and Hiroaki Yamazaki, Ibaragi, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP85/00548, § 371 Date Jun. 3, 1986, § 102(e) Date Jun. 3, 1986, PCT Pub. No. WO86/02074, PCT Pub. Date Apr. 10, 1986

PCT Filed Oct. 3, 1985, Ser. No. 876,860

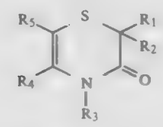
Claims priority, application Japan, Oct. 4, 1984, 59-208781; Mar. 28, 1985, 60-64679

The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.

Int. Cl.⁴ A61K *31/54;* **C07D** *279/12*

U.S. Cl. 514—230.8 **33 Claims**

23. A cardiotonic agent comprising a pharmaceutically acceptable excipient and an effective amount of a 1,4-thiazine derivative representated by the formula I or pharmaceutically acceptable acid addition salt thereof:



I

wherein

R_1 and R_2 represent respectively hydrogen atom, lower alkyl group, lower alkoxy group, unsubstituted amino group, lower alkyl-amino group, aryl-amino group, wherein the aryl-amino is one of phenyl-amino, tolyl-amino, xylyl-amino, mesityl-amino, cumenyl-amino or biphenyl-amino which may be unsubstituted or may be substituted with lower alkyl, lower alkoxy, halogeno, aldehyde, acyl, cyano, nitro or hydroxy, hydroxy group, aryl group wherein the aryl is one of phenyl, tolyl, xylyl, mesityl, cumenyl or bipheynyl which may be unsubstituted or may be substituted with lower alkyl, lower alkoxy, halogeno, aldehyde, acyl, cyano, nitro or hydroxy, or 5- or 6-membered heterocyclic residue; wherein the residue is furyl, thienyl, pyrrolyl, pyrano, pyridinyl, pyridazino, pyrimidino, piperidino, piperazino or morpholino;

R_3 and R_4 represent hydrogen atom or lower alkyl group; and

R_5 represents N-containing heterocyclic residue wherein said residue is one of pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl, quinolinyl, iso-quinolinyl, cinnolinyl, quinazolinyl, quinoxalinyl, phthalazainyl, acridinyl, thiazolyl, piperidinyl, piperazinyl or morpholinyl which may be unsubstituted or may be substituted with lower alkyl, lower alkoxy, halogeno, aldehyde, acyl, cyano, nitro, hydroxy or lower alkoxycarbonyl, and is not pyridinyl group when R_1 and R_2 represent hydrogen atom and R_3 and R_4 represent hydrogen atom or lower alkyl group.

4,800,202

AMINOMETHYLTETRAHYDROFURANS, FUNGICIDAL COMPOSITIONS AND USE

Joachim Weissmüller, Monheim; Dieter Berg, Wuppertal; Stefan Dutzmann, Duesseldorf, and Paul Reinecke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

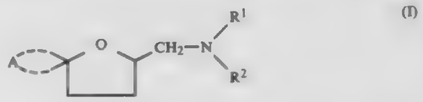
Filed Jan. 25, 1988, Ser. No. 147,416

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1987, 3703972; Sep. 11, 1987, 3730499

Int. Cl.⁴ A01N *43/08, 43/84;* **C07D** *307/94, 413/06*

U.S. Cl. 514—227 **9 Claims**

1. An aminomethyltetrahydrofuran of the formula



(I)

in which

A represents a divalent alkylene or alkenylene chain which completes a mono or bicyclic ring system which is in each case optionally substituted and

R^1 and R^2 independently of one another each represent hydrogen, alkyl, alkenyl, alkinyl, alkoxyalkyl, dialkoxyalkyl, hydroxylalkyl, hydroxyalkoxyalkyl, dioxolanylalkyl, oxolanylalkyl, or dioxanylalkyl, or represent in each case optionally substituted cycloalkylalkyl, cycloalkyl, aralkyl, aralkenyl or aryl, or

R^1 and R^2, together with the nitrogen atom to which they are bonded, represent an optionally substituted saturated heterocyclic radical, which can optionally contain further heteroatoms,

or an acid addition salt thereof.

7. A fungicidal composition comprising a fungicidally effective amount of a compound or salt according to claim 1, and a diluent.

4,800,203

PYRROLO(1,2-B)CINNOLINES

R. Russell Hamer, Far Hills; Richard C. Effland, and Joseph T. Klein, both of Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

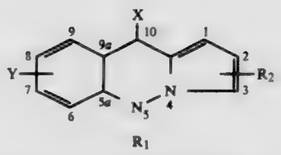
Filed Sep. 24, 1987, Ser. No. 100,700

Int. Cl.⁴ A61K *31/50;* **C07D** *487/04*

U.S. Cl. 514—248 **31 Claims**

1. A compound having the formula

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R_1

where R_1 when present is hydrogen, loweralkyl, arylloweralkyl or $—CH_2CO_2C_2H_5$; R_2 is hydrogen, loweralkyl, arylloweralkyl, chlorine, bromine, iodine, formyl, nitro $—CH=CR_3R_4$ or $—CH_2CHR_3R_4$, R_3 and R_4 being independently hydrogen, loweralkyl, aryl or arylloweralkyl; X is oxygen, amino, loweralkylamino, arylloweralkylamino or methoxy; and Y is hyrogen, fluorine, chorine, bromine, iodine, trifluoromethyl or nitro, the term aryl in each occurrence signifying a phenyl group having 0,1,2 or 3 substituents each of which being independently loweralkyl, loweralkoxy, halogen, CF_3,NO_2 or CN; or a pharmaceutically acceptable acid addition salt thereof.

4,800,204

METHOD OF CONTROLLING TOBACCO USE

Peter S. Mueller, 182 Snowden La., Princeton, N.J. 08540

Continuation of Ser. No. 47,753, May 7, 1987, abandoned. This application May 5, 1988, Ser. No. 190,428

Int. Cl.[4] A61K *31/505*

U.S. Cl. 514—267 **18 Claims**

1. A method of controlling tobacco use in a human tobacco user who desires to reduce or stop tobacco use, which comprises administering to the user a pharmaceutically acceptable direct dopamine receptor agonist in an amount effective to control tobacco use.

4,800,205

FUNGICIDAL PYRIDYL SULFENYL CARBAMATES

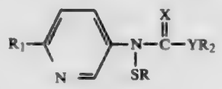
Don R. Baker, 15 Muth Dr., Orinda, Calif. 94563; Francis H. Walker, 302 Montford Ave., Mill Valley, Calif. (94941), and Keith H. Brownell, 4751 Elmhurst Dr., San Jose, Calif. 95129

Filed Oct. 29, 1987, Ser. No. 114,811

Int. Cl.[4] C07D *213/64, 213/75;* **A01N** *43/40*

U.S. Cl. 514—346 **7 Claims**

1. A compound having the structural formula



wherein

R is selected from the group consisting of C_1–C_3 haloalkyl, C_1–C_8 alkyl, phenyl, substituted phenyl wherein the substituents are selected from the group consisting of —Cl, $—NO_2$, C_1–C_4 alkanoyl, propylamino and methylbenzyl amino;

R_1 is C_1–C_3 alkoxy, C_1–C_3 haloalkoxy or halogen;

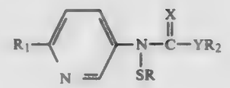
R_2 is C_1–C_3 alkyl;

X is oxygen or sulfur; and

Y is oxygen or sulfur

or fungicidally acceptable organic and inorganic salts thereof.

5. The method of controlling fungi comprising applying to the area where control is desired a fungicidally effective amount of a compound having the formula



wherein

R is selected from the group consisting of C_1–C_3 haloalkyl, C_1–C_8 alkyl, phenyl, substituted phenyl wherein the substituents are selected from the group consisting of —Cl, $—NO_2$, C_1–C_4 alkanoyl, propylamino and methylbenzyl amino;

R_1 is C_1–C_3 alkoxy, C_1–C_3 haloalkoxy or halogen;

R_2 is C_1–C_3 alkyl;

X is oxygen or sulfur; and

Y is oxygen or sulfur

or fungicidally acceptable organic and inorganic salts thereof.

4,800,206

PYRIDINE-ETHANOLAMINE DERIVATIVES

Leo Alig, Kaiseraugst, and Marcel Müller, Frenkendorf, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

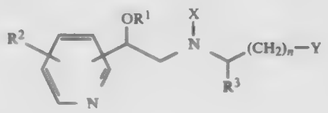
Filed Jun. 3, 1987, Ser. No. 57,150

Claims priority, application Switzerland, Jun. 27, 1986, 2608/86; Mar. 27, 1987, 1186/87

Int. Cl.[4] C07D *401/12;* **A61K** *31/44*

U.S. Cl. 514—332 **21 Claims**

1. A compound of the formula

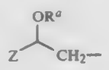


I

wherein

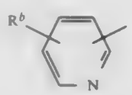
n is 1 or 2

X is a group X^a of the formula



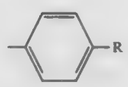
X^a

Z is a group of the formula



(Z^1)

Y is



R is lower alkyl, COR^4 or $C(R^5)$-$CHCOR^4$ or OR",

R" is hydrogen, lower-alkyl, lower-alkanoyl, $(CH_2)_{1-6}$—OH, $(CH_2)_{1-6}$—$O(CH_2)_{1-6}$—R^6 or $(CH_2)_{1-6}$—COR^4,

R^1 and R^a are hydrogen, lower-alkanoyl, benzoyl or $(CH_2)_{1-6}$—OH,

R^2 and R^b are hydrogen, Cl, Br or CF_3,

R^3 and R^5 are hydrogen or CH_3,

R^4 is hydroxy, lower-alkoxy or $N(R^7, R^8)$,

R^6 is hydrogen, Rg, OH or COR^4,

R^7 and R^8 are hydrogen or lower-alkyl,

R^g is phenyl or phenyl substituted by Cl, F or Br,

an enantiomer, diastereomer or racemate thereof or a physiologically compatible salt thereof.

4,800,207

HEXAHYDROPYRROLIZINE COMPOUNDS USEFUL AS ANALGESICS

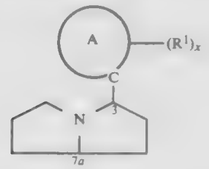
Richard J. Carmosin, Quakertown, and John R. Carson, Norristown, both of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Filed Nov. 2, 1987, Ser. No. 115,960

Int. Cl.[4] C07D *487/02;* **A61K** *31/40*

U.S. Cl. 514—413 **15 Claims**

1. A hexahydropyrrolizine of the following formula (I):



(I)

wherein

A represents the atoms necessary to form a phenyl, naphthyl, cycloalkyl of 3 to 7 carbons, cycloalkenyl of 3 to 7 carbons, thienyl, furanyl or pyrrolyl ring system as the A-C cycle shown in formula (I);

R^1 is independently cyano, halogen, alkyl of 1 to 8 carbons, alkyloxy of 1 to 8 carbons, alkylthio of 1 to 8 carbons, haloalkyl of about 1 to 8 carbons, alkenyl of 2 to 8 carbons, alkynyl of 2 to 8 carbons, cycloalkenyl of 3 to 7 carbons or such an alkyl, alkenyl or alkynyl substituted by hydroxy; and

x is the integer 0, 1, 2, or 3,

provided that when A represents a phenyl ring, x is 1, 2 or 3, or a pharmaceutically-acceptable acid-addition salt thereof.

4,800,208

(BENZOFURAN-2-YL)IMIDAZOLES HAVING PHARMACEUTICAL ACTIVITY, THEIR SALTS AND RELEVANT PRODUCTION PROCESSES

Vittorio Pestellini; Mario Ghelardoni, both of Florence; Danilo Giannotti, Lucca; Alessandro Giolitti, Florence; Adriano Barzanti, Florence; Rossella Ciappi, Florence, and Carlo Ortolani, Riccione, Forli', all of Italy, assignors to A. Menarini s.a.s., Italy

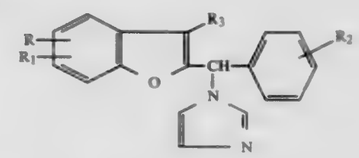
Filed Aug. 13, 1987, Ser. No. 85,067

Claims priority, application Italy, Aug. 13, 1986, 9461 A/86

Int. Cl.[4] A61K *31/34, 31/415;* **C07D** *403/06*

U.S. Cl. 514—397 **6 Claims**

6. Antifungal or antibacterial pharmaceutical composition, comprising an effective amount of at least one compound corresponding to the formula



I

wherein:

R and R_1, which may be the same or different, represent a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group having one to four carbon atoms, a nitro group, a cyano group, an amino group, or an acetamino group,

R_2 represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group having one to four carbon atoms, a phenyl group, a phenylalkyl group, a phenylalkenyl group in which the alkenyl radical has two to four carbon atoms, a nitro group, a cyano group, an amino group, or an acetamino group, and

R_3 represents a hydrogen atom, an alkyl group having one to three carbon atoms, or a cyano group, alkyl unless otherwise specified having one to four carbon atoms

or a pharmaceutically acceptable salt thereof, as active ingredient, in combination with an inert carrier, in suitable form for administration by a method selected from the group consisting of oral, parenteral and topical administration.

4,800,209

METHOD OF ALLEVIATING WITHDRAWAL SYMPTOMS

Albert Sjoerdsma, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 821,668, Jan. 23, 1986, Pat. No. 4,670,459, which is a division of Ser. No. 657,288, Oct. 3, 1984, Pat. No. 4,575,510, which is a division of Ser. No. 467,553, Feb. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 330,528, Dec. 14, 1981, Pat. No. 4,382,946. This application May 18, 1987, Ser. No. 51,885

Int. Cl.[4] A61K *31/415*

U.S. Cl. 514—401 **3 Claims**

1. A method of alleviating the adverse symptoms associated with drug-like withdrawal which comprises the administration of an anti-withdrawal effective amount of lofexidine or a pharmaceutical salt thereof to a patient suffering from pre-menstrual tension or peri-menopausal flushing.

4,800,210

Patent Not Issued For This Number

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4,800,211

5-METHYLTHIO-3-HYDROXYBENZO [B]THIOPHENE-2-CARBOXAMIDE DERIVATIVES AS CYCLOOXYGENASE AND LIPOXYGENASE INHIBITORS

Allan N. Tischler, Westfield; Philippe L. Durette, New Providence; Bruce E. Witzel, Westfield, and Thomas J. Lanza, Jr., Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 18, 1986, Ser. No. 897,576
Int. Cl.[4] A61K *31/38;* **C07D** *333/70*
U.S. Cl. 514—443 **6 Claims**

1. The compound which is N-(3-chlorophenyl)-3-hydroxy-5-methylthiobenzo [b]thiophene-2-carboxamide or a pharmaceutically acceptable salt thereof.

3. A method of treating a disease selected from the group consisting of arthritic conditions and immediate hypersensitivity reaction comprising the administration to a subject in need of such treatment a non-toxic effective amount of compound according to claim 1.

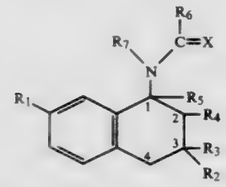
4,800,212

PYRROLIDONE-2 COMPOUNDS AND ANTI-HYPERTENSIVE USE THEREOF

John M. Evans, Roydon, and Geoffrey Stemp, Harlow, both of England, assignors to Beecham Group p.l.c., England

Filed Jun. 10, 1985, Ser. No. 742,798
Claims priority, application United Kingdom, Jun. 12, 1984, 8414987
Int. Cl.[4] C07D *207/27, 211/76;* **A61K** *31/40, 31/435*
U.S. Cl. 514—424 **8 Claims**

1. A compound of formula (I) or when the compound of formula (I) contains a salifiable group, a pharmaceutically acceptable salt thereof:



(I)

wherein:

R_1 is C_{1-6} alkylcarbonyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyloxy, C_{1-6} alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, C_{1-6} alkoxysulphinyl, C_{1-6} alkoxysulphonyl, C_{1-6} alkylcarbonylamino, C_{1-6} alkoxycarbonylamino, C_{1-6} alkylthiocarbonyl, C_{1-6} alkoxy-thiocarbonyl, C_{1-6} alkyl-thiocarbonyloxy, 1-mercapto-C_{2-7} alkyl, formyl, or aminosulphinyl, aminosulphonyl or aminocarbonyl, the amino moiety being optionally substituted by one or two C_{1-6} alkyl groups, or C_{1-6} alkylsulphinylamino, C_{1-6} alkylsulphonylamino, C_{1-6} alkoxysulphinylamino or C_{1-6} alkoxysulphonylamino, or ethylenyl terminally substituted by C_{1-6} alkyl carbonyl, nitro or cyano;

one of R_2 and R_3 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_3 and R_4 together are C_{2-5} polymethylene;

either R_4 is hydrogen, hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy and R_5 is hydrogen or R_4 and R_5 together are a bond;

R_6 and R_7 together are CH_2-$(CH_2)_n$-Z-(CH_2)m— wherein m and n are 0 to 2 such that m+n is 1 or 2 and Z is CH_2;

X is oxygen or sulphur;

the nitrogen-containing group in the 1-position being trans to the R_4 group when R_4 is hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy.

8. A method of treatment of hypertension in mammals which comprises administering to the suffering mammal an antihypertensive amount of a compound according to claim 1 or a pharmaceutically salt thereof.

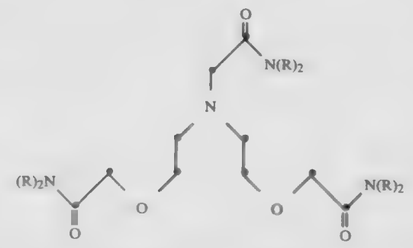
4,800,213

NOVEL DIETHANOLAMINE TRIACETIC ACID TRIAMIDES AND METHODS FOR IMPROVING FEED UTILIZATION AND LACTATION IN RUMINANT ANIMALS

Alan W. White, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1987, Ser. No. 81,064
Int. Cl.[4] A61K *31/16;* **C07C** *103/50*
U.S. Cl. 514—616 **7 Claims**

1. A method for increasing the efficiency of feed utilization by ruminant animals comprising administering to said animals an effective amount of one or more compounds having the formula:



wherein each R may be the same or different and represents a straight or branched chain alkyl group of one to six carbon atoms,

or the physiologically acceptable salts thereof.

4,800,214

OPEN CELL BODY MADE OF HARD VINYL CHLORIDE RESIN

Tatsuo Waki; Takeshi Watanabe, and Kazuo Suzuki, all of Ibaraki, Japan, assignors to Lonseal Corporation, Tokyo, Japan

Filed Oct. 13, 1987, Ser. No. 107,029
Claims priority, application Japan, Oct. 21, 1986, 61-251325
Int. Cl.[4] C08J *9/10*
U.S. Cl. 521—84.1 **50 Claims**

1. An open cell body made of hard vinyl chloride resin having a composition consisting essentially of:

(1) a vinyl chloride resin,

(2) an ultramacromolecular weight acrylic resin processing aid having a molecular weight of at least about 1,500,000,

(3) a stabilizer selected from the group consisting of a mixture of a first organic stabilizer containing a metal of the group I in the periodic table, a second organic stabilizer containing a metal of the group II in the periodic table, and a composite organic stabilizer containing a metal from group I and a metal from group II of the periodic table,

(4) a surface active agent selected from the group consisting of a mixture of an anionic surface active agent and a nonionic surface active agent, and a mixture of an anionic surface agent and a member selected from the group consisting of low polymerization degree polyolefins and waxes, and

(5) a blowing agent.

4,800,215

COMPOSITIONS PREPARED FROM DIALKANOLAMINES AND TRIGLYCIDYL ETHERS OF TRISPHENOLS

James L. Bertram, Lake Jackson; Willie L. Myles, Brazoria, both of Tex., and Michael P. Kubisiak, Hayward, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 918,421, Oct. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 515,757, Jul. 21, 1983, abandoned. This application Mar. 18, 1988, Ser. No. 170,217
Int. Cl.[4] C08L *63/00;* **C08G** *63/76, 8/28, 65/08*
U.S. Cl. 523—414 **20 Claims**

1. An uncured, water soluble or water miscible adduct prepared by reacting (1) at least one polyglycidyl ether of a tris(-hydroxyphenyl)alkane and/or an oxazolidinone modified derivative thereof with (2) at least one dialkanolamine in quantities which provide a ratio of moles of dialkanolamine to equivalents of epoxy groups of from about 0.85:1 to about 1.1:1.

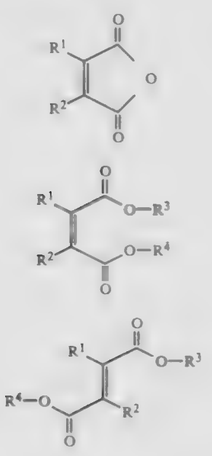
4,800,216

ABS MOLDING COMPOSITIONS OF REDUCED RESIDUAL BUTADIENE CONTENT

Herbert Eichenauer, Dormagen, and Alfred Pischtschan, Kuerten, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

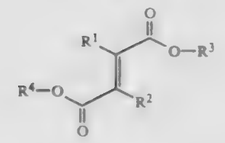
Filed Nov. 2, 1987, Ser. No. 115,387
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1986, 3638704
Int. Cl.[4] C08L *55/02*
U.S. Cl. 525—285 **5 Claims**

1. Thermoplastic molding compositions comprising 100 parts by weight of an ABS polymer and from 0.05 to 2.0 parts by weight of a compound corresponding to general formula A, B or C or mixtures thereof



A

B



C

in which

R^1 and R^2 independently of one another represent H, or C_1–C_4 alkyl,

R^3 and R^4 independently of one another represent H, C_1–C_8 alkyl, C_7–C_{10} alkaryl, C_7–C_{10} aralkyl, or phenyl,

and the ABS polymer is 5 to 100% by weight of a graft copolymer and 95 to 0% by weight of a thermoplastic copolymer resin wherein the graft copolymer is a 10 to 95% by weight of a butadiene-containing rubber having a gross transition temperature of 10° C. or less onto which is grafted 90 to 5% by weight of graft monomers which are styrene or methyl methacrylate or a mixture of from 95 to 50% by weight styrene, α-methyl styrene, nucleus-substituted styrene, methyl methacrylate or mixtures thereof and from 5 to 50% by weight acrylonitrile, methacrylonitrile, maleic acid anhydride, N-substituted maleic imides or mixtures thereof and the thermoplastic resin is a polymer of one or more monomers selected from said graft monomers or mixtures thereof.

4,800,217

PAINT DETACKIFICATION

Charles R. Kiss, Austabula, Ohio, and Shu-Jen W. Hsaug, Schaumburg, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 62,526, Jun. 12, 1987, Pat. No. 4,764,561. This application Jan. 21, 1988, Ser. No. 146,633
Int. Cl.[4] C08F *82/80;* **C08L** *31/00, 33/00, 35/00*
U.S. Cl. 525—163 **1 Claim**

1. A paint spray booth detackifying mixture comprising melamine-formaldehyde polymer and styrene acrylate polymer in a mole ratio within the range of 2:1 to 4:1 respectively wherein said molecular weight of said melamine-formaldehyde is within the range of 2,500 to 4,000 and the molecular weight of said styrene acrylate polymer is with the range of 50,000 to 100,000.

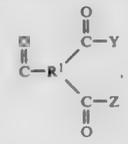
4,800,218

FUNCTIONALIZED THERMOPLASTIC POLYMERS, BLENDS PREPARED THEREFROM, AND METHODS FOR PREPARING BLENDS

Susan J. Hathaway, Schenectady, N.Y., and Robert A. Pyles, Evansville, Ind., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 939,391, Dec. 8, 1986, Pat. No. 4,732,934. This application Nov. 5, 1987, Ser. No. 117,001
Int. Cl.[4] C08L *69/00*
U.S. Cl. 525—433 **8 Claims**

1. A thermoplastic polymer having recurring carbonate units in the main chain and end groups of the formula



wherein

R^1 is a trivalent group selected from the group consisting of aliphatic chains containing about 2–20 carbon atoms and aromatic groups containing about 6–20 carbon atoms; and

Y and Z are individually selected from the group consisting of hydroxy and alkoxy groups, and when taken together are oxygen.

4,800,219

POLYLACTIDE COMPOSITIONS

Joseph R. Murdoch, Wilmington, Del., and Gary L. Loomis, Drexel Hill, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 108,531, Oct. 15, 1987, Pat. No. 4,766,182, which is a division of Ser. No. 944,588, Dec. 22, 1986, Pat. No. 4,719,246. This application Apr. 28, 1988, Ser. No. 187,350
Int. Cl.[4] C08G *63/76*
U.S. Cl. 525—413 **18 Claims**

1. A polymeric composition comprising segments of poly(R-lactide) interlocked with segments of poly(S-lactide).

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4,800,220

CROSSLINKED CARBOXYLIC COPOLYMERS USABLE AS THICKENERS IN AQUEOUS MEDIA AND PREPARATION THEREOF

Alain Ribba, Crotelles, France, assignor to Manufacture de Produits Chimiques Protex, Paris, France

PCT No. PCT/FR87/00072, § 371 Date Nov. 2, 1987, § 102(e) Date Nov. 2, 1987, PCT Pub. No. WO87/05611, PCT Pub. Date Sep. 24, 1987

PCT Filed Mar. 13, 1987, Ser. No. 124,945

Claims priority, application France, Mar. 14, 1986, 86 03655

Int. Cl.⁴ C08F *1/00, 34/02*

U.S. Cl. 526—238.23 **15 Claims**

1. Crosslinked carboxylic colpolymers obtained by copolymerizing the following monomers in the indicated proportions by weight:

(a) from 50 to 95% of at least one olefinically unsaturated carboxylic acid monomer,

(b) from 5 to 25% of at least one ester of acrylic or methacrylic acid with a polyalkylene glycol having the general formula:



in which

R is H or CH_3,

R_1 is a divalent alkylene group containing from 2 to 6 carbon atoms inclusive, and

n is an integer from 2 to 25, and

(c) from 0.1 to 5% of at least one crosslinking agent chosen from unsaturated monomers containing at least two vinyl end groups $CH_2{=}C<$; as well as the products obtained by neutralizing at least partially said copolymers with an organic or inorganic base.

4,800,221

SILICON CARBIDE PRECERAMIC POLYMERS

Ollie W. Marko, Carrollton, Ky., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 25, 1987, Ser. No. 89,119

Int. Cl.⁴ C08G *77/00*

U.S. Cl. 528—10 **26 Claims**

1. A preceramic polymer composed of



units where there are present 0 to 25 mole percent $[R_2Si]$ units and 75 to 100 mole percent $[R_2SiC{=}CSiR_2]$ units and where each R is independently selected from the group consisting of hydrogen, alkyl radicals containing 1 to 8 carbon atoms, phenyl radicals, and vinyl radicals.

4,800,222

ACCELERATOR FOR CURING EPOXY RESINS COMPRISING PIPERAZINE, TRIETHANOLAMINE AND TRIS(DIMETHYLAMINOMETHYL)PHENOL

Harold G. Waddill, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 24, 1987, Ser. No. 88,329

Int. Cl.⁴ C08G *59/62, 59/64, 59/68*

U.S. Cl. 528—94 **1 Claim**

1. A composition comprising an epoxy resin and an accelerator comprising: 50 to 60 parts by weight triethanolamine, 20 to 30 parts by weight tris(dimethylaminomethyl)phenol and the balance piperazine.

4,800,223

QUINOXALINONE DERIVATIVES AND ANALYTICAL METHOD USING SAID COMPOUNDS

Yosuke Ohkura, Fukuoka, Japan, assignor to Tosoh Corporation, Tokyo, Japan

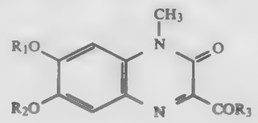
Filed Mar. 11, 1987, Ser. No. 24,420

Claims priority, application Japan, Mar. 11, 1986, 61-51488

Int. Cl.⁴ C07D *241/44*; G01N *33/52, 30/02, 21/64*

U.S. Cl. 544—354 **2 Claims**

1. A compound of the following formula:



where R_1 and R_2 are each methyl, ethyl or propyl; and R_3 is a chlorine atom or azide.

4,800,224

OPTICALLY ACTIVE STYRENE DERIVATIVES, POLYMERS OBTAINED FROM THESE, COMPLEXES WITH IRIDIUM(I) AND THEIR USE

Jürgen Kaschig, Freiburg, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

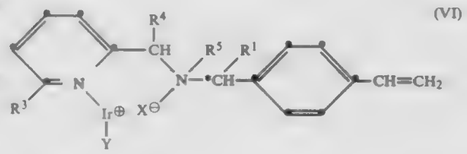
Filed May 8, 1987, Ser. No. 47,099

Claims priority, application Switzerland, May 16, 1986, 1965/86

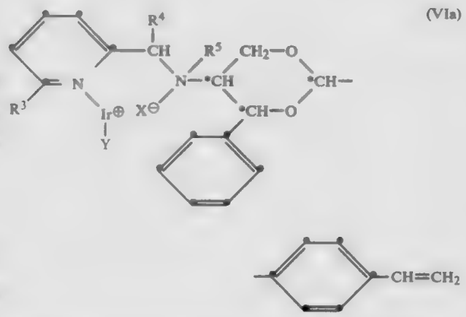
Int. Cl.⁴ C07F *15/00*; C07D *407/12, 213/89, 213/38*

U.S. Cl. 546—12 **8 Claims**

1. An iridium complex which corresponds to the formula VI or VIa



(VI)



(VIa)

in which • represents predominantly R or predominantly S configuration, R^1 is C_1–C_4-alkyl, phenyl or benzyl, R^3 is H or $-CH_3$, R^4 and R^5 are each H or together form a bond, $X^{\ominus}$ is the anion of a monobasic inorganic or organic acid and Y is an open-chain or cyclic diene having 6 to 10 C atoms, whose double bonds are separated by 1 or 2 C atoms.

4,800,225

PHARMACOLOGICALLY ACTIVE HYDRATED AZABICYCLO COMPOUND

Paul Smith, Harlow, England, assignor to Beecham Group, p.l.c., Brentford, England

Filed Mar. 20, 1987, Ser. No. 28,256

Claims priority, application United Kingdom, Mar. 22, 1986, 8607163

Int. Cl.⁴ C07D *471/08*

U.S. Cl. 546—112 **6 Claims**

1. (±)endo-4-Amino-5-chloro-2-methoxy-N-(1'-azabicyclo-[3.3.1]non-4'-yl)benzamide, hydrochloride salt hydrate.

4,800,226

PROCESS INTERMEDIATE FOR THE PREPARATION OF ENCAINIDE

John L. Dillon, Clay, and Richard H. Spector, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 833,295, Feb. 25, 1986, Pat. No. 4,675,409. This application Apr. 20, 1987, Ser. No. 39,847

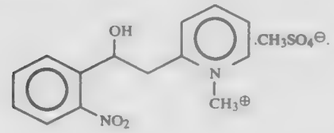
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.

Int. Cl.⁴ C07D *213/02*

U.S. Cl. 546—338 **1 Claim**

1. 1-(2-nitrophenyl)-2-[2-(1-methyl) pyridinium methyl sulfate]-ethanol (IV)

IV



4,800,227

PROCESS FOR THE PRODUCTION OF LACTAMS

Michael S. Matson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 20, 1984, Ser. No. 642,011

Int. Cl.⁴ C07D *201/08*

U.S. Cl. 548—543 **19 Claims**

1. A process for producing a lactam comprising contacting a feedstock selected from the group consisting of acid anhydrides, dicarboxylic acids, lactones, and imides, said feedstock having 4 to 6 carbon atoms in the backbone with a catalyst system comprising palladium and at least one second metal selected from the group consisting of ruthenium, rhodium and rhenium under conditions to convert at least a portion of the feedstock to the lactam.

4,800,228

4,7-DIACETOXY-2-(4-METHOXYBENZYL)-3,5,6-TRIMETHYLBENZOFURAN

Julian Adams, Westmount, and Yvan Guindon, Montreal, both of Canada, assignors to Merck Frosst Canada, Inc., Quebec, Canada

Filed Jun. 18, 1987, Ser. No. 64,269

Int. Cl.⁴ C07D *307/86*

U.S. Cl. 549—470 **1 Claim**

1. A compound which is: 4,7-diacetoxy-2-(4-methoxybenzyl)-3,5,6-trimethylbenzofuran.

4,800,229

PHOSPHATED ACRYLATES OF ALKOXYLATED ALCOHOLS

John G. Papalos, Ledgewood, N.J., assignor to Diamond Shamrock Chemical Company, Dallas, Tex.

Continuation of Ser. No. 844,978, Mar. 27, 1986, abandoned. This application Jan. 12, 1988, Ser. No. 144,701

Int. Cl.⁴ C07F *9/09*

U.S. Cl. 558—92 **8 Claims**

1. A process for preparing phosphated acrylate of condensates of alcohol and alkylene oxide having at least two hydroxyl groups comprising esterifying a condensate of one mole of at least one alcohol having at least two carbon atoms and at least two hydroxyl groups with from about one to about ten moles of at least one alkylene oxide having from two to four carbon atoms per hydroxyl group of said alcohol,

A. with sufficient phosphorus oxychloride to partially esterify at about 20 deg. C. to about 150 deg. C. at least 20% to about 80% of hydroxyl groups of said condensate and then at least one ultraviolet or electron beam curable anionic vinyl monomer sufficient to esterify at about 60 deg. C. to about 180 deg. C. the balance of said hydroxyl groups, or

B. with at least one ultraviolet or electron beam curable anionic vinyl monomer sufficient to partially esterify at about 60 deg. C. to about 180 deg. C. at least about 20% to about 80% of hydroxyl groups of

said condensate and then sufficient phosphorus oxychloride to esterify at about 20 deg. C. to about 150 deg. C. the balance of said hydroxyl groups.

4,800,230

PREPARATION OF ALPHA-CYANO-PHENOXYBENZYL ESTERS

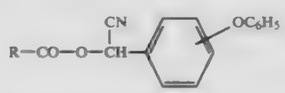
Jerry M. Roper, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 30, 1986, Ser. No. 880,039

Int. Cl.⁴ C07C *61/04, 121/52*

U.S. Cl. 558—388 **7 Claims**

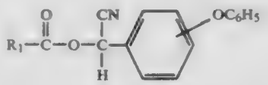
1. A process for the preparation of an alpha-cyano-phenoxybenzyl ester of the formula:



in which an acid halide of the formula:



in which R is an optionally substituted cyclopropyl group or an optionally substituted benzyl group and X is fluorine, chlorine or bromine is reacted with an ester of an alpha-cyano-phenoxybenzyl alcohol of the formula:



in which R_1 is a straight chain or branched chain alkyl group containing from 1 to 6 carbon atoms in the presence of an inert polar aprotic solvent and a transition metal alkoxide catalyst.

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4,800,231
KETO-DIESTERS PRODUCTION
Pen C. Wang, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Mar. 23, 1988, Ser. No. 171,999
Int. Cl.[4] C07C *67/313*
U.S. Cl. 560—176 8 Claims

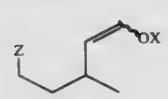
1. A process for the production of keto-diesters by reacting a lower alkyl ester of a 2-alkenoic acid and an aldehyde having two hydrogen atoms present as part of a formyl group, in the presence of a thiazolium salt and a trialkylamine, in liquid phase solution.

4,800,232
PROCESS FOR PRODUCING TRIAMINOGUANIDINE NITRATE AND THE HIGH MELTING POINT PRODUCT SO PRODUCED
Eugene F. Rothgery, North Branford, and Steven A. Manke, Wallingford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.
Filed Oct. 16, 1987, Ser. No. 109,010
Int. Cl.[4] C07C *133/10*
U.S. Cl. 564—227 3 Claims

1. A process for producing triaminoguanidine nitrate by a reaction of an aqueous mixture of cyanamide, hydrazine nitrate, and hydrazine in a molar ratio of between about 1:2:1 and about 1:4:4 to provide a product having a melting point of at least 220° C.

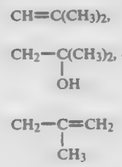
4,800,233
CYCLOALIPHATIC ALDEHYDES AND PROCESS FOR THE PREPARATION THEREOF
Dana P. Simmons, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland
Filed Aug. 3, 1987, Ser. No. 81,267
Claims priority, application Switzerland, Aug. 6, 1986, 3154/86
Int. Cl.[4] C07C *45/45*
U.S. Cl. 568—447 7 Claims

1. Process for the preparation of dihydrocyclocitral which comprises cyclising by means of an acidic cyclisation agent an enol ester of formula



(I)

wherein the wavy line stands for a C—O bond of cis or trans configuration, X represents an acyl radical or $P(O)(OR)_2$, R being a lower alkyl monovalent radical or an aryl and Z represents a monovalent radical of formula



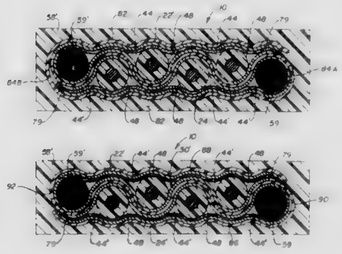
4,800,234
SYNTHESIS OF 1,1,2,2-TETRAHYDROPERFLUOROALKANOLS AND THEIR ESTERS
André Lantz, Vernaison, and Pascal Michaud, La Mulatiere, both of France, assignors to Societe ATOCHEM, Puteaux, France
Filed Dec. 4, 1987, Ser. No. 128,915
Claims priority, application France, Dec. 22, 1986, 86 17984
Int. Cl.[4] C07C *31/38*
U.S. Cl. 568—842 4 Claims

1. A process for the preparation of 1,1,2,2-tetrahydroperfluoroalkanols and their esters, comprising oxidizing a 2-(perfluoroalkyl)ethyl iodide using peroxomonosulphuric acid or peroxodisulphuric acid in a carboxylic acid or an ester of such an acid.

4,800,235
SYNERGISTIC BIOCIDE OF 1,5-PENTANEDIAL AND A MIXTURE OF N-ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE AND N-DIALKYL METHYL BENZYL AMMONIUM CHLORIDE
Thomas M. La Marre, Aurora, and Cynthia H. Martin, Plainfield, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.
Continuation-in-part of Ser. No. 770,048, Aug. 28, 1985, abandoned. This application Jun. 13, 1986, Ser. No. 873,915
Int. Cl.[4] A01N *33/12, 35/00*
U.S. Cl. 514—643 5 Claims

1. A synergistic biocidal composition useful in treating industrial process waters to prevent the growth of gram-negative bacteria and fungi which comprises from 10–90% by weight of 1,5-pentanedial and from 90–10% by weight of a mixture comprising:
(a) N-alkyl dimethyl benzyl ammonium chloride and
(b) N-dialkyl methyl benzyl ammonium chloride, wherein the ratio of (a) to (b) is within the range of 10:1 to 1:10 and the alkyl group contains between 12–20 carbon atoms in chain length.

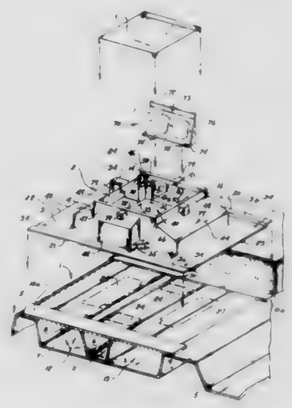
4,800,236
CABLE HAVING A CORRUGATED SEPTUM
Timothy A. Lemke, Carlisle, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 892,300, Aug. 4, 1986, abandoned. This application Jul. 8, 1987, Ser. No. 67,767
Int. Cl.[4] H01B *7/08, 13/22*
U.S. Cl. 174—36 16 Claims



1. A cable comprising:
a corrugated member having a first and a second longitudinal edge thereon and opposed surfaces thereon, each surface having an open groove formed therein, a conductive layer being disposed in each of the grooves, the conductive layers being in electrical contact with each other, the corrugated member being substantially planar in configuration,
an electrical conductor disposed in each of the grooves, each conductor having a central axis extending therethrough, the axes of the conductors lying on a common, substantially linear, locus,
the corrugated member having a first and a second flap integrally formed along each respective longitudinal edge thereof,
a first and a second substantially planar conductive member respectively disposed on each of the flaps,
the flaps being foldable to overlie a respective surface of the corrugated member thereby to dispose each conductive member into contact with its respective conductive layer to close an open groove on each surface of the corrugated member and thereby to define an enclosed tubular envelope receiving each conductor along its entire axial length,
the conductive members and the conductive layers being, in use, at a predetermined electrical potential such that each conductor in each envelope is substantially totally electromagnetically isolated along its entire axial length.

15. A method of forming a cable comprising the steps of:
(a) laying a first and a second array of conductors on opposite sides of a metallic strip, a predetermined lateral spacing being defined between the conductors in each array;
(b) compressing the conductors in each array toward the strip such that a corrugated structure is formed with the axes of the conductors lying on a substantially linear locus;
(c) folding the strip along a first fold line substantially parallel to the axes of the conductors to overlay the strip over the first array of conductors; and
(d) folding the strip along a second, spaced, fold line substantially parallel to the axes of the conductors to overlay the strip over the second array of conductors.

4,800,237
MULTI-SERVICE PRESET ACCESS UNIT FOR CELLULAR RACEWAY
Gregory L. Mohr, Mineral Wells, W. Va., assignor to Butler Manufacturing Company, Kansas City, Mo.
Filed Mar. 11, 1983, Ser. No. 474,696
Int. Cl.[4] H02G *3/18*
U.S. Cl. 174—48 12 Claims



1. A preset access unit for a floor having cellular raceway means with crests thereof being co-planar, the cellular raceway means being buried in concrete, the unit including a base extending generally horizontally and a housing extending upwardly therefrom, the base adapted to position the unit over the cellular raceway means with the housing buried in the concrete:
said base being flat and formed as a unitary stamped steel piece;
said housing being formed as a unitary die cast piece and including:
(a) a main section having a side wall connected to the base and extending upwardly and providing a hollow interior structure, the side wall terminating in a top portion forming an access opening providing access to the interior of the main section, said side wall being comprised of a pair of power walls and a pair of communication walls respectively arranged whereby the main section, in plan, is in the form of a rectangle;
(b) a pair of hollow power sections respectively connected to said pair of power walls and to said base and each having a power opening open to said interior, the power sections being disposed in positions generally opposite one another and extending outwardly from the main section with the respective power openings facing one another and each power section being dimensioned to receive a power receptacle to extend across its power opening for access from the main section;
(c) a pair of hollow communication sections respectively connected to said base and to said pair of communication walls and each having a communications opening open to said interior, the communication sections being disposed in positions generally opposite one another and between said power sections and extending outwardly from the main section with the respective communications openings facing one another and each communication section being dimensioned to store a telephone amphenol connector; and
(d) each of said hollow power sections and each of said hollow communication sections having a top wall which is angularly oriented to extend in a direction downwardly from the main section toward the base and

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the point of connection between the top wall and the side wall being substantially below the top edge of the side wall;

a pair of power apertures formed in said base respectively open to said hollow power section, portions of said power apertures respectively extending inboard of said power walls;

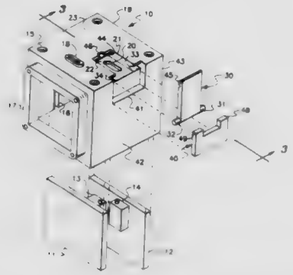
a pair of communication apertures formed in said base respectively open to said hollow communication sections, portions of said communication apertures respectively extending inboard of said communication walls; and said power and communication openings, said hollow power and communication sections, and said power and communication apertures formed in said base providing passageways to the cellular raceway means over which the unit is positioned.

4,800,238

HOUSING WITH IMPROVED ADJUSTMENT ACCESS SEALING ARRANGEMENT

George Gesvent, Rock City, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 10, 1987, Ser. No. 118,921
Int. Cl.[4] H05K *5/03*
U.S. Cl. 174—52.1 **11 Claims**



1. In a device of the type including a hollow housing having an access port through a first wall of the housing and cover means for reopenably sealing the access port, the improvement which comprises:

a cover having a laterally oriented pivot portion supported by said housing: and

a retainer, said retainer and said housing cooperatively defining a recess configured to hold the pivot portion of said cover captive when said retainer is in place, said housing and said retainer being formed of a first ultrasonically weldable material and being ultrasonically welded together, the cover being formed of a second material not susceptible of being ultrasonically welded to the first material, said housing and said cover being provided with means for releasably holding said cover in a position to seal the access port.

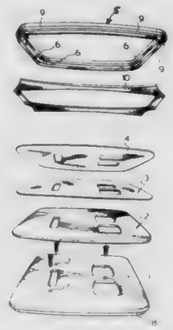
4,800,239

DECORATIVE SWITCH PLATE AND RECEPTACLE WALL PLATE

D. James Hill, Medford, N.J., assignor to Vanguard-Hill, Inc., Wilmington, Del.

Filed May 4, 1987, Ser. No. 45,461
Int. Cl.[4] H02G *3/14*
U.S. Cl. 174—66 **7 Claims**

1. A wallpaper assembly for mounting on electrical switch assemblies and receptacle assemblies comprising a baseplate with means for attachment to an electric switch assembly or receptacle assembly, said baseplate having a continuous recess around its rear surface perimeter forming a lip or flange at its front surface perimeter with openings for electrical switch lever or levers and/or outlet or outlets, decorated decor plate and transparent shield of the same size and shape as the baseplate but with no visible means for direct attachment to the



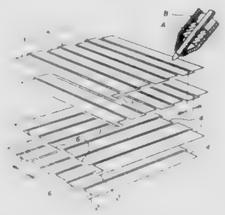
electrical switch or receptacle, and a decorative trim frame with means operative to enclose and surround the baseplate flange and perimeter edges of the decorative and protective plates.

4,800,240

DEVICE FOR DETECTING THE DISPLACEMENT OF A WRITING IMPLEMENT

Louis Béchet, Douvaine, France, assignor to Battelle Memorial Institute, Switzerland

PCT No. PCT/CH86/00127, § 371 Date May 7, 1987, § 102(e) Date May 7, 1987, PCT Pub. No. WO87/01842, PCT Pub. Date Mar. 26, 1987
PCT Filed Sep. 9, 1986, Ser. No. 57,059
Claims priority, application Switzerland, Sep. 11, 1985, 3925/85
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 **3 Claims**



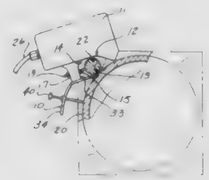
1. A device for detecting the displacement of a writing implement from a proximity threshold determined relative to a writing surface, this instrument having close to its writing tip a permanent magnet of which the magnetisation is orientated so as to be generally parallel to the longitudinal axis of the said instrument and symmetrically about this axis, the device comprising, subjacent to the writing surface, at least two electric conductors in series extending parallel to the writing plane, characterised in that each of the conductors forms a series of extended parallel loops open alternately at their opposite ends, the major axes of the loops of one conductor being perpendicular to the major axes of the loops of the other conductor, the width of the loops being selected so as to be substantially equal to the diameter of the flux of the said permanent magnet when the said writing implement is, at the most, a given distance from the said writing surface, so that the displacement of this instrument induces at the terminals of these conductors periodic voltage variations which are greater than a given threshold, a detector of the said threshold being designed to emit a command signal as soon as the periodic voltage exceeds this threshold.

4,800,241

PROXIMITY SWITCH MOUNTING PLATE

James A. McNamara, Willowdale, Canada, assignor to Allied Automation Systems, Inc., Detroit, Mich.

Filed Nov. 16, 1987, Ser. No. 121,333
Int. Cl.[4] H01H *35/38*
U.S. Cl. 200—82 E **4 Claims**



1. A mounting plate mounted to a proximity switch which senses the position of a piston within a fluid operated, expansible chamber cylinder, said proximity switch being provided with a retaining channel formed on a side thereof and engaged with a tie-rod extending between heads secured to each end of the cylinder and a plurality of externally threaded first fastening devices engageable with a plurality of threaded bores formed therein and extending through the rear adjusting surface of the retaining channel, wherein the proximity switch is positioned with respect to the cylinder by engaging the fastening devices with the tie-rod in the channel, the mounting plate comprising:

a flat portion having two tabs formed adjacent opposite edges thereof, said tabs abutting the end of the rear adjusting surface of the retaining channel;

an arcuate portion adjoining the flat portion having means forming an aperture therein;

a second fastening device threaded through the aperture, wherein the acruate portion is aligned coaxially with respect to and spaced apart from the surface of the cylinder and the proximity switch is positioned with respect to the cylinder by engagement of the tie-rod in the channel, the second fastening device abuts the surface of the cylinder thereby preventing dislodgement of the proximity switch with respect to the cylinder.

4,800,242

SPRING-POWERED DRIVE ASSEMBLY FOR OPENING AND CLOSING A SWITCH

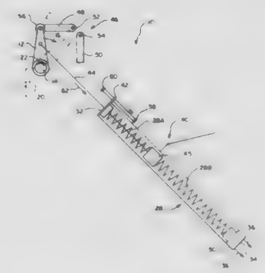
Simon Yin, Fremont, Calif., assignor to Square D Research, Palatine, Ill.

Filed Sep. 10, 1987, Ser. No. 95,417
Int. Cl.[4] H01H *5/06*
U.S. Cl. 200—400 RS **11 Claims**

1. A spring-powered drive assembly for opening and closing a switch such as one forming part of a high voltage switch gear apparatus, said drive assembly comprising:

(a) first means adapted for connection with said switch and movable from a first position to a second position in response to a certain minimum force applied to said first means in one direction, whereby to open said switch, and from said second position to said first position in response to a certain minimum force applied to said first means in an opposite direction, whereby to close said switch; and

(b) second means for moving said first means between said first and second positions for opening and closing said switch, said second means including a single straight coil spring for applying said minimum force to said first means in both of said directions, whereby the same single coil is used to open and close said switch, said second means including spring activating means for first charging said spring by placing it in a way which places certain sections of the spring partially in compression and partially in tension and thereafter simultaneously discharges said



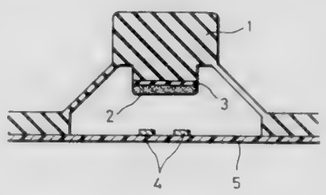
charged spring sections in one predetermined way in order to apply said minimum force to said first means in said one direction and thereby open said switch and in a second predetermined way in order to apply said minimum force to said first means in said opposite direction and thereby close said switch.

4,800,243

CONTACTOR RUBBER

Yasuhisa Osawa, Kawaguchi, and Yasuko Kimura, Tokyo, both of Japan, assignors to Fuji Rubber Co. Limited, Japan

PCT No. PCT/JP86/00419, § 371 Date May 8, 1987, § 102(e) Date May 8, 1987, PCT Pub. No. WO87/01235, PCT Pub. Date Feb. 26, 1987
PCT Filed Aug. 14, 1986, Ser. No. 43,560
Int. Cl.[4] H01H *1/02*
U.S. Cl. 200—514 **4 Claims**



1. A rubber structure contact connector, comprising a support having an electrical contact, an insulating rubber portion overlying said contact on said support and having a raised dome-shaped resilient compressible portion with an interior face and an opposite exterior face, said opposite exterior face being formed as a key, said interior face of said compressible portion having an oil-resistant layer thereon, and a conductive portion overlying said oil-resistant layer aligned over said electrical contact.

VOL 1098 ISS 4 JA 24 1989 UMI

4,800,244

PRESSURE SWITCH

Masaru Suzuki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Division of Ser. No. 662,890, Oct. 19, 1984. This application Oct. 4, 1985, Ser. No. 784,468

Claims priority, application Japan, Oct. 21, 1983, 58-197965; Oct. 24, 1983, 58-164188[U]; Oct. 24, 1983, 58-164189[U]

Int. Cl.[4] H01H *9/02, 9/04*

U.S. Cl. 200—306 **3 Claims**



1. A switch cover for a switch body having a lead wire extending outside of the switch from a connection terminal portion comprising:

a molded cover body of a macro-molecular material deformably resistant in response to temperature and pressure changes outside of the switch, said cover body being provided on the switch to cover the connection terminal portion of the switch body, said cover body having a lead-out portion for allowing the switch lead wire to pass therethrough;

a vent hole formed in said cover body to cause the inside of said cover body to communicate with the outside;

a thin, flexible film disposed to cover said vent hole, said film having characteristics of gas permeability and waterproofness, said film having opposed surfaces; and

means for integrating said film with said molded cover body when said cover body is molded,

and two rigid holders supporting said film, each rigid holder extending over said vent hole to support one of said opposed film surfaces.

4,800,245

KEY MODULE FOR KEY-ACTUATED MEMBRANE SWITCH PANELS

Gunter Murmann, Pegaitz, and Walter H. Mertel, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Cherry-Mikroschalter GmbH, Auerbach, Fed. Rep. of Germany

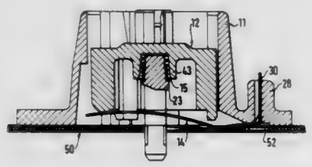
PCT No. PCT/EP86/00453, § 371 Date Mar. 9, 1987, § 102(e) Date Mar. 9, 1987, PCT Pub. No. WO87/01236, PCT Pub. Date Feb. 26, 1987

PCT Filed Jul. 31, 1986, Ser. No. 23,119

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1985, 3530050

Int. Cl.[4] H01H *13/70*

U.S. Cl. 200—345 **27 Claims**



1. A key module adapted for use with a key-actuated membrane switch panel, said module comprising:

(a) a key housing comprising a base portion and a body portion;

(b) a plunger slidably disposed within said key housing; and

(c) spring means secured within said base portion of said key housing, said spring means comprising a substantially flat spring which includes an upwardly bent portion and a substantially flat portion;

wherein said base portion includes a vertical shoulder, said shoulder comprising a vertically extending slot for accommodating said upwardly bent portion of said spring therein, said slot having an open top end so as to comprise means for receiving a tool for adjusting said spring.

4,800,246

DEVICE FOR PROTECTING THE TURNTABLE SHAFT OF MICROWAVE OVENS FROM THE CONCENTRATION OF MICROWAVES

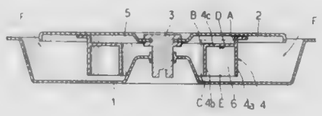
Eon H. Lee, and Seok W. Chin, both of Busan, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 28, 1987, Ser. No. 113,476

Claims priority, application Rep. of Korea, Oct. 28, 1986, 9049/1986

Int. Cl.[4] H05B *6/78*

U.S. Cl. 219—10.55 F **7 Claims**



1. In a microwave oven having a heating chamber, a base plate and a turntable mounted on a turntable shaft, the turntable shaft being rotatably mounted on the baseplate and being constructed of a resinous material, a device for protecting the turntable shaft comprising:

protection means connected to the turntable, for preventing microwaves from concentrating around the turntable shaft;

said protection means including,

a choke cavity having a first inlet, said first inlet having a minimum impedance, with respect to the microwaves, thereby reflecting the microwaves at said first inlet, and

a supplemental cavity having a second inlet, said second inlet having a maximum impedance with respect to the microwaves, thereby absorbing the microwaves at said second inlet.

4,800,247

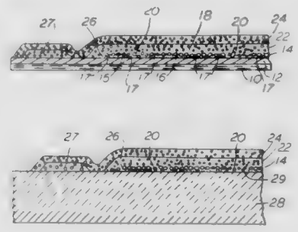
MICROWAVE HEATING UTENSIL

Marvin Schneider, Bryn Mawr, Pa.; Louis A. Blanco, Tuckahoe, and Salvatore A. Milo, Yonkers, both of N.Y., assignors to Commercial Decal, Inc., Mount Vernon, N.Y.

Continuation-in-part of Ser. No. 826,087, Feb. 4, 1986. This application Apr. 3, 1987, Ser. No. 34,496

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 E **33 Claims**



1. A microwave heating utensil comprising a substantially microwave-transparent body and a particulate susceptor material fixed to said body, said susceptor material comprising zinc and one or more zinc antioxidant metals.

4,800,248

ELECTRICAL DISCHARGE MACHINING APPARATUS WITH DISCHARGE CURRENT CONTROL

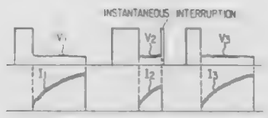
Shoji Futamura, Kawasaki, and Masaki Kurihara, Tokyo, both of Japan, assignors to Institute of Technology Precision Electrical Discharge Works, Japan

Filed Dec. 21, 1987, Ser. No. 137,502

Claims priority, application Japan, Dec. 22, 1986, 61-305935

Int. Cl.[4] B23H *1/02*

U.S. Cl. 219—69 S **7 Claims**



1. A discharge machining apparatus having a discharge current control means for controlling a discharge current flowing between an electrode and a workpiece as a result of the application of a d-c voltage, a discharge current value setting means for setting the value of said discharge current, and a discharge current pulse width setting means for setting the pulse width of said discharge current, in which said discharge current control means carries out discharge machining by controlling said discharge current in accordance with a discharge current value set by said discharge current value setting means and a discharge current pulse width set by said discharge current pulse width setting means; characterized in that an abnormal mode detecting means for detecting an electrical shortcircuiting between said electrode and said workpiece and an instantaneous interruption of said discharge current taking place during an ON duration of said discharge current pulse, and a forced cut-off means for cutting off the supply of said discharge current for a predetermined period of time immediately after said abnormal mode detecting means detects the occurrence of said electrical shortcircuiting or said instantaneous interruption are provided; said discharge current value setting means being adapted to set a discharge current value which is gradually increased with the lapse of said discharge current pulse ON duration.

4,800,249

AUTOMATIC SYSTEM FOR ASSEMBLY AND WELDING METAL SHEET BODIES, PARTICULARLY CAR BODIES, SUITABLE FOR HIGH MASS PRODUCTION

Gaetano Di Rosa, Pino Torinese, Italy, assignor to Fata European Group S.p.A., Pianezza, Italy

Continuation of Ser. No. 750,992, Jul. 2, 1985, abandoned, which is a continuation of Ser. No. 716,032, Mar. 26, 1985, abandoned. This application Aug. 13, 1987, Ser. No. 86,214

Claims priority, application Italy, Mar. 26, 1984, 20226 A/84

Int. Cl.[4] B23K *37/02*

U.S. Cl. 219—79 **8 Claims**

1. An automatic system for the production of sheet metal bodies, comprising:

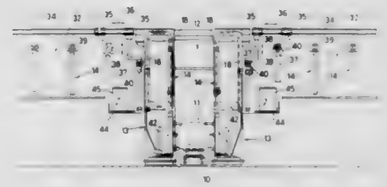
means defining a single body-processing station for receiving a plurality of bodies to be welded;

a pair of stores vertically elevated above and positioned on opposing sides of said single body-processing station;

a plurality of forming-welding assemblies contained in said stores, said forming-welding assemblies having welding and auxiliary equipment including as many welding machines as there are welds to be made on one of said bodies, whereby a plurality of welds may be performed on each of said bodies simultaneously;

conveying means for moving said forming-welding assemblies around in said stores and for raising and lowering respective pairs of said forming-welding assemblies between said pair of stores and said single body-processing station;

positioning means, provided at said single body-processing station, for positioning each pair of said forming-welding assemblies in a proper operative position alongside one of



said bodies to be produced at said single body-processing station; and

means for providing electrical, hydraulic and pneumatic connections to said forming-welding assemblies for operating said welding and auxiliary equipment thereon when said forming-welding assemblies are respectively at said operative position.

4,800,250

METHODS AND APPARATUS FOR MANUFACTURING TUBES

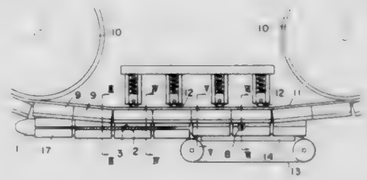
Michio Watanabe, Yokohama; Kazuhisa Ishibashi, Tokyo; Kenji Matsuno, and Hideo Kurashima, both of Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 22, 1987, Ser. No. 64,548

Claims priority, application Japan, Jun. 23, 1986, 61-146734

Int. Cl.[4] B23K *26/00*

U.S. Cl. 219—121.63 **5 Claims**



1. A method of producing tubes, comprising the steps of feeding rectangular sheet material around a cylindrical mandrel; advancing said sheet material along an axis of said mandrel, said sheet material being pressed against said mandrel by a tube holder which moves substantially in concert with said sheet material; letting said tube holder hold said sheet material with a first edge of two opposite edges of the sheet material being in intimate contact with a basis plane of a mandrel holder, said basis plane being parallel to the axis of said mandrel; advancing said tube holder along the axis of said mandrel with said sheet material passed through a terminal point of said basis plane of said mandrel holder; guiding said tube holder with a horizontal plane of said mandrel holder, said plane being operative to prevent said tube holder from moving about the circumference of said mandrel; sliding the second edge of said sheet material along a face of a slide plane until said two opposite edges are in abutting edge-to-edge relationship with one another; passing said abutting edges through a predetermined position of a joining apparatus; and joining said abutting edges.

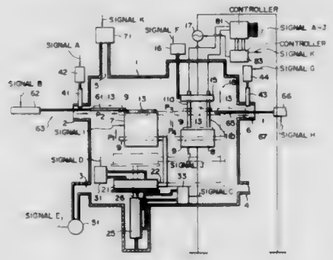
VOL 1098 ISS 4 JA 24 1989 UMI

4,800,251

APPARATUS FOR FORMING A RESIST PATTERN

Yasuo Matsuoka, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 11, 1986, Ser. No. 884,640
Claims priority, application Japan, Jul. 16, 1985, 60-156510
Int. Cl.[4] B23K *9/00*; B44C *1/22*
U.S. Cl. 219—121.43 **10 Claims**



1. A resist pattern-forming apparatus which bakes a substrate on which a predetermined resist pattern has been developed and descums said substrate, comprising:

a vacuum chamber operable to be mechanically evacuated;

baking means set in said vacuum chamber to bake said substrate;

temperature holding means provided in said vacuum chamber to maintain the baked substrate at a predetermined temperature;

transport means for carrying said substrate from said baking means to said temperature holding means;

descumming means for descumming a surface of said substrate while said temperature holding means maintains said surface at the predetermined temperature level;

means for detecting the temperature of the substrate placed on said temperature-holding means; and

means for operating said descumming means for a predetermined length of time at times when said detecting means detects the predetermined temperature level.

4,800,252

APPARATUS FOR HEATING LIQUID MEDIA BY INFRARED IRRADIATION

Fritz Steixner, Stuttgart, Fed. Rep. of Germany, assignor to Rivi Establishment, Vaduz, Liechtenstein

PCT No. PCT/EP83/00299, § 371 Date Jul. 10, 1984, § 102(e) Date Jul. 10, 1984, PCT Pub. No. WO84/01994, PCT Pub. Date May 24, 1984
PCT Filed Nov. 12, 1983, Ser. No. 829,784
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242298
Int. Cl.[4] H05B *1/00*; F24H *1/12*; C10G *7/00*
U.S. Cl. 219—306 **4 Claims**

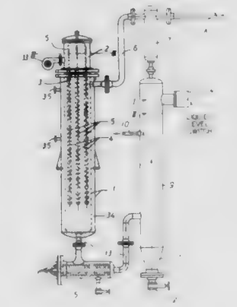
1. An apparatus for treating used oil which has at least one component tending to form deposits when in contact with heated surfaces, comprising

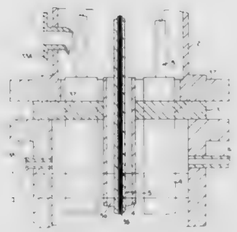
an elongated cracking vessel,

at least one ray-permeable insulating tube disposed within said vessel,

at least one wave generator centrally located within and co-linear with said at least one insulating tube, an intermediate space being provided between said at least one insulating tube and said wave generator, each of said at least one wave generator comprising a ray-permeable insulating jacket and a linear irradiating element disposed within said insulating jacket and operative to heat the oil to a temperature above about 350° C., said insulating jacket having a composition substantially the same as said at least one insulating tube, said irradiating element emitting radiant heat energy, said radiant heat energy adapted to heat the oil in order to obtain at least one fraction with a lower boiling point,

a hood attached to an end of said vessel, each of said at least one wave generator including an end extending into said hood, each of said at least one insulating tube including an





open end extending into said hood and in communication therewith, and

cooling means connected to said hood, said cooling means removing excess heat generated by said wave generator,

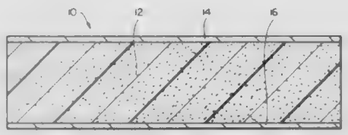
wherein the heating of said at least one insulating tube, said insulating jacket, and said vessel by heat conduction or convection is negligible, and deposits are avoided.

4,800,253

ELECTRICAL DEVICES CONTAINING CONDUCTIVE POLYMERS

Lothar Kleiner, Los Altos, and Martin Matthiesen, Fremont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 787,218, Oct. 15, 1985, Pat. No. 4,689,475. This application Aug. 25, 1987, Ser. No. 89,093
Claims priority, application European Pat. Off., Oct. 14, 1986, 0223404
Int. Cl.[4] H05B *3/10*
U.S. Cl. 219—553 **17 Claims**



1. An electrical device which comprises

(1) an element composed of a conductive polymer, and

(2) at leat one metal electrode having a microrough surface which

(i) comprises nickel,

(ii) is in direct physical contact with the conductive polymer element, and

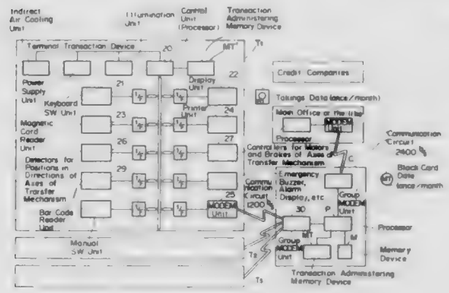
(iii) has a surface comprising at least 50 percent macronodules.

4,800,254

COMMODITY INFORMATION TRANSMISSION SYSTEM FOR ON-LINE TRANSACTION NETWORK

Shigeaki Suzuki, Komaki, and Tatsuya Nozaki, Tokyo, both of Japan, assignors to CDK Corporation and Credix Corporation, both of, Japan

Filed Sep. 26, 1986, Ser. No. 912,428
Claims priority, application Japan, Oct. 8, 1985, 60-222680
Int. Cl.[4] G06K *5/00*; G06F *15/24*
U.S. Cl. 235—380 **12 Claims**



1. In an on-line transaction network having an administration center and a plurality of terminal transaction devices;

a commodity information transmission system comprising:

a memory device (M) which is disposed in said administration center (C) and in which a plurality of commodity patterns that specify corresponding relations between custodial positions of commodities in said terminal transaction devices (T) and contents of the commodities are stored along with pattern codes affixed to the commodity patterns,

means to transmit the pattern code corresponding to the commodity pattern to said administration center (C) after the commodity has been placed in said terminal transaction device (T) in accordance with any of the commodity patterns, and

a transaction administering memory device (MT) which is disposed in said administration center (C) and in which the commodity pattern read out of said memory device (M) in response to the transmitted pattern code is stored.

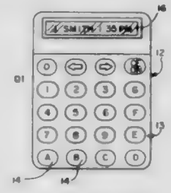
4,800,255

ELECTRONIC ACCESS CARD WITH VISUAL DISPLAY

Mir A. Imran, Palo Alto, Calif., assignor to DataTrak, Inc., Mountain View, Calif.

Filed Aug. 22, 1986, Ser. No. 899,338
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—382 **22 Claims**

1. In an electronic access card for use with a lock device, a printed circuit board, a microprocessor carried by the printed circuit board, keyboard means connected to the microprocessor for inserting information into the micrprocessor, coupling means coupled to the microprocessor and adapted to receive information from the lock device to be conveyed to the microprocessor and adapted to transmit information from the microprocessor to the lock device and visual display means coupled to the microprocessor for visually displaying information



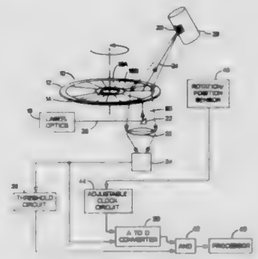
which is carried in the microprocessor and supplied to or from the lock device.

4,800,256

HALOGRAPHIC SCANNER HAVING ADJUSTABLE SAMPLING RATE

Eric C. Broockman, and Robert T. Cato, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1986, Ser. No. 938,930
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—467 **9 Claims**



1. In an optical scanner of the type having a coherent light source, a rotating holographic optical element having a plurality of facets for deflecting the coherent light beam along predetermined scan lines, said facets having the capability of focusing the coherent light beam at different focal lengths from the optical element, a photosensitive detector for detecting light reflected from an object and a sampling circuit for periodically sampling signals produced by the detector, the improvement comprising means for varying the sampling frequency as a function of the focal length of the facet currently being employed to generate a scan line.

4,800,257

OPTOELECTRONIC READING PEN

Heinz Johner, Embrach, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 11, 1987, Ser. No. 13,555
Claims priority, application Switzerland, Feb. 21, 1986, 689/86
Int. Cl.[4] G06K *13/00*
U.S. Cl. 235—472 **6 Claims**

1. Optoelectronic reading pen for scanning optically encoded information applied to an information carrier, comprising:

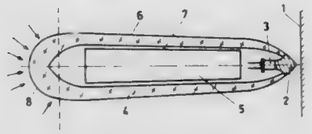
means for illuminating the information carrier; and

optoelectronic sensor means for receiving light reflected from the information carrier and converting the received light into an electric signal;

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wherein said illuminating means comprises means for collecting ambient light from the environment and applying the collected light to the information carrier, and ambient light from the environment of the reading pen is exclusively used for illuminating the information carrier;

said illuminating means comprising means for concentrating collected ambient light prior to application to the informa-



tion carrier, comprising an essentially hollow-cylindrical pen housing of an optically transparent material, into which pen housing ambient light can enter from the environment through an outside surface, wherein the ambient light entering the pen housing is conducted further towards a scanning side and is there concentrated, said pen housing comprising an optically dull rear outside surface selected as an outside surface for entry of the light.

4,800,258

INFORMATION RECORDING-REPRODUCING APPARATUS

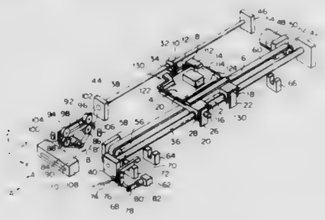
Kenichi Suzuki, and Kazuo Minoura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1986, Ser. No. 919,505

Claims priority, application Japan, Oct. 18, 1985, 60-231393

Int. Cl.[4] G06K *13/04*

U.S. Cl. 235—479 **5 Claims**



1. An information recording-reproducing apparatus comprising:

support means for supporting an information recording medium;

a head for effecting at least one of recording and reproducing of information;

means for reciprocally moving said support means relative to said head to accompliah at least one of recording and reproduction of information;

means for effecting at least one of feeding of the information recording medium onto said support means and taking out of the information recording medium from said support means; and

locking means for locking said support means in the case that the information recording medium is fed onto said support mean

4,800,259

DOCUMENT TRACK WORK STATION

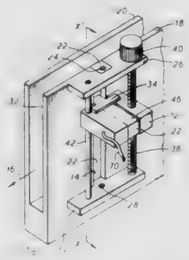
David Steele, Edinburgh, and Robert G. Bradford, Bonnybridge, both of Scotland, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 11, 1986, Ser. No. 906,065

Claims priority, application United Kingdom, Sep. 14, 1985, 8522785

Int. Cl.[4] G06K *13/06*

U.S. Cl. 235—483 **22 Claims**



1. An apparatus which selectively positions a workhead along a slot in a document track wall, comprising:

positioning means, coupled to said workhead, for moving said workhead along said slot;

a flexible strip coupled to said wall; and

strip displacing means, coupled to said workhead and responsive to movement of said workhead along said slot, and for displacing said flexible strip to occupy a portion of said slot unoccupied by said workhead.

4,800,260

PORTABLE CARD-LIKE ARTICLE

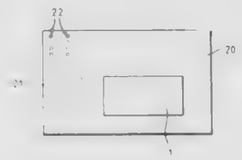
Raymon W. Simpson-Davis, Bishops Waltham, and Allan Bennett, East Meon, both of England, assignors to De La Rue Systems, Limited, England

Filed Dec. 22, 1987, Ser. No. 136,376

Claims priority, application United Kingdom, Dec. 23, 1986, 8630731

Int. Cl.[4] G06F *19/00*

U.S. Cl. 235—487 **7 Claims**



1. A portable card-like article having a force sensing assembly which comprises a support; a force responsive member pivoted to said support; biassing means for biassing said force responsive member towards a rest position; and sensing means for sensing pivotal movement of said force responsive member against said bias in response to an applied force.

4,800,261

APPARATUS FOR DETECTING FOCUSING STATE OF OBJECTIVE LENS

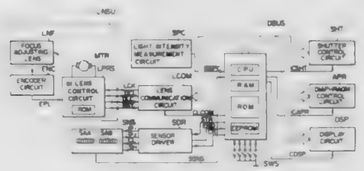
Akira Akashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 936,734

Claims priority, application Japan, Dec. 5, 1985, 60-272562

Int. Cl.[4] G01J *1/36*

U.S. Cl. 250—204 **5 Claims**



1. An apparatus for detecting a focusing state of an objective lens comprising:

optical means for receiving light fluxes transmitted through an objective lens and forming light intensity distributions based on an object whose relative position varies with a focusing state of the objective lens,

sense means having a plurality of photo-sensors for sensing the light intensity distributions to produce first and second signals for the respective light intensity distributions; and

processing means for manipulating the first and second signals to sequentially and relatively displace the first and second signals under a first relationship to determine a first correlation amount $V_1(k)$, manipulating the first and second signals to sequentially and relatively displace the first and second signals under a second relationship to determine a second correlation amount $V_2(k)$, subtracting the second correlation amount from the first correlation amount to determine an evaluation amount V(k), calculating the evaluation amount for each relative displacement, and calculating the relative position of the light intensity distributions based on the evaluation amounts to produce a signal indicating the focusing state of the objective lens;

said processing means calculating one of the first and second correlation amounts by utilizing another correlation amount previously calculated for another relative displacement.

4,800,262

TRI-STATE OPTICAL DEVICE WITH QUANTUM WELL ABSORPTION

Anthony L. Lentine, St. Charles, Ill., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

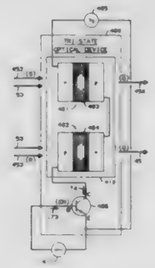
Filed Dec. 31, 1987, Ser. No. 140,198

Int. Cl.[4] H01J *40/14*; **H01L** *27/12*

U.S. Cl. 250—211 J **16 Claims**

1. An optical device comprising:

first and second means including respective first and second quantum-well regions and responsive to respective first and second light beams, said first and second light beams having respective first and second optical powers, and third means responsive to an electrical current, for electrically controlling an optical absorption of each of said first and second quantum-well regions, the optical absorption of said first quantum-well region assuming one of first and second predetermined levels and the optical absorption of the second quantum-well region assuming the other of said first and second predetermined levels when at least one of a first ratio of said electrical current to said first optical power and a second ratio of said electrical current to said second optical power exceeds a first predetermined amount, the optical absorption of both of said first and second quantum-well regions assuming the greater of said first and second predetermined levels when both of said



first and second ratios are less than a second predetermined amount.

4,800,263

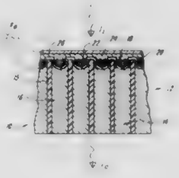
COMPLETELY CROSS-TALK FREE HIGH SPATIAL RESOLUTION 2D BISTABLE LIGHT MODULATION

Robert F. Dillon, Stoneham, and Cardinal Warde, Newtonville, both of Mass., assignors to Optron Systems, Inc., Waltham, Mass.

Division of Ser. No. 15,055, Feb. 7, 1967. This application Feb. 25, 1988, Ser. No. 160,185

Int. Cl.[4] H01J *40/14*

U.S. Cl. 250—213 R **5 Claims**



1. A completely cross talk free voltage driven high spatial resolution two-dimensional light modulator, comprising:

a high spatial resolution two-dimensional array of longitudinally extending optical fibers having ends constituting a fiber optic face plate defining longitudinally spaced two-dimensional input and output end faces, the optical fibers of the two-dimensional array of optical fibers each including an opaque cladding surrounding a light transmisive core, the ends of said optical fibers terminating along said two-dimensional input end face having a well therein, such that the opaque cladding of the several optical fibers optically isolates the several wells provided in the ends of the optical fibers from laterally adjacent wells and the several cores optically couple the associated wells with corresponding ends of the optical fibers terminating along the output two-dimensional end face;

a plurality of bistable light modulating elements individually constituted by a photoconductor layer and a phosphor layer that are in intimate mechanical contact and electrical interconnection, each of said bistable light modulating elements being associated with a corresponding one of said wells and in such a way that the phosphor layer is wholely received within the associated well and the photoconductor layer is disposed on the phosphor layer; and

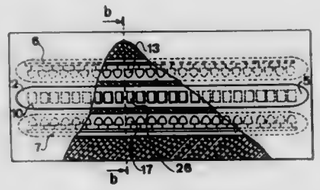
means for applying a voltage in parallel across the plural bistable light modulating elements.

4,800,264

MANUALLY CONTROLLED STATIC SWITCH

Daniel Viniera, Villefranche de L., France, assignor to VCL Audio, Vezenobres, France

Continuation of Ser. No. 842,657, Mar. 21, 1986, abandoned. This application Dec. 7, 1987, Ser. No. 129,899
Claims priority, application France, Apr. 1, 1985, 85 05489
Int. Cl.[4] H03K *17/94, 17/969*
U.S. Cl. 250—221 **6 Claims**



1. A manually controlled static switch comprising a body which has at least one oblong slot with a base wall, said slot being bordered on either side by first and second oblong recesses, so that said slot has at least two walls transparent to electromagnetic radiation, positioned laterally of the base wall and substantially parallel to one another, the body being constituted by a plate defined by two substantially parallel faces, said slot issuing by one opening onto a first face and the two recesses issuing by an opening onto the second face, a plurality of juxtaposed electromagnetic radiation beam emitters for emitting a first electromagnetic radiation located in the same first recess, a plurality of juxtaposed receivers located in the same second recess, the two recesses and the slot being located on substantially parallel axes, whereby with each emitter is associated a sensitive receiver, said receiver being able to emit an output signal having at least two different levels as a function of whether the receiver does or does not receive said beam when said beam is interrupted, wherein said base wall is made from a transparent material and said switch also comprises a plurality of juxtaposed light sources of a second electromagnetic radiation in the visible range positioned behind the base wall of said slot respectively corresponding to the emitters and receivers and oriented so as to illuminate the interior of said slot through said base wall and means connected to the outputs of the receivers for controlling each of said sources as a function of the level of said output signal of the sensitive receiver corresponding to this source; said body being made from a material transparent to the first electromagnetic radiation.

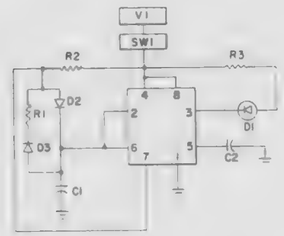
4,800,265

OPTICAL FIBER CONTINUITY TESTING WITH PULSATING OPTICAL TEST SIGNAL

Robert L. Marzart; Robert K. Southard, both of Harrisburg, and William J. Stape, Lewisberry, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 21, 1986, Ser. No. 842,613
Int. Cl.[4] G01N *21/00*
U.S. Cl. 250—227 **2 Claims**

1. A method for testing the continuity of an optical fiber transmission system comprising the steps of:
- generating an optical test signal pulsating at a preselected repetition rate from a transmitter coupled to a first optical fiber end of the transmission system,
- propagating the test signal from said first optical fiber end through at least one optical discontinuity of said transmission system to a second optical fiber end of said transmission system located remotely from said first end,
- sampling said propagated test signal at said second fiber end using a receiver and producing a signal by an indicator of the receiver indicating the intensity of the sampled test signal,
- adjusting said discontinuity to cause a variation in the intensity of said optical test signal transmitted through said discontinuity, and



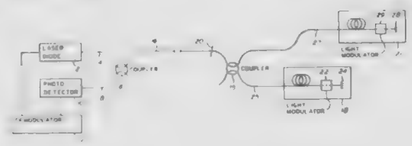
producing a signal by said indicator of said receiver indicating said variation in the intensity of said test signal.

4,800,266

FIBER OPTIC SENSOR WITH LIGHT SAMPLING FOR REFERENCING

Thomas J. Poorman, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Sep. 3, 1987, Ser. No. 93,301
Int. Cl.[4] H01J *5/16*
U.S. Cl. 250—227 **8 Claims**



1. An apparatus for sensing a parameter modulating an optical fiber sensor comprising:
- an optical energy modulator;
- an optical energy source;
- an optical path for conveying the optical energy from said optical energy source to said optical energy modulator;
- a first optical reflector positioned in said optical path between said source and said optical energy modulator for reflecting a portion of the optical energy reaching said first optical reflector;
- a second optical reflector on the opposite side of said optical energy modulator from said first reflector for reflecting optical energy reaching said second reflector;
- detection means responsive to the magnitude of the reflected energy from the first reflector and the second reflector for comparing the magnitude of the reflected energy from said first reflector and said second reflector for determining the modulating parameter; and
- a second optical path for conveying said optical energy reflected from said partial reflector and from said second reflector to said detection means.

4,800,267

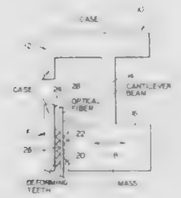
OPTICAL FIBER MICROBEND HORIZONTAL ACCELEROMETER

James B. Freal; Clarence J. Zarobila, and Charles M. Davis, all of 360 Herndon Pkwy., Ste. 1200, Herndon, Va. 22070

Filed Jul. 6, 1987, Ser. No. 70,175
Int. Cl.[4] H01J *5/16, 40/14*
U.S. Cl. 250—227 **14 Claims**

1. A fiber optic microbend accelerometer comprising a rigid housing, a beam connected at one end to the housing, and a mass connected at the other end of the beam, the connected

mass being free to move within the housing upon application of force to the housing in a direction normal to the plane of the beam, a pair of fiber deforming teeth sets mounted in opposed relation, one to the mass and the other to the housing, and an



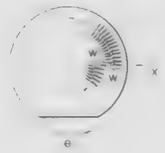
optical fiber positioned between the pair of teeth sets and in contact with the teeth, means for directing radiant energy into an input end of the fiber and means for analyzing the radiant energy at an output end of the fiber.

4,800,268

METHOD AND APPAPARATUS FOR SCANNING A LASER BEAM TO EXAMINE THE SURFACE OF SEMICONDUCTOR WAFER

Motosuke Miyoshi, Tokyo; Katsuya Okumura, and Shigeru Ogawa, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 1, 1987, Ser. No. 91,867
Claims priority, application Japan, Sep. 17, 1986, 61-218434
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—234 **5 Claims**



1. An apparatus for scanning a laser beam to examine the surface of a semiconductor wafer comprising:
- a stage onto which a semiconductor wafer is mounted;
- driving means for rotating said semicoductor wafer and for moving the semiconductor wafer by only a predetermined distance in a predetermined direction every rotation of said wafer; and
- laser beam scanning means for repeatedly rectilinearly scanning the laser beam at a swing width of a predetermined amount in a direction perpendicular to the rotational direction of the semiconductor wafer.

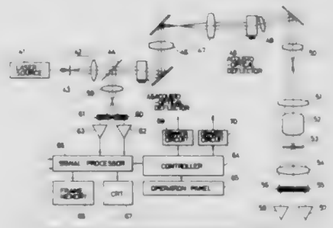
4,800,269

SCANNING TYPE OPTICAL MICROSCOPE

Yoshiaki Horikawa, Hachioaji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1987, Ser. No. 65,034
Claims priority, application Japan, Jun. 20, 1986, 61-144353
Int. Cl.[4] G01N *21/00*
U.S. Cl. 250—234 **8 Claims**

1. A scanning type optical microscope, comprising:
- a light source;
- an objective lens for collecting a light beam emitting from said light source onto an object;
- light beam scanning means disposed on an optical axis lying between said light source and said objective lens for scanning the surface of the object with a light beam;
- at least one light detecting means disposed for receiving a light from said object and separated into a first section and a second section;
- calculating means connected to said light detecting means for calculating a difference signal of output signals coming



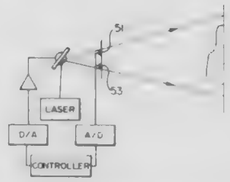
from the first section and the second section of said light detecting means; and
- adjusting means connected to said calculating means for adjusting said difference signal with a signal varying with a position where said object is irradiated by said light beam and being synchronous with the scanning of said light beam to thereby obtain a differential phase signal of the object.

4,800,270

GALVANOMETRIC OPTICAL SCANNING SYSTEM HAVING A PAIR OF CLOSELY LOCATED SYNCHRONIZATION

Francois Blais, Vanier, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Continuation-in-part of Ser. No. 65,386, Jun. 23, 1987. This application Dec. 18, 1987, Ser. No. 134,683
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—235 **8 Claims**



1. A galvanometric optical scanning system, comprising:
- a scanning mirror rotatably supported on an axis,
- mirror drive means for driving the said scanning mirror in an angularly reciprocating fashion about the said axis;
- a light source for projecting a beam of light towards the scanning mirror to scan an object with the deflected beam of light deflected from the said scanning mirror;
- galvanometric controller means for applying a drive signal to the said mirror drive means;
- at least two beam position detection means, each including a pair of closely located photodetectors positioned in an optical path of the deflected beam and comparator means for comparing output signals generated by said pairs of photodetectors, to generate synchronization pulses indicative of precise position of the deflected beam as it scans the object;
- synchronization circuit means connected to said beam position detection means for handling said synchronization

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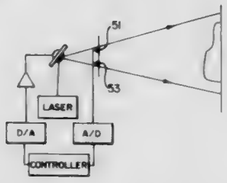
pulses and apply a correction signal to the said galvanometer controller means so that the said drive signal is compensated.

4,800,271

GALVANOMETRIC OPTICAL SCANNING SYSTEM HAVING SYNCHRONIZATION PHOTODETECTORS

Francois Blais, Vanier, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Jan. 23, 1987, Ser. No. 65,386
Int. Cl.[4] H01J 3/14
U.S. Cl. 250—235 **6 Claims**



1. A galvanometric optical scanning system, comprising:
a scanning mirror rotatably supported on an axis;
mirror drive means for driving the said scanning mirror in an angularly reciprocating fashion about the said axis;
a light source for projecting a beam of light towards the scanning mirror to scan an object with the deflected beam of light deflected from the said scanning mirror;
galvanometer controller means for applying a drive signal to the said mirror drive means;
at least two synchronization photodetector means positioned in an optical path of the deflected beam to generate synchronization pulses upon impinging of the deflected beam thereon;
synchronization circuit means connected to said synchronization photodetector means for processing said synchronization pulses to generate correction signals indicative of phase variation ϕ, offset E_{off} and gain drift E_{gain} of the drive signal, according to the following equations:

$$\phi = \frac{t_1 + t_2 + t_3 + t_4}{4} - \pi$$

$$E_{off} \simeq T_1 + T_2$$

$$E_{gain} \simeq T_1 + T_2 - 2T_{ref}$$

where t_1, t_2, t_3 and t_4 are timings of four synchronization pulses in each scan cycle and

$T_1 = t_2 - t_1$

$T_2 = t_4 - t_3$

and T_{ref} is a preset reference value; and
means for applying any or all of the said correction signals to the said galvanometer controller means so that the said drive signal is compensated.

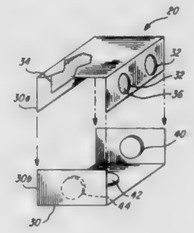
4,800,272

ENVIRONMENTAL GAMMA-RAY AND RADON DETECTOR

Naomi H. Harley, Hoboken, N.J., and Mark L. Maiello, Yonkers, N.Y., assignors to New York University, New York, N.Y.

Filed Mar. 4, 1987, Ser. No. 21,450
Int. Cl.[4] G01T 1/11
U.S. Cl. 250—253 **15 Claims**

1. A device for measuring environmental radioactivity comprising:
a housing having walls for enclosing a volume of air inside the housing, at least one wall having at least one opening therethrough for permitting radioactive gas to continuously diffuse into the volume of air; and
a first radiation detection means mounted within the housing, for generating a first signal responsive to an amount of radioactivity produced over a period of time by the radioactive gas diffused in the volume of air, the first radiation detection means further comprising at least one thermoluminescence dosimeter mounted in close proximity to an electret,
a second radiation detection means mounted within the housing, for generating a second signal responsive to an



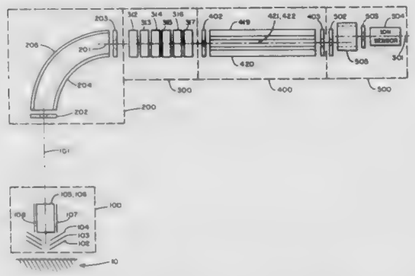
amount of environmental gamma radiation over the period of time, the second radiation detection means further comprising at least one thermoluminescence dosimeter, and
a third radiation detection means mounted within the housing, for generating a third signal indicative of an amount of fading of said second signal over the period of time, the third radiation detection means further comprising at least one thermoluminescence dosimeter having an initially predetermined third signal,
the device for measuring environmental radioactivity not having any means for actively moving the radioactive gas into the housing.

4,800,273

SECONDARY ION MASS SPECTROMETER

Bradway F. Phillips, P.O. Box 201526, Bloomington, Minn. 55420

Filed Jan. 7, 1988, Ser. No. 141,588
Int. Cl.[4] H01J 49/04
U.S. Cl. 250—288 **6 Claims**



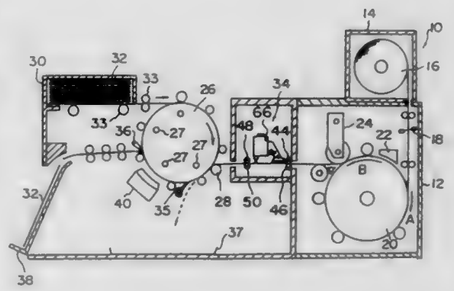
1. A secondary ion mass spectrometer system adaptable for placement in close proximity to a specimen surface, comprising
(a) an ion collection lens having three spaced-apart conical sections aligned along a first axis, including a first conical section having means for electrostatically focusing ions into a stream along said first axis, a second conical section having means for electrostatically attracting and accelerating said ions emitted from said specimen surface, and a third conical section having means for electrostatically influencing said ions for energy window matching to an entrance aperture of a quadrupole mass spectrometer;
(b) an electrostatic ion deflector positioned adjacent said ion collection lens, said deflector having four mutually orthogonal plates equally spaced about said first axis;
(c) an ion energy spectrometer having an entrance aperture aligned with said first axis, said ion energy spectrometer further comprising two 90. sectors of spherical arcuate plates having an inlet aligned with said entrance aperture and having an exit aligned with an exit aperture, said exit aperture being aligned with a second axis;
(d) an ion bunching and deceleration lens assembly positioned adjacent said exit aperture and aligned along said second axis;
(e) said quadrupole mass spectrometer having its entrance aperture and having an exit aperture respectively aligned along said second axis; and
(f) an ion detector having an entrance aperture aligned along said second axis immediately adjacent the exit aperture of said quadrupole mass spectrometer, said ion detector having means for generating electrical signals responsive to and representative of ions received through said entrance aperture.

4,800,275

HEAT-DEVELOPING AND TRANSFERRING APPARATUS

Masayuki Shimizu, and Sumio Yoshikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 3, 1987, Ser. No. 33,937
Claims priority, application Japan, Apr. 3, 1986, 61-77457; Apr. 18, 1986, 61-90372; May 22, 1986, 61-118301; May 22, 1986, 61-118298
Int. Cl.[4] G03C 5/08
U.S. Cl. 250—317.1 **20 Claims**



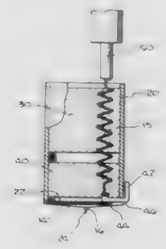
1. A heat developing and transferring apparatus for conducting a heat development of a latent image formed on an exposed heat-developable photosensitive material and for conducting transfer of the developed image from said heat-developable photosensitive material to an image receiving material in the presence of an image forming solvent, comprising:
a rotary drum on which said image receiving material and said heat-developable photosensitive material are wound in layers;
image receiving material supply means for supplying said image receiving material onto said rotary drum so as to wind said image receiving material on an outer peripheral surface of said rotary drum;
conveyor means for conveying said heat-developable photosensitive material towards said rotary drum so as to wind said heat-developable photosensitive material on said image receiving material which has been wound on said rotary drum;
application means for applying said image forming solvent to only one side of at least one of said image receiving material and said heat-developable photosensitive material;
first heating means for heating said heat-developable photosensitive material and said image receiving material on said rotary drum so as to effect at least transfer of the image;
first separation means disposed in the vicinity of the outer peripheral surface of said rotary drum for separating said heat-developable photosensitive material after the heating from said image receiving material;
drying means for drying said image receiving material remaining on the outer peripheral surface of said rotary drum after separation of said heat-developable photosensitive material; and
second separation means disposed in the vicinity of the outer peripheral surface of said rotary drum for separating the dried image receiving material from said rotary drum.

4,800,274

HIGH RESOLUTION ATOMIC FORCE MICROSCOPE

Paul K. Hansma, and Richard Sonnenfeld, both of Goleta, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Feb. 2, 1987, Ser. No. 9,682
Int. Cl.[4] G01N 23/00
U.S. Cl. 250—306 3 Claims



1. An atomic force microscope to generate topographs of the surface of a sample, comprising:
point means for contacting said sample;
wire means for suspending said point means;
electrode means, disposed adjacent to said wire means, for allowing a tunnelling current to flow between said wire means and said electrode means as said point coarsely adjusting including, in association with said tube means a boss, piezoelectric bending means, mounted to said boss, for moveably supporting said electrode means, and a coupling threadingly engaging said boss and supporting said wire means.

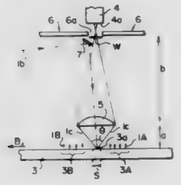
VOL 1098 ISS 4 JA 24 1989 UMI

4,800,276

RADIATION IMAGE READ-OUT APPARATUS

Masaru Noguchi, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 16, 1985, Ser. No. 766,202
Claims priority, application Japan, Aug. 17, 1984, 59-171227; Sep. 26, 1984, 59-201171
The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.
Int. Cl.[4] G01T *1/105*
U.S. Cl. 250—327.2 5 Claims



1. An apparatus for reading out a radiation image, which comprises:

(i) a main scanning means for scanning a stimulable phosphor sheet, which carries a radiation image stored therein, by stimulating rays in a main scanning direction to cause said stimulable phosphor sheet to emit light in proportion to the stored radiation energy,

(ii) a sub-scanning means for scanning said stimulable phosphor sheet in a sub-scanning direction by moving said stimulable phosphor sheet with respect to said stimulating rays in a direction approximately normal to said main scanning direction,

(iii) a light guide member provided with a light input face extending in parallel to the main scanning line in said main scanning direction so that light entering from said light input face is guided inside of said light guide member up to a light output face thereof,

(iv) a photodetector closely contacted with said light output face of said light guide member,

(v) a light shielding member positioned between the surface of said stimulable phosphor sheet and said light input face of said light guide member, and provided with an aperture extending in said main scanning direction, and

(vi) an optical system for converging the light emitted by a scanned point on said stimulable phosphor sheet solely in said sub-scanning direction by a cylindrical lens positioned above said stimulable phosphor sheet, and making the light impinge upon said light input face of said light guide member via said aperture of said light shielding member.

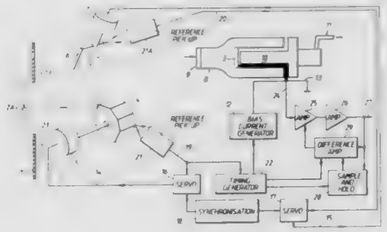
4,800,277

INFRA-RED IMAGER

Andrew de M. Fremoat, Chelmsford, United Kingdom, assignor to GEC Avionics Limited, Rochester, United Kingdom

Filed Aug. 12, 1987, Ser. No. 84,489
Claims priority, application United Kingdom, Aug. 13, 1986, 8619719
Int. Cl.[4] G02B *26/10*
U.S. Cl. 250—334 3 Claims

1. An infra-red imager comprising an infra-red sensor of a type which consumes energy, a supply of energy for the sensor, scanning means for causing the sensor to receive radiation from a direction which scans through a range of angles and switching means for switching off the supply of energy to the



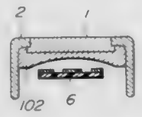
sensor whilst it is receiving radiation from selected angles within the said range.

4,800,278

PYROELECTRIC INFRARED SENSOR

Yoshiharu Taniguti; Shigeki Edano; Kazuhiko Tanaka; Shiniti Taniguti, and Megumi Kuramoto, all of Tottori, Japan, assignors to Nippon Ceramic Co., Ltd., Tottori, Japan

PCT No. PCT/JP86/00275, § 371 Date Oct. 17, 1986, § 102(e) Date Oct. 17, 1986, PCT Pub. No. WO86/07449, PCT Pub. Date Dec. 18, 1986
PCT Filed May 30, 1986, Ser. No. 928,248
Claims priority, application Japan, Jun. 6, 1985, 60-123695; Jun. 6, 1985, 60-123696; Jul. 10, 1985, 60-106009; Jul. 11, 1985, 60-153585; May 7, 1986, 61-105200; May 23, 1986, 61-119831
Int. Cl.[4] G01J *5/04, 5/08, 5/10*
U.S. Cl. 250—338.1 12 Claims



1. An infrared sensor comprising a housing enclosing an infrared sensitive element, said housing having an opening at one end and a conductive window having a peripheral edge, the window being secured to the housing and covering the opening, a conductive adhesive disposed between the peripheral edge of the window and the housing in a plurality of locations for providing a conductive path between the window and the housing for reducing contact resistance therebetween;

said infrared sensitive element including a substrate having a surface;

concentric inner and outer electrodes formed on the surface of the substrate;

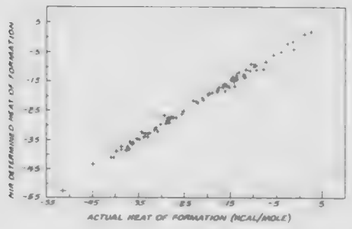
a plano-concave converging lens disposed in opposed relationship to the substrate and to the inner and outer electrodes, said lens positioned for receiving incident infrared rays passing through said window and directing the rays onto said inner and outer electrodes in a direction substantially perpendicular to the surface of said substrate.

4,800,279

METHODS AND DEVICES FOR NEAR-INFRARED EVALUATION OF PHYSICAL PROPERTIES OF SAMPLES

Gary M. Hieftje, Bloomington, Ind.; David E. Honigs, Brier, Wash., and Thomas B. Hirschfeld, Livermore, Calif., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Sep. 13, 1985, Ser. No. 776,133
Int. Cl.[4] G01J *1/00*
U.S. Cl. 250—339 23 Claims



1. A method for quantifying a physical property of a hydrocarbon sample, comprising the steps of:

(a) determining which wavelengths in the near-infrared spectrum correlate to the physical property to be quantified;

(b) determining weighting constants which are correlated to the determined wavelength;

(c) measuring the absorbance of the sample at each of the determined wavelengths; and

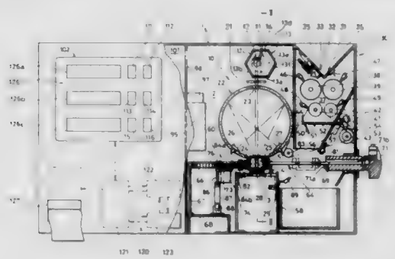
(d) calculating a reference value for the physical property from the measured absorbance of the sample as corrected by the weighting constant.

4,800,280

MEASURING APPARATUS FOR AMYLOSE AND/OR AMYLOPECTIN CONTENT IN RICE

Toshihiko Satake, Higashihiroshima, Japan, assignor to 501 Satake Engineering Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1987, Ser. No. 97,748
Claims priority, application Japan, Sep. 19, 1986, 61-222493; Dec. 27, 1986, 61-315799
The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.
Int. Cl.[4] G01J *1/00*
U.S. Cl. 250—339 18 Claims



1. An apparatus for measuring amylose and/or amylopectin content in rice, said apparatus comprising:

a sample container located at a predetermined measuring position with sample rice to be measured being contained in said sample container;

a near infrared spectrometer including a light source for applying light to said sample rice, optical means located between said light source and said sample rice for permitting passage of near infrared light beam having its wavelength within a range of from 1900 nm to 2500 nm, of the light from said light source, and luminous intensity detecting means for detecting luminous intensity of the light reflected from and/or transmitted through said sample rice to generate signals representative of the luminous intensity;

control means including memory means for storing therein content conversion coefficients set for the amylose and/or amylopectin, and calculation means for calculating the amylose and/or amylopectin content in said sample rice, based on the content conversion coefficients and said signals from said luminous intensity detecting means; and

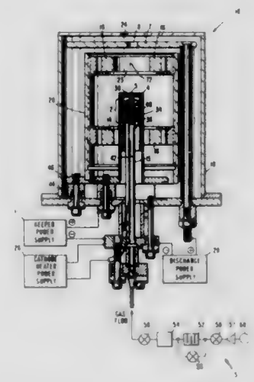
display means connected to said control means for displaying the amylose and/or amylopectin content calculated by said calculation means.

4,800,281

COMPACT PENNING-DISCHARGE PLASMA SOURCE

Weldon S. Williamson, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 653,615, Sep. 24, 1984, abandoned. This application Oct. 24, 1986, Ser. No. 922,582
Int. Cl.[4] H01J *27/00*
U.S. Cl. 250—427 16 Claims



1. A plasma source housed in an outer enclosure comprising:

a tubular cathode having a tip defining an orifice disposed inside said enclosure for thermionically emitting electrons;

electron emission means comprising foil means disposed within said cathode adjacent said orifice;

a planar anode having an exit aperture, said anode and cathode being coaxially disposed with a discharge space therebetween, said anode accelerating electrons emitted by said cathode and said emission means into said discharge space;

a first plurality of magnets disposed in a first ring configuration axially with and adjacent to said anode;

a second plurality of magnets disposed in a second ring configuration axially with and adjacent to said cathode;

said first and second ring configuration providing a strong divergent axial magnetic field having an axial maximum adjacent to the exit aperture in said anode, and having an axially minimum a short distance in front of said anode in said discharge space;

discharge power supply means for supplying a relatively high voltage to start discharge in said discharge space and for supplying a reduced voltage to maintain discharge during steady state operation;

means for supplying gas to be ionized to said discharge space

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including gas control means for supplying gas at a constant rate during steady state operation of said plasma source and at an increased rate during ignition of said source; and

heating means for initially heating and conditioning said emission means.

4,800,282

APPARATUS AND METHOD FOR DETECTING RESIDUAL ORGANIC COMPOUNDS

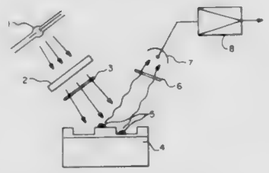
Yasunori Nishimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 823,624, Jan. 29, 1986. This application Jul. 31, 1987, Ser. No. 80,222

Claims priority, application Japan, Feb. 7, 1985, 60-23170; Mar. 22, 1985, 60-59273

Int. Cl.[4] G01M *11/00*

U.S. Cl. 250—461.1 **8 Claims**



1. An apparatus for detecing residual organic compounds on a surface comprising

scanning means for forming an ultraviolet light beam for irradiating a target surface and scanning said target surface with said ultraviolet light beam,

detecting means for detecting fluorescent light from said target surface, and outputting a detection signal in response to said detected fluorescent light,

judging means for judging the existence of residual organic compounds on said target surface from said detection signal, and

display means controlled simultaneously by said scanning and judging means for displaying positions of residual organic compounds left on said target surface.

4,800,283

SHOCK-ABSORBING AND HEAT CONDUCTIVE BASKET FOR USE IN A FUEL ROD TRANSPORTATION CASK

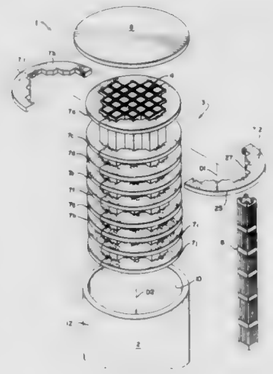
Larry E. Efferding, Pensacola, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1987, Ser. No. 44,694

Int. Cl.[4] G21F *5/00*

U.S. Cl. 250—507.1 **24 Claims**

1. An improved shipping cask for spent fuel rods of the type having a vessel and a basket structure disposed in the interior thereof for holding a plurality of spent fuel containers, wherein the improvement comprises at least one former member disposed between the sides of the basket structure and the side walls of the vessel interior for both mechanically uniting the basket structure and the vessel, and absorbing mechanical shock applied to the exterior of the vessel to protect the spent fuel rods in the containers, wherein said member includes a shock-absorbing portion that deformably yields when mechanical shock of a magnitude indicative of an accident condition is



applied to the outside of the vessel in order to reduce the shock transmitted from the vessel to the basket structure.

4,800,284

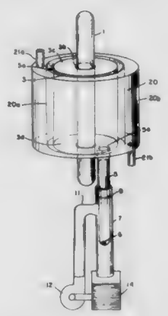
FILTER FOR ISOTOPIC ALTERATION OF MERCURY VAPOR

Mark W. Grossman, Belmont, and William A. George, Gloucester, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 29, 1986, Ser. No. 947,216

Int. Cl.[4] G01N *21/00*

U.S. Cl. 250—505.1 **7 Claims**



1. A filter for enriching the content of ^{196}Hg in a mercury feedstock which flows through a reactor, said filter comprising:

an enclosure, at least a portion of which is transparent to the passage of ultraviolet light;

a fill of mercury vapor in said enclosure, said mercury vapor having quantities of ^{196}Hg less than that which is found in naturally occurring mercury.

4,800,285

FLAME DETECTING ARRANGEMENT FOR DETECTING A FLAME THROUGH HORIZONTAL AND VERTICAL SCANNING OF A SUPERVISORY REGION BY USING A PHOTODETECTOR

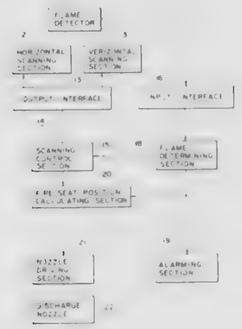
Kouji Akiba, Yokohama, Japan; Akira Kitajima, Huntington Berch, Calif., and Yoshio Arai, Sagamihara, Japan, assignors to Hochiki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 68,145

Claims priority, application Japan, Jun. 30, 1986, 61-153225

Int. Cl.[4] G08B *17/12*

U.S. Cl. 250—554 **8 Claims**



1. A flame detecting apparatus comprising:

a flame detector having a directivity and comprising a photodetector generating a photo-output in response to the intensity of incident light;

scanning means for driving said flame detector to sequentially scan in a horizontal and a vertical direction within a supervisory region;

scanning control means suspending one of the horizontal and the vertical scanning while repeating the other, a horizontal or vertical position being scanned continuously a plurality of times when a photo-output from said flame detector obtained in the horizontal or vertical scanning by said scanning means exceeds a predetermined threshold value; and

flame determining means comparing the photo-outputs obtained through the repeated scanning to each other and calculates the changes in the photo-output, said flame determining means determining that there is really a flame when changes in the photo-outputs obtained through repeated scanning exceed a predetermined value.

4,800,286

MEASUREMENT OF VARIATION IN FLUTE PROFILE HEIGHT

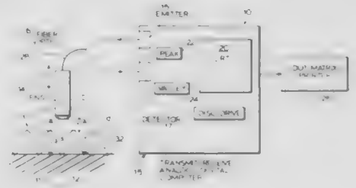
John H. Brears, North Vancouver, Canada, assignor to MacMillan Bloedel Limited

Filed Aug. 10, 1987, Ser. No. 83,647

Int. Cl.[4] G01N *21/86*

U.S. Cl. 250—560 **11 Claims**

1. A method of determining the variation in height of a flute profile of a corrugated material having curved alternating flute tips and valleys comprising passing the corrugated medium in a predetermined space relationship past a beam of light, said beam being directed substantially perpendicularly to each said flute tip and the base of each said flute valley as said tips and valleys traverse said beam, collecting light reflected back from said corrugated medium substantially parallel to said beam and generating voltages representative of said light collected, determining the maxima of said voltages to provide a series of



positive maximas the values of which are representative of the relative heights of said tips of said corrugated material.

4,800,287

MEASUREMENT OF IMAGE AREA FROM STORED PIXEL DATA

Eugene L. Green, Sr., and Jefferson H. Taylor, both of Dallas, Tex., assignors to Wilson Engraving Company, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 840,378, Mar. 17, 1986. This application May 5, 1987, Ser. No. 46,980

Int. Cl.[4] G01N *21/86;* **G01B** *11/28*

U.S. Cl. 250—560 **2 Claims**



1. A method for measuring the area of an image formed on a sheet comprising the steps:

directing light onto the sheet; reflecting light from the sheet onto the sensor read field of a linear array of light responsive sensor cells, each sensor cell having first and second logic states corresponding with first and second levels of incident light;

advancing said sheet incrementally relative to the sensor read field of said array in a sequence of scanning increments in which said image is traversed by said read field;

generating a digital data word corresponding with the logic condition for each sensor cell during each scanning increment;

storing the data words corresponding to the logic condition of each sensor cell in unique address locations of a memory;

counting the number of data words corresponding with the production of a selected one of said logic states in response to the reflection of light from the image area;

dividing the number of counted data words by a number corresponding with the known sensor cell density.

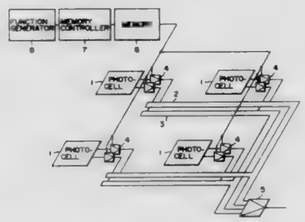
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4,800,282

OPTICAL IMAGE TRANSFORMATION APPARATUS

Shintaro Inagaki, Ebina, and Akira Kobayashi, Fujisawa, both of Japan, assignors to Aaritsu Corporation, Tokyo, Japan

Filed Jul. 13, 1987, Ser. No. 72,417
Claims priority, application Japan, Jul. 18, 1986, 61-170594
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **20 Claims**



1. An optical image transformation apparatus for two-dimensionally transforming an intensity distribution of received light, comprising:

a plurality of photocell means, two-dimensionally arranged on a single light-receiving plane, for outputting signals corresponding to the intensities of the received light;

first sum signal output line means for receiving signals output from said photocell means, and for transmitting a signal corresponding to the sum of the output signals to the outside;

transmission switching means, each of which is arranged between each of said photocell means and said first sum signal output line means in correspondence with said photocell means, and has a capability for amplifying, attenuating, transmitting, and isolating the output signal from the corresponding photocell means in accordance with a control signal, so as to amplify or to attenuate the output signal from the corresponding photocell means and to transmit or not to transmit it into said first sum signal output line means;

memory means for storing the control signals including weighting data for indicating the amplification factors, the attenuation factors, and the information whether to transmit or isolate for said transmission switching means, and for outputting the control signals for causing said transmission switching means to perform amplification, attenuation, transmission, or isolation;

memory control means for writing the weighting data into said memory means; and

function generating means for generating the weighting data of two-dimensional functions, and for transmitting the weighting data to said memory control means.

4,800,289

ANTI-SKID APPARATUS FOR AUTOMOTIVE VEHICLE

Yoshiharu Adachi, Gamagori; Takumi Nishimura, Chiryu; Hiroaki Takeuchi, Toyota; Noboru Noguchi, Toyota; Nobuyasu Nakanishi, Toyota, and Hiromu Kuromitsu, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 20, 1987, Ser. No. 4,707
Claims priority, application Japan, Dec. 22, 1986, 61-306026
Int. Cl.[4] B60T *8/40*
U.S. Cl. 303—119 **12 Claims**

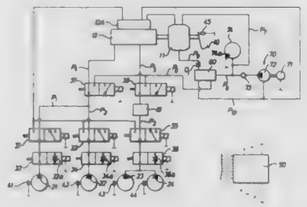
1. An anti-skid apparatus for installation in a vehicle braking system between a master cylinder and a wheel brake cylinder, comprising:

a fluid reservoir arranged to store an amount of hydraulic fluid;

a hydraulic power pressure source connected to said fluid reservoir and comprising means to produce a hydraulic power pressure at a predetermined level;

a regulator valve connected to said power pressure source and comprising means to control the hydraulic power pressure in response to a braking operation;

a first switchover valve disposed within a braking circuit connecting said master cylinder to said wheel brake cylinder, said first switchover valve comprising means for permitting a flow of fluid under pressure to be supplied therethrough from said master cylinder to said wheel brake cylinder when in a deactivated condition thereof and being arranged to be intermittently activated when a road wheel tends to be locked in braking operation, said first switchover valve being connected to said fluid reservoir to connect said wheel brake cylinder to said fluid reservoir when in an activated condition thereof;



a second switchover valve disposed within the braking circuit between said master cylinder and said first switchover valve, said second switchover valve comprising means for permitting a flow of fluid under pressure to be supplied therethrough from said master cylinder to said first switchover valve in a deactivated condition thereof and being arranged to be activated when the road wheel tends to be locked, said second switchover valve being connected to said regulator valve and having means to interrupt the flow of fluid under pressure from said master cylinder and permit the flow of fluid under controlled power pressure supplied therethrough from said regulator valve to said first switchover valve when in an activated condition thereof;

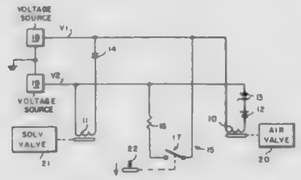
wherein said regulator valve is arranged independently of said master cylinder to modulate the hydraulic power pressure in dependence upon a hydraulic pressure created in said master cylinder in braking operation.

4,800,290

CONTROL CIRCUITRY

Robert A. Norcross, Jr., Newton, Mass., assignor to Norcross Corporation, Newton, Mass.

Filed Nov. 18, 1987, Ser. No. 123,321
Int. Cl.[4] H02H *3/28*
U.S. Cl. 307—43 **7 Claims**



1. Control circuitry comprising:

a first voltage source for supplying a first voltage V1;

a second voltage source for supplying a second voltage V2;

a first circuit comprising an energizable means and a first diode arrangement connected in series therewith across said first and second voltage sources;

a second circuit comprising a second energizable means and a second diode arrangement connected in series therewith across said first and second voltage sources;

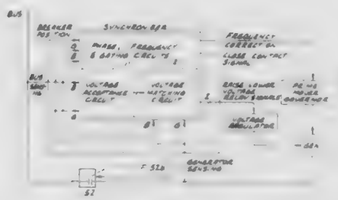
said first and second voltages being arranged so that V1–V2 is greater than a first value, said first diode arrangement becomes conductive and said first energizable means is energized and, when V1—V2, is less than a second value, said second diode arrangement is conductive and said second energizable means is energized.

4,800,291

ELECTRONIC CIRCUIT FOR CONTROL OF A VOLTAGE REGULATOR OF AN ELECTRICAL GENERATOR

Jack R. Bowers, Madison, Ill., assignor to Basler Electric Company, Highland, Ill.

Filed Mar. 4, 1987, Ser. No. 21,906
Int. Cl.[4] H02J *3/00*; H02H *3/00*
U.S. Cl. 307—87 **20 Claims**



1. An electronic circuit for use with an electrical generator having a voltage regulator which responds to raise or lower control signals produced by control pulses to change the voltage output of the generator, the electronic circuit comprising:

means for sensing the magnitude of the difference between the voltage output of the generator and the voltage of a bus to which the generator is to be connected; and

means, responsive to the magnitude of the difference sensed by said means for sensing, for generating control pulses having a pulse duration which is a function of the magnitude of the sensed difference wherein each control pulse has a fixed maximum pulse duration when the magnitude of the difference is greater than a first predetermined value, wherein each control pulse has a pulse duration which decreases with a decreasing magnitude of difference down to a fixed minimum pulse duration at a second and lesser predetermined value of the magnitude of difference when the magnitude of the sensed difference is less than the first predetermined value, and wherein each control pulse has the minimum pulse duration when the magnitude of the difference is less than the second predetermined value, whereby the control pulses produce the raise or lower control signals for the voltage regulator to cause the voltage output of the generator to approach the voltage of the bus.

4,800,292

TEMPERATURE SENSING CIRCUIT

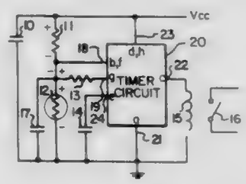
Jimmie D. Gillett, Garland, Tex., assignor to Ranco Incorporated, Dublin, Ohio

Continuation of Ser. No. 601,270, Apr. 17, 1984, abandoned.
This application Jun. 24, 1987, Ser. No. 68,776
Int. Cl.[4] H01H *35/00*
U.S. Cl. 307—117 **8 Claims**

1. A temperature sensing apparatus comprising:

a first and second set point temperature sensing circuit including a thermistor for placement in operative association with a medium and connected to a voltage divider having first and second resistors of preselected values for generating first and second voltages indicative of the medium's first and second set point temperatures; and

a 555 timer having its threshold and trigger inputs coupled to the voltage divider for monitoring first and second voltages from the set point temperature sensing circuit, said



555 timer outputting first and second logic state output signals indicative, respectively, of temperatures below the first set point temperatures and above the second set point temperature wherein a hysteresis effect is generated for switching between the first and second logic state output signals.

4,800,293

INFRASONIC SWITCH

Robert E. Miller, 1301 Rose Island Rd., Prospect, Ky. 40059

Filed Apr. 16, 1987, Ser. No. 38,945
Int. Cl.[4] H01H *35/00*
U.S. Cl. 307—117 **10 Claims**



1. Infrasonic switch apparatus disposed between an alarm signal means and an alternating current power source, comprising;

infrasonic detection means for providing an intrusion signal in response to selected levels of infrasonic energy;

timing circuit means connected to said infrasonic detection means for providing a signal output for a predetermined time in response to said intrusion signal;

delay switching angle trigger switch means connected between said alarm signal means and said power source for receiving said signal output of said timing circuit means for enabling a current flow through said alarm signal means in response to said output of said timing circuit means; and

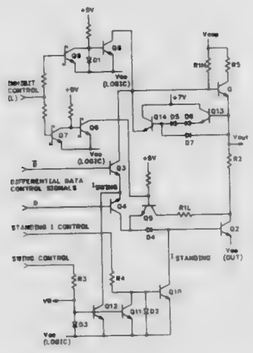
multi-position switch means connected to said timing circuit means and having at least one first position for enabling said timing circuit means to either have a continuous signal output or to interrupt the signal output thereof and also having at least one other position for enabling said timing circuit means to provide an output for said predetermined period of time.

4,800,294

PIN DRIVER CIRCUIT

Keith A. Taylor, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 25, 1988, Ser. No. 147,484
Int. Cl.[4] H03K *3/023, 5/12*
U.S. Cl. 307—263 **8 Claims**



1. A circuit for producing an output signal that switches between a high level and a low level in response to a control signal, the circuit comprising:

an output resistor having a high end and a low end, the output signal being taken from the high end;

a high end transconductance amplifier having an input, a high output, and a low output, with the high output coupled to a voltage source and the low output coupled to the high end of the output resistor;

a high input resistor coupled between the input of the high end transconductance amplifier and the high output of the high end transconductance amplifier;

a low end transconductance amplifier having an input, a high output, and a low output, with the high output coupled to the low end of the output resistor and the low output coupled to a return voltage;

a low input resistor coupled between the input of the low end transconductance amplifier and the high output of the low end transconductance amplifier;

a swing voltage current source having an input and an output, with the input coupled to the return voltage;

a current switch having a current input, a control input, a first current output, and a second current output, with the current input receiving current from the output of the swing voltage current source, the first current output providing current to the end of the high input resistor that is connected to the input of the high end transconductance amplifier when the control input is in a first condition, and the second current output providing current to the end of the low input resistor that is connected to the input of the low end transconductance amplifier when the control input is in a second condition, such that the output signal goes to the low level when the current is provided to the high input resistor and the output signal goes to the high level when the current is provided to the low input resistor; and

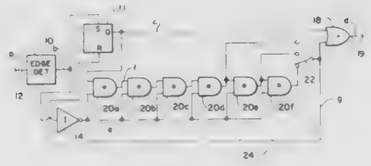
a standing current control current source having an input and an output, with its input coupled to the return voltage and its output coupled to the input of the low end transconductance amplifier so as to provide a means for reducing flow of a standing current through the output resistor.

4,800,295

RETRIGGERABLE MONOSTABLE MULTIVIBRATOR

Vadim B. Minnhin, and Vernon F. Von Deylen, both of Bloomington, Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 11,973, Feb. 6, 1987, Pat. No. 4,760,472. This application Mar. 29, 1988, Ser. No. 174,553
Int. Cl.[4] H03K *3/10, 3/033*
U.S. Cl. 307—273 **18 Claims**



1. A retriggerable monostable multivibrator comprising:

bistable means responsive to an input pulse for setting the bistable means to a first output state and responsive to a reset signal for resetting the bistable means to a second output state, said second output state being opposite said first output state; and

propagation chain means responsive to the first output state of said bistable means for providing said reset pulse signal upon a predetermined period after said bistable means is set to its first output state, said propagation chain means being responsive to said input pulse for cancelling a reset signal in process of being provided; and

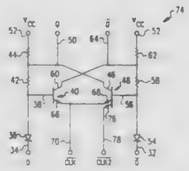
output means responsive to said bistable means and to said propagation chain means for producing an output pulse while either said bistable means is in its first output state or said propagation means provides said reset signal.

4,800,256

METASTABLE DEFEATING FLI-FLOP

Kevin M. Ovens; Jay A. Maxey, both of Garland, and Craig B. Greenberg, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 5, 1987, Ser. No. 46,074
Int. Cl.[4] H03K *3/286*
U.S. Cl. 307—291 **15 Claims**



1. A flip-flop circuit comprising:

an input to receive input signals;

first and second transistors each responsive to said input signals, said second transistor having a first emitter and a second emitter; and

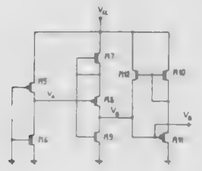
means to render said second emitter conducting in response to concurrent conduction of said first transistor and said first emitter of said second transistor, such that additional current conducted through said second emitter results in nonconduction of said first transistor.

4,800,297

SOURCE BIAS GENERATOR FOR NATURAL TRANSISTORS IN MOS DIGITAL INTEGRATED CIRCUITS

David Novosel, West Middlesex, Pa., and Giovanni Campardo, Bergamo, Italy, assignors to SGS Microelecttronics spa, Catania, Italy

Filed Jun. 1, 1987, Ser. No. 56,866
Claims priority, application Italy, Jun. 3, 1986, 20660 A/86
Int. Cl.[4] H03K *3/013, 17/16, 17/687;* **G11C** *11/40*
U.S. Cl. 307—296 R **17 Claims**



1. A source bias voltage generator for natural transistors each having a source, a drain, a gate driven by a control signal, and having a negative turn-off threshold voltage, particularly for digital integrated circuits such as EPROM memories, characterized in that said generator comprises:

(a) a reference voltage generator stage supplied by a supply voltage and generating a reference voltage approximately equal to the turn-off threshold voltage of a natural transistor, with its sign changed; and

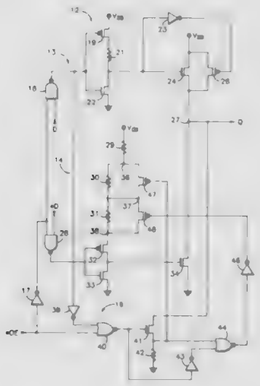
(b) a doubler stage driven by said reference voltage and supplying a bias voltage equal to twice said reference voltage.

4,800,298

OUTPUT BUFFER FOR IMPROVING DI/DT

Ruey J. Yu, and Alan R. Bormann, both of Austin, Tex., assignors to Motorola, Inc., Schaumberg, Ill.

Filed Aug. 4, 1987, Ser. No. 81,194
Int. Cl.[4] H03K *17/04, 17/12, 17/284, 17/687*
U.S. Cl. 307—443 **14 Claims**



1. A buffer circuit comprising:

driver means, coupled to an output terminal and having an input, for passing current between a first power supply terminal and the output terminal in proportion to a voltage level on said first input in order to change a voltage level on said output terminal

a first transistor and a first resistor, and a second resistor coupled in series between a second power supply terminal and the input of the driver means, said first transistor having a control electrode for receiving a first input signal;

a second transistor, responsive to the first input signal, coupled between the first power supply terminal and the input of the driver means;

impedance means, coupled to the output terminal and the first for providing a resistance in parallel with the first resistor which is proportional to the voltage on the output terminal; and

sensing means, coupled to the output terminal, for providing a sense signal at a voltage representative of the voltage on the output terminal; and

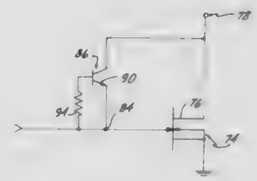
a second third transistor coupled in parallel with said second resistor and enabled by an enable signal.

4,800,299

METHOD AND APPARATUS FOR MOSFET RADIATION FAILURE CIRCUMVENTION

William C. Hayward, Marina Del Rey, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Dec. 18, 1986, Ser. No. 943,976
Int. Cl.[4] H03K *19/08*
U.S. Cl. 307—308 **25 Claims**



1. A radiation hardened electrical circuit which comprises:

a MOSFET device having a gate, a source and a drain; said source being electrically connected to an electrical circuit, said electrical circuit including a voltage source;

means for sensing a radiation event,

means for imposing an "on" enabling bias voltage on said gate during a sensed radiation event so as to bias said MOSFET device in an con" state at least during said radiation event, and

timing means for maintaining said "on" enabling bias voltage imposed on said gate of said MOSFET device for a time period at least as long as said radiation event.

4,800,300

HIGH-PERFORMANCE, CMOS LATCH FOR IMPROVED RELIABILITY

Donald M. Walters, Jr., Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 2, 1987, Ser. No. 115,279
Int. Cl.[4] G11C *11/40*
U.S. Cl. 307—279 **13 Claims**

11. A CMOS latch circuit comprising:

a P-channel precharge transistor (P1) having a source connected to a supply potential (VCC), a gate, and a drain;

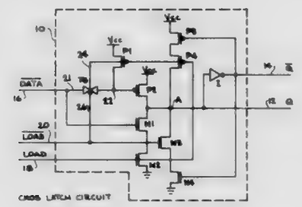
A P-channel drive transistor (P2) having a source connected to the supply potential, a gate connected to the drain of said P-channel precharge transistor (P1), and a drain connected to a storage node (A) and a true data output terminal (12);

an N-channel drive transistor (N1) having a drain connected to the drain of said P-channel drive transistor (P2), a gate connected to a first input terminal (16) for receiving a complementary data input signal, and a source;

an N-channel enable transistor (N2) having a drain con-

nected to the source of said N-channel drive transistor (N1), a gate connected to a second input terminal (18) for receiving a true load signal, and a source connected to a ground potential;

transmission gate means responsive to the true load signal and a complementary load signal for communicating said



complementary data input signal to the gate of said P-channel drive transistor (P2); and

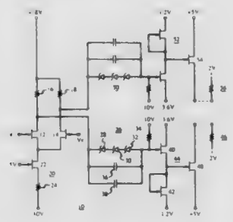
output transistor means responsive to said true and complementary load signals and to true and complementary data output signals for maintaining said latch circuit in one of two states.

4,800,301

METHOD AND APPARATUS FOR SENSING SIGNALS

Sheng J. Tsai, Newtown, Pa., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Dec. 2, 1987, Ser. No. 127,401
Int. Cl.[4] H03K *5/24*
U.S. Cl. 307—362 **12 Claims**



1. A method for sensing whether the amplitude of an input signal exceeds a reference voltage of predetermined amplitude comprising the steps of:

applying the input signal to the gate of a first field effect transistor (FET) having its drain coupled to a voltage source and having its source at a potential less than that of said voltage source;

applying the reference voltage to the gate of a second FET having its drain coupled to the voltage source and its source coupled to ground; and

the first and second FETs each conducting to the exclusion of the other while the amplitude of the signal at the gate of one FET exceeds the amplitude of the signal at the gate of the other FET, CHARACTERIZED IN THAT:

each of the first and second FETs is a high-speed device and has its drain coupled by a separate one of a pair of resistors to the voltage source and its source coupled to a current source;

the voltage at the drain of one of the FETs is compensated for variations caused by changes in the operating characteristics of the FETs due to temperature variations; and

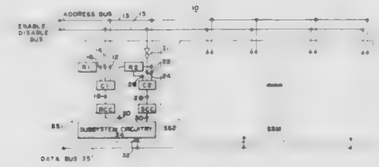
the compensated drain voltage is applied to a voltage-sensitive switch which serves to output a separate one of a pair of indicating voltages having different amplitudes, when the compensated drain voltage has an amplitude larger and smaller, respectively, than a predetermined threshold voltage.

4,800,302

REDUNDANCY SYSTEM WITH DISTRIBUTED MAPPING

John R. Marum, Stanford, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 17, 1987, Ser. No. 74,602
Int. Cl.[4] H03K *19/003*
U.S. Cl. 307—441 **20 Claims**



1. A distributed mapping system for interconnecting multiple subsystems, some of which are redundant or defective, comprising:

address bus means for selecting a particular subsystem for use in an operation or for performance of some function; and

mapping circuitry associated with each of the subsystems, and having

first storage means, for registering a physical address of the subsystem,

second storage means, for registering a logical address for accessing the subsystem,

means for modifying the logical address of the subsystem during a configuration mode of operation,

means for comparing the logical address of the subsystem with an address impressed on the address bus means during a normal mode of operation, and

means for activating the subsystem in response to the detection of a match by the means for comparing;

and wherein the means for modifying the logical address of the subsystem includes

means for comparing the physical address of the subsystem stored in the first storage means with a physical address impressed on the address bus means during the configuration mode of operation, and generating a match signal if the physical address matches the address on the address bus means, and

means responsive to the match signal, for enabling the transfer of a logical address from the address bus means to the second storage means, for later use in the normal mode of operation.

4,800,303

TTL COMPATIBLE OUTPUT BUFFER

Andrew C. Graham, Sunnyvale, and Mark E. Fitzpatrick, San Jose, both of Calif., assignors to Gazelle Microcircuits, Inc., Santa Clara, Calif.

Filed May 19, 1987, Ser. No. 51,983
Int. Cl.[4] H03K *19/094, 19/017, 19/003, 17/04*
U.S. Cl. 307—450 **16 Claims**

1. A buffer circuit having a buffer circuit input signal lead for receiving an input signal, a buffer circuit output signal lead for providing an output signal, a first voltage supply terminal and a second voltage supply terminal, comprising means for providing that in the state with the output signal high, no substantial current is provided inward of the buffer circuit from the output signal lead over a wide range of voltages

applied to the output signal lead, including applied voltages substantially greater than that receivable by the first and second voltage supply terminals, and wherein said buffer circuit is implemented in compound semiconductor technology.



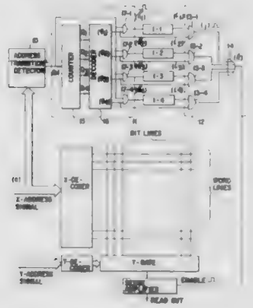


4,800,304

TIME DELAY CIRCUIT FOR A SEMICONDUCTOR DEVICE

Atsushi Takeuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 6,206, Jan. 23, 1987, abandoned. This application May 9, 1988, Ser. No. 193,192
Claims priority, application Japan, Feb. 4, 1986, 61-22528
Int. Cl.[4] H03K *17/26;* **G11C** *7/00*
U.S. Cl. 307—602 **6 Claims**



1. A semiconductor device comprising:

a plurality of delay circuits delaying an input signal having a first level and a second level, said delay circuits having a predetermined delay time;

a selection circuit connected to said delay circuits, said selection circuit selecting one of said delay circuits, in sequence, in response to a transition from the first level, which is an initial state, to the second level of the input signal and supplying said input signal of said second level to said selected one of said delay circuits, said selection circuit resetting unselected ones of said delay circuits to an initial state;

a plurality of first gate circuits each of which having input terminals, a first input terminal being connected to an associated one of said delay circuits and a second input terminal being connected to said selection circuit's output terminal associated with said delay circuit, each of said first gate circuits outputting a delayed input signal only from said associated selected one of said delay circuits and inhibiting output from said each associated unselected one of said delay circuits by having a level of said second input terminal of said first gate circuit vary from said second level to said first level; and

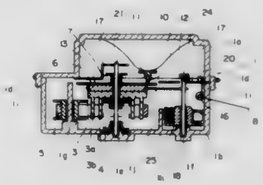
a second gate circuit, each input terminal of which being connected to an output terminal of each of said first gate circuits, wherein an output signal from any of said first gate circuits is output from said second gate, a noise pulse having said second level and ending within an interval prior to a a following signal pulse, said interval being essentially shorter than said delay time of said delay circuit, said noise pulse input into one of said delay circuits being inhibited from being output through said associated first gate circuit, and said following signal pulse, of said second level input into another one of delay circuits earlier than said interval which is prior to a next incoming signal pulse, being allowed to be output through said associated first and second gate circuits.

4,800,305

PULL STRING MECHANISM IN A PULL STRING TYPE SOUND REPRODUCING DEVICE

Eishi Koike, Sagamihara, Japan, assignor to Onea Corporation, Tokyo, Japan

Filed Apr. 28, 1988, Ser. No. 192,325
Claims priority, application Japan, Apr. 30, 1987, 62-65575[U]
Int. Cl.[4] G11B *27/10, 3/78, 17/00*
U.S. Cl. 369—67 **2 Claims**



1. A pull string mechanism in a pull string type sound reproducing device comprising:

(a) a turn table supported by an upstanding shaft disposed in a casing, the casing having a pull out hole formed on a side face thereof below the level of a record disc, the turn table being capable of being rotatable an axially movable along said shaft,

(b) a speaker cone fixedly attached within said casing,

(c) a record disc integrally mounted with said turn table and having at least one spirally formed record groove, and having a starting point and an end point of sound reproduction,

(d) a tone arm being swingable along said record disc,

(e) a pickup carried by said tone arm so as to be in contact with a cone head of said speaker cone, the pickup being provided with a sound reproducing stylus which confronts with and contacts the record disc,

(f) a stylus force spring resiliently supporting said turn table and which imparts stylus force to said reproduction stylus through said turn table,

(g) a constant torque spring for urging said turn table toward the predetermined direction of rotation,

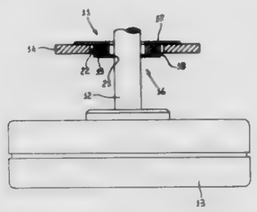
(h) a return spring for urging said tone arm toward the starting point of sound reproduction,
(i) a bobbin supported by said shaft, the bobbin being integral with said turn table and said record disc both in the axial direction and the direction of rotation, a pull out hole formed on the side face of said casing at a portion below the upper face of said record disc,
(j) a pull string one end of which attached to said bobbin and the other end being stretchable outside the casing through said pull out hole,
(k) a string supporting means for supporting said pull string at the portion between the bobbin and said pull out hole and at a level higher than the upper face of said record disc; and
wherein said string supporting means is resiliently movable only in an upward and downward direction and is disposed adjacent said pull out hole such that the path of the pull string from said pull out hole via the string supporting means and to said bobbin can follow a crank shaped path with the angle of turning being not larger than a right angle.

4,800,306

DEVICE FOR DAMPING THE OSCILLATIONS OF A STEPPING MOTOR

Massimo Oberto, Via Belvedere, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Apr. 10, 1987, Ser. No. 36,576
Claims priority, application Italy, May 19, 1986, 87410 A/86
Int. Cl.[4] H02K *5/24*
U.S. Cl. 310—51 **2 Claims**



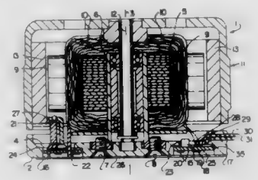
1. A device for damping the oscillations of a stepping motor of the type wherein the stepping motor comprises a shaft, and the damping device comprises an external inertia element and a damping member, wherein the external inertia element comprises an inertial mass of metal material in the form of an annulus of limited thickness having a central hole with an internal cylindrical surface, wherein the damping member comprises a first circular flange to which the external inertia element is fixed by means of spot welding and having a central hole, an element of elastomeric material in the form of an annular portion which is housed in the central hole of the external inertia element with clearance with respect to the internal cylindrical surface of the central hole and to the external surface of the shaft, and a second circular flange having a hole by means of which the damping device is fixed to the shaft, wherein the elastomeric element is fixed between the first circular flange and the second circular flange, and wherein the external inertia element, the first circular flange, the elastomeric element and the second circular flange are parallel and coaxial with each other and also coaxial with respect to the shaft.

4,800,307

REPLACEABLE CIRCUIT BOARD MOUNTING SYSTEM IN OUTER ROTOR MOTORS

Georg Papst, St Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH, St. Georgen, Fed. Rep. of Germany

PCT No. PCT/EP86/00537, § 371 Date Jul. 14, 1987, § 102(e) Date Jul. 14, 1987, PCT Pub. No. WO87/01879, PCT Pub. Date Mar. 26, 1987
PCT Filed Sep. 17, 1986, Ser. No. 67,787
Claims priority, application Switzerland, Sep. 18, 1985, 4035/85
Int. Cl.[4] H02K *29/00;* **H02P** *1/00*
U.S. Cl. 310—67 R **27 Claims**



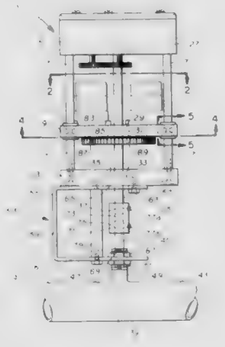
1. An electric motor having a motor shaft and a flange disk that is arranged at right angles to the motor shaft; a stator fixed to an interior side of said flange disk; a control circuit means for the motor for which an insertible circuit board means is provided and arranged in a plane, parallel to the flange disk on the exterior side of the flange disk that faces away from the stator, said control circuit means providing electrical connection with control elements on the circuit board means which extend through the flange disk and cooperate with cooperating elements of the motor located on the interior side of the flange disk.

4,800,308

MOTORIZED CONTROL UNIT WITH TORSIONAL ELASTOMERIC BIAS

Bill Tice, Carlsbad, Calif., assignor to ETI Systems, Oceanside, Calif.

Filed Mar. 21, 1988, Ser. No. 170,885
Int. Cl.[4] H02K *7/10;* **F16K** *31/04;* **F16H** *57/12*
U.S. Cl. 310—83 **22 Claims**



1. A motorized control, for driving a rotatable shaft-actuated device, comprising:
(a) a base plate for mounting above the device;
(b) a top housing spaced above said base plate;
(c) a plurality of stiff legs extending between said base plate and said housing to hold them in fixed spacial relationship;
(d) a work plate intermediate said base plate and said top

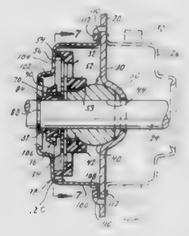
housing, held in spaced-apart relationship therebetween through elastomeric means mounted thereto to permit torsional movement of said work plate with respect to said base plate;
(e) a rotatable drive shaft depending from said top housing through said work plate and said base plate terminating at a lower distal end adapted for connection to the rotatable actuation shaft of the device; and,
(f) a drive motor mounted on said work plate and containing an output shaft and pinion engaging the periphery of a central bull gear centrally mounted on said drive shaft including means for starting, stopping and reversing the rotation of said drive motor and drive shaft;
(g) wherein said elastomeric means is caused to deform and store energy when said drive motor is caused to overrotate said drive shaft at the end of rotational travel of the shaft-actuated device and twist said work plate with respect to said base plate so that, upon reverse travel of said drive shaft to drive the actuation shaft in the opposite direction, said elastomeric means returns to its normal shape and releases the stored energy into said drive shaft at the beginning of the reverse rotational movement.

4,800,309

SELF-ALIGNING BEARING AND OIL CAP MOUNT FOR AN ELECTRIC MOTOR

Bryan L. Lakin, Springfield, Mo., assignor to Fasco Industries, Inc., Lake Forest, Ill.

Division of Ser. No. 806,028, Dec. 6, 1985, Pat. No. 4,711,590. This application Jul. 2, 1987, Ser. No. 69,116
Int. Cl.[4] H02K *7/08*
U.S. Cl. 310—90 **11 Claims**



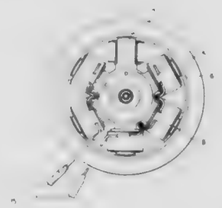
1. In a dynamoelectric machine having a housing with an end shield at an end thereof and an oil cap secured to the end shield, comprising in combination: the end shield having a surface, the oil cap secured to the end shield, the end shield having circumferentially spaced protrusions extending out of the surface of the end shield and formed integrally therewith of the material of the end shield, the protrusions having edge means defining with the end shield surface a seat for the oil cap, the oil cap having an end surface that seats against the end shield surface and further having side surface means, the protrusions being deformed generally radially inwardly such that the edge means of the protrusions engage and overlie the side surface means of the oil cap to secure the oil cap to the end shield against both axial and rotational movement relative thereto, said protrusion positioned prior to deformation relative to the side surface means of the oil cap to allow ease of insertion of the oil cap within the close confines of the protrusions.

4,800,310

BICYCLE ERGOMETER AND EDDY CURRENT BRAKE THEREFOR

Shinroku Nakao, Kanagawa; Masao Itoh, Tokyo; Akira Itoh, Tokyo, and Hiroshi Takano, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Division of Ser. No. 588,933, Mar. 13, 1984, Pat. No. 4,678,182. This application Jun. 25, 1985, Ser. No. 748,675
Claims priority, application Japan, Jul. 8, 1983, 58-123172
Int. Cl.[4] H02K *7/02, 49/04*
U.S. Cl. 310—105 **2 Claims**



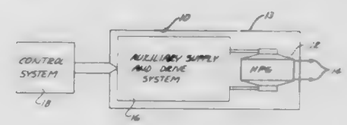
1. An eddy current brake comprising:
rotor means having a non-ferrous outer rotor and a cast iron inner rotor concentrically mounted within said outer rotor, said inner rotor being structural carbon steel pipe (STK and STKM) having a carbon content of 0.12% or less and a silicon content of 0.35% or less, said outer rotor providing a flywheel effect to said inner rotor;
a stator fixedly mounted radially inward of said rotor means;
a plurality of exciting coils disposed on said stator; and
power means for energizing said exciting coils.

4,800,311

ROTOR ASSEMBLY FOR HOMOPOLAR GENERATOR

William F. Weldon; John H. Gully, and Mark A. Pichot, all of Austin, Tex., assignors to Board of Regents, Austin, Tex.

Continuation of Ser. No. 381,928, May 26, 1982, abandoned. This application Jul. 2, 1985, Ser. No. 751,459
The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.
Int. Cl.[4] H02K *31/02, 1/28*
U.S. Cl. 310—178 **8 Claims**



1. A homopolar generator, comprising:
a support structure;
a stator assembly inwardly disposed within said support structure for producing a stator magnetic field;
a shaft mounted in said support structure;
a rotor carried on said shaft, said rotor including two mating rotor halves together defining a recess in the peripheral surface of the rotor, for receiving the stator assembly to enclose the same;
an inner brush mechanism disposed within the recess in the rotor, for contacting a surface of the rotor defined by the recess to collect discharge current; and
an outer brush mechanism disposed within the support structure, for contacting the peripheral surface of the rotor adjacent the recess to collect discharge current.

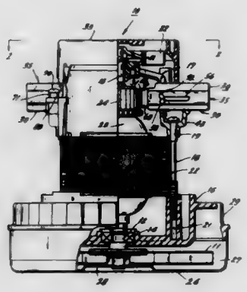
VOL 1098 ISS 4 JA 24 1989 UMI

4,800,312

MOUNTING FOR BRUSHES OF ELECTRIC MOTORS

Rudolph W. Wacek, Montoursville, and R. Lent Creviing, Jr., Williamsport, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed May 21, 1987, Ser. No. 53,147
Int. Cl.[4] H02K *13/00*
U.S. Cl. 310—239 **16 Claims**



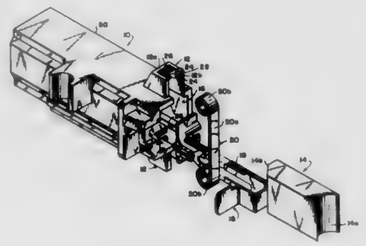
1. An electric motor including:
an output shaft, frame means on which said shaft is mounted for rotation about a first axis, armature winding means on said shaft, commutator means on said shaft connected in circuit with said armature winding means, first and second brush-holder assemblies mounted on said frame means and in operative engagement with said commutator;
each of said brush-holder assemblies including an insulating tube, a conducting brush disposed within said insulating tube with a first end of said brush extending through an open front end of said insulating tube, and spring means biasing said brush in a generally radial direction with respect to said first axis to drive said first end of said brush through said first end into operative engagement with said commutator means;
each of said insulating tubes having a tubular axis extending in a generally radial direction with respect to said first axis and having bearing means defining a transverse pivot for said insulating tube, which pivot is transverse to said tubular axis, said frame means including first and second bearing formations that are operatively engaged by the bearing means of the respective first and second insulating tubes to cooperate therewith and define axes about which the brush-holder assemblies were pivoted into their final operating positions with respect to the frame means;
with said brush-holder assemblies in their said final operating positions, the insulating tubes thereof being maintained against pivotal movement about said bearing means and otherwise being maintained in fixed positions relative to said frame means;
first and second securing means on the frame for maintaining the respective first and second brush-holder assemblies in their said final operating positions;
said securing means being in operative engagement with said brush-holder assemblies at locations radially outward of said bearing formations;
each of said first and second securing means comprising a screw including a stem threadably engaged with said frame and a head that engages a different one of said insulating tubes.

4,800,313

LONG-LIFE MOTOR BRUSH HOLDER

Robin L. Warner, Mt. Holly Springs, and Richard E. DeSisto, Carlisle, both of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Oct. 29, 1987, Ser. No. 113,849
Int. Cl.[4] H02K *13/00*
U.S. Cl. 310—242 **5 Claims**



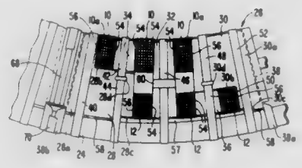
1. A motor brush holder for use with a motor commutator, comprising:
a brush holder, having first and second ends, and a motor brush retained within said holder while adapted to bear against the motor commutator;
a ribbon spring for urging the brush against said commutator, said spring including a middle portion for resiliently engaging said brush and a pair of end coil portions retained within said holder;
at least two pairs of spaced cylindrical surfaces forming part of said brush holder, a given pair serving as line contact supports for one of the respective coil portions of the spring, thereby to minimize contact of each coil portions with the holder and consequently reduce frictional drag.

4,800,314

DEEP BEAM SUPPORT ARRANGEMENT FOR DYNAMOELECTRIC MACHINE STATOR COIL END PORTIONS

Robert T. Ward, Winter Park, and John M. Butler, Orlando, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 24, 1987, Ser. No. 92,851
Int. Cl.[4] H02K *3/46*
U.S. Cl. 310—260 **18 Claims**



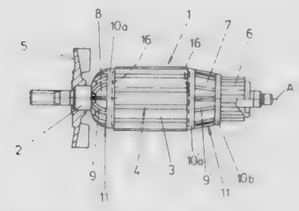
1. A coil support arrangement for use in connection with a dynamoelectric machine equipped with a stator having top and bottom winding coil end portions extending outwardly from the stator at each end thereof, said coil end portions being arranged in phase groups, said support arrangement comprising:
a support ring encircling the bottom winding coil end portions;
respective end blocking means providing lateral support for the coil end portions of each phase group to restrain vibrational movement of the coil end portions during machine operation; and
banding means encircling the coil end portions of a phase group, said respective end blocking means and said support ring for holding the coil end portions, the blocking means and the support ring together, with the blocking means disposed in axial alignment with the ring, to thereby present a single, blocked, elongated phase group structure which extends circumferentially around the inside of the ring,
said blocking means comprising a plurality of individual block elements which are disposed in axial alignment with the ring and which extend the full radial depth of the phase group structure to provide deep beam strength characteristics to the structure.

4,800,315

AIR-COOLED ROTOR FOR ELECTRIC MOTOR

Manfred Schulz; Alfred Wagemann, both of Nurtingen, and Gerhard Waldner, Necharhausen, all of Fed. Rep. of Germany, assignors to Metabowerke GmbH & Co., Nurtingen, Fed. Rep. of Germany

Filed Sep. 17, 1987, Ser. No. 97,710
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632771
Int. Cl.[4] H02K *5/12*; F01D *5/00*
U.S. Cl. 310—261 **10 Claims**



1. In combination with a rotor having:
a ferrous core extending along and centered on an axis and formed with axial slots;
a winding extending along the slots of the core and having opposite axial ends extending axially beyond the core; and
means for circulating air axially over the core and winding;
the improvement comprising:
a plurality of ribs fixed to the rotor and winding and each extending at least generally axially and radially over at least one of the ends of the winding so as to project generally axially from the one end, the ribs being spaced apart on the one end such that the winding is exposed between the ribs.

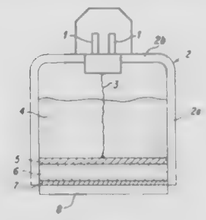
4,800,316

BACKING MATERIAL FOR THE ULTRASONIC TRANSDUCER

Wang Ju-Zhen, Shanghai, China, assignor to Shanghai Lamp Factory, Shanghai, China

Continuation-in-part of Ser. No. 737,135, May 23, 1985, abandoned. This application Dec. 22, 1987, Ser. No. 140,934
Claims priority, application China, Apr. 1, 1985, 85100483
Int. Cl.[4] H01L *41/18*; H01B *1/22*; H04R *17/00*
U.S. Cl. 310—327 **9 Claims**

1. An ultrasonic transducer including a piezoelectric element, a backing element which acts as an attenuator for said piezoelectric element, a mating surface between said piezoelectric element and said backing element having approximately the same acoustic impedance as said piezoelectric element, said backing element consisting of a material in the form of a tungsten base composite comprising:
(a) tungsten
(b) an oxide of metal from the lanthanum group, and



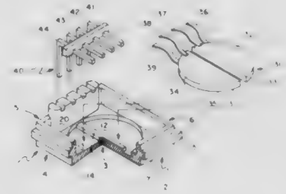
(c) an insulating cement, said insulating cement present in said tungsten-metallic oxide composite by a ratio of 4:1 to 50:1% by total weight of said composite.

4,800,317

ULTRASONIC TRANSDUCER METHOD AND APPARATUS

Frank W. Ingle, and John P. Claude, both of Palo Alto, Calif., assignors to Medasonics, Inc., Mountain View, Calif.

Division of Ser. No. 895,274, Aug. 11, 1986, Pat. No. 4,691,418. This application May 22, 1987, Ser. No. 52,908
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—334 **11 Claims**



1. An ultrasonic transducer assembly comprising:
a body member having an end wall and a plurality of side walls, said end wall having a pair of exterior planar surfaces, each of said exterior planar surfaces extending from a centerline of said end wall outwardly to a side edge of said end wall at a predetermined angle relative to each other, an interior surface, and a pair of recesses located in said interior surface which are separated from each other by a central rib which extends along said centerline of said end wall, each of said recesses having a planar surface which is parallel to one of said exterior planar surfaces of said end wall, said side walls having an outwardly extending exterior rib which is located between the top and bottom surfaces thereof and which extends about the periphery thereof, one of said end walls which is located at one end of said central rib including a multiple pin receiving post which is integrally formed therewith and which extends perpendicularly from said interior surface of said end wall, said post having a plurality of equally spaced, tapered, pin receiving holes;
a pair of piezoelectric ceramic planar members, each of said members having a pair of conductive electrodes covering and affixed to opposite surfaces thereof, respectively;
a plurality of metal ribbons;
first means for attaching one of said ribbons to each of said electrodes, each of said ribbons having a length sufficient for it to be inserted well into a corresponding one of said

plurality of tapered holes in said multiple pin receiving post;

second means for attaching one of said pair of ceramic planar members to said planar surface in each of said recesses; and

a multiple pin connector having an electrically conductive pin inserted in each of said tapered holes in such a manner as to form a good electrical connection between said pin and the metal ribbon inserted in said hole.

4,800,318

ELECTRODE ASSEMBLY POR ELECTROSTATIC LENS OF ELECTRON GUN

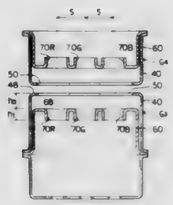
Kazuaki Naiki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 12, 1987, Ser. No. 13,676

Claims priority, application Japan, Feb. 12, 1986, 61-29363; Sep. 10, 1986, 61-214431

Int. Cl.[4] H01J *29/58*

U.S. Cl. 313—414 **12 Claims**



1. An electrode assembly for an electrostatic lens of the in-line type electron gun for a color cathode ray tube, which includes a pair of tubular electroces, wherein the improvement is that each of the tubular electrodes includes a main tubular electrode member closed at its one end by an end wall which has an aperture of the configuration obtained by partially overlapping a plurality of circular openings arranged in an inline manner, and an auxiliary electrode member fitted into the main electrode member and having an end wall position separate from the end wall of the main electrode member by a predetermined distance, the end wall of the auxiliary electrode member being formed with a plurality of independent collars projecting therethrough in parallel to the axial direction of the respective circular openings of the overlapped-multicircle aperture and to superpose the corresponding circular openings of the overlapped-multicircle aperture in an axial direction, the pair of tubular electrodes being located in such a manner that the end walls of the respective main tubular electrode members oppost each other and are separate from each other, each of the main electrode members having an overlapped-multicircle aperture composed of three circular openings, a high potential side tubular electrode of the tubular electrode pair having its overlapped-multicircle aperture composed of circular openings whose diameters are smaller than the diameters of the circular openings of the overlapped-multicircle aperture of a low potential side tubular electrode.

4,800,319

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

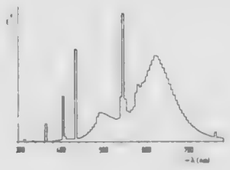
Johannes T. C. Van Kemenade; Johannes T. W. De Hair, both of Eindhoven, and Everhardus G. Berns, Geldrop, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 598,957, Apr. 11, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 814,284

Claims priority, application Netherlands, Apr. 25, 1983, 8301445

Int. Cl.[4] H01J *1/62, 63/04;* **C09K** *11/08*

U.S. Cl. 313—487 **15 Claims**



1. A low-pressure mercury vapor discharge lamp having a color rendering index R(a,8) of at least 85, a luminous flux of at least 55 l/mW a color temperature of the emitted white light in the range of 2300 to 3300 K. and a color point on or not greater than 20 Minimum Perceptible Color Difference from the point on the Planckian curve of the same color temperature and provided with a gas-tight radiation-transparent envelope containing mercury, a rare gas, a pair of spaced elctrodes for providing a discharge, a luminescent layer comprising:

a. at least one luminescent alkaline earth metal halophosphate activated by trivalent antimony and bivalent manganese and having a color temperature of the emitted radiation of 2900 to 5000 K.;

b. at least one luminescent material activated by bivalent europium with an emission maximum in the range of 470 to 500 nm and a half-value width of the emission band of at most 90 nm, and

c. a luminescent rare earth metal metaborate activated by trivalent cerium and bivalent manganese, having a monoclinic crystal structure, whose fundamental lattice corresponds to the formula $Ln(Mg,Zn,Cd)B_5O_{10}$, in which Ln is at least one of the elements yttrium, lanthanum and gadolinium and in which up to 20 mol.% of the B can be replaced by Al and/or Ga, which metaborate exhibits red Mn^{2+} emission, and

means for absorbing at least in part blue radiation having wavelengths below 480 nm.

4,800,320

DISCHARGE TUBE FOR A HIGH PRESSURE METAL VAPOR DISCHARGE LAMP AND A METHOD OF MANUFACTURING THE SAME

Takehiro Kajihara, Komaki; Senji Atsumi, Kakamigahara, and Hirotsugu Izumiya, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 757,506, Aug. 31, 1984, Pat. No. 4,687,969. This application May 28, 1987, Ser. No. 55,144

Claims priority, application Japan, Aug. 31, 1984, 59-183294

The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.

Int. Cl.[4] H01J *17/18, 61/36*

U.S. Cl. 313—625 **11 Claims**

1. A discharge tube for a high pressure metal vapor discharge lamp, comprising:

a translucent alumina tubular body having first and second opposite end portions;

first and second end plates comprised of cermet, said cermet having a firing shrinkage factor which is less than a firing shrinkage factor of the translucent alumina tubular body;

first and second electrode support members, said first support member being partially embedded in the first end plate and said second support member being partially embedded in the second end plate and each of said first and second electrode support members being located inside of the translucent alumina tubular body, said first end plate being fitted to the first opposite end portion of the translucent alumina tubular body and bonded thereto, said first opposite end portion being located at a lower position than the second opposite end portion when the high pressure metal vapor discharge lamp is in use, wherein bonding of the first end plate to the first opposite end portion is achieved by shrinkage fitting of the first end

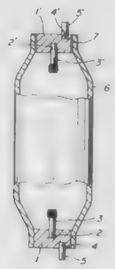


plate into the alumina tubular body at a shrinkage fitting ratio of the tubular body to the first end plate being from 3 to 6% during a simultaneous sintering of the first end plate to the translucent alumina tubular body and a simultaneous bonding of said first electrode support member to said first end plate through shrinkage fitting at a shrinkage fitting ratio of the first end plate to the first electrode support member being from 4 to 16%, said bonding occurring when the translucent alumina tubular body is fired to be translucent, said second end plate being fitted to the second opposite end portion of the translucent alumina tubular body and being bonded thereto by using a frit, said second opposite end portion being located at a vertically higher position than the first opposite end portion when the high pressure metal vapor discharge lamp is in use.

4,800,321

HIGH PRESSURE SODIUM LAMP

Yujiro Ike, Yokohama; Akihiro Yonezawa; Shinichi Ooshima, both of Yokosuka; Akihiro Kamiya, Yokohama, and Yoshio Hirose, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 5, 1987, Ser. No. 81,728

Claims priority, application Japan, Aug. 5, 1986, 61-182648

Int. Cl.[4] H01J *61/20, 17/22*

U.S. Cl. 313—639 **5 Claims**

1. A high pressure sodium lamp for operation under a prescribed electric field strength, comprising:

an arc tube having an inner diameter; and

an amalgam including a prescribed quantity of sodium and mercury sealed in the arc tube, the amalgam substantially satisfying the following relationship:

$$(10^{0.848\phi(-0.171)} \log X+(0.105\phi-10.22))$$

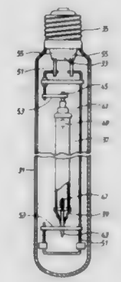
$$<\log Y<$$

$$(10^{0.848\phi(-0.171)} \log X-10^{1.43\phi(-0.574)}),$$

and the field strength satisfying the following relationship:

$$(-7.97 \log\phi+14.8)<\log \Delta V<(84.7 \log \phi-84.5),$$

where ϕ (mm) is the inner diameter of the arc tube and is greater than 12 mm, X (wt%) is the ratio of the quantity of



sodium to the quantity of amalgam sealed in the arc tube, Y (mg/cc) is the quantity of the sodium sealed in the arc tube, and ΔV (v/cm) is the electric field strength when the lamp is operated.

4,800,322

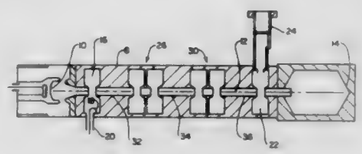
BROADBAND KLYSTRON CAVITY ARRANGEMENT

Robert S. Symons, Los Altos, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 663,801, Oct. 23, 1984, abandoned. This application Oct. 1, 1987, Ser. No. 106,976

Int. Cl.[4] H01J *25/10*

U.S. Cl. 315—5.39 **16 Claims**



1. In a klystron operating within a predetermined bandwidth or passband, and having means for producing an electron stream along the length thereof including through the section providing gain at least one input cavity having means for introducing microwave energy into said klystron, and at least one output cavity for extracting microwave energy therefrom, the cavities being separated by drift tubes of predetermined drift lengths, the improvement comprising:

a plurality of floating cavity clusters positioned along and coupled only to said electron stream between said input and output cavities, each of said clusters comprising a plurality of juxtaposed cavities having closely spaced interaction gaps; and

the drift lengths between said clusters being greater than the drift length between adjacent cavities of the individual clusters.

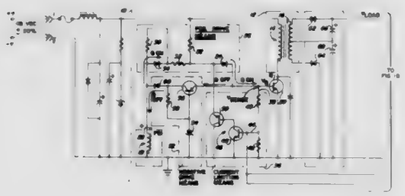
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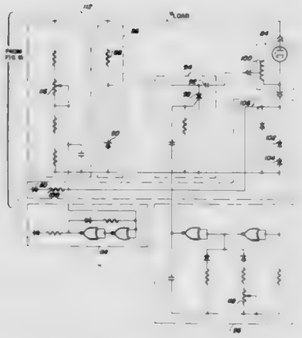
4,800,323

SINGLE-ENDED SELF-OSCILLATING DC-DC CONVERTER FOR INTERMITTENTLY ENERGIZED LOAD HAVING V_{BE} RESPONSIVE CURRENT LIMIT CIRCUIT

Scott T. Sikora, Mesa, Ariz., assignor to Tomar Electronics, Inc., Tempe, Ariz.

Continuation of Ser. No. 794,415, Nov. 4, 1985, Pat. No. 4,682,081. This application Jul. 17, 1987, Ser. No. 74,697
The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.
Int. Cl.[4] H05B *41/29, 41/34*
U.S. Cl. 315—219 20 Claims





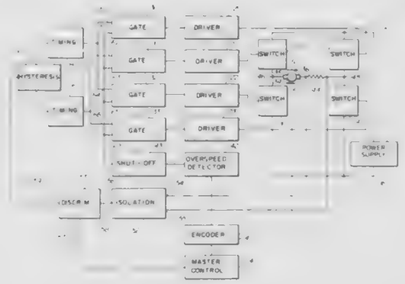
1. Apparatus for delivering current to an intermittently energized load comprising:
a. a coupled inductor including a primary winding a secondary winding and a feedback winding;
b. a switching transistor having base, collector and emitter terminals and a base-emitter junction and being coupled in series with said primary winding for switching between conductive and non-conductive states to control the flow of current through said primary winding;
c. a positive drive supply coupled between said feedback winding and the base of said switching transistor and energized by said feedback winding for providing a positive bias voltage to said switching transistor to switch into and maintain said switching transistor in the conductive state to transfer energy into said inductor;
d. a current limiting circuit for removing the positive bias voltage from said switching transistor when the primary winding current reaches a predetermined value to thereby switch said switching transistor out of the conductive state and into the non-conductive state, said current limiting circuit including
i. a semiconductor switch having a control lead with a threshold voltage;
ii. a voltage divider coupled across the base-emitter junction of said switching transistor for applying a scaled output voltage to the control lead of said semiconductor switch to cause said semiconductor switch to conduct when the base-emitter voltage of said switching transistor reaches a predetermined current limit voltage representative of a preselected switching transistor collector current limit;
iii. said semiconductor switch shunting the positive bias voltage away from the base of said switching transistor when the voltage on the control lead rises above the threshold voltage to switch said transistor out of the conductive state and into the non-conductive state; and
e. a load coupled to said secondary winding for receiving energy stored in said inductor after said switching transistor is switched into the non-conductive state by said current limiting circuit.

4,800,324

BRUSH MOTOR AMPLIFIER WITH OVERSPEED PROTECTION

Ralph Kuttner, Fullerton, Calif., assignor to Steel Casting Engineering, Ltd., Orange, Calif.

Filed Nov. 19, 1986, Ser. No. 932,663
Int. Cl.[4] H02P *5/06*
U.S. Cl. 318—293 3 Claims



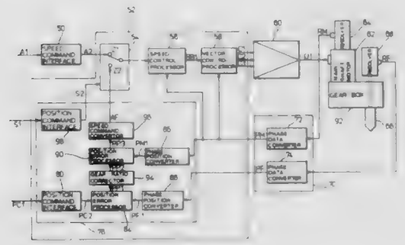
1. An amplifier control system for controlling the armature current of a DC brush motor comprising:
a supply of DC operating voltage;
a first pair of current switching deivces connecting to said voltage supply and said DC brush motor for driving said motor in a first direction;
a second pair of current switching devices connecting to said voltage supply and said DC brush motor for driving said motor in a second direction;
a plurality of driver circuits connected to each of said current switching devices in said first and second pairs;
a gate circuit operative upon the driver circuits to provide switching signals for operation of said first and second pairs of current switching devices;
speed sensing means for sensing the speed of the armature rotation of said DC brush motor, said speed sensing means including an encoder coupled to said brush motor for producing an output signal indicative of the motor speed and comparison means comparing said encoder signal to a predetermined maximum motor speed for establishing a reference voltage corresponding to a predetermined maximum motor speed threshold; and
shut off means, coupled to said comparison means, operative upon said gate circuit to interrupt said first and second current switching devices in the event the motor speed exceeds said predetermined maximum motor speed threshold,
said gate circuit including a plurality of gates each having one input commonly connected to said shut-off means.

4,800,325

SPINDLE POSITIONING APPARATUS

Yoshinori Nakanishi, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1987, Ser. No. 3,281
Claims priority, application Japan, Jan. 17, 1986, 61-6396
Int. Cl.[4] G05B *1/06*
U.S. Cl. 318—661 11 Claims



1. A spindle positioning apparatus comprising:
an absolute angle detector operatively coupled to a spindle motor, said absolute angle detector comprising a first resolver;
a spindle drivable by the spindle motor;
an absolute position detector operatively coupled to said spindle, said absolute position detector comprising a second resolver; and
a position control processing system for deriving a positional error from detected signals from said absolute angle detector and a target position command signal whereby said spindle can be accurately and quickly positioned, said position control processing system further comprising,
a first position error processor for deriving a positional error of said spindle from a spindle position command signal and the detected signal from said absolute position detector and for generating a position error signal indicative of the position of said spindle; and
a second position error processor for deriving a deviation between said spindle motor and said spindle from the detected signal from said absolute angle detector and from a signal based on said position error signal from said first position error processor.

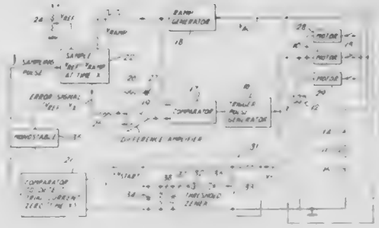
4,800,326

APPARATUS AND METHODS FOR CONTROLLING INDUCTION MOTORS

Peter J. Unsworth, Lewes, England, assignor to National Research Developement Corporation, London, England

Continuation of Ser. No. 770,012, Aug. 28, 1985, abandoned, which is a continuation of Ser. No. 305,735, Sep. 25, 1981, abandoned. This application Jun. 6, 1986, Ser. No. 873,454
Claims priority, application United Kingdom, Sep. 26, 1980, 8031129; Feb. 6, 1981, 8103681; Jun. 29, 1981, 8119931
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—729 19 Claims

1. A power controller for an induction motor which is coupled to an alternating current supply operating at a predetermined frequency, comprising:
at least one SCR device, each said SCR device connected between a phase of said alternating current supply and the induction motor to be energized from the supply, one SCR device being provided for each phase of the supply, each said SCR device also including a trigger input for trigger signals for turning on said SCR device;
ramp generating means for generating a ramp waveform with a frequency double said predetermined frequency of said alternating current supply;
means for detecting zero crossings of a voltage waveform of one phase of said alternating current supply;
synchronizing means, connected to said ramp generating means, for synchronizing zero crossings of said ramp waveform with said zero crossings in the voltage waveform of said one phase of the alternating current supply;
detecting means, coupled to said phase of said alternating current supply, for detecting when a current in said one phase of the supply ceases;
sample and hold means, coupled to said ramp generating means and said detecting means, for sampling and holding a voltage of said ramp waveform from said ramp generating means each time said current cessation is detected, said sampled and held voltage being a monitoring signal, proportional to intervals between said zero crossing of said voltage waveform in said one phase of the supply, and a cessation of current in said one phase which preceeds current reversal therein;



a first comparator, connected to said sample and hold means, for comparing said monitoring signal with a reference signal to derive an error signal indicative of a difference between said error signal and said reference signal; and
control means, connected to said SCR devices and to said first comparator, for generating said trigger signals to said SCR devices responsive to said error signal, to change a time relationship between a waveform of the supply and the trigger signals in a direction to shorten a period of conduction of the switching means when said interval increases, and lengthen said period of conduction when said interval decreases.

4,800,327

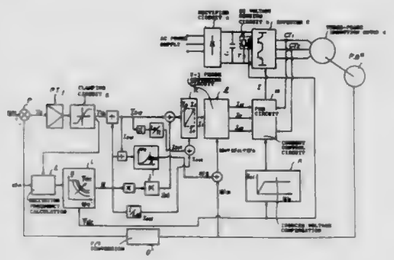
THREE-PHASE INDUCTION MOTOR CONTROL METHOD

Yoshiki Fujioka, Higashiyamato, and Shinichi Kouno, Hino, both of Japan, assignors to Fanuc Ltd, Yamanashi, Japan

PCT No. PCT/JP86/00187, § 371 Date Dec. 15, 1986, § 102(e) Date Dec. 15, 1986, PCT Pub. No. WO86/06227, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 15, 1986, Ser. No. 2,405
Claims priority, application Japan, Apr. 16, 1985, 60-79257
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—798 12 Claims

1. A three-phase induction motor control method for vector control of a three-phase induction motor by an output from an inverter to which is applied a direct current obtained by conversion from an AC input, said method comprising the steps of:
(a) sensing voltage at a DC link section which converts the AC input voltage into the direct current;
(b) increasing a flux command above a base velocity and raising an amplitude of a PWM current control circuit signal with respect to a triangular wave applied to the PWM circuit to raise motor terminal voltage, when the voltage of the DC link section, which is proportional to said AC input voltage, is low compared to desired motor terminal voltage;
(c) decreasing the flux command from a region below the base velocity and reducing the amplitude of the PWM

circuit signal with respect to said triangular wave to lower the motor terminal voltage, when the voltage of the DC



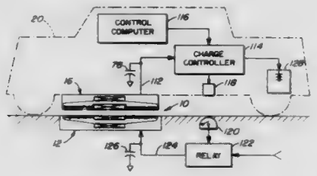
link section, which is proportional to said input AC voltage, is high compared to desired motor terminal voltage.

4,800,328

INDUCTIVE POWER COUPLING WITH CONSTANT VOLTAGE OUTPUT

John G. Bolger, Orinda, and Lung S. B. Ng, Berkeley, both of Calif., assignors to Inductran Inc., Berkeley, Calif.

Continuation of Ser. No. 887,242, Jul. 18, 1986, abandoned. This application Mar. 2, 1988, Ser. No. 166,733
Int. Cl.[4] H02J *7/00*
U.S. Cl. 320—2 **20 Claims**



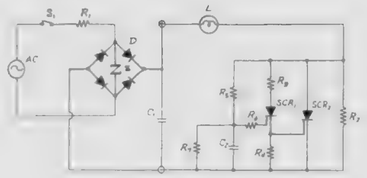
1. A constant voltage inductive power coupling for magnetically transferring electrical power from a power source through an air gap to a load, the coupling comprising:
- electromagnetic means with substantial leakage reactance, responsive to the power source to generate a shaped alternating magnetic field;
- a saturable core in spaced-apart relationship to the electromagnetic means to define an air gap there between and magnetically coupled thereto to receive mutual flux of the shaped magnetic field, the core having enlarged poles and a region of reduced cross sectional area such that the region is in a state of magnetic saturation when the amount of magnetic flux that is required to induce the desired constant output voltage is present in the core, thereby tending to limit the output voltage to the desired constant voltage and counteracting any excess electromagnetic force in the electromagnetic means by causing leakage flux from the electromagnetic means;
- a coil, electromagnetically coupled to the core whereby the magnetic field induces voltage in the coil, the voltage determined by the amount of magnetic mutal flux in the core, said saturable core also providing an inductive component of leakage flux which varies in response to any change in input voltage to said electromagnetic means to magnetically counteract an associated change in said field so as to maintain the core in its state of saturation thereby tending to keep the output voltage from said coil constant; and
- a capacitor in electrical communication with said coil to form therewith a tuned circuit that is below resonance at operating frequency when said core is in its saturated state, any increase in output current being associated with a closer approach of the circuit to a resonant condition and thereby tending to maintain the output voltage at a constant level.

4,800,329

DEVICE FOR LIMITING INRUSH CURRENT

Kazumi Masaki, Osaka, Japan, assignor to Ken Hayashibara, Okayama, Japan

Continuation of Ser. No. 1,625, Jan. 5, 1987, abandoned. This application May 23, 1988, Ser. No. 198,487
Claims priority, application Japan, Feb. 10, 1986, 61-27513
Int. Cl.[4] H02H *9/02*
U.S. Cl. 323—242 **7 Claims**



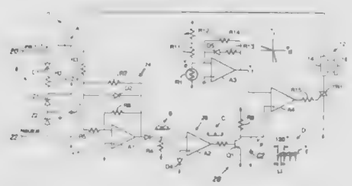
1. A device for limiting inrush current comprising
- a rectifier circuit comprising a rectifier and smoothing means;
- a first resistor means to limit the inrush current that may arise in a lamp, said resistor means being connected with a dc side of said rectifier circuit through said lamp;
- a second resistor means to cause a loss to the arc discharge current that may arise in said lamp on its outage, said second resistor means being connected at an ac side of said rectifier circuit;
- a main controlled rectifier having its main current path connected in parallel with said first resistor means;
- a secondary controlled rectifier having its main current path connected with a gate of said main controlled rectifier; and
- a delay circuit having an output connected with a gate of said secondary controlled rectifier in such manner that said rectifier circuit energizes said lamp through said first resistor means over a time as predetermined by a time constant of said delay circuit.

4,800,330

AC POWER CONTROL

Kosta Peloulis, R.R. #2

Filed Apr. 6, 1987, Ser. No. 34,602
Claims priority, application Canada, Jul. 8, 1986, 513356
Int. Cl.[4] G05F *1/455*
U.S. Cl. 323—243 **5 Claims**



1. A device for regulating delivery of ac power from an ac voltage source to a load in response to changes in the state of a predetermined condition, the ac voltage source having an instantaneous phase angle, the device comprising: a switching

means for controlling flow of current through the load in response to the ac voltage, the switching means having a conductive state in which the switching means permit flow of current through the load and a non-conductive state in which the switching means prevent flow of current through the load, the switching means requiring application of a triggering signal in each half cycle of the ac voltage to assume the conductive state;

phase angle signal generating means responsive to the ac voltage for generating a phase angle signal corresponding to the instantaneous phase angle of the ac voltage relatie to the most recent zero crossover of the ac voltage;

sensor means for sensing the current state of the predetermined condition, the sensor means comprising a sensor whose resistance varies with the current state of the predetermined condition;

threshold signal generating means responsive to the sensor means for generating a threshold signal varying with the sensed current state of the predetermined condition, the threshold signal generating means comprising:

(a) means defining a voltage divider, the sensor being an element of the voltage divider;

(b) dc supply means adapted to be powered by the ac voltage for so applying a dc voltage to the voltage divider that a divider voltage whose magnitude is dependent on the resistance of the sensor is generated; and

(c) amplifier means for amplifying the divider voltage; and,

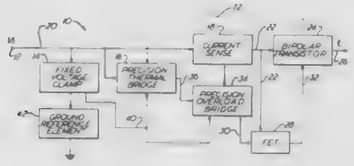
comparison means for comparing the phases angle signal with the threshold signal and for applying a triggering signal to the switching means whenever the phase angle signal corresponds to the threshold signal.

4,800,331

LINEAR CURRENT LIMITER WITH TEMPERATURE SHUTDOWN

Richard V. Vesce, East Hampton, Conn., and Andrew C. Reck, St. Joseph, Mich., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 12, 1987, Ser. No. 13,758
Int. Cl.[4] G05F *1/573*
U.S. Cl. 323—277 **8 Claims**



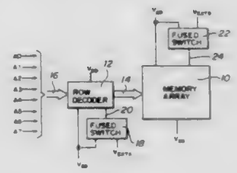
4. A current limiter for limiting load current delivered from an input voltage source to a load:
- current sensing means, responsive to the input voltage source for conducting the load current and providing a sensed signal indicative of the magnitude thereof;
- control means, responsive to the magnitude of the sensed signal for providing a control signal for controlling the magnitude of the load current; and
- a solid-state series pass element, responsive to the load current and responsive to said control signal for providing said load current by operating in its saturation region for load currents less than a selected magnitude and in its linear region for load currents greater than said selected magnitude.

4,800,332

RECONFIGURABLE INTEGRATED CIRCUIT WITH ENHANCED TESTABILITY OF MEMORY CELL LEAKAGE

Charles L. Hutchins, Sugar Land, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 709,266, Mar. 7, 1985. This application Dec. 5, 1986, Ser. No. 938,213
Int. Cl.[4] G01R *31/28;* **G11C** *7/00*
U.S. Cl. 324—73 R **3 Claims**



1. An integrated circuit, comprising:
- a bias node for receiving a voltage from a bias supply;
- a plurality of memory cells, each comprising a capacitor having a first plate connected to said bias node and having a second plate;
- sensing means for sensing the contents of a memory cell;
- means for addressing one of said memory cells responsive to an address signal, said addressing means connecting the second plate of the addressed memory cell to said sensing means;
- means for isolating said bais node from said external bias supply, so that said bias supply may be applied to other portions of said integrated circuit while not being applied to said bias node;
- a test voltage terminal for receiving a test voltage, said test voltage terminal connected to said bias node so that the operation of said circuit with a voltage at said first plate of said memory cell capacitors different from the voltage of said bias supply may be tested;
- means for disconnecting said test voltage terminal from said bias node; and
- means for disabling said isolating means, so that said first plates of said memory cell capacitors may be biased by said bias supply in the operation of said integrated circuit when said isolating means is disabled.

4,800,333

SWITCHED-CAPACITOR WATTHOUR METER CIRCUIT HAVING REDUCED CAPACITOR RATIO

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 947,114, Dec. 29, 1986, abandoned. This application Jun. 24, 1988, Ser. No. 212,115
Int. Cl.[4] G01R *21/127, 21/133*
U.S. Cl. 324—142 **15 Claims**

1. An electronic circuit for measuring energy consumption in an electrical system comprising:
- input means for first and second signals representative, respectively, of current and voltage in the electrical system;
- multiplying means for multiplying the first and second signals to provide a product signal representative of power being supplied by the electrical system;
- said multiplying means comprising a time division multiplier including sampling means for sampling one of said first and second siganls and for providing samples proportional to the instantaneous value of current or voltage represented by said one signal, and switching means receiving the other of said first and second signals and an inverted form of said other signal, the switching means being controlled by said samples so as to switch between said other

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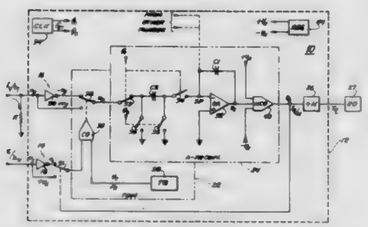
signal and the inverted form of said other signal to produce said product signal;

said sampling means comprising sampling signal generating means for generating a triangular waveform sampling signal, and means for comparing the amplitude of said one of the first and second signals to the sampling signal to produce said samples, the samples comprising pulses having a pulse width that is proportional to said amplitude;

said sampling signal generating means comprising a switched-capacitor integrator for providing at an output thereof said triangular waveform sampling signal, another switching means for alternately applying one of positive and negative reference voltages to an input of the switched-capacitor integrator, and comparator means for comparing the triangular waveform sampling signal from the switched-capacitor intergrator alternately with said one of the positive and negative reference voltages and for controlling said other switching means;

switched-capacitor integrator means for integrating the product signal and for providing an integrated signal representative of average energy;

converting means for converting the integrated signal into a first train of signal pulses; and



divider means for dividing the first train of signal pulses by a preselected ratio and for providing a second train of output signal pulses, each output signal pulse representing a predetermined amount of electrical energy consumed in the electrical system, said switched-capacitor integrator means comprising an amplifier having a first capacitor connected between an output and an input of the amplifier, a second capacitor, first switching means for alternately connecting the second capacitor to the multiplying means and to the input of said amplifier, second switching means for alternately connecting and disconnecting the second capacitor to and from ground, and clock generator means for supplying first and second clock signals for respectively controlling said first and second switching means, the clock signals being non-overlapped and out of phase, and the output signal of said amplifier being a ramp voltage having a time constant which is a function of the ratio of the values of said first capacitor to said second capacitor, said ratio of the values of said first capacitor of said second capacitor being inversely proportional to the preselected ratio by which said divider means divides said first train of pulses and limited to maintaining said first and second capacitor values within the same order of magnitude.

4,800,334

METHOD OF ANALYZING THE VOLTAGE INDUCED IN AN EXCITER COIL OF A STEPPING MOTOR

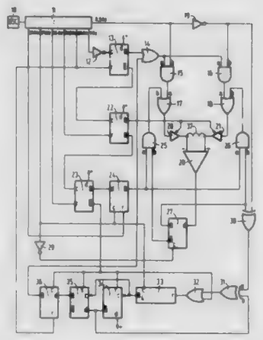
Jean-Claude Bersey, Epalinges, Switzerland, assignor to U.S. Philips Corp., New York, N.Y.

Continuation-in-part of Ser. No. 516,021, Jul. 22, 1983, abandoned. This application Aug. 27, 1986, Ser. No. 900,861

Claims priority, application Netherlands, Aug. 4, 1982, 8203094

Int. Cl.[4] G01R *31/02;* **G04F** *5/00;* **G06F** *1/04*

U.S. Cl. 324—158 MG **36 Claims**



1. A method of analysing the voltage induced in an exciter coil of a stepping motor in detection periods which occur after energization of the exciter coil, said method comprising: energizing the exciter coil with a drive pulse for a given period, defining detection periods after the energizing periods, loading the exciter coil in said detection periods with an impedance so that an induction voltage developed can produce an induction current, detecting the polarity of the current in the exciter coil at periodic instants during said detection period, energizing the exciter coil in accordance with the detected polarity with a voltage of a polarity such that the instantaneous current in the exciter coil is counteracted, and analyzing the polarity pattern of consecutive energizations during said detection periods to provide an indication of the motor response to the drive pulses.

4,800,335

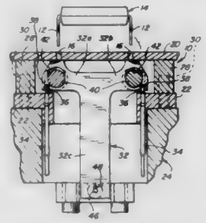
TEST FIXTURE FOR CIRCUIT COMPONENTS ON CIRCUIT BOARDS

Fernando E. Davila, Chicago, and Richard G. Schmid, Glenview, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed May 28, 1987, Ser. No. 55,471

Int. Cl.[4] G01R *31/02*

U.S. Cl. 324—158 F **18 Claims**



1. A test fixture for determining proper or improper insertion of a pair of contact pins on a circuit component through a pair of mating sockets in a printed circuit board or the like, comprising:

support means mounted beneath the circuit board;

a single detection member movably mounted on said support means beneath said sockets for engagement by the contact pins upon proper insertion through the sockets, the single detection member being movable from a first position whereat neither contact pin is in engagement therewith to either a second position in response to both contact pins coming into engagement therewith or a third position in response to only one contact pin coming into engagement therewith; and

signal means operatively associated with said single detection member for producing a signal only when the detection member is in said second position whereat both contact pins are in engagement therewith after proper insertion through the sockets in the circuit board.

4,800,336

BATTERY LEVEL INDICATOR SUPPLYING DATA FROM A MEMORY TO A DISPLAY IN A POWER-OFF STATE

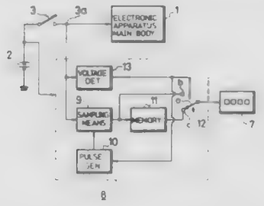
Tsutomu Mikami, Saitama, and Masaaki Kojima, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 18, 1987, Ser. No. 50,399

Claims priority, application Japan, May 21, 1986, 61-116819

Int. Cl.[4] G10N *27/02*

U.S. Cl. 324—426 **2 Claims**



1. A battery level indicator for use with an electronic apparatus comprising:

(a) voltage detection means for detecting the application of power to said electronic apparatus from a battery, for producing an output signal in response to such application of power.

(b) sampling means connected to said electronic apparatus for sampling the value of voltage applied thereto from said battery.

(c) memory means connected to said sampling means for storing data corresponding to the voltage level applied to said electronic apparatus,

(d) an indicator for displaying data, and

(e) data supplying means connected to and responsive to said voltage detecting means for supplying real time voltage data from said sampling means to said indicator while said battery is applying power to said electronic apparatus, and for supplying voltage data from said memory means to said indicator when said battery is not applying power to said electronic apparatus.

4,800,337

METHOD AND MEANS FOR DETERMINING A MEASURE OF THE SURFACE POTENTIAL OF A MEDIUM CHARGED BY MEANS OF A CORONA CHARGING DEVICE

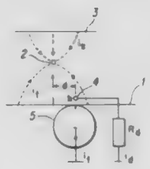
Jan. J. F. M. Cox, Helden-Beringe, and Hendrik Essing, Velden, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Jun. 27, 1986, Ser. No. 879,477

Claims priority, application Netherlands, Jul. 1, 1985, 8501886

Int. Cl.[4] G01R *29/12*

U.S. Cl. 324—455 **6 Claims**



1. A method for determining a surface potential value (E) of a charged medium from a wire current (i_d) collected by a measuring wire, wherein a charge is emitted by at least one corona electrode and a first portion of the charge comprises a charge current (i_f) which is deposited on a surface of the charged medium giving it the surface potential value (E), and wherein the measuring wire is disposed near the surface of the charged medium to collect a second portion of the charge emitted by the corona electrode which comprises the wire current (i_d), said method comprising the steps of:

(a) determining a value of the wire current (i_d);

(b) determining a value for an apparent surface voltage (ASV) from the wire current (i_d);

(c) determining a value of the charge current (i_f);

(d) determining a correction C according to a first predetermined relationship between the correction C and the charge current (i_f), correction C varying as the charge current (i_f) varies; and

(e) determining the surface potential value (E) from the apparent surface voltage value (ASV) and correction C.

4,800,338

PULSE COUNT TYPE FM DEMODULATOR

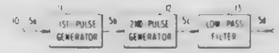
Shigeo Yoshizawa, and Eiichi Ishii, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 67,179

Claims priority, application Japan, Jun. 28, 1986, 61-150662

Int. Cl.[4] H03D *3/04;* **H03K** *9/06*

U.S. Cl. 329—103 **26 Claims**



1. A frequency modulation (FM) demodulator comprising:

limiter means for converting an input signal into a first signal having a rectangular waveform;

first pulse generator means responsive to rising and falling edges of said first signal for generating a first pulse train having first and second states whose combined duration is equal to the period of said first signal, said first state having a first predetermined duration;

second pulse generator means, responsive to said first pulse train, for generating a second pulse train having third and fourth states whose combined duration is equal to the period of said first signal, a duration of said third state being equal to said first predetermined duration reduced

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by a time length proportional to the duration of said second state of said first pulse train; and

low-pass filter means for integrating said second pulse train to provide a demodulated signal.

4,800,339

AMPLIFIER CIRCUIT

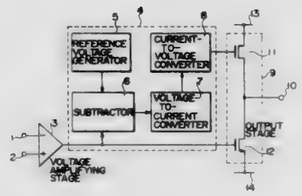
Hiroshi Tanimoto, Kawasaki, and Hisashi Yamada, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 29, 1987, Ser. No. 79,141

Claims priority, application Japan, Aug. 13, 1986, 61-190104

Int. Cl.⁴ H03F *3/45, 3/26*

U.S. Cl. 330—253 **13 Claims**



1. An amplifier circuit comprising:

a voltage-amplifying stage for amplifying the voltage of an input signal;

a drive stage having reference voltage-generating means for generating a predetermined reference voltage, subtracting means for generating a voltage equal to a difference between said reference voltage and an output voltage of said voltage-amplifying stage, which is based on the first pole-potential of a power supply, and signal-converting means for converting the voltage generated by said subtracting means to a voltage signal based on the second pole-potential of the power supply; and

an output stage including a push-pull circuit comprised of at least one complementary pair of output transistors, one of said output transistors being driven by the voltage signal output from said signal-converting means, and the other of said output transistors being driven by the output voltage of said voltage-amplifying stage.

4,800,340

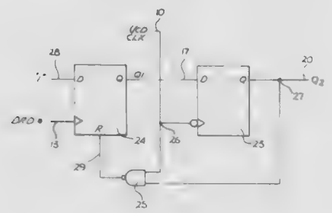
METHOD AND APPARATUS FOR GENERATING A DATA RECOVERY WINDOW

Peter Maimone, Irvine, and Richard G. Yamasaki, Torrance, both of Calif., assignors to Silicon System, Inc., Tustin, Calif.

Filed Apr. 22, 1987, Ser. No. 41,728

Int. Cl.⁴ H03L *7/00*

U.S. Cl. 331—1 A **19 Claims**



1. A circuit for providing a programmable decode window generator comprising:

clock generating means for generating a first clock signal having a period and having a first transition point in said period of said first clock signal;

data synchronizing means coupled to a delayed read data (DRD) signal and said first clock signal, said DRD having a mean center position, said data synchronizing means for locking said DRD signal to said first clock signal;

programming means coupled to said clock generating means for shifting said first transition point to coincide with said mean center position without altering said period of said first clock signal.

4,800,341

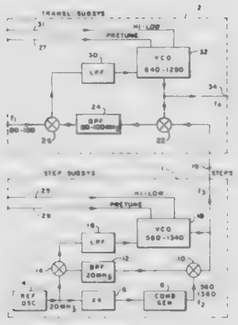
FAST SWITCHING FREQUENCY SYNTHESIZER

Edgar A. Johnson, Tujunga, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 2, 1987, Ser. No. 115,027

Int. Cl.⁴ H03L *7/16*

U.S. Cl. 331—2 **15 Claims**



1. A frequency generator comprising:

reference frequency means for providing a reference signal of stable frequency and phase;

frequency multiplier means receiving said reference signal for providing a signal having a multiplied frequency that is at least four time said reference frequency;

voltage controlled oscillator means (VCO) for providing an AC signal whose frequency is of the same order of magnitude as said multiplied frequency and is controllable by a DC control voltage at a control terminal, said AC signal being perturbed by some phase noise that is manifested as phase angle excursions of said AC signal;

heterodyne means receiving (a) said VCO AC signal and said noise and (b) said multiplied frequency signal, for providing a down-converted signal and phase noise of undivided phase angle excursions, whose frequency is the difference of the frequencies of said VCO and multiplied signals;

phase comparator means receiving

(c) said reference signal and

(d) said down-converted signal and said phase noise of undivided phase angle excursions,

for providing a phase error signal indicative of the phase difference between said reference and down-converted signals; and,

filter means receiving said phase error signal for providing said DC control voltage, with predetermined bandwidth and loop again, to said control terminal of said VCO;

whereby a phase lock loop is established in which the phase noise perturbing said VCO signal is effectively translated to the phase comparator means with undivided phase angle excursions, to enable corrective feedback of the phase lock loop to effectively reduce the noise.

4,800,342

FREQUENCY SYNTHESIZER OF THE FRACTIONAL TYPE

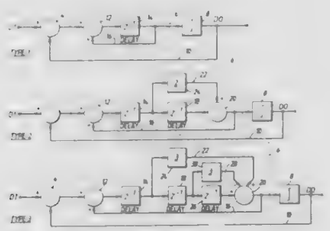
Thomas Jackson, Hanwell, Great Britain, assignor to Plessey Overseas Limited, Ilford, England PCT No. PCT/GB86/00090 § 371 Date Nov. 24, 1986, § 102(e) Date Nov. 24, 1986, PCT Pub. No. WO86/05045, PCT Pub. Date Aug. 28, 1986

PCT filed Feb. 21, 1986, Ser. No. 925,632

Claims priority, application United Kingdom, Feb. 21, 1985, 8504542

Int. Cl.⁴ H03L *7/00*

U.S. Cl. 331—10 **8 Claims**



1. A frequency synthesiser of the fractional N type comprising a voltage controlled oscillator for producing an output signal which is afforded to a phase detector via a variable divider to provide a control signal for the voltage controlled oscillator in the presence of a phase difference between a reference signal from a reference source and the signal afforded from the variable divider wherein the division ratio of the variable divider is set in dependence upon the output of an interpolator arrangement comprising combiner means for receiving a digital input, digital controller means for receiving an output from the combiner means, digital slicer means for receiving an output from the digital controller means, and feedback means for affording the output of the digital slicer means to a component of the synthesiser for varying the division ratio of the variable divider, the said digital controller means comprising summing means for receiving the output from the said combiner means, delay means coupled to the said summing means, and a feedback loop for affording the output of the delay means to the said summing means.

4,800,343

DC CUTTING CIRCUIT

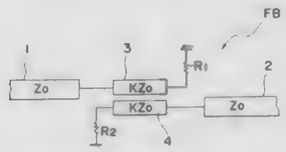
Humiaki Kinoshita, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed May 7, 1987, Ser. No. 47,196

Claims priority, application Japan, May 9, 1986, 61-106998

Int. Cl.⁴ H01P *1/20, 5/02*

U.S. Cl. 333—24 C **4 Claims**



1. A DC cutting circuit for passing a signal having a selected wavelength from input side circuitry to output side circuitry while cutting from said signal any DC component therein, which comprises

a resonator electrode having an electrical length of ¼ wavelength at said selected wavelength and formed at a forward open end of a micro-strip line connected to said input side circuitry, and

another resonator electrode also having an electrical length of ¼ wavelength at said selected wavelength and formed at a forward open end of a micro-strip line connected to said output side circuitry,

said resonator electrodes being disposed in a parallel spaced relation to each other so as to couple said input side circuitry with said output side circuitry by said two resonator electrodes;

wherein at least the resonator electrode connected to the input side circuitry is terminated by a resistor member at said forward open end thereof.

4,800,344

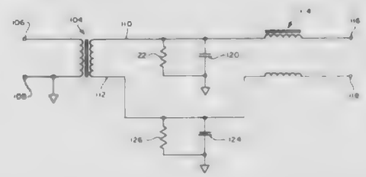
BALUN

Martin H. Graham, Berkeley, Calif., assignor to And Yet, Inc., Berkeley, Calif.

Continuation of Ser. No. 795,374, Nov. 5, 1985, abandoned, which is a continuation-in-part of Ser. No. 715,129, Mar. 21, 1985, Pat. No. 4,717,896. This application Aug. 27, 1987, Ser. No. 109,348

Int. Cl.⁴ H03H *7/42*

U.S. Cl. 333—25 **4 Claims**



1. A balun which substantially attenuates common mode signals without significantly attenuating differential mode signals for coupling an at least partially unbalanced line having at least a first and a second conductor to a balanced line having at least a first and a second conductor, comprising:

a first inductance adapted to have a first lead coupled to said first conductor of said unbalanced line and adapted to have a second lead coupled to said second conductor of said unbalanced line;

a second inductance sharing a common core with said first inductance and having a substantially equal value to said first inductance;

a third inductance having a first coupled to a first lead of said second inductance and adapted to have a second lead coupled to said first conductor of said balanced line;

a fourth inductance having a first lead coupled to a second lead of said second inductance and adapted to have a second lead coupled to said second conductor of said balanced line, said fourth inductance sharing a common core with said third inductance and having a substantially equal value to said third inductance; and

a first capacitance coupling said first lead of said second inductance to a ground potential, and a second capacitance coupling said second lead of said second inductance to the ground potential for substantially attenuating the common mode signals without significantly attenuating the differential mode signals, wherein the common mode signals are one-half the sum of the voltage between the first conductor of the unbalanced line and the ground potential and the voltage between the second conductor of the unbalanced line and the ground potential and wherein the differential mode signals are the difference between the voltage from the first conductor of the unbalanced line to the ground potential and the voltage from the second conductor of the unbalanced line to the ground potential,

said first and second capacitances satisfy the equation

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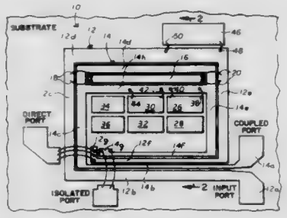
$1/(2\omega C) << \omega L_{oc}$ to substantially attenuate the common mode signals and satisfy the equation $1/(\omega C/2) >> \omega L_{sc}$ to avoid attenuating the highest frequencies of the differential mode signals used for transmission, where L_{oc} is the open circuit inductance, L_{sc} is the short circuit inductance and ω is 2π times the highest frequency of the differential mode signals used for transmission.

4,800,345

SPIRAL HYBRID COUPLER

Allen F. Podell, Palo Alto, and Robert H. Benton, Mountain View, both of Calif., assignors to Pacific Monolithics, Sunnyvale, Calif.

Filed Feb. 9, 1988, Ser. No. 154,640
Int. Cl.[4] H01P *5/18*
U.S. Cl. 333—111 **25 Claims**



1. A quadrature coupler having input, direct, coupled and isolated ports comprising:

an outer strip conductor formed in a planar spiral; and

an inner strip conductor extending generally parallel, coplanarly and coextensively inside the spiral of, and spaced from said outer strip conductor, said respective conductor ends forming said four ports,

four alternating coupled regions comprising a first region and a third region in which said inner strip conductor and outer strip conductor are of known widths and are weakly coupled, a second region disposed between said first and third regions in which said inner strip conductor and outer strip conductor are in the form of an interdigital arrangement of four strongly coupled conductor sections, with adjacent sections connected to a different one of said inner and outer strip conductors, and a fourth region disposed between said third and first regions of strong coupling, wherein the beginning and ending portions of said coupled inner and outer strip conductors are adjacent each other as four generally parallel conductor ending portions with widths less than the widths of said inner and outer strip conductors in said first and third regions.

4,800,346

DELAY LINE AND ITS MANUFACTURING METHOD

Masayauki Muramatsu, Iruma, and Toshiki Morozumi, Yokohama, both of Japan, assignors to Delphi Company Ltd., Tokyo, Japan

Filed May 13, 1987, Ser. No. 49,142
Claims priority, application Japan, May 19, 1986, 611986; Jul. 3, 1986, 611986; Aug. 26, 1986, 611986
Int. Cl.[4] H03H *7/18*
U.S. Cl. 333—140 **9 Claims**

1. A lumped constant type delay line comprising:

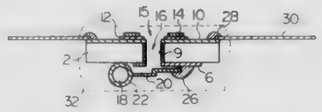
an insulating substrate having opposed surfaces, and a through-hole extending therethrough and open to said surfaces;

a laminated condenser extending over one of said opposed surfaces,

said laminated condenser comprising a first condenser electrode disposed on said one of said surfaces and around said through-hole, a dielectric layer disposed on said first condenser electrode, and a second condenser electrode disposed on said dielectric layer;

an inductor extending over the other of said opposed surfaces,

said inductor comprising an inductance electrode disposed on said other of said opposed surfaces and around said through-hole, an inductor bobbin confronting and extending parallel to said other of said opposed surfaces, electri-



cally conductive wire extending around said inductor bobbin, and a terminal pin extending from said inductor bobbin across said through-hole, said terminal pin connected to said inductance electrode; and

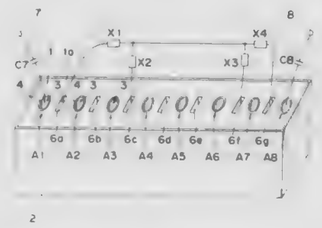
a coating of electrically conductive paste disposd on an inner peripheral wall of said substrate defining said through-hole, said coating extending from said first condenser electrode to said inductance electrode for electrically connecting said laminated condenser to said inductor.

4,800,347

DIELECTRIC FILTER

Tadahiro Yorita, and Motoharu Hiroshima, both of Kanszawa, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 3, 1987, Ser. No. 92,769
Claims priority, application Japan, Sep. 4, 1986, 61-208759; Sep. 4, 1986, 61-208760; Sep. 4, 1986, 61-208761
Int. Cl.[4] H01P *1/205, 7/04*
U.S. Cl. 333—202 **8 Claims**



1. A dielectric filter comprising:

at least three dielectric resonators coupled in a cascade manner, said resonators being arranged in a unit defined by a single block made of dielectric material having at least three first-type through holes extending into a main face thereof, an inner conductor deposited on an inner face of each said first-type through hole, and an outer conductor deposited at least on an outer face of said block other than said main face thereof, each dielectric resonator being defined by one said inner conductor, by said dielectric material provided therearound, and by said outer conductor;

at least two coupling means, each formed between a pair of neighboring dielectric resonators wherein each said coupling means is defined by a second-typehole formed extending into said main face between a respective pair of said first-type through holes; and

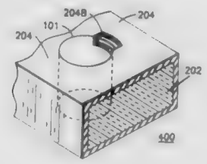
at least one bypass circuit means separate from said coupling means, having a reactance component, connected between at least two of said second-type holes.

4,800,348

ADJUSTABLE ELECTRONIC FILTER AND METHOD OF TUNING SAME

George C. Rosar, Waseca, Minn., and David G. Clifford, Jr., Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1987, Ser. No. 81,264
Int. Cl.[4] H01P *1/205, 7/04*
U.S. Cl. 333—202 **19 Claims**



4. A method for tuning an electronic filter having at least two resonators, each formed from a transmission line having a short-circuited end as a base within a dielectric block and including at least two through-holes spatially disposed at a predetermined distance from one another, the dielectric block and the through-holes having a conformal conductive coating that covers essentially the entire surface thereof, except for an open area around each through-hole at an end opposite that of said base, the method comprising the steps of:

(a) removing a portion of said conductive coating near said open area, for at least one of said resonators in a preestablished tuning sequence, in order to capacitively tune each resonator to a respective predetermined phase target; and

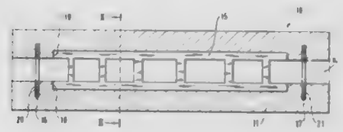
(b) removing a portion of the conductive coating near the base of at least one of said resonators.

4,800,349

E-PLANE TYPE WIDE BAND COMPOSITE FILTER

Mustafa Gurcan, Osny, and Jean-Claude Cruchon, Bouffemont, both of France, assignors to Alcatel Thomson Faisceaux, Cedex, France

Filed Sep. 17, 1987, Ser. No. 97,989
Claims priority, application France, Sep. 18, 1986, 86 13083
Int. Cl.[4] H01P *1/207, 5/02*
U.S. Cl. 333—208 **7 Claims**



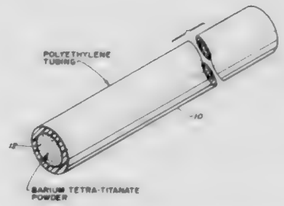
1. An E-plane type wideband composite filter comprising a conductive screening body having an elongate cavity therein with an E-plane filter structure disposed longitudinally therein, said structure being in the form of a blade having a plurality of rectangular openings cut therethrough, said body comprising two portions held against each other on either side of a separation plane along which said structure is disposed, and two irises being disposed transversely at the inlet and at the outlet of said cavity beyond the ends of said E-plane filter structure and wherein the irises are received in two transverse notches machined in the two portions of the screening body, thereby overcoming the inlet susceptances in forming said composite filter while obtaining wider inlet pass bands and retaining good transfer function characteristics.

4,800,350

DIELECTRIC WAVEGUIDE USING POWDERED MATERIAL

William B. Bridges, and William M. Bruno, both of Pasadena, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1985, Ser. No. 737,122
Int. Cl.[4] H01P *3/16*
U.S. Cl. 333—239 **15 Claims**



1. A low-loss dielectric waveguide for replacing conventional electrical metallic waveguides and integrated circuits, comprising:

(a) a waveguide housing made from a section of flexible low dielectric constant tubing which is operable to readily be bent to conform to any of various desired electrical waveguide and integrated circuit component shapes;

(b) the interior of said section of flexible low dielectric constant tubing being entirely filled with a loose powder having low-loss and a high dielectric constant to provide a purely powdered waveguide core therein which conforms to the interior configuration of said flexible tubing;

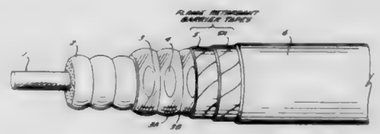
(c) a very low dielectric constant sealing means provided at opposite ends of said section of flexible low dielectric constant tubing for retaining said low-loss, high dielectric constant powder within said section of flexible low dielectric constant tubing and preventing spilling of said low-loss, high dielectric constant powder; wherein said waveguide can be bent to physically conform to the shape of various electrical waveguide and integrated circuit components as desired.

4,800,351

RADIATING COAXIAL CABLE WITH IMPROVED FLAME RETARDANCY

Sitaram Rampalli, Tinley Park, and Hugh R. Nudd, Mokena, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed Sep. 10, 1987, Ser. No. 95,015
Int. Cl.[4] H01P *3/06*; H01Q *13/00*
U.S. Cl. 333—237 **6 Claims**



1. A radiating coaxial electric cable of the foam dielectric type which has improved flame retardancy, said cable comprising an inner conductor; a layer of cellular foam dielectric material surrounding the inner conductor; a single, continuous, corrugated outer conductor surrounding the dielectric foam layer in direct contact therewith, said outer conductor having apertures milled in the crests of the corrugations in said outer conductor along its length for the passage of electromagnetic radiation; at least one layer of inert, flame-retardant barrier

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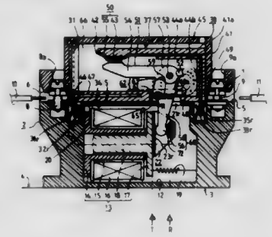
tape wrapped over the outer surface of the outer conductor so as to cover each of said radiating apertures of said outer conductor, said barrier tape comprising a particulate refractory material affixed by a heat-resistant binder to a carrier material; and a jacket of flame-retardant material extruded over the wrapped layer of tape, said tape functioning as a barrier for preventing said foam dielectric material from melting and bubbling out through said radiating apertures into penetrating contact with said extruded jacket.

4,800,352

ELECTROMAGNETIC SWITCHING APPARATUS WITH INTERCHANGEABLE SWITCHES

André Haury, Le Raincy; Elie Bebel, Epinay sur Seine; Michel Lazraire, Courbevoie, and André Vergez, Villemomble sur Seine, all of France, assignors to La Telemecanique Electrique, France

Filed Oct. 8, 1987, Ser. No. 105,746
Claims priority, application France, Oct. 9, 1986, 86 14275
Int. Cl.[4] H01H *67/02*
U.S. Cl. 335—132 **6 Claims**



1. An electromagnetic switching apparatus comprising:

i. an insulating base having a coupling wall provided with at least one opening and input and output socket contacts mounted in said coupling wall;

ii. actuating electromagnet means housed in said base and having an armature movable along a first direction parallel to said wall from a rest to an actuated positions and at least one coupling member attached to said armature and having an elongate receptacle substantially extending at right angles to said coupling wall;

iii. at least one insulating case having a fixation wall adapted for removably mating with said coupling wall; at least one aperture being provided in said fixation wall and registering at least partially with said opening and input and output conductor portions outwardly protruding from said fixation wall to plug-in into the respective socket contacts;

iv. switch means connected to said conductor portions and housed in said case, said switch means comprising at least one fixed contact, at least one movable contact and at least one pivotable lever holding the movable contact for effecting a displacement of the movable contact from a closed to an open condition of the switch means when the armature is in the actuated position, said displacement being effected in a second direction substantially perpendicular to said coupling wall, said holding lever pivoting about an axis substantially perpendicular to said first and second directions;

v. at least one insulating layer pivotally mounted about the axis of the holding lever and driving the latter for displacing the movable contact, said insulating lever passing through said opening and said aperture and having a coupling head which is removably engaged into said receptacle and

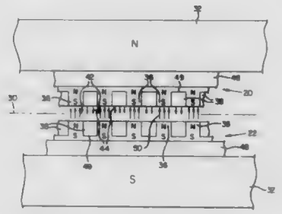
vi. locking means for preventing engagement in said head into said receptacle and disengagement of said head from said receptacle both in the closed condition of the movable contact and when the armature is in its actuated position.

4,800,353

MICROPOLE UNDULATOR

Paul L. Csonka, Eugene, Oreg., and Roman O. Tatchyn, Palo Alto, Calif., assignors to The State of Oregon Acting by and through the State Board of Higher Education on Behalf of the University of Oregon, Eugene, Oreg.

Filed Oct. 30, 1986, Ser. No. 925,036
Int. Cl.[4] H01F *7/00*
U.S. Cl. 335—210 **35 Claims**



1. An undulator for causing transverse undulations in the trajectory of a charged particle travelling along in a substantially linear trajectory, the undulator comprising:

first and second opposed jaws located on opposite sides of an undulator axis which is positionable substantially to coincide with the trajectory of moving charged particles, each jaw comprising a plurality of magnetic bars which are separated by spaces and which extend transversely to the axis, each of the bars of the first jaw having a south pole which extends toward the axis and each of the bars of the second jaw having a north pole which extends toward the axis so that a plurality of primary magnetic fields extend across the axis, each primary field extending between opposed bars of the two jaws respectively; and

a magnetic biasing means for providing a biasing magnetic field extending across the axis in a direction substantially opposite that of the primary fields, such that the strengths of the primary fields are reduced and the net effect is to provide a plurality of secondary fields extending between opposed spaces of the two jaws in a direction substantially opposite that of the primary fields.

4,800,354

SUPERCONDUCTING MAGNETIC RESONANCE MAGNET AND METHOD OF MAKING SAME

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

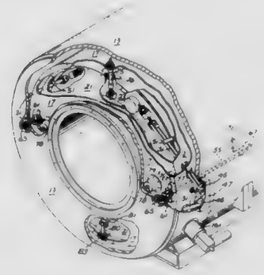
Continuation of Ser. No. 33,326, Apr. 2, 1987, abandoned. This application Sep. 16, 1987, Ser. No. 97,572
Int. Cl.[4] H01F *7/22*
U.S. Cl. 335—216 **11 Claims**

1. A magnetic resonance superconductor magnet comprising:

a cylindrical coil form having a plurality of circumferential grooves;

superconductor wire wrapped under tension in each of the

circumferential grooves, the superconductor wire in each groove forming a main magnet coil; and



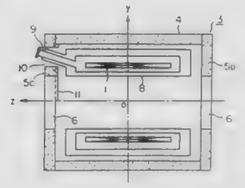
current conducting wire overwrapped under tension around each of said main coils, the start and finish ends of the overwrapped wire electrically shorted.

4,800,355

ELECTROMAGNET HAVING MAGNETIC SHIELD

Moriaki Takechi; Tsugio Watanabe, and Shigenori Kuroda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1988, Ser. No. 193,445
Claims priority, application Japan, May 13, 1987, 62-114846
Int. Cl.[4] H01F *7/00*
U.S. Cl. 335—301 **2 Claims**



1. An electromagnet comprising a magnetic field coil and a magnetic shield composed of a cylindrical yoke of ferromagnetic material and opposite end plates formed with center openings, respectively, and surrounding said magnetic field coil, one of said end plates having an asymmetrical side hole, said one end plate having a portion having a thickness larger than the other portion of said one end plate, said portion being defined within a deviation angle of not more than 90° in both directions from a straight line passing through a center of said center opening and a center of said side hole.

4,800,356

SHUNT TRANSFORMER

Herbert H. Ellis, Asheville, N.C., assignor to Eaton Corporation, Cleveland, Ohio

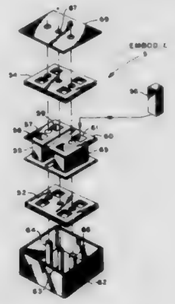
Division of Ser. No. 127,345, Dec. 1, 1987. This application Mar. 31, 1988, Ser. No. 175,990
Int. Cl.[4] H01F *27/24, 27/30*
U.S. Cl. 336—184 **5 Claims**

1. A transformer having a primary winding, a secondary winding, and a magnetic circuit, said magnetic circuit comprising:

two primary coil core means placed spaced apart through said primary winding for conducting magnetic flux in the general direction of a principal axis, and both described as follows: having a plurality of laminations substantially all of which are of the same shape and size, and whose shape is substantially rectangular, and having first and second end portions;

two secondary coil core means placed spaced apart through said secondary winding for conducting magnetic flux in the general direction of a principal axis, and both described as follows: having a plurality of laminations, substantially all of which are of the same shape and size, and whose shape is substantially rectangular, and having first and second end portions;

first plate means for conducting magnetic flux between the first ends of said primary and secondary coil core means and having a plurality of laminations, substantially all of which are of the same shape and size, and having four rectangular interior boundaries defining spaced apart holes for accommodating insertion therein of said primary and secondary coil core means;



second plate means for conducting magnetic flux between the second ends of said primary and secondary coil core means and having a plurality of laminations, substantially all of which are of the same shape and size, and having four rectangular interior boundaries defining spaced apart holes for accommodating insertion therein of said primary and secondary coil core means;

said first end portions of all of said primary and secondary coil core means being inserted in mating relationship to said boundaries in said first plate mens for conduction of flux thereto;

said second end portions of all of said primary and secondary coil core means being inserted in mating relationship to said boundaries in said second plate means for conduction of flux thereto.

4,800,357

TRANSFORMER SUPPORT ASSEMBLY

Richard C. Nickels, Jr., Hampstead, and Gary S. Podhorniak, Baltimore, both of Md., assignors to Black & Decker, Inc., Newark, Del.

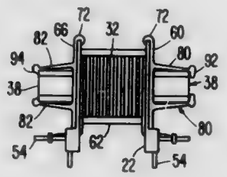
Filed Mar. 4, 1988, Ser. No. 164,828
Int. Cl.[4] H01F *27/26, 27/30*
U.S. Cl. 336—198 **9 Claims**

1. A transformer support assembly for holding primary and secondary coils and a pair of U-shaped cores in operative relation, said assembly comprising:

first and second bobbins, each bobbin including a post axially extending between opposed flanges spaced for windingly receiving one of said coils around said post, each bobbin having an axial bore through said post and said flanges for receiving one leg of each held core in axially opposed relation; and

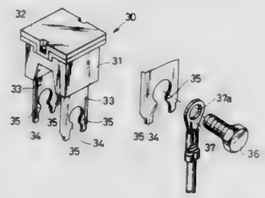
a separator including means engaging corresponding flanges

of both said bobbins for positioning said posts in generally parallel, spaced relation and means adapted to grip base



portions of held cores for biasing the legs thereof toward one another in axially opposed relation in said bores.

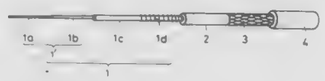
4,800,358
FUSE
Kenji Takenouchi; Tomohiro Ikeda, and Mitsuhiko Tozuka, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Nov. 19, 1987, Ser. No. 122,694
Claims priority, application Japan, Nov. 19, 1986, 61-176590[U]; Nov. 19, 1986, 61-176589[U]
Int. Cl.⁴ H01H *85/16*
U.S. Cl. 337—268 **16 Claims**



1. A fuse adapted to be connected to cable terminals with bolts, comprising:
- an electrical insulating housing having a bottom portion;
- a pair of fuse contacts having first and second ends, said first ends being disposed within said housing and said second ends extending out through the bottom portion of said housing, and each of said fuse contacts having a notch formed at said second end;
- a fuse element disposed within said housing and electrically connected to the first ends of said fuse contacts; and
- a pair of protruding portions formed at each end of said second ends and extending into a middle section of said notch such that the distance between said protruding portions is slightly smaller than the diameter of a stem portion of said bolt.

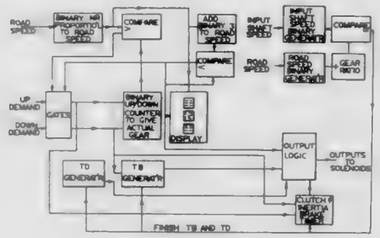
4,800,359
WINDING OF NOISE SUPPRESSING HIGH TENSION RESISTIVE ELECTRICAL WIRE
Yoshimi Yukawa, and Seiichi Wakabayashi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Dec. 24, 1987, Ser. No. 137,699
Int. Cl.⁴ H01C *3/06*
U.S. Cl. 338—214 **8 Claims**

1. A winding of noise suppressing high tension resistive electrical wire comprising:
- a reinforcing fiber cord bound by immersion in a low-viscosity liquid resin binder;
- an elastomeric coating layer formed on a surface of said fiber cord by application of a liquid rubber paint;



- a metallic resistive wire wound around said coating layer; and
- an insulating protective layer.

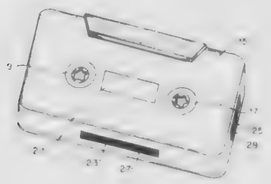
4,800,360
VEHICLE DISPLAY FOR CURRENT AND ALLOWABLE GEAR RATIOS
Michael W. Dunkley, Preston, and John E. Stainton, Chorley, both of Great Britain, assignors to Eaton Corporation, Cleveland, Ohio
Division of Ser. No. 755,628, Jul. 16, 1985, Pat. No. 4,648,290. This application Aug. 22, 1986, Ser. No. 899,564
Claims priority, application United Kingdom, Jul. 23, 1984 8418749
Int. Cl.⁴ B60Q *9/00*
U.S. Cl. 340—52 R **5 Claims**

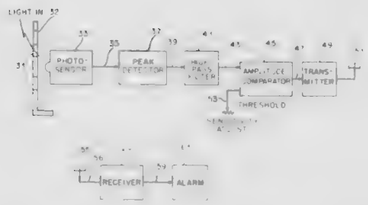


1. A control display system for a change gear transmission characterized by:
- a central processing unit for receiving input signals indicative of transmission input shaft and output shaft rotational speeds, for processing said input signals according to predetermined logic rules to determine the currently engaged gear ratio of said transmission and permissibly engaged gear ratios of said transmission under sensed vehicle operating conditions, and for issuing command output signals for operation of a control display, said control display comprising:
- a first section displaying information indicating of the currently engaged gear ratio;
- a second display section displaying information indicative of the highest permissible engagable gear ratio; and
- a third display section displaying information indicative of the lowest permissible engagable gear ratio.

4,800,361
ANTI-THEFT ALARM SYSTEM FOR MOTOR VEHICLES
Jonathan D. Greif, 67 Center St., Clinton, N.J. 08809
Filed Jul. 13, 1987, Ser. No. 73,064
Int. Cl.⁴ B60R *25/00*
U.S. Cl. 340—63 **12 Claims**

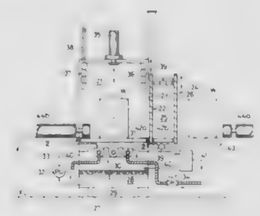
1. In a motor vehicle alarm system which includes an alarm and which is adapted to signal the alarm in response to attempted intrusion, an improvement which is adapted to respond to intrusion of light into said motor vehicle, which comprises:
- (a) an enclosure for placement in the inside area of a motor vehicle having at least a frame and a faceplate, said faceplate having at least one aperture through which intruding light may enter, said enclosure being portably located on a dashboard and having the appearance and size of a tape cassette so as to conceal it from an intruder;
- (b) intruding light detecting means within said enclosure and located at said aperture;





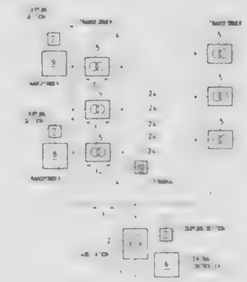
- (c) a signal generating means connected to said intruding light detecting means adapted to generate a signal in response to a preset level of intruding light; and,
- (d) a signal transmitting means connected to said signal generating means for transmission of a generated signal to set off an alarm.

4,800,362
ORGANIC SOLVENT CLEANING APPARATUS
Noboru Sasaki, Toyota; Haruki Yamada, Nagoya; Yoshiaki Onchi, Kyoto, and Kazuya Horio, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Feb. 10, 1987, Ser. No. 13,137
Claims priority, application Japan, Feb. 10, 1986, 61-27714; Nov. 6, 1986, 61-264704
Int. Cl.⁴ F26B *21/06*
U.S. Cl. 340—78 **10 Claims**



1. An organic solvent cleaning apparatus comprising:
- a cleaning chamber adapted to be rendered full of an organic solvent vapor to effect a cleaning operation, the cleaning chamber having
- an entrance formed in a side portion thereof;
- a door mounted at the entrance of the cleaning chamber operable between upper and lower positions;
- means for lowering the door to immerse a portion of the door in organic solvent for hermetically sealing the cleaning chamber during a cleaning operation;
- vapor supply means in the cleaning chamber for supplying the vapor only during the cleaning operation; and
- vapor collecting means in the cleaning chamber for collecting the vapor subsequent to the cleaning operation.

4,800,363
METHOD FOR DATA TRANSMISSION VIA AN ELECTRIC DISTRIBUTION SYSTEM AND TRANSMISSION SYSTEM FOR CARRYING OUT THE METHOD
Walter Braun, Wettingen; Walter Hagmann, Dättwil; Urs Hanselmann, Zürich; Bruno Maibach, Ennetturgi, and Peter Schranz, Ariesheim, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Jan. 2, 1987, Ser. No. 134
Claims priority, application Switzerland, Jan. 15, 1986, 132/86
Int. Cl.⁴ H04M *11/04*
U.S. Cl. 340—310 A **2 Claims**



1. A method for transmitted data via an electric distribution system having a high-voltage distribution line, a medium-voltage distribution line and a low-voltage distribution line, wherein data are exchanged between a central controller and at least one terminal via the medium-voltage distribution line and the low-voltage distribution line, comprising:
- transmitting data on the medium-voltage distribution line at a first carrier frequency in the range between 20 KHz and 140 KHz; and
- transmitting data from the medium-voltage distribution line to the low-voltage distribution line at a second carrier frequency in the range between 4 KHz and 20 KHz;
- wherein the first carrier frequency is continuously changed and is phase modulated for transmission at the medium-voltage distribution line.

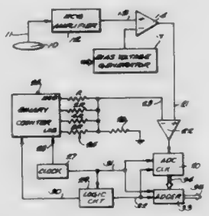
4,800,364
ANALOG-TO-DIGITAL CONVERTER UTILIZING VERNIER TECHNIQUES
David W. Mortara, 8450 N. River Rd., Milwaukee, Wis. 53217
Continuation of Ser. No. 754,775, Jul. 15, 1985, abandoned. This application May 27, 1987, Ser. No. 57,686
Int. Cl.⁴ H03M *1/46*
U.S. Cl. 341—131 **21 Claims**

1. An analog-to-digital signal conversion system comprising:
- analog-to-digital converter having an input for receiving an analog signal and an output for providing a digital representation thereof, said digital representation having a predetermined resolution;
- means for generating a signal having a plurality, N, of discrete amplitude levels, the difference between the closest

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in amplitude of the amplitude levels being substantially equal to (N+1)/N times the predetermined resolution of the analog-to-digital converter;

means for additively applying said N discrete amplitude level signal and an analog signal to be converted to the input of the analog-to-digital converter to provide at the



output thereof N digital representations, each corresponding to the sum of the analog signal to be converted and one of said N discrete levels; and

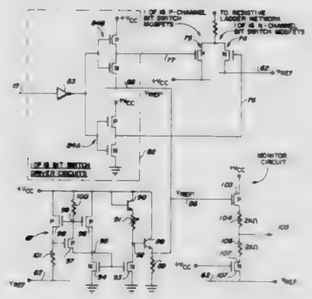
means for combining said N digital representations to provide a digital representation of the analog signal being converted with a greater resolution than the predetermined resolution of the analog-to-digital converter.

4,800,365

CMOS DIGITAL-TO-ANALOG CONVERTER CIRCUITRY

Robert L. White; Frederick J. Highton; Kazuo Ito, all of Tucson, Ariz., and Gary L. Miller, Santa Clara, Calif., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Jun. 15, 1987, Ser. No. 62,774
Int. Cl.[4] H03M *1/06*
U.S. Cl. 341—119 **24 Claims**



1. In a CMOS digital-to-analog converter including a resistive voltage divider ladder network, a P-channel bit switch MOSFET having its drain connected to a terminal of a ladder resistor and its source connected to a first supply voltage conductor, and its gate connected to an output of a first driver, an N-channel bit switch MOSFET having its drain connected to the terminal of the ladder resistor, its source connected to receive a first reference voltage on a first reference voltage conductor, and its gate connected to the output of a second driver, bit switch adjustment circuitry for causing the on channel resistances of the P-channel and N-channel bit switch MOSFETs to be equal, the bit switch adjustment circuitry comprising in combination:

(a) first circuit means for producing a second reference voltage on a second reference voltage conductor, the first driver including a first N-channel MOSFET having its source connected to the second reference voltage conductor and its drain connected to the output of the first driver; and

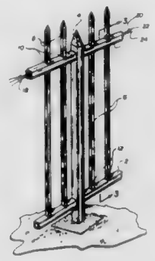
(b) second circuit means responsive to the second reference voltage for producing a predetermined level of a monitor voltage at a monitor conductor when the second reference voltage has a value that causes the first driver output voltage to turn on the P-channel bit switch MOSFET so that its on channel resistance is equal to that of the on channel resistance of the N-channel bit switch MOSFET.

4,800,366

ALARM LOCATOR MODULE FOR PICKET BARRIER INTRUSION DETECTION AND LOCATION SYSTEM

Robert J. Husmann, Soquel, Calif., assignor to Omni Signal, Inc., Capitola, Calif.

Filed Aug. 4, 1987, Ser. No. 82,029
Int. Cl.[4] G08B *25/00, 13/00*
U.S. Cl. 340—524 **11 Claims**



1. An alarm locator module for use in association with a picket fence barrier having a first, second and third continuous conductor extending through a horizontal rail forming a part of the picket fence, having means for causing an open circuit in one of the conductors in the event that one of the conductors is severed and means including sensors associated with one or more of the pickets and adapted to cause a short across said first and second conductors in the event that a picket is deformed more than a predetermined amount, comprising:

signal supply means for communicating a first signal down a first end of said first conductor means;

connection detection and location means for determining when a first short has occurred across said first and second conductors and for determining the location of said first short; and

open circuit detection means for determining when an open circuit occurs on one of said conductors.

4,800,367

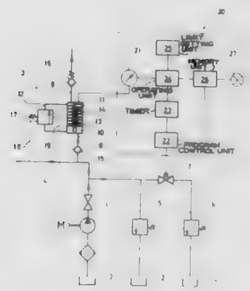
METHOD OF SENSING AND INDICATING ERRORS IN A DOSING CIRCUIT

Kjell Klintenstedt, Saltsjö-Boo, and Christer Lantz, Stocksund, both of Sweden, assignors to Alfa-Laval Separation AB, Tumba, Sweden

PCT No. PCT/SE86/00570, § 371 Date Jul. 23, 1987, § 102(e) Date Jul. 23, 1987, PCT Pub. No. WO87/03667, PCT Pub. Date Jun. 18, 1987
PCT Filed Dec. 12, 1986, Ser. No. 79,771
Claims priority, application Sweden, Dec. 13, 1985, 8505898O
Int. Cl.[4] G01F *15/00*
U.S. Cl. 340—526 **11 Claims**

1. Method of sensing and indicating errors in a dosing circuit, in which a pumping device (1) pumps fluid via a conduit system (4) out to at least one dosing device (3) located nearby a dosing place, which measures and discharges intermittently a predetermined volume of the fluid through a pressure controlled non-return valve (16) out to the dosing place when the pressure in the conduit system (4) is increased from a low

pressure to a high pressure during a certain limited time, the dosing device (3) comprising an inlet and an outlet (8, 9, respectively) for the fluid, a charging chamber (10) connected to said inlet (8), a dosing chamber (11) connected to said outlet (9), a closable passage (12) connecting the chambers and a moveable body (13), which on one side thereof is subjected to the pressure in the charging chamber (10) and on an opposite side thereof is subjected to the pressure in the dosing chamber (11) and upon an increase of the pressure in the conduit system (4) to said high pressure moves in a way such that the volume of the dosing chamber (11) decreases and the volume of the charging chamber (10) increases, during which moment the passage (12) between the chambers (10, 11) is closed, whereby the fluid is discharged out of the dosing chamber (11) through said outlet (9) and non-return valve (16) to the dosing place and fluid flows into the charging chamber (10) from the conduit system (4), said moveable body (13) being moving in an oppo-



site direction upon a decrease of the pressure in the conduit system (4) to said low pressure by the force of a resetting device (14), thereby pressing any fluid located in the charging chamber (10) through said passage (12) into the dosing chamber (11), and a valve (15) being arranged to prevent outflow through the inlet, characterized in that an error in the dosing circuit is sensed and indicated by:

(a) measuring the pressure in the dosing chamber (11) and channels between the same and non-return valve (16) connected thereto,

(b) measuring the time at least while the dosing is taking place, from a chosen reference time during a dosing cycle,

(c) checking that a combination of simultaneously measured values of pressure and time is kept within predetermined limits for such a combination, and

(d) emitting a signal when the combination of measured values is not kept within said limits.

4,800,368

PYROELECTRIC DETECTOR ARRANGEMENT

George R. Wisner, Deep River, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Sep. 1, 1987, Ser. No. 91,796
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—567 **9 Claims**

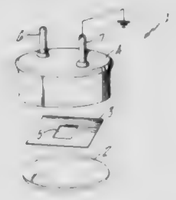
1. An arrangement for detecting the passage of living beings at least into a surveillance region, comprising

optical means for concentrating thermal radiation energy from the surveillance region into a detection zone;

pyroelectric detector means having at least one active area situated at said detection zone and operative for converting the thermal radiation energy received thereby into an electrical signal;

means for evaluating said electrical signal of said detector means to provide an indication of at least the entry of a living being from the outside into the surveillance region based on change in the total amount of the thermal radiation energy received by said active area from the surveillance region as reflected in said electrical signal; and

means for controlling the timing of the electrical signal caused by entry of a living being into a selected portion of the surveillance region relative to those caused by entry of a living being into the remainder of the surveillance region, including masking means for preventing thermal radiation from the outside of the surveillance region from reaching said active area of said detector means, said



masking means including a marginal portion which peripherally bounds an opening for the passage of the thermal radiation energy from the surveillance region to said detection zone and includes at least one serration at said opening for controlling the timing of the electrical signal caused by entry of a living being into a portion of the surveillance region corresponding to said serration relative to those caused by entry of a living being into the remainder of the surveillance region.

4,800,369

ANTI-SHOPLIFTING SYSTEM

Toyoji Gomi, No. 29-2, 2-chome, Sasazuka, Shibuya-ku, Tokyo, and Kozo Yamada, No. 18-32, 2-chome, Tokumaru, Itabashi-ku, Tokyo, both of Japan

Filed Oct. 15, 1986, Ser. No. 918,919
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—572 **4 Claims**



1. An anti-shoplifting system for identifying unauthorized removal of individual goods sold in shops by generating a theft-detection alarm and being capable of identifying the shoplifter, said system comprising:

a detector means mounted in the vicinity of each entrance and exit of the shop, said detector means having a signal-generating stage for generating a radiowave having a predetermined range, a signal-receiving stage for receiving a specific frequency, and a warning device for providing a warning signal upon receipt of said specific frequency;

a signal generator unit, being attached to individual goods sold in the shop, for generating said specific frequency when said signal generator unit is within said predetermined range of said detector means, said signal generator unit including

a parallel wound coil, being a conductive wire wound at

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least once to form several interconnected coils to obtain a parallel array of coils, said parallel wound coil for receiving said generated radiowave from said signal-generating stage and for producing a magnetic field current;

a switching circuit receiving said magnetic field current and for producing an "energized" signal;

a flat miniature power pack receiving said "energized" signal and upon receipt of said "energized" signal being maintained in a switched-on condition for supplying power to said signal generator unit;

an oscillation-modulation circuit for generating a radiowave of said specific frequency; and

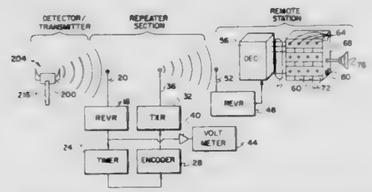
a signal-transmitting circuit for transmitting said generated radiowave from said oscillation-modulation circuit.

4,800,370

WETNESS DETECTION SYSTEM

Ivan Vetecnik, Salt Lake City, Utah, assignor to I E Sensors, Inc., Salt Lake City, Utah

Filed Oct. 7, 1985, Ser. No. 784,936
Int. Cl.⁴ G08B *23/00*
U.S. Cl. 340—573 **14 Claims**



1. A system for detecting and signalling the presence of urine in a diaper or similar article of clothing comprising

detector/transmitter means attachable to the diaper for producing and transmitting a signal when no urine or other conductive matter is present in the diaper,

receiver means for receiving the signal transmitted remotely by the detector/transmitter means for producing a received signal in response thereto,

timer means for producing a time-out signal if no received signal is produced for a predetermined period of time,

repeater means responsive to the time-out signal for transmitting a radio signal,

second receiver means for receiving the radio signal and for producing an indicator signal, and

indicator means for producing a visual and/or audible indication in response to production of the indicator signal.

4,800,371

FREEZE ALARM

Joseph N. Arsi, 1209 Wellington Rd., Colonial Heights, Va. 23834

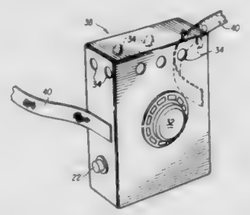
Continuation-in-part of Ser. No. 701,032, Feb. 12, 1985, abandoned. This application Aug. 26, 1986, Ser. No. 900,319
Int. Cl.⁴ G08B *17/06*
U.S. Cl. 340—593 **12 Claims**

1. An apparatus to be used in attics, crawl spaces and other areas where no heat is normally present for protecting water containing pipes subjected to freezing temperatures which comprises:

a. electric circuit means including a power supply,

b. switch means in said circuit for sensing the ambient air temperature in the vicinity of a water containing pipe to be tested,

1. said switch means being preset to be activated only when the water in the pipe being tested reaches a temperature of about 4° C. to about 5° C.,



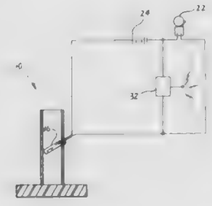
c. and alarm means responsive to said switch means to warn of the imminent freezing of said water in said tested pipe.

4,800,372

FLOOD ALARM

John H. Poteet, 303 Railroad Avenue, Bay St. Louis, Miss. 39520

Filed Nov. 17, 1986, Ser. No. 930,883
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—625 **3 Claims**



1. A float actuated alarm system, comprising:

a. float switch support means comprising a conduit vertically attached to a weighted base structure, said conduit including a through-extending axially aligned slot, said conduit further including a plurality of through-extending apertures, said slot and said apertures allowing a flow of water in and out of said conduit;

b. float switch means slidably mounted in said slot so as to permit heightwise adjustment of said float switch means, thereby to detect preselected liquid levels; and,

c. alarm means operably activated by said float switch means, said alarm means including a battery powered alarm bell.

4,800,373

LOW PRESSURE WARNING DEVICE FOR SCUBA DIVERS

Allan Mayz, 7 Academy St., Staunton, Va. 24401

Filed Aug. 25, 1987, Ser. No. 89,157
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—626 **1 Claim**

1. In combination with a scuba air tank having a regulator with a high pressure stage, and a pressure gauge suspended from said high pressure stage by a line, the improvement comprising:

first housing means attached to an upper portion of said line;

pressure switch means, in said first housing means, connected to said high pressure stage and actuated by a decrease of air pressure in said scuba air tank to a first predetermined level;

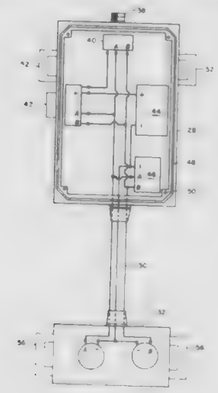
audible signal means in said first housing means actuated by said pressure switch means;

second housing means operatively connected to said first housing means and attached to a lower portion of said line adjacent said pressure gauge;

visual signal means in said second housing means actuated by said pressure switch means;

said audible signal means providing a first audible signal upon a decrease in pressure in said scuba air tank to a first predetermined pressure and a second audible signal which is different from said first audible signal in response to a further reduction in pressure in said scuba air tank to a second predetermined level;

said visual signal means comprising an amber light activated upon a decrease in pressure in said scuba air tank to said



first predetermined level and a red light activated by reduction in pressure in said scuba air tank to said second predetermined level;

battery means in said first housing means for powering said audible and visual signal means;

second switch means connected between said battery means and said pressure switch means for deactivating said audible signal means;

and

said second switch means comprising a three position switch having a first position in which said audible signal means is controlled by said pressure switch means, a second position in which said audible signal means is deactivated and a third position for testing said audible signal means.

4,800,374

PERSONNEL ANTISTATIC TEST DEVICE

Terry W. Jacobson, Chippewa Falls, Wis., assignor to Cray Research, Inc., Minneapolis, Minn.

Filed Oct. 31, 1986, Ser. No. 925,283
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—649 **1 Claim**

1. Apparatus for testing effectiveness of personnel static discharge paths through footwear and wrist straps, comprising:

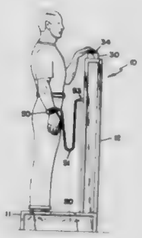
a housing including a base portion configured and positioned for standing upon by a person to be checked and a control panel portion positioned above said base portion at a convenient height to permit manual access to said control panel by a person on said base;

a terminal member positioned on said control panel and adapted for electrical connection to a wrist strap;

a first conductive member adapted for shoe contact, and means positioning it on said base portion for standing upon by a person to be checked;

a second conductive member positioned on said housing and adapted for being touched by a hand of a person being checked;

electrical resistance measurement and indication means including means mounted in said housing for connecting said first and second conductor members and said terminal member thereto, said resistance measurement and indication means operative in a first mode for measuring electrical resistance between said terminal member and said second conductive member and in a second mode for measuring electrical resistance between said first and second conductive members, and for indicating that the resistance being measured is within one of the predetermined low, medium or high resistance ranges; and



switching means operatively connected to said resistance measurement and indication means and selectively operative to cause said electrical resistance measurement in said first mode and for selecting a set of predetermined low, medium and high resistance ranges for wrist strap testing, and selectively operative to cause said electrical resistance measurement in said second mode and for selecting a second set of predetermined low, medium and high resistance ranges for checking the static discharge path through footwear;

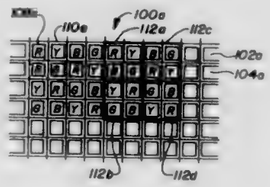
whereby said apparatus provides indications of potential hazards due to low resistance, satisfactory electrostatic discharge path, or unsatisfactory electrostatic discharge path due to high resistance, for the wrist strap and footwear of a person being checked.

4,800,375

FOUR COLOR REPETITIVE SEQUENCE MATRIX ARRAY FOR FLAT PANEL DISPLAYS

Louis D. Silverstein, Scottsdale, and Robert W. Monty, Phoenix, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 24, 1986, Ser. No. 922,659
Int. Cl.⁴ G09G *3/20*
U.S. Cl. 340—703 **1 Claim**



1. A color matrix array comprising:

a plurality pixels, each being one of four colors; blue, green, red, or yellow arranged to form a matrix of rows and columns wherein said columns are perpendicular to said rows;

each row in said matrix having a repetitive sequence of said

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four colors, each row in a set of four rows commencing with a different one of said four colors such that a first group of two contiguous rows in said set of four rows have a first repetitive row sequence of said four colors and a second group of contiguous rows having a second repetitive row sequence of said four colors, thereby establishing repetitive sets of four rows;

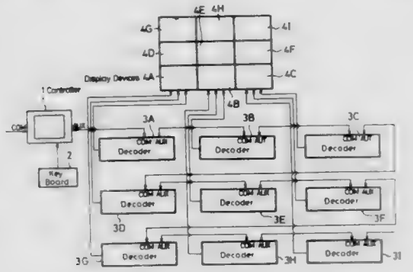
said first and second row sequences arranged such that a repetitive set of four columns is established wherein a first group of two contiguous columns have a first repetitive column sequence of said four colors and a second group of two contiguous columns have a second repetitive column sequence of said four colors, said first and second row sequences with said first and second column sequences establishing blocks of four elements in said matrix formed by two rows and two columns wherein each block contains said four colors one in each element.

4,800,376

MULTIPLE DISPLAY SYSTEM

Ryoichi Suga; Yutaka Nakagawa, and Yoshimi Watanabe, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1986, Ser. No. 945,797
Claims priority, application Japan, Jan. 13, 1986, 61-4760
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—721 **5 Claims**



1. A multiple display system for displaying data derived internally or externally on a display formed of a plurality of display devices as a single picture screen, said multiple display system comprising:

encoder means responsive to said data for generating a coded data signal;

a plurality of decoding means connected to said encoder means and arranged in a series from a first decoding means to a last decoding means; and

a plurality of display devices respectively corresponding to said decoding means and arranged in an array forming a single picture screen, said display devices being connected respectively to corresponding ones of said plurality of decoding means for displaying respective video signals fed thereto;

wherein:

said encoder means comprises means for inserting an identification number in a predetermined portion of said coded data signal and for transmitting said coded data signal to the first decoding means in said series;

each decoding means except the last in said series comprises means for transmitting said coded a data signal to the next decoding means in said series;

each of said decoding means comprises means for adopting the identification number transmitted to it in said coded data signal as its own;

each decoding means except the last in said series comprises means for deriving a new identification number from the identification number transmitted to it and for substituting said new identification number into said coded data signal for transmission to the next decoding means in said series; and

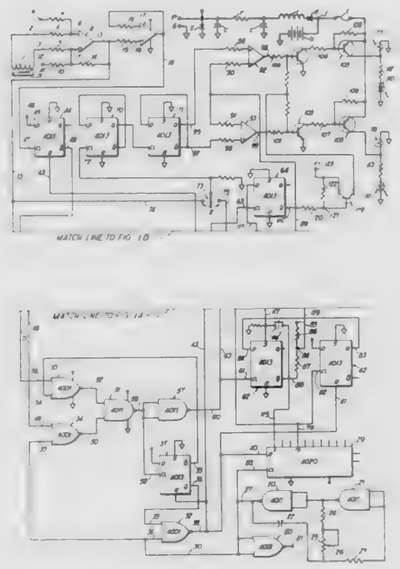
said plurality of decoding means respectively comprise means for extracting data with corresponding identification numbers from said data sequence supplied thereto, for converting the extracted data into decoded video signals, and for supplying said display devices with said decoded video signals.

4,800,377

SPEED REDUCING SIGNAL

Charles E. Slade, 103 E. Walker St., Augusta, Ga. 30901

Filed May 20, 1987, Ser. No. 52,534
Int. Cl.[4] B60Q *1/26*
U.S. Cl. 340—72 **6 Claims**



1. A speed reduction signaling apparatus for use in an automotive vehicle having an electrical power system and a rotatable mechanical system comprising:

a speed responsive pickup system cooperative with a plurality of permanent magnets mounted on said rotatable mechanical system and which emits pulses at a rate responsive to said vehicle's speed;

a timing circuit means for independently providing clock timing pulses at a predetermined rate and establishing speed threshold;

logic circuitry means cooperative with said speed responsive pickup system and said timing circuit means for determining when said vehicle's speed has fallen below said speed threshold;

a plurality of external lamp means cooperative with said logic circuitry means and which are caused to alternately flash on and off by said logic circuitry means whenever the rate of said pulses which are emitted by said speed responsive pickup system falls below said speed threshold; and

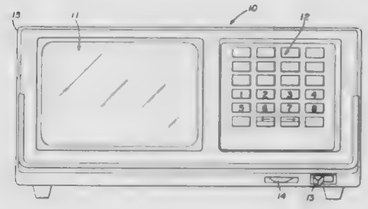
electrical connections for receiving electrical energy for said speed responsive pickup system, said timing circuit means, said logic circuitry means, and said external lamp means and adapted for connection to said electrical power system.

4,800,378

DIGITAL ENGINE ANALYZER

Michael C. Putrow; Leonard J. Wisneski, Jr., both of Kenosha, Wis.; Craig F. Govekar, Gurnee, Ill.; Gary D. Jonker, Kenosha, Wis.; Gordon Lindhard, Racine, Wis.; Dennis W. Weidenbenner, Union Grove, Wis., and Robert O. Quinn, Wheeling, Ill., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Aug. 23, 1985, Ser. No. 769,150
Int. Cl.[4] G09G *1/14*
U.S. Cl. 340—722 **8 Claims**



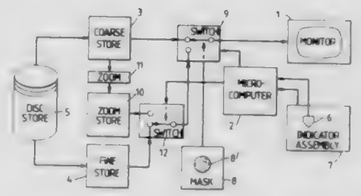
1. An engine analyzer for analyzing an internal combustion engine that produces analog signals, said engine analyzer comprising an analog to digital converter for converting the analog signals into digital signals at a variable sampling rate, memory means including first and second memory banks for storing the digital signals, memory write means coupled to said memory means for writing the digital signals into said memory means at a variable writing rate which corresponds to the rate at which the digital signals are being produced, memory readout means coupled to said memory means for reading the digital signals from said memory means, control means for controlling said memory banks, said memory write means and said memory readout means to enable digital signals to be written into said first memory bank while digital signals are read from said second memory bank and to enable digital signals to be read from said first memory bank while digital signals are written into said second memory bank, a cathode ray tube including a screen and an electron beam which is swept across said screen, said control means being coupled to the engine to receive information on the speed of the engine to cause the sampling rate and the writing rate to be dependent on the engine speed and to vary the rates automatically in correspondence with changes in engine speed, and said control means controlling the readout rate to correspond with the rate at which the beam is swept across the screen, the rate at which digital signals are read out of said memory means being many times greater than the rate at which digital signals are written into said memory means, said screen being defined of a plurality of rows and a plurality of columns, the electron beam being selectively operable to illuminate selected points at the intersections of the rows and the columns, each digital signal identifying the row location of a selected point in a different one of the columns (R-CC), the electron beam scanning said screen along a row in one row after the next, row monitoring means for monitoring the row in which the electron beam is sweeping at an instant of time (R-S), latching means having a clock input coupled to a source of clock signals and a signal input coupled to said memory means for receiving the R-CC information on a row containing a data point in a given column and latching it until R-CC information for the next column is read out so as to provide information on the row containing a data point in the immediately preceding column (R-PC), and circuit means coupled to said row monitoring means and to said memory means and to said latching means and being responsive to R-S and R-CC and R-PC information to provide a screen energizing signal at each intersection corresponding to the location of a digital signal and to each intersection in a column below a digital signal intersection in such column and above a digital signal intersection in the immediately preceding column and to each intersection in a column above a digital signal intersection in such column and below a digital signal intersection in an immediately preceding column, thereby giving continuity to the waveform displayed on said screen.

4,800,379

IMAGE DISPLAY WITH MOVABLE MAGNIFICATION

Andrew J. V. Yeomans, Hertfordshire, England, assignor to Crosfield Electronics Limited, London, England

Filed Apr. 30, 1987, Ser. No. 44,264
Claims priority, application United Kingdom, May 12, 1986, 8611554
Int. Cl.[4] G09G *1/16*
U.S. Cl. 340—731 **7 Claims**



1. A method of displaying an image on a monitor, said image being defined by digital data representing the colour content of pixels of said image, said method comprising:

(1) causing said monitor to display said image under the control of said digital data;

(2) moving an image area selecting outline through ones of a plurality of positions on said displayed image, the size of said outline being smaller than said displayed image;

(3) determining, for each position of said outline, subsidiary digital data defining a portion of said image within said outline after magnification and corresponding to said position; and

(4) causing said monitor to display said magnified portion within said outline, pixels of the originally displayed image within the remaining portion of said outline being suppressed, such that said magnified portion substantially fills said outline, while the remainder of said image outside said outline is displayed unchanged.

4,800,380

MULTI-PLANE PAGE MODE VIDEO MEMORY CONTROLLER

Richard W. Lowenthal, Los Gatos; Larke E. Reeber, Freemont; Drew S. Hoffman, Campbell, and Michael Ramsay, Los Altos, all of Calif., assignors to Convergent Technologies, San Jose, Calif.

Filed Dec. 21, 1982, Ser. No. 452,000
Int. Cl.[4] G09G *1/16*
U.S. Cl. 340—750 **21 Claims**

1. A page mode memory controller for accessing a dynamic random access memory (RAM), comprising:

means for accessing a selected memory row address;

means for latching said selected memory row address during a memory access interval;

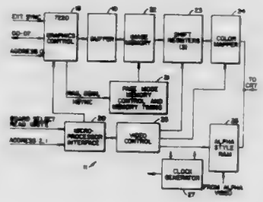
means for providing a selected most significant (MS) memory column address portion;

means for providing a selected least significant (LS) memory column address portion;

means for combining said MS and said LS memory column address portions and for periodically accessing a corresponding memory column address during said memory access interval; and

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a counter for sequentially incrementing said LS memory column address portion, in coordination with said periodic memory column address access, wherein a plurality



of memory column addresses are accessed during said memory access interval, locating a plurality of corresponding sequential memory pages.

4,800,381

ELECTROMAGNETIC INDICATOR DEVICE

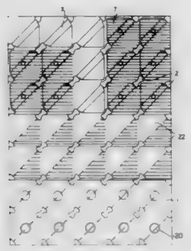
Johannes Joseph, Tulbeckstrasse 27, München 2; Maximilian Bleicher, Leonburgstrasse 11, München 90, both of Fed. Rep. of Germany (8000), and Walter Greiner, Tannenweg 8, Straubing, Fed. Rep. of Germany (8440)

PCT No. PCT/DE86/00018, § 371 Date Nov. 17, 1986, § 102(e) Date Nov. 17, 1986, PCT Pub. No. WO86/04440, PCT Pub. Date Jul. 31, 1986

PCT Filed Jan. 21, 1986, Ser. No. 916,680

Int. Cl.[4] G09G *3/34*

U.S. Cl. 340—764 **17 Claims**



1. An electromagnetic indicator device having a plurality of pivotable, triangle shaped vanes which are asymmetrical in relation to the axis of rotation, said vanes arranged on a plate in the form of a matrix, each vane having a polarization magnet attached in the vicinity of said axis of rotation and pivot pins at the ends of the axis of rotation, an electromagnet for each vane fixed behind said plate for pivotably moving the associated vane from a first position to a second position on said plate, the upper side of said plate being provided with a network of bearing brackets aligned with the outer edges of said plate such that a set of four of said bearing brackets form the corner points of a square and diagonally opposite bearing brackets in a square provide the support for the pivot pins of one of said vanes, the axis of rotation of said vanes being the hypotenuse of the triangular form of said vanes.

4,800,382

DRIVING METHOD FOR LIQUID CRYSTAL DEVICE

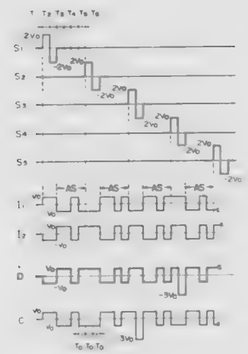
Shinjiro Okada, Kawasaki, and Junichiro Kanbe, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1985, Ser. No. 813,239

Claims priority, application Japan, Dec. 28, 1984, 59-276491

Int. Cl.[4] G09G *3/36*

U.S. Cl. 340—784 **42 Claims**



1. A liquid crystal apparatus, comprising:

a ferroelectric liquid crystal device having:

a group of scanning electrodes;

a group of signal electrodes disposed to intersect the scanning electrodes; and

a ferroelectric liquid crystal having a first and a second threshold voltage of one and another polarity, respectively, disposed between the scanning electrodes and the signal electrodes so as to form a picture element at each intersection; and

voltage signal application means for:

(a) applying to a selected scanning electrode a scanning selection signal comprising;

a voltage of one polarity or another polarity with respect to the voltage level of a non-selected scanning electrode; and

a same level voltage which is at the same voltage level as that of the non-selected scanning electrode;

(b) applying to a selected electrode an information signal comprising:

a first voltage signal providing a voltage exceeding the first or second threshold voltage in synchronism with said voltage of one polarity or another polarity; and

an alternating voltage signal commencing with a voltage of a polarity opposite to that of the first voltage signal with respect to the voltage level of the non-selected scanning electrode in the application period of said same level voltage; and

(c) applying to another signal electrode an information signal comprising:

a second voltage signal providing a voltage not exceeding the first or second threshold voltage of the ferroelectric liquid crystal in synchronism with said voltage of one polarity or the another polarity; and

an alternating voltage signal commencing with a voltage of a polarity opposite to that of the second voltage signal with respect to the voltage level of the non-selected scanning electrode in the application period of said same level voltage.

4,800,383

DATA PROCESSING ARRAYS AND A METHOD OF PRODUCING THEM

William H. Considine, Sussex, England, assignor to Stonefield Systems Plc., West Sussex, England

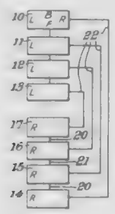
PCT No. PCT/GB85/00029, § 371 Date Nov. 13, 1985, § 102(e) Date Nov. 13, 1985, PCT Pub. No. WO85/03403, PCT Pub. Date Aug. 1, 1985

PCT Filed Jan. 21, 1985, Ser. No. 781,121

Claims priority, application United Kingdom, Jan. 21, 1984, 8401628

Int. Cl.[4] H05K *3/36*; **G06F** *1/00*

U.S. Cl. 340—825.79 **13 Claims**



1. A method of producing a data processor array, said method including the steps of forming a plurality of sub-array boards each carrying a plurality of data processors arranged so that each sub-array board comprises a respective sub-array of a larger two-dimensional matrix array of said data processors, forming a stack with said sub-array boards as if each respective sub-array were divided from each adjacent respective sub-array by an imaginary fold line, said sub-array boards being arranged in an order in the stack as if the array were folded along said imaginary fold lines between the sub-arrays, and providing interconnections between the sub-array boards corresponding to interconnections extending across the imaginary fold lines between the sub-arrays in order that none of the interconnections crosses with any other said interconnection.

4,800,384

ARRANGEMENT FOR IDENTIFYING PERIPHERAL APPARATUS SUCH AS WORK STATIONS PRINTERS AND SUCH LIKE, WHICH CAN OPTIONALLY BE CONNECTED IN GEOGRAPHICALLY DIFFERENT LOCATIONS TO A COMMUNICATION NETWORK BY MEANS OF LOCAL COUPLING UNITS

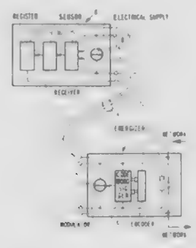
Wilfred A. M. Snijders, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 27, 1986, Ser. No. 866,647

Claims priority, application Netherlands, Jun. 6, 1985, 8501632

Int. Cl.[4] H04Q *9/00*

U.S. Cl. 340—825.520 **11 Claims**



1. A modular coupling unit serving as an interface between a communication network and a peripheral apparatus connectable thereto, comprising:

(a) at least two input/output voltage terminals;

(b) a code word signal generator coupled to said voltage terminals including means for triggering a generating operation in response to an external triggering signal applied to said voltage terminals, wherein said means for triggering a generating operation are arranged for deriving an operating supply voltage;

(c) a settable coding portion arranged for having said code word signal generator generate an optionally adjusted code word signal; and

(d) a modulator arranged for modulating on said supply voltage said code word signal generated by said code word signal generator and for supplying a modulated voltage to said input/output terminals.

4,800,385

WELL DATA TRANSMISSION SYSTEM USING A MAGNETIC DRILL STRING FOR TRANSMITTING DATA AS A MAGNETIC FLUX SIGNAL

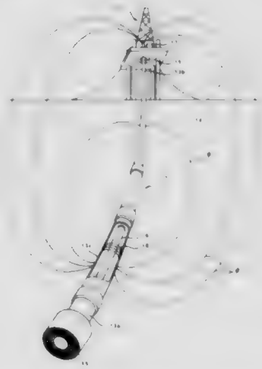
Nobuyoshi Yamazaki, Tokyo, Japan, assignor to Radic Co., Ltd. and Sakata Denki Co., Ltd., both of Tokyo, Japan

Filed Dec. 23, 1987, Ser. No. 137,190

Claims priority, application Japan, Dec. 24, 1986, 61-306253

Int. Cl.[4] H04B *13/02*

U.S. Cl. 340—854 **8 Claims**



1. A well data transmitting system for use in transmission of a data signal representative of drilling parameters sensed at a bottom of a well to the earth's surface, said system comprising a downhole unit disposed at the wall bottom for sensing the drilling parameters and a surface station disposed on the earth's surface, which comprises:

a tubular drill string disposed in the well formed by the drill string and being made of magnetic permeable material, said drill string having an upper portion exposed above the earth's surface and a bottom end portion;

said downhole unit being disposed in said bottom end portion of said drill string and said downhole unit comprising;

oscillating means for oscillating an electric carrier wave signal of a predetermined frequency;

means for producing data signal corresponding to at least one drilling parameter;

modulating means for modulating said electric carrier wave signal by said data signal to produce a modulated electric signal;

a transmitting coil in the form of a solenoid wound on said bottom end portion of said drill string and coupled to said modulating means, said modulated signal flowing through said transmitting coil to thereby induce a magnetic flux

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signal flowing through said magnetic permeable material of said drill string; and

a power source for supplying electric power to said oscillating means, and said modulating means;

said surface station comprising:

a receiving coil in the form of a solenoid disposed around said upper portion of the drill string, a received electric signal being induced in said receiving coil by said magnetic flux signal flowing through said magnetic permeable material of said drill string, said received electric signal being equivalent to said modulated signal; and

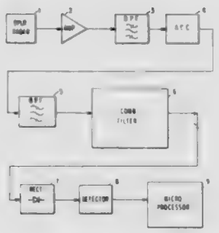
detecting means coupled with said receiving coil for detecting said data signal from said received electric signal.

4,800,386

METHOD OF AND APPARATUS FOR COUNTING OBJECTS

Hannu Kulju, Hyvinkää , and Alpo O. Värri, Tampere, both of Finland, assignors to Kone Elevator GmbH, Baar, Switzerland

Filed May 26, 1987, Ser. No. 53,866
Claims priority, application Finland, May 30, 1986, 862325
Int. Cl.[4] G10S *13/86*
U.S. Cl. 342—61 **10 Claims**



1. A method of counting objects present within a predetermined area by detecting acceleration and deceleration of said objects, comprising the steps of:

utilizing at least one Doppler radar to sense movements of said objects by monitoring Doppler frequencies of signals reflected from said objects;

amplifying the Doppler signal reflected from each of said objects to provide an amplified signal;

effecting an automatic gain control of said amplified signal to provide a signal of substantially constant strength independent of a distance and a size of the respective object;

detecting a frequency variation of said constant strength signal as an indication of change in a speed of movement of a respective one of said objects;

determining whether said constant strength signal represents an acceleration or represents a deceleration of the respective object;

correcting the automatic gain control of said amplified signal, at least in respect of interference signals occurring immediately above a frequency range under examination, by filtering and detecting said constant strength signal in a frequency band above said frequency range under examination and correcting said constant strength signal in said range under examination according to said filtered and detected constant strength signal; and

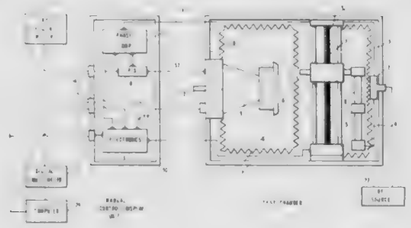
correspondingly modifying a count representing a number of said objects in said predetermined area according to said determined acceleration and deceleration.

4,800,387

BORESIGHT CHAMBER ASSEMBLY APPARATUS

Edward B. Joy, Stone Mountain, Ga., assignor to Logimetrics, Inc., Plainview, N.Y.

Filed Feb. 7, 1984, Ser. No. 577,788
Int. Cl.[4] G01S *7/40*
U.S. Cl. 342—165 **17 Claims**



1. A boresight chamber assembly apparatus for measuring the boresight characteristics of an antenna, comprising:

a rectangular housing having an aperture of a given diameter located on a sidewall and adapted to accommodate an antenna to be tested,

an antenna structure having a base secured to a plate said plate being of a larger diameter than said aperture to enable said antenna to be positioned into the hollow of said housing when said plate is inserted over said aperture,

a moveable RF near field probe located in the hollow of said housing and adapted to move parallel to the radiating surface of said antenna, said probe being a linearly polarized low gain open ended waveguide antenna positioned at a given distance from said antenna radiating surface,

a source of RF energy coupled to said probe for enabling said probe to emit RF radiation with said RF source generating a given wavelength where said given distance of said probe is at three wavelengths of said RF wavelength, and

means coupled to said probe to move the same to a plurality of separate positions each parallel to said radiating surface of said antenna, and

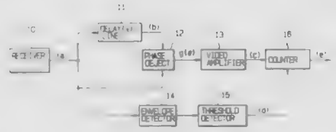
processing means coupled to said antenna and said RF source for providing outputs indicative of any phase differences between the same with a separate output for each of said separate positions whereby the boresight error of said antenna can be derived from said outputs.

4,800,388

APPARATUS FOR MEASURING PULSE COMPRESSION RATIO

Kozo Okada, Kanagawa, Japan, assignor to Tokyo Keiki Company, Ltd., Tokyo, Japan

Filed Feb. 6, 1985, Ser. No. 699,154
Int. Cl.[4] G01S *13/28*
U.S. Cl. 342—194 **4 Claims**



1. An apparatus for measuring a pulse compression ratio comprising:

an unknown radar signal receiving means for receiving radar signals transmitted from at least one unspecified unknown pulse compression radar; and

a pulse compression ratio detecting means for detecting a number (J) of phase inversions existing in one pulse of an unknown bi-phase modulated signal whose modulation code sequence is unknown from among the signals received by said unknown radar signal receiving means or for detecting a function of said number of phase inversions;

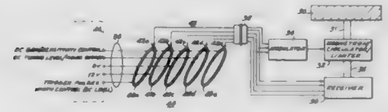
wherein a value detected by said pulse compression ratio detecting means is set to a pulse compression ratio (PCR) of said unknown bi-phase modulation code or to an approximate value of said pulse compression ratio.

4,800,389

RADAR APPARATUS

Philip R. Reger, Newtown Square, and Bob M. Dobbins, Villanova, both of Pa., assignors to Mars Electronics, West Chester, Pa.

Filed Dec. 5, 1986, Ser. No. 938,506
Int. Cl.[4] G01S *13/00*
U.S. Cl. 342—175 **11 Claims**



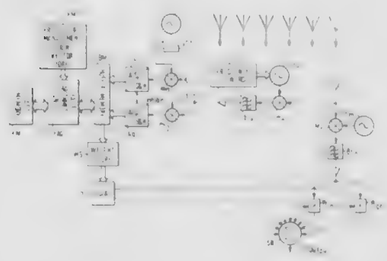
1. A radar apparatus comprising: transmit means for generating radar signals to be transmitted; receive means for receiving reflected radar signals; an antenna coupled to said transmit and receive means; a rotatable antenna structure to which said antenna is secured; and a common housing formed of microwave shielding material and secured to said rotatable antenna structure and in which said transmit and receive means are housed; said transmit means and said receive means including a unitary magnetron, microwave circulator and microwave limiter device.

4,800,390

ADAPTIVE ANTENNA ARRAYS FOR FREQUENCY HOPPED SYSTEMS

Jeffrey G. Searle, Galmpton, Great Britain, assignor to STC PLC, London, England

Filed Jul. 28, 1987, Ser. No. 78,590
Int. Cl.[4] G01S *3/16, 3/28*
U.S. Cl. 342—383 **5 Claims**



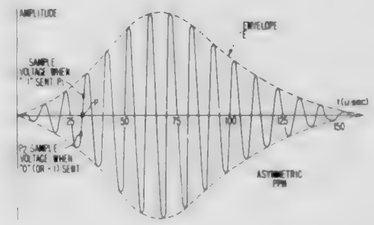
1. An adaptive antenna array arrangement for a frequency hopped spread spectrum system receiver, the arrangement including a frequency hopped auxiliary local oscillator and control thereof designed to hop sequentially and pseudo-randomly into frequency bands across the spread spectrum of the system independently of the main receiver frequency hopped local oscillator which is hopped into the same bands on a different pseudo-random basis, individual mixing means for mixing output of the auxiliary local oscillator with the signal received from each of the antenna array elements, means for deriving from each mixing means weight values for each hopped frequency, means for storing the weight value so derived and means for applying the weight values to the relevant array element outputs when the main local oscillator is hopped into the different frequency bands, the weight value being such that the adaptive arrays form nulls in the reception pattern which are directed towards unwanted signal sources.

4,800,391

METHOD OF AND APPARATUS FOR MESSAGE COMMUNICATION ON LORAN-C NAVIGATIONAL SIGNAL BROADCASTS AND THE LIKE WITH REDUCED NAVIGATION ERRORS

Per Enge, Groton, Mass., assignor to Megapulse, Inc., Bedford, Mass.

Filed Nov. 3, 1987, Ser. No. 116,461
Int. Cl.[4] G01S *1/24*; H03K *7/04*
U.S. Cl. 342—389 **10 Claims**



1. A method of pulse position modulating successive Loran-C pulses while obviating errors caused by such modulation in the sampling reception determination of a predetermined zero crossing of a captive cycle monitored for navigation position determination, said method comprising pulse-position modulating said pulses from the normal unmodulated pulse timing positions asymmetrically for pulse position advance and delay, and adjusting the degree of asymmetry to compensate for the difference in amplitudes of the negative and positive portions of said cycle at equal reception sampling times on each side of the said zero crossing.

4,800,392

INTEGRAL LAMINAR ANTENNA AND RADIO HOUSING

Oscar M. Garay, North Lauderdale; Quirino Balzano, Plantation, and Thomas J. Manning, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 8, 1987, Ser. No. 1,284
Int. Cl.[4] H01Q *1/38*
U.S. Cl. 343—700 MS **1 Claim**

1. A laminar antenna, comprising in combination:

a substantially flat conductive ground plane lamina having first and second surfaces;

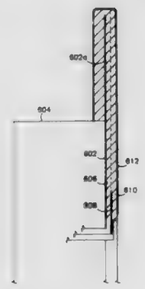
a first dielectric lamina superposed said first surface, wrapping around an end of said ground plane lamina, and superposing a portion of said second surface of said ground plane lamina;

a second dielectric lamina superposed said first dielectric lamina, and extending over said first surface of said ground plane lamina, wrapping around said end of said ground plane lamina and extending over said second surface of said ground plane lamina;

a conductive exciter lamina positioned between said first and second dielectric laminae; and

a radiator lamina superposed said second dielectric lamina

and extending over said first surface of said ground plane lamina, wrapping around said end of said ground plane



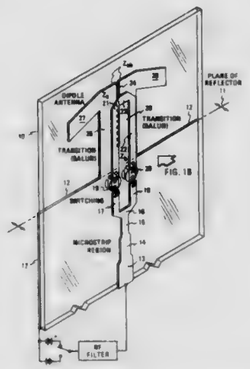
lamina and extending over a portion of said second surface of said ground plane lamina.

4,800,393

MICROSTRIP FED PRINTED DIPOLE WITH AN INTEGRAL BALUN AND 180 DEGREE PHASE SHIFT BIT

Brian J. Edward, Jamesville; Richard J. Lang, Liverpool, and Daniel E. Rees, Camillus, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Aug. 3, 1987, Ser. No. 80,955
Int. Cl.[4] H01Q *1/38, 9/16*
U.S. Cl. 343—821 **7 Claims**



1. In combination, a microstrip fed printed dipole with an integral balun and 180° phase shift bit, fabricated by patterning a first and a second metallized layer disposed respectively on the under and upper surface of a planar dielectric substrate, said combination comprising:

(1) an unbalanced first microstrip transmission line including a first strip conductor and a first ground plane, said transmission line having a branch at which a second and a third microstrip transmission line are formed, the second transmission line including a second strip conductor and a second ground plane, and the third transmission line including a third strip conductor and a third ground plane with the three said ground planes being formed from said first metallized layer and the three said strip conductors being formed from said second metallized layer,

(2) a pair of switches, the first switch connected between said second strip conductor and said second ground plane, and said second switch connected between said third strip conductor and said third ground plane, each switch being positioned at an electrical length approximately equal to one-fourth wavelength from said branch, each switch having a first state in which the strip conductor, to which it is connected, is connected to the ground plane, to which it is connected, and a second state in which the strip conductor, to which it is connected, is disconnected from the ground plane to which it is connected to respectively prevent and permit r.f. transmission in the transmission line,

(3) control means coupled to said switches to achieve a first control state in which said first switch is conductive and said second switch is non-conductive or a second control state in which said first switch is non-conductive and said second switch is conductive,

(4) a dipole radiating element formed from said first metallized layer, and

(5) a transition in which a continuation of the ground plane of said unbalanced transmission lines is bifurcated by a central slot into a first and a second ground plane, said first and second ground planes of said transition forming a balanced transmission line, and

continuations of the strip conductors of said second and third transmission lines form a three part "U" shaped strip conductor with the base of the "U" remote from said branch, said "U" shaped conductor continuing over said bifurcated ground planes to provide propagation between said three parts and said bifurcated ground planes, propagation proceeding in one consecutive order or the reverse consecutive order, depending upon which of said two control states is present,

a first of said three parts, which forms a portion of said second transmission line, being disposed between said branch and said dipole,

a second of said three parts, which forms a crossover extending across said slot over said dipole from one bifurcated ground plane to the other bifurcated ground plane, and

the third of said three parts, which forms a portion of said third transmission line, being disposed between said branch and said dipole,

said dipole radiating element being formed as a diverging extension of said first and second bifurcated ground planes, the inner portions of the arms of said dipole underlying and being strongly coupled to said second part, and the outer portions of said arms extending beyond said second part for efficient radiation.

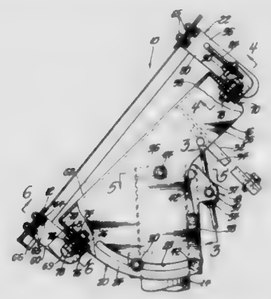
4,800,394

ANTENNA POLAR MOUNT ASSEMBLY

Helmut F. Homann, 16354 Greenland, Mt. Clemens, Mich. 48045, and Robert J. Piper, 22494 Ray, Detroit, Mich. 48223

Filed Nov. 14, 1986, Ser. No. 930,535
Int. Cl.[4] H01Q *1/12, 3/04*
U.S. Cl. 343—882 **3 Claims**

1. An antenna support assembly (**10**) for supporting a disk-type antenna (**12**) on a support post (**14**) defining a vertical axis and having a horizontal axis perpendicular to said vertical axis, said assembly (**10**) including a polar adjustment means (**16**) to interconnect an antenna (**12**) and a support post (**14**) and having a slanted axis inclined relative to said vertical axis for adjusting and fixing the position of the antenna about said vertical axis for longitude and about said horizontal axis for latitude and angularly fore and aft relative to said slanted axis, said polar adjustment means (**16**) including mounting means (**18**) for securing said polar adjustment means (**16**) to the support post (**14**) and for adjustment about said vertical axis, housing means (**20**) for adjustment about said horizontal axis, and brace means (**22**) secured to said housing means (**20**) to attach the antenna (**12**) to said housing means (**20**) and to define said slanted axis along said housing means (**20**) and for adjustment of the antenna (**12**) angularly for and aft relative to said slanted axis, said housing means (**20**) including a housing (**24**) pivotally secured to said mounting means (**18**) and the support post (**14**) at said horizontal axis and having side flanges (**26**) forming a U-shaped configuraiton and having a curved elongated slot (**28**) on at least one of said side flanges (**26**) and a fastening means (**30**) disposed within said slot (**28**) for adjusting and fixing the position of the housing (**24**) with respect to said horizontal axis, said brace means (**22**) including a top bracket means (**56**) for adjustably securing the antenna (**12**) to the upper portion (**58**) of said housing (**24**) along said slanted axis, and a bottom bracket means (**60**) for fixedly securing the antenna (**12**) to the lower portion 962) of said housing (**24**) along



said slanted axis, said assembly characterized by said top bracket means (**56**) including an upper bracket (**82**) secured to the antenna (**12**) and having a U-shaped configuration, a threaded rod (**84**) pivotally connected between said upper bracket (**82**) for displacing said upper bracket (**82**) for and aft said slanted axis, said bottom bracket means (**60**) including an upper angle bracket (**64**) having a U-shaped configuration and a lower angle bracket (**68**) disposed between said upper angle bracket (**64**) and having a U-shaped configuration and connecting said upper angle bracket (**64**) to said housing (**24**)

4,800,395

HIGH EFFICIENCY HELICAL ANTENNA

Quirino Balzano, Plantation, and Oscar M. Garay, North Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 22, 1987, Ser. No. 64,628
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—895 **6 Claims**



1. An antenna comprising:

a helical element exhibiting an electrical length approximately equal to ¼ wavelength at a selected center frequency, said helical element also exhibiting a physical length, and

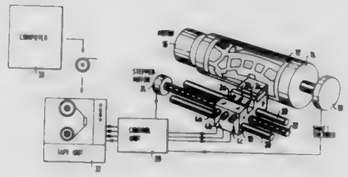
a monopole element having opposed ends, one end of which extends into said helical element a predetermined distance sufficient to cause resonant coupling between said monopole element and said helical element, said predetermined distance being substantially less than the physical length of said helical element, the remaining end of said monopole element being connectable to a source of radio frequency energy.

4,800,396

COMPENSATION METHOD AND DEVICE FOR INK DROPLET DEVIATION OF AN INK JET

Carl H. Hertz, Skolbinkavägen 8, S-22367 Lund, Sweden

Filed Jul. 8, 1987, Ser. No. 70,922
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—1.1 **17 Claims**



11. Apparatus for adjusting the direction of a jet in an ink jet printing device using at least one electrically controllable continuous ink jet, said apparatus comprising:

a. nozzle means (**2**) to generate a liquid jet (**6**) which disintegrates into a train of drops at a point of drop formation and propagates along an ink jet path;

b. control electrode means (**36**) to charge the drops of the jet in response to an electrical control signal;

c. means (**34***a*, **34***b*) to generate an electric deflection field essentially perpendicular to the jet direction;

d. means (**38**) to select the drops on the basis of their charge to determine, whether a specific drop proceeds to and impinges on a predetermined location on a record receiving surface or is intercepted and prevented to proceed to said surface, characterized by

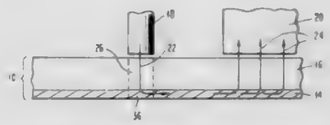
e. means (**46**) to apply an adjustable DC bias voltage between the jet liquid and the control electrode means (**36**) to adjust the jet direction in a plane parallel to the electric deflection field, said bias voltage being appreciably lower than the control signal voltage, which effects said selection.

4,800,397

METAL TRANSFER TO FORM PRINTING MASTER PLATE OR PRINTED CIRCUIT BOARD

Ali Afzali-Ardakani, White Plains; Mukesh Desai, Fishkill, both of N.Y.; Bradford J. Factor, Palto Alto, Calif.; Jan-Pieter Hoekstra, Carmel, and Keith S. Pennington, Somers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1987, Ser. No. 115,471
Int. Cl.[4] G01D *9/00*
U.S. Cl. 346—1.1 **21 Claims**



1. A method for transferring a metal image to a softenable receiving layer, which method comprises:

locating a multi-stylus recording head capable of providing

electrical current pulses in selected ones of said recording styli in contact with a resistive layer of a metal thermal transfer medium comprising said resistive layer and thereon a thin metal layer;

applying electrical current pulses through selected ones of said recording styli to produce high density localized currents in the regions of said resistive layer in contact with said selected energized styli, said electrical currents providing resistive heating in the regions of said metal layer about coextensive with said resistive layer regions;

contacting said metal regions with said softenable receiving layer while providing sufficient heating by means of said resistive heating in the regions of said metal layer about coextensive with said receiving substrate to soften said about coextensive regions of said receiving substrate to transfer at least a portion of the thickness of said metal regions to said receiving layer.

21. An apparatus for metal transfer comprising:

a transfer medium comprised of a resistive layer and a thin metal layer thereon;

a receiving medium comprised of a heat softenable receiving surface; and

a multi-stylus recording head for providing patterns of electrical current through selected regions of said resistive layer, where said electrical currents are localized in the regions of said resistive layer contacted by the styli which are energized by said electrical currents, said localized electrical currents being sufficiently dense to provide sufficient resistive heating to regions of said metal layer about coextensive with said selected regions of said resistive layer, to soften coextensive regions of said heat softenable receiving surface when brought into contact with said metal layer.

4,800,398

INK-JET PRINTER WITH AN ENCASED PRINTER HEAD UNIT

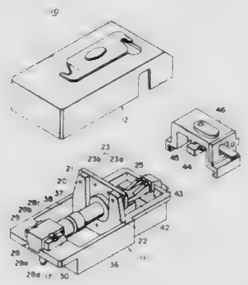
Osamu Narusc; Chuji Ishikawa, both of Yokohama; Sadao Kakeso, and Kyuhachiro Iwasaki, both of Fujisawa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 13, 1987, Ser. No. 120,634

Claims priority, application Japan, Nov. 14, 1986, 61-271509

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—75 **16 Claims**



1. An ink-jet head assembly for use in an ink-jet printer, comprising:

a generally bathtub-shaped bottom case;

ejecting means mounted on said bottom case for ejecting a series of charged ink droplets in a predetermined direction;

deflecting means mounted on said bottom case in front of said ejecting means for deflecting said series of charged ink droplets selectively in accordance with image information to be recorded; and

collecting means mounted on said bottom case for collecting said series of charged ink droplets which have not been deflected beyond a predetermined level.

4,800,399

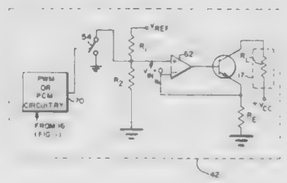
PULSED CONSTANT CURRENT SOURCE FOR CONTINUOUS TONE RESISTIVE RIBBON PRINTERS

Michael E. Long, Fairport, and David A. Johnson, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1987, Ser. No. 44,622

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **5 Claims**



1. In a continuous density thermal printer including a print head having a plurality of electrodes which supply current to a resistive ribbon having a dye layer with sublimable dye which in response to different heat levels causes variable amounts of dye to transfer to a receiver, the improvement comprising:

(a) a plurality of constant current means each effective in a first condition to provide constant current to a selected electrode which supplies such current to the resistive ribbon which responds by producing heat and effective in a second condition to prevent current from being supplied to such electrode; and

(b) control means for causing each said constant current means to be effective in its first condition for a selected time to produce constant current to cause a predetermined amount of dye to transfer to produce a continuous tone dye image.

4,800,400

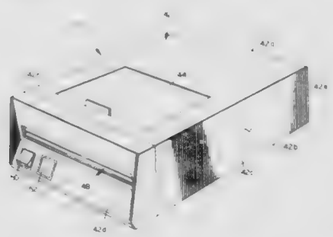
ELECTRONIC IMAGE PRINTING APPARATUS

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 104,770, Oct. 5, 1987, abandoned. This application Feb. 22, 1988, Ser. No. 158,585

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—107 R **17 Claims**



1. An electronic image printing apparatus for printing images on respective ones of a plurality of image recording units which are releasably retained in a cassette therefor, said apparatus comprising:

a housing assembly having means for allowing entry and removal of the cassette;

means disposed in said housing assembly for mounting the cassette for movement in at least a printing direction along a predetermined path;

means for providing at least a beam of light;

means for modulating said means for providing the light beam in response to electronic signals corresponding to an image of a subject selected for printing;

light scanning means operable for scanning the modulated light beam across a preselected scanning line of the image recording units;

optical means for directing the modulated light beam to said light scanning means and from said light scanning means to an image plane of one of the image recording units;

means operable for driving said cassette mounting means and the cassette in said printing direction as said light scanning means scans the modulated light beam across the scanning line, such that the combination of movement provided by said light scanning means and said cassette driving means results in a raster scan image of the subject on the image recording unit by the modulated light beam; and,

means disposed in said housing assembly for ejecting successive scanned recording units from the cassette and said housing assembly.

4,800,401

LIGHT SCANNING DEVICE FOR SCANNING WITH A LASLER BEAM AND AN IMAGE FORMING APPARATUS FOR FORMING AN IMAGE WITH A LASER BEAM

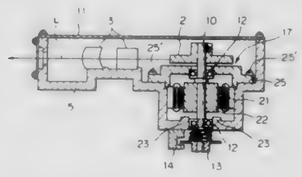
Hideki Sato, Tokyo; Teruo Komatsu, Yokohama, and Yoshinori Sugiura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1986, Ser. No. 850,829

Claims priority, application Japan, Apr. 15, 1985, 60-54763[U]

Int. Cl.[4] G01D *9/42*

U.S. Cl. 346—108 **78 Claims**



1. A light scanning device having:

light scanning means for scanning with a light beam;

said light scanning means having a light deflecting member rotated to scan with the light beam and deflecting the light beam, and bearing means for rotatable supporting said light deflecting member;

a supporting member for holding at least a part of said bearing means; and

a base member formed integrally as a one-piece construction with said supporting member;

said base member having a first containing portion for containing and positioning therein a light output unit which puts out the light beam, and a second containing portion for containing and positioning therein an imaging lens for imaging the light beam deflected by said light deflecting member, the positional relation among said first containing portion, said second containing portion and said supporting member being determined by integral one-piece construction formation, the optical path accuracy of said light beam being improved.

4,800,402

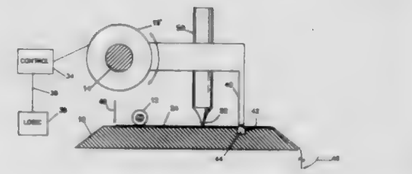
PLOTTER PAPER SIZING SYSTEM

Ralph J. Lake, Jr., Yorba Linda; Frankiyn L. Wiley, Long Beach; A. Daniel Coby, Brea, and John Plath, Jr., Hacienda Heights, all of Calif., assignors to CALCOMP Inc., Anaheim, Calif.

Filed Jan. 7, 1988, Ser. No. 142,059

Int. Cl.[4] G01D *15/24, 9/00*; **G06F** *15/626*

U.S. Cl. 346—139 R **8 Claims**



7. In a graphics plotter system having a platen over which paper is moved longitudinally to create one axis; penholding apparatus moved transversely across the platen and the paper to create the other axis, a controlled raising and lowering mechanism connected to the penholding apparatus for lowering a pen being held therein into contact with and for raising it from contact with the paper and for providing a relative vertical position value signal, vertical sensing means carried by the penholding apparatus for sensing the top surface of the platen, and history means operably connected to the vertical sensing means and to receive the vertical position value signal from the controlled raising and lowering mechanism for calculating and saving values indicating the distance to the platen top surface at a plurality of points across the platen, the improvement for allowing automatic paper sizing comprising:

(a) edge sensing means carried by the penholding apparatus and cooperating with the vertical sensing means and the history means for sensing the edges of paper;

(b) means for automatically moving the paper from end to end over the platen and for saving the positional values of the ends of the paper as found by said edge sensing means; and,

(c) means for automatically moving the penholding apparatus from side to side over the paper and for saving the positional values of the side edges of the paper as found by said edge sensing means.

4,800,403

METHOD AND APPARATUS FOR RESTORING OPERATION OF INK JET PRINTING NOZZLES

Andrea Accattino, Romano, and Aldo Jans, Banchette, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Aug. 24, 1987, Ser. No. 88,303

Claims priority, application Japan, Sep. 5, 1986, 67691 A/86

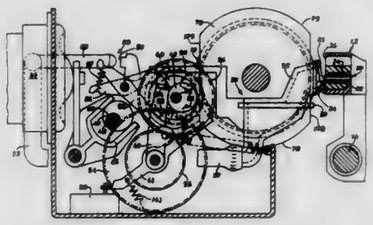
Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—140 R **8 Claims**

1. Apparatus for restoring the operation of at least a nozzle of an ink jet head, including a printing element carrying said nozzle, said element being permanently filled with ink and connected with an ink tank means, the apparatus comprising a suction device adapted to be selectively connected to said head to apply a predetermined depression to said head to draw ink through the nozzle, said suction device comprising a movable container for collecting the ink drawn from said nozzle and an elastic cap connected to said container and selectively covering said head, depression means for generating said depression within said container and said cap, said depression means comprising a vacuum pump connected to said cap through a drain conduit, valve means interposed in said drain conduit between said pump and said cap, and magnetic coupling means connected to said valve means and activated by said pump for selectively connecting said cap with the pump to apply said

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depression to the head and for connecting said cap to the atmosphere after the pump is deenergized and before the cap is



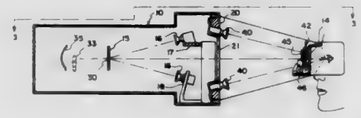
removed from said head, whereby any additional suction effect caused by said elastic cap is prevented.

4,800,404

APPARATUS AND METHOD FOR TESTING VISUAL SENSITIVITY TO GLARE

Arthur P. Ginsburg; David W. Evans, both of Dayton, and Kenneth Bisavelt, Centerville, all of Ohio, assignors to Vistech Consultants, Inc., Beavercreek, Ohio

Filed Sep. 22, 1986, Ser. No. 910,000
Int. Cl.[4] A61B *3/02, 3/00*
U.S. Cl. 351—243 **18 Claims**



1. Apparatus for measuring the visual contrast sensitivity of an individual in both the presence and absence of glare, comprising:

(a) a target having thereon alternating light and dark areas arranged for testing the visual contrast sensitivity of an individual,

(b) means for locating one eye of an individual to be tested at a predetermined viewing position relative to said target,

(c) means establishing a plurality of discrete glare source locations within the field of view of said target from said viewing position from which glare may be projected toward said viewing position, and

(d) selective means for producing glare at any one or more of said source locations.

4,800,405

CAMERA HAVING DISCONNECTIBLE MANUAL CONTROLS FOR FILM UNIT REMOVAL ASSEMBLY AND A SHADE ASSEMBLY

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 24, 1987, Ser. No. 137,669
Int. Cl.[4] G03B *17/52*
U.S. Cl. 354—86 **14 Claims**



1. Photographic apparatus comprising: means for supporting a film cassette containing a plurality of film units of the instant type in position for their sequential exposure;

means for defining a lighttight imbibition chamber, said means including a window through which an image in an exposed film unit may be viewed subsequent to its formation;

means for advancing a film unit, subsequent to its exposure, from the film cassette to said imbibition chamber, said advancing means including means for spreading a processing liquid across a layer of the exposed film unit so as to initiate the formation of a visible image therein;

means for defining an egress through which the exposed film units may be advanced from said imbibition chamber to the exterior of said apparatus;

means for preventing the entry of light, actinic to an exposed film unit, into said imbibition chamber via said window, said light preventing means being movable from an operable light blocking position to an inoperative position in which a film unit containing a visible image may be viewed through said window;

manually operative means for moving said light preventing means from said operative position to said inoperative position and for moving an exposed film unit from said imbibition chamber to the exterior of said camera via said egress; and

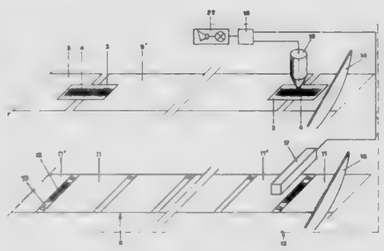
means for rendering said manually operative means ineffective to perform such functions for a predetermined period of time subsequent to the exposure and during development of a film unit in the apparatus.

4,800,406

APPARATUS FOR CREATING AND CHECKING CORRELATION BETWEEN NEGATIVES AND PRINTS IN PHOTOGRAPHIC LABORATORIES

Roberto Signoretto, Olmo Di Martellago, Italy, assignor to Photo Engineering International S.R.L., Venice, Italy

Filed Nov. 5, 1986, Ser. No. 927,170
Claims priority, application Italy, Nov. 11, 1985, 84154 A/85
Int. Cl.[4] G03B *17/24, 27/32, 27/52*
U.S. Cl. 354—105 **7 Claims**



1. In a method for creating and verifying correlation between film negatives and prints in a photographic processor having a printing station at which prints are made on print medium from the negatives, and a finishing station at which negatives and prints are inserted into an envelope, said method comprising steps of

joining adjacent pairs of filmstrips thus forming a continuous strip from the filmstrips pertaining to different orders by means of labels bearing machine-readable control numbers between adjacent film strips,

reproducing each of said numbers onto the print medium at the printing station,

checking the correspondence in the finishing station between the control number of each film and the number reproduced on the corresponding series of prints, and

producing an error signal in the event of any lack of correlation, the improvement wherein

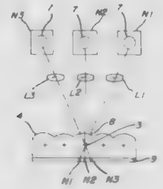
in the reproducing step, the machine-readable control numbers on the labels are transferred to the print medium photographically.

4,800,407

TOTAL FOCUS 3-D CAMERA AND 3-D IMAGE STRUCTURE

Allen K. Wah Lo, 5022 Hidden Branches Dr., Dunwoody, Ga. 30338

Filed Feb. 1, 1988, Ser. No. 150,977
Int. Cl.[4] G03B *35/08*
U.S. Cl. 354—114 **5 Claims**



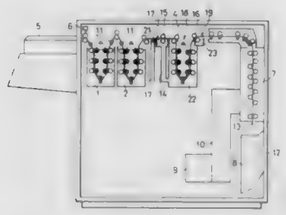
5. A three lens three-dimensional camera in which the lenses are arranged in substantially the same horizontal plane with the distance between adjacent lenses being equal and determined by the focal length of the lenses and size of the negative being utilized so that when the film is projected onto lenticular photographic material so that the image taken through the center lens of the camera is projected onto the photographic material at the center of the lenticule with the images from the other two lenses being projected on each side thereof.

4,800,408

PHOTOGRAPHIC MATERIAL DEVELOPING AND PROCESSING APPARATUS

Minoru Yamada, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 8, 1987, Ser. No. 130,269
Claims priority, application Japan, Dec. 8, 1986, 61-290619
Int. Cl.[4] G03D *3/02, 3/08*
U.S. Cl. 354—322 **10 Claims**



1. An apparatus for development processing of photographic material, comprising:

a tank for developing exposed photographic material;

a tank for fixing the developing exposed photographic material;

a tank for containing solution for washing the photographic material;

a pre-washing bath provided between said fixing tank and said washing tank; and

a roller cleaning bath for washing one pair of rollers for conveying said photographic material from said washing tank to said drying means, said pair of rollers being situated with respect to said roller washing tank so that at least the one roller of said pair of rollers is washed;

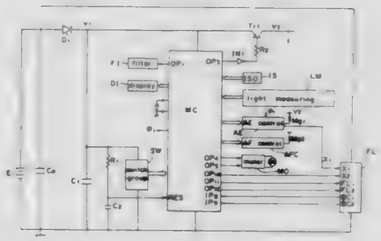
wherein flow of the washing solution is from the roller cleaning bath to said washing tank and then to said prewashing bath, and wherein said washing solution being provided in an amount of not more than 3 liter (inclusive of 0 liter) per 1 m^2 of the photographic material.

4,800,409

CONTROL DEVICE FOR USE IN A CAMERA HAVING AN OBJECTIVE LENS

Motonobu Matsuda, Kawachinagano; Yoshihiro Tanaka, Osaka; Motohiro Nakanishi, Kobe; Nobuyuki Taniguchi, Nishinomiya, and Hiroshi Ootsuka, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1987, Ser. No. 43,616
Claims priority, application Japan, Apr. 28, 1986, 61-99233; Jul. 16, 1986, 61-167466; Jul. 16, 1986, 61-167467; Jul. 16, 1986, 61-167468; Jul. 16, 1986, 61-167470
Int. Cl.[4] G03B *3/00, 7/08, 15/02;* G02B *7/11*
U.S. Cl. 354—402 **24 Claims**



1. Control device for use in a camera having an objective lens, comprising:

means for producing a plurality of distance signals on a plurality of first regions of an object area to be photographed;

means for determining a distance on the basis of the plurality of distance signals to produce a determined distance signal for focusing the objective lens;

means for driving the objective lens in accordance with the determined distance signal;

means for measuring a plurality of brightnesses of second regions of the object area to produce a plurality of brightness signals each corresponding to the measured brightness respectively, each of the second regions being substantially similar to each of the first regions, respectively;

means for counting the number of the distance signals representing an identical distance to a distance represented by the determined distance signal;

means for discriminating whether the number counted by the counting means is single or plural;

means for determining a light measuring value on the basis of a brightness signal of a single second region corresponding to a single first region whose corresponding distance signal represents an identical distance to a distance represented by the determined distance signal when the discriminated number is single, while determining a light measuring value which corresponds to a brightness of almost the entire object area when the discriminated number is plural; and,

means for calculating exposure value of the camera in accordance with the light measuring value.

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4,800,410

FOCUS DETECTING APPARATUS FOR SELECTING THE OPERATING PROCESS IN CONFORMITY WITH THE CONTRAST OF AN OBJECT

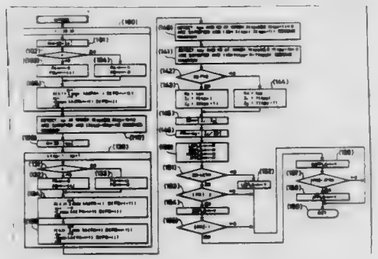
Akira Akashi; Akira Ishizaki; Yasuo Sada, all of Yokohama; Ichiro Ohnuki, Tokyo; Keiji Ohtaka, Tokyo, and Takeshi Koyama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,382

Claims priority, application Japan, Jul. 10, 1986, 61-160823

Int. Cl.[4] G03B *3/00;* **G01J** *1/20*

U.S. Cl. 354—408 **8 Claims**



1. An apparatus for detecting the focus adjusted state of an objective optical system, comprising:

optical means for forming first and second light distributions of an object, said first and second light distributions having their relative positional relation varying in accordance with the focus adjusted state of the objective optical system;

light-receiving means for receiving said first and second light distributions and providing output signals, said light-receiving means having first and second ranges each provided with a plurality of picture elements; and

operation means for calculating a valve indicative of the focus adjusted state of said objective optical system in accordance with a plurality of different calculations using the output signals of said light-receiving means, said operation means (1) calculating a first value indicative of the focus adjusted state of said objective optical system by using one of said different calculations, (2) calculating second values indicative of the focus adjusted state of said objective optical system in said plurality of different calculations respectively by using said first value, (3) calculating evaluation values depending upon a contrast of the object determined in each of said different calculations, and (4) selecting one of said second values on the basis of said evaluation values.

6. A method of detecting the focus adjusted state of an objective optical system, comprising the steps of:

forming first and second light distributions of an object, said first and second light distrubutions having their relative positional relation varying in accordance with the focus adjusted state of the objective optical system;

receiving said first and second light distributions with a light-receiving element having first and second ranges each provided with a plurality of picture elements, and providing output signals from said light-receiving element;

calculating a preliminary value by the use of one of a plurality of different calculations, each of which calculates a value indicative of the focus adjusted state of said objective optical system by the use of the output signals obtained in said light-receiving step;

evaluating each of said different calculations using said preliminary value and selecting one of said different calculations in accordance with the evaluation; and

outputting the value calculated in the selected calculation as a value indicative of the focus adjusted state of said objective optical system.

4,800,411

MAGNETIC BRUSH DEVELOPMENT DEVICE FOR ELECTROSTATIC LATENT IMAGES

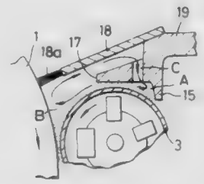
Masaru Tanaka, and Seiji Oka, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 10, 1987, Ser. No. 37,193

Claims priority, application Japan, Apr. 10, 1986, 61-54041[U]; Apr. 16, 1986, 61-56897[U]; Apr. 16, 1986, 61-87716; Apr. 18, 1986, 61-59003

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—3 DD **7 Claims**



1. A magnetic brush development device comprising:

(a) a development sleeve disposed closely to the peripheral surface of an electrostatic latent image carrier;

(b) a development casing housing said development sleeve and storing a two-component developer;

(c) a doctor blade disposed closely to the peripheral surface of said development sleeve for limiting the amount of the developer to be supplied to said electrostatic latent image carrier;

(d) a fiber limiting plate positioned downstream of said doctor blade in the direction of movement of the developer for limiting erected fibers of the developer;

(e) an inlet seal member extending from said development casing toward said electrostatic latent image carrier and having a distal end held against the peripheral surface of said electrostatic latent image carrier; and

(f) an air flow passage providing communication between:

(i) a first space surrounded by said doctor blade, said fiber limiting plate, and a portion of the peripheral surface of said development sleeve and

(ii) a second space surrounded by said inlet seal member, said fiber limiting plate, a portion of the peripheral surface of said development sleeve, and a portion of the peripheral surface of said electrostatic latent image carrier.

4,800,412

APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

Masahide Ueda, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1986, Ser. No. 841,611

Claims priority, application Japan, Mar. 22, 1985, 60-59067; Apr. 4, 1985, 60-72292

Int. Cl.[4] G03G *15/08*

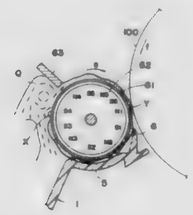
U.S. Cl. 355—3 DD **8 Claims**

1. An electrostatic latent image developing apparatus comprising:

a developing sleeve drivingly rotatable for transporting a developer mixture in a direction along a path to an electrostatic latent image bearing surface opposite a developing side of said sleeve;

magnetic means fixedly positioned in said developing sleeve and having a plurality of N and S poles;

means for mixing and agitating a fresh supply of developer with said developer mixture, said means for mixing and agitating including at least two auxiliary poles having a common polarity and being provided adjacent one another at a side of the sleeve facing away from an associated latent image, one pole of said plurality of N and S poles which is of a polarity opposite to the polarity of the auxiliary poles being located adjacent one of the auxiliary poles at a position downstream thereof in the rotating direction of the developing sleeve; and



a bristle height restricting plate positioned between said one pole and the auxiliary pole which is adjacent the one pole, an attractive magnetic force being exerted on the developer mixture downstream of the auxiliary poles and upstream of the bristle height restricting plate to capture the developer mixture and attract the mixture to the developing sleeve at a position adjacent the bristle height restricting plate.

4,800,413

READER PRINTER

Masahiko Ito, Yokohama; Masami Maetani, Ohmiya; Shinji Murata, and Kazuhiko Onuki, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1987, Ser. No. 79,539

Claims priority, application Japan, Aug. 8, 1986, 61-186593; Aug. 14, 1986, 61-190986

Int. Cl.[4] G03B *13/28*

U.S. Cl. 355—45 **11 Claims**



1. A reader printer comprising:

a focusing lens for focusing light rays passing therethrough:

first optical means for directing light rays passing through said focusing lens to a movable recording medium, said first optical means including a rotatable first mirror;

drive means for rotating said first mirror from a first angled state to a second angled state at a constant speed during movement of the recording medium;

second optical means for directing light rays reflected from said first mirror toward a screen, said second optical means including a second mirror movable between an inserted position wherein it is inserted in a reflection optical path formed by reflection from said first mirror and a retracted position wherein it is retracted from the reflection optical path; and

means for moving said second mirror in a direction substantially parallel to its reflection surface.

4,800,414

MAGNIFICATION VARYING DEVICE FOR ELECTRO-PHOTOGRAPHIC COPYING MACHINE

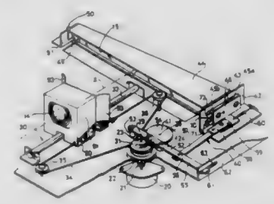
Katsuhiko Takeda, Okazaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1987, Ser. No. 19,560

Claims priority, application Japan, Mar. 3, 1986, 61-47114; Mar. 3, 1986, 61-47115; Aug. 27, 1986, 61-200699

Int. Cl.[4] G03B *27/36, 27/38*

U.S. Cl. 355—58 **15 Claims**



1. A magnification varying device for use in an electrophotographic copying machine of the scan type having a projection lens, means for relatively scanning an original with respect to the projection lens and a deflection mirror for deflecting the projected light from the projection lens toward a photoconductive member, the device comprising:

a drive source,

lens shifting means coupled to the drive source for shifting the projection means substantially along the optical axis of the lens,

means for holding the deflection mirror shiftably in the direction of the optical axis of projection, and

drive force transmission means coupled to the drive source and the deflection mirror for shifting the mirror with the shift of the projection lens, the transmission means including an eccentric cam and a cam follower in contact with the eccentric cam, the eccentric cam having the largest radius at a position where the cam follower is in contact with the cam when giving a magnification of ×1 and shaped to gradually decrease in radius from the largest radius.

4,800,415

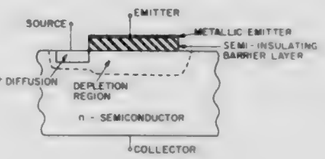
BIPOLAR INVERSION CHANNEL DEVICE

John G. Simmons, Bethlehem, Pa., and Geoffrey W. Taylor, Berkeley Heights, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 653,440, Sep. 21, 1984, abandoned. This application Jan. 22, 1987, Ser. No. 9,620

Int. Cl.[4] H01L *29/72, 29/161, 49/02, 29/80*

U.S. Cl. 357—34 **52 Claims**



1. A solid state device comprising an interface between first and second regions having a first conductivity type, and adapted to the formation of an inversion layer at said interface, with said inversion layer being in electrical contact with a source of electrical carriers of a second conductivity type and

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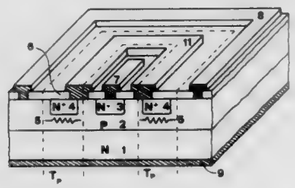
adapted to control electrical carriers of said first conductivity type flowing between said first and second regions.

4,800,416

BIPOLAR POWER TRANSISTOR HAVING BYPASSABLE INCORPORATED-BASE BALLAST RESISTANCE

Salvatore Musemeci, Giarre, Italy, assignor to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed May 8, 1984, Ser. No. 608,084
Claims priority, application Italy, May 16, 1983, 6613 A/83
Int. Cl.⁴ H01L *29/72*
U.S. Cl. 357—34 **3 Claims**



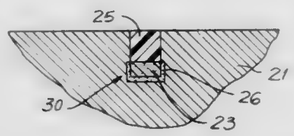
1. A bipolar power transistor comprising: a semiconductor body including a collector region of a first type of conductivity; a base region with a second type of conductivity that is opposite to that of said first type of conductivity, said base region being arranged on said collector region so as to form a junction therewith and having one upper surface which is opposite to said collector region; an emitter region of said first type of conductivity which extends into said base region from an upper surface thereof so as to form a junction therewith; a first and a second and a third conductive means which respectively establish ohmic contacts with said collector and base and emitter regions; and an additional region of said first type of conductivity which extends into said base region from said upper surface thereof and forms therewith a junction delimiting a resistive path through said base region along the base-collector junction but outside of the emitter-collector path; a fourth conductive means which establishes an ohmic contact with said base region and with said additional region, said fourth conductive means being located on said upper surface on a part of said additional region which is closest to said emitter region.

4,800,417

IMPROVED SEMICONDUCTOR DEVICE HAVING A POLYCRYSTALLINE ISOLATION REGION

Juri Kato, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 24, 1982, Ser. No. 391,790
Claims priority, application Japan, Jun. 25, 1981, 56-98602; Jun. 25, 1981, 56-98603
Int. Cl.⁴ H01L *29/04, 27/12*
U.S. Cl. 357—59 **4 Claims**



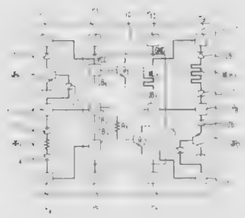
1. In a semiconductor device including a monocrystalline semiconductor substrate having an upper surface formed with a groove, the improvement which comprises a polycrystalline semiconductor region submerged in the groove in the substrate and below the upper surface of the substrate, said polycrystalline region being in direct contact with the monocrystalline semiconductor substrate, and an insulating film region on said polycrystalline semiconductor region and in said groove and forming a flat surface with said upper surface of the monocrystalline semiconductor substrate for forming an isolated polycrystalline region, said isolated polycrystalline region being ion implanted.

4,800,418

INTEGRATED CIRCUIT WITH IMPROVED MONITORING FUNCTION BY USE OF BUILT-IN ELEMENTS

Yoshinobu Natsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 6, 1985, Ser. No. 773,060
Claims priority, application Japan, Sep. 6, 1984, 59-186803
Int. Cl.⁴ H01L *23/48*
U.S. Cl. 357—68 **18 Claims**



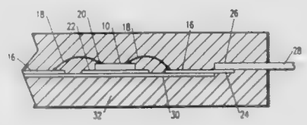
1. A semiconductor integrated circuit comprising: a semiconductor chip, a functional circuit formed on said semiconductor chip, said functional circuit including at least one functional element, a plurality of bonding pads formed on said semiconductor chip and electrically connected to said functional circuit, at least one reference element formed on said semiconductor chip, the type of said reference element being analogous to that of said functional element, and switching means coupled between said reference element and one of said bonding pads, said functional circuit operating by a given range of voltages, said switching means assuming a conducting state only when a voltage outside said given range of voltages is applied to said one bonding pad.

4,800,419

SUPPORT ASSEMBLY FOR INTEGRATED CIRCUITS

Jon Long, Livermore, and V. K. Sahakian, Los Altos Hills, both of Calif., assignors to LSI Logic Corporation, Santa Clara, Calif.

Filed Jan. 28, 1987, Ser. No. 8,208
Int. Cl.⁴ H01L *23/48, 23/28*
U.S. Cl. 357—70 **4 Claims**



1. A composite package assembly for supporting an integrated circuit chip comprising;
- a relatively thin flexible tape-like structure having inner lead fingers, and having outer lead fingers electrically connected to said inner lead fingers;
- a die attach pad having one surface attached to said structure;

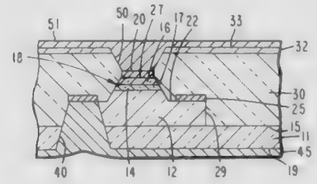
- an integrated circuit chip attached to the other exposed surface of said die attach pad;
- a rigid lead frame joined to said structure and having internal leads aligned to and connected to said outer lead fingers;
- package leads electrically connected to said internal leads for connection to external circuitry; and
- metallic wires connecting said integrated circuit chip to said inner lead fingers.

4,800,420

TWO-TERMINAL SEMICONDUCTOR DIODE ARRANGEMENT

James C. Chen, Torrance; Wah S. Wong, Montebello, and Cheng K. Pao, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 14, 1987, Ser. No. 49,875
Int. Cl.⁴ H01L *23/36, 23/14, 21/84*
U.S. Cl. 357—76 **18 Claims**



1. A two-terminal semiconductor diode arrangement, comprising:
- a semi-insulating substrate having first and second major surfaces;
- a semiconductor diode located on the first major surface of said semi-insulating substrate, said diode having an upper portion and a lower base portion, the lower base portion having an annular upper surface extending outwardly from the base of the upper portion;
- a first metal contact in electrical contact with the upper portion of said semiconductor diode;
- a second metal contact in the shape of a ring located on and making electrical contact to the annular upper surface of the lower base portion;
- a layer of dielectric material disposed over said semiconductor diode, first and second metal contacts, and first major surface of said substrate, said dielectric layer having a first hole therethrough to said first metal contact;
- metallic heat sink means thermally and electrically coupled to said first metal contact through said first hole, said semi-insulating substrate and lower base portion having a second offset hole extending vertically therethrough to said ring-shaped metal contact; and
- a metallic bias line making electrical contact to said second ring-shaped contact through said second offset hole.

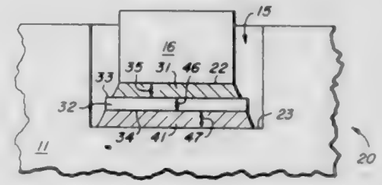
4,800,421

GLASS BONDING MEANS AND METHOD

Earl K. Davis, Tempe; James E. Drye, and David J. Reed, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 696,219, Jan. 29, 1985, Pat. No. 4,592,794, which is a division of Ser. No. 614,573, May 25, 1984, Pat. No. 4,515,898, which is a continuation-in-part of Ser. No. 298,435, Sep. 1, 1981, abandoned. This application Jan. 27, 1986, Ser. No. 822,571
Int. Cl.⁴ H01L *39/02*
U.S. Cl. 357—80 **6 Claims**

1. A semiconductor device comprising:
- a ceramic base having a predetermined ceramic coefficient of expansion, yield strength, and a melting temperature;
- a ductile foil bonded to at least a portion of said ceramic base, said foil having a predetermined foil yield strength and melting temperature;
- a die bonding material bonded to at least a portion of said foil, said die bonding material having a predetermined coefficient of expansion, yield strength, and softening temperature;
- a semiconductor die bonded to at least a portion of said die bonding material, said die having predetermined die coefficient of expansion, yield strength, and melting point;
- wherein said foil yield strength is less than said ceramic, die bonding material, and die yield strengths, wherein said die bonding material has a coefficient of expansion intermediate between said ceramic and die coefficient of expansion,



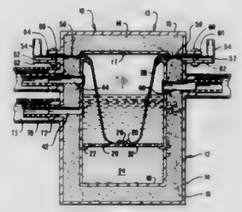
and wherein said die bonding material has a softening temperature less than said die, foil, and ceramic melting temperatures; and
- a foil bonding glass region between said foil and said base, for bonding said foil to said base, said foil bonding glass having a predetermined coefficient of expansion, yield strength, and softening temperature, and wherein said foil bonding glass coefficient of expansion is less than said die bonding material coefficient of expansion, wherein said foil bonding glass softening temperature is intermediate between said foil melting temperature and said die bonding material softening temperature, and wherein said foil bonding glass yield strength is greater than said foil yield strength.

4,800,422

FROSTLESS INTERFACE SUPERCOOLED VLSI SYSTEM

Ikuo J. Sanwo, San Marcos, and Gregory H. Milby, San Diego, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed May 7, 1987, Ser. No. 46,764
Int. Cl.⁴ H01L *23/44, /23/46, 23/36*
U.S. Cl. 357—82 **11 Claims**



1. A system for supercooling a semiconductor chip comprising:
- a double wall vessel;
- a double wall top for sealing said double wall vessel, wherein said double wall vessel and top each have inner and outer walls and a space therebetween;
- a temperature insulating material filling said space;
- a semiconductor chip;

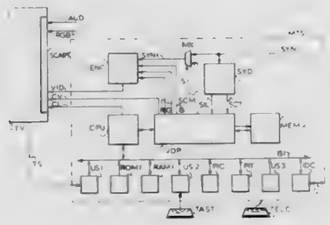
means within said vessel for supporting said semiconductor chip;
electrical conductor means connected to said semiconductor chip, said electrical conductor means extending from said semiconductor chip to the top of the inner wall of said vessel;
carbon conductors connected to said electrical conductor means from the inner wall to the outer wall of said vessel and sandwiched between said temperature insulating material of said vessel and said top;
electrical conductor means connected to said carbon conductors at the outer wall of said vessel; and
a supercooling liquid within said vessel covering said semiconductor chip.

4,800,423

INTERFACE MODULE FOR SUPERIMPOSING ALPHANUMERIC CHARACTERS UPON RGB VIDEO SIGNALS

Silvano Appiano, Montafia; Wolmer Chiarottino, Villanova; Mauro Pozzi, Turin, and Aldo Reali, Caselle Torinese, all of Italy, assignors to Sip- Societa Italiana per L'Esercizio Delle Telecomunicazioni S.P.A., Turin, Italy

Filed Nov. 6, 1987, Ser. No. 118,579
Claims priority, application Italy, Dec. 18, 1986, 67943 A/86
Int. Cl.[4] H04N *9/76, 5/272*
U.S. Cl. 358—21 R **6 Claims**



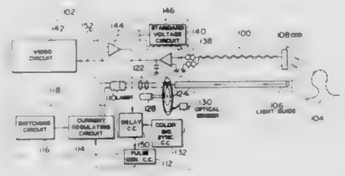
1. An interface module for superimposing alphanumeric characters upon RGB video signals, said alphanumeric characters and said RGB video signals being supplied to corresponding inputs of a SCART connector of a display device, characterized in that it basically comprises:
a video signal generator (VDP) relevant to said alphanumeric characters it extracts from a video memory (MEMV), said generator supplying at the output three primary colour components (R, G, B) of said characters and a base-band video composite synchronism signal (SCM);
a video encoder (ENC) converting said three components of primary colours (R, G, B) and said video-composite synchronism signal (SCM) it receives from said video signal generator (VDP) in a base-band standard colour video signal (VID) which supplies at the input for alphanumeric characters of said SCART connector (SCART);
a data processing unit (CPU) which, on the basis of commands it receives from data input devices (TS, TAST, TELC, S), controls said video signal generator (VDP) supplying it with information determining the shape, type and position of the alphanumeric characters of a video page, and information relevant to different display types and such that said video-signal generator (VDP) may control the switching input (CV) of said SCART connector (SCART).

4,800,424

ENDOSCOPE LIGHT SOURCE APPARATUS WITH A LIGHT EMITTING TIMING DELAYING CIRCUIT

Toshiaki Noguchi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1987, Ser. No. 119,604
Claims priority, application Japan, Nov. 13, 1986, 61-270461; Apr. 7, 1987, 62-85528
Int. Cl.[4] A61B *1/04;* **H04N** *7/18*
U.S. Cl. 358—98 **7 Claims**



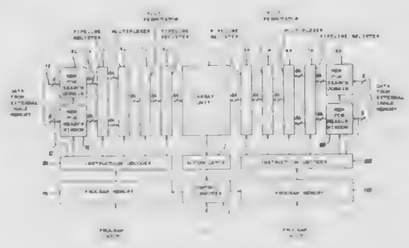
1. An endoscope light source apparatus for feeding an illuminating light to an endoscope comprising:
a lamp capable of flashing;
a lighting circuit feeding electric power to said lamp;
a rotary filter interposed in a light path of a color developing light of said lamp and fitted with respectively different color transmitting filters in a plurality of aperture windows provided in a light intercepting plate;
a rotating driving means rotating said rotary filter;
a color filter detecting means detecting the color transmitting filters interposed in said light path and outputting a detecting signal; and
a light emitting timing delaying means outputting into said lighting circuit a trigger signal delayed by using the detecting signal of said color filter detecting means.

4,800,425

SYSTEM FOR DISPLACEMENT VECTOR SEARCHING DURING DIGITAL IMAGE ANALYSIS

Wolfgang Schwerzel, Erbach, and Georg Kummerfeldt, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 18, 1987, Ser. No. 134,872
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644407; Jun. 26, 1987, 3721074
Int. Cl.[4] H04N *7/137;* **G06F** *15/70*
U.S. Cl. 358—136 **8 Claims**



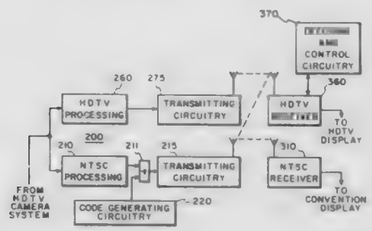
1. A system for displacement vector searches during digital analysis of a time-sequence of images having digitalized gray values, the displacement vector searches being conducted by dividing pixel data for a predetermined image in the sequence into a regular grid of blocks, and determining displacement of the blocks with respect to the image immediately earlier in the sequence, for each block the determination of the displacement including comparing a predetermined subquantity of the pixel data for the block with a plurality of corresponding subquantities of the pixel data for the earlier image to generate a plurality of sums of difference amounts between the gray values of the pixel data in the predetermined subquantity and the gray values of the pixel data in the corresponding subquantities, and selecting the minimum of the sums of the difference amounts, said system comprising:
array unit means, having a plurality of pixel data inputs, for calculating sub-totals of the difference amounts for a plurality of pixel pairs in parallel, each pixel pair including a pixel in the predetermined image and a pixel in the earlier image;
accumulator means, connected to the array unit means, for adding the sub-totals to one another to form the sums of the difference amounts; and
control computer means, connected to the accumulator means, for determining the components of a displacement vector for each block by selecting the minimum of the sums of the difference amounts.

4,800,426

METHOD AND SYSTEM FOR TRANSMISSION AND RECEPTION OF HIGH DEFINITION

William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed May 18, 1987, Ser. No. 51,505
Int. Cl.[4] H04N *7/04, 7/087, 5/50*
U.S. Cl. 358—141 **18 Claims**



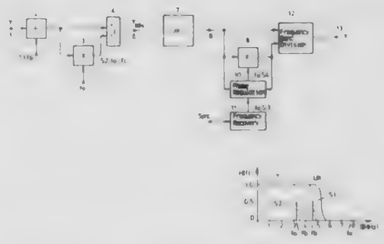
17. For use in a system for transmitting and receiving high definition television signals representative of images of a scene, the system including a transmitter and a receiver, a transmitter for said system comprising:
means for deriving first and second television signals representative of said images;
means for generating a code signal representative of a transmission frequency channel over which said second television is to be transmitted;
means for combining said code signal with said first television signal; and
means for transmitting said first television signal over a first transmission frequency channel and for transmitting said second television signal over a second transmission frequency channel as is represented by said code signal, said second transmission frequency channel being not adjacent to said first transmission frequency channel;
whereby when said first television signal is received at a receiver, said code signal can be recovered therefrom and utilized to automatically tune a tuner to receive said second television signal, said second television signal to be used for enhancing said first television signal to obtain a high definition television signal representative of said images.

4,800,427

METHOD OF COMPATIBLY INCREASING RESOLUTION IN A COLOR TELEVISION SYSTEM

Martin Plantholt, Hemmingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Nov. 30, 1987, Ser. No. 127,272
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1986, 3640848
Int. Cl.[4] H04N *7/12, 7/087*
U.S. Cl. 358—141 **11 Claims**



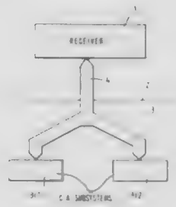
1. In a method for compatibly increasing resolution in a color television system, which system includes a transmitter in which part of a television picture signal is converted in frequency by offset modulation with spectral addition of spectral components transmitted in the base band and in which a reference signal for subsequent offset demodulation is produced in coincidence with a blank picture line during vertical blanking intervals, and a receiver which receives the converted signal part, including spectral components, and the reference signal and in which the converted signal part is reconverted by offset demodulation, the improvement comprising: forming the reference signal at the transmitter such that the reference signal has first and second components with respectively different frequencies; causing the first component to represent phase information about the spectral addition of the spectral components transmitted in the base band and the spectral components reconverted by offset demodulation; and causing the second component to contain information regarding the phase of the offset modulation.

4,800,428

CIRCUIT ARRANGEMENT FOR A TELEVISION RECEIVER COMPRISING A VIDEO TEXT DECODER

Martin H. Johanndeiter, and Detlef W. K. Oldach, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1987, Ser. No. 48,196
Claims priority, application Fed. Rep. of Germany, May 22, 1986, 3617251
Int. Cl.[4] H04N *7/087, 9/74, 5/262*
U.S. Cl. 358—142 **12 Claims**



1. A circuit arrangement for a television receiver comprising

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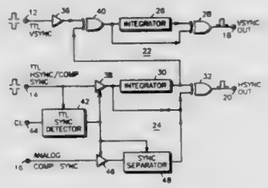
a television signal decoder, said television signal decoder deriving from a television signal applied to its input a luminance signal supplied by a luminance signal output via a low-pass filter arrangement for suppressing a chrominance signal, and comprising a video test decoder, producing signals from video text data from which driving signals for a picture display device can be derived, characterized in that the input of the video text decoder is coupled to the luminance signal output, in that the low-pass filter arrangement has a first attenuation characteristic to suppress the chrominance signal and a second attenuation characteristic to allow all video text data to pass in that the attenuation characteristic of the low-pass filter arrangement is changed over by means of a change-over signal derived from the television signal by a change-over device so that the second attenuation characteristic of the low-pass filter arrangement is switched on at least during the periods of time in which the video text data occur.

4,800,429

AUTO SYNC POLARITY CONTROL CIRCUIT FOR USE WITH MONITOR

Geoffrey W. Perkins, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 14, 1988, Ser. No. 168,108
Int. Cl.[4] H04N 5/04
U.S. Cl. 358—148 **7 Claims**



1. Circuit for providing single polarity pulses at first and second outputs in response to receiving applied digital input signals, comprising:

first circuit means responsive to either positive or negative applied input signals for providing single polarity pulses at the first circuit output including a first integrator having an input coupled to a first input of the circuit and an output; and a first gate circuit having an output coupled to the first circuit output, a first input coupled to said input of said first integrator and a second input coupled to said output of said first integrator; and

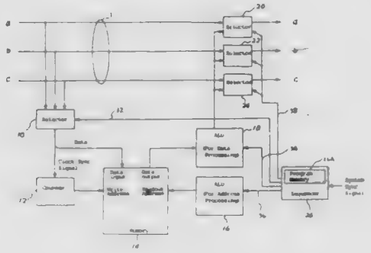
second circuit means responsive to either negative or positive input signals for providing single polarity pulses at the second circuit output including a second integrator having an input and an output; a second gate circuit having an output coupled to the second circuit output, a first input coupled to said output of said second integrator, and a second input coupled to said input of said second integrator; and a third gate circuit having an output coupled to said input of said second integrator, a first input coupled to a second input of the circuit and a second input coupled to said output of said first integrator.

4,800,430

FUNDAMENTAL UNIT FOR PROCESSING VIDEO SIGNALS

Keisosuke Murakami, Machida; Kazumasa Enami, Atsugi, and Nobuyuki Yagi, Kawasaki, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed May 30, 1986, Ser. No. 879,108
Claims priority, application Japan, Oct. 1, 1984, 59-204156; Sep. 30, 1985, PCT/JP85/00539
Int. Cl.[4] H04N 5/14
U.S. Cl. 358—160 **9 Claims**



1. A fundamental unit for processing video signals, comprising:

(a) video signal selection means, receiving video signals transmitted through a plurality of first transmission lines, for selecting one of the video signals, the selected video signal having a sync signal;

(b) memory means for storing therein the selected video signal;

(c) write control means for controlling said memory means to store the selected video signal as data in said memory means by utilizing the sync signal of said video signal as a control signal;

(d) readout means for addressing said memory means to read out said data from said memory means;

(e) arithmetic means for operating arithmetically on said data read out by said readout means;

(f) output means for outputting, on a respective plurality of second transmission lines, signals selected from the result of the operation of said arithmetic means and the video signals on said first transmission lines; and

(g) programmable control means for controlling said video signal selection means, said readout means, said arithmetic means, and said output means in accordance with the timing of a system sync signal, said programmable control means having a program memory to store a program for predetermined processing of the selected video signal,

wherein said programmable control means includes means for generating a clock signal, and wherein said write control means includes an address counter which counts said clock signal, said address counter being reset by said sync signal of the selected video signal.

4,800,431

VIDEO STREAM PROCESSING FRAME BUFFER CONTROLLER

Michael F. Deering, Mountain View, Calif., assignor to Schlumberger Systems and Services, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 590,980, Mar. 19, 1984, abandoned. This application Jul. 29, 1986, Ser. No. 892,727
Int. Cl.[4] H04N 5/14
U.S. Cl. 358—160 **15 Claims**

1. Digital video information control apparatus for use on a video processing system in conjunction with a digital memory for control and storage of digital video information, comprising:

programmable input means, for input of said digital video information for selective storage in the digital memory and for output of said digital video information, comprising

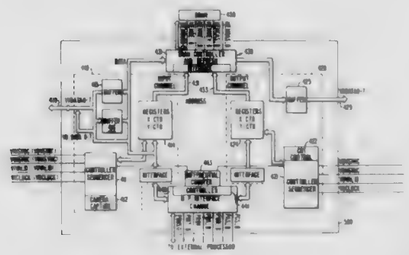
a plurality of programmable control registers for controlling the input means,

video input buffers for buffered input and output of said digital video information,

a plurality of control signal inputs for input of data validation and synchronization signals, and a clock input;

programmable output means, for selective output of said digital video information stored in the digital memory, comprising

a plurality of programmable control registers for controlling the output means,



video output buffers for buffering output of said digital video information,

a plurality of control signal outputs for output of said data validation and synchronization signals, and a clock signal output;

processor interface means, coupled to the video input buffers and the programmable registers, for bidirectional exchange of data with the input buffers for storage to and recall from the digital memory and for transfer of control data to the programmable registers; and

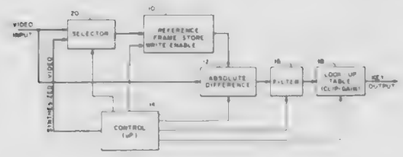
memory interface means, for exchange of digital video data with the digital memory and the video buffers and for providing control signals for control of the memory responsive to control signals from the input and output means programmable control registers.

4,800,432

VIDEO DIFFERENCE KEY GENERATOR

Ronnie D. Barnett, Nevada City, and Steven M. Parkes, Davis, both of Calif., assignors to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Oct. 24, 1986, Ser. No. 922,976
Int. Cl.[4] H04N 5/14, 5/275, 9/75
U.S. Cl. 358—160 **5 Claims**



1. A video difference key generator comprising:

means for storing a predetermined reference video image;

means for enabling the storing means to receive the reference video image, the reference video image being provided via an input selector; and

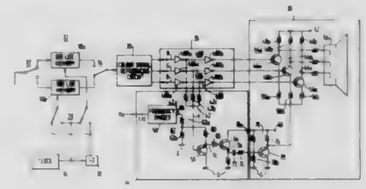
means for comparing the reference video image from the storing means with an input video image from an input bus to produce a desired key output.

4,800,433

PROGRESSIVE SCANNING CONVERSION SYSTEM FOR TELEVISION IMAGE DISPLAY APPARATUS

Kazuhiro Kamemoto, Kumagaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 20, 1988, Ser. No. 146,178
Claims priority, application Japan, Jan. 21, 1987, 62-9995
Int. Cl.[4] H04N 5/14, 9/20
U.S. Cl. 358—168 **8 Claims**



1. A progressive scanning conversion circuit for converting video signals corresponding to an original image from a predetermined interlaced format scan line rate to progressive format video signals having an increased scan line rate, the video signals each having a brightness level corresponding to a portion of the original image, comprising:

means (32) responsive to receipt of a video signal having the interlaced format scan line rate for increasing the scan line rate of the video signal to form a progressive format video signal;

drive means (30) for amplifying the progressive format video signal, characterised in that

the progressive scanning conversion circuit further comprises:

means (36) for generating a luminance signal corresponding to the brightness level of the corresponding portion of the original image in response to the progressive format video signal; and

brightness compensation means (34) for generating a brightness compensation signal in response to the luminance signal;

and wherein:

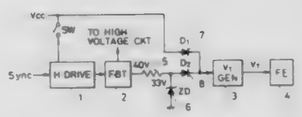
the drive means (30) is provided for adjusting the brightness level thereof in response to the brightness compensation means (34).

4,800,434

POWER SOURCE FOR ELECTRONIC TUNING TUNER

Yoshiro Sugai, and Hiroyuki Kimura, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 19, 1986, Ser. No. 909,392
Claims priority, application Japan, Sep. 20, 1985, 60-144587
Int. Cl.[4] H04N 3/18, 5/44
U.S. Cl. 358—190 **4 Claims**



1. A power source for an electronically tuned tuner, comprising:

an electronic tuning front end;

a tuning voltage generating circuit for supplying a tuning voltage to said front end;

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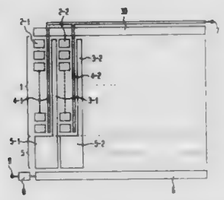
a horizontal deflection circuit;
a fly-back transformer receiving a voltage signal from said horizontal deflection circuit;
a DC power source of a voltage lower than an output voltage of said fly-back transformer; and
power source change-over circuit means connected between both an output of said fly-back transformer and an output of said DC power source and an input to said tuning voltage generating circuit, said change-over circuit means for applying a source voltage from said fly-back transformer to said tuning voltage generating circuit in a case of reception of television signals, and for applying a source voltage from said DC power source in a case other than reception of television signals, wherein said change-over circuit comprises a first diode connected between said input of said tuning voltage generating circuit and said output of said fly-back transformer and a second diode connected between said input of said tuning voltage generating circuit and said output of said DC power source.

4,800,435

METHOD OF DRIVING A TWO-DIMENSIONAL CCD IMAGE SENSOR IN A SHUTTER MODE

Sadayuki Ikeda; Hidehiko Inoue; Kiyotake Nagai; Hiroshi Nakajima, and Yasuichi Ushiyama, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 20, 1986, Ser. No. 932,671
Claims priority, application Japan, Nov. 20, 1985, 60-261779; Aug. 18, 1986, 61-193545; Oct. 3, 1986, 61-236729
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213.19 **7 Claims**



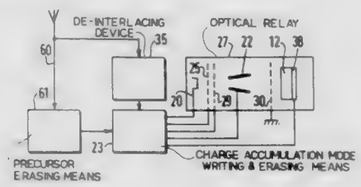
5. An image sensor comprising a plurality of photodiode arrays, each of said photodiode arrays containing first photodiodes designated for an odd television field and second photodiodes designated for an even television field, said first photodiodes and said second photodiodes being alternately arranged; a plurality of vertical transfer register means respectively coupled to the plurality of said photodiode arrays for receiving electric charges from said first photodiodes and said second photodiodes; storage means coupled to the plurality of said vertical transfer register means for receiving the electric charges from the plurality of said vertical transfer register means; horizontal transfer register means coupled to said storage means for transferring the electric charges delivered from said storage means in a horizontal direction to output a video signal; means for generating first high-speed pulses to sweep away electric charges contained in said vertical transfer register means and said storage means in the vertical direction during one vertical blanking period in one frame period; means for generating a first transfer pulse after generation of said first high-speed pulses to transfer electric charges accumulated in said first photodiodes to said vertical transfer register means during said vertical blanking period; means for generating second high-speed pulses after generation of said first transfer pulse to transfer the electric charges stored in said vertical transfer register means to said storage means during said vertical blanking period; means for generating a second transfer pulse after generation of said second high-speed pulses to transfer the electric charges accumulated in said second photodiodes to said vertical transfer register means; means for generating third transfer pulses after generation of said second transfer pulse to shift the electric charges stored in said storage means and in said vertical transfer register means into said horizontal transfer register means continuously during a television frame period; means for generating a fourth transfer pulse to transfer electric charges accumulated in said first photodiodes to said vertical transfer register means at a selected time point in said television frame period; and means for generating a fifth transfer pulse after said fourth transfer pulse by a predetermined period to transfer electric charges accumulated in said second photodiodes to said vertical transfer register means, whereby an effective accumulation period in said first and second photodiodes can be controlled by selecting said time point in generating said fourth transfer pulse.

4,800,436

TELEVISION SYSTEM WITH IMPROVED TEMPORAL RESOLUTION ON DISPLAY OF A TELEVISION SIGNAL

Rémy Polaert, Villecresnes, and Bruno Schorter, Morsang S/Orge, both of France, assignors to U.S. Philips Corp., New York, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,923
Claims priority, application France, Mar. 4, 1986, 86 02993
Int. Cl.[4] H04N *5/74*
U.S. Cl. 358—232 **6 Claims**



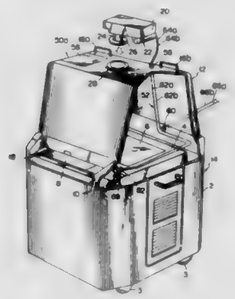
1. An optical relay comprising an electrically insulating material target plate for passing light depending on the electric field parallel to the direction of propagation of this light, and said target plate becomes ferro-electric below the Curie temperature, in a region of which the optical relay operates for supplying a final picture, means for having a first side of the target plate scanned by an electron beam produced by an electron gun, an anode in the form of a grid, suitable for receiving the secondary electrons caused by this beam, an optically transparent and electrically conducting thin plate provided against the second side of the target, a charge accumulation mode writing and erasing means through which the target plate can be written and erased in the charge accumulation mode for applying to the optical relay a video information component of a video signal formed by a sequence of scanned lines, characterized in that said charge accumulation mode writing and erasing means comprises a video amplifier applying video modulation to a wehnelt electrode in said optical relay during a write mode, and polarizing generators coupled to the grid-shaped anode, the transparent thin plate and an electron beam deflection device, said charge accumulation mode writing and erasing means cooperating with precursor erasing means acting on a limited number q of scanning lines positioned beyond the line n on which a writing operation is effected.

4,800,437

IMAGE PHOTOGRAPHY APPARATUS HAVING SWITCH IN REMOTE CONTROL CABLE FOR PREVENTING ERRONEOUS PHOTOGRAPHY

Takamasa Hosoya, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1986, Ser. No. 907,833
Claims priority, application Japan, Sep. 30, 1985, 60-149128[U]
Int. Cl.[4] H04N *5/84*; G03B *1/00*
U.S. Cl. 358—244 **13 Claims**



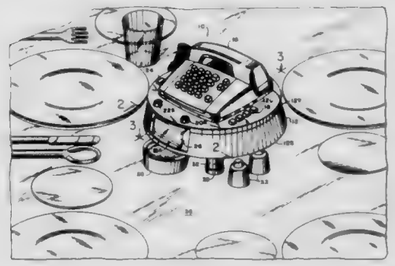
1. An image photography apparatus for photographing from a TV monitor, comprising:
a casing which is shaped substantially like a box;
a TV monitor received in the casing;
a power supply source for the TV monitor;
camera means detachably coupled to the casing for photographing an image displayed on the TV monitor, said camera means having a power source which is separate from the power source for the TV monitor, and a pair of remote control cables for actuating said camera means by remote control for causing remote controlled photographing of the image on the TV monitor; and
switch means, including a switch contact electrically inserted in series with one of the remote control cables, said switch means including means for opening/closing the switch contact in response to on/off operation of the power supply source of the TV monitor.

4,800,438

TELEPHONE CONSOLE FOR RESTAURANT TABLES

Seymour C. Yuter, 407 Cedar Dr. W., Briarcliff Manor, N.Y. 10510

Filed Dec. 8, 1987, Ser. No. 129,980
Int. Cl.[4] H04N *5/64, 5/645*; H04R *1/02, 1/21*
U.S. Cl. 358—254 **54 Claims**



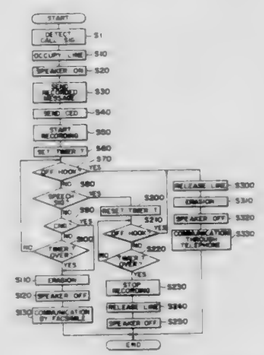
41. A restaurant console system comprising:
(A) a chassis adapted to be mounted on a support member extending above a table in the restaurant;
(B) a lampshade support adapted to fit over said chassis;
(C) a telephone mounted on the top of said lampshade support;
(D) a lamp socket connected to said chassis and adapted to hold a lamp outside said chassis and beneath said lampshade support, the lamp when lighted illuminating a portion of the table around said lampshade support;
(E) a television set mounted on said chassis;
(F) a video source to feed video signals for two television channels to said chassis;
(G) television channel separation means mounted on said chassis and responsive to separate said video signals; and
(H) switch means for feeding one of said separated television channels to said television set.

4,800,439

DATA COMMUNICATION APPARATUS ADAPTED TO PERFORM DATA COMMUNICATION AND SPEECH COMMUNICATION

Motoaki Yoshino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1987, Ser. No. 14,387
Claims priority, application Japan, Feb. 26, 1986, 61-042460
Int. Cl.[4] H04N *1/32*
U.S. Cl. 358—257 **15 Claims**



1. A data communicating apparatus comprising:
means for performing data communication in a data communication mode;
means for performing speech communication in a speech communicating mode;
detection means for detecting a signal from a calling station indicating that the calling station is in a data communication mode; and
control means for switching, during speech communication in the speech communication mode by said speech communication means, said data communicating apparatus from the speech communication mode to the data communication mode in response to the detecting of said detection means.

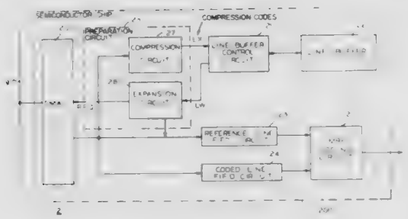
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4,800,440

DIGITAL IMAGE SIGNAL CODING/DECODING CIRCUIT WITH BUFFER MEMORY STORING REFERENCE LINE AS COMPRESSION CODES

Hidefumi Kurokawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 23, 1986, Ser. No. 946,434
Claims priority, application Japan, Dec. 23, 1985, 60-289570
Int. Cl.[4] H04N *1/413, 1/41*
U.S. Cl. 358—260 **17 Claims**



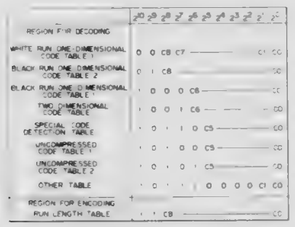
1. A digital signal coding/decoding circuit comprising coding/decoding means responsive to an adjacent two digital signal lines for coding/decoding digital signals line by line, one of said two digital signal lines being a line which is to be coded or decoded, the other of said two digital signal lines being a reference line, first means responsive to the reference line for producing a compression code, a line buffer coupled to said first means for temporarily storing the compression code, second means coupled to said line buffer for expanding the compression code when it is read out of the line buffer to reproduce the reference line, and an interface circuit coupled to said second means and said coding/decoding means for applying said line to be coded or decoded and said reference line reproduced by said second means to said coding/decoding means.

4,800,441

BINARY DATA COMPRESSION AND EXPANSION PROCESSING APPARATUS

Fumitaka Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 1987, Ser. No. 18,334
Claims priority, application Japan, Feb. 28, 1986, 61-43693
Int. Cl.[4] H04N *1/419*
U.S. Cl. 358—261.1 **18 Claims**



1. A binary data compression and expansion processing apparatus which can decode code data in a pipeline manner, comprising:

holding means for receiving the code data having a first predetermined length, and for holding the latest code data for a second predetermined length;

block output means for receiving the held code data in said holding means, for producing a code data block from input control data and a code data portion selected in accordance with bit position data input thereto, and for outputting the produced code data block in accordance with an output instruction;

decoding means for generating data indicating a length of a code unit and run length data corresponding to the code unit beginning from a leading bit of the code data block in accordance with an input of the code data block; and

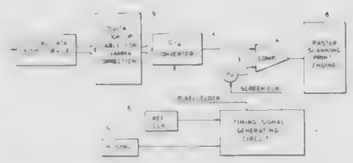
bit position designation means for outputting the held bit position data to said block output means, and for updating the bit position data in accordance with the code unit length data from said decoding means.

4,800,442

APPARATUS FOR GENERATING AN IMAGE FROM A DIGITAL VIDEO SIGNAL

John H. Riseman, deceased, late of Cambridge, Mass. (by Jean M. Riseman, executrix); John J. Smith, Cambridge; Alice M. d'Entremont, Boston, and Craig E. Goldman, Natick, all of Mass., assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 931,941, Nov. 19, 1986, abandoned, which is a continuation of Ser. No. 765,938, Aug. 15, 1985, abandoned. This application May 18, 1987, Ser. No. 51,154
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—280 **96 Claims**



1. An image processing apparatus responsive to a digital input signal, said apparatus comprising:

a raster scanning print engine for generating a series of successive scan lines;

means for generating a pulse-width-modulated signal from a digital input signal input to said apparatus; and

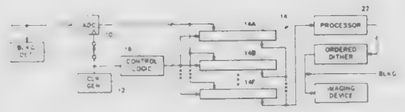
means for applying said pulse-width-modulated signal to said print engine to cause said print engine to generate each said scan line as a succession of line-segments, the lengths of which are controlled in accordance with said pulse-width-modulated signal to produce a variable density line screen from said line segments, said line screen comprising a plurality of columns of said line segments.

4,800,443

METHOD AND APPARATUS FOR CARRYING OUT A DITHERING OPERATION

Regis J. Crinon, Beaverton, and Yih-Chyun Jenq, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 14, 1987, Ser. No. 85,425
Int. Cl.[4] H04N *1/40*
U.S. Cl. 338—280 **8 Claims**



1. A method of controlling operation of an imaging device in response to a two-dimensional array of pixel values f(u,v) representing an image having an edge of amplitude C, comprising:

(a) forming an enhanced array of pixel values g(u,v) from the values f(u,v),

(b) forming atwo-dimensional array of binary values h(u,v) by applying the enhanced array to a two-dimensional array of threshold values t(u,v), and

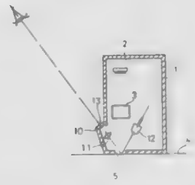
(c) applying the two-dimensional array of binary values to the imaging device for controlling the operation thereof, wherein $g(u,v)=m_f+k[f(u,v)-m_f]$ where m_f is the average value of f(u,v) over a predetermined number of pixels in the neighborhood of the pixel (u,v) and k is dependent on both the standard deviation in f(u,v) over a predetermined number of pixels in the neighborhood of the pixel (u,v) and a number which is inversely proportional to the distance between the point (u,v) and a point (x,y) such that $t(x,y)-t(u,v)$ is less than C.

4,800,444

IMAGE SCANNER

Motoyuki Suzuki, and Kazuo Kikuchi, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 19, 1986, Ser. No. 944,810
Claims priority, application Japan, Feb. 5, 1986, 61-14506[U]
Int. Cl.[4] H04N *1/024*
U.S. Cl. 358—294 **3 Claims**



1. An image scanning system for reading by an operator of data registered on the surface of a fixed original comprising:

an image sensor;

a case for containing said image sensor, said case having a side wall and a connecting bottom portion;

an opening in said bottom portion for providing access for reading data on said surface of said fixed original;

a window formed in a portion of said side wall closely spaced from said opening for monitoring data being read, said window having a member on which an image is formed; and

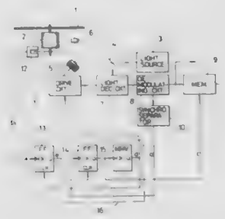
means disposed within said case for directing an image of the data being read from said fixed original to said window in said side wall for viewing by said operator.

4,800,445

VIDEODISK PLAYER

Masao Kanda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 27, 1986, Ser. No. 833,703
Claims priority, application Japan, Feb. 28, 1985, 60-29372[U]
Int. Cl.[4] H04N *5/76*
U.S. Cl. 358—342 **10 Claims**



1. A controller for a videodisk player for playing back video signals through a pickup from a disk rotating at a constant linear velocity, said controller comprising:

a first circuit for generating a rotational pulse synchronous with the rotation of said disk;

memory means responsive to an enabling signal for storing the video signals played back;

driving means responsive to a jump signal for causing said pickup to execute a jump of at least one track; and

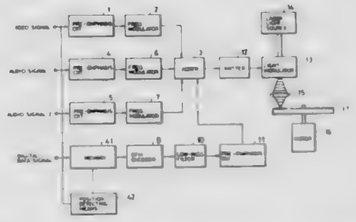
control circuit means responsive to at least said rotational pulse for generating said enabling signal, for thereafter terminating said enabling signal upon completion of storage in said memory means of desired data derived from the played back video signal, and for generating said jump signal in response to the termination of said enabling signal.

4,800,446

VIDEO DISK RECORDED WITH VIDEO AND DIGITAL DATA AND RECORDING/REPRODUCING APPARATUS THEREFOR

Hitoshi Kanamaru, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 18, 1986, Ser. No. 931,826
Claims priority, application Japan, Nov. 18, 1985, 60-258325
Int. Cl.[4] H04N *5/92*
U.S. Cl. 358—343 **4 Claims**



1. A video disk recording apparatus for recording both a television picture signal and a digital data signal onto one and the same track of a video disk through frequency-division multiplexing, said video disk recording apparatus comprising:

means receiving a television picture signal for modulating said television picture signal;

means receiving a digital data signal for dividing said digital data signal into blocks each composed of a predetermined number of bits;

means receiving an output of said dividing means for modulating said divided digital data signal;

means receiving said television picture signal for detecting from said television picture signal a first vertical synchronizing pulse located at least one field before a frame or a field of a television signal corresponding to each of said blocks so that a terminal part of said each block is disposed in the vicinity of a position corresponding to a second vertical synchronizing pulse located at a rearmost portion of said frame or field corresponding to said each block;

means for adding at least one of said blocks of said modulated digital data signal to said modulated television picture signal, said at least one block beginning after a lapse of predetermined time from the detection of said first vertical synchronizing pulse; and

means for recording the added signals onto said video disk.

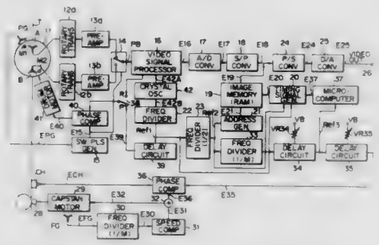
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4,800,447

SLOW-PLAYBACK FOR HELICAL SCANNING TYPE VCR-VTR

Akira Toba, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 24, 1986, Ser. No. 911,094
Claims priority, application Japan, Sep. 27, 1985, 60-212130
Int. Cl.[4] H04N *5/78*
U.S. Cl. 360—10.3 **21 Claims**



1. A special playback apparatus for a helical scan type VTR, comprising:

tape travel control means for controlling travelling of a video tape such that a control signal, representing a position of a video track on said video tape, has a predetermined phase difference from a frequency-divided reference signal obtained by 1/M (where M is a natural number of 2 or more) frequency-dividing a predetermined reference signal having a frame frequency;

rotary head control means for controlling rotation of rotary heads for tracing the video track on said video tape, such that said rotary heads are rotated to have a prescribed phase difference with respect to the predetermined reference signal; and

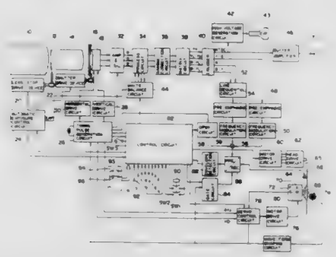
memory means, having a memory capacity of at least one field of a video signal, for storing, at 2M fields interval, a one-field component of the video signal reproduced to the predetermined reference signal according to the frequency-divided reference signal.

4,800,448

IMAGE RECORDING/REPRODUCING APPARATUS

Kiyotaka Kaneko; Kazuya Oda; Kimihide Takahashi, and Izumi Miyake, all of Tokyo, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Sep. 2, 1987, Ser. No. 95,166
Claims priority, application Japan, Sep. 2, 1986, 61-206201; Sep. 2, 1986, 61-206202; Sep. 2, 1986, 61-206203; Sep. 2, 1986, 61-206204
Int. Cl.[4] H04N *5/78;* **G11B** *5/02*
U.S. Cl. 360—35.1 **8 Claims**



1. An image recording/reproducing apparatus for use with a magnetic recording medium such as a magnetic disc or the like, the magnetic recording medium being rotatively driven, and a magnetic head being shifted in a radial direction with respect to the magnetic recording medium to record onto the magnetic recording medium video signals obtained by photographing an object or to reproduce the video signal recorded on the magnetic recording medium, said image recording/reproducing apparatus, comprising:

photograph mode setting means for setting up photograph modes, said photograph modes including at least a sequential photograph mode;

reproduction mode setting means for setting up one of a plurality of reproduction modes, said reproduction modes including at least a sequential photograph reproducing mode for permitting reproduction to be performed at a reproduction speed corresponding to a sequential photograph speed;

recording means for recording said video signals together with various kinds of data signals onto said magnetic recording medium;

signal reproducing means for reproducing the signals recorded on said magnetic recording medium;

said signal reproducing means including,

magnetic head shift means for shifting said magnetic head in the radial direction of said magnetic recording medium;

memory means for storing photograph data, said photograph data including at least data representing said sequential photograph speed recorded on each of tracks provided on said magnetic recording medium; and

control means, responsive to an output of said photograph mode setting means or said reproduction mode setting means, for controlling said recording means such that data signals representing the photograph data including the number of frames to be photographed in one sequential photograph unit and the sequential photograph speed thereof are recorded onto said magnetic recording medium when said photograph mode is set to said sequential photograph mode;

said control means for searching said tracks, storing said photograph data recorded on said magnetic recording medium in said memory means, and reading out from said memory means at least said data representing said sequential photograph speed of said photograph data when reproduction is to be performed and said reproducing mode is set to the sequential photograph mode, thereby controlling said mangetic head shift means so that said magnetic head shift means performs its reproducing operation in accordance with said read-out data.

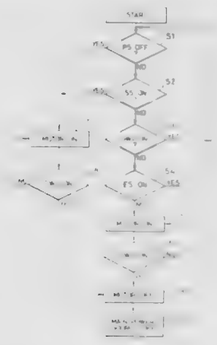
4,800,449

DAT RECORDER WITH AUTOMATIC CASSETTE MOVEMENT

Hidenori Yamasaki, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1987, Ser. No. 901
Claims priority, application Japan, Jan. 21, 1986, 61-11595
Int. Cl.[4] G11B *15/675*
U.S. Cl. 360—71 **4 Claims**

1. A rotary head type digital recording and reproducing device for use with a tape cassette (**10**) which is inserted thereinto through a slot (**20**) formed in said device and in which said cassette is selectively disposed in any one of an ejection position (i) where a lid (**104**) of said cassette is closed while a cover (**40**) of said slot is open, an unloaded position (ii) where both said cover and said lid are closed, and a loaded position (iii) where said lid is open to perform a recording or reproducing operation, comprising: detection means for detecting a termination of a recording or reproducing operation while said cassette is disposed in said loaded position and for producing an output signal in response thereto, and drive means responsive to an output signal from said detection means for moving said cassette from said loaded position to said unloaded position to prevent dust from entering the cassette through the lid thereof.

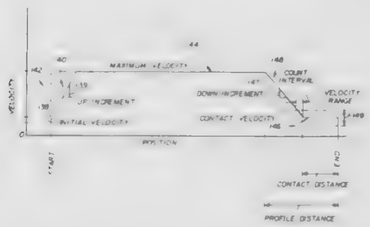


4,800,450

METHOD AND APPARATUS FOR CONTROLLING DEPLOYMENT OF A TAPE TRANSPORT MEMBER

David R. Rodal, Palo Alto, and Nathan W. Osborn, Menlo Park, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 11, 1986, Ser. No. 850,995
Int. Cl.[4] G11B *15/46, 15/48*
U.S. Cl. 360—73.06 **23 Claims**



1. A method for moving a tape-carrying member of a tape transport machine comprising the steps of:

moving the member at a first velocity along a selected path toward a preselected end position;

periodically sensing the position of the member relative to the preselected end position during said moving along the selected path;

determining if the sensed position of the member is within a first selected distance from the preselected end position;

said step of moving further including moving the member at a selected reduced velocity when the member is within the first selected distance from the preselected end position; and

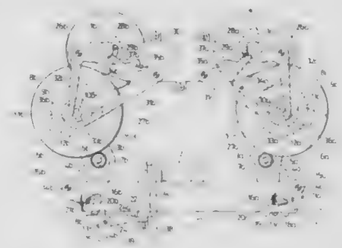
stopping movement of the member when a true end position is reached.

4,800,451

AUTOMATIC REVERSE MECHANISM FOR TAPE RECORDER

Shinsaku Tanaka, Setagaya, and Kunio Kido, Wako, both of Japan, assignors to Tanashin Denki Co., Ltd., Japan

Filed Sep. 29, 1987, Ser. No. 102,586
Claims priority, application Japan, Sep. 30, 1986, 61-150520[U]; Nov. 21, 1986, 61-179413[U]
Int. Cl.[4] G11B *15/18, 15/44*
U.S. Cl. 360—74.2 **19 Claims**



1. An automatic reverse mechanism for a tape recorder, in which capstans, pinch rollers and reel shafts are arranged symmetrically on both sides of an associated magnetic head, the capstans on both sides of the magnetic head and either one of said reel shafts are normally driven and rotated, the pinch roller on the same side as the rotating reel shaft is pressed against the corresponding capstan to cause the magnetic tape of a tape cassette inserted in the tape recorder to run in one direction, and when the magnetic tape has been fully wound up, the running direction of the magnetic tape is automatically changed over, comprising:

a rotation transmitting means having a pair of rotation transmitting members arranged symmetrically relative to the magnetic head, said rotation transmitting members being rotated normally under rotary forces of the corresponding capstans so as to transmit the rotary forces to the corresponding reel shafts via friction mechanisms respectively;

an eccentric circular cam surface provided eccentrically about a rotary shaft of at least one of the rotation transmitting members, and an engagement portion provided with said at least one rotation transmitting member;

a reel-shaft stop detecting means for detecting each stop of at least one of the reel shafts, said means having a cam follower portion and a contact portion and adapted to receive a rotary force of said at least one reel shaft via a reel-stop detecting friction mechanism; said cam follower being maintained in sliding contact with the eccentric circular cam surface so as to avoid engagement between the contact portion and the engagement portion and when said at least one reel shaft stops, remaining at a position apart from the eccentric circular cam surface, whereby the contact portion is allowed to engage the engagement portion and at the same time said at least one rotation transmitting member is displaced from an engagement position to a non-engagement position relative to the corresponding reel shaft by a turning force developed in said at least one rotation transmitting member; and

a reversing means operable responsive to each displacement of said at least one rotation transmitting member to the non-engagement position so that the pinch roller associated with said at least one rotation transmitting member is separated from its corresponding capstan, the other pinch roller is brought into contact with the other rotation transmitting member, and the other rotation transmitting member is displaced to an engagement position relative to its corresponding reel shaft.

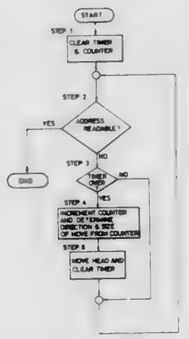
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4,800,452

DISK RECORDING AND REPRODUCING HEAD SYSTEM HAVING TRACK SEEKING FOR FAULTY ADDRESSES

Tsuneo Ishii, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 20, 1986, Ser. No. 920,497
Claims priority, application Japan, Oct. 18, 1985, 60-159569
Int. Cl.[4] G11B *21/08*
U.S. Cl. 360—78.14 7 Claims



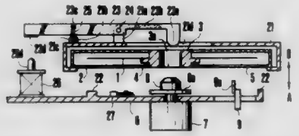
1. A disk recording and reproducing head system, comprising:
conversion means for playing back data from a disk;
driving means for driving said conversion means in a radial direction of said disk;
reading means for reading a plurality of address data recorded on said disk out of a signal produced by said conversion means; and
control means for controlling said driving means when said reading means is unable to read out any of said address data to cause said driving means to drive said conversion means in alternating inner and outer peripheral directions of said disk.

4,800,453

RECORDING AND/OR REPRODUCING APPARATUS ADAPTED FOR UTILIZATION OF RECORD BEARING MEDIA OF A DISC TYPE

Shigeki Okauchi, and Tsukasa Uehara, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha

Continuation of Ser. No. 663,963, Oct. 23, 1984, abandoned.
This application Jun. 22, 1987, Ser. No. 65,648
Claims priority, application Japan, Oct. 27, 1983, 58-201519
Int. Cl.[4] G11B *5/012, 17/04*
U.S. Cl. 360—99.02 21 Claims



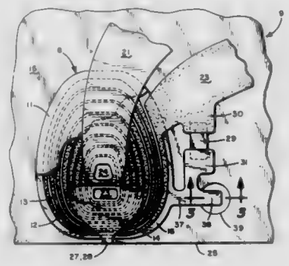
1. A recording and/or reproducing apparatus using a disc-shaped record bearing medium, comprising:
(A) a recording and/or reproducing head;
(B) drive means for rotating the medium relative to said head;
(C) holder means movable between a first position for receiving the medium and a second position for placing the received medium at a predetermined position for signal recording and/or reproducing;
(D) detecting means for detecting that said holder means has reached said second position;
(E) pressing means arranged to apply no pressing action to press a portion of the medium against said drive means until said detecting means detects that the medium has reached said predetermined position and to apply the pressing action to press said portion of the medium against the drive means thereby to mount the medium on the drive means after said detecting means detects that the medium has reached said predetermined position and then to release said pressing action after a lapse of a predetermined period of time;
(F) instruction means for instructing said drive means to rotate the medium; and
(G) control means arranged to monitor the pressing action of said pressing means and to activate said drive means to rotate the medium when said pressing action by said pressing means has been released and said instruction means instructs said drive means to rotate the medium.

4,800,454

STATIC CHARGE PROTECTION FOR MAGNETIC THIN FILM DATA TRANSDUCERS

Edward L. Schwarz, Minneapolis, and Beat G. Keel, Prior Lake, both of Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Aug. 10, 1987, Ser. No. 83,408
Int. Cl.[4] G11B *5/60, 5/30*
U.S. Cl. 360—103 9 Claims



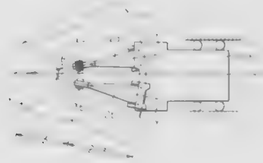
1. In a thin film magnetic data transducer and conductive air bearing flyer assembly for use in a disk memory system, said transducer carried on an end surface of the flyer intersecting the air bearing surface, and separated from the flyer body by an insulating layer, a pole tip of a conductive magnetic core of said transducer being adjacent the flyer body at the intersection of the end and air bearing surfaces and separated therefrom by the insulating layer, and permitting electrostatic discharges between the pole tip and the flyer body, an improvement for preventing such discharges comprising:
a. an area of the insulating layer having an opening; and
b. a conductor comprising an arm on the magnetic core projecting into the opening and making electrical contact with the flyer body thereat.

4,800,455

MAGNETIC DISK DRIVE HAVING A MAGNETIC-HEAD WITH A HEAD GAP SUPPORTED PARALLEL TO THE MOVING DIRECTION OF A MAGNETIC-HEAD POSITIONING MECHANISM

Toshimitsu Takizawa, Tachikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 6, 1986, Ser. No. 860,039
Claims priority, application Japan, May 7, 1985, 60-95576
Int. Cl.[4] G11B *5/48, 5/23*
U.S. Cl. 360—104 2 Claims



1. A magnetic disk drive apparatus for aligning a magnetic head relative to a plurality of concentric annular tracks formed on a recording surface of a magnetic disk, said magnetic disk having a predetermined radius, comprising:
a magnetic head disposed on the distal end of a suspension arm having a longitudinal axis;
linear positioning means for moving said suspendion arm and magnetic head across said recording surfaces along a first axis parallel to said recording surface and coincident with the center of said disk, said suspension arm being fixedly connected to and extending from said positioning means such that said longitudinal axes of said suspension arm forms a first angle relative to said first axis;
said magnetic head having a slider section, said slider section having a surface disposed opposite to said recording surface and acting as a fluid bearing against said recording surface, and a head gap formed in said surface of said slider section;
said head gap being inclined relative to said longitudinal axis of said suspension arm and parallel to said first axis along which said linear positioning means moves such that bit patterns recorded on adjacent tracks by said head gap are linearly continuous from the innermost tract to the outermost track of said magnetic disk.

4,800,456

MAGNETIC DISK DEVICE WITH COMPONENT MATERIALS HAVING IMPROVED SILICON CONTENT

Jiro Matsuyama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1987, Ser. No. 126,374
Claims priority, application Japan, Nov. 28, 1986, 61-284643
Int. Cl.[4] G11B *5/56*
U.S. Cl. 360—109 1 Claim



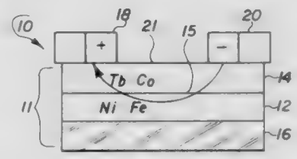
1. In a magnetic disk device of the type comprising a box-shaped base made of an aluminum alloy, a spindle motor attached to an upper plate of said base to rotate a magnetic disk through a hub, a swing arm made of an aluminum alloy and rotatably support at one end thereof on a pivot attached to the upper plate of said, a magnetic head supported at a tip of said swing arm so as to be positioned over a data track of said magnetic disk, a capstan rotated by a stepper motor attached to the upper plate of said base, and a band coupled to said capstan and to said swing so as to turn said swing arm through the rotation of said capstan, the improvement characterized in that:
said swing arm is made of an aluminum alloy whose silicon content is 16±1% weight; and
said base is made of a die-cast aluminum alloy whose silicon content is 7.5 to 9.5% by weight.

4,800,457

MAGNETORESISTIVE SENSOR ELEMENT

Mark Kryder, Bradford Woods; William C. Cain, West Mifflin, both of Pa., and William H. Meiklejohn, Scotia, N.Y., assignors to Carnegie-Mellon University, Pittsburgh, Pa.

Filed Sep. 29, 1987, Ser. No. 102,426
Int. Cl.[4] G11B *5/39*
U.S. Cl. 360—113 17 Claims



1. A magnetoresistive readback sensorelement comprising:
a first layer that has a high permeability, a uniaxial anisotropy, is magnetically soft and which exhibits a magnetoresistive response; and
a second layer made of rare earth transition metal which provides a magnetic bias field to the first layer, said second layer contacting the first layer.

4,800,458

RECORDING SHEET BONDED TO A SUBSTRATE IN A MAGNETIC DISK

Tsutomu Okita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 24, 1986, Ser. No. 910,918
Claims priority, application Japan, Sep. 24, 1985, 60-144173[U]; Sep. 24, 1985, 60-144174[U]; Jan. 13, 1986, 61-2021[U]
Int. Cl.[4] G11B *5/82*
U.S. Cl. 360—135 4 Claims



1. A recording disk, comprising:
a circular substrate having on each principal side a raised inner annular mounting ring and a raised outer annular

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mounting ring, said mounting rings together defining a first recess formed on respective sides of said substrate;

two flexible sheets having a recording layer formed on one side thereof and adhesively bonded on another side thereof to bonding surfaces of said inner and outer mounting rings to thereby form respective gaps between respective ones of said flexible sheets and respective bottom surfaces of said first recesses;

each of said bonding surfaces of each of said mounting rings being formed with a plurality of second recesses extending into said mounting rings from each said bonding surface for receiving excess adhesive, said second recesses comprising a plurality of grooves extending radially with respect to a center of said circular substrate for receiving said excess adhesive, each of said grooves being in fluid communication with said gap and having a depth which increases progressively toward said gap.

4,800,459

CIRCUIT SUBSTRATE HAVING CERAMIC MULTILAYER STRUCTURE CONTAINING CHIP-LIKE ELECTRONIC COMPONENTS

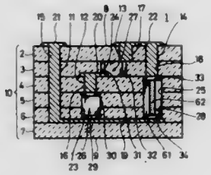
Hoshi Takagi; Yoshiaki Mori, and Yukio Sakabe, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 12, 1987, Ser. No. 119,674

Claims priority, application Japan, Nov. 12, 1986, 61-269238; Jan. 7, 1987, 62-2428

Int. Cl.⁴ H01G *4/10*; H05K *1/18*

U.S. Cl. 361—321 **14 Claims**



1. A circuit substrate comprising:

a ceramic laminated structure comprising a plurality ceramic layers including a first ceramic layer which defines a cavity, said laminated structure having first and second major surfaces opposite to each other;

a chip-like electronic component having external terminal electrodes and being received in said cavity; and

electrical connection means connected to said external terminal electrodes and having a portion extending from said first major surface and into said cavity which is in the interior of said ceramic laminated structure,

said external terminal electrodes being mainly composed of at least one metal selected from the group consisting of nickel, copper and palladium,

said electrical connection means being metal and mainly composed of copper; and

said electrical connection means including a conductive material member extending to said cavity along the interface between an adjacent pair of ceramic layers selected from said plurality of ceramic layers.

4,800,460

ELECTRICAL POWER PROTECTION TECHNIQUE

Simon Yin, Fremont, Calif., assignor to Square D Company, Palatine, Ill.

Filed Sep. 10, 1987, Ser. No. 95,346

Int. Cl.⁴ H02B *1/04*

U.S. Cl. 361—340 **11 Claims**

1. An electrical power protection arrangement especially suitable for high voltage applications, comprising:

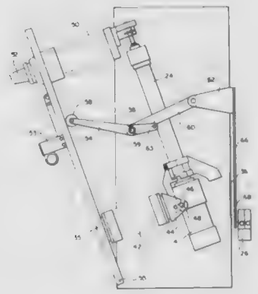
(A) an electrically insulated housing having a utility opening into its interior from outside the housing and a separate entry door mounted to the housing for movement between a closed position and an opened position;

(b) fuse means disposed within said housing;

(c) means adapted for connecting one side of said fuse means in electrical circuit with a load;

(d) means for electrically connecting and disconnecting the opposite side of said fuse means to a source of power through a cooperating terminal disposed outside said housing, said connecting and disconnecting means being movable between

(i) a first connecting position extending out through said utility opening from within said housing for electrically connecting said opposite side of said fuse means within the housing with said cooperating terminal outside the housing; and



(ii) a second disconnecting position entirely within said housing for electrically disconnecting said opposite side of said fuse means from said terminal; and

(e) first and second means for coupling the entry door of said housing with said connecting and disconnecting means such that

(i) opening the entry door causes said first coupling means to automatically move the connecting and disconnecting means to its disconnecting position while said second coupling means closes said utility opening whereby to disconnect the fuse means and physically shield it from said terminal; and

(ii) closing the entry door causes said second coupling means to automatically opens the utility opening while said first coupling means moves said connecting and disconnecting means to its connecting position through said opening.

4,800,461

MULTILAYER COMBINED RIGID AND FLEX PRINTED CIRCUITS

Herbert S. Dixon, Derry; Jonathan W. Weller, Amherst; Ivon Boyer, Merrimack, and Darryl J. McKenney, Milford, all of N.H., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Nov. 2, 1987, Ser. No. 115,751

Int. Cl.⁴ H05K *1/00*; B44C *1/22*; C23F *1/02*; B05D *5/12*

U.S. Cl. 361—398 **13 Claims**

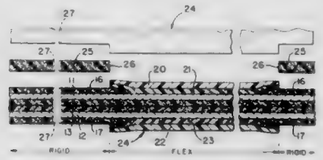
1. A process of fabricating a rigid flex printed circuit comprising the steps of laminating to an insulator layer on which has been imaged and etched conductor patterns

(a) a pair of first insulator layers impregnated with adhesive having cutout portions and

(b) insulator sheets covered on one side with an adhesive layer coextensive with the cutout portion and slightly overlapping at least one edge of the first insulator layers

to form a first printed circuit structure containing two conductor layers, cutting suitable flex cables in the cutout portion

area, stacking a plurality of the first printed circuit structures with second insulator layers impregnated with adhesive interposed between said first circuit structures, the second insulator layers having cutout sections generally coextensive with the insulator sheets, laminating the first printed circuit structures and the second insulator layers together to form a second printed circuit structure having rigid and flexible sections,



drilling holes in the rigid section of the second printed circuit structure, cleaning the holes, and plating through the holes to form conductive barrels connecting conductors in the conductor patterns of the conductor layers, whereby the second printed circuit structure is a rigid flex circuit having flexible cables cut from the areas coextensive with the cutout portions and extending from the rigid section.

4,800,462

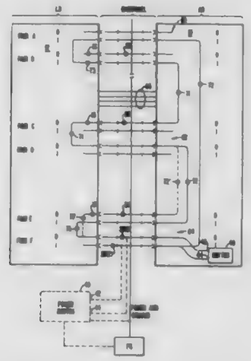
ELECTRICAL KEYING FOR REPLACEABLE MODULES

A. Richard Zacher, Los Gatos; Jay A. Zwagerman, Saratoga, and Francis J. Dwan, Gilroy, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Apr. 17, 1987, Ser. No. 40,454

Int. Cl.⁴ H01R *23/68*

U.S. Cl. 361—413 **2 Claims**



1. In an electromechanical interconnect system of the type interconnecting a pair of modules via a backpanel, with the backpanel having an array of connectors disposed thereon, with each module having a module array of connectors mechanically compatible with the backpanel array, and with the backpanel for mechanically and electrically interconnecting the connectors on the pair of modules, with a first module in the pair selected from a first set of modules and second module in the pair selected from a second set of modules, with some of the modules in the first set being electrically incompatible with modules in the second set in the sense that damage to the electrically incompatible modules would result if the electrically incompatible modules were interconnected via the backpanel and a power supply control regulator circuit coupled to a pair of control regulator terminals were closed so that power was applied to the modules, a subsystem for assuring that power cannot be applied to a given pair of interconnected modules unless the first and second modules in the given pair are electrically compatible modules, said subsystem comprising:

a first set of keying connectors included in the array of connectors of the first module of the given pair of modules;

means for electrically connecting the pair of control regulator terminals to the connectors of a first selected pair of keying connectors in said first set, with a first control regulator terminal connected to a first keying connector and a second control regulator terminal connected to a second keying connector in said first selected pair of keying connectors;

means for connecting selected other pairs of keying connectors in said first set, with said connected pairs in said first set forming a first wiring pattern;

a second set of keying connectors included in the array of connectors of the second module of the given pair of modules;

means for connecting selected pairs of keying connectors in the second set, with said connected pairs forming a second wiring pattern, with said first and second wiring patterns forming a closed circuit between the pair of control regulator terminals when the modules in the given pair are interconnected only if the modules in the given pair are electrically compatible thereby preventing power-up and possible resulting damage when a pair of electrically incompatible modules are inadvertently interconnected.

4,800,463

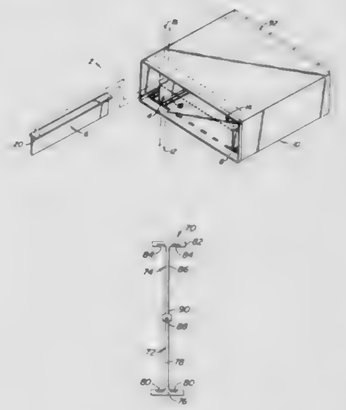
CIRCUIT BOARD BARRIER GUIDE

Joerg U. Ferchau, Morgan Hill, and Kenneth A. Kotyuk, San Jose, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Dec. 5, 1985, Ser. No. 805,510

Int. Cl.⁴ H05K *9/00*

U.S. Cl. 361—424 **6 Claims**



1. A circuit board barrier guide for mounting a circuit board, having first and second edges, in a housing comprising:

an elongate base including a first support groove for receipt of the first edge therein;

an elongate top having a second support groove facing a first support groove for receipt of the second edge therein; and

an elongate, planar barrier including first and second barrier portions, the base and the first barrier portion being a unitary extruded piece, the first and second barrier portions including respective first and second outer edges positioned adjacent one another and configured for complementary mating engagement with portions overlap-

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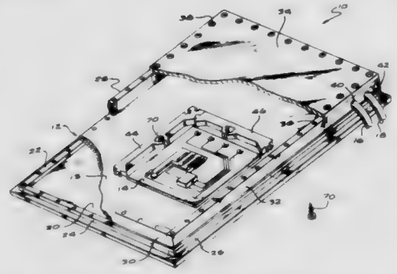
ping, the barrier spaced apart from the first and second grooves a chosen distance to form a channel between the barrier and a circuit board.

4,800,464

MODULAR SHIELDING ASSEMBLY FOR ELECTRONIC DEVICES

Mark D. Roos, San Carlos, and Walter J. Messmer, III, San Jose, both of Calif., assignors to EIP Microwave, Inc., San Jose, Calif.

Filed Feb. 5, 1988, Ser. No. 152,611
Int. Cl.[4] H05K 9/00
U.S. Cl. 361—424 16 Claims



10. A compartmentalized electromagnetic shielding assembly for electronic and microwave components comprising:

a housing defined by two opposing end plates connected by four peripheral side walls, each of said side walls being defined by two separate sections, said two opposing end plates and said side wall sections being comprised of an electromagnetic shielding material;

a ground plane platform formed with two opposing surfaces which is dimensioned to be fitted an releasably secured between said sections defining each of said side walls of said housing to subdivide said housing into two separate compartments, a first of said surfaces having disposed thereon a layer of conductive material to define a ground plane electromagnetically isolating said two compartments from each other, a second of said surfaces being formed with electronic circuitry disposed thereon;

one or more microwave components being secured to said ground plane platform first surfaces;

electronic coupling means formed through said ground plane platform to allow electronic coupling of each of said microwave components to said electronic circuitry, said coupling means formed to maintain the electromagnetic isolation between said two housing compartments;

a plurality of interlinkable framing members formed from a conductive material which are selectively assembled about each of said microwave components affixed to said first surface of said ground plane platform, said members being affixed to said first surface and dimensioned to abut up against the adjacent end wall of said housing, whereby said frame members surround and electromagnetically isolated each of said microwave components affixed to said first surface; and

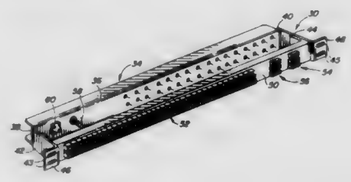
first and second cable connecting means mounted in selected ones of said housing walls, said first cable connecting means being coupled to said electronic circuitry to deliver or receive electronic signals therefrom, with said second cable connecting means being coupled to said microwave components to deliver microwave energy to or receive microwave energy therefrom, each of said first and second cable connecting means being formed with an exteriorly disposed coupling joint to which an electronic or microwave cable can be attached.

4,800,465

FUSE PANEL MOUNTING PLATE

E. Walter Rodgers, 5650 W. Marconi, Glendale, Ariz. 85036, and Lenual E. Rodgers, Jr., 1434 W. Pershing, Phoenix, Ariz. 85029

Filed Jul. 31, 1987, Ser. No. 80,446
Int. Cl.[4] H02B 1/18
U.S. Cl. 361—432 11 Claims



1. A mounting plate for supporting one or more fuse blocks to an electrical equipment bay frame, said mounting plate comprising in combination:

a. an elongated support member having a substantially planar surface and having first and second ends;

b. first and second mounting arms extending from the first and second ends, respectively, of said elongated support member for securing said elongated support member to opposing vertically-oriented standards of an electrical equipment bay frame;

c. said elongated support member including:

i. a plurality of spaced terminal-receiving holes formed in the substantially planar surface of said elongated support member for permitting wiring terminals of a fuse block supported by said mounting plate to extend therethrough, said plurality of terminal-receiving holes being arranged in pairs, each pair of terminal-receiving holes being centered upon a line lying perpendicular to a longitudinal axis of said elongated support member, a first hole in each said pair being centered on a first line lying parallel to the longitudinal axis of said elongated support member, and a second hole in each said pair being centered on a second line lying parallel to the longitudinal axis of said support member, said pairs of terminal-receiving holes being spaced apart at equal intervals, the distance of each such interval corresponding to the distance between the wiring terminals extending from the fuse blocks to be supported by said mounting plate, said plurality of terminal-receiving holes including at least 8 such pairs of terminal-receiving holes;

ii. a plurality of spaced screw-receiving holes formed in the substantially planar surface of said elongated member and adapted to receive mounting screws for securing a fuse block to said mounting plate, said plurality of screw-receiving holes being centered upon a line lying parallel to the longitudinal axis of said elongated support member and substantially midway between the first and second holes in each said pair of said plurality of terminal-receiving holes, said plurality of screw-receiving holes including mounting screw receiving holes lying substantially midway between at least a first and second pair, a third and fourth pair, the fourth and a fifth pair, the fifth and a sixth pair, and a seventh and eighth pair of said plurality of terminal-receiving holes; and

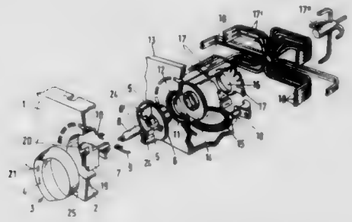
iii. a plurality of ground bar apertures formed in the substantially planar surface of said elongated support member and adapted to receive a ground bus bar extending from a fuse block, each of said ground bar apertures lying substantially between the first and second holes of one of said pairs of terminal-receiving holes, said plurality of ground bar apertures including at least a first ground bar aperture formed proximate the fourth pair of terminal-receiving holes on a first side of and adjacent to the screw-receiving hole lying between said fourth and fifth pairs of terminal-receiving holes, and including at least a second ground bar aperture formed proximate the fifth pair of terminal-receiving holes on a second side of and adjacent to the screw-receiving hole lying between said fourth and fifth pairs of terminal-receiving holes.

4,800,466

ILLUMINATION DEVICE FOR A FRONT PANEL

Karl-Heinz Bauer; Gerold Eckert, and Rüdiger Maidhof, all of Bad Neustadt/Saale, Fed. Rep. of Germany, assignors to Preh, Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co., Bad Neustadt/Saale, Fed. Rep. of Germany

Continuation of Ser. No. 916,518, Oct. 8, 1986, abandoned. This application May 3, 1988, Ser. No. 191,758
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1985, 3535881
Int. Cl.[4] G01D 11/28
U.S. Cl. 362—26 20 Claims



1. A front panel and means for illuminating said panel comprising a lamp, light guides placed behind said front panel, said light guides extending at least to said front panel for illuminating said front panel, a connection base for holding said lamp, an adjusting member for rotatable control, and means for conducting electrical power to said lamp, characterized in that said adjusting member for rotatable control further cmprises a rotary knob, a cover member removably attached to said rotary knob, said connection base removably attached to said rotary knob in a latching fit, wherein said connection base is placed behind said cover member such that said lamp projects behind said front panel and towards said light guides, said light guides communicating light projected by said lamp to said front panel.

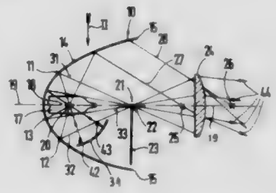
4,800,467

DIMMED HEADLIGHT, PARTICULARLY FOR MOTOR VEHICLES

Gerhard Lindae, Leonberg; Richard Loewe, Gerlingen, and Peter Perthus, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 4, 1987, Ser. No. 58,351
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1986, 3620789
Int. Cl.[4] B60Q 1/00
U.S. Cl. 362—61 3 Claims

1. A dimmed headlight for motor vehicles, comprising a reflector whose vertical center section delimits a partial ellipse having an apex portion defining an optical axis, an inner focal point and an outer focal point located in said optical axis, said apex portion transiting into an upper elliptical portion and a lower elliptical portion, said upper and lower elliptical portions having an inner focal point coinciding with said inner focal point of the apex portion, said upper elliptical portion being shaped such as to provide a plurality of outer focal points located on said optical axis behind said outer focal point of the apex portion when viewed in the direction of reflected light rays; a light source arranged in the region of said inner focal points; an objective arranged on said optical axis between said outer focal point of the apex portion and an outermost focal point of the upper elliptical portion to collect light rays reflected by said apex portion and the said upper elliptical portion; a diaphragm provided in a lower part of said reflector in



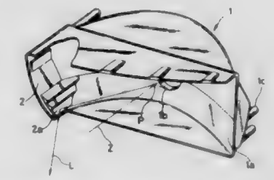
the region below said outer focal point of the apex portion and extending transversely to said optical axis to block-off light rays propagating in said lower part of the reflector; and a light reflecting member provided within said lower part of the reflector before said diaphragm to reflect downwardly directed rays from said light source against a part of said apex portion situated above said optical axis.

4,800,468

HEADLAMP FOR VEHICLE

Sakae Yokoyama, Kawasaki, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1987, Ser. No. 123,761
Claims priority, application Japan, Nov. 29, 1986, 61-184088[U]
Int. Cl.[4] F21V 7/09
U.S. Cl. 362—61 7 Claims



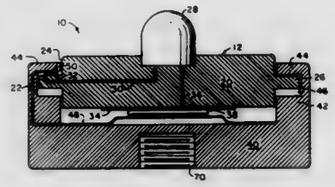
1. A vehicle headlamp, comprising

a main reflector formed of molded synthetic resin, said main reflector being arranged to reflect light from a light source in a main beam in a direction along an optical axis of said main reflector;

a rim portion integrally formed with said main reflector during molding of said main reflector, said rim portion extending forwardly of said main reflector substantially in the direction of said optical axis of said main reflector to form an integral carrier portion extending forwardly of said main reflector in said direction of said optical axis; and

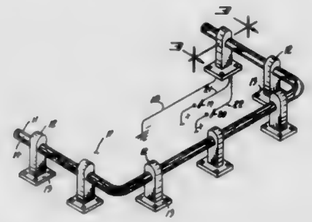
at least a portion of said extending carrier portion having at least one sub-reflecting surface integrally formed thereon by molding during said molding of said main reflector and carrier portion, said at least one sub-reflecting surface extending substantially linearly lengthwise along said optical axis direction for permitting easy removal of said reflector from a mold during said molding, and for reflecting light impinging on said at least one sub-reflecting surface in a direction other than the direction of said optical axis.

4,800,469
WHEEL MOUNTED SAFETY LIGHT
Thomas B. Leos, 4028 Norton Ave., Oakland, Calif. 94602
Filed Nov. 23, 1987, Ser. No. 124,551
Int. Cl.[4] B60Q *1/26*
U.S. Cl. 362—72 2 Claims



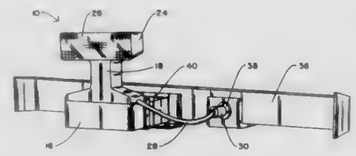
1. A safety warning light comprising
a power source,
a light source,
means for connecting said light source to said power source comprising
means defining a generally circular bottom housing having a bottom electrical conductor disposed along the inner surface thereof,
means defining a generally circular top housing having a top electrical conductor extending from proximate center thereof to proximate the outer edge thereof,
said generally circular top housing disposed generally parallel to said bottom housing and having its center coaxial with the center of said bottom housing,
means for electrically connecting one side of said light source to said top electrical conductor,
means for electrically connecting one side of said power source to said bottom electrical conductor,
means for electrically connecting the other side of said light source to the other side of said power source, said means comprising
a bottom electrical contact electrically connected to said bottom electrical conductor,
a top electrical contact electrically connected to said top electrical conductor,
said top electrical contact adapted to be electrically connected to said bottom electrical contact when said top housing is rotated to a particular position relative to said bottom housing, and
said top housing further comprises
a first tab integral with said top housing projecting radially from the peripheral edge of said top housing,
a second tab integral with said top housing projecting radially from the peripheral edge of said top housing approximately 180 degrees from said first tab,
said first tab adapted to have said top electrical contact attached thereto, and
said bottom housing further comprises
a rim integral with said bottom housing projecting upwardly about the periphery of said bottom housing nd adapted to receive said top housing,
a lip about the periphery of said bottom housing, integral with said rim, adapted to receive and engage said first and second tabs, one end of said bottom conductor being attached to the underside of said lip to define said bottom electrical contact and adapted to electrically engage said top electrical contact, and
means for biasing said top housing upwardly from said bottom housing to cause said tabs to frictionally engage the underside of said lip.

4,800,470
ILLUMINATED CARGO RACK
Robert E. Hartsaw, F-4 DonLee P.O. Box 3286, Oxford, Ala. 36203
Filed Sep. 8, 1987, Ser. No. 93,965
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 362—73 4 Claims



1. An illuminated cargo rack for securement and illumination of cargo positionable therein for attachment to an exterior surface of a motor vehicle comprising,
a single elongate, tabular light bar means for defining a securement perimeter for positioning of said cargo therein, and
means for positioning said light bar a spaced distance above said surface, and
wherein said means for positioning said light bar include a plurality of vertically oriented stanchions securing said light bar proximate one terminal end and securable to said surface at another terminal end, and
first and second light sources positioned within said light bar and
switching means for selectively illuminating said first and second light sources within said light bar, and
said first and second light sources are positioned on either side of a longitudinal co-extensive reflective mirror within said light bar, and
wherein said co-extensive mirror is vertically oriented relative to said light bar, and
said light bar is completely formed of a transparent exterior surface.

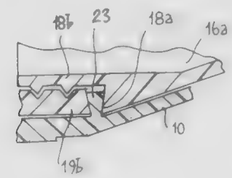
4,800,471
BRAKE LIGHT ATTACHMENT
Raymond E. Lippert, Box 330 Oceanside Village, Surfside Beach, S.C. 29575
Filed Aug. 10, 1988, Ser. No. 230,364
Int. Cl.[4] B60Q *1/26, 1/44*
U.S. Cl. 362—80 6 Claims

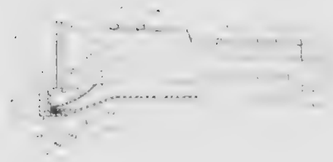


1. A brake light attachment for use with a trailer hitch, mounted on a vehicle, having an electrical plug connector having contacts for operating trailer brake lights and trailer turn signals and a tongue receiving socket for receiving a trailer tongue, said brake light attachment comprising:
shank means having a first end dimensioned for insertion into the trailer hitch tongue receiving socket;
retaining means for securing said shank means in the tongue receiving socket;

housing means attached to a second end of said shank means;
electrical light producing means in said housing means; and
connecting means for connecting said light producing means to the trailer hitch electrical plug connector.

4,800,472
BATTERY-POWERED LAMP
Colin R. Burton, Wolverhampton, and Philip Davies, London, both of United Kingdom, assignors to Ever Ready Limited, London, England
Filed Oct. 27, 1987, Ser. No. 114,160
Claims priority, application United Kingdom, Oct. 27, 1986, 8625647
Int. Cl.[4] F21L *9/00*; F21Y *31/02*
U.S. Cl. 362—158 7 Claims





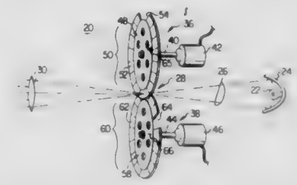
1. A battery powered lamp including a two-part rigid casing comprising a hollow body and an end cap removably attached to the body, and a water-impermeable sock of flexible resilient material closed at one end and open at the other end and designed to fully enclose the body and partially enclose the end cap, the sock including an annular rib projecting inwardly of the sock at a position spaced from the open end thereof, the rib being wedge-shaped so that it thickens in the radially inward direction and being trapped between the body and its attached cap, the casing components that trap the rib in place, being shaped so that there is a force applied to the wedge-shaped rib, as the cap is fixed in place on the body, which is radially inwardly directed with respect to the casing, the portion of the sock between the rib and the open end thereof surrounding the cap and extending beyond the cap.

4,800,473
VENITIAN BLIND LAMP
Denis Tremblay, P.O. Box 549, Succ. C, Montreal, Canada (H2L 4K4)
Filed Jul. 6, 1987, Ser. No. 69,976
Int. Cl.[4] F21V *17/02, 17/06*
U.S. Cl. 362—217 14 Claims

1. A lighting fixture comprising spaced first and second frames, a connector member spacedly rigidly interconnecting said frames, a light-emitting member extending between said frames, mounting means to secure said light-emitting member to said frames, a plurality of first pivot members mounted to said first frame and a plurality of second pivot members mounted to said second frame, each first pivot member coaxial with a corresponding one of the second pivot members, said pivot members at least partially spacedly surrounding said light-emitting member, a plurality of quadrangular louvers each supported at its ends by a pair of coaxial first and second pivot members; and actuating means, to incrementally pivot said louversd between an opened position, in which said louvers are substantially parallel, and a closed position, in which the side edge portions of adjacent louvers overlap one another so as to define a substantially opaque partition.



4,800,474
COLOR WHEEL ASSEMBLY FOR LIGHTING EQUIPMENT
James M. Bornhorst, Duncanville, Tex., assignor to Vari-Lite, Inc., Dallas, Tex.
Filed May 15, 1986, Ser. No. 863,440
Int. Cl.[4] F21V *9/00*
U.S. Cl. 362—293 20 Claims



1. A lighting instrument for producing a plurality of colors of light from a light source which produces a light beam, comprising:
a first rotatable color wheel comprising a first set of dichroic filters mounted about the periphery of a hub wherein each of said filters in said first set can be selectively positioned in said light beam by rotation of said first color wheel,
said first set of dichroic filters comprising long wave pass filters each of which transmits light having a wavelength greater than a cutoff wavelength of the filter, the cutoff wavelengths of said first set of filters spaced in the visible spectrum at respective intervals, said intervals being greater at longer wavelengths than at shorter wavelengths,
a second rotatable color wheel comprising a second set of dichoric filters mounted about the periphery of a hub wherein each of said filters in said second set can be selectively positioned in said light beam by rotation of said second color wheel, wherein said filters are positioned such that said light beam can pass sequentially through one filter in said first set and one filter in said second set, and
said second set of dichroic filters comprising short wave pass

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filters each of which transmits light having a wavelength less than a cutoff wavelength of the filter, the cutoff wavelengths of said second set of filters spaced in the visible spectrum at respective intervals, said intervals being greater at shorter wavelengths than at longer wavelengths.

10. A color wheel for use in a lighting instrument for producing multiple colors of light, said lighting instrument generating a beam of light, comprising:

a hub rotatable about the axis thereof, said hub having a periphery, an annular ring shaped area being defined radially outward of the periphery, the beam of light passing through the annular ring at a first position, and

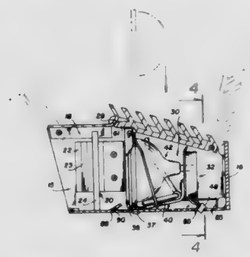
a set of planar dichroic filters, each filter joined along one edge thereof to the periphery of said hub and extending outward from said hub and across a predetermined arc of the annular ring shaped area, the predetermined arc for each filter being sufficient for the entire beam to pass through a given filter at the first position, each of a plurality of said filters is positioned contiguous to other filters in said set so that the beam is unimpeded by the hub as the hub rotates about the axis to place a filter at the first position.

4,800,475

PORTABLE ELECTRIC LIGHT

George N. Panagiotou, Encino, Calif., assignor to Cool Lux Lighting Industries, Inc., North Hollywood, Calif.

Filed Oct. 27, 1987, Ser. No. 113,715
Int. Cl.[4] F21V 29/00
U.S. Cl. 362—294 20 Claims



1. In a portable lighting device having a bulb assembly mounted within a housing defined by a bottom wall with opposing sidewalls and a back wall extending across said sidewalls, said housing having an open front end and an open top overlaid by a cover means, wherein the improvement comprises:

an enlarged opening in said bottom wall beneath said bulb assembly covering at least one fourth of the area of said bottom wall which is beneath said bulb assembly, said opening having opposing side edges;

a guard flange extending into said opening having peripheral edges spaced-apart from said side edges to define passages for air flow to said bulb assembly;

an elongated slot in said bottom wall offset from said front end; and,

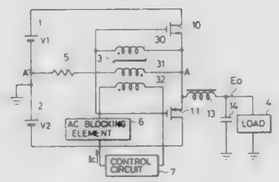
said cover means including a vent cover having air vent openings located at least above said enlarged opening and elongated slot.

4,800,476

PWM INVERTER WITH A SATURABLE CORE

Kousuke Harada, and Hiroshi Sakamoto, both of Fukuoka, Japan, assignors to Nishimu Electronics Industries Co., Inc., Fukuoka, Japan

Filed Sep. 10, 1987, Ser. No. 95,399
Int. Cl.[4] H02M 3/335
U.S. Cl. 363—16 11 Claims



1. A PWM inverter having a saturable core, the inverter comprising:

a saturable magnetic material core wound with a main winding and a control winding,

a resistor connected to the main winding in series to form a main circuit,

a pair of semiconductor switch elements each with a control terminal means and each connected on one side thereof to one end of the main circuit and each also connected on the opposite side thereof to one of a pair of terminal means of which pair the first teminal means is adapted for connection to a first source of voltage and the second terminal means is adapted for connection to a second source of voltage, and with the main circuit also connected on the other end thereof to a third terminal means adapted for connection to a reference source of voltage,

a control circuit means which selectively supplies a selected control current to the control winding, and

a drive winding wound on the saturable magnetic material core and connected on one end thereof to one side of each semiconductor switch element and on the opposite end thereof to the control terminal of each, wherein the pair of semiconductor switch elements switched on and off alternately as a result of transient oscillation due to the inductance of the aforementioned drive winding after saturation of the saturable magnetic material core and to the capacitance between the control terminal and one side of the semiconductor switch elements so that a voltage results across the main circuit with its polarity inverted alternately which can be pulse-width-modulated by the control circuit current.

4,800,477

DIGITALLY CONTROLLED SWITCH-MODE POWER SUPPLY APPARATUS EMPLOYING QUANTIZED STORED DIGITAL CONTROL SIGNALS

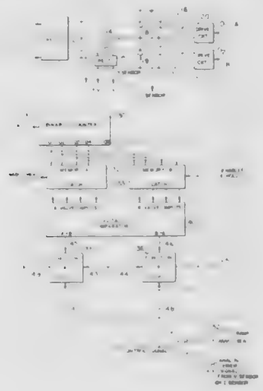
Anthony Esposito, 159 Connetquot Rd., Oakdale, N.Y. 11769

Filed Nov. 23, 1987, Ser. No. 124,076
Int. Cl.[4] H02M 3/337
U.S. Cl. 363—17 14 Claims

1. In a switch-mode power supply circuit of the type employing a pulse width modulated (PWM) drive signal for providing an output frequency according to said drive signal which output frequency is applied to a drive transformer coupled to means for converting said drive signal to a DC output, the improvement therewith of apparatus for controlling said drive signal comprising:

means responsive to said drive signal for quantizing said signal to provide a digital indication of said drive signal; memory means for storing said digital indication of said drive signal indicative of a condition of said signal in a first

mode; means responsive to the next drive signal as applied to said circuit for controlling the same according to said



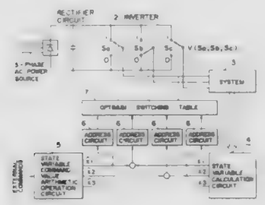
stored digital value to assure that said next drive signal is conditioned always according to said stored value.

4,800,478

METHOD AND APPARATUS FOR CONTROLLING PWM INVERTER

Izao Takahashi, Nagaoka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCT/JP85/00492, § 371 Date Oct. 31, 1986, § 102(e) Date Oct. 31, 1986
PCT Filed Sep. 3, 1985, Ser. No. 932,739
Claims priority, application Japan, Mar. 1, 1985, 60-41467
Int. Cl.[4] H02M 7/527; H02P 7/63
U.S. Cl. 363—41 6 Claims



1. A control method for a PWM inverter having branches containing switching means, said method comprising the steps of:

obtaining first digital signals of two or more state variables which represent whole combination states of said PWM inverter and load systems connected to an AC side of said PWM inverter and second digital signals of two or more deviations of said state variables from corresponding command values;

defining an evaluation function having as variables said state variables and said deviations;

inputting a set of said first and second digital signals to a memory as addresses; and,

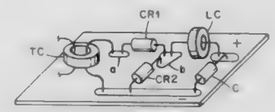
deriving data from said memory for switching said switching means of the branches of said inverter so that a value of the evaluation function is minimized.

4,800,479

HIGH FREQUENCY POWER CONVERTER HAVING COMPACT OUTPUT TRANSFORMER, RECTIFIER AND CHOKE

James H. Bupp, Hudson, Mass., assignor to Prime Computer, Inc., Natick, Mass.

Filed Mar. 31, 1988, Ser. No. 175,098
Int. Cl.[4] H02M 7/06
U.S. Cl. 363—48 24 Claims



1. A high frequency power converter system comprising;

an input transformer means comprised of a magnetic circuit element having a through hole,

at least one unilateral conducting device having opposed terminals and disposed extending at least in part through the magnetic circuit element through hole,

bussbar means comprised of a pair of bus conductors having said unitateral conducting device terminals connected therebetween,

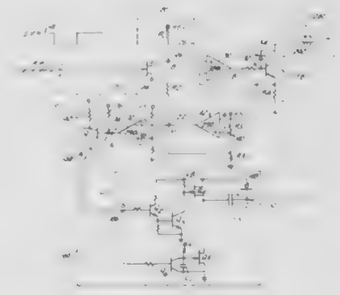
and inductance means comprised of a magnetic circuit member associated with one of said bus conductors.

4,800,480

VOLTAGE DOUBLER AND SYSTEM THEREFOR

Douglas R. Verner, Sterling Heights, Mich., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Oct. 30, 1987, Ser. No. 115,218
Int. Cl.[4] H02M 7/25
U.S. Cl. 363—60 28 Claims



1. A device for energizing at least one coil comprising:

voltage doubler circuit connected to a voltage source and including a charge storage capacitor, means operative during a first mode for causing the storage capacitor to charge to substantially the voltage level of the voltage source and means operative during a second mode for connecting the voltage source and storage capacitor in series.

first means in circuit with a coil and the voltage doubler circuit for: selectively completing a current path through the coil to enable and disable current flow therethrough in response to an input control signal, and for regulating the magnitude of the current flowing through the coil to a hold or steady state level;

second means responsive to the input control signal and the magnitude of current in the coil for generating a first control signal, the first control signal characterized that

during intervals prior to the input control signal such first control signal is maintained in a first state sufficient to cause the voltage doubler circuit to be in its first mode, and during intervals subsequent to the input control signal such first control signal is maintained in a second state sufficient to cause the voltage doubler circuit to be in its second mode, and

the second means including means for returning the first control signal to its first state after the level of current has reached a predetermined peak level to thereby reset the voltage doubler circuit to its first mode.

4,800,481

STATIC CONVERTER CIRCUIT AND METHOD FOR CONTROLLING IT

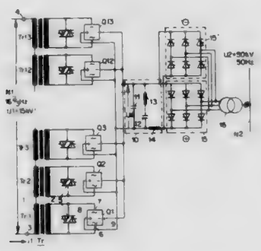
Berislav Knaffl, Wettingen; Peter Knapp, Oberehrendingen; Alfred-Christophe Rufer, Lauffohr; Urs Zürcher, Turgi, all of Switzerland, and Birger Gotaas, Skedsmokorset, Norway, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Jul. 17, 1987, Ser. No. 74,621

Claims priority, application Switzerland, Aug. 1, 1986, 3102/86

Int. Cl.⁴ H02M *7/17*

U.S. Cl. 363—70 **7 Claims**



1. A static converter circuit, comprising:

a voltage summing transformer;

said voltage summing transformer containing a predetermined number of part transformers;

each one of said part transformers containing a magnetic core which is magnetically decoupled from the magnetic cores of the remaining ones of said predetermined number of part transformers;

a predetermined number of static converters;

each one of said part transformers containing at least one power-system-side winding and at least one static-converter-side winding;

said at least one power-system-side windings of said predetermined number of part transformers being series-connected;

an alternating power system;

said series-connected power-system-side windings of said predetermined number of part transformers being operatively connected to said alternating power system;

said at least one static-converter-side winding of each one of said predetermined number of part transformers being connected to a respective one of said predetermined number of static converters; and

at leat one electric valve connected in parallel with said at least one static-converter-side winding of each one of said predetermined number of part transformers between said at least one static-converter-side winding and an associated one of said predetermined number of static converters.

4,800,482

SEQUENCE CONTROLLER USING PULSE COUNTS TO ACTIVATE/DEACTIVATE CONTROLLED ELEMENTS

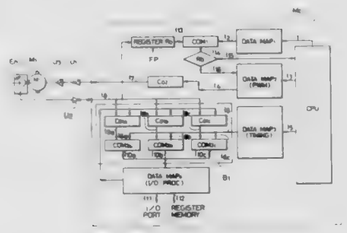
Masao Hosaka, Sagamihara; Yoshitaka Ogino; Kazutoshi Shimada, both of Kawasaki, and Takashi Saito, Ichikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 726,884, Apr. 24, 1985, abandoned. This application Mar. 15, 1988, Ser. No. 170,074

Claims priority, application Japan, Apr. 27, 1984, 59-86597; Apr. 28, 1984, 59-86894

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 364—140 **11 Claims**



1. A sequence control apparatus comprising:

a plurality of channel means, each channel means comprising count means for counting an input timing signal, and comparison means for comparing a count value from said count means and reference data;

data supply means for supplying the reference data for sequence control to said comparison means in said channel means;

designating means for designating the selection of a channel means among the plurality of said channel means in accordance with the number of objects to be processed in parallel; and

output means for outputting control signals to controlled elements in accordance with the comparison result of said comparison means.

8. A sequence control apparatus comprising:

count means for counting an input timing signal;

comparison means for receiving reference data for sequence control and for comparing a counted value received from said count means and the reference data;

data supply means for supplying the reference data for sequence control to said comparison means, said data supplying means comprising memory means containing a plurality of reference data, wherein said supplying means moves said plurality of reference data sequentially in a ring-form in accordance with the comparison result of said comparison means; and

output means for outputting a control signal to controlled elements in accordance with the comparison result of the comparison means.

4,800,483

METHOD AND SYSTEM FOR CONCURRENT DATA TRANSFER DISK CACHE SYSTEM

Akira Yamamoto, Yokohama; Toru Nishigaki, Sagamihara; Akira Kurano, Odawara; Kiyoshi Hisano, Odawara, and Yoshiro Shiroyanagi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 556,412, Nov. 30, 1983, abandoned. This application May 28, 1987, Ser. No. 56,355

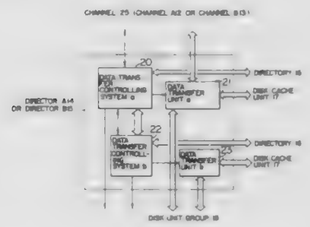
Claims priority, application Japan, Dec. 1, 1982, 57-209420

Int. Cl.⁴ G06F *13/00*

U.S. Cl. 364—200 **18 Claims**

1. In an information processing system including a disk cache unit; a disk unit; a processing unit; a channel for transferring data relating to input/output processing of said processing unit; and a director connected to said channel, said disk unit, and said disk cache unit; the improvement in which said director comprises:

first data transfer means connected to said channel and said disk cache unit by way of first and second transmission lines, respectively, for transferring data between said channel and said disk cache unit; and



second data transfer means connected to said disk cache unit and said disk unit by way of a third and fourth transmission lines, respectively, for transferring data between said disk cache unit and said disk unit when data is being transferred between said channel and said disk cache unit by said first data transfer means, thereby to transfer the data in parallel between said channel and said disk cache unit and between said disk cache unit and said disk unit.

4,800,484

COMPUTING INSTALLATION WITH AUTOMATIC TERMINAL SWITCHING AND A TERMINAL ADAPTED TO SUCH SWITCHING

Dominique Baize, Lagnieu; Maurice Cléand, Pont de Cheruy, and Serge Minard, Lagnieu, all of France, assignors to Electricite de France, Paris, France

Filed Jun. 21, 1984, Ser. No. 623,214

Claims priority, application France, Jun. 21, 1983, 83 10247

Int. Cl.⁴ G06F *13/14*

U.S. Cl. 364—200 **2 Claims**



1. A computer system comprising:

two digital computers each having means for sending an access request to a terminal unit from an output terminal when required for operation of the computer and having a receipt terminal for reception by said computer of a "ready" signal from the terminal unit indicating that access to said terminal unit is granted;

at least one terminal unit suitable for operation in co-operation with any one of said digital computers;

and connection means responsive to an access request from any one of said computers for providing a connection between said computer which sent the access request and said terminal unit while preventing access to said terminal unit by the other computers and providing an access priority to a first one of said computers with respect to the other computer;

said connecting means including: a switching circuit having a first condition providing connection of the first computer to said terminal unit and a second condition providing connection of the second computer to said terminal unit, said switching circuit being arranged to remain in the second condition until it receives an access request from said first computer and including a first circuit and a second circuit, said first and second circuits being respectively connected to said first and second computers so as to receive respective access requests therefrom so that each of said first and second circuits is responsive to access requests by the respective computer connected thereto, said switching circuit further comprising switching means including inputs connected to said first and second circuits for receiving control signals therefrom, and being arranged for overriding the control signal from said first circuit and for switching said switching circuit to said first condition responsive to the occurrence of a signal representing a predetermined condition of said terminal unit delivered by said terminal unit and an access request directed to said first circuit by said first computer.

4,800,485

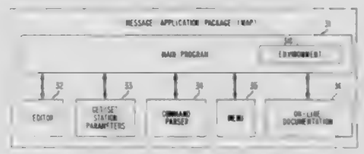
ON-LINE DOCUMENTATION FACILITY

John M. Ackroff, Highland Park, N.J.; Michael J. Heffler, New York City, N.Y., and John C. Mitchell, Middletown, N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 383,578, Jun. 1, 1982. This application Jun. 16, 1986, Ser. No. 875,246

Int. Cl.⁴ G06F *3/02*

U.S. Cl. 364—200 **9 Claims**



1. A method performed by an on-line documentation program executing in a computer system, said method comprising the steps of

maintaining in a file within said computer system particular predefined system on-line documentation associated with a particular on-line documentation command,

receiving from at least one user of said system user-specific on-line documentation associated with said particular on-line documentation command, said at least one user being other than a designer of said computer system,

retrieving from said file and providing to each other individual user of said system, in response to each issuance by said each other user of said particular on-line documentation command, said particular predefined system on-line documentation associated with said particular on-line documentation command, and

providing to said at least one user of said system, in response to each issuance by said at least one user of said particular on-line documentation command, said user-specific on-line documentation, said user-specific on-line documentation being different from said system on-line documentation.

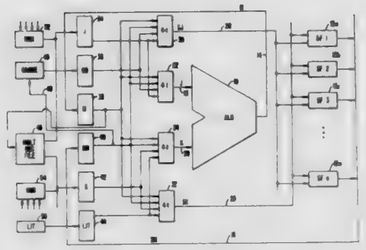
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4,800,486

MULTIPLE DATA PATCH CPU ARCHITECTURE

Robert W. Horst, Cupertino; Shannon J. Lynch, Los Gatos; Cirillo L. Costantino, Castro Valley, and John M. Beirne, Los Gatos, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Sep. 29, 1983, Ser. No. 537,877
Int. Cl.[4] G06F *9/28*
U.S. Cl. 364—200 **15 Claims**



4. A CPU architecture for use in a data processing system wherein an instruction causes operands to be processed during execution of a microcode word having at least first, second, third, fourth, and fifth microcode fields, including:

arithmetic logic means in a first data path for performing arithmetic logic operations on operands as specified by the first microcode field,

at least one selectable function means in a second data path for performing operations on operands simultaneously with the arithmetic logic operations as specified by the second microcode field,

a plurality of first register means for holding operands for processing by said arithmetic logic means and said function means,

a plurality of first select logic means, responsive to the third microcode field, for selectively connecting one of said first register means to said arithmetic logic means and one of said first register means to said function means,

first return bus means for returning results from an operation of said arithmetic logic means to at least one of said first register means,

second return bus means for returning results from an operation of said arithmetic logic means to at least one of said first register means,

second return bus means for returning results from an operation of said function means to at least one of said first register means,

at least one second register means connected to at least one of said first register means for holding operands for processing by said arithmetic logic means and said function means and selectively supplying said operands to said first register means in response to the fourth microcode field, and

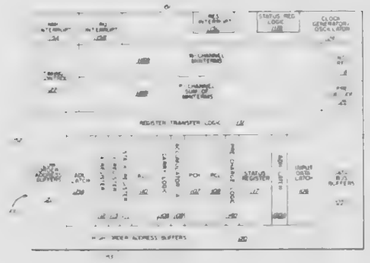
at least one second select logic means connected to at least one of said first register means for selectively connecting one of a plurality of data sources to said first register means in response to the fifth microcode field.

4,800,487

TOPOGRAPHY OF INTEGRATED CIRCUIT INCLUDING A MICROPROCESSOR

William D. Mensch, Jr., 1924 E. Hope St., Mesa, Ariz. 85203

Continuation of Ser. No. 534,181, Sep. 20, 1983, Pat. No. 4,652,992. This application Mar. 23, 1987, Ser. No. 29,272
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[4] G06Z *1/00*
U.S. Cl. 364—200 **2 Claims**



1. An integrated circuit chip including a microprocessor having a surface, said microprocessor comprising in combination:

(a) data bus means on said surface for transferring digital data;

(b) address bus means on said surface for transferring digital address information;

(c) register circuit means on said surface coupled to said data bus means and said address bus means for storing digital information received from said data bus means and said address bus means and transferring digital information to and from said data bus means and said address bus means in accordance with execution of program instructions by said microprocessor;

(d) address output buffer circuit means on said surface coupled to said address bus means for temporarily storing digital address information from said microprocessor;

(e) instruction decoding circuit means located above said register circuit means for decoding instructions to be executed by said microprocessor, said instruction decoding circuit means including

i. first read-only memory circuit means including a plurality of FETs arranged in an array for producing a plurality of minterm signals in response to instruction information in an instruction register on said surface,

ii. second read-only memory circuit means including a plurality of FETs arranged in an array for producing a plurality of sum-of-minterm signals in response to said minterm signals, and

iii. register transfer circuit means responsive to said sum-of-minterm signals for effectuating electrical coupling between registers in said register circuit means, said data bus means and said address bus means in accordance with the instruction being executed, in order to effect predetermined data transfers therebetween, said register transfer circuit means being disposed above said register circuit means, and second read-only memory circuit means being disposed above said register transfer circuit means, and said first read-only memory circuit means being disposed and above said second read-only memory circuit means, said data bus means and said address bus means extending horizontally through said register circuit means;

said FETs in said first read-only memory circuit means being arranged as vertical groups of series-coupled FETs, said minterm signals being coupled at the bottom of said first read-only memory circuit means to a plurality of conductors, respectively, which are connected to gate electrodes of various ones of said FETs in said second read-only memory circuit means, said FETs in said second read-only memory circuit means being arranged as horizontal groups of parallel-coupled FETs on the drain electrodes of which said sum-of-minterm signals are produced;

(f) a first group of horizontal conductors connected, respectively, to various drains of said FETs of said second read-only memory circuit means, for each conducting a respective one of said sum-of-minterm signals; and

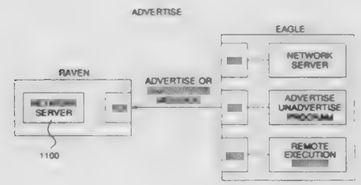
(g) a second group of horizontal conductors conducting said instruction information from said instruction register to various ones of said FETs of said first read-only memory circuit means.

4,800,488

METHOD OF PROPAGATING RESOURCE INFORMATION IN A COMPUTER NETWORK

Rakesh Agrawal, Chatham, and Ahmed K. Ezzat, New Providence, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 12, 1985, Ser. No. 796,864
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—200 **17 Claims**



1. A method of propagating resource information among computers of a computer network, comprising the steps of

at each computer,

dynamically advertising the availability or unavailability of a resource at the computer to other computers of the network in response to the resource becoming available or unavailable, respectively, for use by the other computers,

soliciting the availability or unavailability of a resource at other computers of the network each time the computer is placed on-line in the network,

maintaining a database of the availability or unavailability of the resource at other computers of the network, and

verifying from the database that a resource at a specified computer is available from attempting to use the resource at the specified computer.

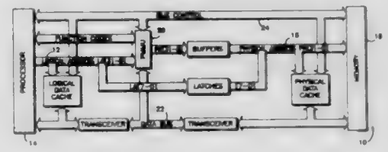
4,800,489

PAGED MEMORY MANAGEMENT UNIT CAPABLE OF SELECTIVELY SUPPORTING MULTIPLE ADDRESS SPACES

William C. Moyer; Michael W. Cruess, both of Austin; William M. Keshlear, Richmond, all of Tex., and John Zolnowsky, Milpitas, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 819,180, Jan. 15, 1986, Pat. No. 4,763,244. This application May 19, 1988, Ser. No. 195,751
Int. Cl.[4] G06F *12/16*
U.S. Cl. 364—200 **4 Claims**

3. In a paged memory management unit (PMMU) adapted to selectively access a plurality of pointer tables and page tables stored in a memory to translate a selected logical address into a corresponding physical address by first combining a first portion of said logical address and a first table pointer to access a selected one of said pointer tables to obtain therefrom a page table pointer to a selected one of said page tables and then combining a second portion of said logical address and said page table pointer to access said selected page table to obtain therefrom said physical address, the improvement wherein said



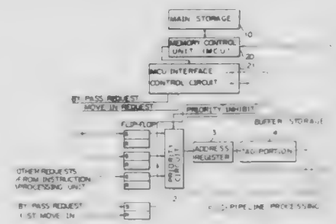
PMMU is selectively enabled to combine said first table pointer and said second portion of said logical address to directly access said page table to obtain therefrom said physical address.

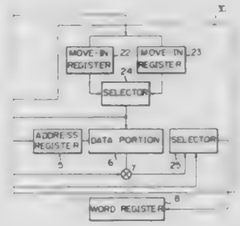
4,800,490

BUFFER STORAGE CONTROL SYSTEM HAVING A PRIORITY CIRCUIT

Tsutomu Tanaka, Yokohama, and Yuji Oinaga, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 29, 1986, Ser. No. 924,329
Claims priority, application Japan, Oct. 29, 1985, 60-241799
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—200 **6 Claims**





1. A buffer storage control system including a central processing unit and a main storage for storing data, comprising:

buffer storage means for storing a part of the data of the main storage; and

at least one of an arithmetic means and an instruction processing means, each for processing data;

means for transferring data to be processed directly to said one of said arithmetic means and said instruction processing means by a by-pass operation when a block transfer of data from the main storage means to the buffer storage is carried out;

means for writing said transferred data into said buffer storage means and when not all of the data of one block is

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written into said buffer storage means, only the data written in said block transfer can be read; and

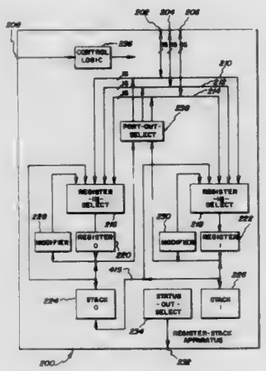
means for inhibiting access to said buffer storage means during a period from an end of the by-pass operation to an end of the writing of said transferred data into said buffer storage means with respect to data related to said by-pass operation and data transferred from said main storage subsequent to said data related to said by-pass operation, based upon a subsequent request for access.

4,800,491

REGISTER-STACK APPARATUS

Robert M. Hardy, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 17, 1986, Ser. No. 931,314
Int. Cl.[4] G06F *12/00*; G11C *7/00*
U.S. Cl. 364—200 23 Claims



1. Apparatus, comprising:

first memory means for retrievably storing a plurality of binary bit signals;

second memory means for retrievably storing a plurality of binary bit signals such that a last signal stored therein is a first available signal for retrieval, said second memory means being coupled to receive for storage a content of said first memory means;

modifier means for providing the contents of said first memory means in a plurality of predetermined modified forms on a like plurality of modifier means outputs;

select means, responsive to an applied one of a plurality of possible control command signals, for applying to said first memory means selected binary bit signals for storage therein, said select means being coupled to receive said plurality of predetermined modified forms of said first memory means contents; and

output means for applying the contents of said first memory means to one of a plurality of ports for reading said first memory means contents external to said apparatus.

4,800,492

DATA LOGGER FOR A POST-MIX BEVERAGE DISPENSING SYSTEM

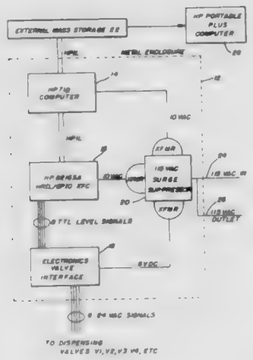
Donald A. Johnson, Duluth, Ga., and Dave Conklin, Corvalis, Oreg., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed May 13, 1987, Ser. No. 49,221
Int. Cl.[4] G06F *15/24*; B65B *3/04*
U.S. Cl. 364—403 12 Claims

1. In a beverage dispenser apparatus having a plurality of valve assemblies for dispensing respective flavors of beverages into containers of different sizes, a data logging system for sensing and storing information with respect to beverages dispensed from each respective valve assembly, the improvement comprising:

(a) means for sensing the opening and closing of each valve assembly, a beverage dispensing cycle beng initiated when a valve assembly is opened and terminated when a valve assembly is closed, said means for sensing generating data signals indicating the opening and closing of each valve assembly;

(b) controller means including,



1. clock means for continuously generating time of day signals, and

2. means for receiving and storing said data signals and said time of day signals; and

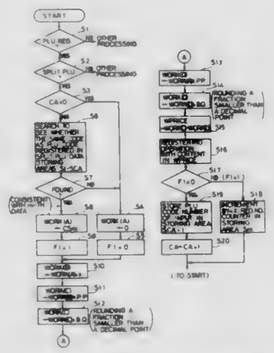
(c) processor means for determining from the stored data and time of day signals, the volume of beverage dispensed for each respective valve assembly for a selected period during a day or days.

4,800,493

ELECTRONIC CASH REGISTER

Hiroshi Takagi, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 8, 1985, Ser. No. 763,641
Claims priority, application Japan, Aug. 10, 1984, 59-169033
Int. Cl.[4] G06F *15/21*; G07G *1/00*
U.S. Cl. 364—405 2 Claims



1. A method of operating an electronic cash register to register commodity prices using split PLU registering, said method comprising the steps of:

a. storing a plurality of packaged commodity data words, corresponding to a plurality of packaged commodities, in a memory having a plurality of PLU data storing memory areas, each of said packaged commodity data words including a commodity code, a total package price, and a commodity number indicating the number of individual commodities in each of said packaged commodities;

b. entering into said electronic cash register a commodity code for an individual commodity and a registering number indicating the quantity of said individual commodity to be registered;

c. determining if split PLU registering is applicable to said entered commodity code by locating matching package commodity data word in said plurality of package commodity data words, said matching package commodity data word comprising one of said plurality of data words in which the included commodity code is equivalent to said entered commodity code for an individual commodity;

d. determining if a count value (CA), indicative of whether split PLU registering has been performed previously, is zero if split FLU registering is applicable to said entered commodity code;

e. setting a total number registered value stored in a first memory area to zero and resetting a flag if said count value (CA) is equal to zero, and if said count value (CA) is not equal to zero, determining if said entered commodity code has previously been entered;

f. setting said total number registered value in said first memory are equal to a registering number counter value (CSm) indicative of the quantity of said individual commodity corresponding to said entered commodity code that has previously been entered and setting said flag if said entered commodity code has previously been entered, and setting said total number registered value in said first memory area equal to zero and resetting said flag if said entered commodity code has not been previously entered;

g. calculating with a processor unit a sum of said registering number and said total number registered value stored in said first memory area, and storing said sum in a second memory area;

h. calculating with said processor unit a first rounded result of the division of a product of said package price and said sum stored in said second memory area by the commodity number included in said matched packaged commodity data word and storing said first rounded result in a third memory area;

i. calculating with said processor unit a second rounded result of the division of a product of said sum stored in said first memory area and the package price included in said matched packaged commodity data word by said commodity number included in said matched packaged commodity data word, and storing said second rounded result in a fourth memory area; and

j. calculating with said processor unit a final result value based on the numerical difference between said first rounded result stored in said third memory area and said second rounded result stored in said fourth memory area and indicating on an indicator unit that an amount to be registered for said entered commodity code is said final result value.

4,800,494

METHOD AND APPARATUS FOR EXECUTION OF MULTISLICE IMAGING EXPERIMENTS

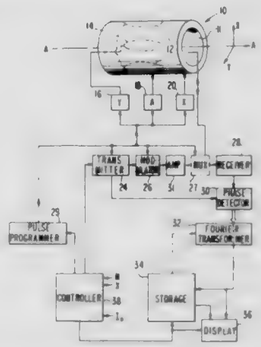
David L. Foxall, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 23, 1987, Ser. No. 29,284
Int. Cl.[4] G06F *15/42*; G01R *33/22*
U.S. Cl. 364—413.13 10 Claims

1. An apparatus for sequentially applying selected excitation signals to selected slices of a physical object comprising:

means for associating the integer i with a corresponding slice denoted by S_i for i=0, . . . , (N−1), where N is a positive integer greater than 6;

means for calculating the least positive residue r_k satisfying $r_k \equiv I_0 + kX \pmod N$ for k=0, . . . , N−1 where I_0 is a selected integer and X is an integer relatively prime to N satisfying r(X)>2 and N−4(X)>2, where r(X) is the least positive residue congruent to X modulo N; and



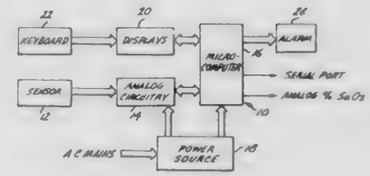
means, responsive to said residue r_k, for applying a selected excitation signal to slice S_{rk}, for k=0, . . . , (N−1) in the order k=0, . . . , N−1 so that a selected excitation signal is applied to slice S_{rk} before being applied to slice $S_{r(k+1)}$ for k=0, . . . , (N−2).

4,800,495

METHOD AND APPARATUS FOR PROCESSING SIGNALS USED IN OXIMETRY

Robert E. Smith, Edmonds, Wash., assignor to Physio-Control Corporation, Redmond, Wash.

Filed Aug. 18, 1986, Ser. No. 897,750
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—413.03 43 Claims



1. An apparatus for processing a signal containing information about arterial blood flowing in tissue, said signal having a relatively periodic pulsatile component superimposed upon a varying baseline component, said apparatus comprising:

first portion identification means for identifying a first portion of said signal during which the sign of the slope of said signal changes from positive to negative;

positive peak location means for locating the point along said first portion of said signal having the largest amplitude, the point having said largest amplitude defining a positive peak of said signal;

second portion identification means for identifying a second portion of said signal during which the sign of the slope of said signal changes from negative to positive;

negative peak location means for locating the point along said second portion of said signal having the smallest amplitude, the point having said smallest amplitude defining a negative peak of said signal and the difference in

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signal amplitude between said positive peak and said negative peak defining a pulse amplitude; and

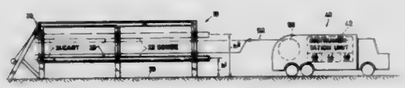
analyzing means, responsive to said positive and negative peak location means, for producing an output indicative of a characteristic of said arterial blood.

4,800,496

METHOD FOR DETERMINING INDUCTION SONDE ERROR

Thomas D. Barber; William B. Vandermeer, and William D. Flanagan, all of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 28, 1987, Ser. No. 101,616
Int. Cl.[4] G01V *3/18*
U.S. Cl. 364—422 **19 Claims**



1. A method for determining a sonde error characteristic of an induction logging tool comprising the steps of

measuring an electrical characteristic with said logging tool from at least at two different heights above the earth, and

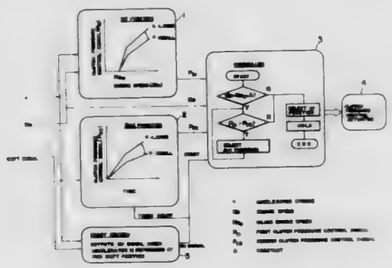
determining said sonde error characteristic as a function of a predetermined relationship between said sonde error characteristic and said measurements of said electrical characteristic at said different heights above the earth.

4,800,497

CLUTCH PRESSURE CONTROL APPARATUS

Yasuo Koori, Toyota, and Tsutomu Mitsui, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 28, 1986, Ser. No. 845,329
Claims priority, application Japan, Mar. 28, 1985, 60-62134
Int. Cl.[4] B60K *41/28*
U.S. Cl. 364—424.1 **12 Claims**



1. A clutch pressure control apparatus which comprises:

(a) a first function generator for generating a clutch pressure control signal in accordance with a first function such that a clutch pressure control signal P_{c1} is definitely determined as a function of an engine rotational speed signal and an acclerator pedal stroke signal;

(b) a controller including a second function generator for providing a second clutch pressure control signal P_{c2} in accordance with a second function such that when actual engine speed at an initial clutch engagement phase at which a clutch is entering a half-clutch state exceeds a predetermined engine speed limit, which does not provide shock when the clutch is engaged, said second clutch pressure control signal is first set to a temporary low value corresponding to an engine speed not exceeding the predetermined engine speed limit and then in accordance with said second function is allowed to approach a value determined by the first function according to the actual engine speed signal; and

(c) a start switch for detecting accelerator pedal stroke and transmission shift position and outputting a start signal to start to operate said controller when transmission is shifted to a running position and the accelerator stroke meets a condition for start,

wherein the second clutch pressure control signal P_{c2} increases as the time proceeds starting from said outputting of the start signal;

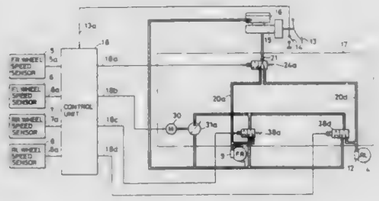
said controller receiving control signal P_{c1}, the accelerator pedal stroke signal, the start signal and the engine rotational speed and selecting the control signal P_{c2} when the engine speed signal is higher than the predetermined engine speed limit and P_{c1} is higher than P_{c2}, or selecting the control signal P_{c1} when the engine speed signal is not higher than the predetermined engine speed limit or P_{c1} is not higher than P_{c2} with the control signal P_{c1} being maintained until the start signal is outputted again.

4,800,498

ANTI-SKID CONTROL BASED ON DUTY CYCLE ADJUSTMENT

Kazuma Matsui, Toyohashi; Yoshiyuki Hattori, Toyoake; Yuuichi Imani, Hamamatsu; Akira Kuno, Oobu, and Yoshihisa Nomura, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 24, 1986, Ser. No. 877,729
Claims priority, application Japan, Jun. 26, 1985, 60-142091
Int. Cl.[4] B60T *8/34*
U.S. Cl. 364—426.02 **11 Claims**



9. An anti-skid control system incorporated in a hydraulic pressure braking apparatus of a vehicle at least including a master cylinder for developing a hydraulic pressure in response to the operation of a brake pedal and a wheel braking cylinder responsive to the hydraulic pressure developed by said master cylinder for braking a wheel of said vehicle, comprising:

means for detecting the speed of said wheel and generating a signal indicative of the detected wheel speed;

a first directional control valve switched to shut off the communication between said master cylinder and said wheel braking cylinder;

hydraulic pressure supplying means coupled to said wheel braking cylinder for supplying a hydraulic pressure thereto;

a second directional control valve provided between said hydraulic pressure supplying means and said wheel braking cylinder and actuated to shut off the communication therebetween; and

control means responsive to the signal from said wheel speed detecting means for:

(1) deriving a vehicle speed and a wheel acceleration from the detected wheel speed,

(2) determining a target wheel speed on the basis of the derived vehicle speed and a predetermined slip ratio of said wheel,

(3) deriving a parameter as a function of the derived wheel acceleration and the difference between the determined target wheel speed and the detected wheel speed,

(4) comparing the derived parameter with a first predetermined value,

(5) switching said first directional control valve to the shut-off condition when the derived parameter exceeds the first predetermined value,

(6) determining a duty cycle in terms of the time of the actuation of said second directional control valve,

(7) comparing the derived parameter with a second predetermined value and reducing the duty cycle by a first correction value when the derived parameter is greater than said second predetermined value,

(8) comparing the derived parameter with a third predetermined value and enlarging the duty cycle by a second correction value when the derived parameter is smaller than said third predetermined value, and

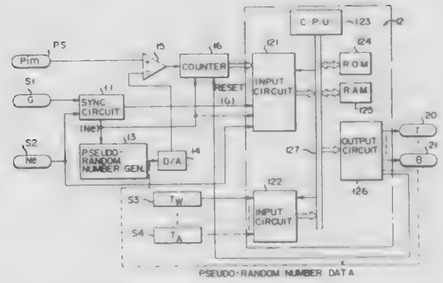
(9) controlling the switching of said second directional control valve in accordance with the reduced or enlarged duty cycle.

4,800,499

APPARATUS FOR PROCESSING ENGINE OPERATION DETECTION SIGNALS

Katsuhiro Ina, Okazaki; Susumu Akiyama, Kariya, and Yuzi Hirabayashi, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 23, 1986, Ser. No. 854,818
Claims priority, application Japan, Apr. 24, 1985, 60-86239
Int. Cl.[4] F02P *9/00*; F02D *41/30*
U.S. Cl. 364—431.03 **12 Claims**



1. An apparatus for processing signals from a device for detecting the operating state of an engine, comprising:

first signal generating means for generating a first signal in a first period in response to detection parameters of said device of a desired detection accuracy;

second signal generating means for generating a second signal in a second period which is longer than said first period;

pseudo random number generating means for generating random numbers in response to said first signal;

comparing means for comparing a detection signal level from said device for detecting the operating state of the engine and random number data generated by said pseudo random number generating means and providing an output signal;

counting means which is incremented by the output signal from said comparing means in response to said first signal; and

control means for outputting count data of said counting means based on said second signal and then resetting said counting means to an initial value.

4,800,500

METHOD OF DETECTING CYLINDER PRESSURE IN INTERNAL COMBUSTION ENGINE

Akira Tanaka, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 936,858
Claims priority, application Japan, Dec. 2, 1985, 60-271124
Int. Cl.[4] G01M *15/00*; G01L *23/22*
U.S. Cl. 364—431.08 **8 Claims**



1. A method of detecting cylinder pressure angle in an internal combustion engine, comprising the steps of:

(a) determining first and second reference values such that the first reference value is higher than the second reference value and the first reference value is lower in voltage than a potential largest output signal expected to be output from a cylinder pressure sensor;

(b) applying said first and second reference values and an output signal from said cylinder pressure sensor to a window comparator;

(c) measuring distances from a predetermined point to leading and trailing edges of first and second pulses generated from said window comparator, respectively;

(d) determining a first midpoint of the distance between the leading edge of the first pulse and the trailing edge of the second pulse and determining a second midpoint of the distance between the trailing edge of the first pulse and the leading edge of the second pulse of said window comparator;

(e) approximating a point of maximum pressure by determining an angle of slope between said first and second midpoints and applying said angle of slope to said pressure output signal to determine a largest value of said pressure sensor, representing a maximum cylinder pressure, of a current cycle;

(f) calculating a difference between the largest value and one of said first and second reference values;

(g) calculating an offset value of said approximated point of maximum pressure from one of said first and second midpoint values by multiplying the difference by said angle of slope;

(h) calculating a total distance between the predetermined point and the approximated point of maximum cylinder pressure by obtaining a sum of the offset value and said one of said midpoints; and

(i) using the sum as a position representing a maximum cylinder pressure angle of said internal combustion engine.

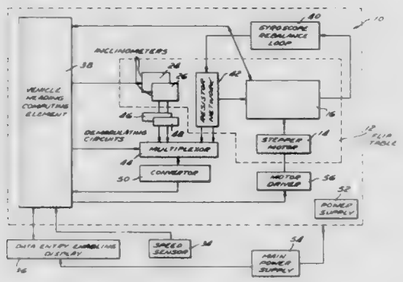
VOL 1098 ISS 4 JA 24 1989 UMI

4,800,501

VEHICLE LAND NAVIGATING DEVICE

Ivan Kinsky, 23601 Draco Way, Canoga Park, Calif. 91307

Filed Nov. 24, 1986, Ser. No. 933,807
Int. Cl.[4] G06G *7/78*; G01C *19/38*
U.S. Cl. 364—453 8 Claims



1. A vehicle land navigating device, adapted to measure and update vehicle heading by North-seeking and navigating, comprising:

(a) means for sensing vehicle heading and for generating vehicle heading measuring and updating data, comprising:

(1) a flip table, adapted to be rotated so as to sequence through a series of angular positions and drift measurements to find North;

(2) means for rotating the flip table so as to sequence the flip table through the series of heading positions;

(3) a gyroscope, of the dual-axis type, adapted to have a first degree of freedom defining a first generally horizontal sensitive axis for North-seeking by aligning the gyroscope generally horizontal sensitive axis orthogonal to the horizontal component of the Earth Rate, and a second degree of freedom defining a second generally vertical sensitive axis for navigating, offset from the first sensitive axis, the output from which represents the heading rate of change, which gyroscope is further adapted to be mounted on the flip table to rotate therewith and to be rotated thereby through a sequence of heading positions to seek North and calibrate the gyroscope parameters including the horizontal axis drift and vertical axis drift and the vertical axis scale factor; and

(4) an inclinometer, adapted to be mounted on the flip table for movement therewith and to define the pitch or roll axis of the vehicle body depending on the flip table position;

(b) a housing for supporting the heading sensing and data generating means, adapted to be strapped down to the vehicle;

(c) means for sensing the speed of the vehicle for navigating in conjunction with the updated heading angles for the Northing coordinates generated by the vehicle speed times the cosine of the heading, and for Easting coordinates generated by the vehicle speed times the sine of the heading;

(d) means for enabling entry of data including coordinates, latitude, and map information; and

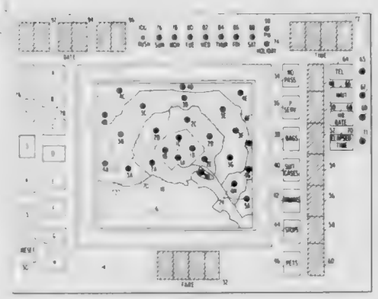
(e) means for computing vehicle heading data from the heading sensed and data generated in the heading sensing and data generating means, including the inclinometer, temperature of the gyroscope, and the angle of the flip table, and in the speed sensing means, and from information entered in the data entry enabling means by coordinating the integral of the heading rate of change with the initial heading found during North seeking.

4,800,502

FARE COMPUTER

Eugene A. Stewart, 5819 - 7th St., NW., Washington, D.C. 20011, and Ralph L. Robinson, 4009 Parkwood St., Brentwood, Md. 20722, assignors to Eugene A. Stewart, Washington, D.C. and Ralph L. Robinson, Brentwood, Md., part interest to each

Continuation of Ser. No. 741,324, Jun. 4, 1985, abandoned. This application Mar. 22, 1988, Ser. No. 172,972
Int. Cl.[4] G06F *15/50*
U.S. Cl. 364—467 7 Claims



1. A fare computer, for digitally calculating an accrued fare for desired transportation within a zoned tariff locality between a first point in a selected zone of origin within the locality and a second point in a selected zone of destination within the locality according to a tariff schedule and for displaying the accrued fare and visual representations of charges contributing to the accrued fare, said fare computer comprising:

digital memory means adapted for storing rate schedule data, including one or more tariff schedules containing a schedule of primary fare charges for transportation from a point in any zone selected as the zone of origin to a point in any zone selected as the zone of destination, and a fare calculation program;

operator actuated input means for permitting selection of one of the tariff schedules and of a zone of origin and a zone of destination of the transportation;

means connecting said memory means and said input means and responsive to the selection of one of the tariff schedules and of the zone of origin and the zone of destination for obtaining from the selected tariff schedule fare charge data indicative of the fare charge for transportation from a point in the selected zone of origin to a point in the selected zone of destination and entering the obtained fare charge data into said digital memory means for storage therein;

processing circuit means adapted to interrogate said memory means for stored fare charge data therein to derive signals representative of the accrued fare and charges contributing to the accrued fare; and

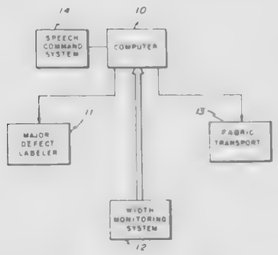
display means, responsive to the signals derived by said processing circuit means, for digitally displaying the accrued fare as the fare for transportation from a point in the zone of origin to a point in the zone of destination and for displaying visual representations of charges contributing to the accrued fare.

4,800,503

METHOD AND APPARATUS FOR GRADING FABRICS

James M. Pierce, Jr., Greensboro, and Jerry F. Mallard, High Point, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Sep. 19, 1986, Ser. No. 909,222
Int. Cl.[4] G06F *15/46, 9/00*; D06H *3/02*; G10L *9/00*
U.S. Cl. 364—470 25 Claims



18. A fabric grading system comprising:

width monitoring means for monitoring the width of a fabric to be graded and for outputting fabric width data;

verbal command discriminating and control means for discriminating verbal commands from an operator as any one of major fabric defect, minor fabric defect, fabric transport-off, fabric transport forward and fabric transport reverse commands, for receiving and recording the fabric width data outputted from said width monitoring means and for recording the major and minor fabric defect commands;

defect labeling means for applying a defect label to the fabric in response to said control means discriminating a major defect verbal command from the operator;

fabric transport means for transporting the fabric in a forward direction in response to said control means discriminating a forward verbal command from the operator, for transporting the fabric in a reverse direction in response to said control means discriminating a reverse verbal command from the operator and for disabling said fabric transport means in response to said control means discriminating fabric transport-off verbal command from the operator.

4,800,504

INTERACTIVE OUTGOING AND INCOMING MAILPIECE PROCESSING SYSTEM

Robert T. Durst, Jr., Monroe, and Alfred C. Schmidt, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 13, 1987, Ser. No. 25,552
Int. Cl.[4] G06F *15/20*; B65H *39/02*
U.S. Cl. 364—478 22 Claims

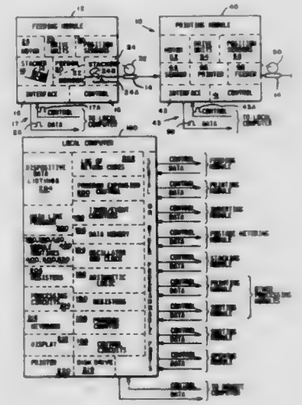
1. An interactive outgoing and incoming mailpiece processing system comprising:

a. means for processing an outgoing mailpiece for mailing to an addressee, said outgoing mailpiece including a returnable stationery item bearing an identification code identifying the addressee thereof;

b. computer means, said computer means including means for storing said identification code, said computer means including a dispositive data listing for said identification code, said listing including data corresponding to an operation to be implemented by said system, said computer means including means for causing said system to implement said operation upon sensing the identification code for said listing;

c. means for processing an incoming mailpiece, said incoming mailpiece including said stationery item when returned;

d. means for sensing said code; and



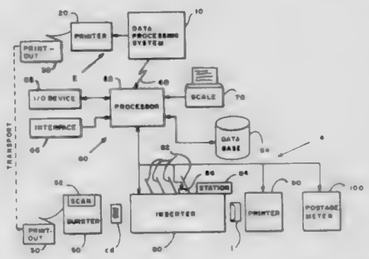
e. means for changing the dispositive data listing whereby said data corresponding to said operation may be changed.

4,800,505

MAIL PREPARATION SYSTEM

Barry H. Axelrod, Newtown; Robert T. Durst, Jr., Monroe; Kevin D. Hunter, Stratford; Leon A. Pintsov, West Hartford; William G. Hart, Stamford, and Morton Silverberg, Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 13, 1987, Ser. No. 25,418
Int. Cl.[4] G06F *15/20*; B65H *39/02*
U.S. Cl. 364—478 19 Claims



16. A method for controlling an apparatus for preparing items to be mailed in accordance with parameters, comprising the steps of:

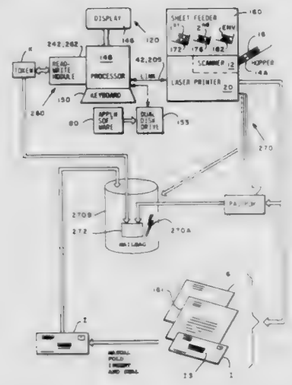
(a) maintaining a data base, said data base comprising a plurality of records each of which includes selected values of said parameters for preparing one of said items, each of said records including an identification code having values selected for identifying an addressee of a given item;

(b) accessing said data base in accordance with the selected values of each of said identification codes scanned from at least one component of each of said items; and

(c) outputting said selected values of parameters included with each of said selected identification code values from said accessed records to said preparing apparatus for preparing respective items to be mailed.

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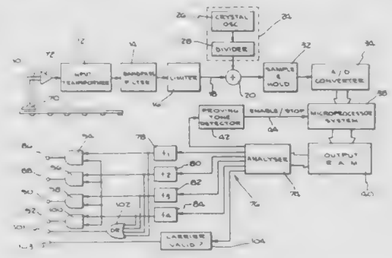
4,800,506
APPARATUS FOR PREPARING MAIL PIECES
Barry H. Axelrod, Newtown; Robert T. Durst, Jr., Monroe; Kevin D. Hunter, Stratford, and Alfred C. Schmidt, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Mar. 13, 1987, Ser. No. 25,308
Int. Cl.[4] G06F *15/20;* **B65H** *39/02*
U.S. Cl. 364—478 **29 Claims**



1. Apparatus for preparing mailpieces, comprising:
a. printing means;
b. means for supplying a plurality of stationery items; and
c. computer means, said computer means including means for receiving and storing data including different letter datum corresponding one-for-one to different information provided for preparing each of a plurality of different mailpieces, said information for each mailpiece including a postal zip code, said computer means including means for identifying respective postal zip codes which each include a plurality of predetermined elements, said computer means including means for sorting from said data the letter datum corresponding to information which includes an identified postal zip code, said computer means including means for causing said supplying means to selectively supply to said printing means the respective stationery items for each mailpiece for which a postal zip code is identified, and said computer means including means for causing said printing means to print the information corresponding to the sorted letter datum for each mailpiece on the stationery items selected therefor.

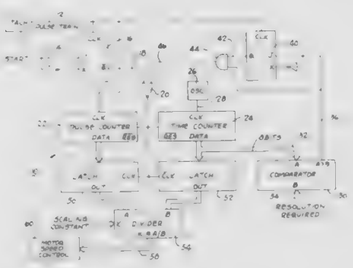
4,800,507
PROVING SAFE OPERATION
Christopher R. Brown, 65 New Road, Bromham, Wiltshire, England
Filed Dec. 15, 1986, Ser. No. 941,764
Int. Cl.[4] B61L *11/02*
U.S. Cl. 364—484 **10 Claims**

1. A method of proving correct operation of an electronic circuit capable of providing an output signal containing a frequency component corresponding to an input proving signal having a predetermined frequency comprising the steps of generating a proving signal of said predetermined frequency, superimposing said proving signal on the normal input to the electronic circuit, detecting in the output of the electronic circuit a signal indicating said predetermined frequency, and producing in response to detection of said signal a control signal connected to operate means connected to pass or inhibit the output from the electronic circuit in a sense to pass the



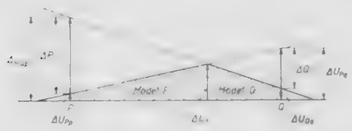
output only when and for as long as a signal having said proving signal frequency is indentified in the output.

4,800,508
FREQUENCY DETECTOR
William L. Frederich, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jun. 30, 1986, Ser. No. 880,531
Int. Cl.[4] G01R *23/00*
U.S. Cl. 364—484 **2 Claims**



1. Apparatus for controlling the speed of a variable speed motor comprising:
tachometer means for converting a rotational output from said motor into a sequences of pulses having a pulse repetition frequency related to the motor speed;
set means for setting a base time period;
timing means for timing an extended time period which includes said base time period, said timing means initiating said extended and base time periods upon receipt of an initial pulse from said tachometer means;
said timing means for stopping said extended timing period upon the occurrence of the first pulse subsequent to the expiration of said base time period;
counting means for counting the occurrence of tachometer pulses between said initial pulse and said first pulse subsequent to the expiration of said base time period;
calculating means for determining a repetitive pulse frequency based upon the count of said counting means and the extended time period overwhich the count is determined; and
motor control means coupled to said calculating means to adjust the speed of said motor by comparing a desired motor speed with a sensed motor speed as indicated by said calculated pulse frequency.

4,800,509
DETECTION OF HIGH RESISTANCE FAULTS IN ELECTRICAL POWER SUPPLY NETWORK
Gunnar Nimmersjö, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden
Filed Dec. 18, 1986, Ser. No. 942,988
Claims priority, application Sweden, Dec. 20, 1985, 8506063
Int. Cl.[4] G06F *15/56;* **G01R** *31/08*
U.S. Cl. 364—492 **16 Claims**



1. A method for detecting a ground fault on an electrical power transmission line located between two stations (P, Q) included in a multi-phase electrical power transmission system, in which at two end points of the transmission line, a value for current and voltage of each phase is measured, which values are supplied to a travelling wave model of the line in the respective station, the travelling wave model being used to obtain a voltage distribution along the power transmission line as seen from each station, comprising:
monitoring in each station a difference between a change in voltage on the transmission line at one station calculated with values measured at the other station before and after a suspected fault has occurred, and a change in voltage on the line at the one station calculated with values measured at the one station before and after a suspected fault has occurred, comprising the steps of:
determining a value ΔU_{Pp} as a difference between a present line voltage (U'_p), determined in station P and a corresponding line voltage (U''_p) one period earlier;
determining a value ΔU_{Qq} as a difference between a present line voltage (U'_Q), determined in station Q and a corresponding line voltage (U''_Q) one period earlier;
determining a value ΔU_{Pq} as a difference between a present line voltage (U'_{Pq}) in station Q, calculated in the travelling wave model in station P with values of currents and voltages measured in station P, and a corresponding voltage (U"Pq) one period earlier;
determining a value ΔU_{Qp} as a difference between a voltage (U'_{Qp}) in station P, calculated in the travelling wave model in station Q with values of currents and voltages measured in station Q, and a corresponding voltage (U"Qp) one period earlier;
determining a value ΔP as a difference between ΔU_{Qp} and ΔU_{Pp};
determining a value ΔQ as a difference between ΔU_{Pq} and ΔU_{Qq}; and detecting a fault if the measured difference exceeds a preset value and comprising the step of:
detecting a fault when at least one of $\Delta P > \epsilon_p$ and $\Delta Q > \epsilon q$ is determined, ϵ_p being the accepted voltage difference in station P and ϵ_q the corresponding value in station Q.

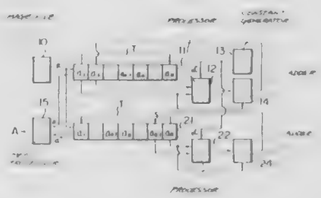
4,800,510
METHOD AND SYSTEM FOR PROGRAMMED CONTROL OF COMPUTER GENERATED GRAPHICS LAYOUT
Anders B. Vinberg, Del Mar, and Kenneth W. Colby, San Diego, both of Calif., assignors to Computer Associates International, Inc., Garden City, N.Y.
Filed Jul. 31, 1985, Ser. No. 761,182
Int. Cl.[4] G06F *15/62, 3/14, 3/037*
U.S. Cl. 364—521 **14 Claims**

11. A system for automatically determining the detailed layout of a graph having numerous detail design parameters (DDPs), each DDP representing a single attribute of the graph layout, in response to user selection of high-level design control parameters (DCPs), comprising:
input means for enabling a user to provide the system with a user-selected value for each of a complete set of DCPs'
a database for associating each user-selected value of each DCP provided through the input means with a predetermined set of DDP values;
memory means for storing, at an address associated with each DCP value, its associated set of DDP values;



selection means adapted to receive a user-selected DCP value from the input means and for selecting from the memory means, by reference to the database, the associated set of DDP values; and
graphics process means for receiving the set of DDP values selected by the selection means from the memory means and converting the received set into graphical output primitives suitable for operating a graphics output device to produce on an output medium a graph having a layout determined by the set of DDP values.

4,800,511
METHOD OF SMOOTHING IMAGE DATA
Nobuyuki Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 26, 1987, Ser. No. 29,926
Claims priority, application Japan, Mar. 26, 1986, 61-68174
Int. Cl.[4] G06F *15/68*
U.S. Cl. 364—521 **6 Claims**



4. An apparatus for smoothing image data comprising:
(i) image data means for providing original image data items $a_1, a_2, \ldots a_N$ with respect to a series of pixels in a two-dimensional image, and a constant α;
(ii) first converting means for converting a_n to a'_n which is the median value of a_n, $(a'_{n-1}+\alpha)$, and $(a'_n-\alpha)$ (where a'_{n-1} is a converted data item which is produced by converting the original image data item a_{n-1} to a median value);
(iii) second converting means for converting a_n to a''_n which is the median value of a_n, $(a''_{n+1}+\alpha)$, and $(a''_{n+1}-\alpha)$ (where a''_{n+1} is a converted data item which is produced

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by converting the original data item a_{n+1} to a median value; and

(iv) smoothing means for determining the mean value A_n of the converted data items a'_n and a''_n with respect to the same pixel and employing the determined mean value A_n as smoothed data.

4,800,512

METHOD AND APPARATUS FOR DETERMINING AND DETECTING DATA INDICATIVE OF THE CONDITION OF MACHINES THROUGH A UNIQUE DATA PROBE INCLUDING A TEST DATA PROBE PORTION AND AN IDENTIFYING DATA SENSING PROBE PORTION

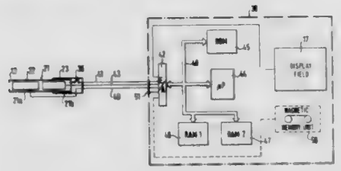
Dieter Busch, Ismaning, Fed. Rep. of Germany, assignor to Pruftechnik Dieter Busch & Partner GmbH & Co., Ismaning, Fed. Rep. of Germany

Filed Jun. 25, 1986, Ser. No. 878,366

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1985, 3523289

Int. Cl.⁴ G01H *11/00;* **G06F** *15/46;* **G01D** *5/34*

U.S. Cl. 364—551.01 **21 Claims**



5. Measuring instrument for determining and evaluating data indicative of the condition of a machine provided with a plurality of measuring points, the instrument comprising a data probe having a test data probe portion which includes a test data receiver and an evaluation circuit with memory means for detecting and evaluating test data received from the respective measuring points, the data probe also having an identifying data sensing probe portion comprising a sensor unit for sensing identifying data representative of the respective measuring points, wherein the memory means comprises storage space for data specific to the measuring points and which is activated by the corresponding identifying data from the measuring points, wherein the test data probe portion and the identifying data sensing probe portion are provided in a common housing of said data probe with a measuring head, in which housing there is provided a measuring chamber for a machine-side data transfer means, said chamber having an opening towards a forward end of the measured head for receiving said data transfer means, said data transfer means also being a carrier for the identifying data specific to a measuring point, and wherein the identifying data sensing probe portion is arranged at a side of the measuring chamber viewed in a direction of placement of the data probe and is movable along the identifying data of the identifying data carrier so that both the test data and the identifying data are read through said opening of the measuring chamber.

4,800,513

AUTO-CALIBRATED SENSOR SYSTEM

Robert W. Deutsch, Sugar Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1986, Ser. No. 891,938

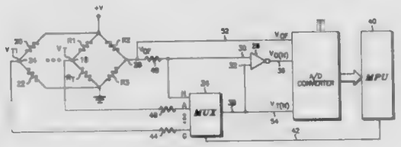
Int. Cl.⁴ G06F *15/20;* **G01K** *15/00*

U.S. Cl. 364—571.02 **9 Claims**

1. A self-calibrating system for processing the output signal of at least one sensor, comprising:

means for establishing a reference voltage which includes an unintentional reference voltage error;

a processing circuit, including amplifier means receiving the sensor's output signal and the reference voltage, for providing an amplified output signal, the amplified output signal including a gain error and an offset error attributable to the amplified reference voltage error, the processing circuit being constructed to develop further signals for use in computing gain and offset errors; and



correcting means coupled to the processing circuit for sensing the amplified output signal from the amplifier means, said further signals, the reference voltage, and the output signal from the sensor for computing corrective factors based on the sensed signals, and for combining the corrective factors with the amplified output signal to produce a corrected sensor output signal.

4,800,514

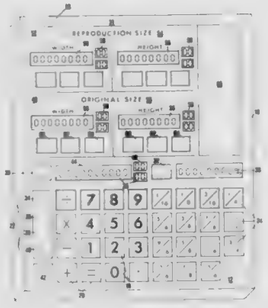
ELECTRONIC GRAPHIC ARTS PROPORTIONAL CALCULATOR

John R. Earle, 4711 S. Los Feliz, Tempe, Ariz. 85282

Filed May 28, 1987, Ser. No. 55,137

Int. Cl.⁴ G06F *7/38, 3/14*

U.S. Cl. 364—715.07 **17 Claims**



1. A portable hand-held electronic calculator for decimal and fraction calculations of proportional percentages for reductions and enlargements of graphic works, said calculator comprising:

a housing containing numerical keys, fraction keys and computation means for performing a plurality of computations based upon which of said numerical keys and fraction keys are pressed, said computation means being operatively connected to said numerical and said fraction keys;

a plurality of displays connected to each of said numerical keys, said fraction keys and to said computation means for displaying numerals therein, each of said plurality of displays further including memory means for storing values entered therein, display means for displaying at least one of decimal notation and combined whole number and fraction notation, at least one of said plurality of displays further including percentage display means for displaying percentages and at least one of said plurality of displays further comprising a keyboard entry display connected to said numerical keys and to said fraction keys;

a plurality of display function keys connected to each of said plurality of displays, said plurality of display function keys further comprising at least one of an enter function key, an enter constant key, a display clear function key, and an all clear key;

mode select means for selecting one of a proportional calculation decimal mode and a proportional calculation fractional mode; and

electric source means for providing electrical power to the calculator.

4,800,515

CIRCUIT FOR OPERATING FINITE FIELDS

Katsuya Hori, and Tsuneo Furuya, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

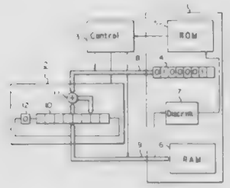
PCT No. PCT/JP85/00017, § 371 Date Jun. 16, 1985, § 102(e) Date Jun. 16, 1985, PCT Pub. No. WO85/03371, PCT Pub. Date Aug. 1, 1985

PCT Filed Jan. 18, 1985, Ser. No. 776,202

Claims priority, application Japan, Jan. 21, 1984, 59-9150; Jan. 31, 1984, 59-15704

Int. Cl.⁴ G06F *7/38*

U.S. Cl. 364—746.1 **3 Claims**



1. A circuit for operating a multiplication or a division in relation to the arbitrary elements α^i and α over a finite field, where α is a root of a primitive polynomial of said finite field, comprising:

an accumulator for storing said arbitrary element α^i;

a register for storing a vector representation of said primative polynomial, corresponding to the root α;

an adder for performing a (mod. 2) addition using as operands the contents of said accumulator and signals from said register; and

a control section for controlling the bit-shift in said accumulator and the operation of said adder in accordance with a program.

4,800,516

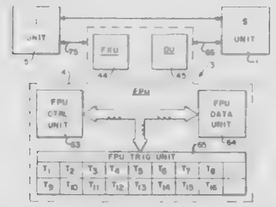
HIGH SPEED FLOATING-POINT UNIT

Stephen S. C. Si, Milpitas; H. P. Sherman Lee, and Stephen J. Rawlinson, both of Sunnyvale, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Oct. 31, 1986, Ser. No. 925,997

Int. Cl.⁴ G06F *7/38*

U.S. Cl. 364—748 **14 Claims**



1. A system responsive to a floating point instruction for processing floating point first and second operands, each having a fraction and an exponent, comprising:

(a) determining means for determining from said operands whether said operands have a predetermined condition with respect to said instruction;

(b) primitive operator means for performing one or more of a plurality of floating point primitive operations on said operand data including the following primitive operations in respective machine cycles;

(1) means for comparing the exponents and calculating the alignment shift amount,

(2) means for aligning the fraction that has the smaller exponent,

(3) means for algebraically adding the fractions and obtaining the absolute value of the sum,

(4) means for testing if the result of said addition is zero, counting the number of leading zero digits in the result and adjusting the exponent,

(5) means for postnormalizing the fraction, determining exponent underflow and significant exceptions,

(c) sequencing means, responsive to said instruction, for sequencing said primitive operator means to perform a plurality of said primitive operations to execute said instruction; and

(d) selector means, connected to said sequencing means and responsive to said determining means for bypassing selected ones of said primitive operations, thereby reducing the number of machine cycles utilized in the execution of said instruction when said operand data has said predetermined condition with respect to said instruction.

4,800,517

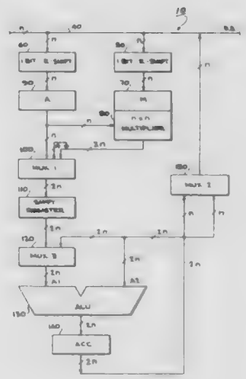
WORD-SLICED SIGNAL PROCESSOR

Safdar M. Asghar; Hwa-Sheng Pyl, both of Sunnyvale, and Dermot Dunnion, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 30, 1986, Ser. No. 891,713

Int. Cl.⁴ G06F *7/52*

U.S. Cl. 364—757 **1 Claim**



1. A digital signal processor connected to a bus conducting plural-bit data words each word consisting of a predetermined number of "slices" comprising:

first means connected to said bus for receiving a first word slice, shifting said slice a selectable number of bits and storing the resulting slice;

second means connected to said bus for receiving a second word slice, shifting said slice a selectable number of bits and storing the resulting slice;

multiplier means responsive to said slices stored in said first

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and second shifting means, for generating a two-slice product of said first and second slices;

first multiplexer means connected to said first shifting means and to said multiplier means for selectably generating at a set of output terminals either said first slice padded with a low-order slice of zeros or said two-slice products;

third means connected to said first multiplexer means output terminals for receiving said two-slices generated thereat, shifting said two-slices a selectable number of bits and storing the resulting two-slices;

second multiplexer means having a first set of input terminals connected to said third shifting means and a second set of input terminals for selectably generating at a set of output terminals either the two-slices received at said first set of input terminals or the two-slices received at said second set of input terminals;

arithmetic logic unit means having a first set of input terminals connected to said output terminals of said second multiplexer means and a second set of input terminals for generating a selectable two slice combinatorial result of the two-slice operands received at said first and second set of input terminals, and for accumulating and storing said selected combinatorial result; said accumulated result received at said second set of input terminals of said arithmetic logic unit and said second multiplexer means; and

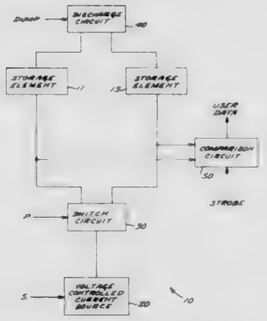
third multiplexer means having a first set of input terminals receiving a first slice of said two-slice accumulated result and a second set of input terminals receiving a second slice of said two-slice accumulated result and a set of output terminals connected to said data bus for selectably generating at said output terminals said first or said second slice applied to said input terminals.

4,800,518

DIFFERENTIAL CORRELATOR CIRCUIT

William J. Miller, North Miami, Fla., assignor to Racal Data Communications, Inc., Fort Lauderdale, Fla.

Filed Jun. 21, 1985, Ser. No. 747,213
Int. Cl.⁴ G06G 7/12
U.S. Cl. 364—819 **5 Claims**



1. A correlation detection circuit comprising:

means responsive to an input data signal for providing a controlled signal as a function of the input data signal;

first and second storage means for selectively integrating said controlled signal and for providing first and second integration signals;

switching means responsive to a single reference signal for selectively coupling said controlled signal to said first and second storage means as a function of the reference signal, said switching means including differentially coupled transistors having their emitters coupled together for receiving said controlled signal and having respective collectors respectively coupled to said first and second storage means; and

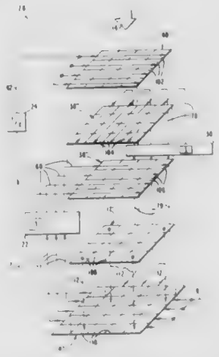
comparator means responsive to said first and second integration signals for providing a comparator output indicative of the difference between said first and second integration signals.

4,800,519

OPTICAL DATA PROCESSING SYSTEMS AND METHODS FOR MATRIX INVERSION, MULTIPLICATION, AND ADDITION

Jan Grinberg, Los Angeles; Yuri Owechko, Newberry Park; Bernard H. Soffer, Pacific Palisades, and Emanuel Marom, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 5, 1986, Ser. No. 836,675
Int. Cl.⁴ G06G 9/00; G02F 1/133, 1/05, 1/03
U.S. Cl. 364—822 **17 Claims**



1. Apparatus for optically processing for N×N matrices A, B, C, and D to calculate the expression $CA^{-1}B+D$, comprising:

first modulator means for spatially modulating an optical beam in response to a signal representing a first number, and having a first set of modulation areas arranged as 2N−1 rows;

second modulator means for spatially modulating the optical beam exiting the first modulator means in response to signals representing elements in a second row of 2N−1 numbers, and having a second set of modulation areas arranged as 2N−1 columns;

third modulator means for spatially modulating the optical beam exiting the second modulator means in response to signals representing elements in a third column of 2N−1 numbers, and having a third set of modulation areas arranged as 2N−1 rows;

light detector means having $(2N-1)^2$ light detection areas arranged as a matrix array of 2N−1 rows and 2N−1 columns, where the detection areas provide an array of detector signals in response to light modulated by respective modulation areas of the first, second and third modulator means, each element in the array of detector signals being proportional, respectively, to the product of the first number, a respective element in the second row of numbers, and a respective element in the third column of numbers;

accumulator means for storing, adding and shifting the array of detector signals, and having $(2N)^2$ locations arranged as an accumulator matrix array of 2N rows and 2N columns;

means for storing the elements of the matrix A in the upper left quadrant of the accumulator array, for storing the elements of the matrix B in the upper right quadrant of the accumulator array, for storing the elements of the matrix D in the lower right quadrant of the accumulator array, and for storing the polarity inverted elements of the matrix C in the lower left quadrant of the accumulator array; and

controls means for:

(a) providing the negative reciprocal of the upper left-most location of the accumulator array as the first number to the first modulator means;

(b) providing the 2N-1 right-most elements of the top row of the accumulator array as the second row of numbers to the second modulator means;

(c) providing the 2N−1 bottom-most elements of the left column of the accumulator array as the third column of numbers to the third modulator means;

(d) adding the elements of the array of detector signals to corresponding elements in the portion of the accumulator array comprising the 2N−1 right-most columns and the 2N−1 bottom-most rows;

(e) shifting the contents of the accumulator array one column to the left and one row to the top; and

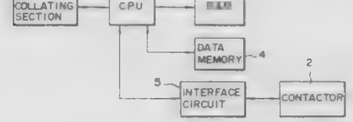
(f) repeating the operations in (a) through (e) N−1 times, whereby the expression $CA^{-1}B+D$ is provided in the upper left quadrant of the accumulator array.

4,800,520

PORTABLE ELECTRONIC DEVICE WITH GARBAGE COLLECTION FUNCTION

Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 23, 1986, Ser. No. 922,465
Claims priority, application Japan, Oct. 29, 1985, 60-242213; Nov. 30, 1985, 60-269625
Int. Cl.⁴ G06F 12/16; G06K 5/00, 7/01
U.S. Cl. 364—900 **5 Claims**



1. A portable electronic device comprising:

memory means divided into a plurality of areas, each area storing input data and attribute data of the input data, the attribute data comprising a first flat indicating whether input data has previously been written in the area, and a second flag indicating whether the input data previously stored in the area is deletable;

means for writing input data in the area whose first flag indicates that input data has not been previously written therein;

means for deleting input data in the area whose second flag indicates that input data previously stored therein is deletable;

first changing means for changing the first flag to indicate that input data has been written in the corresponding area or to indicate that input data has not been written in the corresponding area;

second changing means for changing the second flag to indicate that the previously stored input data is deletable in the corresponding area or to indicate that the previously stored input data is not deletable in the corresponding area; and

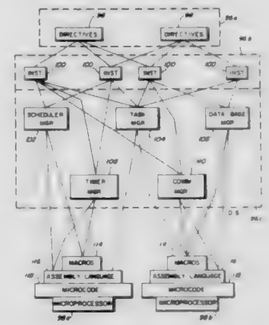
data rearrangement means for copying previously stored input data into another area and deleting the previously stored input data from the area where previously stored in accordance with the corresponding first and second flags for each area, and for causing the first and second flags for each area to be changed by said first and second data changing means to indicate the data rearrangement.

4,800,521

TASK CONTROL MANAGER

Jeff C. Carter, Fairport; Anthony M. Federico, West Webster, and Christopher Comparetta, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 420,994
Int. Cl.⁴ G06F 1/00; G03G 15/00
U.S. Cl. 364—900 **6 Claims**



1. In a multiprocessor control for controlling a machine, the control comprising Directives, an operating system, a memory portions of said memory being allocated for operating system information, and a plurality of processors, said operating system including Instruction Modules, said Instruction Modules decoding said Directives and communicating with said processors, the control executing a plurality of tasks, said tasks being blocks of instructions for controlling said machine, aid tasks residing in at least one of said processors, said tasks being executed by at least one of said processors, the method of control of said machine including the steps of

(1) involing a task for execution,

(2) allocating operating system memory locations for said task,

(3) inserting in said memory locations information related to said task,

(4) determining the processor in which the task resides,

(5) sending a request to the processor wherein the invoked task resides, and

(6) initiating task execution in response to a Directive, said Directive in turn invoking an Instruction Module.

4,800,522

BILINGUAL TRANSLATION SYSTEM CAPABLE OF MEMORIZING LEARNED WORDS

Kouji Miyao, Kashihara; Hitoshi Suzuki, Nara; Hazime Asano, Kitakatsuragi; Shinji Tokunaga; Yasuhiro Takiguchi, both of Nara, and Shuzo Kugimiya, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

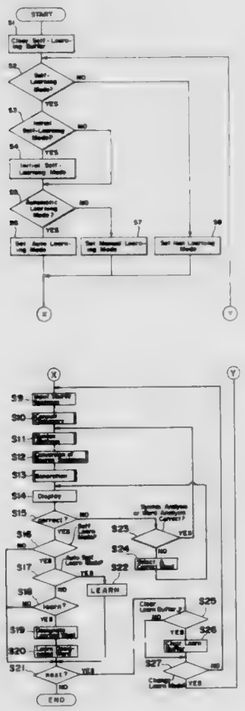
Filed May 13, 1986, Ser. No. 862,323
Claims priority, application Japan, May 14, 1985, 60-103458; May 14, 1985, 60-103459; May 14, 1985, 60-103460
Int. Cl.⁴ G06F 15/38, 15/02
U.S. Cl. 364—900 **7 Claims**

1. A translation system for translating sentences in a first language to sentences in a second language, comprising:

storage means for storing individual words in said first language together with a plurality of words in said second language, each word of said individual words being equivalent to a number of words in said plurality of words stored with said individual words;

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means for storing an input sentence in said first language to be translated;
means for determining the part of speech of each individual word in said stored input sentence;
means for selecting a first one of said plurality of words in said second language stored with an individual word as corresponding to said individual word based on the part of speech determination;
means for selecting another one of said plurality of words as



corresponding to said individual word in response to a signal from a user indicating the previous selected word to be incorrect;
means for storing a selected word in said second language as a learned word corresponding to an individual word in said first language in response to a signal from a user indicating the correspondence to be correct; and
means for selecting the learned word as said first one of said plurality of words in subsequent translations of input sentences containing said individual word.

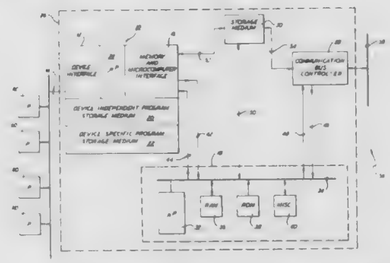
4,800,523

DEVICE INTERFACE CONTROLLER HAVING DEVICE SPECIFIC AND DEVICE COMMON INSTRUCTIONS SEPARATELY STORED

Eugene P. Gerety, Wolcott, and Jitender K. Vij, Trumbull, both of Conn., assignors to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 705,458, Feb. 25, 1985, abandoned.
This application Feb. 16, 1988, Ser. No. 158,136
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—900 **13 Claims**

1. A device interface controller, for use in a data transport controller which includes a storage medium for temporarily storing data transmitted from an external source, and a microcomputer for controlling transport of the transmitted data through the storage medium to any selected one of a plurality of data communication devices interconnected to the data transport controller through a device bus, said device interface controller comprising:
device bus interface means for interfacing with said device bus interconnected with said plurality of data communication devices;
interfacing means including microcomputer interfacing means for interfacing with said microcomputer and storage medium interfacing means for interfacing with said storage medium of said data transport controller;
instruction storing means separate from said storage medium, which includes common instruction storing means, for storing instructions for performing a data transfer operation which are common to all of said plurality of data communication devices, and specific instruction



storing means, for storing instructions for performing a data transfer operation which are specific to each respective one of said plurality of data communication devices, including a selected one of the data communication devices; and
a dedicated microprocessor responsive to said microcomputer through said microcomputer interfacing means for controlling data transport between said storage medium interfacing means with said storage medium and said bus device interface means with said plurality of data communication devices, wherein said dedicated microprocessor executes, for a data transport operation to the selected one of said data communication devices, common device instructions from said common instruction storing means which are common to all of said data communication devices, and specific device instructions from said specific instruction storing means which are specific to the selected data communication device.

4,800,524

MODULO ADDRESS GENERATOR

John P. Roesgen, Easton, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 811,679, Dec. 20, 1985, abandoned.
This application Dec. 2, 1987, Ser. No. 127,579
Int. Cl.[4] G06F *12/00, 7/00*
U.S. Cl. 364—900 **5 Claims**

5. Apparatus for generating an address for accessing a target location in a circular buffer of length L, such address being termed a target address, the buffer having an upper address boundary and a lower address boundary, the lower address boundary being an address which is a multiple of an integer power of 2, and the target address being offset by M locations from a current buffer address A, where M is no larger than L and includes a sign bit indicating the direction of the offset from the current buffer address A, such apparatus comprising:
a. a register holding a binary word representing the length of the buffer, such register being termed the L register.
b. a ripple-carry adder for generating a summation of the current buffer address A and the offset M, said summation being termed an absolute address;
c. means for providing as a direction control signal, the sign bit of the offset M;
d. an adder/subtractor which provides a wrapped address by adding the summation from the ripple-carry adder to the binary word in the L register in response to a direction control signal being provided in a first state and by subtracting the binary word in the L register from the summation from the ripple-carry adder in response to the direction control signal being provided in a second state;
e. the adder/subtractor also outputting on a separate set of lines, the carry bit corresponding to each sum bit;
f. means for selecting as a first boundary-crossing signal the carry bit from the ripple-carry adder which is from the same bit position as the most significant one (i.e., 1) in the binary word in the L register;



g. means for selecting as a second boundary-crossing signal the carry bit from the adder/subtractor which is from the same bit position as the most significant one (i.e., 1) in the binary word in the L register;
h. means responsive to the direction control signal for generating a wrap control signal by inverting the first boundary-crossing signal when the direction control signal is in a first state and logical-ORing the first and second boundary-crossing signals a when the direction control signal is in a second state; and
i. means responsive to the wrap control signal for selecting as the target address the absolute address when the wrap control signal is in a first state and for selecting as the target address the wrapped address when the wrap control signal is in a second state.

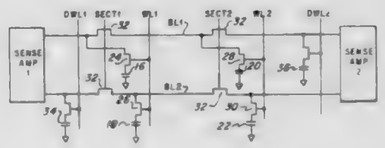
4,800,525

DUAL ENDED FOLDED BIT LINE ARRANGEMENT AND ADDRESSING SCHEME

Ashwin H. Shah; Richard H. Womack, both of Dallas, and Chu-Ping Wang, Carrollton, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 666,854, Oct. 31, 1984, abandoned.
This application Aug. 6, 1987, Ser. No. 83,911
Int. Cl.[4] G11C *5/06, 7/00, 8/00*
U.S. Cl. 365—72 **9 Claims**

8. A memory circuit comprising:
a first bit line separated into segments 1 through N, each segment having a section line connected thereto through a section select transistor and at least one memory cell connected thereto;
a second bit line parallel to said first bit line, said second bit line separated into segments 0 through N—1, each segment having a section line connected thereto through a section select transistor and at least one memory cell connected thereto;
a first plurality of switching means 1 through N, wherein a second terminal of said 1st switching means of said first plurality of switching means is connected to a first end of said 1st segment of said first bit line and said 2nd through Nth switching means of said first plurality of switching means are connected so that the Lth switching means of said first plurality of switching means has a first terminal connected to a second end of the Lth—1 segment of said first bit line and a second terminal connected to a first end of the Lth segment of said first bit line;
a second plurality of switching means 1 through N, wherein a first terminal of said Nth switching means of said second plurality of switching means is connected to a second end of said Nth—1 segment of said second bit line and said 1st through Nth—1 switching means of said second plurality of switching means are connected so that the Mth switching means of said second plurality of switching means has a second terminal connected to a first end of the Mth segment of said second bit line and a first terminal connected to a second end of the Mth—1 segment of said second bit line;
a first sense amplifier connected to a first terminal of said 1st switching means of said first plurality of switching means and said sense amplifier being connected to a first end of said 0th segment of said second bit line;
a second sense amplifier connected to a second terminal of



said Nth switching means of said second plurality of switching means and said second sense amplifier being connected to a second end of said Nth segment of said first bit line;
a plurality of word lines running perpendicular to said first and second bit lines, each of said word lines connected so that a word line connected to a memory cell which is connected to the Xth segment of said first bit line is also connected to a memory cell connected to the Xth—1 segment of said second bit line; and
a plurality of control lines 1 through N running parallel to said word lines, said control lines connected so that a Yth control line which is connected to a control terminal of the Yth switching means of said first plurality of switching means is also connected to a control terminal of the Yth switching means of said second plurality of switching means; and
a plurality of section control lines 1 through N runnning parallel to said word lines, said section control lines connected so that the Kth control line of said plurality of section control lines is connected to the control terminals of the section select transistors connected to the Kth and Kth—1 segments of said first and second bit lines, respectively.

4,800,526

MEMORY ELEMENT FOR INFORMATION STORAGE AND RETRIEVAL SYSTEM AND ASSOCIATED PROCESS

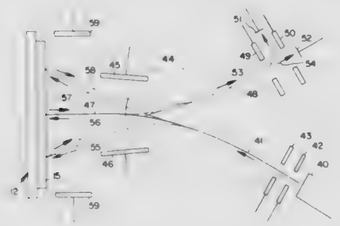
David F. Lewis, Monroe, Conn., assignor to GAF Corporation, Wayne, N.J.

Filed May 8, 1987, Ser. No. 47,350
Int. Cl.[4] G11C *11/72*
U.S. Cl. 365—118 **42 Claims**

1. A memory element for an information storage and retrieval system in which data is transferred by a scanning electron beam, wherein said element comprises an electrically conductive layer of an electrically conductive substance to

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which is laminated a layer of dielectric material, the latter having a thickness of less than 1 micrometer, a resistivity of at least 10^{16} ohm-cm, and a dielectric strength of at least 10^5 volts/cm, means disposed essentially coplanar with the exposed surface of said insulating material layer for providing a



focusing means for said electron beam, and means recognizable by said electron beam for providing spatial reference information to said system for enabling precise repeatable access to discrete locations for each bit of information in said memory element, whereby said element is capable of handling data with a resolution equal to at least 10^8 bits/cm^2.

4,800,527

SEMICONDUCTOR MEMORY DEVICE

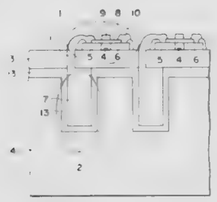
Masaharu Ozaki, Yokohama, and Takao Yonehara, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1987, Ser. No. 111,588

Claims priority, application Japan, Nov. 7, 1986, 61-264026

Int. Cl.[4] G11C *13/00, 11/24*

U.S. Cl. 365—182 **1 Claim**



1. A semiconductor memory device comprising:

a charge holding capacitor formed on a semiconductor substrate;

an insulating layer formed on said capacitor; and

a transistor formed on a monocrystalline or substantially monocrystalline semiconductor layer which is provided by forming, on said insulating layer, a hetero material of a nucleation density sufficiently higher than that of said insulating layer and of a size small enough to allow growth of a single nucleus of a semiconductor layer, followed by crystal growth around a single nucleus formed on said hetero material.

4,800,528

NON-VOLATILE MEMORY HAVING CHARGE CORRECTION CIRCUITRY

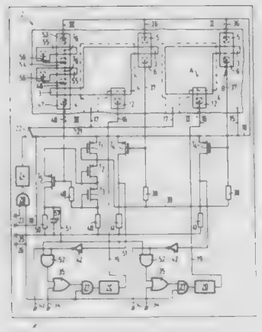
Ronald C. Geddes, Hausen, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 21,561, Mar. 2, 1987, abandoned, which is a continuation of Ser. No. 707,354, Mar. 1, 1985, abandoned. This application Dec. 3, 1987, Ser. No. 129,930

Claims priority, application Netherlands, Mar. 1, 1984, 8400661

Int. Cl.[4] G11C *7/00, 11/40, 29/00*

U.S. Cl. 365—185 **15 Claims**



1. A semiconductor device comprising a semiconductor body having a surface-adjacent layer, a charge storage region, and at least one non-volatile memory cell which comprises a first non-volatile memory transistor, said first memory transistor comprising a control electrode capacitively coupled to said charge storage region and source and drain zones of a first conductivity type in said surface-adjacent layer, the surface-adjacent layer being of a second conductivity type opposite to the first, a channel region of the first memory transistor located between the source and drain zones and covered with an insulating layer which separates the charge storage region from the channel region, an injector region in said surface-adjacent layer, a thin insulating layer separating said charge storage region from said injector region, charge transport occurring in operation through said thin insulating layer by applying a suitable electric field to vary the quantity of charge stored in the charge storage region, characterized in that the semiconductor body further comprises a detector which has a second non-volatile memory transistor, the output signal of which, with a previously-determined quantity of charge stored in the charge storage region of said first memory transistor, forms a reference value, and means for reading the output signal of the second memory transistor for comparing said output signal of the second memory transistor with the output signal of the first memory transistor and for correcting the quantity of stored charge in both memory transistors when the reference value is exceeded.

4,800,529

SEMICONDUCTIVE MEMORY DEVICE WITH CURRENT CONTROL AND COMPARISON MEANS TO REDUCE POWER CONSUMPTION AND INCREASE OPERATING SPEED

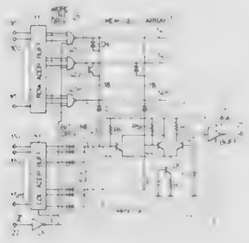
Kouji Ueno, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1987, Ser. No. 26,899

Claims priority, application Japan, Mar. 17, 1986, 61-058714

Int. Cl.[4] G11C *7/00*

U.S. Cl. 365—189 **12 Claims**



1. A memory device having an enable state and a disable state, comprising:

word lines;

bit lines;

a memory cell array comprising a plurality of memory cells in a matrix arrangement, said plurality of memory cells being coupled to corresponding ones of said word lines and said bit lines;

input terminal means for receiving row address signals and column address signals;

access circuit means for setting a selected one of the word lines to a first level responsive to the row address signals and for setting a selected one of the bit lines to a second level responsive to the column address signals so as to designate one of said plurality of memory cells within said memory cell array;

constant current source means for maintaining a current;

comparing circuit means, operatively connected to said constant current source means and to said bit lines, for receiving a reference level and for reading information from said designated memory cell via the bit lines by comparing a bit line level of the bit line coupled to said designated memory cell with said reference level;

output circuit means, having an output impedance, for outputting the information read out by the comparing circuit means; and

control circuit means, operatively connected to receive a disable signal, for setting all word lines and all bit lines to one of a high impedance and for high level, and for setting the impedance of said output circuit means to a high impedance when the memory device is placed in the disable state by said disable signal.

4,800,530

SEMICONDUCTOR MEMORY SYSTEM WITH DYNAMIC RANDOM ACCESS MEMORY CELLS

Yasuo Itoh; Fumio Horiguchi, both of Kawasaki; Shigeyoshi Watanabe, Yokohama; Kazunori Ohuchi, Yokohama, and Mitsugi Ogura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1987, Ser. No. 85,086

Claims priority, application Japan, Aug. 19, 1986, 61-193509; Aug. 20, 1986, 61-194573; Sep. 3, 1986, 61-207192

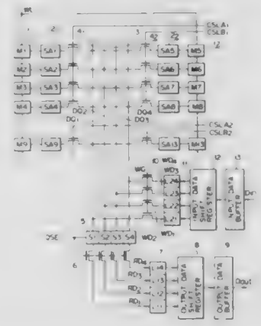
Int. Cl.[4] G11C *7/00, 11/40*

U.S. Cl. 365—189 **11 Claims**

1. A semiconductor memory system with dynamic random access memory cells which are integrated in a semiconductor substrate, comprising:

first and second memory banks, a plurality of said memory cells connected to a word line being arranged in each of said memory banks;

read/write means for reading output data and writing input data from and into said memory cells, in which, while output data from said memory cells of said first memory bank latched in output data latching circuits are subsequently read out in synchronism with a column address store signal, output data from said second memory bank are transmitted to input/output lines and input data to be written into said memory cells of said



first memory bank are latched subsequently in input data latching circuits in synchronism with said column address strobe signal, and in which, while output data from said memory cells of said second memory bank latched in said output data latching circuits are subsequently read out in synchronism with said column address strobe signal, output data from said memory cells of said first memory bank are transmitted to said input/output lines and input data to be written into said memory cells of said second memory bank are latched subsequently in said input data latching circuits in synchronism with said column address strobe signal, said read/write operations for said first and second memory banks being repeated alternatively.

4,800,531

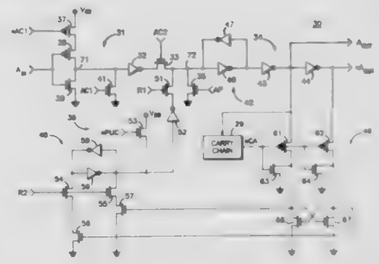
ADDRESS BUFFER CIRCUIT FOR A DRAM

Sam Dehganpour, and Perry H. Pelley, III, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1986, Ser. No. 944,784

Int. Cl.[4] G11C *7/00, 8/00*

U.S. Cl. 365—222 **9 Claims**



1. An integrated circuit memory having an array requiring

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periodic refreshing and having a counter for providing address information for controlling refresh of the array, an input buffer for receiving an external address signal at one of two logic states, comprising:

a CMOS NOR gate having a first input for receiving a first control signal, a second input for receiving the external address signal, and an output; said NOR gate characterized as providing information, in the form of a logic state on the output, as to the logic state of the external address signal when the first control signal is a logic low;

first coupling means, having a first input coupled to the output of the NOR gate, a second input for receiving a second control signal, and an output coupled to a precharge node, for coupling a logic state to the precharge node representative of the logic state present on the output of the NOR gate when the second control signal is received; and

precharge means for precharging, in response to a precharge signal, the precharge node to the logic state which is coupled to the precharge node when the external address signal and the first control signal are a logic low and the second control signal is received by the coupling means.

4,800,532

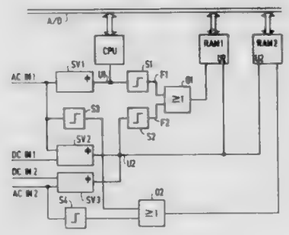
CIRCUIT ARRANGEMENT WITH A PROCESSOR AND AT LEAST TWO READ-WRITE MEMORIES

Karl-Heinz Hoseck, Essingen, Fed. Rep. of Germany; David Johnson, Portland, Oreg.; Manfred Neugebauer; Walter Teutsch, both of Erlangen, Fed. Rep. of Germany; M. Vittal Kini, Portland, and Steven C. Stacey, Hillsboro, both of Oreg., assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 25, 1987, Ser. No. 125,628

Int. Cl.[4] G11C *13/00*

U.S. Cl. 365—226 **3 Claims**



1. A circuit arrangement having at least one read-write memory for address-controlled data communication connected to a processor, comprising:

a power supply unit including two memory power supply circuits connected in parallel with each other and connected to the read-write memories, each said memory power supply circuit having a maximum current capacity corresponding to the sum of the operating current of a first read-write memory and a standby current of second read-write unit;

a capacitive current buffer as a part of the output of each of said memory power supply circuits having capacitors of sufficient size to provide, upon a fault of one of said memory supplies during the operation of both said read-write memories, a voltage discharge time constant which decreases from a threshold voltage to a minimum allowable operating voltage in at least a time period which corresponds to a time require for one of said read-write memories to complete a current data communication and change to a standby mode; and

a monitoring device connected to one of said read-write memories, and to said memory power supply, which upon the discharge of the parallel memory power supply voltage to said threshold voltage causes the change into the standby mode of the read-write memory it is connected to.

4,800,533

SEMICONDUCTOR NONVOLATILE MEMORY DEVICE

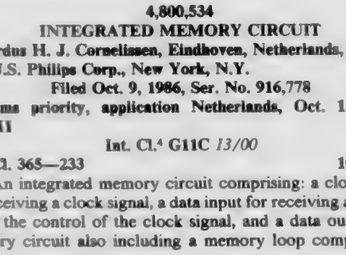
Hideki Arakawa, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 29, 1987, Ser. No. 43,791

Claims priority, application Japan, Apr. 30, 1986, 61-097985

Int. Cl.[4] G11C *17/00*

U.S. Cl. 365—228 **8 Claims**



1. A semiconductor nonvolatile memory device comprising:

a plurality of nonvolatile random access memory cells constituted by volatile memory cells and nonvolatile erasable programmable read only memory cells;

a first terminal for receiving a power source voltage;

a second terminal for receiving an auxiliary power source voltage;

a sense circuit, connected to said first terminal, monitoring said power source voltage to generate both a first control signal, when the power source voltage reaches a normal range, and a second control signal, when the power source voltage falls out of the normal range;

first switch means, connected between said first and second terminals, for supplying the power source voltage to said second terminal;

second switch means, connected between said first terminal and said nonvolatile random access memory cells, for supplying the power source voltage;

third switch means, connected between said second terminal and said nonvolatile random access memory cells, for supplying the auxiliary power source voltage; and

control means, connected to said nonvolatile random access memory cells, said second switch means, and said sense circuit, for recalling data stored in the nonvolatile erasable programmable read only memory cells to the volatile memory cells in response to the first control signal and for storing data stored in the volatile memory cells to the nonvolatile memory erasable programmable read only memory cells in response to the second control signal, wherein said first and second switch means are turned off when the power source voltage falls down, and said third switch means is turned on in response to said second control signal.

4,800,534

INTEGRATED MEMORY CIRCUIT

Bernardus H. J. Cornelissen, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Oct. 9, 1986, Ser. No. 916,778

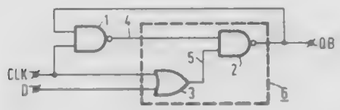
Claims priority, application Netherlands, Oct. 15, 1985, 8502811

Int. Cl.[4] G11C *13/00*

U.S. Cl. 365—233 **10 Claims**

1. An integrated memory circuit comprising: a clock input for receiving a clock signal, a data input for receiving a data bit under the control of the clock signal, and a data output, the memory circuit also including a memory loop comprising a

first and a second gate each having a switching threshold, characterized in that said first and second gates are switched by the clock signal, the switching threshold of the first gate being substantially different from the switching threshold of the second gate, and that the first gate includes a first input



coupled to an output of the second gate and a second input coupled to the clock input, an output of the first gate being coupled to a first input of the second gate which includes a second input coupled to the clock input and a third input coupled to the data input.

4,800,535

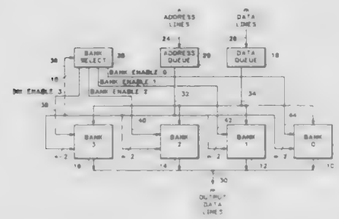
INTERLEAVED MEMORY ADDRESSING SYSTEM AND METHOD USING A PARITY SIGNAL

Gary L. McAlpine, Beaverton, Oreg., assignor to Aptec Computer Systems, Inc., Portland, Oreg.

Filed Apr. 28, 1987, Ser. No. 43,840

Int. Cl.[4] G11C *8/00*; G06F *11/10*; H03M *13/00*

U.S. Cl. 365—230 **5 Claims**



1. A system for addressing a plurality of banks of random-access memory devices, comprising:

(a) means for providing a memory address having a predetermined number of address bits, greater than one;

(b) means, responsive to a predetermined set of said address bits including the least significant bit, for producing a parity signal representative of the parity among said set of address bits; and

(c) means, responsive to said parity signal, for selecting one of said banks of memory devices based upon said parity signal.

4,800,536

EXTRUDER

Gerd Dittrich, Völklingen, Fed. Rep. of Germany, assignor to Saar-Hartimetall und Werkzeuge GmbH, Volkingen, Fed. Rep. of Germany

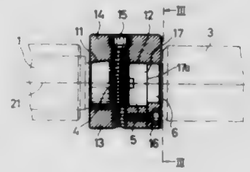
Filed Jun. 3, 1987, Ser. No. 57,782

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1986, 3620267

Int. Cl.[4] B29C *1/06*

U.S. Cl. 366—78 **10 Claims**

1. An extruder, particularly for plastic materials comprising a screw having a first end portion provided with a first flat; drive means for said screw including a motion transmitting member having a second end portion provided with a second flat adjacent said first flat; and means for coupling said end portions including a first coupling element overlying and abutting said flats, a second coupling element partially surrounding



said end portions, and means for fastening said coupling elements to each other.

4,800,537

METHOD AND APPARATUS FOR DETERMINING CEMENT CONDITIONS

Houston B. Mount, II, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Aug. 1, 1986, Ser. No. 893,055

Int. Cl.[4] G01V *1/40*

U.S. Cl. 367—35 **2 Claims**



1. A method of determining the absence or presence of foreign material and/or voids in the cement adjacent a casing set within a wellbore, comprising:

(a) positioning at least one acoustic transmitting and receiving transducer and at least one acoustic receiving transducer into contact with an interior surface of the casing with the at least one acoustic receiving transducer being vertically spaced a predetermined distance from the at least one acoustic transmitting and receiving transducer;

(b) transmitting from the at least one acoustic transmitting and receiving transducer at least one pulse of acoustic energy through the casing to a reflecting boundary representative of an interface between disparate material surrounding the wellbore;

(c) measuring the times between the transmission of the pulse of acoustic energy and the reception of the acoustic energy at the at least one acoustic transmitting and receiving transducer and the at least one acoustic receiving transducer;

(d) from the measured times and the known distance between the at least one acoustic transmitting and receiving transducer and the at least one acoustic receiving transducer determining the acoustic velocity associated with the cement; and

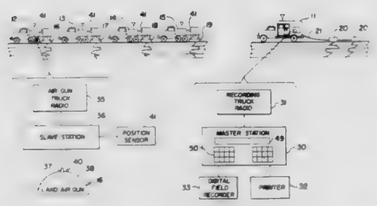
(e) determining the absence or presence of foreign material and/or voids in the cement by comparing the acoustic velocity associated with the cement of step (d) to a known acoustic velocity associated with the cement.

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4,800,538
METHOD OF AND SYSTEMS FOR SEISMIC EXPLORATION

Paul R. Passmore, Dallas, and William A. Nance, Carrollton, both of Tex., assignors to Refraction Technology, Inc., Dallas, Tex.

Filed Mar. 31, 1986, Ser. No. 846,583
Int. Cl.[4] G01V *1/22*
U.S. Cl. 367—55 **17 Claims**

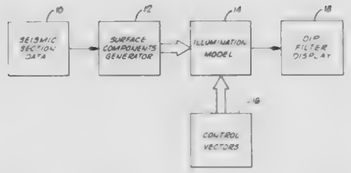


1. A system for seismic exploration including a master station and a plurality of slave stations for use with a plurality of remotely located seismic sources comprising:
means at said master station for generating a start signal, means for transmitting over a single frequency radio link said start signal to each of said slave stations, one of which is selected with its associated source as a designated unit,
means for receiving said start signal at each of said slave stations to activate their associated sources to generate seismic energy in a preprogrammed mode,
means at each slave station for acquiring the time break and amplitude of the seismic energy generated at each source,
means for transmitting via the radio link to the master station in real time the time break data of the source at said designated unit, and
means at each slave station for sequentially transmitting to said master station via the same radio link prior to the generation of the next start signal the amplitude data representative of the signature of each of the sources.

4,800,539
METHOD AND APPARATUS FOR SEISMIC DIP FILTERING

Kruger C. Corn, Ponca City, and Gary L. Raney, Stillwater, both of Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 16, 1985, Ser. No. 809,684
Int. Cl.[4] G01V *1/34*
U.S. Cl. 367—72 **9 Claims**

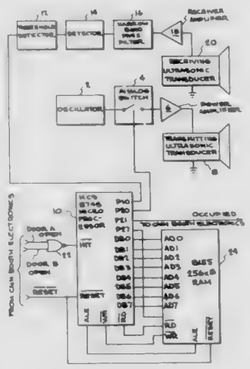


1. A method for enhanced display of seismic data, comprising:
inputting selected attribute seismic section data;
orienting said seismic section data in a predetermined multi-dimensional display format relative to a preselected apparent viewing angle; and
adjusting the apparent illumination angle to establish a preferentially highlighted display of selected portions of the seismic section;
said apparent illumination angle being established by transforming a selected vector of images of the seismic section data in accordance with an illumination model of selected angular relationship, said selected vector of images being a vector that is normal to the viewing surface presenting the data at every sample point;
said apparent illumination angle being determined for an illumination point that is disposed at an angle theta from a reference point around to the illumination position relative to the plane of the viewing surface, and at an angle phi from the plane of the viewing surface to the illumination position as projected on a unit vector hemisphere that would contain said viewing surface, said angle theta determining filter orientation and said angle phi determining overall surface brightness being varied interactively to optimally enhance the output display of the seismic section data.

4,800,540
DISCRIMINATING ULTRASONIC PROXIMITY DETECTION SYSTEM

Wayne C. Annala, Durango, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 4, 1986, Ser. No. 937,781
Int. Cl.[4] G01S *9/66*
U.S. Cl. 367—87 **20 Claims**



1. A method of detecting the presence of an object comprising:
setting up a reference table with values at locations describing a Burst-Echo-Signature of a burst of ultrasound transmitted into an environment without the object;
transmitting periodic bursts of ultrasound into the environment;
receiving a plurality of echoes from the environment for each transmitted burst of ultrasound; and
comparing the echoes from a plurality of bursts of ultrasound with the reference table to determine if a Burst-Echo-Signature of the present environment consistently differs from the Burst-Echo-Signature of the environment without the object.

4,800,541
METHOD FOR UNDERWATER ACOUSTIC DIRECTION SENSING

David M. Farmer, Saanichton, and Jane A. Verrall, Victoria, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Feb. 12, 1987, Ser. No. 13,933
Int. Cl.[4] G01S *3/80*
U.S. Cl. 367—424 **7 Claims**



1. A method of determining a bearing "S" of a signal transmitter relative to a remote signal receiver, said method comprising the steps of:
(a) transmitting, from said transmitter, a signal pulse having a carrier frequency "ω", and having a high signal to noise ratio;
(b) sampling said transmitted pulse at first and second closely spaced receivers displaced from said transmitter by a distance "D" which may vary over time;
(c) for each of said receivers, deriving a sampled pulse phase component by:
(i) deriving in-phase and quadrature components of said sampled pulse and,
(ii) deriving an arctangent of each of said in-phase and quadrature components;
(d) for each of said receivers, measuring an arrival time "t" at which said sampled pulses arrive at each of said receivers respectively, by fitting a predetermined function, by least squares, to one of, a modulus, or, an amplitude envelope, of said pulse samples;
(e) determining a difference "ωt" between said arrival times of said sampled pulses at each of said receivers;
(f) determining an approximate phase difference

$$\Delta\phi = 2\pi\omega\delta t$$

between said sampled pulses;
(g) using said phase difference to resolve phase ambiguity of said phase components; and,
(h) determining said bearing "S" as

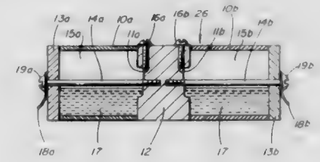
$$\cos(S) = \frac{(\Delta\phi)(c)}{(2\pi)(\omega)r}$$

where
"c"=propagation velocity of said pulse; and,
"r"=displacement between said receivers.

4,800,542
TILT SENSOR FOR RESOLVING LEFT-RIGHT AMBIGUITY IN UNDERWATER ACOUSTIC DETECTION SYSTEMS

J. Barrie Franklin, and Garfield W. McMahon, both of Dartmouth, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Canada

Filed Nov. 13, 1987, Ser. No. 120,126
Claims priority, application Canada, Dec. 8, 1986, 524791
Int. Cl.[4] G01V *1/38*; G01F *23/26*; H04R *1/02*
U.S. Cl. 367—154 **10 Claims**



1. A variable capacitance tilt sensor comprising:
a substantially cylindrical shell made of high permittivity dielectric material and closed at both ends by end caps made of electrically insulating material to form an enclosed space, said enclosed space being partially filled with mercury,
first electrically conducting means comprising an electrode in contact with the outside wall of the shell and in the shape of two sinusoidally-shaped portions,
and second electrically conducting means which is in electrical contact with the mercury,
wherein the capacitances of the two electrode portions is represented by the equations:

$$C_{S1} = C_S(1-\sin\theta)/2$$

$$C_{S2} = C_S(1+\sin\theta)/2$$

wherein C_S is the capacitance of a single first electrode portion when fully electrically coupled with the mercury and θ is the tilt angle of the sensor.

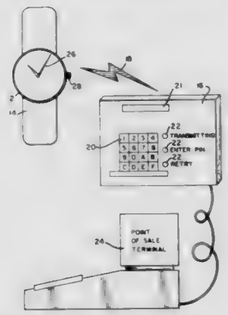
4,800,543
TIMEPIECE COMMUNICATION SYSTEM

Ross Lyndon-James; Alfred P. Gnadinger, both of Colorado Springs; Donald L. Black, Breckenridge, and Carlos P. de Araujo, Colorado Springs, all of Colo., assignors to Ramtron Corporation, Colorado Springs, Colo.

Filed Dec. 3, 1987, Ser. No. 128,550
Int. Cl.[4] G04B *47/00*
U.S. Cl. 368—10 **23 Claims**

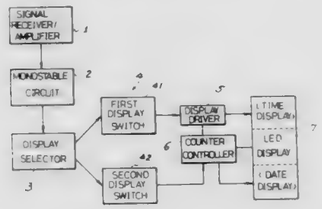
1. A user operated multi-function timepiece system comprising:
a housing;
a time indication device mounted within or upon said housing;
timekeeping apparatus coupled to said time indication device;
a power source coupled to said timekeeping apparatus;
integrated circuitry including memory and a communication circuit coupled to said battery and located within said housing, said memory including unique data for each respective user;
a transmitter coupled to said integrated circuitry and located within said housing for transmitting data to a location outside said housing;

a reader device including a receiver arranged to receive signals transmitted by said transmitter;



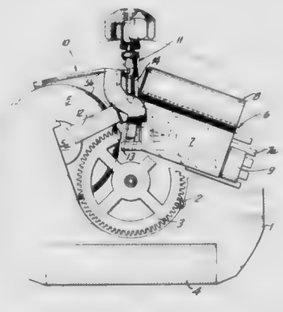
a keypad coupled to said receiver; and means for comparing information entered via
said keypad with data from said memory.

4,800,544
AUDIO-ACTUATED DIGITAL CLOCK WITH DOUBLE SELECTIONS
Chien-Na Hsu, P.O. Box 96-392, Taipei, Taiwan
Filed Jul. 6, 1988, Ser. No. 215,796
Int. Cl.[4] G04C *17/00, 19/00*
U.S. Cl. 368—69 **3 Claims**



1. A digital clock comprising:
an acoustic-signal receiver and amplifier operatively receiving and amplifying an acoustic signal by a human clap;
a monostable circuit processing an acoustic signal as transmitted from said signal receiver and amplifier for producing square-wave pulse;
a display selector selectively turning on a display switch means as triggered by said square-wave signal from said monostable circuit; said display selector, said monostable circuit and said amplifier powered by a first power source;
a light-emitting diode digital display means energized and controlled by a counter controller for the display of a time or date;
the display switch means having a first display switch selectively connecting a display driver of said counter controller having a time base therein and a second power source for powering a light-emitting diode digital display means for displaying a time of hours, minutes and seconds thereof, and a second display switch selectively connecting a date-display pin of said counter controller for displaying a date of month and day;
the improvement which comprises:
said display selector including a first flip-flop having an input connected to an output of said monostable circuit and an output connected to said first display switch through a capacitor and a resistor for setting a RC timing constant for the display time duration of hour, minute and second; and a second flip-flop following said first flip-flop having an output of second flip-flop connected to said second display switch; whereby upon a single clap by a user, the first flip-flop will be actuated to turn on said first display switch for displaying the time; and upon double claps, the two flip-flops will be actuated to turn on said second display switch for displaying a date.

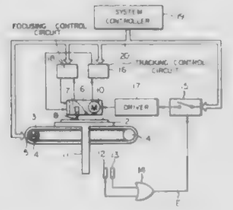
4,800,545
REMOVABLE STEM AND SWITCH ACTUATOR FOR ELECTRONIC WRISTWATCH
Paul Wuthrich, Watertown, and Edward Kaulins, New Milford, both of Conn., assignors to Timex Corporation, Waterbury, Conn.
Filed Apr. 3, 1987, Ser. No. 33,933
Int. Cl.[4] G04B *27/02, 29/00*
U.S. Cl. 368—190 **11 Claims**



1. A removable stem and switch actuator assembly for an electronic wristwatch having a frame, and an electronic circuit including at least one switch contact terminal,
a cylindrical stem disposed in said frame and defining a first deep lateral groove and a second shallow lateral groove, said grooves being axially spaced on the same side of said stem and defining inclined detenting surfaces therebetween,
a switch actuator mounted in said frame having a detent portion, a flexible spring portion biasing the detent portion into said stem grooves, and having a switch contact portion adapted to touch said switch contact terminal when the detent portion is biased into said deep groove by axial movement of said stem, whereby partial rotation of the stem raises the detent portion out of said grooves permitting axial removal of the stem from the frame.

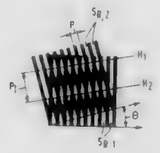
4,800,546
OPTICAL INFORMATION RECORD/REGENERATING APPARATUS WITH DEVICE FOR PROHIBITING MOVEMENT OF OPTICAL HEAD
Satoshi Shikichi; Akio Aoki, both of Tokyo, and Kazuo Minoura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 24, 1986, Ser. No. 910,974
Claims priority, application Japan, Sep. 26, 1985, 60-211143
Int. Cl.[4] G11B *7/085*
U.S. Cl. 369—44 **6 Claims**

1. An optical information recording and/or regenerating apparatus comprising:
an optical system for forming at least one light spot on an optical information recording medium provided with plural tracks and having a track jump area therein;
an optical head including moving means for movably supporting said optical system;
optical system driving means for driving said moving means so that said light spot is moved, in said track jump area, from a track at least to another track adjacent thereto;
head move means for moving said optical head relative to said optical information recording medium in a direction substantially perpendicular to the tracks;
detection means for detecting whether said light spot is positioned in said track jump area;



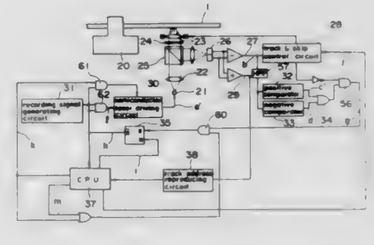
tracking control means for controlling both said optical system driving means and said head move means according to a tracking error signal; and
prohibition means for prohibiting the movement of said optical head by said head move means when said detection means detects that the light spot is positioned in said track jump area.

4,800,547
OPTICAL RECORD CARRIER SCANNING APPARATUS WITH SCANNING BEAM FOCUS ERROR DETECTION
Henricus M. M. Kessels, and Christiaan H. F. Velzel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 8, 1986, Ser. No. 939,205
Claims priority, application Netherlands, Jul. 18, 1986, 8601876
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—45 **7 Claims**



1. An improved apparatus for scanning the information surface of an optical record carrier, which apparatus comprises a source of a beam of radiation, means for focusing such beam into a scanning spot on the information surface which produces reflected radiation therefrom, and a focus-error detection system producing a focus error signal signifying any deviation between the plane of focus of the radiation spot and the information surface, such improvement being characterized in that the focus-error detection system comprises:
a first and a second optical diffraction grating arranged parallel to each other in succession in the path of the radiation reflected from the information surface of said record carrier, each grating having a constant strip period, the directions of the grating strips of the two gratings being at a small angle relative to each other so as to form an interference pattern of light and dark bands in radiation emergent from the second grating, such interference pattern having an orientation which changes in accordance with deviations between the plane of focus of said radiation spot and said information surface; and
an assembly of radiation detecting elements arranged adjacent the second grating to receive the radiation emergent therefrom, such assembly having coordinate axes oriented at an angle relative to the orientation of said interference pattern at the location of said assembly; whereby changes in the orientation of said interference pattern change the angle thereof relative to said assembly and cause corresponding changes in output signals produced by the detecting elements of said assembly.

4,800,548
OPTICAL RECORDING AND REPRODUCING APPARATUS WITH ABNORMALITY DETECTOR
Kenji Koishi, Kawabe, and Tamotsu Matsuo, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jun. 22, 1987, Ser. No. 64,605
Claims priority, application Japan, Jun. 20, 1986, 61-145104; Sep. 22, 1986, 61-224471; Sep. 22, 1986, 61-224472
Int. Cl.[4] G11B *27/36*
U.S. Cl. 369—54 **8 Claims**

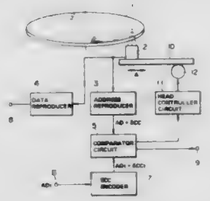


1. An optical recording and reproducing apparatus comprising an optical recording and reproducing means for focusing a laser light source onto an optical disc to record or reproduce the information, an abnormal record detecting means which detects that the abnormal condition has been caused where the normal record operation cannot be effected when the information is recorded by the optical recording and reproducing means onto the optical disc, a write protecting means for changing from the recording state to the non-recording state the optical power level of the laser light source during the recording operation by said abnormal record detecting means, a diagnostic means for confirming that said abnormal record detecting means and said write protecting means normally operate.

4,800,549
METHOD AND APPARATUS FOR SEEKING TARGET ADDRESS WITH ERROR CHECK CODE
Tamotsu Yamagami, Kanagawa, and Yoichiro Sako, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 6, 1987, Ser. No. 47,699
Claims priority, application Japan, May 31, 1986, 61-126005; May 31, 1986, 61-126006
Int. Cl.[4] G11B *7/00, 21/00*
U.S. Cl. 369—56 **13 Claims**

1. A method for seeking a target address on a record medium on which has been recorded data divided into plural blocks in correlation with an address for each block and an error check code which is encoded based on each address, said method comprising the steps of
a. forming from a supplied target address an error check code to be appended to said target address;
b. reading data recording on the medium and extracting the address therefor with the corresponding error check code;
c. comparing said target address and the error check code formed therefrom with said extracted address and corresponding error check code; and

d. repeating steps (b) and (c) until the comparison in step (c) indicates that the error between the target address and the



extracted address is less than a predetermined number and then designating the currently extracted address to be the target address.

4,800,550

MULTI-FORMAT OPTICAL DISK RECORDING/REPRODUCING SYSTEM

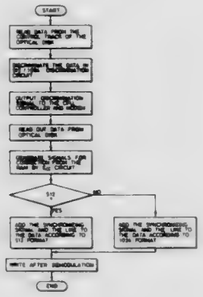
Keiichi Yamamachi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 2, 1987, Ser. No. 69,126

Claims priority, application Japan, Jul. 3, 1986, 61-157536

Int. Cl.[4] G11B *20/10, 5/09*

U.S. Cl. 369—59 6 Claims



1. A disk recording/reproducing system, comprising:

means for recording/reproducing to/from a rotating disk a group of data, said group of data comprising digital recording data, error detection and correction codes for said digital recording data and synchronizing signals, said group of data being arranged selectively in a first format and a second format, said synchronizing signals being present in said first format at first intervals and being present in said second format at second intervals different from said first intervals; and

control means for controlling said recording/reproducing means to convert between said group of data and said digital data selectively according to either said first or said second format.

4,800,551

METHOD AND APPARATUS FOR FEEDING CARD

Philip R. Norris, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 15, 1987, Ser. No. 50,039

Int. Cl.[4] G11B *17/04, 25/04*

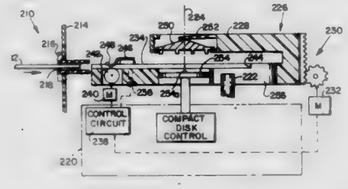
U.S. Cl. 369—77.1 42 Claims

1. Apparatus for transferring a generally rectangular card having thereon binary coded information, in concentric and/or spiral tracks, along a predetermined path to a rotational reference axis whereat the card is rotated thereabout, said apparatus comprising:

a housing assembly including an opening thereinto;

a binary coded information reader and/or writer device disposed in said housing assembly;

means disposed in said housing assembly for transferring the card from said opening to the reference axis; and



means for positioning the card at the reference axis and for cooperating with said transferring means so that a longitudinal axis of the card is substantially parallel to said path during transfer of the card along at last a portion of said path and for allowing rotation of the card about the reference axis, whereby the tracks can be read and/or written by said reader and/or writer device.

4,800,552

SEMICONDUCTOR MEMORY DEVICE WITH RESET SIGNAL GENERATING CIRCUIT

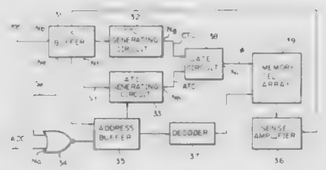
Atuo Koshizuka, Kawasaki, and Kazuto Furumochi, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 15, 1986, Ser. No. 941,437

Claims priority, application Japan, Dec. 18, 1985, 60-282736; Dec. 19, 1985, 60-284406

Int. Cl.[4] G11C *7/00, 8/00*

U.S. Cl. 365—190 8 Claims



1. A semiconductor memory device having a chip selection state and a chip non-selection state having a pulse width defined with respect to a predetermined time period and receiving an address signal and a chip selection signal, said device comprising:

a pair of signal lines for transferring a complementary signal;

reset means, operatively connected between said signal lines, for equalizing potentials of said signal lines in response to a reset signal;

a first clock generating circuit, connected to receive the chip selection signal, for generating a first clock signal in response to a transition of the chip selection signal, the transition being from the chip non-selection state to the chip selection state;

a second clock generating circuit, connected to receive the address signal, for generating a second clock signal in response to a transition of the address signal, the second clock signal being generated during a generation of the first clock signal and terminated at a predetermined time period after the generation of the first clock signal is terminated;

a logical OR circuit, connected to said first and second clock generating circuits, for receiving the first and second clock signals and outputting the reset signal; and

a control circuit, operatively connected to said second clock generating circuit, for permitting the generation of the second clock signal when a pulse width, corresponding to a time period of the chip non-selection state, of the chip selection signal is shorter than a predetermined time period.

4,800,553

DEVICE FOR RECORDING INFORMATION ON AND PLAYING IT BACK FROM A DRIVEN RECORDING MEDIUM

Helmut Laufer, St. Georgen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

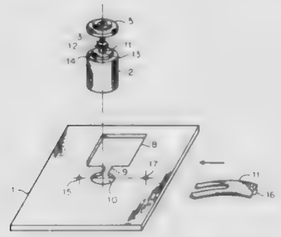
PCT No. PCT/EP86/00092, § 371 Date Oct. 5, 1987, § 102(e) Date Oct. 5, 1987, PCT Pub. No. WO87/05144, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 25, 1986, Ser. No. 138,377

Claims priority, application Fed. Rep. of Germany, Jan. 28, Feb. 25, 1986, 3502708

Int. Cl.[4] G11B *33/02, 19/20;* **H02K** *5/00*

U.S. Cl. 369—263 7 Claims



1. A device for recording information on and/or playing back the information from a recording medium driven by a motor, comprising: a motor having a centering shoulder; stationary centering means corresponding to the shape of said motor and having a bore corresponding to said centering shoulder; said centering shoulder having a projection extending beyond said centering means; said projection having a groove; and a resilient element engaging said groove, said centering means resting against said resilient element; and a turntable preassembled to said motor prior to mounting in place free of screws.

4,800,554

DISK MAGAZINE

Hidetoshi Yamasaki, Atsugi, and Masao Murata, Yamato, both of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Sep. 29, 1987, Ser. No. 102,194

Claims priority, application Japan, Oct. 1, 1986, 61-151057; Oct. 1, 1986, 61-151059

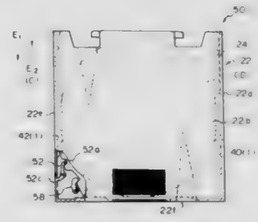
Int. Cl.[4] G11B *17/00, 23/04*

U.S. Cl. 369—291 17 Claims

1. A disk magazine having a plurality of disk trays each carrying a disk in a coaxial disposition when said tray is properly inserted, said disk magazine being of the type which is mountable in a disk playback device which is operable to selectively play back the disks, comprising:

a plurality of trays each having a disk seat portion for receiving a disk and each having a generally rectangular shape which includes four corner portions;

a magazine casing having a top and bottom wall along with opposed side walls and a back wall to thereby define an enclosed casing which is open at the front through which said disk-carrying trays are inserted in a disk-insertion direction, said casing having a plurality of tray guides disposed on the inside of each of said opposed side walls and arranged to receive disk-carrying trays inserted into said casing through said front opening, said trays being insertable into said casing into a fully inserted position when said tray is inserted into opposite aligned tray guides on said opposed side walls and when said tray is inserted



into said opposite aligned tray guides in a desired orientation; and

cooperable means on said casing and said trays for preventing said trays from being inserted into said fully inserted position when said trays have not been inserted into opposite aligned tray guides or when said trays have not been inserted into said casing in said desired orientation.

4,800,555

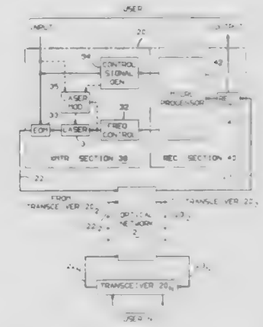
TECHNIQUE FOR REPELLING CARRIERS IN OPTICAL COMMUNICATIONS TO MINIMIZE MUTUAL INTERFERENCE

Gerard J. Foschini, Sayreville, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 3, 1987, Ser. No. 34,135

Int. Cl.[4] H04B *9/00*

U.S. Cl. 370—3 3 Claims



1. A transceiver for use in a frequency division multiplexing (FDM) lightwave communication system, the transceiver comprising:

a transmitter section (**30**) including;

means (**31**) for generating a predetermined nominal lightwave carrier signal;

means (**33–35**) for modulating the nominal lightwave carrier signal from the generating means with an information signal to be transmitted from the transmitter section to a remote transceiver; and

means (**32**) for generating control signals to the generating means for causing said generating means to slowly dither

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the nominal lightwave carrier signal to a first carrier frequency on a first side of the nominal carrier signal and then to a second carrier frequency on a second side of the nominal carrier signal opposite the first side thereof in a manner that enables a collective background interference to be sensed for each of the first and second sides of the nominal carrier frequency by the remote transceiver for deriving a control signal for transmission back to the generating means to reposition the carrier and situate the carrier more favorably amid the background interference.

4,800,556

OPTICAL DATA TRANSMISSION WITH FREQUENCY MULTIPLEXING

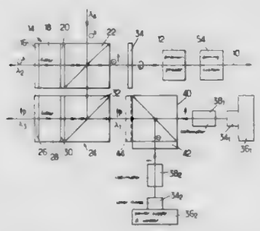
Jean Charlier, Pontoise; Bernard Geenen, Mareil sur Mauldre; Bernard Laurent; Jean Lorsignol, both of Toulouse; Andre Malherbe, Pontoise, and Jean-Luc Perbos, Toulouse, all of France, assignors to Matra, Paris, France

Filed May 6, 1987, Ser. No. 46,350

Claims priority, application France, May 6, 1986, 86 06506

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 370—3 **7 Claims**



1 In an optical transmission system with multiplexing of at least three channels at different wavelengths, a transmitter comprising:

(a) first, second and third laser diode means delivering linearly polarized optical beams at respective wavelengths λ2, λ3 and λ4 which are mutually different,

(b) an assembly located in the path of the light of wavelength λ2 emitted by said first diode means and including a plate which is substantially quarter-wave for a wavelength equal to (2λ2−λ4), a filter having a band pass centered on wavelength λ2, a plate which is substantially quarter-wave for wavelength λ4 and a polarizer, the first diode means being oriented so that its beam is transmitted by the polarizer,

(c) first means for directing the light from said third diode means onto the polarizer along a direction at 90° from the direction of the beam of wavelength λ2 and with the same polarization direction, so that the beam of wavelength λ4 is reflected towards said filter and back by said filter along an output path common with the output path of the light having wavelength λ2, and

(d) second means for directing the light from said second diode means, having wavelength λ3 intermediate between λ2 and λ4, onto the polarizer in a direction opposite to that of the light beam of wavelength λ4 and with a polarization orthogonal to that of the light of wavelength λ4, so that the light of wavelength λ3 is reflected along a path coaxial with said common output path.

4,800,557

OPTICAL DEMULTIPLEX TRANSMISSION EQUIPMENT

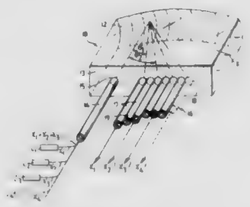
Jens Weber, Berlin, Fed. Rep. of Germany, assignor to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 6, 1985, Ser. No. 763,010

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1984, 3431448

Int. Cl.⁴ H04B *9/00*; **G02B** *6/34*

U.S. Cl. 370—3 **18 Claims**



1. An optical demultiplex transmission apparatus comprising:

a plurality of light transmitters for emitting light signals of discrete wave lengths;

a dispersion grating;

a first light conductor disposed between said light transmitters and said dispersion grating and directed at said dispersion grating for conducting a multiplex signal formed by superposition of said light signals; and

a plurality of second light conductors each having an input end arranged in a diffraction plane of the dispersion grating, for individually decoupling the light signals from said multiplex signal into individual signals having discrete wave lengths, said second light conductors also having respective input ends adjacently arranged in juxtaposition to each other, said second light conductors including output conductors and spacing conductors interpersed therebetween, only every nth second light conductor forming an output conductor where N is a natural number greater than one, adjacent said output conductors being spaced apart by said spacing conductors;

said light transmitters emitting said light signals with their discrete wave lengths being tuned so that said light signals are diffracted by said grating to substantially impinge only on said output conductors.

4,800,558

TELEPHONE SWITCHING SYSTEM FRAME SYNC GENERATOR

Mark A. Nichols, Las Vegas, Nev., assignor to Pathfinder Systems, Inc., Las Vegas, Nev.

Filed Mar. 3, 1987, Ser. No. 21,235

Int. Cl.⁴ H04J *3/02*

U.S. Cl. 370—67 **1 Claim**

1. In a telephone switching system which includes a group of codecs, a separate analog line coupled to each codec, a bus output line common to all codecs in said group, and a separate timing input line coupled to each codec, the improvement of means for generating timing signals on said timing input lines, comprising:

clock means for generating a high frequency clock signal;
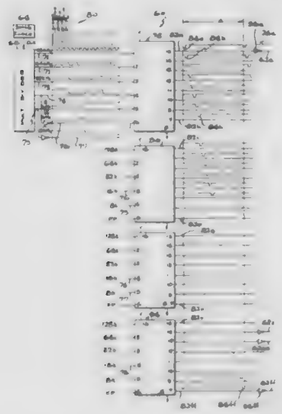
divider means coupled to said clock means, for generating a plurality of substantially square wave signals including a first binary signal of a first low frequency and a plurality of additional binary signals of progressive 2's multiples of said first frequency, all synchronized to the first signal;

an integrated circuit which has a plurality of input lines that each represent a bit of predetermined significance and that each receive a different one of said binary signals, said integrated circuit also having a plurality of output lines that each carries a square wave only while the binary signals on its input lines define a predetermined number, whereby each of said output lines carries a square wave for a predetermined small minority of the time;

each of said output lines is connected to a different one of said plurality of codecs, to control each codec to operate during a different short period of time to sample the analog signal on its analog line and deliver a burst of binary signals on said bus representing the analog signal sample;

said system includes four of said integrated circuits;

said divider means includes means for generating the inverse



of said first low frequency signal and the inverse of a second signal whose frequency is twice said low frequency;

each of said four integrated circuits receives a different combination of inverse and noninverse of said first low frequency signal and said second signal, with a first integrated circuit receiving said first and second signals, with a second integrated circuit receiving the noninverse of said first signal and the inverse of said second signal, with a third integrated circuit receiving the inverse of said first signal and the noninverse of said second signal, and with a fourth integrated circuit receiving the inverse of said first signal and the inverse of said second signal.

4,800,559

ETHERNET AND BROADBAND LAN INTERFACE

Michael Florea, Springfield; Stephen C. Foster, Herndon, and Gary J. Bisaga, Reston, all of Va., assignors to Contel Information Systems, Inc., Fairfax, Va.

Filed Jul. 30, 1986, Ser. No. 890,457

Int. Cl.⁴ H04J *3/24*

U.S. Cl. 370—94 **11 Claims**

1. A broadband/baseband interface for passing data packets between a broadband medium and a baseband medium, said interface comprising:

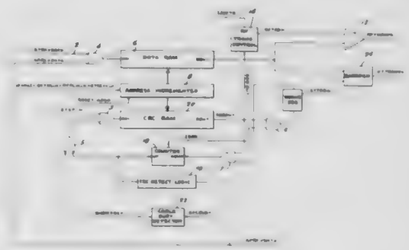
means for receiving a data packet from said broadband medium;

detecting means for recognizing errors in said data packet, said errors including false end-marks found in said data packet, and an actual end-mark implanted in said data packet to mark the end of said data packet;

counting means for counting said false and actual end-marks;

transmitting means for transmitting said data packet over said baseband medium; and

control means associated with said counting means for counting the false and actual end-marks registered by said counting means and stopping said transmitting means



effective when said actual end-mark is counted by said control means.

4,800,560

SYNCHRONIZATION CONTROL CAPABLE OF ESTABLISHING SYNCHRONIZATION WITHOUT TRANSMISSION OF DISTANCE INFORMATION BETWEEN CONTROL AND LOCAL EARTH STATIONS

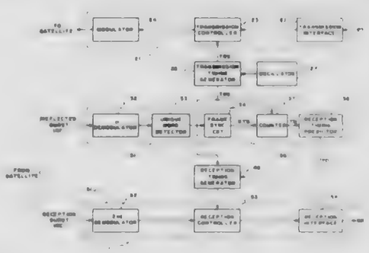
Takahiro Aoki, and Shunichiro Tejima, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Mar. 13, 1987, Ser. No. 25,342

Claims priority, application Japan, Mar. 15, 1986, 61-56086

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 370—104 **6 Claims**



1. In a control earth station for use in a time division multiple access network to communicate with a local earth station through a geostationary satellite which fluctuates from a standard position into a deviated position with time with a spatial deviation left between said standard and said deviated positions, said control earth station comprising transmission timing means for transmitting a transmission reference timing signal towards said geostationary satellite, first detecting means for receiving a reception timing signal which results from the transmission reference timing signal sent back from said satellite, and reception timing control means coupled to said transmission timing means and said first detecting means for controlling a reception time instant determined for said local earth station, the improvement wherein said reception timing control means comprises:

measuring means responsive to said reception timing signal for measuring a time difference between said transmission reference timing signal and said reception time instant to determine an actual distance between said control earth station and said satellite;

standard delay providing means for providing a standard delay time determined by a standard distance between said control earth station and said standard position of the satellite;

second detecting means coupled to said measuring means and said standard delay providing means for detecting a

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time deviation resulting from said spatial deviation of the satellite, with reference to said time difference and said standard delay time; and

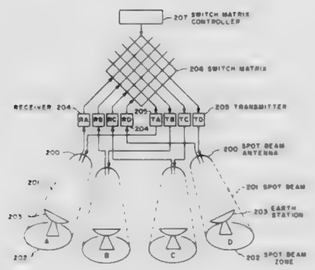
varying means coupled to said second detecting means and said standard delay providing means for varying said reception time instant for the local earth station with reference to said standard delay time and said time deviation.

4,800,561

SYNCHRONIZATION BURST TRANSMIT PHASE CONTROL SYSTEM

Yuuhei Ishi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 20, 1987, Ser. No. 87,662
Claims priority, application Japan, Aug. 27, 1986, 61-199038
Int. Cl.[4] H04J *3/06*
U.S. Cl. 370—104 **8 Claims**



1. In an SS/TDMA (Satellite-Switched Time Division Multiple Access) communications system having at least one up-link and one down-link which include a plurality of spot beams, the up- and down-links being sequentially switched according to a predetermined connection mode by a satellite born switch, and the switching of the connection being repeated at a predetermined frame period according to a timing reference provided in a satellite;

a sync burst transmit phase control system in which a predetermined satellite communications reference station for establishing and maintaining a TDM frame between earth stations, which correspond to a plurality of different beam spot zones, comprises:

means for switching a metric pattern included in a predetermined sync burst which is transmitted to the satellite, said burst being based on a period corresponding to the TDMA frame and, then, said burst is returned from said satellite after being gated off by a sync window which is generated on a basis of a reference time in said satellite and adapted for regulation of the TDMA frame;

means responsive to a synchronization control operation performed by using a first metric pattern for determining a synchronization accuracy which is obtainable with the first metric pattern by averaging transmit phase correction values, which are necessary for maintaining synchronization, over a predetermined period of time;

means responsive to a synchronization control operation performed by using a second metric pattern for determining a synchronization accuracy which is obtainable with the second metric pattern by averaging transmit phase corrections, which are necessary for maintaining synchronization, over a predetermined period of time; and

means for comparing the synchronization accuracy with a predetermined synchronization accuracy at a predetermined period;

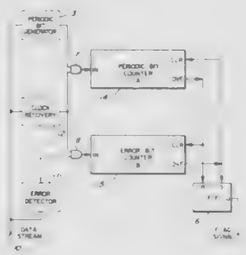
whereby any of the metric patterns is selected which provides a highest synchronization accuracy at a particular moment.

4,800,562

CIRCUIT AND METHOD FOR MONITORING THE QUALITY OF DATA IN A DATA STREAM

Gregory F. Hicks, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Quebec, Canada

Filed Apr. 27, 1987, Ser. No. 43,273
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—5 **9 Claims**



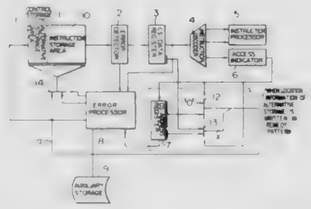
1. An event ratio detector circuit comprising a first counter means having a predetermined maximum count and being responsive to each event of a first sequence of events for increasing its count by one, and a second counter means having a predetermined maximum count and being responsive to each event of a second sequence of events for increasing its count by one, the overflow output of the first counter means being connected to the clear input of the second counter means, and the overflow output of the second counter means being connected to the clear input of the first counter means, a signal appearing at the overflow output of the second counter means indicating that the ratio of second events to first events as predetermined by the respective maximum counts of the second and first counter means has been exceeded.

4,800,563

ERROR PROCESSING METHOD AND APPARATUS FOR INFORMATION PROCESSING SYSTEM

Teruo Itagaki, and Teruo Noro, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1986, Ser. No. 893,179
Claims priority, application Japan, Aug. 24, 1985, 60-186459
Int. Cl.[4] G06F *11/14, 11/16*
U.S. Cl. 371—13 **15 Claims**



10. An error processing apparatus for producing a corrected instruction word in an information processing system, comprising:

an instruction storage including a regular instruction storage area and an alternative instruction storage area for storing instruction words at respective addressable storage locations;

read means for producing an address of a selected storage location of said regular instruction storage area of said instruction storage to read out an instruction word therefrom;

error detector means connected to receive a read-out instruction word from said instruction storage for detecting whether said read-out instruction word has a fixed error;

error processor means responsive to said error detector means detecting an erroneous instruction word for replacing said erroneous instruction word in said selected storage location of said regular instruction storage area with a particular pattern and for storing a corresponding correct instruction word into said alternative instruction storage area at a storage location therein which has an address identifiable from said selected storage location of said regular instruction storage area; and

decoder means connected to receive data read out of said instruction storage for detecting said particular pattern and for controlling said read means in response to said detecting to produce an address of said storage location in said alternative instruction storage area at which said corresponding correct instruction word is stored to read out said corresponding correct instruction word;

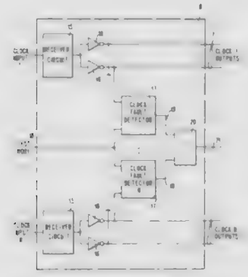
wherein said error processor means includes means responsive to said error detector means for determining the type of error of an erroneous instruction word and means for formulating said particular pattern in accordance with said type of error.

4,800,564

HIGH PERFORMANCE CLOCK SYSTEM ERROR DETECTION AND FAULT ISOLATION

John J. DeFazio, Pleasant Valley, and Timothy G. McNamara, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1986, Ser. No. 912,289
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—61 **13 Claims**



1. Apparatus for fault testing a clock distribution network which fans out a single-ended clock signal to a plurality of clock signal lines with said apparatus fault testing each of said plurality of clock signal lines for the presence of stuck-at-faults and missing and extra pulses, said apparatus including:

(a) a clock fault detection circuit for each of said plurality of said single-ended clock signal lines, said clock fault detection circuit having a first latch circuit means, said first latch circuit means having a data-in-port, a scan data-in-port with a predetermined one of said plurality of clock signal lines connected to said data-in-port and an output;

(b) invert delay circuit means, said invert delay circuit means having an input connected to said output of said first latch circuit and an output connected to the data-in-port of said first latch circuit means; and

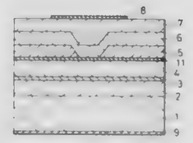
(c) an error collecting means, said error collecting means having a plurality of inputs, each of said plurality of inputs of said error collecting means connected to the output of a discrete one of said first latch circuits of said plurality of clock fault detector circuits, said error collecting means having an output for rendering an error signal if any one or more of said clock signals malfunctions.

4,800,565

SEMICONDUCTOR LASER DEVICE HAVING HIGH OPTICAL INTENSITY AND RELIABILITY

Misuzu Yoshizawa, Tokyo; Kazuhisa Uomi, Hachioji; Toshihiro Kawano, Ome; Yuichi Ono, and Takashi Kajimura, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1987, Ser. No. 94,602
Claims priority, application Japan, Sep. 16, 1986, 61-215717
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—45 **9 Claims**



1. A semiconductor laser device structure comprising:

a semiconductor region of first conductivity type;

a first cladding layer of said first conductivity type formed on said semiconductor region;

an active layer formed on said first cladding layer, said active layer having a larger refractive index than that of said first cladding layer and a smaller band gap than that of said first cladding layer;

a second cladding layer of a second conductivity type, different from said first conductivity type, formed on said active layer, said second cladding layer containing Al as a constituent atom, and having a smaller refractive index than that of said active layer and a larger band gap than that of said active layer;

an interface layer of said second conductivity type formed on said second cladding layer, said interface layer containing Al as a constituent atom;

a semiconductor layer formed on said interface layer, said semiconductor layer having a stripe shaped channel extending through said semiconductor layers so as to expose said interface layer and lying from one side to another side of a laser resonator in the direction of a laser beam;

a buried cladding layer of said second conductivity type buried at least in said stripe shaped channel, wherein said interface layer has a smaller Al mole ratio than that of said second cladding layer, and said buried cladding layer has a smaller refractive index than that of said second cladding layer; and

a pair of electrodes one of which is electrically coupled to said first cladding layer and the other to said buried cladding layer.

4,800,566

FUSION PUMPED LASER

Daniel S. Pappas, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

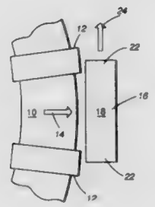
Filed Jul. 31, 1987, Ser. No. 79,961
Int. Cl.[4] H01S *3/09;* **G21B** *1/00*
U.S. Cl. 372—73 **4 Claims**

1. Apparatus for generating laser radiation, comprising:

tokamak fusion means for generating a long pulse of high-energy neutrons and having a temperature and magnetic field effective to generate a neutron flux of at least 10^{15} neutrons/cm^2-s;

conversion means adjacent said fusion means operable for

converting said high-energy neutrons to an energy source with an intensity and energy effective to excite a preselected lasing medium; and



said lasing medium responsive to said energy source to generate a population inversion effective to support laser oscillations for generating output radiation.

4,800,567

HIGH-FREQUENCY-DISCHARGE EXCITED GAS LASER

Norio Karube, Machida, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP87/00059, § 371 Date Sep. 28, 1987, § 102(e) Date Sep. 28, 1987, PCT Pub. No. WO87/04868, PCT Pub. Date Aug. 13, 1987

PCT Filed Jan. 28, 1987, Ser. No. 117,149

Claims priority, application Japan, Jan. 29, 1986, 61-15594; Jan. 29, 1986, 61-15596

Int. Cl.[4] H01S *3/097*

U.S. Cl. 372—87 **20 Claims**



1. A high-frequency-discharge excited gas laser adapted to excite a laser gas by means of a high frequency voltage applied from a high frequency power source to metallic electrodes disposed within a stream of laser gas, comprising:

metallic electrodes disposed within the stream of laser gas, at least one of said metallic electrodes being formed into a tubular shape;

a tubular covering body made of dielectric material having a ballast effect for establishing a uniform electric discharge, said covering body being disposed to be detached from an outer peripheral surface of said at least one metallic electrode and to cover said outer peripheral surface of said at least one metallic electrode, to permit a difference between thermal properties of said covering body and thermal properties of said at least one metallic electrode, said covering body having walls with a thickness which is sufficient to prevent pinholes from being produced during manufacture of said covering body and to prevent occurrences of dielectric breakdown of said covering body during use.

4,800,568

GAS LASER WITH A FREQUENCY-SELECTIVE DIELECTRIC LAYER SYSTEM

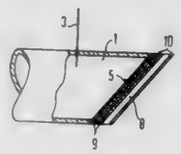
Hans Krueger, Munich, Fed. Rep. of Germany, and Hans P. Good, Sargans, Switzerland, assignors to Siemens Aktiengesellschaft & Balzers Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 29, 1986, Ser. No. 823,641

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1985, 3503092

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—99 **9 Claims**



1. In a gas laser having a discharge tube provided with a Brewster window adjacent at least one of its two opposite ends through which laser radiation is emitted, an improvement comprising means for allowing passage of only one wavelength and absorbing all others, said means being a frequency selective layer system being formed on the Brewster window, said system comprising:

a plurality of successive layers, said plurality of layers including only two layer types and including alternating high refractive index first layers and low refractive index second layers, each of said first layers having substantially a first optical thickness and each of said second layers having substantially a second optical thickness, said plurality of successive layers including between five and nine layers of each of said first layers and of each of said second layers, each of said first layers having an optical thickness of at least $0.98d_1$ and at most $1.02d_1$, where d_1 is a constant and is at least

$$0.8\left(\frac{2q+1}{4}\right)\lambda$$

and at most

$$1.2\left(\frac{2q+1}{4}\right)\lambda$$

and each of said second layers having an optical thickness of at least $0.98d_2$ and at most $1.02d_2$, where d_2 is a constant and is at least

$$0.8\left(\frac{2q+1}{4}\right)\lambda$$

and at most

$$1.2\left(\frac{2q+1}{4}\right)\lambda,$$

where λ is a wavelength of a desired laser emission and q is a positive whole number.

4,800,569

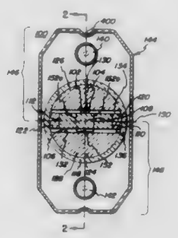
REFLECTOR DESIGN FOR A SLAB LASER

Farzin H. Azad, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1987, Ser. No. 127,028

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—99 **7 Claims**



1. A method for determining a shape of reflector in a slab laser including a solid-state lasing medium having as generally rectangular shape with two opposing major face surfaces, said slab laser including a first and a second optical pumping lamp respectively disposed adjacent said lasing medium face surfaces for impinging electromagnetic radiation thereon and further including cooling means for flowing a fluid coolant across at least a portion of said lasing medium, said lasing medium exhibiting a negative focal power lens effect in lateral edge portions thereof, said reflector being positioned to generally direct the electromagnetic radiation form said first and second pumping lamps onto said lasing medium face surfaces and having a shape effective to introduce a positive focal power lens effect approximately equal in magnitude to said negative focal power lens effect into a central portion of said lasing medium between said lasing medium lateral edge portions, the last recited positive and negative lens effects representing desired lens effect distribution across a width dimension of said lasing medium, said method comprising the steps of:

(a) computing amounts of pumping energy absorbed in said lasing medium, as a function of width position, effective to produce a temperature distribution in said lasing medium which in turn produces said desired lens effect distribution, the amounts of absorbed pumping energy so computed corresponding to a desired pumping profile;

(b) assigning a predetermined initial set of values to a predetermined set of reflector dimensional parameters descriptive of the shape of said reflector, said initial values defining a current reflector shape;

(c) computing by ray tracing, based on the current reflector shape, a computed pumping profile corresponding to amounts of pumping energy absorbed in said lasing medium as a function of width position;

(d) computing a value of a predetermined error function that expresses a deviation of said computed pumping profile from said desired pumping profile;

(e) comparing the value of said error function computed in step (d) with a predetermined minimum value of said error function which represents an acceptable correspondence between said computed and desired pumping profiles and if said computed value is greater than the predetermined minimum value of said error function proceeding to step (f) and, if not, to step (g);

(f) updating the values assigned to said reflector dimensional parameters in accordance with a numerical minimization technique to minimize said error function and repeating steps (c) through (e) with the updated reflector dimensional parameters defining the current reflector shape; and

(g) stopping the method since the computed pumping profile resulting from the current reflector shape is sufficiently similar to said desired pumping profile that said desired lens effect distribution is substantially produced.

4,800,570

CONCATENATED CODE-DECODE SYSTEM FOR THE PROTECTION AGAINST INTERFERENCE OF DIGITAL TRANSMISSIONS THROUGH AN INTERMEDIATE REGENERATIVE REPEATER

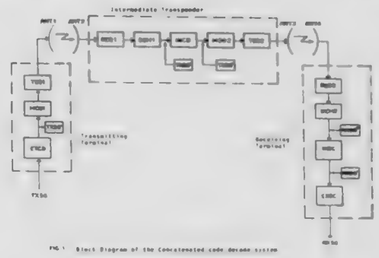
Giorgio Perrotta, and Giacinto Loquadro, both of Rome, Italy, assignors to Selenia Spazio S.p.A., L'Aquila, Italy

Filed Apr. 30, 1987, Ser. No. 44,888

Claims priority, application Italy, May 15, 1986, 48024 A/86

Int. Cl.[4] H03K *11/00*

U.S. Cl. 375—4 **15 Claims**



1. A concatenated code-decode system for protecting data transmissions effected through a transponder from interference, said system comprising:

(a) a transmitter terminal having (i) means for encoding a data signal with an external code, thereby producing an external coded signal, and (ii) means for transmitting said external coded signal;

(b) a transponder having (i) means for receiving the transmitted external coded signal, (ii) means for encoding the received external coded signal with an internal code, thereby producing an internal coded signal, and (iii) means for transmitting said internal coded signal; and

(c) a receiving terminal having (i) means for receiving the transmitted internal coded signal, (ii) means for decoding the received internal coded signal, thereby producing a coded signal corresponding to said external coded signal, and (iii) means for decoding said coded signal corresponding to said external coded signal, thereby producing a signal corresponding to said data signal.

4,800,571

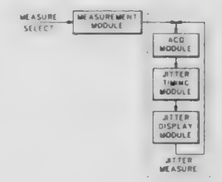
TIMING JITTER MEASUREMENT DISPLAY

Tomoo Konishi, Yokohama, Japan, assignor to Tektronix, Inc., Beaverton, Oreg. and Sony-Tektronix, Inc., Tokyo, Japan

Filed Jan. 11, 1988, Ser. No. 142,092

Int. Cl.[4] H04B *3/46*

U.S. Cl. 375—10 **8 Claims**



1. A method for displaying timing pulse jitter of an input signal having a timing pulse occurring at a nominal repetitive rate comprising the steps of:

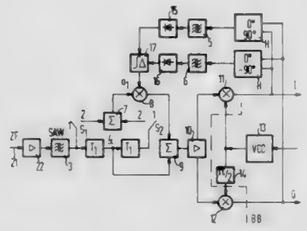
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acquiring from the input signal a set of digitized data samples using a free running, stable, precision clock;
selecting from the set of digitized data samples a predetermined number of samples about a timing pulse data sample corresponding approximately to a specified point on the timing pulse for each timing interval between timing pulses of the input signal;
determining a precise timing point corresponding to the specified point from the selected data samples for each timing interval with respect to a stable reference point established by the precision clock; and
displaying the timing point for each timing interval as a function of a difference between the timing point and the stable reference point.

4,800,572
ADAPTER FREQUENCY RANGE EQUALIZER FOR DIGITAL RADIO RELAY SYSTEMS

Josef A. Nossek, Iffeldorf; Georg Sebald; Berthold Lankl, both of Munich, and Klaus Bosbold, Kaufering, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 31, 1987, Ser. No. 91,020
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 3637051
Int. Cl.[4] H04B *3/04*
U.S. Cl. 375—14 **7 Claims**



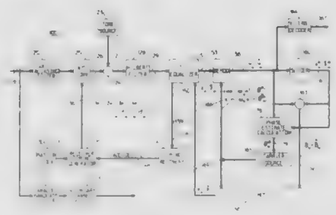
1. An adaptive frequency range equalizer for a digital radio relay systems (DRS) in which an intermedate frequency band (ZF), there is provided a transversal filter (4) which has adjustable coefficients (a_n+jb_n, n from $-N$ to $+N$) and which has means for spectrum analysis for setting the coefficients wherein coefficients (a_n+jb_n) determine the transmission function of the transversal filter (4) so that it can be the minimum-phase type (mp), linear-phase type (lp) or non-minimum-phase type (nmp), wherein the criteria for setting the coefficients (e_n+jb_n) of the transversal filter (4) are obtained from an in-phase base-band signal (I) and from a 90 degree signal (Q), a pair of hybrids (M) which receive said in-phase base-band signal (I) and said 90 degree signal (Q), a pair of filter probes (5, 6) connected to receive the outputs of said pair of hybrids (H) and a difference integrator connected to receive the outputs of said pair of filter probes.

4,800,573
EQUALIZATION ARRANGEMENT

Robert L. Capo, Eatontown, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Nov. 19, 1987, Ser. No. 122,812
Int. Cl.[4] H04B *3/04;* **H04J** *1/14*
U.S. Cl. 375—14 **8 Claims**

3. Apparatus comprising
means for receiving a signal transmitted to said apparatus over a communication channel, the transmitted signal being comprised of first and second frequency multiplexed signals, the energy in said first frequency multiplexed signal representing a stream of data,
means for forming samples of the received signal at a rate less than the Nyquist frequency associated with said transmitted signal, said samples containing substantial energy from both of said first and second frequency multiplexed signals,

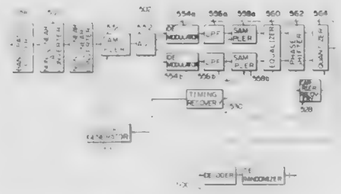


a fractionally-spaced equalizer for generating an equalized signal in response to said samples, and
means for forming, in response to said equalized signal, decisions as to the value of said data, said equalizer updating its transfer function in response to said equalized signal and said decisions.

4,800,574
DIGITAL MODULATOR/DEMODULATOR INCLUDING NON-LINEAR ANALOG-TO-DIGITAL CONVERTER AND CIRCUITRY COMPENSATING FOR THE NON-LINEARITY OF THE CONVERTER

Shigetaka Tanaka; Toshiaki Tanigawa, both of Atsugi, and Mitsuru Kaga, Hatano, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 7, 1984, Ser. No. 609,405
Claims priority, application Japan, May 10, 1983, 58-80145; Jun. 2, 1983, 58-96915; Jun. 3, 1983, 58-98033
Int. Cl.[4] H04B *14/04*
U.S. Cl. 375—26 **7 Claims**

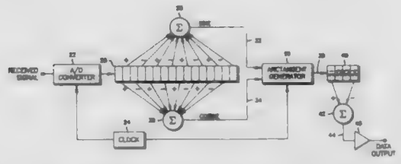


1. A digital demodulator for demodulating an analog transmission signal on a line and converting the analog transmission signal to a linear digital signal, comprising:
an analog-to-digital converter having a non-linear conversion characteristic which produces an output digital signal having a first predetermined number of bits non-linearly relative to the input analog transmission signal; and
compensation means having a non-linear conversion characteristic which converts the non-linear digital signal output from the analog-to-digital converter into said linear digital signal having a second predetermined number of bits which is larger than the first predetermined number of bits.

4,800,575
MODEM FSK DEMODULATION METHOD AND APPARATUS

Steven L. Anderson, Huntsville, Ala., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1987, Ser. No. 91,479
Int. Cl.[4] H04L *27/14*
U.S. Cl. 375—80 **6 Claims**

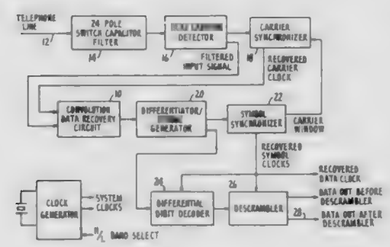


1. In a demodulator which receives data transmitted using frequency shift keying (FSK) modulation using mark and space tones having first and second frequencies, respectively, a method for demodulating said data comprising the steps of:
generating a clock reference having a third frequency which is approximately equal to one half of the sum of said first frequency and said second frequency;
converting said received tones into digital words;
calculating the phase of each of said words relative to the phase of said clock reference;
storing said calculated phase of each data word for a predetermined number of words;
determining the difference between one and another of said predetermined number of stored words, the number of words between said one and another selected such that a phase difference of +45 to +135 degrees exists when one of said mark and space tones is being received and a phase difference of −45 to −135 degrees exists when the other of said mark and space tones is being received, the polarity of said phase difference between said one and another of the predetermined number of words being determinative of whether a mark or space is received.

4,800,576
CONVOLUTION DATA RECOVERY CIRCUIT

Hee Wong, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 4, 1987, Ser. No. 21,407
Int. Cl.[4] H04L *27/22*
U.S. Cl. 375—83 **9 Claims**

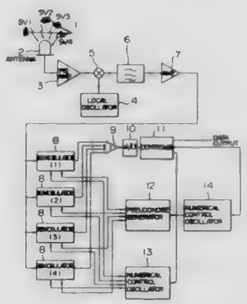


1. A data recovery circuit of the type utilized in a receiver circuit to generate decoded data signals from an incoming signal which comprises a phase modulated carrier signal, the data recovery circuit comprising:
(a) means for converting the incoming signal to a corresponding binary signal;
(b) means for recovering a carrier clock signal from the incoming signal, the carrier clock having a frequency greater than that of the incoming signal;
(c) a shift register which responds to the carrier clock signal to provide an array of phase vectors based on the binary signal which is shifted into the shift register;
(d) means for convoluting the phase vectors against a weighting curve to generate a weighted output; and
(e) means for removing the phase of the carrier signal from the weighted output to generate a decoded data signal representative of the difference between the phase of the incoming signal and the phase of the carrier signal.

4,800,577
GPS RECEIVER

Ryobun Tachita, Kawasaki; Ken Ikeda, Musashino, and Akio Teranishi, Ebina, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 6, 1987, Ser. No. 78,247
Claims priority, application Japan, Jul. 7, 1986, 61-159048; Jul. 7, 1986, 61-159054
Int. Cl.[4] H04L *7/10*
U.S. Cl. 375—115 **11 Claims**



1. A GPS receiver comprising:
pseudonoise generator means for simultaneously generating pseudonoise signals respectively corresponding to satellite electromagnetic waves transmitted from two or more satellites;
oscillator means for simultaneously regenerating carrier waves of the plurality of satellite electromagnetic waves; and
a plurality of demodulator means responsive to said regenerated carrier waves and said pseudonoise signals to demodulate individual satellite electromagnetic waves independently, to thereby regenerate data transmitted from individual satellites;
each demodulator means being operative, during demodulation, to detect a set of phases of one pseudonoise signal and one regenerated carrier wave relative to one satellite electromagnetic wave on time division basis and including a first mixer for mixing of one pseudonoise signal, a second mixer for mixing of one regenerated carrier wave and a filter, whereby a set of phases of one pseudonoise signal and one regenerated carrier wave is changed to another set at timed relationship with transmission of data from individual satellites to measure a phase of one pseudonoise signal relative to one satellite electromagnetic wave, thereby tracking data transmitted from individual satellites on the basis of the measured phase.

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4,800,578

SYNCHRONIZING DETECTING CIRCUIT FOR A DIGITAL BROADCASTING RECEIVER

Kazuji Sasaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

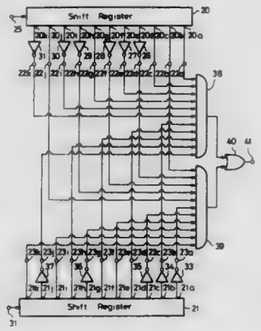
PCT No. PCT/JP86/00651, § 371 Date Aug. 27, 1986, § 102(e) Date Aug. 27, 1986, PCT Pub. No. WO87/04310, PCT Pub. Date Jul. 16, 1987

PCT Filed Dec. 25, 1986, Ser. No. 93,024

Claims priority, application Japan, Dec. 28, 1985, 60-297333

Int. Cl.[4] H04C *7/00*

U.S. Cl. 375—116 **5 Claims**



1. A synchronizing detecting circuit for a digital broadcasting receiver characterized by first and second serial-to-parallel converting means for converting serial sync. word signals of first and second series derived from an output of a demodulator into first and second parallel sync. word signals, respectively, first and second inverting means for making all bits of said first and second parallel sync. word signals derived at outputs of said first and second serial-to-parallel converting means high in level when said sync. word signals are supplied thereto, and judging means for re-arranging respective bits of even-numbered bits (or odd-numbered bits) of said first and second parallel digital data derived at outputs of said first and second means into sync. word signals of first and second groups and for judging said bits as a sync. word when all the bits of at least one of said sync. word signals of said first and second groups are at high level.

4,800,579

CHARGE TRANSFER DEVICE PROVIDED WITH CHARGE DETECTION CIRCUIT OF A FLOATING GATE SYSTEM

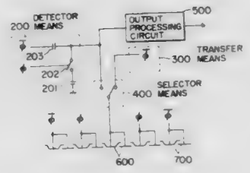
Shin-ichi Imai, and Naoki Hosoya, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1987, Ser. No. 31,456

Claims priority, application Japan, Mar. 31, 1986, 61-73495

Int. Cl.[4] G11C *19/28;* **H01L** *29/78*

U.S. Cl. 377—60 **5 Claims**



1. A charge transfer device comprising:
a charge transfer path;
a plurality of transfer electrodes provided on said charge transfer path;
a read electrode provided on said charge transfer path;
clock means for delivering a clock signal to said transfer electrodes to effect transfer on said charge transfer path;
detector means for detecting signal components of a charge below said read electrode without affecting a charge transferred on said charge transfer path;
transfer means for delivering a predetermined signal to said read electrode, thus allowing a charge below said read electrode to be transferred; and
selector means for allowing only either said detector means or said transfer means to be operative for said read electrode.

4,800,580

X-RAY ANALYSIS APPARATUS

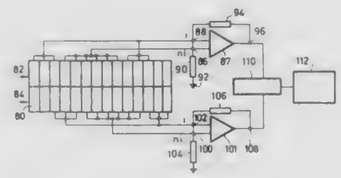
Eliberthus Houtman, Almelo, and Geert Brouwer, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 573,244, Jan. 23, 1984. This application Oct. 20, 1986, Ser. No. 921,861

Claims priority, application Netherlands, Feb. 4, 1983, 8300419

Int. Cl.[4] G01N *23/20*

U.S. Cl. 378—71 **21 Claims**



1. An X-ray analysis apparatus comprising
an X-ray diffractometer comprising:
X-ray source means for producing X-rays,
a specimen to be examined being irradiated by said X-rays,
detector means for detecting X-radiation emanating from said specimen, said detector means including a plurality of detector elements, each of said detector elements being a composite photodiode-semiconductor detector element for directly measuring photocurrent produced by said X-radiation, and
signal reading means receiving signals from said composite photodiode-semiconductor detector elements for reading said signals, said composite photodiode-semiconductor detector elements being connected to said signal reading means in either a separate connection from each of said composite photodiode-semiconductor detector elements to said signal reading means or a connection of groups of said composite photodiode-semiconductor detector elements connected to said signal reading means,
wherein said composite photodiode-semiconductor detector elements have a resolution determined by detection entrance widths of said composite photodiode-semiconductor detector elements, and
wherein adjacent ones of said detector elements are joined to determine said entrance widths.

4,800,581

X-RAY TUBE

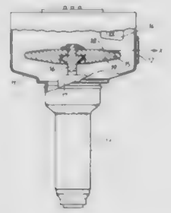
Masaji Kujirai, Ohtawara, and Yoshio Fukuhara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 22, 1987, Ser. No. 111,255

Claims priority, application Japan, Oct. 27, 1986, 61-255147; Oct. 27, 1986, 61-255148

Int. Cl.[4] H01J *35/08*

U.S. Cl. 378—143 **8 Claims**



1. An X-ray tube comprising:
cathode means for emitting electrons; and
target means for radiating primarily characteristic X-rays of molybdenum, including an electron focal area thereon for bombardment by the emitted electrons,
the electron focal area including a molybdenum base alloy containing at least one of titanium and potassium oxide-silicon dioxide.

4,800,582

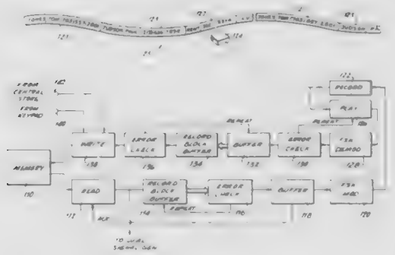
METHOD AND APPARATUS FOR CREATING AND STORING TELEPHONE DIRECTORY LISTINGS

Nicholas A. D'Agosto, III, Trumbull, Conn.; Steven M. Smith, Mahopac, N.Y., and Emil F. Jachmann, Greenwich, Conn., assignors to Dictaphone Corporation, Stratford, Conn.

Filed Aug. 8, 1986, Ser. No. 895,001

Int. Cl.[4] H04M *1/27*

U.S. Cl. 379—216 **50 Claims**



1. Automatic telephone dialing apparatus for dialing telephone numbers represented by telephone number information stored therein, comprising:
memory means for selectively and alterably storing a plurality of items of said telephone number
selection means for selecting one of said items from said memory means;
display means responsive to said selection means an said memory means for displaying at least a portion of said selected item;
read out means for responsive to said selection means said memory means, and a user input to read out from said memory means at least portion of said selected item corresponding to a telephone number and for effecting a dial-out operation for said corresponding telephone number;
playback means for playing back from a record medium a selected plurality of items of telephone number information; and,
write means for writing said selected plurality of items into said memory means, whereby a previously selected plurality of stored items may be altered.

4,800,583

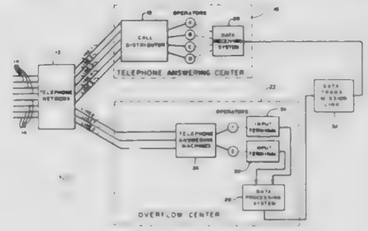
OVERFLOW CALL HANDLING SYSTEM

Peter F. Theis, 3203 Bay View Ln., McHenry, Ill. 60050-9621

Continuation-in-part of Ser. No. 892,196, Jul. 31, 1986, abandoned. This application Aug. 22, 1986, Ser. No. 899,538

Int. Cl.[4] H04M *1/57, 3/50;* **H04Q** *3/64*

U.S. Cl. 379—67 **21 Claims**



13. A telephone answering system for handling overflow calls from a telephone answering center of the type which comprises at least one operator station and means for interconnecting the operator station with a telephone line, said system comprising:
an overflow station;
means for automatically diverting overflow calls on the telephone line from the telephone answering center to the overflow station;
means, located at the overflow station, for automatically answering the overflow calls and automatically recording caller responses from individual overflow callers, and for allowing said recorded caller responses to be transcribed;
means, located at the overflow station, for digitally encoding information obtained from transcribed ones of said caller responses;
means for transmitting said digitally encoded information from the overflow station to a selected telephone center, remote from the overflow center; and
means for receiving said digitally encoded information at the selected telephone center.

4,800,584

INDEX DEVICE FOR AUTOMATIC INFORMATION RETRIEVAL

Ryoji Kitanishi, Tokyo, Japan, assignor to Tandy Electronics Japan, Ltd., Tokyo, Japan

Filed Sep. 3, 1987, Ser. No. 92,551

Claims priority, application Japan, Sep. 19, 1986, 61-143731[U]

Int. Cl.[4] H04M *1/27*

U.S. Cl. 379—355 **2 Claims**

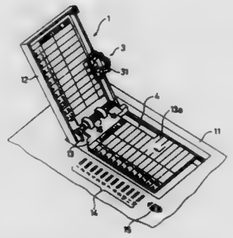
1. An indexing device for providing signals identifying the address in a memory device of stored information corresponding to any selected index entry, comprising
(a) a housing having a plurality of index cards therein,
(b) A movable cover having a closed position in which it covers the index cards in the housing,
(c) a carriage movably mounted on the cover,
(d) an indicator pivotally mounted on the carriage and ar-

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ranged to be selectively brought into alignment with indicia on the cover by movement of the carriage,

(e) a position sensor disposed in the housing and extending along the path of movement of the carriage for detecting the position of the indicator,

(f) means carried by the indicator for enabling the position sensor to detect the position of the indicator at stations along the indicator's path of movement,



(g) signal generating means coupled to the position sensor for generating a signal identifying the station at which the indicator is positioned,

(h) latch means carried by the pivoted indicator for latching the cover in its closed position, and

(i) a latch retainer disposed in and secured to the housing and situated to engage the latch means carried by the pivoted indicator.

4,800,585

SATURATING BIPOLAR SWITCH CIRCUIT FOR TELEPHONE DIAL PULSING

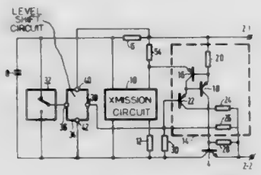
Hendricus A. H. Dorland, Hilversum, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jul. 6, 1987, Ser. No. 69,686

Claims priority, application Netherlands, Jul. 8, 1986, 8601773

Int. Cl.[4] H04M *1/30*

U.S. Cl. 379—364 **5 Claims**



1. A telephone set dial pulsing circuit for connection to the two terminals of a subscriber line to provide pulsed interruptions of the subscriber line current, comprising a bipolar switching transistor whose main current path is situated between one of such line terminals and the remaining circuit elements of the telephone set and whose emitter is connected to the aforesaid one line terminal; the improvement characterized in that such dial pulsing circuit comprises a control circuit connected to a controllable current source having a control input and an output which is connected to the base of the switching transistor, the output current of the current source increasing with the line current under control of the control circuit; such control circuit comprises converter means for producing a control voltage proportional to the line current; and the controllable current source is a voltage-controlled current source which is controlled by the control voltage applied to its control input by the converter means.

4,800,586

COMPENSATION CIRCUIT FOR USE WITH AN INTEGRATING AMPLIFIER

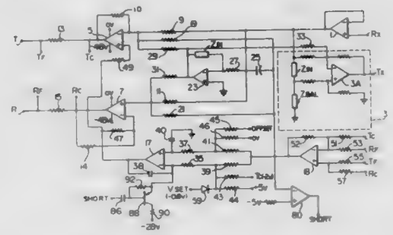
Rolf Meier, Nepean, Canada, assignor to Mitel Corporation, Canada

Filed Feb. 19, 1988, Ser. No. 157,862

Claims priority, application Canada, Mar. 10, 1987, 531660

Int. Cl.[4] H04M *1/74*

U.S. Cl. 379—399 **5 Claims**



1. In a constant current line circuit including tip and ring lead differential driver circuits for generating nominal tip and ring lead battery voltages, and a DC control circuit comprised of amplifier means and integrating capacitor means connected thereacross for monitoring DC voltages carried by said tip and ring leads and in response maintaining DC current flowing in said tip and ring leads at a constant level; the improvement comprising compensation means for detecting a sudden increase in impedance connected to said tip and ring leads and in response momentarily discharging said integrating capacitor mean, thereby increasing responsiveness of said DC control circuit in the event of said sudden increase in impedance connected to said tip and ring leads.

4,800,587

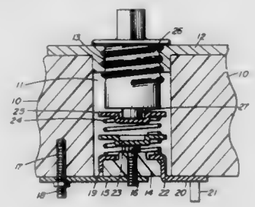
TELEPHONE LINE PROTECTOR WITH LINE DISCONNECT AND AN ENTRANCE TERMINAL ASSEMBLY INCORPORATING A PLURALITY OF PROTECTORS

Albert Kupferschmidt, Highland Park, Ill., assignor to Northern Telecom Limited, Montreal, Canada

Filed May 11, 1987, Ser. No. 47,464

Int. Cl.[4] H02H *3/22*

U.S. Cl. 379—437 **6 Claims**



1. A telephone line protector housing comprising:

a housing defining a well having front and back ends;

a ground connection at said front end, said ground connection at said front end including a threaded bore for reception of a threaded protector module into said well;

a cable conductor attachment and a line conductor attachment each connected to the housing;

a first member in said well, said first member being adjacent to and spring biased away from said back end;

a second member in said well, said second member being adjacent to and spring biased away from said first member, the spring bias on the second member being stronger than the spring bias on the first member;

means for connecting a line conductor to said first and second members via said line conductor attachment; and

means for connecting a cable conductor to said first member via said cable conductor attachment,

whereby, upon initial insertion of said protector module, said module contacts and moves said second member which sequentially moves said first member into contact with said means for connecting said cable conductor, and further insertion further moves said second member only.

4,800,588

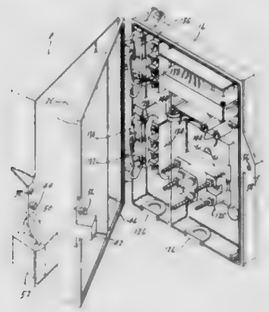
TELEPHONE NETWORK INTERFACE SYSTEM

Thomas J. Poster, Jr., Clemens, Mich., assignor to GTE Products Corporation, Danvers, Mass.

Filed Aug. 7, 1985, Ser. No. 763,200

Int. Cl.[4] H04M *9/00*

U.S. Cl. 379—412 **57 Claims**



28. A network interface device for housing at least one telephone network interface unit and at least one telephone utility circuit component, the network interface device comprising:

a rear housing member having an interior partitioning wall defining first and second compartments;

a means for securing at least one telephone network interface unit within said first compartment;

a means for securing at least one telephone utility circuit component within said second compartment;

an inner cover member movable between an open position and a closed position, in said closed position said inner cover member preventing access to said second compartment;

an outer cover member of a size to substantially cover said inner cover member and movable between an open position and a closed position, in said closed position said outer cover member preventing access to said first compartment and to said inner cover member;

hinge means disposed on said rear housing for rotatably carrying both of said inner and outer cover members for movement about a common axis;

first and second securing means for securing said outer cover member to said inner cover member; and

threaded locking means for locking said inner cover member in said closed position, said locking means having a head portion accessible from the exterior of said device.

38. The device of claim 28 further comprising at least one bridging connector securable in said first compartment for manually disconnecting telephone service at said network interface.

4,800,589

VOLTAGE REGULATOR CONTROL CIRCUIT FOR A SUBSCRIBER LINE INTERFACE CIRCUIT

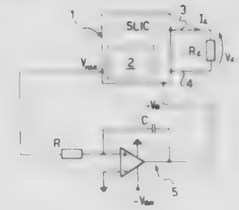
Marco Siligoni, Milan, and Vanni Poletto, Alessandria, both of Italy, assignors to SGS-Thomson Microelettronica S.p.A., Italy

Filed Oct. 16, 1987, Ser. No. 109,435

Claims priority, application Italy, Oct. 24, 1986, 22140-A/86

Int. Cl.[4] H04M *19/00*

U.S. Cl. 379—413 **9 Claims**



1. A control circuit for a voltage regulator in a subscriber line interface circuit which has output terminals connected to the subscriber line and having, in their steady-state condition, a so-called line current/line voltage characteristic described by a continuous straight segment function wherein a first segment at a steady current equal to the line peak or upper limit current (I_{LIM}) merges with a second sloping segment merging, in turn, with a third sloping segment, the gradients of said segments being dependent on the value of a bridge resistance (R_{DC}) in the interface circuit, and said characteristic depending on a supply voltage value (V_B) from said voltage regulator, characterized in that it comprises a first circuit portion connected to said interface circuit and having first (A) and second (B) inputs respectively connected to the bases of a transistor pair (T11, T12) in a differential cell effective to provide a voltage value proportional to the difference between said limit current (I_{LIM}) and said line current (I_L), to said second input (B) there being applied a voltage value proportional to said limit current (I_{LIM}) multiplied by the difference of a value of an apparent resistance (R'_{DC}) minus said bridge resistance (R_{DC}), and an output terminal (U) effectively providing a voltage value proportional to the difference between an optimum voltage (V_{BF}) to be applied to said interface circuit and said supply voltage (V_B) and being dependent on the voltage values appearing at said inputs.

4,800,590

COMPUTER KEY AND COMPUTER LOCK SYSTEM

James C. Vaughan, Palo Alto, Calif., assignor to Willis E. Higgins, Palo Alto, Calif., a part interest

Filed Jan. 14, 1985, Ser. No. 691,225

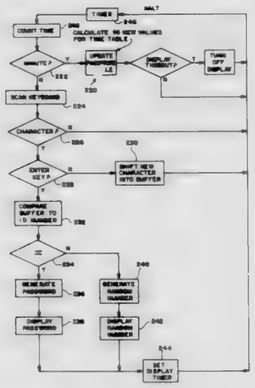
Int. Cl.[4] H04K *1/00*; **G07P** *7/00*

U.S. Cl. 380—25 **10 Claims**

1. A system for remote access by a user to a computer, which comprises a plurality of password generators, each user having one of the password generators, an interface remotely accessible by the user and connected to said computer, means for loading equivalent information into one of the password generators and the interface for generation of the passwords, said interface and said password generators each including a clock, said interface and said password generators each including means for generating the same passwords from the equivalent information at corresponding clock time periods in said one password generator and said interface using the equivalent information and an input from said clock as data to generate the same passwords in said one password generator and said interface, with the passwords changing for each successive time period, said interface including means for comparing a transmitted password generated by said one password genera-

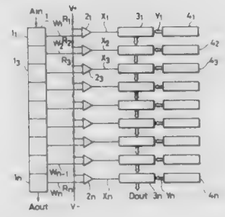
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tor during the clock time period with a password generated by said interface during the clock time period, so that identity of the transmitted password generated by said one password generator during the clock time period with the password generated by said interface allows access to said computer through said interface, and for comparing the transmitted



password generated by said password generator with the changed passwords generated by said interface for a plurality of adjacent time periods in the absence of identity between the compared passwords generated by said one password generator and said interface, to compensate for non-coincidence of the clock time periods of generation of the compared passwords.

4,800,591
SIGNAL PROCESSING APPARATUS
Yuichi Sato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 416,364, Sep. 9, 1982, abandoned. This application Jan. 6, 1987, Ser. No. 4,270
Claims priority, application Japan, Sep. 17, 1981, 56-146583; Sep. 21, 1981, 56-149278; Sep. 21, 1981, 56-149279
Int. Cl.[4] **G06K** *9/00;* **H03M** *1/42*
U.S. Cl. 382—50 9 Claims

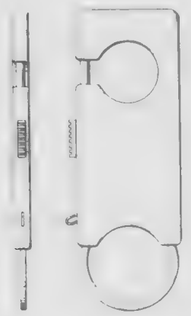


1. A signal processing apparatus comprising:
(a) an analog shift register having plural addresses, for shifting input analog data without changing the input analog data to be shifted;
(b) plural discriminating means for comparing the levels of analog information in different addresses of said register respectively with predetermined reference levels; and
(c) a plurality of digital registers each arranged to correspond to a respective one of said plural discriminating means and each having first and second input terminals which respectively receive digital data associated with said reference levels and data contained in an adjacent one of said digital registers, and each of said digital registers, in response to an output from the corresponding one of said discriminating means, storing the data at either one of said first or second input terminals.

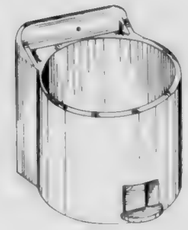
DESIGNS

JANUARY 24, 1989

299,480
KEY-HOLDER
Rolando S. Harari, Av. Sernambetiba 3600 Bl. 3, Apt. 803, Rio de Janeiro, Brazil
Filed Jun. 19, 1984, Ser. No. 622,344
Claims priority, application Brazil, Dec. 19, 1983, MI 4301185
Term of patent 14 years
U.S. Cl. D3—61



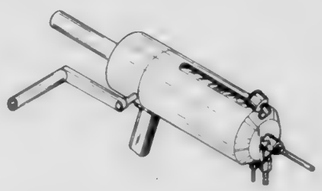
299,482
COMBINATION CUP, CAN 'N COIN HOLDER
Stanley W. Pearson, 1601 Cambridge Dr., Kinston, N.C. 28501
Continuation-in-part of Ser. No. 499,287, May 31, 1983, abandoned. This application Jan. 15, 1986, Ser. No. 818,958
Term of patent 14 years
U.S. Cl. D7—70



299,481
TOOL HOLDER
Milton E. Handler, Northbrook; Richard Sylvan, Glenview, and Herbert Baisch, Palatine, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Jun. 26, 1986, Ser. No. 879,165
Term of patent 14 years
U.S. Cl. D6—569

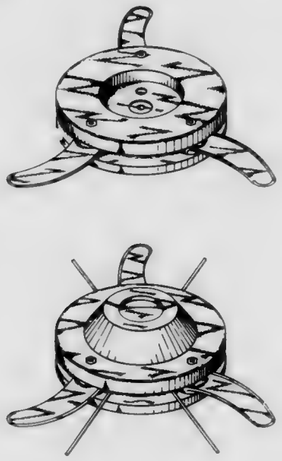


299,483
TREE INJECTOR
Jeremiah N. Hansen, Paso Robles, Calif., assignor to The Weed Works, Paso Robles, Calif.
Filed Apr. 16, 1986, Ser. No. 852,925
Term of patent 14 years
U.S. Cl. D8—1

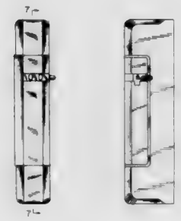


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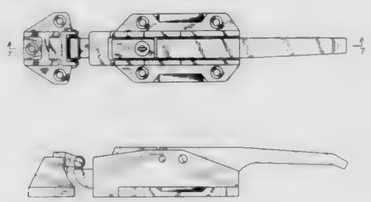
299,484
CUTTING ATTACHMENT FOR A LAWN AND WEED TRIMMER
Anthony L. Lee, P.O. Box 617, Walnut Grove, Calif. 95690
Filed Oct. 8, 1986, Ser. No. 916,671
Term of patent 14 years
U.S. Cl. D8—8



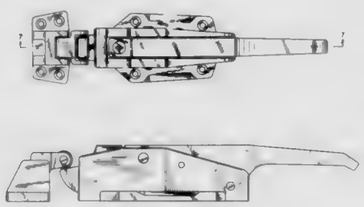
299,485
HINGE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,712
Term of patent 14 years
U.S. Cl. D8—323



299,486
LATCH FOR REFRIGERATOR DOOR
Yoshiaki Takimoto, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,602
Term of patent 14 years
U.S. Cl. D8—341



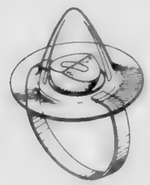
299,487
LATCH FOR REFRIGERATOR DOOR
Yoshiaki Takimoto, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,617
Term of patent 14 years
U.S. Cl. D8—341



299,488
CONTAINER FOR KNITTING NEEDLES
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Oct. 17, 1985, Ser. No. 788,737
Term of patent 14 years
U.S. Cl. D9—307



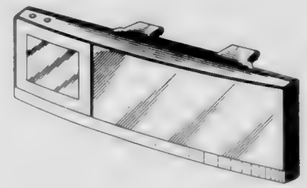
299,489
SOMBRERO RING
Nelson Wood, 20 Dean Rd., Brookline, Mass. 02146
Filed Nov. 26, 1986, Ser. No. 935,560
Term of patent 14 years
U.S. Cl. D11—30



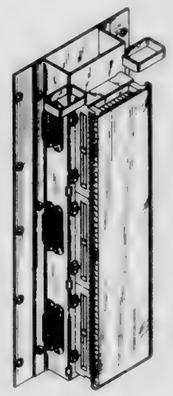
299,490
TRAILER HITCH ALIGNMENT DEVICE
Mike Berg, P.O. Box 547, Bolen, N. Mex.; John Balko, 3621 Cardinal Dr., Sharpsville, Pa. 16150, and Alex Mervis , 206 Oakville Rd., Beaver Falls, Pa. 15010
Filed May 14, 1986, Ser. No. 863,398
Term of patent 14 years
U.S. Cl. D12—162

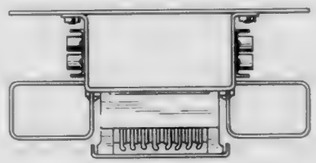


299,491
COMBINED VEHICLE REAR VIEW MIRROR AND TELEVISION
Masaru Masuda, Tokyo, Japan, assignor to Road Runner Co., Ltd., Tokyo, Japan
Filed Oct. 30, 1986, Ser. No. 925,114
Claims priority, application Japan, Apr. 30, 1986, 61-16305
Term of patent 14 years
U.S. Cl. D12—188



299,492
TELEPHONE VOICE TERMINATION BLOCK
Donald L. Gregson, Oxnard, Calif., assignor to Harris Corporation, Melbourne, Fla.
Filed Mar. 14, 1986, Ser. No. 844,994
Term of patent 14 years
U.S. Cl. D14—240





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299,493
PORTABLE RADIO TELEPHONE
Katsuhito Watanabe, Tokyo, Japan, assignor to Oki Electric Industry Company, Ltd., Tokyo, Japan
Filed Jul. 14, 1986, Ser. No. 884,927
The portion of the term of this patent subsequent to Mar. 31, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—138

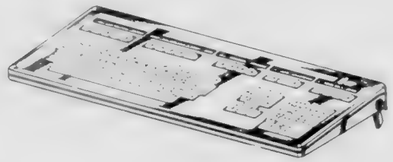




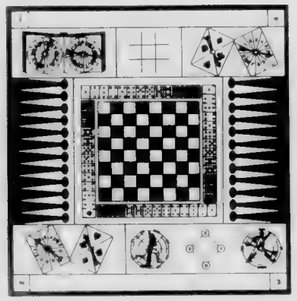
299,494
TELEPHONE EQUIPPED FACSIMILE
Hideo Tsuruoka, Chiba, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Oct. 31, 1986, Ser. No. 925,878
Claims priority, application Japan, May 6, 1986, 61-16503
Term of patent 14 years
U.S. Cl. D14—118



299,495
KEYBOARD
Robert G. Dickie, New Market, Canada, assignor to Northern Technologies, Ltd., Markham, Canada
Continuation-in-part of Ser. No. 711,933, Mar. 15, 1985. This application Feb. 18, 1986, Ser. No. 833,771
Term of patent 14 years
U.S. Cl. D14—100



299,496
GAMEBOARD
Ben Reynolds, P.O. Box 152, Stoughton, Mass. 02072
Filed Aug. 22, 1985, Ser. No. 768,210
Term of patent 14 years
U.S. Cl. D21—24



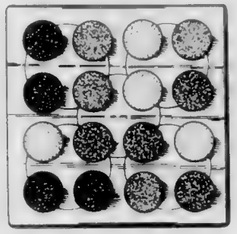
299,497
GAME DIE
Jean Reidenbach, 134, chemin Valmont, 1260 Nyon, and Hans Breitschmid, Avenue Blanc 48, 1202 Geneva, both of Switzerland
Filed Nov. 25, 1985, Ser. No. 806,359
Claims priority, application Hague, Jul. 23, 1985, DMA/000403
Term of patent 14 years
U.S. Cl. D21—41



299,498
TOY TELEPHONE
Tomoko Taninaka, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Feb. 6, 1987, Ser. No. 11,713
Claims priority, application Japan, Aug. 8, 1986, 61-31079
Term of patent 14 years
U.S. Cl. D21—111



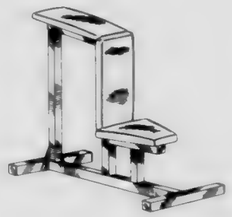
299,499
MANIPULABLE PUZZLE
Murray J. Gould, 11712 Silent Valley La., Gaithersburg, Md. 20878
Filed Sep. 14, 1987, Ser. No. 95,898
Term of patent 14 years
U.S. Cl. D21—104



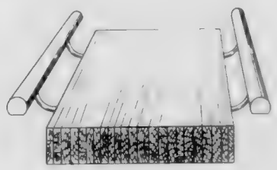
299,500
INFLATABLE WATER TOY
Daniel C. Geraci, P.O. Box 563, Pescadero, Calif. 94060
Filed Jun. 13, 1986, Ser. No. 874,364
Term of patent 14 years
U.S. Cl. D21—157

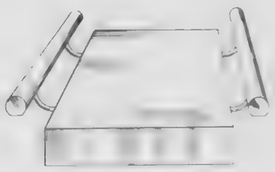


299,501
EXERCISE BENCH
Joseph K. Howze, P.O. Box 1574, Chula Vista, Calif. 92012
Filed Jul. 24, 1986, Ser. No. 889,009
Term of patent 14 years
U.S. Cl. D21—191



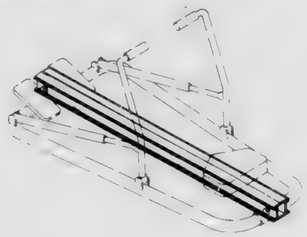
299,502
EXERCISE STAND
Donn S. Streiler, 1564 Arbuckle Dr., Chesterfield, Mo. 63017
Filed Nov. 12, 1985, Ser. No. 805,034
Term of patent 14 years
U.S. Cl. D21—191





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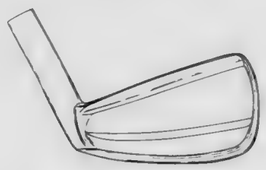
299,503
MAIN BEAM FOR A ROWING MACHINE
Ronald A. McNeil, P.O. Box 1127, Havana, Fla. 32333
Filed Mar. 22, 1985, Ser. No. 714,723
Term of patent 14 years
U.S. Cl. D21—191



299,504
EXERCISE BICYCLE
Chue S. Hong, No. 4-2, Lane 63, Chia Hsa N. Road, Pei Twen District, Taichung City, and Chin S. Chen, No. 30, Lane 229, Pao Tzu Keng Rd., Tai Ping Hsiang, Taichung Hsien, both of Taiwan
Filed Aug. 28, 1986, Ser. No. 901,467
Term of patent 14 years
U.S. Cl. D21—194



299,505
CLUB-HEAD FOR GOLF
Yukihiro Honma, Kawasaki, Japan, assignor to Kabushiki Kaisha Honma Gorufu Kurabu Seisakusho (Honma Golf Club Mfg., Co., Ltd.), Yokohama, Japan
Filed Jun. 3, 1985, Ser. No. 740,359
Claims priority, application Japan, Feb. 14, 1985, 60-5015
Term of patent 14 years
U.S. Cl. D21—220



299,506
DEFENSE FLASHER HOUSING
Robert J. Jensen, 16734 Nordhoff, Sepulveda, Calif. 91343
Filed Mar. 31, 1986, Ser. No. 847,557
Term of patent 14 years
U.S. Cl. D22—117



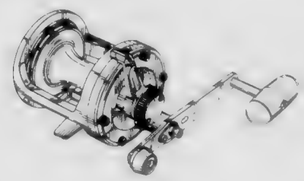
299,507
DEFENSIVE ELECTRIC SHOCK WEAPON
Mou Y. Hwa, No. 25, Lane 152, Kun Yang St., Nan Kang District, Taipei, Taiwan
Filed Aug. 7, 1985, Ser. No. 763,250
Term of patent 14 years
U.S. Cl. D22—117



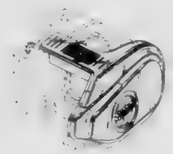
299,508
FISHING LURE BODY
Edward M. Ashworth, 2332 Gearhart Rd., Troy, Ohio 45373
Filed Mar. 27, 1987, Ser. No. 32,194
Term of patent 14 years
U.S. Cl. D22—133



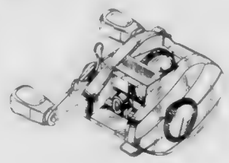
299,509
REEL FOR FISHING
Kanji Iinuma, and Yasuhisa Kameda, both of Musashino, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Oct. 22, 1986, Ser. No. 922,138
Claims priority, application Japan, Apr. 24, 1986, 61-15451
Term of patent 14 years
U.S. Cl. D22—140



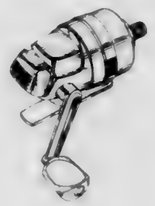
299,510
END CASING FOR A FISHING REEL
Kanji Iinuma, and Yasuhisa Kameda, both of Musashino, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Oct. 22, 1986, Ser. No. 922,136
Claims priority, application Japan, Apr. 24, 1986, 61-15452
Term of patent 14 years
U.S. Cl. D22—140



299,511
REEL FOR FISHING
Yasuhisa Kameda, and Toshiaki Yoshikawa, both of Musashino, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jun. 22, 1987, Ser. No. 64,455
Claims priority, application Japan, Dec. 26, 1986, 61-52046
Term of patent 14 years
U.S. Cl. D22—140



299,512
REEL FOR FISHING
Yasuhisa Kameda, Musashino, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 1, 1986, Ser. No. 881,178
Claims priority, application Japan, Jan. 7, 1986, 61-105
Term of patent 14 years
U.S. Cl. D22—141



299,513
HANDLE FOR A FISHING ROD
James E. Andreasen, Magnolia Springs; Casey J. Childre, and David B. Peed, both of Foley, all of Ala., assignors to Lew Childre & Sons, Inc., Foley, Ala.
Filed Feb. 20, 1986, Ser. No. 834,473
Term of patent 14 years
U.S. Cl. D22—142

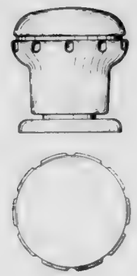


299,514
HANDLE FOR A FISHING ROD
James Andreasen, Eastgate Ave., Magnolia Springs, Ala. 36754, and Casey J. Childre, Rte. 3, Foley, Ala. 36535
Filed Mar. 17, 1986, Ser. No. 845,037
Term of patent 14 years
U.S. Cl. D22—142

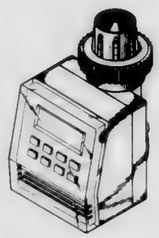


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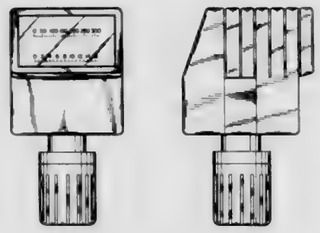
299,515
FAUCET HANDLE
Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Filed Aug. 25, 1986, Ser. No. 902,327
Term of patent 14 years
U.S. Cl. D23—250



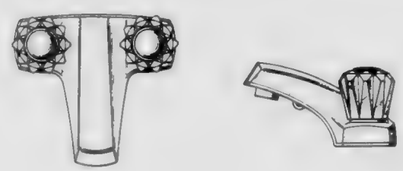
299,516
WATER FLOW CONTROL UNIT
Po-Hsiung Wang, No. 91, Kuo Tai Road, Chu Nan Chen, Miao Li Hsien, Taiwan, R.O.C., Taiwan
Filed Jan. 15, 1986, Ser. No. 818,976
Term of patent 14 years
U.S. Cl. D23—200



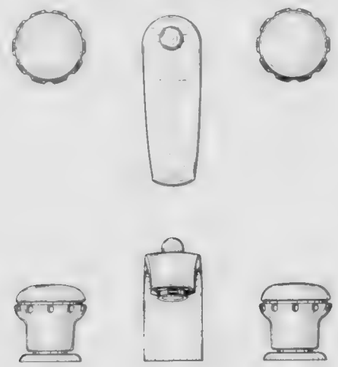
299,517
PRESSURE REDUCER
Jean-Louis Vigneau, Varilhes, France, assignor to Etablissements Duffour et Igoa (D.I.), Toulouse, France
Filed May 24, 1985, Ser. No. 737,448
Claims priority, application France, Nov. 26, 1984, 84 5255
Term of patent 14 years
U.S. Cl. D23—235



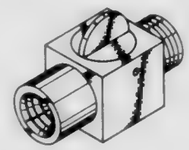
299,518
FAUCET
Holly K. Yost, Van Nuys, Calif., assignor to Price Pfister, Inc., Pacoima, Calif.
Division of Ser. No. 692,109, Jan. 17, 1985. This application May 21, 1987, Ser. No. 52,361
Term of patent 14 years
U.S. Cl. D23—241



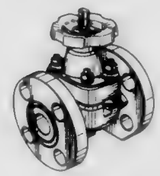
299,519
FAUCET SET
Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.
Filed Aug. 25, 1986, Ser. No. 902,328
Term of patent 14 years
U.S. Cl. D23—242



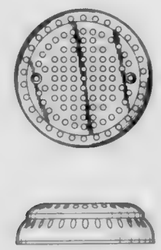
299,520
GARDEN HOSE PROTECTION VALVE
Robert J. Pechler, 1166 NE. Ocean View Cir., Jensen Beach, Fla. 33457
Filed Jul. 25, 1985, Ser. No. 758,876
Term of patent 14 years
U.S. Cl. D23—245



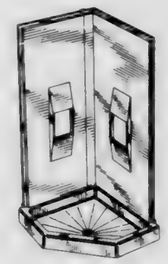
299,521
DIAPHRAGM VALVE
Yoshihiro Kiyota, and Toyoji Muratani, both of Saitama, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 738,208, May 28, 1985. This application May 20, 1988, Ser. No. 196,631
Claims priority, application Japan, Nov. 26, 1984, 59-48534; Nov. 26, 1984, 59-48536
Term of patent 14 years
U.S. Cl. D23—245



299,522
SUCTION ASSEMBLY FOR A WHIRLPOOL BATH
Philip E. Chalberg, 3441 Santa Clara Cir., Costa Mesa, Calif. 92626
Filed Mar. 6, 1985, Ser. No. 708,876
Term of patent 14 years
U.S. Cl. D23—261



299,523
SHOWER STALL
Placide Poulin, 251 Notre Dame, Tring Jonction, Beauce County, Quebec, Canada G0N 1X0
Filed Jun. 9, 1986, Ser. No. 872,442
Term of patent 14 years
U.S. Cl. D23—283

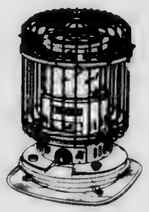


299,524
COMBINED AIR COOLER AND HEATER
Chen Din-Her, No. 386, 8th Floor, Jen Ai Rd., Sec. 4, Taipei City, Taiwan
Filed Sep. 12, 1986, Ser. No. 907,753
Term of patent 14 years
U.S. Cl. D23—314

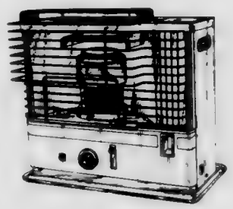


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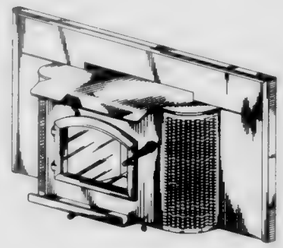
299,525
KEROSENE HEATER
Saiao Nasui, Machida, and Kazuyoshi Iriesawa, Shibukawa, both of Japan, assignors to Toshiba Electric Appliances Co., Ltd., Maebashi, Japan
Filed Jan. 2, 1986, Ser. No. 815,466
Claims priority, application Japan, Jul. 11, 1985, 60-29683; Aug. 15, 1985, 60-34731
Term of patent 14 years
U.S. Cl. D23—336



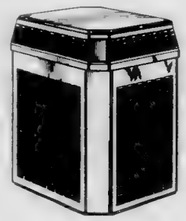
299,526
KEROSENE HEATER
Saiao Nasui, Machida, and Takeo Yajima, Tomioka, both of Japan, assignors to Toshiba Electric Appliances Co., Ltd., Maebashi, Japan
Filed Jan. 2, 1986, Ser. No. 815,465
Claims priority, application Japan, Jul. 11, 1985, 60-29681
Term of patent 14 years
U.S. Cl. D23—338



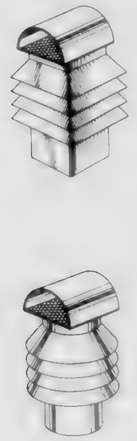
299,527
FRONT FOR A FIREPLACE INSERT OR SIMILAR ARTICLE
Daniel S. Henry, Colville, Wash., assignor to Aladdin Steel Products, Inc., Colville, Wash.
Filed Jul. 24, 1987, Ser. No. 77,316
Term of patent 14 years
U.S. Cl. D23—344



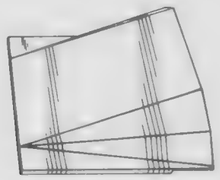
299,528
OUTDOOR HEAT EXCHANGER CABINET FOR AN AIR CONDITIONING UNIT
Alan F. Kessler; David E. Bronaugh; James J. Watson, all of Tyler, Tex., and Stephen P. Bartlett, London, England, assignors to American Standard Inc., New York, N.Y.
Filed Jul. 21, 1986, Ser. No. 887,319
Term of patent 14 years
U.S. Cl. D23—351



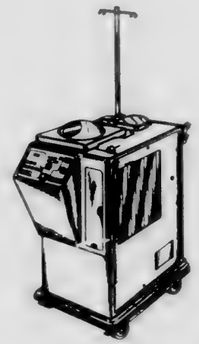
299,529
DRAFT INTENSIFIER FOR A FIREPLACE CHIMNEY
James J. Best, P.O. Box 83, Henderson, Ark. 72544
Filed Oct. 16, 1986, Ser. No. 919,826
Term of patent 14 years
U.S. Cl. D23—373



299,530
CHIMNEY CAP
Tore Hansen, Gml. Flaenebrekka, and Henrik Hansen, Slettebakkvn. 74B, both of N-5200 Os, Norway
Filed Aug. 18, 1986, Ser. No. 897,605
Claims priority, application Norway, Feb. 18, 1986, 67,025
Term of patent 14 years
U.S. Cl. D23—374



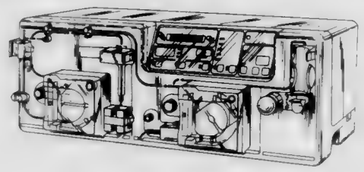
299,531
PATIENT PHOTOPHERESIS TREATMENT UNIT
Vernon H. Troutner, St. Petersburg, and Martin J. King, Seminole, both of Fla., assignors to McNeilab, Inc., Spring House, Pa.
Filed Feb. 27, 1986, Ser. No. 838,044
Term of patent 14 years
U.S. Cl. D24—1.1



299,532
DISPOSABLE VAGINAL SPECULUM
John Cecil, Jr., Skaneateles, and Robert R. Black, Syracuse, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Jun. 19, 1986, Ser. No. 876,252
Term of patent 14 years
U.S. Cl. D24—18



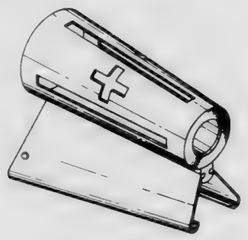
299,533
BLOOD CIRCUIT FOR MONITORING AND CONTROLLING THE BLOOD FLOW DURING EXTRACORPOREAL BLOOD TREATMENT
Francesco Bianco, Modena, Italy, assignor to Hospal Ltd., Basel, Switzerland
Filed Apr. 25, 1985, Ser. No. 727,238
Claims priority, application Italy, Oct. 31, 1984, 53985/84[U]
Term of patent 14 years
U.S. Cl. D24—21



299,534
COMBINED PACIFIER COVER AND RETAINER
Daniel Mastropierro, 73 Clifton Ter., Weehawken, N.J. 07087
Filed Jun. 5, 1986, Ser. No. 873,211
Term of patent 14 years
U.S. Cl. D24—45



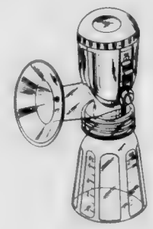
299,535
BABY BOTTLE SUPPORT
Carol James, 404 NW. Pleasant View Dr., Grants Pass, Oreg. 97526
Filed Apr. 28, 1986, Ser. No. 857,814
Term of patent 14 years
U.S. Cl. D24—48



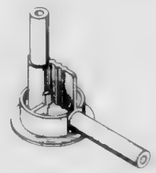
299,536
SURGICAL SUCTION WAND FOR TISSUE FAT
Noel Robbins, Chatham, N.J., assignor to Robbins Instruments Inc., Chatham, N.J.
Filed Jan. 29, 1986, Ser. No. 823,580
Term of patent 14 years
U.S. Cl. D24—51



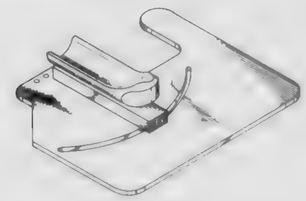
299,537
BREAST PUMP
Yasuo Morifuji, Osaka, Japan, assignor to Jex Co., Ltd., Osaka, Japan
Filed Apr. 21, 1986, Ser. No. 856,145
Term of patent 14 years
U.S. Cl. D24—51



299,538
PRESSURE RESPONSIVE CHAMBER FOR MONITORING PRESSURE IN AN INFUSION SET
Alan S. Balding, Abington; Nigel F. Carter, Grove, Wantage; Paul F. Frampton, Virginia Water, and Vincent A. Rosso, Didcot, all of Great Britain, assignors to Vi-Tal Hospital Products, Ltd., Reading, England
Filed Oct. 29, 1985, Ser. No. 792,366
Claims priority, application United Kingdom, May 1, 1985, 1016354
Term of patent 14 years
U.S. Cl. D24—53



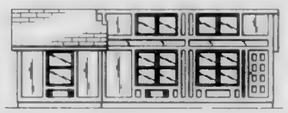
299,539
ARM EXTENSION BOARD FOR EXERCISING A DISABLED LIMB
Viva L. Kennedy, Rte. 5, Box 40, Jasper, Ala. 35501
Filed Apr. 28, 1986, Ser. No. 857,810
Term of patent 14 years
U.S. Cl. D24—64



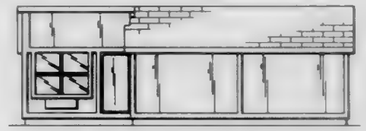
299,540
BUILDING
Sacha Sosno, 3, rue Bariellerie, 06300 Nice; Henri Vidal, 8 bis, Boulevard Maillot, 92200 Neuilly, and Yves Bayard, 44, rue Foch, 06480 La Colle sur Loup, all of France
Filed Nov. 22, 1985, Ser. No. 806,196
Term of patent 14 years
U.S. Cl. D25—5



299,541
HOUSE
Lucien R. Downing, Columbus, Ohio, assignor to Cardinal Industries, Inc., Columbus, Ohio
Filed Sep. 23, 1985, Ser. No. 778,927
Term of patent 14 years
U.S. Cl. D25—17



299,542
APARTMENT BUILDING OR SIMILAR ARTICLE
Monica P. Subtirelu, Columbus, Ohio, assignor to Cardinal Industries, Inc., Columbus, Ohio
Filed Jul. 29, 1985, Ser. No. 760,140
Term of patent 14 years
U.S. Cl. D25—17



299,543
MODULAR DRAINAGE CHANNEL
Trevor Phillips, Westlake Village, Calif., assignor to National Diversified Sales, Inc., Newbury Park, Calif.
Filed Apr. 8, 1986, Ser. No. 849,423
Term of patent 14 years
U.S. Cl. D25—35



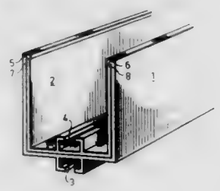
299,544
DOUBLE HUNG WINDOW
William A. Nolan, Louisville, Ky., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed May 7, 1986, Ser. No. 860,771
Term of patent 14 years
U.S. Cl. D25—52



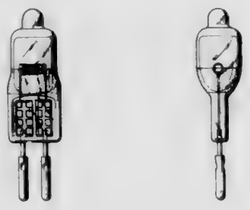
299,545
AWNING FRAME MEMBER
James Gandy, Brampton, Canada, assignor to Signtech Inc., Mississauga, Canada
Filed Jan. 28, 1986, Ser. No. 823,436
Claims priority, application Canada, Aug. 8, 1985, 08-08-8510
Term of patent 14 years
U.S. Cl. D25—57



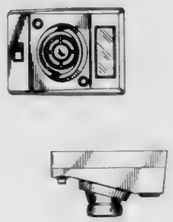
299,546
CHANNELS FOR A FILTER BANK SUPPORTING LATTICEWORK
Bertil Larsson, Tyresö, Sweden, assignor to Flakt AB, Stockholm, Sweden
Filed Jul. 23, 1985, Ser. No. 757,934
Claims priority, application Sweden, Jan. 29, 1985, 85-0205
Term of patent 14 years
U.S. Cl. D25—119



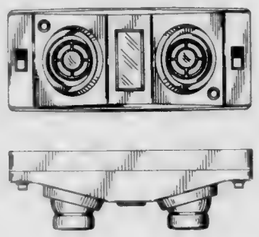
299,547
PARTIALLY FROSTED LAMP
Wayne R. Hellman, Oakwood Village, and Emmett H. Wiley, Chesterland, both of Ohio, assignors to Advanced Lighting International, Inc., Oakwood Village, Ohio
Filed Dec. 10, 1985, Ser. No. 807,182
Term of patent 14 years
U.S. Cl. D26—2



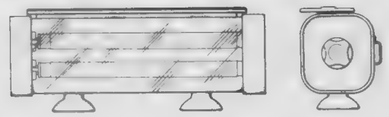
299,548
ADJUSTABLE LIGHT FOR THE INTERIOR OF AIRCRAFT, AUTOMOTIVE AND RECREATIONAL VEHICLES
Anthony Macaluso, 6833 Rosecrans Ave., Unit D, Paramount, Calif. 90723
Filed Oct. 24, 1986, Ser. No. 923,658
Term of patent 14 years
U.S. Cl. D26—29



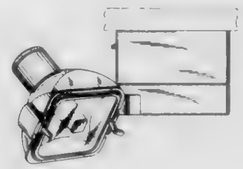
299,549
COMBINED COURTESY AND ADJUSTABLE LIGHT FOR THE INTERIOR OF AUTOMOTIVE VEHICLES
Anthony F. Macaluso, 6833 Rosecrans Ave., Unit D, Paramount, Calif. 90723
Filed Oct. 24, 1986, Ser. No. 923,659
Term of patent 14 years
U.S. Cl. D26—29



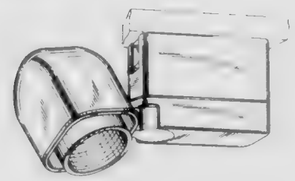
299,550
PORTABLE FLUORESCENT LIGHT
Duncan M. Payne, Fort Gibson, Okla., assignor to Optronics, Inc., Ft. Gibson, Okla.
Filed Dec. 6, 1985, Ser. No. 805,629
Term of patent 14 years
U.S. Cl. D26—42



299,551
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed Oct. 30, 1986, Ser. No. 925,129
Term of patent 14 years
U.S. Cl. D26—63



299,552
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed Oct. 30, 1986, Ser. No. 925,130
Term of patent 14 years
U.S. Cl. D26—63



299,553
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed Oct. 30, 1986, Ser. No. 925,131
Term of patent 14 years
U.S. Cl. D26—63



299,554
EXTERIOR POST LAMP
Henry Muller, Forest Hills, N.Y., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed May 1, 1986, Ser. No. 858,305
Term of patent 14 years
U.S. Cl. D26—69



299,555
EXTERIOR POST LAMP
Henry Muller, Forest Hills, N.Y., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed May 1, 1986, Ser. No. 858,306
Term of patent 14 years
U.S. Cl. D26—69

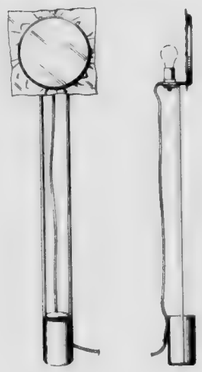


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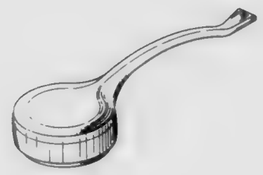
299,556
ELECTRIC CANDLE
Cheryl Marshbanks, Wilson, N.C., assignor to Marshbanks, Inc., Wilson, N.C.
Filed Sep. 16, 1986, Ser. No. 907,891
Term of patent 14 years
U.S. Cl. D26—96



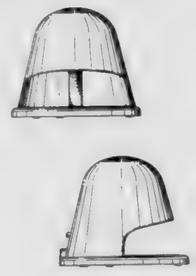
299,557
FLOOR LAMP
V. Lorenzo Porcelli, 225 Lafayette St., New York, N.Y. 10012
Filed Jan. 13, 1986, Ser. No. 818,339
Term of patent 14 years
U.S. Cl. D26—106



299,558
COMBINED BODY LOTION APPLICATOR AND COVER THEREFOR
Beverly M. Robison, P.O. Box 207, Carlew, Wash. 99118
Filed Jan. 20, 1987, Ser. No. 5,401
Term of patent 14 years
U.S. Cl. D28—7



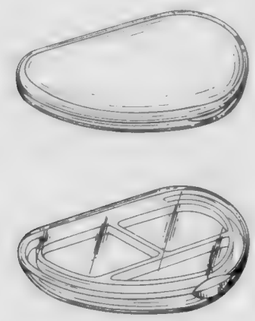
299,559
NAIL DRYER
Fu K. Wong, Kowloon, Hong Kong, assignor to Motor Electric Manufacturing Co., Ltd., Kowloon, Hong Kong
Filed Apr. 28, 1986, Ser. No. 858,227
Claims priority, application United Kingdom, Oct. 29, 1985, 1030113
Term of patent 14 years
U.S. Cl. D28—58



299,560
DENTAL FLOSSER
Paul V. Dalton, 7008 7th Avenue Blvd., NW., Bradenton, Fla. 33529
Filed Apr. 30, 1986, Ser. No. 858,291
Term of patent 14 years
U.S. Cl. D28—64



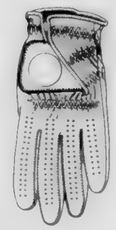
299,561
COSMETIC CASE
Karena Bakic, Munich, Fed. Rep. of Germany, assignor to Comede Anstalt, Vaduz, Liechtenstein
Filed Mar. 7, 1986, Ser. No. 880,286
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, URA 1128/85
Term of patent 14 years
U.S. Cl. D28—78



299,562
ARM PROTECTOR
Evelyn Lee, 1339 E. Sixth St., Bethlehem, Pa. 18015
Filed Oct. 21, 1985, Ser. No. 789,458
Term of patent 14 years
U.S. Cl. D29—20

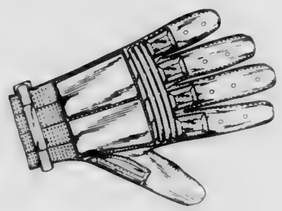


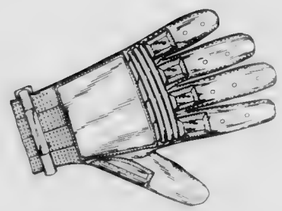
299,563
GOLF GLOVE
David D. Boone, Oceanside, Calif., assignor to Lynx Golf, Inc., City of Industry, Calif.
Filed Jan. 13, 1986, Ser. No. 818,048
Term of patent 14 years
U.S. Cl. D29—22

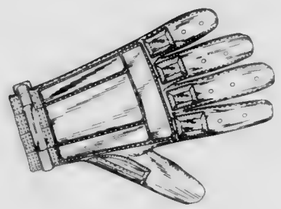


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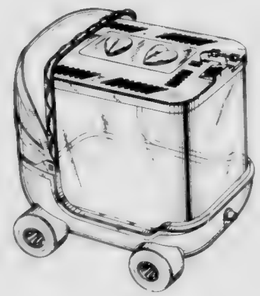
299,564
ATHLETIC GLOVE
Alfred R. Pierce, Jr., 25 Argyle Ave., Blackwood, N.J. 08012
Continuation-in-part of Ser. No. 687,745, Dec. 31, 1984, Pat. No. Des. 287,904. This application Apr. 25, 1986, Ser. No. 857,782
The portion of the term of this patent subsequent to Jan. 27, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D29—22



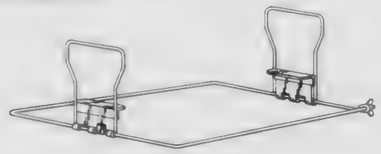




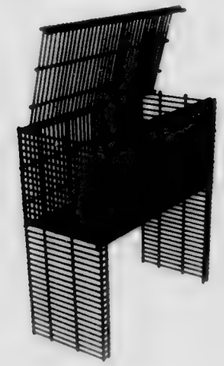
299,565
AQUARIUM
Mei-Kwei Lee Hsu, No. 239, Sec. 4, Chung-Chin North Road, Taipei, Taiwan
Filed Jul. 17, 1987, Ser. No. 74,915
Term of patent 14 years
U.S. Cl. D30—102



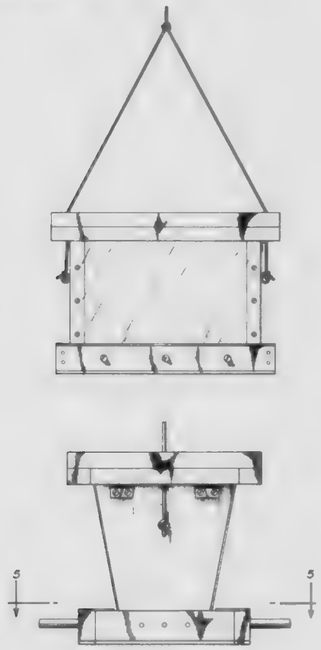
299,566
BEE HIVE CARRIER
Kelemen C. Kelemen, 12937 Ida West Rd., P.O. Box 8, Ida, Mich. 48140
Filed Jan. 13, 1986, Ser. No. 818,542
Term of patent 14 years
U.S. Cl. D30—109



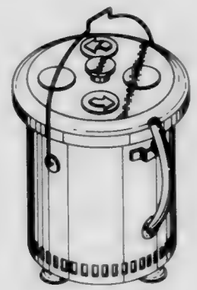
299,567
CAGE
Sybil E. Willingham, Rte. 1, Box 241, Butler, Ga. 31006
Filed Jan. 16, 1986, Ser. No. 875,352
Term of patent 14 years
U.S. Cl. D30—116



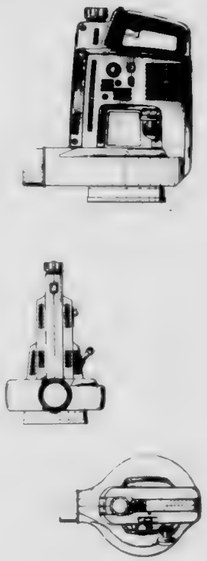
299,568
BIRD FEEDER
H. James Waltemeyer, 4 Hillside Dr., Jacobus, Pa. 17407
Filed Jul. 30, 1987, Ser. No. 80,553
Term of patent 14 years
U.S. Cl. D30—124



299,569
PORTABLE SPIN DRYER
Robert D. Davis, and Lois S. Davis, both of 321 East St. South, Box 141, Kewanee, Ill. 61443
Filed Jul. 12, 1985, Ser. No. 754,080
Term of patent 14 years
U.S. Cl. D32—8

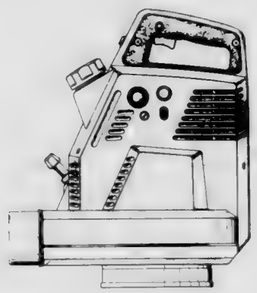


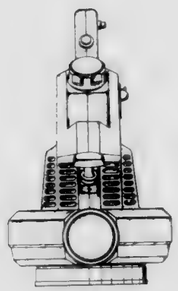
299,570
PORTABLE BLOWER
Katsumi Kiyooka, Saitama; Akira Gamoh, and Keiko Iramina, both of Tokyo, all of Japan, assignors to Komatsu Zenoah Co., Tokyo, Japan
Filed Jun. 9, 1986, Ser. No. 872,444
Claims priority, application Japan, Dec. 16, 1985, 60-051974
Term of patent 14 years
U.S. Cl. D32—15



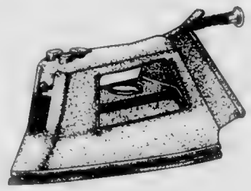
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299,571
PORTABLE BLOWER
Katsumi Kiyooka, Warabi; Akira Gamoh, Kodaira; Hideko Inomata, Higashiyamato, and Keiko Iramina, Tachikawa, all of Japan, assignors to Komatsu Zenoah Co., Tokyo, Japan
Filed Jan. 16, 1986, Ser. No. 819,356
Claims priority, application Japan, Jul. 16, 1985, 60-030057; Aug. 12, 1985, 60-034114; Aug. 12, 1985, 60-034115
Term of patent 14 years
U.S. Cl. D32—15





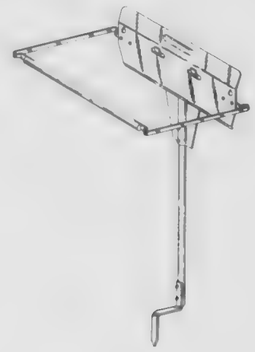
299,572
STEAM IRON OR THE LIKE
Eduard Rohner, Karlstein, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed May 8, 1987, Ser. No. 47,926
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1986, 5 MR 10728
Term of patent 14 years
U.S. Cl. D32—70



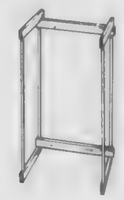
299,573
COMBINED CORDLESS LAUNDRY IRON AND RE-CHARGING BASE
Jacques Gudefin, St Priest, France, assignor to Calor S.A., Lyons, France
Filed Jul. 30, 1986, Ser. No. 890,728
Claims priority, application France, Jan. 31, 1986, 860.490
Term of patent 14 years
U.S. Cl. D32—70



299,574
COMBINED BAG HOLDER AND STAND
Alan F. Savicki, South Windsor, Conn., assignor to First Brands Corporation, Danbury, Conn.
Filed May 30, 1986, Ser. No. 869,030
Term of patent 14 years
U.S. Cl. D34—6



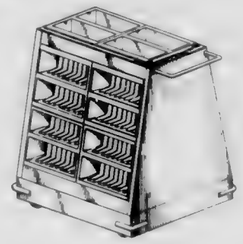
299,575
BAG SUPPORT
Frank J. DiFrank, 3442 Woodley Rd., Toledo, Ohio 43606
Filed Sep. 18, 1986, Ser. No. 909,457
Term of patent 14 years
U.S. Cl. D34—6



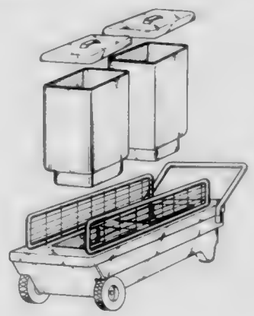
299,576
REFUSE AND STORAGE CONTAINER
Don Kracke, 39 Crespa Verde, Rolling Hills Estates, Calif. 90274
Filed Dec. 11, 1986, Ser. No. 940,638
Term of patent 14 years
U.S. Cl. D34—7



299,577
TAPE CARTRIDGE CART
Macy J. Price, Golden; Norman J. Acker, Wheatridge, both of Colo., and Mario B. Accumanno, Cedar Grove, N.J., assignors to Engineered Data Products, Inc., Broomfield, Colo.
Filed Oct. 31, 1985, Ser. No. 793,568
Term of patent 14 years
U.S. Cl. D34—21



299,578
COMBINED TRASH CONTAINERS AND CART THEREFOR
Jordan E. Wilson, 967 Continental, Detroit, Mich. 48215
Filed Oct. 24, 1986, Ser. No. 923,734
Term of patent 14 years
U.S. Cl. D34—25



299,579
JEWELRY PENDANT
Matthew G. Jones, 203 W. 5th St., Huntingburg, Ind. 47542
Filed Aug. 4, 1986, Ser. No. 892,406
Term of patent 14 years
U.S. Cl. D99—27



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JANUARY, 1989

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corp.: *See*—
Nieminen, Jorma J., 4,799,937, Cl. 48-62.00R.

A. Menarini s.a.s.: *See*—
Pestellini, Vittorio; Ghelardoni, Mario; Giannotti, Danilo; Giolitti, Alessandro; Barzanti, Adriano; Ciappi, Rossella; and Ortolani, Carlo, 4,800,208, Cl. 514-397.000.

A/S Apotekernes Faellesindkjop: *See*—
Dommerud, Svein A., 4,799,274, Cl. 5-82.00R.

Aardee Spring & Lock Co., Ltd.: *See*—
Duncan, Robert, 4,799,371, Cl. 70-214.000.

AB Volvo: *See*—
Janiszewski, Grzegorz K., 4,799,395, Cl. 74-331.000.

Abbott Laboratories: *See*—
Bailey, Mark W.; and Ulanday, Myrna G., 4,800,167, Cl. 436-66.000.

Abbott, Neil M. Ratchet tap wrench. 4,799,832, Cl. 408-123.000.

Abbott, Woodrow A.; and Durossette, Leo J. Fluid filter with improved electrode and spacer configuration. 4,800,011, Cl. 204-302.000.

Ablestien Industries, Inc.: *See*—
Beierle, Frederick P.; Boyer, Birdell T.; and Suisse, Richard A., 4,799,437, Cl. 110-229.000.

Abraham, William W.; and Gentelia, John S., to Conmed. Electrode for electrosurgical apparatus. 4,799,480, Cl. 128-303.130.

Aburaya, Toshio: *See*—
Buma, Shuuichi; Ohwa, Nobutaka; Takeda, Osamu; and Aburaya, Toshio, 4,799,707, Cl. 280-711.000.

Accattino, Andrea; and Jans, Aldo, to Ing. C. Olivetti & C., S.p.A. Method and apparatus for restoring operation of ink jet printing nozzles. 4,800,403, Cl. 346-140.00R.

Acco Babcock Inc.: *See*—
Pickell, John M., 4,799,400, Cl. 74-502.600.

Acheson, Willard P.: *See*—
Silver, Richard S.; Bunting, Pamela M.; Moon, William G.; and Acheson, Willard P., 4,799,545, Cl. 166-246.000.

Ackroff, John M.; Heffler, Michael J.; and Mitchell, John C., to American Telephone and Telegraph Company; and Bell Telephone Laboratories, Incorporated. On-line documentation facility. 4,800,485, Cl. 364-200.000.

Acree, Elick H., to Gulf Nuclear, Inc. Method and apparatus for injecting radioactive tagged sand into oil and gas wells. 4,799,552, Cl. 166-305.100.

Action Pumping Services Ltd.: *See*—
Hockley, Stephen J., 4,799,864, Cl. 417-7.000.

Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Anti-skid apparatus for automotive vehicle. 4,800,289, Cl. 303-119.000.

Adams, Julian; and Guindon, Yvan, to Merck Frosst Canada, Inc. 4,7-diacetoxy-2-(4-methoxybenzyl)-3,5,6-trimethylbenzofuran. 4,800,228, Cl. 549-470.000.

Adamson, Fletcher D., to Russell Corporation. Method and apparatus for sensing the preferred side of garment portions. 4,799,613, Cl. 223-39.000.

Aderans Co., Ltd.: *See*—
Kobayashi, Hisao; and Mochizuki, Kousuke, 4,799,502, Cl. 132-53.000.

Advanced Design & Manufacture Limited: *See*—
Atkin, Howard S.; and Palmer, Christopher J., 4,799,539, Cl. 165-54.000.

Advanced Dimensional Displays, Inc.: *See*—
Newswanger, Craig, 4,799,739, Cl. 350-3.700.

Advanced Glass Systems Corp.: *See*—
Bolton, Nelson P.; and Smith, W. Novis, Jr., 4,799,346, Cl. 52-509.000.

Advanced Interventional Systems, Inc.: *See*—
Goldenberg, Tsvi, 4,799,754, Cl. 350-96.180.

Advanced Micro Devices, Inc.: *See*—
Asghar, Safdar M.; Pyi, Hwa-Sheng; and Dunnion, Dermot, 4,800,517, Cl. 364-757.000.
Iranmanesh, Ali; and Thomas, Mammen, 4,800,171, Cl. 437-31.000.
Walters, Donald M., Jr., 4,800,300, Cl. 307-279.000.

Advanced Techniques Co., Inc.: *See*—
Friedman, Gennady, 4,799,617, Cl. 228-180.200.

Aerospace Corporation, The: *See*—
Bernard, Jay M.; Chodzko, Richard A.; and Bixler, Timothy J., 4,799,780, Cl. 350-600.000.
Zimmerman, Albert H.; and Badcock, Charles C., 4,800,140, Cl. 429-48.000.

Afzali-Ardakani, Ali; Desai, Mukesh; Factor, Bradford J.; Hoekstra, Jan-Pieter; and Pennington, Keith S., to International Business Machines Corporation. Metal transfer to form printing master plate or printed circuit board. 4,800,397, Cl. 346-1.100.

Agnew Machine Company: *See*—
Kutzli, Carl R.; and Rutter, James D., 4,799,586, Cl. 198-803.010.

Agosta, Roy P.: *See*—
Robbins, Mark R.; Robbins, Douglas W.; and Agosta, Roy P., 4,799,727, Cl. 296-107.000.

Agrawal, Rakesh; and Ezzat, Ahmed K., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Method of propagating resource information in a computer network. 4,800,488, Cl. 364-200.000.

Agrogen Stiftung: *See*—
Knopf, Ulrich C.; and Sieber, Joseph, 4,799,358, Cl. 62-3.000.

Ahmed, Syed M., to Aqualon Company. Water-soluble polymer dispersion. 4,799,962, Cl. 106-188.000.

Ahrens, Max; and Haissig, Manfred, to Steel Casting Engineering, Ltd. Horizontal continuous casting mold. 4,799,533, Cl. 164-137.000.

Aihara, Masayo: *See*—
Iguchi, Seiya; Noguchi, Takeshi; Kimura, Hiroshi; and Aihara, Masayo, 4,800,160, Cl. 435-177.000.

Ainslie, Benjamin J.; and Craig, Susan P., to British Telecommunications plc. Preparation of glass fibre. 4,799,946, Cl. 65-3.120.

Air Products and Chemicals, Inc.: *See*—
Bauman, Bernard D.; Ruprecht, David R.; Marsh, Paul D.; and Williams, Mark A., 4,800,053, Cl. 264-83.000.
Carlin, Richard T.; and Dunbobbin, Brian R., 4,800,070, Cl. 423-210.500.

Airhart, Tom P., to Atlantic Richfield Company. Amphibious seismic source. 4,799,572, Cl. 181-114.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Adachi, Yoshiharu; Nishimura, Takumi; Takeuchi, Hiroaki; Noguchi, Noboru; Nakanishi, Nobuyasu; and Kuromitsu, Hiromu, 4,800,289, Cl. 303-119.000.
Koori, Yasuo; and Mitsui, Tsutomu, 4,800,497, Cl. 364-424.100.
Shimei, Masato; Goto, Shigeki; and Takahashi, Shigeo, 4,799,404, Cl. 74-869.000.

Akao, Masaru; Okamoto, Yoshio; Manba, Akio; and Ichimoto, Takehiko, to Kao Corporation. Cold rolling oil composition for aluminum and aluminum-containing alloys. 4,800,034, Cl. 252-56.00S.

Akasaka, Nobuhiro: *See*—
Kakuta, Tatsuya; and Akasaka, Nobuhiro, 4,799,762, Cl. 350-96.340.

Akashi, Akira, to Canon Kabushiki Kaisha. Apparatus for detecting focusing state of objective lens. 4,800,261, Cl. 250-204.000.

Akashi, Akira; Ishizaki, Akira; Suda, Yasuo; Ohnuki, Ichiro; Ohtaka, Keiji; and Koyama, Takeshi, to Canon Kabushiki Kaisha. Focus detecting apparatus for selecting the operating process in conformity with the contrast of an object. 4,800,410, Cl. 354-408.000.

Akers, Cliff; and James, Richard N. Vehicle cover. 4,799,728, Cl. 296-136.000.

Akiba, Kouji; Kitajima, Akira; and Arai, Yoshio, to Hochiki Kabushiki Kaisha. Flame detecting arrangement for detecting a flame through horizontal and vertical scanning of a supervisory region by using a photodetector. 4,800,285, Cl. 250-554.000.

Akiyama, Susumu: *See*—
Ina, Katsuhiro; Akiyama, Susumu; and Hirabayashi, Yuzi, 4,800,499, Cl. 364-431.030.

Aktiebolaget Electrolux: *See*—
Farquhar, George N., 4,799,468, Cl. 123-400.000.

Albany International Corp.: *See*—
Dutt, William H., 4,799,998, Cl. 162-348.000.

Albrecht, Thomas; and Lee, Chan H., to Board of Regents, The University of Texas System. Methods and compositions for treating viral infections. 4,800,081, Cl. 424-129.000.

Alcan Aluminio Do Brasil, S.A.: *See*—
Cuminale, Francesco, 4,799,508, Cl. 137-534.000.

Alcantara, Miguel A.: *See*—
Lazcano-Navarro, Arturo; Alcantara, Miguel A.; and Hernandez-Ruiz, Jose E., 4,799,651, Cl. 166-268.000.

Alcatel Thomson Faisceaux: *See*—
Gurcan, Mustafa; and Cruchon, Jean-Claude, 4,800,349, Cl. 333-208.000.

Alcor, Inc.: *See*—
Portman, Joseph L., Jr.; and Margraf, David J., 4,799,378, Cl. 73-54.000.

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Baggio, Giorgio; and De Bortoli, Giuseppe, to Nordica S.P.A. Closure and securing device, particularly for ski boots. 4,799,297, Cl. 24-68.05K.
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Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, to Magyar Szenhidrogenipari Kutato-Fejleszto Intezet. Enhanced oil recovery. 4,799,551, Cl. 166-303.000.
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Haury, Andre ; Bebel, Elie; Lauraire, Michel; and Vergez, Andre , 4,800,352, Cl. 335-132.000.

Bechet, Louis, to Battelle Memorial Institute. Device for detecting the displacement of a writing implement. 4,800,240, Cl. 178-18.000.

Beck, James L.; Doyle, Marguerite H.; Early, Roger W.; Ringle, Terrance W.; and Smith, David R., to International Buisness Machines Corporation. Automatic relocate on continuation of document playout. 4,799,811, Cl. 400-279.000.

Beecham Group p.l.c.: *See—*
Evans, John M.; and Stemp, Geoffrey, 4,800,212, Cl. 514-424.000.
Smith, Paul, 4,800,225, Cl. 546-112.000.

Beeh, Hans A. Machine and a method for dyeing fabrics with already known dyestuffs. 4,799,278, Cl. 8-151.000.

Beer, Christian; Riedweg, Robert; and Schlensog, Klaus, to Ameda AG. Breast pump insert. 4,799,922, Cl. 604-74.000.

Beezer, Earl F.: *See—*
Beezer, William E.; and Beezer, Earl F., 4,799,405, Cl. 29-822.000.

Beezer, William E.; and Beezer, Earl F. Assembly machine chassis. 4,799,405, Cl. 29-822.000.

Beffa, Fabio; and Koller, Josef, to Ciba-Geigy Corporation. Process for the trichromatic dyeing of leather. 4,799,933, Cl. 8-404.000.

Behrendt, Ulrich: *See—*
Ebeling, Wolfgang; Metz, Harald; Brummer, Wolfgang; Schmid, Gunter; and Behrendt, Ulrich, 4,800,161, Cl. 435-233.000.

Beierle, Frederick P.; Boyer, Birdell T.; and Suisse, Richard A., to Ablestien Industries, Inc. Heating stove which includes a pyrolysis gasifier. 4,799,437, Cl. 110-229.000.

Beirne, John M.: *See—*
Horst, Robert W.; Lynch, Shannon J.; Costantino, Cirillo L.; and Beirne, John M., 4,800,486, Cl. 364-200.000.

Belanger, Inc.: *See—*
Belanger, James A.; Wentworth, Robert J.; Turner, Barry S.; and Astley, Graham J., 4,799,287, Cl. 15-405.000.

Belanger, James A.; Wentworth, Robert J.; Turner, Barry S.; and Astley, Graham J., to Belanger, Inc. Blower housing construction. 4,799,287, Cl. 15-405.000.

Beley, Serce; and Fourrey, Francois, to Cycles Peugeot. Seat structure having a pivotable backrest and in particular a front seat structure of a motor vehicle. 4,799,733, Cl. 297-379.000.

Bell Telephone Laboratories, Incorporated: *See—*
Ackroff, John M.; Heffler, Michael J.; and Mitchell, John C., 4,800,485, Cl. 364-200.000.

Bellmer, Klaus; and Capelle, Gerd, to Hermann Berstorff Maschinenbau GmbH. Extrusion head. 4,799,874, Cl. 425-131.100.

Benfield, Dan W., to Platt Saco Lowell Corporation. Drawbox air shut-off and method for doffing a textile comber. 4,799,295, Cl. 19-159.00R.

Bengtsson, Erik; and Andersson, Ulf, to EKA Nobel AB. Process for the production of hydrogen peroxide. 4,800,073, Cl. 423-588.000.

Bengtsson, Erik; and Andersson, Ulf, to EKA Nobel AB. Process for the production of hydrogen peroxide. 4,800,074, Cl. 423-588.000.

Benitez, Richard. Closure device. 4,799,528, Cl. 160-199.000.

Bennett, Allan: *See—*
Simpson-Davis, Raymon W.; and Bennett, Allan, 4,800,260, Cl. 235-487.000.

Benton, Robert H.: *See—*
Podell, Allen F.; and Benton, Robert H., 4,800,345, Cl. 333-111.000.

Benton, Ronald E. Bending machine. 4,799,373, Cl. 72-307.000.

Berfield, Robert C., to Shop-Vac Corporation. Outlet port baffle for exhaust air. 4,799,285, Cl. 15-327.00R.

Berfield, Robert C.; and Seasholtz, Craig A., to Shop-Vac Corporation. Dolly frame. 4,799,699, Cl. 280-79.500.

Berg, Dieter: *See—*
Weissmuller, Joachim; Berg, Dieter; Dutzmann, Stefan; and Reinecke, Paul, 4,800,202, Cl. 514-227.000.

Bergersen, Earl O. Expansion/buccal shield appliance. 4,799,884, Cl. 433-6.000.

Bernard, Alain; and Touboul, Pierre, to Office National d'Etudes et de Recherches Aerospatiales. Electrostatic accelerometer with dual electrical connection to its test mass. 4,799,386, Cl. 73-517.00B.

Bernard, Jay M.; Chodzko, Richard A.; and Bixler, Timothy J., to Aerospace Corporation, The. Aberrated suppressor mirror. 4,799,780, Cl. 350-600.000.

Berney, Jean-Claude, to U.S. Philips Corp. Method of analyzing the voltage induced in an exciter coil of a stepping motor. 4,800,334, Cl. 324-158.0MG.

Berns, Everhardus G.: *See—*
Van Kemenade, Johannes T. C.; De Hair, Johannes T. W.; and Berns, Everhardus G., 4,800,319, Cl. 313-487.000.

Berrod, Gerard: *See—*
Vinot, Bernard; Berrod, Gerard; and Brun, Jean-Louis, 4,799,549, Cl. 166-293.000.

Berstein, Garri; Obrig, Hans W.; Wittkopp, Helmut; and Wolters, Hermann, to Wilhelm Hegenscheidt GmbH. Method and apparatus for performing a rotary broaching operation particularly on work pieces of rotational symmetry. 4,799,839, Cl. 409-244.000.

Bertagnoli, Leopoldo, to Orizio Paolo S.p.A. Knitting or hosiery machine with electronic-controlled, electromechanically actuated selection of the needles. 4,799,366, Cl. 66-219.000.

Berthagen, Leif: *See—*
Karlsson, Bertil; and Berthagen, Leif, 4,800,007, Cl. 204-196.000.

Berthet, Olivier; Greffet, Jean-Jacques; and Denayrolles, Yves, to Electricite de France Service National; and Ecole Centrale des Arts et Manufactures de Paris. Process for measuring the temperature of a body by optical detection and modulated heating. 4,799,788, Cl. 356-45.000.

Bertram, James L.; Myles, Willie L.; and Kubisiak, Michael P., to Dow Chemical Company, The. Compositions prepared from dialkanolamines and triglycidyl ethers of trisphenols. 4,800,215, Cl. 523-414.000.

Beth Israel Hospital Association, The: *See—*
Spears, J. Richard, 4,799,479, Cl. 128-303.100.

BeVier, William E.; Fails, Charles F., deceased; and by Fails, Virginia N., executor, to UOP. Process for continuous application of solid lubricant to moving bed particles. 4,800,027, Cl. 252-18.000.

Bhat, Gulgunji R.; Lukenbach, Elvin R.; and Stutzman, Ralph C., to Johnson & Johnson Consumer Products, Inc. Skin care compositions. 4,800,076, Cl. 424-69.000.

Biava, Richard D.; and Whelan, Andrew J., to Physicians' Pharmaceutical Services, Inc. Prescription sheet and medication distribution system. 4,799,712, Cl. 282-1.00A.

Bibaeff, John A., to Pony Industries, Inc. Apparatus and process for the gas flotation purification of oil-contaminated water. 4,800,025, Cl. 210-703.000.

Biek, Paul A.: *See—*
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Bigler, John M.: *See—*
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Bikson, Benjamin; and Giglia, Salvatore, to Union Carbide Corporation. Tubesheet for semipermeable membrane devices. 4,800,019, Cl. 210-321.800.

Binder, Ulrich, to O&K Orenstein & Koppel Aktiengesellschaft. Apparatus for the classifying of powdered bulk materials. 4,799,595, Cl. 209-135.000.

Binks Bullows Limited: *See—*
Dixon, George; and Eaves, Henry W., 4,799,944, Cl. 55-446.000.

Biro , Zoltan: *See—*
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Birt, Robert M. Motor vehicle window ventilator. 4,799,422, Cl. 98-2.130.

Bisaga, Gary J.: *See—*
Florea, Michael; Foster, Stephen C.; and Bisaga, Gary J., 4,800,559, Cl. 370-94.000.

Bisbee, Jerry L. Child-proof adaptor for disposable butane cigarette lighter. 4,799,877, Cl. 431-153.000.

Bisconte, Jean-Claude, to Institut National de la Sante et de la Recherche Medicale-INSERM. Automatic device for the analysis and cloning of cellular cultures as well as for bacteriological analysis. 4,800,164, Cl. 435-300.000.

Bish, James R.; McCartney, Charles P., Jr.; and Meadows, Clarence A., to General Motors Corporation. Electric storage battery. 4,800,142, Cl. 429-130.000.

Bisping, Hans-Jurgen. Implantable electrode with active fixation means. 4,799,499, Cl. 128-785.000.

Bixler, Timothy J.: *See—*
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Black & Decker, Inc.: *See—*
Nickels, Richard C., Jr.; and Podhorniak, Gary S., 4,800,357, Cl. 336-198.000.

Black, Donald L.: *See—*
Lyndon-James, Ross; Gnadinger, Alfred P.; Black, Donald L.; and de Araujo, Carlos P., 4,800,543, Cl. 368-10.000.

Blackburn, James H.; and Blackburn, Maureen T. Cover for christmas trees. 4,799,520, Cl. 150-52.00R.

Blackburn, Maureen T.: *See—*
Blackburn, James H.; and Blackburn, Maureen T., 4,799,520, Cl. 150-52.00R.

Blackman, Stephen M., to Federal Paper Board Co., Inc. Vending and reclosure device for powder and granular products. 4,799,594, Cl. 206-626.000.

Blais, Francois, to Canadian Patents & Development Ltd. Galvanometric optical scanning system having a pair of closely located synchronization. 4,800,270, Cl. 250-235.000.

Blais, Francois, to Canadian Patents & Development Ltd. Galvanometric optical scanning system having synchronization photodetectors. 4,800,271, Cl. 250-235.000.

Blanco, Louis A.: *See—*
Schneider, Marvin; Blanco, Louis A.; and Milo, Salvatore A., 4,800,247, Cl. 219-10.55E.

Blanda, Guy, to Sanofi. Process and apparatus for turning head to foot and packing dissymmetrical oblong bodies. 4,799,351, Cl. 53-446.000.

Blauvelt, Kenneth: *See—*
Ginsburg, Arthur P.; Evans, David W.; and Blauvelt, Kenneth, 4,800,404, Cl. 351-243.000.

Bleicher, Joel N. Reanimation device and method for treating the paralyzed face. 4,799,487, Cl. 128-419.00R.

Bleicher, Maximilian: *See—*
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Bloecher, Ulrich; and Duwell, Ernest J., to Minnesota Mining and Manufacturing Company. Erodable agglomerates and abrasive products containing the same. 4,799,939, Cl. 51-293.000.

Bloomfield, Philip E.; Ferren, Richard A.; and Wickwire, Dean H., to Pennwalt Corporation. Die drawing process and apparatus for piezoelectric polymer films and tubes. 4,800,048, Cl. 264-22.000.

Board of Regents: *See—*
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Board of Regents, The University of Texas System: *See—*
Albrecht, Thomas; and Lee, Chan H., 4,800,081, Cl. 424-129.000.
Linner, John G., 4,799,361, Cl. 62-64.000.

Bodewein, Jakob, to Jagenberg Aktiengesellschaft. Sheet stacker. 4,799,847, Cl. 414-790.800.

Boeckeler, Rudolph H., to Freeman Chemical Corporation. In-mold scratch resistant coating for peroxide curable urethane elastomers. 4,800,123, Cl. 428-424.200.

Boeing Company, The: *See—*
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Bogacz, Joseph: *See—*
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Bohman, Carl E.: *See—*
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Boikov, Vladimir P.: *See—*
Kozachevsky, Gennady G.; Guskov, Valery V.; Boikov, Vladimir P.; Molodan, Oleg L.; and Sizova, Svetlana I., 4,799,919, Cl. 474-205.000.

Bolger, John G.; and Ng, Lung S. B., to Inductran Inc. Inductive power coupling with constant voltage output. 4,800,328, Cl. 320-2.000.

Bolton, Nelson P.; and Smith, W. Novis, Jr., to Advanced Glass Systems Corp. Laminated glazing unit. 4,799,346, Cl. 52-509.000.

Bomer, Bruno; and Piejko, Karl-Erwin, to Miles Inc. Test aids and method for the preparation thereof. 4,800,169, Cl. 436-166.000.

Bone, Matthew F.: *See—*
Crossland, William A.; Davey, Anthony B.; and Bone, Matthew F., 4,799,775, Cl. 350-350.00S.

Bonneau, Alian; and Paseri, Jacques, to Societe d'Etudes Techniques et d'Entreprises Generales - Sodeteg. Method to test the polishing of a mirror and system to use this method. 4,799,792, Cl. 356-124.000.

Booze, Raymond F. Auxiliary rifle sight. 4,799,325, Cl. 42-100.000.

Bopp, Stefan, to Daimler-Benz Aktiengesellschaft. Motor vehicle transmission mounting system. 4,799,571, Cl. 180-294.000.

Borchardt, John K., to Shell Oil Company. A CO_2 drive process for oil recovery employing an alcohol ethoxycarboxylate surfactant. 4,799,547, Cl. 166-275.000.

Borgstrom, Alan D., to Amerace Corporation. 660-amp hot stick operable screw-assembled connector system. 4,799,895, Cl. 439-183.000.

Bormann, Alan R.: *See—*
Yu, Ruey J.; and Bormann, Alan R., 4,800,298, Cl. 307-443.000.

Borner, Manfred; Muller, Reinhard; and Trommer, Gert, to Siemens Aktiengesellschaft. Integrated resonator matrix for wavelength-selective separation or joining of channels in the frequency domain of optical communications technology. 4,799,749, Cl. 350-96.130.

Bornhorst, James M., to Vari-Lite, Inc. Color wheel assembly for lighting equipment. 4,800,474, Cl. 362-293.000.

Boser, Ronald J. Method of sewing elastic about a garment opening. 4,799,441, Cl. 112-262.200.

Boshold, Klaus: *See—*
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Bossart, Clayton J.; Fertig, Glenn H.; and Welker, Albert L., to Mine Safety Appliances Company. Liquid separator. 4,799,374, Cl. 73-1.00G.

Bosse, Reinhard: *See—*
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Baxter, Anthony G. W.; Bostock, Stephen B.; and Greenwood, David, 4,799,960, Cl. 106-22.000.

Boudreau, Ronald R.: *See—*
Savas, Peter G.; Kiger, Virginia S.; and Boudreau, Ronald R., 4,800,020, Cl. 210-359.000.

Boutroy, Marc. Security device for transporting documents of value. 4,799,435, Cl. 109-25.000.

Bowen, Chester O.: *See—*
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Bowers, Jack R., to Basler Electric Company. Electronic circuit for control of a voltage regulator of an electrical generator. 4,800,291, Cl. 307-87.000.

Boyer, Birdell T.: *See—*
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Boyer, Ivon: *See—*
Dixon, Herbert S.; Weller, Jonathan W.; Boyer, Ivon; and McKenney, Darryl J., 4,800,461, Cl. 361-398.000.

Boyer, Jean-Francois. Medicine based on fenofibrate, and a method of preparing it. 4,800,079, Cl. 424-482.000.

Bracy, Julie A. Sandbox and swimming pool playset. 4,799,665, Cl. 272-1.00R.

Bradford, Robert G.: *See—*
Steele, David; and Bradford, Robert G., 4,800,259, Cl. 235-483.000.

Brami, Max; and Mazarguil, Pierre. Method and equipment for making a rigid slab enabling to carry a building. 4,799,348, Cl. 52-742.000.

Bras, Johan C. M., to SKF Industrial Trading & Development Co. B.V. Lubrication device. 4,799,574, Cl. 184-27.100.

Brauers, Bert, to Goetze AG. Piston ring and method of making the same. 4,799,694, Cl. 277-140.000.

Braun Aktiengesellschaft: *See—*
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Braun, Walter; Hagmann, Walter; Hanselmann, Urs; Maibach, Bruno; and Schranz, Peter, to BBC Brown, Boveri & Company, Limited. Method for data transmission via an electric distribution system and transmission system for carrying out the method. 4,800,363, Cl. 340-310.00A.

Brears, John H., to MacMillan Bloedel Limited. Measurement of variation in flute profile height. 4,800,286, Cl. 250-560.000.

Breitbarth, Friedrich-Wilhelm; Tiller, Hans-Jurgen; Groech, Michael; Schmidt, Albert; Janda, Ralf; and Oppawsky, Steffen, to Kulzer & Co. GmbH. Terminal for a radiation conductor. 4,799,753, Cl. 350-96.180.

Breivik, A. Norris: *See—*
Reigstad, Gordon H.; Breivik, A. Norris; and Reigstad, Hanley S., 4,799,307, Cl. 29-452.000.

Bremer, Fridtjof; and Muijderman, Everhardus, to U.S. Philips Corporation. Hydrodynamic spiral-grooved journal bearing for electromagnetically rotated and reciprocated compressor piston. 4,799,421, Cl. 92-162.00R.

Brealow, Jeffrey D.: *See—*
Terzian, Rouben T.; Brealow, Jeffrey D.; Rosenwinkel, Donald A.; and Zarubs, John V., 4,799,678, Cl. 273-1.00E.

Breuer Electric Mfg. Co.: *See—*
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Bridges, William B.; and Bruno, William M., to United States of America, Navy. Dielectric waveguide using powdered material. 4,800,350, Cl. 333-239.000.

Bridgestone Corporation: *See—*
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Bristol-Myers Company: *See—*
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British Gas Corporation: *See—*
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British Petroleum Company p.l.c., The: *See—*
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British Telecommunications plc: *See—*
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Broadbent, Ronald W., to Amchem Products, Inc. Gloss enhancement of autodeposited coatings. 4,800,106, Cl. 427-388.100.

Brockman, John P.: *See—*
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Brodersen, John C. Method and apparatus for containment and/or directing the flow of spilled hazardous liquids. 4,799,821, Cl. 405-115.000.

Brodsky, Stuart: *See—*
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Broockman, Eric C.; and Cato, Robert T., to International Business Machines Corporation. Halographic scanner having adjustable sampling rate. 4,800,256, Cl. 235-467.000.

Brose Fahrzeugteile GmbH & Co. KG: *See—*
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Brown, Christopher R. Proving safe operation. 4,800,507, Cl. 364-484.000.

Brown, David C. Slab-diffuser fiber incident energy concentrator. 4,799,748, Cl. 350-96.100.

Brown, John T., to Stadium Bags, Inc. Stadium seat cover. 4,799,731, Cl. 297-192.000.

Brownell, Keith H.: *See*—
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Broze, Guy; and Lysy, Regis, to Colgate-Palmolive Company. Acetylated sugar ethers as bleach activators detergency boosters and fabric softeners. 4,800,038, Cl. 252-174.170.

Bruce, Robert W., to Ford Motor Company. Manually controlled multiple speed ratio transmission. 4,799,399, Cl. 74-477.000.

Bruchez, Raymond J., Jr.; Eichhorn, Gunther; and Kiblinger, Elliott C., II, to United Technologies Corporation. Variable convergent/divergent nozzle. 4,799,623, Cl. 239-265.410.

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Bruning, Werner, to Alfred Fischbach KG Kunststoff-SpritzguBwerk. Mixing device for pasty multicomponent materials. 4,799,801, Cl. 366-255.000.

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Bucher, Robert, to Sulzer Brothers Limited. Weft yarn store for a loom. 4,799,517, Cl. 139-452.000.

Buckley, Margaret M., to FMC Corporation. Adjustable control station for aircraft loader. 4,799,848, Cl. 414-347.000.

Budzich, Tadeusz, to Caterpillar Inc. Load responsive control system adapted to use of negative load pressure in operation of system controls. 4,799,420, Cl. 91-529.000.

Buehler, Volker; Hofmann, Friedbert; and Heinz, Robert, to BASF Aktiengesellschaft. Preparation of ascorbic acid granules. 4,800,086, Cl. 424-497.000.

Buma, Shuuichi; Ohwa, Nobutaka; Takeda, Osamu; and Aburaya, Toshio, to Toyota Jidosha Kabushiki Kaisha. Gas suspension system for easier start-up of a compressor. 4,799,70*/, Cl. 280-711.000.

Buna, Tibor; and Miller, William H., to Martin Marietta Corporation. Conical contact heat exchanger. 4,799,541, Cl. 165-78.000.

Bunting, Pamela M.: *See*—
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Bupp, James H., to Prime Computer, Inc. High frequency power converter having compact output transformer, rectifier and choke. 4,800,479, Cl. 363-48.000.

Burger, Karl H., to Neue Rotoprint GmbH. Sheet feeder for sheet-processing machines. 4,799,664, Cl. 271-277.000.

Burgess, Michael J.; Sewell, Robert A.; and Clifford, David P., to Dow Chemical Company, The. Substituted azo N-phenyl-N'benzoylureas and their use as insecticides and acaricides. 4,800,195, Cl. 514-150.000.

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Burton, Colin R.; and Davies, Philip, to Ever Ready Limited. Battery-powered lamp. 4,800,472, Cl. 362-158.000.

Busch, Dieter, to Pruftechnik Dieter Busch & Partner GmbH & Co. Method and apparatus for determining and detecting data indicative of the oondition of machines through a unique data probe including a test data probe portion and an identifying data sensing probe portion. 4,800,512, Cl. 364-551.010.

Bushey, Roger A.: *See*—
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Ueno, Kouji, 4,800,529, Cl. 365-189.000.
Fukai, Yoshio; Takagi, Hitoshi; and Osawa, Tatsuo. Vibratory body mounting structure with a vibration-conduction preventing mechanism. 4,799,640, Cl. 248-559.000.
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Furman, Theodore J. Package and method of packaging. 4,799,590, Cl. 206-390.000.
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Fuss, Gunter G., to Free Flow Packaging Corporation. Air conveyor dispensing and recycling system. 4,799,830, Cl. 406-117.000.
Futamura, Shoji; and Kurihara, Masaki, to Institute of Technology Precision Electrical Discharge Works. Electrical discharge machining apparatus with discharge current control. 4,800,248, Cl. 219-69.00S.
G.B.R. Ltd.: *See—*
Golicz, Roman M., 4,799,663, Cl. 271-199.000.
G & H Technology, Inc.: *See—*
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G.T.I. du Gaianigo Umberto & Co. Snc: *See—*
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Gahan, Edward A., to Donnelly Corporation. Automatic rearview mirror with filtered light sensors. 4,799,768, Cl. 350-279.000.
Gaianigo, Umberto, to G.T.I. du Gaianigo Umberto & Co. Snc. Actuator activating on-off valves. 4,799,644, Cl. 251-14.000.
Galland, Sherry A., to J. R. Simplot. Method of preserving potatoes. 4,800,098, Cl. 426-637.000.
Gannon, Raymond, to FGL Projects Limited. Vacuum flow device. 4,799,863, Cl. 417-84.000.
Garay, Oscar M.; Balzano, Quirino; and Manning, Thomas J., to Motorola, Inc. Integral laminar antenna and radio housing. 4,800,392, Cl. 343-700.0MS.
Garay, Oscar M.: *See—*
Balzano, Quirino; and Garay, Oscar M., 4,800,395, Cl. 343-895.000.
Gardner, Steven J., to ASM America, Inc. Electrode boat apparatus for processing semiconductor wafers or the like. 4,799,451, Cl. 118-500.000.
Garnero, Pierino: *See—*
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GARRIG 4 S.s.: *See—*
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Gaynor, Edwin; and Dinsdale, John C., to Edwin Gaynor Co. Socket for compact fluorescent lamps. 4,799,896, Cl. 439-232.000.
Gazelle Microcircuits, Inc.: *See—*
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GEC Avionics Limited: *See—*
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Geddes, Ronald C., to U.S. Philips Corporation. Non-volatile memory having charge correction circuitry. 4,800,528, Cl. 365-185.000.
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General Electric Company: *See*—
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Hardy, Robert M., 4,800,491, Cl. 364-200.000.
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Geremia, Nonini, to Danieli & C. Officine Meccaniche SpA. System and method for moving skips and pressing scrap in a skip. 4,799,426, Cl. 100-218.000.

Gerety, Eugene P.; and Vij, Jitender K., to ITT Corporation. Device interface controller having device specific and device common instructions separately stored. 4,800,523, Cl. 364-900.000.

Gerrard, Donald L., to British Petroleum Company p.l.c., The. Method of diamond identification. 4,799,786, Cl. 356-30.000.

Gertzman, Arthur A.: *See*—
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Giray, Guenes; Huthmacher, Klaus; Kleemann, Axel; and Lied, Thomas, to Degussa AG. Intermediates for the production of 1,2-dithiolan acid (thioctic acid), 4,800,044, Cl. 260-399.000.

Giusti, Giambattista; Reinauer, Thomas V.; and DeHont, Raymond J. Gas stream diffusing and distribution apparatus. 4,799,943, Cl. 55-308.000.

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Glenn, William E., to New York Institute of Technology. Method and system for transmission and reception of high definition. 4,800,426, Cl. 358-141.000.

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Golicz, Roman M., to G.B.R. Ltd. Feeding mechanism. 4,799,663, Cl. 271-199.000.

Goller, Ernest; and Walker, Fritz, to H. Stoll GmbH & Co. Device for flatbed knitting machines for monitoring the knitwear for falling-off. 4,799,365, Cl. 66-166.000.

Golub, Jeff E. Dental process with treated fabric. 4,799,888, Cl. 433-215.000.

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Goodson, Thomas A.; and Truelove, Ronald D. Lock protector. 4,799,369, Cl. 70-54.000.

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Gras, Elie, to Anver. Process and apparatus for obtaining plastic molded objects. 4,800,049, Cl. 264-26.000.

Grass, Alfred, to Alfred Grass Ges.m.b.H. Metallwarenfabrik. Hinge frame with easily-releasable attachment of the furniture-side cover bracket to the furniture piece. 4,799,289, Cl. 16-236.000.

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Greif, Jonathan D. Anti-theft alarm system for motor vehicles. 4,800,361, Cl. 340-63.000.

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Grier, John K.; and McGuire, Dane T., to Grier-McGuire Inc. "Twist-lock" gas nozzle for a heat treating furnace. 4,799,881, Cl. 432-77.000.

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Griffith, John D., to Sulzer Brothers Limited. Weff yarn feed for a weaving loom. 4,799,516, Cl. 139-435.000.

Grinberg, Jan; Owechko, Yuri; Soffer, Bernard H.; and Marom, Emanuel, to Hughes Aircraft Company. Optical data processing systems and methods for matrix inversion, multiplication, and addition. 4,800,519, Cl. 364-822.000.

Grollier, Jean-Francois; and Beauquey, Bernard, to Societe Anonyme dite: L'Oreal. Capillary cosmetic composition for washing disentangling hair containing a plant extract containing saponins. 4,800,080, Cl. 424-74.000.

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Hakkei, Kouichi: *See*—
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Hale, James L.; and Hodges, Harold D., to Amoco Corporation. Means to facilitate handling of core members and rolls of material. 4,799,721, Cl. 294-1.100.

Hall, George R., II: *See*—
Barnett, Daniel C.; and Hall, George R., II, 4,799,394, Cl. 73-864.810.

Hall, Jerry A.: *See*—
Van Gompel, James; and Hall, Jerry A., 4,799,840, Cl. 410-42.000.

Hall, Mitchell A., to Monarch Tool & Manufacturing Company. Coin chute construction. 4,799,580, Cl. 194-235.000.

Hallerback, Stig, to SKF Nova AB. Gear wheel. 4,799,918, Cl. 474-161.000.

Halliburton Company: *See*—
Harris, Phillip C.; and Sandy, Joe M., 4,799,550, Cl. 166-300.000
Hensley, Donald E.; Rankin, E. Edward; Tomek, Martin L.; and Moody, David M., 4,799,546, Cl. 166-250.000.

Hamatani, Toshiji: *See*—
Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, 4,799,776, Cl. 350-350.00S.

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Hamer, R. Russell; Effland, Richard C.; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals, Inc. Pyrrolo(1,2-b)cinnolines. 4,800,203, Cl. 514-248.000.

Hamill, Patrick J.: *See*—
Gunn, Erwin T.; Bigler, John M.; and Hamill, Patrick J., 4,799,600, Cl. 220-1.500.

Handa, Akio; Hosoya, Eiji; Mizumoto, Kousei; Ishiwatari, Makoto; and Okuma, Takanori, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply system for off-road vehicle. 4,799,565, Cl. 180-69.400.

Handa, Akio; Kasa, Keiji; Hosoya, Eiji; and Shibukawa, Takerou, to Honda Giken Kogyo Kabushiki Kaisha. Off-road vehicle. 4,799,708, Cl. 280-796.000.

Haneda, Hisao: *See*—
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.

Hanna, Junichi: *See*—
Kanai, Masahiro; Hanna, Junichi; and Shimizu, Isamu, 4,800,173, Cl. 37-081.000.

Hanrahan, Robert J.; and Gupta, Avinash K., to Solar Reactor Technologies, Inc. Closed loop regeneration system for generating mechanical energy and the method therefor. 4,799,357, Cl. 60-673.000.

Hanselmann, Urs: *See*—
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Hansma, Paul K.; and Sonnenfeld, Richard, to University of California, The Regents of the. High resolution atomic force microscope. 4,800,274, Cl. 250-306.000.

Hanson, Donald W.: *See*—
Hargreaves, Thomas E.; and Hanson, Donald W., 4,799,496, Cl. 128-772.000.

Hanson, Steven D.: *See*—
Lichau, James W.; Lichau, Patricia K.; and Hanson, Steven D., 4,799,340, Cl. 52-170.000.

Hansson, Torbjorn, to Flakt AB. Arrangement in the drying section of a paper machine. 4,799,318, Cl. 34-117.000.

Harada, Koosuke; and Sakamoto, Hiroshi, to Nishimu Electronics Industries Co., Inc. PWM inverter with a saturable core. 4,800,476, Cl 363-16.000.

Harada, Toru; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Light-sensitive material containing silver halide, reducing agent and polymerizable compound. 4,800,148, Cl. 430-138.000.

Harasaki, Hayatsugu, to Mazda Motor Corporation. Arrangements for forming rear partial structures of vehicle body constructions. 4,799,730, Cl. 296-195.000.

Harbach, Friedrich; Knodler, Reinhard; Krapf, Rudolf; Mennicke, Stefan; and Weiler, Ludwig, to BBC Brown, Boveri Aktiengesellschaft. High-temperature storage battery. 4,800,143, Cl. 429-153.000.

Harben, Grover S., III, to Centennial Machine Company, Inc. Gizzard peeling apparatus. 4,799,292, Cl. 17-11.000.

Hardy, Robert M., to General Electric Company. Register-stack apparatus. 4,800,491, Cl. 364-200.000.

Hargreaves, Thomas E.; and Hanson, Donald W., to Lake Region Manufacturing Company, Inc. Guide wire handle. 4,799,496, Cl. 128-772.000.

Hargreaves, William P., to TriQuint Semiconductor, Inc. Method and apparatus for removably attaching semiconductor packages to circuit boards. 4,799,892, Cl. 439-72.000.

Harley, Naomi H.; and Maiello, Mark L., to New York University. Environmental gamma-ray and radon detector. 4,800,272, Cl. 250-253.000.

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Peacey, John G.; and Harris, G. Bryn, 4,800,003, Cl. 204-70.000.

Harris, Phillip C.; and Sandy, Joe M., to Halliburton Company. Subterranean formation treating with delayed crosslinking gel fluids. 4,799,550, Cl. 166-300.000.

Harrison, Anthony W., to Lucas Industries public limited company. Brake actuation systems for vehicles. 4,799,355, Cl. 60-562.000.

Hart, William G.: *See*—
Axelrod, Barry H.; Durst, Robert T., Jr.; Hunter, Kevin D.; Pintsov, Leon A.; Hart, William G.; and Silverberg, Morton, 4,800,505, Cl. 364-478.000.

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Hartsaw, Robert E. Illuminated cargo rack. 4,800,470, Cl. 362-73.000.

Hartsuiker, Hendrik; and Knapp, Dorcel W., to Continental Grain Company. Drive mechanism for bucket elevators. 4,799,584, Cl. 198-709.000.

Harvey, Richard D.; and Klem, Robert E., to Grain Processing Corporation. Preparation of filler compositions for paper. 4,799,964, Cl. 106-436.000.

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Hassick, Denis E.; and Miknevich, Joseph P., to Calgon Corporation. Flocculation of suspended solids from aqueous solutions. 4,800,039, Cl. 252-181.000.

Hathaway, Susan J.; and Pyles, Robert A., to General Electric Company. Functionalized thermoplastic polymers, blends prepared therefrom, and methods for preparing blends. 4,800,218, Cl. 525-433.000.

Hattori, Shigeru; and Asakura, Toshimitsu, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,799,569, Cl. 180-219.000.

Hattori, Yoshiyuki: *See*—
Matsui, Kazuma; Hattori, Yoshiyuki; Imani, Yuuichi; Kuno, Akira; and Nomura, Yoshihisa, 4,800,498, Cl. 364-426.020.

Haug, Joachim, to Patent-Treuhand Gesellschaft fur elektrische Gluhlampen mbH. Machine for sequential manufacture of incandescent lamp filaments. 4,799,518, Cl. 140-71.500.

Haury, Andre ; Bebel, Elie; Lauraire, Michel; and Vergez, Andre , to La Telemecanique Electrique. Electromagnetic switching apparatus with interchangeable switches. 4,800,352, Cl. 335-132.000.

Hausdorf, Jorg; Kandler, Joachim; and Siekermann, Volker, to Carl Freudenberg, Firma. Method for cleaning apparatus for fabricating reactive multiple-component mixtures containing isocyanate. 4,799,967, Cl. 134-38.000.

Havens, Marvin R., to W. R. Grace & Co. Agent for imparting antistatic characteristics to a thermoplastic polymer and a thermoplastic polymer composition containing the agent. 4,800,115, Cl. 428-178.000.

Hawkins, Irwin F.; Rafferty, George A., Jr.; Hawkins, Mark C.; and Hawkins, Jeffrey S., to National Standard Company. Localization needle assembly. 4,799,495, Cl. 128-754.000.

Hawkins, Jeffrey S.: *See*—
Hawkins, Irwin F.; Rafferty, George A., Jr.; Hawkins, Mark C.; and Hawkins, Jeffrey S., 4,799,495, Cl. 128-754.000.

Hawkins, Mark C.: *See*—
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Haydon, Susen J., to Interpat Ltd. Collapsible cleaning implement. 4,799,283, Cl. 15-229.100.

Hays, George E.; Nielsen, Richard H.; Bowen, Chester O.; and Holland, Floyd H., to Phillips Petroleum Company. Catalytic cracking process. 4,800,014, Cl. 208-157.000.

Hayward, William C., to Northrop Corporation. Method and apparatus for MOSFET radiation failure circumvention. 4,800,299, Cl. 307-308.000.

Hebert, Gary; and Leone, Stacey. Portable boarding platform. 4,799,447, Cl. 114-362.000.

Heckmann, Johannes; and May, Wolfgang, to Dragerwerk Aktiengesellschaft. Device for detecting gases which must be treated before testing. 4,800,067, Cl. 422-86.000.

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Foster, Bruce A.; and Hedges, Raymond, 4,799,556, Cl. 173-43.000.

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Helm Products, Inc.: *See*—
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Helmer, George L. Arm locking device for weightlifters. 4,799,675, Cl. 272-123.000.

Helsa-Werke Helmut Sandler GmbH & Co. KG: *See*—
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Hensley, Donald E.; Rankin, E. Edward; Tomek, Martin L.; and Moody, David M., to Halliburton Company. Drill pipe conveyed logging system. 4,799,546, Cl. 166-250.000.

Herbots, Nicole; and Hellman, Olof C., to Massachusetts Institute of Technology. Combined ion and molecular beam apparatus and method for depositing materials. 4,800,100, Cl. 427-38.000.

Herman Miller, Inc.: *See*—
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Hickel, Sigrun; and Franke, Wolfgang, to Braun Aktiengesellschaft. Kitchen apparatus for preparing food. 4,799,626, Cl. 241-37.500.

Hicks, Gregory F., to Northern Telecom Limited. Circuit and method for monitoring the quality of data in a data stream. 4,800,562, Cl. 371-5.000.

Hideshima, Masayuki, to Tokyo Kogaku Kikai Kabushiki Kaisha. Tonometer. 4,799,489, Cl. 128-648.000.

Hieftje, Gary M.; Honigs, David E.; and Hirschfeld, Thomas B., to Indiana University Foundation. Methods and devices for near-infrared evaluation of physical properties of samples. 4,800,279, Cl. 250-339.000.

Higgins, William R.: *See*—
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Hinckle, John E., to Apparel Machinery International, Ltd. Method and apparatus for clamping and manipulating workpieces during a sewing operation. 4,799,438, Cl. 112-121.120.

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Hoggan, Lynn D.; Van Wagoner, Earl, III; and Balogh, Edward N., to Hoggan Health Industries, Inc. Weight lifting exercise apparatus. 4,799,671, Cl. 272-118.000.

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Homann, Helmut F.; and Piper, Robert J. Antenna polar mount assembly. 4,800,394, Cl. 343-882.000.

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Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., to Siemens Aktiengesellschaft. Circuit arrangement with a processor and at least two read-write memories. 4,800,532, Cl. 365-226.000.

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Sakamaki, Hiroshi; Horikoshi, Yukio; and Tanzawa, Kenji, 4,799,867, Cl. 418-1.000.

Horio, Kazuya: *See*—
Sasaki, Noboru; Yamada, Haruki; Orchi, Yoshiaki; and Horio, Kazuya, 4,800,362, Cl. 340-78.000.

Horn, Glenn T.: *See*—
Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., 4,800,159, Cl. 435-172.300.

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Horng, Weiyo. Roll-up flush toilet. 4,799,272, Cl. 4-312.000.

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Siedlecki, Walter F., Jr.; and Horst, Kenneth R., 4,799,376, Cl. 73-29.000.

Horst, Robert W.; Lynch, Shannon J.; Costantino, Cirillo L.; and Beirne, John M., to Tandem Computers Incorporated. Multiple data patch CPU architecture. 4,800,486, Cl. 364-200.000.

Hosaka, Masao; Ogino, Yoshitaka; Shimada, Kazutoshi; and Saito, Takashi, to Canon Kabushiki Kaisha. Sequence controller using pulse counts to activate/deactivate controlled elements. 4,800,482, Cl. 364-140.000.

Hosogai, Daijiro: *See*—
Ishikawa, Kiyoe; Kokubo, Kakuro; Kurokawa, Hitoshi; Hosogai, Daijiro; and Takenaka, Hirokazu, 4,799,622, Cl. 239-102.200.

Hosoya, Eiji: *See*—
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Imai, Shin-ichi; and Hosoya, Naoki, 4,800,579, Cl. 377-60.000.

Hosoya, Takamasa, to Olympus Optical Co., Ltd. Image photography apparatus having switch in remote control cable for preventing erroneous photography. 4,800,437, Cl. 358-244.000.

Hostettler, Fritz. Low temperature, storage stable mixtures of prepolymers and flow modifiers. 4,800,040, Cl. 252-182.200.

Hotma, Johan J. K., to Rauma-Repola Oy. Board press. 4,799,425, Cl. 100-194.000.

Houska, Jeffrey: *See*—
Davis, Donald F.; Brodsky, Stuart; and Houska, Jeffrey, 4,799,927, Cl. 604-192.000.

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Howa Machinery, Ltd.: *See*—
Kawasaki, Yoshio; Horibe, Tatutake; Sasaki, Kenji; and Yamada, Kazuo, 4,799,353, Cl. 57-281.000.

Howe, Michael W., to Calgon Corporation. Method for improving magnesium oxide steel coatings using non-aqueous solvents. 4,799,969, Cl. 148-6.14R.

Hoyack, Mark E.: *See*—
Krishnaswamy, Prem; and Hoyack, Mark E., 4,800,017, Cl. 210-219.000.

Hrabal, Hans, to Hoerbiger Ventilwerke Aktiengesellschaft. Adjustable compressor valve which can accommodate changing operating conditions in the compressor to which it is attached. 4,799,507, Cl. 137-516.210.

Hrysko, Paul W., to Dunlop Construction Products Inc. Means for attaching sheet material to a substrate. 4,799,845, Cl. 411-542.000.

Hsieh, Wu H. Carrying holder. 4,799,610, Cl. 224-266.000.

Hsu, Chien-Na. Audio-actuated digital clock with double selections. 4,800,544, Cl. 368-69.000.

Huang, Shu-Jen W.: *See*—
Kiss, Charles R.; and Huang, Shu-Jen W., 4,800,217, Cl. 525-163.000.

Huber, Mary L. B.: *See*—
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Hudson, Timothy R., to Efco Corporation. Sash locking and sealing assembly. 4,799,330, Cl. 49-62.000.

Huggins, Raymond W., to Boeing Company, The. Coherence multiplexing of optical sensors. 4,799,797, Cl. 356-345.000.

Hughes Aircraft Company: *See*—
Chen, James C.; Wong, Wah S.; and Pao, Cheng K., 4,800,420, Cl. 357-76.000.
Ferrer, John J., 4,799,765, Cl. 350-174.000.
Grinberg, Jan; Owechko, Yuri; Soffer, Bernard H.; and Marom, Emanuel, 4,800,519, Cl. 364-822.000.
Niskala, Gary G., 4,799,854, Cl. 414-737.000.
Sterling, Rodney D., 4,799,773, Cl. 350-342.000.
Williamson, Weldon S., 4,800,281, Cl. 250-427.000.
Wreede, John E., 4,799,746, Cl. 350-3.600.

Hughes, Owen P. Hockey stick. 4,799,682, Cl. 273-67.00A.

Huls Aktiengesellschaft: *See*—
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Hulsing, Rand H.; and Peters, Rex B., to Sundstrand Data Control, Inc. Angular rate sensor with phase shift correction. 4,799,385, Cl. 73-505.000.

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Hunia, Robert M.: *See*—
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Hunter, Robert M. Apparatus and technique for metering liquid flow. 4,799,388, Cl. 73-861.630.

Husmann, Robert J., to Omni Signal, Inc. Alarm locator module for picket barrier intrusion detection and location system. 4,800,366, Cl. 340-524.000.

Hussong, Dean R. Automatic high velocity evacuator dental suction device. 4,799,885, Cl. 433-95.000.

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Hutchinson, Jack M. Remote control lighter-than-air toy with tether. 4,799,914, Cl. 446-225.000.

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Iams, John F.; Splane, Robson L., Jr.; and Drusch, John A., III, to Superspine, Inc. Device permitting a user to simulate crawling motions to improve movement of the truncal muscles and spine. 4,799,475, Cl. 128-25.00R.

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Iijima, Yasuo, to Kabushiki Kaisha Toshiba. Portable electronic device with garbage collection function. 4,800,520, Cl. 364-900.000.

Ike, Yujiro; Yonezawa, Akihiro; Ooshima, Shinichi; Kamiya, Akihiro; and Hirose, Yoshio, to Kabushiki Kaisha Toshiba. High pressure sodium lamp. 4,800,321, Cl. 313-639.000.

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Imai, Shin-ichi; and Hosoya, Naoki, to Kabushiki Kaisha Toshiba. Charge transfer device provided with charge detection circuit of a floating gate system. 4,800,579, Cl. 377-60.000.

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Ing, Kuo S. Sabotage-proof lock device with elbow-shaped latches. 4,799,718, Cl. 292-36.000.

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McMaster, Harold A. Fluid power transfer device. 4,799,870, Cl. 418-151.000.
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Moorehead, Thomas J.; and Bayless, Allan V., to Norwich Eaton Pharmaceuticals, Inc. Acylphosphorotriamides useful as lipid-altering agents. 4,800,194, Cl. 514-89.000.

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Cook, Timothy; Craigen, Joseph G.; and Morgan, Clive A., 4,799,647, Cl. 251-356.000.

Mori, Katsuhisa: *See*—
Tanaka, Tsuneo; and Mori, Katsuhisa, 4,799,514, Cl. 137-625.230.

Mori, Kei. Flying object for collecting solar rays. 4,799,629, Cl. 244-23.00C.

Mori, Yoshiaki: *See*—
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Morimoto, Kiyoshi; and Ishikawa, Takatoshi, to Fuji Photo Film Co., Ltd. Method for processing silver halide color photographic materials and a color photographic developer composition comprising hydroxylamine and stabilizer. 4,800,153, Cl. 430-380.000.

Moriya, Masayoshi: *See*—
Kuwabara, Youbei; Asaoka, Teruo; Moriya, Masayoshi; Iwasaki, Yasuhiro; and Sugiyama, Haruki, 4,800,006, Cl. 204-129.430.

Morozumi, Toshiki: *See*—
Muramatsu, Masayauki; and Morozumi, Toshiki, 4,800,346, Cl. 333-140.000.

Morris, Charles; and Bateson, George, to Ogilvie Mills, Inc. Dried nutmeat and starch food product and process. 4,800,097, Cl. 426-632.000.

Morris, Michael; and Vickers, John, to Ozley Developments Company Limited. Metallizing paste. 4,799,958, Cl. 106-1.120.

Mortara, David W. Analog-to-digital converter utilizing vernier techniques. 4,800,364, Cl. 341-131.000.

Morton, Kenneth P.: *See*—
Knoedler, Roy E.; Morton, Kenneth P.; and Schroer, Charles E., 4,799,700, Cl. 280-87.051.

Moser, Ronald T. Portable water purification system. 4,800,018, Cl. 210-266.000.

Moshofsky, Gerald S., to Newood Products of Oregon, Inc. Outside-corner shelf assembly. 4,799,434, Cl. 108-108.000.

Moss, Wayne L.: *See*—
Kaesler, Ralph W.; Robinson, Donald G.; Moss, Wayne L.; and Failon, Brian K., 4,800,071, Cl. 423-321.00R.

Motorola, Inc.: *See*—
Anderson, Steven L., 4,800,575, Cl. 375-80.000.
Balzano, Quirino; and Garay, Oscar M., 4,800,395, Cl. 343-895.000.
Davis, Earl K.; Drye, James E.; and Reed, David J., 4,800,421, Cl. 357-80.000.
Dehganpour, Sam; and Pelley, Perry H., III, 4,800,531, Cl. 365-222.000.
Deutsch, Robert W., 4,800,513, Cl. 364-571.020.
Dockrey, Jasper W., 4,799,991, Cl. 156-643.000.
Garay, Oscar M.; Balzano, Quirino; and Manning, Thomas J., 4,800,392, Cl. 343-700.0MS.
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,800,489, Cl. 364-200.000.
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Wilson, Syd R.; Lorigan, Robert P.; and Peterson, Richard L., 4,799,392, Cl. 73-865.900.
Yu, Ruey J.; and Bormann, Alan R., 4,800,298, Cl. 307-443.000.

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Mount, Houston B., II, to Amoco Corporation. Method and apparatus for determining cement conditions. 4,800,537, Cl. 367-35.000.

Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, to Motorola, Inc. Paged memory management unit capable of selectively supporting multiple address spaces. 4,800,489, Cl. 364-200.000.

Mozley, Richard H., to National Research Development Corporation. Minerals separator. 4,799,920, Cl. 494-23.000.

Mueller, Manfred: *See*—
Kreider, Hans; and Mueller, Manfred, 4,799,842, Cl. 411-171.000.

Mueller, Peter S. Method of controlling tobacco use. 4,800,204, Cl. 514-267.000.

Mueller, Rudolf; and Strasser, Ludwig, to Bayerische Motoren Werke Aktiengesellschaft. Wheel suspension for rear wheels of motor vehicles equipped with front wheel steering, especially passenger motor vehicles. 4,799,703, Cl. 280-91.000.

Muijderman, Everhardus: *See*—
Bremer, Fridtjof; and Muijderman, Everhardus, 4,799,421, Cl. 92-162.00R.

Mukai, Ryoichi, to Fujitsu Limited. Method for fabricating semiconductor device. 4,800,179, Cl. 437-203.000.

Muller, Jean M., to Figg and Muller Engineers, Inc. Method of constructing the approach and main spans of a cable stayed segmental bridge. 4,799,279, Cl. 14-1.000.

Muller, Marcel: *See*—
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Muller, Reinhard: *See*—
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Mullis, Kary B.; Erlich, Henry A.; Arnheim, Norman; Horn, Glenn T.; Saiki, Randall K.; and Scharf, Stephen J., to Cetus Corporation. Process for amplifying, detecting, and/or cloning nucleic acid sequences. 4,800,159, Cl. 435-172.300.

Mumallah, Naim A.; and Doe, Peter H., to Phillips Petroleum Company. Gelable compositions and use thereof in steam treatment of wells. 4,799,548, Cl. 166-288.000.

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Murakami, Keinosuke; Enami, Kazumasa; and Yagi, Nobuyuki, to Nippon Hoso Kyokai. Fundamental unit for processing video signals. 4,800,430, Cl. 358-160.000.

Muramatsu, Masayauki; and Morozumi, Toshiki, to Delphi Company Ltd. Delay line and its manufacturing method. 4,800,346, Cl. 333-140.000.

Murata Manufacturing Co., Ltd.: *See*—
Kinoshita, Humiaki, 4,800,343, Cl. 333-24.00C.
Takagi, Horshi; Mori, Yoshiaki; and Sakabe, Yukio, 4,800,459, Cl. 361-321.000.
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Murata, Shinji: *See*—
Ito, Masahiko; Maetani, Masami; Murata, Shinji; and Onuki, Kazuhiko, 4,800,413, Cl. 355-45.000.

Murdoch, Joseph R.; and Loomis, Gary L., to Du Pont de Nemours, E. I., and Company. Polylactide compositions. 4,800,219, Cl. 525-413.000.

Murdter, Herbert; and Ast, Adolf, to August Sauter GmbH. Measuring apparatus. 4,799,559, Cl. 177-124.000.

Murmann, Gunter; and Mertel, Walter H., to Cherry-Mikroschalter GmbH. Key module for key-actuated membrane switch panels. 4,800,245, Cl. 200-345.000.

Muroran Institute of Technology: *See*—
Kenjyo, Tadao, 4,800,139, Cl. 429-42.000.

Murphy, John P., to Lubrizol Corporation, The. Aliphatic hydrocarbon substituted aromatic hydrocarbons to control black sludge in lubricants. 4,800,032, Cl. 252-51.50A.

Muscat, Peter P. Tonneau cover mechanism for convertible automobiles. 4,799,729, Cl. 296-136.000.

Musemeci, Salvatore, to SGS-ATES Componenti Elettronici S.p.A. Bipolar power transistor having bypassable incorporated-base ballast resistance. 4,800,416, Cl. 357-34.000.

Musgrave, Daniel D. Magazine carrier for use on firearms or other support. 4,799,323, Cl. 42-90.000.

Musha, Toshimitsu, to Olympus Optical Company, Ltd. Method and apparatus for measuring immunological reaction with the aid of phase-modulation of light. 4,799,796, Cl. 356-336.000.

Musser's Potato Chips, Inc.: *See*—
August, Joseph R., 4,800,090, Cl. 426-243.000.

Myantt, Roy L. Interior reflective chamber embodying an ordering principal for color reflectors therein. 4,799,794, Cl. 356-246.000.

Myers, Paul A.; and Jensen, Charles O. Clutch and brake friction assembly and method of making same. 4,799,579, Cl. 192-107.00M.

Myers, Thomas W.; and Jacobson, Earl C., to Deere & Company. Drawbar coupler. 4,799,706, Cl. 280-504.000.

Myles, Willie L.: *See*—
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Nabisco Brands, Inc.: *See*—
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Nagakawa, Hiroshi: *See*—
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Nagano, Masami; Atago, Takeshi; and Manaka, Toshio, to Hitachi, Ltd. Apparatus and method for controlling ignition timing for internal combustion engine. 4,799,469, Cl. 123-418.000.

Nagle, Dennis C.: *See*—
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Naiki, Kazuaki, to NEC Corporation. Electrode assembly for electrostatic lens of electron gun. 4,800,318, Cl. 313-414.000.

Nail, James W., to Craftsman Printing Company. Apparatus for compiling sheets in a binding line. 4,799,661, Cl. 270-54.000.

Nakagawa, Katsuya, to Nintendo Co., Ltd. System for determining authenticity of an external memory used in an information processing apparatus. 4,799,635, Cl. 364-900.000.

Nakagawa, Yutaka: *See*—
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Nakai, Kaysuyuki: *See*—
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Nakamura, Ikuro: *See*—
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Nakamura, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Room air conditioner. 4,799,363, Cl. 62-160.000.

Nakanihon Juki Co., Ltd.: *See*—
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Nakanishi, Yoshinori, to Toshiba Kikai Kabushiki Kaisha. Spindle positioning apparatus. 4,800,325, Cl. 318-661.000.

Nakao, Shinroku; Itoh, Masao; Itoh, Akira; and Takano, Hiroshi, to Combi Co., Ltd. Bicycle ergometer and eddy current brake therefor. 4,800,310, Cl. 310-105.000.

Nakashima, Yukio; Watanabe, Kaneo; Iwamoto, Masayuki; and Minami, Koji, to Sanyo Electric Co., Ltd. Photovoltaic device. 4,799,968, Cl. 136-258.000.

Nakatani, Toshio; and Ohshima, Atsumi, to Nakanihon Juki Co., Ltd. Method of and apparatus for feeding fabric to sewing machine. 4,799,442, Cl. 112-262.200.

Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, to Nihon Shinku Gijutsu Kabushiki Kaisha. Method of forming a thin film by chemical vapor deposition. 4,800,105, Cl. 427-253.000.

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Namekawa, Kouroku, to Aloka Co., Ltd. Doppler ultrasonic diagnostic apparatus. 4,799,490, Cl. 128-661.090.

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Naruse, Osamu; Ishikawa, Chuji; Kakeno, Sadao; and Iwasaki, Kyuhachiro, to Ricoh Company, Ltd. Ink-jet printer with an encased printer head unit. 4,800,398, Cl. 346-75.000.

National Research Development Corporation: *See*—
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Wong, Hee, 4,800,576, Cl. 375-83.000.

National Standard Company: *See*—
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Natsui, Yoshinobu, to NEC Corporation. Integrated circuit with improved monitoring function by use of built-in elements. 4,800,418, Cl. 357-68.000.

NCR Corporation: *See*—
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NEC Corporation: *See*—
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Nelson, Anthony J.; and Duggan, Peter J., to Imperial Chemical Industries, PLC. Substituted phthaloayanine photoconductor and charge transport phase. 4,800,145, Cl. 430-58.000.

Nelson, Craig H., to SpaceLabs, Inc. Method and apparatus for indirect blood pressure measurement. 4,799,492, Cl. 128-672.000.

Neue Rotoprint GmbH: *See*—
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Neugebauer, Manfred: *See*—
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New York University: *See*—
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Newbury, Renton D. Method of and apparatus for treatment of muscle imbalance. 4,799,500, Cl. 128-859.000.

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NGK Insulators, Ltd.: *See*—
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NGK Spark Plug Co., Ltd.: *See*—
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Nichols, Mark A., to Pathfinder Systems, Inc. Telephone switching system frame sync generator. 4,800,558, Cl. 370-67.000.

Nickels, Richard C., Jr.; and Podhorniak, Gary S., to Black & Decker, Inc. Transformer support assembly. 4,800,357, Cl. 336-198.000.

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Nihon Shinku Gijutsu Kabushiki Kaisha: *See*—
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Nimmersjo, Gunnar, to ASEA Aktiebolag. Detection of high resistance faults in electrical power supply network. 4,800,509, Cl. 364-492.000.

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Nippon Seiko Kabushiki Kaisha: *See*—
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Nippon Thompson Co., Ltd.: *See*—
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Tanaka, Kazuhiko, 4,799,805, Cl. 384-44.000.
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Nishimura, Akira: *See*—
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Nishimura, Takumi: *See*—
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Nishimura, Yasunori, to Sharp Kabushiki Kaisha. Apparatus and method for detecting residual organic compounds. 4,800,282, Cl. 250-461.100.

Nishiyama, Toshio: *See*—
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Niskala, Gary G., to Hughes Aircraft Company. Rotatable pick and place vacuum sense head for die bonding apparatus. 4,799,854, Cl. 414-737.000.

Niznik, Shelly S.: *See*—
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NM Laser Products, Inc.: *See*—
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Nobbs, James H.; Oldring, Peter K. T.; and Duerden, David, to Thomas Swan & Co., Ltd. Solidification of liquid films. 4,799,453, Cl. 118-665.000.

Nodo, Nicholas L. Firearm recoil attenuator and method. 4,799,324, Cl. 42-94.000.

Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Radiation image read-out apparatus. 4,800,276, Cl. 250-327.200.

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Nomura, Yoshiharu; Aoki, Shigemasa; and Nishimura, Akira, to Earth Chemical Co., Ltd. Phenyl salicylate and benzyl salicylate as acaricidal agents. 4,800,196, Cl. 514-159.000.

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Peters, Josephus A. M., to Drukker International B.V. Method of making a diamond heat sink. 4,800,002, Cl. 204-15.000.

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Petershofer, Georg: *See—*
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Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., to Petitto Mine Equipment, Inc. Material handling vehicle for use in a mine. 4,799,850, Cl. 414-687.000.

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Perlou, Pierre, 4,799,734, Cl. 297-361.000.

Rockwell International Corporation: *See*—
Mahoney, Murray W.; and Ghosh, Amit K., 4,799,974, Cl. 148-12.70A.

Rodal, David R.; and Osborn, Nathan W., to Ampex Corporation. Method and apparatus for controlling deployment of a tape transport member. 4,800,450, Cl. 360-73.060.

Rodgers, E. Walter; and Rodgers, Lenual E., Jr. Fuse panel mounting plate. 4,800,465, Cl. 361-432.000.

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Rodgers, E. Walter; and Rodgers, Lenual E., Jr., 4,800,465, Cl. 361-432.000.

Roe, James E.: *See*—
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Roesgen, John P., to Analog Devices, Inc. Modulo address generator. 4,800,524, Cl. 364-900.000.

Roestenberg, Jerome R. Method for shaping a molding compound applied to a surface for modifying the surface. 4,800,054, Cl. 264-86.000.

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Rollett, Marius, to Society said: ROVIP. Valve for a gas cylinder or the like. 4,799,646, Cl. 251-88.000.

ROLLS-ROYCE plc: *See*—
Midgley, Ronald A., 4,799,354, Cl. 60-39.142.

Romanowski, William E.; and Suljak, George T., to International Fuel Cells Corporation. Separation of gaseous hydrogen from a water-hydrogen mixture in a fuel cell power system operating in a weightless environment. 4,800,138, Cl. 429-19.000.

Roos, Mark D.; and Messmer, Walter J., III, to EIP Microwave, Inc. Modular shielding assembly for electronic devices. 4,800,464, Cl. 361-424.000.

Roper, Jerry M., to Ethyl Corporation. Preparation of alpha-cyanophenoxybenzyl esters. 4,800,230, Cl. 558-388.000

Rosar, George C.; and Clifford, David G., Jr., to Motorola, Inc. Adjustable electronic filter and method of tuning same. 4,800,348, Cl. 333-202.000.

Rose, Gene D.; Teot, Arthur S.; and Foster, Kenneth L., to Dow Chemical Company, The. Aqueous bleach compositions thickened with a viscoelastic surfactant. 4,800,036, Cl. 252-102.000.

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Rosenblatt, Richard. Aspirator for collection of bodily fluids. 4,799,925, Cl. 604-181.000.

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Sallavanti, Robert A.; Dalton, Jeffrey L.; and Olsen, Sharon M., to Gentex Corporation. Siloxane-based tintable coating. 4,800,122, Cl. 428-412.000.

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Sasaki, Noboru; Yamada, Haruki; Onchi, Yoshiaki; and Horio, Kazuya, to Toyota Jidosha Kabushiki Kaisha. Organic solvent cleaning apparatus. 4,800,362, Cl. 340-78.000.

Satake, Toshihiko, to 501 Satake Engineering Co., Ltd. Measuring apparatus for amylose and/or amylopectin content in rice. 4,800,280, Cl. 250-339.000.

Sato, Fumitaka, to Kabushiki Kaisha Toshiba. Binary data compression and expansion processing apparatus. 4,800,441, Cl. 358-261.100.

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Sugai, Yoshiro; and Kimura, Hiroyuki, to Pioneer Electronic Corporation. Power source for electronic tuning tuner. 4,800,434, Cl. 358-190.000.
Sugiura, Miyoji: *See—*
Hibi, Tadaaki; Sugiura, Miyoji; Kano, Hiromi; Kimura, Sigeyuki; and Kazami, Takeshi, 4,800,163, Cl. 435-287.000.
Sugiura, Yoshinori: *See—*
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Sugiyama, Haruki: *See—*
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Sugiyama, Takekatsu: *See—*
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Suljak, George T.: *See—*
Romanowski, William E.; and Suljak, George T., 4,800,138, Cl. 429-19.000.
Sullins, Harry P., to Richland Industries. Pipe turning apparatus. 4,799,987, Cl. 156-425.000.
Sulzer Brothers Limited· *See—*
Bucher, Robert, 4,799,517, Cl. 139-452.000.
Griffith, John D., 4,799,516, Cl. 139-435.000.
Sumitomo Electric Industries, Ltd.: *See—*
Kakuta, Tatsuya; and Akasaka, Nobuhiro, 4,799,762, Cl. 350-96.340.
Koiso, Takashi; and Fujii, Satoshi, 4,799,970, Cl. 148-6.200.
Sumitomo Metal Industries, Ltd.: *See—*
Masuyama, Fujimitsu; Daikoku, Takashi; Haneda, Hisao; Yoshikawa, Kunihiko; Teranishi, Hiroshi; and Iseda, Atsuro, 4,799,972, Cl. 148-14.000.
Sunaga, Takashi: *See—*
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Sundstrand Data Control, Inc.: *See—*
Hulsing, Rand H.; and Peters, Rex B., 4,799,385, Cl. 73-505.000.
Superspine, Inc.: *See—*
Iams, John F.; Splane, Robson L., Jr.; and Drusch, John A., III, 4,799,475, Cl. 128-25.00R.
Surface Technologies, Inc.: *See—*
Kolar, Richard A., 4,800,119, Cl. 428-283.000.
Sutcliffe, Roger F., to Mill-Max MFg. Corp. Compliant tail connector. 4,799,904, Cl. 439-733.000.
Suzuki, Akinori; Be Hyeon, Suong; Kajita, Toshio; Furushima, Masakazu; and Tanaka, Akinori, to Mitsubishi Gas Chemical Company, Inc. Plant growth regulating composition. 4,799,950, Cl. 71-89.000.
Suzuki, Akitoshi: *See—*
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Suzuki, Akiyoshi: *See—*
Echizen, Hiroshi; Ota, Masakatsu; and Suzuki, Akiyoshi, 4,799,791, Cl. 356-121.000.
Suzuki, Hitoshi: *See—*
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, 4,800,522, Cl. 364-900.000.
Suzuki, Kazuhiro: *See—*
Okubo, Toshimitsu; Takezawa, Mamoru; Satoh, Mitsuyoshi; and Suzuki, Kazuhiro, 4,799,814, Cl. 400-639.100.
Suzuki, Kazuo: *See—*
Waki, Tatsuo; Watanabe, Takeshi; and Suzuki, Kazuo, 4,800,214, Cl. 521-84.100.
Suzuki, Kenichi; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Information recording-reproducing apparatus. 4,800,258, Cl. 235-479.000.
Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Pressure switch. 4,800,244, Cl. 200-306.000.
Suzuki, Michiyuki: *See—*
Yamamoto, Tadashi; and Suzuki, Michiyuki, 4,799,531, Cl. 164-120.000.
Suzuki, Motoyuki; and Kikuchi, Kazuo, to Alps Electric Co., Ltd. Image scanner. 4,800,444, Cl. 358-294.000.
Suzuki, Shigeaki; and Nozaki, Tatsuya, to CDK Corporation; and Credix Corporation. Commodity information transmission system for on-line transaction network. 4,800,254, Cl. 235-380.000.
Suzuki, Takao: *See—*
Arai, Kozo; Suzuki, Takao; and Umetsu, Syozo, 4,800,133, Cl. 428-606.000.
Suzuki, Toru; Sakamoto, Masahide; and Watanabe, Akihito, to Hitachi, Ltd.; and Hitachi Automotibe Engineering. Engine rotation speed detecting apparatus. 4,799,380, Cl. 73-116.000.
Suzuki, Yoshikazu: *See—*
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Koshinaka, Osamu; Suzuki, Yoshikazu; and Yoneda, Yoshihide, 4,799,440, Cl. 112-162.000.
Svenska Rotor Maskiner AB: *See—*
Oscarsson, Johnny, 4,799,865, Cl. 417-283.000.
Swanson, William C. Level lift hydraulic valve. 4,799,851, Cl. 414-700.000.
Swarr, Thomas E.; and Trocciola, John C., to International Fuel Cells Corporation. Method of fabricating molten carbonate cathodes. 4,800,052, Cl. 264-65.000.
Swartz, Ralph E. Combination napkin and table setting holder. 4,800,108, Cl. 428-43.000.
Swoboda, Hellmuth, to Connec AG Systembau-Technik. Connector for profiled structural members. 4,799,819, Cl. 403-252.000.
Symons, Robert S., to Litton Systems, Inc. Broadband klystron cavity arrangement. 4,800,322, Cl. 315-5.390.
System 3R International ab: *See—*
Ramsbro, Borje, 4,799,841, Cl. 411-55.000.
Szittar, Antal: *See—*
Bauer, Sandorne ; Biro , Zoltan; Doleschall, Sandor; Farkas, Eva; Milley, Gyula; Paal, Tibor; Szittar, Antal; Tiszai, Gyorgy; Udvardi, Geza; and Pa pay, Jozsef, 4,799,551, Cl. 166-303.000.
Tabei, Ichiro: *See—*
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Tachi-S Co., Ltd.: *See—*
Shimada, Makoto, 4,799,988, Cl. 156-475.000.
Tachikawa, Hiromichi: *See—*
Yokoya, Hiroaki; Sano, Kenji; Tachikawa, Hiromichi; and Sato, Hideo, 4,800,146, Cl. 430-73.000.
Tachita, Ryobun; Ikeda, Ken; and Teranishi, Akio, to Matsushita Electric Industrial Co., Ltd. GPS receiver. 4,800,577, Cl. 375-115.000.
Taga, Yukio, to Yoshida Kogyo K. K. Apparatus for assembling pairs of garment fastener elements. 4,799,611, Cl. 227-18.000.
Tahara, Tomio, to Kamaya Kagaku Kogyo Co., Ltd. Compact cosmetic case. 4,799,503, Cl. 220-260.000.
Tajima, Kenji; and Arai, Noboru, to Fuji Photo Film Co., Ltd. Sheet film package and method and device for loading sheet film. 4,799,591, Cl. 206-455.000.
Takada, Koichiro, to Nordson Corporation. Powder spraying or scattering apparatus and method. 4,800,102, Cl. 427-197.000
Takagi, Hiroshi, to Omron Tateisi Electronics Co. Electronic cash register. 4,800,493, Cl. 364-405.000.
Takagi, Hitoshi: *See—*
Fukai, Yoshio; Takagi, Hitoshi; and Osawa, Tatsuo, 4,799,640, Cl. 248-559.000.
Takagi, Horshi; Mori, Yoshiaki; and Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Circuit substrate having ceramic multilayer structure containing chip-like electronic components. 4,800,459, Cl. 361-321.000.
Takahashi, Isao, to Kabushiki Kaisha Toshiba. Method and apparatus for controlling PWM inverter. 4,800,478, Cl. 363-41.000.
Takahashi, Junichi; and Itoh, Yuji, to Canon Kabushiki Kaisha. Eye fundus camera. 4,799,783, Cl. 351-206.000.
Takahashi, Kenji: *See—*
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Takahashi, Kimihide: *See—*
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Takahashi, Shigeo: *See—*
Shimei, Masato; Goto, Shigeki; and Takahashi, Shigeo, 4,799,404, Cl. 74-869.000.
Takahashi, Yoshikazu; and Nishiyama, Toshio, to Mitsuba Electric Mfg. Co., Ltd. Vacuum actuator for vehicle speed control. 4,799,418, Cl. 91-449.000.
Takahira, Nobuhiro: *See—*
Matsudaira, Nobuyasu; Kyoya, Michio; Mikogami, Takashi; Okazaki, Yoichiro; Matsuo, Eito; and Takahira, Nobuhiro, 4,799,856, Cl. 415-155.000.
Takakuwa, Kazuo: *See—*
Nakayama, Izumi; Suzuki, Akitoshi; Kusumoto, Yoshiro; Takakuwa, Kazuo; and Ikuta, Tetsuya, 4,800,105, Cl. 427-253.000.
Takano, Hiroshi: *See—*
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Takano, Yoshihiro: *See—*
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Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, to Zenyaku Kogyo Kabushiki Kaisha. 1,4-thiazine derivative, and cardiotonic agent comprising it as effective component. 4,800,201, Cl. 514-230.800.
Takashima, Masanobu: *See—*
Saeki, Keiso; Takashima, Masanobu; Iwakura, Ken; Sugiyama, Takekatsu; and Satomura, Masato, 4,800,193, Cl. 503-217.000.
Takatori, Hideo: *See—*
Ouchi, Chiaki; Kohsaka, Yohji; Suenaga, Hiroyoshi; Sakuyama, Hideo; and Takatori, Hideo, 4,799,975, Cl. 148-12.70B.
Takayama, Syuichi, to Olympus Optical Co., Ltd. Stone disintegrator apparatus. 4,799,482, Cl. 128-328.000.

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Takechi, Moriaki; Watanabe, Tsugio; and Kuroda, Shigenori, to Mitsubishi Denki Kabushiki Kaisha. Electromagnet having magnetic shield. 4,800,355, Cl. 335-301.000.

Takeda Chemical Indus. Ltd.: *See*—
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Nakai, Kaysuyuki; Yamanaka, Hidetoshi; Shida, Keizo; and Shiraishi, Akira, 4,800,085, Cl. 424-462.000.

Takeda Chemical Industries, Ltd.: *See*—
Miyata, Katsuaki; Sakuma, Yutaka; Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,799,449, Cl. 118-19.000.

Takeda, Katsuhiko, to Minolta Camera Kabushiki Kaisha. Magnification varying device for electro-photographic copying machine. 4,800,414, Cl. 355-58.000.

Takeda, Osamu: *See*—
Buma, Shuuichi; Ohwa, Nobutaka; Takeda, Osamu; and Aburaya, Toshio, 4,799,707, Cl. 280-711.000.

Takei, Haruo: *See*—
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Takenaka, Hirokazu: *See*—
Ishikawa, Kiyoe; Kokubo, Kakuro; Kurokawa, Hitoshi; Hosogai, Daijiro; and Takenaka, Hirokazu, 4,799,622, Cl. 239-102.200.

Takenaka, Hiroyuki: *See*—
Kurisu, Shingo; Omori, Shunji; Takenaka, Hiroyuki; Egawa, Tsuneo; Mitsunaga, Takuro; and Kiyama, Nobuo, 4,799,836, Cl. 409-138.000.

Takenouchi, Kenji; Ikeda, Tomohiro; and Tozuka, Mitsuhiko, to Yazaki Corporation. Fuse. 4,800,358, Cl. 337-268.000.

Takeuchi, Atsushi, to Fujitsu Limited. Time delay circuit for a semiconductor device. 4,800,304, Cl. 307-602.000.

Takeuchi, Hiroaki: *See*—
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Takezawa, Mamoru: *See*—
Okubo, Toshimitsu; Takezawa, Mamoru; Satoh, Mitsuyoshi; and Suzuki, Kazuhiro, 4,799,814, Cl. 400-639.100.

Takiguchi, Yasuhiro: *See*—
Miyao, Kouji; Suzuki, Hitoshi; Asano, Hazime; Tokunaga, Shinji; Takiguchi, Yasuhiro; and Kugimiya, Shuzo, 4,800,522, Cl. 364-900.000.

Takizawa, Toshimitsu, to Kabushiki Kaisha Toshiba. Magnetic disk drive having a magnetic-head with a head gap supported parallel to the moving direction of a magnetic-head positioning mechanism. 4,800,455, Cl. 360-104.000.

Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper. 4,800,192, Cl. 503-200.000.

Tanada, Shinichi: *See*—
Sagara, Seiji; Maruyama, Hiroyoshi; Miyake, Hiroyuki; Kasama, Nobuhiro; Tanada, Shinichi; Kagiura, Kazuo; Yonemori, Takaji; and Hasegawa, Yuji, 4,799,662, Cl. 271-114.000.

Tanaka, Akinori: *See*—
Suzuki, Akinori; Be Hyeon, Suong; Kajita, Toshio; Furushima, Masakazu; and Tanaka, Akinori, 4,799,950, Cl. 71-89.000.

Tanaka, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Method of detecting cylinder pressure in internal combustion engine. 4,800,500, Cl. 364-431.080.

Tanaka, Kazuhiko, to Nippon Thompson Co., Ltd. Ball spline linear motion rolling guide unit. 4,799,803, Cl. 384-43.000.

Tanaka, Kazuhiko, to Nippon Thompson Co., Ltd. Four track-type endless rectilinear motion guide unit. 4,799,804, Cl. 384-44.000.

Tanaka, Kazuhiko, to Nippon Thompson Co. Ltd. Four track-type endless rectilinear motion guide unit. 4,799,805, Cl. 384-44.000.

Tanaka, Kazuhiko: *See*—
Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, 4,800,278, Cl. 250-338.100.

Tanaka, Koichi, to Honda Giken Kogyo Kabushiki Kaisha. Front cover for multi-wheeled vehicles. 4,799,568, Cl. 180-219.000.

Tanaka, Masaru; and Oka, Seiji, to Ricoh Company, Ltd. Magnetic brush development device for electrostatic latent images. 4,800,411, Cl. 355-3.0DD.

Tanaka, Nobuyuki, to Fuji Photo Film Co., Ltd. Method of smoothing image data. 4,800,511, Cl. 364-521.000.

Tanaka, Shigetaka; Tanigawa, Toshiaki; and Kaga, Mitsuru, to Ricoh Company, Ltd. Digital modulator/demodulator including non-linear analog-to-digital converter and circuitry compensating for the non-linearity of the converter. 4,800,574, Cl. 375-26.000.

Tanaka, Shinsaku; and Kido, Kunio, to Tanashin Denki Co., Ltd. Automatic reverse mechanism for tape recorder. 4,800,451, Cl. 360-74.200.

Tanaka, Tsuneo; and Mori, Katsuhisa, to Toyoda Koki Kabushiki Kaisha. Rotary servovalve for power-assisted steering system. 4,799,514, Cl. 137-625.230.

Tanaka, Tsutomu; and Oinaga, Yuji, to Fujitsu Limited. Buffer storage control system having a priority circuit. 4,800,490, Cl. 364-200.000.

Tanaka, Yoshihiro: *See*—
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,800,409, Cl. 354-402.000.

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Tandem Computers Incorporated: *See*—
Ferchau, Joerg U.; and Kotyuk, Kenneth A., 4,800,463, Cl. 361-424.000.
Horst, Robert W.; Lynch, Shannon J.; Costantino, Cirillo L.; and Beirne, John M., 4,800,486, Cl. 364-200.000.
Zacher, A. Richard; Zwagerman, Jay A.; and Dwan, Francis J., 4,800,462, Cl. 361-413.000.

Tandy Electronics Japan, Ltd.: *See*—
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Tanigawa, Toshiaki: *See*—
Tanaka, Shigetaka; Tanigawa, Toshiaki; and Kaga, Mitsuru, 4,800,574, Cl. 375-26.000.

Taniguchi, Koki, to Sharp Kabushiki Kaisha. Liquid crystal display with stopper pins in guide means. 4,799,771, Cl. 350-334.000.

Taniguchi, Masaru; Saito, Hiroaki; Yamaguchi, Yutaka; Hiraoka, Fumio; and Nakamura, Ikuro, to Yoshitomi Pharmaceutical Industries, Ltd.; and Taniguchi, Masaru. Human monoclonal antibody to lung carcinoma and hybridoma producing the same. 4,800,155, Cl. 435-7.000.

Taniguchi, Nobuyuki: *See*—
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,800,409, Cl. 354-402.000.

Taniguti, Shiniti: *See*—
Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, 4,800,278, Cl. 250-338.100.

Taniguti, Yoshiharu; Edano, Shigeki; Tanaka, Kazuhiko; Taniguti, Shiniti; and Kuramoto, Megumi, to Nippon Ceramic Co., Ltd. Pyroelectric infrared sensor. 4,800,278, Cl. 250-338.100.

Tanimoto, Hiroshi; and Yamada, Hisashi, to Kabushiki Kaisha Toshiba. Amplifier circuit. 4,800,339, Cl. 330-253.000.

Tanimoto, Takao: *See*—
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Tsukamoto, Takeshi; and Tanimoto, Takao, 4,799,790, Cl. 356-73.100.

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Tao Nenryo Kogyo Kabushiki Kaisha: *See*—
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Tasset, Emmett L., to Dow Chemical Company, The. Regeneration of fluorocarbonsulfonic acid catalysts. 4,800,186, Cl. 502-33.000.

Tatabanyai Szenbanyak: *See*—
Solymos, Andras; Barsi, Karoly; Kis-Tamas, Laszlo ; Forisek, Istvan; Dorombozi, Laszlo ; and Lukonits, Otto , 4,799,738, Cl. 299-11.000.

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Taylor, Geoffrey W.: *See*—
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Taylor, Jefferson H.: *See*—
Green, Eugene L., Sr.; and Taylor, Jefferson H., 4,800,287, Cl. 250-560.000.

Taylor, Keith A., to Tektronix, Inc. Pin driver circuit. 4,800,294, Cl. 307-263.000.

Taylor, Wesley L. Adjustable safety relief valve. 4,799,506, Cl. 137-469.000.

Tech Research, Inc.: *See*—
Reigstad, Gordon H.; Breivik, A. Norris; and Reigstad, Hanley S., 4,799,307, Cl. 29-452.000.

Technical Equipment Associates of Florida, Inc.: *See*—
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Technicon Instruments Corporation: *See*—
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Tegeler, John J.; and Shoger, Kirk D., to Hoechst-Roussel Pharmaceuticals Inc. 4,8-dihydro-8-arylisoxazolo[4,3-e][1,4]-oxazepin-5(6H)-ones. 4,800,200, Cl. 514-211.000.

Tejima, Shunichiro: *See*—
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Tekbilt, Inc.: *See*—
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Tekken Construction Co., Ltd.: *See*—
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Tektronix, Inc.: *See*—
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Teledyne Industries, Inc.: *See*—
Dixon, Herbert S.; Weller, Jonathan W.; Boyer, Ivon; and McKenney, Darryl J., 4,800,461, Cl. 361-398.000.

Teot, Arthur S.: *See*—
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Teranishi, Hiroshi: *See*—
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Terzian, Rouben T.; Breslow, Jeffrey D.; Rosenwinkel, Donald A.; and Zaruba, John V., to Marvin Glass & Associates. Electronic game with animated host. 4,799,678, Cl. 273-1.00E.

Teutsch, Walter: *See*—
Honeck, Karl-Heinz; Johnson, David; Neugebauer, Manfred; Teutsch, Walter; Kini, M. Vittal; and Stacey, Steven C., 4,800,532, Cl. 365-226.000.

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Texas Instruments Incorporated: *See*—
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Ovens, Kevin M.; Maxey, Jay A.; and Greenberg, Craig B., 4,800,296, Cl. 307-291.000.
Rao, Kalipatnam V.; Mitchell, Allan T.; and Paterson, James L., 4,799,992, Cl. 156-643.000.
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Eckenhoff, James B.; Theeuwes, Felix; and Deters, Joseph C., 4,800,056, Cl. 264-129.000.

Theis, Peter F. Overflow call handling system. 4,800,583, Cl. 379-67.000.

Thermacore, Inc.: *See*—
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Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile ballast cleaning apparatus. 4,799,430, Cl. 104-2.000.

Thomas, Henry, Jr.: *See*—
Patel, Ramanlal L.; Chew, Meng-Sang; Marsh, Richard A.; Rosenberg, Richard C.; and Thomas, Henry, Jr., 4,799,464, Cl. 123-90.410.

Thomas, Mammen: *See*—
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Thomas, Michael S.: *See*—
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Thomas Swan & Co., Ltd.: *See*—
Nobbs, James H.; Oldring, Peter K. T.; and Duerden, David, 4,799,453, Cl. 118-665.000.

Thompson, Barbara J.; and Dittakavi, Ashok, to Thompson, Barbara J. Electronic learning device for teaching how to tell time. 4,799,890, Cl. 434-304.000.

Thompson, Daniel T. Articulated belt like toroid forming machine. 4,799,875, Cl. 425-329.000.

Thompson, Robert H., to Westvaco Corporation. System for sensing a discontinuity in a paper web and containing web puncturing means across the web width. 4,799,997, Cl. 162-255.000.

Thurston, Marlin O.: *See*—
Davis, John R.; and Thurston, Marlin O., 4,799,763, Cl. 350-137.000.

Tice, Bill, to ETI Systems. Motorized control unit with torsional elastomeric bias. 4,800,308, Cl. 310-83.000.

Tiller, Hans-Jurgen: *See*—
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Timex Corporation: *See*—
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Warwick, Amparo A. Computer page place marker. 4,799,812, Cl. 400-616.000.
Washizu, Katsushi; and Usui Kokusai Sangyo Kabushiki Kaisha. Flexible composite hose. 4,800,109, Cl. 428-34.900.
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Watanabe, Kazuhiro: *See—*
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Watanabe, Masakazu: *See—*
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Watanabe, Masaru; and Tabei, Ichiro, to Copal Electronics Co., Ltd. Level winder for double-bearing fishing reel. 4,799,628, Cl. 242-84.420.
Watanabe, Michio; Ishibashi, Kazuhisa; Matsuno, Kenji; and Kurashima, Hideo, to Toyo Seikan Kaisha, Ltd. Methods and apparatus for manufacturing tubes. 4,800,250, Cl. 219-121.630.
Watanabe, Shigeyoshi: *See—*
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Wausau Metals Corporation: *See—*
Reeves, John R., 4,799,526, Cl. 160-168.100.
Wawra, Helmut; Scheurenbrand, Dieter; and Kleineberg, Wolfgang, to Daimler-Benz Aktiengesellschaft. Venting arrangement for fuel tanks of motor vehicles. 4,799,509, Cl. 137-587.000.
Weaver, Marvin G., Jr.; Bohman, Carl E.; Strosser, Richard P.; McClure, John R.; and Chow, Mark K., to Ford New Holland, Inc. Method and apparatus for adjusting a shear bar relative to a cutter head. 4,799,625, Cl. 241-30.000.
Weber, Jens, to Krone GmbH. Optical demultiplex transmission equipment. 4,800,557, Cl. 370-3.000.
Weber, Karl, to Polaroid Corporation. Eyeglasses with detachable lenses. 4,799,781, Cl. 351-86.000.
Weidenbenner, Dennis W.: *See—*
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Weimar, Deborah M. Transparent puzzle. 4,799,680, Cl. 273-157.00R.
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Weldon, William F.; Gully, John H.; and Pichot, Mark A., to Board of Regents. Rotor assembly for homopolar generator. 4,800,311, Cl. 310-178.000.
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Western Atlas International, Inc.: *See*—
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Poorman, Thomas J., 4,800,266, Cl. 250-227.000.

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Williams, Thomas D. Plow with readily replaceable wear parts especially adapted for use in a vibratory cable laying machine. 4,799,823, Cl. 405-180.000.

Williamson, Calvin C.; and Williamson, Joan. Apparatus for manually moving loads. 4,799,697, Cl. 280-3.000.

Williamson, Joan: *See*—
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Williamson, Neil. Exercise apparatus. 4,799,670, Cl. 272-117.000.

Williamson, Weldon S., to Hughes Aircraft Company. Compact penning-discharge plasma source. 4,800,281, Cl. 250-427.000.

Willsey, Charles H., to Seymour Foods, Inc. Egg contents separating mechanism. 4,799,423, Cl. 99-500.000.

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Wilson, Stephen T.; Woodard, Naomi A.; and Flanigen, Edith M., to UOP. Crystalline gallophosphate compositions. 4,799,942, Cl. 55-35.000.

Wilson, Syd R.; Lorigan, Robert P.; and Peterson, Richard L., to Motorola Inc. Method for determining silicon (mass 28) beam purity prior to impiantation of gallium arsenide. 4,799,392, Cl. 73-865.900.

Wilson, Thomas G. Kayak construction. 4,799,446, Cl. 114-347.000.

Wimmer, Joachim, to Park Dental Research Corp. Dental submerged endosseous implant. 4,799,886, Cl. 433-176.000.

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Wood, George. Motor operated lock. 4,799,719, Cl. 292-144.000.

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Woodruff, David C., to NM Laser Products, Inc. High speed shutter for a laser beam. 4,799,767, Cl. 350-269.000.

Wreede, John E., to Hughes Aircraft Company. Efficient holograms and method for making same. 4,799,746, Cl. 350-3.600.

Wright, George A., to RT/Katek Communications Group, Inc. Antenna mounting. 4,799,642, Cl. 248-516.000.

Wrobbel, Edward J.; Canzoneri, Louis S.; Cocchiara, Ronald P.; and Paul, Nikhil C., to Xerox Corporation. Self-centering end effector. 4,799,853, Cl. 414-730.000.

Wu, Yulin, to Phillips Petroleum Company. Petroleum sulfonate adjuvants in epoxy resin corrosion-inhibiting composition. 4,799,553, Cl. 166-310.000.

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Yamagami, Tamotsu; and Sako, Yoichiro, to Sony Corporation. Method and apparatus for seeking target address with error check code. 4,800,549, Cl. 369-56.000.

Yamaguchi, Akihide: *See*—
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Yamakawa, Kazuo, to Minolta Camera Kabushiki Kaisha. Tilt error corrective scanning optical system. 4,799,747, Cl. 350-6.800.

Yamamoto, Akira; Nishigaki, Toru; Kurano, Akira; Hisano, Kiyoshi; and Shiroyanagi, Yoshiro, to Hitachi, Ltd. Method and system for concurrent data transfer disk cache system. 4,800,483, Cl. 364-200.000.

Yamamoto, Tadashi; and Suzuki, Michiyuki, to UBE Industries, Inc. Casting method in high-pressure casting. 4,799,531, Cl. 164-120.000.

Yamamoto, Takashi; Mishina, Yoshihiko; and Oda, Masaaki, to Mitsubishi Rayon Co., Ltd. Plastic optical transmission medium, process for producing the same and array of lenses using the same. 4,799,761, Cl. 350-96.310.

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Yamane, Ryozo; Kurihara, Takashi; Kaise, Hiroshi; Komatsubara, Takeo; and Sunaga, Takashi, to Idemitsu Kosan Company Limited. Refrigerator oil composition. 4,800,013, Cl. 208-19.000.

Yamasaki, Hidenori, to Mitsubishi Denki Kabushiki Kaisha. DAT recorder with automatic cassette movement. 4,800,449, Cl. 360-71.000.

Yamasaki, Hidetoshi; and Murata, Masae, to Victor Company of Japan, Limited. Disk magazine. 4,800,554, Cl. 369-291.000.

Yamasaki, Richard G.: *See*—
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Yamauchi, Keiichi, to Pioneer Electronic Corporation. Multi-format optical disk recording/reproducing system. 4,800,550, Cl. 369-59.000.

Yamazaki, Hiroaki: *See*—
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Yamazaki, Kouichi, to Okamura Corporation. Chair seat inclining and moving device. 4,799,732, Cl. 297-300.000.

Yamazaki, Nobuyoshi, to Radic Co., Ltd.; and Sakata Denki Co., Ltd. Well data transmission system using a magnetic drill string for transmitting data as a magnetic flux signal. 4,800,385, Cl. 340-854.000.

Yamazaki, Shunpei; Inujima, Takashi; Mase, Akira; Konuma, Toshimitsu; Sakama, Mitsunori; Hamatani, Toshiji; Miyazaki, Minoru; Koyanagi, Kaoru; and Yamaguchi, Toshiharu, to Semiconductor Energy Laboratory Co., Ltd. Ferroelectric liquid crystal display device having a single polarizer. 4,799,776, Cl. 350-350.00S.

Yan, Man F., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Method for fabricating ceramic materials. 4,800,051, Cl. 264-56.000.

Yanagisawa, Naoki; and Sato, Yoshihiko, to Isuzu Motors Limited. Combustion chamber for internal combustion engines. 4,799,465, Cl. 123-256.000.

Yang, Tai-Her. Dust collecting system for bench grinder. 4,799,336, Cl. 51-102.000.

Yang, Victor C., to University of Michigan, The. Extracorporeal blood de-heparinization system. 4,800,016, Cl. 210-206.000.

Yanmar Diesel Engine Co., Ltd.: *See*—
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Yazaki Corporation: *See*—
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Takenouchi, Kenji; Ikeda, Tomohiro; and Tozuka, Mitsuhiko, 4,800,358, Cl. 337-268.000.
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Yeomans, Andrew J. V., to Crosfield Electronics Limited. Image display with movable magnification. 4,800,379, Cl. 340-731.000.

Yi-Tung, Kao. Robot agus-feeder. 4,799,459, Cl. 119-51.110.

Yin, Simon, to Square D Research. Spring-powered drive assembly for opening and closing a switch. 4,800,242, Cl. 200-400.0RS.

Yin, Simon, to Square D Company. Electrical power protection technique. 4,800,460, Cl. 361-340.000.

Yockey, Patricia. Stuffed bear as teaching aid. 4,799,889, Cl. 434-112.000.

Yokota, Yasunori, to Nippon Thompson Co., Ltd. Method of manufacturing holding device of roller bearing for rectilinear motion. 4,799,302, Cl. 29-148.40C.

Yokoya, Hiroaki; Sano, Kenji; Tachikawa, Hiromichi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Transparent electrophotographic photoreceptor comprising specific hydrazone and benzidine compounds as photoconductors. 4,800,146, Cl. 430-73.000.

Yokoyama, Sakae, to Stanley Electric Co., Ltd. Headlamp for vehicle. 4,800,468, Cl. 362-61.000.

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Yonehara, Takao: *See*—
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Yonekura, Katsuyoshi; Uchiyama, Akira; and Matsuda, Akira, to Mitsui Petrochemical Industries, Ltd. Laminate excellent in surface gloss and surface hardness, and preparation process and use thereof. 4,800,130, Cl. 428-517.000.

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Yoshida Industry Co., Ltd.: *See*—
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Ohfusa, Masaatsu, 4,799,515, Cl. 139-384.00B.
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Yoshikawa, Sumio: *See*—
Shimizu, Masayuki; and Yoshikawa, Sumio, 4,800,275, Cl. 250-317.100.

Yoshino, Motoaki, to Canon Kabushiki Kaisha. Data communication apparatus adapted to perform data communication and speech communication. 4,800,439, Cl. 358-257.000.

Yoshino, Nobuo, to Nihon Metal Gasket Kabushiki Kaisha. Metallic gasket. 4,799,695, Cl. 277-231.000.

Yoshioka, Kimitomo: *See*—
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 4,800,201, Cl. 514-230.800.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Taniguchi, Masaru; Saito, Hiroaki; Yamaguchi, Yutaka; Hiraoka, Fumio; and Nakamura, Ikuro, 4,800,155, Cl. 435-7.000.

Yoshizawa, Misuzu; Uomi, Kazuhisa; Kawano, Toshihiro; Ono, Yuichi; and Kajimura, Takashi, to Hitachi, Ltd. Semiconductor laser device having high optical intensity and reliability. 4,800,565, Cl. 372-45.000.

Yoshizawa, Shigeo; and Ishii, Eiichi, to NEC Corporation. Pulse count type FM demodulator. 4,800,338, Cl. 329-103.000.

Younes, Usama E., to Arco Chemical Company. Method for the preparation of rigid cast or transfer molded thermoset polyurethane modified polyisocyanurate compositions. 4,800,058, Cl. 264-328.400.

Young, Donald R., to Young, Donald R.; and Young, Ruth L. Combination medication applicator and pet grooming. 4,799,456, Cl. 119-83.000.

Young, Ruth L.: *See*—
Young, Donald R., 4,799,456, Cl. 119-83.000.

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Younghans, James L.: *See*—
Lahti, Daniel J.; and Younghans, James L., 4,799,633, Cl. 244-130.000.

Yu, Ruey J.; and Bormann, Alan R., to Motorola, Inc. Output buffer for improving di/dt. 4,800,298, Cl. 307-443.000.

Yuge, Shizuo: *See*—
Ueda, Hideaki; Yuge, Shizuo; and Konishi, Katsutoshi, 4,800,144, Cl. 430-58.000.

Yuhara, Yukitomo: *See*—
Okojima, Sumio; and Yuhara, Yukitomo, 4,799,604, Cl. 220-260.000.

Yuhda, Sadayuki, to Sankin Kogyo Kabushiki Kaisha. Anaerobic germiculture receptacle. 4,800,156, Cl. 435-296.000.

Yukawa, Yoshimi; and Wakabayashi, Seiichi, to Yazaki Corporation. Winding of noise suppressing high tension resistive electrical wire. 4,800,359, Cl. 338-214.000.

Yukino, Hiroyasu, to Yanmar Diesel Engine Co., Ltd. Device for mounting an implement on a tractor. 4,799,563, Cl. 180-14.400.

Yunan, Malak E., to Explosives Technologies International Inc. Explosive primer unit for instantaneous initiation by low-energy detonating cord. 4,799,428, Cl. 102-322.000.

Yuter, Seymour C. Telephone console for restaurant tables. 4,800,438, Cl. 358-254.000.

Zacher, A. Richard; Zwagerman, Jay A.; and Dwan, Francis J., to Tandem Computers Incorporated. Electrical keying for replaceable modules. 4,800,462, Cl. 361-413.000.

Zarobila, Clarence J.: *See*—
Freal, James B.; Zarobila, Clarence J.; and Davis, Charles M., 4,800,267, Cl. 250-227.000.

Zaruba, John V.: *See*—
Terzian, Rouben T.; Breslow, Jeffrey D.; Rosenwinkel, Donald A.; and Zaruba, John V., 4,799,678, Cl. 273-1.00E.

Zatko, David A.; and Maguire, John F., to Manufacturers Engineering Equipment Corp. Low level moisture measurement system and method. 4,800,000, Cl. 204-1.00T.

Zellweger, Max. Device for warming the foot of a wearer. 4,799,319, Cl. 36-2.600.

Zenith Electronics Corporation: *See*—
Davila, Fernando E.; and Schmid, Richard G., 4,800,335, Cl. 324-158.00F.

Zenyaku Kogyo Kabushiki Kaisha: *See*—
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 4,800,201, Cl. 514-230.800.

Zerbe, Horst. Pharmaceutical product in the form of a pellet with continuous, delayed medicament substance emission. 4,800,084, Cl. 424-458.000.

Ziegler, Steven M. Knife support and cutting guide. 4,799,315, Cl. 30-293.000.

Zimmer, Herbert, to Dornier GmbH. Helicopter rotor blade control. 4,799,859, Cl. 416-20.00R.

Zimmerman, Albert H.; and Badcock, Charles C., to Aerospace Corporation, The. Apparatus and method for preventing degradation of nickel hydrogen cells and batteries. 4,800,140, Cl. 429-48.000.

Zmijewski, Milton J., Jr.: *See*—
Eaton, Tom E.; Ford, Lynda M.; Godfrey, Otis W., Jr.; Huber, Mary L. B.; and Zmijewski, Milton J., Jr., 4,800,157, Cl. 435-71.000.

Zolnowsky, John: *See*—
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,800,489, Cl. 364-200.000.

Zurcher, Urs: *See*—
Knaffl, Berislav; Knapp, Peter; Rufer, Alfred-Christophe; Zurcher, Urs; and Gotaas, Birger, 4,800,481, Cl. 363-70.000.

Zwagerman, Jay A.: *See*—
Zacher, A. Richard; Zwagerman, Jay A.; and Dwan, Francis J., 4,800,462, Cl. 361-413.000.

501 Satake Engineering Co., Ltd.: *See*—
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LIST OF REISSUE PATENTEES

TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Advantest Corporation: *See*—
Hayashi, Mishio, Re. 32,845, Cl. 324-77.00R.

Bingham, Garrick R., to Green & Bingham Limited. Liquid spray jet assembly and a mineral mining machine cutting head incorporating such assembly. Re. 32,840, Cl. 239-600.000.

Green & Bingham Limited: *See*—
Bingham, Garrick R., Re. 32,840, Cl. 239-600.000.

Hayashi, Mishio, to Advantest Corporation. Period and frequency measuring instrument. Re. 32,845, Cl. 324-77.00R.

Hitachi, Ltd.: *See*—
Saito, Cyuichi; and Sato, Yoshihiko, Re. 32,839, Cl. 198-335.000.

Horowitz, Justin. Canoe caddy. Re. 32,844, Cl. 280-641.000.

Martin Marietta Energy Systems, Inc.: *See*—
Wei, George C., Re. 32,843, Cl. 501-95.000.

Mulder, Douglas C., to Nordson Corporation. Apparatus for transferring powder from bulk drums. Re. 32,841, Cl. 406-134.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Suzuki, Hideo, Re. 32,838, Cl. 84-1.240.

Nordson Corporation: *See*—
Mulder, Douglas C., Re. 32,841, Cl. 406-134.000.

Saito, Cyuichi; and Sato, Yoshihiko, to Hitachi, Ltd. Balustrade of passenger conveyor. Re. 32,839, Cl. 198-335.000.

Sato, Yoshihiko: *See*—
Saito, Cyuichi; and Sato, Yoshihiko, Re. 32,839, Cl. 198-335.000.

Suzuki, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments. Re. 32,838, Cl. 84-1.240.

Wei, George C., to Martin Marietta Energy Systems, Inc. Silicon carbide whisker reinforced ceramic composites and method for making same. Re. 32,843, Cl. 501-95.000.

Wiogda, Luis L. Arbitration of tennis by change of colors. Re. 32,842, Cl. 273-31.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

American Cyanamid Co.: *See*—
Giglia, Robert D.; and Battistelli, Edward A., B1 4,565,727, Cl. 428-172.000.

Artz, Steven P., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. B1 4,678,498, 1-24-89, Cl. 71-87.000.

Atkin, John; and Loustau, Marie-Therese, to Societe Anonyme Dite: SAFT. Method of manufacturing an electrode for an electrochemical cell, and an electrode manufactured by the method. B1 4,514,473, 1-24-89, Cl. 429-221.000.

Battistelli, Edward A.: *See*—
Giglia, Robert D.; and Battistelli, Edward A., B1 4,565,727, Cl. 428-172.000.

Casio Computer Co., Ltd.: *See*—
Hanzawa, Kohtaro; Morikawa, Shigenori; Morokuma, Hiroshi; and Sasaki, Hiroyuki, B1 4,667,556, Cl. 84-1.010.

Dorr, Irene M. Barrette with swiveled hinge. B1 3,998,233, 1-24-89, Cl. 132-48.00A.

Du Pont de Nemours, E. I., and Company: *See*—
Artz, Steven P., B1 4,678,498, Cl. 71-87.000.

Eventoff, Franklin N. Electronic pressure sensitive transducer apparatus. B1 4,314,227, 1-24-89, Cl. 338-99.000.

Ford Motor Company: *See*—
Johnson, Robert C.; Perry, David L.; and Peitsch, Bernd E., B1 4,634,971, Cl. 324-133.000.

General Electric Company: *See*—
Roemer, Peter B.; and Hickey, John S., B1 4,737,716, Cl. 324-319.000.

Giglia, Robert D.; and Battistelli, Edward A., to American Cyanamid Co. Non-woven activated carbon fabric. B1 4,565,727, 1-24-89, Cl. 428-172.000.

Hanzawa, Kohtaro; Morikawa, Shigenori; Morokuma, Hiroshi; and Sasaki, Hiroyuki, to Casio Computer Co., Ltd. Electronic musical instrument with waveform memory for storing waveform data based on external sound. B1 4,667,556, 1-24-89, Cl. 84-1.010.

Hickey, John S.: *See*—
Roemer, Peter B.; and Hickey, John S., B1 4,737,716, Cl. 324-319.000.

Johnson, Robert C.; Perry, David L.; and Peitsch, Bernd E., to Ford Motor Company. Portable hand-held voltage sensor with manually adjustable reference voltage for comparison with sensed voltage. B1 4,634,971, 1-24-89, Cl. 324-133.000.

Loustau, Marie-Therese: *See*—
Atkin, John; and Loustau, Marie-Therese, B1 4,514,473, Cl. 429-221.000.

Morikawa, Shigenori: *See*—
Hanzawa, Kohtaro; Morikawa, Shigenori; Morokuma, Hiroshi; and Sasaki, Hiroyuki, B1 4,667,556, Cl. 84-1.010.

Morokuma, Hiroshi: *See*—
Hanzawa, Kohtaro; Morikawa, Shigenori; Morokuma, Hiroshi; and Sasaki, Hiroyuki, B1 4,667,556, Cl. 84-1.010.

Peitsch, Bernd E.: *See*—
Johnson, Robert C.; Perry, David L.; and Peitsch, Bernd E., B1 4,634,971, Cl. 324-133.000.

Perry, David L.: *See*—
Johnson, Robert C.; Perry, David L.; and Peitsch, Bernd E., B1 4,634,971, Cl. 324-133.000.

Roemer, Peter B.; and Hickey, John S., to General Electric Company. Self-shielded gradient coils for nuclear magnetic resonance imaging. B1 4,737,716, 1-24-89, Cl. 324-319.000.

Sasaki, Hiroyuki: *See*—
Hanzawa, Kohtaro; Morikawa, Shigenori; Morokuma, Hiroshi; and Sasaki, Hiroyuki, B1 4,667,556, Cl. 84-1.010.

Schintlmeister, Wilfried, to Schwarzkopf Development Corporation. Coated cemented carbide elements. B1 4,101,703, 1-24-89, Cl. 428-552.000.

Schwarzkopf Development Corporation: *See*—
Schintlmeister, Wilfried, B1 4,101,703, Cl. 428-552.000.

Societe Anonyme Dite: SAFT: *See*—
Atkin, John; and Loustau, Marie-Therese, B1 4,514,473, Cl. 429-221.000.

Wright, Wayne E. Method and means for reducing the effect of electrostatic charges on paper in a copying system. B1 3,826,379, 1-24-89, Cl. 271-208.000.

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Accumanno, Mario B.: *See—*
Price, Macy J.; Acker, Norman J.; and Accumanno, Mario B., 299,577, Cl. D34-21.000.
Acker, Norman J.: *See—*
Price, Macy J.; Acker, Norman J.; and Accumanno, Mario B., 299,577, Cl. D34-21.000.
Advanced Lighting International, Inc.: *See—*
Hellman, Wayne R.; and Wiley, Emmett H., 299,547, Cl. D26-2.000.
Aladdin Steel Products, Inc.: *See—*
Henry, Daniel S., 299,527, Cl. D23-344.000.
American Standard Inc.: *See—*
Fabian, Wolfgang, 299,515, Cl. D23-250.000.
Fabian, Wolfgang, 299,519, Cl. D23-242.000.
Kessler, Alan F.; Bronaugh, David E.; Watson, James J.; and Bartlett, Stephen P., 299,528, Cl. D23-351.000.
Andreasen, James; and Childre, Casey J. Handle for a fishing rod. 299,514, 1-24-89, Cl. D22-142.000.
Andreasen, James E.; Childre, Casey J.; and Peed, David B., to Lew Childre & Sons, Inc. Handle for a fishing rod. 299,513, 1-24-89, Cl. D22-142.000.
Ashworth, Edward M. Fishing lure body. 299,508, 1-24-89, Cl. D22-133.000.
Baisch, Herbert: *See—*
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, 299,481, Cl. D6-569.000.
Bakic, Karena, to Comede Anstalt. Cosmetic case. 299,561, 1-24-89, Cl. D28-78.000.
Balding, Alan S.; Carter, Nigel F.; Frampton, Paul F.; and Rosso, Vincent A., to Vi-Tal Hospital Products, Ltd. Pressure responsive chamber for monitoring pressure in an infusion set. 299,538, 1-24-89, Cl. D24-53.000.
Balko, John: *See—*
Berg, Mike; Balko, John; and Mervis , lex, 299,490, Cl. D12-162.000.
Bartlett, Stephen P.: *See—*
Kessler, Alan F.; Bronaugh, David E.; Watson, James J.; and Bartlett, Stephen P., 299,528, Cl. D23-351.000.
Bayard, Yves: *See—*
Sosno, Sacha; Vidal, Henri; and Bayard, Yves, 299,540, Cl. D25-5.000.
Berg, Mike; Balko, John; and Mervis , lex. Trailer hitch alignment device. 299,490, 1-24-89, Cl. D12-162.000.
Best, James J. Draft intensifier for a fireplace chimney. 299,529, 1-24-89, Cl. D23-373.000.
Black, Robert R.: *See—*
Cecil, John, Jr.; and Black, Robert R., 299,532, Cl. D24-18.000.
Blanco, Francesco, to Hospal Ltd. Blood circuit for monitoring and controlling the blood flow during extracorporeal blood treatment. 299,533, 1-24-89, Cl. D24-21.000.
Boone, David D., to Lynx Golf, Inc. Golf glove. 299,563, 1-24-89, Cl. D29-22.000.
Breitschmid, Hans: *See—*
Reidenbach, Jean; and Breitschmid, Hans, 299,497, Cl. D21-41.000.
Bronaugh, David E.: *See—*
Kessler, Alan F.; Bronaugh, David E.; Watson, James J.; and Bartlett, Stephen P., 299,528, Cl. D23-351.000.
Calor S.A.: *See—*
Gudefin, Jacques, 299,573, Cl. D32-70.000.
Cardinal Industries, Inc.: *See—*
Downing, Lucien R., 299,541, Cl. D25-17.000.
Subtirelu, Monica P., 299,542, Cl. D25-17.000.
Carter, Nigel F.: *See—*
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Cecil, John, Jr.; and Black, Robert R., to Welch Allyn, Inc. Disposable vaginal speculum. 299,532, 1-24-89, Cl. D24-18.000.
Chalberg, Philip E. Suction assembly for a whirlpool bath. 299,522, 1-24-89, Cl. D23-261.000.
Chen, Chin S.: *See—*
Hong, Chue S.; and Chen, Chin S., 299,504, Cl. D21-194.000.
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Davis, Robert D.; and Davis, Lois S. Portable spin dryer. 299,569, 1-24-89, Cl. D32-8.000.
Dickie, Robert G., to Northern Technologies, Ltd. Keyboard. 299,495, 1-24-89, Cl. D14-100.000.
DiFrank, Frank J. Bag support. 299,575, 1-24-89, Cl. D34-6.000.
Din-Her, Chen. Combined air cooler and heater. 299,524, 1-24-89, Cl. D23-314.000.
Donato, Anthony C., to Lightolier Incorporated. Spotlight. 299,551, 1-24-89, Cl. D26-63.000.
Donato, Anthony C., to Lightolier Incorporated. Spotlight. 299,552, 1-24-89, Cl. D26-63.000.
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Gandy, James, to Signtech Inc. Awning frame member. 299,545, 1-24-89, Cl. D25-57.000.
Geraci, Daniel C. Inflatable water toy. 299,500, 1-24-89, Cl. D21-157.000.
Gould, Murray J. Manipulable puzzle. 299,499, 1-24-89, Cl. D21-104.000.
Gregson, Donald L., to Harris Corporation. Telephone voice termination block. 299,492, 1-24-89, Cl. D14-240.000.
Gudefin, Jacques, to Calor S.A. Combined cordless laundry iron and re-charging base. 299,573, 1-24-89, Cl. D32-70.000.
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Tool holder. 299,481, 1-24-89, Cl. D6-569.000.
Hansen, Henrik: *See—*
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Hansen, Tore; and Hansen, Henrik. Chimney cap. 299,530, 1-24-89, Cl. D23-374.000.
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Honma, Yukihiro, to Kabushiki Kaisha Honma Gorufu Kurabu Seisakusho (Honma Golf Club Mfg., Co., Ltd.). Club-head for golf. 299,505, 1-24-89, Cl. D21-220.000.
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Kelemen, Kelemen C. Bee hive carrier. 299,566, 1-24-89, Cl. D30-109.000.
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Kiyota, Yoshihiro; and Muratani, Toyoji, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Diaphragm valve. 299,521, 1-24-89, Cl. D23-245.000.
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305.1 4,799,552
310 4,799,553
312 4,799,554

CLASS 172
751 4,799,555

CLASS 173
43 4,799,556
91 4,799,557

CLASS 174
36 4,800,236
48 4,800,237
52.1 4,800,238
66 4,800,239

CLASS 177
25 4,799,558
124 4,799,559
148 4,799,560
229 4,799,561
4,799,562

CLASS 178
18 4,800,240

CLASS 180
14.4 4,799,563
65.5 4,799,564
69.4 4,799,565
79.1 4,799,566
205 4,799,567
219 4,799,568
4,799,569
275 4,799,570
294 4,799,571

CLASS 181
114 4,799,572

CLASS 182
2 4,799,573

CLASS 184
27.1 4,799,574

CLASS 188
71.6 4,799,575
84 4,799,576
277 4,799,577

CLASS 192
84 C 4,799,578

107 M 4,799,579

CLASS 194

235 4,799,580

CLASS 198

335 Re.32,839
341 4,799,581
346.1 4,799,582
418.1 4,799,583
709 4,799,584
743 4,799,585
803.01 4,799,586

CLASS 200

82 E 4,800,241
306 4,800,244
345 4,800,245
400 RS 4,800,242
514 4,800,243

CLASS 204

1 T 4,799,999
4,800,000
15 4,800,001
4,800,002
28 4,800,004
70 4,800,003
73 R 4,800,012
109 4,800,005
129.43 4,800,006
196 4,800,007
225 4,800,009
253 4,800,008
299 R 4,800,010
302 4,800,011

CLASS 206

37.6 4,799,587
301 4,799,588
330 4,799,589
390 4,799,590
455 4,799,591
504 4,799,592
585 4,799,593
626 4,799,594

CLASS 208

19 4,800,013
157 4,800,014
[illegible] 4,800,015

CLASS 209

135 4,799,595
580 4,799,596

CLASS 210

206 4,800,016
219 4,800,017
266 4,800,018
321.8 4,800,019
359 4,800,020
605 4,800,021
636 4,800,022
644 4,800,023
665 4,800,024
703 4,800,025

CLASS 211

105.1 4,799,432

CLASS 213

250 4,799,597
260 4,799,598
307 4,799,599

CLASS 219

10.55 E 4,800,247
10.55 F 4,800,246
69 S 4,800,248
79 4,800,249
121.43 4,800,251
121.63 4,800,250
306 4,800,252
553 4,800,253

CLASS 220

1.5 4,799,600
21 R 4,799,601
260 4,799,503
4,799,604
307 4,799,602
4,799,603

CLASS 221

11 4,799,605
280 4,799,606

CLASS 222

94 4,799,607
[illegible] 4,799,608

CLASS 223

39 4,799,613

CLASS 224

42.07 4,799,609
266 4,799,610

CLASS 227

9 4,799,689
[illegible] 4,799,611
121 4,799,612

CLASS 228

1.1 4,799,614
44.7 4,799,615
125 4,799,616
180.2 4,799,617

CLASS 229

92.3 4,799,618
125.42 4,799,619
191 4,799,620

CLASS 235

380 4,800,254
382 4,800,255
467 4,800,256
472 4,800,257
479 4,800,258
483 4,800,259
487 4,800,260

CLASS 237

2 A 4,799,621

CLASS 239

102.2 4,799,622
265.41 4,799,623
412 4,799,624
600 Re.32,840

CLASS 241

30 4,799,625
37.5 4,799,626
236 4,799,627

CLASS 242

84.42 4,799,628

CLASS 244

23 C 4,799,629
101 4,799,630
118.5 4,799,631
122 R 4,799,632
130 4,799,633
155 R 4,799,634

CLASS 248

68.1 4,799,641
102 4,799,636
221.2 4,799,637
228 4,799,639
311.2 4,799,638
516 4,799,642
544 4,799,643
559 4,799,640

CLASS 250

[illegible] 4,800,261
211 J 4,800,262
213 R 4,800,263
221 4,800,264
227 4,800,265
4,800,266
4,800,267
234 4,800,268
4,800,269
235 4,800,270
4,800,271
253 4,800,272
[illegible] 4,800,273
306 4,800,274
317.1 4,800,275
327.2 4,800,276
334 4,800,277
338.1 4,800,278
339 4,800,279
4,800,280
427 4,800,281
461.1 4,800,282
505.1 4,800,284
507.1 4,800,283
554 4,800,285
560 4,800,286
4,800,287
578 4,800,288

CLASS 251

14 4,799,644
30.04 4,799,645
88 4,799,646
356 4,799,647

CLASS 252

8.8 4,800,026
18 4,800,027
25 4,800,028
32.5 4,800,029
4,800,030
47.5 4,800,031
51.5 A 4,800,032
55 4,800,033
56 S 4,800,034
[illegible] 4,800,035
102 4,800,036
[illegible] 4,800,037
174.17 4,800,038
181 4,800,039
182.2 4,800,040
378 R 4,800,041
628 4,800,042

CLASS 254

420 4,799,648

CLASS 260

391 4,800,043
[illegible] 4,800,044
400 4,800,045

CLASS 261

50.3 4,800,046
112.2 4,800,047

CLASS 264

22 4,800,048
26 4,800,049
40.6 4,800,050
56 4,800,051
65 4,800,052
[illegible] 4,800,053
[illegible] 4,800,054
118 4,800,055
129 4,800,056
229 4,800,057
328.4 4,800,058
502 4,800,059

CLASS 266

45 4,799,649
227 4,799,650
275 4,799,652

CLASS 267

136 4,799,653
162 4,799,654

CLASS 269

2 4,799,655
17 4,799,656
24 4,799,657
133 4,799,658
289 R 4,799,659

CLASS 270

21.1 4,799,660
[illegible] 4,799,661

CLASS 271

114 4,799,662
199 4,799,663
208 B1 3,826,379
277 4,799,664

CLASS 272

1 R 4,799,665
8 N 4,799,666
36 4,799,667
73 4,799,668
85 4,799,669
117 4,799,670
118 4,799,671
123 4,799,672
4,799,673
4,799,674
4,799,675
130 4,799,676

CLASS 273

1 E 4,799,677
4,799,678
1.5 R 4,799,679
25 4,799,681
31 Re.32,842
67 A 4,799,682
138 A 4,799,683
157 R 4,799,680
162 F 4,799,684
246 4,799,685
[illegible] 4,799,686
312 4,799,687
371 4,799,688

CLASS 277

[illegible] 4,799,690
12 4,799,691
[illegible] 4,799,692
96.1 4,799,693
140 4,799,694
231 4,799,695

CLASS 279

50 4,799,696

CLASS 280

3 4,799,697
46 4,799,698
79.5 4,799,699
87.041 4,799,701
4,799,702
87.051 4,799,700
[illegible] 4,800,035
267 4,799,704
444 4,799,711
477 4,799,705
504 4,799,706
641 Re.32,844
711 4,799,707
796 4,799,708
[illegible] 4,799,709
[illegible] 4,799,710

CLASS 282

1 A 4,799,712

CLASS 285

42 4,799,713
145 4,799,714
215 4,799,715
334.2 4,799,716
341 4,799,717

CLASS 292

36 4,799,718
144 4,799,719
[illegible] 4,799,720

CLASS 294

1.1 4,799,721
19.2 4,799,725
64.1 4,799,722
87.2 4,799,723
87.26 4,799,724

CLASS 296

100 4,799,726
107 4,799,727
136 4,799,728
4,799,729
195 4,799,730

CLASS 297

192 4,799,731
[illegible] 4,799,732
361 4,799,734
379 4,799,733
440 4,799,735
4,799,736
[illegible] 4,799,737

CLASS 299

11 4,799,738

CLASS 300

15 4,799,740
60 4,799,741
115 4,799,742
119 4,800,289

CLASS 307

43 4,800,290
87 4,800,291
117 4,800,292
4,800,293
263 4,800,294
273 4,800,295
279 4,800,300
291 4,800,296
296 R 4,800,297
308 4,800,299
362 4,800,301
441 4,800,302
443 4,800,298
450 4,800,303
602 4,800,304

CLASS 310

51 4,800,306
67 R 4,800,307
83 4,800,308
90 4,800,309
[illegible] 4,800,310
178 4,800,311
239 4,800,312
242 4,800,313
[illegible] 4,800,314
261 4,800,315
327 4,800,316
334 4,800,317

CLASS 311

228 4,799,743
229 4,799,744

CLASS 313

414 4,800,318
487 4,800,319
625 4,800,320
639 4,800,321

CLASS 315

5.39 4,800,322
219 4,800,323

CLASS 318

293 4,800,324
[illegible] 4,800,325
729 4,800,326
[illegible] 4,800,327

CLASS 320

2 4,800,328

CLASS 323

242 4,800,329
243 4,800,330
277 4,800,331

CLASS 324

73 R 4,800,332
77 R Re.32,845
133 B1 4,634,971
142 4,800,333
158 F 4,800,335
158 MG 4,800,334
319 B1 4,737,716
426 4,800,336
455 4,800,337

CLASS 325

103 4,800,338

CLASS 330

253 4,800,339

CLASS 331

1 A 4,800,340
2 4,800,341
10 4,800,342

CLASS 333

24 C 4,800,343
25 4,800,344
111 4,800,345
140 4,800,346
[illegible] 4,800,347
4,800,348
208 4,800,349
237 4,800,351
239 4,800,350

CLASS 335

132 4,800,352
210 4,800,353
216 4,800,354
301 4,800,355

CLASS 336

184 4,800,356
198 4,800,357

CLASS 337

[illegible] 4,800,358

CLASS 338

99 B1 4,314,227
214 4,800,359
280 4,800,443

CLASS 340

52 R 4,800,360
[illegible] 4,800,361
72 4,800,377
78 4,800,362
310 A 4,800,363
524 4,800,366
526 4,800,367
567 4,800,368
572 4,800,369
573 4,800,370
593 4,800,371
625 4,800,372
[illegible] 4,800,373
649 4,800,374
703 4,800,375
721 4,800,376
722 4,800,378
731 4,800,379
750 4,800,380
764 4,800,381
784 4,800,382
825.520 4,800,384
825.79 4,800,383
854 4,800,385

CLASS 341

119 4,800,365
131 4,800,364

CLASS 342

61 4,800,386
165 4,800,387
175 4,800,389
194 4,800,388
383 4,800,390
[illegible] 4,800,391

CLASS 343

700 MS 4,800,392
821 4,800,393
882 4,800,394
895 4,800,395

CLASS 346

1.1 4,800,396
4,800,397
75 4,800,398
76 PH 4,800,399
107 R 4,800,400
[illegible] 4,800,401
139 R 4,800,402
140 R 4,800,403

CLASS 350

1.7 4,799,745
3.6 4,799,746
3.7 4,799,739
6.8 4,799,747
96.10 4,799,748
96.13 4,799,749
4,799,750
96.15 4,799,751
4,799,752
96.18 4,799,753
4,799,754
4,799,755
4,799,756
96.2 R 4,799,758
96.20 4,799,757
96.21 4,799,759
96.23 4,799,760
96.31 4,799,761
96.34 4,799,762
137 4,799,763
162.18 4,799,764
174 4,799,765
252 4,799,766
269 4,799,767
279 4,799,768
331 R 4,799,769
334 4,799,770
339 R 4,799,772
342 4,799,773
346 4,799,774
350 S 4,799,775
4,799,776
358 4,799,777
452 4,799,778
585 4,799,779
600 4,799,780

CLASS 351

86 4,799,781
118 4,799,782
206 4,799,783
212 4,799,784
4,799,785
243 4,800,404

CLASS 354

86 4,800,405
[illegible] 4,800,406
114 4,800,407
322 4,800,408
[illegible] 4,800,409
[illegible] 4,800,410

CLASS 355

3 DD 4,800,411
4,800,412
45 4,800,413
58 4,800,414

CLASS 356

30 4,799,786
43 4,799,787
45 4,799,788
73.1 4,799,789
4,799,790
121 4,799,791
124 4,799,792
127 4,799,793
246 4,799,794
310 4,799,795
336 4,799,796
345 4,799,797
374 4,799,798
446 4,799,799

CLASS 357

34 4,800,415
4,800,416
59 4,800,417
[illegible] 4,800,418
70 4,800,419
76 4,800,420
[illegible] 4,800,421
[illegible] 4,800,422

CLASS 358

21 R 4,800,423
[illegible] 4,800,424
136 4,800,425
141 4,800,426
4,800,427
142 4,800,428
148 4,800,429
[illegible] 4,800,430
4,800,431
4,800,432
[illegible] 4,800,433
190 4,800,434
213.19 4,800,435

232 4,800,436
244 4,800,437
254 4,800,438
257 4,800,439
260 4,800,440
261.1 4,800,441
280 4,800,442
294 4,800,444
342 4,800,445
343 4,800,446

CLASS 360

10.3 4,800,447
35.1 4,800,448
71 4,800,449
73.06 4,800,450
74.2 4,800,451
78.14 4,800,452
99.02 4,800,453
103 4,800,454
104 4,800,455
109 4,800,456
113 4,800,457
135 4,800,458

CLASS 361

321 4,800,459
340 4,800,460
398 4,800,461
413 4,800,462
424 4,800,463
4,800,464
432 4,800,465

CLASS 362

26 4,800,466
61 4,800,467
4,800,468
72 4,800,469
73 4,800,470
[illegible] 4,800,471
158 4,800,472
217 4,800,473
293 4,800,474
294 4,800,475

CLASS 363

16 4,800,476
17 4,800,477
41 4,800,478
48 4,800,479
60 4,800,480
70 4,800,481

CLASS 364

140 4,800,482
200 4,800,483
4,800,484
4,800,485
4,800,486
4,800,487
4,800,488
4,800,489
4,800,490
4,800,491
403 4,800,492
405 4,800,493
413.03 4,800,495
413.13 4,800,494
422 4,800,496
424.1 4,800,497
426.02 4,800,498
431.03 4,800,499
431.08 4,800,500
453 4,800,501
467 4,800,502
470 4,800,503
478 4,800,504
4,800,505
4,800,506
484 4,800,507
4,800,508
492 4,800,509
521 4,800,510
4,800,511
551.01 4,800,512
571.02 4,800,513
715.07 4,800,514
746.1 4,800,515
748 4,800,516
757 4,800,517
819 4,800,518
822 4,800,519
900 4,799,635
4,800,520
4,800,521
4,800,522
4,800,523
4,800,524

CLASS 365

72 4,800,525
118 4,800,526
182 4,800,527
185 4,800,528
[illegible] 4,800,529
4,800,530
[illegible] 4,800,552
222 4,800,531
226 4,800,532
[illegible] 4,800,533
[illegible] 4,800,535
233 4,800,534

CLASS 366

[illegible] 4,800,536
255 4,799,801
296 4,799,800

CLASS 367

[illegible] 4,800,537
55 4,800,538
72 4,800,539
[illegible] 4,800,540
154 4,800,542
424 4,800,541

CLASS 368

[illegible] 4,800,543
[illegible] 4,800,544
[illegible] 4,800,545

CLASS 369

[illegible] 4,800,546
45 4,800,547
54 4,800,548
[illegible] 4,800,549
59 4,800,550
67 4,800,305
77.1 4,800,551
263 4,800,553
[illegible] 4,800,554

CLASS 370

3 4,800,555
4,800,556
4,800,557
67 4,800,558
[illegible] 4,800,559
[illegible] 4,800,560
4,800,561

CLASS 371

[illegible] 4,800,562
13 4,800,563
[illegible] 4,800,564

CLASS 372

45 4,800,565
73 4,800,566
87 4,800,567
99 4,800,568
4,800,569

CLASS 375

[illegible] 4,800,570
[illegible] 4,800,571
14 4,800,572
4,800,573
[illegible] 4,800,574
[illegible] 4,800,575
83 4,800,576
115 4,800,577
116 4,800,578

CLASS 376

202 4,800,060
261 4,800,061
272 4,800,062
316 4,800,063
[illegible] 4,800,579

CLASS 378

71 4,800,580
143 4,800,581

CLASS 379

67 4,800,583
216 4,800,582
355 4,800,584
364 4,800,585
399 4,800,586
412 4,800,588
413 4,800,589
437 4,800,587

CLASS [illegible]

25 4,800,590

CLASS 382

[illegible] 4,800,591

CLASS 384

19 4,799,802
43 4,799,803
[illegible] 4,799,804
4,799,805
45 4,799,806
462 4,799,807
481 4,799,808
522 4,799,809
[illegible] 4,799,810

CLASS 400

279 4,799,811
616 4,799,812
629 4,799,813
639.1 4,799,814

CLASS 401

132 4,799,815

CLASS 403

[illegible] 4,799,816
57 4,799,817
[illegible] 4,799,818
252 4,799,819

CLASS 404

[illegible] 4,799,820

CLASS 405

46 4,799,822
115 4,799,821
146 4,799,824
180 4,799,823
[illegible] 4,799,825
191 4,799,826
195 4,799,827
4,799,828
4,799,829

CLASS [illegible]

117 4,799,830
134 Re.32,841
136 4,799,831

CLASS [illegible]

123 4,799,832
132 4,799,833
200 4,799,834

CLASS 409

138 4,799,836
219 4,799,835
232 4,799,837
234 4,799,838
244 4,799,839

CLASS 410

42 4,799,840

CLASS 411

55 4,799,841
171 4,799,842
414 4,799,844
[illegible] 4,799,845

CLASS 413

[illegible] 4,799,846

CLASS 414

331 4,799,843
347 4,799,848
462 4,799,849
687 4,799,850
700 4,799,851
724 4,799,852
730 4,799,853
737 4,799,854
790.8 4,799,847

CLASS 415

143 4,799,855
155 4,799,856
185 4,799,857

CLASS 416

20 R 4,799,859
110 4,799,858
119 4,799,860
186 R 4,799,861
242 4,799,862

CLASS 417

7 4,799,864
84 4,799,863
283 4,799,865
415 4,799,866

CLASS 418

[illegible] 4,799,867
36 4,799,868
97 4,799,869
151 4,799,870

CLASS 419

36 4,800,064

CLASS 420

129 4,800,065

CLASS 421

[illegible] 4,800,128

CLASS 422

55 4,800,066
[illegible] 4,800,067
173 4,800,068

CLASS 423

97 4,800,069
210.5 4,800,070
321 R 4,800,071
396 4,800,072
[illegible] 4,800,073
4,800,074
4,800,075

CLASS 424

[illegible] 4,800,076
[illegible] 4,800,077
74 4,800,080
[illegible] 4,800,078
129 4,800,081
409 4,800,082
457 4,800,083
458 4,800,084
462 4,800,085
482 4,800,079
497 4,800,086
4,800,087

CLASS 425

38 4,799,871
63 4,799,872
73 4,799,873
131.1 4,799,874
329 4,799,875
536 4,799,876

CLASS 426

[illegible] 4,800,091
46 4,800,093
[illegible] 4,800,088
4,800,092
78 4,800,089
243 4,800,090
513 4,800,094
548 4,800,095
577 4,800,096
632 4,800,097
637 4,800,098
641 4,800,099

CLASS 427

[illegible] 4,800,100
142 4,800,101
197 4,800,102
221 4,800,103
230 4,800,104
253 4,800,105
388.1 4,800,106
421 4,800,107

CLASS 428

34.9 4,800,109
43 4,800,108
4,800,110
121 4,800,111
163 4,800,112
172 B1 4,565,727
175 4,800,113
4,800,114
178 4,800,115
215 4,800,116
260 4,800,117
270 4,800,118
283 4,800,119
[illegible] 4,800,120
364 4,800,121
391 4,800,124
405 4,800,125
412 4,800,122
420 4,800,126
424.2 4,800,123
447 4,800,127
474.4 4,800,129
517 4,800,130
552 B1 4,101,703
558 4,800,131
[illegible] 4,800,132
606 4,800,133
626 4,800,134
653 4,800,135
[illegible] 4,800,136
698 4,800,137

CLASS 429

19 4,800,138
42 4,800,139
[illegible] 4,800,140
116 4,800,141
[illegible] 4,800,142
153 4,800,143
221 B1 4,514,473

CLASS 430

58 4,800,144
4,800,145
73 4,800,146
125 4,800,147
138 4,800,148
4,800,149
264 4,800,150
270 4,800,151
4,800,152
[illegible] 4,800,153
570 4,800,154

CLASS 431

153 4,799,877
202 4,799,878
328 4,799,879

CLASS 432

13 4,799,880
77 4,799,881

CLASS 433

[illegible] 4,799,884
8 4,799,882
17 4,799,883
95 4,799,885
176 4,799,886
212.1 4,799,887
215 4,799,888

CLASS 434

112 4,799,889
304 4,799,890

CLASS 435

7 4,800,155
71 4,800,157
172.1 4,800,158
172.3 4,800,159
177 4,800,160
233 4,800,161
280 4,800,162
287 4,800,163
296 4,800,156
[illegible] 4,800,164

CLASS 436

6 4,800,165
55 4,800,166
66 4,800,167
124 4,800,168
166 4,800,169

CLASS 437

24 4,800,170
31 4,800,171
51 4,800,172
101 4,800,174
160 4,800,175
193 4,800,176
4,800,177
203 4,800,179
206 4,800,178

CLASS 439

43 4,799,891
72 4,799,892
76 4,799,893
92 4,799,894
183 4,799,895
232 4,799,896
264 4,799,897
418 4,799,898
502 4,799,899
585 4,799,900
4,799,902
620 4,799,901
696 4,799,903
733 4,799,904

CLASS 440

89 4,799,905

CLASS 441

42 4,799,907
85 4,799,906
115 4,799,908
131 4,799,910

CLASS 445

14 4,799,911
26 4,799,912

CLASS 446

193 4,799,913
225 4,799,914
279 4,799,915
444 4,799,916
450 4,799,917

CLASS 474

161 4,799,918
168 4,799,909
205 4,799,919

CLASS 484

23 4,799,920

CLASS 501

88 4,800,180
[illegible] 4,800,181
92 4,800,182
95 Re.32,843
[illegible] 4,800,183
140 4,800,184

CLASS 502

26 4,800,185
33 4,800,186
64 4,800,187
159 4,800,188
400 4,800,189
416 4,800,190

CLASS 503

200 4,800,192
217 4,800,193

CLASS 514

15 4,800,191
[illegible] 4,800,194
150 4,800,195
159 4,800,196
162 4,800,197
167 4,800,198
202 4,800,199
211 4,800,200
227 4,800,202
230.8 4,800,201
248 4,800,203
267 4,800,204
332 4,800,206
346 4,800,205
397 4,800,208
401 4,800,209
413 4,800,207
424 4,800,212
443 4,800,211
616 4,800,213
643 4,800,235

CLASS 521

84.1 4,800,214

CLASS 523

414 4,800,215

CLASS 525

163 4,800,217
285 4,800,216
413 4,800,219
433 4,800,218

CLASS 526

238.23 4,800,220

CLASS 528

[illegible] 4,800,221
94 4,800,222

CLASS 544

354 4,800,223

CLASS 546

[illegible] 4,800,224
112 4,800,225
338 4,800,226

CLASS 548

543 4,800,227

CLASS 549

470 4,800,228

CLASS 558

92 4,800,229
388 4,800,230

CLASS 560

176 4,800,231

CLASS 564

227 4,800,232

CLASS 568

447 4,800,233
842 4,800,234

CLASS 604

51 4,799,921
74 4,799,922
179 4,799,923
181 4,799,924
4,799,925
187 4,799,926
192 4,799,927
329 4,799,928
331 4,799,929

CLASS 623

[illegible] 4,799,930
5 4,799,931

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CLASSIFICATION OF DESIGNS

D3—	61	299,480		41	299,497			299,514	D24—	1.1	299,531			299,548			299,564
D6—	569	299,481		104	299,499	D23—	200	299,516			299,532			299,549	D30—	102	299,565
D7—	711	299,482		111	299,498		235	299,517		21	299,533		42	299,550		109	299,566
D8—	1	299,483		157	299,500		241	299,518			299,534			299,551		116	299,567
	8	299,484		191	299,501		242	299,519			299,535			299,552		124	299,568
	323	299,485			299,502		245	299,520			299,536			299,553	D32—	8	299,569
	341	299,486			299,503			299,521			299,537			299,554		15	299,570
		299,487		194	299,504		250	299,515		53	299,538			299,555			299,571
D9—	307	299,488		220	299,505		261	299,522			299,539		96	299,556		70	299,572
D11—	30	299,489	D22—	117	299,506		283	299,523	D25—	3	299,540		106	299,557			299,573
D12—	162	299,490			299,507		314	299,524		17	299,541	D28—	7	299,558	D34—	6	299,574
	188	299,491		133	299,508		336	299,525			299,542		58	299,559			299,575
D14—	100	299,495		140	299,509		338	299,526		35	299,543		64	299,560		7	299,576
	118	299,494			299,510		344	299,527		52	299,544		78	299,561		21	299,577
	138	299,493			299,511		351	299,528		57	299,545	D29—	20	299,562		25	299,578
	240	299,492		141	299,512		373	299,529		119	299,546		22	299,563	D99—	27	299,579
D21—	24	299,496		142	299,513		374	299,530	D26—		299,547						

CLASSIFICATION OF PLANTS

P.—	7	6,559	49	6,558		6,564		6,555	74	6,563			6,562
		6,560		6,556	69	6,549	71	6,553	76	6,552	78	6,551	
	10	6,561		6,557		6,550	73	6,554					

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
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Georgia	13	New Hampshire	33	Washington	53
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,799,613	4,799,739	4,800,328	4,800,232		4,800,492		4,799,800
	4,800,118	4,799,744	4,800,340	4,800,331	16 :	4,800,098		4,799,964
	4,800,470	4,799,745	4,800,341	4,800,368	17 :	4,799,282	20 :	4,799,423
	4,800,575	4,799,746	4,800,344	4,800,504		4,799,444		4,799,795
02 :	4,799,554	4,799,756	4,800,345	4,800,505		4,799,455		4,799,908
	4,799,782	4,799,759	4,800,350	4,800,506		4,799,483		4,799,917
04 :	4,799,392	4,799,765	4,800,366	4,800,523		4,799,497	21 :	4,799,362
	4,799,451	4,799,767	4,800,380	4,800,526		4,799,590		4,799,446
	4,799,810	4,799,770	4,800,402	4,800,545		4,799,594		4,799,580
	4,799,821	4,799,773	4,800,419	4,800,582		4,799,618		4,799,811
	4,800,101	4,799,780	4,800,420	10 :	4,799,954		4,799,649		4,799,929
	4,800,323	4,799,827	4,800,422		4,799,962		4,799,673		4,800,221
	4,800,365	4,799,830	4,800,431		4,799,984		4,799,674		4,800,293
	4,800,375	4,799,854	4,800,432		4,800,129		4,799,677	22 :	4,799,520
	4,800,421	4,799,875	4,800,450		4,800,219		4,799,678		4,799,714
	4,800,429	4,799,881	4,800,460	11 :	4,800,502		4,799,679		4,799,826
	4,800,465	4,799,894	4,800,462	12	Re.32,842		4,799,691		4,799,829
	4,800,487	4,799,924	4,800,463		4,799,279		4,799,711		4,799,923
	4,800,514	4,799,925	4,800,464		4,799,357		4,799,723		4,799,966
06	4,799,277	4,799,926	4,800,469		4,799,447		4,799,751		4,800,025
	4,799,299	4,799,945	4,800,475		4,799,456		4,799,851		4,800,185
	4,799,300	4,799,952	4,800,486		4,799,495		4,799,884		4,800,191
	4,799,314	4,799,974	4,800,494		4,799,525		4,799,905		4,800,230
	4,799,325	4,799,978	4,800,501		4,799,527		4,799,916	24 :	4,799,323
	4,799,327	4,799,980	4,800,510		4,799,528		4,799,953		4,799,494
	4,799,331	4,799,982	4,800,516		4,799,623		4,799,977		4,799,617
	4,799,345	4,799,999	4,800,517		4,799,631		4,800,022		4,799,690
	4,799,429	4,800,011	4,800,519		4,799,637		4,800,024		4,799,712
	4,799,452	4,800,018	4,800,576		4,799,659		4,800,071		4,799,812
	4,799,458	4,800,046	4,800,590		4,799,686		4,800,094		4,800,065
	4,799,460	4,800,056	4,314,227		4,799,687		4,800,167		4,800,078
	4,799,475	4,800,068	08 :	4,799,370		4,799,704		4,800,235		4,800,357
	4,799,477	4,800,088		4,799,541		4,799,848		4,800,238		3,998,233
	4,799,491	4,800,089		4,799,643		4,799,927		4,800,262	25 :	4,799,359
	4,799,505	4,800,092		4,799,665		4,800,083		4,800,291		4,799,401
	4,799,529	4,800,110		4,799,700		4,800,090		4,800,335		4,799,408
	4,799,532	4,800,140		4,800,540		4,800,108		4,800,351		4,799,479
	4,799,533	4,800,152		4,800,543		4,800,158		4,800,513		4,799,521
	4,799,543	4,800,159	09 :	4,799,322		4,800,283		4,800,583		4,799,606
	4,799,560	4,800,178		4,799,335		4,800,314		4,800,587		4,799,682
	4,799,597	4,800,205		4,799,589		4,800,392	18 :	4,799,414		4,799,784
	4,799,630	4,800,242		4,799,614		4,800,395		4,799,579		4,799,815
	4,799,658	4,800,253		4,799,663		4,800,426		4,799,840		4,799,861
	4,799,668	4,800,255		4,799,764		4,800,518		4,799,882		4,799,906
	4,799,675	4,800,274		4,799,896		4,800,142		4,800,005
	4,799,684	4,800,281		4,799,934	13 :	4,799,292		4,800,157		4,800,019
	4,799,692	4,800,299		4,799,936		4,799,293		4,800,279		4,800,020
	4,799,697	4,800,302		4,799,973		4,799,432	19 :	4,799,291		4,800,100
	4,799,709	4,800,303		4,799,989		4,799,721		4,799,341		4,800,126
	4,799,717	4,800,308		4,800,010		4,800,077		4,799,422		4,800,162
	4,799,727	4,800,317		4,800,052		4,800,377		4,799,487		4,800,166
	4,799,728	4,800,322		4,800,138		4,800,387		4,799,645		4,800,263
	4,799,737	4,800,324		4,800,197		4,800,407		4,799,706		4,800,284

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4,800,290 4,799,428 4,799,910 4,799,877 4,799,900 4,799,911
4,800,391 4,799,443 4,799,942 4,799,948 4,799,901 4,799,991
4,800,400 4,799,481 4,799,949 4,799,971 4,799,902 4,799,992
4,800,405 4,799,484 4,799,983 4,799,981 4,799,913 4,799,995
4,800,442 4,799,488 4,799,998 4,800,017 4,799,955 4,800,081
4,800,479 4,799,583 4,800,027 4,800,026 4,799,963 4,800,171
4,800,524 4,799,584 4,800,054 4,800,031 4,799,969 4,800,186
4,800,551 4,799,642 4,800,070 4,800,032 4,799,979 4,800,215
26 : 4,799,287 4,799,680 4,800,099 4,800,066 4,800,000 4,800,222
4,799,303 4,799,778 4,800,127 4,800,107 4,800,028 4,800,231
4,799,309 4,799,886 4,800,147 4,800,135 4,800,039 4,800,266
4,799,377 4,799,895 4,800,187 4,800,149 4,800,041 4,800,287
4,799,381 4,799,915 4,800,194 4,800,175 4,800,048 4,800,292
4,799,399 4,799,943 4,800,199 4,800,209 4,800,053 4,800,296
4,799,400 4,799,956 4,800,218 4,800,217 4,800,058 4,800,298
4,799,436 4,799,957 4,800,226 4,800,404 4,800,061 4,800,300
4,799,513 4,799,985 4,800,333 40 : 4,799,369 4,800,064 4,800,311
4,799,586 4,800,037 4,800,354 4,799,506 4,800,106 4,800,332
4,799,729 4,800,040 4,800,393 4,799,548 4,800,122 4,800,474
4,799,768 4,800,051 4,800,397 4,799,550 4,800,131 4,800,489
4,799,794 4,800,072 4,800,399 4,799,553 4,800,141 4,800,496
4,799,878 4,800,076 4,800,438 4,799,876 4,800,207 4,800,525
4,799,921 4,800,087 4,800,477 4,799,892 4,800,236 4,800,531
4,799,986 4,800,091 4,800,491 4,800,014 4,800,247 4,800,538
4,800,016 4,800,095 4,800,521 4,800,113 4,800,265 49 : 4,799,671
4,800,036 4,800,096 4,800,564 4,800,227 4,800,297 4,800,370
4,800,043 4,800,168 4,800,569 4,800,537 4,800,301 50 : 4,799,990
4,800,082 4,800,188 4,565,727 4,800,539 4,800,312 51 : 4,799,438
4,800,125 4,800,203 4,737,716 41 : 4,799,275 4,800,313 4,799,587
4,800,170 4,800,203 37 : 4,799,576 4,799,296 4,800,389 4,799,997
4,800,394 4,800,204 4,799,661 4,799,320 4,800,415 4,800,117
4,800,480 4,800,211 4,799,760 4,799,329 4,800,457 4,800,267
4,800,588 4,800,229 4,799,935 4,799,340 3,826,379 4,800,371
4,634,971 4,800,239 4,799,940 4,799,431 4,678,498 4,800,373
27 : 4,799,307 4,800,272 4,799,993 4,799,434 44 : 4,799,685 4,800,559
4,799,324 4,800,361 4,800,256 4,799,492 4,799,825 53 : 4,799,385
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4,799,486 4,800,555 38 : 4,800,015 4,799,726 4,800,115 4,799,600
4,799,493 4,800,573 39 : Re.32,841 4,799,880 4,800,471 4,799,641
4,799,496 35 : 4,800,566 4,799,316 4,800,294 47 : Re.32,843 4,799,797
4,799,648 36 : Re.32,844 4,799,347 4,800,353 4,799,301 4,799,883
4,799,725 4,799,315 4,799,376 4,800,443 4,799,868 4,799,889
4,799,931 4,799,328 4,799,394 4,800,535 4,799,890 4,799,961
4,799,939 4,799,333 4,799,412 42 : 4,799,285 4,800,075 4,800,062
4,800,097 4,799,343 4,799,420 4,799,286 4,800,181 4,800,119
4,800,114 4,799,375 4,799,464 4,799,305 4,800,183 4,800,495
4,800,273 4,799,393 4,799,512 4,799,312 4,800,213 54 : 4,799,445
4,800,295 4,799,441 4,799,536 4,799,317 48 : 4,799,356 4,799,748
4,800,348 4,799,457 4,799,555 4,799,338 4,799,361 4,799,850
4,800,454 4,799,480 4,799,558 4,799,342 4,799,378 4,800,237
28 : 4,799,914 4,799,511 4,799,599 4,799,346 4,799,382 55 : 4,799,326
4,800,372 4,799,616 4,799,633 4,799,360 4,799,391 4,799,433
29 : 4,799,330 4,799,638 4,799,656 4,799,374 4,799,544 4,799,519
4,799,823 4,799,688 4,799,672 4,799,485 4,799,546 4,799,526
4,799,832 4,799,696 4,799,715 4,799,535 4,799,547 4,799,657
4,799,834 4,799,741 4,799,731 4,799,537 4,799,552 4,799,670
4,800,093 4,799,755 4,799,752 4,799,545 4,799,572 4,799,701
4,800,116 4,799,766 4,799,757 4,799,625 4,799,609 4,799,885
4,800,309 4,799,793 4,799,763 4,799,650 4,799,615 4,800,123
30 : 4,799,388 4,799,849 4,799,779 4,799,681 4,799,669 4,800,180
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4,799,831 4,799,888 4,799,808 4,799,699 4,799,719 4,800,364
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U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, Commissioner

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Vol. 1098 Number 5

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT
January 31, 1989

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
January 31, 1989 Volume 1098 Number 5

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226-864 O.G.-89-1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Oct. 1, 1988, and was announced in the *Official Gazette* at 1094 O.G. 2 on Sept. 6, 1988.

Domestic PCT fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Danish declaration under PCT Article 64 (1)(a), that Denmark shall not be bound by PCT Chapter II, as from Nov. 1, 1988, was announced at 1095 O.G. 2 on Oct. 4, 1988.

The withdrawal of the Norwegian declaration under PCT Article 64(1)(a), that Norway shall not be bound by PCT Chapter II, as from Jan. 1, 1989, was announced at 1096 O.G. 34 on Nov. 22, 1988.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1160.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

Oct. 26, 1988.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for A Decision Without A Hearing as of Dec. 30, 1988

Chemical Discipline	-	March 1, 1988
Mechanical Discipline	-	March 23, 1987
Electrical Discipline	-	May 18, 1987

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Hearing as of Dec. 30, 1988

Chemical	-	September 3, 1986
Electrical	-	September 29, 1986
Mechanical	-	September 4, 1986

Board of Patent Appeals and Interference Decisions Rendered in Ex Parte Appeals During the Month of Dec. 1988

Affirmed	175
Affirmed-in-Part	30
Reversed	126
Total Decided	331

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 28, 1986 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,566,136 through 4,567,610
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 26, 1982 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,312,076 through 4,313,228
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 13, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,481,683	06/384,478	11/13/84
4,481,685	06/401,171	11/13/84
4,481,690	06/481,726	11/13/84
4,481,693	06/311,286	11/13/84
4,481,695	06/423,150	11/13/84
4,481,707	06/469,370	11/13/84
4,481,713	06/498,847	11/13/84
4,481,714	06/462,366	11/13/84
4,481,715	06/463,742	11/13/84
4,481,719	06/455,428	11/13/84
4,481,720	06/492,566	11/13/84
4,481,729	06/471,229	11/13/84
4,481,733	06/520,550	11/13/84
4,481,737	06/599,547	11/13/84
4,481,743	06/337,686	11/13/84
4,481,749	06/355,738	11/13/84
4,481,768	06/292,903	11/13/84
4,481,769	06/332,734	11/13/84
4,481,775	06/222,803	11/13/84
4,481,784	06/548,295	11/13/84
4,481,791	06/558,049	11/13/84
4,481,792	06/543,050	11/13/84
4,481,796	06/284,988	11/13/84
4,481,800	06/435,981	11/13/84
4,481,812	06/494,207	11/13/84
4,481,815	06/452,792	11/13/84
4,481,817	06/382,674	11/13/84
4,481,831	06/485,223	11/13/84
4,481,846	06/352,934	11/13/84
4,481,857	06/220,811	11/13/84
4,481,874	06/492,385	11/13/84
4,481,875	06/446,571	11/13/84

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Patent Number	Serial Number	Issue Date
4,481,883	06/493,490	11/13/84
4,481,887	06/413,499	11/13/84
4,481,892	06/519,943	11/13/84
4,481,893	06/449,382	11/13/84
4,481,894	06/380,415	11/13/84
4,481,899	06/426,043	11/13/84
4,481,900	06/361,829	11/13/84
4,481,902	06/358,858	11/13/84
4,481,907	06/459,534	11/13/84
4,481,917	06/524,296	11/13/84
4,481,936	06/568,524	11/13/84
4,481,951	06/467,524	11/13/84
4,481,955	06/502,153	11/13/84
4,481,962	06/353,060	11/13/84
4,481,965	06/431,042	11/13/84
4,481,966	06/512,066	11/13/84
4,481,968	06/356,015	11/13/84
4,481,975	06/391,837	11/13/84
4,481,980	06/402,162	11/13/84
4,481,988	06/551,021	11/13/84
4,481,989	06/533,535	11/13/84
4,482,002	06/505,897	11/13/84
4,482,005	06/567,758	11/13/84
4,482,006	06/469,126	11/13/84
4,482,027	06/527,570	11/13/84
4,482,044	06/374,001	11/13/84
4,482,049	06/568,046	11/13/84
4,482,066	06/423,250	11/13/84
4,482,072	06/493,777	11/13/84
4,482,073	06/547,692	11/13/84
4,482,095	06/422,342	11/13/84
4,482,096	06/341,491	11/13/84
4,482,098	06/365,370	11/13/84
4,482,101	06/503,826	11/13/84
4,482,105	06/445,508	11/13/84
4,482,112	06/418,952	11/13/84
4,482,113	06/586,893	11/13/84
4,482,115	06/260,115	11/13/84
4,482,116	06/363,016	11/13/84
4,482,119	06/430,722	11/13/84
4,482,120	06/419,938	11/13/84
4,482,123	06/350,258	11/13/84
4,482,125	06/421,590	11/13/84
4,482,128	06/519,032	11/13/84
4,482,130	06/462,944	11/13/84
4,482,131	06/378,519	11/13/84
4,482,132	06/421,234	11/13/84
4,482,143	06/465,958	11/13/84
4,482,149	06/504,989	11/13/84
4,482,151	06/499,829	11/13/84
4,482,152	06/434,166	11/13/84
4,482,153	06/467,983	11/13/84
4,482,154	06/376,022	11/13/84
4,482,157	06/432,692	11/13/84
4,482,163	06/428,046	11/13/84
4,482,165	06/447,028	11/13/84
4,482,166	06/406,334	11/13/84
4,482,167	06/483,671	11/13/84
4,482,169	06/461,428	11/13/84
4,482,175	06/464,021	11/13/84
4,482,178	06/232,119	11/13/84
4,482,181	06/258,255	11/13/84
4,482,182	06/463,170	11/13/84
4,482,184	06/419,139	11/13/84
4,482,191	06/392,487	11/13/84
4,482,192	06/395,764	11/13/84
4,482,199	06/473,703	11/13/84
4,482,200	06/402,506	11/13/84
4,482,201	06/365,333	11/13/84
4,482,230	06/460,465	11/13/84
4,482,232	06/353,583	11/13/84
4,482,241	06/482,534	11/13/84
4,482,242	06/482,540	11/13/84
4,482,251	06/312,676	11/13/84
4,482,255	06/437,067	11/13/84
4,482,259	06/498,238	11/13/84
4,482,272	06/371,305	11/13/84
4,482,276	06/425,913	11/13/84
4,482,282	06/338,608	11/13/84
4,482,285	06/407,555	11/13/84
4,482,287	06/373,661	11/13/84
4,482,289	06/299,585	11/13/84
4,482,310	06/451,144	11/13/84
4,482,317	06/395,693	11/13/84
4,482,322	06/478,095	11/13/84
4,482,333	06/373,653	11/13/84
4,482,354	06/535,129	11/13/84
4,482,359	06/400,089	11/13/84
4,482,362	06/459,564	11/13/84
4,482,364	06/492,231	11/13/84
4,482,366	06/508,783	11/13/84
4,482,374	06/386,051	11/13/84
4,482,377	06/485,209	11/13/84
4,482,382	06/494,933	11/13/84
4,482,388	06/539,861	11/13/84
4,482,391	06/447,391	11/13/84
4,482,394	06/415,969	11/13/84
4,482,404	06/558,675	11/13/84
4,482,406	06/491,111	11/13/84
4,482,407	06/497,445	11/13/84
4,482,408	06/497,456	11/13/84
4,482,409	06/497,457	11/13/84
4,482,410	06/497,458	11/13/84
4,482,411	06/497,459	11/13/84
4,482,414	06/547,247	11/13/84
4,482,431	06/467,922	11/13/84
4,482,438	06/520,646	11/13/84
4,482,440	06/539,606	11/13/84
4,482,446	06/394,678	11/13/84
4,482,454	06/440,292	11/13/84
4,482,459	06/489,127	11/13/84
4,482,461	06/451,086	11/13/84
4,482,469	06/414,665	11/13/84
4,482,473	06/431,178	11/13/84
4,482,503	06/400,026	11/13/84
4,482,512	06/463,889	11/13/84
4,482,517	06/389,997	11/13/84
4,482,519	06/256,331	11/13/84
4,482,521	06/265,709	11/13/84
4,482,525	06/487,491	11/13/84
4,482,527	06/538,130	11/13/84
4,482,533	06/479,499	11/13/84
4,482,535	06/387,859	11/13/84
4,482,543	06/349,608	11/13/84
4,482,555	06/474,205	11/13/84
4,482,559	06/466,100	11/13/84
4,482,561	06/441,093	11/13/84
4,482,584	06/401,616	11/13/84
4,482,589	06/518,309	11/13/84
4,482,597	06/453,891	11/13/84
4,482,606	06/356,338	11/13/84
4,482,614	06/441,491	11/13/84
4,482,617	06/447,270	11/13/84
4,482,619	06/493,808	11/13/84
4,482,633	06/337,293	11/13/84
4,482,635	06/534,779	11/13/84
4,482,639	06/418,320	11/13/84
4,482,643	06/401,829	11/13/84
4,482,645	06/519,151	11/13/84
4,482,661	06/513,896	11/13/84
4,482,680	06/484,721	11/13/84
4,482,707	06/447,967	11/13/84
4,482,708	06/406,458	11/13/84
4,482,711	06/404,116	11/13/84
4,482,714	06/461,095	11/13/84
4,482,716	06/487,352	11/13/84
4,482,721	06/387,463	11/13/84
4,482,724	06/411,521	11/13/84
4,482,731	06/297,479	11/13/84
4,482,736	06/513,933	11/13/84
4,482,744	06/440,894	11/13/84
4,482,763	06/399,270	11/13/84
4,482,785	06/421,982	11/13/84
4,482,786	06/351,325	11/13/84
4,482,793	06/358,446	11/13/84
4,482,796	06/409,388	11/13/84

Patent Number	Serial Number	Issue Date
4,482,804	06/418,563	11/13/84
4,482,817	06/335,649	11/13/84
4,482,818	06/367,150	11/13/84
4,482,823	06/377,488	11/13/84
4,482,835	06/493,099	11/13/84
4,482,840	06/424,118	11/13/84
4,482,843	06/346,201	11/13/84
4,482,844	06/464,405	11/13/84
4,482,859	06/378,346	11/13/84
4,482,869	06/368,067	11/13/84
4,482,870	06/312,245	11/13/84
4,482,871	06/393,146	11/13/84
4,482,879	06/469,161	11/13/84
4,482,881	06/399,267	11/13/84
4,482,901	06/345,226	11/13/84
4,482,916	06/437,825	11/13/84
4,482,933	06/398,471	11/13/84
4,482,941	06/551,969	11/13/84
4,482,972	06/277,224	11/13/84
4,482,986	06/341,007	11/13/84
4,482,993	06/485,848	11/13/84
4,483,006	06/375,621	11/13/84
4,483,011	06/603,991	11/13/84
4,483,017	06/288,685	11/13/84

Notification of Acceptance of Delayed Payment of Maintenance Fee (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below is considered as not having expired but is subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,355,810	06/219,295	10/26/82	12/22/80	12/27/88
4,364,492	06/236,661	12/21/82	2/23/81	12/27/88
4,377,244	06/321,756	3/22/83	11/16/81	12/27/88
4,418,138	06/411,565	11/29/83	8/25/82	12/14/88
4,439,235	06/388,112	3/27/84	6/14/82	11/30/88
4,446,504	06/532,085	5/1/84	9/13/83	12/14/88
4,446,588	06/381,545	5/8/84	5/24/82	12/14/88
4,461,046	06/436,275	7/24/84	1/3/83	12/14/88

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,593,280, Re. S.N. 201,707, Filed June 6, 1988, Cl. 340/825.05, WRITE TOKEN REGENERATION IN A TIMED TOKEN RING, Robert M. Grow, Owner of Record: *Burroughs Corp., Detroit, Mich.*, Attorney or Agent: Nathan Cass, Ex. Gp.: 264

4,615,959, Re. S.N. 254,966, Filed Oct. 7, 1988, Cl. 429/194, SECONDARY BATTERY OR CELL WITH IMPROVED RECHARGEABILITY, Hiroshi Hayashi, et al., Owner of Record: *Sanyo Chemical Industries, Ltd., Kyoto, Japan*, Attorney or Agent: Norman F. Oblon, Ex. Gp.: 114

4,624,171, Re. S.N. 275,439, Filed Nov. 23, 1988, Cl. 84/103, AUTO-PLAYING APPARATUS, Keiji Yuzawa, et al., Owner of Record: *Casio Computer Co., Tokyo, Japan*, Attorney or Agent: Thomas Langer, Ex. Gp.: 215

4,625,545, Re. S.N. 277,278, Filed Nov. 29, 1988, Cl. 73/40, METHOD AND APPARATUS FOR DETECTING LEAKS, Albert E. Holm, et al., Owner of Record: *Testrite Inc., Marine City, Mich.*, Attorney or Agent: Thomas A. Lewry, Ex. Gp.: 265

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,882,745, Reexam. No. 90/001,666, Requested: Dec. 14, 1988, Cl. 83/311, APPARATUS AND METHOD FOR ACCURATE DIE-CUTTING, Clyde B. Garrett, et al., Owner of Record: *Koppers Co., Inc., Pittsburgh, Pa.*, Attorney or Agent: Thomas W. Flynn, Ex. Gp.: 320, Requester: Owner

3,899,945, Reexam. No. 90/001,667, Requested: Dec. 14, 1988, Cl. 83/88, APPARATUS AND METHOD FOR ACCURATE DIE-CUTTING, Clyde G. Garrett, et al., Owner of Record: *Koppers Co., Inc., Pittsburgh, Pa.*, Attorney or Agent: Thomas B. Flynn, Ex. Gp.: 320, Requester: Owner

4,499,591, Reexam. No. 90/001,664, Requested: Dec. 12, 1988, Cl. 378/62, FLUOROSCOPIC FILTERING, Gary Hartwell, Owner of Record: *Inventor, Troy, Va.*, Attorney or Agent: Price & Adams, Ex. Gp.: 250, Requester: Jones, Askew, et al., Atlanta, Ga.

4,568,420, Reexam. No. 90/001,669, Requested: Dec. 15, 1988, Cl. 162/65, MULTI-STAGE BLEACHING PROCESS INCLUDING AN ENHANCED OXIDATIVE EXTRACTION STAGE, Arthur J. Nonni, Owner of Record: *International Paper Co., New York, N.Y.*, Attorney or Agent: J. S. Cinamon, Ex. Gp.: 130, Requester: Norman H. Zivin, New York, N.Y.

4,581,516, Reexam. No. 90/001,665, Requested: Dec. 12, 1988, Cl. 219/121.0PM, PLASMA TORCH WITH A COMMON GAS SOURCE FOR THE PLASMA AND FOR THE SECONDARY GAS FLOW, Bruce D. Hatch, et al., Owner of Record: *Thermal Dynamic Corp., West Lebanon, N.H.*, Attorney or Agent: J. S. Hsue, Ex. Gp.: 210, Requester: Owner

4,688,499, Reexam. No. 90/001,668, Requested: Dec. 15, 1988, Cl. 112/121.12, APPARATUS FOR AUTOMATICALLY FABRICATING TEXTILES ARTICLES SUCH AS BATH RUGS AND THE LIKE, Lawrence C. Moore, et al., Owner of Record: *C. S. Brooks Corp., New York, N.Y.*, Attorney or Agent: Bell, Selzer, et al., Ex. Gp.: 240, Requester: Helfgott & Karas, New York, N.Y.

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4,767,746, Reexam. No. 90/001,660, Requested: Dec. 7, 1988, Cl. 514/25, METHOD FOR ENHANCEMENT OF HEALING OF EPITHELIAL WOUNDS IN MAMMALS, Nicholas Catsimpoolas, et al., Owner of Record: *Angio-Medical Corp., New York, N.Y. & Trustees of Boston Univ., Boston, Mass.*, Attorney or Agent: Felfe & Lynch, Ex. Gp.: 120, Requester: Birch, Stewart, et al., Falls Church, Va.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Marquis Industries, Inc., Cerritos, Calif., Reg. No. 1,255,724, for the mark "FORMULA 1 CAR CARE PRODUCTS" and design, Canc. No. 17,355.

Sea Air Ground Apparel, Inc., New York, N.Y., Reg. No. 1,454,537, for the mark "S-A-G-A A TRUE ADVENTURE IN WEARING GEAR SEA AIR GROUND APPAREL" and design, Canc. No. 17,074.

Marquis Industries, Inc., Cerritos, Calif., Reg. No. 1,255,726, for the mark "FORMULA 1", Canc. No. 17,356.

Marquis Industries, Inc., Cerritos, Calif., Reg. No. 1,255,725, for the mark "FORMULA 1" and design, Canc. No. 17,357.

Kazi's Inc., Stillwater, Okla., Reg. No. 1,399,987, for the mark "LEAN MARINADE", Canc. No. 17,375.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Erasa Corp., Fargo, N. Dak., Reg. No. 1,438,582, for the mark "ERASA LABEL", Canc. No. 17,332.

Reed Unit-Fans, Inc., New Orleans, La., Reg. No. 628,700, for the mark "PORT-O-VENT", Canc. No. 17,335.

Associated Publishers, Inc., Omaha, Nebr., Reg. No. 1,409,979, for the mark "WOMEN'S EDITION", Canc. No. 17,358.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Closing of the Patent and Trademark Office on Friday, Jan. 20, 1989

In view of the fact that Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, were officially closed on Jan. 20, 1989, the Patent and Trademark Office will consider Jan. 20, 1989, a "holiday within the District of Columbia" under 35 U.S.C. §21. Any action or fee due that day will be considered as timely for the purposes of e.g., 35 U.S.C. §§119, 133 and 151, if the action is taken, or fee paid, on Jan. 23, 1989. Papers deposited in U.S. Department of Commerce District Offices on Jan. 20, 1989, will similarly be considered timely for the purposes of 35 U.S.C. §§119, 133 and 151.

Jan. 6, 1989

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Status of PTO Services

The following is an update of the status of PTO services for December 1988:

Service Item	FY 1989 Goal (Calendar Days[1])	Monthly Average (Calendar Days[1])
Filing Receipts:		
Patents	22	23
Trademarks	30	17
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	19 Hours
Window Coupons	5	2
Mail Coupons	12	6
Letter Orders	16	9
Certified Copies:		
Trademark Registrations	21	28
Applications-As-Filed	17	10*
File-Wrapper/Contents	N/A	12
Walk-up Certification	1	1
Trademark Search Library:		
Filing Pending Marks	21	24
Filing Reg. Certificates	Issue Date	+3 Days
Filing Temp. Drawings		7
Assignments:		
Recording Patent Assignments	20	87**
Receipt Date of Patent Documents Returned		Aug. 19, 1988
Recording Trademark Assignments	20	48**
Receipt Date of Trademark Documents Returned		Sept. 30, 1988
Avg. Days from Issue Fee Payment to Issue Date	90–100	91
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule
Patent Copies Available	95% on Issue Date	98% on Issue Date
Trademark Copies Available	95% on Issue Date	99% on Issue Date

1] Unless otherwise noted.
* The 5% of orders for which fiche are not on site are not included in calculations.
** See Narrative.

SERVICE STATISTICS

- *Assignment Backlog Improvement* — The trademark assignment backlog has been reduced from an average of 61 days to 48 days. The backlog for the last week covered by this report was reduced to 36 days. Information on trademark assignments is available to the public in the Assignment Search Room through Nov. 30, 1988. All documents from Sept. 1988 have been returned to senders. Oct. 1988 documents are ready to be released on Jan. 3, 1989.

  The backlog in patent assignments has been reduced by 27 days. The majority of patent assignments which were filed with new applications have a backlog dating from Aug. 1988, when the new application was filed. These assignments could not be processed until the new applications were processed through preliminary examination. Assignments other than those received with new applications date from Sept. 1988.

  We have instituted mandatory overtime for stall for the month of Jan. in order to eliminate our backlog in both trademark and patent assignments as soon as possible.

  We continue to investigate problems and study ways to report information. We ask that any problems and/or corrections to assignment records be brought to our attention.

IMPROVEMENTS TO SERVICES

- *Drawing Review Study Team* — Several comments were received in response to the OG notice published on Oct. 25, 1988. In addition, the Drawing Review Study Team is conducting its own telephone survey of practitioners and examiners for more information. The team will analyze the comments, formulate feasible alternatives, and present recommendations to PTO management in the next month.

- *Return Postcards* — Application serial numbers which include both series code and serial number are now being stamped on return postcards which are proviced with new patent applications. In the past, only the serial number was provided.

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HELPFUL HINTS

- *Assignments*

Assistance — Customers are encouraged to call the Assignment Branch Quality Control Status Section (703-557-8691) with questions regarding procedure, fees or status of assignments.

Foreign Assignees — When filing an assignment with a foreign assignee, an appointment of domestic representation is required. If more than one property is included in the assignment, a separate appointment of domestic representative is required for each property. You need only submit one original appointment. Photocopies of the appointment of domestic representative may be filed for the additional properties.

Submission of Assignment Documents — Only an original document or a certified copy of a document is acceptable for recordation. When signing an original document, ink other than black should be used so that the signature can clearly be identified as an original one.

Do not file extra copies of assignment documents. They may be mistaken as documents intended for recordation.

Be sure to attach a transmittal letter including the firm's name and address on each assignment document to ensure accurate return of the assignment document. Use extra staples to ensure the transmittal letter does not become detached. As a further safeguard, include a return address on the assignment document.

Do check the assignment document to make sure that the name of the assignor and assignee are consistent throughout the document.

- *Certificate of Mailing - Separate Certificate for Each Document* — Practitioners and others are reminded of the requirement of MPEP 512(D) which states: "In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO-85 and an assignment), each paper must have its own certification as a part thereof or attached thereto." Although form PTOL-85b, Issue Fee Transmittal, may contain a Certificate of Mailing thereon, a separate Certificate of Mailing is required for all papers included with this form, including formal drawings, since papers are separated and flow to different areas of the Office. Checks submitted with papers do not require a Certificate of Mailing.

- *Correspondence Concerning a Patent Application* — Under revised 37 CFR 1.5(a), effective Jan. 1, 1989, when a document concerns a previously filed application for a patent, it must identify on the top page in a conspicuous location, either the application number (consisting of the series code and the serial number, e.g., 07/123,456), or the serial number and filing date assigned to that application by the Patent and Trademark Office, or the international application number of the international application. No papers related to a new patent application should be filed in the Office prior to receipt of this information. Any papers filed without this required information will not be processed, but will be returned to sender if a return address is available.

- *Docket Numbers on Filing Receipts for Patent Applications* — Docket numbers must be limited to a maximum of 12 characters to prevent truncation. The Patent Application Location and Monitoring (PALM) system data base allows a maximum of 12 characters for the attorney's docket numbers. Spaces, slashes and hyphens will no longer be included in the entered docket number on the official filing receipt. In an application where CASE or NAVY-CASE appears before the first character in the docket number, only the characters after CASE or NAVY-CASE will be entered on the official filing receipt.

- *Responses Filed for International Applications* — The 18 month publication deadline for international applications filed under the Patent Cooperation Treaty (PCT) is critical. Therefore, it is in applicant's interest to respond timely to an invitation to correct a PCT Article 14 defect. An untimely response can result in the withdrawal of the international application under Article 14 and PCT Rule 26. If an extension to respond is needed. call the person who signed the invitation before the expiration of the time limit. The PTO will strictly comply with PCT Article 14 and Rule 26 in holding international applications withdrawn when responses are untimely or not filed.

- *Consolidated Helpful Hints* — Below is an updated compilation of all Helpful Hints published to date.

Jan. 5, 1989

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PTO Helpful Hints

1. APPEALS
a. Appeal Fees in Patent Cases
b. Notices of Appeal to the United States Court of Appeals
2. APPLICATION FILES
a. Requests for Allowed Patent Application Files
b. Returning Files to the File Information Unit (FIU)
3. APPLICATION PAPERS
a. Disclosure Statements
b. Docket Numbers - Placement
c. Papers Related to Patent Applications
d. Papers Related to Trademark Applications
e. Papers with No Particular Time Requirement
f. Residence of Applicant
g. Response to Final Rejection in Patent Applications - Expediting Processing
h. Separation of Various Application Papers
i. Supplemental or Preliminary Amendments
j. Transmittal Letters for Deposit Account Charges
4. ASSIGNMENTS
a. Assistance
b. Delays in Assignments for New Patent Applications
c. Expediting Corrections or Updates
d. Foreign Assignees
e. Routing of Assignment Documents
f. Submission of Assignment Documents
g. Trademark Registrations - Ensuring Correct Printing
5. CERTIFICATES OF CORRECTION
a. Accurate Requests
6. CERTIFICATION SERVICES
a. Expedited Service for Patent Applications-As-Filed
b. Methods of Ordering
c. Processing time
d. PTO vs. Public-Supplied Copies for Certification
e. Questions Frequently Asked
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a. Proper Identification of Formal or Substitute Drawings
b. Proper Identification of New Application Drawings
c. Submission of Copies of Drawings
d. Timeliness of Submission of Corrected Drawings in Allowed Cases
8. EXTENSIONS OF TIME IN PATENT CASES
a. Appropriateness
b. Extensions of Time Under 37 CFR 1.136(a)
c. Instances Not Permitted
d. Insufficient Fees
e. Policy
f. Requirement for Request or Petition for Extension
g. Response to Final Rejection - Avoiding Extension Fees
h. Supplemental Amendments
9. FILES
a. Official Searches
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10. FILING RECEIPTS FOR PATENT APPLICATIONS
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b. License to Foreign File
c. Residence of Applicant
11. INTERVIEWS WITH PATENT EXAMINERS

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12. MAIL

a. Certificate of Mailing - Separate Certificate for
b. Certificate of Mailing AND Return Postcard
c. Correspondence with Certificate of Mailing Delivered
d. Expediting Handling of Trademark Applications
e. Express Mail
f. Response to Final Rejections in Patent Applications - Expediting Processing and Reply by PTO
g. Return Postcard
h. Secrecy - Related Papers (37 CFR 5)
i. Special Box - Box AF
j. Special Box - Box Re-exam
k. Special Designations for Mail

13. MAINTENANCE FEES

a. Address to Which Correspondence is Sent Regarding
b. Correspondence Address and/or Fee Address on
c. Delayed Payment of Maintenance Fees

14. NEW PATENT APPLICATIONS

a. Attorney Docket Number on Incomplete/Missing Parts
b. Continuation or Divisional - Retaining Original Claim
c. Continuation or Divisional - Problems
d. File Wrapper Continuation - Preliminary Amendment
e. File Wrapper Continuation - Problems
f. Information Disclosure Citation - Form PTO 1449
g. Petition for License
h, Processing and Retention Fees for Abandoned Applications
i. Surcharge for Filing a Patent Application

15. PATENT COOPERATION TREATY APPLICATIONS

a. Responses Filed in International Applications
b. Early Notification of Receipt of PCT Designated Office cases

16. PATENT COPIES

a. Coupon Ordering Service
b. Electronic Ordering Service
c. Subscription Services

17. PETITIONS TO REVIVE

a. Request and Fee for Extension Not Required
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18. POWER TO INSPECT

a. Power of Attorney
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19. REISSUES

a. Amendments
b. Oaths and/or Declarations

20 SMALL ENTITY STATUS

a. Small Entity Statements

21. TRADEMARKS

a. Application Drawings
b. File Histories
c. Post Registration

1. APPEALS

a. *Appeal Fees in Patent Cases*

Appeal fees deficiencies are frequent, causing necessity for extension fees to cover the additional time consumed in making up the appeal fee deficiency. Ensuring proper payment at time of filing the appeal will save money and time.

b. *Notices of Appeal to the United States Court of Appeals for the Federal Circuit*

Notices of appeal to the United States Court of Appeals for the Federal Circuit should be sent to the Solicitor at the address below:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Improperly addressing such communications, e.g. to the examining groups, may delay delivery to the Solicitor.

2. APPLICATION FILES

a. *Requests for Allowed Patent Application Files*

Applicants or attorneys requesting files from the Publishing Division, Office of Publications, should make their request at least twenty-four hours in advance to ensure file availability. Attention is especially directed to out-of-town requesters who visit the Office, anticipating same day service. Although the Office is usually able to respond promptly, unexpected inconvenience can be avoided if arrangements are made in advance.

Inquiries and requests should be directed to the Correspondence Section at (703) 557-6397 or (703) 557-6398 between the hours of 8:30 a.m. through 5:00 p.m. on weekdays.

b. *Returning Files to the File Information Unit (FIU)*

Customers are reminded that file histories obtained through the FIU are official government records which must not be removed from the confines of the Patent Search Room at any time. Such files must be returned to the File Information Unit by 7:45 p.m. on the same day they are obtained.

FIU personnel will continue to periodically monitor this problem. Should individual patterns of abuse be discerned, administrative sanctions up to termination of access privileges may be applied.

3. APPLICATION PAPERS

a. *Disclosure Statements*

If a disclosure statement is to be filed before an Office action, file it when the application is filed. Some Group Art Units have greatly reduced the pendency to first action. Hence, many examiners are taking up new applications before an information statement is matched with the application.

b. *Docket Numbers - Placement*

If use of a docket number is desired, the docket number should be placed in the upper right corner of the transmittal letter accompanying newly filed patent applications. This will eliminate a time consuming search of the application papers for the docket number or the likelihood of it being overlooked during processing.

c. *Papers Related to Patent Applications*

When a document concerns a previously filed application for a patent, it *must* identify on the top page in a conspicuous location, either the application number (consisting of the series code and the serial number, e.g. 07/123,456), or the serial number and filing date assigned to that application by the Patent and Trademark Office, or the international application number of the international application. *No papers related to a new patent application should be filed in the Office prior to receipt of this information.* [37 CFR 1.5(a)] Any papers received without this information will not be processed.

Additionally, the word "Patent" should be in the upper right hand corner and the filing date, inventor' s names and title of the invention should be included on the paper.

Responses to Notices of Incomplete Application and Notices to File Missing Parts must be accompanied by a copy of the Notice form.

d. *Papers Related to Trademark Applications*

For all papers related to *trademark* applications, the word "Trademark" and the series code/serial number should be placed in the upper right-hand corner of the document. Also, please set forth the applicant's name, filing date, law office, examining attorney, and mark.

e. *Papers With No Particular Time Requirment*

Patent and trademark documents which have no particular time or sequence requirements should be filed with materials submitted in response to the statutory or regulatory requirements. Examples are certified copies of foreign documents to support priority in patent applications, changes of Power of Attorney, or changes in Mailing Address following first action.

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f. *Residence of Applicant*

The residence of applicant should be indicated as city and state for United States residents and city and country for residents of foregin countries.

g. *Response to Final Rejection In Patent Applications - Expediting Processing*

See section under Mail.

h. *Separation of Various Application Papers*

In *patent* applications, requests for extensions of time, changes of address, proposed drawing corrections, and petitions are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response." In *trademark* applications, change of address and power of attorney are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response." Please present such items in separate papers, appropriately titled, since they are all handled by different personnel [37 CFR 1.4(c)].

i. *Supplemental or Preliminary Amendments*

Where a supplemental or preliminary amendment is found necessary in patent or trademark applications, please telephone the examiner and request that the examiner delay action for a certain time in order to avoid crossing in the mails of the amendment and the Office action.

j. *Transmittal Letters for Deposit Account Charges*

When statutory fees are to be charged to a deposit account, the processing of the application can be facilitated by submitting the applicant's transmittal letter or other correspondence specifying the account to be charged in triplicate. Submission of these documents in triplicate will eliminate the need for the Mail Room to photocopy the document and will thereby reduce the processing time of incoming mail.

4. ASSIGNMENTS

a. *Assistance*

Customers are encouraged to call the Assignment Branch Quality Control Status Section (703-557-8691) with questions regarding procedure, fees or status of assignments.

b. *Delays in Assignments for New Patent Applications*

The automated patent assignment system is dependent upon bibliographic information that is keyboarded to produce filing receipts and to create records in the PALM system. When assignments are filed before the filling receipt has been produced, their processing is delayed until the bibliographic information is keyed and verified.

c. *Expediting Corrections or Updates*

When requesting correction or updating of a previously recorded patent or trademark assignment document, providing the reel and frame number of that document to the Assignment Branch will greatly expedite the recording process.

d. *Foreign Assignees*

When filing an assignment with a foreign assignee, an appointment of domestic representative is required. If more than one property is included in the assignment, a separate appointment of domestic representative is required for each property. You need only submit one original appointment. Photocopies of the appointment of domestic representative may be filed for the additional properties.

e. *Routing of Assignment Documents*

Many individuals are submitting assignment documents and requests for assignment services, together with application prosecution papers, directly to the examiner. Often, these requests get placed in the file and are not forwarded to the assignment area for handling. Please send all assignment documents and request through the Mail Room in order that they may be properly routed to the assignment area

Please separate requests for certified copies of assignments from requests for other services including requests for certified copies of other documents. Certification of assignment documents is not performed by the same individuals as certification of other documents.

f. *Submission of Assignment Documents*

Only an original document or a certified copy of a document is acceptable for recordation. When signing an original document, ink other than black should be used so that the signature can clearly be identified as an original one.

Do not file extra copies of assignment documents. They may be mistaken as documents intended for recordation.

Be sure to attach a transmittal letter including the firm's name and address on each assignment document to ensure accurate return of the assignment document. Use extra staples to ensure the transmittal letter does not become detached. As a further safeguard, include a return address on the assignment document.

Do check the assignment document to make sure that the name of the assignor and assignee are consistent throughout the document.

g. *Trademark Registrations - Ensuring Correct Printing*

To ensure the correct printing of ownership information on a Trademark Registration at issue date, provide the trademark examining attorney with the reel and frame number of the appropriate assignment document as soon as you are notified of it.

5. CERTIFICATES OF CORRECTION

a. *Accurate Requests*

Many requests for "Certificate of Correction" result from a prefunctory comparison of the issued patent with the attorney's application file, without investigating whether the recitation in the issued patent is correct. In many instances, change to the PTO file wrapper has been caused by the examiner prior to printing of the patent in order to make appropriate corrections to the file.

6. CERTIFICATION SERVICES

a. *Expedited Service for Patent Applications-As-Filed*

If there is a need for special service, for example to meet a priority date within a short period of time, the order must be marked "RUSH" with the date/time needed and reason for the need. The order should be hand-delivered to the Manager, Assignment and Certification Division, CP2-7D13. Orders may also be mailed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, clearly marked to the attention of the Manager, Certification Branch. However, because mail orders must be initially handled by the Mail Room, requesters are cautioned that turnaround time will be several days longer than for hand-delivered orders. Every effort will be made to fill all "RUSH" orders timely, to the extent resources are available.

b. *Methods of Ordering*

Mail Orders - The address for mail orders is:

Box 10
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Hand-carried Orders - Hand-carried requests for certification service should be taken to the Public Service Window in the North Stacks of the Patent Search Room where they can be placed in the Certification Order Receipt Box or given to the attendant. For security reasons, the public is not permitted access to the Certification Branch itself.

c. *Processing Time*

The current goal for furnishing certified copies of applications-as-filed is 17 days from receipt in the Mail Room of the Patent and Trademark Office to mailing of the completed order by the Certification Branch. The 17 days includes 4 work days for Mail Room and Finance processing, 9 work days in the Certification Branch and 4 weekend days that accure over the 13 work days.

The 17-day goal applied to those orders for which microfiche of applications-as-filed are available in the Certification Branch. The microfiche for a small percentage of the total orders for certified copies of applications-as-filed must be retrieved from a remote location, or be replaced due to damage or correction. The 17-day goal does not apply to these orders.

d. *PTO vs. Public-Supplied Copies for Certification*

Requests for all certified copies of applications-as-filed and file wrapper/contents of pending patent and trademark applications will be filled with PTO supplied copies of original source documents. No public supplied copies will be accepted.

The public may submit copies of Registered Trademarks, Registered Trademark Files, Patented Files, and Patents for certification by the Certification Branch.

e. *Questions Frequently Asked*

Q. What does "certified" means?
A. Authentication of copies by ribbon and seal of the PTO with the signature of an officer authorized by the Commissioner of Patent and Trademarks.

Q. What does an application consist of?
A. (1) Written Description (2) Claims (3) Oath or Declaration (4) Drawings, when necessary, and (5) Filing Fee.

Q. What does a file wrapper and contents (file history) consist of?
A. The original application papers plus all correspondence between the applicant/attorney of record/assignee and the PTO.

Q. Why are certified copies of applications-as-filed required?
A. Since the rights granted by a U.S. patent extend only throughout the territory of the U.S. and have no effect in a foreign country, an inventor who wishes patent protection in other countries must submit a certified copy of his or her U.S. application when applying for a patent in that country in order to receive the benefit of the U.S. filing date.

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Q. What regulations govern the filing of an U.S. application in a foreign country?
A. There is a treaty relating to patents which involves 97 countries and is known as the Paris Convention for the Protection of Industrial Property. It provides that each country guarantees to the citizens of other countries the same patent rights that it gives to its own citizens.

Q. Can anyone request a copy of a pending application?
A. No. Pending applications are preserved in secrecy. No information or copies may be obtained without written authority of the applicant, attorney of record, or the assignee, if any. Such written consent must accompany the request for copies.

Q. Can orders for copies by placed by phone?
A. No. All orders must be in writing.

Q. May office copies of my application be sent to the PTO for certification?
A. No. We do not certify copies prepared outside the PTO.

Q. Will the PTO mail certified copies ordered directly to a foreign country?
A. No. With respect to the exportation of technical data, the PTO discontinued the practice of forwarding direct to any foreign country certified copies of U.S. applications ordered by residents of the United States.

Q. Are cited references in a file automatically furnished when a file wrapper and contents is requested?
A. No. Cited references are not included as papers comprising the file history. References cited are furnished only if specifically requested.

Q. Can cited references, when requested, be certified with the file wrapper and contents under one certificate?
A. No. Each reference must be certified separately.

Q. Are there instances when references are included in a file wrapper and contents?
A. Yes. If the references are submitted as attacments to a response from the applicant and if such response is entered and made a part of the file.

Q. Exclusive of applications-as-filed and file wrappers and contents of patented files, what other types of copies may be obtained from the Certification Branch?
A. The following items may be obtained:

a. Certified copies of issued U.S. patents.
b. Certified copies of foreign patents.
c. Certified copies of publications from the Scientific Library.
d. Certified copies of Office letters.
e. Certified duplicate filing receipts.
f. Certified copies of an assignment and application-as-filed, under one certificate.
g. Copies of disclosure documents.
h. Copies of the following files:

- Defensive publication files.
- Reexamination files.
- Interference files.
- Trademark files.
- Opposition files.
- Concurrent use proceedings files.
- Statutory Invention Request.
- Certified copies of assignment documents.
- Abstract of title.

f. *Status Requests or Problems*

For status inquiries, call the Input and Records Control Unit of the Certification Branch at 557-1587. For problem situations call the Manager of the Certification Branch, at 557-1552.

7. DRAWINGS FOR PATENT APPLICATIONS

a. *Proper Identification of Formal or Substitute Drawings*

When the Office receives formal or substitute drawings, a cover letter identifying the application by serial number should accompany them. It is extremely difficult to associate the drawings with the files when this information is missing. The application serial number should be placed on the sheet of drawing in accordance with 37 CFR 1.84(1).

According to 37 CFR 1.84(1), identifying indicia (such as the attorney's docket number, inventor's name, number of sheets, etc.) not to exceed 2½ inches may be placed in a centered location between the side edges within three-fourths inch of the top edge. Either this marking technique on the front of the drawing or the placement of this information on the back of the drawing is acceptable. However, for identification of the serial number, the PTO prefers that it be placed on the front.

b. *Proper Identification of New Application Drawings*

During pre-examination processing, drawings are temporarily separated from the rest of the application papers. To facilitate the matching of drawings with the application, it would be helpful if the applicant's name, docket number, and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels.

c. *Submission of Copies of Drawings*

DO NOT SUBMIT ORIGINAL DRAWINGS WITH PATENT APPLICATIONS. DO SUBMIT A HIGH QUALITY COPY. If the copy submitted passes the formality review and patent examination, no substitute drawings will be necessary. If corrections are necessary, they should be made to the original drawings. Either one good copy of the corrected drawings or the corrected original can then be submitted after the Notice of Allowability is mailed.

The PTO will not release drawings from patent applications filed after Jan. 1, 1989, to applicants, bonded drafting companies, or others.

d. *Timeliness of Submission of Corrected Drawings in Allowed Cases*

When drawings need to be corrected in an allowed patent application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.

Corrected drawings, as well as the issue fee should be addressed to Box Issue Fee. Note that any assignment document should be submitted in a separate envelope, addressed to Box Assignment.

Each piece of correspondence should carry its own certificate of mailing. For example, drawings should have a certificate of mailing and the issue fee should have a certificate of mailing.

8. EXTENSIONS OF TIME IN PATENT CASES

a. *Appropriateness*

After a final rejection, where applicants' approval is not needed to amend the claims, no extension of time is required. However, if applicants' approval is required and applicants did not file their response within two months of the Final Rejection, the appropriate extension of time must be purchased.

Also, it should be noted that extensions of time may be requested under 37 CFR 1.136(a) for extending the time required to pay for the request for an oral hearing before the Board of Patent Appeals and Interferences. [MPEP §1209(1)]. The time for a request and fee for an oral hearing is one month from the date of the Examiner's Answer or any supplemental Examiner's Answer.

Extensions of time by fee payment under 37 CFR 1.136(a) are appropriate for filing of the Brief on Appeal in regular applications. No more than four months may be granted under 37 CFR 1.136(a). Beyond those four months, any further request must show sufficient cause under 37 CFR 1.136(b), and no additional extension fee is required.

An extension of time is not required in order to hold an interview with the examiner. However, after the period for response has ended, an extension is required for the purpose of filing a follow-up amendment by applicant and/or for the entry of an Examiner's Amendment requiring approval of the applicant.

Extensions of time are appropriate for the purpose of achieving continuity between parent and continuing applications. A separate paper requesting the extension of time must be filed in the *parent* application. It would be useful to file a *copy* of that request or petition with the papers constituting the filing of the continuing application.

b. *Extensions of Time Under 37 CFR 1.136(a)*

Under 35 U.S.C. 41(a) (8) and 37 CFR 1.136(a), a response filed within a statutory period but outside of the period set for response may be rendered timely if accompanied by (1) a petition for an extension of time and (2) the appropriate extension fee. Experience indicates that there have been differing opinions as to the language necessary to constitute an acceptable extension of time petition. This Helpful Hint is intended to clarify the policy of the Patent and Trademark Office concerning the language required for such a petition.

An extension of time under §1.136(a) requires a petition therefor and payment of the appropriate fee. The §1.136(a) petition should explicitly request in writing an extension of time for the specific number of months needed as explained in §710.02(e) of the Manual of Patent Examining Procedure. This is the best way to avoid mistakes by the applicant or by the Patent and Trademark Office and assure orderly and efficient processing of the petition.

The following language is an example of a preferred §1.136(a) request:

Applicant petitions the Commissioner of Patent and Trademarks to extend the time for response to the Office action dated _____ for _____ month(s) from _____ to _____

[If paying by check:]

Submitted herewith is a check for _____ to cover the cost of the extension. (Optionally, add: Any deficiency or overpayment should be charged or credited to deposit account number _____. A duplicate copy of this sheet is enclosed.)

[If paying by charge to deposit account number:]

Please charge my deposit account number _____ in the amount of _____ to cover the cost of the extension. Any deficiency or overpayment should be charged or credited to this deposit account.

Applicants are cautioned that, in order to be timely, a response must be accompanied by a *specific* reference to an extension of time. A general authorization under 37 CFR 1.25(b) to charge necessary fees to a deposit account will not be interpreted as a petition for an extension of time. For example, a response accompanied by

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the statement "Please charge any fees necessary under 37 CFR 1.17 to my deposit account" would not be acceptable, since the statement does not make *specific* reference to an extension of time.

As previously indicated, a proper §1.136(a) petition must be in writing. However, when an extension of time is necessary to make an Examiner's Amendment timely, the extension may be obtained by way of a verbal communication. The verbal communication must be transcribed as a written part of the official application file record. For example, during a telephone interview with an examiner, an attorney for the applicant, in order to render an Examiner's Amendment timely, may verbally request an extension of time under 37 CFR 1.136(a) and authorize a charge of the appropriate fee to his or her deposit account. If this verbal request and authorization are transcribed as a written part of the application file record (e.g., via the Examiner's Amendment or an Examiner Interview Summary Record, PTOL-413), the desired extension of time may be obtained. The filing date of the §1.136(a) petition and fee will be considered the date of the verbal request and authorization if this date is reflected in the written file record.

c. *Instances Not Permitted*

An extension of time under 37 CFR 1.136(a) is not permitted in the following instances:

(1) Where an applicant is so notified in an Office action as, for example, in a Reissue application involving a litigated patent.
(2) Where the application is involved in an interference declared pursuant to 37 CFR 1.611. See 37 CFR 1.645 for provisions governing extensions of time in interference proceedings.
(3) In reexamination proceedings. See 37 CFR 1.550(c) for extensions of time in reexamination proceedings.
(4) In PCT international applications. Under PCT Rule 26.2, extensions are permitted for correction of PCT Article 14 defects in international applications before the Receiving Office.

d. *Insufficient Fees*

Many requests for extension of time are being filed with insufficient fees. In those instances where there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned.

Please note that effective October 5, 1985, the extension fees in patent cases are as follows:

	Small Entity	Non-Small Entity
One Month Extension	$28	$56
Two Month Extension	85	170
Three Month Extension	195	390
Four Month Extension	305	610

If applicants have a deposit account, it is recommended that applicants file, in an individual application, a general authorization to charge any of the fees set forth in 37 CFR §§ 1.16 to 1.18 to a deposit account for the entire pendency of the application.

e. *Policy*

Where an extension of time is required to file a response in a timely manner, the response is not considered complete until the response, fee, and request or petition for an extension of time are received. The fee and request or petition must be filed before the expiration of the extended period requested. The fee cannot be paid outside the statutory six-month limit for the period of response.

f. *Requirement for Request or Petition for Extension*

Submission of the appropriate extension fee under 37 CFR 1.136(a) is to no avail unless a request or petition for extension is filed. Frequently, the request is omitted, which then requires an additional extension fee to cover the period to the date of the request. Occasionally, the application is held abandoned because the six month maximum statutory period has expired before detection of the omission of the request for extension. It is critical that a paper specifically requesting the extension be filed with late responses. It is also wise to use the Certificate of Mailing practice under 37 CFR 1.8 when requesting extensions.

g. *Response to Final Rejection - Avoiding Extension Fees*

In patent applications wherein a three month Shortened Statutory Period (SSP) is set for response to a Final Rejection, the response would best be filed within two months of the date of the Office Action. If filed within two months, any Advisory Action mailed after the SSP expires will reset the SSP to expire on the date of the Advisory Action for extension fee purposes, but never more than six months from the date of the Final Rejection.

h. *Supplemental Amendments*

If a timely and complete response has been filed after a *Non-Final* Office Action, an extension of time *is not required* to permit filing and/or entry of an additional amendment after expiration of the shortened statutory period.

If a timely response has been filed after a *Final* Office Action, an extension of time *is required* to permit filing and/or entry of a Notice of Appeal or filing and/or entry of an additional amendment after expiration of the shortened statutory period unless the timely-filed response placed the application in condition for allowance. Of course, if a Notice of Appeal has been filed within the shortened statutory period, the period has ceased to run.

9. FILES

a. *Official Searches*

The PTO has had an unusually large number of official search status letters returned by the Postal Service due to insufficient/incomplete addresses. When requesting an official search for a lost patent or trademark file, please ensure that all pertinent information is completely filled out on the PTO Form 1216. In the case of an individual working for a particular firm, the firm's name should be included in block number 5 of the form along with the name of the requester. If you have any questions in this matter please call the Chief, Support Services Branch on (703) 557-3560.

b. *Requests for Reconstruction*

To request the reconstruction of a file, submit a written request along with a notice from the PTO Official Search unit stating that the file cannot be located.

c. *Requests for Trademark Files*

To eliminate unnecessary delays when ordering Trademark files, requestors should complete all required information blocks on form PTO-1538 (Order and Charge for Trademark Files). Failure to properly complete the form is the primary reason for requests not being quickly processed. Submitting a completed form will reduce the number of requests that have to be returned and thus reduce the overall time required to fill the request.

10. FILING RECEIPTS FOR PATENT APPLICATIONS

a. *Docket Numbers*

Docket numbers must be limited to a maximum of 12 characters to prevent truncation. The Patent Application Location and Monitoring (PALM) system data base allows a maximum of 12 characters for the attorney's docket number. Spaces, slashes and hyphens will no longer be included in the entered docket number on the official filing receipt. In an application where CASE or NAVY-CASE appears before the first character in the docket number, only the characters after CASE or NAVY-CASE will be entered on the official filing receipt.

b. *License to Foreign File*

Each newly filed patent application is routinely reviewed for security interests during pre-examination processing. A code is entered into the data base to indicate the presence or absence of security interests. When no security interest are found, the filing receipt will be generated with the notation "Foreign license granted xx/xx/xx." There is no additional cost for this security screening and license notation.

c. *Residence of Applicant*

The residence of applicant should be indicated as city and state for United States residents and city and country for residents of foreign countries. The Patent Application Location and Monitoring (PALM) System data base allows a maximum of 15 characters for the city of residence. If the city name is longer than 15 characters, it will be truncated in the data base and appear in the shortened form on the filing receipt. However, the entire city name will be taken from the file and printed on any patent that issues.

Please do not call or write the Office for a corrected filing receipt should the printed city name be cut short due to the 15-character limit.

Often applicants who are residents of foreign countries indicate street address, sections of cities, provinces or other political divisions as part of their cities of residence. This leads to confusion and possible erroneous entries in the data base. Only the foreign city and country should be indicated as the applicant's residence.

11. INTERVIEWS WITH PATENT EXAMINERS

a. *Appropriateness*

Prior to filing, no interview is permitted; only search assistance may be given to the attorney, searcher or inventor.

Prior to first action, an interview is ordinarily granted only in continuing or substitute applications; a request for an interview is untimely and will not be granted prior to first action in all other applications.

After final rejection, an interview will not be denied merely because final Office action has been rendered. Normally, one interview after a final rejection is permitted if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal further consideration. In requesting an interview after final rejection, the intended purpose and content of the interview must be presented briefly, either orally or in writing. Interviews merely to restate arguments of record or to discuss new limitations which would require more than nominal reconsideration or new search will be denied.

After a case is sent to issue, it is technically no longer under the jurisdiction of the primary examiner (37 CFR 1.312). Requests for interviews on cases already passed to issue should be granted only with specific approval of the Group Director upon a showing in writing of extraordinary circumstances.

The ideal time for personal interviews, during which time an interview is clearly available, is the "Conference Period", which is the time between the filing of applicant's thorough first reponse to the examiner's first action on the merits and a concluding action by the examiner.

In reexamination proceedings, an interview with the owner is permitted after first action. Requests that reexamination requestors be permitted to participate in or attend interviews will be denied.

When an interference has been declared, all questions involved are to be determined *inter partes* and will not be discussed *ex parte*.

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Following the grant of a United States Patent, an examiner must refuse to express any opinion or view as to the validity of the patent, except on the record in the course of examining a reissue application or a reexamination proceeding. Even in the case of search assistance on an invention, if an examiner is aware that the invention has been patented in the United States, the searcher will be referred to the prosecution file history, and the examiner will make no comment on the appropriateness of the search conducted or the references cited.

Should any examiner fail to comply with the above guidelines, the matter would best be brought to the attention of the examiner's Group Director.

Direct questions to:

Al Lawrence Smith
Director, Group 350
(703) 557-3414

b. *Prohitition*s

No interview will be conducted with an attorney who is not registered or who has been suspended or excluded from practice regarding an application unless the attorney is the applicant in the application.

Protestors are not permitted to participate in interviews in applications where the protest was filed after Dec. 8, 1981, and the examiner will not communicate in any manner with such protestors.

12. MAIL

a. *Certificate of Mailing - Separate Certificate for Each Document*

Practitioners and other are reminded of the requirement of MPEP 512(D) which state: "In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO-85 and an assignment), each paper must have its own certification as a part thereof or attached thereto." Although form PTOL-85b, Issue Fee Transmittal, may contain a Certificate of Mailing thereon, a separate Certificate of Mailing is required for all papers included with this form, including formal drawings, since papers are separated and flow to different areas of the Office. Checks submitted with papers do not require a Certificate of Mailing.

b. *Certificate of Mailing AND Return Postcard*

Use of the Certificate of Mailing Procedure is strongly encouraged.

37 CFR 1.8(a) provides for the use of a Certificate of Mailing on most correspondence with the PTO, whereby the correspondence (and/or fee) will be considered as timely filed if deposited with the U.S. Postal Service within the set time period. Consistent use of this procedure is extremely beneficial to practitioners, whether or not the Postcard Receipt provision of MPEP 503 is used.

In those instances where the PTO never receives the correspondence, no postcard receipt will be available to evidence the filing and/or timeliness of the correspondence. However, in those instances where a Certificate of Mailing is properly used, 37 CFR 1.8(b) provides relief, even if the correspondence is *not* received in the PTO at all. Under 37 CFR 1.8(b) the party who forwarded the correspondence need only (1) inform the PTO of the previous mailing of the correspondence, (2) supply a copy of the previously mailed correspondence and Certificate, and (3) include a declaration which adequately attests to the previous timely mailing.

c. *Correspondence with Certificate of Mailing Delivered by Commercial Carrier*

The benefits of 37 CFR 1.8 or 1.10 apply only to documents delivered to the PTO by the U.S. Postal Service.

A number of instances have been uncovered where individuals are certifying that documents were deposited with the U.S. Postal Service when, in fact, the documents were hand-carried or delivered to the PTO via commercial mail service, e.g., "Federal Express," "DHL," "Purolator," "Air Borne," "UPS," etc. In those instances where documents include a certificate of mailing under 37 CFR 1.8 or 1.10, but were delivered to the PTO by other than the U.S. Postal Service, Mail Room personnel are placing a notice indicating that fact on the correspondence involved to alert PTO personnel that the benefits of 37 CFR 1.8 or 1.10 do not apply.

d. *Expediting Handling of Trademark Applications*

To facilitate processing of new trademark applications, place them in a separate envelope apart from all other mail. Identify on the outside of the envelope "TRADEMARK APPLICATION ONLY." More than one new trademark application may be placed in the same envelope. Do not place any papers in the envelope other than those related to the new trademark applications.

e. *Express Mail*

Due to a failure to follow proper procedures, many applicants are losing the advantage of receiving the date a paper or fee was deposited at the Post Office when "Express Mail" is used. According to 37 CFR §1.10, any such paper or fee must include a certificate of mailing by "Express Mail," signed by the person mailing the paper or fee.

To ensure papers and fees sent by "Express Mail" are accorded the proper certificate date, the following suggestions and reminders are offered:

(1) Each document must have a certificate of mailing typed on or affixed to the document. The certificate should be placed on the first page of the document or the covering letter to ensure easy accessibility.
Often, the certificate is missing, illegible, inaccurate, incomplete, or difficult to locate. As a result, the paper or fee is considered to have been filed on the date of receipt in the PTO.
(2) The certificate should be legible.
(3) The Express Mail number must be placed on the certificate.

(4) Dates on the certificate must correspond to dates on the Express Mail label.
The PTO continues to receive correspondence filed under the provisions of 37 CFR 1.10 in which the certificate of mailing by "Express Mail" certifies that the correspondence is being mailed on one date while the "Express Mail" label shows a "Date-In" on a different date. This usually occurs when the "Express Mail" package is deposited in a remote "Express Mail" receptacle or mailbox after the last pickup, and accordingly is not being picked-up and processed by the Postal Service until the next business day. The question as to the treatment of such a situation was covered in the final rule making published on Jan. 20, 1983, at 48 FR 2696–2714 and on Feb. 10, 1983, at 1027 O.G. 9. The following comments appear therein.
"Comment: One person questions what treatment will be accorded a paper placed in an 'Express Mail' box receptacle after the box has been cleared for the last time on a given day."
"Reply: The paper will be considered to be deposited as of the date of receipt indicated on the 'Express Mail' mailing label by the Postal Service clerk."
It is recommended that where the filing date of a paper or fee is critical, e.g., the filing of a patent application, and particularly when the deposit by "Express Mail" is being made late in the business day, the correspondence should be personally delivered to a Post Office. There the date of receipt of the "Express Mail" package can be immediately indicated by the Postal Service clerk.
(5) Each certificate must have an original signature of the person *actually mailing* the paper or fee; i.e., the person who actually deposits the paper or fee with the U.S. Postal Service.
The PTO has encountered instances in which the certificate of mailing by "Express Mail" was signed by an attorney and the deposit was made by the attorney's secretary or another member of the attorney's staff. This is improper under the provisions of 37 CFR 1.10. This section differs in that regard from 37 CFR 1.8.
(6) The preferred wording and information to be included on the certificate is as follows:

"Express Mail" Mailing Label No. (*insert B no. from Express Mail label*)
Date of Deposit (*insert date from Express Mail Label*)

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

(*Typed or printed name of person mailing paper or fee*)
(*Signature of person mailing paper or fee*)

By following these procedures, problems concerning filing dates should be minimized.

f. *Reponse to Final Rejections In Patent Applications - Expediting Processing and Reply by PTO*

In order to ensure the quickest reply to an amendment or response after Final Rejection in patent applications, the paper must be marked in the upper right portion:

"RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP (Insert Group Number)"

The marking on the paper preferably should be written in, highlighted by, or encirculed with, a bright color or felt-point marker.

The envelope in which the response is submitted must include only submissions under 37 CFR 1.116. The envelope must be marked "Box AF" in the lower left corner and must be addressed to:

BOX AF
Commissioner of Patents and Trademarks
Washington, D.C. 20231

If the paper is being hand-carried to the Examining Group (instead of mailing to Box AF), the envelope, if any, and the response should both be marked:

"RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP (Insert Group Number)"

Use of this procedure should avoid the necessity for extensions of time and the filing of unnecessary notices of appeal in many cases.

g. *Return Postcard*

If a receipt for any paper filed in the Patent and Trademark Office is desired, it may be obtained by enclosing with the paper a self-addressed postcard identifying the paper. The Patent and Trademark Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to clearly identify the paper for which receipt is requested. For example, the card should identify the applicant name(s), serial number, filing date, interference number, etc. Also, the paper(s) should be identified by specifying the type thereof, namely affidavit, amendment, appeal, itemized components of applications, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

A postcard receipt which itemizes and properly intentifies the papers which are being filed serves as prima facie evidence of receipt in the PTO of all the items listed thereon on the date stamped thereon by the PTO unless the postcard receipt has been annotated by the PTO to indicate that one or more items were not received. A postcard receipt will *not* serve as prima facie evidence of receipt in the PTO if the papers are not

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itemized in a detailed manner, e.g., number of pages of specification and number of sheets of drawings, or if the postcard receipt has been annotated to indicate that one or more items was not received.

When papers for more than one document are filed under a single cover, a return addressed postcard should be attached to the paper for each document for which a receipt is desired.

h. *Secrecy—Related Papers (37 CFR 5)*

All correspondence in connection with 37 CFR 5 should be addressed to:

Commissioner of Patents and Trademarks
(Attention Licinensing and Review)
Washington, D.C. 20231

Improperly addressing such correspondence may delay delivery and could result in violations of 37 CFR 5. See 37 CFR 5.33 regarding correspondence.

i. *Special Box—Box AF*

Since the establishment of the special box "Box Non Fee Amendment," some questions have been received as to which box should be used for amendments after final rejections. Continue to use Box AF for amendments after final rejections, even if it is a non-fee amendment. Although mail delivery by the Mail Room should be the same in either case, the Patent Examining Group will expedite those labeled Box AF.

j. *Special Box—Box Re-exam*

Requests for re-examination should be clearly marked "Box Reexam" on the outer envelope, and include only requests for re-examination. The goal for processing request for re-examination is 30 days from receipt in the Mail Room to delivery to the appropriate examining group. Requests for re-examination which are marked on the outside envelope for Box Re-exam are immediately placed in a special box for pick up by re-examination processing clerks twice daily. Properly marked requests for re-examination allow us to meet the 30-day goal and allow the examiner adequate time for considering the request.

If requests for re-examination are included in packages with other mail, the entire package will be placed with the thousands of pieces of mail received on that date to be opened in date order. Reexamination requests are, therefore, delayed for several days making the 30-day goal nearly impossible to meet, and often reducing the time available for the examiner's consideration of the request.

k. *Special Designations for Mail*

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other then the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they were intended.

The following special department should be used only for their specified purpose. Address mail as follows:

Commissioner of Patents and Trademarks
Box _____
Washington, DC 20231

Box 3	Mail for the Office of Personel for NFC
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and Internal Affairs.
Box 5	"No fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending* litigation.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of patent and trademark applications.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Comminications relating to interferences and applications and patents involved in iterference.
Box Issue Fee	All Communications following the receipt of a PTOL-85. "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).

Box OED	Mail for the Office of Enrollment and Discipline
Box Patent Application	New patent application and associated papers and fees.
Box Trademark Application	New trademark application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.a
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

13. *MAINTENANCE FEES*

a. *Address to Which Correspondence is Sent Regarding Patent Maintenance Fees*

Under 37 CFR 1.33(d), a "correspondence address" or change thereto may be filed with the Office during the enforceable life of a patent. This "correspondence address" will be used in any correspondence relating to maintenance fees unless a separate "fee address" has been specified solely for maintenance fee purposes as provided by CFR 1.363. Practitioners who do not wish to receive correspondence relating to maintenance fees must change the correspondence address in the patented file or provide the PTO with a fee address to which the correspondence should be sent. It is not required that a practitioner file a request for permission to withdraw pursuant to 37 CFR 1.36 solely for the purpose of changing the correspondence address in a patent, even though a withdrawal of a practitioner would change the correspondence address.

b. *Correspondence Address and/or Fee Address on Maintenance Fees*

Effective Nov. 1, 1984, 37 CFR 1.363 provides for a "fee address" to be entered in the Office patent file records for use in all correspondence relating to maintenance fees. The fee address is in addition to the "correspondence address" under 37 CFR 1.33. The "correspondence address" will continue to be used for all reexamination and interference purposes. If no separate fee address is specified, the correspondence address will also be used for maintenance fee correspondence. A similar reminder appears on the Issue Fee Transmittal Form, PTOL-85(b).

Practitioners should maintain a current "correspondence address" and, if desired, a separate current "fee address" during the enforceable life of the patent in order to ensure receipt of correspondence regarding maintenance fee.

Practitioners are reminded that they are obliged to inform a client for former client (or timely notify the Office of an inability to notify a client or former client) of any maintenance fee correspondence received from the PTO. See 37 CFR 10.23 (c) (8). This is similar to the practice with respect to interference and reexamination proceedings.

Practitioners who do not wish to receive correspondence relating to maintenance fees must change the correspondence address in the patented file or provide the PTO with a "fee address" to which such correspondence should be sent.

It is not required that a practitioner file a request for permission to withdraw pursuant to 37 CFR 1.36 solely for the purpose of changing the correspondence address in a patent even though a withdrawal of a practitioner would change the correspondence address. However, a request for permission to withdraw pursuant to 37 CFR 1.36 must be filed in the patent if the attorney or agent of record does not desire to receive correspondence relating to reexamination.

c. *Delayed Payment of Maintenance Fees*

Payment of any maintenance fee due on a patent after expiration of the patent may be accepted if the conditions set forth in 37 CFR 1.378 are satisfied.

In the past, petitions under 37 CFR 1.378 to accept delayed payment of the maintenance fee in an expired patent have been filed which allege, as a basis for unavoidable delay: (1) lack of knowledge that a maintenance fee was due and/or (2) failure to receive a Maintenance Fee Reminder notice from the PTO.

Practitioners are reminded that a patentee's lack of knowledge of a requirement to pay a maintenance fee does not constitute a showing of unavoidable delay; see 49 F.R. 34716 at page 34720, and 1046 O.G. 28 at page 32.

Maintenance Fee Reminder notices are mailed only as a courtesy after the "grace period" has begun; see 37 CFR 1.362(e). Patentees are expected to maintain their own docket systems to ensure timely payment of maintenance fees, preferably during the "window period"; see 37 CFR 1.362(d). Since patentees are expected to maintain their own docket systems for timely payment of maintenance fees, proof that a Maintenance Fee Reminder notice was not received from the PTO does not constitute a showing of unavoidable delay; see 49 F.R. 34716–34726, and 1046 O.G. 28–37.

Practitioners are cautioned that any petition to accept delayed payment of a maintenance fee under CFR 1.378 must include an enumeration of the steps taken to ensure timely payment of the maintenace fee. In this regard, the petition should include a detailed explanation of the docket system employed to ensure such timely payment. Any petition filed more than six months after the expiration of a patent will also be required to show that the failure to timely pay the maintenance fee was due entirely to circumstances outside the control of the patentee and those acting on behalf of the patentee.

d. *Maintenance Fee Transmittal Form Notice*

Where maintenance fee payments are to be made by authorization to charge a deposit account, the Maintenance Fee Transmittal Form, should reflect *both* the Payor's Name *and* signature in the bottom left corner thereof.

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e. *Mandatory Indentifiers when Submitting Maintenance Fees*

Practitioners are reminded that a patent maintenance fee payment and any surcharge payment submitted must identify the patent to which it relates by at least *two mandatory identifiers* [see 37 CFR 1.366(c)]:

1. The patent number; and
2. The serial number of the United States application for the patent on which the maintenance fee is being paid.

Reissure patent maintenace fee due dates are based on the issue date of the original, rather than the reissue patent. The payment must identify the reissue patent by reissue patent number and reissue application serial number as the two mandatory identifiers and should also include the original patent number, the original patent issue date and the original United States application filing date. See 37 CFR 1.366(d).

The two mandatory identifiers are required as a minimum to enable a cross-check to be made to avoid errors in crediting payment of maintenance fees.

It is suggested that the payment identify the fee being paid for each patent as to whether it is the 3½, 7½ or 11½ year fee; whether small entity status is being changed or claimed; the amount of the maintenance fee and any surcharge being paid; any assigned payor number; the patent issue date; and the United States application filing date. See 37 CFR 1.366(d).

Failure to provide at least the two above-named mandatory identifiers will likely result in the non-acceptance of the maintenace fee payment. The date the two mandatory identifiers and the required fee are submitted is the date the maintenance fee payment is credited as being made.

f. *Payor Number*

In order to simplify changes in address by patent owners having several patents, and data input by the Patent and Trademark Office, a "payor number" will be assigned to each fee address when a fee address is presented to the Office in a patent or earlier upon request. A request for a payor number before a maintenance fee is paid or due will permit a patent owner to request that the fee address and payor number be recorded in the Office records of the patents owned on which maintenance fees are due so that all notices relating to maintenance fees will be sent to the fee address.

When a fee address has been specified as provided by 37 CFR 1.363, that address is assigned a "payor number". Processing time can be greatly reduced if practitioners cite that "payor number" when submitting a maintenance fee payment.

The Patent and Trademark Office has established a procedure for assigning a payor number upon request by a patent owner or a party responsible for paying maintenance fees. Such a party may be, for example, the finance office of a corporation or of a separate organization specializing in maintenance fee payments.

Under the procedure, a patent owner or other party may request a payor number for a particular fee address by writing to:

Commissioner of Patents and Trademarks
Box M. Fee
Washington, DC 20231

Each request for a payor number should include the:

- fee address to be used by the Office, and
- telephone number of the fee addressee to be used to resolve problems.

After receipt of a payor number, it may be used to indicate to the Patent and Trademark Office the fee address to be used in particular patents on which maintenance fees will become due and in applications in which issue fees have been or are being paid. Any request for entry of a payor number or fee address in the Office records of a patent, however, must be signed by the patent owner or his or her attorney or agent of record.

After a payor number has been assigned, it should be used in all future maintenance fee payments and related correspondence. However, where a payor number has not been previously entered in the Office records for a particular patent, the mere indication of a payor number at the time of payment of the maintenance fee, without the signature of the patent owner or the owner's attorney or agent of record, will not serve to make the payor number of record in the Office for that patent.

The problems which most often arise in connection with attempts to establish a fee address in a particular patent or group of patents is that the request is being signed by an attorney who is not of record in each of the patents. This results in the request being entered only in part.

Also, when the request is signed by an owner of the patent, the records of the Assignment Branch do not always reflect such ownership. Where the assignment was recorded prior to Dec. 1980, it would help the Office if the PTO reel and frame number of the assignment recordation were presented in the paper requesting that a fee address be entered, and if the person signing the request would indicate his or her title.

g. *Public Availability of Maintenance Fee Petitions/Decisions*

Maintenance fee petitions and decisions thereon are public records. Copies thereof can be obtained by submitting a written request to the Certification Branch. The request should state the patent number and serial number. The charge for the copies is currently $.50 per page.

14. NEW PATENT APPLICATIONS

a. *Attorney Docket Number on Incomplete/Missing Parts Notices*

In response to several requests from patent attorneys, the PTO is now entering the attorney docket number on the Notice of Incomplete Application and Notice to File Missing Parts of Application.

The attorney docket number which will be entered on the Notice will be that which was submitted on the transmittal letter as filed with a new patent application. The number must be clearly identified as an "attorney docket number."

If the Office makes a mistake in recording the attorney docket number on the Notice of Incomplete Application or the Notice to File Missing Parts of Application, such mistake is not to be used by the attorney as cause for delay in response. Nor is the attorney to request that the Office correct the docket number prior to response to the Notice. The attorney can notify the Office in the response, but no change will be made by the Office until the Filing Receipt is issued.

If the attorney wishes to change the attorney docket number from that which was entered on transmittal letter as filed, the request must be submitted through amendment, submitted to the Patent Examining Corp.

b. *Continuation or Divisional—Retaining Original Claim*

When filing under Rule 1.60, retain at least one original claim from the parent application to assure a complete application. Only amendments reducing the number of claims or adding a reference to the prior application [Rule 1.78(a)] will be entered, upon request, before calculating the filing fee and granting the filing date. *Reminder*: Applicant cannot file a CIP (continuation-in-part) under Rule 1.60.

c. *Continuation or Divisional—Problems*

Applicantions are often filed incorrectly under 37 CFR 1.60. This causes problems not only for applicants but also for the Patent and Trademark Office. Filing dates are not granted to applications which do not comply with the rules. As a result, petitions with fees are required to be filed in such applications before a filing date will be granted.

Most often, the problems that arise in this area can be characterized as the following:

(1) Applicants continue to fail to comply with the requirements of 37 CFR 1.60 with regard to what must be submitted upon filing under the rule. This is true even after the clarifying amendments (effective Apr. 1, 1984) were made to the rule.
A true copy of the prior application must be filed including the specification (with claims), drawings, oath or declaration showing the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application.
(2) Applicants are using transmittal forms which request filings under 37 CFR 1.62 when it was really desired to file a divisional application under 37 CFR 1.60 and not to abandon the parent application.

d. *File Wrapper Continuation—Preliminary Amendment*

Many continuation applications filed under 37 CFR 1.62 contain no preliminary amendment to the claims which were finally rejected in the parent application. The result is a first action final rejection of these claims. Applicants should file any desired amendments at the time the application is filed under 37 CFR 1.62, since the Office is treating these applications as "Special" and an action on the merits will be rendered quite promptly.

To expedite processing under Rule 1.62, make certain that the parent serial number cited in the transmittal letter is the correct serial number.

e. *File Wrapper Continuation—Problems*

Applications continue to be filed incorrectly under both 37 CFR 1.60 and 37 CFR 1.62. Filing dates are not granted to applications which do not comply with the rules. As a result, petitions with fees are required to be filed in such applications before a filing date will be granted.

The problems that most frequently arise in this area can be characterized as the following:

(1) Applications have been filed with a transmittal form requiesting filing under 37 CFR 1.60 when it was intended to file under 37 CFR 1.62. The confusion in the record of such applications must be clarified by a decision on petition before the applications can be processed for examination.
(2) Some applicants fail to realize that the parent application is abandoned by the filing of a continuing application under 37 CFR 1.62. Paragraph (g) of 37 CFR 1.62 states:

> "The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application."

Correction after such a mistaken filing under 37 CFR 1.62 usually requires a revival of the parent application under 37 CFR 1.137(a) or (b) which expends resources of both the applicant and the PTO.
(3) Some applicants are attempting to file continuing applications under 37 CFR 1.62 after payment of the issue fee in the patent application. Such applications are improper and are not entitled to a filing date. Additionally, such filings will not affect the prior application; i.e., the parent application may issue as a patent. Paragraph (a) of 37 CFR 1.62 specifies that continuing applications may be filed under 37 CFR 1.62 "before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application".
(4) Some applicants are attemping to file continuation-in-part applications under 37 CFR 1.62 with a new specification rather than with the changes made by amendment to the prior application. As stated in 37 CFR 1.62(a), filings under 37 CFR 1.62 use the specification of the prior application.
Paragraph (c) of 37 CFR 1.62 also states:

> "In the case of a continuation-in-part application which *adds and claims additional disclosure by amendement*, an oath or declaration as required by §1.63 must also be filed. . . "(emphasis added)

(5) The request for a FWC *must* contain the original signature of the inventor, assignee, attorney or agent of record, or attorney or agent filing under representative capacity. [1.34(a)]

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f. *Information Disclosure Citation—Form PTO 1449*

The Public is encouraged to use Form PTO 1449, "Information Disclosure Citation," when preparing a statement under 37 CFR 1.97–1.99 (see MPEP §609). This form provides the Office with a uniform way of listing the citations and a vehicle from which the information thereon can be printed on the issued patent.

Some citations are being presented on various forms prepared by the public rather than on Form PTO 1449. As a result, delays are cropping up in the printing process because the printer has difficulty in following the various formats and is having to query the examiner each time a non-PTO 1449 form is used.

Note that listing citations on Form PTO 1449 does not raise an irrebuttable presumption that the citation is prior art. A holding by an examiner that any citation on Form PTO 1449 is prior art to claimed subject matter can be rebutted by procedures commonly used to rebut the prior art status of an examiner's citations on Form PTO 1449, "Notice of References Cited".

Among the information that should be provided on Form PTO 1449 is the date of publication of the citation. In addition, it is helpful if the class and subclass of each citation is provided. It is appreciated that classification information may not be known at the time Form PTO 1449 is prepared. When classification information is not known, draw a line in the boxes under the class and subclass heading adjacent to the citation for which classification information is not known.

g. *Petition for License*

Rule 5.12 states that "filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 USC 184 for the subject of the application. The filing receipt will indicate a license is granted." There is no need to request a corrected filing receipt deleting the words "License Granted." Its intent is to provide the necessary acknowledgement for those filing abroad.

h. *Processing and Retention Fees for Abandoned Applications*

An application, which has become abandoned pursuant to 37 CFR 1.53(d) for failure to pay the filing fee, will be disposed of unless the processing and retention fee set forth in §1.21(l) is paid within the 1-year period referred to in §1.53(d). Moreover, the processing and retention fee must be timely paid in order to obtain certified copies of the application (e.g., for convention priority purposes) or to establish in a later filed application the filing date benefit of an earlier copending application under 35 USC 120 and 37 CFR 1.78(a)(3). Therefore, an application which has become abandoned for the reasons set forth above should be immediately reviewed in order to timely determine the advisability of submitting a processing and retention fee payment.

i. *Surcharge for Filing a Patent Application*

Filing dates are accorded to applications filed without the basic filing fee and without the oath or declaration. In such cases, a notice is mailed by Application Branch requiring at least the basic filing fee and the oath or declaration, accompanied by a surcharge [37 CFR 1.16(e)]. In numerous instances, applicants fail to submit the surcharge causing the application to become abandoned. See 37 CFR 1.53(d) and MPEP §506.

15. PATENT COOPERATION TREATY APPLICATIONS

a. *Responses Filed in International Applications*

The 18 month publication deadline for international applications filed under the Patent Cooperation Treaty (PCT) is critical. Therefore, it is in applicant's interest to respond timely to an invitation to correct a PCT Article 14 defect. An untimely response can result in the withdrawal of the international application under Article 14 and PCT Rule 26. If an extension to respond is needed, call the person who signed the invitation before the expiration of the time limit. The PTO will strictly comply with PCT Article 14 and Rule 26 in holding international applications withdrawn when responses are untimely or not filed.

b. *Early Notification of Receipt of PCT Designated Office Cases*

If you would like to have early notification that the PTO has received requirements under 35 U.S.C. 371 to enter the Designated Office phase, you should send two self-addressed, stamped postcards with those requirements. The first postcard will be date stamped and returned to you upon receipt of the requirements by the PCT staff. The second postcard will be sent to you when the case is released to the Mail Room to join the regular flow of national applications. The second postcard will be stamped with the U.S. serial number. If only one postcard is sent, it will be marked with the U.S. serial number but will remain with the application until requirements are completed and the case is released.

When corrections of PCT Rule 91 obvious errors in the description, claims or abstract are submitted together with corrections of defects under PCT Article 14, the transmittal letter should clearly note the Rule 91 corrections. This is necessary because, under PCT Rule 91.1(e), the Receiving Office can authorize the rectification of obvious errors only in the Request (Form PCT/RO/101), while Searching Authority authorization is needed for obvious errors in the description, claims or abstract. When the transmittal letter clearly notes the Rule 91 corrections, Searching Authority authorization of any obvious errors in the description, claims or abstract can be expedited.

Call PCT on 557-2903 if you have questions concerning responses filed during the international stage for international applications under the PCT.

16. PATENT COPIES

a. *Coupon Ordering Service*

Some problems being experienced in successfully filling coupon orders are:

- No return address or Box Number
- Incorrect return address or Box number
- Missing name of person(s) ordering copies (although the PTO attempts to send such orders, they are frequently returned by the receiving organization).
- Failure to identity whether request is for patent, trademark, or design copy.
- Failure to identity the patent, trademark, or design number being requested. Identification by application serial number is not acceptable.
- Inappropriate use of coupon for ordering a foreign patent (Foreign patents are $10.00 per copy and should be ordered through the Scientific Library).
- Insufficient payment (any coupons valued less than $1.50 must accompany additional payment either by check, money order, or additional coupons).

To ensure coupon orders can be successfully filled, please include a patent/trademark/design number, complete name, return address/box number, and the sufficient fee.

b. *Electronic Ordering Service*

Copies may be ordered electronically through the PTO's Electronic Ordering Service (EOS) rather than placing orders through the mail. With EOS, orders are received the same day they are placed, thereby reducing the turnaround time by about seven days. Orders can be placed any day, 24 hours a day.

To use EOS you need a standard computer terminal and modem. If you have any questions about equipment or the technical aspects of EOS, call (202) 377-2535.

The copy costs are $1.50 for each patent and trademark, and $6.00 for each plant patent. In addition, there will be a communication cost. This has been averaging 10 cents per copy; could range up to 25 cents on single orders.

Our regulations require that we receive payment for services before they are rendered. For this reason, a PTO deposit account is a prerequisite for becoming an EOS user. There are two types of PTO deposit accounts. One is an unrestricted account which can be used for any service PTO provides. This account requires a minimum balance of $1,000. The second type of account, the restricted deposit account, is available only for EOS and for subscriptions for copies of newly issued patents by subject matter classification. The restricted account requires a minimum balance of $300.

If you would like to become an EOS user or if you have questions, call (703) 557-7261.

c. *Subscription Services*

When submitting changes to subscription accounts, allow approximately two months from the date mailed to the Patent and Trademark Office for changes to become effective. The reason for the two month delay is to allow for changes to be recorded, data entered, and the automated system to be updated.

17. PETITIONS TO REVIVE

a. *Request and Fee for Extension Not Required*

Frequently, a petition to revive an abandoned application is accompanied by an unnecessary request and fee for extension of time. Our policy is set forth in MPEP 711.03(c). Specifically, a response does not require a request and fee for extension of time as a condition of revival.

b. *Terminal Disclaimer*

A petition to revive an abandoned application is often accompanied by an unnecessary terminal disclaimer. A terminal disclaimed is required only when a grantable petition based on *unavoidable delay* is not filed within six months of the date of abandonment [37 CFR 1.137(a) and 1.137(c)]. It follows that a terminal disclaimer should not accompany a petition based on *unintentional abandonment* [(37 CFR 1.137(b)]. In these respects, analogous reasoning applies to petitions to accept late payment of the issue fee under 37 CFR 1.155 or 1.316.

When a terminal disclaimer is a necessary component of the petition, the period to be disclaimed must equal the number of months between the date of abandonment and the date a grantable petition is filed. The date of abandonment is the date the period for response has expired [see MPEP 711.04(a)]. This is normally the end of the three month shortened statutory period. Moreover, the terminal disclaimer should employ the format shown in Figure 1.

FIGURE 1 — Terminal Disclaimer

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of (NAME)
Serial No.
Filed:
For:

TERMINAL DISCLAIMER

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Your petitioner, _____residing at _____, represents that he is the owner of the entire interest in the above-identified application (by virture of an assignment recorded at Reel _____, and Frame _____, filed on the _____ day of _____, 19 _____).

Your petitioner, _____, hereby disclaims the terminal _____ months of any patent granted on the above-identified application or on any application which is entitled to the benefit of

the filing date of this application under 35 USC 120. This agreement is to run with any patent so granted and to be binding upon the grantee, its successors or assigns.

IN WITNESS THEREOF, I here unto set my hand and seal this _____ day of _____, 19 _____

_____
(Signature)

18. POWER TO INSPECT

a. *Power of Attorney*

The Office receives letters granting power to inspect patent applications. These may only be granted by the attorney of record or inventor. Sometimes the person signing the power is not authorized to do so, causing delay until proper authorization is received. Copies of completed applications cannot be made during the pre-examination process. They can be inspected, but not pulled from the work flow to have copies made.

b. *Withdrawal of Attorney*

To expedite requests for permission to withdraw as attorney under 37 CFR §1.36, submit the request in triplicate (original and two copies) and indicate thereon the present mailing addresses of the attorney who is withdrawing and of the applicant. The examining group number should also appear on all such requests. Because the Office does not recognize law firms, each attorney of record must sign the notice of withdrawal, or the notice of withdrawal must contain a clear indication of one attorney signing on behalf of another.

A request to withdraw is effective when approved rather than when received. This is particularly important when such requests are submitted toward the end of the period for response. There should be at least 30 days between approval of withdrawal and the expiration date of a time response period so that the applicant will have time to obtain other representation or take other action. If less than 30 days remains in a running response period, a request to withdraw is normally disapproved.

If a period has been set for response and the period may be extended [without a showing of cause pursuant to 37 CFR 1.136(a)] by filing a petition for extension of time and fee, it is not necessary to seek such extension of time for withdrawal to be approved. In such a situation, however, withdrawal will not be approved unless at least 30 days would remain between the date of approval and the last date on which such a petition for extension of time and fee could properly be filed.

19. REISSUES

a. *Amendments*

To avoid unnecessary delays in the issuance of reissue applications, applicants and their attorneys are reminded to exercise caution and give sufficient attention to 37 CFR 1.121(a) and (e) in presenting resissue amendments. The practices and procedures vary somewhat from regular utility application amendments.

MPEP Sec. 1455 provides guidance for proper entry of amendments and claim numbering. Publication of the reissue application(s) may be needlessly postponed while formal irregularities are corrected.

b. *Oaths and/or Declarations*

Since standard oath and declaration forms are not used in reissue applications, applicants are commonly neglecting to include averments required by 37 CFR 1.63 per 37 CFR 1.175(a). The most frequent omissions involve the "duty of disclosure" acknowledgment, and the "reviewed and understands" statement. Such omissions usually necessitate additional handling and correspondence, and cause undue time delays, which result in postponement of publication of the reissue patent.

A frequent problem in reissue practice is the failure of applicants to satisfactorily comply with 37 CFR 1.175 regarding the description of all errors of the original patent in the reissue oath or declaration. Applicants are required to specify errors in the original reissue oath or declaration at the time of filing the reissue application. They must also specify, in a supplemental oath or declaration, any errors brought to their attention during the prosecution, as well as the circumstances surrounding the occurrence or discovery of these errors. Every departure from the original patent represents an "error" and must be particularly and distinctly specified and supported in the original, or a supplemental, reissue oath or declaration under 37 CFR 1.175. See MPEP Sec. 1414 and 1444. Postponement of publication of the reissue patent may result if these requirements are not met at the time of allowance.

20. SMALL ENTITY STATUS

a. *Small Entity Statements*

Verified statements claiming small entity status, where appropriate, would best be signed and submitted at the time the application oath or declaration is signed to permit filing of the statement with the application. This would reduce correspondence between attorney and client, reduce paper handling by the PTO support staff and the PTO Finance Branch, and greatly simplify the processing of subsequent papers involving fees. If small entity status is being claimed for the first time at the time of payment of the issue fee, a verified statement claiming small entity status should be submitted with the fee. See MPEP §509.03.

21. TRADEMARKS

a. *Application Drawings*

To avoid delays in processing new trademark applications, the drawing should have the following information in the upper left hand corner:

- Drawing title.
- Applicant's name and address.
- First use date.
- First use in interstate commerce date.
- Goods, services or both.

b. *File Histories*

When requesting trademark file histories, the "status date" (i.e., date abandoned) must be provided to fill the order if the file is abandoned. If not known, this information can be obtained from TRAM. The request will be returned unfilled if this date is not provided.

c. *Post Registration*

Section 8 Affidavit or Declaration Held Insufficient During Post Registration Examination — The Trademark Act of 1946, Section 8(a) was amended Aug. 27, 1982, Public Law 97-247 (96 Stat. 317), to clarify that the continued use required to be shown in the sixth year under Section 8(a) be use "in commerce."

Subsequently the Trademark Rules were amended on Jan. 28, 1983 (48 *Federal Register* 3977), to require that all Section 8(a) affidavits or declarations "state that the registered mark is in use in commerce and specify the nature of such commerce." [37 C.F.R. Section 2.162(e)].

The affadavit or declaration must be filed between the fifth and sixth year following the date of registration and it must contain a statement that the "mark is in use in commerce," with evidence thereof. There may be no extensions of time beyond the sixth year for submission of this statement and evidence of use of the mark in commerce. However, if the timely-filed affidavit or declaration does not set forth the type of commerce, the registrant will be given six months to submit that information even though the sixth year may have expired. The rules do not provide for any further extensions of time beyond the six months.

While the Post Registration Division will allow up to six months to respond to a letter from the office, a supplemental or substitute affidavit or declaration required by Section 8(a) will not be considered unless it is received before the expiration of the six year anniversary of the registration. It is suggested that registrants file Section 8(a) affidavits as early as possible between the fifth and sixth year following registration to allow time to submit an affidavit or declaration which is correct, if required.

Signatures —The corporate title of the affiant/declarant is often missing. Occasionally, the affidavit/declaration is unsigned.

Assignments —It will speed up the processing of Section 8 affidavits and renewal applications if the affiant/declarant will furnish the reel and frame number and the date(s) of recordation with the USPTO Assignment Section of any relevant assignment, merger, change of name, or other transfer.

Fees —Many of the affidavits and applications for renewal contain insufficient fees. The fee schedule for these transactions done in the Post Registration are is listed below:

(1) For filing an application for renewal of a registration, per class $300.00
(2) For filing an affidavit under Section 8 of the Act, per class $100.00
(3) For filing an affidavit under Section 15 of the Act, per class $100.00
(4) For filing a combined affidavit under Sections 8 and 15 of the Act, per class $200.00

If you have any questions, please call (703) 557-3061.

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PATENT NOTICES

Certificates of Correction for the Week of Jan. 31, 1989

Re. 32,720	4,724,038	4,753,767	4,765,735
4,371,015	4,725,465	4,753,786	4,766,626
4,377,365	4,726,589	4,753,883	4,766,815
4,443,327	4,726,816	4,755,099	4,766,883
4,461,369	4,727,064	4,755,165	4,767,019
4,487,754	4,727,923	4,755,521	4,767,044
4,520,116	4,728,778	4,755,596	4,767,134
4,548,768	4,729,702	4,755,744	4,767,243
4,619,788	4,729,861	4,755,903	4,767,510
4,625,538	4,730,976	4,755,935	4,767,569
4,626,488	4,731,044	4,755,980	4,767,637
4,629,015	4,731,995	4,756,038	4,768,241
4,630,417	4,733,761	4,756,416	4,768,526
4,635,121	4,735,227	4,756,910	4,768,539
4,640,944	4,737,155	4,756,961	4,769,043
4,648,055	4,737,352	4,756,963	4,769,058
4,655,817	4,739,397	4,756,967	4,769,262
4,657,838	4,740,049	4,757,054	4,769,518
4,668,093	4,740,338	4,757,606	4,769,717
4,669,120	4,740,560	4,758,352	4,769,743
4,671,869	4,740,577	4,758,752	4,769,993
4,672,165	4,740,894	4,759,157	4,770,058
4,679,317	4,740,968	4,759,256	4,770,421
4,682,112	4,741,972	4,759,295	4,770,429
4,684,562	4,741,976	4,759,687	4,770,882
4,689,330	4,742,240	4,759,837	4,771,450
4,692,396	4,742,251	4,759,974	4,771,485
4,692,870	4,742,628	4,760,009	4,771,593
4,694,388	4,744,054	4,760,134	4,771,706
4,700,302	4,744,121	4,761,018	4,771,939
4,701,035	4,744,675	4,761,809	4,772,164
4,702,520	4,744,813	4,762,691	4,772,272
4,705,380	4,746,535	4,762,703	4,772,552
4,706,124	4,747,637	4,763,472	4,772,676
4,709,138	4,747,867	4,763,571	4,772,963
4,711,848	4,747,899	4,764,016	4,773,547
4,714,680	4,748,040	4,764,111	4,773,593
4,714,974	4,748,055	4,764,538	4,773,903
4,716,204	4,749,004	4,764,639	4,774,189
4,719,149	4,749,523	4,764,974	4,774,239
4,720,623	4,749,565	4,765,085	4,775,623
4,722,055	4,750,859	4,765,627	4,775,715
4,722,613	4,752,543	4,765,649	
4,723,878	4,752,547	4,765,726	

Disclaimers

4,238,129.—*Jun Yasumatsu*, Toyota, Japan. PASSIVE SEATBELT SYSTEM. Patent dated Dec. 9, 1980. Disclaimer filed Dec. 8, 1987, by the assignee, *Toyota Jidosha Kabushiki Kaisha.*

Hereby enters this disclaimer to the remaining term of said patent.

4,652,533.—*Michael E. Jolley*, Round Lake, Ill. METHOD OF SOLID PHASE IMMUNOASSAY INCORPORATING A LUMINESCENT LABEL. Patent dated Mar. 24, 1987. Disclaimer filed Aug. 15, 1988, by the assignee, *Baxter Healthcare Corp.*

Hereby enters this disclaimer to claim 26 of said patent.

Dedication

4,614,745.—*Atso Ilvespaa*, Allschwil; *Georges Hass*, Binningen, both of Switzerland. ANTI-ALLERGIC 3-CARBOXYCARBONYL) AMINO BENZOTHIOPYRAN-4-ONE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR. Patent dated Sept. 30, 1986. Dedication filed Oct. 20, 1988, by the assignee, *Ciba-Geigy Corp.*

Hereby dedicates to the Public the remaining term of said patent.

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PATENT APPLICATION	New patent application and associated papers and fees.
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	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 31, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-4-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	1-21-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	1-20-87
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	7-31-86
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-24-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-8-87
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SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-22-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-4-88

Expiration of patents: The patents within the range of numbers indicated below expire during December 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,624,839 to 3,631,538, inclusive

Plant Patents . . . . . None

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REEXAMINATIONS

JANUARY 31, 1989

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,194,650 (1007th)

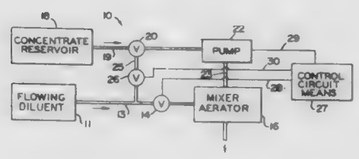
LIQUID MIXING AND AERATING SYSTEM

James E. Nottke, Seminole, and Jack K. Ruebel, Clearwater, both of Fla., assignors to Lykes Pasco Packing Co. Dispenser Manufacturing Div., Clearwater, Fla.

Reexamination Request No. 90/001,377, Nov. 16, 1987.
Reexamination Certificate for Patent No. 4,194,650, issued Mar. 25, 1980, Ser. No. 882,658, Mar. 2, 1978.
Division of Ser. No. 768,612, Feb. 14, 1977.

Int. Cl.[4] B67D *1/10*

U.S. Cl. 222—57



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–7 is confirmed.

6. A system for mixing a first liquid diluent and a second liquid concentrate in a fluid passage comprising in combination;

regulating means for regulating the flow of the first liquid;

pumping means for pumping the second liquid;

said pumping means including a rotor housing having at least a partially cylindrical pumping chamber for receiving a rotary pumping element therein;

said pumping chamber having a rear wall and a side wall with an input and output disposed in said side wall;

a housing plate engageable with said rotor housing for enclosing the front of said pumping chamber;

and means for removably mounting said housing plate from said rotor housing for enabling cleaning of said rotary pumping element while said rotary pumping element is disposed in said pumping chamber and while the input and the output of the pumping chamber are connected to the system;

control means for controlling said pumping means and varying the pumping rate thereof in accordance with the flow of the first liquid to maintain a given volumetric relationship between the first liquid and the second liquid;

mixing means for mixing said given volumetric relationship of said first and second liquids enabling the mixture to flow from the fluid passage;

said regulating means including valve means connecting the first liquid to said mixing means; and

means connecting said control means to said valve means for simultaneously energizing and deactivating said valve means and said pumping means for controlling the flow of the first and second liquids.

B1 4,370,372 (1008th)

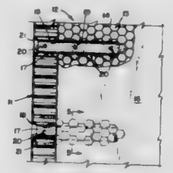
METHOD OF JOINING HONEYCOMB PANELS USING A FASTENER ELEMENT

William E. Higgins, Largo, and Richard C. Lazzara, St. Petersburg, both of Fla., assignors to Advanced Technology & Research, Inc., Largo, Fla.

Reexamination Request No. 90/001,510, May 13, 1988.
Reexamination Certificate for Patent No. 4,370,372, issued Jan. 25, 1983, Ser. No. 248,894, Mar. 30, 1981.

Int. Cl.[4] B32B *3/12, 7/08*

U.S. Cl. 428—116



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–9 is confirmed.

1. A method of joining two composite honeycomb panels each having internal cellular structure positioned between cover sheet members, comprising the steps of providing related bores in the respective panels, at least one of said bores being a through bore extending entirely through its panel, including the respective cover sheet members, placing the panels in tightly abutting relation with the bores of the respective panels in alignment, inserting a hollow tubular fastener element having an open outer end through said through bore with its inner end projecting into and along the aligned bore, there being side apertures in said fastener located within each of said panels when the fastener is fully inserted, forcing fluent anchoring material into said fastener through said outer end under sufficient pressure that some of the material extrudes from a column within the fastener element through said apertures to randomly occupy adjacent space in the cellular structures of both panels, and allowing said anchoring fluid to harden in situ whereby to provide a combined fastener tube and hardened anchoring fluid unit to effectively anchor said fastener to both panels and secure said panels together in tight assembly.

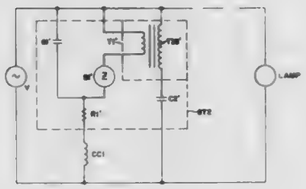
4. Coupling means for securing together two abutting honeycomb panels each having internal cellular structure positioned between cover sheet members, comprising means providing aligned bores in the respective panels, at least one of said bores being a through bore extending entirely through its panel, including the respective cover sheet members, each bore being surrounded by regions where cell walls are ruptured to provide spaces of irregular size and location during formation of said bores, an open-ended hollow tubular fastener inserted through said bores to bridge said aligned bores, said fastener having side wall apertures that communicate with said regions in both panels and a solid column of anchoring material located within the hollow portion of said fastener, said column having branches extending through said apertures to occupy said regions.

B1 4,480,214 (1009th)

STARTER CIRCUIT FOR GASEOUS DISCHARGE LAMP

Gregory L. Sodini, Memphis, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Reexamination Request No. 90/001,359, Oct. 26, 1987.
Reexamination Certificate for Patent No. 4,480,214, issued Oct. 30, 1984, Ser. No. 369,262, Apr. 16, 1982.
Int. Cl.[4] H05B *41/14*
U.S. Cl. 315—290



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

1. A starter for a gaseous discharge lamp adapted to be powered across the two conductors from an alternating current source, the starter circuit being connected across the two conductors in parallel with said lamp, said starter circuit including a first and second path both in parallel across the source, said first path including a series resistance-capacitance network in which there is a choke coil in series resistance with the resistance of said resistance capacitance network and further with the combination of a voltage threshold sensitive switch and pulse transformer primary in parallel with the capacitance of said network, said switch being adapted to close a circuit to the primary of the transformer when the threshold voltage of the switch is reached by the network, and said second path including the secondary of said pulse transformer coupled across said two conductors for transmitting high voltage, high frequency pulses to said lamp to start said lamp, with said pulse transformer having a turns ratio of approximately one to thirty to generate high voltage, high frequency starting current from said transformer secondary for starting said lamp.

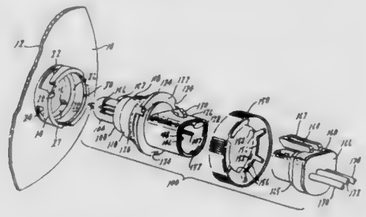
B1 4,513,356 (1010th)

REPLACEABLE LAMP ASSEMBLY AND LOCKING MECHANISM FOR A SEALABLE REFLECTOR HOUSING

James A. Mikola, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Reexamination Request No. 90/001,427, Feb. 1, 1988.
Reexamination Certificate for Patent No. 4,513,356, issued Apr. 23, 1985, Ser. No. 474,374, Apr. 29, 1983.
Division of Ser. No. 339,194, Jan. 13, 1982.

Int. Cl.[4] H01R *33/00*
U.S. Cl. 362—226



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **3** are determined to be patentable as amended.

Claims **2** and **4–9**, dependent on an amended claim, are determined to be patentable.

1. A replaceable lamp assembly for mating with a hermetically sealable lamp enclosure including a light transmitting lens, a light directing reflector and a socket opening in said reflector comprising:

a filament lamp light source;

plug means, containing said filament lamp, and having a body *with a* portion *thereof* formed to be axially [inserted] *insertable* into said socket opening, wherein said plug means includes means for supporting said lamp so that the filament of said lamp is located at a predetermined point in a predetermined orientation with respect to said body [portion], and means *annularly positioned around said insertable portion of said body for insertion therewith and* for sealing *said socket opening of* said lamp enclosure when said plug means is inserted into said socket opening[;] *and* a base flange *transversely* extending [transverse to] *from* said body [portion] and having a diametric dimension larger than that of said socket opening for limiting the insertion distance of said plug means into said socket opening; and

means surrounding said base flange of said plug means and sad socket for *applying compressive forces directly to said flange and said socket to thereby lock* [locking] said plug means in said socket.

REISSUES

JANUARY 31, 1989

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

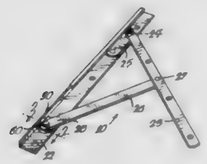
Re. 32,846

SNAP STUD

Christopher T. Sandberg, Owatonna, and Gary F. Paulson, Waseca, both of Minn., assignors to Truth Incorporated, Owatonna, Minn.

Original No. 4,593,431, dated Jun. 10, 1986, Ser. No. 746,443, Jun. 19, 1985. Continuation of Ser. No. 589,307, Mar. 14, 1984, abandoned. Application for reissue Jan. 12, 1987, Ser. No. 4,175

Int. Cl.[4] E05D *5/12*
U.S. Cl. 16—381 **10 Claims**



1. A releasable connection means *for holding two window hardware members in pivotally connected relationship, said connection means comprising:* a snap stud [for mounting on a first member] *having a generally cylindrical stud; a first member; means attaching the cylindrical stud to the first member so that the cylindrical stud and first member are fixed against relative movement axially of the cylindrical stud;* and a second member having a through opening [and defining at an end thereof an annular edge having a substantially right angle cross section], said snap stud extending through said opening [for] *and* releasably holding said second member in pivotal relation with said first member, said [snap stud comprising a generally] cylindrical stud having an external peripheral groove intermediate the ends of the stud, and a C-ring of [spring wire] *substantially incompressible spring-type material extending through more than 180°, surrounding said cylindrical stud,* defining an annular centerline positioned in said peripheral groove and having a pair of spaced-apart ends, said C-ring having inner and outer diameters selected to have a part thereof in said peripheral groove and a part extending *radially* beyond the stud periphery when said C-ring is in a retention position, the diameter of [said edge] *at least a portion* of the *through* opening of the second member being less than the outer diameter of the C-ring *in its retention position* and *at all times* greater than the diameter of said annular centerline of the C-ring [when the C-ring is in said retention position], and said peripheral groove having a depth to enable [compression] *deformation* of the C-ring *by movement of said spaced-apart ends towards each other* to a release position in which substantially all of the C-ring is in said peripheral groove and which enables disassembly of said pair of members by pulling one member away from the other axially of the stud.

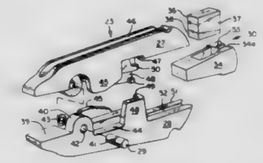
Re. 32,847

WEDGE-TYPE ROPE SOCKET CONNECTION AND METHOD

Terry L. Briscoe, Portland, Oreg., and Robert L. Van Hoomissen, Toledo, Ohio, assignors to ESCO Corporation, Portland, Oreg.

Original No. 4,561,154, dated Dec. 31, 1985, Ser. No. 604,063, Apr. 26, 1984. Application for reissue Dec. 8, 1986, Ser. No. 939,065

Int. Cl.[4] F16G *11/04*
U.S. Cl. 24—136 R **7 Claims**



7. A collapsible support for resisting a clamping force comprising three stacked, longitudinally tapered members arranged to slide relative to each other, wedge-forming means including an element adjacent each of the end members of said stack for applying a compressive load to the stack end members, the middle of the three stacked members having an angle of taper relative to each of the adjacent end members, said angle of taper having a tangent greater than the coefficient of friction between adjacent members, and housing means operably associated with said three members releasably constraining the same against sliding movement longitudinally relative to each other, whereby when said constraining housing means is removed, the middle of said members automatically is ejected relative to said adjacent end members to relieve said compressive load.

Re. 32,848

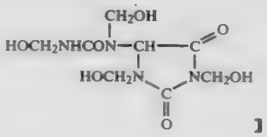
ANTI-MICROBIAL REACTION PRODUCT OF #9 ALLANTOIN AND FORMALDEHYDE

Philip A. Berke, Madison, and William E. Rosen, Summit, both of N.J., assignors to Sutton Laboratories, Inc., Chatham, N.J.

Original No. 4,487,939, dated Dec. 11, 1984, Ser. No. 214,993, Dec. 10, 1980. Division of Ser. No. 70,502, Aug. 28, 1979, Pat. No. 4,271,176. Application for reissue Dec. 10, 1986, Ser. No. 940,241

Int. Cl.[4] C07D *233/60*
U.S. Cl. 548—311 **5 Claims**

[1. A condensation product of formaldehyde and allantoin in the proportion of four moles of formaldehyde to one mole of allantoin having the structural formula:



]

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Re. 32,849

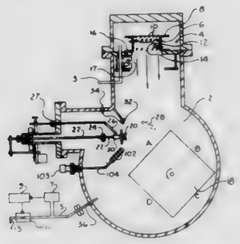
METHOD FOR FABRICATING MULTI-LAYER OPTICAL FILMS

David T. Wei, Malibu, and Anthony W. Louderback, Ojai, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Original No. 4,142,958, dated Mar. 6, 1979, Ser. No. 896,133, Apr. 13, 1978. Application for reissue Jul. 2, 1985, Ser. No. 751,218

Int. Cl.[4] C23C *14/46*

U.S. Cl. 204—192.27 21 Claims



1. A method of fabricating multiple layer optical films, *said multiple layer optical films comprising optical layers having different indices of refraction* comprising:

bombarding targets obliquely with an ion beam *produced by or derived from a Kaufman-type ion beam source* in a vacuum chamber to sputter deposit a plurality of optical film layers on a base;

controlling the atmosphere inside [of] the vacuum chamber to provide sufficient gas to sustain the ion beam and the proper amount of oxygen to accomplish proper stoichiometry of the thin films; and

depositing multiple layers of different materials on said base by varying the targets being bombarded by the ion beam; and

continuously rotating said base during the deposition of said multiple optical layers.

Re. 32,850

FILM FEEDING SYSTEM OF A CAMERA

Kunihiko Araki, Tokyo; Susumu Iguchi, Yokohama; Tadafumi Ohgaro, Tokyo; Yoshimi Ono, Kawasaki; Koichi Nishi, Yokohama; Yoshio Fukushima, Machida; Satoshi Yamane, Takarazuka, and Hirofumi Horigome, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Original No. 4,460,256, dated Jul. 17, 1984, Ser. No. 323,686, Nov. 20, 1981. Application for reissue Jan. 31, 1989, Ser. No. 339,045

Claims priority, application Japan, Nov. 26, 1980, 55-166105; Nov. 26, 1980, 55-166106; Nov. 26, 1980, 55-166107; Nov. 26, 1980, 55-166108; Nov. 26, 1980, 55-166109; Nov. 26, 1980, 55-166110; Nov. 26, 1980, 55-166111; Nov. 26, 1980, 55-166112; Nov. 26, 1980, 55-1661113

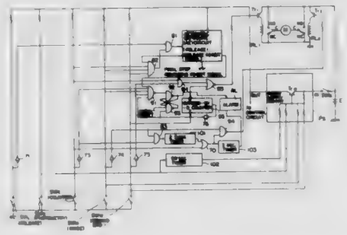
Int. Cl.[4] G03B *1/18, 1/66, 17/36*

U.S. Cl. 354—412 21 Claims

17. A camera in which film is continuously wound onto a spool from a film magazine loaded into the camera, and the film is rewound into the magazine frame by frame during exposure; said camera being operable with a direct power supply and comprising:

a motor to drive either the spool or magazine shaft depending on the direction of the power supply, and

control means for retaining the motor in a state in which power is supplied thereto continuously for rewinding the film into



the magazine when no film frames allowing exposures are left.

Re. 32,851

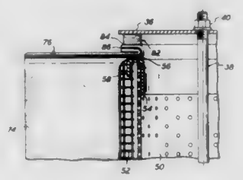
FLUID FILTER

Frederick E. Tarala, Pittsford, N.Y., assignor to North American Filter Corporation, Newark, N.Y.

Original No. 4,615,803, dated Oct. 7, 1986, Ser. No. 666,503, Oct. 30, 1984. Application for reissue Mar. 3, 1988, Ser. No. 163,633

Int. Cl.[4] B01D *27/04, 27/06*

U.S. Cl. 210—455 13 Claims



1. A filter medium for a fluid filter element comprising;

a continuous elongated web of filter material having;

a plurality of spaced-apart tabs along at least one edge of said web;

at least *a* first [and second parallel seams] *seam* along said at least one edge [forming] *joining adjacent portions of said elongated web to form* a plurality of pockets[; at least one further seam] *and* joining adjacent edges of adjacent ones of said tabs, [said further seam intersecting at least one of said first and second parallel seams,] whereby said filter element includes;

a generally tubular central core having a neck portion at one end of said core and a plurality of pockets extending radially outwardly from said core.

Re. 32,852

Patent Not Issued For This Number

Re. 32,853

TUNING DEVICE

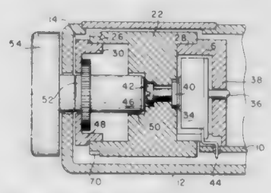
Toshiaki Oguchi, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Original No. 4,609,894, dated Sep. 2, 1986, Ser. No. 653,846, Sep. 24, 1984. Application for reissue Aug. 26, 1987, Ser. No. 89,440

Claims priority, application Japan, Sep. 29, 1983, 58-182558

Int. Cl.[4] H03J *1/08*

U.S. Cl. 334—11 3 Claims



1. A tuning device comprising:

a frame;

a dial drum, rotatably supported in said frame, said dial drum having characters for tuning and having an outer toothing formed on the periphery thereof;

a rheostat operatively connected to said dial drum; *for being tuned upon rotation of said dial drum;*

a knob having the rotational axis thereof in alignment with the rotational axis of said dial drum;

a drive gear co-axially secured to said knob and rotatably supported in said dial drum; and

a gear reduction train disposed between said drive gear and said outer toothing for transmitting the rotation of the drive gear to said drum, said gear reduction train comprising:

a large diameter gear engaged with said drive gear[;], *and*

a small diameter gear [engaged with said large diameter gear and disposed] in an integral relationship with said large diameter gear *and engaged with said outer toothing*

whereby the axis of rotation of each gear is parallel to the axis of rotation of said knob.

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PLANT PATENTS

GRANTED JANUARY 31, 1989

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,565

CHRYSANTHEMUM PLANT NAMED SCHNIZER'S TWILIGHT

William O. Schnizer, Waco, Tex., assignor to Ball Pan Am Plant Co., Parrish, Fla.

Filed Jun. 15, 1987, Ser. No. 61,426
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Schnizer's Twilight, as illustrated and described, and distinguished from its parent cultivar Twilight by its dark coral bronze flower color.

6,566

MINIATURE CARNATION—DONNA

Angelo J. Siri, San Francisco, Calif., assignor to Siri Brothers Nursery Inc., East Palo Alto, Calif.

Filed Aug. 17, 1984, Ser. No. 641,922
The portion of the term of this patent subsequent to Aug. 31, 2004, has been disclaimed.
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct variety of miniature carnation plant, substantially as herein shown and described.

6,567

ACHIMENES PLANT NAMED TETRA LINDA

Konrad Michelsen, Hannover, Fed. Rep. of Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jun. 16, 1987, Ser. No. 62,948
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct Achimenes plant named Tetra Linda, as illustrated and described, and particularly characterized by its distinct all white flower color, including throat; vigorous and compact growth habit; floriferousness, producing many flowers on stiff stems which elevate the flowers above the leaf canopy; long flowering period, and by its ability to propagate well from rhizomes, leaf and stem cuttings.

6,568

ROSE PLANT NAMED BENDAY

Frank A. Benardella, Old Tappen, N.J., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Jun. 15, 1987, Ser. No. 62,066
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by Cardinal red flowers of excellent exhibition form.

6,569

ROSE PLANT NAMED BENRAD

Frank A. Benardella, Old Tappen, N.J., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Jun. 15, 1987, Ser. No. 62,067
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by well-formed orange red flowers which open well and which are long lasting on the plant and as cut flowers.

6,570

ROSE PLANT NAMED SAVAREND

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Jun. 15, 1987, Ser. No. 62,068
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by red flowers of exhibition form which are long lasting on the plant and as cut flowers.

6,571

CARNATION VARIETY 'LONDRAGEL'

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, La Londe, France

Filed Jul. 28, 1986, Ser. No. 889,845
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—70 1 Claim

1. The new and distinct variety of spray carnation, substantially as herein shown and described, characterized by its profuse but recurrent flower production and its normal height of about one meter at eight months, the flower stem averaging about 53.6 cm. long when cut at the tenth node.

6,572

LILY PLANT NAMED FOXTROT

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Aurora, Oreg.

Filed Jun. 19, 1987, Ser. No. 63,926
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. The new and distinctive variety of Asiatic hybrid lily plant and parts thereof substantially as herein shown and described, characterized by its large, broad but "clawed" tepalled flowers of rich golden orange coloration which are completely unspotted; by the excellence of its flower form, its vigorous growth and rapid natural propagation, and its versatility both as a garden plant and as a cut flower producer from precooled bulbs forced under glass out-of-season.

6,573

LILY PLANT NAMED 'FIRE PIXIE'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Aurora, Oreg.

Filed Jun. 19, 1987, Ser. No. 63,927
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. The new and distinct variety of Asiatic hybrid lily plant and parts thereof substantially as herein shown and described, characterized by its orange to red-orange flowers with their inconspicuous ring of tiny spots encircling the center of the bloom; by its versatility both as a garden plant and as a pot plant variety suited for forcing into flower out-of-season; and by its short stemmed and abundantly leaved, upright-flowering silhouette.

6,574

LILY PLANT NAMED 'HORNPIPE'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Aurora, Oreg.

Filed Jun. 19, 1987, Ser. No. 63,928
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. The new and distinctive variety of Asiatic lily plant and

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parts thereof, substantially as herein shown and described, characterized in particular by its unspotted, broad tepalled, rich golden-orange flowers with fluted tepal margins; and by the excellence of its flower form and its versatility both as a garden plant and as a cut flower variety well suited to forcing into flower out-of-season.

6,575
AFRICAN VIOLET PLANT NAMED ANNIE
Reinhold Holtkamp, Sr., Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany
Filed Mar. 4, 1987, Ser. No. 21,786
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Annie, as described and illustrated, and particularly characterized by its generally single, bright red-purple flowers which are wavy, particularly at the edges; strong, upright flower stems that curve toward the center to form a bouquet above the leaves, profuse and continuous flowering, vigorous growth habit, flowering 9–10 weeks after potting, and its long-lasting and non-dropping flowers.

6,576
GERANIUM PLANT NAMED YELLOW RIBBONS
David Tostevin, Framsden, England, assignor to White Swan, Ltd., Beaverton, Oreg.
Filed Mar. 1, 1984, Ser. No. 585,307
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. The new and distinct variety of geranium plant substantially as herein shown and described, characterized particularly as to novelty by the true yellow semi-double flowers, with abundant, compact foliage.

6,577
ROSE PLANT JACRIS
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.
Filed Oct. 24, 1986, Ser. No. 922,634
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright growth habit, profusion of single red flowers, glossy green foliage and its ability to easily root from hardwood cuttings.

6,578
STRAWBERRY PLANT CALLED 'OSO GRANDE'
Victor Voth, Santa Ana, and Royce S. Bringhurst, Davis, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.
Filed Jul. 9, 1987, Ser. No. 73,246
Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—48 1 Claim

1. The new distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above together with the parts thereof.

6,579
STRAWBERRY POANT CALLED 'MRAK'
Royce S. Bringhurst, Davis, and Victor Voth, Santa Ana, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.
Filed Jul. 16, 1987, Ser. No. 74,439
Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—49 1 Claim

1. The new distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above together with the parts thereof.

6,580
STRAWBERRY PLANT
Royce S. Bringhurst, Davis, and Victor Voth, Santa Ana, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.
Filed Jul. 16, 1987, Ser. No. 75,915
Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—49 1 Claim

1. The new distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above together with the parts thereof.

PATENTS

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ERRATA

For CLASS	See PATENT NO.
256-047	4,800,630
034-044	4,800,709
141-098	4,801,005
244-055	4,801,058
264-040	4,801,361
252-051	4,801,362
208-108	4,801,364
427-035	4,801,468
427-103	4,801,469
429-198	4,801,511
429-213	4,801,512
540-358	4,801,720
585-500	4,801,762
354-289	4,801,793
346-153	4,801,919
341-144	4,801,923
369-136	4,802,081

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PATENTS

GRANTED JANUARY 31, 1989

GENERAL AND MECHANICAL

4,800,592
COSTUME WITH COMPRESSIBLE ARMS AND LEGS
Jon S. Cable, 319 N. 46th St., Phoenix, Ariz. 85008
Filed Oct. 28, 1987, Ser. No. 114,434
Int. Cl.[4] A41D *3/00*
U.S. Cl. 2—69 17 Claims



1. A costume to be worn by an individual over conventional street clothes, said costume comprising:

(a) a plurality of compressible tubular conduits, each of said conduits defining a large diameter opening for loosely encircling a limb of said individual and including,

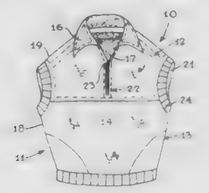
I. a helically wound coil of resiliently flexible wire material, and

II. a covering material for encasing said coil of wire material;

(b) an end cap provided on one end of each of said tubular conduits opposite said large diameter opening, said end cap comprising a planar surface which extends transversely with respect to the longitudinal extent of said conduit, said planar surface acting essentially as a stop for preventing said coil of wire material from extending beyond the length of said limb, said planar surface further defining a small diameter opening for closely encircling said limb; and

(c) fastening means attached to each of said tubular conduits for securing said conduits over said individual's body.

4,800,593
PROTECTIVE GARMENT FOR WEIGHT LIFTERS
John J. Ruffner, 21438 Ellen Dr., Fairview Park, Ohio 44126
Filed Jan. 11, 1988, Ser. No. 141,800
Int. Cl.[4] A41D *13/00*
U.S. Cl. 2—108 3 Claims



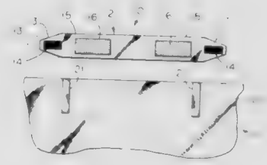
1. A protective garment construction for weight lifters to prevent bruises and abrasions on the weight lifter's neck, shoulders and upper torso from contact with a metal bar during weight lifting exercises; wherein, the protective garment constructions consists of:

a garment unit comprising a sleeveless jacket member having a front panel segment, a back panel segment and a raised collar segment surrounding a throat opening wherein each of the segments is provided with an inner and an outer layer of fabric whereby the upper portion of the front and back panel segments are provided with a plurality of compartments that are formed by joining the inner and outer fabric layer; and, wherein the raised collar segment is also provided with a compartment that is formed by joining the inner and outer fabric layers of the raised collar segment; and,

wherein said plurality of compartments consists of a single upper back compartment; a neck compartment; a pair of shoulder compartments; and, at least one upper chest compartment covering at least one side of the upper portion of the user's torso; and,

a padding unit comprising a plurality of individual padded members that are dimensioned and conformed to occupy the said plurality of compartments that are formed in the upper portion of the front and back panel segments and the raised collar segment wherein the said plurality of padded members comprise: a neck pad member; an upper back pad member; a pair of shoulder pad members; and at least one upper chest pad member; wherein, said padded members are concentrated in the upper portion of the sleeveless jacket member.

4,800,594
PANTS EPAULET AND BINDER
W. Bradley Young, Marietta, Ga., assignor to Youngstuff, Inc., Atlanta, Ga.
Filed Dec. 3, 1987, Ser. No. 127,986
Int. Cl.[4] A41F *9/00*
U.S. Cl. 2—237 5 Claims



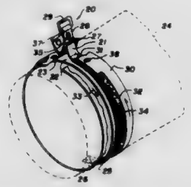
1. A pants epaulet for adorning the waist of pants of a type having a pair of adjacent belt loops secured to the pants waist at a selected spacing, and with the pants epaulet comprising an integral flexible ornamental band of a length greater than the loops spacing adapted to overlay the pair of loops with band far end portions located beyond the loops and with band near end portions located adjacent and between the loops, and fastening means mounted to an inside of said band for releasibly fastening adjacent far end portion to adjacent near end portions of said band with the band overlaying the loops and with said far end portions folded behind said near end portions and extending through the loops.

4,800,595

CIRCUMFERENTIAL SUPPRESSION SYSTEM

Robert J. Askew, 14200 - 18th Avenue, Surrey, British Columbia, Canada V4A 7C1

Filed Oct. 30, 1986, Ser. No. 925,069
Int. Cl.[4] A41F *17/04*; A41B *7/02*
U.S. Cl. 2—270 6 Claims



1. A circumferential suppression system for garments and articles made of supple material, comprising:

a drawline having one end attached to said article and a free end adapted to be led around the said article to a return anchor point remote from said attached end, said drawline being led back along itself from said return anchor point to a pivoting anchor point attached near said attached end of said drawline;

retaining means for said drawline comprising a pocket attached around said article and substantially enclosing the length of said drawline, said pocket extending from said attached end of said drawline around said article, over said return anchor point to said pivoting anchor point; and

securing means on said drawline and said pocket to allow said drawline to be removably attached to said pocket around said article;

said return anchor point forming a first load reversal point and said pivoting anchor point forming a second load reversal point, such that, in combination, said first and second load reversal points provide a mechanical advantage and prevents torsion of said article when said free end of said drawline is pulled away from said pivoting anchor point to cause a generally even radial contraction of material between said return anchor point and said pivoting anchor point, whereupon said drawline can be removably secured to said pocket by said securing means to maintain said contraction.

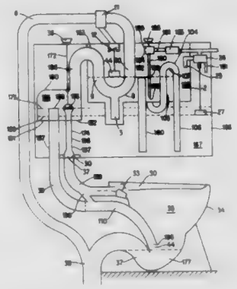
4,800,596

VENTILATED TOILET

Heinrich Menge, Elsendorfer Pferdeweg 145, D-2100 Hamburg 90, Fed. Rep. of Germany

Filed Jul. 25, 1986, Ser. No. 901,261
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1985, 3526587; Sep. 27, 1985, 3534494
Int. Cl.[4] E03D *9/052*
U.S. Cl. 4—348 47 Claims

1. A toilet, comprising a toilet bowl having a waste discharge opening; a waste discharge line communicating with said bowl by way of said discharge opening; means for flushing waste from said bowl into said waste discharge line through said waste discharge opening, said flushing means including a flushing tank for a supply of flushing liquid and means for effecting discharge of flushing liquid into said bowl, said flushing tank having a pair of chambers; means for withdrawing air from said bowl including a pipe having an open first end in said bowl and a second end in said tank, an air duct having a first end portion in said tank and a second end portion opening into said waste discharge line, and blower means for conveying air from said bowl to the waste discharge line via said pipe and said duct; liquid seal means in one of said chambers between said second end and said first end portion, a body of the supply of flushing liquid being disposed in said liquid seal means; and



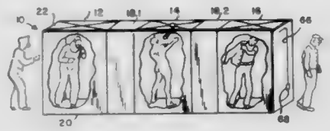
means for establishing communication between said one chamber and the other of said chambers.

4,800,597

DECONTAMINATION SHELTER

Brian J. Healey, 21 Harvard St., Charlestown, Mass. 02129

Continuation of Ser. No. 024,914, Mar. 11, 1987, abandoned, which is a continuation of Ser. No. 746,721, Jun. 20, 1985, abandoned. This application May 18, 1988, Ser. No. 196,788
Int. Cl.[4] A47K *3/22*
U.S. Cl. 4—599 4 Claims



1. A portable shelter of rectangular, vertical and horizontal section comprising in line three longitudinally-spaced support frames and a cover removably disposed on the frames, said frames each comprising vertical supports in the form of quadrilaterally arranged posts and horizontal supports joining the upper ends of the posts and said cover comprising a flexible sheet material embodying a top, a bottom, spaced, parallel sides and spaced, parallel ends, said cover further comprising longitudinally-spaced, tranversely-disposed pairs of spaced, parallel, flexible sheet material partitions disposed transversely of the spaced, parallel sides, with each pair disposed between adjacent frames such as to divide the structure into three isolation compartments with isolation corridors therebetween, comprising a first compartment within which contaminated clothing can be removed, a second compartment containing a shower head at the top and a drain at the bottom within which contaminant can be washed off and a third compartment within which uncontaminated clothing can be donned and said corridors providing space for moving from one compartment to another and said partitions embodying transversely-spaced flaps such as to require traversing the corridors from one side to and exit from the other to move from one compartment to another and said end walls embodying flaps for entrance into the structure.

4,800,598

ANTI-TILT SOFA SLEEPER MECHANISM

Dennis E. Arft, Joplin, Mo., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Dec. 1, 1987, Ser. No. 127,252
Int. Cl.[4] A47C *17/14*
U.S. Cl. 5—13 8 Claims



1. A foldable sofa-sleeper mechanism adapted to be mounted upon a sofa frame and stored within a storage enclosure of the sofa frame, said mechanism comprising

a bed frame having pivotally interconnected head, body, intermediate and foot sections each having a pair of opposed side rails, a mattress supporting fabric extending between said sections and connected thereto,

a pair of center legs connected to a center actuating leg means operable to retract and extend said center legs, said mechanism being movable between a folded position in which said mechanism is contained within said storage enclosure of said sofa frame and said center legs are retracted, and an extended unfolded position in which said bed frame extends forwardly from said sofa frame and said center legs extend downwardly from said bed frame, the improvement comprising

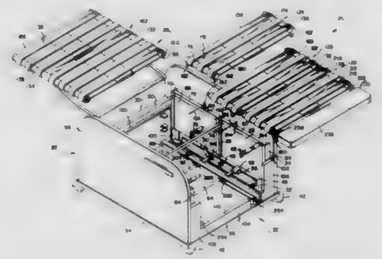
tilt prevention means for preventing tilting of the head section of the unfolded sofa-sleeper mechanism downwardly, said tilt prevention means including at least one flexible, non-stretchable cable connected to two locations on said mechanism such that the unfolded mechanism cannot tilt upwardly at the foot section of the mechanism without stretching the nonstretchable cable.

4,800,599

SOMATIC SUPPORT SYSTEM

Vernard S. Korchinski, and Korchinski N. Paul, both of 11777 Indian Ridge Rd., Reston, Va. 22091

Filed Sep. 8, 1987, Ser. No. 93,780
Int. Cl.[4] A61G *7/02*; A47B *83/02*
U.S. Cl. 5—68 30 Claims



1. A somatic support system usable for the support of a bed dependent person, said somatic support system comprising:

a unit frame assembly having spaced side and end rails;

a body lift frame assembly removably supported by said unit frame and movable vertically with respect to said unit frame;

a panel assembly removably supported on said unit frame and including means for defining a path of vertical travel for said lift frame assembly;

a mattress support frame assembly removably secured to an upper portion of said body lift frame assembly, and

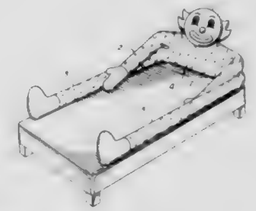
drive means removably carried by said unit frame and operable to vary the position of said body lift frame assembly and said mattress support frame assembly.

4,800,600

DECORATIVE CRIB BUMPER

Marilyn J. Baum, 15822 Castlewoods Dr., Sherman Oaks, Calif. 91403

Filed Aug. 20, 1986, Ser. No. 898,439
Int. Cl.[4] A47D *9/00*
U.S. Cl. 5—93 R 10 Claims



1. A crib bumper comprising:

a. a mattress having two opposed ends and two opposed side edges;

b. a body having upper and lower edges and opposite sides and stuffed with a firmly packed resilient material and located at one mattress end;

c. a fanciful head attached to the body;

d. a pair of legs, stuffed with a firmly packed resilient material, said legs attached to the body on the opposite sides thereof and extending along the side edges of said mattress to form a cushioned bumper along the periphery of said mattress; and

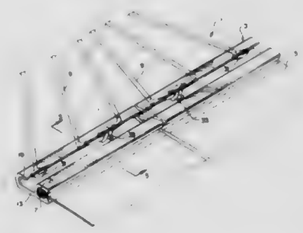
e. a pair of stuffed arms attached to the body on the opposite sides thereof.

4,800,601

DEVICE FOR SPREADING AND HANGING THE HEAD OF A HAMMOCK

Thomas J. DeCaro, Green Lantern Station, 2901 McGehee Rd., Montgomery, Ala. 36111

Filed Mar. 11, 1988, Ser. No. 167,191
Int. Cl.[4] A45F *3/22*
U.S. Cl. 5—123 12 Claims



1. A device for securing a flexible sheet of material having a head defined by a thickened edge to the ends of plural support members comprising:

(a) a substantially rigid elongate member;

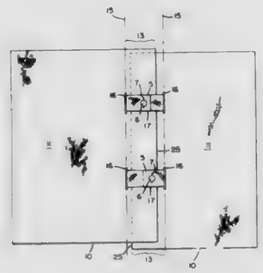
(b) the transverse profile of the elongate member being defined by a base section, an open C-shaped section and a closed C-shaped section, which sections collectively form open and closed longitudinal slots along the length of the member;
(c) the open slot including a longitudinal rear wall provided with a plurality of spaced apertures therethrough for receiving the ends of the support members; and
(d) the closed slot being further formed by a pair of inwardly directed longitudinal flanges having edges which terminate to define a longitudinal spacing therebetween, the spacing being dimensioned for receiving the sheet of material therein but preventing the head of the sheet from passing transversely therethrough.

4,800,602

SIZE ADJUSTABLE BEACH TOWEL AND METHOD

Jerry L. Laery, 9245 Countess Dr., Owings Mills, Md. 21117

Filed Feb. 16, 1988, Ser. No. 156,417
Int. Cl.[4] A47G *9/06*
U.S. Cl. 5—417 11 Claims



1. A detachable beach towel system, adapted to underlie a substantial portion of a human body, comprising:
a first beach towel module and at least one different beach towel module,
wherein each beach towel module contains at least two regularly-spaced linear openings parallel to at least one outermost edge, said at least two regularly-spaced linear openings define a linear axis which extends parallel to said outermost edge,
at least two flexible members,
wherein each flexible member terminates in a first end and a second end, said ends being provided with complementary connecting means capable of being readily detached, the width of said flexible member being less than the length of said regularly-spaced linear openings,
A first end of a flexible member extending through a first linear opening of said first beach towel module and a second end of said flexible member extending through a first linear opening of a different beach towel module, said first and second ends of said flexible member being connected;
a first end of a different flexible member extending through a second linear opening of said first beach towel module said second linear opening of said first beach towel module being found in the same linear axis as said first linear opening of said first beach towel module, and a second end of said flexible member extending through a second linear opening of said different beach towel module, said second linear opening of said different beach towel module being found in the same linear axis as said first linear opening of said different beach towel module, said first and second ends of said flexible member being connected,
whereby said first beach towel module attached to said different beach towel module is capable of ready detachment by the release of said complementary connecting means of connected flexible members.

4,800,603

TISSUE FIXATION WITH VAPOR

Norman R. Jaffe, 33861 Chula Vista, Dana Point, Calif. 92629

Filed Jan. 30, 1987, Ser. No. 8,836
Int. Cl.[4] A61F *1/22*
U.S. Cl. 8—94.11 34 Claims

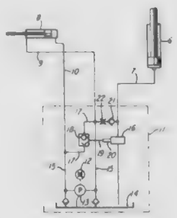
1. The method of fixing tissue at a relatively slow rate without being subjected to stress comprising the steps of
placing of quantity of tissue to be fixed within an atmosphere of substantially unpressurized vapor of a glutaraldehyde fixative solution, said glutaraldehyde being present in an amount of from about 0.01% to about 3.0% by volume, and maintaining said tissue within said atmosphere of substantially unpressurized vapor in a manner sufficient to provide uniform application of the fixative solution for a period of time to cause the desired fixation of said tissue.

4,800,604

BRIDGING DEVICE FOR DOCKS

Kurt Alten, Ringstr. 14, D-3015 Wennigsen, Fed. Rep. of Germany

Filed Mar. 11, 1988, Ser. No. 166,658
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1987, 3708446
Int. Cl.[4] E01D *1/00*
U.S. Cl. 14—71.3 4 Claims



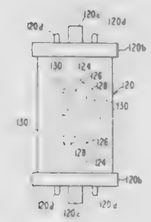
1. A bridging device that includes a bridge plate that is pivotably connected to a dock; the bridge plate can be raised via a lifting cylinder, and can be lowered by its own weight, the free end of said bridge plate is provided with a movable extension that can be retracted or extended via a feed cylinder for removal from or placement upon a platform that is to be loaded or unloaded; said bridging device further comprises:
a first line leading to said lifting cylinder;
a hydraulically operable relief valve disposed in said first line for closing off the latter;
a second line leading to an extension-effecting side of said feed cylinder;
a third line leading to a retraction-effecting side of said feed cylinder;
connecting line means connecting said relief valve to said second and third lines; and
a reversible pump that is connected to said first, second, and third lines, for supplying medium thereto, in such a way that in one direction of rotation of said pump, said second line, and hence said feed cylinder, are supplied with medium to effect extension of said extension, while in the other direction of rotation of said pump, said third line, and hence said feed cylinder, are supplied with medium to effect retraction of said extension.

4,800,605

BUFFING APPARATUS

Howard M. Arneson, 6 Locksley La., San Rafael, Calif. 94901

Continuation-in-part of Ser. No. 790,300, Oct. 23, 1985, Pat. No. 4,691,400, which is a continuation-in-part of Ser. No. 502,433, Jun. 9, 1983, Pat. No. 4,566,144. This application Aug. 31, 1987, Ser. No. 91,694
Int. Cl.[4] A47L *23/00*
U.S. Cl. 15—3 11 Claims



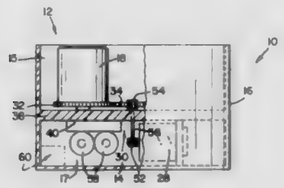
1. Buffing apparatus comprising:
an elongated container for receiving an article to be buffed, said container adapted to be placed in a shiftable bin having an opening and to be moved about in the bin relative to a predetermined reference as the bin is shifted, said container having a side wall capable of being flexed to shorten the length of the container to permit it to be inserted in the bin through said opening, there being a buffing element in the container, said element having a buffing material thereon frictionally engageable with the article in the container, said container being of a size to permit the article therein to move relative to the buffing element and the container as the container is moved relative to said reference.

4,800,606

DIGIT NAIL CLEANING DEVICE

Johan Kolesky, P.O. Box 1282, Middleburg, Transvaal Province, South Africa

Filed Jul. 13, 1987, Ser. No. 72,789
Claims priority, application South Africa, Jul. 24, 1986, 86/5532
Int. Cl.[4] A45D *29/17*
U.S. Cl. 15—97 R 13 Claims



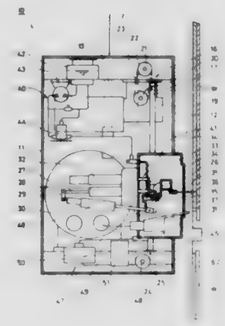
1. A digit nail cleaning device which includes:
at least one displaceable digit nail cleaning member comprising a circular cylindrical casing which is rotatable about its axis, and a cleansing element inside the casing;
an electric motor having a drive shaft and a gear set comprising a drive gear mounted on the motor drive shaft, and a driven gear adapted to be driven by the drive gear, wherein the cleaning member is mounted to the driven gear so that the electric motor can displace the cleaning member relative to a digit nail about its axis while the nail is in contact with the cleaning member so as to clean the nail; and
control means for controlling the operation of the motor, said control means including direction switching means for cyclically reversing the direction of rotation of the motor.

4,800,607

APPARATUS FOR CLEANING WINDOWPANES

Osamu Fukutomi, Tokyo, Japan, assignor to Nihon Biso Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1987, Ser. No. 40,644
Int. Cl.[4] A47L *1/00*
U.S. Cl. 15—103 3 Claims



1. An apparatus for cleaning windowpanes comprising:
a unit movable in either an ascending or descending manner along a side surface of a structure having a windowpane and formed with an opening portion in a portion facing the windowpane;
a cleaning head vertically movable in either the same direction or the opposite direction as said unit in said opening portion of said unit;
drive means for driving said cleaning head in one direction at a velocity substantially equal to the velocity of the unit as the unit moves in the opposite direction to the driven cleaning head whereby the velocity of movement of said cleaning head relative to the windowpane is substantially zero;
a moveable member provided in said cleaning head;
means for moving said movable member to approach and withdraw from the windowpane and also to be tilted with respect to the windowpane;
a scraper mounted on said movable member for cleaning the windowpane in abutting engagement therewith;
a rotary disc mounted on a rotary shaft which is provided substantially vertically with respect to said movable member;
cleaning water supply means for dripping cleaning water onto said rotary disc;
means for forming an air curtain provided below said movable member in said cleaning head, said air curtain being located opposite to said scraper and guiding soiled water flowing along the windowpane; and
soiled water collecting means for collecting soiled water guided along said air curtain.

4,800,608

TOOTHBRUSH

John R. Key, 709 Scurry, Big Spring, Tex. 79720

Filed Oct. 5, 1987, Ser. No. 104,236
Int. Cl.[4] A46B *9/04*
U.S. Cl. 15—167.1 3 Claims

1. A new and improved toothbrush providing optimum cleaning performance for buccal, lingual and distal surfaces of the teeth and gums and optimum cleaning performance for the

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embrasure areas of the mouth comprising in combination, a plurality of bristles of even length and in rows; an angled head for holding said bristles, a handle and a neck connecting said handle to said angled head; wherein,

(a) said angled bristle head is of constant width and comprises a distal segment, and a second segment intermediate to said distal segment and said neck;

(b) said distal segment fixed to said intermediate segment of an obtuse angle within the range of 115° and 155° relative to said intermediate segment;

(c) said neck is of narrower width and smaller cross-section than said bristle head, and at one end is made contiguous with the proximate end of said intermediate segment of said angled bristle head, and at the other end is made contiguous with said handle which is of larger cross-section than said bristle head;



(d) said two segments of said bristle head are provided on the inside, facing surfaces of said segments with plane surfaces for the attachment of said bristles;

(e) said bristles are perpendicular relative to the plane surfaces where attached to the plane surfaces formed on the inside of said bristle head segments, so that all bristles attached to a given segment of said bristles head are parallel and so that bristles mounted to the distal segment of the angled bristle head are facing the bristles mounted to the intermediate segment of the angled bristle head and so that the bristle ends of the bristles attached to the distal segment forms a plane facing and intersecting the plane of bristle ends formed by the bristles attached to the intermediate segment; and,

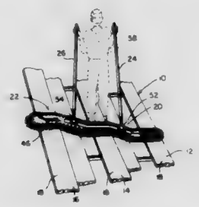
(f) said handle has a longitudinally straight axis and is connected to said neck at an obtuse angle within the range of 115° and 155° relative to said neck.

4,800,609

BLEACHER SEAT DUST MOP

William L. Peck, 6036 Dolly Varden, South Charleston, Ohio 45368

Filed Feb. 12, 1988, Ser. No. 155,471
Int. Cl.[4] A47L *13/252*
U.S. Cl. 15—210 R **7 Claims**



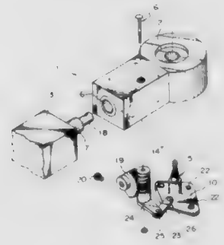
1. A bleacher seat dust mop including a horizontally elongated head assembly and at least a first elongated handle pivotally mounted at one end to an intermediate length mid-portion of said head assembly for angular displacement of said handle relative to said head assembly about an axis extending generally longitudinally of said head assembly and transversely of said handle, said head assembly including at least one pair of elongated primary sections longitudinally spaced apart along said head assembly and extending longitudinally therealong, said primary sections being horizontally disposed and vertically offset relative to each other a vertical distance generally equal to the vertical spacing between the upper surface levels of adjacent bleacher seat rows, adjacent ends of said elongated primary sections being interconnected by an elongated inclined head assembly connecting section connected and extending therebetween, said handle one end being pivotally mounted from said inclined connecting section.

4,800,610

WINDSHIELD WIPER

Masaru Arai, and Itsuro Saita, both of Saitama, Japan, assignors to Nippon Wiper Blade Co., Ltd., Saitama, Japan

Filed Jun. 12, 1987, Ser. No. 61,544
Int. Cl.[4] B60S *1/34*
U.S. Cl. 15—250.21 **1 Claim**



1. A windshield wiper comprising:

a rotable pivot shaft having a rotational axis;

an arm head mounted to said pivot shaft for reciprocatingly rotating about the rotational axis thereof,

said arm head comprising a first head portion connected to said pivot shaft, a second head portion rotatably mounted to said first head portion about a second rotational axis extending generally perpendicular to the axis of rotation of said pivot shaft, and rotating means for rotation said second head portion about said second rotational axis,

said rotating means comprising a worm operatively connected to said first head portion, a worm gear fixed to said second head portion and engaging said worm for rotating to rotate said second head portion about said second rotational axis when said worm rotates, a stationary mounting plate, and a linkage mechanism operatively connected between said worm and said stationary mounting plate for selectively rotating said worm as said arm head rotates about the rotational axis of said pivot shaft,

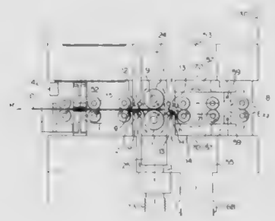
said linkage mechanism comprising a first link having one end fixedly connected to said worm, and a second link having one end pivotably connected to said stationary mounting plate and the other end pivotably connected to the other end of said first link.

4,800,611

PLATE CLEANING APPARATUS AND CLEANING ROLLER THEREFOR

Masao Toriwaki, Otsu; Kinya Kawakami, Mitaka, and Tomoaki Ishino, Funabashi, all of Japan, assignors to Hakuto Co., Ltd. and Toyo Netsu Kogyo Kaisha, Ltd., both of Tokyo, Japan

Filed Apr. 15, 1987, Ser. No. 38,827
Claims priority, application Japan, Nov. 6, 1986, 61-133700; Nov. 6, 1986, 61-87746[U]
Int. Cl.[4] B08B *1/04, 5/02*
U.S. Cl. 15—308 **8 Claims**



1. A plate cleaning apparatus for cleaning plates advanced along a production line, said plate cleaning apparatus comprising:

means defining a passageway in said plate cleaning apparatus;

means for advancing a plate to be cleaned along said passageway;

a pair of cleaning means, one of said pair of cleaning means being above said passageway for cleaning one side of a plate, the other one of said pair of cleaning means being below said passageway for cleaning another side of the plate;

a suction chamber surrounding each one of said pair of cleaning means;

a first pair of nozzles, one of said pair of nozzles being above said passageway at the upstream side of and adjacent said one of said pair of cleaning means, the other one of said pair of nozzles being below said passageway at the upstream side of and adjacent said other one of said pair of cleaning means, each one of said first pair of nozzles directing high speed clean air angularly forwardly in the advancing direction along said passageway for cleaning a plate;

a second pair of nozzles, one of said pair of nozzles being above said passageway at the downstream side of and adjacent said one of said air of cleaning means, the other one of said second pair of nozzles being below said passageway at the downstream side of and adjacent said other one of said pair of cleaning means, each one of said second pair of nozzles directing high speed clean air angularly rearwardly against the advancing direction along said passageway for cleaning a plate;

means at the downstream side of said passageway and directly adjacent said second pair of nozzles for supplying low speed clean air for defining a clean zone;

a blower for circulating clean air;

a high efficiency particulate air filter means; and

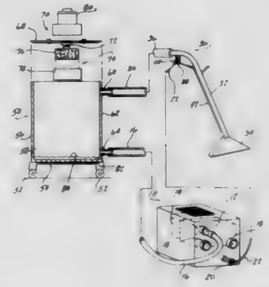
connecting means for fluidly connecting said blower, said high efficiency particulate air filter means, said suction chamber, and said first and second pairs of nozzles for circulating and filtering all the clean air to and from said blower, said high efficiency particulate air filter means, said suction chamber, and said first and second pairs of nozzles.

4,800,612

VACUUM POWER BOOSTER WITH AUTOMATIC WASTE LIQUID DISCHARGE FOR A WATER VACUUM EXTRACTION APPARATUS

Edward R. Valentine, Plackney, Mich., assignor to Cross American Corporation, Ann Arbor, Mich.

Filed Nov. 23, 1987, Ser. No. 123,725
Int. Cl.[4] A47L *7/00*
U.S. Cl. 15—314 **4 Claims**



1. A vacuum power booster having automatic waste liquid discharge for a water vacuum extraction apparatus comprising:

a first housing;

a first waste liquid storage tank disposed in the first housing;

a first vacuum generating means, mounted in the first housing and operably connected to the first waste liquid storage tank, for drawing waste liquid into the first waste liquid storage tank under vacuum pressure;

a second housing remotely located from the first housing;

a second waste liquid storage tank disposed in the second housing;

a second vacuum generating means operably mounted in the second housing and connected to the second waste liquid storage tank for drawing waste liquid into the second waste liquid storage tank;

a vacuum pickup means connected to the second waste liquid storage tank for conducting waste liquid extracted from the surface being cleaned under vacuum pressure to the second waste liquid storage tank;

means for connecting the first and second waste liquid storage tanks in fluid flow communication; and

automatic discharge means for automatically discharging liquid from the second waste liquid storage tank to the first waste liquid storage tank only when the waste liquid in the second waste liquid storage tank and rises above the bottom of the tank to a predetermined level within the second waste liquid storage tank.

4,800,613

LIQUID EXTRACTION SURFACE CLEANING APPARATUS

Michael R. Blase; Henry J. Rosendall, and Gordon W. Goodrich, all of Grand Rapids, Mich., assignors to Bissell, Inc., Grand Rapids, Mich.

Division of Ser. No. 28,613, Mar. 20, 1988. This application Apr. 11, 1988, Ser. No. 180,190
Int. Cl.[4] A47L *7/00*
U.S. Cl. 15—321 **4 Claims**

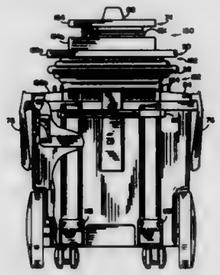
1. A liquid extraction surface cleaning apparatus comprising:

dispensing means for dispensing a cleaning liquid on a surface;

a fluid hose having a first end configured for connection to said dispensing means and a second end configured for connection to a source of liquid remote from said surface;

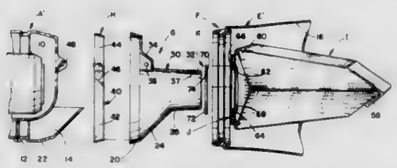
suction means for picking up said liquid from said surface.

a power cord having a first end connected to said motor means and a second end configured for connection to a source of electrical power;
a tank having first wall means defining an opening;
a top member selectively covering said opening and having second wall means substantially enclosing said suction means and said motor means;



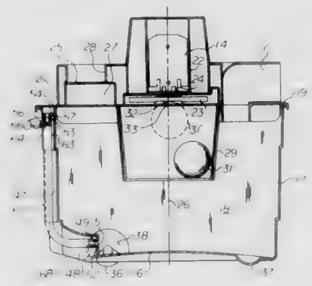
said top member defining first and second concentric spool means for wound storage of said power cord and said fluid hose respectively; and
facilitating means associated with said second spool means for facilitating selective access to both said ends of said fluid hose often wrapped on said second spool.

4,800,614
ADAPTOR AND BAG INSERT
James J. Kopco, Richmond Heights, and John F. Sovis, Twinsburg, both of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio
Filed Apr. 30, 1987, Ser. No. 44,797
Int. Cl.[4] A47L *5/24*
U.S. Cl. 15—330 **6 Claims**



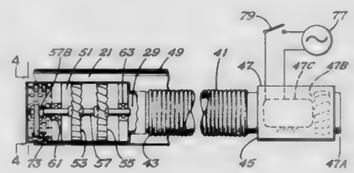
1. A hand-held vacuum cleaner comprising: a housing having suction means defined therein;
an adaptor having a passage defined therethrough an operatively connected to said housing, said adaptor having an inner end including a rim portion having a minimized axial dimension relative to a total axial dimension of the adaptor, a steeply sloping portion extending radially inward from the rim portion toward a generally tubular portion defined at an outer terminal end of the adaptor axially spaced from said inner end, said sloping portion extending only partially around the periphery of the adaptor, a connecting flange completing the periphery of the adaptor between the rim portion and generally tubular portion and an exterior surface of said generally tubular portion radially increasing from a narrow dimension adjacent the outer terminal end to a wide dimension adjacent the sloping portion;
a first, resuable bag selectively engaging said housing and adapted for covering relation with said adaptor;
a second, disposable bag selectively engaging said adaptor for filtering dirt particles and the like from exhaust air exiting from said suction means; and,
a double-sided adhesive tape disposed on an interior portion of said rim portion facilitating connection between said adaptor and housing.

4,800,615
WET/DRY VAC
Richard J. Ostroski, Aurora; James E. Bigley, Warren; John L. Falk, Aurora, and E. Charles Sallee, Berea, all of Ohio, assignors to The Scott Fetzer Company, Cleveland, Ohio
Filed Apr. 3, 1987, Ser. No. 35,624
Int. Cl.[4] A47L *7/00*
U.S. Cl. 15—353 **10 Claims**



1. A tank for a wet/dry vacuum cleaner comprising a rigid body with bottom wall and sidewall portions forming a collection chamber, a lid for closing the top of the chamber during normal operation of the cleaner and allowing discharge of collected material from the chamber when open, the collection chamber being substantially liquid-tight for the vacuum collection of liquids therein, a transparent tube external of the body extending upwardly from an elevation adjacent that of the bottom wall portion, a first means connecting a lower end of the tube into fluid communication with the chamber adjacent the bottom wall portion and a second means for connecting an upper end of the tube into fluid communication with the chamber whereby the tube is adapted to visually display the level of liquid contained in the chamber.

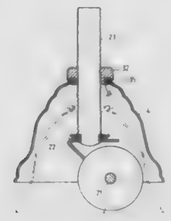
4,800,616
AIR POWERED DUCT CLEANER AND CRAWLER
Calvin N. Wade, Forth Worth, Tex., assignor to Steamatic, Inc., Grand Prairie, Tex.
Filed May 6, 1988, Ser. No. 191,210
Int. Cl.[4] A47L *9/02*
U.S. Cl. 15—379 **6 Claims**



1. A cleaning apparatus, comprising:
a housing means adapted to be inserted into an air duct,
said housing means having first and second spaced apart ports for providing an air flow path through said housing means,

a flexible hose means having first and second ends with said first end being coupled to said first port of said housing means for use for moving said housing means in an air duct and for providing a passage for the flow of air between said first port of said housing means and said second end of said hose means,
turbine means supported within said housing means for rotation about an axis upon the passage of air through said housing means by way of said first and second ports, and
weight means coupled to said turbine means off center from said axis for rotation with said turbine means for causing said turbine means and hence said housing means to vibrate upon rotation of said turbine means whereby said housing means may vibrate against the inside wall of the air duct to loosen dust and other matter in the duct and to facilitate movement of the housing means in the duct.

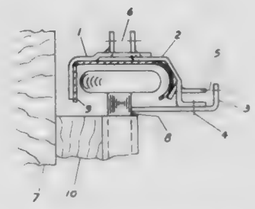
4,800,617
CASTOR POSITIONING DEVICE
Tsuang H. Yeh, No. 21, Chung Chyan 2 St., Ta-Li Shiang, Taichung Hsien, Taiwan
Filed Feb. 18, 1988, Ser. No. 157,247
Int. Cl.[4] B60B *33/00*
U.S. Cl. 16—18 CG **1 Claim**



1. In combination, a castor and a positioning device comprising:
a positioning shell generally conical in shape and having a hole at the top and an open end at the bottom;
an actuating member with a threaded through hole formed at its center and a hexagonal contour from which extends downwardly an engaging portion having a thin stopper flange at the bottom end thereof, said actuating member being disposed on the positioning shell with the stopper flange first extending downwardly through the hole of the positioning shell and then pressed to hold the positioning shell, said actuating member further having a plurality of steel balls captured between the bottom of the hexagonal contour and the shell so that the actuating member can turn freely with respect to the positioning shell; and
a castor having on the top a vertical screw extending upwardly through the hole of the positioning shell and then threadedly engaged with the threaded through hole of the actuating member.

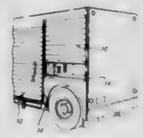
4,800,618
OVERHEAD GARAGE DOOR SELFSEALING DEVICE
Helmut J. Putz, 18645 Portland Ave., Gladstone, Oreg. 97027
Filed Oct. 1, 1987, Ser. No. 103,676
Int. Cl.[4] E05D *15/16*
U.S. Cl. 16—95 R **3 Claims**

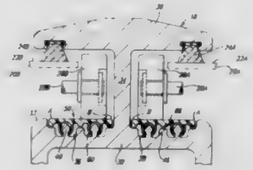
1. An overhead tracked door sealing device which can be retrofitted to existing door installations which do not have such sealing capability, said device comprising bracket means for clamping onto the door track at the roller points when the door is in the closed position, and spring loaded cam means attached to said bracket means for resiliently forcing the door



towards the door jamb, thereby sealingly engaging the door with the door jamb.

4,800,619
WEAR INSERT FOR A DOOR CHANNEL
Robert R. Hadak, Columbus, Ga., assignor to Douglas & Lomason Company, Farmington Hills, Mich.
Filed Jul. 31, 1987, Ser. No. 80,291
Int. Cl.[4] A47H *15/00*
U.S. Cl. 16—95 R **30 Claims**





1. A wear resistant track for the rollers of an overhead door to bear against, characterized by a pair of uniform longitudinally extending members including a nonmetal insert and a metal channel, and locking means for releasably interlocking the members together whereby a planar surface of the insert is positioned for the roller to bear against, said channel including a pair of laterally spaced upstanding sidewalls, said nonmetal insert having a lateral width configured to fit snugly between the sidewalls upon a downward movement into the channel, and said locking means including an upstanding longitudinal rib on one member being configured to removably interlock within a longitudinal groove in the other member, said groove being defined by a pair of longitudinally extending arcuate flanges configured to receive the rib inserted therebetween.

4,800,620
HINGE CONNECTION
Wolfram Schiemann, Eugen-Nagele-Str. 17, D-7140 Ludwigsburg, Fed. Rep. of Germany
Filed Sep. 28, 1987, Ser. No. 101,398
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1986, 8626257[U]
Int. Cl.[4] E05D *1/00, 7/10*
U.S. Cl. 16—225 **17 Claims**

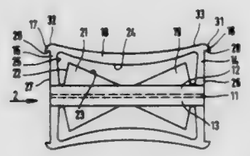
1. Hinge connection comprising a one-piece hinge part of

synthetic plastic material and a separate part to which the hinge part is fittable,

said hinge part comprising:

an elastic joint film forming a joint axis and stiffening strips extending on both sides thereof parallel to said joint axis and formed by material thickenings,

at least one stiffening strip having two resilient tongues spaced from each other and protruding in a common



plane, said tongues having ends with projections pointing away from one another,

said separate part comprising:

spaced, opposed side wall sections and an insertion socket into which said tongues can be inserted until said projections engage behind said opposite side wall sections in the assembled condition of said hinge connection,

characterized in that an elastically flexible crossing piece connects said end of said tongues.

4,800,621

HINGE

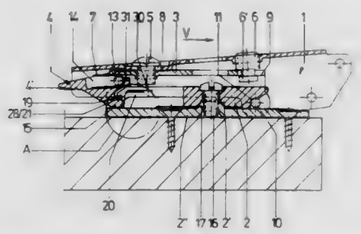
Erich Röck, Höchst; Klaus Brüstle, and Helmut Rupprechter, both of Lauterach, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Continuation of Ser. No. 939,439, Dec. 4, 1986, abandoned. This application Apr. 22, 1988, Ser. No. 184,770

Claims priority, application Austria, Dec. 10, 1985, 3569/85; Feb. 10, 1986, 313/86; Fed. Rep. of Germany, Apr. 29, 1986, 8611716[U]

Int. Cl.[4] E05D *7/10*

U.S. Cl. 16—235 **16 Claims**



16. In a hinge including a mounting plate, a hinge arm to be linked to another hinge part, and an intermediate member adjustably supporting said hinge arm for mounting said hinge arm on said mounting plate, said intermediate member having a U-shaped configuration defined by two side flanges joined by a web, a pin mounted between said two side flanges at a first end of said intermediate member, said pin fitting into a recess of said mounting plate and thereby forming a pivot axis about which said intermediate member and said hinge arm are pivotable with respect to said mounting plate, said intermediate member having pivotally mounted on a second end thereof a pivot lever having a hook member engageable with a projection of said mounting plate for fastening said intermediate member to said mounting plate, and spring means for urging said pivot lever to a position such that said pivot lever thereof engages said projection of said mounting plate, the improvement comprising means, operable in cooperation with the pivotal engagement between said first end of said intermediate member and said mounting plate, for, when said intermediate member is fastened to said mounting plate, bracing said intermediate member with respect to said mounting plate without substantial clearance therebetween in a direction transverse to said pivot axis and extending therefrom toward said second end of said intermediate member, said bracing means comprising:

a positioning surface on said intermediate member at a position spaced in said direction from said pivot axis;

a countersurface on said mounting plate; and

said positioning surface abutting said countersurface when said intermediate member is fastened to said mounting plate.

4,800,622

FURNITURE HINGE INCLUDING HINGE ARM RELEASABLY CONNECTED TO A MOUNTING PLATE

Erich Röck, Höchst; Helmut Rupprechter, and Klaus Brüstle, both of Lauterach, all of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

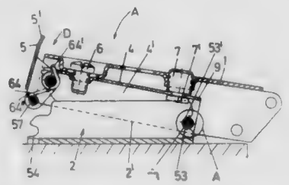
PCT No. PCT/AT85/00037, § 371 Date May 28, 1986, § 102(e) Date May 28, 1986, PCT Pub. No. WO86/02402, PCT Pub. Date Apr. 24, 1986

PCT Filed Oct. 3, 1985, Ser. No. 878,868

Claims priority, application Austria, Oct. 19, 1984, 3336/84; Oct. 19, 1984, 3337/84; May 9, 1985, 1393/85; Aug. 19, 1985, 2404/85

Int. Cl.[4] E05D *7/06*

U.S. Cl. 16—240 **8 Claims**



1. A hinge comprising:

a mounting plate having at a first end thereof a partially cylindrical recess and having at a second end thereof a latching means;

a hinge arm;

an intermediate member adjustably supporting said hinge arm for mounting said hinge arm on said mounting plate, said intermediate member having a U-shaped configuration defined by two side flanges joined by a web;

a pin mounted between said two side flanges at a first end of said intermediate member, said pin having an outer circumference matching said partially cylindrical recess in said mounting plate, said pin fitting into said recess and thereby forming a pivot axis about which said intermediate member and said hinge arm are pivotable with respect to said mounting plate;

a pivot lever pivotally mounted between said side flanges at a second end of said intermediate member, said pivot lever having latching means to engage said latching means of said mounting plate when said intermediate member and said hinge arm are pivoted about said pivot axis toward said mounting plate and thereby to fasten said intermediate member to said mounting plate; and

spring means for urging said pivot lever to a position such that said latching means thereof engages said latching means of said mounting plate, said pivot lever being movable against the force of said spring means to disengage said latching means of said pivot lever from said latching means of said mounting plate, such that said intermediate member and said hinge arm then are removable from said mounting plate.

4,800,623

AUTOMOTIVE DOOR HINGE ASSEMBLY WITH REMOVABLE HINGE WING

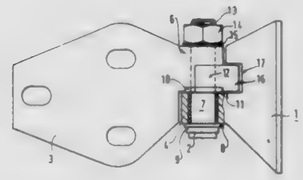
Ernst Brockhaus, Remscheid-Hasten, Fed. Rep. of Germany, assignor to Ed. Scharwächter GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 656,518, Oct. 1, 1984, abandoned. This application Sep. 30, 1986, Ser. No. 913,626

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1983, 3336802; Feb. 13, 1984, 3405063

Int. Cl.[4] E05D *7/10*

U.S. Cl. 16—254 **12 Claims**



1. A removable door hinge assembly particularly for motor vehicle doors comprising:

a first hinge half adapted to be attached to one part of a door installation and including a first hinge eye;

a second hinge half adapted to be attached to a complementary part of said door installation and including a second hinge eye;

a hinge pin operatively engaged within said first and second hinge eyes interconnecting said hinge halves for pivotal movement about a hinge axis through an operating pivoting angle of said hinge assembly, said hinge pin being secured against axial movement is said first hinge eye of said first hinge half but supported therein with a running fit in bushing means made of maintenance free bearing material and engaging by means of a radially protruding collar between opposing joint faces of said first and second hinge eyes;

said hinge pin being also mounted in said second hinge eye of said second hinge half in such a way that said second hinge half may be pulled from engagement with said hinge pin in the axial direction thereof;

radially oriented positively interlocking means connecting said second hinge half with said hinge pin so as to be nonrotatable with respect thereto; and

first and second safety means which are installed independently of each other and which act independently of each other securing said second hinge half against unintended unhinging with respect to said hinge pin and with respect to said first hinge half;

said first safety means comprising means detachably interposed between said second hinge half and said hinge pin to prevent undesired axial disengagement therebetween and to allow such axial disengagement upon detachment thereof;

said second safety means comprising means interposed between said second hinge half and said first hinge half to prevent relative axial disengagement therebetween over only said operating pivoting angle of said hinge assembly.

4,800,624

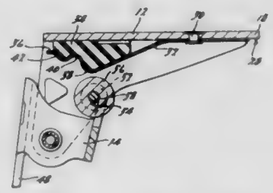
HINGE WITH ELASTOMERICALLY SUPPORTED CHECK SPRING

Douglas E. Whitefoot, Canton, Mich., and Samorfin Salazar, Toledo, Ohio, assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 924,187, Oct. 24, 1986, abandoned, which is a continuation of Ser. No. 736,501, May 21, 1985, abandoned. This application Jan. 11, 1988, Ser. No. 144,626

Int. Cl.[4] E05D *11/10*

U.S. Cl. 16—332 **6 Claims**



1. A hinge assembly for pivotally mounting a door of a motor vehicle to the vehicle body, the assembly being of the type having a body plate secured to the vehicle body, a door plate secured to the door and pivotally connected to the body plate, and check spring means mounted on one of the plates and having a portion operatively engageable in a plurality of positions with a striker member carried for movement with the other plate to hold the door plate in a door-open position, characterized in that the check spring means comprises a leaf spring member of curvilinear configuration and mounted in cantilever fashion between the door plate and the body plate for permitting cushioning deflection during certain relative movement of the plates and a cushion member fixed to the side of the leaf spring member remote from the side engageable with the striker member, the cushion member substantially conforming to the curvilinear configuration of the leaf spring member throughout a greater portion of the spring member than is engageable with the striker member and supporting the leaf spring member at all of the striker engageable positions.

4,800,625

BASE PLATE ASSEMBLY PERMITTING TRANSVERSE DISPLACEMENT

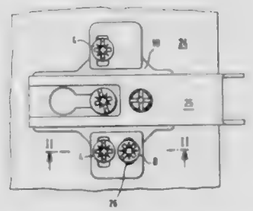
Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy

Filed Feb. 13, 1987, Ser. No. 14,399

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1986, 3604984; Jul. 30, 1986, 8620441[U]

Int. Cl.[4] E05D *5/00, 7/04*

U.S. Cl. 16—382 **22 Claims**



1. A base plate assembly for mounting a hinge bracket of a furniture hinge, said base plate assembly comprising a base plate adapted to be secured to a carrying wall by fixing screws, and a cover plate at least partly covering the base plate and guided on the base plate transversely to the hinge bracket and provided with means for fixing the hinge bracket, wherein the

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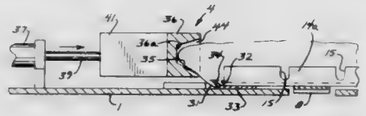
base plate is formed in its end portions with bores for receiving fixing screws, said bores registering with intermediate portions of slots formed in luglike lateral extensions of the cover plate and extending on a line connecting said bores, and said bores are defined at least in part by projections, said projections serving as guides for side faces of the slots.

4,800,626

SALMON PROCESSING MACHINE

Trevor T. Wastell, 7675 Summitt 19.55 Dr., Gladstone, Mich. 49837

Filed Jul. 30, 1987, Ser. No. 79,646
Int. Cl.[4] A22C *25/14*
U.S. Cl. 17—63 12 Claims



1. A machine for processing fish, comprising:
a base;
conveyor means on said base for conveying fish along a longitudinal work path;
a fish heading station on said base adjacent said work path, said heading station including cutting means for cutting the head off the fish;
a fish locating station on said base adjacent said work path disposed upstream of the heading station, said locating station including positioning means engageable within the gill slit of the fish for positioning the head of the fish at a desired location with respect to said cutting means, said positioning means includes a gill catcher plate having an edge receivable within said gill slit, means for raising the nose of the fish to open the gill slit, and means for moving the fish laterally with respect to said work path onto said gill catcher plate; and
indexing means for sequentially moving said conveyor means between said stations.

4,800,627

LOAD BINDER AND METHOD OF MAKING SAME

Lonnie M. Smith, St. Louis, Mo., assignor to Durbin-Durco, Inc., St. Louis, Mo.

Filed Apr. 16, 1987, Ser. No. 38,933
Int. Cl.[4] B66F *3/00*
U.S. Cl. 24—68 CD 3 Claims



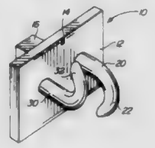
1. A load binder for use in securing a load held by tie means such as a chain, cable, or the like, said binder being of the type including a lever means and a clevis means, each having a securing means connected thereto for fastening onto the tie means during load securement, pivot means for mounting said lever means for shifting with respect to the clevis means in a first direction to a binding position and in an opposite direction to a second, loosened position, said securing means being a swivel bolt and having a shaft and a head, means for retaining the swivel bolt against substantial axial movement when the load binder is in a binding position, said retaining means being made by the method comprising the steps of: casting a retaining member including a collar defining an opening therein of a suitable size and shape for passage of the head of the swivel bolt therethrough, the opening through the collar being originally substantially circular, and the swivel bolt head being substantially unworked, said swivel bolt being of a single, cast piece, inserting the swivel bolt head through the opening in the collar, and once the swivel bolt head is inserted through the opening, forming the collar at an elevated temperature, between about approximately 1300° F. to approximately 2400° F., below the melting temperature of the material of which the collar is cast, and reducing at least one dimension of the opening in the collar to a size small enough to retain the swivel bolt head in the collar while allowing the swivel bolt shaft to remain rotatable in the opening, wherein each collar defines after forming a generally oval-shaped and swivel bolt retaining opening.

4,800,628

WIRE TIGHTENING APPARATUS

Jack M. Farnsworth, 440 West Park Ave., Chandler, Ariz. 85224

Filed Feb. 8, 1983, Ser. No. 465,006
Int. Cl.[4] A44B *21/00*; A43C *11/00*
U.S. Cl. 24—71.3 5 Claims



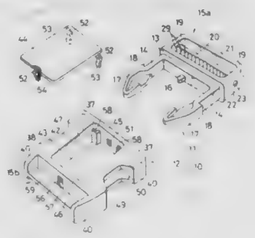
1. Wire tightening apparatus comprising, in combination:
a base plate;
a first pin extending outwardly from the base plate substantially perpendicularly thereto;
a first hook disposed on the first pin and extending in a first direction;
a second pin extending outwardly from the base plate and spaced apart from the first pin and substantially parallel to the first pin and substantially perpendicular to the base plate;
a second hook disposed on the second pin and extending in a second direction substantially parallel to the first hook but in the opposite direction; and
shank means secured to the base plate and substantially parallel to the first and second pins for rotating the base plate to wrap wire to be tightened around the first and second pins and to lock the wire to the apparatus by hooking the wire beneath the first and second hooks.

4,800,629

PLASTIC BUCKLE

Yasuhiko Ikeda, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Dec. 22, 1987, Ser. No. 136,765
Claims priority, application Japan, Dec. 25, 1986, 61-308018
Int. Cl.[4] A44B *11/00*
U.S. Cl. 24—170 3 Claims



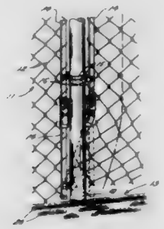
1. A plastic buckle comprising:
(a) a stationary bar and a rotatable bar provided adjacent to each other across a space between two opposed side members for fixing a strap inserted between said stationary bar and said rotatable bar;
(b) said stationary bar being fixed to said two opposed side members and having an abutment portion formed on an inner surface thereof facing said rotatable bar;
(c) said rotatable bar:
(i) having a peripheral surface which, in use, is surrounded once by said strap;
(ii) having a non-circular cross-section,
(iii) being rotatably supported on said two opposed side members, and
(iv) having two acute angle portions formed on edges of opposite sides thereof; and
(d) one of said two acute angle portions being brought into abutment against said abutment portion of said stationary bar when a tension force is exerted on said strap to rotate said rotatable bar, thereby clamping said strap between said one acute angle portion and said abutment portion.

4,800,630

RELEASABLE FENCING APPARATUS

Michael J. Bakalar, Two Red Haw La., Lake Zurich, Ill. 60047

Filed Dec. 7, 1987, Ser. No. 129,596
Int. Cl.[4] B21F *27/00*
U.S. Cl. 256—47 8 Claims



1. A chain link fencing system comprising,
two or more spaced apart vertical terminal support posts,
one or more vertical intermediate support posts positioned between said terminal support posts,
chain link fencing fabric mounted between said terminal support posts,
fastener means for fastening said fencing fabric between said terminal support posts,
hinge means operatively associated with said fastener means for allowing a lower portion of said fencing fabric to swing away in an arcuate fashion from said terminal support posts, and
a plurality of releasable clip means located along the length of said intermediate support posts for selectively and releasably fastening portions of said fencing fabric to said intermediate support posts, thereby allowing a lower portion of said fencing fabric to be released from said intermediate support posts and swing away from said intermediate support posts and said terminal support posts.

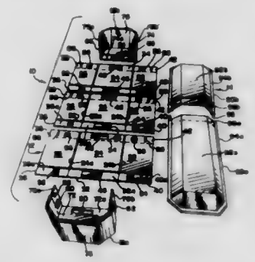
4,800,631

MODULAR CASKET

Russell R. Pellmann, 1702 Cass Ave., Libertyville, Ill. 60048

Filed Jul. 2, 1987, Ser. No. 69,161
Int. Cl.[4] A61G *17/00*
U.S. Cl. 27—7 23 Claims

1. A modular casket comprising, in combination, a body receiving compartment including at least one modular base section having a substantially rectangular base panel and a pair of substantially rectangular side panels integrally hingedly connected to said base panel along opposite longitudinal marginal edges thereof so as to enable movement of said side panels between positions generally coplanar with said base panel and upstanding positions generally normal to said base panel, a pair of modular end pieces each of which includes a bottom wall and an upstanding end wall affixed at a lower edge to said bottom wall in sealed relation therewith, said base panel, side panels and modular end pieces having mutually cooperable connecting flanges adapted for selective releasable



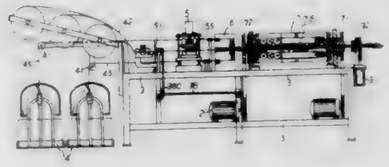
interlocking engagement to establish a generally rectangular body receiving compartment having an upper peripheral edge, and a modular cover lid adapted to be mounted on said body receiving compartment in sealed relation thereon so as to close said body receiving compartment.

4,800,632

APPARATUS FOR PRODUCING LEAVES FOR CHRISTMAS TREE

Chun-Nang Cheng, No. 72-7, Chao An Li, Pai Her Chen, Taian Hsien, Taiwan

Filed Jan. 13, 1988, Ser. No. 143,509
Int. Cl.[4] B23P *23/00*
U.S. Cl. 29—33 R 3 Claims



1. An apparatus for producing leaves for Christmas tree comprising a housing adapted to be connected to an iron wire source and a plastic cloth source and fixing thereon in sequence the following means:
a cutting means including two juxtaposed rotating blade plates for continously cutting respectively two sides of said plastic cloth passing therebetween;
a shearing means including two vertically spaced mould halves adapted to be driven by an air cylinder for regularly shearing in desired shape said plastic cloth coming from said cutting means;
a guiding means including a guiding plate having a central slit for passing therethrough said plastic cloth coming from said shearing means, a pair of vertically spaced clamping wheels disposed at the outlet of said cloth on said guiding plate for passing therebetween said cloth, a first pair of verticaliy spaced guiding wheels engaging therebetween said clamping wheels respectively, and a second pair of guiding wheels respectively guiding two iron wires from said iron wire source such that said two iron wires respectively run along the surface of said first pair of guiding wheels and said clamping wheels and are clamped by said clamping wheels respectively to clamp therebetween said cloth coming from said guiding plate substantially at the longitudinal axis of said cloth;
a twisting means having a plurality of running clamping

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media for clamping therebetween said two iron wires and said cloth coming from said guiding means, and being rotatable along said longitudinal axis so as to twist said two iron wires and said cloth and tidily tangle them together; and

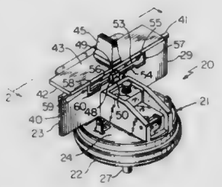
a breaking means including a guiding piece having a central hole for passing therethrough said tangled iron wires and cloth coming from said twisting means, and a breaking piece disposed against the outlet of said tangled iron wires and cloth on said guiding piece, having two vertically spaced holes capable of passing therethrough said tangled iron wires and cloth and adapted to be driven by an air cylinder such that each time when said pieces are set in vertical relative, movement, they will break said tangled iron wires and cloth to so produce a leaf for a Christmas tree.

4,800,633

METHOD OF MAKING A WATER LEVEL CONTROL DEVICE

Thomas M. Buckshaw, Indiana, and David T. Llewellyn, Strongstown, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 857,636, Apr. 29, 1986, Pat. No. 4,696,204.
This application Jul. 8, 1987, Ser. No. 71,148
Int. Cl.[4] F16H *53/00*
U.S. Cl. 29—157 R **15 Claims**



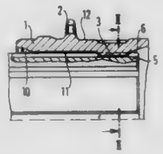
1. A method of making a water level control device comprising the steps of forming a frame means to have a substantially flat frame plate with opposite sides and with elongated slot means passing therethrough and having a first portion, forming a movable cam follower means to be carried by said frame means for setting the desired water levels to be provided by said device, forming a slide cam member to have projection means extending through said slot means to guide sliding movement thereof relative to said frame means, forming said projection means to have interlocking means interlocking with said frame means while said projection means is disposed in said first portion of said slot means, and forming said cam member to have cam surface means engaging said cam follower means to set the same in desired water level setting positions thereof when said projection means is in said first portion of said slot means, the improvement comprising the steps of forming said slot means to have a second portion thereof for unlocking with said interlocking means when said projection means of said cam member is disposed in said second portion whereby said cam member can be easily detached from or attached to said frame means and forming said interlocking means of said cam member to bear against one of said sides of said frame plate when said projection means is in said first portion of said slot means by providing said cam member with a plurality of spaced apart abutment means extending outwardly therefrom and bearing against the other of said sides of said frame plate when said projection means is in said first portion of said slot means so that said projection means of said cam member is under tension when said projection means is in said first portion of said slot means whereby said interlocking means and said abutment means compress said frame plate therebetween and thereby provide resistance to sliding movement of said cam member relative to said frame means when said projection means is in said first portion of said slot means.

4,800,634

METHOD OF MANUFACTURING A BICYCLE HUB SLEEVE

Richard Gerstner, Dittelbrunn; Günter Look, Grafenrheinfeld; Werner Seybold, Gädheim, and Werner Steuer, Schweinfurt, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Division of Ser. No. 801,453, Nov. 25, 1985, Pat. No. 4,707,034.
This application Jun. 2, 1987, Ser. No. 57,365
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1984, 3442873
Int. Cl.[4] B21K *1/40*
U.S. Cl. 29—159.3 **6 Claims**



1. A method of manufacturing a bicycle main hub sleeve member (1) having an axis, a radially inward face (11) having a radially inner profile line and a radially outward face (12) having a radially outer profile line, at least one of said radially inner profile line and said radially outer profile line having deviations from a straight line such as to define longitudinal sections (S_1, S_2, S_3) of said main hub sleeve member (1) with differences in wall thickness, ball bearing faces (10) and at least one circular arrangement of torque transmission teeth (3) being integrally formed with said main hub sleeve member (1) at said radially inward face (11), said torque transmission teeth (3) being formed by radially inward dislocations of material of said main hub sleeve member (1), comprising the steps of: profiling a raw member by either forging or/and cold-swaging such as to approximately obtain said radially inward and outward faces (11, 12) of the main hub sleeve member, subsequently machining at least said ball bearing faces (10) in a material removal turning operation, and then stamping the torque transmission teeth (3) radially inwardly dislocate the material of said main hub sleeve member (1) using at least one radially inwardly movable stamping tool (4) radially movable against said radially outward face (12) of said main hub sleeve member (1) and concurrently applying a support unit (5z) to said radially inward face (11), said support having at least one recess (6) to receive the material dislocated by said stamping tool.

4,800,635

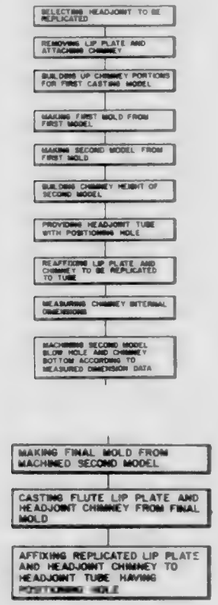
METHOD OF MANUFACTURING FLUTE HEADJOINTS

Sanford Drelinger, 13 Park Cir., White Plains, N.Y. 10601

Division of Ser. No. 468,894, Feb. 23, 1983, Pat. No. 4,550,637.
This application Nov. 5, 1985, Ser. No. 795,201
Int. Cl.[4] B29D *17/00*
U.S. Cl. 29—169.5 **7 Claims**

1. A method of manufacturing a flute headjoint, comprising:
providing a flute headjoint tube;
casting a single piece comprised of a flute lip plate and

chimney having an entire undercut surface at the chimney bottom opening and a bottom portion in the shape of an



area of the headjoint tube, said bottom portion immediately surrounding the chimney bottom opening; and
affixing the cast single piece to said flute headjoint tube.

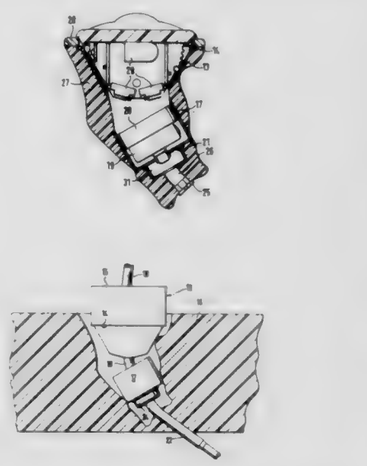
4,800,636

PROCESS FOR MANUFACTURING AN IN-THE-EAR CANAL HEARING AID

Jan Topholm, Vaerloese, Denmark, assignor to Topholm & Westermann ApS, Vaerloese, Denmark

Filed Nov. 19, 1986, Ser. No. 932,768
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1985, 3542616; Feb. 14, 1986, 3604648
Int. Cl.[4] B29D *17/00*
U.S. Cl. 29—169.5 **15 Claims**

1. In a process for manufacturing an in-the-ear canal hearing aid with microphone, amplifier, volume control, battery compartment with battery and earphone, in addition to an individually matched ear-piece, produced by making an impression of the ear canal for producing a casting mold and filling the casting mold with a polymerizable plastic resin, the improvement comprising the following process steps:
inserting at least one prefabricated plastic hollow body, matched to the dimensions of the earphone and the other components, as deeply as possible into the casting mold, until parts thereof touch large surface portions of the side walls of the casting mold; filling the cavities between the hollow body and the casting mold with the polymerizable plastic resin and causing the casting resin to combine with the material of the hollow body, removing the polymerized ear-piece blank, stripping and removing all excess parts of the ear-piece blank by cutting or grinding, and inserting the earphone and the other components in the ear-piece, including securing a cover plate to the ear-piece, whereby the walls of the final molded ear-piece are as thin as possible, permitting the available space within the molded ear-piece molded in hollow body to be utilized optimally while facilitating the precise fitting of the actual



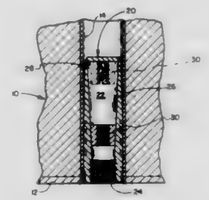
earphone in the resultant ear-piece and precise snug fitting of the earphone and its securing facility in addition to the other components and the cover plate to the ear piece.

4,800,637

METHOD OF REMOVING PLUGS

Mark A. Overbay, East Ridge, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 7, 1987, Ser. No. 129,572
Int. Cl.[4] B21D *53/02*
U.S. Cl. 29—157.4 **7 Claims**



1. In a method of removing an internally threaded plug for a steam generator tube, which plug has a first hardness and includes an interior cavity having a threaded portion and a portion containing a displaceable cone of a second and greater hardness for movement along an internal tapered surface of the plug cavity to create a component of force which radially expands the softer plug of a second lesser hardness and holds it in place in sealing engagement with an inner surface of a defective tube, the improvement comprising the steps of:
moving the displaceable cone out of its radially expanding position within the interior cavity,
applying a force to the plug lengthwise within the cavity to elongate the plug, and
pulling the plug from the tube.

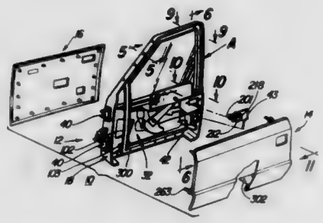
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4,800,638

METHOD OF MOUNTING AN OUTER SKIN TO AN INNER PANEL OF A VEHICLE DOOR

Steven D. Herringshaw, Mt. Clemens, and Robert J. Szefi, Troy, both of Mich., assignors to The Budd Company, Troy, Mich.

Filed Aug. 25, 1987, Ser. No. 89,305
Int. Cl.[4] B23Q *17/00*
U.S. Cl. 29—407 9 Claims



1. A method of mounting an outer skin to an inner panel of a vehicle door, said method comprising the steps of:
(a) mounting the inner panel to the vehicle;
(b) attaching a mounting plate to the interior perimeter of the outer skin, the mounting plate having a plurality of shanked fasteners protruding inwardly therefrom;
(c) moving the skin/mounting plate subassembly into general alignment with the inner panel;
(d) inserting the shanks of the fasteners through elongated slots formed in the inner panel;
(e) moving the skin/mounting plate subassembly as necessary to bring the outer skin into precise alignment with adjacent vehicle body portions; and
(f) securing the outer skin in its precise alignment location by fixing the positions of the fasteners relative to the inner panel.

4,800,639

METHOD OF MAKING A METAL BONE IMPLANT

Otto Frey, and Manfred Semlitsch, both of Winterthur, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Division of Ser. No. 823,390, Jan. 28, 1986, Pat. No. 4,752,295. This application Jun. 12, 1987, Ser. No. 62,894
Claims priority, application Switzerland, Feb. 7, 1985, 559/85
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—421.1 7 Claims



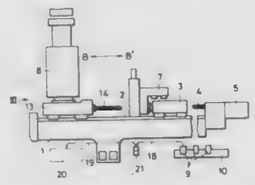
1. A method of making a bone implant comprising the steps of
securing at least two sheet metal plates on a proximal end of a metal base element leaving a distal end of the metal base element exposed; and
deforming each sheet metal plate outwardly of said base element in a mold to form a hollow cavity therebetween and an irregular surface on the plates.

4,800,640

AUTOMATED ASSEMBLY SYSTEM AND METHOD OF ASSEMBLY

Hiroshi Miyazaki; Takao Miyatani; Akira Ishizaki, and Shinpei Abe, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 11, 1987, Ser. No. 24,556
Claims priority, application Japan, Apr. 15, 1986, 61-56463[U]
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—429 5 Claims



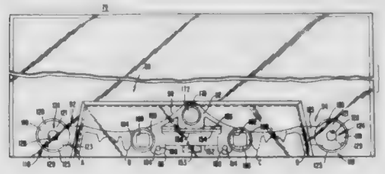
5. A method of connecting a plurality of components to a workpiece in a precise orientation relative to one another wherein the workpiece has a conveyance path in a first direction and the components are to await assembly at a position spaced from the path and with an orientation different from the precise orientation for assembly, comprising the steps of:
supporting on spaced frames a first elongated arm unit at opposite ends of the unit, the first arm unit extending in a direction substantially parallel to the direction of the conveyance path;
supporting on the spaced frames a second elongated arm unit at opposite ends of the unit, the second arm unit spaced from and extending in a direction substantially parallel to the direction of the first arm unit;
supporting on the first unit a first tool having a single shaft;
supporting on the second unit a second tool having a plurality of shafts;
positioning the first unit including the single shaft tool above the positioned components for gripping the individual components;
moving the first unit reciprocally on the spaced frames in a direction tranverse to the conveyance path of the workpiece for arranging the components in the precise orientation for assembly;
positioning the second unit including the multi-shaft tool above the precisely oriented components for gripping the components; and
moving the second unit tranverse to the path of the workpiece to a position above the workpiece for attaching the components to the workpiece.

4,800,641

METHODS FOR MANUFACTURING A TAPE CASSETTE WITH SEPARATE TAPE GUIDE HAVING INTEGRATED ROLLERS

Anthony L. Geiardi; John Geiadri, both of Cape Porpoise; Vincent E. Landry; Diane C. Pruneau, both of Saco, all of Me., and Alan B. Lowry, Canton, Mass., assignors to Shape Inc., Biddeford, Me.

Division of Ser. No. 883, Jan. 6, 1987. This application Oct. 2, 1987, Ser. No. 103,657
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—436 24 Claims



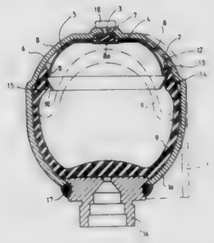
1. A method for manufacturing a tape guide subassembly for a tape cassette, comprising the steps of:
(a) forming a tape guide subassembly by a one-step injection molding to include a relatively rigid, one-piece bridge having left and right ends, each of which includes a bearing planar members extending from respective support members, each of which is parallel to a planar top and bottom of the bridge, and roller receiving means molded as an integral part of the tape guide subassembly;
(b) forming a roller; and
(c) locating the roller in the roller receiving means for rotation by inserting the roller in the roller receiving means between the planar members.

4,800,642

METHOD OF PRODUCING A HYDROPNEUMATIC ACCUMULATOR

André Stil, Vimont Par Argences, France, assignor to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly Sur Seine, both of, France

Filed Jul. 30, 1987, Ser. No. 80,028
Claims priority, application France, Aug. 4, 1986, 86 11482
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—436 6 Claims



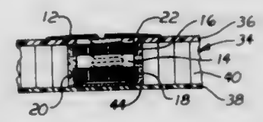
1. A method of manufacturing a hydropneumatic accumulator, comprising the steps of:
(a) cold forming a sheet metal disk into a blank having a wall surrounding an axis, open at one axial end and formed with an outwardly convex bottom at an opposite axial end, said outwardly convex bottom being formed with an orifice and with internal bosses spaced around said orifice;
(b) fixing in said blank against said bottom a cup opening in the direction of said one axial end and having a lip and at least one hole, said cup being welded to said bosses;
(c) disposing, between said lip and said wall within said blank, a membrane defining with said bottom a first chamber adapted to be filled with a gas supplied to said first chamber through said orifice;
(d) thereafter hammering said wall in the region of said one axial end to impart a generally spherical shape thereto and to crimp a liquid fitting to said wall and define between said liquid fitting and said membrane a second chamber to which liquid can be fed through said fitting, and welding said wall to said fitting; and
(e) hammering said wall in the region of said bottom inwardly to impart a generally spherical shape thereto and clamp said membrane against said lip of said cup.

4,800,643

METHOD OF MOUNTING A BOLT IN LIGHTWEIGHT PANELS

William R. Higgins, Clearwater, Fla., assignor to ATR International, Inc., Clearwater, Fla.

Continuation-in-part of Ser. No. 9,966, Feb. 2, 1987, Pat. No. 4,729,705. This application Dec. 21, 1987, Ser. No. 135,780
Int. Cl.[4] B23P *25/00*
U.S. Cl. 29—458 3 Claims



1. A method of forming a permanent mounting for a bolt in a lightweight panel having a lightweight core between upper and lower facial sheets comprising:
(a) boring a hole in the panel to a depth to penetrate the core and the upper facial sheet but not the lower facial sheet;
(b) partially filling the bored hole with a quick setting resin;
(c) providing a fastener having:
(1) an integral head in the form of a flat circular flange of sufficient diameter to overlap the bored hole;
(2) an integral cylindrical body depending from the outer head having a pair of radial flanges with serrated edges, the flanges being parallel to and spaced apart from the outer head and each other;
(3) a central threaded bore through the outer head and a portion of the cylindrical body; and
(4) spaced apart holes in the outer head on each side of the central bore, the diameter of the parallel radial flanges being less than the distance between an outer edge of the two holes and slightly more than the diameter of the bored hole;
(d) pushing the fastener into the hole, displacing the resin around the fastener and filling the space between the radial flanges;
(e) giving the fastener a partial turn to fully insert the fastener;
(f) wiping away excess resin around the edge of the head and the holes in the outer head; and
(g) screwing a compatible bolt into the central threaded bore in the fastener.

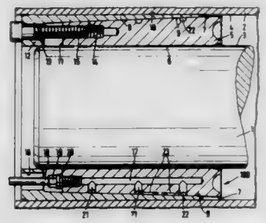
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4,800,644

METHOD FOR FASTENING OR LOOSENING A CLAMP UNIT

Ralph Muelleaberg, Im Wiesengrund 6, D-4048 Grevenbroich 12, Fed. Rep. of Germany

Division of Ser. No. 894,091, Aug. 7, 1986, Pat. No. 4,702,635. This application Aug. 17, 1987, Ser. No. 85,756
Int. Cl.⁴ F16L *17/00*
U.S. Cl. 29—525.1 7 Claims



1. A method of clamping elements together which transmits torque forces between an inner structural element having a cylindrical outer circumferential surface and an outer structural element having a cylindrical inner circumferential surface, said method comprising:

resting a first conical ring having a cylindrical outer surface against an inner circumferential surface of the outer structural element, said first conical ring having a sloping conical inner surface;

cooperating a second conical ring with said first ring by resting said second conical ring having a cylindrical inner surface against an outer circumferential surface of the inner structural element and a sloping conical outer surface complementary to said sloping conical inner surface;

drawing at least one of said conical rings axially relative to each other such that said sloping conical surfaces ride along each other and said rings exerting radical clamping forces while sliding over the sloping conical inner and outer surfaces;

placing a plurality of surface channels with a small cross section formed on at least one of said surfaces;

connecting said surface channels with a source of a flowable lubricant under a high pressure when said conical rings are drawn axially relative to each other for reducing friction during clamping.

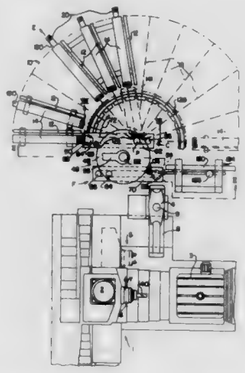
4,800,645

MACHINING CENTER WITH MAGAZINE FOR THE TOOLS

Felice Limongelli, Semone, and Favareto Marcello, Villarbasse, both of Italy, assignors to OCN-PPL S.p.A., Marcianise, Italy

Filed Oct. 5, 1987, Ser. No. 104,082
Claims priority, application Italy, Oct. 6, 1986, 67755 A/86
Int. Cl.⁴ B23Q *3/157*
U.S. Cl. 29—568 19 Claims

1. Machining center with a magazine for a plurality of tool supporting structures each containing a group of working tools, said center having a tool changing device located between a tool changing station and a working machine, said magazine comprising a handling device adapted to exchange a first structure withdrawn from said magazine with a second structure disposed at said station, said handling device comprising a pair of discs keyed on a vertical shaft rotatable on a base, and at least two symmetrical frames, each frame being pivoted on pairs of pins disposed on said discs in diametrically opposed positions, said frames being adapted to carry said structures vertically and comprising means actuated to selectively move said structure to and fro in said frame, said vertical shaft being rotated through 180° in both directions to simultaneously transfer said frames carrying said supporting structures from a loading position in which one of said structures is moved from the magazine to a corresponding one frame, to a discharge position adjacent said tool changing device, in which said one structure is moved from the frame to said tool



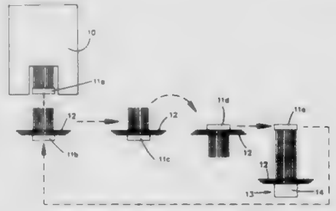
changing station and vice versa, whereby during the working operations of said working machine a new tool supporting structure is loaded into said corresponding frame in said loading position.

4,800,646

TRANSFER TOOLING FOR WIRE COILS

Paul R. Russell, Roanoke, Ind., assignor to Pease Windamatic Systems, Inc., Fort Wayne, Ind.

Filed Sep. 24, 1987, Ser. No. 100,611
Int. Cl.⁴ H02K *15/06*
U.S. Cl. 29—736 12 Claims



1. Tooling for transferring wire coils from a coil winder and for inserting such coils into a dynamoelectric component, comprising a transfer tool having a plurality of aligned elongated cantilever-supported fingers spaced from each other by transfer tool spaces and supported by a transfer tool base, and an inserter tool having a plurality of aligned elongated cantilever-mounted inserter tool fingers spaced from each other by inserter tool spaces, said transfer tool receiving in said transfer tool spaces a plurality of wire coils from a coil winder and maintaining said coils in a predetermined relationship, said inserter tool receiving said coils in said inserter tool spaces in said predetermined relationship from said transfer tool and maintaining said predetermined relationship after said inserter tool and said transfer tool are separated, said inserter tool operating after said inserter tool and said transfer tool are completely separated to insert said coils into said dynamoelectric components, said transfer tool and inserter tool being sized and shaped for assembly in a unit in which each finger of one of said transfer tool or said inserter tool fits with an associated finger of the other of said transfer tool or inserter tool to

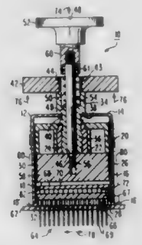
position associated spaces on said tools in alignment permitting coils within said spaces in said transfer tool to be moved along said transfer tool spaces into said inserter tool spaces while maintaining said predetermined arrangement, said transfer tool fingers and said inserter tool fingers being provided with longitudinally extending alignment and guide means which interfit when said tools are assembled as a unit to establish exact alignment of said fingers and thereby maintain exact alignment of associated spaces of said tools so that said coils can smoothly move along said spaces from said transfer tool onto said inserter tool while maintaining said predetermined arrangement, said transfer tool fingers being flexible and movalbe from their aligned position, said guide means including camming surfaces on the ends of said fingers of one of said tools for aligning said transfer tool fingers with said inserter tool fingers as said fingers initially engage during assembly of said tools.

4,800,647

ELECTRIC MODULE INSERTION TOOL

Anthony W. Geyer, Bensalem, Pa., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 14, 1987, Ser. No. 96,061
Int. Cl.⁴ H05K *3/30, 13/04*
U.S. Cl. 29—741 4 Claims



1. A tool for inserting the leads of an electronic module into sockets of a mating connector secured to a substrate, said connector sockets having a given spacing and including terminal portions having said spacing and attached to said substrate, said tool comprising:

connector grasping means for releasably grasping said connector at a surface thereof intermediate the connector and substrate, said grasping means being constructed so as to align relative to the grasped connector;

plunger means moveably secured to and aligned by said grasping means and having a surface for abutting said module at a module surface opposite said module leads and for displacing the module leads in a direction toward said connector and substrate determined by said grasping means; and

means secured to said plunger means for receiving a pushing force for pushing said plunger means against said module and toward said grasped connector to manually insert said leads into said sockets, said connector grasping means including bearing means arranged to guide and align the plunger means during said pushing to insert said leads in said direction substantially uniformally into said sockets,

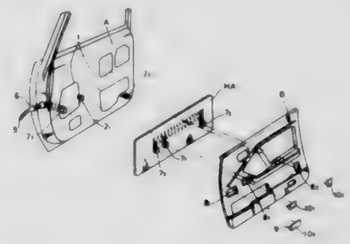
said connector grasping means including first and second arrays of spaced facing connector grasping fingers arranged to be inserted in the interstices of said terminals in the region between said connector and substrate for aligning the grasping means to the connector.

4,800,648

METHOD OF CONNECTING WIRE HARNESS FOR AUTOMOBILE VEHICLE

Yoshiaki Nakayama, and Shinichi Ueda, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Nov. 30, 1987, Ser. No. 126,718
Int. Cl.⁴ H01R *43/00*
U.S. Cl. 29—854 10 Claims



1. A method of connecting a wire harness disposed between a door frame and a trim cover to at least one electric device housed in an automotive vehicle door, which comprises the following steps of:

(a) forming at least one connector window in the trim cover;

(b) fixing the wire harness to inside the trim cover by inserting at least one harness connector connected to the wire harness into the connector window;

(c) fixing at least one electric device connector connected to the electric device to the door frame at a position corresponding to the connector window;

(d) fixing the trim cover to the door frame by inserting the electric device connector into the connector window side by side with the harness connector; and

(e) connecting the electric device comector with the harness connector from outside the trim cover.

4,800,649

DISPOSABLE SHAVER

John Catsaridis, 6147 Gage, Apt. 3B, Rosemont, Ill. 60018

Continuation of Ser. No. 924,428, Oct. 29, 1986, abandoned, which is a division of Ser. No. 810,210, Dec. 18, 1985, Pat. No. 4,716,652, which is a continuation-in-part of Ser. No. 539,892, Oct. 5, 1983, Pat. No. 4,562,643. This application Mar. 21, 1988, Ser. No. 145,288
Int. Cl.⁴ B26B *19/44*
U.S. Cl. 30—41 5 Claims



1. The disposable shaver comprising in combination a shaving head element and a unified handle and shaving lubricant

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container, said unified handle and shaving lubricant container comprising:

an elongated substantially rigid handle member connected at one end thereof to said shaving head;

an elongated shaving lubricant container disposed longitudinally adjacent said handle member, said elongated shaving lubricant container substantially coextensive in length with said handle member;

said elongated shaving lubricant container closed at the top and bottom, and sharing at least one common wall with said handle;

said common wall adjoined by a pair of oppositely disposed, longitudinally corrugated and collapsable walls, each of which is further joined by a further common wall to form a closed shaving lubricant container for the shaving lubricant; and

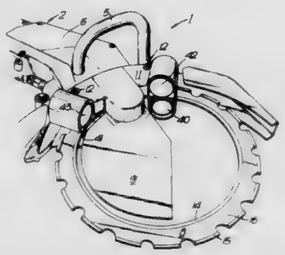
said shaving lubricant container having closeable aperture means therein for permitting expelling shaving lubricant therefrom by pressure exerted upon said corrugated walls to at least partially collapse said walls to dispose shaving lubricant from said aperture.

4,800,650

ANNULAR CIRCULAR SAW BLADE

Mats Johansson, Forshaga, Sweden, assignor to Electrolux Motor Aktiebolag, Huskvarna, Sweden

Filed Oct. 8, 1987, Ser. No. 105,590
Claims priority, application Sweden, Oct. 22, 1986, 86 04488
Int. Cl.[4] B27B *5/14*
U.S. Cl. 30—389 **5 Claims**



1. Annular circular saw blade (8) with an imaginary centre axis and with a plane of symmetry (19) which is perpendicular to the imaginary centre axis, an inner rim section (14) with first drive surfaces (22) provided to work in conjunction, through friction coupling, with second drive surfaces (38) on a rotating drive unit (30); an outer rim section (15) with cutting devices and between them a web portion (16) with an underside (17) and a topside (18), with at least one of the said sides (17, 18) exhibiting at least a first annular bearing surface (25) provided to work in conjunction with a second bearing surface (45) on a support element (40, 41) for holding the saw blade in place, characterised by the fact that the said first drive surfaces (22) are located in a continuous groove (20) projecting radially inwardly from the inner edge of the inner rim of the saw blade.

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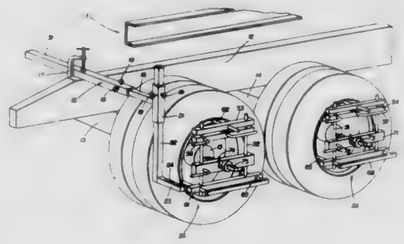
VEHICLE ALIGNMENT SYSTEM

William C. Hanlon, Medina, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jun. 13, 1983, Ser. No. 503,956
Int. Cl.[4] G01B *5/255*
U.S. Cl. 33—203.18 **6 Claims**

1. A method for determining alignment of a vehicle axle having a first and second end with respect to a longitudinal frame member of said vehicle comprising the steps of:

(a) measuring a first distance from a point related to the centerline of said first end of said axle to a reference line perpendicular to said frame member and generally parallel to said centerline of said first end of said axle using a reference bar assembly affixed to said longitudinal frame member with clamping means, said reference bar assembly comprising a support bar having at least one telescoping member which may telescopically engage each end of said support bar wherein said telescoping member has mounted on one end thereof vertical bar mounting means adapted to slidably engage a vertical bar having an axis



substantially perpendicular to said reference bar assembly wherein said vertical bar has affixed thereto a horizontal element having an axis parallel to said reference bar and having a measuring mark thereon;

(b) measuring a second distance from a point related to the centerline of said second end of said axle to said reference line perpendicular to said frame member; and

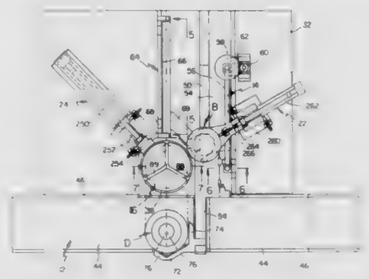
(c) comparing the measurements of said first and second distance.

4,800,652

MACHINE FOR MEASURING GENERALLY CIRCULAR OBJECTS IN CYLINDRICAL COORDINATES

Thomas A. Ballas; William E. Harbottle, both of North Canton, and Russell W. Keller, Stark County, all of Ohio, assignors to The Timken Company, Canton, Ohio

Filed Sep. 25, 1987, Ser. No. 101,205
Int. Cl.[4] G01B *5/25*
U.S. Cl. 33—552 **32 Claims**



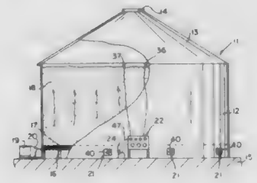
1. A machine for measuring an object, said machine comprising: a frame; support means on the frame for supporting the object along a measuring axis with the axis of the object generally coinciding with the measuring axis and for further moving the object parallel to the measuring axis, means for ascertaining the position of the support means along the measuring axis; at least three measuring heads located on the frame around the measuring axis with each having a probe provided with a tip that is adapted to contact and bear continuously against the object as the support means moves the object parallel to the measuring axis, each measuring head being capable of moving the tip of its probe along a radius that emanates from the measuring axis; and means for ascertaining the position of the probe tip for each measuring head with respect to a fixed reference on the frame, whereby the object is measured as it moves parallel to the measuring axis.

4,800,653

METHOD AND APPARATUS FOR CONTROLLING THE DRYING AND COOLING OF FIELD-HARVESTED SEEDS IN STORAGE

Sylvester L. Steffen, 321 E. Hamilton, New Hampton, Iowa 50659

Continuation of Ser. No. 811,700, Jun. 30, 1977, abandoned, which is a continuation of Ser. No. 422,760, Dec. 7, 1973, abandoned, which is a continuation of Ser. No. 179,889, Sep. 13, 1971, abandoned. This application Aug. 17, 1979, Ser. No. 67,347
Int. Cl.[4] F26B *23/04*
U.S. Cl. 34—30 **32 Claims**



1. The process of drying and preserving seeds in a bin having heating means and means for forcing air into a plenum chamber in the lower part of the bin, said heating means being disposed in said plenum chamber, the chamber being covered by a floor pervious to gas flow, the process comprising the steps of:

introducing atmospheric air into the plenum chamber;

determining the temperature within the plenum chamber;

determining the temperature of exhaust air leaving the bin;

inactivating the heating means when the temperature of the air in the plenum chamber minus the temperature of the exhaust air is greater than a pre-selected amount; and

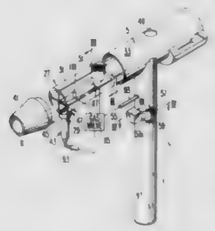
controlling the amount of heat from said heating means to always maintain the exhaust air temperature cooler than the inlet air temperature while the grain is curing.

4,800,654

HANDHELD CORDLESS HAIR DRYER

Mark R. Levin, 10032 Beacon Pond La., Burke, Va. 22015; William M. Nalley, Silver Spring, Md., and Dwight L. Green, Hamilton, Va., assignors to Mark R. Levin, Burke, Va.

Filed Oct. 15, 1987, Ser. No. 108,534
Int. Cl.[4] A45D *2/00*
U.S. Cl. 34—97 **9 Claims**



1. A handheld cordless hair dryer comprising:

a handholdable body having a handle body portion and a nozzle body portion mounted to a top end of said handle portion;

battery powered fan means for drawing a flow of air into said nozzle body portion, and for directing said flow of air along a path through said nozzle body portion and out of the nozzle body portion via an air discharge opening located at an outlet end of the nozzle body portion;

a heat exchanger disposed in said path of air directed through said nozzle body portion;

a gas combustion device disposed in said nozzle body portion in heat exchange relationship with air directed along said path via said heat exchanger;

gas fuel supply means for delivering a supply of combustible gas, from a self-contained supply of gas received in a gas container receiving space in said handle body portion, to said gas combustion device;

ignition means for igniting fuel supplied to said gas combustion device; and

manually operable actuation means for sequentially activating said gas fuel supply means, ignition means and fan means;

wherein said manually operable actuation means comprises a single manually shiftable switch means positioned on said handle body portion at a position for enabling manipulation thereof by a hand of a user grasping said handle body portion, operator means which is actuatable, in response to manually applied pressure shifting said switch means from a released position to a manually shifted position, for commencing a flow of gas to said gas combustion device followed by a triggering of said ingition means and then followed by activating of said fan means, and means for automatically returning said switch means to its released position, in response to removal of said manually applied pressure therefrom, and for terminating said flow of gas and operation of said fan means; and

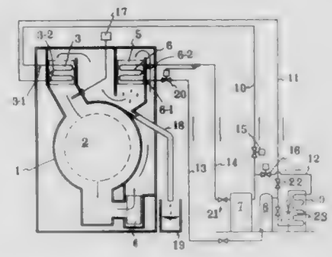
wherein lock means is provided for preventing inadvertent shifting of said switch means from said released position.

4,800,655

SOLVENT RECOVERY SYSTEM

Tetsuya Mori, and Hitoshi Tamezumi, both of Kitakyushu, Japan, assignors to Else Company, Ltd., Kitakyusyu, Japan

Filed Jun. 3, 1987, Ser. No. 57,619
Claims priority, application Japan, Jul. 7, 1986, 61-104573
Int. Cl.[4] F26B *21/06*
U.S. Cl. 34—77 **4 Claims**



1. In a solvent recovery system for use with a dry cleaning system or the like having a tumbler and a blower, the combination of:

an air heater;

an air cooler;

a housing defining an air recirculating path from said tumbler to said air cooler, said air heater, and return to said tumbler, with said blower in said air recirculating path for moving air around said air recirculating path;

a refrigerant compressor out of said air recirculating path;

a refrigerant evaporator out of said air recirculating path;

a heating exchanger in said air heater in said air recirculating path;
a cooling exchanger in said air cooler in said air recirculating path; and
first means for connecting said refrigerant compressor, said heating exchanger, said refrigerant evaporator and said cooling exchanger in a refrigerant recirculating path while maintaining said refrigerant evaporator out of said air recirculating path.

4,800,656

DEVICE AND PROCESS FOR DRYING SOLVENT-CONTAINING PLASTIC SHEETS OR FILMS

Oswald Broeck, Eimeldingen, Fed. Rep. of Germany, assignor to Lonza-Werke GmbH, Waldshut, Fed. Rep. of Germany

Filed Jan. 21, 1987, Ser. No. 5,841
Claims priority, application Switzerland, Jan. 28, 1986, 00316/86
Int. Cl.[4] F26B *9/00, 25/00*
U.S. Cl. 34—159 **6 Claims**



1. Device for the drying of a plastic sheet or film containing solvent and/or moisture, consisting of a drying oven housing containing a single oven, having several stretcher-rollers in parallel relationship on the outside of two diametric side walls of the drying oven housing opposite one another, having sealable slots in the two diametric side walls, the sheet passing through the sealable slots and around the stretcher-rollers, two of the sealable slots being positioned in the two diamatric side walls for the feeding and removal of the sheet, and the remainder of the sealable slots being aligned in the two diametric side walls of the oven with the stretcher-rollers for the exit from and entance into the oven of the sheet in each instance of the sheet passing around one of the stretcher-rollers, and having openings for the introduction and removal of a heated dryer gas, only a single stretcher-roller being used for each turn of the sheet through the oven to reverse the direction of the sheet.

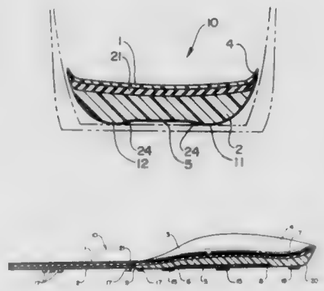
4,800,657

VARIABLY ADJUSTABLE SHOE INSERT

Dennis N. Brown, 8525 Custer School Rd., Custer, Wash. 98240

Continuation of Ser. No. 785,574, Oct. 8, 1985, abandoned, which is a continuation of Ser. No. 677,820, Dec. 3, 1984, abandoned, which is a continuation of Ser. No. 324,820, Nov. 25, 1981, abandoned. This application Aug. 25, 1986, Ser. No. 899,967
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.[4] A43B *13/38*
U.S. Cl. 36—44 **10 Claims**

1. An orthotic appliance having a forward to rear lengthwise axis and adapted to be placed as an insert within a boot, shoe or the like, said appliance comprising:
(a) An upper substantially continuous surface portion adapted to engage a lower surface of a foot,
(b) a lower relatively resilient main body portion which extends beneath the foot,
(c) said main body portion having at a rear part thereof upstanding edge portions to engage lower rear side portions of the foot,
(d) the rear part of the main body portion having at a lower surface thereof a lengthwise extending recessed area with side strips positioned on opposite sides of said recessed area and protruding downwardly from said recessed area,
(e) said appliance being characterized in that when a downward force is applied by a heel portion of the foot downwardly on a rear upper middle surface area of the appliance, the recessed area deflects downwardly in a manner



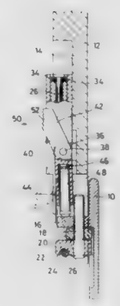
that the upstanding edge portions grip the lower rear side portions of the foot,
whereby when weight is transferred initially to the heel portion of the foot and then toward a middle portion of the foot during a gait cycle, proper lateral support of the foot is provided by the upstanding edge portions.

4,800,658

ADJUSTABLE REAR CLOSING DEVICE FOR SKI BOOTS

Ruggero Zanatta, Nervesa della Battaglia, Italy, assignor to Calzatruificio Tecnica Spa, Treviso, Italy

Filed Jul. 9, 1987, Ser. No. 71,250
Claims priority, application Italy, Jul. 14, 1986, 22509/86[U]
Int. Cl.[4] A43C *11/00;* **A43B** *5/04*
U.S. Cl. 36—50 **5 Claims**



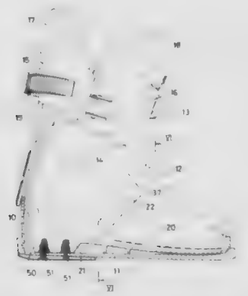
1. Adjustable rear closing device for a rear-entry boot having a shell and a boot leg with a rear portion, said device comprising:
a hook connected to the rear portion of the boot leg;
a hooking member connected to the boot shell, said hook being resiliently engageable with said hooking member;
operating lever means for facilitating positional adjustment of the rear portion of the boot leg in relation to the shell comprising a bracket lever pivotally mounted in an intermediate position of the boot leg for pivotal movement about an essentially vertical plane constituting a plane of symmetry of the boot, said bracket lever comprising a first arm for unclamping the device upon being urged towards the boot leg; a second arm having an axially extending threaded aperture in a free end thereof, and a threaded adjusting pin receivable in said threaded aperture, said pin having an end adjustably protruding from said free end of said second arm; and
a horizontal projection extending from said shell, said end of said pin being abuttingly engageable with said horizontal projection when said device is clamped, whereby the relative position of the boot leg in relation to the shell is adjustable according to the extent by which said pin protrudes from said free end of said second arm.

4,800,659

FOOT-CLAMPING STRUCTURE FOR SHOES AND BOOTS

Antonello Marega, Nervesa della Battaglia, Italy, assignor to Calzaturificio Tecnica Spa, Nervesa della Battaglia, Italy

Filed Jul. 9, 1987, Ser. No. 71,442
Claims priority, application Italy, Jul. 10, 1986, 22501 B/86
Int. Cl.[4] A43B *5/04;* **A43C** *11/00*
U.S. Cl. 36—119 **8 Claims**



1. A foot clamping structure for a boot, comprising:
a rigid shell having a bottom;
an inner liner;
an inner sole disposed between said bottom and said liner and fixed to said shell;
at least one band member having one end connected to said shell immediately beneath the malleolus articulation of a foot present in the boot, said band member being engageable with the dorsum of the foot;
clamping means connected to said at least one band member and actuable from outside the boot for clamping said at least one band member against the dorsum of the foot, said clamping means being positioned towards an upper front part of the boot, said clamping means being actuable between a first open position in which at least one band member does not press against the foot dorsum and a second clamping position in which said at least one band member is adjustably pressed against the foot dorsum, said clamping means comprising a flexible element having a first end integral with a fixing element secured to a terminal edge of one of said band members and a second end integral with a pivot pin of a control lever operable between an open and a closed position, a sleeve element rigidly fixed to a terminal edge of another band member and mounted to extend axially with respect to said flexible element, said control lever being provided with a cam part for engaging one end of said sleeve element to push said sleeve element towards said fixing element when said control lever is in said closed position;
a first tie cable fixed to an anchoring member of said clamping means, the other end of said at least one band member being connected to said first tie cable, said first tie cable being engageable with a movable member of said clamping means, said movable member being removable from said anchoring member of said clamping means when said clamping means is brought into said clamping position, whereby tension is applied to said first tie cable and said band member is clamped against said foot dorsum; and
a second tie cable connected at one end to said movable member of said clamping means, said second tie cable being connected at the other end to a first edge of a band member, the other edge of which is anchored to said inner sole, said band member embracing a part of the foot before the big toe, whereby said band member, when clamped by said clamping means, clamps the foot to said inner sole.

4,800,660

AUTOMATIC SPEED STAGE CHANGING APPARATUS FOR A WHEEL LOADER

Fukuda Masao, Kawagoe, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

PCT No. PCT/JP87/00215, § 371 Date Nov. 24, 1987, § 102(e) Date Nov. 24, 1987, PCT Pub. No. WO87/06287, PCT Pub. Date Oct. 22, 1987
PCT Filed Apr. 7, 1987, Ser. No. 138,844
Claims priority, application Japan, Apr. 8, 1986, 61-52646
Int. Cl.[4] E02F *3/00, 9/26*
U.S. Cl. 37—118 A **8 Claims**



1. An automatic speed stage changing apparatus for a wheel loader including a bucket and a boom, characterized in that said apparatus comprises:
speed signal generating means for generating a signal representative of a speed stage,
speed stage selecting means for electrically selecting a speed stage of a transmission adapted to come in engagement in response to said speed stage signal,
first detecting means for detecting that the boom assumes a predetermined boom angle suitable for digging work,
second detecting means for detecting that the bucket assumes a predetermined bucket angle suitable for digging work, and
shifting means adapted to output a signal of a predetermined lower speed stage in place of the signal outputted from said speed stage signal generating means when detecting signals are outputted from both said first and second detecting means.

4,800,661

ELECTRIC IRON

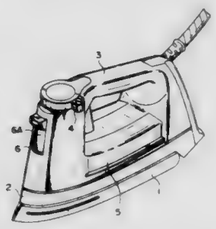
Hiroshi Yamamoto, Niigata; Masaru Ishida, Kamo; Jin Watanabe, Niigata; Takashi Ishiwatari, Kamo; Kazuharu Tabaki, Niigata, and Shinichi Nakanishi, Aichi, all of Japan, assignors to Toshiba Heating Appliances Co., Ltd., Kamo, Japan

Filed May 18, 1987, Ser. No. 50,567
Claims priority, application Japan, May 20, 1986, 61-115574; Sep. 12, 1986, 61-214109
Int. Cl.[4] D06F *75/38*
U.S. Cl. 38—93 **4 Claims**

1. In an electric iron having a heat-radiating base, the im-

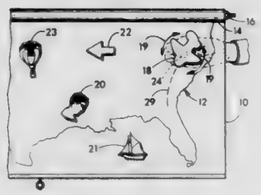
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provement comprising that the heat-radiating base includes a coating located on a lower side thereof and formed of a mixture consisting essentially of a polytetrafluoroethylene resin and a conductive fine powder, the amount of the conductive fine powder being 5 to 15% by weight based on the amount of the polytetrafluoroethylene resin,



wherein the conductive fine powder is formed of a material which is at least one member selected from the group consisting of aluminum, nickel, stainless steels, carbon blacks and carbon fibers.

4,800,662
MAGNETIC MAP MARKER
Frank R. Belrose, 2349 Dodd Rd., Mendota Heights, Minn. 55120
Filed Feb. 11, 1987, Ser. No. 13,258
Int. Cl.[4] G09F *19/00*
U.S. Cl. 40—426 4 Claims



1. A magnetic map marker comprising a marker unit suited for placement adjacent the front surface of the map, said marker unit having a display surface and a smooth map contacting surface adapted to slide easily over a surface of the map, said marker unit including a magnetic material, a double-faced magnet for magnetically attracting the marker and holding it in place from a position on the rear side of the map, said double-faced magnet having front and rear faces, said front face being magnetically active and having spaced apart north and south magnetic poles thereon, the other face of the magnet being the magnetically inactive face, whereby the marker can be slid manually by moving the magnet in any desired direction across the back of the map or pivoted about a central axis perpendicular to the map by manually turning the double-faced magnet about said axis, and a magnet holder having a socket therein to receive the end of a ruler or like elongated article and a recess to hold the magnet in place thereon, thereby attaching the magnet to the elongated article.

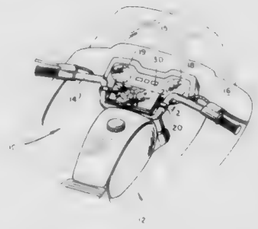
4,800,663
COLLAPSIBLE DISPLAY APPARATUS
Theodore R. Zeigler, 205 S. Columbus St., Alexandria, Va. 22314
Filed Dec. 11, 1986, Ser. No. 941,486
Int. Cl.[4] G09F *15/00*
U.S. Cl. 40—610 39 Claims

1. A collapsible display apparatus comprising a collapsible framework movable between a collapsed compact position and an erected expanded position, said framework including a plurality of interconnected strut means, a plurality of hub means pivotally interconnected with said strut means, said framework in the erected position defining opposite faces and



opposite ends of the apparatus, and display support means mounted on said framework so as to substantially cover one of said faces, said display support means defining a substantially continuous support surface to which displays may be attached.

4,800,664
MAP HOLDER
Jerry Marstall, 207 Sandy Pond Rd., Lincoln, Mass. 01773
Filed Apr. 6, 1987, Ser. No. 34,924
Int. Cl.[4] G09F *3/18*
U.S. Cl. 40—661 11 Claims



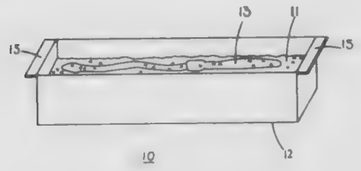
1. A map holder for motorcycles and the like, comprising:
a compartment having a bottom and sides for holding a map therein;
a pivotally mounted transparent cover for said compartment;
a separate mounting base for supporting said compartment;
means for adjustably mounting said mounting base on the handlebars of a motorcycle; and
means for mounting and aligning said compartment on said mounting base, said mounting and aligning means comprising a pivotal connection between the mounting base and compartment bottom and enabling said compartment to be pivoted in the plane of the bottom, said pivotal connection including a pivot pin connected between the compartment bottom and the mounting base, resilient biasing means engaged between the compartment bottom and the mounting base for urging them yieldably toward one another, and interengaged detent means on the bottom and mounting base for detaining said compartment in a positively located pivotally adjusted position on the mounting base, whereby a map or the like held in said compartment can be oriented to specific different positions, said biasing means acting to hold the detent means in engaged position but enabling it to be overridden.

4,800,665
PISTOL GRIP SAFETY CLIP
David C. Schumaker, 1336 Albany, Ferndale, Mich. 48220
Filed May 31, 1988, Ser. No. 200,505
Int. Cl.[4] F41C *27/00*
U.S. Cl. 42—71.02 6 Claims



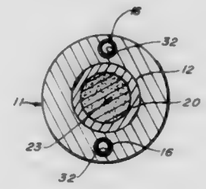
1. In a pistol having a grip, a forwardly extending upper portion connected to the grip, a grip safety pivotally mounted on the grip and movable forwardly to a depressed position when engaged by the hand of the user, transverse apertures formed in opposed sides of the grip and removable grip panels mountable over the apertures in the grip, the improvement comprising:
a clip removably mountable over a portion of the grip and the grip safety, the clip having:
first and second opposed legs;
a flange formed at one end of each of the first and second legs and extending from the respective leg toward the opposed leg; and
a central portion joined to and extending between the opposite ends of the first and second legs;
the spacing between the flanges and the central portion of the clip being selected to hold the grip safety in the forward depressed position when the flanges are mounted in registry with the grip and the first and second legs and the central portion of the clip surround a portion of the pistol grip and the grip safety.

4,800,666
METHOD AND APPARATUS FOR TEMPORARILY IMMOBILIZING AN EARTHWORM
Loren Lukehart, 4391 Greer, Boise, Id. 83703
Filed Feb. 26, 1988, Ser. No. 161,144
Int. Cl.[4] A01K *97/02*
U.S. Cl. 43—4 3 Claims



1. An apparatus for temporarily immobilizing an earthworm which comprises:
a container for housing the a reservoir of sand;
a reservoir of sharp sand having a grain size of 1/20th of an inch or less.

4,800,667
ILLUMINATED FISHING NET
Timothy B. Johnson, P.O. Box 54, Benedict, Minn. 56436
Filed Apr. 3, 1987, Ser. No. 34,839
Int. Cl.[4] A01K *75/02*
U.S. Cl. 43—17.5 10 Claims



1. An illuminated fishing net comprising in combination:
a longitudinally elongated body having a centrally disposed aperature and longitudinally extending aperatures opening outwardly of one end and disposed generally parallel to said centrally disposed aperture;
an elongated hollow handle having a first end in the centrally disposed aperture in said body;
illuminating means disposed in said first end of said handle and including operating means therefor, accessible from the interior of the other end of said handle;
longitudinally elongated means for operating said operating means in said illuminating means slidably disposed within said other end of said handle;
flexible, resilient sealing means disposed over said other end of said handle;
an open ended loop for receiving a net and including ends disposed in the longitudinally extending apertures in said body; and
means interconnecting said body, said ends of said loop, the first end of said handle and said illumination means.

4,800,668
ADJUSTABLE TENSION FISHING ROD
Peter Burrough, Kwe Kwe, Zimbabwe, assignor to CMN Associates, Inc., Carpinteria, Calif.
Filed Jan. 20, 1988, Ser. No. 146,036
Int. Cl.[4] A01K *87/00*
U.S. Cl. 43—18.1 7 Claims



1. A fishing rod comprising a hollow rod member having one closed end and one open end, a liquid disposed in said hollow rod member, means for adjusting the pressure of said liquid in said rod disposed in said open end of said rod, said means being controlled by a rotatable drive mechanism.

4,800,669
SPINNER BLADES FOR USE IN WATER OR AIR
John R. E. Charrow, P.O. Box 530, Red Lake, Ontario, Canada P0V 2M0
Filed Jan. 25, 1987, Ser. No. 66,310
Claims priority, application Canada, Jul. 16, 1986, 513880
Int. Cl.[4] A01K *85/04*
U.S. Cl. 43—42.19 11 Claims

10. A fishing lure assembly comprising in combination a leader, a hook on one end of said leader and a line connection loop on the other end of said leader, and a spinner blade on said

leader between said hook and said line connecting loop, means on said leader to limit the movement of said spinner blade towards said hook whereby said spinner blade may rotate, said spinner blade comprising a disc formed from lightweight substantially semi-rigid sheet material, said disc having a chordal fold line thereacross, said disc being angulated along said fold line to form two substantially flat wings having an included angle of between 90° and 160° and a line aperture formed through one wing and situated towards one end of said fold

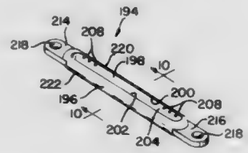


line and between said fold line and the periphery of said one wing whereby, when said leader is held vertically, a major portion of said fold line inclines downwardly and outwardly from adjacent said line aperture, said blade being mounted upon said leader via said aperture with said included angle facing the end of said leader opposite to said hook, said one wing having a convexedly curved segment removed whereby the contour of said one wing, where said segment is removed, is substantially concave.

4,800,670
FISHING LURE

Robert N. Mattison, 5826 McKinley Pl. N., Seattle, Wash. 98103

Continuation of Ser. No. 813,677, Dec. 23, 1985, Pat. No. 4,693,032, Continuation-in-part of Ser. No. 607,284, May 4, 1984, Pat. No. 4,589,221, and a continuation-in-part of Ser. No. 648,458, Sep. 7, 1984, Pat. No. 4,581,839. This application May 15, 1987, Ser. No. 51,083
The portion of the term of this patent subsequent to Sep. 15, 2004, has been disclaimed.
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—17.6 21 Claims



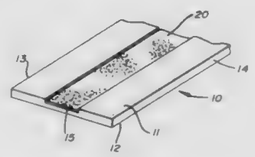
1. An illuminated fishing lure for housing an elongated member having a resilient outer surface, comprising;

an elongated body including a longitudinally extending cavity at least as long as the member, the cavity being formed in the body by a pair of opposed generally planar sidewalls spaced apart a distance sufficient to receive the member therebetween, the cavity having first and second opposed longitudinally extending openings communicating with the body cavity and sized large enough to allow lateral passage of the member therethrough, the body further including at least one protrusion attached to one of the sidewalls and projecting into the first cavity opening a sufficient distance such that the member can be pushed past the protrusion by deforming its resilient outer layer for positioning the member within the cavity for use of the lure or removal of the member from within the cavity, but cannot pass by the protrusion once within the cavity under the normal forces encountered on the member during use of the lure.

4,800,671
INSECT TRAPPING BAND

Earle L. Olson, Medina, Ohio, assignor to Olson Products, Inc., Medina, Ohio

Filed Dec. 14, 1987, Ser. No. 132,796
Int. Cl.[4] A01M *1/14*
U.S. Cl. 43—108 14 Claims



1. An insect trapping band, comprising:

(a) an elongate strip of material having front and rear faces;

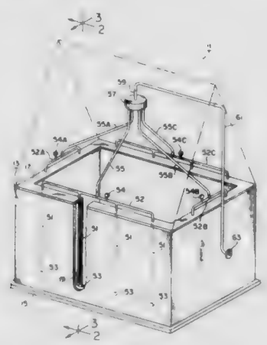
(b) said front face having an elongate groove extending longitudinally thereof and including a first planar surface lying in a plane parallel to and beneath the plane of said front face and opposed sidewalls extending from said front face substantially normal to the plane thereof to said first planar surface; and

(c) a quantity of insect trapping adhesive disposed in said groove.

4,800,672
CENTRALIZED FUMIGATION SYSTEM FOR EXTERMINATING INSECTS IN A BUILDING

John C. Jackson, 313 S. Lakeside Dr., Lake Worth, Fla. 33460

Filed May 21, 1987, Ser. No. 52,289
Int. Cl.[4] A01M *13/00*
U.S. Cl. 43—125 15 Claims

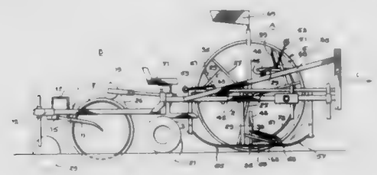


1. A fumigation system for a hollow-core concrete block exterior wall of a building, said wall including a horizontal concrete tie-beam across the top thereof for mechanically tying said wall together and also for sealing off the hollow cores of said wall, said fumigation system comprising distribution means for transferring fumigant under pressure from a common reservoir into said hollow cores, said distribution means including a plurality of tubular means through said tie beam across the top of said wall into said hollow cores, a fogging nozzle operatively connected to each of said tubular means in said hollow cores, and, means for controlling the transfer of fumigant under pressure from said reservoir into said tubular means.

4,800,673
ARCHES DRIVER

Louis Charbonneau, 136, rue de la Gare, C.P. 750, St-Rémi, Québec, Canada J0L 2L0

Filed Nov. 25, 1987, Ser. No. 125,609
Int. Cl.[4] A01G *13/02*
U.S. Cl. 47—1 R 9 Claims



1. An apparatus for driving wire rod arches into the ground for the making of a cultivation tunnel, said apparatus comprising:

a chassis and a pair of wheels mounted on said chassis, each wheel having a rim and radial spokes with said wheels being rotative about a common axis;

an arcuate arch support, between said wheels, defining an outwardly open trough for the insertion and removal of an arch;

pivot means mounting the free ends of said arch support on said wheel rims; said pivot means being located adjacent a pair of said wheel spokes lying in a common radial plane; said support free ends being mounted for pivotal movement of said arch support about an axis parallel to said wheel common rotation axis; said pivot means being further located behind said pair of spokes with respect to the direction of rotation of said wheels;

first resilient means for holding said arch support inwardly and between said rims and in an inoperative position where said arch support diverges from said pair of spokes;

a plurality of hooks and means mounting said hooks on said arch support for pivotal movement of said hooks between a hooking position for holding an arch within said trough and a release position for allowing said arch to move out of said trough;

second resilient means biassing said hooks into said hooking position;

cam means on said arch support and on said chassis for pivoting said arch support from said inoperative position toward said adjacent wheel spokes and for holding said support in vertical position as said pivot means approaches the ground, and

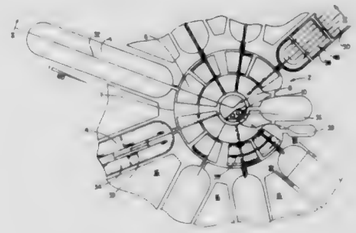
hook releasing means on said spokes of said pair of wheels; said releasing means engaging said hooks after said arch support has reached said vertical position for pivoting said hooks to said hook release position.

4,800,674
GREENHOUSE STRUCTURE

Philip D. Sprung, c/o 1001 - 10th Ave., SW., Calgary, Alberta, Canada T2R 0B7

Filed Dec. 30, 1986, Ser. No. 947,638
Int. Cl.[4] A01G *9/14*
U.S. Cl. 47—17 11 Claims

1. In a greenhouse structure for growing plants using nutrient feed solution, the improvement characterized by a plurality of elongated greenhouse production areas, each having a shell and a base enclosing a predetermined space within which plants are to be grown and radially extending outwardly from a central supply area in which nutrient feed solution to be supplied to the production areas is to be kept, the base of each of the production areas being loped downwardly away from the center in the transverse direction and sloped upwardly in the direction away from the central supply area so that excess nutrient feed solution passed to the production areas will return by gravity flow to the central supply area, pump and conduit means to supply nutrient feed solution from the central

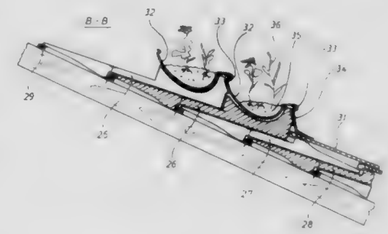


supply area to the production areas and conduit means sloped to return by gravity flow excess nutrient from the production areas to the central supply area.

4,800,675
ROOFING PLATE FOR PLANTING GREENERY ON ROOFS

Eugen Feil, Lange Strasse 29, D-7084 Westhausen; Gerd Neumann, Attenzell 50, D-8079 Kipfenberg; Wolfgang Graser, Mittelsetzring 56, D-8729 Zeil, and Horst Friedrich, Kriegsreuth, D-8662 Helmbrechts, all of Fed. Rep. of Germany

Filed Jul. 9, 1987, Ser. No. 71,439
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1986, 3623562
Int. Cl.[4] A01G *1/00*; E04D *1/00*
U.S. Cl. 47—33 13 Claims



1. A roofing plate for supporting plants on roofs, having means for heat insulating said roof and means for containing a nutritive medium for growing plants, comprising:

(a) an upper section having a wedge-shaped tapering cross-section, decreasing in thickness towards its upper edge;

(b) a central section integral with said upper section having a uniform cross-sectional thickness, said thickness being less than the cross sectional thickness of the thickest portion of said upper section; and

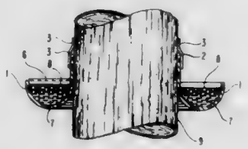
(c) a lower section, integral with said central section, having at least one open channel on its upper surface extending transversely of said plate, said channel defined by a first cross piece at its lower edge and a second cross piece separating the lower section of said plate from said central section, said first cross piece being higher than said second cross piece.

4,800,676

TREE PROTECTOR

Richard E. Lockwood, Sr., 62 Tindall Rd., Robbinsville, N.J. 08619

Filed Nov. 10, 1986, Ser. No. 929,338
Int. Cl.[4] A01G *17/12*; A01M *1/18*
U.S. Cl. 47—24 1 Claim



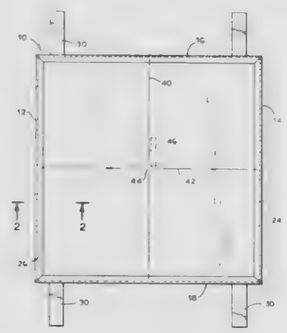
1. In a tree protector, the combination of a corrugated plastic trough-shaped member having an inner wall and an outer wall extending continuously about the tree including an hygroscopic insecticide in said trough the ends of said trough-shaped member being joined by a seal to maintain the effective continuity of the trough, sealant means including asbestos attached to said trough-shaped member at the upper end of the inside wall and extending around the tree between said member and said tree, the inner wall of said trough-shaped member extending a short distance above the outer wall of said member and in direct contact with the outer surface of said tree and said sealant, and adhesive tape for forming a seal between said member and said tree at the top of the inner wall for preventing passage of insects up the tree between the tree and the corrugated trough-shaped member.

4,800,677

ANIMAL WASTE COLLECTION PAD

Robert J. Mack, Aberdeen, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 21, 1987, Ser. No. 99,454
Int. Cl.[4] A01K *1/015*, *29/00*
U.S. Cl. 119—1 3 Claims



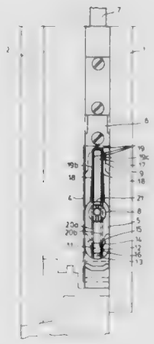
2. An animal waste collection pad comprising a backing sheet, a top sheet overlying said backing sheet and a frangible capsule containing a scent attractive to dogs for causing a dog to dispose his waste on said pad, said animal waste collection pad being provided with intersecting folds folding said animal waste collection pad into quarters, said frangible capsule being located adjacent the intersections of said folds, that is, centrally located, so that said capsule may be easily located and the breakage thereof facilitated.

4,800,678

TILT-LOCK DEVICE

Horst Loos, Freudenberg, Fed. Rep. of Germany, assignor to Siegenia-Frank KG, Siegen, Fed. Rep. of Germany

Filed Aug. 21, 1987, Ser. No. 88,065
Int. Cl.[4] E05C *17/00*
U.S. Cl. 49—394 10 Claims



1. A tilt-lock device for rotary/tilt windows and doors and the like having upright frame elements and upright wing elements, comprising:

(a) a tilt-lock plate in a frame element having an upper portion with lock webs and a lower portion containing a pocket with lugs,

(b) a swivel lashing on the wing element adjacent the frame element, the swivel lashing carrying a profile cam at a lower end and a closure plug having a shaft at an upper end, the cam and the plug facing towards the frame element, the swivel lashing further provided with two elongated grooves facing towards the wing element,

(c) a connecting rod on the wing element connected to the swivel lashing through the closure plug at one end and at the other end connected to a control mechanism,

(d) a U-rail on the wing element between the swivel lashing and the wing element, the U-rail carrying an elongated slot having two longitudinal edges and an upper end and a lower end, the surface of the U-rail defining a plane and the elongated slot being provided with two enlarged areas in the area of the lower end, separated from each other by a lug on each longitudinal edge, and

(e) a cross-sectionally flat, rectangular flexible bar spring in the elongated slot of the U-rail, the spring having two longitudinal legs and a connecting web, the edges of the legs extending slightly beyond the edges of the elongated slot toward the frame element and engaging the elongated grooves on the swivel element.

4,800,679

QUARTER POINT RETURN MECHANISM FOR MANUALLY OPERATED REVOLVING DOORS

Horst Appelmann, Pickering, Canada, assignor to C. J. Rush Inc., Agincourt, Canada

Filed Jun. 10, 1987, Ser. No. 60,198
Int. Cl.[4] E05D *15/02*
U.S. Cl. 49—42 7 Claims

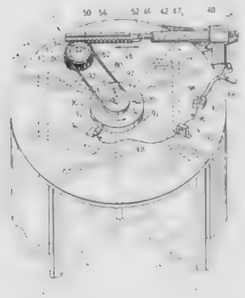
1. A quarter point return mechanism for a manually driven revolving door having revolving door leaves extending outwardly from a central shaft and being partially enclosed between opposed curved side walls, said return mechanism comprising:

an actuator;

a rack arranged to be linearly displaced by said actuator;

a pinion engaging said rack said pinion being rotatable in opposite directions;

means connecting said pinion to said central shaft, said means transmitting rotation to said shaft when said pinion is rotated in one direction, and not transmitting rotation to said shaft when said pinion is rotated in the other direction; and



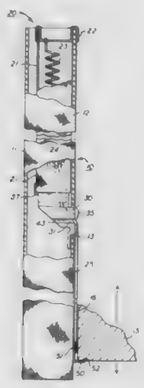
means for sensing circumferential displacement of outer ends of said door leaves from said side walls, and operating said actuator when said outer ends of said door leaves are in a position circumferentially displaced from said side walls, said return mechanism returning said door leaves to a rest position in which said door leaves are in contact with said side walls.

4,800,680

CORD GUIDE SYSTEM FOR SASH BALANCE

Norman R. Westfall, Rochester; Patrick E. Milligan, Kendall; John I. Habbersett, and Brian S. Dense, both of Rochester, all of N.Y., assignors to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Aug. 14, 1987, Ser. No. 85,378
Int. Cl.[4] E05D *13/00*
U.S. Cl. 49—429 24 Claims



1. In a sash balance system for a non-take-out window using a block and tackle balance arranged within a jamb liner spring cover and having pulleys and a cord for counterbalancing a sash running in said jamb liner and having a plough region extending around said spring cover, the improvement comprising:

a. a sash support connected to a free end of said cord and movable vertically outside of said spring cover to support said sash;

b. a guide fixed in a hole in said spring cover for guiding said cord from an end of said balance through said spring cover to said sash support;

c. said guide having a cord slot that directs said cord around a pair of radiused corners as said cord passes through said hole in said spring cover so that passage of said cord around said corners in said slot creates a friction load as a function of the force of said balance and the weight of said sash on said support; and

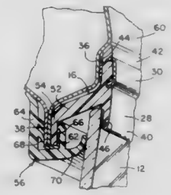
d. said spring extending for the full length of said jamb liner, and said plough region of said sash clearing said spring cover sufficiently to allow said cord to run outside of said spring cover, within said plough region.

4,800,681

SEALING AND GUIDING ELEMENT FOR FLUSH MOUNTED MOVABLE AUTOMOBILE WINDOW

John D. Skillen, Keokuk, Iowa; Melvin S. Coons, Marion, Ind., and Olav H. Brannstrom, Troy, Mich., assignors to Sheller-Globe, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 826,762, Feb. 6, 1986, Pat. No. 4,649,668. This application Feb. 25, 1987, Ser. No. 18,551
Int. Cl.[4] E06B *7/16*
U.S. Cl. 49—440 14 Claims



1. A structure for windows in an automobile, comprising:

a sealing and guiding member having an exposed exterior surface and having a plurality of vertical members interconnected by at least one horizontal member to form an integral member, part of said sealing and guiding member having a single inner flange and an outer flange;

means for holding said sealing and guiding member to a surface of an automobile body flange so that the single inner flange rests against an outer surface of said body flange;

an interior trim piece having a surface for facing an interior of a vehicle; and

means for holding said interior trim piece to a surface of said automobile body flange.

4,800,682

GRINDER, ESPECIALLY A HIGH PRECISION GRINDER, FOR A BEARING RING

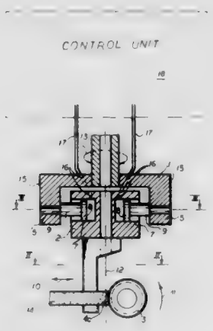
Martin Wolters; Rolf Wilde, both of Wuppertal, and Manfred Loock, Sprockhövel, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Ernst Thielenhaus GmbH, Wuppertal, Fed. Rep. of Germany

Filed Sep. 30, 1987, Ser. No. 103,531
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1986, 3633531
Int. Cl.[4] B24B *19/06*
U.S. Cl. 51—33 W 4 Claims

1. In a grinder, especially a high precision grinder, for a bearing ring which has a race with a curved cross section comprising at least one tool support and at least one tool holder, said tool holder being supported in said tool support on two equal feed guide rods held by a crosstie bar, and a feed

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piston cylinder device for a feed and a withdrawal motion, said tool support with said tool holder being oscillatable to and fro about a substantially central oscillation axis through said tool support which provides a tool mounted in said tool holder in a working position with a to and fro pivoting motion rotating substantially about the center of said curved cross section of said race, the improvement wherein at least one of said crosstie



bars is provided at each end of said feed guide rods holding said feed guide rods so that said crosstie bars are mass balanced in regard to said pivoting motion and said feed piston cylinder device comprises two mass balanced cylinders positioned axially centrally in said tool holder and two mass balanced pistons in said cylinders whose piston rods are attached centrally to said crosstie bars.

4,800,683

GRINDING MACHINE FOR THE GRINDING OF ELONGATED WORKPIECES

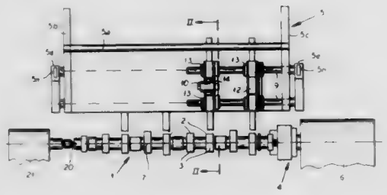
Rudolf Schwär, Wuppertal, Fed. Rep. of Germany, assignor to Maschinenfabrik Ernst Thielenhaus GmbH, Wuppertal, Fed. Rep. of Germany

Filed Feb. 27, 1987, Ser. No. 20,288

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1986, 3609409

Int. Cl.[4] B24B *5/42*

U.S. Cl. 51—34 E **5 Claims**



1. A grinding machine for an elongated workpiece having a plurality of zones axially spaced therealong to be ground simultaneously, said grinding machine comprising:

means for supporting said workpiece at its ends and for rotating said workpiece about an axis of rotation thereof;

a plurality of nonrotatable guide spindles extending parallel to said axis;

respective toolholders guided along said spindles and each formed with at least one tool engaging a respective one of said zones;

a plurality of high-precision low-play rotatable nuts operatively connected to each of said holders and threadedly engaging each of said spindles;

a respective positioning motor operatively connected with each of said holders and having an angularly displaceable output member; and

means for operatively connecting said output member with said plurality of nuts of each holder comprising a cog belt means coupled to all of the nuts of the toolholder for synchronously driving said nuts to displace the respective holder along said spindles and cause the respective tool to grind the respective zone.

4,800,684

APPARATUS FOR GRINDING AND LAPPING SEALING SURFACES IN SLIDE VALVES AND THE LIKE IN SITU OR IN THE WORKSHOP

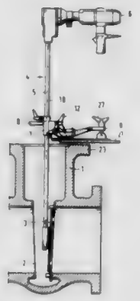
Ranko F. F. Effenberger, Zum Wibbelrusch 6, 5160 Dueren, Fed. Rep. of Germany

Division of Ser. No. 863,007, May 14, 1986, abandoned. This application Jun. 3, 1988, Ser. No. 204,971

Claims priority, application Fed. Rep. of Germany, May 14, 1985, 3517409

Int. Cl.[4] B24B *49/02*

U.S. Cl. 51—165.76 **2 Claims**



1. A method for grinding and lapping sealing surfaces in slide valves and the like, said method comprising:

releasably positioning a rotatable tool plate adjacent a said surface to be ground and lapped for rotation about an axis which is generally perpendicular to said surface;

urging said tool plate against said surface in a direction generally parallel to said axis while rotating said plate to thereby grind said surface;

measuring the resistance to movement of said plate toward the surface during said grinding;

checking the planeness of the ground surface; and thereafter repositioning the plate and adjusting the force urging the tool plate against said surface as required using the measured resistance as a guide to thereby condition the plate for grinding said surface to the desired planeness.

4,800,685

ALUMINA BONDED ABRASIVE FOR CAST IRON

Douglas G. Haynes, Jr., Grand Island, N.Y., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 615,663, May 31, 1984, abandoned, which is a continuation of Ser. No. 536,830, Sep. 30, 1983, abandoned, which is a continuation of Ser. No. 331,442, Dec. 16, 1981, abandoned. This application Oct. 30, 1984, Ser. No. 666,131

Int. Cl.[4] B24B *1/00*

U.S. Cl. 51—281 R **8 Claims**

1. A method of abrading cast iron comprising providing a bonded abrasive, said bonded abrasive comprising sol-gel alumina grain in a matrix, and bringing said bonded abrasive into frictional contact with cast iron.

4,800,686

FABRICATION METHOD FOR CHAMFERED HOLE

Toshihiko Hirabayashi, Higashikurume, and Keiji Honda, Tokyo, both of Japan, assignors to Kyokuwei Optical Glass Co., Ltd. and Asahi Diamond Industrial Co., Ltd., both of Tokyo, Japan

Filed Apr. 9, 1987, Ser. No. 36,257

Claims priority, application Japan, Apr. 15, 1986, 61-86745

Int. Cl.[4] B24B *9/08*

U.S. Cl. 51—283 R **3 Claims**



1. A method for fabricating a chamfered hole comprising the steps of providing a drill bit with a first tapered portion and an enlarged portion, drilling a hole in a workpiece with said enlarged portion, engaging the edge of the drilled hole with the tapered portion of the drill bit, and effecting relative movement between the drill bit and the workpiece to cause the tapered portion of the drill bit to traverse the circumference of the edge of the hole, said drill bit being provided with a second portion reversely tapered with respect to the first tapered portion, and wherein said method further comprises the step of contacting the upper and lower edges of the hole with the respective first and second tapered portions of the drill bit and effecting relative movement therebetween to cause the tapered portions of the drill bit to traverse the circumferences of the upper and lower edges of the hole.

4,800,687

METHOD FOR CYLINDRICAL GRINDING OF ROLLS

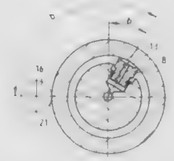
Werner Kade; Theodor Bahr; Georg Zurn, all of Heidenheim, and Gunter Rohde, Zang, all of Fed. Rep. of Germany, assignors to J. M. Voith, GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jun. 16, 1987, Ser. No. 62,704

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1986, 3621979

Int. Cl.[4] B24B *1/00*

U.S. Cl. 51—289 R **4 Claims**



1. A method for grinding a cylindrical roll assembly for a paper mill on a grinder having a grinding wheel and support devices, said cylindrical roll assembly having a beam type roll core with axial ends and an outer roll cylinder mounted on said roll core, which roll core and roll cylinder have a longitudinal axis and a collar at each roll core end, said assembly further having hydraulic support means for supporting said roll cylinder essentially in a radial direction along the length of said roll core and,

antifriction bearings having an inner race and an outer race, one of said bearings mounted on each of said axial ends with said inner race on said roll core and said cylinder roll on said outer race;

said method comprising the steps of:

(a) mounting said roll assembly at said collars on said grinder support devices:

(b) moving said grinding wheel to contact said roll cylinder and to define a contact line, which contact line and longitudinal axis cooperate to define a plane;

(c) providing hydraulic fluid at a pressure to said pressure transfer elements, which hydraulic pressure produces a force acting in a plane;

(d) rotating said roll core to an angular position such that the hydraulic pressure force is at an angle to the plane defined by the contact line and the longitudinal axis;

(e) securing the roll core in a selected position on said grinder for balancing the hydraulic pressure force to counteract the weight of said roll and to thus essentially eliminate antifriction bearing play prior to grinding, the selected position being substantially similar to the operational orientation of the roll core;

(f) finish grinding said assembly to eliminate the effect of runout.

4,800,688

BLASTING NOZZLE FOR WET BLASTING MACHINE

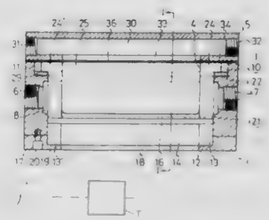
Akira Suzuki, Gotemba, Japan, assignor to Fuji Seiki Machine Works, Ltd., Sunto, Japan

Continuation-in-part of Ser. No. 805,087, Dec. 4, 1985, abandoned. This application Jun. 17, 1987, Ser. No. 63,259

Claims priority, application Japan, Dec. 5, 1984, 60-183649

Int. Cl.[4] B24C *5/04*; **B05B** *1/04*

U.S. Cl. 51—439 **3 Claims**



1. In an abrasive blasting system including a tank containing therein a liquid-solid abrasive particle slurry, a nozzle structure for discharging a stream of said slurry against a workpiece, means for supplying said slurry to said nozzle structure, and means for supplying pressurized air to said nozzle structure for blasting said slurry therefrom in the form of an air-slurry stream, the improvement wherein said nozzle structure comprises:

body means defining therein an elongated slurry flow passage extending along a first direction, said body means defining therein inlet and outlet openings communicating with opposite ends of said slurry flow passage for respectively permitting the slurry to flow therethrough;

said body means defining therein an elongated air passage which is spaced upwardly from said slurry flow passage and extends in generally parallel relationship therewith, and an air inlet formed in said body means in direct communication with said air flow passage for permitting the pressurized air to be supplied thereto, said air inlet being oriented in generally perpendicular relationship with respect to a second direction which perpendicularly intersects the longitudinally extending central axes of said slurry and air supply passages;

first nozzle means stationarily associated with said body means and defining a slitlike discharge opening for permitting ejection of a thin curtainlike air-slurry jet, said slitlike

discharge opening extending downwardly away from said slurry flow passage substantially along said second direction so as to be substantially perpendicular with respect to said first direction, said discharge opening being continuously open and having an upstream end which communicates with said slurry passage and a downstream discharge end which is spaced a substantial sideward distance from said slurry passage, said discharge opening being substantially elongated in said first direction so as to have a length dimension as measured along said first direction which substantially exceeds the length as measured along said second direction, said discharge opening as it extends along said second direction between said upstream and discharge ends being of substantial length and of narrow width throughout said last-mentioned length;

said first nozzle means also including structure defining an elongated V-shaped channel extending longitudinally along said slurry passage, said V-shaped channel extending directly along the lower side of said slurry passage and opening upwardly for continuous communication with said slurry passage, said discharge opening having the upstream end thereof communicating with said V-shaped channel substantially at the apex thereof;

second nozzle means stationarily mounted relative to said body means and defining a slitlike air opening which projects substantially along said second direction in alignment with said discharge opening, said second nozzle means projecting downwardly along said second direction away from said air supply passage and substantially transversely across said slurry passage so as to terminate in a lower tip part which projects downwardly into said V-shaped channel, said slitlike air opening at its upper end having an inlet which communicates with said air passage and at its lower end an outlet which opens downwardly through said lower tip part, said outlet being directed downwardly toward said apex so as to be aligned with and disposed directly opposite the upstream end of said discharge opening, said outlet being spaced upwardly from the upstream end of said discharge opening by a small distance, and said slitlike air opening having a length as measure in said first direction which is similar in magnitude to the length of said slitlike discharge opening as measured in said first direction;

whereby a thin curtainlike jet of air is discharged from said air opening into said V-shaped channel directly adjacent the upstream end of said discharge opening for causing the slurry in the channel to be entrained within the curtainlike air jet and then transported through and discharged out of said discharge opening;

wherein said body means includes a main body part having said slurry passage extending longitudinally therethrough and terminating in said inlet and outlet openings which are formed in opposite ends of said main body part, said main body part having a first slotlike opening which opens upwardly from the bottom thereof for communication with said slurry passage and a second slotlike opening which opens downwardly from the top thereof for communication with said slurry passage, said first and second slotlike openings being aligned with one another;

said first nozzle means including a pair of substantially identical first members positioned in opposed abutting engagement with one another for defining said slitlike discharge opening therebetween, said pair of opposed first members being stationarily disposed within said first slotlike opening, said pair of opposed first members having upper surfaces which are provided with tapered walls formed on the upper corners thereof for defining said V-shaped channel therebetween;

said body means including a top body part which removably and sealingly attaches to the top of said main body part, said top body part having said air supply passage extending longitudinally therethrough and terminating in openings which project through opposite end walls of said top body part; and

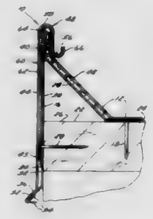
said second nozzle means being clampingly held between said main and top body parts and being defined by an opposed pair of substantially identical second members which are disposed in opposed face-to-face contact with one another and define said slitlike air opening therebetween, said pair of opposed second members being stationarily disposed within said second slotlike opening.

4,800,689

FASCIA ASSEMBLY FOR SECURING EDGE OF RUBBER ROOF MEMBRANE INCLUDING REINFORCING CLIPS

Bennie L. Lane, Eagle, Wis., assignor to Metal Era, Inc., Waukesha, Wis.

Filed Aug. 7, 1987, Ser. No. 82,736
Int. Cl.[4] E04D *1/36*
U.S. Cl. 52—60 10 Claims



1. A roof fascia assembly for providing a dam at the edge of a roof and for securing the edge of a rubber membrane overlying the roof in place, the roof fascia assembly comprising:

a dam adapted to be secured to the edge of the roof, the dam including a first portion having a lower edge adapted to be secured to the upper surface of the roof and a vertical portion secured to the vertical surface of the edge of the roof, a lower edge of the vertical portion being below the surface of the roof and an upper portion of the dam projecting above the surface of the roof, and the dam being adapted to support an edge of the membrane thereon, the edge of the membrane extending over the dam and being positioned against an outer surface of the dam;

a fascia for covering at least a portion of the dam and a portion of the rubber membrane, the fascia including a vertical portion adapted to overlie the vertical portion of the dam with the edge portion of the rubber membrane positioned between the vertical portion of the dam and the vertical portion of the fascia, the vertical portion of the fascia having a lower edge including means for engaging the lower edge of the vertical portion of the dam to restrain the fascia against upward movement with respect to the dam, an upper portion extending over the upper portion of the dam, the upper portion of the fascia including a curved lower surface; and

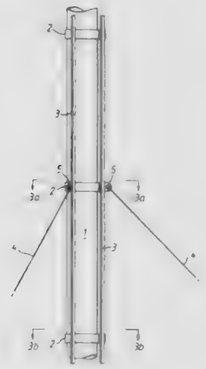
a reinforcing clip adapted to be housed within the upper portion of the fascia and providing means for reinforcing the upper portion of the fascia against deflection caused by forces on the rubber membrane, the reinforcing clip including a curved upper surface complementary in shape to the curved lower surface of the upper portion of the fascia and engaging the curved lower surface in face-to-face mating relation whereby the reinforcing clip is housed in nested relation in said upper portion of fascia extending over the upper portion of the dam.

4,800,690

STACK SYSTEM

James W. Bunce, Sittingbourne, England, assignor to Kaldair Limited, London, England

Continuation of Ser. No. 717,129, Mar. 28, 1985, abandoned. This application Jun. 24, 1988, Ser. No. 220,941
Claims priority, application United Kingdom, Mar. 30, 1984, 8408349
Int. Cl.[4] E04H *12/20*
U.S. Cl. 52—146 7 Claims



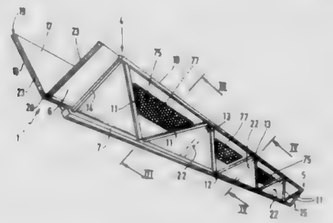
1. A stack system comprising in combination a stack, one or more elongate struts extending along and being spaced apart from said stack, a plurality of rings spaced apart from each other and being attached to said struts, said rings encircling said stack, being located close to or touching said stack and not being attached to said stack, and a plurality of flexible guy wires attached to one or more of said rings or struts and to the ground.

4,800,691

SELF-SUPPORTING ELEMENT FOR THE CONSTRUCTION OF A BUILDING ROOF, COMPRISING A METAL FRAMEWORK ASSOCIATED WITH A SINGLE-UNIT INSULATING CLADDING, METAL FRAMEWORK AND INSULATING CLADDING CONSTITUTING SAID ELEMENT, AND THE RESULTING ROOF

Yves L. Theault, Tracy-Sur-Mer, France, assignor to Theault & Cie, Arromanches, France

PCT No. PCT/FR86/00159, § 371 Date Dec. 8, 1986, § 102(e) Date Dec. 8, 1986, PCT Pub. No. WO86/06776, PCT Pub. Date Nov. 20, 1986
PCT Filed May 7, 1986, Ser. No. 2,653
Claims priority, application France, May 7, 1985, 85 06945
Int. Cl.[4] E04B *7/10*; E04C *2/50*
U.S. Cl. 52—90 30 Claims



1. A self-supporting element of great length for the construction of a roof of a building, in particular an industrial, commercial, school, administration or sports building, or a building for living quarters, said roof being formed by the combination of a plurality of said elements which are disposed parallel to each other and assembled along longitudinal edges thereof, said element having two longitudinal edges, a front transverse end edge, a rear transverse end edge and a longitudinal plane of symmetry and comprising:

(a) a framework of metal section members extending continuously between said two longitudinal edges and between said two transverse end edges so as to ensure a selfsupporting character of said element, and

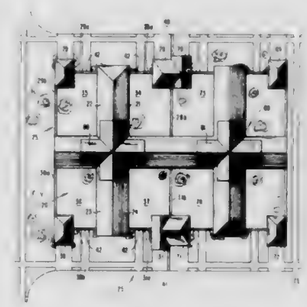
(b) an insulating cladding detachably supported by said framework, said cladding being in a single unit and formed by a composite comprising: an outer skin resisting corrosions, an inner skin substantially of the same configuration as the outer skin and disposed parallel to and under the outer skin; and an insulating blanket comprising at least partly mineral wool fibres which extend in a direction substantially perpendicular to parallel planes of the skins and which are glued at their ends to the inside faces of said outer and inner skins, respectively.

4,800,692

CRUCIFORM DWELLING STRUCTURE

Louis J. Jenn, Indianapolis, Ind., assignor to Atrium Structure, Inc., Indianapolis, Ind.

Continuation of Ser. No. 906,124, Sep. 22, 1986, abandoned. This application Jan. 25, 1988, Ser. No. 148,177
Int. Cl.[4] E02D *1/00*
U.S. Cl. 52—169.2 9 Claims



1. A multi-family dwelling configured as a double cruciform structure and positioned on a lot which is bounded on opposite sides by substantially parallel streets suitable for vehicle traffic, said dwelling comprising:

four generally L-shaped living units arranged into a first cruciform shape and having a first common wall which is substantially parallel to said street and a second common wall which is substantially perpendicular to said first common wall;

four generally L-shaped living units arranged into a second cruciform shape and having a first common wall which is substantially parallel to said street and a second common wall which is substantially perpendicular to said first common wall, said first common walls of said first and second cruciform shapes being substantially coplanar;

each of said L-shaped living units including an adjoining private atrium courtyard, a separate out building and a pair of security walls, the periphery of said private atrium courtyard being enclosed at least in part on two sides by the corresponding living unit, on a third side at least in part by one security wall in combination with said out building and on the fourth side at least in part by the other other security wall in combination with said out building;

a plurality of driveways, one corresponding to each out building and arranged to provide vehicle communication between said out building and one of said streets, for each cruciform shaped arrangement of four living units there are four driveways with two in communication with one street and the other two in communication with the opposite street; and

a pair of spaced and substantially parallel pedestrian pathways, one pedestrian pathway being located at each end of the double cruciform structure and each pedestrian pathway being substantially perpendicular to said two streets.

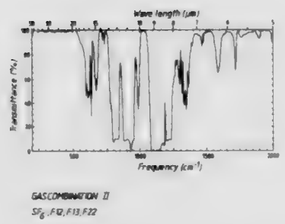
4,800,693

HEAT INSULATING WINDOW UNIT AND INSULATING BLOCKING COMPONENT THEREFOR

Jan Karlsson, Gothenburg, and Ingemar Fasth, Hisings Backa, both of Sweden, assignors to Barrier HB, Sweden

Continuation of Ser. No. 919,050, Oct. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 648,152, Sep. 4, 1984, abandoned. This application Apr. 8, 1988, Ser. No. 180,678
Claims priority, application Sweden, Jan. 4, 1983, 8300025
Int. Cl.[4] E06B *5/20*
U.S. Cl. 52—171 7 Claims





GASCOMBINATION II
SF_6:F12:F13:F22

1. A method of manufacturing heat insulating window glass units, such method including the following steps:

providing at least two glass panes of substantially the same size and at least one spacer frame element sized to follow the border of the panes:

assembling the panes and the frame element or elements by means of a sealing substance with one frame element placed between each pair of inner surfaces of the panes facing each other to form one or more respective inner-spaces between said surfaces, the sealing substance being provided to hermetically close said spaces together with said frame element;

providing at least two openings in the respective frame elements into each space;

providing a gas mixture of at least two gases, each selected from the group consisting of gases having a boiling point not exceeding the lowest estimated temperature of the window glass unit in use, having a high absorption of electromagnetic radiation in the wave-length region of 2–25 μm, having a transparency without noticeable negative influence on visible light, beaing non-explosive, non-toxic and non-radioactive in the concentration used in the mixture, including a first gas having one or more absorption bands for infrared radiation in said wave-length region; and selecting a second gas having one or more absorption bands for infra-red radiation in said wave-length region, the bands being substantially positioned in said region in other positions than the bands of the first gas, and selecting a third gas and further gases, each having one or more absorption bands for infra-red radiation in said wave-length field the bands being substantially positioned in said field in other positions than the absorption bands of the first and second gases and further gases so that a substantial part of the infra-red transmission in said wave-length region is blocked by said absorption bands of the selected gases thus absorbing a substantial portion of the infrared radiation impinging upon said glass planes and thus, reducing the transmission of heat through said windows;

inserting said gas mixture into said spaces through one of said openings while exhausting the spaces through the other opening of any gas or air enclosed in the spaces while assembling the window glass unit; and

sealing said inserting and exhausting openings after filling the spaces with said gas mixture.

4,800,694

PLACE-ON TYPE ASSEMBLAGE STRUCTURE

Mitsuo Sasaki, Yamato, Japan, assignor to Tsugarusoken Co., Ltd., Yamato, Japan

Filed Apr. 3, 1987, Ser. No. 33,561
Claims priority, application Japan, Apr. 17, 1986, 61-87089
Int. Cl.[4] E04H *6/10, 6/42*
U.S. Cl. 52—175 13 Claims



1. A three dimensional place-on type assemblable vehicle parking structure adapted to be placed on a substantially flat surface, said structure including the following:

a. a plurality of assembly elements, each said assembly element having a base plate which has a lower ground-contacting surface which is lying on said flat surface, each said assembly element also including a pillar extending upwardly from the base plate wherein a vertical load acting on the pillar is substantially borne by the base plate, each said pillar having an upper end and a lower end;

b. beam members connecting the upper ends of the pillars of adjoining assembly elements; and,

c. brace members connecting the lower ends of the pillars of adjoining assembly elements;

said structure providing a plurality of three dimensional parking spaces which are capable of receiving parked vehicles.

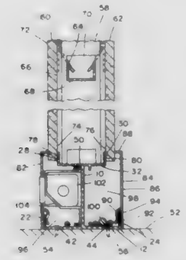
4,800,695

ELECTRICAL RACEWAY FLOOR TRACK

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Oct. 2, 1987, Ser. No. 103,628
Int. Cl.[4] E04F *17/08*; H02G *3/10*
U.S. Cl. 52—221 3 Claims

1. A partition comprising a floor track and partition elements including wallboard, said floor track comprising a single elongate electrical raceway floor track having an upwardly opening lower channel, an upwardly opening upper channel disposed in spaced parallel relationship over said lower channel, and a vertical wall connecting said lower channel and said upper channel, whereby a partition can be supported on said upper channel, utilities can be disposed between said channels and a base trim can be affixed to said track to conceal said track, wherein said upper channel supports said partition elements including said wallboard, wherein elongate utility elements are disposed in a hollow path formed between said upper and lower channels and between said vertical wall and a base trim affixed to said track, wherein a short section of upper channel has been removed forming a space thereat extending in width from an outer edge of said upper channel to a narrow shallow elongate groove in said upper channel, and wherein utility elements extend upward through said space created by said removal of said section of upper channel.

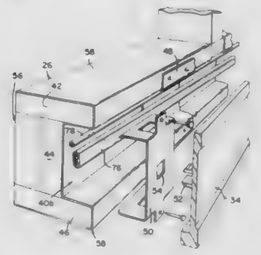


4,800,696

PREMISE WIRING SYSTEM FOR FRAME STRUCTURES

Vernon R. Miller, Atlanta, and Lincoln E. Roberts, Decatur, both of Ga., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 17, 1986, Ser. No. 942,893
Int. Cl.[4] E04F *17/08*; E04B *2/00*
U.S. Cl. 52—221 13 Claims



1. A substantially enclosed wooden frame structure extending between a ceiling plane and a floor plane, the structure comprising:

an upper beam extending continuously around the enclosed frame structure adjacent the ceiling plane, the upper beam having a first continuous interior channel formed therein;

a lower beam extending around the enclosed frame structure adjacent the floor plane, the lower beam having a second interior channel formed therein;

a plurality of vertical columns extending between the upper and lower beams, each vertical column having a third interior channel, each third interior channel communicating with at least one of the first and second channels;

an interior wall, the first, second and third channels being recessed behind the wall; and

a plurality of stamped metal brackets spanning the channels;

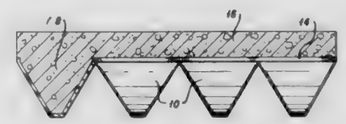
electrical wiring disposed in the channels and extending around the enclosed frame structure, whereby the upper and lower beams and the vertical columns comprise parts of the load bearing structure and the electrical wiring can be disposed behind the interior wall after the interior wall has been erected on the previously assembled load bearing structure.

4,800,697

MODULAR INTERSTITIAL CONCRETE SUB-FLOOR

Arthur A. Oswald, Steinstrasse 58, 8003 Zurich, Switzerland

Filed Apr. 23, 1987, Ser. No. 41,453
Int. Cl.[4] E04C *1/00*
U.S. Cl. 52—309.17 2 Claims



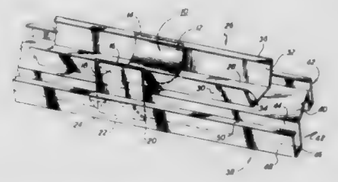
1. An interstitial sub-floor comprising: a formwork composed of a plurality of rectangular modules attached to one another, each of said modules having an egg-crate configuration and formed of an integral rigid material, each of said modules providing a multiplicity of pockets, and each of said pockets being formed as a truncated pyramid having a rectangular base with rims directly adjacent to and integral with the rims of the adjacent pockets, and having an apex forming a bearing surface; and a concrete layer contained in said pockets and supported by said formwork.

4,800,698

CLIP FOR JOINING SHEET METAL BEAM MEMBERS

Wesley T. Murphy, 94 Prospect St., Auburn, N.Y. 13021

Filed Dec. 10, 1987, Ser. No. 131,133
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—714 9 Claims



1. A sheet metal clip for joining a sheet metal beam to another sheet metal beam, each of said beams being formed of a planar web, a pair of flanges that rise from the web, and a bent-in lip at a free edge of at least one of the flanges, said clip comprising an arcuate spring plate fitting between the flanges of one said beam with a free edge engaging the lip of said one beam; a first transverse bend at the other edge of said arcuate spring plate; a flat plate joined to said first bend and extending outside the associated flange of said one beam beyond the plane of the web thereof; a second transverse bend at the edge of said plate remote from the first bend; and a flange rising from said second bend to engage one of the flanges of the second beam beneath the lip thereof.

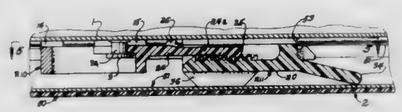
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4,800,699

MOLDING/LOCATING AND ATTACHING CLIP DEVICE

Steven C. Lang, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 14, 1987, Ser. No. 85,621
Int. Cl.[4] E04F *19/02*
U.S. Cl. 52—717.1 **3 Claims**



1. A molding/locator and attaching clip device, for securing an open channel molding with notched sheet metal return bent flanges therein to a support panel having headed studs fixed thereto, includes a molding retainer clip and a molding locator clip, said molding retainer clip including a body portion having at least one keyhole slot therein whereby said molding retainer clip can be secured to an associate said headed stud on said support panel, with opposite sides of said body portion defining retaining means for opposite ends of said open channel molding, a plurality of resilient pawl arms extending outward from one end of said body portion of said molding retainer clip; said molding locator clip including a locator body portion having opposed first and second edges, spaced apart retaining tabs extending outward from said first edge of said locator body portion adjacent to the opposite sides thereof, at least one spring finger tab extending outward from said first edge intermediate said retaining tabs and, anti-rattle ribs extending upward from one surface of said locator body portion so as to cooperate with said retaining tabs and said spring finger tab whereby said molding locator clip can be secured into a said notched return bent flanges of said molding, said locator body portion on the surface thereof opposite from said anti-rattle ribs having at least one cavity therein extending inward from said second edge and defined in part by a plurality of rows of spaced apart ratchet teeth, the arrangement being such that when said open channel molding with said molding locator clip fixed thereto is secured to said molding retainer clip, said resilient pawl arms are adapted to operatively engage said ratchet teeth to permit movement of said molding locator clip and said open channel molding in only one direction while preventing movement thereof in an opposite direction.

4,800,700

METHOD AND APPARATUS FOR LIFTING AND SUPPORTING SLABS

Donald R. May, Independence, Mo., assignor to Atlas System, Inc., Independence, Mo.

Filed May 7, 1987, Ser. No. 46,850
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—742 **9 Claims**



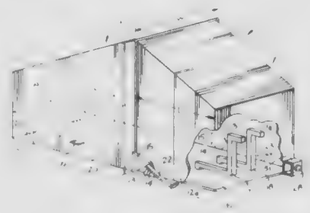
1. A method of lifting and supporting a slab comprising the steps of:
cutting an access hole through the slab;
inserting a lift plate through the access hole and rotating it to permit engagement with lower face of the slab;
mounting a pier driving assembly over said access hole;
driving a pier through said hole to a position where said pier can ultimately support said slab;
successively and individually inserting additional lift plates through other access holes cut in the slab and driving additional piers for supporting said slab;
removing said pier driving assembly;
placing a lift bracket assembly on each of the piers;
attaching each of said lift bracket assemblies to a corresponding lift plate,
raising the lift plates and therefore the slab to a desired position,
securing said lift plates to said piers;
removing said lift bracket assemblies whereby said slab is supported by said piers in the desired position.

4,800,701

PORTABLE MOTORCYCLE GARAGE

Ewell E. Dunsworth, R-1 Box 233-A, Augusta, Kans. 67010

Filed Jul. 30, 1987, Ser. No. 79,416
Int. Cl.[4] E04B *1/343*
U.S. Cl. 52—66 **9 Claims**



1. A portable motorcycle garage transportable from one location to another comprising:
a rigid planar base portion including a perimeter, and
a stationary rear portion including three vertical wall portions securing a sloping roof wherein sides are positioned about a partial perimeter of said base portion, and
a forward pivotal portion formed with three vertical wall surfaces supporting a sloped roof wherein said wall portions of said forward portion are formed about a remaining perimeter of said base portion, and
pivot means secured to said base portion and said forward portion positioned and arranged to enable said forward portion to pivot relative to said stationary portion to enable access to an interior of said portable motorcycle garage, and
wherein said forward portion has attached thereto a cabinet means for storage.

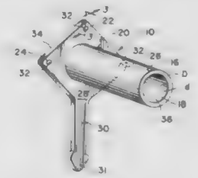
4,800,702

STEEL PLACEMENT MEMBER

Charles F. Wheeler, 6141 NW. 34th Way, Ft. Lauderdale, Fla. 33309-2221

Continuation-in-part of Ser. No. 835,292, Mar. 3, 1986, Pat. No. 4,644,726. This application Feb. 24, 1987, Ser. No. 17,500
The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.
Int. Cl.[4] E04C *5/16*
U.S. Cl. 52—677 **17 Claims**

1. A steel placement member adapted to support and position a reinforcing steel bar in a concrete structural member formed by placing concrete within an area defined by a bottom horizontal surface and a vertical perimetrical surface comprising a tubular body having a first end, a second end, and a longitudinal axis, a generally circular channel formed in said first end of said body, said channel being defined in said tubular body by an inside diameter and an outside diameter, a generally planar plate member provided on said second end of said body, said plate member being located in a plane perpendicular to said longitudinal axis and having a back surface, said back surface being adapted to abut said vertical perimetrical surface, said plate member being defined by first, second, third and fourth corners, said first corner being disposed directly above said tubular body, said second and third corners being disposed directly one on each side of said tubular body, said fourth corner being disposed directly below said tubular body, said



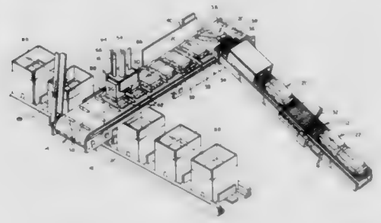
fourth corner being provided with an integral vertically depending arrow member, said arrow member having a tip adapted to rest against said horizontal bottom surface, said arrow member having a length, as measured by the distance from said channel to said tip, for holding said reinforcing bar a desired distance above said bottom surface when said back surface of said plate member abuts said vertical surface, said channel being adapted to receive an end of said reinforcing steel bar, said channel having a depth so as to support said end of said reinforcing steel bar a desired distance inside said vertical surface.

4,800,703

HORIZONTAL POUCH PACKER

James A. Goodman, Glencoe, Ill., assignor to Prototype Equipment Corp., Lake Forest, Ill.

Filed Aug. 6, 1986, Ser. No. 893,580
Int. Cl.[4] B65B *5/08*
U.S. Cl. 53—53 **2 Claims**



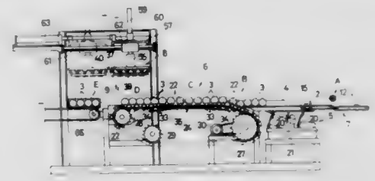
1. A packing machine for pouches or other flexible containers of variable dimensions comprising:
an indexable conveyor;
feed means to discharge pouches onto said conveyor in a selected orientation comprising a sideless feed conveyor wherein said feed conveyor includes sensing means to sense the relative position of the pouches being fed toward said indexable conveyor and rejection means operatively controlled by said position sensing means to reject pouches from said feed conveyor when adjacent pouches being fed by said feed conveyor are sensed to be in a predefined improper relationship;
control means for indexing said conveyor through a controlled, variable distance to move said pouches of variable dimensions into a pick-up station;
a vacuum head assembly positioned in operative relationship to said conveyor including vacuum means and a shrouded vacuum head means adapted to grip said pouches at said pick-up station;
means to position a packing carton at a packing station;
motion control means to position said vacuum head assembly and said gripped pouches adjacent the packing carton at the packing station; and
adjustable drive means to move said vacuum head a variable distance into said carton at the packing station so that the release of said vacuum force in said head will discharge the pouches at a selected position in said carton.

4,800,704

APPARATUS FOR ALIGNING AND PACKING FRUITS OR VEGETABLES INTO PACKAGES

Toru Ishii, 3-14, 4-chome, Takehara, Mathuyama, Ehime-Pref, and Kodo Shimomura, 13-34, I-Chome, Shinbonmachi, Kochi-Pref, both of Japan

Filed Dec. 14, 1987, Ser. No. 133,144
Int. Cl.[4] B65G *11/00*; **B65B** *35/44*
U.S. Cl. 53—145 **5 Claims**



1. An apparatus for automatically aligning and packing fruits or vegetables, which is provided with means for conveying fruits or vegetables in the position next to means for feeding these fruits or vegetables and an absorbing unit moving itself between the vacuuming position of said fruit-conveying means and the following fruit-packing position; wherein said fruit-conveying means is provided with a plurality of supporting shafts installed at specific intervals in the lengthwise direction of endless conveyor belts between said plurality of endless belts installed in parallel with each other in loose condition so that intervals between said supporting shafts can be varied as required; said shafts respectively support a plurality of cups for accommodating fruits or vegetables which are respectively movable in the direction of the driving shaft so that both said supporting shafts and cups integrally make up a fruit-conveying belt; wherein said apparatus is further comprised of;
means for varying width of ranks of cups which is provided beneath fruit-conveying members of said fruit-conveying members of said fruit-conveying belt to cause said cups to depart from each other in the width direction at equal intervals at the fruit-posture-correcting position and return to the predetermined adjoining state at the fruit/-vegetable vacuuming position; and
means for varying length of endless conveyor belt provided on both sides of said fruit-conveying belt to cause said endless conveyor belt to spread itself in order to allow said cups to depart from each other in the conveying direction at equal intervals at the fruit-posture-correcting position and also to cause said endless conveyor belt to contract itself so that intervals between said cups can become narrow at the fruit/vegetable vacuuming position.

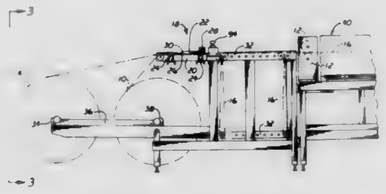
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4,800,705

CONTINUOUS FORM, FILL, SEAL AND SEPARATE PACKAGING MACHINE

William A. Bodolay, Lakeland, Fla., assignor to Package Machinery Company, Bodolay/Pratt Division, Lakeland, Fla.

Filed Jul. 31, 1987, Ser. No. 80,314
Int. Cl.[4] B65B 41/12
U.S. Cl. 53—168 22 Claims



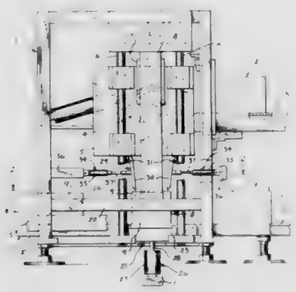
1. A continuous form, fill, seal and separate packaging machine, said machine comprising: means for supporting a primary supply roll of thermoplastic base web material; means for continuously conveying said base web along a path at a substantially constant speed; means for supporting a secondary supply roll of said thermoplastic base web material; means for splicing said secondary supply roll base web onto said primary supply roll base web; means for heating said thermoplastic base web material downstream of said means for splicing; movable means for forming said heated base web downstream of said means for heating, whereby a plurality of receptacles are formed in said base web; means for filling each of said receptacles downstream of said means for forming; means for sealing said filled receptacles downstream of said means for filling; means for cooling said sealed receptacles downstream of said means for sealing; and means for perforating and cutting said filled and sealed receptacles from said web, said perforating and cutting means comprising means for intermittently conveying said sealed receptacles.

4,800,706

APPARATUS FOR LOADING A STACK OF ARTICLES INTO A RELATIVELY FLIMSY CONTAINER

Wolfgang C. Dorner, Oconomowoc, Wis., assignor to Dorner Mfg. Corp., Hartland, Wis.

Filed Oct. 16, 1987, Ser. No. 109,109
Int. Cl.[4] B65B 39/02, 5/06
U.S. Cl. 53—251 5 Claims



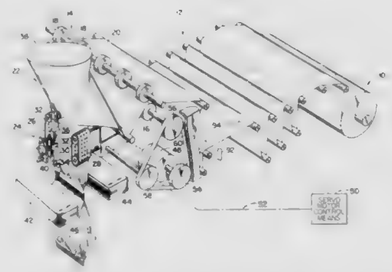
1. An apparatus for loading an article into an elongated open top container having relatively flexible elongated side walls, comprising conveyor means to convey a container, elevating means for elevating said container to an elevated position above said conveyor means, a pair of spaced spreader members disposed to engage the opposite elongated side walls of a container when said container is in the elevated position, said spreader members being mounted for movement between an inner receiving position and an outer spreading position whereat said spreader members act to spread the side walls outwardly apart, and loading means for loading a stack of side-by-side stacked articles into said container while said side walls are spread apart, said loading means including clamping means for applying clamping pressure to opposite ends of said stack, said loading means also including means for loading the clamped stack into the space between said spreader members when said spreader members are in the outer spreading position, and release means for releasing said clamping means when the lower end of said clamped stack is disposed within said space and above the level of the lower edge of said spreading members whereby said stack will fall by gravity through said space and into said container.

4,800,707

VERTICAL FORM, FILL & SEAL PACKAGING MACHINE WITH SERVO MOTOR DRIVE MEANS

Horst Rabus, Broad Brook, Conn., assignor to Package Machinery Company, Longmeadow, Mass.

Continuation of Ser. No. 922,071, Oct. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 690,956, Jan. 11, 1985, abandoned. This application Dec. 9, 1987, Ser. No. 135,175
Int. Cl.[4] B65B 9/10
U.S. Cl. 53—552 12 Claims



1. A vertical form, fill and seal packaging machine having a source of packaging material in the form of an elongated thin flat strip of film comprising successive package blanks as integral contiguous sections thereof, a tube former having a vertically open interior space and adapted to receive said strip material and in downward passage therethrough form the same to a depending and upwardly open tubular configuration, opposite longitudinal edge portions of the material being progressively juxtaposed by said tube former in overlapping, parallel, and vertically extending relationship, a product dispensing means associated with said tube former and operable intermittently for the gravity discharge of measured quantities of product to and downwardly through said tube former interior space into a tube depending therefrom, a longitudinal seam sealing station disposed beneath said tube former, intermittently rotatable film and tube advancing means beneath said tube former intermittently advancing said tube downwardly therethrough whereby successively to present integral blanks of film in tubular form and with overlapped longitudinal edge portions extending vertically as aforesaid at said longitudinal seam sealing station, a vertically extending longitudinal seam sealer at said sealing station adjacent the overlapped edge portions of a tubular blank and intermittently movable generally horizontally toward and away from and thus into and out of sealing engagement with the overlapped edge portions of the blank, an end sealer disposed beneath said tube former and longitudinal seam sealer and intermittently movable generally horizontally toward and away from and thus into and out of sealing engagement with the tubular blank whereby to provide vertically spaced horizontal end seals and sequentially to horizontally sever said tubular blanks, said product dispensing means serving to fill the tubular blanks between sequential end sealing and severing operations and said end sealer thus providing individual filled packages in its severing operation, servo motor means connected in driving relationship with said rotatable film and tube advancing means, and motor control means operatively associated with said motor, said servo motor and control means comprising at least one precisely regulable high response electric motor and associated power supply, amplifier, and controller whereby acceleration and deceleration characteristics may be closely controlled during film and tube advancing operation said control means providing for an intermittent film and tube advancement cycle characterized by a low initial rate of acceleration and a low substantially constant velocity during the terminal portion of the cycle such that termination of the cycle may occur with a preselected and known elasped time of deceleration from said substantially constant velocity to zero velocity.

4,800,708

APPARATUS AND METHOD FOR FORMING FOAM CUSHIONS FOR PACKAGING PURPOSES

Charles R. Sperry, Springfield, Vt., assignor to Sealed Air Corporation, Saddle Brook, N.J.

Filed Nov. 16, 1987, Ser. No. 121,223
Int. Cl.[4] B65B 9/02, 55/20
U.S. Cl. 53—449 16 Claims



1. A method of successively forming foam cushions for packaging purposes wherein each cushion comprises a closed plastic bag filled with foam and having a ventilation opening along at least one side edge thereof for escapement of gas generated during foam formation, said method comprising the steps of

advancing a pair of webs of plastic film along predetermined paths of travel from respective supply sources, and including guiding the advancing webs into opposing face to face contact at a first heat sealing station, while

heat sealing the opposing longitudinal side edges of the advancing pair of webs to each other at the first heat sealing station to sealingly interconnect the opposing webs along opposite side edges, while

periodically introducing a predetermined amount of foamable composition between the advancing pair of webs of plastic film and so as to be deposited in each bag being formed, while

periodically and momentarily interrupting the heat sealing of the pair of webs to each other along at least one of said side edges during the advancement of the webs through the first heat sealing station so as to form at least one unsealed longitudinal side edge portion which defines at least one side edge opening for each bag, and while

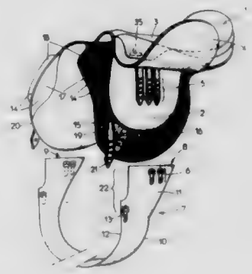
advancing the sealingly interconnected webs to and through a second heat sealing station and transversely heat sealing the webs together upstream of the unsealed side edge portions at the second heat sealing station to form a sealed top edge for each successive bag of foamable composition and including severing each bag from the next succeeding bag while forming a sealed bottom for the next succeeding bag to thereby form separate and individual bags having at least one ventillation opening in at least one longitudinal side edge.

4,800,709

ARRANGEMENT FOR SETTING BACK THE SEAT OF AN EQUESTRIAN SADDLE AND A DAMPING DEVICE ADAPTED TO BE FITTED TO SAID ARRANGEMENT

Eric Le Tixerant, 8 Rue Erlanger, 75008 Paris, France

Filed Sep. 12, 1986, Ser. No. 906,823
Claims priority, application France, Sep. 19, 1985, 85 13874; Dec. 2, 1985, 85 17791; Aug. 25, 1986, 86 12015
Int. Cl.[4] B68C 1/00
U.S. Cl. 54—44 9 Claims



1. An equestrian saddle which is constructed such that, when fixedly positioned on the back of a horse, the weight of a rider sitting therein will be over the 13th and 14th dorsal vertebrae of the backbone of the horse, said equestrian saddle comprising

a saddle frame which has a forward end, a rearward end and opposite left and right sides,

a seat mounted on said saddle frame for supporting a rider,

a plurality of fastening means attached to the respective left and right sides of said saddle frame,

left and right side panels located beneath said saddle frame and said plurality of fastening means, said left and right side panels defining front edges,

an elongated saddle cloth located beneath said left and right side panels, said saddle cloth providing a left portion located beneath said left side panel and a right portion located beneath said right side panel, said left and right side portions of said saddle cloth having outer and inner surfaces and defining front edges which are positionable forwardly of the front edges of said left and right side panels, each of said left and right portions of said saddle cloth including a fastening means,

a girth which can extend around the underside of a horse, said girth having first and second end portions, each of said first and second end portions including (1) a plurality of rear fastening means for connection with said fastening means attached to the respective left and right sides of said saddle frame, and (2) a front fastening means for connection with the fastening means of the associated left or right portion of said saddle cloth,

a pad attached to the inner surface of each of the left and right portions of said saddle cloth for extending into an associated hollow of a horse's shoulder, and

an abutment element attached to the outer surface of each of the left and right portions of said saddle cloth, against a rearward edge of which the front edge of the associated left or right side panel abuts.

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4,800,710

ROTARY MOWER

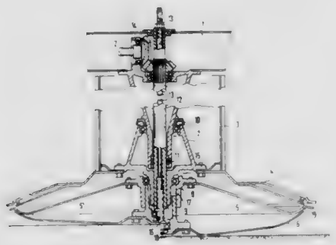
Wilhelm von Allwoerden, Gallingen, and Martin Maier, Gottmadingen, both of Fed. Rep. of Germany, assignors to Kloeckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Dec. 14, 1987, Ser. No. 132,172

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644273

Int. Cl.[4] A01D *34/74*

U.S. Cl. 56—17.2 13 Claims



1. A rotary mower having a frame, at least one rotary cutter unit (3) including a first bearing hub (7) mounted on said frame for rotation about a generally vertical axis, drive means rotating said rotary cutter unit including a drive shaft (12) connected to said first bearing hub (7), a cutter disc (4) secured coaxially to said first bearing hub, an axially displaceable bearing hub (9) beneath said cutter disc (4), a skid disc (6) of flexible material having its central portion secured to said axially shiftable bearing hub (9), an intermediate disc (5) of rigid material rotatably mounted on said rotary cutter unit beneath said cutter disc (4), said intermediate disc (5) being axially nonshiftable relative to said cutter disc (4), the outer rim of said skid disc (6) supportingly engaging the outer rim of said intermediate disc (5) and an adjustment device connected to said axially shiftable bearing hub operable to shift the latter axially relative to said intermediate disc.

4,800,711

HEADER FOR HARVESTING MACHINE

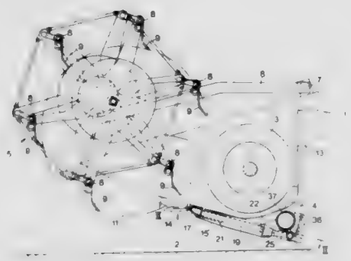
Joseph C. Hurlburt, and Peter J. Torland, both of Lancaster, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Jun. 19, 1987, Ser. No. 64,286

Claims priority, application European Pat. Off., Jun. 24, 1986, 86/201097.2

Int. Cl.[4] A01D *57/00*

U.S. Cl. 56—219 4 Claims



1. In a header for a harvesting machine having a frame; a cutterbar mounted on the frame for fore-and-aft adjustment relative thereto; a reel rotatably supported between a pair of reel arms pivotally mounted on the frame and operable to sweep crop material towards and over the cutterbar; a hydraulic actuator extending between each reel arm and a corresponding side wall of said header frame to effect a generally vertical movement of said reel, the improvement comprising:

an interlock mechanism operably interconnecting the cutterbar and the hydraulic actuator at each side of the header for adjusting the position of the reel in response to a fore-and-aft adjustment movement of the cutterbar to maintain substantially constant the spacing between the reel and the cutterbar upon fore-and-aft adjustment thereof so that interference between the reel and the cutterbar due to a repositioning of the cutterbar relative to the frame is avoided, said interlock mechanism including a linkage mechanism at each side of the header, each linkage mechanism including a bell-crank lever pivotally mounted on the corresponding header side wall.

4,800,712

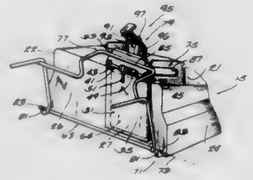
GRASS CATCHER MOUNTING SYSTEM

Richard R. Morse, Galesburg, and Carl E. Seyerle, Abington, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 582,136, Feb. 23, 1984, abandoned, which is a continuation of Ser. No. 405,292, Aug. 4, 1982, abandoned. This application Aug. 23, 1984, Ser. No. 643,754

Int. Cl.[4] A01D *34/70*

U.S. Cl. 56—202 6 Claims



1. A lawn mower comprising a housing including a discharge chute having a bottom portion, a door mounted on said housing for pivotal movement between a closed position preventing discharge from said chute of grass clippings and an open position permitting discharge from said chute of grass clippings, means biasing said door to said closed position, a grass clippings catcher including a relatively rigid frame defining, at least in part, a mouth having an upper part, and a collector communicating with said mouth, said frame including a supporting part, and a second part adjacent said upper part of said mouth, upwardly open cradle means on said housing adjacent said bottom portion of said discharge chute for receiving said supporting part of said frame so as to removably support said frame in a position located adjacent said chute ad so as to afford pivotal movement of said frame about an axis located adjacent the bottom poriton of said discharge chute and relative to said discharge chute and to a mounted position with said mouth in communication with said discharge chute whereby to enable receipt of grass clippings from said chute, said cradle means including an upwardly facing support surface and a vertically extending surface spaced from said housing, interengaging means on said frame and on said door for displacing said door to said open position in response to movement of said frame to said mounted position and for retaining said door in said open position during continued location of said frame in said mounted position, interengaging means on said frame and on said housing for releasable engagement therebetween to hold said frame in said mounted position on said housing, and means for preventing displacement of said supporting part from said cradle means comprising said supporting part and said second part of said frame, said vertical surface and said upwardly facing surface of said cradle means, and a downwardly facing surface on said housing, said surface

on said housing being spaced from said upwardly facing surface at a dimension locating said downwardly facing surface adjacent to the path of said second part of said frame during frame movement to, and when said frame is located in, said mounted position so as to permit movement of said frame to said mounted position and to prevent displacement of said supporting part from said cradle means when said frame is moved to, and when said frame is located in, said mounted position.

4,800,713

ROTARY RAKES

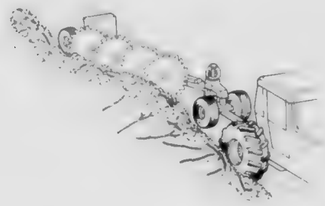
Darrell C. Symonds, 13 Linkwater Street, Shelley, W.A. 6155, Australia

Filed Jan. 28, 1987, Ser. No. 7,762

Claims priority, application Australia, Jan. 28, 1986, PH4353

Int. Cl.[4] A01D *78/14*

U.S. Cl. 56—377 4 Claims



1. A rotary rake for raking of timbers and associated debris disposed on a ground plane, laterally to one side in relation to a longitudinally forward direction of travel of the rake along a towing path, for forming the timbers and associated debris into a longitudinal window extending along said side of said path, said rake comprising:

an elongated, generally horizontal main frame; said main frame being obliquely oriented as seen in top plan view so as to have a forward end, and a rearward end displaced laterally towards said side in relation to said longitudinally forward direction;

said main frame having a forward end, and ground-supported front bogey wheel means supporting said forward end;

said main frame further having a rear end, and ground-supporting rear bogey wheel means supporting said rear end;

tow bar means operatively connecting with said forward end of said main frame for towing said rotary rake in said longitudinally forward direction along said towing path;

a plurality of rake wheels, each including a generally planar hub portion having a plurality of circumferentially-shaped, radially outwardly-extending rake fingers integrally provided thereon and extending on an outer periphery thereof;

each rake wheel being disposed forwardly of a forward side of said main frame and supported thereon and journalled with respect thereto for rotation about its own longitudinal axis while facing about 45 degrees obliquely of said path, as seen in top plan view, and while being disposed so as to have a rotation axis which is slightly upwardly-forwardly inclined relative to horizontal;

each rake wheel being disposed to have respective ones of said rake fingers below the respective rake wheel hub portion disposed to intersect said ground plane, so that advancement of said rotary rake along said path causes ground engagement-induced rotation of said rake wheels in a common direction;

said rake wheels being arranged in a series in an echelon arrangement in which, as seen looking longitudinally backwards along said towing path, each further forward said rake wheel overlaps each respectively adjacent but further rearward said rake wheel nearly to axially centrally of the latter, and each said respectively adjacent but further rearward rake wheel extends further laterally to said one side of said towing path than the respectively adjacent further forward said rake wheel;

on each said rake wheel, said fingers being blunt-ended and each having a leading edge and a trailing edge relative to said common direction of rotation, adjacent ones of said fingers being spaced from one another by gaps, each gap having an imaginary medial line which bisects that gap into a leading half and a trailing half adjacent respective ones of said fingers;

on each said rake wheel, the leading edge of each finger being inclined, relative to respective longest radii of that rake wheel through respective teeth, so that a radially outer segment of each leading edge leads less than a radially inner segment thereof;

on each said rake wheel, said medial lines of said gaps being substantially rearwardly inclined relative to respective short radii of that rake wheel intersecting respective gap medial lines at a base of the respective gap, on said outer periphery of that rake wheel.

4,800,714

GUIDE CHAIN

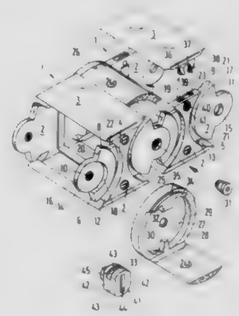
Werner Moritz, Siegen, Fed. Rep. of Germany, assignor to Kabelschlepp GmbH, Siegen, Fed. Rep. of Germany

Filed May 21, 1987, Ser. No. 52,833

Claims priority, application Fed. Rep. of Germany, May 23, 1986, 3617447

Int. Cl.[4] F16G *13/16*

U.S. Cl. 59—78.1 13 Claims



1. A guide chain for carrying lines that supply all types of expendable material from a fixed connection to a movable consuming device; said chain includes pivotably interconnected chain links, each of which comprises side pieces and crosspieces that interconnect the latter, with said side pieces and said crosspieces delimiting an interior space for accommodating said lines; the pivot movement of adjacent chain links is limited by radial stops that are pivotable in a given plane with cooperating stops of an adjacent chain link; said guide chain further comprises:

transverse elements that are connected with said crosspieces to cover said chain links;

curved cover elements disposed between said transverse elements of adjacent chain links; and

support elements for connecting said cover elements between given adjacent chain links, with said support elements disposed radially relative to pivot axes of said chain links, and having a central shaft that is mounted in a pivot hole of said side pieces.

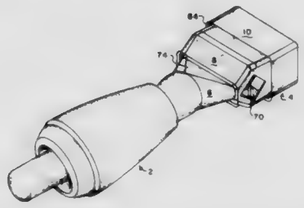
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4,800,715

APPARATUS FOR SUPPRESSING INFRARED RADIATION EMITTED FROM GAS TURBINE ENGINES

Wallace R. Conway, Yorktown, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 10, 1981, Ser. No. 291,602
Int. Cl.[4] F02K *1/38*
U.S. Cl. 60—39.5 **1 Claim**



1. In an infrared radiation suppressor for aircraft gas turbine engine outlets wherein hot exhaust gases discharged therefrom are blocked from view by metal surfaces, and mixed with ambient air drawn into said suppressor to cool the gases and radiation-emitting hot metal surfaces, the improvement comprising:

exhaust gas transition means including

a gas inlet duct having a circular inlet adapted to fit the engine outlet, and having flat converging surfaces forming a rectangular outlet,

a concentric flow separator geometrically similar to the gas inlet duct so that it has a round end, and two flat converging surfaces, but dissimilar in that a plate covers its round end,

the flow separator being disposed within the gas inlet duct with its plate end in the circular gas inlet end, forming an annular duct for inflowing engine exhaust gases, and rectangular ducts downstream therefrom in the direction of gas flow,

partition means formed by merging the two flat converging surfaces of the flow separator into a single dividing plane to form two adjacent rectangular outlet ducts, the transition duct thus transforming engine exhaust gases from annular flow to two rectangularly confined gas streams;

air mixing means including

a rectangular mixing duct larger than the rectangular transition duct outlet adapted to be attached thereto but to overlap the rectangular outlet or the transition duct to form a perimetrical ambient air inlet slot therebetween,

the mixing duct having divergent walls and parallel sides forming a housing with

an outlet larger than its inlet,

flow divider means within the mixing duct having a plane surface joining the transition outlet partition means and having diverging walls in the housing as extensions of the plane surface,

the diverging walls extending across the housing between its sides to form two diverging gas ducts separated from each other within the housing, to effect more even heating of divider surfaces,

the cross sectional area of the housing being larger than that of the transition section outlet to create a mixing plane aspirating air through the perimetrical air inlet slot to cool gas stream in the two ducts,

a shielding plate within the housing between the diverging flow divider walls to block a rear view of the divergent flow divider, and spaced from the flow divider surfaces;

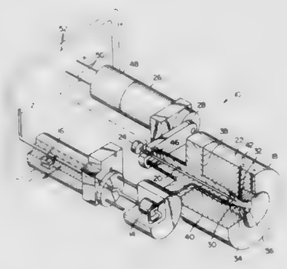
means cooling the flow divider and shielding plate including portholes in the sides of the mixer housing and slots between the shielding plate and flow divider which cooperate to draw ambient air across shielding plate and flow divider surfaces.

4,800,716

EFFICIENCY ARCJET THRUSTER WITH CONTROLLED ARC STARTUP AND STEADY STATE ATTACHMENT

William W. Smith, and Steven C. Knowles, both of Seattle, Wash., assignors to Olin Corporation, Stamford, Conn.

Filed Jul. 23, 1986, Ser. No. 889,451
Int. Cl.[4] F03H *1/00*
U.S. Cl. 60—203.1 **6 Claims**



1. In an arcjet thruster, the combination comprising:

(a) means forming a tandemly-arranged constrictor and nozzle which together define an arc chamber, at least said nozzle being electrically conductive to define an anode, said constrictor including a generally annular-shaped portion formed of electrically insulative material disposed in the subsonic zone between said cathode tip and said nozzle anode;

(b) an elongated member having a tip disposed adjacent to and spaced upstream from said constrictor, said member being electrically conductive to define a cathode spaced from said anode by a gap generally coextensive with said arc chamber;

(c) means for applying an electrical potential to said anode and cathode so as to generate an electrical arc in said arc chamber from said cathode to said anode; and

(d) means for supplying preheated constituent gases of a catalytically decomposed monopropellant to said arc chamber via said constrictor concurrently with the generation of said arc so as to produce thermal heating of said gases in said chamber and expansion thereof through said nozzle.

4,800,717

TURBINE ROTOR COOLING

Colin Rodgers, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 22, 1986, Ser. No. 944,761
Int. Cl.[4] F02C *7/12*
U.S. Cl. 60—39.36 **6 Claims**

1. A gas turbine comprising:

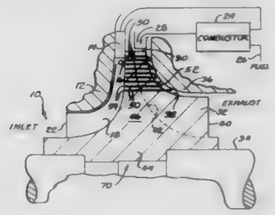
a combustion supporting gas inlet,

an annular diffuser downstream of said inlet;

a combustor for receiving combustion supporting gas and burning a fuel therewith to produce a high pressure turbine driving gas;

an annular nozzle adjacent said diffuser and receiving said turbine driving gas and directing the same generally radially inward;

a rotor including rotary shaft means and extending through and centered in said annular diffuser and said annular nozzle, said rotor having a disc, compressor blades on one side of said disc and operatively interposed between said inlet and said diffuser, and turbine blades on the other side of said disc adjacent said nozzle; and



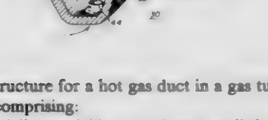
a plurality of groups of passages, each group extending at least from said disc one side through said disc and through a corresponding one of said turbine blades.

4,800,718

SURFACE COOLING SYSTEM

Anthony M. Zimmerman, Palm Beach Gardens, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 24, 1986, Ser. No. 946,541
Int. Cl.[4] F02K *3/04*
U.S. Cl. 60—264 **1 Claim**



1. Liner structure for a hot gas duct in a gas turbine engine or the like, comprising:

(a) substantially coaxial inner and outer walls having respective upstream and downstream ends and defining a duct for conducting hot gas from an upstream end to a downstream end thereof;

(b) said inner and outer walls circumferentially joined near respective upstream ends thereof and spaced downstream thereof to define a circumferential plenum having a closed upstream end and an open downstream end defining a circumferential opening between respective downstream ends of said inner and outer walls;

(c) a plurality of axially extending wall members disposed within said plenum between said inner and outer walls dividing said plenum into a corresponding plurality of circumferential plenum segments;

(d) means, in said outside wall defining an inlet into each respective plenum segment, for selectively conducting gaseous coolant into each said respective plenum segment; and

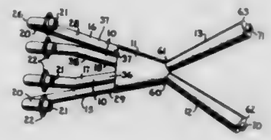
(e) said inner wall terminating at the downstream end thereof near and downstream of said circumferential opening, said downstream end of said inner wall being spaced from said outer wall a preselected distance to define a circumferential louver at each said plenum segment for directing said gaseous coolant along the surface of said outer wall defining said duct downstream of each said louver.

4,800,719

EXHAUST SYSTEM

Monty A. Campbell, 3701 NW. 56th St., Kansas City, Mo. 64151

Continuation of Ser. No. 769,995, Aug. 26, 1985, abandoned, which is a continuation of Ser. No. 461,863, Jan. 28, 1983, abandoned. This application Oct. 8, 1987, Ser. No. 107,870
Int. Cl.[4] F02B *27/02*
U.S. Cl. 60—313 **14 Claims**



1. An exhaust system for an internal combustion engine having a plurality of exhaust ports; said system comprising:

(a) a plurality of exhaust pipes; each exhaust pipe adapted to be connected to one of said exhaust ports so as to allow flow of exhaust gas from said ports into respective exhaust pipes;

(b) structural means defining a collector chamber connected to and flow communicating with each of said exhaust pipes;

(c) a first discharge pipe opening into the ambient air and connected to and flow communicating with said chamber at a location spaced from and generally coaxially aligned with a first of said exhaust pipes; and

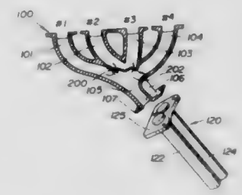
(d) a second discharge pipe opening into the ambient air and connected to and flow communicating with said chamber at a location spaced from and generally coaxially aligned with a second of said pipes; said first and second discharge pipes being aligned such that the axes thereof cross within said chamber.

4,800,720

EXHAUST SYSTEM FOR INTERNAL COMBUSTION ENGINE

Makoto Okada, Tachikawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Sep. 8, 1986, Ser. No. 904,295
Claims priority, application Japan, Sep. 10, 1985, 60-138435
Int. Cl.[4] F02B *27/02*
U.S. Cl. 60—313 **11 Claims**



1. A multi-cylinder internal combustion engine exhaust system comprising:

a cylinder head including a plurality of exhaust ports each of which is associated with a cylinder of the engine;

exhaust conduiting which leads to the ambient atmosphere;

a manifold which fluidly interconnects said conduiting and said exhaust ports including first, second, third and fourth branch runners and first and second collector sections into which said first and fourth and said second and third branch runners merge respectively, said first and fourth

branch runners and said first collector section defining a first exhaust gas passage structure and said second and third branch runners and said second collector section defining a second exhaust gas passage structure; and

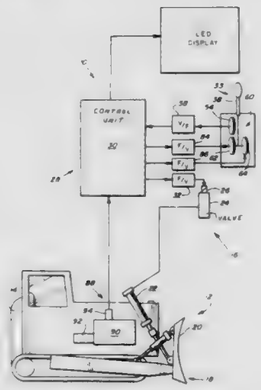
transfer passage means wherein said transfer passage means takes the form of first, second and third transfer passages formed in said cylinder head of said engine, said first cylinder head including first, second, third and fourth exhaust ports, said first transfer passsage fluidly interconnecting said first and second exhaust ports, said second transfer passage fluidly interconnecting said second and third exhaust ports and said third transfer passage fluidly interconnecting said third and fourth exhaust ports.

4,800,721

FORCE FEEDBACK LEVER

Richard A. Cemenska, Edelstein; Marvin P. Schneider, and Thomas J. Buege, both of Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Feb. 13, 1987, Ser. No. 14,734
Int. Cl.[4] B64C *13/46*; F15B *17/02*
U.S. Cl. 60—393 **11 Claims**



10. In an off-highway vehicle having an attached earthworking or materials handling work implement whose position is controlled by a control lever, the improvement comprising a force feedback control lever where the force fed back thereto is calculated as a direct function of the position of the control lever and a load on the work implement, the force feedback control lever including:

a manually positionable lever having a selected range of movement in at least one plane;

a electrical sensor connected to and moveable with the manually positionable lever and adapted for delivering a first electrical signal having a magnitude responsive to the position of the manually positionable lever;

electrical means for sensing the load applied to the work implement and delivering a second electrical signal having a magnitude responsive thereto;

means for receiving the first and second electrical signals and delivering a control signal having a magnitude responsive to the magnitudes of the first and second electrical signals; and

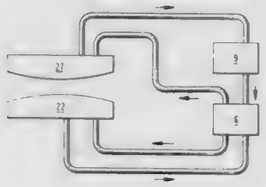
an electric motor responsive to the control signal for selectively applying a force of a preselected variable magnitude to the manually positionable lever in one of the first and second directions of rotation, the magnitude of the force being responsive to the magnitude of the received control signal.

4,800,722

METHOD AND EQUIPMENT FOR CONVERTING THERMAL ENERGY TO MECHANICAL ENERGY

Ilkka Arvola, Taavilantie 2, and Jaakko Kajamaa, Maununsevantie 38 A, both of 02180 Espoo, Finland

Division of Ser. No. 705,429, filed as PCT F184/00043 on May 30, 1984, published as WO 84/04947 on Dec. 20, 1984, Pat. No. 4,756,158.
This application Apr. 28, 1988, Ser. No. 187,278
Claims priority, application Finland, Jun. 3, 1983, 832016; Dec. 2, 1983, 834438
Int. Cl.[4] F03G *7/06*
U.S. Cl. 60—527 **10 Claims**



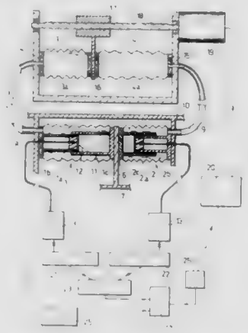
1. A thermal power machine for converting thermal energy provided from a heat source to mechanical energy comprising at least one oblong metal alloy member being provided in a predetermined length which expands below a predetermined temperature and contracts to the predetermined length upon an increase in the temperature, said member being stretchable below the predetermined temperature, wherein the machine is provided with a heat exchange cooling face, the metal alloy member being alternately brought into and out of contact with the cooling face while the metal alloy member moves.

4,800,723

ELECTRICALLY-DRIVEN OPPOSED FLEXIBLE BELLOWS PUMP AND POSITION-CONTROLLED OPPOSED FLEXIBLE BELLOWS JACK SYSTEM

Jean Clot, Saint-Orens, and Jean Falipou, Escalquens, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Jun. 4, 1985, Ser. No. 741,105
Claims priority, application France, Jun. 13, 1984, 84 09927
Int. Cl.[4] B25J *3/00*; F15B *7/00*; F01B *19/04*; F16J *3/06*
U.S. Cl. 60—545 **13 Claims**



13. A system for connecting a supporting element and a supported element for enabling relative displacement between said elements comprising a support framework secured to said supporting element and a movable framework for positioning the supported element; a closed hydraulic circuit comprising at least one pair of flexible jacks (1, 2) arranged between the support framework and the movable framework in such a manner as to position the movable framework with respect to the support framework as a function of the relative deformation of said jacks, a variable capacity reservoir (3, 4) associated with and connected to each of said flexible jacks and forming with the associated jack a closed fluid circuit so that the capacity of the associated reservoir determines the state of deformation of the respective jack; each of said jacks forming with the associated reservoir a set (1, 3 and 2, 4) and the sets of each of said pairs forming a differential system with respect to each other; a control system for said hyraulic circuit comprising drive means (19) operating on the reservoirs (3, 4) and causing oppositely directed deformation of said jacks; measuring means associated with each of said jacks for emitting a signal representative of the deformation of each of said jacks; processing means (21, 22, 23) for receiving the signals from said measuring means and for generating a differential signal indicative of the difference in the deformation of each jack in said pair; means (25) for generating and transmitting a set signal corresponding to desired deformation of said pair of jacks, and comparison means (24) for comparing said differential signal and said set signal and for transmitting an error signal representative of the difference between said differential signal and said set signal; and control means (20) operatively connected to said drive means for receiving said error signal and causing operation of said drive means in a direction tending to cancel said error signal.

4,800,724

BRAKE BOOSTER DEVICE PROVIDING PRESSURE TO BOTH PRESSURE CHAMBERS OF TANDEM BRAKE MASTER CYLINDER DEVICE

Makoto Asahara, and Kenji Shirai, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 29, 1986, Ser. No. 946,866
Claims priority, application Japan, Dec. 27, 1985, 60-296658
Int. Cl.[4] F15B *7/00*
U.S. Cl. 60—560 **4 Claims**



1. A tandem type power brake system for a vehicle, comprising:

a master cylinder body formed with a cylinder bore open at a first axial end thereof and closed at a second axial end thereof opposite to siad first axial end by an end wall,

a first piston member fitted in said cylinder bore adjacent said first axial end,

a second piston member fitted in said cylinder bore in tandem with said first piston member and positioned adjacent said second axial end,

a first pressure chamber defined in said cylinder bore between siad first piston member and said second piston member,

a second pressure chamber defined in said cylinder bore between said second piston member and said closed axial end of said cylinder bore,

means on said second piston member for defining a fluid reserving space;

means on said second piston member for defining a one way valve for allowing fluid to flow only from said fluid reserving space to said second pressure chamber,

a first compression spring disposed in said first pressure chamber between said first piston member and said second piston member for resiliently expanding said first pressure chamber,

a second compression spring disposed in said second pressure chamber between said second piston member and said end wall of said master cylinder body for resiliently expanding said second pressure chamber,

a first brake fluid outlet port formed in said master cylinder body at a position to open to said first pressure chamber for communication with a first brake system,

a second brake fluid outlet port formed in said master cylinder body at a position to open to said second pressure chamber for communication with a second brake system,

a fluid reservoir port formed in said master cylinder body at a position to open to said fluid reserving space,

mechanical drive means for transmitting a mechanical force to said first piston member in a direction to drive said first piston member toward said second piston member,

a valve structure incorporated in said mechanical drive means for opening a first valve passage while closing a second valve passage when said mechanical drive means is being applied with said mechanical force and to close said first valve passage while opening said second valve passage when said mechanical force is not being applied to said mechanical drive means,

booster actuation means for supplementing said mechanical force in response to the application of pressurized hydraulic brake fluid pressure thereto,

source means for supplying a hydraulic brake fluid under a raised pressure,

first conduit means for connecting said fluid reservoir port and said booster actuating means with said raised pressure brake fluid source means via said first valve passage, whereby said fluid reservoir port and said booster actuation means are both supplied with pressurized hydraulic brake fluid via said first valve passage, and

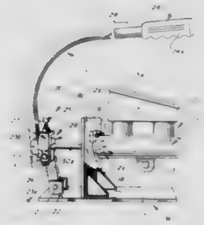
second conduit means for draining said fluid reservoir port through said second valve passage.

4,800,725

VEHICLE MASTER BRAKE CYLINDER ASSEMBLY BLEEDING DEVICE

Robert Kaulig, Naperville, and James D. Wheeler, Crystal Lake, both of Ill., assignors to Echlin Inc., Branford, Conn.

Filed Aug. 20, 1987, Ser. No. 87,661
Int. Cl.[4] B60T *11/30*; F15B *7/10*
U.S. Cl. 60—584 **7 Claims**



1. A device for bleeding a vehicle master brake cylinder assembly when the latter is removed from the vehicle, the removed assembly having a cylinder with plugged outlet means, a reciprocating primary piston disposed within the cylinder, and having a first end segment of the piston being accessible through an axial access opening formed in an end of the cylinder and a second end segment of the piston disposed within the cylinder and provided with a head, and a fluid

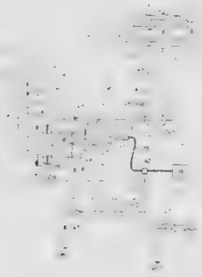
reservoir in communication with the cylinder; said device comprising support means mountable on a subtending supporting surface and having a stationary upright plate section provided with a transversely extending passage, one side surface of said upright plate section being adapted to have removably mounted thereon the assembly cylinder with the access opening thereof aligned with and adjacent to the upright plate section passage; and actuating means disposed on an opposite side of the upright plate section and mounted on said support means for selective adjustment between operative and inoperative modes, said actuating means including an elongated push member having an end portion thereof independent of the piston first end segment and aligned with and extending through the upright plate section passage and adapted to effect only pushing engagement with the primary piston first end segment when the actuating means is in the operative mode, and manually operated first means operatively connected to and spaced from said push member for effecting pushing engagement thereof with the primary piston first end segment and bleeding into the reservoir of any gas entrapped within the cylinder ahead of the piston head.

4,800,726

TURBO COMPOUND ENGINE

Masaki Okada, and Keiji Kishishita, both of Kawasaki, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Dec. 22, 1987, Ser. No. 136,319
Claims priority, application Japan, Dec. 26, 1986, 61-308776
The portion of the term of this patent subsequent to Jun. 7, 2005, has been disclaimed.
Int. Cl.[4] F02G *5/00*
U.S. Cl. 60—614 **8 Claims**



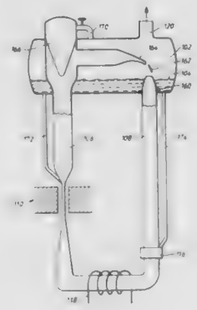
1. A turbo compound engine, comprising:
an engine having an exhaust gas passage and a crankshaft;
a power turbine disposed in said exhaust passage so as to recover the exhaust gas energy;
driving power transmission means for drivingly connecting said power turbine and said crankshaft so as to transmit driving power to said power turbine at a revolution speed below the preselected maximum speed of said power turbine;
a fluid passage connected to a portion of said exhaust passage which lies between said power turbine and said engine; and
fluid passage switching means for closing said exhaust passage upstream of said fluid passage while opening said fluid passage during exhaust braking of said engine.

4,800,727

ENERGY CONVERSION SYSTEM INVOLVING CHANGE IN THE DENSITY OF AN UPWARDLY MOVING LIQUID

Michael Petrick, Joliet, Ill., assignor to Solmecs Corporation N.V., Netherlands

Continuation-in-part of Ser. No. 915,222, Oct. 2, 1986, abandoned. This application Apr. 28, 1987, Ser. No. 43,340
Int. Cl.[4] F01K *25/04*
U.S. Cl. 60—649 **7 Claims**



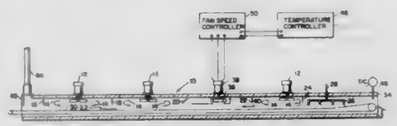
1. In a system for conversion of thermal energy into another type of energy, a reservoir for a first, relatively high-boiling-point, low velocity, fluid, a downcomer defining a vertical flow path communicating at its upper end with said reservoir, an upcomer defining a vertical fluid flow path, communicating at its upper end with said reservoir, a variable area nozzle through which fluid from the upcomer enters the reservoir, a plate separator mounted in the reservoir on which fluid discharged from the nozzle impinges, a diffuser mounted to receive fluid from the plate separator, a vortex separator communicating with the outlet of the diffuser and with the upper end of the downcomer, said upcomer communicating at its lower end with the downcomer, a mixing chamber located at the lower end of said upcomer, through which mixing chamber a second, relatively low-boiling-point fluid is introduced into the upcomer for producing, upon contact with said first fluid, bubbles forming together with said first fluid a two-phase fluid having a lower density than said first fluid, heater means for introducing heat to the fluids of the system and power-generating means operated by fluid moving in one of said vertical fluid flow paths by which means power is generated by said first fluid moving down said downcomer.

4,800,728

METHOD AND APPARATUS FOR GAS FLOW CONTROL IN A CRYOGENIC FREEZER

David J. Klee, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 18, 1987, Ser. No. 99,443
Int. Cl.[4] F25D *13/06*
U.S. Cl. 62—63 **10 Claims**



1. In a cryogenic freezer for refrigerating a product wherein said freezer comprises a generally elongated insulated tunnel including a conveyor belt for moving product from an entry end to a discharge end, a liquid cryogen injection system located near said discharge end of said tunnel and gas control fan

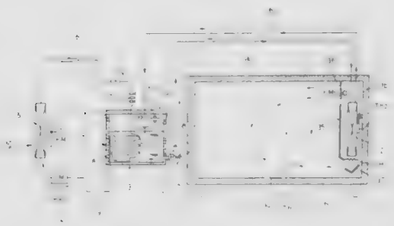
means to move cryogen vaporized by contact with said product in counterflow heat exchange with said product, the improvement comprising:
a thermocouple disposed at the discharge end of said tunnel;
a temperature controller having an input connected to said thermocouple and an output adapted to be connected to a motor controller; and
a motor controller having an input connected to the output of said temperature controller and an output adapted to vary the speed of rotation of said gas control fan whereby when said thermocouple senses ingress of ambient air into or egress of vaporized cryogen out of said tunnel said motor controller varies the speed of rotation of said gas control fan to prevent ingress of ambient air or egress of vaporized cryogen.

4,800,729

THERMO-HYGROSTATIC REFRIGERATORS

Yasuo Hara, Toyoake, Japan, assignor to Hoshizaki Electric Co., Ltd., Aichi, Japan

Filed Jun. 2, 1987, Ser. No. 57,536
Claims priority, application Japan, Aug. 27, 1986, 61-200694
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—185 **7 Claims**



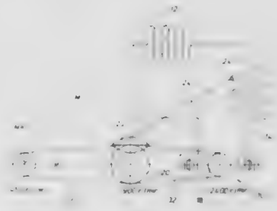
1. A thermo-hygrostatic refrigerator comprising a storage room for cooling and storing food materials therein, a refrigeration unit including a compressor for coolant, a condenser, a decompression means and an evaporator installed in a brine tank and other refrigeration systems, said brine tank cooling brine stored therein by said evaporator, and a cooler which circulates said brine by a pump to cool the interior of said storage room, said refrigerator being characterized in that:
an outlet section of said evaporator disposed inside of said brine tank is positioned at the bottom of said brine tank, and an accumulator connected to outlet side of said compressor is disposed obliquely at the outlet section of said evaporator so that said accumulator is entirely immersed in said brine stored in said brine tank;
a brine sensing means is relatively connected to said brine tank, said brine sensing means including a sensing tank which collects brine returning from said cooler, a level sensing switch which is disposed in said sensing tank and senses the varying level of said brine, and a drain hole which is formed in the bottom of said sensing tank and communicates to said brine tank so that said drain hole permits a smaller amount of brine compared to the amount of said brine returning to said sensing tank to return to said brine tank; and
a solenoid valve is disposed in a pipeline system connecting said compressor and decompression means, said solenoid valve being opened and closed in synchronism with the starting and stopping of said refrigerator unit, and said level sensing switch senses the stop of decrease of the flow of said brine returning from said cooler to said sensing tank so that said solenoid valve is closed to prevent coolant from flowing from said compressor into said decompression means

4,800,730

ARRANGEMENT FOR INFLUENCING THE SPEED OF A COMPRESSOR OF A REFRIGERATING SYSTEM

Wolfgang E. Hipfl, Wolfsberg, Austria; Herwat Lamm, Neuhausen/Filder, Fed. Rep. of Germany, and Günter Pöschl, Schwalkheim, Austria, assignors to Sectrak Transporthaelte GmbH, Fed. Rep. of Germany

PCT No. PCT/EP85/00350, § 371 Date Mar. 27, 1986, § 102(e) Date Mar. 27, 1986, PCT Pub. No. WO86/00690, PCT Pub. Date Jan. 30, 1986
PCT Filed Jul. 15, 1985, Ser. No. 846,459
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1984, 3426190
Int. Cl.[4] F25B *27.00*
U.S. Cl. 62—228.3 **6 Claims**



1. Arrangement for influencing the speed of a compressor for regulating the refrigerating power of a refrigerating system which includes a condenser and an evaporator, the compressor being drivable by an engine undergoing abrupt speed variations independent of the load on the refrigerating system, and the refrigerant volume throughput being influenceable in the compressor in dependence upon the refrigerant pressure on the suction side of the compressor, characterized in that the engine (M) is coupled to the compressor (**10**) by a V-belt drive of infinitely variable transmission ratio and comprising at least one cone pulley pair (**20, 520', 520'', 620**) which is adapted to be pushed apart and together, and that there is associated with the cone pulley pair (**20, 520', 520'', 620**) an actuating drive (**22, 522, 622**) which is subjected via a line (**24**) connected to the evaporator (**14**) to the refrigerant pressure in said evaporator and adjusts the cone pulleys (**20a, 20b; 520a, 520c; 620a, 620b**) of the cone pulley pair proportionally to changes of the refrigerant pressure directly by the action of said refrigerant pressure, said actuating drive (**622**) is constructed as a diaphragm cylinder including a piston (**646**) which moves toward and away from one of the cone pulleys (**620b**) of the cone pulley pair (**620**) and the piston (**646**) of which displaceable therein is connected on the one side to the other cone pulley (**620a**) for relative rotation but not relative axial displacement and on the other side is subjected via the line (**624**) connected to the cylinder and the evaporator (**14**) to the line refrigerant pressure in the evaporator.

4,800,731

ICEMAKER

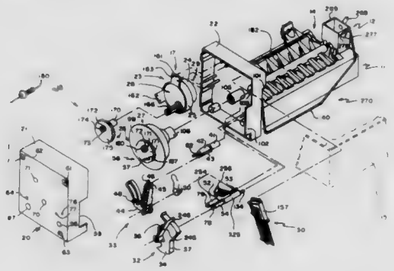
Ronald E. Cole, Greenwood, Ind., assignor to Emkart Industries, Inc., Indianapolis, Ind.

Filed May 3, 1988, Ser. No. 189,785
Int. Cl.[4] F25C *1/04*
U.S. Cl. 62—233 **10 Claims**

1. An icemaker comprising:
water holding means for holding water in a cold area to form ice bodies;
water delivery means for delivering water to said water holding means;
ice mover means for moving ice from said water holding means to an ice storage bin;
control means for controlling the operation of said water delivery means and said ice mover means;

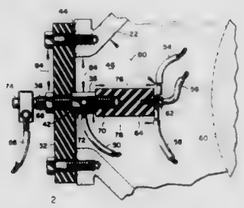
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drive means for driving said mover means and said control means; said drive means including a motor and a gear train;
a control housing comprising a first portion and a second portion;
a drive housing;
fastener means for fastening said first control housing portion and said second control housing portion together;
control mounting means for mounting at least a portion of said control means in said control housing;
drive mounting means for mounting said drive housing in said control housing, said drive mounting means comprising:



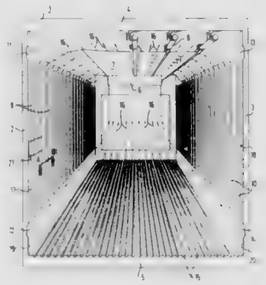
three or more pins, each pin integrally formed with one of said control housing portions or said drive housing;
three or more channels for accepting said pins, each channel integrally formed with one of said control housing portions or said drive housing; said control housing, said drive housing, said pins and said channels cooperating to mount said drive housing in said control housing;
one-way clutch means for permitting said control means to be manually driven in the direction in which it is driven by said drive means without driving said motor; and
anti-back means for preventing said gear train from being driven in the direction reverse to the direction in which it is driven by said motor.

4,800,732
REFRIGERATION COMPRESSOR WITH DUAL VOLTAGE HOOKUP
Earl W. Newton, La Crosse, Wis., assignor to American Standard Inc., New York, N.Y.
Filed Apr. 28, 1988, Ser. No. 187,669
Int. Cl.[4] F25B *27/00*
U.S. Cl. 62—236 33 Claims



26. A refrigeration apparatus comprising:
a three-phase electric motor coupled to a compressor both of which are disposed in a housing containing a refrigerant at a pressure of at least 10 PSIG;
a condenser, an expansion device, and an evaporator connected in series flow relationship with said compressor;
a substantially non-conductive terminal board hermetically fastened to said housing to seal in said refrigerant;
three electrical feedthrough terminals extending through said terminal board to conduct electrical current to said motor, said three terminals being spaced apart from each other by at least three inches and spaced apart from said housing by at least two inches;
an electrical insulator disposed inside said housing and attached to one of said feedthrough terminals; and
a fourth electrical terminal attached to said insulator and electrically connected to said motor by way of three motor winding leads, said fourth terminal being spaced apart from each of said three feedthrough terminals by a surface distance of at least 2½ inches and spaced apart from said housing by at least 2 inches.

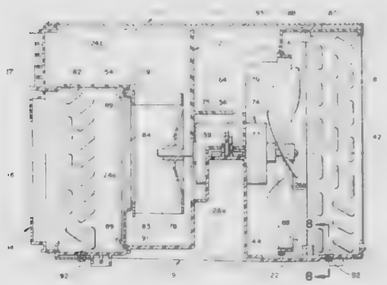
4,800,733
REFRIGERATION SYSTEM FOR FREIGHT VEHICLES
Georg Strobel, Ulm-Wiblingen, and Walter Hüge, Ulm, both of Fed. Rep. of Germany, assignors to F. X. Kogel GmbH & Co., Ulm, Fed. Rep. of Germany
Filed Nov. 12, 1987, Ser. No. 119,768
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1986, 8630333[U]
Int. Cl.[4] B60H *1/32*
U.S. Cl. 62—239 8 Claims



1. A refrigeration system for freight vehicles comprising:
a roof, a floor, side walls and cooling means at one end thereof, said side walls and said floor being provided with inwardly open profiling for air ducting in the floor and side walls, said profiling being formed of vertically extending channels on the side walls with each side wall having upper and lower horizontally extending air ducting channels spaced from the roof and floor at respective ends of said vertically extending air ducting channels and a guard surface formed on each said wall between the floor and the lower edge of the lower horizontally disposed air ducting channel, which guard surface extends along the entire length of the vehicle and is raised relative to the inner surface of the side wall.

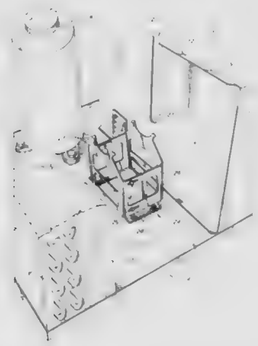
4,800,734
ROOM AIR CONDITIONER
R. Stuart Sauber, Lowell, and Paul J. Horvath, Belding, both of Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Nov. 2, 1987, Ser. No. 115,114
Int. Cl.[4] F25D *23/12*
U.S. Cl. 62—263 5 Claims

1. A room air conditioner comprising upper and lower unitary non-metallic molded chassis members cooperating to provide a base wall and vertically extending walls, a wrapper cooperating with said chassis members to define an interior space of said air conditioner, said vertically extending walls dividing said interior space into a condenser chamber and evaporator chamber, said air conditioner providing a plurality of operating components mounted on said lower chassis member, one of said components being a compressor, the remainder of said components being secured in position without separate



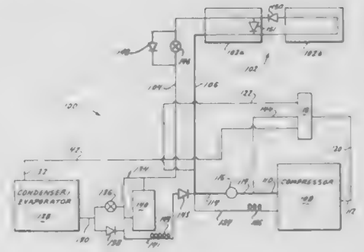
fasteners, wherein said wrapper encloses the top and side walls of said chassis members and assists in holding said chassis members in an assembled position, and said wrapper provides flanges extending under the edges of said base wall, and fasteners releasably connect said flanges to said base wall.

4,800,735
FAN MOTOR ASSEMBLY METHOD AND APPARATUS FOR A ROOM AIR CONDITIONER
Richard D. Lang, Chittenango, and Theodore S. Bolton, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 23, 1987, Ser. No. 123,687
Int. Cl.[4] F25D *19/00*
U.S. Cl. 62—298 11 Claims



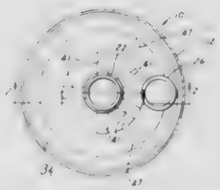
1. In a room air conditioner of the type having a base pan and indoor and outdoor sections separated by a partition and having a motor for driving an indoor fan, an improved motor mounting arrangement comprising:
a motor mount fixture for supporting the motor in the outdoor section adjacent the partition;
a slot opening formed in the partition and extending downwardly from the top edge thereof to a point adjacent said motor mount fixture to accommodate the downward insertion of a motor into said motor mount fixture with the motor shaft extending through said slot to the indoor section; and
a filler plate adapted to be inserted into said slot opening to close said opening between the outdoor and indoor sections.

4,800,736
HEAT PUMP
Russell L. Weber, 864 Pebblefield, Manchester, Mo. 63021
Filed Jan. 27, 1988, Ser. No. 149,133
Int. Cl.[4] F25B *13/00*
U.S. Cl. 62—324.1 7 Claims



1. An improved heat pump of the type in which a compressor circulates refrigerant through a closed system to a heat exchanger during heating and cooling cycles to transfer heat to and from air forced over the heat exchanger, the improvement comprising means for removing oil that is picked up by the refrigerant from the compressor, this means comprising:
a size increase in a portion of the closed system which conducts refrigerant during the cooling cycle, the size increase decelerating the refrigerant to cause oil carried by the refrigerant to drop out;
a size increase in a portion of the closed system which conducts refrigerant during the heating cycle, the size increase decelerating the refrigerant to cause oil carried by the refrigerant to drop out;
at least one oil scavenging capillary to return the oil removed by the size increases to the compressor.

4,800,737
AUTOMOTIVE AIR CONDITIONING SYSTEM ACCUMULATOR WITH REFRIGERANT PROCESSING CARTRIDGE INCLUDING EVAPORATOR PRESSURE REGULATOR
Michael D. Smith, Westland; Norman H. Dolinski, Grosse Point Woods, and Jayendra J. Amin, Pontiac, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Apr. 17, 1987, Ser. No. 39,544
Int. Cl.[4] F25B *43/00*
U.S. Cl. 62—503 10 Claims

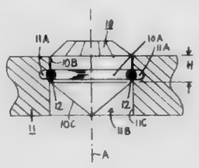


1. An accumulator for use in an air conditioning system for an automotive vehicle, said system including refrigerant and a refrigerant circuit having a compressor with an inlet port, a condenser, an expansion device, and an evaporator arranged in a series relationship with the high pressure side of the compressor, said accumulator comprising:
a housing comprised of upper and lower portions joined

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together to define a closed chamber, said accumulator housing having an upper housing wall and a lower housing wall;
an inlet tube extending through said upper wall, said inlet tube communicating with the outlet side of said evaporator;
an outlet tube extending through said upper wall of said housing, said outlet tube communicating with the inlet port of said compressor; and
a refrigerant processing cartridge positioned within said housing, said cartridge comprising:
an outer casing having upper and lower casing walls;
drier means for removing moisture from said refrigerant;
filter means for removing particulate matter from said refrigerant; and
pressure regulator means for regulating the pressure of said refrigerant within said air conditioning system.

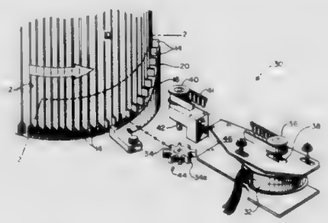
4,800,738
GEM SETTING
Georg Bunz, Obere Bergstrasse 16, D-7544 Dobel, Fed. Rep. of Germany
Filed Jan. 14, 1987, Ser. No. 3,263
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1986, 8601026[U]
Int. Cl.[4] A44C *17/02*
U.S. Cl. 63—26 5 Claims



1. A gem setting including a holding body and a gem received therein in a predetermined position, comprising
(a) an inner wall face forming part of said holding body and defining a bore hole therein; said bore hole being dimensioned for receiving at least a portion of said gem;
(b) means defining a first annular groove in said inner wall face defining said bore hole; said first annular groove having a depth;
(c) means defining a second annular groove in a peripheral face of said gem; said peripheral face being received in said bore hole and said first and second annular grooves being in alignment with one another in said predetermined position; said second annular groove having a depth; and
(d) a discontinuous metal spring ring being nested simultaneously in both said first and second annular grooves for coupling said gem to said holding body; said discontinuous metal spring ring and the depth of one of said annular grooves being dimensioned with respect to one another such that said discontinuous metal spring ring is expandable into said one of said annular grooves during introduction of said gem into said bore hole until said first and second annular grooves arrive in mutual alignment with one another.

4,800,739
PATTERNING MECHANISM FOR KNITTING MACHINES
Kent Underwood, 8100 Flatrock Rd., Stokesdale, N.C. 27357
Filed Jan. 14, 1987, Ser. No. 3,208
Int. Cl.[4] D04B *9/10*
U.S. Cl. 66—228 15 Claims

1. In a circular knitting machine having a frame, a rotatable needle cylinder in which a plurality of needle jacks are independently constrained for relative vertical movement, cam means being fixed laterally adjacent to the periphery of said rotatable needle cylinder for lifting certain selected needle jacks as said jacks travel by said cam means, a patterning device carried by said frame for addressing said jacks and determining which of said jacks will be cammed and which of said jacks will not be cammed and thereby determining the pattern knitted by said machine, said patterning device comprising a plurality of lobes defined about the periphery of a rotor element adjacent said needle cylinder, drive means for rotating said rotor element in substantially synchronous rotational movement with said needle cylinder comprising a drive motor positioned radially outwardly from said needle cylinder



and said rotor element, and a force transmission means operatively connected between said drive rotor and said motor element and control means for actuating said drive means according to a predetermined program in order to determine which of said lobes will be brought into registry with a respective jack in order to force said jack out of engagement with said cam means and which of said lobes will be caused to miss a respective jack and thereby allow said jack to be cammed, said rotor element having a diameter such that the peripheral surface speed of said rotor element is no greater than the peripheral surface speed of said needle cylinder when successive lobes thereof are successively engaging successive jacks of said needle cylinder.

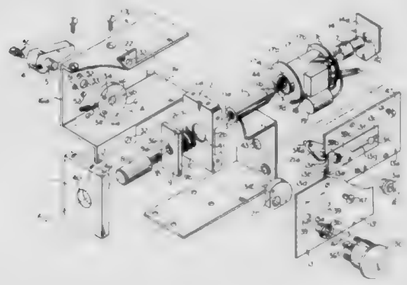
4,800,740
ROTARY SWITCH APPARATUS FOR CYCLE SELECTION ON AN AUTOMATIC WASHING MACHINE
Wilfried Hüttemann, Bielefeld, Fed. Rep. of Germany, assignor to Miele & Cie. GmbH & Co., Gutersloh, Fed. Rep. of Germany
Filed Dec. 1, 1986, Ser. No. 936,215
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1985, 3542503
Int. Cl.[4] D06F *33/02*
U.S. Cl. 68—12 R 21 Claims



1. An automatic washing machine with a plurality of wash cycles having:
motor means and a wash drum mechanically connected to said motor means;
water inlet means for admitting water into said washing machine;
water temperature control means connected to control the temperature at least of the water in said washing machine;
a control panel being disposed on said automatic washing machine;

means for selecting a wash cycle among a plurality of wash cycles of said automatic washing machine being disposed on said control panel, said selecting means comprising a single, unitary, rotary switch for selecting a wash cycle among a plurality of wash cycles, said rotary switch having means for disposing each wash cycle on its own arcuate portion of said rotary switch;
said single rotary switch having means for moving between and indicating said plurality of wash cycles along a single circular coordinate, indicating said plurality of wash cycles;
each said wash cycle having a predetermined wash temperature range associated therewith;
said rotary switch having means for restricting a water temperature range within its predetermined, specific, individual temperature range for its corresponding wash cycle, said means for restricting a water temperature range within its predetermined, specific, individual temperature range for its corresponding wash cycle having means for disposing water temperatures for each wash cycle in the corresponding arcuate portion representing that wash cycle;
means for displaying each said wash cycle and its temperature range, each said temperature range being restricted to its predetermined temperature range for its wash cycle;
cycle data being disposed on said displaying means and arranged in a circular fashion with respect to said rotary switch;
said rotary switch being connected to said water temperature control means to control temperature of at least the water in said washing machine; whereby
a predetermined variably adjustable temperature range is assigned to each of the individual wash cycles, each of these temperature ranges lies within the limits allowable for the appropriate fabrics to be washed in that wash cycle and whereby a selection of wash cycle and temperature can only be made which correspond to a desired wash cycle and a temperature in its predetermined temperature range in one unambiguous and unitary selection, and whereby a wash cycle and a water temperature are selectable in a single, continuous movement of said rotary switch.

4,800,741
ELECTRICALLY AND MANUALLY OPERABLE DOOR LOCK WITH CONVENIENT BACKSET SELECTION
Sidney Kerschenbaum; Barry Kerschenbaum, both of 135-60 233rd St., Rosedale, N.Y. 11422, and Charles Kerschenbaum, 88-08 107th Ave., Ozone Park, N.Y. 11417
Continuation-in-part of Ser. No. 464,620, Feb. 7, 1983, abandoned, which is a continuation-in-part of Ser. No. 663,283, Sep. 20, 1984, abandoned. This application Sep. 9, 1986, Ser. No. 905,312
Int. Cl.[4] E05C *1/06*; E05B *65/48*
U.S. Cl. 70—13 21 Claims



1. In combination with a door post and a door having a stile inwardly engageable therewith and having an outwardly directed front face and an inwardly directed rear face, a rim lock comprising:
(a) a housing secured to the rear stile face and forming a guide extending along a longitudinal axis;
(b) a bolt displaceable in said guide along said longitudinal axis between an inner position generally retracted in said housing and an outer position projecting axially therefrom;
(c) a strike disposed on the door post and being formed with a recess opening axially toward the stile and receiving said bolt in said outer position thereof when the stile engages the door post;
(d) a solenoid mounted on said housing and having a coil centered on said longitudinal axis;
(e) a plunger axially reciprocal in said coil of said solenoid;
(f) a crosspiece fin disposed between and rigidly affixed to said plunger and said bolt;
(g) a front inner lever having at least one pin and being rotationally mounted in said housing and being in mechanical communication with said crosspiece fin;
(h) a spring operatively braced between said crosspiece fin and said housing and urging said bolt axially outward into said outer position to a distance controlled by said front inner lever;
(i) means for electrically energizing said coil of said solenoid and pulling said plunger, said crosspiece fin, and said bolt axially backward against said spring into said inner position of said bolt;
(j) holding means operatively engageable between said bolt and said housing for mechanically retaining said bolt in said inner position;
(k) a key operated lock cylinder having a stem and being disposed on the front face of the stile of the door;
(l) a rear inner lever having at least one pin and being rotationally mounted in said housing and being in mechanical communication with said crosspiece fin;
(m) first coupling means including an interchangeable backset plate engaged between said key-operated lock cylinder and said bolt for displacing said bolt axially upon operation of said key-operated lock cylinder, said interchangeable backset plate being a one of a plurality of interchangeable backset plates each being removably mounted to said housing and each having a different backset so that a single rim lock can fit on doors with different size stiles and required backsets, said each one of said plurality of interchangeable backset plates containing a bushing and a throughbore through which is disposed said bushing, said bushing having an outer face and an inner face rigidly connected to said rear inner lever, said stem of said key-operated lock cylinder being disposed within said outer face of said bushing so that when said key-operated lock cylinder is operated said stem rotates said bushing which rotates said rear inner lever causing said at least one pin of said rear inner lever to move said bolt via said crosspiece fin since said crosspiece fin is rigidly affixed to said bolt;
(n) manual operating means pivotally mounted on said housing, said manual operating means including a finger lever having a shaft with a free end; and
(o) second coupling means engageable between said manual operating means and said bolt for displacing said bolt axially upon manual pivoting of said manual operating means, said second coupling means including said free end of said shaft being rigidly connected to said front inner lever so that when said finger lever is rotated said shaft rotates said front inner lever causing said at least one pin of said front inner lever to move said bolt via said crosspiece fin said crosspiece fin is rigidly affixed to said bolt.

4,800,742

ROLLING MILL FOR MAKING A ROLLED PRODUCT, ESPECIALLY ROLLED STRIP

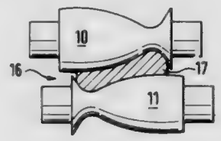
Hugo Feldmann, Alsdorf-Warden; Tilmann Schultes, Solingen, and Gerd Betzemann, Düsseldorf, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

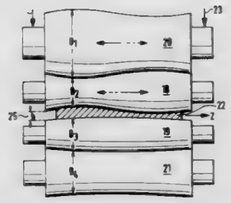
Filed Jun. 15, 1987, Ser. No. 62,740

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1986, 3620197

Int. Cl.[4] B21B *27/02, 31/18, 29/00*

U.S. Cl. 72—247 **8 Claims**





1. A rolling mill for rolling flat stock, comprising a plurality of rolls including a pair of working rolls defining a rolling gap between them and being axially shiftable relatively and in opposite axial directions, said working rolls being relatively axially shiftable to control the shape of said gap and having respective roll bodies which are continuously curved over the entire lengths thereof and at least one of said roll bodies being bottle shaped and, in an unloaded state without stock being rolled in said gap, have the sums of their diameters at successive locations axially along said bodies deviating from a constant value in all relative axial positions of said bodies in accordance with a nonlinear mathematical function which is symmetrical with respect to the centers of said bodies in positions in which said bodies are unshifted axially relative to one another.

4,800,743

METHOD AND APPARATUS FOR ACCOMMODATING THERMAL EXPANSION AND OTHER VARIANCES IN PRESSES

Joseph D. Bulso, Jr., Canton, and James A. McClung, North Canton, both of Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Jul. 28, 1987, Ser. No. 78,869

Int. Cl.[4] B21D *28/02*

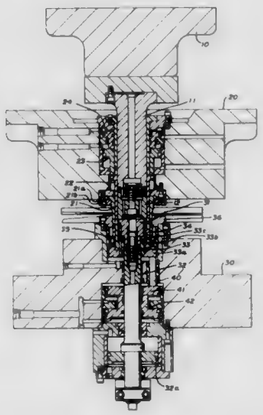
U.S. Cl. 72—336 **9 Claims**

1. A method of controlling the spacing between a material forming punch carried by a movable slide and a forming die carried by a fixed base in a double acting press, comprising the steps of:

(a) advancing a punch shell and a pressure sleeve into engagement with the material;

(b) holding the material with the pressure sleeve against an opposed die core ring and blanking it by advancing the punch shell;

(c) preliminarily forming the material and establishing a predetermined dimension by engaging a peripheral area of the material between the pressure sleeve and the top of the die core ring and advancing a punch core past the top of the die core ring so as to engage a central area of the material and clamp the same against a die cover; and



(d) engaging the normally independently movable and supported die core ring and the die core at the end of step (c) so that further advancement of the punch core will cause the die core and the die core ring to move together while maintaining their relationship with each other.

4,800,744

PRODUCTION OF A TAPER ROD

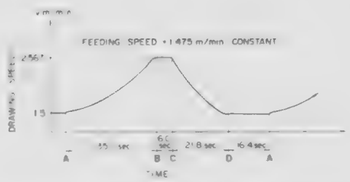
Heijiro Kawakami; Yasunobu Kawaguchi; Kozo Katsube; Mamoru Murahashi, and Susumu Takada, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 15, 1987, Ser. No. 73,689

Claims priority, application Japan, Sep. 11, 1986, 61-214951; Sep. 16, 1986, 61-218869

Int. Cl.[4] B21C *37/04;* **B21F** *35/00, 37/04*

U.S. Cl. 72—342 **6 Claims**



1. A process for producing a tapered rod using a tapered rod producing apparatus which includes constant speed feeding means for holding and feeding a metal wire or bar stock at a constant speed, a heating device located downstream of said constant speed feeding means in a feeding direction of the metal wire or bar stock, a cooling device located further downstream of said heating device, variable speed feeding means located further downstream of said cooling device for holding and feeding the metal wire or bar stock at a variable speed, wherein the process comprises:

accelerating the feeding speed of said variable speed feeding means to provide the metal wire or bar stock passing between said heating device and said cooling device with plastic deformation in order to form a wire diameter gradually decreasing portion of a predetermined length of a tapered rod in which the diameter of the metal wire or bar stock gradually decreases;

decelerating the feeding speed of said variable speed feeding means in order to form a wire diameter gradually increasing portion of a predetermined length of the tapered rod in which the diameter of the metal wire or bar stock gradually increases;

during working of the wire diameter gradually decreasing portion of the tapered rod, making a drawing length of the metal wire or bar stock from starting to completion of the acceleration of said variable speed feeding means greater than said predetermined length of the wire diameter gradually decreasing portion, and

during working of the wire diameter gradually increasing portion, making smaller the drawing length of the metal wire or bar stock from starting to ending of the deceleration of said variable speed feeding means than said predetermined length of the wire diameter gradually increasing portion of the tapered rod.

4,800,745

SPUR GEAR AUTOMATIC PRODUCTION PROCESS

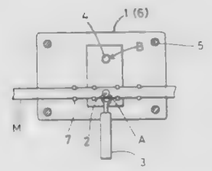
Michihiro Yokoyama, Aichi, Japan, assignor to Kabushiki Kaisha Yokoyama Seisakusho, Anjo, Japan

Filed Jun. 30, 1987, Ser. No. 68,143

Claims priority, application Japan, Jul. 1, 1986, 61-154823

Int. Cl.[4] B21D *53/28, 28/02*

U.S. Cl. 72—336 **2 Claims**



1. A method of automatically producing a spur gear through cold-press forming, comprising the steps of:

stamping a disk-shaped workpiece from a stock material at a first section of a bottom table, said stamping being performed by an upper die and a bottom die at the first section of the bottom table, said workpiece being formed with a diameter substantially equal to the diameter of a finished spur gear;

removing said workpiece from said stock material and transporting the removed workpiece along said bottom table to a second section of the bottom table separate from said first section;

pressing the workpiece with a punch from an upper position to a lower position through a female die which defines a tooth profile and which includes upper and lower inlets, the upper and lower inlets each having a mirrored surface and being provided with a chamfer; and

extruding the workpiece toward the upper inlet of the female die from the lower position with a counter.

4,800,746

MACHINE AND METHOD FOR MAKING STAR SHAPED FASTENERS

Frank Potucek, 6111 28th St. E., Bradenton, Fla. 34203

Filed Oct. 19, 1987, Ser. No. 109,988

Int. Cl.[4] B21D *31/00;* **B21G** *3/28, 3/30*

U.S. Cl. 72—372 **14 Claims**

1. A machine for manufacturing fasteners supplied by a continuous roll of wire comprising:

wire straightening rollers receiving wire from the roll,

multiple pre-form rollers receiving wire from the straightening rollers to form a number of longitudinally extending flats in the wire corresponding to the number of said preform rollers,

multiple synchronized forming rollers for receiving the wire from said pre-form rollers, said forming rollers having equally spaced apart and aligned peripheral forming sections separated by equally spaced apart and aligned multiple notches formed in an outer edge of each forming roller for forming equally spaced apart formations in said wire corresponding to the number and spacing of said peripheral forming sections and equally spaced apart nonformed sections corresponding to the number and spacing of said notches,



a gripper housing containing multiple cam operated grippers for receiving and holding the wire after it exits from the forming rollers,

a hammer activated heading punch to strike and form a head on a first portion of the wire which is unformed by the forming rollers while held by said grippers,

multiple cam-operated wire cutting and tapering elements for cutting and tapering the wire at a second portion of the wire which is unformed by the forming rollers while held by the grippers to form a finished fastener, and

a kicker means for removing said finished fastener from the machine.

4,800,747

METHOD OF MEASURING OXYGEN IN SILICON

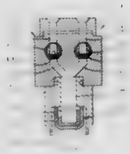
Katsuya Tsuji; Takeshi Yamada, and Hiroshi Uchihara, all of Kyoto, Japan, assignors to Horiba, Ltd., Miyanohigashi, Japan

Filed Feb. 18, 1988, Ser. No. 157,852

Claims priority, application Japan, Feb. 28, 1987, 62-47086

Int. Cl.[4] G01N *31/12*

U.S. Cl. 73—19 **16 Claims**



1. A method of measuring a quantity of oxygen contained in a silicon sample, comprising the steps of:

heating a double graphite crucible consisting of an outside graphite crucible capable of directly controlling a temperature by electrification to generate heat and an inside graphite crucible housed in said outside graphite crucible capable of indirectly controlling a temperature at first at an appointed high temperature to degas said double graphite crucible itself;

adjusting a temperature of said double graphite crucible at an appointed value and throwing a flux metal into said inside graphite crucible to degas said flux metal;

adjusting a temperature of said double graphite crucible at values near a melting point of silicon and throwing a silicon sample into said inside graphite crucible to melt said silicon sample in the flux metal and then adjusting the temperature of said double graphite crucible at values relatively higher than the melting point of silicon to ex-

tract oxygen contained in said silicon sample in the form of gases combined with carbon; and

introducing said extracted gases into a gas-concentration analyzing system to detect the gas concentration, whereby measuring a quantity of oxygen contained in said silicon sample is accomplished.

4,800,748

METHOD AND APPARATUS FOR TESTING RAIL VEHICLE WHEELS

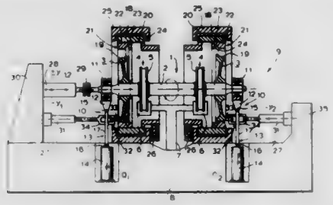
Gerhard Fischer, Menzelweg, and Vatroslav Grubisic, Zum Stetteritz, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed Feb. 6, 1987, Ser. No. 11,637

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1986, 3604186

Int. Cl.[4] G01M *7/00*

U.S. Cl. 73—865.9 **17 Claims**



1. Method of testing the wheels or complete wheel sets of rail vehicles, in which a whole wheel-set of a rail vehicle, comprising at least one axle and at least two vehicle wheels attached to its ends is tested by the introduction of radial and axial forces into the contact point of the wheel to the rail, said method comprising:

(a) the radial forces are introduced selectively upon the region of the wheel axis of one of the two wheels of the rail vehicle or both wheels;

(b) the test is carried out under loading conditions similar to those prevailing in service;

(c) the complete wheel-set of the rail vehicle is rotated by bringing the vehicle wheels into rolling contact with rotating rings which represent the rail and are mounted inside of drums;

(d) the axial forces are introduced through the wheel axle region of one of the two vehicle wheels or of both wheel axle regions;

(e) the axis of the wheel set is maintained parallel to the axis of the drums;

(f) axial outward forces are introduced selectively by side rings which are mounted inside the drums spaced axially inwardly from the rotating rings representing the rails and which side rings are designed such that the wheels can be brought into contact therewith.

4,800,749

TRANSDUCER CALIBRATION CIRCUIT

Edwin B. Merrick, Stow, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 15, 1986, Ser. No. 896,992

Int. Cl.[4] G01C *25/00*

U.S. Cl. 73—4 R **1 Claim**

1. A calibration circuit for a monitor comprising

a monitor having first and second input terminals to which signals to be monitored are to be applied and third and fourth terminals at which excitation voltages of opposite polarity appear,

a transducer having fifth and sixth terminals at which output signals of opposite polarity appear and seventh and eighth terminals at which excitation voltages of opposite polarity are to be applied,

a first resistor having a given resistance connected between said first and fifth terminals,

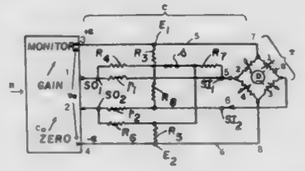
a second resistor having said given resistance connected between said second and sixth terminals,

a connection between third and seventh terminals,

a connection between said fourth and eighth terminals,

third and fourth resistors connected in series in the order named between said third and first terminals,

fifth and sixth resistors respectively connected in the order named in series between said fourth and second terminals,



a switch and a seventh resistor connected in series in the order named between the junction of said third and fourth resistors and said fifth terminal,

an eighth resistor connected between the junction of said third and fourth resistors and said sixth terminal,

said fourth, sixth, seventh and eighth resistors having the same resistance that is at least an order of magnitude greater than the given resistance,

said third and fifth resistors having the same resistance that is at least an order of magnitude greater than said given resistance, and

a connection between the junction of said fifth and sixth resistors and the junction of said switch and said seventh resistor.

4,800,750

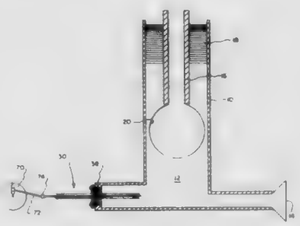
DEVICE FOR ACCURATELY DISPLACING FLUID

Goran Enhorning, 21 Oakland Pl., Buffalo, N.Y. 14222

Filed Jun. 10, 1987, Ser. No. 61,122

Int. Cl.[4] G01N *13/02*

U.S. Cl. 73—64.4 **11 Claims**



1. A device for accurately displacing fluid, said device comprising:

a barrier wall separating the fluid to be displaced from another fluid, said barrier wall being provided with an aperture;

an elongated element extending through said aperture in the barrier wall, said elongated element having a constant cross section throughout its length;

an elastomeric tube disposed about said elongated element, an intermediate portion extending of said tube through said aperture in said barrier wall;

securing means securing said tube to said elongated element;

a lubricant filling the space between said elastomeric tube and said elongated element;

sealing means carried by said barrier wall and sealing an intermediate portion of said elastomeric tube about said elongated element in such a manner that a fluid tight seal is achieved but which permits movement of said elongated element through said sealing means.

4,800,751

SYSTEM FOR DETECTING LOAD APPLIED TO SUSPENSION

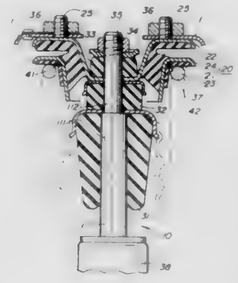
Hiroshi Kobayashi, and Hiroaki Ohbayashi, both of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 2, 1987, Ser. No. 56,761

Claims priority, application Japan, Jun. 3, 1986, 61-128332

Int. Cl.[4] G01M *17/04*

U.S. Cl. 73—118.1 **16 Claims**



1. A load detecting system in an automotive suspension assembly, said suspension system including:

a shock absorber, a suspension spring, and a mounting assembly connecting one end of said suspension spring to a vehicle body, and said load detecting system comprising:

a strain gauge provided in said mounting assembly, said mounting assembly being deformed according to the load, and said strain gauge being deformed according to the deformation of said mounting assembly; and

a detecting means for outputting an electrical signal on the basis of resistance of said strain gauge and for detecting the load, the resistance being varied according to the deformation of said strain gauge.

4,800,752

FLOW RESTRICTING LOGGING TOOL AND METHOD

George E. Piers, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 1, 1987, Ser. No. 68,983

Int. Cl.[4] E21B *47/00*

U.S. Cl. 73—155 **20 Claims**

1. A well-logging tool for use within a well borehole for measuring a characteristic of a fluid flowing therein, comprising:

a housing having a bore therein;

means for measuring a characteristic of said fluid, the means for measuring being disposed within said housing;

sealing and directing means, comprising a funnel having a wide end and a narrow end, said narrow end abutting said housing for sealing the annulus between said well borehole and said housing and for directing said flowing fluid into said bore of said housing;

an inflatable tubular ring attached to the periphery of the wide end of said funnel means; and



a pump located within said housing for actuating said sealing and directing means by pumping a fluid into said inflatable tubular ring.

4,800,753

GEOMECHANICAL PROBE FOR A DRILLING WELL

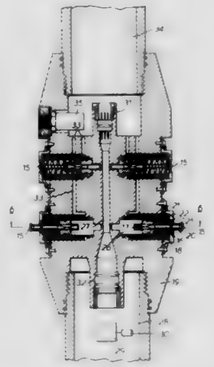
Damien M. Despax, Paris; Jean-Pierre A. Martin, Colombes, and Francois C. Gueuret, Voisins le Bretonneux, all of France, assignors to Compagnie Francaise Des Petroles, Paris, France

Continuation of Ser. No. 715,844, Mar. 25, 1985, Pat. No. 4,625,795. This application Aug. 15, 1986, Ser. No. 896,892

Claims priority, application France, Apr. 3, 1984, 84 05210

Int. Cl.[4] E21B *47/00*

U.S. Cl. 73—151 **13 Claims**



1. A geometrical probe apparatus for use in a well bore, comprising:

an elongate body;

upper and lower expandable preventers disposed about said body in a longitudinally spaced relationship;

expansion means for expanding said first and second preventers to seal between said body and the wall of said well bore;

passage means for conveying a pressurised fluid from a location above said upper preventer to a location between said body, said longitudinally spaced preventers and the wall of said well bore; and

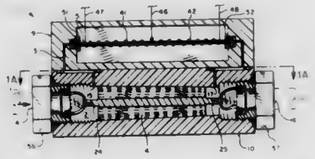
tracer means located between said longitudinally spaced preventers for determining cross-sectional characteristics of said well bore on at least one transverse plane.

4,800,754

WIDE-RANGE, ADJUSTABLE FLOWMETER

David M. Korpi, Monterey, Calif., assignor to Sierra Instruments, Inc., Carmel Valley, Calif.

Filed Oct. 7, 1987, Ser. No. 107,490
Int. Cl.[4] G01E 5/00; F15D 1/14
U.S. Cl. 73—202 5 Claims



1. A wide-range flowmeter for measuring the mass flow rate of a fluid comprising:

a housing having a central bore there through defining a primary passage for the fluid and at least one secondary bore defining a secondary passage of lesser diameter communicating at its ends with the primary passage;

a sensor located within the secondary passage for measuring the rate of mass flow of fluid through the secondary passage; and,

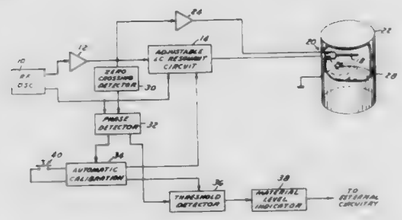
a configurable laminar flow element located within the primary passage for restricting flow within the primary passage, said laminar flow element having a body having a first end and a second end and having one or more longitudinal slots, each of said slots having a ratio of length to cross-section sufficiently great to produce laminar flow, at least one of said slots having a webbing at the first end normally covering the slot so as to limit fluid flow through said slots, said webbing having the characteristic that it may be disengaged from the body without damage to the body to expose more slots and to thereby change the division ratio between the primary and secondary passages.

4,800,755

CAPACITANCE-TYPE MATERIAL LEVEL INDICATOR

George H. Fathauer, and Charles F. Hood, both of Mesa, Ariz., assignors to Berwind Corporation, Philadelphia, Pa.

Continuation of Ser. No. 652,854, Sep. 21, 1984, Pat. No. 4,555,941. This application Oct. 1, 1985, Ser. No. 782,466
The portion of the term of this patent subsequent to Feb. 18, 2002, has been disclaimed.
Int. Cl.[4] G01F 23/26; G01R 27/26
U.S. Cl. 73—304 C 3 Claims



1. A system for indicating the condition of material in a vessel as a function of material capacitance comprising a capacitance probe adapted to be disposed in said vessel so as to be responsive to variations in capacitance as a function of material condition in said vessel, oscillator means for providing a periodic electrical signal, circuit means for coupling said periodic electrical signal to said capacitance probe, means for generating a reference signal for calibration purposes, detection means responsive the capacitance at said probe and said reference signal for indicating the condition of material in a vessel, calibration means for automatically varying the reference signal, and means responsive to said detection means and to said calibration means for automatically terminating said varying of said reference signal when said detection means detects a predetermined relationship between said probe capacitance and said reference signal whereupon the system is calibrated for proper indication of the material condition.

4,800,756

ACOUSTIC CONTROLLED ROTATION AND ORIENTATION

Martin B. Barmatz, Glendale, and James L. Allen, La Crescenta, both of Calif., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 29, 1986, Ser. No. 924,297
Int. Cl.[4] G10K 15/00; G01B 17/00
U.S. Cl. 73—505 10 Claims



1. A method for establishing a levitated object in slow rotation comprising:

establishing an object in a chamber which has walls, away from the walls;

applying acoustic energy resonant to said chamber and of the same frequency at each of a pair of locations that are spaced about said chamber, including applying said acoustic energy at a first phase difference which causes said object to rotate by at least the critical angle, which would cause continuous object rotation, and then reducing the phase difference to keep the object rotating but at a lower average rotation rate than would result from maintaining the large phase difference.

4,800,757

ULTRASONIC DIMENSION MEASURING APPARATUS

Kazuhiro Hashinoki, and Kenichi Dairiki, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1986, Ser. No. 928,907
Claims priority, application Japan, Nov. 15, 1985, 60-255985; Dec. 2, 1985, 60-270946
Int. Cl.[4] G01N 29/00
U.S. Cl. 73—597 14 Claims

1. An apparatus for measuring a dimension of an object by using ultrasonic waves, said apparatus comprising:

a pair of transmitting and receiving means spaced apart a predetermined distance from and being in opposing relation with each other, each being operable to transmit and receive ultrasonic signals and responsive to a transmission signal for transmitting ultrasonic pulses and for producing reception signals when receiving ultrasonic pulses, one of said pair of transmitting and receiving means facing a top surface of the object and the other of said pair of transmitting and receiving means facing a bottom surface of the object;

control means for choosing a travelling period of time to be currently measured from a first, second and third travelling periods of time and for producing a first control signal indicating which one of said pair of transmitting and receiving means transmits ultrasonic pulses and which at one of said pair of transmitting and receiving means receives the transmitted ultrasonic pulses when measuring the chosen travelling period of time, said first travelling period of time being the time which the ultrasonic pulses take to propagate through the air between said pair of transmitting and receiving means, said second travelling period of time being the time which the ultrasonic pulses take to propagate through the air between the top surface of the object and one of said pair of transmitting and receiving means facing the top surface of the object, said third travelling period of time being the time which the ultrasonic pulses take to propagate through the air between the bottom surface of the object and the other of said pair of transmitting and receiving means facing the bottom surface of the object;

selection means responsive to the first control signal from said control means for sending transmission signals to said



transmitting and receiving means indicated to transmit ultrasonic pulses and for receiving the reception signal from said transmitting and receiving means indicated to receive the transmitted ultrasonic pulses and for issuing the transmission and reception signals; and

evaluation means for receiving the transmission and reception signals from said selection means and for measuring each of the first, second and third travelling periods of time from a time at which said indicated transmitting and receiving means transmitted an ultrasonic pulse and which is given by the transmission signal and another time at which said indicated transmitting and receiving means received the transmitted ultrasonic pulse and which is given by the reception signal and for calculating the dimension of the object from the evaluated first, second and third travelling periods of time; and

monitoring means for determining whether or not the object is present between said pair of transmitting and receiving means by detecting the ultrasonic wave propagated between said pair of transmitting and receiving means and for producing signals indicating that the object is present or absent between said pair of transmitting and receiving means to said control means, in which;

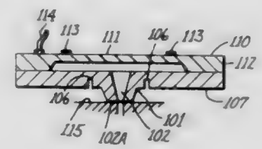
said control means being responsive to the signals from said monitoring means to produce the first control signal.

4,800,758

PRESSURE TRANSDUCER WITH STRESS ISOLATION FOR HARD MOUNTING

Thomas A. Knecht, Eden Prairie; James Ruf, Maple Grove, and John P. Schalte, Eden Prairie, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Jan. 23, 1986, Ser. No. 877,278
Int. Cl.[4] G01L 7/08, 7/10, 9/06
U.S. Cl. 73—727 12 Claims



1. A pressure sensor comprising:

a mounting surface;

a first body having a diaphragm with a diaphragm rim supported by an edge support surrounding a deflectable region which is otherwise free of support and which is responsive to the pressure;

means disposed on the diaphragm for providing an output which varies as a function of deflection of the diaphragm; and

stress isolation means connected between the mounting surface and the edge support of the first body for supporting the first body and preventing transmission of stress from the mounting surface to the diaphragm, said means for providing an output further comprising a layer disposed on the diaphragm which is substantially free of mechanical coupling to any portion of the pressure sensor other than the diaphragm such that the deflectable region of the diaphragm is substantially isolated by the stress isolation means from mechanical stress at the mounting surface.

4,800,759

SEMICONDUCTOR PRESSURE CONVERTER

Terutaka Hirata; Tetsu Odohira, and Tadashi Nishikawa, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Filed Aug. 31, 1987, Ser. No. 91,219
Int. Cl.[4] G01L 7/08, 9/06, 19/04
U.S. Cl. 73—708 18 Claims



17. A semiconductor pressure converter comprising a shearing type gage formed at a strain generating part of a semiconductor diaphragm, said gage outputting a voltage in accordance with a shearing stress generated at said strain generating part due to pressure being measured; a drive circuit for apply-

ing a drive voltage to a series circuit comprising an ordinary type gage having the same impurity concentration as that of said shearing type gage and changing resistance value in response to said applied pressure and said shearing type gage; an amplifying means for amplifying an output voltage from said shearing type gage; a zero adjusting means for applying a voltage related to said drive voltage to said amplifying means to adjust zero point; a span adjusting means for adjusting span by changing feedback voltage of said amplifying means; a temperature signal generating means for generating a temperature signal which becomes zero at a reference temperature in relation to difference between said reference temperature and ambient temperature; a temperature zero adjusting means for compensating for temperature zero shift by controlling said amplifying means with said temperature signal; and a temperature span adjusting means for compensating for temperature span shift by controlling said drive circuit with said temperature signal.

4,800,760

FORCE MEASURING DEVICE WITH AN ELECTROMECHANICAL TRANSDUCER

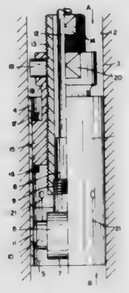
Peter Wolfer, Kleinandelfingen; Georges Schaffner, and Jean-Jacques Schmid, both of Pfäffikon, all of Switzerland, assignors to Kistler Instrumente AG, Winterthur, Switzerland

Filed Sep. 18, 1987, Ser. No. 98,206

Claims priority, application European Pat. Off., Sep. 18, 1986, 86112831

Int. Cl.[4] G01L *1/16*

U.S. Cl. 73—862.68 **20 Claims**



1. A force measuring device for insertation into a hole of a mechanically loaded machine component comprising:

a cylindrical sleeve means for forming an outer enclosure for said measuring device and having an inside taper at one end;

an electromechanical transducer in said sleeve means for measuring forces;

a screw spindle joined to said transducer coaxial to and in said sleeve means;

a screw means axially fixed and rotatably mounted in said sleeve and engaging said screw spindle for moving said screw spindle axially; and

a pair of diametrically opposed force introduction means on said transducer for engaging directly said inside taper of said sleeve means to expand said sleeve means thereby preloading said transducer and bracing said measuring device in said hole.

4,800,761

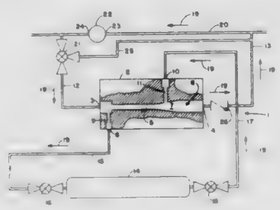
SAMPLE EXTRACTION SYSTEM

R. Wilson Spencer, P.O. Box 22586, Houston, Tex. 77227

Filed May 29, 1987, Ser. No. 55,720

Int. Cl.[4] G01N *1/14*

U.S. Cl. 73—863.71 **9 Claims**



7. A sample extraction system, comprising:

a. a pressure reducing means, for causing a pressure drop, said pressure reducing means having an inlet and an outlet;

b. a loop entry line, connected at a first point to a main flow line, and on the other end to said inlet of said pressure reducing means;

c. a loop line, connected on one end to said main flow line, at a second point where pressure is less than that at said first point point where said loop entry line is connected to said main flow line, such that fluid will flow from said main flow line into said loop entry line, and on the other end to said outlet of said pressure reducing means;

d. a sample container, having an inlet and an outlet;

e. a sample inlet line, connected on one end to said loop entry line at a point upstream from said pressure reducing means, and on the other end to said inlet of said sample container;

f. at least one sample inlet valve, positioned in said sample inlet line;

g. a sample exit line, connected on one end to said outlet of said sample container, and on the other end to said pressure reducing means so as to fluidly communicate with the interior of said pressure reducing means at a point where pressure is reduced;

h. at least one sample exit valve, positioned in said sample exit line, whereby fluid flow is induced through the loop entry line, pressure reducing means, loop exit line, sample inlet line, container, and sample exit line due to the pressure differential between the two points only.

4,800,762

LIQUID DEPOSITING DEVICE

Fumio Sugaya, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1987, Ser. No. 62,874

Claims priority, application Japan, Jun. 20, 1986, 61-144258

Int. Cl.[4] G01N *1/14*

U.S. Cl. 73—864.24 **7 Claims**

1. A liquid depositing device comprising,

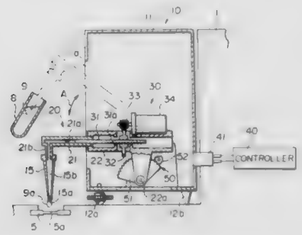
a liquid depositing tip for sucking sample liquid in a container through a lower end thereof and depositing the sucked sample liquid on a chemical assay slide,

a tip support arm mounted for up-and-down movement and provided with a tip mounting portion on which said liquid depositing tip is removably mounted,

a suction-and-discharge means operatively connected to said liquid depositing tip by way of said tip support arm to suck sample liquid into said liquid depositing tip and to discharge the sucked sample liquid from said depositing tip onto the chemical assay slide,

a quantity control means which controls the operation of said suction-and-discharge means to control the quantity of the sample liquid to be sucked into said liquid depositing tip and to be discharged therefrom, and

an arm driving means for moving said tip support arm up and down between a sucking position in which mounting or removal of the tip is effected and the sample liquid is



sucked into the tip, and a depositing position in which the lower end of the tip is positioned immediately above a chemical assay slide, the sucking position being higher than the depositing position.

4,800,763

METHOD OF SAMPLING A FLUID STREAM AND APPARATUS SUITABLE THEREFOR

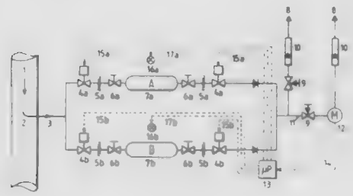
Royce R. D. Hakkers, and Martin H. Hagen, both of Apeldoorn, Netherlands, assignors to VEG-Gasinstituut N.V., Apeldoorn, Netherlands

Filed Jan. 25, 1988, Ser. No. 147,780

Claims priority, application Netherlands, Feb. 3, 1987, 8700256

Int. Cl.[4] G01N *1/20*

U.S. Cl. 73—863 **6 Claims**



1. A method of sampling a fluid stream with reference to one or more criteria by drawing samples and analysis, characterized by drawing successively from the fluid stream a number of samples that is at least one more than the number of analysis criteria, each sampling step including analyzing a portion of the fluid stream and preserving another portion, and then, at intervals, on the ground of a selection criterion, removing one of the samples preserved and drawing a fresh sample, thereby again analyzing a portion of the fluid stream and preserving another portion, the arrangement being such that, at all times, one sample is preserved that corresponds with an extreme value of each of the criteria of analysis.

4,800,764

APPARATUS FOR SENSING RELATIVE ROTATION BETWEEN MEMBERS

Louis R. Brown, Livonia, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jun. 4, 1987, Ser. No. 58,243

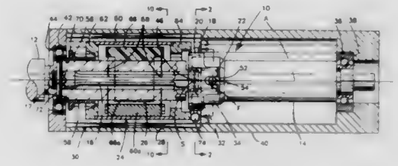
Int. Cl.[4] G01L *3/10*

U.S. Cl. 73—862.33 **28 Claims**

1. An apparatus for sensing the amount and direction of relative rotation between an input member and an output member which are disposed coaxially along a common central axis, said apparatus comprising:

a sole link member associated with the input and output members;

means supporting said sole link member for pivotal movement relative to the input and output members about a first axis extending transverse to the central axis in response to relative rotation between the input and output members;



means for effecting pivotal movement of said sole link member about said first axis in response to relative rotation of the input and output members; and

means responsive to pivotal movement of said sole link member for generating an output signal indicative of the amount and direction of pivotal movement of said sole link member.

4,800,765

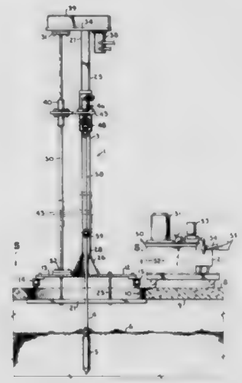
GRAIN DRILL AND PROBE MECHANISM

Eugene E. Nelson, 101 South Skyline Dr., Mankato, Minn. 56001

Filed Mar. 26, 1987, Ser. No. 31,088

Int. Cl.[4] G01N *1/08, 1/16*

U.S. Cl. 73—864.64 **9 Claims**



5. A grain drill and probe for insertion into a body of grain and comprising:

(a) a support tower having a base and an upright post extending therefrom and mountable over an opening of a grain elevator bin; said base having clamp means therewith for clamping said support tower about said opening;

(b) a hydraulic power unit providing pressurized fluid, and including controls for independent directional porting of said pressurized fluid;

(c) a first hydraulic motor mounted on said support tower and operatively connected to a rotary screw shaft extending upright adjacent said post;

(d) a traveling nut mounted on said screw shaft and moveable up and down, said traveling nut being joined to a

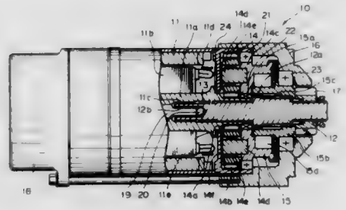
traveling platform extending between said shaft and said post;
(e) a second hydraulic motor mounted on said traveling platform and comprising a rotary head; said head connected to a joint fitting extending therefrom;
(f) a plurality of lengths of drill string and couples for joining said drill string together and to said rotary head; said drill string being rotatable by operation of said rotary head and moveable into said body of grain by operation of said screw shaft and traveling nut and platform; and
(g) a probe connected to said drill string for insertion into said body of grain.

4,800,766

COAXIAL TYPE STARTER

Shuzoo Isozumi, and Kazuhiro Odawara, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1988, Ser. No. 159,201
Claims priority, application Japan, Feb. 25, 1987, 62-26983
Int. Cl.[4] F02N *15/06*
U.S. Cl. 74—7 E **5 Claims**



1. A coaxial type starter including a motor having a tubular armature rotary shaft an output rotary shaft disposed concentrically with said armature rotary shaft at one axial end of said motor and axially slidably supported by said armature rotary shaft, an overrunning clutch for transmitting the rotation of said armature rotary shaft to said output rotary shaft, an epicyclic reduction gear for reducing the speed of rotation which is transmitted from said armature rotary shaft to said output rotary shaft through said overrunning clutch, said reduction gear having a plurality of planet gears rotatably supported through respective pins on a carrier which is formed integral with a clutch outer member of said overrunning clutch, an electromagnetic switch provided at the other axial end of said motor, and an actuating member for applying force for axial movement to said output rotary shaft in response to the action of said electromagnetic switch, wherein the improvement comprises a first bearing disposed between the outer circumferential portion of said carrier of said epicyclic reduction gear which is formed integral with said clutch outer member and a fixed portion of said coaxial type starter, and a second bearing disposed between the inner circumferential portion of said carrier and the outer circumferential portion of said armature rotary shaft.

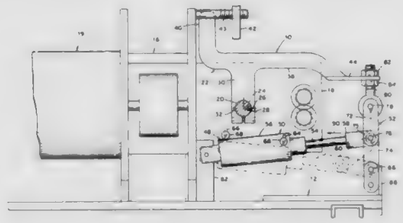
4,800,767

ACCELERATION CONTROL DEVICE FOR A HYDRAULIC DRIVE UNIT

Daniel P. Abrahamson, Phoenix, Ariz., assignor to Builders Equipment Company, Phoenix, Ariz.

Filed Jun. 8, 1987, Ser. No. 58,989
Int. Cl.[4] F16H *21/26*; G05G *1/04*
U.S. Cl. 74—38 **11 Claims**

1. An acceleration control device for a material transfer apparatus such as a conveyor or the like, comprising:
a hydraulic drive unit for imparting motion to the material transfer apparatus, said drive unit having a hydraulic fluid pump that provides power for moving the material transfer apparatus, the fluid output of said pump and thus the speed of the material transfer apparatus being determined by the position of a rotatable control shaft about its longitudinal axis between an off position corresponding to a low fluid output configuration of the pump and a stopped condition of the material transfer apparatus, and an on position corresponding to a high fluid output configuration of the pump and a moving condition of the material transfer apparatus, the change in the fluid output of the pump caused by rotation of said control shaft to positions between said off and on positions and thus the acceleration or deceleration of the material transfer apparatus being proportional to an arc length through which said control shaft is rotated;
crank means connected to said control shaft for rotating said control shaft about its longitudinal axis between said off and on positions in response to rotation of said crank means about the longitudinal axis of said control shaft, the arc length through which said control shaft is rotated being proportional to the arc length through which said crank means is rotated;
support means;
motive means supported on said support means, said motive means having a movable element and being configured to move said element through a distance between a first position which corresponds to the off position of said control shaft and a second position which corresponds to the on position of said control shaft;
actuation means for actuating said motive means to move said element between said first and second positions;



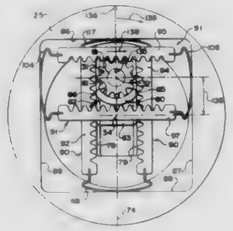
a mechanical linkage connected between said movable element of said motive means and said crank means to impart rotational movement to said crank means in response to movement of said element, said linkage being configured together with said crank means so that movement of said element between its first and second positions causing rotational movement of said crank means causes said control shaft to be rotated between its off and on positions, respectively; and
said mechanical linkage being further configured to provide a substantially nonlinear relationship between the distance through which said movable element is moved by said motive means and the arc length through which said crank means is rotated by said movable element over a given time interval such that the arc length through which said crank means is rotated is at a minimum in relation to the distance through which said movable element is moved when said element is immediately adjacent its first position and the arc length through which said crank means is rotated increases gradually in relation to the distance through which said movable element is moved as said element is moved away from its first position, whereby said nonlinear relationship is also established between said movable element and said control shaft so that moving said movable element through said distance causes said control shaft and thus the material transfer apparatus to accelerate and decelerate gradually to minimize disturbances of the conveyed material associated with starting and stopping movements.

4,800,768

POWER TRANSMISSION APPARATUS

Bruce H. Kazuta, Burnaby, Canada, assignor to 4N Developments Ltd., North Vancouver, Canada

Filed May 7, 1987, Ser. No. 46,711
Int. Cl.[4] F16H *21/42*
U.S. Cl. 74—63 **25 Claims**



1. A power transmission apparatus having:
(a) a body,
(b) a pinion gear mounted for rotation about a pinion axis relative to the body,
(c) a cam means having curved inner and outer surfaces, the cam means and the pinion gear being mounted for relative rotation therebetween,
(d) inner and outer gear rack pairs, each gear rack pair having oppositely facing toothed rack portions which are spaced apart sufficiently to receive the pinion gear and cam means therebetween when the pinion gear fully engages teeth of at least one of the toothed rack portions and the outer surface of the cam means is adjacent at least one of the oppositely facing toothed rack portions, the toothed rack portions of each pair having oppositely disposed end portions,
(e) resilient connecting means for interconnecting the end portions of each pair of toothed rack portions, so as to permit limited resilient movement between the toothed rack portions of each pair,
(f) a rotor mounted for rotation about a rotor axis, the rotor having engaging means for sliding contact with the resilient connecting means of said first and second gear rack pairs, so as to transmit power therebetween.

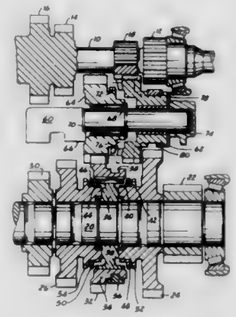
4,800,769

TRANSMISSION DUAL IDLER REVERSE DRIVE MECHANISM

Donald R. Rietsch, Howell, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 21, 1987, Ser. No. 52,511
Int. Cl.[4] F16H *3/08*
U.S. Cl. 74—322 **10 Claims**

1. A reverse drive mechanism for a transmission comprising:
a reverse pinion;
a first reverse idler slidably mounted and continually meshing with the reverse pinion, having first clutching means;
a reverse output gear; and



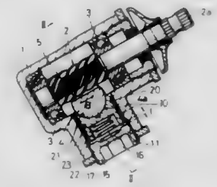
a second reverse idler continually meshing with the reverse output gear, having second clutching means for releasable connection to the first clutching means.

4,800,770

RACK-AND-PINION TYPE STEERING GEAR FOR AUTOMOTIVE VEHICLES

Nobuo Kobayashi; Iwao Tanimoto; Atsushi Watanabe, and Hiroaki Shinto, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 16, 1984, Ser. No. 580,955
Claims priority, application Japan, May 24, 1983, 58-92005
Int. Cl.[4] B62D *3/12*
U.S. Cl. 74—422 **10 Claims**



1. A rack-and-pinion type steering gear for automotive vehicles comprising:
a rack housing;
a pinion inserted into said rack housing and adapted to rotate in cooperation with rotation of a steering wheel;
a rack bar having rack teeth normally meshed with said pinion and adapted to reciprocatingly move along its axis in said rack housing in association with rotation of said pinion;
a rack guide hole formed perpendicularly to said rack bar in said rack housing and on the opposite side to the meshed position of said pinion and said rack teeth; and
a rack guide inserted into said rack guide hole and receiving the back surface of said rack bar to guide the reciprocating motion of said rack bar, said rack guide being made of resin having a small coefficient of friction, an outer diameter of said rack guide in the direction perpendicular to the direction of movement of said rack bar being greater than an inner diameter of said guide hole in such a manner that the transverse crosssection of said rack guide is elliptical.

4,800,771

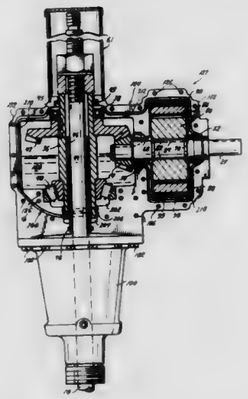
DRIVE ASSEMBLY WITH OVERSPEED BRAKE

Wallace L. Edwards, and Stewart L. Thomson, both of Stockton, Mo., assignors to Superior Gear Box Company, Stockton, Mo.

Filed Mar. 16, 1987, Ser. No. 26,292

Int. Cl.[4] F16H *57/04*

U.S. Cl. 74—467 5 Claims



1. In a drive assembly connecting a motor to a submersible pump by means of a horizontal input shaft connected to the motor and a vertical output shaft rotated at a lower speed by the input shaft and connected to the submersible pump by a tubing string, an improvement comprising:

(a) a gearbox including a first housing portion carrying the input shaft and a second housing portion carrying the output shaft, the first housing portion including a brake-receiving chamber having a brake shoe engageable surface and the second housing portion including an oil chamber,

(b) a brake shoe carried by the input shaft within the brake-receiving chamber and movable radially outwardly under centrifugal force into engagement with said brake shoe engageable surface when the input shaft reversely rotates above a critical speed,

(c) means disengaging the brake shoe when the input shaft rotates below the critical speed,

(d) the gearbox being of the split casing type and being formed from matched portions having cooperating connectible faces, and

(e) the input shaft being supported by spaced inner and outer bearings mounted in cooperating semi-circular grooves provided in each matched gearbox portion on each side of the brake receiving chamber,

(f) the output shaft being supported by spaced upper and lower bearings mounted in cooperating semi-cicrular grooves provided in each matched gearbox portion at upper and lower portions of the oil chamber,

(g) the second housing portion including a spiral passage disposed about the output shaft and formed from cooperating grooves in each matched gearbox portion and communicating with the oil chamber,

(h) the first housing portion and the second housing portion including lubricating passage means operatively communicating between the spiral passage and the associated inner and outer bearings of the input shaft and the upper bearing of the output shaft said lubricating passage means being formed into circumferentially closed passages from cooperating grooves in each matched gearbox portion for circulating oil from the spiral passage.

4,800,772

LOCKING PLATE FOR GEAR CHANGE RODS

Wolfgang Irlbacher, Eriskirch, and Gerhard Burr, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

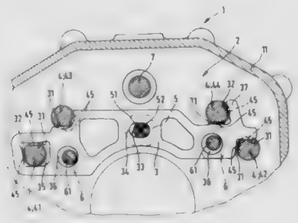
PCT No. PCT/EP86/00681, § 371 Date Aug. 4, 1987, § 102(e) Date Aug. 4, 1987, PCT Pub. No. WO87/03714, PCT Pub. Date Jun. 18, 1987

PCT Filed Nov. 26, 1986, Ser. No. 93,747

Claims priority, application PCT Int'l Appl., Dec. 6, 1985, PCT/EP85/00680

Int. Cl.[4] G05G *5/10*

U.S. Cl. 74—477 14 Claims



1. In combination with the plurality of control rods (4) constrained to axial displacement from a neutral position in which locking grooves (45) therein are aligned within a housing (11), locking means (2) responsive to displacement of one of the control rods from the neutral position for locking the other of the control rods in the neutral position, including a locking plate (3) within the housing engageable with the control rods within said grooves therein, the improvement comprising means (51–33) mounting the locking plate for displacement along a path extending transversely of the control rods and about a pivot axis (52) fixed to the housing in intersecting relation to said path, said plurality of control rods including at least two pairs of the control rods (41, 43 and 42, 44) respectively disposed on opposite sides of the pivot axis along said path and means (31,32) responsive to said displacement of the one of the control rods for camming the locking plate into locking engagement with the other of the control rods, said latter means including two locking edges (31,32) on the locking plate engageable with each of said pairs of the control rods within the grooves therein.

4,800,773

ACCELERATOR CABLE CONNECTING DEVICE

Akira Nakamura, Zama; Motoyoshi Hanaoka, Yokohama, and Tatsuo Sugimoto, Chiba, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Sep. 16, 1986, Ser. No. 907,867

Claims priority, application Japan, Sep. 20, 1985, 60-144564; Oct. 30, 1985, 60-168368

Int. Cl.[4] F16C *1/10*

U.S. Cl. 74—500.5 15 Claims

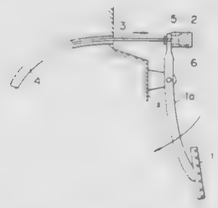
1. An accelerator cable connecting device for an accelerator pedal connected to a pedal lever, said accelerator cable connecting device comprising:

a housing securely connected at a first end section with the pedal lever, said housing being movable in a given direction upon depression of the accelerator pedal and having means defining a cylindrical inner wall;

an accelerator cable,

a supporting and damping structure movably disposed inside said housing and connected to transmit movement of said housing in the given direction to said accelerator cable, said supporting and damping structure including elastomeric means for elastically supporting said structure relative to said housing and for absorbing vibrations transmitted through said accelerator cable via said housing to said pedal; and

said accelerator cable having a first end section passing through said housing first end section and disposed inside said housing, said accelerator cable first end section being securely connected to said supporting and damping structure, said accelerator cable having a second end section connected to an engine to accelerate the engine, and



said housing defining an inner surface below said supporting and damping structure so that said structure is movable within said housing with a slight play whereby upon release of the accelerator pedal the supporting and damping structure is supported by said housing and prevented from hanging down by its own weight and contacting any adjacent members.

4,800,774

PEDAL-LOAD LIGHTENING APPARATUS

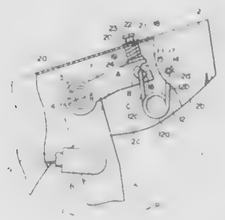
Yoshihiko Hagiwara, Sagamihara, and Katsumi Ooshima, Yokohama, both of Japan, assignors to Topre Corporation, Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,460

Claims priority, application Japan, Feb. 27, 1986, 61-28559[U]; Oct. 27, 1986, 61-163569[U]

Int. Cl.[4] G05G *1/14*

U.S. Cl. 74—512 7 Claims



1. A pedal-load lightening apparatus for reducing a necessary treadling force on a pedal, comprising:

a support bracket including a pair of side plates and a top plate connecting the side plates;

a horizontal support shaft extending between the side plates;

a pedal arm supported, at the upper end portion thereof, on the support shaft so as to be rotatable around the shaft;

a lever attached to the pedal arm so as to be rockable therewith;

a torsion coil spring provided between the lever and the support bracket, and including at least one coil, a first end rockably supported by one side plate of the support bracket, and a second end anchored to the lever so as to apply an initial torsional moment to the coil, said torsion coil spring comprising means for urging the pedal arm to return to an initial position thereof before the arm reaches a critical position at a predetermined rotational angle to the initial position, and for urging the pedal arm in the direction of treadling action when the arm passes the critical position during movement from said initial position in the direction of treadling action, the second end of said torsion coil spring being located on one side of a line segment connecting the center of the support shaft and the first end when the pedal arm is in the initial position, and being located on a side opposite said one side, with respect to the line segment after the pedal arm has moved past said critical position during movement in the direction of treadling action; and

an urging element positioned between the support bracket and the lever, and comprising second means for urging the pedal arm in the direction of treadling action thereof throughout substantially all of the predetermined rotational angle between the initial position and the critical position.

4,800,775

STEERING WHEEL

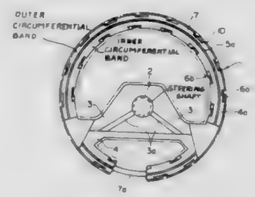
Yasuaki Iuchi, Aichi, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jun. 16, 1987, Ser. No. 62,602

Claims priority, application Japan, Aug. 9, 1986, 61-122609[U]; Oct. 29, 1986, 61-257849

Int. Cl.[4] B62D *1/04*; **G05G** *1/10*

U.S. Cl. 74—552 6 Claims



1. A steering wheel, comprising:

a steering wheel core metal including a plurality of members, including a boss for joining the steering wheel to an end of a steering wheel shaft, a ring-shaped ring core metal having a circumferentially-extending radially outer circumferential band-shaped outer circumferential region and a circumferentially-extending radially inner circumferential band-shaped inner circumferential region, and a spoke core metal joining said ring core metal with said boss;

a hard resin insert fixed upon and covering at least a portion of said steering wheel core metal;

a plurality of recesses formed in said hard resin insert, said recesses being spaced from one another along at least one said member of said steering wheel core metal and each including an internal cavity and an opening into said cavity from externally of said hard resin insert, each said opening being narrower in at least one direction than is the respective recess within said cavity thereof; and

a soft coating layer substantially covering said hard resin insert and said steering wheel core metal and intruding into said recesses through said openings for thereby joining said soft coating layer to said hard resin insert for restricting movement of said soft coating layer along and around said members of said steering wheel core metal.

4,800,776

STEERING WHEEL COVER

Murray Strongwater, 326 Hewlett Neck Rd., Woodmere, N.Y. 11598

Filed Feb. 22, 1983, Ser. No. 468,151
Int. Cl.[4] B62D *1/06*; G05G *1/10*
U.S. Cl. 74—558 7 Claims



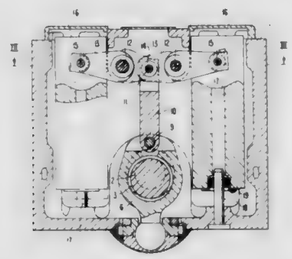
1. A cover adapted to be placed onto a steering wheel for improving the grip of a user's fingers on the cover, comprising;
(a) an endless annular member defined by elements of stretchable material secured in end to end relation with alternating elements of non-stretchable material for the major extent of said annular member,
(b) said elements defining stalls comprising depressed regions separated by raised regions, each of said stalls adapted to coact with a finger of the user's hand for facilitating the gripping of said steering wheel,
(c) each half of said annular member having at least two elements of stretchable material secured in end to end relation with two alternating elements of non-stretchable material to define, for each half, at least four side by side stalls for coacting with four fingers of one the user's hand,
(d) said annular member being provided along its side edges with an endless elastic band to enable the steering wheel cover to be placed onto the steering wheel under tension.

4,800,777

DYNAMIC BALANCING DEVICE FOR PRESS

Shozo Imanishi, and Mitsuo Sato, both of Sagamihara, Japan, assignors to Aida Engineering, Ltd., Kanagawa, Japan

Filed Sep. 10, 1985, Ser. No. 774,363
Int. Cl.[4] B30B *5/00*
U.S. Cl. 74—604 3 Claims



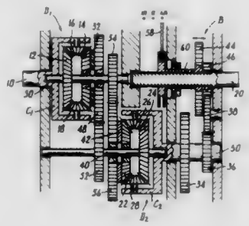
1. A dynamic balancing device in combination with a press having a rotating crank shaft with a crank rotated by said crank shaft and a reciprocating slide operatively connected to and driven by said crank, comprising:
a connecting rod means mounted around and freely rotatable relative to said crank and connected to said slide for reciprocating the slide along a path when said crank is rotated with said crank shaft;
link means directly pivotally connected at one end to said connecting rod means and reciprocated by said connecting rod means when said crank is rotated with said shaft;
a pair of levers pivotally connected to the other end of said link means at respective first ends thereof and extending in opposite directions from one another to respective second ends located at opposite sides of said crank shaft, each of said levers having a pivot point between said respective first and second ends around which said levers pivot;
a plurality of balancing weights for maintaining a dynamic balance of inertia forces generated by said slide and said connecting rod when said slide and connecting rod are reciprocated, a respective balancing weight connected at one end to the second end of a corresponding one of said pair of levers, said balancing weights being moved in opposite directions to said slide and connecting rod means by said pair of levers when said slide and connecting rod means are reciprocated, said balancing weights each having a bore extending from the other end therethrough in a direction parallel to the path along which said slide is reciprocated; and
respective guide pins fixed to a frame of the press and each extending into a respective said bore of each of said balancing weights for slidingly guiding said balancing weights when said balancing weights are moved in the opposite directions.

4,800,778

MECHANICAL SYSTEM FOR THE CONTINUOUS AND STAGED CONVERSION OF A TORQUE

M. Michel Combastet, 25, rue du Faubourg Saint-Honoré , 75008 Paris, France

Filed Apr. 14, 1987, Ser. No. 38,156
Claims priority, application France, Apr. 24, 1986, 86 05958
Int. Cl.[4] F16H *37/06*
U.S. Cl. 74—682 1 Claim



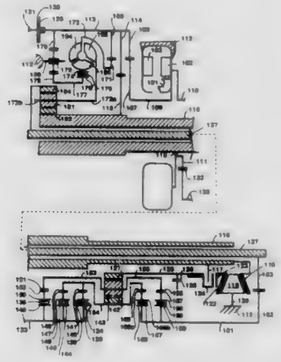
1. A torque converter system comprising a first differential gear and a second differential gear, said first differential gear and said second differential gear each being provided with a cage, wherein the cage of the first differential gear is an input cage for receiving power from an engine motion input shaft and said cage of said second differential gear is an output cage, said second differential gear being provided with an output shaft for driving a system output shaft, said first differential gear and said second differential gear having four planetary shafts coupled two by two, wherein the system output shaft is coaxial with the engine motion input shaft whereby motion is transmitted through each said differential gear by planetary shafts which are coaxial to each other and coaxial to a shaft connected, respectively, to the input cage and the output cage, whereby the motion of the planetary shafts are output on the same side, opposite each shaft which is connected to each said cage; said torque converter system further comprising means for obtaining a staging of fixed ratios between rotation speeds of the output shaft; means for rotating the system output shaft in one direction and in another direction; and means for disconnecting the system output shaft in order to obtain a dead point, and means for blocking rotation of the system output shaft.

4,800,779

HYDRAULIC TRANSMISSIONS

Joseph W. Parker, 1121 87th St., Daly City, Calif. 94015

Continuation-in-part of Ser. No. 694,355, Jan. 24, 1985, abandoned, and a continuation-in-part of Ser. No. 376,926, May 10, 1982, abandoned, and a continuation of Ser. No. 108,492, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 846,895, Oct. 31, 1977, abandoned, which is a continuation of Ser. No. 642,767, Dec. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 467,277, May 6, 1974, abandoned. This application Dec. 2, 1987, Ser. No. 127,585
Int. Cl.[4] F16H *47/08, 47/00*
U.S. Cl. 74—688 5 Claims



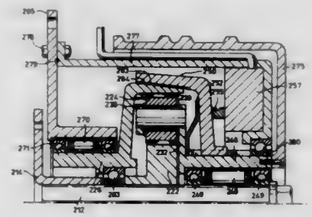
1. In a power transmitting device having input and output members, fluid drive means including fluid driving and fluid driven members, and gear and clutch means including an epicyclic gear train:
said fluid driving member being drivenly connected to said input member and driving said fluid driven member through fluid means in rotation toward and beyond a predetermined speed ratio with the rotation of said fluid driving member, said fluid driven member being connected to drive said output member through mutually alternative and sequentially operative combinations of gear and clutch members having a portion of their members in common;
a first of said combinations made operative in part by the synchronous rotation together of first driving and driven clutch members for engagement thereof for a first drive of said output members by said fluid driven member, and a second of said combinations being made operative in part by the synchronous rotation together of second driving and driven clutch members for engagement thereof for a second drive of said output member by said fluid driven member; said first driving and driven clutch members being hereby operative in alternation with said second driving and driven clutch members being operative, and said second driving and driven clutch members being hereby operative in alternation with said first driving and driven clutch members being operative;
means included in said first and second combinations and including an epicyclic gear train, whereby progression of said fluid driven member in rotation toward said predetermined speed ratio with the rotation of said fluid driving member during said first drive progressively decreases an existing difference between the rotating speeds of said second driving and driven clutch members to zero with the attainment of synchronous rotation thereof, and whereby progression of said fluid driven member beyond said predetermined speed ratio toward a higher speed ratio during said second drive initiates and progressively increases a difference between the rotating speeds of said first driving and driven clutch members in digression from synchronous rotation thereof.

4,800,780

ACCESSORY TRANSMISSION

Ramalingam Sivalingam, Mississauga, Canada, assignor to G.E. Machine Tool Limited, Brampton, Canada

Division of Ser. No. 810,321, Dec. 17, 1985, Pat. No. 4,706,520. This application Nov. 13, 1987, Ser. No. 120,094
Int. Cl.[4] F16H *3/44*; F16D *41/04*
U.S. Cl. 74—785 7 Claims



1. An underdrive accessory transmission associated with an engine, comprising:
a planetary gear set comprising a sun gear, a plurality of planet gears positioned about and drivingly engaging the sun gear, a planet gear carrier having an integrally formed shaft for providing rotational output from the transmission, and a ring gear positioned about and drivingly engaging the planet gears;
an input shaft for providing rotational input to the transmission from the engine, said sun gear being affixed about the input shaft, and said gear carrier being supported about the input shaft by a bearing;
a cone clutch slidably affixed on the shaft of the planet gear carrier and being capable of movement axially along the shaft, the clutch having a frustoconical working surface engageable with a compatible surface of the ring gear;
means for sliding the cone clutch axially along the shaft of the gear carrier;
a fixed cover for the transmission being supported about the shaft of the gear carrier by a bearing, and about the ring gear by a first one way clutch and support bearings, said first one way clutch allowing the ring gear to rotate only in the direction of engine rotation; and
a second one way clutch and support bearings being positioned between the gear carrier and the input shaft, the second clutch allowing the input shaft to rotate only in the direction of engine rotation.

4,800,781

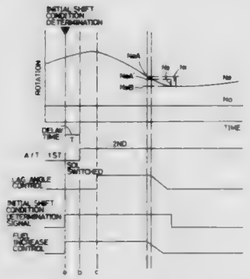
SYSTEM FOR INTEGRALLY CONTROLLING AUTOMATIC TRANSMISSION AND ENGINE

Hideki Yasue, and Kagesori Fukumura, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 10, 1987, Ser. No. 37,253
Claims priority, application Japan, Apr. 14, 1986, 61-85533
Int. Cl.[4] B60K *41/08*
U.S. Cl. 74—860 7 Claims

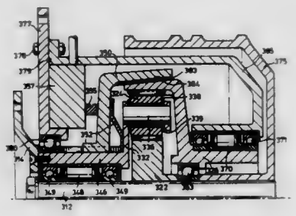
1. A system for integrally controlling an automatic transmission and an engine, said system comprising:
gear shift means having a plurality of frictionally engaging devices for changing gear stages;
hydraulic control means for selectively switching engagements of said plurality of frictionally engaging devices to obtain any one of a plurality of gear stages in accordance with a preset shift map;
torque changing means for changing the torque of said engine by lagging ignition timing of the engine during said

switching of the engagements of the frictionally engaging devices;
means for detecting the presence of switching of the engagements of the frictionally engaging devices in accordance with said preset shift map;



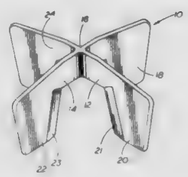
means for delaying actual commencement of said switching of the engagements of the frictionally engaging devices for a predetermined time duration; and
means for performing a fuel increase of said engine immediately after detection of the presence of the switching of the engagements of the frictionally engaging devices.

4,800,782
ACCESSORY TRANSMISSION
Ramalingam Sivalingam, Mississauga, Canada, assignor to G.E. Machine Tool Limited, Brampton, Canada
Division of Ser. No. 810,321, Dec. 17, 1985, Pat. No. 4,706,520. This application Nov. 13, 1987, Ser. No. 120,095
Int. Cl.[4] F16H *3/44, 57/10*
U.S. Cl. 74—785 **8 Claims**



1. An overdrive accessory transmission associated with an engine, comprising:
a planetary gear set comprising a sun gear, a plurality of planet gears positioned about and drivingly engaging the sun gear, a planet gear carrier having an integrally formed shaft for providing rotational input from the engine, and a ring gear positioned about and drivingly engaging the planet gears;
an output shaft for providing rotational output from the transmission, said sun gear being affixed about the output shaft, and said gear carrier being supported about the output shaft by a bearing;
a cone clutch slidably affixed in the shaft of the planet gear carrier and being capable of movement axially along the shaft, the clutch having a frustoconical working surface engageable with a compatible surface of the ring gear;
means for sliding the cone clutch axially along the shaft of the gear carrier; and
a fixed cover for the transmission being supported about the shaft of the gear earlier by a bearing, and about the ring gear by a one way brake and support bearings, said one way brake allowing the ring gear to rotate only in the direction of engine rotation.

4,800,783
METHOD AND APPARATUS FOR REMOVING A CORK OR PLASTIC STOPPER FROM A CHAMPAGNE BOTTLE
Herbert Allen, 3207 Groveland, Houston, Tex. 77019
Filed Jan. 5, 1987, Ser. No. 58,566
Int. Cl.[4] B67B *7/02*
U.S. Cl. 81—3.4 **24 Claims**



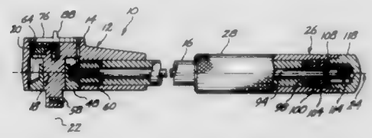
.. A method for removing a stopper from a bottle having an internal pressure within said bottle higher than the ambient pressure surrounding said bottle, wherein said stopper has at least one preformed, generally vertical groove in its upper peripheral surface, comprising:
placing means into at least one of said grooves; and
using said means to rotate said stopper with respect to said bottle, thereby reducing static friction between the bottle and stopper to sliding friction and allowing said internal pressure to expel the stopper from the bottle.

4,800,784
APPARATUS FOR REMOVING CORKS FROM BOTTLES
Herbert Allen, Houston, Tex., assignor to Hallen Company, Houston, Tex.
Filed Mar. 15, 1988, Ser. No. 168,163
Int. Cl.[4] B67B *7/02*
U.S. Cl. 81—3.36 **32 Claims**



1. Apparatus for removing corks from bottles comprising:
a handle fixed to a corkscrew;
bottle engaging means, including stop means for abutting the top of a bottle and defining a central gap for passage of a cork;
spacer means extending upwardly from said stop means and defining a cork receiving space aligned with said gap for receipt of a cork as it emerges from a bottle;
catch means connected to said spacer means and disposed generally in said cork receiving space, said catch means being engagable with a cork in said cork receiving space to prevent rotation thereof;
said corkscrew being helical and longitudinally movable with respect to said spacer means, said corkscrew having a first section fixed to said handle, said first section having a first outer diameter and a second section disposed below said first section and with a second outer diameter greater than said first outer diameter to form an upwardly directed screw step between said sections;
and limit means abuttable with said screw shoulder and cooperative between said corkscrew and said spacer means to limit upward movement of said corkscrew with respect to said spacer means.

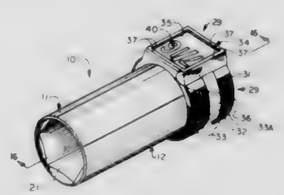
4,800,785
DUAL-DRIVE RATCHET WRENCH
Wendell N. Christensen, 1304 Avondale Rd., Everett, Wash. 98204
Filed Nov. 2, 1987, Ser. No. 116,240
Int. Cl.[4] B25B *17/00*
U.S. Cl. 81—57.29 **6 Claims**



1. In a dual-drive ratchet wrench for operating in a reciprocating or nonreciprocating mode, the wrench having a body with a housing, a drive unit mounted within the housing, a handle having a longitudinal cylindrical bore, the handle depending from the housing, a drive shaft extending through the cylindrical bore of the handle with one end of the drive shaft permanently engaging the drive unit, and a sleeve surrounding the handle, the improvement comprising an external gear affixed to the unengaged end of the drive shaft, an internal gear located on the inside of the sleeve for engagement with the external gear, the sleeve being axially movable along the longitudinal axis of the handle between an engaged position wherein the internal gear is engaged with the external gear to connect the sleeve to the drive shaft, and a disengaged position wherein the internal gear is disengaged from the external gear to disconnect the sleeve from the drive shaft, the sleeve being rotatable about the longitudinal axis of the handle such that when the sleeve is in the engaged position, rotation of the sleeve will rotate the drive shaft, and thus the drive means, to thereby operate the wrench in the nonreciprocating mode, and when the sleeve is in the disengaged position, the sleeve will be freely rotatable about the longitudinal axis of the handle to permit operation of the wrench in the reciprocating mode without causing rotation of the sleeve.

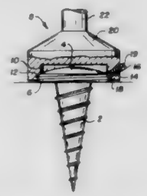
4,800,786
ELASTOMERIC SLEEVE FOR WRENCH SOCKET AND METHOD OF MANUFACTURE THEREOF
Robert L. Arnold, Lancaster; William G. Mader, York, both of Pa., and Philip A. Desmarais, Gastonia, N.C., assignors to Easco Hand Tools, Inc., Hunt Valley, Md.
Continuation-in-part of Ser. No. 930,249, Nov. 13, 1986, which is a continuation-in-part of Ser. No. 804,533, Dec. 4, 1985. This application May 19, 1987, Ser. No. 49,028
Int. Cl.[4] B25B *13/06*
U.S. Cl. 81—121.1 **29 Claims**

1. In a socket for a ratchet wrench, wherein the socket has respective forward and rearward portions disposed about a longitudinal axis, the combination of a sleeve on the rearward portion of the socket, the sleeve having an internal annular groove formed therein, adhesive disposed in the internal annular groove and radially between the sleeve and the socket, thereby securing the sleeve to the socket, the sleeve further having a pair of spaced-apart canals communicating with the internal annular groove in the sleeve, and a flap carried by the sleeve between the canals, the flap projecting into the internal



annular groove, whereby the adhesive may be injected into one of the canals, such that the flap acts as a dam to block the flow of the adhesive into the other canal and directs the flow of adhesive into and around the internal annular groove as the air entrapped therein flows out of the other canal, thereby securely bonding the sleeve to the socket.

4,800,787
SYSTEM TO INSTALL A VANDAL-RESISTANT SCREW
Alexander Cerny, P.O. Box 417, Sechelt, British Columbia, Canada V0N 3A0
Filed Jan. 13, 1987, Ser. No. 2,847
Int. Cl.[4] B25B *31/00*
U.S. Cl. 81—121.1 **2 Claims**



1. A system to install a vandal-resistant screw comprising:
(a) a screw having a head and a peripheral thread on the head;
(b) a tightening and fitting member comprising:
a head;
a cavity formed in the head;
an internal thread within the cavity, able to tighten onto the peripheral thread on the head of the screw;
a shank extending from the head;
a threaded opening extending outwardly from the cavity to receive a threaded abrading member;
an abrading member removably received in the threaded opening, the abrading member extending into the cavity whereby the thread on the periphery of an installed screw can be abraded away by an abrading member located in the threaded opening.

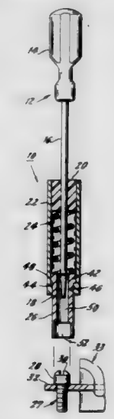
4,800,788
NON-SLIP SCREWDRIVER
Howard Goldstein, Staten Island, N.Y., assignor to Innovative Computer Tools, Inc., Staten Island, N.Y.
Continuation of Ser. No. 848,808, Apr. 4, 1987, abandoned. This application Oct. 22, 1987, Ser. No. 111,110
Int. Cl.[4] B25B *23/08*
U.S. Cl. 81—451 **4 Claims**

1. A screw head locator for use with a screwdriver having a blade tip and a shaft, comprising:
a rigid outer ferrule;

a compressible bushing being tapered so as to form a force fit for fixedly engaging said shaft of said screwdriver and said outer ferrule for positioning the outer ferrule axially on the shaft of the screwdriver; said outer ferrule being spaced from said shaft by said bushing; said bushing being removably positionable on said screwdriver shaft;

said rigid outer ferrule being mountable on and removable from said bushing and being retained thereon by friction;

said bushing being manually adjustable along the length of said screwdriver shaft;



a rigid inner ferrule slideably telescoped, within predetermined limits, in the free end of said outer ferrule, wherein at least a portion of said inner ferrule surrounds the blade tip of said screwdriver; and

spring biasing means disposed in said outer ferrule for urging said rigid inner ferrule outwardly of the free end of said outer ferrule so that said inner ferrule may surround said screwdriver head.

4,800,789

TOOL SLIDE DEVICE IN MACHINE TOOL

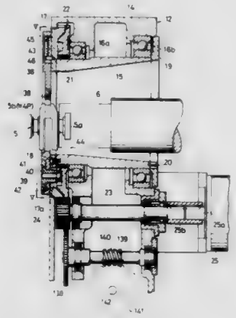
Kyuzo Nakano, Niigata, Japan, assignor to Nigata Engineering Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1987, Ser. No. 19,809

Claims priority, application Japan, Feb. 27, 1986, 61-27744[U]; Feb. 27, 1986, 61-42724; Jul. 4, 1986, 61-157712; Jul. 4, 1986, 61-157713

Int. Cl.[4] B23B *5/18*

U.S. Cl. 82—2 E **10 Claims**



1. A tool slide device in a machine tool, comprising:

a hollow main spindle rotatably disposed on a machining unit body;

a main spindle driving gear concentrically and fixedly mounted on said hollow main spindle;

a feed gear mounted on said hollow main spindle in opposition to said main spindle driving gear and rotatable relative to said hollow spindle, said feed gear having teeth differing in number from teeth of said spindle driving gear;

a motor for rotatably driving said spindle driving gear and said feed gear;

a feed slide disposed on said spindle driving gear and movable in a radial direction of said main spindle driving gear, said feed slide having a cutting tool projecting toward an outer circumference of a shaft-like work-piece to be machined;

an in-feed cam groove annularly formed in said feed gear; and

a cam follower attached to said feed slide and biased against said cam groove so as to engage therewith,

wherein said tool slide device further comprises:

mechanical means directly responsive to a motion of said feed slide for detecting a point of a cycle of sliding motion of said cutting tool owing to a relative rotational displacement between said main spindle driving gear and said feed gear.

4,800,790

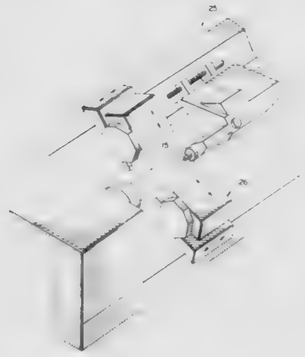
MODAL COUPLING TAILSTOCK

John R. Hasz, Fayetteville, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 14, 1986, Ser. No. 930,614

Int. Cl.[4] B23B *23/00*

U.S. Cl. 82—31 **4 Claims**



1. In a turning machine having a base; a headstock with a headstock spindle rotatable about a spindle axis; a tool support means movably mounted on said base for advancing and retracting a tool along a radial feed vector passing through said spindle axis; a tailstock having a housing portion supported on said base, said tailstock having a central axis collinear with said headstock axis, and including center means for supporting a workpiece on said central axis; a improved tailstock wherein said improvement comprises:

a beam portion extending from said tailstock housing portion, said beam portion having

a neutral axis collinear with said tailstock central axis;

a cross-sectional minor axis normal to said neutral axis and oriented substantially in line with said radial feed vector;

a cross-sectional major axis normal to both said neutral axis and said minor axis;

a means for mounting said center means in said beam portion,

wherein said beam portion is non-circular in cross-section, and of substantially-greater dimension along said major axis in respect to a dimension along said minor axis, wherein said beam portion comprises a substantially rectangular cross-section centered about said neutral axis and wherein the ratio of major-to-minor dimensions of said rectangular cross-section is about 2:1.

4,800,791

TRANSPORT SYSTEM FOR AN AUTOMATIC CABLE PROCESSING MACHINE

Bernhard Jürgenhake, Im Brok 45, D-4782 Erwitte-Völlinghausen, Fed. Rep. of Germany

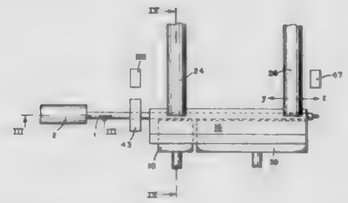
Continuation-in-part of Ser. No. 730,348, May 3, 1985, Pat. No. 4,655,107. This application Apr. 21, 1986, Ser. No. 854,082

Claims priority, application Fed. Rep. of Germany, May 4, 1984, 3416432; Aug. 7, 1984, 3429054

The portion of the term of this patent subsequent to Apr. 7, 2004, has been disclaimed.

Int. Cl.[4] B65H *5/10*

U.S. Cl. 83—23 **4 Claims**



1. A method for transporting a cable in an automatic cable processing machine comprising resetting the machine for starting a process cycle; electronically determining if a data input or if a programming input for a recipe of cable production is to be performed;

producing a cable line according to a recipe by feeding in a cable from a cable supply means and transporting a cable coming from the cable supply means in the direction of the axis of the cable with a first transporting unit; starting a second transporting unit to run, where the direction of advance of the second transporting unit is at an angle relative to the direction of the first transporting unit;

determining an end of the running of the section transporting unit by employing a sensor for position of the second transporting unit;

cutting the cable to proper length in a cutting station; pushing the cable section with a slider through a slot adapted to open up upon advancement of the slider toward the slot;

transporting the cable in a direction about perpendicular to the axis of the cable with the second transporting unit disposed near the output end of the slot.

4,800,792

CUTTING DEVICE FOR HOT GRANULATION OF THERMOPLASTIC POLYMERS

Franco Bertolotti, Milan, Italy, assignor to Montedison S.p.A., Italy

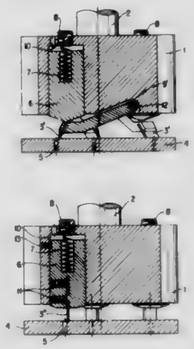
Continuation of Ser. No. 742,271, Jun. 7, 1985, abandoned. This application Apr. 6, 1987, Ser. No. 33,857

Claims priority, application Italy, Jun. 8, 1984, 21325 A/84

Int. Cl.[4] B26D *3/22*

U.S. Cl. 83—356.3 **8 Claims**

1. A cutting device for hot granulation of thermoplastic polymers, comprising a rotary driving shaft, a blade-carrying disc rigidly keyed on the driving shaft and blades mounted on the blade-carrying disc and sliding on a cutting plate, wherein each blade includes a flexible arm rigidly fixed to said blade-carrying disc wherein each blade has an end equipped with a cutting edge which is coupled to a movable opposing element



which is arranged in a guide of said blade-carrying disc and which opposes every sudden variation tending to move the cutting edge of the blade away from the plate by a force of inertia with a component perpendicular to the face of the plate and directed against the same.

4,800,793

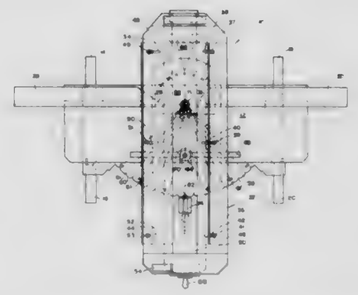
COMPOUND MITER BOX

Kenneth L. McCord, Sr., Mobile, Ala., assignor to Carolyn McCord, Mobile, Ala., a part interest

Filed Jan. 4, 1988, Ser. No. 140,582

Int. Cl.[4] B27B *5/20*

U.S. Cl. 83—467 R **10 Claims**



1. A compound miter box apparatus for forming miter cuts with a hand saw, comprising:

an elongated work board supportable by a leg at each of its ends;

a swivel plate means transversely positioned under a middle portion of the work board, said swivel plate supportable by legs independently from said work board and adjustable for a limited horizontal pivotal movement in relation to said work board;

a saw guide assembly supportable by the swivel plate supporting legs in a parallel relationship above the work board;

means for limiting longitudinal movement of a saw in relation to the swivel plate means;

a front degree plate means securedly attached to the work board; and

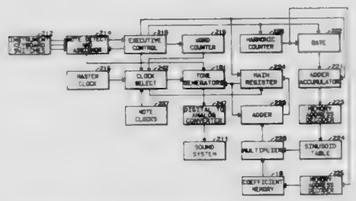
a back degree plate means securedly attached to the work board opposite said front degree plate means.

4,800,794

HARMONIC COEFFICIENT GENERATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jul. 6, 1987, Ser. No. 69,793
Int. Cl.[4] G10H *1/14, 7/00*
U.S. Cl. 84—1.21 **8 Claims**



1. In combination with a keyboard operated musical instrument having an array of keyboard switches, apparatus for producing musical tones comprising:

an assignor means whereby a detect data word is generated in response to each actuated keyboard switch in said array of keyboard switches and whereby one of a plurality of tone generators is assigned to each actuated keyboard switch and whereby a corresponding detect data word is provided to the corresponding said assigned tone generator,

a harmonic coefficient memory for storing a set of harmonic coefficients,

a means for generating a plurality of preselected increment numbers,

a harmonic coefficient computing means for computing said set of harmonic coefficients in response to said preselected plurality of increment numbers wherein said plurality of increment numbers is less than the number of harmonic coefficients in said set of harmonic coefficients, and whereby said computed set of harmonic coefficients is stored in said harmonic coefficient memory,

a memory addressing means for reading out said set of harmonic coefficients from said harmonic coefficient memory,

a computing means for computing a sequence of waveshape data points in response to the harmonic coefficients read out of said harmonic coefficient memory,

said plurality of tone generators each of which comprises,

a conversion means whereby said sequence of waveshape data points is transformed to one of said musical tones at a fundamental frequency corresponding to said provided detect data word.

4,800,795

ELECTRONIC DRUM WITH ANGLE ADJUSTMENT

Toshinori Yamashita, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

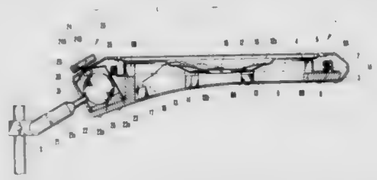
Continuation of Ser. No. 71,522, Jul. 9, 1987, abandoned, which is a continuation of Ser. No. 794,061, Nov. 1, 1985, abandoned. This application Apr. 11, 1988, Ser. No. 183,373
Claims priority, application Japan, Nov. 8, 1984, 59-168583[U]
Int. Cl.[4] G10D *13/02*
U.S. Cl. 84—421 **11 Claims**

1. An electronic drum of a type that is played by a player and is attachable to an instrument stand comprising:

a drum body having an upper surface with an opening in a center portion thereof and a peripheral extremity;

a drum head disposed over said opening;

angle adjusting means mounted on said peripheral extremity of said drum body for adjusting an angular orientation of said drum body comprising a ball housing having a seat, a ball disposed within said ball housing and resting on said seat, a rod having a first end connected to said ball and a



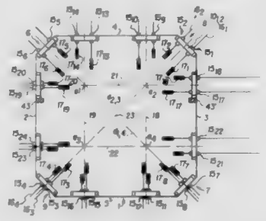
second end connected to the instrument stand, and screw means extending through said upper surface of said drum body, said screw means selectively operable by the player for depressing said ball against said seat, thereby preventing movement of said drum body with respect to the instrument stand.

4,800,796

METHOD OF MANUFACTURING STRUCTURAL MEMBERS BY BRAIDING THREADS, AND STRUCTURAL MEMBERS OBTAINED THEREBY

Dante Vendramini, 34, rue du Général Leclerc, 92270 Bois Colombes, France

Continuation-in-part of Ser. No. 912,638, Sep. 26, 1986, abandoned, which is a division of Ser. No. 713,667, Mar. 19, 1985, Pat. No. 4,614,147. This application Mar. 4, 1987, Ser. No. 21,773
Claims priority, application France, May 22, 1984, 84 04478
Int. Cl.[4] D04C *1/06, 3/00, 3/02*
U.S. Cl. 87—5 **32 Claims**



1. A method of manufacturing an elongated braided structural member having high mechanical strength, including the steps of providing at least three primary elongated cores, parallel and spaced from one another, helically winding a plurality of threads around said cores with at least two threads being wound around any pair of primary cores, providing shaping means and putting the cores and the threads wound around them in contact with said shaping means to shape the member with a predetermined openwork shape, and providing cores and/or threads embedded in a resin and molding the resin for shaping the member.

4,800,797

HYDRAULIC PERCUSSION DEVICE AND METHOD OF CONTROLLING SAME

Jean S. Comarmond, Vourles, France, assignor to Etablissements Montabert, Saint-Priest, France

Filed Aug. 7, 1987, Ser. No. 83,778
Claims priority, application France, Aug. 7, 1986, 86 11710
Int. Cl.[4] F01L *25/02;* **F01B** *7/18*
U.S. Cl. 91—307 **17 Claims**



1. A method of operating a hydraulic percussion device comprising:

a housing defining a longitudinal cylinder;

a piston longitudinally reciprocal in the cylinder and subdividing same into a front compartment and a rear compartment;

a tool engageable longitudinally with the piston at the front compartment;

means for alternately and oppositely hydraulically pressurizing the compartments from a source having a high-pressure side and a low-pressure side to move the piston forward to strike the tool while traveling at an end speed and to move the piston backward away from the tool, the rate of alternation being a frequency parameter and the speed being a force parameter; and

control means for varying at least one of the parameters; the method comprising the steps of:

detecting how much the piston rebounds from the tool after striking same by sensing the pressure in one of the compartments immediately after the piston strikes the tool; and

operating the control means in accordance with how much rebound is detected.

4,800,798

CONTROL SURFACE DUAL REDUNDANT SERVOMECHANISM

Clete M. Boldrin, Renton; Richard D. McCorkle; Jimmy W. Rice, both of Seattle, and James J. Rustik, Kent, all of Wash., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

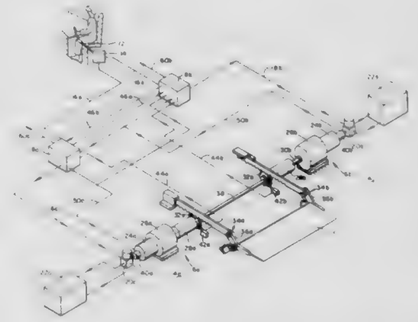
Filed Dec. 11, 1984, Ser. No. 680,674
Int. Cl.[4] F15B *13/16*
U.S. Cl. 91—361 **3 Claims**

1. In an aircraft having a pilot operable member and an aerodynamic control surface which moves in response to movement of the pilot operable member a dual servomechanism assembly which comprises:

a displacement transducer connected to the pilot operable member for generating substantially identical first and second command signals which are proportional to the displacement of the pilot operable member;

first and second hydraulic actuators having respective first and second output members operatively connected to said control surface so as to cause movement thereof in response to movement of said actuators, said first and second hydraulic actuators being operatively interconnected whereby one of said first and second actuators drives the other upon said other becoming inoperative;

first and second control systems operatively interconnecting respective first and second hydraulic actuator assemblies and said displacement transducer and responsive to respective said first and second command signals for generating respective first and second control signals for controlling respective said first and second hydraulic actuators; and



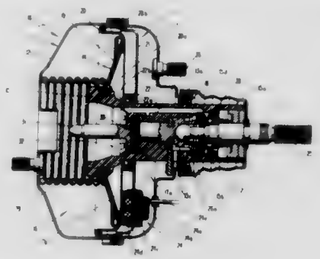
sensor means for sensing force fight between said first and second hydraulic actuators, said sensor means including first and second transducer means operatively interconnecting respective said first and second hydraulic actuators and said first and second control systems for generating respective first and second feedback signals indicative of one of respective pressures within said first and second hydraulic actuators and respective positions of said first and second output members, said first feedback signal received by said first control system and said second feedback signal received by said second control system.

4,800,799

VACUUM TYPE BRAKE BOOSTER

Michiharu Nishii, Toyoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 5, 1986, Ser. No. 836,641
Claims priority, application Japan, Mar. 5, 1985, 60-043883; Mar. 5, 1985, 60-032121[U]
Int. Cl.[4] F15B *9/10*
U.S. Cl. 91—369.2 **3 Claims**



1. A booster comprising:

a booster housing;

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movable wall means disposed in said booster housing and dividing the interior of the housing into a constant pressure chamber connected to a vacuum source and a variable pressure chamber;
a hub member connected to said movable wall means and having a projection extending air-tightly from said housing, said hub member being slidable relative to said housing;
control valve means disposed in said hub member or causing the interruption of fluid communication between said constant and variable pressure chambers and for introducing ambient air into said variable pressure chamber thereby generating an operation force on said movable wall means;
manual actuation means for manually actuating said control valve means;
an output member transmitting said operation force of said movable wall means and said manual force applied to said control valve means through a reaction force mechanism to an output means;
a partition wall connected to sand disposed in said housing for dividing said variable pressure chamber into first and second variable pressure chambers, said first variable pressure chamber being normally connected to said control valve means and said second variable pressure chamber being disposed next to said movable wall means; and
operational force maintaining means for maintaining the operational force of said movable wall means regardless of the position of said manual actuation means, said operational force maintaining means including further valve means for normally allowing fluid flow from said second variable pressure chamber to said first variable pressure chamber and for interrupting said fluid flow in response to an input signal.

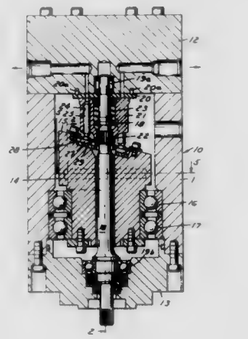
4,800,800

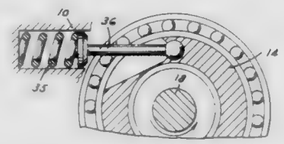
FLUID PRESSURE TRANSLATING DEVICE

Jean J. Schweitzer, Brandon, Miss., assignor to Vickers, Incorporated, Troy, Mich.

Continuation of Ser. No. 898,391, Aug. 20, 1986, abandoned. This application May 2, 1988, Ser. No. 188,639
Int. Cl.[4] F01B *13/04*
U.S. Cl. 91—483 1 Claim

1. A fluid pressure energy translating device comprising
a housing,
a pumping mechanism within said housing,
said pumping mechanism including a rotary cylinder barrel mounted for rotation about a drive axis within said housing and having a plurality of axial cylinders with pistons slidable therein,
a cam block having an inclined face operatively associated with said pistons,
each cylinder having a port opening to a valving base on the cylinder barrel,
means for forming an inlet passage and an outlet passage,
a valve plate associated with said cylinder barrel and provided with inlet and outlet ports, respectively, in communication with the inlet and outlet passages,
means for supporting said cam block for rotation about said axis within said housing such that the circumferential position of the cam block relative to the valve plate may be varied thereby varying the displacement of the pumping mechanism,
said cam block being rotatable between a position of maximum displacement and a position of minimum displacement,
said cam block being subjected to torque of said pumping mechanism during operation thereof urging said cam block rotatably about said axis toward said position of minimum displacement, and
spring means within said housing acting directly on said cam block from a direction tangential to said axis for yieldingly urging said cam block circumferentially about said axis toward said maximum fluid displacement position and opposing movement of said cam block toward a lesser displacement position thereby resisting the torque transmitted by the pumping mechanism on the cam block and providing a constant torque.



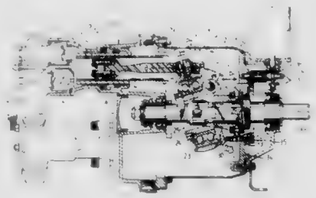


4,800,801

PUMP

Adriaan van Zweeden, Rijsenhout, Netherlands, assignor to Multinorm B.V., Nieuw-Vennep, Netherlands

Filed May 6, 1986, Ser. No. 860,026
Claims priority, application Netherlands, May 8, 1985, 8501315
Int. Cl.[4] F04B *1/28;* **F16J** *9/28, 7/00, 1/14*
U.S. Cl. 92—12.2 16 Claims



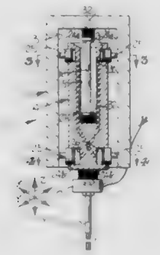
1. A fluid pump comprising the combination of a housing and a rotatable drive shaft journalled in the housing and defining a drive axis, a plurality of cylindrical pump chambers grouped around the drive axis along a circular path within a plane perpendicular to the drive axis with the axes of the chambers being generally parallel to the drive axis, a piston reciprocably received in each chamber for reciprocation along the axis of its associated chamber, swash plate means carried by the drive shaft for rotation therewith, an integral piston rod for each piston, means for rigidly connecting one end of each piston rod to its associated piston so as to extend in unguided, cantilever fashion therefrom toward and to the swash plate means, complementary ball joint means connecting each piston rod at the opposite end thereof to the swash plate means for oscillating such opposite end of each piston rod along a fixed arcuate drive path in a plane containing the drive axis as the drive shaft is rotated so that each such opposite end of the piston rod describes a fixed arcuate driving path which is different from linear reciprocation of its associated piston parallel to the drive axis so that the entire unguided portion of the piston rod from its rigid connection at the one end of the piston rod toward and to the swash plate means is free to oscillate cyclically in a plane perpendicular to the drive axis, and compensating means for compensating such cyclic oscillation of the unguided portion of each piston rod, including means surrounding the drive shaft and axially slidable therealong and actuating means for effecting such sliding to vary the angle of the swash plate means.

4,800,802

HYDRAULIC REMOTE CENTER COMPLIANCE DEVICE

Jack Rebman, Cary, N.C., assignor to Lord Corporation, Erie, Pa.

Filed Aug. 11, 1987, Ser. No. 84,396
Int. Cl.[4] F01B *1/02*
U.S. Cl. 92—61 13 Claims



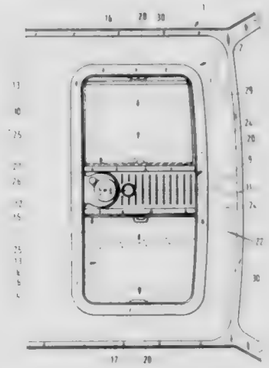
1. In a remote center compliance device for use with a supporting member and a supported member, said device including a primary frame member adapted to be supported by said supporting member, a secondary frame member having support means for supporting said supported member, and interconnecting means interconnecting said primary and secondary members for gross movement of said primary member in unison with said secondary member and for limited adjustive movement of said secondary member relative to said primary member, the improvement comprising:
said interconnecting means including a plurality of extensible and retractable positioning members carried by said secondary frame member and projecting from a plurality of sides thereof into engagement with said primary frame member, each of sides of said secondary frame member having first and second ones of said positioning members projecting therefrom at spaced locations thereon;
a plurality of fluid circuit means, each interconnecting a therewith associated one of said first positioning members upon one side of said secondary support member and a therewith associated nonaligned one of said second positioning members upon another side of said secondary member, for effecting extension of either of said members in response to retraction of the other of said members.

4,800,803

VENTILATION DEVICE

Rolf Farmont, Düsseldorf, Fed. Rep. of Germany, assignor to Farmont Production GmbH & Co. KG, Düsseldorf, Fed. Rep. of Germany

PCT No. PCT/EP86/00637, § 371 Date Jul. 14, 1987, § 102(e) Date Jul. 14, 1987, PCT Pub. No. WO87/02945, PCT Pub. Date May 21, 1987
PCT Filed Nov. 5, 1986, Ser. No. 90,682
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1985, 3540546
Int. Cl.[4] B60H *1/26*
U.S. Cl. 98—2.14 7 Claims



1. A sun roof for location in an opening in the roof of a vehicle and defining a window through which light and air are able to enter the vehicle interior, said sun roof comprising:
frame means to be supported by the vehicle roof and defining the window including an unobstructed window area for the penetration of air and light therethrough;
a translucent cover for the window including said unobstructed window area and movable between an open position in which air may enter the vehicle interior through the unobstructed window area and a closed position in which it blocks entry of air into the vehicle interior through the window;
a ventilation device supported by said frame means and located in the window adjacent said unobstructed window area, said ventilation device comprising:
fan blades,
a motor for driving said fan blades,
a support portion located under said translucent cover for supporting said motor and said fan blades on the vehicle interior side of said cover, said fan blades and said motor being spaced laterally away from said unobstructed window area, and
a power source for said motor, said power source comprising at least one solar cell located between said translucent cover and said support portion;
the area of said unobstructed window area being greater than the area of the window occupied by said ventilation device.

4,800,804

VARIABLE AIR FLOW DIFFUSER

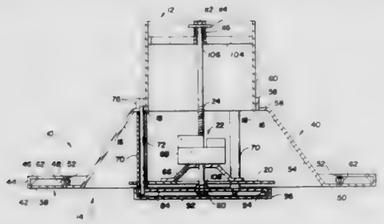
Laurence I. Symington, Unicoi, Tenn., assignor to Tennessee Plastics, Inc., Johnson City, Tenn.

Filed Aug. 6, 1987, Ser. No. 82,350
Int. Cl.[4] F24F *11/00, 13/062*
U.S. Cl. 98—40.06 9 Claims

1. An air diffuser adapted for mounting in a building, comprising tile means having an air inlet side and an air discharge

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side, wall means providing port means in said tile means for allowing the flow of air from said inlet side to said discharge side, damper means adapted in one position to substantially seal against said wall means to prevent air flow through said port means and in other positions removed from said wall means to allow variable air flow through said port means, electrically driven actuator means having relatively movable elements, one of said elements being connected to a stationary portion of said diffuser, and the other of said elements being connected to said



damper means whereby relative motion between said elements will move said damper means toward or away from said wall means to adjust the flow of air through said port means, guide means on said diffuser comprising a plurality of guide posts extending generally axially of the direction of movement of said damper means toward and away from said wall means, and follower means on said damper means engageable with said guide means to allow substantially only linear movement of said damper means.

4,800,805

ESPRESSO MACHINE WITH CAPPUCCINO MAKING ATTACHMENT

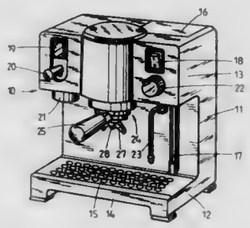
Gotthard C. Mahlich, Kronberg, and Michael Borgmann, Solingen, both of Fed. Rep. of Germany, assignors to Robert Krups Stiftung & Co. KG., Solingen, Fed. Rep. of Germany

Filed Sep. 23, 1987, Ser. No. 100,339

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, 3632375; Dec. 24, 1986, 3644519

Int. Cl.[4] A47J *31/40*

U.S. Cl. 99—293 **26 Claims**



1. An espresso machine comprising a housing; a coffee filter carrier on said housing; a source of steam in said housing; steam supplying first conduit means connected with said source and having a steam discharging orifice and being immersible into a supply of milk; and air supplying second conduit means having an air discharging outlet sufficiently close to said orifice to enable steam which issues from said orifice to draw air from said second conduit means by way of said outlet and into the supply of milk when the first conduit means is immersed into the supply of milk to thereby cause a frothing of milk as a result of admission of steam and air into milk.

4,800,806

METHOD OF AND APPARATUS FOR SELECTIVELY OPERATING A COOKING APPARATUS WITH CIRCULATING HEATED AIR OR WATER VAPOR

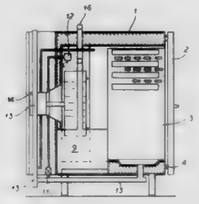
Wilfried Durth, Burbach-Wahlbach, Fed. Rep. of Germany, assignor to Buderus Aktiengesellschaft, Wetzlar, Fed. Rep. of Germany

Division of Ser. No. 800,470, Nov. 21, 1985, Pat. No. 4,701,334. This application Jan. 8, 1987, Ser. No. 1,470

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1984, 3443477

Int. Cl.[4] A47J *27/00*

U.S. Cl. 99—330 **3 Claims**



1. An apparatus for circulated hot air and steam food treatment, comprising:

a walled housing defining a cooking space;

means for supplying heated air in said cooking space with a predetermined temperature for heated air treatment of a foodstuff in said space;

means for spraying cold water onto a wall of said housing to cool the same and generate water vapor in said cooking space;

at least one blower located near said wall to be sprayed with said cold water for selectively circulating said heated air and water vapor in said cooking space;

means external of said generating steam and having a boiler located outside said cooking space, said boiler being connectable to said cooking space for a steam food treatment; and

control means converting heated air treatment to said steam treatment for

deenergizing said means for supplying the heated air after said predetermined temperature has been reached,

turning on said means for spraying said cold water until a temperature of about 100° C. has been reached,

subsequent closing said spraying means when the temperature of about 100° C. has been reached,

switching on said means for generating said steam while controlling the steam treatment in said cooking space, and

continuously controlling the desired degree of the temperature in said cooking space for the food treatment by said steam.

4,800,807

APPARATUS FOR THE MANUFACTURE OF PERFORATED PITA BREAD

Daniel Mani, 838 N. Doheny Dr., #501, Los Angeles, Calif. 90069, assignor to Daniel Mani and Simon Mani, both of Vernon, Calif.

Filed May 18, 1987, Ser. No. 51,503

Int. Cl.[4] A23P *1/00*

U.S. Cl. 99—450.2 **10 Claims**

1. In a pocket bread manufacturing apparatus of the type having a conveyer system and providing a flat sheet of dough on said conveyor having a predetermined thickness, the improvement comprising a pita cutter comprising a cylindrical wheel having a circumferential surface, said cylindrical wheel being rotatably mounted above said conveyor with the circumferential surface thereof disposed near said conveyor, said

wheel having disposed on the circumferential surface thereof a plurality of circular blades which come in contact with said conveyor when disposed adjacent thereto, each circular blade having disposed therein along a chord of said circular blade a



perforating means comprising a row of a plurality of teeth of sufficient depth to provide in a pita loaf formed thereby perforations along said predetermined position, whereby a pita loaf is formed which during baking does not rupture as a result of the gases escaping from said perforations during baking.

4,800,808

APPARATUS FOR PRODUCTION OF MILK CONCENTRATE

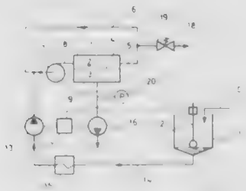
Magnus Lidman, Tumba, Sweden, assignor to Alfa-Laval Agri International AB, Tumba, Sweden

Continuation-in-part of Ser. No. 834,246, Dec. 17, 1985, abandoned. This application May 28, 1987, Ser. No. 55,050

Claims priority, application Sweden, Jun. 1, 1984, 8402970; PCT Int'l Appl., May 28, 1985, PCT/SE85/00222

Int. Cl.[4] A23C *1/00, 9/00*

U.S. Cl. 99—453 **16 Claims**



1. In an apparatus for producing a milk concentrate by membrane filtration of the milk produced at a milking plant, said apparatus comprising a filter unit (1) having a permeate space (3), a concentrate space (2) and a membrane (4) separating said spaces, and means (14) for leading a flow of said milk from the milking plant to the concentrate space by way of an inlet (8), said concentrate space having an outlet (5, 18) for discharging a concentrate flow from the apparatus, said permeate space having an outlet (9) for discharging a permeate flow, the improvement comprising two positive pumps (13, 16; 26, 27) positioned to control respective flows selected from said milk flow, concentrate flow and permeate flow, and means (17, 28) interconnecting said pumps for operating them at a constant internal relation of capacity while discharging said concentrate flow at a rate substantially lower than the rate of said milk flow, said two pumps having a substantial difference in their respective capacities, the degree to which the milk is concentrated depending upon the amount of said difference.

4,800,809

EQUIPMENT FOR CONTINUOUSLY COAGULATING MILK PREFERABLY PRE-ACIDIFIED MILK FOR PREPARING YOGHURT

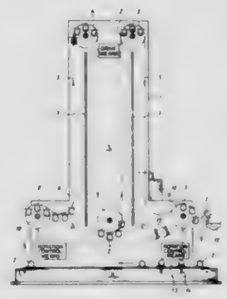
Jort Boer, Vorden, Netherlands, assignor to N. V. Machinefabriek Terlet, Zutphen, Netherlands

Filed Apr. 23, 1987, Ser. No. 41,438

Claims priority, application Netherlands, Apr. 23, 1986, 8601046

Int. Cl.[4] A23C *9/12*

U.S. Cl. 99—453 **8 Claims**



1. Equipment for continuously coagulating milk for preparing yoghurt, said milk being maintained at a predetermined temperature during the continuous coagulation, said equipment comprising:

an essentially closed housing having at least one opening therein;

an endless conveyor belt disposed substantially within said housing, said conveyor belt having at least one minor portion thereof extending through said at least one opening in said housing;

a plurality of paternoster-lift type containers suspended from said conveyor belt;

means for advancing said conveyor belt at a uniform velocity within said housing such that each of said containers remains within said housing for a predetermined time; and

means for stopping each container stepwise along said at least one minor portion of said conveyor belt to permit filling of each container with milk outside said housing and to permit emptying of coagulated milk from each container outside said housing;

wherein, said containers are filled with milk at a filling point outside said housing; the filled containers, which are suspended from the conveyor belt, are transported into the housing and remain within the housing for said predetermined time to permit coagulation of the milk in the filling containers; and then the coagulated milk is emptied out of the containers at an emptying point outside said housing.

4,800,810

IMPACT RICE HULLER

Toyojiro Masumoto, Hoya, Japan, assignor to Yamamoto & Co. Ltd., Tendou, Japan

Filed Jul. 15, 1987, Ser. No. 74,308

Claims priority, application Japan, Jul. 24, 1986, 61-174300; Aug. 1, 1986, 61-181782

Int. Cl.[4] B02B *3/00, 7/02*

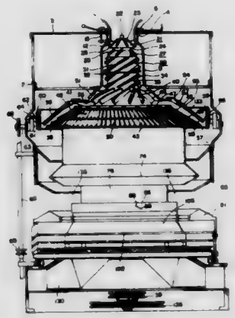
U.S. Cl. 99—519 **5 Claims**

1. A vertical type impact huller for processing grains so as to remove husks therefrom, comprising:

a vertical rotary shaft;

an umbrella type feeder rigidly mounted on an upper portion of the shaft and adapted to turn with the shaft, said feeder having an upper cover and a bottom plate approximately

parallel to the upper cover, the upper cover having an undersurface and array channels on an outer portion of the undersurface, the grains being discharged in an oblique downward direction from the array channels in a non-mutually contacting state, and said feeder further having an annular ejection port formed between outer ends of the upper cover and the bottom plate through which the grains are ejected;



an annular elastic member surrounding the ejection port in a peripherally spaced relationship therewith wherein the grains ejected from the ejection port strike a surface of the elastic member; and

an air separating chamber provided below the feeder for separating husks from processed grains and separating means for separating broken and/or waste grains disposed below the air separating chamber and around the rotary shaft.

4,800,811

DWELL-EFFECTING TWINE ARM DRIVE LINK

Stanley P. Wellman, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 1, 1987, Ser. No. 56,084

Int. Cl.[4] B65B *13/18*

U.S. Cl. 100—5 **10 Claims**



1. In a twine dispensing mechanism of a twine wrapping mechanism for applying wraps of twine to a large cylindrical bale formed in a bale chamber having ends defined by a pair of sidewalls, the twine dispensing mechanism including at least one pivotally mounted twine arm having a dispensing end which, when the arm is oscillated, sweeps back and forth between first and second predetermined end locations of a path located adjacent to the bale chamber, and a reversible arm drive mechanism coupled to the twine arm for oscillating the same, the improvement comprising: said drive mechanism including a first member movable in opposite first and second directions and capable of respectively effecting movement of the twine dispensing end of the arm from location beyond said second location and back to said first location; stop means located for stopping movement of the twine dispensing end at said second location while said drive mechanism is moving in said first direction; and said drive mechanism further including a resiliently yieldable link means coupled to the first member for permitting continued movement of the latter in said first direction after the twine dispensing end has stopped at said second location thereby effecting a dwell period whereby the twine dispensing mechanism is adapted for applying extra wraps of twine to a peripheral area of a bale near the second location.

4,800,812

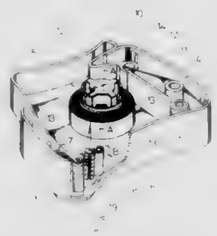
AUTOMATIC TAPE CUTTER/STICKER

Shuh-Chin Lin, No. 5, 35th Alley, 4th Lane, An-Lo Rd., Chung-Ho City, Taipei, Taiwan

Filed Sep. 5, 1986, Ser. No. 904,162

Int. Cl.[4] B41F *13/56*

U.S. Cl. 101—226 **9 Claims**



1. In an automatic tape cutter/sticker comprising an outer housing; an inner housing; a side cover; a plate spring; a rotating cutter; a compressing rod; the improvement comprising:

a circular ring tube installed in substantially the center of said inner housing having two upper and lower symmetrical circular arc tube plates, two left and right symmetrical circular arc tube sheets, and an X-shaped fixing shaft, said circular arc tube plates being smaller and shorter than said circular arc tube sheets, said plates and sheets being independent and installed respectively at circular edges of said X-shaped shaft;

printing equipment installed on a bottom plate of said inner housing, said printing equipment comprising a character model rolling cylinder shaft, a character model rolling cylinder, an ink rolling cylinder shaft and an ink rolling cylinder, said character model rolling cylinder shaft being located substantially parallel to said ink rolling cylinder shaft and disposed generally perpendicular to the bottom plate of said inner housing, said character model rolling cylinder shaft and said ink rolling cylinder shaft each having a slightly tapered connecting hole installed at a substantially center portion of the top of the respective cylinder for compressing a fixing plug for fixing the cylinders on the shaft, said character model rolling cylinder and said ink rolling cylinder each having a shaft hole installed at a substantially center position thereof and said character model rolling cylinder having a circular edge comprising at least two parallel slots for dividing the rolling cylinder surface into at least two convex arc faces on which convex characters are installed.

4,800,813

PLANETARY TRANSMISSION DEVICE FOR DRIVING AN OSCILLATING AUXILIARY GRIPPER OF A PRINTING PRESS

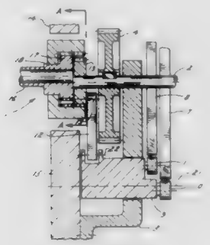
Hans-Wilhelm Leyendecker, Obertshausen, and Paul Abendroth, Offenbach am Main, both of Fed. Rep. of Germany, assignors to M.A.N. Roland, Offenbach am Main, Fed. Rep. of Germany

Filed Jun. 24, 1987, Ser. No. 65,847

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1986, 3621385

Int. Cl.[4] B41F *21/05;* **B65H** *5/10*

U.S. Cl. 101—409 **2 Claims**



1. A device for driving an oscillating auxiliary gripper of a printing press having a frame including a side upright, comprising in combination, an intermediate drive shaft with an eccentric portion shaft portion having an eccentricity e, said intermediate drive shaft being rotatably mounted with respect to the side upright of the press, a cam-actuated auxiliary gripper shaft rotatably mounted on said eccentric portion for oscillation thereon, a driven gear rigidly secured to said intermediate drive shaft and meshing permanently with a drive gear that rotates with the impression cylinder of the press, a casing shell secured to said side upright, an auxiliary cam and main cam intermediate drive rigidly secured to said shaft coaxially with said driven gear and, a double cam follower lever having cam followers positively engaging said main cam and said auxiliary cam, said follower lever being pivotally mounted in said casing shell, a link rod pivotally connected to said follower lever and connected by way of a crank pin to the input side of a differential planetary transmission on whose output side said auxiliary gripper shaft is rotatably disposed for oscillation on the eccentric portion of said rotating intermediate drive shaft.

4,800,814

ARMING DEVICES

Alan W. Holt, and Martin Thaw, both of Herts, United Kingdom, assignors to British Aerospace Public Limited Company, London, England

Filed Apr. 7, 1986, Ser. No. 882,917

Int. Cl.[4] F42B *13/50;* **F42C** *15/04*

U.S. Cl. 102—226 **10 Claims**

1. A projectile comprising:

a projectile body;

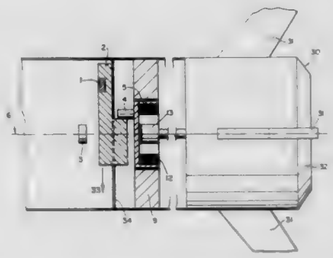
a control device mounted in said body and including a part which is fixed relative to said body and a movable element which is movable relative to the fixed part to initiate a projectile control action by the device;

a first movable member mounted within said body for turning movement relative to the body about an axis, the first member having portions defining an internal surface which extends around said axis and which bounds a space within the first member and containing said axis, said first member also being coupled to said movable element of said control device;

disengageable latch means connected to the first member for initially preventing said turning movement of the first member;

a second movable member positioned in said space within the first member and mounted for rotation relative to the first member about said axis;

drive means coupled to said second member for producing rotation of the second member relative to the first member in response to movement of the projectile upon launch thereof; and,



a flexible elongate strip which is initially wound up through a plurality of turns around and adjacent said internal surface defined by portions of the first member; of which an inner end portion is connected to said second member, of which an outer end portion is coupled to said latch means and said first member, and which is operative, during said relative rotation of the second member, to be progressively wound off said internal surface onto said second member and then to pull said latch means to disengage it and to pull said first member to turn the first member and move said movable element of the control device.

4,800,815

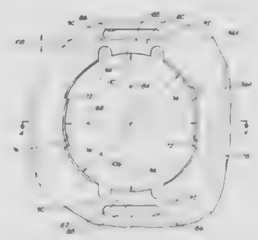
SHAPED CHARGE CARRIER

Roger C. Appledorn, Katy; Lary G. Ratliff, Columbus, both of Tex.; William C. Behling, Duncan, Okla., and Michael L. Oestreich, Katy, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 5, 1987, Ser. No. 22,158

Int. Cl.[4] F42B *3/00*

U.S. Cl. 102—321 **42 Claims**



1. A shaped charge carrier assembly apparatus for use in a perforating gun, comprising:

at least one shaped charge including an outer case, said case having a generally cylindrical outer surface joined by a first inwardly tapered surface which is joined by a second inwardly tapered surface extending to an end of said shaped charge;

inner charge holder means for receiving said second inwardly tapered surface of said shaped charge outer case and providing support to said shaped charge;

a tubular thin wall carrier with a substantially circular cross-

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section and having a substantially circular charge opening disposed therethrough large enough to receive said shaped charge outer case,

deformable retaining means, permanently attached to said carrier adjacent a periphery of said charge opening, for engaging said shaped charge at an end opposite said second tapered surface upon deformation of said deformable retaining means to thereby retain said shaped charge in said charge opening; and

at least one tool insertion aperture, disposed through said carrier, adjacent said deformable retaining means so that said deformable retaining means is at least partially defined between one of said tool insertion aperture and said charge opening.

4,800,816

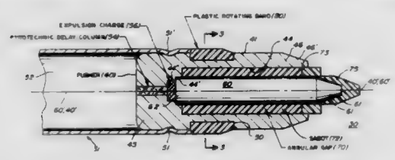
DELAY DISCARDING SABOT PROJECTILE

David A. Meyer, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 562,352, Dec. 16, 1983, abandoned. This application Jul. 30, 1987, Ser. No. 102,320

Int. Cl.[4] F42B *13/16*

U.S. Cl. 102—523 **11 Claims**



1. A low dispersion delay discarding sabot projectile comprising:

(a) a full caliber right circular cylindrically shaped pusher having a preselected longitudinal length and having a cup-like forward facing recess substantially concentric with the external surface of said pusher, said pusher having an aft end portion and a front end portion and said recess having a preselected longitudinal extent;

(b) a right circular cylindrically shaped subcaliber penetrator of dense material and having a preselected longitudinal length, an aft end, a front end nose portion, and positioned in said recess of said pusher so that (i) said penetrator aft end is in abutting relationship with said aft end portion of said pusher and (ii) the pusher and penetrator longitudinal axes are aligned, said recess further having an inner diameter substantially larger than the outer diameter of said penetrator so that, when said penetrator is positioned in said pusher, as aforesaid, an annular gap is defined therebetween, and said longitudinal extent and length of said recess and penetrator being respectively preselected, as aforesaid, so that, the longitudinal extent of said recess (i) is at least 75% of the longitudinal length of said penetrator, but (ii) is not as great as the longitudinal length of said penetrator, thereby, when said penetrator is positioned in said recess, as aforesaid, said nose portion of said penetrator projects beyond said front end portion of said pusher;

(c) a sabot of non-resilient material disposed in said annular gap substantially the entire longitudinal length of said penetrator; and

(d) expulsion means in said aft end portion of said pusher for axially separating said penetrator from said pusher at a preselected time.

4,800,817

RAIL JOINT ALIGNMENT SYSTEM AND METHOD OF CONNECTION

Calvin L. Carstensen, 2137 6th Ave., Rapid City, S. Dak. 57702, and Randall J. Schonmer, P.O. Box 63, Morrill, Nebr. 69358

Filed Apr. 22, 1987, Ser. No. 41,596

Int. Cl.[4] E01B *29/46, 29/44*

U.S. Cl. 104—2 **22 Claims**



1. An alignment system for aligning and supporting facing ends of two rails in a manner such that said ends of said rails can be secured together while said rails are in proper alignment, said alignment system comprising:

(a) a pair of lift plates; wherein one said lift plate is adapted to support one said end of one said rail while the other said lift plate is adapted to support one said end of the other said rail; wherein each said lift plate includes first and second clamping means which are adapted to detachably secure said lift plate to a said rail; wherein each said lift plate further includes first and second height adjustment means; and

(b) a pair of adjustable gauge members, each having first and second ends; wherein each gauge member is adapted to be pivotably attached at its first end to one of said lift plates and is adapted to be attached at its second end to a rail member which is parallel to the rails to which said lift plates are secured; wherein each said gauge member includes length adjustment means;

wherein said lift plates are adapted to support said ends of said rails; wherein the relative positions of said ends of said rails can be adjusted by said height adjustment means of each said lift plate; and wherein the position of said ends of said rails relative to said parallel rail member can be adjusted by means of said gauge members.

15. A method for aligning and supporting facing ends of two rails in a manner such that said ends of said rails can be secured together while said rails are in proper alignment, said method comprising the steps of:

(a) providing a pair of lift plates, each of which includes first and second clamping means which are adapted to detachably secure said lift plate to said rail; wherein each said lift plate further includes first and second height adjustment means;

(b) positioning a said lift plate under said end of each said rail and securing said lift plate to said rail;

(c) providing a pair of adjustable gauge members, each having first and second ends;

(d) attaching said first end of each said gauge member to a said lift plate;

(e) attaching said second end of each said gauge member to a fixed object laterally spaced from said ends of said rails;

(f) laterally aligning said ends of said rails by means of said adjustable gauge members; and

(g) vertically and angularly aligning said ends of said rails by means of said height adjustment means.

4,800,818

LINEAR MOTOR-DRIVEN CONVEYOR MEANS

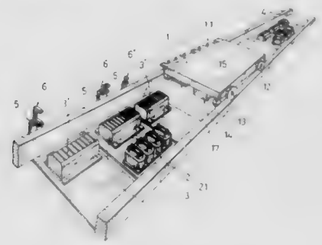
Kojiro Kawaguchi, Osaka, and Shohei Furukawa, Kobe, both of Japan, assignors to Hitachi Kiden Kogyo Kabushiki Kaisha, Amagasaki, Japan

Filed Nov. 3, 1986, Ser. No. 926,185

Claims priority, application Japan, Nov. 2, 1985, 60-246906

Int. Cl.[4] B60L *13/00*

U.S. Cl. 104—290 **6 Claims**



3. In a linear motor-driven conveyor means including a transporting pallet which runs along a transporting track and which is driven by linear motors, the improvement wherein said linear motors comprise:

a linear step motor including a linear step motor primary side provided at a transporting track station or on said transporting pallet and a linear step motor secondary side provided at said transporting track station or on said transporting pallet at a position opposite to said primary side of said linear step motor;

a first linear induction motor including a linear induction motor primary side provided at said transporting track station or on said transporting pallet and a linear induction motor secondary side provided at said transporting track station or on said transporting pallet at a position opposite to said primary side of said first linear induction motor; and

a second linear induction motor for acceleration and deceleration and having a primary side or a secondary side plate at said transporting track station at a location adjacent the respective said side of said first linear induction motor in the advancing direction of said transporting pallet, said second linear induction motor for acceleration and deceleration being connected to said first linear induction motor upon advancement of said transporting pallet.

4,800,819

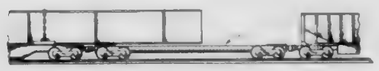
RAILWAY CAR

Ronald L. Frey, Bethlehem, Pa., assignor to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Nov. 9, 1984, Ser. No. 669,707

Int. Cl.[4] B60P *3/40*

U.S. Cl. 105—238.1 **3 Claims**



1. A railway idler car for being pushed and/or pulled by a connected and immediately adjacent railway car carrying at least first object extending beyond the car and overlying but not being supported by the idler car, the idler car comprising:

(a) a lightweight center sill for carrying axial loads resulting from pushing and/or pulling of the idler car;

(b) a pair of lightweight side sills, said center sill positioned between said side sills;

(c) a plurality of longitudinally spaced lightweight cross ties interconnecting said center sill with each of said side sills for providing substantial structural support between said center and side sills and for thereby providing an open skeletal frame;

(d) an end panel flooring for defining a walkway secured to said frame at opposite ends thereof and with no other flooring overlying said frame between said walkways so that said frame is substantially floorless and thereby not intended to carry any freight;

(e) a pair of spaced lightweight bolsters, each bolster disposed at an end of said frame; and,

(f) a pair of light duty trucks, each truck operably connected to one of said bolsters.

4,800,820

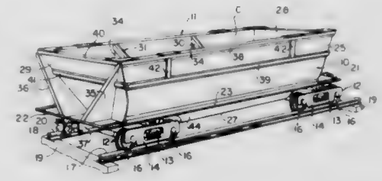
SIDE SILL ARRANGEMENT FOR A GONDOLA-TYPE RAILROAD CAR

Jan Z. Tomaka, Mount Royal, Canada, assignor to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 634,929, Jul. 27, 1984, abandoned. This application Dec. 2, 1986, Ser. No. 937,033

Int. Cl.[4] B61D *17/00, 7/00*

U.S. Cl. 105—406.1 **18 Claims**



1. In a center sill-less railroad car body, in combination,

(a) two spaced, aligned shear plates extending transversely of the car body respectively adjacent opposite ends thereof;

(b) two spaced, parallel side sills extending between the shear plates longitudinally of the car body respectively along opposite sides thereof such that opposed end portions of each side sill are respectively adjacent longitudinal edges of the two shear plates, and opposed longitudinal edges of each shear plate are respectively adjacent end portions of the two side sills; and

(c) means for interconnecting the side sill end portions to the respectively adjacent longitudinal edges of the shear plates to constituted a load-bearing frame for the car body such that longitudinally directed push-pull forces imposed on the car body during operation are primarily transmitted between the shear plates by the side sills;

(d) the interconnecting means comprising a plurality of unitary, integral load transfer members extending longitudinally of the car body and each having an X-shaped profile with a central juncture portion and four legs respectively extending radially inwardly, outwardly, upwardly, and downwardly therefrom;

(e) each side sill end portion being received between, and secured to at least one of, the outwardly and upwardly extending legs of one of the load transfer members, and the inwardly extending leg of the same load transfer member being secured to and along the shear plate longitudinal edge adjacent the side sill end portion which is received between the outwardly and upwardly extending legs of the same load transfer member, such that longitudinal push-pull forces are transferred between the side sills and the shear plates through the load transfer members, and

each load transfer member forms an integral portion of the exposed surface of the interior of the car body;

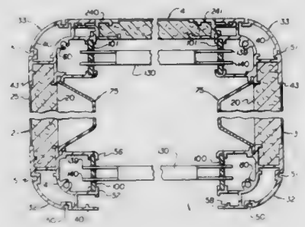
(f) the legs and juncture portions of the load transfer members each having a solid cross-section of thickness sufficient to withstand stresses, created by the push-pull forces, which peak near locations where the members first contact the inside transverse edge of the shear plates.

4,800,821

DISPENSING RACK

Thomas J. Nook, Grand Haven, and Henry G. Oltof, Spring Lake, both of Mich., assignors to Harbor Industries, Grand Haven, Mich.

Filed Feb. 24, 1987, Ser. No. 18,032
Int. Cl.[4] A47B *3/00*
U.S. Cl. 108—111 **41 Claims**



1. A knockdown dispensing rack for stacked articles and the like, comprising:

first and second end panels shaped to be supported on a surface in a laterally spaced apart, generally upright, and freestanding condition; said first and second end panels including generally closed corner brackets with at least first and second slotted portions respectively, which extend generally longitudinally therealong in a mutually parallel relationship, and define spaces with a transversely measured width within the interior of said corner brackets; said first and second slotted portions including at least first and second slots extending respectively therethrough, which are normally, generally laterally aligned;

at least one shelf adapted to support articles thereon, and including a laterally extending, downwardly opening groove which extends along a substantial portion thereof;

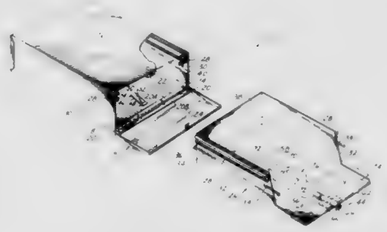
at least one support bar shaped to extend between said end panels, and being sufficiently rigid to laterally interconnect said first and second end panels, and support at least a portion of said shelf thereon, with said support bar being closely received in said shelf groove to rigidify said dispenser rack; said support bar including first and second ends shaped for close reception in said first and second slots respectively, with the width of said corner bracket spaces being substantially greater than the length of said bar ends to permit said support bar to shift laterally therein; said first bar end including a first, downwardly opening notch shaped to closely receive therein a lower edge of said first slot; said second bar end including a second, downwardly opening notch shaped to closely receive therein a lower edge of said second slot; said first and second notches being spaced apart a preselected distance substantially equal to the lateral distance between said first and second slots, such that said end panels are set spaced apart in the upright, freestanding condition for detachable assembly and interconnection in a knockdown fashion by said support bar, with the first end of said support bar being inserted into said first slot past said first notch, and said support bar is being then bodily translated longitudinally in the opposite direction to insert the second end of said support bar into said second slot until said first and second notches contemporaneously engage the lower edges of said first and second slots respectively, thereby facilitating quick and easy assembly of said end panels without either moving the same from their set position, or requiring any tools.

4,800,822

GUN SAFE WITH EJECTABLE DRAWER

John Adkins, 1955 New Berlin Rd., Jacksonville, Fla. 32218

Filed Oct. 9, 1986, Ser. No. 917,050
Int. Cl.[4] E05B *7/32*
U.S. Cl. 109—19 **7 Claims**



1. A safe for storing articles such as a firearm, comprising in combination:

a housing having walls and a floor defining an opened end;

a drawer having a floor for positioning within said housing;

means for reciprocatingly mounting said drawer within said housing;

means for urging said drawer outwardly from within said housing;

a door;

means for connecting said door to said opened end of said housing; and

a catch mechanism for securing said drawer within said housing until closure of said door, said catch mechanism including:

a leaf extending from said floor of said housing,

a down turned tab extending from said floor of said drawer in longitudinal alignment with said leaf for engagement by said leaf when said drawer is retracted within said housing,

trigger, and

means for reciprocatingly securing said trigger relative to said floor in longitudinal alignment with said leaf and in engageable alignment with said door, whereby, upon closure of said door, said trigger engages said leaf causing said leaf to disengage said down turned tab;

whereby said catch mechanism secures said drawer within said housing until closure of said door whereupon said drawer is urged against said door and is ejected form said housing upon opening of said door.

4,800,823

AQUASAFE™ A TEMPERATURE TOLERANT SAFE

Gilbert P. Hyatt, P.O. Box 3357, Cerritos, Calif. 90703

Filed Jan. 12, 1982, Ser. No. 338,935
Int. Cl.[4] E05G *3/00;* **E04B** *2/02*
U.S. Cl. 109—24 **8 Claims**

1. A storage system comprising:

means for storing materials and

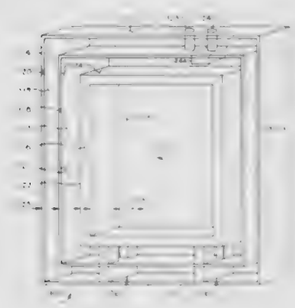
means for reducing temperature of the materials stored in said storing means, said temperature reducing means including;

(a) a fluid container for containing fluid,

(b) a thermal conductor for conducting heat between said material storing means and said fluid container,

(c) means for evaporating fluid contained in said fluid container to remove heat conducted said thermal conductor,

(d) means for sensing the amount of fluid contained in said fluid container, and



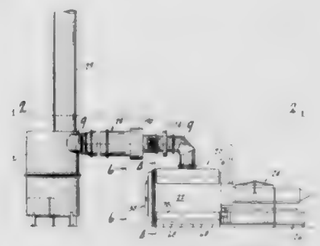
(e) means for adding fluid to said fluid container in response to the sensing of the amount of fluid by said sensing means to replace fluid evaporated by said evaporating means.

4,800,824

PYROLYTIC INCINERATION SYSTEM

Mark A. DiFonzo, Brookfield, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Oct. 13, 1987, Ser. No. 107,099
Int. Cl.[4] F23D *14/00*
U.S. Cl. 110—235 **19 Claims**



1. An incineration system comprising:

a pyrolysis chamber for gasifying materials, said chamber comprising a generally cylindrical wall, a circular front head and a circular rear head, the interior of said chamber being lined with refractory material, said cylinder wall having an upper opening designed to be an exit for said gasified materials from said chamber, the lower portion of said chamber being lined with refractory material forming a generally planar floor with a support ridge extending longitudinally down the center thereof and the sides of the interior of said chamber having longitudinal support grooves cut therein;

a flat hearth comprising a plurality of plates made of nonporous material, opposing sides of said plates being support edges, one of said edges on each plate being designed to sit on one of said support grooves and the opposing edge of each plate being designed to sit on said support ridge, each said plate having a plurality of apertures evenly distributed therein to provide fluid communication from the lower surface of each said plate to its upper surface, a nipple surrounding the upper edge of each said aperture on the upper surface of said plate;

the front head of said chamber being bolted to said cylindrical wall and having a generally rectangular passageway therein, said passageway of said front head being covered by an access assembly vertically movable between a first lower position and second raised position, means for raising and lowering said access assembly, wherein when said access assembly is in said lower position said assembly seals said interior of said chamber from the atmosphere;

a system for cooling said cylindrical wall and said rear head of said pyrolysis chamber, said cooling system comprising a skirt mounted to the lower portion of said cylindrical wall and having an intake for atmospheric air, a plurality of lower inlets in each side of said cylindrical wall, a plurality of upper outlets in each side of said cylindrical wall, a curved wall segment mounted to the interior of each side of said cylindrical wall and connecting said lower inlets and upper outlets on respective sides of said cylindrical wall, a plenum on the upper portion of said cylindrical wall connecting said upper outlets, a fan mounted to said plenum designed to draw air through said intake, said inlets and said outlets to said plenum, a plurality of ducts in said rear head through which said fan directs the air, and a plurality of orifices at the bottom of said ducts designed to inject air into the interior of said chamber between said floor of said chamber and said hearth;

ash removal means comprising a ram movable between a first retracted position and a second extended position, external means for extending and retracting said ram, a rear access assembly for selectively permitting access of said ram to the interior of said chamber;

a thermal reactor comprising a cylindrical premixing section connected to said upper opening of said chamber and having first air jets designed to inject a preselected amount of combustion air directed into said premixing section and away from said upper opening and imparting an axial direction to the combustion air and gasified materials, a cylindrical igniter section connected to said premixing section designed to ignite said gasified materials and combustion air while imparting a swirl in a first rotational direction, and further designed to inject an additional preselected amount of combustion air directed away from said premixing section through second air jets imparting a swirl in a second rotational direction, a frusto-conical expansion section designed to inject an additional preselected amount of combustion air directed away from said igniter section through third air jets imparting a swirl in said first rotational direction, and a cylindrical combustion section in which said combustion air and gasified materials may burn.

4,800,825

SLAGGING-COMBUSTOR SULFUR REMOVAL PROCESS AND APPARATUS

John D. Kuenzly, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 93,064, Aug. 31, 1987, abandoned, which is a continuation of Ser. No. 670,411, Nov. 13, 1984, abandoned. This application Feb. 24, 1988, Ser. No. 161,291
Int. Cl.[4] F23J *7/00*
U.S. Cl. 110—345 **12 Claims**

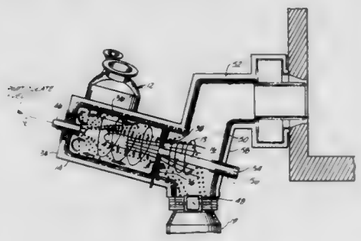
1. A method for the combustion of particulate sulfur-containing carbonaceous fuel in a combustion zone and removing a major proportion of the sulfur from the gaseous products of combustion before the same leave the combustion zone, which method comprises in combination:

(a) introducing an oxidant at a temperature of from about 1200° to about 2000° F. tangentially into a combustion chamber having a fuel-injection nozzle extending from an end wall of said chamber into a combustion zone within said chamber, said oxidant being introduced tangentially and flowing substantially helically towards the end wall of said chamber and an apertured baffle positioned at the exit

end of said chamber, said injection being at a velocity sufficient to form and maintain along a cylindrical wall between the end wall and apertured baffle a molten flowing slag layer along the surface thereof and resulting from combustion of the carbonaceous fuel, while simultaneously introducing to said combustion zone, through said nozzle, particulate carbonaceous material fluidized in a carrier fluid;

(b) combusting said particulate sulfur-containing carbonaceous material to yield molten slag and sulfur-containing gaseous combustion products;

(c) regulating the fuel and oxidant input velocities and mass-flow rates in a manner to maintain a relatively oxygen-rich annular region adjacent the cylindrical walls and a relatively fuel-rich recirculation zone within said annular region; and



(d) injecting particulate sorbent, at a particle size of from about 5 to about 50 microns, into said recirculation zone co-current with the flow therein, and reacting said particulate sorbent with sulfur-containing combustion products to form a sulfur-containing compound, said sulfur-containing compound passing to, and being taken up by, said molten slag and;

(e) discharging products of combustion of reduced sulfur content from said primary combustion zone, and separately disposing of molten slag containing the sulfur-containing compound for collection external of said combustion zone.

4,800,827

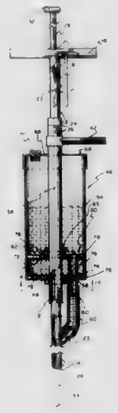
APPARATUS AND IMPROVED METHOD FOR DISPENSING MATTER INTO THE GROUND

Wayne H. Smith, R.R. 2, Leoti, Kans. 67861

Continuation-in-part of Ser. No. 861,840, May 12, 1986, Pat. No. 4,760,805. This application Mar. 9, 1987, Ser. No. 23,537

Int. Cl.[4] A01C *23/02, 15/02*

U.S. Cl. 111—7.2 **15 Claims**



1. An apparatus for dispensing matter into the ground comprising:

a rod means;

a body conduit means terminating at one end into a funnel and terminating at another end into a body aperture, said rod means slidably passes through said body aperture and into said body conduit, and said body conduit having a structure defining a body opening;

a cylinder reservoir means coaxial with and bound to said body conduit means, said cylinder reservoir means including a cylinder bottom having a structure defining a cylinder bottom aperture; and a lower plate means bound to said body conduit means and spacedly positioned with respect to said cylinder bottom and having a structure defining a lower plate aperture;

a dispensing conduit means interconnecting said lower plate aperture with said body opening to conduct and channel matter from said lower plate aperture and into said body conduit through said body opening;

a means for measuring and holding a certain quantity of matter from said cylinder reservoir means and rotatably positioned around said body conduit means between said cylinder bottom and said lower plate means to dispense the certain quantity of matter through said lower plate aperture and into said dispensing conduit means when rotated over the lower plate aperture; and

said means for measuring and holding a certain quantity of matter comprises an upper bearing plate and a lower bearing plate, said bearing plates are generally parallel with respect to each other and are rotatable around said body conduit means; each bearing plate has a structure defining a bearing aperture; an upright side wall attached to said upper bearing plate and said lower bearing plate and is rotatable therewith; and handle means attached to said upright side wall in order to rotate the upper bearing plate and lower bearing plate about the body conduit means.

4,800,826

AGRICULTURAL MACHINE

Viktor V. Shiskin, ulitsa Festivalnaya, 16, kv. 5, Krasnodar, U.S.S.R.

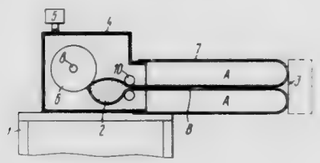
PCT No. PCT/SU86/00129, § 371 Date Jul. 16, 1987, § 102(e) Date Jul. 16, 1987, PCT Pub. No. WO87/03776, PCT Pub. Date Jul. 2, 1987

PCT Filed Dec. 17, 1986, Ser. No. 110,711

Claims priority, application U.S.S.R., Dec. 24, 1985, 3989052; Dec. 24, 1985, 3989054; Dec. 24, 1985, 3989053

Int. Cl.[4] A01C *7/00, 7/04, 15/04, 91/02*

U.S. Cl. 111—1 **10 Claims**



1. An agricultural machine comprising a frame (1) carrying a hopper (2) for a fluid material and a device for causing the fluid material to move towards a working implement (3) for carrying out production operations in the field, characterized in that the hopper (2) is located in a sealed chamber (4) having an inlet communicated with a source (5) of working fluid supplied to the chamber (4) under pressure, the device comprising a driven drum (6) having a flexible hose (7) wound thereon and accommodated in the sealed chamber (4) in such a manner that the interior space (B) thereof communicates with the hopper (2) for a fluid material, the free end of the hose (7) extending through an outlet of the chamber (4), being turned inside out and sealingly secured to and along the perimeter of the chamber (4) so as to define an annular space (A), the volume of the annular space varying under pressure of working fluid to cause the fluid material to move.

4,800,828

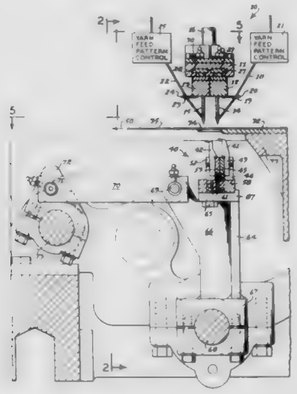
DOUBLE NEEDLE BAR LOOP PILE TUFTING APPARATUS

Charles W. Watkins, Ooltewah, Tenn., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Feb. 1, 1988, Ser. No. 150,759

Int. Cl.[4] D05C *15/22*

U.S. Cl. 112—80.41 **12 Claims**



1. A tufting machine for the formation of loop pile, comprising:

(a) means for supporting a base fabric for longitudinal movement in a feeding direction from front-to-rear through the machine,

(b) a front needle bar supporting a plurality of front needles spaced transversely of said feeding direction for introducing yarns through said base fabric to form loops,

(c) a rear needle bar behind said front needle bar in said feeding direction and supporting a plurality of rear needles spaced transversely of said feeding direction for introducing yarns through said base fabric to form loops,

(d) needle drive means supporting said needle bars for simultaneous reciprocal movement toward and away from said base fabric,

(e) looper apparatus comprising a plurality of front loop pile hooks and a plurality of rear loop pile hooks, there being one hook for each of said needles,

(f) said looper apparatus further comprising an elongated front hook bar supporting said front loop pile hooks spaced longitudinally of said front hook bar and an elongated rear hook bar supporting said rear loop pile hooks spaced longitudinally of said rear hook bar,

(g) an elongated hook mounting bar and means mounting said front and rear hook bars longitudinally of and upon said hook mounting bar so that said front hook bar is in front of and parallel to said rear hook bar,

(h) said looper apparatus further comprising reciprocal motive means including a transverse reciprocable hook shaft and means connecting said hook mounting bar to said hook shaft so that said loop pile hooks are spaced transversely of said feeding direction so that the bills of said loop pile hooks point in the same direction as said feeding direction and each of said front loop pile hooks cooperates with a corresponding front needle to form a front loop and each of said rear loop pile hooks cooperates with a corresponding rear needle to form a rear loop simultaneously with the formation of said front loops.

4,800,829

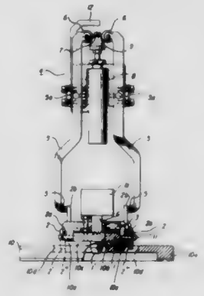
DEVICE FOR PLACING A PRESSER FOOT IN AN AUTOMATIC SEWING MACHINE

Masatoshi Ichimura, Higashiosaka, Japan, assignor to Satoh Seiki Co., Ltd., Japan

Filed Feb. 28, 1986, Ser. No. 834,541

Int. Cl.[4] D05B *29/00*

U.S. Cl. 112—240 **5 Claims**



1. A device for placing a pressure foot for positioning a fabric to be sewn by a sewing machine,

a placement means for holding the pressure foot on the sewing machine during a sewing operation,

said placement means comprising a pair of hook means releasably engagable with the pressure foot to hold the same in place, and an actuating means for causing the hook means to release the pressure foot,

said hook means and said actuating means being displaceable together as a unit toward and away from said pressure foot.

4,800,830

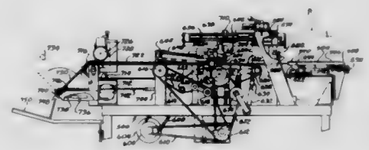
HEMMER SEAMER ASSEMBLY

Maximilian Adamski, Palatine; Robert L. Kosrow, Hoffman Estates, and Stephen Ruderman, Oak Park, all of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Mar. 2, 1988, Ser. No. 162,919

Int. Cl.[4] D05B *27/00, 69/10*

U.S. Cl. 112—303 **20 Claims**



1. A device for transporting a fabric to a sewing station, comprising:

first means for moving the fabric in a first direction;

a table assembly;

means for placing the fabric from the first moving means onto the table assembly;

means for moving the table assembly in a direction transversely to the first direction; and

second means for moving the fabric from the table assembly in the transverse direction to the sewing station.

16. A device for transporting a fabric toward a sewing machine, comprising:

a table assembly;

pickup means for grasping the fabric and releasing the fabric onto the table assembly while the pickup means is located above the table assembly;

a transport assembly including clamp means; and

means for moving the table assembly toward the transport assembly for gripping a portion of the fabric by the clamp means while the pickup means is located above the table assembly.

4,800,831

ICE BREAKER

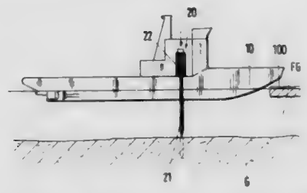
Jens H. Hellmann; Karl-Heinz Rupp, both of Hamburg, and Günter Varges, Emden, all of Fed. Rep. of Germany, assignors to Thyssen Nordseewerke GmbH

Filed Sep. 29, 1986, Ser. No. 912,966

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1985, 3535091

Int. Cl.[4] B63B *21/56*

U.S. Cl. 114—40 **8 Claims**



1. An ice breaker, wherein the horizontal propulsion of the ice breaker is independent of a ship screw, the ice breaker including a hull, and wherein the horizontal propulsion of the ice breaker takes place by instantaneous force engagement of the hull with means located on the ocean bed constituted by lowered or lowerable, vertical or sloping travelling piles, mechanical pushing-off or hauling-in means being provided on the hull side, wherein the forward propulsion takes place by hauling-in on the travelling pile using said mechanical means, such as a cable, wherein on the deck of the hull is provided at least one device for driving-in, drawing-out and for position-variable transportation of the travelling piles and which comprises a hydraulic operating cylinder, wherein the drawing-out of the driven-in travelling piles takes place on the hull side by raising the piles by means of a pressurized medium, and wherein in the interior of each travelling pile is provided at least one supply line for the pressurized medium, which is connected to outlets located in the lower region of the outer wall of the pile.

4,800,832

RECREATIONAL BOAT

Edmund J. Sulimierski, 151 La Rose Avenue, Apt. 309, Weston, Ontario,, Canada (M9P 1B3)

Filed Mar. 6, 1987, Ser. No. 23,010

Int. Cl.[4] B63B *7/04*

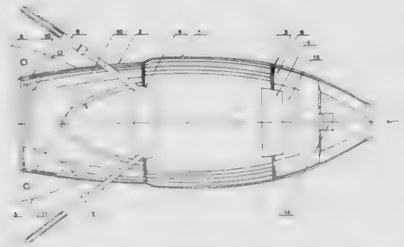
U.S. Cl. 114—352 **16 Claims**

1. A knock-down boat assembly comprising,

bow, mid and stern water-tight hull sections, each having, fore and aft ends, concave side walls and a flat transverse bulkhead at the after end of the bow section, at the fore and aft ends of the mid section and at the fore end of the stern section,

the concave side walls of the stern section converge continuously from it fore end bulkhead to its aft end bulkhead, the stern section being nestable in the mid-section and the bow section being nestable in the stern section when in the knock-down configuration, the side walls of the stern section converge continuously from the fore end bulkhead to the aft end bulkhead such that the width of the stern section is a maximum at the fore end,

the forward bulkhead of the stern section being secured in a position butting against the aft bulkhead of the mid-section and the aft bulkhead of the bow section being secured in a position butting against the fore bulkhead of the mid-section when the boat is assembled for sailing,



the side walls of the mid-section each having a short length extending from the aft bulkhead thereof which extends obliquely outwardly from the plane of the longitudinal curvature of the stern section such that the width of the aft end of the mid-section increases rapidly to a greater width than the maximum width of the stern section whereby the stern section is nestable within the mid-section with the forward bulkhead located more closely adjacent the after bulkhead than would be possible with a smooth longitudinal arc of curvature.

4,800,833

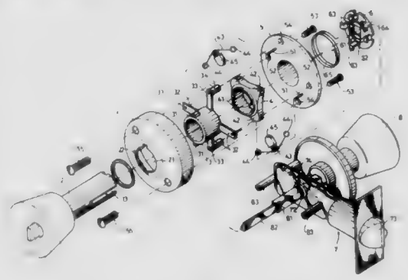
TUBULAR DOOR LOCK WITH A BELL

Nan C. Shih, 116, Chantsao Rd., Changhua City, Taiwan (500)

Filed Oct. 28, 1986, Ser. No. 923,739

Int. Cl.[4] G08B *13/08*

U.S. Cl. 116—10 **2 Claims**



1. A tubular door lock with a bell comprising,

an inside knob constructed with a locking structure and a pipe shaft cut with two straight slots,

a bell bored with a hole which is penetrated by said pipe shaft and which has two notches in which respective projections of a fixing frame fit,

said fixing frame containing four radiating arms, two of said arms having axial projections connected to a fixing plate, the other two of said arms each being bored with a hole, and the fixing frame further having two projections located in the notches of said bell,

said fixing plate containing a hole for a screw to penetrate to link said bell to an outside knob, and two pins, the pins being inserted in the respective holes in said fixing frame, two sticker springs, each pivotally carried on a respective

one of the pins for striking internally against the bell, each striker spring having a central pivot, a contact head adjacent the pivot, a pair of spring arms extending outwardly from the pivot, and a striker at the end of each arm,

a rotating unit having a protruded circle at each of its two sides for matching with said fixing frame and said fixing plate, and four protrusions able to squeeze and overpass the contact heads of the striker springs,

an assembling plate having two lunar slots for assembling with said inside knob, a square opening for assembling with a square shaft of said outside knob, four hooks for further spring respectively to hook around and an ear for connecting with one end of said further spring,

said further spring having one end connected with said ear and the other end fixed at said fixing plate, so that said fixing plate can automatically return to its original position after either of the knobs is turned around,

said square shaft being connected with a linking plate to rotate the linking plate,

a latch to be pulled or released by the linking plate and which has a shaft hole to be penetrated by said square shaft of said outside knob to rotate and to move a latch bolt,

and characteristics that the rotation of said outside knob will be transmitted to move said rotating unit causing said protrusions sequentially to press against the contact heads of the respective striker springs, with pressure of a respective protrusion against a respective contact head effecting pivotal movement of a respective striker spring on its respective pivot until one of the strikers engages the interior of the bell where upon subsequent release of the contact head on passage of the protrusion causes the striker to strike against the interior of the bell due to the resilience of the respective spring arm.

4,800,834

TELESCOPIC ROD MEANS WITH ROLLING DISPLAY SHEET

Ou-Yang Feng, No. 18, Lane 25, Hang-Chou S. Rd., Sec. 2, Taipei, Taiwan

Filed Aug. 5, 1987, Ser. No. 81,685

Int. Cl.[4] G09F *17/00*

U.S. Cl. 116—173 **2 Claims**



1. A telescopic rod means comprising:

a hollow-pipe handle having a longitudinal slit formed thereon as cut from its top opening, a pair of side windows symmetrically disposed on both sides of its upper portion, an annular extension formed on its lower portion inside the handle, and a bottom cap sealing a bottom hole of said handle;

an alignment coupler being a generally cylindrical-shaped sleeve having an inner cylindrical hole therein, having a longitudinal extension formed on said sleeve slidably engaging with said longitudinal slit formed on said handle, a pair of spring hook plates secured to said sleeve and slightly protruding outwardly for operatively engaging said windows of said handle, an inclined-surface portion formed on the lower portion of said sleeve, a recess formed above said inclined-surface portion and aligned with said longitudinal extension of said sleeve, and an arcuated extension formed on the lower perimeter of said sleeve as operatively limited against said annular extension of said handle; and

a reel pole including a key extension formed on the lower end of said pole engageable with said recess of said coupler, a top knob formed on its top end, a lengthy aperture longitudinally formed on said pole for fixing a side edge of a display sheet selected from a flexible flag cloth and flexible clothes or papers having suitable toughness, and a pin transversely fixed under said lengthy aperture operatively pushing said coupler downwardly when retracting said pole into said handle;

said key extension of said pole operatively engaged with said recess of said coupler as engaged with said windows of said handle to automatically align said lengthy aperture of said display sheet with said longitudinal slit on said handle.

4,800,835

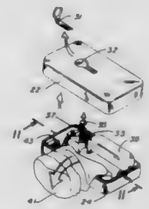
LOCATOR DEVICE

Arthur W. Mears, Loveland, Colo., assignor to Radarfind, Inc., Broomfield, Colo.

Filed Mar. 10, 1988, Ser. No. 166,523

Int. Cl.[4] B64B *1/44, 1/50*; B64C *31/06*

U.S. Cl. 116—210 **9 Claims**



1. A locator device comprising;

a container;

said container having a top case and a bottom case;

said top case is mechanically affixed to said bottom case by a release key attached to said bottom case by way of a release pin which is attached to said bottom case;

a deflated and collapsed airfoil and a tail means in said container and having a fill connect with a one-way valve therein;

a cartridge of compressed gas rigidly fixed in said container to a gas release chamber;

said gas release chamber communicating with said fill connect;

said gas release chamber having a puncture pin means and a spring means for puncturing said cartiridge of compressed gas and simultaneously retracting said puncture pin means allowing the compressed gas to flow through said gas release chamber into said airfoil by way of said fill connect and said one-way valve;

a plunger restraint, said plunger restraint restraining a plunger in a plunger channel;

said plunger restraint under tension of a spring and held in place by said top case;

said plunger under tension by a plunger spring for driving said plunger against a lever;

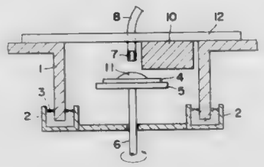
said lever affixed in said bottom case wherein said lever is held pivitally in place by a fulcrum pin;
one end of said lever located in a position to communicate with said puncture pin and the other end capable of communicating with said plunger;
a tether means connecting said bottom case and said airfoil allowing said airfoil to rise to a height the length of said tether means;
whereby said release key is pulled causing said plunger restraint to force said top case from communication with said bottom case and simultaneously allowing said plunger to be released striking said lever causing said puncture pin to puncture said cartridge of compressed gas and releasing the compressed gas and filling said airfoil allowing it to separate from said fill connect and rising to a length of said tether means.

4,800,836

RESIST COATING APPARATUS

Noboru Yamamoto, Yokohama, and Yasuo Matsuoka, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 24, 1988, Ser. No. 172,497
Claims priority, application Japan, Mar. 27, 1987, 62-73465
Int. Cl.[4] B05C *13/00, 15/00*
U.S. Cl. 118—52 **10 Claims**



1. An apparatus for coating resist on a substrate comprising:
a vessel having an open top covered by a cover plate;
sealing means for creating a sealed solvent vapor atmosphere in said vessel;
a circular rotary chuck disposed in said vessel at substantially the central portion thereof, said chuck with the substrate supported thereon being rotatable about a vertical axis by driving means;
means disposed directly above said rotary chuck and adapted to drop liquid state resist on said substrate thereby to form a resist coat thereon; and
means disposed above said rotary chuck and extending in a radial direction thereof for substantially reducing swirly flow of the solvent vapour created above said rotary chuck when said rotary chuck is rotated.

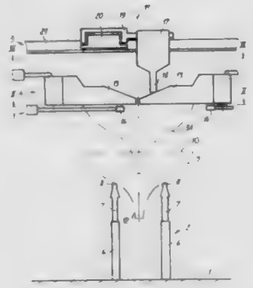
4,800,837

MACHINE FOR DEPOSITING PRODUCT ON A PLANE AND HORIZONTAL SURFACE, ESPECIALLY MACHINE FOR DEPOSITING FRIT ON CATHODE TUBE CONES

Clemente Ferragni, Frosinone, Italy, assignor to Videocolor, Montrouge, France

Filed Jun. 10, 1987, Ser. No. 60,163
Claims priority, application France, Jun. 13, 1986, 86 08586
Int. Cl.[4] B05C *3/20*
U.S. Cl. 118—410 **5 Claims**

1. A machine for depositing a product on a planar, horizontal surface of an object in a closed path having straight sections and at least one rounded corner, said machine comprising:
(a) first means for holding an object having a planar surface in a work position in which the planar surface is horizontal;
(b) a single nozzle capable of depositing a product at a fixed rate, said single nozzle being disposed above the planar surface of the object when the object is in its work position; and
(c) second means for moving said single nozzle relative to the planar surface of the object in a closed path having straight sections and at least one rounded corner, said second means being adapted:
(i) to move said single nozzle at a constant speed V_n while said nozzle is moving along the straight sections of the closed path, to increase the speed of said single nozzle beginning at the beginning of said at least one rounded corner to a maximum speed of V_m half way through said at least one rounded corner, and to decrease the



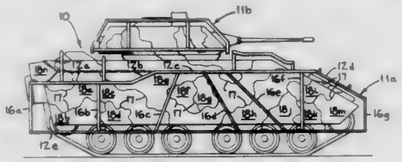
speed of said single nozzle back to V_n at the end of said at least one rounded corner, the increase and decrease in speed being accomplished in a symmetrical and at least approximately Gaussian manner, and
(ii) at the start of a circuit around the closed path, to move said single nozzle over a short distance at the speed $2V_n$, thereby obtaining half of the normal deposition of the product over that short distance, and, at the end of the circuit around the closed path, to move said single nozzle over the same short distance at the speed $2V_n$, thereby again obtaining half of the normal deposition of the product over that short distance.

4,800,838

FRAME FIXTURE FOR CAMOUFLAGE PAINTING

Yen C. Chu, Cupertino; Edward N. Berticevich, and Max J. Soldenwagner, both of San Jose, all of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 28, 1987, Ser. No. 101,702
Int. Cl.[4] B05C *21/00*
U.S. Cl. 118—505 **6 Claims**



1. A frame fixture for camouflage painting of vehicles, said fixture comprising:
a frame formed in a shape corresponding generally to the shape of a portion of a vehicle to be painted;
support means for mounting said frame in a predetermined position adjacent to said vehicle;
a plurality of strips, each of said strips being connected to said frame to divide an area of said frame into a plurality of smaller areas, said smaller areas corresponding to a plurality of areas to be painted on said vehicle; and

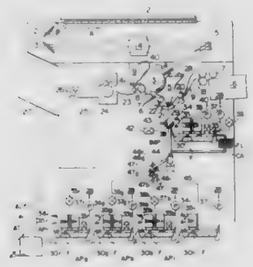
a plurality of spacers, said spacers being connected to said frame to position said strips a predetermined distance from said vehicle when said frame is mounted adjacent to said vehicle to allow paint to move between said strips and said vehicle to cause a blending of paint into areas adjacent to an area being sprayed with paint.

4,800,839

DEVELOPING DEVICE FOR ELECTROPHOTOGRAPHIC COLOR COPIER

Kenzo Ariyama, Yokohama; Manabu Mochizuki, Shizuoka; Tsuneo Kunotori; Kenji Kojima, both of Tokyo; Masato Jinbo, Fukushima; Hiroaki Takenouchi, Tokyo, and Yuichi Kobayashi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 9, 1986, Ser. No. 884,208
Claims priority, application Japan, Jul. 10, 1985, 60-153124; Aug. 2, 1985, 60-170668; Dec. 17, 1985, 60-194848[U]
Int. Cl.[4] G03G *15/01;* **B05C** *11/00*
U.S. Cl. 118—691 **39 Claims**



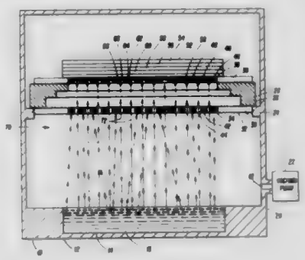
1. A recording apparatus having a visualizing device which supplies a recording medium with visualizing liquid of different colors for recording information on the recording medium, comprising:
first visualizing liquid vessel means which contains a visualizing liquid of a first color and is provided with an overflow port;
second visualizing liquid vessel means containing a visualizing liquid of a color which is different from the first color;
first supply means for supplying the visualizing liquid contained in said first visualizing liquid vessel means to the visualizing device;
second supply means for supplying the visualizing liquid contained in said second liquid vessel means to the visualizing device;
path switching means for selectively delivering any of the visualizing liquids discharged from the visualizing device to said first and second visualizing liquid vessel means;
purifier means interposed between said overflow port of said first visualizing liquid vessel means and said second visualizing liquid vessel means for capturing developing agents which are contained in the visualizing liquids;
color commanding means for commanding a color in which a recording is to be made;
state monitoring means for monitoring the visualizing liquid supply state of the visualizing device; and
liquid supply control means for comparing a color commanded by said color commanding means with the color of said visualizing liquid monitored by said state monitoring means and, if the color of the visualizing liquid in the visualizing device is different from the commanded color, then any of said first and second supply means corresponding to the commanded color are activated to supply the selected visualizing liquid while said path switching means is activated to deliver visualizing liquid to said supply means which corresponds to the commanded color. path switching means a delivery to said supply means which corresponds to the commanded color.

4,800,840

METHOD AND APPARATUS FOR VAPOR STREAM DISCRIMINATION

Russell F. Colton, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 24, 1986, Ser. No. 911,921
Int. Cl.[4] C23C *16/00*
U.S. Cl. 118—721 **3 Claims**



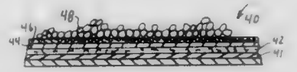
1. An apparatus for vapor deposition masking to form elongated parallel conductors on a panel, comprising:
a rigid frame having first and second ends and an open top and bottom;
a first plurality of parallel, coplanar top wires mounted on said ends and spanning the top of said frame;
a second plurality of parallel, coplanar bottom wires mounted on said ends and spanning the bottom of said frame; and
each of said bottom wires vertically aligned with a corresponding one of said top wires so that said top and bottom wires form a vapor stream discriminator when the apparatus is placed in a vapor deposition chamber between a vapor source and the panel, said discriminator allowing only the vapor traveling most perpendicularly to the planes of said top and bottom wires to pass both said top and bottom wires and contact the panel.

4,800,841

CARDBOARD CONTAINER WITH LITTER PAD

Patrick Yananton, 1518 Little Hill Rd., Point Pleasant, N.J. 08742, and Sheldon Parker, 365 St. Nicholas Ave., Haworth, N.J. 07641

Continuation-in-part of Ser. No. 573,958, Jan. 26, 1984, Pat. No. 4,640,225, which is a continuation-in-part of Ser. No. 315,307, Oct. 27, 1981, Pat. No. 4,469,046, which is a continuation-in-part of Ser. No. 909,256, May 24, 1978, abandoned. This application Feb. 3, 1987, Ser. No. 10,509
The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.
Int. Cl.[4] A01K *67/00*
U.S. Cl. 119—1 **28 Claims**



1. The combination of a self supporting structure and sorbent pad laminate and litter means for the collection of animal urine wherein said self supporting structure is made of a disposable material and has a base and walls; said sorbent pad laminate and litter means including

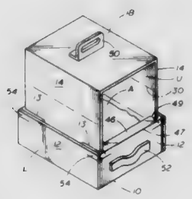
a. a bottom sheet layer of moisture impermeable material, said sheet layer being in contact with said base and walls;
b. an intermediate sorbent layer of material having a high absorbency capacity for urine and a high surface area for evaporation of said urine;
c. a top claw resistant screen means, said screen means being a urine permeable, flexible member of material which is substantially inert to urine, formed of strands bonded at their intersections and having sufficient tear strength to withstand the clawing action of a cat and sufficiently small hole size to protect said sorbent layer and said sheet layer of moisture impermeable material from being torn by animal claws without inhibiting evaporation, said bottom sheet layer and said top claw resistant screen means being bonded to each other along at least a substantial portion of the screens periphery; and
d. litter granules.

4,800,842

DISPOSABLE PET SANITARY STATION HAVING A FIXED LOWER COMPARTMENT AND AN EXPANDABLE UPPER COMPARTMENT

George C. Jones, Jr., 2610 Austins Pl., Sugar Land, Tex. 77478

Filed Jan. 15, 1987, Ser. No. 3,645
Int. Cl.[4] A01K *29/00*
U.S. Cl. 119—1 2 Claims



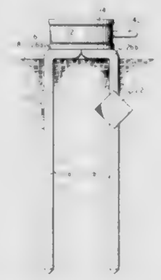
1. A pet sanitary station having a fixed lower compartment and an expandable upper compartment, comprising:
a rectangular bottom panel and four sides extending vertically from the bottom panel that form a lower rectangular compartment;
a rigid rectangular horizontal top panel and three contiguous rigid vertical rectangular folding wall panels, connected along their lower horizontal edges to three sides of the lower compartment at a height below the top edges of three sides of the lower compartment, that an upper compartment which can be folded, storing the top panel and folding wall panels inside the lower compartment;
wherein the folding wall panels form three vertical sides of the upper rectangular compartment by being continuously joined to each other, each of two vertical edges of one wall panel being joined to a vertical edge of each of the other two wall panels, and by being continuously joined to three edges of the top panel along their upper horizontal edges;
wherein the fourth side of the upper compartment is open;
wherein each of the two folding wall panels adjacent the open side of the upper compartment has a horizontal fold inward midway of its height; and
wherein the remaining folding wall panel has a horizontal fold outward midway of its height and two diagonal folds inward, each extending from a corner of the wall panel to a diagonally opposite corner.

4,800,843

ANIMAL TETHER

Jack Wendling, RR 9, South Eighth St., Quincy, Ill. 62301

Filed Jun. 3, 1987, Ser. No. 57,768
Int. Cl.[4] A01K *1/04, 3/00*
U.S. Cl. 119—117 4 Claims



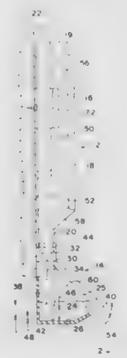
1. A rotatable animal tether comprising:
a plurality of laterally spaced ground-penetrating legs having substantial length to cross sectional area ratios;
said legs having aboveground portions including horizontally bent segments and vertically bent segments;
antifriction bearing means having an axially centerbored inner race and a rotatable outer race;
said horizontally bent segments underlying said bearing means;
said vertically bent segments axially penetrating said centerbore and being fixedly attached to said inner race; and,
means cooperating with said outer race for securing an animal thereto.

4,800,844

DISPENSING DEVICE FOR FEED OR WATER

Carl W. Van Gilst, Goshen, Ind., assignor to Agri-Plastics, Inc., Goshen, Ind.

Filed Dec. 4, 1986, Ser. No. 937,819
Int. Cl.[4] A01K *5/00, 7/00*
U.S. Cl. 119—51.5 18 Claims



1. A dispensing device (10) for both liquid and dry materials, which dispensing device comprises:
a base unit (14) having a pan (24) with an inside bottom surface (26);
means 25, being disposed above said inside bottom surface, for determining the maximum fluid level of said pan;

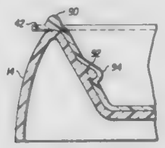
a dispensing unit (12) having a reservoir 18, and having an outlet (38) that communicates with said reservoir;
means (16) for operatively attaching said dispensing unit to said base unit with said outlet opening into said pan;
means (32, 40) for selectively providing a first effective opening (42) between said outlet and said inside bottom surface that is located entirely below said maximum fluid level for dispensing liquid materials into said pan;
means (32, 46) for selectively providing a second and larger effective opening (48) between said outlet and said inside bottom surface for dispensing dry materials into said pan; and
means (19) for preventing air from entering said dispensing unit except through said outlet.

4,800,845

DISPOSABLE PET FOOD DISH

Louise T. Budd, 304 Myrtle Ave., Mahwah, N.J. 07430

Continuation of Ser. No. 897,026, Aug. 15, 1986, abandoned. This application Jan. 5, 1988, Ser. No. 142,268
Int. Cl.[4] A01K *5/00*
U.S. Cl. 119—61 19 Claims



1. A disposable pet dish, comprising:
a pet dish liner comprising a bottom wall and sidewalls terminating in a rim having a lip, said lip lying generally in a plane and projecting outwardly from a nominal centerline of said liner intersecting said plane, and at least two discrete depressions protruding inwardly from opposing sidewalls, said liner being monolithically formed of one piece; and
a pet dish holder comprising sidewalls and a bottom wall attached to said sidewalls, said sidewalls defining an inner perimeter of said holder, said sidewalls extending upwardly and outwardly terminating in a rim having a lip projecting outwardly therefrom, a downwardly and outwardly extending outer wall attached to said lip of said holder, and a raised mound for each of said depressions, said raised mound protruding inwardly from opposing sidewalls of said holder and located to detachable insert into said depression, said bottom and sidewalls of said holder being sized and shaped to support said liner bottom and sidewalls, with at least a portion of said liner lip being vertically disposed above each of said depressions, and said lip of said liner sized to project outwardly beyond said holder lip.

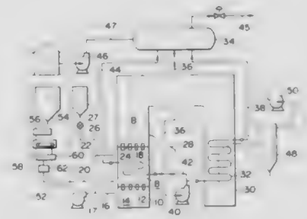
4,800,846

METHOD OF CONTROLLING A FLUIDIZED BED BOILER

Yasumasa Idei, and Satoshi Orisaki, both of Yamaguchi, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Jun. 6, 1988, Ser. No. 203,221
Claims priority, application Japan, Jun. 23, 1987, 62-156150
Int. Cl.[4] F23C *11/02*
U.S. Cl. 122—4 D 5 Claims

1. A method of controlling a fluidized bed boiler comprising:
an air chamber to which a primary air supply device is connected;
a fluidizing chamber for burning fuel therein and provided above the air chamber, separated by a distributor plate from the air chamber, and supplied with air through the distributor plate;
a plurality of heating tubes provided within the fluidizing chamber and having different installation heights;
a drum connected to the heating tubes for supplying steam by separating steam from water;
means for supplying fuel to the fluidizing chamber;
means for supplying a fluidizing medium to the fluidizing chamber;
means for discharging the fluidizing medium from the fluidizing chamber;



whereby, at the time of effecting the control of a boiler output by changing a fuel supply quantity from a supply quantity F_0 prior to a load fluctuation to a supply quantity F_1, before said load fluctuation, a fuel supply quantity is first changed to a level greater than a difference between F_1 and F_0, and the fuel supply quantity is then changed to a level smaller than said difference between F_1 and F_0, followed by changing the fuel quantity supply quantity to F_1.

4,800,847

ANAEROBIC OPERATION OF AN INTERNAL COMBUSTION ENGINE

Huw O. Pritchard, R.R. #1, Bolton, Ontario, Canada L7E 5R7

Filed Jun. 5, 1987, Ser. No. 58,816
Int. Cl.[4] F02B *75/12*
U.S. Cl. 123—1 A 12 Claims

1. A process for running an internal combustion engine comprising running said engine in communication with ambient air and with a fuel that is capable, at the compression ratio of said engine, of undergoing combustion air containing a sufficient amount of oxygen for combustion and of undergoing spontaneous explosion in the absence of sufficient oxygen in said air for combustion

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4,800,848

WATER INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

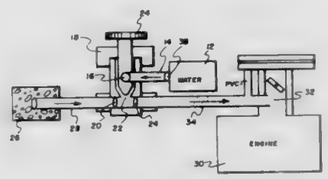
Von J. Hubbard, 3536 Churchwood Dr., Salt Lake City, Utah 84118

Continuation-in-part of Ser. No. 829,186, Feb. 14, 1986, abandoned. This application May 18, 1987, Ser. No. 50,779
Int. Cl.[4] F02M *25/02*
U.S. Cl. 123—25 E 11 Claims

1. A fluid injection system for injecting a mist of fluids, essentially comprised of water, water soluble alcohol mixtures, and the like, into the intake manifold of an internal combustion engine for mixing with the hydrocarbon fuels powering the engine for more complete combustion comprising:
a. a fluid reservoir to hold a supply of fluid,
b. fluid conduit means to transport the fluid,
c. a mixer component having:
i. a mixing junction structured to receive and turbulently mix incoming fluid and air streams;
ii. a flow adjustable fluid intake port in communication with the mixing junction, and associated with the fluid

conduit means; said intake port flow pre-set by the user to deliver the required fluid to provide the desired engine combustion requirements

iii. a restricted fixed air flow intake port in communication with the mixing junction, and associated with an ambient air source to deliver a predetermined approximately constant air flow into the mixing junction pre-set to prevent the breaking of the siphoning action drawing



fluid into the mixing junction for atomization to provide an atomized constant air with varying amounts of fluid mixture; and

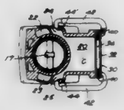
d. mixture conduit means associated with the mixing junction to collect and transport the atomized fluid mixture for delivery into the intake manifold for admixture with the air drawn into the air intake of the engine in response to the vacuum created therein for blending with the fuel.

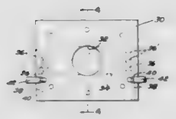
4,800,849

TWO CYCLE ENGINE WITH INJECTED FUEL AT INTAKE PASSAGE

Joseph A. Carroccio, 56 Walnut St., Johnston, R.I. 02919

Filed May 5, 1988, Ser. No. 190,389
Int. Cl.[4] F02B *33/04*
U.S. Cl. 123—73 PP **2 Claims**





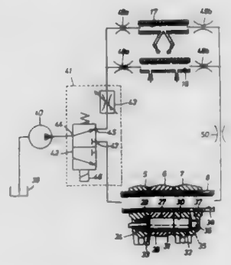
1. In a two-cycle crankcase compression type internal combustion engine that has a cylinder with a piston movable between a top and bottom position and in which there is fuel intake porting in the cylinder controlled by the piston and passage means thereto, there being exhaust porting on the side of the cylinder substantially opposite the intake port, the improvement consisting of a transfer pressure plate fixed to the intake passage, said plate having a central aperture with a plurality of jets directed toward the central aperture, said jets being connected via conduits to the crankcase of the internal combustion engine.

4,800,850

HYDRAULIC CIRCUIT FOR A VALVE OPERATING MECHANISM FOR AN INTERNAL COMBUSTION ENGINE

Kazuo Yoshida, Tokyo, and Koichi Fukuo, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,757
Claims priority, application Japan, Dec. 27, 1986, 61-314029
Int. Cl.[4] F01L *1/18, 1/26;* **F01M** *9/10*
U.S. Cl. 123—90.16 **8 Claims**



1. A hydraulic circuit for a valve operating mechanism for an internal combustion engine, having a plurality of intake or exhaust valves normally urged in a valve closing direction, a plurality of adjacent rocker arms associated respectively with said intake or exhaust valves and pivotably supported on a rocker shaft, said rocker arms being pivotable by cams rotatable in synchronism with a crankshaft, coupling means for selectively interconnecting and disconnecting said adjacent rocker arms under oil pressure to said coupling means, and an oil feed passage for lubricating said cams, an improvement comprising, said hydraulic circuit and said oil feed passage being connected in series to each other through restriction means, said hydraulic circuit including directional control means for changing the direction of flow of lubricating oil supplied from an oil pump to cause the lubricating oil to flow from said oil feed passage to said hydraulic circuit during low-speed operation of said engine and to cause the lubricating oil to flow from said hydraulic circuit to said oil feed passage during high-speed operation of said engine.

4,800,851

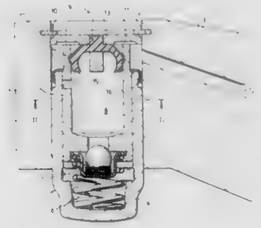
HYDRAULIC PLAY COMPENSATING ELEMENT

Steffen Hertrich, Herzogenaurach; Friedrich Ness, Dachsbach, both of Fed. Rep. of Germany, and Charles Knorr, Niederbronn, France, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Feb. 5, 1988, Ser. No. 152,540
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1987, 3706006
Int. Cl.[4] F01L *1/24*
U.S. Cl. 123—90.46 **15 Claims**

1. A hydraulic play compensating element (1) for a valve control mechanism in internal combustion engines comprising an outer piston (4) closed on one end and insertable for displacement in the longitudinal direction in a bore (2) of a structural element (3) of the valve drive and which guides an inner piston (5) for longitudinal displacement with slight play in a longitudinal bore wherein both pistons encompass a high pressure chamber (6) therebetween which communicates via a check valve (7) arranged in the inner piston with an oil reservoir (8) provided in the inner piston (5), and wherein the inner piston (5) is supported at its end facing away from the pressure chamber by a disc (9) which is fixed in the bore (2) of the structural element (3) of the valve drive, characterized in that

the disc (9) engages the bore (16) of the inner piston (5) with radially resilient clamping projections (15) upon contacting the



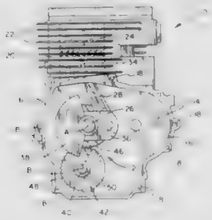
end of the inner piston (5) facing away from the pressure chamber (6).

4,800,852

INLINE COUNTERBALANCE WEIGHT SYSTEM FOR A SINGLE CYLINDER ENGINE

William C. Kandler, New Holstein, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation of Ser. No. 862,312, May 12, 1986, abandoned.
This application Aug. 5, 1987, Ser. No. 82,961
Int. Cl.[4] F02B *75/06;* **F16F** *15/28*
U.S. Cl. 123—192 B **15 Claims**



1. In a single cylinder internal combustion engine, the combination comprising:

a piston reciprocable in said cylinder along a generally rectilinear path;

a main, rotatably mounted vertical crankshaft connected to said piston and rotatably driven in a first rotational direction by said piston about an axis extending generally transverse to and in alignment with said rectilinear path of reciprocation of said piston;

weight means eccentrically mounted on said crankshaft, said weight means having a center of rotating mass;

a single counterbalance system rotating about a single axis extending generally parallel to said crankshaft at a side thereof opposite from said piston, said counterbalance system having a center of rotating mass that is aligned along the same plane with the weight means center of mass, said plane being perpendicular to the axes of said crankshaft and counterbalance system; and

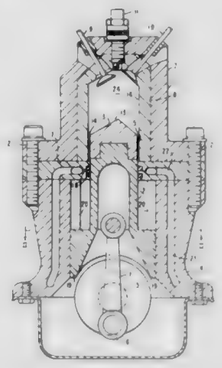
means driving said counterbalance system in a second rotational direction opposite to said first rotational direction of said crankshaft and in a predetermined timed relationship thereto, for causing vibration imbalance in said engine in the direction of said rectilinear path of reciprocation of said piston to be substantially eliminated due to the force vector of said reciprocating piston being generally aligned with and balanced by the force vectors of said rotating counterbalance system and said crankshaft and weight means thereon when said piston is at opposite end positions of its stroke and causing rocking imbalance in said engine to be substantially eliminated due to the force vector of said rotating crankshaft and weight means thereon being generally balanced by the force vector of said rotating counterbalance system when said piston is at an intermediate position between the opposite ends of its stroke.

4,800,853

ADIABATIC INTERNAL COMBUSTION ENGINE

Charles E. Kraus, and Charles B. Lohr, both of Austin, Tex., assignors to Excelermatic Inc., Austin, Tex.

Filed Jan. 11, 1988, Ser. No. 142,477
Int. Cl.[4] F02F *1/00*
U.S. Cl. 123—193 CP **6 Claims**



1. An adiabatic internal combustion engine comprising a cylinder having a piston movably disposed therein, means for admitting air and fuel to said cylinder to be combusted therein and means for discharging the combustion gases therefrom, said cylinder including a piston guide and seal structure having stationary seal rings associated therewith and, said cylinder having an inner wall structure of a highly temperature resistant material and said piston having a guided piston section adapted to move back and forth through said guide and seal structure and a cap of highly temperature resistant material, said cap being disposed on top of the guided piston section and extending sufficiently high to provide for the desired compression ratio and said cap further having cylindrical side walls slightly spaced from the cylinder walls.

4,800,854

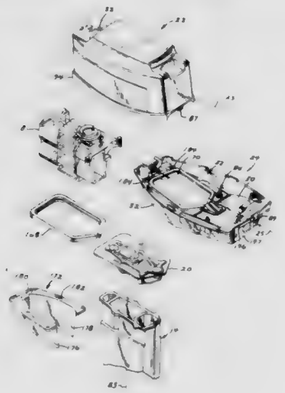
COWL ASSEMBLY FOR AN OUTBOARD MOTOR

James C. Boda, Winnecome, and Gordon C. Slattery, Omro, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jul. 24, 1987, Ser. No. 77,689
Int. Cl.[4] F02F *7/00*
U.S. Cl. 123—195 P **9 Claims**

1. A cowl assembly for enclosing the engine of an outboard marine motor having an external cable leading thereto, comprising a first cowl section and a second cowl section, said first and second cowl sections adapted to fit together to house said engine, said first and second cowl sections having edge portions which cooperate to form a joint between said cowl sections when said cowl sections are fitted together about said engine, one of said cowl sections having a cut-out portion adjacent its said edge portion forming an opening for allowing said cable to pass into the interior of said cowl assembly, and sealing means comprising an insert adapted for placement in

said opening and including cable surrounding clamping means for fixing the position of said cable relative to said cowl sec-



tions at said opening and for providing a water-resistant seal at said opening around said cable.

4,800,855

SPONTANEOUS-COMBUSTION ENGINE

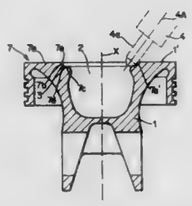
Ludwig Elsbett; Günter Elsbett, and Klaus Elsbett, all of Industriestrasse 14-16, D-8543 Hilpoltstein, Fed. Rep. of Germany

Filed Oct. 19, 1987, Ser. No. 110,360

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1986, 3635554

Int. Cl.[4] F02B *23/06, 17/00;* **F02F** *3/26*

U.S. Cl. 123—276 **12 Claims**



1. In a spontaneous-ignition engine, the combination of a cylinder; a piston including a crown having an end face and a circular combustion chamber in said end face, said end face further having a shallow annular recess surrounding and communicating with said chamber; and a fuel injection nozzle provided in said cylinder and having an exposed fuel discharging portion, said piston being movable relative to said cylinder to and from a predetermined position at the top center of its compression stroke and said portion of said nozzle extending into said recess but remaining out of contact with said crown in said predetermined position of said piston.

4,800,856

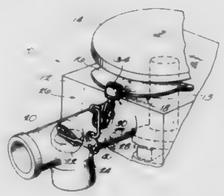
ABRASION RESISTANT ROLLER APPARATUS FOR INTERNAL COMBUSTION ENGINES

Gene F. Baltz, Lake Villa, and Glenn R. Belec, Gurnee, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 11, 1985, Ser. No. 710,057

Int. Cl.[4] F24C *3/00*

U.S. Cl. 123—413 **21 Claims**



1. An engine apparatus comprising an internal combustion engine including a timer plate including thereon a throttle controlling cam, a carburetor mounted on said engine and including a throttle valve, and an actuating lever operably connected to said throttle valve, a cam follower assembly including a rocker arm pivotally mounted on said engine and having an end, a roller rotatably mounted on said rocker arm end and including an outer surface, and an abrasion resistant sleeve member on said roller outer surface, said sleeve member being resilient and having memory, means biasing said cam follower assembly for engaging said sleeve member in rolling contact with said throttle controlling cam, and means connecting said rocker arm to said actuating lever for actuating said throttle valve in response to movement of said timer plate.

4,800,857

APPARATUS FOR LEARN-CONTROLLING AIR-FUEL RATIO FOR INTERNAL COMBUSTION ENGINE

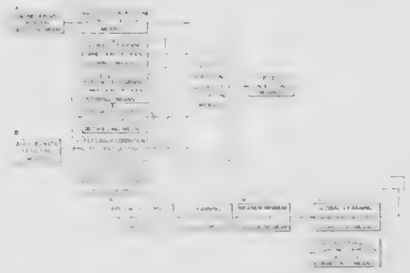
Naoki Tomisawa, Isesaki, Japan, assignor to Nippon Denshi Kiki Co., Ltd., Isesaki, Japan

Filed Jan. 20, 1988, Ser. No. 146,085

Claims priority, application Japan, Jan. 21, 1987, 62-10089

Int. Cl.[4] F02M *51/00*

U.S. Cl. 123—489 **10 Claims**



1. An apparatus for learn-controlling the air-fuel ratio for an internal combustion engine, comprising:

engine running condition detecting means for detecting an engine running condition including at least a parameter concerning the quantity of air which is sucked into the engine;

air-fuel ratio detecting means for detecting the air-fuel ratio of the air-fuel mixture which is sucked into the engine by detecting a component of exhaust gas from the engine;

basic fuel injection quantity setting means for setting a basic fuel injection quantity on the basis of said parameter detected by said engine running condition detecting means;

rewritable global learning correction coefficient storing means for storing a global learning correction coefficient employed for globally correcting said basic fuel injection quantity for all the engine running condition areas;

rewritable area-wise learning correction coefficient storing means for storing an area-wise learning correction coefficient employed for correcting said basic fuel injection quantity for each of said engine running condition areas;

area-wise learning correction coefficient retrieving means for retrieving on the basis of an actual engine running condition an area-wise learning correction coefficient in the corresponding engine running condition area stored in said area-wise learning correction coefficient storing means;

feedback correction coefficient setting means for comparing the air-fuel ratio detected by said air-fuel ratio detecting means with a target air-fuel ratio and setting a feedback correction coefficient for correcting said basic fuel injection quantity by increasing or decreasing said feedback correction coefficient by a predetermined amount so that the actual air-fuel ratio is convergent on said target air-fuel ratio;

fuel injection quantity calculating means for calculating a fuel injection quantity on the basis of the basic fuel injection quantity set by said basic fuel injection quantity setting means, the global learning correction coefficient stored in said global learning correction coefficient storing means, the area-wise learning correction coefficient retrieved by said area-wise learning correction coefficient retrieving means, and the feedback correction coefficient set by said feedback correction coefficient setting means;

fuel injection means for injecting fuel into the engine in an ON/OFF manner in response to a driving pulse signal which is equivalent to the fuel injection quantity calculated by said fuel injection quantity calculating means;

area-wise learning correction coefficient correcting means for learning a deviation of said feedback correction coefficient from a reference value for each of the engine running condition areas and correcting as well as rewriting the corresponding area-wise learning correction coefficient stored in said area-wise learning correction coefficient storing means so that said deviation is minimized;

area-wise learning progress detecting means for issuing a first global learning command every time the area-wise learning correction coefficients for a predetermined number of different engine running condition areas are corrected by said area-wise learning correction coefficient correcting means;

learning direction judging means for judging the direction of deviations of the present area-wise learning correction coefficients from a reference value for a predetermined number of different engine running condition areas when the first global learning command is issued from said area-wise learning progress detecting means, and issuing a second global learning command when all the deviations have the same direction;

mean value calculating means for calculating a mean value of deviations of the present area-wise learning correction coefficients from the reference value for the predetermined number of different engine running condition areas when the second global learning command is issued from said learning direction judging means;

global learning correction coefficient correcting means for correcting and rewriting the global learning correction coefficient stored in said global learning correction coefficient storing means by adding the mean value calculated by said mean value calculating means to the global learning correction coefficient stored in said global learning correction coefficient storing means; and

second area-wise learning correction coefficient correcting means for correcting and rewriting the area-wise learning correction coefficients stored in said area-wise learning correction coefficient storing means and on the basis of which said mean value was calculated by subtracting the mean value calculated by said mean value calculating means from the area-wise learning correction coefficients.

4,800,858

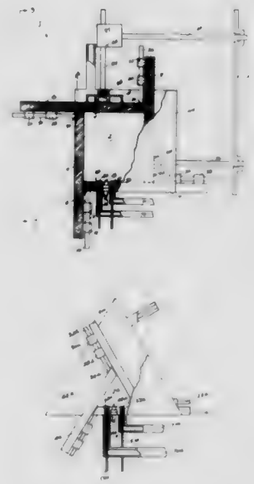
COLLAPSIBLE WALL ENGINE

Ping Yang, 8220 Dorothy St., Rosemead, Calif. 91770

Division of Ser. No. 753,670, Jul. 10, 1985, Pat. No. 4,651,690, which is a continuation-in-part of Ser. No. 646,773, Sep. 4, 1984, abandoned. This application Oct. 6, 1986, Ser. No. 915,509

Int. Cl.[4] F02B *25/08*

U.S. Cl. 123—51 R **5 Claims**



1. An internal combustion engine comprising:

a combustion chamber being defined by (1) a pair of end walls, (2) a fixed side wall, and (3) at least two pistons reciprocally mounted between said pair of end walls; said fixed side wall being fixedly coupled to said pair of end walls on opposing ends thereof; said pistons being linearly slidingly coupled one to the other with both of said pistons being linearly slidingly coupled to said fixed side wall such that the longitudinal axis of reciprocable movement of each piston is non-parallel to the longitudinal axis of reciprocable movement of any other piston and contact areas between said pistons and between said pistons and said fixed side wall remain constant during said reciprocal movement;

ignition means secured in said combustion chamber adapted to selectively ignite a gas contained in said combustion chamber; and,

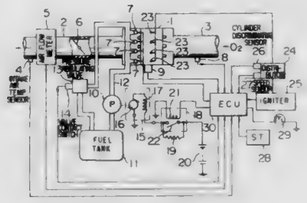
means for permitting said gas to selectively enter into and exit from said combustion chamber.

4,800,859

FUEL PUMP CONTROL APPARATUS

Yasuo Sagisaka, and Ryuichi Sano, both of Obu, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 24, 1987, Ser. No. 65,854
Claims priority, application Japan, Jun. 25, 1986, 61-148382
Int. Cl.[4] F02M *37/08, 39/02*
U.S. Cl. 123—497 **16 Claims**



8. A control apparatus for controlling a fuel pump of an engine that is adapted for supplying fuel to at least one fuel injection valve supplying fuel to said engine, comprising:

first detecting means for a detecting an operating condition of said engine;

means, connected to said first detecting means, for discriminating based on a preset comparing level whether said detected operating condition corresponds to a high fuel operating condition, that requires a quantity of fuel greater than or equal to a predetermined quantity;

control means for controlling said fuel pump means to increase a quantity of fuel pumped from said tank in response to said discriminating means discriminating said high fuel operating condition;

second detecting means for detecting a fuel undersupply condition of said engine while said high fuel operating condition is not being detected; and

means for modifying said comparing level of said discriminating means in a direction to clear the detected fuel undersupply condition when said second detecting means detects said fuel undersupply condition while said high fuel operating condition is not being detected.

4,800,860

FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE WITH PRECISELY ENGINE LOAD DEPENDENT FUEL INJECTION AMOUNT ADJUSTMENT FEATURE

Yasutoshi Nanyoshi, and Katsunori Oshiage, both of Kanagawa, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Jan. 12, 1988, Ser. No. 143,087
Claims priority, application Japan, Jan. 14, 1987, 62-7772
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—492 **26 Claims**

1. A fuel injection control system for an internal combustion engine comprising:

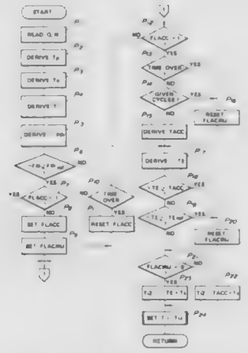
a plurality of fuel injection valves for injecting fuel to respectively engine cylinders;

a first sensor means for monitoring engine load to produce a first sensor signal indicative thereof;

a second sensor means for monitoring crank shaft angular position for producing a second sensor signal;

a third means for monitoring engine speed to produce an engine speed indicative data; and

a control unit for controlling operation of each of said fuel injection valves to perform controlled amount of fuel injection at first and second injection timings in one engine revolution cycle, said first injection timing being set at advanced timing to that of said second injection timing, said control unit performing two cycles of data processing operations at first derivation timing for deriving first fuel injection pulse width for fuel injection at said first injection timing, based in said first sensor signal value and said engine speed indicative data obtained at said first derivation timing and at a second derivation timing for deriving second fuel injection pulse width for fuel injection at said



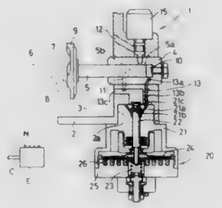
second derivation timing, which second fuel injection pulse width is variable depending upon variation of engine load between said first and second derivation timings for compensating fuel amount required by increase of the engine load during the period between said first and second derivation timings.

4,800,861

FUEL INJECTION SYSTEM ELECTROMAGNETIC-VALVE CONTROLLED TYPE

Hidekazu Oshizawa, and Masataka Ishikawa, both of Higashimatsuyama, Japan, assignors to 501 Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 177,994
Claims priority, application Japan, Apr. 23, 1987, 62-98705
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—506 **11 Claims**



1. A fuel injection system for an engine comprising:

(a) a fuel injection pump having a pump housing, a plunger associated with said pump housing and reciprocatively movable in relation to rotation of a crankshaft of the engine, and a fuel pressurizing chamber associated with said pump housing and variable in volume in response to reciprocative movement of said plunger;

(b) supply passage means supplying fuel to said fuel pressurizing chamber, said supply passage means being closed substantially during a forward stroke of said plunger and being opened substantially during a backward stroke of said plunger;

(c) forcible-delivery passage means connecting said fuel pressurizing chamber to at least one fuel injection nozzle of the engine;

(d) release passage means communicating with said fuel pressurizing chamber;

(e) an electromagnetic valve provided in said release passage means and movable between a closed position where said release passage means is closed and an open position where said release passage means is opened, the fuel being released from said fuel pressurizing chamber through said release passage means for substantially a period within which said electromagnetic valve is in the open position and within which said plunger is in the forward stroke, the fuel being permitted to be pressurized within said fuel pressurizing chamber for substantially a period within which said electromagnetic valve is in the closed position and within which said plunger is in the forward stroke, the pressurized fuel being forcibly delivered to the fuel injection nozzle of the engine through said forcible-delivery passage means;

(f) rotation detecting means for substantially detecting passage of the crankshaft of the engine through a reference rotational position to output a reference pulse each time the crankshaft passes through the reference rotational position, and for substantially detecting angular movement of the crankshaft every a predetermined angular extent to output scale pulses;

(g) first control means receiving each reference pulse and the scale pulses from said rotation detecting means to calculate current rotational angle of the crankshaft, said first control means outputting a drive pulse representative of a command moving said electromagnetic valve to the closed position, at a timing with reference to said current rotational angle, to control a period, within which said electromagnetic valve is in the closed position, during the forward stroke of said plunger, thereby controlling fuel injection; and

(h) second control means intermittently outputting drive pulses representative of the command moving said electromagnetic valve to the closed position, at an initial stage of start-up of the engine, independently of the rotational angle of the crankshaft at least based on the reference pulses, wherein a time duration of each of the drive pulses outputted from said second control means is shorter than a time duration required for the forward stroke of said plunger, and a period within which each of the drive pulses is not outputted from said second control means is also shorter than the time duration required for the forward stroke of said plunger.

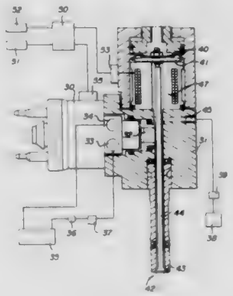
4,800,862

CONTROL OF FUELLING RATE FOR INTERNAL COMBUSTION ENGINES

Michael L. McKay, and Mark R. Lear, both of Western Australia, Australia, assignors to Orbital Engine Company Proprietary Limited, Balcatta, Australia

Filed Oct. 6, 1986, Ser. No. 915,670
Claims priority, application Australia, Oct. 7, 1985, PH02782
Int. Cl.[4] F02M *67/02*
U.S. Cl. 123—531 **23 Claims**

1. A method of delivering fuel to an engine having a combustion chamber in which fuel is ignited and burnt, comprising introducing a metered quantity of fuel into a body of gas to provide a fuel-gas mixture, admitting said fuel-gas mixture to the engine in timed relation to the engine cycle, and, over at least part of the engine load range, controlling during respective engine cycles, the introduction of fuel to the gas as the



fuel-gas mixture is delivered to the engine to obtain a predetermined fuel distribution in the combustion chamber at ignition.

4,800,863

SYSTEM FOR CONTROLLING INTAKE PRESSURE IN A SUPERCHARGED INTERNAL COMBUSTION ENGINE

Hideo Miyagi, Okazaki; Fumiaki Ohya, Toyota; Koji Fukushima, Toyota, and Shin Adachi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 862,971, May 14, 1986, Pat. No. 4,766,873.
This application Feb. 17, 1988, Ser. No. 156,901
Claims priority, application Japan, May 21, 1985, 60-106832; May 27, 1985, 60-112033
Int. Cl.[4] F02D *23/00*
U.S. Cl. 123—559.3 **9 Claims**



1. An intake system for a supercharged internal combustion engine, comprising:

an intake line for introduction of an amount of intake air into the engine;

fuel supplying means, responsive to operating conditions of the engine, for controlling the supply of fuel into the engine;

a mechanically operated type supercharger arranged in the intake line;

connecting means for connecting the supercharger to the engine for transmitting engine rotation to the supercharger in at least an acceleration condition of the engine;

detecting means for detecting a period adjacent to a switching to a fuel supply condition in which the fuel supplying means operates to supply fuel from a fuel cut condition in which the fuel supply means operates to stop the supply of the fuel, and for issuing a signal indicative of the switching; and

control means, responsive to the signal from the detecting means, for controlling the supercharger so that the supercharging pressure is decreased when the engine is accelerated from a fuel cut condition.

VOL 1098 ISS 5 JA 31 1989 UMI

4,800,864

REPEATING RUBBER BAND PROJECTING GUN

Steve E. Small, 5811 E. Waverly, Tucson, Ariz. 85712

Filed Sep. 23, 1987, Ser. No. 100,207
Int. Cl.[4] F41B 7/02
U.S. Cl. 124—19 9 Claims



1. A toy gun for repetitively firing a plurality of stretched rubber bands, comprising in combination:
(a) a rotary cylinder with a plurality of front hooks retaining front ends of the rubber bands;
(b) means for continuously urging the cylinder to rotate in a first direction;
(c) a plurality of means connected to the cylinder in alignment with the front hooks, respectively, for retaining rear ends of the rubber bands;
(d) a plurality of means respectively connected to the retaining means for releasing rear ends of the rubber bands;
(e) a trigger;
(f) means disposed in fixed relationship to an axis of rotation of the cylinder for selectively actuating the various releasing means in response to pulling of the trigger to thereby release the rubber bands;
(g) a plurality of rotation limiting means connected to the respective releasing means for (1) engaging the actuating means to stop rotation of the cylinder at a first position at which one of the releasing means is aligned with the actuating means and (2) disengaging the actuating means in response to releasing of the trigger to permit rotation of the cylinder to a next position at which a next one of the releasing means is aligned with the actuating means,
whereby the stretched rubber bands can be fired as fast as the trigger can be pulled and released.

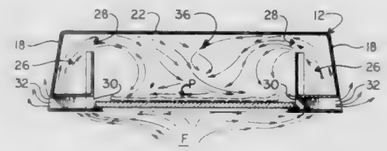
9. A method of operating a toy gun to shoot a plurality of stretched rubber bands, comprising the steps of:
(a) loading a plurality of rubber bands on a rotary cylinder by stretching each rubber band into an elongated configuration with a front end looped around a front hook attached to the rotary cylinder and looping a rear end of that rubber band around a rear hook pivotally attached to a rear portion of the rotary cylinder, and rotating the cylinder to tighten an elastic element having one portion attached to the cylinder and another portion attached to a frame supporting the cylinder as each rubber band is loaded;
(b) preventing rotation of the cylinder in response to the elastic element by engagement of a rotation limiting stop connected to a first one of the rear hooks with an actuator/stop element;
(c) pulling a trigger;
(d) moving the actuator/stop element in response to pulling of the trigger to pivot the first rear hook and the rotation limiting stop connected to the first rear hook from a first position to a second position in response to the pulling of the trigger in order to release a corresponding one of the stretched rubber bands, thereby firing that rubber band;
(e) retaining the first front hook in its second position;
(f) releasing the trigger; and
(g) withdrawing the actuator/stop element from the first rotation limiting stop, thereby allowing the elastic element to rotate the cylinder until a second rotation limiting stop connected to a second one of the rear hooks engages the actuator/stop element.

4,800,865

PORTABLE COOKING DEVICE

Michael W. Setzer, 19825 Terri Dr., Canyon Country, Calif. 91351

Filed Feb. 22, 1988, Ser. No. 158,947
Int. Cl.[4] F24C 1/00
U.S. Cl. 126—21 R 27 Claims



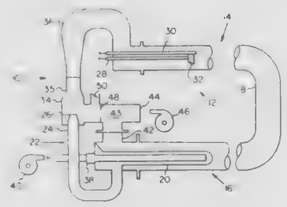
1. A portable cooking means for use in conjunction with an underlying heat source comprising:
an enclosure for capturing hot gases from said heat source, said enclosure being removable from said heat source and having an open bottom defined by a peripheral bottom edge, a front wall, a back wall, opposing side walls and a top wall;
a partition spaced-apart from each side wall and extending between said front and back wall, said partition extending from a lower portion upwardly and terminating at an upper edge which is offset a predetermined distance below said top wall, the space between said top edge and top wall defining an upper level hot gas inlet;
a base overlying said open bottom extending from between the lower portion of each partition and said front and back walls, the area above said base between the front and back walls and partitions defining a cooking chamber, the area between each side wall and respective partition defining an open flue for hot gases from said heat source; and,
gas vents adjacent said base for removing gases from said cooking chamber.

4,800,866

LOW NOX RADIANT TUBE BURNER AND METHOD

Harry P. Finke, Pittsburgh, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 25,365, Mar. 13, 1987, abandoned. This application Aug. 26, 1988, Ser. No. 237,645
Int. Cl.[4] F24C 3/00
U.S. Cl. 126—91 A 13 Claims



1. A radiant tube and burner assembly comprising:
(a) a radiant tube having a burner leg and an exhaust leg;
(b) a plenum positioned at least in part normal to and between the burner leg and the exhaust leg for mixing combustion air with at least a restricted quantity of products of combustion from the exhaust leg and for directing the resultant mixture into the burner leg;
(c) a jet pump positioned upstream of said plenum for directing high velocity combustion air through a nozzle and along a central longitudinal axis of the plenum and for aspirating at least a restricted quantity of the products of combustion;
(d) a duct in registry with the plenum and the exhaust leg for directing at least a restricted quantity of the products of combustion to the plenum;
(e) a restricted orifice associated with the duct and dimensioned in side in relation to the jet pup nozzle to control the amount of products of combustion aspirated to the plenum;
(f) exhaust means associated with the exhaust leg or duct and upstream of the plenum for exhausting the quantity of products of combustion not aspirated by the jet pump; and
(g) a fuel source directed into the burner leg for providing fuel to mix with the combustion air and products of combustion;
whereby all air intake is vitiated during normal operated and the fuel, combustion air and products of combustion provide a low temperature, uniform flame for reducing NOX emissions and providing uniform radiation along the radiant tube.

4,800,867

FOOT COMFORTER

Robert Owens, R.D.#1, Box 237-A, Oakdale, Pa. 15071

Continuation-in-part of Ser. No. 624,525, Jun. 25, 1984, abandoned. This application Jun. 5, 1986, Ser. No. 871,195
Int. Cl.[4] A61F 7/00; A43B 7/02
U.S. Cl. 126—204 28 Claims



1. Foot comforter apparatus comprising
a foot supporting chamber having an upper wall and lower wall,
said chamber being at least partially compressible to permit cyclic application of foot pressure to cause said chamber to act as a fluid pump, whereby application of pressure on said chamber will cause said chamber to at least partially compress and thereby discharge a portion of the fluid from said chamber and release of pressure from said chamber will cause said chamber to very rapidly expand, said expansion causing very rapid replenishment of fluid to said chamber,
divider wall located at generally one end of the longitudinal axis of said chamber, said divider wall separating said chamber from an adjacent portion of said comforter for resisting the escape of fluid from said chamber,
a front wall disposed forwardly of said divider wall for confinement of said air,
said upper wall, said lower wall, said divider wall and said front wall forming a discharge portion,
fluid supply conduit means for delivering fluid to said chamber, said fluid supply conduit means in communication with said chamber at generally the end of the longitudinal axis of said chamber opposite said divider wall,
fluid return conduit means for delivering fluid from said chamber disposed between said fluid supply conduit means and said divider wall,
valve means on said fluid supply conduit means and said fluid return conduit means for controlling the direction of fluid flow,
passageway means through said divider wall, whereby said divider wall and passageway means will resist excessive flow rate of said fluid from said chamber to a portion of said comforter adjacent said chamber,
said valve means, said divider wall and said passageway means cooperating to restrict the flow of fluid between the rearward portion of said chamber and said divider wall to substantially one direction along and parallel to the longitudinal axis of said chamber, and
said fluid supply conduit means and said passageway means being in communication with relatively spaced portions of said chamber in order to facilitate said one direction fluid, whereby said fluid flow will be a closed circuit from said chamber through said divider wall into said passageway to said discharge portion and then to said fluid return conduit means and then into said fluid supply conduit means for returning to said chamber.

4,800,868

TILTED PANEL LINEAR ECHELON SOLAR COLLECTOR

Roger H. Appeldorn, and Dennis F. Vanderwerf, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 084,526, Oct. 21, 1979, abandoned, which is a continuation of Ser. No. 880,183, Feb. 22, 1978, abandoned. This application Dec. 22, 1983, Ser. No. 564,351
Int. Cl.[4] F24J 2/10, 2/08
U.S. Cl. 126—438 1 Claim



1. A solar concentrator for directing incident solar radiation to a linear focus, comprising:
a planar base surface being positioned at an angle ϕ, which is greater that 0° but less than 90°, with respect to a direction which is normal to said incident solar radiation;
a plurality of planar reflective elements set along said planar base surface each of which is positioned at an angle α' with respect to said planar base surface and which varies for each of said planar reflective elements to reflect said incident solar radiation to said linear focus, said plurality of planar reflective elements being separated from each other by substantially planar riser elements, said riser elements being substantially normal to said planar base surface, each of said planar reflective elements making an angle α with respect to said direction which is normal to said incident solar radiation;

wherein the magnitude of said angle α for each of said planar reflective elements is not more than the magnitude of said α for said planar base surface;

wherein the magnitude of said angle α' of each of said plurality of planar reflective elements decreases for said planar reflective elements which are positioned away from a point at which a line drawn parallel to said incident solar radiation through said linear focus intersects said planar base surface;

whereby all of said incident solar radiation is directed to said linear focus.

4,800,869

ENDOSCOPE

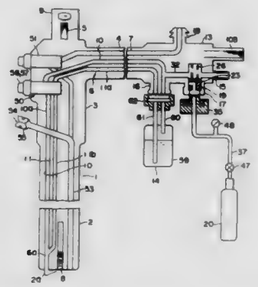
Shigeru Nakajima, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Feb. 8, 1988, Ser. No. 153,334

Claims priority, application Japan, Feb. 13, 1987, 62-30759; Apr. 6, 1987, 62-84409; Dec. 17, 1987, 62-31937

Int. Cl.⁴ A61B *1/12*

U.S. Cl. 128—4 **20 Claims**



1. An endoscope including an elongated insertion section inserted into the cavity of a human body and provided with a nozzle at the foremost end thereof, an operating section connected to the other end of said insertion section and controlling it from outside the human body, and a universal code extending from said operating section, said endoscope further comprising

a fluid source;

a connector connected to that end of said universal code, opposite of said operating section, and also connected to said fluid source;

a fluid supply tube means extending through said insertion section, operating section and universal code and communicating with said nozzle and also with said fluid source through said connector; and

a switch valve means arranged within said fluid supply tube means, dividing said fluid supply tube means into upper and lower side tube means;

wherein said switch valve means comprises a valve seat attached to said operating section and having an inner hole communicating with an inlet port means connected to said upper side tube means, and an outlet port means communicating with said lower side tube means, and a valve assembly means inserted into said inner hole of the valve seat, said valve assembly means being capable of moving between a first position where said inlet and outlet port means are shut off and a second position where they communicate with one another, said valve assembly means having a leak passage, which can be selectively closed, for allowing fluid to be released via the inlet port means to the outlet port means, and thereby released to the outside of said first position.

4,800,870

METHOD AND APPARATUS FOR BILE DUCT EXPLORATION

Ben A. Reid, Jr., 4001 Dutchmans La., Louisville, Ky. 40207

Filed Mar. 11, 1988, Ser. No. 166,923

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—6 4 Claims



1. A method of examining the bile duct of a patient utilizing an endoscope having a probe including a light fiber bundle, a viewing fiber bundle, an irrigating channel and a malleable stylet channel comprising the steps of shaping the distal end of a malleable stylet to a curved configuration so as to fit within the cystic duct of a patient, opening the cystic duct of the patient and inserting the distal end of the endoscope probe within the opened cystic duct, moving the distal end of the probe into the bile duct and examining the bile duct through the viewing fiber bundle.

4,800,871

MUSCLE RELAXING DEVICE

Peter Florjancic, Wallgau, Fed. Rep. of Germany, assignor to PVG Patentverwertungsgesellschaft mbH, Grainau, Fed. Rep. of Germany

Filed Sep. 3, 1986, Ser. No. 903,302

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1985, 3531342

Int. Cl.⁴ A61H *1/02*

U.S. Cl. 128—75 12 Claims



1. A muscle relaxing device for passive stretching of the wearer's spinal column with relaxed musculature in water, comprising a neck opening, said neck opening being arranged eccentric to the outside periphery of an annular part of the device, said annular part increasing substantially steadily in its vertical dimension and in its traverse sectional area from where the wearer's chin is to be received to where the nape of the neck is to be received so that said device safely supports the body during total relaxation of the body's voluntary muscles.

4,800,872

RAVEL-FREE ORTHOPAEDIC CASTING TAPES

George J. Buese, East Brunswick, and Hee K. Yoon, North Brunswick, both of N.J., assignors to Johnson & Johnson Orthopaedics, Inc., New Brunswick, N.J.

Filed Jan. 20, 1987, Ser. No. 5,491

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—90 7 Claims



1. A ravel resistant, orthopedic casting tape of the type comprising of knitted fiberglass substrate impregnated with a water reactive, hardenable, liquid resin, said substrate being coated, prior to the application of the liquid hardenable resin, with a soft, flexible binder to form a thin, stretchable coating to resist ravel of the fiberglass, said binder being essentially not reactive with the hardenable liquid resin and the binder having a type A hardness less than 50, and being applied to the substrate in an amount from 2.5 to 90 grams per square meter of coated area.

4,800,873

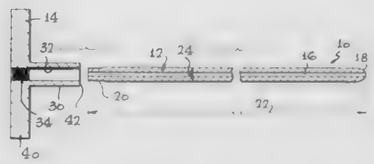
METHOD FOR SETTING FRACTURES

Robert A. Audell, 10660 Rochester Ave., Westwood Village, Calif. 90024

Filed Aug. 31, 1987, Ser. No. 91,110

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 R 5 Claims



1. A method of setting fractured long bones, having a central medullary canal, of a limb while the limb is under at least periodic X-ray observation comprising the steps of:

placing the limb in traction;

making an opening from the exterior of the limb to the intermedullary canal of the bone through one end thereof;

inserting a guide wire through said opening into the canal at the point of fracture;

reaming the canal to the point of fracture by means of a hollow reamer guided by said wire;

removing said reamer and said guide wire from the limb;

inserting an aligning tool in said reamed portion of the canal through said aligned opening to the point of the fracture, said aligning tool having a passageway therethrough;

leveraging said tool to align the reamed portion of the bone with the unreamed portion of the bone using X-ray exposures as a guide;

inserting a second guide wire through said reamed portion and the remaining unreamed portion of the bone;

reaming the second portion of the bone by means of said hollower reamer guided by said second guide wire;

removing said reamer;

installing a hollow pin in said aligned canal; and

withdrawing said second guide wire.

4,800,874

ANATOMICAL BONE PLATE AND/OR TRANSFIXION PLATE

Thomas David, and Dieter Uyka, both of Vienna, Austria, assignors to Vereinigte Edelstahlwerke A.G., Vienna, Austria

Filed Jul. 14, 1987, Ser. No. 73,575

Claims priority, application Austria, Jul. 15, 1986, 1927/86; Dec. 2, 1986, 3215/86

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 YP 19 Claims



1. Alone transfixion plate for transfixing an acetabulum fragment to the os ilium, by screw means, following pelvic osteotomies with rotation of the roof of the acetabulum in a human patient comprising:

a proximal plate region lying substantially in a first plane for application to the os ilium at least generally adapted for close application to a surface of said os ilium;

a distal plate region lying substantially in a second plane for application to the acetabulum fragment at least generally adapted for close application to a surface of said acetabulum fragment; and

a substantially wedge-shaped transition zone plate region lying substantially in a third plane intersecting said first and second planes and connecting respective ends of said proximal and distal plate regions for supporting said proximal and distal plate regions at a mutual angle in the range of 10–50 degrees with respect to the ventrodorsal/proximodistal plane the transition zone plate region having larger and smaller width portions and respective sides connected to said proximal and distal plate regions;

the screw means being disposed in said proximal and distal plate regions.

4,800,875

SURGICAL FUNNEL AND METHOD OF USING

Charles D. Ray, Deephaven, Minn., assignor to Cedar Surgical, Inc., Minnetonka, Minn.

Filed Aug. 20, 1987, Ser. No. 87,423

Int. Cl.⁴ A61F *5/04*; B67C *11/02*

U.S. Cl. 128—92 V 17 Claims

1. Method of guiding particulate bone to a properly prepared recipient site and for impacting the particualte bone into a fusion mass, said method comprising the steps of

(1) loading the particulate bone into an open reservoir of a surgical funnel provided by an elongated, thin, flat base and a pair of thin, upstanding walls which extend along the elongated edges of the base to provide a chute,

(2) resting the outlet of the funnel against the recipient site,

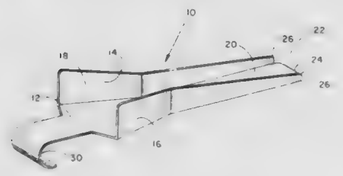
(3) pushing increments of the loaded particulate bone from the chute onto the prepared site, and while leaving the funnel in place,

(4) tamping each deposited increment to build a fusion mass incrementally.

4. A surgical funnel useful for guiding particulate bone into position for impaction and comprising:

an elongated, thin, flat base,

a pair of thin, upstanding walls extending along and terminating at the ends of the elongated edges of the base to form an open reservoir including a chute of substantially uniform width which has an inlet and an outlet, both unobstructed,



the base and upstanding walls gradually extending outwardly beyond the other end of the chute to provide an expanded reservoir,

the upstanding walls being rounded at the outlet and tapering from the outlet to a significantly greater height at the other end of the base,

the base at the outlet of the chute extending beyond the upstanding walls and being rounded to enhance lateral movement of the funnel within a surgical wound, and

a handle at said other end of the base curving away from the base and the upstanding walls.

4,800,876

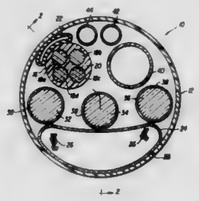
METHOD OF AND APPARATUS FOR LASER TREATMENT OF BODY LUMENS

Kenneth R. Fox, 2716 N. Upshur St., Arlington, Va. 22207, and A. Arthur Coster, 3541 Braddock Rd., Alexandria, Va. 22302

Continuation-in-part of Ser. No. 329,978, Dec. 11, 1981, abandoned, which is a continuation of Ser. No. 87,894, Oct. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 32,844, Apr. 24, 1979, abandoned. This application Mar. 25, 1983, Ser. No. 478,781

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.1 10 Claims



1. In a method of performing laser surgery in a body lumen comprising the steps of inserting a catheter into said body lumen, said catheter having a longitudinal axis and proximal and distal ends, at least one fiber means in said catheter for transmitting a beam of laser energy from said proximal to said distal end, positioning the distal end of said catheter adjacent an obstruction in said lumen and transmitting laser energy through said fiber means to impinge upon said obstruction, the improvement wherein said laser energy is a pulsed argon-ion laser beam having a pulse duration of from about 5 to 30 milliseconds, a pulse repetition rate of from about 1 to 100 pulses per second and a duty cycle of from about 5 to 50 percent, said pulse duration, pulse repetition rate and duty cycle being selected to effect damage to said obstruction with substantially no thermal necrosis of the surrounding tissue of the body lumen.

4,800,877

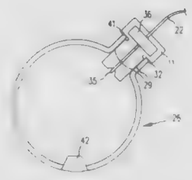
LASER OUTPUT CALIBRATION TAB

Richard C. Losch, Union City, Calif., assignor to Laserscope, Santa Clara, Calif.

Filed May 23, 1986, Ser. No. 866,601

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.1 7 Claims



1. A laser calibration device insert removably affixable to the output end of a laser surgery peripheral implement, said insert comprising a rigid body of flat sheet stock shaped into a wider upper region and joined continuously therewith through a transition to a narrower lower region having a bottom edge and two sides, the lower region being sized to permit insertion into the aperture of a laser calibration device and having one or both of its two sides angled from the plane of the flat sheet stock so as to form angled wings to frictionally engage the inner walls of the aperture upon insertion, and the upper region having one or more manually-engageable tabs for manipulating the insert and the transition between the upper and lower regions defining a shoulder which limits insertion of the insert into the aperture to a predetermined depth.

4,800,878

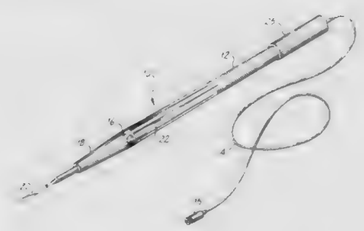
ELECTROSURGICAL KNIFE WITH VISUAL ALARM

Robert L. Cartmell, Bellbrook, Ohio, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 26, 1987, Ser. No. 90,199

Int. Cl.[4] A61B *17/39*

U.S. Cl. 128—303.14 6 Claims



1. An electrosurgical handle apparatus, comprising

(a) a handle body;

(b) connector means at one end of said body for connection to a power source;

(c) an active tip at the end of said handle body opposite said connector means for receiving a cutting instrument;

(d) electronic flow communication means in said handle body, said electronic flow communication means extending through said handle body for carrying current between said active tip and said connector means;

the improvement characterized by

(e) a current responsive lamp in said electronic flow communication means;

(f) a resistor in said electronic flow communication means; and

(g) said lamp and said resistor being connected in parallel.

4,800,879

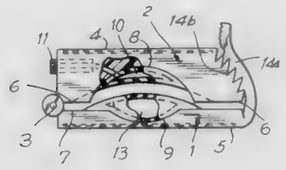
DISPOSABLE VASCULAR OCCLUDER

Vladimir Golyakhovsky, 165 W. 91st St., New York, N.Y. 10024, and Robert Lerner, 315 E. 65th St., New York, N.Y. 13021

Filed Jul. 9, 1987, Ser. No. 71,406

Int. Cl.[4] A61B *17/12*

U.S. Cl. 128—325 8 Claims



1. A disposable vascular occluder device for temporarily stopping or interrupting arterial or venous blood flow in an artery or vein during surgical procedures, comprising,

(a) a first arm having an outer surface and an inner surface, said inner surface having a cavity therein;

(b) a second arm having an outer surface and an inner surface, said inner surface having a cavity therein;

(c) partially-inflated balloon means provided in said first and second arm cavities;

(d) means pivotally connecting said first and second arms at first ends thereof, to permit said arms to be pivoted towards each other to assume a closed condition in which the inner surfaces thereof are in confronting relation, and pivoted away from each other to assume an open condition;

(e) means for releasably maintaining said arms in said closed condition, in which said inner surfaces are in said confronting relation;

(f) whereby said arms, when in said open condition thereof, can be inserted around a blood vessel and can thereafter be pivoted to said closed condition thereof, wherein said blood vessel is occluded between said balloon means under soft pressure with minimized trauma to the blood vessel;

(g) said balloon means comprising a first partially-inflated balloon provided in said first arm cavity and a second partially-inflated balloon provided in said second arm cavity; and

(h) means for controllably inflating said first partially-inflated balloon beyond said partially-inflated state to adjust the pressure of said balloon means on said blood vessel;

(i) said controlled inflation means comprising a one-way valve in said first arm communicating with said first balloon, whereby said first balloon can be controllably inflated by a syringe inserted into said valve.

4,800,880

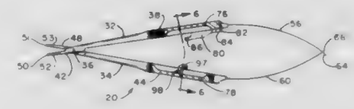
SURGICAL NEEDLE HOLDER

J. Denis Catalano, 609 Claymont Estates Dr., Ballwin, Mo. 63011

Continuation of Ser. No. 654,880, Sep. 26, 1984, abandoned. This application Sep. 29, 1986, Ser. No. 912,647

Int. Cl.[4] A61B *17/06*

U.S. Cl. 128—340 9 Claims



1. A surgical instrument adapted to grip a suturing needle utilized in connection with optical surgery comprising:

first and second elongated handle members each having a forward end and rearward end and a substantially semi cylindrical surface and an opposite facing surface, said handle members being hingedly connected adjacent the forward ends thereof, spring means connecting said first and second handle members adjacent the rearward end thereof, said connecting means normally biasing the rearward ends of said handle members away from each other to a first position wherein said handle members are angularly related,

first and second jaw members each being integral with the forward end of a respective one of said handle members and extending therefrom at an obtuse angle, said first and second jaw members being adapted to cooperate with one another to grip a suturing needle therebetween when said first and second handle members are moved toward each other to a second position wherein said handle members are in more nearly substantially parallel relationship adjacent each other whereby the semi cylindrical surfaces on the respective handle members together form a substantially cylindrical gripping surface, and

releasable latching means having cooperatively engageable portions on the respective handle members, said latching means including a recess in the facing surface of one of said handle members, at least a portion of the latching means on said one handle member being located in the recess, another portion of the latching means being on the other handle member in position such that when the handle members are in said second position as with a needle clamped between said jaw members in opposition to said biasing means the latching means on the respective handle members are able to become engaged or disengaged with each other by gripping pressure to hold the handle members together and by relative lateral movement of the handle members with respect to each other so that the latching means can become engaged or disengaged.

4,800,881

DEPILATING APPLIANCE

Jean Alazet, Paris, France, assignor to Pilus, Paris, France

PCT No. PCT/FR86/00374, § 371 Date Jun. 30, 1987, § 102(e) Date Jun. 30, 1987, PCT Pub. No. WO87/02556, PCT Pub. Date May 7, 1987

PCT Filed Nov. 4, 1986, Ser. No. 76,168

Claims priority, application France, Nov. 5, 1985, 85 16350

Int. Cl.[4] A61B *17/00*

U.S. Cl. 128—355 4 Claims

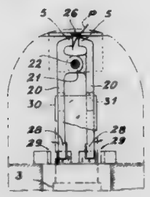
1. Depilating appliance comprising:

a pair of plucking-out jaws (5) having longitudinal registering edges, said jaws comprising the ends of two arms (20) hingedly interconnected at a point intermediate their length in the fashion of the two arms of a pair of pliers for swinging movement about an axis parallel to said edges,

a driving member (3) coupled to said hinged arms (20) pro-

vided with said plucking-out jaws and adapted to impart to said arms a reciprocating movement of translation along said axis, said driving member being driven in turn by a motor housed inside a casing of the appliance,

control cams engaging the ends (28) of said hinged arms (20) which are remote from said plucking-out jaws, said cams being adapted to move said jaws toward and away from



each other during said translation of said hinged arms assembly in one or the other direction,

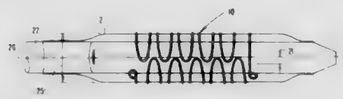
said cams comprising a pair of guideways engaged each by the corresponding end (28) of one of said arms, said ends (28) being adapted to slide along said guideways when said hinged arm assembly (20) is driven for translation in one and the other direction.

4,800,882

ENDOVASCULAR STENT AND DELIVERY SYSTEM

Cesare Gianturco, Champaign, Ill., assignor to Cook Incorporated, Bloomington, Ind.

Filed Mar. 13, 1987, Ser. No. 25,736
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—343 **31 Claims**



1. A stent comprising a wire formed into a serpentine configuration including a series of straight sections and a plurality of bends, said straight sections being joined by said bends to form a series of alternating loops, said serpentine configuration being formed into a cylindrical shape having a longitudinal axis and wherein said straight sections are bent into generally circular configurations surrounding and generally perpendicular to said axis, and expansion means within said cylindrical stent for radially expanding said circular configurations within a body passageway of a patient when said stent is disposed within said passageway.

4,800,883

APPARATUS FOR GENERATING MULTIPHASIC DEFIBRILLATION PULSE WAVEFORM

William L. Winstrom, Andover, N.J., assignor to Intermedics, Inc., Angleton, Tex.

Filed Apr. 2, 1986, Ser. No. 847,283
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 D **30 Claims**

1. An apparatus for generating multiphasic defibrillation pulse waveforms by selectively switching the continuous output of a single multilevel source, comprising:

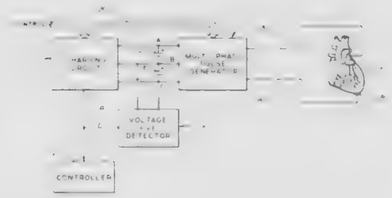
first and second output terminal means for electrical connection to the heart;

a plurality of charge storage means forming a single multilevel source, each said storage means storing an electrical charge to provide an output potential;

low voltage power source means;

charging means connected to said plurality of charge storage means and said low voltage power source means for charging each of said charge storage means to a level suitable to cause defibrillation of the heart;

a plurality of switch means, each having control means operative to render the switch means conductive in response to a control signal, one switch means of said plurality being connected in circuit between a respective one of each said charge storage means and each of said first and second output terminal means for connecting the potential provided by the said charge storage means to the respective terminal means when said switch means is conductive sand disconnecting the potential provided by said charge storage means form the respective terminal means when said switch means is nonconductive; and



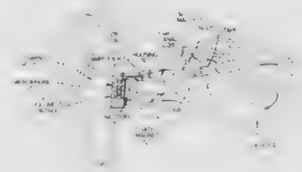
pulse generator means connected to said control means of said plurality of switch means for applying control signals to said control means upon said charge storage means reaching a predetermined level to thereby control the conductive state of each of said plurality of switch means to sequentially connect and disconnect said output potentials of said plurality of charge storage means to and from said first and second output terminal means in selected additive and subtractive combinations to generate a multiphasic defibrillation pulse waveform for application to the heart.

4,800,884

MAGNETIC INDUCTION HEARING AID

Jorgan Heide, Cordova; Timothy D. Gooch, Memphis; Anthony D. Prescott, Germantown; Thomas W. Sander, Memphis; Jim Davidson, Germantown, and Eric A. Renz, Memphis, all of Tenn., assignors to Richards Medical Company, Memphis, Tenn.

Filed Mar. 7, 1986, Ser. No. 837,708
Int. Cl.[4] H04R *25/00*
U.S. Cl. 128—419 R **12 Claims**



1. A magnetic induction hearing aid, comprising:

housing means with an outer surface shaped and dimensioned to fit entirely in an animal ear canal;

microphone means located in said housing means for producing an electrical signal in response to received sound waves;

amplifier means located in said housing means for amplifying said microphone means signal;

electrical power means located in said housing means for powering said amplifier means;

magnetic coil means located in said housing means and driven by said amplifier means for producing a magnetic field indicative of the received sound waves;

magnet means affixed to a portion of the middle ear and

wherein the magnet means is induced into movement by the magnetic field produced by the coil means such that the magnet means produces movement of the middle ear indicative of the received sound waves.

4,800,885

BLOOD CONSTITUENT MONITORING APPARATUS AND METHODS WITH FREQUENCY DIVISION MULTIPLEXING

Eric N. Johnson, Boulder, Colo., assignor to The BOC Group, Inc., Montvale, N.J.

Filed Dec. 2, 1987, Ser. No. 127,835
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—633 **19 Claims**



1. Apparatus for monitoring the level of a constituent of the blood within a body structure comprising:

(a) illumination means for emitting light at a plurality of wavelengths and directing the emitted light through said body structure;

(b) photodetector means for detecting light from said illumination means transmitted through said body structure and producing at least one photodetector signal representing the intensity of said detected light;

(c) carrier frequency means for varying the amplitude of the light at each said wavelength emitted by said illumination means at a different carrier frequency whereby said at least one photodetector signal will include a component at each said carrier frequency bearing information relating to the optical transmissivity of said body structure at one of said wavelengths;

(d) separation means for subdividing said at least one photodetector signal by frequency so as to separate said components at said different carrier frequencies from one another; and

(e) interpretation means for determining the level of said constituent from said separated components.

4,800,886

SENSOR FOR MEASURING THE CONCENTRATION OF A GASEOUS COMPONENT IN A FLUID BY ABSORPTION

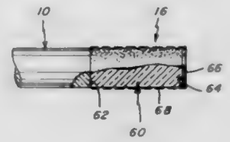
James R. Nestor, Nashua, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jul. 14, 1986, Ser. No. 885,072
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—634 **28 Claims**

1. Analytical apparatus comprising:

waveguide means defining an axially-elongated energy path having an inlet aperture receptive to an incident energy signal within a predetermined wavelength range and an emission aperture for emitting an emitted energy signal, said waveguide means allowing passage of and being substantially transparent to energy within eh predetermined wavelength range;

an axial segment of said waveguide means comprising a block of fixed axial length of a solid material which is substantially transparent to energy within the predetermined wavelength range and permeable to a gaseous component that has an energy absorption peak in the predetermined wavelength range, the remainder of said waveguide means being substantially impermeable to the gaseous component;



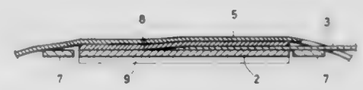
whererin, when said axial segment is exposed along said fixed length to a fluid containing the gaseous component; the gaseous component permeates said segment and absorbs the incident energy signal along said fixed length to thereby reduce the intensity of the emitted energy signal in proportion to the concentration of the gaseous component in the segment, whereby differnces between the intensities of the incident and emitted energy signals may provide an indication of the concentration of the gaseous component in the fluid.

4,800,887

X RAY-TRANSPARENT ELECTRODE FOR A LIVING BODY

Masatomo Shigeta; Hikonori Abe, and Shinichi Nishiyama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1986, Ser. No. 900,661
Claims priority, application Japan, Aug. 27, 1985, 60-187596
Int. Cl.[4] A61B *5/04;* **A61N** *1/04*
U.S. Cl. 128—639 **4 Claims**



1. An electrode for a living body comprising:

an electrode main body, at least a portion of said main body having a surface for contact with a living body being made flexible;

a lead member for connecting said electrode main body to a electric source;

said electrode main body and said lead member each being made of crystalline flexible graphite sheet obtained by treating natural graphite particles with concentrated sulfuric acid, each said flexible sheet having a thickness in the range of 0.1 to 2.0 mm and a radius of curvature less than 50 mm;

said lead member and said electrode main body being bonded together at connecting portions thereof by electroconductive adhesive, such as one of a thermosetting resin and rubber adhesive each of which is admixed with fine particles of carbon black, to form said electrode, the whole of said electrode being substantially transparent to X-rays.

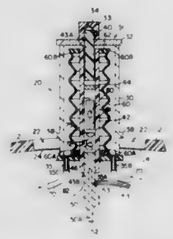
VOL 1098 ISS 5 JA 31 1989 UMI

4,800,888

ENHANCED ELECTRODE HEADSET

Taran M. Itil, Nyack; Donald M. Shapiro, Kings Point; Emin Eralp, and Nils E. Johansson, both of Tarrytown, all of N.Y., assignors to HZI Research Center Inc., Tarrytown, N.Y.

Filed Aug. 17, 1987, Ser. No. 86,616
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—644 **10 Claims**



1. An electrode assembly for detecting brain waves in the form of electric impulses, said assembly comprising:

a. Electrode containing means including a cylindrical wall, a top cover and a bottom cover defining a hollow container, said bottom cover including an aperture therein;

b. A hollow rod mounted in said container and extending from said aperture in said bottom cover, said hollow rod having upper and lower openings;

c. an electrode element reciprocally received in said lower opening of said hollow rod;

d. signal amplification means located in said hollow rod between said electrode element and said upper opening;

e. a source of power positioned between said signal amplification means and said electrode element in said hollow rod and coupled to said signal amplification means for driving said signal amplification means;

f. means between said electrode element and said signal amplification means for biasing said electrode element away from said signal amplification means, said biasing means subject to being overcome upon said electrode element being driven into said hollow rod, for turning on said amplification means; and,

g. means responsive to pressure for partially driving said hollow rod out of said container and through said aperture for effecting contact of said electrode element with the scalp of an subject and for overcoming said biasing means for turning on said signal amplification means.

4,800,889

RAPID-SCAN NMR ANGIOGRAPHY

Charles L. Dumoulin, Ballston Lake, N.Y., and Steven P. Souza, Williamstown, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 6, 1987, Ser. No. 34,864
Int. Cl.[4] A61B 5/05
U.S. Cl. 128—653 **21 Claims**

1. A method for rapidly acquiring at least one nuclear magnetic resonance (NMR) angiographic projection image of flowing material in at least a selected portion of a living organism sample having a cardiac cycle occuring at a cardiac rate, comprising the steps of:

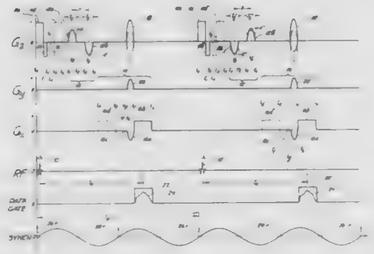
(a) immersing the sample in a main static magnetic field;

(b) nutating by an angle α which is less than 90°, in the initial part of each of a first sequence and a second sequence of a sequential pair of imaging sequences for each of a multiplicity S of phase-encoding amplitudes operating upon said selected sample portion, the spins of all nuclei of a selected species and with a repetition time interval T_R between sequential nutations being less than the reciprocal of the cardiac rate;

(c) applying, after each nutation, a flow-encoding subsequence comprising a pair of alternating-polarity signal pulses in a first magnetic field gradient impressed upon the sample, in a first direction selected to cause a resulting NMR response echo signal from the spin of a moving nucleus to different from the NMR response echo signal resulting from the spin of a substantially stationary nucleus, each of the flow-encoding pulses in the first sequence of each pair having a polarity opposite to the polarity of the like-positioned flow-encoding pulse in the second sequence of each pair;

(d) then acquiring, responsive to an imaging subsequence evoking an NMR response echo signal from at least the sample portion, a set of data in a response data acquisition time interval of each of the first and second sequences;

(e) subtracting the data in each of the NMR response signal data sets acquired in a selected one of the first and second



sequences from the data in the data set of the remaining one of the first and second sequences, to generate a difference data set from which response data obtained from stationary nuclei has been substantially removed;

(f) repeating steps (b)–(e) a plurality N times, with N set approximately equal to $60(M)/(2T_R(PR))$, where M is a positive number and PR is the cardiac rate, to generate a plurality N of difference data sets for each of the different S amplitudes;

(g) averaging all N difference data sets for each of the S amplitudes, to obtain a single average data set for each of the S amplitudes; and

(h) generating, responsive to all S average data sets, each of at least one angiographic projection image, each lying in a plane having a preselected relationship with respect to the first direction.

4,800,890

STEERABLE GUIDE WIRE FOR CATHETERS

Bernhard M. Cramer, Heusnerstrasse 40, D-5600 Wuppertal 2, Fed. Rep. of Germany

Filed Dec. 26, 1985, Ser. No. 813,435
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1984, 3447642
Int. Cl.[4] A61B 6/00
U.S. Cl. 128—657 **9 Claims**



1. A catheter and wire guide combination comprising

a wire guide adapted to be independently pushed and steered through blood vessel lumens to a site and comprising a hollow metal tube through which a liquid flows, said tube having a distal end region, a proximal end region and a flexible tubular section of torsional stability, said hollow metal tube having further a mouth opening in said distal end region and an open proximal tube end in said proximal end region,

a connector for receiving an injection adapter for injecting through the hollow metal tube a first means comprising a liquid directly to the site itself, said connector being connected to the open proximal end of the metal tube,

a helically wound spring tightly overlappingly surrounding for a substantial support length said distal end region of said metal tube extending beyond said distal end region,

a turning handle which is connected to the proximal tube end of the hollow metal tube but distally with respect to said connector for said injection adapter and which surrounds the proximal tube end coaxially and only radially,

a hollow flexible catheter being freely coaxially pushable over said wire guide independently of the position of said wire guide for being moveable in said blood vessel lumens directly to the site, said catheter having open proximal and distal ends,

a Y-connector connected to the proximal end of the catheter and having a hollow side arm communicating with the open proximal end for pushing a second means comprising a liquid therethrough directly to the site itself independently of liquid passing through the hollow metal tube, whereby two liquids simultaneously can be passed through said catheter and said metal tube to the site,

said Y-connector being adapted for receiving said hollow metal tube in a fluid tight manner with respect to said second means,

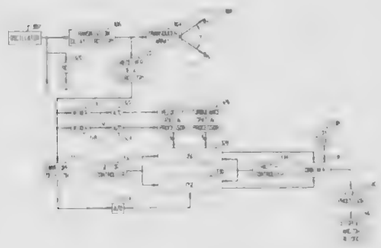
said wire guide being freely relatively moveable lengthwise and rotatably with respect to said Y-connector and to said hollow flexible catheter.

4,800,891

DOPPLER VELOCITY PROCESSING METHOD AND APPARATUS

Jin H. Kim, Pleasanton, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Nov. 13, 1987, Ser. No. 120,577
Int. Cl.[4] A61B 10/00
U.S. Cl. 128—661.09 **37 Claims**



1. A method for developing an estimation of the velocity of a moving target, comprising:

transmitting groups of pulse signals towards said target;

receiving groups of echo signals caused by reflections of said transmitted groups of pulse signals from said target;

converting said received echo signals into real and imaginary vector signal components;

vector processing of two temporally successive groups of said echo signals in their vector component format so as to develope real and imaginary processed vector signal components;

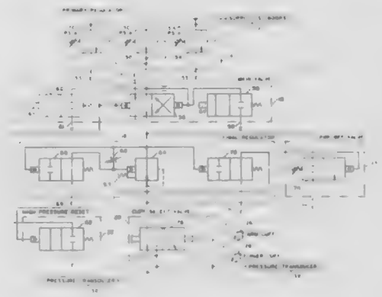
spatial averaging of said real and imaginary processed vector components; and calculating said velocity estimation from said spatially averaged real and imaginary processed vector signal components.

4,800,892

APPARATUS FOR INFLATING CUFF FOR BLOOD PRESSURE MONITORING SYSTEM

William D. Perry; Donald H. Heihn, and H. Herbert Peel, all of San Antonio, Tex., assignors to Nippon Colin Co., Ltd., Komaki, Japan

Filed Jul. 21, 1986, Ser. No. 888,856
Int. Cl.[4] A61B 5/02
U.S. Cl. 128—677 **20 Claims**



1. An inflation system, comprising:

a pressurizable container;

means for supplying a first gas stream at a first pressure;

first regulator means having an input port and an output port, said input port receiving said first gas stream at said first pressure, said regulator comprising first means for converting said first gas stream at said first pressure to a regulated second gas stream at a second pressure, said second gas stream being communicated from said first regulator means through said output port;

first valve means for controlling the flow of said second gas stream from said output port of said first regulator means; and

second regulator means having an input port for receiving said second gas stream from said output port of said first valve means and having an output port in airflow communication with said pressurizable container, said second regulator means comprising means for converting said second gas stream at said second pressure to a third regulated gas stream having a pressure which increases linearly with time, said third gas stream pressurizing said container in a substantially linear manner independent of the volume of said container.

4,800,893

KINESTHETIC PHYSICAL MOVEMENT FEEDBACK DISPLAY FOR CONTROLLING THE NERVOUS SYSTEM OF A LIVING ORGANISM

Sidney A. Ross, and Mark J. Ross, both of 6901 Katherine Ave., Van Nuys, Calif. 91405

Filed Jun. 10, 1987, Ser. No. 61,156
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—732 **56 Claims**

1. An improved method of controlling the nervous system of a living organism comprising the steps of:

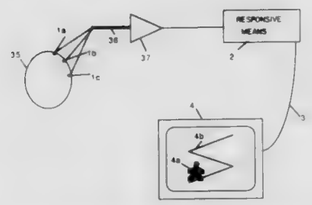
(a) detecting at least one bioelectrical signal from one or more topological locations in said organism's nervous system;

(b) passing said at least one bioelectrical signal through at least one electronic means responsive to the presence of at least one characteristic of interest in the waveform of each detected bioelectric signal, each of said responsive means being adapted to provide a first output signal relating to the amount of said characteristic present;

(c) producing a visual display responsive to said first one or

more output signals, said visual display presenting an image depicting kinesthetic physical movement; and

(d) causing said organism to concentrate mentally so as to change the image depicting kinesthetic physical move-



ment on said visual display, said change of depicted image indicating desired and undesired conditions;

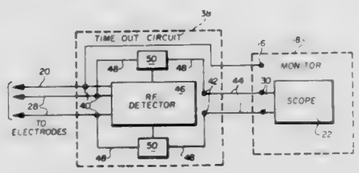
whereby said organism is trained to alter the waveform pattern of said one or more bioelectrical signals, thereby achieving a desired condition of said nervous system.

4,800,894

PROTECTION OF EKG MONITOR AGAINST ELECTRICAL SURGICAL INTERFERENCE

Dean L. Milani, Highland Park, Ill., assignor to Medical Research Laboratories, Niles, Ill.

Filed Nov. 7, 1986, Ser. No. 928,807
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—419 R **3 Claims**



1. A protective device for EKG monitor for in surgical electrocautery and comprising an EKG monitoring apparatus having monitoring electrode input means and display means for providing a continuous instantaneous EKG display, electrodes for attachment to a surgical patient, conductive means interconnecting said electrodes and said input means of said EKG monitoring apparatus, and wherein said surgical electrocautery is carried out with an electrocautery surgical knife and a radio frequency energy source operatively connected thereto; wherein said protective device comprises electrical disabling means coupled with said input means for removing said electrodes from operative circuit connection with said input means in response to a control signal and radio frequency detector means operatively coupled with the patient and responsive to the presence of radio frequency energy for producing said control signal.

4,800,895

ELECTROENCEPHALOGRAPHIC DATA DISPLAY METHOD AND SYSTEM

Richard S. Moberg, Philadelphia, Pa., and Frank W. Sharbrough, Rochester, Minn., assignors to Interspec, Inc., Coshohocken, Pa.

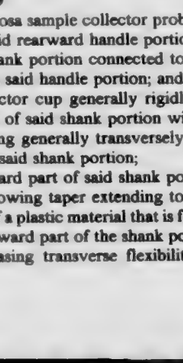
Filed Sep. 3, 1986, Ser. No. 903,510
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—731 **21 Claims**

1. A method for displaying electroencephalographically derived signals comprising transducing of said signals from a patient, transmitting of said signals to an amplifier for amplification, digitizing of said amplified signals by an analog-to-digital converter, quantizing of said digitized signals into discrete frequency components by Fourier transformation, display processing of said quantized signal, and displaying of visual representations of said processed signal on a visual output device, wherein said display processing includes the steps of:

(a) determining the total power of said quantized signal during a predetermined time period or epoch;

(b) dividing said determined total power by a predetermined number representative of desired display resolution to yield a step value;

(c) establishing a running total power indication for accumulating said quantized signal values;



(d) until said running total power indication exceeds said computed total power: (1) repeatedly adding quanta of said signal to said running total power indication, and (2) comparing said running total power indication to an an integer multiple of said step value, and

(i) if said running total power indication exceeds said multiple of said step value, displaying a visual indication at a position corresponding to said integer multiplier on said visual output device, incrementing said integer multiplier, and repeating step (d); or

(ii) if said running total power indication does not exceed said integer multiple of said step value, repeating step (d).

4,800,896

CELL SAMPLE COLLECTOR PROBE

Alfredo A. Jalowayski, 6864 Lipmann Street, San Diego, Calif. 92122

Continuation-in-part of Ser. No. 796,186, Nov. 8, 1985, abandoned, which is a continuation of Ser. No. 421,822, Sep. 23, 1982, abandoned. This application Nov. 10, 1986, Ser. No. 928,860
Int. Cl.[4] A61B *17/22*
U.S. Cl. 128—759 **8 Claims**

1. A nasal mucosa sample collector probe which comprises:

a generally rigid rearward handle portion;

a elongated shank portion connected to and extending forwardly from said handle portion; and

a sample collector cup generally rigidly connected to the forward end of said shank portion with the concavity of the cup facing generally transversely to the longitudinal direction of said shank portion;

at least a forward part of said shank portion having as forwardly narrowing taper extending to said cup and being composed of a plastic material that is flexible and elastic so that said forward part of the shank portion has a progressively increasing transverse flexibility toward said cup

which minimizes the likelihood of injury to sensitive nasal tissues, said forward part of said shank portion further



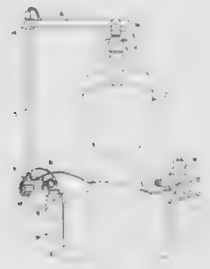
being thinner and hence more flexible in said cup-facing transverse direction than in the transverse direction at right angles thereto.

4,800,897

DEVICE FOR DETECTION OF RELATIVE MOVEMENTS AND/OR POSITIONS OF A PART OF THE BODY OR THE LIKE

Sten Nilsson, Göteborg, Sweden, assignor to SE-Produkter, Sweden

PCT No. PCT/SE86/00304, § 371 Date Feb. 24, 1987, § 102(e) Date Feb. 24, 1987, PCT Pub. No. WO87/00026, PCT Pub. Date Jan. 15, 1987
PCT Filed Jun. 24, 1986, Ser. No. 30,869
Claims priority, application Sweden, Jun. 24, 1985, 8503151
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—782 **9 Claims**



1. A device for simultaneously measuring relative movements and positions of parts of a human body comprising:

at least two measuring sensors; and attachment means for attaching said sensors to the parts of the body whose relative movements and positions are to be measured; and

at least two bars which are pivotally connected to each other and interconnect said means for attaching the sensors to the parts of the body, said bars forming a part of a pivotal parallelogram action linkage and the imaginary axes about which said movements are performed forming another part of said pivotal parallelogram action linkage; said measuring sensors being arranged at vertices of said pivotal parallelogram action linkage;

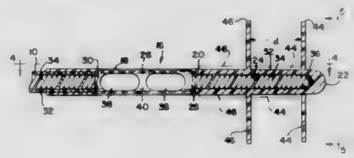
said attachment means being for attaching a first one of said at least two measuring sensors to the head of the body for measuring the head's rotation; and for attaching a second one of said at least two measuring sensors to a shoulder of the body; a first one of said bars thereby being pivotally connected with the measuring sensor on the head, said first bar at its opposite end being pivotally connected with a second one of said bars, and the measuring sensor on the shoulder being arranged at the vertex at the opposite end of said second bar remote from its pivotal connection with the first bar.

4,800,898

NEURAL STIMULATOR ELECTRODE ELEMENT AND LEAD

Stanley R. Hess, Miami; Sandra L. Miller, N. Miami; Peter J. Pohndorf, Miami Shores, and Peter P. Tarjan, Miami, all of Fla., assignors to Cordis Corporation, Miami, Fla.

Continuation of Ser. No. 540,123, Oct. 7, 1983, abandoned. This application Mar. 26, 1987, Ser. No. 30,281
Int. Cl.[4] A61N *1/05*
U.S. Cl. 128—785 **20 Claims**



1. An electrode carrying tip assembly for a neural stimulator lead of the type having an interior conductor and an exterior insulating covering, comprising:

a tubular insulating sheath having an interior passageway for receiving one end of ht neural stimulator lead;

a generally tubular electrode element received in said passageway having an exterior surface and including an interior bore for receiving and electrically engaging the interior conductor of the neural stimulator lead when the end of the lead is received in said passageway;

said insulating sheath having an opening through the side wall thereof adjacent said electrode element exposing a portion of said exterior surface of said electrode element to the exterior of said sheath; and

stabilizing means for stabilizing said tip assembly within the spinal column of a patient including a pair of flexible elongate stabilization members extending outwardly from said sheath adjacent said opening, each of said members being attached to said sheath at one end and free at the other to allow flexure of said members from an extended position to a folded position adjacent and substantially parallel to the exterior of said sheath, hereby said tip assembly can be slidably mounted over the end of the neural stimulator lead and said stabilization members can be folded to said folded position to facilitate insertion of said tip assembly into the spinal column of a patient.

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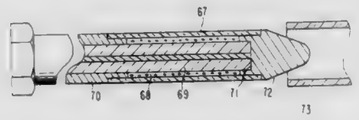
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4,800,899

APPARATUS FOR DESTROYING CELLS IN TUMORS AND THE LIKE

Martin K. Elliott, Milpitas, Calif., assignor to Microthermia Technology, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 663,743, Oct. 22, 1984, abandoned. This application Oct. 29, 1986, Ser. No. 924,656
Int. Cl.[4] A61N *1/06*
U.S. Cl. 128—804 **3 Claims**



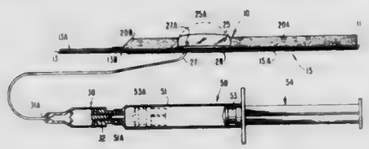
1. An antenna assembly for applying electromagnetic energy to a body part on or within a living body comprising:
an antenna having a coaxial cable member adapted to be coupled with a source of electromagnetic power and to be inserted into the tissue of a body part on or within a living body, said member including a central, electrical conductive element and an outer, electrically non-conductive element surrounding the central element;
a tube coupled with said member in surrounding, spaced relationship thereto, said tube having a pair of end plugs for forming with the tube a closed space surrounding the member and extending longitudinally thereof, one of the plugs having a pointed outer end; and
a volume of fluid in said space, the impedance of the fluid being sufficient to match the impedance of the tissue with the impedance of the member.

4,800,900

EXTERNAL STRAP INCONTINENCE CONTROL DEVICE

Gerald J. French, Spencer, Ind., assignor to Vance Products, Inc., Spencer, Ind.

Continuation-in-part of Ser. No. 926,955, Nov. 4, 1986, abandoned. This application Sep. 25, 1987, Ser. No. 101,078
Int. Cl.[4] A61M *19/00*
U.S. Cl. 128—885 **7 Claims**



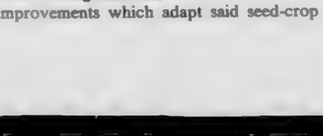
1. A male incontinence control device, comprising:
an elongated flexible inextensible strap adapted to encircle a penis in an overlapping arrangement, said strap having an outer surface and an inner surface;
said outer surface having a first pressure adherence layer over substantially the entire length of said outer surface and a coupling strip affixed thereon at one end of said strap, said coupling strip having a second pressure adherence layer, said first and second pressure adherence layers being detachably adherent to each other when said strap is encircled about a penis in said overlapping arrangement;
said inner surface, facing the penis when said strap is encircled thereabout, having affixed thereon a first compressible pad adjacent said one end and a second compressible pad spaced from said first pad and extending to the other end of said strap;
an inflatable vinyl sac having a floor portion and a bubble portion, said floor portion being adhered to said inner surface between said first and second pads, said bubble portion being sized to contact only the region of the penis immediately adjacent the urethra and having a predetermined free noninflated shape with a height from said inner surface greater than the thickness of said first and second pads;
means for inflating said sac including an inflation tube communicating with the interior of said sac in sealing engagement at its one end with said floor portion of said sac and passing through an opening in said strap, said inflation means further including a check valve sealingly engaged at the other end of said inflation tube; wherein, said sac, when inflated, reacts between said strap and the penis to constrict the urethra and coacts with said compressible pads to limit the pressure exerted by said strap against the remainder of the penis; and wherein said floor portion elastic so that when said sac is inflated said floor portion distends slightly to further reduce the pressure exerted by said strap against the remainder of the penis.

4,800,901

BALLOON-TYPE TISSUE EXPANSION DEVICE

Lior Rosenberg, 13 Harduff Street, Omer, Beersheva, Israel

Filed Sep. 9, 1987, Ser. No. 94,619
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—899 **17 Claims**



1. A tissue expansion device, comprising:
an inflatable balloon adapted to be implanted subcutaneously,
and an inflation tube having one end connected to said balloon to be implanted subcutaneously therewith, with its opposite end to extend through an opening in the skin and to serve as an external entry port for the inflating fluid;
characterized in that said device further includes:
a drain tube connected to said inflation tube so as to be implanted therewith, with one end of the drain tube to be located adjacent to the implanted inflatable balloon, and the opposite end of the drain tube passing through said opening in the skin to serve as an external port for draining fluid accumulating at the site of implantation of the inflatable balloon.

4,800,902

SEED-CROP HARVESTING MACHINE AND METHOD FOR CONVERTING A SEED-CROP HARVESTING MACHINE INTO ONE WHICH CAN BE USED FOR HARVESTING FRAGILE SEED-CROPS

Gale E. Maust, deceased, late of Bay Port, Mich. (by Sharon S. Maust, personal representative), assignor to Maust Enterprises, Inc., Bayport, Mich.

Filed Apr. 13, 1987, Ser. No. 37,706
Int. Cl.[4] A01F *12/46;* **A01D** *45/00*
U.S. Cl. 130—27 R **12 Claims**

1. In a seed-crop harvesting machine which comprises:
gathering means for gathering seed-crop plants;
separating means for separating the seed from the stalks and/or pods of the plants;
a storage bin;
elevator means for elevating the separated seed to said storage bin; and
conveyor means for conveying separated seed from said storage bin to a supplemental storage facility not a part of said harvesting machine;
the improvements which adapt said seed-crop harvesting machine to the harvesting of fragile seed-crops in which:
said elevator means comprises a bucket elevator means;
means for feeding seed into successive buckets after the bucket has started to rise in the elevator;
said conveyor means comprises a belt conveyor means, and



said elevator means and said conveyor means function to carry the separated seed rather than to drag it along, whereby attrition of the skins of the seeds is minimized or avoided.

4,800,903

NICOTINE DISPENSER WITH POLYMERIC RESERVOIR OF NICOTINE

Jon P. Ray, 12544 Judson Rd., San Antonio, Tex. 78233; James E. Turner, 307 Wayside, San Antonio, Tex. 78213; Michael P. Ellis, 811 River Rd., San Antonio, Tex. 78212, and Ronald G. Oldham, 1410 Tartou, San Antonio, Tex. 78231

Filed May 24, 1985, Ser. No. 738,120
Int. Cl.[4] A24D *1/00, 3/08;* **A24F** *1/00*
U.S. Cl. 131—273 **39 Claims**



1. A nicotine dispenser for non-pyrolytic use, adapted to release nicorine-bearing vapor into air drawn through the dispenser, said dispenser comprising:
(a) a housing, said housing defining a passageway for air through the dispenser; and
(b) interposed in the passageway, at least one porous plug comprising nicotine and a first polymeric substance, the first polymeric substance being able to absorptively and reversibly retain and release the nicotine,.

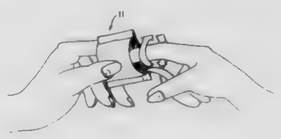
4,800,904

ARTICLE FOR REMOVING NAIL POLISH FROM A NAIL

Peter B. Kinseley, Weston; Stuart R. Kipperman, Easton, and John A. Russo, Westport, all of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Jan. 14, 1987, Ser. No. 3,356
Int. Cl.[4] A45D *29/18*
U.S. Cl. 132—73.5 **4 Claims**

1. An article for removing nail polish from a nail which comprises:
(a) a sealed envelope sealed along three edges and having a rupturable sealed means along and adjacent to one edge thereof to allow for entry of a nail coated with nail polish into the interior of the envelope; and
(b) an absorbent material, bonded to the inner surfaces of the envelope, which is impregnated with nail polish remover and which is adapted to come in contact with the nail that



is coated with nail polish to remove the nail polish therefrom, when within the envelope.

4,800,905

SEMI-RIGID TOOTHPICK WITH PROTECTIVE CASE HANDLE

Dennis D. Stuart, P.O. Box 657, Woodacre, Calif. 94973

Continuation-in-part of Ser. No. 898,563, Aug. 21, 1986, abandoned. This application Aug. 21, 1987, Ser. No. 88,367
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—328 **4 Claims**



1. A toothpick handle with a mounted toothpick for the removal of plaque and food and debris from both the interproximal and subgingival areas of the human dentition comprising in combination:
a hollow handle defining a cavity and having an essentially elliptical cross-section defining major and minor axes, said handle having two opposing flattened sides extending essentially parallel to the major axis of the handle for gripping in the digits of the human hands;
a toothpick formed of bendable plastic material attached to and protruding from the handle, said toothpick having an essentially elliptical cross-section defining major and major axes, the major axis of the toothpick being substantially longer than the minor axis of the toothpick, the major axis of said toothpick being disposed normally to the flattened sides of said handle whereby said toothpick can be bent within the plane of said handle while said handle is gripped between digits of the human hand;
wherein said toothpick is attachable to the handle in a first position where the toothpick protrudes into the cavity of the handle, and a second reversed position where the toothpick protrudes outwardly from the handle.

4,800,906

WASHING APPARATUS

Jerry D. Brightbill, and Kenneth M. Johnson, both of Norman, Okla., assignors to Alco Foodservice Equipment Company, Miami, Fla.

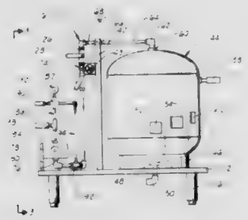
Filed Aug. 1, 1986, Ser. No. 891,608
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—56 R **5 Claims**

2. A hot water washing apparatus comprising:
a heated storage tank;

a motor driven pump adjacent said tank and having an inlet and an outlet;

a tank discharge line in fluid communication with said tank, said tank discharge line comprising:

a first branch connected to said inlet of said pump and including a flow control valve wherein said pump is used to pump water from said tank through a first water outlet in communication with said pump outlet; and



a second branch including a flow switch therein responsive to fluid flow through said second branch, said flow switch being electrically connected to said motor, such that said motor is prevented from driving said pump when there is fluid flow from said tank through said second branch toward a second water outlet in fluid communication with said flow switch.

4,800,907

STORAGE SPACE FOR LIQUIDS, WITH A FLUSHING DEVICE

K. Ulrich Giehl, Lindenstrasse 26, D-5239 Heimborn, and Lothar Steinhardt, Panoramastrasse 44, D-6204 Taunusstein 2, both of Fed. Rep. of Germany

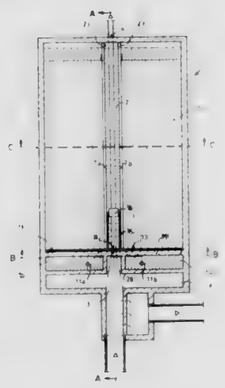
PCT No. PCT/EP86/00047, § 371 Date Sep. 22, 1986, § 102(e) Date Sep. 22, 1986, PCT Pub. No. WO86/04629, PCT Pub. Date Aug. 14, 1986

PCT Filed Jan. 31, 1986, Ser. No. 912,100

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1985, 3503509; Jul. 18, 1985, 3525667

Int. Cl.[4] B08B *3/04*

U.S. Cl. 134—166 R **16 Claims**



16. A storage space for liquids, comprising: a rain basin; at least one flushing chamber positioned at a maximum height of the bottom of said storage space and fillable with storage liquid; said flushing chamber emitting storage liquid in form of a torrent of flushing water through at least one flushing opening when said storage space empties; said flushing chamber filling automatically with storage liquid as the level of storage liquid rises; means for retaining storage liquid in said flushing chamber once said storage liquid has arrived in said flushing chamber; closure means controlled by the level of storage liquid in said storage space for closing and opening said flushing opening; said flushing chamber collecting a part of said liquid; said part of liquid being first released through said flushing opening when said storage space has emptied to enable flushing said storage space thoroughly with a strong torrent from the maximum height to the minimum height of the bottom of said storage space to remove sludge deposited in said storage space; intake means into said storage space; at least one choke positioned in vicinity of said intake means and between said intake means and said storage space; intake opening means communicating with said storage space; means for closing off said intake opening means and comprising a flap trap; means for closing off said flushing opening in said flushing chamber; float means in said storage space for actuating said means for closing off said flushing opening in said flushing chamber, said float means being located in a runoff area of said storage space and dependent on the level of liquid in said storage space and liquid in said runoff area; a vestibule and a first wall between said vestibule and said flushing chamber; a second wall between said flushing chamber and said storage space, said first wall and said second wall comprising an overflow sill; said storage space having runoff gutter means extending in a direction that the storage liquid flows out, and parallel structural sections at a side that channel said flushing torrent laterally; said flushing chamber being at the highest point of said gutter means and emptying into said gutter means; said storage space having transversely sloping bottom with additional channeling sections along the basin to channel the flushing torrent; said storage space having a base of predetermined geometrical shape.

4,800,908

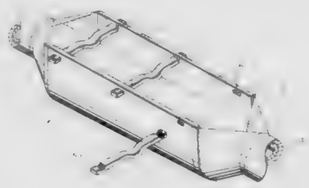
TAPED TROUGHS FOR WET REMOVAL OF ASBESTOS

William G. Lyons, 34 Freemens Bridge Rd., Scotia, N.Y. 12302

Filed Jan. 7, 1988, Ser. No. 141,710

Int. Cl.[4] B08B *3/00, 3/12, 6/00*

U.S. Cl. 134—201 **6 Claims**



1. A trough soaking device for use in a process for complete wet removable of asbestos insulation covering and like hazardous materials from pipes, joints, and valves comprising:

a trough member having ends to be secured having means adapted to secure said trough around an asbestos covered pipe securing means to secure said trough on said pipe comprises opposing porthole openings in upper wall portions of said trough and support bars to rest on said pipe when placed trough said openings; and

sealing means between said asbestos covered pipe and said trough member ends to allow an aqueous solution added into said trough to completely immerse said pipe and prevent leakage of said solution during soaking.

4,800,909

CLAMP FOR UMBRELLA STICK

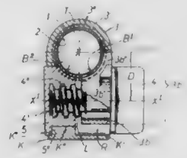
Joachim Seidel, Solingen, and Klaus Stiller, Langenfeld, both of Fed. Rep. of Germany, assignors to Kortenbach Verwaltungs- und Beteiligungsgesellschaft MbH & Co., Soligen, Fed. Rep. of Germany

Filed Sep. 17, 1987, Ser. No. 97,695

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1986, 3635097

Int. Cl.[4] A47B *37/04*

U.S. Cl. 135—16 **9 Claims**



1. For use in a static umbrella, a base-tube which is adapted to be supported vertically, an umbrella stick removably and telescopically located in the top of said base-tube and for carrying, at its upper end, a canopy framework of the umbrella, and a clamping device mounted on the upper end of said base-tube for releasably clamping the lower end of the telescoped stick, said clamping device including a cuff having an annular bush defining at its upper end a passageway providing an entry opening for said umbrella stick and at its lower end a rigid enclosure of the base tube, said cuff defining a lateral projection of said annular bush and enclosing a flexible segment defining a clamping cheek for abutting against said telescoped umbrella stick, said clamping cheek being swingably arranged within said passageway and within said cuff and connected flexibly to said bush, and a screw-threaded adjustment means within said lateral projection and operatively connected to said segment for flexing said segment inward into said passageway relative to said bush to reduce said passageway and to bring said clamping cheek of said segment into frictional contact with said unbrella stick whereby substantially the entire outer surface of the stick is tightly gripped.

4,800,910

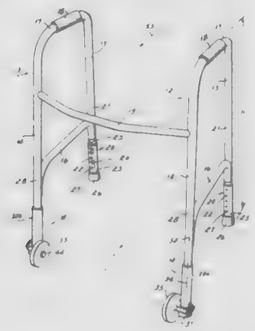
WALKER

Paul B. Gamm, Cincinnati, Ohio, assignor to The Kendall Company

Filed Feb. 24, 1987, Ser. No. 18,041

Int. Cl.[4] A61H *3/00*

U.S. Cl. 135—67 **11 Claims**



1. A leg support system comprising first and second main support legs,

first and second mobile legs, each of said mobile legs being connectable to one of said main support legs, each mobile leg being usable to support a minor operational load relative to ground with said leg's foot being supported above ground so that said leg is mobile relative to ground when in the minor load support mode, and said mobile leg also being usable to support a major operational load relative to ground with said leg's foot resting on ground so that said leg is not mobile relative to ground when in the major load support mode, said mobile legs being separate and independent one from the other when disconnected from said two main support legs,

a wheel connected to each of said mobile legs for rendering said mobile legs mobile in the minor operational load support position, each wheel being positioned to one side of its associated support leg relative to the expected motion direction of said support leg when said mobile leg is connected to said main support leg, and

a connector device for connecting each pair of main support and mobile legs, said connector device being partially carried by said main support leg and said mobile leg of each pair, said connector devices cooperating with said main support legs to allow said first and second mobile legs to be connected to said first and second main support legs, respectively, and also to allow said first and second mobile legs to be connected to said second and first main support legs, respectively, both said connector devices cooperating to permit said wheels to be positioned adjacent to each other inboard of said main support legs, or separated one from the other by said main support legs outboard of said main support legs, as desired by the user when said mobile legs are connected to said main support legs.

4,800,911

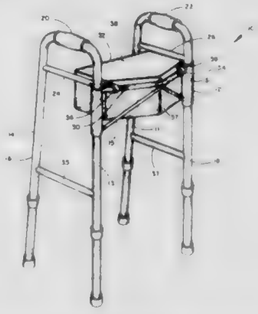
WALKER CARRIER

Kathleen O. Endres, and James T. Endres, both of 2512 Palma Vista Ave., Las Vegas, Nev. 89121

Filed Apr. 6, 1987, Ser. No. 34,630

Int. Cl.[4] A61H *3/00*

U.S. Cl. 135—67 **9 Claims**



1. A walker assembly comprising two leg members, each of said leg members having a pair of legs whereby a space is defined within said walker by an area between said leg members, handle means bridging the upper ends of each of said pair of legs, respectively, first brace members extending between the two legs of each of said pair of legs, respectively, and adjacent said handle means, and a second brace member extending between two opposite legs of different pairs of legs, and a carrier secured on said walker substantially entirely within said space defined between said leg members comprising a rigid frame removably secured on at least one of said first and second brace members and a flexible receptacle secured to

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and extending below said rigid frame, whereby the portion of said carrier extending below said rigid frame is flexible.

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ELECTROMAGNETICALLY OPERABLE VALVE AND METHOD FOR PRODUCING SUCH A VALVE

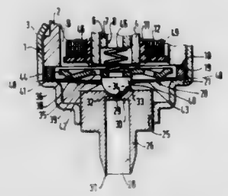
Udo Hafner, Lorch; Rudolf Krauss, Stuttgart, and Rudolf Sauer, Besningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

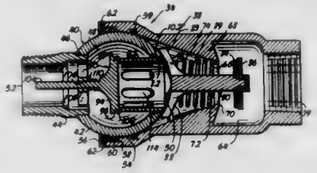
Filed Apr. 15, 1985, Ser. No. 723,229

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418436

Int. Cl.⁴ F16L *55/18*

U.S. Cl. 137—15 **2 Claims**





1. A method for assembly of an electromagnetically actuatable fuel injection valve for fuel injection systems of internal combustion engines, having first and second valve housing portions, said first valve housing portion including a valve seat, and further having a coil assembly comprising a magnetic coil attached to a core of ferromagnetic material and an armature firmly connected to a valve closing part arranged to cooperate with said valve seat, said valve closing part being guided by means of a guide diaphragm supported under spring tension on a guide collar disposed on said armature on the side thereof oriented toward the valve seat, said guide diaphragm serving thereby to guide said armature parallel to said valve seat, comprising the steps of:

(a) positioning said guide diaphragm via an outer circumference upon a shoulder in said first valve housing portion;

(b) inserting a centering body into a centering opening of said guide diaphragm so it radially touches said guide diaphragm, said centering body disposed to sit close to said valve seat to define a centered position for said guide diaphragm;

(c) welding said guide diaphragm upon at least two points of its outer circumference to said shoulder to retain said centered position;

(d) removing said centering body;

(e) assembling said armature and said valve closing part together as a unit in axial alignment;

(f) inserting said unit together with said magnetic coil into said first valve housing, and

(g) clamping axially said second valve housing part to said first valve housing part so that a tensioning force is exerted upon said outer circumference of said guide diaphragm to positively retain said centered position.

4,800,913

BREAKAWAY BALL JOINT SWIVEL COUPLING

Leonard R. Nitzberg, Knoxville, Tenn., and Paul D. Carmack, Tipp City, Ohio, assignors to Helix Enterprises, Inc., Knoxville, Tenn.

Continuation-in-part of Ser. No. 107,947, Oct. 13, 1987, Pat. No. 4,779,638. This application Jun. 20, 1988, Ser. No. 209,065

Int. Cl.⁴ F16L *37/28*

U.S. Cl. 137—68.1 **15 Claims**

1. In a fuel dispensing system including a liquid fuel dispensing station for receiving fuel from a remote location and supplying fuel to a supply conduit, a flexible fuel line operatively connected in flow communication to said conduit, and a nozzle including operator actuating means operatively connected to said fuel line, a detachable safety device connected in said fuel line intermediate said nozzle and said conduit for coupling portions of said line together and for uncoupling when a predetermined excessive tensile force is applied externally to said fuel line, said device comprising first and second body members, one of said body members having a spherical portion, the other of said body members having a socket portion including an open end annular mouth having an inner periphery for receiving said spherical portion, each of said body members having a fluid passageway extending therethrough, each of said passageways having portals defining an inlet and an outlet, coupling means interconnecting said spherical portion to said socket portion for swiveling movement about a multiplicity of axes relatively to one another with the outlet of a first of said body members connected in flow communication with the inlet of the second of said body members to permit fuel to flow therethrough when said body members are coupled, said coupling means including a releasable annular retaining member disposed about part of said spherical portion, said retaining member having an inner periphery conforming to said spherical portion for journally receiving said part for swiveling therein and an outer periphery conforming to the inner periphery of said mouth for retaining said spherical portion within said mouth, locking means for locking said retaining member within said mouth to thereby couple said body members together and for unlocking and releasing said retaining member from said mouth to uncouple said members when an external tensile force above said predetermined limit is applied to said fuel line, and valve means in the fluid passageway of each body member for shutting flow communication between said body members when uncoupled.

4,800,914

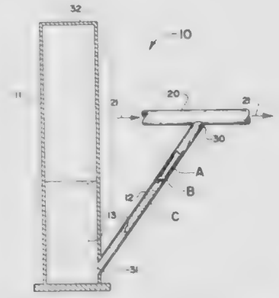
GAS PRESSURE RELIEF APPARATUS

Thomas W. Mulcihy, Jr., Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 15, 1987, Ser. No. 132,296

Int. Cl.⁴ F16K *13/10*

U.S. Cl. 137—247.45 **11 Claims**



1. A pressure relief device for a process or pipeline compris-

ing a vertical column having a level of seal-liquid therein and a conduit in fluid communication with the column and attached to the column near the bottom of the column and generally extending upward to a predetermined distance from the bottom to a point wherein the conduit is in fluid communication with the pipeline, the conduit having a level of seal-liquid therein, the column having a diameter larger than the diameter of the conduit, the column having a diameter and height large enough to prevent a gas flowing at a maximum relieving rate from blowing the seal-liquid from the column.

4,800,915

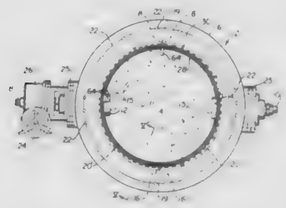
BUTTERFLY VALVE

Herbert L. Hormel, Oakdale, Pa., assignor to S. P. Kinney Engineers, Inc., Carnegie, Pa.

Filed Aug. 14, 1987, Ser. No. 85,881

Int. Cl.⁴ F16K *49/00, 1/22*

U.S. Cl. 137—340 **16 Claims**



1. A butterfly valve for use in a high temperature fluid conduit, main or the like, comprising:

a valve disc having a hollow interior with diametrically opposed coolant fluid inlet and outlet orifice means communicating therewith, said disc including baffle means positioned within the hollow interior defining a continuous, tortous coolant fluid passageway across the disc between said inlet and outlet orifice means, said disc also including an outer peripheral edge, a portion thereof defining a first valve sealing surface therearound;

a valve body having a high temperature fluid flow passage therethrough adapted to be placed in communication with said conduit, main or the like, including means for mounting said disc therein to permit rotative movement of said disc between an open position to a closed position within the flow passage of said body, said body including an inner sidewall surrounding said high temperature fluid flow passage, a portion of said sidewall defining a second valve sealing surface therearound, adapted to engage the first valve sealing surface when the disc is in the closed position, said body including a fluid coolant passageway means adjacent said inner sidewall adapted to contain a flow of coolant fluid therearound to extract heat from said sidewall and said second valve sealing surface.

4,800,916

HEDGE HOSE BIBB EXTENSION APPARATUS

Larry D. Lakey, 4628 O'Connor Ct., Country Club Pl., Irving, Tex. 75062

Filed Aug. 11, 1987, Ser. No. 84,638

Int. Cl.⁴ F16L *3/00*

U.S. Cl. 137—343 **17 Claims**

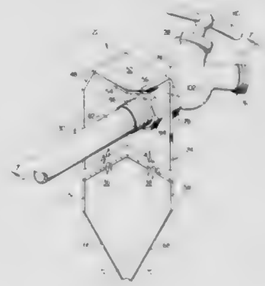
1. Water flow extension apparatus connectable to a primary hose bibb disposed behind obstructive foliage, comprising:

valve means for controlling water flow, said valve means having an inlet, and an outlet connectable to a garden hose;

an elongated stake member having a lower end portion drivable into the ground in front of the foliage, and an upper end portion; and

coupling means for fixedly securing said valve means to said upper end portion of said stake member and for coupling said inlet of said valve means to the outlet end of an extension hose having an inlet end connectable to the outlet of said primary hose bibb,

whereby, with said stake member driven into the ground in front of the foliage, an extension hose interconnected



between said coupling means and the outlet of the primary hose bibb, and the primary hose bibb being initially turned on and left on, said valve means are held in an elevated position in front of the foliage and may be used in place of the primary hose bibb to control water flow to a garden hose connected to the outlet of said valve means.

4,800,917

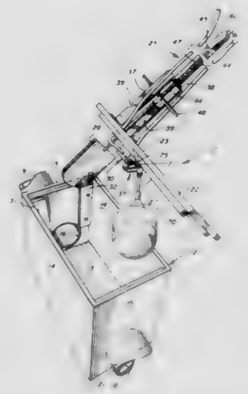
FLUID ACTUATED GATE VALVE ASSEMBLY

Mario DePirro, 133 S. Westmore Ave., Lombard, Ill. 60148

Filed Jan. 15, 1988, Ser. No. 144,223

Int. Cl.⁴ F16K *43/00, 31/26, 33/00*

U.S. Cl. 137—315 **12 Claims**



1. A non-electric fluid actuated automatic gate valve assembly of the type for interposition in a typical sewer line system interconnecting a structure with a muncipal sewer line and for preventing sewer back-up in flood conditions comprising in combination,

an enclosed chamber having a water inlet and a water outlet spaced in opposed relation thereto, said chamber being adapted to allow sewer water to pass therethrough under normal operating conditions,

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said water inlet having a fluid actuated gate valve assembly associated therewith,

said fluid actuated gate valve assembly comprising gate means for alternately opening and closing said water outlet,

fluid actuated control means in operative relation with said gate means, and being in fluid communication with a source of fluid under pressure,

said fluid actuated control means including a removable chamber cover, said chamber cover including,

(a) fluid actuated controller means in operative connection with said gate means for alternately opening and closing said gate means in response to fluid pressure supplied thereto,

(b) valve block means interposed between said chamber and said fluid actuated controller means for controlling the fluid pressure within said controller means,

(c) valve block actuating means interposed between said chamber and said valve block means for sensing the water level within said chamber and adapted to activate said valve block means in response to a rise in water level thereby to concommitantly actuate said fluid actuated controller means and close said gate means in a high water condition within said chamber and alternatively actuate said valve block means and concommitantly said fluid actuated controller means to open said gate means in a low water condition within said chamber,

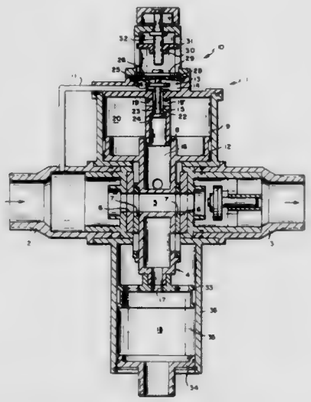
whereby said fluid actuated control means is operated by a fluid under pressure thereby to operate said gate valve assembly without the need for electromotive energy, and.

4,800,918

TUBE SEPARATOR

Hans Arens, Wertingen; Hans Kern, Vacheadorf, and Richard Haslberger, Hufschlag, all of Fed. Rep. of Germany, assignors to Grunbeck Wasseraufbereitung GmbH, Hochstadt, Fed. Rep. of Germany

Filed Aug. 14, 1984, Ser. No. 640,653
Int. Cl.[4] F16K *31/122*
U.S. Cl. 137—488 **3 Claims**



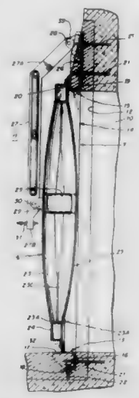
1. A tube separator comprising a housing with an inlet and an outlet, a fluid passage connecting said inlet with said outlet, shut-off means between said inlet and said outlet for opening said fluid passage in a first position thereof and closing said fluid passage in a second position thereof, and means for operating said shut-off means, said operating means comprising a pressure chamber connected with said inlet via a fluid line, a pilot valve defining a first side of said pressure chamber and pilot valve operating means defining a second side of said pressure chamber opposite to said first side, said pilot valve connecting the shut-off means with the pressure chamber in a first switching position and with a reduced pressure chamber in a second switching position and comprising a first valve member having a first valve area and cooperating with a first valve seat in said first switching position and a second valve member having a second valve area and cooperating with a second valve seat in said second switching position, said first valve area being smaller than said second valve area, said valve operating means comprising an inlet fluid operated member connected with said pilot valve, said member having a fluid operated area which is larger than said second valve area, whereby said fluid operated member is acted upon by the inlet fluid pressure in a direction opposite to the action of the inlet fluid pressure on said first and second valve members in their respective closed positions.

4,800,919

FLAP GATE ASSEMBLY

Lothar Bachmann, Dillingham Hill Rd., R.F.D #3, Auburn, Me. 04210

Filed Jun. 18, 1987, Ser. No. 63,414
Int. Cl.[4] F16K *15/03*
U.S. Cl. 137—527.4 **7 Claims**



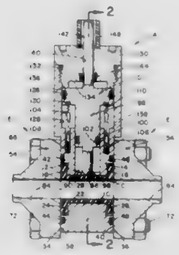
1. A flap gate assembly for use in establishing a first, water receiving section in which water therein is under a head and a second, pump controlled water delivery section in communication therewith, said assembly including a gate supporting frame to be installed at the wanted junction of said sections transversely thereof, a flap gate on the head side of the frame and including a gate frame and first and second walls which are sheet metal stampings strengthened by being so deformed that one surface is dished and the other surface correspondingly protrudes, said walls having their dished surfaces proximate and said walls marginally sealed to the gate frame, a seal carried by one of said frames for sealing engagement with the other of said frames when the flap gate is closed, and supporting structure pivotally connected to a side of the supporting frame and to the side of the flap gate exposed in said first section and close to a center line of the flap gate parallel to said side of the supporting frame but between said line and said last named side, said structure shaped and dimensioned to enable the gate to be swung relative to the gate supporting frame by an incoming stream of adequate pressure into an unseated position and also to swing relative to the supporting structure into an open position with both surfaces exposed in said first section in said stream with the gate frame in a plane parallel to the flow path.

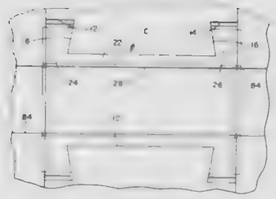
4,800,920

PINCH VALVE

Edward M. Yusko, Jr., Demark; Cal R. Brown, Euclid; Terry M. Kalain, Willoughby, and Peter C. Williams, Cleveland Heights, all of Ohio, assignors to Whitey Co., Highland Hts., Ohio

Filed Apr. 5, 1988, Ser. No. 177,971
Int. Cl.[4] F16K *37/00, 7/07*
U.S. Cl. 137—556 **14 Claims**





1. A valve comprising:

a body having an opening extending between first and second end walls for communication with an inlet defined in a first end member and an outlet defined in a second end member, said end members being disposed on opposite sides of said body;

a flexible member closely received in said opening, said flexible member having first and second enlarged flanges abuttingly engaging said first and second end members and a bore extending through said flexible member having a diametrical dimension substantially identical to said inlet and outlet, said flexible member having an unstressed, first axial dimension greater than a second axial dimension defined between said body end walls;

means for interconnecting said first and second end members together and axially compressing said flexible member; and,

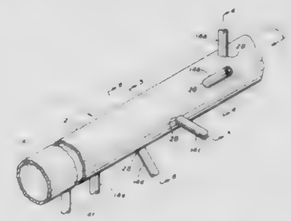
an actuation member disposed in said body for selective reciprocation toward and away from said flexible member and adapted for close receipt through a pinch opening in said body disposed generally perpendicular to said body opening.

4,800,921

METHOD AND APPARATUS FOR DIVIDING A SINGLE STREAM OF LIQUID AND VAPOR INTO MULTIPLE STREAMS HAVING SIMILAR VAPOR TO LIQUID RATIONS

Franz Greebe, Calgary, Canada, assignor to Exxon Production Research Company, Houston, Tex.

Filed Jun. 20, 1986, Ser. No. 876,961
Int. Cl.[4] F16K *51/00;* **E21B** *43/24*
U.S. Cl. 137—561 A **18 Claims**



1. A piping arrangement to promote equal splitting of vapor and liquid into multiple branchlines comprising:

a substantially horizontal header for receiving a stream of vapor and liquid in which the liquid component of the stream collects on the interior of the header in an annular ring, the annular ring having a thickness which varies along the header as a function of both the elevation on the periphery of the header and the quantity of the liquid component remaining in the stream;

a first branchline in fluid conducting communication with the header for drawing a first branch stream of vapor and liquid from the header, the first branchline being connected relatively high on the periphery of the header; and

a second branchline in fluid conducting communication with the header for drawing a second branch stream of vapor and liquid from the header, the second branchline being connected downstream of the first branchline and relatively lower on the periphery of the header, so that the vapor-liquid quality of the second branch stream is substantially equal to the vapor-liquid quality of the first branch stream.

4,800,922

HYDRAULICALLY CONTROLLED MANEUVERING DEVICE

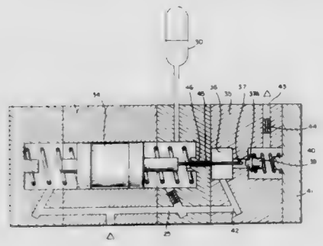
Ove Bratland, Romolslia 48, N-7000 Trondheim, Norway

PCT No. PCT/NO86/00001, § 371 Date Sep. 29, 1986, § 102(e) Date Sep. 29, 1986, PCT Pub. No. WO86/04120, PCT Pub. Date Jul. 17, 1986
PCT Filed Jan. 6, 1986, Ser. No. 910,229
Claims priority, application Norway, Jan. 4, 1985, 850033
Int. Cl.[4] F15B *21/12*
U.S. Cl. 137—624.14 **17 Claims**

1. A hydraulically controlled valve where, between two chambers (8, 9) for hydraulic medium, a movable body (10) is placed which is held in middle position under tension from both sides by biasing means (21, 22), and the movable body can be displaced from middle position by supplying different medium pressures in the two chambers (8, 9) and where there are means for transferring the body's movement as a maneuvering impulse to a control system, characterized in that the two pressure chambers (8, 9) are connected by a common conduit (25) for the signal medium, and that a hydraulic accumulator (30) which together with its connector tube has a selectable natural frequency, is connected to one of the pressure cham-

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bers (9) while the pressure of the signal medium is devised for controlled variation with a frequency which corresponds to



the natural frequency of the accumulator (30) to displace the movable body (10) away from its middle position.

4,800,923

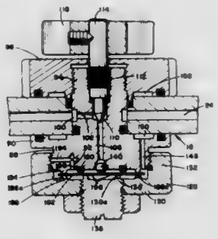
PORTABLE EMERGENCY BREATHING APPARATUS

Josef A. Bartos, Diamond Bar, Calif., assignor to Respirator Research, Ltd., Willoughby, Ohio

Division of Ser. No. 762,251, Aug. 5, 1985, Pat. No. 4,722,333. This application Dec. 4, 1987, Ser. No. 128,985

Int. Cl.[4] F16K *31/12*

U.S. Cl. 137—613 **13 Claims**



1. A shutoff and pressure reducing valve for controlling the pressure of fluid flow from a source of fluid under pressure comprising valve body means, fluid flow passageway means in said body means and having an inlet end for connection with a source of fluid under pressure and an outlet end, manually operable shutoff valve means including a shutoff valve element supported in said body means to open and close said passageway means downstream from said inlet end, a diaphragm chamber in said fluid flow passageway means downstream of said shutoff valve element, said diaphragm chamber having upstream and downstream ends, said passageway means including a port opening into said upstream end of said chamber, a diaphragm in said chamber transverse to said port, said valve body means including means engaging said diaphragm to bias said diaphragm toward said port, a ball valve element between said diaphragm and port, fluid under pressure from said source displacing said ball element downstream against said diaphragm when said shutoff valve element opens said passageway means, said diaphragm having at least one aperture therethrough, and said fluid flow passageway means including flow restricting means between the downstream end of said diaphragm chamber and said outlet end of said passageway means whereby fluid flowing under pressure from said source through said port and diaphragm aperture to said downstream end of said diaphragm chamber and said flow restricting means provides a back pressure on the downstream side of said diaphragm to control the position of said ball valve element with respect to said port when said shutoff valve element opens said flow passageway means.

4,800,924

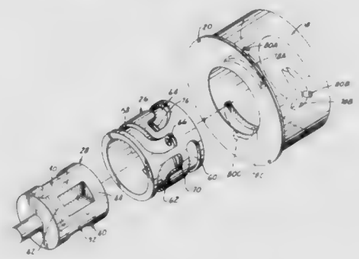
DIRECT DRIVE SERVOVALVE WITH ROTARY VALVE

Dennis D. Johnson, Mt. Clemens, Mich., assignor to Davidson Textron Inc., Dover, N.H.

Filed Apr. 24, 1987, Ser. No. 42,036

Int. Cl.[4] F16K *11/085*

U.S. Cl. 137—625.23 **10 Claims**



1. In a motor driven four-way valve assembly including a drive motor connected to a rotary spool having lands thereon moveable with respect to metering passages for modulating pressure from a pressure source port in the valve housing to first and second control ports and for modulating pressure flow from the control ports to a return port the improvement comprising:

a circular sleeve in said valve housing rotatably supporting the rotary spool and having a pair of pressure metering passages and having a pair of return metering passages;

means for directing pressure to said pressure metering passages including a first groove formed in the outer circumference of said circular sleeve, means for returning pressure flow from said return metering passages including a second groove formed in the outer circumference of said circular sleeve, said first and second grooves each having an arcuate segment formed on a circle segment of said sleeve; said first and second grooves having spaced offset end segments therein communicating respectively with said pair of pressure metering passages and with said pair of return metering passages to equalize radial pressure on the rotary spool for reducing the force required to rotate the rotary spool with respect to the circular sleeve.

4,800,925

AUTOMOBILE COOLANT FLOW CONTROL

Roger L. Yeoman, Dublin, Ohio, assignor to Ranco Incorporated of Delaware, Dublin, Ohio

Filed Aug. 5, 1987, Ser. No. 81,740

Int. Cl.[4] F16K *17/24*

U.S. Cl. 138—46 **9 Claims**

1. A two-stage flow controller for use in a vehicle heating circuit, comprising:

(a) a housing having an inlet and an outlet and a flow control chamber intermediate said inlet and outlet;

(b) structure defining a valve seat within said chamber;

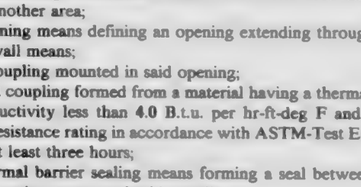
(c) a flow controller assembly slidably disposed in said chamber for movement towards and away from said seat;

(d) biasing means urging said flow controller assembly away from said seat;

(e) said flow controlling assembly including:

(i) a flow controlling element defining a valve seat engaging surface and a through passage, said element operative to restrict fluid flow through said passage as a function of fluid pressure;

(ii) a cage for supporting said elastomeric element within said flow controlling chamber, said cage allowing relative axial movement between said flow controlling element and element engagement structure forming part of said cage;



(iii) a plurality of peripheral axially extending legs slidably supporting said cage and operative to maintain a spaced distance between said flow controlling element and said inlet such that under conditions of reverse fluid flow said flow controlling element does not substantially impede fluid flow from said outlet to said inlet.

4,800,926

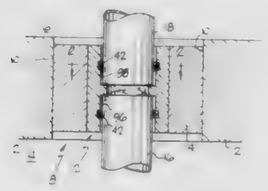
FIREBREAK FOR CONDUITS

Paul C. Beck, Arvada, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Jul. 8, 1987, Ser. No. 71,158

Int. Cl.[4] F16L *35/00*

U.S. Cl. 138—106 **19 Claims**



1. A system for passing conduit through a wall so as to maintain a firebreak for the wall comprising:

wall means for separting one area from another area and providing a firebreak between said one area and said another area;

opening means defining an opening extending through said wall means;

a coupling mounted in said opening;

said coupling formed from a material having a thermal conductivity less than 4.0 B.t.u. per hr-ft-deg F and a fire resistance rating in accordance with ASTM-Test E 814 of at least three hours;

thermal barrier sealing means forming a seal between said opening means and said coupling;

a first conduit having one end thereof located in a first side of said coupling;

a second conduit having one end thereof located in a second side of said coupling;

said first and second conduit formed from a metallic materail having relatively high thermal conductivity properties;

separation means in said coupling for providing a positive space between said one ends of said first and second metallic conduits in said coupling; and

retaining means for retaining said one ends of said first and second metallic conduits in said coupling means.

4,800,927

CABLE INSERTION NOZZLE

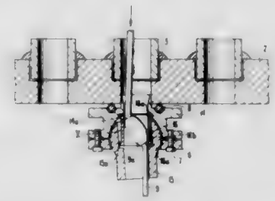
Masaaki Torichigai, and Keiichi Iwamoto, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1986, Ser. No. 919,681

Claims priority, application Japan, Oct. 23, 1985, 60-162443[U]

Int. Cl.[4] F16L *35/00*

U.S. Cl. 138—109 **3 Claims**



1. A cable insertion nozzle comprising:

a ball and socket joint having male and female portions, which are rotatable relative to each other, and an internal passage therethrough extending along the longitudinal axes thereof and having an original inside diameter, the inner peripheral surfaces of the internal passage in the female and male portions having recesses therein which define a cavity therebetween with the longitudinal axis of the female segment coinciding with the longitudinal axis of the male segment, which cavity has a rectangular shape in longitudinal cross-section and a circular shape in transverse cross-section; and

a hollow cylindrical member having an interior with an inside diameter substantially the same as the original inside diameter of the internal passages of said male and female portions and positioned in said cavity, said cylindrical member having opposite end portions and a radially outwardly projecting collar on each end portion defining a concavity along the exterior of said cylindrical member, the end of said male portion being opposed to said concavity, so that, said male portion can move into said concavity while the interior of said cylindrical member remains aligned with the internal passage in said female portion and the formation of a step between the female portion and the male portion is avoided.

4,800,928

FLEXIBLE PIPE

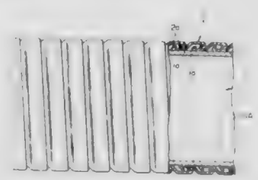
Shiro Kanao, No. 9~, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Filed May 15, 1987, Ser. No. 49,890

Claims priority, application Japan, Dec. 26, 1986, 61-199495[U]

Int. Cl.[4] F16L *11/16*

U.S. Cl. 138—122 **6 Claims**



1. A flexible pipe comprising:

an inner flexible solid pipe (1) made of flexible material; and

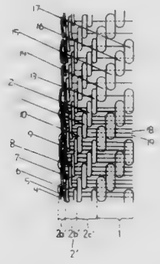
at least one outer belt (2), roughly S-shaped in transverse cross section, made of rigid material, helically wound and firmly fixed onto a wall surface of said flexible pipe (1), each belt having two intermediate portions offset from each other in a radial direction and a central portion disposed between said intermediate portions for connecting said intermediate portions, one of said two inntermediate portions being proximate to an outer surface of said inner flexible pipe, and having parallel hook-like ends (2*a*, 2*a*) pointed opposite to each other and bent radially toward each other at acute angles relative to said intermediate portions of said belt to form a rigid flexible layer, and wherein said inner flexible solid pipe consists of a soft pipe , said at least one outer belt (2) is made of a material selected from the group consisting of hard synthetic resin, fiber reinforced plastic, and fiber reinforced rubber, the one of said intermediate portions of said outer belt which is proximate to the outer surface of said inner flexible solid pipe is fused to and conforms to said outer surface of said flexible solid pipe, and wherein bent ends of said at least one outer belt, at adjacent turns, are adjoining and the adjoining bent ends of said at least one outer belt are engaged such that said hook-like bent ends form spaces therebetween allowing the belt to be displaed in the axial direction of the inner flexible solid pipe.

4,800,929

WEBBING FOR SAFETY BELT

Masao Watanabe, Shizuoka, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1987, Ser. No. 18,396
Claims priority, application Japan, Feb. 28, 1986, 61-27445[U]
Int. Cl.[4] P03D *5/00*
U.S. Cl. 139—383 R **10 Claims**



1. In a webbing for a safety belt, said webbing comprising a main part and selvedges extending along both sides of the main part, the improvement wherein the denier size of warp threads in at least one of the selvedges is smaller than the denier size of warp threads in the main part and decreases stepwise toward the outermost warp thread in said at least one selvedge, the outermost warp thread has a denier size at most equal to the denier size of weft threads, and the weft threads are made of threads having a higher heat shrinkage percentage than the warp threads in the main part.

4,800,930

SOLVENT FOR POROUS MASS ACETYLENE CONTAINERS

Michael S. Rabren, 101 Mason Dr., Citronelle, Ala. 36522

Filed Mar. 24, 1987, Ser. No. 29,628
Int. Cl.[4] B65B *31/00*
U.S. Cl. 141—9 **10 Claims**

1. A method for storing acetylene in containers of the type having a porous mass contained therein, said method comprising:

(a) adding a solvent to said container, said solvent comprising acetone and a lower alkyl alcohol, said lower alkyl



alcohol being present in an amount sufficient to improve the acetylene storage capacity of the solvent; and

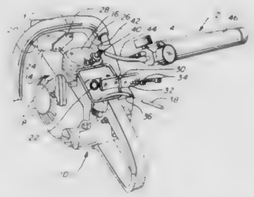
(b) adding acetylene to said containers.

4,800,931

COMBINATION PRESSURE PRODUCING AND EVACUATION TESTING DEVICE

Stephen Petkovsek, 828 Woodbine Cir., Lake Zurich, Ill. 60047

Filed Jan. 28, 1987, Ser. No. 7,948
Int. Cl.[4] B65B *31/04*
U.S. Cl. 141—65 **10 Claims**



1. A combination pressure producing and evacuation device comprising:

a barrel having a chamber;

a vacuum passageway in said barrel in communication with said chamber and having an outlet;

a pressure passageway in said barrel in communication with said chamber and having an outlet;

a first flow control means in said barrel to allow passage of air into said chamber through said vacuum passageway and to prevent passage of air in said chamber outwardly through said vacuum passageway;

a second flow control means in said barrel to allow passage of air in said chamber outwardly through said pressure passageway and to prevent passage of air into said chamber through said pressure passageway;

a plunger;

means mounting the plunger at least partially within said chamber for selective movement in a first direction to compress air in the chamber and pressure passageway and in a second direction to draw air in the chamber away from the vacuum passageway to evacuate the vacuum passageway;

means outside of said chamber to be grasped by the hand of a user for moving the plunger selectively in said first and second directions;

a pressure gauge;

means mounting the pressure gauge rigidly on the barrel to establish communication between said pressure gauge and pressure passageway so that the amount of pressure in said pressure passageway can be ascertained;

a vacuum gauge;

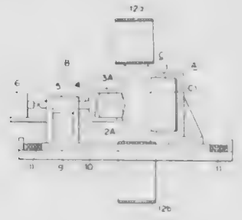
means mounting the vacuum gauge rigidly on the barrel to establish communication between said vacuum gauge and vacuum passageway so that the amount of vacuum in the vacuum passageway can be ascertained.

4,800,932

METHOD AND APPARATUS FOR JUDGING INNER PRESSURE OF FILLED CAN

Masayuki Masuda, and Tamotsu Umeyama, both of Sagamihara, Japan, assignors to Daiwa Can Company, Ltd., Tokyo, Japan

Filed Jan. 9, 1987, Ser. No. 1,892
Claims priority, application Japan, Jan. 13, 1986, 61-4650
Int. Cl.[4] B07C *5/34*
U.S. Cl. 141—83 **1 Claim**



1. An apparatus for determining whether or not the inner pressure of a filled can moving in a conveyed direction is satisfactory, said apparatus comprising:

a back-up unit and a measuring unit between which the filled can moves in the conveyed direction,

said back-up unit including a hard back-up roll rotatably mounted in the apparatus about a fixed axis of rotation for rotatably engaging the barrel of the filled can moving between said back-up unit and said measuring unit,

said measuring unit including a measuring roll spaced from said back-up roll and rotatably mounted in the apparatus about an axis of rotation thereof that extends parallel to the fixed axis of rotation of said measuring roll, and a support rod means to which said measuring roll is rotatably mounted for receiving a reaction force exerted by the can on said measuring roll when the outer diameter of the barrel of the can moved between said back-up unit and said measuring unit is greater than the distance at which said measuring roll is spaced from said back-up roll,

one of said back-up roll and said measuring roll having an outer periphery having an arcuate sectional profile that extends in a plane in which the axis of rotation of said one of said back-up roll and said measuring roll is disposed,

a load cell operatively connected to said support rod means for sensing said reaction force received by the support rod means to determine whether or not the inner pressure of the filled can moving in the conveyed direction is satisfactory, and

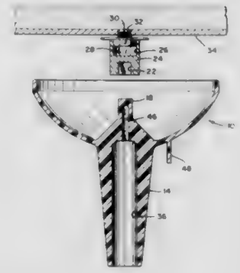
a slide block to which said back-up roll, said load cell and said measuring roll are mounted, a base on which said slide block is slidably supported, and resilient spring means connected between said slide block and said base for biasing said slide block to a predetermined position on said base and for allowing said slide block to slide on said base from said position.

4,800,933

FUNNEL AND TOOL WITH CUTTING ATTACHMENT FOR REMOVING PLUG FROM VEHICLE OIL PAN

Arnold P. Moore, 601 S. First St., and Nobel Linn, Jr., 301 W. Washington, both of Benton, Ill. 62812

Filed Jul. 17, 1987, Ser. No. 74,712
Int. Cl.[4] B25B *13/06;* **B67C** *11/02*
U.S. Cl. 141—98 **4 Claims**



1. A plastic funnel comprising;

a bowl having an open upper end defined by a rim and having a rounded bottom having an opening therethrough and defining an interior;

a nozzle stem having a bore throughout its length and said bore being in communication with the interior of said bowl;

a drive member having an upper end shaped to engage a socket for a socket wrench at its driven end;

a bridge network supporting said drive member within sid bowl without interrupting the communication between the interior of said bowl and bore; and

a hollow cutting tool having a square end shaped to engage said member and a cylindrical member extending therefrom;

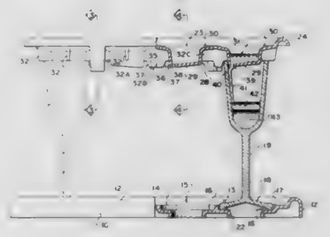
said cylindrical member having an outer end, a center axis and a distal end cut at an angle transverse to its center axis so as to provide a sharp cutting surface at its distal end.

4,800,934

DEVICE FOR POURING DRINKS HAVING LAYERS OF DIFFERENT DENSITIES

Mark Boissoneault, 202 Bernadine Crescent, Winnipeg, Manitoba, Canada R2Y 1W4

Filed Jan. 11, 1988, Ser. No. 142,704
Int. Cl.[4] B67C *11/00*
U.S. Cl. 141—106 **19 Claims**



1. A device for use with a drinking glass in preparing a drink having layers of liquid of differing densities, the device comprising a support member having support surface means arranged to engage a rim of the glass such that the support member can rest upon the rim, a cup member carried on said

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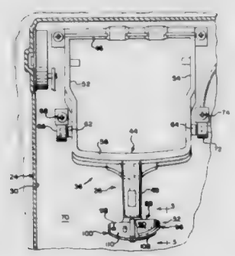
support member and projecting therefrom downwardly relative to said support surface means to project into an interior of the glass, said cup member having an open top into which a liquid can be poured, a generally closed base onto which said poured liquid collects and orifice means in said cup member through which said liquid can flow arranged at a lower most position of the base to cause the cup member to empty through said orifice means, said orifice means being confined to one angular location around a periphery of the cup member, said support member including locating means projecting therefrom downwardly relative to said support surface means at a position to engage an outer surface of the glass to relatively move the glass and the support member to a position in which the closest point of approach of the cup member to the glass is constituted by said one angular location thereof.

4,800,935

CONTROL LEVER FOR REFRIGERATOR WITH WATER AND/OR ICE DISPENSER IN DOOR

William J. Bucheer, Marrs Township, Posey County, and Thomas P. Ladlam, Ohio Township, Warrick County, both of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 5, 1988, Ser. No. 177,665
Int. Cl.[4] B67D *1/00*; F25D *23/12*
U.S. Cl. 141—362 **18 Claims**



1. A refrigerator comprising:
a door;
means disposed in said door for dispensing ice and/or water;
at least one control lever for actuating said dispensing means when said lever is pressed, said lever including an integrally formed first saddle defining an area to be pressed to actuate said dispensing means;
a second saddle mounted on and overlying said first saddle, said second saddle having a color to delineate the area to be pressed; and
a cushioning pad made of a resilient material and mounted on said second saddle to cushion objects contacting said pad to press said lever and actuate said dispensing means, said cushioning pad being smaller in size than said second saddle so as to expose a portion of said second saddle when mounted thereon.

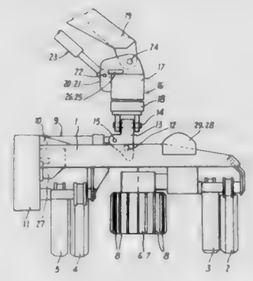
4,800,936

MACHINE FOR FELLING AND SHAPING TREES

Jean-Pierre Pomies, Montargis, and Bernard Gomel, Joigny, both of France, assignors to Societe Industrielle et Forestiere d'Etudes et de Realisations (Sifer), Echouboulains, France

Filed Nov. 23, 1987, Ser. No. 123,723
Claims priority, application France, Nov. 24, 1986, 86 16305
Int. Cl.[4] A01G *23/08*
U.S. Cl. 144—3 D **4 Claims**

1. A machine for felling and shaping trees, said machine being attachable at the end of a support arm, said machine comprising:
a yoke having an upper portion for attachment to said support arm and a lower portion rotatable around a vertical axis with respect to the upper portion,
a mounting bracket pivotally connected to said lower yoke portion along a first horizontal axis,
a beam, with a U-shaped cross section, having flanges defining a housing for said yoke, said beam being pivotally connected to said bracket along a second horizontal axis perpendicular to the first axis, said beam having connected thereto driving means and trimming means for shaping a



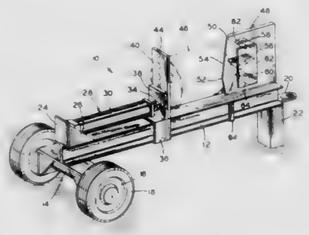
tree, and gripping means and cutting means for felling a tree,
means connected between said bracket and said beam for moving said beam between a horizontal position for shaping trees, and a vertical position for felling trees, and further comprising means, operable only when said beam is in its vertical position, both for preventing said beam from rotating about said first horizontal axis and for permitting only limited movement of said beam about said vertical axis.

4,800,937

LOG SPLITTING APPARATUS

Kenneth H. Mangus, Sr., 125 Chestnut St., P.O. Box 22, Manitou Beach, Mich. 49253

Filed Jan. 14, 1988, Ser. No. 143,840
Int. Cl.[4] B27L *7/00*
U.S. Cl. 144—193 A **9 Claims**



1. A log splitting apparatus comprising:
a frame;
a main splitter mounted on said frame, said main splitter including;
a vertically disposed wedge having a leading splitting edge bevelled along an angle sloping toward one vertical surface of said vertically disposed wedge, the leading splitting edge of the vertically disposed wedge having a leading apex with an upper portion sloping rearwardly from said apex at a first angle from the vertical and a lower portion sloping rearwardly from said apex at a second angle from the vertical, the first angle being greater than the second angle;

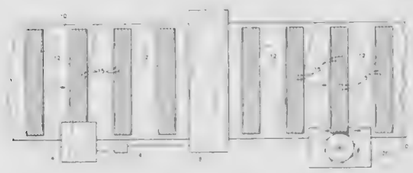
a first horizontally disposed wedge extending from the opposite vertical surface of said vertically disposed wedge and having a splitting edge having two bevelled surfaces extending in opposite directions, said apex of the leading splitting edge of the vertically disposed wedge residing in a plane below the plane of the splitting edge of said first horizontally disposed wedge;
a second horizontally disposed wedge extending from said opposite vertical surface of said vertically disposed wedge and spaced from said first horizontally disposed wedge and including a splitting edge having a bevelled edge sloping away from said first horizontally disposed wedge;
a third horizontally disposed wedge extending from said opposite vertical surface of said vertically disposed wedge and spaced from an opposite side of said first horizontally disposed wedge and including a splitting edge having a bevelled edge sloping away from said first horizontally disposed wedge; and
ram means mounted on said frame for to and fro movement relative to said main splitter.

4,800,938

METHOD AND APPARATUS FOR FINGER JOINTING LUMBER

Malcolm M. Coombs, 4345 25th Ave., N.E., No. 156, Salem, Oreg. 97303

Filed Nov. 10, 1987, Ser. No. 119,721
Int. Cl.[4] B27B *1/00*; B27F *1/00*
U.S. Cl. 144—356 **5 Claims**



1. Method for machining finger jointing grooves in the end of an elongate piece of lumber with a rotary cutter having a plurality of knives located on its periphery, said method comprising:
(a) scanning the piece of lumber in a plane which is parallel with the plane the grooves are to be machined in to determine mine the fiber direction in said plane proximate the end which is to be machined;
(b) positioning said piece of lumber relative to the rotary cutter such that the angle between the tangent of the cutting circle of the knives as they enter the piece of lumber and said fiber direction is greater than or equal to 90°; and
(c) thereafter machining finger jointing grooves with the rotary cutter.

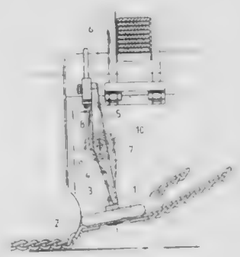
4. Apparatus for finger jointing grooves in the end of an elongate piece of lumber with a rotary cutter having a plurality of knives located on its periphery, said apparatus comprising:
(a) scanner means for locating the fiber direction in the end of the piece of lumber which is to be machined, in a plane which is parallel with the plane the grooves are to be machined in;
(b) orienter means for positioning said piece of lumber relative to the rotary cutter such that the angle between the tangent of the cutting circle of the knives as they enter the piece of lumber and said fiber direction is greater than or equal to 90°; and
(c) a finger jointer which is positioned to machine finger joints in the end of said piece of lumber after it has been scanned and positioned.

4,800,939

ANTI-SKID DEVICE

Göte Törnebäck, Linköping, Sweden, assignor to On Spot AB, Linkoping, Sweden

Filed Jul. 6, 1987, Ser. No. 70,049
Claims priority, application Sweden, Jul. 3, 1986, 86029683
Int. Cl.[4] B60C *27/02*; F16J *3/04*
U.S. Cl. 152—214 **5 Claims**



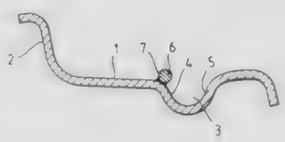
1. An anti-skid device for use with a vehicle having a wheel, said device comprising a rotatable pulley provided with chain pieces, said pulley being journalled to one end of a movable first arm; a second arm rigidly connected at one of its ends to a vehicle and hingedly connected at its opposite end directly to the end of said first arm opposite that to which the pulley is journalled; and inflatable bellows extending between and fastened to the distal ends of the first and second arms, said bellows being operable when inflated to unbold and displace said first arm from a folded position to a substantially straightened position relative to the second arm so as to bring the pulley into contact with said vehicle wheel thereby disposing the claim pieces under the wheel; and spring means operatively associated with said first arm to return the first arm to said folded position when the bellows is deflated.

4,800,940

VEHICLE WHEELS

Thomas Holmes, and Phillip N. Griffiths, both of Sutton Coldfield, England, assignors to S P Tyres U K Limited, Birmingham, England

Filed Jul. 17, 1987, Ser. No. 74,673
Claims priority, application United Kingdom, Jul. 19, 1986, 8617729
Int. Cl.[4] B60C *5/16, 15/02*; B60B *21/10*
U.S. Cl. 152—379.4 **11 Claims**



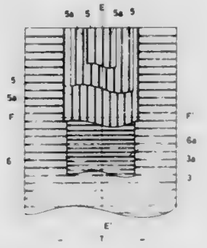
1. A vehicle wheel rim, comprising:
a pair of spaced apart circumferentially extending bead seats for retaining a bead of a tire to be placed on said rim;
a circumferentially extending tire toe engaging groove located axially inward of wach of said pair of bead seats; and
a hump, located between each bead seat and tire toe engaging groove, wherein said hump has a height, measured radially from said bead seat surface adjacent to said hump, of 1.0 to 3.0 mm.

4,800,941

HEAVY LOAD RADIAL TIRE

Kazuyuki Kabe, Hiratsuka; Ken Takahashi, Atsugi; Masashi Kida, Chigasaki, and Saichi Harada, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1987, Ser. No. 38,572
Claims priority, application Japan, May 8, 1986, 61-103893
Int. Cl.[4] B60C *9/18*
U.S. Cl. 152—531 **2 Claims**



1. A heavy duty radial tire having a tread portion and at least one carcass layer disposed inwardly of said tread whose cords are disposed at substantially 90° with respect to a tire circumferential direction, further comprising:

(1) a sub-carcass layer having a cord angle substantially equal to that of said carcass layer disposed adjacent to and outwardly of said carcass layer on a tread surface side and having a width of from 50 to 90% of the road contact width of said tread surface; and

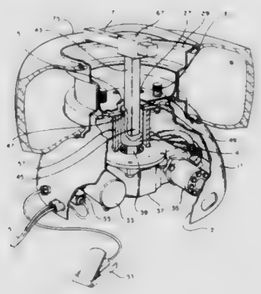
(2) at least one belt layer whose cords cross at right angles the cords of said sub-carcass layer disposed adjacent to and outwardly of said sub-carcass layer on the tread surface said, the width of said belt layer adjacent to said sub-carcass layer being greater than the width of said sub-carcass layer.

4,800,942

PORTABLE TIRE CHANGING STAND

Patrick M. Timlin, P.O. Box 297, Justin, Tex. 76247

Filed Jan. 16, 1987, Ser. No. 4,073
Int. Cl.[4] B60C *25/08*
U.S. Cl. 157—1.24 **8 Claims**



1. A portable tire changing stand which is positionable on the ground at a breakdown site for receiving and holding wheel rims of different diameters, comprising:

a base which includes a wheel rim supporting surface having a central aperture, the rim supporting surface being arranged in a plane generally parallel to the ground, the remainder of the base comprising a dome-shaped enclosure which slopes in arcuate fashion evenly away from the wheel rim supporting surface toward the ground and defines an open interior;

a hydraulic motor contained within the open interior of the base, the hydraulic motor having an output shaft which terminates in a coupling for a tool driving extension, the output shaft being arranged in the base interior generally perpendicular to the plane of the rim supporting surface with the coupling aligned with the central aperture, the length of the shaft being selected so that the coupling does not extend through the central aperture above the plane of the rim supporting surface; and

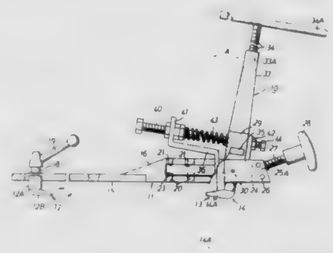
wherein the output shaft of the hydraulic motor is provided with a square, female coupling and wherein a tool driving extension is engageable and removable within the coupling, the tool driving extension having a square end which is received within the square, female coupling when the tool driving extension is engaged within the coupling.

4,800,943

TIRE BEAD DISLODGING DEVICE

Hitoo Umemoto, and Tomio Wakatsuki, both of Osaka, Japan, assignors to The Ohtsu Tire & Rubber Co., Ltd., Izumi-Ohtsu, Japan

Filed Aug. 25, 1987, Ser. No. 89,264
Claims priority, application Japan, Dec. 27, 1986, 61-315714
Int. Cl.[4] B60C *25/07*
U.S. Cl. 157—1.17 **6 Claims**



1. A tire bead dislodging device, comprising a support member which is positionable only on a topside of a tire rim and is provided with a pair of opposing pawls movably attached thereto, one of which is comprised of a pair of pawl members, and means for removably engaging said pawls on the tire rim by displacing said pawls longitudinally along said support member and radially with respect to a periphery of the rim, and also comprising a bead pusher which is mounted on the support member for pushing down upon a bead of a tire mounted on said rim;

wherein said support member is provided with a slide block which is slidable longitudinally of the support member and radially of the tire rim for fixing the tire rim thereunder;

wherein an upstanding screw rod is provided with said bead pusher at a lower end thereof, said upstanding screw rod being threaded vertically through said slide block, and said bead pusher at said lower end of the upstanding screw rod extending between the pawl members;

wherein the bead pusher is displaceable by action of said upstanding screw rod for pushing down upon a tire bead in an axial direction relative to a tire axis while the support member is held by engagement of the pawls with an outer surface of the rim; and

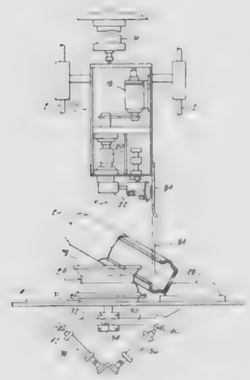
wherein the upstanding screw rod, provided with the bead pusher, extends at a predetermined upward and outward angle relative to the tire axis, which is substantially equal to an angle formed by a bead seat portion of the tire rim relative to the tire axis, as a means for causing the bead pusher to be displaced by said screw rod substantially parallel to said bead seat portion by turning of said upstanding screw rod.

4,800,944

SINGLE BEAD TIRE MOUNTER

John P. Kane, Sterling Heights, Mich., assignor to Allied Automation Systems, Inc., Detroit, Mich.

Filed Feb. 9, 1987, Ser. No. 12,427
Int. Cl.[4] B60C *25/10*
U.S. Cl. 157—1.22 **8 Claims**



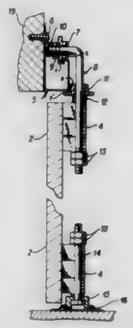
1. A single bead tire mounted for mounting one bead only of a tubeless tire upon a wheel having axially spaced radially projecting opposed rim flanges, said mounter comprising a work head mounted for movement along a fixed vertical axis from and to an elevated rest position, an arm mounted at the lower end of said head for rotation about said vertical axis, rotary drive means on said head for driving said arm in rotary oscillation about said vertical axis from and to a normally maintained home position, conveyor means operable when said head and arm are in their respective rest and home positions for forwardly advancing a horizontally disposed wheel with a rearwardly inclined tire having two circumferentially spaced points on its lower bead resting upon the uppermost rim to a work position beneath said head wherein the axis of said wheel is coaxial with said vertical axis, head positioning means operable when said wheel is in said work position to lower said head to an operating position wherein said head is at a predetermined distance above the uppermost rim flange of said wheel, second means operable upon the arrival of said head at said operating position for shifting said tire rearwardly relative to said wheel to position forwardmost portion of the circumference of said lower bead of said tire in underlying relationship with a forwardmost portion of the circumference of said uppermost rim flange, first roller means on said arm located above said uppermost rim flange when said head is in said operative position operable upon rotation of said arm in a first direction from its home position to progressively engage those portions of said lower bead above said uppermost rim and to force the engaged portion of said bead radially outwardly beyond said rim, and second roller means on said arm spaced radially outwardly from said uppermost rim flange for progressively depressing portions of said lower bead adjacent the portion engaged by said first roller means downwardly below said uppermost rim flange as said arm is rotated in said first direction.

4,800,945

STRIP-ARTICULATED DOOR THAT TURNS IN SMALL RADIUS

Alfredo G. Arteaga, Serrano 2240, Floor 1, Dept. 9, Buenos Aires, Argentina C.1425

Filed Mar. 6, 1987, Ser. No. 23,048
Int. Cl.[4] E05B *15/06*
U.S. Cl. 160—196.1 **9 Claims**



1. A two-roller guide assembly for a strip-articulated sliding door that allows said door to turn in a small radius of curvature about a corner on a high guide track comprising:

a vertical roller that rotates about the horizontally disposed section of an inverted L-bent axial rod consisting of a flange which prevents derailment from said high guide track and a hub which contacts the head of said high guide track and adapted to support the weight of the sliding door,

a horizontal roller that rotates about the vertically disposed section of said inverted L-bent axial rod consisting of a flange which contacts the base section of said high guide track and a hub which contacts the web of said high guide track and adapted to reduce frictional forces that would impede travel of the sliding door about said corner;

said sliding door consisting of a plurality of articulated strips, each pair of adjacent strips at the upper pivotal position is interiorly secured to the vertically disposed section of said inverted L-bent axial rod by fastening means;

means for holding said vertical and horizontal rollers in position and means for securing the high guide track to the interior surface of a walled enclosure.

4,800,946

WINDSTRAP FOR PLIABLE ROLL-TYPE OVERHEAD DOOR

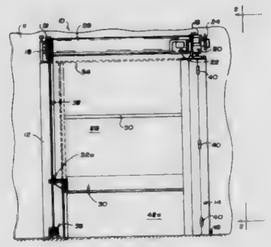
Anthony Rosenoy, Dubque, Iowa, assignor to Frommelt Industries, Inc., Dubuque, Iowa

Continuation of Ser. No. 867,483, May 27, 1986, abandoned.
This application Aug. 10, 1987, Ser. No. 83,936
Int. Cl.[4] A47G *5/02*
U.S. Cl. 160—264 **5 Claims**

1. An improved roll-up door installation including a pliable door mounted at an upper end portion to a cylindrical roller having a generally circular uniform cross section along the length thereof, wherein said roller is coupled to drive means for rotationally displacing said roller in raising and lowering said door and wherein said pliable door is comprised of a transparent material subject to surface scratching resulting in its reduced transparency, said roll-up door installation further including tension means coupled to a lower end portion of said door for maintaining said door in a tightly stretched condition when removed from said roller, the improvement comprising:

strap means mounted to the door substantially across the

width thereof for reinforcing and maintaining the door in a laterally stretched condition upon the application of a load thereto, wherein said strap means includes a pair of elongated, linear metal strips positioned directly opposite each other on respective opposing surfaces of the door and a plurality of mounting pins inserted therethrough maintaining said metal strips in position on the door; and



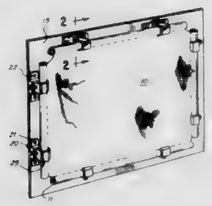
first and second anti-friction wear pads secured on an outer surface of each of said metal strips for preventing contact between a metal strip and a portion of the roll-up door to which said metal strip is not mounted when the door is rolled up on the roller so as to avoid scratching of the pliable door and reducing its transparency.

4,800,947

TENSION MOUNTING SYSTEM AND ASSEMBLY

Russell M. Loomis, Palos Heights, Ill., assignor to Joseph K. Favata, Cicero, Ill.

Filed Sep. 21, 1987, Ser. No. 99,056
Int. Cl.[4] E06B *3/00*
U.S. Cl. 160—368.1 **19 Claims**



1. A tension mounting assembly for suspending flexible sheet material in a taut condition comprising:

a flexible sheet;

at least two rigid retaining means mounted at least at two opposite peripheral edges of said flexible sheet; and

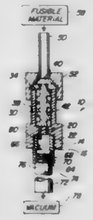
at least two bracket means attachable to a support surface at locations corresponding to said at least two opposite peripheral edges of said flexible sheets, each said bracket means comprising at least one attachment flange attachable to said support surface, two side walls rigidly attached and oriented generally perpendicular to said attachment flange, a top wall oriented substantially perpendicular to said side walls and said attachment flange, an adjustable bracket arm adjustably clamping said rigid retaining means between said side walls and said adjustable bracket arms, and a threaded adjustment means engaging said top wall of said bracket means and said adjustable bracket whereby rotation of said threaded adjustment means causes axial displacement of said adjustable bracket arm and said rigid retaining means capable of tautening said flexible sheet.

4,800,948

METHOD OF FORMING A THERMALLY ACTIVATED PRESSURE RELIEF VALVE

James E. Visnic, West Lafayette, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 29, 1987, Ser. No. 43,978
Int. Cl.[4] B22D *27/15*
U.S. Cl. 164—63 **26 Claims**



1. A method of forming a thermally activated pressure relief valve comprising the steps of:

(a) forming a helical passageway in a body;

(b) introducing a molten fusible material into said helical passageway;

(c) exerting a force on said fusible material to cause movement of said material through said helical passageway thereby displacing any air or gas trapped therein and filling said passageway; and

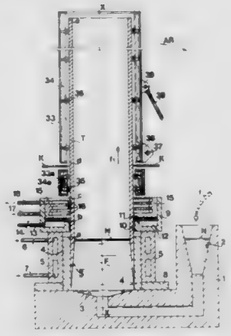
(d) allowing said fusible material to solidify.

4,800,949

METHOD AND INSTALLATION FOR THE CONTINUOUS MANUFACTURE OF PIPES FROM SPHEROIDAL GRAPHITE CAST-IRON HAVING A CONTROLLED STRUCTURE

Claude Bak, Loisy; Rio Bellocci, Pont-a-Mousson; Yves Gourmel, Blenod-Les-Pont-à-Mousson, and Michel Pierrel, Maidieres, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

Continuation of Ser. No. 808,805, Dec. 13, 1985, abandoned. This application Dec. 3, 1987, Ser. No. 131,250
Claims priority, application France, Jan. 4, 1985, 85 00159
Int. Cl.[4] B22D *11/124*
U.S. Cl. 164—460 **9 Claims**



1. Method for the continuous manufacture of pipes from spheroidal graphite cast-iron having a homogeneous and controlled structure chosen from structures containing bainite or bainite and ferrite, of the type in which a tube is formed by a continuous casting method inside a cooled tubular die, from a cast-iron having the following composition by weight: carbon 2.5 to 4%, silicon 2 to 4%, manganese 0.1 to 0.6%, molybdenum 0 to 0.5%, nickel 0 to 3.5%, copper 0 to 11%, magnesium 0 to 0.5%, sulphur 0.1% maximum, phosphorous 0.06% maximum, the remainder being iron, this method being characterized in that, at the outlet (a) of the cooled tubular die (**4-5**) the tube (T) which has just been produced passes through a first phase of tempering comprising the steps of:

(a) cooling the tube naturally, between the outlet of the cooled tubular die and entry into a fluidized bath, to obtain an austenitic structure;

(b) passing the tube through the fluidized bath, which contains refractory particles cooled to a temperature substantially lower than that of the tube, to forcefully cool the tube to a first temperature; and

(c) passing the tube beyond an outlet of the fluidized bath and past a cutting point, and cutting the tube at the cutting point to a predetermined length during an intermediate phase of slow cooling from the first temperature to a second temperature less than said first temperature, and the tube passes through a second phase comprising the steps of:

(d) passing the cut tube through a tunnel furnace to maintain the tube at a constant isothermal temperature to obtain a homogeneous bainitic or bainitic-austenitic structure.

4. An installation for tempering continuously cast-iron tubes including means for the supply of molten cast-iron and means for producing the tubes comprising a cooled tubular die (**4, 5, 21, 23**) and further comprising; a fluidization vat (**9**) of solid refractory particles located downstream of said die, the vat being provided with fluidization means (**12, 13, 14**) to suspend the particles in a gaseous medium and a tubular coil (**16**) embedded in the fluidized bath (**15**) with means to circulate water therethrough and the vat comprising at least one orifice (**10**) for the tube (T) which has to pass through the fluidized bath (**15**) of the particles in the vat (**9**).

4,800,950

PROCESS FOR MANUFACTURING A SUBSTRATE FOR A LITHOGRAPHIC PRINTING PLATE

Theodore J. Crona, New Martinsville, W. Va.; Heinz Bichsel, Neuhausen, Switzerland, and Jürgen Timm, Steisslingen, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 920,205, Oct. 17, 1986, abandoned. This application Dec. 29, 1987, Ser. No. 138,933
Claims priority, application Switzerland, Oct. 30, 1985, 4668/85
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—467 **2 Claims**

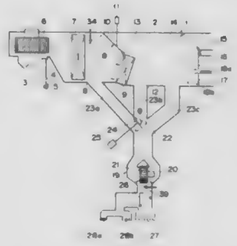
1. A process for manufacturing a substrate for a lithographic printing plate characterized by improved mechanical properties including improved ductility and relatively high tensile and fatigue strengths, a fine substantially uniform surface structure suitable for roughening, a stable $Al_6(FeMn)$ phase that precipitates out on casting and is not transferred into an undesirable $AlFe_3$ phase during heat treatment, and a ternary Al-FeSi phase whih appears as a fine structure comprising providing an aluminum alloy melt consisting essentially of 1.1 to 1.8 wt. % iron, 0.1 to 0.4 wt. % silicon, 0.25 to 0.6 wt. % manganese, up to 0.3 wt. % copper, up to 0.8 wt. % magnesium, up to 2.0 wt. % zinc, 1.0 wt. % total of other elements which each individually do not exceed 0.3 wt. % in concentration, balance essentially aluminum wherein the sum of silicon and manganese is between 0.3 and 1.0 wt. % and said iron and manganese are present in a ratio of iron to manganese between 2.5 and 4.5; casting from said alloy melt a sheet having a uniform thickness of between 5 mm and 12 mm; and rolling said cast sheet to a uniform thickness of between 0.03 mm and 0.6 mm.

4,800,951

AIR CONDITIONER SYSTEM FOR AUTOMOBILES WITH REAR SEAT OCCUPANT SENSOR

Yoshihiko Sakurai, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Division of Ser. No. 758,963, Jul. 25, 1985, Pat. No. 4,711,295. This application Aug. 26, 1987, Ser. No. 89,563
Claims priority, application Japan, Jul. 25, 1984, 59-154224
Int. Cl.[4] B60H *3/00*; **B61D** *27/00*; **F24F** *3/00*
U.S. Cl. 165—22 **3 Claims**



1. An air conditioner system for vehicle including a passenger compartment having a front-seat part and a rear-seat part, said air conditioner system comprising:

(a) a front-seat air conditioner unit including a main duct, a blower disposed in said main duct for forcing air therethrough to said front-seat part, an evaporator disposed in said main duct and a heater core disposed in said main duct;

(b) a rear-seat blower unit including a rear-seat duct and a rear-seat blower disposed in said rear-seat duct for forcing air therethrough to the rear-seat part;

(c) at least one connecting passage interconnecting said main duct downstream of said main blower and said rear-seat duct upstream of said rear-seat blower;

(d) a means for setting a temperature of said front-seat part;

(e) a means for setting a temperature of said rear-seat part;

(f) a means for detecting passengers in said rear-seat part;

(g) a means for controlling said rear-seat blower according to control patterns which are dependant upon at least an output signal of said means for setting a temperature of said rear-seat part and an output signal of said means for detecting passengers in said rear-seat part;

(h) a means for determining if said set temperature of said means for setting a temperature of said front-seat part and said means for setting a temperature of said rear-seat part are at maximum or minimum values;

(i) a means for controlling said main blower according to control patterns which are dependent upon said means for determining and said output signal of said means for detecting passengers in said rear-seat part.

4,800,952

THAW FLOW CONTROL FOR LIQUID HEAT TRANSPORT SYSTEMS

Aaron S. Kirpich, Broomall, Pa., assignor to General Electric Company, King of Prussia, Pa.

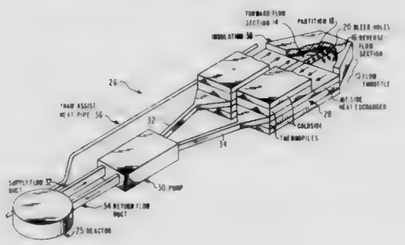
Filed Jul. 22, 1987, Ser. No. 76,465
Int. Cl.[4] F28D *15/00*
U.S. Cl. 165—104.11 **16 Claims**

1. In a liquid-metal heat transport loop including a pump and a source of heat, the improvement comprising:

a heat exchanger with separate forward and reverse flow sections and a source of thaw heat for thawing a coolant that may be frozen in a non-operating state and melted in an operating state,

a thaw flow throttle mounted between said forward and reverse flow sections of said heat exchanger, said thaw

flow throttle having a partition separating forward and reverse flow sections thereof, said partition having a plu-



rality of bleed holes to enable fluid flow of coolant between said forward and reverse flow sections when the coolant is melted.

4,800,953

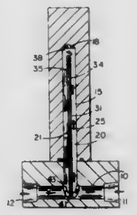
BAFFLE FOR COOLANT PASSAGE

James A. Veldhoff, 4968-138th Ave., Holland, Mich. 49423

Filed Oct. 14, 1987, Ser. No. 107,976

Int. Cl.[4] B29C *47/78*; F28D *3/02*

U.S. Cl. 165—142 **13 Claims**



1. A plastic injection mold or the like comprising:

a structure which includes fluid circulating passages including a first passage having an inlet and an outlet through which fluid flows, and a second passage having a side wall defining a predetermined diameter, first end which opens into said first passage and a second end which is closed; and

a baffle including an elongated body having a pair of sides and a pair of opposed edges, said body extending through said second passage and positioned such that said sides extend laterally thereacross so that the opposed edges of said body snugly engage opposite sidewalls of said second passage to thereby partition said second passage into two conduits fluidly connected at said second end of said second passage, said first end of said body further extends into said first passage and substantially blocks said first passage, said baffle further including a retaining structure projecting outwardly beyond said side wall of said second passage from at least one of said body sides to engage a sidewall of said first passage for holding and positioning said body in place, whereby said fluid flow is directed to flow around said baffle through said conduits as said fluid flows from said inlet to said outlet.

4,800,954

LAMINATED HEAT EXCHANGER

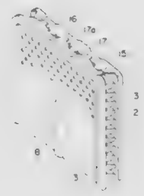
Ichiro Noguchi; Yoshikiyo Nagasaka, and Isamu Kurosawa, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1987, Ser. No. 130,298

Claims priority, application Japan, Dec. 18, 1986, 61-302292; Dec. 23, 1986, 61-197818[U]

Int. Cl.[4] F28D *1/02*

U.S. Cl. 165—153 **8 Claims**



1. A laminated heat exchanger comprising:

(a) a plurality of parallel spaced tube elements, each said tube element being composed of a pair of stamped plates and having two juxtaposed tanks at one end thereof and an internal guide channel extending contiguously from said tanks for the passage therethrough of a heat transferring medium;

(b) a plurality of corrugated fins each disposed between an adjacent pair of said plurality of tube elements;

(c) said tube elements and said fins being laminated into layers; and

(d) each said stamped plate including a joint portion extending along an end edge thereof remote from said tanks and having alternate parallel ridges and grooves, said joint portion having intermediate connecting section means for interconnecting adjacent pairs of said grooves and ridges and for abutting an opposed intermediate connecting section means for engaging adjacent tube elements when said joint portion of one tube element abuts the joint portion of an adjacent tube element, and said joint portion having locking means on at least one of said grooves and ridges for holding said joint portion of one tube element in abutment with the joint portion of an adjacent tube element.

4,800,955

HEAT EXCHANGER

Klaus Hagemeister, Munich, and Alfred Hueber, Merching, both of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 8, 1987, Ser. No. 106,237

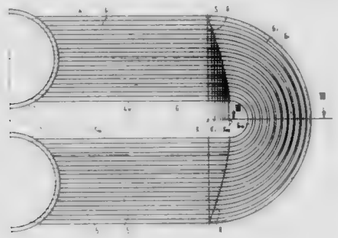
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1986, 3635548

Int. Cl.[4] F28D *7/06*

U.S. Cl. 165—163 **12 Claims**

1. A heat exchanger comprising an inlet duct for admission of a first fluid to be heated, an outlet duct for discharge of said first fluid after heating thereof, said ducts being arranged in substantially parallel relation, an assembly of a plurality of heat exchanger tubes connected to said inlet and outlet ducts for receiving said first fluid from the inlet duct to convey said first fluid through said tubes for discharge into said outlet duct, said heat exchanger tubes being of U-shape, each including first and second straight leg portions respectively connected to said inlet and outlet ducts and a curved bend region connecting said straight leg portions for reversing the direction of flow of said first fluid from said first leg portion to said second leg portion, said assembly of heat exchanger tubes projecting laterally of

said ducts into the path of travel of a second fluid which flows around said tubes in a passage area, said assembly of heat exchanger tubes being arranged in a matrix of rows and columns, the tubes in said columns being disposed in common planes extending parallel to one another and perpendicular to said ducts, said straight leg portions in said common planes being spaced apart equal distances, the curved bend regions of said tubes in said common planes being arranged from an innermost tube of smallest radius of curvature to an outermost



tube of largest radius of curvature, the curved bend regions of adjacent tubes having a spacing in each common plane which is greater between the curved bend regions closer to the innermost tube as compared to the spacing between the curved bend regions of adjacent tubes closer to the outermost tube to provide a throttle region for flow of the second fluid at the curved bend regions of the tubes closer to the outermost tube and thereby obtain substantially undisturbed homogenous flow of said second fluid through the tube matrix.

4,800,956

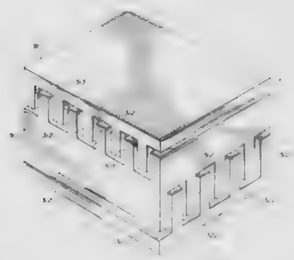
APPARATUS AND METHOD FOR REMOVAL OF HEAT FROM PACKAGED ELEMENT

William R. Hamburgen, Menlo Park, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 856,294, Apr. 25, 1986, abandoned. This application Jan. 12, 1988, Ser. No. 145,641

Int. Cl.[4] F28F *13/14*; H01L *23/40*

U.S. Cl. 165—185 **9 Claims**



1. Apparatus for transferring heat from a component package to a cooling plate, said apparatus comprising:

a first plurality of generally parallel planar members coupled to said component package;

a second plurality of generally parallel planar members coupled to said cooling plate, said first and said second planar members having good thermal conductivity, said first and said second plurality of planar elements generally aligned along an axis and separated; and

coupling apparatus thermally coupling said first and said second plurality of planar members, said coupling apparatus including,

a base,

a third plurality of generally parallel planar members coupled to said base, and

a fourth plurality of generally parallel planar members coupled to said base, said third plurality of planar members generally being interleaved with said first plurality of planar members and said fourth plurality of planar members generally being interleaved with said second plurality of planar elements when said coupling apparatus is in an operative configuration.

4,800,957

RECOVERING HYDROCARBONS WITH A MIXTURE OF CARBON DIOXIDE AND ALCOHOL

James F. Stevens, Jr., Houston, Tex., and Jeffrey T. Hawkins, Ponca City, Okla., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 30, 1987, Ser. No. 79,385

Int. Cl.[4] E21B *43/22*

U.S. Cl. 166—268 **9 Claims**

1. A method of recovering hydrocarbons from an undergound hydrocarbon foundation penetrated by at least one injection well and at least one production well, consisting essentially of:

injecting through an injection well a mixture of carbon dioxide and a polar alcohol or polar glycol additive at a temperature and pressure above the critical temperature and pressure of carbon dioxide,

said alcohol or glycol additive having less than about 9 carbon atoms and comprising about 0.1% about 10% by weight of the injected mixture; and

recovering hydrocarbons and other fluids at a production well.

4,800,958

ANNULUS PRESSURE OPERATED VENT ASSEMBLY

David M. Haugen, Houston; David S. Wesson, Katy; Robert R. Luke, Houston, and Kevin R. George, Columbus, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 894,101, Aug. 7, 1986, Pat. No. 4,732,211. This application Jan. 20, 1988, Ser. No. 146,287

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[4] E21B *43/116, 34/10*

U.S. Cl. 166—55.1 **5 Claims**



1. An apparatus for communicating an annilus outside a tubing string with an interior of the tubing string to which a perforator is connected, said apparatus comprising:

vent means mounted in the tubing string for providing an actuatable opening in the tubing string above the perforator, said vent means comprising:

a vent body having a port therein; and

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a sleeve slidably mounted in said vent body for movement between a closed position, wherein said port is closed to prevent communication of the annulus outside the tubing string with the interior of the tubing string through said port, and an open position, wherein said port is open to allow communication of the annulus outside the tubing string with the interior of the tubing string through said port;

actuating means for actuating said vent means so that the position of said sleeve is changed in response to an external force existing above said vent means, said actuating means including means for connecting to the tubing above said vent means and means for connecting to said sleeve; and

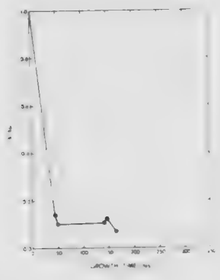
coupling means for coupling said sleeve to the perforator so that actuation of said vent means by said actuating means also provides an initiating force to the perforator.

4,800,959

MICROBIAL PROCESS FOR SELECTIVELY PLUGGING A SUBTERRANEAN FORMATION

J. William F. Costerton; Francene Cusack, and Fraser A. MacLeod, all of Calgary, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Calif.

Filed Nov. 19, 1987, Ser. No. 122,814
Int. Cl.[4] E21B *43/22, 33/138*
U.S. Cl. 166—246 **4 Claims**



1. A process for plugging a permeable subterranean stratum which comprises:

injecting ultramicrobacteria into the stratum, said ultramicrobacteria having a diameter in the range of about 0.2 μm to about 0.4 μm; and

injecting a nutrient-containing solution into the stratum, said solution being adapted to substantially uniformly resuscitate the ultramicrobacteria to the vegetative state and cause them to produce sufficient biofilm to effectively plug said stratum.

4,800,960

CONSOLIDATABLE GRAVEL PACK METHOD

Robert H. Friedman, and Billy W. Surles, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 18, 1987, Ser. No. 135,162
Int. Cl.[4] E21B *33/138, 43/04*
U.S. Cl. 166—276 **8 Claims**

1. A method for forming a consolidated gravel pack in a washed-out cavity adjacent to a producing well penetrating a subterranean oil formation comprising the steps of:

(a) forming a quantity of resin coated gravel comprising granular mineral particles including gravel, said gravel particles being coated with a resin fluid containing a polymerizable oligomer of furfuryl alcohol resin, a catalyst comprising an oil soluble, very slightly water soluble organic acid and an ester of a weak organic acid to consume water produced by the polymerization of resin, said polymer coated gravel comprising a sticky solid material;

(b) preparing an aqueous saline carrier fluid comprising water which is from 70 to 100% saturated with sodium chloride;

(c) suspending said resin-coated gravel in the carrier fluid, forming a fluid mixture of resin-coated gravel and carrier fluid;

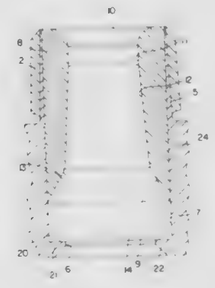
(d) introducing the fluid mixture comprising the resin coated gravel particles suspended in the aqueous saline carrier fluid into the washed-out cavity of the formation adjacent to the producing well and shutting in the well for sufficient period of time to allow polymerization of the resin, forming the permeable gravel pack in the washed-out cavity of the formation.

4,800,961

SPRINKLER OR FIRE-EXTINGUISHING NOZZLE

Wilfried Klein, Lindlarer Str. 79, 5063 Overath-Immekeppel, Fed. Rep. of Germany

Filed Feb. 18, 1987, Ser. No. 16,027
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1986, 3624939
Int. Cl.[4] A62C *37/10*
U.S. Cl. 169—37 **12 Claims**



1. In a sprinkler or spray nozzle for on-site fire-extinguishing systems provided with at least one intake opening (**11**) and with at least one outlet opening (**6**) downstream of the intake opening, and provided between the openings (**11**) and (**6**) with a connector with an open cross-section that initially expands like that of a diffuser from the intake opening toward the outlet opening over at least part of its length and then contracts into a constriction (**9**) positioned between the intake opening and its associated outlet opening, the improvement wherein the open cross-section of the intake opening is smaller than the open cross-section of the outlet opening in such a way and that the initial expansion of the open cross-section of the connector like that of a diffuser is so formed that the pressure of an extinguisher fluid in the open cross-section of the intake opening decreases to the vapor pressure of the extinguisher fluid if the above atmospheric pressure of the extinguisher fluid exceeds a predetermined value so that at an above-atmospheric pressure of the actual extinguisher fluid from 0 bar to the predetermined value, the outflow rate Q of the sprinkler/nozzle will be determined by the formula

$$Q = K\sqrt{p}$$

and at a higher above-atmospheric pressure of the extinguisher fluid by the formula

$$Q = KS\sqrt{p+1}\ ,$$

wherein

Q=flow rate in liters per minute,

K=flow rate in liters per minute at an above-atmospheric pressure of 1 bar,

KS=flow rate in liters per minute at 1 bar of pressure drop between entry into and exit from the intake opening cross-section, and

p=above-atmospheric pressure upstream of the sprinkler.

4,800,962

PLANTER HYDRAULIC SYSTEM WITH MEANS FOR LOCKING ROW MARKERS DURING TRANSPORT

David L. Murray, Lee's Summit, Mo., assignor to Deutz-Allis Corporation, Milwaukee, Wis.

Filed Aug. 3, 1987, Ser. No. 80,618
Int. Cl.[4] A01B *17/00*
U.S. Cl. 172—126 **5 Claims**



1. A wide agricultural implement having a laterally elongated frame, ground engaging tools depending from the frame, support wheels mounted on the frame movable between a frame lowered position in which the tools engage the ground and a frame raised position in which the tools are raised from the ground, transport wheels mounted on the frame for movement between a frame raised transport position in which the tools are raised from the ground and in which the implement may be transported in an endwise direction and a frame lowered position in which the transport wheels are raised from the ground, and a swing hitch tongue having a rear end pivotally connected to the frame and a front end adapted for connection to a towing tractor, said tongue being pivotable between a field working position and an endwise transport position in which said implement is transportable endwise, and further comprising

hydraulic ram means interposed between said frame and said support wheels operable to move said wheels between said frame lowered and frame raised positions,

a row marker pivotally connected to each of the laterally opposite ends of said frame,

a double acting hydraulic actuator interconnected between each of said row row markers and said frame,

a hydraulic control system including

a fluid reservoir,

a control valve,

a pump connected in fluid receiving relation to said reservoir and in fluid delivery relation to said control valve,

a first hydraulic circuit connecting said ram means to said control valve,

a second hydraulic circuit connecting said actuators to said control valve, said second circuit being in parallel with said first circuit and

a blocking valve in said second circuit including a flow control element shiftable between a closed position in which said second circuit is blocked and an open position in which fluid flow in said second circuit is permitted and

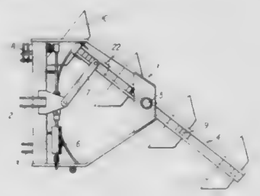
a valve operating mechanism on said implement operatively associated with said flow control element automatically causing said flow control element to be in said open position when said tongue is in said first working position and to be in said closed position when said tongue is in said endwise transport position.

4,800,963

BIDIRECTIONAL MOLDBOARD PLOW WITH MOLDBOARD FRAME INCLUDING GUIDE MEMBER

Pompeyo B. Gomez, Monterrey, Mexico, assignor to Industrias John Deere, S.A. de C.V., Nuevo Leon, Mexico

Filed Apr. 9, 1987, Ser. No. 36,430
Claims priority, application Mexico, Apr. 9, 1986, 2115
Int. Cl.[4] A01B *3/40*
U.S. Cl. 172—219 **3 Claims**



1. A bidirectional moldboard plow, comprising:

a hitching frame which includes a central pole and a plurality of hitching plates attached thereto;

a moldboard frame which includes a guide member extending along and permanently parallel with the longitudinal axis of said moldboard frame and a set of bidirectional moldboards fastened to said moldboard frame and extending along said axis, said moldboard frame being fastened to the hitching frame by a pivot pin for reversible pivoting of the moldboard frame such that said bidirectional moldboards are adapted to cut into the soil on a right and left side of said plow; and

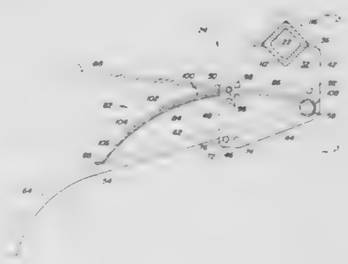
reversing means connected to said guide member of said moldboard frame, said guide member guiding a portion of said reversing means along said longitudinal axis for moving said moldboard frame and said set of bidirectional moldboards by a pivoting action to said right side and said left side of the plow.

4,800,964

COMPACT SHANK ASSEMBLY WITH LEAF SPRING

Vernon E. Rettig, Bondurant; Ronald M. Steilen, and Jeffrey J. Postal, both of Ankeny, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 1, 1987, Ser. No. 44,537
Int. Cl.[4] A01B *61/04*
U.S. Cl. 172—711 **13 Claims**



1. A shank assembly adapted for mounting on a support beam of an implement, comprising:

a shank support bracket;

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a fore-and-aft extending shank having a forward end pivotally connected to the support bracket, an intermediate portion extending rearwardly from the forward end, and an end portion adapted for mounting a tool;

spring means for biasing the shank downwardly about the pivotal connection with the support bracket, said spring means comprising: a leaf spring having a forward end, a central portion, and a rearward shank abutting end, and means connecting the forward end of the leaf spring to the support bracket adjacent the pivotal connection; and

wherein the central portion of the leaf spring is concave downwardly and is offset above the shank, and the support bracket includes spring contacting means bearing downwardly against the central portion of the leaf spring for deflecting the leaf spring toward the shank and accommodating pivoting of the shank relative to the support bracket about the pivotal connection between upper and lower rocked positions.

4,800,965

DAMPING ELEMENT, AND ITS INSTALLATION IN A MOTOR-DRIVEN HAND TOOL

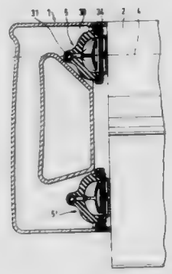
Michael Keller, Nürtingen, Fed. Rep. of Germany, assignor to Metabowerke GmbH & Co., Fed. Rep. of Germany

Division of Ser. No. 713,658, Mar. 19, 1985, Pat. No. 4,667,749. This application May 18, 1987, Ser. No. 50,368

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410669; European Pat. Off., Dec. 20, 1984, 84115934.6

Int. Cl.[4] B25D *17/00*; F16F *13/00*

U.S. Cl. 173—162.2 **12 Claims**



1. A motor-driven hand tool comprising:

a housing for housing a drive mechanism;

a tool connected to one end of the housing, said tool defining an impact axis;

at least one handgrip joined in a damped resilient manner to the other end of the housing in order to reduce vibration; and

at least one damping element mounted between the housing and each handgrip serving to reduce vibration and damp oscillations, each damping element defining a control axis parallel to the impact axis, and comprising:

an approximately bell-shaped rubber spring element having an open end and defining a cavity inwardly from said open end, said cavity being filled with a damping fluid;

a rubber diaphragm, which extends over said open end;

a base plate which extends over said open end and is connected to the diaphragm and the spring element such that the diaphragm is pressed tightly against the spring element, a portion of the spring element facing the base plate;

fastening means mounted to said base plate and to the housing;

further fastening means mounted to that portion of the spring element facing the base plate and to its respective handgrip;

at least one partition situated in said cavity connected to said further fastening means, said partition subdividing said cavity and defining overflow conduits therein; and

a plurality of additional partitions within said cavity which extends at an angle to said at least one partition, wherein:

two damping elements are mounted between the housing and each handgrip, one of said damping elements being mounted so that the impact axis and the central axis are in alignment, the other of said damping elements being spaced apart and at right angles to said one of said damping elements.

4,800,966

DEVICES FOR DRILLING BRANCHED WELLS

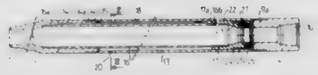
Jean-Pierre Parant, Bizanos; Christian Mariotti, Saint-Gaudens, and Patrick Rousselet, Jurencon, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Apr. 30, 1987, Ser. No. 44,333

Claims priority, application France, Apr. 30, 1986, 86 06256

Int. Cl.[4] E21B *7/08*

U.S. Cl. 175—73 **11 Claims**



1. A device for drilling lateral boreholes from a cased parent well surmounted by a wellhead, and comprising selecting and coupling means adapted to cooperate with stationarily fixed deflecting means placed within the parent well; an extension unit formed by tubular elements assembled together, said selecting means being mounted at the lower end of said extension unit; suspension means placed within the wellhead and to which is rigidly fixed the upper end of said extension unit; at least one slip joint interposed within tubular elements of the extension unit, wherein said slip joint has a means for allowing adjustment of the length of said extension unit between said wellhead and said deflecting means, the internal diameter of each tubular element of said extension unit being such that a drilling packer can be housed within said elements, wherein the suspension means comprises a swivel hanger having a portion of smaller width in which the upper end of the tubular element is mounted and a portion of greater width receives means for pulling to the surface said extension unit, and selecting and coupling means.

4,800,967

DRILLING MACHINE FOR DIGGING TRENCHES IN THE GROUND

Philippe Chagnot, Moret sur Loing, and Jean-Pierre Schreiber, Mareil sur Mauldre, both of France, assignors to Soletanche, Nanterre, France

Filed Aug. 5, 1987, Ser. No. 82,032

Claims priority, application France, Aug. 7, 1986, 86 11460

Int. Cl.[4] E21B *4/04*

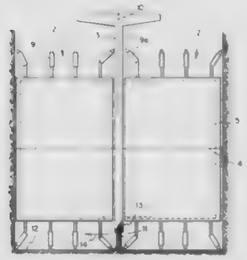
U.S. Cl. 175—96 **3 Claims**

1. In a drilling machine for digging trenches in the ground, and of the type comprising at least one substantially vertical support plate on which are mounted two rotatable drilling drums, one on each side of said support plate, for rotation about an axis substantially perpendicular to the principal plane of the support plate, the improvement characterized by

(a) said support plate having spaced apart opposite side surfaces and downwardly facing edges,

(b) the downwardly facing edges of said vertical support plate being formed by sharply inclined surface portions extending from one side surface to the other and forming

a sharply acute angle with one side surface and an obtuse angle with the other side surface,



(c) said inclined surface portions being operative to displace laterally and rupture material left intact between said rotatable drilling drums during operation thereof.

4,800,968

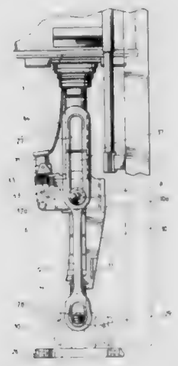
WELL APPARATUS WITH TUBULAR ELEVATOR TILT AND INDEXING APPARATUS AND METHODS OF THEIR USE

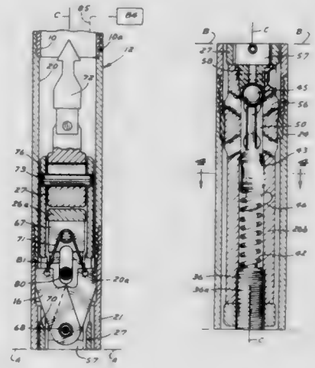
Daniel G. Shaw, Conroe, and Billy M. Cline, Houston, both of Tex., assignors to Triten Corporation, Houston, Tex.

Filed Sep. 22, 1987, Ser. No. 99,771

Int. Cl.[4] E21B *19/00*

U.S. Cl. 175—85 **17 Claims**





1. Well drilling apparatus for use in a derrick comprising:

a drilling unit including a rotary element adapted to be connected to the upper end of a drill string for rotation therewith about the axis of the string, and a motor operable to drive the element and the connected string rotatively about the axis;

an elongated guide structure mounted on the derrick which extends generally vertically parallel to the axis and which guides the drilling unit for movement upwardly and downwardly with a connected drill string to drill a well;

a link adapter connected to the string beneath the drilling unit;

two links having lower ends and having upper ends, the links rotatably connected to and rotatable with the link adapter for movement upwardly and downwardly therewith and in a relation suspending the links at opposite sides of the axis;

an elevator connected to lower ends of the links and adapted to support a section of the drill string in axial alignment with the well; and

a power actuated link tilt mechanism mounted on the link adapter independently of the links, the link tilt mechanism operable to contact and move the lower ends of the links and the elevator suspended thereby laterally outwardly relative to the axis in a relation shifting the elevator between a first position in which it is beneath the drilling unit and aligned therewith along the axis to suspend a section of the drill string in axial alignment with the well and a second position in which the elevator is offset to a side of the axis and is not aligned with the drilling unit to engage a section of drill pipe offset from the axis while the drilling unit remains in alignment with the axis.

4,800,969

FAST DESCENT CORE BARREL APPARATUS

Terrence L. Thompson, Minneapolis, Minn., assignor to Longyear Company, Salt Lake City, Utah

Filed Nov. 24, 1987, Ser. No. 125,016

Int. Cl.[4] E21B *25/02*

U.S. Cl. 175—246 **15 Claims**

1. A wire line core barrel inner tube assembly that is pumpable downwardly in a drill stem, comprising an axially elongated latch body having an upper end portion and a lower end portion, a retractable latch member mounted by the latch body for movement between a latch seating position and a latch retracted position, latch release means mounted for limited movement relative to the latch body between a latch retracted position and a latch seated position, means for receiving a core sample connected to the latch body lower portion, the latch

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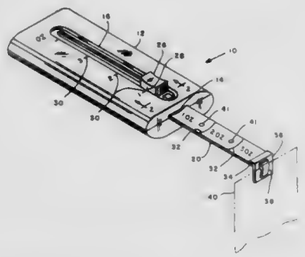
body having a radially outer peripheral surface, an axially intermediate first section of a larger diameter than any other part of the inner tube assembly, a second section axially below the first section and joined thereto to form a downwardly facing annular shoulder, and an axially elongated bore having an upper end portion that includes an upper end portion, an axial intermediate portion and a lower end portion, an upper port opening to the bore intermediate portion and through the latch body outer peripheral surface above the latch body first section, a lower port opening to the bore intermediate portion and through the latch body outer peripheral surface below the latch body shoulder, the lower port being axially inwardly of and axially spaced from the opening of the upper port to the bore, the ports and bore axially between the ports forming a fluid bypass channel, a valving member being mounted in the bore for movement between a lowered position at least substantially blocking flow of fluid through said fluid bypass channel and an upper position permitting fluid flow through the fluid bypass channel, a piston movable relative to the valving member and mounted in the bore for movement between a first axial position for retaining the valving member in the valving member upper position and a second axial position axially inwardly of the first position for permitting the valving member to move to its lowered position, and means for constantly resiliently urging the piston to move to its first position, said valving member being movable from the valving member lowered position toward the valving member upper position sufficiently to permit fluid flow through the fluid bypass channel by fluid flowing into the second port and thence to the bore when the piston is in its second position to permit fast descent of the assembly in the drill stem, the piston and latch body having cooperating means for releasably retaining the piston in the selected one of the piston positions and when the piston is in its second position, the valving member is in its lowered position and the fluid pressure in the upper port exceeds that in the lower port by a preselected amount, fluid pressure acting on at least one of the valving member and the piston moves the piston out of its second position so as to permit the piston thereafter moving the valving member to its upper position when the pressure difference between the upper and lower ports decrease by about the preselected amount.

4,800,970

FLEXIBLE BEAM MECHANICAL WEIGHING SCALE

Michael P. Taylor, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 27, 1987, Ser. No. 125,850
Int. Cl.[4] G01G *3/08, 23/14, 1/18*
U.S. Cl. 177—229 **20 Claims**



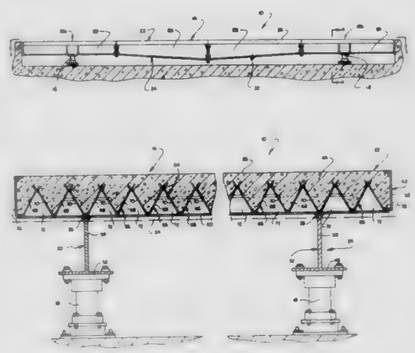
1. A weighing scale comprising:
a housing having a first opening therein,
a flexible beam supported within said housing and having a variable portion of its length extending through and beyond said opening,
said portion having means for supporting an article to be weighed, wherein said flexible beam will bend upon being extending and having an article attached thereto the length of the flexible beam at the moment of bending being inversely proportional to the weight of such article.

4,800,971

SCALE ASSEMBLY

Benny N. Dillon; James F. Williams, both of Worthington; Leo J. Niese, Westerville, and Amiel R. Helle, Delaware, all of Ohio, assignors to Maastron Scale, Inc., Columbus, Ohio

Filed Jan. 13, 1987, Ser. No. 2,959
Int. Cl.[4] G01G *19/02, 19/04*
U.S. Cl. 177—134 **19 Claims**



1. A scale assembly for use in weighing a load, said scale assembly comprising load sensing means for providing an output indicative of the magnitude of a load and platform means for receiving a load to be weighed and supported at locations longitudinally spaced along said platform means by said load sensing means, said platform means comprising an upper portion which includes a body of concrete, a lower portion disclosed below the upper portion and formed of metal, said lower portion including a plurality of spaced apart longitudinally extending metal beams, and connector means for preventing relative movement between said body of concrete and said lower portion of said platform means upon the application of a load to said platform means, said body of concrete being stressed only in compression and said longitudinally extending beams being stressed in tension when said platform means receives a load to be weighed between said location, said platforms means having only one neutral plane which separates the portion of said platform means stressed in compression from the portion of said platform means stressed in tension, said neutral plane being disposed in the lower portion of said platform means below said body of concrete, said upper portion of said platform means including a metal container which holds said body of concrete, each of said beams including a bottom flange and a web section which extends upwardly from said bottom flange to said metal container, said web section being fixedly connected to said metal container by said connector means.

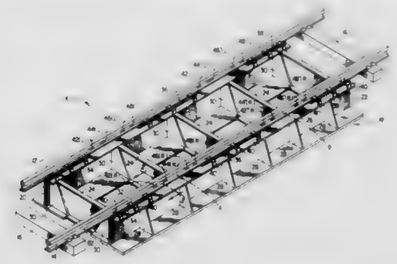
4,800,972

APPARATUS FOR WEIGHING ROLLING RAILCARS

Edwin D. Snead, Georgetown, Tex., assignor to Kilo-Wate, Inc., Georgetown, Tex.

Filed Nov. 16, 1987, Ser. No. 119,038
Int. Cl.[4] G01G *19/04*
U.S. Cl. 177—163 **14 Claims**

1. In a system for weighing railcars in motion including a weigh scale comprising a plurality of longitudinally spaced sensors secured to a predetermined length of relatively unsupported rail track for measuring rail track stresses imposed by a railcar passing thereon, the improvement comprising a plurality of said weigh scales arranged in tandem on said rail track



for enabling stress measurements to be obtained from a plurality of different select locations about the circumference of a common wheel.

4,800,973

PORTABLE ELECTRONIC SCALE OF MINIMAL THICKNESS AND WEIGHT

Shlomo Angel, 175, Ranong 1 Road, Bangkok 10400, Thailand

Filed Mar. 4, 1988, Ser. No. 163,895
Int. Cl.[4] G01G *3/14*; G01L *1/22*
U.S. Cl. 177—211 **6 Claims**

1. A low-profile and light-weight portable electronic scale, comprising:
(a) a thin and rigid load-bearing composite plate comprising a plurality of layers rigidly bonded together to act as a single structural plate of minimal weight and thickness yet of sufficient size and strength to support the weight of a person standing or an object lying thereon, said plate comprising:
(i) a top layer of high elastic modulus having high compressive strength;
(ii) a bottom layer of high elastic modulus, which has a high tensile strength and which acts primarily in tension when the composite plate is loaded from above; and
(iii) an intermediate light weight, rigid layer which bonds the top and bottom layers to one another and which acts primarily in shear when the composite plate is loaded from above;
(b) at least three supporting feet upon which the composite plate is mounted, the feet being spaced across the bottom layer of the composite plate to support a load placed on the top layer thereof;
(c) at least three thin transducers secured in cavities in the composite plate above the supporting feet so that the entire load on the plate, including its own weight, is transferred to the feet through the transducers, each of the transducers incorporating:
(i) mechanically deformable means free to deform upwards when subjected to a force exerted by the supporting feet from below, and
(ii) means for measuring and transforming the deformations into electrical signals; and
(d) electronic means of low power consumption and low vertical profile for powering the transducers, for summing their signal outputs, for transforming the result into digital form, and for providing a read-out thereof, said electronic means being housed in cavities within the composite plate.

4,800,974

ELECTRIC STEERING GEAR

Thomas J. Wand, Canton; Philip A. Gaubis, Walled Lake, and Philip Q. Guest, Jr., Berkley, all of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Oct. 23, 1985, Ser. No. 790,468
Int. Cl.[4] B62D *5/04*
U.S. Cl. 180—79.1 **12 Claims**

1. A steering assembly for turning the steerable wheels of a vehicle upon rotation of the vehicle steering wheel, said assembly comprising:
means for mechanically coupling the vehicle steering wheel with the steerable wheels of a vehicle;
torsion sensing means for providing an electric signal having a value which varies as a function of the amount of input torque applied to said steering wheel;
speed sensing means for sensing the speed of the vehicle and for providing an electric signal indicative thereof;
electronic control means connected to said torsion sensing means and to said speed sensing means, said electronic control means including speed decoder means for providing a plurality of coded electric signals, each coded signal being indicative of the vehicle being within a particular range of vehicle speeds, memory means for storing a plurality of look-up tables, each vehicle speed range having an associated look-up table, each look-up table having a control value corresponding to a value of the signal provided by said torsion sensing means, means for selecting a look-up table responsive to said coded electric signal indicative of the vehicle being within a particular range of vehicle speeds, means for selecting a control value from a selected look-up table responsive to the value of the signal provided by said torsion sensing means, and means for generating an electric control signal responsive to said selected control value form said selected look-up table;
signal generating means for sequentially generating control values from a minimum assist value to a maximum assist value in a predetermined amount of time, said electric control signal being responsive to the smaller of (i) the selected control value from said selected look-up table, or

(ii) the control value generated by said signal generating means; and

power assist means for providing steering assist to aid a vehicle operator in a steering maneuver, the amount of assist being responsive to the electric control signal.

4,800,975

MOTOR CONTROL UNIT FOR ELECTRICALLY OPERATED POWER STEERING DEVICES

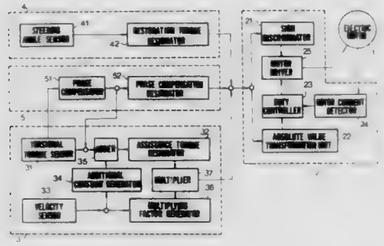
Saiichiro Oshita; Toyohiko Mouri, and Yuji Uemura, all of Ohta, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 785,929, Oct. 9, 1985, abandoned. This application Sep. 18, 1987, Ser. No. 99,689

Claims priority, application Japan, Oct. 19, 1984, 59-220956

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—142 **16 Claims**



1. An electric power steering system for a motor vehicle having a motor operatively connected to a steering system for reducing steering effort, comprising:

means comprising a torsion torque sensor for detecting torsion torque applied to the steering system in a steering operation for producing a torsion torque signal;

means comprising a vehicle speed sensor for producing a vehicle speed signal;

first means responsive to the torsion torque signal and to the vehicle speed signal for producing an assist torque signal the absolute value of which increases with increase of the absolute value of the torsion torque signal and decreases with increase of the vehicle speed signal;

means comprising a steering angle sensor for detecting steering angle for producing a steering angle signal;

second means responsive to the steering angle signal for producing a return torque signal independent of vehicle speed for returning the steering system to a neutral state;

third means for adding the return torque signal to the assist signal; and

fourth means responsive to summation of the assist torque signal and the return torque signal for producing a signal for driving the motor, whereby assist torque increases with increase of the absolute value of the torsion torque signal and decreases with increase of the vehicle speed signal, and returned torque is produced independent of the vehicle speed.

4,800,976

METHOD OF CONTROLLING POWER STEERING DEVICE

Kunio Okada, and Shigeru Kobayashi, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1987, Ser. No. 58,980

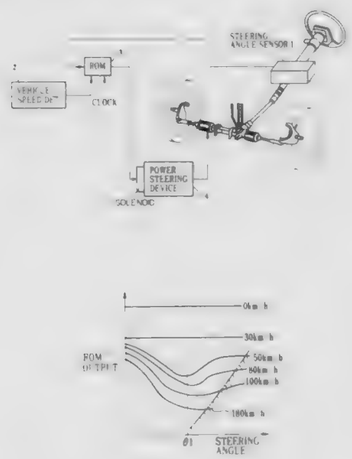
Claims priority, application Japan, Jun. 11, 1986, 61-133887

Int. Cl.[4] B62D *5/06*

U.S. Cl. 180—142 **5 Claims**

1. A method of controlling a power steering device, which controls an output from said power steering device in accordance with a vehicle speed and a steering angle, said method comprising the steps of:

causing the output from said power steering device to vary inversely with the steering angle when the vehicle speed exceeds a predetermined vehicle speed and the steering angle is below a given angle; and



causing the output from the power steering device to vary directly with the steering angle when the vehicle speed exceeds the predetermined vehicle speed and the steering angle exceeds the given angle.

4,800,977

CONTROL SYSTEM FOR DRIVING AND STEERING DRIVERLESS TRANSPORT DEVICES

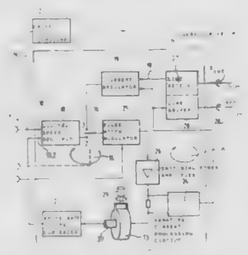
Peter Boegli, Studer, and Jörg Buser, Biel, both of Switzerland, assignors to JD-Technologie AG, Zug, Switzerland

Continuation of Ser. No. 759,749, Jul. 29, 1985, abandoned. This application Aug. 24, 1987, Ser. No. 88,598

Claims priority, application Switzerland, Aug. 10, 1984, 3847/84

Int. Cl.[4] B60K *26/00;* **B62D** *1/24*

U.S. Cl. 180—168 **12 Claims**



7. A control system for driving and steering a driverless transport device, comprising:

at least two drive wheels;

a predetermined number of free-wheeling support wheels;

each one of said at least two drive wheels being provided with a substantially vertically extending steering axle and being pivotable by predetermined steering angles through means of said steering axle;

a predetermined one of said at least two drive wheels being freely controllable with respect to its drive speed;

said at least two drive wheels being provided with essentially identical servo-drive units;

each said servo-drive unit comprising a d.c.-electromotor, a speed regulation loop, an armature current regulation loop and a switch device;

each said servo-drive unit assuming a preselectable configuration and mode of operation;

said switch device adapting said configuration and said mode of operation of its associated servo-drive unit to predetermined values of said steering angle of its associated one of said at least two drive wheels;

said switch devices associated with the related servo-drive units of said at least two drive wheels, adapting said configuration and mode of operation of their associated servo-drive units such that a MASTER/MASTER configuration is formed which constitutes an optimum configuration at predetermined values of about ±90° for said steering angles of said at least two drive wheels;

each said MASTER servo-drive unit operatively associated with one of said at least two drive wheels constituting a motor-driving speed regulation loop; and

said MASTER servo-drive units being operated independently of each other.

4,800,978

MAGNETIC OBJECT DETECTING SYSTEM FOR AUTOMATED GUIDED VEHICLE SYSTEM

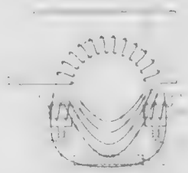
Yasuhiro Wasa; Yojiro Kondo, and Tokuki Miura, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 8, 1985, Ser. No. 796,209

Claims priority, application Japan, Nov. 9, 1984, 59-170161[U]; Jan. 24, 1985, 60-11251

Int. Cl.[4] B62D *1/28*

U.S. Cl. 180—168 **4 Claims**



1. A system for detecting an object including a magnetic material, said system comprising a first coil for generating a magnetic field that is directed towards said object, second and third coils arranged in a magnetic field path generated by said first coil at separate positions, said first coil including a magnetic core having first and second ends, said first and second ends being arranged near said second and third coils respectively, said magnetic core being formed substantially in a U shape, a first amplifier for amplifying an output of said second coil, a second amplifier for amplifying an output of said third coil, each of said first and second amplifiers having a gain control terminal for controlling a gain thereof, adding means for obtaining an addition signal proportional to the sum of outputs of said first and second amplifiers, and means for applying said addition signal to said gain control terminals of said first and second amplifiers thereby to control gains of said amplifiers, whereby said addition signal is kept at a predetermined value.

4,800,979

CANTILEVER REAR SUSPENSION SYSTEM FOR MOTORCYCLES

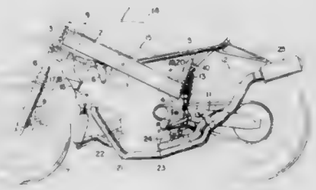
Seino Tatsuji, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1986, Ser. No. 888,529

Claims priority, application Japan, Jul. 19, 1985, 60-160761; Jul. 19, 1985, 60-160762; Jul. 20, 1985, 60-160883

Int. Cl.[4] B60G *7/04;* **B62K** *25/20;* **B60K** *13/04*

U.S. Cl. 180—227 **4 Claims**



1. A rear suspension for a motorcycle having a frame, a cantilever rear swing arm pivotally mounted to the frame at a first end, an engine mounted to the frame having exhaust ports, a chain drive having a drive sprocket driven by said engine, a driven sprocket and a drive chain extending about said drive sprocket and said driven sprocket, exhaust pipes extending from the exhaust ports a bore through the swing arm adjacent the first end, a rear cushion member extending through the bore and a linkage coupled with the rear swing arm, the cushion being fixed at one end to the frame and at the other end to the linkage, wherein the improvement comprises the bore being displaced laterally from the centerline of the vehicle toward the cantilever portion of the cantilever rear swing arm and at least one of the exhaust pipes extending downwardly adjacent the first end of the rear swing arm and being laterally displaced from the centerline of the vehicle in a direction opposite to the direction of displacement of said bore and said rear swing arm rotatably mounting said driven sprocket on the end opposite the first end and having a longitudinal section in the plane of said drive chain, the vertically spaced sides of said section being defined by surface portions diverging oppositely from the respective ends of said rear swing arm to a maximum dimension intermediate said ends, said surface portions at said maximum dimension being disposed closely adjacent tangent lines extending between the pitch circles of said driven sprocket.

4,800,980

BODY COVER AND TRUNK STRUCTURE FOR A MOTOR SCOOTER

Ochiai Hideo, Saitama; Kiyoshi Ohno, Tokyo; Eiichi Iwao, Saitama, and Hideo Mori, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1986, Ser. No. 915,624

Claims priority, application Japan, Oct. 5, 1985, 60-222173; Mar. 24, 1986, 61-42829[U]

Int. Cl.[4] B60K *13/06*

U.S. Cl. 180—225 **9 Claims**

1. A motor scooter comprising:

a frame;

a front and rear wheel rotatably mounted to said frame;

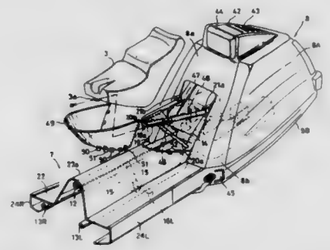
a seat connected to said frame;

an engine unit arranged below said seat;

a body cover comprising a rear cover enclosing said engine, and extending beyond said seat, said rear cover having a projection portion at a portion no lower than said seat, said projection portion having louvers in the wall thereof defining an outlet for discharging heat from said engine unit; and

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insulating means between said seat and said engine unit including a heat insulating partition board positioned



beneath said seat and having an inclination to direct the flow of heated gases toward said projection portion.

4,800,981

STABILIZED REFERENCE GEOPHONE SYSTEM FOR USE IN DOWNHOLE ENVIRONMENT

Gary W. Uttecht; Danny E. Hoover, and Stephen W. Klopp, all of Houston, Tex., assignors to Gyrodata, Inc., Houston, Tex.

Filed Sep. 11, 1987, Ser. No. 96,138
Int. Cl.[4] G01V *1/40*
U.S. Cl. 181—104 **8 Claims**



1. A downhole tool, comprising:

(a) a tool housing to be lowered in a well borehole wherein said housing defines three mutually orthogonal axes, and including individual geophones in said housing having sensitive axes along the three axes thereof wherein said geophones are momentarily directionally fixedly oriented with respect to said housing for receiving seismic vibrations through the earth from a source located remote from said housing to transmit seismic vibrations through the earth and wherein said geophones form output signals thereof; and

(b) position means for determining the position of said housing with respect to an orthongal reference system in space when said housing is located in the well borehole wherein a rate gyro forms an output of azimuth relative to north as one axis of the orthogonal reference system and said gyro is operative only when said geophones are not operated.

4,800,982

CLEANABLE IN-THE-EAR ELECTROACOUSTIC TRANSDUCER

Elmer V. Carlson, Prospect Heights, Ill., assignor to Industrial Research Products, Inc., Elk Grove, Ill.

Filed Oct. 14, 1987, Ser. No. 108,122
Int. Cl.[4] H04R *25/00*
U.S. Cl. 181—130 **11 Claims**

1. A cleanable electroacoustic transducer device of the kind that fits into an ear canal of a user, comprising:

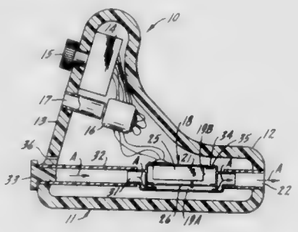
a housing having a size and configuration adapted to fit into said ear canal;

a sound outlet passage extending from an inner end in an interior of the housing to an outer end that opens into the ear canal of the user;

an acoustic chamber positioned within the housing, in communication with the inner end of the sound outlet passage;

a sound generating diaphragm mounted in the acoustic chamber;

acoustic drive means, mounted in the housing, for driving the diaphragm;



actuating means, including a microphone and amplifier mounted in the housing, for actuating the acoustic drive means;

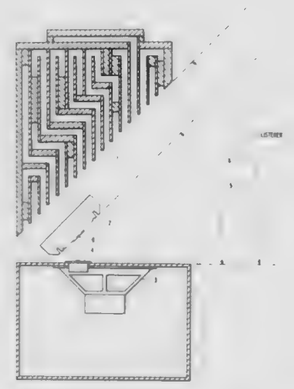
and a cleaning passage, extending into the housing and into communication with the inner end of the sound outlet passage, the two passages comprising a continuous conduit such that a solvent pumped into one end of the cleaning passage from outside the housing flows through the full length of the outlet passage to clean out accumulated cerumen without disassembly of the device.

4,800,983

ENERGIZED ACOUSTIC LABYRINTH

David K. Geren, 4601 Gloria Ave., Encino, Calif. 91436

Filed Jan. 13, 1987, Ser. No. 2,812
Int. Cl.[4] H05K *5/00*
U.S. Cl. 181—155 **2 Claims**



1. An acoustic labyrinth for diffracting and thereby disbursing sound impinged thereupon from a sound source close thereto, comprising;

(a) a large plurality of adjacent elongated parallel channels,

(b) each said adjacent elongated parallel channel having an entrance, and having nonuniformly varying depths,

(c) the entrance to each said adjacent elongated parallel channel positioned in oblique alignment with respect to the direction of the depths of said elongated parallel channels, and

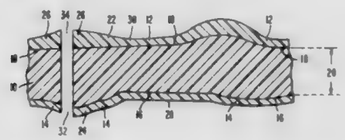
(d) said sound source (3 and 4) closely adjacent to said elongated parallel channels to impinge sound upon said large plurality of channels.

4,800,984

ACOUSTICAL BARRIER FOR VEHICLES

Michael L. Kerman, Langhorne, Pa., assignor to Cartex Corporation, Troy, Mich.

Filed Apr. 24, 1987, Ser. No. 42,188
Int. Cl.[4] E04B *1/82*
U.S. Cl. 181—290 **15 Claims**



1. An acoustical barrier construction particularly usable in vehicles having an area to be acoustically insulated comprising:

(a) a base layer of a flexible foam of a shape matching an area to be acoustically insulated and adapted to generally abut a surface thereof, said base layer including an inner surface adapted to abut the area to be insulated, said base layer further including an outer surface on an opposite side of said base layer from said inner surface spatially diposed from the surface of the area to be acoustically insulated; and

(b) an insulation layer of acoustically insulating material positioned over said outer surface of said base layer to be spaced away from the area to be insulated by a thickness of said base layer, said insulation layer being of greater mass in areas of high acoustical activity and being thinner in areas of lower acoustical activity to increase efficiency of acoustical insulation while minimizing material cost and weight of the barrier while also providing cushioning, vibration dampening and sound deadening.

4,800,985

SILENCER WITH A SIDE BRANCH

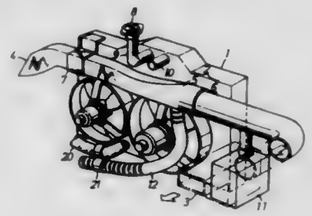
Yukihiko Hasuzwa; Haruki Kawanchi, both of Tochigi; Takaso Mikami, Saitama; Akinobu Takagi, Kanagawa, and Yohji Kurotobi, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1986, Ser. No. 830,561
Claims priority, application Japan, Feb. 18, 1985, 60-30026; Apr. 29, 1985, 60-63799[U]; May 22, 1985, 60-109848
Int. Cl.[4] F01N *1/02*
U.S. Cl. 181—229 **24 Claims**

1. A silencer for the air intake system of an internal combustion engine adapted to be mounted within an engine chamber comprising:

an air passage tube having an air inlet for drawing ambient intake air into the engine at a pressure in the air passage tube below ambient

a side branch tube having a first end connected to said air passage tube and having a second closed end for attenuating noise produced by the air drawn into said air passage tube, said side branch tube being at least partially flexible to allow said second closed end to be selectively positioned and mounted within said engine chamber without affecting the position of said first end.

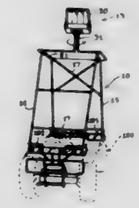


4,800,986

COLLAPSIBLE TOWER FOR ATVS

James C. Hayes, III, Rte. 1, Box 104-A, Four Oaks, N.C. 27524

Filed Mar. 1, 1988, Ser. No. 162,543
Int. Cl.[4] E06C *5/00*; A45F *3/26*
U.S. Cl. 182—18 **7 Claims**



1. A collapsible tower apparatus in combination with an all terrain vehicle including a vehicle body equipped with front and rear rack members wherein the collapsible tower apparatus comprises:

a framework unit comprising a front framework segment and a rear framework segment; wherein, each of said framework segments comprise a pair of elongated leg members operatively connected together by a plurality of cross-piece members and the lower portion of the elongated leg members are adapted to be pivotally connected to the front and rear rack members of the all terrain vehicle; and,

a platform unit comprising a generally rectangular platform member that is adapted to be pivotally connected to the upper portion of said front and rear framework segments.

4,800,987

MECHANIC WORKSTAND

Kemp C. Liles, 1124 SE. 15th St., Ocala, Fla. 32671

Filed Mar. 9, 1988, Ser. No. 165,978
Int. Cl.[4] E06C *5/24*; B60R *3/00*
U.S. Cl. 182—92 **8 Claims**

1. A mechanic's work platform for a motor vehicle comprising:

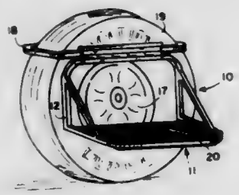
a framework having a vertical frame portion and a horizontal frame portion at the lower edge of said vertical frame portion;

a platform covering disposed over said horizontal frame portion;

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an essentially rectangular support frame hingedly attached to an upper edge of said vertical frame portion; and



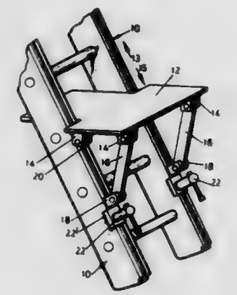
said support frame adapted to be disposed over a vehicle tire with said vertical frame portion then depending therefrom and in contact with said tire.

4,800,988

ADJUSTABLE PLATFORM FOR A RUNG LADDER

Joseph Dunmore, 13 Sandringham Road, Liverpool, United Kingdom L13 8BX

Filed Apr. 14, 1988, Ser. No. 181,520
Int. Cl.[4] E06C *1/38*
U.S. Cl. 182—103 **12 Claims**



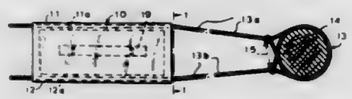
1. An adjustable platform for a rung ladder comprising two parallel guides running lengthwise of the ladder, a footplate engagable with a selected rung of the ladder, and footplate support system adapted to slide in the guides for adjusting the angle of the footplate relative to the guides, and means for clamping the footplate in a desired position.

4,800,989

PORTABLE OUTDOORSMAN'S SEAT

Andrew Valenti, 277 Lacledo Ave., Uniondale, N.Y. 11553

Filed Jun. 10, 1988, Ser. No. 205,377
Int. Cl.[4] A45F *3/26*; A01M *31/02*
U.S. Cl. 182—187 **6 Claims**



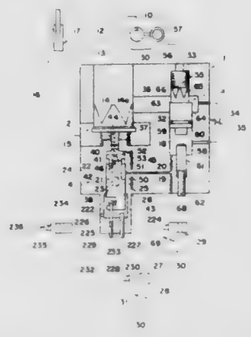
1. A portable outdoorsman's seat adapted for suspension on a pair of forward and rearward flexible support lines adapted to be secured to randomly laterally spaced apart supports, comprising, a generally flat and rectangular seat portion formed of inflexible material and having sufficient bending strength to support a seated person when mounted on the support lines, said seat portion having slots formed adjacent its respective forward and rearward longitudinal edges, each slot being inclined inwardly and upwardly to receive the lines and to provide opposed upwardly inclined supporting force vectors against the seat, thereby to constrain the support lines to remain engaged in the slots under a range of supported weights and a range of angles for the support lines relative to the seat and to allow the seat both to be slid laterally on the support lines or to be snapped onto the strung lines at selected points.

4,800,990

THREE SPEED VALVE CONTROL FOR HIGH PERFORMANCE HYDRAULIC ELEVATOR

Roy W. Blain, Böllinger Höfe, D-7100 Heilbronn, Fed. Rep. of Germany

Filed May 7, 1987, Ser. No. 48,101
Int. Cl.[4] B66B *1/04*
U.S. Cl. 187—17 **5 Claims**



1. In a hydraulic elevator control system including a pressure fluid source (10) having a supply and return,

means including a check valve (2) having an inlet and connecting the supply of said source with a cylinder (17) of the elevator, and

means including a by-pass valve (3) connected across said source for by-passing said check valve, said by-pass valve normally being biased by biasing means (33) to the open condition and including a by-pass chamber (18) for receiving pressure fluid from said source via a fluid restrictor (35) for displacing said by-pass valve to the closed position against the force of said biasing means, and

means including a solenoid valve (29) operable to connect said chamber with the return of said source and

a setting valve having both a setting element which is connected to move with the check valve and a setting sleeve, wherein a flow passage from the by-pass chamber to the return is established between portions of both the setting element and the setting sleeve for controlling the operation of said check valve to provide an elevator full up speed, a slow creep up speed, and a stop position, as a function of the pressure of fluid in said by-pass chamber; wherein an hydraulic balance between the bypass valve and the check valve occurs as a function of the position of said portion of the setting sleeve;

means for providing an intermediate fast creep up speed between the full up speed and the slow creep up speed by shifting the setting sleeve during operation of the setting valve between two stationary limits wherein the hydraulic balance between the bypass valve and the check valve occurs in a state wherein said portion of the setting element is in a location closer to the inlet of the check valve for the slow creep up speed than for the intermediate fast creep up speed; the setting sleeve being shifted between the limits by controlling fluid pressure on the setting sleeve.

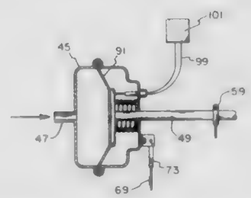
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4,800,991

BRAKE MAINTENANCE MONITOR

Nicholas A. Miller, 7182 County Rd., 11A, Auburn, Ind. 46706

Continuation-in-part of Ser. No. 767,094, Aug. 19, 1985, abandoned. This application Aug. 19, 1987, Ser. No. 86,968
Int. Cl.[4] F16D *66/02*; G01D *21/00, 11/00*; B60Q *1/00*
U.S. Cl. 188—1.11 **18 Claims**



10. In a vehicle braking system having an air actuated diaphragm chamber having a diaphragm therein, an elongated actuating rod connected to the diaphragm, and a pivotable arm coupled to the actuating rod and responsive to the actuating rod translation to apply and release a vehicle brake at a single wheel; the improvement comprising: means for monitoring motion of one of the diaphragm, actuating rod, and pivotable arm each time the vehicle brake is applied; and for triggering a warning indication when monitored motion exceeds a predetermined limit indicating the brakes of the single wheel require adjustment, the means for monitoring including a pivotable flag and an electrically activated display device both providing warning indications when the monitored motion exceeds a predetermined limit, the means for monitoring further includes a spring for biasing said pivotable flag toward the extended position, and a triggering mechanism for normally holding the flag in a retracted position and responsive to monitored motion in excess of the predetermined limit to release the flag, said means continuing to provide the warning indication when the brake is released after such motion exceeds said limit.

4,800,992

ANTI-SKID DEVICE

Olle Andersson, Linköping, and Lennart Carlsson, Skänninge, both of Sweden, assignors to Onspot AB, Linkoping, Sweden

Filed Oct. 14, 1986, Ser. No. 918,536
Claims priority, application Sweden, Mar. 1, 1985, 8501021; European Pat. Off., Feb. 28, 1986, 86850074.5
Int. Cl.[4] B60T *1/00*
U.S. Cl. 188—4 B **16 Claims**



1. Anti-skid device for a vehicle comprising:

a pulley (1) provided with chain pieces (2);

activation means for moving said pulley (1) along a path between a parking position in which said pulley (1) is spaced from a vehicle wheel (W) and a working position in which said pulley (1) is in contact with a side of the vehicle wheel (W) so that said chain pieces (2) are successively thrown in between wheel and ground in order to increase traction there between;

said activation means including an arm (7) having a swivel axle at one end to carry out a swivel movement for moving said pulley (1) between said parking and working positions;

said pulley (1) being mounted on an opposite end of said arm (7);

first and second adjustable means for fastening said arm (7) to the vehicle or its axle (19);

said first adjustable means for heightwise adjusting of said pulley (1) relative to the ground when in said working position;

said second adjustable means for lengthwise adjusting of said pulley (1) in a lengthwise direction of the vehicle when in said working position to position said pulley (1) along a verticle centre line of the vehicle wheel (W);

said second adjustable means also for adjusting of said path of movement of said pulley (1) between said parking and working positions so that said pulley (1) avoids objects of the vehicle that would otherwise be in its way;

said second adjustable means including a tube (11) fastened in at least one or more clamps (12, 13), said tube (11) being arranged essentially in said lengthwise direction of the vehicle;

securing means connecting said tube (11) to said one end of said arm (7) for said arm (7) to move together with said tube (11) in the same direction while permitting said swivel movement of said arm (7) relative to said tube (11) so that, prior to fastening said tube (11), said tube (11) can be moved in said lengthwise direction of the vehicle to move said arm (7) together therewith in said lengthwise direction for said lengthwise adjusting of said pulley (1), and said tube (11) can also be turned about its axis to run said arm (7) together therewith for said adjusting of said path of movement of said pulley (1); and

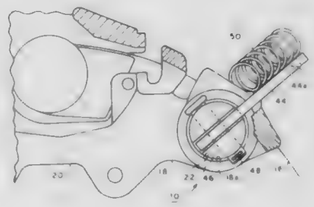
said arm (7) having said swivel axle angled relative to a center line of said tube (11) when in a plane corresponding to said working position.

4,800,993

TANDEM PARKING BRAKE CALIPER FOR DISC BRAKES

James L. Weber, West Bloomfield, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Jun. 29, 1987, Ser. No. 67,069
Int. Cl.[4] F16D *55/18, 55/26, 65/14*
U.S. Cl. 188—72.6 **12 Claims**



1. A tandem parking brake caliper system for use with the rotor of a disc brake of a wheel of an automotive vehicle and for mounting adjacent to the main service brake of said vehicle, said system comprising, in combination:

a caliper for fixed mounting to a non-rotating portion of said vehicle, said caliper surrounding a radially outer peripheral portion of said rotor on opposite sides thereof said

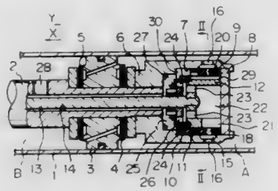
caliper including an integral caliper extension mounted within an anchor or extension portion of said adjacent main service brake;
a frictional brake lining material mounted adjacent to at least one of the caliper surfaces facing said rotor;
a movable piston slidably mounted in a bore of said caliper extension of said caliper for forcing said lining into engagement with said rotor upon the application of force into engagement with said rotor upon the application of force onto and translation of said piston;
an actuating lever adapted to be movably mounted to said vehicle in an axial direction of said piston for engaging and applying translating force to said piston; and
means for applying force to and actuating said lever.

4,800,994

HYDRAULIC DAMPER OF ADJUSTABLE DAMPING FORCE TYPE

Tomio Imaizumi, and Masahiro Ashiba, both of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Sep. 18, 1984, Ser. No. 651,764
Claims priority, application Japan, Sep. 20, 1983, 58-145820[U]
Int. Cl.⁴ F16F *9/50, 9/34*; F16K *5/10*
U.S. Cl. 188—319 **2 Claims**



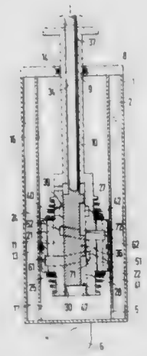
1. In a hydraulic damper of the adjustable damping force type and including a cylinder containing hydraulic liquid therein, a piston working in said cylinder and partitioning the interior thereof into two liquid chambers, a piston rod secured to said piston and extending through a first said liquid chamber to the outside of said cylinder, a valve mechanism mounted on said piston for generating damping force both in extension and contraction strokes of the damper, and an adjusting mechanism provided independently from said valve mechanism and including a passage having a plurality of orifice openings each having a different effective area, a shutter cooperating with said orifice openings for selectively opening and closing said orifice openings and being operable from outside the damper, and a check valve for controlling the liquid flow through said passage, the improvement comprising:
a tubular member having a first end mounted on the inner end of said piston rod;
a closure member closing a second end of said tubular member;
a guide defining a valve seat and being fitted in and fixedly secured to said tubular member, said shutter being rotatably mounted within said guide;
a control rod extending in the direction of the axis of said piston rod, said control rod being connected to said shutter;
said orifice openings being formed in said guide;
said check valve being positioned to cooperate with said valve seat on said guide to open and close said passage; and
said adjusting mechanism further including an additional liquid passage bypassing said check valve and including a second plurality of orifice openings each having a different effective area, said additional liquid passage including a passage portion formed between said shutter and said guide, said second plurality of orifice openings being formed in said guide and being selectively communicated with said passage portion by said shutter.

4,800,995

APPARATUS FOR DAMPING COURSES OF MOTION

Wolfgang Bernhardt, Korntal-Munchingen, and Michael Friedow, Tamm, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 20, 1987, Ser. No. 110,404
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644447
Int. Cl.⁴ F16F *9/14*; B60G *13/08*
U.S. Cl. 188—319 **15 Claims**



1. An apparatus for damping courses of motion of two bodies or masses such as resilient wheel suspension systems in vehicles that move relative to one another, which comprises a tubular jacket, a damping piston displaceable inside said tubular jacket, said damping piston separating said tubular jacket into first and second work chambers, a piston rod connected to said damping piston, at least two flow connections connecting the work chambers with one another, said at least two flow connections including throttle cross sections arranged to allow a flow therethrough in only one direction of flow, the flow established through each one of said throttle cross sections further being opposite to one another, valve means which vary the size of the throttle flow cross sections, said throttle cross sections being variable in both the same and opposite directions by means of said valve means as a function of motion parameters of the two bodies or masses moving relative to one another, a single control slide in said valve means for varying the size of said throttle cross sections, which control slide is movable with first and second degrees of freedom, in the first degree of freedom of the single control slide, the size of one of said throttle cross sections is decreased and in the second degree of freedom of the single control slide all said throttle cross sections increase or decrease in the same manner.

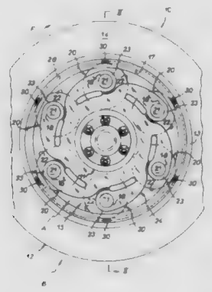
4,800,996

CLUTCH UNIT FOR MOTOR VEHICLE

Pierre Loizeau, Ville d'Avray, France, assignor to Valeo, Paris, France

Filed Aug. 5, 1987, Ser. No. 81,738
Claims priority, application France, Aug. 6, 1986, 86 11391
Int. Cl.⁴ F16D *3/50, 47/02*
U.S. Cl. 192—106.1 **5 Claims**

1. A clutch unit for rotatably connecting two coaxial parts mounted for relative rotation with respect to each other, the clutch unit comprising a first track fixed for rotation with one of said parts and extending circularly around the axis of the clutch unit, at least one clamping cam carried by the other of said parts and bearing on a second track supported on said other part, said self-clamping cam comprising a roller having an outer roller surface and mounted for eccentric rotation about a pin having an outer periphery forming said second track, said roller surface being clampingly engageable with said first tract for defining an engaged position of the clutch unit, said pin being carried by a radially elastically deformable arm so as to elastically deformably mount the second track relative to the first track.

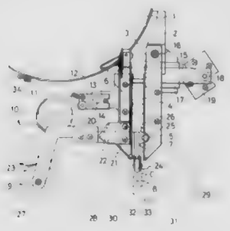


4,800,997

COIN PASSAGEWAY IN COIN HANDLING MACHINE

Masamichi Ozeki, Ashikaga, and Mamoru Takasaki, Nerima, both of Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1987, Ser. No. 18,962
Claims priority, application Japan, Feb. 27, 1986, 61-42610
Int. Cl.⁴ G07D *9/04*; G07F *1/04*
U.S. Cl. 194—344 **2 Claims**



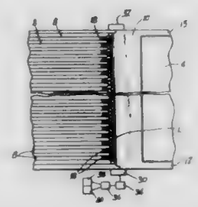
1. A coin passageway in a coin handling machine, said coin passageway having a width capable of being changed depending on the type of coins to be handled, said coin passageway comprising:
a pivotable rail extending from a guide member and pivotally mounted adjacent to said guide member,
a bar guide formed on said pivotable rail,
a slide rail formed integrally on a slide bar, said slide bar being slidably inserted into said bar guide,
a guide roller formed on the distal end of said slide bar,
a slide guide for guiding said guide roller of said slide bar, and
a passageway width setting cam having a cam face which is adapted to act on said slide rail to move said slide rail toward and away from said pivotable rail through said bar guide while maintaining a parallel relationship with said pivotable rail, and to pivot said pivotable rail in response to movement of said slide rail.

4,800,998

ESCALATOR COMB SAFETY DEVICE

Ronald E. Myrick, Sudbury, Mass., assignor to Otis Elevator Company, Farmington, Conn.

Filed Jan. 21, 1988, Ser. No. 146,747
Int. Cl.⁴ B66B *29/06*
U.S. Cl. 198—323 **4 Claims**



1. A people moving assembly comprising:
(a) tread means for people to stand on while being conveyed by the assembly, said tread means being driven by a motor;
(b) means forming a landing plate at an exit end of said assembly upon which plate people will step when exiting from said tread means;
(c) a comb plate disposed adjacent said landing plate and facing said tread means, said tread means passing beneath said comb plate and said landing plate, and said tread means having an uppermost surface which moves along a horizontal path beneath said comb plate;
(d) means forming a gap beneath a bottom surface of said comb plate and said uppermost tread surface, said gap extending for the full breadth of said comb plate and tread means in a direction transverse to the direction of movement of said tread means;
(e) photosensor means at one end of said gap to one side of said path of travel;
(f) a brake operably connected to said photosensor means, and operable by said photosensor means to selectively brake said motor and thereby stop movement of said tread means; and
(g) a light source at an opposite end of said gap on the opposite side of said path of travel, said light source being operable to project a beam of light through said gap to said photosensor means, whereby foreign objects entering said gap and blocking said beam of light will cause said photosensor means to actuate said brake to stop further movement of said tread means.

4,800,999

TRANSPORTING APPARATUS

Yukito Matsuo, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 14, 1987, Ser. No. 49,404
Claims priority, application Japan, May 15, 1986, 61-109387
Int. Cl.⁴ B65G *37/00*
U.S. Cl. 198—370 **29 Claims**

1. A transporting apparatus comprising:
a main transport means defining a main transport path, for transporting articles at high speed along the main transport path, while orienting the articles in a specified direction;
a first auxiliary transport means defining a first incoming path extending from said main transport path into a first region provided on one side of said main transport path, and designed to transport articles along said first incoming path at a lower speed than said main transport means;
a second auxiliary transport means defining a second incoming path extending from said main transport path into a second region provided on the other side of said main

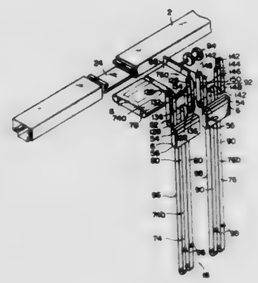
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transport path, and designed to transport articles along said second incoming path;

a first transferring means for transferring articles from and to said main transport path to and from said first incoming path, said first auxiliary transport means being joined to said first transferring means for transporting said articles toward or away from the first transferring means;

a second transferring means for transferring articles from and to said main transport path to and from said second incoming path, said second auxiliary transport means being joined to said second transferring means for transporting said articles toward or away from the second transferring means;

a first article-outlet section provided on said first incoming path, for supplying articles from said first incoming path;



a second article-outlet section provided on said second incoming path, for supplying articles from said second incoming path;

a first article-orienting means provided midway along said first auxiliary transport means for rotating articles in a first direction by a predetermined angle, whereby the articles are oriented in a specific manner in said first article-outlet section after the articles have been transported to said first article-outlet section; and

a second article-orienting means provided midway along said second auxiliary transport means for rotating articles in a second direction by a predetermined angle, whereby the articles are oriented in a specific manner in said second article-outlet section after the articles have been transported to said second article-outlet section.

4,801,000

METHOD FOR THE CONTROLLED ACTUATION OF DEVICES FOR UNLOADING THE CONVEYED ITEMS, IN SORTING APPARATUS

Francesco Canziani, Via Contardo Ferrini, 21, 21010 San Macario-Varese, Italy

Filed Sep. 11, 1987, Ser. No. 96,602

Claims priority, application Italy, Sep. 24, 1986, 21799 A/86

Int. Cl.[4] G65G *47/46*

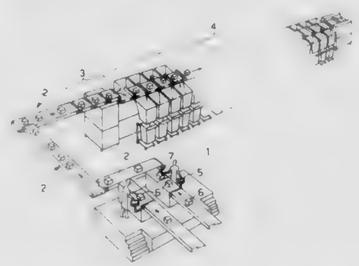
U.S. Cl. 198—365 **2 Claims**

1. A method for the controlled actuation of an unloading device in a sorting apparatus, the unloading device having a plurality of revolving belts for the conveyance and unloading of items thereon for sorting, comprising:

actuating a motor for an unloading device for conveying items in the portion of a conveyance path of the unloading device preceding an unloading zone therefor so as to accumulate energy in a flywheel before unloading takes place;

actuating subsequently a joint for connecting the flywheel with the unloading device and transferring the energy to the unloading device when passing the unloading zone for unloading the items conveyed thereby;

detecting the instantaneous conveyance speed of the unloading device along the conveyance path; and



acting upon the joint in order to adjust the transfer of the energy to the unloading device to obtain an unloading speed thereof desired from the detected conveyance speed.

4,801,001

BLOW MOLDING APPARATUS

Joseph F. Gibbemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 869,499, Jun. 2, 1986, Pat. No. 4,723,906. This application Jun. 12, 1987, Ser. No. 60,805

Int. Cl.[4] B65G *47/36*

U.S. Cl. 198—468.2 **2 Claims**



1. A blow molding conveyor for conveying a plurality of preforms in depending position, a pair of spaced apart rings at the upper end of each preform defining therebetween a groove by which the below-defined conveyor system holder means engages such preform, the lower such ring when depending being called a support ring, from a preform receiving station to a transfer station and thence through at least one additional work station comprising;

a reach and take assembly having:

a carriage assembly means mounted for motion on a first path;

power means to move said carriage assembly means back and forth along said first path between said receiving station and said transfer;

a support plate assembly having an upper plate and an inner plate, said upper plate having a horizontal trailing edge that extends laterally of said path mounted at the upper side of said carriage assembly means, said inner plate being movably supported underneath said upper plate to reciprocate in said first path direction;

support ring notches in said upper plate trailing edge corresponding in number to the quantity of preforms to be transferred in one cycle of opeation and each shaped to snugly receive and locate said support ring and smaller corresponding notches in said inner plate to provide subjacent support to said support ring from underneath said support ring; and

a conveyor system having:

an endless conveyor member;

drive and idler means supporting said conveyor member in a horizontal plane and providing a second path of movement including a linear run in tension when driven between said transfer station and the work station downstream therefrom;

an indexing drive means to periodically move said drive means, hence said conveyor member, a predetermined amount on each cycle;

a frame supporting said indexing drive means and said endless member drive and idler means; and

a group of holder means supported outwardly from said endless conveyor member and presenting a group of notches aligned with said carriage notches but superjacent thereto by an amount sufficient to receive said preform groove therein when said carriage assembly is swept underneath by said power means.

4,801,002

CONVEYING APPARATUS FOR TREE TRUNKS

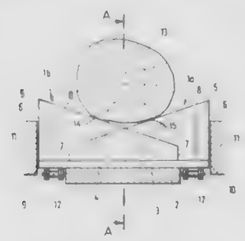
Siegmar Gönner, Oberkirch, Fed. Rep. of Germany, assignor to Gatterlinck GmbH & Co. KG, Oberkirch, Fed. Rep. of Germany

Filed Feb. 17, 1987, Ser. No. 14,863

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1986, 360496

Int. Cl.[4] B65G *15/44*

U.S. Cl. 198—698 **28 Claims**



1. In a conveying apparatus having a conveying bed for transporting tree trunks and the like having at least one transport chain driven in the transport direction and a plurality of longitudinally spaced drive units secured at intervals to the at least one transport chain, each of the drive units being driven by the at least one transport chain and having engaging faces contacting said trunk which are inclined in a direction transverse to the transport direction, said drive units being supported on a guide track, the improvement comprising: the plurality of drive units having respective engaging faces which are inclined in only one direction, said drive units being arranged so that the direction of inclination of each engaging face alternates between successive drive units and the engaging faces are longitudinally spaced from each other.

4,801,003

CONVEYOR AND DEVICES FOR CONVEYING MOVABLE PLANES ON AUTOMATIC DISTRIBUTION LINES SHOWING A PLAN PREFERABLY QUADRANGULAR

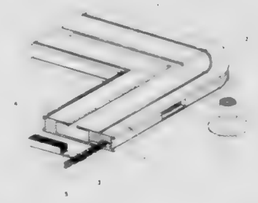
Alessandro Costa, Via Brolo del Conte, 10 - Schio (Vicenza), Italy

Filed Oct. 28, 1987, Ser. No. 114,124

Claims priority, application Italy, Nov. 5, 1986, 63355B/86[U]; Aug. 27, 1987, 63294B/87[U]

Int. Cl.[4] B65G *15/00*

U.S. Cl. 198—802 **6 Claims**



1. A conveyor for automatically distributing products, comprising:

a quadrilateral guideway having straight components connected to each other by angular components to form an endless quadrilateral path;

a plurality of planes engaged with said guideway for motion around said path while at all times maintaining the same orientation, each plane changing direction by 90° at each angular component without rotation;

peripheral seat means defining an endless seat extending around said quadrilateral path;

a chain having vertical links disposed in said peripheral seat means for movement around said endless seat;

drive means engaged with said chain for driving said chain around said endless seat;

a plurality of pusher members connected to and spaced along said chain, each pusher member rotating about 90° at each angular component and moving around said quadrilateral path; and

a projection connected to each of said plurality of planes, each projection projecting into the path of movement of said pusher members so as to be moved by said pusher members around said quadrilateral path.

4,801,004

ARTICULATED MAGNETIC DISK STORAGE CASE

Robert A. Egly, 31 Belcourt South, Newport Beach, Calif. 92660, and Patrick Sullivan, 1752 Brookshire Ave., Tustin, Calif. 92680

Continuation of Ser. No. 927,069, Nov. 4, 1986, abandoned. This application Jun. 12, 1987, Ser. No. 62,640

Int. Cl.[4] B65D *85/57*

U.S. Cl. 206—45.13 **13 Claims**

1. A case formed of a continuously molded plastic material for magnetic memory disks that are used with disk drives comprising:

a boxlike member having side walls thereto;

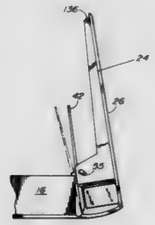
a top portion hinged to said boxlike member having a hinge between said boxlike member and said top portion formed as a binding with a continuous portion of the boxlike portion and the top portion in the form of a living hinge on either edge of said binding formed as a web of the plastic material and that is of a lesser thickness than said top portion and side walls;

a ledge attached to said boxlike portion by said binding and that is hinged by a living hinge on said binding for arcuate movement on said binding and with respect to said top

portion in spaced relationship providing a space therebetween that can be expanded and contracted by moving said ledge radially inwardly and outwardly on its living hinge on said binding; and,

means for limiting the movement of said ledge in the form of extensions from said ledge extending into openings provided in connected relationship to said top portion so as to allow said ledge to move with said extensions between the limits of the openings.

11. An articulated shelf in combination with a case for storing magnetic disks wherein said shelf is used for the storage of said magnetic disks and said case comprises a boxlike portion and a top portion having an injection molded one piece form with said shelf and further comprising a hinged binding having



a hinge formed with the binding but of lesser thickness than the binding between said top portion and said bottom portion all formed as a singly molded item wherein the improvement comprises:

a shelf hinged to said hinged binding between said top end boxlike portion;

wall brackets extending from said top portion having openings therein; and,

extensions from said shelf which extend into the openings of said wall brackets and are of a lesser dimension than said openings for seating therein and providing for articulated movement of said extensions of said shelf to the extent of said openings so that said shelf can expand and contract arcuately around its hinge point in its spaced relationship from said top portion.

4,801,005

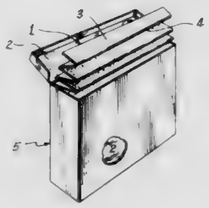
OIL DRIPPING ABSORPTION AND CONTAINMENT KIT

Annerose Hahn, and George T. Hahn, both of 2815 Inverness Dr., La Jolla, Calif. 92037

Filed Apr. 20, 1987, Ser. No. 40,291

Int. Cl.[4] F16N *31/02*; B32B *7/00*; B65D *69/00*

U.S. Cl. 141—98 **1 Claim**



1. An oil drip handling kit for containing oil drippings from automotive equipment, comprising a spreadable mat and a container for storage of said mat before use and for disposal of said mat after use, said mat is constructed of combinations of oil and petroleum absorbent materials, said materials are incorporated into said mat thus increasing said mats resistance to crushing, said mat has an underside sealing structure of a non-oil degradable material which is also abrasion resistant, flexible and oil impermeable, said mat is pleated so as to be adapted for folding and placement in said container, said container is provided with a liner, said liner extends around the entire interior of said container, said liner is non-oil degradable, abrasion resistant and oil impermeable, whereby in use the mat is withdrawn from said container and spread under automotive equipment so that said absorbent materials will receive any drippings, with said sealing structure preventing the oil drippings from flowing through the mat, when said mat is saturated, said mat is folded along said pleats and deposited into said container for disposal wherein said liner contains any oil drippings in said container.

4,801,006

PREPACKED AND DISPOSABLE ANIMAL LITTER RECEPTACLES AND CONTAINMENT THEREFOR

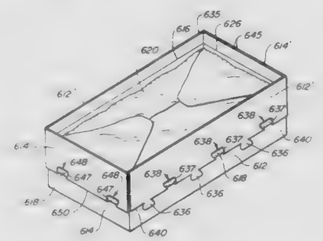
James L. Martin, Poplar & McKinley, Stonefort, Ill. 62987, and A. R. Jackson, 707 S. Bentley, Marion, Ill. 62959

Continuation-in-part of Ser. No. 057,600, Jun. 3, 1987, Pat. No. 4,724,955, which is a continuation-in-part of Ser. No. 864,152, May 16, 1986, abandoned. This application Feb. 10, 1988, Ser. No. 154,774

The portion of the term of this patent subsequent to Feb. 16, 2005, has been disclaimed.

Int. Cl.[4] A01K *1/00*; B65D *21/00*

U.S. Cl. 206—204 **5 Claims**



1. A disposable bag dispensing container for animal litter and waste comprising in combination:

(A) disposable, substantially rigid carton having top, bottom and at least two intermediate sides and at least two compressible flaps in extension of said sides, said flaps being depressible disposed with respect to the side when in use, but said flaps being closeable by a mating locking means provided in said flaps;

(B) adhesive means on said sides of the carton whereby to secure the flaps and a flexible bag relative to the side;

(C) one or more flexible bags each in superposed array with respect to the other, said bags each containing a measure of comminute litter absorbent substance in at least sufficient quantity to cover an area equivalent to a horizontal cross-section of the carton; the free end of each said bag being openable and successively engageable and disengageable with the flaps and the side of the carton.

4,801,007

TEAT UNIT

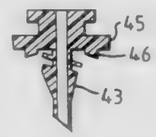
Arthur W. T. Rule, Westbourne, Near Emsworth, England, assignor to John Wyeth & Brother, Limited, Maidenhead, England

Continuation of Ser. No. 824,022, Jan. 30, 1986, abandoned. This application Aug. 27, 1987, Ser. No. 91,301

Claims priority, application United Kingdom, Feb. 7, 1985, 8503146

Int. Cl.[4] B65D *83/00*

U.S. Cl. 206—217 **15 Claims**



1. A teat unit comprising (a) a one piece teat mounting comprising a narrow tube for sucking liquid therethrough, said tube having (1) a short piercing end adapted to be inserted through a semi-rigid container wall, (2) a teat mounting end for securely receiving a retaining and sealing means on a teat, (3) a flange between said two ends and about the circumference of said tube for limiting insertion of the tube, (4) adhesive sealing means on the face of said flange adjacent the piercing end for sealing said flange against the outer side of said container and (5) retaining means between said flange and said piercing end engageable with said container wall for urging said sealing means into sealing engagement with said wall; and (b) a teat adapted to said teat mounting end.

8. A teat unit comprising (a) a one piece teat mounting comprising a narrow tube for sucking liquid therethrough, said tube having (1) a short piercing end adapted to be inserted through a semi-rigid container wall, (2) a teat mounting end for securely receiving a retaining and sealing means on a teat, (3) a flange between said two ends and about the circumference of said tube for limiting insertion of the tube, (4) sealing means comprising a co-axial annular extension on the face of said flange adjacent to the piercing end for sealing said flange against the outer side of said container and (5) retaining means between said flange and said piercing end engageable with said container wall for urging said sealing means into sealing engagement with said wall; and (b) a teat adapted to said teat mounting end.

13. A one-piece teat mounting comprising a narrow tube for sucking liquid therethrough, said tube having (1) a short piercing end adapted to be inserted through the wall of a semi-rigid container wall, (2) a teat mounting end for securely receiving a retaining and sealing means on a teat, (3) a flange between said two ends and about the circumference of said tube for limiting insertion of the tube, and (4) retaining means and sealing means which comprise, in combination, (a) adjacent the piercing end a tapered flange which terminates in a shoulder and (b) a co-axial annular extension of the limiting flange which surrounds the circumference of said shoulder.

4,801,008

DISPENSING DEVICE HAVING STATIC MIXER IN NOZZLE

Thomas R. Rich, Salem, Mass., assignor to W. R. Grace & Co., Lexington, Mass.

Continuation of Ser. No. 020,271, Mar. 2, 1987, abandoned. This application Jun. 24, 1988, Ser. No. 212,165

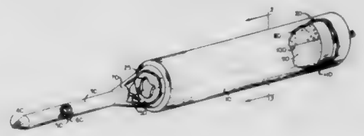
Int. Cl.[4] B65D *25/40*

U.S. Cl. 206—219 **2 Claims**

1. A dispensing device, containing a plurality of interactive components adapted to be mixed together to form a self-setting composition and comprising:

a chamber portion containing said interactive components, said components being separated by one or more reacted barriers, and

a nozzle means for mixing and dispensing said components comprising a frustro-conical portion including an interior wall and having its base disposed at one end of the chamber portion and an elongated portion disposed at the apex



of the frustro-conical portion, the elongated portion having static mixing means therein, and

entrapment means disposed within said frustro-conical portion and spaced apart from the interior wall, adapted to trap said reacted barrier while allowing said interactive components to flow therepast.

4,801,009

TWO COMPARTMENT CONTAINER FOR MIXING

Walter Amos, Wiesbaden, Fed. Rep. of Germany, assignor to Blendax-Werke Schneider GmbH & Company, Fed. Rep. of Germany

Filed Sep. 25, 1987, Ser. No. 101,374

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1986, 3634264

Int. Cl.[4] B65D *25/08*

U.S. Cl. 206—222 **1 Claim**

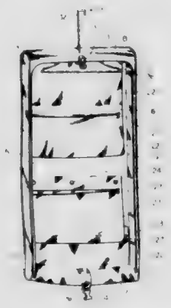


1. A container for packing two compositions which must be separately kept until being mixed together shortly before use, the container consisting of two separate chambers arranged one upon the other and movable toward and away from one another, the upper chamber having a closeable orifice for delivery of the container contents, means sealing the upper and lower chambers including one seal for the upper chamber and another seal for the lower chamber, and an intermediate part arranged between the two chamber and the respective seals, the intermediate part having means for cutting the sealing means of the upper and lower chambers when the chambers are moved toward one another to thereby allow mixing of two compositions being separately kept, one composition in each of the two chambers, the means for cutting the sealing means including upper and lower cutting rings on the intermediate part, and the upper chamber having internal threads and the lower chamber including cooperating external threads whereby the chambers move toward one another by being

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screwed together to thereby urge the upper cutting ring into the seal on the upper chamber and the lower cutting ring into the seal on the lower chamber.

4,801,010
GARMENT BAG WITH STRAP TO SECURE CLOSURE FLAP IN BUNDLED CONFIGURATION
Miriam S. Levitas, 720 W. Conway Dr., Atlanta, Ga. 30327
Filed Jul. 1, 1987, Ser. No. 68,546
Int. Cl.[4] A45C *3/00, 13/10, 13/30;* **B65D** *85/18*
U.S. Cl. 206—279 **6 Claims**

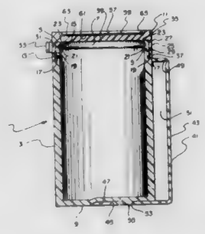


1. A garment bag means for holding said flap portion in a bundled configuration adapted to be folded for carrying and unfolded for service as a wardrobe, and with the garment bag comprising flexible front and back panels joined by flexible side panels to define a compartment having a top portion and a bottom portion in a bag unfolded configuration; said front panel having a peripheral portion and a central flap portion adapted to be partially disconnected from said front panel peripheral portion by fastening means secured to said peripheral portion and said central flap portion to provide access to the compartment from ambiance; said flap portion being adapted to be rolled into a compact bundle for storage within said compartment bottom portion while partially disconnected from said front panel peripheral portion; means for holding said flap portion in a bundled configuration within the compartment bottom portion which comprises a strap having a first end and a second end, said first strap end being attached to the inside of one of said panels adjacent the compartment bottom portion and with said second strap end being releasibly fastened to the outside of one of said panels; hanger means for hanging garments within the compartment; and means for releasibly holding said side panels together to maintain the garment bag in a folded configuration.

4,801,011
PROTECTIVE CONTAINER FOR A FILM CARTRIDGE
Olivier P. C. Desdoigts, and Francis Metzler, both of Paris, France, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 21, 1987, Ser. No. 136,075
Claims priority, application France, Feb. 23, 1987, 87 02360
Int. Cl.[4] B65D *85, 38*
U.S. Cl. 206—316 **3 Claims**

1. An improved protective container for a film cartridge, wherein said container is of the type provided with (a) an elongate cannister including an upper portion which has an opening for placing the film cartridge into said cannister and a bottom portion which is closed to support the film cartridge, and (b) a cap adapted to cover said opening to seal said cannister, and wherein the improvement comprises:

a substantially flat clip member integrally formed with said cannister of the same material, said clip member being united with said cannister generally at said upper portion of the cannister and including an elongate main portion normally extending lengthwise of said cannister in spaced facing relation, a bottom free end portion normally extending alongside said bottom portion of the cannister, and a hinge-like portion arranged adjacent said main portion and substantially spaced from the location at which said clip member is united with said cannister for permitting only said main portion and said free end portion to be pivoted away from the cannister to open a slot for a strap or the like defined by said cannister and said clip member;



mutually engagable means arranged on said bottom portion of the cannister and said free end portion of the clip member for releasably connecting the bottom portion and the free end portion to prevent said free end portion from being pivoted to open said slot; and

means defining a recess at said bottom portion of the container for receiving said free end portion of the clip member in flush relation with the bottom portion to enable said cannister to stand upright when said bottom and said free end portions are connected.

4,801,012
HOLDER FOR A PLURALITY OF SYRINGES
Johannes E. Steenhuisen, and Gerrit Grotenhuis, both of Oist, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands
Filed Jul. 7, 1987, Ser. No. 70,391
Claims priority, application Netherlands, Jul. 10, 1986, 8601799
Int. Cl.[4] B65D *83/10*
U.S. Cl. 206—366 **12 Claims**



1. A holder for a plurality of disposable syringes, the syringes comprising a barrel having a front end and a rear aperture, on the front end of the barrel a needle connection means for sealingly connecting an injection needle, and a finger grip, provided with an outwardly projecting flange, which holder is characterized in that it comprises a strip of flexible material, one side of which comprises a number of resilient projections, distributed over the surface, for a detachable connection of the syringes in such a way that the rear face of the finger grip adjoins the surface of the strip in a non-sealing manner, and in that it comprises at the side holding the projections a longitudinal spacing ridge, which is smaller than the rear aperture of the barrel of the syringes to be connected.

4,801,013
CONTAINMENT DEVICE FOR SAFELY REMOVING, STORING AND ULTIMATELY DISPOSING OF NEEDLES FROM HYPODERMIC NEEDLE/SYRINGE ASSEMBLIES
John Bruno, 77-83 Second Ave., Paterson, N.J. 07514
Filed Feb. 10, 1987, Ser. No. 12,949
Int. Cl.[4] B65D *25/00, 51/00*
U.S. Cl. 206—366 **17 Claims**



1. A needle removal and storage device for removing needles from hypodermic needle/syringe assemblies and automatically receiving and safely storing removed needles within the device, comprising:

a storage/containment member which is closed at one end and proportioned to receive used needles; and

a top assembly at the open end of the storage/containment member and providing an opening to receive a needle and its hub portion, said top assembly including a pair of grasping members, said grasping members being mounted directly to generally opposite sides of the storage/containment member at its open end, said grasping members being proportioned to receive the hub portion of the needle to be removed from its syringe yet to provide substantial closure of said open end, said device being adapted to permit said grasping members to constrict said opening when squeezed together by a person holding said device so as to grasp the needle hub at its ribbed portion for removal of the needle from its syringe, such that when a needle is inserted and received within the opening of said top assembly, a person may grasp the needle hub by squeezing said grasping members and remove the hypodermic syringe from the needle, whereafter the grasp on the needle may be released to permit the needle to drop vertically into the storage/containment member, needle point first, for automatic safe storage of used needles until the entire device is ultimately disposed of.

4,801,014
BOUQUET SLEEVE
Patricia H. Meadows, 593 California Way, Redwood City, Calif. 94062
Filed Oct. 28, 1986, Ser. No. 923,848
Int. Cl.[4] B65D *85/50*
U.S. Cl. 206—423 **1 Claim**

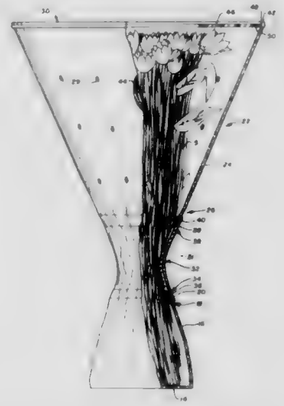
1. A bouquet sleeve for removably containing a bouquet of cut flowers having flower heads on stems,

said bouquet sleeve comprising:

(a) a tubular band of sheet material having an upper end and a lower end, each end with a respective perimetrically-extending margin, this band being adapted to loosely encircle the stems of the bouquet below the flower heads and being adapted to be easily manually crushed into conforming engagement with the stems of the bouquet in order to releasably restrain mobility of the bouquet relative to said band;

(b) an upwardly-open cup-shaped lower portion made of a moisture resistant material and having a perimetrically-extending upper region perimetrically joined with said perimetrically-extending lower end margin of said tubular band; and

(c) a downwardly-open, upwardly flared tubular upper portion having a perimetrically-extending lower region perimetrically joined with said perimetrically-extending upper end margin of said tubular band,



said lower region of said upper portion and said upper region of said lower portion both provided as longitudinally adjoining regions of a common element which lies radially adjacent said tubular band,

said downwardly-open tubular portion having a perimetrically-extending upper end and, near said upper end, a radially inwardly-opening groove means; and

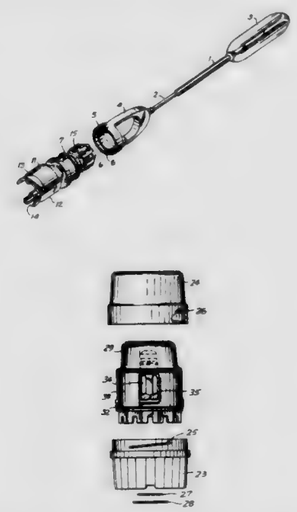
(d) a closure disk removably attached to said downwardly-open tubular portion by being seated about an outer perimetrical edge thereof in said groove means.

4,801,015
RELEASABLE HOLDER AND PACKAGE ASSEMBLY FOR A PROSTHETIC HEART VALVE
Paul Lubock, Laguna Hills, and Mike Sullivan, San Clemente, both of Calif., assignors to Shiley Inc., Irvine, Calif.
Division of Ser. No. 852,699, Apr. 16, 1986, Pat. No. 4,679,556.
This application Jun. 30, 1987, Ser. No. 68,751
Int. Cl.[4] B65D *81/18*
U.S. Cl. 206—438 **2 Claims**

1. A package assembly for storing under sterile conditions a holder member in engagement with a prosthetic heart valve, which assembly comprises an outer container and an inner container, said outer container comprising a bottom portion and a tight fitting lid, and said inner container comprising a housing having a cover, said housing being defined by one or more vertical walls attached to a flat base, said vertical wall or walls having two pairs of slots diametrically facing each other, each pair of slot carrying a double pivoting fastener adapted to slide up and down within said slots, each fastener being snap fitted to a downwardly extending limb attached to a split platform having a central hole, the combination of split platform, limbs, pivoting fasteners and associated slots forming a

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clam shell mechanism adapted to accommodate said holder member and attached heart valve for storage and shipment and



to release same after engagement of a cooperating handle member with said holder member.

4,801,016

PLANAR ELEMENT STORAGE AND DISPLAY APPARATUS

Hans Irrgeher, Linz, Austria, assignor to Elmer L. Thompson, Jr., Knoxville, Tenn.

Continuation of Ser. No. 934,737, Nov. 25, 1986, abandoned. This application May 6, 1988, Ser. No. 195,480
Claims priority, application Austria, Oct. 15, 1986, 2739/86
Int. Cl.[4] B65D *85/16;* **G09F** *11/30*
U.S. Cl. 206—455 7 Claims



1. An apparatus for storing a stack of planar elements having a slight transverse curvature and displaying at least one of the planar elements, comprising:

an outer box having a display window;

a carriage slidably mounted within said box for transporting the stack of planar elements between at least extended and retracted positions; said carriage comprising:

a carriage floor having two sides and two ends and being dimensioned from end to end so that the planar elements extend beyond said carriage floor;

a pair of parallel side walls attached to the sides of said carriage floor dimensioned to engage opposite edges of the planar elements to maintain their slight transverse curvature;

a tongue disposed adjacent to and extending from one end of said carriage floor and at least a portion of said tongue being disposed below and spaced apart from the stack of planar elements;

a pair of opposed guide pieces attached to said parallel side walls and above said tongue for retaining the stack of planar elements within the carriage except for the top planar element as the carriage moves from the retracted position to the extended position and for guiding a planar element disposed in the outer box below the guide pieces and the stack as the carriage moves from the extended position to the retracted position; and

an end wall formed on the end of said floor opposite said tongue so that a boundary is formed for the transverse edge of the stack of elements;

a frame having opposed first and second ends being attached at one end to said box opposite a carriage admitting end of said box and having the second end of said frame free to move downwardly to the stack of planar elements;

a stop attached to said second end of said frame, dimensioned with a thickness such that it engages only a single element, having a leading edge for engaging and stripping the top element from the stack as the carriage is moved from the retracted position to the extended position and transporting the top planar element in said box, and having a trailing edge disposed for resting on the stack when said carriage is in the extended position; and

an engagement surface disposed within said box for engaging a planar element within said box and pushing it under the stack when said carriage is moved from the extended position to the retract position.

7. An apparatus for storing a stack of planar elements having a slight transverse curvature and displaying at least one of the planar elements, comprising:

an outer box having a display window;

a carriage slidably mounted within said box for transporting the stack of planar elements between at least extended and retracted positions; said carriage comprising;

a carriage floor having two sides and two ends and being dimensioned from end to end so that the planar elements extend beyond said carriage floor;

a pair of parallel side walls attached to the sides of said carriage floor dimensioned to engage opposite edges of the planar elements to maintain their slight transverse curvature;

a wedge-shaped tongue disposed adjacent to and extending from one end of said carriage floor and at least a portion of said tongue being disposed below and spaced apart from the stack of planar elements;

a pair of opposed rhomboidal-shaped guide pieces attached to said parallel side walls and above said wedge-shaped tongue for retaining the stack of planar elements within the carriage except for the top planar element as the carriage moves from the retracted position to the extended position and for guiding a planar element disposed in the outer box below the guide pieces and the stack as the carriage moves from the extended position to the retracted position;

an end wall formed on the end of said floor opposite said tongue so that a boundary is formed for the transverse edge of the stack of elements; and

a handle having a receptacle attached to said carriage floor opposite said tongue;

a frame having opposed first and second ends, being attached at one end to said box opposite a carriage admitting end of said box and having the second end of said frame free to move downwardly to the stack of planar elements;

a stop attached to said second end of said frame, dimensioned with a thickness such that it engages only a single element, having a leading edge for engaging and stripping the top element from the stack as the carriage is moved from the retracted position to the extended position and transporting the top planar element in said box, and having a trailing edge disposed for resting on the stack when said carriage is in the extended position; and

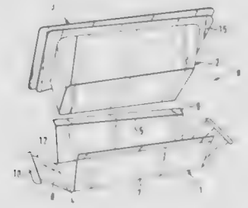
an engagement surface disposed within said box for engaging a planar element within said box and pushing it under the stack when said carriage is moved from the extended position to the retracted position and which surface engages said handle recepticle when said carriage is moved to the retracted position.

4,801,017

CONTAINER, PARTICULARLY FOR RECEIVING FOODS

Aldo Artusi, Muhleboden 661, CH-8461 Trullikon, Switzerland

Continuation of Ser. No. 924,838, Oct. 17, 1986, abandoned. This application Apr. 13, 1988, Ser. No. 180,966
Int. Cl.[4] B65D *90/04*
U.S. Cl. 206—524.1 15 Claims



1. Container, particularly for receiving foods or the like and for use in a baking oven or the like comprising an inner tray surrounded by an outer tray, said inner tray being at least partially formed from a heat-resistant plastic material which has been exposed to a high energy, electron or electromagnetic radiation to increase its resistance to heat exposure and which is capable of permanently withstanding a temperature of over 200° C. (oven temperature), said outer tray being made of a blank (**1**) at least partly joined to the inner tray (**2**), said blank having an outer fibrous material layer (**16**) and an internal plastic coating (**17**) and comprising a base part (**4**) and a plurality of walls (**7, 8**) separated from said base part by means of bend lines (**5** and/or **6**), said walls having edge strips (**9** and/or **10**) which engage a first surface of a rim (**14**) on said inner tray (**2**), said edge strips being separated from the walls by means of additional bend lines (**11** and/or **12**), said container further being characterized by said edge strips of two facing ones of said walls carrying extensions (**20**), and a cover (**3**) sealed to a second surface of said rim opposed to said first surface.

4,801,018

CORNER PROTECTORS

Melvyn Wilde, Unit 1A, Empress Industrial Estate, Anderton St., Higher Ince Wigan, Great Britain

Filed Jul. 27, 1987, Ser. No. 78,116
Claims priority, application United Kingdom, Jul. 29, 1986, 8618500
Int. Cl.[4] B65D *59/00*
U.S. Cl. 206—586 19 Claims



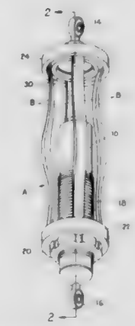
1. A protector for the corner of an article, the article at the corner having two substantially plane faces and two adjacent edge faces, the protector having two spaced members to slide over respective ones of the plane faces, the protector having side wall members connecting the two spaced members for overlying respective ones of the edge faces, the spaced members and side wall members defining a mouth to allow the protector to be applied to the corner, each side wall member comprising confronting flanges extending respectively from sides of the spaced members, and a substantially non-extensible web connecting the flanges intermediate the ends of the flanges, a first slot extending between the webs of the side wall members, and a second slot in one of the flanges of each of the side wall members, the second slot extending along the respective flange.

4,801,019

SHOCK ABSORBING UNIT ASSISTED BY FIBERGLASS REINFORCED SPRING

George W. Smolen, Jr., 208 Knoxwood Ct., Anderson, S.C. 29621

Filed Nov. 13, 1986, Ser. No. 930,698
Int. Cl.[4] F16F *3/02, 1/36*
U.S. Cl. 267—151 30 Claims



1. A vehicle spring shock absorbing device for a wheeled vehicle and the like of the type which includes a shock absorbing unit having first and second parts movable in a relative reciprocation motion along a central longitudinal axis of said device, a first support member affixed for movement with said first part, a second support member affixed for movement with said second part, and a spring arranged between said first and second support member for supporting the static load of said vehicle and accommodating loads from road shocks, wherein said device, when not under load, comprises:

a plurality of elongated slender one-piece spring elements arranged generally parallel to the longitudinal axis of said device including fiber reinforcing strands embedded in a matrix material;

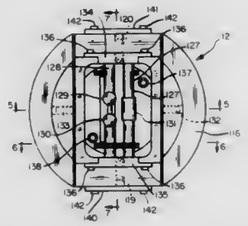
said elongated spring elements have a length defined by first and second remote ends arranged between said first and second support members, and a medial portion intermediate said first and second ends;

said medial portion having a cross-section with a thickness that is greater than a thickness of said spring element between said medial portion and said first and second ends so that cantilevered arms are formed generally on opposing sides of said medial portion extending between said medial portion and said first and second ends in a manner that compression of said spring elements causes bending of said cantilevered arms inwardly toward the longitudinal axis of said device during compression;

attachment means affixing said first and second ends of said spring elements to said first and second support members, said one-piece spring elements being constructed and arranged with said attachment means so that when said first and second ends of said spring elements are loaded under compression said medial portion of each said spring

element deflects radially with respect to the longitudinal axis of said device when said spring elements are loaded compressively from road shock loads due to irregularities in the road surface and the like.

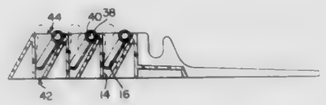
4,801,020
APPARATUS AND METHOD FOR DETECTING DEFECTS IN A SPHERICAL OBJECT
Conrad O. Rogne, 2166 Yorktown; Charles H. Franklin, 1902 Longshore Dr., and Clarence S. Vinton, 1826 Traver St., all of Ann Arbor, Mich. 48105
Filed Apr. 21, 1987, Ser. No. 40,604
Int. Cl.[4] B07C *5/00*; G01B *5/28*
U.S. Cl. 209—538 **18 Claims**



1. An apparatus for locating defects in spherical objects having varying diameters which comprises:
(a) shaft means rotatable on a vertical and longitudinal axis and having an upper end and a lower end;
(b) housing means supporting the shaft means for rotation on the vertical and longitudinal axis;
(c) drive means connected to the shaft means for rotating the shaft means;
(d) head means connected to the upper end of the shaft means and supported for rotation in a horizontal plane by the shaft means;
(e) drive roller means mounted on the head means and rotatable on a horizontal axis for rotating the spherical object resting on the roller means on the vertical and longitudinal axis about a vertical plane as the head means and spherical object are rotated in the horizontal plane, wherein the spherical object is centered on the vertical axis of rotation by the drive roller means regardless of the diameter of the spherical object; and
(f) detection means mounted on the frame means adjacent the spherical object for locating the defects in the spherical object when rotated by the head means and drive roller means, wherein there is a precise precession of the spherical object past the detection means.

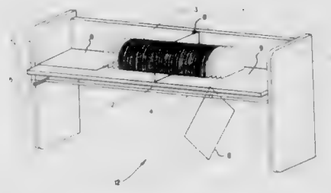
4,801,021
MULTI-LINE PAPER FEEDING ASSEMBLY
H. Charles Hassel, Los Angeles, and Donald Westland, Venice, both of Calif., assignors to MicroComputer Accessories Inc., Los Angeles, Calif.
Filed Oct. 14, 1987, Ser. No. 108,230
Int. Cl.[4] B41J *15/04*
U.S. Cl. 211—45 **18 Claims**

1. A paper feeding assembly for a computer printer or the like, comprising:
base plate means having at least one elongate channel extending therethrough, a forwardmost portion of said channel being defined by a forwardly inclined sidewall;
an elongate clamping bar residing within said channel pivotal freely under gravitational influence from a first position away from said inclined channel sidewall to a second clamping position against said inclined channel sidewall, whereby a length of paper, fed through a bottom channel opening and out a top channel opening, is pressured by the



weight of said clamping bar against said channel sidewall and is thereby retained within said channel.

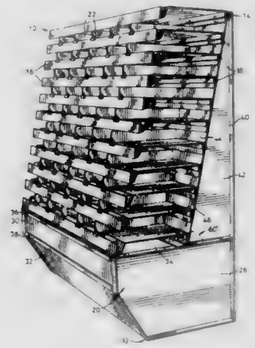
4,801,022
MAIL, CARD AND PHOTOGRAPH DISPLAY, STORAGE AND RETRIEVAL RACK
Kevin T. Colby, 715 Smith St., Ft. Collins, Colo. 80524
Filed Sep. 21, 1987, Ser. No. 99,156
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—50 **4 Claims**



1. A rack or organizer for storage, display, retrieval and replacement of two-dimensional articles like mail, cards or photographs of substantially similar shape but of different contents said device comprising in combination a support frame having opposed vertical side walls, a vertical back wall and a horizontal shelf; said shelf contains a plurality of closely spaced vertical elements of sufficient dimension and strength for the support of said articles; a removable horizontal rod extending between the two vertical side walls below the said shelf.

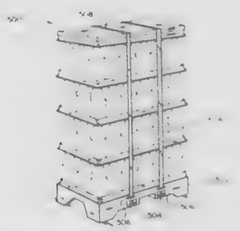
4,801,023
MODULAR DISPLAY AND STORAGE UNIT
James A. Ecclestone, Don Mills, Canada, assignor to Calstone Inc., Scarborough, Canada
Filed Feb. 24, 1987, Ser. No. 17,679
Claims priority, application Canada, Oct. 17, 1986, 520709
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—55 **23 Claims**

1. In a module for the combined display and storage of merchandise, which is adapted for attachment to an upstanding support formation to project outwardly therefrom, an inner end portion including anchoring means for attachment to said support formation and an outer end portion including barrier means for confining merchandise thereto for display and inspection, and an intermediate repository portion for supporting merchandise thereon for storage and extending above said



barrier means from said outer end portion towards said inner end portion and accessible from said outer end portion.

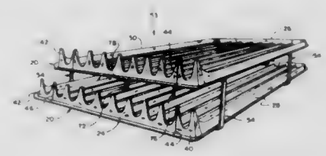
4,801,024
STACKABLE SHELVING SYSTEM
Paul L. Flum, Ladue, Mo., and Christopher C. Bidwell, Norcross, Ga., assignors to Paul Flum Ideas, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 559,968, Dec. 9, 1983, Pat. No. 4,653,651. This application Mar. 26, 1987, Ser. No. 31,409
The portion of the term of this patent subsequent to Mar. 31, 2004, has been disclaimed.
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—59.4 **12 Claims**



1. A bulk packaging and display system for holding, transporting and displaying product containers in a stackable arrangement comprising a base member, a base shelf member adaptable to be supported on said base member, said base shelf member including a product supporting floor portion extending substantially the full length width thereof and a wall portion extending therearound, said floor portion including a plurality of adjacent product support areas extending substantially thereover, each of said product support areas including a cavity adaptable for receiving and holding at least one product container positioned therewithin, a plurality of additional shelf members each adaptable to rest upon and to be supported by the product containers positioned on a shelf member located therebelow, each of said plurality of additional shelf members including means located on the floor portion thereof for cooperatively engaging the upper portion of the product containers positioned therebelow, the product containers being stackably arranged on said base shelf member and on said plurality of additional shelf members thereabove to a predetermined height, one of said plurality of additional shelf members being positioned to engage the upper portion of each product container located in the uppermost layer of product containers, a

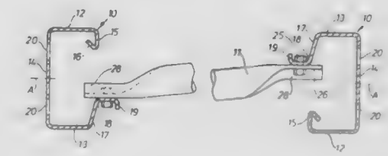
relatively non-yieldable member positioned on top of the uppermost shelf member, and means engageable with the base member and with the non-yieldable member for fastening the system together into a unitary structure.

4,801,025
ADJUSTABLE SHELF ORGANIZER UNITS HAVING FRANGIBLE SIDE AND REAR PORTIONS
Paul L. Flum, Ladue, and Christopher C. Bidwell, Richmond Heights, both of Mo., assignors to Paul Flum Ideas, Inc., St. Louis, Mo.
Filed Sep. 12, 1986, Ser. No. 907,056
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—128 **38 Claims**



1. A one-piece shelving unit for merchandising products arranged in rows comprising a base member having a front wall portion, a rear edge, opposed side walls and a floor portion extending therebetween, spaced parallel upstanding walls extending upwardly from said floor portion dividing said floor portion into adjacent portions extending in one direction from said front wall towards said rear edge, said upstanding walls defining therebetween a plurality of channels for receiving and supporting products positioned therewithin, and means extending transversely across said base member between said opposed side walls at an intermediate location between said front wall and said rear edge for weakening said base member whereby said base member can be broken along said weakening means into separate front and rear portions.

4,801,026
DEVICE IN A STORAGE RACK
Olof I. Andersson, Säffle, Sweden, assignor to Electrolux Constructor Aktiebolag, Sweden
Filed Oct. 31, 1983, Ser. No. 547,388
Claims priority, application Sweden, Nov. 22, 1982, 8206647
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—183 **5 Claims**



1. A rack of the type used for storing pallets comprising at least two substantially vertical disposed and spaced columns, a plurality of stays interconnecting said columns at end parts thereof, each of said columns being substantially C-shaped and being provided with at least one flange extending substantially parallel to the longitudinal axis of said column, each of said flanges on said spaced columns being bent inwardly in opposite directions toward an imaginary middle plane of the respective column and continuing in an outwardly bent part forming a flat abutment surface, and means on each of said outwardly bent parts by which said end parts of said stays can be fastened thereto, and each of said stays being a tube whose outer ends

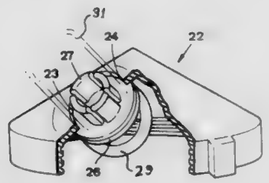
are partly flattened to form an L-shaped profile facing in opposite directions and having means by which the stay can be fastened to said abutment surfaces of said outwardly bent parts of the flanges of each of said columns.

4,801,027

DRINKING CUP WITH TEAT ATTACHMENT

Murray Hunter, Balmain, Australia, assignor to Jackel International Pty. Ltd., New South Wales, Australia

Filed Mar. 11, 1987, Ser. No. 24,444
Claims priority, application Australia, Mar. 11, 1986, PH4965
Int. Cl.[4] A47G *19/22;* **A61J** *9/00, 11/04*
U.S. Cl. 215—11.1 3 Claims



3. An infant drinking vessel including a hollow body to receive a liquid to be drunk and having an open top, and a teat and cap assembly including:

a cap mounted to said top and providing a teat opening, said cap having major inner and outer surfaces;

a teat removably mounted on said cap and passing through said teat opening so as to project from said cap away from said hollow body and to close said teat opening, said cap having a generally annular sealing surface surrounding said teat opening and extending longitudinally thereof to sealingly engage said teat; and

a seal member with a generally annular flange located within the teat so as to be coextensive with respect to said sealing surface so that the teat is sealed between said sealing surface and the flange of said member, said seal member having a gripping portion projecting internally of the cap and including a gripping segment to aid a user in inserting and removing the seal member, and said seal member having a resiliently deformable engagement means including resilient fingers which project inwardly of the teat and are biased into engagement therewith to retain said teat sealingly connected to said cap but removable by a deformation of said engagement means to allow removal of the teat, said resilient fingers of said engagement means terminating in a barb which engage past the major outer surface of the cap.

4,801,028

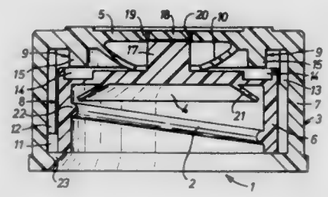
CLOSURE DEVICE FOR A CONTAINER HAVING A CYLINDRICAL OPENING

Peter J. Puresevic, Tonteg, and Julian D. Taylor, Pwllypant, both of Wales, assignors to Spectra King Precision Engineers Limited, England

Filed Oct. 3, 1986, Ser. No. 914,878
Int. Cl.[4] B65D *55/02*
U.S. Cl. 215—220 2 Claims

1. A closure device for a container having a cylindrical opening, comprising:

inner and outer closure members each comprising an end member and a skirt member and first and second drive means for driving of said inner closure member by said outer closure member, the first drive means being disposed between the respective skirt members and being operative to rotate the closure members in unison in one sense only, the second drive means being associated with means for biassing the inner and outer members axially apart and being operative to rotate said closure members in unison in the opposite sense only when pressure is applied to the outer member in the axial direction sufficiently to overcome the force of the biassing means to move the outer member towards the inner member and the outer member is rotated in the opposite sense, and means for indicating that such operation of the device has been effected or attempted, said indicating means comprising a frangible part of the outer closure member which is



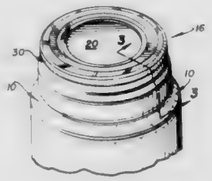
joined to the remainder thereof by frangible connections and a boss disposed on the inner closure member to act on the connections to break the same when said axial pressure is applied, thereby to separate the frangible part from the outer closure member, wherein the inner closure member comprises a seal for sealing in use the cylindrical opening to which the device is applied, and the seal comprises a resilient flange extending from the end member of the inner closure member towards the skirt member thereof.

4,801,029

TAMPER EVIDENT CAP

Douglas G. Begley, Palatine, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Feb. 9, 1988, Ser. No. 153,922
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—250 15 Claims



1. A tamper evident cap comprising a screw threaded closure including an end panel and a skirt, an inner ring fixedly secured to said end panel and an outer ring telescoped over said skirt and being rotatable relative to said skirt, first and second sets of bridges extending between said inner and outer rings, said first set of bridges being rupturable in response to application of cap removing torque to said outer ring, and said second set of bridges forming torque transmitting means for effecting rotation of said inner ring and said closure after breakage of said first set of bridges.

4,801,030

TAMPER-INDICATING CLOSURE AND PACKAGE

Jacques J. Barriac, Toledo, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 54,964, May 28, 1987, abandoned. This application Sep. 14, 1987, Ser. No. 95,793
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—252 24 Claims

1. A tamper-indicating closure adapted for attachment on a container having a finish disposed about a mouth opening and an external annular bead below said finish comprising,

a one-piece molded closure of plastic and having a base and peripheral skirt,

said closure having means thereon adapted to interengage means on the container,

a tamper-indicating band joined to the skirt of the closure along a weakened frangible line,

a flexible annular first wall formed within the band providing an inner annular surface and extending inwardly and upwardly when the closure is applied to the container finish,

said band including a plurality of circumferentially spaced



flexible second walls extending circumferentially and fastened at their circumferential ends to the inner surface of said annular first wall,

said second wall having portions intermediate their ends extending radially inwardly such that when the closure is applied to the container finish, said second walls are flexed radially outwardly over said annular bead and then flex radially inwardly beneath the annular bead while said first annular wall is interposed between the skirt of the closure and said annular bead, and when the applied closure is removed from the container finish, the edges of said second walls nearest the base of the closure skirt at said weakened line engage the underside of said bead and cause the band to sever along said weakened line.

4,801,031

TAMPER-INDICATING CLOSURES AND PACKAGES

Jacques J. Barriac, Toledo, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed May 28, 1987, Ser. No. 54,922
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—252 2 Claims



2. A tamper-indicating package comprising

a container,

a one-piece molded closure of plastic having a base wall and a peripheral skirt,

said skirt having means thereon adapted to interengage securing means on said container,

a tamper-indicating band on said closure having a first portion joined to the closure along a weakened frangible line and having an edge spaced from said weakened line,

an integral wall joined to the edge by an integral annular connecting portion on said band extending axially toward the base of said closure along the inner surface of said first portion of said band,

said wall being joined to said first portion and spaced radially inwardly from said first portion, said wall having a free edge,

said wall having circumferentially spaced flexible wall portions along said free edge extending radially inwardly,

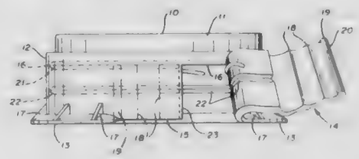
each said flexible wall portion comprising a pleat which extends radially inwardly from the remainder of the wall from a point intermediate the connecting portion and the free edge and defining an undulating free edge such that when the closure is applied to the container, the circumferentially spaced wall portions flex radially outwardly relative to the remainder of the wall over an annular bead on said container and then radially inwardly beneath the bead on the container, and when the closure is removed, the upper edges of the circumferentially spaced wall portions engage the underside of the bead on the container and cause the band to be severed along the weakened line.

4,801,032

CLOSURE FOR CONTAINERS WITH CONVENIENT TEAR OFF SKIRT

Harry E. Criaci, New Castle, Pa., assignor to Northern Engineering & Plastics Corp., New Castle, Pa.

Filed Aug. 24, 1987, Ser. No. 88,808
Int. Cl.[4] B65D *41/46*
U.S. Cl. 215—256 3 Claims



1. An improvement in a resilient molded plastic closure for a container of the type having a neck surrounding an opening to the container and having dual closure retaining means on the exterior of said neck; said closure comprising a cap for covering said opening to said container, a depending annular flange on the peripheral edge of said cap, closure retaining means in said depending annular flange, an annular groove in said depending annular flange adjacent said cap forming an annular frangible wall defining a continuous tear skirt therebelow; the improvement comprising: a vertically positioned frangible wall formed in said depending annular flange and extending from a lower edge thereof to said annular frangible wall so as to form means for separating said tear skirt, an enlarged pull tab integrally formed with said tear skirt on one side of said vertically positioned frangible wall and extending vertically from the lower edge of said tear skirt to said annular frangible wall whereby said enlarged pull tab defines an extension of one end of said tear skirt of size and shape enabling it to be easily manually engaged and moved so as to remove said tear skirt from said closure.

4,801,033

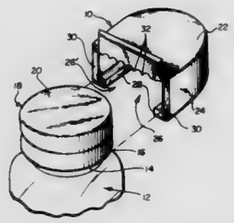
REUSABLE VIAL CAP

Rowland W. Kanner, Guntersville, Ala., assignor to Ryder International Corporation, Arab, Ala.

Filed Mar. 29, 1988, Ser. No. 174,690
Int. Cl.[4] B65D *43/12, 43/20*
U.S. Cl. 215—322 8 Claims

1. A reusable cap for sealing a vial or the like including a

neck portion having a generally resilient stopper inserted therein to close the open end of the vial neck portion, said cap comprising: a body of material having a base extending in generally parallel overlying relationship to the open end of the vial neck portion, said base including a plurality of downwardly projecting rib members for seating against said stopper



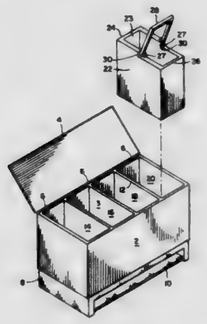
member, and a pair of opposed jaw portions formed integral with said body, said jaw portions projecting from said base for gripping the radially outward periphery of said neck portion in order to clamp said stopper and neck portion between said ribs and each of said jaw portion and to maintain sealing of the stopper against the open end of the vial neck.

4,801,034

STRUCTURE FOR STORING RECYCLABLE TRASH MATERIALS

Laura Scudomeso, 123 Morningside Rd., Verona, N.J. 07044

Filed Oct. 9, 1987, Ser. No. 108,940
Int. Cl.[4] B65D *1/36*
U.S. Cl. 220—23.83 **8 Claims**



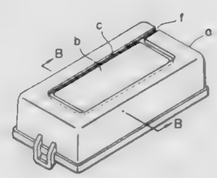
1. Structure for storing recyclable trash materials, comprising:
a container having an open top;
a base for supporting the container and having an open front;
a shelf disposed in the open front for storing flat, newspaper-like trash;
a cover arranged with the top of the container for opening and closing said container;
means for partitioning the interior of the container into a plurality of compartments;
a corresponding plurality of receptacles, each of which receptacles has an open top and is designated to receive a different type of recyclable trash, each of said receptacles including a ledge near the top of the receptacle and extending at least partially along the sides from the front to the rear thereof, and extending along the front of the receptacle;
means arranged with each of the receptacles for grasping the receptacle to store said receptacle in its respective compartment and for removing said receptacle therefrom, and including a generally U-shaped handle supported by the receptacle so as to be displaceable to a first position for grasping the receptacle to store said receptacle in its respective compartment and to remove said receptacle therefrom, and displaceable to a second position when the receptacle is stored in said compartment; and
the handle being substantially upright and above said ledge when it is in the first position, and resting on and conforming to said ledge when it is in the second position.

4,801,035

PROTECTION COVER

Masaaki Sugiyama; Mitsuga Watanabe; Hideharu Hayashi; Yukio Nishio, and Masaki Yamamoto, all of Kosai, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jan. 8, 1987, Ser. No. 59,743
Claims priority, application Japan, Jun. 27, 1986, 61-97753[U]
Int. Cl.[4] H02G *3/14*
U.S. Cl. 220—3.8 **2 Claims**



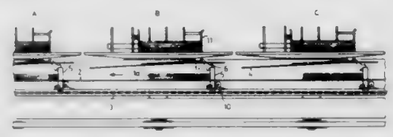
1. A protective cover for an automotive part to be stored in an automobile engine compartment, said cover comprising an upper surface having a generally planar area, a label applied to the upper surface in the generally planar area, said generally planar area being recessed in the upper surface a depth substantially equal to the label thickness, and at least one drain groove means in the unrecessed portion of the upper surface for permitting water to escape from the generally planar area.

4,801,036

COLLATING MACHINE WITH A DEVICE FOR PRE-ACCELERATING THE PRINTED SHEETS

Horst Rathert, Minden, Fed. Rep. of Germany, assignor to Kolbus GmbH & Co. KG, Rahden, Fed. Rep. of Germany

Filed Jan. 26, 1988, Ser. No. 148,484
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1987, 3702608
Int. Cl.[4] B65H *39/02*
U.S. Cl. 270—58 **17 Claims**



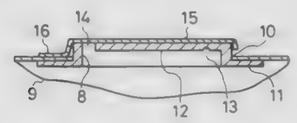
1. A collating machine comprising:
a plurality of feed stations located in a row, each feed station including a feed sheet bin;
a stationary support table situated below each of the feed sheet bins, for serially receiving single sheets from the feed sheet bin for transfer to a stack of sheets;
a channel situated below the tables, the channel including a support surface for receiving individual sheets from the tables in a plurality of collated stacks;
a conveyor including dog means associated with each stack for transporting the stacks on the channel support surface;
pre-acceleration means for sweeping an individual sheet from a support table with sufficient acceleration in the transport direction to deposit the sheet on a stack as the stack is transported by the dog means along the channel, said pre-acceleration means including,
a sweep element associated with each dog means and movable therewith through the channel, the sweep element having an arm portion adapted to pass the table for sweeping a sheet from the table onto a stack, and a base portion connected to one of the dog means for swinging the arm portion back and forth along the transport direction of the dog means;
means for synchronizing the swinging of the arm portion with the dog means transport speed, such that when approaching a sheet on the table, the arm portion is angled forward toward the sheet, when contact is made with the sheet the arm portion is swinging backward relative to the dog means, and the arm portion is moving at the speed of the dog means when the sheet is deposited on the stack.

4,801,037

OPENING/CLOSING DEVICE FOR A MOUTH OF A CONTAINER AND PROCESS FOR MAKING THE SAME

Mitsuharu Hayashida, Nara; Kazuo Sasaki, Tokyo; Nobusige Yasui, Tokyo, and Eiji Takahashi, Tokyo, all of Japan, assignors to Mikasa Sangyo Kabushiki Kaisha, Nara and Jujo Paper Co., Ltd., Tokyo, both of, Japan

Filed Nov. 30, 1987, Ser. No. 126,843
Int. Cl.[4] B65D *41/62*
U.S. Cl. 220—259 **3 Claims**



1. An opening/closing device for a mouth of a container characterized in that said device comprises a cylindrical pouring mouth made of synthetic resin and having a mount portion for mounting it to the mouth of the container, a lid provided integrally via a hinge on a part of the inside of said pouring mouth, a gap space formed between said lid and the inner surface of said pouring mouth along the entire circumference except for said hinge, and a metallic film bonded to the upper surface of said pouring mouth and to said lid so as to straddle both the upper surface of said lid and the upper surface of said pouring mouth, provided with a nip portion and including a metal foil with synthetic resin layers coated on its both surfaces.

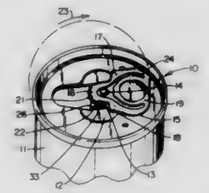
4,801,038

CAN TOP OPENING ASSEMBLY AND METHOD OF MAKING SAME

Donald C. Grigorenko, 8625 Dunblane Ct., Dublin, Ohio 43017

Filed Feb. 22, 1988, Ser. No. 158,479
Int. Cl.[4] B65D *17/34*
U.S. Cl. 220—269 **14 Claims**

1. A can top opening assembly comprising:
(a) a unitary tongue integrally formed in the can top, said tongue being bendable at an intermediate area thereof into first and second portions and at an end of the second portion attached to the can top;
(b) a pull tab provided with:
(1) a nose section disposed in overlying relation to and generally coextensive with the first portion of the tongue;
(2) lever means manually movable in a first direction to bend the first portion of the tongue under the second portion thereof and in a second direction to bend said tongue at the end of the second portion over the can top; and



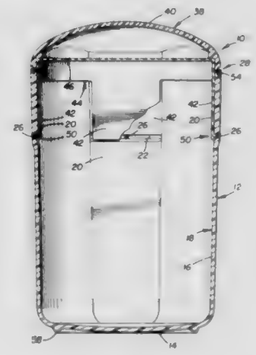
(3) pivot means disposed intermediately of the nose section and lever means in overlying relation to at least one point on the can top adjacent to the intermediate area of the tongue; and
(c) fastening means for securing the nose section of the pull tab to the first portion of the tongue.

4,801,039

ANIMAL PROOF CONTAINER

Mark McCall, San Jose, Calif., and Jeffrey W. Vinson, Cave Creek, Ariz., assignors to Netra Plastics, Mountain View, Calif.

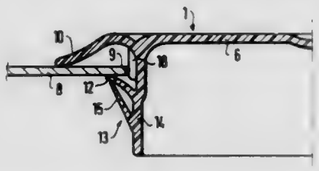
Filed Feb. 11, 1988, Ser. No. 154,914
Int. Cl.[4] B65D *39/00*
U.S. Cl. 220—284 **12 Claims**



1. An animal proof container, comprising:
a can having a bottom, a sidewall having an inside surface having a plurality of substantially flat portions each having a recess defined thereby and an outside surface having a corresponding plurality of holes communicating to said recess and a rim defining an open top of said can;
a lid having a cover portion adapted to cover said open top of said can and a plurality of members extending downwardly peripherally from said cover portion, fitting adjacent said inside surface and having lower end portions adjacent said flat portions of said inside surface, said lower end portions being biased outwardly toward said flat portions sufficiently to proceed into said recesses when said lid is pushed fully downwardly into said can; and
biasing means for biasing said lid normally upwardly relative to said can sufficiently for preventing said lower end portions from entering said recesses.

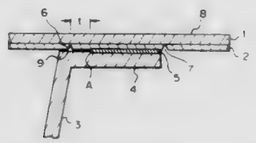
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4,801,040
CLOSURE COVER OF PLASTIC
Willibald Kraus, Grunstadt, Fed. Rep. of Germany, assignor to TRW United Carr-GmbH, Alsenborn, Fed. Rep. of Germany
Filed Apr. 21, 1988, Ser. No. 184,343
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1987, 3713503
Int. Cl.⁴ B65D *39/00*
U.S. Cl. 220—307 9 Claims



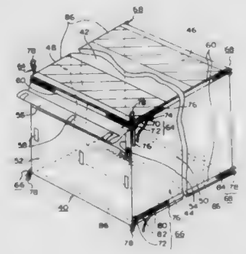
1. A plastic closure member for insertion into an opening formed in a panel for closing and sealing said opening comprising:
- a main body portion having an end wall and a side wall sized and adapted for insertion into the opening in the panel;
- a continuous peripheral flexible sealing lip formed integrally with said main body portion and extending radially outwardly to engage said panel about said opening;
- a peripheral retaining ring extending radially outwardly of said main body at a location axially spaced from said sealing lip and adapted to engage said panel circumferential about said opening on the side of said panel opposite said sealing lip; and,
- at least one support element means spaced from the said retaining ring on the side opposite said sealing lip for striking against said retaining ring to increase the pressing force applied to said panel by said retaining ring.

4,801,041
EASILY-OPENABLE PACKAGING CONTAINER AND LID FOR THE SAME
Yukio Takata, and Takeshi Shinohara, both of Himeji, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan
Filed Sep. 30, 1987, Ser. No. 102,648
Claims priority, application Japan, Sep. 30, 1986, 61-229594; Feb. 27, 1987, 62-42794
Int. Cl.⁴ B65D *41/00*
U.S. Cl. 220—359 11 Claims



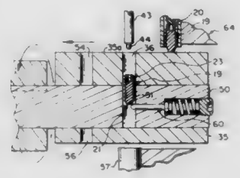
1. An easily-openable packaging container comprising a container body having a flat flange portion and a multilayer lid member heat-sealed to the flange portion of said container body; said multilayer lid member having an interlaminar strength smaller than the adhesion strength exhibited between said flange portion and an inner layer of said multilayer lid member at a heat-seal portion formed between the flange portion and the inner layer so that said multilayer lid member can be delaminated at a portion corresponding to the heat-seal portion during opening of the container, and a cutting line being provided in said inner layer of said multilayer lid member at an inner vicinity of said heat-seal portion and spaced from said heat-seal portion for promoting circular peeling of said inner layer of said multilayer lid member from an outer edge of said heat-seal portion to the inner vicinity of said heat-seal portion; a space between said cutting line and an inner edge of the heat-seal portion being 1 to 10 mm.

4,801,042
INNER BAG FOR CONTAINER
Hiroshi Hamada; Takamitsu Watanabe, and Mitiharu Suzuki, all of Tokyo, Japan, assignors to Kawasaki Kisen Kaisha, Hyogo, Japan
Filed Jan. 11, 1988, Ser. No. 141,860
Claims priority, application Japan, Feb. 25, 1987, 52-25675
Int. Cl.⁴ B65D *90/04*
U.S. Cl. 220—410 6 Claims



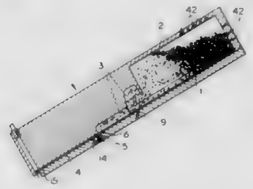
1. An inner bag for a container including an upper surface, a bottom surface, a rear surface, side surfaces and a front surface to form a substantial hexahedron and having jointing portions for jointing said inner bag to inner walls of the container, said inner bag comprising waterproof means provided on front and rear portions of the upper surface in the form of belts.

4,801,043
PARTS ORIENTOR & METHOD
Emil J. Cindric, 509 Huron Trail, Lake-in-the-Hills, Ill. 60102
Continuation of Ser. No. 798,818, Nov. 18, 1985, abandoned. This application Sep. 29, 1987, Ser. No. 104,594
Int. Cl.⁴ B65G *47/14*
U.S. Cl. 221—1 25 Claims



13. A method of orienting parts where the parts are of a similar shape each having a head end and a tail end comprising the steps of successively placing parts one by one into a first radial slot on a shuttle block, moving the shuttle block axially radially aligning the first radial slot with the nest, causing a plunger to enter the first slot and to positively move the part into a nest while operating a sensor to determine whether the ends of the part are properly oriented relative to one another in the nest, retracting the plunger, only rotating the nest to reorient a disoriented part when a part is disoriented, causing the plunger to enter a second radial slot on the shuttle lock, to positively expel the oriented part from the nest after the second radial slot and the nest have been radially aligned, contemporaneously rotating the empty nest 180° to its original position only if the part had been sensed and found to be disoriented while moving the shuttle block axially to its part loading position.

4,801,044
CHIP SEPARATION AND ALIGNMENT APPARATUS
Shigeru Kubota, Tokyo; Shoji Kanou, Yokohama, and Masahiro Kubo, Sagamihara, all of Japan, assignors to Nitto Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 27, 1987, Ser. No. 54,497
Claims priority, application Japan, May 27, 1986, 61-121799; Nov. 17, 1986, 61-273682; Mar. 12, 1987, 62-57649
Int. Cl.⁴ B23Q *7/12*; B65H *3/08*
U.S. Cl. 221—163 3 Claims



1. A chip separation and alignment apparatus comprising:
(a) a principal chip storage chamber which, in use, contains a relatively large number of chips, said principal chip storage chamber having at least one air purge hole therein near the top thereof;
(b) a secondary chip storage chamber which, in use, contains a relatively small number of chips, and secondary chip storage chamber being located beneath said principal chip storage chamber and being separated therefrom by a gate that defines the lower opening of a passageway sized and shaped to permit a small number of chips to pass abreast from said principal chip storage chamber to said secondary chip storage chamber;
(c) first means for intermittently introducing blasts of pressurized air into said secondary chip storage chamber so as to scatteringly separate the chips in said secondary and primary chip storage chambers during alternating first periods, after which the chips fall back into the lower portions of said secondary and primary chip storage chambers under the force of gravity during alternating second periods;
(d) a control plate having an upper surface, said control plate being disposed in said secondary chip storage chamber beneath the opening of said passageway into said secondary chip storage chamber and being sized, shaped, and positioned so that its upper surface supports a small number of chips during the alternating second periods and so that said control plate and said gate cooperate to prevent the chips from filling said secondary chip storage chamber during the alternating second periods;
(e) a chip alignment hole projecting downwardly from said secondary chip storage chamber, said chip alignment hole being sized and shaped to pass the chips one after the other in linear array; and
(f) second means for alternatingly blocking the lower end of said chip alignment hole and permitting one of the chips therein to exit said chip alignment hole and pass to a subsequent step.

4,801,045
PRODUCE DISPENSER
William D. Barnhart, 629 Ransom St., Ripon, Wis. 54971
Filed Dec. 29, 1986, Ser. No. 947,287
Int. Cl.⁴ A47F *1/04*
U.S. Cl. 221—305 4 Claims



1. Apparatus for storing and dispensing individual items comprising:
a. a sleeve having four connected walls of predetermined length that define a rectangular tube open at both ends and
b. a chute slideably inserted into the sleeve, the chute being fabricated from a blank of foldable material comprising:
i. first and second elongated generally rectangular side walls having respective upper and lower ends and predetermined widths;
ii. a generally rectangular back wall having upper and lower ends and a predetermined width, the back wall being interposed between and coextensive in length with the side walls, the back wall being separated from the first and second side walls by respective first and second fold lines;
iii. a first imperforate flap joined to the lower end of the first side wall by a third fold line, the first flap having a length approximately equal to the width of the back wall;
iv. a bottom panel joined to the lower end of the back wall by a fourth fold line and having a length approximately equal to the width of the side walls;
v. a generally rectangular bottom end flap joined to the bottom panel along a fifth fold line parallel to the fourth fold line, the bottom end flap having opposed free edges perpendicular to the fifth fold line and generally colinear with the first and second fold lines; and
vi. a second imperforate flap joined to the lower end of the second side wall by a sixth fold line, the second flap having a length approximately equal to the width of the back wall,
so that the first and second side walls are foldable along the first and second fold lines, respectively, to be perpendicular to the back wall, the first and second flaps are foldable along the third and sixth fold lines, respectively, to be perpendicular to the first and second side walls, respectively, the bottom panel is foldable along the fourth fold line to be perpendicular to the back wall and underlie the first and second flaps, and the bottom end flap can be folded back along the fifth fold line to overlie the first and second flaps with the opposed free edges of the bottom end flap being adjacent the first and second side walls to thereby create a three-sided chute having a bottom platform wherein the bottom end flap

is parallel to the bottom panel and first and second flaps and is unconnected thereto.

4,801,046

PRESSURE CONTAINER FOR RECEIVING AND MIXING AT LEAST TWO SEPARATE COMPONENTS

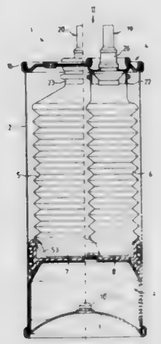
Lothar Miczka, Feldwiesenstrasse 22, Altstätten, Switzerland

Filed Jun. 9, 1987, Ser. No. 59,922

Claims priority, application Switzerland, Jun. 10, 1986, 2342/86

Int. Cl.⁴ B65D *35/28*

U.S. Cl. 222—95 11 Claims



1. A container for storing and dispensing components being mixed when dispensed from the container, the container comprising:

a vertical main container openable at an upper end thereof and being sealed at all other sides thereof;

at least two vertically extending internal containers disposed side by side in said main container and each containing a different component and being openable at an upper end and sealed at all other sides thereof;

piston means which divides said main container into an upper pressure free chamber, in which said internal containers are positioned, and a lower chamber containing a pressure gas;

a disk-shaped double wall cover having openings in a number equal to the number of said internal containers, said cover enclosing said upper end of said main container and including at least two neck portions disposed one below another and each being substantially disk-shaped, each neck portion having a peripheral rim defining each opening;

at least two discharge valves each extending upwardly from said main container and each having a valve disk crimped to the peripheral rim of the corresponding neck portion;

each internal container being formed as a flexible bag having a neck placed over the peripheral rim of the corresponding neck portion and crimped thereto;

an adapter head secured to each valve and having manually operative means for simultaneously opening and closing each valve; and

venting means provided on said cover and manually operated between an open and closed position so as to permit said piston to exert pressure on said internal container under action of pressure gas when said vent means is in said open position in which a connection is established between said upper chamber and atmosphere, said manually operated means of said adapter opening said venting means during the opening of each valve, whereby when said piston exert pressure in said internal containers and said valves are open the component of said internal containers are mixed in said adapter head and are dispensed from said container as a mixture.

4,801,047

DISPENSING DEVICE FOR RADIONUCLIDE GENERATORS

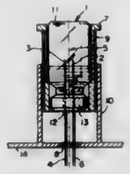
Bernd Klatte, Regensburg; Vencenzo Ferme, Waldetzberg; Fritz Herrmann, Rotgau; Hans-Gerd Hebborn, Donaustauf, and Oskana Poliwczyk, Regensburg, all of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 10, 1987, Ser. No. 83,765

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1986, 8621529[U]

Int. Cl.⁴ G01F *11/28*

U.S. Cl. 222—163 14 Claims



1. A dispensing apparatus for radionuclide generators comprising:

a container having a liquid eluant therein;

at least one hollow needle sealingly and shiftably attached to the container, a tip of said needle projecting into said container; and

means for limiting the amount of eluant in said container which is available for elution by arbitrarily fixing and shifting the at least one needle relative to the container whereby the projection of the tip of the at least one needle into the container can be changed.

4,801,048

BEVERAGE DISPENSER

William S. Credle, Jr., Stone Mountain, Ga., and Alfred A. Schroeder, San Antonio, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 944,637, Dec. 19, 1986, Pat. No. 4,781,310. This application Jan. 20, 1988, Ser. No. 145,942

The portion of the term of this patent subsequent to May 18, 2005, has been disclaimed.

Int. Cl.⁴ B67D *5/56*

U.S. Cl. 222—129.1 6 Claims

1. A beverage dispenser comprising:

(a) a tank with a removable bonnet mounted thereon;

(b) a refrigeration system including a refrigeration deck removable mounted on top of said tank;

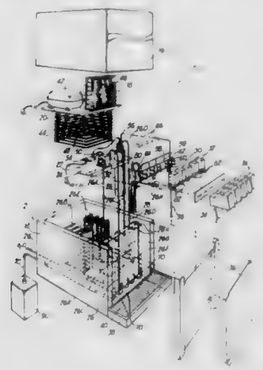
(c) a carbonator system including a carbonator deck removable mounted on top of said tank, a carbonator pump and a control module mounted on top of said carbonator deck, and a carbonator tank extending down from said carbonator deck into said tank;

(d) a syrup pump mounting bracket mounted on top of said tank and extending vertically upwardly and adapted to mount a plurality of syrup pumps;

(e) a plurality of beverage dispensing valves mounted on the front of said dispenser;

(f) said refrigeration system including a evaporator coil depending down from said refrigeration deck into said tank;

(g) a water inlet conduit in said tank extending into said carbonator pump, then extending from said carbonator pump into a pre-cooling coil located within the tank then extending outwardly of the tank to said carbonator tank, then extending from said carbonator tank back to a cooling coil within the tank and then to a water manifold having a plurality of separate water inlet tubes each going to a respective one of said valves; and



(h) a plurality of separate, vertically oriented, syrup cooling coils located in said tank below said carbonator deck, each of said syrup cooling coils having an outlet end connected to a respective one of said valves.

4,801,049

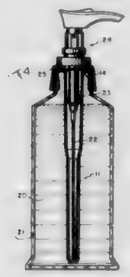
SHROUDED CONTAINER/FINGER-DEPRESSIBLE PUMP COMBINATION

Thomas E. Thompson, Jefferson City, Mo., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Feb. 27, 1987, Ser. No. 19,848

Int. Cl.⁴ B05B *9/043*; **B67D** *5/42*

U.S. Cl. 222—179.5 5 Claims



1. A container and finger-depressible pump combination having improved non-leaking characteristics when the container holds a liquid which comprises:

(a) a container, holding a liquid, which terminates at its upper end in a container neck and at its lower end in a bottom wall;

(b) a finger-depressible pump, removably joined to the neck of the container, said pump having a dip tube portion which extends into the container below the level of the liquid in the container to adjacent said bottom wall; and

(c) a closed, removable shroud mounted on the pump, said shroud encasing and isolating the entire dip tube portion of the pump extending into the container below the liquid level and the pump from contact with the liquid.

4,801,050

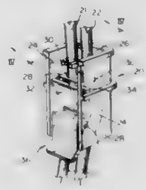
OUTLET TUBE RESTRICTOR

Michael Bell, c/o 36-275 King Street East, Toronto, Ontario, Canada M5A 1K2

Filed Mar. 23, 1987, Ser. No. 28,928

Int. Cl.⁴ B65D *37/00*

U.S. Cl. 222—212 5 Claims



1. A liquid dispenser outlet controller for simultaneous dispensing under gravity of liquid through flexible outlet tubes, one each from two independent liquid containers, the outlet controller having a channel defined by vertically oriented walls within which channel the outlet tubes from each liquid container pass, retainer means associated with the channel to maintain the positioning of the tubes within the channel a similar distance with respect to one of the walls of the channel, a tube pinch valve having a surface parallel to said one of the walls of the channel positioned on the opposite side of the tubes with respect to the wall, this valve being moveable to move the pinch valve surface in parallel fashion with respect to said one wall between a position proximal to but spaced from the wall to pinch off simultaneously the flow of liquid through the tubes, and a position more distant from the wall which permits simultaneous flow of liquid through each of the tubes, the dispenser outlet controller having a flow control device for controlling the flow rate of liquid through one of the outlet tubes secured to one of the walls of the channel above the pinch valve, the flow control device comprising a body having sides, a slot passing through the body to receive the flexible tube, the slot having an entrance commencing at one of the sides of the body, the length of the slot being sufficient to receive most of the tube, the slot having sides spaced apart a predetermined distance sufficient to bear against the sides of the tube when in position in the slot to deform the tube inwardly and evenly along those sides a sufficient degree to provide an even, predetermined reduced flow rate through the tube, one of the tubes passing through the slot thereof, the width of the slot being such as to permit relatively similar flow of liquid through the tubes when the pinch valve is in open position.

4,801,051

FLOW CONTROL DEVICE FOR A FLUID DISPENSING APPARATUS

William A. Lewis, Tucker, and Robert G. Baker, Buford, both of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Mar. 26, 1984, Ser. No. 593,607

Int. Cl.⁴ G01F *11/06*

U.S. Cl. 222—309 2 Claims

1. An improved flow control device for a fluid-dispensing apparatus, comprising:

a body with an axial bore therein and a nozzle communicating with one end of the bore having a nozzle orifice,

a valve member axially movable within said axial body bore to open and close said nozzle orifice,

means to move said valve member within said axial body bore, including spring means for biasing said valve to a closed position,

means for adjusting the closing force of said spring means,

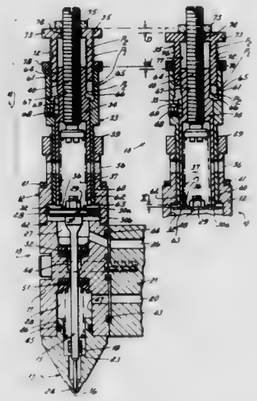
a sleeve-stop member axially movable in said body bore, said sleeve-stop member having opposed ends, one end of said sleeve-stop member forming an end stop to the movement

of said valve member away from the nozzle orifice, said sleeve-stop member having an axial bore therein, said spring means being located within said bore of said sleeve-stop member,

key means for preventing rotary movement while permitting axial movement of said sleeve-stop member relative to said body bore,

external screw threads of a first pitch formed on a portion of said sleeve-stop member,

internal screw threads of a second pitch different from said first pitch formed on the body within the axial bore thereof, and



adjustment-screw means for adjusting the maximum length of travel of the valve member away from the nozzle orifice, said adjustment screw means including a tubular portion externally threaded with threads of said second pitch and engaged with said second pitch threads of said body bore, and internally threaded with threads of said first pitch and engaged with said first pitch threads of said sleeve member, rotation of said adjustment-screw means causing differential axial movement of said sleeve-stop member for adjustment of the maximum opening travel of said valve.

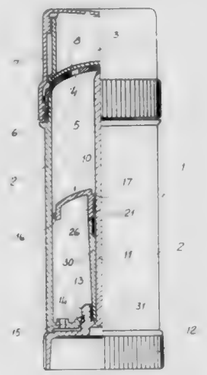
4,801,052

METERING CONTAINER FOR THICK AND SEMI-THICK COSMETIC PRODUCTS, SUCH AS CREAMS AND THE LIKE

Gianfranco Citterio, Via Stoppani 1/3 22058, Osnago Como, Italy

Filed Jun. 17, 1987, Ser. No. 63,250
Claims priority, application Italy, Jun. 19, 1986, 20855 A/86
Int. Cl.[4] B67D *5/42*
U.S. Cl. 222—386 1 Claim

1. A metering container, specifically designed for thick and semi-thick cosmetic products, such as creams and the like, comprising a holding body provided, at the top, with a delivering surface and, in its inside, with a chamber holding the product to be delivered, which is closed at the bottom by a sliding member, which may be displaced with respect to an axial stem extending inside said holding body and rigid with an outer ring nut, an intermediate body rigidly coupled with said sliding member and having a toothed portion abutting and cutting on a smooth surface of said stem for axially displacing said sliding member as said stem is rotated, said sliding member being provided, on its periphery, with a tightness lip acting on the inner surface of the holding body and, at a central portion, with a ring gear tightly engaging with said stem, said intermediate body being housed in a narrow recess provided between the axial end portion of said sliding member and said stem, said intermediate body being provided, on its surface, with wing members which insert into the central portion of said sliding



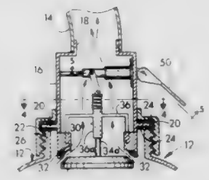
member, so as to render said intermediate body rigidly coupled with said sliding member.

4,801,053

VALVED DISPENSING SPOUT

Eugene J. Kaster, R.R. 2, Mahnomen, Minn. 56557

Filed Dec. 22, 1986, Ser. No. 944,455
Int. Cl.[4] B65D *47/20*
U.S. Cl. 222—506 8 Claims



1. A valve-containing dispensing spout for a fuel can or the like comprising, a spout having an outlet at one end and an inlet at the other end, coupling means at the inlet end for attaching the spout to a fuel receptacle or the like, a movable valve housed in the spout, a valve operating member mounted on the spout, said valve operating member including a finger engagable pressing surface projecting from the side of the valve housing for opening the valve when finger pressure is applied thereto, a connecting link in the spout operatively linking the valve operating member with the valve for conveying movement of the finger operating member to the valve to open the valve when finger pressure is applied to the member, whereby the fuel can or the like can be lifted as by a handle and tipped to pouring position and simultaneously finger pressure applied to the operating member to open the valve to allow fluid to be poured from the can through the spout and the closing of the valve will interrupt the flow of liquid through the spout, the valve operating member comprises an operating lever pivotally mounted upon the spout for movement about a laterally disposed pivot point and is operatively associated with a horizontally disposed plunger mounted for lateral sliding movement within the spout, said connecting link is operatively associated between the plunger and the valve member to move

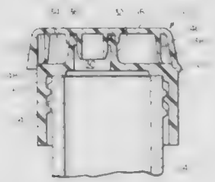
the valve member off its seat when the plunger is slid laterally by the valve operating member, the plunger is mounted slidably within a fixed sleeve supported upon the spout, the valve operating lever is pivotally connected to outwardly extending free end of said plunger, the valve member is a poppet valve yieldably biased toward a closed position and the valve operating member includes a cam in operative engagement with the spout for sliding the plunger within the sleeve as the operating lever is moved upon or down by finger pressure and the lateral sliding motion of the plunger is adapted to transmit motion via the connecting link to the valve member to open the valve, the cam on the valve operating lever is provided with at least once flat spot to hold the operating lever in a selection position with respect to the spout.

4,801,054

WATERTIGHT MOLDED PLASTIC DISPENSING CLOSURE

Joseph D. Nycz, Haskins, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Jul. 6, 1987, Ser. No. 70,262
Int. Cl.[4] B65D *43/14*
U.S. Cl. 222—545 16 Claims



1. A one-piece dispensing closure for a container that contains a flowable product, the container having an annular closure receiving finish, said closure being molded from a thermoplastic material and comprising:

a body portion having a generally flat top panel that is adapted to span the finish of the container and an annular skirt depending from said top panel, said annular skirt having container finish engaging means and being adapted to surround and engage the finish portion of the container, said top panel having dispensing opening means therein to permit the dispensing of the flowable product from the container through said body portion, said dispensing opening means comprising an opening in said top panel and an annular spout surrounding said dispensing opening, said annular spout having a longitudinal central axis, an inside surface, and an outside surface;

a cover portion hingedly attached to said body portion, said cover portion having a top panel, an annular skirt and first sealing means, said cover portion being foldable from a first position where said first sealing means sealingly engages said dispensing opening means to prevent the dispensing of the flowable product from the container and a second position where said first sealing means does not engage said dispensing opening means, said annular skirt projecting from said top panel of said cover portion toward said top panel of said body portion when said cover portion is in said first position, said annular spout projecting from said top panel of said body portion toward said top panel of said cover portion when said cover portion is in said first position, said first sealing means comprising means for engaging one of said inside surface and said outside surface of said annular spout in an annular pattern when said cover is in said first position; and

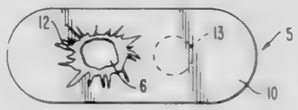
second sealing means carried by one of said body portion and said cover portion, said second sealing means surrounding said dispensing opening means and defining an annular space therewith, said second sealing means comprising an elongate flexible member and sealingly engaging the other of said body portion and said cover portion when said cover portion is in said first position to prevent contaminants from outside the container from entering said annular spade, said second sealing means extending in a direction which is not perpendicular to said longitudinal central axis of said annular spout.

4,801,055

METHOD OF REPAIRING OR RENEWING A WORN REFRACTORY PLATE OF A SLIDING CLOSURE UNIT

Udo Muschaner, Tönisvorst, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 893,447, Aug. 7, 1986, Pat. No. 4,702,460, which is a continuation of Ser. No. 678,033, Dec. 14, 1984, abandoned. This application Jul. 29, 1986, Ser. No. 890,481
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345539; Aug. 2, 1985, 3527756
The portion of the term of this patent subsequent to Oct. 27, 2004, has been disclaimed.
Int. Cl.[4] B22D *41/08*
U.S. Cl. 222—590 5 Claims



1. A method of renewing or repairing a refractory plate employed as a stationary bottom plate or as an adjustably movable plate in a sliding closure unit for controlling the discharge of molten metal from a metallurgical vessel, said refractory plate having a planar sealing surface with a sealing area at a first portion of said plate and a discharge opening extending through said plate at a second area thereof, whereby during use of the sliding closure unit said plate becomes damaged at a wear area around said discharge opening at said sealing surface, said method comprising:

providing forming in said damaged plate with a new discharge opening to extend through said plate at a desired location at said sealing area; and

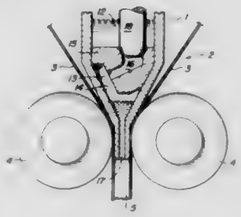
filling the damaged, first-mentioned discharge opening with refractory material to a level flush with said sealing surface, thereby forming a new sealing area.

4,801,056

DISTRIBUTOR FOR CONTINUOUS CASTING MACHINE

Joseph W. Hlinka, Bethlehem, Pa., assignor to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Jun. 8, 1987, Ser. No. 59,715
Int. Cl.[4] B22D *11/10*
U.S. Cl. 222—594 8 Claims



1. Distributor apparatus for receiving molten metal from a

VOL 1098 ISS 5 JA 31 1989 UMI

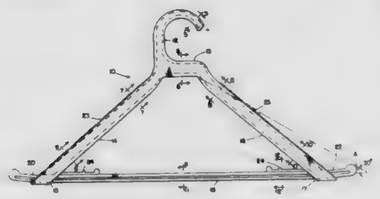
ladle or tundish and for introducing the molten metal into a continuous casting machine comprising a unitary refractory upper chamber and refractory lower chamber, said lower chamber having at least one downwardly sloping sidewall surface, a plate member forming the bottom of said upper chamber and the top of said lower chamber and having at least one molten metal passage in said plate member extending between said upper chamber and said lower chamber, the outlet of said passage being oriented so that it directs the molten metal against the downwardly sloping wall surface above the level of the pool of molten metal in said lower chamber whereby the molten metal discharged from said passage is spread across substantially the full width of said downwardly sloping wall surface before being collected in a pool of molten metal in said lower chamber.

4,801,057

CLOTHES HANGER

Krystyna L. Heston, 3611 NE. I St., Spc 52, Auburn, Wash. 98002

Filed Mar. 26, 1987, Ser. No. 30,354
Int. Cl.[4] A47G *25/44, 25/14, 25/36*
U.S. Cl. 223—92 3 Claims



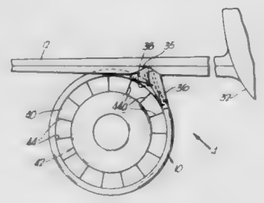
1. A garment hanger, comprising:
two elongated shoulder elements joined together at the respective upper ends thereof by a neck element such that said shoulder elements extend downwardly and at a substantial angle relative to each other;
a hook element extending upwardly away from said neck element;
an elongated, horizontal cross member extending between and affixed to the respective lower ends of said shoulder elements; and
two wing elements which respectively are relatively short compared to the length of said cross member and which slidably mate with said cross member for movement in substantial registry with the cross member away from and into the respective ends of said cross member, thereby defining extensions of said cross member of adjustable length beyond the junction of said cross member and said shoulder elements, characterized by an absence of connecting elements between said shoulder elements and the free end of the portion of each wing element extending beyond the junction of said shoulder elements and said cross member to that the extending portion of said wing elements form shelf-like extensions relative to the remainder of the hanger, wherein the wing elements further include portions thereof which are arranged on the wing elements in such a fashion that they contact said shoulder elements, tending to prevent further movement of the wing elements away from the ends of the cross member, when the wing elements have been extended a selected distance.

4,801,058

AIRCRAFT AND POWERPLANT COMBINATIONS

John A. Mullins, Glastonbury, Conn., assignor to Rolls-Royce plc, London, England

Filed Feb. 5, 1987, Ser. No. 11,215
Int. Cl.[4] B64D *29/02*
U.S. Cl. 244—55 3 Claims



1. In combination with an aircraft having a body including a wing having an underside, fluid flow powerplant means having an outer surface, link means connecting said powerplant means to the underside of said wing, the improvement comprising said powerplant means having a centerline and link means connecting points located to one side of said centerline, said one side being inboard with respect to said body, an aerodynamically shaped box structure enclosing said link means, said box structure including a wall which is inboard with respect to said body and lying in a plane which is at least substantially normal to said underside of said wing and substantially tangential to said outer surface of said powerplant means, said wall being located inboard with respect to all of said powerplant means mounted under said wing whereby the generation of shock waves between said wall and said body will be reduced.

4,801,059

POCKET CALCULATOR HOLDER

Leonard E. Hayes, 156 Grambling Ct., Westwego, La. 70094

Filed Nov. 16, 1987, Ser. No. 121,121
Int. Cl.[4] B65D *33/10*
U.S. Cl. 224—240 6 Claims



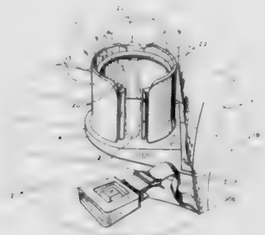
1. A pocket calculator holder, comprising:
a front portion and a back portion securedly attached to each other to form a holder body having a closed bottom, closed sides and an open top;
a securing means for detachably securing said holder body to a shoulder strap; and
a flap closing means securely attached to said back portion and adapted to be folded in covering relationship over at least a part of said open, top wherein said securing means comprises at least one strip securedly attached at its ends to underside of said flap closing means and forming a loop therewith for receiving the shoulder strap.

4,801,060

AUTOMOBILE SEAT DRINKING VESSEL RETAINER

Gary L. Thompson, 4161 W. 2550 North, Plain City, Utah 84404

Filed Nov. 27, 1987, Ser. No. 125,867
Int. Cl.[4] B60R *7/00*
U.S. Cl. 224—275 7 Claims



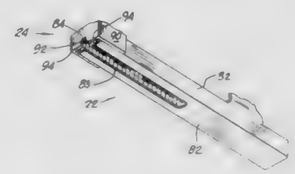
1. A drinking vessel retainer which may be used in an automobile upon a conventional substantially horizontal seat cushion, at least a portion of the seating surface of which is inclined upwardly away from a conventional associated substantially vertical backrest cushion, said retainer comprising:
a drinking vessel receptacle comprising a vertical cylindrical side wall and a horizontal bottom wall defining an upwardly opening vessel receiving cavity; and
a base member mounted to the bottom surface of said bottom wall for supporting the receptacle upon the seat cushion, said base member having a wedge shaped portion disposed directly beneath said bottom wall to maintain the vessel cavity in substantially vertical position when the retainer is installed upon the inclined portion of the seat and a thin flat member extending laterally from the wedge portion which is to be inserted into the space between the horizontal and vertical cushions to anchor the retainer upon the seat cushion.

4,801,061

CABLE MOUNTING APPARATUS AND METHOD

Peter G. Mangone, Jr., 28600 Buchanan Dr., Evergreen, Colo. 80439

Continuation-in-part of Ser. No. 740,802, Jun. 3, 1985, and a continuation-in-part of Ser. No. 754,574, Jul. 15, 1985. This application May 15, 1986, Ser. No. 861,778
Int. Cl.[4] B27F *7/00*; F16B *15/08*
U.S. Cl. 227—120 18 Claims



1. An assembly of mounting devices for use in an applicator tool for attaching an elongated object such as a cable to a support surface comprising:
a plurality of individual mounting devices mounted in abutting relationship to provide an elongted row of mounting devices having a longitudinal axis extending therethrough;
each of said mounting devices having a plurality of surfaces including at least top and bottom surfaces, two opposite side surfaces and front and rear surfaces;
each of said mounting devices having elongated object receiving channel means in said bottom surface for receiving a portion of said elongated object;
each of said mounting devices having at least one bore means extending therethrough and having an opening in said bottom surface;
a surface penetrating fastening device having at least a portion thereof located in said at least one bore means;
each of said mounting devices having interlocking means comprising at least one interlocking rib portion on one of said surfaces and at least one interlocking groove portion in another of said surfaces;
each of said mounting devices having its interlocking rib located rib located in the interlocking groove of an adjacent one of said mounting devices to form an interlocking relationship between adjacent mounting devices; and
said interlocking relationship restraining movement between said adjacent mounting devices in one direction while permitting relative guided movement between said adjacent mounting devices in another direction until one of said adjacent mounting devices has been fastened to said support surface.

17. A method of fastening an elongated object such as a cable to a support surface comprising:
providing a plurality of mounting devices each having at least top and bottom surfaces, two side surfaces and front and rear surfaces and at least a pair of spaced apart bore means extending therethrough between said top and bottom surfaces;
providing elongated object receiving channel means in said bottom surface between said spaced apart bore means;
locating at least a portion of a surface penetrating fastening device in each of said bore means so that at least a portion of said surface penetrating fastening device is located within each of said bore means;
temporarily retaining each of said surface penetrating fastening devices in said bore means for storage and handling prior to use in fastening said elongated object to said support surface;
interlocking a portion of one of said mounting devices with a portion of an adjacent one of said mounting devices to restrain movement therebetween in one direction but to permit relative guided movement therebetween in a direction pependicular to said one direction while holding said mounting devices in an assembled relationship;
placing said mounting devices in said assembled relationship into an applicator tool and positioning said applicator tool over said elongated object;
applying a force to said surface penetrating fastening devices in said one of said mounting devices to move said one of said mounting devices into a position over said elongated object;
maintaining said interlocking relationship between said one of said mounting devices and said adjacent one of said mounting devices during repeated applications of said force until said one of said mounting devices has been fastened to said support surface; and
moving said adjacent one of said mounting devices relative to said one of said mounting devices to disengage said interlocking relationship.

4,801,062

SIDE LOAD MAGAZINE FOR A FASTENER DRIVING TOOL

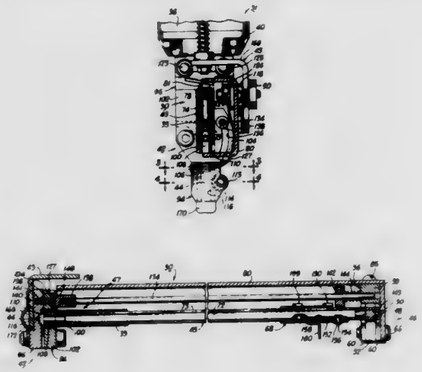
Ronald Austin, Hazelcrest, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed Jun. 18, 1987, Ser. No. 63,416
Int. Cl.[4] B25C *5/13, 7/00*
U.S. Cl. 227—125 25 Claims

1. A fastener driving tool for driving fasteners into a workpiece comprising:
a housing;
a nosepiece assembly carried by said housing including a

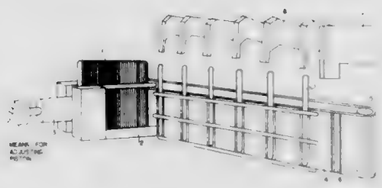
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front nosepiece and a rear nosepiece pivotably connected together to form a drive track;
a fastener carrier pivotably supported at each end in communication with said drive track for carrying fasteners;



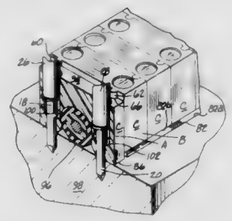
a drive assembly in communication with said drive rack for driving fasteners into the workpiece; and
means for advancing the fasteners to the drive track.

4,801,063
APPARATUS FOR INSERTING STICKS INTO ICE CREAM BODIES
Ole C. Morch, Solrod Strand, Denmark, assignor to NTC Engineering APS, Herlev, Denmark
Filed Apr. 20, 1987, Ser. No. 40,318
Claims priority, application Denmark, Apr. 21, 1986, 1832/86
Int. Cl.⁴ A23G *9/26*
U.S. Cl. 227—45 **5 Claims**



1. A mechanism for leading sticks, especially in preparation for subsequent insertion of sticks into ice cream bodies or the like, from
(a) a magazine, in which the sticks are stacked in parallel with abutting broad sides, into
(b) a carrier in the form of a belt made of flexible material comprising at intervals transversely placed pockets with a form corresponding to the form of the sticks for reception of the sticks, said carrier being adapted to be moved in its longitudinal direction past the one end of the magazine, comprising:
squeezing means arranged at the other end of the magazine for squeezing the stick at any time being first in the stack into a pocket in the carrier opposite the magazine,
the squeezing means exerting a pressure adequate to flatten any crooked or arched sticks, and
the carrier being provided with reinforcements along the edges of the pockets.

4,801,064
CABLE MOUNTING APPARATUS AND METHOD
Peter G. Mangone, Jr., 28600 Buchanan Dr., Evergreen, Colo. 80439
Continuation-in-part of Ser. No. 740,802, Jun. 3, 1985. This application Dec. 3, 1985, Ser. No. 804,064
Int. Cl.⁴ B27F *7/00*; F16B *15/08*
U.S. Cl. 227—120 **18 Claims**

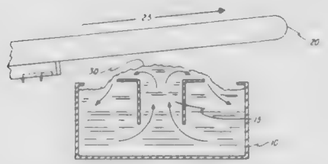


1. A system for use in fastening an elongated object such as a cable on a support surface comprising:
a housing having at least top and bottom surfaces, two opposite side surfaces and front and rear surfaces;
elongated object receiving channel means extending inwardly from said bottom surface for receiving a portion of said elongated object;
two spaced apart bore means extending through said housing and having one end opening into said bottom surface, each of said bore means having a surface penetrating fastening device positioned therein;
each of said surface penetrating fastening devices being substantially contained within said surfaces of said housing;
temporary retaining means for temporarily holding said surface penetrating fastening devices in said bore means until a driving force is applied to said surface penetrating fastening devices;
each of said bore means including a first bore portion having a relatively large cross-sectional configuration and a second bore portion having a relatively small cross-sectional configuration with said second bore portion having an opening in said bottom surface;
a shoulder formed at the junction of said first and second bore portions;
said shoulder being located closer to said bottom surface than to said top surface;
each of said surface penetrating fastening devices having an enlarged portion adapted to contact said shoulder to limit movement of said surface penetrating fastening device through said bore means and to secure said housing to said support surface;
said elongated object receiving channel means being located between said two spaced apart bore means;
a multiplicity of said housings connected together in abutting relationship to provide an elongated row of said housings;
an applicator tool having means for holding said multiplicity of said housings and having a discharge chute;
means for positioning one of said multiplicity of housings over said discharge chute; and
means operative from a retracted position to a driving position including a pair of spaced apart hammer head portions adapted to contact said enlarged portions to move said one of said multiplicity of housings through said discharge chute into position over said cable and for driving said surface penetrating fastening devices through said bore means and into said support surface.

7. A method of fastening an elongated object such as a cable to a support surface comprising:

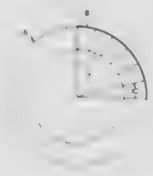
providing a plurality of mounting devices, formed from a plastic material, each having at least top and bottom surfaces, two side surfaces and front and rear surfaces and at least a pair of spaced apart bore means extending therethrough between said top and bottom surfaces;
providing elongated object receiving channel means in said bottom surface between said spaced apart bore means;
locating a surface penetrating fastening device in each of said bore means so that at least a portion of said surface penetrating fastening device is located in each of said bore means;
temporarily retaining each of said surface penetrating fastening devices in said bore means for storage and handling prior to use in fastening said elongated object to said support surface;
interlocking a portion of one of said mounting devices with a portion of an adjacent one of said mounting devices to restrain movement therebetween in one direction but to permit relative guided movement therebetween in a direction perpendicular to said one direction while holding said mounting devices in an assembled relationship;
placing said mounting devices in said assembled relationship into an applicator tool and positioning said applicator tool over said elongated object;
applying a force to said surface penetrating fastening devices in one of said mounting devices to move said one of said mounting devices into a position over said elongated object;
maintaining said interlocking relationship between said one of said mounting devices and said adjacent one of said mounting devices during repeated applications of said force until said one of said mounting devices has been fastened to said support surface; and
moving said adjacent one of said mounting devices relative to said one of said mounting devices to disengage said interlocking relationship.

4,801,065
CHIP CARRIER SOLDERING PALLET
Michael L. Colquitt, Palm Bay; Robert D. Gerke, Melbourne; Mark A. Kwoka, and Dennis M. Foster, both of Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed Sep. 30, 1987, Ser. No. 103,620
Int. Cl.⁴ B23K *1/00*
U.S. Cl. 228—19 **9 Claims**



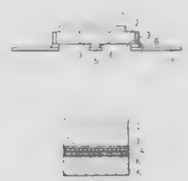
1. An improvement in a pallet fixture of the type used to carry at least one electronic component through a wave soldering system comprising:
a pin made of solderable material, wherein said pin is arranged mounted on said bullet adjacent to said electronic component such that excess solder is removed from the electronic component by said pin as the electronic component is passed through a solder wave.

4,801,066
SLOTTED BRAZING ALLOY STRIP
Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.
Filed Apr. 1, 1988, Ser. No. 176,566
Int. Cl.⁴ B23K *3/00*
U.S. Cl. 228—56.3 **3 Claims**



1. A slotted brazing alloy strip comprising a plurality of angled ear portions connected to a long continuous leg portion, the leg portion being at right angles to the ear portions, with angular slots between the ear portions creating angular gap between adjacent ear portions, the angle of the slots being predetermined to abut adjacent ear portions to each other with substantially no gap therebetween when the alloy strip is bent into a circular shape.

4,801,067
METHOD OF CONNECTING METAL CONDUCTOR TO CERAMIC SUBSTRATE
Kazuo Kondo; Tsuneyuki Sukegawa, and Asao Morikawa, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan
Filed Aug. 27, 1987, Ser. No. 89,762
Claims priority, application Japan, Aug. 29, 1986, 201231; Sep. 24, 1986, 223763
Int. Cl.⁴ B23K *1/04*; H01R *9/06*; H05K *3/00*
U.S. Cl. 228—123 **3 Claims**



1. A method of connecting a metal conductor to a ceramic substrate in an IC package used in high frequency bands on the order of several GHz, said method comprising the steps of:
providing a terminal portion on the ceramic substrate, the ceramic substrate having a dielectric constant of less than or equal to 7.0 and a coefficient of thermal expansion of 5×10^{-6}/°C. or less;
forming a barrier layer on the terminal portion of the ceramic substrate, the barrier layer consisting essentially of a material selected from the group consisting of Ni, Pd, and Pt; and
brazing a metal conductor to the terminal portion of the ceramic substrate through the barrier layer with a brazing filler material consisting essentially of pure Ag.

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4,801,068

METHOD OF PRODUCING AN INJECTION MOULDING TOOL

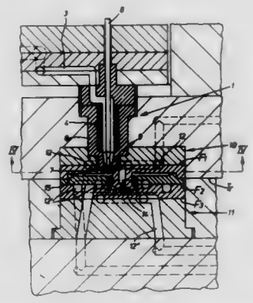
Peter Gracsoll, Munich; Franz Gumplinger, Rottenburg; Helmut Penke, Hohentann, and Gerd Riedel, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Sep. 14, 1987, Ser. No. 95,903

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1986, 3632640

Int. Cl.⁴ B23K *1/12, 1/04;* **B29F** *1/03*

U.S. Cl. 228—174 3 Claims



1. A method of producing an injection moulding tool which contains a tempering duct system as well as cavities into which a thermoplastic material is injected from a nozzle, characterised in that the tool inserts (10, 11) containing the tempering duct system (12, 12', 12'') are each composed of two or more plates in whose faces to be joined the ducts are incorporated, preferably by milling and boring, whereupon the faces to be joined (F1, F2, F3) are freed from contamination and the plates are subsequently joined by diffusion welding.

4,801,069

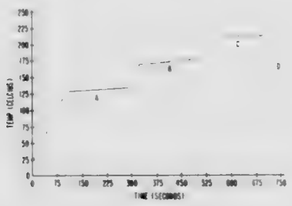
METHOD AND APPARATUS FOR SOLDER DEPOSITION

Michael J. Ankrom, Baltimore, and James A. Rew, Millersville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1987, Ser. No. 32,427

Int. Cl.⁴ B23K *31/02*

U.S. Cl. 228—180.2 17 Claims



17. A method for depositing solder onto component pads of a printed wiring board, said method comprising the steps of:

applying a fluxing agent to the pwb;

placing preform solder means onto at least some of the pwb pad rows such that solder is disposed proximate the pads, said preform solder means comprising:

a multi-layer member having a first layer defining a cover layer, one face of which has an adhesive layer thereon;

a second layer defining a first window layer having a plurality of window means therethrough which are in a predetermined pattern which corresponds to the predetermined pattern of at least one row of the component pads of the printed wiring board, the first window layer having one face with an adhesive layer and a second face which is in intimate contact with the adhesive layer of the cover layer;

a third layer defining a second window layer having a plurality of window means therethrough which are in a predetermined pattern which corresponds to the predetermined pattern of the first window layer widow means such that a continuous window means is defined through the first and second window layers, the second window layer having one face with an adhesive layer and a second face which is in intimate contact with the adhesive layer of the first window layer;

at least one continuous ribbon of solder disposed between the cover layer and the first window layer so as to be alternately exposed and covered by the first window layer and its window means; wherein the second window layer's adhesive layer removably adheres the multi-layer member to the printed wiring board:

positively biasing the solder so placed against the pwb pad rows;

introducing the pwb into a vapor phase environment defining a temperature gradient between approximately ambient and the temperature of a saturated vapor of at least a first selected fluid in order to heat the pwb as follows:

initially heating the pwb to a predetermined first temperature selected to activate the flux and permit the flux to outgas before reflow and maintaining the pwb at said predetermined first temperature for a predetermined first period of time,

heating the pwb to a predetermined second temperature selected to preheat the pwb to a temperature which is slightly less than the melting point of the solder and maintaining the pwb at said predetermined second temperature for a predetermined second period of time,

heating the pwb to a predetermined third temperature selected to preheat the pwb to a temperature which is at least equal to the melting point of the solder and maintaining the pwb at said predetermined third temperature for a predetermined third period of time;

cooling the pwb by reducing the temperature below the third selected temperature so that the solder is in a solid state; and

withdrawing the pwb from the vapor phase environment.

4,801,070

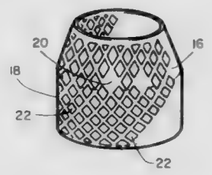
ENGINE DUCT AND CASE CONSTRUCTION

Felix Hoen, La Mesa; Uwe Bockenhaser, Bonita, and James R. Woodward, La Jolla, all of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 11, 1987, Ser. No. 48,239

Int. Cl.⁴ B23K *31/02*

U.S. Cl. 228—184 17 Claims



1. Method of manufacturing force supporting and gas directing ducts, and cases comprising the steps of:

(a) cutting a pattern of the desired configuration from a flat sheet of duct supporting material;

(b) rolling said flat sheet of duct supporting material into a tubular structure with the two adjacent ends abutting;

(c) bonding together said two ends;

(d) shaping the tubular structure to the required shape;

(e) removing selected portions of the tubular structure in a preselected pattern of ribs and bosses; and

(f) bonding a thin sheet metal gas directing liner to the inner surface of said ribs and bosses.

4,801,071

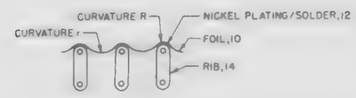
METHOD FOR SOLDERING AND CONTOURING FOIL E-BEAM WINDOWS

Scott A. Lissit, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 5, 1987, Ser. No. 11,656

Int. Cl.⁴ B23A *31/02*

U.S. Cl. 228—212 5 Claims



1. A method for soldering and contouring foil E-beam windows comprising the steps of:

plating a foil material with narrow strips of a first predetermined material with a first predetermined spacing between the strips,

applying a second predetermined material to said narrow strips,

heating coolant rib members which have a second predetermined spacing therebetween to a predetermined temperature,

placing said narrow strips in contact with said coolant rib members, and

maintaining said narrow strips in contact with said coolant rib members while said second predetermined material melts, cools and then solidifies to form a high strength bond between said narrow strips and said coolant rib members to attach said foil material to said coolant rib members and thereby form a foil E-beam window.

4,801,072

HOMOGENEOUS, DUCTILE BRAZING FOILS

Claude Henschel, Mt. Freedom, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 639,559, Aug. 10, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 856,861

Int. Cl.⁴ B23K *35/22, 35/30;* **B22D** *11/06*

U.S. Cl. 228—245 6 Claims

1. A process for fabricating a brazed article comprising the steps of:

(a) providing a homogeneous, ductile brazing foil composed of metastable material having at least 50% glassy structure and a composition consisting of from about 0 to about 10 atom percent iron, from about 5 to about 15 atom percent chromium, from about 2 to about 5 atom percent molybdenum, from about 10 to about 30 atom percent cobalt, from about 16 to about 18 atom percent boron, the balance essentially nickel and incidental impurities;

(b) interposing said brazing foil between at least a portion of each of two parts;

(c) causing said brazing foil to be melted and therafter solidifying the molten material to effect brazing of said portions.

4,801,073

LIQUID PACKAGING CONTAINER WITH A FILMED-OVER NOTCH

Jürgen Färber, Kaarst, Fed. Rep. of Germany, assignor to PKL Papier- und Kunstoff Werke Lünich GmbH, Duesseldorf, Fed. Rep. of Germany

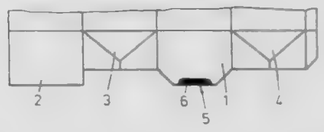
Continuation of Ser. No. 58,969, Jun. 8, 1987, abandoned, which is a continuation of Ser. No. 355,031, Mar. 5, 1982, Pat. No. 4,728,024. This application Dec. 1, 1987, Ser. No. 127,526

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3113044

The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.

Int. Cl.⁴ B65D *5/62*

U.S. Cl. 229—3.1 4 Claims



1. In a die-cut cardboard blank coated on both sides with a thermoplastic coating and capable of being folded into a liquid packaging container having a planar rectangular folded bottom sealed in a liquid-tight manner with an overlapped seam and a protected edge on the inner bottom fold-in panel, the improvement which comprises providing the blank with an inner bottom fold-in panel having in its marginal area a die-cut notch extending beyond the visible area when folded, this notch being entirely filmed over with the coating material of the blank, whereby the coating material filmed over the notch directly contacts coating material on the adjacent panels.

4,801,074

SEALED LETTER

Etsujiro Ikeda, Yokohama, Japan, assignor to Jyoni Business Forms Co., Ltd. and Honsha Seishi Kabushiki Kaisha, both of Tokyo, Japan

Filed Jan. 27, 1987, Ser. No. 7,247

Claims priority, application Japan, Jul. 25, 1986, 36-113495[U]

Int. Cl.⁴ B65D *27/04*

U.S. Cl. 229—71 8 Claims



1. A sealed letter characterized in that the letter paper on which an address or other descriptive matters are printed is covered, (1) on its front surface with a long, continuous front sheet made of transparent paper which is laminated on its rear surface with a transparent and thermal adhering synthetic resin film and, (2) on its rear surface with a long, continuous rear sheet made of a paper material, wherein the front sheet and the rear sheet are adhered together by heat at their peripheral portions to form an enclosed sealed portion.

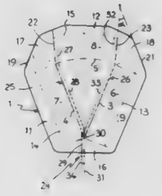
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COMPLETELY OPENABLE PACKING WRAPPER IN PARTICULAR FOR PASTY FOOD PRODUCTS

Jean-Claude Weber, Bondy, and Jean-Claude Mitaine, Voiteur, both of France, assignors to Fromageries Bel, Paris, France

Filed Apr. 15, 1987, Ser. No. 38,578
Claims priority, application France, Apr. 16, 1986, 86 05465
Int. Cl.[4] B65D *17/00*
U.S. Cl. 229—87 F **6 Claims**



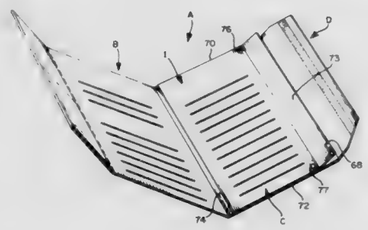
1. A fluidtight packing wrapper for pasty products and in particular food products such as processed cheese, said wrapper having a triangular base and being capable of being completely opened, said wrapper comprising a first sheet cut out along a suitable contour and folded so as to form a bottom having a triangular shape, two lateral walls adjoining the bottom of the first sheet and a wall forming a heel adjoining the bottom of the first sheet, a second sheet having a triangular shape and placed flat on the surface of a product which is to be packed and which is placed in said first sheet, and a tearing element fixed inside said first sheet and including only a single pulling tongue, the tearing element comprising two tearing stripe each extending in a first portion of each strip along one of the lateral edges of the heel and in a direction parallel to said one lateral edge and, in a second portion of each strip, along one of the lateral edges of the bottom and in a direction parallel to said one lateral edge, said two strips being in at least partly overlapping relation to each other in a third portion of each strip in the vicinity of a point of the triangular bottom so as to form said only single pulling tongue which extends beyond said first sheet.

4,801,076

ADVERTISING POUCH ASSEMBLY FOR DISTRIBUTING ADVERTISING LITERATURE OR THE LIKE

Donald Schoenleber, Princeton; Frederick Grainger, West Greenbrook, and Patrick J. Donahue, Hamilton Square, all of N.J., assignors to Webcraft Technologies, Inc., No. Brunswick, N.J.

Filed Oct. 15, 1986, Ser. No. 918,892
Int. Cl.[4] B65D *27/14*
U.S. Cl. 229—92.7 **18 Claims**



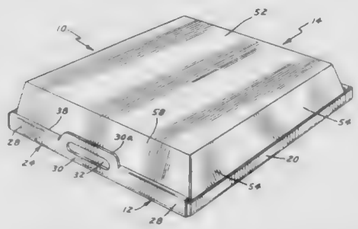
1. An advertising pouch assembly, comprising:
(a) a first web sheet including at least first, second and third spaced parallel hinge lines defining a closure flap, a backing panel, a first business reply card panel and a second business reply card panel,
(b) a second web sheet including a cover panel,
(c) one of said first and second web sheets having an intermediate hinge line defining an advertising panel,
(d) said closure flap including top, bottom, left and right edges,
(e) said backing, first business reply card, second business reply card, cover and advertising panels each including top, bottom, left and right edges,
(f) said top edge of said backing panel being hingedly connected to said bottom edge of said closure flap,
(g) means for securing said left and right edges of said cover panel to said left and right edges respectively of said backing panel,
(h) means for securing said bottom edge of said cover panel adjacent said bottom edge of said backing panel for forming a pouch, said pouch having an opening adjacent said bottom edge of said closure flap for accommodating advertising material or the like,
(i) means for securing said first business replay card panel to said second business reply card panel for forming at least one double thickness business reply card,
(j) said at least one double thickness business reply card, aid backing panel and said cover panel each having printed indicia formed thereon, and
(k) means for securing said closure flap to said advertising panel for forming the advertising pouch assembly.

4,801,077

COMBINED TRAY AND COVER FOR USE IN THE DELIVERY OF FOOD ITEMS

Blaine Sweatt, III, Minneapolis, and Stephen E. Moorman, Forest Lake, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 19, 1988, Ser. No. 145,169
Int. Cl.[4] B65D *43/03, 43/04*
U.S. Cl. 229—113 **12 Claims**



1. A carton comprising a tray including a rectangular bottom panel, upstanding side wall panels and upstanding end wall panels, and a cover including a rectangular top panel of smaller size than said bottom panel, depending side wall panels and depending end wall panels, the cover's side wall panels sloping upwardly and inwardly and each having a straight free edge extending from end to end of the respective end wall panel and frictionally engaged throughout their length with the tray's side wall panels adjacent the tray's bottom panel and the cover's end wall panels slopingly upwardly and inwardly and each having a straight free frictionally engaged throughout their length with the tray's end wall panels adjacent the tray's bottom panel.

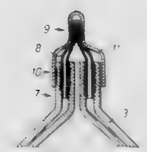
4,801,078

ARRANGEMENT ON PACKING CONTAINERS

Lars Carlsson, Blentarp, Sweden, assignor to AB Tetra Pak, Lund, Sweden

Filed Aug. 25, 1987, Ser. No. 89,154
Claims priority, application Sweden, Sep. 16, 1986, 8603888
Int. Cl.[4] B65D *5/70*
U.S. Cl. 229—123.2 **5 Claims**





1. A closure arrangement on a packing container of the type constructed of a folded and sealed flexible packing material having an inside surface, the packing container having an upper part including panels which jointly form a sealing fin of multiple material thickness, the sealing fin including a top edge, the closure arrangement comprising; a sealing film joined to the inside surface of the packing material, the sealing film including a sealing zone located outside the top edge of the sealing fin, the sealing zone being covered by, and joined to, a separate tearing strip, wherein several layers of the sealing film are sealed to one another.

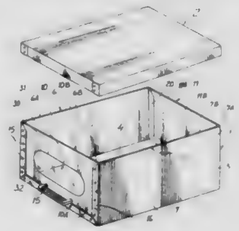
4,801,079

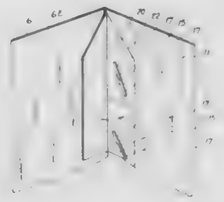
HIGH CAPACITY COLLAPSIBLE CONTAINER

Federico Gonella, Via Lacaita, 2, 20138, Milan, Italy

Filed Jan. 15, 1988, Ser. No. 144,551
Claims priority, application Italy, Jan. 22, 1987, 20594/87[U]
Int. Cl.[4] B65D *5/18*
U.S. Cl. 229—174 **2 Claims**

1. A high capacity collapsible container comprising a box-like body having a bottom, a front wall, a rear wall and side walls and a closing cover, said front and rear walls having respective inner and outer faces and said side walls having respective inner and outer faces, said box like body being made of a die cut element forming said bottom and side walls, said die cut element being coupled to said front wall and rear wall by throughgoing bosses engageable in flaps of said die cut element adapted to be superimposed on said front and rear walls, said die cut element being provided with a central portion forming said bottom, said bottom having transverse and longitudinal sides, said die cut element being upwardly bent at said longitudinal sides of said bottom and then being downwardly bent so as to provide said inner and outer faces of said side walls, said container further including, at said bosses, a





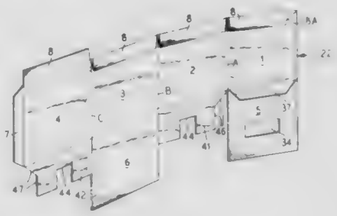
plurality of protecting fins provided on extensions of said inner faces of said side walls.

4,801,080

ICE CREAM CARTON

Daniel F. Spengler, Sacramento, Calif., assignor to Deutchcube, Inc., Sacramento, Calif.

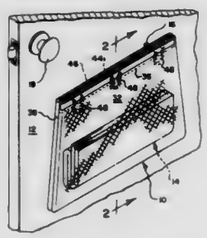
Filed Nov. 19, 1986, Ser. No. 932,335
Int. Cl.[4] B65D *5/02, 5.68*
U.S. Cl. 229—125.19 **5 Claims**



1. An ice cream carton comprising:
a sheet-form body member rolled and scored to provide six identically dimensioned square panels;
four panels of said six panels being disposed in a longitudinal row and being interconnected to one another at three transverse roll score lines and a remaining two panels of said six panels being interconnected to a first two of said four panels at longitudinal roll score lines;
a first panel of said four panels having an assembly flap and being interconnected thereto at a transverse roll score line;
whereby the body member may be folded and formed into a rectangular tube with said assembly flap adhesively underlying and secured to an adjacent portion of a fourth panel of said four panels;
each of said four panels having a

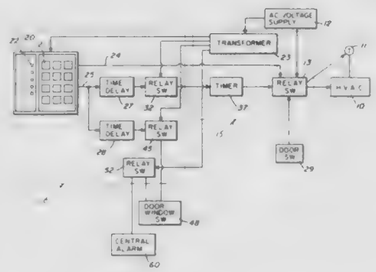
reinforcing flap rolled and sealed inside of the tube to keep the structure square and to eliminate bulge;
the reinforcing flap on said fourth panel being notched to accommodate positioning of said assembly flap on said adjacent portion of said fourth panel;
one panel of the remaining two panels having edges and two separate anchoring embossments formed to extend outwardly of the plane of said one panel;
one of said anchoring embossments being generally rectangular and centrally disposed inwardly of the edges of said one panel;
the other of said anchoring embossments comprising an elongated strip commensurate in length with said roll score associated with the one panel and extending inwardly thereof, but terminating short of said one of said anchoring embossments;
a second two panels of said four panels each having a bottom wall half flap connected thereto at a longitudinal roll score line;
each of said bottom wall half flaps having an innermost edge centrally notched and together with one another forming an opening commensurate in size, shape and disposition with said one of said anchoring embossments; and
each flap having a transverse edge notched to form an opening commensurate in size, shape and disposition with the said other of said anchoring embossments;
whereby said one panel may be folded to form an interior bottom wall and said half flaps may be folded to overlie said one panel and another panel of the two panels may be adhesively locked to said one panel at said anchoring embossments to form a smoothly surfaced cubical container having one open side; and
a cover forming a top wall for the open side and comprising a cover panel of a size corresponding to each of said six panels and having cover reinforcing tabbed flanges rolled and sealed to form a continuous peripheral flange adapted to be placed in an interference fit assembly with the body member, thereby to form a cube having six essentially identical smooth sides.

4,801,081
RECEPTACLE FOR STORING ARTICLES SUCH AS NEWSPAPERS
James C. O'Connor, Tonawanda, N.Y., assignor to Joseph P. Armenia, Tonawanda, N.Y., a part interest
Filed Mar. 28, 1988, Ser. No. 173,877
Int. Cl.[4] B65D *91/00*
U.S. Cl. 232—1 C 3 Claims



1. A receptacle adapted for mounting on a vertically disposed surface, such as a door, and for removably storing articles, such as a newspaper, delivered to a residence, said receptacle comprising: non-rigid sheet material forming a storage chamber communicating with a mouth of the receptacle through which said articles may be removably inserted into said chamber, said sheet material is a generally rectangular sheet folded in half with its facing side edge portions joined together and its opposite end portions defining opposite side edges of said mouth, said opposite end portions being folded upon themselves to define a pair of sleeves; a relatively rigid strip extending along one of said opposite side edges of said mouth; a strip of elastic material extending along the other of said opposite side edges of said mouth and tending to resiliently retain said mouth in a closed condition wherein said one and said other of said opposite side edges are disposed in close proximity to one another, said strips are disposed one in each of said sleeves; and means for mounting said receptacle on said surface to arrange said mouth to open upwardly with said relatively rigid strip adjacent said surface.

4,801,082
SECURITY ACTIVATED LOAD CONTROL
Charles Harwood, Jr., Richmond, Va., assignor to Harwood-Moody, Ent., Inc., Richmond, Va.
Filed Apr. 6, 1988, Ser. No. 178,365
Int. Cl.[4] G08B *13/00*
U.S. Cl. 236—46 R 3 Claims

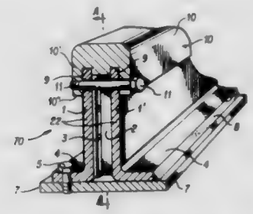


1. A power saving system for conserving energy consumption by a primary electric load and which is responsive to room security activation, comprising: a key pad operated control circuit,
first means connecting said control circuit to supply means tor said load when said control circuit is in a first condition,
second means connecting said control circuit through a control means to said supply means for said load when said control circuit is in a second condition,
said control means having timing means operative repetitively to connect said control circuit to said load for a predetermined time interval,
and third means connecting said control circuit to room security switch means when said control circuit is in said second condition.

4,801,083
COMPOUND RAILROAD TRACK
Alfredo G. Arteaga, and Alfredo E. Arteaga, both of Serrano 2240, Floor 1, Dept. 9, Buenos Aires, Argentina C.1425
Filed Mar. 6, 1987, Ser. No. 23,047
Int. Cl.[4] E01B *5/08*
U.S. Cl. 238—134 4 Claims

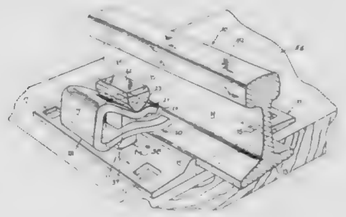
1. A compound railroad track comprising;
a substantially planar rail base,
a pair of longitudinal support members each including a vertically disposed web having an upper end and an opposite end joined to a horizontally extending base, means affixing said support member bases to said rail base with said webs laterally spaced apart from one another,
U-shaped separators each having a transverse base joined to a pair of sides, said separators vertically extending between the majority of the height of said spaced apart support member webs and having said sides welded to said webs,

a rail head having an undersurface including a center segment bounded by two laterally spaced apart downwardly facing vertical channels, said rail head defining an overall height substantially less than the height of said support member webs and provided with outermost depending flange portions respectively forming one side of each said channel and each having a lower edge disposed in a plane substantially below that of said center segment,
said rail head mounted atop said support members with said



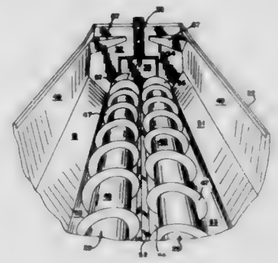
web upper ends disposed within said channels and said rail head depending flange portions flushly engaging said webs with said separators extending upwardly to a plane above the plane of said flange portion lower edges,
said flange portions and webs provided with aligned holes, and
removable threaded bolts disposed through said aligned holes, whereby
said rail head is captively secured atop said support members.

4,801,084
BASE PLATE INSERT
Albert E. Rex, 205 Churchill Road, Prospect, Australia 5082
Continuation of Ser. No. 898,345, Aug. 20, 1986, abandoned.
This application Mar. 25, 1988, Ser. No. 177,874
Claims priority, application Australia, Aug. 21, 1985, PH2071; Aug. 21, 1985, 61721/86
Int. Cl.[4] E01B *9/34*
U.S. Cl. 238—351 9 Claims



1. An insert for a rail fastening system employing a base plate having generally vertical internal surfaces defining an aperture through which the insert passes, to secure a rail having a head to a timber sleeper by means of a resilient clip, said insert having an elongated shank to extend below the base plate, an upper end to engage said clip and to retain said clip in a compressed state to bias said rail into engagement with said base plate, and a lower end to be positioned below the plate, which lower end is provided with a tip for penetrating the timber sleeper and a lower abutment surface to engage the plate to prevent withdrawal of the insert by forces applied thereto by said clip; said upper end having a downwardly facing clip engaging surface which permits installation of the clip in a direction transverse of said shank, the shank having a front surface adjacent the rail and a rear opposed surface, and wherein said insert has a relief surface so as to taper the lower end of the insert, the relief surface being on the rear opposed surface of said shank behind said lower abutment surface enabling insertion of the shank into said aperture by tilting of the insert, said shank further having a generally transverse base plate-engaging surface above said relief surface such that said insert securely engages against said base plate internal surfaces so as to be oriented relatively normal to the base plate when inserted in said aperture thereof.

4,801,085
DUAL AUGER MANURE SPREADER
Thomas R. Fischer, Wapakoneta, Ohio, assignor to Allied Products Corporation, Chicago, Ill.
Filed Jun. 30, 1987, Ser. No. 68,234
Int. Cl.[4] A01C *19/02*
U.S. Cl. 239—1 24 Claims



1. A manure spreader for distributing any of a variety of manure materials having varying consistencies, comprising:
a bin mounted onto a frame having ground engaging wheels, said bin having an end wall and an opening ' therethrough;
at least two auger assemblies longitudinally mounted within the bin in side-by-side relationship, said auger assemblies each have an outfeed end at a longitudinal end thereof that is adjacent to and closely spaced from said end wall opening, and said auger assemblies are counter-rotating with respect to each other and include means for feeding manure materials in a feed direction longitudinally generally along the auger assemblies;
a generally vertically oriented expeller assembly positioned over said end wall opening, said expeller assembly is closely spaced form said outfeed ends of the auger assemblies, said expeller assembly having edge means for receiving manure materials directly from each longitudinal outfeed end of the auger assemblies and for distributing such manure material onto a field or the like, said expeller assembly means for receiving a manure materials engages manure materials fed through said end wall opening;
drive means for counter-rotating said auger assemblies and for rotating said receiving and distributing means of the expeller assembly;
each auger assembly includes at least two different auger profiles, one such auger profile including relatively shallow flights and a broad auger shaft, and the other such auger profile including deep flights that are substantially deeper than said shallow flights and a narrow auger shaft that is smaller in overall cross-section than said broad auger shaft; and
each said outfeed end of each said auger assembly is positioned at a longitudinal end of said deep flight auger profile that is closely spaced from said vertically oriented expeller assembly, each said deep flight auger profile longitudinal end has edge means for engaging and moving manure materials into and through said end wall opening, each said edge means of the deep flight auger profile rotates within a generally vertical plane that is substan-

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tially parallel to said end wall opening, said receiving means of the expeller assembly includes means for sweeping said end wall opening in a direction generally perpendicular to the feed direction of said auger assemblies, said sweeping means includes a rigidly mounted blade having an edge that is closely spaced from said end wall opening, and said blade edge rotates within a generally vertical plane that is substantially parallel to said end wall opening.

19. A method for distributing any of a variety of manure materials having varying consistencies, comprising:

depositing a supply of manure material into a translatable bin having a wide-mouth configuration and an end wall with an opening therethrough;

augering said manure material within the bin longitudinally along at least two side-by-side auger assemblies therewithin, said augering including moving said manure material in a feed direction flow by counter-rotating action imparted thereto by the auger assemblies;

said augering including stepping said feed direction flow from a shallow auger flight pathway to a deep auger flight pathway, said feed direction flow form the deep auger flight pathway being directly into and through the end wall opening and directly into and closely spaced from a generally vertically oriented expeller assembly; and

receiving said feed direction flow from the deep auger flight pathway and distributing same with the expeller assembly, said receiving step including wiping substantially the entire bin end wall opening with a plurality of blades of the expeller assembly.

4,801,086

SPRAYING APPARATUS

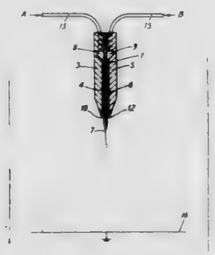
Timothy J. Noakes, Hampshire, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 830,874, Feb. 19, 1986, abandoned. This application May 31, 1988, Ser. No. 201,330

Claims priority, application United Kingdom, Feb. 19, 1985, 8504254

Int. Cl.[4] B05B 5/02

U.S. Cl. 239—3 26 Claims



24. A process for the electrostatic spraying of a plurality of different liquids comprising supplying each of the different liquids to respective channels in a sprayhead, each channel communicating with an outlet means at which the liquids flowing through respective channels meet, and subjecting liquids emerging from the outlet means to an electrical field sufficiently high for a mixture of liquids to be drawn from the sprayhead in the form of at least one filament containing a mixture of liquids in proportions equal to the proportions in which they were supplied.

4,801,087

EXHAUST NOZZLE FOR A GAS TURBINE ENGINE

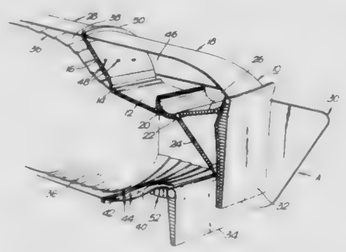
Clifford S. Woodard, Bristol, England, assignor to Rolls-Royce plc, England

Filed Jan. 20, 1987, Ser. No. 5,108

Claims priority, application United Kingdom, Jan. 23, 1986, 8601675

Int. Cl.[4] F02K 1/12

U.S. Cl. 239—127.1 9 Claims



1. An exhaust nozzle for a gas turbine engine comprising:

duct structure, generally circular in cross-section, having upstream and downstream ends, the downstream end of the duct structure being shaped and formed to provide generally straight lower and upper lips each adapted to form attachment means for flap means; upper and lower ventral flap means movably mounted to the attachment means; and two opposing side planar along their entire lengths, walls, planar along their entire lengths, each positioned and arranged to extend along and within the generally circular duct structure and protrude therefrom in a downstream direction wherein the upper and lower flap means extend between the opposing sidewalls to define a rectangular flow path through the nozzle.

4,801,088

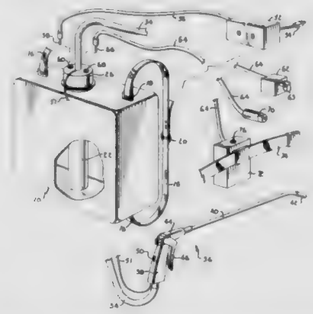
PORTABLE BATTERY POWERED SPRAYER

Wesley L. Baker, 615 Grover St., Liberty, Mo. 64068

Filed Jun. 8, 1987, Ser. No. 59,638

Int. Cl.[4] B05B 9/08

U.S. Cl. 239—152 1 Claim



1. A portable spraying device for spray application of liquids, said device comprising:

a portable tank adapted to hold liquids to be sprayed and having a size and weight to be carried on the person, said tank having a bottom and a top presenting a fill opening through which liquids may be supplied to the tank;

a spray wand adapted to be held in the hand, said wand having a discharge nozzle for spraying liquids delivered to the wand;

a pipe presenting a liquid tight chamber therein and having a length to extend from said fill opening to a location adjacent the bottom of the tank, said pipe having a top end carrying a cap thereon;

means for establishing a threaded connection between said cap and tank for holding said pipe in extension through the fill opening in a manner to submerge the pipe in the liquid in the tank, said threaded connection permitting removal of said pipe from the tank to expose the fill opening;

a battery powered pump mounted in said chamber in the pipe, said pump having an intake side situated outside of the chamber adjacent the bottom of the tank at a location to draw in liquid from the tank and a discharge side located with said chamber;

a rechargeable battery pack mounted in said chamber above the pump and electrically coupled with said pump to supply electrical operating power thereto;

an elongate flexible hose having an inlet end connected with said discharge side of the pump at a location within said chamber, said hose extending in said chamber and through said cap and connecting with said wand to deliver liquid thereto when the pump is activated;

switch means for activating and deactivating said pump;

a battery charging terminal on said cap for connection with a battery charger for charging of the battery; and

said pipe being removable to remove the pipe, pump, battery pack and hose as a unit from the tank.

4,801,089

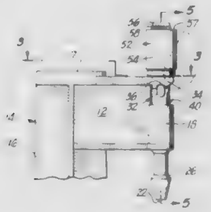
SPRINKLER STRUCTURES HAVING REPLACEABLE WATER DISTRIBUTION STRUCTURES

David G. Zeman, P.O. Box 42040, Las Vegas, Nev. 89116

Filed Apr. 13, 1987, Ser. No. 37,932

Int. Cl.[4] B05B 15/06

U.S. Cl. 239—276 10 Claims



1. A sprinkler structure having a support means for use in holding said sprinkler structure, inlet means on said support means, said inlet means including an inlet passage which is intended to be connected to a water supply structure, an inlet into said inlet passage and an outlet of said inlet passage, said sprinkler structure also including distribution means for distributing water from said sprinkler structure, said distribution means being located so as to receive water from said outlet of said inlet passage, said sprinkler structure further including holding means for holding said distribution means on said support means so that said distribution means is capable of receiving water from said outlet from said inlet passage, in which the improvement comprises:

said inlet means includes a first seat for forming a seal around said outlet of said inlet passage,

said distribution means is shaped so as to include an internal passage having an inlet and an outlet and so as to include a second seat surrounding said inlet to said internal passage which is complimentary in shape to the shape of said first seat so as to be capable of fitting against said first seat so as to form said seal,

said distribution means includes shoulder means for use in holding said distribution means so that said seats are in engagement so as to form said seal,

said holding means resiliently engages said shoulder means so as to permit the removal and replacement of said distribution means,

said shoulder means comprises two shoulders located on opposite sides of said distribution means intermediate the longitudinal ends thereof, and said holding means comprises two resilient arms, one of said arms engaging one of said shoulders, the other of said arms engaging the other of said shoulders so as to bias said second seat into engagement with said first seat, and

said holding means and said support means are integral with one another and are formed of a self supporting, resilient, inert polymer composition.

4,801,090

DISCHARGE PIPE AND DISCHARGE APPARATUS USING THE SAME

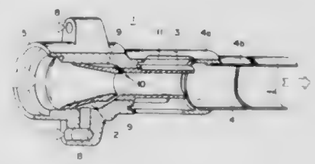
Yoshiyuki Yoshida; Kazutaka Onozuka, both of Tokyo; Yoshihiko Ohashi, Fujisawa; Toshihide Tsuji; Kensuke Miyazaki, both of Sagamihara, and Yoshio Koyama, Toyonaka, all of Japan, assignors to Hochiki Corp., Tokyo and Kabushiki Kaisha Takenaka Komuten, Osaka, both of, Japan

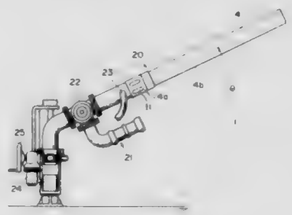
Filed Oct. 7, 1986, Ser. No. 916,234

Claims priority, application Japan, Oct. 9, 1985, 60-154761

Int. Cl.[4] A62C 35/00

U.S. Cl. 239—290 14 Claims





1. A discharge pipe comprising: a nozzle for throttling fire-extinguishing water supplied under pressure to jet it therethrough;

an inner cylindrical member, which has a hollow and straight shape, provided adjacent to an exit tip end of said nozzle;

the inner face of said inner cylindrical member is straight in the direction of the jetting of said fire extinguishing water;

an air injecting means of injecting compressed air into said fire extinguishing water jet where it exits from said nozzle and jets into said inner cylindrical member, such air injection being directed so that the compressed air flows along an inner face of said inner cylindrical member; and

an outer cylindrical member, which has a hollow and straight shape, provided around said inner cylindrical member;

said outer cylindrical member has an extension portion that extends beyond said exit tip end of said inner cylindrical member in a direction of the jetting of said fire extinguishing water, an inner face which is parallel with said inner

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face of said inner cylindrical member and is straight in a direction of the jetting of said fire extinguishing water, and provided with one or more air inlets adjacent the outside of the outer periphery of said inner cylindrical member.

10. A discharge apparatus comprising a long reach discharge pipe for fire extinguishing a place remote from where said long reach discharge pipe is installed; and a short reach discharge pipe for fire extinguishing a place in the vicinity of said long reach discharge pipe;

said long reach discharge pipe including,

a nozzle for throttling fire-extinguishing water supplied under pressure to jet it therethrough;

an inner cylindrical member, which has a hollow and straight shape, provided adjacent to an exit tip end of said nozzle;

the inner face of said inner cylindrical member is straight in the direction of the jetting of said fire extinguishing water;

an air injecting means for injecting compressed air into said fire extinguishing water jet where it exists from said nozzle and jets into said inner cylindrical member, such air injection being directed so that the compressed air flows along an inner face of said inner cylindrical member; and

an outer cylindrical member, which has a hollow and straight shape, provided around said inner cylindrical member,

said outer cylindrical member has an extension portion that extends beyond said exit tip end of said inner cylindrical member in a direction of the jetting of said fire extinguishing water, an inner face which is parallel with said inner face of said inner cylindrical member and is straight in a direction of the jetting of said fire extinguishing water, and provided with one or more air inlets adjacent the outside of the outer periphery of said inner cylindrical member;

said short reach discharge pipe being adapted to spray the fire extinguishing water;

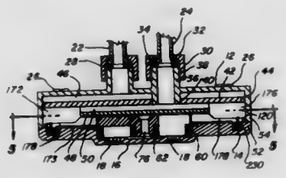
said long reach discharge pipe and said short rech discharge pipe being connected through a selector valve so as to be switchable.

4,801,091

PULSATING HOT AND COLD SHOWER HEAD

Arne P. Sandvik, 2275 Ramsgate Ter., Colorado Springs, Colo. 80919

Filed Mar. 31, 1988, Ser. No. 176,164
Int. Cl.[4] B05B 3/04, 1/08
U.S. Cl. 239—381 23 Claims



1. A liquid dispensing device for simultaneously dispensing a plurality of liquids in separate pulsed streams, the device comprising:

(a) a body means, said body means having liquid inlet and outlet means and a rotor recess arranged within said body means;

(b) said liquid inlet means including separate inlet conduit means for each liquid to be dispensed, said conduit means being arranged to include connector means whereby said conduit means can be connected to a suitable pressurized source of said liquid;

(c) distribution means arranged within said body means, said distribution means having a separate distribution chamber means and nozzle channel means for each liquid to be dispensed, each chamber means being connected to one of said inlet conduit means, each channel means having at least one nozzle means properly positioned and arranged next to said rotor recess;

(d) a rotor means arranged to freely rotate within the rotor recess formed within said body means, said rotor being divided into a plurality of tiers extending along the axis of rotation of said rotor means, at least one separate tier being provided for each liquid to be dispensed, one end of said rotor means coinciding with one end of said axis of rotation having a flat surface of rotation and each tier having one or more open angular segments which extend from the perimeter of the rotor tier to an opening in the flat surface of said rotor means, all of the surface openings on said rotor means being positioned to have at least a portion of the opening at the same radius from the axis of rotation of said rotor means; and

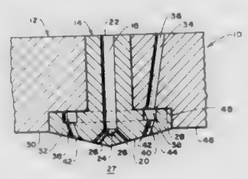
(e) said liquid outlet means having at least one opening in the surface of the body means which connects with the rotor recess and the flat surface of said rotor means, said opening means being positioned to correspond to the position of the rotor openings in the flat surface whereby the respective liquid will be dispensed from the rotor and through the outlet means when the segment opening corresponding to the rotor tier is aligned with said outlet means.

4,801,092

INJECTOR ASSEMBLY FOR A FLUID FUELED ENGINE

William T. Webber, Agoura, and Robert M. Saxelby, Santa Susana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 832,200, Feb. 24, 1986, abandoned.
This application Aug. 31, 1987, Ser. No. 93,068
Int. Cl.[4] B05B 7/06
U.S. Cl. 239—418 9 Claims



9. In a fluid fueled rocket engine including an injector assembly for injecting first and second liquid propellants into a combustion chamber, the improvement to the injector assembly comprising:

a substantially solid one-piece plate member having an upstream face in fluid communication with a source of said first propellant and a downstream face adjacent a combustion chamber,

said plate member having an open extending therethrough from the upstream face to said downstream face,

said plate member further including a narrow fluid passageway having a first end in fluid communication with a source of said second propellant and a second end in fluid communication with said opening; and

a substantially solid injector element located in said opening in said plate member having an outer periphery in sealing engagement therewith,

said injector element including a first propellant injection passageway having an upstream end in fluid communication with the source of said first propellant and at least one downstream end in fluid communication with said combustion chamber,

said injector element further including a plurality of second propellant injection passageways having diameters in a range between 0.004 and 0.200 inches, each having an upstream end in fluid communication with the second end of said fluid passageway in said plate member and a downstream end in fluid communication with said combustion chamber;

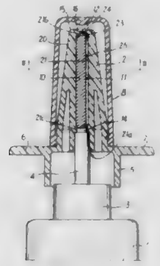
said first and second propellant injection passageways being angularly disposed to provide for impingement of said propellants upon one another at predetermined points in said combustion chamber.

4,801,093

PUSH-NIPPLE FOR MEDICAL SPRAYER

Michel Brunet, Colombe la Commanderie, and Firmin Garcia, Evreux, both of France, assignors to Etablissements Valois, France

Filed Jun. 25, 1984, Ser. No. 623,867
Claims priority, application France, Jun. 24, 1983, 83 10450
Int. Cl.[4] B05B 1/34
U.S. Cl. 239—490 3 Claims



1. An elongate push-element, for spraying a liquid, in combination with a container (1) for holding a liquid, said container having a valve stem (4), said push-element fitting over said valve stem (4), said push-element comprising:

a one-piece molded elongate external member (20) having a central channel (21) extending vertically axially within said external member, said central channel having one end (21*a*) which is open, said external member further including a wall (21*b*) integrally formed as a part of said external member and inseparable from said external member, wherein said wall substantially closes a second, opposite end of said central channel, said wall having an opening (12) extending therethrough to form an inner periphery of the wall which surrounds said opening, said opening having a diameter smaller than that of said central channel and through which liquid is expelled, said wall further having at least one groove (23) formed therein, said at least one groove extending non-radially outwardly from the opening, wherein a swirling motion is imported to the liquid as it is expelled; and

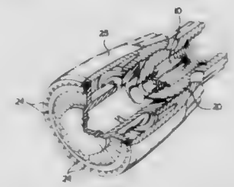
an internal member (10) comprising a rod having a cross-section of smaller area than said central channel and larger area than said opening and having an end section (26) substantially perpendicular to a longitudinal axis of said rod, said internal member being separate from said external member, said container (1) and said valve stem (4) and inserted into said central channel through said one end, wherein at least a passage (25) is formed.

4,801,094

FLOW RESTRICTOR

Teodoro J. Gonzalez, Canyon Country, Calif., assignor to Price Pfister, Inc., Pacoima, Calif.

Filed Jan. 21, 1987, Ser. No. 5,913
Int. Cl.[4] B05B 1/18
U.S. Cl. 239—553.3 4 Claims



1. In a shower head assembly including a swivel ball member having a bore for receipt of water therethrough and an attachment means for coupling said swivel ball to a water source, and other housing disposed about said swivel ball, said outer housing including a plurality of flow channels in fluid communication with said bore of said swivel ball, said flow channels for outputting a plurality of streams of water, said improvements comprising:

a flow restricter disposed within said coupled to said swivel ball, said flow restrictor having flow limiting means and contaminant restricting means;

said flow limiting means for limiting the flow of water through said flow restricter to a desired level, said flow limiting means comprising a hollow member having a channel formed there through said channel of such a size as to limit the flow of fluid there through to said desired level;

said contaminant restricting means comprising a conical member of decreasing diameter away from said flow limiting means having a plurality of slots formed therein, said slots being in fluid communication with said water source and said channel and adapted to prevent the passage of contaminant particles in said water source to said flow limiting means, said contaminant restricting means forming a reservoir with said bore of said swivel ball for collection of contaminant particles.

4,801,095

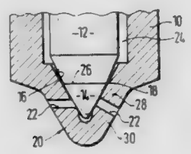
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Werner Banzhaf, Sindelfingen; Ewald Ehles; Heinrich Faber, both of Stuttgart; Rolf J. Giersch, Eberdingen-Hochdorf; Karl Hofmann, Remseck; Dieter Liedtke, Ludwigsburg, and Helmut Norberg, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE86/00159, § 371 Date Dec. 15, 1986, § 102(e) Date Dec. 15, 1986, PCT Pub. No. WO87/00889, PCT Pub. Date Feb. 12, 1987
PCT Filed Apr. 11, 1986, Ser. No. 35,584
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1985, 3528792; Oct. 12, 1985, 3536452
Int. Cl.[4] B21K 1/20
U.S. Cl. 239—533.3 6 Claims

1. In a fuel injection nozzle for internal combustion engines, comprising a nozzle element, and a valve needle displaceably supported in said nozzle element and having a conical sealing surface, said nozzle element including a front cusp having an inner wall having an area which forms a conical valve seat face with which said sealing surface of said needle cooperates, said front cusp being provided with at least one injection hole and at least one outer wall area which has a lower hardness than that of said inner wall face which forms said valve seat, the improvement comprising said area of said inner wall face which forms said valve seat face being edge layer hardened to

provide a greater hardness thereof, said front cusp having a center wall area (**28** or **28***a*) which is disposed between the valve seat face (**16** or **16***a*) and an outer wall area (**30** or **44**) of



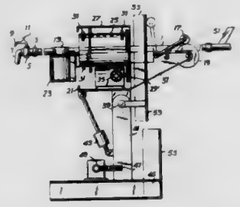
said nozzle element, which opposite to said valve seat face, said center wall area having a lower hardness than that of the outer wall area (**30** or **40**, **44**).

4,801,096

AUTOMATIC GUNNING APPARATUS WITH DETACHABLY MOUNTED GUNNING PIPE

Yukio Kumagai, Zama, Japan, assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 1, 1987, Ser. No. 32,812
Int. Cl.⁴ B05B *3/18*
U.S. Cl. 239—752 **19 Claims**



1. An automatic gunning apparatus for repairing the refractory lining of a furnace, comprising in combination:

means for supplying refractory material to effect the repair;

a moveably and detachably mounted gunning pipe having a circular cross sectional area for conveying the refractory material from the refractory material supply means to the interior of the furnace, the gunning pipe being connected at a proximal end thereof to the refractory material supply means, and having a gunning nozzle attached to the distal end thereof;

a pair of pinch rollers arranged about the gunning pipe near its proximal end, such that the longitudinal central axes of the pinch rollers are perpendicular to the longitudinal central axis of the gunning pipe, with the pinch rollers cooperating with the gunning pipe is such manner as to alternatively enable the gunning pipe to be held in position near its proximal end and to be secureably slideable between the pinch rollers in a direction along the longitudinal central axis of the gunning pipe, in response to a force applied to the gunning pipe;

a rotatable drum through which a central section of the gunning pipe passes and which encloses the gunning pipe, with the rotatable drum and gunning pipe having a common longitudinal central axis;

means for attaching the pinch rollers to the rotatable drum such that the pinch rollers, drum and gunning pile held by the pinch rollers and drum are simultaneously jointly co-rotatable;

means for rotating the drum about its longitudinal central axis;

a pair of receiving rollers arranged about the gunning pipe near its distal end, such that the longitudinal central axes of the receiving rollers are perpendicular to the longitudinal central axis of the gunning pipe, with the receiving rollers cooperating with the gunning pipe in such manner as to alternatively enable the running pipe to be held in position near its distal end and to be secureably slideable between the receiving rollers in a direction along the longitudinal central axis of the gunning pipe in response to a force applied to the gunning pipe;

a platform supporting the rotatable drum and drum rotating means;

means for attaching the receiving rollers to the platform;

a vertical column pivotally bearing the platform at an upper end of the column;

means for tilting the platform upward and downward about a pivoting pin connecting the platform to the column, to a position determined by an angle measured between the vertical longitudinal central axis of the column and the plane of the platform, such that the direction of the common longitudinal central axis of the rotatable drum and gunning pipe remains rotationally unchanged about the vertical longitudinal central axis of the column;

a horizontal base supporting the column; and

means for rotating the column on the base;

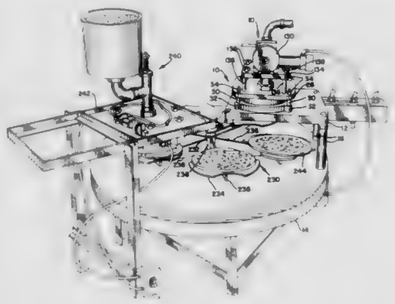
the gunning pipe being detachable from the apparatus by the provision that at least one of the pinch and receiving rollers includes a spring release mechanism enabling it to be retracted away from its normal operating position in proximity with the gunning pipe at selected times; and by the provision that a portion of the circumferene of the rotatable drum be removable at selected times from its normal operating position enclosing a central section of the gunning pipe; thereby alternatively enabling the gunning pipe to be emplaced or removed through the gap in the rotatable drum formed by removal of the circumferential portion thereof and the space afforded by retraction of at least one of the pinch and receiving rollers.

4,801,097

FOOD PRODUCT INGREDIENT DISPENSING APPARATUS

Clifford E. Fitch, Jr., R.R. #2-Box 74 C, Beecher, Ill. 60401

Filed Dec. 4, 1987, Ser. No. 128,737
Int. Cl.⁴ B02C *25/00*
U.S. Cl. 241—34 **29 Claims**



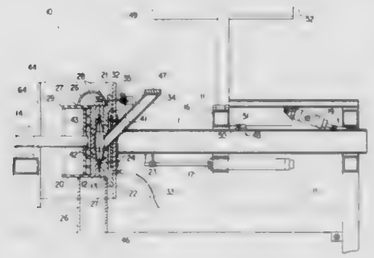
1. A food material dispensing apparatus, comprising: a supporting base portion having an opening therethrough; a main cylinder having a chamber in communication with the opening in the supporting base portion; a reciprocatable piston in the chamber of said main cylinder; an intermediate cylinder having a chamber for receiving a food material from a source thereof; a reciprocatable piston in the chamber of said intermediate cylinder; conduit means, including rotatable valve means, in communication with the chamber of the intermediate cylinder and the chamber of the main cylinder for alternately conveying a food material from said source to the chamber of the intermediate cylinder and from the chamber of the intermediate cylinder to the chamber of the main cylinder; a source of air under pressure for actuating the reciprocatable piston in the chamber of the main cylinder and the reciprocatable piston in the chamber of the intermediate cylinder; and reciprocatable severing means positioned between the main cylinder and the opening in the supporting base for cutting the food material into predetermined sized pieces as the food material in the chamber of the main cylinder is moved into engagement therewith by the reciprocatable piston therein.

4,801,098

PULVERIZING APPARATUS

Graeme E. Cook, 851 Lytton Road, Queensport, Queensland 4152, Australia

PCT No. PCT/AU86/00344, § 371 Date Jul. 6, 1987, § 102(e) Date Jul. 6, 1987, PCT Pub. No. WO87/02912, PCT Pub. Date May 21, 1987
PCT Filed Nov. 7, 1986, Ser. No. 95,540
Claims priority, application Australia, Nov. 7, 1985, PH3292
Int. Cl.⁴ B02C *7/06*
U.S. Cl. 241—37 **32 Claims**



1. A mill assembly for reducing crude or semiprocessed mineral sample particles to a representative mineral sample of desired particulate size, said mill assembly being a rotary pulverizing mill comprising:

a pair of opposed disc-like recessed anvils which are relatively rotatably about a mill axis and arranged in a face to face abutting relationship, recesses in said anvils cooperation to define a mill chamber having a peripheral discharge opening about said mill chamber and extending between adjacent peripheral edges of said anvils and through which reduced desired size particles may be discharged;

one of said anvil being rotatable about said mill axis and having a cylindrical peripheral edge portion co-axial with said axis and the other said anvil being fixed against rotation and being provided with a sample inlet through which a sample may be introduced to said mill chamber;

mill release means for axially separating said anvils sufficiently to permit visual inspection of said recesses for particles remaining in said mill chamber;

an enclosure assembly about said peripheral discharge opening for confining reduced sample discharged from the pulverizing mill;

an outlet from said enclosure assembly for discharge of the sample in said collection means;

said enclosure assembly including a first wall assembly mounted on and extending outwardly from the peripheral edge of said other anvil and a complementary wall assembly which engages with said first wall assembly to form said enclosure assembly, said complementary wall assembly having a mounting aperture which fits closely about said cylindrical peripheral edge portion, said wall assemblies being mounted for relative axial movement with respect to one another and said mill assembly; and

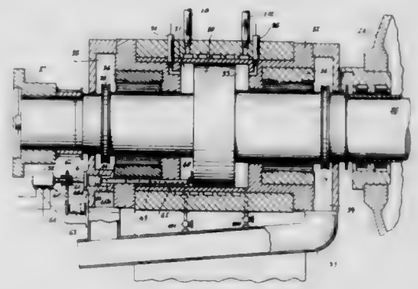
biasing means for moving said wall assemblies into abutting relationship during actuation of said mill assembly.

4,801,099

COMBINED HYDROSTATIC/HYDRODYNAMIC BEARING SYSTEM FOR GRINDING APPARATUS

Rolf B. Reinhall, 834 171st Pl., N.E., Bellevue, Wash. 98008

Filed Sep. 5, 1984, Ser. No. 647,412
Int. Cl.⁴ B02C *7/14*
U.S. Cl. 241—101.2 **17 Claims**



1. In a pulp refining apparatus in which the pulp material is ground in a grinding space defined between at least one pair of relatively rotating grinding members and in which at least one of said grinding members is carried by an axially displaceable rotatable shaft, a bearing system comprising combined hydrostatic/hydrodynamic

(a) at least one rotatable piston defined between two opposed pistons ends mounted on said rotatable shaft to rotate therewith

(b) at least one cylindrical housing defining at least one pressure chamber circumferentially surrounding said at least one cylindrical piston permitting the same to move axially in said pressure chamber;

(c) means for applying a hydrostatic stabilizing force on said shaft in an axial direction by supplying a fluid pressure medium to at least one of said piston ends to continuously counteract fluctuating axial thrust forces exerted on said shaft during the grinding operation to thereby maintain a predetermined clearance range of said grinding space with consequent generation of fluctuating pressure differentials between said opposed piston ends; and

(d) means for generating a hydrodynamic stabilizing force on said rotating shaft in a radial direction comprising passage means allowing said pressure medium to flow under pressure between said opposed piston ends in said at least one pressure chamber by the effect of said pressure differentials and the effect of the centrifugal force imparted to said fluid pressure medium by the rotation of said at least one cylindrical piston within said at least one pressure chamber.

4,801,100

SYSTEM FOR DISCHARGING BALL MILLS

John J. Orlando, Rivervale, N.J., assignor to Inco Alloys International, Inc., Huntington, W. Va.

Filed Mar. 15, 1985, Ser. No. 712,703
The portion of the term of this patent subsequent to Aug. 5, 2003, has been disclaimed.
Int. Cl.⁴ B02C *17/10*
U.S. Cl. 241—171 **8 Claims**

1. A batch-type grinding mill operable under seal from the atmosphere and provided with a discharge system for discharging material by outward flow from the mill, the discharge

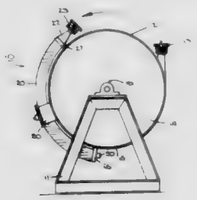
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system permitting substantially complete emptying of the mill while maintaining the grinding mill and discharge system under seal from the atmosphere, and the discharge system comprising:

(A) a rotatably mounted shell having an inner environment and an outer side wall, said outer side wall having a circumference, means to rotate the shell, a plurality of grinding media within the shell, and at least one discharge orifice in the outer side wall of the shell for outward flow of material from the shell;

(B) blocking means securable across the discharge orifice for preventing passage of the grinding media outwardly therethrough, said blocking means comprising a grate

(C) at least one collection chute secured on the outer side wall of the shell over the discharge orifice and extending adjacently and substantially parallel to the circumference of the outer side wall, said collection chute having at least one entry port and one unloading end, the at least entry



port being aligned with the discharge orifice and providing an atmospherically sealed access to the collection chute for material from the discharge orifice, the unloading end being provided with an exit opening and sealing sealing means for sealing the exit opening, and said unloading end having adapter means for receiving a receptable for discharge and removal of discharge material from the collection chute under sealed conditions; and

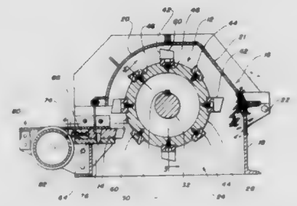
(D) a discharge orifice seal assembly for the discharge orifice, said discharge orifice seal assembly forming a part of the collection chute and comprising a removable closure means for sealing the discharge orifice against the outward flow of material from the shell into the collection chute, and means to open and close the closure means without disturbing the environment in the mill, said closure means having open and shut positions, and said closure means in the open position permitting substantially unencumbered outward flow of material from the shell.

4,801,101
WALLBOARD CUTTER

Fredrick B. Dreyer, St. Louis, Mo., and Daniel T. Maloney, Cahokia, Ill., assignors to Gruendler Crusher and Pulverizer, Co., St. Louis, Mo.

Filed Aug. 5, 1987, Ser. No. 83,268
Int. Cl.[4] B02C *18/16*
U.S. Cl. 241—240 10 Claims

1. A shredder comprising a housing with a feed opening, a rotor disposed within the housing, a transversely extending shaft rotatably mounted on the housing, a drum with means mounting the drum on the shaft for rotation therewith, said drum having primary and secondary cutters mounted in rows about the periphery thereof longitudinal to the shaft and a stationary cutter mounted on a support block fixed to the housing at an elevation such that the stationary cutter is in a plane passing below the centerline of the shaft, said primary and stationary cutters comprising opposing combs, each of which has squared off projections which are distributed and dimensioned to pass in close tolerance through a correspondingly squared off recess between the squared projections of the opposite comb, the projections of the primary cutter being

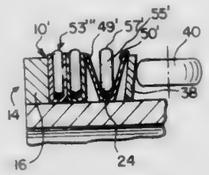


longer than the recessed area between the squared off projections of the stationary cutter is deep such that the rear edge of the recessed area between said projections of the primary cutter does not form a cutting surface with the projections of the stationary cutter, said secondary cutter comprising a squared off bar dimensioned to pass in close tolerance to the squared off projections on the stationary cutter whereby said primary and secondary cutters make individual "punch and die" cuts.

4,801,102
METHOD OF MANUFACTURING COATED ROLLS

Charles R. Bradlee, Sidney, Ohio, assignor to Monarch Machine Tool Co., New Bremen, Ohio

Filed Oct. 22, 1987, Ser. No. 112,177
Int. Cl.[4] B21F *3/00*
U.S. Cl. 242—7.02 20 Claims



1. A method of manufacturing a coated roll comprising the steps of:

(a) selecting a roll body having a rigid, cylindrical outer surface;

(b) attaching a leading end of a line to said outer surface;

(c) selecting a first elongate strip of material, forming said first strip into a V-shape, and placing said line along a crotch of said V-shape of said first strip;

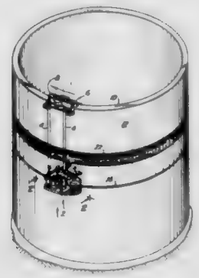
(d) inserting a second strip of material within said V-shape such that said line lies between said crotch and said second strip;

(e) simultaneously winding said line and said first and second strip onto said outer surface such that side portions of said first strip extend in substantially a radial direction, and urging said line and said first strip sidewardly in an axial direction relative to said roll body, thereby compressing said first strip into said V-shape sufficiently to retain said second strip securely between said side portions.

4,801,103
APPARATUS FOR PRESTRESSING CONCRETE STRUCTURES OR THE LIKE

Bill R. Bush, West Babylon; Andrew Tripp, Jr., Woodbury, and Tadeusz J. Marchaj, Port Washington, all of N.Y., assignors to Preload Concrete Structures, Inc., Garden City, N.Y.

Continuation-in-part of Ser. No. 626,101, Jun. 29, 1984, Pat. No. 4,659,033, which is a continuation-in-part of Ser. No. 504,280, Jun. 14, 1983, abandoned. This application Feb. 5, 1987, Ser. No. 11,220
The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.
Int. Cl.[4] B65H *59/38, 81/02*
U.S. Cl. 242—7.21 18 Claims



1. A device for prestressing structures by wrapping tensioned wire around the periphery of the same, which comprises:

a carriage which travels about the periphery of the structure;

means for paying off wire from a wire supply, the wire supply payoff means being mounted to the carriage;

means for tensioning the wire supplied from the wire supply, the wire tensioning means including at least one pair of rotatable stress wheels each of which the wire at least partially encircles;

means for measuring the tension in the wire which produces an electrical output;

means for controlling the tension in the wire; and

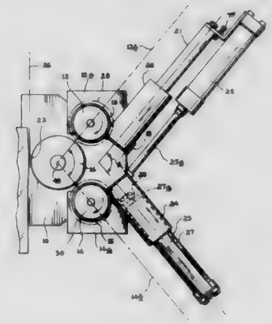
driving means to propel the carriage about the periphery of the structure, the driving means being mounted to the carriage and including a drive sprocket which is rotatably driven by the driving means and has a diameter which is greater than those of the stress wheels, the drive sprocket engaging a chain encircling the concrete structure to allow movement of the carriage about the periphery of the structure,

wherein the wire tension control means includes a pneumatically actuated slip clutch having input shaft which is linked to one of the stress wheels and an output shaft which is linked to the drive sprocket of the driving means, the slip clutch being adjusted to slip when torque transferred from the tension in the wire is applied thereto and exceeds a predetermined torque value and means for increasing the rotational speed of the input shaft of the slip clutch proportionally to the rotational speed of the stress wheels, the speed increasing means being interposed between and connected to one of the stress wheels and the input shaft of the slip clutch wherein the input and output shafts of the slip clutch rotate at an increased speed, and wherein the wire tension control means includes a means to automatically regulate air pressure to the slip clutch such that the tension in the wire can be rapidly regulated.

4,801,104
LINEAR TRAVEL WINDUP

Rufus E. Buck, Grimesland, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 5, 1987, Ser. No. 104,109
Int. Cl.[4] B65H *54/20, 54/52*
U.S. Cl. 242—35.5 R 2 Claims



1. A yarn winding apparatus comprising:

a frame;

an elongated driven roll, said roll being cantilevered at one end to said frame along its major axis;

at least one pair of rotatable chucks, each chuck carrying a package support for engaging said driven roll as to be driven thereby;

a plurality of angularly displaced bearing posts mounted to said frame adjacent said one end of said driven roll;

a plurality of linear bearings mounted on said bearing posts for movement in angularly displaced planes, each said chuck being mounted to at least one of said bearings;

a hydraulic system comprising hydraulic cylinders having operating shafts at one end and a pressurized source of fluid connected to their other ends for driving said shafts, the shaft of one cylinder being connected to at least one bearing of one chuck while said one cylinder is fixed to said frame, the shaft of the other cylinder being connected to said frame, while said other cylinder is fixed to at least one bearing of the other chuck to move said chucks simultaneously toward and away from engagement with said driven roll in separate angularly displaced planes that intersect each other at the central axis of the drive roll;

means for traversing said yarn as it advances around the driven roll to the driven supports to form packages; and hydraulic circuit means connected between said hydraulic cylinders for replicating motion of one of said pair of chucks in the other of said pair of chucks during winding of said packages.

4,801,105
SHOULDER HARNESS REEL ASSEMBLY WITH AUTOMATIC REEL LOCK

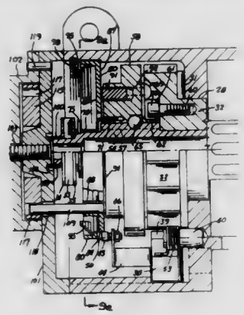
Don L. Frisk, Yorba Linda, Calif., assignor to PZF, Inc., Yorba Linda, Calif.

Filed Oct. 1, 1987, Ser. No. 103,414
Int. Cl.[4] B60R *22/38*
U.S. Cl. 242—107.4 B 27 Claims

1. An improved reel assembly of the type used for retracting and locking a shoulder harness, said assembly including a housing which rotatably supports a strap supporting spool affixed to a ratchet wheel which is rotatable about its axis of rotation and a releasable dog for stopping the turning of the reel when a strap is rapidly pulled from the reel wherein the improvement comprises:

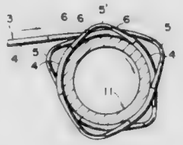
VOL 1098 ISS 5 JA 31 1989 UMI

a generally cylindrical inertia mass wheel support shaft affixed to said ratchet wheel so that its central axis lies along the axis of rotation of the ratchet wheel;
an inertia mass wheel affixed on said support shaft by thread means so that the turning of the support shaft with respect to the inertia mass wheel causes the axial movement of the inertia mass wheel with respect to the support shaft;
disk shaped sear means supported at the outer edge thereof



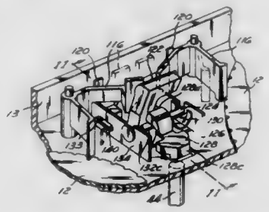
within said housing, said sear means being movable in the direction of the axis of rotation of said inertia mass between a first position, wherein it holds said releasable dog away from said ratchet wheel, and a second position wherein it releases said dog and allows it to contact the ratchet wheel, said sear means being movable between its first and second position by the axial movement of the inertia mass wheel from a first position to a second position.

4,801,106
COIL OF TAPERED WIRE
Heijiro Kawakami; Yasunobu Kawaguchi; Kozo Katsube; Masaru Murakoshi, and Susumu Takada, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Jul. 16, 1987, Ser. No. 74,030
Claims priority, application Japan, Nov. 4, 1986, 61-262490
Int. Cl.[4] B65H *55/00*
U.S. Cl. 242—159 **2 Claims**



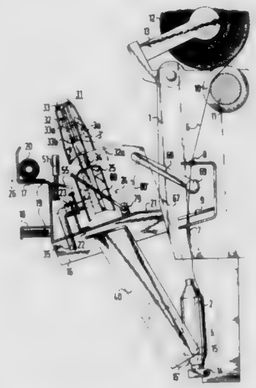
1. A coil of tapered wire, comprising:
a plurality of concentric loops of tapered wire having a successive arrangement of tapered wire segments each consisting of a bent thick section having a radius of curvature, first and second bent thin sections having a radius of curvature and first and second tapered sections interconnecting the thin sections to opposite ends of the thick sections, respectively, wherein the radius of curvature of the bent thick sections in a unrestrained state is smaller than the radius of curvature of the bent thin sections of an unrestrained state.

4,801,107
CASSETTE LOCKING SYSTEM
Dale A. Dixon, Torrance, and Forrest Hannan, Azusa, both of Calif., assignors to Sotar, Inc., Torrance, Calif.
Filed Oct. 22, 1986, Ser. No. 922,027
Int. Cl.[4] G11B *15/32, 23/04*
U.S. Cl. 242—198 **16 Claims**



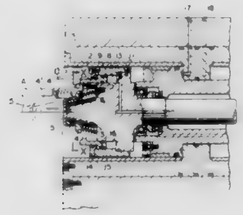
1. A method of controlling the playing cassette tape recordings comprising the steps of:
providing a lock in a cassette that, in its normally locked position, prevents the cassette from being played;
unlocking said lock when the cassette is to be rented, so that the cassette when placed in a cassette player can be repeatedly replayed while it remains in the player; and
readying the lock to be reset when it is unlocked so that when the cassette is inserted into a cassette player and then removed from the player, the lock automatically resets to prevent the cassette from being played.

4,801,108
BOBBIN WINDING MACHINE
Hans Grecksch, Monchengladbach; Leo Tholen, Heinsberg, and Edmund Wey, Nettetal, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Fed. Rep. of Germany
Filed Dec. 23, 1987, Ser. No. 137,481
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1986, 3644432
Int. Cl.[4] B65H *54/02, 67/06*
U.S. Cl. 242—35.5 A **7 Claims**



1. In a bobbin winding machine having a plurality of yarn winding stations each including a cop delivery position wherein an active yarn cop may be disposed for yarn unwinding therefrom and a cop reserve position wherein a reserve yarn cop may be disposed awaiting replacement of the active cop in the delivery position, conveyor means extending along the machine for transporting cops to the reserve positions, and receptacle means at each reserve position movable between a disposition for receiving a reserve cop from the conveyor means and another disposition for discharging the reserve cop for transportation to the delivery position, the improvement comprising yarn suction means at each winding station affixed to and movable with the receptacle means for disposition adjacent a nose portion of a reserve cop received thereby for locating and retaining a leading yarn end of the reserve cop.

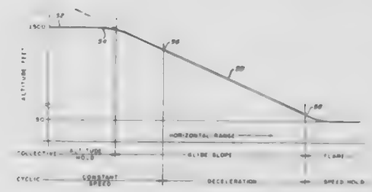
4,801,109
ROLL CORE HOLDING DEVICE
Tetsuo Hatakeyama, Tama; Yoshinori Uera, Matsudo, and Nobuaki Nagao, Kawasaki, all of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan
Division of Ser. No. 899,995, Aug. 22, 1986, Pat. No. 4,715,553.
This application Oct. 8, 1987, Ser. No. 106,033
Claims priority, application Japan, Sep. 2, 1985, 60-134164
Int. Cl.[4] B65H *75/24*
U.S. Cl. 242—72.1 **2 Claims**



1. A roll core holding device for each end of a roll core comprising,
a shifting means;
a center member capable of shifting owing to the shifting motion of the shifting means and comprising a base section and a shaft section protruding from the base section;
a plurality of pawls capable of shifting along the shaft section of the center member, arranged so as to widen the space between the adjacent pawls as the pawls are shifted toward the base section;
means for urging the pawls toward the top of the shaft section;
means for pressing the pawls toward the roll core as said center member is shifted;
means for actuating the pawl pressing means;
a stopper secured at the top of the shaft section of the center member; and
wherein the shaft section of the center member is a conical shape tapered to its top.

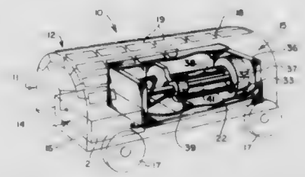
4,801,110
APPROACH TO HOVER CONTROL SYSTEM FOR HELICOPTERS
Edmund R. Skutecki, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 21, 1987, Ser. No. 135,907
Int. Cl.[4] B64C *13/16*
U.S. Cl. 244—17.13 **9 Claims**

1. Apparatus for generating flight path control signals for an aircraft having a pitch attitude control system including rotor cyclic pitch command means for controlling the pitch attitude and rotor collective pitch command means for controlling the vertical lift thereof,
means for providing a first signal representative of a vertical velocity of said aircraft with respect to a predetermined longitudinal flight path,
means for providing a second signal representative of a velocity error corresponding to a difference in actual flight path from said predetermined flight path,
means for combining said first and second signals to form a difference thereof, and
function means proportional to an angular measure of said



predetermined flight path, said angular measure relating vertical velocity to longitudinal velocity, said function means responsive to said difference signal, whereby to derive a longitudinal velocity signal corresponding to the vertical velocity of said aircraft with respect to said actual flight path.

4,801,111
SYSTEM FOR PROPULSION AND POSITIONING OF A TRANSITORY OBJECT
Charles E. Rogers, and Fred Van Arsdell, both of Akron, Ohio, assignors to Rebecca H. Cook, Akron, Ohio
Filed Dec. 24, 1985, Ser. No. 813,005
Int. Cl.[4] B64D *27/02*
U.S. Cl. 244—62 **1 Claim**



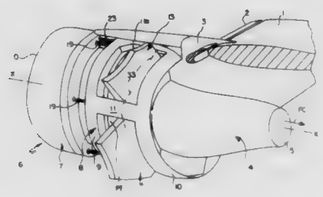
1. In a system (**10**) for propulsion of a transitory object (**11**), said system having a force transmission means surface (**37**) on said object, an electromagnetic coil (**35**) positioned so that the magnetomotive force thereof will be exerted substantially perpendicular to said force transmission means surface, an impact piston means (**39**) responsive to said magnetomotive force being movable toward and away from said force transmission means surface, and a stop means (**44**) arranged substantially perpendicular to the direction of movement of said impact piston means, the improvements wherein:
said electromagnetic coil is positioned apart from and out of contact with said force transmission means surface;
said piston means when moved toward said force transmission means surface being movable coaxially within and out of contact with said electromagnetic coil; and,
said stop means positions said piston means within the range of said magnetomotive force when said piston means is away from said force transmission means surface;
the velocity of movement of said piston means relative to said force transmission means surface and according to $E=\frac{1}{2}MV^2$ having an increasing acceleration in the direction toward said force transmission means surface and a relatively low rate of movement in the direction away from said force transmission means surface, the magnitude of energy transferred to said transitory object being exponentially related to the velocity of said piston means immediately prior to and at the moment of contact thereof with said force transmission means surface.

4,801,112

AIRCRAFT POWER UNIT OF THE TYPE WITH FAIRED BLOWER EQUIPPED WITH A THRUST REVERSER WTH DOORS

Alain Fouruler, Clamart, France, and John F. Kennedy, Walmer, United Kingdom, assignors to Societe de Constraction des Avions Hurel-Dubois, France

Filed Feb. 17, 1988, Ser. No. 157,366
Claims priority, application France, Feb. 19, 1987, 87 02121
Int. Cl.[4] F02K *3/06*; B64C *15/00*
U.S. Cl. 244—110 B **8 Claims**



1. Aircraft propulsive power unit of the type comprising, on the one hand, a fixed central structure along the axis of which is housed a gas generator whose nozzle delivers a hot jet and, on the other hand, an upstream fan or blower concentric with the gas generator and rotating inside an annular channel defined by the fixed structure and by a peripheral cowling or fairing with double wall carried by the fixed structure, said blower providing the forced circulation of a cold flow in the channel for improving the performance of the power unit, the fairing being formed of two parts, the upstream one of which is fixed and surrounds the blower, whereas the downstream one is mobile and slides parallel to the longitudinal axis of the generator, said propulsive power unit further comprising a system for reversing the thrust of the cold flow which is formed of pivoting doors having respectively external and internal walls which, in the retracted position of the doors, are aligned respectively with the external and internal walls of the fairing, characterized in that said doors are housed in openings of the sliding part of the fairing, defined by annular parts joined together by beams, said doors pivoting about pivots housed in said beams and each door being coupled by at least one link to the fixed central structure so that the backward movement of the sliding part of the fairing causes rotation of the doors, which uncovers the openings and closes the annular channel, the doors projecting radially outwardly of the fairing.

4,801,113

APPARATUS AND METHOD FOR ELECTRICAL HEATING OF AIRCRAFT SKIN FOR BACKGROUND MATCHING

Michel Engelhardt, Brooklyn, N.Y., assignor to Grumman Aerospace Corporation, New York, N.Y.

Filed Sep. 24, 1987, Ser. No. 100,775
Int. Cl.[4] B64D *45/00*
U.S. Cl. 244—121 **41 Claims**

12. A system for matching the radiance of the upper skin of an aircraft to the background radiance emanating from below the aircraft, said system comprising:

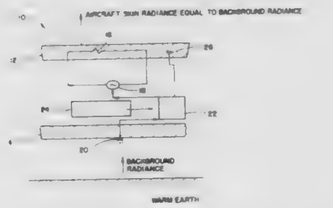
means for determining the radiance of said aircraft skin while in flight;

means for determining the background radiance emanating from below said aircraft while in flight;

means for comparing the background radiance with the aircraft skin radiance and producing an output signal representative of a negative contrast signature, said negative contrast signature being present when the aircraft radiance is less than said background radiance;

means for electrically heating the aircraft skin to increase the radiance thereof;

means for determining the magnitude of the electrical power required to heat the aircraft skin sufficient to increase the aircraft radiance to match the background radiance, and



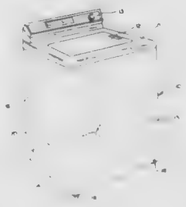
means for providing said required magnitude of electrical power to said heating means thereby resulting in a substantially zero contrast signature.

4,801,114

RETRACTABLE SELF-LEVELING LEG ASSEMBLY

Daniel R. Price, Big Lake, Minn., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 9, 1988, Ser. No. 204,679
Int. Cl.[4] F16M *11/24*
U.S. Cl. 248—188.3 **11 Claims**



1. A self-leveling leg assembly for a household appliance having a base with adjacent corners along one side, a first bracket secured to said base at one corner, a second bracket secured to said base at the other corner, each of said brackets having at least one vertically extending wall, the wall of said first bracket defining a straight diagonal slot sloping upwardly and outwardly from said second bracket, the wall of said second bracket defining a slot having a first straight diagonal portion sloping upwardly and outwardly from said first bracket and a second straight horizontal portion extending from the top of said first portion toward said first bracket, a first leg carried by said first bracket and having a pin engaging the adjacent slot, a second leg carried by said second bracket and having a pin engaging the adjacent slot, and a connecting bar rigidly secured at its opposite ends to said first and second legs.

4,801,115

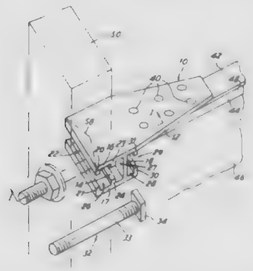
MOUNTING FOR OFFSET SIGN

Robert A. H. Heard, Bristol, England, assignor to Signfix Limited, Bristol, England

Filed Jul. 11, 1986, Ser. No. 884,508
Claims priority, application United Kingdom, Jul. 19, 1985, 8518251
Int. Cl.[4] G09F *17/00*
U.S. Cl. 248—219.3 **10 Claims**

1. A multifunctional bracket for an offset sign, in which the bracket can be used in different functional modes for mounting

the sign to a supporting post, the bracket comprising first and second channels each comprising a pair of opposite walls joined by a third wall, said third wall of each channel being provided by a common web separating the channels, said first channel having a mouth restricted by inturned lips, whereby attachment members on a strap passed around a supporting post may be retained in a first functional mounting mode, and a pair of internal mutually opposed ribs on said opposite walls



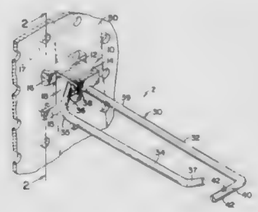
extending lengthwise of the channel and dividing the channel into inner and mouth regions, whereby the head of a bolt mounting the bracket to a supporting post may be retained in the inner region in a second functional mounting mode, said second channel providing a location for a strap passed around a supporting post and the bracket in a third functional mounting mode, the bracket further comprising a plate extending from a wall of said second channel in the direction remote from the first channel for attachment thereto of a sign plate.

4,801,116

MERCHANDISE HANGER ASSEMBLY

David J. Blankenship, Winona, Minn., assignor to Peerless Chain Company, Winona, Minn.

Filed Jul. 30, 1987, Ser. No. 79,808
Int. Cl.[4] E04G *3/00*
U.S. Cl. 248—220.4 **32 Claims**



1. A merchandise hanger assembly base portion for attachment to an upright, apertured merchandise display panel, and for receiving a merchandise display hanger having upper and lower elements interconnected at inner ends by a diagonally extending stabilizing element, and having a crossbar member located on a top side of the upper element and extending transversely thereof, said assembly base portion comprising:

(a) an integrally molded, plastic body, the body including an outwardly extending portion interconnected at an inner end portion to a downwardly extending portion, the outwardly extending portion including a bottom surface and an outer end portion defining a horizontally extending, rearwardly opening recess located below said bottom surface, said outer end portion also defining an outwardly extending, downwardly opening recess located at least partially below the rearwardly extending recess; and

(b) rearwardly and upwardly projecting L-shaped lug means for mounting said base portion on the apertured merchandise display panel;

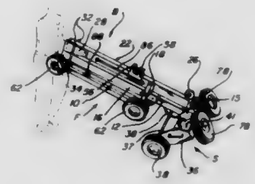
wherein the crossbar member is receivable in said rearwardly opening recess, and the upper element is receivable in the downwardly opening recess, wherein the diagonally extending stabilizing element is engageable with said downwardly extending portion of said body when the crossbar member and the upper element are received in the respective recesses, thereby securing the merchandise hanger against pivotal movement relative to said base portion and yet allowing for repetitive removal and engagement of the hanger to said base portion while said base portion is mounted on the display panel.

4,801,117

PORTABLE SUPPORT BOOM FOR WINDOW WASHER

Rafael C. Take, Aurora, Colo., assignor to Building Access Products, Inc., Aurora, Colo.

Filed Jan. 25, 1988, Ser. No. 147,717
Int. Cl.[4] E04G *3/10*, *5/04*
U.S. Cl. 248—237 **15 Claims**



1. A portable support boom which can be configured in a collapsed position for wheeling by one person to and from a work site and can be reconfigured at the work site into a working position for supporting a load on an extending end thereof, said support boom comprising:

a generally rectangular support frame with opposite ends and sides and having a first pair of transporting wheels journaled on opposite ends of said base for rolling said base with said boom in collapsed position to and from a work site and a second pair of positioning wheels journaled on one side of said base for moving said boom from one work position to another work position at the work side;

a first boom section, having a first end pivotally mounted centrally on said support base and a second end extending over the other side of said support base;

a first lock pin for releasably locking said first boom section in fixed position on said support base when said boom is in said collapsed position;

a second boom section, having a first end pivoted to said second end of said first boom section for folding into juxtaposed relationship with the upper surface of said first boom section when said support boom is in said collapsed position, said second boom section also being pivotable to a working position as an extension of said first boom section, said second boom section having a second end with means for supporting a load;

a second lock pin for releasably locking said second boom section in said juxtaposed position with respect to said first boom section;

a third lock pin for releasably locking said second boom section in said working position with respect to said first boom section;

a support device for supporting said boom adjacent said second end of said second boom section, including an elongated support frame having first and second ends, wheels journaled at each end of said frame for moving said

frame longitudinally in cooperation with said positioning wheels of said support base to move said boom from one work position to another, a pair of support arms having first and second ends, said first end of one of said support arms being pivoted to said first end of said support frame and said first end of the other of said support arms being pivoted to said second end of said support frame, said arms being foldable against said support frame when in said collapsed position, means for holding said second ends of said support arms against each other when said support arms are pivoted upwardly from said support frame to a raised position so that said support arms and said support frame form a triangular configuration; and

means for connecting said second ends of said support arms to said second boom section when said support boom is in said working position.

4,801,118

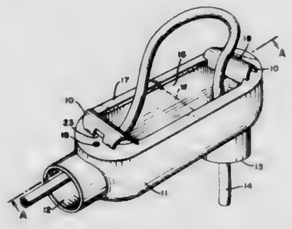
CABLE PROTECTION SYSTEM INCLUDING A CONDUIT BODY AND A CLIP

Eigil Winn, Cheshire, Conn., assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 73,347, Jul. 10, 1987, which is a continuation of Ser. No. 794,927, Nov. 4, 1985, abandoned. This application Jan. 4, 1988, Ser. No. 142,290

Int. Cl.[4] B66D *1/36*

U.S. Cl. 248—300 **10 Claims**



1. A system for protecting a cable from abrasion and facilitating a pulling of the cable through cable openings in a conduit body, the system comprising:

a conduit body including a lip which forms an access opening; and

an elongated tubular clip which forms a longitudinal slot and which forms at least one notch, the slot facing in a first direction generally perpendicular to the longitudinal axis of the tubular clip, the at least one notch facing in a second direction generally parallel with the longitudinal axis, a first portion of the lip being disposed within the longitudinal slot and a second portion of the lip being disposed within the at least one notch.

4,801,119

AWNING SUPPORT FOR RECREATIONAL VEHICLES

Ralph W. Pelletier, 200 E. Southern Ave., #110, Apache Junction, Ariz. 85219

Filed May 23, 1988, Ser. No. 197,309

Int. Cl.[4] E04G *25/00*

U.S. Cl. 248—354.5 **3 Claims**

1. A dual purpose adjustable pole for use as a support for a recreational vehicle awning in extended parked position and while the vehicle is in transit comprising:

a center pole employing a pair of telescopically arranged tubular members,

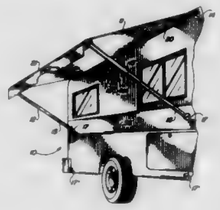
a first means for adjustably positioning and locking said members in a given position,

said first means comprising a collar secured to the outer surface of one of said members at a point along its length and a bolt threadedly attached to said collar and bearing at one end against the other of said members,

said members having a plurality of axially aligned apertures extending through juxtapositioned surfaces thereof,

said first means comprising a pin extending through said aligned apertures in said juxtapositioned surfaces of said members,

one end of said pole being provided with a pin extending axially therefrom,



the other end of said pole being provided with a bolt threadedly mounted at one end therein and extending axially therefrom,

an arcuate aligned cradle threadedly secured to the other end of said bolt, and

a second means for adjustably positioning and locking said bolt in said pole to increase and decrease selectively the length of said pole.

4,801,120

READING APPARATUS

Renand Gregoire, 3374 Lambert Closse Street, Sainte-Foy, Canada G1W 2S4

Filed May 17, 1988, Ser. No. 194,999

Int. Cl.[4] A47B *19/00*

U.S. Cl. 248—441.1 **6 Claims**



1. A reading apparatus comprising a post, an arm having a rear end pivotally connected to an upper portion of said post for substantially horizontal swinging movement about the longitudinal axis of said post, said arm having a front end, a connector pivoted to the front end of said arm for rotation of said connector relative to said arm about a second axis substantially parallel to said longitudinal axis, said connector defining a plate-like element rearwardly upwardly inclined relative to said second axis and having upwardly-converging side edges, and a support for reading material including a support plate having a front face and a back face, a top edge and a bottom edge, a ledge protruding from said botton edge at said front face, a series of superposed cavities formed at said back face, extending between said top and bottom edges, each cavity having upwardly-converging sides for selectively mating with

the converging sides of said plate-like element whereby said plate-like element, when inserted in a selected cavity, will support said support plate at a selected level, and further including retainer means at each cavity engageable with said connector to releasably prevent detachment of said support from said connector.

4,801,121

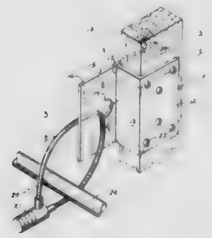
SECURITY BRACKET

Donald C. Zunker, 1663 N. Prospect Ave., Milwaukee, Wis. 53202

Filed Oct. 26, 1987, Ser. No. 112,738

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—551 **5 Claims**



1. A security bracket made of rigid material for the securement of an item such as a bicycle or appliance or the like to a shelter structure having wall studs or the like, said bracket comprising a channel section member having opposed flanges and connected by a web, a plate member secured to the outer side of one of the channel member flanges and projecting beyond the channel member web, said bracket being mountable on a wall stud with the stud being received within the channel section member, and threaded members to secure the channel members onto the wall stud, said threaded members being of a type that can be threaded into the wall stud but cannot be turned oppositely to effect a removal, said projecting portion of the plate member having a hole therein spaced from the edges thereof, said hole being adapted to receive and pass a locking chain or cable that also encircles some portion of the item to secure the latter to the wall stud.

4,801,122

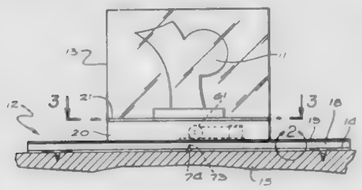
ISOLATOR FOR SEISMIC ACTIVITY

James M. Stahl, 4049 Irving Pl., Culver City, Calif. 90232

Filed Feb. 5, 1988, Ser. No. 152,767

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—636 **10 Claims**



1. In an apparatus for supporting an object on a base for isolating the object from movement of the base, the combination of:

a base plate for attachment to a base;

a frame positioned on said base plate, said base plate and frame having interengaging means providing for omni-directional movement of said frame over said base plate, said frame including support means for mounting an object thereon;

a moving member mounted on said frame;

a spring means mounted at one end on said frame;

first connector means interconnecting the other end of said spring means and said moving member, with said spring means urging said moving member in a first direction to a rest position; and

second connector means interconnecting said base plate and said moving member for moving said moving member in an opposite direction as said base plate moves relative to said frame away from said rest position, with said spring means through said first connector means, moving member and second connector means urging said frame to said reat position.

4,801,123

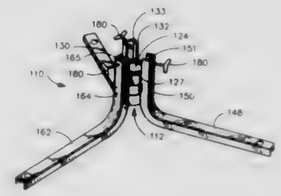
SUPPORT STAND FOR POLE-LIKE OBJECTS

James P. Lynch, 13 S. Field, Lakewood, Colo. 80226

Filed Apr. 16, 1987, Ser. No. 39,097

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—524 **21 Claims**



1. A support stand adapted to receive and support a pole-like object in an upright position on a horizontal support surface, comprising:

a base member having an open interior and an upper opening sized to receive a lower portion of said pole-like object;

a primary leg rigidly attached to said base;

a plurality of mounting sleeves telescopically slideable onto said base member to define an assembled condition;

a plurality of first legs each attached to a respective mounting sleeve such that, when said mounting sleeves are in the assembled condition, said first legs support said base member in an upright position on said support surface with a longitudinal axis of the base member oriented in a vertical direction with said opening oriented parallel to said support surface; and

alignment means for aligning said legs at selected angularly spaced locations about the longitudinal axis of the base member, said alignment means becoming operative as said first legs are slideably mounted on the base member to prevent relative angular movement of each of said first legs with respect to said base member.

4,801,124

DISPOSABLE VALVE

Henry L. Liebel, Cincinnati, Ohio, assignor to Shippers Paper Products Company, Loveland, Ohio

Filed Jan. 25, 1988, Ser. No. 148,008

Int. Cl.[4] F16L *37/28*

U.S. Cl. 251—149.4 **12 Claims**

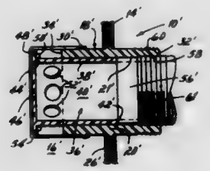
1. A valve comprising:

a valve body formed with a hollow interior, said valve body being adapted to mount to the wall of a hollow container;

a valve plug formed with at least one fluid flow passageway having a first end and a second end, said valve plug being movable within said hollow interior of said valve body

between an open position in which one of said first and second ends of said fluid flow passageway in said valve plug extends outwardly from said valve body and into the hollow container, and a closed position in which said first and second ends of said fluid flow passageway of said valve plug extend within said hollow interior of said valve body;

sealing means carried by one of said valve plug and said valve body for sealing said fluid flow passageway in said valve plug from the interior of the hollow container with said valve plug in said closed position;



a resilient band connected between said valve plug and said valve body for forcing said valve plug into said closed position relative to said valve body; and

means circumferentially spaced on the exterior surface of one end of said valve body connecting said resilient band to said valve body, said means connecting said resilient band to said valve body comprises a plurality of circumferentially spaced hooks, said resilient band being connected between said hooks and the exterior surface of one end of said valve plug.

4,801,125

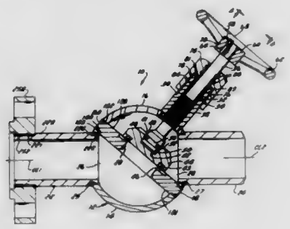
VALVE BODY COMPRISING SHEET METAL HEMISPHERES AND METHOD FOR MAKING SAME

Erich J. Kocher, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 516,684, Jul. 25, 1983, abandoned. This application Nov. 6, 1984, Ser. No. 668,670

Int. Cl.[4] F16K *27/00*

U.S. Cl. 251—367 **4 Claims**



1. A spherical valve comprising:

a circular valve plate having opposite surfaces and an aperture therethrough between said surfaces, each plate surface having an annular flat-bottomed groove extending inwardly and along its circumferential edge;

first and second hemispherical sections disposed on opposite sides of said plate and overlying said aperture, each hemispherical section having inner and outer surfaces and a flat circular circumferential edge for engagement with the associated annular flat-bottomed groove in said plate, the first hemispherical section having at least one circular hole therethrough and the second hemispherical section having at least two circular holes therethrough, one of the two circular holes lying in a place parallel to said plate;

a first electron beam weld joining each hemispherical section to said plate, each first weld extending around said plate and extending inwardly from the exterior of a hemispherical section between the flat circumferential edge of a hemispherical section and the associated annular flat-bottomed groove in said plate;

a plurality of tubes, each tube having a cylindrical portion with a circular cross-sectional configuration of the same diameter as its associated hole extending into one of said holes and having a shoulder abutting the outer surface of its associated hemispherical section;

a second electron beam weld joining each tube to a respective hemispherical section and extending outwardly from the interior of a hemispherical section entirely around and between the cylindrical tube portion and the edge of its associated hole;

a valve spindle mounted for movement in a tube on said second hemispherical section which is disposed perpendicular to said plate;

and a valve member located between said plate and one of said hemispherical sections and axially movable by said valve spindle relative to said aperture;

each first and second electron beam weld extending for a distance equal to the thickness between the inner and outer surfaces of an associated hemispherical section and comprised solely melted and re-solidified material from the hemispherical section and from the plate or tube joined to the hemispherical section.

4,801,126

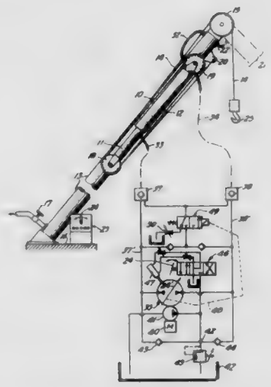
HYDRAULICALLY OPERATED LIFT MECHANISM

Alan H. Rosman, Woodland Hills, Calif., assignor to Dynamic Hydraulic Systems, Inc., Canoga Park, Calif.

Filed Feb. 24, 1987, Ser. No. 17,588

Int. Cl.[4] B66F *3/24*

U.S. Cl. 254—93 R **17 Claims**



1. In a hydraulically operated lift system, a three-volume cylindrical actuator, comprising an outer elongate tubular cylindrical actuator, comprising an outer elongate tubular cylinder of bore diameter D_1, said cylinder extending between a head end and a tail end, an annular piston having a head side and a tail side and having sealed slidable engagement to the bore of said outer cylinder, an intermediate elongate tubular cylinder of outer diameter D_2 less than D_1 and concentrically fixed at one end to the tail side of said piston, said intermediate cylinder being closed at its other end, head-closure means closing the head end of said outer cylinder, an inner elongate tubular cylinder (1) of outer diameter D_3 substantially less than the bore diameter of said intermediate cylinder and (2) concentrically fixed at one end to said head-closure means and (3) extending with sealed slidable engagement within and beyond the bore of said piston, said inner cylinder being open at its other end within said intermediate cylinder, annular tail-closure means closing the tail end of said outer cylinder with sealed slidable engagement to said intermediate cylinder; thereby defining a first annular volume radially between said inner and outer cylinders and axially between said piston and said head-closure means, a second annular volume radially between said intermediate and outer cylinders and axially between said piston and said tail-closure means, and a third volume within said inner and intermediate cylinders; the sectional area of said second volume being substantially equal to the sectional area of said inner cylinder; first connection means including an accumulator for supplying fluid under substantially uniform preloading pressure to said first volume essentially independent of the axial position of said piston within said outer cylinder, whereby both said second and third volumes can be preloaded via preloading pressure fluid in said first volume, second connection means for a first hydraulic line to said second volume, and third connection means for a second hydraulic line to said third volume; a closed hydraulic system comprising a reversible hydraulic pump connected to and interposed between said first and second lines for selectively and reversibly transferring hydraulic-fluid between said second and third volumes; and externally exposed means on said outer and intermediate cylinders for compressionally sustaining a lifting load.

4,801,127

HANDLE OPERATED WIRE PULLER

Robert D. Patterson, Jr., 113 Ruby Ct., Maitland, Fla. 32751

Filed Mar. 23, 1987, Ser. No. 28,862

Int. Cl.[4] E21C *29/16*

U.S. Cl. 254—134.3 FT **20 Claims**



1. A lightweight, portable device for pulling a plurality of relatively small wires through a conduit by the use of a rope attached thereto, without using a winch or necessitating the use of external power, said device comprising an elongate frame particularly adapted for use in a substantially upright position and having lower and upper ends, the lower end of said frame having floor engaging portions, with a pivotally mounted operating lever operatively located adjacent a middle portion of said frame, at least one force-reacting component on said frame over which the rope used with the device passes, for changing the direction of pull of the rope, rope clamping means on said operating lever for releasably grasping successive portions of the rope during the pulling process, said operating lever being movable by one or more operators about its pivot point from a position in which said operating lever resides in a plane substantially parallel to and closely adjacent the plane of said elongate frame, to a position in which said operating lever resides at approximately right angles to the plane of said frame, each such movement of said operating lever serving to cause several feet of rope to move with respect to said force-reacting component that serves to change the pull direction of the rope, and thus to cause the plurality of wires attached to the rope to move along the conduit for a like distance.

4,801,128

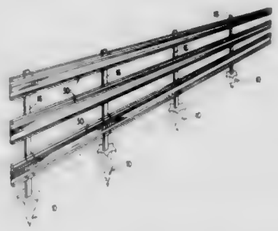
GROUND IMBEDDED SUPPORT SYSTEM

Lawrence Taylor, P.O. Box 210.577, Dutch Fork PO Branch, Columbia, S.C. 29221

Filed Mar. 6, 1987, Ser. No. 22,862

Int. Cl.[4] E04H *17/14*

U.S. Cl. 256—68 **2 Claims**



1. A ground inbeded support system, comprising a carrot shaped, metal hole making and measuring tool, coming to a point at the bottom, with a depth scale on the side of the tool to measure the soil density by the depth to which the tool is driven into various soils of different density during a preset period of uniform driving impact done to make the hole, and to indicate the length of base member to be put in place in the hole made by the tool without impact to fit the depth of the hole made by the tool, and to provide uniform weight bearing capacity of each base member, so set in ratio to the time period of driving impact used, a power driven impact driver unit, capable of delivering various preset periods of uniform driving impact to the top of the holemaking and measuring tool, base members of the same configuration as the tool with the top structure of the members containing sockets suitable for the insertion of fence posts, or suitable means for the attachment of building support members.

4,801,129

LEAF SPRING CLAMP WITH ATTACHMENT MEANS

Wayne E. Wells, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 20, 1987, Ser. No. 5,186

The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.

Int. Cl.[4] B60G *11/02*; F16F *1/36*

U.S. Cl. 267—52 **12 Claims**

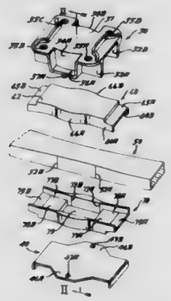
1. A leaf spring clamp assembly adapted to secure a synthetic material leaf spring in position in a suspension system, which leaf spring has upper, lower and side surfaces, said leaf spring clamp assembly comprising:

a rigid clamp base comprising a bottom wall and two substantially parallel side walls extending from said bottom wall to form therewith a channel, wherein the inner surface of at least one said side wall fairs from each longitudinal end into a channel-widening concavity;

a resilient wedge insert adapted to be positioned within said channel, comprising a wedge insert bottom wall adapted to be positioned substantially parallel to and adjacent to said clamp base bottom wall, two substantially parallel side walls, each having an inner surface and an outer surface, and a wedge insert top wall extending between said wedge insert side walls and forming therewith and

with said wedge insert bottom wall an inner channel adapted to substantially encircle said leaf spring laterally, wherein the inner surface of each said wedge insert side wall is adapted to be in substantial planar surface contact with one of said side surfaces of said leaf spring along substantially the entire longitudinal dimension of said inner channel, and the outer surface of each said wedge insert side wall is adapted to be in substantial planar surface contact with the corresponding clamp base side wall to substantially fill each channel-widening concavity thereof; and

a clamp plate adapted, together with said clamp base, to hold said leaf spring between them, wherein said clamp plate and said clamp base together comprise means for holding



themselves in assembly with each other to provide a compressive pre-load on said wedge insert sandwiched between them, said means comprising flanges extending outwardly from said clamp base side walls and flange portions extending outwardly from said clamp plate, said clamp plate flange portions corresponding to, and being substantially co-planar with, said flanges of said clamp base, each of said clamp base flanges providing one of a pin and a correspondingly positioned hole and each of said clamp plate flange portions providing the other of said pin and said correspondingly positioned hole, each said pin being sufficiently long to extend through said hole and being deformable to prevent withdrawal thereof from said hole.

4,801,130

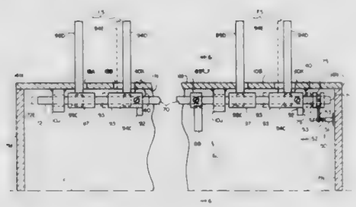
FRAMING TABLE ASSEMBLY

Rodney L. Montgomery, Lavista, Nebr., assignor to Carlson Systems Corporation, Omaha, Nebr.

Filed Aug. 10, 1987, Ser. No. 83,438

Int. Cl.⁴ B25B *1/20*

U.S. Cl. 269—37 **7 Claims**



7. For use in manufacturing a skeletal framework comprising a plurality of parallel riser-members transversely perpendicularly intervening between parallel longitudinally extending base-members, a framing table assembly for precisely and securely positioning said riser-members and base-members horizontally whereby the riser-members might be accurately and perpendicularly attached to said base-members, and said framing table assembly comprising:

(A) a pair of parallel, longitudinally extending, transversely separated, and multi-apertured benches and respectively having horizontal planar upper-surface and lower-surface and also having longitudinally extending outward-edge and an inward-edge confronting the other bench;

(B) each of said benches and directionally longitudinal therealong being provided with an array of teamed-flippers movably associated with said bench, each teamed-flippers pair having a downward inactive-station located below the bench upper-surface and also having an upward ready-station located above the bench upper-surface; and

(C) between the teamed-flippers array and the bench outward-edge, a longitudinally extending array of rollers that are respectively rotatable about a transverse-axis, each of said rollers having a lower-station and also having an upper-station extending above a bench aperture whereby a finally attached framework might be rolled directionally longitudinally off the parallel benches, and there being means for elevating each said roller from lower-station to upper-station whenever said teamed-flippers are moving from upward ready-station to downward inactive-station.

4,801,131

WORK HOLDING DEVICE

Jeffrey W. Bagley, 1776 El Codo Way, San Jose, Calif. 95124

Filed Oct. 19, 1987, Ser. No. 110,135

Int. Cl.⁴ B23Q *1/04*

U.S. Cl. 269—75 **6 Claims**



1. A work holding device for releasably attaching a work fixture comprising:

a base member adapted to be attached to a work bench or the like;

a pivotable member fixed to the work fixture;

a second member having a single cavity sized to receive said base member and said pivotable member in abutting relationship; and

a clamp for holding in said cavity said base member and said pivotable member.

4,801,132

METHOD AND APPARATUS PROCESSING PRINTED PRODUCTS

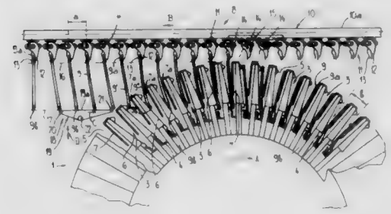
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Oct. 3, 1986, Ser. No. 915,261

Claims priority, application Switzerland, Oct. 23, 1985, 04558/85

Int. Cl.⁴ B65H *5/30*

U.S. Cl. 270—55 **12 Claims**



1. A method of processing printed products, comprising the steps of:

delivering the printed products to be processed to radially arranged, outwardly open compartments of a processing drum by means of a circulatingly driven conveying means elevated and transversely positioned relative to said processing drum;

said step of delivering the printed products entailing delivering the printed products to said processing drum in a substantially suspended configuration and in a linear, essentially horizontally oriented direction;

introducing the printed products with lower side edges thereof leading into said radially arranged, outwardly open compartments of said processing drum;

said step of introducing the printed products entailing introducing the printed products such that a path of motion of said lower aide edges of the printed products passes below a highest point of said processing drum; and

said step of introducing the printed products with lower side edges of thereof leading into said radially arranged, outwardly open compartments of said processing drum further entails introducing each printed product into an associated one of said compartments such that each said printed product at least at some point in time during introduction thereof into the associated compartment is supported at two separate and oppositely situated locations of the associated compartment.

4,801,133

SHEET PROCESSING APPARATUS WITH A SHEET BINDING FUNCTION

Kuniaki Ishiguro, and Takuma Ishikawa, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 24, 1987, Ser. No. 124,927

Claims priority application Japan, Nov. 27, 1986, 61-285052; 61-285053; 61-285055; 61-285056; 61-285057; 61-285058; 61-285059

Int. Cl.⁴ B42B *1/02*

U.S. Cl. 270—53 **11 Claims**

1. A sheet processing apparatus comprising:

a sheet receiving inlet;

sorting means for distributing the sheets received through said inlet among a plurality number of bins;

means for binding the sheets;

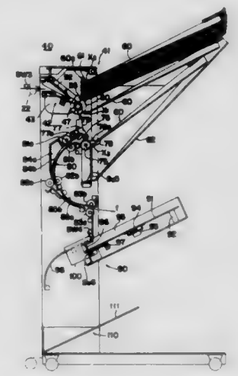
transporting means for sequentially transporting the sheets contained in each of the bins to said sheet binding means;

first designating means for designating a first mode;

second designating means for designating a second mode;

first control means for controlling said sheet binding means in conjunction with said sheet transporting means when the first mode is designated;

second control means for independently controlling said



sheet binding means regardless of said sheet transporting means when the second mode is designated; and

means for inhibiting the designation of the second mode by said second designating means when the first mode is designated.

4,801,134

PAPER FEED APPARATUS CAPABLE OF FEEDING OF COMMON USE PAPERS AND SPECIFICALLY PROCESSED PAPERS

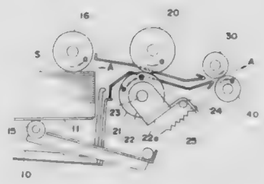
Chujiro Yokoyama, Toyokawa; Kazuyuki Fukui, Toyohashi, and Haruki Iwatsuki, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 4, 1987, Ser. No. 21,483

Claims priority, application Japan, Mar. 4, 1986, 61-47553

Int. Cl.⁴ B65H *3/52*

U.S. Cl. 271—122 **5 Claims**



1. A paper feeding apparatus comprising:

means for holding a stack of a large number of paper sheets;

a first roller means for sheet wise feeding out paper sheets in a paper feeding direction from the stack held by said holding means;

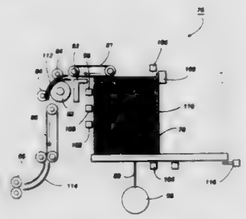
a regular rotation roller means for contacting and further feeding each of the paper sheets and rotatably mounted at a position downstream from said first roller means in the paper feeding direction;

a paging roller means for contacting each of the paper sheets and rotatably mounted in opposition to said regular rotation roller means; and

drive means for driving said regular rotation roller means and said paging roller means for driving said paging roller means in different rotational modes depending upon the class or quality of the paper sheet being fed.

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4,801,135
SHEET HANDLING APPARATUS
Raymond A. Povio, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 19, 1987, Ser. No. 64,023
Int. Cl.[4] B65H *1/08*
U.S. Cl. 271—155 25 Claims



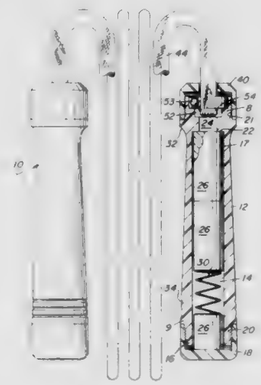
19. A method of loading and unloading sheets from a tray in a printing machine with the tray being adapted to move between a first position adjacent a sheet feeder and a second position remote therefrom, including the steps of:
moving the tray to control the position thereof;
detecting the position of at least one sheet of the stack of sheets on the tray and controlling said step of moving to move the uppermost sheet of the stack of sheets on the tray to a selected position intermediate the first position and the second position with the tray moving toward the second position as sheets are loaded thereon and toward the first position as sheets are added from the tray; and
ejecting the tray in response to said step of detecting indicating that the uppermost sheet of the stack of sheets on the tray is at the selected position to optimize operator loading and unloading of sheets on the tray at the selected position.

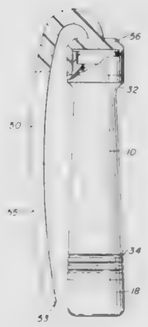
4,801,136
SWIM TRAINING DEVICE
Craig Askins, P.O. Box 1126, Boston, Mass. 02134
Filed Jul. 7, 1986, Ser. No. 882,418
Int. Cl.[4] A63B *31/00*
U.S. Cl. 272—71 16 Claims



1. A swim exercise assembly adapted to be secured around a support structure near the surface of water, said device comprising; a single flexible cord (12) having first and second ends (20,28), a first guide means (14) containing first and second pairs of holes (16,18) therethrough, said first end (20) of said cord (12) threaded through said first pair of holes (16) of said first guide means (14) and secured to said first guide means by threading said cord (12) through said second pair of holes (18) to create a first loop (22) of said cord (12) between said pairs of holes (16, 18) for securing around a person, said first guide means (14) being a sheet material folded along a fold line extending between each of said first and second pairs of holes for folding in response to a predetermined force for aligning said pairs of holes (16, 18) to allow said cord (12) to move therethrough for adjusting the length of said first loop (22) around a person and for naturally resisting such folding motion to remain biased toward flat absent said predetermined force to grip and prevent movement of said cord (12) once adjusted.

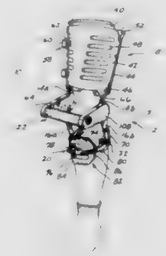
4,801,137
VARIABLE WEIGHT HAND HELD EXERCISE APPARATUS
Shane Douglass, 109 Pope Ave., Altoona, Pa. 16606
Filed Oct. 26, 1987, Ser. No. 113,073
Int. Cl.[4] A63B *5/20, 11/02*
U.S. Cl. 272—75 20 Claims

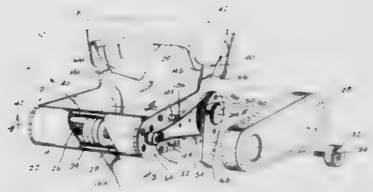




1. A convertible variable weight hand held exercise apparatus comprising:
(a) a substantially tubular handle defining a bore having a first end and a second end, said first end being open to receive variable weight means for selectively varying the weight of said handle;
(b) said variable weight means being disposed through said open first end within said bore;
(c) weight retaining means releasably attached to said first end of said tubular handle for maintaining said variable weight means within said bore;
(d) a strap for releasably securing said handle to a user's hand;
(e) a flexible exercise means; and
(f) said second end of said tubular handle being adapted to alternatively and releasably receive said strap and said flexible exercise means.

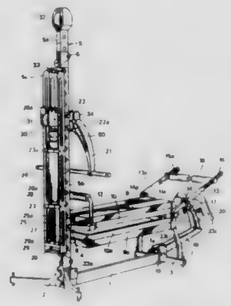
4,801,138
WEARABLE APPARATUS FOR EXERCISING BODY JOINTS
James F. Airy, and Thomas D. Kadavy, both of Bellevue, Wash., assignors to Soma Dynamics Corporation, Bellevue, Wash.
Filed Dec. 1, 1987, Ser. No. 127,113
Int. Cl.[4] A63B *21/00, 21/22;* A61F *3/00*
U.S. Cl. 272—130 43 Claims





25. A portable appliance for exercising a body joint, comprising:
(a) a first pivot arm;
(b) a second pivot arm;
(c) means for pivotally interconnecting the first and second pivot arms about a pivot axis;
(d) first means for mounting the first and second pivot arms to respective first and second pivotally connected limbs of the body to place the pivot axis in approximate aligment with the pivot axis of the body joint;
(e) fluid resistance means carried by the body to resist relative pivotal movement between the first and second pivot arms;
(f) second means for mounting the fluid resistance means at a location spaced from and generally parallel with the pivot axis of the body joint; and,
(g) transmission means for transmitting the relative rotational movement between the first and second pivot arms to the fluid resistance means to actuate the resistance means to generate a resistive load to the relative pivotal movement between the first and second pivot arms and, thus, generating a resistive force against the flexing and extending of the body joint.

4,801,139
COLLAPSIBLE, PORTABLE, EXERCISE MACHINE WITH LOAD-REGULATING HYDRAULIC JACK
Henri Vanhoutte, and Danièle Masson, both of 52 Chemin des Chênes, Ste-Anne des Lacs, Québec, Canada J0R 1B0
Filed Jul. 23, 1987, Ser. No. 76,705
Claims priority, application Canada, Oct. 23, 1986, 521250
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—130 15 Claims



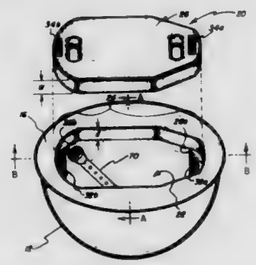
1. An exercise machine adapted to be actuated by a user, comprising a frame including a base, legs mounted on said base and a column connected to and extending upwardly from said base, said column including a housing and a variable load-regulating hydraulic cylinder fixedly mounted in said housing, said cylinder including a piston slidably received within said cylinder and a piston rod attached to said piston and extending outwardly from said cylinder; at least one bench mounted to said frame so as to accommodate the user; at least one exercise member pivotally mounted to said frame such that its angle of inclination relative to the vertical is variable, whereby the user can pivot said at least one exercise member from a rest position in which said at least one exercise member forms a predetermined angle of inclination with respect to the vertical; and translation means movable relative to said housing for interconnecting said at least one exercise member to said piston rod such that the pivotal movement of said at least one exercise member from said rest position causes the conjoint movement of said piston rod into said cylinder, whereby a force exerted on said at least one exercise member by the user during its pivotal movement is counteracted by a force exerted on said piston from within said cylinder, said translation means including a strap connected to said at least one exercise member and strap adjustment means for varying the length of said strap and for releasably locking said strap at a predetermined length to thereby adjust said angle of inclination of said at least one exercise member when at said rest position.

4,801,140
THERAPEUTIC EXERCISE EQUIPMENT FOR THE HANDICAPPED
Timothy J. Bergeron, R.D. 1 Box 40, Dolgeville, N.Y. 13329
Filed Mar. 9, 1987, Ser. No. 23,841
Int. Cl.[4] A63B *23/04;* A63G *1/12*
U.S. Cl. 272—146 33 Claims

1. Therapeutic exercise apparatus capable of being used to initiate postural and equilibrium reactions in the body of handicapped individual with the goal of enhancing the individual's ability to maintain balance and proper posture, said therapeutic exercise apparatus comprising:
a hemisphere having an exterior manufactured of a soft foam material and having a substantially rigid internal shell, said hemisphere having two ends, one end of said hemisphere being rounded and the other end of said hemisphere being substantially flat, the width of said molded foam material

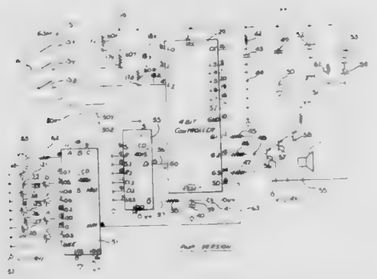
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increasing from a minimum at said rounded end to a maximum adjacent said substantially flat end, whereby various



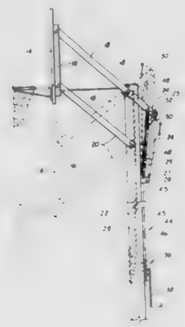
balance and postural exercises may be conducted with either one of said rounded end and said substantially flat end contacting the floor.

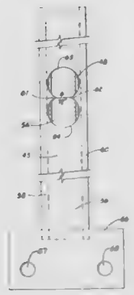
4,801,141
LIGHT AND SOUND PRODUCING BALL
Daniel Ramsey, 5520 W. 118th Pl., Inglewood, Calif. 90304
Filed Apr. 21, 1987, Ser. No. 40,842
The portion of the term of this patent subsequent to May 5, 2004, has been disclaimed.
Int. Cl.[4] G10H *1/00, 5/04*
U.S. Cl. 273—1 E 10 Claims



1. A light and sound producing device comprising:
supporting shell means including at least two (2) removably connected sections;
speaker means mounted within said shell means;
a power source mounted within said shell means;
a plurality of light generating means mounted within said shell means;
a plurality of switches electrically coupled to said power source, the state of any one of said switches being dependent upon the orientation of each of said switches to a reference, each of said switches mounted to said shell means at a different orientation than any other of said switches;
decoding means coupled to said switches for determining the state of each of said switches, said decoding means producing a unique signal for each combination of states of said switches, each of said signals having a unique frequency, said decoding means coupled to said speaker means and said light generating means, each of said signals producing an audible tone in said speaker of a frequency corresponding to the frequency of said signal and activating one of said plurality of light generating means;
control means coupled to said switches and said decoding means, said control means producing a first signal when the state of said switches remains constant for a first amount of time, said first signal for disabling said decoding means;
whereby different sounds are produced and different lights are activated when the orientation of said shell to said reference is altered.

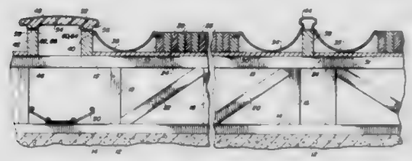
4,801,142
ADJUSTABLE BASEBALL GOAL
Vernon W. Friesen, 411 S. Wilson, Hillsboro, Kans. 67063
Continuation-in-part of Ser. No. 894,003, Aug. 7, 1986, abandoned. This application Apr. 3, 1987, Ser. No. 34,856
Int. Cl.[4] A63B *63/08*
U.S. Cl. 273—1.5 R 4 Claims





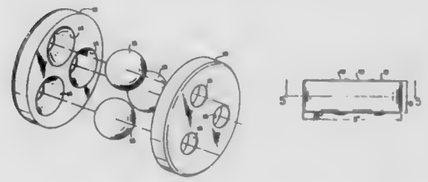
1. An adjustable basketball goal comprising:
a vertical backboard having a basketball hoop attached thereto;
a pair of upper and lower parallel support arms pivotally attached to the back of the backboard at a first end thereof;
a vertical hollow stand, the support arms pivotally attached to the top of the stand near the second ends thereof, the second ends of the upper parallel support arms extending rearwardly from the top of the stand;
a cable having a first end attached to the back of the backboard, the cable received over a pulley rotatably mounted inside the top of the hollow stand;
winch means mounted in the stand for receiving a second end of the cable around a spool portion thereof so that by winding or unwinding a winch handle connected to the spool, the goal can be raised and lowered by the cable;
a hydraulic safety cylinder pivotally attached to the second ends of the upper parallel support arms, the cylinder having a piston extending outwardly therefrom and pivotally attached to a mounting attached to the rear of the vertical stand, the cylinder and piston allowing gradual descent of the basketball hoop and vertical backboard should the cable break; and
a height indicator assembly comprising:
an elongated tape housing secured to the vertical stand, the housing having an eye sigh bore therein; and
a height indicator tape with measuring scale thereon, the tape slideably received between the stand and the housing, the top of the tape extending upwardly from the top of the housing and secured to one of the support arms, a portion of the scale seen through the eye sight bore for indicating the height of the hoop above the playing surface.

4,801,143
BOWLING LANE CONSTRUCTION
Will Heddon, 2000 Dundee Rd., Winter Haven, Fla. 33880
Filed Nov. 4, 1986, Ser. No. 927,245
Int. Cl.[4] A63D *1/00, 1/08*
U.S. Cl. 273—51 19 Claims



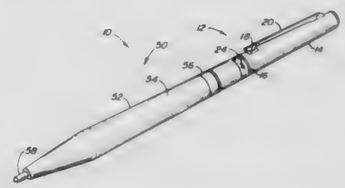
18. A bowling lane construction comprising:
bowling lane supporting means adapted for mounting on a sub-foundation and having an upper support surface;
decking for at least one bowling lane extending over said support surface and defining a pair of gutter openings, each on an opposite side of said lane;
a gutter of a generally semi-circular cross-section positioned longitudinally in each gutter opening and extending parallel with said lane, each gutter formed of plural sections mated end to end in overlapping relation;
means for laterally fastening each gutter section to said decking, said lateral fastening means extending through each said gutter section and into said decking along an upper extremity of said gutter section; and wherein
adjacent gutter sections are free of fasteners at the mated ends thereof, except at said upper extremity opposite said one extremity to which each said gutter section is attached to said decking.

4,801,144
HOCKEY PUCK
Anthony De Masi, Jr., and John A. McMahon, 3rd, both of West Hartford, Conn., assignors to Roll-A-Puck Limited, Simsbury, Conn.
Filed Sep. 1, 1987, Ser. No. 91,750
Int. Cl.[4] A63B *71/00*
U.S. Cl. 273—128 R 7 Claims



1. A puck for playing road hockey and comprising:
a generally cylindrical main body, said body defined by at least two body sections, which sections are also of cylindrical configuration and include inner and outer faces, said inner faces abutting one another, said body sections having regions that define at least three spherical cavities, each cavity including semispherical portions formed in each of said body sections, spherical ball elements provided in said spherical cavities and including diametrically opposed projecting portions that protrude beyond the outer faces of said cylindrical body sections.

4,801,145
LOTTERY DEVICE
Leonardo J. Arevalo, 1851 Center Rd., Novato, Calif. 94947
Filed Jun. 15, 1987, Ser. No. 62,229
Int. Cl.[4] A63B *71/06*
U.S. Cl. 273—143 R 2 Claims

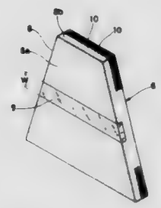


1. An apparatus for selecting a random number from a specified field of numbers comprising:
a disc portion having a circumferential edge, said edge being partitioned into a plurality of segments, each segment bearing a different numerical indicia corresponding to a single given number from said specified field of numbers;
drive means for rotating said disc about an axis, said drive means comprising motor and a battery;
switch means for activating said drive means; and
housing means for containing said disc portion, drive means, and switch means, said housing means having a window portion for displaying only one of said disc portion numerical indicia at a time, said housing means being generally cylindrical in shape, and including a pocket clip portion for removable attachment to a users pocket, said pocket clip portion comprising said switch means, and said housing means including a writing instrument portion which is removable and replaceable with a flashlight portion; wherein when said switch means is closed, said drive means rotates said disc portion within said housing means, and when said switch means is open, said disc portion stops rotating and displays only one numerical indicia through said housing window.

4,801,146
GOLF CLUB HEAD
Yukihiro Honma, Kawasaki, Japan, assignor to Kabushiki Kaisha Honma Gorufu Kurabu Seisakusho, Yokohama, Japan
Filed Dec. 17, 1986, Ser. No. 943,118
Claims priority, application Japan, Dec. 26, 1985, 60-199158[U]; Jan. 29, 1986, 61-15909
Int. Cl.[4] A63B *53/04*
U.S. Cl. 273—173 11 Claims

1. A golf club head comprising a wood club head having a top surface, a front surface and a recess formed in said front surface, a front face body having a predetermined hardness and specific gravity secured in said recess for contact with a golf ball, said front face body having a front face and a horizontal recess formed in said front face, and a front face insert secured in the horizontal recess of said front face body, said front face insert being made of a metal having a greater specific gravity

and lower hardness than the specific gravity and hardness of said front face body, whereby said front face insert prevents



damage to a golf ball and minimizes the impact applied to the wood club head when the front face insert strikes a golf ball.

4,801,147

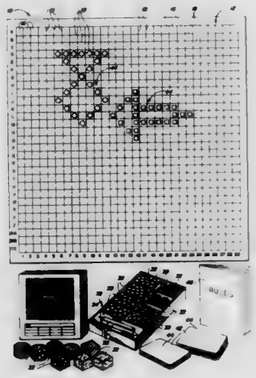
METHOD OF PLAYING A BOARD GAME

James R. Miller, 7600 Manchester Ave., Apt. 211, Playa Del Rey, Calif. 90293

Division of Ser. No. 896,643, Aug. 15, 1986, abandoned. This application Jul. 6, 1987, Ser. No. 70,339

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—276 **4 Claims**



1. A method of playing a board game wherein the board game comprises a game board, a plurality of markers, a plurality of cards and a plurality of player design recording sheets, said game board having a plurality of squares set forth on one face thereof, said plurality of markers having indicia thereon distinguishing them into a plurality of sets, each of said plurality of cards having a distinctively different design pattern thereon, each of said player design recording sheets having designated thereon, a representation of said game board including a plurality of squares; the method of playing comprising the steps of:

(a) all players determining the order of play,

(b) each player selecting markers so as to determine the markers to be used by each player during play of the game,

(c) each player selecting a card from said plurality of cards,

(d) each player secretly determining the position on the game board at which the player intends to locate the design pattern shown on the selected card,

(e) each player secretly outlining the selected design pattern on one of said player design recording sheets, the position of said outline corresponding to the secretly determined position on the game board at which the player intends to locate the design pattern shown on the selected card,

(f) each player, in the order of play, placing one of his markers on a square of the game board that corresponds to a square on said player design recording sheet that constitutes a portion of the outlined design pattern,

(g) each of the players continuing the sequential placement of markers on the game board and said game ending when one of the players has covered every square on the game board that corresponds to a square on said player design recording sheet that constitutes a portion of the outlined design pattern.

4,801,148

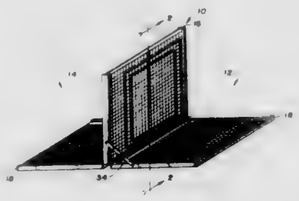
MILITARY BOARDGAME

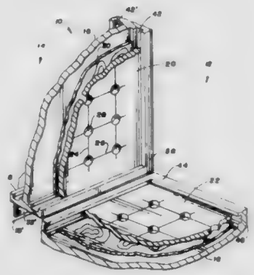
Donald J. Lamb, Rural Route 3, Box 2410, McMillan, Mich. 49853

Filed Nov. 16, 1987, Ser. No. 121,227

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—255 **24 Claims**





1. A strategic and tactical game comprising:

a first playing position having a first vertically disposed maneuvering board and a first horizontally disposed situation tracking board;

a second playing position having a second vertically disposed maneuvering board and a second horizontally disposed situation tracking board;

a mounting structure for maintaining said first and said second vertically disposed maneuvering boards in a back-to-back relationship and said first and said second horizontally disposed tracking boards in an adjacent, coplanar relationship;

a plurality of playing pieces representative of soldiers;

a plurality of playing pieces representative of implements of war;

a plurality of maps overlaying each of said maneuvering boards and said tracking boards, each of said maps being identical;

a transparent grid sheet overlaying each of said maps, each of said grid sheets bearing an identical series of vertical and horizontal lines thereon and having holes disposed in said grid sheets at intersecting line points to receive said playing pieces;

a plurality of spinning devices for randomly specifying various playing conditions;

a plurality of cards for specifying missions, situations and battle objectives; and

a plurality of dice for randomly determining the amount of advancement of said game members.

4,801,149

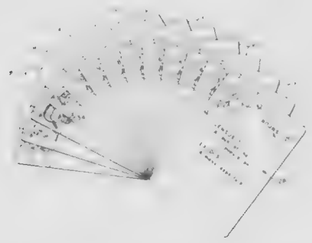
EDUCATIONAL PLAYING CARDS

Fahad A. Alnafissa, 1433 Santa Monica Blvd., #4, Santa Monica, Calif. 90404

Filed Oct. 21, 1987, Ser. No. 110,729

Int. Cl.[4] A63F *1/00*

U.S. Cl. 273—302 **3 Claims**



3. A deck of 52 playing cards bearing indicia corresponding to 4 suits of 13 ranked cards each, said 13 cards in each suit each bearing a plurality of sets of questions and answers, the number of sets of questions and answers on each card being related to the respective ranking of the card.

4,801,150

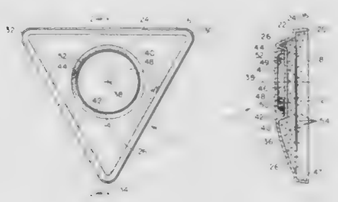
TRAPSHOOTING TARGET

Paul W. Stevenson, 102 E. Elmview Pl., Alamo Heights, Tex. 78209

Filed Jun. 29, 1987, Ser. No. 67,206

Int. Cl.[4] F41J *9/16*

U.S. Cl. 273—362 **10 Claims**



1. A trapshooting target adapted to be thrown through air by a catapult or similar device capable of imparting both a linear and a rotational motion to the target, said target comprising

a primary shell, said primary shell comprising a convex upper surface,

said upper surface having at least one edge bounded by at least one side wall;

said upper surface further having at least one depression for detachably receiving at least one secondary shell carried on said primary shell, said depression having an inward edge and a planar bottom surface, said inward edge defining the depth of the depression;

said secondary shell being substantially smaller and less massive than said primary shell and comprising a plate having at least one secondary shell edge bounded by at least one secondary shell side wall, said secondary shell side wall having substantially the same depth as the inward edge of the depression, whereby passage of the target through the air creates lift to raise the secondary shell out of the depression and causes the primary and secondary shells to begin to tumble as the secondary shell emerges from the depression.

4,801,151

ARROW STRING TRACKING APPARATUS

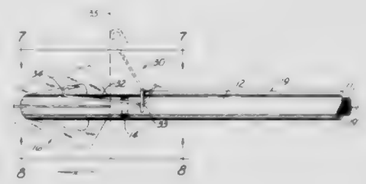
Michael O. Sturm, 552 Country Club Blvd., Des Moines, Iowa 50312, and Frank A. Mika, Potomac, Md., assignors to Michael O. Sturm, Des Moines, Iowa

Continuation-in-part of Ser. No. 886,804, Jul. 18, 1986, Pat. No. 4,651,999. This application Mar. 19, 1987, Ser. No. 27,860

The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.

Int. Cl.[4] F41B *5/02*

U.S. Cl. 273—416 **5 Claims**



5. A string tracking apparatus for archery arrows comprising:

a hollow tubular shaft;

means for attaching a point to one end of said shaft;

nock means for receiving a string attached to the other end of said shaft, said shaft being adapted to have fletchings attached to said other end thereof;

an opening leading from the interior to the exterior of said shaft;

flexible line disposed within said shaft between the one end and the other end of said shaft; and

catching means attached to one end of said flexible line, said catching means being disposed adjacent to said one end of the shaft and having at least one end disposed outside of said shaft for catching onto an object when said arrow shaft penetrates said object whereby the flexible line will be pulled from the interior of the shaft by a force pulling on said catching means.

4,801,152

BOAT DOLLY

James H. Elliott, 9701 Muirfield Dr., Upper Marlboro, Md. 20772, and Robert Bagley, 13202 Midway Ave., Rockville, Md. 20851

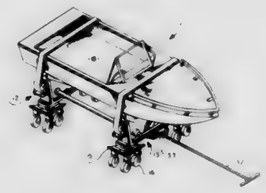
Filed Jul. 10, 1987, Ser. No. 71,875

Int. Cl.[4] B62B *3/02*

U.S. Cl. 280—47.34 **3 Claims**

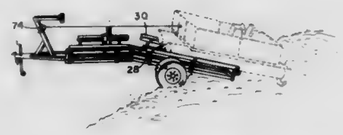
1. A boat dolly comprising at least two narrow elongated upper carriages, said upper carriages each having a base portion each with an underside, at least two subassembly carriages mounted to rotate 360° at the underside of said upper carriages in spaced apart relationship, each of said subassembly carriages having at least three ground rolling contact caster wheels mounted to a plate that rotates 360°, each of said upper carriages having a V-shaped notched means for supporting a portion of the underside of a boat, said upper carriages being in spaced apart relationship, mounted means comprising two laterally spaced elongated rigid rods for connecting said upper carriages in a spaced apart relationship, said elongated rigid

rods including adjustable ring flange means and said upper carriage mounting means including holes through which a



portion of said rods extend such that said upper carriages are sandwiched between said adjustable ring flange means.

4,801,153
PONTOON TRAILER
Parks B. Wilson, Marcellus, Mich., assignor to World Pride Welding, Inc., Marcellus, Mich.
Filed Apr. 20, 1987, Ser. No. 40,072
Int. Cl.[4] B60P *3/10*
U.S. Cl. 280—414.1 **27 Claims**



1. A trailer for transporting a multiple-hull craft of the type having at least two laterally spaced apart hulls, said trailer comprising:

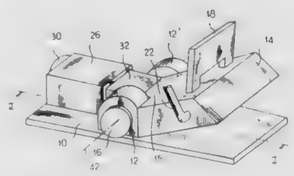
a frame having a front portion and a rear portion, with pivot means for pivotally interconnecting the same;

first and second ground engaging wheels rotatably connected with opposite sides of the rear portion of said frame and supporting the same;

first and second glides extending along opposite sides of said frame; each of said glides longitudinally elongated and having a lateral cross-sectional configuration having means including a plurality of circumferentially spaced support points for abuttingly supporting substantially the entire length of one hull of a craft along the length of each said glide; said glides each having a front portion supported on the front portion of said frame, and a rear portion supported on the rear portion of said frame, and including means for permitting mutual rotation therebetween;

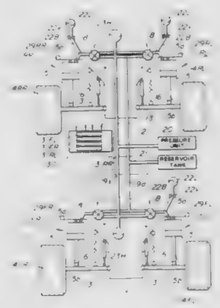
a latch selectively interconnecting the front and rear portions of said frame, having a locked position wherein the front and rear portions of each of said glides are retained in a substantially colinear relationship, and an unlocked position wherein the rear portions of each of said glides can pivot with respect to the front portions of said glides to facilitate loading and unloading.

4,801,154
LINKAGE DEVICE BETWEEN A CROSS-COUNTRY SKI AND A BOOT
Josiane Dunand, Cran Gevrier, France, assignor to Salomon S.A., Annecy Cedex, France
Filed Nov. 3, 1986, Ser. No. 925,921
Claims priority, application France, Nov. 26, 1985, 85 17442
Int. Cl.[4] A63C *9/00*
U.S. Cl. 280—615 **60 Claims**



1. A linkage apparatus for attaching a ski boot and a cross-country ski, said linkage apparatus comprising a blade which is adapted to be pivotably mounted on said ski about a substantially horizontal axis which is transverse to the longitudinal extent of said ski and which is adapted to be connected to an end of said ski boot, said linkage apparatus further comprising means for exerting, on said linkage blade, a return force whenever said linkage blade is moved by an external force away from an equilibrium position in which the sole of said ski boot is generally inclined with respect to the upper surface of said cross-country ski, and in which the heel of said boot is lifted with respect to said upper surface, said exerting means comprising means for bringing said linkage blade back into its equilibrium position after said external force is exerted.

4,801,155
ACTIVELY CONTROLLED AUTOMOTIVE SUSPENSION SYSTEM WITH ADJUSTABLE ROLLING-STABILITY
Naoto Fukushima, Kamakura; Hirotsugu Yamaguchi, Chigasaki, and Yohsuke Akatsu, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jun. 12, 1987, Ser. No. 60,911
Claims priority, application Japan, Jun. 12, 1986, 61-137106
Int. Cl.[4] B60G *17/00*
U.S. Cl. 280—707 **14 Claims**



1. An actively controlled suspension system for an automotive vehicle comprising:

first fluid pressure means provided at one lateral side of the vehicle body and interposed between a vehicle body and a suspension member rotatably supporting a road wheel, said first fluid pressure means having a first variable pressure chamber;

second fluid pressure means provided at the other lateral side of the vehicle body and interposed between the vehicle body and a suspension member rotatably supporting a road wheel, said second fluid pressure means having a second variable pressure chamber;

sensor means for monitoring relative distance between said vehicle body and said suspension members for producing a sensor signal indicative thereof;

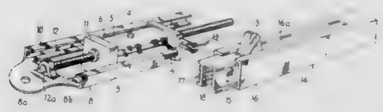
a controller receiving said sensor signal to detect vehicular rolling condition based thereon, and deriving a control signal based on the detected rolling condition for adjusting the fluid pressure in said first and second variable pressure chambers in such a manner that said fluid pressure in one of said first and second variable pressure chambers is increased and the fluid pressure in the other of said first and second variable pressure chambers is decreased in order to suppress vehicular rolling;

said sensor means comprises a first sensor provided at the one lateral side of said vehicle body for monitoring bounding and rebounding motion of the one corresponding side of the vehicle body and a second sensor provided at the other lateral side of said vehicle body for monitoring bounding and rebounding motion of the other corresponding side of the vehicle body;

said controller derives a difference between the output values of said first and second sensors for detecting rolling magnitude of the vehicle body for deriving said control signal; and

said controller further derives a rolling speed to derive a roll-damping factor value to modify said control signal value with said roll-damping factor indicating value.

4,801,156
DEVICE FOR ADJUSTING THE POSITION OF A STRAP RETURN ELEMENT OF IN PARTICULAR A SAFETY BELT FOR A MOTOR VEHICLE
Gérard Escaravage, Valentigney, France, assignor to ECIA—Equipements et Composants Pour L'Industrie Automobile, Audincourt, France
Continuation of Ser. No. 922,498, Oct. 23, 1986, abandoned.
This application Feb. 19, 1988, Ser. No. 161,342
Claims priority, application France, Oct. 24, 1985, 85 15830; Feb. 7, 1986, 86 01716
Int. Cl.[4] B60R *22/20*
U.S. Cl. 280—808 **9 Claims**



1. A device for adjusting the vertical position of a strap return element, of in particular a safety belt for a motor vehicle, said device comprising said return element mounted to be movable between two end positions, an electric motor having a stator and a rotor, a control element, a source of current, means for connecting the source of current to the motor through the medium of the control element, an anchoring pin mounted on the stator of the motor, said return element being mounted on said anchoring pin, means for mounting on the vehicle for guiding and retaining the electric motor so that the electric motor is movable between said two end positions, said guiding and retaining means comprising a metal plate having bent edge portions and projecting portions on the stator which are cooperative with the edge portions of the plate, the rotor of the electric motor being hollow and carrying an internal screwthread, and screwthreaded rod for fixing to the vehicle and screwthreadedly engaged with the internal screwthread of the rotor for ensuring the axial displacement of the stator of the motor, and therefore of the strap return element, when the motor is supplied with current;

wherein said means for connecting the source of current to the electric motor comprise brushes mounted on the stator and cooperative with said control element; and

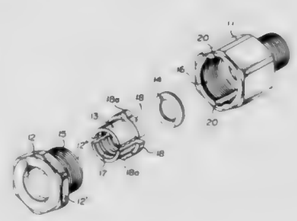
wherein the control element comprises a slide and conductive tracks mounted on the slide, the conductive tracks being cooperative with the brushes for supplying current to the electric motor.

4,801,157
FOLDING MAP
Richard K. Sink, St. Petersburg, Fla., assignor to Rallye Group, Inc., St. Petersburg, Fla.
Filed Aug. 31, 1987, Ser. No. 90,915
Int. Cl.[4] G09B *29/00*
U.S. Cl. 283—35 **7 Claims**



1. A folding map which represents a geographical area, comprising a sheet having a plurality of accordion-like alternating folds of decreasing width which define a plurality of panels therebetween, each of said panels comprising a map portion representing a portion of the geographical area and an information-bearing portion located along an edge of the map portion adjacent a fold containing information concerning the portion of the area represented on the map portion printed along the length thereof, wherein the geographical area represented by the map is not contiguous between adjacent panels, and wherein each information-bearing portion is a different color and is visible when the sheet is folded.

4,801,158
PIPE JOINT
Chikashi Gomi, Yamanashi, Japan, assignor to Kitz Corporation, Tokyo, Japan
Filed Oct. 20, 1987, Ser. No. 110,970
Claims priority, application Japan, Oct. 31, 1986, 61-168032; Oct. 31, 1986, 61-168033; D.P.R. of Korea, Oct. 31, 1986, 61-168031; Japan, Jan. 9, 1987, 62-1032; Jan. 9, 1987, 62-1033
Int. Cl.[4] F16L *11/12*
U.S. Cl. 285—52 **11 Claims**



1. A pipe joint comprising in combination:

a joint body having an internal thread portion formed in an axial interior portion thereof and a radially extending pipe

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receiving wall formed at one end of the axial interior portion, said internal thread portion having at least one lock groove formed therein,

a bush having a pressure application end face formed on one end thereof and a nut portion formed on the other end portion thereof, and also having formed on an outer periphery thereof an external thread portion which is helically engageable with said internal thread portion of said joint body,

a ring-shaped gasket composed of an electric insulating material and accommodated within the interior of said joint body with one surface thereof abutted against said pipe receiving wall of said joint body,

a retainer composed of an electric insulation material comprising two axial segments jointed together with a thin hinge, said retainer having a flange of increased wall thickness relative to the remainder of the retainer formed on one end thereof and a corrugated portion formed in an inner periphery thereof, and a portion thereof other than said flange having an outside diameter smaller than the inside diameter of said external thread portion of said bush,

wherein said corrugated portion of said retainer is engageable with a peripheral corrugation of a pipe, and

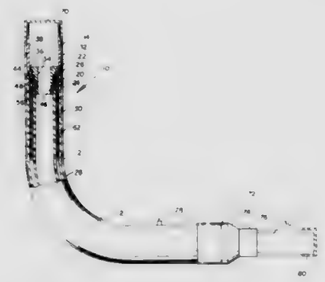
wherein said flange has an outside diameter smaller than the inside diameter of said internal thread portion of said joint body and larger than the inside diameter of said external thread portion of said bush, and has at least one engaging projection which extends radially outwardly from the peripheral surface thereof and is locked in said at least one lock groove of said internal thread portion of said joint body, is placed towards said joint body when inserted into said joint body, and is pushed by said pressure application end face of said bush.

4,801,159

ANODELESS RISER ASSEMBLY

Bobby W. Sehorn, Shawnee, Okla., assignor to Central Plastics Company, Shawnee, Okla.

Filed Sep. 10, 1987, Ser. No. 95,556
Int. Cl.[4] F16L *21/02*
U.S. Cl. 285—55 **14 Claims**



1. A riser assembly for gas meter connection comprising:

an outer pipe body formed as a first portion have a terminus for underground disposition and an angularly bent riser portion;

nipple means for meter connection secured within said outer pipe body riser portion and defining a critical inside diameter;

adapter means having an axial bore and a collar poriton having an outside diameter that enables close reception within said nipple means, and extending into a shank portion of diameter less than said critical inside diameter and including a plurality of gripping ridges formed peripherally therearound; and

plastic pipe of selected length having outside diameter of a size to be closely received through said critical inside diameter and being tightly secured over said adapter means shank portion and gripping ridges;

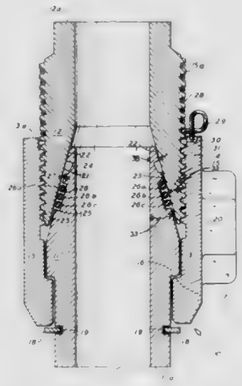
whereby said assembled plastic pipe and adapter means can be slidingly inserted through and nipple means and outer pipe body until said adapter means with plastic pipe is seated inside of said nipple means.

4,801,160

HIGH-PRESSURE FLUID FLOW CONNECTOR

Burchus Q. Barrington, Duncan, Okla., assignor to Michael J. Caddell, Richardson, Tex., a part interest

Filed Sep. 17, 1981, Ser. No. 302,973
Int. Cl.[4] F16L *19/00*
U.S. Cl. 285—81 **6 Claims**



1. A tubular connector assembly to connect two tubular members together in fluid tight sealing arrangement, said connector assembly comprising:

a male connector body adapted for connection to a tubular member, said body having an internal bore therethrough;

a first conical sealing surface forming a portion of the exposed external end of said body;

a second conical sealing surface on said external end of said body, parallel to and non-aligned with said first conical sealing surface;

a flex channel between said first and second surfaces;

a seal channel in said second surface containing circumferential elastomeric seal means;

a female connector body adapted for connection to a tubular member at one end and having an internal conical sealing surface at the other end adapted for surface contact with said first and second sealing surfaces on said male connector body;

wherein said first sealing surface is further arranged to provide a positive interference fit with said female sealing surface when said second sealing surface is in sealing engagement with said female sealing surface; and,

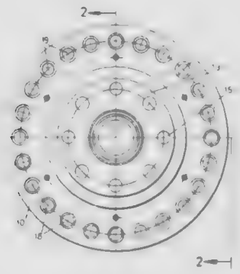
tightening means for drawing said male connector body into sealing engagement in said female connector body, wherein said tightening means comprises collar means rotatably held on one of said connector bodies and having thread means, and, thread means on the other connector body adapted for engagement with said collar thread means.

4,801,161

ROTARY PIPE COUPLING

James McCann, Midcalder, Scotland, assignor to Vickers PLC, London, England

Filed Apr. 23, 1987, Ser. No. 41,724
Claims priority, application United Kingdom, May 8, 1986, 8611274
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—93 **7 Claims**



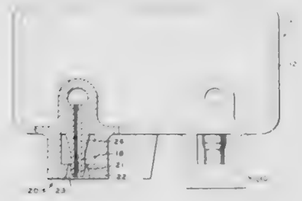
1. A rotary pipe coupling for connecting together two pipe sections in a relatively rotatable manner, said coupling comprising a first body portion adapted to be connected to a first pipe section, a second body portion adapted to be connected to a second pipe section, and rotary bearing means interconnecting the first and second body portions to permit relative rotation therebetween, characterized in that there is provided first seal element means connected to the first body portion and second seal element means connected to the second body portion, said first and second seal element means defining therebetween at least two seal cavities for receiving at least two replaceable dynamic sealing members therein, one sealing member being provided for each cavity to prevent leakage of fluid passing through the coupling to the exterior of the coupling, said cavities being stepped so that said sealing members are disposed at different and spaced radial and axial positions along the same potential fluid leakage path and fastening means enabling separation of said first and second seal elements to permit ready replacement of the sealing members.

4,801,162

INTEGRAL STRAIN RELIEF FOR FLUIDIC DEVICES

Stanley J. Rozycki, Roselle, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 257,077, Apr. 24, 1981, abandoned. This application Jan. 30, 1987, Ser. No. 14,106
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—115 **12 Claims**



1. A fluidic device, comprising:

a fluidic housing having a wall, said housing forming at least part of a fluidic device which substantially encloses on all sides a volume within the device;

integral connector means for receiving a fluid carrying tube, said integral connector means being integrally formed with said wall and standing away from said wall, said integral connector means comprising an aperture for passing a fluid through said wall, said aperture having a size which is small in comparison to the size of said wall;

integral strain relief means integrally formed with said wall for relieving strain which may be applicable to said integral connector means by the fluid carrying tube; and

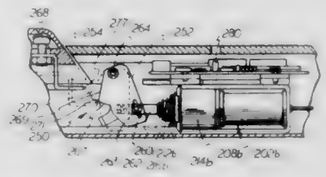
said wall, said integral connector means, and said integral strain relief means forming a unitary, molded construction.

4,801,163

EXIT DEVICE ACTUATOR AND DOGGER

Theodore H. Miller, New Britain, Conn., assignor to Emhart Industries Inc., Farmington, Conn.

Filed Sep. 2, 1986, Ser. No. 902,907
Int. Cl.[4] E05B *65/10*
U.S. Cl. 292—92 **9 Claims**



1. In an exit device having a latch bolt, a pushbar mechanically coupled to retract the latch bolt and supported for movement from a normal, outward position to an inward position where it operates said latch bolt, and biasing means for biasing the pushbar toward its outward position, the improvement comprising:

a latching element connected to the pushbar for movement inwardly and outwardly therewith along a path,

a dogging element movable between a retracted position out of said path of said latching element and an extended position into said path of said latching element for retaining said latching element when said latching element is moved inwardly, and actuating means including an electrically operated latching solenoid selectively connected to a source of electrical power for moving said dogging element between its retracted and extended position, said latching solenoid having a plunger connected to said dogging element and including mechanical biasing means for extending said plunger from said retracted position, said solenoid being selectively connected to said source of electrical power for retracting said plunger from said extended position and for releasing said plunger from said retracted position to enable said biasing means to extend said plunger wherein said electrical power is not required to maintain said plunger in said retracted position.

4,801,164

CHECK RAIL LOCK

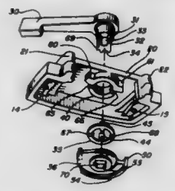
Duane L. Mosch, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Continuation-in-part of Ser. No. 821,004, Jan. 22, 1986, Pat. No. 4,736,972. This application Apr. 30, 1987, Ser. No. 44,239
Int. Cl.[4] E05C *3/04*
U.S. Cl. 292—204 **3 Claims**

1. A check rail lock having a casing having detent means, a handle rotatable in said casing and held in a selected rotative position by a spring washer, a shaft rotatable by the handle, a cam rotatable between locked and unlocked positions, said spring washer between the housing and cam and fastened to the shaft for rotation with said cam, said spring washer having an annular body with a generally concave configuration to

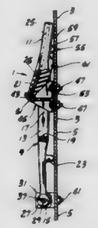
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provide a predetermined spring load on the handle, said annular body further having a pair of planar sections connected by



a bend to adjacent sections thereof and detents embossed in said planar sections which coact with said detent means.

4,801,165
HOOD LATCH
Jeffrey A. Pyle, Hannibal, Mo., assignor to Buckhorn Rubber Products, Inc., Hannibal, Mo.
Filed Jul. 15, 1987, Ser. No. 73,825
Int. Cl.[4] E05C *19/10*
U.S. Cl. 292—249 **19 Claims**



1. A latch for releasably securing one body portion, such as a hood, to another body portion, such as a cowl, of a semi-tractor or the like, one of said body portions having hook means mounted thereon and the other carrying securing means, the latch being of one-piece molded construction and comprising an elongate elastomeric member having a handle at one end, an opening therein adjacent the handle and a tongue in the opening extending from the handle toward the other end, the handle and tongue being integral with the elongate member and having a stiffness substantially greater than that of the balance of the latch, the free end of the tongue being adapted for engaging the hook means and connecting means on the other end of the elongate member for connection to said securing means, the free end of the tongue being spaced from said connecting means a distance less than the distance said hook means is spaced from said securing means when the two body portions are adjacent one another and the elongate member is untensioned, the tongue of the elongate member being adapted to be brought overcenter with respect to the plane of the elongate member when the handle is pushed toward the body portion on which the hook means is mounted while the tongue is engaging said hook means thereby tensioning the elongate member and securing together the two body portions.

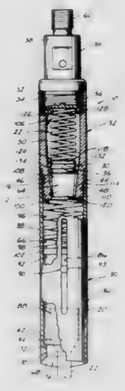
4,801,166
GRATE HANDLE
Cindy Jordan, and Alan Jordan, both of 19760 NE. 10th Ave., North Miami Beach, Fla. 33179
Filed Jan. 25, 1988, Ser. No. 148,006
Int. Cl.[4] A47J *45/10*
U.S. Cl. 294—9 **5 Claims**

1. Grate handle, comprising a handle body having a longitudinal axis, said handle body having a first slot formed therein with a substantially uniform width being wider than a bar of an oven grate and being substantially horizontal and elongated in substantially the same direction as said longitudinal axis forming means for horizontally pushing an oven grate having a bar inserted in said first slot, and said grate handle having a second



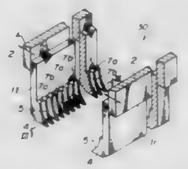
slot formed therein with a substantially uniform width being wider than a bar of an oven grate and being substantially vertical and elongated in a direction substantially perpendicular to said longitudinal axis forming means for horizontally pulling an oven grate having a bar inserted in said second slot.

4,801,167
DOWNHOLE WELL FISHING ASSEMBLY
Darrell Driskill, Rte. 5, Box 33D, Ardmore, Okla. 73401
Filed Aug. 25, 1987, Ser. No. 89,139
Int. Cl.[4] E21B *31/02*
U.S. Cl. 294—86.3 **14 Claims**



1. A fishing assembly for use in retrieving a downhole member from a well, comprising:
- a body member having a cylindrical cavity formed in central portions thereof above a cavity axis and an entrance port through one end thereof and extending to one end of the cavity so that portions of a rod can be inserted into the cavity via the entrance port, the body member further having an elongated, longitudinally extending slot formed in a side portion thereof, the slot openly communicating with the cavity;
- an arcuate-shaped internally disposed should supported by the body member substantially adjacent the entrance port, the shoulder having a relatively large radial thickness in a medial portion and narrowing to substantially zero thickness at its respective ends, the medial portion of the arcuateshaped shoulder being disposed substantially opposite and in facing relationship with the side portion of the body member having the elongated, vertically extending slot therein;
- a curved, substantially semi-cylindrical slide member having an upper end and an opposed lower end, the slide member disposed within the cavity substantially adjacent the elongated slot in the body member for reciprocation along the cavity axis from a lower position to an upper position, in the lower position the lower end of the slide member being disposed substantially adjacent the entrance port of the body member and in an oppositely disposed facing relationship with the medial portion of the shoulder, in the upper position the lower end of the slide member being disposed upwardly from the shoulder a distance effective to permit an enlargement on a rod to be inserted into the cavity via the entrance port; and
- connecting means extendable through the elongated, longitudinally extending slot for connecting the slide member to body member and for permitting reciprocal movement of the slide member along the cavity axis.

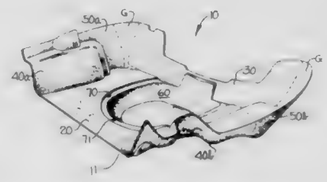
4,801,168
DEVICE FOR TRANSFERRING SEMICONDUCTOR WAFERS
Ryosuke Sato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 18, 1986, Ser. No. 853,624
Claims priority, application Japan, Apr. 22, 1985, 60-85953
Int. Cl.[4] B25J *13/04;* **B65G** *65/00*
U.S. Cl. 294—87.1 **8 Claims**



1. A semiconductor wafer transferring device comprising:
- a pair of holder walls movable between a first position in which a plurality of semiconductor wafers are held therebetween, and a second position in which said plurality of semiconductor wafers are released from said holder walls;
- first means, associated with said holder walls, for retention of a first set of semiconductor wafers from among said plurality of semiconductor wafers while said pair of holder walls are in said first position, said first means releasing said first set of semiconductor wafers at a third position of said holder walls moving from said first position to said second position; and
- second means, associated with said holder walls, for retention of a second set of semiconductor wafers from along said plurality of semiconductor wafers while said pair of holder walls are in said first position, said second means releasing said second set of semiconductor wafers at a fourth position of said holder walls moving from said first position to said second position, said fourth position being different from said third position.

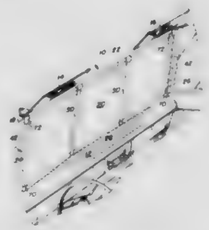
4,801,169
AUTOMOTIVE TRUNK LINER
Robert A. Queen, Marion, N.C., and Michael D. Faloon, Canton Township, Mich., assignors to Collins & Aikman Corporation, New York, N.Y.
Filed Mar. 23, 1988, Ser. No. 172,319
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—39.1 **23 Claims**

1. A trunk liner for an automobile trunk compartment to lie adjacent the walls of the trunk, said trunk liner comprising an integrally molded relatively stiff fibrous body having a center floor cover panel, and a plurality of panels extending upwardly along the sides of said center floor cover panel and integrally connected thereto, and a recessed spare tire well liner integral



with and extending downwardly from a medial portion of said center floor cover panel.

4,801,170
SUN SCREEN FOR ATTACHMENT TO A VEHICLE WINDSHIELD
Franklin A. Moore, Florence, Ariz.
Filed Oct. 19, 1987, Ser. No. 109,865
Int. Cl.[4] B60J *3/00*
U.S. Cl. 296—97.5 **14 Claims**



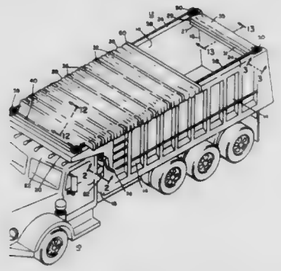
1. A sun screen for blocking light rays and inhibiting heat transfer through a vehicle windshield, the sun screen comprising:
- a sheet of flexible, light-reflective material;
- support means for supporting a first edge of said sun screen on a surface of said vehicle near said first edge;
- gripping means for releasably attaching at least a portion of a second edge opposite said first edge of said sun screen to mounting means projecting from a surface of said vehicle near said second edge; and
- biasing means for biasing said gripping means away from said support means and towards said mounting means;
- in which said support means and said gripping means comprise lower and upper ends, respectively, of a compression rod, and said biasing means comprises a compression spring disposed between said lower and upper ends of said compression rod, said gripping means further comprising a yoke piece bifurcated to define two upwardly extending prongs, for receiving said mounting means between said prongs.

4,801,171
SLIDABLE TRUCK COVER ASSEMBLY
Robert C. Weaver, R.D. #1, Port Matilda, Pa. 16870, assignor to Robert C. Weaver, Port Matilda; Robert Semion, State College; John H. Imbt, State College and Marlin K. Gingrich, State College, all of, Pa.
Continuation-in-part of Ser. No. 888,001, Jul. 22, 1986, Pat. No. 4,725,090. This application Nov. 16, 1987, Ser. No. 120,854
Int. Cl.[4] B60P *7/02*
U.S. Cl. 296—100 **8 Claims**

1. A slidable truck cover assembly for covering the open bed of a truck having side, front and rear walls, comprising
- front pulleys mounted to the front portion of the truck bed,

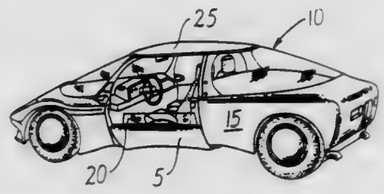
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an axle connecting the front pulleys,
rear pulleys mounted to the rear portion of the truck bed
cables extending between the front pulleys and the rear pulleys in looping relationship,
a plurality of slats extending between said cables and attached thereto in a slipping relationship,
cable connecting means for connecting the cables to a slat,
a tarpaulin attached to the slats,
the tarpaulin having side portions that extend over the side walls of the truck,
side holding means for holding the tarpaulin side portions in sliding contact with the side walls of the truck such that



the tarpaulin encloses the sides of the truck bed when the tarpaulin is in an extended position,
the side holding means including a lateral tarpaulin support mounted on the end of each slat over the tarpaulin and extending downwardly over and adjacent to the side walls of the truck to hold the side portions of the tarpaulin in slidable contact with the side walls of the truck,
front enclosure means for enclosing the front of the truck bed,
rear enclosure means for enclosing the rear of the truck bed, and
bi-directional rotating means for rotating the axle.

4,801,172
VEHICLE CLOSURE
John A. Townsend, 1053 Vista Grande, Millbrae, Calif. 94030
Continuation of Ser. No. 783,837, Oct. 3, 1985, abandoned. This application May 7, 1987, Ser. No. 49,001
Int. Cl.[4] B60J *5/06*
U.S. Cl. 296—155 2 Claims



1. A vehicle closure assembly, comprising a vehicle body section having an aperture formed in a generally curved exterior side wall thereof and an arcuate aperture closure door slidably mounted on the vehicle body section and selectively and rotatably movable within the curved exterior vehicle body wall about the circumference of an arcuate path along said vehicle body wall between closed and at least partially open positions with respect to the aperture, said arcuate closure door being of a length sufficient to extend across the aperture when in the closed position, a unitary structural member mounted on and extending transversely across the length of the door, said member having integrally formed distal ends, and means on the vehicle body section to either side of the aperture, said means including downwardly open channels each proportioned for receipt of a respective one or the distal ends of said structural member when the door is in the closed position within the aperture such that compression forces may be transmitted from the vehicle body section longitudinally to the member whereby the door becomes a structurally integral part of the vehicle body section, said structural member sliding into received condition relative to said means, said sliding being responsive to rotational movement of the door from the open position to the closed position.

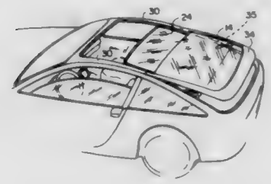
4,801,173
REMOVABLE ROOF FOR A MOTOR VEHICLE
Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche, Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Jan. 18, 1983, Ser. No. 458,828
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201895
Int. Cl.[4] B60J *7/12, 7/185*
U.S. Cl. 296—218 22 Claims



1. A removable folding roof for a motor vehicle, which extends between a windshield frame and a roll bar and which includes laterally disposed longitudinally extending girders, a plurality of struts extending generally parallel to the girders and a roof covering, the folding roof being detachably secured to the windshield frame and the roll bar by a plurality of locking mechanisms, each locking mechanism being arranged within an area adjacent a respective end of one of the girders, each said locking mechanism comprising tensioning lever means pivotally supported relative to the vehicle for simultaneously affecting stretching of the folding roof in a direction transverse to the direction of travel of the vehicle and for detachably securing the roof relative to the vehicle body by pivoting of the tensioning lever means to a lowered position, said folding roof being operatively connected with the windshield frame and the roll bar intermediate the locking mechanisms by a plurality of support members.

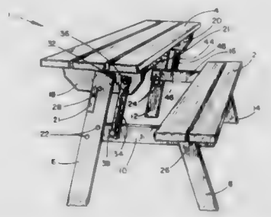
4,801,174
TRANSPARENT ROOF CONVERTIBLE AUTOMOBILE
Gerald P. Hirshberg; Joseph E. Mrozowski, both of Del Mar, and Stephen D. Ball, San Diego, all of Calif., assignors to Nissan Design International, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 107,862, Oct. 7, 1987, abandoned, which is a continuation of Ser. No. 855,821, Apr. 24, 1986, abandoned. This application Jun. 8, 1988, Ser. No. 204,105
Int. Cl.[4] B60J *7/047, 7/057*
U.S. Cl. 296—216 10 Claims

1. A convertible roof assembly for an automobile body having a passenger compartment and including a front windshield, a rear window and structure defining a roof opening over the passenger compartment, comprising:
a transparent roof panel movable between a normal position in which it covers the roof opening with a rear edge of the roof panel in colinear relationship with a forward edge of the rear window, and a stowed position in which the roof opening is uncovered and the roof panel and the rear window are aligned and nearly parallel but with an angle there between selected to eliminate double reflections otherwise seen by a driver seated in a driving position in the passenger compartment looking rearwardly through both the roof panel and the rear window;



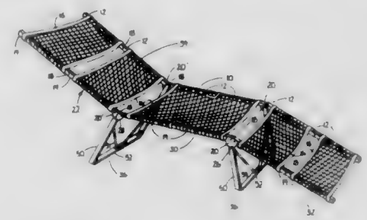
means for mounting the roof panel for movement between the normal and stowed positions;
means for tilting one of the roof panel and the rear window to move the roof panel and the rear window out of the colinear relationship to permit the movement of the roof panel between the normal and stowed positions; and
means for moving the roof panel between the normal and stowed positions.

4,801,175
CONVERTIBLE BENCH/TABLE
Victor A. Albanese, 5130 E. Charleston Blvd., Suite 306, Las Vegas, Nev. 89122
Continuation of Ser. No. 920,661, Oct. 20, 1986, abandoned. This application Feb. 11, 1988, Ser. No. 157,078
Int. Cl.[4] A47B *85/04*
U.S. Cl. 297—124 3 Claims



1. A convertible bench-table apparatus comprising:
first and second spaced apart support frames, each frame support comprising a front leg member, a rear leg member which is taller than said front leg member, and a strut extending generally horizontally between said front and rear leg members and rigidly connected thereto in a non-pivoting manner by removable fasteners;
a seat spanning said support frames and secured to said struts at a position adjacent said front leg members;
a planar table top having first and second mounting flanges connected to an underside thereof and being spaced apart so that one flange is adjacent to each of said rear leg members;
mounting means for pivotally mounting each flange to a respective one of said rear leg members at an upper portion thereof;
at least one angular adjustment bracket having an elongated planar body with one end pivotally mounted to the first mounting flange and a longitudinal slot extending along a portion of its length; and
clamping means for releasably gripping said adjustment bracket at selected positions along said elongated slot to enable continuous adjustment of an angular attitude of the table top from a horizontal position to a vertical position for use as a bench back, said clamping means comprising:
bolt means extending through the first frame support strut and the elongated slot, said bolt means being spaced apart from an associated rear leg member; and
handle means having a manually rotatable body with a threaded aperture for interfacing with said bolt means.

4,801,176
COMBINATION FOLDING CHAISE AND COT
David Wolberg, 459 West St., Albany, N.Y. 12206
Filed Aug. 12, 1987, Ser. No. 84,393
Int. Cl.[4] A47C *4/44*
U.S. Cl. 297—44 1 Claim



1. In a compactly collapsible chaise-cot having an articulating and foldable legged rectangular frame, the improved combination comprising:
a foldable transverse frame member located at the head and at the foot of lateral members of said rectangular frame;
a set of foldable legs located at the head and foot of said frame;
a foldable netting attached transverse to the lateral members of said rectangular frame; and
two unitary folding foot-base members hingably attached and transverse to said rectangular frame proximate both the head and foot regions of same, each of said foot-base members further comprising two vertical legs, a foldable ground-contacting base orthogonal to said vertical legs and hingably connected thereto, said base further comprising two ground-contacting members that interlock proximate leg and base hinges by detent-in-hole means, and a strut for additionally supporting the orthogonal relationship between said base and each of said legs, said strut having a central hingable foldable joint and that is further hinged to said base and a vertical leg and when folded collapses so that its foldable joint moves in towards the hingable connection of said vertical leg and said base, whereby folding said set of foldable legs and said foot-base members, and further folding said frame at points of articulation, and further folding said transverse frame members in predetermined directions collapses said chaise-cot, gathering said fabric interstitially between said frame, said leg and set foot-base members.

4,801,177

RECLINING DEVICE OF SEAT

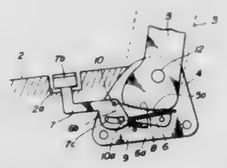
Yuzo Kanazawa, Gifu, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Nov. 17, 1987, Ser. No. 121,857

Claims priority, application Japan, Nov. 18, 1986, 61-176939[U]

Int. Cl.[4] A47C *1/025*

U.S. Cl. 297—367 9 Claims



1. A reclining device for a seat which has a seat cushion and a seatback, said reclining device comprising:

a bracket secured to said seat cushion;

an arm pivotally connected to said bracket and secured to said seatback, so that said seatback is pivotal relative to said seat cushion, said arm having a first toothed portion;

a lock lever having one end pivotally connected to said bracket, said lock lever having a second toothed portion which is latchingly engageable with said first toothed portion, said lock lever having at the other end a curved edge;

a pivotal lever pivotally connected to said bracket and having a pin formed thereon, said pin being slidably engageable with said curved edge of the lock lever thereby forming a cam means which operably pivots the second toothed portion in and out of engagement with the first toothed portion;

first biasing means for biasing said pivotal lever in a direction to press said pin against said curved edge; and

an actuating lever pivotally connected to said bracket in a manner to pivot concentric with said pivotal lever, said actuating lever having a enlarged end portion which is formed with an arcuate slot through which said pin of the pivotal lever slidably passes.

4,801,178

JOINT STRUCTURE FOR AXLE HOUSING BALL-END

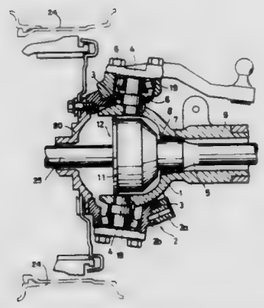
Naomichi Sasa, Fujisawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 6,139

Claims priority, application Japan, Jan. 30, 1986, 61-16691; Jan. 30, 1986, 61-16692

Int. Cl.[4] B60K *17/30*

U.S. Cl. 301—124 H 4 Claims



1. In a joint structure for an axle comprising: a non-rotatable tubular axle extending in the transverse direction of a car; a hollow spherical portion having a spherical surface formed at the end portion of said tubular axle; a non-rotatable hollow axle casing disposed on a wheel side; a knuckle mounted to the end surface of said axle casing; a pair of king-pins fitted to said hollow spherical portion and supporting rotatably said knuckle on said spherical surface of said hollow spherical portion; an annular seal fitted to said knuckle and coming into sliding contact with said spherical surface of said hollow spherical portion; and a constant-velocity joint connecting an axle shaft supported rotatably inside said tubular axle to a drive shaft disposed rotatably inside said axle casing, and disposed inside the space defined by said hollow spherical portion, said knuckle and said axle casing;

a joint structure for an axle wherein an outer race of said constant-velocity joint is coupled to an end of the axle shaft, and that said annular seal is fitted to said knuckle in such a manner as to cross the axis of each of said king pins.

4,801,179

LOAD-DEPENDENT BRAKE PRESSURE CONTROL DEVICE FOR PNEUMATIC BRAKES OF RAIL VEHICLES

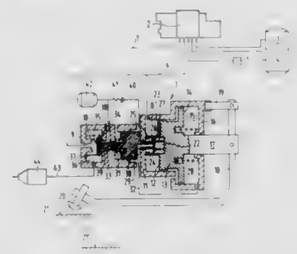
Josef Hintner, Turkheim, Fed. Rep. of Germany, assignor to Knorr-Bremse AG, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1987, Ser. No. 81,257

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1986, 3626191

Int. Cl.[4] B60T *8/18*

U.S. Cl. 303—22.2 9 Claims



1. Load-dependent brake pressure control device for indirectly acting, direct-release pneumatic rail vehicle brakes, said control device comprising a brake control valve (2) controlling a first brake pressure; a key valve (7; 7') having a key piston which is acted on by said first brake pressure in opposition of a spring means (28), for moving a sensing arm (18) sensing deflection of an abutment of a rail vehicle, and valve means switching in dependence on an adjustable key position of said sensing arm (18); said valve means transmitting said first brake pressure to a brake cylinder (44) when a position of said key valve corresponds to a loaded vehicle and said valve means transmitting said first brake pressure to an air container (42) when said position of said key valve corresponds to an unloaded vehicle; and a reduction valve (23, 26) controlled by a differential piston (13) having a smaller surface and a larger surface and reducing said first brake pressure to a second brake pressure also transmitted to said brake cylinder (44); means for loading said differential piston (13) on said smaller surface (12) by said first brake pressure prevailing in a first impact space (8), and on said larger surface (14) by said second brake pressure, prevailing in a second impact space (15), said reduction valve (23, 26) being a reflux valve opening in the flow direction to said brake control valve (2), wherein

(a) said differential piston (13), together with said reduction valve (23, 26), which constitutes a part of said valve means, is arranged in said key valve (7; 7') and mechanically coupled to said sensing arm (18) and comprising means for directing said first brake pressure in the direction of movement of said sensing arm (18) to said key positions;

(b) a stop (24) effective in the opening direction of the reduction valve (23, 26) is provided between a first valve part (23) of the reduction valve (23, 26), spring-loaded (27) in the closing direction, and the differential piston (13), the stop (24) having a play whose magnitude, relative to the lift to said differential piston (13) for adjusting the key positions of said sensing arm (18), falls between the respective lifts for said key positions for loaded and unloaded vehicles;

(c) a second valve part (26) of said reduction valve (23, 26) disposed in a connection between said first and a third impact space (8, 29) is connected to a switching piston (30; 30a) also disposed in said key valve (7; 7'), said switching piston being loaded in an opening direction of said reduction valve (23, 26), in opposition to spring means (31), by said second brake pressure in said third impact space (29), the lift of said switching piston being smaller than the play of said stop coupling (24);

(d) the third impact space (29) is connected to the air container (42); and

(e) a shuttle valve (10, 35, 38), switching in dependence on the second brake pressure, selectively connects the brake cylinder

(i) with a space (9; 49) that constantly holds the first brake pressure, when said switching piston (30; 30a and 52) is not loaded, and

(ii) otherwise to said air container (42).

4,801,180

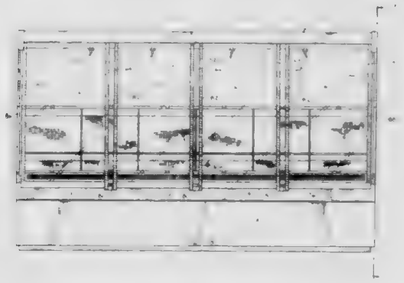
REFRIGERATED AND MOISTURIZED PRODUCE RACK AND METHOD FOR THE REFRIGERATED AND MOISTURIZED DISPLAY AND STORAGE OF PRODUCE

J. Cabot Styles, 162 Paradise Cove, Malibu, Calif. 90265

Continuation-in-part of Ser. No. 533,413, Sep. 19, 1983, abandoned, and a continuation-in-part of Ser. No. 809,564, Dec. 16, 1985, abandoned. This application Oct. 10, 1986, Ser. No. 917,424

Int. Cl.[4] A47F *3/04*

U.S. Cl. 312—115 2 Claims



1. A cover means for covering the display area opening of a produce rack, said opening defined by a rear wall, a front edge, a right side wall, and a left side wall, said cover means comprising:

at least two curtains, each of said curtains having:

a left edge;

a right edge; and

a spring-loaded roller coupled to said rear wall;

said curtains selectively extending to said front edge; and

said rollers rolling up said curtains for storage when said curtains are not extended over said opening to said front edge;

said left edge of one of said at least two curtains spaced from and substantially parallel to said right edge of an adjacent of said at least two curtains defining a substantially rectangular gap therebetween;

one strip connector for each of said gaps for covering said gap when said adjacent curtains are extended over said opening; and

fastener means for securing said strip connector to said adjacent curtains.

4,801,181

ADHESIVE-BONDED MULLION BRACKET FOR HOUSEHOLD REFRIGERATOR

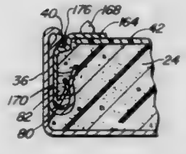
Rexford W. Cordill, Evansville; John T. Woods, Scott Township, Vanderburgh County, both of Ind., and Louis W. Fellwock, Sebastian County, Ark., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 19, 1987, Ser. No. 51,950

The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.

Int. Cl.[4] A47B *81/00*

U.S. Cl. 312—214 14 Claims



1. In a refrigeration apparatus cabinet structure including a liner defining a space to be refrigerated, said liner having an outwardly turned edge, an outer cabinet defining a turned edge having a returned portion defining a channel opening inwardly of said cabinet and receiving said turned edge of the liner, a center rail defining a partition front wall, and a center rail bracket defining a distal edge, the improvement comprising:

a body of adhesive disposed in a preselected portion only of said channel embedding the distal end of said center rail bracket and defining the sole means for retaining the center rail bracket in said cabinet structure.

4,801,182

REFRIGERATOR DOOR STRUCTURE

L. D. Metcalfe, Royalton Township, Berrien County; Michael J. Maczazak, Southfield; Curtis J. Bailey, Birmingham, and Paul R. Deyo, Van Buren Township, Wayne County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 21, 1987, Ser. No. 136,026

Int. Cl.[4] A47B *88/00*

U.S. Cl. 312—309 14 Claims

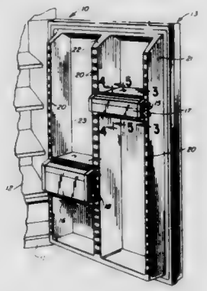
1. In a refrigeration apparatus having wall means defining a refrigerated space having an access opening, and a door movably mounted to said wall means for selectively closing said opening in a closed position of the door, said door having an inner portion confronting said storage space in said closed position, the improvement comprising:

a storage container having a removable cover, housing means; and

mounting means for fixedly associating said housing means with said door inner portion selectively in any one of a

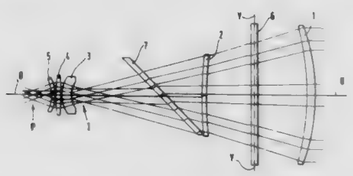
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plurality of different locations, said housing means defining a front opening pocket for removably receiving and



fittedly retaining said storage container on said door in said any one of a plurality of different locations.

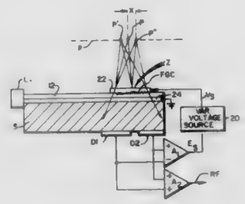
4,801,183
INFRA-RED OPTICAL SYSTEMS
John M. Palmer, North Wales, United Kingdom, assignor to Pilkington P.E. Limited, St. Helens, England
Filed Jul. 30, 1985, Ser. No. 760,489
Claims priority, application United Kingdom, Aug. 7, 1984, 8420070
Int. Cl.[4] G02B *13/14*
U.S. Cl. 350—1.2 9 Claims



1. An infra-red optical system having an optical axis and comprising:
- a beam-splitter plate located in a beam position having one value of numerical aperture and being tilted with respect to the optical axis of the system; and,
- a single compensating plate located in a beam position having another and different value of numerical aperture and being tilted with respect to the optical axis of the system differently from the beam-splitter plate,
- wherein the manner in which the compensating plate is tilted differently from the tilted beam-splitter plate is such as to compensate at least partially for aberrations introduced by the tilted beam-splitter plate.

4,801,184
INTEGRATED OPTICAL READ/WRITE HEAD AND APPARATUS INCORPORATING SAME
Joseph F. Revelli, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 15, 1987, Ser. No. 62,524
Int. Cl.[4] G02B *6/10*
U.S. Cl. 350—96.14 10 Claims

1. Apparatus for writing and/or reading information on a recording element having a plurality of data tracks along which such information is, or is to be, recorded, said apparatus comprising:
(a) a laser for producing a beam of radiation;
(b) an integrated optical write/read head, said head comprising (i) a planar optical waveguide disposed on one surface of a planar substrate, said waveguide being positioned to receive and guide said beam along a predetermined path, (ii) means for deflecting a beam of radiation guided by said waveguide out of a data track on the recording element and for bringing such deflected beam to focus at a spot, such deflected beam emerging from said waveguide at an egress zone;
(c) means for detecting any displacement of said spot from a



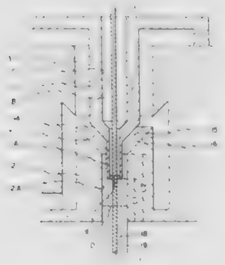
desired data track and for producing a tracking error signal proportional to said displacement;
(d) means responsive to said error signal for selectively varying the effective refractive index of said waveguide in the vicinity of said egress zone, said refractive index-varying means comprising a pair of spaced, parallel electrodes positioned in close proximity to said waveguide, and means for producing a variable electric field between said electrodes, said field varying as a function of said error signal.

4,801,185
DIRECTIONAL COUPLER
Terry Bricheno, Essex, Great Britain, assignor to STC PLC, London, England
Filed Mar. 31, 1987, Ser. No. 32,783
Claims priority, application United Kingdom, May 23, 1986, 8612660
Int. Cl.[4] G02B *6/02, 6/26*
U.S. Cl. 350—96.15 2 Claims



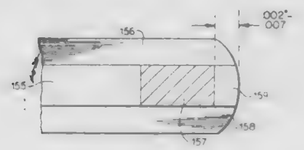
1. A fused tapered optical fibre directional coupler, which coupler is constructed from a plurality of lengths of single mode fibre that have been arranged in side by side assembly and drawn down and fused together to produce a reduced diameter portion of the assembly within which reduced diameter portion the fibres are mutually coupled, wherein each one of said plurality of lengths of single mode fibre is formed of two axes-aligned portions of polarisation-preserving fibre spliced to opposite ends of an associated stub of non-polarisation-preserving fibre, and wherein said stubs accommodate the reduced diameter portion of the assembly within which the fibres are mutually coupled.

4,801,186
COATED OPTICAL FIBER, FABRICATION PROCESS THEREOF AND FABRICATION APPARATUS THEREOF
Makoto Wagatsuma, Mito; Fumio Yamamoto, Katsuta; Takao Kimura; Yoshito Shuto, both of Mito, and Shinzo Yamakawa, Katsuta, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan
Filed Jan. 17, 1985, Ser. No. 692,922
Claims priority, application Japan, Jan. 25, 1984, 59-10323; May 29, 1984, 59-107502
Int. Cl.[4] G02B *6/10*
U.S. Cl. 350—96.30 9 Claims



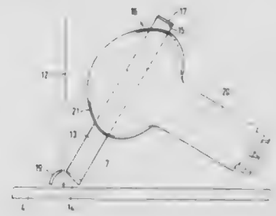
1. A coated optical fiber comprising:
an optical fiber;
a first layer of a thermoplastic rubber composition which is disposed around the circumference of said optical fiber, has a Young's modulus of 0.1 GPa or less, and is capable of extrusion coating, the thermoplastic rubber composition of said first layer comprising a styrene/butadiene block copolymer containing 20–40% by weight of styrene, a naphthenic processing oil, and a heat stabilizer as the major components, each amount of said naphthenic processed oil and said heat stabilizer being 5–150 parts by weight and 0.5–5 parts by weight, respectively, with respect to 100 parts by weight of said styrene/butadiene block copolymer; and
a second layer of a thermoplastic resin composition which is disposed around the circumference of said first layer, has a linear expansion coefficient of $1\times10^{-5}°C.^{-1}$ or less and a Young's modulus of 5 GPa or more, and is capable of extrusion coating.

4,801,187
LIQUID LIGHT TUBE END CAP ASSEMBLY
Lawrence E. Elbert, Huntington Beach; John C. Mazza, El Toro, and Raymond L. Hecker, Mission Viejo, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Apr. 30, 1986, Ser. No. 858,218
Int. Cl.[4] G02B *6/26*
U.S. Cl. 350—96.15 13 Claims



1. In an automated instrument system for analyzing the constituents of a specimen sample wherein the sample is contained in a cuvette and light is directed to the sample, into a light guide and to a photo-optical system for analyzing the sample, an improved light guide assembly comprising a light guide having projecting at one end portion thereof a quartz member and a housing for containing the end portion of the light guide and the quartz member said housing projecting beyond the end of the quartz member forming an aperture between the quartz member and the housing, the aperture having a depth of between about 0.002 and 0.007 inches.

4,801,188
LIGHT GUIDE OPTICS
Bernhard Conrad, Erlangen, and Günther Tresal, Bubeareuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Feb. 9, 1987, Ser. No. 12,346
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1986, 3603928
Int. Cl.[4] G02B *6/00*
U.S. Cl. 350—96.10 11 Claims



1. A light guide optical device for guiding light emitted from an original to an opto-electrical transducer for conversion into electrical signals, the original being scanned line-by-line, comprising:
a light conducting plate having a first narrow side directed towards the original and a second narrow side connecting at the ends of said first side, said second narrow side being curved at least in areas, said plate defining a hole extending through said plate and the transducer extending through said plate and fastened in said hole to receive light emerging from a surface of said plate that limits said hole and that travels into said hole toward the transducer.

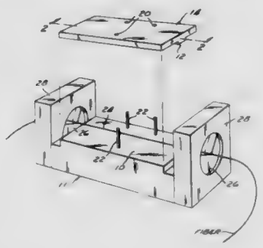
4,801,189
BIREFRINGENT FIBER NARROWBAND POLARIZATION COUPLER AND METHOD OF COUPLING USING SAME
Herbert J. Shaw, Stanford; Robert C. Youngquist, and Janet L. Brooks, both of Mountain View, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Continuation of Ser. No. 556,305, Nov. 30, 1983. This application Feb. 22, 1988, Ser. No. 161,375
Int. Cl.[4] G02B *6/26, 5/30*
U.S. Cl. 350—96.15 34 Claims

1. A directional coupler apparatus, comprising:
- a monomode, polarization maintaining, birefringent optical fiber having first and second orthogonal polarization modes which correspond to first and second orthogonal axes of birefringence, respectively, said fiber having a beat length for said two modes; and
- a member having a plurality of elements, each of said elements having a surface for applying force to said fiber at an angle relative to said axes of birefringence, said elements spaced along said fiber to apply said force at plural intervals along said fiber, said intervals spaced by a dimension related to the beat length of said fiber such that said force causes cumulative transfer of power between said first mode and said second mode in said fiber.

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28. In a polarization maintaining, birefringent optical fiber, having first and second orthogonal polarization modes which correspond to first and second orthogonal axes of birefringence, respectively, a method of coupling light between said modes, comprising:

introducing a lightwave into said polarization maintaining, birefringent optical fiber, said fiber having a beat length between said modes for said lightwave;



utilizing a surface having periodic variations to apply force to said fiber asymmetrically to perturb said axes of birefringence at plural intervals along said fiber; and

spacing said intervals in accordance with said beat length to cause cumulative power transfer between said modes at said intervals.

4,801,190

TWO-WAY OPTICAL FIBER TRANSMISSION NETWORK

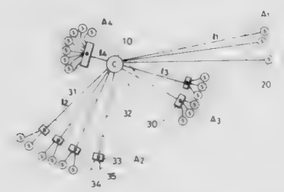
Katsuyuki Imoto, Sayama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 4, 1987, Ser. No. 58,197

Claims priority, application Japan, Jun. 10, 1986, 61-132815

Int. Cl.⁴ G02B *6/28*

U.S. Cl. 350—96.16 10 Claims



4. A two-way optical fiber transmission network comprising:

a center that transmits and receives information;

a plurality of areas each having a plurality of subscribers who are using information from the center;

one or more optical star couplers connected with a plurality of subscribers in one or more areas;

one or more optical fiber cables connecting the one or more optical star couplers with the center; and

optical fiber cables connecting the plurality of subscribers in the remaining areas with the center,

wherein the distance between the center and the closest optical star coupler to the center is shorter than the distance between the center and the subscriber closest to the center in the remaining areas.

5. A two-way optical fiber transmission network as set forth in claim 4, in which the area having the optical star couplers comprises:

a spare optical star coupler with a plurality of branch ports; and

an optical fiber cable connecting the spare optical star coupler with the center.

4,801,191

CONNECTING SECTION FOR OPTICAL FIBER CABLE

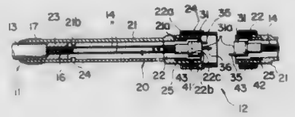
Sinichiro Nakai; Yuichi Obara; Renichi Yuguchi, and Shigeru Tachigami, all of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1986, Ser. No. 894,031

Claims priority, application Japan, Sep. 25, 1985, 60-210030

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.20 14 Claims



1. An apparatus for connecting optical fiber cables, said apparatus comprising:

first and second multicore connectors respectively mounted on a plurality of optical fiber core wires extending from an end of a cable sheath of a first optical fiber cable and on a plurality of optical fiber core wires extending from an end of a cable sheath of a second optical fiber cable,

first and second outside housing members mounted on the outer peripheral surface of the ends of the cable sheaths of said first and second optical fiber cables, respectively, each of said first and second outside housing members respectively securing a central tension member extending from the ends of the cable sheaths of said first and second optical fiber cables, said first and second outside housing members including means for directly coupling said first and second outside housing members;

first and second inside housing members movable in a longitudinal direction within the interior of said first and second outside housing members, respectively, said multicore connectors being retained by said first and second inside housing members; and

springs interposed between said first inside and outside housing members and between said second inside and outside housing members to apply a mating force to said first and second multicore connectors.

4,801,192

ELECTRIC AERIAL CABLE HAVING AN OPTICAL COMMUNICATIONS LINE

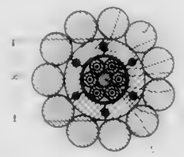
Roderich Wehner, Köln, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jul. 9, 1987, Ser. No. 71,694

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1986, 3624267

Int. Cl.⁴ G02B *6/00*

U.S. Cl. 350—96.23 6 Claims



1. A water-tight electric aerial cable having a cavity formed by a plurality of electrically conductive sectional elements which are joined so as to form a tube, in which cavity an optical communications line is housed, wherein the tangentially adjoining end faces of the sectional elements are interengaged and have longitudinal facing grooves with a substantially rectangular inside contour which form an enclosed chamber in which an elastically compressed annular sealing element is arranged, said sealing element retaining its elasticity at high temperatures and having a diameter which in the uncompressed condition is larger than the tangential inside diameter of the chamber.

4,801,193

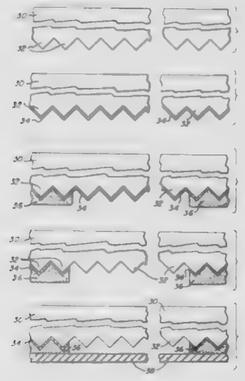
RETROREFLECTIVE SHEET MATERIAL AND METHOD OF MAKING SAME

David C. Martin, Berlin, Conn., assignor to Reflexite Corporation, New Britain, Conn.

Filed Mar. 4, 1988, Ser. No. 164,184

Int. Cl.⁴ G02B *5/124, 5/136*

U.S. Cl. 350—103 24 Claims



15. A retroreflective sheet material comprising:

(a) retroreflective sheeting having a multiplicity of closely spaced microretroreflective formations on one surface thereof with a coating on a minor portion of said one surface, said coating including a reflective metallic deposit on a minor portion of the area of said one surface; and

(b) backing sheeting adhered to said one surface of said reflective sheeting, and extending in a plane generally above the formations and spaced from the predominant surface area exposed to the atmosphere, the major portion of the area of said one surface being free from said coating and from contact with said backing sheeting to provide an atmosphere interface thereat, whereby light rays entering the said other surface of said sheeting and impinging upon said metallic deposit are reflected thereby and those impinging upon said metal free surface area are reflected by the atmospheric interface.

4,801,194

MULTIPLEXED ARRAY EXPOSING SYSTEM HAVING EQUI-ANGULAR SCAN EXPOSURE REGIONS

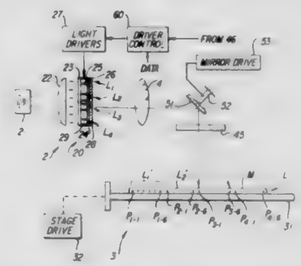
John A. Agostinelli, Rochester, and José M. Mir, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1987, Ser. No. 100,059

Int. Cl.⁴ G02F *1/03, 1/01*

U.S. Cl. 350—356 4 Claims

1. An electro-optic imaging apparatus comprising: (i) a linear light source array comprising a plurality of selectively activatible pixel source portions having approximately equal widths, in the linear direction of the array, (ii) lens means for forming an image of said pixel source portions at a linear image zone and (iii) multiplexing means for scan-indexing the array image along said image zone in a plurality of increments, said light



source array being constructed so that the spaces between said array pixel sources increase in linear dimension progressively from the center to the ends of said array.

4,801,195

VARIABLE LIGHT TRANSMITTANCE GLASS BOARD FUNCTIONAL AS ELECTROCHROMIC CELL

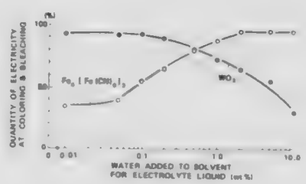
Mikio Kawai; Harutoshi Miyagi, and Mikio Ura, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 19, 1985, Ser. No. 810,687

Claims priority, application Japan, Jan. 29, 1985, 60-15193; Feb. 5, 1985, 60-19186

Int. Cl.⁴ G02F *1/01*

U.S. Cl. 350—357 9 Claims



1. A variable light transmittance glass board which is functional as an electrochromic cell and which comprises:

two transparent glass substrates each of which is laid with a transparent electrode film and which are arranged such that the two transparent electrode films are held opposite to and spaced from each other;

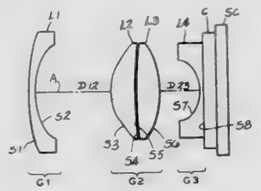
a first electrochromic layer which comprises tungsten trioxide and is formed on one of the two transparent electrode films;

a second electrochromic layer which comprises Prussian blue and is formed on the other of the two electrode films; and

an electrolyte liquid which fills up the space remaining between the two transparent electrode films, said electrolyte liquid being a solution of a supporting electrolyte in an organic polar solvent to which 0.2 to 3.0 wt% of water is added.

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4,801,196
WIDE ANGLE PROJECTION LENS
Ellis I. Betensky, Redding, Conn., assignor to U.S. Precision Lens, Incorporated, Cincinnati, Ohio
Continuation-in-part of Ser. No. 642,825, Aug. 21, 1984, Pat. No. 4,697,892, which is a continuation-in-part of Ser. No. 543,017, Oct. 18, 1983, abandoned, continuation-in-part of Ser. No. 652,062, Sep. 19, 1984, Pat. No. 4,707,084, which is a continuation-in-part of Ser. No. 642,825, Aug. 21, 1984, Pat. No. 4,697,892, which is a continuation-in-part of Ser. No. 543,017, Oct. 18, 1983, abandoned. This application Sep. 13, 1985, Ser. No. 776,140
Int. Cl.[4] G02B *13/18, 9/00, 9/34*
U.S. Cl. 350—432 **67 Claims**



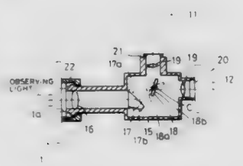
1. A projection lens comprising from the image end a negative lens unit having at least one aspheric surface, a positive lens unit, and a negative lens unit having an aspheric surface concave to the image, said first lens unit serving as an aberration corrector and contributing negative optical power to the overall lens, said third lens unit contributing to field flattening, said first lens unit also contributing to field flattening, and

$$0.4 > |K_1/K_0| > 0.15$$

$$0.9 > |K_3/K_0| > 0.2$$

where K_1 and K_3 are the optical powers of said first and third lens units at the optical axis and K_0 is the optical power of the overall lens, determined at the optical axis.

4,801,197
ADAPTOR FOR MICROSCOPES PROVIDING AN ODD NUMBER OF REFLECTIONS FOR PROVIDING AN EVEN NUMBER OF REFLECTIONS IN CONJUNCTION WITH ADDITIONAL MICROSCOPE REFLECTION MEANS
Kazuyuki Minami, Musashino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 11, 1988, Ser. No. 154,201
Claims priority, application Japan, Feb. 16, 1987, 62-32971
Int. Cl.[4] G02B *5/08*
U.S. Cl. 350—622 **7 Claims**

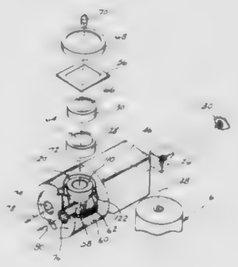


1. In an adaptor for microscopes provided with a mount for a microscope, a mount for a TV camera and a mount for a still camera and adapted to introduce therein light reflected an odd number of times in a microscope body, an improvement comprising:

first reflecting means reflecting incident light an even number of times to emit the light in a direction making a predetermined angle with the incident light; and

second reflecting means being able to rotate around a shaft positioned near a center of gravity thereof so as to be made to rest on two predetermined positions and reflecting once the incident light coming from said first reflecting means to emit the light in one direction of the mount for the TV camera and the mount for the still camera.

4,801,198
SLIT LAMP ATTACHMENT
Gregory L. Heacock, Bothell, and Phillip J. Erickson, Kirkland, both of Wash., assignors to Ocular Instruments, Inc., Bellevue, Wash.
Continuation-in-part of Ser. No. 773,805, Sep. 9, 1985, abandoned. This application Sep. 5, 1986, Ser. No. 902,395
Int. Cl.[4] A61B *3/10*
U.S. Cl. 351—214 **11 Claims**



1. A slit lamp attachment that permits an operator to view the superimposition of a first image of a patient's eye and a second image, the slit lamp comprising objective means for forming the first image directed along a first optical path, and viewing means comprising an eyepiece, the objective means and the viewing means including an objective connector and a viewing connector respectively, the objective connector and the viewing connector being adapted to connect the viewing means directly to the objective means, the viewing means being attachable to the objective means such that the eyepiece is positioned along the first optical path to permit viewing of the first image through the eyepiece, the slit lamp attachment comprising:

(a) a body including a first connector adapted to cooperate with the objective connector to attach the body to the objective means and a second connector adapted to cooperate with the viewing connector for attaching the viewing means to the body, the first connector being substantially similar to the viewing connector and the second connector being substantially similar to the objective connector, the body further comprising a passage through which the first image can pass along the first optical path from the objective means to the viewing means;

(b) a beamsplitter mounted in the body and positioned in the first optical path; and

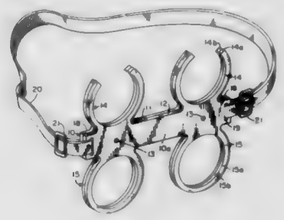
(c) an image forming system comprising means for forming the second image and for projecting the second image onto the beamsplitter such that a portion of the second image is reflected by the beamsplitter along the first optical path.

4,801,199
TEMPLE ADAPTER
Sal J. Penora, 920 1st Ave., Franklin Square, N.Y. 11010
Continuation-in-part of Ser. No. 824,587, Jan. 3, 1986, abandoned. This application Aug. 6, 1987, Ser. No. 82,381
Int. Cl.[4] G02C *5/22*
U.S. Cl. 351—111 **3 Claims**



1. In combination with an eye glass frame, a replacement temple comprising temple adapter means for replacing an original connection of an original temple on said frame comprising a U-shaped member having an outside surface overlapping said frame and cemented thereto, a stationary member having an outside surface attached to the outside of said U-shaped member, a hinge having two sides, means on the outside of said stationary member for supporting one side of said hinge, and a replacement sidepiece connected to the other side of said hinge, said stationary member being soldered to the outside of said U-shaped member, and said U-shaped member being constructed of sheet metal sufficiently thick to support said replacement temple and sufficiently thin to permit fitting on and conforming to said frame and cemented thereto.

4,801,200
OPTOMETRIC LENS TRIAL FRAME
Eric S. Hussey, N. 10511 Middleton, Spokane, Wash. 99218
Filed Mar. 27, 1987, Ser. No. 30,629
Int. Cl.[4] A61B *3/04*
U.S. Cl. 351—230 **6 Claims**



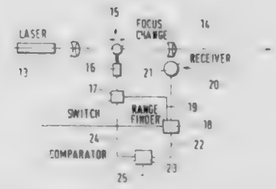
1. In a test frame for optometric therapy and testing, that is secured to a wearer's head, and has

a rigid central longitudinal support, first and second pairs of lens holder members secured to opposite sides of said central support, each member of a lens holder pair positioned on the same side of said support, said support being formed with distal ends including attachment means, and

a resilient head band, for fastening about a wearer's head, secured to the attachment means of the longitudinal support for enabling rotary motion of the test frame about the support without removal from the wearer's head, the invention comprising:

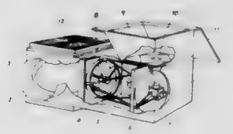
the test frame being formed of a plurality of frame halves each half formed with two pairs of lens holder elements with fastening means to secure said frame halves together to form said pairs of lens holder members.

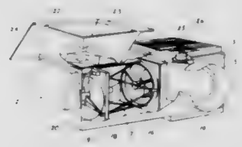
4,801,201
METHOD AND DEVICE FOR LASER-OPTICAL MEASUREMENT OF COOPERATIVE OBJECTS, MORE ESPECIALLY FOR THE SIMULATION OF FIRING
Kurt Eichweber, Hamburg, Fed. Rep. of Germany, assignor to Prazitronic Gesellschaft fur Feinmechanik und Electronic mbH, Hamburg, Fed. Rep. of Germany
Filed Dec. 23, 1985, Ser. No. 812,791
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1984, 3447887; Oct. 7, 1985, 3535744
Int. Cl.[4] G01C *3/08*
U.S. Cl. 356—4 **11 Claims**



1. In a method for the laser-optical measurement of cooperative objects at an uncertain distance of the type using emission of a laser beam and evaluation of the echo reflected by the object for target practice, the improvement comprising means for measuring the distance of the object and setting the divergence of the beam in accordance with the object distance in such a manner that the beam has a predetermined cross-sectional size at the object, said size being independent of the distance of said object whereby the relative size of an operative portion of the object with respect to the size of the beam at the object is maintained substantially constant so that the reflection of light by said operative portion and the detection of said reflected light give a uniform measure of accuracy.

4,801,202
METHOD AND APPARATUS FOR RADIOMETER STAR SENSING
Jack E. Wilcox, Dekalb, Ind., assignor to ITT Aerospace Optical, Fort Wayne, Ind.
Filed Dec. 20, 1985, Ser. No. 811,963
Int. Cl.[4] G01B *11/26*; G01C *1/00*; G01J *1/20*
U.S. Cl. 356—152 **11 Claims**





1. A system for orienting the optical axis of a radiometer instrument mounted on an orbiting spacecraft to enable said instrument to scan a desired area on a remote body such as the

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earth by taking a siting of a single star whose location is used to accurately determine the optical axis of said instrument, comprising:

optical detection means associated with said instrument and operative to detect radiant energy, said optical detection means including an array of detectors having a long and a short axis, with the long axis of said array positioned perpendicularly to the orbital plane of said spacecraft with each detector in said array operative to provide an output signal upon the impingement of radiant energy on said detector,

controllable scanning means positioned with respect to said array and operative to scan said detectors in said array as controlled by a servo signal,

servo means coupled to said scanning means and operative to control the scanning position of said scanning means according to a control servo signal,

means coupled to said servo means to cause said scanning means to commence a scan of said detector array so that the image of said array is slightly ahead of the expected position of said star and for stopping said scan when said star is radiating upon said array to cause the image of said star to drift through the field of said optical detection means due to the orbital motion of said spacecraft,

means for detecting the time of transition of movement by said star image through said array to determine the orientation of the optical axis of said instrument relative to said desired scanned area.

4,801,203

DETECTOR OF IMPURITIES IN MOLTEN SOLDER

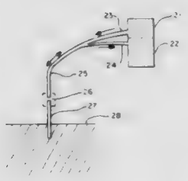
Shigeo Harada, Ibaragi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 734,567, May 15, 1985, abandoned. This application Oct. 6, 1987, Ser. No. 106,953

Claims priority, application Japan, May 18, 1984, 59-101520; Jul. 31, 1984, 59-163223

Int. Cl.[4] G01N *21/88*; B23K *1/00*

U.S. Cl. 356—237 **4 Claims**



1. A detector of impurities in molten solder for detecting kinds and concentrations of impurity metals in molten solder or changes in the tin-lead composition thereof by measuring the dissolution rate of a film of the same metal as that to be detected or a copper film, said detector comprising

a light-transmissive rod having a first end cross-sectional area and a second end cross-sectional area at opposite ends thereof,

a metallic film coveringly attached to said first end cross-sectional area of said rod,

measuring means for optically measuring the dissolution time of said metallic film through said second end cross-sectional area while said first end cross-sectional area is immersed in molten solder,

a light-screening layer coveringly attached to the peripheral or side section of said rod, said light-screen layer being insoluble in molten solder.

4,801,204

METHOD AND APPARATUS FOR MEASURING THE TURBIDITY OF LIQUID MEDIA

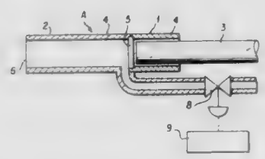
Takashi Nakamura, Kawasaki; Motohiko Hikuma, Yokohama; Takahiro Kuratani, Kawasaki; Haruo Obana, Tokyo, and Yasutsugu Morita, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jul. 12, 1985, Ser. No. 754,212

Claims priority, application Japan, Jul. 12, 1984, 59-145192

Int. Cl.[4] G01N *21/26*; C12K *1/04*

U.S. Cl. 356—338 **14 Claims**



1. A method for on-line measurement of the turbidity of a liquid media, said method comprising:

(i) placing an apparatus for measuring the turbidity of a liquid media in a liquid media, said apparatus comprising a cylindrical body, a light sensor including at least one optical fiber in said cylindrical body, said cylindrical body having a light-receiving surface and a measuring cell adjacent said light receiving surface for holding the said liquid media to be analyzed, wherein said light sensor comprises means for radiating light through said light-receiving surface and into said measuring cell, and further comprises means for detecting scattered light impinging on said light-receiving surface, said cell having one end joined to said sensor, another end which is open, and a means for intermittently cleaning the said light-receiving surface, wherein said apparatus is oriented in a direction permitting bubbles dissolved in the said liquid media within said measuring cell to float away therefrom and out of the cell through said open end and preventing bubbles outside of said cylindrical body from entering said cell;

(ii) introducing a portion of said liquid media into said measuring cell;

(iii) allowing bubbles in the said measuring cell to float out of the said cell;

(iv) radiating light in the said liquid media via the said optical fiber; and

(v) detecting scattered light impinging on the said light-receiving surface.

4,801,205

PARTICLE SIZE MEASURING APPARATUS

Kyoichi Tatsuno, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 30, 1985, Ser. No. 739,283

Claims priority, application Japan, Jun. 30, 1984, 59-135972; Jun. 30, 1984, 59-135978

Int. Cl.[4] G01B *11/08*; G01N *15/02*

U.S. Cl. 356—336 **3 Claims**

1. A particle size measuring apparatus comprising:

laser means for outputting a laser beam;

an optical system for irradiating a number of particles to be measured with a laser beam from said laser means;

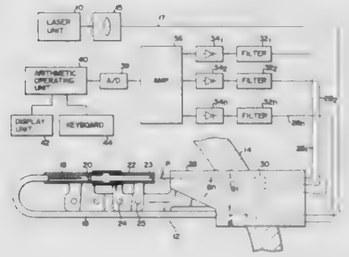
an optical shield, interposed between said optical system and the particles to be measured, for shutting off the light scattered by the optical system;

detecting means wherein said detecting means comprises optical fibers each having one end positioned at an equal distance from a center of an area containing the particles to be measured and photodetectors connected respectively to the other end of said optical fibers, for measuring

a scattered light intensity pattern generated by the particles to be measured irradiated with the laser beam through said optical shield;

a conversion table for storing conversion coefficients ($T(\theta)$) obtained from a ratio of an absolute value ($I(\theta)$ of the scattered light intensity pattern calculated in accordance with a scattering theory to a measured value ($Ipm(\theta)$) of a scattered light intensity pattern obtained when particles with a known particle diameter and particles density are irradiated with a laser beam said absolute value being expressed in terms of the number of particles whose diameters are within a predetermined range;

converting means for converting a measured value of the scattered light intensity pattern obtained by irradiating the



particles to be measured with the laser beam into the absolute value of the scattered light intensity pattern using the conversion coefficient stored in said conversion table;

first arithmetic operating means for calculating a relative particle size distribution ($n_r(D)$) of the particles to be measured from the absolute value of the scattered light intensity pattern converted by said converting means said relative particle size distribution being unitless; and

second arithmetic operating means for calculating an absolute particle size distribution of the particles to be measured from the absolute value of the scattered light intensity pattern obtained from said converting means and the relative particle size distribution obtained from said first arithmetic operating means.

4,801,206

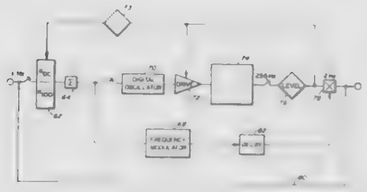
SIMPLIFIED RING LASER GYROSCOPE DITHER CONTROL AND METHOD

Rodney W. Benoist, Moorpark, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jun. 4, 1986, Ser. No. 870,722

Int. Cl.[4] G01C *19/64*

U.S. Cl. 356—350 **8 Claims**



1. A dither drive control for a ring laser angular rotation sensor that includes a dither flexure mounted between a ring laser gyroscope body and a support such that the ring laser gyroscope may be dithered to have angular oscillations about a sensing axis, comprising:

dither drive means for supplying a dither drive signal having a variable amplitude and frequency to the dither flexure to oscillate said ring laser gyroscope body at a selected amplitude about the sensing axis;

means for modulating the frequency of the dither drive signal to modulate the frequency of the dither oscillations, the amplitude of the dither drive signal required to maintain the selected amplitude of the dither oscillations being a function of the frequency of the dither oscillations;

means for demodulating the effect of modulating the frequency of the dither oscillations on the amplitude of the dither drive signal required to maintain the selected amplitude of the dither oscillations; and

means responsive to the demodulating means for controlling the dither drive means to drive the dither flexure at the selected amplitude and at a selected frequency.

4,801,207

METHOD AND APPARATUS FOR THE OPTICAL DETERMINATION OF SURFACE PROFILES

Daryl N. Williams, Mount Waverley, Australia, assignor to The Broken Hill Proprietary Company Limited, Victoria, Australia

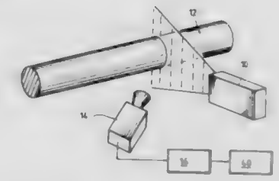
PCT No. PCT/AU86/00150, § 371 Date Jan. 2, 1987, § 102(e) Date Jan. 2, 1987, PCT Pub. No. WO86/07443, PCT Pub. Date Dec. 18, 1986

PCT Filed May 27, 1986, Ser. No. 14,052

Claims priority, application Australia, Jun. 14, 1985, PH1039

Int. Cl.[4] G01B *11/24*

U.S. Cl. 356—376 **9 Claims**



1. A method of providing information as to the cross-sectional shape or profile of at least a portion of a surface of a body, comprising the steps of:

providing a known datum, said known datum including at least four substantially planar surfaces defining at least four planes substantially perpendicular to a measurement plane such that four lines formed by the intersection of said planes with the measurement plane define at least three non-colinear reference locations at the intersections of said lines;

detecting said known datum with a detecting apparatus;

determining a geometrical image tranformation from said known datum which would transfer the detected shape defined by the reference locations from an image plane to an object plane to the true shape defined by the reference locations in the known datum;

illuminating said body to produce a reflected light from said body to provide preliminary information as to the cross-sectional shape or profile of the body;

performing said geometrical image transformation on said preliminary information to thereby change the shape of the preliminary information to thereby compensate for distortions due to the geometrical relationship between the detecting apparatus and the body, said geometrical image transformation transforming said preliminary information from an image plane to an object plane so as to provide a better indication of the true cross-sectional shape or profile of at least a portion of the surface of the body.

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4,801,208

PROJECTION TYPE EXPOSING APPARATUS

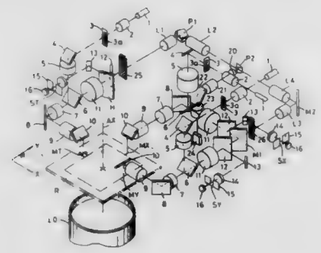
Kiuya Katoh, and Toshio Matsuura, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 796,785, Nov. 12, 1985, Pat. No. 4,710,029. This application Aug. 29, 1986, Ser. No. 901,587

Claims priority, application Japan, Nov. 19, 1984, 59-244229; Sep. 2, 1985, 60-193589

Int. Cl.[4] G01B *11/27*

U.S. Cl. 356—401 **17 Claims**



1. An exposing apparatus for exposing a plurality of exposure areas on a substrate by light of a predetermined wavelength, wherein said substrate has a plurality of first areas, each of which has a first mark disposed between adjacent ones of said plurality of exposure areas, including:

as mask formed by a light transparent portion and a light intercepting portion, said mask having a main area, a second area in which a second mark is disposed and a third area in which a third mark is disposed, said second area being disposed outside said main area and said third area being disposed inside said second area;

stage means for mounting said substrate;

projecting means provided with a projection optical system for projecting the image of said main area of said mask formed by said projection optical system on one of said plurality of exposure areas of said substrate mounted by said stage means;

illuminating means including a light source, light from which is of a wavelength substantially equal to said predetermined wavelength, said illuminating means having a first status in which said illuminating means illuminates said second and third areas simultaneously by light from said light source, and having a second status in which said illuminating means illuminates said third area by light from said light source, one of said first areas adjacent said one of said plurality of exposure areas being illuminated by light passed through a light transparent portion of said third area and said projection optical system when said illuminating means is in said second status;

an objective optical system;

first detecting means provided with a first detecting plane responsive to said illuminating means for detecting the position of an image of said second mark formed by said objective optical system on said first detection plane in said first status;

second detecting means provided with a second detecting plane responsive to said illuminating means for detecting a displacement between images of said first and third marks formed by said objective optical system on said second detection plane in said second status and producing a detection signal; and

displacement means responsive to said detection signal for providing a relative displacement between said mask and said substrate so that the images of said first and third marks formed by said objective optical system assume a predetermined relationship.

4,801,209

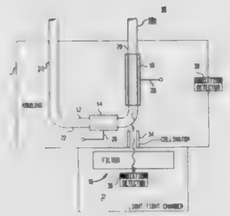
PROCESS AND APPARATUS FOR ANALYZING A GASEOUS MIXTURE AND A VISIBLE EMISSION SPECTRUM GENERATOR THEREFOR

David Wadlow, Basking Ridge, N.J., assignor to The BOC Group, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 822,457, Jan. 17, 1986, abandoned. This application May 4, 1987, Ser. No. 45,336

Int. Cl.[4] G01N *21/68*

U.S. Cl. 356—417 **20 Claims**



3. Apparatus for analyzing a gaseous mixture of three atomic or molecular components X, Y and Z from a combined emission spectrum comprising:

a. means for separating said combined emission spectrum into bandpass regions A, B and C at least equal in number to that of the number of component gases X, Y and Z such that each region contains energy peaks at characteristic wavelengths identifying each individual component gas;

b. means for measuring the intensity of the emission in each separated spectral region A, B and C;

c. analog-to-digital conversion means for transforming the regional intensities into digital electrical signals;

d. calculating means for correlating respective ratios of adjacent converted electrical signals into digital indicia representative of a measure of the individual component gases present in the mixture according to the following equations:

$$G1=a0+a1Z1+a2Z2+a3Z1^2+a4Z1Z2+a5Z2^2,$$

$$G2=b0+b1Z1+b2Z2+b3Z1^2+b4Z1Z2+b5Z2^2;$$

where a0 through a5 and b0 through b5 are constant coefficients;

V1=intensity of a selected X gas spectral feature in region A;

V2=intensity of selected Y gas spectral feature in region B;

V3=intensity of selected Z gas spectral feature in region C;

Z1=R1−M1; Z2=R2−M2;

R1=V3/V1; R2=V2/V1;

M1 and M2 are mid values of numerical ranges of the values of R1 and R2, respectively;

e. means within said calculating means for storing said equations and said coefficients;

f. digital-to-analog conversion means for transforming the solutions G1 and G2 from said calculating means into analog output signals; and

g. means responsive to the output signals from said digital-to-analog conversion means for determining the relative amount of at least one of the individual component gases as a utilizable electrical quantity.

4,801,210

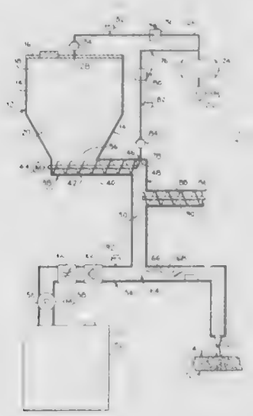
METHOD AND APPARATUS FOR CONTINUOUS MIXING OF SMALL, PRECISE QUANTITIES OF BULK MATERIALS WITH A LIQUID STREAM

Michael Glan, 1502 Kingsbury Rd., Garden City, Kans. 67846

Filed Mar. 14, 1988, Ser. No. 167,369

Int. Cl.[4] B01F *15/02, 13/02*

U.S. Cl. 366—156 **10 Claims**



1. Apparatus for mixing precise quantities of bulk materials with a stream of liquid comprising:

means defining a hopper presenting an enclosed chamber for receiving bulk materials,

said enclosed chamber having a lower outlet and being pressurizable to a value above atmospheric pressure;

means for pressurizing said chamber to a first, certain pressure;

an elongated, axially rotatable screw feeder extending through said outlet of said chamber for carrying away metered portions of said bulk materials from said chamber,

said screw feeder presenting a discharge end portion remote from said outlet of said chamber;

a vessel for receiving and storing liquid;

conduit means coupled to said vessel and having an outlet opening remote from the latter;

means for pumping liquid from said vessel and along the length of said conduit means under pressure for discharge through said outlet opening,

said conduit means including structure defining a mixing zone having an upwardly facing inlet opening;

an upright separation tube having an upper section for receiving bulk materials discharged from said end portion of said screw feeder,

said tube including a lower section directly connected to said structure defining said mixing zone of said conduit means in surrounding relationship to said inlet opening; and

air conveying means for accelerating bulk materials along substantially the length of said upright separation tube in cooperation with the effects of gravity and for directing said bulk materials through said inlet opening and into said mixing zone,

said conveying means including means for pressurizing the tube at a pressure equal to or less than the pressure of said chamber and at a pressure which is greater than the pressure of said liquid passing through said mixing zone of said conduit means in order to substantially preclude ascent of said liquid through said inlet opening adjacent said mixing zone and into said upright tube,

said means for pressurizing said tube including structure defining an air inlet disposed adjacent said discharge end portion of said screw in order to facilitate acceleration and descent of bulk materials along said separation tube.

4,801,211

HUMIDITY AND DEW POINT DETECTOR

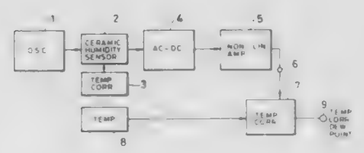
Hideaki Yagi; Takahito Kojima, and Katsuhiko Horii, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Oct. 14, 1986, Ser. No. 918,755

Claims priority, application Japan, Oct. 12, 1985, 60-226017; Oct. 12, 1985, 60-226018; Oct. 12, 1985, 60-226019

Int. Cl.[4] G01N *25/02*

U.S. Cl. 374—28 **8 Claims**



1. A humidity detecting circuit comprising:

a humidity sensor providing an AC output;

an AC-DC conversion amplifier circuit receiving said AC output of said humidity sensor and providing a DC output;

a non-linear amplifier circuit receiving said DC output of said AC-DC conversion amplifier circuit and providing a signal indicating a relative humidity;

wherein said humidity sensor is a ceramic humidity sensor and further comprising a heater for selectively heating said humidity sensor to remove impurities on a surface thereof;

an output holding circuit receiving said signal indicating a relative humidity;

a timer circuit controlling a turning on of said heater and said output holding circuit after a set period, whereby said output holding circuit holds said signal indicating said relative humidity while said heater is operating; and

external means for selectively resetting said timer circuit, said resetting means including an external input terminal.

4,801,212

OPTICAL SYSTEM FOR RADIATION THERMOMETER

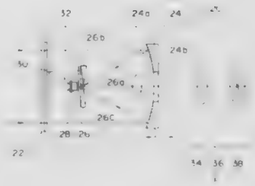
Kenji Imura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 792,793, Oct. 30, 1985, abandoned. This application Jun. 16, 1987, Ser. No. 62,848

Claims priority, application Japan, Oct. 30, 1984, 59-229909

Int. Cl.[4] G01J *05/08, 05/20*

U.S. Cl. 374—130 **13 Claims**



1. An optical system for a radiation thermometer comprising:

means for reflecting light coming from an object to be measured, said reflecting means including a light reflecting

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surface concave to the object side and a light transmitting portion located in a center of the light reflecting surface;

means for receiving light reflected by said reflecting means to produce an electric signal indicative of the intensity of light received thereon for measuring the temperature of the object;

means located between said reflecting means and said receiving means for restricting light to be received by said receiving means, said restricting means including a focusing plate located near an image forming plane of the light reflecting surface of said reflecting means, said focusing plate including a light reflecting portion for further reflecting light which has been reflected by the light reflecting surface of said reflecting means towards the light transmitting portion of said reflecting means, and a light transmitting portion, located on an optical axis of the light reflecting surface, through which light reflected by said reflecting means passes towards said receiving means; and

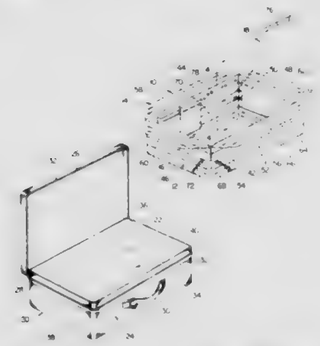
means for indicating a position of said reflecting means relative to the object, said indicating means including a finder optical system indicating an image of the object formed by said reflecting means with the position of the light transmitting portion of said restricting means by use of light which has been reflected by the light reflecting surface of said reflecting means and which is reflected by the light reflecting portion of said focusing plate of said restricting means, said finder optical system being arranged so that an optical axis of the optical system coincides with the optical axis of the light reflecting surface of said reflecting means.

4,801,213

INFLATABLE INSERT FOR LUGGAGE

Marshall Frey, Ossining, and Thomas Scheuer, East Williston, both of N.Y., assignors to Airelle Industries, Inc., Ossining, N.Y.

Filed Oct. 19, 1987, Ser. No. 113,935
Int. Cl.[4] B65D *30/00*
U.S. Cl. 383—3 6 Claims



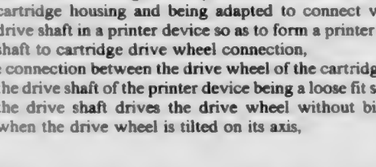
1. An inflatable insert for an item of luggage, said item of luggage being of a type including a bottom wall, spaced substantially parallel front and rear walls extending upwardly from said bottom wall, a pair of spaced substantially parallel end walls extending upwardly from said bottom wall and joining said front and rear walls, and a top wall receivable in a closed position on said front, rear and end walls for substantially closing said suitcase, said insert comprising an inflatable wall portion which is receivable in said item of luggage, said wall portion including inflatable front and rear portions which extend along the inner sides of the front and rear walls of said item of luggage when said insert is received therein and a pair of inflatable end portions which extend between said front and rear portions and along the inner sides of the end walls of said item of luggage when said insert is received therein, an inflatable bottom flap hingeably attached to said wall portion and extending inwardly along the inner side of said bottom wall of said item of luggage when said insert is received therein, and a plurality of inflatable top flaps, one of said top flaps being hingeably attached to each of said front, rear, and end portions of said insert, said top flaps being positionable so that they extend inwardly in said item of luggage, and at least one pocket element secured on the inner side of said wall portion so that it is positioned between said bottom flap and one of said top flaps when said top and bottom flaps are in inwardly hinged positions.

4,801,214

COLOR FILTER FOR WIND-UP SYSTEM COLOR CHANGER

Yoshiaki Ikeda, Tokyo, Japan, assignor to Ryudensha Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1987, Ser. No. 63,585
Claims priority, application Japan, Jul. 4, 1986, 61-102097[U]
Int. Cl.[4] B65D *30/00*
U.S. Cl. 383—37 3 Claims



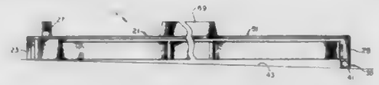
1. A color filter for wind-up system color changer comprising two continuous sheets of laminated transparent film in a series of units each comprising a sheet of a transparent film folded in two and sealed between the films with the line of flection of each folded sheet being disposed along the longitudinal direction of the films the edges of the units opposite to their respective line of flection being unsealed, and a gap formed between adjacent ones of said series of units, said films being adhered to each other in said gap, said units being independently sealed between said films, thereby forming individual bags for housing a series of color filter elements received through said unsealed edge.

4,801,215

RAMP RIBBON CARTRIDGE

Hans Paffhausen, and Uli G. Morf, both of Franklin, Tenn., assignors to Pelikan, Inc., Franklin, Tenn.

Filed May 28, 1987, Ser. No. 55,011
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—224 7 Claims



1. A ramp ribbon cartridge adapted for ramp mounting of a ribbon in a printer device, comprising

a cartridge housing having a bottom wall with upwardly depending sidewalls and a top cover,

the cartridge housing having a first end and a second end,

a ribbon, having top and bottom edges, stored in and extending from the cartridge housing and on which a printing head makes a track while printing,

a drive wheel mounted in the housing for pulling the ribbon out of the housing such that the top edge of the portion of ribbon which extends out of the housing is parallel to the plane of the top cover of the housing,

said drive wheel being rotatably mounted at a first end of the cartridge housing and being adapted to connect with a drive shaft in a printer device so as to form a printer drive shaft to cartridge drive wheel connection,

the connection between the drive wheel of the cartridge and the drive shaft of the printer device being a loose fit so that the drive shaft drives the drive wheel without binding when the drive wheel is tilted on its axis,

ramping means attached to the cartridge housing and extending downwardly from the housing and positioned away from the drive wheel end of the housing to elevate the second end of the housing and position the cartridge at a ramp angle to the horizontal,

whereby when the ribbon cassette is placed in a printer having a drive shaft designed to engage a drive wheel of a flat ribbon cassette such that the flat ribbon cassette is in a horizontal position when used, the printing track of the ribbon is at a ramp angle to the top and bottom edges of the ribbon and is wider than if the ribbon were positioned in a horizontal attitude.

4,801,216

DEVICE FOR GENERATING A PRESTRESS WHEN TWO CONNECTION PARTS ARE COUPLED RIGIDLY

Heinrich Lageder, Würenlingen; Jaroslav Masek, Wettingen, and Kamil Prochazka, Windisch, all of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Aug. 20, 1986, Ser. No. 898,340
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1985, 3531300
Int. Cl.[4] F16D *1/06*
U.S. Cl. 403—24 2 Claims



1. A connection arrangement in a control valve comprising:

an elongated piston rod having first and second axial ends and an opening extending between said ends;

a valve spindle having an end adjacent the first end of said piston rod,

means for maintaining the end of said valve spindle in the vicinity of the first end of the piston rod to form a connection between the piston rod and the valve spindle;

a compressive force transmitting member mounted in the opening of said piston rod, said force transmitting member having first and second axial ends, said first axial end of the force transmitting member abutting the end of said valve spindle; and

force generating means positioned at the second end of said piston rod in contact with the second end of said force transmitting member for generating a compression force on the second end of said force transmitting member so as to prestress said valve spindle at the connection.

4,801,217

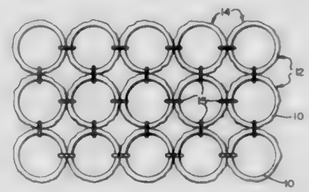
CONSTRUCTION MAT FORMED FROM DISCARDED TIRE BEADS AND METHOD FOR ITS USE

Jerry Goldberg, 462 Arbor Cir., Youngstown, Ohio 44505

Filed Nov. 24, 1986, Ser. No. 934,347
Int. Cl.[4] E01C *21/00*
U.S. Cl. 404—75 4 Claims

1. A method for laying a road surface over unstable ground surfaces comprising the steps of placing the mat of a two-dimensional array of circular tire beads arranged in linear rows and columns extending at right angles to each other, and fastening means securing said tire beads together into a mat only at their peripherally facing surfaces over the unstable ground surface such that said beads are in proxial relation for ensuring the beads are placed in tension as well as compression under roadway loads, and thereafter pouring at least one layer of road base course material over the mat, whereby the weight of a vehicle traveling over the road surface will be distributed over the entire area of the mat.

2. A method for forming a blasting mat from the mat construction of a two dimensional array of circuit tire beads arranged in linear rows and columns extending at right angles to each other, and fastening means securing said tire beads together into a mat only at their peripherally facing surfaces such that a force of a blast is transferred from bead to bead by said fastening means, comprising forming a number of said two-dimensional arrays of tire beads and superimposing one array upon another over a blasting area such that the centers of the tire beads of the respective layers are not aligned with each other.

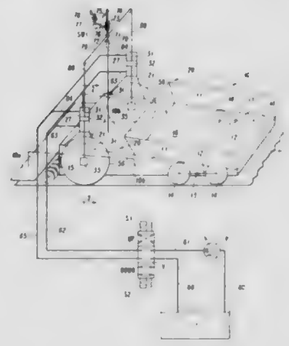


4,801,218

THREE-POINT SUSPENSION FOR BITUMINOUS PAVERS

Joseph E. Musil, Ely, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Jan. 20, 1987, Ser. No. 4,875
Int. Cl.[4] E01C *19/22*
U.S. Cl. 404—84 30 Claims



1. In a bituminous paver including a tractor unit with forward and rearward ends,

(a) a hopper disposed at the forward end of the tractor unit for receiving paving material,

(b) and material spreader means attached across the rearward end of the tractor unit for distributing paving material in opposite transverse directions,

(c) the paver further including a floating screed assembly spaced rearwardly of the spreader means and extending transversely of the rearward end of the tractor unit,

(d) first and second ground engaging suspension means for the tractor unit including respective first and second pairs of laterally spaced rotating assemblies,

(e) first means attaching the first pair of rotating assemblies to the tractor unit adjacent its forward end such that upward and downward movement of either of the first pair of assemblies results in upward or downward movement of the forward end of the tractor unit,

(f) the second pair of laterally spaced rotating assemblies being disposed adjacent the rearward end of the tractor unit and driven from the tractor unit for propelling the paver over the ground,

the improvement comprising:

(1) second means attaching the second pair of rotating assemblies to the tractor unit,

(2) the second means including means interconnecting the second pair of rotating assemblies effective to provide a first mode of movement of the second pair or rotating assemblies relative to the tractor unit while on the run in which movement of one of said second pair in an upward direction effects corresponding movement of the other of said second pair in a downward direction,

(3) whereby to maintain the second ground engaging suspension means in driving engagement with the ground while on the run regardless of the lateral disposition of paving material in the hopper.

4,801,219

SYSTEM FOR COMPACTING PAVED SURFACES

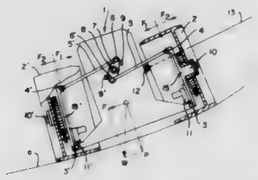
Masayuki Yazawa, Chiba; Mitsuo Fukukawa, Saitama; Kazumitsu Asai, Saitama, and Yoshiharu Okamoto, Saitama, all of Japan, assignors to Kajima Corporation and Kajima Road Company, both of Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 65,438

Claims priority, application Japan, Jun. 27, 1986, 61-149652

Int. Cl.[4] E01C *19/23*

U.S. Cl. 404—125 **4 Claims**



1. Apparatus for compacting a paved curved surface, comprising,

a vehicle body,

a right shaft and a left shaft mounted on said vehicle body, said shafts being variably inclinable relative to each other and to the vehicle body, a right wheel and a left wheel which are rotatable and are mounted on said right shaft and said left shaft, respectively,

said shafts being connected to left and right members each of which has an upper portion and a lower portion, pivot pins coupling said lower portions to the vehicle body,

left and right links connected by pins to said upper portions of the left and right members respectively,

a pivoted member pivoted on the body by a pin, said pivoted member having opposite arms connected by pins to the left and right links,

the pivoted member moving said left and right links relative to the vehicle body so as to change inclinations of said right and left shafts in opposite directions relative to each other and relative to said vehicle body.

4,801,220

SEAWALL, PIER, OR BASALT COLUMN LANDSCAPE

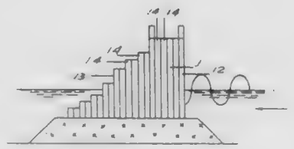
Pedro S. Bores, Vegafria 1, T.L., 28035 Madrid, Spain

Continuation-in-part of Ser. No. 786,840, Oct. 11, 1985, abandoned. This application Oct. 27, 1986, Ser. No. 923,678

Claims priority, application Spain, Oct. 28, 1985, 289904

Int. Cl.[4] E02B *3/06*

U.S. Cl. 405—31 **4 Claims**



1. A mosaic seawall comprising

a fascine of vertically-elongated prismatic structural elements of generally identical cross-section substantially vertically disposed at least partially in a body of water,

each of said elements having a closed base at each end and at least one lateral face therebetween abutting the lateral face of another of said elements to define a common lateral face extending substantially the full vertical extent of at least one of said abutting elements,

said plurality of elements together further defining in cross-section at least one ocean-side cove section having a horizontally concave cross-section formed by a substantial number of said elements in non-intersecting disposition to diminish wave reflection therefrom, and

an echeloned or vertically stepped mosaic crest providing a plurality of support surfaces at different levels adapted for functional use and joining said plurality of elements together to define in cross-section a stable water-impermeable mosaic to resist overturning or sliding under wave action.

4,801,221

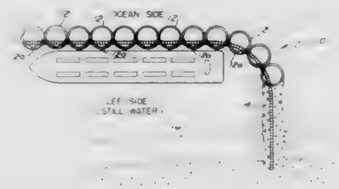
OCEANWHEEL BREAKWATER

Mark E. Capron, 3129 Lassen St., Oxnard, Calif. 93033

Filed May 19, 1987, Ser. No. 51,977

Int. Cl.[4] E02B *3/04*

U.S. Cl. 405—34 **6 Claims**



1. A breakwater, extending a preselected length along the seafloor from a shoreline into an ocean, said breakwater having a height sufficient to protrude above the high tide level of said ocean, and having a shape with respect to said shoreline so as to present one side thereof toward incoming ocean waves, for producing a generally sheltered body of water on the leeward side thereof, said breakwater comprising:

shore connecting means, extending orthogonally outward a preselected distance from said shoreline, for providing access to water of a desired depth between said seafloor and said ocean level; and

oceanwheel cell means, further comprising a first oceanwheel cell, an end oceanwheel cell and one or more intermediate oceanwheel cells, said cells being arranged serially on said seafloor such that said first cell being abutted to said shore connecting means, said intermediate cells being positioned in tangential contact with each of two adjacent cells and said end cell being in tangential contact only with the intermediate cell furthest from said shore connecting means, each said first, end and intermediate cell having an individual preselected height chosen to accommodate variations in depth from said seafloor to said ocean level and further to protrude above said high tide water level, for forming thereby said breakwater of preselected length and shape having said leeward side and said ocean side.

4,801,222

PRESSURE-TIGHT PIPE CONNECTION FOR A DRIVEN PIPELINE

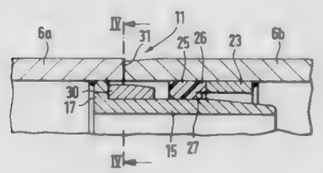
Herbert Fröhlich, Bad Reichenhall, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 31, 1987, Ser. No. 80,747

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1986, 3626988

Int. Cl.[4] F16L *1/02*

U.S. Cl. 405—184 **8 Claims**



1. A pressure-tight pipe connection for a pipeline driven through an earth section below the ground level thereof without disturbing the overlying earth, comprising a plurality of serially arranged axially extending similar pipe sections, each said pipe section comprising a leading end and a trailing end with the trailing end of one pipe section being abutted in a pressure-tight manner by the leading end of the next pipe section as said pipeline is driven, wherein the improvement comprises that each said pipe section has an axially extending inside surface, a steel ring located within and fixed to the inside surface of the trailing end of said pipe section, said steel ring is coaxial with said pipe section and has an axially extending outside surface with a smaller diameter than the inside surface of said pipe section, said ring extends out of the trailing end of said pipe section so that said ring projects axially into the leading end of the following pipe section, an elastic material sealing ring secured to the inside surface of said pipe section and projecting radially inwardly therefrom for a dimension greater than the difference between the inside surface of said pipe section and the diameter of the outside surface of said ring whereby the outside surface of said ring contacts the inwardly projecting said sealing ring, said sealing ring bears against the inside surface of said pipe section and the end of said sealing ring more remote from the leading end of said pipe section abuts against a shoulder fixed to the inside surface of said pipe section, said steel ring has angularly shaped cross-section in axially extending section and has one leg extending in the axial direction of said steel ring with a first end located within said pipe section spaced from the trailing end thereof and a second end spaced axially outwardly from the trailing end of said pipe section, and a second leg extending perpendicularly to the axis of said ring and forming a flange projecting radially outwardly from the first end of said first leg, and the radially outer end of said flange is fixed to the inside surface of said pipe section with said flange spaced inwardly from the trailing end of said pipe section.

4,801,223

MASK STRUCTURE FOR TYPE BELT OF PRINTER

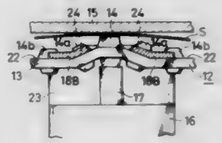
Atsushi Goto, Iwate, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Oct. 23, 1987, Ser. No. 112,674

Claims priority, application Japan, Feb. 13, 1987, 62-18799

Int. Cl.[4] B41J *1/20*

U.S. Cl. 400—145.1 **3 Claims**



1. In a printer of the type having a carriage movable along a platen in a lateral direction, a hammer mounted on the carriage and selectively actuable for movement in a printing direction toward the platen, which is perpendicular to the lateral direction, for printing on a paper placed thereon, a type belt interposed between the hammer and the platen formed by a belt body and a plurality of types spaced apart thereon by a predetermined spacing in the lateral direction, each type being connected to its adjacent types by connecting portions of the belt body, means for moving the type belt in the lateral direction so as to position a selected type in front of the hammer to be pressed against the platen for printing on the paper, and a pair of mask members interposed between the type belt and the platen and defining an opening therebetween through which a selected type is pressed by the hammer, said pair of mask members operating to restrain the type belt and prevent the adjacent types on both sides of the selected type from being pressed against the paper,

the improvement wherein said pair of mask members are each formed by one portion which extends in the lateral direction in parallel to the type belt and an inclined portion which extends from said one portion at an inclined angle toward said platen at said opening between said mask members, such that when said hammer is actuated to press the selected type through said opening, the type belt is pressed against said mask members and bent along the inclined angle of said inclined portion in order to facilitate the pressing of the selected type against the platen and reduce the pressing force of the hammer required to print with the selected type.

4,801,224

TOOL AND INSERT FOR CHIP REMOVAL

Lars T. Pettersson, and Jörgen V. Wiman, both of Sandviken, Sweden, assignors to Santrade Limited, Lucerne, Switzerland

Filed Apr. 6, 1987, Ser. No. 35,015

Claims priority, application Sweden, Apr. 7, 1986, 8601533

Int. Cl.[4] B23P *15/28*

U.S. Cl. 407—110 **13 Claims**

1. A parting or grooving tool comprising a holder and an insert removably securable in said holder,

said insert including:

front and rear ends, said front end containing a cutting edge, said rear end including a rear face,

first and second front-to-rear extending surfaces of generally V-shaped cross-section facing in opposite directions,

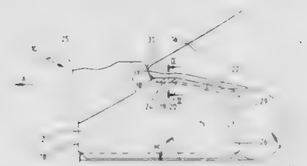
said second surface comprising a front portion and a rear portion, said rear portion converging rearwardly at a first acute angle relative to said first surface to define therewith a wedge angle of said insert, said rear portion terminating rearwardly at a location separated from said first surface by said rear face, said

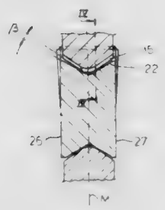
front portion extending forwardly from said rear portion at an obtuse angle relative thereto, an abutment surface disposed adjacent a front end of said front portion of said second surface and including a planar portion which diverges forwardly relative to said first surface at a second acute angle relative thereto,

said holder including:

a forwardly opening slot formed by first and second front-to-rear extending walls of V-shaped cross-section, said walls facing one another and engaging said first and second surfaces, respectively, said first wall and said first surface extending parallel to a feed direction of said tool, and

a clamping arm containing said second wall, said arm extending forwardly in cantilever fashion so as to be resiliently flexed away from said first wall by said rear portion of said second surface during insertion of said insert into said slot, said clamping arm including a front end abutting said planar portion of said abutment surface to define therewith a first contact region, and said





second wall including a recessed portion extending rearwardly from said first contact region in non-contacting relationship with said insert, whereby said first contact region terminates short of a juncture between said abutment surface and said second surface,

said second wall being in clamping contact with said front portion of said second surface at a second contact region when said arm is in contact with said abutment surface at said first contact region, said recessed portion being disposed intermediate said first and second contact regions,

said rear face of said insert being spaced forwardly of a rear end of said slot when said arm contacts said insert at said first contact region, such that substantially all rearwardly directed forces tending to push said insert farther into said slot are resisted by said arm at said first contact region, said recessed portion of said second wall defining an interruption of contact between said front end of said arm and said abutment surface to minimize a tendency for said arm to ride up on said abutment surface in response to said rearwardly directed forces.

4,801,225

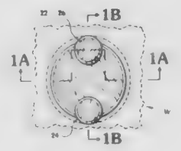
INSERT LOCATING PIN FOR LOCATING A WORKPIECE ON A SUB-PLATE FOR MACHINING

Manfred Morghen, San Diego, Calif., assignor to General Dynamics Corp./Convair Division, San Diego, Calif.

Filed May 4, 1988, Ser. No. 190,317

Int. Cl.[4] B23Q *3/10*

U.S. Cl. 409—218 **9 Claims**



1. An insert locating pin adapted to be securely positioned within an aperture having a predetermined position in a sub-plate for locating a workpiece on the upper planar surface of the sub-plate in at least one direction, said locating pin extending from the sub-plate upwardly into an aperture provided in the workpiece and into contact with a sidewall of said aperture, comprising:

a central body that is positioned within an aperture in the sub-plate and which has a generally angularly shaped upper portion that extends into the aperture in the workpiece, the annular portion being sized so that it is loosely received within said aperture, said annular portion being provided at its outer periphery with at least two opposing apertures, each aperture communication with the space between the workpiece and the annular upper portion each aperture being separated and of a generally accurate configuration when viewed from the top of the locating pin; and

an insert positioned within each aperture in the annular portion and being sized so as to contact the sidewall of the aperture in the workpiece and to locate the workpiece in at least one direction of movement.

4,801,226

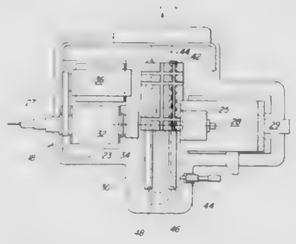
CRANKSHAFT BROACHING MACHINE AND METHOD

Patrick J. Gleason, Lum, Mich., assignor to Turn-Broach, Inc., Lum, Mich.

Continuation of Ser. No. 4,264, Jan. 9, 1987, abandoned, which is a continuation of Ser. No. 627,360, Jul. 3, 1984, abandoned. This application Aug. 28, 1987, Ser. No. 93,084

Int. Cl.[4] B23D *37/06*; **B23B** *5/18*

U.S. Cl. 409—244 **33 Claims**



1. A broaching lathe for use in machining a plurality of bearings on a crankshaft or the like comprising rotatable work holder means for rotatably supporting a crankshaft on a horizotally disposed rotational axis, said crankshaft having

front and rear main bearings at opposite ends thereof, said rotatable work holder means including a first center at one end of said crankshaft and a second center at the other end of said crankshaft, at least one of said centers being a driven center and said lathe being free of any center drive chuck that drivingly engages said crankshaft at a location intermediate said front and rear main bearings, a machine tool slide mounted on sid machine for substantially horizontally reciprocating movement in a substantially horizontal plane below said crankshaft and in a direction perpendicularly to and spaced radially from said rotational axis, a first plurality of at least about eight to twelve cutting tools mounted on said slide in a first row with upwardly projecting cutting edges for progressively machining a first bearing when said slide is reciprocated and a second plurality of at least about eight to twelve cutting tools mounted on said slide in a second row with upwardly projecting cutting edges for progressively machining a second bearing when said slide is reciprocated, said cutting tools in said first and said second rows comprising disposable inserts that are individually and removably mounted, and wherein the cutting tools at a rear end of said slide project deeper into said crankshaft than do the cutting tools at a front end of said slide during a machining operation to thereby progressively distribute machining forces between the cutting tools in each row, said cutting tools have cutting edges inclined to the direction of travel of the slide so as to provide a leading cutting edge portion and a trailing cutting edge portion so that each cutting edge feeds progressively into said bearing to thereby distribute cutting forces along each inclined cutting edge and, the leading cutting edge portions of the cutting tools in said first row are offset in the direction of travel of said slide from the leading edge portions of the cutting tools in said second row so as to distribute machining forces between the cutting tools in said first and second rows.

4,801,227

CLAMPING DEVICE FOR WORKPIECES OR TOOLS WITH A HIGH CONCENTRICITY ACCURACY

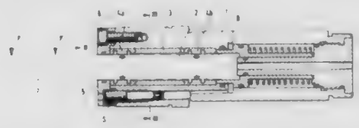
Helmut Glimpel, and Volker Wenzel, both of Lauf, Fed. Rep. of Germany, assignors to Emuge-Werk Richard Glimpel Fabrik fur Präzisionwerkzeuge (vormals Moschkau & Glimpel), Lauf, Fed. Rep. of Germany

Filed Oct. 9, 1987, Ser. No. 107,702

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1986, 3636581

Int. Cl.[4] B23C *1/00*

U.S. Cl. 409—234 **12 Claims**



1. A clamping device for workpieces or tools having a high accuracy of concentricity comprising a base body means having a cylindrical hole for receiving a shank part of a workpiece or tool, adjusting means on said base body means for adjusting the accuracy of concentricity of said workpiece or tool, said adjusting means comprising means defining a plurality of threaded holes in said base body means and each having a central axis extending in a generally radial direction and disposed in a generally radial plane, and bolt means threaded in each of said holes such that threading said bolt means into said holes provides for variable distortion of said base body means to thereby adjust the position and concentricity of the workpiece or tool in the clamping device.

4,801,228

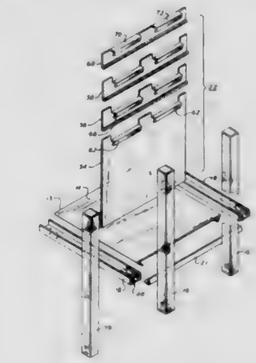
BANDABLE CARGO RESTRAINING DEVICE

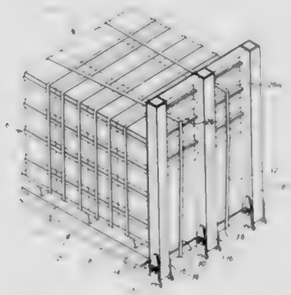
James J. Van Gompel, Fremont, Ind., assignor to N P Marketing Corporation, Neenah, Wis.

Continuation of Ser. No. 898,760, Aug. 13, 1986, abandoned, which is a continuation of Ser. No. 507,796, Jun. 24, 1983, abandoned. This application Dec. 9, 1987, Ser. No. 131,341

Int. Cl.[4] B65D *19/08*, *19/00*

U.S. Cl. 410—94 **1 Claim**





1. A self-sustaining device for securely restraining a cargo load transport, comprising a pair of laterally spaced-apart horizontal legs,

a generally planar platform member supported horizontally upon said legs and secured thereto in spaced relation to an underlying floor, and having an upper load-bearing surface for receiving a cargo load thereupon:

a vertical member secured to an end of each of said horizontal legs to define L-shaped support beams;

a third vertical member substantially intermediate said L-shaped support beams;

a cross-bar secured to and interconnecting said L-shaped support beams and said third vertical member;

an upright unit vertically adjoined to one end of said platform member and secured to said vertical members for effecting restraining contact with the adjacent side of the load seated on said platform member; said upright unit including a first generally planar element extending upwardly from said platform member, a plurality of second generally planar elements superposed above said first element, and an uppermost generally planar element above said second elements, all of said elements lying in substantially coplanar relationship to define a backing panel extending across the back of said platform member

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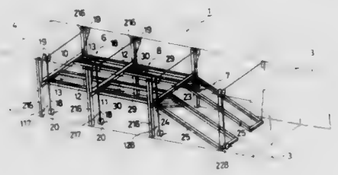
and upwardly from said platform member to the top of said element, said first and second elements having cut-out portions along their edges adjoining each other to define in said upright unit a plurality of vertically-spaced horizontal elongate parallel slots therethrough extending between each of said vertical members and positioned to receive straps passed beneath said platform member and then about the load seated thereupon and securely fastened in contact with said load by being passed through at least one elongate horizontal slot in said upright unit in accordance with the height of said load seated on said platform member; said second elements being formed from metal and said cut-out portions being defined by integral sections of said elements cut and bent over rearwardly away from said platform member to provide a widened support where said straps pass through said slots, to prevent undue wear or strain upon said straps, the upper edge of said uppermost element of said upright unit member being formed at its upper edge with bent-over pieces to provide a widened support surface for straps passed thereover, and said device including downwardly-facing surface-gripping projections at the bottom thereof, to limit movement of said device and load with respect to the underlying floor.

4,801,229

TRANSPORTATION CONTAINER

Heiroku Hanada, Fujisawa; Yoshihiro Uesu, Tokyo; Yohei Matsuyama, Gamagori, and Yuji Kato, Atsugi, all of Japan, assignors to Nippon Yusen Kaisha and Nippon Fruehauf Company, Ltd., Tokyo, Japan

Filed Jul. 27, 1987, Ser. No. 78,156
Claims priority, application Japan, Jul. 31, 1986, 61-117928
Int. Cl.⁴ B60P *3/08*
U.S. Cl. 410—26 **4 Claims**



1. A convertible transportation container adapted for loading finished cars and, alternatively, loading general cargo comprising:

a longitudinal main body having opposed top and bottom and side walls and having a door at one longitudinal end thereof, through which first and second lower cars can be loaded onto said bottom wall;

a front deck mounted on and supported by both side walls of the container main body and adapted to have a finished first upper car loaded thereon said first upper car being displaced in the longitudinal direction relative to both of said first and second lower cars located on said bottom wall, at least a portion of said first upper car on said front deck being disposed below the top end of said first and second lower cars on said bottom wall;

a rear deck having at least the end thereof on the front side supported by both of the side walls of the container main body respectively, said rear deck having a loading face adapted to have a finished second upper car loaded thereon while displacing the position of said second upper car in the longitudinal direction relative to both of said first and second lower cars, at least a portion of the loading face being disposed below the top end of said first and second lower cars said rear deck guiding said first upper car when driven onto the front deck and said second upper car when driven onto the rear deck;

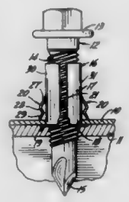
elevation mechanisms for lifting the front and rear decks and tucking said decks just below the top wall of said longitudinal main body.

4,801,230

RETAINER FOR A FASTENER

Douglas H. Wilburn, Logansport, Ind., assignor to Elco Industries, Inc., Rockford, Ill.

Filed Feb. 8, 1984, Ser. No. 578,265
Int. Cl.⁴ F16B *13/06*
U.S. Cl. 411—61 **9 Claims**



1. The combination of a plate having a circular hole and an elongated threaded fastener having an upper head and having a shank projecting downwardly through the hole to be threaded into an underlying member, a cylindrical sleeve projecting downwardly into said hole, a flange projecting radially outwardly from the lower end of said sleeve and underlying said plate to prevent the sleeve from being moved upwardly out of said hole, a plurality of resilient fingers normally projecting downwardly and outwardly from said sleeve to engage the upper side of said plate and prevent the sleeve from being moved downwardly through said hole, said fingers resiliently moving inwardly as said sleeve is inserted into said hole from the underside of said plate and then springing outwardly to engage the upper side of the plate, and means on said sleeve for holding said fastener in the sleeve while permitting the fastener to be threaded down into said underlying member, said sleeve being crushable so as to be flattened between the lower side of said head and the upper side of said plate as said fastener is threaded downwardly into said underlying member.

4,801,231

SELF-DRIVEN NUT AND JOINDERS INCORPORATING IT

Michael R. Everman, Santa Barbara, Calif., assignor to AECABLE Engineering Company, Inc., Goleta, Calif.

Filed Apr. 10, 1987, Ser. No. 36,785
Int. Cl.⁴ F16B *37/00*
U.S. Cl. 411—432 **10 Claims**

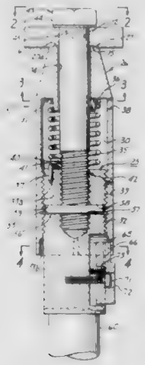
1. A self-driven nut having a central axis, comprising:

an axial nut portion having an axial passage, an internal thread in said passage, and a bearing face;

an axial anchor portion having an anchor body coaxial with and inside said nut portion, said portions being rotatable relative to one another, said anchor body having an external thread engaged to said internal thread, whereby said relative rotation moves said portions axially relative to each other;

torsion bias means interposed between said portions adapted to be deformed to store energy when the portions are turned relative to one another in a first counter-rotative direction, and to exert said energy to turn the portions relative to one another in a second, opposite counter-rotative direction when released to do so; and

releasable latch means interposed between said portions to permit relative counter rotation in said first direction in order to store energy, and to prevent relative counter



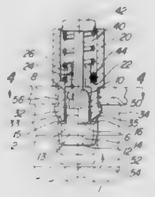
rotation in said second direction until released to enable said energy to be exerted.

4,801,232

DEVICE FOR THE REMOVABLE FASTENING OF A PLATE-SHAPED COMPONENT ONTO A BASE WITH A T-GROOVE OPEN TOWARDS THE COMPONENT

Werner Hempel, Bad Vilbel, Fed. Rep. of Germany, assignor to CAMLOC GmbH, Fed. Rep. of Germany

Filed Apr. 2, 1987, Ser. No. 34,227
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1986, 3612199
Int. Cl.⁴ F16B *21/00*
U.S. Cl. 411—552 **15 Claims**



1. A device for removably fastening a plate-shaped component onto a base, said plate-shaped component including a diametrically widened hole, said base including a T-groove having diametrically opposed shoulders, each of said shoulders having an edge, said device comprising:

a substantially pot-shaped receiving element, said receiving element having a floor therein, said floor having a central hole therethrough, said receiving element further having a pair of snap wedges protruding axially therefrom on diametrical sides of said hole for being snappingly inserted into said diametrically widened hole in said plate-shaped component, thereby holding said receiving element onto said plate-shaped component;

a head-bolt reciprocally guided in said central hole of said floor of said receiving element, said head-bolt having a first end and a second end, said head-bolt having a head at said first end thereof;

biasing means inserted in said receiving element between said head of said head-bolt and said floor of said receiving element for biasing said head-bolt in a direction axially away from said floor of said receiving element;

a cross-bar located at said second end of said head-bolt, said cross-bar being insertable in said T-groove of said base when said plate-shaped component is placed against said base, said cross-bar further having at least one radial extension thereon, said at least one radial extension of said cross-bar interferingly engaging said shoulders of said T-groove thereby locking said plate-shaped component onto said base when said head-bolt has been depressed against said biasing means and rotated from an unlocked position to a locked position;

stop means for preventing said head-bolt from turning further than said locked position; and

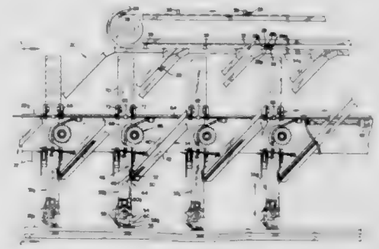
means for axial and radial guidance of said cross-bar in response to rotation of said head-bolt, so that said at least one radial extension of said cross-bar is axially lifted off said shoulders of said T-groove when turning said head-bolt from the locked position to the unlocked position.

4,801,233

STICKER PLACER APPARATUS

Edward Ritola, La Center, Wash., assignor to Harvey Industries, Inc., Little Rock, Ark.

Filed Aug. 10, 1987, Ser. No. 83,455
Int. Cl.⁴ B65G *57/26*
U.S. Cl. 414—789.5 **21 Claims**



1. Apparatus for the controllable placement of a sticker on the top of a course of lumber comprising:

releasable sticker-face capture means including at least one pivotable support arm for supporting a face of the sticker, and releasable sticker retaining means operable with said support arm positively to capture the sticker by pressing against an opposite face thereof, thereby pinching the sticker;

generally vertically reciprocable carriage means mounting the capture means operable alternately to lower the capture means to the top of the lumber course and to raise the capture means therefrom, the carriage means including lost motion means providing a predefined dwell time after the lowering and before the raising of the carriage means; and

sticker release means operable during the dwell time to pivot the support arm out from under the sticker, thereby releasing the sticker substantially at the level of the lumber course.

13. In apparatus for the placement of stickers on the top of a course of lumber, the apparatus having at least one placement station, each station being capable of placing consecutive stickers in a predetermined generally horizontal position relative to the course of lumber, improved placement means comprising:

capturing means for releasably positively capturing each sticker throughout the placement of the sticker;

means for generally vertically reciprocating the capturing means; and

means for releasing the capturing means by spring tension to deposit the sticker in the predetermined position.

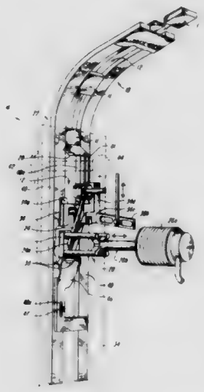
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4,801,234

VACUUM PICK AND PLACE MECHANISM FOR INTEGRATED CIRCUIT TEST HANDLER

Nicholas J. Cedrone, Wellesley Hills, Mass., assignor to Daymarc Corporation, Waltham, Mass.

Filed May 15, 1987, Ser. No. 50,923
Int. Cl.[4] B65H *5/08*
U.S. Cl. 414—224 **9 Claims**



1. A mechanism for transporting at a high speed a succession of integrated circuits (IC's) which are movable in a guide track section along a product flow path from a staging area to a test site that is displaced horizontally from a test plane along a first direction transverse to said flow path, comprising:

lateral guide means extending from said staging area to said test site,

a slide member movable in a reciprocating manner along said lateral guide means between a pick position at said staging area and a place position at said test site,

a pick mounted on said slide member adapted to vacuum grip an IC at said staging area and carry it to said test site in coordination with a corresponding movement of said slide member,

means for driving said slide member and pick between said pick and place positions, and

means for driving said IC along said first direction between said place position and a test position,

said pick gripping said IC sufficiently lightly to allow changes in orientation of the device with respect to the pick, said pick being mounted on said slide member for an articulated movement, and said lateral guide means being mutually inclined rails to self-center said IC as it moves from the staging area to the test site.

4,801,235

DEVICE FOR HANDLING WORKPIECES

Ludwig Rauschdorf, Bad Rappenau/Obergimpern, Fed. Rep. of Germany, assignor to Firma August Läpple GmbH & Co., Fed. Rep. of Germany

Filed Jan. 25, 1988, Ser. No. 147,741
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702108
Int. Cl.[4] B65H *1/00*
U.S. Cl. 414—225 **18 Claims**

1. A motor driven device for transferring workpieces between two stations comprising:

a holding means which is able to move vertically adjacent to each of the stations and to perform a longitudinal motion therebetween,

an operating lever,

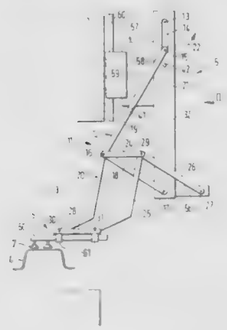
a crank lever,

a guide lever,

said three levers constituting a linkage in which the operating lever extends upwards from the holding means, to which it is attached at its lower end, so that the opposite upper end of said operating lever is articulated at a first pivot axis with a free end of the crank lever, the other end of said crank lever pivoting about a stationary crank lever axis and said operating lever having a center part pivotally connected at a second pivot axis with the free end of the guide lever, the other end of said guide lever pivoting about a stationary guide lever axis, said guide lever axis being arranged under the said crank lever axis and in parallelism thereto so that during transfer motion of a workpiece between stations the said linkage moves through a center position, in which

the guide lever axis,

the pivot axis connecting the guide lever with the operating lever,



the crank lever axis and

the pivot axis connecting the crank lever with the operating lever

are arranged in this order along a straight line,

a drive shaft connected with one of said levers and centered on one of said axes so as to rock said lever when it is turned, said drive shaft being adapted to be connected with a driving means,

a guide member

a counter guide member

said guide member being arranged on said operating lever so as to protrude from a plaine defined by said lever so that in said center position said guide member abuts against said counter guide member, said counter guide member being arranged on a straight line passing through said guide lever axis and the crank lever axis and so moves the operating lever via the guide member that the operating lever performs a motion symmetrical in relation to the said straight line.

4,801,236

MECHANICAL INVENTORY STORAGE AND DELIVERY CABINET

Norbert Katzenschwanz, Neuburg, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne GmbH & Co., Günzburg, Fed. Rep. of Germany

Filed Mar. 27, 1986, Ser. No. 844,826
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1985, 3514932
Int. Cl.[4] B65G *1/127, 1/137*
U.S. Cl. 414—416 **15 Claims**

1. A mechanical inventory storage and delivery cabinet comprising:

carrier units located within said cabinet extending in a first horizontal direction and having inserts adapted to contain therein inventory items to be stored and delivered;

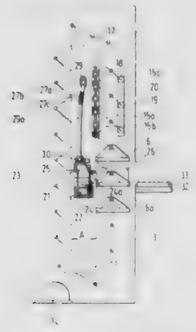
conveyor means including a vertical conveyor mechanism having endless chain means and sprocket wheels for conveying said carrier units in the vertical direction within said cabinet;

means defining a delivery station for said cabinet extending in the first horizontal direction and spaced outwardly from said cabinet at which said inventory items can be delivered;

control means for controlling said conveyor means to selectively deliver said carrier units to said delivery station;

an ejection device arranged on an opposite side of said carrier units from said delivery station for ejecting inserts from said carrier units when said carrier units are located at said delivery station, said ejection device being horizontally displaceably arranged along a horizontally extending guide with respect to said inserts for movement in the first horizontal direction and in a second horizontal direction transverse to said first horizontal direction, said sprocket wheels defining a vertically and horizontally extending free space therebetween with said ejection device being arranged in said free space defined by said sprocket wheels; and

first drive means for said ejection device switched to alternate with a second drive means of said conveyor means for said carrier units.



4,801,237

TRANSPORTATION DEVICE FOR COMMERCIAL AND INDUSTRIAL USE

Toshihiro Yamamoto, Tokorozawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 2, 1986, Ser. No. 902,628
Claims priority, application Japan, Sep. 3, 1985, 60-193153; Mar. 11, 1986, 61-33932[U]
Int. Cl.[4] B60B *29/00*
U.S. Cl. 414—428 **14 Claims**

1. A transportation device for moving objects, comprising:

a frame on which the object can be supported;

a base supported on a vehicle;

linkage means interconnecting said base and said frame; said linkage means comprising:

a first linkage section comprised of:

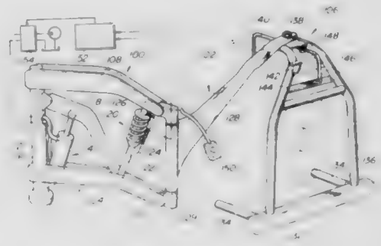
an essentially vertical shaft rotatably mounted on said base, and

a pair of parallel arms pivotally mounted on said vertical shaft at the first ends thereof; and

a second linkage section comprised of:

an arm which is operatively connected to the second ends of said parallel arms so as to be pivotal about an essentially vertical axis;

a servo device for controlling the orientation of said linkage means with respect to said base; and



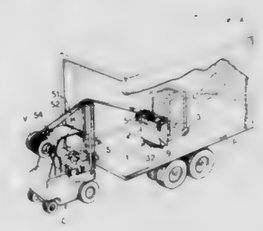
a balancing device for damping the movement of said linkage means and for exerting a force which tends to return said frame to a predetermined height.

4,801,238

VEHICLE FOR THE REMOTE HANDLING OF LOADS

Riccardo Pezzolato, Envie, Italy, assignor to Pezzolato Officine Construzioni Meccaniche S.p.A., Envie, Italy and Automated Container Loading Limited, Whitchich, Great Britain

Filed Jul. 14, 1987, Ser. No. 73,029
Claims priority, application Italy, Jul. 15, 1986, 53631/86[U]
Int. Cl.[4] B66F *9/06*
U.S. Cl. 414—607 **9 Claims**



1. A vehicle for the remote handling of loads, comprising a carrying structure provided with a roller-like driving and steering wheel and a fork structure supported by the carrying structure so that it can be raised and lowered, the fork structure having a rear frame and being provided with hook means for connection to a vertically movable attachment part of a lift truck, and electro-hydraulic control means connected to the lift truck being provided for the operation of the driving and steering wheel and the fork structure, a support structure comprising an articulated parallelogram structure including a horizontal bar having its ends articulated to the rear frame of the fork structure, two vertical legs situated on opposite sides of the driving wheel and carrying balancing support wheels at their lower ends, a pair of upper arms carried by the horizontal bar and articulated to the tops of the two vertical legs, and a pair of lower arms articulated at one end to the vertical legs and at their other ends to the rear frame of the fork structure, a cross member parallel to the horizontal bar interconnecting the tops of the vertical legs and carrying the driving wheel underneath it, and a single vertical linear hydraulic actuator for raising and lowering the fork structure relative to the carrying structure being interposed between the middle of the cross member and the rear frame of the fork structure.

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4,801,239
ARM DEVICE

Arne Austad, Kolnes, Norway, assignor to Multi Craft a.s., Norway

PCT No. PCT/NO86/00067, § 371 Date Jul. 21, 1987, § 102(e) Date Jul. 21, 1987, PCT Pub. No. WO87/03139, PCT Pub. Date Jun. 4, 1987
PCT Filed Sep. 19, 1986, Ser. No. 78,300
Claims priority, application Norway, Nov. 26, 1985, 854720
Int. Cl.[4] B66C *23/00*
U.S. Cl. 414—680 4 Claims

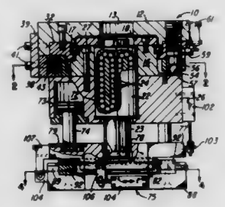


1. Arm device adapted to move and position a first basic part (6) relatively to a second basic part (4), comprising at least three arms (1, 2, 3,-7) capable of being extended and shortened in a controlled manner, one end of each of said arms being free to pivot in attachments (5) on the second basic part, the other end of each of said arms being attached to said first basic part with the attachment of one of said arms to the first basic part being rigid, and one of said arms (7) is torsionally rigid, characterized in that a third basic part (15) is connected to the first basic part (6) through a joint (16), and that at least one axiliary arm (12, 13) of positively and controllably adjustable length is connected to and arranged to be movable in its entirety with said other end of said torsionally rigid arm through a joint, while the other end of the auxiliary arm is connected to the third basic part (15), which is adapted to hold a tool (14).

4,801,240
ROBOT COMPLIANCE APPARATUS

Charles F. Hautau, 146 Hilltop Rd., Oxford, Ohio 45056; Michael W. Schmidt, 2772 Hunters Way, Bloomfield Hills, Mich. 48013, and David L. Fleischman, 6231 Rivercliff La., Dayton, Ohio 45449

Filed Feb. 19, 1987, Ser. No. 17,048
Int. Cl.[4] B25J *17/02*
U.S. Cl. 414—735 9 Claims

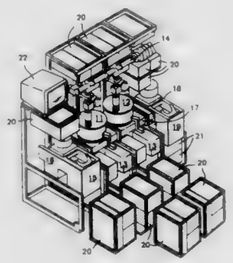


1. Apparatus adapted for connecting tooling to the moveable arm of a robot to provide for precision alignment of a part to be assembled, comprising a first support member adapted to be attached to the arm of a robot, a second support member adapted to be attached to the tooling, means connecting said first and second support members and providing for axial movement of said second support member relative to said first support member, fluid actuated means for biasing said second support member axially to a normal position relative to said first support member, said second support member including first and second support sections separated by a core member, bearing means supporting said core member and said second support section for lateral movement of said second support section in two perpendicular linear directions relative to said first support section, linear moveable biasing means for urging said second support section to a home position relative to said first support section, said linear moveable biasing means including a set of elongated opposing recesses in said first support section and in said core member and a set of elongated opposing recesses in said second support section and in said core member, each of said recesses having opposite ends, a pressure biased collapsible plunger within each set of opposing recesses and having opposite end portions engaging said opposite ends of said recesses to form precision said home position, and electrical control means for sensing movement of said second support member in said axial direction from said normal position and for sensing movement of said second support section laterally in each of said perpendicular directions from said home position relative to said first support section.

4,801,241
MODULAR ARTICLE PROCESSING MACHINE AND METHOD OF ARTICLE HANDLING THEREIN

John Zajac, San Jose; Ninko T. Mirkovich, Novato; Thomas M. Rathmann, Rohnert Park, and Roger B. Lachenbruch, Petaluma, all of Calif., assignors to Tegal Corporation, Petaluma, Calif.

Filed Mar. 9, 1984, Ser. No. 588,029
Int. Cl.[4] C23C *14/00*
U.S. Cl. 414—786 2 Claims

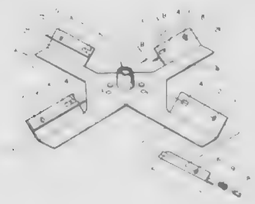


1. A method of article handling, in an article processing machine of the type having an article holding station at an input end, an article holding station at an output end and at least two chambers in which said articles are processed, comprising the steps of:
- simultaneously transferring articles from a first location to a second location in a sequence of stations defined by said input holding station, said chambers and said output holding station;
- repeating said simultaneous transfer step until each chamber holds an unprocessed article;
- simultaneously processing articles in each chamber; and
- repeating each of the above steps until all of the articles are in said output holding station.

4,801,242
FIN ATTACHMENT FOR MICROWAVE OVEN DISPERSING FANS

Yoo Eunbong, Kyungkido, Rep. of Korea, assignor to Samsung Electronics Ltd., Rep. of Korea

Filed Jul. 21, 1987, Ser. No. 76,084
Claims priority, application Rep. of Korea, Jul. 21, 1986, 86-10561
Int. Cl.[4] F04D *29/38*
U.S. Cl. 416—62 18 Claims

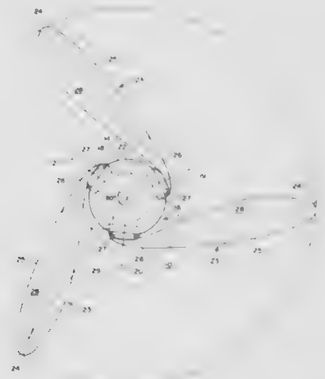


1. A supplementary fin for attachment to a dispersing fan in a microwave oven, the supplementary fin comprising:
- attachment means for attaching the supplementary fin to a blade of the dispersing fan; and
- a supplementary fin dispersing surface for modifying dispersing characteristics of the dispersing fan.

4,801,243
ADJUSTABLE DIAMETER SCREW PROPELLER

John A. Norton, Norwell, Mass., assignor to Bird-Johnson Company, Walpole, Mass.

Continuation of Ser. No. 792,064, Dec. 28, 1985, abandoned. This application Nov. 3, 1987, Ser. No. 120,247
Int. Cl.[4] B63H *1/22*
U.S. Cl. 416—89 3 Claims

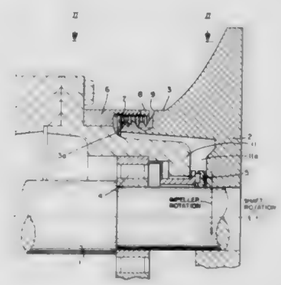


1. A continuously adjustable diameter marine propeller comprising:
- a hub having an axis of rotation, an aft end and a surface formed as a surface of revolution, the hub being adapted to be coaxially coupled to a rotatable drive shaft;
- a plurality of rotatable spindle means, each mounted in the hub for rotation about an axis disposed radially of the hub axis and positioned adjacent to the surface of the hub;
- a plurality of propeller blades attached to respective one so the spindle means, each blade having a predetermined pitch contour and a skew in the range of 60° to 90°; and
- means for synchronously turning each of the spindle means about its axis in a common direction so as to cause each of the blades to synchronously rotate between a first disposition in which the blade is held against applied loads in an orientation substantially transverse to the axis of the hub and the diameter of the propeller is maximum, and a substantially continuous range of second dispositions in which the blade is held against applied loads in respective orientations inclined towards the aft end of the hub and the diameter of the propeller is reduced up to 50% of the maximum diameter, whereby the pitch of the propeller increases as the diameter of the propeller decreases.

4,801,244
DEVICE

Peter Stahl, Enskede, Sweden, assignor to Flygt AB, Solna, Sweden

Filed Jan. 4, 1987, Ser. No. 58,098
Claims priority, application Sweden, Jan. 27, 1986, 8602873
Int. Cl.[4] B63H *1/14*; F16J *15/447*
U.S. Cl. 416—146 R 4 Claims



1. In a submersible unit having a housing (11), a shaft (1) rotatably mounted by a bearing (4) in said housing (11), a mechanical seal (5), and an impeller (2) mounted on said shaft (1), the improvement comprising:
- a socket member (6) mounted on said housing (11), said member (6) having internally formed helical grooves (7) and a plurality of cutting slots (8);
- said impeller (2) having a hub portion (3) with externally formed helical grooves (3a) which extend into and are spaced radially inward from said internally formed helical grooves (7); and
- said hub portion (3) having a plurality of circumferentially spaced and radially directed holes (10) positioned to cooperate with said cutting slots (8) for cutting pollutant material.

4,801,245
METHOD OF DAMPING SURGES IN RECIRPOCATING COMPRESSORS

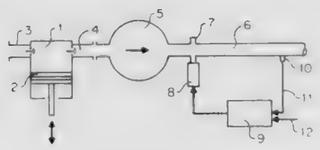
Peter de Haas; Robert Ehrich, and Reidar Joergensen, all of Berlin, Fed. Rep. of Germany, assignors to Borsig GmbH, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 44,886, May 1, 1987, abandoned. This application Apr. 8, 1988, Ser. No. 183,259
Claims priority, application Fed. Rep. of Germany, May 2, 1986, 3614930
Int. Cl.[4] F04B *11/00*
U.S. Cl. 417—53 9 Claims

1. A method of damping pressure oscillations in reciprocating compressors comprising the steps of: providing at least one throttle with adjustable flow-through opening in a line of a

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compressor; measuring pressure fluctuations in said line having said throttle; said fluctuations being superimposed on a working pressure produced by said compressor comparing the measured pressure fluctuations with a predetermined limit; and reducing said flow-through opening of the throttle when said predetermined limit is exceeded, said flow-through opening of said throttle being reduced to a predetermined minimum at



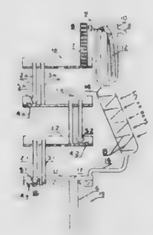
which said fluctuations are tolerable; said throttle being continuously adjustable for damping resonance amplified fluctuations; when said predetermined limit is not attained, said flow-through opening of the throttle is increased until said limit is just about to be exceeded, said flow-through opening being adapted to the measured pressure fluctuations up to a constant minimum magnitude of said opening.

4,801,246

DEVICE FOR ELEVATING LIQUIDS WITH A PLURALITY OF INTERMEDIATE CONTAINERS COMMUNICATING WITH ONE ANOTHER

Iosif Bamberg, Brooklyn, N.Y., assignor to Danmin Software and Technology, Inc., Fair Lawn, N.J.

Filed Aug. 11, 1987, Ser. No. 83,979
Int. Cl.⁴ F04F *1/04, 1/18*
U.S. Cl. 417—121 **15 Claims**



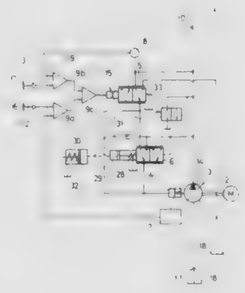
1. A device for elevating liquids, comprising
a heat exchanging vessel arranged to be heated by a source of heat and to receive a liquid which is vaporized and produces a high pressure vapor and after vaporization produces a suction;
an auxiliary vessel accommodating a liquid and connected with said heat exchanging vessel to supply a liquid into the latter to be heated and vaporized;
an inlet pipe connected with a source of a liquid; and
a discharge pipe arranged to elevate doses of liquid and connected with said inlet pipe to receive the liquid from said inlet pipe, said discharge pipe being also connected with said heat exchanging vessel so that for performing a thermodynamic cycle the liquid to be elevated is used as a working medium in that the high pressure vapor produced in said heat exchanging vessel forces the liquid in said discharge pipe up and after the vaporization of the liquid the produced suction draws the liquid from said inlet pipe into said discharge pipe,
said discharge pipe having a plurality of vertically spaced containers, a plurality of pairs of pipe portions each pair connecting two neighboring ones of said containers, and an emptying member located in each container and associated with one pipe portion of each of said pairs of pipe portions,
one portion of each of said pairs of pipe portions having a lower end associated with said emptying member, said emptying member having a predetermined height, said one pipe portion of each of said pairs of pipe portions having a bubbling chamber located above said emptying member, said bubbling chamber having a height which is smaller and a volume which is greater than that of said emptying member.

4,801,247

VARIABLE DISPLACEMENT PISTON PUMP

Toshio Hashimoto; Susumu Yoshino; Akira Ohashi, all of Kanagawa; Masao Egi, Tokyo; Yasuyuki Shingu, Kanagawa; Takashi Yoshioka, Tokyo, and Siro Hattori, Kanagawa, all of Japan, assignors to Yuken Kogyo Kabushiki Kaisha, Fujisawa, Japan

Filed Aug. 26, 1986, Ser. No. 900,445
Claims priority, application Japan, Sep. 2, 1985, 60-193639; Sep. 2, 1985, 60-193640; Jan. 31, 1986, 61-19517; Mar. 22, 1986, 61-61995; Mar. 22, 1986, 61-61994; Mar. 28, 1986, 61-68448
Int. Cl.⁴ F04B *1/30*
U.S. Cl. 417—213 **26 Claims**



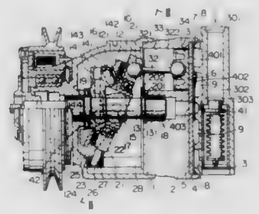
1. A variable displacement piston pump of a type which varies an output flow by controlling a hydraulic pressure to displace a variable element against a spring force, said pump comprising:
pressure detecting means for generating an electric signal output corresponding to a pump output pressure;
a proportional electro-hydraulic control valve means for communicating a pressure chamber of the variable element with a tank or a pump outlet port with an opening proportional to an input current; and
control amplifier means for receiving an externally applied pressure setting signal and the electric output signal from said pressure detecting means to control the input signal to said proportional elector-hydraulic control valve means in such a manner that said output pressure is introduced into the pressure chamber of said variable element to cut off said pump when a pressure detected by said pressure detecting means attains a setting pressure value,
said variable element being connected to flow detecting means for detecting a pump output flow in accordance with the displacement of said variable element, and
said control amplifier means including a control circuit responsive to a difference between an externally applied flow setting signal and a flow detection signal from said flow detecting means to adjust the magnitude of said input current.

4,801,248

VARIABLE CAPACITY SWASH PLATE COMPRESSOR

Kenji Tojo; Yuzo Kadomukai; Kunihiko Takao; Yozo Nakamura, all of Ibaraki; Atsushi Suginama, Mito; Isao Hayase, and Yukio Takahashi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1987, Ser. No. 83,290
Claims priority, application Japan, Sep. 5, 1986, 61-207900
Int. Cl.⁴ F04B *1/26, 27/08*
U.S. Cl. 417—222 **7 Claims**



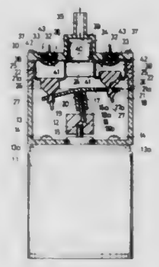
1. A variable capacity swash plate compressor, including:
a housing having therein a crank room, a suction plenum communicating with a suction bore of the compressor, and a discharge gas plenum,
a drive shaft rotatably supported in said housing,
a plurality of cylinders disposed in parallel with the axis of said drive shaft and spaced apart along the circumference of said drive shaft,
a plurality of pistons respectively received in said plurality of cylinders for reciprocating movement therein,
a plurality of rows connected to said plurality of pistons, respectively;
a piston support for supporting said plurality of rods;
a control valve disposed in said suction bore with the upstream side thereof communicating with said crank room and with the downstream side thereof communicating with said suction plenum,
a swash plate attached to said drive shaft for rotation about the axis normal to the axis of said drive shaft, the nutational angle of said swash plate being controlled by a pressure difference upstream and downstream of said control valve, and the nutational motion of said swash plate causing reciprocating motions of said pistons with strokes corresponding to said nutational angle of said swash plate, and
a pivot pin for rotatably supporting said swash plate on said drive shaft,
said swash plate comprising a mass distribution so determined that, when said pistons and said rods are reciprocatingly moved and said piston support is wobbly moved, the sum of a first nutational moment and a second nutational moment is varied in magnitude and/or direction in accordance with variations in the nutational angle of said swash plate, said first nutational moment being a moment acting upon said swash plate about the axis of said pivot pin produced by the inertial forces of said pistons, rods and piston support along the axis of said drive shaft and said second nutuational moment being a moment about the axis of said pivot pin produced by the rotation of said swash plate per se having said mass distribution.

4,801,249

SMALL-SIZED PUMP

Goro Kakizawa, Tokyo, Japan, assignor to Ohken Seiko Co., Ltd., Japan

Filed Jun. 3, 1987, Ser. No. 57,780
Claims priority, application Japan, Jun. 9, 1986, 61-133435; Oct. 22, 1986, 61-161678[U]
Int. Cl.⁴ F04B *1/28, 39/10*
U.S. Cl. 417—269 **14 Claims**



1. A diaphragm pump comprising a common valve chamber having a delivery port, a casing having a plural number of cylinders respectively arranged on a substantially same circular line round said common valve chamber, diaphragms respectively arranged in said cylinders and having end portions, to form pump chamber communication portions arranged to make said pump chambers respectively communicate with said common valve chamber, first check valves respectively arranged in said communicating portions, suction ports provided to each of said pump chambers, second check valves provided to said suction ports, drive portions respectively provided to said diaphragms constituting said pump chambers, and a source of driving force arranged to drive said drive portions, said diaphragms being in a cup-like form having outer circumferences arranged in contact with the inside wall surfaces of said cylinders at portions spaced from the end portions thereof, said diaphragm pump being arranged that said diaphragms are respectively driven by said drive portions so that said diaphragms respectively perform reciprocating motions in the axial direction of an output shaft of said source of driving force in such a manner that a predetermined time lag is maintained between said reciprocating motions of said diaphragms, and said diaphragm pump being arranged that said respective pump chambers are thereby made to repeatedly perform pumping action in turn so that the fluid from said respective pump chambers is delivered through said delivery port after passing through said common valve chamber.

4,801,250

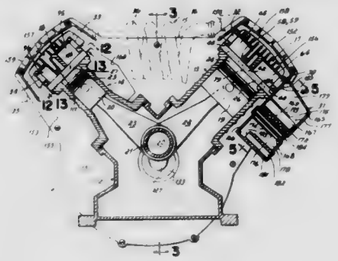
VALVE STRUCTURE FOR A COMPRESSOR

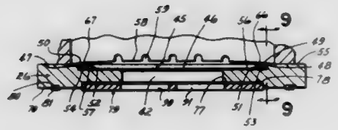
James B. Lammers, Cleves, Ohio, assignor to Campbell Hausfeld/Scott Fetzer Company, Harrison, Ohio

Filed Apr. 25, 1986, Ser. No. 856,645
Int. Cl.⁴ F04B *27/04, 39/00*
U.S. Cl. 417—265 **32 Claims**

1. A compressor of the type having at least one cylinder having a reciprocable piston therein, a valve plate at one end of said cylinder defining with said cylinder and said piston an expansible chamber, and a cylinder head disposed over said valve plate and said cylinder, the improvement including:
a fluid passageway in said valve plate;
a flexible free-floating reed valve means disposed in said valve plate for opening and closing said passageway; and
keeper bar means comprising two elongated keeper bars in said valve plate overlying and movably capturing said reed valve means with respect to and in said valve plate

for free-floating movement between a passage closing position and a flexed passage opening position wherein





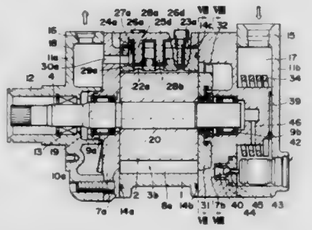
said reed valve means is curved, having each end portion thereof in contact with a respective keeper bar when so flexed.

4,801,251

SLIDING-VANE ROTARY COMPRESSOR

Nobuyuki Nakajima; Kenichi Inomata, and Shigeru Okada, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1987, Ser. No. 100,344
Claims priority, application Japan, Oct. 9, 1986, 61-241019
Int. Cl.⁴ F04C *29/08;* **F04B** *49/02*
U.S. Cl. 417—295 **2 Claims**



1. A sliding-vane rotary compressor comprising:

(a) a cylinder and a rotor rotatably disposed in said cylinder for defining therebetween an operating compartment, said rotor carrying thereon a plurality of substantially radially movable sliding vanes, there being defined between said cylinder, said rotor and said vanes a plurality of compression chambers which vary in volume with each revolution of said rotor;

(b) a pair of side blocks secured to opposite ends of said cylinder;

(c) a pair of heads secured to said side blocks, respectively, on opposite sides of said cylinder;

(d) a first one of said pair of side blocks and a first one of said pair of heads secured to said first side block jointly defining therebetween a low pressure chamber in fluid communication with an intake port of said compressor;

(e) the second one of said pair of side blocks and the second one of said pair of heads jointly defining therebetween a high pressure chamber in fluid communication with a discharge port of said compressor;

(f) said first side block having an intake hole connecting said low pressure chamber and said operating compartment;

(g) said cylinder having a recess defined in an outer surface thereof, and a discharge hole having first and second ends, said first end opening to said operating compartment and said second end opening to said recess for fluidly communicating said operating compartment and said recess;

(h) a cover secured to said cylinder and extending over said recess for closing said recess, there being defined between said cylinder and said cover a valve receiving chamber;

(i) a tubular discharge valve disposed in said valve receiving chamber for opening and closing said discharge hole, said tubular discharge valve having a longitudinal slit therein;

(j) a stopper projection on said cover and extending toward said cylinder, and said stopper projection extending into said longitudinal slit of said stopper projection extending into said longitudinal slit of said tubular discharge valve for limiting movement of said discharge valve away from said discharge hole for limiting the opening of said discharge hole;

(k) said cylinder and said second side block having a discharge connecting hole extending between said recess and said high pressure chamber; and

(l) a displacement-adjustment mechanism incorporated in said first side block and said first head for adjusting displacement of said compressor, said displacement-adjustment mechanism including:

(i) an adjustment member rotatably disposed in said first side block for adjusting a compression starting position;

(ii) resilient means for urging said adjustment member to turn in one direction;

(iii) an adjustment member pressure chamber means for producing a pressure acting on said adjustment member for urging the latter to turn in the opposite direction against the force of said resilient means, and said adjustment member pressure chamber means being fluidly connected with said high pressure chamber; and

(iv) a control valve for adjusting the rate of fluid communication between said adjustment member pressure chamber means and said low pressure chamber according to the pressure in said low pressure chamber.

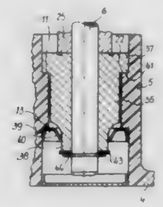
4,801,252

SLIDE BEARING UNIT FOR SMALL SIZE FAN

Guenter Wrobel, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 731,880, May 8, 1985, Pat. No. 4,743,173. This application Dec. 28, 1987, Ser. No. 137,945
Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417127
The portion of the term of this patent subsequent to May 10, 2005, has been disclaimed.
Int. Cl.⁴ F04D *29/00;* **F16C** *27/00*
U.S. Cl. 417—354 **30 Claims**

1. A small fan which is constructed as a compact axial fan, comprising a central driving motor means having a rotatable shaft retained by way of a flange means and a bearing support tube means, a rotor secured to the driving motor, and housing means for the fan forming a flow duct that surrounds the rotor, bearing support means for the shaft of the driving motor constructed as a slide bearing means, said slide bearing means being radially fixed at least within an axial partial area of the bearing support tube means by a sliding seat, and wherein said sliding seat is obtained by a spring means acting to produce a



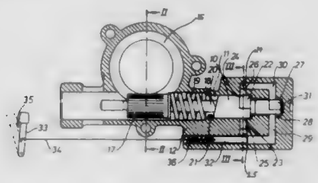
bias force between the slide bearing unit and the bearing support tube.

4,801,253

OIL PUMP

Jan-Erik Johansson, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Filed Oct. 31, 1986, Ser. No. 925,834
Claims priority, application Sweden, Nov. 11, 1985, 8505321-3
Int. Cl.⁴ F04B *19/02*
U.S. Cl. 417—427 **8 Claims**



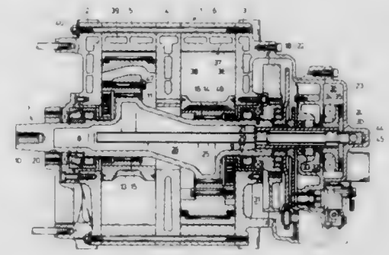
1. A pump arrangement comprising a shaft mounted for rotation and axial movement in a cylinder, means for rotating said shaft, means for axially reciprocating said shaft in response to rotation thereof, said cylinder defining first and second axially spaced cylinder portions, said shaft having first and second axially spaced pistons thereon positioned within said first and second cylinder portions respectively, first and second inlet ports and first and second outlet ports coupled to said first and second cylinder portions respectively, and first and second valve means responsive to rotation of said shaft for selectively coupling said first and second cylinder portions to said first and second inlet ports and first and second outlet ports respectively, said first valve means comprising a chamfer on the first piston, whereby in one rotary position of the first piston the first cylinder portion is exposed to the first inlet port and in a second rotary position of the first piston the first cylinder is exposed to the first outlet port, said second valve means comprising a chamfer on the second piston, whereby in one rotary position of the second piston the second cylinder portion is exposed to the second inlet port and in a second rotary position of the second piston the second cylinder is exposed to the second outlet port.

4,801,254

COOLING SYSTEM FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE

Dankwart Eiermann, Weissensberg-West, Fed. Rep. of Germany, assignor to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 944,808
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1985, 3545818
Int. Cl.⁴ F01C *21/06*
U.S. Cl. 418—94 **15 Claims**



1. A fluid cooling system of a rotary piston internal combustion engine or trochoidal type of construction with a housing having one or more trochoidal shaped internal surfacing, which has an eccentric shaft passing through the housing and having an inner chamber therewith, including an eccentric bearing means constructed as a roller bearing means as well as an eccentric arranged and associated respectively upon the inner surfacing respectively thereof and including a triangular piston having corners thereof in continuous engagement with the internal surfacing during rotation of the triangular piston upon the eccentric, said fluid cooling system comprising a main cooling circuit with cooling medium flowing therethrough as well as a hollow construction of the eccentric shaft for direct cooling thereof as well as for indirect cooling of the eccentric bearing means constructed as the roller bearing means and having a by-pass conduit connected with the main cooling circuit with cooling medium flowing therethrough branched-off via the by-pass conduit for the indirect cooling to occur effectively therewith.

4,801,255

INTERNAL AXIS SINGLE-ROTATION MACHINE WITH INTERMESHING INTERNAL AND EXTERNAL ROTORS

Felix Wankel, Eichwaldstrasse 54, D-8990 Lindau, Fed. Rep. of Germany

Division of Ser. No. 743,786, Jun. 12, 1985, Pat. No. 4,714,417. This application Jun. 19, 1987, Ser. No. 64,838
Claims priority, application Switzerland, Jun. 12, 1984, 2911/84
The portion of the term of this patent subsequent to Dec. 22, 2004, has been disclaimed.
Int. Cl.⁴ F01C *1/10*
U.S. Cl. 418—168 **3 Claims**

1. An internal axis single-rotation machine comprising:

a casing defining an internal machine volume;

an internal rotor and an external rotor having a generally circular outer periphery both mounted within said casing for rotation about their own centers of gravity at different angular velocities;

said internal rotor having a cross-sectional configuration defining a number of lobes having external peripheral faces and lateral faces which meet each other at radially external sealing corner areas;

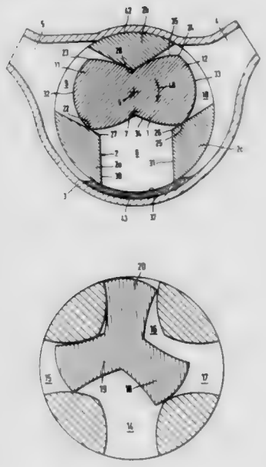
said external rotor having a cross-sectional configuration defining internal lateral faces defining a number of reces-

ses, which faces meet each other at radially sealing corner areas;

peripheral surface areas defined on said outer periphery of said external rotor having a circular Cross-section, the center of which coincides to said center of gravity and which moves past diametrically facing sealing parts of said casing to maintain a continuous sealing contact therebetween during rotation of said external rotor relative to said casing thereby to prevent fluid flow through said internal volume around the outer periphery of said external rotor;

inlet means and outlet means of said casing which, in a peripheral direction of said casing, are arranged at opposite sides of said casing between said sealing parts of said casing;

said internal rotor and said external rotor rotating at angular velocities having a ratio therebetween which corresponds to the ratio between said number of lobes and said number of recesses and being arranged in a cooperating rotating relationship during relative rotation thereof, wherein a continuous sealing engagement between said rotors is maintained in that



said radially external sealing corner areas of said internal rotor kinematically describe said internal lateral faces of said external rotor,

said internal sealing corner areas of said external rotor kinematically describe said external peripheral faces of said internal rotor, and

a meshing gear-like contact is maintained between said internal lateral faces of said external rotor and said lateral faces of said internal rotor.

said internal rotor extending to the periphery of said external rotor at certain points during the relative rotation therebetween, with said recesses of said external rotor extending to the periphery of said external rotor to open radially outwardly thereof and moving past said inlet means and said outlet means of said casing.

3. An internal axis single-rotation machine comprising:

a casing defining an internal machine volume which is partially enclosed by diametrically facing sealing parts defined by internal wall portions of said casing and having inlet means and outlet means for effecting fluid flow through said internal volume;

an internal rotor and an external rotor having a generally circular outer periphery both mounted within said casing for rotation about their own centers of gravity at different angular velocities;

said internal rotor having a cross-sectional configuration defining a number of lobes having external peripheral faces and lateral faces which meet each other at radially extending sealing corner areas;

said external rotor having a cross-sectional configuration defining internal lateral faces defining a number of recesses, which faces meet each other at internal sealing corner areas;

peripheral surface areas defined on said outer periphery of said external rotor having a circular cross-section, the center of which coincides to said center of gravity and which moves past said diametrically facing sealing parts of said casing to maintain a continuous sealing contact therebetween during rotation of said external rotor relative to said casing thereby to prevent fluid flow through said internal volume around the outer periphery of said external rotor;

said internal rotor and said external rotor rotating at angular velocities having a ratio therebetween which corresponds to the ratio between said number of lobes and said number of recesses and being arranged in a cooperating rotating relationship during relative rotation thereof, wherein a continuous sealing engagement between said rotors is maintained in that

said radially extending sealing corner areas of said internal rotor kinematically describe said internal lateral faces of said external rotor,

said internal sealing corner areas of said external rotor kinematically describe said external

peripheral faces of said internal rotor, and

a meshing gear-like contact is maintained between said internal lateral faces of said external rotor and said lateral faces of said internal rotor,

said internal rotor extending to the periphery of said external rotor at certain points during the relative rotation therebetween, with said recesses of said external rotor extending to the periphery of said external rotor to open radially outwardly thereof and moving past said inlet means and said outlet means of said casing;

said internal lateral faces of said external rotor being convexly curved and arranged in opposed facing relationship with one another.

4,801,256

MOLDING OUTER AND INNER SOLES ONTO SHOE UPPERS

Reinhard Landwehr, Achim, and Günter Rebers, Achim-Baden, both of Fed. Rep. of Germany, assignors to Klöckner Ferromatik Desma GmbH, Malterdingen, Fed. Rep. of Germany

Filed Nov. 4, 1987, Ser. No. 116,361

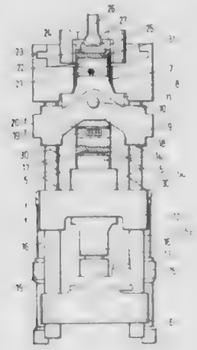
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, 3637697; Dec. 20, 1986, 3643821

Int. Cl.⁴ B29C *45/16*

U.S. Cl. 425—119 **1 Claim**

1. Apparatus for molding outer and inner soles on to shoe uppers, comprising an upstanding frame structure including a vertically movable upper cross block, a mold carrier mounted on said cross block for pivotal movement about a transverse axis, said mold carrier including a heatable first mold part at one end for the molding of outer soles of an elastomer, a vertically movable lower cross block having a mold plate in engagement with said first mold part in a molding position of said cross block and said mold carrier, said first mold part defining a mold cavity into which an elastomer is injected for molding an outer sole, means for raising and lowering said blocks between extended and retracted positions of said mold carrier, said first mold part disengaging from said mold plate in said retracted position, and said first mold part releasing the molded outer sole on to the mold plate, laterally movable mold elements mounted on said frame structure above said upper cross block, means for moving said mold elements between mold

open and mold closed positions, said mold carrier further including a cooled second mold part at an opposite end thereof, said second mold part having a cavity for receiving the molded outer sole, a shoe last holder mounted on said frame structure above said lateral mold elements for vertical movement between extended and retracted positions relative to said mold carrier, means for vertically moving said last holder, said last holder having a shoe last supporting a shoe upper, means for pivoting said mold carrier to a position in which said second mold part confronts said mold plate in said retracted position of said mold carrier and engages said mold plate in said extended position of said mold carrier, said second



mold part including suction means for transferring the molded outer sole from said mold plate to said second mold part in said extended position of said mold carrier, said pivoting means pivoting said mold carrier in said retracted position thereof to confront the molded outer sole to said last supported shoe upper, in said extended position of said mold carrier the molded outer sole supported in said second mold part cooperating with said mold elements in said closed position thereof and with said last supported shoe upper in said extended position of said last holder to form a cavity for molding an inner sole of thermoplastic material and for chemically bonding said material to said molded outer sole and to said shoe upper.

4,801,257

MELT SPINNING APPARATUS

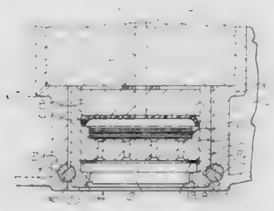
Erich Lenk, Remscheid, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Dec. 15, 1987, Ser. No. 133,431

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1986, 3642867

Int. Cl.⁴ B29C *47/12*

U.S. Cl. 425—192 S **12 Claims**



1. In a spinning apparatus for melt spinning synthetic filament yarns including a heating box having a vertically extending opening formed therein of rectilinear cross section and including internal walls, a spinning head inserted in said vertically extending opening and including external walls corresponding in cross section with said internal walls of said opening of said heating box and being disposed closely adjacent thereto, and so that a pair of opposing vertical walls are positioned adjacent each other on two opposite sides of said spinning head, said vertically extending opening being closed in the upper end portion above said spinning head, and including means for supporting said spinning head in said heater box, said supporting means including an internal contact surface extending along each internal and external wall of each of said pairs of opposing walls, with the internal contact surfaces being aligned to collectively define a channel therebetween, and a supporting and locking strip means positioned in each of said channels for maintaining said spinning head in position in said vertically extending opening and permitting easy removal therefrom in a downward direction.

4,801,258

APPARATUS FOR QUANTITATIVELY EXTRUDING FOOD MATERIAL

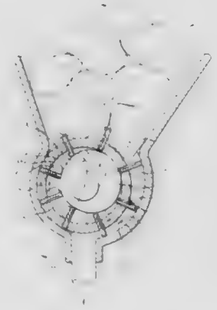
Torahiko Haysah; Koichi Hirabayashi, and Yasunori Tashiro, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Filed Feb. 19, 1988, Ser. No. 157,809

Claims priority, application Japan, Feb. 23, 1987, 62-39963; Jun. 12, 1987, 62-146685

Int. Cl.⁴ A23P *1/12*

U.S. Cl. 425—238 **8 Claims**



1. An apparatus for quantitatively extruding food material comprising

(a) a hopper for food material,

(b) an eccentrically formed cylindrical housing mounted to the bottom of said hopper, having a cylindrical side wall, which is open at the top part that faces the hopper, and two end walls, and which housing has an exit port positioned away from said hopper,

(c) a rotating hollow cylindrical drum disposed in said housing, operatively connected to an axis, said axis in turn being connected to a motor, said drum having a plurality of slits formed radially through the peripheral body thereof and extending in the axial direction of said peripheral body, said side wall of said housing so formed that the periphery of said drum and the inner surface of said side wall of said housing downstream of said hopper in the direction of rotation of said drum defining a space progressively narrowing in its cross-section toward said exit port, and slidably engaging each other downstream of said exit port in the direction of rotation of said drum,

(d) a plurality of blades, inserted into each of said slits, and of cross-sectional dimensions defined such that they slidably fit in said slits, each said blade being provided with a recess on its trailing surface extending in the radial direc-

VOL 1098 ISS 5 JA 31 1989 UMI

tion over a distance slightly greater than the thickness of the peripheral body of said drum,

(e) an eccentric cylindrical cam mounted on said axis of said drum, the periphery thereof being radially spaced apart from the inner surface of said side wall of said housing by a distance equal to the radial width of said blades, engaging said peripheral body of said drum at the top portion of said drum and being progressively separated from said peripheral body in the direction of rotation of the drum, defining an inner chamber together with the end walls of the housing, and enlarging in its cross-section toward said exit port, and

(f) an exit path connecting said inner chamber to said hopper,

wherein each of said blades is slidably movable as said drum rotates along said periphery of said eccentric cam and said inner surface of said side wall of said housing, so that when the rotation brings said blade to face the bottom of said hopper the outward part of said blade is arranged to protrude into said hopper to introduce said food material into said space, while said recess on said blade provides a path from said space to said inner chamber for releasing into said inner chamber the air trapped in a compartment formed by the two adjacent said blades and the drum and the housing, and to retract to a point where the outward end of said blade becomes flush with the periphery of said drum when said blade has moved past said exit port.

4,801,259

DEVICE FOR PRODUCTING CONICAL CASES FROM STRIPS OF DOUGH MATERIAL WOUND ON A CARRIER

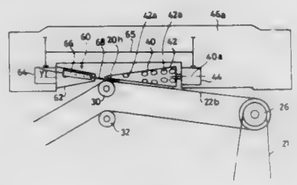
Rudolf J. G. A. van der Hoora, Nemnen, and Henrikus P. M. Clerx, Baarlo, both of Netherlands, assignors to Houdstermaatschappij De Goede B.V., Amsterdam, Netherlands

Filed Sep. 3, 1987, Ser. No. 92,864

Claims priority, application Netherlands, Sep. 3, 1986, 8602232

Int. Cl.⁴ A01J *21/02*

U.S. Cl. 425—305.1 **9 Claims**



1. Device for producting of conical cases from strips of dough material wound on a carrier, comprising

a first endless supply belt, on which narrow strips of dough, arranged side by side transversely to the lengthwise direction of the belt, are supplied,

a second endless conveyor belt which is linked to the first belt in the lengthwise direction thereof, and which has, ascending at an obtuse angle under the end of the first belt a first part, on which the dough strips are taken over, and a second part connecting thereto via a guide roller disposed at an angle, and

a number of winding units which are movable at right angles to the lengthwise direction of this second part, each with a detachable carrier disposed on a rotary core and having a conical outer surface whose tip is directed against the direction of movement of the second belt, while the speed of rotation of the carriers is greater at the beginning of the winding process than at the end thereof, in such a way that the peripheral speed at the beginning of the winding process is greater than the unwinding speed over the belt and decreases during the winding process until these speeds are equal.

4,801,260

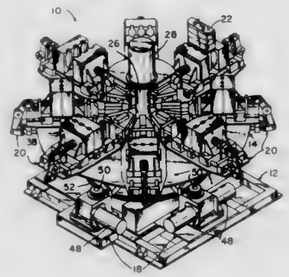
ROTARY BLOW MOLDING MACHINE

Paul M. Oles, and Frederick J. Shepps, both of York, Pa., assignors to Graham Engineering Corp., York, Pa.

Continuation of Ser. No. 28,975, Mar. 23, 1987, abandoned. This application Mar. 30, 1988, Ser. No. 175,603

Int. Cl.⁴ B29C *49/00*

U.S. Cl. 425—527 **30 Claims**



1. A rotary blow molding machine comprising:

(a) A base;

(b) A turntable rotatably mounted on the base;

(c) A plurality of mold units mounted on and spaced around the turntable, each mold unit including a pair of mold halves defining a blow mold cavity when closed, and mold clamp drive means for opening the closed mold halves to permit removal of a blow molded article at an ejection station and for closing the open mold halves at an extrusion station to capture a parison within the mold cavities;

(d) A turntable drive for moving the turntable around the base in steps to index the mold halves between stations spaced around the machine, the stations including an extrusion station and an ejection station;

(e) An extrusion die head mounted relative to the base above the extrusion station in a fixed circumferential location and operable to extrude a continuously growing resin parison down into the extrusion station;

(f) Vertical positioning means at the extrusion station for holding each mold unit indexed to the extrusion station in an elevated position so that the open mold halves move to either side of a parison growing down from the extrusion die head prior to closing of the mold halves and capture of the parison, and for lowering the mold units and closed mold halves vertically down from the elevated position faster than the rate of downward parison growth;

(g) Parison separation means at the extrusion station for severing the captured parison from a new parison growing from the extrusion die head;

(h) Blow means for expanding the captured parison against the mold cavity; and

(i) Mold unit rise means for raising each mold unit to the elevated position prior to return of the mold unit to the extrusion station; whereby a parison is captured between closed mold halves, separated from the new parison and blow molded against the cavity as each mold unit is rotated around the base.

4,801,261

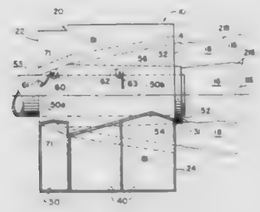
APPARATUS AND METHOD FOR DELIVERY OF COMBUSTION AIR IN MULTIPLE ZONES

Donald K. Hagar, Bethlehem, Pa., assignor to Eaglair, Inc., Bethlehem, Pa.

Filed Mar. 19, 1987, Ser. No. 28,180

Int. Cl.⁴ F23M *3/00*

U.S. Cl. 431—9 **19 Claims**



1. A method of supplying combustion air to a combustion device so as to provide an inner ignition zone where fuel is first ignited and an outer supplemental zone where the main combustion takes place, the method comprising the steps of:

(a) independently regulating and directing a first, discrete stream of air through an inwardly spiralling ignition zone register scroll passageway, whereby the first air stream has measurable characteristics which govern combustion characteristics in the ignition zone;

(b) discharging the first air stream into the combustion device after the first air stream has passed through the ignition zone register scroll passageway, whereby the discharged first air stream supports and governs combustion in the ignition zone;

(c) independently regulating and directing a second, discrete stream of air through an inwardly spiralling supplemental zone register scroll passageway, whereby the second air stream has measurable and controllable characteristics which govern combustion characteristics in the supplemental zone; and

(d) discharging the second air stream into the combustion device after the second air stream has passed through the supplemental zone register scroll passageway, whereby the discharged second air stream supports and governs combustion in the supplemental zone.

4,801,262

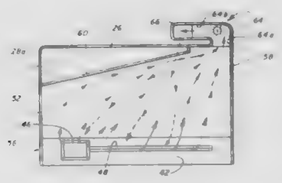
LOW VELOCITY AIR SEAL

Jeffrey C. Johnson, Birmingham, and Maximilian K. Carthew, Rochester Hills, both of Mich., assignors to Haden Schweitzer Corporation, Madison Heights, Mich.

Continuation of Ser. No. 858,029, May 1, 1986, abandoned. This application Dec. 11, 1987, Ser. No. 133,161

Int. Cl.⁴ F27B *9/28*; F24F *9/00*

U.S. Cl. 432—8 **8 Claims**



1. A method of reducing the flow of hot air out of the entry end of an elongated paint curing oven system of the type in which painted articles to be processed are moved longitudinally through an oven and wherein said oven system includes a sealing compartment having a longitudinal length terminating in an entrance and exit, with said exit aligned with the entry to the oven, said method comprising the steps of:

continuously removing heated air from the upper region of said compartment adjacent said compartment exit;

continuously recirculating said heated air to the lower region of said compartment along its longitudinal length;

preventing any high velocity flow of air between said lower and upper regions of said compartment, and

preventing any high velocity flow of air across the entrance to said compartment.

4,801,263

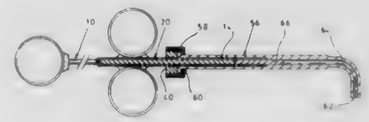
OSSEOUS IMPLANT SYRINGE

William C. Clark, P.O. Box 2777, Knoxville, Tenn. 37901

Continuation-in-part of Ser. No. 867,065, May 27, 1986, abandoned. This application Aug. 19, 1987, Ser. No. 87,597

Int. Cl.⁴ A61C *5/04*

U.S. Cl. 433—90 **16 Claims**



1. An osseous implant syringe designed for injecting an osseous implant substance into interdental alveolar bone defects, comprising:

a syringe plunger member having a piston rod and handle means connected at a first end of said piston rod;

a syringe barrel member having a syringe barrel provided with an axial lumen from an inlet to an outlet to closely receive said piston rod of said syringe plunger member, said lumen having a uniform cross section throughout its length;

grasping members attached to an external surface of said barrel sleeve proximate said barrel inlet; and

a threaded nozzle coupler attached exterior to said barrel member proximate said grasping members.

4,801,264

DENTAL PIN AND BUSHING ASSEMBLY

Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Filed Jul. 23, 1987, Ser. No. 76,640

Int. Cl.⁴ A61C *13/00*

U.S. Cl. 433—74 **21 Claims**

1. A dental pin and bushing assembly for removable coupling of a die of a tooth into a working cast comprising:

a pin having an axially extending head portion for secured retention within the die, a coaxial body portion for depending projection from the die portion, the body portion include offset means for oriented insertion of the pin; and

a bushing for securement within the working cast having an elongated sleeve with an interior shape for matingly receiving the body portion of the pin, and

wherein the body portion of the comprises a substantially

cylindrical rod and a first radially projecting rib extending along at least a portion of the length of the rod, and



further comprising a second radially projecting rib extending along at least a portion of the length of rod in diametric opposition to the first rib.

4,801,265

CONTROL VALVE DEVICE FOR A DENTAL DEVICE

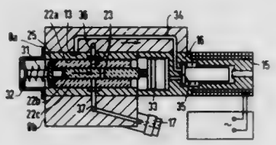
Hans-Michael Kratochwilla, Lorsch, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 796,712, Nov. 12, 1985, abandoned. This application Aug. 26, 1987, Ser. No. 89,948

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1984, 3442846

Int. Cl.[4] F16K *11/065*

U.S. Cl. 433—98 **17 Claims**



1. In a control valve means for a dental device for the simultaneous control of a plurality of fluid agents, said control valve means containing at least one valve, which is composed of a plurality of parts arranged on top of one another sandwich-like and forming the valve seat therebetween, an intake and discharge line for each of the plurality of agents as well as control lines under given conditions being connected to the valve, the improvements comprising said control valve means having a single valve control block having an output control valve for each instrument associated with the valve means and a common input control valve, each of said output control valves containing two stationary spaced plates with one plate having ports being connected to the agent intake lines and the other plate having ports being connected to the discharge lines, and a movable plate forming a valve body adjustably arranged between the two stationary plates and having through-channels proceeding at right angles to a plane of movement, said plates comprising super-fine sliding surfaces of ceramic material with which the plates lie against one another, and adjustment means including a solenoid valve and associate pneumatic control means for moving said movable plate along said sliding surfaces of the stationary plates between at least two positions with one of the two positions having the through-channels of the movable plate being aligned with the ports formed in the two stationary plates to enable flow therebetween and a second of the two positions having the through-channels of the movable plate out of alignment with the ports of the stationary plates to block flow of the agents, said valve control block having an upper part and a lower part, said upper part having connections for the feed the agents to each of said output control valves, and said lower port having a hose connection for each of the output control valves for connecting a supply conduit thereto.

4,801,266

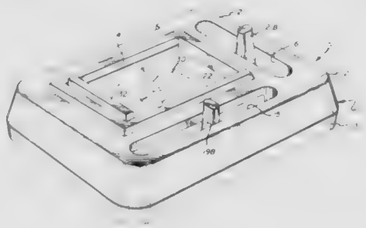
IRRIDESCENT DRAWING OR SKETCHING DEVICE

Benjamin Kinberg, 425 Riverside Dr., New York, N.Y. 10025

Filed Jan. 25, 1988, Ser. No. 148,342

Int. Cl.[4] B43L *1/12, 13/00;* **B44F** *1/14*

U.S. Cl. 434—85 **4 Claims**



1. A sketching device for making an irridescent image comprising a housing having an upper member and a complementary lower member, said upper member having a window formed therein, a transparent imaging surface having disposed therein an irridescent dye, a sheet of opaque plastic material disposed below said imaging surface, said imaging surface and sheet of opaque material being disposed in interfacing relationship, an inner annular frame disposed between said upper and lower members in alignment with said window, means for securing said imaging surface and underlying opaque material to said inner frame, a courser disposed in contacting relationship with said sheet of opaque material for imparting a pressure thereon and actuating means for moving said courser along an X and Y axis either independently or simultaneously relative to said sheet of opaque material whereby the pressure applied by the courser as it is translated relative to said sheet develops an irridescent image at said imaging surface along the points of applied pressure, said actuating means including a pair of courser arms disposed at right angles to one another and crossing each other, each of said courser arms having elongated slot formed therein, and said courser being captive by said courser arms at the intersection thereof whereby said courser is guided along said slots as one or both of said courser arms is translated relative to said imaging sheet.

4,801,267

DISPLAY DEVICE FOR ILLUSTRATING COLOR MIXTURES

Hans Von Loesch, Waldfriedstrasse 24, D-6000 Franfurt/Main 1, and Harald Riehle, Gottlieb-Wolfer-Strasse 6, D-7306 Denkendorf, both of Fed. Rep. of Germany

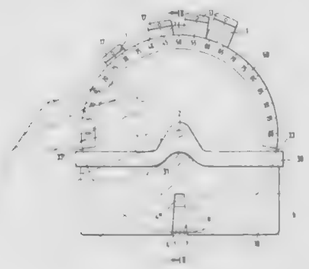
PCT No. PCT/EP86/00592, § 371 Date May 29, 1987, § 102(e) Date May 29, 1987, PCT Pub. No. WO87/02767, PCT Pub. Date May 7, 1987

PCT Filed Oct. 16, 1986, Ser. No. 57,900

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1985, 8529913[U]; Oct. 25, 1985, 3537990; Jul. 3, 1986, 86109058

Int. Cl.[4] G09F *9/00, 11/00*

U.S. Cl. 434—104 **15 Claims**



1. A display device for illustrating color mixtures, comprising:

a plurality of concentrically arranged, transparent color wheels each having a color printed thereon of varying gradation, and means for rotating the color wheel in assembly;

a covering wheel of non-transparent material for covering the cover wheels in assembly said covering wheel having a recess;

means for mounting the plurality of color wheels and the covering wheel together for rotation of the color wheels relative to each other and the covering wheel; and

a scale disposed on the covering wheel, said scale being associated with the rotated position and consequently a given color gradation of each color wheel; wherein:

(a) each color gradation on each color wheel has a radial extent less than the total radial extent of the wheel;

(b) the recess has a radial extent greater than the radial extent of the color gradations, so that the color gradations and an uncolored region adjacent thereto of each color wheel can be viewed through the recess; and

(c) said recess thereby serving for viewing any mixture of color gradations of the color wheels obtained by adjustment of the color wheels by said rotating means, in contrast to the adjacent uncolored regions.

4,801,268

MANIKIN FOR PRACTICING ARTIFICIAL RESPIRATION

Ole B. Kohnke, Frederiksberg, Denmark, assignor to Ambu International A/S, Glostrup, Denmark

Filed Apr. 14, 1988, Ser. No. 181,525

Claims priority, application Denmark, Apr. 15, 1987, 2002/87

Int. Cl.[4] G09B *23/28*

U.S. Cl. 434—265 **5 Claims**

1. A manikin for practicing artificial respiration by the mouth-to-mouth or mouth-to-nose method, said manikin comprising an inflatable element simulating a lung, an element simulating a chest and a hollow element simulating a head, said head element comprising a cavity containing a replaceable inflatable bag having an air inlet which is airtightly connected to a replaceable element simulating a mouth and nose, the cavity in the head being connected to the lung simulating



element through an air duct, and wherein the bag is surrounded by an elastically expandable cover having a predetermined internal volume in its state of rest.

4,801,269

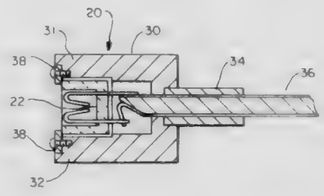
COAXIAL CONNECTOR FOR USE WITH PRINTED CIRCUIT BOARD EDGE CONNECTOR

Donald R. Howard, Danville, and Robert A. MacGill, Richmond, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 31, 1987, Ser. No. 80,324

Int. Cl.[4] H01R *17/04*

U.S. Cl. 439—63 **12 Claims**



1. A coaxial connector for interfacing with a printed circuit board edge connector comprising a metallic body having two leg portions extending from one side for receiving an edge connector therebetween and a tubular portion extending from another side for receiving a coaxial cable, said body having a cavity for receiving lugs of the edge connector and the conductors of the coaxial cable.

4,801,270

SHAFT MOUNTING AND ELECTRICAL GROUNDING DEVICE

Richard F. Scarlata, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 5, 1987, Ser. No. 104,470

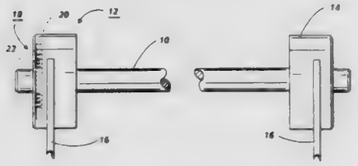
Int. Cl.[4] H01R *4/66*

U.S. Cl. 439—95 **11 Claims**

1. A device for supporting a shaft rotatably in an electrically grounded frame, including:

an electrically conductive molded member mounted on the frame, said molded member having an aperture therein;

means, mounted in the aperture of said molded member, for rotatably supporting the shaft; and



means, mounted on said molded member, for electrically connecting said molded member to the shaft so as to electrically ground the shaft.

4,801,271

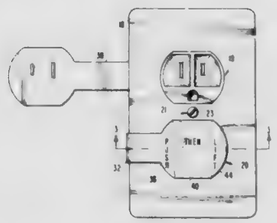
SAFETY COVER FOR ELECTRICAL OUTLETS

Danny A. Piper, R.R. 5, Box 3, Peru, Ind. 46970

Filed Mar. 21, 1988, Ser. No. 170,981

Int. Cl.[4] H01R *13/44*

U.S. Cl. 439—148 **10 Claims**



1. A safety device for insertion into the receptacle openings of an electrical outlet having a socket comprising:

a plug head having a protective surface, an oppositely facing socket contact surface, a first edge and a second edge located opposite said first edge;

pivot means for pivoting said second edge away from a socket in which the device is inserted when a force directed toward the socket is applied to said first edge;

a plurality of prongs extending from said socket contact surface, said prongs being positioned on said socket contact surface to be received in the receptacle openings of an electrical outlet.

4,801,272

EXTERNAL PACK CONNECTOR

Manabu Kanazawa, Tokyo, and Kazuyoshi Odagawa, Koshigaya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 730,037, May 3, 1985, abandoned. This application Feb. 10, 1987, Ser. No. 13,149

Claims priority, application Japan, May 10, 1984, 59-91727; May 10, 1984, 59-91728; May 10, 1984, 59-91729; May 15, 1984, 59-95493; May 15, 1984, 59-95494; May 15, 1984, 59-95495

Int. Cl.[4] H01R *13/62*

U.S. Cl. 439—153 **9 Claims**

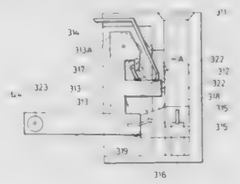
1. An external pack connector providing connection to an external pack, said connector comprising:

means defining a recess for receiving an external pack by insertion thereinto in an insertion direction;

table means slidably mounted in said recess and biased in a direction opposite to the insertion direction of said external pack;

securing means for securing said external pack in said recess by projecting into said recess as said table means is moved in the insertion direction of said external pack by the insertion of said external pack;

flexible contact means for electrically connecting with said external pack, said contact means biasing said securing means to project into said recess by a spring force thereof;



rotatable lever means fixed to said securing means; and

rotation means for rotating said lever means to retract said securing means against the spring force of said contact means.

4,801,273

SOCKET

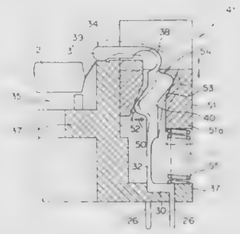
Kiyokazu Ikeya, Ueno, and Masanori Yagi, Numazu, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 20, 1987, Ser. No. 87,580

Claims priority, application Japan, Sep. 2, 1986, 61-206531

Int. Cl.[4] H01R *9/09*

U.S. Cl. 439—269 **6 Claims**



1. A socket having contactors secured at one end thereof to a socket body, and a slide cover slidably fitted to said socket body, said contactors being disposed in such positions that said contactors may be electrically connected in an elastically pushed condition of said contactors to a given electrical part as said electrical part is mounted on the socket, wherein a tapered surface is formed in each sliding contact area between the respective contactors and said slide cover in such a manner that, as said slide cover slides, a force is generated to elastically deform said contactors and thereby release said contactors from said electrical part to remove electrical connections of the contactors relative to said electrical part, each of said contactors comprising a fixed base disposed at one end thereof and secured to said socket body, a resilient standing section that stands almost perpendicularly from said fixed base, a resilient bent section fully bent in a circular arc and extending via an intermediate section form the top end of said standing section, and a pushing member disposed to extend from said bent section, wherein said intermediate section of each contactor passes through a throughole in said slide cover having said tapered surface made in the wall thereof.

4,801,274

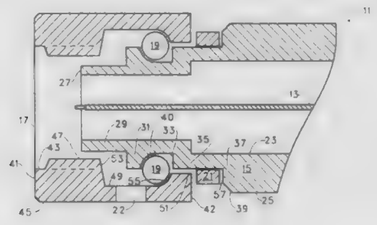
MICROWAVE COAXIAL CONNECTOR DEVICE

Norman D. Royce, San Carlos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 15, 1988, Ser. No. 144,286

Int. Cl.[4] H01R *13/623*

U.S. Cl. 439—322 **2 Claims**



1. A coaxial microwave connector comprising:

a body having an inner conductor and an outer conductor defining a coaxial transmission line therebetween, said outer conductor extending radially and axially, said outer conductor including a front face at a front axial end thereof, said front face consisting primarily of gold, said front face defining a reference plane, said inner conductor extending axially within said outer conductor, said outer conductor having an inner surface and an outer surface, said outer surface including a circumferentially extending conductor segment with a concave axial profile for engaging and constraining the forward movement of ball bearings;

a coupling nut extending axially of said outer conductor so as to intersect said reference plane, said coupling nut having an inner surface, said inner surface including a threaded segment extending at least partially in front of said reference plane, said inner surface including a circumferentially extending nut segment with a concave axial profile for engaging and constraining the rearward movement of ball bearings, said nut segment being disposed behind said conductor segment, said coupling nut including an aperture through which said ball bearings can fit, said aperture being located forward of said nut segment;

ball bearings mechanically coupled to and disposed between said conductor segment and said nut segment; and

constraining means for constraining the rearward movement of said nut relative to said body, said constraining means including a removable element which when in place prevents said ball bearings from passing through said aperture.

4,801,275

CONNECTOR LOCK DEVICE

Tomohiro Ikeda, and Mitsuhiko Totsuka, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Nov. 30, 1987, Ser. No. 126,717

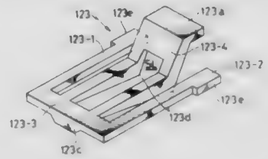
Int. Cl.[4] H01R *13/627*

U.S. Cl. 439—350 **5 Claims**

1. A connector lock device for locking two connector housings, which comprises:

(a) a roughly triangular protrusion member provided on a first connector housing; and

(b) a roughly E-shaped latch lever member provided on a second connector housing to cooperate with said triangular protrusion member to lock and unlock the two connector housings at a mated position, said latch member being formed with a slot at a middle leg portion thereof into which said protrusion member is accommodated at a locked position when the two connector housing are coupled to each other, a claw portion engageable with said protrusion member at the locked position, an outer flat depression portion at one end thereof, and two projected fulcrum portions contactable with the second connector housing, for pivoting said latch lever member away from said protrusion member into an unlocked position when the outer flat depression portion is depressed.



4,801,276

CONNECTOR ASSEMBLY FOR ANODE SOCKET OF CATHODE RAY TUBE

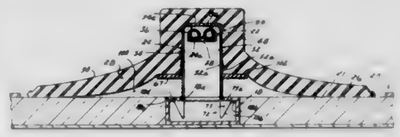
Thomas V. Thole, 5543 Jessup Rd., Cincinnati, Ohio 45239

Continuation of Ser. No. 860,244, May 6, 1986, Pat. No. 4,720,273. This application Nov. 19, 1987, Ser. No. 123,602

The portion of the term of this patent subsequent to Jan. 19, 2005, has been disclaimed.

Int. Cl.[4] H01R *11/22*

U.S. Cl. 439—592 **8 Claims**



1. A connector assembly connectable between (a) an electrically conductive anode socket having an annular ring with an inwardly-directed circular lip mounted to the exterior wall of an evacuated glass tube, and (b) a high voltage insulated cable, said connector assembly comprising:

a conductive terminal having an inner section electrically and mechanically connected to said high voltage cable, said terminal having an outer section provided with a leading edge,

an electrically insulative molded cup having

(a) a skirt section defining a large open cavity;

(b) a central body section having a small cavity defined by a first and second pair of opposed internal generally parallel side walls and a generally rectangular top internal wall, the cross-section of said small cavity being approximately coextensive in size and shape with that of said rectangular top internal wall, said small cavity having a longitudinal axis approximately perpendicular to said top wall;

(c) a barrel having a bore therein connected at its inner end to said small cavity via one of said walls of said first pair and having an outer open end, said barrel having a longitudinal axis disposed at a substantial angle to said longitudinal axis of said small cavity, said barrel bore being configured to snugly embrace the exterior of said high voltage insulated cable, and

(d) a recess in the other of said internal side walls of said first pair located opposite said inner end of said bore,

a stamped band of electrically conductive spring sheet material formed into a generally U-shaped anode clip having

(a) a central generally rectangular base approximately coextensive in size and shape with said internal top wall of said small cavity, said base having a generally rectangular perimeter defined by four sides,

(b) oppositely disposed, spaced-apart, elongated arms ex-

tending from opposite sides of said base, said arms each having

(i) a first section at the free end thereof which includes means for mechanically and electrically connecting said arms to an anode socket at opposite points of the annular ring thereof,

(ii) a second section located between and integral with said first section and said opposite sides of said base, said second sections each being in a single plane disposed generally parallel to each other and perpendicular to said base, and

(c) a connecting element extending from and integral with a third side of said base located between said opposite sides of said base from which said arms extend, said connecting element having an outer section disposed between said second arm sections and approximately parallel to said base, said connecting element being free of edges which project beyond the perimeter of said base,

said clip being located in small cavity with said base in substantially full surface contact with said top internal wall, said opposite side walls of said second pair in substantially full surface contact with said second arm sections, said third side of said base being proximate said other of said walls of said first pair, said outer section of said connecting element being disposed between said inner end of said bore and said recess, and said first arm sections extending into said large open cavity,

whereby when said terminal is inserted into said bore (a) the terminal and connecting element slidingly engage to establish an electrical and mechanical interconnect therebetween and (b) the leading edge of said terminal seats in said recess to prevent withdrawal and inhibit wobble of said clip relative to said small cavity, and

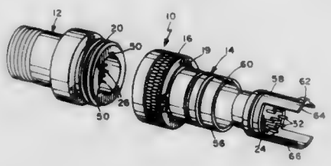
lock means incorporated in said terminal and connecting element inhibiting mechanical disengagement therebetween when said terminal and connecting element slidingly engage upon insertion of said terminal into said bore and the leading edge of said terminal outer section seats in said recess.

4,801,277

UNDERWATER ELECTRICAL CONNECTOR WITH KEYED INSERT SLEEVE

Denton S. Sellhan, San Diego, Calif., assignor to Brantner & Associates, Inc., El Cajon, Calif.

Filed Jun. 1, 1987, Ser. No. 56,756
Int. Cl.[4] H01R *13/64*
U.S. Cl. 439—680 **9 Claims**



9. An electrical connector comprising:

a pair of mating connector shells, one of the shells comprising a socket and the other shell comprising a plug for mating engagement in the socket;

a first insert body for engagement in one of the connector shells and a second insert body for engagement in the other connector shell, one of the insert bodies having contact pins projecting from its front face and the other insert body having corresponding contact sockets in its front face for slidably receiving the contact pins when the plug and socket shells are connected together;

one of the connector shells having at least one keyway and the other connector shell having a corresponding key for engaging in the keyway as the part are connected together to maintain a predetermined relative angular orientation between the connected shells;

each of the insert bodies and corresponding connector shell having interengageable keying means for maintaining a predetermined relative angular orientation between the insert body and respective connector shell as the insert body is engaged in the shell;

the keying means of at least one insert body and corresponding connector shell comprising a rearwardly projecting sleeve on the connector shell for receiving the insert body, the sleeve having at least one through slot extending axially from its rear end along part of its length, and a sleeve projecting rearwardly from the rear face of the insert body having at least one outwardly projecting key for engagement in the slot in the connector shell sleeve as the insert body is inserted into the connector shell; and

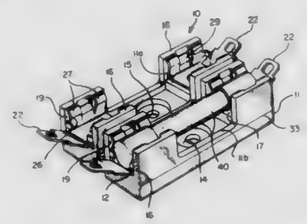
each insert body having a series of connector projections projecting from its rear face corresponding to the contacts on the front face of the insert body for connection with electrical cable wires, the contact pins and contact sockets on the insert bodies being electrically connected to the connector projections, and the rearwardly projecting sleeve on at least one of the insert bodies surrounding the connector projections on that insert body.

4,801,278

LOW PROFILE BREAK-AWAY FUSEBLOCK

Gayle L. Sappington, Glendale, Mo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jul. 18, 1984, Ser. No. 632,051
Int. Cl.[4] H01R *13/432*
U.S. Cl. 439—746 **27 Claims**



16. A fuse holder for retaining an elongated cylindrical bodied fuse on an insulative base in terminals mounted to said base for connection of said fuse into a circuit, said fuse holder comprising:

a plurality of fuse connecting terminals, each including outwardly projecting resilient retaining means;

an elongated terminal base means, a plurality of generally rectangular terminal support bases each having surfaces receiving said retaining means for securing said fuse connecting terminals in opposed facing alignment within the bases,

interconnecting webs extending along at least one longitudinal side of one of said rectangular support bases and laterally therefrom to the longitudinal side of another of said rectangular support bases and attached thereto, and

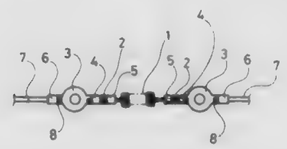
a thinned cross section running the longitudinal length of said web to define a lone of weakness in said web for locating, enhancing and facilitating the severance of said web and thereby the separation of at least one of said bases from said elongated terminal base means.

4,801,279

SHAPE MEMORY ALLOY SPRING CONNECTION ASSSEMBLY

Takao Nakanishi, Takaichi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 733,309, May 13, 1985, abandoned. This application Nov. 2, 1987, Ser. No. 117,422
Claims priority, application Japan, Jul. 18, 1984, 59-109748[U]
Int. Cl.[4] H01R *4/18*
U.S. Cl. 439—877 **2 Claims**



1. A shape memory alloy spring connector assembly comprising:

a shape memory alloy spring having first and second ends;

first and second spring connectors connected to said first and second ends of said shape memory alloy spring;

first and second connection terminals connected to said first and second spring connectors; and

power supply line connected to said connection terminals for feeding power to said shape memory alloy spring;

wherein a crimped connection is formed between said power supply line and each of said first and second connection terminals, a plurality of crimped connections are formed between said first connection terminal and said first end of said shape memory alloy spring, and a plurality of crimped connections are formed between said second connection terminal and said second end of said shape memory alloy spring,

whereby said crimped connections provide for improved mechanical and electrical stability.

4,801,280

STATOR FOR MARINE PROPELLER

Johannes Schuit, 1433 Camilo Trillado, Carpinteria, Calif. 93013

Filed Jan. 3, 1984, Ser. No. 567,686
Int. Cl.[4] B63H *1/14*
U.S. Cl. 440—67 **4 Claims**



1. For combination with a marine propeller having blades, and adapted for connection to a ship's hull,

(a) a substantially cylindrical flow guide having fore and aft opposite ends,

(b) the propeller having an axis of rotation, and said flow guide having an axis, said axes being substantially coincident,

(c) the flow guide having a rim defining a bore diameter at said aft end which is substantially the same as the propeller blade tip diameter, and

(d) said blades having tips and the propeller having a location characterized in that the blade tips rotate adjacent said rim at the aft end of the flow guide,

(e) the blades located partly within, and partly outside the flow guide so that the blade tips rotate closely adjacent said rim, the blades tapering forwardly between said tips and said propeller axis,

(f) the flow guide having an outer cylindrical body, a tubular hub, and struts extending between said hub and said body, there being flow space between said hub and body, the propeller having a shaft extending through said hub,

(g) the struts comprising multiple stator vanes mounted to the guide and located in said flow space and spaced about the hub to direct the flow of water rearwardly and directionally circumferentially into the rotating blades, each vane having a flow directing face which extends rearwardly and circumferentially in a direction opposite to the rotary direction of blade rotation.

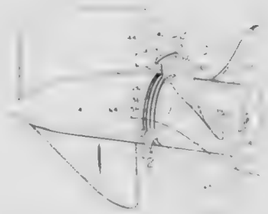
(h) the vanes including said flow directing faces extending generally axially throughout the major length of the flow guide, and rearwardly into proximity to said flow guide rim, whereby water flowing through the major length of the flow guide is directed both axially and circumferentially.

4,801,281

LINE CUTTER FOR OUTBOARD, INBOARD/OUTBOARD, AND TROLLING MOTORS

Donald T. Govan, P.O. Box 350246, Ft. Lauderdale, Fla. 33335

Filed Sep. 12, 1986, Ser. No. 907,195
Int. Cl.[4] B63H *5/16*
U.S. Cl. 440—73 **26 Claims**



1. An apparatus that cuts lines, nets, and weeds of the type that may be encountered by propeller driven vessels utilizing outboard, inboard/outboard, or trolling motors, said vessels of the type where the propeller is mounted about a rotatable propeller shaft that extends rearwardly from a propeller shaft housing that depends to a vessel's hull, comprising:

an annular cutter ring disposed transversely to said propeller shaft, said cutter ring capable of limited movement relative to said propeller shaft housing, a cutting blade member mounted on said cutter ring, a pair of shear edges formed on opposite sides of said cutting blade member;

a protruding forwardly expanding, wedge member formed on said cutting blade member, said wedge member configured to define a forwardly opening wedge-shaped cavity, said wedge-shaped cavity adapted to receive said propeller shaft housing;

a rotatably mounted annular bolt ring disposed intermediate said cutter ring and said propeller shaft housing;

a rotatably mounted annular cutter ring mounted rearwardly of said non-rotatably mounted cutter ring so that said non-rotating cutter ring is disposed in sandwiched relation to said bolt ring and said rotatable cutter ring;

a plurality of circumferentially spaced cutting blade members mounted on said rotatable cutter ring;

a pair of shear edges formed on opposite sides of each of said plurality of cutting blade members;

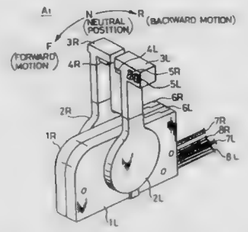
said protruding wedge member entering into abutting engagement with said propeller shaft housing attendant rotation of said propeller shaft;

said propeller shaft housing entering into fine engagement with said forwardly opening wedge-shaped cavity sub-

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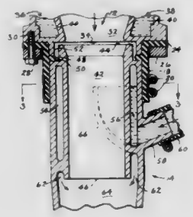
stantially instantaneously upon the introduction of a load on said apparatus.

4,801,282
REMOTE CONTROL APPARATUS
Toshimitsu Ogawa, and Shinichi Kudo, both of Tokyo, Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Tohatsu Corporation, Tokyo, both of, Japan
Filed Feb. 20, 1987, Ser. No. 16,919
Claims priority, application Japan, Feb. 21, 1986, 61-24259[U]
Int. Cl.[4] B63H *21/28*
U.S. Cl. 440—84 **6 Claims**



1. An apparatus for remotely controlling a plurality of marine propulsion units for providing a propelling force for a marine vessel, each propulsion unit having a propeller movable about a horizontal tilt axis which is transverse to the direction of movement of the marine vessel, comprising:
- a plurality of control levers, each control lever being operably connected to a respective marine propulsion unit and adapted to control a clutch and a throttle operation of the respective marine propulsion unit; and
- a plurality of tilt and trim switches disposed in a lever grip of a single control lever and performing at least one of a displacing operation in the tilt angle of the respective propeller around a pivotal point, and an adjusting operation in the trim angle of the respective propeller around the pivotal point to adjust the direction of the propelling force, each switch being operatively connected to a respective marine propulsion unit for controlling movement of the propeller of the propulsion unit about the horizontal tilt axis, whereby an operator of the marine vessel can simultaneously operate the tilt and trim switches and said plural control levers by using a single hand.

4,801,283
MIXING TUBE ASSEMBLY FOR MARINE PROPULSION SYSTEM
Jeffrey P. Ruhnke, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Dec. 16, 1987, Ser. No. 133,746
Int. Cl.[4] F01N *3/04*
U.S. Cl. 440—88 **17 Claims**



1. An exhaust discharge assembly for a marine propulsion system in which engine exhaust is mixed with water prior to discharge, comprising:
- an exhaust passage defined by an inner wall and having an exhaust inlet for receiving exhaust from said engine and an exhaust discharge outlet downstream of said inlet;
- water jacket means provided around said exhaust passage and defined by an outer wall spaced from said inner wall, said water jacket means having water discharge outlet means for discharging water from said water jacket means;
- a water inlet for introducing water into said water jacket means;
- dam means provided in said water jacket means between said inner wall and said outer wall adjacent said water inlert for distributing water through said water jacket means adjacent said water inlet; and
- a mixing cavity disposed downstream of said exhaust passage and said water jacket means for receiving and mixing exhaust from said exahust discharge outlet with water from said water discharge outlet means, said mixing cavity having an outlet for discharging mixed water and exhaust therefrom.

4,801,284
WATER WALKING SHOES
Tam T. Lieu, 1840 Senter Rd., #3, San Jose, Calif. 95112
Filed Nov. 16, 1987, Ser. No. 120,961
Int. Cl.[4] A63C *15/03*
U.S. Cl. 441—76 **10 Claims**

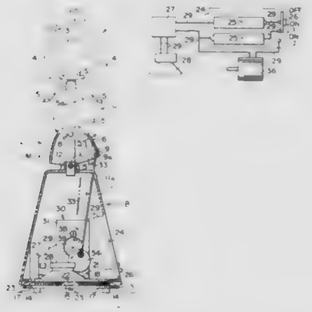


1. A new and improved water walking shoe, comprising:
- outer bell means formed from a rigid material;
- vent means formed in said outer bell means;
- inner bell means formed from a thin flexible plastic material attached to a top inner surface of said outer bell means;
- binding means on a top outer surface of said outer bell means for attaching said water walking shoe to a wearer's foot; and
- a plurality of radially extending partitions forming compartments within said inner bell means.

4,801,285
FIGURE TOY HAVING A THREE-POSITION SWITCH AND TWO MODES OF OPERATION
Nam J. Yeu, Seoul, Rep. of Korea, assignor to Michael & Park's Trading And Sales, Inc., Honolulu, Hi.
Filed Feb. 25, 1987, Ser. No. 18,913
Int. Cl.[4] A63H *3/28, 11/00*
U.S. Cl. 446—298 **2 Claims**

1. A figure toy comprising: an upper portion, a lower portion, and a base portion; the upper portion resembling the head through waist of a human; the lower portion resembling the waist through hip portion of a human; a pin pivotably connecting the upper portion to the lower portion; a support bar supporting the upper portion and the lower portion above the base portion, one end of said support bar secured to the base portion and the other end said support bar located in a cavity in the body of the upper portion; means to alternately move the

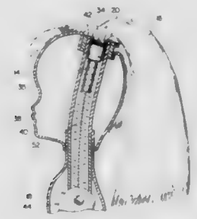
lower portion in a left and right direction including a motor, a drive gear, a cam, and an actuator arm, said drive gear being connected to a shaft of the motor, said cam being operatively connected to the drive gear, one end portion of the actuator arm being operatively connected to the cam and the other end portion of the actuator arm being connected to a hip connector located within the lower portion and at its side; said base portion including a housing, a rotating base, a stationary base with feet, bevel gears for turning the rotating base, a three-position switch, a speaker, a melody I.C., and a battery; the rotating base has an axle at its center portion which rotates within a bearing support located at the center portion of the stationary base; said bevel gears being operatively connected to the drive gear; said battery is connected to the side of the



housing; and wiring that connect the switch, the speaker, the melody I.C., and the motor to the battery, said actuator arm is a bar with a hook at one end and a loop at the other end, the hook is connected to the hip connector and the loop is connected to a projection on the cam; said three-position switch has a first position which is the off position, a second position which actuates the melody I.C. causing music to be heard, and a third position which both actuates the melody I.C. causing music to be heard and actuates the motor causing said lower portion to move;

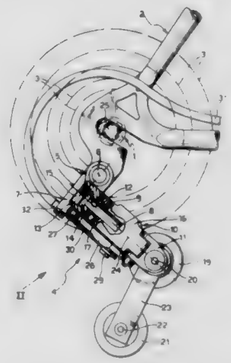
the housing of the base portion is a truncated cone with an opening at its top near its side and the rotating base is secured within the housing adjacent its bottom portion; the speaker is secured to the rotating base and a speaker hole is located in the rotating base near the speaker.

4,801,286
DOLL WITH SIMULATED HAIR GROWTH
Henry Oreastein, 1140 Bloomfield Ave., West Caldwell, N.J. 07006; Joseph J. Wetherell, 37 W. 72nd St., New York, N.Y. 10023, and Alan Buchwalter, 1020 Race St., Philadelphia, Pa. 19107
Filed Feb. 5, 1988, Ser. No. 153,252
Int. Cl.[4] A63H *3/44, 3/36;* **A63J** *19/00*
U.S. Cl. 446—319 **18 Claims**



16. A toy doll comprising a doll body including a head portion having an aperture therein in the upper portion thereof, a tube extending from said aperture to the interior of said doll body, a lock of hair secured to an end cap, said end cap arranged within said tube and said lock of hair being closely fitting in said tube and extending from said end cap and outwardly through said aperture, said end cap being axially movable in said tube to adjust the length of hair extending outward through said aperture, a spring in said tube for urging said end cap toward said aperture, a cord connected between said end cap and a spool, and means for selectively operating said spool to permit said cord to selectively unwind under the force of said spring to extend said hair, means for automatically retarding the speed of unwinding of said spool, and means for rewinding said spool to retract said hair.

4,801,287
REAR DERAILER FOR BICYCLE GEARS
Antonio Romano, Padova, Italy, assignor to Campagnolo S.p.A., Vicenza, Italy
Filed Jun. 16, 1988, Ser. No. 207,486
Claims priority, application Italy, Jun. 16, 1987, 67517 A/87
Int. Cl.[4] F16H *11/08*
U.S. Cl. 474—82 **8 Claims**



1. A rear derailleur for bicycle gears, comprising:
- an upper body which can be fixed to the bicycle frame,
- a lower body carrying transmission means for the chain of the bicycle and being movable relative to the upper body to bring the chain into selective engagement with a series of sprockets carried by the hub of the rear wheel of the bicycle, and
- an articulated parallelogram joint having connecting rods and connecting the lower body to the upper body,
- wherein the derailleur further includes guide means carried by the upper body and an intermediate connecting element which is slidably mounted on the guide means and to which the lower body is directly connected by the articulated parallelogram joint, and wherein means are provided for univocally correlating the movements of the intermediate element relative to the upper body with the movements of the lower body relative to the intermediate element, so that the resulting movement of the lower body relative to the upper body has both a component along an axis of the hub of the rear wheel and a component radial to that axis.

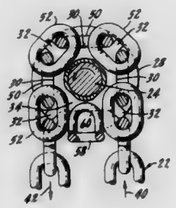
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4,801,288

RAILROAD HAND BRAKE CHAIN LINK STRIPPER

Eugene W. Schmitt, Lockport, and Richard L. Cotterell, Villa Park, both of Ill., assignors to Sloan Valve Company, Franklin Plaza, Ill.

Filed Sep. 16, 1987, Ser. No. 97,128
Int. Cl.[4] F16G *13/00*
U.S. Cl. 474—140 1 Claim



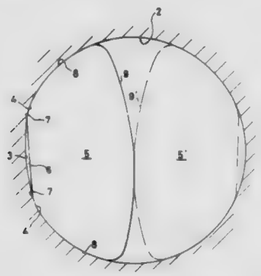
1. In a railroad car hand brake, a housing, a chain opening in said housing, a shaft mounted in said housing, a chain drum positioned within said housing and mounted on said shaft, said drum having a plurality of circumferentially spaced pockets, each formed and adapted to receive a chain link, each of said pockets being connected with adjacent pockets by a circumferentially extending slot, means engaged with and for causing rotation of said drum whereby turning of said drum moves said chain inwardly through said opening, around said drum, and outwardly through said opening, and a chain stripper having a pair of diverging legs attached to said housing and a generally U-shaped portion joining said legs and extending toward said drum, and a chain stripper portion, attached to said generally U-shaped portion, in alignment with said pockets and extending inside of the outer periphery of said drum, said chain stripper portion further extending into said slots and pockets to prevent the chain from wrapping around said drum.

4,801,289

ROCKER PIN TYPE CONTINUOUSLY VARIABLE TRANSMISSION CHAIN

Yoshiaki Sugimoto, Tokorozawa, and Toshihiro Hosokawa, Hanno, both of Japan, assignors to Tsubakimoto Chain Co., Japan

Filed Jul. 14, 1988, Ser. No. 219,564
Claims priority, application Japan, Jul. 15, 1987, 62-107661[U]
Int. Cl.[4] F16H *13/04*
U.S. Cl. 474—215 2 Claims



1. A rocker pin type continuously variable transmission chain, comprising:

a plurality of frictionally driven blocks;

a plurality of link plates connected endlessly by paired rocker pins, the rocker pins each having a load transmitting surface formed by a planar portion and a pair of arcuate convex portions, each of the pair of arcuate convex portions having the same radius of curvature;

the link plates each having rocker pin insertion bores formed in part to closely fit the convex portions of the rocker pins and form load transmitting surfaces for each bore; and,

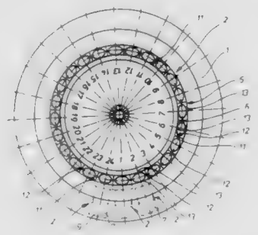
each of the load transmitting surfaces of each bore having an arcuate portion, opposing the planar portion of each rocker pin, with a radius of curvature greater than that of the convex portions of the rocker pins to prevent rotation of the rocker pins in the bores, whereby load forces are transmitted by extensive surface contact areas.

4,801,290

ANGULAR CAP FOR CENTRIFUGES

Eberle Gunter, Tuttlingen, Fed. Rep. of Germany, assignor to Firma Andreas Hettich, Tuttlingen, Fed. Rep. of Germany

Filed Feb. 5, 1988, Ser. No. 152,829
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1987, 3703514
Int. Cl.[4] B04B *5/02*
U.S. Cl. 494—16 10 Claims



1. An angular cap for a centrifuge, in which test tubes containing material to be centrifuged are disposed in vertically inclined holders, the cap having a hub adapted to be mounted on a motor shaft of the centrifuge, said cap comprising:

a vertically inclined, continuous annular groove extending along the circumference of the cap; and

a plurality of beaker-like vertically inclined inserts adapted to be positioned in said annular groove disposed in a row for holding the test tubes, said beaker-like inserts each having protrusions disposed on the outside of an upper part of the insert, facing one another, which when said inserts are disposed in a row in said annular groove produce a continuous, smooth, annular surface.

4,801,291

PORTABLE TOPICAL HYPERBARIC APPARATUS

Phillip E. Loori, 912 Summit Ave., Jersey City, N.J. 07307

Filed Nov. 18, 1987, Ser. No. 122,355
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—23 42 Claims



1. A topical hyperbaric apparatus comprising:

a shell having at least one wall providing an external surface and defining a substantially closed internal chamber, said at least one wall having an opening therethrough communicating with said internal chamber;

adhesive sealing means provided on said external surface of said shell about said opening for adhesively sealing said shell to a patient's body about a portion to be treated; and

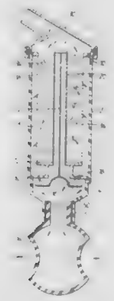
gas introduction means for introducing therapeutic gases into said internal chamber for therapeutically treating the portion of the patient's body about which said shell is adhesively adhered.

4,801,292

MEDICAL PUMP FOR DEBRIS COLLECTION

Jeremy P. Watson, Clacton-on-Sea, United Kingdom, assignor to Bard Limited, Sunderland, England

Filed Jun. 23, 1987, Ser. No. 65,563
Claims priority, application United Kingdom, Jun. 24, 1986, 8615437
Int. Cl.[4] A61M *5/18*
U.S. Cl. 604—36 14 Claims



1. A pump for fluid recirculation and debris collection comprising a nozzle for both intake and discharge for connection by tube to a bodily or other cavity, and a fluid circulator for imposing on fluid within the tube cyclic changes of pressure to cause the fluid to flow alternately and repeatedly into and out of the cavity thereby to flush the cavity, an elongate barrel extending between and joining the circulator and the nozzle, two different fluid flow paths within said barrel and connecting said circulator and said nozzle, namely, an efflux path including a reservoir for flow of fluid away from the cavity into the reservoir of the device and thence to the circulator, and a flushing path for a flow of fluid from the circulator to the cavity, each of which paths including a non-return valve whereby, in use of the device, fluid flow is uni-directional from the circulator through the flushing path to the cavity, and thence from the cavity through the efflux path back to the circulator, the said efflux path and flushing path are disposed one within the other with one path peripherally surrounding the other path between the circulator and the nozzle, a hollow filter element is disposed within the efflux path with the barrel for removal of debris from the flow away from the cavity, the filter element having one open end seating around the circumference of the efflux path at the nozzle end of the path for free flow of the fluid therein from the cavity, the filter element extending along the efflux path from the seating towards the circulator end of the efflux path over a major part of the length of the efflux path, said filter element confining the debris while allowing passage of fluid flow through the filter element to the circulator, and the nonreturn valve of the efflux path being located between the filter element and the circulator and downstream of the confined debris, said filter element and said non-return valves comprising a replaceable cartridge within said barrel.

4,801,293

APPARATUS AND METHOD FOR DETECTING PROBE PENETRATION OF HUMAN EPIDURAL SPACE AND INJECTING A THERAPEUTIC SUBSTANCE THEREINTO

Anthony Jackson, 13 Cayuse Lane Rancho, Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 930,211, Nov. 13, 1986, abandoned, which is a continuation of Ser. No. 785,923, Oct. 9, 1985, Pat. No. 4,623,335. This application Dec. 18, 1987, Ser. No. 134,699
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—51 6 Claims



1. A method for detecting probe penetration of human epidural space having predetermined essentially negative gauge pressure relative to atmosphere pressure and enlarging said epidural space in the neighborhood of said probe by displacing tissue bounding said epidural space away from said probe, prior to injecting a therapeutically desired substance into said epidural space via said probe, comprising:

(a) inserting a hollow probe into the human body towards said epidural space and into ligamentum-flavum tissue having internal pressure substantially above atmosphere, proximate said epidural space;

(b) increasing pressure in an essentially closed system within the ligamentum-flavum, defined by said probe hollow interior and a conduit communicating with said probe by forcing gas into said system until a moveable member, including a passageway therethrough connecting said conduit with an orifice formed in a lateral surface of the moveable member which slidably contacts said conduit interior, moves within said conduit, in opposition to predetermined bias force which varies with movement of said moveable member, to a position at which said orifice found in said lateral surface communicates with ambient air through a passageway in the wall of said conduit and at which said predetermined bias force corresponds to said predetermined internal pressure higher than gauge:

(c) moving said probe further through said tissue generally proximate said epidural space and having predetermined internal pressure higher than zero gauge pressure, towards said epidural space so that the probe tip moves from said tissue to penetrate said epidural space with said probe tip;

(d) enlarging said epidural space in the neighborhood of the probe tip by anteriorly displacing dura tissue bounding said epidural space away from said probe tip by increasing pressure in the ligamentum-flavum and subsequently releasing gas under pressure within said probe into said epidural space; and

(e) injecting said therapeutically desired substance into said enlarged epidural space through said hollow probe.

4,801,294

CATHETER FOR NASOGASTRIC INTUBATION

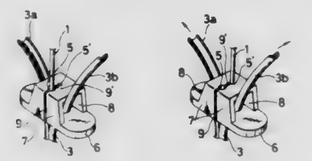
Yosuke Okada, Morimachi, Japan, assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Dec. 2, 1986, Ser. No. 936,868
Claims priority, application Japan, Dec. 9, 1985, 60-189202[U]
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—171 14 Claims

1. A catheter for nasogastric intubation of a patient comprising a catheter body, a plastic sheath tube, and a fixing means for said tube and catheter body adapted to be located at the

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nose of the patient for holding said catheter body, said tube having a longitudinal tear-off line over the full length thereof so that said tube is separable into longitudinal parts, said tube having an elasticity and a rigidity slightly larger than those of said catheter body, said catheter body being slidably insertable in said plastic sheath tube and together insertable into the patient, said fixing means comprising a base plate having opening means adapted to receive said sheath tube, said sheath tube being adapted to be pulled through said opening means and out of the patient and split along said tear-off line with said separa-



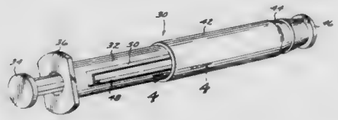
ble parts moving in opposite directions, said fixing means having a portion integrally connected to said base plate and having a relatively large passing hole adapted to softly hold the outer periphery of said catheter body and a relatively small passing hole adapted to firmly pinch said catheter body at a catheter pinch portion of said fixing means to hold it relative to the fixing means, said large passing hole and said small passing hole being communicated by a connecting groove, said catheter being movable sideway through said connecting groove and selectively between said large and small holes.

4,801,295

DISPOSABLE HYPODERMIC SYRINGE AND NEEDLE COMBINATION HAVING RETRACTABLE, ACCIDENT PREVENTING SHEATH

Treesa A. Spencer, 1882 Winnebago, El Toro, Calif. 92630

Continuation-in-part of Ser. No. 866,151, May 22, 1986, Pat. No. 4,702,738. This application Oct. 22, 1987, Ser. No. 112,538
The portion of the term of this patent subsequent to Oct. 27, 2004, has been disclaimed.
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—198 **10 Claims**



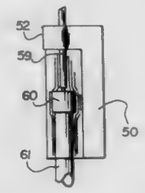
1. A combination of a hypodermic needle and syringe of the type which is discardable after a single use, the combination comprising:
- a syringe barrel having a plunger mounted in the barrel;
- a hypodermic needle mounted to the barrel at an end of the barrel which is opposite to the end where the plunger enters the barrel;
- a sheath mounted to the barrel and extending therefrom in a first position to substantially cover the needle and thereby prevent the needle from accidental contact with a foreign object or person during transportation and storage of the combination, the sheath being made of a different plastic material than the barrel and the plunger and which melts at lower temperature than the plastic material of the barrel and plunger, below the temperature customarily used for sterilization by heat, whereby repeated use of the syringe through sterilization can be substantially avoided;
- means incorporated into the barrel and the sheath for permitting movement of the sheath upward on the barrel into a second position wherein the needle is at least partially exposed, for permitting downward movement of the sheath on the barrel into a third position wherein the needle is substantially covered by the sheath, and for substantially irreversibly locking the sheath to the barrel in the third position, whereby the needle is protected when the combination is discarded after normal use.

4,801,296

MEDICATOR SECURING DEVICE

Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039

Division of Ser. No. 628,641, Jul. 6, 1984, Pat. No. 4,704,177. This application Sep. 11, 1987, Ser. No. 80,991
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—272 **15 Claims**



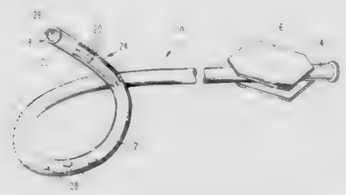
1. A medicator securing device comprising
- a thin transparent flexible plastic film having an adhesive coating on one side;
- a self-supporting frame secured to at least a portion of a periphery of said plastic film, said frame having a fold line for folding of said frame thereon to secure said film to itself and about a pair of connector components to secured the connector components together; and
- a release sheet removably mounted over said adhesive coating on said plastic film.

4,801,297

CATHETER HAVING SLIT TIP

Richard L. Mueller, Athens, Tex., assignor to Edward Weck Incorporated, Princeton, N.J.

Filed Jun. 1, 1984, Ser. No. 616,036
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—280 **6 Claims**



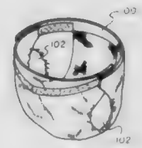
1. An improved catheter of the type having an elongated tube having an exterior wall defining at least one lumen formed therein, said tube terminating in a tip having at least one opening to said at least one lumen,
- wherein the improvement comprises a soft tip which is able to easily bend within a patient's vessel thereby reducing the probability of vessel wall injury, said soft tip being comprised of at least one slit formed through said wall of said tube adjacent said tip, whereby said at least one slit will function as both a pressure release to allow fluid under high pressure to escape from said catheter and as a tip softening means which allows said tip to flex and thereby prevents injury to a patient's vessel.

4,801,298

VARIABLE SIZED REUSABLE DIAPER

Wendy K. J. Sorenson, 360 W. Main; Judith N. Jackson, 291 N. 700 E., both of Payson, Utah 84651; Kevin J. Jackson, and Cheryl Jackson, both of 942 N. 800 E., Genola, Utah 84655

Filed Nov. 28, 1986, Ser. No. 936,088
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—384 **10 Claims**



1. A variable sized, reusable diaper comprising:
- an outer panel having a first perimeter, said outer panel being disposed about a first imaginary longitudinal axis; said outer panel having a back portion possessing first and second laterally extending wing portions and a front portion possessing third and fourth laterally extending wing portions; said outer panel being fabricated from a liquid impermeable, washable fabric;
- a "V"-shaped pile attachment strip mounted on said front portion of said outer panel, said attachment strip extending from an edge of said first wing to said longitudinal axis and from an edge of said second wing to said longitudinal axis;
- an inner panel having a second perimeter, said inner panel being disposed about a second imaginary longitudinal axis, said inner panel having a back portion possessing a fifth and a sixth laterally extending wing corresponding in configuration to said first and second wing of said outer panel, said inner panel also having a front portion possessing a seventh and an eighth laterally extending wing corresponding in configuration to said third and fourth wings of said outer panel, said inner panel and outer panel being connected one to another about their respective corresponding perimeters, said inner panel being composed of a liquid absorbing elongated porous fabric strip positioned parallel with said second longitudinal axis and a liquid impermeable sheet mounted to circumscribe said liquid absorbing strip an association of said inner panel and said outer panel defining a hollow sealed impermeable sack having an interior cavity; said cavity being accessible through said porous absorbent strip wherein liquid contacting said absorbent strip in excess of said strip's ability to absorb said liquid is directed to said interior cavity and retained therein by said impermeable sack;
- a pair of elongated loop fastener strips, one of said strips being mounted on each of said fifth and sixth wings of said inner panel, said fastener strips being adapted to form a manually releasable union with said pile attachment strip, wherein said fastener strips are positioned perpendicular to said second longitudinal axis.

4,801,299

BODY IMPLANTS OF EXTRACELLULAR MATRIX AND MEANS AND METHODS OF MAKING AND USING SUCH IMPLANTS

Klaus Brendel, and Raymond C. Duhamel, both of Tucson, Ariz., assignors to University Patents, Inc., Westport, Conn.

Continuation-in-part of Ser. No. 503,203, Jun. 10, 1983. This application Feb. 22, 1984, Ser. No. 582,504
Int. Cl.[4] A01N *1/02;* **A61L** *17/00*
U.S. Cl. 623—1 **15 Claims**

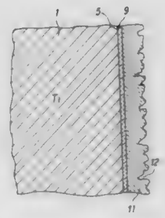
1. A sterile body implant comprising a body derived structure having as its major component collagens and elastin in the form of extracellular matrix from which has been removed cellular membranes, nucleic acids, lipids and cytoplasmic components.

4,801,300

SINGLE PART BIOCOMPATIBLE HIP-JOINT SOCKET MOORABLE WITHOUT CEMENT

Peter Kurze, Oberlichtenau; Klaus Rabending, Taura; Waldemar Krysmana, Karl Marx Stadt; Peter Daniel, Karl Marx Stadt; Rainer Morgenstera, Karl Marx Stadt; Wilfried Wehner, Karl Marx Stadt, and Manfred Polster, Karl Marx Stadt, all of German Democratic Rep., assignors to Technische Universitaet Karl-Marx-Stadt, Karl Marx Stadt, German Democratic Rep.

Continuation-in-part of Ser. No. 19,408, Feb. 26, 1987, abandoned. This application Dec. 23, 1987, Ser. No. 137,392
Claims priority, application German Democratic Rep., Mar. 12, 1986, 2878010
Int. Cl.[4] A61F *2/34*
U.S. Cl. 623—22 **11 Claims**



1. A single-piece biocompatible hip-joint socket moorable without cement for engaging a hip joint and a pelvic bone comprising a spherical joint socket having a circumference, a convex surface for facing the pelvic bone and a concave surface for facing the hip joint, said joint socket being made of a metal forming a barrier layer, and a perforated flange ring enveloping at least ¼ of the circumference of said joint socket for the moorage, wherein said convex surface consists of an exposed surface of a porous oxide layer comprising TiO_x or Ta_2O_5 and having a calcium phosphate content at and adjacent the exposed surface thereof of at least 40%, and said concave surface consists of an exposed surface of the second layer of a two-layer composite comprising a first layer adjacent said concave surface of a mechanically compacted, finest-pored oxide layer comprising TiO_x or Ta_2O_5 and a second layer overlying said first layer of a fine-pored, abrasion-resistant, oxide sliding layer comprising TiO_x or Ta_2O_5 and having a calcium phosphate content at and adjacent the exposed surface thereof of 10–30%.

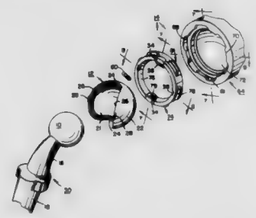
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4,801,301

BALL AND SOCKET BEARING FOR ARTIFICIAL JOINT

Douglas G. Noiles, New Canaan, Conn., assignor to Joint Medical Products Corporation, Stamford, Conn.

Continuation of Ser. No. 473,431, Mar. 8, 1983, Pat. No. 4,642,123. This application Dec. 16, 1986, Ser. No. 942,298
The portion of the term of this patent subsequent to Feb. 10, 2004, has been disclaimed.
Int. Cl.[4] A61F 2/32
U.S. Cl. 623—23 8 Claims



1. A ball and socket joint for implanting in the body comprising:

a ball;

first means for affixing the ball to bone including a stem portion for implantation in bone and a neck portion connecting the stem portion to the ball;

a bearing member for receiving the ball;

second means for affixation to bone, said means including a cavity which surrounds a portion of the bearing member, said cavity having an opening which defines a plane through which the bearing member enters the cavity;

third means associated with the bearing member and the second means for retaining the bearing member in the cavity, said third means permitting the bearing member to be inserted into and removed from the cavity in at least one discrete initial position and permitting the bearing member to be rotated while seated in the cavity in either a clockwise or a counterclockwise direction about an axis passing through the cavity, said axis being substantially perpendicular to the plane defined by the opening of the cavity, said rotation of the bearing member permitting the bearing member to be moved from said at least one discrete initial position to any one of a plurality of intermediate positions in which the bearing member cannot be inserted or removed from the cavity, and to be moved from any one of the plurality of intermediate positions to at least one discrete final position in which the bearing member may be locked in position; and

fourth means for locking the bearing member in said at least one discrete final position.

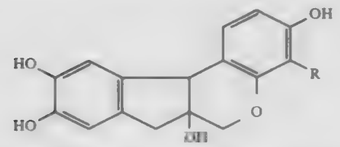
4,801,302

PROCESS FOR DYEING HUMAN HAIR WITH BRAZILIN OR ITS HYDROXYL DERIVATIVE AND COMPOSITIONS EMPLOYED

Jean F. Grollier, Paris, France, assignor to L'Oreal, Paris, France

Filed May 5, 1987, Ser. No. 46,657
Claims priority, application Luxembourg, May 7, 1986, 86422
Int. Cl.[4] A61K 7/13
U.S. Cl. 8—429 16 Claims

1. Process for dyeing hair, consisting in applying to the said hair in separate steps wherein said steps are separated by rinsing at least one composition containing a cupric salt in a cosmetically acceptable medium and a composition containing at least one dye corresponding to the formula:



(I)

in which R denotes hydrogen or OH, in a cosmetically acceptable medium,

wherein the copper content in the composition containing said cupric salt is between 0.01 and 2% by weight, and

said dye is present in the composition containing it in a proportion between 0.05 and 5% by weight.

4,801,303

ONE-BATH DYEING OF POLYESTER-CELLULOSIC BLENDS USING DISPERSE AND SULFUR DYES

Mark S. Carlough, Concord, and Laszlo A. Meszaros, Charlotte, both of N.C., assignors to Sandoz Ltd., Basel, Switzerland

Filed Jun. 1, 1987, Ser. No. 57,068
Int. Cl.[4] D06P 3/82; C09B 49/00
U.S. Cl. 8—532 24 Claims

1. A method for the one-bath dyeing of a polyester-cellulosic blend substrate, which comprises exhaust dyeing said substrate with a disperse dye in an aqueous medium and subsequently exhaust dyeing said substrate with a water-soluble or water-dispersible sulfur dye under alkaline conditions and in the presence of a reducing agent in the same aqueous medium, said method being characterized in that the temperature of said aqueous medium is kept at or below 100° C. after the sulfur dye has been added thereto.

4,801,304

PROCESS FOR THE PRODUCTION AND BURNING OF A NATURAL-EMULSIFIED LIQUID FUEL

Domiago R. Polanco, Los Teques; Ignacio Layrisse, Edif. San Luis; Hercilio Rivas; G. Euler Jimenez, both of Caracas; Lirio Q. de Paz, Los Teques; Jose P. Salazar, San Antonio de Los Altos; Mayela Rivero, Edo. Miranda; Emilio Guevara, and Maria L. Chirinos, both of Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Jun. 17, 1986, Ser. No. 875,450
Int. Cl.[4] C10L 1/32
U.S. Cl. 44—51 10 Claims

1. A process for the preparation and burning of a natural liquid fuel from bitumen crude oil having a high sulfur content without further refining comprising the steps of:

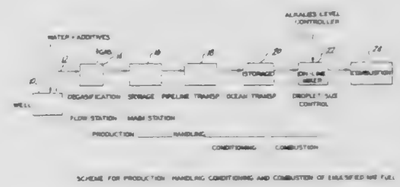
(a) providing a downhole deep well pump for pumping said bitumen crude oil from a well, said bitumen crude oil has the following chemical and physical properties:

C wt. % of 78.2 to 85.5;
H wt. % of 10.0 to 10.8;
O wt. % of 0.26 to 1.1;
N wt. % of 0.50 to 0.66;
S wt. % of 3.68 to 4.02;
Ash wt. % of 0.05 to 0.33;
Vanadium, ppm of 420 to 520;
Nickel, ppm of 90 to 120;
Iron, ppm of 10 to 60;
Sodium, ppm of 60 to 200;
Gravity, °API of 1.0 to 12.0;
Viscosity (CST) 122° F. of 1,400 to 5,100,000; 210° F. of 70 to 16,000;
LHV (KCAL/KG) of 8,500 to 10,000; and
Asphaltenes wt. % of 9.0 to 15.0;

(b) injecting a mixture of water plus an emulsifier additive into said well wherein said emulsifier additive is present in an amount of about between 0.1 to 5% by weight based on the total weight of the oil in water emulsion so as to form an oil in water emulsion having a water content of about between 15 to 35 wt. % and an oil droplet size of about between 10 to 60 μm;

(c) pumpin said oil in water emulsion from said well to a flow station;

(d) degassing said oil in water emulsion;



(e) transporting said oil in water emulsion from said flow station to a combustion station without further refining;

(f) conditioning said oil in water emulsion so as to optimize the water content and droplet size and adding an alkali metal so as to obtain an oil in water emulsion wherein said oil in water emulsion has 20–40% wt. of water, 40–60 μm of mean droplet size and at least 50 ppm of alkaline content selected from the group consisting of Na^+, Ca^{++}, $Mg^{++}$and $K^+$and mixtures thereof in order to reduce the amount of sulfur emissions produced during subsequent burning as a natural liquid fuel;

(g) heating said optimized oil in water emulsion natural liquid fuel to a temperature of 20° to 80° C. and atomizing said fuel with a diluent selected from the group consisting of steam and air wherein said steam is at a pressure of 2 to 6 Bar in a steam to fuel ratio of 0.05 to 0.5 and said air is at a pressure of 2 to 7 Bar in an air to fuel ratio of 0.05 to 0.4; and

(h) burning said atomized fuel whereby said sulfur dioxide and sulfur trioxide emissions are less than that of No. 6 fuel oil.

4,801,305

MOTOR-FUELS

Heinrich Muller, Wesseling, and Karl-Heinz Keim, Heimerzheim, both of Fed. Rep. of Germany, assignors to Union Rheinische Braunkohlen Kraftstoff AG, Wesseling, Fed. Rep. of Germany

Continuation of Ser. No. 625,082, Jun. 27, 1984, which is a continuation-in-part of Ser. No. 584,479, Feb. 28, 1984. This application Apr. 30, 1986, Ser. No. 858,014
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1983, 3308433
Int. Cl.[4] C10L 1/02
U.S. Cl. 44—53 20 Claims

2. Fuels based on methanol containing up to 15 weight-% of water, characterized in that the methanol contains a mixture of C_4-hydrocarbons and a mixture of C_5–C_7-hydrocarbons whereby

(a) the total amount of C_4- and C_5–C_7-hydrocarbons in the fuel amounts to 0,1 to 18 weight-% and
(b) the ratio of C_4:C_5–C_7 is 1:500 parts by weight to 3:1 parts by weight.

3. Fuels based on methanol containing up to 15 weight-% of water, characterized in that the methanol contains a mixture of C_4-hydrocarbons and gasoline whereby
(a) the total amount of C_4-hydrocarbons and gasoline in the fuel amounts to 0,1–25 weight-% and
(b) the ratio of C_4:gasoline is 1:500 parts by weight to 3:1 parts by weight.

6. Fuels based on ethanol containing up to 25 weight-% of water, characterized in that the ethanol contains a mixture of C_4-hydrocarbons and a mixture of C_5 - C_7-hydrocarbons whereby
(a) the total amount of C_4- and C_5–C_7-hydrocarbons in the fuel amounts to 0,1 to 18 weight-% and
(b) the ratio of C_4:C_5–C_7 is 1:500 parts by weight to 3:1 parts by weight.

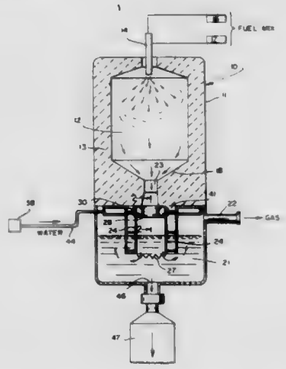
7. Fuels based on ethanol containing up to 25 weight-% of water, characterized in that the ethanol contains a mixture of C_4-hydrocarbons and gasoline whereby
(a) the total amount of C_4-hydrocarbons and gasoline in the fuel amounts to 0,1 to 25 weight-% and
(b) the ratio of C_4:gasoline is 1:500 parts by weight to 3:1 parts by weight.

4,801,306

QUENCH RING FOR A GASIFIER

Alfred L. Doubleyker, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 1, 1987, Ser. No. 44,696
Int. Cl.[4] C10J 3/72
U.S. Cl. 48—69 **4 Claims**



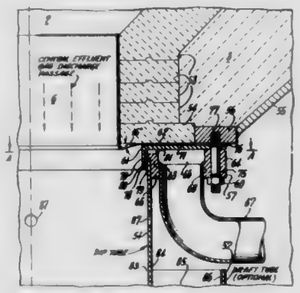
1. In a gasifier for the high temperature combustion of a carbonaceous fuel to produce a usable gas, which gasifier includes an insulated shell having a combustion chamber in which the fuel is burned at an elevated temperature and pressure, a quench chamber in said shell holding a liquid bath for cooling products of combustion, a constricted throat communicating the respective combustion chamber and quench chamber, and an elongated dip tube having an inner wall which defines a flow guide path between said combustion chamber and said quench chamber, and having opposed upper and lower edges, the improvement therein of
a quench ring supportably positioned at said dip tube upper edge and communicated with a pressurized source of liquid coolant,
a drain passage in the quench ring for discharging a flow of liquid coolant along the dip tube inner wall to wet the surface thereof,
said quench ring having a curved exterior face positioned contiguous with the dip tube inner wall to define a segment of the said flow guide path, and
said dip tube upper edge being registered in said quench ring drain passage to segregate said quench ring into inlet and discharge compartments, respectively.

4,801,307

QUENCH RING AND DIP-TUBE ASSEMBLY

James R. Muenger, Beacon, N.Y.; Americo R. Catena, Rancho Palos Verdes, Calif.; John S. Stevenson, Gardena, Calif.; Anthony E. Bergin, Garden Grove, Calif.; John M. Veillon, West Covina, Calif., and Michael W. Becker, Long Beach, Calif., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 604,767, Apr. 27, 1984, abandoned. This application Sep. 12, 1985, Ser. No. 775,206
Int. Cl.[4] C10J 3/72
U.S. Cl. 48—69 **4 Claims**



1. In a quench water distribution ring and dip-tube assembly in combination with a refractory lined reaction chamber which are located in the same vertical cylindrical free-flow gasifier, said quench liquid distribution ring and dip-tube assemble being for use in a hot effluent gas quench cooling zone partially filled with quench water which is located in the bottom section of said vertical cylindrical free-flow gasifier for the partial oxidation of a sulfur and metals-containing liquid hydrocarbonaceous fuel or a pumpable slurry of solid carbonaceous fuel at a temperature in the range of about 1800° to 3000° F. to produce a stream of a raw synthesis gas, reducing gas or fuel gas, comprising H_2, CO, CO_2, H_2O, and containing entrained particulate matter from the group consisting of particulate carbon, soot, ash, slag, unburned solid fuel, and mixtures thereof, wherein said refractory lined reaction chamber has a refractory lined bottom central effluent gas discharge passage whose central longitudinal axis is coaxial with that of the gasifier, and said reaction chamber is in the upper section of said gasifier and has a supporting floor with a floor flange for said refractory lining, the improvement comprising: an annular shaped quench water distribution channel having a vertical central axis which is coaxial with that of said central effluent gas discharge passage and having inner and outer vertical cylindrical shaped walls and a flat ring shaped closed bottom that extends between said walls; a quench ring face and cover for said quench water distribution channel having a vertical central axis which is coaxial with that of said distribution channel and comprising a vertical cylindrical shaped leg portion that extends downward and which has inside and outside faces, and a horizontal flat ring plate portion that extends perpendicularly and outwardly from the top of said leg portion, wherein the downstream outlet of said refractory lined central effluent gas discharge passage terminates near the top of said quench ring face and cover, and wherein the inside surface of said inner cylindrical wall of said distribution channel is radially and uniformly spaced from the outside surface of the vertical cylindrical shaped leg portion of said quench ring face and cover to

provide an annular shaped gap of uniform width from top to bottom; wherein the ratio in inches of the interior height of said annular shaped gap to the width of said annular shaped gap is in the range of about ½ to 1.5, wherein the inside diameter of the vertical cylindrical shaped leg portion of said quench ring face and cover is increased radially beyond the diameter of the central effluent gas discharge passage, and a rear portion of the flat underside of the refractory lining at the downstream end of said central passage is supported by said quench ring cover while a front portion overhangs the vertical leg portion of the quench ring face and cover and slopes downward at an angle in the range of about 10° to 30°; means for securing the top of said quench water distribution channel to the underside of the horizontal ring plate portion of said quench ring face and cover, and for securing the upper surface of said horizontal ring plate portion to said refractory support floor flange; gasketing means between at least one surface of said horizontal ring plate portion of the quench ring face and cover and at least one mating surface; a plurality of slot orifices of uniform cross-section passing through the top of said inner wall of said distribution channel and providing a plurality of passages between said distribution channel and said annular shaped gap, wherein said slot orifices are rectangular shaped or round and wherein a straight extension of the furthest side of each slot orifice from the central longitudinal axis makes an outside angle of about 90° with a radial in a horizontal plane that intersects the central longitudinal axis of said quench water distribution channel and said slot orifice, wherein a plurality of streams of quench water emerge simultaneously and horizontally from the plurality of slot orifices and tangentially to the inside surface of the inner wall of said quench water distribution channel body and with a tangential velocity in the range of about 10 to 60 feet per second and said tangential velocity being about 10 to 30 times the vertically downward velocity of the quench water in said annular gap, and wherein the separate streams of quench water merge into a single swirling body of quench water; a coaxial vertical cylindrical shaped dip-tube extending downward from the inner vertical wall of said distribution channel to below the level of said quench water; wherein the upstream end of said dip tube is welded to the inner vertical wall of the distribution channel and said welds are overlapped by the vertical cylindrical shaped leg portion of said quench ring face and cover thereby protecting the welded area with a layer of water; and wherein said dip tube is provided with a ring of weep holes located in the wall of said dip tube near its upstream end; and at least one inlet means provided in the bottom of said distribution channel for introducing quench water; whereby said annular shaped gap is operated full of said quench water and free from gas and vapor pockets, and a spiralling layer of quench water is supplied to and distributed over the entire inside surfaces of the inner wall of said quench water distribution channel and the cylindrically shaped dip-tube, and wherein the spiralling layer of quench water on the interior surface of said dip-tube has a thickness in the range of about 0.5 to 1.2 times the width of the annular shaped gap.

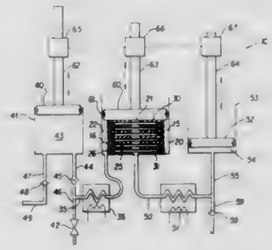
4,801,308

APPARATUS AND PROCESS FOR PRESSURE SWING ADSORPTION SEPARATION

Bowie G. Keefer, 4324 W. 11th Ave., Vancouver B.C., Canada V6R 2M1

Continuation-in-part of Ser. No. 866,395, May 23, 1986, Pat. No. 4,702,903, which is a continuation-in-part of Ser. No. 538,370, Oct. 3, 1983, abandoned. This application Nov. 12, 1986, Ser. No. 929,438
Int. Cl.[4] B01D 53/04
U.S. Cl. 55—25 **41 Claims**

1. A process for separating components of a gas mixture containing a first component which is more readily adsorbed and a second component which is less readily adsorbed by an adsorbent material, the process including the steps of;
(a) introducing the gas mixture into a flow path having first and second ends and an adsorbent bed containing the adsorbent material and providing a flow path volume associated with the flow path and including volume of flow channels of the adsorbent bed, the flow path being disposed between first and second cyclic flow generation means at opposite ends of the adsorbent bed
(b) cyclically imposing a flow of the gas mixture in the flow path so as to have cyclic reversals of flow direction along the flow path at a periodic frequency,
(c) cyclically exchanging heat between the gas mixture in the flow path and a material with heat capacity disposed along the flow path,
(d) cyclically varying total pressure of the gas mixture in the flow path between upper and lower limits, at the same periodic frequency and with phase coordinated with the cyclic reversals of the flow direction,
(e) preferentially adsorbing the first component on the adsorbent material under increased pressure when the gas mixture is flowing along the flow path in the direction toward the second end of the adsorbent bed, and desorbing the first component so that it is free to move with the



flow under decreased pressure and the flow direction is reversed toward the first end of the adsorbent bed,
(f) separating the gas mixture in the flow path by enriching flow toward the first end of the bed in the first component, and enriching flow toward the second end of the bed in the second component,
(g) cyclically varying the flow path volume between minimum and maximum limits in accordance with the cyclic pressure variations, so the flow path volume is reduced toward the minimum limit thereof when pressure is higher, and the flow path volume is increased toward the maximum limit thereof when the pressure is lower.

18. A process as claimed in claim 11 further characterized by:
(a) opening the exhaust valve means in response to maximum spacing between components of the adsorbent bed, so that the exhaust valve is open when flow path volume is maximum,
(b) maintaining the exhaust valve means closed when the flow path volume is below maximum.

4,801,309

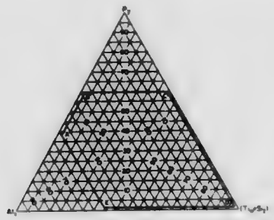
TITANIUM-ALUMINUM-PHOSPHORUS-SILICON-OXIDE MOLECULAR SIEVES

Brent M. T. Lok, New City; Bonita K. Marcus, Rye, and Edith M. Flanigen, White Plains, all of N.Y., assignors to UOP, Des Plaines, Ill.

Division of Ser. No. 600,179, Apr. 13, 1984, Pat. No. 4,684,617. This application May 13, 1987, Ser. No. 49,274
Int. Cl.[4] B01D 53/04
U.S. Cl. 55—35 **7 Claims**

1. Process for separating molecular species from admixture with molecular species having a lesser degree of polarity which comprises contacting a mixture of molecular species, said mixture of molecular species comprising at least a first species having a lesser degree of polarity and a second species having a greater degree of polarity, with a molecular sieve

having pore diameters large enough to adsorb at least said second molecular species, said molecular sieve being at least partially activated whereby molecules of said second molecular species are selectively adsorbed into the intracrystalline pore system thereof while molecules of said first molecular species are selectively excluded from said pore system, said molecular sieve being a crystalline molecular sieve having three-dimensional microporous framework structures of TiO_2, AlO_2, PO_2 and SiO_2 tetrahedral units having an empirical chemical composition on an anhydrous basis expressed by the formula:



$mR: (Ti_wAl_xP_ySi_z)O_2$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the molar amount of "R" present per mole of $(Ti_wAl_xP_ySi_z)O_2$ and has a value of zero (0) to about 0.3; and "w", "x", "y" and "z" represent the mole fractions of titanium, aluminum, phosphorus and silicon, respectively, present as tetrahedral oxides, said mole fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D, and E of FIG. 1 and each has a value of at least 0.01.

4,801,310

VORTEX CHAMBER SEPARATOR

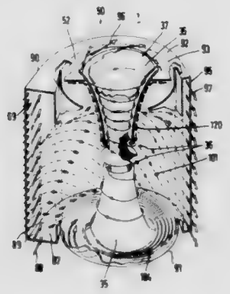
Ernst-August Bielefeldt, DE-2114 Hollenstedt/FRG, Kiefergrund 20, DE-2114 Hollenstedt, Fed. Rep. of Germany

Filed May 7, 1987, Ser. No. 47,002

Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615747

Int. Cl.⁴ B01D *17/038, 45/16*

U.S. Cl. 55—44 **8 Claims**



1. In a process for separating and/or precipitating of solid and/or liquid particles (disperse phase) from gaseous and/or liquid media (continuous phase) as well as for separating mixed gases (gas-gas-separation) and/or mixed fluids (fluid-fluid-separation) as well as for screening and/or classifying by means of centrifugal force in a vortex chamber separator, from where the specifically lighter fraction is removed by suction through two suction tubes in the central region of the vortex chamber separator; the improvement comprising decreasing flow resistance at generation of moment of momentum by adjusting the contact flow between main flow and eddy within a casing of the vortex chamber separator in such a way that a tangential initial impulse in bottom flow is increased by decreasing bottom flow impulse secondarily circulating in the vortex chamber, reducing loss of impulse by means of a dissipative drop of pressure of the flow in a main channel of the separator by producing a bottom flow with a rotationally symmetric main flow having a substantially constant average speed, passing a clean gas flow through suction tubes having increasing cross sections extending axially within the vortex chamber after the clean gas flow passes along the outside of the suction tubes with increasing speed toward inlet sections of the suction tubes and with flow being affected by only small meridian deviations in zones of extremely high flow speed.

4,801,311

METHOD AND APPARATUS FOR REMOVING HYDROGEN CYANIDE, CYANOGEN AND CYANOGEN CHLORIDE FROM AIR

Edward D. Tolles, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 18, 1985, Ser. No. 713,287

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—71 **19 Claims**

1. An improved method for removing toxic gases selected from the group consisting of the mixture of hydrogen cyanide and cyanogen chloride, the mixture of cyanogen and cyanogen chloride, the mixture of hydrogen cyanide, cyanogen and cyanogen chloride, and cyanogen chloride from an air stream containing said toxic gases using type ASM whetlerite carbons, wherein the improvement comprises utilizing said carbon having an amount of triethylenediamine added thereto effective for the removal of cyanogen chloride.

7. Filter for removing toxic gases from an air stream comprising chromium-free carbon particles impregnated with copper, triethylenediamine and one or more components selected from the group consisting of molybdenum and vanadium.

4,801,312

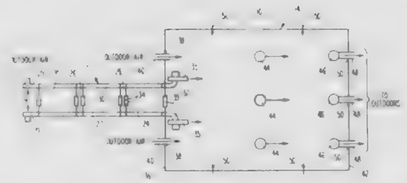
LAMINAR AIR FLOW HAZARDOUS MATERIALS ABATEMENT METHOD AND SYSTEM

Mark E. Mateson, 905 Berkeley Rd., Wilmington, Del. 19807

Filed Feb. 11, 1988, Ser. No. 155,039

Int. Cl.⁴ B01D *46/00*

U.S. Cl. 55—97 **21 Claims**



14. A method of providing a safe work space within a building for removal of hazardous particulate materials therefrom, comprising

(1) defining a decontamination space comprising a plurality of enclosed decontamination rooms and air locks between the rooms;

(2) defining a work space including opposing first and second walls, the work space communicating with the decontamination space through an opening in the first wall, the first wall having a fresh air duct therethrough;

(3) supplying fresh air to the work space through the fresh air duct and forcing the fresh air outwardly away from the first wall;

(4) supplying fresh air to each of the rooms and air locks through at least two inlet ducts extending substantially the entire length of the decontamination space;

(5) evacuating air from each of the rooms and air locks through at least two outlet ducts extending substantially the entire length of the decontamination space and spaced apart from the inlet ducts, said outlet ducts extending through outlet duct openings in the first wall;

(6) forcing said evacuated air through the outlet duct openings and outwardly away from the first wall whereby said evacuated air and the fresh air from said fresh air duct act cooperatively to form a first substantially uniform air flow away from the first wall;

(7) first filtering the air of the first uniform air flow by a plurality of first spaced apart air filtration devices positioned in a first row normal to the first uniform air flow and approximately midway between the first and second walls of the work space and expelling the resulting filtered air from the plurality of first air filtration devices to form a second substantially uniform air flow away from the first row;

(8) second filtering the air of the first uniform air flow by a plurality of second spaced apart air filtration devices positioned proximate to the second wall in a second row normal to the second uniform air flow; and

(9) exhausting to the external environment air from the second row of filtration devices through exhaust ducts from each of the air filtration devices of the second row.

4,801,313

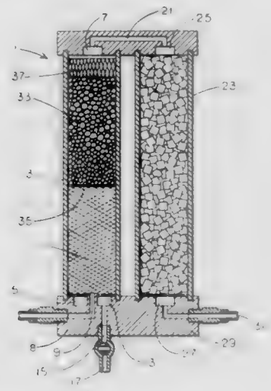
GAS PURIFICATION APPARATUS

David O. Mann, Hamilton, Ind., assignor to Mann Technology Limited Partnership, Greenville, S.C.

Filed Apr. 13, 1987, Ser. No. 37,705

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—179 **7 Claims**



1. An apparatus for removing contaminants from a gaseous stream, comprising:

a first hollow vertical column having a bottom opening and a top opening;

means defining an inlet in a central portion of said bottom opening, said inlet being vertically directed for fluid communication directly into the hollow of said first column;

means defining a drain basin generally concentrically located about said means defining an inlet and otherwise closing said open end;

a coalescing zone in said hollow above said inlet of greater diameter than said inlet;

granulated activated charcoal above said coalescing zone;

a filter above said granulated activated charcoal;

a second hollow vertical column parallel to said first column having top and bottom openings therein;

conduit means connecting said top opening of said first column to said top opening of said second column; and

means for closing the bottom opening of said second column and defining an exit therein.

4,801,314

DEAERATOR FOR THE FEED WATER TO A STEAM GENERATOR

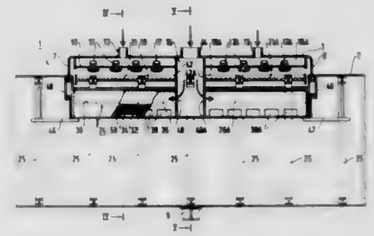
Bernard Andrieux, Boulogne, and Claude Grand, Levallois-Perret, both of France, assignors to Delas, Levallois-Perret, France

Filed Apr. 1, 1988, Ser. No. 176,505

Claims priority, application France, Apr. 3, 1987, 87 04692

Int. Cl.⁴ B01D *47/02*

U.S. Cl. 55—198 **5 Claims**



1. A deaerator for deaerating the feed water to a steam generator, the deaerator comprising a single enclosure including a deaerating device, wherein said enclosure is divided into two longitudinal zones with a first one of said zones corresponding to the location of said deaerating device, said first zone having a cross-section which is larger in area than the cross-section of the other or second one of said zones, the center of gravity of said cross-section of said first zone being higher than the center of gravity of the cross-section of said second zone, the top portion of said first zone being provided with escape orifices for the incondensables, nozzles for spraying the water to be deaerated and reheated, and a reheating steam inlet, a steam distribution chest for distributing steam, longitudinal passages situated in an elongate box suspended from the walls of said first zone of the enclosure, said box having longitudinal edges and a central longitudinal alley for receiving water from said nozzles, said passages being situated on either side of said alley and having bottom orifices through walls of said passages, the box having outside alleys with perforated walls wherein the water and the steam then passing from said passages into the outside alleys via the perforated walls causing the water and the steam to mix in said outside alleys, said mixture finally pouring into the enclosure over the entire length of the longitudinal edges of the box.

4,801,315

DEVICE FOR THE WET CLEANING OF FLUE GAS

Wolfgang Mauerhoff, Limburger Strasse 15, D-6240 Königstein, Fed. Rep. of Germany

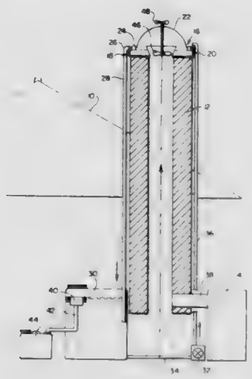
Filed Dec. 3, 1986, Ser. No. 937,545

Int. Cl.⁴ B01D *47/02, 47/04*

U.S. Cl. 55—228 **13 Claims**

1. A device for the wet cleaning of flue gas drawn through a flue gas passage, said device comprising a hood covering the flue gas passage and a ring shaped basin surrounding the flue gas passage and containing a cleaning fluid including a foam forming additive, the hood including, at the lower edge thereof, turbulence creating means, extending into the basin

below the surface of the cleaning fluid contained in the basin, for causing the flue gas to pass beneath the surface of the cleaning fluid, from above said surface, at least two separate times during travel of the flue gas from the flue gas passage to the surrounding atmosphere, said turbulence creating means comprising a plurality of spaced, enclosing obstructions extending into the basin below the surface of the cleaning fluid contained therein beneath which the flue gas must travel, and at least one hollow space defined between said obstructions which fills with foam produced by said foam forming additive and through which the flue gas flowing through the hollow



space passes, the obstructions which comprise said turbulence creating means comprising a plurality of spaced, concentric, vertically extending sheets wherein the spaces between said sheets are at least partially connected together at the tops thereof through a common space at the top of the turbulence creating means and the lower edges of said sheets extend below the surface of the cleaning fluid contained in said basin, the sheets being of an accordion shape including rounded convolutions, and the convolutions of adjacent sheets being disposed in side by side relationship so as to form constrictions in the spaces between the sheets.

4,801,316

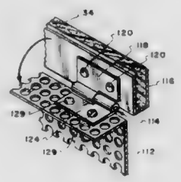
MOLDED FIBERGLASS AIR RETURN FILTER GRILLE

Clifford A. Schroeder, Westlake Village, Calif., assignor to C. A. Schroeder, San Fernando, Calif.

Continuation-in-part of Ser. No. 871,092, Jun. 5, 1986, Pat. No. 4,713,099. This application Dec. 3, 1987, Ser. No. 128,461

Int. Cl.[4] B01D *46/10*

U.S. Cl. 55—385.1 **16 Claims**



1. An air return filter grille assembly comprising:

a molded fiberglass plenum having an open side surrounded by a skirt;

a filter receiving recess formed in said molded fiberglass plenum for receiving a filter;

a perforated face plate fitting the open side of said plenum;

separable hinge means hingedly mounting said perforated face plate on said fiberglass plenum so that said perforated face plate can be easily swung open to allow access to the interior of said molded fiberglass plenum;

latch means on said perforated face plate for holding said face plate in a closed position against said open side of said molded fiberglass plenum;

said separable hinge means comprised of a split hinge, one half of said hinge having a socket and a mating half of said hinge having a pin;

one half of said hinge being secured to said molded fiberglass plenum and the other half of said hinge being secured to said interchangeable perforated face plate;

whereby said molded fiberglass plenum may be used as an air return filter grille assembly or air diffusing supply grille assembly by removing and changing said interchangeable perforated face plate.

4,801,317

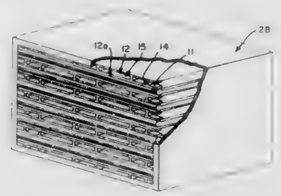
HIGH EFFICIENCY PARTICULATE AIR FILTER AND SEPARATORS

Boyd F. Agnew, deceased, late of Rancho Mirage, Calif., and by Gertrude B. F. Agnew, legal representative, 11 Santa Clara Dr., Rancho Mirage, Calif. 92270

Continuation-in-part of Ser. No. 862,493, May 12, 1986, Pat. No. 4,708,724. This application Nov. 10, 1987, Ser. No. 118,936

Int. Cl.[4] B01D *46/00*

U.S. Cl. 55—500 **8 Claims**



5. A pleated filter comprising a plurality of pleats of a filter medium formed around a plurality of separators, each of said separators comprising a lattice member having a pair of parallel longitudinal spaced members one of which positioned at the rear of each pleat has a rounded surface in engagement with the inner surface of the pleat fold and the other of which is positioned at the air entry position of the pleat and is composed of a pair of superimposed vertically spaced apart flat strips the upper and lower surfaces of which are in engagement with the open edges of the pleat to permit the entry of air to be filtered therebetween said longitudinal members being joined by a plurality of spaced apart transverse struts tapering at their narrow width from the inner surface of the member having a rounded outer surface to a wider width at said member formed of spaced apart flat strips.

4,801,318

SILICA GLASS FORMATION PROCESS

Motoyuki Toki; Sadao Kanbe; Satoru Miyashita, and Tetsuhiko Takeuchi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 642,606, Aug. 20, 1984, Pat. No. 4,681,615. This application Jan. 29, 1987, Ser. No. 8,226

Claims priority, application Japan, Dec. 23, 1982, 57-228198; Sep. 16, 1983, 58-170643; Sep. 16, 1983, 58-170644; Dec. 16, 1983, 58-237577; Dec. 22, 1983, PCT/JP83/00450

The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.

Int. Cl.[4] C03B *19/06*

U.S. Cl. 65—18.1 **21 Claims**

1. A process for forming a monolithic silica glass article, comprising:

hydrolyzing a silicon alkoxide in solution to form a hydrolyzed solution;

adding an effective amount of fumed silica for preventing cracking during the process, which would provide cracks in the glass article, to the hydrolyzed solution to form a sol solution;

gelling the sol solution to form a gel;

drying the gel to form a dry gel; and

sintering the dry gel at a temperature effective to form a glass thereby to form a large monolithic silica glass article without said cracking during the process.

4,801,319

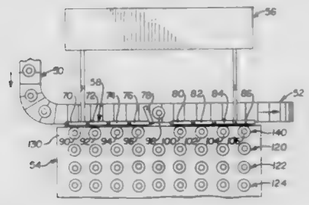
APPARATUS AND ASSOCIATED METHOD FOR CONTAINER SAMPLING FOR INSPECTION

David A. Rugaber, and Richard N. Maxson, both of Butler, Pa., assignors to American Glass Research, Inc., Butler, Pa.

Filed Nov. 9, 1987, Ser. No. 118,766

Int. Cl.[4] C03B *35/10*

U.S. Cl. 65—29 **48 Claims**



1. Apparatus for transporting and inspecting containers comprising

annealing lehr means for cooling said containers,

primary conveyor means disposed adjacent to said annealing lehr means for transporting said containers positioned adjacent to said annealing lehr means,

inspection means for inspecting at least some of said containers,

stacker means disposed on the opposite side of said conveyor means from said annealing lehr means for transferring containers from said primary conveyor means to said annealing lehr means,

said stacker means having a reciprocating pusher bar for contacting said containers and urging them toward said lehr means, and

said pusher bar having means for delivering less than the total number of said containers on said primary conveyor means to said annealing lehr means, whereby predetermined containers may be delivered to said inspection means for inspection.

29. A method of transporting and inspecting containers comprising

providing primary conveyor means for transporting said containers, annealing lehr means for receiving containers from said primary conveyor means, stacker means having pusher bar means for transferring containers from said primary conveyor means to said annealing lehr means and inspection means,

transporting a group of containers on said primary conveyor means,

transferring by said pusher bar means less than all said containers to said annealing lehr means, and

delivering a said container not so transferred to said inspection means.

4,801,320

METHOD FOR THE MANUFACTURE OF VACUUM TUBE BASES AND DEVICE FOR THE APPLICATION OF THIS METHOD

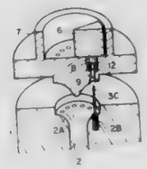
Alain Prost, Villeurbanne, France, assignor to Videocolor, Montrouge, France

Filed Apr. 22, 1987, Ser. No. 41,067

Claims priority, application France, Apr. 25, 1986, 86 06028

Int. Cl.[4] C03B *27/02*

U.S. Cl. 65—59.25 **3 Claims**



1. A method for the manufacture of bases for vacuum tubes, eliminating the need to cut the internal conductors after moulding, which comprises:

pre-cutting the conductors to a desired length and bottom mould;

setting glass parts on the bottom mould;

placing an upper mould above the bottom mould, said upper mould having through-holes provided therein and widened openings coaxially with said through-holes;

positioning a distance sleeve in each of said widened openings of said upper mould so as compensate for a length dimension of each of said conductors for proper positioning of each of said conductors in each of said through holes such that for a short length conductor, said sleeve comprises a solid sleeve, for a long length conductor said sleeve includes an axial through hole and for an intermediate length conductor, said sleeve has a dead hole formed therein;

setting individual weights in said upper mould at an upper end of each of said sleeves; and

shaping the base.

4,801,321

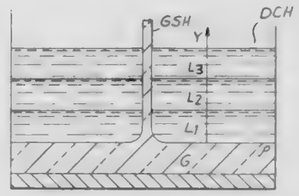
METHOD FOR THE MANUFACTURING OF GLASS SHEETS

Antonio Pita, Garza Garcia; Guillermo Carro-de-la-Fuente, Guadalupe, and Saul-Roman Ruiz-Ontiveros, Gaza Garcia, all of Mexico, assignors to Vidrio Plano, S.A., Monterrey, Mexico

Continuation-in-part of Ser. No. 868,358, May 29, 1986, abandoned. This application Nov. 30, 1987, Ser. No. 126,481

Int. Cl.[4] C03B *15/04*

U.S. Cl. 65—90 **5 Claims**



1. A method of manufacturing glass sheets from a molten glass mass contained in a drawing chamber, including the steps of:

controlling the temperature and viscosity of said molten glass mass for it to be substantially homogenous;

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placing a stratified liquid layer on said molten glass mass contained within said drawing chamber, said stratified liquid layer being substantially immiscible with said molten glass mass and comprising at least two phases of densities different to each other; and,

vertically drawing a glass sheet through said stratified liquid layer from said molten glass mass;

whereby, said stratified liquid layer dampens convective currents occurring both in said stratified liquid layer and in said molten glass mass, and applies a uniform hydrostatic pressure to said molten glass mass and to the glass sheet during the drawing thereof in order to promote uniform distribution of thickness throughout the drawn glass sheet and diminish causes of distortion in the drawn glass sheet.

4,801,322

METHOD, APPARATUS AND BURNER FOR FABRICATING AN OPTICAL FIBER PREFORM

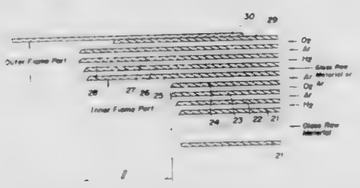
Hiroyuki Sodu; Shuichi Shibata, and Motohiro Nakahara, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Division of Ser. No. 895,483, Aug. 11, 1986, which is a division of Ser. No. 705,362, Feb. 25, 1985, Pat. No. 4,618,354. This application May 27, 1987, Ser. No. 54,886

Claims priority, application Japan, Feb. 27, 1984, 59-34300; Mar. 1, 1984, 59-37223; Feb. 12, 1985, 60-23486; Feb. 12, 1985, 60-23487; Feb. 12, 1985, 60-23488

Int. Cl.[4] C03B *37/018*

U.S. Cl. 65—144 **3 Claims**



1. An optical fiber preform fabrication burner for decomposing a glass raw material in a flame to synthesize fine glass particles, where raw material and flame-forming gases are flowed in a downstream direction to provide said fine glass particles, comprising:

means defining an inner raw material supply orifice for supplying said glass raw material;

means defining a plurality of flame forming orifices disposed around said raw material supply orifice concentrically for forming a plurality of flames;

means defining an outer raw material supply orifice interposed between said plurality of flame forming orifices for supplying said glass material;

the tip of one of said plurality of flame forming orifices, which is inside said raw material supply orifice, being located on the upstream side of the tip of the outer flame forming orifice outwardly surrounding said one flame forming orifice;

each of said plurality of flame forming orifices comprising means defining a fuel gas supply orifice and means defining an oxygen-containing auxiliary gas supply orifice; and

the tip of the inner raw material supply orifice being located on the upstream side of the tips of said combustible gas supply orifice and said auxiliary gas supply orifice of the flame forming orifice surrounding said inner raw material supply and the tip of the outer raw material supply orifice being located on the upstream side of the tips of said combustible gas supply orifice and said auxiliary gas supply orifice of the flame forming orifice surrounding said outer raw material supply.

4,801,323

METHOD OF MAKING A DISCHARGE VESSEL FOR COMPACT LOW-PRESSURE DISCHARGE LAMPS

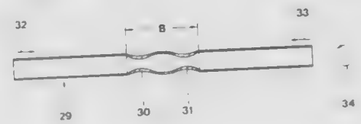
Lutz Klein; Ernst Panofski; Gerd-Otto Eckstein; Hans Schmidt, and Josef Plischke, all of Augsburg, Fed. Rep. of Germany, assignors to Patent Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed May 19, 1987, Ser. No. 51,909

Claims priority, application Fed. Rep. of Germany, May 21, 1986, 3616986; Mar. 10, 1987, 3707679

Int. Cl.[4] C03B *23/08*

U.S. Cl. 65—108 **18 Claims**



1. A method of making, from a straight glass tube (1, 26), a tubular, generally U-shaped discharge vessel (23), having at least one bend therein, for use in a compact low-pressure discharge lamp,

said discharge vessel having

two straight tube sections (12, 13; 41, 42) and a cross connecting section which forms, with the straight tube sections, connecting corners, said cross connecting section connecting said straight tube sections by a 180°-bend, comprising the steps of

heating said glass tube (1, 26) over a length at least encompassing the length of the cross connecting section, at a predetermined central tube portion (A, B) thereof intended for use in forming a 180°-bend, until said portion softens while leaving lateral straight portions (12, 13; 41, 42) which extend laterally from said heated and softened central tube portion;

axially moving the lateral straight portions (12,—13; 41, 42) towards one another in the direction of the heated tube portion (A, B), thereby compressing said heated tube portion and thickening the walls of the tube at said central tube portion (A, B); and

bending, or rotating said lateral straight tube portions (12, 13; 41, 42), extending laterally of the thus thickened heated central tube portion (A, B), towards one another until they are aligned substantially parallel to one another in a generally U-shaped configuration, to form said straight tube sections,

thereby making the cross connecting section at a predetermined location in the glass tube (1, 26) and having, after bending at said 180° bend, walls at the connecting corners which are thinner than the previously thickened walls at said central tube portion with a wall thickness of the glass at the connecting corners commensurate with the wall thickness of the straight tube sections (12, 13; 41, 42).

4,801,324

METHOD FOR OPTICAL FIBRE MANUFACTURE

Fred Hyland, Dartford, England, assignor to STC PLC, London, United Kingdom

Continuation of Ser. No. 896,517, Aug. 14, 1986, abandoned. This application Feb. 19, 1988, Ser. No. 161,331

Claims priority, application United Kingdom, Aug. 21, 1985, 8520946

Int. Cl.[4] C03B *37/027*

U.S. Cl. 65—3.11 **8 Claims**

1. A method of manufacturing optical fibre by progressively melting a preform in a furnace and drawing a fibre from the molten preform said method being controlled by a computer, the method comprising:

(a) a first mode of operation including entering into the computer data defining the length of that portion of said preform which is useable to make said fibre and the distance of said portion from a tip of the preform;

mounting the preform in a feed mechanism driven by a motor under the control of said computer;

(b) advancing the preform by means of said motor towards the furnace and towards a preform sensor so constructed and arranged to sense a predetermined position of the preform above the furnace and operate a switch in response thereto, prior to drawing a fibre from said preform, and completing said first mode of operation when said switch has operated; and



(c) utilising said switch operation to initiate a second mode of operation under the control of said computer in which the feed mechanism feeds the preform tip automatically by said motor into said furnace by a predetermined amount from said predetermined position and commencing drawing the optical fibre during ramp up until said usable portion has reached the furnace, and continuing to draw said fibre until said useable portion has been made into said fibre.

4,801,325

METHOD FOR PRODUCING HIGH-GRADE FERTILIZER AND USEFUL SIDE PRODUCTS

Gernot Graefe, Bergstrasse 6, A-7082 Donnerskirchen, Austria

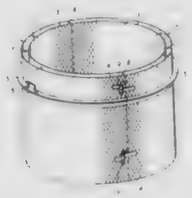
PCT No. PCT/AT81/00023, § 371 Date May 10, 1982, § 102(e) Date May 10, 1982, PCT Pub. No. WO82/00999, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 10, 1981, Ser. No. 380,728

Claims priority, application Austria, Sep. 11, 1980, 4586/80

Int. Cl.[4] C05F *5/00*

U.S. Cl. 71—9 **7 Claims**



1. In a method for producing high-grade fertilizer and useful side products from pips, wherein, after the aerobic decay of press residues from wine production, the pips are separated from the decay product by sieving, are opened by crushing and are subjected to another aerobic decay, the improvement which comprises dividing the components of the decayed crushed pips into three fractions of different particle sizes by means of sieving, the fine fraction of which contains predominantly or almost exclusively humified seedlings and humified nutrient tissue of the grape seed, the coarse fraction consists predominantly of thirds and quarters of pip walls, and the middle fraction includes smaller pip wall pieces.

4,801,326

1-PHENYLPYRAZOLE-4,5-DICARBOXYLIC ACID DERIVATIVES, COMPOSITION CONTAINING THEM, AND POLLEN FORMATION INHIBITING METHOD OF USING THEM

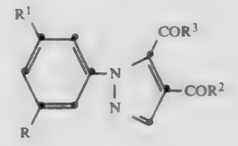
Stephen A. Ackmann; James R. Beck, both of Indianapolis, and Fred L. Wright, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 13,520, Feb. 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 947,139, Dec. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 841,405, Mar. 19, 1986, abandoned. This application Jan. 15, 1988, Ser. No. 145,735

Int. Cl.[4] A01N *43/56*; C07D *231/14, 231/54*

U.S. Cl. 71—92 **28 Claims**

1. A compound of the formula



wherein

R and R^1 independently represent chloro, bromo or methyl;

R^2 is hydroxy, C_1–C_4 alkoxy, C_3–C_4 alkenoxy, C_3–C_4 alkynoxy, or a phytologically-acceptable moiety forming a salt of the carboxylic acid;

R^3 is NH_2, hydroxy, or a phytologically-acceptable moiety forming a salt of the carboxylic acid;

or R^2 and R^3 combine to form an imide;

provided that R^3 is NH_2 when R^2 is alkoxy, alkenoxy or alkynoxy; and that R^2 and R^3 are the same when R^3 is other than NH_2.

17. A method of inhibiting pollen formation in a cereal grain plant which is sensitive to such treatment comprising supplying to the plant at a time prior to anther maturation a pollen formation inhibiting amount of a compound of claim 1.

4,801,327

HERBICIDAL SULFONAMIDES

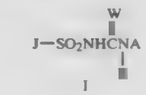
Joel R. Christensen, Wilmington, and Morris P. Rorer, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 739,232, May 30, 1985. This application Mar. 26, 1986, Ser. No. 842,295

Int. Cl.[4] C07D *239/69, 401/12, 403/12*; A01N *43/54*

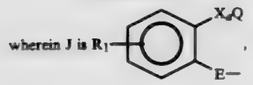
U.S. Cl. 71—92 **27 Claims**

1. A compound which is

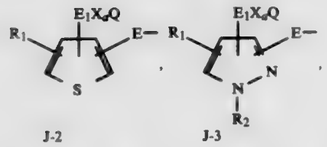


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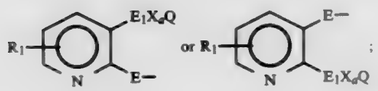
wherein J is R_1



J-1

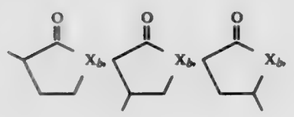


J-2 J-3

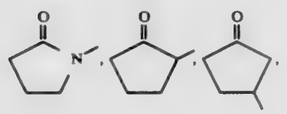


J-4 J-5

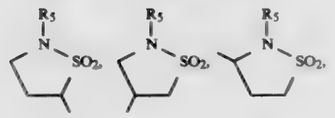
W is O or S;
R is H or CH_3;
E_1 is O, S, CO, SO_2 or a single bond.
X_a is CH_2, $CH(CH_3)$, CH_2CH_2, $CH_2CH_2CH_2$ or CO;
E is a single bond, CH_2 or O;
Q is selected from



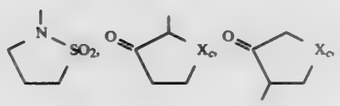
Q-1 Q-2 Q-3



Q-4 Q-5 Q-6

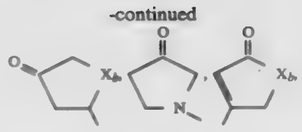


Q-7 Q-8 Q-9

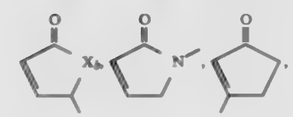


Q-10 Q-11 Q-12

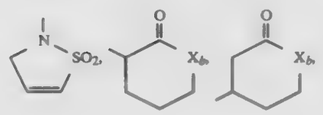
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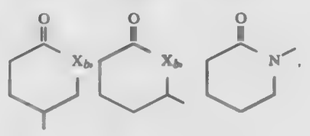
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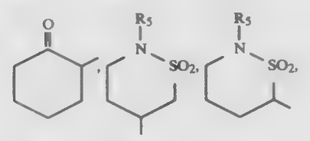
Q-16 Q-17 Q-18



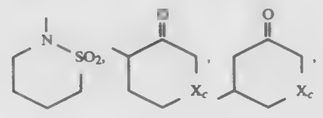
Q-19 Q-20 Q-21



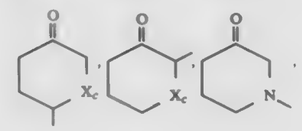
Q-22 Q-23 Q-24



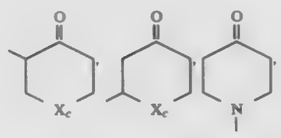
Q-25 Q-26 Q-27



Q-28 Q-29 Q-30

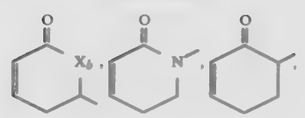


Q-31 Q-32 Q-33

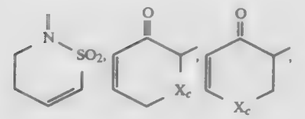


Q-34 Q-35 Q-36

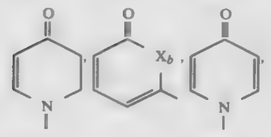
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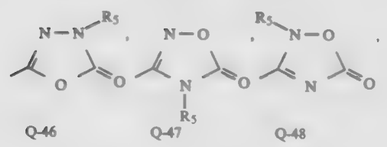
Q-37 Q-38 Q-39



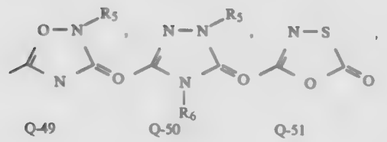
Q-40 Q-41 Q-42



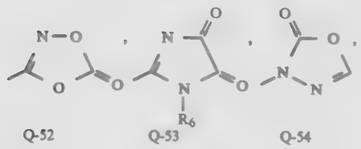
Q-43 Q-44 Q-45



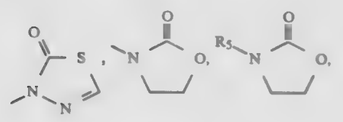
Q-46 Q-47 Q-48



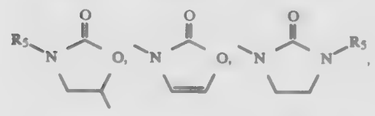
Q-49 Q-50 Q-51



Q-52 Q-53 Q-54

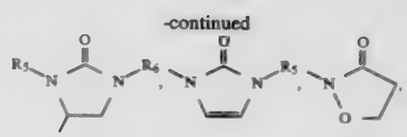


Q-55 Q-56 Q-57

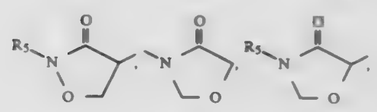


Q-58 Q-59 Q-60

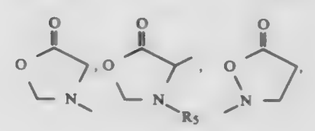
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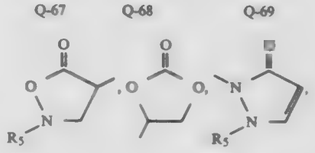
Q-61 Q-62 Q-63



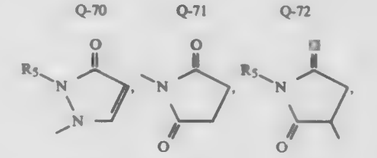
Q-64 Q-65 Q-66



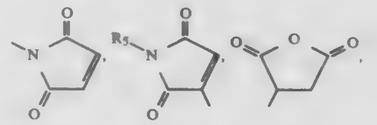
Q-67 Q-68 Q-69



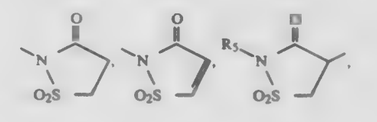
Q-70 Q-71 Q-72



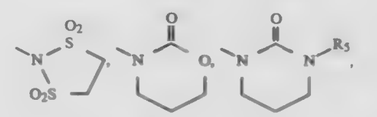
Q-73 Q-74 Q-75



Q-76 Q-77 Q-78

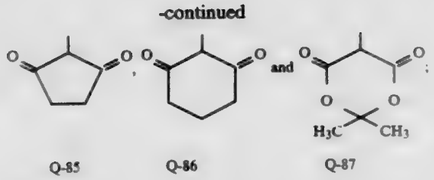


Q-79 Q-80 Q-81



Q-82 Q-83 Q-84

-continued



Q-85 Q-86 Q-87

wherein

Q-1 through Q-87 may be optionally substituted with 1 or 2 groups selected from C_1–C_2 alkyl or C_1–C_2 haloalkyl;

R_5 and R_6 are independently H or C_1–C_3 alkyl;

X_b is O or NR_5; and

X_c is O, S, SO, SO_2 or NR_5;

R_1 is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl, halogen, nitro, C_1–C_3 alkoxy, $SO_2NR_aR_b$, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CH_2CN, CN, CO_2R_c, C_1–C_3 haloalkoxy, C_1–C_3 haloalkylthio, C_2–C_4 alkoxyalkyl, C_2–C_4 alkylthioalkyl, CH_2N_3 or NR_dR_e;

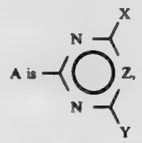
R_a is H, C_1–C_4 alkyl, C_2–C_3 cyanoalkyl, methoxy or ethoxy;

R_b is H, C_1–C_4 alkyl or C_3–C_4 alkenyl; or

R_a and R_b may be taken together as $-(CH_2)_3-$, $-(CH_2)_4-$, $-(CH_2)_5-$ or $-CH_2CH_2OCH_2CH_2-$;

R_c is C_1–C_4alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_2–C_4 haloalkyl, C_2–C_3 cyanoalkyl, C_5–C_6 cycloalkyl, C_4–C_7 cycloalkylalkyl or C_2–C_4 alkoxyalkyl;

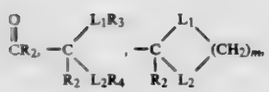
R_d and R_e are independently H or C_1–C_2 alkyl;

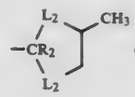


A-1

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino or C_3–C_5 cycloalkyl;

Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, azido, cyano, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl,





or $N(OCH_3)CH_3$;

m is 2 or 3;

L_1 and L_2 are independently O or S;

R_2 is H or C_1–C_3 alkyl;

R_3 and R_4 are independently C_1–C_3 alkyl;

Z is CH, CCH_3, CC_2H_5, CCl or CBr;

and their agriculturally suitable salts; provided that

(a) when X is Cl, F, Br or I, then Z is CH and Y is OCH_3, OC_2H_5, $N(OCH_3)CH_3$, $NHCH_3$, $N(CH_3)_2$ or OCF_2H;

(b) when X or Y is C_1 haloalkoxy, then Z is CH;

(c) when J is J-2 or J-3, the substituent E_1X_dQ and the sulfonylurea bridge are on adjacent carbon atoms;

(d) when E is O, then J is J-1 and W is O;

(e) when W is S, then R is H, Z is CH and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or 1,3-dioxolan-2-yl;

(f) when the total number of carbon atoms of X and Y is greater than four, then the number of carbons of R_1 must be less than or equal to two, and the number of carbons of the substituent on Q must also be less than or equal to two;

(g) when J is J-1 wherein E is a single bond, X_d is CH_2, $CH(CH_3)$ or CH_2CH_2 and Q is a 5-membered heterocyclic ring containing one endocyclic double bond or a 6-membered heterocyclic ring containing 1 or 2 endocyclic double bonds which is unsubstituted or substituted by one or more C_1–C_4 alkyl groups then said heterocycle must contain at least one nitrogen and be bound to X_d through nitrogen; and

(h) when X_d is CO then E_1 is a single bond.

19. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,801,328

DEOXIDIZING AGENT

Glenn Canfield, 303 Ramblewood Pl., Longview, Tex. 75601-3055

Filed Dec. 31, 1987, Ser. No. 140,125
Int. Cl.[4] C21C 7/02
U.S. Cl. 75—58 16 Claims

1. A deoxidizing agent for molten ferrous metals comprising:

a core of material being chemically non-reactive with the ferrous metal to be deoxidized and having a density greater than the density of metallic aluminum; and

one or more discrete layers of metallic aluminum substantially surrounding said core.

4,801,329

METAL VALUE RECOVERY FROM CARBONACEOUS ORES

Thomas J. Clough, Santa Monica; John W. Sibert, Malibu, and Arthur C. Riese, Toluca Lake, all of Calif., assignors to Enscl Incorporated, Chatsworth, Calif.

Filed Mar. 12, 1987, Ser. No. 25,069
Int. Cl.[4] C22B 11/04
U.S. Cl. 75—97 A 31 Claims

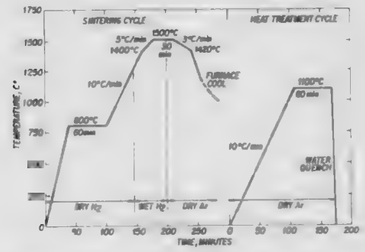
1. A process for recovering at least one first metal selected from the group consisting of gold, silver, the platinum group metals and mixtures thereof from an ore containing carbonaceous material comprising: contacting said ore with at least one component including an added metal in an amount effective to at least promote the oxidation of said carbonaceous material and at least one oxidant in an amount effective to provide at least one of the following: (A) form said component including said added metal, (B) regenerate said component including said added metal, and (C) oxidize said carbonaceous material, said contacting occurring in the presence of an aqueous medium at conditions effective to (1) chemically oxidize said carbonaceous material and (2) liberate said first metal from said ore, said component including said added metal being selected from the group consisting of iron complexes with ligands in which iron is present in an amount in the 3+ oxidation state effective to at least promote the oxidation of said carbonaceous material in said ore, copper complexes with ligands in which copper is present in an amount in the 2+ oxidation state effective to at least promote the oxidation of said carbonaceous material in said ore, vanadium components in which vanadium is present in the 5+ oxidation state in an amount effective to at least promote the oxidation of said carbonaceous material in said ore, manganese complexes with ligands in which manganese is present in the 3+ oxidation state in an amount effective to at least promote the oxidation of said carbonaceous material in said ore, and mixtures thereof; and recovering said first metal from said ore.

4,801,330

HIGH STRENGTH, HIGH HARDNESS TUNGSTEN HEAVY ALLOYS WITH MOLYBDENUM ADDITIONS AND METHOD

Animesh Bose, Troy; Randall M. German, Latham, both of N.Y., and David M. Sims, Bonners Ferry, Id., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed May 12, 1987, Ser. No. 48,703
Int. Cl.[4] B22F 1/00
U.S. Cl. 75—298 5 Claims



1. A method of making a dense alloy having high strength, high hardness, moderate ductility and a refined grain structure, said alloy being particularly useful in making kinetic energy penetrators and said method comprising the steps of:

forming a mixture of metal powders composed of a main constituent of tungsten in a proportion of 74% to 88% by weight of the mixture and a minor constituent consisting of molybdenum in a proportion of 2% to 16% by weight of the mixture, nickel and iron in respective proportions of 7% and 3% by weight of the mixture;

compressing the mixture into a compact;

liquid phase sintering of the compact in the presence of substantially only wet hydrogen gas for at least about 30 minutes; and

slow cooling the sintered compact.

4,801,331

NAIL LACQUER REMOVER COMPOSITION

Akira Murase, Nagoya, Japan, assignor to Suhama Chemical Co., Ltd., Nagoya, Japan

Filed Feb. 18, 1988, Ser. No. 157,027
Int. Cl.[4] C09G 1/00
U.S. Cl. 106—5 6 Claims

1. A nail lacquer recover composition,consisting essentially of:

(a) 30–65% by weight of a carbonate selected from the group consisting of ethylene carbonate, propylene carbonate, butylene carbonate and glycerine carbonate;

(b) 10–50% by weight of 1,3-dimethyl-2-imidazolidinone;

(c) 0.2–20% by weight of hydroxypropyl cellulose; and

(d) 13–40% by weight of water.

4,801,332

HIGH STRENGTH ASPHALT CEMENT PAVING COMPOSITION

Philip T. Selfridge, Half Moon Bay; John B. Leonard, Jr., Hillsborough, and Patrick K. Clancey, San Mateo, all of Calif., assignors to Chemcrete International Corp., San Mateo, Calif.

PCT No. PCT/US86/02056, § 371 Date Jun. 15, 1987, § 102(e) Date Jun. 15, 1987, PCT Pub. No. WO87/02373, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 6, 1986, Ser. No. 9,410
Claims priority, application China, Oct. 15, 1985, 851.07358
Int. Cl.[4] C08L 95/00; C10C 3/02
U.S. Cl. 106—273.1 20 Claims

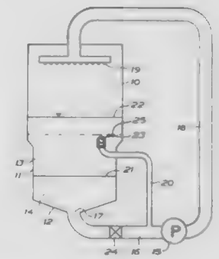
1. A paving composition comprising a major proportion by weight of aggregate and a minor proportion by weight of asphalt cement, said asphalt cement containing a combination of a primary catalyst comprising a compound chosen from the group consisting of asphalt cement soluble organic-manganese, organic-cobalt, and organic-copper compounds, or a mixture of two or more thereof, and a secondary catalyst comprising an asphalt cement soluble organic-iron a compound "wherein the combination of primary and secondary catalysts is present in the asphalt cement in an amount sufficient to provide from about 0.05 to about 0.25 percent by weight, based on the weight of the asphalt cement, of iron ions and manganese, cobalt or copper ions or a mixture of two or more thereof".

4,801,333

METHOD OF CLEANING ARTICLES IN A TANK

Carl G. Mosell, Sitio de Calahonda, Mijas Costa, Malaga, Spain

Filed Nov. 26, 1984, Ser. No. 675,421
Continuation of PCT SE84/00104 filed Mar. 23, 1984
Claims priority, application Sweden, Mar. 24, 1983, 8301624
Int. Cl.[4] B08B 3/10
U.S. Cl. 134—7 4 Claims



1. A method of cleaning articles in a tank, containing a liquid at a first predetermined level and a layer of granules at a second predetermined level within and below said first level, the tank having an inlet and a first outlet in said tank located below the first but above the second predetermined level, and a second outlet below said second predetermined level and including valve means for controlling the flow from said first and second outlet, comprising the steps of:

a: drawing liquid from said first outlet,

b: discharging the liquid towards the article to be cleaned,

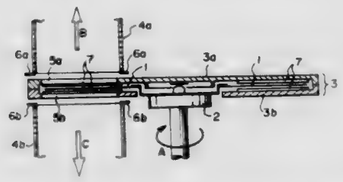
c: opening said valve means to allow flow of liquid and granules from the second outlet,

d: discharging the liquid with the granules entrained therein towards the article to be cleaned, and

e: alternately performing steps a, b, c and d until the article is cleaned.

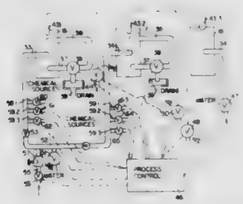
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4,801,334
METHOD OF AND APPARATUS FOR CLEANING MAGNETIC RECORDING DISK CARTRIDGE
Toshihiko Wada, Tokyo, and Hideki Matsuzawa, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 19, 1987, Ser. No. 51,352
Claims priority, application Japan, May 19, 1986, 61-114370
Int. Cl.⁴ B08B *5/04*
U.S. Cl. 134—21 **4 Claims**



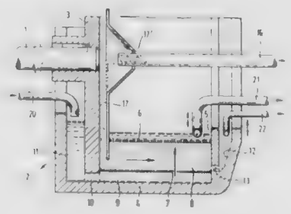
1. A method of cleaning a magnetic recording disk accommodated for rotation in a casing comprising steps of rotating the magnetic recording disk and suctioning air from the casing through air suction openings formed in the upper and lower sides of the casing by applying suction nozzles thereto.

4,801,335
RINSING IN ACID PROCESSING OF SUBSTRATES
Don C. Burkman, Excelsior; David D. Schumacher, Plymouth, and Charlie A. Peterson, Waconia, all of Minn., assignors to FSI Corporation, Chaska, Minn.
Division of Ser. No. 626,702, Jul. 2, 1984, Pat. No. 4,682,615. This application Dec. 12, 1986, Ser. No. 920,516
Int. Cl.⁴ B08B *9/04*
U.S. Cl. 134—25.4 **6 Claims**



1. In the liquid chemical processing of substrates in a closed chamber with means providing rinsing spray orifices directed toward the substrate and chemical orifices also directed toward the substrate and in flow communication with chemical supply lines and spray head chemical passages, an improved rinsing method consisting in
spraying rinsing liquid from the rinsing spray orifices toward and onto the substrate in the closed chamber to drench the substrate with such rinsing liquid to terminate the chemical processing by rinsing away such processing chemicals and any particulate that may exist on such substrates while allowing the rinsing liquid to exit the chamber,
and simultaneously with said spraying, clearing the chemical supply lines, chemical passages and chemical orifices by supplying additional rinsing liquid into the chemical supply lines, spray head chemical passages and chemical orifices, to mix with and progressively dilute the liquid chemical therein and directing the mixture of rinsing liquid and liquid chemical through the lines and passages into an open drain while applying pressure on the additional rinsing liquid, as to move the mixture through the lines and passages and drain, and as to trickle the mixture through and from the chemical orifices without spraying the mixture onto the substrates.

4,801,336
PROCESS FOR ACCELERATING THE TRANSFER OF MEDIA IN A FLUIDIZED BED
Franz Alstetter, Karlsfeld, and Guenther Hultsch, Oberschleissheim, both of Fed. Rep. of Germany, assignors to Krauss-Maffei A.G., Fed. Rep. of Germany
Division of Ser. No. 685,233, Dec. 21, 1984, Pat. No. 4,710,356. This application Sep. 9, 1987, Ser. No. 95,582
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346861
Int. Cl.⁴ C02F *3/08*
U.S. Cl. 134—32 **6 Claims**

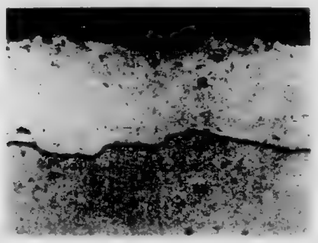


1. A method for contacting a flowing liquid of lower density with a medium of higher density comprising solid particles, said method comprising:
introducing said liquid of lower density into a radially outer zone within a centrifuge,
introducing said medium of higher density into a radially inner zone within said centrifuge wherein said inner zone and said outer zone are separated by a perforated surface,
rotating said radially inner zone to force said medium of higher density radially outward toward said radially outer zone;
flowing said liquid of lower density radially inward toward said radially inner zone and in contact with said medium of higher density to form a reaction bed, and
independently withdrawing said liquid and said medium of higher density.

4,801,337
PROCESS AND COMPOSITION FOR CONVERSION COATING METAL SURFACES
George Higgins, Windsor, England, assignor to Pyrene Chemical Services Limited, Buckinghamshire, England
Filed Apr. 2, 1987, Ser. No. 43,288
Claims priority, application United Kingdom, Apr. 8, 1986, 8608509
Int. Cl.⁴ C23C *22/60*
U.S. Cl. 148—6.2 **20 Claims**

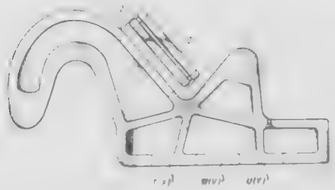
1. In a process for forming a corrosion-resistant complex oxide coating on a zinc or zinc alloy surface wherein the surface is contacted with an aqueous alkaline composition having a pH value above 11 and containing a complexed polyvalent metal, the improvement comprising including in said composition at least three of said polyvalent metals, one of which is trivalent chromium.

4,801,338
PROCESS OF PROTECTIVE COATING OF IRON AND STEEL PRODUCTS
Danièle Quantin, Nogent s/Marne, and Francisco Galdon, Nanterre, both of France, assignors to Institut De Recherches de la Siderurgie (IRSID), Maizieres-les-Metz, France
Filed Feb. 6, 1987, Ser. No. 11,538
Claims priority, application France, Feb. 6, 1986, 86 01636
Int. Cl.⁴ C23C *22/00*
U.S. Cl. 148—6.14 **3 Claims**



1. Process of protective coating of an elongated steel product rolled hot, comprising the following steps:
(a) provoking, in ambient atmosphere the formation of an adherent and rough layer of scale at the end of working off of the product by controlled accelerated cooling from a temperature of about 900° to 1000° at the end of rolling to a temperature of about 550°–600° C. so that the resultant thickness of scale is less than a threshold characterized by the metal of which the product is made and of its temperature at the end of rolling, and then
(b) depositing directly on the layer of scale thus formed a protective material.

4,801,339
PRODUCTION OF AL ALLOYS WITH IMPROVED PROPERTIES
Donald H. Osborn; Paul S. Gilman, both of Suffern, and Stephen J. Donachie, New Windsor, all of N.Y., assignors to Inco Alloys International, Inc., Huntington, W. Va.
Filed Mar. 15, 1985, Ser. No. 712,701
Int. Cl.⁴ C22F *1/04*
U.S. Cl. 148—11.5 A **25 Claims**



1. A process for improving the fracture toughness in the non-aged condition with substantially no reduction in tensile properties, of a product composed of an alloy containing, by weight, about 0.5 to about 4% lithium, 0 up to about 7% magnesium, 0 up to about 6% copper, 0 up to about 2% zirconium, 0 up to about 5% cerium, 0 up to about 6% zinc, 0 up to about 2% silicon, 0 up to about 5% carbon, 0 up to about 2% oxygen, and the balance essentially aluminum, and wherein the alloy product further contains 0 up to about 10% by volume of a dispersoid, which comprises: shaping the alloy at a homologous temperature of said alloy below about 0.75, heat treating the shaped product above the temperature of the shaping treatment, provided said heat treating temperature is a homologous temperature in the range of about 0.65 up to about 0.85, and cooling the resultant heat treated shaped product.

4,801,340
METHOD FOR MANUFACTURING PERMANENT MAGNETS
Nobuyuki Inoue; Katsumi Takahashi, and Nobuo Imaizumi, all of Tokyo, Japan, assignors to Namiki Precision Jewel Co., Ltd., Tokyo, Japan
Filed Jun. 11, 1987, Ser. No. 60,414
Claims priority, application Japan, Jun. 12, 1986, 61-134865
Int. Cl.⁴ H01F *1/02*
U.S. Cl. 148—103 **9 Claims**

1. A method for manufacturing compacted powder permanent magnets from alloys whose compositions are determined by the formula $R(T_{1-y}M_y)z$ wherein R denotes one or two species of rare earth metals including Y, T denotes a transition metal selected from the group consisting of Fe and Fe and Co, M denotes the metalloid element B, and wherein $0.02<y<0.15$, and $5<z<9$, said method comprising the steps of:
a. obtaining 50–1000 um crude grains by spraying said alloys in a melt state using an inert gas atomization process,
b. heat-treating said crude grains in a vacuum or in an inert atmosphere,
c. forming grains of less than 30 um by a mechanical pulverizing process, and
d. compression-molding said grains of (c) to form a compression molded body.

4,801,341
ONE-SIDED ENAMELABLE HOT-ROLLED STEEL SHEET AND PROCESS FOR PRODUCING THE SAME
Atsushi Itami; Kazuo Koyama; Nobuhiko Matsuzu, and Takahito Watanabe, all of Kimitsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Jul. 31, 1987, Ser. No. 79,805
Claims priority, application Japan, Aug. 6, 1986, 61-183426
Int. Cl.⁴ C22C *38/06;* **C21B** *7/13*
U.S. Cl. 148—320 **7 Claims**

1. A one-sided enamelable hot-rolled steel sheet that consists essentially of 0.0050–0.07 wt % C., 0.05–1.5 wt % Mn, up to 0.03–0.15 wt % P, 0.03–0.1 wt % Al, 0.003–0.010 wt % N, at least 0.002 wt % of free nitrogen not bound to Al, the nitrogen content as defined above satisfying the condition of $Al/N \geqq 10$ on the basis of impurities.

4,801,342
METHOD AND APPARATUS FOR FORMING A BUTT SPLICE
Roger R. Wheeler, Roscoe, and John R. Martin, Rockford, both of Ill., assignors to Martin Automatic Inc., Rockford, Ill.
Continuation of Ser. No. 907,117, Sep. 12, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 153,578
Int. Cl.⁴ B31F *5/06;* **B65H** *69/06*
U.S. Cl. 156—159 **12 Claims**

1. An improved method for forming a butt splice to join together a web from a new roll of material to a web which is from an expiring roll of material, has two, substantially parallel side edges, and is being run, downstream from the expiring roll, under tension along a predetermined path of travel that includes running web storage means, the improved method comprising the steps of:
holding a portion of the web from the new roll against anvil means that includes a cutting edge;
trimming the portion of the web from the new roll along the cutting edge of the anvil means so that the trimmed edge of the downstream, leading end of the web from the new roll is aligned with and conforms to the cutting edge of the anvil means;
applying a first piece of adhesive tape to the leading end of the web from the new roll so that the adhesive of the tape

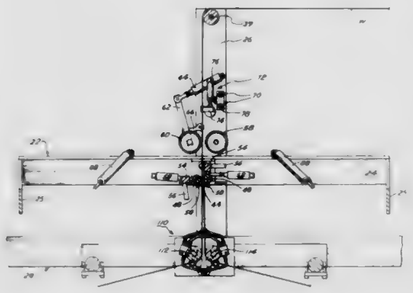
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faces the path of travel and so that a portion of the adhesive tape extends downstream beyond the cutting edge of the anvil means and the trimmed edge of the web from the new roll;

momentarily stopping the running of the portion of the web from the expiring roll, adjacent to the anvil means, while permitting further downstream portions of the web from the expiring roll, remote from the anvil means, to continue to run with tension;

holding the stopped, anvil means adjacent portion of the web from the expiring roll against the anvil;

trimming the stopped, anvil means adjacent portion of the web from the expiring roll along the cutting edge of the anvil means by cutting the stopped, anvil means adjacent portion of the web from the expiring roll a part at a time, across the web and beginning at one side edge thereof, so that the point of cutting moves across the stopped, anvil means adjacent portion of the web from the expiring roll from the one side edge to the other side edge, so that the uncut part of the stopped, anvil means adjacent portion of the web from the expiring roll remains under tension ahead of the point of cutting, and so that the trimmed edge of the trailing end of the stopped, anvil means adjacent



portion of the web from the expiring roll is aligned with and conforms to the cutting edge of the anvil means;

adhering the cut part of the trailing end of the stopped, anvil means adjacent portion of the web from the expiring roll, behind the point of cutting, to the downstream extending portion of the adhesive tape substantially simultaneously as the point of cutting moves across the stopped, anvil means adjacent portion of the web from the expiring roll, so that the trimmed edge of the trailing end of the stopped, anvil means adjacent portion of the web from the expired roll abuts and is disposed closely adjacent to the trimmed edge of the leading edge of the web from the new roll, and so that the adhesive tape secures together the leading end of the web from the new roll and the trailing end of the web from the expiring roll; and

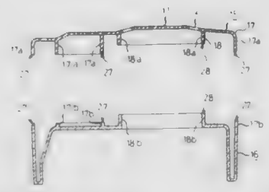
permitting the joined web from the expiring roll and from the new roll to run again, along the path of travel, with the further downstream portions of the web from the expiring roll.

4,801,343

METHOD FOR MANUFACTURING A CASE HAVING MULTIPLE WALLS

Shinichi Tamba, and Noboru Fukui, both of Kakogawa, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 721,456, Apr. 9, 1985, abandoned. This application Sep. 4, 1987, Ser. No. 94,072
Claims priority, application Japan, Apr. 13, 1984, 59-75423
Int. Cl.[4] B32B *31/26, 31/28;* B65B *7/16*
U.S. Cl. 156—69 **1 Claim**



1. A method for manufacturing a case which has at least one closed looped inner vertical wall and a closed looped outer vertical wall, the former being surrounded with the latter, respectively spaced apart from each other, and which originally in manufacturing has an upper and a lower half and is manufactured by integrating both halves into one piece by jointing together, wherein each of said closed looped vertical walls is manufactured by jointing a closed looped upper wall formed in said upper half to a corresponding closed looped lower wall formed in said lower half, comprising the steps of: providing the jointing portions of each pair of mating closed looped vertical walls with a tongue-and-groove joint wherein a conductive wire for high-frequency-heating is to be inserted between end surfaces of the tongue and groove, each jointing portion for a respective vertical wall being disposed at a location which is apart from the top and bottom of said vertical wall respectively, the locations for the jointing portions of said inner and outer vertical walls being at different planes of elevations with respect to each other; inserting conductive wire between the jointing surfaces of the corresponding closed looped upper and lower walls at each jointing portion; and applying a one time high-frequency-heating to the conductive wire in each jointing portion by means of a high-frequency coil positioned around the case for simultaneously welding said jointing surfaces.

4,801,344

METHOD FOR THE MANUFACTURE OF REINFORCEMENTS FOR TIRES

Daniel Laurent, Meylan, and Jean C. Mayet, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissement Michelin-Michelin et Cie., Clermont-Ferrand Cedex, France

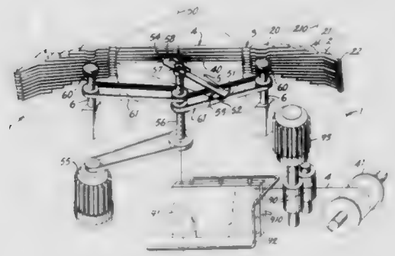
Filed Apr. 20, 1987, Ser. No. 40,360
Claims priority, application France, Apr. 25, 1986, 86 06159
Int. Cl.[4] B29H *17/00*
U.S. Cl. 156—117 **7 Claims**

1. A method of manufacturing a tire reinforcement formed from a continuous cord, characterized by the fact that

(a) the continuous cord is hooked to retention means disposed in two circles which are a distance apart corresponding to the length of the path of the cord from one side of the reinforcement to the other so that the cord disposed in this way defines a cylinder by a plurality of passes back and forth from one retention means to another,

(b) by a suitable movement of the retention means, the cord which is disposed in this way is folded back on and around

a rigid core which defines the shape of the inner surface of the tire,



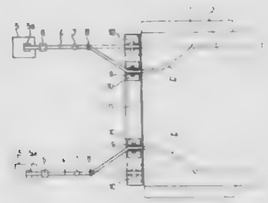
(c) anchoring of the cord being assured, the retention means are released.

4,801,345

PROCESS FOR MANUFACTURING DISPOSABLE DIAPERS AND DIAPER BRIEFS, AND DISPOSABLE DIAPERS AND DIAPER BRIEFS OBTAINED BY APPLICATION OF THIS PROCESS

Jacques Dussaud, Lille, and Raphael DE Jonckheere, Bondues, both of France, assignors to Boussac Saint Freres B.S.F., Lille, France

Continuation of Ser. No. 301,262, Sep. 11, 1981, abandoned. This application May 1, 1984, Ser. No. 605,970
Claims priority, application France, Sep. 15, 1980, 80 19862
Int. Cl.[4] B29C *65/48;* B32B *31/08*
U.S. Cl. 156—164 **10 Claims**



1. A method of continuously attaching an elongated narrow elastic element to a moving flexible sheet material to be employed as an outer moisture impermeable envelope for receiving an absorbent pad of a disposable diaper, said elastic element fitting in a stretched condition substantially along a curvilinear-shaped-cut-out of said envelope to allow a leg therethrough when said envelope is constructed as a diaper, said method comprising the steps of:

(a) passing an elongated narrow elastic element, along a longitudinal path of travel, in a stretched condition;

(b) intermittently depositing liquid adhesive material at high temperature on said elastic element during said passing step (a);

(c) passing said elastic element, with adhesive material thereon, over a fixed guide means;

(d) passing said elastic element with adhesive material over a carriage means, arranged down-stream of the fixed guide means in the direction of travel, and being movable intermittently in a transverse direction;

(e) feeding a flexible sheet around the peripheral surface of a rotary drum such that the sheet remains in contact with said drum for about one-half the rotation of said drum, said drum having a smooth outer surface which is maintained at a substantially constant temperature, said temperature being less than the temperature of said liquid adhesive, the difference between the temperature of the adhesive at the time of contact with said flexible sheet and the temperature of said peripheral surface of the drum being at least 20° C.; and

(f) positions said movable carriage immediately next to the periphery of said rotary drum at a location such that said carriage means and said drum are not in contact with each other and such that the adhesive coated elastic element contacts said flexible sheet supported by said drum, and said sheet together with said elastic element remain in contact with said drum for at least a portion of the rotation of said rotary drum before leaving it, moving said carriage means intermittently in a direction transverse to the direction of rotation of said drum and said temperature difference being sufficient to lead to an immediate adhesion effect capable of withstanding the transverse forces to which said elastic element is subjected owing to the movement of said carriage means whereby said elastic element is laid-down on said drum in an oscillating path, and whereby said elastic element is intermittently attached in a stretched condition along a curved-shaped line by laying said elastic element on said flexible sheet due to the temperature difference between the drum and the adhesive material;

and with the provision that steps (e) and (f) are conducted on a single drum.

4,801,346

PROTECTIVE COATINGS

Elwyn Huddleston, Franklin, Ky.; Jerry M. Serra, Chelmsford, Mass., and Gary R. Robe, Franklin, Ky., assignors to The Kendall Company, Boston, Mass.

Filed Jul. 30, 1986, Ser. No. 892,156
Int. Cl.[4] B65H *81/02*
U.S. Cl. 156—187 **12 Claims**

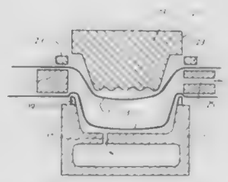
1. A method for protecting a metal article from corrosion comprising coating said article with a liquid coating composition comprising: (1) a triblock thermoplastic rubber comprising a copolymer having polystyrene end blocks and a poly(ethylene-butylene) rubber midblock; (2) at least one tackifying resin selected from the group consisting of phenolic-modified terpene resins and coumarone-indene resins; and (3) a hydrocarbon solvent for said copolymer.

4,801,347

METHOD OF PRODUCING A PACKAGING TRAY

Anthony J. M. Garwood, Bayswater, Australia, assignor to Garwood Limited, Victoria, Australia

PCT No. PCT/AU86/00248, § 371 Date Apr. 30, 1987, § 102(e) Date Apr. 30, 1987, PCT Pub. No. WO87/01330, PCT Pub. Date Mar. 12, 1987
PCT Filed Aug. 25, 1986, Ser. No. 56,484
Claims priority, application Australia, Aug. 30, 1985, PH2222
Int. Cl.[4] B29D *17/00*
U.S. Cl. 156—245 **10 Claims**



1. A method of producing a packaging tray comprising:

(a) providing at least two webs of plastics material,

(b) holding both webs in spaced apart relationship over an

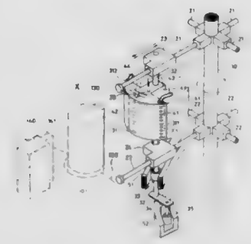
aperture in a die part so that the die part is between the webs,
(c) applying a female die cavity to one of the webs and in aligned relationship to said aperture,
(d) applying a reduction in air pressure to said female die cavity whereby to draw the web closest to said female die cavity thereinto,
(e) then applying a reduction in air pressure to said aperture to draw the other web into said aperture,
(f) then inserting a male die member into said aperture, at least one of said female die cavity or said male die member having a surface which will form corrugations in one of the webs,
(g) then applying pressure between the male die member and the female die cavity so that the two webs can be bonded together,
(h) then bonding the two webs together where the corrugations in one web touch the other web.

4,801,348

FILM SUPPLY APPARATUS

Nobuyuki Takagaki, Nara, Japan, assignor to Fuji Seal Industry Co., Ltd., Osaka, Japan

Filed Apr. 29, 1987, Ser. No. 43,499
Claims priority, application Japan, May 27, 1986, 61-123178
Int. Cl.[4] B65C *9/04, 9/14*
U.S. Cl. 156—456 **4 Claims**



1. A film supply apparatus for gluing a film to the surface of a container which is driven along a container transport line while it is spun about its own axis, generally comprising a revolving vertical main shaft adapted to revolve in association with the movement of a container in a container transport line, first and second horizontal slide shafts mounted radially on said revolving vertical main shaft, said first slide shaft being vertically spaced above said second slide shaft, a film suction element positioned between said first and second slide shafts,

said film suction element having an arcuate suction surface adapted to retain a film under suction, capable of advancing and retreating with respect to a container in said container transport line and swingable in the circumferential direction of said arcuate suction surface, a first groove cam means adapted to cause said film suction element to advance and retreat in association with the rotation of said revolving vertical main shaft in such a manner that the arcuate suction surface of the film suction element retaining the film under suction is maintained in a constant contact with the lateral side of a container in said container transport line without slippage during the course from a gluing start position to a gluing end position, and a second groove cam means for swinging said film suction element,

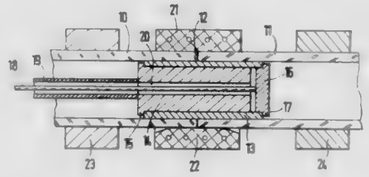
said first groove cam means being positioned beneath said second slide shaft but above said second groove cam means, and a pivot shaft parallel to said vertical main shaft for connecting said film suction element to said first slide shaft above said suction element and to said second slide shaft below said suction element.

4,801,349

APPARATUS FOR BUTT-WELDING PLASTIC PIPE SECTIONS OR PLASTIC FITTINGS

Armin Dommer, Eichweg 13, and Dieter Dommer, Bahnhofstrasse 5, both of 7257 Ditzingen 1, Fed. Rep. of Germany

Filed Oct. 16, 1987, Ser. No. 109,110
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1986, 3636891
Int. Cl.[4] B29C *65/20*
U.S. Cl. 156—503 **9 Claims**



1. In a device for butt-welding two plastic tubular members at the juncture of their abutting ends of the type including means to support such members in axially adjustable position, means to apply axial pressure of one abutting end on the other, and electric heating elements to apply heat in the vicinity of the juncture, the improvement comprising:

a bolster tube inside the plastic tubular members, said bolster tube bridging the juncture and flush with the inside curvature of the plastic tubular members;

means to adjustably apply pressure on the inside curvature through the bolster tube; and

a pair of shell-shaped heating elements configured and arranged to contact and enwrap the outside curvature of the plastic tubular members near the juncture, said heating elements having heating contact surfaces which are convex in longitudinal cross-section.

3. In a device for butt-welding two plastic tubular members at the juncture of their abutting ends of the type including means to support such members in axially adjustable position, means to apply axial pressure of one abutting end on the other, and electric heating elements to apply heat in the vicinity of the juncture, the improvement comprising:

a bolster tube inside the plastic tubular members, said bolster tube bridging the juncture and flush with the inside curvature of the plastic tubular members;

means to adjustably apply pressure on the inside curvature through the bolster tube, including: a core member inserted into one end of the bolster tube, said core member buttressing the inside of the bolster tube and having a flange engaging said one end of the bolster tube; a set-plate inserted into the opposite end of the bolster tube and having an attachment flange engaging said opposite end; and means to adjust the position of the set-plate with respect to the core member; and

a pair of shell-shaped heating elements configured and arranged to contact and enwrap the outside curvature of the plastic tubular members near the juncture.

4,801,350

METHOD FOR OBTAINING SUBMICRON FEATURES FROM OPTICAL LITHOGRAPHY TECHNOLOGY

Robert J. Mattox, Tempe, and Frederick J. Robinson, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1986, Ser. No. 947,069
Int. Cl.[4] B44C *1/22*; C03C *15/00*; H01L *21/306*
U.S. Cl. 156—643 **3 Claims**

1. A method for obtaining submicron features from optical lithography technology comprising the steps of:

depositing a first layer on a surface of a material to be etched, wherein the material to be etched and the first layer are not of the same material type;

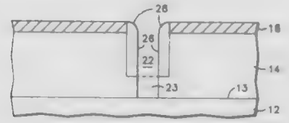
depositing a separating layer over said first layer;

forming a resist layer on said separating layer;

exposing said resist layer to act as a mask for etching through the separating layer and partially through said first layer;

etching through the separating layer and partially through said first layer;

removing said resist layer;



depositing a second layer in said partially etched area of said first layer;

anisotropically etching said second layer, leaving sidewalls in said partially etched area as a first mask;

completing etch through said first layer to form a second mask over said material to be etched, guided by said first mask; and

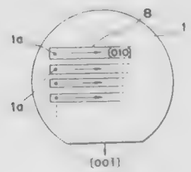
thereafter etching a submicron trench in said material and removing the masks.

4,801,351

METHOD OF MANUFACTURING MONOCRYSTALLINE THIN-FILM

Katunobu Awane, Ikoma; Masayoshi Kobe, Nara; Toshiaki Miyajima, Ikoma, and Masashi Maekawa, Nara, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 19, 1986, Ser. No. 943,428
Claims priority, application Japan, Dec. 20, 1985, 60-285438; Mar. 28, 1986, 61-68554; Sep. 26, 1986, 61-225900
Int. Cl.[4] C30B *1/08*
U.S. Cl. 156—603 **14 Claims**



1. A method of manufacturing a monocrystalline thin film which comprises the steps of:

forming a non-crystalline insulating film on a monocrystalline silicon base-plate so as to provide an opening in said insulating film which corresponds to an exposed portion of said monocrystalline silicon base-plate, said exposed portion being formed in a circular or rectangular shape;

filling said exposed portion with non-monocrystalline material, which is to be monocrystallized so as to form a filled portion;

forming a thin film of non-monocrystalline material to be monocrystallized on said insulating film,

forming a surface protective film on said thin film,

applying first energy beams to said filled portion so as to transform said non-monocrystalline material of said filled portion into monocrystalline material having a crystal direction which coincides with that of said silicon base-plate, wherein said exposed portion of said monocrystalline silicon base-plate acts as a seed,

forming a stripe-shaped silicon film cover on said surface protective film so as to cover said filled portion, and

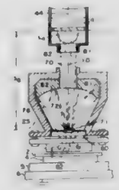
applying second energy beams to said thin film so as to transform said non-monocrystalline material of said thin film into monocrystalline material having a crystal direction which coincides with that of said silicon base-plate so as to manufacture said monocrystalline thin film, wherein said filled portion acts as a seed.

4,801,352

FLOWING GAS SEAL ENCLOSURE FOR PROCESSING WORKPIECE SURFACE WITH CONTROLLED GAS ENVIRONMENT AND INTENSE LASER IRRADIATION

Bernhard Piwczyk, Carlisle, Mass., assignor to Image Micro Systems, Inc., Billerica, Mass.

Filed Dec. 30, 1986, Ser. No. 209
Int. Cl.[4] B44C *1/22*; C03C *15/00*; B05D *3/06*; B23K *9/00*
U.S. Cl. 156—643 **56 Claims**



44. A method of processing a surface of a substrate body comprising the steps of:

(a) holding said substrate body with said surface exposed,

(b) enclosing a portion of said exposed surface with an enclosure providing a processing chamber for said said portion of said exposed substrate surface, positioned adjacent said portion of said exposed substrate surface,

(c) positioning said substrate body so that an annular portion thereof that encircles said processing chamber is parallel to and spaced from said exposed substrate surface to provide a flowing gas seal gap therebetween and

(d) imposing a gas pressure differential across said flowing gas seal,

(e) whereby said processing chamber and said portion of said substrate body exposed surface that is adjacent said processing chamber are exposed to gas at one of said imposed gas pressures.

4,801,353

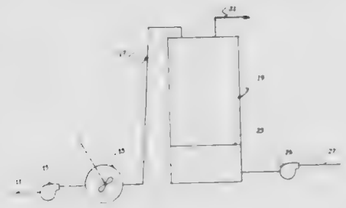
USE OF CHLOROUS ACID FOR BLEACHING WOOD PULP

James A. Mason, P.O. Box 605, Theodore, Ala. 36590

Filed May 15, 1987, Ser. No. 50,919
Int. Cl.[4] D21C *3/18, 3/20*
U.S. Cl. 162—73 **3 Claims**

1. In a process of bleaching wood pulp including the steps of injecting an aqueous solution into a vessel containing wood pulp the improvement comprising: using as said aqueous solution a solution containing an effective amount for bleaching

purposes of a mixture of a salt of lactic acid or citric acid and chlorous acid, wherein said aqueous solution is obtained by



reacting lactic acid or citric acid and sodium chlorite, at a temperature ranging from 60° F. to 80° F.

4,801,354

AQUEOUS PIGMENT SUSPENSIONS BASED ON ALKYL (METH) ACRYLATES AS DISPERSANTS FOR PIGMENTS

Guenter Hirsch, Mutterstadt, and Werner Auhorn, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 833,251, Feb. 26, 1986. This application Apr. 16, 1987, Ser. No. 38,986

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1985, 3508704

Int. Cl.⁴ D21H *3/44, 3/98*

U.S. Cl. 162—168.1 **6 Claims**

1. A process for the preparation of a paper containing from 2 to 50% by weight of a pigment, which comprises adding an aqueous pigment suspension to paper stock prior to sheet formation,

wherein said aqueous pigment suspension contains from 40 to 80% by weight of a pigment in which from 40 to 90% of the particles thereof have a diameter of less than two microns and, as a disperant, from 0.1 to 2% by weight, based on the pigment, of a copolymer which contains, as copolymerized units,

(a) from 40 to 95% by weight of an ester of acrylic acid or methacrylic acid with a saturated monohydric C_1–C_8-alcohol or with a saturated dihydric C_2–C_4-alcohol, and

(b) from 60 to 5% by weight of an ethylenically unsaturated C_3–C_5-carboxylic acid,

and wherein said copolymer has a K value of from 10 to 65 , determined according to the method of H. Fikentscher in 1% strength aqueous solution in the form of an ammonium salt at pH 9 and at 20° C. and wherein the pH of the stock is from 7.0 to 7.5.

4,801,355

TABULAR ACICULAR GYPSUM AND METHOD OF FILLING PAPER

Norman E. Johnstone, Schaumburg; John C. Gaynor, Des Plaines, and Robert W. Erickson, Lindenhurst, all of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Jan. 16, 1987, Ser. No. 4,545

Int. Cl.⁴ D21H *3/78*

U.S. Cl. 162—181.3 **11 Claims**

1. In the manufacture of paper, such as paper for facing gypsum wallboard, the improvement which comprises the steps of:

A. Forming an about 20%–25% solids aqueous slurry of calcium sulfate hemihydrate;

B. Hydrating said slurry in a continuously stirred reactor at about 50°–60° C. with suspending agitation to produce large tabular crystals of calcium sulfate dihydrate having a mean particle size in the largest dimension of about 45–350 micrometers and an aspect ratio between the largest dimension and the second largest dimension of at least about 10:1; and



C. Adding said tabular dihydrate crystals to wet paper pulp at a point before web formation.

4,801,356

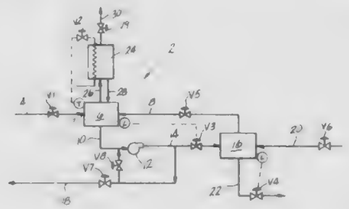
REMOVAL OF AMMONIA FROM FUEL CELL POWER PLANT WATER SYSTEM

Albert P. Grasso, Vernon, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Oct. 15, 1987, Ser. No. 108,529

Int. Cl.⁴ B01D *3/06, 3/38*

U.S. Cl. 203—11 **7 Claims**



1. In a closed water cycle fuel cell power plant, a method for removing ammonia, gaseous ammonium compounds such as ammonium carbonates and bicarbonates, and carbon dioxide contaminants from contaminated water in the power plant, said method consisting essentially of the steps of:

(a) providing a stream of the contaminated water at superatmospheric pressure and elevated temperature having an ammonia content of less than about 500 ppm by weight;

(b) performing a first steam stripping operation on said stream of contaminated water by contacting the latter with steam to strip a first portion of the ammonia content from the water;

(c) performing a second steam stripping operation on the contaminated water after said first steam stripping operation is completed to strip a second portion of the ammonia content from the water, said two steam stripping operations being operable to remove at least about 85% of the ammonia and about 99% of the carbon dioxide from the contaminated water stream;

(d) combining contaminated steam exhausted from said second steam stripping operation with steam used in said first steam stripping operation during performance of the latter so that said first stripping operation is performed with a combined supply of steam and feeding combined contaminated steam exhausted from said first steam stripping operation into a condenser to condense water out of the combined contaminated steam; and

(e) venting contaminated steam from the condenser at controlled rates so that the vented steam has a water content which is less than the available amount of water produced by the electromechanical reaction in the full cell power plant.

4,801,357

SEPARATION OF ACETIC ACID FROM DIOXANE BY EXTRACTIVE DISTILLATION

Lloyd Berg, and Rudolph J. Szabados, both of 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Apr. 1, 1988, Ser. No. 177,420

Int. Cl.⁴ B01D *3/40;* **C07C** *51/44;* **C07D** *319/12*

U.S. Cl. 203—51 **2 Claims**

1. A method for recovering dioxane from mixtures of dioxane and acetic acid which comprises distilling a mixture of dioxane and acetic acid in a rectification column in the presence of about one part of an extractive agent per part of dioxane-acetic acid mixture, recovering dioxane as overhead product and obtaining the acetic acid and the extractive agent from the stillpot, wherein said extractive agent comprises dimethylsulfoxide.

4,801,358

SEPARATION OF ACETIC ACID FROM DIOXANE BY EXTRACTIVE DISTILLATION

Lloyd Berg, and Rudolph J. Szabados, both of 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Jul. 28, 1988, Ser. No. 225,199

Int. Cl.⁴ B01D *3/40;* **C07C** *53/02;* **C07D** *319/12*

U.S. Cl. 203—51 **3 Claims**

1. A method for recovering dioxane from mixtures of dioxane and acetic acid which comprises distilling a mixture of dioxane and acetic acid in a rectification column in the presence of about one part of an extractive agent per part of dioxane—acetic acid mixture, recovering dioxane as overhead product and obtaining the acetic acid and the extractive agent from the stillpot, wherein said extractive agent comprises N,N-dimethylacetamide.

4,801,359

SOLID COMPOSITIONS BASED ON SUPEROXIDES HAVING HIGH IONIC CONDUCTIVITY, THEIR METHOD OF MANUFACTURE, AND THEIR ELECTROCHEMICAL APPLICATIONS

Francis Jeanne, Jouy-En-Josas; Serge Lombard, Longjumeau, and Emmanuel Schmidt, Issy-Les-Moulineaux, all of, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et Exploitation Des Procedes Georges Claude, Paris, France

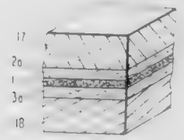
PCT No. PCT/FR86/00035, § 371 Date Nov. 24, 1986, § 102(e) Date Nov. 24, 1986, PCT Pub. No. WO86/04932, PCT Pub. Date Aug. 28, 1986

PCT Filed Feb. 10, 1986, Ser. No. 925,024

Claims priority, application France, Feb. 15, 1985, 85 02218

Int. Cl.⁴ C25G *1/02*

U.S. Cl. 204—1 T **50 Claims**



1. A solid electrolytic material for selective transfer of O_2^- ions, comprising a matrix chemically stable to O_2^- ions and mobile $)_2^-$ ions incorporated in said matrix, said matrix comprising a solid macromolecular electrolytic substance, or a liquid or gelled electrolyte containing superoxide salt and carried on a porous support, said material conducting O_2^- ions at operating temperatures up to about 100° C.

4,801,360

SURFACE TREATMENT OF ALUMINUM/SILICON ALLOYS

Christopher G. Tanner, Haverhill, United Kingdom, assignor to STC PLC, London, England

Filed Jun. 19, 1986, Ser. No. 876,236

Int. Cl.⁴ C25D *11/16*

U.S. Cl. 204—33 **7 Claims**



1. A process for the treatment of a surface of an aluminum/-silicon alloy having anodizable and non-anodizable phases, said process comprising exposing the surface of the aluminum/silicon alloy to a first etchant, said first etchant comprising a solution of ammonium bifluoride in nitric acid, to selectively remove the non-anodizable phase at the surface of the alloy, followed by exposing the surface of the alloy to a second etchant, said second etchant comprising aqueous hydrofluoric acid, and thereafter anodizing the etched surface to provide an oxide film.

4,801,361

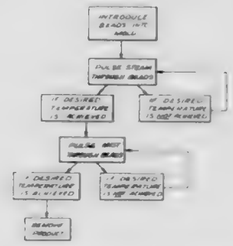
METHOD AND APPARATUS FOR MOLDING EXPANDABLE POLYSTYRENE FOAM ARTICLES

Calvin P. Ballard, 467 Mountain Rd., Wilbraham, Mass. 01095, and F. Paul Szabelick, 857 Armory St., Springfield, Mass. 01107

Filed Apr. 3, 1987, Ser. No. 34,411

Int. Cl.⁴ C08J *9/22;* **B29C** *65/38, 67/22*

U.S. Cl. 264—40.6 **18 Claims**



1. A time and energy efficient method of molding thermoplastic polymer beads to form articles of foamed material in a mold having at least two separable portions with a cavity behind each portion comprising the steps of:

introducing the beads into the mold;

pulsing steam among the beads to contact, expand and fuse the beads; and

pulsing cooling mist directly among the expanded and fused beads.

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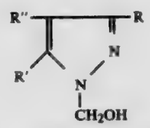
4,801,362

CONTROL OF MICROORGANISMS IN AQUEOUS SYSTEMS WITH 1-HYDROXYMETHYLPYRAZOLES

Joseph G. Fenyes, Germantown, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Dec. 11, 1987, Ser. No. 131,733
Int. Cl.⁴ C10M *133/44, 173/02*
U.S. Cl. 252—51 **13 Claims**

1. A method of preserving an aqueous system which is susceptible to microbiological degradation, comprising the step of adding to said system a compound having the formula



wherein R and R' are independently selected from hydrogen or a methyl group, R'' is a moiety selected from the group consisting of (a) hydrogen, (b) a halogen atom selected from the group consisting of F, Cl, Br and I, and (c) a nitro group; or the hydrochloride salt of said compound, and wherein said compound or said hydrochloride salt of said compound is added in an amount sufficient to inhibit the growth and proliferation of at least one microorganism in said aqueous system.

4,801,363

HIGH PURITY ALKALINE EARTHS VIA ELECTRODEPOSITION

Thomas D. Gregory, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1987, Ser. No. 501
Int. Cl.⁴ C25D *11/08*
U.S. Cl. 204—58.5 **19 Claims**

1. A process for electrodepositing a high purity metal consisting essentially of magnesium on a conductive substrate comprising operating an electrochemical cell having

(1) a sacrificial magnesium anode;

(2) an electrolyte containing an aprotic solvent and a solute of a minor amount of residual halogen containing synergist and a major amount of residual alkaline earth metal, and

(3) a cathode, which contains the conductive substrate,

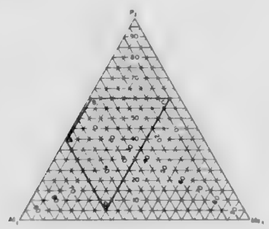
under conditions whereby said electrodepositing occurs.

4,801,364

SEPARATION AND CONVERSION PROCESSES USING METAL ALUMINOPHOSPHATES

Stephen T. Wilson, Shrub Oak, and Edith M. Flanigen, White Plains, both of N.Y., assignors to UOP, DesPlains, Ill.

Division of Ser. No. 514,334, Jul. 15, 1983. This application Nov. 4, 1985, Ser. No. 794,416
Int. Cl.⁴ C10G *11/02, 47/02*
U.S. Cl. 208—108 **11 Claims**



1. Process for catalytically converting a hydrocarbon which comprises contacting said hydrocarbon under hydrocarbon converting conditions with a crystalline metal aluminophosphate having a three-dimensional microporous framework structure of MO_2^{-2}, AlO_2^-, and PO_2^+ tetrahedral units and having an empirical chemical composition on an anhydrous basis expressed by the formula

$$mR:(M_xAL_yP_z)O_2$$

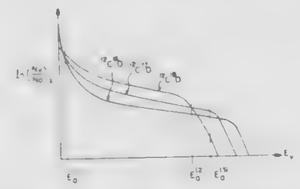
wherein "R" represents at least one organic templating agent present in the intracrystalline pore system, "m" represents the moles of "R" present per mole of $(M_xAL_yP_z)O_2$ and has a value of from zero to 0.3, "M" represents at least one metal of the group magnesium, manganese, zinc and cobalt, "x", "y" and "z" represent the mole fraction of the metal "M", aluminum and phosphorus respectively present as tetrahedral oxides, said mole fractions being such that they are within the tetragonal compositional area defined by points A, B, C and D of the ternary diagram which is FIG. 1 of the drawings, or by the tetragonal compositional area defined by points a, b, c and d of the ternary diagram which is FIG. 2 of the drawings.

4,801,365

METHOD FOR ENRICHING A MIDDLE ISOTOPE USING VIBRATION-VIBRATION PUMPING

Joseph W. Rich, East Aurora; Gregory F. Homicz, Getzville, and Richard C. Bergman, Corfu, all of N.Y., assignors to The United States of American as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 13, 1984, Ser. No. 670,523
Int. Cl.⁴ B01D *59/34*
U.S. Cl. 204—157.22 **8 Claims**



1. A method of producing isotopically enriches material by vibration-vibration excitation of gaseous molecules in which at least one embodiment is present as first, second, and middle isotopes, said middle isotope having an atomic mass greater than said first isotope and less than said second isotope, wherein said method comprises:

vibrationally exciting said molecules while cooling said molecules to maintain a low translational mode temperature such that selected vibrational quantum levels of said molecules containing said middle mass isotope are preferentially populated;

combining a diluent gas with said gaseous mixture of isotopes and adjusting the concentration of said diluent gas to cause the middle isotope to be more abundant at the activation energy level than either said first or second isotopes;

chemically reacting said vibrationally excited molecules in a reaction which preferentially occurs at the vibrational quantum level at which the vibrational population of said molecules containing said middle isotope exceeds the vibrational populations of said molecules containing said first and second isotopes, a larger fraction of said molecules containing said middle isotope reacting than said molecules containing said first and second isotopes; and

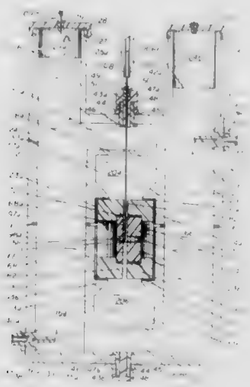
collecting the product of said reaction.

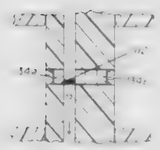
4,801,366

APPARATUSES AND METHODS FOR ANALYZING MACRO-IONS AT ELECTROPHORETIC STEADY STATE

Jamie E. Godfrey, 2559 Steele Rd., Baltimore, Md. 21209

Filed Mar. 18, 1987, Ser. No. 27,538
Int. Cl.⁴ G01N *27/26, 27/28*
U.S. Cl. 204—180.1 **10 Claims**





3. A method for optically interrogating-macro-ions established in a substantially stable concentration gradient, said method comprising the steps of:

confining a solution of macro-ions and a solvent to a selected volume adjacent to at least one semipermeable membrane;

establishing a directed electrical field substantially normal to the surface of said semipermeable membrane to at least cause a concentration gradient of said macro-ions adjacent to said semipermeable membrane in which opposing forces of diffusion and said directed electrical field define a substantially stabilized concentration gradient of said macro-ions;

passing a first beam of optical energy through said selected volume, said first beam of optical energy affected by said concentration gradient of macro-ions as a function of at least one property of said macro-ions;

passing a second beam of optical energy substantially parallel to said first beam of optical energy; and

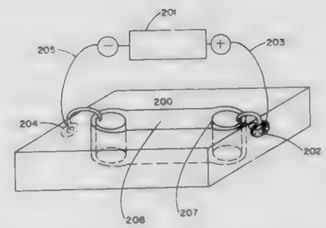
detecting said first beam of optical energy after passage through said selected volume and detecting said second beam of optical energy.

4,801,367

APPARATUS FOR ELECTRO-ETCHING

Lester E. Burgess, Swarthmore, and Joe J. Capista, Jr., Media, both of Pa., assignors to White Cap Dental Company, Inc., Springfield, Pa.

Continuation-in-part of Ser. No. 801,241, Nov. 25, 1985, abandoned, which is a division of Ser. No. 687,643, Dec. 31, 1984, Pat. No. 4,668,193. This application Aug. 6, 1987, Ser. No. 83,893
Int. Cl.⁴ C25D *17/00;* **C25F** *3/02, 3/16, 7/00*
U.S. Cl. 204—224 M **5 Claims**



1. An electro-etching, high energy phosphotising, apparatus for electro-etching and phosphotising a selected surface portion of a metallic dental crown substrate comprising:

(a) a DC power supply having a positive terminal and a negative terminal,

(b) a low volume electrolytic cell having a positive electrode and a negative electrode connected to said positive and negative terminals of said DC power supply of step (a),

(c) a phosphate containing electrolyte within said electrolytic cell and electrically connecting the positive and negative electrodes,

(d) a pair of dental crown substrate holders in said electrolytic cell, one holder located for each electrode, and

(e) a retaining means in conjunction with each holder electrically connected to the positive and negative electrodes respectively said retaining means maintaining the proper position of the dental crown substrates causing a selected portion of said dental crown substrates surface areas to be electro-etched and thereby completing the electrical circuit,

further characterized in that the electrolytic cell of step (b) has an electrolyte volume capacity and a voltage and amperage applied to the cell to raise the temperature of the electrolyte from ambient to from 170 to 200 degrees F. in from 20 to 200 seconds thereby producing electro-etching and high energy phosphotising.

4,801,368

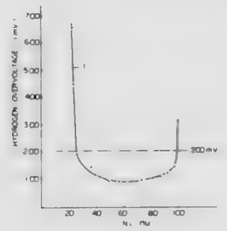
NI/SN CATHODE HAVING REDUCED HYDROGEN OVERVOLTAGE

Hiroya Yamashita; Takeshi Yamamura, both of Tokuyama, and Katsutoshi Yoshimoto, Kudamatsu, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Continuation of Ser. No. 795,114, Nov. 5, 1985, abandoned. This application Jul. 30, 1987, Ser. No. 80,164
Claims priority, application Japan, Nov. 8, 1984, 59-234155
Int. Cl.⁴ C25B *1/14*
U.S. Cl. 204—293 **19 Claims**

1. A reduced hydrogen overvoltage cathode comprising an electrically conductive electrode substrate and an active layer

of an alloy of nickel and tin on the substrate, wherein the alloy of nickel and tin adheres to the substrate in the form of a



plurality of substantially spherical crystalline nodules and the nickel content in the active layer is 25 to 99% by weight.

4,801,369

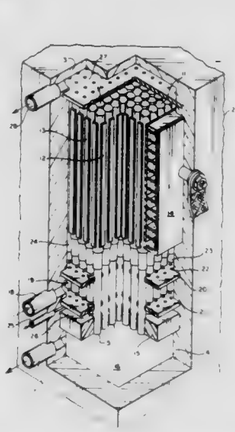
PREVENTING FLUIDS IN LEAKABLE ENCLOSURES FROM INTERMIXING

Robert Draper, Churchill Boro, and Stephen E. Veyo, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1987, Ser. No. 67,576

Int. Cl.[4] C25B *9/00, 13/02;* **E03B** *1/00;* **F16K** *23/00*

U.S. Cl. 204—258 **7 Claims**



4. A solid oxide water electrolyzer comprising:

(A) a multiplicity of electrically interconnected vertical tubes sealed at one end, comprising a solid oxide oxygen ion conducting electrolyte sandwiched between an oxygen permeable anode on the inside of said tube and an oxygen permeable cathode on the outside of said tube;

(B) a first plenum leakably sealed to the outside of said tubes into which steam can be admitted;

(C) a second plenum leakably sealed to the outside of said tubes in gaseous communication with the inside of said tubes, from which oxygen can be taken; and

(D) a third plenum inbetween said first plenum and said second plenum into which pressurized steam can be admitted.

4,801,370

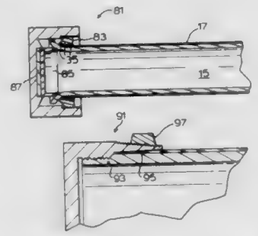
FIELD GENERATOR FOR GENERATING AN ELECTROSTATIC FIELD IN A BODY OF LIQUID

Tore C. Arnesen, Ontario, Canada, assignor to 671135 Ontario Limited, Concord, Canada

Filed Sep. 25, 1986, Ser. No. 911,345

Int. Cl.[4] B03C *5/02*

U.S. Cl. 204—302 **6 Claims**



4. An electrode adapted for use in generating a high voltage electrostatic field, said electrode having a proximal end and a distal end and comprising an electrically conductive tube adapted to extend in use within a vessel containing a liquid medium;

an insulating sleeve overlying in insulating sealing relation a major portion of the outer surface of said tube;

a mounting boss secured in sealing relation with said sleeve and enclosing the proximal end of said electrode, having attachment means for securing the electrode in sealed entered relation within said vessel;

conductor means extending toward the distal end of the electrode from within said mounting boss making electrical connection with said tube;

a protective distal end cap mounted in sealing relation over the distal end of said sleeve and said tube, wherein the distal end cap has an interior non-conducting threaded portion thereof in threaded engagement with an end portion of the tube, and wherein the distal end cap has a skirt portion extending toward the proximal end of tube and overlying the sleeve, the skirt portion including a plurality of shaped annular ridges facing the sleeve;

and a separable annular ring secured in radial compressive relation over the skirt portion of the distal end cap causing the ridges to engage the sleeve in sealing relation, the distal end cap being axially secured in protective sealing and insulating relation to said tube to substantially preclude mechanical dissassembly of the distal end cap from the tube.

4,801,371

URANYL ION SELECTIVE ELECTRODE

Shujiro Shiga; Hideo Nagata, and Kenichiro Shigeoka, all of Chiba, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Mar. 10, 1987, Ser. No. 24,115

Claims priority, application Japan, Mar. 25, 1986, 61-66943

Int. Cl.[4] G01N *27/30*

U.S. Cl. 204—418 **15 Claims**

1. A uranyl ion selective electrode having a responsive membrane, an inner reference electrode, and a uranyl ion inner solution, in which the responsive membrane is obtained by mixing a membrane material with an ion-exchanger comprising at least one uranyl ion complex, which is previously obtained by reacting a uranyl ion with from 2 to 3 mols, per mol of the uranyl ion, of a complexing agent which is a neutral phosphoric ester or a neutral phosphorous ester, a diluent which is a solvent for the ion-exchanger, and a solvent mediator which is a plasticizer for the membrane material with a weight ratio of said ion-exchanger to a mixture of said diluent and said solvent mediator being from 1/7 to 1/20 and a weight ratio of said diluent to said solvent mediator being form 3/1 to $\frac{1}{1}$.

4,801,372

OPTICALLY ANISOTROPIC PITCH

Kazuhito Tate; Hajime Yoshida, and Teruhiko Sasaki, all of Kanagawa, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1986, Ser. No. 914,426

Claims priority, application Japan, Oct. 2, 1985, 60-218079

Int. Cl.[4] C10C *3/06;* **D01F** *9/20*

U.S. Cl. 208—22 **7 Claims**

1. An optically anisotropic pitch, wherein said pitch is preared by singly using as a starting material a polymer which has a structure of an alkylbenzene and a condensed aromatic compound with two to four fused rings bonded together via a methylene group, and by subjecting said starting material to thermal modification at 350° C. to 460° C. for 0.5 to 10 hours and then removing a light fraction.

4,801,373

PROCESS OIL MANUFACTURING PROCESS

Blaine G. Corman, Crosby; Paul F. Korbach, Baytown, and Kenneth M. Webber, Houston, all of Tex., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Mar. 18, 1986, Ser. No. 840,882

Int. Cl.[4] C10G *65/04*

U.S. Cl. 208—210 **20 Claims**

1. A method for producing a naphthenic process oil having reduced sulfur, nitrogen and polynuclear aromatics contents from a naphthenic feed containing same and having an atmospheric boiling range of about 650° to about 1200° F. comprising:

A. passing the feed into a first hydrotreating stage having a hydrotreating catalyst therein, said stage maintained at a temperature of about 600° to about 750° F. and at a hydrogen partial pressure of about 400 to about 1500 psig, to convert at least a portion of the sulfur to hydrogen sulfide and the nitrogen to ammonia;

B. passing the hydrotreated feed from the first hydrotreating stage into an intermediate stripping stage wherein hydrogen sulfide, ammonia, or both is removed;

C. passing the hydrotreated feed from the intermediate stage into a second hydrotreating stage having therein a hydrotreating catalyst selected from the group consisting of nickel-molybdenum, cobalt-molybdenum, nickel-tungsten and mixtures thereof, said second hydrotreating stage maintained at a temperature lower than that of the first hydrotreating stage and at a hydrogen partial pressure ranging between about 400 and about 1,500 psig;

D. monitoring the polynuclear aromatics content, the degree of saturation, or both of the product exiting the second hydrotreating stage; and,

E. adjusting the temperature in the second hydrotreating stage to keep the polynuclear aromatics content, the degree of saturation, or both below a limit suitable for process oil.

4,801,374

APPARATUS FOR THE TREATMENT OF SEED MATERIALS

Franz Harold, Hintersdorf, Austria, assignor to Maschinenfabrik Heid Aktiengesellschaft, Stockeran, Austria

Filed Jun. 29, 1987, Ser. No. 68,011

Claims priority, application Austria, Jun. 27, 1986, 1749/86

Int. Cl.[4] B07B *4/02*

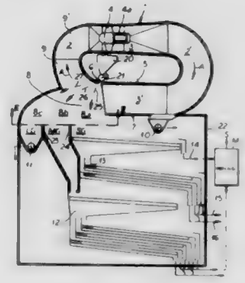
U.S. Cl. 209—135 **3 Claims**

1. An apparatus for the treament of raw seed materials, comprising:

an annular channel formed in a vertical plane from a pair of opposite curved sections bridged by opposite straight sections;

a blower for circulating air through said channel received therein, said channel having an inner wall formed with an inlet slit across a width of said channel and an outer wall formed with an opening directly opposite said inlet slit at an upstream end of one of said curved sections;

means for introducing a cascade of said raw seed materials transversely into said inlet slit from above whereby said cascade of said materials is transversely fanned out by said air circulating in said channel; and



means at said opening for collecting a heavy fraction, a mixed intermediate fraction and a light fraction from said materials, said one of said curved sections being fromed from two segments of different radii of curvature including a segment proximal to said inlet slit having larger radii of curvature than a segment distal from said inlet slit whereby the fanning out of the materials is enhanced.

4,801,375

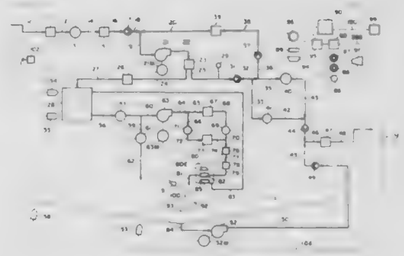
WATER VENDING SYSTEM

James M. Padilla, Covina Heights, Calif., assignor to Cano Incorporated, Meriden, Conn.

Filed Feb. 17, 1987, Ser. No. 15,693

Int. Cl.[4] B01D *13/00, 36/00;* **B67D** *5/58*

U.S. Cl. 210—100 **26 Claims**



1. A vending apparatus for dispensing water comprising:

apparatus-inlet means for introducing water into said vending apparatus;

module-pump means, having a module-pump inlet and a module-pump outlet, for pumping water to an elevated pressure;

inlet-pump connective means for connecting said apparatus-inlet means to said module-pump inlet;

a reverse osmosis module having a module inlet for introducing water into said module, a semipermeable membrane operable for separating water pumped into said module under pressure into

(i) a permeate containing a rduced amount of solids and dissolved substances, and

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(ii) a concentrate containing enriched amounts of solids and dissolved substances,

a permeate module outlet in a first part of said module for removing permeate and a concentrate module outlet in a second part of said module for removing concentrate, said second part being separated from said first part by said membrane;

pump module connective means for connecting said module-pump outlet to said module inlet;

disposal-outlet means, connected to said concentrate module outlet, for discharging concentrate from said vending apparatus to a drain;

water tank having a tank inlet and a tank outlet;

module-tank connective means for connecting said permeate module outlet to said tank inlet;

vend-pump means, having a vend-pump inlet and a vend-pump outlet, for pumping water from said water tank;

tank-pump connective means for connecting said tank outlet to said vend-pump inlet;

dispensing means, having a dispensing inlet and a dispensing outlet, for dispensing water from said vending apparatus;

pump-dispensing connective means for connecting said vend-pump outlet to said dispensing inlet;

dump valve means having a dump valve inlet and a dump valve outlet;

tank-valve connecting means for connecting said tank outlet to said valve inlet, said dump valve means for shutting off the flow of water in said tank-valve connective means;

discharge means, connected to said dump valve outlet, for discharging water from said dump valve to a drain; and

control means operable for automatically opening said dump valve means by signal from said control means to said dump valve means if there has not been at least a predetermined number of vends of water within a predetermined period of time, said control means also operable for opening said dump valve means for a length of time sufficient to discharge at least substantially all water in said water tank through said dump valve means to said discharge means and thereafter for automatically closing said dump valve means.

4,801,376

CLEANER FOR SWIMMING POOLS AND THE LIKE

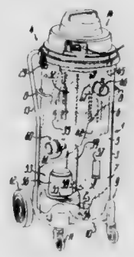
Gunter Kulitz, Ulm/Donau, Fed. Rep. of Germany, assignor to ESTA Apparatebau GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 709,386, Mar. 7, 1985, abandoned. This application May 11, 1987, Ser. No. 48,985

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410817

Int. Cl.[4] B01D *29/10*

U.S. Cl. 210—123 40 Claims



1. A mobile cleaner for a liquid receptacle, comprising:

a mobile tank (1) with a liquid; in use, defining an upper surface,

means defining a liquid flow path including a liquid suction connection (46) forming an inlet to the mobile tank (1) from the liquid receptacle, for bringing liquid to be cleaned from the receptacle to a chamber (5, 7) in the tank (1),

a liquid recycling mechanism (53) operable to forcibly expel the liquid from a lower part (7) of the tank (1) to the receptacle, and means defining an air containing space (6) being maintained in the tank (1) above said upper surface,

a suction mechanism (14) connected to the liquid suction connection (46), the suction mechanism (14) being operable to forcibly expel air from said air containing space (6),

the liquid recycling mechanism (53) having a pressure connection (60) for discharging the liquid from the tank (1), the suction mechanism (14) and the liquid recycling mechanism (53) each having a suction side (26, 54) and a pressure side (24, 59), said suction sides (26, 54) of the liquid recycling mechanism (53) and of the suction mechanism (14) being both connected to the chamber (5, 7), thereby forming a vacuum chamber (6), the suction mechanism (14) having an air suction device (17) operable to produce a suction in the tank (1) apart from the liquid flow path and apart from said liquid recycling mechanism (53),

and a wet filter (41) arranged in the liquid flow path upstream of the liquid recycling mechanism (53), said wet filter (41) forming a jacket having an inside connected to said suction side (26) of the suction mechanism (14) and to said inlet to the mobile tank formed by said liquid suction connection (46), wherein a substantial part of the wet filter is positioned above said upper surface of the liquid.

4,801,377

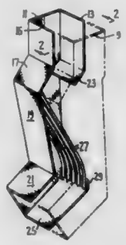
DEBRIS SEPARATOR UNIT FOR RAINGUTTER DOWNSPOUTS

Benjamin H. Bolt, 9 Crescent La., Fairfax, Calif. 94930

Continuation-in-part of Ser. No. 325,094, Nov. 25, 1981, abandoned, which is a continuation-in-part of Ser. No. 272,999, Jun. 12, 1981, abandoned. This application Nov. 7, 1983, Ser. No. 549,641

Int. Cl.[4] B01D *29/00*; **E04D** *13/08*

U.S. Cl. 210—162 2 Claims



1. A separation device for separating a down flowing stream of water containing debris, such as leaves, comprising in combination:

a. a path for water generally downwardly through the separator,

b. a grating interposed in said path, said grating comprising a plurality of roughly parallel bars, said bars being set at an acute angle of less than 30° to the vertical whereby water passing downwardly through said separator flows through said bars and debris contained in said water will be caught by said bars and separated from said downflowing stream of water and whereby said debris is caried downwardly along said grating and exteriorly of the separator through an opening in the separator, and

c. the lower terminal end of each of said bars being bent to be substantially vertical.

4,801,378

COMPACT UNIT FOR SERVICING SWIMMING POOLS

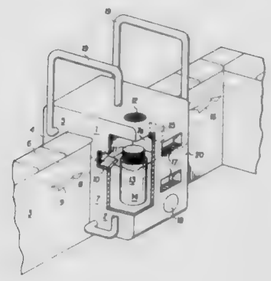
Pierre Desjoyaux, and Jean-Louis Desjoyaux, both of RN 82,, 42480 La Fouillouse, France

Filed Nov. 7, 1984, Ser. No. 669,313

Claims priority, application France, Nov. 10, 1983, 83 18248

Int. Cl.[4] E04H *3/16*

U.S. Cl. 210—169 9 Claims



1. A portable unit for servicing liquid present in a swimming pool having a wall, said wall having an external side and an internal side, said portable unit comprising:

a housing having a front section, a rear section, and an upper section extending from said front section to said rear section, said housing having the general form of an inverted U, said front section having a first side wall, a second side wall and a front wall extending therebetween, said first side wall and said second side wall extending in a direction perpendicular to said internal side of said wall of said swimming pool, said front section further being adapted to extend from said upper section downwardly along said internal side of said wall of said swimming pool such that said front section is adapted to extend beneath the surface of said liquid when said pool contains a predetermined amount of said liquid, said rear section being adapted to extend downwardly from said upper section along said external side of said wall of said swimming pool;

means for filtering said liquid from said swimming pool, said means for filtering positioned in said front section of said housing;

means for intaking liquid into said portable unit from said swimming pool, said means for intaking being positioned in said front section of said housng and comprising an inlet member positioned in said first side wall for delivering liquid to said means for filtering when said liquid in said swimming pool reaches a predetermined level;

outlet means positioned in said front section of said housing for returning filtered liquid to said swimming pool, said outlet means being positioned on said second side wall of said front section of said housing; and

means for conveying liquid from said means for filtering to said outlet means, said means for conveying having a pump member positioned in said rear section of said housing, whereby filtered liquid is directed outward from said second side wall of said front section and generally parallel to the direction of the flow of liquid into said portable unit through said means for intaking liquid and generally parallel to said wall of said swimming pool to create a circulatory flow of liquid in said swimming pool from said outlet means to said inlet member.

4,801,379

MICROFILTER FOIL AND METHOD OF PRODUCING SAME

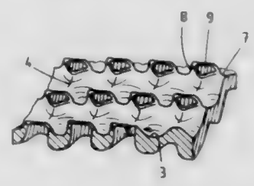
Christian Ehrsam, Winterthur, and Thomas Ruegg, Gachnang, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 15, 1987, Ser. No. 73,812

Claims priority, application Switzerland, Jul. 23, 1986, 2945/86

Int. Cl.[4] B01D *13/04, 29/04*

U.S. Cl. 210—498 16 Claims



1. A microfilter foil of inorganic material having a filtering surface on one side, a plurality of discrete hollow protuberances extending from said surface, each said protuberance having a pore opening at a crest thereof and a pore channel extending therethrough with an increasing cross-section in a direction from said crest.

12. A method of producing a microfilter foil comprising the steps of

forming a photosensitive layer of a material selected from the group consisting of paint and lacquer on a substrate;

exposing the photosensitive layer to an interference pattern produced with monochromatic and coherent light to form a relief surface having a plurality of discrete protuberances thereon;

forming a skin of inorganic material on and over said protuberances of said relief surfaces;

thereafter removing inorganic material from over said protuberances along with a portion of each protuberance to define perforations in said skin; and

removing the remainder of the photosensitive layer to obtain a foil of inorganic material with a plurality of discrete protuberances, each said protuberance having a pore opening in a crest thereof.

4,801,380

METHOD OF PRODUCING A SILICON FILM WITH MICROPORES

Donald L. Parker; Kenneth R. Hall, both of College Station, and James C. Holste, Bryan, all of Tex., assignors to The Texas A&M University System, College Station, Tex.

Filed Dec. 23, 1987, Ser. No. 136,984

Int. Cl.[4] B01D *13/02*

U.S. Cl. 210—500.21 21 Claims

1. A method comprising:

providing a membrane for separating materials in a molecular regime by,

(a) anodizing crystalline silicon to form a porous silicon film; and



(b) securing the porous silicon film on a porous substrate having pores greater in diameter than the pores in the porous film.

4,801,381

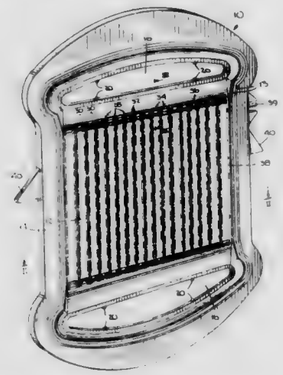
ULTRAFILTRATION APPARATUS

Lawrence J. Niesen, 3 Hooks La., Edgewater, N.J. 07020

Filed Jan. 16, 1986, Ser. No. 874,549

Int. Cl.⁴ B01C *13/00*

U.S. Cl. 210—321.84 **24 Claims**



1. Apparatus for separating a base liquid into two fractions based upon the molecular weight of the constituents thereof, comprising:

a plurality of semi-permeable membrane means for separating the liquid into the fractions;

a plurality of support panel means for carrying said membrane means, each support means generally having a flat rectangular form and having two support faces adapted for receiving said membrane means on each generally flat face thereof, said support panels having first and second apertures formed in the periphery of said support panel means, said support panel means being disposed in a stack, with said apertures of each said panel in alignment, thereby forming first and second duct means within said stack; a plurality of base liquid flow channel means of substantially equal length and mutually parallel;

permeate flow channel means, underlyng said base liquid flow channel means and separated therefrom by said membrane means;

ring means, disposed in each said first and second aperture of said support panel means, for effecting a liquid-tight seal for said first and second duct means and for directing liquid flow toward said permeate flow channels; and

turbulence reduction flange means, disposed in said stack at selected intervals, including means for conducting the fluid to the opposite side of said stack of said support panel means, whereby said stack is subdivided into a plurality of modules, with parallel flow across said membrane members of each said module and series flow between said modules, said parallel flow being in the same direction across each of said membrane members.

4,801,382

FILTER MEANS WITH A SEGMENTAL CONSTRUCTION

Werner Kemmelmeyer, Veilchenstrasse 5, Thansau, Fed. Rep. of Germany (8201)

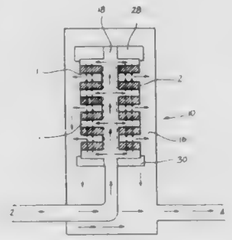
PCT No. PCT/DE85/00137, § 371 Date Jul. 28, 1986, § 102(e) Date Jul. 28, 1986, PCT Pub. No. WO86/04254, PCT Pub. Date Jul. 31, 1986

PCT Filed May 2, 1985, Ser. No. 897,340

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1985, 8502177

Int. Cl.⁴ B01D *29/16, 29/26*

U.S. Cl. 210—323.1 **20 Claims**



1. A filter for filtering gases, liquids and similar media, comprising a segmental construction formed by: at least two circular filter elements (1) against which a flow can take place from the inside and outside and at least one disk-shaped filter materila (2); each said filter element comprising an inner ring, an outer ring, at least one member connecting said rings, and a fluid port in one of said rings; each said disk-shaped filter material being positioned intermediate two adjacent ones of said filter elements and being supported by said two adjacent filter elements; said filter material having substantially its entire edge area in sealing cooperation with the adjacent filter elements (1); and said filter material and said adjacent filter elements defining a flow path for a medium to be filtered in which said medium enters through said fluid port in the inner ring or the outer ring of one of said adjacent filter elements, passes through said filter material between said adjacent filter elements, and exits through said fluid port in the inner ring or the outer ring of a second one of said adjacent filter elements.

4,801,383

SELECTIVE TWIST FILTRATION ROVING

Michael A. Hoffmann, Manchester, Md., and Robert J. Schmitt, Felton, Pa., assignors to MEMTEC North America Corp., Timonium, Md.

Filed Nov. 19, 1984, Ser. No. 672,483

Int. Cl.⁴ B01D *39/08*

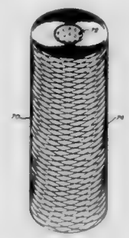
U.S. Cl. 210—494.1 **11 Claims**

1. A filter comprising

rigid pervious core means through which fluid to be filtered can flow,

filter media means for filtering the fluid, the filter media means covering a portion of said core means,

the filter media means comprising filtration roving consisting of a twisted unitary strand which, in crossection,



exhibits portions more tightly twisted than the remainder of the roving.

4,801,384

PROCESS FOR THE REMOVAL OF ORGANIC CONTAMINANTS FROM SOILS AND SEDIMENTA

Werner Steiner, 216 Daniel Low Ter., New York, N.Y. 10301

Filed May 26, 1987, Ser. No. 54,340

Int. Cl.⁴ B01D *11/04*

U.S. Cl. 210—634 **22 Claims**



1. A process for the decontamination of materials including solids contaminated with organic contaminants, the process comprising the steps of:

(a) separating the material into a solid fraction;

(b) leaching the solid fraction with a liquid consisting essentially of a hydrophilic leaching solvent and up to 30% water to obtain contaminated leaching solvent and a mixture of decontaminated solid fraction and leaching solvent, and wherein the hydrophilic solvent is completely miscible in water and has a boiling point in the range of 40° C. to 95° C. at atmospheric pressure; and

(c) stripping contaminants from the contaminated leaching solvent with a hydrophobic stripping solvent and water to concentrate the contaminants, and wherein the hydrophobic solvent has a density of less than 0.9 g/ml, and the hydrophobic solvent is such that a partition coefficient of the contaminants between the hydrophobic and the hydrophilic solvent is equal to or greater than 3 for the entire range of the ratio of water to hydrophilic solvent.

4,801,385

SYSTEM FOR EXCHANGING A SUBSTANCE BETWEEN FLUIDS

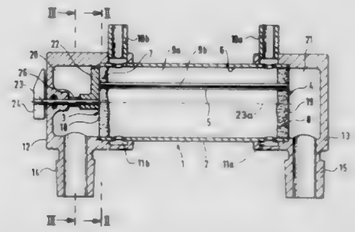
Jürgen Sachtler, Ratekau, and Wolf-Dieter Schmidt, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed May 18, 1988, Ser. No. 195,305

Claims priority, application Fed. Rep. of Germany, May 19, 1987, 3716653

Int. Cl.⁴ B01D *13/01*

U.S. Cl. 210—644 **2 Claims**



1. A method of operating an exchange system for exchanging a substance between fluids comprising: providing an exchange system including a housing; a bundle of hollow fibers mounted in said housing; said housing and the outer sides of said hollow fibers conjointly defining a first flow space; said hollow fibers having respective interiors conjointly defining a second flow space; said hollow fibers being grouped into a first set of fibers dimensioned and configured to have a first exchange characteristic value and a second set of fibers dimensioned and configured to have a second exchange characteristic value with the exchange between said flow spaces being dependent upon said exchange characteristic values; and, enabling respective independent variation of substance mass exchange and energy transfer by;

passing a first fluid through said first flow space and a second fluid through said second flow space; and,

dividing said second fluid into two component flows for passing through respective ones of said first and second sets of fibers.

4,801,386

PROCESS OF USING A POROUS WATER-TREATING MATERIAL

Shuichi Sugimori; Toshihiko Kawamura, both of Hiroshima; Tadashi Matsuda, Yokohama; Shintaro Nakano, deceased, late of Tokyo (by Shizuyo Nakano, heir, Hideki Nakano, Masahiro Nakano, Yoshiyuki Nakano, heirs); Semito Saiki, Hiroshima, and Hideaki Habara, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

Division of Ser. No. 51,235, May 1, 1987, which is a continuation of Ser. No. 702,637, Feb. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 563,531, Dec. 20, 1983, abandoned, which is a continuation of Ser. No. 368,249, Apr. 15, 1982, abandoned. This application Apr. 13, 1988, Ser. No. 181,168

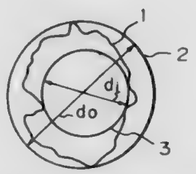
Claims priority, application Japan, Jun. 19, 1981, 59-95743; Feb. 22, 1984, 59-30191; Feb. 23, 1984, 59-31480; Feb. 23, 1984, 59-31481; Feb. 23, 1984, 59-31482; Feb. 23, 1984, 59-31483

Int. Cl.⁴ C02F *1/28, 1/40*

U.S. Cl. 210—680 **12 Claims**

1. A method for absorbing colloidal or fine particles of oily substances dispersed or emulsified in water comprising passing water containing said colloidal or fine particles of oily substances dispersed or emulsified therein, through a porous water-treating material in the form of pellets comprising cut porous strands each comprising a resinous matrix material consisting essentially of at least one member selected from the

group consisting of organic thermoplastic polymer material and mixtures of at least one organic thermoplastic polymer material with at least one inorganic particulate material in an amount of from 20% to 75% based on the weight of the resinous matrix material, and each having a number of pores formed therein and connectd to each other and an irregular ruggedness being to an extent such that, in any cross-sectional profile of each cut porous strand, the ratio of the diameter of a circumscribed circle to that of an inscribed circle in the cross-sectional profile is in the range from 1.10:1 to 5.00:1, that, in any



side projection profile of each cut porous strand observed in a radius direction thereof, the ratio of the distance between a pair of circumscribed lines to that between a pair of inscribed lines in the side projection profile, the circumscribed and inscribed lines being parallel to the longitudinal axis of the cut porous strand, is in the range of from 1.10:1 to 3.00:1, and that in the side projection profile of each cut porous strand, an average D of the distance Do between the circumscribed lines and the distance Di between the inscribed lines is in a range of from 0.5 to 5.0 mm and the length of the profile is in a range of from 0.3 times to 3.0 times the average D.

4,801,387

WATER TREATMENT POLYMERS AND METHODS OF USE THEREOF

Fu Chen, Newtown, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation of Ser. No. 861,785, May 9, 1986, Pat. No. 4,659,482, which is a continuation-in-part of Ser. No. 545,563, Oct. 26, 1983, abandoned. This application Apr. 13, 1987, Ser. No. 37,755

The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.

Int. Cl.[4] C02F *5/14*

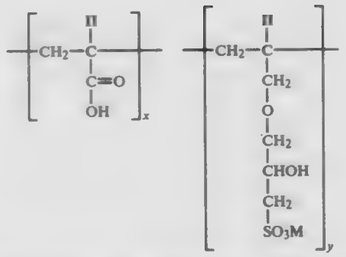
U.S. Cl. 210—699 **6 Claims**

1. A method for simultaneously inhibiting corrosion and scale formation including calcium carbonate in a cooling water system, comprising

(a) maintaining the pH of said cooling water system within the pH range of about 7.5 to about 9.0;

(b) maintaining the cooling water system in a state of supersaturation with respect to calcium carbonate;

(c) adding from about 0.5–50 ppm of a water soluble acylic acid/allyhydroxylsulfonate ether copolymer or water soluble salt form thereof to said cooling water system, based upon one million parts of water in said system; said copolymer having the formula



wherein M is a water soluble cation and the molar ratio x:y being from about 10:1 to 1:5;

(d) adding to said cooling water system from about 0.2–50 ppm of water soluble phosphonate compound to cooling water; and

(e) adding to said cooling water system from about 0.1–15 ppm of a zinc compound adapted to liberate Zn^{2+} ions in water.

4,801,388

MODIFIED ACRYLAMIDE POLYMERS USED AS SCALE INHIBITORS

Dodd W. Fong; John E. Hoots, and Donald A. Johnson, all of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 842,568, Mar. 21, 1986, abandoned. This application Nov. 25, 1986, Ser. No. 934,598

Int. Cl.[4] C02F *5/10*

U.S. Cl. 210—701 **9 Claims**

1. A method of controlling scale deposits by adding to waters having a tendency to form scale, a scale-inhibitorily effective amount of a hydrocarbon polymer wherein said hydrocarbon polymer is a copolymer of from about 25 to about 95 mole % (meth)acrylic acid and from about 5 to about 75 mole % sulfoalkyl(meth)acrylamide having a molecular weight of about 5,000 to 80,000 and wherein said sulfoalkyl(meth)acrylamide includes a moiety having the general structural formula:



wherein R_1 is hydrogen or an alkyl and R is a hydrocarbon group containing from one to three carbon atoms.

4,801,389

HIGH TEMPERATURE GUAR-BASED FRACTURING FLUID

Harold D. Brannon, Glenpool; Richard M. Hodge, Broken Arrow, both of Okla., and Kevin W. England, Highlands Ranch, Colo., assignors to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Aug. 3, 1987, Ser. No. 80,738

Int. Cl.[4] E21B *43/26*

U.S. Cl. 252—8.551 **20 Claims**

1. An aqueous fracturing fluid having a pH from about 8 to about 10, consisting essentially of:

guar gum in an amount from about 0.2 to about 1.25 weight percent to produce a fracturing fluid,

at least one zirconium cross-linking agent in an amount from about 5 ppm to about 50 ppm to cross-link said guar gum, and

a bicarbonate salt in an amount from about 250 ppm to about 3000 ppm. and sufficient to provide a relatively low viscosity at ambient temperature and a relatively high viscosity at elevated temperatures.

4,801,390

LUBRICATING COMPOSITIONS

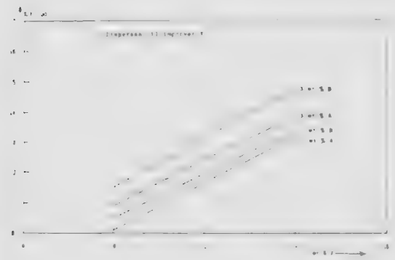
Robert Robson, Oxford, United Kingdom, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 28, 1985, Ser. No. 738,694

Claims priority, application United Kingdom, Jun. 5, 1984, 8414299

Int. Cl.[4] C10M *125/26*

U.S. Cl. 252—25 **5 Claims**



1. A lubricating composition comprising a lubricating oil, from about 1 to about 10%, by weight, based on the composition weight, of at least one nitrogen containing borated ashless dispersant which contains at least 0.5% by weight boron based on the weight of said borated dispersant, from about 5 to about 20%, by weight, based on the composition weight, of at least one dispersant viscosity improver, and boron in an amount of at least 0.02 wt. % of the lubricating composition.

4,801,391

METHOD OF IMPROVING THE ANTI-WEAR PROPERTIES OF A LUBE OIL

Irwin L. Goldblatt, Edison, and Harold Shaub, Berkeley Heights, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 811,999, Dec. 23, 1985, Pat. No. 4,707,284. This application Nov. 16, 1987, Ser. No. 122,050

The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.

Int. Cl.[4] C10M *129/00*

U.S. Cl. 252—32.7 E **4 Claims**

1. A method for improving the anti-wear properties of a lubricating oil which comprises adding to said oil

A. from about 0.1 to about 1.5 wt. % diphenyl carbonate; and

B. from about 0.5 to about 2.0 wt. % of zinc dialkyldithiophosphate.

4,801,392

MAGNETIC RECORDING COMPOSITIONS CONTAINING IONIC DYE COMPOUNDS AS INITIATORS

Paul C. Adair, and Todd M. Hess, both of Dayton, Ohio assignors to The Mead Corporation Dayton, Ohio

Filed Jul. 2, 1987, Ser. No. 69,354

Int. Cl.[4] C04B *35/26*; H01F *1/26*

U.S. Cl. 252—62.54 **11 Claims**

1. A magnetic recording composition comprising magnetic particles and a photohardenable composition, said photohardenable composition comprising a free radical addition polymerizable or crosslinkable compound and an ionic dye-reactive counter ion compound, said ionic dye-reactive counter ion compound being a stable non-transient compound capable of absorbing actinic radiation and producing free radicals which initiate free radical polymerization or crosslinking of said polymerizable or crosslinkable compound.

4,801,393

HIGH-TEMPERATURE NON-OXIDIZING WATER VAPOR ABSORBENT

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Jun. 19, 1987, Ser. No. 64,809

Int. Cl.[4] C09K *5/04*

U.S. Cl. 252—69 **10 Claims**

1. A process for transferring heat from low to high temperature comprising evaporating water at said low temperature, absorbing the resulting water vapor into an aqueous solution at said high temperature, and providing as said aqueous solution a composition of matter comprised of at least 2 weight percent H_2O, KSCN and NaSCN.

4,801,394

HEAT TRANSFER PROMOTERS AND METHOD OF USING THE SAME

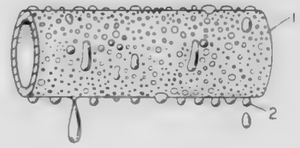
Yoshiro Nakamura, 2-8-51; Kunio Mori, 4-17-20, both of Takamatsu, Morioka-shi, Iwate-ken; Minoru Okumura, Hiratsuka; Yoshio Mochida, Ebina, and Matsuo Miyazaki, Yokohama, all of Japan, assignors to Yoshiro Nakamura; Kunio Mori, both of Morioka and Kabushiki Kaisha Toshiba, Kawasaki, all of, Japan

Continuation of Ser. No. 871,916, Jun. 9, 1986, abandoned, which is a division of Ser. No. 662,027, Oct. 18, 1984, Pat. No. 4,601,933. This application Nov. 23, 1987, Ser. No. 124,363

Claims priority, application Japan, Oct. 19, 1983, 58-195808

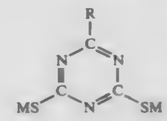
Int. Cl.[4] C09K *5/00*

U.S. Cl. 252—75 **16 Claims**



1. A composition of matter for application to a metal surface in a vapor-liquid condensation system to promote the heat transfer properties of the surface, comprising:

(a) an active ingredient comprised of a triazine-dithiol derivative represented by the formula



wherein R represents —NHR′ or —NR′$_2$; R′ is a hydrocarbon group containing from 4 to 18 carbon atoms; M is selected from hydrogen, alkali metal, and alkaline earth metal; and at least one of the M groups is an alkali metal or an alkaline earth metal and

(i) when R is —NHR′, R′ is a hydrocarbon group containing at least four carbon atoms,

(ii) when R is —NR′$_2$, R′ is a hydrocarbon group containing at least eight carbon atoms,

(iii) when R′ is an aromatic hydrocarbon it contains at least 7 carbon atoms; and

(b) a an aqueous solvent for said active ingredient.

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4,801,395

THIXOTROPIC CLAY AQUEOUS SUSPENSIONS CONTAINING LONG CHAIN SATURATED FATTY ACID STABILIZERS

Georges Chazard, Herstal; Julien Drapier, Seraing; Chantal Gallant, Cheratte, and Daniel van De Gaer, Flemalle, all of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 7, 1986, Ser. No. 894,155
Int. Cl.⁴ C11D *3/20, 3/395, 17/00*
U.S. Cl. 252—99 **23 Claims**

1. An aqueous thixotropic automatic dishwasher composition comprising approximately by weight:
(a) 5 to 35% alkali metal tripolyphosphate;
(b) 2.5 to 20% sodium silicate;
(c) 0 to 9% alkali metal carbonate;
(d) 0.1 to 5% chlorine bleach stable, water-dispersible organic non-soap detergent active material;
(e) 0 to 5% chlorine bleach stable foam depressant;
(f) chlorine bleach compound in an amount to provide about 0.2 to 4% of available chlorine;
(g) thixotropic clay thickener in an amount of about 0.1 to 3% sufficient to provide the composition with a thixotropy index of about 2 to 10;
(h) 0 to 8% of sodium hydroxide;
(i) a long chain fatty acid having from 8 to 24 carbon atoms as a physical stabilizer in an amount of about 0.02 to 0.4% effective to increase the apparent viscosity and to increase the physical stability of the composition; and
(j) balance water.

4,801,396

DISHWASHER DETERGENT PASTE

Theodor Altenschöpfer, Düsseldorf; Klaus Schumann, Erkrath, and Peter Christophliemk, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 653,366, Apr. 15, 1986, abandoned, which is a continuation of Ser. No. 357,471, Mar. 12, 1982, abandoned. This application Jul. 20, 1987, Ser. No. 75,284
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138425
Int. Cl.⁴ C11D *7/14, 7/56*
U.S. Cl. 252—99 **12 Claims**

1. In a process for washing dishes in an automatic dishwashing machine comprising subjecting dirty dishes and utensils to the action of a wash forcefully projecting an aqueous solution containing a detergent composition on the surface of said dirty dishes and utensils, said detergent composition being released into said wash only, the improvement comprising employing as said detergent composition an aqueous, thixotropic dishwasher detergent composition which at room temperature is a paste having a viscosity of at least about 30 Pa.s. as measured at 20° C. with a rotational viscometer at 5 spindle revolutions per minute, is completely dissolved or suspended within about 2 to about 5 minutes after being released into said wash, and which consists essentially of:
(a) from about 3 to 40 percent by weight of sodium or potassium tripolyphosphate; from about 5 to 30 percent by weight of sodium or potassium silicate containing a mixture of metasilicate having a $Me_2O:SiO_2$ molar ratio of about 1:1 and disilicate or waterglass having a $Me_2O:SiO_2$ molar ratio of from about 1:2 to 1:3.5 in a weight ratio of from about 1:1 to 1:5 wherein Me is sodium or potassium; from 0 to about 25 percent by weight of powdered, sodium aluminosilicate that binds calcium salts; and from 0 to about 20 percent by weight of sodium or potassium carbonate or hydroxide;
(b) an alkali metal hypchlorite in an amount sufficient to provide an active chlorine content of the composition of from about 0.1 to 3.0 percent by weight; and
(c) from about 1 to 10 percent by weight of a swellable silicate that is resistant to alkalies and active chlorine and is capable of forming a thixotropic gel in water, said silicate consisting essentially of a hectorite selected from a trioctadhedral foliated magnesium silicate having the general formula

$$[(Li_xMg_{6-x})Si_8O_{20}(OH)_{4-y}F_y]^{x(-)}(x/n)M^{n(+)}$$

wherein x represents a number of from 0 to about 6, y represents a number of from 0 to about 4, n represents an integer of from 1 to 3, and M represents a cation, all weights being based on the total weight of the detergent composition.

4,801,397

PEELABLE SOLVENT-BASED COATING REMOVER

Kenneth J. Flanagan, Arlington; John B. Reed, and A. Denise Lott, both of Memphis, all of Tenn., assignors to W.M. Barr & Co., Inc., Memphis, Tenn.

Continuation of Ser. No. 913,848, Sep. 30, 1986, abandoned. This application Oct. 1, 1987, Ser. No. 104,549
Int. Cl.⁴ C11D *7/52*
U.S. Cl. 252—154 **28 Claims**

1. A peelable solvent-based coating remover for removing a coating from a coated substrate comprising:
a solvent-based coating remover containing (a) a binder; (b) a solvent; and (c) fibers in an amount from about 1.5% to 2.5% by weight of said fiber-containing solvent-based coating remover.

4,801,398

METHOD OF PREPARING FLUORESCENT MATERIAL OF SMALL PARTICLE SIZE

Katsutoshi Ohno, Tokyo; Abe, and Yuichi Kimizuka, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 925,154, Oct. 31, 1986, abandoned. This application Jun. 1, 1988, Ser. No. 201,369
Claims priority, application Japan, Oct. 31, 1985, 60-244561
Int. Cl.⁴ C09K *11/84*
U.S. Cl. 252—301.4 R **4 Claims**



1. A method of preparing a fluorescent material of small particle size which comprises:
synthesizing a fluorescent material consisting of $Y_3Al_5O_{12}$:Tb, Y_2O_2S:Eu or Y_2O_3:Eu in a single phase;
pulverizing the thus prepared fluorescent material whereby its luminescence is decreased,
sieving the pulverized material so that particles of less than one micron particle size constitute less than 5% by volume of the sieved material, forming a mixture of the sieved fluorescent material and a flux, the mixture consisting of $Y_3Al_5O_{12}$:Tb and BaF_2 flux, Y_2O_2lS:Eu and Na_2CO_3-$(NH_4)_2HPO_4$-S flux or Y_2O_3:Eu and $BaCl_2$. $2H_2O$ flux and heat treating said mixture at a temperature according to the following schedule:
$Y_3Al_5O_{12}$:Tb and BaF_2 flux at 1400° to 1700° C., Y_2O_2S-:Eu and Na_2CO_3-$(NH_4)_2HPO_4$-S flux at 900° to 1000° C., and
Y_2O_3:Eu and $BaCl_2$,$2H_2O$ flux at 1400° C.
the heat treatment in each instance being sufficient so that the fluorescent material recovers substantially all the luminescence lost as a result of pulverizing.

4,801,399

INORGANIC SALTS AS PEPTIZING AGENTS IN THE PREPARATION OF METAL OXIDE SOL-GEL COMPOSITIONS

David E. Clark; William J. Dalzell, Jr., and Brenda L. Adams, all of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed Feb. 25, 1986, Ser. No. 841,087
Int. Cl.⁴ B01J *13/00*
U.S. Cl. 252—315.01 **9 Claims**

1. A method of preparing a metal oxide sol, said method comprising the steps of:
hydrolyzing and peptizing a metal alkoxide in the presence of an excess of aqueous medium and in the presence of a metal nitrate used as a peptizing agent, said metal alkoxide, said medium and said nitrate being present in a proportion, and said hydrolysis and said peptizing being conducted at a temperature and for a time effective to obtain a sol whose colloids have a particle size of up to and including 10 microns.
7. A method for obtaining a metal oxide sol-gel, comprising:
(a) the method of claim 1 to obtain a sol; and
(b) partially reducing the volume of said aqueous medium of said sol to obtain a sol-gel.

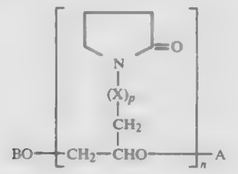
4,801,400

EPOXY PYRROLIDONE BASED NON-IONIC SURFACTANTS

Robert B. Login, Oakland; Mohamed M. Hashem, Wayne, and David J. Tracy, Lincoln Park, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Mar. 2, 1987, Ser. No. 21,053
Int. Cl.⁴ C07D *403/12, 403/14;* **B01F** *17/22, 17/32*
U.S. Cl. 252—357 **10 Claims**

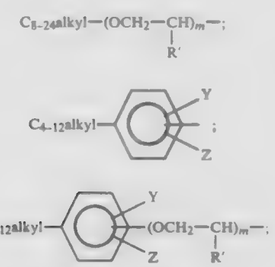
1. A compound having the formula:



wherein
X is

$$-(CH_2)_r- \text{ or } -(CH_2)_r-O-;$$

B is C_{8-24} alkyl-



Y and Z are each H or C_{1-12} alkyl;
m is an integer having a value of 1 to 100;
n is an integer having a value of 2 to 50;
p is an integer having a value of 0 or 1;
s is an integer having a value of 1 or 2;
R' is H of CH_3 and A is H or

$$-(CH_2-CHO)_nH.$$
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petroleum coke addition agent to ash in the fuel feedstock present in the partial oxidation reaction zone in (6) is in the range of about 0.5–10.0 to 1.0; where in said coking zone the petroleum coke addition agent falls by gravity into the swirling liquid hydrcarbonaceous fuel feedstock rising from below and a portion of said petroleum coke addition agent reacts with a portion of the sulfur in said fuel feedstock to produce solid oxysulfide compounds and sulfide compounds and said reacted and unreacted portions of the petroluem coke addition agent are well dispersed in the heavy liquid hydrocarbonaceous fuel in said coking zone during the filling period and a portion of the holding period; (3) coking aid heavy liquid hydrocarbonaceous fuel feed from (2) in said coking zone to produce petroleum coke having said nickel and vanadium-containing ash and having dispersed therein said solid oxy- sulfide compounds, sulfide compounds, and unreacted petroleum coke addition agent; (4) removing solid petroleum coke and removing gaseous materials comprising hydrocarbon gases, H_2O, and a reduced amount of H_2S and SO_2 from said coking zone; (5) grinding said petroleum coke from (4) to a particle size in the range of about 44 microns to 850 microns and (6) introducing said ground petroleum coke as the fuel feed into a refractory lined free-flow unobstructed down-flowing partial oxidation reaction zone where said petroleum coke is reacted with a free-oxygen containing gas at a temperature in the range of about 2200° F. to about 3000° F. and a pressure in the range of about 5 to 250 atmospheres, a H_2O fuel weight ratio in the range of about 0.1 to 5.0, an atmoic ratio (OC) in the range of about 0.6 to 1.6, in the presence of a temperature moderator and in a reducing atmosphere to produce a hot raw effluent gas stream comprising H_2+CO and molten slag comprising vanadium, nickel, and other constituents of the ash in said fuel which are fluxed or washed by said petroleum coke addition agent and said oxy-sulfide and sulfide reaction products thereof, and a reduced amount H_2S and COS, if any in comparison with the amount of H_2S and COS that would be produced without the addition in (2) of said petroleum coke addition agent.

22. A process for the production of gaseous mixtures comprising H_2+CO by the partial oxidation of a feedstock comprising petroleum coke having a nickel and vanadium-containing ash; and said fuel feedstock includes a minimum of 0.5 wt. % of sulfur; and said ash includes a minimum of 5.0 wt. % vanadium, a minimum of 2.0 wt. % of nickel and up to about 50,000 parts per million (ppm) of silicon; said process comprising:

(1) introducing a heavy liquid hydrocarbonaceous fuel feedstock having a nickel and vanadium-containing ash and containing sulfur at a temperature in the range of about 800° to 895° F. upwardly into the bottom of a delayed coking zone; (2) simultaneously, introducing an iron-containing addition agent having a particle size in the range of about 3000 microns to 38 microns, or below, into the upper section of said coking zone above the upper level of the material in said coking zone being converted into petroleum coke, wherein the weight ratio of said iron-containing addition agent to ash in the fuel feedstock present in the partial oxidation reaction zone in (6) is in the range of about 0.5–10.0 to 1.0; where in said coking zone the iron-containing addition agent falls by gravity into the swirling liquid hydrocarbonaceous fuel feedstock rising from below and a portion of said iron-containing addition agent reacts with a portion of the sulfur in said fuel feestock to produce iron oxy-sulfide and iron and nickel sulfide compounds and said reacted and unreacted portions of the iron-containing addition agent are well dispersed in the heavy liquid hydrocarbonaceous fuel in said coking zone during the filling period and a portion of the holding period, wherein said iron-containing addition agent comprises an inorganic or organic iron compound or elemental iron with or without a calcium compound; and wherein the weight ratio or iron to vanadium in the reaction zone is at least 10; (3) coking said heavy liquid hydrocarbonaceous fuel feed from (2) in said coking zone to produce petroleum coke having a nickel and vanadium-containing ash and having dispersed therein said iron oxy-sulfide compounds, sulfide compounds or iron and nickel, and unreacted petroleum coke addition agent; (4) removing solid petroleum coke and removinq gaseous materials comprising hydrocarbon gases, H_2O, and a reduced amount of H_2S and SO_2 from said coking zone; (5) grinding said petroleum coke from (4) to a particle size in the range of about 44 microns to 850 microns; and (6) introducing said ground petroleum coke as the fuel feed into a refractory lined free-flow unobstructed down-flowing partial oxidation reaction zone where said petroleum coke is reacted with a free-oxygen containing gas at a temperature in the range of about 2200° F. to about 3000° F. and a pressure in the range of about 5 to 250 atmospheres, a H_2O/fuel weight ratio in the range of about 0.1 to 5.1 an atomic ratio (O/C) in the range of about 0.6 to 1.6, in the presence of a temperature moderator and in a reducing atmosphere to produce a hot raw effluent gas stream comprising H_2+CO and a reduced amount H_2S and COS, if any in comparison with the amount of H_2S and COS that would be produced without said iron-containing addition agent; and molten slag comprising vanadium, nickel, and other constituents of the ash in said fuel which are fluxed or washed by said iron-containing addition agent and the oxy-sulfide and sulfide reaction products thereof.

4,801,403

AQUEOUS MINERAL DISPERSIONS

Cheng-Fa Lu, Newark, and Lawrence L. Nelson, Wilmington, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jul. 17, 1987, Ser. No. 74,731
Int. Cl.[4] C04B *20/06*
U.S. Cl. 252—378 R 16 Claims

1. A one step process for the production of an aqueous dispersion of vermiculite ore particles comprising mechanically delaminating vermiculite ore by subjecting an aqueous slurry of the ore to a shearing action until a dispersion containing vermiculite lamellae having dimensions less than 200 microns is produced.

4,801,404

BORIC ACID COMPOSITIONS

Wolf Dietrich, Ladenburg; Volker Beez, Mannheim, and Eberhard Giebeler, Schriesheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke AG, Fed. Rep. of Germany

Filed Sep. 11, 1987, Ser. No. 96,399
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1986, 3633366
Int. Cl.[4] C09K *21/00;* C09D *5/16, 5/18;* C01B *15/12*
U.S. Cl. 252—607 8 Claims

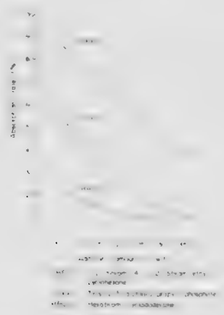
1. A suspension consisting essentially of a concentrated dispersed suspension of fine particles of boric acid and a soluble borate salt in an aqueous medium formed by adding a small amount of an aqueous solution of a soluble base to a suspension of boric acid in water with a molar ratio of boric acid to borate being 1.0:0.01 to 1.0:0.2 and the weight ratio of boric acid to water being 1:1 to 1:5 to recrystallize the boric acid as fine particles.

4,801,405

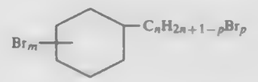
COMPOSITION FOR IMPARTING FIRE-RETARDANT PROPERTIES TO POLYESTER FIBERS

Mamoru Yamada, 1-2-8-1103 Tsurumi, Tsurumi-ku, Osaka-shi, Osaka-fu, and Takeo Tanaka, 14-14 Kamisatotorimi-cho, Oharano, Nishikyo-ku, Kyoto-shi, Kyoto-fu, both of Japan

Filed Apr. 8, 1987, Ser. No. 35,800
Claims priority, application Japan, Apr. 11, 1986, 61-82221
Int. Cl.[4] C09K *21/00;* C09D *5/16, 5/18;* C08K *5/02*
U.S. Cl. 252—609 7 Claims



1. A composition for imparting fire-retardant properties to polyester fibers comprising a brominated cyclohexane of the formula



wherein m is an integer of 1–3, n is an integer of 1–4, and p is an integer of 1–3; and at least one surface active agent.

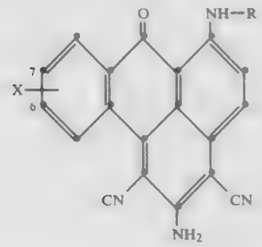
4,801,406

DICYANOBENZANTHRONE COMPOUNDS

Hansrudolf Schwander, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 9, 1987, Ser. No. 23,593
Claims priority, application Switzerland, Mar. 18, 1986, 1088/86
Int. Cl.[4] C07C *50/22*
U.S. Cl. 260—352 14 Claims

1. A compound of the formula



(1)

wherein

R is hydrogen or C_1–C_8alkyl which is unsubstituted or substituted by OH, C_1–C_4alkoxy or C_1–C_4alkoxy which is substituted by OH, or by phenyl, phenoxy or phenylcarbamoyl, the phenyl moiety in each of which may be substituted by C_1–C_4alkyl, C_1–C_4alkoxy or phenoxy, or R is C_5–C_8cycloalkyl which is unsubstituted or substituted by C_1–C_4alkyl, or R is a naphthyl or phenyl radical which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, fluorine, chlorine, bromine, nitro, C_1–C_4alkylcarbonylamino or C_1–C_4alkoxycarbonyl, and

X is hydrogen or a halogen which is in 6- or 7-position.

4,801,407

PROCESS FOR THE PRODUCTION OF A PEROXY COMPOUND

Geoffrey J. Hignett, Lymm, and Iain S. MacKirdy, Warrington, both of England, assignors to Interox Chemicals Limited, London, England

Filed May 25, 1982, Ser. No. 381,753
Claims priority, application United Kingdom, Jun. 10, 1981, 8117841
Int. Cl.[4] C07C *178/00*
U.S. Cl. 260—502 R 19 Claims

1. In a process for the production of a solid hydrated magnesium salt of an aromatic or conjugated aliphatic compound containing peroxycarboxylic acid group and a carboxylate group, said process comprising reacting an anhydride, a magnesium base, water and hydrogen peroxide to form said magnesium salt, the improvement wherein:

said reaction is carried out in an aqueous phase reaction medium;

said anhydride is selected from those which form a compound selected from classes 1 and 3 set forth hereinafter:

Class (1)-aromatic carbocyclic compound substituted around the aromatic nucleus by a carboxylate group and a peroxycarboxylic acid group both groups being derivable from the corresponding aromatic carbocyclic anhydride by reaction with hydrogen peroxide, said aromatic carboxylic compound optionally being further substituted by at least one of the groups selected from alkyl, carboxylate, sulphonate, nitro, chloro and bromo groups and

Class (3)-olefinically unsaturated aliphatic percarboxylic acid in which the carbonyl group of the peroxycarboxylic acid substituent is conjugated with the carbonyl group of a carboxylate substituent via olefinic unsaturation which carboxylate and peroxycarboxylic acid substituents are derivable from the corresponding anhydride by reaction with hydrogen peroxide; and,

the content of free iron in said aqueous phase reaction medium is sufficiently low that solid hydrated magnesium salt of the carboxylate group precipitates out.

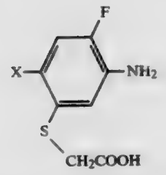
4,801,408

2-SUBSTITUTED PHENYL-4,5,6,7-TETRAHYDRO-2H-ISOINDOLE-1,3-DIONES, AND THEIR PRODUCTION AND USE

Eiki Nagano, Nishinomiya; Ryo Yoshida, Kawanishi; Hiroshi Matsumoto, Kakogawa, all of Japan; Shunichi Hashimoto, Fresno, Calif., and Katsuzo Kamoshita, Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

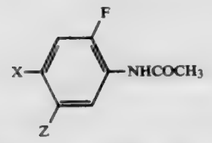
Division of Ser. No. 744,943, Jun. 17, 1985, Pat. No. 4,709,049, which is a continuation-in-part of Ser. No. 609,019, May 10, 1984, abandoned. This application Jun. 25, 1987, Ser. No. 66,245
Claims priority, application Japan, May 16, 1983, 55-86213
Int. Cl.[4] C07C *149/42*
U.S. Cl. 260—508 12 Claims

1. A 3-amino-4-fluoro-6-halophenylthioacetic acid of the formula:



wherein X is a chlorine atom or a bromine atom.

2. A 5-substituted-acetanilide of the formula:



wherein X is a chlorine atom or a bromine atom and Z is $-SCH_2COOH$, $-SO_2Cl$, $-SO_3H$ or $-SH$.

4,801,409

HYPOFLUORITES AND BIS-HYPOFLUORITES, AND PROCESS FOR PREPARING SAME

Antonio Marraccini, Dormelletto; Giorgio Guglielmo, Mirano; Alessandro Malacrida, Sovico, and Lamberto Roberti, Monza, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Sep. 8, 1987, Ser. No. 93,700

Claims priority, application Italy, Sep. 10, 1986, 21658 A/86

Int. Cl.⁴ C07C *143/70*

U.S. Cl. 260—543 F **9 Claims**

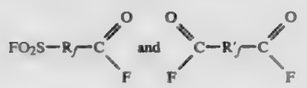
1. A process for preparing hypofluorites and bis-hypofluorites, respectively of formula:

$$FSO_2—R_f—CF_2OF \quad (I)$$

and

$$FOCF_2—R'_f—CF_2OF \quad (II)$$

wherein R_f is a perfluoroalkylene or a perfluorochloroalkylene having from 1 to 4 carbon atoms and R′ is a perfluoroalkylene or a perfluorooxyalkylene having from 1 to 10 carbon atoms, by reaction of the respective acid fluorides



with fluorine, in the gas phase, conducted at 0°-60° C. in the presence of a catalyst composed of a K, Rb, Cs or a Ba fluoride, preferably supported on a metal material and arranged in the reactor in the form of a fixed catalytic bed, the process being conducted continuously.

4,801,410

PLASTIC FILL SHEET FOR WATER COOLING TOWER WITH AIR GUIDING SPACERS

Ohler L. Kinney, Jr., Leawood, and James R. Houx, Jr., Shawnee Mission, both of Kans., assignors to The Marley Cooling Tower Company, Mission, Kans.

Filed Jul. 2, 1987, Ser. No. 69,377

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 261—112.2 **12 Claims**

1. A film fill pack for water cooling towers comprising:

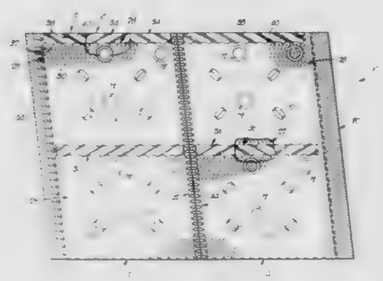
a series of upright, generally parallel sheets of material each presenting two faces,

said sheets being disposed in a row of generally face-to-face relationship to each other,

each face of each of said sheets presenting at least one cooling zone adapted to receive thereover a descending film flow of water to be cooled,

said at least one cooling zone of each face of said sheets being horizontally adjacent one of said at least one cooling zone of the next adjacent sheet and spaced therefrom for enabling the flow of air through said pack in generally transverse relation to said descending flow of water to be cooled,

said sheets each having at least one sheet spacing section extending in a generally horizontal direction and formed in a corrugated pattern presenting a spaced series of elongated peaks on each face of said sheets, said peaks being interconnected by a spaced series of corresponding valleys,



the peaks on one face of each sheet defining the valleys on the opposite face thereof and vice-versa,

said peaks on each face of the sheet extending outwardly in a horizontal direction past said at least one cooling zone of the respective face of each corresponding sheet,

the longitudinal axes of said peaks of each face being inclined relative to the longitudinal axes of the peaks of the adjacent face of the next adjacent sheet,

said peaks of each face being in contact with the peaks of the adjacent face of the next adjacent sheet in order to maintain a desired, preselected horizontal spacing between the cooling zones of adjacent sheets,

certain of the cooling zones being bounded above and below by corresponding sheet spacing sections extending substantially across the entire width of the respective sheet at an intermediate portion of said sheet for precluding excessive warpage of the respective sheets and to redistribute the liquid.

4,801,411

METHOD AND APPARATUS FOR PRODUCING MONOSIZE CERAMIC PARTICLES

Stephen T. Wellinghoff, San Antonio, and Thomas E. Owen, Helotes, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Jun. 5, 1986, Ser. No. 871,093

Int. Cl.⁴ B29B *9/10*

U.S. Cl. 264—7 **1 Claim**

1. A method for producing two-layer ceramic particles comprising the steps of:

a. directing an immiscible combination of an organometallic liquid and surface coating liquid to an aerosol particle generator;

b. separating at said generator said organometallic liquid to a top layer and said surface coating liquid to a bottom layer;

c. mechanically exciting said layers whereby said organometallic liquid mixes with said surface coating liquid said mechanical excitation generating and releasing simultaneously into a space from a single discharge opening a multiplicity of two-layered microparticles thereby forming a stream of said two-layered microparticles in said space;



d. electrostatically charging said two-layered microparticles to induce particle repulsion;

e. separating from said charged microparticles, microparticles having substantially equal size; and

f. oxidizing said substantially equal size microparticles.

4,801,412

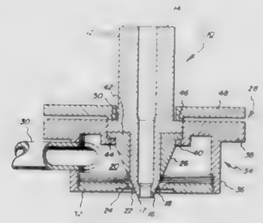
METHOD FOR MELT ATOMIZATION WITH REDUCED FLOW GAS

Steven A. Miller, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 584,691, Feb. 29, 1984. This application Jun. 20, 1986, Ser. No. 876,574

Int. Cl.⁴ B29B *9/00*

U.S. Cl. 264—12 **4 Claims**



1. The method of producing higher proportions of finer powder in an atomization process, which comprises:

providing a melt delivery tube the external surface of the exit end of which has a concave shape,

delivering a solid stream of molten metal at temperatures above 1000° C. to an atomization zone through a melt delivery tube;

developing an inwardly annular stream of gas about the exit end of said tube to impinge on molten metal exiting said tube; and

directing the stream at least partially into the concave surface of said tube to sweep gas across said concave surface.

4,801,413

PROTECTION PROCESS IN THE WRAPPING OF TEMPERATURE- OR PRESSURE-SENSITIVE MATERIALS

Heinz-Ernst Wagner, Troisdorf-Spich, and Gunther Schneider, Bad-Honnef, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 3, 1986, Ser. No. 881,924

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1985, 3523930

Int. Cl.⁴ C06B *21/00*

U.S. Cl. 264—3.3 **12 Claims**



1. A protective process in the covering of temperature- or pressure-sensitive materials, in particular, of explosive materials, with a plastic casing with use of a multi-part shaping tool, characterized in that, on exceeding of critical values of pressure and/or temperature of the plastic at or in the shaping tool, the parts of the shaping tool are driven away from one another by auxiliary device means and the sensitive substance is removed from the shaping tool.

4,801,414

PRODUCTION OF SILICON NITRIDE SINTERED BODY

Takao Soma, Nagoya, and Tomosori Takahashi, Chita, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Feb. 9, 1987, Ser. No. 12,160

Claims priority, application Japan, Feb. 25, 1986, 61-38316

Int. Cl.⁴ C04B *33/32*

U.S. Cl. 264—65 **10 Claims**

1. A process for producing a silicon nitride sintered body, comprising the steps of:

molding a formulated batch of starting materials of silicon nitride to form a molded body;

firing said molded body to obtain a fired body having a desired shape; and

thermally treating the fired body in an atmosphere having a total pressure of not less than 1.5 atm and having an oxygen partial pressure which is higher than an oxygen partial pressure of a firing atmosphere present in the firing step, such that the thermally treating atmosphere suppresses a weight increment in oxidation of the thermally treated silicon nitride sintered body to not more than 0.1 mg/cm^2.

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4,801,415

METHOD FOR FORMING SHAPED PIECES OF INSULATION

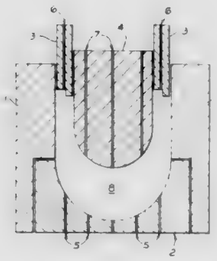
John T. Hughes, Worcester, United Kingdom, assignor to Micropore International Limited, Droitwich, United Kingdom

Filed Aug. 4, 1986, Ser. No. 894,496

Claims priority, application United Kingdom, Aug. 16, 1985, 8520564

Int. Cl.⁴ B29C *43/04, 59/02*

U.S. Cl. 264—120 **10 Claims**



1. A method of forming a shaped piece of insulation in the form of a half cylinder having substantially uniform density, comprising

introducing a particulate insulation material having a flow properties similar to a fluid into a die having an elongated cavity U-shaped in cross-section and shaped to form the exterior of a half cylinder, and having side portions corresponding to legs of said U, said half cylinder also having a horizontal axis;

simultaneously compacting and consolidating side portions of the insulation material laterally offset from said axis of said half cylinder with a first plunger within the side portions of said die, and an axially extending central portion of the insulation material located intermediate said side portions with a second central plunger, said first plunger acting downwardly along the legs of said U between the central plunger and the die on said particulate insulation material to form side portions of said half cylinder and said second central plunger acting downwardly on said particulate insulation material to form a central portion of said half cylinder;

moving said first plunger, during said simultaneous compaction and consolidation, a greater distance than the movement of said second central plunger, the thickness of the side portions of said half cylinder formed by said first plunger being greater in the direction of compaction than the thickness of said central portion formed by said second central plunger, the degree of compaction of said side portions being the same as the degree of compaction of said central portion so that the resultant half-cylindrical piece of insulation has substantially uniform density; and

removing the half-cylindrical piece of insulation from the die.

4,801,416

TRANSPARENT AND LITTLE COLORED POLYARYLENETHIOETHER PRIMARY MELT MOLDING, PREPARATION AND UTILIZATION THEREOF

Akio Kobayashi; Toshitaka Kouyama; Yo Iizuka; Takayuki Katto, and Zenya Shiiki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1986, Ser. No. 924,346

Claims priority, application Japan, Oct. 25, 1985, 60-238679

Int. Cl.⁴ B29C *55/12, 47/00;* **C08G** *75/14*

U.S. Cl. 264—177.1 **10 Claims**

1. A process for producing a polyarylenethioether primary melt formed article having the following properties:

(a) Hunter whiteness > 30%

(b) parallel light transmittance Tp > 60%, as measured for a sheet with a thickness of 0.3 mm, which comprises producing a polyarylenethioether according to the polymerization reaction comprising dehalogenation/sulfidization reaction between an alkali metal sulfide and a dihaloaromatic compound in a polar organic solvent, and then subjecting the polyarylenethioether to melt extrusion, said reaction being carried out by means of a reactor which is constructed of titanium at least at the portion contacting the reaction mixture and said melt extrusion being carried out through the melt extruder which is constructed of a nonferrous alloy at the surface contacting the molten polymer.

4,801,417

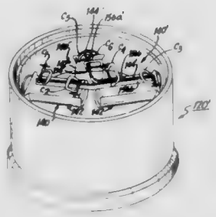
METHODS FOR FORMING INVERTS IN MANHOLD ASSEMBLIES

Jack Ditcher, Tullytown, Pa., assignor to A-LOK Products Corporation, Tullytown, Pa.

Division of Ser. No. 716,353, Mar. 26, 1985, Pat. No. 4,685,650, which is a continuation-in-part of Ser. No. 513,696, Jul. 14, 1983, abandoned, which is a division of Ser. No. 234,639, Feb. 17, 1981, Pat. No. 4,422,994. This application May 26, 1987, Ser. No. 54,267

Int. Cl.⁴ B28B *1/16;* **B29C** *39/10*

U.S. Cl. 264—250 **16 Claims**



1. A method for forming a manhole base having an invert, said method comprising the steps of:

casting a member having a base portion and an integral upright cylindrical sidewall having at least two openings therein;

providing a resilient annular gasket in each sidewall opening before casting so that a portion of each gasket is embedded in the cast member and so that a portion of each gasket is exposed;

providing a pair of substantially identical channel forming members each having a semi-cylindrical shaped surface portion whereby said channel forming members collectively define the desired channel;

placing one of a pair of positioning rings in each sidewall opening;

placing each one of said pair of substantially identical channel forming members in the interior of said cast member with one end of each of said channel forming members being positioned adjacent to but not inside of an associated one of said openings;

releasably securing the first end of each channel forming member to an associated positioning ring to axially align each channel forming member with its adjacent sidewall opening;

releasably joining the adjacent ends of said channel forming members to an alignment bar bent to conform to the desired angular orientation between said channel forming members;

pouring casting material into said interior of said manhole to a height to substantially cover said semi-cylindrical-shaped surface portion of said channel forming member and form said channel;

allowing said casting material to set;

releasing said bar from said channel forming members;

releasing each positioning ring from its associated channel forming member; and

removing said channel forming members and said positioning rings from said cast member.

4,801,418

SEALING COMPOUND

Bruno Bersano, Epalinges, Switzerland, assignor to W. R. Grace & Co., Lexington, Mass.

Division of Ser. No. 861,170, May 9, 1986, Pat. No. 4,743,636. This application Feb. 12, 1988, Ser. No. 155,334

Claims priority, application Fed. Rep. of Germany, May 28, 1985, 3519053

Int. Cl.⁴ B65D *53/06;* **C09K** *3/10;* **C08K** *3/00*

U.S. Cl. 264—268 **9 Claims**

1. A sealing compound comprising:

(a) from about 75 to about 95 parts by weight of polyethylene;

(b) from about 10 to about 20 parts by weight of a thermoplastic elastomeric mixture of an ethylene-propylene copolymer and ethylene vinyl acetate copolymer and process oil; and

(c) from about 15 to about 50 parts by weight of one or more fillers.

4,801,419

SOLID PHASE DEFORMATION OF THERMOPLASTIC TUBES

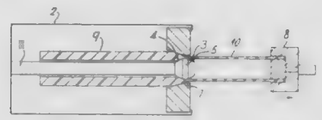
Ian M. Ward, Leeds, and Alan Selwood, Harrogate, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 717,840, Mar. 29, 1985, abandoned. This application Jul. 15, 1986, Ser. No. 885,804

Claims priority, application United Kingdom, Mar. 30, 1984, 8408336; Aug. 24, 1984, 8421520; Mar. 5, 1985, 8505551

Int. Cl.⁴ B29C *55/30*

U.S. Cl. 264—288.4 **25 Claims**



1. A process for the deformation of a hollow workpiece comprising an orientable, thermoplastic polymer by passage in the solid phase through a die having both an entry side and an exit side, which process comprises providing the hollow workpiece at the entry side of the die; applying tension to the hollow workpiece from the exit side of the die where said tension is insufficient to cause tensile failure of the workpiece but sufficient to deform the hollow workpiece; thereby drawing said hollow workpiece with reduction in its bulk cross-sectional area in the solid phase simultaneously through the die and over an internally position former; said former having a cross-sectional area greater than the initial internal cross-sectional area of the hollow workpiece; and collecting the deformed hollow workpiece from the exit side of the die.

4,801,420

PROCESS FOR FORMING A FILM

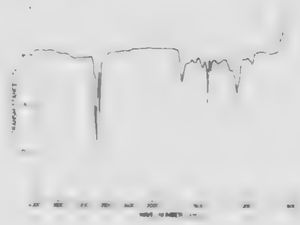
Masakazu Uekita, Kobe, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1986, Ser. No. 905,415

Claims priority, application Japan, Sep. 11, 1985, 60-202191

Int. Cl.⁴ B05D *1/20;* **B29C** *41/00*

U.S. Cl. 264—298 **7 Claims**



1. A process for forming a built-up film by the Langmuir-Blodgett technique which comprises using a high polymer which consists essentially of (i) a skeleton of linear repeating units, wherein said linear repeating units are composed of a first organic group R_1 and a second organic group R_2, each of R_1 and R_2 being at least divalent and having at least two carbon atoms, R_1 and R_2 being connected with each other by a divalent bonding group formed by reaction of an acidic group containing a heteroatom and a basic group containing a heteroatom, and (ii) at least one group selected from hydrocarbon-containing groups R_3 and R_4 and bonded to the linear repeating units by covalent bonding, wherein each of R_3 and R_4 is independently a hydrocarbon-containing group of 10 to 30 carbon atoms which may contain substituent groups, with the proviso that when any one of the groups selected from R_3 and R_4 has 10 or 11 carbon atoms, then said group selected from R_3 and R_4 and having 10 or 11 carbon atoms must contain fluorine as said substituent groups.

4,801,421

ON-LINE MONITORING AND ANALYSIS OF REACTOR VESSEL INTEGRITY

D. Scott Ackerson, West Chester; Albert J. Impink, Jr., Murrysville Boro; Kenneth R. Balkey, Churchill Boro, and Timothy S. Andreychek, Whitehall Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 741,088, Jun. 4, 1985, abandoned. This application Mar. 16, 1987, Ser. No. 26,501

Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—249 **29 Claims**

14. A method of on-line monitoring and analysis of nuclear reactor pressure vessel integrity in a unit in which reactor coolant is circulated along the inner wall of the pressure vessel, said method comprising the steps of:

generating on an on-line basis, temperature signals representative of the temperature of the reactor coolant circulating along the inner wall of the pressure vessel;

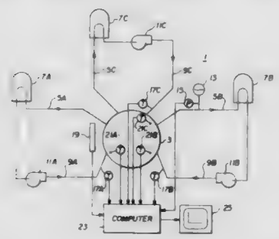
generating on an on-line basis, a pressure signal representative of the reactor coolant pressure;

generating a signal representative of fast neutron fluence to which the reactor pressure vessel has been subjected;

generating as a function of said fluence signal a visual representation of the actual real time reference nil-ductility

transition temperature (RT_{ndt}) across the entire pressure vessel wall thickness at a preselected critical location in said wall;

generating as a function of transients in said reactor coolant temperature and pressure signals, a visual representation of the real time required RT_{ndt} across the entire pressure vessel wall thickness at said selected critical location, said required RT_{ndt} being the RT_{ndt} that would be required in



the pressure vessel wall for flaw initiation to occur as a result of stresses set-up by said transients; and

superimposing said visual representations of the real-time actual and required $RT_{ndt's}$ for flaw initiation across the entire pressure vessel wall thickness for the selected critical location to generate a visual representation of the difference in value between the actual and required RT_{ndt} presented as an RT_{ndt} margin.

4,801,422

APPARATUS FOR INSTALLING AND REMOVING A CONTROL ROD DRIVE IN A NUCLEAR REACTOR

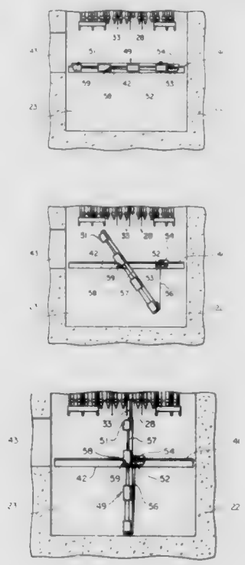
Arthur P. L. Turner, Burke, and S. Robert Ward, McLean, both of Va., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 23, 1986, Ser. No. 945,842

Int. Cl.[4] G21C *19/20*

U.S. Cl. 376—260 **21 Claims**

17. In apparatus for installing and removing a control rod drive from beneath the pressure vessel of a nuclear reactor: an elevator carriage for carrying the control rod drive into and out of the region beneath the pressure vessel in a generally horizontal position, an elevator cradle mounted on the carriage for pivotal movement about an axis between horizontal and vertical positions and for vertical movement when in the vertical position, means for securing the control rod drive to the elevator cradle, a winch cart movable horizontally between a first position spaced from the pivot axis and a second position near the pivot axis and having a winch cable supporting the lower end of the elevator carriage for moving the elevator carriage and the control rod drive between horizontal and vertical positions on the elevator carriage when the cart is spaced from the pivot axis and for raising and lowering the elevator cradle and the control rod drive when the cart is positioned near the pivot axis, a bearing mounting the control rod drive on the elevator cradle and permitting rotational and horizontal movement of the control rod drive when the drive is in a vertical position, a swing arm pivotally mounted on the elevator cradle for movement about a vertically extending axis when the cradle is in a vertical position, a pneumatically actuated cylinder in axial alignment with the control rod drive for raising and lowering the control rod drive, and means pivotally mounting the cylinder on the swing arm for movement about an axis spaced from and generally parallel to the vertically extending axis so that the position of the cylinder and the



control rod drive can be shifted horizontally about the vertically extending axes.

4,801,423

RADIATION SHIELDING DOOR ASSEMBLY

Douglas H. Warren, West Springfield, Mass.; John C. Matthews, Windsor, Conn.; Jay M. Baldwin, East Granby, Conn.; Charles M. Ashman, Weatogue, Conn., and James W. Finlayson, Suffield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 851,780, Apr. 14, 1986. This application Nov. 20, 1987, Ser. No. 124,333

Int. Cl.[4] G21C *11/02*

U.S. Cl. 376—287 **27 Claims**



1. A readily mounted/demountable protective cover assembly for an opening, the opening having an axis and being defined by a flange having a plurality of spaced stud receiving apertures therein, said cover assembly comprising:

a first mounting bracket, said first mounting bracket being sized and shaped to extend about approximately a first half of the periphery of the opening so as to at least partly overlie the opening defining flange, said first bracket being provided with a plurality of mounting holes arranged in a pattern which matches the pattern of stud receiving apertures in the flange;

a second mounting bracket, said second mounting bracket being sized and shaped to extend about approximately the second half of the periphery of the opening so as to at least partly overlie the opening defining flange whereby the ends of said brackets may be placed in generally abutting relationship and said brackets will define an aperture which is in registration with the opening, said second bracket also being provided with a plurality of mounting holes arranged in a pattern which matches the pattern of the stud receiving apertures in the flange;

hanger means affixed to said brackets for engaging and supporting an object, said hanger means defining a support axis which lies in a plane which is generally transverse to the axis of the opening;

hinge means affixed to each of said brackets for pivotally supporting an object, said hinge means each having an outwardly extending portion, said outwardly extending portions being substantially parallel to one another and being provided with substantially parallel hinge pin receiving apertures; and

cover means supportable from said brackets for preventing line-of-sight communication between the environments at the opposite sides of said cover means, said cover means permitting gas flow through the opening when supported from said brackets.

4,801,424

LIQUID RECEIVER WHICH ACTS AS A PRESSURE RELIEF VALVE FOR A NUCLEAR REACTOR

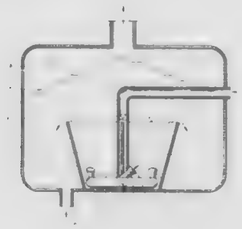
Fritz Schweiger, Deazlingen, Fed. Rep. of Germany, assignor to Hochtemperatur-Kernkraftwerk GmbH, Hamm, Fed. Rep. of Germany

Filed Jul. 18, 1986, Ser. No. 888,048

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1985, 3525986

Int. Cl.[4] G21C *9/00*

U.S. Cl. 376—283 **3 Claims**



1. A nuclear reactor having a pressure relief valve comprising a gas collecting vessel, a liquid receiver located within and fully enclosed by said vessel for receiving radioactive vapors or gases from the nuclear reactor, said receiver comprises a container having a bottom, sides extending upwardly and flaring outwardly from the bottom and said container being open at the top of said sides into said collecting vessel, liquid held, in operation, in said container and forming a horizontal liquid level adjacent the top of said container, nozzles for discharging vapors or gaseous coolant from said reactor into said liquid in said container in the event of an accident occurring, and means for supplying said vapors or gaseous coolant to said nozzles, said means for supplying said coolant to said nozzles includes a horizontal tubular circular ring having an upwardly extending central axis with said tubular ring located within and on the bottom of said container spaced downwardly from the horizontal liquid level, said ring having a lower surface adjoining the bottom of said container and an upper surface located below and facing toward the liquid level, said nozzles mounted on the upper surface of said ring in communicating relationship therewith and for directing flow into the liquid in said container below the liquid level, said nozzles being directed substantially tangentially to said ring and directed obliquely upwardly from said ring for discharging coolant in the same direction as each other around said ring into the liquid in said container whereby discharge of said vapors or gaseous coolant in the event of an accident occurring from the nozzles into said liquid in said container produces a cyclonic effect in said coolant and in said liquid in said container causing a portion of said liquid to be expelled from the top of said container into said vessel and the liquid under the cyclonic effect within the container to assume a somewhat funnel-shaped or parabolic rotational liquid surface within said container extending downwardly from the horizontal liquid level and covering said nozzles so that the coolant flows from said nozzles through the liquid and passes out of the liquid at the rotational liquid surface and flows into said vessel.

4,801,425

NUCLEAR POWER PLANT HAVING A METALLIC REACTOR PRESSURE VESSEL

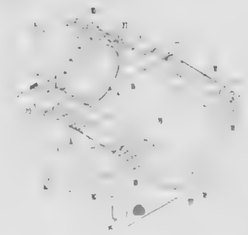
Eberhard Michel, Nürnberg; Manfred Scholz; Wolfgang Berndt, both of Erlangen, and Peter Kätscher, Langensendelbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 24, 1987, Ser. No. 77,587

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1986, 3625436

Int. Cl.[4] G21C *1/08, 13/02*

U.S. Cl. 376—461 **7 Claims**



1. Nuclear power plant, comprising a concrete biological shield having a wall with opposite sides, a metallic reactor pressure vessel surrounded by said concrete biological shield, coolant connector pieces connected to said reactor pressure vessel, coolant lines connected to said coolant connector pieces, a support engaging said coolant connector pieces and holding said reactor pressure vessel, said support including at least one supporting tube surrounding one of said coolant connector pieces, said supporting tube being cylindrical and having an inner surface anchored on said one coolant connector piece, an outer surface anchored on said biological shield, and two sets of dogs for holding said supporting tube, said sets being disposed at two positions along the longitudinal axis of said supporting tube, each of said sets including four dogs mutually offset by 90°, and two support plates each being secured on a respective one of said opposite sides of said wall, said support plates each having recesses formed therein receiving said dogs for securing said supporting tube.

4,801,426

AMINE DEODORIZATION

James E. Borland, and Joe D. Sauer, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jan. 30, 1987, Ser. No. 9,229

Int. Cl.[4] A61L *2/20*

U.S. Cl. 422—5 **9 Claims**

1. A process for de-odorizing a malodorous liquid phase aliphatic amine, said amine containing about 8–40 carbon atoms, said process consisting essentially of injecting a gas

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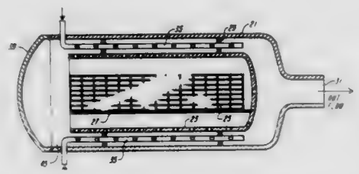
consisting essentially of nitrogen into said amine for a period of time sufficient to decrease the malodor to an acceptable level while maintaining said amine in the liquid phase.

4,801,427

PROCESS AND APPARATUS FOR DRY STERILIZATION OF MEDICAL DEVICES AND MATERIALS

Adir Jacob, 23 Juniper La., Framingham, Mass. 01701, assignor to Adir Jacob, Framingham, Mass.

Filed Feb. 25, 1987, Ser. No. 19,134
Int. Cl.[4] A61L *2/00*; **G01N** *23/00*
U.S. Cl. 422—23 **19 Claims**



18. A method for sterilization of medical devices and materials comprising the steps of,

placing said devices and materials on a metallic electrode, said electrode being positioned within a gas-tight confining chamber, said chamber being made of metal and connected to a point of potential reference, the internal surface area of said chamber being substantially larger than the surface area of said electrode,

evacuating said chamber to a substantially low pressure and introducing a gas into said chamber,

initiating an electrical discharge in said gas within said chamber by application of RF voltage between said metallic electrode and the metal chamber wall creating a gas plasma,

further including a perforated metallic enclosure within said chamber, said enclosure being insulated from, but surrounding and containing said metallic electrode and said devices and materials positioned thereon, said enclosure being connected to said point of potential reference, whereby said devices and materials are contacted by substantially electrically neutral active species at a temperature below that which would be detrimental to said devices and materials,

maintaining said gas plasma for a controlled period of time,

maintaining a flow of said through said chamber while maintaining a pressure within the range of 10 microns Hg to 10 torr during said electrical discharge; and

evacuating the gas plasma residual gases from said chamber prior to withdrawing said devices and materials from it.

4,801,428

BLOOD SAMPLE SEDIMENTATION TEST KIT

Johannes Hossolko, La Croix Des Ayes; Pierre T. Dader, Grenoble, and Bernard Assier, Seyssins, all of France, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 27, 1986, Ser. No. 923,365
Int. Cl.[4] G01N *21/01, 31/22*
U.S. Cl. 422—61 **7 Claims**

1. An assembly for testing the erythrocyte sedimentation rate of at least one blood sample wherein the sample is not moved during testing, comprising

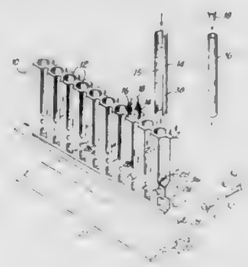
(a) a vertically positioned transparent rack assembly body;

(b) a plurality of vertically positioned slots in said body for receiving a blood reagent tube therein;

(c) a transparent sleeve positioned for vertical movement in each of said plurality of slots;

(d) an adjusting means adjacent each of said plurality of slots, each said adjusting means extending horizontally through said body and into a respective slot associated therewith, for frictional engagement with a respective vertically movable sleeve positioned within said respective slot;

(e) cooperating means on each said adjusting means for frictionally engaging said respective adjacent vertically



movable sleeve for moving said vertically movable sleeve from one position to another in said respective slot; and

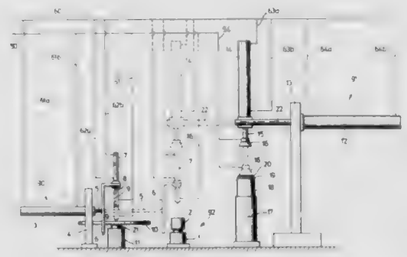
(f) scale means on each of said vertically movable sleeves for measuring a level of blood sample contained in a blood reagent tube introduced into a respective vertically positioned slot containing said vertically movable sleeve.

4,801,429

AUTOMATIC SAMPLE HANDLING DEVICE

Jan C. M. Torfs; Johannes P. M. Laarhoven, and Christiaan F. J. Van Heel, all of Terneuzen, Netherlands, assignors to Dow Nederland B.V., Terneuzen, Netherlands

Continuation of Ser. No. 868,394, May 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 580,995, Feb. 16, 1984, abandoned. This application Jul. 16, 1987, Ser. No. 76,525
Int. Cl.[4] G01N *25/00, 35/00*
U.S. Cl. 422—63 **3 Claims**



1. An apparatus for automatically handling a plurality of samples for testing in a thermal analysis device, which comprises:

a sample holder capable of holding a plurality of samples;

a sample receptacle capable of holding for thermal analysis at least one sample;

a vacuum unit associated with the sample holder and the sample receptacle, for removing at least one sample from the sample holder, depositing the sample(s) in the sample receptacle, and removing the sample(s) from the sample receptacle;

a protector unit for the sample receptacle, the unit comprising a cover means, an insulating sleeve, and a protective hood;

a transfer means associated with the protector unit, and

adapted to hold, place and remove said cover means, said insulating sleeve, and said protective hood; and

a control system which, in a cycle of operation:

(1) activates the vacuum unit, to remove at least one sample from the sample holder, carry the sample to the sample receptacle, and deposit the sample in the receptacle;

(2) activates the transfer means, to place the protector unit on the sample receptacle;

(3) activates the transfer means, to remove the protector unit from the receptacle; and

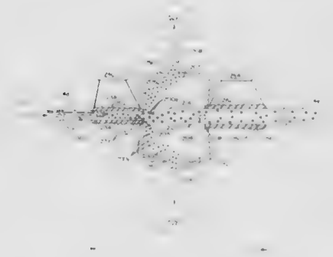
(4) activates the vacuum unit, to remove the sample(s) from the receptacle, carry the sample away from the receptacle, and drop the sample at a desired location.

4,801,430

INTERFACE FOR SEPARATING AN ANALYTE OF INTEREST FROM A LIQUID SOLVENT

Robbat, Jr. Albert, Tewksbury, and Nicholas P. Corso, Watertown, both of Mass., assignors to Trustees of Tufts College, Medford, Mass.

Filed Sep. 25, 1986, Ser. No. 911,350
Int. Cl.[4] B01D *49/00*
U.S. Cl. 422—52 **16 Claims**



1. An interface useful for separating an analyte of interest from an admixture with a liquid solvent, said interface comprising:

conduit means for conveying a liquid admixture comprising an analyte of interest and a liquid solvent;

heating means for vaporizing a liquid admixture comprising an analyte of interest and a liquid solvent into a dry gaseous mixture comprising gaseous molecules of solvent and gaseous molecules of the analyte of interest;

an adiabatic expansion chamber without internal mechanical means for moving a liquid admixture, said adiabatic expansion chamber being adjacent to and in communication with said heating means and being under reduced pressure for adiabatic expansion and separation of a dry gaseous mixture whereby gaseous molecules of solvent of the gaseous mixture migrate substantially toward the internal periphery of said adiabatic expansion chamber and gaseous molecules of the analyte of interest of the gaseous mixture migrate substantially toward the internal center of said adiabatic expansion chamber;

solvent gas collection means at the internal periphery of said adiabatic expansion chamber for collection of separated gaseous molecules of solvent; and

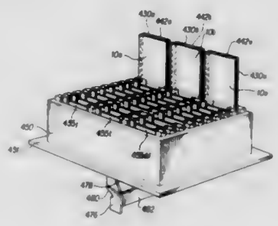
analyte gas collection means at about the internal center of said adiabatic expansion chamber for collection of separated gaseous molecules of the analyte of interest.

4,801,431

SLIDE PAIR HOLDER AND ASSEMBLY

Carlo Caomo, Verona, and David J. Brigati, Hummelstown, both of Pa., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 775,864, Sep. 13, 1985, Pat. No. 4,731,335. This application Mar. 31, 1987, Ser. No. 32,874
Int. Cl.[4] B01L *9/00*
U.S. Cl. 422—104 **12 Claims**



1. An array of slide assemblies comprising:

(a) a plurality of vertically-extending slides, each having a vertically-extending face and a lower edge,

(b) a plurality of vertically-extending cover members, each having a vertically-extending face and a lower edge, each face of a vertically-extending slide being spaced by a first distance less than 0.5 mm from a face of an adjacent vertically-extending cover member, each slide and adjacent cover member together comprising a slide assembly, and

(c) engagement means for holding the slide assemblies of vertically-extending slides and vertically-extending cover members adjacent to their upper ends in a fixed array with the lower edge of each slide extending horizontally and being spaced from a substantially parallel horizontally-extending lower edge of the adjacent cover member of the same slide assembly by the first distance, the space between the adjacent horizontally-extending lower edges of a slide assembly being open.

4,801,432

APPARATUS FOR WITHDRAWING PARTICULATE SOLID FROM A HIGH PRESSURE VESSEL

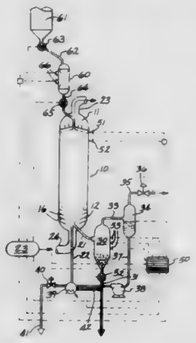
Roberto E. Galiasso, San Antonio de Los Altos; Jose I. Belandria, Merida, and Pasquale L. Caprioli, Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Continuation of Ser. No. 817,404, Jan. 9, 1986, Pat. No. 4,664,782. This application Oct. 9, 1986, Ser. No. 917,353
Int. Cl.[4] B01J *8/18*; **F27B** *15/00*
U.S. Cl. 422—143 **5 Claims**

1. An apparatus for withdrawing particulate solid hydrogenating catalyst maintained in a bed in contact with a liquid hydrocarbon and hydrogen feed within a high pressure vessel wherein the feed passes upwardly through said vessel and through said particulate material which comprises: a high pressure vessel having a bottom and a top and first inlet means at the bottom of the vessel for introduction of said liquid hydrocarbon and hydrogen feed at a first linear velocity and outlet means at the top of the vessel for removal of liquid and gaseous reactor effluent; a bed of particulate solid within said vessel in contact with a liquid; means for supporting the particulate bed in the vessel in a cone-like configuration spaced from the bottom of the vessel; a discharge tube communicating with the particulate solid running from the support means externally of said vessel; and means for producing pressure on the particulate bed to discharge said particulate out of said vessel via said discharge tube comprising a second inlet means for introducing additional liquid hydrocarbon feed into said particulate bed at a point adjacent said discharge tube; and means associated with said second inlet means for introducing said liquid hydrocar-

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bon and hydrogen feed through said second inlet at a linear velocity greater than the first linear velocity of said liquid



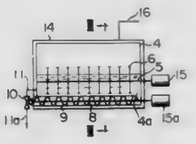
hydrocarbon and hydrogen feed through said first inlet means so as to produce pressure on the particulate bed to discharge said particulate out of said vessel via said discharge tube.

4,801,433

APPARATUS FOR REACTION INCLUDING HORIZONTAL-TYPE REACTOR AND LIQUID CIRCULATOR

Katsuhisa Yamanaka; Tokinobu Furukawa; Hirohiko Shindoh; Yukio Kaneyuki; Takatoshi Kinoshita, and Masahiko Ishibe, all of Kudamatsu-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1986, Ser. No. 841,831
Claims priority, application Japan, Mar. 29, 1985, 60-63615
Int. Cl.[4] B01F *7/04*
U.S. Cl. 422—228 **11 Claims**



1. An apparatus for reaction comprising a horizontal reactor and a liquid circulator,

said horizontal reactor extending in a longitudinal direction, and having at least one stirring shaft, said at least one stirring shaft having an axis extending in said longitudinal direction, and a plurality of stirring blades for stirring liquid in a rotational direction mounted on said at least one stirring shaft, wherein said horizontal reactor has a first portion and a second portion and wherein said second portion of said horizontal reactor is spaced from said first portion of said horizontal reactor in said longitudinal direction;

a liquid circulator, including a liquid feeder, for conveying liquid in an axial direction, having a shaft, said shaft of said liquid circulator extending in said longitudinal direction, said liquid circulator including a first portion and a second portion, wherein said second portion of said liquid circulator is spaced from said first portion of said liquid circulator in said longitudinal direction;

a boundary wall extending in said longitudinal direction separating a portion of said horizontal reactor from a portion of said liquid circulator, said horizontal reactor and said liquid circulator being disposed in a single reactor body;

a change-over valve including means for fluidly coupling said second portion of said liquid circulator with said second portion of said horizontal reactor; and

means for discharging a product from said apparatus,

wherein said first portion of said liquid circulator is in flow communication with said first portion of said horizontal reactor,

whereby liquid fed into the apparatus is stirred in a rotational direction by said plurality of stirring blades and is stirred in an axial direction by the liquid circulator to thereby achieve a uniform stirring of the liquid in the apparatus.

4,801,434

DUAL PIPETTE DEVICE

Keishiro Kido; Yoshio Saito, both of Saitama; Takashi Koizumi, Kanagawa, and Osamu Seshimoto, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 5, 1986, Ser. No. 938,192
Claims priority, application Japan, Dec. 6, 1985, 60-274710; Dec. 12, 1985, 60-279840; Jan. 28, 1986, 61-16077
Int. Cl.[4] B01L *3/02*
U.S. Cl. 422—100 **18 Claims**



1. A dual pipette device comprising:

(i) a pair of housings joined together by a hinge means at a vertically extending axis, said pair of housings being rotatable with respect to each other about said axis

(ii) a pair of cylinders, one each disposed respectively at lower sections of each one of said pair of housings,

(iii) a pair of piston members extending vertically, each one of said piston members being supported by one of said pair of housings or one of said pair of cylinders, and each of said piston members respectively having lower end portions vertically slidable in one of said pair of cylinders, and

(iv) a pair of dropping tip fitting sections disposed at lower ends of each of said pair of housings or each of said pair of cylinders so that each of said pair of dropping tip fitting sections communicate with one of said pair of cylinders,

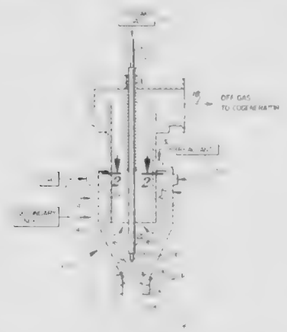
wherein said pair of the piston members are provided with a lock mechanism constructed and arranged for locking said piston members to each other when said pair of housings are rotated and the distance between said pair of piston members becomes not larger than a predetermined distance, so that said piston members are vertically slidable integrally with each other.

4,801,435

HYBRID PLASMA REACTOR

Jozef K. Tylko, Minneapolis, Minn., assignor to Plasma Holdings N.V., Minneapolis, Minn.

Filed Sep. 8, 1986, Ser. No. 905,287
Int. Cl.[4] B01J *19/08;* **H05B** *11/00;* **C22B** *4/00;* **B21J** *9/00*
U.S. Cl. 422—186.04 **26 Claims**



1. A low temperature plasma reactor for the treatment of particulate material which comprises:

housing means including a first portion, a throat portion through which treated material exits the housing and an adaptive portion extending between the first portion and throat portion;

feed means for introducing reactants, including at least the particulate material, into the housing means for thermo-chemical treatment within said first housing portion;

means for establishing cyclonic conditions and subjecting said introduced reactants to cyclonic action within said first housing portion and including gas inlet means;

offgas duct means for withdrawing gas generally at the junction of said first and adaptive housing portions;

means for inducing a thermo-chemical reaction between the reactants within said first housing portion; and

plasma generator means for subjecting at least that material exiting said housing through said throat portion to plasma action.

4,801,436

CRYSTALLIZING APPARATUS

Colin A. Connery, Mt. Vernon, N.Y., assignor to Living Water Corporation, Mt. Vernon, N.Y.

Filed Dec. 19, 1986, Ser. No. 943,792
Int. Cl.[4] B01D *9/00, 9/02*
U.S. Cl. 422—245 **11 Claims**

1. An apparatus for producing buoyant, free-flowing product crystals from a downwardly flowing stream of a given feed liquid that has a specific gravity greater than the specific gravity of said crystals, and growing said product crystals to a size exhibiting a predetermined terminal buoyant velocity with respect to said downwardly flowing stream of said given liquid in which they are immersed, which apparatus comprises:

(a) a hollow, vertically oriented incubation duct of varying cross section, said incubation duct (i) being open at its top end, (ii) being tapered inward from a point adjacent its bottom end to its smallest cross-sectional area at a neck portion near its top end, and (iii) having an upwardly extending portion at its top end above said neck;

(b) means for supercooling a quantity of said given feed liquid, which liquid is suitable for nourishing the growth of said crystals;

(c) means for introducing said supercooled feed liquid under pressure into said incubation duct above said duct neck portion, to fill said incubation duct and pass downward through said duct neck with an initial velocity substantially equal to and opposite from said predetermined terminal buoyant velocity of said free floating product crystals in said liquid; and



(d) means for withdrawing said feed liquid from the bottom portion of said incubation duct for further supercooling.

4,801,437

PROCESS FOR TREATING COMBUSTIBLE EXHAUST GASES CONTAINING SILANE AND THE LIKE

Yoshiaki Konagaya; Tooru Tanaka; Masami Takaine, all of Yokohama, and Toshihiro Tsubouchi, Zama, all of Japan, assignors to Japan Oxygen Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,120
Claims priority, application Japan, Dec. 4, 1985, 60-274121; Dec. 4, 1985, 60-274122
Int. Cl.[4] C01B *33/12*
U.S. Cl. 423—210 **7 Claims**

1. A process for the complete combustion of an exhaust gas comprising toxic gases capable of combusting into solid products, comprising

passing the following four gases downwardly and coaxially through four concentrical hollow conduits of a combustion chamber from the innermost to the outermost:

(I) an exhaust gas comprising toxic gases capable of combusting into solid gas,

(II) an inert gas,

(III) a primary stream of air having a flow rate of about 2 to 10 m/s, and

(IV) a secondary stream of air having a flow rate of about 1 to 2.5 times the rate of the primary stream of air;

providing a flame source in the vicinity of, and below, the lower end of said concentrical conduits so that when a flame forms at the flame source, said flame is formed downwardly by said down flowing exhaust gas which is thereby combusted into solid products in the form of a dust; said downward flame being separated from said lower end of said conduits by said stream of inert gas, stabilized by said primary stream of air and shaped as a rod by said secondary stream of air;

forcing a downward flow of atmospheric air inside said chamber at a rate of at least 0.5 m/sec. to carry said dust and prevent its deposition onto, and clogging of, said lower end of said conduits; and

removing said combusted gas and said solid products from the lower portion of said chamber.

4,801,438

PARTIAL OXIDATION OF SULFUR-CONTAINING SOLID CARBONACEOUS FUEL

Mitri S. Najjar, Hopewell Junction, and Roger J. Corbeels, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 20,307, Mar. 2, 1987. This application Jun. 15, 1987, Ser. No. 62,018

Int. Cl.[4] B01D *53/06;* **C10K** *1/18, 1/26*

U.S. Cl. 423—230 **11 Claims**

1. In a process for the simultaneous partial oxidation and desulfurization of a sulfur and silicate-containing comminuted solid carbonaceous fuel comprising, basis solid fuel, 0.2 to 6.0 wt. % sulfur and 0.1 to 30 wt. % of silicate compounds including iron silicate the improvements comprising: (1) reacting in the free-flow unobstructed down-flowing vertical refractory lined reaction zone of a partial oxidation gas generator a feed mixture comprising said solid carbonaceous fuel and first and second types of supplemental calcium-containing material with a controlled amount of free-oxygen containing gas and a temperature moderator so that an equilibrium oxygen concentration is provided in the gas phase in the reaction zone with a partial pressure which is less than about 10^{-9} atmospheres, the O/C atomic ratio is in the range of about 0.3 to 1.5, the H_2O/-solid carbonaceous fuel weight ratio is in the range of about 0.03 to 0.70 the total atoms of calcium in the reaction zone is in the range of about 1.0 to 3.0 times the atoms of sulfur in the solid carbonaceous fuel plus the atoms of silicon in the ash, and about 90 to 99.8 wt. % of the carbon in said solid carbonaceous fuel is converted into carbon oxides, thereby producing a hot raw effluent gas mixture comprising H_2, CO, CO_2, at least one gas selected from the group consisting of H_2O, N_2, CH_4, H_2S, COS and A, and entrained molten slag including calcium sulfide, iron sulfide, and the silicates of calcium and iron; the partial oxidation and desulfurization reactions take place at a temperature which is above about 1900° F. and about 10° to 100° F. above the fluid temperature of the slag which has a viscosity in the range of about 1.0, to 2,000 poises, the pressure is in the range of about 2 to 250 atmospheres, and wherein substantially no elemental iron is produced, and at least about 10 to 99 wt. % of the sulfur in the solid carbonaceous fuel in the reaction zone is converted into said calcium sulfide and iron sulfide particulate matter which leave the reaction zone along with the silicates of calcium and iron in said molten slag and the remainder of the sulfur is converted into sulfur-containing gaseous products; and wherein said first type of supplemental calcium-containing materials is selected from the group consisting of calcium oxide, calcium hydroxide, calcium carbonate, calcium acetate, calcium formate, calcium hydride, calcium nitrate, calcium chloride, and mixtures thereof; said second type of supplemental calcium-containing material is selected from the group consisting of calcium fluoride, calcium borate, and mixtures thereof; and of the total amount of said first and second supplemental calcium-containing material added from about 0.01 to 12.0 weight percent is supplied as said second supplemental calcium-containing material and the remainder comprises said first supplemental calcium-containing material; (2) cooling and cleaning the hot raw effluent gas mixture from (1) by contacting said effluent gas mixture with a liquid hydrocarbonaceous fuel cooling and scrubbing agent, thereby producing a slurry comprising slag and calcium sulfide in liquid hydrocarbonaceous fuel; (3) steam stripping said slurry and separating a gaseous mixture comprising steam and H_2S; and (4) recycling the sulfur-depleted slurry to the front end of the process for use in preparation of fresh feed mixture to the partial oxidation gas generator.

4,801,439

CATALYTIC PROCESS FOR MAKING COMPOUNDS HAVING A NON-LEWIS ACID/BASE BOND BETWEEN A GROUP IIIA METAL AND GROUP VA NONMETAL

Yigal D. Blum, Menlo Park, and Richard M. Laine, Palo Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Sep. 15, 1986, Ser. No. 907,395

Int. Cl.[4] C01B *35/14*

U.S. Cl. 423—284 **22 Claims**

1. A process for producing a compound containing at least one Group IIIA metal-Group VA nonmetal bond, the process comprising reacting a first reactant that has at least one Z-H bond where Z represents a Group VA nonmetal with a second reactant that has at least one M-H bond where M is a Group IIIA metal in the presence of a metal catalyst that catalyzes dehydrocoupling of the Z-H and M-H bonds, at a reaction temperature in the range of −20° C. and 250° C., whereby said compound is formed.

22. A process for producing a compound containing at least one non-Lewis acid/base Group IIIA metal-Group VA nonmetal bond comprising reacting a comprising cleaving an M-Z bond of a first M-Z bond-containing compound where M is a Group IIIA metal and Z is a Group VA nonmetal in the presence of a metal catalyst that activates the M-Z bond and polymerizing or oligomerizing the cleavage product or reacting the cleavage product with a reactant containing a Z-H or an M-H bond whereby a second M-Z bond-containing compound that is different from the first M-Z bond containing compound.

4,801,440

PARTIAL OXIDATION OF SULFUR-CONTAINING SOLID CARBONACEOUS FUEL

Mitri S. Najjar, Hopewell Junction, and Roger J. Corbeels, Wappingers Falls, both of N.Y., assignors to Texaco, Inc., White Plains, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,307

Int. Cl.[4] B01D *53/34;* **C10J** *3/00;* **C01B** *31/18*

U.S. Cl. 423—415 A **7 Claims**

1. In a process for the simultaneous partial oxidation and desulfurization of a sulfur and silicate-containing comminuted solid carbonaceous fuel comprising, 0.2 to 6.0 wt. % sulfur and 0.1 to 30 wt. % of silicate compounds including iron silicate the improvement comprising: (1) reacting in the free-flow unobstructed down-flowing vertical refractory lined reaction zone of a partial oxidation gas generator a feed mixture comprising said solid carbonaceous fuel and supplemental calcium-containing material with a controlled amount of free-oxygen containing gas and a temperature moderator so that an equilibrium oxygen concentration is provided in the gas phase in the reaction zone with a partial pressure which is less than about 10^{-12} atmosphere, the O/C atomic ratio is in the range of about 0.3 to 1.1, the H_2O/solid carbonaceous fuel weight ratio is in the range of about 0.03 to 0.70, the total moles of calcium in the reaction zone is at least equal to about 1.0 times the moles of sulfur in the solid carbonaceous fuel, and about 70 to 98 wt. % of the carbon in said solid carbonaceous fuel is converted into carbon oxides, thereby producing a hot raw product gas mixture comprising H_2, CO, CO_2, less than about 0.05 mole % of H_2S and COS, at least one gas selected from the group consisting of H_2O, N_2, CH_4, and A, and entrained fly-ash in admixture with calcium sulfide; wherein the mole ratio in the reaction zone for H_2O/H_2 is in the range of about 0.1 to 0.7; wherein said feed mixture of solid carbonaceous fuel and supplemental calcium-containing material is introduced downwardly into said reaction zone and comprises a pumpable liquid slurry having a solids content of about 50–70 wt. % in a liquid carrier selected from the group consistently of H_2O and CO_2; and provided with the step of skimming said liquid carrier prior to said mixture entering the reaction zone to reduce the amount of H_2O entering the gas generator to about 5 to 10 wt. %, basis weight of feed, or alternatively to reduce the amount of CO_2 entering the gas generator to about 10 to 30 wt. %, basis weight of feed,; and wherein the partial oxidation and desulfurization reactions take place at a temperature which is 10° to 200° F. below the softening temperature of the ash in the solid fuel and below about 2000° F., and a pressure in the range of about 2 to 250 atmospheres; and wherein substantially no elemental iron is produced and there is substantially no formation of additional calcium silicates in the gas generator from said supplemental calcium-containing compound and the silicates from the said solid carbonaceous fuel, and at least about 90 wt. % of the sulfur in the solid carbonaceous fuel in the reaction zone is converted into said calcium sulfide particulate matter which leaves the reaction zone entrained in the hot raw product gas mixture from (1) along with said fly-ash; and (2) cooling and cleaning the hot raw product gas mixture from (1) without direct contact with water.

4,801,441

METHOD FOR THE PREPARATION OF HIGH SURFACE AREA AMORPHOUS TRANSITION METAL CHALCOGENIDES

Donald Schleich, Brooklyn, N.Y., assignor to The Polytechnic University, Brooklyn, N.Y.

Filed Jun. 24, 1986, Ser. No. 878,069

Int. Cl.[4] C01B *19/04, 17/00*

U.S. Cl. 423—509 **11 Claims**

1. A process for the direct synthesis of X-ray amorphous sulfides or selenides of molybdenum comprising the steps of:

(1) forming a mixture of:

(a) a halide of molybdenum having the formula MoY_n where Y is chlorine, bromine, fluorine of iodine and n is 4,5 or 6, and

(b) a source of sulfur or selenium selected from: (i) hexamethyl disilathiane or (ii) hexamethyl disilaselenane,

(2) reacting the mixture formed in (1) at a temperature of from −77° C. to +160° C.; and

(3) separating the molybdenum sulfide or selenide formed in step (2).

4,801,442

METHOD FOR PURIFYING STARTING MATERIALS FOR FABRICATING CHALCHOGENIDE GLASS

Junji Nishii, and Takashi Yamagishi, both of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan

Filed Apr. 17, 1987, Ser. No. 40,186

Claims priority, application Japan, Apr. 18, 1986, 61-89260

Int. Cl.[4] C01B *19/02*

U.S. Cl. 423—510 **12 Claims**

6. A method for purifying starting materials for making chalcogenide glass wherein the purification takes place in a distillation purification apparatus comprising a heatable first quartz chamber having an inlet conduit, a heatable second quartz chamber having an outlet conduit, and a connecting passage for communication between said first and second quartz chamber, comprising at least the steps of:

(a) preparing an ingot of a chalcogen element and a metal with the metal being in the range from 1 to 1000 ppm with said metal being at least one element selected from the group consisting of Al and Mg,

(b) encapsulating said ingot and metal in a quartz ampule under a pressure of no greater than 10^{-5} Torr,

(c) heating said ampule to a temperature greater than the melting point of the chalcogen element about 12 hours for wherein a solution is formed,

(d) introducing a solid solution of step (c) into said first quartz chamber,

(e) introducing dry argon gas into the apparatus through said inlet conduit for purging the first quartz chamber, said argon gas being exhausted from the apparatus through said outlet conduit, and

(f) heating said first quartz chamber to a first temperature greater than the melting point of said solid solution and heating said second quartz chamber to a second temperature less than said first temperature wherein said first temperature is sufficient to vaporize the chalcogen and said second temperature is sufficient to condense said chalcogen.

4,801,443

SULPHUR RECOVERY PROCESS

Iron O. Simek, Calgary, Canada, assignor to Multi-Task Engineering Ltd., Calgary, Canada

Filed May 8, 1987, Ser. No. 47,136

Claims priority, application Canada, May 13, 1986, 509245

Int. Cl.[4] C01B *17/04*

U.S. Cl. 423—574 R **1 Claim**



1. A continuous catalyst flow process for sulphur recovery comprising the steps of:

continuously introducing a first gaseous stream comprising Claus reaction gases having a ratio of H_2S to SO_2 of 2:1 to a continuous catalyst flow regenerator, said regenerator having a gas stream inlet means and a gas stream outlet means and a catalyst inlet means and a catalyst outlet means, and said catalyst regenerator containing a continuously moving bed of sulphur containing catalyst particles;

continuously contacting said first gaseous stream with said sulfur containing catalyst particles at a temperature sufficient to vaporize sulphur from the surface of said catalyst particles and to produce a second gaseous stream, said second gaseous stream containing a higher elemental sulphur content than said first gaseous stream;

continuously removing said second gaseous stream from said regenerator and passing said second gaseous stream to a sulphur condenser;

continuously recovering sulphur from said second gaseous stream in said sulphur condenser and thereby producing a third gaseous stream;

continuously withdrawing said catalyst particles from said regenerator after contact with said first gaseous stream and passing the resulting regenerated catalyst particles to a regenerated catalyst transport device;

cooling said third gaseous stream below the water dew point temperature;

continuously separating water from said third gaseous stream and thereby producing a fourth gaseous stream having a lower water vapor content than said third gaseous stream;

increasing the pressure of said fourth gaseous stream and then passing said fourth gaseous stream to said regenerated catalyst transport device;

continuously transporting said regenerated catalyst particles from said catalyst regenerator in said catalyst transport device to a catalyst contacting unit by means of said fourth gaseous stream;

continuously contacting said fourth gaseous stream with said regenerated catalyst particles in said catalyst contactor and thereby depositing sulphur on the surface of said catalyst particles and producing a fifth gaseous stream

containing a lower content of sulphur compounds than said first gaseous stream;
continuously withdrawing said fifth gaseous stream from the catalyst contactor; and
continuously passing said catalyst particles from said catalyst contactor to said catalyst regenerator after contact with said fourth gaseous stream.

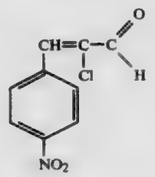
4,801,444

MEDICINAL PREPARATION FOR INDIVIDUAL PREVENTION OF VENEREAL DISEASES AND TREATMENT OF UROGENITAL TRICHOMONIASIS

Vladimir G. Kravchenko, Poltava, U.S.S.R., assignor to Poltavsky Meditsinsky Stomatologichesky Institut, Poltava, U.S.S.R.

Filed Mar. 3, 1988, Ser. No. 164,059
Int. Cl.[4] A61L *9/04*
U.S. Cl. 424—45 **9 Claims**

1. A medicinal preparation comprising an effective amount of an active principal sufficient to prevent venereal diseases and for treatment of urogenital trichomoniasis which is comprised of a synergistic mixture of para-nitro-alpha-chlorocinnamic aldehyde of the formula:



dimethylsulphoxide and the pharmaceutical excipient polyethylene glycol.

4,801,445

COSMETIC COMPOSITIONS CONTAINING MODIFIED POWDER OR PARTICULATE MATERIAL

Hiroshi Fukui; Ryujiro Namba; Tsutomu Saito; Yutaka Ohtsu; Asa Kimura; Motokiyo Nakano; Okitsugu Nakata; Kenichi Tomita; Kazuo Tokubo; Kazuhisa Ohno; Toshio Yoneyama; Takashi Ogawa; Hideo Morohoshi; Junichi Koyama; Taketoshi Kanda; Kunihiro Kawaguchi, and Yuzo Shimizu, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Filed Jun. 17, 1986, Ser. No. 875,140
Claims priority, application Japan, Jul. 29, 1985, 60-165974; Sep. 3, 1985, 60-194654; Nov. 15, 1985, 60-256166; Nov. 26, 1985, 60-265715; Feb. 5, 1986, 61-023518; Feb. 18, 1986, 61-033595; Mar. 25, 1986, 61-066635; Apr. 3, 1986, 61-077301; Apr. 3, 1986, 61-077302; Apr. 5, 1986, 61-078740; Apr. 5, 1986, 61-078741; May 9, 1986, 61-106175; May 23, 1986, 61-118901; May 28, 1986, 61-122821; May 31, 1986, 61-127047; Jun. 10, 1986, 61-134540; Jun. 13, 1986, 61-137838; Jun. 13, 1986, 61-137839; Jun. 13, 1986, 61-137840; Jun. 13, 1986, 61-137841
Int. Cl.[4] A61K *7/021, 7/032, 7/035*
U.S. Cl. 424—69 **21 Claims**

1. In a cosmetic composition comprising a cosmetic base and a powder, the improvement wherein such powder comprises a modified powder having a silicone polymer film coated on substantailly the entire surface thereof, said powder being produced by bringing at least one silicone compound, in the form of vapor, having the general formula (I):

$$(R^1HSiO)_a(R^2R^3SiO)_b(R^4R^5R^6SiO_{\frac{1}{2}})_c \quad (I)$$

wherein R^1, R^2, and R^3 represent, independently, hydrogen, a hydrocarbon residue having 1 to 10 carbon atoms or a hydrocarbon residue having 1 to 10 carbon atoms and substituted with at least one halogen atom, provided that R^1, R^2, R^3 are not hydrogen at the same time, R^4, R^5, and R^6 represent, independently, hydrogen, a hydrocarbon residue having 1 to 10 carbon atoms or a hydrocarbon residue having 1 to 10 carbon atoms and substituted with at least one halogen atom, a is zero or an integer of 1 or more, b is zero or an integer of 1 or more, and c is zero or 2, provided that c is 2 when a and b are simultaneously zero and a +b is an integer of 3 or more when c is zero, into contact with the powder having on the usrface thereof an active site capable of catalytically polymerizing a silicone compound having a siloxane bond (Si-O-Si) or a hydrosilyl group (Si H), whereby the silicone compound is polymerized on substantially the entire surface of the powder.

4,801,446

USE OF METHYL-ISOEUGENOL, N-DODECANOL, 1-(2-BUTENOYL)-2,6,6-TRIMETHYL-1,3-CYCLOHEXADIENE AND MIXTURES OF SAME AS INSECT ATTRACTANTS

Richard A. Wilson, Westfield, N.J.; Jerry F. Butler, Gainesville, Fla.; Donald Withycombe, Lincroft, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ira Katz, West Long Branch, N.J., and Kenneth R. Schrankel, Tinton Falls, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.

Filed Nov. 14, 1986, Ser. No. 930,418
Int. Cl.[4] A01N *25/00*
U.S. Cl. 424—84 **10 Claims**

1. A method of attracting *Musca domestica L.* (Diptera Muscidae) to an insect trap comprising the step of exposing the environment surrounding said trap to an insect attractant containing polymer which consists of a mixture of a polymer and from about 1% up to about 45% by weight of said polymer of a composition of matter selected from the group consisting of:
(i) 1-(2-butenoyl)-2,6,6-trimethyl-1,3-cyclohexadiene;
(ii) a mixture of n-dodecanol and 1-(2-butenoyl)-2,6,6-trimethyl-1,3-cyclohexadiene;
(iii) a mixture of methyl-isoeugenol and 1-(2-butenoyl)-2,6,6-trimethyl-1,3-cyclohexadiene; and
(iv) a mixture of methyl-isoeugenol, n-dodecanol and 1-(2-butenoyl)-2,6,6-trimethyl-1,3-cyclohexadiene said polymer being compatible with said composition of matter.

4,801,447

WATER-IN-VOLATILE SILICONE EMULSIFIER CONCENTRATES, WATER-IN-VOLATILE SILICONE EMULSIONS THAT ARE USEFUL IN PERSONAL-CARE FORMULATIONS AND METHODS OF MAKING SAME

Mary L. Gum, Granite Springs, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 580,320, Feb. 22, 1984, abandoned. This application Dec. 13, 1985, Ser. No. 808,839
Int. Cl.[4] A61K *7/06, 7/32, 7/38, 7/48*
U.S. Cl. 424—68 **21 Claims**

1. Water-in-silicone personal care emulsion comprising
(a) 25 to 98 wt. % water,
(b) 1.6 to 75 wt. % of a volatile cyclic silicone liquid having a normal boiling point of less than 250° C. and having the formula:

$$[R_2SiO]_x$$

wherein R is alkyl having 1 to 4 carbon atoms and x is an integer of 4 to 6;
(c) 0.1 to 30 wt. % of a personal-care component; and
(d) 0.3 to 5 wt. % of a polyoxyalkylene substituted silicone having the average formula: $MD_yD^*_zM$, wherein M is a trialkylsiloxy unit having the average formula $R_3SiO_{0.5}$, D is a dialkylsiloxy unit of the formula R_2SiO, D^* is a polyoxyalkylene substituted alkylsiloxy unit of the average formula:

$$C_nH_{2n}(OC_aH_{2a})_xOR^*,$$
$$\quad\quad|$$
$$\quad RSiO$$

R is an alkyl group having 1 to 4 carbon atoms, R^* is a terminal group selected from the group consisting of, alkyl, aryl, aralkyl and acyl radicals, n is an integer of 2 to 8, a is a number of 5 to 12, b is 2, y is a number of 5 to 100 in which the polyoxyalkylene group has a molecular weight of less than 1000, z is a number of 1 to 16, said percentages being based on the total weight of (a), (b), (c) and (d).

4,801,448

USE OF DIBUTYL SUCCINATE, DIMETHYL DISULFIDE AND MIXTURES OF SAME AS INSECT ATTRACTANTS

Richard A. Wilson, Westfield, N.J.; Jerry F. Butler, Gainesville, Fla.; Donald Whithycombe, Lincroft, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ira Katz, West Long Branch, N.J., and Kenneth R. Schrankel, Tinton Falls, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.

Filed Jun. 27, 1986, Ser. No. 879,351
Int. Cl.[4] A01N *25/00*
U.S. Cl. 424—84 **1 Claim**

1. A method of attracting house flies to an insect trap comprising the step of exposing the environment surrounding said trap to an insect attractant containing polymer which consists of a mixture of a polymer and from about 1% up to about 45% by weight of said polymer of dimethyl disulfide said polymer being compatible with said dimethyl disulfide.

4,801,449

METHOD FOR TREATMENT OF KAPOSI'S SARCOMA

Joseph P. Balint, Jr., Seattle, and Frank R. Jones, Edmonds, both of Wash., assignors to IMRE Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 690,781, Jan. 11, 1985, Pat. No. 4,681,870. This application Dec. 31, 1986, Ser. No. 948,268
Int. Cl.[4] G01N *33/552, 33/543;* B01D *15/08*
U.S. Cl. 424—85.8 **10 Claims**

1. A method for treating a patient suffering from Kaposi's sarcoma, said method comprising extracorporeally contacting the patient's plasma with an immunoadsorbent material capable of binding immune complexes in order to effect removal of immune complexes from the patient's blood.

4,801,450

HIGH TITER PSEUDOMONAS IMMUNE SERUM GLOBULIN

Michael S. Collins, and Robert E. Roby, both of Pinole, Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 504,106, Jun. 14, 1983, Pat. No. 4,587,121. This application May 5, 1986, Ser. No. 859,944
The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.
Int. Cl.[4] A61K *39/40*
U.S. Cl. 424—87 **17 Claims**

1. A method for preparing an immune serum globulin having a high titer of antibody to lipopolysaccharide antigens of *P. aeruginosa* of Fisher immunotypes 1–7 which comprises
(a) screening plasma from donors who have not been vaccinated with a Pseudomonas vaccine or had a recent Pseudomonas infection for a titer of unattenuated antibody to lipopolysaccharide of *P. aeruginosa* of Fisher immunotypes 1 and 6 which is about 1:1,600 or greater,
(b) pooling plasma of said titer of antibody, and
(c) preparing an immune serum globulin from said pooled plasma.

4,801,451

CLEANING WITH ENZYMES FROM KRILL

Lars G. I. Hellgren, Broregjutargatan 13, S-421 63 Västra Frölunda, Sweden; Viggo Mohr, St. Jorgensveita 6a, N-7000 Trondheim, Norway, and Jan G. Vincent, Linnégatan 31, S-114 47 Stockholm, Sweden

Continuation of Ser. No. 621,911, Jun. 18, 1984, abandoned. This application Aug. 6, 1987, Ser. No. 82,134
Int. Cl.[4] A61K *37/54, 37/62;* C12N *9/64;* D06M *16/00*
U.S. Cl. 424—94.63 **6 Claims**

4. In a process for the therapeutical cleaning of living tissue by the application of enzymes to the tissue be cleaned; wherein the improvement comprises the application of a therapeutically cleaning effective amount of purified enzymes comprising a mixture of exo- and endopeptidases isolated from krill of the order Euphausiaceae.

4,801,452

FIBRINOLYTIC COMPOSITION

Robert L. Hunter, 3640 Churchwell Ct., Tucker, Ga. 30084, and Alexander Duncan, 1756 Corners Cove, Dunwoody, Ga. 30338

Continuation-in-part of Ser. No. 863,582, May 15, 1986, abandoned. This application May 7, 1987, Ser. No. 45,459
Int. Cl.[4] A61K *37/54, 37/547, 37/50, 37/74*
U.S. Cl. 424—94.63 **19 Claims**

1. An improved fibrinolytic composition comprising:
a fibrinolytic enzyme and a surface-active copolymer, the surface-active copolymer having the following formula:

$$HO(C_2H_4O)_b(C_3H_6O)_a(C_2H_4O)_bH$$

wherein a is an integer such that the hydrophobe represented by (C_3H_6O) has a molecular weight of approximately 950 to 4000, and b is an integer such that the hydrophile portion represented by (C_2H_4O) constitutes approximately 50% to 90% by weight of the compound.

4,801,453

STABILIZED MUSSEL EXTRACT

Takuo Kosuge, and Kiyoshi Sagiyama, both of Shizuoka, Japan, assignors to James M. Broadbent, Victoria, Australia and Yoshiki Kosuge, Oshika, Japan

PCT No. PCT/AU85/00091, § 371 Date Jan. 23, 1986, § 102(e) Date Jan. 23, 1986, PCT Pub. No. WO85/05033, PCT Pub. Date Nov. 21, 1985
PCT Filed Apr. 24, 1985, Ser. No. 829,656
Claims priority, application Australia, May 1, 1984, PG4775
Int. Cl.[4] A61K *35/12, 33/14*
U.S. Cl. 424—95 **13 Claims**

1. A method of stabilizing the activity of an extract of the New Zealand grean lipped mussel (*Perna canaliculus*), which comprises adding at least one organic aliphatic acid having from 1 to 10 carbon atoms or an alkali metal or alkaline earth metal salt thereof to said extract.

4,801,454

PROCESSES FOR MAKING COLORED PHARMACEUTICAL COMPOSITIONS

Leila D. Coveney, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jul. 17, 1986, Ser. No. 887,671
Int. Cl.[4] A61K *33/24, 31/29*
U.S. Cl. 424—131 **9 Claims**

1. A process for making a color-stable pharmaceutical composition, comprising the steps of:
(a) preparing an aqueous mixture having a pH of at least about 5, containing a suspension agent, and a pharmaceutically-acceptable bismuth salt at a level of from about 0.5% to about 3%, by weight of final composition;
(b) adding a quantity of FD & C Red 3 dye to said mixture;
(c) mixing said mixture for at least about 30 seconds; and

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(d) adjusting the pH of said mixture to a pH in the range of from about 3.4 to about 4.

4,801,455

PHARMACEUTICAL FORMULATION AND PROCESS FOR ITS PREPARATION

Paul H. List; Peter C. Schmidt; Klaus-Jürgen Steffens, all of Marburg; Harald Perschbacher, Bad Homburg; Hans P. Kraemer, Marburg, and Hans H. Sedlacek, Marburg, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Jul. 9, 1987, Ser. No. 71,382

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1986, 3623376

Int. Cl.[4] A61K *9/10, 9/14, 47/00*

U.S. Cl. 424—400 **5 Claims**

1. An isotonic pharmaceutical formulation for the parenteral administration of a sparingly soluble pharmaceutically active substance, composed of a solid/liquid/liquid disperse system with a maximum particle size of 5 μm, said disperse system being a dispersion of an amount sufficient for efficacy up to 1.5% by weight of the sparingly soluble active substance having a particle size not exceeding 3 μm in 8–30% by weight of oil phase which contains 1.0–4.5% by weight of emulsifier, based on the total mixture, said mixture being an emulsion with 64–90% by weight of water.

4,801,456

GROWTH HORMONE-RELEASING FACTOR ANALOGS

Keith A. Dreagler, Lindenhurst, Ill., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Jul. 9, 1987, Ser. No. 71,351

Int. Cl.[4] A61K *37/43;* **C07K** *7/10*

U.S. Cl. 424—422 **15 Claims**

1. A Human Growth Hormone-Releasing Factor (hGRF) analog having a sequence selected from the group consisting
[Asp[8], Nle[27]]-hGRF(1–31)—NH_2;
[Asn[25], Nle[27]]-hGRF(1–31)—NH_2;
[Asn[3], Asn[25], Nle[27]]-hGRF(1–31)—NH_2;
[Asp[8], Asn[25], Nle[27]]-hGRF(1–31)—NH_2;
[Asn[3], Asp[8], Nle[27]]-hGRF(1–31)—NH_2; and
[Asn[3], Asp[8], Asn[25], Nle[27]]-hGRF(1–31)—NH_2.

4,801,457

POLYACETAL HYDROGELS FORMED FROM DIVINYL ETHERS AND POLYOLS

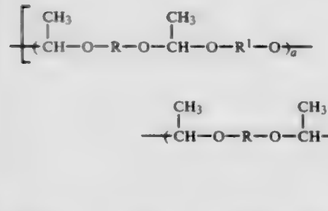
Jorge Heller, Woodside, and Donald W. H. Penhale, Menlo Park, both of Calif., assignors to Sandoz Pharm. Corp., E. Hanover, N.J.

Division of Ser. No. 892,520, Aug. 1, 1986, Pat. No. 4,713,441. This application Oct. 7, 1987, Ser. No. 106,203

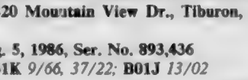
Int. Cl.[4] A61K *31/075*

U.S. Cl. 424—422 **2 Claims**

1. A therapeutic composition comprising a therapeutic macromolecular agent incorporated in a crosslinked polyacetal of the formula



wherein; R, R^1 and R^2 are aliphatic, cycloaliphatic, or aromatic groups, and X represents groups such as $(CH_2)_n$, $(CH_2)_nO$, or



that connect the pendant unsaturation to the aliphatic, cycloaliphatic or aromatic R^2 groups, the raio of a to b is 0.5 to 10, and n is 10–100.

4,801,458

SUSTAINED RELEASE PHARMACEUTICAL PLASTER

Osafumi Hidaka; Tomoki Sakai, and Toyoaki Sakano, all of Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

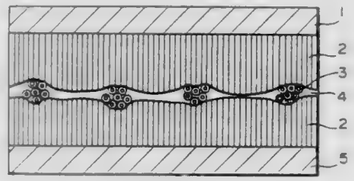
PCT No. PCT/JP86/00317, § 371 Date Feb. 24, 1987, § 102(e) Date Feb. 24, 1987, PCT Pub. No. WO87/00046, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 23, 1986, Ser. No. 17,946

Claims priority, application Japan, Jun. 24, 1985, 60-135917

Int. Cl.[4] A61K *9/70*

U.S. Cl. 424—443 **8 Claims**



1. A sustained release pharmaceutical plaster which is characterized in that it is a pharmaceutical preparation comprising an adhesive compound layer and a supporter which supports the adhesive compound layer, inside of which there is an arrangement of hollow fibers, that have radially arranged open pores, with their tubular hollows filled with medicines, wherein 10% to 95% of the total surface area of all the filaments of the hollow fibers do not adhere to the adhesive compound layer.

4,801,459

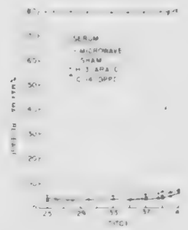
TECHNIQUE FOR DRUG AND CHEMICAL DELIVERY

Robert P. Liburdy, 1820 Mountain View Dr., Tiburon, Calif. 94920

Filed Aug. 5, 1986, Ser. No. 893,436

Int. Cl.[4] A61K *9/66, 37/22;* **B01J** *13/02*

U.S. Cl. 424—450 **18 Claims**



1. A method of delivering a chemical agent to a preselected area of a body, comprising the steps of:
(a) encapsulating said chemical agent within a liposome, said liposome having a predetermined phase transition temperature at which said liposome is capable of releasing said chemical agent;
(b) injecting said liposome into the blood stream of said body; and
(c) subjecting said preselected area of said body to nonionizing electromagnetic fields without heating said preselected area of said body to said predetermined phase transition temperature in order to release said chemical agent from said liposome by nonthermal means at a temperature below said predetermined phase transition temperature.

10. A method of delivering a chemical agent to a preselected area of a body, comprising the steps of:
(a) encapsulating said chemical agent within a liposome, said liposome having a predetermined phase transition temperature at which said liposome is capable of releasing said chemical agent;
(b) injecting said liposome into a preselected tissue of said body; and
(c) subjecting said preselected tissue of said body to nonionizing electromagnetic fields without heating said tissue to said predetermined phase transition temperature in order to release said chemical agent from said liposome by nonthermal means at a temperature below said predetermined phase transition temperature.

4,801,460

PREPARATION OF SOLID PHARMACEUTICAL FORMS

Hans-Helmut Goertz, Freinsheim; Roger G. Klimesch, Aisbach-Haehnlein; Klaus Lacsmerkirt, Boehl-Iggelheim; Siegfried Lang, Ludwigshafen; Axel Sanner, Frankenthal, and Reinhard Spengler, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 6, 1987, Ser. No. 34,938

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1986, 3612212

Int. Cl.[4] A61K *9/20*

U.S. Cl. 424—465 **9 Claims**

1. A process for the preparation of a solid pharmaceutical form by mixing one or more pharmaceutical active compounds with one or more fusible pharmacologically tolerated binders and subjecting the mixture to injection molding or extrusion and shaping at from 50°to 180° C., wherein the fusible binder used is a solvent-free N-vinylpyrrolidone polymer which has a water content of not more than 3.5% by weight and contains not less than 20% by weight of N-vinylpyrrolid-2-one (as copolymerized units, all copolymerized comonomers contain) nitrogen and/or oxygen and, at least when the glass transition temperature of the mixture is above 120° C., N-vinylpyrrolidone polymer is used which is obtained by polymerization in an organic solvent or using an organic peroxide as an initiator in aqueous solution, and the mixture does not contain any thermoplastics which are sparingly soluble in gastric juice.

4,801,461

PSEUDOEPHEDRINE DOSAGE FORM

Larry G. Hamel, Sunnyvale; Felix A. Landrau, Milpitas; George V. Guittard, Cupertino, and Patrick S. L. Wong, Hayward, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

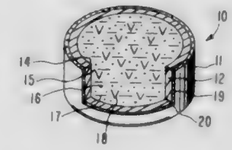
Filed Jan. 28, 1987, Ser. No. 7,879

The portion of the term of this patent subsequent to May 5, 2004, has been disclaimed.

Int. Cl.[4] A61K *9/24, 9/44*

U.S. Cl. 424—467 **20 Claims**

1. A dosage form for delivering the beneficial drug pseudoephedrine to an environment of use, the dosage form comprising:
(a) a compartment
(b) a dosage amount of about 160 to 200 mg of a member selected from the group consisting of pseudoephedrine and its therapeutically acceptable salts in the compartment;
(c) a wall comprising at least in part from 70 to 85 weight percent of a cellulose acetate comprising an acetyl content of 35% to 43.5% and from 15 to 30 weight percent hydroxypropylcellulose, which wall is permeable to the passage of an external fluid, surrounds and defines the compartment and aids in protecting pseudoephedrine present in the compartment from a premature exposure to the environment of use;
(d) at least one passageway in the wall for connecting the compartment with the exterior of the dosage form;



(e) a lamina comprising 55 to 65 mg of a member selected from the group consisting of pseudoephedrine and its therapeutically acceptable salts in laminar arrangement with the exterior of the wall; and,
(f) wherein, when the dosage form is in operation, the dosage form administers the pseudoephedrine immediately from the lamina and at a metered release rate per unit time from the compartment.

4,801,462

METHOD AND APPARATUS OF BREWING

Arthur Touma, Grosse Point Shores, Mich., assignor to The Stroh Brewery Company, Detroit, Mich.

Continuation of Ser. No. 730,784, May 6, 1985, abandoned. This application Feb. 17, 1987, Ser. No. 15,586

Int. Cl.[4] C12C *11/04*

U.S. Cl. 426—16 **9 Claims**

1. A method of brewing, comprising the steps of heating wort to a boiling temperature in a brew kettle, continuously withdrawing wort from the brew kettle and passing the wort at said boiling temperature through a copper hear exchange tube, directly applying hot combustion gases to the tube to heat the wort to a second temperature above said boiling temperature, controlling the rate of flow of said wort through said tube to obtain the desired flavor characteristics in the wort, and continuously returning the wort to the brew kettle.

4,801,463

CONTINUOUS CHEESE-MAKING PROCESS UTILIZING AN IMMOBILIZED RENNET ENZYME REACTOR

Bruce S. Goldberg, Clifton, and Richard Y. Chen, Livingston, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 641,445, Aug. 16, 1984, abandoned. This application Mar. 18, 1987, Ser. No. 24,842

The portion of the term of this patent subsequent to Aug. 25, 2004, has been disclaimed.

Int. Cl.[4] A23C *19/024, 19/04;* **C12M** *11/08, 1/40*

U.S. Cl. 426—36 **20 Claims**

1. A continuous process for making cheese comprising:
continuously flowing a substrate containing coagulatable constituents through a spiral flow path defined by a spirally wound sheet, said sheet containing within it an immobilized enzyme that causes the substrate to coagulate;
coagulating the substrate and converting the resultant coagulate into cheese;
said flow path being between adjacent surfaces of said spirally wound sheet containing said immobilized enzyme, said sheet being microporous and having micro-pores that interconnect adjacent flow paths formed by said spirally wound sheet, said adjacent surfaces being spaced apart by a spacer that is spirally wound with said microporous sheet, and said spacer being selected from a group consist-

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ing of: (a) a plurality of microporous ribs on said spirally wound sheet disposed longitudinally to said flow path, and (b) a further sheet having an open net form.

4,801,464

SINGLE SERVING BREWING PACKET AND METHOD OF MAKING SAME

Maury A. Hubbard, Jr., 700 Linden Tower Centre, Richmond, Va. 23219

Continuation of Ser. No. 875,282, Jun. 17, 1986, abandoned, and a continuation-in-part of Ser. No. 752,357, Jul. 5, 1985, abandoned. This application Feb. 29, 1988, Ser. No. 165,358

Int. Cl.[4] B65B *29/02*

U.S. Cl. 426—79 **18 Claims**



1. A packet for brewing a single serving amount of coffee when the packet is immersed in hot water, comprising:

(a) coffee in the form of roast ground coffee beans, substantially all of the coffee in the packet being distributed in thinly layered form, and substantially all of said layered form being distributed in more than several side-by-side overlapping layered wall portions;

(b) wall means supporting enclosing and maintaining said layered coffee in said distributed relation, and comprising water permeable filter means in contact with the layered coffee, such that:

(i) during immersion the water permeable wall means next to the layered coffee resists passage of coffee sediment but permits water to flow through the wall means next to the side-by-side portions of layered coffee and thence to and from said portions of layered coffee;

(ii) the side-by-side portions of layered coffee are separated from each other by said wall means;

(iii) the side-by-side portions of layered coffee and the intervening portions of said wall means are arranged next to and against each other in closely assembled relation; and

(iv) the proportion of weight of layered coffee to area of wall means in contact with the layered coffee is one gram of said coffee to about 15 to 50 square centimeters of said area; and

(c) means securing said wall means to maintain said layered coffee and said wall means in said distribution, arrangement and relation when the coffee-containing parts of the packet are substantially entirely immersed in hot water, said securing means not being a substantial obstacle to access of water to adjacent coffee-containing parts of the packet when they are immersed.

4,801,465

DISPENSER APPARATUS FOR A SOLID PARTICULATE MATERIAL AND A FLUID

Richard A. Sponer, 36679 Arlene Dr., Sterling Heights, Mich. 48077

Filed Apr. 20, 1987, Ser. No. 40,165

Int. Cl.[4] B65D *83/14*

U.S. Cl. 426—116 **9 Claims**

1. A dispenser apparatus comprising:

a container having a top end and sealed sides and bottom ends with an aperture formed in the top end, the top end, sides and bottom end forming a first chamber in the interior of the container;

a particulate material stored within the first chamber in the container under pressure;

a first conduit extending from the proximity of the aperture in the top end of the container into the first chamber in the interior of the container for the flow of particulate material therethrough;

a second conduit housed within the first chamber in the container and extending in a spiral configuration from one end disposed in the proximity of the aperture in the top end of the container to a sealed other end, the interior of the second conduit forming a second chamber;

a fluid stored under internal pressure within the second chamber in the second conduit;

first and second valve means mounted in the aperture in the top end of the container and disposed in fluid flow communication with the first and second conduits, respectively;



moving means for simultaneously opening and closing the first and second valve means to the flow of particulate material and fluid from the first and second conduits, respectively;

nozzle means formed in the moving means for simultaneously dispersing and mixing the particulate material and the fluid therefrom; and

third and fourth conduits disposed within the moving means and slidably disposed at one end in the first and second valve means, respectively, and connected to the nozzle means at the other end.

4,801,466

PASTEURIZATION MONITORING PROCESS

Carl W. Clyne, St. Louis County, Mo.; Gary L. Woolever, Madison County, Ill.; James Teng, St. Louis County, and Hooshang Naji, St. Louis, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Oct. 31, 1986, Ser. No. 926,004

Int. Cl.[4] A23L *3/02;* **C12H** *1/00;* **G01N** *33/02*

U.S. Cl. 426—232 **13 Claims**

1. A process for continously monitoring a tunnel pasteurization line for drink products, which line includes a pasteurizer tunnel having a bed with a consecutive series of heating, holding and cooling zones along its length, and in which packages filled with product to be pasteurized are fed onto one end of the bed in lateral rows across the width of the bed, water is sprayed onto the packages as they pass through the tunnel to put P.U. into the product, and the packages exit the other end of the tunnel, comprising the steps of

(a) continuously collecting at preselected first time intervals data defining

(1) water spray temperature in each of the consecutive series of heating, holding and cooling zones along the length of the pasteurizer tunnel,

(2) the number of filled packages fed into the pasteurization tunnel, and

(3) the speed of the packages through the tunnel,

(b) storing the data in a raw data base, and

(c) calculating the P.U. input to the product in the packages leaving the pasteurizer line at preselected other time intervals using the raw data base.

4,801,467

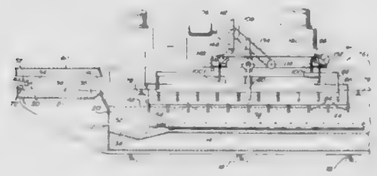
METHOD FOR PREPARING POTATO CHIPS

Horace E. Groff, Bowmansville, Pa., assignor to The Macbeth Corporation, Mohaton, Pa.

Division of Ser. No. 802,164, Nov. 25, 1985, Pat. No. 4,694,743. This application Sep. 14, 1987, Ser. No. 82,510

Int. Cl.[4] A23L *1/217*

U.S. Cl. 426—438 **5 Claims**



1. The method of cooking potato slices in the process of producing potato chips, said method including providing a elongated vat having heated cooking oil disposed therein to a predetermined level, supplying potato slices to one end of said vat at a controlled rate, causing said potato slices to move longitudinally of said vat at a generally constant rate over a predetermined length of time, and withdrawing the potato slices from the other end of said vat, the step of causing said potato slices to move longitudinally of said vat toward said other end including inversely cyclically moving a plurality of frames supported from said vat above said level and including depending fingers spaced both transversely and longitudinally of said vat, each of said frames being cyclically shifted, from a starting position with the fingers thereof spaced above said level, downwardly to a position with said fingers extending through said level, shifted longitudinally of said vat toward said other end thereof, raised to a position with the fingers thereof spaced above said level and then shifted longitudinally of said tank toward said one end thereof back to said starting position, said oil in said tank being maintained in a heated condition through the utilization of a plurality of elongated longitudinally extending and transversely spaced heat tubes disposed in said vat and including burner means in the ends thereof adjacent said other end of said vat, said heat tubes opening into combustion gas exhaust manifold means in said one end of said vat, and cooking oil circulating means operative to pump a portion of said cooking oil outwardly from said other end of said vat back into said one end of said vat.

4,801,468

PROCESS FOR FORMING DEPOSITED FILM

Shunichi Ishihara, Ebina; Shigeru Ohno, Yokohama; Masahiro Kanai; Shunri Oda, both of Tokyo, and Isamu Shimizu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1986, Ser. No. 831,704

Claims priority, application Japan, Feb. 25, 1985, 60-35603; Feb. 26, 1985, 60-36763; Feb. 27, 1985, 60-38572; Feb. 28, 1985, 60-37414; Mar. 1, 1985, 60-41401; Mar. 4, 1985, 60-41195

The portion of the term of this patent subsequent to Feb. 23, 2005, has been disclaimed.

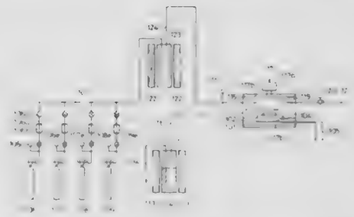
Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—35 **23 Claims**

1. A process for forming a deposited film comprising

separately introducing an active species (A) and an active species (B) into a film forming space housing a substrate therein, said active species (A) being formed by decomposing a compound containing germanium and a halogen; and said active species (B) being formed by decomposing a chemical substance for film formation which is reactive with said active species (A); and

applying discharge energy to both said active species (A) and active species (B) and allowing both active species (A)



and active species (B) to react with each other thereby to form a deposited film on the substrate.

4,801,469

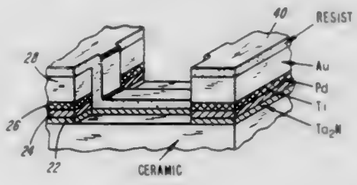
PROCESS FOR OBTAINING MULTIPLE SHEET RESISTANCES FOR THIN FILM HYBRID MICROCIRCUIT RESISTORS

David P. Norwood, Albuquerque, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Aug. 7, 1986, Ser. No. 894,145

Int. Cl.[4] B05D *5/12;* **H01C** *17/06, 1/012*

U.S. Cl. 427—103 **10 Claims**



1. A process of manufacturing on a surface of a substrate member a thin film network (TFN) circuit including a plurality of resistors formed of materials characterized by different resistivities, said process comprising the steps of:

depositing on said surface of said substrate a first layer comprising tantalum nitride (Ta_2N) to a first thickness, said Ta_2N layer having a high resistivity;

depositing on said first layer of Ta_2N a second layer comprising titanium metal (Ti) to a second thickness, the combined layers of Ta_2N+Ti having an intermediate resistivity;

depositing on said second layer comprising Ti a third layer comprising palladium metal (Pd) to a third thickness, said combined layers of $Ta_2N+Ti+Pd$ having a low resistivity;

masking a first portion of said third layer and subsequently plating the remainder of said third layer with gold to form a plurality of conductive paths;

masking a second portion of said third layer and said conductive paths, and subsequently removing the remainder of both said third layer and said second layer to expose said first layer thereunder said masked second portion defining said low resistivity resistor between two conductive paths;

masking said low conductivity resistor, said conductive paths, and a third portion of said first layer exposed by the previous step, and subsequently removing the remainder of said exposed first layer, said masked third portion defining a resistivity resistor between two conductive paths in said TFN circuit.

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4,801,470

FOODSTUFFS CONTAINING STARCH OF A WAXY SHRUNKEN-2 GENOTYPE

Robert B. Friedman, Chicago, Ill.; David J. Gottneid, Griffith, Ind.; Eugene J. Faron, Schererville, Ind.; Frank J. Pustek, Munster, Ind., and Frances R. Katz, Crown Point, Ind., assignors to American Maize-Products Company, Stamford, Conn.

Filed Jul. 2, 1987, Ser. No. 69,263
Int. Cl.[4] A23L *1/04, 1/187, 1/195*
U.S. Cl. 426—578 13 Claims

1. A thickened foodstuff comprising a foodstuff, water and having as an essential thickening ingredient an effective amount of a natural chemically modified starch, said natural chemically modified starch being a starch extracted from a starch bearing plant having a waxy shrunken-2 genotype, said starch having a rounded heating peak not exceeding about 500 Brabender Units, said starch not having been chemically modified.

4,801,471

CLOSED CIRCUIT BEVERAGE PROCESSING WITH ACCUMULATOR

Harry G. Mojonnier, River Forest, Ill., assignor to Robert C. Stewart, LaGrange, Ill.

Filed Aug. 21, 1986, Ser. No. 898,954
Int. Cl.[4] A23L *2/00*
U.S. Cl. 426—590 3 Claims

1. A method of processing a beverage in a closed circuit comprising: stripping unwanted gases from ingredient water to form treated ingredient water; formulating syrup to be utilized in mixing a beverage product using only said treated ingredient water as a water portion of the syrup; mixing the formulated syrup with one or more other constituents of the beverage product including water to thereby form a finished product, using only said treated ingredient water for said mixing; delivering said finished product to a supply line for downstream filling equipment; accumulating any excess of said finished product directly from the same said supply line and without interruption of the same, and making up any shortage of finished product from the excess previously accumulated, so as to substantially match the flow of finished product in the supply line to the demand therefor by downstream equipment.

4,801,472

PROCESS FOR COATING TUNGSTEN CARBIDE WITH COBALT METAL

Joseph E. Ritsko, Towanda, and Jen S. Lee, Sayre, both of Pa., assignors to GTE Product Corporation, Stamford, Conn.

Filed Aug. 24, 1987, Ser. No. 88,321
Int. Cl.[4] B05D *7/00*
U.S. Cl. 427—217 3 Claims

1. A process for coating tungsten carbide with cobalt metal, said process comprising:

(a) forming an aqueous slurry of tungsten carbide having a particle size of no greater than −100 mesh, and zinc metal powder;

(b) adding ammonia to said slurry with the amount of said ammonia being sufficient so that the slurry is basic after the subsequent addition of cobalt chloride in step c;

(c) adding to the resulting ammoniated slurry, a solution of cobalt chloride with agitation, to form a coating of partially reduced cobalt on said tungsten carbide;

(d) removing the resulting cobalt coated tungsten carbide from the resulting liquor; and

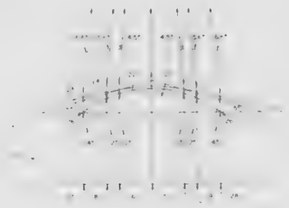
(e) heating said cobalt coated tungsten carbide in a reducing atmosphere to effect the essentially complete reduction of said cobalt and to produce a cobalt metal coating on the tungsten carbide, said coating making up no greater than about 15% by weight of said tungsten carbide.

4,801,473

METHOD FOR PREPARING A HOT MELT INK TRANSPARENCY

Linda T. Creagh, West Lebanon; Steven F. Fulton, Hanover, both of N.H.; Paul A. Hoisington, Norwich, Vt.; Bruce A. Paulson, Lebanon; Robert R. Schaffer, Canaan, both of N.H., and Charles W. Spehrley, Jr., Hartford, Vt., assignors to Spectra, Inc., Hanover, N.H.

Filed May 14, 1987, Ser. No. 50,285
Int. Cl.[4] B05D *5/06*
U.S. Cl. 427—164 21 Claims



1. A method for preparing a projection transparency comprising applying transparent ink to the surface of a transparent substrate to form an ink pattern containing three-dimensional ink spots having a curved surface, applying a transparent liquid coating to the surface of the substrate containing the ink pattern, the coating having a surface tension less than that of the ink spots to form a layer which spreads on the surfaces of the substrate and the ink spots, and solidifying the coating to provide a solid transparent layer which substantiallly covers the ink spots and has an index of refraction approximately the same as that of the ink spots.

4,801,474

METHOD FOR FORMING THIN FILM MULTI-LAYER STRUCTURE MEMBER

Keisha Saitoh, Nabari; Masaaki Hirooka, Toride; Junichi Hanna, and Isamu Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1987, Ser. No. 1,878
Claims priority, application Japan, Jan. 14, 1986, 61-4365; Jan. 14, 1986, 61-4366
Int. Cl.[4] C23C *16/00, 16/30*
U.S. Cl. 427—248.1 7 Claims



1. A method for forming a thin film multi-layer structure on a substrate in a deposition space (A) having at least a first layer of semiconductor thin film controlled in valence electron and at least a second layer of semiconductor thin film regulated in band gap, which comprises:

forming at least one of said first and second thin film layers on said substrate by separately introducing by a first gas introducing conduit system a precurs (B) formed in a decomposition space (B) which becomes the semiconductor starting material for said at least one of said first and second thin film layers and an active species (C) formed in a decomposition space (C) capable of a chemical reaction with said precursor (B) into said deposition space (A) to form a mixture and effect chemical contact therebetween and thereby effect the formation of said at least one said first and second thin film layers;

forming at least the other of said first and second thin film layers by introducing by a second gas introducing conduit system a gaseous starting material (a) for thin film formation and a gaseous halogenic oxidizing agent having the property of oxidation action on said gaseous semiconductor starting material (a) into said deposition space (A) to form a mixture and effect chemical contact therebetween to thereby form a plural number of precursors including precursors under excited state and thereby effect the formation of said other of said first and second thin film layers using at least one of said precursors as the feeding source for the constituent element of said other of said first and second thin film layers; said second gas introducing conduit system including a plurality of coaxially aligned conduits each having an exit orifice with an outer conduit adapted to carry said gaseous halogenic oxidizing agent and at least one inner conduit adapted to carry said gaseous starting material (a), said coaxially aligned conduits extending into the deposition space (A) such that the exit orifices of the inner conduits are set back from the exit orifice of the outer conduit to enable the gaseous halogenic oxidizing agent in the outer conduit to surround the gaseous starting material (a) exiting said inner conduit, said substrate positioned from several millimeters to 20 centimeters from the exit orifice of said outer conduit;

introducing into said deposition space (A) during the formation of said first layer, a substance which includes a valence electron controller so as to form a semiconductor thin film controlled in valence electron; and

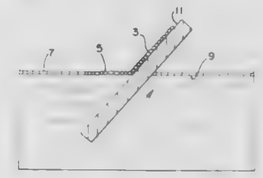
introducing into said deposition space (A) during the formation of said second layer, a substance which includes a band gap regulator so as to form a semiconductor thin film regulated in band gap.

4,801,476

METHOD FOR PRODUCTION OF LARGE AREA 2-DIMENSIONAL ARRAYS OF CLOSE PACKED COLLOIDAL PARTICLES

John H. Dunsmuir, Annandale; Harry W. Deckman, Clinton, and James A. McHenry, Washington, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 911,020, Sep. 24, 1986, abandoned. This application Sep. 3, 1987, Ser. No. 93,010
Int. Cl.[4] B05D *1/20*
U.S. Cl. 427—430.1 12 Claims



1. A method of producing a close packed coating of non-amphiphillic colloidal particles on a substrate comprising:

(a) forming a monolayer of said non-amphiphillic particles at a surface of a first liquid, wherein said monolayer includes only non-amphiphillic particles,

(b) compressing said monolayer of said non-amphiphillic particles on said surface of said first liquid,

(c) removing the compressed layer from said surface of said first liquid onto a substrate, and

(d) drying and substrate.

4,801,475

METHOD OF HYDROPHILIC COATING OF PLASTICS

Gregory Halpern, Wilson Park Dr., Tarrytown, N.Y. 10591; Charles Campbell, Highwood Pl., Alpine, N.J. 07620; Ellington M. Beavers, 931 Coates Rd., Meadowbrook, Pa. 19046, and Huk Y. Cheh, 42-01 Auburndale La., Flushing, N.Y. 11358

Filed Aug. 23, 1984, Ser. No. 643,598
Int. Cl.[4] B05D *3/04, 3/12*
U.S. Cl. 427—338 4 Claims

1. Method of hydrophilic coating of normally hydrophobic plastics to add wetability and lubricity comprising the steps of:

(a) first coating a surface of the plastic with an aqueous solution of a mucopolysaccharide to define a wet film, then;

(b) dehydrating water from said solution by applying a water-miscible solvent so as to precipitate mucopolysaccharide as a film onto said plastic surface, and drying said film;

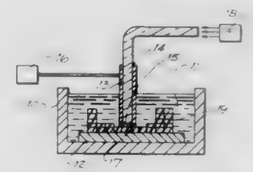
(c) subsequently to said drying, crosslinking and immobilizing said first coating upon the plastic by applying a solution of catalyzed organic-soluble aliphatic polyisocyanate.

4,801,477

METHOD AND APPARATUS FOR PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY PHOTOSOLIDIFICATION

Efrem V. Fudim, 4815 N. Marlborough Dr., Milwaukee, Wis. 53217

Filed Sep. 29, 1987, Ser. No. 102,118
Int. Cl.[4] B05D *3/06*; B29C *35/08*; B29B *13/08*
U.S. Cl. 427—54.1 18 Claims



1. In a method of preparing three-dimensional objects from an uncured photopolymer by treating the photopolymer with radiation to solidify the polymer, the improvement which comprises irradiating said uncured photopolymer by emitting radiation directly into desired areas within a quanity of said uncured photopolymer.

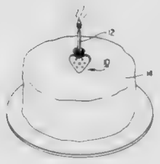
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MUSICAL ORNAMENT FOR CELEBRATED OCCASIONS

Abraham Greenblatt, 6722 Waggoner Dr., Dallas, Tex. 75230

Continuation of Ser. No. 831,407, Feb. 20, 1986, abandoned.
This application May 12, 1987, Ser. No. 48,979
Int. Cl.[4] G10F *1/06*
U.S. Cl. 428—7 8 Claims



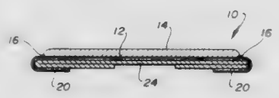
1. An ornament comprising in combination:
(a) means forming an assembled enclosure defining an interior cavity and having an identifiable theme associated with the exterior thereof;
(b) an electrically operated melody module secured in the cavity of said enclosure, said module being preprogrammed when actuated to emit a melody sound socially selected to associate with the identifiable theme of said enclosure; and
(c) switch means for actuating said module to emit the selected melody sound to the proximate vicinity about the location of said enclosure,
(d) said enclosure comprising a candleholder assembled of opposing sections, an elongated generally tapered shank extending from the underside of said enclosure, a tubular neck extending from the topside of said enclosure, a candle receptacle supported for rotation within said neck and extending to a distal end outward of said neck; and said switch means comprises means secured to said receptacle to inward of said cavity for actuating said module in the course of said receptacle being rotated on its support.

4,801,479

DECORATIVE ARTICLE AND PROCESS FOR MAKING

William A. Fielder, Galloway, and Charles M. Coscia, Upper Arlington, both of Ohio, assignors to The D. L. Auld Company, Columbus, Ohio

Continuation-in-part of Ser. No. 025,349, Mar. 13, 1987. This application Dec. 7, 1987, Ser. No. 129,231
Int. Cl.[4] B60R *13/04*
U.S. Cl. 428—31 6 Claims



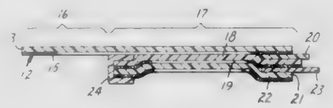
1. A decorative article for covering an elongated automotive component, comprising:
a flexible substrate of approximately 0.002 to 0.010 inch thick vinyl, having a first surface and a second surface, said flexible substrate being produced by casting vinyl plastisol on a smooth surface so as to produce a smooth cast-side surface as said first surface and an air-side surface as said second surface,
an essentially non-wettable material forming a closed edge pattern on said substrate, said edge pattern circumscribing an area on said second surface of said substrate and defining a margin area of generally uniform dimension surrounding said area,
a cured, clear plastic cap within said area on said second surface of said substrate which provides a lens effect over said substrate, thereby enhancing the appearance of said substrate as viewed through said clear plastic cap, and
means for mounting the article on said automotive component to provide a decorative covering therefore, with said margin area being wrapped around the edges of said component.

4,801,480

COMPOSITE PRELAMINATED TAPE SYSTEM

Victor F. Panza; Alejandro Rosso, and Daniel A. Gayuli, all of Buenos Aires, Argentina, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 3, 1987, Ser. No. 116,168
Int. Cl.[4] B32B *3/06, 7/02*
U.S. Cl. 428—40 4 Claims



1. A roll of tape comprising an elongated prelaminated tape composite wound convolutely upon itself about an annular core, especially suited for preparing a tape closure for disposable diapers by simply severing said elongated prelaminated tape composite parallel to the axis of the core at intervals corresponding to the predetermined width of said closure, the length of each such closure corresponding to the width of the roll of tape, said prelaminated tape composite comprising in combination
(a) a fastening tape divided into a bonded section and a fastening section with the fastening tape comprising an elongated strip of sheet backing material, having first and second edges, being substantially as wide as said tape composite, and having a first layer of normally tacky and pressure-sensitive adhesive coated over substantially one surface of said backing material;
(b) a first fingerlift adhered to the first layer of pressure-sensitive adhesive adjacent the second edge thereof;
(c) a target tape, having first and second surfaces, the first surface adhered to said first layer of the pressure-sensitive adhesive layer;
(d) a second layer of normally tacky and pressure-sensitive adhesive coated on the second surface of the target tape;
(e) a second fingerlift adhered to the second layer of normally tacky and pressure sensitive adhesive;
(f) a release tape, having first and second surfaces, the first surface adhered to said second layer of pressure-sensitive adhesive layer;
(g) a third layer of normally tacky and pressure-sensitive adhesive coated over the second surface of said release tape; and
(h) a unifying strip centered over said release tape edge and adhered to the third adhesive layer and to the first adhesive layer on the fastening tape by folding under the target tape.

4,801,481

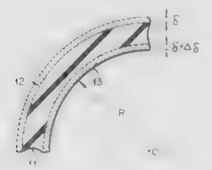
PERPENDICULAR MAGNETIC RECORDING FLOPPY DISK

Masayuki Sagoi, and Reiji Nishikawa, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 17, 1983, Ser. No. 505,480
Claims priority, application Japan, Jun. 25, 1982, 57-109528
Int. Cl.[4] B32B *3/02*
U.S. Cl. 428—64 3 Claims

1. A perpendicular magnetic recording floppy disk comprising:

a flexible plastic film substrate;
a first magnetic recording layer formed on one side of the plastic film substrate and having an axis of easy magnetization in a direction perpendicular to the one side of the plastic film substrates; and
a second magnetic recording layer formed on the other side of the plastic film substrate and having an axis of easy mangetization in a direction perpendicular to said other side of the plastic film substrate said second magnetic recording layer being made of the same magnetic material as that of said first magnetic recording layer the thickness of the second magnetic recording layer being greater than that of the first magnetic recording layer, in which said first and second magnetic recording layers each have a coercive force of about 400 to 1,000 oersteds and second magnetic recording layer has a thickness 2 to 10% greater than that of said first magnetic recording layer.



4,801,482

ELASTIC NONWOVEN PAD

Gary L. Goggans; Cherie H. Everhart, both of Alpharetta; Stephen O. Chester, Woodstock; J. Eric Frost, Roswell, and Monica V. Ozbirn, Dunwoody, all of Ga., assignors to Kimberly-Clark Corporation, Roswell, Ga.

Filed Oct. 15, 1986, Ser. No. 919,298
Int. Cl.[4] B32B *1/04*
U.S. Cl. 428—68 49 Claims



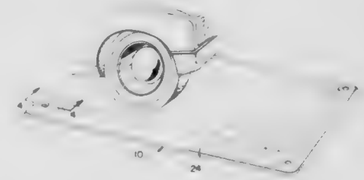
1. An elastic pad formed from a composite elastic laminate which includes an elastic nonwoven web and at least one nonelastic web joined to said elastic nonwoven web at least at two areas and with said nonelastic web being gathered between said two areas, said pad comprising
a top; and
sides depending from said; and
wherein said sides are adapted to retainingly engage an edge of a surface to be covered.

4,801,483

HIGH STRENGTH, LIGHT WEIGHT STRUCTURAL COMPOSITE AND METHOD OF PREPARING SAME

Norton S. Beckerman, Vienna, Va., and William H. Griffin, Bellevue, Wash., assignors to Power-Tel Products Group, Inc., Clearwater, Fla.

Filed Feb. 13, 1987, Ser. No. 14,704
Int. Cl.[4] B32B *3/00*
U.S. Cl. 428—71 13 Claims



1. A ground opening cover, which comprises:
a substantially flat lower facing layer for supporting said cover on the ground while said cover spans an opening in the ground;
an upper facing layer which is spaced from said lower facing layer and which extends substantially parallel thereto;
core means disposed between said facing layers, said core means comprising a plurality of generally square or rectangular cellular blocks having flat upper and lower surfaces lying substantially parallel to said upper and lower facing layers and having substantially flat side walls disposed generally perpendicular to said upper and lower facing layers, said cellular blocks being disposed in a spaced planar array in a single layer such that the side walls of each adjacent pair of blocks define a channel-like spaces which extend between each adjacent pair of blocks generally perpendicularly from said lower facing layer to said upper facing layer, said blocks having a length and width substantially greater than the thickness thereof and being characterized by a high strength to weight ratio;
said upper and lower facing layers comprising a fiber reinforced hardenable resin material selected from the group consisting of epoxies, phenolics, nylons, polyesters, polyurethanes and polysulfones;
said hardenable resin material additionally being disposed in said channel-like spaces between said cellular blocks and on all of the surfaces of said blocks so as to essentially exclude any air from being trapped in said ground opening cover;
said hardenable resin material in said channel-like spaces and on said surfaces of said blocks being integrally bonded to said hardenable resin material in said upper and lower facing layers so as to form said ground cover into a substantially air bubble-free monolithic composite having an ability to carry a static axle load of 32,000 lbs. and an impact load of 41,600 lbs. even when said cover is supported only on two sides while spanning a ground opening;
said ground cover having at least one peripheral edge portion which is tapered such that thickness of said edge portion decreases when measured away from the center and toward the periphery of said cover, said peripheral edge portion defining a ramp-like incline adapted to facilitate vehicular traffic over said cover.

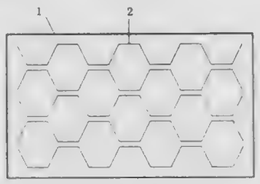
VOL 1098 ISS 5 JA 31 1989 UMI

4,801,484

HIGHLY LOADED COALESCED FOAM

Peter C. Yao, Pickerington, and Bruce A. Malone, Granville, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 13, 1988, Ser. No. 143,430
Int. Cl.[4] B32B *7/02*
U.S. Cl. 428—294 **20 Claims**



1. A highly loaded closed cell foam structure comprising a plurality of coalesced extruded strands or profiles of a mixture comprising:

(a) a thermoplastic resin selected from the group consisting of:

(1) an olefin resin blend of

(a) an olefin polymer selected from the group consisting of homopolymers of ethylene or propylene, copolymers of ethylene or propylene with one or more C4-8 α-olefins and mixtures thereof; and

(b) an interpolymer of ethylene and at least one comonomer, said interpolymer having a melting point less than the melting point of olefin polymer (a);

and

(2) an alkenyl aromatic synthetic resinous material; and

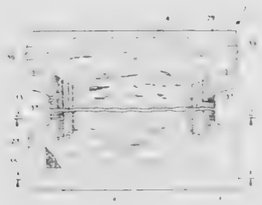
(b) a nucleating additive in a range of about 0.5 to about 50 percent, based on the total weight of the thermoplastic resin; provided further that the foam structure has a density from about 0.5 to about 5.0 lbs/ft^3 and the strands or profiles are disposed in substantially parallel arrangement to the longitudinal axis of the foam.

4,801,485

ARTICLE WHICH INCLUDES AN ELASTIC MEMBER COMPRISING A HOT MELT-PRESSURE-SENSITIVE ADHESIVE APPLIED TO A HEAT SENSITIVE WEB

Lorry F. Sallee, Waushara County, and Russell E. Thorson, Outagamie County, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 840,269, Mar. 17, 1986, abandoned. This application Apr. 14, 1987, Ser. No. 13,995
Int. Cl.[4] C09J *7/02*
U.S. Cl. 428—198 **9 Claims**



1. An elasticizable tape, comprising:

a ribbon composed of a thermally-elasticizable material having an activation temperature at which said elasticizable material shrinks and is rendered elastic; and

a layer of hot melt, pressure-sensitive adhesive disposed on a surface of said ribbon to provide a heat recoverable, elastomeric tape, wherein said adhesive has a hot melt extrusion temperature which is higher than said activation temperature of said ribbon, said adhesive is composed of a base polymer and a tackifier resin, said adhesive is sufficiently conformed and bonded to said ribbon so that said ribbon is securable to an article with said adhesive, and wherein said ribbon is activatable by the application of heat to shir a body of gatherable material on the article.

4,801,486

THERMOPLASTIC MULTI-LAYER PACKAGING FILM AND BAGS MADE THEREFROM

Cesare Quacquarella, Milan, Italy, and Richard S. Williams, Wyton, England, assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Sep. 26, 1986, Ser. No. 911,936
Int. Cl.[4] B32B *27/08, 27/30, 27/32;* **B29D** *7/02*
U.S. Cl. 428—34.9 **5 Claims**

1. A multi-layer thermoplastic packaging film having improved heat shrink and cold seal properties, said film comprising:

(a) a first surface layer which is a heat sealing surface, said layer comprising:

(1) a copolymer of ethylene and an alpha-olefin having 4 to 8 carbon atoms per molecule; and,

(2) said copolymer comprising 90% to 75% ethylene and 10% to 25% alpha-olefin having 4 to 8 carbon molecules and a density of less than 915 kg/m^3;

(b) a second surface layer, said layer comprising a polymer selected from the group consisting of amide polymers, ethylene/vinyl-acetate copolymers, the copolymer of the first layer, and ionomers;

(c) a first core layer comprising an ethylene/vinyl-acetate copolymer;

(d) a second core or barrier layer comprising a polymer selected from the group consisting of copolymers of vinylidene chloride and hydrolyzed copolymers of ethylene/-vinyl-acetate;

(e) said core layers being internal film layers positioned between said first and second surface layers;

(f) at least one adhesive layer to promote adhesion of the barrier layer to another layer; and

(g) said film comprising at least five layers.

4,801,487

IMPRINTABLE SHEET, METHOD FOR THE PRODUCTION THEREOF AND USE THEREOF

Peter Kalus, Neckargemund, and Hanns-Martin von Truchsess, Aschaffenberg, both of Fed. Rep. of Germany, assignors to Esselte Meto International GmbH, Fed. Rep. of Germany

Filed Apr. 9, 1985, Ser. No. 721,377
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1984, 3413371
Int. Cl.[4] B32B *5/16, 27/32;* **B05D** *5/10*
U.S. Cl. 428—206 **22 Claims**

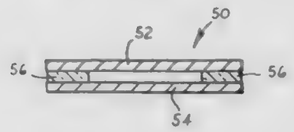
1. In an imprintable sheet of plastic comprising a carrier sheet and a layer applied on at least one side for receiving an imprint with said layer receiving the imprint consisting of a firm polymer matrix and microporous finely divided solid particles embedded therein, the improvement which comprises that said carrier sheet consists of a plastic formed from nonpolar monomers and that said layer receiving the imprint forms an integral composite structure with said carrier sheet.

4,801,488

SEALING GLASS COMPOSITE

Edward F. Smith, Madison, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 651,984, Sep. 19, 1984, abandoned. This application Apr. 7, 1986, Ser. No. 848,554
Int. Cl.[4] B32B *15/04*
U.S. Cl. 428—209 **14 Claims**



1. A laminate, comprising:

a substrate consisting of metal or metal alloy;

a glass composite bonded onto at least a portion of a first surface of said substrate, said glass composite comprising:

a first component consisting essentially of a vitreous glass matrix selected from the group consisting of lead borate, lead-zinc borate, lead borosilicate and lead-zinc borosilicate glasses, said vitreous glass matrix having a coefficient of thermal expansion in excess of about 80×10^{-7} in./in./°C. (from ambient to glass transition temperature); and

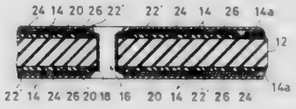
a second component mixed into said first component to increase the effective coefficient of thermal expansion of the resulting glass composite to be close to that of said substrate, said second component consisting essentially of an effective amount up to about 30 wt. % of an uncoated particulate additive having limited solubility in said vitreous glass matrix, said uncoated particulate additive having a higher coefficient of thermal expansion than that of said vitreous glass matrix, said uncoated particulate additive having a melting point higher than that of said vitreous glass matrix.

4,801,489

PRINTED CIRCUIT BOARD CAPABLE OF PREVENTING ELECTROMAGNETIC INTERFERENCE

Katsuya Nakagawa, Kyoto; Kazumasa Eguchi, Higashiosaka; Fumio Nakatani, Higashiosaka; Shinichi Wakita, Higashiosaka; Hisatoshi Murakami, Higashiosaka, and Tsunehiko Terada, Higashiosaka, all of Japan, assignors to Nintendo Co., Ltd., Kyoto and Tatsuta Electric Wire & Cable Co., Osaka, both of, Japan

Filed Mar. 12, 1987, Ser. No. 25,106
Claims priority, application Japan, Mar. 13, 1986, 61-56714; Jun. 13, 1986, 61-138889; Jul. 8, 1986, 61-160364; Jul. 8, 1986, 61-160365
Int. Cl.[4] B32B *3/00, 31/00;* **H05K** *9/00*
U.S. Cl. 428—209 **35 Claims**



1. A printed circuit board constructed for preventing electromagnetic interference, comprising:

a base plate having at least one electrically insulated main surface;

a first electrically conductive layer formed on said electrically insulated main surface of said base plate, said first electrically conductive layer including a signal electrode portion and a ground electrode portion in accordance with a desired circuit pattern; and

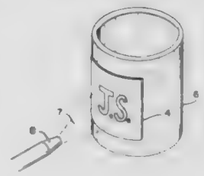
a second electrically conductive layer formed so as to cover said first electrically conductive layer and being electrically insulated from said signal electrode portion, said second electrically conductive layer connected to said ground electrode portion of said first electrically conductive layer so that electromagnetic energy generated in said signal electrode portion of said first electrically conductive layer is capacitively coupled to said second electrically conductive layer and from there passes into said ground electrode portion such that electromagnetic interference does not radiate from said printed circuit board.

4,801,490

METHOD AND APPARATUS FOR SAND BLASTING A DESIGN ON GLASS

James R. Schaette, 601 Homeworth Rd., Alliance, Ohio 44601

Filed May 7, 1986, Ser. No. 860,419
Int. Cl.[4] B24C *1/00;* **B32B** *3/00, 7/00*
U.S. Cl. 428—211 **14 Claims**



1. A self-adhesive stencil for a sandblasting operation which comprises a paper sheet having an adhesive coating on one side and a coating of sandblast resist material on the other side; said resist coating being discontinuous whereby selected sections of the paper are uncoated to form a pattern on the paper; and said adhesive coating is a layer containing a multitude of selfbinding water activatable adhesive gum particles which are attached to the sheet and to each other at their points of contact.

4,801,491

WATER-RESISTANT AND HIGH-STRENGTH LAMINATE

Toshikiyo Tanaka, Ohtsu; Ichiro Yoshida, Osaka, and Hiroshi Yasuda, Ohtsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Apr. 20, 1988, Ser. No. 183,994
Claims priority, application Japan, Apr. 25, 1987, 62-102616
Int. Cl.[4] B32B *7/00*
U.S. Cl. 428—212 **7 Claims**

1. A water-resistant and high-strength laminate which comprises a base cloth of woven or knitted cloth obtained by weaving or knitting warps and wefts wherein at least a portion of warps and/or wefts is ultra-high-strength-polyethylene filaments and a majority of the rest is polyester fibers, at least one surface of said base cloth being laminated with a biaxially oriented polyester film through an adhesive layer.

4,801,492

NOVEL MONOFILAMENTS AND FABRICS THEREOF

David B. Skinner, Irmo, and Larry Ballard, Columbia, both of S.C., assignors to Shakespeare Company, Columbia, S.C.

Division of Ser. No. 051,868, May 19, 1987, Pat. No. 4,748,077. This application Apr. 11, 1988, Ser. No. 180,222
Int. Cl.[4] B05D *3/08*
U.S. Cl. 428—224 **6 Claims**

1. A monofilament formed by a blend of two resins comprising:

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from about 50 to 99 parts by weight of a linear polyphenylene sulfide; and

from about 1 to 50 parts by weight of a melt extrudable polymer selected from the group consisting of ionomer resins.

4,801,493

COATED FABRIC AND MATTRESS TICKING

Daniel Ferziger, 4515 Greystone Ave., Riverdale, N.Y. 10471, and Jerry Lippman, North Bergen, N.J., assignors to Daniel Ferziger, Riverdale, N.Y.

Continuation of Ser. No. 646,132, Aug. 29, 1984, abandoned, which is a continuation of Ser. No. 556,348, Nov. 30, 1983, abandoned, which is a continuation of Ser. No. 289,893, Aug. 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 171,327, Jul. 20, 1980, Pat. No. 4,526,830. This application Mar. 30, 1987, Ser. No. 32,942

The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.

Int. Cl.[4] B32B *7/00*

U.S. Cl. 428—268 **20 Claims**

1. A drapable fabric article such as a mattress ticking or cover, bedspread, upholstery, drapery or the like comprising a tightly woven fiberglass fabric having on at least one surface thereof an unfoamed coating of a flame retardant and plasticized polymeric coating composition, said coating having been formed by applying up to about three ounces per square yard of said coating composition directly to and over the entirety of at least one surface of the fiberglass fabric, wherein the article is coated on at least one outermost surface by an amount of polymeric coating agent sufficient to render the fabric non-abrasive and abrasion resistant.

4,801,494

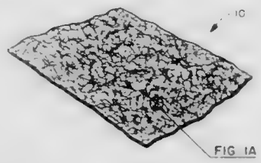
NONWOVEN PAD COVER WITH FLUID MASKING PROPERTIES

Paul J. Datta, Winnebago County; Gary C. Anderson, Outagamie County, and Bernhardt E. Kressner, Winnebago County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 10, 1987, Ser. No. 36,936

Int. Cl.[4] A61F *13/16;* **D04H** *3/14, 5/06*

U.S. Cl. 428—283 **10 Claims**



1. A permeable nonwoven bodyside cover material for products for absorption of human exudate comprising a pigmented spunbonded web wherein the fibers in said web have a denier of greater than 3 and contain greater than 1 percent colorant and wherein said spunbonded web has an average pore size of about 15,000 to about 100,000 sq. microns, an open area of between about 25 and about 50 percent and a weight of between about 0.28 and 0.5 ounce per square yard.

4,801,495

DECORATIVE PANEL WITH IMPROVED SURFACE CHARACTERISTICS

Johannes C. W. van der Hoeven, Horn, Netherlands, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 734,148, May 15, 1985, abandoned. This application May 8, 1987, Ser. No. 47,320

Claims priority, application Fed. Rep. of Germany, May 17, 1984, 3418282

Int. Cl.[4] B32B *27/00*

U.S. Cl. 428—286 **14 Claims**

1. A decorative panel comprising an underlay, a decorative layer applied to said underlay, and a transparent outermost layer applied to said decorative layer, said outermost layer consisting essentially of the product of radiation-polymerizing a mixture consisting essentially of (i) a radiation-polymerizable, aliphatic urethane acrylate oligomer and (ii) a diacrylate or triacrylate monomer, wherein said outermost layer has a scratch resistance of at least 1.5 Newtons, as measured by DIN 53799, part 10, and displays no loss of sheen or discoloration when measured for weather-resistance in accordance with ASTM G 53-84.

4,801,496

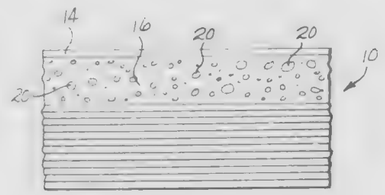
COMPOSITE MEMBER WITH INTEGRATED THERMAL PROTECTION

Daniel A. Buchacher, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 24, 1986, Ser. No. 877,878

Int. Cl.[4] B32B *5/20, 5/26, 5/28*

U.S. Cl. 428—285 **5 Claims**



1. A fire-protected composite structural member, for use as a construction material such as a firewall and the like, comprising:

a plurality of layers of composite material;

an outer layer of shielding material, wherein said shielding material softens upon exposure to fire; and

a layer of intumescent material, said intumescent layer being in juxtapositional relationship between said shielding layer and said layers of composite material, wherein said composite layers, said intumescent layer and said shielding layer are cured together so as to form said structural member.

4. A method of forming a fire-protected composite structural member, comprising the following steps;

providing a plurality of layers of resin-impregnated composite material;

laying up said composite layers in juxtapositional relationship to each other;

providing a layer of intumescent material;

laying up said intumescent layer adjacent an outer layer of said composite layers, and in juxtapositional relationship therewith;

providing a layer of shielding material;

laying up said shielding layer adjacent said intumescent layer and in juxtapositional relationship therewith; and

curing said composite layers, said intumescent layer and said shielding layer together, to form an integrated composite structural member.

4,801,497

RECORDING MEDIUM

Shunzo Kono, Yokosuka; Hidemasa Mouri; Michiaki Tobita, both of Yokohama; Masahiko Ishida, Fujisawa; Naonobu Eto, Yamato; Takashi Akiya, Yokohama; Shigeo Toganoh; Masahiko Higuma, both of Tokyo; Mamoru Sakaki, Hiratsuka, and Ryuichi Arai, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1986, Ser. No. 937,686

Claims priority, application Japan, Dec. 11, 1985, 60-276679

Int. Cl.[4] B41M *5/00*

U.S. Cl. 428—332 **30 Claims**

1. A recording medium, comprising:

an ink receiving layer provided on a substrate, wherein said ink receiving layer contains a cationically modified product of polyvinyl alcohol and a water soluble polymer having no active hydrogen, said water soluble polymer being contained in an amount of from 1–33 parts by weight per 100 parts by weight of cationically modified product, and wherein said recording medium has a linear transmittance of at least 2%.

4,801,498

SUBSTRATES COATED WITH NEUTRALIZED CARBOXYLATED POLYMERS

Ilan Duvdevani, Leonia; Pacifico V. Manalastas, Edison, and Evelyn N. Drake, Lebanon, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 27, 1986, Ser. No. 923,193

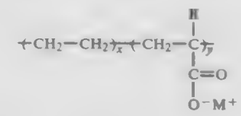
Int. Cl.[4] B05D *7/00;* **B32B** *9/04*

U.S. Cl. 428—334 **7 Claims**

1. A composite consisting essentially of:

(a) a substrate; and

(b) a polymeric coating adhered to at least one surface of said substrate, said polymer coating having a thickness of about 1 to about 100 micrometers, wherein said polymer coating comprises a neutralized carboxylated polymer having a carboxylate content of about 5 to about 300 meq. per 100 grams of said neutralized carboxylated polymer, said polymer coating of a thickness of about 70 microns having a permeability of less than about 2.8×10^{-10} cm^2/sec, wherein said neutralized carboxylated polymer is characterized by the formula consisting of:



wherein y is about 0.1 to about 30 mole percent, R is selected from the group consisting of hydrogen, a methyl group and an ethyl group and M^+ is selected from the group consisting of ammonium counterions, amine counterions and metal counterions, wherein said metal counterions is selected from the group consisting of lead, antimony, zinc, tin and Groups IA, IIA, IB and IIB of the Periodic Table of Elements.

4,801,499

OPTICAL RECORDING MEDIUM

Akira Aoyama; Shigeru Kogure, and Mamoru Sugimoto, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 17, 1986, Ser. No. 819,659

Claims priority, application Japan, Jan. 24, 1985, 60-11355; Aug. 19, 1985, 60-181351

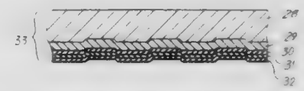
Int. Cl.[4] G11B *7/24*

U.S. Cl. 428—336 **29 Claims**

1. A magneto-optic recording medium comprising:

a transparent substrate;

a non-oxide dielectric layer formed on the substrate, the dielectric layer including at least one layer of a first dielectric material selected from the group consisting of aluminum nitride and silicon carbide and at least one layer of a second dielectric material selected from the group consisting of silicon nitride, zinc sulfide, titanium nitride, zirconium nitride, hafnium nitride, titanium carbide and zirconium carbide; and



a magneto-optic recording layer formed on the dielectric layer.

4,801,500

MAGNETIC RECORDING MEDIUM

Tadashi Yasunaga, and Akio Yanai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 16, 1987, Ser. No. 133,829

Claims priority, application Japan, Dec. 16, 1986, 61-297675

Int. Cl.[4] G11B *5/64*

U.S. Cl. 428—336 **7 Claims**

1. A magnetic recording medium comprising a non-magnetic support having provided thereon a thin ferromagnetic metal film, wherein the thin ferromagnetic metal film comprises iron, nitrogen and oxygen atoms within the following atomic percent ranges:

$57 \leq a \leq 90$

$2 < b < 20$

$5 < c < 23$

$b + c < 25$

in which a, b and c represent the percentage of iron nitrogen and oxygen atoms, respectively, based on the total of iron, nitrogen and oxygen atoms in the thin ferromagnetic metal film.

4,801,501

INSULATED CONDUCTOR WITH MULTI-LAYER, HIGH TEMPERATURE INSULATION

Norman R. Harlow, Cornwall-on-Hudson, N.Y., assignor to Carlisle Corporation, Buchanan, N.Y.

Continuation-in-part of Ser. No. 901,740, Aug. 28, 1986, abandoned, which is a division of Ser. No. 68,615, Jun. 30, 1987. This application Sep. 21, 1987, Ser. No. 99,248

Int. Cl.[4] B32B *15/00, 27/00;* **H01B** *7/00*

U.S. Cl. 428—383 **19 Claims**

1. A conductor with insulation consisting essentially of a first, second and third continuous non-tape superimposed layers having a temperature rating of at least 150° C., said first layer around and in contact with said conductor and consisting

essentially of a plastic selected from the group consisting of perfluoroalkoxy, polytetrafluoroethylene, ethlene-tetraflouroethylene copolymer and fluorinated ethylene-propylene resins; said second layer comprising a polyimide resin around and in contact with said first layer; said third layer being around and

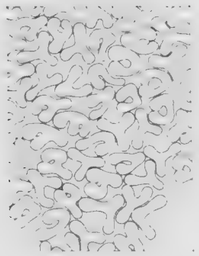


in contact with said second layer and consisting essentially of a plastic selected from the group consisting of perfluoroalkoxy, ethylene-tetrafluoroethylene copolymer, polyvinylidine fluoride and a substantially non-hydrolizing thermoset polyamide resin.

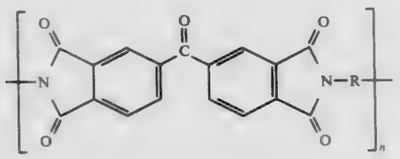
4,801,502
NON-FLAMMABLE, HIGH-TEMPERATURE RESISTANT POLYIMIDE FIBERS MADE BY A DRY SPINNING METHOD

Klaus Weinrotter, Vöcklabruck; Thomas Jeszenszky, Kammer; Heinrich Schmidt, Vöcklabruck; Siegfried Baumann, Timelkam, and Johann Kalleitner, Schörfling, all of Austria, assignors to Chemiefaser Lenzing Aktiengesellschaft, Lenzing, Austria

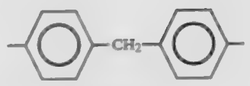
Continuation of Ser. No. 818,989, Jan. 10, 1986, abandoned, which is a continuation of Ser. No. 584,477, Feb. 28, 1984, abandoned. This application May 11, 1987, Ser. No. 48,975
Claims priority, application Austria, Mar. 9, 1983, 820/83
Int. Cl.[4] D01D *5/04*; D01F *6/74*
U.S. Cl. 428—397 **3 Claims**



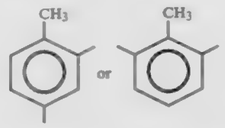
1. Non-flammable, high temperature resistant polyimide fibers comprising units of the general formula



wherein R is present partly as a group of the formula



and partly as a group of the formula



produced by dry spinning in a spinning column a 20 to 40% solution of said polyimide in aprotic organic solvents from spinnerets having circular orifices, orifice numbers ranging from 20 to 800 and orifice diameters of from 100 to 300 μm, applying an extrusion speed of between 20 and 100 m/min, a take-up speed of between 100 and 800 m/min, an amount of spin gas between 40 and 100 m^3/h at standard conditions, and a spin gas temperature between 200° and 350° C., to obtain a tow leaving the spinning column having a residual solvent content of 5 to 25% by weight - based on the dry polymer - and a single filament titer of between 3.5 and 35 dtex, washing said tow in hot water, drying said tow to a moisture content of less than 5%, and drawing said tow at high temperature,

said fibers having a wide variety of irregularly lobed or serrated cross-sections resembling the letters W, U, C, Y, E, V, T and X, a wool-like smooth hand and a high-brightness.

4,801,503
HIGH TENACITY POLYHEXAMETHYLENE ADIPAMIDE YARN HAVING RIBBON CROSS-SECTION FILAMENTS

Uel D. Jennings, Signal Mountain, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 745,059, Jun. 14, 1985, Pat. No. 4,702,875. This application May 5, 1987, Ser. No. 46,091
Int. Cl.[4] D02G *3/00*
U.S. Cl. 428—399 **3 Claims**



1. A polyhexamethylene adipamide multifilament yarn characterized by a tenacity of greater than about 4.5 g/den., an elongation of from about 25 to about 40% and constituent ribbon cross-section filaments having a cross-section of a length to width ratio of greater than about 3.

4,801,504
FLUORESCENT LABELS HAVING A POLYSACCHARIDE BOUND TO POLYMERIC PARTICLES

Brent A. Burdick, and Susan J. Danielson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 713,206, Mar. 18, 1985, Pat. No. 4,719,182. This application Sep. 24, 1987, Ser. No. 100,513
Int. Cl.[4] B32B *5/16*
U.S. Cl. 428—403 **4 Claims**

1. A fluorescent label comprising a polysaccharide bound to a polymeric particle which is derived from a loadable latex having a discontinuous phase which consists essentially of a polymer prepared from one or more ethylenically unsaturated polymerizable monomers, and an aqueous phase, said polymeric partilce having incorporated therein a fluorescent rare earth chelate.

4,801,505
MAGNETIC RECORDING MEDIUM

Kiyomi Ejiri; Hiroaki Araki; Akihiro Matsufuji, and Akira Kasuga, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 20, 1987, Ser. No. 110,294
Claims priority, application Japan, Oct. 20, 1986, 61-248856; Oct. 20, 1986, 61-248857
Int. Cl.[4] G11B *5/712, 5/702*
U.S. Cl. 428—404 **6 Claims**



1. In a magnetic recording medium comprising a non-magnetic support and a magnetic recording layer provided on the support, said magnetic recording layer comprising a ferromagnetic metal powder having a specific surface area of at least 42 m^2/g and an abrasive both dispersed in a binder, the improvement wherein:

said ferromagnetic metal powder contains aluminum oxide in an amount of 1 to 6% by weight as aluminum metal on its surface;

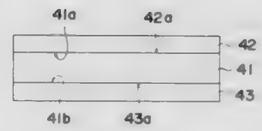
said abrasive in the magnetic recording layer comprises a material selected from the group consisting of α-alumina, chrome oxide, silicon carbide and silicon nitride; and

said binder contains a polar group selected from the group consisting of $—SO_3M$, $—OSO_3M$, and $—PO(OM')_3$, wherein M is hydrogen or an alkali metal atom, and M' is hydrogen, an alkali metal atom or a lower hydrocarbon group, said polar group being contained in the binder in an amount of 0.001 to 5.0 mol.%.

4,801,506
POLYIMIDE FILM HAVING FLUOROCARBON RESIN LAYER

Kazunori Motonari; Kazuo Kumamoto, both of Ube; Shigeto Turuda, Matsuura; Yutaka Ito, Matsuura, and Taiichiro Mitsutake, Matsuura, all of Japan, assignors to Ube Industries, Ltd., Ube and Chukoh Chemical Industries, Ltd., Tokyo, both of, Japan

Filed Jan. 13, 1987, Ser. No. 2,874
Claims priority, application Japan, Jan. 13, 1986, 61-5513; Jan. 13, 1986, 61-5514
Int. Cl.[4] B32B *27/08*; B05D *3/06*
U.S. Cl. 428—421 **15 Claims**



1. A polyimide film having a fluorocarbon resin layer coated on at least one of the surfaces of said polyimide films, said coated film being produced by superposing and contacting said at least one fluorocarbon resin film on a surface of an aromatic polyimide film, said surface of said fluorocarbon resin film and said surface of said aromatic polyimide film having been treated with electric discharge prior to said films having been placed in contact to coat said at least one fluorocarbon resin film on said polyimide film.

4,801,507
ARYLSILOXANE/SILICATE COMPOSITIONS USEFUL AS INTERLAYER DIELECTRIC FILMS

William E. Estes, Pittsboro, N.C.; John H. Deatcher, Lake Peekskill, N.Y., and George E. Whitwell, Campbell Hall, both of N.Y., assignors to Akzo American Inc., New York, N.Y.

Filed Jul. 2, 1987, Ser. No. 69,088
Int. Cl.[4] B32B *9/06*
U.S. Cl. 428—450 **9 Claims**

1. A semiconductor device which comprises, as a dielectric insulating layer, a cured polymeric composition formed by the condensation of an aryl-group containing trifunctional silane comprising three groups capable of condensation with a tetrafunctional silicon compound of the formula $Si(Y)_4$, where Y is selected from the group consisting of alkoxy and halogen.

4,801,508
DRAFTING MATERIAL

Walter Lutz, Hochheim, and Roman Keiper, Wiesbaden-Biebrich, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

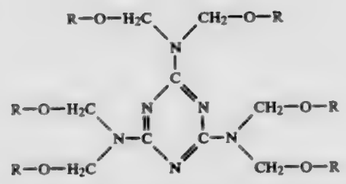
Filed Jun. 23, 1987, Ser. No. 65,422
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1986, 3623984
Int. Cl.[4] B32B *27/34*
U.S. Cl. 428—483 **13 Claims**

1. A drafting material which comprises a plastic support having, on at least one surface, an adhesive layer, a layer of lacquer and an antistatic top layer, wherein the layer of lacquer contains a combination of:

(a) a linear aromatic polyester,

(b) a carboxylated acrylate resin,

(c) a cyclic acid amide, corresponding to the general formula I



wherein R stands for an alkyl group having 1 to 4 carbon atoms, and

(d) an acid catalyst.

4,801,509

PHOTOGRAPHIC RESIN COATED PAPER

Akira Uno, Matsudo, and Toaru Noda, Tokyo, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jul. 3, 1986, Ser. No. 881,964

Claims priority, application Japan, Jul. 5, 1985, 60-148698

Int. Cl.⁴ B32B *23/08*

U.S. Cl. 428—513 16 Claims

1. A photographic resin coated paper which comprises a paper or synthetic paper substrate at least one surface of which is coated with a resin composition comprising at least a titanium dioxide pigment and a resin, said titanium dioxide pigment being prepared by the external seed method, milled by a fluid energy mill and subjected to surface treatment with an inorganic surface treating agent.

4,801,510

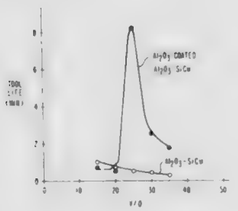
ALUMINA COATED SILCON CARBIDE WHISKER-ALUMINA COMPOSITION

Pankaj K. Mehrotra, Greensburg, and Elizabeth R. Billman, Pittsburgh, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Sep. 2, 1987, Ser. No. 92,113

Int. Cl.⁴ C04B *41/87, 35/80, 35/84*

U.S. Cl. 428—698 40 Claims



1. A coated composite comprising:

a substrate comprising at least 5, and less than 30, volume percent silicon carbide whiskers;

and less than about 95, and more than 70, volume percent alumina;

and an alumina coating bonded to said substrate.

4,801,511

BATTERY CELL ELECTROLYTE

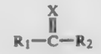
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 750,322, Jun. 28, 1985, Pat. No. 4,686,017. This application Mar. 3, 1987, Ser. No. 21,200

Int. Cl.⁴ H01M *6/16, 6/04*

U.S. Cl. 429—198 34 Claims

1. A lead-acid battery comprising at least one pari of positive and negative plates immersed in an electrolyte both comprising sulfuric acid and a chalcogen-containing compound soluble in said bath and having the empirical formula



wherein X is a chalcogen, each of R_1 and R_2 is selected from hydrogen, NR_3R_4 and R_5, at least one of R_1 and R_2 is other than hydrogen, each of R_3 and R_4 is selected from hydrogen and mononvalent organic radicals, and R_5 is selected from divalent organic radicals, the molar ratio of said chalcogen-containing compound to said sulfuric acid is about 1 to about 10, and the molar ratio of water to the combination of said sulfuric acid and said chalcogen-containing compound is about 20 or less.

4,801,512

REVERSIBLE ELECTROCHEMICAL DOPING OF CONJUGATED POLYMERS AND SECONDARY BATTERIES BASED THEREON

Alan G. MacDiarmid, Drexel Hill; Alan J. Heeger, Wynnewood, and Paul J. Nigrey, Philadelphia, all of Pa., assignors to University Patents, Inc., Westport, Conn.

Division of Ser. No. 763,478, Aug. 7, 1985, Pat. No. 4,728,589, which is a continuation of Ser. No. 559,738, Dec. 9, 1983, abandoned, which is a continuation of Ser. No. 220,496, Dec. 29, 1980, Pat. No. 4,442,187, which is a continuation-in-part of Ser. No. 129,439, Mar. 11, 1980, Pat. No. 4,321,114. This application Nov. 20, 1987, Ser. No. 123,225

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.⁴ H01M *10/44*

U.S. Cl. 429—213 16 Claims

1. A secondary battery comprising an anode means, a cathode means, and a electrolyte at least one of said electrode means including as an electrode active material a conjugated polymer which is characterized as having conjugated unsaturation along a main backbone chain thereof;

said polymer being either oxidized or reduced to an electrically conducting state wherein it is doped with at least one ionic dopant species;

said electrolyte comprising said ionic dopant species or a compound ionizable to form said ionic dopant species; said electrolyte being non-aqueous and inert with respect to the electrodes.

4,801,513

MINOR ELEMENT ADDITIONS TO SINGLE CRYSTALS FOR IMPROVED OXIDATION RESISTANCE

David N. Duhl, Newington, Conn., and Frederick A. Schwizer, Clinton, N.Y., assignors to United Technologies Corporation, Hartford, Conn.

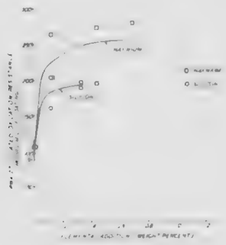
Continuation-in-part of Ser. No. 301,802, Sep. 14, 1981, abandoned. This application Oct. 16, 1984, Ser. No. 661,492

Int. Cl.⁴ B32B *15/01*

U.S. Cl. 428—678 2 Claims

2. A coated single crystal article hving enhanced oxidation resistance consisting of a nickel superalloy substrate consisting of 5–18% chromium, up to 12 % cobalt, at least 5% of the material selected from the group consisting of aluminum and titanium with the aluminum contents ranging from 2% to 8% and titanium content ranging from 1–5%, at least 5% of the material selected from the group consisting of up to 10% Mo, up to 15% W, up to 12% Ta, up to 3% Cb, up to 7% Re, which further contains from 0.05 to 0.2% silicon, balance essentially

nickel, said substrate having a coating thereon consisting of 10–35% chromium, 8–25% aliminum, 0.1–1.0% yttrium balance selected from the group consisting of nickel, cobalt and mixtures thereof.



4,801,514

MULTILAYER ADHESIVE LABEL

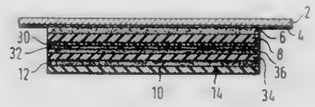
Rolf Will, Bad Toelz, and Hans-Peter Ast, Holzkirchen, both of Fed. Rep. of Germany, assignors to Zweckform Etikettiertechnik GmbH, Holzkirchen, Fed. Rep. of Germany

Continuation of Ser. No. 739,376, May 30, 1985, abandoned. This application Jul. 2, 1987, Ser. No. 70,642

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430162

Int. Cl.⁴ H01M *2/02*

U.S. Cl. 429—167 1 Claim



1. Multilayer adhesive label glued onto a circumferential surface of a dry-cell battery body, the body having an axis and top and bottom end faces, wherein the label comprises:

(a) a bottom layer of hard polyvinyl chloride foil stretched in circumferential direction of the body, an adhesive layer on the bottom side of the bottom layer glued onto the circumferential surface, the top side of the bottom layer covered with a vapor deposited layer of aluminum,

(b) an intermediate layer of hard polyvinyl chloride foil stretched in circumferential direction of the body, an adhesive layer on the bottom side of the intermediate layer glued onto the vapor deposited layer, and an imprint on the top side of the intermediate layer,

(c) a top layer of hard polyvinyl chloride foil stretched in circumferential direction of the body, an adhesive layer on the bottom side of the top layer glued onto the top side of the intermediate layer and the imprint,

wherein the bottom layer, the intermediate layer and the top layer of hard polyvinyl chloride foil are shrinkable, and wherein the label defines edge portions which extend axially beyond the end faces of the body, the end portions being shrunk onto the end faces and the adhesive layer on the bottom of the bottom layer being glued onto the end faces.

4,801,515

PHOTOSENSITIVE MEMBER HAVING AN OVERCOAT LAYER

Shuji Iino, Hirakata; Hideo Hotomi, Suita; Masanori Fujiwara, Osaka; Isao Doi, Toyonaka, and Izumi Osawa, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1987, Ser. No. 69,516

Claims priority, application Japan, Jul. 8, 1986, 61-160228; Jul. 8, 1986, 61-160229; Jul. 8, 1986, 61-160230

Int. Cl.⁴ G03G *5/14*

U.S. Cl. 430—66 8 Claims

1. A photosensitive member comprising:

an electrically conductive substrate;

a photoconductive layer comprising a selenium-arsenic alloy layer or comprising a selenium layer and a selenium-tellurium layer formed in that order; and

an overcoat layer formed on said photoconductive layer and comprising amorphous carbon containing hydrogen, said overcoat layer containing one kind of atom selected from the group consisting of halogen, oxygen and nitrogen.

4,801,516

METHOD OF PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL USING A DEVELOPER COMPRISING A HYDROXYLAMINE AND AN ANTIFOGGANT

Takatoshi Ishikawa, and Morio Yagihara, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

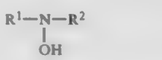
Filed Jun. 24, 1987, Ser. No. 66,022

Claims priority, application Japan, Jun. 25, 1986, 61-147037

Int. Cl.⁴ G03C *7/30*

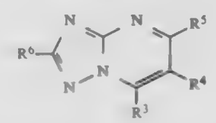
U.S. Cl. 430—380 31 Claims

1. A method of processing a silver halide color photographic material, which comprises imagewise exposing a silver halide color photographic material to light and then processing the silver halide color photographic material with a color developing containing (i) an aromatic primary amine color developing agent, (ii) a hydroxylamine compound represented by formula (I):

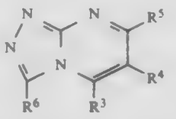


formula (I)

wherein R^1 and R^2 each represent an unsubstituted or substituted alkyl, alkenyl or aryl group and may optionally be joined together to form a nitrogen-containing heterocyclic ring together with the associated nitrogen atom, and (iii) at least one compound selected from the group consisting of formulae (II-a), (II-b) and (II-c):



formula (II-a)



formula (II-b)

wherein R^3, R^4, R^5 and R^6, which may be the same or different, each represent a hydrogen atom; an unsubstituted or substituted alkyl, aryl or amino group; a hydroxyl group; an alkoxy group, an alkylthio group; a carbamoyl group which may optionally be substituted; a halogen atom; a cyano group; a

carboxyl group; an alkoxycarbonyl group, or a heterocyclic group; and R^3 and R^4 and R^5 may optionally form a 5 or 6-membered ring in combination, with the proviso that at least one of R^3 and R^5 represents a hydroxyl group,

Z—S—M formula (II-c)

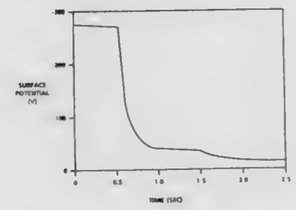
wherein M represents a hydrogen atom, cation or —S—Z, and Z represents a heterocyclic group containing at least one nitrogen atom.

4,801,517

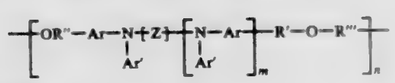
POLYARYLAMINE COMPOUNDS AND SYSTEMS UTILIZING POLYARYLAMINE COMPOUNDS

Jean M. J. Frechet, Ithaca, N.Y.; Sylvie Gauthier, Orleans, Canada; William W. Limburg, Penfield, N.Y.; Rafik O. Loutfy; Dasarao K. Murti, both of Ontario, Canada, and John W. Spiewak, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

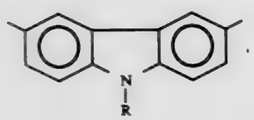
Filed Jun. 10, 1987, Ser. No. 61,053
Int. Cl.[4] G03G *5/07, 5/14*
U.S. Cl. 430—59 **13 Claims**

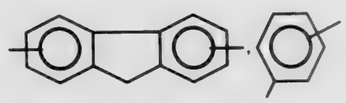


1. An electrostatographic imaging member comprising a support layer, a charge generating layer and a charge transport layer, said charge transport layer comprising an arylamine compound represented by the formula:



wherein:
n is between about 5 and about 5,000,
m is 0 or 1,
Z is selected from the group consisting of:





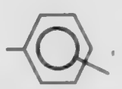
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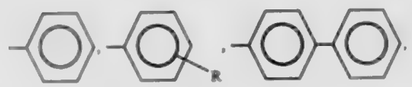
, and —Ar—$(X)_n$—Ar—

n is 0 or 1,
Ar is selected from the group consisting of:

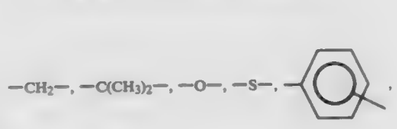


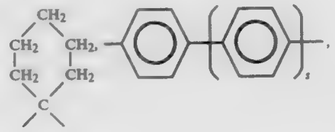


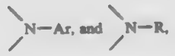
R is selected from the group consisting of —CH_3, —C_2H_5, —C_3H_7, and —C_4H_9,
Ar′ is selected from the group consisting of:



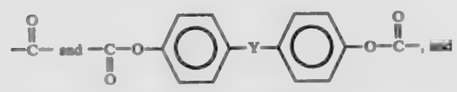
X is selected from the group consisting of:



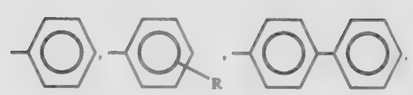




a is 0, 1 or 2,
R′ and R″ are independently selected from the group consisting of —CH_2—, —CH_2CH_2—, —$CH_2CH_2CH_2$—, and —$CH_2CH_2CH_2CH_2$—,
R‴ is selected from the group consisting of:



Y is selected from the group consisting of:



said arylamine compound being substantially non-photoconductive when exposed to radiation having a wavelength between about 4,000 angstroms and about 9,000 angstroms, capable of supporting the injection of photogenerated holes and capable of supporting the transport of said holes.

4,801,518

METHOD OF FORMING A PHOTORESIST PATTERN

Yoshio Yamashita; Ryuji Kawazu; Toshio Itoh; Takateru Asano, and Kenji Kobayashi, all of Tokyo, Japan, assignors to Oki Electric Industry, Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 851,525, Apr. 14, 1986, abandoned. This application Dec. 3, 1987, Ser. No. 129,936
Claims priority, application Japan, Apr. 18, 1985, 60-83070; Jul. 31, 1985, 60-169510
Int. Cl.[4] G03F *7/26*
U.S. Cl. 430—325 **6 Claims**

1. A method of forming a negative type photoresist pattern consisting essentially of the steps of:
forming a photoresist photosensitive coating film of a naphthoquinone diazide sulfonate of a novolak resin on an underlying layer,
exposing a photoresist coating film by selectively irradiating with ultraviolet radiation of 350 to 450 nm through a photomask,
developing the exposed photoresist coating film with a solution made by mixing non-polar solvents containing one or more solvents selected from the group consisting of halogen-containing solvents and alkylbenzene solvents as the major solvent with one or more solvents having a polarity smaller than that of the major solvent and selected from the group consisting of cyclohexane petroleum ether and n-hexane, thereby removing an unexposed portion of the photoresist coating film.

4. A method of forming a negative type photoresist pattern consisting essentially of the steps of:
forming a photoresist photosensitive coating film of a naphthoquinone diazide sulfonate of a novolak resin on an underlying layer,
exposing a photoresist coating film by selectively irradiating with ultraviolet radiation of 350 to 450 nm through a photomask,
baking the exposed photoresist coating film at a temperature of 60° to 130° C.,
developing the exposed photoresist coating film with a solution made by mixing non-polar solvents containing one or more solvents selected from the group consisting of halogen-containing solvents and alkylbenzene solvents as the major solvent with one or more solvents having polarity smaller than that of the major solvent and selected from the group consisting of cyclohexane, petroleum ether and n-hexane, thereby removing an unexposed portion of the photoresist coating film.

4,801,519

PROCESS FOR PRODUCING A PATTERN WITH NEGATIVE-TYPE PHOTOSENSITIVE COMPOSITION

Shigeru Koibuchi; Asao Isobe, both of Hitachi; Daisuke Makino, Mito, and Yutaka Takeda, Ome, all of Japan, assignors to Hitachi Chemical Company Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 855,459, Apr. 24, 1986, abandoned. This application Apr. 13, 1987, Ser. No. 37,847
Int. Cl.[4] G03C *5/00*
U.S. Cl. 430—331 **9 Claims**

1. A process for producing a pattern with a negative-type photosensitive composition which comprises coating a negative-type photosensitive composition on a semiconductor substrate; drying the coating to provide a photosensitive film; subjecting the film to small light exposure to effect curing of selected portions thereof; and developing the film by contacting with a developing solution which comprises at least two compounds selected from the group consisting of a compound of the formula:

$(CH_3)_3(CH_2CH_2OH)NOH$

and compounds of the formula:

$(C_nH_{2n+1})_4NX$ (I)

wherein X is OH, Cl, I or Br; and n is an integer of 1 to 5.

4,801,520

DIRECT POSITIVE COLOR LIGHT-SENSITIVE MATERIAL COMPRISING A DIR COUPLER AND A PYRAZOLOAZOLE COUPLER, AND A PROCESS FOR FORMING A DIRECT POSITIVE IMAGE

Noriyuki Inoue, and Tatsuo Heki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 17, 1987, Ser. No. 75,008
Claims priority, application Japan, Jul. 18, 1986, 61-169523
Int. Cl.[4] G03C *7/00, 1/485*
U.S. Cl. 430—378 **18 Claims**

12. A direct positive color image formation process comprising processing a direct positive color light-sensitive material by a light fogging process, wherein said direct positive light-sensitive material comprises a support having provided thereon at least one photographic emulsion layer containing unfogged internal latent image type silver halide particles and a color image forming coupler, wherein said color image forming coupler itself is substantially nondiffusible and produces or releases a dye upon oxidation coupling with a color developing agent, and said light-sensitive material contains at least one development inhibitor-releasing type coupler selected from the group consisting of compounds represented by formula (D-I) and (D-II)

Coup—Z (D-I)

Coup—TIME—Z (D-II)

wherein Coup represents a coupler residual group; Z represents a diffusible development inhibitor or a precursor thereof; and TIME represents a timing group, which further comprises a pyrazoloazole coupler.

4,801,521

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL WITH A COLOR DEVELOPER COMPRISING A HYDRAZINE DERIVATIVE

Nobutaka Ohki; Nobuo Seto; Hideaki Naruse; Morio Yagihara; Kazuto Asdoh; Takatoshi Ishikawa, and Hiroshi Fujimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

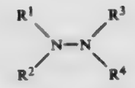
Filed Jul. 22, 1987, Ser. No. 76,505

Claims priority, application Japan, Jul. 22, 1986, 61-170756; May 22, 1987, 62-124038

Int. Cl.[4] G03C *7/30*

U.S. Cl. 430—380 **23 Claims**

1. A method for processing a silver halide color photographic material comprising the step of processing a silver halide color photographic material after imagewise exposure thereof with a color developer containing at least one aromatic primary amine developing agent and at least one hydrazine compound represented by formula (I)



(I)

wherein R^1, R^2, R^3 and R^4, which may be the same or different, each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, provided that R^1 and R^2 may be linked to form a heterocyclic ring; R^3 and R^4 may be linked to form a heterocyclic ring; and at least two hydrazine moieties derived from the compound represented by formula (I) may be linked to form a dimer or polymer by any of R^1, R^2, R^3 and R^4, provided that R^1, R^2, R^3 and R^4 do not all represent hydrogen atoms at the same time.

4,801,522

PROCESS FOR PREPARING A PHOTOGRAPHIC EMULSION CONTAINING TABULAR GRAINS EXHIBITING HIGH SPEED

Charles D. Ellis, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 917,505, Oct. 10, 1986, abandoned. This application Mar. 23, 1988, Ser. No. 171,233

Int. Cl.[4] G03C *1/02*

U.S. Cl. 430—569 **18 Claims**

1. A process for the preparation of a photographic emulsion containing tabular silver halide grains, which exhibit high speed upon sensitization, having a thickness of about 0.05 to 0.5 μm, average grain volume of about 0.05 to 1.0 μm^3, and a mean aspect ratio of greater than 2:1 comprising

A. Adding silver nitrate to a vessel containing a dispersing medium/bromide mixture wherein the initial bromide ion concentration is 0.08 to 0.25 normal whereby tabular seed grains are formed;

B. adding an ammoniacal base solution to achieve 0.002 to 0.2 normal of the base after at least 2% of the total silver nitrate has been added to the vessel; and

C. adding silver nitrate and halide selected from the group consisting of Br^- and BrI^- by balanced double jet procedure whereby tabular grains are formed.

4,801,523

PROCESS FOR THE PREPARATION OF OCTAHEDRAL SILVER CHLORIDE-CONTAINING EMULSIONS

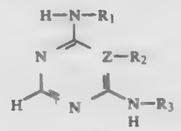
Thomas P. Tufano, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1987, Ser. No. 90,555

Int. Cl.[4] C03C *1/02*

U.S. Cl. 430—589 **14 Claims**

1. A process for preparing a radiation-sensitive photographic emulsion comprising bringing aqueous silver and chloride-containing halide salt solutions into contact in the presence of a dispersing medium thereby forming silver halide grains wherein at least 50% of the total grain population are octahedral silver halide grains and wherein the halide content of the silver halide emulsion is at least 50 mole percent chloride, based on the total moles of silver present, the improvement being forming the octahedral grains at a pH in the range of 2.5 to 9 and a pCl of 0 to 3 in the presence of a crystal habit modifying amount of an organic nitrogen-containing heterocyclic compound of the formula:



wherein Z is C or N; R_1, R_2 and R_3, which may be the same or different, are H or alkyl of 1 to 5 carbon atoms; when Z is C, R_2 and R_3 when taken together can be $—CR_4=CR_5—$ or $—CR_4=N—$, wherein R_4 and R_5, which may be the same or different are H or alkyl of 1 to 5 carbon atoms, with the proviso that when R_2 and R_3 taken together is said $—CR_4=N—$, $—CR_4=$ must be joined to Z; and salts thereof, with the proviso that the organic nitrogen-containing heterocyclic compound is added after at least about 6.0% to about 45% of the silver salt solution has been added.

4,801,524

PROCESS FOR PREPARING SILVER HALIDE EMULSION AND PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING SAID EMULSION

Hiroyuki Mifune; Tadao Shishido, and Yoshiaki Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 725,284, Apr. 19, 1985, abandoned. This application Mar. 20, 1987, Ser. No. 28,040

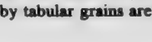
Claims priority, application Japan, Apr. 19, 1984, 59-79161

The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.

Int. Cl.[4] G03C *1/06, 1/02*

U.S. Cl. 430—569 **15 Claims**

1. A process for preparing a silver halide emulsion using a sulfur-containing inhibitor which substantially inhibits growth of silver halide grains, said sulfur-containing inhibitor being used in the formation of silver halide grains and wherein an inorganic oxidizing agent capable of reducing or eliminating the inhibitory activity of the sulfur-containing inhibitor is added to the silver halide emulsion by the start of chemical ripening to reduce or eliminate the inhibitory activity of the sulfur-containing inhibitor said sulfur-containing inhibitor being a mercapto-containing compound represented by formula (I)

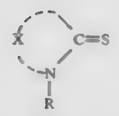


(I)

wherein Z represents an aliphatic group, an aromatic group, or a heterocyclic group,

or a thicketone-containing compound represented by formula (II)





wherein R represents an alkyl group, an aralykyl group, an alkenyl group, an aryl group or a heterocyclic group; and X represents an atomic group forming a 5- or 6-membered ring.

4,801,525

INFRARED SENSITIZED SILVER HALIDE LIGHT-SENSITIVE ELEMENT WITH MORDANT DYE OVER LAYER

Yuji Mihara, and Kunio Ishigaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

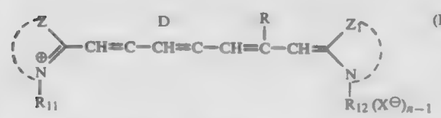
Continuation of Ser. No. 823,844, Jan. 29, 1986, abandoned. This application Jul. 31, 1987, Ser. No. 80,189

Claims priority, application Japan, Jan. 29, 1985, 60-14961

Int. Cl.[4] G03C *1/84*

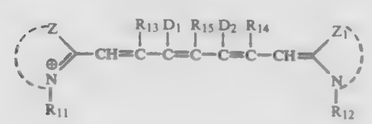
U.S. Cl. 430—518 **9 Claims**

1. A silver halide light-sensitive element comprising a support having provided thereon a silver halide light-sensitive emulsion layer that has been infrared-sensitized, so as to have a sensitivity maximum at a wavelength longer than 750 nm, with at least one sensitizing dye, present in a total amount of from 5×10^{-7} to 5×10^{-3} mol per mol of silver halide, selected from the group consisting of tricarbocyanine dyes represented by formula (IIIa) or (IIIb) and 4-quinoline nucleus-containing dicarbocyanine dyes represented by formula (IIIc)



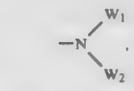
(IIIa)

wherein R represents a hydrogen atom, a methyl group, a methoxy group, or an ethoxy group; R_{11} and R_{12}, which may be the same or different, each represents an alkyl group or a substituted alkyl group; D represents a divalent atomic group necessary to form a substituted or unsubstituted ethylenic linkage; Z and Z_1 each represents a non-metallic atomic group necessary to form a 5- or 6-membered nitrogen-containing heterocyclic ring; $X^\ominus$ represents an acid anion; and n represents 1 or 2;

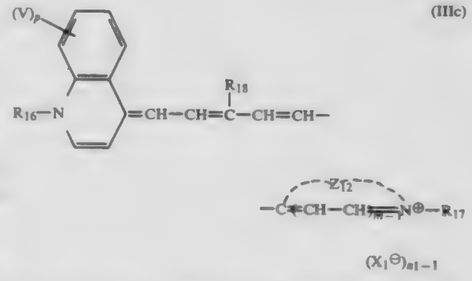


(IIIb)

wherein R_{11}, R_{12}, Z, Z_1, and $X^\ominus$ are the same as defined above for formula (IIIa); R_{13} and R_{14} each represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a phenyl group or a benzyl group; R_{15} represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a phenyl group, a benzyl group or

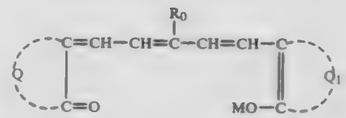


wherein W_1 and W_2 each represents a substituted or unsubstituted alkyl group having 1 to 18 carbon atoms in its alkyl moiety or an aryl group, or W_1 and W_2 together form a 5- or 6-membered nitrogen-containing heterocyclic ring; and D_1 and D_2 each represents a hydrogen atom, or D_1 and D_2 together form a substituted or unsubstituted ethylenic linkage;



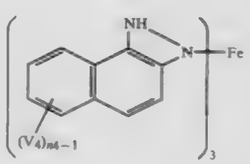
(IIIc)

wherein R_{16} and R_{17} each represents an alkyl group or a substituted alkyl group; R_{18} represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a phenyl group or a benzyl group; V represents a hydrogen atom, a lower alkyl group, an alkoxy group, a halogen atom, or a substituted alkyl group; Z_{12} represents a non-metallic atomic group necessary to form a 5- or 6-membered nitrogen-containing heterocyclic ring; $X^\ominus$ represents an acid anion; and m, n_1 and p each represents 1 or 2, and at least one light-insensitive hydrophilic colloidal layer on said silver halide light-sensitive emulsion layer, wherein said light-insensitive hydrophilic colloidal layer contains a polymer mordant and at least one water-soluble dye, in a total amount of from 10^{-3} to 1 g/m^2, said dye having an absorption maximum at a wavelength between 350 nm and 750 nm, ratio of a density at 780 nm to a density at absorption maximum of 0.6 or less and being selected from dyes represented by formula (Ia)



(Ia)

wherein Q and Q_1 each represents an atomic group necessary to form a pyrazolone, barbituric acid, thiobarbituric acid, isoxazolone, 3-oxythionaphthene, or 1,3-indanedione group; R_0 represents a hydrogen atom, a halogen atom, or a lower alkyl group; and M represents a hydrogen atom, a sodium atom, or a potassium atom; and dyes represented by formula (Id)



(Id)

VOL 1098 ISS 5 JA 31 1989 UMI

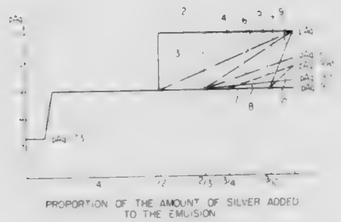
wherein V_4 represents a sulfo group or a carboxyl group; and n_4 represents 2, 3 or 4.

4,801,526

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiji Yoshida; Akio Suzuki; Satoru Nagasaki; Masumi Arai; Iku Metoki, and Haruhiko Sakuma, all of Hino, Japan, assignors to Konica Corporation, Japan

Continuation-in-part of Ser. No. 897,650, Aug. 18, 1986, abandoned. This application Feb. 18, 1988, Ser. No. 161,454
Claims priority, application Japan, Aug. 20, 1985, 60-181050; Sep. 6, 1985, 60-195936
Int. Cl.[4] G03C *1/02, 5/24, 1/06*
U.S. Cl. 430—567 **7 Claims**



1. A silver halide photographic light-sensitive material, comprising a support and at least one silver halide photographic emulsion layer provided on said support, said at least one silver halide emulsion layer containing a silver halide grain which has a localized portion containing 20 mol% or more silver iodide and average silver iodide content of which grain is from 0.1 to 10 mol%, provided that said silver halide grain is prepared by mixing an aqueous solution containing a water soluble halide compound and an aqueous solution containing a water soluble silver salt under a condition that pAg of the mixture is raised between 9.7 and 12.5 during a period after a half amount of said silver salt to be used has been added to the mixture.

4,801,527

PRESENSITIZED O-QUINONE DIAZIDE PLATE HAVING AN ANODIZED ALUMINUM BASE WITH AN AMINE COMPOUND CONTAINING HYDROPHILIC LAYER

Shuiti Takamiya, and Hirokazu Sakaki, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 691,796, Jan. 16, 1985, abandoned. This application Apr. 21, 1987, Ser. No. 42,619
Claims priority, application Japan, Jan. 17, 1984, 59-6050; May 4, 1984, 59-89627
Int. Cl.[4] G03C *1/94, 1/54*
U.S. Cl. 430—166 **11 Claims**

1. In a presensitized plate for use in making a planographic printing plate which comprises an aluminum plate having an anodized film layer, a hydrophilic layer provided on said anodized film layer and a lithographically suitable light-sensitive comprising a positive working light-sensitive composition containing an o-quinonediazide compound on said hydrophilic layer, the improvement wherein said anodized film layer is prepared using an electrolyte selected from the group consisting of sulfuric acid, phosphoric acid, oxalic acid, chromic acid, or a mixture thereof, and wherein said hydrophilic layer comprises a hydrophilic compound having (1) at laast one amino group and (2) at least one group selected from the class consisting of a carboxyl group in the free acid or salt form, a sulfo group in the free acid form or salt form, and a hydroxyl group.

4,801,528

DENTAL ADHESIVE SYSTEM

Richard J. Bennett, Milford, Del., assignor to Dentsply Research & Development Corporation, Milford, Del.

Continuation of Ser. No. 503,308, Jun. 10, 1983, abandoned, which is a continuation of Ser. No. 259,964, Apr. 5, 1981, abandoned. This application Oct. 29, 1985, Ser. No. 792,241
Int. Cl.[4] A61K *5/06*
U.S. Cl. 433—220 **15 Claims**

1. A method of bonding an article to a tooth with a visible light-activated adhesive comprised of a mixture of:
(1) an aromatic or hydroaromatic acrylate or methacrylate having at least two ethylenic double bonds with
(2) an aliphatic acrylate or methacrylate,
(3) an alpha, beta diketone, and
(4) a tertiary amine comprising curing said adhesive by irradiation with visible light, such visible light being applied through a surface of the tooth.

4,801,529

METHODS FOR ISOLATING MUTANT MICROOGANISMS USING MICROCAPSULES COATED WITH INDICATOR MATERIAL

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Filed Jun. 18, 1985, Ser. No. 745,881
Int. Cl.[4] C12N *11/04;* **C12Q** *1/70, 1/18, 1/04*
U.S. Cl. 435—5 **30 Claims**

1. A method for isolating a mutant microorganism, where the method comprises:
(a) separately microencapsulating individual or a small number of microorganisms from a microorganism population containing the mutant to obtain a first microdroplet;
(b) surrounding the first microdroplet, thereby forming an inner microdroplet, with an outer gel-coating to obtain a gel-coated microdroplet, wherein the gel-coating on the microdroplet contains an indicator materials which reacts to the presence of the mutant microorganism;
(c) incubating the gel-coated microdroplets to induce a detectable difference in the indicator material surrounding microdroplets containing mutant microorganisms; and
(d) separating the microdroplets containing mutant microorganisms from those containing non-mutant microorganisms based upon the detectable difference in the indicator material.

18. The method of claim 1, wherein said microorganisms comprise viruses.

4,801,530

NUCLEOTIDE HYBRIDIZATION ASSAY FOR PROTOZOAN PARASITES

Nadia Nogueira, Princeton, N.J., and Paul Lizardi, New York, N.Y., assignors to Rockefeller University, New York, N.Y.

Continuation of Ser. No. 584,646, Feb. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 522,811, Aug. 12, 1983, abandoned. This application Apr. 16, 1987, Ser. No. 38,959
Int. Cl.[4] C12Q *1/68;* **C12N** *1/20, 1/10*
U.S. Cl. 435—6 **30 Claims**

1. A hybridization probe which specifically binds to repetitive portions of nuclear DNA of *Trypanosoma cruzi*, which probe compreise substantially pure sequences of nucleic acids which are complimentary to said repetitive portions of *Trypanosoma cruzi* nuclear DNA, said sequences being of sufficient length to hybridize to said repetitive portions and to identify said portions as *Trypanosoma cruzi* nuclear DNA.

4,801,531

APO AI/CIII GENOMIC POLYMORPHISMS PREDICTIVE OF ATHEROSCLEROSIS

Philippe M. Frossard, Palo Alto, Calif., assignor to Biotechnology Research Partners, Ltd., Mountain View, Calif.

Continuation-in-part of Ser. No. 724,192, Apr. 17, 1985, abandoned. This application Sep. 30, 1985, Ser. No. 782,666
Int. Cl.[4] C12Q *1/68;* **G01N** *33/567*
U.S. Cl. 435—6 **32 Claims**

24. A method of genetically identifying an individual, which method comprises detecting the presence or absence of one or more polymorphisms selected from the group consisting of:
the "ApaI" polymorphism 5.4 kb 5' of the apoAI gene;
the "XmnI/8.2" polymorphism 4 kb 5' of the apoAI gene;
the "XmnI/7.2" polymorphism 3.7 kb 5' of the apoAI gene in combination with the "MspI" polymorphism in the 3rd intron of the apoAI gene;
the "HgiAI" polymorphism in the 3rd exon of the apoAI gene;
the "PstI" polymorphism 0.3 kb 3' of the apoAI gene; and
the "PvuII" polymorphism in the 1st intron of the apoCIII gene.

4,801,532

IMMUNOLOGICAL METHODS FOR DIAGNOSING NEUROCYSTICERCOSIS

Raymond E. Kuhn, Clemmons; John J. Estrada, Winston-Salem, both of N.C., and Max Grogl, Silver Spring, Md., assignors to Wake Forest University, Winston-Salem, N.C.

Division of Ser. No. 766,017, Aug. 15, 1985, Pat. No. 4,740,456. This application Sep. 30, 1987, Ser. No. 102,674
Int. Cl.[4] G01N *33/53, 33/561, 33/567*
U.S. Cl. 435—7 **12 Claims**

1. A method for diagnosing active human neurocysticercosis by detecting the presence of at least one *Taenia solium* larval antigen in cererospinal fluid, which comprises:
contacting cerebrospinal fluid from a human to be diagnosed with a solid support, wherein said support binds with a *Taenia solium* larval antigen if present,
contacting said support with a first antibody, wherein said first antibody binds with a larval Taenia solium antigen if present in said cerebrospinal fluid,
contacting said solid support with a detectable second antibody which will bind with said first antibody, and
detecting said second antibody bound to said support.

4,801,533

METHOD OF USING ALPHA-1 ACID GLYCOPROTEIN ON T-CELLS AS A MARKER FOR ALZHEIMER'S DISEASE

H. Hugh Fudenberg, P.O Box 702, Sullivan Island, S.C. 29482

Filed Jun. 25, 1986, Ser. No. 878,352
Int. Cl.[4] G01N *33/53*
U.S. Cl. 435—7 **8 Claims**

1. A method of diagnosing a dementia of the Alzheimer's type characterized by a change in the percentage of T-cells bearing surface membrane alpha-1 acid glycoprotein which comprises providing T-cells from a subject, determining the percentage of those T cells which bear surface membrane alpha-1 acid glycoprotein, and comparing that percentage of the percentage of T cells which bear said glycoprotein in a control, whereby said dementia is diagnosed.

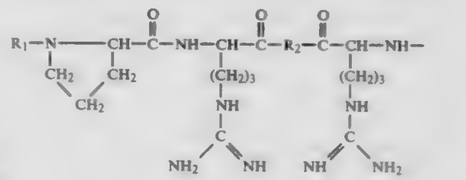
4,801,534

WATER SOLUBLE ZANTHYLIUM DERIVATIVE SUBSTRATES

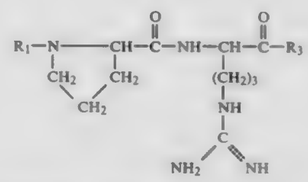
Gary A. Mitchell, Miami Lakes; Gerald E. Jaffe, Pembroke Pines, and Marilyn M. Solorzano, Sunrise, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Division of Ser. No. 737,761, May 28, 1985, Pat. No. 4,694,070. This application Jun. 18, 1987, Ser. No. 63,353
Int. Cl.[4] C12Q *1/56, 1/38;* **C12N** *9/99*
U.S. Cl. 435—13 **13 Claims**

1. A method to obtain a hydrolyzed product for determining the activity of a sample, said sample including at least a proteolytic enzyme; said sample may include one or more member of the group consisting of: an inhibitor, a cofactor, an activator, and an antiactivator, for said enzyme, said method comprising the steps of:
admixing a xanthylium derivative substrate with said sample, and permitting the admixture to stand for a period of time sufficient to obtain a hydrolyzed product capable of being used for determining the activity in said sample;
said xanthylium derivative substrate being selected from the group consisting of:



and



and acid salts thereof, wherein:
R_1 is a water solubilizing radical selected from the group consisting of sacrosyl, pyroglutamyl, and glutaryl;
R_2 is xanthylium, 3',6'-diamino-9'-(2-carboxyphenyl); and
R_3 is xanthylium, 3'-amino-6'-hydroxy-9'-(2-carboxyphenyl).

4,801,535

METHOD FOR DETECTION OF PERIODONTAL DISEASE

Scott D. Babler, Park Ridge; Peter Baram, Chicago; Paul H. Rudolph, Glenwood, and Frank J. Waxman, Bolingbrook, all of Ill., assignors to Xytronyx, Inc., Chicago, Ill.

Filed Mar. 18, 1986, Ser. No. 840,890
Int. Cl.[4] C12Q *1/52*
U.S. Cl. 435—16 **15 Claims**

1. In a method for detection of aspartate aminotransferase in an oral fluid sample through (1) incubation of the sample with aspartate aminotransferase substrates in a first reaction mixture to form a first reaction product and (2) detection of reaction product therein by incubation with an indicator substance in a

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second reaction mixture wherein a second, colored reaction product is formed, the improvement comprising:

(a) utilizing a diazonium compound as the indicator substance in the second reaction mixture; and

(b) modifying reaction conditions within the first and second reaction mixtures so that no visually detectable colored reaction product will be formed in the second reaction mixture when a selected subthreshold level of aspartate aminotransferase is present in said first reaction mixture but a visually detectable colored reaction product will be formed in the second reaction mixture when a selected nonzero suprathreshold concentration of aspartate aminotransferase is present in the first reaction mixture.

4,801,536

METHOD FOR PRODUCING HETEROLOGOUS PROTEINS

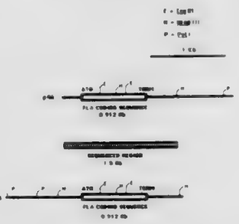
Mark L. Stahl, Arlington, and Edward R. LaVallie, Melrose, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 786,749, Oct. 11, 1985, abandoned. This application Jun. 2, 1987, Ser. No. 57,881

Claims priority, application PCT Int'l Appl., Oct. 10, 1986, PCT/US86/02168

Int. Cl.[4] C12P *21/00*; C12N *15/00*

U.S. Cl. 435—68 **9 Claims**



1. A method for producing a heterologous protein in a bacterial host cell such that the protein is exported from the host cell into the culture medium, the method comprising culturing in a bacterial culture medium a genetically engineered bacterial strain containing a fusion DNA sequence which comprises a first nucleotide sequence encoding at least an N-terminal portion of a flagellin protein native to the bacterial host cell species and a second nucleotide sequence encoding the heterologous protein, said first nucleotide sequence being linked via its 3' terminus to the 5' terminus of the second DNA sequence and said fusion DNA sequence being operatively linked to an expression control sequence and wherein said N-terminal portion results in the export of said heterologous protein.

4,801,537

VECTOR FOR EXPRESSION OF POLYPEPTIDES IN BACILLI

Vasantha Nagarajan, Rockville, Md.; Craig S. Rhodes, Washington, D.C., and Carl D. B. Banner, Bethesda, Md., assignors to Genex Corporation, Gaithersburg, Md.

Continuation-in-part of Ser. No. 618,902, Jun. 8, 1984, abandoned, which is a continuation-in-part of Ser. No. 511,198, Jul. 6, 1983, abandoned. This application Mar. 29, 1985, Ser. No. 717,800

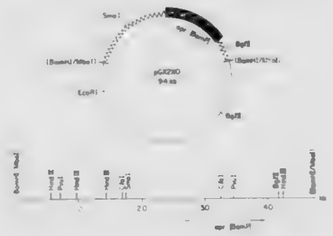
Int. Cl.[4] C12P *21/00*; C12N *15/00, 9/54, 1/20*

U.S. Cl. 435—68 **47 Claims**

1. A process for producing a microorganism for the expression of a protease enzyme which comprises transforming cells of a first Bacillus species with a replicable plasmidic expression vector comprising:

(a) a replicon;

(b) a DNA sequence comprising the promoter and regulatory regions which control expression and secretion of a protease in cells of a second Bacillus species; and



(c) a DNA sequence encoding the amino acid sequence of the desired protease, operably linked to said promoter and regulatory regions.

4,801,538

PROCESS FOR DETERMINING SUPEROXIDE DISMUTASE ACTIVITY

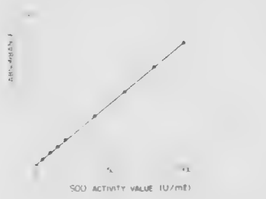
Toshiro Hanada, Kawagoe, and Kazuhiko Yamanishi, Tokyo, both of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 28, 1986, Ser. No. 834,971

Claims priority, application Japan, Mar. 1, 1985, 60-40526; Jun. 29, 1985, 60-144168; Nov. 26, 1985, 60-265257

Int. Cl.[4] C12Q *1/26, 1/28*; C12N *9/02, 9/08*

U.S. Cl. 435—25 **15 Claims**



11. A process for determining superoxide dismutase activity which comprises;

(i) producing superoxide anions by a method selected from the group consisting of (a) the reaction of xanthine with xanthine oxidase, (b) the use of a superoxidized compound, and (c) the reaction of a reduced form coenzyme with an electron carrier,

(ii) reacting superoxide dismutase with the superoxide anions produced in step (i) in the presence of an electron carrier and a maleimide, a carbonyl compound and a member selected from the group consisting of bromine ions and citric acid or a salt thereof, to produce hydrogen peroxide, and

(iii) determining the amount of hydrogen peroxide produced therefrom colorimetrically wherein the amount of hydrogen peroxide produced is an indication of superoxide dismutase activity present.

4,801,539

FERMENTATION METHOD FOR PRODUCING HYALURONIC ACID

Hidemichi Akasaka; Hisayuki Komasaki, and Takayuki Arai, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Japan

Filed May 9, 1985, Ser. No. 732,267

Claims priority, application Japan, May 25, 1984, 59-105942

Int. Cl.[4] C12P *19/04*; C12R *1/46*; C07H *5/06*; C08B *37/00*

U.S. Cl. 435—101 **5 Claims**

1. A method of preparing hyaluronic acid free from streptolysin comprising the steps of:

a. obtaining an anhemolytic mutant of Streptococcus zooepidemicus microorganisms capable of producing hyaluronic acid;

b. growing a culture of said anhemolytic mutant;

c. recovering hyaluronic acid free from streptolysin from said culture of anhemolytic mutant.

4,801,540

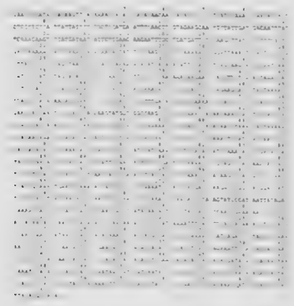
PG GENE AND ITS USE IN PLANTS

William R. Hiatt; Raymond E. Sheehy; Christine K. Shewmaker; Jean C. Kridl, and Vic Knauf, all of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation-in-part of Ser. No. 920,574, Oct. 17, 1986, which is a continuation-in-part of Ser. No. 845,676, Mar. 28, 1986, abandoned. This application Jan. 2, 1987, Ser. No. 201

Int. Cl.[4] C12N *15/00, 5/00*; C12P *21/00*; C07H *15/12*

U.S. Cl. 435—172.3 **14 Claims**



1. A DNA sequence which is uninterrupted, encodes tomato polygalacturonase (PG) and is flanked by at least one non-wild type DNA sequence 5' to or 3' to said polygalacturonase encoding sequence.

4,801,541

METHOD OF INCREASING THE YIELD OF A PRODUCT BY ALTERING A MICROORGANISM

Yuko Yoneda, Rochester, and Frank E. Young, Pittsford, both of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Continuation of Ser. No. 519,911, Aug. 3, 1983, abandoned, which is a continuation of Ser. No. 301,417, Sep. 11, 1981, abandoned. This application Jun. 3, 1987, Ser. No. 58,688

Int. Cl.[4] C12N *15/00, 9/28, 1/20*; C12R *1/125*

U.S. Cl. 435—172.3 **7 Claims**

1. A method for increasing the yield of α-amylase in a *Bacillus subtilis* host microorganism which comprises introducing into said host at least one regulatory gene capable of increasing the biosynthesis of said α-amylase and introducing into said host microorganism at least one structural gene for said α-amylase from a heterologous microorganism by lysogenizing said host microorganism with a recombinant bacteriophage containing said structural gene wherein the combination of said introduced regulatory gene and structural gene results in a rate of biosynthesis of α-amylase that exceeds a base level amount produced in said *Bacillus subtilis* in the absence of said introduced combination.

4,801,542

EXPRESSION OF BIOLOGICALLY ACTIVE PDGF ANALOGS IN EUCARYOTIC CELLS

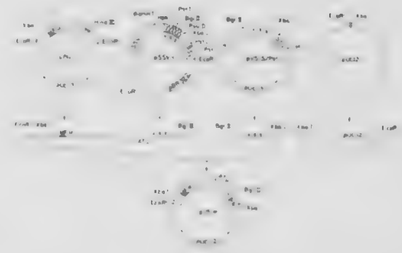
Mark J. Murray, and James D. Kelly, both of King County, Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 660,496, Oct. 12, 1984. This application Feb. 25, 1985, Ser. No. 705,175

The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.

Int. Cl.[4] C12N *15/00, 5/00*; C12P *21/00, 19/00*

U.S. Cl. 435—172.3 **37 Claims**



1. A DNA construct capable of directing the expression and secretion of biologically active PDGF analogs in eucaryotic cells, said vector containing a transcriptional promotor followed downstream by a gene encoding a protein having substantially the same biological activity as PDGF, and a signal sequence positioned upstream from and in proper reading frame wih said gene, said signal sequence directing the secretion of the protein from the eucaryotic cell.

4,801,543

PROCESS AND DEVICE FOR THE DIFFERENTIATION OF PARTICLES IN A MEDIUM

William M. Arnold, Aachen, and Ulrich Zimmermann, Hurtgenwald-Gey, both of Fed. Rep. of Germany, assignors to Kerforschungsanlage Julich, Fed. Rep. of Germany

Filed Jul. 18, 1984, Ser. No. 831,857

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1983, 3325843

The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.

Int. Cl.[4] C12N *13/00*

U.S. Cl. 435—173 **20 Claims**

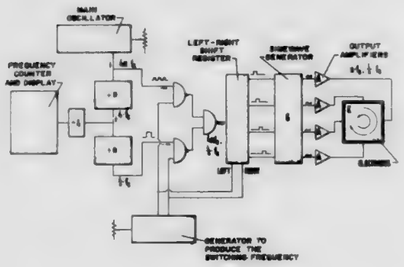
10. An apparatus for use in the differentiation of particles comprising;

a chamber containing the particles;

at least three electrodes arranged in such a way that the chamber is exposed to a rotating electric field produced by the electrodes, and

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means for producing two simultaneous rotating electrical fields with opposite directions of rotation and variable



rotational frequencies in each case, said means being connected to said electrodes.

4,801,544

METHOD OF IMPROVING THE STORAGE LIFE OF LIQUID COMPOSITIONS CONTAINING ENZYMES

Barbara H. Musk, Albany, Calif., assignor to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 650,617, Sep. 12, 1984, abandoned. This application Dec. 8, 1986, Ser. No. 939,264

Int. Cl.[4] C12N *9/96*; C11D *10/02*

U.S. Cl. 435—188 **3 Claims**

1. A method for improving the storage life of a liquid enzyme composition comprising, by weight, about 60 to 70% hydrocarbon solvent, about 25 to 35% surfactant, about 0.1 to 1.0% enzymes, and less than 5.0% water with a solvent to surfactant ratio of about 2:1, consisting essentially of the steps of sequentially:

(a) mixing the enzymes into an aqueous solution with constant agitation;

(b) then mixing surfactant into the aqueous enzyme solution with constant agitation; and

(c) then gradually adding the hydrocarbon solvent to the aqueous enzyme/surfactant mixture with constant agitation whereby the aqueous enzyme/surfactant mixture is encapsulated as reversed micelles in hydrocarbon solvent medium for protecting the enzyme from the hydrocarbon solvent during the steps of the process and producing the resulting soil removal composition product as a clear, stable liquid.

4,801,545

ENHANCED SOMATIC EMBRYOGENESIS USING MALTOSE

David A. Stuart; Steven G. Strickland, and James W. Nichol, all of Davis, Calif., assignors to Plant Genetics, Inc., Davis, Calif.

Continuation-in-part of Ser. No. 496,186, May 19, 1983, abandoned. This application Dec. 23, 1983, Ser. No. 565,116

Int. Cl.[4] C12N *5/00, 5/02*

U.S. Cl. 435—240.45 **9 Claims**

1. In a medium for cultured somatic plant cells, the improvement comprising the inclusion of 7.5 to 300 mM maltose together with at least one amino acid selected from the group consisting of proline, alanine and glutamine in an amount sufficient to increase the number of somatic embryos produced from said plant somatic tissue.



4,801,546

APPARATUS FOR DETECTING MICRO-ORGANISMS

Martin R. Ackland, Wantage, England, assignor to Metal Box Public Limited Company, Reading, England

PCT No. PCT/GB84/00235, § 371 Date Feb. 25, 1985, § 102(e) Date Feb. 25, 1985, PCT Pub. No. WO85/00225, PCT Pub. Date Jan. 17, 1985

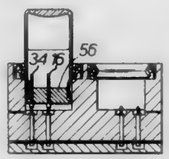
PCT Filed Jun. 28, 1984, Ser. No. 709,035

Claims priority, application United Kingdom, Jun. 29, 1983, 8317685

The portion of the term of this patent subsequent to Aug. 31, 2004, has been disclaimed.

Int. Cl.[4] C12M *1/34*

U.S. Cl. 435—291 **8 Claims**



1. Apparatus for use in detecting micro-organisms in any one of a plurality of samples of a substance, comprising a plurality of containers for samples, wherein each container includes a first electrode of a noble metal and a second electrode of a different metal insulated from the first electrode, the electrodes being arranged so as to be contactable with a sample in the container and presenting respective contact surfaces externally of the container, a container-mounting member provided with means for receiving and locating each of the containers and with a first set of contacts adapted to engage the external contact surfaces of the noble metal electrodes and with a separate lead from each of the said first set of contacts adapted for connecting the noble metal electrodes to separate terminals of a multiplexing recorder system and with a second set of contacts adapted to make contact with the external contact surfaces of the second electrodes, all said second set of contacts being connected to a common lead adapted for connecting said second electrodes to a common terminal of a multiplexing recorder system, the container-mounting member being a block formed with recesses each of which is adapted to receive and locate an individual container and being provided with one of each of said two sets of contacts, the container-mounting block having attached to its underside a printed circuit board with leads connecting each of said first set of contacts to an individual contact of a multi-way connector and with leads connecting all of said second set of contacts to a common contact of the multi-way connector.

4,801,547

DEVICE FOR DETECTING PRESENCE OF MICRO-ORGANISMS IN A SAMPLE

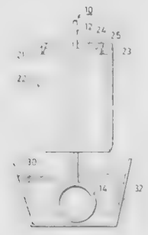
Melvyn Rosenberg, Ramat-Gan, Israel, assignor to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel Aviv, Israel

Filed Dec. 22, 1987, Ser. No. 136,666

Claims priority, application Israel, Jan. 2, 1987, 81145

Int. Cl.[4] C12M *1/26*

U.S. Cl. 435—292 **19 Claims**



1. A device for transferring a portion of a sample to a culture medium to detect the presence of microorganisms in the sample, comprising:

a supporting member including two panels hinged together along one edge to permit the panels to assume a folded condition with one panel folded over the other, or an open condition;

a culture medium carried on the face of at least one of said panels facing the other panel when the panels are in their folded condition;

and a transfer member adapted to be supported between the faces of the two panels when in their folded condition and dimensioned such that the opposite ends of the transfer member project from the opposite ends of the culture medium, whereby one projecting end may be brought into contact with the sample to pick-up a part thereof, and the opposite projecting end may be grasped by the user and pulled to move said one end of the transfer member between the contacting faces of the folded panels to transfer and dilute, by smearing, the picked-up sample to said culture medium.

4,801,548

PETRI DISH FOR CULTIVATING BACTERIA AND METHOD OF INSPECTING DRUG SUSCEPTIBILITY

Tetsuya Takakura, Osaka; Kenzi Asano, Hyogo, and Kazuyuki Sugahara, Nagasaki, all of Japan, assignors to Kobayashi Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 774,757, Sep. 11, 1985, Pat. No. 4,775,628. This application Nov. 20, 1987, Ser. No. 123,141

Claims priority, application Japan, Oct. 9, 1984, 59-212163

Int. Cl.[4] C12M *1/20*

U.S. Cl. 435—301 **6 Claims**

1. A Petri dish for cultivating bacteria characterized in that a mouth of the upper edge of said Petri dish is covered with a sheet, said sheet being pervious to a component of a media to be filled inside said Petri dish and able to hold bacteria on the surface thereof, said Petri dish being further provided with a small aperture in the bottom and sectioned by partitions, the height of said partitions reaching to said sheet from the bottom of said Petri dish.



4,801,549

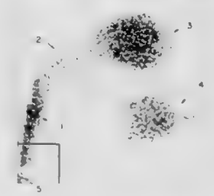
METHOD FOR THE DETERMINATION OF A DIFFERENTIAL WHITE BLOOD CELL COUNT

John F. Cremins, Waterbury, Conn.; Young R. Kim, Hartsdale, N.Y.; Michael J. Malin, Park Ridge, N.J., and Louis D. Sciafani, Carmel, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 773,166, Sep. 6, 1985, abandoned. This application Feb. 2, 1987, Ser. No. 9,423

Int. Cl.[4] G01N *15/10, 15/14*

U.S. Cl. 436—63 **23 Claims**



1. A process for rapidly preparing a blood sample for a differential white blood cell count which comprises:

(a) preparing a aqueous reagent solution comprising formaldehyde in a concentration of from about 4.5% to about 6.6% weight/volume;

a surfactant;

a sugar or sugar alcohol; and

a pH buffer to maintain the pH of said reagent solution at between about 6.6 and 7.6;

(b) contacting said reagent solution with a blood sample and rapidly mixing said reagent solution with the sample to form a uniform reaction mixture within about five seconds after initially contacting each other;

(c) lysing red blood cells contained in said reaction mixture and fixing white blood cells contained in said reaction mixture by heating the reaction mixture to a temperature of from about 62° C. to about 72° C. within 30 seconds; and

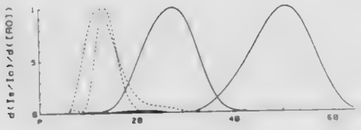
(d) staining at least a portion of white blood cells in the reaction mixture to yield a suspension of stained and unstained white blood cells.

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4,801,550
METHOD FOR SEPARATING AND ANALYZING NUCLEIC ACIDS

Jun Kapuscinski, Carmel, and Zbigniew Darzynkiewicz, Chappaqua, both of N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed May 23, 1984, Ser. No. 613,156
Int. Cl.⁴ G01N *31/02, 33/50*
U.S. Cl. 436—94 **5 Claims**

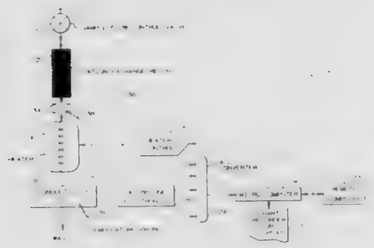


1. A method for separately recovering nucleic acids present in a sample containing a mixture of nucleic acids based upon the primary or secondary structure, or both, of the nucleic acids, comprising the steps of:
- treating the sample with an aqueous solvent to dissolve the nucleic acids present in the mixture;
- contacting the resulting sample containing dissolved nucleic acids with increasing concentrations of a 3- or 4-ring aromatic cationic ligand, which binds to single-stranded nucleic acids by cooperative association and induce condensation thereof, so as to form a series of precipitates;
- monitoring the formation of the precipitates so as to obtain a series of transition curves;
- separating each of the precipitates from the aqueous solvent using the transition curves so as to obtain a precipitated fraction for each nucleic acid present in the sample;
- renaturing each precipitated fraction; and
- separately recovering from each fraction the nucleic acid present therein.

4,801,551
RUGGED DISSOLVED CARBON DIOXIDE MONITOR FOR HIGH PURITY WATER

William A. Byers, Penn Hills Township, Allegheny County; Gerald L. Carlson, Mt. Lebanon Township, Allegheny County, both of Pa., and James C. Bellows, Maitland, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 6, 1986, Ser. No. 915,605
Int. Cl.⁴ G01N *33/18, 33/48*
U.S. Cl. 436—133 **10 Claims**

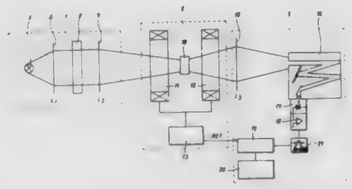


1. A method of determining dissolved carbon dioxide concentration in a sample, comprising the steps of:
- (a) measuring a first cation conductivity in the sample at a first temperature;
- (b) measuring a second cation conductivity in the sample at a second temperature different from the first temperature; and
- (c) determining an actual concentration of carbon dioxide in the sample in dependence upon the first and second measured cation conductivities.

4,801,552
METHOD AND A SPECTROMETER FOR MEASURING ABSORBANCE DIFFERENCE SPECTRA OF RADICAL REACTIONS

Arnold J. Hoff, Leiden, Netherlands, assignor to Rijksuniversiteit Leiden, Leiden, Netherlands

PCT No. PCT/NL86/00004, § 371 Date Sep. 30, 1986, § 102(e) Date Sep. 30, 1986, PCT Pub. No. WO86/04673, PCT Pub. Date Aug. 14, 1986
PCT Filed Feb. 10, 1986, Ser. No. 919,000
Claims priority, application Netherlands, Feb. 6, 1985, 8500363
Int. Cl.⁴ G01J *3/42;* **G01N** *21/62*
U.S. Cl. 436—173 **3 Claims**

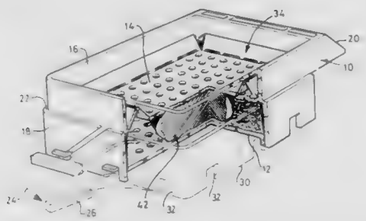


1. An improved method for measuring the absorbance difference spectra of radical reactions in a material using a modulated perturbation of the concentration of reactants in radical complexes induced by radiation, the yield of substances and/or molecular states produced by recombination, and by escaping radicals being influenced, the improvement comprising the steps of:
- applying a modulated magnetic field on said material for changing the absorbance generated by the material,
- adjusting the temperature of said material over a large temperature range of approximately 160°–300° K., and
- phase-sensitively detecting/change of absorbance over said large temperature range for a wide frequency range.

4,801,553
METHODS OF AND APPARATUS FOR PREPARING TISSUE SPECIMENS

Stephen Owen, 8 Hillside, Royston, Herts SG8 9AY; John R. North, Browns Farmhouse, College Rd., Durrington, Salisbury SP4 8AW, and Stefan Nowinski, Pearce Close, Cambridge CB3 9LY, all of United Kingdom

Filed Jun. 25, 1987, Ser. No. 66,377
Int. Cl.⁴ A23G *1/20;* **B01L** *3/00;* **B22D** *19/00;* **G01N** *1/30*
U.S. Cl. 436—174 **23 Claims**

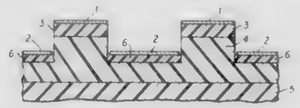


1. A method of preparing a tissue specimen for microtome sectioning, comprising the steps of locating the specimen between a base portion and a separable portion of a cassette connected at an interface, resiliently holding the specimen in a desired orientation in the cassette, processing the located specimen in at least one fluid while holding the specimen in the desired orientation, embedding the processed and located specimen in the cassette in an embedding medium and removing the separable portion of the cassette to leave the located and embedded specimen supported on the base portion of the cassette in the desired orientation for subsequent microtome sectioning of the specimen.

4,801,554
PROCESS FOR MANUFACTURING A POWER SEMICONDUCTOR COMPONENT

Jens Gobrecht, Gebenstorf; Peter Roggwiller, Riedt-Neerach; Roland Sittig, Umiken, and Jan Voboril, Nussbaumen, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Division of Ser. No. 592,280, Mar. 22, 1984, Pat. No. 4,596,999. This application Feb. 26, 1986, Ser. No. 833,219
Int. Cl.⁴ H01L *21/308*
U.S. Cl. 437—6 **2 Claims**

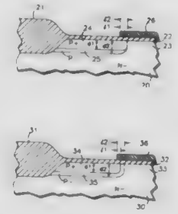


1. A process for manufacturing a semiconductor component having at least first, second and third consecutive layers, the first and second layers extending up to a first surface of the component, the first layer being heavily doped, a first contact plane and a second contact plane formed apart from each other to define said first surface, said first and second contact planes divided into sections defining a steplike structure for making connection to the first layer and the second layer, wherein the first layer has a maximum thickness of 8 μm, the second layer, respectively, is lightly doped and has a maximum thickness of 40 μm, the step-like structure is in the form of steps having a height of between 10 μm, and 20 μm and a width of between 20 μm and 300 μm, and the first and second contact planes have respective surface areas, wherein the ratio between the surface area of the first contact plane is between 1 and 4, comprising:
- producing said first layer as a heavily doped layer by diffusing impurities into said second layer, which is formed of lightly doped semiconductor material;
- applying a silicon dioxide layer to said first heavily doped layer;
- photolithographically forming an aluminum mask on said silicon dioxide layer, said mask defining lateral dimensions of said step-like structure;
- etching trenches down to the second lightly doped layer by reactive ion etching of exposed portions of said silicon dioxide layer and said first layer not covered by said mask;
- removing said mask and thereby leaving portions of said silicon dioxide layer previously covered by said mask as a self-aligned diffusion mask with respect to said trenches;
- producing a fourth layer which is heavily doped by diffusing impurities into said second layer through the trenches previously etched while using the remaining portions of the self-aligned silicon dioxide layer as said diffusion mask;
- completely removing said layer of silicon dioxide;
- vapor depositing a thin metal layer over the entire surface of said first, second and fourth layers; and
- isotropically etching the said metal layer until the metal has been completely removed from the side walls of the trenches, wherein said first and second contact planes are formed by the remaining of said metal layer deposited on said first and fourth layers, respectively.

4,801,555
DOUBLE-IMPLANT PROCESS FOR FORMING GRADED SOURCE/DRAIN REGIONS

Patrick J. Holly, Tempe, Ariz.; Louis C. Parrillo, and Frank K. Baker, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 14, 1987, Ser. No. 3,176
Int. Cl.⁴ H01L *00/00*
U.S. Cl. 437—29 **3 Claims**



1. A method of forming a graded P-type source/drain semiconductor region within an N-type semiconductor region comprising the steps of:
- performing a first ion implantation step at a relatively lower dose and using one of a relatively higher energy and a relatively less massive ion, said first ion implantation step introduces a P-type dopant into said N-type semiconductor region; and
- performing a second ion implantation step, without performing any intervening patterning steps between said first and second ion implantation steps, at a relatively higher dose and using one of a relatively lower energy and a relatively more massive ion, said second ion implantation step introduces a P-type dopant into said N-type semiconductor region.

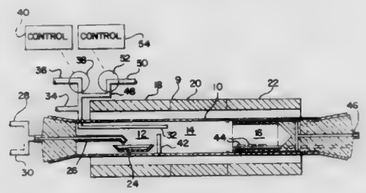
VOL 1098 ISS 5 JA 31 1989 UMI

4,801,556
SELF-ALIGNED BIPOLAR FABRICATION PROCESS
Anthony D. Welbourn, Ipswich, and Christopher J. H. Heslop, Woodbridge, both of England, assignors to British Telecommunications Public Limited Company, United Kingdom
Filed Sep. 8, 1987, Ser. No. 93,667
Claims priority, application United Kingdom, Sep. 8, 1986, 8621534
Int. Cl.⁴ H01L *21/265*
U.S. Cl. 437—32 **4 Claims**



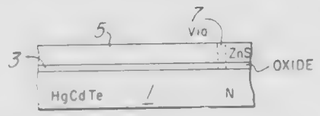
1. A method of fabricating a bipolar transistor comprising emitter, base and collector regions in a semiconductor substrate, the method comprising the steps of:
(a) forming a dielectric layer on the surface of the substrate;
(b) etching the dielectric and the underlying substrate to produce a recess about the areas of substrate which are to form the active area and the collector sinker of the transistor;
(c) filling the recess by forming a dielectric layer therein;
(d) forming on the surface of the substrate a further dielectric layer;
(e) etching said further dielectric layer to leave a body of dielectric over part of the said area of substrate which is to form the active area;
(f) forming base contacts by direct implantation of boron into the substrate adjacent said body;
(g) subsequent to step f, forming a layer of conductive material in the substrate about and; in physical contact with said body; and
(h) removing said body and implanting the base region in the substrate through the opening left in the conductive material by the removal of the body.

4,801,557
VAPOR-PHASE EPITAXY OF INDIUM PHOSPHIDE AND OTHER COMPOUNDS USING FLOW-RATE MODULATION
Bruce W. Wessels, Wilmette, Ill., and Pei-Jih Wang, Carmel, N.Y., assignors to Northwestern University, Evanston, Ill.
Filed Jun. 23, 1987, Ser. No. 65,726
Int. Cl.⁴ H01L *21/205*
U.S. Cl. 437—81 **13 Claims**



1. A method of effecting epitaxial growth of a crystal on a crystalline substrate comprising the steps of:
a. passing a continuous flow of a mixture of a first carrier gas and an active gas over a heated container containing a metal to form a vapor stream containing a compound of the metal;
b. producing a flow of a second carrier gas and a first reactant gas;
c. modulating the flow of the first reactant gas to produce a repeatedly interrupted flow of the first reactant gas at a predetermined frequency and duty cycle;
d. mixing the flow of the second carrier gas and the modulated flow of the first reactant gas with the vapor stream in a reaction region;
e. continuously directing the mixed flow of the vapor stream, the second carrier gas and the modulated flow of the first reactant gas from the reaction region into a deposition region containing the crystalline substrate heated to a predetermined temperature; and
f. venting the mixed flow from the deposition region, whereby a compound of the active gas and the first reactant gas is deposited epitaxially on the crystalline substrate.

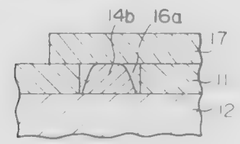
4,801,558
ELECTROSTATIC DISCHARGE PROTECTION USING THIN NICKEL FUSE
Arturo Simmons; Shawn T. Walsh, both of Garland, and Charles G. Roberts, McKinney, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 907,130, Sep. 12, 1986, Pat. No. 4,714,949, and a continuation of Ser. No. 656,111, Sep. 28, 1984, abandoned. This application Jul. 29, 1987, Ser. No. 79,051
Int. Cl.⁴ C25F *3/00, 3/14*
U.S. Cl. 437—170 **18 Claims**

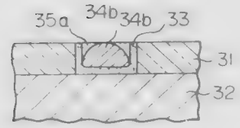


1. A method of making a semiconductor device, comprising the steps of:
(a) providing a semiconductor substrate;
(b) forming an insulating layer on said substrate;
(c) forming a via through said insulating layer to said substrate; and
(d) forming a conductive layer having a gate region and a reduced area fuse region on said insulating layer, said reduced area region extending to said substrate through said via.

4,801,559
PROCESS FOR FORMING PLANAR WIRING USING POLYSILICON TO FILL GAPS
Kazunori Imaoka, Komae, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 817,175, Jan. 9, 1986, abandoned, Division of Ser. No. 734,256, May 15, 1985, abandoned, which is a continuation of Ser. No. 400,012, Jul. 20, 1982, abandoned. This application Feb. 29, 1988, Ser. No. 165,367
Claims priority, application Japan, Jul. 21, 1981, 56-114716
Int. Cl.⁴ H01L *21/283*
U.S. Cl. 437—193 **5 Claims**

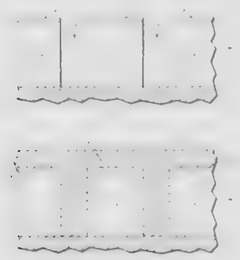
5. A method for producing a semiconductor device having a semiconductor substrate, comprising the steps of:
(a) forming an insulating layer on the semiconductor substrate;
(b) selectively etching the insulating layer and forming a contact hole therein;
(c) forming a thin polycrystalline silicon layer on the insulating layer and in the contact hole;
(d) depositing a metal over the thin polycrystalline silicon layer, a portion of the metal layer in the contact hole forming a contact electrode positioned in such a way that a wedge-shaped gap is formed between the contact electrode and the thin polycrystalline silicon layer;
(e) depositing polycrystalline silicon on the entire surface to form a polycrystalline silicon layer including a wedge-shaped portion in the wedge-shaped gap;
(f) etching the polycrystalline silicon layer, the metal layer, and the thin polycrystalline silicon layer to form a level surface of the insulating layer, the wedge-shaped portion and the contact electrode;





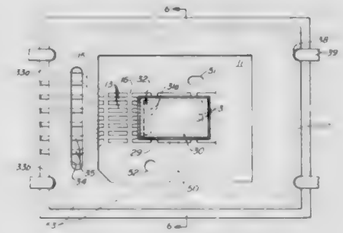
(g) forming a conductor line on the level surface of the insulating layer, the wedge-shaped portion and the contact electrode; and
(h) alloying the polycrystalline silicon layer with the conductor line and the contact electrode.

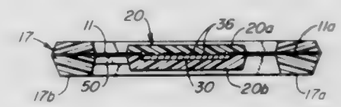
4,801,560
SEMICONDUCTOR PROCESSING UTILIZING CARBON CONTAINING THICK FILM SPIN-ON GLASS
Thomas E. Wood, Chandler, and Henry G. Hughes, Scottsdale, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.
Filed Oct. 2, 1987, Ser. No. 103,770
Int. Cl.⁴ H01L *21/441, 21/473*
U.S. Cl. 437—195 **20 Claims**



1. A method of producing semiconductor devices comprising the steps of:
providing a substrate;
depositing a first layer of spin-on glass which contains carbon on a surface of said substrate;
depositing a layer of photoresist on a surface of said first layer of spin-on glass which contains carbon;
masking and developing said photoresist;
etching through said first layer of spin-on glass which contains carbon in an area defined by said photoresist to said substrate;
removing said layer of photoresist utilizing a directional etching mechanism; and
removing carbon from a top skin of said first layer of spin-on glass which contains carbon.

4,801,561
METHOD FOR MAKING A PRE-TESTABLE SEMICONDUCTOR DIE PACKAGE
Thanomsak Sankhagowit, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Division of Ser. No. 628,106, Jul. 5, 1984, Pat. No. 4,701,781. This application Jun. 18, 1987, Ser. No. 63,356
Int. Cl.⁴ H01L *5/00, 23/48*
U.S. Cl. 437—207 **9 Claims**





1. A method of fabricating a tapemounted semiconductor die package testable in-situ comprising:
providing a metal foil lead frame having multiple interconnected finger contacts extending from a die-receiving area, said contacts having inner beam ends, outer test ends and intermediate portions therebetween including cross-links connecting said finger contacts;
connecting contact pads of a semiconductor die to said inner beam ends;
molding a package-forming encapsulant around said die and said inner beam ends on said lead frame whereby said outer test ends and intermediate portions of said finger contacts extend outwardly from said encapsulant;
molding an insulative carrier over at least a transverse part of said outer test ends of said finger contacts while leaving said outer test ends exposed whereby electrical probe contact can be made to said finger contacts; and
removing said cross-links from their location between said finger contacts whereby said outer test ends become electrically isolated and are accessible for probe testing individual ones of said finger contacts adjacent said carrier.

4,801,562
REFRACTORY FIBERS OF ALUMINA AND AMORPHOUS PHOSPHORUS PENTOXIDE
Harold G. Sowman, and Tai T. Tran, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 854,319, Apr. 21, 1986, abandoned. This application May 7, 1987, Ser. No. 49,017
Int. Cl.⁴ C03C *13/00;* **C04B** *35/02, 35/44*
U.S. Cl. 501—35 **23 Claims**

1. A refractory fiber consisting essentially of a homogeneous mixture of amorphous alumina and amorphous phosphorus pentoxide, the mole ratio of alumina to phosphorus pentoxide being in the range of 10:1 to 2:1, said fiber being essentially free of silica by containing less than 0.25 weight percent silica based on the total oxide composition, and said fiber being of uniform shape.

4,801,563

THERMAL INSULATING EXPANDED SILICATE-HYDRATE PRODUCT AND METHOD OF FORMING

Eugene M. White, 1624 Franklin Ave., Fort Wayne, Ind. 46808

Filed Sep. 26, 1986, Ser. No. 913,109
Int. Cl.[4] C04B *38/00;* **C03C** *11/00*
U.S. Cl. 501—85 **21 Claims**

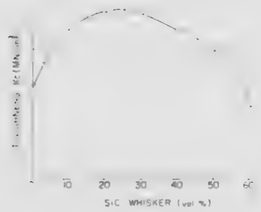
1. A thermal insulating material comprising a plurality of substantially spherical bubbles forming an agglomeration, each said bubble being of expanded silica and having an outer generally spherical wall that consists substantially of a plurality of microbubbles, said microbubbles forming a hollow spherical agglomeration to thereby form said spherical bubble.

4,801,564

HIGH-TOUGHNESS CERAMIC TOOL MATERIALS

Hidetoshi Baba, Aichi, Japan, assignor to 501 NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jun. 17, 1986, Ser. No. 875,016
Claims priority, application Japan, Jun. 17, 1985, 60-130021
Int. Cl.[4] C04B *35/56, 35/58, 35/80*
U.S. Cl. 501—92 **16 Claims**



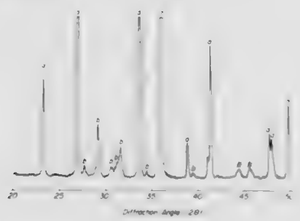
1. A high-toughness ceramic tool material consisting essentially of 50–95% by volume of a main sialon base phase, wherein at least 10% by volume of the sialon base phase consists of alpha-sialon, and 5–50% by volume of a SiC whisker phase.

4,801,565

SILICON NITRIDE SINTERED BODIES AND A METHOD OF MANUFACTURING THE SAME

Minoru Matsui, Nagoya, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Apr. 7, 1987, Ser. No. 35,484
Claims priority, application Japan, Apr. 16, 1986, 61-85855
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—98 **7 Claims**



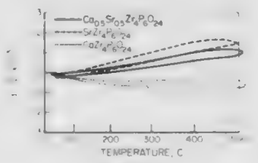
1. A silicon nitride sintered body consisting essentially of Si_3N_4 as a main ingredient, at least one oxide of a rare earth element present in an amount between 3–10% by weight and ZrO_2 present in an amount less than 1.0% by weight, wherein said sintered body has an intergranular phase which consists mainly of a J-phase solid solution, said J-phase solid solution being a crystal phase having a caspidiene structure of a monoclinic system represented by the formula: $M_3^I(M_2^{II}M_7^{III})$-$M^I M_2^{IV}$, wherein M^I is an element selected from the group consisting of Y, Mg, Fe and Ni; M^{II} is an element selected from the group consisting of Si and Al; M^{III} is an element selected from the group consisting of O and N; and M^{IV} is an element selected from the group consisting of F, O and N.

4,801,566

LOW EXPANSION CERAMIC

Santosh Y. Limaye, Salt Lake City, Utah; Dinesh K. Agrawal, State College, Pa.; Herbert A. McKinstry, State College, Pa., and Rustum Roy, State College, Pa., assignors to Pennsylvania State University, State College, Pa.

Filed Mar. 13, 1987, Ser. No. 25,700
Int. Cl.[4] C04B *35/48*
U.S. Cl. 501—104 **4 Claims**



1. A polycrystalline material having low bulk thermal expansion and low anisotropy comprising a solid solution having a composition of $Ca_{1-x}M_xZr_4P_6O_{24}$ or a diphasic mixture having a composition of $(1-x)CaZr_4P_6O_{24} + xMZ_4P_6O_{24}$, wherein M is Ba and/or Sr and x is between about 0.25 and 0.75.

4,801,567

OXIDATION CATALYST

Eric L. Moorehead, Diamond Bar, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 666,997, Oct. 31, 1984, Pat. No. 4,604,371, which is a continuation-in-part of Ser. No. 461,942, Jan. 28, 1983, Pat. No. 4,481,363, which is a division of Ser. No. 289,806, Aug. 3, 1981, Pat. No. 4,388,221, said Ser. No. 666,997, is a continuation-in-part of Ser. No. 646,291, Aug. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 461,942, , said Ser. No. 666,997, is a continuation-in-part of Ser. No. 492,163, May 6, 1983, Pat. No. 4,562,269, and Ser. No. 492,226, May 6, 1983, abandoned, each is a continuation-in-part of Ser. No. 275,370, Jun. 19, 1981, abandoned. This application Apr. 21, 1986, Ser. No. 854,119
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.[4] B01J *29/06, 27/18, 23/22*
U.S. Cl. 502—77 **57 Claims**

4. An oxidation catalyst as defined in claim 1 wherein said catalyst contains a crystalline aluminosilicate zeolite having a silica-to-alumina ratio of at least 20.0.

39. An oxidation catalyst comprising components of phosphorus and vanadium in combination with a microporous crystalline silica, said vanadium being present in an average oxidation state less than 5.0 and wherein said phosphorus and vanadium are present in an atom ratio greater than about 2.0, phosphorus to vanadium, and said catalyst has a surface area of at least 50 m^2/gm.

53. An oxidation catalyst comprising components of vanadium and phosphorous in combination with silicalite, said vanadium being present in an average oxidation state less than 5.0 and wherein said phosphorus and vanadium are present in an atom ratio greater than about 2.0, phosphorus to vanadium, and said catalyst has a surface area of at least about 50 m^2/gm.

4,801,568

CATALYST FOR AMMOXIDATION OF PARAFFINS

James F. Brazdil, Jr., Mayfield Village; Linda C. Glaeser, Cleveland Hts., and Mark A. Toft, Lakewood, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 22, 1987, Ser. No. 111,829
Int. Cl.[4] B01J *23/14, 23/18, 23/22, 23/30*
U.S. Cl. 502—209 **9 Claims**

1. A catalytic mixture suitable for the ammoxidation of propane to acrylonitrile, which comprises an intimate particulate mixture of a first catalyst composition and a second catalyst composition, said first catalyst composition being 10–99 weight percent of a diluent/support and 90–1 weight percent of a catalyst having the components in the proportions indicated by the empirical formula:

$$VSb_mA_aB_bC_cT_tO_x, \qquad \text{formula (1)}$$

where
A is one or more of W, Sn, Mo, B, P and Ge and includes at least 0.2 atoms of W per atom of V;
B is one or more of Fe, Co, Ni, Cr, Pb, Mn, Zn, Se, Te, Ga, In and As;
C is one or more of an alkali metal and Tl;
T is one or more of Ca, Sr and Ba; and
where m is from 0.01 and up to 20; a is 0.2–10; b is 0–20; c is 0–1; t is 0–20; the ratio (a+b+c+t):(1+m) is 0.01–6; wherein x is determined by the oxidation state of other elements, and wherein the antimony has an average valency higher than +3 and the vanadium has an average valency lower than +5,
said second catalyst composition being 0–99 weight percent of a diluent/support and 100–1 weight percent of a catalyst having the components in the proportions indicated by the empirical formula:

$$A_aC_cG_gSn_dSb_eO_x \qquad \text{formula (2)}$$

where
A is one or more of Cu, V, W, Mo
C is one or more of Bi, Ti, Ge, La, Ce, Cr, Mn, Mg Ca, Co, Ni, Pb, Nb, Ta, Zr, Ag, Zn, Cd, B, P, Ga, In, Te, Fe, Sm
G is one or more of K, Cs and Na
a is 0–10
c is 0–10
d is 0.1–10
e is 0.1–10
g is 0–1
(d+e) is 5–20
x is a number determined by the requirements of the other elements present, and
wherein the atoms of V:e is <0.01, the atoms of V:d is <0.01, the atoms of Fe are either less than d or are less than e, and wherein the weight ratio in said mixture of said first catalyst composition to said second catalyst composition is in the range of 0.001 to 2.5.

4,801,569

NOVEL FIXED-BED VANADIUM PHOSPHATE CATALYST SYSTEMS

Michael J. Desmond, Cleveland Heights, and Marc A. Pepera, Northfield Center, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 30, 1985, Ser. No. 792,714
Int. Cl.[4] B01J *27/198, 21/02*
U.S. Cl. 502—209 **16 Claims**

1. An activated catalyst system comprising a physical mixture containing a first component containing an active catalytic material characterized by the formula:

$$A_xV_yP_zO_w$$

wherein
A comprises an alkali metal, alkaline earth metal, a transition metal, Group IIIB element, IVB element, VB element or mixtures thereof;
x=0 to about 1;
y=about 1;
z=0.8 to 2.5; and
w=the number of oxygen atoms sufficient to satisfy the valence requirements of the other elements; and
a second component containing a noncatalytic material comprising an oxide of a Group IA–IIIA element, Pb, In, Sb, Sn, Tl, Bi or mixtures thereof.

4,801,570

PROCESS FOR PREPARING A SUPPORTED, PROMOTED MOLYBDENUM AND/OR TUNGSTEN SULFIDE HYDROPROCESSING CATALYST

Archie R. Young, Montclair; Teh C. Ho, Bridgewater; Allan J. Jacobson, Princeton, and Russell R. Chianelli, Somerville, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 687,534, Dec. 28, 1984, Pat. No. 4,668,376. This application Jan. 29, 1987, Ser. No. 8,008
Int. Cl.[4] B01J *27/047, 27/049, 27/051*
U.S. Cl. 502—220 **10 Claims**

1. A process for preparing a supported catalyst, said process comprising compositing a support material with one or more precursor salts and heating said composite at elevated temperature of at least about 150° C., in the presence of sulfur and under oxygen-free conditions for a time sufficient to form said catalyst, wherein said precursor salt contains a tetrathiometallate anion of Mo, W or mixture thereof and a promoter metal cation selected from manganese and mixtures of manganese with Ni, Co, Zn, Cu or mixture thereof wherein said promoter metals are chelated by a ligand or mixture thereof, at least one of which is a neutral, nitrogen-containing polydentate ligand.

4,801,571

CATALYST AND PROCESS FOR PRODUCTION OF AN ALPHA, BETA-ETHYLENICALLY UNSATURATED MONOCARBOXYLIC ACID

Ruth A. Montag, Naperville, and Stephen T. McKenna, Lisle, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 891,755, Jul. 31, 1986, abandoned. This application Jul. 9, 1987, Ser. No. 71,476
Int. Cl.[4] B01J *23/14*
U.S. Cl. 502—236 **38 Claims**

19. A method for making a cesium-containing catalyst containing a SiO_2-SnO_2 mixed-oxide and suitable for vapor-phase condensation of a saturated monocarboxylic acid with formaldehyde to produce an alpha, beta-ethylenically unsaturated monocarboxylic acid, which method comprises the steps of combining, with agitation, a silica sol having a silica particle diameter of about 50 to about 200 Angstroms, a slurry of SnO_2 and a cesium compound able to provide cesium in the +1 oxidation state on the catalyst support, in relative amounts sufficient to produce a freely-flowing slurry having a SiO_2/SnO_2 weight ratio of about 0.05 to about 6 and a Cs/(SiO_2+SnO_2+Cs) weight ratio of about 0.01 to about 0.15;
solidifying the produced, freely-flowing slurry to a gel;
drying the obtained gel to a crushable solid state; and
calcining the dried gel for a time period sufficient to remove adsorbed moisture therefrom.

4,801,572
MODIFIED CHROMIUM-CONTAINING CATALYST COMPOSITION FOR POLYMERIZING ALPHA-OLEFINS AND METHOD OF PREPARING SAME

J. T. T. Hsieh, Warren, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 28, 1987, Ser. No. 56,039
Int. Cl.[4] B01J *21/06, 21/08, 21/10, 23/26*
U.S. Cl. 502—242 **70 Claims**

1. In a supported alpha-olefin polymerization catalyst composition comprising a chromium compound, which is CrO_3 or any compound of chromium calcinable to CrO_3 under catalyst activation conditions, an improvement comprising combining the catalyst composition with a catalyst modifier which is an oxide of an element of Group IIA of the Periodic Chart of the Elements containing at least about 0.5% by weight of water to form a modified catalyst composition.

4,801,573
CATALYST FOR PRODUCTION OF HYDROCARBONS

Sigrid Eri, Trondheim, Norway; James G. Goodwin, Jr.; George Marcelin, both of Pittsburgh, Pa., and Trygve Riis, Oslo, Norway, assignors to 501 Den Norske Stats Oljeselskap A.S., Trondheim, Norway

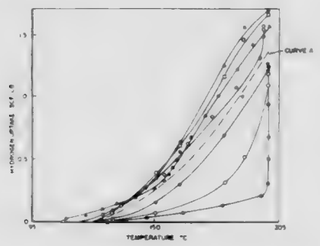
Filed Oct. 23, 1987, Ser. No. 113,095
Int. Cl.[4] B01J *21/04, 23/68*
U.S. Cl. 502—302 **13 Claims**

1. A catalyst for converting synthesis gas to hydrocarbons comprising amounts of cobalt catalytically active in a Fischer-Tropsch synthesis and relatively lesser amounts of rhenium than the cobalt content composited on an alumina support.

4,801,574
IN-SITU ACTIVATION OF CUO/ZNO/AL_2O_3 CATALYSTS IN THE LIQUID PHASE

Dennis M. Brown, Allentown; Thomas H. Hsiung, Emmaus; Pradip Rao, Allentown, and George W. Roberts, Emmaus, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 2, 1987, Ser. No. 127,830
Int. Cl.[4] B01J *21/04, 23/06, 23/72;* **C07C** *29/16*
U.S. Cl. 502—342 **3 Claims**



1. In a process for the activation of $CuO/ZnO/Al_2O_3$ catalysts, which are used as a catalyst for liquid phase methanol synthesis reaction or liquid phase shift reaction, wherein said catalyst is dispersed in an inert liquid phase medium thereby producing a catalyst slurry and activated by subjecting the catalyst slurry to a temperature ramping in the presence of a hydrogen containing atmosphere, the improvement for achieving full activity of the catalyst comprises:

(a) controlling activation temperature during the temperature ramping over the range of 110° C. to 200° C. in relation to hydrogen consumption, wherein in controlling the temperature, a specific activation temperature in the temperature ramping is maintained prior to being increased according to the temperature ramping until at least a minimal hydrogen uptake has been achieved: said minimal hydrogen uptake being ascertained by the following equation:

$$H_2 \text{ Uptake} \geq \chi(9.3-.16[T]+0.00069[T^2])$$

wherein H_2 Uptake has units of SCF/lb of catalyst, χ is the weight fraction of copper in the catalyst, and T is the specific activation temperature in degrees Centrigrade;

(b) holding the temperature at 200° C. for an effective period of time so as to insure that the reduction is complete; and

(c) raising the temperature from 200° C. to 240° C. at about 10° C./hour and holding the temperature at 240° C. for one (1) hour, thereby completing the activation of the $CuO/ZnO/Al_2O_3$ catalyst.

4,801,575
CHIMERIC PEPTIDES FOR NEUROPEPTIDE DELIVERY THROUGH THE BLOOD-BRAIN BARRIER

William M. Pardridge, Van Nuys, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 30, 1986, Ser. No. 891,867
Int. Cl.[4] A61K *37/02;* **C07K** *17/00, 7/40*
U.S. Cl. 514—4 **19 Claims**

1. A chimeric peptide adapted for delivering a neuropharmaceutical agent into the brain by transcytosis through the blood-brain barrier, said chimeric peptide comprising:

a transportable peptide capable of crossing the blood-brain barrier by transcytosis, said peptide being selected from the group consisting of insulin, transferrin, IGF-I, IGF-II, basic albumin and prolactin; and

a neuropharmaceutical agent selected from the group consisting of somatostatin, thyrotropin releasing hormone, vasopressin, alpha interferon, endorphin, muramyl dipeptide and L-methionyl(sulfone)-L-glutamyl-L-histidyl-L-phenylalanyl-D-lysyl-L-phenylalanine, wherein said neuropharmaceutical agent is conjugated with said transportable peptide.

10. A method for delivering a neuropharmaceutical agent into the brain of an animal by transcytosis through the blood-brain barrier comprising the step of introducing a chimeric peptide into the bloodstream of said animal in a sufficient amount to provide transport of said chimeric peptide across said blood-brain barrier, wherein said chimeric peptide comprises a transportable peptide capable of crossing the blood-brain barrier conjugated with a neuropharmaceutical agent.

4,801,576
METHOD OF INHIBITING BLOOD CLOTTING WITH DESULFATOHIRUDINS

Hans Fritz, Hohenbrunn; Johannes Dodt; Ursula Seemüller, both of Munich, and Ernst Fink, Westerstede-Giesselhorst, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 929,710, Nov. 13, 1986, Pat. No. 4,745,177, which is a division of Ser. No. 673,952, Nov. 21, 1984, Pat. No. 4,654,302. This application Jan. 19, 1988, Ser. No. 145,023
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1983, 3342139
Int. Cl.[4] A01N *1/02;* **A61K** *37/02*
U.S. Cl. 514—12 **3 Claims**

1. A method of inhibiting clotting of mammalian blood comprising contacting said blood with at least one desulfatohirudin selected from

(I)

H—Val—Val—Tyr—Thr—Asp—Cys—Thr—Glu—Ser—Gly—
—Gln—Asn—Leu—Cys—Leu—Cys—Glu—Gly—Ser—Asn—
—Val—Cys—Gly—Gln—Gly—Asn—Lys—Cys—Ile—Leu—

-continued

—Gly—Ser—Asp—Gly—Glu—Lys—Asn—Gln—Cys—Val—
—Thr—Gly—Glu—Gly—Thr—Pro—Lys—Pro—Gln—Ser—
—His—Asn—Asp—Gly—Asp—Phe—Glu—Glu—Ile—Pro—
—Glu—Glu—Tyr—Leu—Gln—OH

and

(II)

H—Val—Val—Tyr—Thr—Asp—Cys—Thr—Glu—Ser—Gly—
—Gln—Asn—Leu—Cys—Leu—Cys—Glu—Gly—Ser—Asn—
—Val—Cys—Gly—Gln—Gly—Asn—Lys—Cys—Ile—Leu—
—Gly—Ser—Asp—Gly—Glu—Lys—Asn—Gln—Cys—Val—
—Thr—Gly—Glu—Gly—Thr—Pro—Lys—Pro—Gln—Ser—
—His—Asn—Asp—Gly—Asp—Phe—Glu—Glu—Ile—Pro—
—Glu—Glu—Tyr—OH.

4,801,577
NONAPEPTIDE AND DECAPEPTIDE ANALOGS OF LHRH USEFUL AS LHRH ANTAGONISTS

John J. Nestor, Jr., San Jose, and Brian H. Vickery, Saratoga, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 5, 1987, Ser. No. 10,923
Int. Cl.[4] C07K *7/20;* **A61K** *37/43*
U.S. Cl. 514—15 **41 Claims**

1. A compound of the formula

(I)

A—B—C—Ser—D—E—F—G—Pro—J
1 2 3 4 5 6 7 8 9 10

or a pharmaceutically acceptable salt thereof, wherein:

A is an amino acyl residue selected from the group consisting of either the D- or the L-isomer of: N-Ac-D,L-$\Delta^{3,4}$-prolyl, N-Ac-D,L-prolyl, N-Ac-D,L-phenylalanyl, N-Ac-D,L-p-chlorophenylalanyl, N-Ac-D,L,-p-fluorophenylalanyl, N-Ac-3-(1-naphthyl)-D,L-alanyl, N-Ac-3-(2-naphthyl)-D,L-alanyl, and N-Ac-3-(2,4,6-trimethylphenyl)-D,L-alanyl;

B is an amino acyl residue selected from the group consisting of D-phenylalanyl, D-p-chlorophenylalanyl, D-p-fluorophenylalanyl, D-p-nitrophenylalanyl, 2,2-diphenylglycyl, D-α-methyl-p-chlorophenylalanyl and 3-(2-naphthyl)-D-alanyl;

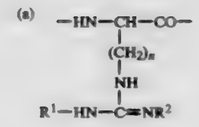
C is an amino acyl residue selected from the group consisting of D-tryptophanyl, D-phenylalanyl, 3-(3-pyridyl)-D-alanyl, and 3-(2-naphthyl)-D-alanyl;

D is an amino acyl residue selected from the group consisting of L-phenylalanyl, L-tyrosyl, and 3-(3-pyridyl)-alanyl, arginyl, or G;

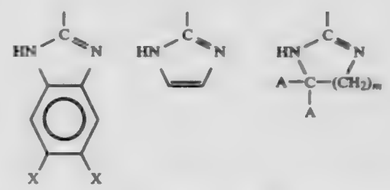
E is 3-(2-naphthyl)-D-alanyl, 3-(3-pyridyl)-D-alanyl, D-tyrosyl, D-tryptophanyl, D-nicotinyl-lysyl, pyridylacetyl-lysyl, D-Glu(AA) or G;

F is an amino acyl residue selected from the group consisting of L-leucyl, L-norleucyl, L-phenylalanyl, L-tryptophanyl, and 3-(2-naphthyl)-L-alanyl;

G is an amino acyl residue selected from the group consisting of the radicals represented by the following structural formulas:

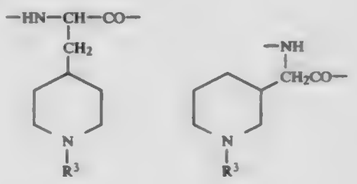
(a)  (II)

wherein
n is 1 to 5;
R^1 is alkyl of 1 to 6 carbon atoms or fluoroalkyl;
R^2 is hydrogen or R^1; or R^1—HN—C═NR^2 is a ring represented by the following structure formulas:



wherein m is 1 to 4; A is hydrogen or alkyl of 1 to 6 carbon atoms; and X is halo or A; and

(b)



wherein
R^3 is hydrogen, alkyl of 1 to 6 carbon atoms, phenyl or phenyloweralkyl; and
J is D-alaninamide; D-leucinamide; glycinamide; or —NHR^4 wherein R^4 is lower alkyl or $NHCONH_2$.

4,801,578
MURAMYLPEPTIDE-GLYCOPROTEIN IMMUNOSTIMULANT DERIVATIVES, THEIR PREPARATION AND THEIR USE IN MEDICATION

Michel Monsigny, Saint-Cyr-en-Val, and Annie-Claude Roche, Saint-Pryve, both of France, assignors to Etablissement Public dit Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed Jun. 4, 1984, Ser. No. 617,176
Claims priority, application France, Jun. 3, 1983, 83 09325
Int. Cl.[4] C07K *15/14, 9/00;* **A61K** *37/02, 45/05*
U.S. Cl. 514—8 **9 Claims**

1. A derivative of the formula

$$(R—X)_m—(LAM)$$

wherein
R is an N-acetylmuramylpeptidyl group or a derivative thereof;
(LAM is a neoglycoprotein having affinity for macrophages or monocytes, consisting of a protein covalenty substituted by more than 5 glycidic chains, each having at least 5 osidic units selected from α-D-glucose, α-D-mannose, α-L-fucose, N-acetylglucosamine, α-L-glucose, β-L-galactose, β-D-galactose, α-D-galactosamine, β-D-galactosamine, β-L-rhamose or 6-phosphoryl α-D-mannose,

X is a covalent bond between a functional group of the peptidic part of R and a functional group of (LAM) or X is the residue of a conventional bifunctional coupling agent capable of bonding to R and (LAM) by formation of covalent bonds; and

m is a number greater than or equal to 1.

4,801,579

NOVEL CYSTINE COMPOUNDS, THEIR PREPARATION AND USE

Naderer Rainer, Arnoldstein; Buxbaum Lothar, Villach, both of, and Langer Klaus, Erlangen, Fed. Rep. of Germany, assignors to Bleiberger Bergwerks Union, Austria and Pfrimmer & Co. Pharmazeutische Werke Erlangen GmbH & Co. KG, Fed. Rep. of Germany

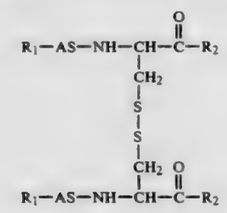
Filed Nov. 2, 1987, Ser. No. 115,796

Claims priority, application Austria, Nov. 7, 1986, 2980/86

Int. Cl.[4] A61K *37/00*; **C07C** *103/00*

U.S. Cl. 514—18 14 Claims

1. Cystine compounds of the general formula:



(I)

which compounds may be acids, esters or salts,

wherein the AS independently of one another represent a divalent entity of a natural, L-amino acid, a carboxyl group of said L-amino acid forming a peptide bond —CO—NH— together with the —NH group;

the R_1 independently of one another each stand for an acyl group of an organic acid with 2 to 5 carbon atoms or for a natural L-amino acid, a carboxylic group whereof forming a peiptide bond —CO—NH— together with an amino group of the amino acid AS, wherein the amino acids for which R_1 stands may be the same as the amino acids for AS or the two R_1 together may form the acyl group of an organic dicarboxylic acid; and

when the compounds are acids, the R_2 independently of one another represents each an hydroxy group or R_3, wherein R_3 is a further amino acid, an amino group whereof forming a peptide bond —CO—NH— together with the



group, and when the compounds are esters, each of the R_2 independently represents an alkoxy group with 1 to 4 carbon atoms and when the compounds are salts R_2 is OR_4 or $—R_3R_4$, wherein R_3 has the above meaning and R_4, is the salt forming portion of a reactant member selected from the group consisting of inorganic bases, organic bases and basic amino acids.

4,801,580

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

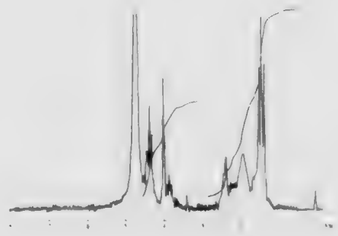
Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi; Matsuhiko Aratani, both of Suita; Hidekazu Takeno, Tenri; Satoshi Okada, Takatsuki; Hirokazu Tanaka; Masashi Hashimoto, both of Takarazuka; Yoshio Kuroda, Takatsuki; Eiko Ignchi, Osaka; Masanobu Kohsaka, Sakai; Hatsuo Aoki, Ikeda, and Hiroshi Imanaka, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

Division of Ser. No. 229,072, Jan. 28, 1981, which is a continuation-in-part of Ser. No. 201,241, Oct. 27, 1980, which is a continuation-in-part of Ser. No. 171,024, Jul. 22, 1980, which is a continuation-in-part of Ser. No. 149,441, May 13, 1980, which is a continuation-in-part of Ser. No. 147,710, May 8, 1980, which is a continuation-in-part of Ser. No. 110,020, Jan. 7, 1980, which is a continuation-in-part of Ser. No. 93,523, Nov. 13, 1979, Pat. No. 4,311,640. This application May 13, 1982, Ser. No. 377,931

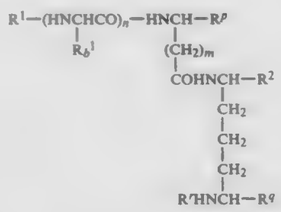
Claims priority, application United Kingdom, Nov. 14, 1978, 44346/78; Jul. 31, 1979, 7926605; Oct. 11, 1979, 7935401; Oct. 15, 1979, 7935730; Oct. 17, 1979, 7936000; Oct. 29, 1979, 7937343

Int. Cl.[4] A61K *37/02*

U.S. Cl. 514—18 9 Claims



1. A compound of the formula:



wherein

R^1 is hydrogen,

R_b^1 is methyl,

R^2 is carboxy, carboxymethylcarbamoyl, 1-carboxyethylcarbamoyl or ethoxycarbonylmethylcarbamoyl,

R^g is carboxy or 3-t-butoxycarbonylcarbazolyl,

R^p is carboxy or methoxycarbonyl,

R^r is hydrogen, t-butoxycarbonyl or benzyloxycarbonyl,

m is the integer 2, and

n is the integer 1, or its pharmaceutically acceptable salt.

4,801,581

PHARMACEUTICAL COMPOSITION CONTAINING PARA-AMINO-BENZOIC ACID-N-D-XYLOSIDE AS AN ACTIVE INGREDIENT

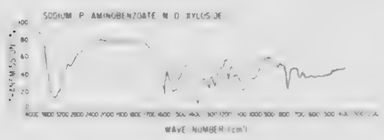
Chikao Yoshikumi, Kunitachi; Yoshio Ohmura, Funabashi; Fumio Hirose, Suginami; Masanori Ikuzawa, Tachikawa; Kenichi Matsunaga, Shinjuku; Takayoshi Fujii, Adachi; Minoru Ohara, Itabashi, and Takao Ando, Setagaya, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 294,286, Aug. 19, 1981, abandoned, which is a division of Ser. No. 102,224, Dec. 10, 1979, Pat. No. 4,315,921, which is a continuation-in-part of Ser. No. 39,282, May 15, 1979, abandoned. This application Mar. 22, 1985, Ser. No. 714,354

Claims priority, application Japan, May 26, 1978, 53-63146; Dec. 29, 1978, 53-161385; Dec. 29, 1978, 53-161386; South Africa, May 21, 1979, 79/2466; Switzerland, May 21, 1979, 4716/79; Sweden, May 22, 1979, 7904485; Philippines, May 23, 1979, 22543; Italy, May 24, 1979, 22968 A/79; United Kingdom, May 24, 1979, 7918109; Australia, May 25, 1979, 47424/79; Belgium, May 25, 1979, 195388; Fed. Rep. of Germany, May 25, 1979, 2921327; France, May 25, 1979, 79 13352

Int. Cl.[4] A61K *31/70*

U.S. Cl. 514—42 30 Claims



1. A method for the treatment of hyperglycemia, which comprises administering to a patient suffering therefrom a pharmaceutically effective amount of p-aminobenzoic acid N-D-xyloside or a pharmaceutically acceptable salt thereof.

5. A method for the treatment of hyperlipemia, which comprises administering to a patient suffering therefrom a pharmaceutically effective amount of p-aminobenzoic acid N-D-xyloside or a pharmaceutically acceptable salt thereof.

9. A method for the treatment of inflammatory diseases, which comprises administering to a patient suffering therefrom a pharmaceutically effective amount of p-aminobenzoic acid N-D-xyloside or a pharmaceutically acceptable salt thereof.

13. A method for the treatment of pains due to the accentuation of central nerve, which comprises administering to a patient suffering therefrom a pharmaceutically effective amount of p-aminobenzoic acid N-D-xyloside or a pharmaceutically acceptable salt thereof.

17. A method for the treatment of pyrexia due to the accentuation of central nerve, which comprises administering to a patient suffering therefrom a pharmaceutically effective amount of p-aminobenzoic acid N-D-xyloside or a pharmaceutically acceptable salt thereof.

4,801,582

METHOD AND COMPOSITION FOR TREATING HYPOGLYCEMIA USING ALOE POLYSACCHARIDES

Hiroshi Hikino, Sendai, and Teruaki Hayashi, Kawanishi, both of Japan, assignors to Toyo Yakushoku Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 718,082, Apr. 1, 1985, Pat. No. 4,598,069. This application Jun. 27, 1986, Ser. No. 879,603

The portion of the term of this patent subsequent to Jul. 1, 2003, has been disclaimed.

Int. Cl.[4] A61K *31/715*

U.S. Cl. 514—54 2 Claims

1. A hypoglycemic composition comprising a pharmaceutically acceptable carrier and an active component selected from the group consisting of polysaccharides Arboran A, Arboran B and mixtures thereof, the polysaccharides having hypoglycemic activity and the following properties:

Arboran A

(a) solubility: soluble in water and insoluble in benzene, ether, chloroform, alcohols and acetone;

(b) color reaction: developing a pale yellowish red color on contact with a mixture of 2% aqueous solution of phenol and concentrated sulfuric acid, and being positive for silver mirror reaction and Fehling's solution;

(c) specific rotation: $[\alpha]_D$ −37.7° C 0.13, water);

(d) elemental analysis: C, 41.11; H, 5.87; N, 0.43%;

(e) infrared absorption spectrum (KBr method) νmax cm^{-1}: 3370, 1726, 1231, 1049, 1027;

(f) NMR spectrum: ^{1}H-NMR δ: 2.04, 2.12, 3.72, 4.96, 5.10, 5.43; ^{13}C-NMR δ: 20.2, 20.4, 60.5, 70.0, 76.6, 172.8, 173.4;

(g) molecular weight (standard material: dextran, Sephacryl S-200 gel filtration): 1.2×10^4;

(h) glass-fiber paper electrophoresis (borate buffer, pH 9.3); moving distance: 17.1 cm (glucose, 10.9 cm);

(i) polyacrylamide-gel electrophoresis (10% polyacrylamide gel; borate buffer, pH 9.3); moving distance: 1.7 cm (bromophenol blue, 8.0 cm);

(j) neutral sugar content:
44.5% (Phenol —H_2SO_4 method)
35.2% (Anthrone —H_2SO_4 method)
50.5% (Cromotropic acid —H_2SO_4 method);

(k) uronic acid content (Carbazol —H_2SO_4 method): 5.0%;

(l) peptide content (Lowry method): 2.5%;

(m) O-acetyl content: 16.7%;

(n) neutral sugar components: rhamnose-fructose-arabinose-xylose-mannose-galactose-glucose (0.3:0.2:0.1:0.1:0.2:1.0:0.3); and

Arboran B

(a) solubility: soluble in water and insoluble in benzene, ether, chloroform, alcohols and acetone;

(b) color reaction: developing a pale yellowish red color on contact with a mixture of 2% aqueous solution of phenol and concentrated sulfuric acid, and being positive for silver reaction and Fehling's solution;

(c) specific rotation: $[\alpha]_D$+162° (C 0.12, water);

(d) elemental analysis: C, 42.35; H, 5.73; N, 0.26%;

(e) infrared absorption spectrum (KBr method) νmax cm^{-1}: 3350, 1052;

(f) NMR spectrum: ^{1}H-NMR δ: 1.21, 3.71, 5.03, 5.20; ^{13}C-NMR δ: 61.4, 68.7, 70.0, 76.6, 81.0, 81.4, 84.1, 107.5;

(g) molecular weight: (standard material: dextran, Sephacryl S-200 gel filtration): 5.2×10^4;

(h) glass-fiber paper electrophoresis (borate buffer, pH 9.3); moving distance: 15.6 cm (glucose 10.9 cm);

(i) polyacrylamide-gel electrophoresis (10% polyacrylamide-gel; borate buffer, pH 9.3); moving distance: 2.7 cm (bromophenol blue, 8.0 cm);

(j) neutral sugar content:
76.4% (Phenol —H_2SO_4 method)
82.0% (Anthrone —H_2SO_4 method)
80.0% (Chromotropic acid —H_2SO_4 method);

(k) uronic acid content (Carbazol —H_2SO_4 method): 11.5%;

(l) peptide content (Lowry method): 10.4%;

(m) O-acetyl content: 5.3%;

(n) neutral sugar components: Mannose-glucose (0.3; 1.0).

4,801,583

OLIGOSACCHARIDES AND THEIR BIOLOGICAL APPLICATIONS

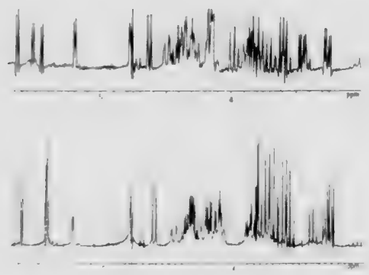
Maurice Petitou, Paris; Jean-Claude Lormeau, Maromme; Jean Choay, Paris; Jean-Claude Jacquinet, and Pierre Sinay, both of Orleans, la Source, all of France, assignors to Choay S.A., Paris, France

Continuation-in-part of Ser. No. 457,931, Jan. 14, 1983, abandoned. This application May 15, 1985, Ser. No. 734,445

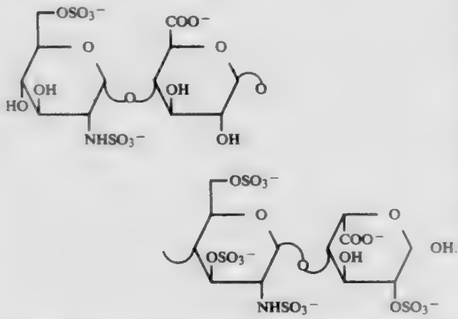
Claims priority, application France, Jan. 15, 1982, 82 00621; Feb. 1, 1982, 82 01575; Feb. 16, 1982, 82 02526; May 28, 1982, 82 09392; Jun. 22, 1982, 82 10891; Jun. 22, 1982, 82 10892; Jul. 2, 1982, 82 11679; Aug. 6, 1982, 82 13804; Sep. 20, 1982, 82 15804; Sep. 20, 1982, 82 15803; Oct. 27, 1982, 82 18003; May 16, 1984, 84 07589

Int. Cl.[4] A61K *31/70;* **C08B** *37/10*

U.S. Cl. 514—54 **6 Claims**



1. A pure, synthetic tetrasaccharide having the formula



5. The fibrinolytic pharmaceutical composition which comprises a pharmaceutically acceptable carrier and a therapeutically effective amount of the tetrasaccharide of claim 1.

4,801,584

PYRIDO(3,2,1-IJ)-1,3,4 BENZOXADIAZINE DERIVATIVES

Kazutaru Yokose, Urayasu; Nobuo Shimma; Miyako Kamata, both of Chigasaki; Masahiro Aoki, and Tatsuo Ohtsuka, both of Fujisawa, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

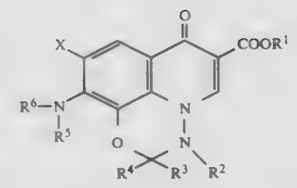
Filed Sep. 8, 1987, Ser. No. 94,361

Claims priority, application European Pat. Off., Sep. 12, 1986, 86112619.1; Aug. 8, 1987, 87111507.7

Int. Cl.[4] A61K *31/535;* **C07D** *498/06*

U.S. Cl. 514—183 **100 Claims**

1. A tricyclic compound of the formula

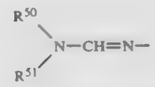


(I)

wherein R^1 is a hydrogen atom or a carboxy-protecting radical; R^2 is a hydrogen atom or a lower alkyl radical which may be substituted with a halogen atom; R^3 and R^4 independently are a hydrogen atom or a lower alkyl radical which may be unsubstituted or substituted with a hydroxy radical or a substituted or unsubstituted amino radical; X is a halogen atom; and R^5 and R^6 are independently a hydrogen atom or a lower alkyl radical which may be unsubstituted or substituted with a hydroxy radical, a lower alkoxy radical or substituted or unsubstituted amino radical; or R^5 and R^6, taken together with the adjacent nitrogen atom, may form a 5 to 7 membered heterocyclic ring which may be substituted with one or more substitutents at the carbon atom (s), and the heterocyclic ring may further contain $—NR^7—$, —O—, —S—, —SO—, $—SO_2—$ or $—NR^7—CO—$, and also R^7 is a hydrogen atom, a lower alkenyl radical, a substituted or unsubstituted lower alkyl or substituted or unsubstituted aralkyl radical, or a radical represented by the formula

$$—(CH_2)_nCOR^8 \quad \text{(II)}$$

in which n is na integer frm 0 to 4 and R^8 is a hydrogen atom, a lower alkoxy radical, or an unsubstituted or substituted amino, unsubsituted or substitutted lower alkyl or unsubstituted or substituted aryl radical; wherein the substituted amino-lower alkyl radicals of R^3, R^4, R^5 and R^6 are di-lower alkylamino-lower alkyl, lower alkylamino-lower alkyl or lower cycloalkylamino-lower alkyl; said substituents at the carbon atoms (s) of the 5 to 7 membered heterocyclic ring for R^5 and R^6 are selected from the group consisting of hydroxy, lower alkoxy, amino, lower alkylamino, lower cycloalkylamino, di-lower alkylamino, lower alkanoylamino, benzyloxycarbonyl-amino, halogen, lower akyl, amino-lower alkyl, lower alkylamino-lower alkyl, lower cycloalkylamino-lower alkyl, di-lower alkylamino-lower alkyl, lower alkanoylamino-lower alkyl, hydroxy-lower alkyl, unsubstituted an substituted pehnyl, a heterocyclic ring, unsubstituted benzylamino and substituted benzylamino, and a group of the formula

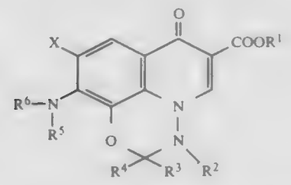


where R^{50} and R^{51} are lower alkyl or together with the nitrogen atom represent a 5 to 8 membered saturated N-heterocycle; the substituents for the substituted phenyl being selected from the group consisting of amino, halogen, hydroxy and lower alkoxy; the substituents for the substituted benzylamino being selected from the group consisting of nitro, amino, halogen, hydroxy and lower alkoxy; the substituents for substituted lower alkyl of R^7 are selected from the group consisting of hydroxy, lower alkoxy, amino, lower alkylamino, di-lower alkylamino, halogen, carboxy, and sulfo; the substituents for substituted saralkyl of R^7 are selected from the group consisting of amino, nitro, lower alkylamino, di-lower alkylamino, halogen and lower alkoxy; the substituents for substituted amino of R^8 are selected from the group consisting of lower alkyl or lower cycloalkyl; the substituents for substituted lower alkyl of R^8 are selected from the group consisting of carboxy and lower alkoxycarbonyl; and the substituents for

substituted aryl of R^8 are selected from the group consisting of halogen, lower alkoxy, hydroxy, nitro and amino;

pharmaceutically acceptable salts thereof, and hydrates of solvates of the compounds or the formula I or their salts.

99. A method for treating a mammal afflicted with a baterial infection, which method comprises administering to such mammal a compound of the formula

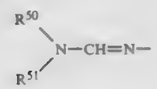


(I)

wherein R^1 is a hydrogen atom or a carboxy-protecting radical; R^2 is a hydrogen atom or a lower alkyl radical which may be substituted with a halogen atom; R^3 and R^4 independently are a hydrogen atom or a lower alkyl radical which may be unsubstituted or substituted with a hydroxy radical or a substituted or unsubstituted amino radical; X is a halogen atom; and R^5 and R^6 are independently a hydrogen atom or a lower alkyl radical which may be unsubstituted or substituted with a hydroxy radical, a lower alkoxy radical or a substituted or unsubstituted amino radical; or R^5 and R^6, taken together with the adjacent nitrogen atom, may be form a 5 to 7 membered heterocyclic ring which may be substituted with one or more substitutents at the carbon atom(s), and the heterocyclic ring may further contain $—NR^7—$, —O—, —SO—, $—SO_2—$, or $—NR^7—CO—$, and also R^7 is as hydrogen atom, a lower alkenyl radical, a substituted or unsubstituted lower alkyl or substituted or unsubstituted aralkyl radical or a radical represented by the formula

$$—(CH_2)_nCOR^8 \quad \text{(II)}$$

in which n is an integer from 0 to 4 and R^8 is a hydrogen atom, a lower alkoxy radical, or an unsubstituted or substituted amino, unsubstituted or substituted lower alkyl or unsubstituted or substituted aryl radical; wherein the substituted amino-lower alkyl radiclas of R^3, R^4, R^5 and R^6 are di-lower alkylamino-lower alkyl, lower alkylamino-lower alkyl or lower cycloalkylamino-lower alkyl; said substituents at the carbon atoms of the 5 to 7 membered heterocyclic ring for R^5 and R^6 are selected from the group consisting of hydroxy, lower alkoxy, amino, lower alkylamino, lower cycloalkylamino, di-lower alkylamino, lower alkanoylaminono, benzyloxycarbonyl-amino, halogen, lower alkyl, amino-lower alkyl, lower alkylamino-lower alkyl, lower cycloalkylamino-lower alkyl, di-lower alkylamino-lower alkyl, lower alkanoylamino-lower alkyl, hydroxy-lower alkyl, unsubstituted and substituted phenyl, a heterocyclic ring, unsubstituted benzylamino and unsubstituted benzylamino, and a group of the formula



where R^{50} and R^{51} are lower alkyl or together with the nitrogen atom represent a 5 to 8 membered saturated N-heterocycle; the substituents for the substituted phenyl being selected from the group consisting of amino, halogen, hydroxy and lower alkoxy; the substituents for the substituted benzylamino being selectected from the group consisting of nitro, amino, halogen, hydroxy and lower alkoxy; the substituents for substituted lower alkyl of R^7 are selected from the group consisting of hydroxy, lower alkoxy, amino, lower alkylamino, di-lower alkylamino, halogen, carboxy, and sulfo; the substituents for substituted aralkyl of R^7 are selected form the group consisting of amino, nitro, lower alkylamino, di-lower alkylamino, halogen and lower alkoxy; the substituents for substituted amino of R^8 are selected from the group consisting of lower alkyl or lower cycloalkyl; the substitutents for substituted lower alkyl of R^8 are selected from the group consisting of carboxy and lower alkoxycarbonyl; and the substituents for substituted saryl of R^8 are selected form the group consisting of halogen, lower alkoxy, hydroxy, nitor and amino;

pharmaceutically acceptable salts thereof, and hydrates or solvates of the compounds of the formula I or their salts in an amount effective for inhibiting the bacterial infection.

4,801,585

CYCLIC CARBOXAMIDE DERIVATIVES AND THEIR USE AS ANALGESICS

Vittorio Vecchietti; Massimo Signorini, and Antonio Giordani, all of Baranzate, Italy, assignors to Dr.Lo.Zambeletti S.p.A., Italy

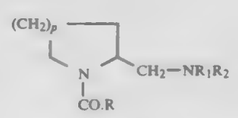
Filed Dec. 22, 1986, Ser. No. 945,038

Claims priority, application United Kingdom, Dec. 23, 1985, 8531617; Sep. 2, 1986, 8621136

Int. Cl.[4] A61K *31/55, 31/455;* **C07D** *401/06, 223/04*

U.S. Cl. 514—210 **10 Claims**

1. A compound of formula I:



(I)

or a solvate or pharmaceutically acceptable salt thereof in which R has the formula (II):

$$—(CHR_4)_n—X—Ar—(R_3)_m \quad \text{(II)}$$

in which

n is 0, 1 or 2,

m is 0, 1 or 2,

X is a direct bond, or O, S or NR_5, in which R_5 is hydrogen or C_{1-6} alkyl,

Ar is phenyl or thienyl,

R_3 is halogen, C_{1-6} alkoxy, cyano, —COOR$_4$, C_{1-6} alkyl, or amino or, when m is 2, two R_3's form a C_{3-6} polymethylene group, and R_4 is hydrogen or C_{1-6} alkyl,

R_1 and R_2 are independently C_{1-6} alkyl or together form a C_{3-6} polymethylene or C_{3-6} alkenylene group; and

p is 1, 2, 3 or 4.

4,801,586

PENETRATION ENHANCERS FOR TRANSDERMAL DELIVERY OF SYSTEMIC AGENTS

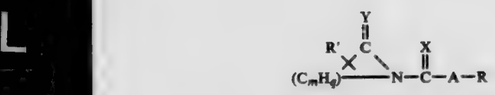
Gevork Minaskanian, Irvine, and James V. Peck, Costa Mesa, both of Calif., assignors to Nelson Research & Development Co., Irvine, Calif.

Continuation-in-part of Ser. No. 855,497, Apr. 23, 1986, Pat. No. 4,755,535. This application Oct. 7, 1986, Ser. No. 916,403

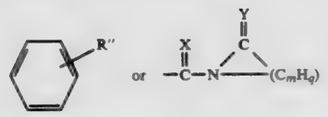
Int. Cl.[4] A61K *31/33, 31/30;* **A01N** *25/02*

U.S. Cl. 514—212 **10 Claims**

1. In a method for topically administering systemically active agents through the skin or mucosal membranes of humans and animals directly in the bloodstream in a transdermal device or formulation, the improvement comprising the topical administration of an effective amount of a membrane penetration enhancer having the structural formula



wherein X and Y, each, may represent sulfur, oxygen or two hydrogen atoms, A is a branched or a straight chain, divalent aliphatic radical having from 0 to 2 double bonds; R' is selected from the group consisting of H, a lower alkyl group having 1–4 carbon atoms, phenyl, lower alkyl or halogen substituted phenyl, acetamido, halogen, piperidinyl, lower alkyl or halogen substituted piperidinyl, carbalkoxy, carboxamide, and alkylformyl; m is 3–7; q is 2m–2x, wherein x equals the number of double bonds in the lactam ring and may be 1, 2 or 3, and R is CH_3,



wherein R'' is H or halogen.

4,801,587

IMPOTENCE OINTMENT

Gene Voss, 213 Alcade Moreno, San Antonio, Tex. 78232, and Allen C. Eichler, 1347 Lockhill-Selma, San Antonio, Tex. 78213

Filed Mar. 2, 1987, Ser. No. 20,544

Int. Cl.[4] A61K *31/47, 31/50*

U.S. Cl. 514—248 **12 Claims**

1. A method of relieving impotence comprising the single step of applying an ointment to the skin around the penis, said ointment comprising:

a primary agent, being a vasodilator, selected from the group consisting of papaverine, hydralazine, sodium nitroprusside, phenoxybenzamine or phentolamine, said primary agent being present in said ointment in an amount between one and five percent by weight;

dimethyl sulfoxide for assisting absorption of said primary agent through said skin; and

a base.

4,801,588

TETRACYCLIC INDOLE DERIVATIVES FOR TREATING HYPERTENSION

Aldemio Temperilli, Milan; Rosanna Eccel, Cornate d'Adda; Enzo Brambilla, Mariano Comense, and Patricia Salvati, Arese, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

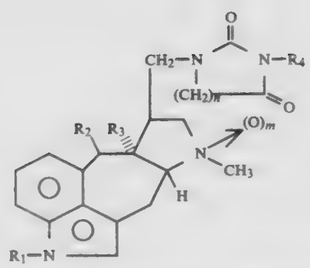
Filed Jul. 15, 1987, Ser. No. 73,438

Claims priority, application United Kingdom, Jul. 22, 1986, 8617907

Int. Cl.[4] A61K *31/40, 31/415;* **C07D** *487/02*

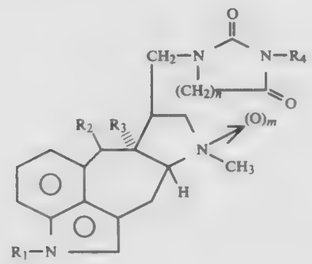
U.S. Cl. 514—274 **11 Claims**

1. A compound of the formula I:



wherein R_1 represents a hydrogen atom or a methyl group, R_2 and R_3 represent each a hydrogen atom or, taken together, represent a chemical bond, R_4 represents a hydrogen atom or a C_{1-4} alkyl group, a C_{3-4} cycloalkyl group, an ethylenically unsaturated C_{2-4} alkyl group, or an acetylenically unsaturated C_{2-4} alkyl group, and n is 1 or 2, and m is 0 or 1, and a pharmaceutically acceptable salt thereof.

7. A method of treating hypertension in a patient in need thereof, comprising administering to said patient an amount effective for treatment of hypertension of a compound of formula I:



wherein:

R_1 represents a hydrogen atom or a methyl group;

R_2 and R_3 represent each a hydrogen atom or, taken together, represent a chemical bond;

R_4 represents a hydrogen atom, a C_{1-4} alkyl group, a C_{3-4} cycloalkyl group, an ethylenically unsaturated C_{2-4} alkyl group, or an acetylenically unsaturated C_{2-4} alkyl group; and

n is 1 or 2, m is 0 or 1, or a pharmaceutically acceptable salt thereof.

4,801,589

METHOD FOR SUPPRESSING THE IMMUNE RESPONSE

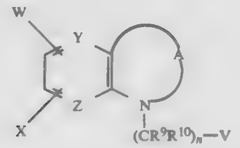
Sidney R. Smith, Ridgewood, and Marvin I. Siegel, Woodbridge, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 12, 1986, Ser. No. 871,691

Int. Cl.[4] A61K *31/44*

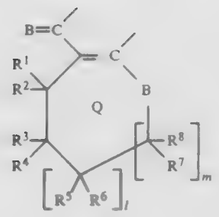
U.S. Cl. 514—291 **28 Claims**

1. A method of suppressing the T or B cell function of the immune response in a mammal which comprises administering to a mammal in need of such treatment an immunosuppressing effective amount of a compound having the structural formula I:

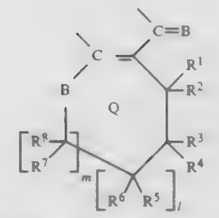


wherein:

A is



or



B is independently oxygen or sulfur;

R^1–R^8 may be the same or different and are hydrogen or alkyl having from 1 to 6 carbon atoms or two adjacent R^1–R^8 substituents may be combined to form an additional carbon to carbon bond;

l and m may be the same or different and are 0 or one;

the ring labelled, Q, may optionally contain up to two additional double bonds;

n is 0, 1 or 2;

W and X may be the same or different and are hydrogen, hydroxy, alkyl having from 1 to 6 carbon atoms, halogen, nitro, alkoxy having from 1 to 6 cabon atoms, trifluoromethyl, cyano, cycloalkyl having from 3 to 7 carbon atoms, alkenyloxy having from 3 to 6 carbon atoms, alkynyloxy having from 3 to 6 carbon atoms, $S(O)_p$—R^a {wherein p is 0, 1 or 2 and R^a is alkyl having from 1 to 6 carbon atoms}, $NHSO_2R^a$ {wherein R^a is defined herein}, $NHSO_2CF_3$, $NHCOCF_3$, SO_2NH_2, COR^b {wherein R^b is OH, NH_2 or OR^a (wherein R^a is defined herein)}, O—D—COR^b {wherein D is alkylene having from 1 to 4 carbon atoms and R^b is defined herein}, $NHCOR^c$ {wherein R^c is hydrogen, alkyl having from 1 to 6 carbon atoms, alkoxy having from 1 to 6 carbon atoms, COR^d (wherein R^d is hydroxy or alkoxy having from 1 to 6 carbon atoms) or NHR^e (wherein R^e is hydrogen or alkyl having from 1 to 6 carbon atoms)}, or phenoxy {wherein the benzene ring may be substituted with any of the other substituents W and X};

Y and Z may be the same or different and are CH or N;

V is phenyl, naphthyl, indenyl, indanyl, 2-, 3- or 4-pyridyl, 2-, 3- or 5-pyrimidinyl, 2- or 3-thienyl, 2- or 3-furyl or 2-, 4- or 5-thiazolyl, any of which may be substituted with W and X as defined herein; and

R^9 and R^{10} are independently hydrogen or alkyl having from 1 to 6 carbon atoms.

4,801,590

PYRIDO(1,8)NAPHTHYRIDINONES, AND THEIR USE AS PHARMACEUTICALS

Erich Cohnen, Jork; Thomas Beuttler; Eva Hofferber, both of Hamburg, and Wolfgang Steuzel, Reibek, all of Fed. Rep. of Germany, assignors to Beiersdorf AG, Hamburg, Fed. Rep. of Germany

Filed Jun. 23, 1987, Ser. No. 65,540

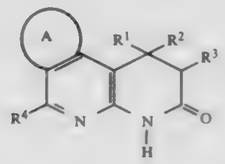
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1986, 3623533

Int. Cl.[4] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—293 **8 Claims**

1. Pyrido(1,8)naphthyridinones of the formula I

(I)



in which

R^1 denotes hydrogen, a straight-chain or branched alkyl group having 1 to 6 carbon atoms, a phenyl group or, a cycloalkyl group having 3 to 6 carbon atoms, a carboxyl group or a cyano group,

R^2 denotes hydrogen or a straight-chain or branched alkyl group having 1 to 4 carbon atoms,

R^3 denotes hydrogen, a straight-chain or branched alkyl group having 1 to 4 carbon atoms, a carboxyl group, a C_1–C_3-alkoxycarbonyl group, a carboxamide group or a cyano group,

R^4 denotes hydrogen, halogen, a cyano group, a hydroxyl group, a carboxamide group, an alkylthio group or an alkoxy group, in each case having 1 to 6 carbon atoms, which may in each case optionally be substituted by a mono or di-C_1–C_6-alkylated amino group, furthermore denotes a phenoxy group, an amino group, a formylamino group, a C_1–C_3-alkylcarbonylamino group, a pyrrolidino, a piperidino, hydrazino, morpholino, piperazino, a C_1–C_3-alkoxycarbonylpiperazino or benzylpiperazino group, or a monosubstituted or disubstituted amino group NR^5R^6,

R^5 and R^6 each independently is hydrogen, or branched or unbranched alkyl having 1 to 6 carbon atoms and optionally substituted by straight-chain or branched C_1–C_6-alkoxy, phenoxy or phenoxy substituted with straight-chain or branched C_1–C_6-alkoxy groups, pyridinyl groups, C_3–C_6-cycloalkyl groups, monoalkylated or dialkylated amino groups in each case having 1 to 6 carbon atoms, pyrrolidino, piperidino, morpholino, piperazino, 2-methoxyphenylpiperazino groups or phenyl groups, and

A denotes a pyridine ring, where ring A may also be present in partially hydrogenated form, and the tautomeric forms thereof, and the salts and acid addition salts thereof.

7. A composition for the treatment of angina pectoris, for the reduction of metastatis formation, for metastasis inhibition, for the treatment and propylaxis of heart insufficiency, migraines, psoriasis and asthma and for the inhibition of thrombocyte aggregation comprising an amount effective therefor of a compound or salt according to claim 1 and a pharmaceutically acceptable diluent.

4,801,591

2-ALKENYLENE-THIENO-1,2-THIAZOLE DERIVATIVES WITH LIPID-LOWERING ACTIVITY

Dieter Binder, Vienna, Austria, assignor to Chemie-Linz Aktiengesellschaet, Linz, Austria

Filed Jun. 19, 1986, Ser. No. 876,673

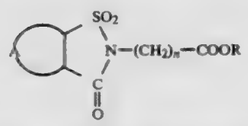
Claims priority, application Austria, Jul. 4, 1985, 1988/85

Int. Cl.⁴ C07D *513/04;* **A61K** *31/425*

U.S. Cl. 514—373 **6 Claims**

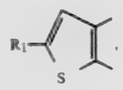
1. A thieno-1,2-thiazole compound of the formula

I

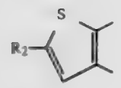


wherein A, with the two carbon atoms of the thiazole ring, forms a group of the formula

IIa



IIb



or

IIc



and the broken line indicates the double bond present in the thieno structures of the formulae IIa and IIb, n denotes the integer 2, 3 or 4, R denotes hydrogen or lower alkyl, R_1 denotes hydrogen, lower alkyl, halogen, trifluoromethyl, lower alkoxy or lower alkylthio and R_2 denotes hydrogen, lower alkyl or halogen; and the pharmaceutically acceptable salts of compounds of the formula I wherein R denotes hydrogen.

4,801,592

SUBSTITUTED 1,8-NAPHTHYRIDINE DERIVATIVES AND FUNGICIDES CONTAINING THEM

Hermann Graf, Mutterstadt; Lothar Franz, Ludwigshafen; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 29, 1987, Ser. No. 139,316

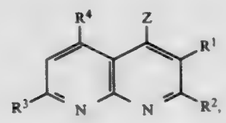
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1986, 3644825

Int. Cl.⁴ C07D *471/02;* **A01N** *43/40*

U.S. Cl. 514—300 **5 Claims**

1. A 1,8-naphthyridine derivative of the formula I

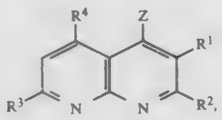
I



where R^1 is C_4–C_{12}-alkyl or C_4–C_{12}-alkoxy-C_1–C_4-alkyl, R^2 and R^3 are identical or different and each is C_1–C_3-alkyl, R^4 is hydrogen or C_1–C_4-alkyl, Z is NHR^5 or $NH—NR^6R^7$, R^5 is hydrogen, allyl, benzyl or halobenzyl, and R^6 and R^7 are identical or different and each is hydrogen, C_1–C_4-alkyl, formyl or C_1–C_4-alkyl-CO—.

2. A process for combating fungi wherein the fungi, or the materials, plants, soil or seed to be protected against fungus attack are treated with a fungicidally effective amount of a 1,8-naphthyridine derivative of the formula

I



where R^1 is C_4–C_{12}-alkyl or C_4–C_{12}-alkoxy-C_1–C_4-alkyl, R^2 and R^3 are identical or different and each is C_1–C_3-alkyl, R^4 is hydrogen or C_1–C_4-alkyl, Z is NHR^5 or $NH—NR^6R^7$, R^5 is hydrogen, allyl, benzyl or halobenzyl, and R^6 and R^7 are identical or different and each is hydrogen, C_1–C_4-alkyl, formyl or C_1–C_4-alkyl-CO—.

4,801,593

CHEMOTHERAPEUTIC AGENTS

Harold F. Hodson; John F. Batchelor, both of Beckenham; John W. T. Selway, Cranbrook; Jeremy G. Vinter, Dorking, and Ramachanderan Iyer, Beckenham, all of United Kingdom, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Aug. 11, 1980, Ser. No. 177,125

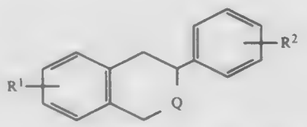
Claims priority, application United Kingdom, Sep. 13, 1979, 7931839

Int. Cl.⁴ A61K *31/47, 31/38*

U.S. Cl. 514—307 **18 Claims**

1. A method for the treatment of a rhinoviral infection in a human being or other animal suffering from a rhinoviral infection which comprises the intranasol administration of an effective, non-toxic antirhinoviral dosage of a compound of formula (III)

(III)



wherein Q is a sulphur atom or an NR^3 group, and R^1 represents four substituents and R^2 represents five substituents, each of said substituents being selected from hydrogen or halogen atoms, (lower)alkyl, hydroxy(lower)alkyl, carboxy(lower)alkyl, (lower)alkoxy, amino, (lower)alkylamino, di(lower)alkylamino, acylamino, nitro, cyano, trifluoromethyl, carboxyl, methylene-dioxy and hydroxyl groups, and whenever present R^3 is selected from (lower)alkyl groups and hydrogen atoms, or a pharmaceutically acceptable salt or ester thereof where appropriate.

4,801,594

AROMATASE INHIBITORS

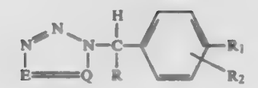
Kenneth S. Hirsch, New Palestine, and Charles D. Jones, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1984, Ser. No. 621,582

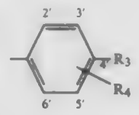
Int. Cl.⁴ A61K *31/41, 31/44*

U.S. Cl. 514—340 **15 Claims**

1. A method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting amount of a compound of the formula



wherein R is pyridyl or



R_1, R_2, R_3, and R_4 are independently hydrogen, methyl, trifluoromethyl, methoxy, or halo; and

E and Q are independently N or CH, with the proviso that E and Q may not both be N at the same time, or a pharmaceutically acceptable salt thereof.

4,801,595

QUINOLINE CARBOXAMIDES AND ANTI-HYPERTENSIVE COMPOSITIONS THEREOF

John L. Archibald, Farnham Royal; Terence J. Ward, Maidenhead, and Janet C. White, Wokingham, all of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

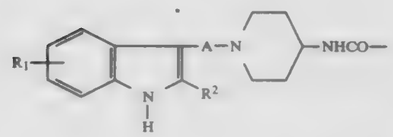
Filed Dec. 15, 1986, Ser. No. 941,914

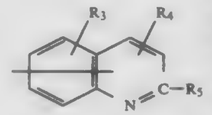
Claims priority, application United Kingdom, Dec. 23, 1985, 8531666

Int. Cl.⁴ C07D *215/14;* **A61K** *31/47*

U.S. Cl. 514—314 **9 Claims**

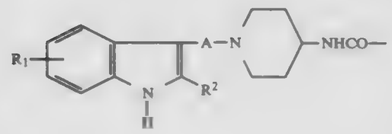
1. A compound of formula:





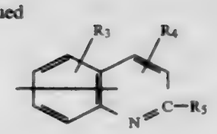
wherein R_1 represents hydrogen, lower alkyl, halogen, lower alkoxy or hydroxy; R_2 represents hydrogen or lower alkyl; A represents an alkylene, monooxo-alkylene or monohydroxy-alkylene chain each having 2 to 6 carbon atoms; R_3 and R_4 may be in the same or different rings and independently represent hydrogen, lower alkyl, lower alkoxy, amino or halogen; and R_5 is one of the values for R_3, or R_5 is the bond to the NHCO group, or a pharmaceutically acceptable salt thereof.

9. An antihypertensive pharmaceutical composition comprising an antihypertensively effective amount of a compound of formula I:



II

-continued



wherein R_1 represents hydrogen, lower alkyl, halogen, lower alkoxy or hydroxy; R_2 represents hydrogen or lower alkyl; A represents an alkylene, monooxo-alkylene or monohydroxy-alkylene chain each having 2 to 6 carbon atoms; R_3 and R_4 may be in the same or different rings and independently represent hydrogen, lower alkyl, lower alkoxy, amino or halogen; and R_5 is one of the values for R_3, or R_5 is the bond to the NHCO group, or a pharmaceutically acceptable salt thereof.

4,801,596

NITROXY AMINO PROPANOLS FOR TREATING HEART AND CIRCULATORY DISEASES

Herbert Simon, Lampertheim; Helmut Michel; Walter-Gunar Friebe, both of Mannheim, and Wolfgang Bartsch, Viernheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Dec. 2, 1985, Ser. No. 803,497

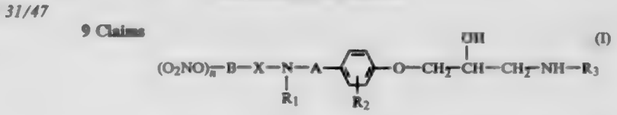
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1984, 3443998

Int. Cl.⁴ A01K *31/21;* **C07F** *79/10*

U.S. Cl. 514—327 **11 Claims**

1. A compound of the formula:

(I)



wherein A is a direct bond, an ethylene chain or a —CO—CH_2— group; X is a direct bond or a carbonyl group; B is a straight-chained or branched, saturated alkyl C_1–C_6 chain, in which one or two —CH_2— groups can also be replaced by a saturated C_6 cycloalkylene ring, n is 1, 2 or 3; R_1 is a hydrogen atom or a C_1–C_4 straight-chained or branched saturated alkyl or a —B—$(ONO_2)_n$ group, in which B and n have the same meanings as above, or when A is a —CO—CH_2— group and X is a direct bond, R_1 together with the nitrogen atom and a carbon atom of chain B can represent a piperidine ring; R_2 is a hydrogen, cyano, C_1–C_4 alkyl acetyl or ethoxycarbonyl; and R_3 is C_3–C_5 alkyl, 2-methyl-3-butyn-2-yl or 1-nitroxy-but-3-yl or a physiologically acceptable salt thereof.

2. A method for the treatment and prophylaxis of heart and circulatory diseases comprising administering 20–500 mg per day per 75 kg body weight of the compound of claim 1.

4,801,597

CERTAIN INOSIZOL-NICOTINATE ESTER DERIVATIVES AND POLYIONIC COMPLEXES THEREFORE USEFUL FOR TREATING DIABETES MEUITUS, HYPERLIPIDEMIA AND LACTIC ACIDOSIS

Peter W. Stacpoole, and Nicholas S. Bodor, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed Jun. 11, 1985, Ser. No. 743,396

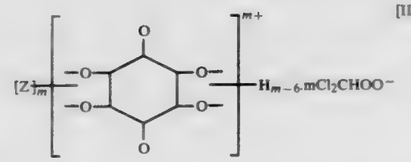
Int. Cl.⁴ C07D *401/12;* **A61K** *31/44*

U.S. Cl. 514—332 **11 Claims**

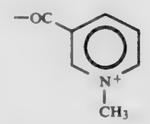
1. A dichloroacetate polyionic complex having the formula:

VOL 1098 ISS 5 JA 31 1989 UMI

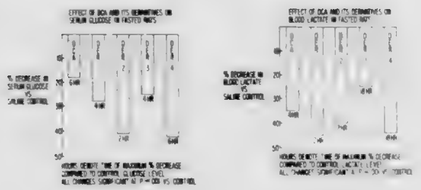
[III]



Wherein:
Z is

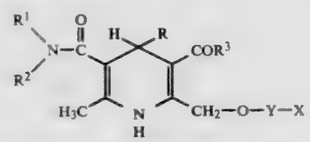


and
m is an integer from 1 to 6.



4,801,598
DIHYDROPYRIDINE ANTI-ALLERGIC AND ANTI-INFLAMMATORY AGENTS
Kelvin Cooper; Michael J. Fray, and Kenneth Richardson, all of Kent, England, assignors to Pfizer Inc., New York, N.Y.
Filed Oct. 30, 1987, Ser. No. 115,213
Claims priority, application United Kingdom, Nov. 7, 1986, 8626698; Apr. 25, 1987, 8709842
Int. Cl.[4] C07D *401/00*; A61K *31/44*
U.S. Cl. 514—333 14 Claims

1. A compound of the formula



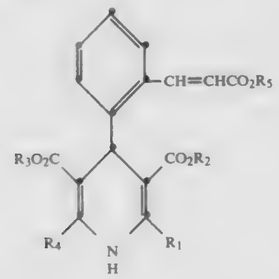
or a pharmaceutically acceptable salt thereof, wherein R is 2-substituted phenyl wherein said substituent is chloro, bromo, cyano, methyl, methylthio, methylsulfonyl, trifluoromethyl, hydroxy, methoxy or benzyloxy; R^1 is hydrogen, alkyl having one to four carbon atoms, pyridyl, thiazolyl, cyano, 3-methylisoxazol-5-yl, 2-methyl-1,3,4-thiadiazol-5-yl or thiazol-2-ylmethyl; R^2 is hydrogen or alkyl having one to four carbon atoms; R^3 is hydroxy, alkoxy having one to four carbon atoms, benzyloxy, amino or alkylamino having one to four carbon atoms; Y is alkylene having two to six carbon atoms having at least two carbon atoms in the chain linking X to the oxygen atom; and X is benzimidazol-1-yl or benzimidazol-2-yl optionally substituted with one or more substituents selected from alkyl having one to four carbon atoms, chloro and trifluoromethyl.

11. A method of treating an allergic condition in a mammal which comprises administering to said mammal an anti-allergic effective amount of a compound according to claim 1.

4,801,599
1,4-DIHYDROPYRIDINES
Claudio Semeraro, Bresso; Dino Micheli, Modena; Daniele Pieraccioli; Giovanni Gavinaghi, both of Verona, all of Italy, and Allan D. Borthwick, London, England, assignors to GLAXO S.P.A., Verona, Italy
Filed Aug. 20, 1985, Ser. No. 767,593
Claims priority, application Italy, Aug. 22, 1984, 22383 A/84; Jul. 5, 1985, 21460 A/85
Int. Cl.[4] A61K *31/455*; C07D *211/90*
U.S. Cl. 514—356 19 Claims

1. A compound of the formula I.

(I)

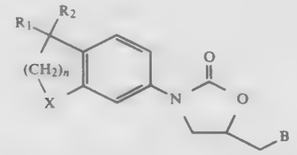


wherein
R_1 and R_4 independently represent a C_{1-4} alkyl group;
R_2 and R_3 independently represent a C_{1-6} straight or branched alkyl chain which may be interrupted by an oxygen atom;
R_5 represents a straight or branched chain C_{1-13} alkyl group or a C_{5-8} cycloalkyl group which cycloalkyl may be substituted by a C_{1-3} alkyl group.

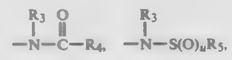
4,801,600
AMINOMETHYL OXOOXAZOLIDINYL CYCLOALKYLBENZENE DERIVATIVES USEFUL AS ANTIBACTERIAL AGENTS
Chia-Lin J. Wang, and Mark A. Wuonola, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 9, 1987, Ser. No. 106,358
Int. Cl.[4] A61K *31/42*; C07D *263/22*
U.S. Cl. 514—376 33 Claims

1. A compound having the formula:

(I)

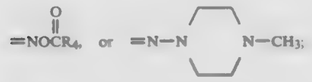


wherein for the l isomer or racemic mixtures containing it B is NH_2,



or N_3;
u is 1 or 2;
R_3 is H, alkyl of 1–10 carbon atoms, or cycloalkyl of 3–8 carbon atoms;
R_4 is H, alkyl of 1–4 carbon atoms, alkenyl of 2–4 carbon atoms, cycloalkyl of 3–4 carbon atoms, or OR_5;

R_5 is alkyl of 1–4 carbon atoms;
X is CH_2;
R_6 is H or alkyl of 1–4 carbon atoms;
n is 1–3; and
R_1 and R_2 taken together are H_2, H and OH, =O, H and $N(R_6)_2$, =NOH, $=NOR_5$,

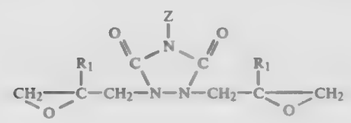


or a pharmaceutically suitable salt thereof;

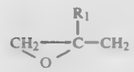
23. A method of treating a bacterial infection in a mammal comprising administering to the mammal an antibacterial amount of a compound of claim 1.

4,801,601
N-SUBSTITUTED POLYGLYCIDYL URAZOLE COMPOUNDS, PROCESSES FOR THEIR PRODUCTION AND PHARMACEUTICAL PREPARATIONS
Herbert Fischer, Düsseldorf; Brigitte Hase, Erkrath; Hinrich Möller, Monheim; Hans-Christoph Wilk, Neuss, and Ulrich Zeidler, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
Division of Ser. No. 563,949, Dec. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 340,066, Jan. 18, 1982, abandoned. This application Feb. 20, 1986, Ser. No. 831,373
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102373
Int. Cl.[4] A61K *31/41*, *31/535*
U.S. Cl. 514—384 7 Claims

1. A method for treating leukemia in a warmblooded animal, including a human, comprising administering to said animal an N-substituted polyglycidyl urazole compound having the formula:



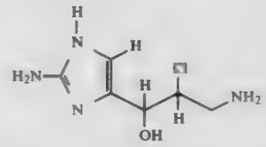
wherein Z is



or a substituent
which is C_1–C_6 alkyl, phenyl, dihydroxypropyl, 2-hydroxy-3-propionoxy propyl, or 2-hydroxy-3-morpholin-N-yl-propyl, and R^1 is hydrogen or C_1–C_4 alkyl; in an amount sufficient to inhibit leucocytic proliferation.

4,801,602
NEW BIOLOGICALLY ACTIVE SUBSTANCE CALLED GIROLLINE, EXTRACTED FROM THE SPONGE PSEUDAXINYSSA CANTHARELLA PROCESS FOR ITS PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING IT
Alain Ahond, Malakoff; Pierre Laboute; Dominique Laurent, both of Noumea; Pierre Potier, Bois D'Arcy; Christiane Poupat, Plaisir; Jacques Pusset; Michele Pusset, both of Saint-Yon, and Odile Thoison, Morangis, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France
Continuation of Ser. No. 886,037, Jul. 16, 1986, abandoned. This application Sep. 24, 1987, Ser. No. 102,765
Claims priority, application France, Jul. 18, 1985, 85 10997
Int. Cl.[4] A61K *31/415*; C07D *233/64*
U.S. Cl. 514—398 4 Claims

1. Girolline of the formula:

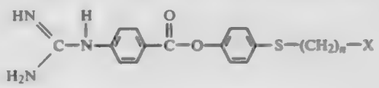


and its pharmaceutically acceptable acid addition salts.

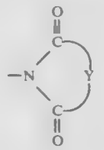
4. A pharmaceutical composition useful as an anti-tumor agent comprising an anti-tumor effective amount of girolline as claimed in claim 1 or a pharmaceutically acceptable acid addition salt thereof, in combination with a pharmaceutically acceptable diluent or adjuvant.

4,801,603
GUANIDINOBENZOIC ESTER DERIVATIVE
Shigeru Souda, Ushiku; Naoyuki Shimomura, Sakuramura; Norihiro Ueda, Sakuramura; Shuhei Miyazawa, Sakuramura; Takashi Yamanaka, Sakuramura; Kaname Miyamoto, Sakuramura; Ieharu Hishinuma, Moriyamachi; Junichi Nagakawa; Naoko Nagaoka, both of Sakuramura; Hidetoshi Kawashima, Toride; Tsutomu Kawata, Tsuchiura; Junsaku Nagaoka, Sakuramura, and Tsuneo Wakabayashi, Mito, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan
Filed Dec. 24, 1986, Ser. No. 946,458
Claims priority, application Japan, Dec. 27, 1985, 60-293268
Int. Cl.[4] A61K *31/40*; C07D *207/404*
U.S. Cl. 514—425 4 Claims

1. Guanidinobenzoic ester compounds of the formula:



wherein X represents a group of the formula:



in which Y is a group of the formula: $—(CH_2)_m—$, m being an integer of 2 and n represents an integer of 1 to 5, and pharmacologically acceptable salts of thereof.

4,801,604

CIS-N-(2-AMINOCYCLOALIPHATIC)BENZAMIDE ANTI-CONVULSANTS

Philip F. Vonvoigtlander, Plainwell, and Jacob Szmuszkovicz, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 791,311, Oct. 25, 1985, abandoned, continuation-in-part of PCT US86/02228, abandoned. This application Jul. 21, 1987, Ser. No. 76,411

Int. Cl.[4] A61K *31/40;* **C07D** *295/06*

U.S. Cl. 514—429 **6 Claims**

1. A method for preventing or treating Central Nervous System (CNS) seizures in a warm-blooded animal patient which comprises administering to such patient suffering from seizures or likely to experience seizures an amount of cis-3,4-dichloro-N-methyl-N-[2-(1-pyrrolidinyl)cyclohexyl]benzamide, or a pharmaceutically acceptable salt thereof,

which amount is effective to prevent or reduce the effects of such CNS seizure disorder in said patient.

4,801,605

3-AMINO-DIHYDRO-[1]-BENZOPYRANS AND BENZOTHIOPYRANS

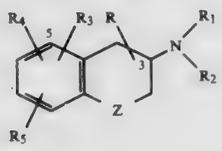
Alan J. Hutchison, Verona, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 902,281, Aug. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 679,182, Dec. 7, 1984, abandoned, and a continuation-in-part of Ser. No. 772,068, Sep. 3, 1985, abandoned. This application Feb. 27, 1987, Ser. No. 20,054

Int. Cl.[4] A61K *31/38;* **C07D** *335/06, 409/02*

U.S. Cl. 514—432 **11 Claims**

1. A compound of the formula



(I)

wherein Z represents S;

R represents hydrogen or lower alkyl; R_1 represents hydrogen, lower alkyl or aryl-lower alkyl; R_2 represents hydrogen, lower alkyl or aryl-lower alkyl; or R_1 and R_2 together represents alkylene of 4 to 6 carbon atoms; R_3 represents hydrogen, hydroxy, lower alkoxy, aryl-lower alkoxy, acyloxy or aryloxy; R_4 and R_5 represent independently hydrogen, lower alkyl or halogen; aryl within the above definitions represents phenyl or phenyl substituted by one to three of lower alkyl, halogen or lower alkoxy; acyloxy is hydroxy esterified in the form of a pharmaceutically acceptable ester; a mono or di- S-oxide thereof; or a pharmaceutically acceptable salt thereof.

4,801,606

ANTIVIRAL COMPOSITIONS

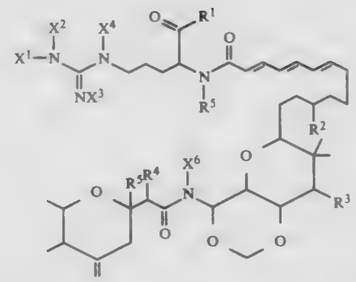
Tatsuo Higa, Okinawa; Shinichi Sakemi, Vero Beach, both of Japan, and Sue S. Cross, Ft. Pierce, Fla., assignors to Harbor Branch Oceanographic Institution Inc., Ft. Pierce, Fla.

Filed Jul. 17, 1987, Ser. No. 74,977

Int. Cl.[4] A61K *31/35;* **C07D** *493/04*

U.S. Cl. 514—452 **5 Claims**

1. A compound according to the formula:



wherein X^1–X^4 are the same or different and are hydrogen, hydroxyl, lower alkanoyl, or lower alkyl; X^5–X^6 are the same or different and are hydrogen or lower alkyl; R^1 is a hydrogen, hydroxyl, lower alkyl or lower alkoxy; R^2–R^5 are the same or different and are hydrogen, hydroxyl, lower alkoxy or lower alkanoyloxy and the analogs thereof wherein the double bonds are partially or fully reduced.

4. A pharmaceutical composition comprising, as an active ingredient, an effective antiviral amount of a compound of claim 1 and a non-toxic pharmaceutically acceptable carrier of diluent.

4,801,607

ANTIVIRAL FURANODITERPENOIDS

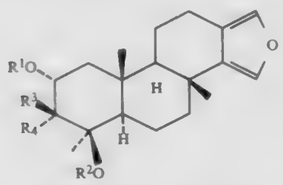
Shigeo Komoto; Oliver J. McConnell, both of Vero Beach, and Sue S. Cross, Ft. Pierce, all of Fla., assignors to Harbor Branch Oceanographic Institution, Inc., St. Pierce, Fla.

Filed Mar. 25, 1987, Ser. No. 30,727

Int. Cl.[4] A61K *31/34;* **C07D** *307/77*

U.S. Cl. 514—468 **8 Claims**

1. A substantially pure compound according to the formula:



wherein R^1 and R^2 are the same or different and are a hydrogen, lower alkyl, or lower acyl; and R^3 and R^4 are together a double bonded oxygen or are the same or different and are single bonded hydrogen or hydroxy groups.

4,801,608

BISMUTH CONTAINING COMPOSITION AND METHOD FOR THE PREPARATION THEREOF

Petrus J. H. Bos, Schipluiden; Dirk J. C. Engel, Aerdenhout, and Hayo de Jonge, Heemstede, all of Netherlands, assignors to Gist-Brocades N. V., Delft, Netherlands

Continuation of Ser. No. 304,372, Sep. 22, 1981, abandoned. This application Dec. 6, 1983, Ser. No. 558,695

Int. Cl.[4] A61K *31/29, 33/24*

U.S. Cl. 515—503 **25 Claims**

1. In a process for the preparation of a solid bismuth containing composition which is colloidally soluble in water by spray drying a colloidal solution of bismuth citrate in aqueous ammonia, wherein the colloidal solution contains a polyhydric alcohol and optionally potassium hydroxide or a combination of potassium hydroxide and citric acid in amounts such that the pH of the colloidal solution is in the range of about 8 to 11.3, the improvement comprising spray drying a colloidal solution of bismuth citrate in aqueous ammonia in the absence of a polyhydric alcohol in the solution to be spray dried.

4,801,609

MERCAPTO-ACYLAMINO ACID ANTIHYPERTENSIVES

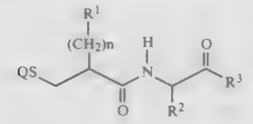
Martin F. Haslanger, Ridgewood; Bernard R. Neustadt, West Orange, and Elizabeth M. Smith, Verona, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Mar. 27, 1987, Ser. No. 32,153

Int. Cl.[4] C07C *103/00, 149/40, 149/43, 147/107*

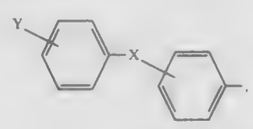
U.S. Cl. 514—506 **17 Claims**

1. A compound having the structural formula

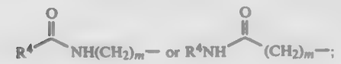


wherein

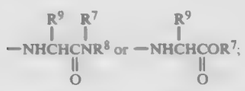
R is phenyl substituted by one to three substituents independently selected from alkyl, alkoxy, cycloalkyl, cyano and aminomethyl, y—C_6H_4S—, y—C_6H_4O—,



α-naphthyl, β-naphthyl, $H_2N(CH_2)m$, dipehnylmethyl,

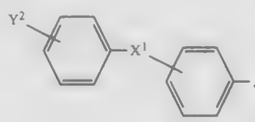


R^2 is alkyl, alkyl-S(O)$_{0-2}$(CH$_2$)$_q$—, R^5(CH$_2$)kS)(O)$_{0-2}$(CH$_2$)$_q$—, alkyl-O(CH$_2$)$_q$—, R^5(CH$_2$)$_k$-O(CH$_2$)$_q$—, R^5(CH$_2$)$_q$, $H_2N(CH_2)_q$—, cycloalkyl(CH$_2$)$_k$—; R^{13}CONH(CH$_2$)$_q$—,R^{13}NHCO(CH$_2$)$_q$— or R^6OCO(CH$_2$)$_q$—; R^3 is —OR^7, —NR^7R^8,



R^4 and R^{13} are independently hydrogen, alkyl or Y^1—C$_6$H$_4$—;

R^5 is Y^2—C_6H_4S—, Y^2—C_6H_4O—, β-naphthyl, β-naphthyyl, or



provided that when R^5 is Y^2—C_6H_4S— or Y^2—C_6H_4O—, k is 2 or 3;

R^6, R^7 and R^8 are independently H, alkyl, hydroxyalkyl, alkoxyalkyl, amioalkyl, alkylaminoalkyl, dialkylaminoalkyl, phenylalkyl, naphthylalkyl, Y-phenylalkyl, or Y-naphthylalkyl;

R^9 is hydrogen, alkyl, carboxyalkyl, mercaptoalkyl, alkylthioalkyl, aminoalkyl, hydroxyalkyl, phenylalkyl, hydroxyphenylalkyl, guanidinoalkyl,

or carbamoylalkyl;

n is 0–2;

m and k are independently 0–3;

q is 1–4;

X and X^1 are independently a bond, —O—, —S—, or —CH$_2$—;

Q is hydrogen or R^{10}CO—;

R^{10} is alkyl, hydroxyalkyl, aloxyalkyl, dialkylaminoalkyl, Y^3—C_6H_4—alkyl, alkoxy, Y^3—C_6H_4— or naphathyl;

Y, Y^1, Y^2 and Y^3 independently represent one to three substituents selcted from H, alkyl, cycloalkyl, alkoxy, OH, F, Cl, Br, CN, —CH_2NH_2, —CO_2H, —CO_2alkyl, —$CONH_2$ and phenyl wherein the term alkyl or and cycloalkyl is C_3 to C_6 each alkyl portion has 1–6 carbon atoms or a pharmaceutically acceptable addition salt thereof.

12. A method for treating hypertension in mammals comprising administering to a mammal in need of such treatment an antihypertensive effective amount of a compound of claim 1.

4,801,610

PHENOLIC ESTER DERIVATIVES AS ELASTASE INHIBITORS

Masateru Miyano, Northbrook, and James R. Deason, Wilmette, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 612,193, May 21, 1984, Pat. No. 4,683,241. This application Jun. 5, 1987, Ser. No. 58,467

Int. Cl.[4] A61K *31/22, 31/265*

U.S. Cl. 514—512 **1 Claim**

1. A pharmaceutical composition for the treatment of elastase mediated diseases comprising a pharmaceutically acceptable inert carrier in combination with an elastase inhibitory anti-inflammatory effective amount of a compound selected from 4-pivaloyloxybenzophenone; 4,4'-dipivaloyloxybenzophenone; 4,4'-diisobutyryloxybenzophenone; 2,4,4'-tripivaloyloxybenzophenone; 2,2',4,'-tetrapivaloyloxy benzophenone; 4,4'-dipivaloyloxyazobenzene; 4-pivaloyloxy-4'-chlorobenzophenone; 4,4'-α,α-dimethylvaleroyloxybenzophenone; 3,4,5,4',5',6'-hexapivaloyloxybenzophenone; 2,4-dipavaloyloxybenzophenone; 4,4'-di(t-butyl)oxycarbonyloxybenzophenone; 4,4'-dipivaloyloxydiphenylether; 4,4'-dipivaloyloxydiphenylsulfone; 3-methylallyl-4-pivaloyloxybenzophenone; 3-allyl-4-pivaloyloxybenzophenone; 3-(1-methylallyl)-4-pivaloyloxybenzophenone; 3-(3-hydroxypropyl)-4-pivaloyloxybenzophenone; 4-isobutyryloxybenzophenone; 4,4'-dipivaloyloxydiphenylmethane.

4,801,611

5-LIPOXYGENASE INHIBITORS

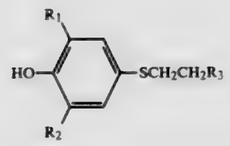
Leland J. Chinn, Montebello, Calif.; Bipinchandra N. Desai, Vernon Hills, and Richard A. Mueller, Glencoe, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed May 7, 1987, Ser. No. 47,237

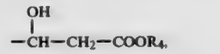
Int. Cl.[4] A61U *31/19, 31/235*

U.S. Cl. 514—532 **8 Claims**

1. A method for treating lipoxygenase mediated conditions in mammals comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of the formula:



where R_1 and R_2 are the same or different members of the group consisting of tert-alkyl of 4 to 10 carbon atoms; and R_3 is



wherein R_4 is hydrogen or lower alkyl; or a pharmaceutically acceptable salt thereof, together with one or more non-toxic pharmaceutically acceptable carriers.

4,801,612

METHOD OF INHIBITING INFLAMMATORY RESPONSE

Edward T. Wei, El Cerrito, and Juliann G. Kiang, Benicia, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Jul. 3, 1986, Ser. No. 881,321
Int. Cl.[4] A61K *37/40*
U.S. Cl. 514—12 **11 Claims**

1. A method of treating skin or mucosal membrane inflammation of a mammal comprising:

administering an anti-inflammatory amount of a neuropeptide effective in inhibit inflammationof th eskin and mucosal membranes of a mammal, the neuropeptide consisting essentially of Corticotropin Releasing Factor, and analog thereof, or a non-toxic salt of the Corticotropin Releasing Factor or analog.

4,801,613

BRADYKININ ANTAGONIST PEPTIDES

John M. Stewart, and Raymond J. Vavrek, both of Denver, Colo., assignors to Nova Technology Limited Partnership, Baltimore, Md.

Continuation of Ser. No. 744,207, Jun. 13, 1985, Pat. No. 4,693,993. This application Jun. 17, 1987, Ser. No. 63,108
The portion of the term of this patent subsequent to Sep. 15, 2004, has been disclaimed.
Int. Cl.[4] A61K *37/42*; C07K *7/18*
U.S. Cl. 514—14 **38 Claims**

1. A modified bradykinin type peptide having the formula

A-Arg-B-C-D-W-X-Y-Z-Arg

and pharmaceutically acceptable salts thereof wherein

a. A is selected from the L-, D- or non configured forms of the group consisting of
(i) hydrogen
(ii) Arg
(iii) Lys-Lys
(iv) Phe
(v) Thi
(vi) Lys
(vii) Met-Lys
(viii) Gly-Arg-Met-Lys;

b. B is selected from the L-, D- or non configured forms of the group consisting of
(i) Azetidine-2-Carboxylic acid (Azt)
(ii) Thiazolidine-2-Carboxylic acid (Thz)
(iii) Isonipecotic acid (Inip)
(iv) Pro
(v) 2,3-Dehydroproline (Δ Pro)
(vi) 4-Hydroxyproline (Hyp)
(vii) Aib;

c. C is selected from the L-, D- or non configured forms of the group consisting of
(i) Azetidine-2-Carboxylic acid (Azt)
(ii) Thiazolidine-2-Carboxylic acid (THz)
(iii) Isonipecotic acid (Inip)
(iv) Pro
(v) 2,3-Dehydroproline (Δ Pro)
(vi) 4-Hydroxyproline (Hyp)
(vii) Aib;

d. D is selected from the L-, D- or non configured forms of the group consisting of
(i) Gly
(ii) Ala
(iii) Sar;

e. W is selected from the L-, D- or non configured forms of the group consisting of
(i) Phe
(ii) beta-(2-Thienyl)-Alanine (Thi)
(iii) O-Methyltyrosine (OMT)
(iv) beta-(2-Pyridyl) Alanine (Pal)
(v) Para-Chloro-L-Phenylalanine (CLF)
(vi) Para-Nitrophenylalanine (PNF)
(vii) beta-(2-Naphthyl)-Alanine (Nal)
(viii) Leu;

f. X is selected from the L-, D- or non configured forms of the group consisting of
(i) Ser
(ii) Gly
(iii) Phe
(iv) Para-Chloro-D-phenylalanine (CDF)
(v) Nal
(vi) Pal
(vii) Thi
(viii) pCl-Phe;

g. Y is a D-configured form selected from the group consisting of
(i) DNal
(ii) DPNF
(iii) DPhe
(iv) DTyr
(v) DPal
(vi) DOMT
(vii) DThi
(viii) DAla
(ix) DTrp
(x) DHis
(xi) D-Homo-Phe (DhPhe)
(xii) pCl-DPhe (CDF)
(xiii) DPhg
(xiv) D-Val
(xv) DIle
(xvi) DLeu
(xvii) MDY; and

h. Z is selected from the L-, D- or non configured forms of the group consisting of
(i) Phe
(ii) beta-(2-thienyl) alanine (Thi)
(iii) O-methyltyrosine (OMT)
(iv) beta-(2-pyridyl) alanine (Pal)
(v) para-chloro-L-phenylalanine (CLF)
(vi) para-nitrophenylalanine (PNF)
(vii) beta-(2-naphthyl)-alanine (Nal)
(viii) Leu.

4,801,614

PROCESS FOR USING ENDOGENOUS ENKEPHALINS AND ENDORPHINS TO INHIBIT GROWTH OF TUMEROUS CELLS

Nicholas P. Plotnikoff, Tulsa, Okla., assignor to TNI Pharmaceuticals, Inc., Tulsa, Okla.

Continuation of Ser. No. 928,721, Nov. 7, 1986, which is a continuation of Ser. No. 698,037, Feb. 4, 1985, which is a continuation-in-part of Ser. No. 597,378, Apr. 6, 1984, Pat. No. 4,537,878, which is a continuation-in-part of Ser. No. 308,287, Oct. 5, 1981, abandoned. This application Oct. 1, 1987, Ser. No. 105,491
Int. Cl.[4] A61K *37/02*
U.S. Cl. 514—17 **24 Claims**

1. A process for inhibiting tumorous growth comprising the step of treating said tumorous growth, in vivo, with an endogenous endorphin.

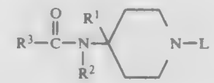
4,801,615

4-HETEROHEXACYCLIC-4-(N-(PHENYL)AMIDO) PIPERIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS AND METHOD EMPLOYING SUCH COMPOUNDS

Linas V. Kudzma, North Bergen, and H. Kenneth Spencer, Chatham, both of N.J., assignors to The BOC Group, Inc., Montvale, N.J.

Filed Dec. 31, 1987, Ser. No. 139,895
Int. Cl.[4] A61K *31/44*; C07D *211/68*
U.S. Cl. 514—318 **15 Claims**

1. A compound of the formula



optically active isomeric forms thereof, or a pharmaceutically acceptable salt thereof, in which formula: R^1 is 2-pyridyl; R^2 is substituted or unsubstituted phenyl wherein the substituent is a halogen atom; R^3 is a lower alkyl; and L is phenyl lower alkyl; pyrazolyl lower alkyl; or (4,5-di-hydro-5-oxo-1H-tetrazolyl) lower alkyl which is unsubstituted or substituted in the 4-position with a lower alkyl.

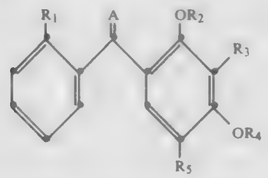
4,801,616

DIPHENYLMETHANONE COMPOUNDS AND ANTI-INFLAMMATORY USE THEREOF

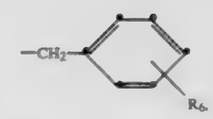
D. Mark Gapinski, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 25, 1986, Ser. No. 843,907
Int. Cl.[4] A61K *31/41, 31/275*; C07D *257/02*; C07C *121/76*
U.S. Cl. 514—381 **18 Claims**

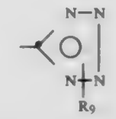
1. A compound of the formula



and pharmaceutically acceptable salts thereof wherein R_1 is —OH, —O—(C_1–C_4 alkyl), halo, or —OCO(C_1–C_4 alkyl);
A is 0;
R_2 is hydrogen or C_1–C_4 alkyl;
R_3 is C_1–C_4 alkyl or C_2–C_4 alkenyl;
R_4 is —H, C_1–C_4 alkyl, —CO(C_1–C_4 alkyl), -alk-R_6, or



R5 is -H or C_1–C_4 alkyl; and
R6 is —CN, —COOH, —COO(C_1–C_4 alkyl), —CONR7R8, or



where
R_7 and R_8 are each indenpendently hydrogen or C_1–C_3 alkyl,
R_9 is hydrogen or C_1–C_4 alkyl, and "alk" is a C_1–C_3 alkylene radical.

7. A method of treating inflammation in mammals which comprises administering to said mammal an effective amount of a compound of claim 1.

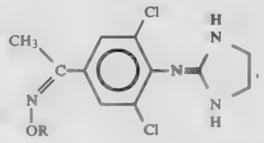
4,801,617

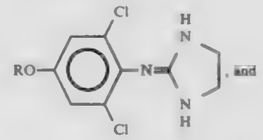
IMINOIMIDAZOLIDINES USEFUL IN LOWERING INTRAOCULAR PRESSURE

Gerard LeClerc, 5, rue Louis Apffel, 67000 Strasbourg; Didier Huber, 12, rue Rembrandt, 67200 Strasbourg; Jacques Himber, 4, Chemin du Liebenberg, 68500 Guebwiller, and Guy Andermann, 5, rue des Jonquilles, 68000 Colmar, all of France

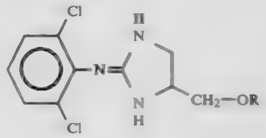
Continuation-in-part of Ser. No. 35,119, Apr. 6, 1987, abandoned. This application Feb. 10, 1988, Ser. No. 154,267
Int. Cl.[4] A61K *31/415*; C07D *233/50*
U.S. Cl. 514—392 **12 Claims**

5. A topical ophthalmic composition useful in the treatment of elevated intraocular pressure, comprising an effective amount of a compound selected from compounds of formula:

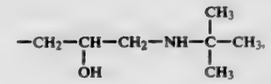




, and



wherein R is



and a pharmaceutically acceptable carrier therefor.

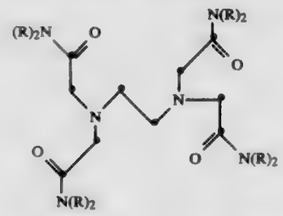
4,801,618

METHODS FOR IMPROVING FEED UTILIZATION AND LACTATION IN RUMINANT ANIMALS

Alan W. White, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1987, Ser. No. 81,063
Int. Cl.[4] A61K *31/16*; C07C *103/50*
U.S. Cl. 514—616 **6 Claims**

1. A method for increasing the efficiency of feed utilization by ruminant animals comprising administering to said animals an effective amount of a compound of the formula:



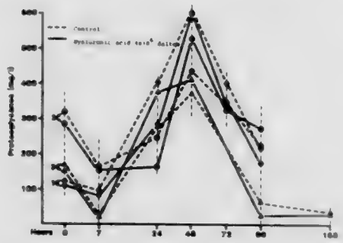
wherein each R, independently, represents a straight or branched chalk alkyl of one to six carbon atoms, or the physiologically acceptable salts thereof.

4,801,619

HYALURONIC ACID PREPARATION TO BE USED FOR TREATING INFLAMMATIONS OF SKELETAL JOINTS

Gert T. Lindblad, Upsala, Sweden, assignor to Pharmacia AB, Upsala, Sweden

PCT No. PCT/SE86/00153, § 371 Date Nov. 4, 1986, § 102(e) Date Nov. 4, 1986, PCT Pub. No. WO86/05984, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 2, 1986, Ser. No. 934,410
Claims priority, application Sweden, Apr. 9, 1985, 8501723
Int. Cl.[4] C08B *37/05*; A61K *31/725*
U.S. Cl. 514—825 **2 Claims**



1. A method for the treatment of a joint undergoing progressive cartilage degeneration caused by proteoglycan degradation, comprising administering intra-articularly to the said joint a hyaluronic acid preparation containing an effective amount of hyaluronic acid of a molecular weight exceeding 4×10^6 dalton.

4,801,620

CATALYST FOR HYDROCARBON SYNTHESIS

Yoshiyasu Fujitani; Hideaki Muraki, and Shiroh Kondoh, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Division of Ser. No. 791,064, Oct. 24, 1985, abandoned. This application Sep. 26, 1986, Ser. No. 912,216
Claims priority, application Japan, Nov. 6, 1984, 59-234697
Int. Cl.[4] C07C *1/04*
U.S. Cl. 518—715 **7 Claims**

1. A method of synthesizing liquid hydrocarbons having at least 5 carbon atoms, which comprises:

preparing a catalyst consisting essentially of cobalt and cerium oxide as catalyst components, said cerium oxide being porous, and said cobalt being supported on said porous cerium oxide in an amount ranging from 1 to 25% by weight relative to said cerium oxide; and

reacting a mixture of hydrogen and carbon monoxide over said catalyst so as to synthesize liquid hydrocarbons having at least 5 carbon atoms, said reaction being conducted at a temperature ranging from 100° C.–300° C. under a pressure of 1–20 atmospheres at a space velocity of 200–2000 hr^{-1}.

4. A method of synthesizing liquid hydrocarbons having at least 5 carbon atoms, which comprises:

preparing a catalyst consisting essentially of cobalt and cerium oxide as catalyst components; and

reacting a mixture of hydrogen and carbon monoxide over said catalyst so as to synthesize liquid hydrocarbons having at least 5 carbon atoms, said cobalt and cerium oxide being supported on a porous support of alumina.magnesia spinel, and the amount of said cobalt ranging from 3 to 15% by weight and that of said cerium oxide ranging from 0.5 to 15% by weight calculated as cerium, each relative to said porous support, the weight ratio of said cobalt to said cerium oxide calculated as cerium ranging from 0.5 to 10.

4,801,621

FOAM-CONTAINING POLYURETHANE(UREA) COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF

Artur Reischl, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 926,770, Nov. 4, 1986, Pat. No. 4,734,439, which is a continuation of Ser. No. 672,439, Nov. 16, 1984, abandoned. This application Jan. 11, 1988, Ser. No. 141,735
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402696
Int. Cl.[4] C08V *9/42*
U.S. Cl. 521—53 **1 Claim**

1. A process for the production of a foam-containing polyurethane(urea) composition in finely divided or particulate form comprising reacting:

(A) at least one di- and/or polyfunctional isocyanate-terminated prepolymer having an isocyanate group content of from 2 to 12% by weight,

(B) from 0 to 50% by weight based on the weight of (A) of a lower molecular weight organic di- and/or polyisocyanate, with the mixture of (A) and (B) having an isocyanate group content of 30% by weight or less,

(C) water in an amount of from two to sixty times the weight of components (A) and (B),

(D) from 0 to 5.0 equivalent % based on total isocyanate equivalents in (A) and (B) of an organic di- and/or polyamine, in the presence of

(E) from 3 to 95% by weight of a synthetic resin foam in the form of particles,

(F) from 0 to 90% by weight of lignite and/or peat, and

(G) from 0 to 90% by weight of other organic and/or inorganic fillers, and in the presence of (H) biomasses selected from the group consisting of living bacteria, functional cells, cell portions or enzymes,

wherein the percents by weight of (E), (F) and (G) are based on the total moisture-free weight of components (A), (B), (D), (E), (F) and (G) and wherein the sum of components (E), (F) and (G) is from 5 to 95% by weight based on the total moisture-free weight of said components (A), (B), (D), (E), (F) and (G), said foam-containing polyurethane(urea) compositions having a water-absorbability of from 33 to 97% by weight, and whereby said foam absorbs the isocyanate and any added filler uniformly both on the external surfaces of said foam and on the internal surfaces of the cells of said foam.

4,801,622

CURABLE AND FOAMABLE ORGANOPOLYSILOXANE COMPOSITION

Yoshio Inoue, and Atsushi Yaginuma, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1988, Ser. No. 150,165
Claims priority, application Japan, Feb. 3, 1987, 62-22794
Int. Cl.[4] C08J *9/00*
U.S. Cl. 521—134 **9 Claims**

1. A curable and foamable organopolysiloxane composition which comprises, in admixture:

(A) 100 parts by weight of a first organopolysiloxane which is an α,ω-divinyl diorganopolysiloxane represented by the general formula

$$ViR_2Si—O—(—SiR_2—O—)_n—SiR_2Vi,$$

in which Vi is a vinyl group, R is a monovalent hydrocarbon group free from aliphatic unsaturation and n is a positive integer in the range from 50 to 2000, and having a viscosity in the range from 20 to 10,000,000 centipoise at 25° C.;

(B) from 1 to 200 parts by weight of a second organopolysiloxane having, in a molecule, at least three siloxane units represented by the unit formula

$$R_a(OH)_bSiO_{(4-a-b)/2},$$

in which R has the same meaning as defined above, a is zero, 1 or 2 and b is 1 or 2 with the proviso that a+b is 1, 2 or 3, and having a viscosity in the range from 10 to 10,000 centipoise at 25° C.;

(C) from 0.1 to 100 parts by weight of an organohydrogenpolysiloxane having, in a molecule, at least two siloxane units represented by the unit formula

$$R_cH_dSiO_{(4-c-d)/2},$$

in which R has the same meaning as defined above, c is zero, 1 or 2 and d is 1 or 2 with the proviso that c+d is 1, 2 or 3, and having a viscosity in the range from 1 to 100,000 centipoise at 25° C.; and

(D) a platinum compound in an amount effective to catalytically promote the curing reaction of the composition.

4,801,623

PROCESS FOR THE PRODUCTION OF A THIXOTROPIC AGENT, ESPECIALLY FOR STORABLE REACTIVE POLYURETHANE SYSTEMS

Heinrich Hess; Gerhard Grögler, both of Leverkusen, and Richard Kopp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jan. 14, 1988, Ser. No. 144,897
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1987, 3701409
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—157 **10 Claims**

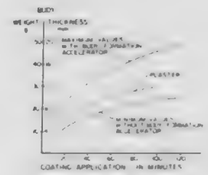
1. A process for the production of a thixotropic polyol agent which comprises adding a polyisocyanate containing a uretdione group to a polybasic carboxylic acid containing at least one carboxyl group and, optionally, OH groups which is dissolved in a relatively high molecular weight polyol and reacting said polyisocyanate with said polybasic carboxylic acid.

4,801,624

MOLDING OF CERAMIC MATERIALS

Guenther Will, Zimmerstrasse 11, 6100 Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 54,682, May 22, 1987, which is a continuation of Ser. No. 764,851, Aug. 12, 1985, abandoned. This application Jul. 28, 1987, Ser. No. 78,533
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1983, 3345188; Mar. 14, 1984, 3409278
Int. Cl.[4] C08F *2/32*; C08K *3/120*; C08J *9/128*
U.S. Cl. 521—62 **7 Claims**



1. A porous, open-pore, hardened, plastic composition suitable as a replacement for plaster for use as a mold in shaping a ceramic article by any of various ceramic shaping methods in which said mold has ceramic body formation properties similar to those of plaster by virtue of the capillary action of the open pores of said mold, said porous, open-pore, hardened, plastic composition having been prepared by forming a water-in-oil emulsion comprising an aqueous phase dispersed in a continuous phase comprising (a) at least one unsaturated polyester resin dissolved in at least one hardenable compound containing at least one ethylenically unsaturated group and (b) at least one emulsifying agent; incorporating in said water-in-oil emulsion about 2–12% by weight of said hardenable compound of a material effective in accelerating the formation of a ceramic article to be shaped in said mold, said material being selected from sodium disilicate and disodium tetraborate; controlling the aqueous phase/oil phase ratio so that said porous, open-pore, hardend, plastic composition has an open-pore volume, which is refillable with water, of about 10–60% of the total volume of said porous, open-pore, hardened, plastic composition; and subjecting the hardenable compound of the continuous oil phase to hardening without breaking the water-in-oil emulsion; and then drying to obtain said porous, open-pore, hardened, plastic composition.

4,801,625

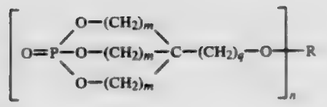
BICYCLIC PHOSPHATE ETHER, ESTER, AND CARBONATE INTUMESCENT FLAME RETARDANT COMPOSITIONS

William J. Parr; Arthur G. Mack, both of Naperville, and Paul Y. Y. Moy, Des Plaines, all of Ill., assignors to AKZO America Inc., New York, N.Y.

Filed Aug. 27, 1987, Ser. No. 90,319
Int. Cl.[4] C08K *5/52*
U.S. Cl. 523—179 **41 Claims**

1. A flame resistant composition comprising an organic polymeric substance having in intimate contact therewith,

(a) a char producing amount of a bicyclic phosphorous compound of the formula



wherein m=1 to 3; n=1 to 3; q=1 to 3; and R is a C_1 to C_8 aliphatic moiety having a valence of n, such that R completes either an ether, carboxylic acid, ester, or carbonate linkage with the remainder of the molecule; and

(b) a bubble producing amount of a gas producing compound which releases a non-flammable gas upon application of a flame.

4,801,626

GLASS FIBER-REINFORCED OXYMETHYLENE POLYMER MOLDING COMPOSITIONS HAVING MECHANICAL PROPERTIES ENHANCED BY AMINO-FORMALDEHYDE RESIN COUPLING AGENTS

Andrew B. Auerbach, Livingston, N.J., and Derrick B. McKie, Brooklyn, N.Y., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 787,952, Oct. 16, 1985, Pat. No. 4,652,594. This application Sep. 16, 1986, Ser. No. 907,795

The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.

Int. Cl.[4] C08K *7/14*

U.S. Cl. 523—208 **5 Claims**

1. A process of preparing a molded article having improved physical properties from a glass fiber-reinforced oxymethylene polymer molding composition comprising the steps of (i) intimately blending a major amount of an oxymethylene polymer, glass fibers in a reinforcing amount, an amount of at least one prepolymeric amino resin selected from condensation products of formaldehyde with at least one of guanidine, melamine, urea, guanamine or a substituted guanamine and having a degree of polymerization of about 2 to about 5, said amount of said amino resin being effective to couple said glass fiber and said oxymethylene polymer and (ii) molding said composition into an article, the process being carried out at a temperature in the range of from about 360° F. to about 430° F.

4,801,627

GLASS FIBER REINFORCED VINYL CHLORIDE POLYMER PRODUCTS AND PROCESS FOR THEIR PREPARATION

Douglas B. Rahrig, Racine, Wis.; Angelo J. Magistro, Brecksville, and Richard G. Parker, Hudson, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 18, 1986, Ser. No. 897,437

Int. Cl.[4] C08K *9/00*

U.S. Cl. 523—209 **7 Claims**

1. In a thermoplastic composition of vinyl chloride resin and glass fibers particularly well-adapted to be thermoformed, comprising a mixture of,

(a) from about 50 percent to about 95 percent by weight (% by wt) based on the combined weight of glass fibers and vinyl chloride resin, of a vinyl chloride resin in which the vinyl chloride portion of each repeating unit contains from about 57% to about 72% by wt of chlorine,

(b) a stabilizer for said vinyl chloride resin, present in an amount sufficient to provide desired stability of the composition during thermoforming, and,

(c) from about 5% to about 50% by wt of glass fibers having a diameter less than about 20 microns, wherein said glass fibers are coated with a size consisting essentially of (i) an aminosilane coupling agent having a reactive amine moiety which upon reaction with said resin results in a compound having a peak in a proton magnetic resonance spectra at 5.65 ppm, and (ii) a polymer film former, the improvement consisting essentially of said film former having a basicity greater than that of poly(vinyl acetate) and sufficient to leave enough said resin coupled to said fibers after thermoforming, to yield a ratio of total chlorine to carbon Cl(2p)/C(ls) of at least 0.91, measured as the ratio of areas under the peaks, after extraction of said composition, after thermoforming, with tetrahydrofuran.

4,801,628

ETHERIFIED PHOSPHORIC ACID ESTER OF EPOXY RESIN

Deanna Ashing, Cincinnati; Stanley Hiltenbeitel, Loveland; Youssef Mousa, and Patrick F. Aluotto, both of Cincinnati, all of Ohio, assignors to BASF Corporation, Coatings and Inks Division, Clifton, N.J.

Filed Nov. 20, 1987, Ser. No. 123,454

Int. Cl.[4] C08L *63/00;* **C08G** *59/14*

U.S. Cl. 523—412 **21 Claims**

1. A method of preparing a non-water dispersable, oxirane-defunctionalized, etherified, phosphoric acid ester of an epoxy resin comprising reacting

(a) an epoxy resin having an epoxy equivalent weight of at least about 190;

(b) orthophosphoric acid in an amount of 0.2 to 0.45 equivalents per equivalent of epoxy resin;

(c) at least about 0.65 equivalents, per equivalent of epoxy resin, of a reactive hydroxyl-functional compound having at least one hydroxy group reactive with an oxirane group of said epoxy resin, said hydroxyl-functional compound being a solvent for said epoxy resin and for the non water-dispersible, defunctionalized, etherified, phosphoric acid epoxy resin ester reaction product; and

(d) water in an amount of 0–20% of the weight of the orthophosphoric acid

at a temperature and for a time sufficient to substantially completely defunctionalize all of the oxirane functionality of the epoxy resin to produce a non water-disperable oxirane-defunctionalized, etherified, phosphoric acid ester of an epoxy resin, having an acid number of less than about 20.

4,801,629

HEAT-CURABLE COMPOSITIONS COMPRISING A MIXTURE OF BIS(2-HYDROXYETHYL)DICYCLOPENTADIENE-CONTAINING POLYESTERS AND UNSATURATED POLYESTERS

Jerome L. Stavinoha, and Anthony W. McCollum, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

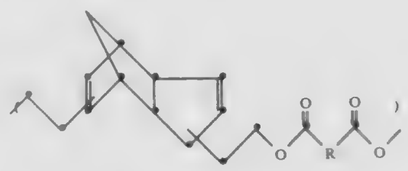
Filed Sep. 28, 1987, Ser. No. 101,473

Int. Cl.[4] C08L *67/06*

U.S. Cl. 523—500 **17 Claims**

1. A heat-curable composition comprising:

(a) a film or fiber forming bis(2-hydroxyethyl)-dicyclopentadiene-containing polyester comprising recurring units of the formula:



wherein R is an aliphatic or aromatic group; and

(b) an unsaturated polyester; said composition being curable at a temperature above 135° C. to provide a cross-linked, three dimensional polyester.

4,801,630

COMPOSITION FOR PREPARING CEMENT—ADHESIVE REINFORCING FIBERS

Wai Y. Chow, and James J. McAlpin, both of Houston, Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 835,705, Mar. 3, 1986, abandoned. This application May 4, 1987, Ser. No. 46,205

Int. Cl.[4] C08K *3/34;* **C08L** *29/02*

U.S. Cl. 524—5 **3 Claims**

1. A fiber reinforced cement article comprising: cement having in intimate admixture therein from about 1 to about 10 percent by volume fibers composed of a polyolefin resin composition comprising:

(1) from about 90 wt % to about 99 wt % of an olefin polymer; and

(2) from about 1 wt % to about 10 wt % of a modifying agent in intimate admixture with said olefin polymer, said modifying agent comprising the reaction product of a vinyl alcohol copolymer with an acid modified polyolefin in an amount of from about 0.1 to 2.0 acid modified polyolefin chains per vinyl alcohol copolymer chain.

4,801,631

AQUEOUS GLUE DISPERSIONS CONTAINING POLYISOCYANATES, THEIR PREPARATION AND USE

Hanns I. Sachs, Cologne, and Donald R. Larimer, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 6, 1987, Ser. No. 11,648

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1986, 3606087

Int. Cl.[4] C08L *31/04, 75/00*

U.S. Cl. 524—18 **9 Claims**

1. An aqueous glue dispersion having a solid content of from 22–65% by weight, comprising

7–50% by weight of at least one polyisocyanate having an average functionality greater than 2.0,

5–20% by weight of at least one soluble starch and

10–35% by weight of at least one flour,

and optionally conventional additives and having a viscosity in the range of 500 to 10000 mPas/25° C.

4,801,632

CELLULOSE ESTER MOULDING MATERIALS WITH IMPROVED TOUGHNESS

Herbert Eichenauer, Dormagen; Christian Lindner, Cologne; Friedemann Müller, Neuss; Hartwig Höcker, Eckersdorf, and Helmut Keul, Karlsruhe, all of Fed. Rep. of Germany, assignors to Bayer Akteingesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 24, 1987, Ser. No. 17,878

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1986, 3607626

Int. Cl.[4] C08L *1/14, 1/10, 83/10;* **C08K** *5/10*

U.S. Cl. 524—37 **4 Claims**

1. Thermoplastic moulding materials consisting of

(1) 70 to 99.9% by weight of a cellulose ester or cellulose mixed ester

(2) 0.1 to 30% by weight of a rubber polymer built up in the form of blocks from recurring structural units (I) with molecular weights of 10,000 to 1,000,000

$$-[A-B]- \quad I$$

wherein

A denotes bifunctional polysiloxane segments of the formula

$$-[(R^1)(R^2)SiO]-_x \quad II$$

in which

R^1 and R^2=aryl (in particular phenyl) or alkyl (in particular methyl) and

x is a number such that the molecular weight is ≧500, and

B denotes bifunctional aliphatic polyester and/or aliphatic polyester segments with molecular weights of ≧800,

and the glass transition temperatures of the polymeric blocks A and B are less than 20° C., which contain additionally

(3) 0 to 30% by weight based on the mixture of (1) and (2) of a plasticizer.

4,801,633

SALT RESISTANT POLYAMIDE COMPOSITION

Charles D. Mason, Chatham; Paul G. Galanty, West Orange, and Elmer D. Jones, Madison, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 754,505, Jul. 12, 1985, Pat. No. 4,745,143. This application Sep. 8, 1987, Ser. No. 94,161

Int. Cl.[4] C08K *5/43, 5/41*

U.S. Cl. 524—98 **8 Claims**

1. A polyamide composition resistant to calcium chloride solutions consisting essentially of:

polyamide comprising from 50 to 100% by weight of caprolactam groups; and

from 2 to 30 percent based on the weight of the polyamide of a water insoluble plasticizer; and

from 5 to 100 percent based on the weight of the polyamide of a copolymer of at least one alpha-olefin having 1 to 8 carbon atoms and a monomer selected from an unsaturated carboxylic acid having 3 to 8 carbon atoms and the derivatives of said acid.

4,801,634

PRODUCTION OF PIGMENTARY COPPER PHTHALOCYANINE

Robert Langley, Glasgow, Scotland; John D. Stewart, Kempton Park, South Africa, and Arthur S. Walls, Kilmarnock, Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 871,932, Jun. 9, 1986, Pat. No. 4,694,078. This application Jun. 22, 1987, Ser. No. 64,730

Claims priority, application United Kingdom, Jun. 20, 1985, 8515600

Int. Cl.[4] C08K *5/34;* **C08L** *27/06*

U.S. Cl. 524—88 **4 Claims**

1. A pigmented composition which comprises

(a) a rubber or plastic, and

(b) an effective pigmenting amount of a copper phthalocyanine (CuPc) pigment prepared by converting crude CuPc to pigmentary CuPc by salt milling, solvent treatment or acid pasting in the presence of 0.5 to 30% by weight, based on the weight of crude CuPc, of crude trichlorophenoxy CuPc, obtained together with CuPc and chlorinated CuPc by replacing from 0.5 to 25% by weight of the phthalic anhydride used to prepare CuPc or chlorinated CuPc by an equivalent amount of 3,4,6-trichloro-5-phenoxy-2-cyanobenzoic acid alkyl or phenyl ester.

4,801,635

COMPOSITION AND METHOD FOR DUST CONTROL

K. James Zinkan, Chagrin Falls, and Louis J. Koenig, Jr., Parma, both of Ohio, assignors to Zinkan Enterprises, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 807,174, Dec. 10, 1985, abandoned. This application Oct. 30, 1987, Ser. No. 114,703

Int. Cl.[4] C08K *5/41*

U.S. Cl. 524—156 **9 Claims**

1. An aqueous solution of water-soluble polymers for dust control which comprises from about

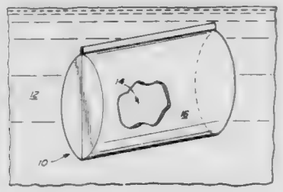
(a) 1 to 99 parts by weight of water,

(b) about 0.001 to 10 parts by weight of at least one water-soluble anionic acrylic polymer having an average molecular weight ranging up to about 20,000,000, derived from monomers selected from the group consisting of acrylamides, acrylonitriles, acrylic acid, methacrylic acid, and the salts and esters of acrylic and methacrylic acids,

(c) about 0.005 to 20 parts by weight of a water-soluble

nonionic alkylene glycol polymer having a molecular weight ranging from about 200 to 15,000,
(d) about 1.0 to 35 parts by weight of at least one water-soluble nonionic polyalkoxy alcohol surfactant having a molecular weight ranging from about 200 to 15,000,
(e) about 0.5 to 25 parts by weight of at least one water-soluble anionic surfactant selected from the group consisting of sulfonates, sulfates, and succinates and
(f) 0.1 to 5.0 parts by weight of a sequestering agent.

4,801,636
RINSE SOLUBLE POLYMER FILM COMPOSITION FOR WASH ADDITIVES
William L. Smith, Pleasanton; Edward J. Kaufmann, San Ramon, and Barry A. Sudbury, Pleasanton, all of Calif., assignors to The Clorox Company, Oakland, Calif.
Filed Mar. 24, 1987, Ser. No. 30,196
Int. Cl.[4] C08K *5/17;* **C08F** *8/00*
U.S. Cl. 524—236 **6 Claims**



1. A polymeric film material comprising
(a) a blend of a polyvinyl alcohol, having a weight average molecular weight of at least about 10,000 g/mole and a degree of hydrolysis between about 70 and 98% with an alkyl cellulose having a weight average molecular weight of at least about 10,000 g/mole, the PVA and alkyl cellulose being present in a ratio of from about 1:5 to 5:1; and
(b) a cross-linking agent, comprising a metal-containing anion having at least two oxygen ligands available and capable of reacting or complexing with hydroxy groups, present in an amount sufficient to substantially insolubilize the film in a first solution having a first pH yet to allow the dissolution thereof in a second solution having a second pH, said second pH being less alkaline than said first pH.

4,801,637
NUCLEATION PROCESS FOR INDUCING CRYSTALLIZATION IN POLY(ALPHA OLEFINS)
J. Douglas McCullough, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 875,828, Jun. 18, 1986, abandoned. This application Aug. 27, 1987, Ser. No. 91,363
Int. Cl.[4] C08K *5/09*
U.S. Cl. 524—287 **18 Claims**

1. A process for nucleating crystalline propylene homopolymer or copolymer prepared by polymerizing propylene or propylene and a comonomer with a catalyst comprising a $MgCl_2$-supported Ti procatalyst component and a cocatalyst component selected from the group consisting of aluminum alkyls, aluminum alkyl halides and mixtures thereof, wherein said homopolymer, or copolymer after polymerization but still containing active aluminum and before melt compounding, is treated at an elevated temperature below the melt temperature of said homopolymer or copolymer with an effective amount of an alcoholic solution of an aromatic carboxylic acid such that an aluminum salt of an aromatic carboxylic acid is formed.

4,801,638
PRODUCTION OF PIGMENTARY COPPER PHTHALOCYANINE
Robert Langley, Glasgow, Scotland; John D. Stewart, Transvaal, South Africa, and Arthur S. Walls, Ayrshire, Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 871,932, Jun. 9, 1986, Pat. No. 4,694,078. This application Jun. 22, 1987, Ser. No. 64,729
Claims priority, application United Kingdom, Jun. 20, 1985, 8515600
Int. Cl.[4] C08K *5/34;* **C09D** *11/00*
U.S. Cl. 524—88 **4 Claims**

1. A pigmented composition which comprises
(a) a paint or ink, and
(b) an effective pigmenting amount of a copper phthalocyanine (CuPc) pigment prepared by converting crude CuPc the pigmentary CuPc by salt milling, solvent treatment or acid pasting in the presence of 0.5 to 30% by weight, based on the weight of crude CuPc, of crude trichlorophenoxy CuPc, obtained together with CuPc and chlorinated CuPc by replacing from 0.5 to 25% by weight of the phthalic anhydride used to prepare CuPc or chlorinated CuPc by an equivalent amount of 3,4,6-trichloro-5-phenoxy-2-cyanobenzoic acid alkyl or phenyl ester.

4,801,639
FLAME-RETARDANT OLEFINIC RESIN COMPOSITION
Kazuo Hoshi, Ibaraki, and Yasuo Nakagawa, Nishinomiya, both of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan
Filed Jul. 9, 1987, Ser. No. 71,744
Claims priority, application Japan, Mar. 2, 1987, 62-45200
Int. Cl.[4] C08K *5/09, 5/57, 3/22*
U.S. Cl. 524—112 **9 Claims**

1. A flame-retardant olefinic resin composition comprising
(A) 100 parts by weight of a mixed resin consisting of an olefinic resin and a silane-grafted polymer obtained by grafting a silane to said olefinic resin, the amount of the silane-grafted polymer being at least 2% by weight in the mixed resin,
(b) 50 to 300 parts by weight of a hydrated metal compound, and
(c) 0.1 to 30 parts by weight of a dicarboxylic acid or dicarboxylic acid anhydride derivative selected from the group consisting of carbocyclic dicarboxylic acids consisting of phthalic acid, isophthalic acid and terephthalic acid and the anhydrides thereof; dibutyltin maleate and dioctyltin maleate; ternary copolymers of ethylene, maleic acid or the anhydride thereof and ethyl acrylate or acrylic acid; polyolefin resins modified with maleic acid or the anhydride thereof; and polybutadiene modified with maleic acid or the anhydride thereof.

4,801,640
POLYESTER FILM HAVING IMPROVED ABRASION RESISTANCE MANUFACTURED FROM PARTICLE-FILLED POLYESTER HAVING NUCLEATING AGENT DISPERSED THEREIN
Hermann Dallmann, Wiesbaden; Werner Schaefer, Hofheim-Diedenbergen; Wolfgang Gawrisch, Gau-Bischofsheim, and Hartmut Hensel, Schlangenbad, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Jan. 9, 1986, Ser. No. 817,238
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1985, 350101
Int. Cl.[4] C08K *5/09;* **C08L** *67/00*
U.S. Cl. 524—394 **15 Claims**

1. An abrasion-resistant polyester film manufactured from a composition comprising a polyester chemically modified with from 0.005 to 5.0 percent by weight, based upon the total weight of said composition, of crosslinked organic particles

covalently bonded to and substantially homogeneously distributed throughout said polyester, said particles having a grain size distribution of from 0.01 to 5.0 microns, wherein the quotient of the weight average particle diameter and the number average particle diameter is 1.1 or less, said chemically-modified polyester additionally containing from 0.01 to 10.0 percent, based upon the weight of the polyester, of a nucleating agent selected from the group consisting of alkali metal salts of ester waxes, alkaline earth salts of ester waxes, alkali metal salts of partially saponified ester waxes and alkaline earth salts of partially saponified ester waxes.

4,801,641
RUBBER COMPOSITIONS AND PNEUMATIC TIRES USING THE SAME
Masaki Ogawa; Yasuro Shiomura, and Toshiki Takizawa, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed May 6, 1987, Ser. No. 46,352
Claims priority, application Japan, Jun. 17, 1986, 61-139287
Int. Cl.[4] C08K *3/04, 3/22, 3/36;* **C08L** *23/16*
U.S. Cl. 524—426 **10 Claims**

1. A vulcanizable rubber composition comprising not less than 20 parts by weight of a rubber consisting essentially of ethylene, propylene and diene and satisfying all of the following requirements:
(1) a glass transition temperature of not higher than −50° C. as measured by a differential scanning calorimeter;
(2) an iodine value of 10～34;
(3) a weight-average molecular weight of not less than 220,000;
(4) an ethylene content of 68～85 mol %;
(5) a molecular weight distribution ($\overline{M}w/\overline{M}n$) of not less than 3.0;
(6) $95 \leqq 1.5 \times$(iodine value)+(ethylene content) $\leqq 120$; and
(7) $90 \leqq$(weight-average molecular weight)$\times 10^{-4}$+(ethylene content) $\leqq 110$,
and 20～150 parts by weight of an inorganic filler based on 100 parts by weight of rubber content.

4,801,642
THERMALLY STABLE ORGANOSILOXANE COMPOSITIONS AND METHOD FOR PREPARING SAME
Gloria Janik, Midland, and Manuello Buentello, III, Thomas Township, Saginaw County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Dec. 28, 1987, Ser. No. 138,414
Int. Cl.[4] C08K *5/16*
U.S. Cl. 524—714 **6 Claims**

1. A method for imparting resistance to heat-induced discoloration to a cured unfilled organosiloxane material prepared from a curable composition comprising the product obtained by blending to homogeniety
(A) at least one organosiloxane copolymer consisting essentially of from 80 to 96.5 mol percent of $(CH_3)_2SiO$ units, from 2.0 to 10.0 mol percent of $CH_3SiO_{1.5}$ units, from 1.25 to 6.0 mol percent of $(CH_3)_3SiO_{0.5}$ units and from 0.25 to 4.0 mol percent of $(CH_3)_2(CH_2=CH)SiO_{0.5}$ units;
(B) an organohydrogensiloxane containing at least two silicon-bonded hydrogen atoms per molecule, no more than one silicon-bonded hydrogen per silicon atom and organic radicals selected from the group consisting of alkyl containing from 1 to 6 carbon atoms per radical, phenyl and 3,3,3-trifluoropropyl, said organohydrogensiloxane providing from 0.7 to 1.2 silicon-bonded hydrogen atoms per silicon-bonded vinyl radical present in said composition, and
(C) a platinum catalyst in an amount sufficient to promote the reaction of (A) and (B), where said catalyst is metallic platinum or a reaction product of a platinum compound with an organosilicon compound,
said method comprising adding to said curable composition at least one amine of the formula $R_mNH_{(3-m)}$, $H_2NR''NH_2$, or $H_2NR''N(H)R''NH_2$ in an amount sufficient to inhibit discoloration of said cured composition at temperatures of up to about 200° C., where each R is individually selected from alkyl or cycloalkyl radicals, R'' represents alkylene and the value of m is 2 or 3.

4,801,643
SMALL PARTICLE SIZE NON-SURFACE ACTIVE PROTECTIVE COLLOID-STABILIZED LATEXES DERIVED FROM MONOMERS OF HIGH AQUEOUS PHASE GRAFTING TENDENCIES
Daniel H. Craig, Mendenhall Village, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Mar. 30, 1987, Ser. No. 32,280
Int. Cl.[4] C08L *31/00;* **C08F** *2/20, 4/04*
U.S. Cl. 524—832 **21 Claims**

1. A process of preparing an aqueous polyacrylate dispersion having improved mechanical stability comprising aqueous polymerization of acrylic esters, methacrylic esters and mixtures thereof in the presence of, by weight of total monomer content, (a) from about 0.05 to about 5% of at least one non-surface active protective colloid, (b) from about 0.01 to about 1% of at least one initiator selected from the group consisting of azo initiators and organosoluble, water-insoluble peroxide initiators, and (c) greater than 0.01% to about 0.05% of at least one water-soluble peroxide initiator, wherein the polyacrylate dispersed as a result of the process has a particle size less than about 1 micron.

4,801,644
COATING COMPOSITIONS
Richard G. Coogan, North Reading, Mass., assignor to Polyvinyl Chemicals Inc., Wilmington, Mass.
Filed Oct. 3, 1986, Ser. No. 915,098
Claims priority, application United Kingdom, Oct. 4, 1985, 8524579
Int. Cl.[4] C08G *18/42*
U.S. Cl. 524—839 **13 Claims**

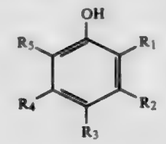
1. An aqueous polyurethane dispersion wherein the polyurethane comprises the reaction product of
(a) an unblocked isocyanate-terminated polyurethane prepolymer containing carboxylic acid salt groups formed by reacting:
(i) a polyisocyanate component containing at least 1% by weight of diphenylmethane-2,4'-diisocyanate, and
(ii) an active hydrogen containing component containing at least one polyol having a molecular weight of from 62 to about 6000 and a carboxy group containing diol, in such proportions that the ratio of the number of isocyanate groups to the number of hydroxyl groups is in the range from about 1.1:1 to about 6:1, and
(b) an active hydrogen containing chain extender selected from the group consisting of water, ammonia, a primary or secondary aliphatic, alicyclic, aromatic araliphatic or heterocyclic amine, hydrazine or a substituted hydrazine, the ratio of active hydrogens in the chain extender excluding water to isocyanate groups in the prepolymer being in the range from 1.0:1 to 1.75:1.

4,801,645
THERMOPLASTIC RESIN COMPOSITION
Taichi Nishio; Takashi Sanada, and Takayuki Okada, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
Filed Mar. 18, 1987, Ser. No. 27,532
Claims priority, application Japan, Mar. 24, 1986, 61-66541
Int. Cl.[4] C08L *71/04*
U.S. Cl. 525—68 **6 Claims**

1. A thermoplastic resin composition comprising:
A. 100 parts by weight of a composition including
1. 5–95% by weight of a polyphenylene ether being an

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oxidation polymerization product of at least one phenol compound of formula



wherein R_1, R_2, R_3, r4, and R_5 each represents a hydrogen atom, a halogen atom, or a substituted or unsubstituted hydrocarbon residue, wherein at least one of R_1–R_5 is hydrogen; and

2. 95–5% by weight of a mixture of 1–99% by weight polypropylene and 99–1% by weight modified polypropylene, said modified polypropylene having been obtained by grafting at least onecomonomer selected from the group consisting of an oxazoline and a compound having a group selected from a carboxyl, an acid anhydride, an acid amide, an amino and a hydroxyl; and

B. 0.01–50 parts by weight of an epoxy compound selected form unsaturated epoxy compound/ethylene copolymer, and unsaturated epoxy compound/ethylene/ethylenically unsaturated compound copolymer, wherein the ethylenically unsaturated compound excludes ethylene.

4,801,646

LOW GLOSS WEATHER AND IMPACT RESISTANT RESINS

David E. Henton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 16, 1987, Ser. No. 4,394

Int. Cl.[4] C08L *13/00, 51/04, 25/12, 33/08*

U.S. Cl. 525—71 **8 Claims**

1. An impact and weather resistant thermoplastic resin comprising: (a) a hard matrix polymer selected from the group consisting of polystyrene; polymethylmethacrylate; an addition polymer of two or more monomers selected from the group consisting of styrene, acrylonitrile, α-methylstyrene and methylmethacrylate; and mixtures thereof, and (b) a grafted alkylacrylate rubber comprising a rubber having a core of a substantially uncrosslinked alkylacrylate polymer having a Tg less than about 0° C., a swelling index in methyl ethyl ketone of greater than 30, a gel content in methyl ethyl ketone of less than about 85 weight percent, and a graftable overpolymer layer of high crosslink density alkylacrylate polymer, said rubber having grafted thereto a polymer selected from the group consisting of polystyrene; polymethylmethacrylate, an addition polymer of two or more monomers selected from the group consisting of styrene, α-methylstyrene, acrylonitrile and methylmethacrylate; and mixtures thereof.

4,801,647

THERMOPLASTIC ELASTOMERIC COMPOSITIONS

James R. Wolfe, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 10, 1988, Ser. No. 166,486

Int. Cl.[4] C08L *51/04, 51/06, 23/26, 23/16*

U.S. Cl. 525—74 **15 Claims**

1. A melt processible thermoplastic composition comprising a blend of:

(a) 15 to 85 parts by weight of a noncrosslinked crystalline polyolefin resin consisting essentially of polymerized monomer units of ethylene or propylene or mixtures thereof and up to about 15 weight percent of a higher olefin containing up to about 8 carbon atoms,

(b) 15 to 85 parts by weight of a crosslinked grafted copolymer elastomer made from dynamically crosslinking using a diamine or polyamine curative an ethylene/propylene/-diene terpolymer or an ethylene/propylene copolymer containing 40 to 80 weight percent ethylene grafted with 0.2 to 10 weight percent maleic acid, fumaric acid, maleic anhydride, or esters thereof, the dynamically crosslinked grafted copolymer elastomer being dispersed throughout the crystalline polyolefin resin.

4,801,648

MOLDING MATERIALS HAVING IMPROVED PROCESSING PROPERTIES, AND AGING-RESISTANT PLASTIC SHEETS PRODUCED FROM THESE MATERIALS

Roland Fink, Anwaenden 3, D-8026 Ebenhausen; Josef Huber-Hesselberger, Behringstrasse 113, D-8000 Muenchen 50, and Maximilian Mayr, Frank-Caro-Strasse 63, D-8268 Garching, all of Fed. Rep. of Germany

Filed May 15, 1986, Ser. No. 863,528

Claims priority, application Fed. Rep. of Germany, May 15, 1985, 3517583

Int. Cl.[4] C08L *25/12, 33/10, 27/06, 51/00*

U.S. Cl. 525—74 **35 Claims**

1. A molding material for production of aging-resistant sheets, comprising in admixture:

(A) 28% to 44.9% by weight of a first polymer comprising a vinyl chloride polymer grafted with acrylate, such that said first polymer has an acrylate content between about 30% and 60% by weight, based on 100 parts by weight of vinyl chloride polymer; and

(B) 55.1% to 72% by weight of a polymer blend, wherein component (B) has a glass transition temperature greater than 30° C., is compatible with component (A), and is comprised of (i) at least one heat-resistant polymer or copolymer selected from the group consisting of a styrene/acrylonitrile copolymer, a methyl styrene/acrylonitrile copolymer, a styrene/maleic anhydride copolymer, a polymethyl methacrylate and an interpolymer of one or more acrylates with acrylonitrile and (ii) at least one of an olefin copolymer or an olefin terpolymer that has polar groups and a glass transition temperature of less than 60° C., such that said component B(ii) and said component B(i) are present in a weight ratio of between about 4:1 and 1:4.

14. A molding material for the production of aging-resistant sheets, comprising in admixture:

(A) 28% to 44.9% by weight of a first polymer or copolymer comprising (i) up to 55 parts by weight of a vinyl chloride polymer or vinyl chloride copolymer of vinylester, acrylonitrile, maleic acid, vinylidene halide and olefin grafted with acrylate, and (ii) up to 85 parts by weight of an admixture of (a) a vinyl chloride polymer and (b) a polyacrylate, such that the sum of components (i) and (ii) is 100 parts by weight and said first poiymer or copolymer has an acrylate content between about 30% and 60% by weight, based on 100 parts by weight of vinyl chloride polymer or vinyl chloride copolymer; and

(B) 55.1% to 72% by weight of a polymer blend, wherein component (B) has a glass transition temperature greater than 30° C., is compatible with component (A), and is comprised of (i) at least one heat-resistant polymer or copolymer selected from the group consisting of a styrene/acrylonitrile copolymer, a methyl styrene/acrylonitrile copolymer, a styrene/maleic anhydride copolymer, a polymethyl methacrylate and an interpolymer of one or more acrylates with acrylonitrile; and (ii) at least one of an olefin copolymer and an olefin terpolymer that has polar groups and a glass transition temperature of less than 60° C., such that said olefin copolymer or terpolymer and said heat-resistant polymer or copolymer are present in a weight ratio of between about 4:1 and 1:4.

18. A flexible sheet having improved aging characteristics produced from the composition comprising in admixture:

(A) 28% to 44.9% by weight of a first polymer comprising a vinyl chloride polymer or vinyl chloride copolymer of vinylester, acrylonitrile, maleic acid, vinylidenehalide and olefin grafted with acrylate, such that said first polymer has an acrylate content of between about 30% and 60% by weight, based on 100 parts by weight of vinyl chloride polymer or vinyl chloride copolymer; and

(B) 55.1% to 72% by weight of a polymer blend, wherein component (B) has a glass transition temperature greater than 30° C., is compatible with component (A), and is comprised of (i) at least one heat-resistant polymer or copolymer selected from the group consisting of a styrene/acrylonitrile copolymer, a methyl styrene/acrylonitrile copolymer, a styrene/maleic anhydride copolymer, a polymethyl methacrylate and an interpolymer of one or more acrylates with acrylonitrile and (ii) at least one of an olefin copolymer or an olefin terpolymer that has polar groups and a glass transition temperature of less than 60° C., such that said component B(ii) and said component B(i) are present in a weight ratio of between about 4:1 and 1:4.

30. a flexible sheet according to claim 18, wherein said acrylate is butyl acrylate.

4,801,649

IONOMERS HAVING IMPROVED LOW TEMPERATURE PROPERTIES AND BLENDS THEREOF WITH THERMOPLASTIC RESINS

Robert J. Statz, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 591,485, Mar. 20, 1984, Pat. No. 4,690,981, which is a continuation-in-part of Ser. No. 477,512, Mar. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 453,951, Dec. 28, 1982, abandoned. This application Jul. 21, 1987, Ser. No. 76,416

Int. Cl.[4] C08L *77/00, 23/00*

U.S. Cl. 525—183 **3 Claims**

1. A thermoplastic blend of an improved ionomer with material selected from the group consisting of nylon, polypropylene, propylene-ethylene copolymer, linear polyethylene, and ethylene/unsaturated carboxylic acid copolymer said improved ionomer being an ionic copolymer of ethylene, unsaturated carboxylic acid and at least one softening comonomer, said ionic copolymer having improved low temperature properties, wherein the unsaturated carboxylic acid is selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, and half esters of maleic, fumaric and itaconic acids, and the softening comonomer is selected from the group consisting of n-propyl acrylate, n-butyl acrylate, 2-ethylhexyl acrylate and 2-methoxyethyl acrylate, said copolymer containing from about 10% to about 87% by weight of ethylene, from about 3% to about 30% by weight of unsaturated acid and from about 10% to about 60% by weight of said softening comonomer, said copolymer having from about 3% to about 90% of the carboxylic acid groups ionized by neutralization with metal ion selected from the group consisting of sodium, potassium, zinc, calcium, magnesium, lithium, aluminum, nickel and chromium, said copolymer being characterized (a) by a low level of chain branching of up to about 5.5 chain branches/1000 backbone methylene units and (b) by having a flex durability which is improved by a factor of at least about 500% when compared with a polymer of the same composition as said ionic copolymer, but having about 8.0 short chain branches per 1000 backbone methylene units.

4,801,650

PROCESS FOR PRODUCING 4-METHYLPENTENE-1 COPOLYMER AND RESIN COMPOSITION CONTAINING THE SAME

Kizuku Wakatsuki, and Kazuki Wakamatsu, both of Chiba, Japan, assignors to Sumimoto Chemical Co., Ltd., Osaka, Japan

Filed Sep. 4, 1987, Ser. No. 93,286

Claims priority, application Japan, Sep. 4, 1986, 61-208767

Int. Cl.[4] C08L *23/18;* **C08F** *210/14*

U.S. Cl. 525—194 **16 Claims**

1. A process for producing a 4-methylpentene-1 copolymer comprising copolymerizing 4-methylpentene-1 and other α-olefin in a hydrocarbon solvent in the presence of a Ziegler-Natta catalyst, wherein the copolymerization comprises a first stage in which (A) a homopolymer or random copolymer of 4-methylpentene-1 having an α-olefin content of not more than 3 mol% and an intrinsic viscosity, as measured in tetralin at 135° C., of at least 2.5 dl/g is prepared and a second stage in which (B) a random copolymer having an α-olefin content higher than that of the polymer (A) and no higher than 9 mol% and an intrinsic viscosity, as measured in tetralin at 135° C., of at least 2.5 dl/g is prepared, and the produced copolymer insoluble in the solvent is separated to recover a 4-methylpentene-1 copolymer containing from 5 to 80% by weight of the polymer (A).

4,801,651

METHOD OF MANUFACTURE OF THERMOPLASTIC ELASTOMER COMPOUNDS

Masato Komatsu, Hanno; Isao Baba, Iruma; Kiyotada Narukawa, Tokorozawa; Noboru Yamamoto, Tokyo, and Tsuyoshi Kanai, Yokohama, all of Japan, assignors to Tonen Sekiyukagaku K.K., Tokyo, Japan

PCT No. PCT/US87/00446, § 371 Date Nov. 2, 1987, § 102(e) Date Nov. 2, 1987, PCT Pub. No. WO87/05308, PCT Pub. Date Sep. 11, 1987

PCT Filed Mar. 3, 1987, Ser. No. 159,586

Claims priority, application Japan, Mar. 3, 1986, 61-44026

Int. Cl.[4] C08L *23/26, 23/16, 15/02, 9/00*

U.S. Cl. 525—195 **1 Claim**

1. A method of manufacture of thermoplastic elastomer comprising thermally blending (A) polypropylene 10–90 weight part, (B) halogenated butyl rubber 90–10 weight part, wherein (A)+(B)=100 weight part, (C) olefinic rubber 10–120 weight part in the presence of (E) metal oxide and/or metal chloride, and to 100 weight part of the resulting composition are added (F) polyolefin 100–600 weight part and (G) vulcanizable olefinic rubber 50–500 weight part and said components (A) through (G) are further mixed and heated in the presence of (H) organic peroxide.

4,801,652

HEAT SHRINKABLE FILM

Tomoji Mizutani; Hideo Isozaki, both of Yatsushiro; Makoto Hirata, Sencho, and Hitoshi Fukushima, Yatsushiro, all of Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1987, Ser. No. 20,980

Claims priority, application Japan, Mar. 3, 1986, 61-44169; Mar. 3, 1986, 61-44170; May 15, 1986, 61-109436

Int. Cl.[4] C08L *23/08, 23/18*

U.S. Cl. 525—240 **3 Claims**

1. A heat shrinkable ethylene polymer film having a heat shrinkage of at least 15% at 85° C. in each of machine and transverse directions and a thickness variation of not more than 20%, said heat shrinkable ethylene polymer film being a biaxially stretched film of a polymer mixture in a stretching ratio of at least 2 in each of machine and transverse directions, said polymer mixture comprising (A) 90 to 50% by weight of at least one linear copolymer of ethylene and α-olefin having a density of 0.90 to 0.93 g/cm^3 at 25° C. and a melt index of 0.2 to 3.0 g/10 min. and (B) 10 to 50% by weight of at least one

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ethylene-α-olefin copolymer having a density of 0.87 to 0.91 g/cm^3 and less than the density of the copolymer (A) by at least 0.014 g/cm^3 and a melt index of 0.2 to 5.0 g/10 min, said polymer mixture indicating a differential scanning calorimetry (DSC) curve wherein an endothermic area below the temperature lower than the melting temperature (main endothermic peak temperature) of the polymer mixture by 10° C. accounts for at least 55% of the total endothermic area.

4,801,653

COATING COMPOSITIONS PREPARED FROM HYDROXYL FUNCTIONAL GRAFT COPOLYMERS

Saryya K. Das, Pittsburgh; Rostyslaw Dowbenko, Gibsonia, and Samuel Porter, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 887,501, Jul. 21, 1986, Pat. No. 4,748,211. This application Dec. 21, 1987, Ser. No. 135,903

Int. Cl.^{4} C08G *59/16*; C08F *269/00*; C08L *33/02*

U.S. Cl. 525—286 **10 Claims**

1. A coating composition comprising an ungelled, hydroxyl functional graft copolymer prepared by the vinyl addition polymerization, in an inert organic solvent, of a vinyl monomer component comprising at least a portion of a carboxyl functional vinyl monomer in the presence of a glycidyl ester containing acrylic polymer, the grafting occurring by the condensation reaction between the carboxyl groups of the vinyl monomer component and the epoxy groups of the glycidyl ester containing acrylic polymer; and a curing agent adapted to cure the hydroxyl functional graft copolymer.

4,801,654

BLOCK COPOLYMER CONTAINING BLOCK FROM TETRAHYDROFURAN

Tokuo Makishima, deceased, late of Saitama; by Nobuko Makishima, legal representative, Tokyo; Satoshi Ueki, Saitama, and Chihiro Imai, Kanagawa, all of Japan, assignors to Toa Nenryo Kogyo K.K., Tokyo, Japan

Division of Ser. No. 738,068, May 24, 1985, Pat. No. 4,705,830. This application Jun. 12, 1987, Ser. No. 61,091

Claims priority, application Japan, May 29, 1984, 59-107616

Int. Cl.^{4} C08F *293/00, 4/68*

U.S. Cl. 525—333.7 **11 Claims**

1. A block copolymer having a number-average molecular weight of about 1,000 to about 300,000 and a molecular weight distribution of 1.05 to 1.40 in which a random copolymer segment (A) is bonded to a polymer segment (B), with the ratio of (A) to (B) being 5/95 to 95/5 by weight, said random copolymer segment (A) being composed of the constitutional units represented by the formulas I and II below:

$$\text{+CH}_2\text{—CH}_2\text{+} \qquad \text{I.}$$

$$\text{+CH}_2\text{—CH(CH}_3\text{)+} \qquad \text{II.}$$

wherein the amount of I in said segment (A) is from 30 to 80 wt% and the amount of II in said segment (A) is from 70 to 20 wt%, and said polymer segment (B) being composed of the constitutional units represented by the formula [O—$(CH_2)_4$], said block copolymer formed by a process which comprises the steps of:

(a) performing living polymerization of ethylene and propylene in a polymerization zone at a temperature of less than −50° C. in the presence of a catalyst comprising a beta-diketone vanadium chelate and an organoaluminum compound, to provide a living ethylene-propylene random copolymer;

(b) reacting said ethylene-propylene copolymer with a halogen to provide an ethylene-propylene random copolymer having halogenated terminal groups;

(c) reacting said halogenated copolymer produced in step (b) with a terminal converting agent to provide terminal carbocations of ethylene-propylene random copolymer; and

(d) polymerizing the product of step (c) with tetrahydrofuran to form said block copolymer.

4,801,655

FIBER OPTIC PH SENSOR HAVING LOW DRIFT RATE

Richard C. Murray, Jr., Palatine, Ill., and Mark S. Goorsky, Somerville, Mass., assignors to Gould, Inc., Ill.

Continuation of Ser. No. 747,488, Jun. 21, 1985, abandoned. This application Aug. 20, 1987, Ser. No. 88,535

Int. Cl.^{4} C08F *8/12*

U.S. Cl. 525—329.4 **10 Claims**

1. A method of treating a chemically and optically unstable hydrophilic acrylic dye/gel polymer which when used as a pH sensor exhibits a drift rate of about 0.03 pH unit or more over a 10 to 15 hour period to convert said unstable polymer to one having its chemical and optical stability with respect to dye loss with time increased to a point at which said polymer exhibits substantially reduced pH drift when used as a pH sensor, said method comprising:

(1) treating said unstable polymer with an aqueous solution of a base,

(2) washing the base-treated polymer with water to remove substantially all the base, and

(3) contacting the washing polymer with an anhydrous solvent having a high affinity for water to remove water from said polymer.

4,801,656

PROCESS FOR SULPHONATING MOLTEN POLYOLEFINS

John R. Boocock, Kingston, Canada, assignor to Du Pont Canada, Mississauga, Canada

Division of Ser. No. 756,225, Jul. 18, 1985. This application Dec. 19, 1986, Ser. No. 5,244

Claims priority, application Canada, Jun. 27, 1985, 485652

Int. Cl.^{4} C08F *8/36*

U.S. Cl. 525—344 **2 Claims**

1. A process for the manufacture of a modified polyolefin comprising the steps of:

(a) admixing molten polyolefin with 20–2000 ppm of sulphur trioxide/trimethylamine complex at a temperature above 210° C., said polyolefin being a homopolymer or copolymer of alpha-olefins selected from alpha-olefins having 2–10 carbon atoms, and mixtures thereof, said alpha-olefin being a non-aromatic hydrocarbon, and

(b) forming the modified polyolefin so obtained into a shaped article;

wherein molten polyolefin is admixed with a concentrate composition comprising a second polyolefin and said complex at a temperature below 210° C. prior to the admixing at a temperature above 210° C., said composition having been formed by admixing the second polyolefin in molten form with the complex at a temperature below 210° C., said second polyolefin having a shear viscosity that is not more than 50% of that of the polyolefin at 200° C. and a shear rate of 400 sec^{-1}.

4,801,657

PROCESS FOR PRODUCING POLYARYLETHERS BY FORMING AN ALKYLATED INTERMEDIATE

Wilhelm K. Risse, Siegen, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1987, Ser. No. 33,257

Int. Cl.^{4} C08G *10/00, 75/23, 65/38*

U.S. Cl. 525—471 **24 Claims**

1. Two-step process for preparing a high molecular weight, high melting polyarylether, the process comprising:

A. contacting and reacting, at a temperature of 100° to 300° C., in an inert, aprotic polar solvent having a boiling point

greater than the reaction temperature, under substantially anhydrous conditions, in the presence of ≧2 to <10 equivalents of an alkali metal and/or alkaline earth metal carbonate and/or bicarbonate, substantially equimolar amounts of:

(i) at least one alkyl-substituted dihydric phenol wherein the alkyl substituent is C_{3-8} iso-alkyl or C_{4-8} tertiary alkyl; and

(ii) an aromatic dihalide having at least one, inert, halogen-activating, electron-withdrawing group in the positions ortho and para to the halogen atoms on the aromatic ring,

to produce amorphous, high molecular weight alkylated polyarylether; and

B. contacting and reacting, under an inert atmosphere, alkylated polyarylether from step A and a suitable Lewis acid or a protic acid having an acidity function (H_o) of less than −11, to produce dealkylated, high molecular weight, high melting polyarylether.

4,801,658

CURABLE RESIN AND PROCESS FOR PREPARING THE SAME

Hisao Furukawa, Kobe; Naotami Ando, Hyogo, and Yasushi Kato, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 8, 1986, Ser. No. 905,107

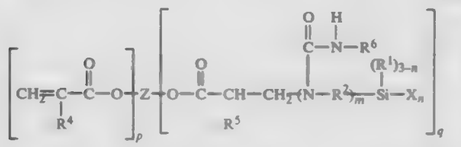
Claims priority, application Japan, Sep. 9, 1985, 60-199049

Int. Cl.^{4} C08F *30/08, 230/08*

U.S. Cl. 525—450 **6 Claims**

1. A curable resin having a number average molecular weight of 1,000 to 100,000 of a copolymer of a prepolymer (F) having a number average molecular weight of 250 to 60,000 with a vinyl monomer (D) having a molecular weight of 53 or greater, said prepolymer (F) having the formula (III):

(III)



wherein R^1 is an alkyl, aryl, or aralkyl group having 1 to 10 carbon atoms; R^2 is a bivalent group having 1 to 10 carbon atoms selected from the group consisting of alkylene groups, arylene groups and aralkylene groups; R^4 and R^5 are the same or (different and each is a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; X is a hydrolyzable group selected from the group consisting of halogen atoms, alkoxyl groups, acyloxyl groups, ketoxymate groups, amino groups, acid amide groups, aminooxy groups, mercapto groups and alkenyloxy groups; Z is a residue of an oligomer (A) having a number average molecular weight of 100 to 50,000 and having at least two groups selected from the group consisting of acryloyloxy groups and methacryloxy groups; R^6 is an alkyl, aryl or aralkyl group having 1 to 30 carbon atoms or a group having the formula: $(C_2H_5O)_3$—Si—$(CH_2)_3$—; p and q are an integer of one or more satisfying the equation of $2<p+q<8$; n is an integer of 1 to 3, and m is an integer of 1 to 10 wherein the amount of said prepolymer (F) is at least 0.1 part per weight per 100 parts by weight of said vinyl monomer.

4,801,659

ORGANOPOLYSILOXANES EXHIBITING NONLINEAR OPTICAL RESPONSE

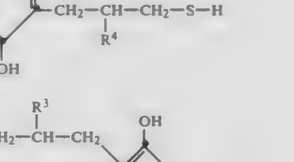
Thomas M. Leslie, Clinton Township, Hunterdon County, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Oct. 27, 1986, Ser. No. 923,501

Int. Cl.^{4} C08F *283/00*

U.S. Cl. 525—479 **22 Claims**

1. A polymer which is characterized by a recurring structural unit corresponding to the formula:



where R^1 is a hydrocarbyl substituent containing between about 1–12 carbon atoms; n is an integer of at least 5; X is an electron-donating substituent; and Y is an electron-withdrawing substituent.

4,801,660

COMPOSITIONS COMPRISING AN EPOXY RESIN AND MERCAPTAN-CONTAINING POLYPHENOLS

Abdul-Cader Zahir, Oberwil, and Karl Mechera, Muttenz, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 3,962, Jan. 16, 1987, Pat. No. 4,721,814. This application Oct. 19, 1987, Ser. No. 110,163

Claims priority, application Switzerland, Jan. 23, 1986, 253/86

Int. Cl.^{4} C08L *63/02, 61/14*

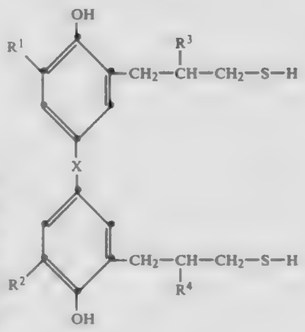
U.S. Cl. 525—481 **2 Claims**

1. A composition comprising

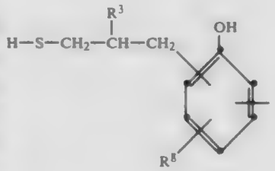
(a) an epoxy resin containing on average more than one epoxy group in the molecule, and

(b) a compound of formula I or II

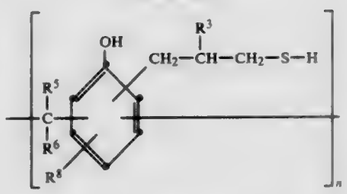
(I)



(II)



-continued



in which formulae R^1 and R^2 are each independently of the other hydrogen, C_1–C_{18} alkyl, C_3–C_{18} alkenylmethyl, cyclohexyl, phenyl, benzyl or tolyl, or are a $—CH_2—CH(R^3)—CH_2—S—H$ group, R^3 and R^4 are each independently of the other hydrogen or methyl, X is $—CR^5R^6—$, —S—, —SO—, $—SO_2—$ or $—(CH_3)C[—(CH_2)_m—COOR^7]—$, R^5 and R^6 are each independently of the other hydrogen or C_1–C_6 alkyl, R^7 is C_1–C_{18}- alkyl, R^8 is hydrogen, C_1–C_{18} alkyl, C_3–C_{18} alkenylmethyl or phenyl, m is 1 or 2 and n is an integer from 1 to 10, or a mixture of such compounds.

4,801,661

PROCESS FOR THE MANUFACTURE OF SELF-CROSSLINKING PAINT BINDERS

Willibald Paar, Graz, Austria, assignor to Vianova Kunstharz, A.G., Werndorf, Austria

Division of Ser. No. 942,829, Dec. 17, 1986, Pat. No. 4,711,937. This application Nov. 3, 1987, Ser. No. 116,040

Claims priority, application Austria, Dec. 20, 1985, 3695/85

Int. Cl.[4] C08G *8/28*; C08L *61/08*

U.S. Cl. 525—489 **6 Claims**

1. Process for the preparation of self-crosslinking cationic paint binders water-dilutable upon protonation comprising the steps of (1) providing a component A which is the reaction product of an amino alkylation product carrying an average of at least one NH-group per molecule of a phenol compound, an amino compound selected from the group consisting of a primary alkylamine, a primary alkanolamine, and an alkylenediamine, and formaldehyde with a semi-blocked diisocyanate; (2) reacting component A with formaldehyde at from about 50° to 90° C. to form reaction product B, wherein said formaldehyde is reacted in a maximum quantity corresponding to the number of formaldehyde reactive hydrogen sites on the phenol and urea groups of A; and (3) reacting the reaction product B with an epoxy compound having an epoxy equivalent weight of from about 50 to 2000, and wherein the quantity of epoxy compound is selected so that the maximum number of epoxide groups available corresponds to the sum of phenolic hydroxy groups and the methylol groups formed through the reaction with formaldehyde, said binder having basic amino groups corresponding to an amine value of at least 30 mg KOH/g.

4,801,662

MONOISOCYANATE CAPPED EPOXY RESINS

Gordon C. Fischer, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

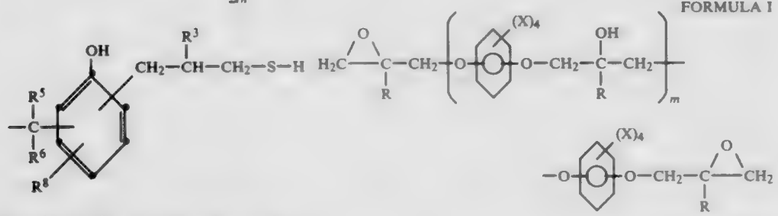
Filed Aug. 28, 1987, Ser. No. 90,486

Int. Cl.[4] C08G *59/14*

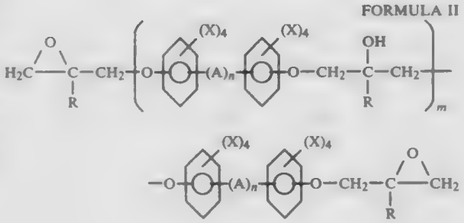
U.S. Cl. 525—504 **25 Claims**

1. In an epoxy resin which has secondary aliphatic hydroxyl groups along its backbone; the improvement which comprises reacting at least a portion of the secondary aliphatic hydroxyl groups with at least one monoisocyanate selected from (a) at least one aliphatic monoisocyanate, (b) at least one aliphatic monoisothiocyanate (c) at least one aromatic monoisocyante, (d) at least one aromatic monoisothiocyanate or (e) any combination thereof and wherein said epoxy resin has been prepared by reacting (A) an epoxy resin represented by the following Formulas I, II, III or IV or any combination thereof

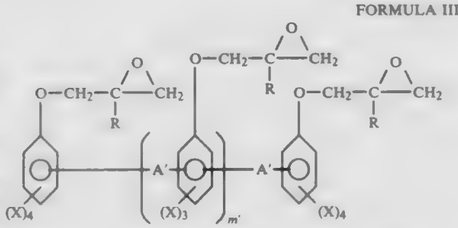
FORMULA I



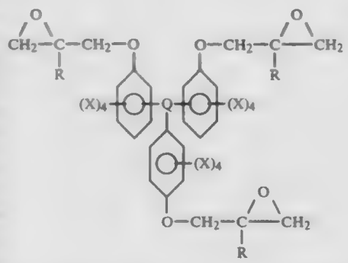
FORMULA II



FORMULA III

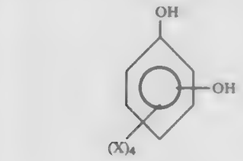


FORMULA IV

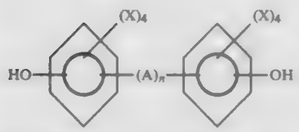


wherein each A is independently a divalent hydrocarbon group having from 1 to about 10 carbon atoms, —O—, —S—, —S—S—, —SO—, $—SO_2—$ or —CO—; Q is a trivalent hydrocarbon group having from 1 to about 10 carbon atoms; each A′ is independently hydrogen or a hydrocarbon group having from 1 to about 10; each R is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; each X is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms, bromine, chlorine or fluorine; m has an average value of from zero to about 2; m′ has an average value from about 0.001 to about 5; and n has a value of zero or 1; with (B) an organic compound having an average of about 2 aromatic hydroxyl groups per molecule represented by the following formulas (V) or (VI) or any combination thereof

FORMULA V



FORMULA VI



wherein each A and X is as defined above; and wherein components (A) and (B) are employed in quantities which provide a ratio of phenolic hydroxyl groups to epoxy groups of from about 0.1:1 to about 0.9:1.

4,801,663

ISOCYANURATE POLYISOCYANATE AND ITS USE AS A CURING AGENT FOR A TWO-COMPONENT POLYURETHANE COMPOSITION

Kaoru Ueyanagi; Norio Oyabu, and Yoshiyuki Asahina, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1988, Ser. No. 174,919

Claims priority, application Japan, Apr. 3, 1987, 62-81123; Apr. 23, 1987, 62-98587; May 11, 1987, 62-112624

Int. Cl.[4] C08G *18/74*

U.S. Cl. 525—528 **17 Claims**

1. An isocyanurate polyisocyanate comprising:

(a) at least 60% by weight, based on the total weight of the components (a), (b) and (c), of N,N′,N″-tris(6-isocyanatohexyl)-isocyanurate,

(b) from 0 to 10% by weight, based on the total weight of the components (a), (b) and (c), of N,N′-bis(6-isocyanatohexyl)-uretodione, and

(c) 40% by weight or less, based on the total weight of the components (a), (b) and (c), of poly(6-isocyanatohexyl)-isocyanurate,

said polyisocyanate having a viscosity of 1600 cps or less as measured at 25° C.

4,801,664

ACID WASH OF POLYARYLENE SULFIDES

Afif M. Nesheiwat, Bartlesville, Okla.; Guy Senatore, Borger, Tex., and Fred T. Sherk, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1988, Ser. No. 149,760

Int. Cl.[4] C08G *23/00*

U.S. Cl. 525—537 **60 Claims**

1. A process for treating a virgin poly(arylene sulfide) resin comprising:

(a) contacting said virgin resin with an aqueous acidic treating solution to form an aqueous acidic polymer slurry, wherein said acidic treating solution comprises an acidic component and an aqueous component and the concentration of said acidic component in said acidic treating solution is less than the amount necessary to result in at least a partial curing of the virgin poly(arylene sulfide) resisn,

(b) treating said virgin poly(arylene sulfide) resin by heating said polymer slurry mixture, while in the substantial absence of a gaseous oxidizing atmosphere, to an elevated temperature below the melting point of said virgin resin, and

(d) recovering said acid-treated poly(arylene sulfide) resin from said polymer slurry in a manner which does not result in at least a partial curing of said acid-treated poly(arylene sulfide) resin.

4,801,665

RESIN METHOD FOR MAKING SULFOXIDE FOR SOLID PHASE PEPTIDE SYNTHESIS

Daniel P. Getman, St. Louis, and Robert M. Heintz, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1986, Ser. No. 947,651

Int. Cl.[4] C08F *8/34, 8/06*

U.S. Cl. 525—350 **4 Claims**

1. A method of synthesizing a resin for solid phase peptide synthesis comprising

(1) reacting a polymer support, P, capable of undergoing a nucleophilic reaction with a mercaptan of the formula

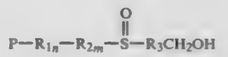
$$HS\text{-}R_3CH_2OH$$

where R_3 is a substituted or unsubstituted phenylene to form a sulfide resin of the formula

$$P\text{-}R_{1n}\text{-}R_{2m}\text{-}S\text{-}R_3CH_2OH$$

where R_1 is a substituted or unsubstituted aromatic wherein the substitutents of R_3 and R_1 are selected from the group consisiting of hydrogen, methyl, ethyl, phenyl, nitro and halogens, and R_2 is an alkylene having 1 to 20 carbon atoms and n and m independently equal 1 to 0 and

(2) oxidizing the sulfide resin to form a sulfoxide resin of the formula



where R_1, R_2, R_3, n and m are defined above.

4,801,666

OLEFIN AND CYCLOALKENE POLYMERIZATION WITH ORGANOLANTHANIDE CATALYSTS

Tobin J. Marks, and Heiko Manermann, both of Evanston, Ill., assignors to Northwestern University, Evanston, Ill.

Division of Ser. No. 715,927, Mar. 25, 1985, Pat. No. 4,668,773. This application May 14, 1987, Ser. No. 29,697

Int. Cl.[4] C08F *4/52, 10/02, 36/06*

U.S. Cl. 526—123 **17 Claims**

1. A method for polymerizing an α-olefin, comprising contacting said α-olefin with a catalyst under an inert atmosphere, said catalyst consisting essentially of a lanthanide catalyst of the formula $(Cp_2'MH)_2$ wherein Cp′ is $\eta^5(CH_3)_5C_5$; and M is selected from the group consisting of La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er and Tm.

4,801,667

PREPARATION OF A (CO)POLYMERIZABLE COMPOSITION CONTAINING A DIOL BIS(ALLYL CARBONATE) MONOMER AND A PROCESS BY WHICH THIS COMPOSITION IS (CO)POLYMERIZED

Johannes Brand, Schalkhaar, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 1,389, Jan. 8, 1987, abandoned. This application Dec. 21, 1987, Ser. No. 135,468

Claims priority, application Netherlands, Jan. 28, 1986, 8600183

Int. Cl.[4] C08G *65/38*

U.S. Cl. 526—213 **19 Claims**

1. A process for the preparation of a polymerizable composi-

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tion containing a diol bis(allyl carbonate) monomer and a finely divided aromatic diacyl peroxide polymerization initiator, comprising mixing the aromatic diacyl peroxide with an organic densensitizing agent to produce a powdered peroxide composition, the desensitizing agent being selected from the group consisting of esters of isomeric benzene dicarboxylic acids and mixtures thereof, having a melting or softening point higher than 40° C. and forming 20–80% by weight of the peroxide composition; and dissolving the peroxide composition in the monomer.

4,801,668

HIGH SOFTENING POINT HYDROCARBON RESINS FROM 1,5-CYCLOOCTADIENE

William A. Beavers, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1987, Ser. No. 70,005

Int. Cl.⁴ C08F *4/14, 32/06*

U.S. Cl. 526—237 **7 Claims**

1. A process for preparing a low non-transannular, high softening point hydrocarbon resin comprising recurring units having the formula`



said resin having a molecular weight of about 500–2,000 and said resin having not more than about 20% by weight of recurring non-transannular units, said process comprising providing a reaction mixture of 1,5-cyclooctadiene and a catalyst consisting essentially of an aluminum halide, and effecting reaction of the 1,5-cyclooctadiene by heating the mixture at a temperature at or above about 80° C.

4,801,669

PROCESS FOR THE QUASI-IONIC POLYMERIZATION OF ACRYLIC ACID DERIVATIVES

Karl-Erwin Piejko, Cologne; Ralph Ostarek, Leichlingen, and Manfred T. Reetz, Marburg, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 14, 1987, Ser. No. 132,525

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1986, 3643709

Int. Cl.⁴ C08F *4/00, 4/14*

U.S. Cl. 526—238 **9 Claims**

1. A process for the quasi-ionic polymerization of an acrylic acid derivative, wherein the acrylic acid derivative is polymerized in an organic solvent in the presence of an initiator and a zinc halide which process is characterized in that the polymerization is carried out by a procedure in which the zinc halide is dissolved in the acrylic acid derivative to be polymerized and the other components of the polymerization mixture are then combined with this solution.

4,801,670

ACRYLIC COPOLYMERS EXHIBITING NONLINEAR OPTICAL RESPONSE

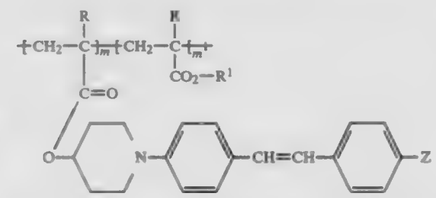
Ronald N. DeMartino, Wayne, and Hyun-Nam Yoon, New Providence, both of N.J., assignors to Hoecast Celanese Corp., Somerville, N.J.

Filed Nov. 16, 1987, Ser. No. 121,302

Int. Cl.⁴ C08F *26/06*

U.S. Cl. 526—263 **18 Claims**

1. An isotropic acrylic copolymer which is characterized by recurring monomeric units corresponding to the formula:



where m and m¹ are integers which total at least 10, and the m monomer comprises between about 10–90 mole percent of the total m+m¹ monomer units; R is hydrogen or a C_1–C_4 alkyl, C_6–C_{10} aryl, halo or haloalkyl substituent; R^1 is a C_1–C_6 alkyl substituent; and Z is a nitro or cyano substituent.

4,801,671

PRODUCTION OF ALKALI-SOLUBLE, CARBOXYL36-FUNCTIONAL AQUEOUS EMULSION THICKENERS

Gregory D. Shay, Oak Forest; Fran K. Kravitz, Chicago; Peter V. Brizgys, Hickory Hills, and Mark A. Kersten, Mt. Prospect, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jun. 25, 1987, Ser. No. 66,311

Int. Cl.⁴ C08F *2/24*

U.S. Cl. 526—214 **15 Claims**

1. A method of carrying out an aqueous emulsion copolymerization to provide an alkali-soluble anionic copolymer having thickening characteristics while minimizing plating and grit problems comprising, copolymerizing in aqueous emulsion monoethylenically unsaturated monomers comprising from 15% to 50% by weight of carboxyl-functional monomer, at least about 5% by weight of monomer having surfactant characteristics, and the balance of the monomers being selected to provide a water insoluble copolymer in the presence of a salt of a styrene sulfonic acid said salt serived from monovalent bases in an amount of from about 0.1% up to about 6.0%, by weight.

4,801,672

RANDOM 1-BUTENE COPOLYMER

Masaki Kohyama, Ichihara; Takeshi Muranaka, Iwakuni; Kunisuke Fukui, Ohno, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 29, 1985, Ser. No. 792,596

Claims priority, application Japan, Nov. 1, 1984, 59-238951

Int. Cl.⁴ C08F *210/14*

U.S. Cl. 526—348.2 **14 Claims**

1. A random 1-butene copolymer comprising 1-butene and an alpha-olefin selected from the group consisting of 1-pentene, 1-hexene, 4-methyl-1-pentene, 3-methyl-1-pentene, 1-octene, and 1-decene, said copolymer having the following characteristics (A) to (F):

(A) it comprises 50 to 99 mole % of the 1-butene component and 1 to 50 mole % of the alpha-olefin component,

(B) it has an intrinsic viscosity (η), measured in decalin at 135° C., of from 0.5 to 6 dl/g,

(C) it has a melting point (Tm), measured by a differential scanning calorimeter, of from 30° to 120° C.,

(D) it has a crystallinity, measured by X-ray diffractometry, of from 5 to 60%,

(E) the amount (W_1 in % by weight) of that portion of it which is soluble in boiling methyl acetate is not more than 2%, and

(F) the amount (W_2 in % by weight) of that portion of it which is soluble in a 1:1 by volume mixture of acetone and n-decane at 10° C. is less than $5\times(\eta)^{-1.2}$.

4,801,673

ROOM TEMPERATURE CROSSLINKABLE COMPOSITIONS

Erhard Bosch, Burghausen Fed. Rep. Germany; Franz Neuhauser, Geretsberg Anstria; August Schiller, Neuötting, and Oswin Sommer, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

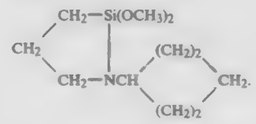
Filed Jul. 6, 1987, Ser. No. 69,749

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1986, 3624206

Int. Cl.⁴ C08G *77/04*

U.S. Cl. 528—34 **3 Claims**

1. A composition which is storable under anhydrous conditions, but when exposed to moisture crosslinks at room temperature to form an elastomer comprising a diorganopolysiloxane having one Si-bonded hydroxyl group in each of its terminal units and a cyclic silane of the formula



4,801,674

SECONDARY AROMATIC DIAMINES AS CURING AGENTS IN POLYURETHANE AND POLYUREA MANUFACTURE BY REACTION INJECTION MOLDING

Ray V. Scott, Jr., Addison, and David W. House, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

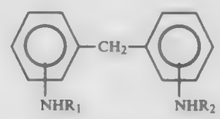
Filed Mar. 20, 1987, Ser. No. 28,511

The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.

Int. Cl.⁴ C08G *18/32, 18/48, 18/85, 18/86*

U.S. Cl. 528—68 **16 Claims**

1. A reaction injection molded elastomer made by reacting in a closed mold a first stream comprising one or more polyisocyanates with a second stream comprising from about 0.7 to about 1.3 equivalents of a blend of compounds having isocyanate reactive hydrogens said blend consisting essentially of a backbone polyamine (B_A) or a backbone polyol (B_O) and a chain diamine (D) which is at least one aromatic diamine of the structure,



where R_1 and R_2 are independently selected from the group consisting of a monovalent alkyl or alkenyl moiety containing from 4 to about 20 carbon atoms, or a monovalent aryl moiety, and where the chain extender diamine constitutes from about 20 to about 80 equivalents percent of the blend.

4,801,675

PROCESS FOR THE PREPARATION OF PREPOLYMERS CONTAINING ISOCYANATE GROUPS, THE PREPOLYMERS OBTAINABLE BY THIS PROCESS AND THEIR USE AS BINDERS IN ONE-COMPONENT LACQUERS

Josef Pedain, Cologne; Michael Sonntag, Odenthal, and Klaus König, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jun. 10, 1987, Ser. No. 60,782

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1986, 3621706

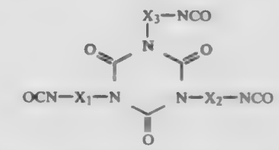
Int. Cl.⁴ C08G *18/28, 18/77, 18/70*

U.S. Cl. 528—73 **18 Claims**

1. A process for the preparation of a prepolymer containing free isocyanate groups and having an isocyanate content of 1 to 16% by weight which comprises reacting at an NCO/OH equivalent ratio above 2:1

(a) a polyisocyanate component comprising

(i) a triisocyanato-isocyanurate corresponding to the formula



(ii) a mixture of the triisocyanato-isocyanurate mentioned under (i) with its higher homologues containing more than one isocyanurate ring, or

(iii) a mixture of the polyisocyanate mentioned under (i) or (ii) with up to 60 isocyanate equivalent percent, based on the total quantity of component (a) of an organic polyisocyanate which is free from isocyanurate groups,

wherein X_1, X_2 and X_3 are identical or different and represent difunctional, aliphatic or cycloaliphatic hydrocarbon groups having a molecular weight of 84 to 206 with

(b) a polyhydroxyl component comprising

(i) at least one polyester polyol having a hydroxyl functionality (average) of about 1.8 to 5 and a hydroxyl number (average) of about 15 to 300, or

(ii) a mixture of the polyester polyol mentioned under (i) with up to about 10% by weight, based on the weight of the mixture, of a (cyclo)alkane polyol having a hydroxyl number above about 300 and optionally containing ester groups.

4,801,676

FULLY AROMATIC THERMOTROPIC POLYESTER IMIDE

Bernd Hisgen, Limburgerhof; Hans-Jakob Kock, Ludwigshafen; Michael Portugall, Wachenheim; Erhard Seiler, Ludwigshafen, and Gerd Blinne, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 28, 1987, Ser. No. 78,668

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1986, 3629208

Int. Cl.⁴ C08G *73/16*

U.S. Cl. 528—170 **6 Claims**

1. A fully aromatic thermotropic polyester produced

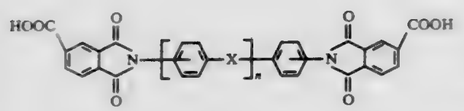
(A) from 30 to 60 mol % of 4-hydroxybenzoic acid,

(B) from 20 to 35 mol % of a mixture of

(B_1) terephthalic acid,

(B_2) isophthalic acid and

(B_3) from 0.5 to 5 mol % of a dicarboxylic acid of the formula I



where X is —O—, —S—, —SO_2—, —CO—, —CH_2— or —$C(CH_3)_2$—, n is 0 or 1 and the two imide nitrogen atoms are meta or para to X, or its C_1–C_8-alkyl, C_1–C_8-alkoxy, aryl, chlorine or bromine derivatives which are substituted in the nucleus, the molar ratio of B_1 to B_2 being from 1.04:1 to 19:1, and

(C) from 20 to 35 mol % of a mixture of

(C_1) hydroquinone and

(C_2) 4,4'-dihydroxydiphenyl,

the molar ratio of C_1 to C_2 being from 0.1:1 to 2.67:1 and the molar ratio of B to C being from 0.9:1 to 1.1:1.

4,801,677

THERMOTROPIC AROMATIC POLYESTER WITH HIGH THERMAL STABILITY

Volker Eckhardt; Hans-Rudolf Dicke; Ludwig Bottenbruch; Dieter Freitag, all of Krefeld, and Ulrich Biskup, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

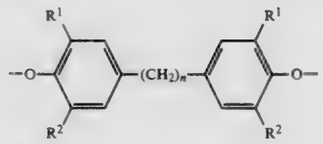
Continuation-in-part of Ser. No. 819,417, Jan. 16, 1986, abandoned. This application Jan. 15, 1987, Ser. No. 3,586

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1985, 3502378; European Pat. Off., Jan. 11, 1986, 86100293.9; Japan, Jan. 21, 1986, 61-9065

Int. Cl.⁴ C08G *63/18*

U.S. Cl. 528—176 **7 Claims**

1. A thermotropic polyester comprising copolymerized aromatic dicarboxylic acid moieties and diphenol moieties wherein at least 90 mol% of the copolymerized diphenol moieties correspond to the formula (I):



wherein

R^1, R^2 represent hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, phenyl or halogen and

n is an integer of from 6 to 12 and wherein the temperature of the transition from the crystalline into the liquid crystalline phase, melting point, determined by differential scanning calorimetry is less than 370° C.

4,801,678

POLY(2,6-NAPHTHOQUINONE) FILM AND THE PREPARATION AND USES THEREOF

Vaclav Horak, Bethesda, Md., and Mani Mala, Washington, D.C., assignors to Georgetown University, Washington, D.C.

Filed Oct. 6, 1986, Ser. No. 915,560

Int. Cl.⁴ C08G *65/38*

U.S. Cl. 528—219 **1 Claim**

1. A polymer, which is poly(2,6-naphthoquinone) or the reduced quinoloid counterpart thereof, or the oxidized quinonoid counterpart thereof.

4,801,679

POLYFORMAL RESIN AND PROCESS FOR PRODUCING SAID RESIN

Kazuyoshi Shigematsu, and Shigenori Shirouzu, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

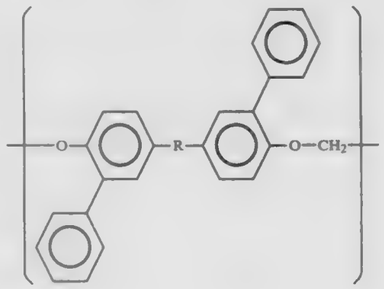
Filed Jan. 20, 1988, Ser. No. 146,244

Claims priority, application Japan, Feb. 4, 1987, 62-22286

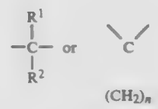
Int. Cl.⁴ C08G *65/40*

U.S. Cl. 528—219 **9 Claims**

1. A polyformal resin having a repeating unit represented by the general formula:



wherein R is



said R^1 and R^2 being each a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an aryl group having 6 to 12 carbon atoms, an alkoxyphenyl group having 7 to 11 carbon atoms or a phenoxyphenyl group, and n being an integer of 4 to 10, and an intrinsic viscosity at 20° C. as a methylene chloride solution of at least 0.2 dl/g.

4,801,680

HYDROXYALKYLAMIDE POWDER COATING CURING SYSTEM

Denise M. Geary, Franklin, Wis.; Paul H. Pettit, Jr., Allison Park; Marvin L. Kaufman, Pittsburgh, both of Pa., and Susan K. Vicha, North Royalton, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 30, 1987, Ser. No. 139,358

Int. Cl.⁴ C08G *81/00*

U.S. Cl. 528—272 **9 Claims**

1. A thermosetting powder coating composition comprising a co-reactable particulate mixture of:

(a) a carboxylic acid group-containing polyester based on a condensation reaction of aliphatic polyols and/or cycloaliphatic polyols with aliphatic and/or aromatic polycarboxylic acids and anhydrides, said polyester having a Tg in the range of about 30° C. to about 85° C. and an acid number of from about 20 to about 80; and

(b) a beta-hydroxyalkylamide, the equivalent ratio of beta-hydroxyalkylamide equivalents to carboxylic acid equivalents being within the range of 0.6 to 1.6:1.

4,801,681

METHOD FOR THE MANUFACTURE OF POLYIMIDAZOLE AND POLYIMIDAZO-PYRROLONE PRECURSORS FROM TETRA CARBOXYLIC ACID MOIETY REACTANT

Hellmut Ahne, Röttenbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 716,675, Mar. 27, 1985, Pat. No. 4,656,244. This application Mar. 3, 1987, Ser. No. 21,152

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 34117067

Int. Cl.⁴ C08G *73/18*

U.S. Cl. 528—336 **5 Claims**

1. A method for manufacturing an oligomeric, polymeric or a mixture of an oligomeric and polymeric radiation-reactive precursor or a polyimidazo-pyrrolone, comprising reacting in the presence of a carbodiimide, an aromatic, heterocyclic or a mixture of an aromatic and a heterocyclic tetraamino compound with an olefinically unsaturated monocarboxylic acid and an aromatic, heterocyclic or a mixture of an aromatic or heterocyclic tetracarboxylic acid dianhydride or an olefinically unsaturated tetracarboxylic acid diester in the form of an addition product of said tetracarboxylic acid dianhydride and an olefinically unsaturated alcohol.

4,801,682

HIGH TEMPERATURE FLUORINATED POLYMER

Daniel A. Scola, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

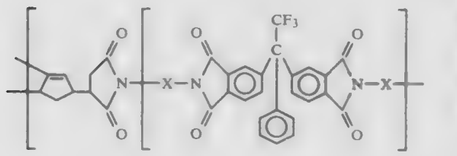
Filed May 27, 1986, Ser. No. 867,719

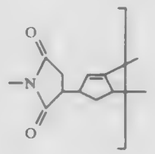
The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.⁴ C08G *73/10*

U.S. Cl. 528—353 **6 Claims**

1. High temperature fluorinated polyimides having repeating polymer units comprising:





wherein X is a diamine.

4,801,683

METHOD FOR THE DEACTIVATION AND NEUTRALIZATION OF POLYOLEFIN CATALYSTS

Oscar W. May, Memphis, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Feb. 5, 1988, Ser. No. 152,921

Int. Cl.⁴ C08F *6/02*; C08K *3/38*

U.S. Cl. 528—485 **11 Claims**

1. A method of deactivating active, corrosive Ziegler-Natta catalyst residues in an olefin polymer, and simultaneously neutralizing these corrosive residues, comprising the step of contacting said polymer containing said residues with an amount of an alkali or alkaline earth salt of perboric acid effective to deactivate and neutralize said residues.

4,801,684

PROCESS FOR OBTAINING INSULIN PRECURSORS FROM REACTION MIXTURES RESULTING FROM THE FOLDING OF INSULIN PRECURSORS FROM THE CORRESPONDING S-SULFONATES

Ulrich Grau, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP86/00008, § 371 Date Sep. 2, 1986, § 102(e) Date Sep. 2, 1986, PCT Pub. No. WO86/04335, PCT Pub. Date Jul. 31, 1986

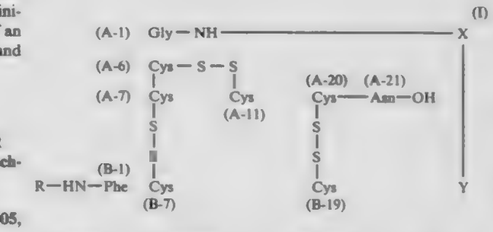
PCT Filed Jan. 11, 1986, Ser. No. 924,850

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 3501641

Int. Cl.⁴ C07K *7/40*

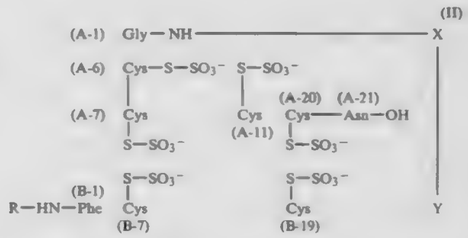
U.S. Cl. 530—303 **12 Claims**

1. A process for the preparation of correctly-recombined insulin precursors of the formula (I)



in which R is hydrogen or the presequence P_m—Q_n—, in which P is a sequence of naturally occurring amino acids with m being from 0 to 50, Q are basic natural amino acids, and n is an integer from 1 to 4, Y represents —Lys^{B29}—Z^{B30}—, in which Z denotes Ala, Thr or Ser, and the bridge extending from A-1 to A-21 is an insulin A-chain, the bridge extending from B-1 to B-30 represents an insulin B-chain, and X is a bridge which is bonded to the insulin A-chain at the amino group of A-1 and is bonded to the insulin B-chain at the ε-amino group of B-29—in which case it is bonded to the free bond of Z^{B30}OH—or at the carboxyl group of B-30, comprising the steps of

folding, in a reaction mixture, S-sulfonates of the formula (II)



in which R, X and Y have the abovementioned meanings, under conditions sufficient to correctly recombine the insulin precursors of formula (I),

precipitating false recombinants co-formed in the folding step by adjustment of the reaction mixture to pH 4 to 6,

removing the precipitate,

converting the precipitate by sulfitolysis into S-sulfonates of the formula (II), and

subjecting the sulfitolyzed S-sulfonates to folding under conditions sufficient to form the insulin precursors of formula (I).

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4,801,685

MICROBIAL PRODUCTION OF MATURE HUMAN LEUKOCYTE INTERFERON K AND L

David V. Goeddel, Burlingame, Calif., and Sidney Pestka, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J. and Genentech, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 894,076, Aug. 5, 1986, abandoned, which is a continuation of Ser. No. 293,044, Aug. 14, 1981, abandoned. This application Jun. 1, 1987, Ser. No. 56,623
Int. Cl.[4] C07K *13/00, 15/26;* A61K *45/02;* C12P *21/00*
U.S. Cl. 530—351 6 Claims

1. A polypeptide of about 166 amino acids comprising the amino acid sequence of human Le IF K as a mature human leukocyte interferon, microbially produced and unaccompanied by any corresponding presequence or portion thereof.

4. A polypeptide of about 166 amino acids comprising the amino acid sequence of human Le IF L as a mature human leukocyte interferon, microbially produced and unaccompanied by any corresponding presequence or portion thereof.

4,801,686

PURIFICATION OF RECOMBINANT INTERLEUKIN-1

Shirley R. Kronheim, Seattle, Wash., assignor to Immunex Corporation, Seattle, Wash.

Filed Sep. 4, 1986, Ser. No. 908,426
Int. Cl.[4] C07K *3/12, 3/28*
U.S. Cl. 530—351 19 Claims

1. A process for purifying recombinant IL-1 from microbial cells, comprising:
(a) suspending the microbial cells in an aqueous buffered medium having a pH from about 1 to about 5;
(b) disrupting the microbial cells to provide an extract containing solubilized recombinant IL-1; and
(c) recovering solubilized recombinant IL-1 from the extract.

4,801,687

MONOCLONAL ANTIBODY PURIFICATION PROCESS USING PROTEIN A

That T. Ngo, Irvine, Calif., assignor to Bioprobe International, Inc., Tustin, Calif.

Continuation-in-part of Ser. No. 923,053, Oct. 27, 1986, abandoned. This application Dec. 30, 1987, Ser. No. 139,504
Int. Cl.[4] A61K *39/395*
U.S. Cl. 530—387 20 Claims

1. A process for the purification of immunoglobulins which comprises:
mixing a medium containing immunoglobulins with a buffer solution having a pH in the range of about pH 7.5 to pH 10 and containing a combination of monovalent cations and polybasic anions in a concentration of about 0.6M to 1.75M to provide a buffered immunoglobulin medium;
contacting said buffered immunoglobulin medium with an immobilized protein A adsorbent to adsorb the immunoglobulins present in said buffered immunoglobulin medium upon said immobilized protein A adsorbent;
washing the immobilized protein A adsorbent having immunoglobulins adsorbed thereon with said buffer solution;
contacting said immobilized protein A adsorbent having immunoglobulins adsorbed thereon with a buffer solution having a pH in the range of about pH 3 to pH 6 to remove the adsorbed immunoglobulins from the immobilized protein A adsorbent; and
recovering the removed immunoglobulins in substantially pure form.

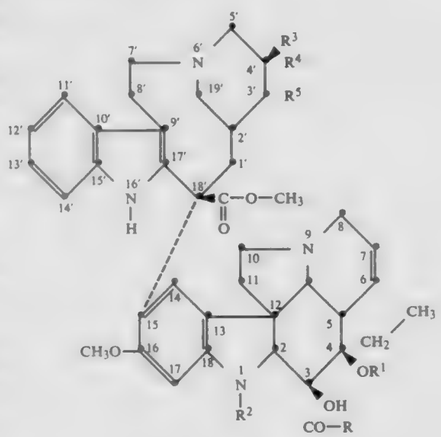
4,801,688

HYDRAZONE IMMUNOGLOBULIN CONJUGATES

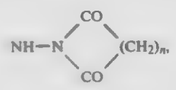
Bennett C. Laguzza, and Cynthia L. Nichols, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 867,183, May 27, 1986, abandoned. This application Oct. 7, 1987, Ser. No. 106,756
Int. Cl.[4] A61K *39/44;* C07K *3/08, 15/14*
U.S. Cl. 530—391 20 Claims

1. A cytotoxic hydrazone conjugate formed by reacting a vinca hydrazide of the formula



wherein R^2 is H, CH_3 or CHO; when R^4 and R^5 are taken singly, R^5 is H, and one of R^3 and R^4 is ethyl and the other is H or OH; when R^4 and R^5 are taken together with the carbons to which they are attached, they form an oxirane ring in which case R^3 is ethyl; R is $NHNH_2$,



O(C_{1-3} alkyl), NH_2, NH(C_{1-3} alkyl), NH-CH_2CH_2-Y, 1-pyrrolidinyl or 1-piperidinyl, wherein n is 2–4 and Y is Cl, OCH_3 or SCH_3; R^1 is H, (C_{1-3} alkyl)-CO, chlorosubstituted (C_{1-3} alkyl)-CO or R^6 wherein R^6 is COXCONHNH$_2$ wherein X is C_{1-4} straight chain alkylene, C_{2-8} branched chain alkylene, C_{2-4} alkenylene, C_{3-4} alkynylene, C_{3-6} cycloalkylene, phenylene, hydroxy-substituted C_{1-4} alkylene, or a direct bond, provided that either R is $NHNH_2$ or R^1 is R^6 except that R cannot be $NHNH_2$ when R^1 is R^6 and R^1 cannot be R^6 when R is $NHNH_2$, with one or more aldehyde groups of an oxidized glycopotein.

4,801,689

PHYSILOGICALLY ACTIVE GLYCOPROTEIN AND PROCESS FOR PRODUCTION THEREOF

Taneaki Oikawa, Yamagata, Japan, assignor to Bio Science Laboratory, Yamagata, Japan

Filed Apr. 22, 1986, Ser. No. 854,470
Claims priority, application Japan, Jul. 12, 1985, 60-152466
Int. Cl.[4] C07K *15/14*
U.S. Cl. 530—395 2 Claims

1. A process for production of a substantially pure glycoprotein having the following properties:
(a) originating from oviduct of a mammal;
(b) having a molecular weight of about 200,000 to 240,000, as determined by SDS-polyacrylamide gel density-gradient electrophoresis;
(c) having an isoelectric point of about 4 to 6.2, as determined by isoelectric focusing;
(d) containing no sub-fragments, as determined by SDS-disk electrophoresis;
(e) forming a carbamylation train in two-dimensional electrophoresis (isoelectric focusing and SDS-polyacrylamide gel density-gradient electrophoresis); and
(f) facilitating species-specific bonding of sperm to zonae pellucidae,
comprising the steps of:
(1) preparing oviduct from a mammal;
(2) homogenating the oviduct with a buffer to obtain a homogenate;
(3) obtaining a liquid containing glycoprotein from the homogenate;
(4) filtering said liquid through a filter which does not pass substances having a molecular weight of more than 200,000 Daltons to obtain a residual material containing said glycoprotein;
(5) absorbing said glycoprotein onto lectin immobilized on an insoluble support;
(6) liberating said glycoprotein from said support;
(7) recovering said glycoprotein.

4,801,690

NOVEL LECTINS DERIVED FROM BACTERIAL PILI

Charles C. Brinton, Jr., and Mark Hanson, both of Pittsburgh, Pa., assignors to Bactex, Inc., Pittsburgh, Pa.

Filed Mar. 24, 1986, Ser. No. 842,946
Int. Cl.[4] A61K *37/02, 39/108, 39/112;* C12N *1/00*
U.S. Cl. 530—396 16 Claims



1. A bactolectin derived from the pili of an organism selected from the group consisting of *E. coli,* and Salmonella Species, said lectin being non-covalently bindable to the pilus rod protein of said pili and separable therefrom by the action of hot aqueous sodium dodecyl sulfate and possessing at least a single binding site for binding to mammalian erythrocyte ghosts.

4,801,691

METHOD FOR REMOVING SODIUM DODECYL SULFATE FROM SODIUM DODECYL SULFATE SOLUBILIZED PROTEIN SOLUTIONS

Henry E. Auer, Skokie, Ill., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed May 15, 1987, Ser. No. 50,146
Int. Cl.[4] C07K *3/24, 3/28*
U.S. Cl. 530—399 19 Claims

1. A method for removing excess sodium dodecyl sulfate (SDS) from a SDS-solubilized protein solution, comprising:
adding guanidine hydrochloride (GCl) in amounts sufficient to produce a GCl:SDS molar ratio of between about 1 to 5 to the solution to induce SDS precipitation;
allowing the excess SDS to precipitate as the guanidinum dodecyl sulfate (GDS) complex; and
removing the GDS precipitate from the solution.

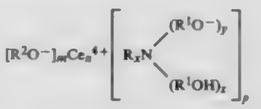
4,801,692

CERIC ALKANOLATOAMINES

Peter S. Gradeff, Pottersville, and Fred G. Schreiber, Highland Park, both of N.J., assignors to Rhone-Poulenc Inc., N.J.

Filed Aug. 11, 1986, Ser. No. 895,560
Int. Cl.[4] C07F *5/00*
U.S. Cl. 534—15 28 Claims

1. A compound having the formula:



wherein R is one or more moieties selected from the group consisting of hydrogen and alkyl having from 1 to 20 carbon atoms, R^2 is an alkyl group having from 1 to 20 carbon atoms, R^1 is an alkyl group having from 1 to 20 carbon atoms, m is an integer from 0 to 3, y is an integer from 1 to 3, x and z are each an integer from 0 to 2, n and p are each an integer from 1 to 20, with the proviso that $m+yp=4n$, the sum of x, y and z is 3.

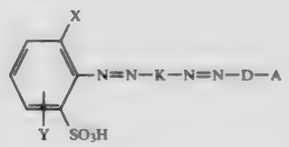
4,801,693

SUBSTITUTED SULFOBENZENE AND TRIAZINE-CONTAINING REACTIVE DYES

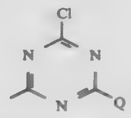
Ortwin Schaffer, Ludwigshafen, and Manfred Patsch, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 739,705, May 31, 1985, abandoned. This application Aug. 20, 1987, Ser. No. 88,533
Int. Cl.[4] C09B *62/03, 62/513;* D06P *3/10, 3/66*
U.S. Cl. 534—637 15 Claims

1. A compound of the formula:



wherein:
A is chlorotriazine of the formula:



bonded to the chromophore via an imino or iminomethylene bridge;
Q is chlorine, phenyl, methoxy, ethoxy, propoxy, isopropoxy, or NR^1R^2; and
R^1 is hydrogen or C_1–C_8-alkyl, or R^1 is cycloalkyl, aryl, or substituted aryl, and R^2 is hydrogen or C_1–C_8-alkyl;
D is a 1,3-phenylenediamine-4-sulfonic acid, 1,4-phenylenediamine-2-sulfonic acid, 1,3-diamino-4-sulfo-6-methylbenzene, 1,3-diamino-4,6-disulfobenzene, 1,4-diamino-2,5-disulfobenzene, 1,6-diaminonaphthalene-4-sulfonic acid or 2,6-diaminonaphthalene-4,8-disulfonic acid;
K is 1-amino-8-hydroxynaphthalene-4,6-disulfonic acid or 1-amino-8-hydroxynaphthalene-3,6-disulfonic acid;
X is chlorine or bromine; and
Y is hydroxysulfonyl, hydroxycarbonyl or aminosulfonyl.

4,801,694

TRIAZINYL REACTIVE DYESTUFFS IN WHICH TRIAZINYL GROUP IS FURTHER SUBSTITUTED WITH A BETA-CHLOROETHYLSULFONYL- OR VINYLSULFONYLBUTYRYLAMINO MOIETY

Peter Scheibli, Bottmingen; Karl Seitz, Oberwil; Herbert Seiler, Rieben, and Athanassios Tzikas, Pratteln, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 785,178, Oct. 7, 1985, abandoned. This application Jul. 13, 1987, Ser. No. 73,323

Claims priority, application Switzerland, Oct. 15, 1984, 4931/84

Int. Cl.[4] C09B *62/02, 62/024, 62/026, 62/036*

U.S. Cl. 534—637 11 Claims

1. A reactive dye of the formula



wherein

D is the radical of a monoazo, polyazo, metal complex azo, anthraquinone, phthalocyanine, formazan, azomethine or dioxazine dye;

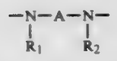
R is hydrogen or alkyl which contains from 1 to 4 carbon atoms and which is unsubstituted or substituted by halogen, hydroxy, cyano, carboxyl, sulfo or alkoxy with 1 to 4 carbon atoms;

X is fluorine, chlorine or bromine;

Y is beta-chloroethylsulfonylbutyryl or vinylsulfonylbutyryl;

n is 1 or 2; and

B is a radical of the formula



wherein

A is sulfophenylene or disulfophenylene; and

R_1 and R_2, independently of each other, are hydrogen; alkyl which contains 1 to 4 carbon atoms and which is unsubstituted or substituted by halogen, hydroxy, cyano, carboxyl, sulfo or alkoxy with 1 to 4 carbon atoms; or phenyl which is unsubstituted or substituted by halogen, cyano, carboxyl, sulfo, alkyl with 1 to 4 carbon atoms, or alkoxy with 1 to 4 carbon atoms.

4,801,695

IRON COMPLEXES OF AZO DYES OBTAINED FROM NAPHTHYLSULFONIC ACID, RESORCINOL AND NITROAMINOPHENOL

Alois Püntener, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 742,343, Jun. 7, 1985, abandoned. This application Mar. 13, 1987, Ser. No. 27,102

Claims priority, application Switzerland, Jun. 12, 1984, 2836/84

Int. Cl.[4] C09B *45/34, 45/32;* D06P *1/10*

U.S. Cl. 534—684 8 Claims

1. An iron complex of an azo dye prepared by diazotizing a naphthylamine sulfonic acid selected from the group consisting of 2-naphthylamine-5-sulfonic acid, 2-naphthylamine-6-sulfonic acid, 2-naphthylamine-7-sulfonic acid 2-naphthylamine-8-sulfonic acid; coupling the resulting diazonium compound with resorcinol at a pH of from 3 to 7 to form the first coupling-reaction product; subsequently coupling the first coupling reaction product with diazotized 4-nitro-2-aminophenol to form the second coupling-reaction product; and metallizing the second coupling-reaction product with an iron compound.

4,801,696

PHENYLAZOCYANOTHIOPHENEAZOANILINE DYES FOR DYEING CELLULOSE-CONTAINING FIBERS IN BLUE TO BLUISH GREEN SHADES

Toshio Niwa; Kiyoshi Himeno; Toshio Hihara, all of Kanagawa, and Shuichi Maeda, Saitama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

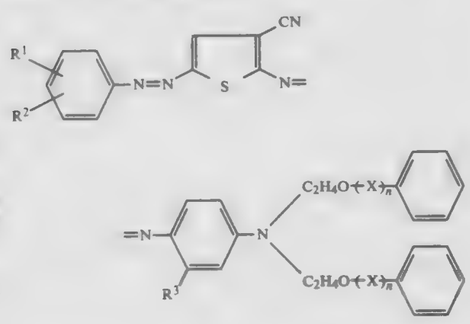
Continuation of Ser. No. 495,874, May 18, 1983, abandoned. This application Jun. 22, 1987, Ser. No. 65,184

Claims priority, application Japan, May 18, 1982, 57-83747; Feb. 3, 1983, 58-16795

Int. Cl.[4] C09B *31/043, 33/02;* D06P *1/18, 3/36*

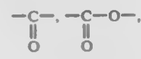
U.S. Cl. 534—761 6 Claims

1. A disazo dye for dyeing cellulose-containing fibers represented by the following formula:





wherein R^1 represents hydrogen, R^2 represents halogen, nitro, cyano, thiocyanato, trifluoromethyl, formyl, lower alkoxycarbonyl or lower alkylsulfonyl, R^3 represents hydrogen, methyl, chlorine or acylamino selected from the group consisting of acetylamino, propionylamino and methylsulfonylamino, —X— represents



$—SO_2—$ or $—CH_2—$, and n represents 0 or 1.

4,801,697

PHYSIOLOGICALLY ACTIVE SUBSTANCE TPI AND PRODUCTION THEREOF

Satoshi Yaginuma; Masashi Awata; Masaki Takada, and Kenji Kinoshita, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

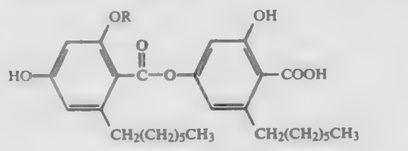
Filed Apr. 2, 1986, Ser. No. 847,312

Claims priority, application Japan, Apr. 2, 1985, 60-68409; Nov. 15, 1985, 60-255978

Int. Cl.[4] C07H *15/00;* A61K *31/715*

U.S. Cl. 536—4.1 4 Claims

1. A compound of the formula



wherein R is β-D-glucopyranosyl, β-D-galactopyranosyl, 6′-O-acetyl-β-D-glucopyranosyl or 6′-O-acetyl-β-D-galactopyranosyl, or a pharmacologically acceptable salt thereof.

4,801,698

PROCESS FOR PREPARING DIAMINOPYRIMIDO(4,5-D)PYRIMIDINE GLYCOSIDE AND GLYCOTIDE

Phillip D. Cook, and David A. Berry, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 15, 1986, Ser. No. 896,778

Int. Cl.[4] C07H *17/02*

U.S. Cl. 536—28 2 Claims

1. A process for preparing N^4-(5-phosphono-β-D-ribofuranosyl)pyrimido[4,5-d]pyrimidine-4,8-diamine or N^4-(4 2,3,5-tri-O-acetyl-β-D-ribofuranosyl)pyrimido[4,5-d]pyrimidine-4,8-diamine comprising the steps of

(a) reacting 6-cyanopurine with bis(trimethylsilyl)trifluoroacetamide in acetonitrile under reflux and thereafter with tetra-O-acetyl-β-D-ribofuranose in the presence of trimethylsilyltrifluoromethanesulfonate catalyst to produce 9-(tri-O-acetyl-β-D-ribofuranosyl)-6-cyanopurine in high yield;

(b) reacting said 9-(tri-O-acetyl-β-D-ribofuranosyl)-6-cyanopurine with ammonia in a sealed pressure vessel at a temperature below about 15° C. to produce N^4-(β-D-ribofuranosyl)pyrimido[4,5-d]pyrimidine-4,8-diamine;

(c) reacting said N^4-(β-D-ribofuranosyl)pyrimido[4,5-d]pyrimidine-4,8-diamine with acetic anhydride in the presence of an acid scavenger to produce N^4-(2,3,5-tri-O-acetyl β-D-ribofuranosyl)pyrimido[4,5-d]pyrimidine-4,8-diamine or, alternatively reacting said N^4-(β-D-ribofuranosyl)pyrimido[4,5-d]pyrimidine-4,8-diamine with phosphoryl chloride in trimethylphosphate at a temperature below about 10° C. to produce N^4-(5-O-phosphono-β-D-ribofuranosyl)pyrimido[4,5-d]pyrimidine-4,8-diamine.

4,801,699

POLYSACCHARIDE ESTERS CONTAINING ACETAL AND ALDEHYDE GROUPS

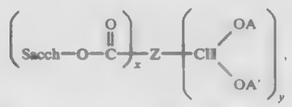
Patrick G. Jobe, Westfield, N.J.; Diane J. Lamb, Lincoln, Nebr., and Gary T. Martino, Dayton, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Mar. 9, 1987, Ser. No. 23,177

Int. Cl.[4] C08G *18/10*

U.S. Cl. 536—59 9 Claims

1. A polysaccharide ester having the structure



wherein Sacch-O- represents a polysaccharide molecule, Z is a multivalent organic group, A and A′ are independently a lower alkyl or A and A′ form a cyclic acetal containing at least 5-members, x is at least 1, and y is at least 1.

4,801,700

PROCESS FOR THE PREPARATION OF 1,6-DICHLORO-1,6-DIDEOXY-β-D-FRUCTOFURANOSYL-4-CHLORO-4-DEOXY-α-GALACTOPYRANOSIDE

William Tully, Swords; Nicholas M. Vernon, Dublin, and Peter A. Walsh, Blackrock, all of Ireland, assignors to McNeilab, Inc., Spring House, Pa.

Filed Oct. 20, 1986, Ser. No. 921,285

Claims priority, application United Kingdom, Oct. 21, 1985, 8525953

The portion of the term of this patent subsequent to Nov. 8, 2005, has been disclaimed.

Int. Cl.[4] C07H *1/00, 5/02, 15/24*

U.S. Cl. 536—125 5 Claims

1. In a process for the preparation of 1,6-dichloro-1,6-dideoxy-β-D-fructofuranosyl-4-chloro-4-deoxy-α-galactopyranoside comprising the steps of:

(a) reacting sucrose with a tritylating agent;

(b) acetylating the tritylated reaction product with an acetylating agent to obtain 6,1′,6′-tri-O-tritylsucrose penta-acetate;

(c) detritylating the 6,1′,6′-tri-O-tritylsucrose penta-acetate to obtain 2,3,4,3′,4′-penta-O-acetylsucrose;

(d) isomerizing the 2,3,4,3′,4′-penta-O-acetylsucrose to obtain 2,3,6,3′,4′-penta-O-acetylsucrose;

(e) chlorinating 2,3,6,3′,4′-penta-O-acetylsucrose to obtain 4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose pentaacetate; and

(f) deacetylating the chlorinated product; the improvement comprising effecting the isomeriation step in a non-aqueous solvent with a weak base at a temperature of from about 30° C. to 60° C.

4,801,701

DIFLUORINATED (5,6,11,12-TETRASELENOTETRACENE)2 HALIDES, THE PREPARATION THEREOF AND THE USE THEREOF

Bruno Hilti, Basel, and Carl W. Mayer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

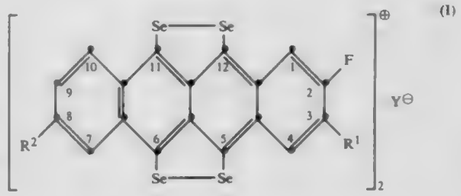
Filed Oct. 8, 1986, Ser. No. 917,112

Claims priority, application Switzerland, Oct. 18, 1985, 4570/85

Int. Cl.[4] C07D *517/06*

U.S. Cl. 540—1 2 Claims

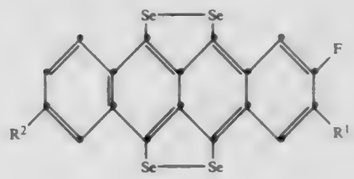
1. A complex formula I



(1)

wherein R^1 is fluorine and R^2 is hydrogen, or R^2 is fluorine and R^1 is hydrogen, and Y is bromine, or Y is also chlorine when R^1 is hydrogen.

2. A compound of the formula



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wherein R^1 is fluorine and R^2 is hydrogen, or R^1 is hydrogen and R^2 is fluorine.

4,801,702

PROCESS FOR THE PREPARATION AND CONDITIONING OR ORGANIC PIGMENTS

Fridolin Babler, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 30, 1986, Ser. No. 925,019

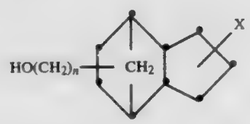
Claims priority, application Switzerland, Nov. 6, 1985, 4761/85

Int. Cl.[4] C09B *19/00, 47/06, 47/067*

U.S. Cl. 540—144 **15 Claims**

1. An improved process for the synthesis and concomitant conditioning of an organic pigment selected from the group consisting of the diketopyrrolopyrrole, perylene, quinacridone, phthalocyanine, perinone, quinophthalone, isoindolinone, isoindoline, dioxazine, anthraquinone, thioindigo, methine, azomethine and azo pigments and the metal salts or complexes of the azomethine, methine, azo and phthalocyanine pigments, wherein the improvement comprises

carrying out the synthesis and concomitant conditioning of said pigment in the presence of a tricyclic alcohol which is 8(9)-hydroxytricyclo[5.2.1.$0^{2,6}$]dec-3-ene or which has the formula



wherein n is 0 or 1, and X is hydrogen or the —CH_2OH group; or a mixture of said tricyclic alcohols.

4,801,703

METHOD FOR PRODUCTION OF CEPHALOSPORIN COMPOUNDS

Kenzo Naito, Soraku; Masayasu Kato, Ashiya, and Kazuo Tsukamura, Kawabe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

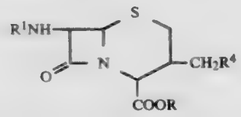
Division of Ser. No. 795,743, Nov. 7, 1985, Pat. No. 4,642,365, which is a continuation of Ser. No. 631,801, Jul. 17, 1984, abandoned, which is a division of Ser. No. 415,138, Sep. 7, 1982, abandoned. This application Aug. 18, 1986, Ser. No. 928,752

Claims priority, application Japan, Jan. 18, 1982, 57-006668; Sep. 10, 1985, 56-143302

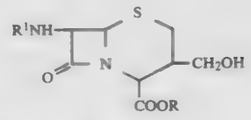
Int. Cl.[4] C07D *501/36;* **A61K** *31/545*

U.S. Cl. 540—227 **17 Claims**

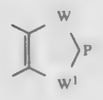
1. A method for producing a cephalosporin compound of the formula:



wherein R^1 is a hydrogen atom or an acyl group; R is a hydrogen atom or an ester residue; the dotted line means a double bond in 2- or 3-position of the cephem ring; and R^4 is a nucleophilic compound residue, or a pharmaceutically acceptable salt thereof, which comprises reacting in an organic solvent a compound of the formula:



wherein R^1, R and the dotted line have the same meanings as defined above, or a pharmaceutically acceptable salt thereof, a nucleophilic compound or a pharmaceutically acceptable salt thereof, wherein the reaction is carried out with the use of (1) a trivalent or pentavalent cyclic phosphorus compound having a partial structure of the formula:



wherein W is an oxygen atom, a sulfur atom or NR^2; W^1 is an oxygen atom, a sulfur atom or NR^3; and R^2 and R^3 may be the same or different and each means a hydrogen atom or a hydrocarbon group, or a salt thereof or (2) a reaction product of a compound having a partial structure of the formula:



wherein W and W^1 have the same meanings as defined above, or a salt thereof with a phosphorus oxyhalide, trihalide or pentahalide.

4,801,704

METHYLENE PENAM AND DERIVATIVES THEREOF

Dennis D. Keith, Montclair; Chung-Chen Wei, Cedar Knolls, and Manfred Weigele, North Caldwell, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

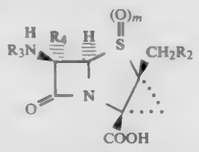
Continuation of Ser. No. 855,967, Apr. 23, 1986, abandoned. This application May 16, 1988, Ser. No. 195,476

Claims priority, application European Pat. Off., Jun. 1, 1985, 85.106769.4

Int. Cl.[4] C07D *499/00, 499/46*

U.S. Cl. 540—312 **43 Claims**

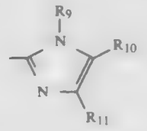
1. A compound of the formula



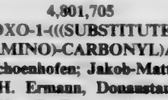
I

wherein R_2 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkylthio, halo, hydroxy, cyano, tribalomethyl, azido, arylthio, five or six-membered heterocyclic thio, a five or six-membered heterocycle, and

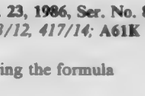
wherein R is hydrogen, lower alkyl, aryl, aryl substituted with substituents selected from the group consisting of halo and hydroxy or alkyl substituted with substituents selected from the group consisting of halo, trifluoromethyl, amino and cyano; R_3 is selected from the group consisting of hydrogen, an acyl group, a group of the formula



a group of the formula



and a group of the formula



wherein another substituent is not present on the nitrogen at the 7-position; R_4 is selected from the group consisting of hydrogen, lower alkoxy, amino, lower alkylthio and amido; R_{10} and R_{11} are selected from the group consisting of hydrogen, halogen, cyano, hydroxy, carboxy, pyridyl, lower alkyl, aminoloweralkyl, hydroxyloweralkyl, C_2 to C_6 alkoxycarbonyl, lower alkyl, amino lower alkyl, dilower alkyl amino lower alkyl, phenyl and phenyl mono- or di-substituted with substituents selected from the group consisting of halo, lower alkyl, amino, nitro and trifluoromethyl; R_9 is selected from the group consisting of hydrogen, hydroxy, amino, lower alkyl, lower alkanoyl, lower alkoxy, lower alkanoylamino, lower alkyl amino, phenyl lower alkyl phenyl and phenyl mono- or di-substituted with substituents selected from the group consisting of halo, lower alkyl, amino, nitro and trifluoromethyl; R_{12} is selected from the group consisting of lower alkyl, lower alkyl substituted with a substituent selected from the group consisting of halo, trifluoromethyl, amino and cyano and aralkyl; R_{13} and R_{14} are selected from the group consisting of lower alkyl, halo-lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, carbalkoxylower alkyl, cyano lower alkyl, carbonyl lower alkyl, alkyl, phenyl, phenyl mono- or di-substituted with substituents selected from the group consisting of halo, lower alkyl, amino, nitro and trifluoromethyl and cyclo-lower alkyl or R_{13} and R_{14} together with the nitrogen to which they are attached form a saturated heterocyclic ring having from 4 to 8 carbon atoms which may optionally contain one or two hetero atoms in place of a carbon atom and m is 0, 1 or 2 and the readily hydrolysable esters or salts of these compounds and hydrates of the compounds of formula I or of their esters or salts.

4,801,705

2-OXO-1-(((SUBSTITUTED SULFONYL)AMINO)-CARBONYL)AZETIDINES

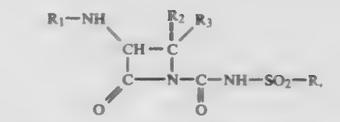
Hermann Breuer, Schoenhofen; Jakob-Matthias Drossard, Regensburg; Peter H. Ermann, Donaustauf; Henner Straub, Regensburg, and Uwe D. Treuner, Etterzhausen, all of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 23, 1986, Ser. No. 877,599

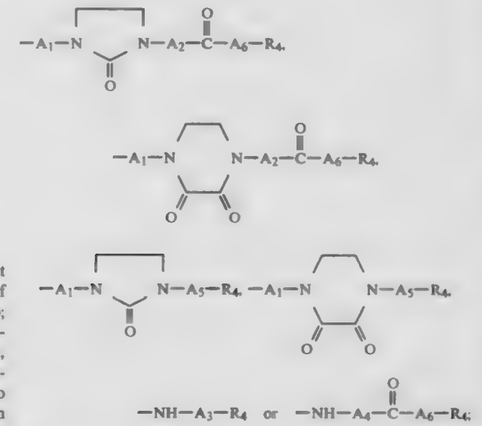
Int. Cl.[4] C07D *403/12, 417/14;* **A61K** *31/495, 31/415*

U.S. Cl. 540—357 **15 Claims**

1. A compound having the formula

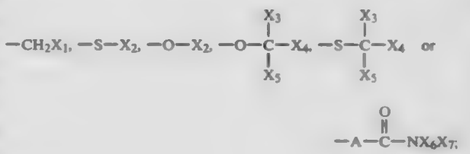


or a pharmaceutically acceptable salt thereof wherein R is

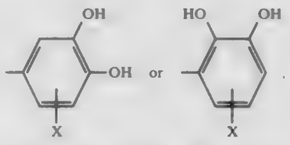


R_1 is an acyl group derived from a carboxylic acid;

R_2 and R_3 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, substituted phenyl or a 4, 5, 6 or 7-membered heterocycle or one of R_2 and R_3 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, 2-phenylethenyl, 2-phenylethynyl, carboxyl,



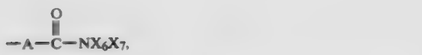
R_4 is



X is hydrogen, halogen, sulfo, carboxyl, aminosulfonyl, carbamoyl, cyano, alkyl, alkanoyl or alkoxycarbonyl;

X_1 is azido, amino, hydroxy, carboxyl, alkoxycarbonyl, alkanoylamino, phenylcarbonylamino, (substituted phenyl)carbonylamino, alkylsulfonyloxy, phenylsulfonyloxy, (substituted phenyl)sulfonyloxy, phenyl, substituted phenyl, cyano,

VOL 1098 ISS 5 JA 31 1989 UMI



—S—X_2, or —O—X_2;

X_2 is alkyl, substituted alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, alkanoyl, phenylalkanoyl, (substituted phenyl)alkanoyl, phenylcarbonyl, (substituted phenyl)carbonyl, or heteroarylcarbonyl;

one of X_3 and X_4 is hydrogen and the other is hydrogen or alkyl, or X_3 and X_4 when taken together with the carbon atom to which they are attached form a cycloalkyl group;

X_5 is formyl, alkanoyl, phenylcarbonyl, (substituted phenyl)carbonyl, phenylalkylcarbonyl, (substituted phenyl)alkylcarbonyl, carboxyl, alkoxycarbonyl, aminocarbonyl, (substituted amino)carbonyl, or cyano;

X_6 and X_7 are the same or different and each is hydrogen, alkyl, phenyl or substituted phenyl, or X_6 is hydrogen and X_7 is amino, substituted amino, alkanoylamino or alkoxy, or X_6 and X_7 when taken together with the nitrogen atom to which they are attached form a 4, 5, 6 or 7-membered heterocycle;

A is —CH=CH—, $-(CH_2)_m-$, $-(CH_2)_m-O-$, $-(CH_2)_m-NH-$ or $-CH_2-S-CH_2-$;

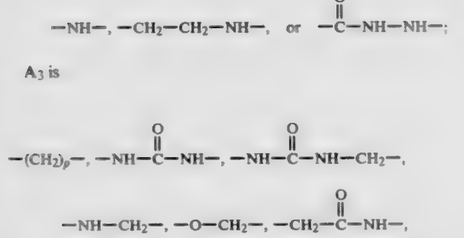
m is 0, 1 or 2;

A_1 is a single bond,

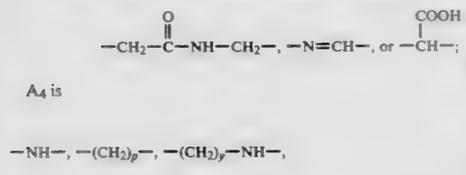


A_2 is a single bond,

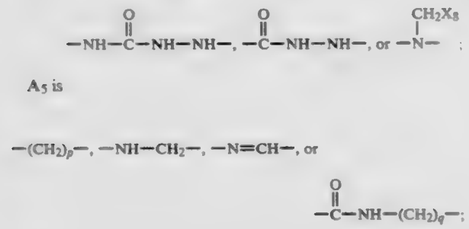
A_3 is



A_4 is



A_5 is



A_6 is

p is 0, 1, 2, 3 or 4;

y is 2, 3 or 4;

q is 0 or 1; and

X_8 is hydrogen, carboxyl or carbamoyl;

wherein the term "substituted alkyl" refers to alkyl groups substituted with azido, amino, halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, aminocarbonyl, alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl)oxy, mercapto, alkylthio, phenylthio, (substituted phenyl)thio, alkylsulfinyl or alkylsulfonyl groups;

the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkanoyloxy, aminocarbonyl, or carboxy groups;

the term "substituted amino" refers to a group having the formula $-NX_8X_9$ wherein X_8 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl, and X_9 is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, hydroxy, cyano, alkoxy, phenylalkoxy or amino;

the term "heteroaryl" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl or one of the above groups substituted with one or more halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino, or substituted alkyl wherein the alkyl group has 1 to 4 carbon atoms, groups;

the term "a 4,5,6, or 7-membered heterocycle" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl, azetidinyl, oxetanyl, thietanyl, piperidinyl, piperazinyl, imidazolylidinyl, oxazolidinyl, pyrrolidinyl, tetrahydropyrimidinyl, dihydrothiazolyl or hexahydroazepinyl or one of the above groups substituted with one or more oxo, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino, or substituted alkyl wherein the alkyl group has 1 to 4 carbon atom, groups.

4,801,706

N-SUBSTITUTED-HEXAHYDRO-1,2,5-TRIAZEPINES

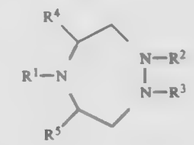
Michael W. Winkley, Malvern, and James L. Diebold, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 28, 1988, Ser. No. 187,187

Int. Cl.[4] C07D *255/02;* **A61K** *31/55*

U.S. Cl. 540—554 **23 Claims**

1. A compound of the formula



I

or a pharmaceutically acceptable acid addition salt thereof, wherein

R^4 and R^5 are independently hydrogen or C_1–C_4 alkyl;

R^1 is $(R^6)_2$—CH—$(CH_2)_n$— in which n is 0, 1, 2 or 3 and R^6 is p-fluoro, chloro or methoxyphenyl; and

R^3 is hydrogen and R^2 is benzoyl, 2,6-dimethyl or diethylbenzoyl, 2,6-dichlorobenzoyl, N-methyl, ethyl or propylcarboxamido, N-phenylcarboxamido, N-2,6-dimethyl or diethylphenylcarboxamido, N-2,6-dichlorophenylcarboxamido, N-methyl, ethyl or propylacetamido, N-phenylacetamido, N-2,6-dimethyl or diethylphenylacetamido, or N-2,6-dichlorophenylacetamido; or

R^2 and R^3 are the same and are N-methyl, ethyl or propylcarboxamido, benzoyl, 2,6-dimethyl or diethylbenzoyl, 2,6-dichlorobenzoyl, benzyl, 2,6-dimethyl or diethylbenzyl, 2,6-dichlorobenzoyl, or a removable amino protective group.

4,801,707

PROCESS FOR THE PRODUCTION OF BENZOTHIAZOLE SULPHENE AMIDES

Alfredo Wüst, Roesrath, Fed. Rep. of Germany, and Tony Van Osselaer, Belsele, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 763,449, Aug. 7, 1985, abandoned. This application Dec. 24, 1986, Ser. No. 946,695

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1964, 3430435

Int. Cl.[4] C07D *277/80, 413/12*

U.S. Cl. 544—135 **5 Claims**

1. A process for the production of benzothiazole sulphene amides from dibenzothiazolyl disulphide and a water-soluble amine in the absence of an oxidizing agent and in the presence of aqueous alkali, characterised in that the amine or an aqueous solution of the amine is placed in water and dibenzothiazolyl disulphide and aqueous alkali are added simultaneously from separate storage vessels such that the resulting mixture pH is adjusted to a value of from 10 to 13 by the added aqueous alkali.

4,801,708

HERBICIDAL AND INSECTICIDAL TRIAZINONES

Beat Böhner, Binningen, and Hans Tobler, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

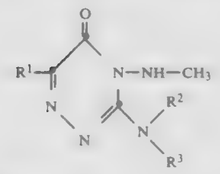
Continuation of Ser. No. 689,528, Jan. 7, 1985, abandoned. This application Dec. 15, 1987, Ser. No. 133,204

Claims priority, application Switzerland, Jan. 11, 1984, 118/84

Int. Cl.[4] C07D *253/06*

U.S. Cl. 544—182 **3 Claims**

1. A 4-methylamino-1,2,4-triazin-5-one of the formula



wherein

R^1 is phenyl, or phenyl substituted by one or more members selected from the group consisting of halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy,

R^2 is hydrogen or methyl, and

R^3 is cyclopropyl, cyclopropylmethyl, C_1–C_4alkyl, C_3–C_4alkenyl or C_3–C_4alkynyl.

4,801,709

PROCESS FOR THE PREPARATION OF 2-CYANAMINO-4,6-DIALKOXY-1,3,5-TRIAZINES

Hans-Jochem Riebel, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

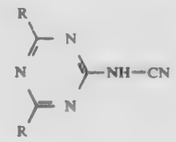
Continuation-in-part of Ser. No. 851,059, Apr. 11, 1986. This application Nov. 25, 1987, Ser. No. 125,621

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1985, 3515286

Int. Cl.[4] C07D *251/46*

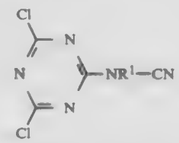
U.S. Cl. 544—194 **1 Claim**

1. A process for the preparation of a 2-cyanamino-4,6-dialkoxy-1,3,5-triazine of the formula



in which

R represents alkoxy, comprising reacting 2,4,6-trichloro-1,3,5-triazine with cyanamide under alkaline conditions thereby to produce a 2-cyanamino-4,6-dichloro-1,3,5-triazine of the formula



in which

R^1 represents an alkali metal ion, reacting the 2-cyanamino-4,6-dichloro-1,3,5-triazine with at least twice the molar amount of an alcoholate of the formula

RMe

in which

Me is an alkali metal ion, in the presence of a diluent, and then reacting with acid in the presence of water.

4,801,710

REGIOSELECTIVE SYNTHESIS OF 9-SUBSTITUTED PURINE ACYCLONUCLEOSIDE DERIVATIVES

Malcolm MacCoss, Freehold; Richard L. Tolman, Warren; Arthur F. Wagner, Princeton, and John Hannah, Matawan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 665,409, Oct. 26, 1984, abandoned. This application Feb. 2, 1988, Ser. No. 153,539

Int. Cl.[4] C07D *473/18;* **A61K** *31/52*

U.S. Cl. 544—244 **8 Claims**

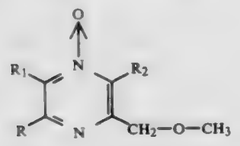
1. In a process for preparing 9-substituted-2,6-disubstituted purines comprising alkylation of a 9-substituted purine derivative, the improvement being the addition, prior to said alkylation, of a bulky, hydrophobic blocking group selected from the group consisting of 6-benzyloxy, substituted 6-benzxyloxy, 6-(2-phenylethoxy) and substituted 6-(2-phenyethoxy), wherein the substituents on the substituted 6-benzyloxy and 6-(2-phenylethoxy) are selected from C_1-to-C_6 alkyl, halo, nitro, phenyl and trifluoromethyl, to the 6-position of the purine and then the removal by standard methods, of said bulky, hydrophobic blocking grouop after said alkylation.

4,801,711
ETHERS OF SUBSTITUTED HYDROXYMETHLYPYRAZINES

Paolo Cozzi; Antonio Pillan; Leone Bertone, and Pier P. Lovisolo, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

Continuation of Ser. No. 479,361, Mar. 28, 1983, abandoned, which is a division of Ser. No. 321,628, Nov. 16, 1981, Pat. No. 4,406,901. This application Jun. 16, 1987, Ser. No. 65,131
Claims priority, application United Kingdom, Dec. 9, 1980, 8039357
The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.
Int. Cl.[4] C07D *241/12, 241/18*
U.S. Cl. 544—336 4 Claims

1. A compound of the formula



(I)

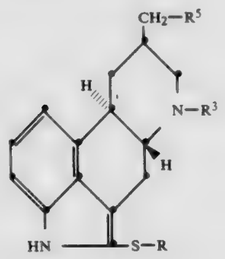
wherein each of the groups R, R_1 and R_2, which may be the same or different, is a hydrogen atom or a C_1–C_6 straight or branched chain alkoxy or C_1–C_6 straight or branched chain alkyl group.

4,801,712
2-ALKYL(OR PHENYL)THIO-6-N-ALKYLERGOLINES ARE DOPAMINE D-1 ANTAGONISTS WITHOUT D-2 AGONIST ACTIVITY

Bennett C. Laguzza; Cynthia L. Nichols, and Nicholas J. Bach, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 747,753, Jun. 24, 1985, Pat. No. 4,683,313. This application Jun. 11, 1987, Ser. No. 60,588
Int. Cl.[4] C07D *457/02;* A61K *31/48*
U.S. Cl. 546—67 2 Claims

1. A compound of the formula:



III

wherein R is C_{1-3} alkyl or phenyl, R^3 is methyl, ethyl or n-propyl, R^5 is SO—R^3 or S—R^3; and pharmaceutically-active acid-addition salts thereof.

4,801,713
ORGANIC COMPLEXES OF A CATION OF A HETEROCYCLIC NITROGEN COMPOUND AND AN ANION OF A 2,5-DISUBSTITUTED-7,7,8,8-TETRACYANOQUINODIETHMANE

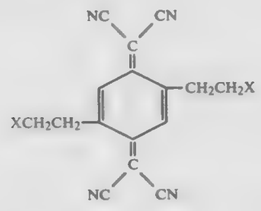
Takeo Kawabata, Hirakata, and Akira Taisha, Ibaraki, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1988, Ser. No. 147,408
Claims priority, application Japan, Jan. 27, 1987, 62-16357
Int. Cl.[4] C07D *217/10, 213/89, 215/58, 233/56*
U.S. Cl. 546—151 2 Claims

1. A novel organic complex of the general formula

$D^+.A^-$

wherein the constituent D^+ is an N-alkyl-onium cation (D^+) derived from a nitrogen-containing heterocyclic compound (D) selected from the group consisting of pyridines, quinolines, isoquinolines and imidazoles and the constituent A^- is the anion radical corresponding to a 2,5-disubstituted-7,7,8,8-tetracyanoquinodimethane (A) of the general formula



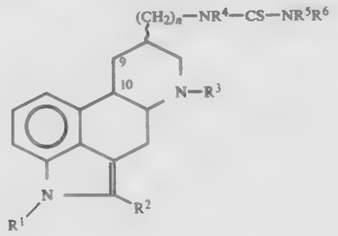
wherein X is —COOR (R being an alkyl group containing 1–10 carbon atoms) or —CN.

4,801,714
PROCESS FOR THE PREPARATION OF ERGOLINYLTHIOUREAS

Helmut Biere, and Gregor Haffer, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

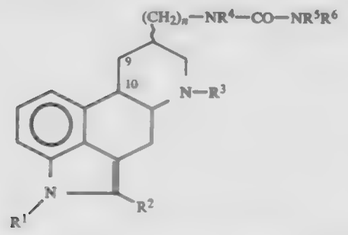
Filed Aug. 6, 1986, Ser. No. 893,911
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1985, 3528576
Int. Cl.[4] C07D *31/48*
U.S. Cl. 546—67 17 Claims

1. A process for the preparation of ergolinylthiourea compounds of the formula



wherein
R^1 is hydrogen, lower alkyl or acyl derived from a carboxylic acid,
R^2 is hydrogen, halogen or lower alkylthio,
R^3 is lower alkyl,
R^4, R^5 and R^6 is hydrogen or lower alkyl,
n=0, 1 or 2 and

C_9═C_{10} is a single or a double bond, which comprises reacting an argolin-8 -ylurea compound of the Formula



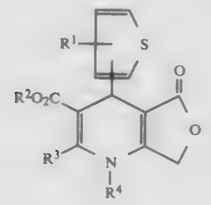
wherein R^1, R^2, R^3, R^4, R^5, R^6 and C_9═C_{10} have the values given above, with phosphorous oxychloride and then with a thiolating agent that is an alkali mewtal xanthate, alkali metal or alkaline earth metal sulfide, thiourea or Bunte salt.

4,801,715
CERTAIN 4-THIENYL-DIHYDROPYRIDINES

Siegfried Goldmann; Hilmar Bischoff; Walter Puls; Joachim Bender, all of Wuppertal; Dieter Petzinna, Wesel, and Klaus Schlossmann, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 937,870
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1985, 3544693
Int. Cl.[4] C07D *491/048*
U.S. Cl. 546—116 4 Claims

1. A 4-thienyl-dihydropyridine of the formula



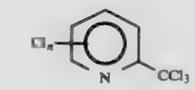
in which
R^1 represents fluorine or chlorine, or represents straight-chain or branched alkyl with up to 4 carbon atoms,
R^2 represents a straight-chain, branched or cyclic hydrocarbon radical which has up to 8 carbon atoms, is optionally interrupted by an oxygen atom and is optionally substituted by one or more fluorine, chlorine, phenyl, hydroxyl, cyano, amino, C_1–C_3-alkylamino, di-C_1–C_3-alkylamino or N-benzyl-N-methyl-amino groups,
R^3 represents C_1–C_4-alkyl which is optionally substituted by hydroxyl and
R^4 represents ethyl,
or a physiologically acceptable salt thereof.

4,801,716
PROCESS FOR PREPARING 2,3,4,5-TETRACHLORO-6-(TRICHLOROMETHYL) PYRIDINE

Joseph Sharvit, and David Lubetzky, both of Beer Sheva, Israel, assignors to Makhteshim Chemical Works Ltd., Beer Sheva, Israel

Filed Mar. 30, 1987, Ser. No. 32,439
Int. Cl.[4] C07D *213/61*
U.S. Cl. 546—345 24 Claims

1. A process for preparing heptachloropicoline which comprises continuously reacting chlorine with one or more lower-chlorinated picolines chosen from



where n=1–3, wherein the reaction is conducted at an elevated temperature in the gas phase in the presence of gaseous ferric chloride, and separating the heptachloropicoline formed.

4,801,717
HYDROXYLAMINE DERIVATIVE OF 5-NITRO-8-HYDROXY QUINOLINE

Jean Tessier, Vincennes; Pierre Girault, Paris; Jean-Jacques Herve, Aubagne, and Charles-Jacques Van Assche, Marseille, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 582,320, Feb. 22, 1984. This application Jun. 24, 1986, Ser. No. 877,884
Claims priority, application France, Feb. 23, 1983, 83 02916
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.[4] C07D *215/24*
U.S. Cl. 546—177 1 Claim

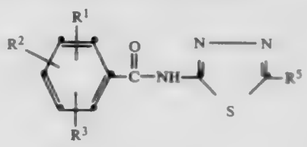
1. A compound selected from the group consisting of 0-(5-nitro-8-quinolyl)-hydroxylamine and their non-toxic, pharmaceutically acceptable acid addition salts.

4,801,718
THIAIAZOLYL BENZAMIDES

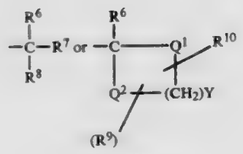
Kenneth W. Burow, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 685,922, Dec. 24, 1984, Pat. No. 4,636,243, which is a division of Ser. No. 510,699, Jul. 5, 1983, Pat. No. 4,515,625, which is a division of Ser. No. 302,323, Sep. 14, 1981, Pat. No. 4,416,683, which is a continuation-in-part of Ser. No. 187,675, Sep. 16, 1980, abandoned. This application Dec. 5, 1985, Ser. No. 805,020
Int. Cl.[4] C07D *285/12*
U.S. Cl. 548—139 24 Claims

1. An N-aryl benzamide of the formula



wherein:
R^1 is hydrogen or C_1–C_4 alkoxy;
R^2 is C_1–C_4 alkylthio or C_1–C_4 alkoxy;
R^3 is C_1–C_4 alkyl, C_1–C_4 alkylthio, or C_1–C_4 alkoxy;
R^5 is



1 or 2

wherein:

R^6 is C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_6 alkoxy, or C_1–C_6 alkylthio;

y is an integer from 0 to 4;

R^7 and R^8 independently are C_1–C_{13} alkyl;

R^9 and R^{10} independently are hydrogen, halogen, C_1–C_4 alkyl, or C_2–C_4 alkenyl;

Q^1 and Q^2 are CH_2; and

the agronomically acceptable salts thereof.

4,801,719

SILANES, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Konrad Oertle, and Hansjürg Wetter, both of Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

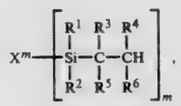
Division of Ser. No. 782,349, Oct. 1, 1985, Pat. No. 4,695,643. This application Jun. 8, 1987, Ser. No. 59,367

Claims priority, application Switzerland, Oct. 4, 1984, 4765/84

Int. Cl.[4] C07D *233/54*

U.S. Cl. 548—335 **1 Claim**

1. A process for protecting hydroxyl, mercapto, carboxyl, amino and amide groups in organic syntheses, which comprises reacting an organic compound carrying hydroxyl, mercapto, carboxyl groups or alkali metal salts thereof, amino and/or amide groups, or an aldehyde or a ketone having an α-H atom with a compound of the formula Ib



(Ib)

in which X is an ester group of an inorganic or organic acid and m is a number from 1 to 4, R^1 and R^2 independently of one another are linear or branched C_1–C_{12}-alkyl, C_5-cycloalkyl or C_6-cycloalkyl or unsubstituted or C_1–C_6-alkyl-substituted benzyl, or R^1 and R^2 together are tetramethylene or pentamethylene and R^3 to R^6 independently of one another are linear or branched C_1–C_{12}-alkyl, unsubstituted or C_1–C_6-alkyl-substituted phenyl or phenyl-C_nH_{2n}- with n=1 to 6, C_5-cycloalkyl or C_6-cycloalkyl, R^3 and R^5 together and/or R^4 and R^6 together are tetramethylene or pentamethylene or R^3 and R^4 together and/or R^5 and R^6 together are trimethylene or tetramethylene, to form a removable protective group on said organic compound, and eliminating the protective group after the organic synthesis reaction has been carried out.

4,801,720

AZETIDINONE DISULFIDES AND A RING OPENING PROCESS FOR PREPARING THE SAME

Sigeru Torii; Hideo Tanaka; Junzo Nokami; Michio Sasaoka, all of Okayama; Norio Saito, Tokushima, and Takashi Siroi, Okayama, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka, Japan

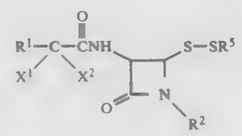
Division of Ser. No. 908,970, Sep. 17, 1986, abandoned, which is a continuation of Ser. No. 553,306, Nov. 17, 1983, abandoned. This application May 6, 1987, Ser. No. 46,444

Claims priority, application Japan, Nov. 29, 1982, 57-210490

Int. Cl.[4] C07D *205/08, 401/12;* **C07B** *43/06, 45/00*

U.S. Cl. 540—358 **1 Claim**

1. A process for preparing an azetidinone derivative represented by the formula (I)

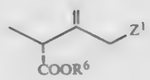


(I)

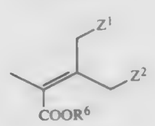
wherein

R^1 is phenyl optionally substituted with methyl, chlorine or nitro or phenoxy optionally substituted with methyl, chlorine or nitro;

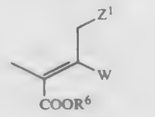
R^2 is hydrogen, amino-protecting group or a group of the formula (II), (III) or (VI)



(II)



(III)



(VI)

R^6 is hydrogen or carboxyl-protecting group;

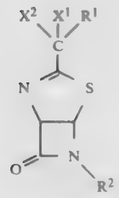
Z^1 and Z^2 are the same or different and are each hydrogen, halogen, methylthio, ethylthio, phenylthio, p-nitrophenylthio, pentachlorophenylthio, 2-pyridylthio, 2-benzothiadiazolylthio, 1,3,4-thiadiazole-5-ylthio, 1,2,3,4-tetrazole-5-ylthio, 1-methyl-1,2,3,4-tetrazole-5-ylthio, O-ethyldithiocarbonate, N,N-diethyldithiocarbamate, phenylsulfonyl, p-methylphenylsulfonyl, hydroxy, methoxy, ethoxy, acetoxy, benzoyloxy, nitrosooxy, nitriloxy, dimethylamino or piperidine-1-yl, and W is protected hydroxyl group;

X^1 and X^2 are the same or different and are halogen, hydroxyl, alkoxy, acyloxy, SR^4 (wherein R^4 is straight chain or branched chain lower alkyl, phenyl optionally substituted with chlorine or nitro, pyridyl or benzothiazolyl), amino or hydrogen, one of X^1 and X^2 not being hydrogen when the other is, or



is >C=O or >C=NOR[3] (wherein R^3 is hydrogen, or lower alkyl); and

R^5 is phenyl optionally substituted with chlorine or nitro, pyridyl, 2-benzothiazolyl, 1,3,4-thiadiazolyl optionally substituted with methyl or phenyl, tetrazolyl optionally substituted with methyl or phenyl, or benzimidazolyl, the process comprising reacting in a hydrous organic solvent in the presence of an acid a thiazolinoazetidinone derivative represented by the formula (IV)

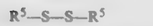


(IV)

wherein R^1, R^2 and



are as defined above with a disulfide represented by the formula (V):



(V)

wherein R^5 is as defined above.

4,801,721

STEREOSPECIFIC SYNTHESIS OF CARBOXYALKYL PEPTIDES

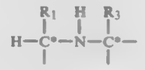
James W. Ryan, 3420 Poinciana Ave., Miami, Fla. 33133, and Alfred Chung, 8781 SW. 87th St., Miami, Fla. 33173

Continuation-in-part of Ser. No. 641,395, Aug. 16, 1984, abandoned. This application Dec. 19, 1986, Ser. No. 943,798

Int. Cl.[4] C07D *209/54, 207/00;* **C07C** *125/06, 101/02, 101/26, 103/19, 103/00, 103/20, 103/07*

U.S. Cl. 548—411 **4 Claims**

1. A process for preparing a compound containing the moiety



wherein one of R_1 and R_3 is of the formula



wherein A_3 is:

I. alkylene having 1–6 carbon atoms, branched chain alkyl having 1–6 carbon atoms, cycloalkylalkylene, alkylcycloalkylalkylene, or alkylcycloalkylene;

II. aralkylene, wherein the alkyl group has 1–6 carbon atoms, or alkylaryl;

III. phenyl;

IV. alkylaralkylene wherein the alkyl groups may be the same or different and are 1–6 carbons in length;

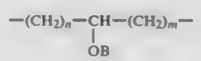
V. substituted alkylene, substituted branched chain alkyl, substituted cycloalkylalkylene, substituted alkyl cycloalkylalkylene, substituted alkylcycloalkylene, substituted alkylaryl, substituted aralkylene, substituted phenyl or substituted alkylaralkylene wherein the substituent or substituents may be the same or different, may be included in an alkylene chain or pendent thereto, and are selected from amino, halo, hydroxy, mercapto, nitro, carboxy, carbamyl, lower alkyl, halomethyl, hydroxymethyl, aminomethyl, dihalomethyl, trihalomethyl, cyano, mercaptomethyl, methoxymethyl, methylthiomethyl, methoxycarbonylmethyl, cyanomethyl, benzyl, acetoxymethyl, allyl, isobutyl, mercaptoalkyl having 2–3 carbon atoms, hydroxyalkyl having 2–3 carbon atoms, acetylthioethyl, benzamido, acetamido, phthaloylaminoalkylene wherein the alkylene group has 1–4 carbon atoms, α-alkoxy-carbonyl isoalkylene wherein the alkyl group has 1–5 carbon atoms and the isoalkylene group has 3–5 carbon atoms, benzoylamino, alkanoylamino having 1–5 carbon atoms, alkylamide having 1–5 carbon atoms, phenylamine, alkylamine having 1–5 carbon atoms, lower alkoxy, aryloxy, lower alkylamino, diloweralkylamino, acylamino, arylamino, guanidino, imidazolyl, indolyl, lower alkylthio, arylthio, carboxyamido and lower carbon alkoxy;

VI. alkylenethio or alkylenethioalkylene having 1–6 carbon atoms, or alkylthioalkylene having 1–6 carbon atoms;

VII. alkyleneoxy or alkyleneoxyalkylene wherein the alkyl groups may be the same or different and have 1–6 carbon atoms;

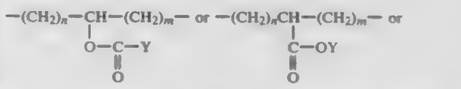
VIII. alkoxyphenyl or alkoxybenzyl wherein the alkoxy groups have 1–3 carbon atoms, phenoxyphenyl, phenoxybenzyl, benzyloxybenzyl or benzyloxyphenyl or a thioether analog of any of them;

IX.



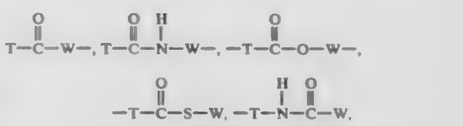
wherein n=0–4, m=0–4, and B=H or a 1–5 carbon atom-containing alkyl group; or an —SB analog thereof;

X.

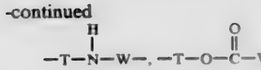


wherein n and m have the same significance as above, Y is phenyl, benzyl or a 1–5 carbon atom-containing alkyl group;

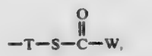
XI.



-continued

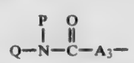


or



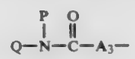
wherein T and W may be the same or different and are alkylene, aryl, benzyl or cycloalkyl; and P and Q may be identical, straight or branched chain alkyl or alkenyl groups, cycloalkyl or cycloalkyl alkylene groups, aralkyl or alkylaryl groups or heterocyclic, aryl or adamantanyl groups, any of which may be substituted functionally or one of P and Q may be hydrogen and the other a group as aforestated or they may combine to form a ring with the hydrogen to which they are attached; which process comprises the essential steps of:

I. reacting a trifluoromethane sulfonate-yielding reagent with the reactive hydroxyl substituent of a first compound which is free of the group

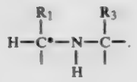


and contains a chiral carbon atom which bears said reactive hydroxyl substituent; and

II. reacting the trifluoromethane sulfonate ester of said first compound obtained in Step I with a second compound containing a chiral carbon atom bearing one



substituent and one primary amino substituent which reacts with said trifluoromethane ester group to form the moiety



4,801,722

COUMARIN CHELATES

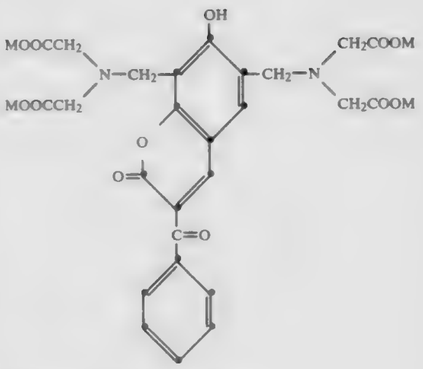
Jerald C. Hinshaw, Ogden, Utah; John L. Toner, Webster, and George A. Reynolds, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 825,693, Feb. 3, 1986, Pat. No. 4,637,988, which is a continuation of Ser. No. 279,398, Jul. 1, 1981, abandoned. This application Jan. 27, 1987, Ser. No. 7,024

Int. Cl.[4] C07D *309/38*

U.S. Cl. 549—211 1 Claim

1. A chelate having the formula:



wherein M is hydrogen or a cation.

4,801,723

INTERMEDIATES FOR (1,5) 6,6-DIMETHYL-4-HYDROXY-3-OXABICYCLO (3,1,0) HEXAN-2-ONE AND ITS ETHERS

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre DeMoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

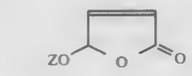
Division of Ser. No. 759,477, Jul. 25, 1985, abandoned, which is a division of Ser. No. 582,321, Feb. 22, 1984, abandoned, which is a continuation of Ser. No. 361,780, Mar. 25, 1982, abandoned, which is a continuation of Ser. No. 170,093, Jul. 18, 1980, abandoned. This application Apr. 10, 1987, Ser. No. 36,890

Claims priority, application France, Jul. 31, 1979, 29 19654

Int. Cl.[4] C07D *307/58*

U.S. Cl. 549—313 1 Claim

1. In the form of pure isomers or in the form of racemic mixtures in the 5-position, the compounds of the formula



wherein Z is chiral and is selected from the group consisting of cyclohexyl substituted with alkyl of 1 to 4 carbon atoms and benzyl substituted on the α-methyl with methyl and on the phenyl with phenoxy.

4,801,724

VITAMIN E INTERMEDIATE

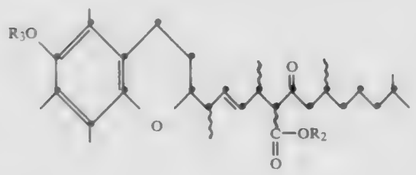
Noal Cohen, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 5, 1987, Ser. No. 58,309

Int. Cl.[4] C07D *311/72*

U.S. Cl. 549—407 4 Claims

1. A compound of the formula



wherein R_3 forms an ether hydroxy protecting group; and R_2 is lower alkyl.

4,801,725

ORGANOSILICON COMPOUND

Masatoshi Arai; Shinichi Satoh, and Kazutoshi Fujioka, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

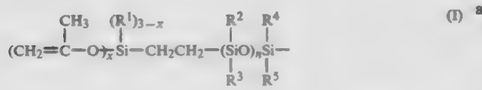
Filed Sep. 2, 1987, Ser. No. 92,000

Claims priority, application Japan, Sep. 4, 1986, 61-208793

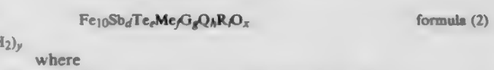
Int. Cl.[4] C07F *7/08*

U.S. Cl. 556—434 3 Claims

1. An organosilicon compound represented by General Formula (I):



(I)



wherein R^1, R^2, R^3, R^4, R^5 and R^6 may be the same or different, and each represent a substituted or unsubstituted monovalent hydrocarbon group, x and y each represent an integer of 1 to 3, and n is an integer of 0 or more.

4,801,726

REPETITIVE HIT-AND-RUN IMMUNOASSAY AND STABLE SUPPORT-ANALYTE CONJUGATES; APPLIED TO T-2 TOXIN

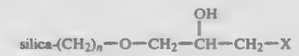
Roger W. Giese, Quincy, Mass.; Beverly Warden, Nashua, N.H.; Allam Kariman, Dorchester, Mass.; Markus Ehrat, Suhr, Switzerland; Douglas J. Cecchini, Somerville, and Abdellah Sentissi, West Roxbury, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed Apr. 15, 1986, Ser. No. 852,144

Int. Cl.[4] C07F *7/10*

U.S. Cl. 556—419 3 Claims

1. A hydrazide silica having the formula



where

X is —NHNHCONHNH$_2$ or —NHNHCO(CH$_2$)$_m$CONHNH$_2$ and n and m are numbers between 1 and 10.

4,801,727

METHOD FOR AMMOXIDATION OF PARAFFINS AND CATALYST SYSTEM THEREFOR

Linda C. Glaeser, Lyndhurst; James F. Brazdil, Jr., Mayfield Village, and Mark A. Toft, Lakewood, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 67,891, Apr. 20, 1987. This application Mar. 28, 1988, Ser. No. 173,794

Int. Cl.[4] C07C *120/14*

U.S. Cl. 558—319 18 Claims

1. A process for the ammoxidation of a C_3 to C_5 paraffin to an α,β-unsaturated mononitrile which comprises contacting in a reaction zone said paraffin in the vapor phase in admixture with ammonia, molecular oxygen, and optionally an inert gaseous diluent, with an intimate particulate mixture of a first catalyst composition and a second catalyst composition, said feed to the reaction zone containing a mole ratio of paraffin:NH_3 in the range from 2 to 16 and a mole ratio of paraffin to O_2 in the range from 1 to 10,

said first catalyst composition being 10–99 weight percent of a diluent/support and 90–1 weight percent of a catalyst having the components in the proportions indicated by the empirical formula:

$$VSb_mA_aD_bE_cT_fO_x, \qquad \text{formula (1)}$$

where

A is one or more of W, Sn, Mo, B, P and Ge;

D is one or more of Fe, Co, Ni, Cr, Pb, Mn, Zn, Se, Te, Ga, In and As;

E is one or more of an alkali metal and Tl;

T is one or more of Ca, Sr and Ba; and

where m is from 0.01 and up to 20; a is 0.2–10; b is 0–20; c is 0–, t is 0–20; the ratio (a+b+c+t):(1+m) is 0.01–6; wherein x is determined by the oxidation state of other elements, and wherein the antimony has an average valency higher than +3 and the vanadium has an average valency lower than +5,

said second catalyst composition being 0–99 weight percent of a diluent/support and 100–1 weight percent of a catalyst having the components in the proportions indicated by the empirical formula:

$$Fe_{10}Sb_dTe_eMe_fG_gQ_hR_iO_x \qquad \text{formula (2)}$$

where

Me is V, Mo, W or a combination of these;

G is one or more alkali metals;

Q is one or more of Cu, Mg, Zn, La, Ce, Cr, Mn, Co, Ni, Bi, Sn;

R is one or more of P, B and,

d=10–60, e=0–10, f=0–6, g=0–5, h=0–10, i=0–5, and x is a number determined by the valence requirements of the other elements present, and wherein the weight ratio in said mixture of said first catalyst composition to said second catalyst composition is in the range of 0.001 to 2.5.

4,801,728

OMEGA-PHASE CATALYZED CHEMICAL REACTIONS

Charles L. Liotta, and Edward M. Burgess, both of Marietta, Ga., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Continuation-in-part of Ser. No. 740,652, Jun. 3, 1985, abandoned. This application Jun. 25, 1986, Ser. No. 878,166

Int. Cl.[4] C07C *120/04, 121/75*

U.S. Cl. 558—348 6 Claims

1. A reaction mixture for carrying out catalyzed displacement chemical reactions between an organic reactant and an inorganic anion at rapid rates comprising:

(a) a solid inorganic salt-selected from an alkali or alkaline earth metal halide, nitrile, hydroxide or acetate which is capable of dissociating into a cation and an anion reactant,

(b) a polar liquid which is selected from water, ethylene glycol, glyceryl and dimethylformamide present in a predetermined quantity which is adsorbed on said solid,

(c) a w-phase catalyst which comprises a phase transfer type catalyst material selected from a macrocyclic or macrobicyclic ether, a linear polyether or a quaternary salt which is retained in said adsorbed polar liquid and attracted to said cation thereby enabling said anion to be available for reaction, the quantity of said polar liquid being predetermined so that substantially all of said catalyst material is present in the form of undiluted w-catalyst,

(d) a non-polar organic solvent which forms an interface with said polar liquid, and

(e) an organic reactant selected from a reactive alkylaryl or aralkyl halide dissolved in said solvent, whereby chemical action can occur between said anion and said organic reactant at an enhanced rate with a given amount of catalyst material.

VOL 1098 ISS 5 JA 31 1989 UMI

4,801,729

LUBRICATING COMPOSITIONS

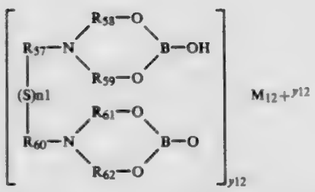
Richard A. Holstedt, Whittier, and Michael C. Croudace, Huntington Beach, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 884,960, Jul. 11, 1986, which is a continuation-in-part of Ser. No. 482,941, Apr. 7, 1983, Pat. No. 4,686,056, and a continuation-in-part of Ser. No. 329,385, Dec. 10, 1981, Pat. No. 4,623,474, and a continuation-in-part of Ser. No. 679,286, Dec. 7, 1984, Pat. No. 4,629,579, and a continuation-in-part of Ser. No. 696,006, Jan. 29, 1985, Pat. No. 4,629,580, and a continuation-in-part of Ser. No. 695,959, Jan. 29, 1985, Pat. No. 4,627,930, and a continuation-in-part of Ser. No. 696,025, Jan. 29, 1985, Pat. No. 4,657,686, said Ser. No. 482,941, is a division of Ser. No. 158,828, Jun. 12, 1980, Pat. No. 4,400,284, said Ser. No. 679,286, is a division of Ser. No. 158,981, Jun. 12, 1980, abandoned, said Ser. No. 696,006, and Ser. No. 695,959, each is a continuation-in-part of Ser. No. 525,718, Aug. 23, 1983, abandoned, and a continuation-in-part of Ser. No. 525,691, Aug. 23, 1983, abandoned, and a continuation-in-part of Ser. No. 525,719, Aug. 23, 1983, abandoned, and a continuation-in-part of Ser. No. 679,286, Dec. 7, 1984, Pat. No. 4,629,579, and a continuation-in-part of Ser. No. 418,196, Sep. 15, 1982, Pat. No. 4,511,516, and a continuation-in-part of Ser. No. 482,941, Apr. 7, 1983, Pat. No. 4,686,056, and a continuation-in-part of Ser. No. 476,513, Mar. 1, 1983, Pat. No. 4,533,480, and a continuation-in-part of Ser. No. 329,385, Dec. 10, 1981, Pat. No. 4,623,474, and a continuation-in-part of Ser. No. 525,720, Aug. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 319,073, Nov. 9, 1981, Pat. No. 4,410,436, and a continuation-in-part of Ser. No. 329,384, Dec. 10, 1981, Pat. No. 4,427,560, and a continuation-in-part of Ser. No. 329,385, and a continuation-in-part of Ser. No. 333,998, Dec. 23, 1981, Pat. No. 4,412,928, and a continuation-in-part of Ser. No. 434,602, Oct. 15, 1982, Pat. No. 4,490,265, and a continuation-in-part of Ser. No. 476,513, Mar. 1, 1983, Pat. No. 4,533,480, said Ser. No. 525,718, is a continuation-in-part of Ser. No. 158,828, and a continuation-in-part of Ser. No. 158,828, and a continuation-in-part of Ser. No. 418,196,. This application Dec. 30, 1987, Ser. No. 140,153

Int. Cl.[4] C07F *5/04*

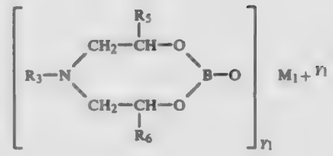
U.S. Cl. 558—289 **55 Claims**

1. The compound of formula:



wherein R_{57}, R_{58}, R_{59}, R_{60}, R_{61}, and R_{62} are the same or different organic groups containing 1 to 50 carbon atoms, M_{12} is an organic radical containing 1 to 50 carbon atoms or an inorganic radical selected from the group consisting of hydrogen, metals, metalloids, and semi-metals, Y_{12} is an integer, and (S)n1 represents one or more sulfide or polysulfide bridges connecting R_{57} and R_{60}.

21. A compound of the formula:



wherein:

Y_1 is an integer;

M_1 is an inorganic or organic radical or hydrogen or a metal, semi-metal, or metalloid;

R_3 is hydrogen, an inorganic radical, or organic radical of 1 to 50 carbon atoms;

R_5 and R_6 are independently selected from the group consisting of alkylaryl, arylalkyl and unsubstituted phenyl radicals; and

wherein either or both of R_3 and M_1 contains a sulfide group.

4,801,730

PROCESS FOR THE PREPARATION OF FATTY ACID NITRILES AND GLYCEROL FROM GLYCERIDES

Herbert Stühler, Burgkirchen, and Kurt Fischer, Neuötting, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 19, 1987, Ser. No. 122,403

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1986, 3639857

Int. Cl.[4] C07C *120/00, 120/08*

U.S. Cl. 558—313 **6 Claims**

1. A process for the production of glycerol and fatty acid nitrile from the reaction of glyceride with ammonia, said process comprising:

reacting a bath of mono-, di-, or tri-glyceride or mixture thereof having alkyl or olefinically unsaturated aliphatic hydrocarbon or monohydroxyalkyl or monohydroxyalkene radicals of 3 to 23 carbon atoms with a flow of ammonia in an amount of at least 200 liters per kilgram of said glyceride per hour in a reaction zone at a temperature of 220° to 300° C. in the presence of a metal salt of a carboxylic or sulfonic acid or a diorganotin(IV) bissulfonate catalyst wherein said diorganotin catalyst is of the formula

$$(R^4)(R^5)Sn^{2+}[(OSO_2R^6)^-]_2$$

in which R^4, R^5 and R^6, are identical or different, and are alkyl, aryl, alkyl-substituted aryl, aralkyl or cycloalkyl, thereby forming an effluent product mixture comprising glycerol, water, and fatty acid nitrile containing fatty acid and fatty acid amide, said fatty acid nitrile, fatty acid, and fatty acid amide all having said radicals of 3 to 23 carbon atoms,

conveying the resulting effluent product mixture to a separating zone, wherein said fatty acid nitrile containing fatty acid and fatty acid amide is separated from the product mixture and returned to the reaction zone while the reaction between said glyceride and the ammonia is still proceeding at 220° to 300° C., and continuing to maintain the temperature range of 220° to 300° C. until the batch of said glyceride is essentially used up and the effluent product mixture becomes essentially free of glycerol,

subsequently, continuing the return of fatty acid nitrile containing fatty acid and fatty acid amide to the reaction zone while decreasing the flow of ammonia to the amount of 5 to 150 liters per kilogram of the total fatty acid nitrile containing fatty acid and fatty acid amide in the reaction zone, per hour, and adjusting the temperature to 240° to 320° C., until essentially all of the fatty acid and fatty acid amide have been converted to fatty acid nitrile, while conveying the fatty acid nitrile product to the separating zone, and

recovering fatty acid nitrile and glycerol from said separating zone.

4,801,731

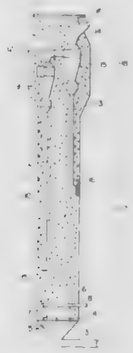
PREPARATION OF ACRYLONITRILE

Stephen P. Jordan, Beaumont, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1987, Ser. No. 132,253

Int. Cl.[4] C07C *120/14*

U.S. Cl. 558—320 **6 Claims**



1. In a process for the preparation of acrylonitrile by the reaction of propylene, ammonia and an oxygen containing gas in a fluidized catalyst bed, the improvement which comprises, feeding a mixture of propylene and ammonia to the fluidized catalyst bed in which the catalyst is finely divided, in a plurality of downwardly directed perpendicular streams, and feeding the oxygen containing gas to the fluidized catalyst bed in a plurality of upwardly directed perpendicular streams, and each stream of the mixture of propylene and ammonia is directly aligned with the stream of the oxygen under conditions such that there is complete mixing of the gas streams prior to the gases having significant contact with the catalyst, the number of streams of oxygen containing gas being equal to the number of streams of the mixture of propylene and ammonia and in which the source of each oxygen containing gas stream is ½ inch to 36 inches from the source of the aligned gas stream of the mixture of propylene and ammonia.

4,801,732

PREPARATION PROCESS OF α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER

Ryuichi Mita, Kawasaki; Takeshi Oura, Zushi; Chojiro Higuchi, Kamakura; Toshio Katoh, Kawasaki, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 63,736, Jun. 17, 1987, abandoned, which is a continuation of Ser. No. 809,800, Dec. 17, 1985, abandoned. This application Mar. 22, 1988, Ser. No. 171,134

Claims priority, application Japan, Dec. 27, 1984, 59-273701; Feb. 27, 1985, 60-36530

Int. Cl.[4] C07C *101/32;* A23L *1/236*

U.S. Cl. 560—40 **9 Claims**

1. A process for preparing α-L-aspartyl-L-phenylalanine methyl ester which comprises treating N-formyl-α-L-aspartyl-L-phenylalanine as a raw material in methanol in the presence of an acid to form α-L-aspartyl-L-phenylalanine dimethyl ester as a primary product, hydrolyzing the α-L-aspartyl-L-phenylalanine dimethyl ester by bringing it into contact with hydrochloric acid in the presence of methanol as desired, separating the thereby-deposited α-L-aspartyl-L-phenylalanine methyl ester hydrochloride and neutralizing said hydrochloride.

4,801,733

1-SUBSTITUTED TETRALIN DERIVATIVES, THEIR PREPARATION AND THEIR USE

Hans-Heiner Wenst, Donnersheim; Fritz-Frieder Frickel, Deidesheim, and Axel Nuerrenbach, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

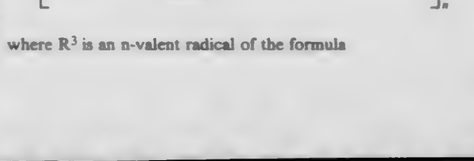
Filed Sep. 23, 1985, Ser. No. 778,681

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1984, 3434944

Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—56 **11 Claims**

1. A 1-substituted tetraline of the formula I



where n is 0 or 1, R^1 is hydroxyl or C_1–C_6-alkoxy, R^2 and R^3 are each hydrogen, halogen, C_1–C_4-alkyl or methoxy, R^4 is hydrogen or an acyclic or cyclic alkyl group of not more than 6 carbon atoms, R^5 is hydrogen or C_1–C_4-alkyl, and R^6 is —$COOR^{13}$, where R^{13} is hydrogen or C_1–C_8-alkyl which is unsubstituted or substituted by hydroxyl or C_1–C_6-alkoxy and their physiologically tolerated salts.

4,801,734

AMPHIPHILIC 4-ALKOXYPOLYETHOXYBENZOATES, THEIR PREPARATION AND THEIR USE

Hans-Jakob Kock, Ladwigshafen; Ekhard Winkler; Richard Baur, both of Mutterstadt; Heino Flakelmann, and Markus Schafheutle, both of Freiburg i. Br., all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

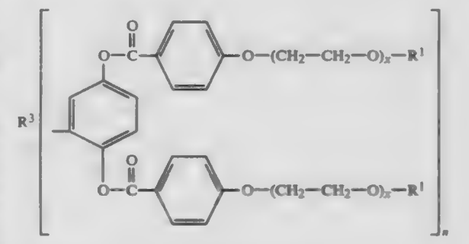
Filed Jun. 25, 1987, Ser. No. 66,108

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1986, 3622086

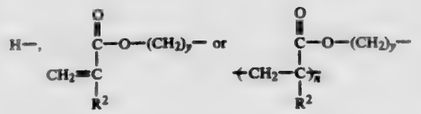
Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—73 **5 Claims**

1. A 4-alkoxypolyethoxybenzoate forming lyotropic liquid crystals, of the formula



where R^3 is an n-valent radical of the formula



n is 1 or an integer greater than 1, R^1 is C_1–C_4-alkyl, R^2 is —H or —CH_3, x is from 3 to 12 and y is from 3 to 15.

4,801,735

PHARMACEUTICAL COMPOUNDS

Mark A. W. Finch, Basingstoke, and John R. Harris, Guildford, both of England, assignors to Lilly Industries Limited, London, England

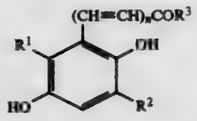
Filed Nov. 25, 1985, Ser. No. 801,524

Claims priority, application United Kingdom, Nov. 28, 1984, 8430072

Int. Cl.[4] C07C *69/76, 65/01*

U.S. Cl. 560—75 **5 Claims**

1. A compound of the formula



in which R^1 and R^2 are each C_{3-7} alkyl or $R^{13}(CH{=}CHCH_2)_r$— where R^{13} is hydrogen or C_{1-3} alkyl and r is 1 to 3, and R^3 is —OH, —OR^{14} where R^{14} is C_{1-4} alkyl or —$(CH_2)_2NR^{15}R^{16}$ where R^{15} and R^{16} are each hydrogen or C_{1-4} alkyl, or —NR^4R^5 where R^4 and R^5 are each hydrogen, C_{1-4} alkyl or phenyl optionally substituted by halogen or C_{1-4} alkyl; and salts thereof.

4,801,736

POLYESTER POLYOLS CONTAINING MONOALKANOLAMINE DERIVED UNITS

Gian C. Bagaglio, Brussels; James M. Bentley, Wezembeek-Oppem, and James P. Brown, Sterrebeek, all of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Filed Jan. 21, 1987, Ser. No. 5,861

Claims priority, application United Kingdom, Feb. 5, 1986, 8602801

Int. Cl.[4] C07C *69/80*

U.S. Cl. 560—84 **6 Claims**

1. A polyester polyol comprising units derived from dicarboxylic acids selected from the group consisting of adipic, glutaric, succinic, phthalic, isophthalic and terephthalic acids and their ester-forming derivatives and glycols selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 1,4-cyclohexanedimethanol and 2,5-bis-hydroxymethylfuran, characterized in that the polyester polyol comprises between 0.02 and 11.0 mole percent of units derived from monoalkanolamine with respect to the total amount of glycol and monoalkanolamine present in the polyester polyol, and in that the polyester polyol has an hydroxyl number between 28 and 112.

4,801,737

PROCESS FOR PRODUCING ACYLOXYNAPHTHOIC ACIDS

Susumu Naito, Niigata; Koichi Abe, Niitsu; Hidetaka Kiga, and Yuzi Onda, both of Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

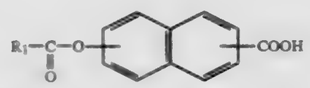
Filed Aug. 1, 1985, Ser. No. 761,520

Claims priority, application Japan, Aug. 2, 1984, 59-163402; Mar. 7, 1985, 60-45596

Int. Cl.[4] C07C *67/29*

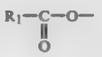
U.S. Cl. 560—139 **11 Claims**

1. A process for producing an acyloxynaphthoic acid represented by the general formula



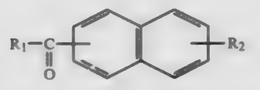
(I)

wherein R_1 represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms,



is bonded to the 6- or 7-position of the naphthalene ring, which comprises

(a) oxidizing an acylalkylnaphthalene represented by the general formula



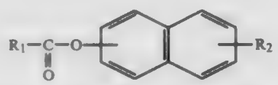
(II)

wherein R_1 is as defined, and R_2 represents a lower alkyl group having 1 to 3 carbon atoms, R_2 is bonded to the 2-position of the naphthalene ring, and



is bonded to the same position as defined above, with a peroxide in the presence of a reaction medium composed of 45 to 95% by weight of formic acid and at least 5% by weight of water at a temperature of 10° to 70° C., and

(b) oxidizing the resulting acyloxyalkylnaphthalene represented by the general formula



(III)

wherein R_1 and R_2 are as defined above, with molecular oxygen in an organic carboxylic acid having 2 to 4 carbon atoms or a mixture thereof with acetic anhydride in the presence of a catalyst comprising a bromine compound and a cobalt compound.

4,801,738

PREPARATION OF δ-FORMYLVALERATES

Heinz-Walter Schneider, Ludwigshafen; Rudolf Kummer, Frankenthal, and Volker Taglieber, Eppelheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 9, 1984, Ser. No. 608,460

Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317164

Int. Cl.[4] C07C *67/38, 69/67*

U.S. Cl. 560—177 **4 Claims**

1. A process for the preparation of δ-formylvaleric acid esters of an alcohol of not more than 12 carbon atoms, wherein

(a) a 3-pentenoic acid ester of an alcohol of not more than 12 carbon atoms is isomerized by treating it with an acidic ion exchanger or acidic zeolite containing palladium, rhodium or ruthenium at from 80° to 180° C. and a 4-pentenoic acid ester of an alcohol of not more than 12 carbon atoms is distilled off from the reaction mixture, and

(b) the resulting 4-pentenoic acid ester of an alcohol of not more than 12 carbon atoms is reacted with carbon monoxide and hydrogen at from 80° to 160° C. and under from 1 to 30 bar in the presence of a rhodium carbonyl complex which has been modified with tertiary organic phosphines or phosphites.

4,801,739

OLIGOMERIC HYDROXYCARBOXYLIC ACID DERIVATIVES, THEIR PRODUCTION AND USE

Joachim Franz, Riehen; Walter Prikoszovich, Allschwil, and Zdenek Brich, Binningen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Dec. 16, 1983, Ser. No. 562,470

Claims priority, application Switzerland, Dec. 17, 1982, 7372; Dec. 17, 1982, 7373

Int. Cl.[4] G07C *69/66*

U.S. Cl. 560—185 **5 Claims**

1. A modified oligomer consisting of units of lactic acid and/or glycolic acid, the oligomer moiety having a molecular weight of from 500 to 10,000, in which the terminal carboxy group is in the form of an amide of an alpha amino acid.

4,801,740

ACRYLATE AND METHACRYLATE MONOMERS AND POLYMERS

W. James Hammar, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

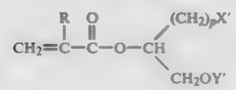
Continuation of Ser. No. 798,594, Nov. 15, 1985, which is a continuation of Ser. No. 500,782, Jun. 3, 1983, Pat. No. 4,578,504. This application Feb. 13, 1987, Ser. No. 14,609

The portion of the term of this patent subsequent to Jan. 20, 2004, has been disclaimed.

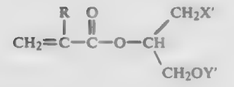
Int. Cl.[4] C07C *69/54*

U.S. Cl. 560—224 **12 Claims**

1. A process for preparing a monomer having the formula:



or



wherein

R is hydrogen or methyl,

X′ is fluoro, chloro, bromo, iodo, perfluoroalkylsulfonoxy of one to three carbon atoms, perfluoroacyloxy of one to three carbon atoms, benzoyloxy, or trichloroacetoxy,

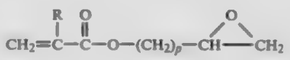
Y′ is selected from trichloroacetyl, perfluoroacyl of the formula



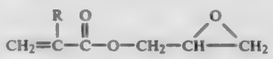
or trialkylsilyl of the formula $[CH_3(CH_2)m]_3Si$—, where n is zero to three, and p is 2 to 4;

(a) reacting in inert solvent under mild conditions, equimolar quantities of

(1) a compound of the formula



or

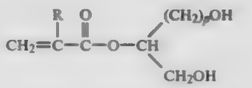


wherein R and p are as defined above, and

(2) an electrophilic reagent having the formula X′—Y′ wherein X′ and Y′ are as defined above; and

(b) isolating and recovering the resulting product.

8. A monomer having the formula:

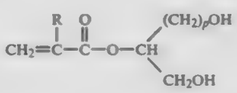


wherein

R is hydrogen or methyl, and

p is 2 or 4.

11. A monomer having the formula



wherein

R is hydrogen or methyl,

p is 2 to 4,

said monomer having greater than 90 percent by weight purity.

4,801,741

PROCESS FOR THE PREPARATION OF PERHALOHYDROCARBON HYPOCHLORITES

Giorgio Guglielmo, Mirano; Guglielmo Gregorio, Milan, and Pierangelo Calini, Rho, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Sep. 4, 1987, Ser. No. 93,040

Claims priority, application Italy, Sep. 8, 1986, 21631 A/86

Int. Cl.[4] C07C *71/00*

U.S. Cl. 560—300 **8 Claims**

1. Process for the preparation of chloro-halo-compounds having the formula:

$$(R)_nC(F)_m—OCl \quad (I)$$

wherein R is an alkyl, cycloalkyl, aromatic, heterocyclic, polyether radical, containing from 1 to 12 carbon atoms, fully halogenated with bromine, chlorine and/or fluorine; n is an integer comprised within the range of from 0 to 2; m is an integer equal to 3−n, and wherein, if n=2, R represents radicals equal to or different from each other, by means of the direct reaction in the presence of a solid catalyst constituted by

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a fluoride of an alkali metal or of an alkali-earth metal, between FCl and organic compounds, having a molecular structure wherein an oxygen atom is directly bonded to a carbon atom in carbonyl form, characterized in that the reaction is carried out in the gas phase at a temperature comprised within the range of from 0° to 100° C., under conditions of continuous feeding of the reactants and of removal of the reaction product, so that the stay time of the reactants inside the reaction medium is shorter than 10 minutes, and under conditions of removal of the reaction heat for maintaining the temperature at a not higher value than pre-established.

4,801,742

N-FORMYLATION OF AMINO CARBOXYLATES WITH ALKYL FORMATES

Jennifer M. Quirk, Highland; Charles G. Carter, Columbia, and Robert J. Kupper, Mt. Airy, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 17, 1987, Ser. No. 74,752
Int. Cl.⁴ C07C *102/06*
U.S. Cl. 562—450 **18 Claims**

1. A process for N-formylating an alkali metal salt of an amino carboxylic acid in which said salt reacts with an alkyl formate having 1–4 carbons in the alkyl group, in a solvent of an alkanol having 1–4 carbons, thereby forming an alkali metal salt of N-formyl amino carboxylic acid.

4,801,743

PROCESS FOR PREPARING CARBOXYLIC ACIDS

William D. Baugh, and Jawad H. Murib, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 276,105, Jun. 22, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,709
Int. Cl.⁴ C07C *51/12*
U.S. Cl. 562—519 **19 Claims**

1. The carbonylation process which comprises reacting allyl alcohol and carbon monoxide under carbonylation conditions substantially in the absence of water and in the presence of a catalytically effective amount of a catalyst composition containing zero valent palladium promoted with a catalyst promoting amount of a hydrogen halide selected from the group consisting of hydrogen fluoride, hydrogen chloride, hydrogen bromide and hydrogeniodide to provide one product or a mixture of products predominately made up of C_4 and C_5 carboxylic acids selected from the group consisting of vinylacetic acid, crotonic acid, butyric acid, isobutyric acid, glutaric acid and methyl succinic acid.

4,801,744

CATALYTIC SYNTHESIS OF UREA FROM CARBON MONOXIDE AND AMINE COMPOUND

Jean-Jacques Herman, Waterloo, and André Lecloux, Meise, both of Belgium, assignors to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Feb. 28, 1986, Ser. No. 834,504
Claims priority, application France, Mar. 1, 1985, 85 03175
Int. Cl.⁴ C07C *126/00*
U.S. Cl. 564—65 **6 Claims**

1. Process for the catalytic synthesis of nitrogen-containing organic compounds containing at least one >N—CO— group in their molecule, which comprises reacting carbon monoxide with at least one amine compound in a reaction mixture containing a catalyst based on selenium and a liquid organic medium, characterized in that the liquid organic medium contains a substituted pyridine.

4,801,745

IMPROVED PROCESS FOR THE PREPARATION OF UREA

Jozef H. Meessen, Wijlre, and Rudolf Sipkema, Geleen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Aug. 11, 1986, Ser. No. 895,430
Claims priority, application Netherlands, Aug. 12, 1985, 8502227
Int. Cl.⁴ C07C *126/00, 126.02*
U.S. Cl. 564—70 **4 Claims**

1. In a process for the preparation of urea from the reaction of ammonia and carbon dioxide at an NH_3/CO_2 molar ratio of up to about 4:1 in a high pressure synthesis zone maintained at a temperature of at least about 175° C.and a synthesis pressure of between about 125 and 350 bar, to form a first urea solution containing unconverted ammonium carbamate and excess ammonia, wherein

in a first decomposition stage, a portion of the uncoverted ammonium carbamate present in said first urea solution is decomposed to ammonia and carbon dioxide at a pressure of at most the pressure in said urea synthesis zone by the simultaneous supply of heat and countercurrent contact with a stripping gas, and separately removing therefrom a first gas mixture containing ammonia, carbon dioxide and water vapor, and a second urea solution still containing residual ammonium carbamate,

in a first condensation stage, said first gas mixture is at least in part condensed to form a first condensate which, together with any remaining noncondensed gas mixture, is returned to the synthesis zone,

in a second decomposition stage, maintained at a pressure of between about 12 and 30 bar, the second urea solution is heated by heat exchange with the condensing first gas mixture in said first condensation stage, thereby decomposing a further portion of said ammonium carbamate, and a second gas mixture thus obtained is separated from a third urea solution,

in further processing stages, urea solution is subjected to at least one further decomposition step for the decomposition of ammonium carbamate and separation of ammonia and carbon dioxide thus formed, whereafter the remaining urea-containing solution is concentrated to product urea by evaporation of water in a concentration stage,

the improvement essentially comprising

expanding said second urea solution, to a pressure at least as high as the pressure in said second decomposition stage, and separating out a third gas mixture thereby formed prior to introduction of said second urea solution into said second decomposition stage,

introducing said third gas mixture into a contact zone wherein said third gas mixture is brought into direct gas-liquid contact with said third urea solution,

separately removing from said contact zone a fourth gas mixture having an NH_3/CO_2 molar ratio higher than said third gas mixture, and a fourth urea solution having an NH_3/CO_2 molar ratio lower than said third urea solution, and

condensing said fourth gas mixture and returning the condensate thus formed to said high pressure synthesis zone.

4,801,746

PROCESS FOR THE PREPARATION OF UREA

Victor E. A. Baeseus, Maasmechelen, Belgium, assignor to Stamicarbon B.V., AC Geleen, Netherlands

Filed Aug. 11, 1986, Ser. No. 895,429
Claims priority, application Netherlands, Aug. 12, 1985, 8502228
Int. Cl.⁴ C07C *126/00, 126/02*
U.S. Cl. 564—70 **4 Claims**

1. In a process for the preparation of urea from the reaction of ammonia and carbon dioxide at an NH_3/CO_2 molar ratio of up to about 4:1 in a high pressure synthesis zone maintained at

a temperature of between about 175° and 220° C. and a synthesis pressure of between about 125 and 250 bar, to form a urea synthesis solution containing unconverted ammonium carbamate and excess ammonia, wherein

in a first decomposition stage, a portion of the unconverted ammonium carbamate present in said urea synthesis solution is decomposed to ammonia and carbon dioxide at a pressure of at most the pressure in said high pressure synthesis zone by the simultaneous supply of heat and countercurrent contact with a carbon dioxide stripping gas, and separately removing therefrom a first decomposition stage gas mixture containing ammonia, carbon dioxide and water vapor, and a residual urea solution still containing unconverted ammonium carbamate,

in a first condensation stage, said first decomposition stage gas mixture is at least in part condensed to form a first condensate which, together with any remaining noncondensed gas mixture, is returned to the synthesis zone,

in at least two further decomposition stages, residual urea solution is heated, thereby decomposing further portions of said ammonium carbamate, and the gas mixtures thereby formed are separated from the residual urea solutions and condensed, the first of said further decomposition stages being maintained at a pressure of between about 12 and 30 bar, and the second of said further decompositions stages being maintained at a pressure lower than the pressure in the first of said further decomposition stages, whereafter

in a concentration stage, the remaining urea-containing solution is concentrated to product urea by evaporation of water,

the improvement essentially comprising dividing said urea synthesis solution into first and second portions for separate treatment in said first decomposition stage wherein

said first portion of urea synthesis solution is subjected to a stripping treatment with carbon dioxide while heat is being supplied, thereby forming a first gas mixture and a first residual urea solution,

said second portion of urea synthesis solution is countercurrently contacted with carbon dioxide under adiabatic conditions, thereby forming a second gas mixture and a second residual urea solution,

said first and second gas mixtures are combined as said first decomposition stage gas mixture and at least in part condensed in said first condensation stage,

said first residual urea solution is supplied to the second of said further decomposition stages, and

said second residual urea solution is supplied to the first of said further decomposition stage.

4,801,747

PROCESS FOR PREPARING UREA

Kees Jonckers, Born, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 670,731, Nov. 13, 1984, abandoned. This application Oct. 6, 1986, Ser. No. 898,610
Claims priority, application Netherlands, Nov. 13, 1983, 8303888
Int. Cl.⁴ C07C *126/08, 126/02*
U.S. Cl. 564—72 **3 Claims**

1. In a process for the preparation of urea from the reaction of carbon dioxide and a molar excess of ammonia in a synthesis zone at a pressure of between about 125 and 350 bar and at a corresponding elevated temperature, to form a urea synthesis solution containing unconverted ammonium carbamate and free ammonia, wherein

in a first decomposition zone, urea synthesis solution is heated, thereby decomposing a portion of said ammonium carbamate, and a first gas mixture thus obtained is separated from a residual urea containing liquid phase and at least partially condensed in a first condensation zone;

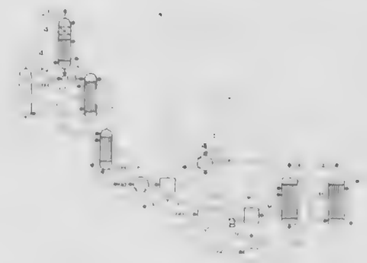
in a second decomposition zone, maintained at a pressure of between about 4 and 40 bar, residual urea containing liquid phase from said first decomposition zone is heated, thereby decomposing a further portion of said ammonium carbamate, and a second gas mixture thus obtained is separated from a second residual urea containing liquid phase;

in a further decomposition zone, ammonium carbamate remaining in said second residual urea containing liquid phase is substantially removed from the urea-containing solution, and a third gas mixture thereby formed, containing ammonia and carbond dioxide, is processed to form a dilute aqueous ammonium carbamate solution; and

in an evaporation zone, said urea containing solution is concentrated by evaporation of water to form a concentrated urea solution;

the improvement essentially comprising said evaporation zone including a shell and tube heat exchanger wherein

said second gas mixture is introduced into the shell side of said heat exchanger, adjacent one end of said shell side, wherein it is condensed and the condensate thus formed is discharged from said shell side adjacent the opposing end thereof;



said urea containing solution to be concentrated is passed through the tube side of said heat exchanger countercurrent to the condensing gas mixture in said shell side; and

said dilute aqueous ammonium carbamate solution is fed into the shell side of said heat exchanger at a point between the introduction of said second gas mixture and the discharge of said condensate, said point being selected such that the temperature at said point in said shell side subtantially corresponds to the temperature at which, in a Q-t-diagram, the condensation line of said second gas mixture in the absence of said dilute carbamate solution, and the condensation line of said second gas mixture in the presence of said dilute carbamate solution, intersect, on which diagram Q is the amount of heat transferred from the shell side to the tube side, and t is the temperature in said shell side;

whereby said second gas mixture is virtually completely condensed and the heat of condensation of said condensing second gas mixture is transferred to said urea containing liquid phase being concentrated in said evaporation zone.

4,801,748

CATALYTIC PROCESS FOR PREPARING AMIDE FROM NITRILE, AMINE AND WATER

Shunichi Murahashi, Ikeda, and Takeshi Naota, Kawanishi, both of Japan, assignors to Osaka University, Suita, Japan

Continuation-in-part of Ser. No. 828,245, Feb. 11, 1986, abandoned. This application Mar. 7, 1986, Ser. No. 838,199
Claims priority, application Japan, Mar. 8, 1985, 60-44939
Int. Cl.⁴ C07C *102/08*
U.S. Cl. 564—126 **20 Claims**

1. A process for preparing an amide from a carbonitrile and an amine which comprises reacting by heating a mixture of a carbonitrile, an equivalent amount of an amine, which amine is a primary amine or a secondary amine, and at least a stoichio-

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metric amount of water in the presence of an effective amount of a catalyst, which catalyst is comprised of a complex containing at least one metal selected from the group consisting of ruthenium, rhodium, nickel, and molybdenum, and at least one group selected from the group consisting of hydride, phosphine, carbonyl, ammonia, and hydroxyl, to form an amide.

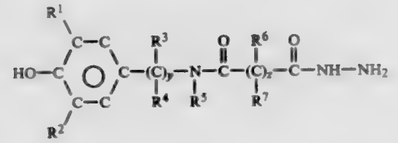
4,801,749

PHENOLIC ANTIOXIDANT HYDRAZIDES

Robert T. Kazmierczak; Ronald E. MacLeay, and Jerome Wicher, all of Erie, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 12, 1987, Ser. No. 84,536
Int. Cl.[4] C07C *103/20, 103/29*
U.S. Cl. 564—158 **6 Claims**

1. A compound having the formula



wherein

R^1 is a tertiary alkyl of 4 to 8 carbons,

R^2 is selected from hydrogen, t-alkyl of 4 to 8 carbons, and alkyl of 1 to 8 carbons,

R^3, R^4, R^5, R^6, and R^7 are independently selected from hydrogen, alkyl of 1 to 6 carbons, and phenyl,

y is an integer of from 0 to 6, and

z in an integer of from 0 to 10.

4,801,750

PROCESS FOR THE PRODUCTION OF 2-CHLOROACETOACETIC ACID AMIDES

Leander Tenud, Visp, Switzerland; Raimund Miller, Hackensack, N.J., and Barry Jackson, Visp, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Filed Mar. 24, 1982, Ser. No. 361,333
Claims priority, application Switzerland, Mar. 26, 1981, 2044/81; Sep. 17, 1981, 6004/81
Int. Cl.[4] C07C *102/06*
U.S. Cl. 564—199 **21 Claims**

1. Process for the production of a 2-chloroacetoacetic acid amide comprising (a) converting diketene at a temperature of +30° to −40° C. with the help of hydrogen chloride into acetoacetic acid chloride, (b) introducing chlorine at a temperature of +30° to −40° C. into the acetoacetic acid chloride, whereby 2-chloroacetoacetic acid chloride forms, and (c) converting the 2-chloroacetoacetic acid chloride into the corresponding amide at a temperature of +50° to −40° C. by reaction with a N-compound having the formula:



wherein (i) R and R′ are H, or (ii) R and R′ are the same or different alkyl, substituted alkyl, aryl, substituted aryl, alkyl aryl, substituted alkyl aryl, alkoxy aryl, substituted alkoxy aryl, alkoxy alkyl or substituted alkoxy alkyl, or (iii) R is H, and R′ is alkyl, substituted alkyl, aryl, substituted aryl, alkyl aryl, substituted alkyl aryl, alkoxy aryl, substituted alkoxy aryl, alkoxy alkyl or substituted alkoxy alkyl.

4,801,751

PROCESS FOR THE DISPROPORTIONATION OF ALKYLATED AROMATIC PRIMARY AMINES

Andrew F. Nordquist, Whitehall, and Ronald Pierantozzi, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 30, 1986, Ser. No. 913,826
Int. Cl.[4] C07L *85/24*
U.S. Cl. 564—305 **20 Claims**

1. A process for the disproportionation of alkylated aromatic primary amines which comprises contacting said alkylated aromatic primary amines with a catalyst consisting essentially of activated carbon or unmodified graphite at a temperature between 200° C. and 500° C.

4,801,752

PREPARATION OF N-ALKYL AND N,N-DIALKYLANILINE

Po Y. Chen, Tao Yuan; Shiao J. Chu, Hsin Chu; Mei C. Chen, Hsin Diahu; Nan S. Chang, Tai-Nan, and Wen C. Lin, Hsin Chu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Feb. 12, 1987, Ser. No. 13,651
Int. Cl.[4] C07C *85/06*
U.S. Cl. 564—401 **12 Claims**

1. A process for the selective production of N-alkyl and N,N-dialkylaniline which comprises reacting in the vapor phase aniline with an alkanol having from 1 to 3 carbon atoms at a temperature of from 300° to 500° C., at a pressure of from 1 to 5 atm. in the presence of a crystalline aluminosilicate catalyst having a silica to alumina ratio of from 20:1 to 700:1, said crystalline aluminosilicate catalyst originally being possessed of Na^+ cations which were ion-exchanged with H^+ cations or being possessed of H^+ cations which were ion-exchanged with Fe^{+3}, Mg^{+2}, Cs^+, or K^+ cations.

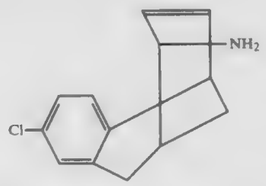
4,801,753

BIOLOGICALLY ACTIVE TRICYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

David S. Savage, Glasgow; Thomas Sleigh, Wishaw, and John K. Clark, Hamilton, all of Scotland, assignors to Akzona Incorporated, Asheville, N.C.

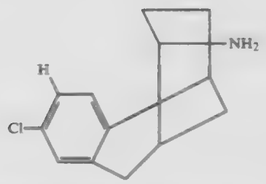
Continuation of Ser. No. 886,489, Sep. 8, 1986, abandoned, which is a continuation of Ser. No. 772,478, Oct. 4, 1985, abandoned, which is a continuation of Ser. No. 545,797, Oct. 26, 1983, abandoned, which is a continuation of Ser. No. 348,371, Feb. 10, 1982, abandoned, which is a continuation of Ser. No. 842,882, Oct. 17, 1977, abandoned. This application Sep. 17, 1987, Ser. No. 98,203
Claims priority, application United Kingdom, Oct. 27, 1976, 44675/76
Int. Cl.[4] A61K *31/135*; C07C *87/64*
U.S. Cl. 564—426 **14 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof.

7. A compound of the formula:



or a pharmaceutically acceptable salt thereof.

4,801,754

HYDROFORMYLATION PROCESS

Hanswilhelm Bach, Duisburg; Boy Cornils, Hofheim; Wilhelm Gick, Duisburg; Gehard Diekhaus, Oberhausen; Werner Konkol, Oberhausen, and Ernest Wiebus, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 25, 1987, Ser. No. 125,595
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1986, 3640615
Int. Cl.[4] C07C *45/50*
U.S. Cl. 568—454 **2 Claims**

1. In a hydroformylation process for the preparation of aldehydes by reacting aliphatic olefins of 2 to 12 carbon atoms with carbon monoxide and hydrogen at temperatures of 20° to 150° C. and pressures of 0.1 to 20 mPa in the liquid phase and in the presence of an aqueous solution containing 50 to 800 wt. ppm of rhodium and 25 to 30 wt. % of phosphines, in each case based on the aqueous solution as a catalyst system and in addition the transformation products of the phosphines, the improvement comprising draining off a portion of the aqueous solution of the catalyst system together with the reaction product and replacing the same with fresh aqueous solution of the catalyst system.

4,801,755

ISOBUTANE OXIDATION IN THE PRESENCE OF A SOLUBLE PROPYLENE GLYCOL/VANADIUM CATALYST

John R. Sanderson, Leander, and Edward T. Marquis, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 27, 1987, Ser. No. 125,964
Int. Cl.[4] C07C *179/02*
U.S. Cl. 568—571 **4 Claims**

1. A method for oxidizing isobutane with an oxygen-containing material in the presence of an effective amount of a soluble propylene glycol/vanadium catalyst.

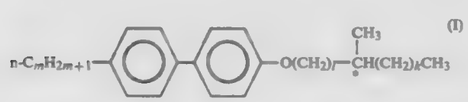
4,801,756

LIQUID CRYSTAL COMPOUND

Mitsuru Kano, Furukawa, and Jun Nakanowatari, Miyagi, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 30, 1986, Ser. No. 947,631
Claims priority, application Japan, Feb. 13, 1986, 61-29698
Int. Cl.[4] G02F *1/13*; C09K *19/12*; C07C *43/02*
U.S. Cl. 568—642 **3 Claims**

1. A liquid crystal compound represented by Formula I below:



where m, l, and k are integers in the range of $4 \leqq m \leqq 14$, $0 \leqq l \leqq 7$, $1 \leqq k \leqq 8$, respectively, excluding the case where $l=1$ and $k=1$, the asterisk (*) indicates an asymmetric carbon atom, and the compound should be optically active.

4,801,757

NONCRYSTALLINE TRIS(4-HYDROXY-2-METHYL-5-TERT. BUTYLPHENYL) BUTANE

Jerry H. Smith; John F. Stevens, both of West Chester, Pa., assignors to ICI Americas, Inc., Wilmington, Del.

Filed Nov. 27, 1987, Ser. No. 125,888
Int. Cl.[4] C07C *39/16*
U.S. Cl. 568—720 **7 Claims**

1. A noncrystalline 1,1,3-tris(2-methyl-4-hydroxy-5-tert-butylphenyl) butane having an amorphous X-ray defraction pattern and characterized by a melt transition temperature of 113°–119° C. as determined by differential scanning calorimetry.

4,801,758

PROCEDURE FOR PRODUCING HYDROQUINONE

Saime Koskimies, Helsinki, and Taru Haimala, Mäntsälä, both of Finland, assignors to Neste Oy, Finland

Filed May 18, 1987, Ser. No. 51,736
Int. Cl.[4] C07C *39/10*
U.S. Cl. 568—768 **26 Claims**

1. Method of producing hydroquinone which comprises:

oxidizing a mixture of about 10–80% by weight of diisopropylbenzene and about 20–90% by weight of C_4–C_9 alkylbenzenes by means of oxygen to form dihydroperoxide of p-diisopropylbenzene,

cooling the thus-formed dihydroperoxide of p-diisopropylbenzene to crystalize the same, with other components of said thus-oxidized mixture remaining in solution, and

separating the crystalized dihydroperoxide of p-diisopropylbenzene from the remaining components and decomposing the same by acid catalysis with at least one of mineral acid, acid aluminosilicate, sulphur trioxide, Lewis acid and acid ion exchange resin to form hydroquinone.

4,801,759

PROCESS FOR PRODUCING VICINAL DIOLS

Rainer Siegmeier, Bad Homburg; Günther Prescher, Hanau, and Helmut Maurer, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 7, 1987, Ser. No. 82,569
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1986, 3628665
Int. Cl.[4] C07C *29/10/31/20*
U.S. Cl. 568—833 **12 Claims**

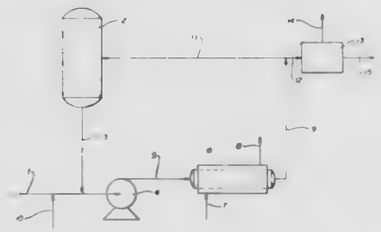


1. A continuous process for producing low molecular

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weight vicinal diols by saponification of the corresponding expoxides with water at low pressure and moderate temperatures, said process comprising continuously supplying water and an aliphatic linear or branched epoxide or a cycloaliphatic epoxide, said epoxide containing 3–8 carbon atoms, in a weight ratio of 1:0.5 to 1:2.5 to a reaction vessel in the absence of any organic solvent, heating the epoxide and water at a pressure of 1–5 bar, refluxing at the boiling temperatures which develop, and drawing off an aqeuous solution of the resulting diol.

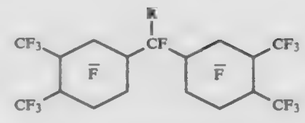
4,801,760
TERTIARY BUTYL ALCOHOL PURIFICATION
Vijai P. Gupta, Berwyn, Pa., assignor to Arco Chemical Company, Newtown Square, Pa.
Filed Feb. 12, 1988, Ser. No. 155,411
Int. Cl.[4] C07C 29/78, 31/12
U.S. Cl. 568—923 **5 Claims**



1. The method of recovering tertiary butyl alcohol of improve purity from mixtures which also contain minor amounts of organic impurities which comprises:
(a) forming an admixture of tertiary butyl alcohol containing minor amounts of organic impurities, and 1 to 5 wt % water,
(b) cooling said admixture to a temperature sufficiently low to form a slurry containing tertiary butyl alcohol crystals in mother liquor, and
(c) separating said tertiary butyl alcohol crystals from said mother liquor.

4,801,761
PERFLUORO-1,1-DI(ORTHOXYLYL)ALKYL COMPOUNDS
Webb I. Bailey, Fogelsville, and John T. Lileck, Tamaqua, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Feb. 20, 1987, Ser. No. 17,390
Int. Cl.[4] C07C 23/18
U.S. Cl. 570—130 **4 Claims**

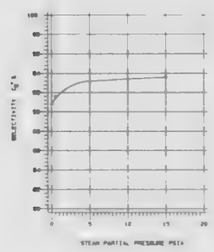
1. The composition having the structural formula:



wherein F indicates that all available sites are fluorinated and there are no carbon to carbon double bonds and R is selected from the group consisting of F, CF_3 and C_2F_5.

4,801,762
METHANE CONVERSION PROCESS
David W. Leyshon, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Feb. 13, 1987, Ser. No. 14,405
Int. Cl.[4] C07C 2/00
U.S. Cl. 585—500 **12 Claims**

FIGURE 1
EFFECT OF STEAM ON C_2^+ SELECTIVITY

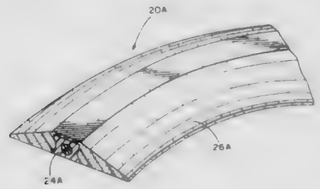


1. In a method for converting methane to higher hydrocarbons wherein a gas comprising methane and a gaseous oxidant are contacted with a nonacidic solid to produce higher hydrocarbons and coproduct water, the improvement which comprises conducting at least a portion of said contacting in the presence of added water.

4,801,763
SELECTIVE CHLORINATION OF CHLOROTRIFLUOROETHYLENE TELOMERS
James J. Manl; Bobby F. Dannels, both of Grand Island, and David Y. Tang, East Amherst, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.
Filed Jul. 27, 1987, Ser. No. 78,327
Int. Cl.[4] C07C 17/20, 17/38, 19/08; C07G 13/00
U.S. Cl. 570—177 **20 Claims**

1. A process for purifying a mixture of chlorotrifluoroethylene telomers from bromine-containing organic impurities, each of said chlorotrifluoroethylene telomers having an end group of formula —CFClBr, said process comprising the steps of:
(a) chlorinating the mixture at a temperature in the range of about 100° C. to about 350° C. for a sufficient period of time to convert the —CFClBr telomer end groups into $—CFCl_2$ end groups, without chlorinating the bromine-containing organic impurities, and
(b) separating the chlorinated telomers from the bromine-containing organic impurities.

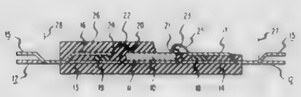
4,801,764
CABLE ASSEMBLY FOR USE UNDER CARPETING
Ronald L. Ohlhaber, Geneva, Ill., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Feb. 11, 1986, Ser. No. 828,849
Int. Cl.[4] H01B 7/08, 11/22
U.S. Cl. 174—70 C **2 Claims**



1. A thin, relatively flat cable assembly for laying under carpet, said cable assembly comprising:
an insulative central portion formed of a relatively rigid plastic material;
at least one conductor held in said central portion and having an insulative jacket; and
a pair of insulative side portions formed of a foamed plastic material connected to said central portion and extending in opposite directions from said central portion with said side portions and said central portion forming a substantially flat bottom surface of said cable assembly, said central portion providing crush protection for said conductor and said side portions providing limited bending of said assembly in the plane of said bottom surface.

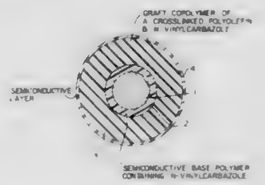
2. A thin, relatively flat cable assembly for laying under carpet, said cable assembly comprising:
a cable comprising at least one conductor having an insulative jacket; and
a plurality of regularly, axially spaced, discrete ridge elements held only by said cable, each element being of a plastic and formed by molding and including an element central region and a pair of side portions connected to said central region and extending in opposite directions therefrom with the side portions and the central region forming a substantially flat bottom surface, the bottom surfaces of said elements being substantially coplanar and forming a bottom surface of said cable, adjacent side portions of adjacent elements defining spaces when said cable assembly is not bent in the plane of said cable bottom surface bending of said cable assembly in the plane of said bottom surface being substantially limited by contact of the distal ends of adjacent side portions on the inside of the bend so that the spaces at the lateral edge on the inside of the bend are substantially closed.

4,801,765
ELECTRONIC COMPONENT PACKAGE USING MULTI-LEVEL LEAD FRAMES
Harold W. Moyer, Allentown, and Harry R. Scholz, Macungie, both of Pa., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 6, 1986, Ser. No. 816,443
Int. Cl.[4] H01L 23/02
U.S. Cl. 174—52.4 **18 Claims**



1. An encapsulated semiconductor chip package comprising:
a semiconductor chip with contact areas on a surface thereof;
a first level of conductive leads electrically coupled to associated contact areas on the chip;
a second level of conductive leads disposed above the leads of the first level in an area proximate to said chip and electrically coupled to associated contact areas; and
a molded material encapsulating the semiconductor chip and a portion of said leads so that the leads extend from an area proximate to said chip within the molded material to an area outside the molded material.

4,801,766
CROSSLINKED POLYOLEFIN INSULATED POWER CABLE
Fumio Aida, Tokyo; Takeo Shiisoo, Yokohama; Miuso Hanai, Yokohama, and Shahrzad Tasnevori, Yokohama, all of Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Japan
Division of Ser. No. 798,114, Nov. 14, 1985, Pat. No. 4,732,722.
This application Oct. 16, 1987, Ser. No. 109,208
Claims priority, application Japan, Nov. 27, 1984, 59-179779; Sep. 25, 1985, 60-211657
Int. Cl.[4] H01B 9/02, 13/00
U.S. Cl. 174—120 SC **3 Claims**

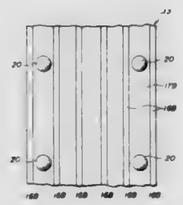


1. A crosslinked polyolefin insulated power cable including:
a conductor,
an inner semiconductive base polymer layer on the outer surface of said conductor, said base polymer layer containing N-vinylcarbazole,
an insulating layer of a graft copolymer of a crosslinked polyolefin and N-vinylcarbazole grafted thereon, said insulating layer being formed on said inner semiconductive layer, and
an outer semiconductive layer formed on said insulating layer.

3. A crosslinked polyolefin insulated power cable including a conductor, an inner semiconductive layer formed on the outer surface of said conductor, an insulating layer of a graft copolymer of a crosslinked polyolefin and N-vinylcarbazole grafted thereon, said insulating layer being formed on said inner semiconductive layer, and an outer semiconductive layer formed on said insulating layer, said cable being produced by the steps of:
extruding, on the outer surface of a conductor, a coating comprising:
a material for the formation of an inner semiconductive layer, comprising a base polymer and N-vinylcarbazole,
a crosslinkable polyolefin material for the formation of a crosslinked polyolefin insulating layer and,
a material for the formation of an outer semiconductive layer, in this order, and
then subjecting the coated conductor to a crosslinking treatment to cause part of the N-vinylcarbazole to diffuse into said insulating layer and thereby form, on the outer surface of the conductor, said inner semiconductive layer, said crosslinked polyolefin insulating layer and said outer semiconductive layer in this order.

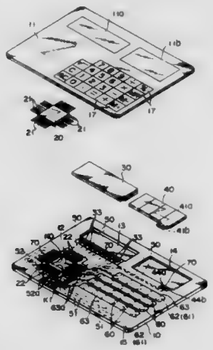
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4,801,767
COORDINATE INPUTTING SHEET WITH AUXILIARY ELECTRODES PROMOTING ACCURACY OF POSITIONAL DETECTION
Hideki Sato, Takatsuki; Haruyuki Kotsumi, Kyoto; Shinichi Hashizume, Kamtsuu, and Koichi Omae, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Jun. 1, 1987, Ser. No. 55,946
Claims priority, application Japan, Jun. 6, 1986, 61-132262
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 6 Claims



1. A coordinate inputting sheet, comprising: an X coordinate inputting sheet for detecting an X coordinate and a Y coordinate inputting sheet for detecting a Y coordinate, said X coordinate inputting sheet and said Y coordinate inputting sheet being laid together with conducting surfaces thereof mutually confronting one another; an insulating projection provided between said X coordinate inputting sheet and said Y coordinate inputting sheet as means for spacing apart said opposing conducting surfaces thereof; and auxiliary electrodes extending substantially along equipotential directions of at least one of said coordinate inputting sheets adjacent to said insulating projection.

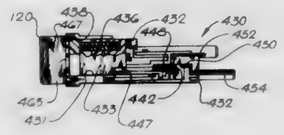
4,801,768
COMPACT ELECTRONIC DEVICE
Kazuhiro Sugiyama, Kunitachi, and Yoshio Kawai, Higashiyamato, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 757,849, Jul. 22, 1985, Pat. No. 4,680,432. This application Jul. 6, 1987, Ser. No. 69,898
Claims priority, application Japan, Aug. 7, 1984, 59-165062; Aug. 7, 1984, 59-165063; Aug. 7, 1984, 59-165064
The portion of the term of this patent subsequent to Jul. 14, 2004, has been disclaimed.
Int. Cl.[4] H01H *3/12*
U.S. Cl. 200—5 A 9 Claims



9. A compact electronic device, comprising:

an electrical insulating substrate;
first key input terminals formed on said substrate, each of said terminals comprising a pair of contacts;
anisotropically electrically conductive islands printed on each of said first terminals;
a first synthetic resin layer printed on said substrate while leaving said islands exposed;
second key input terminals printed on said islands and on said synthetic resin layer, each of said second terminals has a surface area facing each of the pairs of contacts; and
a second synthetic resin layer coated on said second terminals, on which key symbols are printed.

4,801,769
PUSHBUTTON CARTRIDGE SWITCH FOR AUTOMOTIVE AIR CONTROL UNITS
John G. Cummings, Cary, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.
Division of Ser. No. 930,000, Nov. 10, 1986, Pat. No. 4,720,612.
This application Oct. 29, 1987, Ser. No. 114,700
Int. Cl.[4] H01H *13/50, 15/02*
U.S. Cl. 200—16 C 2 Claims



1. A control unit incorporating a pushbutton electrical switch cartridge,
said control unit comprising
a control unit housing having a rear wall closing the rear thereof and an attachable front panel with a generally rectangular guide opening therein,
a switch cartridge including a pushbutton of generally rectangular cross section and having a front portion for slidable reception in said guide opening,
said pushbutton having a forwardly facing shoulder for engaging said front panel to limit the forward sliding movement of said pushbutton,
said pushbutton being hollow and being formed with a generally rectangular rearwardly facing internal slideway,
a stationary body having a generally rectangular external slide member on the front portion of said body for telescopic slidable reception in said internal slideway,
said pushbutton having a rearwardly projecting finger affording a switch carriage portion,
said body having a longitudinal guideway channel therein for slidably receiving said finger,
an electrically conductive contactor mounted on said switch carriage portion of said finger for longitudinal movement therewith,
first and second fixed contact fixed on said body and mounted thereon along said guideway channel for selective engagement by said contactor,
and spring means acting between said body and said pushbutton for biasing said pushbutton forwardly toward an extended position with said shoulder of said pushbutton engaging said front panel,
said pushbutton being telescopically engaged around said body for sliding movement of said pushbutton between said forwardly extended position and a rearwardly depressed position against said body,
first and second terminals fixedly connected to the respective first and second fixed contacts and projecting rearwardly from said body,
said contactor being engageable with both of said fixed contacts when said pushbutton is in said depressed position while being out of engagement with said second fixed contact with said pushbutton in said extended position,
said rear wall of said control unit housing having first and second slots therein for slidably receiving and supporting said first and second terminals,
said terminals being insertable rearwardly through said slots for the assembly of said switch cartridge into said control unit housing,
said switch cartridge being easily pre-assembled by assembly of said pushbutton, said contactor, said spring means, and said body, complete with said fixed contacts and said terminals, for easy assembly of said switch cartridge into said control unit housing.

4,801,770
SWITCH ASSEMBLY
Kazuo Yukitomo; Yoshiaki Anan, both of Hiroshima; Masaichi Hattori, Aichi; Kaneyasu Arakawa, Aichi; Akira Hanaki, Aichi, and Koichi Kihira, Aichi, all of Japan, assignors to Mazuda Motor Corporation, Hiroshima and Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, both of, Japan
Continuation of Ser. No. 888,167, Jul. 22, 1986, abandoned. This application Jul. 5, 1988, Ser. No. 220,324
Claims priority, application Japan, Jul. 24, 1985, 60-113497[U]
Int. Cl.[4] H01H *3/16*
U.S. Cl. 200—61.27 14 Claims



1. A switch assembly comprising:
a switch case;
a first member rotatably supported about a first axis by said switch case, said first member having an opening therethrough;
a second member mounted to pivot between an original position and a pivoted position on a second axis extending perpendicular to said first axis, said second member being supported by said first member with a rear portion of said second member extending within said opening in said first member and a front portion of said second member protruding from the front of said switch case;
a single operating lever attached to the front portion of said second member to selectively rotate said first member about said first axis to a first turn position, a second turn position, and a neutral position therebetween, and to pivot said second member about said second axis between said original and said pivoted positions irrespective of the rotational position of said first member;
a first switch operably connected to said first member, said first switch operable to a first closed position in response to the rotation of said first member to said first turn position, said first switch operable to an open position in response to the rotation of said first member to said neutral position, and said first switch operable to a second closed position in response to the rotation of said first member to said second turn position;
a second switch operably connected to said second member, said second switch operable to a closed position in response to the pivoting of said second member to said pivoted position and operable to an open position in response to the pivoting of said second member to said original position;
means for holding said first member at said first turn position or said second turn position, respectively, when said first member is rotated;
an electromagnetic solenoid and a cam linked to said solenoid, said solenoid and said cam operable to restore said first member to said neutral position; and
returning means for returning and guiding said second member from said pivoted position to said original position in response to the release of said operating lever, said returning means also being operative to guide the second member from said original position to said pivoted position.

4,801,771
FORCE SENSITIVE DEVICE
Masaaki Mizuguchi, and Hirohisa Kuroyanagi, both of Shizuoka, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan
Filed Oct. 13, 1987, Ser. No. 107,583
Claims priority, application Japan, Oct. 13, 1986, 61-243538; Oct. 13, 1986, 61-243537
Int. Cl.[4] H01H *3/02, 13/00*; G10H *1/34*
U.S. Cl. 200—86 R 25 Claims

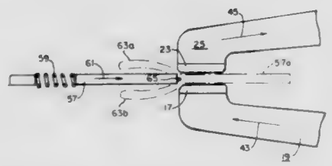


1. A force sensitive device comprising:
(a) a first conductive layer;
(b) a second conductive layer with an insulative backing layer resiliently deformable to come into contact with a contact portion of said first conductive layer upon application of a force to said insulative backing layer, the magnitude of said force being approximately equal in every application; and
(c) a plurality of spacing members attached to preselected positions of said second conductive layer, respectively, for intervening between said first conductive layer and said second conductive layer and formed of an insulating material, wherein said preselected positions are successively varied in area for variance of the contacting areas of the conductive layers.

4,801,772
CURRENT LIMITING CIRCUIT INTERRUPTER WITH INSULATING WEDGE
Walter V. Bratkowski, McKeesport, and James P. Ellsworth, Beaver, both of Pa., assignors to Westinghouse Electric Corp, Pittsburgh, Pa.
Filed Mar. 2, 1988, Ser. No. 163,354
Int. Cl.[4] H01H *33/06*
U.S. Cl. 200—151 6 Claims

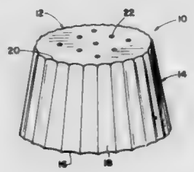
1. A current limiting circuit interrupter with insulating wedge, comprising:
a circuit breaker structure having first and second separable

contacts operable between open and closed positions and forming a gap therebetween,
means for opening and closing the contacts,
the first and second contacts being mounted on first and second contact arms respectively which arms extend in substantially parallel spaced locations to effect current limiting relationship between the arms,
at least one of the arms being pivotally mounted for movement,
a plate-like shutter of electrically insulating material in a plane extending through the gap and movable into the gap when the contacts are separated,



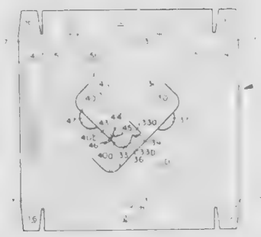
moving means for moving the plate-like shutter into the gap,
the plate-like shutter including a first portion disposed in said plane on the side of the gap opposite the contact arms and movable therefrom and through the gap to a position between the contacts and at least partially disposed between the arms whereby the formation of an arc between the contacts is minimized, and
the shutter having a leading edge in latched abutment with the movable contact for release into the gap of the movable contact.

4,801,773
SHROUD TO COVER DISH IN MICROWAVE OVEN
Ronnie Hanlon, 5307 East 33 St., Tulsa, Okla. 74135
Filed Oct. 1, 1987, Ser. No. 103,674
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 E **9 Claims**



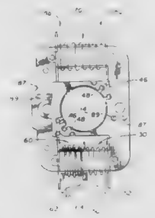
1. A shroud to cover a dish in a microwave oven, the shroud formed of moisture-absorbent, microwave-transparent paper, and comprising:
a top member having
at least one vent hole to permit the escape of steam during heating of food in the dish, and
a plurality of scallops around the edge of the top member, and
a wall member depending downwardly from the periphery of the top member, the wall member having
a plurality of fluted portions with an upper edge of each fluted portion coinciding with a scallop, and
the fluted portions positioned in a manner to strengthen the wall member sufficiently that the wall member is self-supporting.

4,801,774
CENTER-SUPPORTED MICROWAVE TRAY
Joseph J. Hart, Philadelphia, Pa., assignor to Container Corporation of America, Clayton, Mo.
Filed Nov. 24, 1987, Ser. No. 125,695
Int. Cl.[4] H05B *6/64*
U.S. Cl. 219—10.55 E **6 Claims**



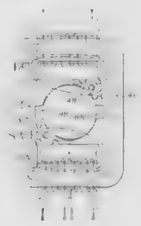
3. A disposable, one-piece, self-supported tray for holding food in a microwave oven, said tray being formed from a unitary blank of dielectric, foldable sheet material, such as paperboard, and comprising:
(a) a center panel having a periphery, a center portion, a plurality of side edges, at least one surface, and a relatively thin layer of conductive material on said one surface;
(b) a plurality of side panels foldably joined to each other and to said side edges and extending downwardly therefrom for supporting said center panel at said periphery;
(c) an integral supporting structure, for supporting said center panel center portion, including:
(i) first and second support panels formed soley from material cut from said center panel and foldably joined thereto along intersecting fold lines;
(ii) said support panels being disposed to extend downwardly from and normal to said center panel and having interlocking engagement with each other to maintain them in supporting position.

4,801,775
SHADING BAND COMPENSATION FOR CONTINUOUS TRANSFORMER AND MOTOR
Jeffrey K. Cornell, Memphis, Tenn., assignor to Microwave Products of America, Inc., Memphis, Tenn.
Division of Ser. No. 860,632, May 7, 1986, Pat. No. 4,757,171. This application Feb. 1, 1988, Ser. No. 151,202
Int. Cl.[4] H05B *9/06*
U.S. Cl. 219—10.55 R **10 Claims**



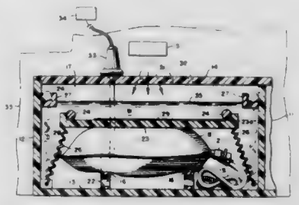
1. A transmotor for providing an output voltage proportional to an input voltage and for providing a selectively driven rotatable shaft, said transmotor comprising, in combination:
(a) a magnetic flux conducting structure having first and second flux conducting paths therethrough;
(b) a first winding operatively coupled to the first flux conducting path of the flux conducting structure and continuously connected to a source of input voltage for inducing flux in the first flux conducting path of the magnetic flux conducting structure;
(c) a second winding operatively coupled to the second flux conducting path and selectively connectable to the source of input voltage to thereby induce flux therein;
(d) a third winding operatively coupled to receive flux from either the first or the second flux conducting path to produce an output voltage; and
(e) a motor rotor mounted on the flux conducting structure for receiving flux conducted in the first and second flux conducting paths, said rotor constructed and arranged for rotation when the second winding is connected to a source of input voltage and for remaining stationary when the second winding is not connected to a source of input voltage; and
(f) compensating means for improving the regulation of the output voltage of the third winding, wherein the compensating means comprises at least two shading bands of highly conductive metal which encircle each of the first and second flux conducting paths through the magnetic flux conducting structure.

4,801,776
FLUX REDUCTION COMPENSATION FOR CONTINUOUS TRANSFORMER AND MOTOR
Jeffrey K. Cornell, Memphis, Tenn., assignor to Microwave Products of America, Inc., Memphis, Tenn.
Division of Ser. No. 860,632, May 7, 1986, abandoned. This application Feb. 1, 1988, Ser. No. 151,229
Int. Cl.[4] H05B *9/06*
U.S. Cl. 219—10.55 B **15 Claims**



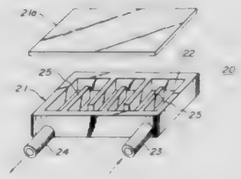
10. In a shaded pole electric motor having a magnetic flux conducting structure and a stator winding wound on the structure to induce a flux therein in accordance with the excitation thereof, and a rotor rotatably supported in the structure the improvement comprising:
(a) a secondary path in the magnetic flux conducting structure;
(b) a further winding operatively coupled to the flux conducting structure and selectively connectable to a voltage source of including flux in a secondary path in the magnetic flux conducting structure;
(c) an output winding operatively coupled to the flux conducting structure to continuously produce a voltage on the windings thereof which is proportional to the voltage of the voltage source; and
(d) compensating means for improving the regulation of the output voltage of the output winding, wherein the compensating means comprises a reduced cross-section in the portion of the magnetic flux conducting structure to which the output winding is operatively coupled;
wherein the motor rotor mounted on the flux conducting structure receives flux from the stator winding and the secondary path only when the further winding is connected to the voltage source.

4,801,777
BLOOD REWARMING METHOD AND APPARATUS
Paul S. Auerbach, Brentwood, Tenn., assignor to Vanderbilt University, Nashville, Tenn.
Filed Sep. 3, 1987, Ser. No. 92,468
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 M **22 Claims**



1. A method of rewarming blood contained in a plastic bag in preparation for infusion of such blood, comprising the steps of supporting a blood bag in a housing formed of microwave-transmissible material and containing a volume of water; immobilizing said blood bag within said housing with said immobilized bag being totally immersed in said volume of water; subjecting said water and bag to microwave irradiation until the temperature of the water adjacent said bag reaches a predetermined temperature, and interrupting said irradiation when said predetermined temperature of said water adjacent said bag has been reached.

4,801,778
CONDENSATION RESISTANT ELECTRODE FOR USE IN A DIELECTRIC HEATING APPARATUS
Isao Mizutani, Nagoya, and Akio Esomoto, Chita, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Continuation of Ser. No. 835,364, Mar. 3, 1986, Pat. No. 4,692,581. This application Jun. 26, 1987, Ser. No. 66,506
Claims priority, application Japan, Mar. 12, 1985, 60-34064
Int. Cl.[4] H05B *6/54*
U.S. Cl. 219—10.81 **4 Claims**



1. A dielectric heating apparatus for drying an article containing excess water, comprising:
a pair of electrodes located spaced apart parallel to one another, such that said electrodes define an open dielectric heating zone and remain in a non-contacting relationship with said article, wherein at least one of said electrodes includes an interior box-like portion, said portion having a convoluted passageway formed therein by a plurality of alternately extending partition members, said partition members extending from opposed inner wall faces of said interior box-like portion;
means for introducing and discharging a heated fluid into and out of said interior portion, said fluid being restricted from entering said dielectric heating zone, such that said at least one of said electrodes including said interior box-like portion is heated by said heated fluid so as to prevent water vapor, exiting from said article, from condensing on said heated electrode; and
means for supplying electrical power to said electrodes.

4,801,779

WIRE ELECTRODE TYPE ELECTRICAL DISCHARGE MACHINING EQUIPMENT

Haruki Obara, Sagamihara, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

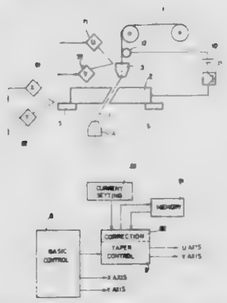
PCT No. PCT/JP86/00289, § 371 Date Mar. 12, 1987, § 102(e) Date Mar. 12, 1987, PCT Pub. No. WO86/07294, PCT Pub. Date Dec. 18, 1986

PCT Filed Jun. 11, 1986, Ser. No. 30,849

Claims priority, application Japan, Jun. 15, 1985, 60-129137

Int. Cl.[4] B23H *7/04, 7/06*

U.S. Cl. 219—69 W **3 Claims**



1. A wire electrode type electrical discharge machining apparatus comprising:

a wire electrode;

first and second wire guides for guiding said wire electrode, said wire guides being capable of relative movement therebetween for changing a taper angle of said wire electrode;

basic controller means for controlling said machining apparatus, including setting a desired taper angle;

taper machining controller means for controlling the taper angle by controlling the relative movement of said wire guides, said taper machining controller means being input from said basic controller means with data regarding the desired taper angle;

memory means for storing data indicative of relationships between machining currents and taper angles required corresponding to the machining currents;

machining current setting means for setting the machining current; and

correction means for reading out of said memory means the taper angle required corresponding to the machining current set by said machining current setting means and setting a required taper angle adjustment to said taper machining controller means for compensating for changes in wire electrode rigidity due to the machining current.

4,801,780

MIG WELDER ATTACHMENT FOR AN ELECTRIC HAND DRILL

Peter F. Hayes, Santa Fe, N. Mex., assignor to Omniverse Research, Inc., Los Gatos, Calif.

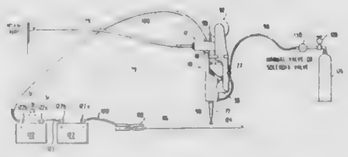
Continuation of Ser. No. 789,907, Oct. 21, 1985, Pat. No. 4,703,156. This application Oct. 14, 1987, Ser. No. 108,347

Int. Cl.[4] B23K *9/10*

U.S. Cl. 219—130.1 **3 Claims**

1. A consumable wire electrode welding system including:

a metal workpiece acting as a first electrode, a consumable fine wire second electrode, means for feeding said consumable fine wire second electrode towards said metal workpiece for initiating and maintaining an electrical arc therebetween, said feeding means including an electric drive motor, a first arc power means connected between said electrodes for creating an electrical welding arc therebetween, second electrical drive power means for energizing said electric drive motor, control means for selectively connecting said second electrical drive power means to said electric motor and for varying the power supply thereto for the purpose of varying the speed of the consumable wire electrode feed, the improvement wherein said first arc power means and said second electrical drive power means comprises at least one storage battery, and wherein separate circuits are defined by said



at least one storage battery and said electrodes, and said at least one storage battery and said electric drive motor, which separate circuits are substantially electrically unaffected by each other such that there is no appreciable drop in arc voltage resulting from variation in drive speed of said motor or vice versa, with said first arc power means at least one battery constituting an inherently stable, totally unregulated welding arc power supply.

4,801,781

SEMI-AUTOMATIC HOT WIRE TIG WELDING EQUIPMENT

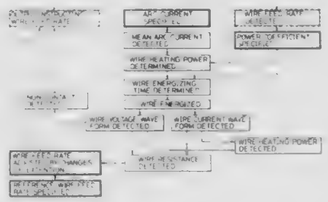
Katsuyoshi Hori; Toshiharu Myoga; Miharu Shinomiya; Eiji Watanabe; Kazuki Kusano; Toshiaki Takuwa, and Miharu Hafuri, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 828,885, Feb. 13, 1986, abandoned. This application Dec. 15, 1986, Ser. No. 940,209

Claims priority, application Japan, Feb. 13, 1985, 60-24428; Jun. 3, 1985, 60-118917; Oct. 8, 1985, 60-153108

Int. Cl.[4] B23K *9/10*

U.S. Cl. 219—137.71 **8 Claims**



1. A semi-automatic hot wire TIG (Tungsten Inert Gas) welding equipment for welding a base metal with filler wire, comprising:

a portable manually held and moved TIG arc torch;

a portable filler wire feed torch manually held and movable relative to said TIG arc torch;

a hot wire switching power source means for energizing said TIG arc torch, said filler wire feed torch and the base metal;

filler wire feeding means for feeding the wire to said wire feed torch at a desired wire feed rate;

welding condition control means for controlling said power source means to provide wire heating power commensurate to the wire feed rate;

means for measuring the resistance value of the wire extension section between the terminal end of the wire and the terminal end of the filler wire feed torch; and

means for controlling said filler wire feeding means to change the wire feed rate in response to the detected wire extension.

4,801,782

HEATED CUP

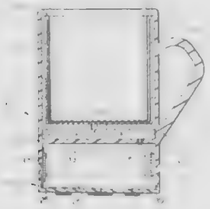
Leonard Ineson, 3574 Pitch Pine Crescent, Mississauga, Ontario, Canada (L5L 1P8)

Filed Nov. 12, 1986, Ser. No. 929,535

Claims priority, application Canada, Jul. 7, 1986, 513252

Int. Cl.[4] H05B *1/02*

U.S. Cl. 219—438 **16 Claims**



1. A vessel for maintaining a heated liquid in a heated state comprising:

a receptacle adapted to house a heated liquid, electrical heating means integral with said receptacle for maintaining the heated liquid in a heated state, and power connection means electrically connected to said heating means, said connection means being adapted to connect said heating means to a source of electrical power, said electrical heating means including an electrical circuit and a thermal switch in said circuit, said switch being activatable by a predetermined minimum temperature of heated liquid in the receptacle whereby the heating means heats the heated liquid to maintain its temperature.

4,801,783

CONNECTORS

James C. Milroy, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 8, 1987, Ser. No. 59,702

Int. Cl.[4] H05B *3/08*

U.S. Cl. 219—541 **20 Claims**



1. An assembly which comprises

(1) an elongate self-regulating heating tape which has a substantially rectangular cross-section and which comprises

(a) a laminar self-regulating resistive heating element having a first surface and an opposite second surface,

(b) a first laminar electrode which has an inner surface and an outer surface, substantially the whole of the inner surface being in contact with the first surface of the heating element,

(c) a second laminar electrode which has an inner surface and an outer surface, substantially the whole of the inner surface being in contact with the second surface of the heating element, and

(d) an insulating jacket which surrounds the first and second electrodes and the heating element except at least one end of the tape, at which end the outer surfaces of the electrodes are exposed;

and

(2) a connector which comprises

(a) a housing which is composed of an insulating material and which comprises a cavity enclosing said end of the heating tape comprising the exposed electrodes,

(b) a first contact member which

(i) is secured to the housing within the cavity,

(ii) has a first contact surface which contacts the exposed surface of the first electrode, and

(iii) has a second contact surface which is connectable to a further conductor, and

(c) a second contact member which

(i) is secured to the housing within the cavity,

(ii) has a third contact surface which contacts the exposed surface of the second electrode, and

(iii) has a fourth contact surface which is connectable to a further conductor.

4,801,784

ELECTRICAL DEVICE COMPRISING A PTC OR NTC COMPOSITION
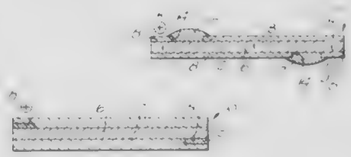
Michael L. Jensen, Overijse; Jean-Marie E. Nolf, Hamme-Mille, and Jan Vanzant, Louvain, all of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

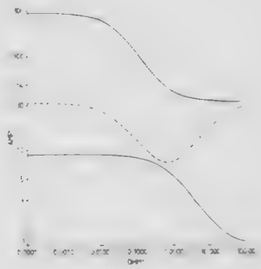
Filed Feb. 24, 1987, Ser. No. 18,229

Claims priority, application United Kingdom, Feb. 24, 1986, 8604519

Int. Cl.[4] H05B *3/10*

U.S. Cl. 219—548 **16 Claims**





1. An electrical device which comprises:

(a) a material comprising a PTC or NTC composition;

(b) at least two electrodes to which a source of electrical power may be applied to cause current to flow through the material; and

(c) means other than reversal of polarity of the source of power whereby a direction of current flow in a region of the material may be made to alter through at least 90°.

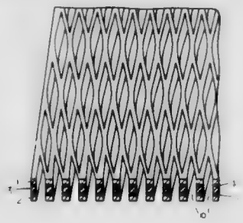
VOL 1098 ISS 5 JA 31 1989 UMI

4,801,785

ELECTRICAL DEVICES

Chi-Ming Chan, Palo Alto; Pradeep Barnas, Fremont; David Chazan, Palo Alto, and David Liu, Mountain View, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 14, 1986, Ser. No. 818,844
Int. Cl.[4] H05B *3/08*
U.S. Cl. 219—549 **21 Claims**



1. An electrical device which comprises
(1) a first electrode composed of a metal;
(2) a second electrode;
(3) an element which is composed of a conductive polymer; and
(4) a resistive layer which
(a) contacts the first electrode and lies between the first electrode and the conductive polymer element, so that all electrical paths between the first electrode and the conductive polymer element pass through the resistive layer,
(b) is composed of an inorganic material having a resistivity at 23° C. of at least 10^5 ohm.cm,
(c) is at most 12 microns thick, and
(d) has been formed by chemical modification of the surface of the first electrode, whereby the resistive layer comprises a metal compound wherein the metal of said compound is the same as the metal of the first electrode;
the first and second electrodes being connectable to a source of electrical power to cause current to pass between the electrodes through the conductive polymer element (3) and the resistive layer (4).

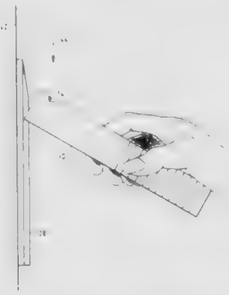
4,801,786

CHECKING SYSTEM AND METHOD FOR VERIFYING CHECKING STATIONS IN A MONITORING SYSTEM

Anatoli Stobbe, Berlinerstrasse 5e, 3013 Barsinghausen 1, Fed. Rep. of Germany

PCT No. PCT/DE85/00176, § 371 Date Jan. 24, 1986, § 102(e) Date Jan. 24, 1986, PCT Pub. No. WO85/05712, PCT Pub. Date Dec. 19, 1985
PCT Filed May 21, 1985, Ser. No. 836,165
Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3420100
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—377 **13 Claims**

1. A control system having at least one stationary control point, each control point having a contactlessly queried data carrier containing an identification, a data collector associated with the control points for verifying the individual control points, the data collector having a data reading head for serially reading the identification as the data collector moves across the data carrier, an electronic memory connected to the data reading head for receiving the data conforming to the identification, a transmitter for transmitting to a central unit the data corresponding to the identification, and an emergency call key for switching on the transmitter, wherein:
said data collector further including a microprocessor for controlling said memory and said transmitter, a clock chip whose time data together with the identification data is transmitted and stored in said central unit, a random generator and an optical display whereby random sequences of control points may be input and the corresponding data carriers sequentially identified on the display as determined by the random generator;
said transmitter further including a receiving unit, the transmitted data and a verification entry received by the receiving unit from said central unit are transferred to said memory, and means causing said transmitter to repeatedly transmit the identification data and time data at time intervals until a verification entry is received by the receiving unit from the central unit;



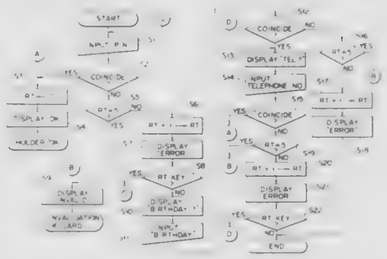
said memory being adapted to store all data of a route which encompasses several control points;
said central unit comprising a computer which interprets the routes and is connected to a central printer; and
means for automatically transmitting an emergency call to said central unit when a time range associated with each control point within which a respective control point must be verified is exceeded, said emergency call identifying the non-verified control point.

4,801,787

IC CARD IDENTIFICATION SYSTEM HAVING FIRST AND SECOND DATA IDENTIFICATION FUNCTIONS

Hideo Suzuki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1986, Ser. No. 878,223
Claims priority, application Japan, Jul. 5, 1985, 60-147781
Int. Cl.[4] G06F *15/02*; G06K *19/06*
U.S. Cl. 235—380 **12 Claims**



1. An IC card identification system comprising:
input means including a keyboard for inputting a first identification data and a second identification data; and
an IC card including:
a first memory means for storing a first identification data in advance of identification information being input by said input means;

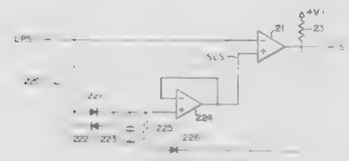
a second memory means for storing a second identification data in advance of identification information being input by said input means; and
first comparing means for comparing the first identification data stored in said first memory means with first identification data inputted by said input means; and
directing means for directing a user to input second identification data responsive to a noncoincidence of said compared first identification data as detected by said first comparing means; and
said IC card further including:
second comparing means for comparing the second identification data stored in said second memory means with second identification data inputted by said input means according to a direction by said directing means; and
determining means for determining that said IC card is valid when said second comparing means detects coincidence of said compared second identification data.

4,801,788

BAR CODE SCANNER FOR A VIDEO SIGNAL WHICH HAS A SHADING WAVEFORM

Norihisa Osaka, Mishima, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1986, Ser. No. 902,523
Claims priority, application Japan, Sep. 10, 1985, 60-198639
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—462 **20 Claims**



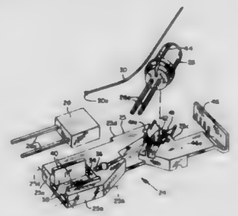
1. A bar code scanner for a video signal comprising:
line image sensing means for detecting a bar code and for generating an output signal in accordance with the detected bar code;
sample/hold means for sampling and holding an output signal from said line image sensing means, and for producing an output signal;
comparing means for receiving said output signal from said sample/hold means at a first input terminal thereof, and for comparing the received signal from said sample/hold means with an input signal received at a second input terminal thereof, and for selectively generating a first and a second output signal in accordance with a comparison result, said first output signal being generated when said comparator determines that the output signal from said sample/hold means is in a falling waveform portion and is higher than the signal level of the signal received at said second input terminal; and
a slice level determination circuit for determining a slice level in accordance with said output signal from said sample/hold means, said slice level determination circuit comprising:
a diode parallel circuit which includes a pair of diodes connected in parallel with each other in opposite directions, one end of said diode parallel circuit being connected to said sample/hold means,
capacitive means connected between another terminal of said diode parallel circuit and a reference voltage terminal,
voltage transfer means for transferring a charging voltage of said capacitive means to said second input terminal of said comparing means, and
discharging circuit means for gradually discharging said capacitive means in response to said first output signal from said comparing means.

4,801,789

REPLACEABLE READER HEAD FOR OPTICAL CODE READER

Paul R. Davis, Corvallis, Oreg., assignor to Videx, Inc., Corvallis, Oreg.

Filed Jul. 7, 1986, Ser. No. 882,729
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—472 **12 Claims**



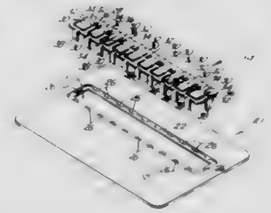
1. A reader head for an optical code reader comprising:
(a) a base having an elongate substantially endless edge surface defining a periphery of said base, said edge surface extending longitudinally along said periphery of said base in different directions defining a common plane;
(b) light source means mounted on said base communicating optically with a location on said edge surface for directing light in an illuminating direction extending substantially parallel to said plane and outwardly from said edge surface so as to illuminate an area immediately adjacent to and exterior of said location on said edge surface;
(c) light sensor means mounted on said base communicating optically with said location on said edge surface for receiving light reflected from said area, said light sensor means including an optical fiber at said location protruding outwardly from said edge surface generally in said illuminating direction; and
(d) said light source means and said light sensor means having detachable electrical connectors, each of said electrical connectors extending in a direction having a vector component opposite to said illuminating direction and substantially parallel to said plane.

4,801,790

ACCESS CARD PROVIDED WITH CODED SECURITY MEANS

Alan J. Solo, Brooklyn, N.Y., assignor to Valid Technologies, Ltd., New York, N.Y.

Filed Jan. 12, 1987, Ser. No. 2,511
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—487 **24 Claims**



1. An access comprising:
a card body;

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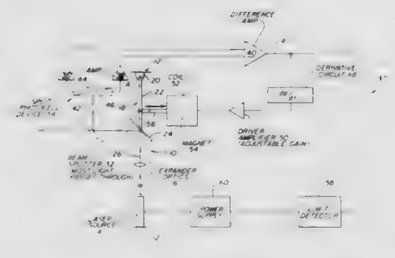
tab means on said card body to provide coded information to avoid unauthorized use of said access card;
said tab means including a plurality of tab members, each tab member being hinged at one end to permit each tab member to be individually pivoted between a first position in as first plane and a second position in a second plane;
engagement means on said card body to maintain selected pivoted ones of said tab members in said second position to provide a particular coded information for checking authenticity of a user of said access card;
said engagement means including abutment portions for engaging said selected pivoted ones of said tab members in said second position; and
said tab members being disposed in a parallel side-by-side arrangement in said first position with opposing free ends of said tab members extending in same direction.

4,801,791

PENDULOUS COMPENSATOR VIBRATORY MOTION DAMPING SYSTEM

Gary L. Cain, New Carlisle, Ohio, assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Jul. 24, 1987, Ser. No. 77,214
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—201 **20 Claims**



1. In combination with a laser beam projector including a stationary laser source adapted to generate a laser beam and a pendulous compensator adapted to deflect the laser beam, a system for dampening vibratory motion of the pendulous compensator, comprising:
first means for sensing the displacement of the position of the deflected laser beam relative to its desired predetermined position to produce a first electrical signal representing the vibratory movement of the pendulous compensator;
second means, coupled to said first means, for receiving said first electrical signal and producing a second electrical signal representing the rate of movement of the pendulous compensator; and
third means, coupled to said second means and linked to the pendulous compensator, for receiving said second electrical signal and translating the same to produce a force sufficient to resist the movement of the pendulous compensator.

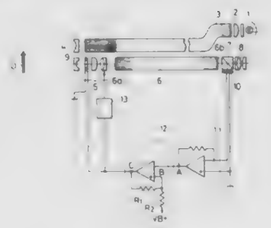
4,801,792

ENDOSCOPE

Nobuo Yamasita; Iwao Kanamori, both of Hachiouji, and Shinichiro Hattori, Akishima, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1987, Ser. No. 28,316
Claims priority, application Japan, Mar. 22, 1986, 61-64592
Int. Cl.[4] G01J *1/32*
U.S. Cl. 250—205 **7 Claims**

1. An endoscope that uses an illuminating device to emit light from a distal portion of said endoscope onto an area of a object to be observed and an objective lens unit to focus an image of said area on a predetermined image forming surface comprising:
an electro-optical stop means disposed in said objective lens unit for changing an amount of light that strikes said predetermined image forming surface to obtain a proper depth of field and brightness, said stop means including:
a light transmitting section of a predetermined size disposed along an optical axis of said objective lens unit, and
a variable light transmitting section that surrounds said light transmitting section and is capable of changing alternatively to one of a light transmitting state and a light interrupting state;



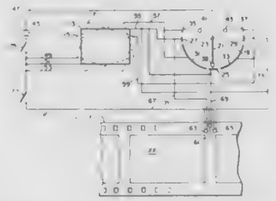
a photoelectric converting means that receives at least a portion of said light incident on said objective lens unit for generating a signal representative of said portion of said incident light; and
control means respective to said signal for controlling said stop means with an output signal so that said variable light transmitting section is in said light interrupting state when a distance between said object and said distal portion is short and a value of said signal is larger than a predetermined value and said variable light transmitting section is in said light transmitting state when said distance is far and said value of said signal is lesser than said predetermined value.

4,801,793

ORIENTATION INDICATING DEVICE

Mikhail Vaynshteyn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1988, Ser. No. 143,411
Int. Cl.[4] G03B *17/20*
U.S. Cl. 354—289.12 **10 Claims**



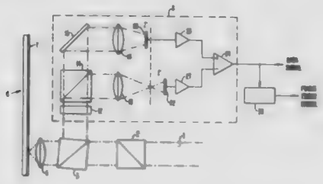
1. An orientation indicating device for visibly indicating that a camera is deviated improperly from a normal horizontal position to take a picture, said device comprising:
orientation indicating means electrically activatable for providing a visible indication that said camera is deviated improperly from horizontal; and
pendulum switch means responsive to said camera being deviated improperly from horizontal for activating said orientation indicating means before a picture can be taken.

4,801,794

DATA DETECTION AND OPTICAL FOCUS ERROR DETECTION SYSTEM FOR ROTATING OPTICAL MEDIA

Daniel C. Kowalski, Portola Valley, and Dan S. Bloomberg, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 614,178, May 29, 1984, abandoned. This application Apr. 29, 1987, Ser. No. 45,746
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—201 **4 Claims**



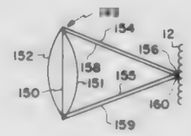
1. A focus error detection system for an optical disk system comprising:
first and second detector lenses having a common focal length;
means for directing light from an optical disk to said first and second detector lenses;
a first photodetector positioned within the focal length of said first detector lens;
a second photodetector positioned beyond the focal length of said second detector lens;
differential amplifier means having a pair of input terminals each coupled to the output of a different one of said first and second photodetectors; and
low pass filter means coupled to the output of said differential amplifier means for providing a focus error signal at the output thereof.

4,801,795

SPATIAL FREQUENCY FILTER IN WHICH FREQUENCY COMPONENTS GREATER THAN THE NIQUIST FREQUENCY ARE SUPPRESSED

Dennis J. Wilwerding, Arapahoe, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 31, 1987, Ser. No. 92,269
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—201 **20 Claims**



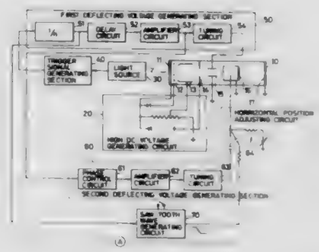
1. Apparatus for use with radiation sensing means including a plurality of lenslets having a surface upon which radiation patterns are received over an optical path, which patterns may contain undesirable spatial frequencies, comprising:
radiation directing means mounted in the optical path to divide the radiation into first and second images which overlap, the first and second images being separated on the surface by a distance which causes the undesirable spatial frequencies to have opposing effects on the sensing means to suppress the undesirable spatial frequencies.

4,801,796

STREAK CAMERA UNIT WITH ELLIPTICAL DEFLECTION

Katsuyuki Kinoshita; Masuho Kolshi, and Yutaka Tsuchiya, all of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 16, 1986, Ser. No. 942,348
Claims priority, application Japan, Dec. 16, 1985, 60-282690
Int. Cl.[4] H01J *31/50*
U.S. Cl. 250—213 VT **9 Claims**



1. A streak camera device for measuring a repetitive light beam comprising:
a streak tube including photoelectron beam generating means reponsive to the light beam, and first deflecting means for providing a first deflecting electric field in the direction of a first axis and second deflecting means for providing a second deflecting electric field in a second direction substantially perpendicular to said first axis and a photoelectron beam detecting means;
DC voltage generating means for supplying operating voltages to said streak tube;
trigger signal generating means for generating a trigger signal responsive to the light beam; and
deflecting voltage generating means for applying to said first deflecting means and said second deflecting means in synchronization with said trigger signal, sine wave deflecting voltages whose frequencies are 1/n of the frequency of said trigger signal, where n is a positive integer, to cause an elliptical photoelectron beam sweep having a finite major axis extending in the direction of said first axis and a finite minor axis unequal in length to said major axis so that at least part of said photoelectron beam excites said detecting means.

4,801,797

OPTICAL POSITION INPUT DEVICE

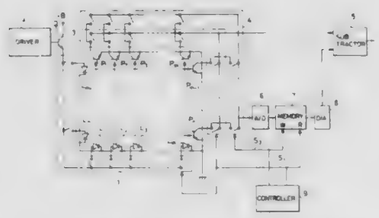
Junichi Ohsuchi; Hiroaki Sasaki, and Kazuo Hasegawa, all of Furukawa, Japan, assignors to ALPS Electric Co., Ltd., Japan

Filed Aug. 10, 1987, Ser. No. 84,421
Claims priority, application Japan, Oct. 6, 1986, 61-237538; Jan. 20, 1987, 62-7057[U]
Int. Cl.[4] G01V *9/04*
U.S. Cl. 250—221 **3 Claims**

1. In an optical position input device of the type which includes a plurality of light emitting elements arranged along each of two sides of directions of the X- and Y-axes, a plurality of light receiving elements arranged along each of the other two sides of the directions of the X- and Y-axes in an opposing relationship to said light emitting elements, a first multiplexer for scanning to successively selectively drive said light emitting elements, and a second multiplexer for successively selecting the light receiving elements opposing to the selectively driven light emitting elements, whereby when a light signal developed from a selectively driven one of said light emitting elements is not received by a particular one of said light receiving elements opposing to the selectively driven light emitting element, a position signal indicating that the particular light

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receiving element fails to receive a light signal is developed, the improvement which comprises a third multiplexer for selecting one or more of the light receiving elements in the direction of the Y-axis when the light emitting elements in the direction of the X-axis are scanned to be successively selectively driven and for selecting one or more of the light receiving elements in the direction of the X-axis when the light emitting elements in the direction of the Y-axis are scanned to be successively selectively driven, a memory for receiving and storing therein light reception signals developed in response to incident disturbant light from the light receiving elements selected by said third multiplexer, means for reading out light reception signals for the direction of the Y-axis stored in said



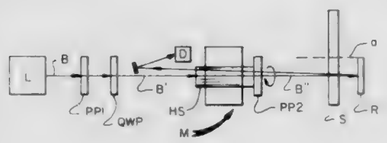
memory when the light receiving elements in the direction of the Y-axis are subsequently selected by said second multiplexer and for reading out light reception signals for the direction of the X-axis stored in said memory when the light receiving elements in the direction of the X-axis are subsequently selected by said second multiplexer, and a subtractor for subtracting a light reception signal read out from said memory from a light reception signal developed from one of said light receiving elements selected by said second multiplexer to produce an output signal from which it is to be determined whether or not a light signal developed from a selectively driven one of said light emitting elements is received by an opposing one of said light receiving elements.

4,801,798

METHOD AND APPARATUS FOR MEASURING OPTICAL RETARDATION IN TRANSPARENT MATERIALS

Gerald R. Lange, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1987, Ser. No. 133,112
Int. Cl.[4] G01N *21/21*
U.S. Cl. 250—225 **9 Claims**



8. Apparatus for measuring optical retardation in a birefringent membrane overlying a reflective surface, said apparatus comprising:

(a) means for producing a beam of circularly polarized radiation;

(b) polarizing filter means located in said beam for converting said circularly polarized radiation to a first beam of plane-polarized radiation;

(c) means for rotating said polarizing filter means to cause the plane of polarization of said first beam to rotate continuously;

(d) means for scanning a birefringent membrane overlying a reflective surface with said first beam to cause said first beam to pass through said membrane, reflect from said surface and pass again through said membrane, whereby a second beam of plane-polarized radiation is produced, the plane of polarization of said second beam being angularly displaced with respect to the plane of polarization of said first beam proportional to the amount of optical retardation; and

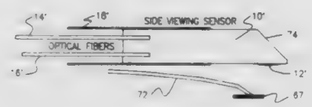
(e) means for continuously monitoring the angle between the respective planes of polarization of said first and second beams.

4,801,799

FIBER OPTIC SYSTEM FOR DETECTING VIBRATIONS OF A REFLECTING SURFACE

Erik T. Tromborg, Bloomington, and James H. Garfunkel, Golden Valley, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 27, 1987, Ser. No. 126,071
Int. Cl.[4] H01J *5/16*
U.S. Cl. 250—227 **5 Claims**



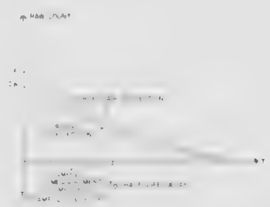
1. A fiber optic system for detecting vibrations of a reflecting surface, comprising, a transparent body, source and return optic fibers having distal ends fastened to the proximal end of said body, light collimating lens means at the distal end of said body facing in a predetermined viewing direction relative to said body, said lens means being operable to shape light emanating from said source fiber into a column which extends in said predetermined viewing direction to said body, mounting means for positioning said lens means relative to said reflecting surface so that when said reflection surface is quiescent said column strikes said reflecting surface and is reflected back through said lens to a predetermined focal point in the vicinity of said distal end of said return optic fiber, and detecting means connected to the proximal end of said return optic fiber for detecting vibrations of said reflecting surface by detecting variations in the intensity of light emitted from said proximal end of said return optic fiber.

4,801,800

RADON COLLECTION APPARATUS AND METHOD

James N. Scheible, 2013 Park Rd., NW., Washington, D.C. 20010

Continuation-in-part of Ser. No. 937,335, Dec. 3, 1986, abandoned. This application Aug. 31, 1987, Ser. No. 91,589
Int. Cl.[4] G01V *5/00*
U.S. Cl. 250—255 **5 Claims**



1. A method for collection and analysis of a radon gas sample representative of the radon gas concentration within an environment, comprising the steps of;

providing a housing with an air passageway therethrough, and having air moving means located within and gas collecting means positioned across said passageway,

providing said gas collecting means with radon adsorbing particles,

locating said housing within said environment to be sampled,

activating said air moving means to draw air through said passageway and said gas collecting means to force-saturate said particles,

isolating said particles from said environment, ,

analyzing said particles to determine the quantity of radiation emitted therefrom,

converting said radiation quantity into a number representative of the radon concentration within said environment,

wherein said step of converting includes;

utilizing a standard passively-saturated-particle radiation emission analysis formula appropriate to said particles to convert said radiation quantity to a first radon pseudo-concentration value, and

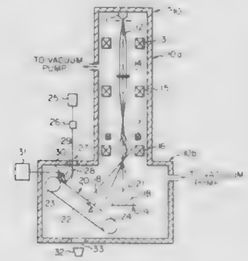
adjusting said first pseudo-concentration value to reflect the increased radon adsorption by said force-saturated particles.

4,801,801

TRANSMISSION-TYPE ELECTRON MICROSCOPE

Nobufumi Mori; Junji Miyahara, both of Kaisei-machi; Tetsuo Oikawa, and Yoshiyasu Harada, both of Akishima, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and JEOL Ltd., Tokyo, both of, Japan

Filed Jun. 8, 1987, Ser. No. 59,501
Int. Cl.[4] G01N *23/04;* **H01J** *37/22*
U.S. Cl. 250—327.2 **7 Claims**



1. A transmission-type electron microscope comprising:

a lens system including an electron gun for producing an electron beam that is focused and directed to a specimen along a main optical axis extending from the gun to the specimen, the lens system also acting to form a magnified electron optical image of the specimen from the electron beam transmitted through the specimen at a focal plane perpendicular to the optical axis;

a two-dimensional sensor mounted in the plane in which the magnified image is formed, the sensor acting to store the energy of the electron beam impinging on it and to release the stored energy as light when illuminated with light or heated;

an evacuated envelope containing the lens system which protrudes vertically from an evacuated envelope containing the two-dimensional sensor; and

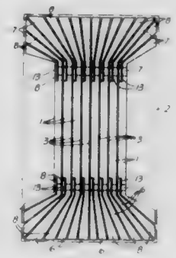
an electron beam-deflecting means mounted in the lens system near the specimen end of the main optical axis for tilting the focal plane in which the magnified image is formed, in such a way that a straight line extending from the main optical axis of the electron beam between the electron gun and the specimen does not intersect the two-dimensional sensor.

4,801,802

IMAGING, DEVICE, ELEMENTS AND SYSTEMS

Clive M. Dyson, Southampton, England, assignor to Philips Electronic and Associated Industries Limited, both of London, England

Filed Apr. 30, 1980, Ser. No. 153,923
Claims priority, application United Kingdom, May 25, 1979, 7918368
Int. Cl.[4] G02F *1/01;* **H01L** *25/00*
U.S. Cl. 250—330 **18 Claims**



1. A thermal-radiation imaging device comprising on a substrate a plurality of semiconductor bodies or body portions in the form of substantially parallel elongate strips of semiconductor material in which free charge carriers can be generated on absorption of thermal radiation incident on said strip, biasing-electrode means spaced in a direction along each of said strips for causing a bias current predominantly of majority charge carriers to flow along said strip, said bias current being capable of supporting an ambipolar drift of radiation-generated free minority charge carriers in the opposite direction to said bias current, and read-out means in the ambipolar drift path between the spaced biasing-electrode means, at the area of which read-out means each of said strips branches into two parts separated from each other by a slot which extends from said area in a direction substantially parallel to said strip, one of the two parts providing the continuation of the ambipolar drift path from said area to one of said biasing-electrode means,

a connection to said read-out means, which connection comprises the other of said two parts, extends from said area in a direction substantially parallel to said slot, and is separated by said slot from the said one of said biasing-electrode means.

4,801,803

DETECTOR AND LOCALIZER FOR LOW ENERGY RADIATION EMISSIONS

Dennis J. Denen; Marlin O. Thurston, and Raymond C. Ramsey, all of Columbus, Ohio, assignors to Neoprobe Corporation, Columbus, Ohio

Filed Mar. 17, 1987, Ser. No. 27,197
Int. Cl.[4] G01T *1/161*
U.S. Cl. 250—336.1 **39 Claims**

1. An instrument for detecting and locating sources of radiation emission, comprising:

a housing having a first portion having sidewalls formed of select gamma radiation attenuating material and exhibiting an electrical shielding effect and extending to a forward opening positionable proximate said source, and a hand graspable second portion extending from said first portion;

window means for permitting gamma radiation transmission

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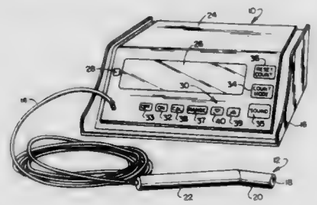
through said forward opening while blocking the passage of light;

a gamma radiation responsive crystal positioned within said first portion having a forward surface disposed toward said window means and a rearward surface;

a thin, gamma radiation transmissive and electrically conductive first insert positioned adjacent said crystal forward surface;

electrically conductive contact means positioned adjacent said crystal rearward surface for effecting application of an electrical bias thereto and conducting gamma ray induced signal charges therefrom and having a rearwardly disposed portion;

blocking means formed of a gamma radiation attentuating material postioned within said housing first portion and



adjacent said contact means rearwardly disposed portion for blocking entry of radiation toward said crystal rearward surface;

compression means within said housing first portion spaced from said window means a predetermined amount establishing a dead space therebetween, including a compressible foamaceous material and a retainer transparent to said radiation retaining said foamaceous material in compression against said crystal forward surface for effecting a conforming compressive relationship between said crystal forward surface and said first insert and between said crystal rearward surface and said contact means; and

circuit means within said housing for applying said electrical bias through said contact means, and including amplifier means and for receiving and electrically treating said signal charges to provide output signals.

4,801,804

METHOD AND APPARATUS FOR NEAR INFRARED REFLECTANCE MEASUREMENT OF NON-HOMOGENEOUS MATERIALS

Robert D. Rosenthal, Gaithersburg, Md., assignor to Trebor Industries, Inc., Gaithersburg, Md.

Filed Sep. 30, 1986, Ser. No. 913,468

The portion of the term of this patent subsequent to Dec. 30, 2003, has been disclaimed.

Int. Cl.[4] G01N *21/55*

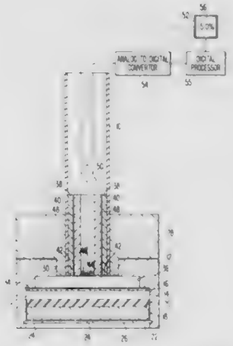
U.S. Cl. 250—341 **10 Claims**

1. A method for near infrared reflectance measurement of a constituent of a sample material utilizing a near infrared interactance quantitative analysis device, comprising:

(a) providing sample material having a constituent to be measured within a near infrared-opaque cahbmer with the sample material having a substantially planar surface;

(b) uniformly irradiating a pedetermined surface area of the planar surface of the sample material with substantially uniform, highly diffuse, multiple-wavelength near infrared radiation for uqantitative measurement of a sample constituent, which radiation is emitted from a multiple-wavelength near infrared radiation source spaced a predetermined distance away from the planar surface for uniformly irradiating said predetermined surface area;

(c) detecting near infrared radiation reflected by substantially all of said predetermined surface area with a near infrared radiation detector spaced a predetermined distance away from the planar surface of the sample material to detect near infrared radiation reflected by substantially all of said predetermined surface area, the predetermined surface area being sized to reflect near infrared radiaion from said source to said detector which is indicative of an average content of said consituent of said sample material,



said detector providing an electrical signal upon detection of near infrared radiation, said detector being positioned so as to prevent near infrared radiation emitted from said source from directly impinging on said detector; and

(d) processing an electrical signal provided by said detector to quantitatively measure an average content of said constituent for said sample material.

4,801,805

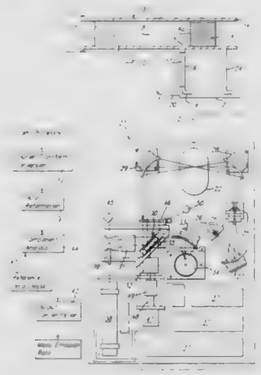
METHOD OF MEASURING MULTICOMPONENT CONSTITUENCY OF GAS EMISSION FLOW

James W. Butler, Dearborn Heights; Paul D. Maker, Ann Arbor, and Thomas J. Korniski, Livonia, Alex D. Calvin, Oak Ridge, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 19, 1987, Ser. No. 87,171

Int. Cl.[4] G01N *21/37*

U.S. Cl. 250—343 **25 Claims**



1. A method of on-line gas analysis of a multicomponent gas emission flow, comprising:

(a) continuously sequestering a sample flow from said gas emission flow, diluted to lower its dew point to below room temperature, and changed in either temperature and/or pressure to be substantially the same in temperature and pressure as that of gases used to create reference transmission frequency spectral data deployed in step (d);

(b) continuously irradiating said sample flow with an electromagnetic radiation beam while mounting the amplitude of infrared frequencies in the audio frequency range of said beam, either prior to or immediately subsequent to irradiation of said sample flow, the produce electromagnetic signals having discernible amplitude variations resulting from spectral interference patterns;

(c) detecting and collecting said signals at a sufficiently high rate to substantially completely distinguish between adjacent spectral pattern amplitude peaks without mutual spectral interference and to permit analysis of said signals and

(d) analyzing said signals by (i) mathematically manipulating said signals in accordance with Beer's Law to create reformed background-corrected data, and (ii) applying reference transmission frequency spectral data to said reformed data for each suspected gaseous component to give a linear quantitative measure of the presence of each and every suspected gas component in said gas emission flow.

4,801,806

RADIATION IMAGE RECORDING AND REPRODUCING METHOD

Takashi Nakamura, and Kenji Takahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 846,919, Apr. 1, 1986. This application Apr. 22, 1988, Ser. No. 184,881

Int. Cl.[4] G01T *1/10*

U.S. Cl. 250—484.1 **4 Claims**

1. A radiation image recording and reproducing method comprising the steps of:

(i) causing a bismuth activated alkali metal halide stimulable phosphor having the formula (I):

$$M^{I}X{:}xBi \quad (I)$$

in which M^{I} is at least one alkali metal selected from the group consisting of Rb and Cs; X is at least one halogen selected from the group consisting of Cl, Br and I; and x is a number satisfying the condition of $5\times10^{-4}\leqq x\leqq10^{-2}$, to absorb a radiation having passed through an object or having radiated from an object;

(ii) exciting said stimulable phosphor with an electromagnetic wave having a wavelength within the range of 450–900 nm to release the radiation energy stored therein as light emission in the wavelength range of approximately 350–450 nm; and

(iii) detecting the emitted light.

4,801,807

SHIELD FOR PROTECTION OF A SLEEPING PERSON AGAINST HARMFUL RADIATION

Robert Jacobs, Nieuwegein, Netherlands, assignor to Olmac B.V., Nieuwegein, Netherlands

Filed May 19, 1986, Ser. No. 864,797

Claims priority, application Fed. Rep. of Germany, May 18, 1985, 8514703[U]; Apr. 9, 1986, 3611919

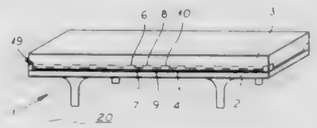
Int. Cl.[4] G21F *3/00*

U.S. Cl. 250—515.1 **13 Claims**

1. A shield for protection against harmful radioactive decay products such as from uranium or radon, particularly for protection of an individual from said radioactive decay products present within the ground, comprising:

a mattress which is part of a bed upon which said individual sleeps and which has an upper part forming a sleeping surface; and

a plurality of overlapping elements at least along an underside of said mattress preventing the passage of said radiation to an individual lying on said mattress, said elements being formed from a material selected from lead, barium



and compounds thereof, said elements being thin wall platelets and overlapping only slightly.

4,801,808

ALIGNMENT AND EXPOSURE APPARATUS HAVING AN OBJECTIVE LENS SYSTEM CAPABLE OF OBSERVING A MARK ON AN EXPOSURE OPTICAL HOLDING MEMBER TO PERMIT ALIGNMENT OF A MASK RELATIVE TO THE EXPOSURE OPTICAL SYSTEM

Bunei Hamasaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 758,883, Jul. 25, 1985, abandoned. This application Jul. 28, 1987, Ser. No. 80,246

Claims priority, application Japan, Jul. 27, 1984, 59-155513; Jul. 27, 1984, 59-155514

Int. Cl.[4] G01B *11/27*

U.S. Cl. 250—548 **13 Claims**



12. An alignment apparatus for bringing a first member and a second member into a predetermined positional relation with each other, said apparatus comprising:

a movable objective lens system;

a reference mark provided independently of the first and second members; and

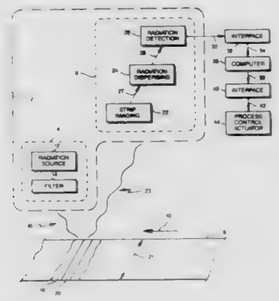
aligning means for detecting said reference mark by use of light passed through said objective lens system and, in accordance with the detection, for setting said objective lens system with respect to a reference position for movement thereof, so as to detect the positional relation between the first and second members.

4,801,809

SHEET INSPECTION APPARATUS AND METHODS PROVIDING SIMULTANEOUS RESOLUTION OF MEASUREMENT ZONES AND WAVELENGTH BANDS

Gary N. Burk, and Paul Williams, both of Columbus, Ohio, assignors to Process Automation Business, Inc., Columbus, Ohio

Filed Jul. 13, 1987, Ser. No. 72,505
Int. Cl.[4] G01N *21/86*
U.S. Cl. 250—559 **32 Claims**



1. A non-scanning apparatus for use in measuring a quality attribute of a continuouslymanufactured sheet of paper in each of a plurality of measurement zones, comprising:

(a) a source of electromagnetic radiation for directing radiation onto a portion of said sheet, said portion including a strip extending across said plurality of measurement zones;

(b) means for filtering said radiation to pass a number of selected radiation wavelength bands;

(c) means for detecting radiation of said wavelength bands, said detecting means having an array of detection zones corresponding both numerically and sequentially to said measurement zones, so that for each of said radiation wavelength bands there is produced a plurality of detector responses associated with said plurality of measurement zones, said responses being indicative of the intensity of radiation impinging said detection zones and being dependent upon a physical property of the sheet such as transmittance or reflectance; and

(d) means for imaging said strip to form an image thereof on said detecting means so that radiation which emits from said irradiating means, passes through said filtering means, and interacts with said sheet at said strip impinges said detection zones in accordance with said array correspondence.

4,801,810

ELLIPTICAL REFLECTOR ILLUMINATION SYSTEM FOR INSPECTION OF PRINTED WIRING BOARDS

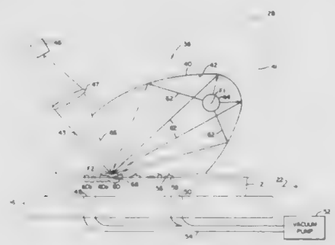
Dusan A. Koso, Cambridge, Mass., assignor to Gerber Scientific, Inc., South Windsor, Conn.

Filed Jul. 13, 1987, Ser. No. 73,013
Int. Cl.[4] G01N *21/88*
U.S. Cl. 250—572 **18 Claims**

1. An elliptical reflector illumination system for inspection of printed wiring boards comprising:

an elliptical reflector element for mounting above the board to be inspected with a region of said board generally at a first elliptical focus of said reflector element;

a light source mounted generally at a second elliptical focus of said elliptical reflector element for illuminating substantially all facets of said region of the board at the first focus; and



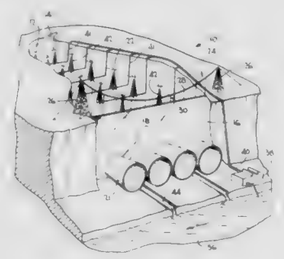
detector means for sensing light reflected from the illuminated facets of at least a portion of the illuminated region of the board at the first focus.

4,801,811

METHOD OF AND MEANS FOR GENERATING ELECTRICITY IN AN ARID ENVIRONMENT USING ELONGATED OPEN OR ENCLOSED DUCTS

Gad Assaf, and Lucien Bronicki, both of Rehovot, Israel, assignors to Geophysical Engineering Co., Seattle, Wash.

Filed May 14, 1980, Ser. No. 149,655
Int. Cl.[4] F03G *7/04*
U.S. Cl. 290—55 **47 Claims**



1. A method for generating electricity in an arid environment using an open duct such as a canyon that is closed at one end and open at the other, said method comprising:

(a) erecting an air dam at the open end of the canyon;

(b) locating windmill apparatus at the base of the dam; and

(c) spraying water into air entering the duct thereby cooling such air and causing it to flow downwardly toward the base of the dam and through the windmill aparatus.

4,801,812

SYSTEM FOR CONTROLLING VEHICLE POWER WINDOW REGULATORS

Enzo Brusasco, Torino, Italy, assignor to Roltra S.p.A., Torino, Italy

Filed Oct. 13, 1987, Ser. No. 107,965
Claims priority, application Italy, Oct. 14, 1986, 67778 A/86
Int. Cl.[4] H02P *1/22*
U.S. Cl. 307—10 R **7 Claims**

1. A system for controlling the power window regulators of at least the doors on the driver and front-seat passenger side of a vehicle, comprising:

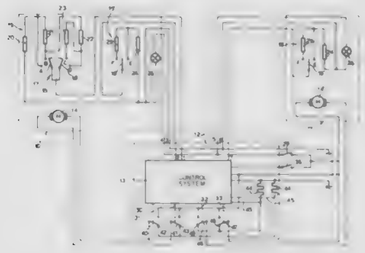
a plurality of individually selectable control switch means, each producing control signals corresponding to specific switch means settings, said switch means being mounted in said doors;

at least one electronic control motor;

a control system means for controlling said motor in dependence upon said control signals, said control system means being mounted remotely from said switch means;

a single wire connecting all of said switch means for a single one of said at least one motor to said control system means;

means for coding said control signals from said switch means by supplying a corresponding electrical signal level in



dependence upon said specific switch settings; wherein said coding means comprises resistive dividers including components and said switch means are branch-connected between said components to said connecting elements; and

respective decoding means in said control system means comprising a plurality of threshold comparators for supplying decoded signal lines, equal in number to said switch means settings;

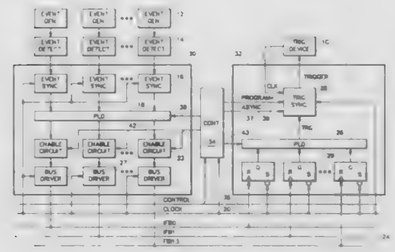
whereby the number of elements connecting said switch means and said control system means is minimized to said single wire for each of said at least one motor.

4,801,813

EVENT DISTRIBUTION AND COMBINATION SYSTEM

Michael D. Kersenbrock, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 830,596, Apr. 17, 1986. This application Apr. 21, 1987, Ser. No. 40,971
Int. Cl.[4] H02J *1/00*
U.S. Cl. 307—40 **12 Claims**



1. An apparatus for generating a trigger signal in response to a set of event indication signals, a state of each of said event indication signals indicating a state of occurrence of a corresponding event, comprising:

encoding means for generating event encoding signals, the state of each event encoding signal being determined according to states of a corresponding subset of said event indication signals;

a plurality of conductors, each for carrying a separate bus signal of a selective one of first and second states;

means for generating a system clock signal of alternating third and fourth states; and

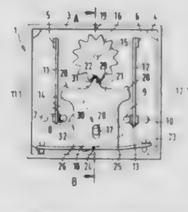
a plurality of bus drivers, each corresponding to a separate one of said event encoding signals, each of said plurality of conductors corresponding to at least one of said bus drivers, each bus driver comprising means for actively driving the bus signal carried by the corresponding conductor to said first state when said system clock signal is of said third state, and for actively driving the bus signal carried by said corresponding conductor to said second state when said clock signal changes to said fourth state and the corresponding event encoding signal is of a particular state.

4,801,814

PULSE GENERATOR

Jochen Rose, Rothenbach, and Wolfgang Rosl, Eckenthal, both of Fed. Rep. of Germany, assignors to Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany

Filed Dec. 8, 1986, Ser. No. 939,204
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1985, 3543652
Int. Cl.[4] H03K *3/00*; H01H *19/58*
U.S. Cl. 307—106 **16 Claims**



1. A pulse generator for producing electrical contact closure pulses in response to the rotation of a rotary shaft, said pulse generator comprising:

a generator body on which the rotary shaft is rotatably mounted, wherein the body has a swivel shaft mounted thereon;

a toothed disk coupled to said rotary shaft to rotate therewith, said disk having a plurality of teeth on the periphery thereof, and having spaces between each of said teeth;

a rocker of a solid, single-piece construction with an elongated, oblong bearing hole therethrough adapted to fit over said swivel shaft and allowing the rocker to deflect by rotating on said swivel shaft, said rocker further having a mating portion thereon for engaging the teeth of a toothed disk, said rocker being deflectable in at least two different directions in response to the rotation of said toothed disk by said rotary shaft;

wherein the mating portion of the disk is movable out of engagement with one of said tooth spaces and into engagement with the next adjacent tooth space as the rocker is deflected in response to rotation of said toothed disk;

a pair of contact springs mounted to apply spring forces to said rocker, wherein said contact springs apply spring forces to the rocker, when the contact springs are deflected by deflection or the rocker due to rotation of the disk;

wherein said contact springs are mounted adjacent said rotary shaft on said generator body, said contact springs being aligned with an imaginary line connecting the rotary shaft and the swivel shaft;

wherein said rocker has lateral actuating arms mounted thereon and positioned to fit against said contact springs; and

a detent means for resiliently holding the rocker in a rest position when both of said contact springs are undeflected, said detent means comprising a compression spring in the form of a leaf spring for contact with outside lateral edges of said rocker, said lateral edges being symmetrically disposed on opposite sides of the bearing hole and being in contact with the compression spring in the rest position of the rocker and shaped to cooperate with the spring to urge the rocker into said rest position.

4,801,815

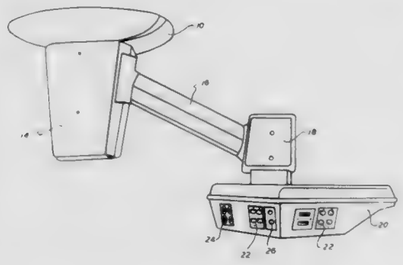
AUTOSTOP MECHANISM FOR PENDANT ASSEMBLY

Douglas S. Biette, Norcross; Steven D. Clark, Lilburn; Max E. Raby, Jr., and George R. Lewis, both of Norcross, all of Ga., assignors to The BOC Group, Inc., Montvale, N.J.

Filed Nov. 12, 1987, Ser. No. 119,747

Int. Cl.[4] F01V *33/00*

U.S. Cl. 307—112 **14 Claims**



1. A pendant assembly for suspension from the ceiling of a medical room, said pendant assembly comprising a distribution head and an adjustable arm affixing said distribution head to the ceiling, motive means to move said distribution head upwardly and downwardly within the room, said distribution head having an upper and a lower housing, upper and lower contact means affixed, respectively, to said upper and lower housings and being spaced a predetermined distance apart, said lower housing being movable with respect to said upper housing, said lower contact means being movable upwardly with said lower housing toward said upper housing to touch said upper contact means responsive to the lowering of said distribution head to encounter an obstruction, and electrical circuit means responsive to the touching of said respective upper and lower contact means to prevent said motive means from moving said distribution head in the downward direction.

4,801,816

GENERATOR OF PERIODIAL SIGNALS, IN PARTICULAR FOR SWITCH-MODE POWER SUPPLIES

Mauro Merlo, Villasanta, and Silvano Coccetti, Vittuone, both of Italy, assignors to SGS-Thomson Microelectronics S.p.A., Catania, Italy

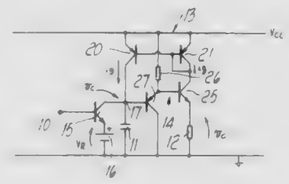
Filed Feb. 22, 1988, Ser. No. 158,811

Claims priority, application Italy, Feb. 25, 1987, 19492 A/87

Int. Cl.[4] H03K *4/48*

U.S. Cl. 307—228 **6 Claims**

1. A generator of periodic signals, in particular for switch-mode power supplies, comprising a capacitive element generating a capacitor voltage drop thereon, a resistive element generating a resistor voltage drop thereon, current source means connected to said capacitive element and to said resistive element and supplying them with currents having mutually proportional amplitudes, amplifier means, interposed between said capacitive element and said resistive element for maintaining the resistor voltage drop proportional to the capacitor voltage drop and a switch device, connected in parallel to said capacitive element, said switch device being periodically switched off for allowing discharge of said capacitive element therethrough.



4,801,817

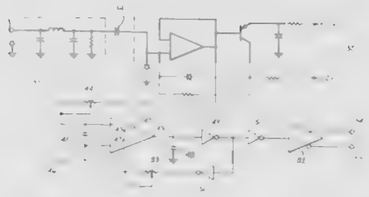
APPARATUS AND METHOD FOR STORING VIDEO IMAGES

Gary D. Mayhak, 9208 N. 83rd St., Scottsdale, Ariz. 85258

Filed Sep. 5, 1986, Ser. No. 904,557

Int. Cl.[4] H03K *5/04, 5/24*

U.S. Cl. 307—261 **2 Claims**



1. A circuit for converting an analog signal to a binary signal comprising:

comparison means having a first input port, a second input port and an output port, said output port having a first output value if said first input port has a higher voltage level than said second input port and a second output value if said second input port has a higher value than said first input port;

a first capacitance means between said first input port and said second input port;

a second capacitance means between said output port of said comparison means and ground potential; and

connecting means for connecting said output port of said comparison means to said second input port of said comparison means.

4,801,818

CLOCK REGENERATION CIRCUIT

Karl Schroedinger, Olching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

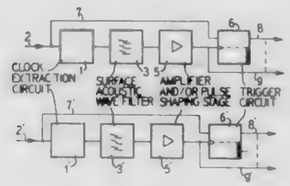
Filed May 1, 1987, Ser. No. 44,772

Claims priority, application Fed. Rep. of Germany, May 28, 1986, 3617909

Int. Cl.[4] H03K *5/13, 1/17, 9/00;* **G05F** *5/00*

U.S. Cl. 307—269 **3 Claims**

1. A plurality of regeneration circuits composed of at least two clock regeneration circuits, said plurality of regeneration circuits being respectively provided for mutually different clock frequencies and each containing at least one SAW (surface acoustic wave) filter module which receives input from a clock extraction circuit comprising pulses acquired from data pulses, wherein at least the clock extraction circuit (**1**) of every regeneration circuit is identical for all of the regeneration circuits and which produces output pulses which have identical pulse lengths in all regeneration circuits; and said filter modules (**3**) for said plurality of regeneration circuits have a phase delay which is respectively selected to depend on the respective clock frequency and which phase delay increases as the clock frequency decreases by varying a spacing between a transmission electrode configuration and a reception electrode configuration of the SAW filter.



4,801,819

CLOCKED CMOS CIRCUIT WITH AT LEAST ONE CMOS SWITCH

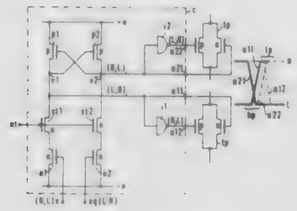
Ulrich Theus, Gundelfingen, and Hans-Josef Orben, Heuweiler, both of Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Jun. 29, 1987, Ser. No. 67,571

Claims priority, application European Pat. Off., Jul. 9, 1986, 86109362.3

Int. Cl.[4] H03K *3/356, 3/013, 17/687, 17/693*

U.S. Cl. 307—269 **6 Claims**



1. A clocked CMOS circuit comprising:

first and second switches, each comprising a p-channel transistor and an n-channel transistor connected in parallel; and

a drive circuit coupled to said switches that produces a first pair of drive signals for said first switch and a second pair of drive signals for said second switch, each of said pairs of drive signals including a first drive signal for controlling said n-channel transistor in the respective switch and a second drive signal for controlling said p-channel switch in the respective switch, said first drive signal in each pair of drive signals being inverse to said second drive signal in each pair of drive signals, said first drive signal in said first pair of drive signals being inverse to said first drive signal in said second pair of drive signals and said second drive signal in said first pair of drive signals being inverse to said second drive signal in said second pair of drive signals, said drive circuit being supplied a clock signal and a first switching signal and a second switching signal inverse to said first switching signal, said n-channel transistors and said p-channel transistors in said switches being selectively rendered conducting and non-conducting by respective levels of said switching signals, said drive circuit controlling the time at which said drive signals switch from one signal level to another signal level so that the n-channel transistor in one of said first and second switches is rendered non-conducting before the n-channel transistor in the other of said first and second switches is rendered conducting and so that the p-channel transistor in said one of said first and second switches is rendered non-conducting before the p-channel transistor in said other of said first and second switches is rendered conducting.

4,801,820

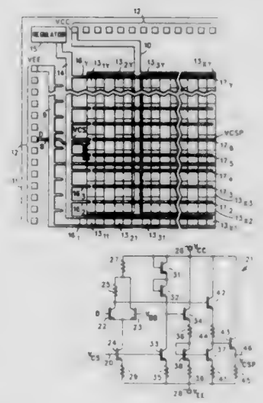
LSI ARRAY HAVING POWER DOWN CAPABILITY

Keith D. Nootbaar, San Diego, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 2, 1986, Ser. No. 858,788

Int. Cl.[4] H03K *3/01, 17/16, 19/173*

U.S. Cl. 307—296R **19 Claims**



1. An integrated circuit device formed on a semiconductor chip, comprising:

a plurality of pads;

a first plurality of cells, each of said cells coupled to at least one of said plurality of pads;

a second plurality of cells, each of said cells coupled to at least one of said plurality of pads, each of said cells comprising a plurality of first semiconductor devices interconnected to form a logic circuit; and

first means comprising second semiconductor devices within each of said first plurality of cells, said first means coupled to different groups of said second plurality of cells for selectively enabling at least one of said different groups of said second plurality of cells, wherein substantially no current flows in the unselected groups of cells.

4,801,821

INTEGRATED BISTABLE ELECTRONIC COMMUTATOR WITH A LOW VOLTAGE DROP

Claude Prevost, Saint Aubin de Medoc, and Gérard Le Bourhis, Saint Medard en Jalles, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Oct. 8, 1987, Ser. No. 106,555

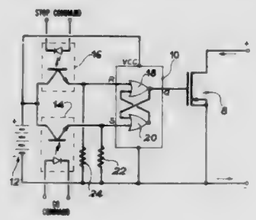
Claims priority, application France, Oct. 8, 1986, 86-14006

Int. Cl.[4] H03K *3/26;* **G02B** *27/00*

U.S. Cl. 307—311 **11 Claims**

1. Integrated bistable electronic commutator comprising a switch provided with at least two terminals, said switch incorporating at least one MOS power transistor (**8**, **8T**, **8R**, **26T**, **26R**); a MOS technology control circuit (**10**) having a bistable flip-flop provided with an input for setting to "1" and an input for setting to "0" and at least one control output, each control output being connected to the gate of at least one MOS power

transistor of the switch; an integrated power supply (12) for supplying said circuit; and two optical couplers (14, 16) which in each case receive an electrical commutating control signal



and which in each case transmits said signal to one input of the control circuit, each optical coupler ensuring an electrical insulation of the commutator.

4,801,822

SEMICONDUCTOR SWITCHING CIRCUIT

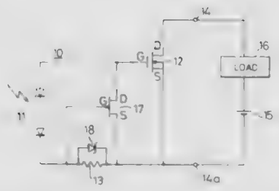
Yukio Idaka, Nara; Shuichiroh Yamaguchi, Hirakata, and Takeshi Matsumoto, Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jul. 28, 1987, Ser. No. 78,791

Claims priority, application Japan, Aug. 11, 1986, 61-188272; Oct. 27, 1986, 61-255023

Int. Cl.⁴ G02B *27/00*

U.S. Cl. 307—311 **4 Claims**



1. A semiconductor switching circuit comprising a diode array optically coupled to a light emitting element which generates a light signal in the presence of an input current for generating a photovoltaic output responsive to said light signal, a resistor connected in series with said photovoltaic diode array, an output FET having a gate, a source and a drain, said output FET being connected to said photovoltaic diode array to be turned from a first impedance state to a second impedance state upon application of said photovoltaic output to the gate and source, a depletion-mode driving FET having a gate, a source and a drain, said driving FET being connected at the drain and source to the gate and source of said output FET and at the gate and source to both ends of said resistor and capable of being biased into an OFF state by a voltage across the resistor upon generation of said photovoltaic output at the photovoltaic diode array, and a constant-voltage conduction element connected in parallel with said resistor to be conductive upon application of a voltage higher than a threshold voltage of said depletion mode driving FET and contributive, with a conduction current upon said conduction, to a charge between the gate and the source and to a discharge between the drain and the gate of the output FET.

4,801,823

SAMPLE HOLD CIRCUIT

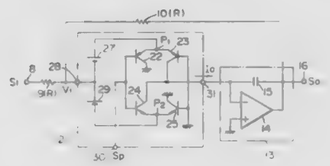
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 2, 1987, Ser. No. 92,235

Claims priority, application Japan, Sep. 10, 1986, 61-213383

Int. Cl.⁴ G11C *27/02*

U.S. Cl. 307—353 **7 Claims**



1. A sample hold circuit for sampling an analog input signal by use of a sampling pulse having a predetermined sampling frequency and holding and outputting the sampled level of said analog input signal for a predetermined period, said sample hold circuit comprising:

(a) mode selecting means for selecting one of a hold mode and a follow mode in response to said sampling pulse, said analog input signal being inputted via an input terminal and sampled in response to said sampling pulse, an output signal which follows said analog input signal being outputted therefrom in response to selection of said follow mode by said sampling pulse, wherein the mode selecting means includes a variable gain voltage-to-current converting means which converts an input voltage of said analog input signal into a current corresponding to the level of the input voltage and outputs the converted current as said output signal, the conversion gain of the converting means being determined in accordance with the level of the sampling pulse; and

(b) an integration circuit means for holding and outputting the output signal of said mode selecting means via an output signal terminal, sampled level of said analog input signal being outputted from the integration circuit means in response to selection of said hold mode by said sampling pulse.

4,801,824

INTEGRABLE BUFFER CIRCUIT FOR VOLTAGE LEVEL CONVERSION HAVING CLAMPING MEANS

Christine Fellinger, Unterhaching; Josef Einzinger, Unterschleissheim; Ludwid Leipold, Munich; Jenoe Tihanyi, Munich, and Roland Weber, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 21, 1987, Ser. No. 76,255

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1986, 3624565

Int. Cl.⁴ H03K *17/10, 17/16, 17/687, 5/04*

U.S. Cl. 307—558 **4 Claims**

1. A circuit arrangement for converting a first signal voltage, referenced to a voltage supply potential, into a second signal voltage referenced to ground potential, the arrangement comprising:

(a) a MOSFET and at least one resistor serially connected between a first and a second terminal;

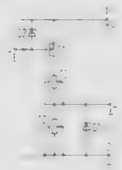
(b) the MOSFET having a source terminal connected to the first terminal;

(c) at least one diode is connected in the forward direction of the flow of current between the first terminal and the source terminal of the MOSFET;

(d) the MOSFET having a gate terminal connected to a third terminal;

(e) a first Zener diode is connected between the first terminal and the third terminals for limiting the first signal voltage;

(f) a fourth terminal is connected to one terminal of the resistor while the other terminal of the resistor is connected to the second terminal; and





(g) a second Zener diode is connected between the second terminal and the fourth terminal for limiting the second signal voltage.

4,801,825

THREE LEVEL STATE LOGIC CIRCUIT HAVING IMPROVED HIGH VOLTAGE TO HIGH OUTPUT IMPEDANCE TRANSITION

Michael E. Stanley, Mesa; Walter V. Lowe, Gilbert, and Byron G. Bynum, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1987, Ser. No. 70,284

Int. Cl.⁴ H03K *19/02, 19/01*

U.S. Cl. 307—473 **6 Claims**



1. A circuit, comprising:

an input stage responsive to applied input signals for providing first and second anti-phased output signals at first and second respective outputs;

output driver circuit means responsive to said first and second anti-phased output signals for establishing high and low output voltage levels at an output of the circuit, said output driver circuit means including first switching means responsive to a drive signal for establishing said high output voltage level when rendered conductive and driver circuit means responsive to said first anti-phased output signal for supplying said drive signal to said first switching means;

first circuit means responsive to a disable signal for disabling said output driver circuit means wherein said first switching means is rendered non-conductive such that a hight impedance is established at said output of the circuit; and

second circuit means coupled to said first circuit means responsive to said disable signal applied to said first circuit means for removing said drive signal from said first switching means and establishing a psuedo-high output impedance at said output of the circuit until such time as said driver circuit means is disabled after which said second circuit means is diabled, said second circuit means including sensing means for sensing when said driver circuit means is disabled to cause said second circuit means to become disable after a transitory period of time.

4,801,826

CMOST INPUT BUFFER FOR TTL LEVEL INPUT SIGNALS

Bernardus H. J. Cornelissen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1987, Ser. No. 46,975

Claims priority, application Netherlands, Jul. 30, 1986, 8601953

Int. Cl.⁴ H03K *4/58, 3/013, 19/017, 17/04*

U.S. Cl. 307—482 **9 Claims**



1. A CMOST input buffer, which comprises:

a first current source which is connected to a first supply terminal and which comprises a first current output;

a first logic gate which is powered via the first current output and via a second supply terminal; and

a first buffer capacitance which is permanently connected between the first current output and the second supply terminal for stabilizing a supply voltage across the first logic gate.

4,801,827

ADJUSTABLE DELAY ELEMENT FOR DIGITAL SYSTEMS

Arthur J. Metz, Gervais, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 2, 1987, Ser. No. 115,785

Int. Cl.⁴ H03K *5/13, 5/159*

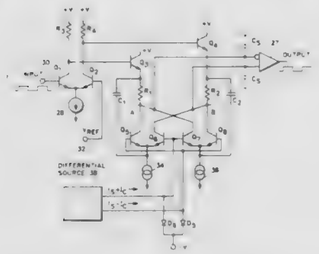
U.S. Cl. 307—602 **6 Claims**

1. An adjustable delay circuit for delaying passage of a digital signal, comprising:

low-pass filter means for passing the lower frequency component of the digital signal, the lower frequency component having a delay relative to the digital signal; high-pass filter means in parallel with the low-pass filter means for passing the higher frequency component of the digital signal;

control means for coupling a selectable portion of the higher frequency component to be summed with the lower frequency component to vary the delay produced by the lower frequency component; and

an output stage for receiving the lower frequency component and selected portion of the of the higher frequency



component to reproduce the digital signal with the corresponding delay.

4,801,828

MULTIPHASE SOLID-STATE CONTACTOR

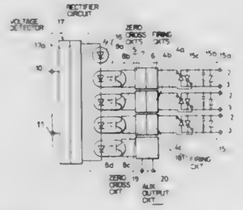
Masahide Ishikawa; Kazuo Sakurai; Tomio Shimizu, and Junzo Tanaka, all of Kanagawa, Japan, assignors to Fuji Electric Company, Ltd., Kanagawa, Japan

Filed Jul. 16, 1986, Ser. No. 886,074

Claims priority, application Japan, Jul. 16, 1985, 60-108505[U]; Jul. 17, 1985, 60-157464

Int. Cl.⁴ H03K *17/72*

U.S. Cl. 307—646 **11 Claims**



1. A multiphase solid-state contactor for controlling the application of power from a power source to a principal circuit, said contactor comprising:

thyristor means for opening and closing the principal circuit; and

an electronic control circuit coupled to said thyristor means, said electronic control circuit including,

firing control circuit means for activating said thyristor means,

input means for controlling current to said firing control circuit means, wherein said input means includes rectifier means for rectifying the voltage of the power source to produce a rectified voltage, and voltage detection means coupled to said rectifier means for detecting when the voltage of the power source has reached a predetermined voltage level and causing said rectified voltage to be applied to said firing control circuit means upon detecting at least said predetermined voltage level,

auxiliary output circuit means operatively coupled to the power source and to said input means for selectively applying power from the power source to said input means to cause said firing control circuit means to activate and deactivate said thyristor means, and

surge absorbing means coupled to said thyristor means for protecting said thyristor means from power surges from the power source, wherein each of said firing control circuit means, said input means and said surge absorbing means is mounted on a separate printed circuit board.

4,801,829

ELECTROMAGNETIC MOTOR WITHOUT MECHANICAL MOTION CONVERTER

Mitsuru Babe, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 19, 1987, Ser. No. 122,792

Claims priority, application Japan, Nov. 20, 1986, 61-277589; Nov. 22, 1986, 61-279330; Nov. 28, 1986, 61-285127; Nov. 28, 1986, 61-285128; Jan. 30, 1987, 62-19697

Int. Cl.⁴ H02K *33/12*

U.S. Cl. 310—10 **23 Claims**



1. An electromagnetic motor comprising:

a movable member magnetized to form N and S poles on opposing surfaces;

a flexible support member, one end of which is connected to said movable member, and the other end of which is connected to a base;

a first fixed magnetic pole so arranged as to apply a magnetic force in a direction parallel to said N and S poles of said movable member;

a second fixed magnetic pole so arranged as to apply a magnetic force in a direction perpendicular to said N and S poles of said movable member; and

a control means for controlling the magnetic coupling between said first and second fixed magnetic poles and said N and S poles of said movable member, whereby controlling the magnetic force of said first and second fixed magnetic poles consequently controls the movement of said movable member.

4,801,830

BRUSHLESS MOTOR

Shigeru Ogino, Kawasaki; Noritsugu Hirata, Yokohama, and Tatsuzo Ushiro, Kawaguchi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1987, Ser. No. 79,211

Claims priority, application Japan, Aug. 4, 1986, 61-183021; Aug. 18, 1986, 61-192574; Dec. 19, 1986, 61-301514

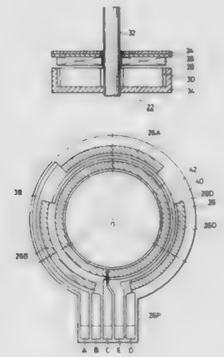
Int. Cl.⁴ H02K *11/00*

U.S. Cl. 310—68 B **4 Claims**

1. A brushless motor comprising a rotor having a rotary shaft to which a permanent magnet having a plurality of poles is fixed, and a stator having a yoke member for rotatably supporting said rotary shaft, said yoke member having coils mounted thereon,

zig-zag patterns of magnetoresistive elements disposed on the surface of said yoke which faces said permanent magnet substantially at the same spacing from each other around the axis of said rotary shaft and located in the field of said permanent magnet, said magnetoreaistive elements being connected by signal outputting conductors, said magnetoresistive elements being in patterns for detecting the rotational position of said rotor,

said position detecting magnetoresistive elements being disposed in such a manner that the dividing line at an angle of 120° corresponds to the center of each pattern and that each pattern expands from the center in two directions by about 45°, and said zig-zag patterns each comprising line segments expanding between concentric circles of a radius R_b and a radius R_a whose center is the center of said rotary



shaft and disposed around said center substantially at the same pitch in a radial form, said line segments of each magnetoreaistive element being connected by conductors.

4,801,831

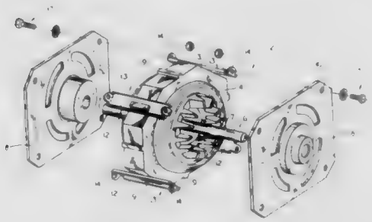
ELECTRIC MOTOR STATOR SUPPORT STRUCTURE AND METHOD OF MANUFACTURING SAME

John G. Lewis, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 2, 1987, Ser. No. 10,180

Int. Cl.⁴ H02K *5/00*

U.S. Cl. 310—91 **11 Claims**



1. An improved electric motor structure comprising:

a stator and rotor, said rotor being rotatably disposed with reference to said stator and having a rotor shaft extending therefrom;

a pair of spaced end shields for rotatably journalling said rotor shaft relative said stator; and,

longitudinally extending support means connected at opposite ends thereof to and extending from said spaced end shields to maintain said end shields in spaced relation relative said stator;

said stator and said support means including spaced nesting tongue means and slot means comprising a part of and cooperably positioned in directly opposed, facing relation between and intermediate the longitudinal edges of said longitudinally extending support means and said stator, said tongue means extending laterally relative the peripheral sides of said stator to independently and directly interfittingly engage with said directly opposed, facing slot means with the said stator supported intermediate said spaced end shields.

4,801,832

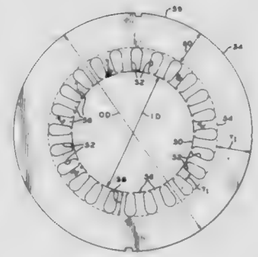
STATOR AND ROTOR LAMINATION CONSTRUCTION FOR A DYNAMO-ELECTRIC MACHINE

Thomas W. Neumann, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 4, 1987, Ser. No. 116,303

Int. Cl.⁴ H02K *1/00*

U.S. Cl. 310—216 **12 Claims**



1. A dynamo-electric machine comprising:

a generally cylindrical casing;

a stator core fixed in said casing and comprised of stator lamination plates of ferromagnetic material, said stator core having a cylindrical bore;

a stator winding embedded in stator slots radially projecting from the bore and which slots extend generally axially along the core, with end turns of said winding extending beyond end faces of said stator core;

a rotor supported in said bore for rotational movement and comprised of rotor lamination plates of ferromagnetic material, said rotor including conductive means for interacting with a magnetic field produced in an air gap between an outer periphery of said rotor and an inner periphery of the stator core when said stator winding is energized;

wherein each of said stator lamination plates comprises:

a flat annular plate of ferromagnetic material having a preselected outer diameter and a generally circular inner opening of a preselected inner diameter which forms the stator bore when like ones of said plates are stacked face-to-face with one another,

said plate having a number of uniformly circumferentially spaced slots which project radially outwardly from the bore to an intermediate circumference of said plate to define teeth between the slots, said slots forming said stator slots when corresponding slot openings in the like plates are substantially aligned to communicate with one another and the plates are stacked,

said annular plate including a tooth portion defined by said teeth between said intermediate circumference and said circular inner opening, and a yoke portion defined between said intermediate circumference and an outer periphery of said plate, and

wherein each of said rotor lamination plates comprises a flat circular plate of ferromagnetic material having a number of equally circumferentially spaced closed slots extending radially in a region near the outer periphery of said plate,

said slots being formed to contain conducting members which extend axially along the rotor when like ones of said plates are stacked face-to-face with corresponding slots in communication with one another; and

wherein for a given ratio of said preselected inner diameter to said preselected outer diameter for said annular plate of each of said stator lamination plates, said teeth are sufficiently wide relative to the area of said slot openings so that the ratio of flux density in said tooth portion to flux density in said yoke portion in response to energization of

the stator winding is optimized for the number of poles n in the operating configuration of said stator winding; and wherein the ratio of inner diameter to outer diameter of the annular plate forming said stator lamination plate is in the range of about 0.5025 to 0.504 for n equals 2.

4,801,833

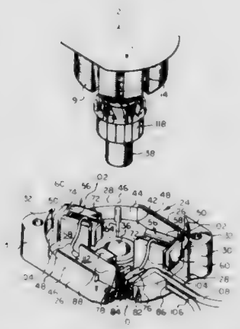
MOTOR END CAP

Clifford L. Dye, Eaton Rapids, Mich., assignor to Eaton Stamping Company, Eaton Rapids, Mich.

Continuation of Ser. No. 808,068, Dec. 12, 1985, abandoned. This application Oct. 21, 1987, Ser. No. 111,114

Int. Cl.[4] H02K *13/00*

U.S. Cl. 310—239 5 Claims



1. In an electric motor having a tubular casing having ends wherein an armature is rotatably supported within the casing upon end caps mounted upon the casing ends, the improvement comprising, at least one of the end caps being molded of a synthetic plastic dielectric material, an inner surface defined on said one end cap, armature bearing means defined on said end cap defining a bearing axis, a plurality of brush-holding means defined upon said end cap inner surface about said axis, said brush-holding means including a pair of spaced parallel cantilevered fingers homogeneously formed of the material of the end cap having a length extending substantially parallel to said bearing axis, each finger having an outer free end, an inner lateral edge disposed toward said bearing axis, an outer lateral edge remote from said bearing axis, and an inner side, said inner sides of said pair of fingers being in spaced opposed relation to each, other, an elongated recess defined in each of said fingers' inner sides having a length projecting toward said bearing axis, the recesses of a pair of fingers being in opposed relation and defining a brush-receiving guide, said fingers' outer free ends being in spaced relation to each other and adapted to be deformable whereby temporary deformation of said fingers toward each other will frictionally grip a brush within said guide to prevent brush movement therein, and a spring anchor projection homogeneously formed of the material of said one end cap adjacent and spaced from said outer lateral edges of a spaced pair of said fingers, said spring anchor projection being in alignment with said brush-receiving guide defined in said spaced pair of fingers.

4,801,834

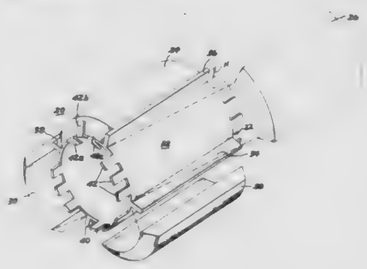
ROTOR ASSEMBLY

Vijay K. Stokes, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 857,280, Apr. 30, 1986, abandoned. This application Dec. 23, 1987, Ser. No. 137,386

Int. Cl.[4] H02K *1/22*

U.S. Cl. 310—261 9 Claims



1. A rotor assembly comprising:

a generally cylindrical ring;

a plurality of circumferentially spaced reinforcing ribs integral with said ring, each of said reinforcing ribs projecting radially outward of said ring and extending axially for substantially the length of said ring, each of said ribs being substantially straight and of a common height, and said ribs being generally parallel to each other and spaced at regular intervals about the circumference of said ring;

at least one bendable tab proximate each end of said ring intermediate each adjacent pair of said reinforcing ribs; and

said ring, ribs and tabs being formed from a single piece of magnetic flux conducting material.

4,801,835

ULTRASONIC PROBE USING PIEZOELECTRIC COMPOSITE MATERIAL

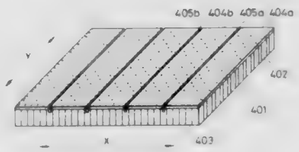
Chitose Nakaya, Tokyo; Hiroshi Takeuchi, Matsudo, and Kageyoshi Katakura, Tokyo, all of Japan, assignors to Hitachi Medical Corp. and Hitachi Ltd., both of Tokyo, Japan

Filed Sep. 23, 1987, Ser. No. 100,238

Claims priority, application Japan, Oct. 6, 1986, 61-236141; Oct. 6, 1986, 61-236142; Apr. 10, 1987, 62-86884

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—358 7 Claims



1. An ultrasonic probe using a piezoelectric composite material having stripe electrodes arranged on at least one of an upper and lower surface thereof and with a gap between adjacent stripe electrodes, said piezoelectric composite material comprising a plurality of piezoelectric ceramic rods and an organic material having said piezoelectric ceramic rods embedded therein, wherein said piezoelectric composite material is constructed so that a relation between gx and gy and a relation between f(x) and f(y) are as follows:

$gx \geqq gy$ and $f(x) < f(y)$

where

Wx: width of each piezoelectric ceramic rod in an direction which is defined as the direction of arrangement of said stripe electrodes.

gx: gap between adjacent piezoelectric ceramic rods arranged in the x-direction,

Px=(Wx+gx): pitch of said piezoelectric ceramic arranged rods in the x-direction,

f(x)=Wx/Px

Wy: width of each piezoelectric ceramic rod in a y direction which is defined as the direction orthogonal to the direction of arrangement of said stripe electrodes,

gy: gap between adjacent piezoelectric ceramic rods arranged in the y-direction,

Py=(Wy+gy): pitch of said piezoelectric ceramic rods arrange din the y-direction,

f(y)=Wy/Py.

4,801,836

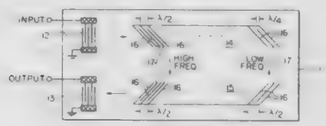
SAW DISPERSIVE DELAY DEVICE

Elio A. Mariani, Hamilton Square, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 24, 1987, Ser. No. 128,700

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—313 D 1 Claim



1. A SAW reflective array correlator utilizing metallic reflectors with positive and negative reflection coefficients comprising a substrate of 128° Y-X $LiNbO_3$, an input and output periodic interdigital transducer on said substrate, a pair of coextensive reflective arrays on said substrate and aligned respectively with said transducers, said transducers and said arrays being of thin-film aluminum photo-etched on said substrate, said reflective arrays having a multiplicity of shorted reflectors and a multiplicity of open reflectors that are alternately interleaved with the shorted reflectors, the reflectors of each reflective array being inclined substantially 45° with respect to the transducer propagation direction and the x-axis of the 128° Y-X $LiNbO_3$ substrate, the periodicity of the reflectors varying along the length of each reflective array so that different frequencies are reflected at different locations along each array to thereby provide a different delay path, the periodicity variation being the same in the two arrays, the width of the shorted and open reflectors and the separation between the reflectors decreasing in a predetermined linear manner along the length of each reflective array for increasing frequencies to be reflected by the array, the spacing between said shorted reflectors being equal to $\lambda/2$ and between adjacent open and shorted reflectors being equal to $\lambda/4$ where λ corresponds to the SAW wavelength for the frequency associated with a given section of a reflective array, said shorted and open reflectors having a length that is substantially coextensive with the acoustic aperture of the input and output transducers.

4,801,837

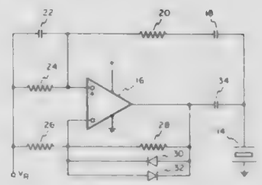
PIEZOELECTRIC LOAD MEASUREMENT APPARATUS AND CIRCUITS

Tello Adams, 8400 141st St., Seminole, Fla. 33542

Continuation-in-part of Ser. No. 001,901, Jan. 9, 1987, and a continuation-in-part of Ser. No. 029,233, Mar. 3, 1987. This application Dec. 8, 1987, Ser. No. 130,179

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—316 3 Claims



1. Load measurement apparatus comprising:

an oscillator employing a single flat piezo-electric transducer as a frequency determining element, the transducer having first, second and third mutually orthagonal axes, the first and second axes lying in a selected one of first and second planes, the first plane being the plane of the transducer, fthe second plane being at right angles to the first plane, the third axis being perpendicular to the selected plane, the transducer having different modes of excitation in different planes at different resonant frequencies, the oscillator having a positive feedback loop containing in series a high pass filter and a low pass filter which together [a] determine one selected mode of excitation of the transducer in said selected plane with an associated resonant frequency whereby the transducer resonates in the selected plane at the associated resonant frequency and [b] prevent the transducer from being excited along the third axis, the transducer yielding thereacross an oscillatory voltage having a predetermined maximum peak to peak voltage value in the absence ot any load exerted upon the transducer; and

means to apply a load to the transducer which is directed along the third axis, said peak to peak voltage value increasing toward the maximum as the magnitude of the load decreases and decreasing away from the maximum as the magnitude of the load increases whereby the peak to peak voltage value is a monatonic function of the magnitude of the load.

4,801,838

METHOD AND DEVICE FOR IMPROVING THE SENSITIVITY AND THE SIGNAL TO NOISE RATIO OF PIEZO-ELECTRIC TRANSDUCERS HAVING A PLURALITY OF SENSORS COMBINED IN PARALLEL

Claude Beaudoucel, Hesouville, and Thierry Gautier, Meina, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 22, 1987, Ser. No. 64,570

Claims priority, application France, Jun. 23, 1986, 86 09170

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—319 5 Claims

1. A device for improving sensitivity and signal to noise ratio of piezo-electric transducers including:

at least one combination in parallel of piezo-electric sensors;

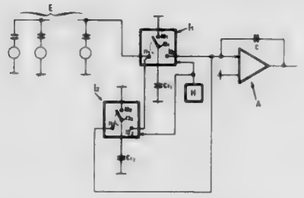
at least one charge amplifier provided with a feedback circuit including a charge capacitor and with one input;

at least one transfer capacitor of a capacity very much less than the capacity of said charge capacitor, said transfer capacitor being provided with a first terminal connected to ground and with a second terminal;

at least one commutation means for connecting said second

terminal to said combination of piezo-electric sensors to said input of the charge amplifier and to ground; and

synchronizing means for controlling said commutation means whereby electric charges accumulated by said



piezo-electric sensors are sequentially transferred to said charge capacitor and said charge capacitor is discharged to ground before any new connection of said second terminal to said piezo-electric sensors.

4,801,839

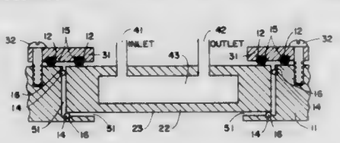
MOUNTING OF A COLD CATHODE DIRECTLY TO A VACUUM CHAMBER WALL

George J. Collins, Fort Collins, Colo.; Jack D. Meyer, Rio Rancho, N. Mex., and Zeng-qi Yu, Ft. Collins, Colo., assignors to Applied Electron Corporation, Albuquerque, N. Mex.

Filed Dec. 8, 1986, Ser. No. 939,054

Int. Cl.[4] H01J *1/96, 7/26, 17/38, 3/097*

U.S. Cl. 313—30 **5 Claims**



1. Apparatus for generating a glow discharge electron beam within a vacuum chamber, the apparatus comprising:

a cold cathode having a front face from which an electron beam is emitted, said cold cathode being positioned within an opening in a wall of the vacuum chamber such that the front face is directed inside the vacuum chamber and such that a gap is provided between the periphery of the cold cathode and the wall of the vacuum chamber surrounding the opening therein to electrically insulate the cold cathode from the wall of the vacuum chamber;

cathode fixture means mounted to the wall of the vacuum chamber and external to the vacuum chamber for retaining the cold cathode in a fixed position within the opening in the wall of the vacuum chamber;

first vacuum seal means positioned between the cold cathode and the cathode fixture means for providing a vacuum seal therebetween;

second vacuum seal means positioned between the cathode fixture means and the wall of the vacuum chamber for providing a vacuum seal therebetween; and

a plurality of electrically insulating spacers selectively positioned within said gap to insure the uniformity of said gap along the periphery of the cold cathode;

said cold cathode having a cavity therein through which a coolant is circulated for cooling the cold cathode;

said first and second vacuum seal means comprising first and second "O" rings; and

said cathode fixture means including first and second grooves for receiving said first and second "O" rings.

4,801,840

DISCHARGE LAMP HAVING AUTOMATICALLY CONTROLLED PREHEATING DEVICE ATTACHED TO ENVELOPE

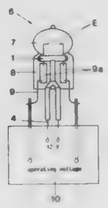
Alexander Dobrusskin, Taufkirchen; Jürgen Heider, Munich, and Wolfgang Schade, Kirchheim, all of Fed. Rep. of Germany, assignors to Patent Treuhand Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Aug. 27, 1987, Ser. No. 90,030

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1986, 3630335

Int. Cl.[4] H01J *61/52;* **H05B** *41/231*

U.S. Cl. 313—44 **17 Claims**



1. A single-walled high-pressure metal halide discharge lamp having

a discharge vessel (7);

two spaced electrodes (E) located in the discharge vessel;

a fill substance sustaining a discahrge arc within the discharge vessel upon energization of the electrodes and striking of an arc therebetween;

a pair of current lead means (9) extending from outside of the discharge vessel to the electrodes;

a pinch or press seal (8) retaining said current lead means in position; and

a heating means (1), thermally coupled to the discharge vessel (7), including a resistance heating means (5),

wherein,

the lamp heating means (1) comprises

an elongated ceramic holder (2,3) formed with apertures therein, having at least one elongated portion (3) directly contacting said discharge vessel along a longitudinal surface of said elongated portion (3), and wherein the resistance heating means (5) are located in the apertures of the ceramic holder.

4,801,841

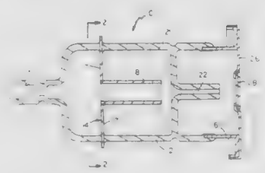
GAS DISCHARGE LAMP WITH BUILT-IN RESISTANCE TO COLOR CENTER FORMATION IN ULTRAVIOLET-TRANSMISSIVE WINDOW

John N. Driscoll, Wellesley, Mass., assignor to HNU Systems, Inc., Newton, Mass.

Continuation of Ser. No. 79,752, Jul. 30, 1987, abandoned. This application Mar. 18, 1988, Ser. No. 171,182

Int. Cl.[4] H01J *61/067, 61/10, 61/40*

U.S. Cl. 313—112 **11 Claims**



1. A gas discharge lamp for emitting vacuum UV radiation, comprising

a lamp body filled at low preasure with a gas capable of emitting radiation in the vacuum UV range,

means for initiating a discharge in said gas,

a crystalline window in said body for transmitting the vacuum UV radiation emitted by said gas,

wherein said crystalline window is constructed of a material that, when exposed to the vacuum UV radiation emitted by said gas, forms color centers that block transmission of said radiation through said window, and

bleaching means located within said lamp body for emitting color-center bleaching radiation without degrading emission of said vacuum UV radiation, said bleaching radiation being in a frequency band lower than said vacuum UV radiation.

4,801,842

METHOD OF REDUCING DOMING IN A COLOR DISPLAY TUBE AND A COLOR DISPLAY TUBE MADE IN ACCORDANCE WITH THE METHOD

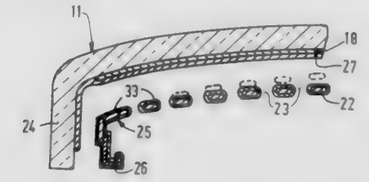
Johannes M. A. A. Compen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 17, 1987, Ser. No. 40,423

Claims priority, application United Kingdom, Apr. 21, 1986, 8609695

Int. Cl.[4] H01J *29/07*

U.S. Cl. 313—402 **13 Claims**



1. A method of reducing the effects of doming in a colour display tube comprising a glass faceplate having an upright edge, a cathodoluminescent screen on the inside surface thereof, an aluminum film applied over the luminescent screen and over the upright edge, and a shadow mask comprising an apertured sheet having an edge portion connected to a mounting frame, characterised in that the thermal radiation reflectivity between the upright edge and at least the edge portion of the apertured sheet is adjusted to obtain a desired temperature stabilisation level, by at least leaving selected areas of the glass of the upright edge non-aluminized, substantially 35 percent of the upright edge remaining aluminized, the size, shape and disposition of said selected areas being chosen so that a desired radiation coefficient is obtained.

4,801,843

DISPLAY TUBE WITH MAGNETIC CORRECTION ELEMENTS

Otto Mensies, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 837,922, Mar. 10, 1986. This application Sep. 29, 1987, Ser. No. 104,547

Claims priority, application Netherlands, Mar. 20, 1985, 8500807

Int. Cl.[4] H01J *29/56*

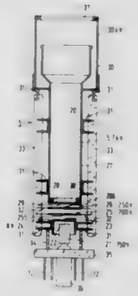
U.S. Cl. 313—421 **5 Claims**

1. In a display tube comprising an envelope containing a luminescent screen and an electron gun having a central axis for producing an electron beam directed at said screen, said electron gun including, successively-centered along said axis;

(a) a cathode for emitting electrons;

(b) means for forming the emitted electrons into the electron beam; and

(c) first and second cylindrical focusing electrodes for producing therebetween an electric focusing lens field for focusing the electron beam into a spot on said screen, each of said electrodes having a front end closer to said screen then the rear end thereof, the first electrode extending partially within the second electrode so as to leave a space between the front ends of said electrodes within which said electric field extends;



the improvement comprising first permanent magnet means disposed in said space between the front ends of said electrodes and producing a 2N pole magnetic field, N being an integer, which acts on said beam so as to compensate for asymmetries of said electric focusing lens field which adversely affect circularity of said beam.

4,801,844

FULL COLOR HYBRID TFEL DISPLAY SCREEN

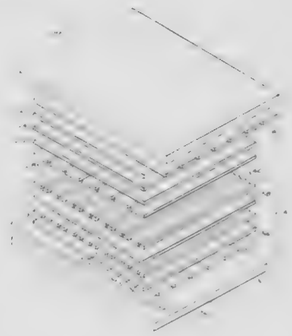
William A. Barrow, Beaverton, and Richard T. Tuenge, Hillsboro, both of Oreg., assignors to Planar Systems, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 727,663, Apr. 26, 1985, Pat. No. 4,719,385. This application Nov. 4, 1987, Ser. No. 116,728

The portion of the term of this patent subsequent to Jan. 12, 2005, has been disclaimed.

Int. Cl.[4] H05B *33/14, 33/22*

U.S. Cl. 313—509 **6 Claims**



1. A full color TFEL display device comprising:

(a) a rear subpanel comprising an independently addressable TFEL matrix array including a solid phosphor layer emitting light of one of the primary colors;

(b) a front subpanel comprising an independently addressable TFEL matrix array including phosphor stripes arranged in side-by-side alternating color sequence and each

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emitting one of the two primary colors not used in the rear matrix array, respectively;

(c) spacer means separating said rear and front subpanels to maintain said subpanels in uniformly spaced apart stacked relationship; and

(d) a filler material interposed between the front and rear subpanels having a dye for enhancing the color emitting properties of the phosphor layer of the rear subpanel.

4,801,845

HALOGEN INCANDESCENT LAMP STRUCTURE

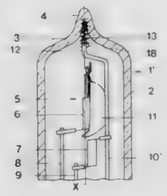
Rolf Kiesel, Aalen, Fed. Rep. of Germany, assignor to Patent Treuhand Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Apr. 29, 1987, Ser. No. 44,048

Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616673

Int. Cl.[4] H01K *1/24, 1/18*

U.S. Cl. 313—579 **13 Claims**



1. Shock-resistant, thermal-change-accepting, halogen incandescent lamp having

a bulb or envelope (2) of hard glass or quartz glass;

an exhaust tip (4) formed at a first or top end portion (3) of the bulb;

a fill of an inert gas and a halogen additive;

a mount (5) having

at least two current supply leads (8, 9, 10) secured thereto,

at least one filament (6, 7) connected to respective current supply leads, and

a wire element (10) extending in the direction towards the top portion of the bulb;

a pinch or press seal (15*a*, 15*b*) closing off the bulb at a second or bottom portion thereof,

said current supply leads (8, 9, 10) passing through said pinch or press seal; and

means for retaining the mount in fixed position with respect to the pinch or press seal,

comprising,

a hollow, essentially at least part-cylindrical, guide element (13) secured to and melted into the exhaust tip (4) of the top portion (3) of the bulb and extending into the interior of the envelope or bulb (2), and

a holding wire element (10′) secured to said mount (5) and having a top portion (12) received within said at least essentially part-cylindrical guide element (13), extending axially thereinto to an extent which permits further extension upon thermal expansion of said holding wire element (10′), said guide element retaining said holding wire element (10′) in a predetermined alignment with respect to an optical axis of said lamp, while resiliently accepting dimensional changes of said holding wire element (10′) resulting from temperature variation during lamp operation, thereby preventing bending of said holding wire element due to thermal expansion and consequent movement of said at least one filament out of predetermined alignment with said optical axis.

4,801,846

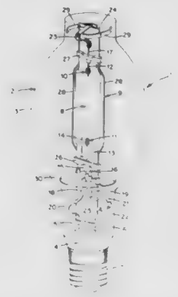
RARE EARTH HALIDE LIGHT SOURCE WITH ENHANCED RED EMISSION

Jerry Kramer, Acton, and Walter P. Lapatovich, Hudson, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 943,461, Dec. 19, 1986, abandoned. This application Oct. 23, 1987, Ser. No. 112,026

Int. Cl.[4] H01J *61/22*

U.S. Cl. 313—641 **14 Claims**



1. An electroded high pressure electric discharge lamp having an enhanced red emission comprising:

an outer envelope, a base, a refractory inner envelope, an inner envelope support frame, two electrodes, and a fill gas;

said fill gas being contained within said refractory inner envelope, said fill gas consisting essentially of from about 1.0 to about 11.0 mg/cm^3 of mercury, from about 0.1 to about 4.0 mg/cm^3 of cerium iodide, from about 0.1 to about 4.0 mg/cm^3 of thulium iodide, from about 0.3 to about 13.6 mg/cm^3 of calcium iodide, from about 0.1 to about 4.8 mg/cm^3 of cesium iodide, and an inert gas;

said inner envelope, said support frame, and said electrical connectors being contained within said outer envelope;

said base being connected to said outer envelope and said electrode connectors, said electrical connectors being connected to said base, said inner envelope, and said electrodes.

4,801,847

CHARGED PARTICLE ACCELERATOR USING QUADRUPOLE ELECTRODES

Noriyuki Sakudo, Ome; Katsumi Tokiguchi, Machida; Hidemi Koike, Tokorozawa; Osami Okada, Chofu; Norio Saito, Iruma, and Susumu Ozasa, Kashiwa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP84/00557, § 371 Date Jul. 29, 1985, § 102(e) Date Jul. 29, 1985, PCT Pub. No. WO85/02489, PCT Pub. Date Jun. 6, 1985

PCT Filed Nov. 22, 1984, Ser. No. 763,133

Claims priority, application Japan, Nov. 28, 1983, 58-222032; Dec. 2, 1983, 58-226860; Dec. 2, 1983, 58-226861

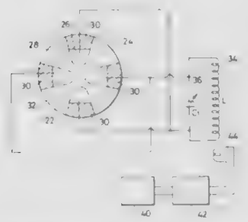
Int. Cl.[4] H01J *25/10*

U.S. Cl. 315—5.41 **8 Claims**

1. A charged particle accelerator, comprising:

quadrupole electrode means, including quadrupole electrodes in which opposing surfaces thereof are undulated, for accelerating charged particles;

radio-frequency resonance circuit means, including a capacitor and a coil which constitute a part of a radio-frequency resonance circuit, for producing a high radio-frequency voltage and for applying the high radio-frequency voltage to said quadrapole electrodes, said radio-frequency resonance circuit means providing a variable resonance frequency; the variable resonance frequency being selected in accordance with the kind of charged particle ion to be accelerated, thereby enabling at least one of different kinds of charged particle ions to be properly accelerated



without changing the size or spacing of the electrodes; and

radio-frequency electric power generating means for applying radio-frequency electric power to said radio-frequency resonance circuit means.

4,801,848

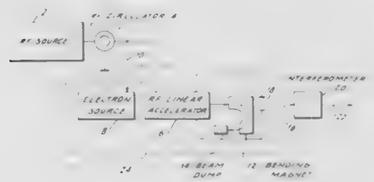
TUNABLE BROADBAND SOURCE IN MILLIMETER WAVELENGTH RANGE OF SPECTRUM

Curtis A. Birnbach, Bronx, N.Y., and Richard N. Heese, Westmont, Canada, assignors to Quantum Diagnostics Ltd., Hauppauge, N.Y.

Filed May 11, 1987, Ser. No. 48,602

Int. Cl.[4] H01J *25/10*

U.S. Cl. 315—5.41 **17 Claims**



1. An apparatus for producing broadband radiation, comprising:

(a) means for generating microwave energy;

(b) means for generating electrons;

(c) means for accelerating said electrons using said microwave energy;

(d) a bending magnet for bending the path of said accelerated electrons, whereby said accelerated electrons radiate broadband radiation; and

(e) frequency selective means for receiving said broadband radiation and for producing radiation of a selected individual frequency from said broadband radiation.

4,801,849

ION SOURCE OPERATING BY SURFACE IONIZATION IN PARTICULAR FOR PROVIDING AN ION PROBE

Georges Slodzian, Sceaux; Bernard Daigne, Chatenay Malabry, and Francois Girard, Paris, all of France, assignors to Office National D Etudes et de Recherches, Chatillon and Aerospatiales and Universite de Paris-Sud, Orsay, both of, France

Continuation of Ser. No. 730,172, May 3, 1985, abandoned. This application Nov. 6, 1987, Ser. No. 119,241

Claims priority, application France, May 16, 1984, 84 07606

Int. Cl.[4] H01J *27/00*

U.S. Cl. 315—111.81 **13 Claims**



12. An ion source operating by surface ionization, comprising, in vacuo:

(a) a source of neutral particles of a nature similar to the ions to be produced;

(b) means for defining, together with said source, a duct which is closed at a first end, except for an outlet orifice formed opposite said source;

(c) an ionization support having an active surface facing said outlet orifice, being suitable for absorbing neutral particles and then desorbing them in the form of ions, including a baffle to oppose passage of neutral particles into an emitted ion beam, and being housed inside the first end of the duct, said duct being completely closed apart from the outlet orifice,

wherein the ionization support includes a stack of thin conductive parts adjacent to each other in the first end of the duct forming an inside cylindrical passage which is coaxial with the outlet orifice, and which is of smaller cross-section than a cross-section of the duct,

wherein the baffle is defined by one of the thin parts being a plate extending across the passage consisting of a central solid portion in said passage defining said active surface opposite the outlet orifice, which central solid portion is surrounded by and incorporates peripheral holes therewith passing through the plate and said central solid portion being interposed in said inside cylindrical passage, thereby providing a baffle capable of preventing the direct passage of neutral particles into the emitted beam without previously encountering the active surface of the ionization support; and

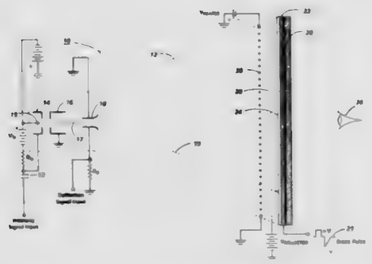
(d) means for focusing ions through the outlet orifice into a beam which is emitted in a chosen direction, the focusing means including an external focusing electrode having a hole formed therethrough and arranged to establish an electric field between the active surface and the outlet orifice suitable for accelerating ions to constitute the emitted beam, the focusing electrode being provided on an upstream side adjacent said first end of the duct with an additional electrode suitable for controlling the return of secondary particles towards the ionization support, said secondary particles being generated by electron bombardment of the focusing electrode,

wherein the ions are positive and the additional electrode is

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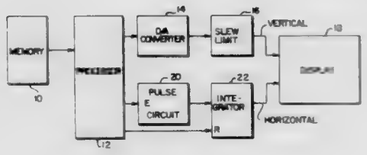
biased to stop secondary particles on the active surface of the ionization support through the outlet orifice of the cap to provide heat for the ion source.

4,801,850
HIGH BRIGHTNESS VACUUM FLUORESCENT DISPLAY (VFD) DEVICES
Benjamin Kazan, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 28, 1987, Ser. No. 78,740
Int. Cl.[4] G09G *310*
U.S. Cl. 315—169.3 **12 Claims**



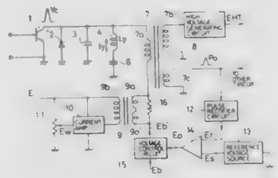
4. In a vacuum fluorescent display device comprising:
a substrate formed of insulating material,
anode means including a phosphor layer deposited thereon,
means to supply a positive potential to said anode means,
a cathode mounted in spaced relation to said anode means to function as a primary electron source,
control grid means mounted between said cathode and said anode means,
means to supply a prescribed positive potential to selected of said control grid means to selectively activate underlying regions of said phosphor layer,
the improvement wherein the surface of said anode means are electrically floating to function as bistable elements wherein said phosphor layer regions may selectively change to a second equilibrium potential state or remain in a first equilibrium potential state.

4,801,851
OSCILLOSCOPE MEMORY CONTROL
Bernard M. Gordon, Gloucester, and Colin Gyles, Boxford, both of Mass., assignors to Analogic Corporation, Peabody, Mass.
Filed Sep. 14, 1982, Ser. No. 418,190
Int. Cl.[4] H01J *29/70, 29/76*
U.S. Cl. 315—367 **10 Claims**



1. Apparatus for displaying signals corresponding to a stored sequence of signal samples comprising:
multi-coordinate display means having a slew-rate limit value in at least one coordinate;
coordinate signal generating means responsive to said stored signal samples providing at least two coordinate signals;
coordinate delay means for providing a delayed coordinate signal to the other coordinate of said display means to prevent respective coordinate signals from exceeding said display slew-rate limit of said one display means coordinate, including
an integrator for providing said other of said coordinate signals having a constant number of start and stop operations for each display trace.

4,801,852
CRT HORIZONTAL DEFLECTION CIRCUIT ENABLING HORIZONTAL SWEEP WIDTH ADJUSTMENT WITH STABILIZED EHT OUTPUT
Shigeru Kashiwagi, Noda, Japan, assignor to Victor Company of Japan, Ltd., Japan
Filed Oct. 22, 1986, Ser. No. 921,766
Claims priority, application Japan, Oct. 22, 1985, 60-235844
Int. Cl.[4] H01J *29/70, 29/76*
U.S. Cl. 315—400 **11 Claims**

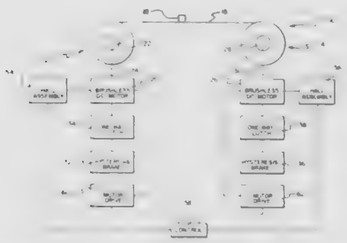


1. A horizontal deflection circuit for producing horizontal sweep operation of a cathode ray tube, comprising:
a horizontal deflection coil, and a periodically actuated switching element coupled thereto;
a flyback transformer having a primary winding, a secondary winding for producing high voltage pulses in response to generation of pulses in said primary winding, and a tertiary winding for producing output pulses in response to generation of pulses in said primary winding, one end of said primary winding being coupled to said horizontal deflection coil;
voltage control circuit means for producing a supply voltage at a controllable level;
externally adjustable inductance means, comprising a saturable reactor, coupled between said voltage control circuit means and the other end of said primary winding of said flyback transformer, and;
means for producing a control signal based upon an amplitude of said pulses generated from said tertiary winding, said control signal being applied to said voltage control circuit means for controlling the level of said supply voltage.

4,801,853
MOTION CONTROL SYSTEM FOR REEL TO REEL WEB TRANSPORT APPARATUS
Martyn Lewis, Pacific Palisades, and Richard Anderson, Chatsworth, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 16, 1987, Ser. No. 121,200
Int. Cl.[4] B65H *59/38*
U.S. Cl. 318—7 **4 Claims**

1. In web transport apparatus for transporting a web between first and second reels, a motion control system comprising:
first and second brushless direct current (DC) motors respectively coupled to said first and second reels;
a first rotatably mounted magnetic hysteresis brake;
a second rotatably mounted magnetic hysteresis brake;

first clutch means for coupling said first magnetic hysteresis brake to said first reel when said first reel is rotated in a first direction, said coupled brake applying a controlled torque to said first reel thereby effecting a controlled tension on said web as it is transported from said first reel to said second reel, and for uncoupling said first magnetic hysteresis brake from said first reel when said first motor rotates said first reel in a direction opposite to said first direction so that said first brake applies no torque to said first reel as web is transported onto said first reel;
second clutch means for coupling said second magnetic hysteresis brake to said second reel when said second reel is rotated in a first direction, said coupled brake applying a controlled torque to said second reel, thereby effecting a



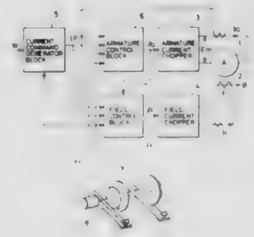
controlled tension on said web as it is transported from said second reel to said first reel, and for uncoupling said second magnetic hysteresis brake from said second reel when said second motor rotates said second reel in a direction opposite said first direction, so that said second brake applies no torque to said second reel as web is transported onto said second reel; and
including a first Hall device assembly mounted on said first brushless direct current motor and a second Hall device assembly mounted on said second brushless direct current motor, wherein said first and second Hall device assemblies produce respective motor control signals which are used to control both the commutation and servo voltage control of said respective first and second brushless direct current motors.

4,801,854
ADJUSTMENT AND DIALOGUE DEVICE MORE PARTICULARLY FOR SPEED VARIATORS
Christian Conrath, Rueil Malmaison, France, assignor to La Telemecanique Electrique, France
Filed Aug. 14, 1987, Ser. No. 85,685
Claims priority, application France, Aug. 14, 1986, 86 11739
Int. Cl.[4] H02P *5/00*
U.S. Cl. 318—305 **3 Claims**



1. In an electronic power control apparatus having a case including a removable front cover housed in said case, a controlled power supply having a plurality of adjustable operating parameters, adjusting and dialogue means comprising:
(i) a printed circuit board mounted within said casing substantially parallel to said front cover, said circuit board having first and second surface portions and said cover having a portion facing said first surface portion and provided with an aperture ;
(ii) a plurality of potentiometers for adjusting the respective operating parameters ;
(iii) alphanumeric display means for displaying the adjusted values of the respective parameters ;
(iv) switch means comprising an advance knob allowing the operator to sequentially scrutinize the respective parameters, said advance knob being accessible through said aperture, and
(v) a processor having inputs connected to said switching means and to the potentiometers through A-D converter means and outputs connected to the display means, said processor including processing means for scrutinizing said inputs and for displaying, in response to the actuation of the advance knob, a code representative of the scrutinized parameter and the value of said parameter ;
(vi) said parameters, display means and switch means being arranged on said first surface portion of the printed circuit board, whereas said processor and A-D convertor are arranged on the second surface portion and
(vii) the portion of the cover which faces the display means is transparent.

4,801,855
METHOD AND SYSTEM FOR CONTROLLING CHOPPER
Makoto Nohmi, Kawasaki, and Eiji Koza, Ehime, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 18, 1987, Ser. No. 63,417
Claims priority, application Japan, Jun. 20, 1986, 61-142993
Int. Cl.[4] H02P *5/16*
U.S. Cl. 318—338 **16 Claims**



1. A method for controlling a chopper comprising:
a step for calculating a first motor voltage to regulate motor current;
a step for calculating a motor electromotive force from a motor speed detected by means which detects the motor speed and from a field current of the motor;
a step for calculating a voltage drop caused by the motor resistance and motor current;
a step for calculating a second motor voltage by adding said calculated voltage drop to said calculated motor electromotive force; and
a step for limiting said first motor voltage within a value determined on the basis of said calculated second motor voltage.

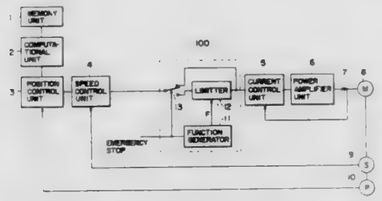
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4,801,856

ROBOT CONTROL APPARATUS

Hiroki Wajima, Akishima, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 21, 1987, Ser. No. 40,873
Claims priority, application Japan, Apr. 22, 1986, 61-59692[U]
Int. Cl.⁴ G05B *19/42*
U.S. Cl. 318—568 **8 Claims**



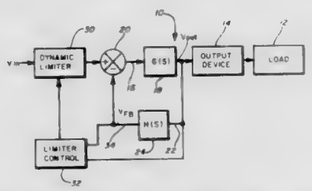
1. A robot control apparatus comprising:
- a position detector for detecting a position of an actuation unit of the robot;
- a position control unit for producing a speed reference on the basis of a deviation between a detection value of said position detector and a predetermined movement value;
- a speed detector for detecting a speed of a motor for driving said actuation unit;
- a speed control unit for producing a torque reference on the basis of a deviation between a detection value of said speed detector and said speed reference;
- a current control unit for controlling a current delivered to said motor on the basis of said torque reference;
- a function generator for generating a function which moderately increases its function value from a point in time when a command for allowing said robot to be subjected to an emergency stop is received;
- a limiter for limiting the magnitude of said torque reference on the basis of said function; and
- a switch for allowing said limiter to be operative only when said command is received.

4,801,857

SERVO LOOP CONTROL SYSTEM WITH DYNAMIC LIMITING

John E. Bundy, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 27, 1986, Ser. No. 900,721
Int. Cl.⁴ G05G *5/00*
U.S. Cl. 318—626 **4 Claims**



1. A servo system for controlling an output device in response to a command signal so that a desired load condition represented by the command signal is attained including means for developing an error signal representing the deviation of the load condition from the desired condition and forward and feedback paths at least one of which includes an impedance therein represented by a transfer function, comprising:

a limiter receiving the command signal and connected to the error signal developing means for controllably limiting the command signal wherein the limiter has a variable saturation point; and

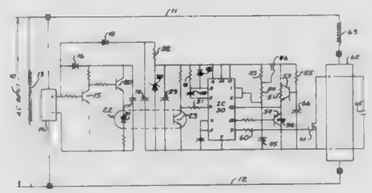
means coupled to the limiter and to the impedance for controlling the saturation point of the limiter in accordance with the transfer function of the impedance to enable fast response without damage to the output device.

4,801,858

MOTOR STARTING CIRCUIT

Young K. Min, Milwaukee, Wis., assignor to PT Components, Inc., Indianapolis, Ind.

Continuation of Ser. No. 634,699, Jul. 26, 1984, abandoned. This application Aug. 4, 1987, Ser. No. 81,347
Int. Cl.⁴ H02P *1/28*
U.S. Cl. 318—786 **10 Claims**



1. A starting control circuit for AC single phase motors having both running and starting windings each connectable to an AC power source, comprising: an AC power source switchably connected to said running windings of said motor and to said starting control circuit, first full wave bridge rectifier means connected to said AC power source in parallel with said running windings, DC power source means connected at its input to the positive side of said first full wave bridge rectifier means, zero voltage inflection point detecting means connected to said first full wave bridge rectifier means and to said AC power source for providing signals indicative of said zero voltage inflection points, control pulse generating means connected to said DC power source means and responsive to the signal output of said zero voltage inflection point detecting means and adapted to provide control pulses selectively phase shifted from said zero voltage inflection points, and switching means connected to said starting windings of said motor and connected and responsive to said control pulses to switch said starting winding on and off each cycle of said AC power source for a time interval equal to each control pulses duration and off therebetween to thereby effect motor starting.

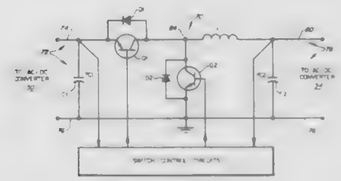
4,801,859

BOOST/BUCK DC/DC CONVERTER

Bryan W. Dishner, Roscoe, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 946,086, Dec. 23, 1986, Pat. No. 4,743,812. This application Dec. 28, 1987, Ser. No. 138,206
Int. Cl.⁴ G05F *1/445*; H02M *3/335*
U.S. Cl. 323—224 **5 Claims**

1. A DC/DC converter, comprising:
- a first switch coupled to a first input/output of the converter;
- a first input/output energy storage element coupled to the first input/output of the converter;
- a second input/output energy storage element coupled to a second input/output of the converter;
- an intermediate energy storage element coupled between the second input/output and the first switch;
- a second switch coupled to the intermediate energy storage element and to the first switch; and
- means for operating the first switch between on and off states while maintaining the second switch in an off state to operate the converter as a buck converter during which time power is transferred from the first input/output to the second input/output and for operating the second switch between on and off states while maintaining the first switch off to operate the converter as a boost converter during which time power is transferred from the second input/output to the first input/output.

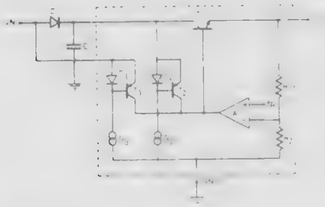


4,801,860

VOLTAGE STABILIZER WITH A MINIMAL VOLTAGE DROP DESIGNED TO WITHSTAND HIGH VOLTAGE TRANSIENTS

Bruno Murari, Monza, and Marco Morelli, Livorno, both of Italy, assignors to SGS-Thomson Microelectronics S.p.A., Agrate Brianza, Italy

Filed Feb. 23, 1988, Ser. No. 159,290
Claims priority, application Italy, Feb. 23, 1987, 19450 A/87
Int. Cl.⁴ G05F *1/56*
U.S. Cl. 323—274 **16 Claims**



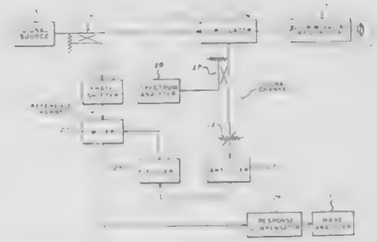
1. A voltage regulator circuit comprising:
- a first bipolar transistor of a first type of conductivity having a collector terminal and an emitter terminal and a base terminal;
- second and third bipolar transistors of a second type of conductivity which is opposite to said first type of conductivity, each of said transistors having a collector terminal and an emitter terminal and a base terminal;
- a differential amplifier having first and second input terminals and an output terminal;
- said voltage regulator circuit having first and second input terminals and an output terminal and a common terminal;
- a circuit biasing means connected between said first and second input terminals and said common terminal and having outputs connected to said base terminals of said second and third transistors;
- a voltage divider means connected between said output terminal and said common terminal and having an output connected to said first input terminal of said differential amplifier;
- wherein a reference voltage is connected to said second input terminal of said differential amplifier;
- and wherein said collector terminal and emitter terminal of said first transistor are respectively connected to said first input terminal and output terminal and said base terminal of said first transistor is connected to said output of said differential amplifier and said collector terminal and emitter terminal of said second transistor are respectively connected to said output of said differential amplifier and said first input terminal; and
- wherein said collector terminal and said emitter terminal of said third transistor are respectively connected to said output of said differential amplifier and said second input terminal.

4,801,861

APPARATUS FOR MEASURING FREQUENCY MODULATION NOISE SIGNALS HAVING A FREQUENCY RESPONSE COMPENSATION CIRCUIT

James R. Ashley, Nashua, N.H., and Frank M. Palka, Safety Harbor, Fla., assignors to Hercules Defense Electronics Systems Inc., Clearwater, Fla.

Filed Aug. 28, 1987, Ser. No. 90,316
Int. Cl.⁴ G01R *23/00, 23/16, 27/00*
U.S. Cl. 324—57 N **10 Claims**



1. An apparatus for determining the frequency modulation noise of a signal source comprising:
- a mixer coupled to receive signals from said signal source;
- frequency discriminator means for reflecting signals within a predetermined frequency band about a selected carrier frequency;
- compensation means coupled to receive signals from said mixer and having a noise versus frequency response that is flat to a predetermined cut off frequency and a preselected negative slope thereafter to compensate for frequency modulation noise increases beyond said cut-off frequency and for providing signals representative of said frequency modulation noise;
- a circulator coupled to direct signals from said signal source to said frequency discriminator means and direct signals reflected from said frequency discriminator means to an output port;
- a filter coupled between said output port and said mixer wherein said reflected signals are mixed with signals from said signal source to provide signals at frequencies which are differences between frequencies of signals from said signal source and frequencies of said reflected signals, said filter being tuned to maximize said signals representative of said frequency modulation noise; and
- means coupled to receive signals from said compensation means for indicating levels of said frequency modulation noise.

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4,801,862

METHOD FOR MEASURING COMPLEX DIELECTRIC CONSTANT OR COMPLEX MAGNETIC CONSTANT OF MATERIALS IN THREE-DIMENSIONAL DIRECTIONS

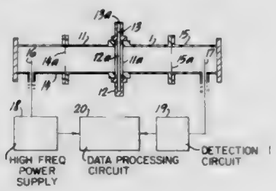
Shigeyoshi Osaki, Takarazuka; Kiyokazu Sakai, Nishinomiya, and Kimiyoshi Uraniahi, Ibaragi, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,549

Claims priority, application Japan, Feb. 24, 1986, 61-39520

Int. Cl.⁴ G01N *22/00*

U.S. Cl. 324—585 C **2 Claims**



1. Method for measuring complex dielectric constant of materials in three-dimensional directions comprising the steps of;

inserting a specimen held by a rotary holder into a slit which is provided in such a position corresponding to the anti-node or belly portion of electric field of a cavity resonator that the slit fully turns around the four-side walls of the cavity resonator in a plane perpendicular to the axis thereof to rotatably accommodate the holder about the axis;

measuring the respective resonant frequencies f_1 and f_2 and the respective Q-values Q_1 and Q_2 of the cavity resonator before and after inserting said specimen into the slit; and

calculating complex dielectric constant $\epsilon' - j\epsilon''$ from equations

$$\epsilon' = 1 - A_1 \cdot \frac{f_2 - f_1}{f_2}$$

$$\epsilon'' = \frac{A_1}{2}\left(\frac{1}{Q_2} - \frac{1}{Q_1}\right)$$

for each of some rotation angles of the holder and each of some insertion dispositions of the specimen to the holder when setting up constant A_1 in accordance with the configuration and dimension of the cavity resonator, the oscillation mode, and the configuration and position of the specimen to the cavity resonator.

4,801,863

APPARATUS FOR MONITORING THE MIXING RELATIONSHIP OF TWO LIQUIDS

Werner Schimion; Gerhard Knoche, and Klaus Reucker, all of Hilchenbach, Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag AG

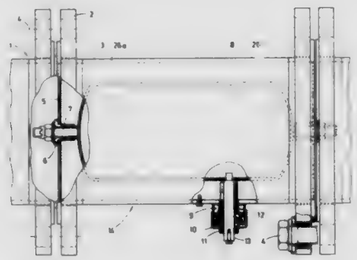
Filed May 1, 1986, Ser. No. 858,392

Claims priority, application Fed. Rep. of Germany, May 11, 1985, 3517065

Int. Cl.⁴ G01N *27/22*

U.S. Cl. 324—61 R **7 Claims**

1. Apparatus for monitoring the mixture ratio of two different liquids having substantially different dielectric constants comprising receptacle means having said liquids therein, said receptacle means comprising two electrodes lying opposite each other and capacitance measuring means connected with said electrodes and measuring the capacitance existing between them, wherein said receptacle means is provided in a collective entrance line for a liquid to be monitored, and wherein said receptacle means comprise a plurality of receptacles and wherein in a first line a first receptacle of said receptacles is provided having a capacitance measuring device with an average value generator located downstream thereof, and that



the other of said receptacles are provided in additional lines whose capacitance values determined by said capacitance measuring means can be compared with those existing at the output of an average value generator.

4,801,864

TESTER FOR TERMINAL POST RESISTANCE FOR AN ENERGY STORAGE ELEMENT CONNECTED IN AN ELECTRICAL CIRCUIT

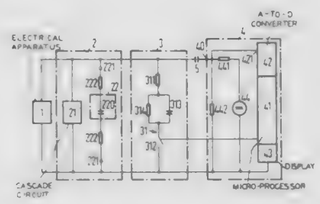
Dieter Neugebauer, Regenstauf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 7, 1987, Ser. No. 35,468

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1986, 3611562

Int. Cl.⁴ G01R *27/04*

U.S. Cl. 324—62 **6 Claims**



1. A contact resistance checker of terminal posts of an energy storage device connectable in an electrical apparatus, comprising:

a check portion connected in parallel to said energy storage device through said terminal posts; said check portion including:

a series circuit branch having a selectively operable transistor switch connected in series with a first resistor and in series a capacitor connected in parallel to a second resistor;

means for actuating said transistor switch so that a voltage jump occurs at said series branch when said switch is actuated; and

an evaluator having an input connected to said series branch of said check portion to measure the contact resistance from the voltage jump at said series branch when said switch is actuated.

4,801,865

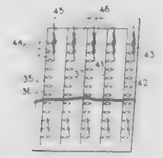
MOISTURE SENSOR PROBE WITH AT LEAST TWO GROUPS OF RESISTIVE ARRAYS

Ralph W. Miller, Encinitas, and Kent O'Brien, San Diego, both of Calif., assignors to California Sensor Corporation, Carlsbad, Calif.

Filed Jan. 19, 1988, Ser. No. 144,957

Int. Cl.⁴ G01R *27/02*

U.S. Cl. 324—65 R **9 Claims**



1. A probe for sensing moisture content in a porous medium, said probe comprising:

a substrate;

an array of at least a first and a second group of resistors formed on said substrate, there being a multiplicity of resistors in each said group;

first conductor means formed on said substrate interconnecting one end of all of said multiplicity of resistors in said first group together in a partial parallel configuration;

first output terminal means connected to said first conductor means;

a first electrode connected to the other end of each said resistor in said first group of resistors;

second conductor means formed on said substrate interconnecting on end of all of said multiplicity of resistors in said second group together in a partial parallel configuration;

second output terminal means connected to said second conductor means;

a second electrode connected to the other end of each said resistor in said second group of resistors, said first and second electrodes being adjacent and electrically isolated within said probe; and

encapsulating material sealing said resistors, conductors and electrodes, said encapsulating material protecting all but the ends of each said first and second electrode from the environment.

4,801,866

ELECTRIC CIRCUIT TESTING EQUIPMENT

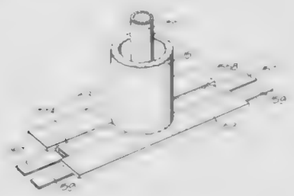
Frederick J. Wixley, Canterbury, England, assignor to GEC Avionics Limited, England

Filed Sep. 11, 1985, Ser. No. 774,795

Claims priority, application United Kingdom, Sep. 14, 1984, 8423310

Int. Cl.⁴ G01R *31/02, 19/165*

U.S. Cl. 324—73 PC **7 Claims**



1. An electric circuit testing equipment comprising: at least one electrical signal pick-up probe unit dimensioned and configured for placement so as to be capacitively coupled with a selected point of a circuit to be tested, said probe unit including a tubular member of electrically conducting material; a pair of elongated members of electrically conducting material secured to one end of said tubular member so as to extend perpendicular to an axis of the tubular member in parallel spaced relationship such that the axis of the tubular member intersects an axis of a gap between said elongated members substantially at right angles; an insulated conductor extending through said tubular member and along the gap between said elongated members; signal conditioning circuit means responsive to signals picked up by the probe unit to suppress signals picked up by the probe unit from any point of the circuit adjacent said selected point, thereby to produce an output signal corresponding only to signals picked up by the probe unit from said selected point; and means utilizing said output signal for test purposes.

4,801,867

MONOLITHIC MICROWAVE INTEGRATED CIRCUIT WITH PROBING PADS

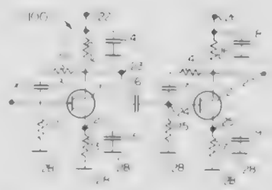
Tomihiro Suzaki, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 904,860, Sep. 8, 1986, abandoned, which is a continuation of Ser. No. 563,981, Dec. 21, 1983, abandoned. This application Nov. 6, 1987, Ser. No. 119,214

Claims priority, application Japan, Dec. 13, 1982, 57-231306; Feb. 2, 1983, 58-16781

Int. Cl.⁴ G01R *31/02, 31/28*

U.S. Cl. 324—73 R **1 Claim**



1. A monolithic microwave integrated circuit wafer used as an intermediate product in the production of integrated circuits, comprising:

a substrate; and

a plurality of separate and distinct circuits, similar to each other, integrated on the surface of said substrate, each such circuit having at least two stages that are resistance-capacitance coupled to one another, each of said stages including at least one resistor, at least one capacitor having an upper electrode, a transistor and one or more bonding pads, each of said separate and distinct circuits also including composing pads, at least one of which is mounted on said upper electrode of said at least one capacitor in each of the separate and distinct circuits to avoid deterioration of high frequency characteristics, and said composing pads being connected between at least one terminal of said transistor and said at least one resistor in each of said stages for measuring direct current and high frequency characteristics of at least said transistor in each of said circuits to thereby identify inoperative circuits in said plurality of separate and distinct circuits of said substrate so as to aid in chip selection before the substrate is diced into physically separate circuit chips.

4,801,868

CIRCUIT TRACING APPARATUS AND METHOD

Lyman J. Brooks, R.F.D. #1, Box 263, Webster, N.H. 03229

Filed Jul. 14, 1987, Ser. No. 73,442

Int. Cl.⁴ G01R *19/00*

U.S. Cl. 324—66 **3 Claims**

1. A method for identifying which one of a plurality of circuit breakers in a circuit breaker box controls a selected electrical outlet of an AC electrical circuit supplied by an AC

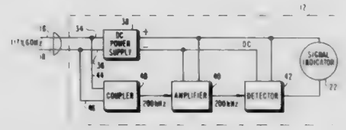
VOL 1098 ISS 5 JA 31 1989 UMI

electrical current distribution system having a plurality of AC electrical circuits, with each electrical circuit controlled by a circuit breaker, comprising the steps of:

(a) providing a transmitter module having means for electrical connection to the selected electrical outlet, means powered by the selected electrical outlet for generating and coupling a low frequency RF signal to the means for electrical connection, and means powered by the selected electrical outlet for indicating whether AC power is present at the means for electrical connection;

(b) connecting said transmitter module to the selected electrical outlet and verifying via said power indicating means that AC power is present at the selected electrical outlet;

(c) providing a receiver module having means for electrical connection to a second electrical outlet, means powered by the second electrical outlet for indicating whether the low frequency RF signal of the transmitter module is



present at the means for electrical connection, and means powered by the second electrical outlet for indicating whether AC power is present at the means for electrical connection;

(d) connecting said receiver module to the second electrical outlet at a location proximate the circuit breaker box such that the indicating means of said receiver module are perceptible by a person operating the circuit breakers, and verifying via the power indicating means that AC power is present at the second electrical outlet, and verifying via the low frequency RF signal indicating means that the low frequency RF signal is present at the second electrical outlet;

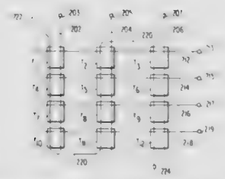
(e) sequentially switching off and switching back on each circuit breaker and perceiving the low frequency RF signal indicating means of the receiver module and the power indicating means of the receiver module.

4,801,869

SEMICONDUCTOR DEFECT MONITOR FOR DIAGNOSING PROCESSING-INDUCED DEFECTS

Edmund J. Sprogis, Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1987, Ser. No. 42,906
Int. Cl.[4] G01R *31/28, 31/00;* **G11C** *7/00*
U.S. Cl. 324—73 R **16 Claims**



10. A semiconductor-processing defect monitor comprising:

a matrix of test cells arranged in columns and rows, each of said test cells comprising a test node;

a plurality of column lines connectable to column decoder circuitry;

a plurality of row lines connectable to row decoder circuitry;

first transistor means in each of said test cells, said first transistor means being connected to one of said column lines, to one of said row lines, and to said test node of the respective test cell, such that said row line, said column line and said first transistor means are used to selectively access the test node of each of said test cells;

a first and a second conductive line provided in close proximity to the individual test cells of at least a portion of said matrix; and

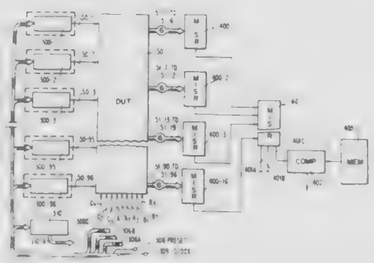
second transistor means in the individual test cells of at least a portion of said matrix, said second transistor means being connected to said first and second conductive lines and to said test node of the respective test cell, such that said first and second conductive lines and said second transistor means are used to provide access to the test nodes of the test cells of at least a portion of said matrix.

4,801,870

WEIGHTED RANDOM PATTERN TESTING APPARATUS AND METHOD

Edward B. Eichelberger, Hyde Park; Eric Lindbloom, Poughkeepsie; Franco Motika, and John A. Waicukauski, both of Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 48,178, May 11, 1987, Pat. No. 4,745,355, which is a division of Ser. No. 748,288, Jun. 24, 1985, Pat. No. 4,687,988. This application Feb. 1, 1988, Ser. No. 151,046
Int. Cl.[4] G01R *31/28*
U.S. Cl. 324—73 R **4 Claims**



1. A method for production testing of complex integrated circuit devices and producing data for diagnosing faults in those devices failing the production test, comprising the steps of;

(a) applying a repetitive succession of structured input stimuli to the device under test,

(b) processing the output responses of the device under test to the succession of input responses to produce a signature which is a predetermined function of the said output responses,

(c) comparing the thus-derived signature with a signature for a known good device,

(d) repeating the test procedure and input stimuli to produce a detailed data base on a device whose test signature fails to compare with the good signature, by

(1) partitioning the prior test procedure into small segments of the prior test procedure,

(2) deriving for each such segment a signature manifestive of the test results of each such segment,

(3) comparing the thus-derived segment signature with a segment signature for a known good device,

(4) repeating the segment test procedure for any test segment whose segment signature fails to compare with the known good segment signature, and

(5) recording each individual set of individual input stimuli and each of the respective resultant output responses thereto to produce a detailed data base for subsequent diagnosis of the failure made of the device wherein each

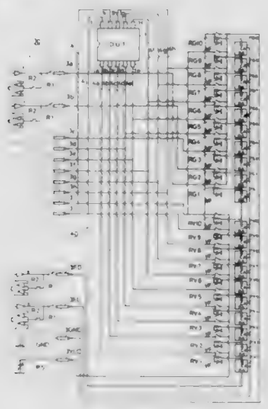
of the segments comprises only a fraction of the initial test procedure.

4,801,871

TESTING APPARATUS FOR SEMICONDUCTOR DEVICE

Tetsuo Tada, and Hideshi Maeno, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1986, Ser. No. 909,303
Claims priority, application Japan, Sep. 20, 1985, 60-209418
Int. Cl.[4] G01R *1/073, 1/04*
U.S. Cl. 324—73 R **10 Claims**



1. In a test fixture for selectively applying test signals to a plurality of pins of a device under test and for detecting response signals at said pins, the improvement comprising:

power source allocating means for selectively connecting first and second voltage levels of a power supply to selectable first and second pins of the device under test thereby to provide a power supply thereto,

said allocating means including:

a plurality of switching means for providing said first and second voltage levels to any selected pins of the device under test,

a first group of said plurality of switching means, including one switching means for each pin, providing said first voltage level to respective ones of said pins,

a second group of said plurality of switching means, including another switching means for each pin, providing said second voltage level to respective ones of said pins,

storage means for storing control signals for activating a subset of said plurality of switching means to provide one of said first and second voltage levels to the respective pins,

said storage means comprising shift register means storing a plurality of said control signals, and

further comprising control signal source means for providing a sequence of said control signals to said shift register means, and

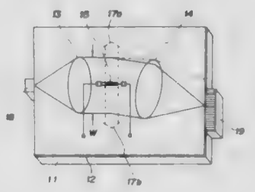
clock signal source means for providing a sequence of clock signals in synchronism with said control signals for storing said control signals in said shift register means.

4,801,872

GUIDED-WAVE ACOUSTOOPTIC SPECTRUM ANALYZER

Toshihiko Kitano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 8, 1987, Ser. No. 70,960
Claims priority, application Japan, Jul. 9, 1986, 61-159741; Jul. 31, 1986, 61-181320; Sep. 16, 1986, 61-218400
Int. Cl.[4] G01R *23/16*
U.S. Cl. 324—77 K **6 Claims**



1. A guided-wave acoustooptic spectrum analyzer comprising,

a planar optical waveguide layer provided on a substrate,

a light source for radiating light to be propagated through said planar optical waveguide layer,

a lens for converting said light which is propagated through said planar optical waveguide layer into parallel beams,

deflecting means for deflecting said parallel beams in response to frequencies of surface acoustic waves produced by electric signals applied to said deflecting means, said deflecting means being positioned adjacent the center of a light path under which said parallel beams are propagated, and

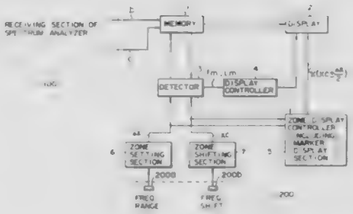
a photodetector array for detecting said light deflected by said deflecting means, thereby producing signals indicative of the frequency spectrum of said electric signals.

4,801,873

WAVEFORM MEASURING APPARATUS WITH MARKER ZONE DISPLAYING FUNCTION

Mitsuyoshi Takano, Tokyo, Japan, assignor to Anritsu Corporation, Tokyo, Japan

Filed Mar. 2, 1988, Ser. No. 163,020
Claims priority, application Japan, Mar. 6, 1987, 62-51707
Int. Cl.[4] G01R *23/16*
U.S. Cl. 324—77 R **18 Claims**



1. A waveform measuring apparatus comprising:

input processing means for processing an input signal to be measured and outputting the input signal as a digital signal which represents a predetermined characteristic value corresponding to a predetermined measurement range;

memory means, connected to said input processing means, for storing the digital signal;

display means, connected to said memory means, for dis-

playing the digital signal stored in said memory means as an image which is developed along one of the two-dimensional coordinates axes and represents the predetermined characteristic value;

zone setting means for outputting zone width data for designating, as a marker zone, a portion which includes a desired range of the one axis for the image displayed on said display means;

zone display control means, connected to said zone setting means and said display means, for causing said display means to display the marker zone in accordance with the zone width data;

detection means, connected to said memory means and said zone setting means, for reading out the digital signal within the desired range of the one axis from said memory means in accordance with the zone width data, and detecting a specific characteristic value in a readout digital signal; and

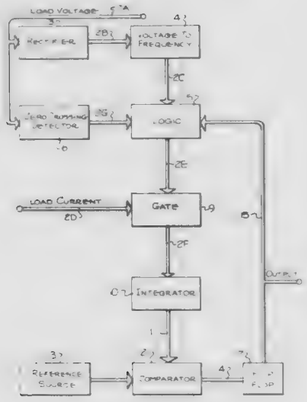
display control means, connected to said detection means and said display means, for causing said display means to display a detected specific characteristic value data.

4,801,874

METHOD AND APPARATUS FOR MEASURING ELECTRICITY

Horst R. Loeffler, Clover, S.C., assignor to Process Systems, Inc., Charlotte,, N.C.

Filed Feb. 27, 1987, Ser. No. 20,077
Int. Cl.[4] G01R *21/00, 7/00*
U.S. Cl. 324—142 **33 Claims**



1. Apparatus for electronically measuring the electricity used by a load comprising:

(a) means for generating an analog load voltage signal proportional to the instantaneous load voltage, said means being responsive to any positive and negative portions of the load voltage;

(b) means for generating a frequency modulated pulse train of signals in response to the load voltage signal, the instantaneous frequency of the pulses being proportional to the instantaneous amplitude of the load voltage signal;

(c) means for generating an analog load current signal proportional to the instantaneous load current, said means being responsive to any positive and negative portions of the load current; and

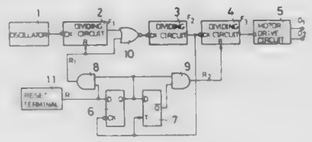
(d) logic means for gating the instantaneous load current signal during each pulse of the frequency modulated pulse train, said logic means generating an output signal comprising a train of pulses having a frequency proportional to the instantaneous load voltage and an amplitude proportional to the instantaneous load current, representing the product of the instantaneous load voltage and the instantaneous load current.

4,801,875

INTEGRATED CIRCUIT WITH FREQUENCY DIVIDING TEST FUNCTION

Yuji Ige, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1987, Ser. No. 21,670
Claims priority, application Japan, Jun. 3, 1986, 61-128967
Int. Cl.[4] G01P *21/00*
U.S. Cl. 324—158 R **3 Claims**



1. An integrated circuit with a frequency dividing test function, comprising: a first frequency dividing circuit which divides a given frequency signal and produces a first output signal at a divided frequency, a second frequency dividing circuit for dividing the output signal from said first frequency dividing circuit, a single terminal receptive of external test clock pulses, and a test circuit connected to the terminal including means for inhibiting the output signal from said first frequency dividing circuit to said second frequency dividing circuit in response to external test clock pulses applied to said terminal and having a higher frequency than the divided frequency of the first output signal and for simultaneously applying the external clock pulses to said second frequency dividing circuit to test said second frequency dividing circuit.

4,801,876

PRINTED WIRING BOARD TESTER

Takashi Nanzai, Fujisawa, Japan, assignor to Sagami Tsushin Kogyo Kabushiki Kaisha, Chigasaki, Japan

Filed Apr. 10, 1987, Ser. No. 37,004
Claims priority, application Japan, Apr. 18, 1986, 61-90949; Dec. 26, 1986, 61-200033
Int. Cl.[4] G01R *1/067, 1/04*
U.S. Cl. 324—158 F **4 Claims**



1. A printed wiring board tester which comprises

first and second fixture members disposed in spaced-apart, substantially parallel relationship with respect to each other,

a plurality of probe pins disposed between said first and second fixture members, and slidably extending therethrough,

said probe pins comprising a first pin element having a large diameter section connected with a small diameter section by a stepped portion, said large diameter section having a free end which is provided for engagement with the terminal area of a printed wiring board to be tested,

a cylindrical second pin element divided into large and small diameter sections, said large diameter section slidably fitting over the small diameter section of the first pin element with the end thereof defining a stopper jaw which engages said stepped portion, and a cord connecting element extending into and connected to the small diameter section of said second pin element, and

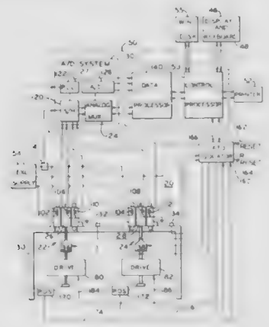
a third pin element comprising a coiled spring member which is loosely fitted around the periphery of said second pin portion and disposed between said first and second fixture members, one end of said spring member engaging the stopper jaw of said second pin element and the other end thereof engaging said fixture member, said coiled spring member imparting a bias to the first pin element to ensure that it is in positive contact with the terminal area of the printed wiring board.

4,801,877

METHOD AND APPARATUS FOR TESTING DYNAMOELECTRIC MACHINE ROTORS

Phillip R. Herrick; Daniel C. Ewing; Floyd H. Wright, and Kevin M. Truelove, all of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed May 6, 1986, Ser. No. 860,240
Int. Cl.[4] G01R *31/06*
U.S. Cl. 324—158 MG **22 Claims**



1. Test apparatus for testing dynamoelectric machine rotors, comprising:

a test fixture including means for accepting and imparting angular movement to a rotor, exciting means for magnetizing the rotor during said angular movement in response to an alternating current applied thereto;

voltage sensing means for generating a voltage signal in response to magnetic flux generated by the rotor;

current sensing means for sensing the magnitude of the alternating current utilized to magnetize the rotor and for generating a current signal corresponding thereto; and

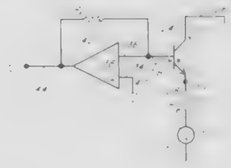
signal processing means for determining at least one of resistance and reactance values of the rotor in response to both the voltage signal and current signal.

4,801,878

IN-CIRCUIT TRANSISTOR BETA TEST AND METHOD

Ronald J. Peiffer, Fort Collins, and David T. Crook, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 18, 1987, Ser. No. 64,157
Int. Cl.[4] G01R *31/22*
U.S. Cl. 324—158 T **17 Claims**



5. An in-circuit test device for testing the gain of a transistor comprising:

constant current source means coupled to the emitter of said transistor for generating first and second bias currents sufficient to forward bias the base/emitter junction of said transistor;

operational amplifier means having a first input coupled to ground potential, a second input coupled to the base of said transistor and feedback resistance coupled to said second input and the output of said operational amplifier means such that output voltages are produced at said output of said operational amplifier means in response to said first and second bias currents which are substantially proportional to the current flowing through the base of said transistor and the voltage at the base of said transistor is maintained at approximately ground potential;

means for coupling the collector of said transistor to ground potential so that the collector/emitter voltage is substantially equal to the base/emitter voltage to prevent said transistor from going into saturation;

whereby the difference in said output voltages divided by said feedback resistance provides an indication of the gain of said transistor when compared to the differences in said first and second bias currents.

4,801,879

ELECTRON BEAM TESTING OF INTEGRATED CIRCUITS

Denis F. Spicer, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 872,567, Jun. 10, 1986. This application Jan. 4, 1988, Ser. No. 142,292
Claims priority, application United Kingdom, Jun. 17, 1985, 8515250
Int. Cl.[4] G01N *23/00;* **G01R** *31/28*
U.S. Cl. 324—158 R **17 Claims**



1. A method of monitoring the function of an integrated circuit in operation, using an electron beam to bombard a selected part of the integrated circuit under test to generate secondary electrons according to the potential at the site of bombardment and collecting secondary electrons resulting from the bombardment using a detector having a biased filter

grid to pass electrons having energies above a predetermined value set by a bias potential on the filter grid; including the steps of:

producing an electric signal representing the number of electrons passing the filter grid and applying the electrical signal to an amplifying loop in which the electrical signal is continuously compared with a reference signal to produce a difference signal;

adding the difference signal to a filter bias signal to produce a feedback signal and applying the feedback signal as the bias potential to the filter grid over a feedback path in the amplifying loop, said amplifying loop having an open loop voltage gain to frequency characteristic with a substantially constant rolloff measured in db/octive extending over substantially the whole unity gain bandwidth of the amplifying loop; and

using the difference signal to produce an output signal representing the potential present.

4,801,880

DEVICE FOR MEASURING THE SPEED OF A MOVING OBJECT

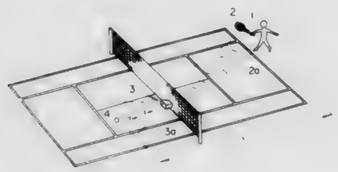
Eishi Koike, Sagamihara, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Oct. 1, 1987, Ser. No. 103,397

Claims priority, application Japan, Nov. 28, 1986, 61-183092

Int. Cl.[4] G01C *1/22*; A63B *69/38*

U.S. Cl. 324—178 **4 Claims**



1. Device for measuring the speed of a moving object wherein said moving object generates first and second vibration waves such as sound waves respectively at a movement starting time and at a movement finishing time after moving a predetermined distance, comprising:

movement start detecting means for detecting the first vibration wave generated by said moving object at the movement starting time, said movement start detecting means including a vibration sensor;

means for hitting said moving object to give an initial speed thereto, the vibration sensor being attached to the means for hitting;

movement finish detecting means for detecting the second vibration wave generated by said moving object at the movement finishing time;

time measuring means for measuring a time interval between a time point at which the first vibration wave is detected by said movement start detecting means and a time point at which the second vibration wave is detected by said movement finish detecting means;

speed computing means for computing speed of movement of said moving object on the basis of the time measurement result obtained by said time measuring means and the predetermined distance; and

a display unit for displaying the result obtained by said speed computing means.

4,801,881

MAGNETORESISTIVE SENSOR HAVING PROTECTIVE DUMMY ELEMENTS

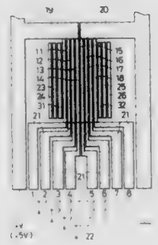
Sadao Kawata, Koide, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Apr. 24, 1987, Ser. No. 42,379

Claims priority, application Japan, Sep. 2, 1986, 61-134706[U]

Int. Cl.[4] G01B *7/30*

U.S. Cl. 324—208 **3 Claims**



1. A rotation information detector including plural magnetoresistant elements located parallel and adjacent to a rotating magnetic field wherein rotation information is detected on the basis of those electric resistances of the magnetoresistant elements which change responsive to the change of the magnetic field, characterized in that dummy elements are located parallel on both sides of the plural parallel-arranged magnetoresistant elements to protect said magnetoresistant elements during fabrication.

4,801,882

THIN FILM SQUID MAGNETOMETER FOR A DEVICE FOR MEASURING WEAK MAGNETIC FIELDS

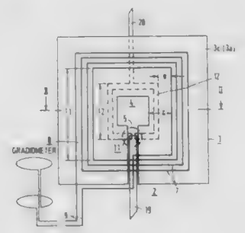
Gabriel M. Daalmans, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 31, 1987, Ser. No. 32,764

Claims priority, application Fed. Rep. of Germany, May 21, 1986, 3617045

Int. Cl.[4] G01R *33/035, 33/022*; H01L *39/22*

U.S. Cl. 324—248 **7 Claims**



1. A thin film SQUID magnetometer for measuring weak magnetic field comprising:

a planar d-c SQUID containing a SQUID loop, two Josephson junctions and connecting leads lying on a first plane surface;

a planar coupling coil lying on a second surface parallel to said first surface and surrounding said SQUID loop at a preselected distance to limit coupling between said SQUID loop and said coupling coil,

a separate planar coupling element lying on a third surface parallel to said first plane and spaced from said d-c SQUID and said coupling coil for coupling energy between said d-c SQUID and said coupling coil, said coupling element including a superconducting area with a coupling hole, said SQUID loop surrounding said coupling hole, and

a gradiometer coil cooperating with said coupling coil to form a superconducting flux transformer for inductively coupling a signal indicative of a magnetic field into said SQUID loop.

4,801,884

APPARATUS FOR THE IDENTIFICATION OF NUCLEAR MAGNETIC SPECTRA FROM SPATIALLY SELECTABLE REGIONS OF AN EXAMINATION SUBJECT

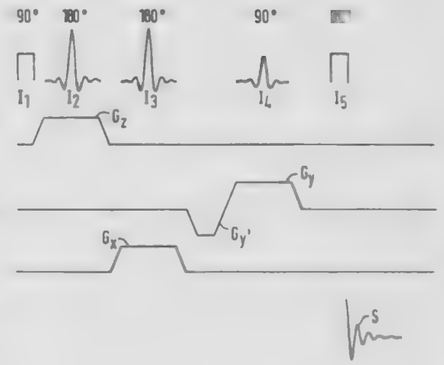
Arnulf Oppelt, Spardorf; Uwe Klose, Braunschweig; Ralf Ladebeck, Erlangen, and Dietmar Hentschel, Niederndorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 1, 1988, Ser. No. 151,256

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1987, 3702820

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—309 **4 Claims**



1. A method for operating a nuclear magnetic resonance examination apparatus including means for generating a fundamental magnetic field, which magnetizes an examination region within a patient, in a first direction, means for respectively generating independent orthogonal gradient fields in first, second and third directions, means for applying RF pulses to said patient, and means for acquiring nuclear magnetic resonance signals from said patient, said method comprising the steps of:

applying a first, non-selective 90° RF pulse to said patient which rotates the magnetization of said examination region out of said first direction into a plane defined by said second and third directions disposed perpendicularly relative to said first direction;

applying a first, selective 180° RF pulse to said patient simultaneously with a magnetic gradient in said first direction, said magnetic gradient in said first direction causing a dephasing of nuclear spins in said examination region outside of a first selected slice;

applying a second, selective 180° RF pulse to said patient simultaneously with a magnetic gradient in said second direction, said magnetic gradient in said second direction effecting a dephasing of the nuclear spins in said examination region outside of a second selected slice;

applying a second, selective 90° RF pulse to said patient simultaneously with a magnetic gradient in said third direction, said magnetic gradient in said third direction rotating said nuclear spins in said examination region in a selected volume of said examination region back into parallel with said first direction;

applying a third 90° RF pulse to said patient; and reading out nuclear magnetic resonances signals from said examination region in response to the application of said third 90° RF pulse for evaluation of said signals.

4,801,883

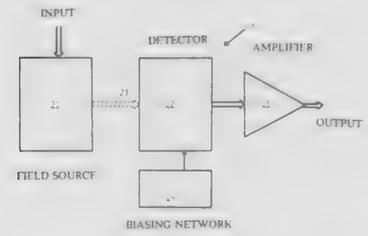
INTEGRATED-CIRCUIT ONE-WAY ISOLATION COUPLER INCORPORATING ONE OR SEVERAL CARRIER-DOMAIN MAGNETOMETERS

Richard S. Muller, Kensington, and Juan I. Goicolea, Berkeley, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 2, 1986, Ser. No. 869,581

Int. Cl.[4] G01R *33/06, 33/02*

U.S. Cl. 324—252 **24 Claims**



1. An integrated-circuit one-way isolation-coupler for a first electrical circuit to control a second electrical circuit so that the second circuit varies in current magnitude proportionally to a signal generated by said first circuit, while isolated as to voltage level, comprising:

an integrated circuit magnetometer chip of semiconductor material, providing a base,

a first electrical circuit, including magnetic-field source means on said base with first contact means and a current element having a coil, for producing a magnetic field from current applied to said first contact means from another portion of said first circuit,

a second electrical circuit,

magnetic-field detecting means on said base for detecting the magnetic field produced by said source means and for producing a signal therefrom,

dielectric separation means on said base and in contact with both said magnetic-field source and said magnetic-field detecting means, for dielectrically separating said source means from said detecting means and for isolating said detecting means so that it can be at a different voltage level from said source means, and

amplifier means on said base having output means, for amplifying said signal and delivering it via said output means to said second circuit.

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4,801,885

NUCLEAR MAGNETIC RESONANCE APPARATUS FOR THE IDENTIFICATION OF SPECTRA OR IMAGES OF AN EXAMINATION SUBJECT

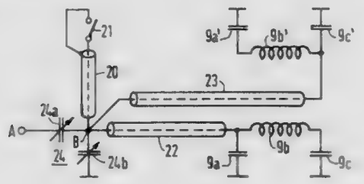
Ralph Meissner, Erlangen, and Helmut Kess, Deggendorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 16, 1987, Ser. No. 97,138

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1986, 3632137

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—318 **12 Claims**



1. In a nuclear magnetic resonance apparatus for identifying spectra or images of an examination subject disposed in a fundamental magnetic field and a plurality of gradient magnetic fields, said apparatus having antenna means with a high impedance for irradiating said examination subject with a sequence of radio-frequency pulses having a wave-length λ, said pulses inducing nuclear magnetic resonance signals in said examination subject, and having a coil means for acquiring said nuclear magnetic resonance signals from said examination subject, the improvement comprising:

means for decoupling said antenna means and said coil means from each other including at least one coaxial line having a first end connected to said antenna means and having a second end connected to a λ/4 line, said at least one coaxial line having a transmission characteristic which transforms the high impedance of said antenna means to a lower level, and switching means connected at a free end of said λ/4 line for short-circuiting said λ/4 line during emission of said radio-frequency pulses by said antenna means and opening said λ/4 line during reception of said nuclear magnetic resonance signals by said coil means.

4,801,886

MOUNTING MEANS FOR WATER CHEMISTRY ANALYSIS DEVICE

Jacques M. Steininger, 792 Hot Springs Rd., Santa Barbara, Calif. 93108

Continuation-in-part of Ser. No. 864,477, May 19, 1986, Pat. No. 4,752,740. This application Apr. 30, 1987, Ser. No. 44,440

Int. Cl.[4] G01N *27/56;* **F16L** *5/02*

U.S. Cl. 324—438 **13 Claims**

1. A water analysis system for continuously analyzing the water in a recirculating line for pool, spa or the like, comprising in combination:

a set of adjacent sensors for mounting in said line said sensors including:

a cylindrical shaft surrounding each of said sensors;

a first oxidation-reduction potential (ORP) sensor mounted on the wall of the line with a sensing probe dispersed in the water in the line for developing a first electrical signal at its output directly related to the active concentration of the form of an oxidation sanitizer contained in the water;

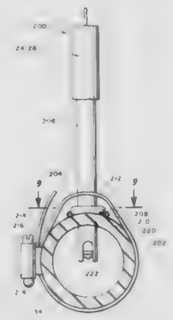
a second pH sensor mounted on the wall of the line with a sensing probe dispersed in the water in the line for developing a second electrical signal at its output directly related to the acidity/basicity level of the water in the line;

means for mounting each of the probes on the wall of the line including an aperture through said wall for receiving the shaft, an assembly of an inner O-ring and an outer constricting ring slidably mounted on the shaft, said constricting ring being harder than the O-ring and having a height smaller than the diameter of the O-ring slidingly positioned on the outside edge of the O-ring and a belt clamp having an aperture receiving the shaft of the sensor and having a belt surrounding the line and means for tightening the belt clamp whereby the clamp flattens the O-ring between the belt and the wall of the line while it is constrained by the outer constraining ring;

an analyzer unit having a housing covered by a face plate and including:

a first bargraph display having a visual indicator movable over a first range corresponding to concentrations of sanitizer below and above optimum concentration mounted on said face plate;

a first sanitizer scale having a height equal to said first range printed on the face plate adjacent the first bargraph display indicating in the below optimum portion of the range a printed instruction to add sanitizer;



a second bargraph display having a visual indicator movable over a second range corresponding to pH mounted on said face plate;

a second scale printed on the face plate adjacent the second bargraph having a height equal to the second range including printed instruction in the high pH range to add acid and a printed instruction in the low pH range to add base;

a compartment within said housing for receiving a battery;

first electrical driver means electrically connected to said battery compartment and operably connected between the output of said first sensor and the first bargraph display for moving the first bargraph display in step increments over the first range; and

second electrical driver means electrically connected to said battery compartment and operably connected between the output of the second sensor and the second bargraph display moving the second bargraph display in step increments over the second range.

4,801,887

CIRCUIT ARRANGEMENT FOR GENERATING A DIRECT VOLTAGE FROM A SINUSOIDAL INPUT VOLTAGE

Armin F. Wegener, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Apr. 7, 1987, Ser. No. 35,533

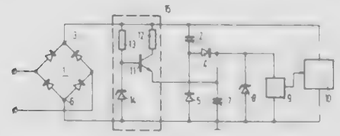
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, 3612147

Int. Cl.[4] H03K *5/00, 17/00, 5/19*

U.S. Cl. 328—26 **16 Claims**

1. A circuit arrangement for generating a direct voltage from a sinusoidal input voltage comprising: a rectifier having

first and second output terminals coupled to a smoothing capacitor connected in parallel arrangement with a control circuit, a load coupled between said first and second output terminals of the rectifier, a capacitor coupled between the first output terminal and a first diode arrangement so that said capacitor can be discharged via the first diode arrangement



and the load, a series circuit connected in parallel with the first diode arrangement and which includes a second diode arrangement, via which only a charge current of the capacitor flows, in series with said parallel arrangement of the control circuit and the smoothing capacitor, and wherein a terminal of the control circuit is connected in common with a terminal of the load.

4,801,888

PROGRAMMABLE, UNIVERSAL FILTER WITH SELF BIASING

Yusuf A. Haque, San Jose, Calif., assignor to Maxim Integrated Products, Sunnyvale, Calif.

Filed Feb. 29, 1988, Ser. No. 161,996

Int. Cl.[4] H03F *1/34*

U.S. Cl. 330—9 **7 Claims**



1. A self-biasing programmable, univeral active filter comprising:

an input section including an operational amplifier having one output and two input terminals, a first capacitor having one terminal coupled to one of said input terminals and the other terminal serving as an input node to the filter, and a second capacitor coupled between said one input terminal and said output terminal;

a bandpass section having an input coupled to the output terminal of said amplifier and having an output;

a third capacitor coupled between said one input terminal of said amplifier and the output of said bandpass section;

a lowpass section having an input coupled to the output of said bandpass section and having an output; and

a pair of switched capacitors under clock control, one in parallel with said first capacitor and the other in parallel with said second capacitor, the values of said pair of switched capacitors having a fixed relationship selected to determine the d.c. gain of said amplifier and filter, whereby d.c. current can flow from said input node to the filter to said one input terminal of said amplifier, and from said one input terminal of said amplifier to the output terminal of said amplifier and filter during at least a portion of the clock cycle.

4,801,889

AMPLIFIER FOR AMPLIFYING INPUT SIGNAL VOLTAGE AND SUPPLYING THE SAME

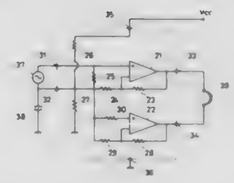
Masanori Fujisawa, Saitama, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 13, 1987, Ser. No. 108,104

Claims priority, application Japan, Oct. 17, 1986, 61-247933

Int. Cl.[4] A03F *1/34*

U.S. Cl. 330—84 **15 Claims**



1. An amplifier for amplifying an input signal voltage and supplying the same to a load, comprising:

a first input terminal,

a second input terminal,

said input signal voltage being coupled between said first input terminal and said second input terminal,

biasing means for applying a DC bias voltage to said input signal voltage,

first amplifier means for amplifying the input signal voltage including said applied DC bias voltage,

second amplifier means for amplifying only said DC bias voltage,

a first output signal deriving means, including a first output terminal for deriving an output signal from said first amplifier means, and

a second output signal deriving means, including a second output terminal for deriving an output signal from said second amplifier means,

said load being connected between said first output terminal and said second output terminal.

4,801,890

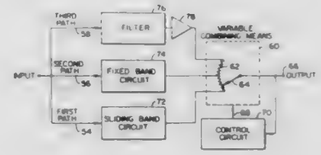
CIRCUIT ARRANGEMENTS FOR MODIFYING DYNAMIC RANGE USING VARIABLE COMBINING TECHNIQUES

Ray M. Dolby, 3340 Jackson St., San Francisco, Calif. 94118

Continuation-in-part of Ser. No. 744,964, Jun. 17, 1985, abandoned. This application Jun. 12, 1986, Ser. No. 871,672

Int. Cl.[4] H03F *3/68*

U.S. Cl. 330—126 **9 Claims**



1. A circuit for modifying the dynamic range of an input signal, comprising:

signal responsive variable gain circuit means having its own dynamic response characteristic,

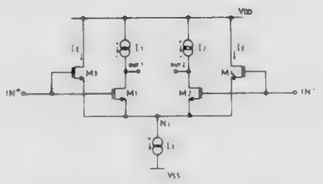
signal responsive variable pass filter circuit means having its own dynamic response characteristic,

means for coupling the input signal to each of said circuit means, and

means for deriving an output signal having a dynamic response characteristic built up from said circuit means' own

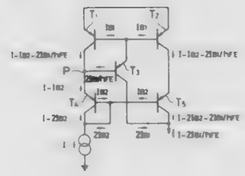
response characteristics by variably selecting signal components from each of said circuit means.

4,801,891
DIFFERENTIAL AMPLIFIER UTILIZING MOS TRANSISTORS OF A SINGLE CHANNEL POLARITY
David Novosel, New Wilmington, Pa., and Alejandro de la Plaza, Buenos Aires, Argentina, assignors to SGS Microelettronica S.p.A., Catania, Italy
Filed Oct. 21, 1987, Ser. No. 110,891
Claims priority, application Italy, Oct. 21, 1986, 83653 A/86
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—253 **1 Claim**



1. A voltage differential amplifier comprising:
a pair of input MOS transistors each having a gate, a drain and a source;
the gates of said input MOS transistors being connected, respectively, to one and to the other of two input terminals;
the sources of said input MOS transistors being connected to a internal node of the amplifier;
the drains of said input MOS transistors being connected, respectively, to one and to the other of two output terminals;
a first and a second bias current generator each having a positive and a negative terminal, with current flowing inside the generator from said positive terminal to said negative terminal, said current generators being connected with their terminal of a first polarity to a first common voltage node and with their terminal of opposite polarity, respectively, to one and to the other of said output terminals;
a third bias current generator having a positive terminal and a negative terminal, with current-flowing inside the generator from said positive terminal to said negative terminal and generating a current equal to or greater than the sum of the currents generated by said first and second current generators, the terminal of said first polarity being connected to said internal node of the amplifier and the terminal of opposite polarity being connected to a second common potential node of the amplifier;
two additional bias MOS transistors each having a gate, a drain and a source;
the gate and the source of each of said two additional bias MOS transistors being respectively connected to the gate and to the source of one and of the other of said two input MOS transistors;
the drains of said two additional bias MOS transistors being connected to said first common potential node of the amplifier.

4,801,892
CURRENT MIRROR CIRCUIT
Akira Yamakoshi; Toyohiko Fujita; Kunihiko Tsukakoshi, and Shinji Anraku, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan
Filed Sep. 9, 1987, Ser. No. 94,375
Claims priority, application Japan, Sep. 11, 1986, 61-214337
Int. Cl.⁴ H03F *3/04*
U.S. Cl. 330—288 **5 Claims**

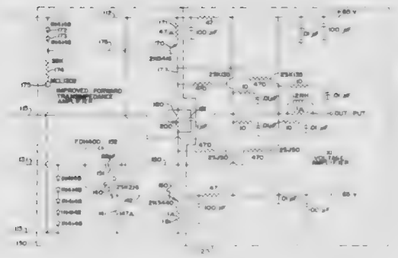


1. A current mirror circuit comprising a first transistor, a second diode-connected transistor connected in series to said first transistor and having a collector receptive of an input current, a third transistor having a base which is connected to a base of said first transistor, a fourth transistor connected in series to the third transistor with a base connected to a base of said second transistor and a collector from which an output current is obtained, and a fifth transistor having an emitter which is connected to the base of said first transistor a base connected to a collector of said first transistor and a collector directly connected to the collector of said fourth transistor.

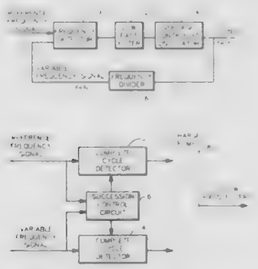
4,801,893
FORWARD TRANSIMPEDANCE AMPLIFIER
Aado J. Perandi, 3864 Midland Ave., White Bear Lk., Minn. 55110, assignor to Frank L. VanAlstine; Aado J. Perandi and David H. Umeda, all of Burnsville, Minn.
Filed Sep. 10, 1986, Ser. No. 905,841
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—300 **5 Claims**

1. In a power amplifier of the type having MOSFET output devices, an improved transimpedance amplifier for driving said output devices, comprising:
a field effect transistor first amplification stage;
a bipolar junction transistor second amplification stage;
input means for receiving signals to be amplified and applying them to said field effect transistor;
means connected for direct coupling of signals from the output of the first amplification stage to the input of the second amplification stage;
output means connected to receive amplified signals from the second amplification stage and connected for applying them to drive the gates of the MOSFET output devices; and
Capacitive feedback means connected to convey negative feedback signals from the output means of said second amplification stage to the input means of said first amplification stage to control the transimpedance of the transimpedance amplifier and to shape the bandwidth of and improve the stability of the power amplifier.



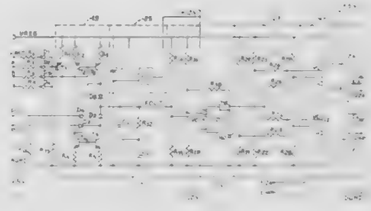


4,801,894
FREQUENCY DETECTOR FOR FREQUENCY LOCKED LOOP
Grant K. Garner, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 23, 1987, Ser. No. 113,036
Int. Cl.⁴ H03L *7/08, 7/18;* **H03D** *13/00*
U.S. Cl. 331—1 A **5 Claims**



1. A frequency synthesizer circuit comprising:
frequency detector means for receiving a reference frequency signal and a variable frequency signal and for generating a difference output signal only after detecting a complete cycle of the one of the reference frequency and variable frequency signals that is of the highest frequency, the difference output signal being a function of the difference between the frequency of the reference frequency signal and the frequency of the variable frequency signal;
low pass filter means for receiving the difference output signal and for removing therefrom any signal components above a predetermined cutoff frequency to provide a smoothed control signal;
voltage controlled oscillator means for receiving the smoothed control signal and for producing an output signal whose frequency is a function of the smoothed control signal; and
frequency divider means for dividing the frequency of the output signal by an adjustable factor to produce the variable frequency signal that is applied to the frequency detector means.

4,801,895
CIRCUIT FOR REGULATING A VOLTAGE CONTROLLED OSCILLATOR
Bruno Melandri, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Jan. 11, 1988, Ser. No. 141,975
Claims priority, application Italy, Jan. 29, 1987, 67054 A/87
Int. Cl.⁴ H03L *7/06*
U.S. Cl. 331—17 **12 Claims**

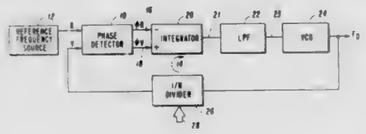


1. In a control arrangement for controlling a unit for reading and writing data on a magnetic carrier, including a voltage controlled oscillator, a circuit for regulating said voltage controlled oscillator, wherein the oscillator is supplied at one of its inputs with a bias voltage and at another one of its inputs with a phase displacement voltage, a preset voltage source, a voltage adder for defining said phase displacement voltage, a resistive divider connected to said voltage source for supplying to said adder a first voltage component of said phase displacement voltage, and means for generating another component of said phase displacement voltage, at least one resistor of said resistive divider being calibratable in such a way as to define with a high precision said first voltage component for said adder.

4,801,896
CIRCUIT PROVIDING IMPROVED LOCK-IN FOR A PHASE-LOCKED LOOP
Donald E. Phillips, Cedar Rapids, and Gregory A. Jobe, Marion, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jul. 1, 1987, Ser. No. 68,877
Int. Cl.⁴ H03L *7/08*
U.S. Cl. 331—25 **11 Claims**

1. A circuit for generating a signal indicative of the phase relationship between a signal R and a signal V comprising:
first phase detector means having a desired operation range of phase relationship between signal R and V;

means for gating signals R and V to the first phase detector means; and



means for disabling the gating means when the phase relationship between signals R and V is outside the desired operation range.

4,801,897

ARRANGEMENT FOR GENERATING NATURAL RESONANT OSCILLATIONS OF A MECHANICAL OSCILLATING SYSTEM

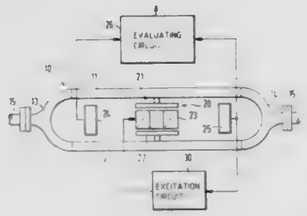
Peter Flecken, Weil-Haltingen, Fed. Rep. of Germany, assignor to Flowtec AG, Switzerland

Filed Sep. 24, 1987, Ser. No. 100,405

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632801; Sep. 11, 1987, 8712331[U]

Int. Cl.[4] G01N *27/00;* **G01F** *1/84*

U.S. Cl. 331—65 **6 Claims**



1. Arrangement for generating natural resonant oscillations of a mechanical oscillating system comprising an electromechanical oscillation exciter, which on excitation by an electrical excitation signal generates a drive force which sets the oscillating system in mechanical oscillations, the phase position of which coincides with the phase position of the excitation signal, a displacement sensor converting the mechanical oscillations into an electrical sensor signal having a phase position which coincides with the phase position of the deflection of the mechanical oscillating system, and an excitation circuit which receives the sensor signal and emits the excitation signal, said displacement sensor comprising a light transmitter, a light receiver and a light waveguide means, and wherein the light waveguide means comprises first and second sapphire rods of which the first sapphire rod is connected at one end to the light transmitter and the second sapphire rod is connected at one end to the light receiver, the other ends of the two sapphire rods terminating in angled faces which act as totally reflecting prisms, the angled faces lying spaced apart opposite each other in such a manner that light flux passing from the light transmitter through the first sapphire rod enters the second sapphire rod and is conducted by the second sapphire rod to the light receiver, said displacement sensor further comprising at least one immersion tab which is attached to the mechanical oscillating system in such a manner that in dependence upon the deflection of the oscillating system said tab projects to a greater or lesser extent into a gap formed between the prism-like ends of the sapphire rods.

4,801,898

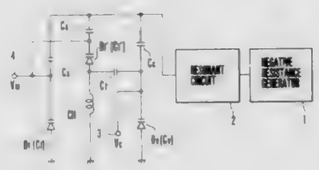
VOLTAGE-CONTROLLED OSCILLATOR

Katsuki Obayashi, Kodaira, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1988, Ser. No. 169,565

Int. Cl.[4] H03B *7/00, 7/06;* **H03C** *3/20*

U.S. Cl. 331—132 **33 Claims**



1. A voltage-controlled oscillator comprising:
a negative resistance generator;
a resonant circuit excited by said negative resistance generator and including an inductance;
a first series circuit, consisting of a first capacitor and a first variable capacitance diode to which a control voltage is applied, for controlling an oscillation frequency for changing a resonant frequency of said resonant circuit;
a second series circuit, consisting of a second capacitor and a second variable capacitance diode to which a modulation signal is supplied, for modulating a frequency for changing the resonant frequency of said resonant circuit; and
a third series circuit, consisting of a third capacitor and a third variable capacitance diode to which the modulation signal is supplied, for changing the resonant frequency of said resonant circuit in a direction for canceling a change in modulation sensitivity caused by said second series circuit.

4,801,899

QUADRATURE AMPLITUDE MODULATION/DEMODULATION DEVICE USING MULTI-LEVEL DIGITAL SIGNALS

Hideo Ashida, Otawara, Japan, assignor to Fujutsu Limited, Kawasaki, Japan

Filed Dec. 15, 1986, Ser. No. 941,370

Claims priority, application Japan, Dec. 17, 1985, 60-283290

Int. Cl.[4] H04L *27/20, 27/22*

U.S. Cl. 332—17 **2 Claims**



1. A modulation device for multiple level quadrature amplitude modulation, comprising:
balanced mixer means for carrying out quadrature amplitude modulation and for providing a quadrature amplitude modulated signal;
an input hybrid circuit, connected to carrier input terminals of said balanced mixer means, for supplying carrier inputs to said balanced mixer means;

means for receiving digital baseband input signals; and
modulation characteristic compensation means, connected to input terminals of said balanced mixer means, for supplying said balanced mixer means with said baseband input signals; said modulation characteristic compensation means comprising:
a pair of addition circuit means; and
a pair of compensation signal generating circuit means, connected between said pair of addition circuit means, for generating compensation signals,
said pair of addition circuit means adding said baseband input signals and said compensation signals such that a value which is a function of one of said baseband input signals is added to another one of said baseband input signals.

2. A demodulation device for multiple level quadrature amplitude demodulation, comprising:
balanced mixer means for carrying out quadrature amplitude demodulation and for providing a pair of quadrature amplitude demodulated signals;
a first input hybrid circuit connected to first input terminals of said balanced mixer means for supplying modulated signals to said balanced mixer means;
a second input hybrid circuit connected to second input terminals of said balanced mixer means for supplying carrier inputs to said balanced mixer means; and
demodulation characteristic compensation means, connected to output terminals of said balanced mixer means, for deriving demodulation characteristic compensated baseband signals from said pair of quadrature amplitude demodulated signals said demodulation characteristic compensation means comprising:
a pair of addition circuit means; and
a pair of compensation signal generating circuit means, connected between said pair of addition circuit means, for generating compensation signals,
said pair of addition circuit means adding demodulated signals from said balanced mixer means such that a value which is a function of one of said demodulated signals is added to another one of said demodulated signals.

4,801,900

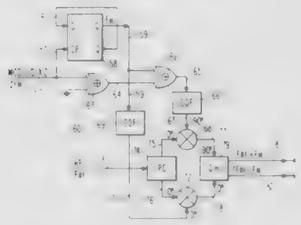
IMAGE REJECT APPARATUS FOR SIGNAL SYNTHESIS APPLICATIONS

Vaughn L. Mower, Bountiful, Utah, assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 18, 1987, Ser. No. 135,167

Int. Cl.[4] H03C *1/60*

U.S. Cl. 332—45 **10 Claims**



1. An image reject apparatus for producing a broad multiple octave range of signal synthesis frequencies, comprising:
digital synthesis input signal means for receiving $2F_M$ frequency signals at twice the desired output sideband frequency,
digital phase shifter means coupled to said $2F_M$ digital input signal means for producing a F_M digital inphase output signal and a F_M digital 90° phase shifted output signal in exact digital quadrature,
RF input signal means for receiving F_{RF} frequency signals,
power divider means coupled to said F_{RF} input signal means for producing a first and a second power output signal,
a first mixer coupled to said first power output signal and to said F_M digital 90° phase shifted output signal,
a second mixer coupled to said second power output signal and to said F_M digital inphase output signal, and
means for combining the outputs of said mixers to produce a sum or difference product output signal expressed as $(F_{RF}+F_M)$ and $(F_{RF}-F_M)$ wherein the modulation signal component F_M is one-half the input modulation frequency $2F_M$.

4,801,901

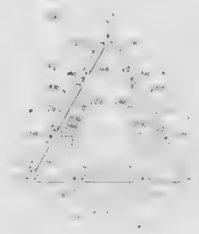
NON-FERRITE NON-RECIPROCAL PHASE SHIFTER AND CIRCULATOR

Yalcin Ayasli, Lexington, Mass., assignor to Hittite Microwave Corporation, Woburn, Mass.

Filed Mar. 13, 1987, Ser. No. 25,594

Int. Cl.[4] H01P *1/32, 1/397;* **H03H** *11/02, 11/16*

U.S. Cl. 333—1 **14 Claims**



1. A non-reciprocal bi-directional phase shifter comprising:
a monolithic, non-ferrite circuit including:
a transmission medium connected between first and second terminals and having a predetermined phase shift which is the same is each direction; and
an amplifier circuit connected in parallel with the transmission medium between the first and second terminals, said amplifier circuit operating to introduce its inherent phase shift in one direction and a phase shift in excess of its inherent phase shift in the other direction for establishing a non-reciprocal phase shift between said first and second terminals.

4,801,902

WAVEGUIDE CIRCULATOR WITH I/O PORT IMPEDANCE MATCHING PRODUCED BY FERRITE-PORT GAP DIMENSIONING

John C. Hoover, Roswell, and David E. Giese, Duluth, both of Ga., assignors to Electromagnetic Sciences, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 852,146, Apr. 15, 1986, Pat. No. 4,697,158. This application Sep. 28, 1987, Ser. No. 103,782

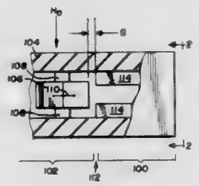
The portion of the term of this patent subsequent to Sep. 29, 2004, has been disclaimed.

Int. Cl.[4] H01P *1/39*

U.S. Cl. 333—1.1 **14 Claims**

1. A waveguide circulator comprising:
a conductive waveguide structure having a cavity located therewithin of a first predetermined height, said cavity having plural input/output apertures emanating therefrom, at least one of said apertures having at least a portion thereof which is of a second, lesser predetermined height;
a ferrite circulator element disposed within said central cavity and having an outer extremity spaced from an inner edge of said second predetermined height by a gap G having a predetermined gap dimension which achieves an

approximate impedance match between the impedance of the ferrite element and the impedance associated with said aperture; and



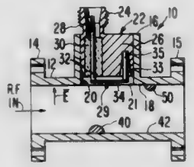
means for creating a magnetic field within said ferrite element and causing it to act as a circulator element.

4,801,903

WAVEGUIDE LOOP DIRECTIONAL COUPLER

Hans J. Mohr, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 8, 1986, Ser. No. 904,993
Int. Cl.[4] H01P *5/18*
U.S. Cl. 333—113 **27 Claims**



1. A loop directional coupler between a waveguide transmission line and a secondary transmission line comprising:

a waveguide member for insertion into said waveguide transmission line, said waveguide member having an aperture-defining means in one wall generally intermediate the ends of said waveguide member;

a loop termination assembly for said second transmission line for coupling radio frequency power between said secondary transmission line and said waveguide transmission line, said aperture-defining means accepting said termination assembly therewithin;

said termination assembly including a loop conductor having a maximum dimension transverse to the longitudinal axis of said secondary transmission line, the maximum dimension of said aperture in said waveguide member wall being similar to or greater than said maximum dimension of said loop conductor;

the rotational orientation of said termination assembly within said aperture-defining means with respect to said longitudinal axis of said secondary transmission line determining the directivity and degree of discrimination against power traveling either upstream or downstream within said waveguide;

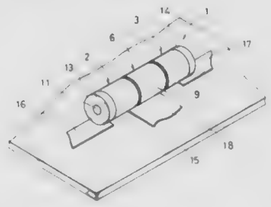
the interior of said waveguide member being provided with first and second electrically conductive obstacles to RF power moving within said waveguide, the cross-sections of said obstacles being small with respect to the cross-section of said waveguide, said first obstacle being selectively disposed proximate said aperture to enhance the directivity of said loop conductor, said second obstacle being selectively disposed in spaced apart relationship from said first obstacle in the downstream direction of travel of the power sought to be preferentially coupled so as to compensate for mismatch effects introduced by said first obstacle.

4,801,904

CHIP-LIKE LC FILTER

Yukio Sakamoto; Shinichi Madokoro, and Shingo Okuyama, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 9, 1987, Ser. No. 1,702
Claims priority, application Japan, Jan. 14, 1986, 61-3537; Jan. 29, 1986, 61-12375; Jun. 27, 1986, 61-99405
Int. Cl.[4] H01P *1/20, 1/215*
U.S. Cl. 333—182 **13 Claims**



1. A chip-like leadless LC filter comprising:

a pair of magnetic elements, each element having a first through hole defining and extending along an axial direction thereof;

a capacitor element provided with a first terminal electrode formed on an outer peripheral surface thereof, a second through hole extending along the axial direction thereof, and a second terminal electrode formed on an inner peripheral surface defining said second through hole;

a central conductor inserted in said first and second through holes to retain said magnetic elements and said capacitor element in an axially aligned state, wherein one said magnetic element, said capacitor element and the other said magnetic element are arranged in this sequence on said central conductor; said central conductor being electrically connected with said second terminal electrode of said capacitor element; and

first and second external terminal means respectively provided on respective end portions along said axial direction of said central conductor, wherein said first and second external terminal means respectively comprise first and second conductive cap-shaped members which have peripheral flange portions partially covering the axial ends of said magnetic elements at each end portion of said central conductor, said cap-shaped members being electrically connected with said central conductor at said end portions thereof;

wherein said first terminal electrode and said first and second external terminal means have outer peripheral surfaces which are aligned to define a substantially cylindrical outer peripheral shape of said filter;

whereby the leadless chip-like LC filter may be placed on a plane surface with only the peripheral flange portions of said cap-shaped members, and the first terminal electrode of the capacitor element, being in contact with said plane surface.

4,801,905

MICROSTRIP SHIELDING SYSTEM

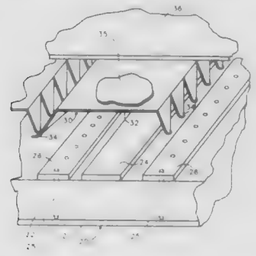
Alvin G. Becker, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 23, 1987, Ser. No. 41,883
Int. Cl.[4] H01P *3/08*
U.S. Cl. 333—238 **34 Claims**

1. A shielded printed circuit board system comprising:

(a) a printed circuit board comprising a conductive microstrip transmission line secured to one surface of a dielectric substrate between ground planes separated from said microstrip line on said substrate; and

(b) a conductive shield member spaced above said microstrip transmission line, wherein said shield member includes downwardly depending leg members secured to said ground planes; wherein said shield member includes an elongated body section having first and second edges; wherein said body section is generally planar and is disposed parallel to said microstrip transmission line; wherein



there are a plurality of said downwardly depending leg members attached to said first edge of said body section and a plurality of said leg members attached to said second edge of said body section; wherein said leg members are integral with said body section and are springy;

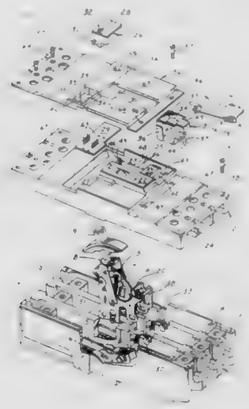
wherein said shield member is adapted to inhibit escape of electromagnetic radiation from said microstrip transmission line.

4,801,906

MOLDED CASE CIRCUIT BREAKER TRIP INDICATOR UNIT

Robert A. Morris, Burlington, and Yuet-Ying Yu, Danbury, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Oct. 19, 1987, Ser. No. 110,239
Int. Cl.[4] H01H *73/12*
U.S. Cl. 335—17 **16 Claims**



1. A circuit breaker trip signal indicator comprising:

a support;

an electric switch fixedly attached to one end of said support, said electric switch having a plunger button;

a bell crank lever pivotally attached to an opposite end of said support, said bell crank lever having an angled end for interacting with said plunger button to turn said switch on and off and a camming surface proximate an end of said bell crank lever opposite said angled end for interacting with a circuit breaker trip lever; and

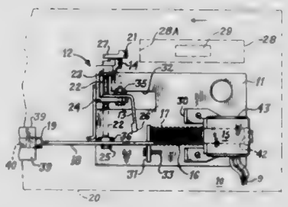
a spring connecting between said support and said bell crank lever, said spring biasing said switch in said off position.

4,801,907

UNDERVOLTAGE RELEASE ACCESSORY FOR A CIRCUIT BREAKER INTERIOR

Joseph B. Kelaita, Jr., Bristol, and Edwin J. Collin, Southington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 17, 1988, Ser. No. 169,545
Int. Cl.[4] H01H *83/12, 73/00, 75/02*
U.S. Cl. 335—20 **10 Claims**



1. An undervoltage release mechanism for circuit breakers comprising in combination:

a support;

an electromagnetic coil on said support;

a plunger within said electromagnetic coil spring-biased for movement in a first direction by means of a charged compression spring when voltage applied to said coil drops to a predetermined level;

a reset mechanism on said support and arranged for moving said plunger in a second direction when said voltage returns to a value greater than said predetermined level, said reset mechanism comprising:

a bell crank lever mounted on said support intermediate said plunger and an operating lever, said bell crank being arranged for rotation in a predetermined direction;

a reset lever attached to said bell crank lever and arranged for rotation in a direction opposite from said predetermined direction; and

a reset spring attached to said reset lever and arranged for contacting said plunger when said reset lever is first rotated to drive said plunger in said second direction against charged compression spring upon rotation of said operating lever in said predetermined direction.

4,801,908

SMALL RELAY FOR AUTOMATED ASSEMBLY

Robert F. Weaver, Brownsburg, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Sep. 25, 1987, Ser. No. 100,728
Int. Cl.[4] H01H *51/22*
U.S. Cl. 335—80 **1 Claim**

1. A relay comprising:

a base,

a coil bobbin carried by said base,

a magnetic core carried in said coil bobbin,

an L-shaped frame carried by said base and extending over said bobbin,

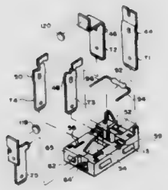
at least two electrical terminals carried by said base, each having a contact thereon,

an electrical spring contact blade having at least two electrical contacts, said blade carried by said base between said two electrical terminals and said electrical contacts carried by said blade adapted to mate with contacts on said

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terminals, and wherein one of said electrical terminals is carried by said base in a slot in a wall thereof so as to aid in maintaining predetermined air gaps between said electrical contacts,

a first notch in a distal end of said L-shaped frame providing first tabs extending from and along opposite sides of said L-shaped frame, and



an armature, said armature having a second notch at an end thereof providing second tabs extending from and along opposite sides of said armature, and third notched in said tabs opening in the same direction,

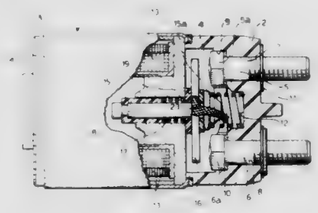
said first, second, and third notches and said first and second tabs constructed and arranged to pivotally mount said armature at said distal end of said L-shaped frame between said electrical spring contact blade and said coil bobbin.

4,801,909

ELECTROMAGNETIC DEVICE FOR CONTROLLING CURRENT TO A STARTER MOTOR

Giancarlo Fasola, Milan, Italy, assignor to Industrie Magneti Marelli S.r.l., Milan, Italy

Filed Aug. 4, 1987, Ser. No. 81,198
Claims priority, application Italy, Aug. 7, 1986, 67637 A/86
Int. Cl.[4] H01H *67/02*
U.S. Cl. 335—126 **2 Claims**



1. Electromagnetic device for controlling the supply of current to an electric starter motor of an internal combustion engine, comprising:

a support carrying a pair of fixed contacts for connection to a supply and to the starter motor respectively,

an electromagnet fixed to the support and including an excitation coil and a movable core carrying a contact which, when the coil is energised, cooperates with the fixed contacts to enable the supply of current to the starter motor,

resilient biassing means for thrusting the movable contact away from the fixed contacts again when the coil is de-energised, and

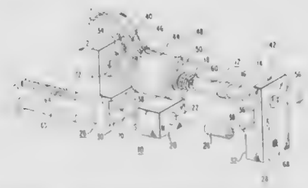
electrical connection means arranged to establish an equipotential electrical connection between the movable contact and one of the fixed contacts before the movable contact touches the fixed contact as a result of the energisation of the coil, said electrical connection means including a flexible conductor which permanently connects the movable contact to one of the fixed contacts.

4,801,910

MAGNETIC ACTUATING MECHANISM

Curtis J. Ayers, Lithonia; Janerio N Morgan, Atlanta, and William E. May, Lawrenceville, all of Ga., assignors to Siemens Energy and Automation, Inc., Atlanta, Ga.

Filed Feb. 10, 1988, Ser. No. 154,778
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—230 **12 Claims**



1. A magnetic actuating mechanism comprising:

an armature;

a permanent magnet for biasing the armature to a biased position;

a first magnetic member defining an armature guide;

a second magnetic member;

an electromagnetic coil including a first winding for urging the armature from the biased position, wherein the coil defines an armature opening;

means for urging the armature from the biased position;

means for fastening the first and second members to the permanent magnet; and

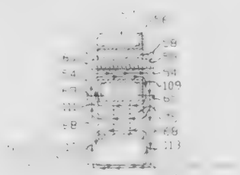
means for locating the electromagnetic coil relative to the first and second members in a side-by-side relationship to the permanent magnet.

4,801,911

SELECTIVE MAGNETIC LIFTING SYSTEM

Graham W. Batts, Dunedin, New Zealand, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 11, 1987, Ser. No. 95,549
Int. Cl.[4] H01F *7/20*
U.S. Cl. 335—289 **16 Claims**



1. A method of assembling a first magnetic member on a second magnetic member utilizing an electromagnet and a separable permanent magnet, comprising the steps of contacting said first member with said permanent magnet held by said

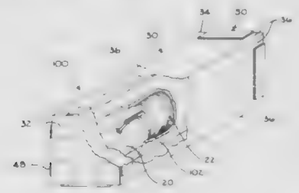
electromagnet with said electromagnet being energized at a first current level to reinforce the field of said permanent magnet, moving said electromagnet, said permanent magnet and said first member as a unit to shift said first member into engagement with said second member, reversing the polarity of said electromagnet while energizing it at a second current level to separate said electromagnet from said permanent magnet while leaving said permanent magnet in magnetic engagement with said first and second members, moving said electromagnet away from said permanent magnet, securing said first and second members together by means independent of any magnetic force, moving said electromagnet back into engagement with said permanent magnet, energizing said electromagnet at a third current level to reinforce the field of said permanent magnet, and thereafter moving said electromagnet and said permanent magnet as a unit away from said first and second members.

4,801,912

SURFACE MOUNTABLE ELECTRONIC DEVICE

Donald C. McElheny, Delevan; Dale A. Ponivas, West Seneca; David A. Syracuse, Hamburg; Stephen H. Chandler, Springville, and Robert H. Nareau, Elma, all of N.Y., assignors to American Precision Industries Inc., Buffalo, N.Y.

Filed Jun. 7, 1985, Ser. No. 742,452
Int. Cl.[4] H01F *15/04, 15/10*
U.S. Cl. 336—84 M **5 Claims**



1. A surface mountable electronic device comprising:

(a) a discrete electronic device comprising a body having opposite ends and a pair of spaced apart leads extending out from said ends of said body in generally opposite directions and substantially along a common axis, said discrete device comprising an inductor including a core and a winding on said core and electrically connected to said leads;

(b) an elongated rectangular solid body of electrical insulating material encapsulating said discrete device body and said leads, said body of insulating material having first and second ends facing and spaced from said ends of said discrete device body and parallel, planar mounting surfaces extending between said first and second ends, said leads terminating adjacent said first and second ends;

(c) first and second electrode means on said first and second ends of said body of insulating material, respectively, each of said electrode means including an end portion on the corresponding end of said body of insulating material and in electrical contact with the corresponding one of said leads, each of said electrode means further including a pair of planar contact portions each one extending along a corresponding one of said mounting surfaces for making electrical connection to a circuit having a portion defined on a surface to which said electronic device is mountable in a mechanically stable manner;

(d) said end portion of said electrode means having a surface area less than the surface area of the end of said body of insulating material on which said electrode end portion is located, said electrode end portion being elongated in shape having a length extending between said mounting surfaces and having a width, said electrode end portion extending from the termination of the corresponding one of said leads along said end of said body of insulating material to the junction of said end and said mounting surface of said body of insulating material, and said end portion having a common area substantially no less than the cross-sectional area of the wire of said inductor winding so that the occurrence of hot spots is prevented in a manner maximizing Q of said inductor and minimizing any reduction in the inductance thereof; and

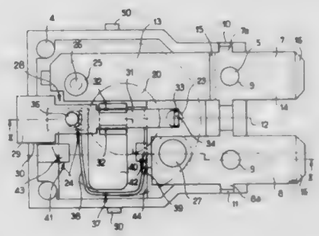
(e) said planar contact portion of said electrode means being elongated rectangular in shape having a length greater than the width thereof, said length of said contact portion being greater than said width of said electrode end portion.

4,801,913

FLAT BI-METALLIC STRIP CIRCUIT BREAKER

Jacques Weber, Vétraz-Monthoux, and Bertrand Torcheux, Ambilly, both of France, assignors to DAV, Annemasse, France

Filed Oct. 26, 1987, Ser. No. 112,088
Claims priority, application France, Oct. 27, 1986, 86 14889
Int. Cl.[4] H01H *71/16*
U.S. Cl. 337—66 **15 Claims**



1. A flat circuit breaker comprising:

a housing including a groove;

a quick-acting bi-metallic actuator, said actuator having at least one spherical portion;

a mobile contact mounted on said bi-metallic actuator;

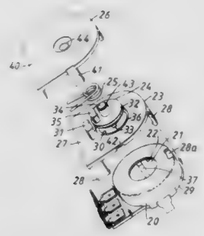
at least two connecting tabs, each of said tabs being fixed and coplanar, one of said at least two tabs connected to said bi-metallic actuator at a fixed connection, the other of said at least two tabs including said fixed contact, said fixed contact and said mobile contact cooperating to make and break an electric circuit between said at least two tabs, said fixed connection and said mobile contact being diametrically opposed along a diameter of said bi-metallic actuator, said diameter inclined with respect to a median plane of said circuit breaker passing through the center of said bi-metallic actuator and between said at least two coplanar connecting tabs;

pushbutton means received in said groove movable between engaged and disengaged positions, for resetting the bi-metallic actuator; and

spring means for moving the pushbutton towards said disengaged position, said pushbutton including means for guiding said pushbutton during movement between said engaged and disengaged positions and means for latching said pushbutton in said engaged position.

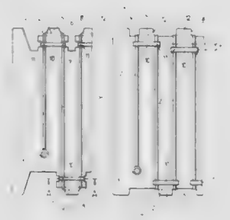
VOL 1098 ISS 5 JA 31 1989 UMI

4,801,914
INFINITELY VARIABLE ROTARY RESISTOR ASSEMBLY
Manji R. K. Keral, 98 Burrows Road, London, NW10 5SH, Great Britain
Filed May 18, 1987, Ser. No. 51,559
Claims priority, application United Kingdom, May 19, 1986, 8612130; Mar. 11, 1987, 8705795
Int. Cl.[4] H01C *10/32*
U.S. Cl. 338—162 **5 Claims**



1. A rotary resistor assembly comprising a housing, a shaft rotatably supported on said housing, a disk shaped element supported on said shaft, said housing have fixed and movable resistive and wiper elements to achieve a variable resistive output in response to rotation of said shaft, a coil torsion spring on said shaft, said spring having projecting legs engageable with abutments on said housing and on said disk to bias said disk and shaft to a predetermined position relative to the housing.

4,801,915
HEATING UNIT, IN PARTICULAR FOR BREAD TOASTERS
Andrea Hahnewald, Friedrichsdorf, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Sep. 3, 1987, Ser. No. 92,456
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1986, 3631852
Int. Cl.[4] H01C *3/12*
U.S. Cl. 338—293 **8 Claims**



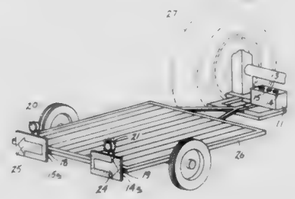
1. An electric heating unit, in particular for bread toasters, with a useful heat emitting area and a waste heat emitting area, comprising an insulating body of plate-shaped configuration having projections (5) formed at the upper and lower edge, and an integrally formed heat conductor having a relatively high specific electrical resistance fitted to the insulating body and extending in at least two spans, said heat conductor including serially connected useful heat conductor portions which extend in the useful heat emitting area and waste heat conductor portions of the same materials as said useful heat conductor portions which extend in the waste heat emitting area, said waste heat conductor portions (12) rearwardly engaging said projections (5), and short-circuiting devices (10, 13) electrically connecting two adjacent spans (2, 2'' and 2', 2''') of the heat conductor (2) at its point of transition from the useful heat emitting area to the waste heat emitting area.

4,801,916
VERTICAL PLUG-IN SINGLE-IN-LINE CIRCUIT MODULE
Michael Kaindl, Pfaffenhofen; Werner Piepenburg, and Ernst Vollmerhaus, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Nov. 16, 1987, Ser. No. 121,007
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1986, 3640694
Int. Cl.[4] H01C *13/00*
U.S. Cl. 338—221 **15 Claims**



1. A plug-in circuit module supportable above a base, comprising:
a carrier for supporting electronic components;
an electronic component fixed to the carrier and including a first connection region and a second connection region, wherein the electronic component is designed such that the amount of heat produced in the electronic component at the first connection region is greater than the amount of heat produced at the second connection region;
a first conducting means for connection to the electronic component at the first connection region and adapted to conduct heat between the first connection region and the base; and
a second conductive means for connection to the electronic component at the second connection region.

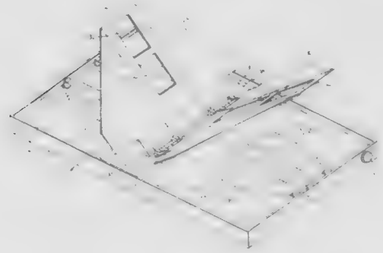
4,801,917
TURN SIGNAL APPARATUS
Donald E. Winterfeld, Box 215, Sioux Center, Iowa 51250
Filed Oct. 6, 1987, Ser. No. 104,931
Int. Cl.[4] B60Q *1/46*
U.S. Cl. 340—81 R **1 Claim**



1. A turn signal apparatus for temporary use in conjunction with trailered vehicles comprising, a control device, and a plurality of signaling modules including a remote control device an a right and left signaling module;

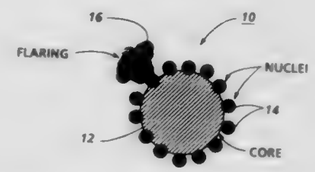
said remote control device and said turn signaling modules each provided with individual power supply sources;
each signaling module further including an indicator arrow means and a flashing light means on a forward surface of each module for indication of turning direction to energization of said remote control device, and
wherein said indicator arrow means and said flashing red light means act simultaneously upon energization of said remote control device, and
wherein said turn signal module has secured on a rearward surface thereof parallel to said forward surface, a permanent magnet for temporary attachment of said modules to a desired and pre-selected vehicle, said permanent magnet medially positioned on each rearward surface and of greater length than each module for enhanced securement and alignment with said vehicle wherein each magnet extends beyond each side of a respective signaling module, and
wherein said flashing red light means are positioned in a spaced and elevated position above companion indicator arrow means, and
wherein said indicator arrow means and said flashing light means are formed of contrasting colors for enhanced indication of a turning event.

4,801,918
ARROW BOARD
Danny W. Buckingham, 12 Chatmere Place, Scarborough, Ontario, Canada (M1H 2G9), and Svend R. De Bruyn, Bloomington Road, R. R. #4, Stouffville, Ontario, Canada L0H 1L0
Filed Oct. 26, 1987, Ser. No. 112,446
Claims priority, application Canada, Jul. 24, 1987, 542907
Int. Cl.[4] E01F *9/00*
U.S. Cl. 340—114 B **18 Claims**



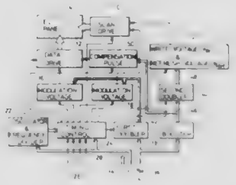
1. An arrow board comprising a cabinet having an elongate operative face, the cabinet housing a rhomboidal array of lamps arranged in a symmetrical configuration about a transverse medial line of the operative face and being directed outwardly of the face, means for operating the lamps, and a wing board hingedly attached to the operative face for pivotal movement about the transverse medial line of the face, the wing board defining a mask having a longitudinal row of apertures conforming to the positions of selected lamps of the array and being movable from a first position, in which it extends across the operative face on one side of the medial line for masking selected lamps of this side to define an arrow configuration of exposed lamps pointing in one direction, to a second position in which it extends across the operative face on the other side of the medial line for masking lamps on this other side to define an arrow configuration of exposed lamps pointing in the opposite direction.

4,801,919
METHOD FOR PREVENTING FLARING IN ELECTROGRAPHIC RECORDING AND RECORDING MEDIUM THEREFOR
Lorin K. Hansen, Fremont, and Arvind R. Saklikar, Sunnyvale, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 4, 1987, Ser. No. 81,397
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—153.1 **7 Claims**



1. A method of preventing flaring in electrographic recording comprising
providing a recording medium having a medium base,
coating one side of said medium base with a dielectric composition to form a dielectric charge retentive layer thereon,
the improvement comprising:
incorporating a flaring suppressor agent in said composition or coating a flaring suppressor agent on the surface of said dielectric charge retentive layer to suppress lateral electrical discharge breakdown due to electron and field assisted thermonic emission processes occurring at or adjacent to the center of the breakdown.

4,801,920
EL PANEL DRIVE SYSTEM
Toshihiro Ohba, Nara; Hiroshi Kinoshita, Yamatokoriyama; Yoshiharu Kanatani, Nara, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 16, 1983, Ser. No. 532,961
Claims priority, application Japan, Sep. 27, 1982, 57-169316
Int. Cl.[4] G09G *3/30*
U.S. Cl. 340—781 **10 Claims**

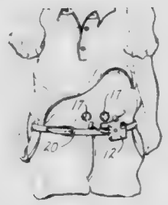


1. A drive system for a thin-film EL display panel having a plurality of display lines comprising:
write voltage applying means for applying write voltage pulses to said thin-film EL display panel;
refresh voltage applying means for applying refresh voltage pulses to said thin-film EL panel;
compensation pulse voltage supplying means for supplying a compensation voltage pulse to said EL display panel to compensate for the difference in amplitude of polarized charges due to the difference in phase relationship at each display line between said refresh voltage pulses and said write voltage pulses;

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modulation voltage applying means for applying a modulation voltage to said thin-film EL display panel;
timing control means, operatively connected to said write voltage applying means and said modulation voltage applying means, for developing control signals for controlling application of said write voltage and modulation voltage to said display panel;
a power supply terminal receiving a $\frac{1}{4}$ V_M voltage from a power supply circuit, where said $\frac{1}{4}$ V_M voltage has a $\frac{1}{4}$ voltage level of said modulation voltage;
a first voltage doubler circuit connected to said power supply terminal to receive said $\frac{1}{4}$ V_M voltage at its input and developing a doubled voltage $\frac{1}{4}$ V_M at its output in response to said control signals developed from said timing control means;
first means for applying said $\frac{1}{4}$ V_M voltage supplied to said first voltage doubler and said doubled voltage $\frac{1}{4}$ V_M developed from said first voltage doubler circuit to said modulation voltage applying means;
a DC booster circuit connected to said power supply terminal for developing $\frac{1}{4}$ V_W voltage, where said $\frac{1}{4}$ V_W voltage has a $\frac{1}{4}$ voltage level of said write voltage;
a second voltage doubler circuit connected to said DC booster circuit to receive said $\frac{1}{4}$ V_W voltage at its input and for developing a doubled voltage V_W at its output in response to said control signals developed from said timing control circuit; and
second wiring means for applying said $\frac{1}{4}$ V_W voltage developed by said DC booster circuit and said doubled voltage V_W developed from said second voltage doubler circuit to said write voltage applying means and said refresh voltage supplying means;
third wiring means for applying said $\frac{1}{4}$ V_W voltage developed by said DC booster circuit to said compensation pulse voltage supplying means;
said $\frac{1}{4}$ V_M voltage received by said power supply terminal being the sole power used to drive said display panel;
both the voltages supplied to the inputs of said first and second voltage doubler circuits and the voltages developed by said first and second voltage doubler circuits being utilized as drive voltages to drive said display panel.

4,801,921
ABDOMINAL MUSCLE FIRMNESS ALARM
Robert W. Zigenfus, 8122 Larch La., Evansville, Ind. 47710
Filed Aug. 24, 1987, Ser. No. 88,252
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—573 **6 Claims**



1. An abdominal muscle firmness trainer comprising a control unit, a signalling member selectively affixed to the abdominal region of a wearer, and means serving to transmit a signal to said signalling member, said control unit including associated timer means programming said signal transmission at a preselected interval.

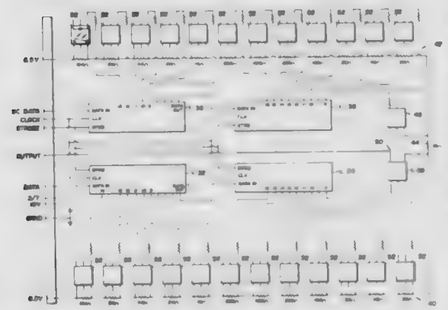
4,801,922
LOW TEMPERATURE ALARM
Darhl R. Worrell, 211 Old Mill Rd., Dardanelle, Ark. 72834, and George Spector, 233 Broadway, RM 3815, New York, N.Y. 10007
Filed May 14, 1987, Ser. No. 49,541
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—586 **2 Claims**



1. A temperature alert device which comprises:
(a) a housing fabricated out of non-conductive material;
(b) a battery within said housing to introduce a source of electric current;
(c) a visual alarm indicator within said housing electrically connected in series to said battery;
(d) an audio alarm indicator within said housing electrically connected in series to said battery;
(e) a test switch within said housing electrically connected between said battery and said indicators so when said test switch is manually closed, said visual alarm indicator and said audio alarm indicator will operate, thus proving said battery is functioning;
(f) a thermostatic switch within said housing electrically connected between said battery and said indicators so as to activate said visual alarm indicator and said audio alarm indicator when the temperature drops to a predetermined level as set in thermostatic switch; and
(g) an on-off switch within said housing electrically connected between said battery and said thermostatic switch so as to be manually operated to turn the source of electric current on and off, wherein said visual alarm indicator is an electric light bulb, said audio alarm indicator is a horn, and said thermostatic switch includes a bimetallic disc fastened at one end to said housing adapted to engage a contact provided adjacent an intermediate point spaced from said one end, wherein
(h) said thermostatic switch includes a second contact at a distal end of said disc spaced from the first said contact and further including
(i) an amplifier within said housing electrically connected between said second contact in said thermostatic switch and said horn whereby when temperature drops to a lower predetermined level as set in said thermostatic switch, said amplifier will be activated to increase the volume of said horn.

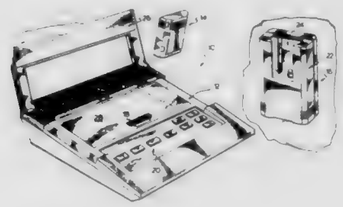
4,801,923
METHOD AND APPARATUS FOR DIGITAL TACAN OUTPUT CONVERSION
Robert J. Schwartz, Depew, and Frederick G. Reinagel, Buffalo, both of N.Y., assignor to LTV Aerospace & Defense Company, Dallas, Tex.
Filed Jul. 20, 1984, Ser. No. 633,024
Int. Cl.[4] H03M *1/74*
U.S. Cl. 341—144 **20 Claims**

1. An apparatus for converting a digital data input into an analog potentiometer output comprising:
input register means for receiving digital data;
complement generation means for generating the complement of said selected digital data;
a first plurality of serially coupled resistive circuit elements coupled at a first end thereof to a selected output node;
a second plurality of serially coupled resistive circuit elements coupled at a first end thereof to said selected output node;
a common resistive circuit element;
means for alternately coupling said common resistive circuit element to said first and second plurality of serially coupled resistive circuit elements in response to at least one of said selected digital data and the complement of said selected digital data;



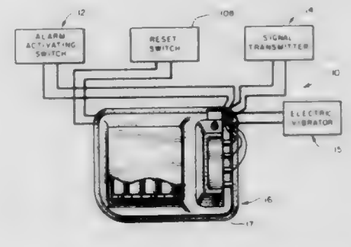
means for electrically shorting selected ones of said first plurality of serially coupled resistive circuit elements in response to said selected digital data; and
means for electrically shorting selected ones of said second plurality of serially coupled resistive circuit elements in response to the complement of said selected digital data.

4,801,924
TRANSMITTER PROGRAMMER CONNECT SYSTEM
Thomas A. D. Burgmann, Mississauga, and Gary Lennartz, Rexdale, both of Canada, assignors to Dicon Systems Limited, Toronto, Canada
Filed Jan. 20, 1988, Ser. No. 145,929
Claims priority, application Canada, Nov. 9, 1987, 551372
Int. Cl.[4] G08B *19/00, 1/08*
U.S. Cl. 340—521 **3 Claims**



1. In a security system for sensing the status of various security detectors which detect fire, door/window opening, intrusion, emergency/medical alert, appliance operation and the like; a central monitor for monitoring said detectors on a regular basis, said central monitor communicating with said detectors via a transmitter provided on each of said detectors and a receiver in said monitor for receiving transmissions from a respective transmitter, means for programming an volatile programmable memory of each of said transmitters to characterize its transmission of a message peculiar to a corresponding detector when said transmitter is actuated to transmit said message, said receiver recognizing said transmitted message from each of said transmitters and identifying the detector associated with said transmitter, an electrical coupling for coupling each of said transmitters to said programming means, each transmitter having a short-term low power device for powering said volatile memory of said transmitter during transport after it is uncoupled from said programing means and until said transmitter is coupled to a power source of one of said detectors, the improvement comprising means for disarming said transmitter during said transport to a detector to prevent said transmitter draining said short-term power source by transmitting a message during said transport and thereby retaining programmed information in said volatile memory, said electrical coupling having means for actuating said disarming means when said transmitter is uncoupled from said programming means and before said transmitter can commence a transmission of a message, said electrical coupler comprising a socket having a plurality of electrical contacts and said transmitter having a corresponding plurality of electrical prongs for insertion into said socket and contacting said electrical contacts, said actuating means comprising one of said prongs being shorter than the remaining prongs whereby upon withdrawal of said transmitter, said shorter prong breaks contact first with said socket electrical contacts to actuate said disarming means prior to remaining prongs breaking contact with said socket electrical contacts.

4,801,925
ALARM TRANSMISSION SYSTEM AND CIRCUIT INTERCEPTION SWITCH
Albert F. Davis, 2148 W. Washburn, Chicago, Ill. 60608
Filed Feb. 2, 1987, Ser. No. 9,459
Int. Cl.[4] G08B *13/00*
U.S. Cl. 340—574 **21 Claims**



1. A circuit interception switch for an emergency alarm transmission system comprising:
a normally open first electric circuit;
an electric vibrator;
means to energize said electric vibrator upon a closure of said first electric circuit;
a normally open second electric circuit; and
means to close said second electric circuit and concomitantly deenergize said electric vibrator upon a closure of said first electric circuit while said electric vibrator is energized.

4,801,926
DEVICE FOR SENSING THE LEVEL OF A LIQUID WITHIN THE INTERIOR OF A CONTAINER
Rodolfo Bitetti, Milan, Italy, assignor to Veglia Borletti S.r.L., Turin, Italy
Continuation of Ser. No. 924,353, Oct. 29, 1986, abandoned. This application Apr. 29, 1988, Ser. No. 188,731
Claims priority, application Italy, Oct. 29, 1985, 53980/85[U]
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—624 **21 Claims**

1. A sensor device for detecting the presence of a liquid at a predetermined level within a container and of the type comprising at least one magnet supported by a tubular float, and a magnetically actuable electrical contact element fixed to a guide and support element, said guide and support element being introduceable into said container to constitute a guide for the displacement which the hydrostatic thrust exerted by said

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liquid induces in said float and comprising a first portion within which said electrical contact element is lodged, and a second portion which can be fixed to a wall of said container to receive said first portion, wherein said sensor device further comprises centering means defining an essentially constant relative positioning of said float with respect to said support and guide element along the length thereof traversed by said float under the action exerted by said hydrostatic thrust, and



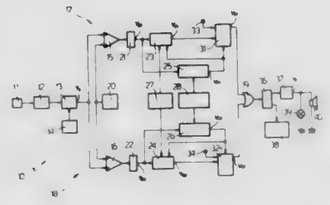
locking means capable of fixing said first portion to said second portion of said guide and support element, said locking means comprising a bush surrounding said first and second portions, said bush having a portion of reduced diameter surrounding an end projection of said second portion, said bush portion being plastically deformable in a radial direction together with said end projection and said first portion in such a way as to establish a mechanical connection between them.

4,801,927

METHOD AND APPARATUS FOR INDICATING THE DYNAMIC INSTABILITY OF RAILWAY OR TRAMWAY ROLLING STOCK

Piero Losa, Pianezza, Italy, assignor to Fiat Ferroviaria Savigliano S.p.A., Turin, Italy

Filed Sep. 23, 1986, Ser. No. 911,244
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—669 **18 Claims**



1. A method for indicating dynamic instability in railway or tramway rolling stock, characterized by the fact that it comprises the following operations:

(1) continuously detecting the acceleration of the wheel arrangement of the rolling stock in a transverse sense with respect to the direction of movement of the rolling stock itself;

(2) suitably processing the said acceleration to obtain sequential acceleration values;

(3) comparing the processed acceleration values with at least one reference value;

(4) counting the number of processed acceleration values which exceed the said at least one reference value; and

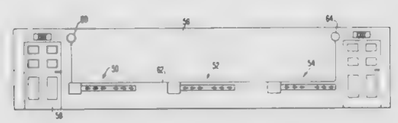
(5) emitting an instability signal whenever the number of processed acceleration values counted which exceed said at least one reference value is greater than a predetermined number within a time period of predetermined duration.

4,801,928

EGRESS DIRECTION INDICATION SYSTEM

Ronald H. Minter, Guilford, Conn., assignor to Chloride Group PLC, London, England

Filed Sep. 2, 1986, Ser. No. 902,662
Int. Cl.[4] G08B *5/36*
U.S. Cl. 340—691 **24 Claims**



1. An egress direction indication system comprising:

an indicator unit including at least three electroluminescent lamps in a linear arrangement; a first means when activated for sequentially illuminating at spaced intervals to indicate a specific direction said at least three electroluminescent lamps in order from a first end of the linear arrangement to a second end of the linear arrangement; a second means responsive to the illumination of the electroluminescent lamp nearest said second end for extinguishing all said electroluminescent lamps in the linear arrangement simultaneously; and a third means responsive to the extinguishment of all the electroluminescent lamps in the linear arrangement for activating said first means.

4,801,929

CONTAINER HAVING AUDIBLE CLOSURE REMOVAL SIGNALLING

David J. Instance, Guinea Hall, Sellindge, Kent, United Kingdom

Filed Feb. 10, 1987, Ser. No. 12,831
Claims priority, application United Kingdom, Feb. 10, 1986, 8603201
Int. Cl.[4] G08B *25/02*
U.S. Cl. 340—692 **7 Claims**



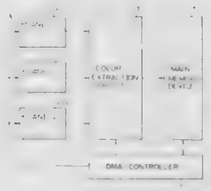
1. A container for a product having a removable closure, the container having means for electronically generating an audible signal disposed in said removable closure, said signal relating to the product in the container, said means being activated by a user, whereby said means for electronically generating an audible signal includes a trigger device which triggers said means into operation in response to removal of the closure from the container.

4,801,930

VIDEO INFORMATION TRANSFER PROCESSING SYSTEM

Haruhiko Tsuchiya, Yokohama; Hiroshi Yamamoto; Shinji Ogawa, both of Sagamihara, and Shinji Kyee, Yokohama, all of Japan, assignors to Panafacom Limited, Yamato, Japan

Continuation-in-part of Ser. No. 890,019, filed as PCT JP 86/00228 on May 2, 1986, abandoned. This application Nov. 7, 1986, Ser. No. 928,003
Claims priority, application Japan, May 8, 1985, 60-97585
Int. Cl.[4] G09G *1/28*
U.S. Cl. 340—703 **7 Claims**



1. A video information transfer processing system, having a video memory including a plurality of planes storing color codes and a main memory device, for transferring the contents of the video memory to the main memory device, comprising:

a DMA control means for controlling transfer of the contents of the video memory to the main memory device; and

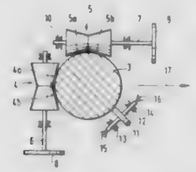
color extraction circuit means, situated between the video memory and the main memory device, for designating a desired color code and for extracting the desired color code from the plurality of planes, said color extraction circuit means including comparison means, having an output, for comparing the stored color codes with the desired color code, the output from said comparison means being supplied to the main memory device as writing information.

4,801,931

DEVICE FOR CONTROLLING THE MOTION OF A VIDEO-SCREEN CURSOR

Michael Schmidt, Boeblingen, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 22, 1987, Ser. No. 112,639
Claims priority, application European Pat. Off., Oct. 25, 1986, 86114850.0
Int. Cl.[4] G09G *3/02*
U.S. Cl. 340—710 **15 Claims**



1. A device for controlling the motion of a video-screen cursor, comprising:

a movably held control ball;

bearing means for supporting the control ball comprising at least two rotatably mounted rolling bodies in contact with the control ball; and

means for converting the rotary motion of the rolling bodies into electrical signals which control the motion of the cursor;

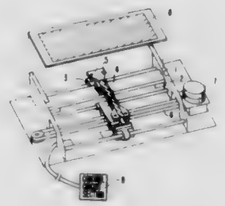
wherein at least one of the rolling bodies has an axial cross section having a change of diameter in the axial direction such that the rolling body is in contact with the control ball at at least two points, said axial cross section rotationally symmetric at least at those axial coordinates where the rolling body is in contact with the control ball, whereby the same motion vector of the control ball is maintained when the control ball freewheels.

4,801,932

DISPLAY APPARATUS

Yoneharu Takubo, Neyagawa; Yasutaka Horibe, Ibaraki; Nobue Yamanishi, Higashiosaka; Eiji Fujii, Neyagawa, and Hideyuki Okinaka, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1986, Ser. No. 869,907
Claims priority, application Japan, Jun. 4, 1985, 60-121785; Jul. 12, 1985, 60-154621; Jul. 15, 1985, 60-155404
Int. Cl.[4] G02F *1/03*; G09F *9/00*
U.S. Cl. 340—783 **17 Claims**



1. A display apparatus comprising:

a light-transmitting ceramic plate having an electrooptic effect;

a polarizing plate disposed facing one major surface of said light-transmitting ceramic plate;

a polarizing film provided on the other major surface of said light-transmitting ceramic plate;

a reflecting film provided on said polarizing film;

a voltage application head movable across said one major surface of said light-transmitting ceramic plate and having at least a pair of electrodes between which a voltage is applied, said electrodes being in contact with said one major surface of said light-transmitting ceramic plate so as to cause said light-transmitting ceramic plate to produce a double refraction at a portion where said voltage is applied through the contacted electrodes, the portion at which the double refraction is produced being seen through said polarizing plate as a displayed image;

a head driving means for moving said voltage application head so as to scan said one major surface of said light-transmitting ceramic plate; and

a control means for controlling said head driving means and for supplying said voltage application head with said voltage.

4,801,933

LIQUID CRYSTAL MATRIX DEVICE HAVING SEPARATE DRIVING CIRCUITS WITH DIVERSE DRIVING VOLTAGES

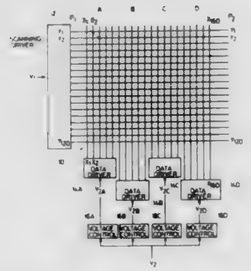
Kunihiko Yamamoto; Yutaka Ishii, both of Nara, and Hiroshi Take, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1986, Ser. No. 841,798
Claims priority, application Japan, Mar. 23, 1985, 60-59002
Int. Cl.[4] G09G *3/36*
U.S. Cl. 340—784 **6 Claims**

1. A liquid crystal matrix display device, comprising:

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a plurality of signal electrodes arranged in a first direction, and divided into a plurality of electrode blocks;
a plurality of scanning electrodes arranged in a second direction perpendicular to said first direction,
intersections of said signal and scanning electrodes forming picture elements of said display; and



a plurality of driver circuits for driving said signal electrodes, each driver circuit being connected to a block of signal electrodes, each of said plurality of driver circuits applying a driving voltage to a respective block, each driving voltage having a magnitude that is different from the remaining driving voltages.

4,801,934

METHOD AND APPARATUS FOR TRANSMISSION OF DATA WITH DATA REDUCTION

Hans Herkert, Hohenschaeftlarn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

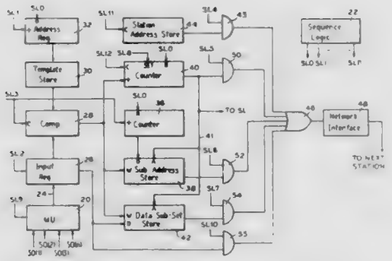
Filed Oct. 4, 1985, Ser. No. 784,110

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1984, 3436441

The portion of the term of this patent subsequent to Oct. 6, 2004, has been disclaimed.

Int. Cl.[4] H04Q *9/00*; **H04L** *11/00*; **G08B** *25/00*

U.S. Cl. 340—825.020 **6 Claims**



1. In a data transmission network having a tree structure with at least one station at one network level being connected by means of a data transmission channel to a station of a higher network level, in which data blocks are normally transmitted between a transmitting station at one level to a station at a different network level, said data blocks including operating status information, indicating normal or abnormal operation signifying that all stations at lower levels have fault-free status or else identifying only those with fault conditions, whereby data relating to normally operating stations is not transmitted to the next higher level, the combination comprising; apparatus at the transmitting stations for monitoring the operating status of the stations of the next lower network level and means responsive to said monitoring for transmitting data blocks to the next higher network level station with a status signal field having at least one status signal byte for indicating normal or abnormal operation of stations at said lower network level, and other data corresponding only to abnormally operating stations at said next lower network level.

4,801,935

APPARATUS AND METHOD FOR SECURITY OF ELECTRIC AND ELECTRONIC DEVICES

John P. Cairns, Wilmington, Del., assignor to Computer Security Corporation, St. Georges, Del.

Continuation of Ser. No. 931,616, Nov. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 602,471, Apr. 20, 1984, abandoned. This application Apr. 26, 1988, Ser. No. 188,137

Int. Cl.[4] H04R *1/00*

U.S. Cl. 340—825.34 **5 Claims**



1. A method for processing a set of code characters in an authentication of the code for authorization of a user or actuation of a device by a user
comprising the steps of
introducing a first character of a code set in a first time cycle,
converting the character to a BCD, consisting of ones and zeros,
transmitting the BCD to a decoder and producing a charge on a first output terminal,
during said first time cycle transmitting a pulse to a first terminal of a counter circuit capable of scanning increment charges from terminal to terminal of said counter,
transmitting pulses from the counter to a plurality of inhibiting control circuits each of which contains a bistable circuit having an on state capable of transmitting a positive pulse received at a first input so as to produce an output pulse and an off state incapable of transmitting a positive pulse received at said first input and
having a second input capable of receiving a signal switching said bistable circuit to the on state from the off state,
so as to switch that inhibiting control circuits to which a pulse from the counter is transmitted to an off state incapable of switching to produce output pulse
or to an on state capable of switching to produce said output pulse
and issuing a signal from one of said inhibiting control circuits in an on-stage by switching the bistable circuit indicative of whether an unauthentic character is present in the time cycle,
subsequently in the first time cycle transmitting a pulse from said first output terminal on the decoder to one of said inhibiting control circuits,
and repeating at least once the steps of introducing a character of the code set in a time cycle, converting the character to a BCD, transmitting the BCD to a decoder and producing an output pulse and subsequently in the time cycle transmitting the output pulse to the inhibiting control circuits.

4,801,936

BROADBAND SIGNAL SWITCHING APPARATUS

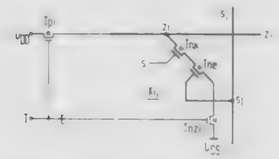
Ruediger Hofmann, Gilching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 17, 1987, Ser. No. 98,024

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1986, 3631634

Int. Cl.[4] H04Q *1/00*

U.S. Cl. 340—825.91 **6 Claims**



1. In a broadband signal switching equipment of the type which is constructed in field effect transistor technology and of the type which includes a cross point matrix which comprises a first matrix of input lines and output lines which intersect to define cross points, and a second matrix of first selection lines and second selection lines which intersect at the cross points, and in which each cross point comprises a switching element including a switching transistor including a first main electrode connected to the respective output line, a second main electrode connectible to a first potential, and a control electrode for receiving a through-connect signal or an inhibit signal, and a holding circuit including selection inputs connected to respective first and second selection lines at the respective cross point and an output connected to said control electrode of said switching transistor, the improvement therein comprising:
an auxiliary transistor including a first main electrode connected to said second main electrode of said switching transistor, a second main electrode connectible to the first potential, and a control electrode connected to the respective input line;
a plurality of precharging transistors each including a pair of main electrodes connected in series between a respective output line and a second potential, and a control electrode for receiving a clock signal; and
a sampling transistor operable to divide a bit through-connection interval into a precharging phase and a through-connect phase, said sampling transistor including a control electrode for receiving a clock signal, and a pair of main electrodes connected between said second main electrode of said auxiliary transistor and the first potential,
said sampling transistor and said precharging transistor oppositely operable in response to the clock signals so that the respective matrix output line is charged via the precharging transistor to at least approximately the potential prevailing at the second potential in each precharging phase given an inhibited respective sampling transistor.

4,801,937

LINE MOUNTED APPARATUS FOR REMOTE MEASUREMENT OF POWER SYSTEM OR ENVIRONMENTAL PARAMETERS BEYOND LINE-OF-SITE DISTANC

Roosevelt A. Fernandes, 104 Ruby Rd., Liverpool, N.Y. 13088

Filed Jun. 16, 1986, Ser. No. 874,520

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—870.16 **16 Claims**

1. A system for measuring the value of at least one electrical, mechanical or environmental parameter associated with or in the immediate vicinity of an overhead power conductor carrying a high voltage potential, at a first location, for transmitting a signal commensurate with said value to a second location beyond line-of-sight distance from said first location, said system comprising:
(a) at least one sensing module mounted upon and at the voltage potential of, an energized power conductor at said first location;
(b) transducer and power supply means mounted to said sensing module for measuring said parameter value;
(c) first signal transmitting means mounted to said sensing module for transmitting a first signal commensurate with said value over a line-of-sight distance;
(d) a communications module physically separate from said



sensor module, mounted upon, and at the voltage potential of, an energized power conductor within line-of-sight distance from said first location;
(e) first signal receiving means mounted to said communication module for receiving said first signal;
(f) second signal transmitting means, at least a portion of said second signal transmitting means being mounted to said communication module, for transmitting a second signal, commensurate with said first signal, over a greater than line-of-sight distance; and
(g) second signal receiving means at said second location for receiving said second signal.

4,801,938

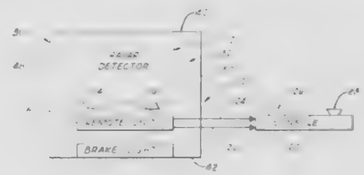
REMOTE OUTPUT INDICATOR FOR PROVIDING OUTPUT INDICATIONS FROM A REMOTELY LOCATED RADAR DETECTOR WHICH IS ADAPTED TO BE USED IN CONNECTION WITH A BRAKE LIGHT INDICATOR

Steven C. Holmes, 2925 Charing Cross Rd., Oklahoma City, Okla. 73120

Continuation-in-part of Ser. No. 2,424, Jan. 12, 1987. This application Mar. 20, 1987, Ser. No. 28,592

Int. Cl.[4] G01S *7/40*

U.S. Cl. 342—20 **10 Claims**



1. A remote output indicator for use with a radar detector providing a perceivable output indication to detect signals from an operating radar mountable within an automobile hav-

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ing a rear window and a rear deck disposed near the rear window comprising:

a rear brake light indicator housing encompassing a housing space and a rear brake light disposed within the housing space, the radar detector being mountable within the housing space;

a mounting assembly for connecting the rear brake light indicator housing to the automobile generally near the rear window;

a remote unit disposed within the rear brake light indicator housing having one portion for sensing the radar detector perceivable output indication and providing an output signal indicative of the radar detector perceivable output indication; and

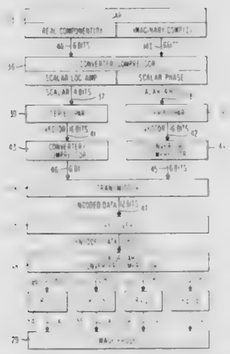
a console receiving the output signal from the remote unit indicative of the radar detector perceivable output indication and providing a perceivable output indication in response to receiving the output signal indicative of the radar perceivable output indication from the remote unit, the console being located in a driver perceivable location so that the output indication provided by the console unit is perceivable by the driver of the automobile.

4,801,939

HIGH-SPEED DATA COMPRESSOR/DECOMPRESSOR FOR SYNTHETIC APERTURE RADAR

Robert V. Jones, Bountiful, Utah, assignor to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 4, 1987, Ser. No. 93,328
Int. Cl.[4] G01S 7/38
U.S. Cl. 342—25 **18 Claims**



1. A method of compressing unfocused synthetic aperture radar (SAR) phase history pixel data, comprising the steps of:

providing unfocused SAR complex inphase and quadrature digital data defining individual pixels,

simultaneously compressing and converting said inphase and quadrature digital data into scalar log amplitude data and phase data defining individual pixels,

converting a plurality of said scalar log amplitude data pixels into combined log amplitude vector data and converting a plurality of said phase data pixel information into combined phase vector data defining a plurality of data pixels, and

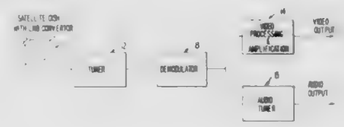
simultaneously compressing and converting said combined vector data to provide compressed encoded data representative of said uncoded complex inphase and quadrature phase history data.

4,801,940

SATELLITE SEEKING SYSTEM FOR EARTH-STATION ANTENNAS FOR TVRO SYSTEMS

John Y. Ma, Milpitas; David H. McCracken, San Jose; Steven Weiss, Los Gatos, and Albert C. Houston, III, Santa Cruz, all of Calif., assignors to Capetronic (BSR) Ltd., Kowloon, Hong Kong

Filed Oct. 30, 1985, Ser. No. 792,786
Int. Cl.[4] H01Q 3/00
U.S. Cl. 342—359 **23 Claims**



1. A TVRO earth station having a satellite seeking system comprising

at least one controllable motor for adjusting the position of an antenna for receiving signals from a satellite having multiple transponders transmitting signals at prescribed nominal center frequencies and with different polarization,

control means for energizing said motor to move said antenna along a predetermined satellite-searching path,

a receiver for receiving the incoming signals from said antenna and successively tuning to said center frequencies at each of a succession of intervals along said searching path,

means responsive to the signals detected by said receiver for producing signals or values representing the quality of the detected signals at each of said successive intervals along said searching path, at least one of said signals representing the noise level associated with the detected signals and not representing the signal level associated with the detected signals, and

means responsive to said quality-representing signals or values for identifying the position along said searching path at which the antenna receives the detected signals with a minimum noise figure.

4,801,941

ANGLE OF ARRIVAL PROCESSOR USING BULK ACOUSTIC WAVES

Farhang Sabet-Peyman, San Jose, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jun. 30, 1987, Ser. No. 70,839
Int. Cl.[4] G01S 3/16; H01L 41/04; G06G 7/12
U.S. Cl. 342—378 **17 Claims**

1. A bulk acoustic wave angle of arrival processor comprising:

a plurality of receiving antennas positioned in a predetermined pattern;

a bulk acoustic wave body having a -property of conducting bulk acoustic wave beams;

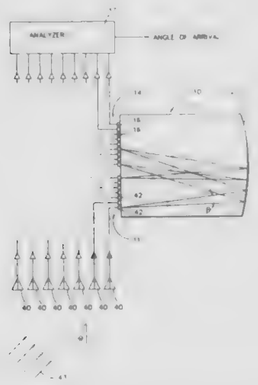
said body having at least one inwardly concave acoustically reflecting and focusing surface defined thereon;

a first transducer set, having electrodes equal in number to said antennas and having the same pattern as said antennas, each adapted to be connected to the one of said antennas having the same position in its pattern as the position of the transducer in its pattern, positioned upon one surface of said body to launch beams into said body toward said reflecting and focusing surface;

each said electrode having a transducer between it and said bulk acoustic wave body;

said acoustically reflecting surfaces including a portion of one concave inward surface which is positioned to receive acoustic beams launched from said input transducer set;

at least a second transducer set, each transducer of said second set having a plurality of juxtaposed, directed finger electrodes aligned in a row perpendicular to the long direction of said electrodes, positioned to receive steered beams from at least one of said reflecting surfaces; and



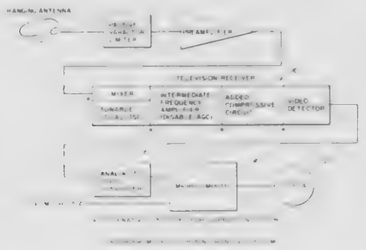
the spacing among said electrodes being proportional, with the same constant of proportionality, to the corresponding spacing among antennas to which they are attached.

4,801,942

INTERFEROMETERIC LIGHTNING RANGING SYSTEM

Ralph Markson, Weston, Mass.; James W. Warwick, Boulder, Colo., and Arthur Uhlir, Jr., Weston, Mass., assignors to Airborne Research Associates, Inc., Weston, Mass.

Filed Aug. 18, 1986, Ser. No. 897,214
Int. Cl.[4] G01J 3/02
U.S. Cl. 342—460 **14 Claims**



1. Interferometric lightning ranging system for determining distance between a lightning discharge at a first altitude and an airborne or elevated object at a second altitude comprising:

a receiver on the object adapted to receive electromagnetic radiation signals generated by a lightning discharge along both a direct and a surface reflected path, the receiver having a center frequency of at least 30 MHz;

signal processing means interconnected with the receiver for determining in the frequency domain the difference in time of arrival of the direct and reflected signals from the interference pattern between the direct and reflected signals; and

computing means of calculating the distance from the difference in the time of arrival of the direct and reflected signals.

4,801,943

PLANE ANTENNA ASSEMBLY

Yasuo Yabu; Kazuhisa Akiyama; Toshio Abiko; Minoru Kanda; Mikio Komatsu; Hirokuni Ishizaki; Hidetsugu Nunoya; Yasumasa Ogawa, and Hiroshi Yokota, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 16, 1987, Ser. No. 3,825
Claims priority, application Japan, Jan. 27, 1986, 61-15013; Apr. 24, 1986, 61-95210
Int. Cl.[4] H01Q 1/38
U.S. Cl. 343—700 MS **4 Claims**



1. A plane antenna assembly comprising:

a plurality of antenna bases, each base having an output port;

signal amplifying means connected to each of the output ports to receive and amplify output signals from the antenna bases;

signal combining means connected to each of the signal amplifying means to receive and combine the amplified output signals;

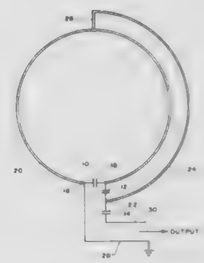
position-adjusting means connected to the signal amplifying means for adjusting the electrical transmission distance from each of the output ports to the combining means, thereby to selectively minimize phase deviations between the amplified signals that are combined.

4,801,944

ANTENNA

Peter A. Madnick, 627 Valley Oak La., and Russell W. Sherwood, 1798 Allepo Ct., both of Thousand Oaks, Calif. 91360

Filed Oct. 13, 1987, Ser. No. 107,007
Int. Cl.[4] H01Q 11/12
U.S. Cl. 343—744 **6 Claims**



1. An antenna comprising:

an electrically conducted loop element terminating in a first terminal and a second terminal, said first terminal being electrically grounded;

a first capacitor connected between said first terminal and said second terminal;

an electrically conductive tap element mounted directly adjacent to said loop element but spaced therefrom, said

tap element being substantially of a length equal to one half the length of said loop element, one end of said tap element connecting directly to said loop element with the other end of said tap element connecting to a third terminal;

a second capacitor connected between said second terminal and said third terminal; and

a fourth terminal functioning as the output terminal for said antenna, a third capacitor connected between said third terminal and said fourth terminal.

4,801,945

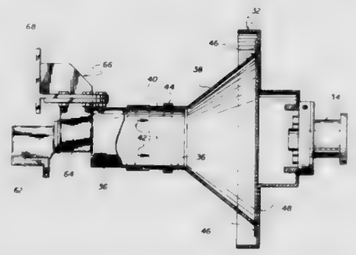
LOW LOSS DUAL BAND SATELLITE ANTENNA FEED

Robert A. Luly, San Bernardino, Calif., assignor to Janeil Corporation, Canoga Park, Calif.

Filed Jul. 7, 1987, Ser. No. 71,484

Int. Cl.[4] H01Q *13/02*

U.S. Cl. 343—786 **20 Claims**



1. A versatile dual-band satellite signal reception system for receiving both short wavelength KU-band signals and longer wavelength C-band signals, comprising:

a main conductive support plate member having a central mounting aperture of a predetermined diameter;

means for mounting said conductive support plate member substantially at the focal point of a satellite antenna;

KU-band signal receiving means;

means for mounting said KU-band signal receiving means at the center of said conductive support plate member to face a satellite antenna;

C-band signal receiving means; and

dielectric means for mounting said C-band signal receiving means from said conductive support plate member to face toward said conductive support plate member to receive C-band signals directed from the antenna toward the focal point of said antenna and reflected from said conductive support plate member toward said C-band signal receiving means.

4,801,946

GRID ANTENNA

Donald W. Matz, Jr., Lockport, Ill., assignor to Mark Antenna Products, Inc., Des Plaines, Ill.

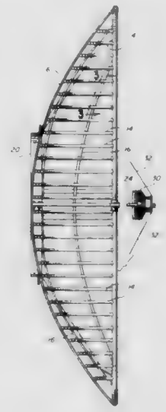
Filed Jan. 26, 1988, Ser. No. 461,143

Int. Cl.[4] H01Q *15/14*

U.S. Cl. 343—840 **7 Claims**

1. In a grid parabolic antenna formed of a peripheral hoop and a plurality of spaced metallic reflector ribs having a parabolic contour, the reflector ribs being arranged in planes substantially parallel to each other and being connected to the hoop, an antenna feed at the focus of the parabola, the improvement comprising:

said reflector ribs each comprising a plurality of connected circular tubes and having an elongated cross-sectional



configuration, the elongation being in a direction generally parallel to the axis of the feed.

4,801,947

ELECTRODEPOSITION-PRODUCED ORIFICE PLATE OF AMORPHOUS METAL

John A. Lichtenberger, and Rodger L. Gamblin, both of Dayton, Ohio, assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Jun. 25, 1987, Ser. No. 66,174

Int. Cl.[4] G01D *15/18*; C25D *1/08*; B32B *15/00*

U.S. Cl. 346—75 **7 Claims**



6. An orifice plate for use in a fluid jet apparatus comprising a single layer of an amorphous nickel-phosphorus alloy defining a number of orifices along its length dimension, said single layer having substantially planar opposing surfaces which establish therebetweeen a thickness dimension of said orifice plate with the orifices thereof extending through said thickness dimension and opening onto each of said opposing substantially planar surfaces, and wherein said orifice plate is unsupported along said length dimension.

4,801,948

THERMAL RECORDING APPARATUS WITH RESISTANCE COMPENSATION

Nobuhisa Kato, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1987, Ser. No. 44,003

Claims priority, application Japan, Apr. 30, 1986, 61-98250

Int. Cl.[4] G01D *15/10*

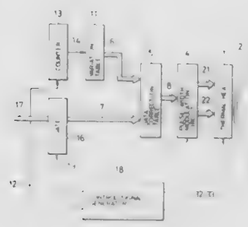
U.S. Cl. 346—76 PH **3 Claims**

1. A thermal recording apparatus adapted to control the calorific value of each of a plurality of resistive heating elements constituting a printing head, each resistive heating element acting to record one of a series of picture elements constituting an image signal and having a gradation value, the apparatus comprising:

first means for storing, for each of said resistive heating

elements, one of a plurality of resistive variation data values to indicate a variance of the resistance of said heating element from a predetermined resistance value;

second means for storing a plurality of sets of gradation values, each of said plurality of sets of gradation values being associated with one of said plurality of resistance variation data values, each of said sets of gradation values containing possible gradation values of a picture element to be recorded by a resistive heating element having a resistance variation data value associated with said set; and



gradation correction means coupled to said first and second storing means for adjusting said gradation values of each of said picture elements in accordance with said resistance variation data value of said resistive heating element acting to record said picture element and said gradation value of said picture element to be recorded, to maintain a uniform calorific value for each of the resistive heating elements regardless of variances in the resistance thereof from said predetermined resistance value.

4,801,949

CAPSULE RUPTURE PRINTING SYSTEM

Shigemi Misono, and Katsuhiro Konno, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed Oct. 21, 1987, Ser. No. 112,091

Claims priority, application Japan, Nov. 4, 1986, 61-263006; Nov. 4, 1986, 61-263007

Int. Cl.[4] G01D *15/10*; G03B *27/30*; G03C *1/72*

U.S. Cl. 346—76 L **8 Claims**



1. An apparatus for forming an image on a sheet by rupturing at least some chromogenic materials-containing capsules, comprising:

means for supplying said capsules to a support sheet;

means for adsorbing said capsules to the surface of said support sheet by electrostatic attraction, disposed at an adsorption station facing said capsule supply means;

means for radiating optical beams to said support sheet in response to image signals, disposed downstream of said capsule supply means;

means for rupturing said capsules adsorbed on said support sheet; and

means for moving said support sheet past said adsorption station, said optical beams radiate means and said capsule rupture means.

4,801,950

MULTI-BEAM ROLLER PHOTOTRACER

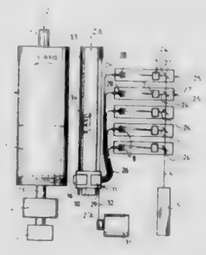
André Frehling, Maisons-Alfort, France, assignor to Societe d'Etudes et de Constructions de Machines et Appareils Industriels, Alfortville, France

Filed Aug. 14, 1987, Ser. No. 85,182

Claims priority, application France, Aug. 20, 1986, 8611890

Int. Cl.[4] G01D *9/42*

U.S. Cl. 346—108 **12 Claims**

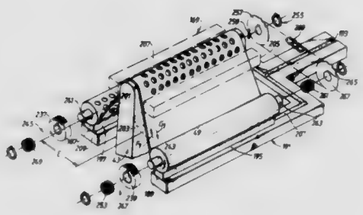


1. A roller phototracer for producing images on photosensitive films inter alia for the manufacture of printed circuits, the phototracer comprising a film-holding roller (**10**) movable in rotation and an optics-carrying slide (**11**) movable in translation along an axis (ZA—Z'A) parallel to the axis (Z—Z') of the film-holding roller (**10**), the optics-carrying slide (**11**) bearing an optical device (**16**, **29**; **16**, **8**) optically connected to a laser emitter (**5**) via at least one space filter (**8**) and at least one acousto-optical modulator (**7**) for directing a light beam (**4**) towards the film (**2**) or switching off the beam in order to light up or extinguish a set of lines of light spots on the film (**2**) depending on the rotation of the roller (**10**) and the movements of the slide (**11**), wherein the laser emitter (**5**) is stationary and the light beam (**4**) emitted by the laser emitter is divided into a number of light beams (**24**) in a number of likewise stationary optical sub-systems (**25**) each comprising an acousto-optical modulator (**7**) and a space filter (**8**), each optical sub-system being connected to the slide (**11**) by an optical fiber (**26**), the optical sub-systems (**25**) being disposed parallel to one another and perpendicular to the laser beam (**4**) and each optical sub-system (**25**) comprising in alignment, a beam-splitting mirror (**27**), an acousto-optical modulator (**7**), a spacer filter (**8**) and an optical focusing device (**28**) connected to an optical fiber (**26**), and wherein the optical device borne by the slide comprises a lens (**16**) having its axis perpendicular to the axis (Z—Z') of the roller (**10**) and also comprises a unit (**29**) for connecting the fibers (**26**), the ends of the fibers (**26**) therein being disposed so that the fiber axes are parallel to the axis of the lens (**16**), the diameter (D) of the fibers (**26**) and the distance (d) between the axes of each pair of adjacent fibers being also chosen in dependence on the light-spot tracing pitch and the lens ratio (**16**) so that the diameter of the light spots is between one and a half and twice the tracing pitch, in order to obtain a partial overlap of the light spots in the film (**2**).

4,801,951
THERMAL INK-JET TYPE IMAGE FORMING APPARATUS

Takashi Shimazaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 9, 1987, Ser. No. 36,554
Claims priority, application Japan, Apr. 17, 1986, 61-88890
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 11 Claims



1. A thermal ink-jet type image forming apparatus for producing with ink an ink image pattern on a recording sheet in response to an image signal, comprising:

movable image formation sheet means made of hydrophilic material including an ink permeable portion having a plurality of holes and a pair of ink impermeable portions for holding ink said ink permeable portion being located between said pair of ink impermeable portions;

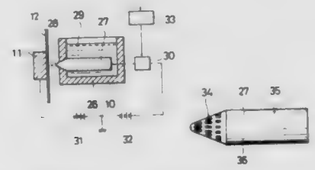
heating means contacting said movable image formation sheet means for selectively applying heat to said movable image formation sheet means to cause the transfer of said ink from said image formation sheet means to said recording sheet to obtain said image pattern in response to said image signal; and

hydrophobic separating means disposed on at least one of said ink impermeable portions of said image formation sheet means facing said heating means for separating said movable image formation sheet means from said heating means to prevent said image formation sheet means from adhering to said heating means when the movement of said image formation sheet means is stopped, said hydrophobic separating means contacting said heating means when the movement of said image formation sheet means is stopped.

4,801,952
IMPROVED INK DOT PRINTER ELECTRODE STRUCTURE

Hisashi Nishikawa; Mitsuharu Endo, and Masashi Shimosato, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 839,995, Mar. 17, 1986, abandoned. This application Oct. 19, 1987, Ser. No. 111,081
Claims priority, application Japan, Mar. 22, 1985, 60-57753; Apr. 2, 1985, 60-69485; Apr. 2, 1985, 60-69484
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 13 Claims



1. An ink dot printer comprising:

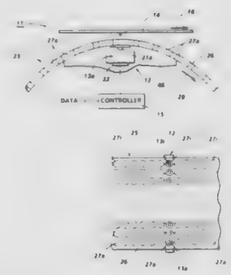
an opposing electrode and a recording electrode, having ink adhered to an end thereof, disposed in an opposing relationship with a record medium interposed therebetween, and a potential difference between said opposing electrode and said recording electrode in order to fly the ink of the end portion of said recording electrode toward the recording medium thereby to form a picture image on the recording medium;

wherein said recording electrode is a ink impregnable non-conductive member having a tapered shape at its tip and having an electrically conductive surface over the entirety of the surface including said tapered shaped tip.

4,801,953
PERFORATED INK TRANSPORTS FOR ACOUSTIC INK PRINTING

Calvin F. Quate, Stanford, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1987, Ser. No. 57,875
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 11 Claims



1. In an acoustic ink printer having a printhead including at least one droplet ejector means for supplying an acoustic beam which converges to a focus approximately in a predetermined focal plane, such that said acoustic beam has a relatively narrow waist diameter in said focal plane; an improved ink transport for delivering ink to said printhead, said ink transport comprising

a carrier having a repetitive pattern of relatively large diameter apertures extending through it on centers which cause the apertures within each repeat of said pattern to laterally align on a one-for one basis with individual addresses of a pagewidth image field, said carrier being advanced at a predetermined rate in a longitudinal direction to pass over said printhead approximately in said focal plane,

means for loading generally uniformly thick films of liquid ink into each of said apertures as said carrier approaches said printhead, and

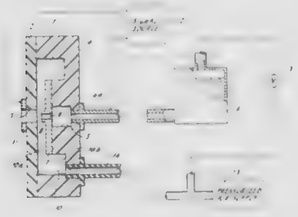
controller means coupled to said ejector means for modulating said acoustic beam, whereby individual droplets of ink are ejected on command from said apertures to print pixels at selected addresses in said image field,

with the rate at which said carrier is advanced being sufficiently high to ensure that the thickness of the ink films that are presented to said printhead at any given time is substantially constant.

4,801,954
INK JET PRINTER

Masayoshi Miura; Kenji Akami, both of Kawasaki; Gen Oda, Sagamihara; Tamotsu Kojima, Kawasaki, and Hiroshi Naito, Machida, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Japan

Division of Ser. No. 781,058, Sep. 27, 1985, Pat. No. 4,728,392, which is a continuation-in-part of Ser. No. 725,354, Apr. 19, 1985, abandoned. This application Jul. 15, 1987, Ser. No. 74,305
Claims priority, application Japan, Apr. 20, 1984, 59-80419; Apr. 27, 1984, 59-86418; May 8, 1984, 59-92249; Jul. 27, 1984, 59-157823; Jul. 27, 1984, 59-157828; Jul. 27, 1984, 59-157812; Aug. 29, 1984, 59-179820; Sep. 12, 1984, 59-191010; Sep. 28, 1984, 59-203406; Jul. 23, 1985, 60-162403; Aug. 13, 1985, 60-177911; Sep. 5, 1985, 60-196290
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R 14 Claims



1. An ink jet printer comprising:

a source of pressurized air;

a liquid container;

an ink jet print comprising a front nozzle member having a front channel, a housing secured to said front nozzle member, a rear nozzle member defining with said housing a liquid chamber connected to said container and defining with said front nozzle member a laminar airflow chamber, the rear nozzle member having a forwardly projecting nozzle and a rear channel extending from the liquid chamber in axial alignment with said front chamber said front and rear nozzle members being respectively formed of a flat panel and arranged in face-to-face relationship with each other, and said forwardly projecting nozzle being in the shape of a ring projecting from the flat-panel rear nozzle member as an extension of said rear channel for forming a meniscus at a forward end of said extension, said ring-shaped projection substantially corresponding in radial dimensions to said front channel, said airflow chamber being connected to said air source for directing air to a point between said front and rear channels so that it makes a sharp turn at the entry into said front channel creating a sharp pressure gradient along a path between forward ends of said front and rear channels and creating a dead air region surrounding said meniscus as a result of the sharp pressure gradient;

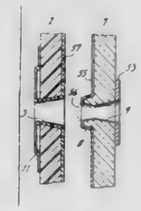
means including an electrode adjacent the forward end of said front channel for establishing an electric field gradient between said front channel and said meniscus to cause the meniscus to be partially expelled through said front channel;

means connecting said liquid container to said air source so that in the absence of said electric field gradient the liquid pressure in said rear channel is statically balanced with the combined forces of said air pressure acting on said meniscus and the surface tension of the liquid;

4,801,955
INK JET PRINTER

Masayoshi Miura; Kenji Akami, both of Kawasaki; Gen Oda, Sagamihara; Tamotsu Kojima, Kawasaki, and Hiroshi Naito, Machida, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 781,058, Sep. 27, 1985, Pat. No. 4,728,392, which is a continuation-in-part of Ser. No. 725,354, Apr. 19, 1985, abandoned. This application Jul. 15, 1987, Ser. No. 74,306
Claims priority, application Japan, Apr. 20, 1984, 59-80419; Apr. 27, 1984, 59-86418; May 8, 1984, 59-92249; Jul. 27, 1984, 59-157823; Jul. 27, 1984, 59-157828; Jul. 27, 1984, 59-157812; Aug. 29, 1984, 59-179820; Sep. 12, 1984, 59-191010; Sep. 28, 1984, 59-203406; Jul. 23, 1985, 60-162403; Aug. 13, 1985, 60-177911; Sep. 5, 1985, 60-196290
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R 1 Claim



1. An ink jet printer comprising:

a source of pressurized air;

a liquid container;

an ink jet print head comprising a front nozzle member having a front channel, a housing secured to said front nozzle member, a rear nozzle member defining with said housing a liquid chamber connected to said container and defining with said front nozzle member a laminar airflow chamber, the rear nozzle member having a forwardly projecting nozzle and a rear channel extending from the liquid chamber in axial alignment with said front channel, said front and rear nozzle members being respectively formed of a flat panel and arranged in face-to-face relationship with each other, and said forwardly projecting nozzle being in the shape of a ring projecting from the flat-panel rear nozzle member as an extension of said rear channel for forming a meniscus at a forward end of said extension, said ring-shaped projection substantially corresponding in radial dimensions to said front channel, said airflow chamber being connected to said air source for directing air to a point between said front and rear channels so that it makes a sharp turn at the entry into said front channel creating a sharp pressure gradient along a path between forward ends of said front and rear channels and creating a dead air region surrounding said meniscus as a result of the sharp pressure gradient;

means including an electrode adjacent the forward end of said front channel for establishing an electric field gradient between said front channel and said meniscus to cause the meniscus to be partially expelled through said front channel;

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means connecting said liquid container to said air source so that in the absence of said electric field gradient the liquid pressure in said rear channel is statically balanced with the combined forces of said air pressure acting on said meniscus and the surface tension of the liquid;

a first liquid repellant layer covering forward and rear end portions of said front channel and inner walls of said front channel; and

a second liquid repellant layer covering front end and outer walls of said ring-shaped projection.

4,801,956

IMAGE RECORDING SYSTEM

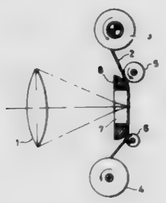
Takao Kinoshita, Tokyo, and Masaya Maeda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1987, Ser. No. 60,861

Claims priority, application Japan, Jun. 19, 1986, 61-143882; Jun. 19, 1986, 61-143883

Int. Cl.[4] G03G *5/00, 5/12*

U.S. Cl. 354—3 **12 Claims**



7. An image recording and reproduction system comprising:

(a) means for feeding a photosensitive member in a film configuration;

(b) recording control means for storing an image obtained through an optical system in said photosensitive member as electric image information, while contacting said photosensitive member fed by said feeding means to an optical member including a transparent electrode; and

control means for applying a predetermined first bias voltage between said photosensitive member and said optical system during image recording, and then applying a second bias voltage, whose polarity is opposite to that of said first bias voltage, between said photosensitive member and said optical system before transfer of said photosensitive member.

4,801,957

DISPOSABLE SINGLE-USE CAMERA AND ACCESSORY RE-USABLE ELECTRONIC FLASH UNIT

Alan V. Vandemoere, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1988, Ser. No. 157,239

Int. Cl.[4] G03B *15/03*

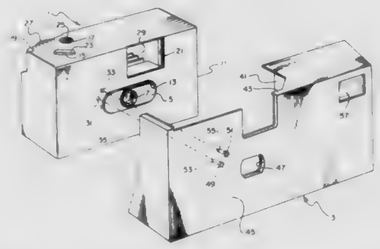
U.S. Cl. 354—147 **9 Claims**

1. An improved combination of a disposable single-use camera and an electronic flash unit, wherein (a) an inner camera part is pre-loaded with film and includes a taking lens and a shutter and (b) an outer sealed pack contains said camera part and has an opening for said taking lens, and wherein the improvement comprises:

said inner camera part has flash synchronization access ports;

said outer sealed pack is constructed of a perforable material which overlays said access ports; and

said flash unit includes electrically conductive flash synchronization pins shaped to perforate said outer sealed pack to



enter said access ports, whereby the flash unit is removably connected to said inner camera part.

4,801,958

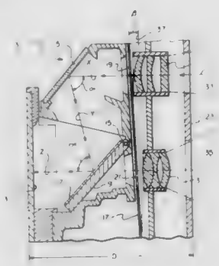
DUAL LENS CAMERA

Jeffrey R. Stoneham, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 19, 1988, Ser. No. 145,332

Int. Cl.[4] G03B *3/00*

U.S. Cl. 354—195.12 **5 Claims**



1. An improved dual lens camera of the type wherein (a) a relatively longer focal length lens and a relatively shorter focal length lens positioned proximate the front of said camera are selectively used to expose film at an exposure plane positioned proximate the rear of said camera, and (b) shutter and/or aperture plane defining means having respective portions optically aligned with said longer and shorter focal length lenses is positioned between said front of the camera and said exposure plane, and wherein the improvement comprises:

means supporting said shutter and/or aperture plane defining means inclined towards said exposure plane in a manner such that said portion of the shutter and/or aperture plane defining means aligned with said longer focal length lens is generally closer to said exposure plane than said portion of the shutter and/or aperture plane defining means aligned with said shorter focal length lens, whereby a front to rear dimension of said camera will be reduced.

4,801,959

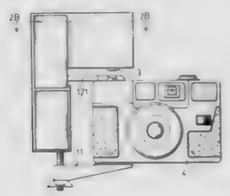
CORDLESS REMOTE CONTROL SHUTTER ACTIVATION DEVICE

Ming J. Chern, No.-1, Alley 2, Lane 290, Hsien Cheng Road, Ling Ya District, Kaohsiung City, Taiwan

Filed Nov. 17, 1987, Ser. No. 122,860

Int. Cl.[4] G03D *17/38*

U.S. Cl. 354—266 **1 Claim**



1. A remote controlled cordless shutter release activation device comprising:

(a) an inverted L-shaped housing (**1**), said housing (**1**) including a long leg which houses a threaded shaft (**13**) and a short leg; said threaded shaft (**13**) protruding from a bottom wall of said housing (**1**) so as to threadably support a base (**11**) on a lower end thereof; a securement arm (**12**) with a gripping portion (**121**) thereon, said securement arm (**12**) being rotatably fixed on an upper part of said threaded shaft (**13**) by securement nuts (**14**); said base (**11**) acting in conjunction with said gripping portion (**121**) of said securement arm (**12**) to clamp one end of a camera therebetween;

(b) an antenna (**541**) and a driving apparatus circuit board (**16**) and a microswitch (**62**) for controlling a driving apparatus; said antenna (**541**) receiving a signal from a remote control signal transmission device operated by a user; said circuit board (**16**) including two FET's (**54**, **55**), two OP AMP's (**56**, **57**), a decoder (**52**), a transistor (**58**), and a relay (**6**) said antenna (**541**) being fixably connected to the circuit board (**16**) and disposed within said housing (**1**); said microswitch (**62**) being fixed on an inside portion of the short leg of said housing (**1**); and

(c) said driving apparatus being housed in said short leg of said housing (**1**) and including: a battery driven motor (**2**), a set of reducing gears (**21**), a driving shaft (**31**), a positioning nut (**32**) and a driving arm (**3**); said motor (**2**) driving a set of reducing gears (**21**); said reducing gears (**21**) driving a driving shaft (**31**), said driving shaft (**31**) threadably displacing a positioning nut (**32**) upwards or downwards with respect to direction of rotation of said motor (**2**); said positioning nut (**32**) being fixed in a recess in a driving arm (**3**) so that said driving arm (**3**) is displaced together with said positioning nut (**32**) to press down and release a shutter release button on said camera.

4,801,960

MODE SELECTOR MEMBER AND FINGER RECESS IN A CAMERA

David E. Hansen, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 14, 1988, Ser. No. 143,786

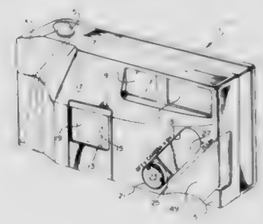
Int. Cl.[4] G03B *17/02, 15/05*

U.S. Cl. 354—288 **1 Claim**

1. An improved camera of the type wherein a manually actuated member located at a front face of a camera body is operated by a finger of the user to initiate at least one function related to said camera, and wherein the improvement comprises:

means defining a single finger-receiving groove in said front face which is arranged completely diagonally across a corner portion of the front face to bridge two sides of said camera body; and

means supporting said manually actuated member for manual movement in opposite directions along a channel in said front face which extends substantially parallel and relatively close to said finger-receiving groove, though is



separated from the groove, for enabling a finger of the user that operates the member to be readily transferred from the member to within the groove, whereby inadvertent movement of the member will prevented.

4,801,961

IMAGE FORMING APPARATUS

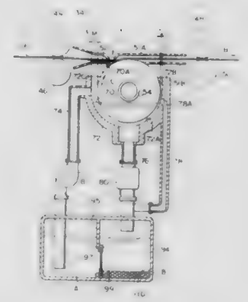
Hiroyuki Hirai, and Hiroshi Hara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 29, 1987, Ser. No. 67,041

Claims priority, application Japan, Jun. 27, 1986, 61-151215

Int. Cl.[4] G03D *9/00, 5/06*

U.S. Cl. 354—303 **14 Claims**



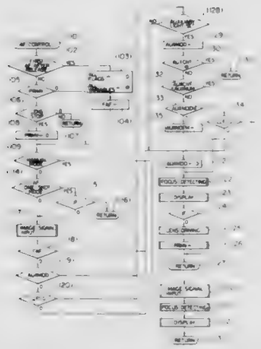
1. In an image forming apparatus for obtaining an image on an image receiving material by applying an image forming solvent to at least one of a photosensitive material and said image receiving material, the improvement comprising:

a solvent application device including means for storing said image forming solvent and applying said solvent to at least one of said photosensitive material and said image receiving material; and

at least one of a cation exchanger and a pollutant absorbent disposed in said solvent application device so as to come into contact with said solvent.

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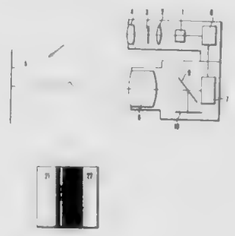
4,801,962
CAMERA INCORPORATING AUTOMATIC FOCUSING APPARATUS
Akira Akashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 31, 1987, Ser. No. 140,301
Claims priority, application Japan, Jan. 12, 1987, 62-4562; Jan. 12, 1987, 62-4563; Jan. 12, 1987, 62-4564
Int. Cl.[4] G03B *3/00*
U.S. Cl. 354—402 **11 Claims**



1. A camera incorporating an automatic focusing apparatus, comprising:
(a) a focus detecting circuit for detecting a focusing state of a focusing optical system with respect to an object to be photographed and outputting a focusing signal corresponding to the focusing state;
(b) a driving circuit for driving said focusing optical system on the basis of the focusing signal;
(c) a control circuit having a first mode for continuously causing to perform detection of the focusing state by said focus detecting circuit and driving of said focusing optical system by said driving circuit to perform focusing control according to movement of the object to be photographed and a second mode for inhibiting driving of said focusing optical system by said driving circuit after a detection result by said focus detecting circuit indicates that an in-focus state is-obtained;
(d) mode selecting means for manually selecting the first or second mode; and
(e) an auxiliary light control circuit for emitting auxiliary light on the object to be photographed when the focusing state is detected by said focus detecting circuit, and when auxiliary light emission control is to be performed by said auxiliary light control circuit, for compulsorily switching the mode to the second mode even if the first mode is selected by said mode selecting means.

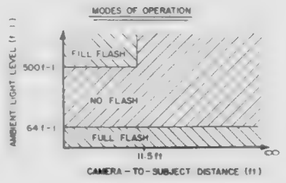
4,801,963
FOCUS DETECTING SYSTEM
Takeshi Koyama, and Keiji Ohtaka, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 15, 1986, Ser. No. 941,308
Claims priority, application Japan, Dec. 18, 1985, 60-285001; Dec. 2, 1986, 61-287078
Int. Cl.[4] G03B *3/00, 15/03*
U.S. Cl. 354—403 **27 Claims**

1. A focus detecting system comprising:
focus detecting means for detecting the focus adjusting state of an objective lens, having a photosensing apparatus; and projecting means for projecting a pattern which forms a highest spatial frequency in a central region of said focus



detecting means and forms a lower spatial frequency toward a marginal region of said focus detecting means.

4,801,964
FILL FLASH CONTROL SYSTEM FOR CAMERAS
Stephen G. M. Desormeaux, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 13, 1988, Ser. No. 143,418
Int. Cl.[4] G03B *15/03*
U.S. Cl. 354—414 **8 Claims**



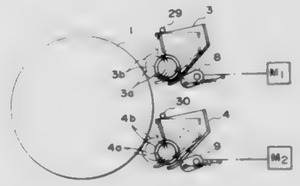
1. An improved artificial illumination control system for controlling the energization of an electronic flash device during a photographic exposure interval in a camera, wherein (a) light level detecting means provides a measure of the brightness level of ambient light intensity, (b) flash triggerng means for energizing said electronic flash device is operated in a fill flash mode to enable a fill flash exposure, and (c) camera-to-subject distance detecting means provides a measure of the camera-to-subject distance, and wherein the improvement comprises:
comparator means for determining that the measure of the level of ambient light intensity provided by said light level detecting means is equal to or greater than a minimum bright light level for a fill flash exposure, and for determining whether the measure of the camera-to-subject distance provided by said camera-to-subject distance detecting means is less than or equal to a maximum distance for a fill flash exposure or is greater than that distance; and
control means, acting subsequent to said comparator means determining both that said measure of the level of ambient light intensity is equal to or greater than the minimum bright light level and said measure of the camera-to-subject distance is less than or equal to the maximum distance, for operating said flash triggering means in its fill flash mode, and acting subsequent to said comparator means determining that said measure of the level of ambient light intensity is equal to or greater than the minimum bright light level but said measure of the camera-to-subject distance is greater than the maximum distance, for preventing operation of said flash triggering means in the fill flash mode.

4,801,965
COLOR RECORDING APPARATUS
Manabu Mochizuki, Yokohama; Tsuneo Kurotori, Tokyo, and Toshiharu Hasegawa, Shiroishi, all of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan
Filed Mar. 19, 1987, Ser. No. 28,084
Claims priority, application Japan, Mar. 24, 1986, 61-65442
Int. Cl.[4] G03G *15/06*
U.S. Cl. 355—4 **3 Claims**



1. A recording apparatus having a visualizing device which selectively supplies visualizing agents to a photoconductive element, comprising:
a first vessel storing a black visualizing agent;
a second vessel storing a visualizing agent of another color;
a cleaner vessel storing a cleaning agent for cleaning said visualizing agents;
first supply means for supplying said visualizing agent in said first vessel to said visualizing device;
second supply means for supplying said visualizing agent in said second vessel to said visualizing device;
cleaner supply means for supplying said cleaning agent in said cleaner vessel to said visualizing device;
switching means for causing said agents to be selectively collected from said visualizing device into either said first vessel, said second vessel or said cleaner vessel;
color commanding means for commanding a recording color;
monitoring means for monitoring a color condition of supply of any of said agents to said visualizing device and providing an output signal indicative of said color condition;
comparing means for comparing said output signal to a reference value for a recording color commanded by said color commanding means and when the comparison indicates an unsatisfactory color condition, initiating cleaning of said visualizing device by commanding said cleaner supply means supply of said cleaning agent and commanding said switching means collection in said cleaner vessel and, after the cleaning, actuating said supply means and switching means in correspondence to said commanded color to said visualizing device, thereby performing recording in said commanded color; and
control means for conditioning said switching means for collection in said cleaner vessel when a predetermined period of time expires before said recording means begins a subsequent recording operation after a recording operation in another color.

4,801,966
IMAGE FORMING APPARATUS WITH MOVABLE DEVELOPING DEVICE
Masamichi Ikeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 27, 1986, Ser. No. 844,718
Claims priority, application Japan, Apr. 6, 1985, 60-73123; Dec. 11, 1985, 60-278485
Int. Cl.[4] G03G *15/01*
U.S. Cl. 355—4 **10 Claims**



1. An image forming apparatus comprising:
a movable image bearing member;
charging means for electrically charging said image bearing member;
means for exposing said image bearing member to light carrying information corresponding to an image to be recorded after said image bearing member is charged by said charging means, to form a latent image on said image bearing member;
at least one developing means for developing the latent image formed on said image bearing member, said developing means being movable between its operative position where it is capable of developing the latent image on said image bearing member and its inoperative position where said developing means is retracted from its operative position;
means for transferring the image developed by said developing means onto a transfer material; and
control means for causing movement of the developing means between the operative position and the inoperative position to be carried out after completion of the image transfer by said transfer means;
wherein said developing means includes a developer carrying member for carrying a developer and for supplying the developer to the latent image on said image bearing member, said developer carrying member being provided adjacent its opposite ends with means contactable to said image bearing member to maintain a gap between said image bearing member and said image carrying member when the developing means is at its operative position.

4,801,967
VOLTAGE SENSING IN A.C. COROTRONS
Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 23, 1987, Ser. No. 124,228
Int. Cl.[4] G03G *15/02;* **H01T** *19/00*
U.S. Cl. 355—3 CH **7 Claims**

1. In an electrostatographic device, having a photoreceptor member charged to a uniform voltage level prior to imagewise discharge thereof, and including at least a first corotron having a corona producing coronode driven with an A.C. voltage source supported therein, for neutralizing charge on a surface, and a conductive shield substantially surrounding the coronode, and open on a side adjacent to the photoreceptor surface, a surface potential measuring device comprising:

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a thin conductive wire electrode arranged parallel and across the photoreceptor surface, parallel to the coronode,



and adjacent to the shield which derives a current proportional to the voltage on the photoreceptor surface.

4,801,968

FIXING DEVICE INCLUDING A HEAT ROLLER HAVING A DEVICE FOR HEATING A REGION OF THE ROLLER CORRESPONDING TO THE WIDTH OF AN IMAGE FORMING MEDIUM

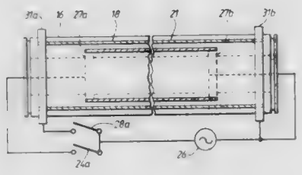
Mitutosi Kegure, Yokohama; Yuka Nakamura, Kamakura; Makoto Tamura, Ohta, and Keiji Itaya, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 13, 1987, Ser. No. 25,766

Claims priority, application Japan, Mar. 18, 1986, 61-58108; May 21, 1986, 61-116996

Int. Cl.⁴ G03G *15/20*

U.S. Cl. 355—3 FU **2 Claims**



1. A fixing device for an image forming apparatus utilizing image forming media of a plurality of different widths, and including means for selecting one of the plurality of image forming media, comprising:

a heat roller including a core roller and an electrically resistive layer region formed on the core roller for carrying an electric current to generate heat, said electrically resistive layer including:

a first electrically resistive layer having a length corresponding to a first width of one of the plurality of image forming media,

a second electrically resistive layer having a length corresponding to a second width of another of the plurality of image forming media, and

an electrically insulating layer between the first and second electrically resistive layers;

a supporting roller disposed parallel to said heat roller for supporting the selected one of the image forming media in a contacting relationship with heat roller; and

means for selectively supplying electrical power to a portion of the electrically resistive layer region corresponding to the width of the selected image forming medium.

4,801,969

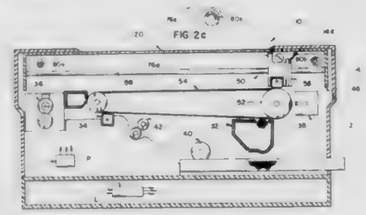
SELF-COILING EXPOSURE SHADE

Gabriel Hamidian, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1987, Ser. No. 108,603

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—8 **10 Claims**



1. In an improved electrophotographic reproduction apparatus having a photoconductive member mounted for movement about a closed loop path in operative relation to electrophotographic process stations and a movable scanning mechanism for optically exposing the photoconductive member to a light image of a document to be reproduced, the improvement including a self-coiling exposure shade for preventing unwanted illumination from exposing said photoconductive member, said exposure shade comprising;

an opaque, low reflectance, sheet material treated to coil on itself; and a support member, one end of said sheet material being connected to said scanning mechanism and the opposite end being associated with said support member in such a manner so that as said scanning mechanism moves in a direction to pull on said sheet material, said sheet material uncoils, and as said scanning mechanism moves in the opposite direction, said sheet material self coils about said support member.

4,801,970

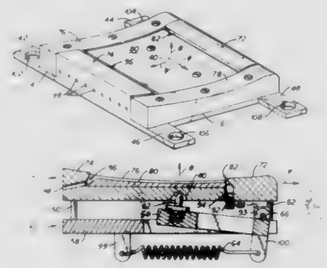
DEVELOPMENT APPARATUS FOR LATENT IMAGES ON SUPPORTED SHEETS

Andreas Bibl, Los Altos, and Gene F. Day, Hillsborough, both of Calif., assignors to Precision Image Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 796,872, Nov. 12, 1985, Pat. No. 4,655,165, which is a continuation-in-part of Ser. No. 763,040, Aug. 6, 1985. This application Nov. 10, 1986, Ser. No. 930,655

Int. Cl.⁴ G03G *15/10*

U.S. Cl. 355—10 **7 Claims**



2. A toning shoe for use in an electrostatic printer comprising

a frame having opposed upstream and downstream support

rims, a central flat surface between said support rims and a pair of lateral flat surfaces bounding said central flat surface, said support rims adapted for frictional contact with a surface bearing a latent image,

two electrically insulating blocks mounted on said lateral flat surfaces to form lateral rims, said lateral rims being relieved relative to said support rims by a depth of less than two mils, and

an electrically conductive electrode mounted to said central flat surface, said electrode having an arcuate developer surface distal to the attachment to said central flat surface, said developer surface having an upstream edge adjacent said upstream support rim and having a downstream edge adjacent said downstream support rim, said edges recessed relative to said support rims by a depth of less than ten mils, a slit being defined between said upstream support rim and said electrode and being in communication with a supply of fluid developer, a drain channel being defined between said downstream support rim and said electrode, and at least one drain port being defined in said downstream support rim in communication with said drain channel, the support rims, the lateral rims and the arcuate developer surface delimitating an area for the flow of fluid developer.

4,801,971

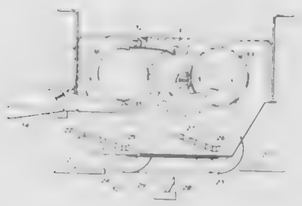
LIQUID CONTROL ASSEMBLY

Theodorus M. Ceelen, Laverne, and Lothar Jeromin, Sierra Madre, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 8, 1987, Ser. No. 94,478

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—10 **4 Claims**



1. In a xerographic printer wherein a xerographic plate travels above and across a liquid toner development station for imprinting a toner image on the lower surface of said plate and then across a transfer station to transfer said image to a sheet of paper, a mechanism for absorbing excess toner from said plate after it has passed the development station comprising:

a stationary cleaning means comprising an upper resilient foam layer and a lower wicking material layer, the lower surface of said cleaning means being below the upper surface of said plate so that the lower surface of said cleaning means will wipe the leading and trailing edges and the top of said plate, and

wherein said foam layer is formed into a cylindrical shape to comprise the outer layer of a cleaning roll, wherein said material is in the form of a web and wherein said cleaning means further comprises a supply roll for supplying material to, and a take up roll for receiving material from, said cleaning roll, and means for advancing said supply and take up rolls a predetermined amount during the passage of each plate past said mechanism.

4,801,972

IMAGE FORMING APPARATUS EQUIPPED WITH A PLURALITY OF DEVELOPING UNITS

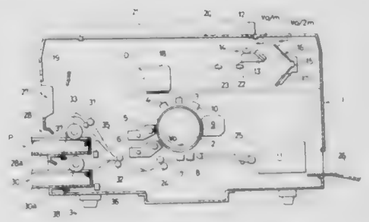
Keiji Kusumoto, and Yoshiaki Takano, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1987, Ser. No. 101,678

Claims priority, application Japan, Oct. 6, 1986, 61-236175; Oct. 6, 1986, 61-236176; Oct. 13, 1986, 61-241281; Oct. 13, 1986, 61-241282

Int. Cl.⁴ G03G *15/01, 15/09*

U.S. Cl. 355—14 D **9 Claims**



1. An image forming apparatus equipped with a plurality of developing units which are selectively bruoght into an operative state one at a time, said image forming apparatus comprising:

developing unit selecting signal input means for giving a developing unit selecting signal designating the selection of one developing unit among the plurality of developing units;

developing unit changeover means which executes a developing unit changeover operation according to the developing unit selecting signal to bring the selected developing unit into an operative state and to bring the rest of the developing units into an inoperative state; and

control means for controlling said developing unit changeover means, when another developing unit selecting signal requesting the selection of another developing unit is given during the developing unit changeover operation, so as to make said developing unit changeover means interrupt the developing unit changeover operation in process and execute another developing unit changeover operation for bringing the newly selected developing unit into an operative state.

4,801,973

PHOTOGRAPHIC PAPER RESERVER MECHANISM

Kunio Takagi, Tokyo, and Takashi Matsumoto, Saitama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 2, 1988, Ser. No. 151,676

Claims priority, application Japan, Feb. 17, 1987, 62-21962[U]

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—27 **20 Claims**

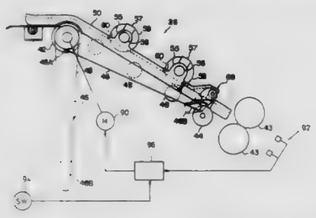
1. A photographic paper reserver mechanism for absorbing the difference between the photographic paper processing speeds of a printing unit and a development unit, comprising:

first roller means supplied with photographic paper processed by said printing unit;

second roller means for receiving said photographic paper supplied from said first roller means and guiding said photographic paper to said development unit;

a flap movable between a first position at which said flap guides the leading end of said photographic paper supplied from said first roller means to said second roller means and a second position at which said flap retreats from said first position so as to enable said photographic paper received by said second roller means to be bent and suspended between said first and second roller means; and

at least one guide arm forming, between itself and said flap, a path through which said photographic paper is transported to said second roller means when said flap is in said first position, and said guide arm being interposed be-



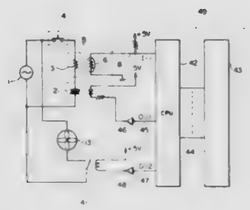
tween said first and second roller means for preventing said photographic paper from moving straight from said first roller means to said second roller means when said flap is in said second position.

4,801,974

SAFETY DEVICE FOR FIXING HEATER

Toshihiko Sato, and Katsuo Suzuki, both of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1988, Ser. No. 143,386
Claims priority, application Japan, Jan. 23, 1987, 62-12238
Int. Cl.[4] G03G *15/20*
U.S. Cl. 355—14 FU **10 Claims**



8. A safety device for an apparatus having a means for thermally fixing images on a paper and a means for exhausting heat outside of said apparatus, comprising:

means for detecting temperature of said thermal fixing means;

means for judging whether the temperature detected by said detecting means is within a normal temperature control region; and

means for controlling drive of said heat exhausting device so as to stop operation of said heat exhausting device when said judging means judges that the detected temperature is out of the normal temperature region.

4,801,975

ERASER LAMP AND TRANSPARENT GUIDE PLATE IN ELECTROSTATIC IMAGE TRANSFER

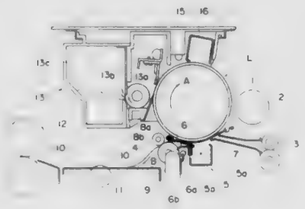
Atsushi Kano, Amagasaki; Toshio Watanabe, Takatsuki; Haruo Yamamoto, Osaka; Katsuhide Yamaguchi, Takatsuki; Kenji Oda, Toyonaka; Arihiro Tsunoda, Higashiosaka, and Masahiko Fukano, Neyagawa, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

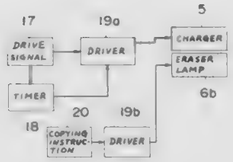
Filed Apr. 16, 1987, Ser. No. 39,088
Claims priority, application Japan, Apr. 18, 1986, 61-91099; Apr. 26, 1986, 61-97653; Apr. 26, 1986, 61-97654
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 TR **5 Claims**

1. In an image forming apparatus comprising, as arranged around electrostatic latent image bearing means, main charging means, means for exposing the image bearing means to an optical image of an original, developing means,transfer means having a transfer corona charger, mechanical separating means and cleaning means, the improvement comprising:

(a) an eraser lamp disposed adjacent to the copy paper delivery side of the transfer corona charger at a position for illuminating copy paper from the rear side thereof upon image transfer thereto; and

(b) a control unit for controlling the operation of the transfer corona charger and the eraser lamp, the control unit comprising:





(i) means for measuring a transfer period including a predetermined period of time before the leading end of the copy paper reaches the transfer corona charger and a predetermined period of time after the rear end of the copy paper has passed the transfer corona charger, and

(ii) means for energizing the transfer corona charger at least during the transfer period and for turning on the eraser lamp to illuminate at least the rear side of the copy paper and the image bearing means over the area thereof charged by the corona charger.

4,801,976

COPYING DEVICE FOR COPYING AN IMAGE ON A PHOTO-PRESSURE SENSITIVE SHEET

Shigeyuki Hayashi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 29, 1987, Ser. No. 114,050
Claims priority, application Japan, Oct. 31, 1986, 61-261427
Int. Cl.[4] G03B *29/00*
U.S. Cl. 355—28 **3 Claims**

1. A copying apparatus comprising:

a photo-pressure sensitive sheet coated with at least a plurality of microcapsules which encapsulate: chromogenic material which reacts with a developing agent coated on one of said photo-pressure sensitive sheet and a transfer sheet; and photo-sensitive composition, wherein the mechanical strength of each microcapsule varies in response to exposure to light;

exposing means for exposing said photo-pressure sensitive sheet arranged on an exposure position for forming a latent image on one of said photo-pressure sensitive sheet and said transfer sheet in response to an original image;

feeding means for feeding one of said photo-pressure sensitive sheet and said transfer sheet onto said exposure position;

developing means for rupturing said microcapsules of weak mechanical strength, for reacting said chromogenic material effused from said microcapsules with said developing agent, and for forming a visible image;

magnification detection means for detecting a degree of the magnification of said image exposed by said exposing means; and



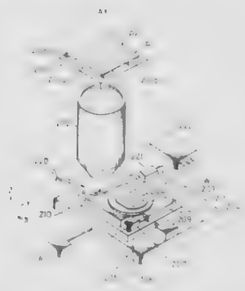
exposure area control means for controlling said feeding means in response to said degree of the magnification detected by said detection means, whereby said photo-pressure sensitive sheet is exposed by said exposing means from a leading edge thereof.

4,801,977

PROJECTION OPTICAL APPARATUS

Shoji Ishizaka, Kawasaki; Hideo Mizutani, Yokohama; Susumu Makinouchi, Kawasaki, and Akikazu Tanimoto, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 089,415, Aug. 26, 1987, abandoned.
This application May 24, 1988, Ser. No. 198,688
Claims priority, application Japan, Aug. 29, 1986, 61-201793
Int. Cl.[4] G03B *27/52, 27/74, 27/80*
U.S. Cl. 355—30 **10 Claims**



1. A projection optical apparatus comprising:

a projection optical system for projecting an image of an object onto a substrate;

data collecting means for obtaining data regarding a factor which causes a variation in an optical characteristic of said projection optical system;

adjusting means for adjusting a relation between said substrate and the image of said object relative to the variation in the optical characteristic of said projection optical system;

means for determining an amount of adjustment by said adjusting means in accordance with a model formula using a predetermined parameter on the basis of said data obtained by said data collecting means;

means for independently measuring the variation in the optical characteristic of said projection optical system; and

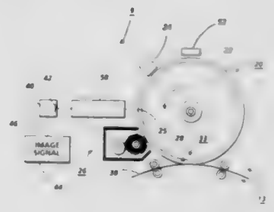
means for correcting the parameter of said model formula on the basis of the result measured by said measuring means.

4,801,978

IMAGE BAR PRINTER COMPENSATED FOR VIBRATION-GENERATED SCAN LINE ERRORS

William L. Lama, Webster; Robert P. Loce, Rochester, and John A. Durbin, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1987, Ser. No. 139,391
Int. Cl.[4] G03B *27/72*
U.S. Cl. 355—69 **3 Claims**



1. An image bar printing apparatus including an image write bar, a photoconductive member adapted for movement though an exposure station, image signal source means connected to said image write bar, said write bar generating a light output representative of said signal source input, a lens array cooperating with said image bar to form line-like images on said photoconductive member as the member moves through said exposure station, a pixel clock for controlling the on-off time of said image write bar, means for generating electrical signals representative of at least velocity motion chaages in the photoconductive member due to vibrational forces, and logic and control circuitry for operating on said electrical signals and for generating at least a first output signal which adjusts the time-dependent radiance of said image bar to compensate for said velocity motion changes

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4,801,979

DEVICE FOR COPYING MICROFICHE

Rodney M. Bourgeois, LaCombe, La., assignor to Innovative Technology, Inc., LaCombe, La.

Filed Dec. 23, 1987, Ser. No. 137,343
Int. Cl.[4] G03B *27/30, 27/10*
U.S. Cl. 355—106 **41 Claims**

1. A device for copying images on a master microfiche flim onto a copy microfiche film comprising:

a master payout station from which master film is supplied;

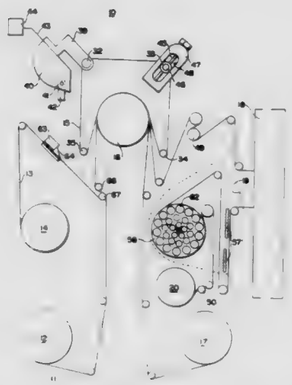
a copy payout station from which copy film is supplied to form a master film-copy laminate;

an exposure station comprising an ultraviolet ray source positioned within a rotatable exposure surface over which said master film-copy film laminate is passed such that ultraviolet light from said ultraviolet ray source passes through said exposure surface and said master film and then exposes said copy film;

a plurality of belt rollers positioned above said exposure station, each of said belt rollers having a belt surface;

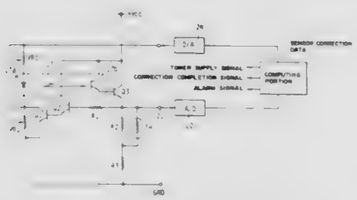
an endless tensioning belt threaded about said rollers and in contact with said belt surfaces of said rollers, said tensioning belt pressing said master film and said copy film into intimate contact with each other and with said exposure surface, such that there is substantially no slippage between said exposure surface, said master film, said copy film and said tensioning belt;

a master take-up station at which said master film is collected after said master film has passed over said exposure surface;
a development section for developing said copy film after said copy film has been exposed;
a cooling section for cooling the developed copy film;
a copy take-up station at which said copy film is collected after said copy film has passed through said cooling section; and



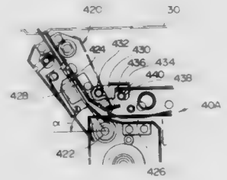
drive means for driving said copy film through said exposure station and through said development section, said master film and said tensioning belt being passively driven by said drive means by virtue of contact between said copy film and each of said master film and said tensioning belt, said exposure surface being rotated by virture of contact with said master film.

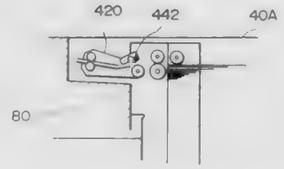
4,801,980
TONER DENSITY CONTROL APPARATUS
Tomio Arai, and Hiroshi Kuru, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Oct. 28, 1987, Ser. No. 114,106
Claims priority, application Japan, Oct. 29, 1986, 61-2550862; Oct. 29, 1986, 61-2550863; Oct. 29, 1986, 61-165085[U]; Oct. 29, 1986, 61-165086[U]; Nov. 5, 1986, 61-169067[U]; Nov. 5, 1986, 61-169068 [U]
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—14 D **10 Claims**



1. A toner density control apparatus comprising:
an image density sensor having a light-emitting element for irradiating a reference image on a photosensitive member, and a light-receiving element for receiving a light reflected from said reference image to detect a density of said image;
means for comparing an output of said sensor with a predetermined level to control a toner density;
means for controlling a voltage to be applied on said light-emitting element according to a difference between an output of said light-receiving element when it receives a light reflected from a non-image surface region on said photosensitive member and correction reference data; and
means for generating a signal to be supplied to the outside when said voltage to be applied is increased more than a predetermined value.

4,801,981
PAPER FEEDING ARRANGEMENT
Hisao Chikano, and Takashi Yokota, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 14, 1987, Ser. No. 107,999
Claims priority, application Japan, Oct. 14, 1986, 61-241934; Nov. 7, 1986, 61-265012
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 SH **2 Claims**

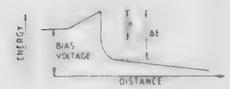




1. In a structure for interconnecting various structural elements of a system which is constituted by a recording apparatus and various structural elements of a plurality of optional paper handling units connectable to said recording apparatus, a first structural element having an outlet opening for transporting a paper sheet and a second structural element having an inlet opening for receiving the paper sheet communicated to each other with said outlet and inlet openings aligned with each other, wherein the paper sheet is transported through said outlet opening in a same direction as the paper sheet is transported through said inlet opening,
wherein said first structural element is provided with a transport direction changing means for changing an intended direction of transport of a paper sheet which is moved through said outlet opening, and
wherein said transport direction changing means comprises a discharge mechanism for driving a paper sheet to said outlet opening, said discharge mechanism being supported to be rotatable about a predetermined point, and a positioning device for positioning said discharge mechanism, said positioning device comprising a lock member provided on said discharge mechanism and a member for selectively locking said lock member in a plurality of positions.

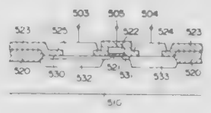
4,801,982
ELECTRONIC DEVICES
Nigel R. Couch, Pinner Green; Michael J. Kelly, Hampstead, and Peter H. Beton, Wandsworth, all of England, assignors to The General Electric Company, p.l.c., England
Filed Sep. 21, 1987, Ser. No. 99,060
Claims priority, application United Kingdom, Sep. 26, 1986, 8623208
Int. Cl.[4] H01L *27/26, 47/00, 47/02, 27/12*
U.S. Cl. 357—3 **4 Claims**

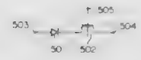




1. An electronic device comprising: a charge injection region and first and second regions of a Gunn effect material, said charge injection region having a graded gap injector, the composition of said charge injection region being the same as said first and second regions at its edge remote from said first and second regions, and varying in the direction toward said first region such that the direct band gap increases linearly with distance from said edge remote from said first and second regions, and so that it forms a heterojunction with said first region, said charge injection region being effective in use of the device to inject into said first region a charge of a predetermined energy which is less than the energy difference between the minima of the pair of energy band edges giving rise to the Gunn effect in said Gunn effect material, said first region having a thickness which is not more than the mean free electron path length in said first region, and being doped to an extent that in use of the device the sum of the depletion energy in said first region and said predetermined energy is in the order of said energy difference, said second region being doped to a lesser extent than said first region such that the electric field across the second region is sufficient for the formation and propagation of domains.

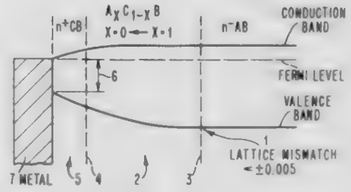
4,801,983
SCHOTTKY DIODE FORMED ON MOSFET DRAIN
Masahiro Ueno; Masahiro Iwamura; Kozaburo Kurita, and Ikuro Masuda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 22, 1986, Ser. No. 899,399
Claims priority, application Japan Aug. 30, 1985, 60-189643
Int. Cl.[4] H01L *27/04*; G11C *11/40*
U.S. Cl. 357—15 **2 Claims**





2. A semiconductor matrix circuit having a plurality of row lines, a plurality of column lines, unidirectional switching circuits formed at selected ones of respective intersections of said row lines and said column lines, and a plurality of input lines formed correspondingly to said row lines, each unidirectional switching circuit comprising:
a field effect transistor including a first semiconductor region of a first conductivity type, second and third regions of a second conductivity type which are formed at a first surface of said first semiconductor region and spaced from each other, said second region being in ohmic contact with a row line passing through an associated intersection, said third region being made in a two-layer form of a low-impurity concentration layer exposed to said first surface of said first semiconductor region and a buried layer buried into said first semiconductor region and having a higher concentration of impurities than that of said low-impurity concentration layer, and a gate electrode facing an area of said first surface of said first semiconductor region disposed between said second and third regions having an insulating layer formed between said area and said gate electrode, said gate electrode being connected to an input line corresponding to said row line passing through said associated intersection, and
a Schottky-barrier diode including said low-impurity concentration layer and said second electrode which is formed of metallic material said second electrode being in contact with said low-impurity concentration layer so as to provide a Schottky-barrier effect therebetween, said second electrode being connected to a column line passing through said associated intersection.

4,801,984
SEMICONDUCTOR OHMIC CONTACT
Jerry M. Woodall, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 411,114, Aug. 24, 1982, abandoned, which is a continuation of Ser. No. 158,664, Jun. 12, 1980, abandoned. This application Jan. 15, 1987, Ser. No. 5,321
Int. Cl.[4] H01L *29/161, 29/20, 23/48*
U.S. Cl. 357—16 **8 Claims**



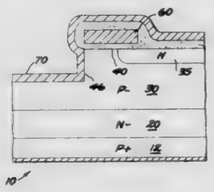
6. An ohmic contact having a resistivity on the order of 10^{-6} ohm cm^2 between a metal member and an intermetallic semiconductor device crystal body wherein
a graded bandgap region is provided between said metal member and said crystal body that is doped to the level of 10^{19} atoms/cc, that is atomically compatible at a first interface with said crystal of said body and
that has a bandgap width at a second interface at said metal member that is less than 0.5 electron volts.

4,801,985

MONOLITHICALLY INTEGRATED SEMICONDUCTOR DEVICE AND PROCESS FOR FABRICATION

Bantval J. Baliga, and Deva N. Pattanayak, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 19, 1987, Ser. No. 51,359
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.3 **4 Claims**



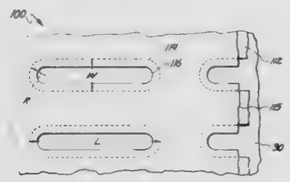
1. A monolithically integrated insulated gate semiconductor device comprising:
- a first layer of one type conductivity;
- a second layer of opposite type conductivity disposed atop the first layer;
- a third layer of one type conductivity disposed atop said second layer, said third layer having first and second parallel plane surfaces and a third surface transverse to said first and second plane surfaces;
- a first region of opposite type conductivity disposed within said third layer adjacent said first plane surface;
- a metallization layer applied in ohmic contact with said transverse surface;
- an insulated gate disposed on said third layer coupling said first region to said metallization layer;
- said insulated gate, in response to an appropriate applied potential, coupling said first region to said metallization layer and in response to removal of said bias, decoupling said first region from said metallization layer.

4,801,986

VERTICAL DOUBLE DIFFUSED METAL OXIDE SEMICONDUCTOR VDMOS DEVICE WITH INCREASED SAFE OPERATING AREA AND METHOD

Hsueh-Rong Chang, Scotia; Bantval J. Baliga, and Tat-Sing P. Chow, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 3, 1987, Ser. No. 33,940
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.4 **23 Claims**



1. A semiconductor field effect device comprising:
- a body of semiconductor material having a first major surface and including a first region of one type conductivity which extends to said first surface;
- an insulated gate electrode grid disposed over said first major surface, said grid having an array of openings therein, said grid including first segments having a minimum width W_1 and second segments having a minimum width W_2, wherein W_2 is greater than W_1;
- said semiconductor body further including a second region having an opposite type conductivity extending into said first region from said first surface, said second region underlying said openings and extending under said gate electrode grid from said openings parallel to said first major surface a distance D to form a PN junction with said first region, wherein $\frac{1}{4}W_2$ is greater than D which is greater than $\frac{1}{4}W_1$, said second region being interposed between said first region and said first major surface under said first grid segments.

4,801,987

JUNCTION TYPE FIELD EFFECT TRANSISTOR WITH METALLIZED OXIDE FILM

Mutsuyuki Otsubo, Itami, and Yasuo Mitsui, Amagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 409,899, Aug. 20, 1982, abandoned. This application Sep. 12, 1985, Ser. No. 774,879
Claims priority, application Japan, Sep. 10, 1981, 143596
Int. Cl.[4] H01L *29/80*
U.S. Cl. 357—22 **11 Claims**



1. A junction type field effect transistor, comprising:
- a first conductivity type region of a semiconductor having a main surface,
- source and drain electrodes formed apart from each other on said main surface of said first conductivity type region,
- a gate electrode formed on said main surface of said first conductivity type region at an area between said source and drain electrodes and comprising a metal means for providing to said semiconductor an impurity of a second conductivity type, and
- an interface region between said gate electrode and said first conductivity type region, said interface region including a second conductivity type region therein, said interface region further including a metal oxide, said second conductivity type region formed by said impurity of said second conductivity type provided by said metal means, and
- a P-N junction between said first conductivity type region and said interface region.

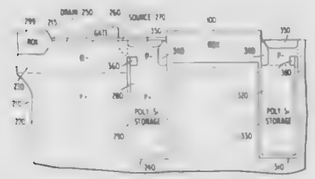
4,801,988

SEMICONDUCTOR TRENCH CAPACITOR CELL WITH MERGED ISOLATION AND NODE TRENCH CONSTRUCTION

Donald M. Kenney, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1986, Ser. No. 925,570
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.6 **9 Claims**

1. A semiconductor trench capacitor structure, comprising:
- a semiconductor substrate;
- a trench formed in said semiconductor substrate, said trench having a bottom wall, a side wall having an upper side wall portion and a lower side wall portion;
- an insulating layer formed on said bottom wall and said lower side wall portion;
- a side wall-defined isolating layer formed within an upper portion of said trench and extending from at least some of said upper side wall portion toward a center of said trench to provide isolation so as to prevent parasitic device formation with an active semiconductor region abutting said trench, said isolating layer being formed of an electrical insulation material and being substantially thicker than said insulating layer and thinner than one-half of a width of said trench; and



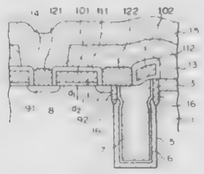
- a conductive electrode formed of a conductive material deposited within a remainder of said trench.

4,801,989

DYNAMIC RANDOM ACCESS MEMORY HAVING TRENCH CAPACITOR WITH POLYSILICON LINED LOWER ELECTRODE

Masao Taguchi, Sagamihara, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 19, 1987, Ser. No. 16,611
Claims priority, application Japan, Feb. 20, 1986, 61-036361; Mar. 3, 1986, 61-045822
Int. Cl.[4] H01C *29/78*
U.S. Cl. 357—23.6 **8 Claims**



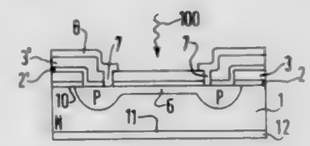
1. A dynamic random access memory having a trench capacitor, said memory comprising:
- a semiconductor substrate of one conduction type;
- a trench formed in said semiconductor substrate;
- a first conductive layer formed on a deep portion of an inner surface of said trench and not being formed in a region close to an entrance of said trench;
- a dielectric layer being formed on said first conductive layer in said trench and being formed on said inner surface of said trench in said region close to said entrance of said trench;
- a second conductive layer filling in said trench through said dielectric layer;
- said first conductive layer, said dielectric layer, and said second conductive layer constituting a storage capacitor; and
- a metal insulator semiconductor transistor formed in said semiconductor substrate, having a source or drain region of another conduction type which is connected to said second conductive layer, said first conductive layer being isolated from said source or drain region.

4,801,990

HGCDTE AVALANCHE PHOTODIODE

Yves Carpentier, Savigny sur Orge, and Michel Royer, Paris, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed May 1, 1987, Ser. No. 44,760
Claims priority, application France, May 7, 1986, 86 06614
Int. Cl.[4] H01L *27/14*
U.S. Cl. 357—30 **10 Claims**



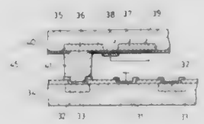
1. A photodiode for use under avalanche operating conditions at ambient temperature comprising:
- a substrate formed of a $Hg_{1-x}Cd_xTe$ crystal, wherein a molar fraction x is between substantially 0.35 and substantially 0.5;
- an N conductivity zone formed in said substrate and having an N carrier concentration less than or equal to $2.10^{15}/cm3$;
- a P conductivity zone formed in said substrate and having a P carrier concentration less than or equal to $10^{16}/cm3$, said P conductivity zone receiving radiation to be detected;
- a PN junction formed at a boundary of said P and N conductivity zones, said PN junction being formed by penetration of impurities from a polished and chemically etched surface of said substrate;
- a guard band provided in said substrate and surrounding said PN junction and said photodiode exhibiting an avalanche phenomenon.

4,801,991

SEMICONDUCTOR LIGHT RECEIVING DEVICE

Yoshihiro Hisa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 14, 1987, Ser. No. 108,076
Claims priority, application Japan, Jul. 17, 1987, 62-179620
Int. Cl.[4] H01L *27/14, 27/22, 29/06*
U.S. Cl. 357—30 **10 Claims**



10. A semiconductor light receiving device comprising:
- a light receiving section obtained by arranging a plurality of light receiving elements having pn junctions in an array on a surface of a semiconductor substrate;
- a signal taking out section for taking out an electric signal obtained at said light receiving section; and

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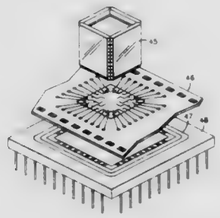
a member applying a magnetic field to said light receiving section, the magnetic field having a direction providing a component perpendicular to the surface of said semiconductor substrate and having an intensity restricting movement of current carriers in the semiconductor substrate to orbits in planes normal to the direction of the magnetic field and which substantially prevent generation of cross-talk between the light receiving elements.

4,801,992

THREE DIMENSIONAL INTERCONNECTED INTEGRATED CIRCUIT

Theodore R. Golubic, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 1, 1986, Ser. No. 936,570
Int. Cl.[4] H01L *27/02*
U.S. Cl. 357—40 **16 Claims**



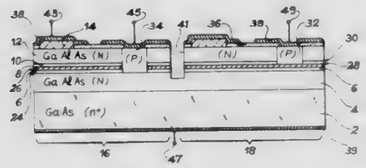
1. A modular integrated circuit comprising a plurality of planar integrated circuits, each having at least two edges, joined at adjacent edges thereof wherein each of said planar integrated circuits contains a plurality of conductors' formed therein and extending to at least one of said edges thereof for connecting said conductors of each of said planar integrated circuits to the conductors of at least one adjacent planar integrated circuit.

4,801,993

MONOLITHIC SEMICONDUCTOR STRUCTURE OF A HETEROJUNCTION BIPOLAR TRANSISTOR AND A LASER

David Ankri, 1 allée des Bouvreuils, 91370 Verrieres, and Jean-Francois Palmier, 9 rue Léon Bloy, 92260 Fontenay-aux-Roses, both of France

Filed Feb. 4, 1987, Ser. No. 10,733
Claims priority, application France, Feb. 4, 1986, 86 01508
Int. Cl.[4] H01L *27/02*
U.S. Cl. 357—40 **10 Claims**



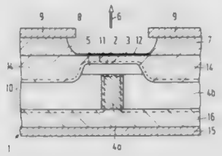
1. A monolithic semiconductor structure forming both a bipolar heterojunction transistor and a laser structure, comprising a heterostructure having a first, second and third semiconductor superimposed layers, the first and third layers constituting respectively the collector and the emitter of the transistor and being produced from a first and second III-V materials having a first type of conductivity and the second layer, which is placed between the first and third layers and constitutes the active layer of the laser structure and the base of the transistor, having a second conductivity type differing from the first type and being a super-lattice consisting of first series of GaAs parallel layers having an identical thickness and of a second series of parallel $Ga_{1-y}Al_yAs$ layers with $0<y<1$ having an identical thickness b satisfying the relation $1.2<b\sqrt{w}<1.9$, in which w represents the difference of the conduction energies between GaAs and $Ga_{1-y}Al_yAs$, the layers of said first and second series alternating, the forbidden band widths of said first and second materials being at least equal to the one of $Ga_{1-y}Al_yAs$ layers of said super-lattice which defines confinement zones of the carriers solely for the laser structure, oriented parallel to the first and third layers; a first region extending at least from one face to the other of the third layer and having the second conductivity type, said firsr region defining with the third layer the junction of the laser; and means for supplying current to the laser and the transistor.

4,801,994

SEMICONDUCTOR ELECTRON-CURRENT GENERATING DEVICE HAVING IMPROVED CATHODE EFFICIENCY

Gerardus G. P. Van Gorkom, and Arthur M. E. Hoeberechts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1987, Ser. No. 21,937
Claims priority, application Netherlands, Mar. 17, 1986, 8600675
Int. Cl.[4] H01L *33/00, 29/34, 29/12*
U.S. Cl. 357—52 **19 Claims**



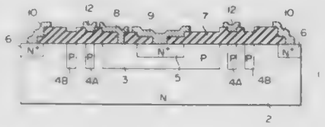
1. A semiconductor device for generating an electron beam comprising a cathode having a semiconductor body with an n-type surface region and a p-type region, in which electrons leaving the semiconductor body can be generated in said body by giving the n-type surface region a positive bias with respect to the p-type region, characterized in that a substantially intrinsic semiconductor region is present between the n-type surface region and the p-type region.

4,801,995

SEMICONDUCTOR DEVICE

Masaaki Iwanishi, Himeji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 20, 1985, Ser. No. 811,713
Claims priority, application Japan, Dec. 28, 1984, 59-279939
Int. Cl.[4] H01L *29/34, 29/72, 27/02, 29/40*
U.S. Cl. 357—52 **15 Claims**



1. A semiconductor device comprising:
a first region formed in a semiconductor substrate, said semiconductor substrate being of a first conductivity type and said first region being of a second conductivity type;

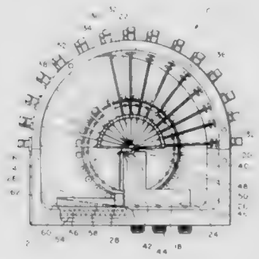
a second region of the second conductivity type formed to surround the outer side of said first region, said second region being a guard ring for said first region;
an insulating film formed on the surface of the semiconductor substrate;
a first electrode formed on said insulating film, said first electrode being in ohmic contact with said first region; and
a metal film formed on said surface portion of said insulating film situated above said second region, said metal film being electrically isolated from elements of said semiconductor device including said second region.

4,801,996

GIGAHERTZ RATE INTEGRATED CIRCUIT PACKAGE INCORPORATING SEMICONDUCTIVE MIS POWER-LINE SUBSTRATE

Thomas A. Knotts, Menlo Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 14, 1987, Ser. No. 108,850
Int. Cl.[4] H01L *23/48, 29/44, 29/60;* **H05K** *1/11*
U.S. Cl. 357—68 **12 Claims**



1. A structure comprising:
a disk-shaped semiconductive substrate;
plural power lines, each including and electrically coupling a power-line-to-system-interfacing contact and a power-line-to-die-interfacing contact, each power line extending parallel to said semiconductive substrate, each said power-line-to-die-interfacing contact being positioned and adapted for interfacing with an integrated circuit die, at least some of said power lines being wedge shaped so as to terminate at their narrow ends at said power-line-to-die-interfacing contacts, said power-line-to-die-interfacing contacts being disposed about a region for accommodating a integrated circuit die near the radial center of the substrate; and
thin-film insulator material capacitively coupling at least some of said power lines and their respective power-line-to-die-interfacing contacts to said semiconductive substrate.

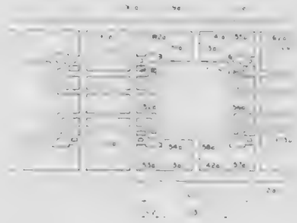
4,801,997

HIGH PACKING DENSITY LEAD FRAME AND INTEGRATED CIRCUIT

Michio Ono, Tokyo; Akihiro Kubota, Kawasaki; Tsuyoshi Aoki, Kawasaki; Osamu Inoue, Kawasaki, and Rikio Sugiura, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 579,714, Feb. 13, 1984, abandoned, which is a continuation of Ser. No. 890,962, Jul. 29, 1986, abandoned. This application Apr. 19, 1988, Ser. No. 185,301
Claims priority, application Japan, Feb. 12, 1983, 58-20549
Int. Cl.[4] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 357—70 **9 Claims**

1. A lead frame of a single continuous sheet of material for mounting a semiconductor element comprising:
a stage for mounting the semiconductor element;
an outer frame positioned to frame said stage and being fixed to said stage;
a plurality of first leads, each having an outer part positioned outside and connected to said outer frame, and having an inner part positioned between said outer frame and said stage at a first distance from said stage, each inner part of said first leads having a first portion being substantially parallel with an edge of said stage and having a first width and having a second part being substantially perpendicular to the edge of said stage and connected to said outer frame;
a plurality of second leads, each having an outer part positioned outside and connected to said outer frame, and



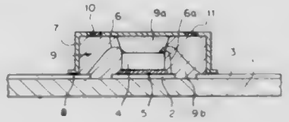
having an inner part positioned between said stage and said outer frame, each inner part of said second leads having a first portion being substantially parallel to the first portion of said first leads and positioned at a second distance from said stage greater than the first distance, said first portion of said second leads having a width smaller than the width of the first portion of the inner part of said first leads, and having a second part being substantially perpendicular to the edge of said stage and connected to said outer frame;
supporting means, extending between and connected to said outer frame and each of the respective first portions of the inner part of said second leads, for supporting the respective inner parts of said second leads and holding the respective inner parts of said second leads in a fixed position.

4,801,998

EPROM DEVICE

Hiroshi Okuaki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 766,294, Aug. 16, 1985, abandoned. This application Apr. 3, 1987, Ser. No. 33,863
Claims priority, application Japan, Aug. 20, 1984, 59-171453
The portion of the term of this patent subsequent to Feb. 2, 2005, has been disclaimed.
Int. Cl.[4] H01L *23/02, 23/28, 23/30, 23/10*
U.S. Cl. 357—72 **12 Claims**



1. An EPROM device comprising:
(a) an insulating board having a chip mounting portion and having conductive interconnecting patterns thereon; one end of each of said patterns being adjacent to said chip mounting portion;
(b) an EPROM chip mounted on said chip mounting por-

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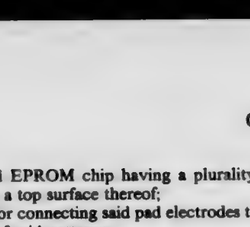
tion; said EPROM chip having a plurality of pad electrodes at a top surface thereof;
(c) means for connecting said pad electrodes to said one end of each of said patterns;
(d) an UV ray transmitting hollow cap fixedly mounted on said insulating board and covering said EPROM chip and said connecting means; said cap having an upper wall spaced from said EPROM chip and said board;
(e) an UV ray transmitting resin filling at least a space between an upper surface of said EPROM chip and an upper wall of said hollow cap and fixed to said upper surface so as to define an optional path through said hollow cap and said UV ray transmitting resin to said upper surface; and
(f) an injected resin filling a remaining space in said cap and fixed to inner surfaces of said cap, said board and said EPROM chip, whereby said cap, said UV ray transmitting resin and said injected resin seal said EPROM chip from the exterior of said device; said cap having means, including a resin injection hole and an air release hole, formed therein, for injection of said injected resin into said remaining space during manufacture of said EPROM device.

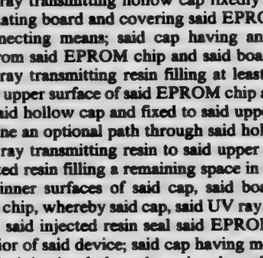
4,801,999

INTEGRATED CIRCUIT LEAD FRAME ASSEMBLY CONTAINING VOLTAGE BUSSING AND DISTRIBUTION TO AN INTEGRATED CIRCUIT DIE USING TAPE AUTOMATED BONDING WITH TWO METAL LAYERS

James Hayward, Mountain View, and Candice H. Brown, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 15, 1987, Ser. No. 73,557
Int. Cl.[4] H01L *23/48, 23/12*
U.S. Cl. 357—70 **30 Claims**





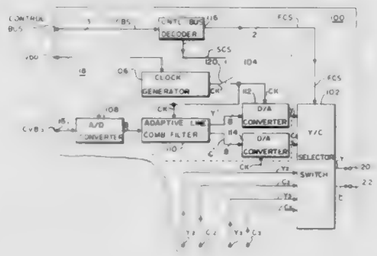
1. An improved integrated flexible circuit lead frame assembly for mounting an integrated circuit die comprises a first conductive metal layer comprising one or more metal leads capable of being electrically connected directly to said die, a flexible dielectric layer attached to at least a portion of said first conductive metal layer, and a second metal conductive layer having a portion attached to the opposite side of said dielectric layer and also comprising one or more leads capable of being electrically attached directly to said die, at least one of said metal layers further comprising at least one metal bus pattern with one or more metal leads capable of being electrically attached directly to said die extending from said metal bus pattern.

4,802,000

VIDEO SWITCHING APPARATUS HAVING INTERFERENCE PREVENTION FEATURE

Donald H. Willis, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Dec. 22, 1987, Ser. No. 136,669
Int. Cl.[4] H04N *9/78, 9/64*
U.S. Cl. 358—21 R **8 Claims**



1. An integrated circuit apparatus comprising:
a first input terminal coupled to receive a first video signal FVS;
a source of a clock signal CK;
sampled signal processing means coupled to receive said first video signal FVS and responsive to said clock signal CK for generating a processed first video signal FVS';
a second input terminal coupled to receive a second video signal SVS; the bandwidth of said second video signal being sufficiently broad to create the possibility of interference from said processed first video signal FVS' coupling into said second video signal SVS;
switching means coupled to receive said processed first video signal FVS' and said second video signal SVS and responsive to a first control signal FCS for applying one of said two input signals to an output terminal thereof; and
means for disabling said sampled signal processing means when said switching means selects a signal other than said processed first video signal FVS' for application to said output terminal.

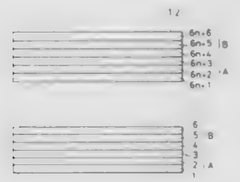
4,802,001

MICRO FILTER ARRANGEMENT IN AN INTERLACED SOLID-STATE IMAGE PICKUP ELEMENT

Masatoshi Tabei, and Kazuhiro Kawajiri, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1986, Ser. No. 909,541
Claims priority, application Japan, Sep. 20, 1985, 60-206254; Sep. 20, 1985, 60-206255; Oct. 4, 1985, 60-220194; Oct. 9, 1985, 60-225806
Int. Cl.[4] H04N *9/07*
U.S. Cl. 358—48 **7 Claims**

1. A solid-state image pickup device for color images, comprising:
a solid-state image sensor including a light receiving section, said light receiving section including a plurality of photoelectric conversion elements;
a charge transferring section for transferring charges from said light receiving section and including means for scanning in a scanning line at least two horizontal lines of said photoelectric conversion elements; and
color microfilters provided on said light receiving section, wherein said photoelectric conversion elements of said light receiving section and the color microfilters associated therewith are arranged in a matrix form and are assigned to scanning lines in such a manner that at least two horizontal lines of said photoelectric conversion elements are associated with each scanning line, said photoelectric conversion elements and said microfilters being



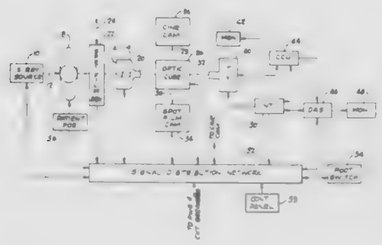
arranged with three horizontal lines for every two scanning lines, one of said three horizontal lines being associated with two of said scanning lines, every three horizontal lines forming a group, and wherein said charge transferring section reads out a luminance signal for a first field image signal from a first horizontal line of each group, reads out a luminance signal for a second field image signal from a third horizontal line of each group, and reads out color signals for both the first and second field images from a second horizontal line of each group.

4,802,002

TELEVISION CAMERA CONTROL IN RADIATION IMAGING

Leonard F. Plut, Willowick, and David Nicolay, Fairview Park, both of Ohio, assignors to Picker International, Inc., Cleveland, Ohio

Division of Ser. No. 763,914, Aug. 8, 1985, Pat. No. 4,677,477.
This application May 15, 1987, Ser. No. 50,727
Int. Cl.[4] H04N *5/32*
U.S. Cl. 358—111 **5 Claims**



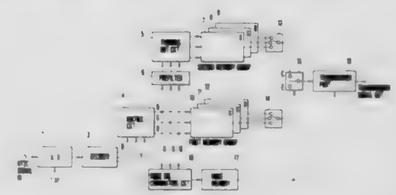
5. A medical diagnostic television imaging system comprising:
(a) a source for propagating x-rays along a path;
(b) an image intensifier spaced from the source and interposable in said path, said intensifier being responsive to x-radiation incident thereon to produce a visible light image corresponding to said incident radiation;
(c) a video camera positionable to view said visible light image and having a target and means for scanning said target for producing a video signal representing a viewed portion of said visible light image, along with synchronization signals;
(d) a monitor coupled to receive said video and synchronization signals for producing a television image corresponding to said visible light image;
(e) means associated with said video camera for controlling said video camera scan at a selected one of a plurality of said scan rates, and
(f) circuitry coupled to said camera and said controlling means for suppressing transmission of said video signal from said camera to said monitor subsequent to its generation in response to the selection of at least one of said plurality of scan rates, and for transmitting said video signal from said camera to said monitor in response to selection of another of said plurality of scan rates.

4,802,003

COLOR PICTURE INFORMATION TRANSMISSION SYSTEM

Masahiro Takei, and Tadashi Takayama, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1987, Ser. No. 18,709
Claims priority, application Japan, Feb. 28, 1986, 61-044559; Feb. 28, 1986, 61-044561; Feb. 28, 1986, 61-044562
Int. Cl.[4] H04N *7/12, 7/04, 11/06, 11/08*
U.S. Cl. 358—133 **44 Claims**



1. A color picture information signal transmission system for transmitting a color picture information signal, comprising:
(A) color component information signal forming means for forming a color component information signal from said color picture information signal;
(B) transmission signal forming means for forming a plurality of transmission signals by means of the color component information signal obtained through said color component information signal forming means according to a plurality of transmission modes varying in information transmission density from each other;
(C) transmission mode selecting means wherein the color component information signal obtained through said color component information signal forming means is divided into a plurality of groups, a transition of the color component information signal in each group according to said plurality of transmission modes is detected with reference to each color component information signal group, and a transmission mode in each group is selected from among said plurality of transmission modes according to the detection result; and
(D) transmission means for outputting and transmitting a transmission signal formed by said transmission signal forming means according to one kind of transmission mode out of said plurality of transmission modes which is based on the selection result of said transmission mode selecting means.

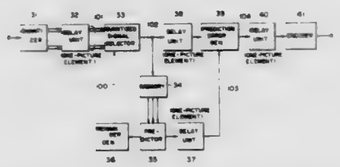
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4,802,004

PREDICTIVE CODING SYSTEM FOR TV SIGNALS

Shuichi Matsumoto, Hiratsuka, and Hitomi Murakami, Yokohama, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1987, Ser. No. 81,112
Claims priority, application Japan, Aug. 11, 1986, 61-188012
Int. Cl.[4] H06N 7/12
U.S. Cl. 358—133 **2 Claims**



1. A predictive coding method for highly efficient coding image signals such as those of a commercial TV or a conference TV system through utilization of high correlation between adjacent picture elements in a picture,

including the steps of:

obtaining a predictive value of an instant picture element to be coded after quantization of the instant picture element from information of an already coded picture element,

determining a representative quantization value of the instant picture element in accordance with a quantization characteristic predetermined in correspondence to the magnitude of the predictive value, and

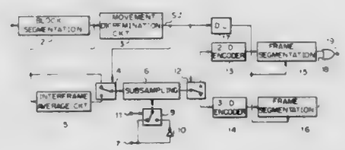
coding a difference value between the representative quantization value and the predictive value for transmission without other quantization.

4,802,005

HIGH EFFICIENCY ENCODING SYSTEM

Tetsujiro Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 17, 1987, Ser. No. 74,939
Claims priority, application Japan, Jul. 30, 1986, 61-179483
Int. Cl.[4] H04N 7/12, 7/18
U.S. Cl. 358—135 **9 Claims**



1. Coding apparatus for coding digital video data in a format composed of blocks of digital video data representing a three-dimensional group of picture elements belonging to a plurality of frames and for allowing compression of the video data, said coding apparatus comprising:

movement discriminating means for detecting movement in each block and generating a discriminating code indicative of detected movement;

sub-sampling means for sub-sampling picture elements in predetermined positions in each of said blocks of digital video data to reduce the number of picture elements in each said blocks to 1/n of the original number of the picture elements in each of said blocks, the sub-sampling of said picture elements in a time-sequential blocks by said sub-sampling means having phases that are shifted sequentially; and

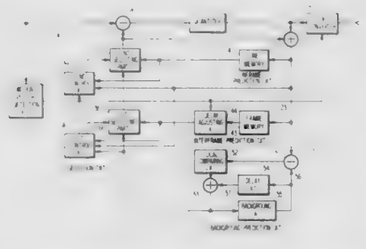
encoding and transmitting means for encoding an output of said sub-sampling means and transmitting the discriminating code and the encoded output of said sub-sampling means.

4,802,006

SIGNAL PROCESSING UNIT FOR PRODUCING A SELECTED ONE OF SIGNALS PREDICTIVE OF ORIGINAL SIGNALS

Kazumoto Iinuma; Toshio Koga; Akihiro Furukawa, all of Tokyo; Sakae Okubo, Kanagawa; Hideo Hashimoto, Kanagawa, and Naoki Mukawa, Kanagawa, all of Japan, assignors to NEC Corporation and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Nov. 12, 1985, Ser. No. 796,682
Claims priority, application Japan, Nov. 9, 1984, 59-236227
Int. Cl.[4] H04N 7/12
U.S. Cl. 358—135 **4 Claims**



1. A signal processing unit for use in processing an original signal into a prediction signal predictive of said original signal at a current instant, by the use of a local decoded signal produced in relation to a previous instant preceding said current instant said signal processing unit comprising:

inframe prediction means (**22**) for carrying out inframe prediction of said original signal by the use of said local decoded signal to produce an inframe prediction signal representative of a result of said inframe prediction:

interframe prediction means (**23**) for carrying out interframe prediction of said original signal by the use of said local decoded signal to produce an interframe prediction signal representative of a result of said interframe prediction;

background prediction means (**31**) for carrying out background prediction of said original signal by the use of said local decoded signal to produce a background prediction signal representative of a result of said background prediction;

controlling means (**38, 39**) coupled to said inframe, said interframe, and said background prediction means for controlling said inframe, said interframe, and said background prediction signals by the use of said local decoded signal to determine an optimum one of said inframe, said interframe, and said background predictions by selecting a minimum one of those absolute values of inframe, interframe, and background prediction errors which are calculated from a difference between said local decoded signal and each of said inframe, said interframe, and said background prediction signals, respectively, and to produce a control signal representative of said optimum one of the inframe, the interframe, and the background predictions: and

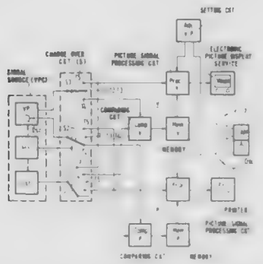
selecting means (**36, 37**) coupled to said controlling means and said inframe, said interframe, and said background prediction means for selecting, as said prediction signal, one of said inframe, said interframe, and said background prediction signals that is determined by said control signal.

4,802,007

PICTURE PICK-UP AND DISPLAY SYSTEM WITH ELECTRONIC AND PRINTED PICTURE DISPLAY

Gerard J. van der Brug, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1987, Ser. No. 127,815
Claims priority, application Netherlands, Dec. 18, 1986, 8603120
Int. Cl.[4] H04N 7/02
U.S. Cl. 358—139 **5 Claims**



1. A picture pick-up and display system comprising:

(a) a picture pick-up means for generating an image carrying signal from an image;

(b) video means for providing a video image from said signal, said video means comprising means for calibration thereof so that said image is optimally represented by said video image;

(c) printing means for providing a print image from said signal, coupled to said video means, said printing means comprising means for calibration thereof so that said image is optimally represented by said print image; and

(d) means for simultaneously adjusting said video means and said printing means,

whereby said print image can be adjusted while observing said video image.

4,802,008

SATELLITE COMMUNICATIONS SYSTEM FOR MEDICAL RELATED IMAGES

Paul J. Walling, 179 Plymouth Way, San Bernardino, Calif. 92325

Filed Feb. 9, 1987, Ser. No. 12,450
Int. Cl.[4] H04N 1/00, 7/12
U.S. Cl. 358—141 **12 Claims**

1. A satellite communication system for sending high resolution, medically related, static images from one or more mobile units to a central location for diagnostics, said satellite communication system comprising:

each said one or mobile units comprising:

means for converting the high resolution images into voltage analog signals;

means for converting the voltage analog signals into narrow band width and low frequency signals;

means for transmitting the narrow band width and low frequency signals to a satellite; and

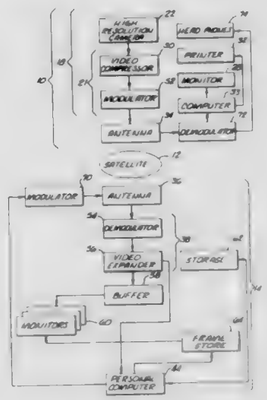
said central location comprising:

means for receiving the narrow band width and low frequency signals;

means for converting the received narrow band width and low frequency signals back into the voltage analog signals;

means for converting the voltage analog signals into digital signals;

means for converting the digital signals into high resolution, digitized, medically related images;



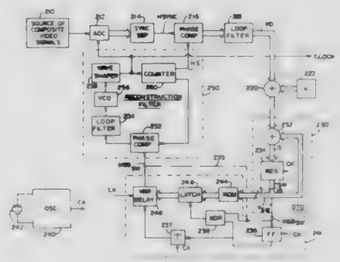
means for transmitting diagnostics of the high resolution, medically related images, in voice or readable form, from the central location to the transmitting mobile unit.

4,802,009

DIGITALLY CONTROLLED PHASE LOCKED LOOP SYSTEM

Werner N. Hartmeier, Geroldswil, Switzerland, assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Jul. 13, 1987, Ser. No. 72,935
Int. Cl.[4] H04N 5/06
U.S. Cl. 358—158 **7 Claims**



1. Apparatus comprising:

a variable oscillator, responsive to a control signal for generating an oscillatory signal having a frequency determined by the value of said control signal;

digital signal generation means including a digital oscillator for generating a plural-bit sampled data digital oscillatory signal having a frequency which approximates a predetermined nominal frequency;

phase comparison means, coupled to said variable oscillator and to said digital signal generation means for generating a phase difference signal proportional to the difference in phase between said oscillatory signal and a single-bit digital signal representing a predetermined bit of said plural-bit sampled data digital oscillatory signal; and

means, coupled to said phase comparison means and responsive to said phase difference signal for generating said control signal.

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4,802,010

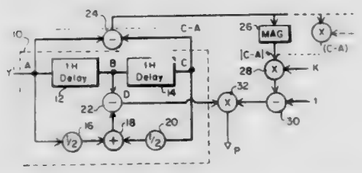
METHOD AND APPARATUS FOR GENERATING AN ADAPTIVE PEAKING SIGNAL INCREASING THE SHARPNESS OF A VIDEO SIGNAL

Kenneth R. Skinner, Jefferson City, and James E. Hitchcock, Knoxville, both of Tenn., assignors to North American Philips Consumer Electronics Corp., Knoxville, Tenn.

Continuation of Ser. No. 931,385, Nov. 14, 1986, abandoned. This application Mar. 4, 1988, Ser. No. 169,150

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—166 **10 Claims**



1. Apparatus for generating an adaptive peaking signal in response to an incoming video signal, comprising

first means for generating a first peaking signal, said first means comprising first and second delay means for delaying said incoming video signal thereby furnishing first and second time delayed signals, and means connected to said first and second delay means for generating said first peaking signal said first peaking signal varying in dependence on said incoming video signal, and said first and second time-delayed signals;

second means connected to said first means for combining only said second time delayed signal and said incoming video signal to generate a peaking factor signal; and

third means connected to said second means and said first means for combining said first peaking signal and said peaking factor signal to generate said adaptive peaking signal.

4,802,011

PICTURE PICK-UP DEVICE WITH AN IMAGE SENSOR IN THE FORM OF A CHARGE TRANSFER DEVICE

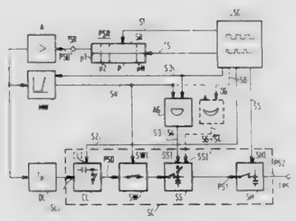
Jacob G. Breamer, and Cornelis A. M. Jaspers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jun. 3, 1987, Ser. No. 57,192

Claims priority, application Netherlands, Jun. 24, 1986, 8601638

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213.15 **6 Claims**



1. A picture pick-up device provided with an image sensor in the form of a charge transfer device, which image sensor comprises picture pick-up elements for converting incident radiation into electric charge and a charge transfer shift register for periodically shifting the charges under the control of clock pulses originating from a control signal generator to a sensor output terminal for the supply of a pulsatory picture signal with periodically occurring reset pulses and picture signal pulses, said picture pick-up device further comprising a series arrangement of at least a signal clamping circuit for at least a part of a reset pulse and a signal sampling circuit for at least a part of a picture signal pulse, said series arrangement being coupled to the sensor output terminal and being controlled from the control signal generator, characterized in that a resettable signal smoothing and hold circuit for the picture signal pulses is disposed between the signal clamping circuit and the signal sample circuit in the said series arrangement, which signal smoothing and hold circuit includes a reset input which is coupled to the control signal generator.

4,802,012

IMAGE SENSOR DRIVING DEVICE WITH NOISE REDUCTION CIRCUITS

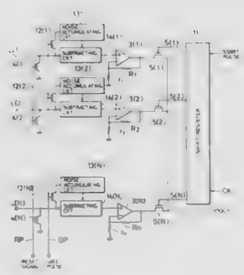
Mamoru Nobue; Takashi Ozawa; Hisao Ito, and Yoshio Nishihara, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

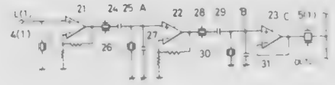
Filed Jul. 22, 1987, Ser. No. 76,599

Claims priority, application Japan, Jul. 22, 1986, 61-172484

Int. Cl.⁴ H04N *3/14*

U.S. Cl. 358—213.18 **2 Claims**





1. An image sensor driving device comprising a plurality of signal lines, each of said plurality of signal lines being supplied with an image signal provided by a light receiving element of an image sensor; means for reducing noise superimposed on the image signal and appearing on each of said plurality of signal lines including a first amplifier connected to each of said plurality of signal lines; a second amplifier connected to said first amplifier through a first switch and a first capacitor; a third amplifier connected to said second amplifier through a second switch and a second capacitor; a third switch and a third capacitor connected in parallel between an input terminal of said second amplifier and ground; a fourth switch and a fourth capacitor connected in parallel between an input terminal of said third amplifier and ground, wherein gains of said first and second amplifier are made larger than a gain of said third amplifier and wherein said first through fourth switches are turned ON and are thereafter turned OFF and then said first and second switches are again turned ON; and means for deriving the image signal from an output of said noise reducing means.

4,802,013

METHOD OF TRANSFERRING INFORMATION FROM THE FRONT TO THE BACK OF A DOCUMENT, AND APPARATUS FOR PERFORMING THE METHOD

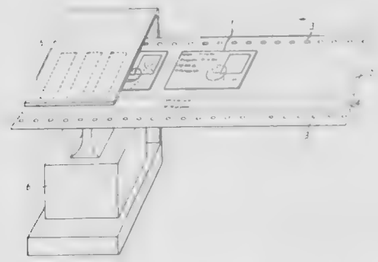
Bernard M. Bartoli, Lieudit "Le Bust", 78490 Bazoches Sur Guyonne, France

Filed Feb. 18, 1986, Ser. No. 830,646

Claims priority, application France, Jun. 22, 1984, 84 09834

Int. Cl.⁴ H04N *1/21*

U.S. Cl. 358—296 **6 Claims**



1. A method of transferring information from the front side of a strip to the back side of the strip wherein the front side of the strip consists of a photographic support comprising moving the strip at a constant velocity in a security document manufacturing machine, photographically applying the information to a first zone on the said front side, optically reading the first zone of the front side of the strip by a stationary reader facing said strip, controlling a line printer by the optical reader via an electronic circuit, and without data processing imprinting information on the said back of the strip directly under the optical reader by utilizing a line printer.

4,802,014

PORTABLE TRANSFER APPARATUS

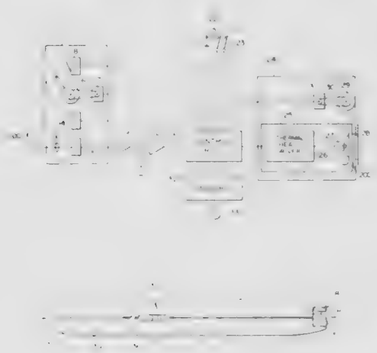
Ritsuo Koga, Tokyo, Japan, assignor to Plus Corporation, Tokyo, Japan

Filed Oct. 6, 1987, Ser. No. 104,972

Claims priority, application Japan, Jun. 29, 1987, 62-162122

Int. Cl.⁴ H04N *1/21, 1/00*

U.S. Cl. 358—296 **8 Claims**



1. A portable transfer apparatus comprising:

a lens provided at one end portion of a casing for focusing an object;

an image sensor for converting into electric signals an optical image passing through said lens;

an illumination light source for illuminating said object;

a first encoder for detecting a relative moving speed of the lens with respect to the object and for outputing a first synchronous signal:

printing means provided at another end portion of said casing for printing informations of said object onto a transfer surface outsdie of said transfer apparatus;

a second encoder for detecting a relative moving speed of the printing means with respect to said transfer surface and for outputing a second synchronous signal; and

a control circuit for storing the electric signals of said image sensor into a memory in synchronism with said first synchronous signal, and for outputing data in said memory to the printing means in synchronism with said second synchronous signal.

4,802,015

IMAGE REPRODUCING APPARATUS

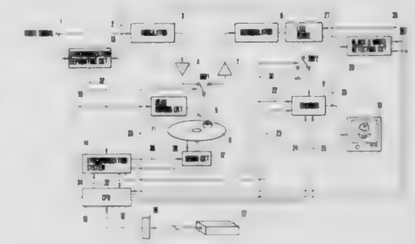
Kazuhiko Ito, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1986, Ser. No. 892,699

Claims priority, application Japan, Aug. 2, 1985, 60-170819; Aug. 2, 1985, 60-170820

Int. Cl.⁴ H04M *9/79*

U.S. Cl. 358—310 **31 Claims**



1. A reproducing apparatus for reproducing a video signal containing line sequential signals comprising:

(a) rearranging means for rearranging said line sequential signals into line simultaneous signals;

(b) discriminating means for discriminating the kind of said line sequential signal for every horizontal frequency period;

(c) processing means for statistically processing results of discrimination effected by said discriminating means so as to control said rearranging means according to the result of processing;

(d) display stopping means for stopping display of an image produced on a display device according to said video signal; and

(e) changing means for changing state of processing of said processing means according to state of said display stopping means.

4,802,016

VIDEO NOISE REDUCTION SYSTEM WITH SIGNAL EMPHASIS PRECEDING FM MODULATION UPPER-BAND LUMINANCE

Shinji Kaneko, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1987, Ser. No. 31,551

Claims priority, application Japan, Apr. 8, 1986, 61-080886

Int. Cl.⁴ H04N *9/81*

U.S. Cl. 358—315 **4 Claims**

1. A video noise reduction system for use in a recording

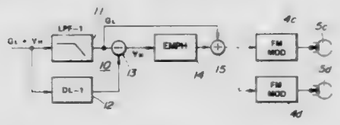
VOL 1098 ISS 5 JA 31 1989 UMI

apparatus adapted to record red, blue and green primary color component video signals on a plurality of separate tracks of a magnetic recording medium, comprising:

means for frequency modulating the red and blue primary color component video signals and recording the frequency modulated signals on separate tracks of the magnetic recording medium;

matrix circuit means for matrixing the red, blue and green primary color component video signals to provide a wide-band luminance signal;

band splitter circuit means connected to the matrix circuit means for splitting the wide-band luminance signal into lower-band and upper-band luminance signals;



means connected to the band splitter circuit means for emphasizing low level components of the upper-band luminance signal to produce a level emphasized upper-band luminance signal;

adder circuit means for adding the lower-band luminance signal and the level emphasized upper-band luminance signal to produce an added luminance signal;

means connected to the adder circuit means for time-base expanding the added luminance signal and for separating the time-base expanded luminance signal into a plurality of narrow-band luminance signals; and

means for frequency modulating the narrow-band luminance signals and recording the frequency modulated narrow-band luminance signals on separate tracks of the magnetic recording medium.

4,802,017

DEVICE FOR RECORDING IMAGE SIGNALS OF PHOTOGRAPHIC PICTURES

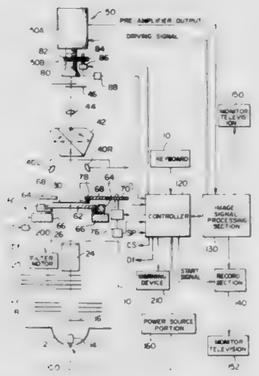
Isao Takahashi, and Takahiro Ohta, both of Ashigarakami, Japan, assignors to Fuji Photo Film, Ltd., Kanagawa, Japan

Filed Feb. 18, 1986, Ser. No. 829,948

Claims priority, application Japan, Feb. 20, 1985, 60-32290

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—335 **6 Claims**



1. A device for recording image signals of photgraphic pictures in frames comprising:

means for producing image signals of photographic pictures in frames at a plurality of optical enlarging magnifications;

selection means for selecting one of said plurality of optical enlarging magnifications;

recording means for storing said image signals;

light quantity adjusting means for adjusting a light quantity incident upon said means for producing;

specifying means for specifying regions of a frame of a photograph to be recorded referenced from a center of said frame; and

control means for controlling said means for producing, said selecting means, said specifying means and said light quantity adjusting means, including:

means for controlling said means for producing to produce an image signal of substantially a whole surface of a photographic picture in a frame;

means for recording said image signal on a first track of said recording means;

means for controlling said selecting means to change said optical enlarging magnification;

means for controlling said specifying means to specify a recording region of said frame referenced to a center of said frame according to said changed optical enlarging magnification;

means for controlling said light quantity adjusting means according to said changed optical enlarging magnification;

means for controlling said means for producing to produce an enlarged image signal of said specified recording region at said center of said frame; and

means for recording said enlarged image signal in a second track of said recording means, adjacent to said first track.

4,802,018

ELECTRONIC MARKING APPARATUS FOR IDENTIFYING A SELECTED IMAGE FROM A PLURALITY OF ELECTRONICALLY STORED IMAGES

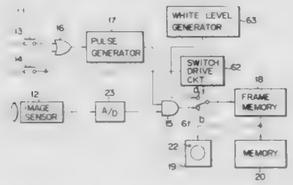
Kowji Tanikawa; Tadashi Kato; Masahide Kanno; Hiroyuki Yashima; Akira Matsueda; Takao Rokutan; Hisayuki Harada; Isao Hirosawa, and Hiroki Hibino, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 715,657, Mar. 25, 1985, abandoned. This application Dec. 1, 1987, Ser. No. 127,586

Claims priority, application Japan, Mar. 29, 1984, 59-62050; Mar. 30, 1984, 59-62539

Int. Cl.⁴ G11B *7/00;* **H04N** *5/781*

U.S. Cl. 358—335 **20 Claims**



1. An image marking apparatus comprising:

image signal producing means for generating a plurality of displayable image signals corresponding, respectively, to a plurality of optical images;

means for selectively generating a marking indication signal when an optical image requiring a marking is found, said marking indication signal being the same for all optical images for which marking is required;

memory means for recording the image signals; and

marking means for, in response to the marking indication signal, providing a displayable mark signal to said memory means to append the displayable mark signal to displayable image signals corresponding to said optical image requiring a marking.

4,802,019

PICTURE PROCESSING SYSTEM FOR SELECTIVE DISPLAY

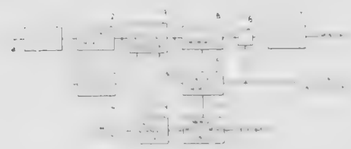
Zenji Harada, 2-25-2, Uguisudai, Kawanishi-shi, Hyogo-ken; Osamu Tensoka, 13-7, Akasakadai 5-chome, Sakai-shi, Osaka, and Tsuneo Mikado, 4-1-5-307, Shimomeguro, Meguro-ku, Tokyo, all of Japan

Continuation-in-part of Ser. No. 455,115, Jan. 3, 1983, abandoned. This application May 12, 1986, Ser. No. 862,041

Claims priority, application Japan, Jan. 11, 1982, 57-2531; Jan. 20, 1982, 57-6971

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—335 **9 Claims**



1. A picture processing system comprising a recording member in which a plurality of full TV screen still picture digital signals is recorded, each signal corresponding to a different still picture, and a monitoring means for reproducing one of said still picture digital signals and displaying the corresponding still picture on a screen, said recording member having an index recording portion in which a second plurality of digital signals is recorded, each digital signal of the second plurality corresponding to a reduced still picture and one reduced still picture digital signal being provided for each still picture, and said monitoring means including: index memory means for storing a group of reduced still picture digital signals from said recording member in predetermined memory locations as a single full TV screen index picture; circuit means for coupling the index memory means and said screen to display the group of said reduced still pictures stored in said index memory means in multiple segmented areas on said screen as an index picture; selecting means for designating multiple segmented areas on said screen to select reduced still pictures displayed in said areas; a detecting circuit for detecting the position of segmented areas designated by said selecting means on the basis of horizontal and vertical sync signals for said screen, said detecting circuit including means for detecting intermediate regions respectively provided between adjacent segmented areas on said screen; and memory control means for rearranging the locations of said reduced still picture signals stored in said index memory means on the basis of the output of said selecting means to rearrange the location of reduced still pictures in said index picture, said memory control means receiving a detecting signal corresponding to one of said intermediate regions for rearranging the contents of said index memory so that a selective one of said displayed reduced still pictures is interposed between two adjacent reduced pictures by designating an intermediate region between said two adjacent reduced pictures displayed on said screen.

4,802,020

VARIABLE MODE ELECTRONIC STILL CAMERA INCLUDING OPTICAL AND ELECTRONIC VIEW FINDERS

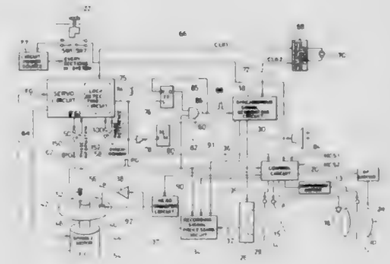
Isumi Miyake; Kiyotaka Kaneko; Masahiro Konishi, all of Tokyo; Motohiko Horio, and Kazutsuga Ogata, both of Oomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd. and Fuji Photo Optical Co., Ltd., both of, Japan

Filed Oct. 15, 1986, Ser. No. 918,910

Claims priority, application Japan, Oct. 19, 1985, 60-234175; Oct. 19, 1985, 60-234176; Oct. 19, 1985, 60-234177

Int. Cl.⁴ H04N *5/781*

U.S. Cl. 358—342 **6 Claims**



1. An electronic still camera comprising:

recording means for recording an image signal into a rotating rotary recording medium;

image sensing means for photographing an image of a subject and accummulating image signals commensurate to the image of the subject;

exposure means for exposing the image of the subject to said image sensing means, said exposure means having an open position and closed position, said exposure means being set in said closed position; and

record control means for controlling said exposure means, said recording means and said image sensing means, for opening said exposure means to expose an image to the image sensing means for causing the image signal from said image sensing means to be read, and for causing said rotary recording medium to record the image signal;

wherein said electronic still camera has mode change-over means for changing a photographing mode between a first mode and an electronic view finder mode, said first mode including observing the subject by use of an optical view finder provided on a main body of the camera and in response to an exposure command opening said closed exposure means for a period of time required to expose the image of the subject to said image sensing means, said electronic view finder mode including exposing the image of the subject to said image sensing means through said exposure means in the open position by use of an electronic view finder to observe the subject, closing said exposure means in response to an exposure command, and subsequently, opening said exposure means for a period of time required to expose the image of the subject to said image sensing means, and said record control means controls said exposure means in accordance with the photographing mode selected in response to a mode change-over signal.

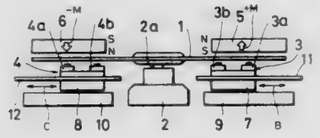
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4,802,021

RECORDING AND/OR REPRODUCING APPARATUS USING OPTO-MAGNETIC DISC

Shozo Makagawa; Shunichi Onishi, and Akihiro Takagi, all of Tokyo, Japan, assignors to Asaka Company Limited and Nikon Corporation, both of Tokyo, Japan

Filed Oct. 9, 1987, Ser. No. 106,393
Claims priority, application Japan, Oct. 21, 1986, 61-251129
Int. Cl.[4] H04N *5/76;* **G11B** *13/04*
U.S. Cl. 358—342 **9 Claims**



1. An apparatus for recording and reproducing a signal on and out of an opto-magnetic disc comprising

a spindle for rotating the opto-magnetic disc;

a spindle motor having an output shaft coupled with said spindle;

an erasing and reproducing opto-magnetic head unit having outer and inner opto-magnetic heads which are separated from each other in a radial direction of the opto-magnetic disc by a predetermined distance;

a recording and reproducing opto-magnetic head unit having outer and inner opto-magnetic heads which are separated from each other in the radial direction by said predetermined distance, said recording and reproducing otpo-magnetic head unit being arranged diametrically in opposition to each other with respect to a center axis of the opto-magnetic disc;

means for having said erasing and reproducing opto-magnetic head unit in the radial direction of the opto-magnetic disc;

means for moving said recording and reproducing opto-magnetic head unit in the radial direction of the opto-magnetic disc;

means for producing an erasing bias magnetic field at a position of the erasing and reproducing opto-magnetic head unit; and

means for producing a recording bias magnetic field at a position of the recording and reproducing opto-magnetic head unit.

4,802,022

CABLE TV SYSTEM FOR GUEST FACILITIES

Takuji Harada, Hiratsuka, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1987, Ser. No. 26,622
Claims priority, application Japan, Mar. 26, 1986, 61-68002
Int. Cl.[4] H04N *7/16, 7/10;* **H04H** *1/00;* **G05B** *23/02*
U.S. Cl. 358—349 **3 Claims**

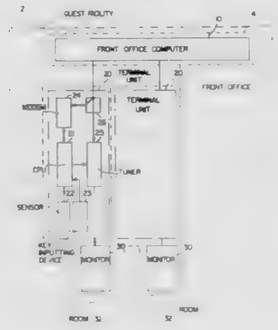
1. A cable TV system for a guest facility comprising:

a monitor installed in a room of said guest facility which is coupled to said cable TV system;

an activation means for arming said monitor from a front office of said facility;

a sensor for detecting a person coming close to said monitor; and

a display control means for displaying on said monitor predesignated video information of the guest facility which is



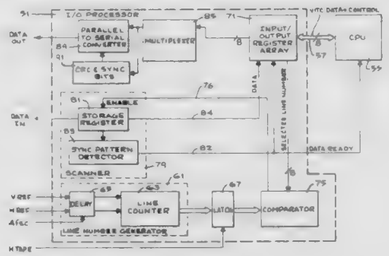
transmitted over said cable TV system when said monitor is armed and a person near said monitor is detected.

4,802,023

SYSTEM FOR READING AND WRITING VERTICAL INTERVAL TIME CODE

Marshall Williams, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 21, 1986, Ser. No. 899,286
Int. Cl.[4] G11B *27/02*
U.S. Cl. 360—14.3 **14 Claims**



9. A process for reading and inserting vertical interval time code information on videotape wherein the videotape contains video information lines wherein some of the lines contain time code information including identifiers that establish the existence of vertical interval time code information comprising the steps of:

(a) reading information lines within vertical blanking intervals;

(b) identifying the line numbers of ones of said lines in the vertical blanking intervals that contain the identifiers that establish the existance of vertical interval time code information;

(c) generating time code information; and

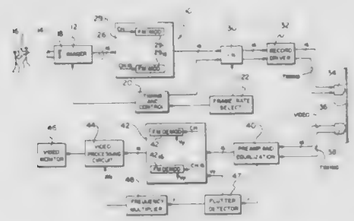
(d) writing the generated time code information onto videotape only at the identified ones of said lines.

4,802,024

VIDEO REPRODUCTION APPARATUS HAVING AUTOMATIC BLACK AND WHITE CALIBRATION

James R. Knowlton, Encinitas, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1986, Ser. No. 929,574
Int. Cl.[4] H04N *5/78*
U.S. Cl. 360—36.1 **8 Claims**



1. A demodulator for a frequency modulated (FM) video signal comprising;

means for reproducing an FM video signal from recording media;

integrator means for producing a ramp signal which varies substantially linearly over a predetermined integration period between first and second signal levels representing intensity limits of a scene;

sample and hold means for sampling and holding the signal level produced by said integrator means;

detector means for detecting the zero crossings of said reproduced FM video signal and for producing a pulse of fixed sampling period which terminates production of said ramp signal by said integrator means and which causes said sample and hold means to sample said integrator means signal level and to hold said sampled signal level after termination of said sampling pulse;

switch means for resetting the signal level of said integrator means to a reset level less than said first signal level and for maintaining said reset signal level for a predetermined offset period;

means for comparing first and second reference signal levels of said demodulated reproduced video signal with respective fixed first and second reference signal levels and for producing a first signal level correction signal for changing the slope of said ramp signal and a second signal level correction signal for changing the duration of said offset period as a function of differences in the compared reproduced reference video signal levels and said fixed reference levels so as to constrain said demodulated video signal between said fixed first and second signal levels.

4,802,025

VIDEO SIGNAL CIRCUIT HAVING TIME BASE CORRECTION

Toru Shinada, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 12, 1986, Ser. No. 929,509
Claims priority, application Japan, Nov. 12, 1985, 60-252012
Int. Cl.[4] H04M *5/95*
U.S. Cl. 360—36.2 **10 Claims**

1. A video signal circuit having time base correction comprising:

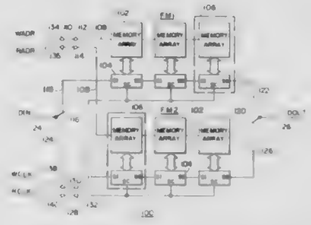
a pair of storage means each for storing at least one field of video signal data;

a pair of shift register means associated with said storage means for temporarily storing a unit of video signal data; and

control means for producing a first sync signal synchronized with input video signal data and a second sync signal synchronized with a reference clock for setting one of said pair of storage means to a write state and the other of said pair of storage means to a read state, and for alternately switching the states during a period of time in which the video signal data are neither written in nor read out from said pair of storage means;

said control means supplying the first sync signal to the shift register means associated with the storage means that is in the write state and the second sync signal to the storage means that is in the read state;

the shift register means associated with the storage means that is in the write state receiving a unit of input video signal data in series in response to the first sync signal to



write the unit of input video signal data into said storage means associated therewith in a horizontal blanking period determined by the first sync signal;

the shift register means associated with the storage means in the read state reading a unit of video signal data from the associated storage means to sequentially produce a readout unit of video signal data in synchronism with the second sync signal;

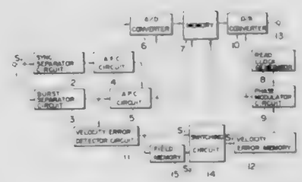
said pair of shift register means producing the readout unit of video signal data and receiving the input unit of video signal data at rates that are equal to each other.

4,802,026

VELOCITY ERROR CORRECTING CIRCUIT FOR TIME BASE ERROR CORRECTOR

Shinji Kaneko; Kenji Takanashi, and Yoshiaki Wakisaka, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 14, 1986, Ser. No. 96,451
Claims priority, application Japan, Aug. 19, 1985, 60-181452; Nov. 30, 1985, 60-270530
Int. Cl.[4] H04N *5/78*
U.S. Cl. 360—36.2 **5 Claims**



1. A time base corrector for correcting a time base error in a signal reproduced from a recording medium in a succession of interlaced fields each formed of a plurality of horizontal lines, each of said lines having a horizontal synchronization position which is shifted by 0.5 horizontal line between successive ones of said fields; said time base corrector comprising:

a main memory for storing a signal reproduced from a recording medium with a time base error;

read clock generator and phase modulator means for generating a read clock signal of variable phase for reading out said signal from said main memory; and

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a velocity error compensating circuit for generating first discrete signals representative of the velocity error of said reproduced signal at designated sample points of a current field and second discrete signals representative of the velocity error of said reproduced signal at sample points of a previous field respectively correspondign to said designated points and for interleaving said first and second discrete signals to produce a combined signal having a sampling frequency twice that of either of said first and second discrete signals;

wherein said combined signal constitutes a nonlinear approximation of said time base error and said read clock generator and phase modulator means is responsive to said combined signal for controlling the readout of said reproduced signal from said main memory in such a manner as substantially to eliminate said time base error; and

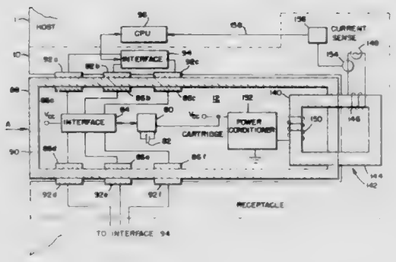
wherein said velocity error compensating circuit comprises a velocity error detector circuit for generating said first discrete signals, a field memory for delaying an output of said velocity error detector circuit by one field period to generate said second discrete signals, and switching means jointly responsive to said velocity error detector circuit and said field memory for generating said combined signal.

4,802,027

DATA STORAGE DEVICE COUPLED TO A DATA STORAGE INTERFACE

Paul C. Talmadge, Ansonia, and David H. Brooks, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 5, 1987, Ser. No. 104,128
Int. Cl.[4] G11B *15/04*
U.S. Cl. 360—60 **28 Claims**



1. A data storage system comprising:

a data storage device having a front surface and at least one horizontal planar surface and comprising data storage means coupled to data storage interface means, said interface means comprising means for coupling data signals between said device and a host system, said interface means comprising a first plurality of conductive plate means disposed beneath said planar surface of said device;

said device further comprising a secondary portion of a power transformer including a secondary core having a secondary winding disposed thereabout, said secondary winding being electrically coupled to a power conditioning means operable for deriving device operating power from said secondary winding;

said system further comprising:

apparatus for securely retaining said device during the storage of data therein said apparatus comprising:

means for engaging said front surface of said device as said device is inserted within said apparatus, said engaging means being capable of movement, in response to said insertion of said device, between at least a first position and a second position;

means for engaging said horizontal planar surface of said device; and

means for activating said device planar surface engaging means, said means for activating being coupled to said front surface engaging means and responsive to said movement thereof for causing said device planar surface engaging means to securely engage said device planar surface in response to said front surface engaging means moving to said second position and wherein:

said device planar surface engaging means comprises a second plurality of conductive plate means for contacting said planar surface of said device, said second plurality of plate means being disposed in registration with said first plurality of plate means for defining a plurality of electrical capacitors individual ones of which are comprised of corresponding ones of said first and said second plurality of plate means, each of said capacitors being a data signal coupling capacitor for coupling at least data signals between said device and said host system;

said apparatus further comprising:

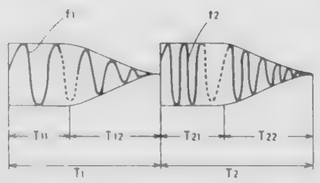
a primary portion of said power transformer being disposed at said second position for magnetically coupling operating power to said secondary portion when said device is at said second position, said primary core having a primary winding disposed thereabout and a source of excitation energy coupled to said primary winding.

4,802,028

METHOD AND APPARATUS FOR ERASING A MAGNETIC DISC EMPLOYING ERASING SIGNALS HAVING AT LEAST TWO DIFFERENT FREQUENCIES

Takashi Ohnaka, Hirakata, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 15, 1987, Ser. No. 38,683
Claims priority, application Japan, May 16, 1986, 61-113108
Int. Cl.[4] G11B *5/024*
U.S. Cl. 360—66 **9 Claims**



1. A method for erasing a signal in a recording track formed on a magnetic disc, comprising the steps of:

erasing said recording track by supplying through a magnetic head having a single winding a first AC erasing signal having a first frequency and a first duration and performing a damping oscillation over at least a first predetermined damping oscillation period following a first predetermined stationary oscillation period during said first duration, and

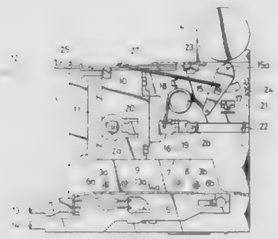
erasing again said recording track erased by said first AC erasing signal by supplying through said magnetic head a second AC erasing signal having a second frequency higher than said first frequency and a second duration and performing a damping oscillation over at least a second predetermined damping oscillation period following a second predetermined stationary oscillation period during said second duration.

4,802,029

AUTO-REVERSE TAPE RECORDER

Shinsaku Tanaka, Tokyo, and Kunio Kido, Wako, both of Japan, assignors to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed May 18, 1987, Ser. No. 50,697
Int. Cl.[4] G11B *15/48, 15/00*
U.S. Cl. 360—74.1 **4 Claims**



1. An auto-reverse tape recorder of such a type that a rotary force of a motor is transmitted selectively to either one of paired reel shafts by way of its corresponding friction mechanism for the transmission of the rotary force, a rotary force of the thus-selected reel shaft is applied to a rotation-detecting member via a rotation-detecting friction mechanism so as to bias the rotation-detecting member in a predetermined direction, the biasing force for the rotation-detecting member is applied to a tape running direction changeover mechanism, and the running direction of a tape is changed over upon elimination of the biasing force caused by a stop of the thus-selected reel shaft, comprising:

a fast forward control member movable forward from a non-operated position thereof by a tape fast forward operation so that when a magnetic head and a pinch roller associated with the thus-selected reel shaft are at their respective operating positions, the magnetic head and pinch roller are once caused to retreat toward their respective stop positions, said fast forward control member having the magnetic head and pinch roller return to their respective operating positions when the fast forward control member returns to the non-operated position thereof;

a rewinding control member movable forward from a non-operated position thereof by a tape rewinding operation so that when the magnetic head and the pinch roller associated with the thus-selected reel shaft are at their respective operating positions, the magnetic head and pinch roller are once caused to retreat toward their respective stop positions, said rewinding control member having the magnetic head and pinch roller return to their respective operating positions when the rewinding control member returns to the non-operated position thereof; and

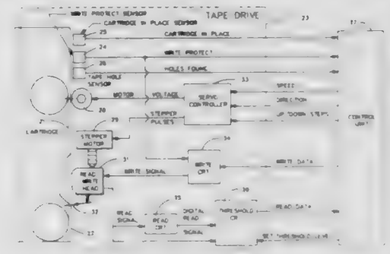
a restraining member operable in association with each of forward and return movements of the rewinding control member so that when the rewinding control member is in the course of movement, the restraining member restrains the movement of the rotation detecting member and the transmission of a biasing force from the rotation detecting member to the tape running direction changeover mechanism is prevented to actuate the tape running direction changeover mechanism.

4,802,030

HEAD-TAPE ALIGNMENT APPARATUS WITH A TAPE EDGE FIND OPERATION

Steven G. Henry, Fort Collins; Dan S. Johnson, Greeley; Kurt E. Spears, Windsor, and Mark E. Wanger, Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 25, 1986, Ser. No. 878,165
Int. Cl.[4] G11B *5/56, 5/584*
U.S. Cl. 360—60 **14 Claims**



1. In apparatus for aligning a read-write head over previously written data on a magnetic tape in a tape drive, the combination comprising:

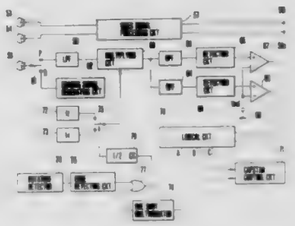
threshold control circuit for setting an amplitude level which is a set threshold level for edge find at which a read data output can be passed from a head read gap of the tape drive, said set threshold level for edge find corresponding to a read output amplitude when only a small portion of the head read gap is positioned over the tape during an edge find operation to increase the edge find accuracy, said set threshold level for edge find being increased by said control circuit to a set threshold level for a normal tape during a data read-out operation.

4,802,031

TRACKING CONTROL USING SIGNALS REPRODUCED BY ERASE HEAD

Kenichi Nagasawa; Hiroyuki Takimoto; Mitsuhiro Otokawa, all of Kanagawa; Hiroo Edakubo, Tokyo; Susumu Kozuki, Tokyo, and Keiji Satoh, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1986, Ser. No. 875,330
Claims priority, application Japan, Jun. 19, 1985, 60-133532; Jun. 19, 1985, 60-133533
Int. Cl.[4] G11B *5/584*
U.S. Cl. 360—77.15 **10 Claims**



1. An information signal reproducing apparatus for reproducing information signals which are recorded on a magnetic record bearing medium with pilot signals of four different frequencies recurrently superimposed in rotation on said information signals, comprising:

(a) magnetic heads arranged to reproduce said information

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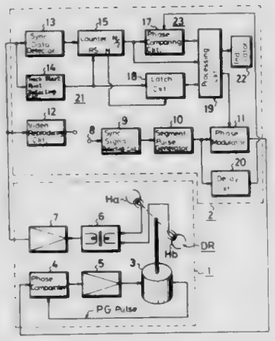
signals and said pilot signals by tracing said magnetic record bearing medium;
(b) medium tracing action causing means for causing said heads to trace said magnetic record bearing medium;
(c) an erasing head arranged to erase said information signals recorded on said medium by tracing said medium in the same direction as said magnetic heads and to be capable of reproducing said pilot signal;
(d) tracking control means arranged to control the tracing position on said medium of said magnetic heads by recurrently generating local pilot signals of the same four different frequencies as those of said pilot signals in rotation in a predetermined sequence, monitoring the state of said pilot signals reproduced by said magnetic heads, using said local pilot signals and controlling said medium tracing action causing means according to the state of said pilot signals;
(e) level detecting means for detecting the level of a specific pilot signal from among said pilot signals reproduced by said erasing head; and
(f) switching means arranged to change the generating sequence of the local pilot signals of said tracking control means according to the level of said specific pilot signal detected by said level detecting means.

4,802,032

SERVO FOR VTR DRUM MOTOR WITH EXTERNAL REFERENCE SIGNAL PHASE MODULATION

Kaichi Tatsuzawa; Takao Abe, and Tetsuo Ogawa, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 823,082, Jan. 27, 1986, abandoned. This application Jun. 23, 1987, Ser. No. 63,800
Claims priority, application Japan, Jan. 31, 1985, 60-17121
Int. Cl.[4] G11B *5/02*
U.S. Cl. 360—77.13 **13 Claims**



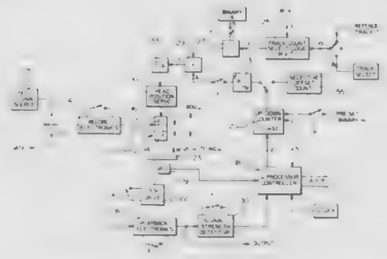
1. Servo circuit for use with a reproducing apparatus wherein an information signal is reproduced from a plurality of elongated slant tracks formed on a tape which is wrapped on a periphery of a guide drum having a rotary head, each of said slant tracks having a length extending at a slant angle to a longitudinal direction of said tape and said information signal being formed of a plurality of information portions, comprising:
means for reproducing an information signal representing less than a complete one of said information portions from one of said slant tracks;
means responsive to the reproduced information signal for detecting a middle point along said length of said slant track and generating a timing signal at the detection of the middle point;
means for providing a reference pulse;
phase comparator means for detecting a phase difference between said timing signal and said reference pulse to produce a compared output;
phase modulator means receiving said compared output and said reference pulse for phase modulating said reference pulse in accordance with said phase difference to provide a phase-modulated pulse as a control signal; and
means for controlling a relative position of said slant track relative to said rotary head in accordance with said control signal.

4,802,033

PREDICTIVE POSITIONING OFFSET COMPENSATION FOR HIGH TPI DISK SYSTEMS

Chao S. Chi, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 7, 1986, Ser. No. 928,332
Int. Cl.[4] G11B *5/58, 21/10*
U.S. Cl. 360—77.04 **3 Claims**



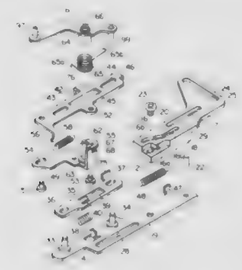
1. Magnetic recording and playback apparatus comprising
A. head support means,
B. a thin-film inductive magnetic head supported by said base support means,
C. a thin-film magneto-resistive magnetic head also supported by said head support means in at least approximate trackwise alignment with said thin-film inductive magnetic head,
D. means for storing a signal proportional to any trackwise disparity in the alignment of said thin-film inductive and magneto-resistive heads,
E. address means for generating a signal to position said head support means for recording by said thin-film inductive head in relation to a recording track of a magnetic recording medium, and
F. means cooperating with said address means for modifying the signal generated thereby to position said head support means for the playback of recorded signals by said magneto-resistive playback head, said means for providing said signal proportional to trackwise disparity comprising
I. playback circuit means for detecting the strength of signals produced by said magneto-resistive head, and
II. microprocessor means cooperative with said address means and said playback circuit means for
a. incrementally positioning said head support means by discrete fractions of the width of a recording track to maximize said signals produced by said magneto-resistive head and
b. in correspondence with such incremental positioning, producing said signal proportional to the trackwise disparity between said inductive and magneto-resistive heads.

4,802,034

TAPE LOADING DEVICE WITH VARIABLE TAPE TENSION MECHANISM FOR RECORDING REPRODUCING APPARATUS

Yoshiharu Matsumoto; Atsuhiro Kumagai, both of Yokohama, and Shuichi Ota, Sagamihara, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 675,838, Nov. 19, 1984, abandoned. This application Aug. 4, 1987, Ser. No. 83,929
Claims priority, application Japan, Mar. 18, 1983, 58-45755
Int. Cl.[4] G11B *5/027, 5/008, 15/00*
U.S. Cl. 360—85 **6 Claims**



1. A magnetic recording and reproducing apparatus comprising: a chassis, a loading electric motor mounted on the chassis, a planetary gearing unit mounted on said chassis for being driven in clockwise and counter-clockwise directions by said loading electric motor, a tape guide drum mounted on the chassis and provided with rotary magnetic heads, a loading ring having said tape guide drum arranged thereinside and being driven in rotation by said planetary gearing unit and adapted for winding a magnetic tape on the periphery of said tape guide drum, tape guide means arranged on said chassis proximate said loading ring for drawing out the tape from a cassette and guiding the tape from a tape mounting section towards and along a predetermined tape route in a direciton around said tape guide drum, said loading ring intercepting the tape guided by said tape guide means for winding the tape around the periphery of said tape guide drum, and a loading lever unit slideably mounted on said chassis, being operated for reciprocal motion by said planetary gearing unit, and being adapted for shifting said tape guide means, a tape tension regulator mounted on said chassis contacting the tape drawn out by said tape guide means and cooperating with said loading lever unit, and means cooperating with said loading lever unit driven by said planetary gearing unit for shifting said tape tension regulator between an unloading position and a loading position in response to the reciprocal motion of said loading lever, whereby the winding of the magnetic tape on said tape guide drum is released by rotationally driving said loading ring by said planetary gearing until driven by said loading electric motor and said loading lever unit is then operated for shifting said tape tension regulator and said tape guide means to their respective unloading positions out of engagement with said tape for returning the tape from the position extending along said tape route towards said tape mounting section.

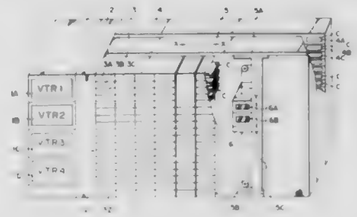
4,802,035

VIDEO CASSETTE AUTO CHANGER

Takashi Ohtsuka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1987, Ser. No. 38,311
Claims priority, application Japan, Apr. 14, 1986, 61-84189
Int. Cl.[4] G11B *15/68*
U.S. Cl. 360—92 **12 Claims**

1. In an apparatus for automatically supplying and selectively reproducing a cassette having a plurality of reproducing and/or recording units, first and second housing blocks closely spaced apart from and in facing relation to each other and adjacent to said reproducing and/or recording units, each of said housing blocks including a plurality of bins for storing cassettes, and a cassette transporting device movable between said first and second housing blocks for transporting said cassettes between said cassette bins of said first and second housing blocks and between said cassette bins and said reproducing and/or recording units, said cassette transporting device comprising:
at least one cassette receiving portion having two inlets provided at opposing sides thereof, said opposing sides respectively facing said first and second cassette housing blocks;
means for carrying a cassette into and out of said cassette receiving portion through said inlets; and
means for pushing out a cassette housed in said cassette receiving portion through a selected one of said inlets after the cassette is carried from said cassette receiving portion toward said selected inlet by said means for carrying;
whereby a cassette can be transferred via said one cassette receiving portion from any bin of one of said blocks to any bin of the same block or to any bin of the other of said blocks.

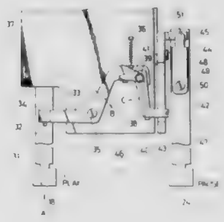


4,802,036

DUBBING TAPE RECORDER

Takashi Watanabe, Ichikawa, Japan, assignor to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed May 20, 1987, Ser. No. 51,691
Claims priority, application Japan, Sep. 30, 1986, 61-150519
Int. Cl.[4] G11B *15/68*
U.S. Cl. 360—92 **2 Claims**



1. A dubbing tape recorder comprising:
a first tape drive mechanism capable of performing at least a playback operation;
a playback control member for maintaining the first tape drive mechanism in a playback mode at an operating position, said playback control member having an engaging portion;

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a second tape drive mechanism capable of performing at least a recording operation;
a recording control member or maintaining the second tape drive mechanism in a recording mode at an operating position;
a pause control member for setting the recording mode into a waiting state while the recording control member is held at its operating position;
a pause lock mechanism for holding the pause control member at an operating position; and
a pause release mechanism having:
a first kick lever, operatively coupled to said playback control member and responsive to reciprocation thereof, said first kick lever having a stopper portion,
a second kick lever pivotally connected to said first kick lever and prevented from turning in a prescribed direction by said stopper portion of said first kick lever, and
a torsion spring normally biasing said second kick lever against said stopper portion of said first kick lever.

4,802,037

CASSETTE HOLDING DEVICE FOR A TAPE RECORDER

Shinsaku Tanaka, Tokyo; Tadao Arata, Inagi, and Takayuki Kitazawa, Yokohama, all of Japan, assignors to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1987, Ser. No. 55,885
Claims priority, application Japan, Sep. 11, 1986, 61-138586[U]
Int. Cl.[4] G11B *15/00*
U.S. Cl. 360—96.5 **2 Claims**



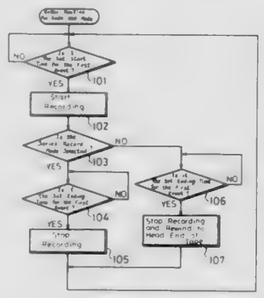
1. A cassette holding device for a tape recorder, comprising a cassette holder for removably receiving a tape cassette therein, said cassette holder being coupled to a base plate for movement between an operative position in which recording on or reproduction from a tape within a tape cassette received therein can be achieved and a rest position, spring means for urging said cassette holder toward the operative position, an arresting member mounted on said cassette holder for selective back and forth movement between an advanced position and a retracted position, stationary arresting means located on said base plate for engagement with said arresting member at the advanced position to arrest said cassette holder to the rest position, an ejecting member coupled to an end of said spring means and mounted for back and forth movement between an advanced position and a retracted position on said cassette holder, said ejecting member being retracted by an inserting force of a tape cassette inserted into said cassette holder to disengage said arresting member from said stationary arresting means while accumulating a spring force in said spring means, said ejecting member being advanced, when allowed, by the accumulated spring force to push back the tape cassette in a direction to unload the tape cassette, and means on said ejecting member for limiting, when said ejecting member is at the advanced position, movement of said arresting member away from the advanced position to maintain the engagement of said arresting member with said stationary arresting means.

4,802,038

PCM AUDIO SIGNAL RECORDING AND/OR REPRODUCING APPARATUS WITH PROGRAM TIMER AND SERIES AND PARALLEL FORMATS

Masaki Oguro, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 18, 1986, Ser. No. 875,531
Claims priority, application Japan, Jun. 20, 1985, 60-135184
Int. Cl.[4] G11B *5/09, 15/18, 20/10*
U.S. Cl. 360—22 **1 Claim**



1. A PCM audio signal recording and/or reproducing apparatus in which each of a plurality of recording tracks formed by a rotary head scanning across a magnetic tape is divided by an integer n greater than 1 in the longitudinal direction thereof to thereby form n track areas in each track corresponding to n channels, respectively, and in which an information signal can be recorded in and/or reproduced from each track area of each of said channels; said PCM audio signal recording and/or reproducing apparatus comprising:
timer means for scheduling starting and ending times for a plurality of successively occurring events, said timer means including memory means for storing data concerning said successively occurring events including said starting and ending times; and
means for selectively establishing one of a first audio recording mode in which said plurality of events are recorded temporally and spatially in series, between the respective scheduled starting and ending times, in track areas corresponding to only one of said n channels, and a second audio recording mode in which said events are recorded temporally in series and spatially in parallel, between the respective scheduled starting and ending times, in track areas respectively corresponding to ones of said n channels which are different from each other, said means for selectively establishing said first and second recording modes including switch means adapted ot be changed-over between positions corresponding to said first and second recording modes, said data previously stored in said memory means being erased in response to change-over of said switch means between said positions.

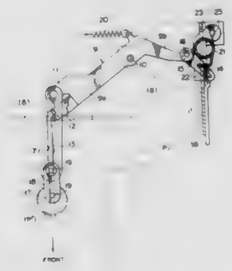
4,802,039

TAPE PLAYER

Ryousuke Hatanaka, Sayamashi, Japan, assignor to Nihon Technical Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1987, Ser. No. 11,057
Int. Cl.[4] G11B *15/32*
U.S. Cl. 360—96.5 **2 Claims**

1. A tape player provided with a mechanism for taking in and out a tape cassette, and tape player comprising: a pivotal lever mounted on an instrument-frame of the tape player which is pivotally moved, when a tape cassette is loaded, from an ejection position of said cassette to its loading position while being urged by said cassette; resilient means for urging said pivotal lever so that said pivot lever is pivotally moved in the direction of ejecting the tape cassette; a member mounted on one end of said pivotal lever and having an engaging shaft engageable with a reel hole of said cassette when the latter is loaded; an ejecting member operative to eject said cassette from a cassette holder which is shifted by resilient urging means from a non-play state to a play state in the ejection position of said cassette; a pivotal member positioned on the side of said instrument frame and having one end pivotally mounted horizontally pivotably, said pivotal member being precluded from pivotal movement outside said frame by said



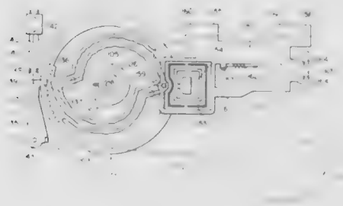
ejecting member; a torsion coil spring having opposite ends engaged with a free end of said pivotal member and with the other end of said pivotal lever, respectively; and a connecting member interposed between the opposite ends of said torsion coil spring to allow movement in the direction in which a spacing between the opposite ends of said torsion coil spring is reduced by restrict movement in the direction said spacing is broadened; whereby when the ejecting member is operated to be ejected, preclusion of pivotal movement of said pivotal member outside said instrument frame is released, and said cassette holder is pivotally shifted from the play state to the non-play state.

4,802,040

DISK-TYPE RECORDING AND REPRODUCING APPARATUS

Fumito Komatsu; Yuzo Oguchi; Akiyoshi Toyama, and Kiyoharu Iwanami, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Continuation of Ser. No. 720,239, Apr. 5, 1985, abandoned. This application Oct. 5, 1987, Ser. No. 105,446
Claims priority, application Japan, Apr. 5, 1984, 59-68199; May 16, 1984, 59-98253
Int. Cl.[4] G11B *5/012, 5/55*
U.S. Cl. 360—78.04 **3 Claims**



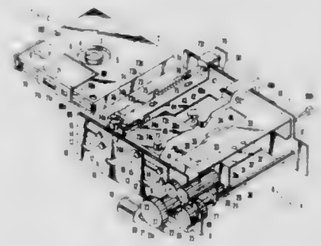
1. A disk-type recording and reproducing apparatus comprising:
a chassis having a spindle hub rotatably mounted thereon;
a motor mounted on said chassis;
drive means connected between said motor and said spindle hub for continuously rotating said spindle hub when said motor is operating;
a cam disk mounted on said spindle hub for rotation relative thereto;
an annular gear rotatably mounted on said cam disk;
gear teeth disposed on said spindle hub;
intermediate gear means mounted for rotation on said cam disk and disposed in meshing engagement with said gear teeth and said annular gear;
said cam disk having a cam surface on the upper surface thereof comprised of stepped cam grooves connected by coupling grooves and engagement recesses peripherally disposed on the cam disk corresponding to each stepped cam groove;
means on said spindle hub for supporting a magnetic disk for rotation therewith;
a head carriage movably mounted on said chassis and disposed in engagement with said cam surface for movement in a radial direction relative to said spindle hub and having a magnetic head thereon for contacting said magnetic disk; and
head movement control means pivotally mounted on said chassis for movement between a first position in engagement with said engagement recesses of said cam disk for preventing rotation of said cam disk and allowing said annular gear to continue rotating and a second position in engagement with said annular gear for preventing rotation of said annular gear while allowing rotation of said cam disk.

4,802,041

LOADING DEVICE FOR A CASSETTE HAVING A COVER MEMBER

Tsukasa Uehara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha

Continuation of Ser. No. 727,583, Apr. 26, 1985, abandoned. This application Feb. 9, 1988, Ser. No. 157,088
Claims priority, application Japan, Apr. 28, 1984, 59-86887
Int. Cl.[4] G11B *5/09, 17/028, 17/032*
U.S. Cl. 360—99.06 **23 Claims**



1. An apparatus for use with a record bearing medium housed in a cassette which is provided with at least one window for exposing a portion of the medium and a movable cover member for the window, a cassette loading device comprising:
(A) cassette holding means for receiving and holding the cassette, said holding means being movable between a first position to receive the cassette and a second position to place the cassette at a predetermined loading position;
(B) positioning means for positioning the cassette at said loading position when said holding means reaches a third position slightly before said second position during the movement of the holding means from said first position to said second position;
(C) opening and closing means movably provided on said holding means and selectively engageable with said mov-

able cover member for engaging with said movable cover member when said holding means is at said first position thereby opening the window of the cassette in correspondence with an action to insert the cassette into the holding means and closing the window of the cassette in correspondence with an action to take out the cassette from the holding means; and

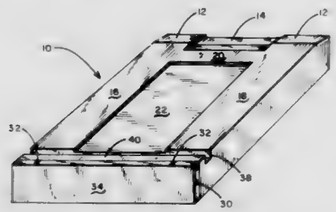
(D) control means including a cam for controlling the engagement of said opening and closing means with said movable cover member so as to disengage said opening and closing means from said movable cover member before said holding means reaches said third position when the holding means is moved to said second position from said first position, and so as to engage said opening and closing means with said movable cover member after said holding means reaches said third position when the holding means is moved to said first position from said second position.

4,802,042

SIDE-VENTED MAGNETIC HEAD AIR BEARING SLIDER

Richard A. Strom, Eagan, Minn., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Feb. 5, 1987, Ser. No. 11,655
Int. Cl.[4] G11B *5/60, 17/32, 21/21*
U.S. Cl. 360—103 **3 Claims**



1. A self-loading air bearing slider comprising:

a slider having leading and trailing edges, two side edges and an air bearing surface, wherein the air bearing surface is adapted to ride on gas flowing from said leading edge to said trailing edge, said gas outside said air bearing surface having an ambient pressure;

a negative pressure recess formed in the center of said air bearing surface, the negative pressure recess having two side edges and a negative pressure surface, the pressure in said recess being negative relative to ambient pressure as gas flow across said air bearing surface, the said edges each having leading and trailing ends; and

a pair of vents each communicating between the trailing end of respective side edges of said negative pressure recess and a corresponding one of said slider side edges, the vents having a sufficiently large cross section so that air flowing through said negative pressure recess when the slider is riding on an air bearing vents through said vents without significant restriction;

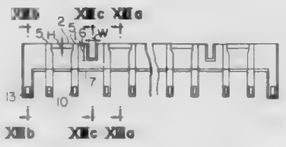
wherein said negative pressure recess has a predetermined depth relative to said air bearing surface and said vents comprise recesses in said air-bearing surface having a depth greater than said predetermined depth.

4,802,043

MAGNETO-RESISTIVE HEAD FOR PROTECTING AGAINST OUTPUT SPIKE NOISES

Naoki Sato, Hachioji; Yoshihisa Kamo, Kokubunji; Tooru Takeura; Masao Katsumata, both of Odawara, and Kazuhiro Momata, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1986, Ser. No. 828,349
Claims priority, application Japan, Mar. 25, 1985, 60-58399; Jul. 10, 1985, 60-150177
Int. Cl.[4] G11B *5/27*
U.S. Cl. 360—113 **8 Claims**



1. A magneto-resistive head for protecting against output spike noises, comprising:

a plurality of magneto-resistive elements formed on a first side of a first isolation layer;

a plurality of conductor layers formed on said first side of said first isolation layer and connected to said magneto-resistive elements for supplying drive currents to said magneto-resistive elements and for transferring reproduction signals out from said magneto-resistive elements;

a second isolation layer formed on a side of said magneto-resistive elements and said plurality of conductor layers opposite that of a side thereof formed on said first side of said first isolation layer;

a first magnetic shield formed on a side of said second isolation layer opposite that of a side thereof formed on said magneto-resistive elements, said first magnetic shield layer being positioned adjacent said plurality of magneto-resistive elements and being coupled to a DC potential; and

notches, each formed in said first magnetic shield layer between adjacent ones of said plurality of magneto-resistive elements.

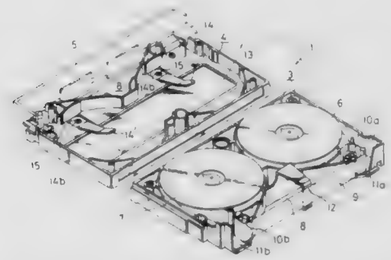
4,802,044

MOUNTING ARRANGEMENTS FOR LEVY SPRINGS ACTING AGAINST TAPE REELS IN A CASSETTE

Yuuji Iwahashi, and Kiyoshi Urayama, both of Miyagi, Japan, assignors to Sony Corp., Tokyo, Japan

Filed Nov. 12, 1986, Ser. No. 929,283
Claims priority, application Japan, Nov. 21, 1985, 60-179514[U]
Int. Cl.[4] G11B *23/02*
U.S. Cl. 360—132 **4 Claims**

1. In a tape cassette comprising supply and take-up reels having a tape wound thereon and extending between said reels, a cassette housing containing said reels and including upper and lower portions with said lower portion having means comparatively engageable with said reels for rotatably positioning the latter within said housing, metal leaf spring means having resilient arms engageable at free ends with said supply and take-up reels, respectively, for urging said reels toward said lower housing portion, and means for mounting said leaf spring means in respect to said upper housing portion including at least one hole in said leaf spring means remote from said free ends of the resilient arms and a thermoplastic pin depending from said upper housing portion through each said hole and being thereafter formed by heat and pressure into a head for retaining said leaf spring means thereon; the improvement of said leaf spring means including a mounting portion having parallel opposed surfaces with said hole extending therethrough, and with the one of said surfaces of the leaf spring means facing away from said upper housing portion having a surface portion adjacent said hole which is preformed to have fine convex and concave irregularities that extend along substantially cross-hatched lines so as to diverge, at least in part, from circles concentric with said hole and are engaged by said head formed by heat and pressure on the pin for providing the formed head with complementary fine concave and convex irregularities which similarly extend along cross-hatched lines and interlock with said concave and convex irregularities, respectively of said surface portion to securely hold said leaf spring means and preclude turning and wobbling about said pin.

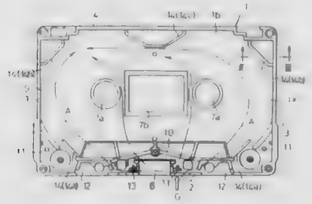


4,802,045

RECORDING TAPE CARTRIDGE

Osamu Yamamoto, Takatsuki; Shigeo Sasaki, and Shinichi Kagano, both of Kyoto, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Mar. 18, 1986, Ser. No. 840,866
Claims priority, application Japan, Mar. 18, 1985, 60-39357[U]
Int. Cl.[4] G11B *23/02*
U.S. Cl. 360—132 **6 Claims**



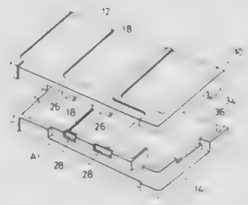
1. A tape cartridge case comprising a top half and a bottom half, each half including a main plate, surrounding walls formed on peripheral edges of said main plate, said surrounding walls including a front wall in which a head insertion opening is formed, a rear wall formed parallel to said front wall and side walls, said top half and bottom half being assembled together to provide said cartridge case having a tape chamber in which a recording tape is accommodated and a tape path through which said recording tape passes, a partition wall formed at each respective front wall of each half along said tape path facing to said head insertion opening, a pair of tape guide members juxtapositioned to each end of said respective partition wall, a pair of front-side ribs extending slantingly rearward towards said side walls from respective ends of said tape guide members and a side-rear corner rib at each rear corner of each half extending between the corresponding side wall and rear wall, such that said ribs are integral with and project from said main plate of each half of the defined regions avoiding said tape chamber and tape path, disposed so as to conform to one or more flow lines of injected resin when said resin is injected to mold each half of said tape cartridge.

4,802,046

CASING ASSEMBLY FOR A DISC CARTRIDGE

Kimio Tanaka, and Haruo Shiba, both of Nagano, Japan, assignors to TDK Corporation, Japan

Filed Feb. 4, 1987, Ser. No. 10,897
Claims priority, application Japan, Feb. 10, 1986, 61-16788[U]
Int. Cl.[4] G11B *23/03*
U.S. Cl. 360—133 **18 Claims**



1. A disc cartridge, comprising:

a casing comprising an upper cover plate and a lower cover plate joined together to define a space therein;

a disc rotatably housed in said space of said casing;

at least one window provided in said casing to allow insertion of a disc driving element therethrough into said disc cartridge;

a shutter for operatively opening and closing said at least one window;

a pair of actuators arranged in said casing to releasably lock said shutter; and

a disc receiver arranged in said casing and operatively connected to at least one of said actuators to selectively hold said disc at a substantially central position of said space in a thickness direction of said space;

said upper cover plate and lower cover plate being alternatively formed at each of peripheral end surfaces thereof with fitting and fitted means engaged with one another in a manner to positionally correspond to each other to provide said casing with sufficient torsional rigidity.

4,802,047

DISC CARTRIDGE

Kimio Tanaka, and Haruo Shiba, both of Nagano, Japan, assignors to TDK Corporation, Japan

Filed Apr. 16, 1987, Ser. No. 39,675
Claims priority, application Japan, Apr. 17, 1986, 61-56796[U]
Int. Cl.[4] G11B *23/03, 19/00, 5/82*
U.S. Cl. 360—133 **14 Claims**

1. A disc cartridge, comprising:

a casing comprising an upper cover plate and a lower cover plate joined together to define a space in said casing;

a disc rotatably housed in said casing;

a shutter for operating at least one window provided in said casing for insertion of a disc driving element of a disc player therethrough into said casing;

a pair of actuators arranged in said casing;

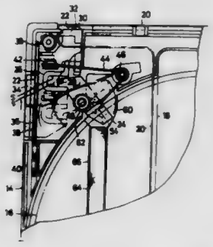
at least one of said actuators including a shutter lock element for releasably locking said shutter;

a pair of disc receivers arranged in said casing, each disc receiver operatively connected to a respective one of said actuators and selectively receiving a part of a peripheral portion of said disc to retain said disc at a substantially

central position in said casing in a thickness direction of said casing;

connection means for operatively connecting each of said actuators to said corresponding disc receiver;

said connection means comprising a guide groove provided in one of said actuator and corresponding disc receiver, and a guide pin provided on the other of said actuator and corresponding disc receiver and selectively engaged with said guide groove, said guide pin being arranged in said guide groove in a manner to be spaced from at least one



surface of said actuator or corresponding disc receiver defining said guide groove and

elastic means for continuously positioning said guide pin in said guide groove and forcing said disc receiver to return to an original position thereof maintaining said guide pin apart from said at least one surface of said guide groove;

wherein said elastic means comprise a spring mounted at a base portion thereof on said casing, and having one end engaged with said actuator and the other end engaged with said disc receiver.

4,802,048

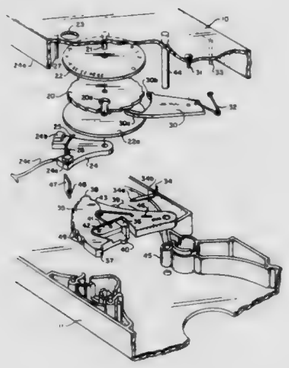
LIMITED PLAY TAPE CASSETTE SYSTEM

Leland M. Perkins; Ralph L. Dodds, both of Thousand Oaks; David H. Rubenstein, Westlake, and Roger D. Nicholson, Irvine, all of Calif., assignors to David H. Rubenstein and Rodger D. Nicholson, both of Santa Ana, Calif.

Filed Oct. 31, 1986, Ser. No. 926,368

Int. Cl.[4] G11B *15/32, 23/04*

U.S. Cl. 360—132 **9 Claims**



1. In a reel-to-reel tape cassette comprised of a bottom half and a top half and two reels between the halves with tape having its ends secured to said reels, one separate end to each reel for transfer from one reel to the other during play and back during rewind, each reel having flanges greater in diameter than a full roll of said tape, apparatus for counting and limiting the number of rewind-play cycles, wherein each cycle counted consists of any play or replay following a rewind of more than a predetermined segment, said apparatus comprising

a follower arm pivoted on a pin between said reels and offset from a line connecting the axes of said reels, said follower arm being spaced from and movable between flanges of one reel to between flanges of the other of said reels as tape is transferred between said reels,

a count wheel assembly comprising a ratchet wheel and pawl for preventing backward motion of said ratchet wheel,

a clutch for coupling reciprocating motion of said follower arm to said count wheel assembly, said clutch including means for limiting rotation of said ratchet wheel to an arc just encompassing a count of one ratchet tooth of said ratchet wheel for each play before engagement by said pawl on the next ratchet tooth,

a notch in said ratchet wheel of said count wheel assembly,

means spring biased to engage said notch in said count wheel assembly, and

means responsive to said spring biased means engaging said notch for preventing further play after said number of rewind-play cycles.

4,802,049

DISC CARTRIDGE

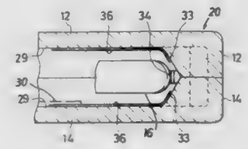
Kimio Tanaka, and Masaoki Sekine, both of Nagano, Japan, assignors to TDK Corporation, Japan

Filed Feb. 4, 1987, Ser. No. 10,894

Claims priority, application Japan, Feb. 10, 1986, 61-16791[U]

Int. Cl.[4] G11B *23/03*

U.S. Cl. 360—133 **18 Claims**



1. A disc cartridge comprising;

a casing comprising an upper cover plate and a lower cover plate joined together to define a spacing in said casing;

said casing being provided with an insertion or front side end through which said disc cartridge is inserted into a disc player and a rear end which is opposite to said insertion side end;

a disc housed in said casing;

a shutter for operating at least one window provided in said casing to insert a disc driving element of the disc player therethrough into said casing; and

at least one elastic means mounted on at least a part of an inner end surface of said opposite or rear end of said casing to force said disc toward said insertion side end to correctly position said disc in said casing.

4,802,050

MAGNETIC RECORDING MEDIUM

Takeshi Miyabayashi, and Takemi Yamamoto, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

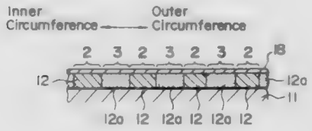
Filed Feb. 19, 1987, Ser. No. 16,666

Claims priority, application Japan, Feb. 21, 1986, 61-37693; Jul. 17, 1986, 61-168710; Sep. 9, 1986, 61-212409

Int. Cl.[4] G11B *5/82, 5/74*

U.S. Cl. 360—135 **7 Claims**

1. A magnetic recording medium comprising data tracks formed of magnetic layers, and non-data tracks formed of non-magnetic layers, said data tracks and said non-data tracks being disposed alternately and formed on a surface of a disc,



and said data tracks having respective widths gradually reduced as the position of the data track comes far from a center of said disc toward an outer circumferential part of said disc.

4,802,051

ARC-FREE ELECTROMAGNETIC CONTACTOR

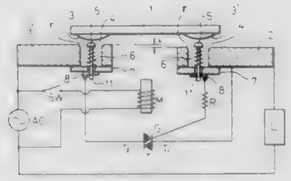
In Suk Kim, Samik Apt 10-615 Chungdamdong 134-21, Kangnam-ku, Seoul, Rep. of Korea

Filed Jun. 1, 1987, Ser. No. 56,851

Claims priority, application Rep. of Korea, Jun. 2, 1986, 1986-4347

Int. Cl.[4] H01H *9/30*

U.S. Cl. 361—13 **6 Claims**



1. An arc-free electromagnetic contactor comprising: first and second fixed terminals, each fixed terminal having a hole therethrough; insulating means secured to said first and second fixed terminals, said insulating means having first and second holes therethrough, said first and second holes respectively communicating with said holes in said first and second fixed terminals; first and second conductive pins mounted on said insulating means for displacement in a first direction from a first position to a second position thereof; first and second means for respectively urging said first and second conductive pins in a direction opposite to said first direction; switching means having first and second terminals respectively electrically coupled to said first conductive pin and to said second fixed terminal, and having a gate terminal electrically coupled to said second conductive pin, said gate terminal controlling the connection between said first and second terminals of said switching means; movable conductive bridge means having first and second contact means; and means for moving said bridge means, said first contact means contacting said first conductive pin and said first fixed terminal, and said second contact means contacting said second conductive pin when said bridge means is in first and second positions, and said second contact means further contacting said second fixed terminal only when said bridge means is in said second position, said second conductive pin being displaced in said first direction when said bridge means moves from said first position to said second position thereof, whereby current flows through said switching means when said bridge means is in said first position, and current flows from said first fixed terminal to said second fixed terminal by way of said bridge means when said bridge means is in said second position.

4,802,052

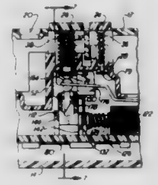
LATCHING AND RELEASE SYSTEM FOR GROUND FAULT RECEPTACLE

Edward J. Brant, Mattydale, and Thomas N. Packard, Syracuse, both of N.Y., assignors to Pass & Seymour, Inc., Syracuse, N.Y.

Filed Jan. 20, 1987, Ser. No. 5,086

Int. Cl.[4] H02H *3/16*

U.S. Cl. 361—42 **7 Claims**



1. In a ground fault circuit interrupter having a pair of fixed contacts and a pair of contacts movable between engaged and disengaged positions with respect to said fixed contacts to complete and break circuit continuity between an electrical source and load, means for effecting movement of said movable contacts, said means comprising:

(a) a pair of substantially parallel, elongated arms of flexible, springy, electrically conducting material each having an anchored end and a free end, said movable contacts being respectively mounted upon said free ends, whereby said arms are naturally biased toward an unflexed position when said free ends are moved to and held in a flexed position;

(b) a latch block and a first axis along which said latch block is movable between a first position, wherein said block contacts said arms adjacent said free ends thereof and holds said arms in said flexed position with said movable contacts engaged with said fixed contacts, and a second position, wherein said free ends of said arms are moved under the natural bias thereof to move said movable contacts out of engagement with said fixed contacts;

(c) an L-shaped latch member having first and second portions arranged at substantially 90° to one another and a second axis, substantially perpendicular to said first axis, along which said latch member is movable independently of said block between a latched position, wherein said first portion of said latch member engages and holds said latch block in said first position thereof, and an unlatched position, permitting movement of said latch block and said latch member along said first axis to said second position;

(d) means for releasably holding said latch member in said latched position;

(e) a solenoid including a coil and an armature movable along said second axis and having an end portion directly engageable with said second portion of said latch member to contact and move the latter along said second axis to said unlatched position; and

(f) circuit means operable in response to a ground fault between said source and said load to change the energized state of said coil, thereby moving said armature and said latch member along said second axis to move said latch member to said unlatched position, permitting movement of said latch block and said latch member along said first axis, permitting movement of said free ends of said arms to move said movable contacts out of engagement with said fixed contacts.

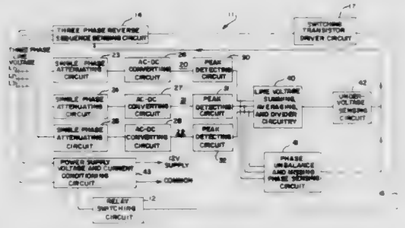
VOL 1098 ISS 5 JA 31 1989 UMI

4,802,053

CONTROL CIRCUITRY INCLUDING PHASE FAILURE RELAY

Roger C. Wojtak, St. Francis; John S. Hoelzer, Grafton, and James T. Libert, Waukesha, all of Wis., assignors to Square D Company, Palatine, Ill.

Filed Mar. 11, 1987, Ser. No. 24,640
Int. Cl.[4] H02H *3/00*
U.S. Cl. 361—85 14 Claims



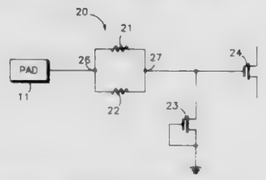
1. A control circuit for controllably interrupting power to a load through a switching relay, in response to a fault signal, by monitoring the voltages on a certain number of polyphase AC power lines each carrying a separate phase voltage, said circuit comprising:
(a) averaging means for producing an average signal that is an average of the peak values of all of said phase voltages;
(b) a plurality of comparator means, at least one comparator means for each polyphase power line, each of said comparator means having one input coupled to said average signal and another input coupled to a related polyphase power line, said comparator means for producing an imbalance signal in response to a voltage of said related power line being compared to said average signal; and
(c) fault signal means producing said fault signal in response to an imbalance signal from at least one comparator means.

4,802,054

INPUT PROTECTION FOR AN INTEGRATED CIRCUIT

Ruey J. Yu, Austin, and Fu T. Liou, Irving, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 13, 1987, Ser. No. 25,427
Int. Cl.[4] H02H *3/20*
U.S. Cl. 361—91 2 Claims



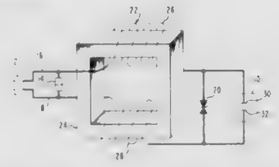
1. An integrated circuit, comprising:
an input circuit having at least an input transistor with a gate, source, and drain;
an input pad for receiving a signal external to the integrated circuit;
a first resistor having a first terminal coupled to the input pad, and a second terminal coupled to the gate of the input transistor, said first resistor being a polysilicon strip having a first length and a first width;
a second resistor having a first terminal coupled to the input pad, and a second terminal coupled to the gate of the input transistor, said second resistor being a polysilicon strip having a second length and a second width, said second width being greater than said first width whereby said first resistor has a greater resistance than that of said second resistor; and
a diode-connected transistor coupled between the gate of the input transistor and a first power supply terminal.

4,802,055

TRANSIENT VOLTAGE SURGE SUPPRESSOR

Howard L. Beckerman, Middletown, N.J., assignor to Joseph L. Brooks Manufacturing Corp., Philadelphia, Pa.

Filed Oct. 26, 1987, Ser. No. 112,517
Int. Cl.[4] H02H *9/04*
U.S. Cl. 361—56 8 Claims



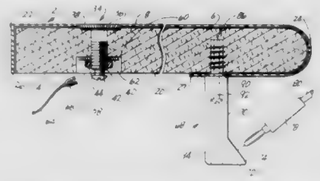
1. A transient voltage surge suppressor comprising:
first connection means for connecting said suppressor to AC power lines;
second connection means connecting said suppressor to a load receptacle having a plurality of terminals;
first voltage clamping means connected across said first connection means to clamp a transient voltage surge appearing on said first connection means to a first level;
second voltage clamping means connected across said second connection means to clamp a transient voltage surge appearing thereacross to a second level, said second level being less than said first level and protective of a load connected to said receptacle terminals; and
surge reactor means connected between said first and second voltage clamping means to absorb and dissipate a transient voltage surge energy which is a result of the difference between said first and second levels, said surge reactor means including a first coil connected between a first end of said first voltage clamping means and a first end of said first voltage clamping means and a second end of said second voltage clamping means, said first and second coils being wound on a single ferromagnetic core and having the same magnetic polarity on said core.

4,802,056

ELECTROSTATIC GROUNDING SYSTEM FOR WORK SURFACES

Harold K. Aronson, 10615 Daines Dr., Temple City, Calif. 91780

Continuation-in-part of Ser. No. 844,708, Mar. 27, 1986, abandoned. This application Jul. 28, 1986, Ser. No. 891,206
Int. Cl.[4] H05F *3/02*
U.S. Cl. 361—212 5 Claims



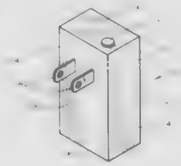
1. In a work surface of the type including a core and a laminate covering the core, said laminate having an electrically insulating outer layer over a conductive layer between the core and the outer layer, the improvement comprising:
a grounded conductive plug for grounding the conductive layer and work surface, the plug having a head with a tapered circumference adapted to define an electrically conductive relationship with the conductive layer, said plug having a roughened surface texture on said circumference adjacent said laminate, said roughened surface texture being adapted to be impressed into the conductive layer to maximize the area of initimate contact between the plug and conductive layer.

4,802,057

RODENT CONTROL DEVICE

Charles R. Patterson, and Gary E. Lutz, both of 137 Lynn St., Ames, Iowa 50010

Filed Jan. 11, 1988, Ser. No. 142,438
Int. Cl.[4] H04B *11/00*
U.S. Cl. 361—232 4 Claims



1. A rodent control device for generating a pulsating magnetic field offensive to rodents in buildings, said device comprising:
(a) a housing;
(b) an electrical supply means having hot and neutral lines for connection to a source of high voltage AC electrical power and associated with said housing to supply said power to the interior thereof;
(c) low voltage circuit means for generating a pulsed frequency gating signal;
(d) rectifying and voltage regulating circuit means connected in series to said hot and neutral lines for reducing and rectifying said high voltage AC power to a regulated low voltage DC electrical power that serves as a supply voltage to said low voltage circuit means;
(e) high voltage circuit means connected to said hot and neutral lines for providing a pulsed high voltage output signal in response to the gating signal of said low voltage circuit means;
(f) amplifying means for amplifying the frequency gating signal from said low voltage circuit means;
(g) circuit isolating means that is physically connected to said amplifying means and said high voltage circuit means and is actuated by the amplified gating signal from said amplifying means to provide a corresponding pulsed gating signal to said high voltage circuit means, said isolating means serving to electrically isolate said low voltage circuit from said high voltage circuit;
(h) said high voltage circuit means includes a magnetic field generating means that is connected to the hot line of said electrical supply means and receives said pulsed gating signal and generates a pulsating magnetic field in response thereto;
(i) conductive means connected to the neutral line of said electrical supply means and associated with said magnetic field generating means in such fashion that an electrical current is established in said conductive means in response to said pulsating magnetic field, which current produces lines of pulsating magnetic flux about said conductive means and said neutral line of said electrical supply means.

4,802,058

NOVEL METHOD FOR REFINING ELECTRICAL INSULATING OIL

Shigenobu Kawakami, Ichikawa; Keiji Endo, Yokosuka; Hideyuki Dohi, Yokohama, and Atsushi Sato, Tokyo, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Japan

Filed Mar. 9, 1988, Ser. No. 165,728
Claims priority, application Japan, Mar. 11, 1987, 62-55865
Int. Cl.[4] H01G *4/22*; C10L *1/10*; H01B *3/22*; C07C *15/12*
U.S. Cl. 361—315 5 Claims

What is claimed is:

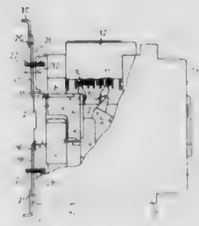
1. A method of refining an electrical insulating oil, comprising steps of:
(I) alkylating benzene or toluene with ethylene in the presence of an alkylating catalyst to produce a heavy oil containing diarylethanes;
(II) distillating the heavy oil to recover a fraction containing diarylethanes, said fraction mainly consisting of components having boiling points lower than those of the corresponding diarylethylenes as a dehydrogenated product of said diarylethanes;
(III) dehydrogenating the fraction containing the diarylethanes by a hydrogenation catalyst to covert at least part of the diarylethanes in the fraction into diarylethylenes, thereby preparing a fraction containing the diarylethylenes;
(IV) distilling components lighter than the diarylethylenes from the fraction containing the diarylethylenes to increase the concentration of the diarylethylenes; and
(V) hydrogenating the fraction containing the diarylethylenes having the increased concentration in the presence of a hydrogenation catalyst under conditions which substantially inhibit nucleus hydrogenation, thereby converting at least part of the diarylethylenes in the fraction into diarylethanes.

4,802,059

MULTIPLE LOW-VOLTAGE CIRCUIT BREAKER HAVING BUS BARS

Günter Prietzel; Georg Sprenger, and Reinhard Kugler, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 922,298, Oct. 23, 1986, abandoned. This application Apr. 28, 1988, Ser. No. 188,186
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1985, 3539672
Int. Cl.[4] H02B *1/20*
U.S. Cl. 361—361 7 Claims



1. A multipole low-voltage high current circuit breaker having bus bars for connecting contact arrangements of the circuit breaker to one or more circuits, wherein the bus bars comprise bus bars for an input side and bus bars for an output side each arranged in a row and both of said rows being arranged parallel to each other and at right angles to side walls of the circuit breaker, and further wherein, the bus bars are connected to connecting bars which are arranged approximately parallel to a back side of the circuit breaker and which connecting bars connect the bus bars to stationary conductors not aligned with the bus bars for the input and output side, respectively, said connecting bars for each of the input side and the output side are coupled by common insulating support bodies provided for each of the input side and the output side connecting bars and each support body having ends which are fastened to the side walls of the circuit breaker, said common insulating support body for each of the input side and output side being provided for spacing said connecting bars connected to each pole of said multipole circuit breaker apart in a defined orientation to prevent forces due to currents in said connecting bars from moving said connecting bars.

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4,802,060

APPARATUS FOR CONNECTING A CONTROL PANEL WITH AN AIR CONDITIONING DEVICE

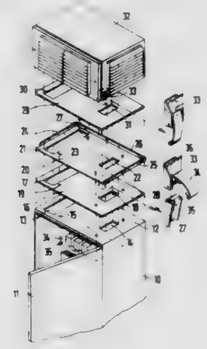
Manfred Immel, Mittenaar, Fed. Rep. of Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co., KG, Fed. Rep. of Germany

Filed Mar. 7, 1988, Ser. No. 164,583

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1987, 3710566

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—379 **16 Claims**



1. A control panel with an air conditioning device, in which the top of the body of the control panel and the bottom of the air conditioning device are provided with through openings which are adjusted and oriented to one another and are in communication with one another, comprising:

an intermediary plate (**20**) having first through openings (**21, 22**), said intermediary plate solidly connected to said top (**12**) of said body of said control panel (**10**) with said first through openings (**21, 22**) adjusted and oriented to second through openings (**13, 14**) in said top (**12**), said intermediary plate (**20**) provided on three sides with an upturned edge (**24, 25, 26**) forming an accommodation;

and means for detachably connecting said air conditioning device (**32**) and said intermediary plate (**20**) comprising a plurality of quick fasteners having locking parts (**27, 33**), each of said locking parts (**27, 33**) adjusted to one another, one of said locking parts (**27**) connected to the external sides of said upturned edges (**24, 25**) lying opposite one another and the other said locking parts (**33**) connected to the external sides of said air conditioning device (**32**) inserted into said accommodation of said intermediary plate (**20**).

4,802,061

MICROELECTRONIC COMPONENTS AND THICK-FILM HYBRID CIRCUITS

Michael Portugall, Wachenheim; Hans-Josef Sterzel, Dannstadt-Schauernheim; Gerd Blinne, Bobenheim; Heinz-Dieter Vondenhagen, Frankenthal; Erhard Seiler, Ludwigshafen; Hans-Friedrich Schmidt, Eusasburg, and Sybille Von Tomkewitsch, Pöcking, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 24, 1987, Ser. No. 77,215

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1986, 3625263

Int. Cl.⁴ H05K *1/18;* **B32B** *27/36*

U.S. Cl. 361—400 **5 Claims**

1. A microelectronic component containing multilayer substrates, wherein the multilayer substrates are produced using a liquid crystalline thermoplastic polymer which, in the form of a melt, has anisotropic optical properties.

4,802,062

INTEGRATED WIRING SYSTEM FOR VLSI

Arnold Blum, Gechingen; Marian Briska, Rottenburg, and Knut Najmann, Gartringen, all of Fed. Rep. of Germany, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 6, 1987, Ser. No. 70,265

Claims priority, application European Pat. Off., Aug. 22, 1986, 86111642.4

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 361—401 **40 Claims**



1. Integrated wiring system for at least one circuit chip comprising:

a carrier structure including buried power supply rails;

a semiconductor interconnection wafer positioned above said carrier structure and having multilevel wiring planes and openings having at least one circuit chip located therein;

said buried power supply rails having portions protruding from said carrier structure up to the level of said at least one circuit chip and said interconnection wafer;

at least one contact chip positioned above each said at least one circuit chip lying in the interconnection wafer plane, each said at least one contact chip having conductive surface layers providing electrical interconnections between each said at least one circuit chip and between at least one circuit chip and the interconnection wafer by means of contact needles extending through each said at least one contact chip.

4,802,063

CAPACITOR ASSEMBLY WITH ANCHORING MEANS FOR A LAYERED CAPACITOR

John W. Carino, Columbia, S.C., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 19, 1987, Ser. No. 123,446

Int. Cl.⁴ H01G *9/06*

U.S. Cl. 361—433 **8 Claims**

1. A capacitor assembly comprising a tubular container having a closed end and an open end, a wound capacitor having alternating conductive and insulative layers disposed in the container, and a lid for closing the open end of the container, characterized in that:

(a) the closed end of the tubular container includes an inner surface having a first plurality of projections distributed over said surface in a predefined pattern which locates the projections such that at least one of said projections will press into a first end of the capacitor at the maximum possible displacement of the first end from a centered position in the container, said predefined pattern including at least one circular arrangement of said projections surrounding a central region of the closed end of the container; and

(b) the lid includes an inner surface having a second plurality of distributed projections comprising elongated members



extending radially from a central region of the lid for pressing against a second end of the capacitor;

the distance between the first and second ends of the capacitor and the distance between the first and second pluralities of projections being established such that the capacitor is secured in place by the pressure applied by said first and second pluralities of projections.

4,802,064

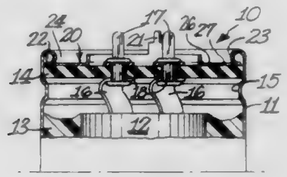
CAPACITOR WITH MOUNTING RING

Lester C. Dain, West Jefferson, N.C., and Steven A. Rubin, Sharon, Mass., assignors to Sprague Electric Company and Universal Products, Inc., both of North Adams, Mass.

Filed Feb. 19, 1988, Ser. No. 157,566

Int. Cl.⁴ H01G *9/00*

U.S. Cl. 361—519 **6 Claims**



1. A sealed electrical component having a component body, a casing containing said body, said casing having a rim defining an open end, a closure member positioned within said open end sealing said body within said casing, electrical leads extending from said body, terminals mounted on said closure member and connected to said electrical leads, said rim being rolled over inwardly of said casing and forming a curl extending radially inward and in force-fit contact with said closure member so constructed and arranged as to provide a seal between said casing and said closure member, a recess between said curl and said closure member and in combination therewith a mounting ring formed of resilient material, teeth on said mounting ring extending radially outwardly of the center of said component into said recess and adapted to snappingly retain said mounting ring on said sealed component by engagement with said curl, said electrical component being completely sealed prior to attachment of said mounting ring thereto, and means on said mounting ring extending axially beyond said rim outward of said open end for mounting said sealed component.

4,802,065

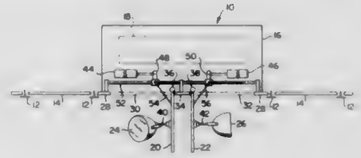
EMERGENCY LIGHTING FIXTURE

Ronald H. Minter, 780 Maple Hills Rd., and Robert J. McCue, 11 Copper Hill Dr., both of Guilford, Conn. 06437

Filed Aug. 27, 1987, Ser. No. 89,839

Int. Cl.⁴ F21V *19/04*

U.S. Cl. 362—20 **32 Claims**



1. An emergency lighting fixture for mounting in a ceiling which comprises, in combination: a panel normally closing an opening in said ceiling, an electric lamp mounted to the inner side of said panel, an a.c. power supply, means responsive to the presence of a.c. power from said power supply for retaining said panel in its normally closing position at said opening, said retaining means being adapted to release said panel and allow said panel to drop under its own weight and the weight of said lamp below said ceiling along with said lamp in the absence of a.c. power, a d.c. power supply and switch means for electrically connecting said d.c. power supply to said lamp in response to the failure of said a.c. power.

4,802,066

BED EMPLOYED FOR LIGHT BATHING

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Jun. 4, 1987, Ser. No. 58,090

Claims priority, application Japan, Jun. 10, 1986, 61-134306

Int. Cl.⁴ F21V *7/04;* **A47B** *23/06*

U.S. Cl. 362—32 **2 Claims**

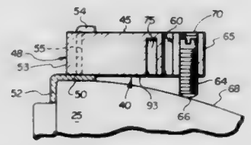


1. A bed employed for light bathing, comprising a bed frame having a first end and a second end along with a first side and a second side, a first elongated roller disposed along said first side of said bed frame and extending between said first and said second ends, a transparent cloth having a width greater than said bed frame, said cloth having a first end connected to said first roller, at least a first portion rolled around said first roller, a second stretched portion stretched across said bed frame, and a second end connected to said second roller, means for winding said second roller such that said second portion of said cloth is wound around said second roller as said first portion is unwound from said first roller and stretched across said bed frame, a plurality of elongated optical conductors on said bed frame and extending between said first and second ends of said bed frame, said optical conductors being arranged beneath the stretched portion of said transparent cloth for conducting one of the visible light rays component of solar rays and artificial light rays, said visible light rays component being devoid of ultraviolet and infrared rays and radiating the conducted visible light rays out of said optical conductors and through said transparent cloth, a reinforcing material stretched across said frame for preventing said transparent cloth from ripping and stretching, and a reflecting plate beneath said optical conduc-

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tors for reflecting visible light rays radiated out of said optical conductors towards said transparent cloth.

4,802,067
HEADLIGHT AIMING AND LEVELING DEVICE
Francis E. Ryder; Stephen P. Lisak, and Harold L. Purdy, all of Arab, Ala., assignors to Ryder International Corp., Aral, Ala. and Textron Inc., Providence, R.I.
Filed Jun. 9, 1987, Ser. No. 60,112
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 362—61 **13 Claims**



1. A headlight aiming and leveling device for attachment to an automotive headlamp to facilitate leveling and aiming of the headlamp beam relative to an automotive vehicle upon which the headlamp is installed, said device comprising: level-indicating means including a housing; means for mounting at least one, first part of said housing to a given surface of said headlamp, such that said housing is movable for varying the inclination of the housing in such fashion as to permit adjustment of the level indicating means to indicate a level condition; adjusting means operatively coupled with said housing at a second part thereof spaced from said part hereof affixed to said headlamp for producing movement of said housing for achieving said indication of a level condition by said level-indicating means while the headlamp is held in a condition wherein the headlamp beam is level; and locking means for locking said adjusting means in the position at which said indication of a level condition is achieved; whereby, upon installation of said headlamp upon an automotive vehicle, said headlamp may be adjusted until said level-indication means again indicates said level condition, to thereby assure proper leveling and consequent aiming of the headlamp beam; wherein said housing has at least two sides formed at an angle such that it substantially defines, in plan, a triangle, said level-indicating means being aligned along a first side thereof, and wherein a further side of the housing is angled relative to the first side to form a reflective surface for permitting viewing of a reflected image of the level-indicating means from a location other than said first side.

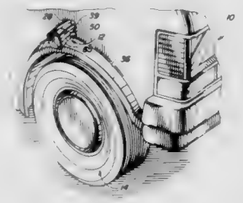
4,802,068
SEALED CHAMBERS
Pierre Mokry, Les Clayes Sous Bois, France, assignor to Dow Corning France S.A., Valbonne, France
Filed Nov. 10, 1987, Ser. No. 118,930
Claims priority, application France, Nov. 20, 1986, 86-16152
Int. Cl.[4] F21V *31/00*
U.S. Cl. G29362—61 **11 Claims**

1. An article having a chamber in which a quantity of air is enclosed which chamber is sealed against ingress of water in liquid form and is provided with an element through which air may permeate under the influence of differences between the pressures of air outside the chamber and air inside the chamber, the element being a plug of a foamed silicone comprising a cellular layer consisting of a fine pored foam of predominantly open cells having a skin disposed to be contacted by air outside the chamber and a second skin disposed in contact with air



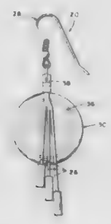
inside the chamber, and wherein the skins are of silicone composition.

4,802,069
RETRACTABLE TIRE CHANGE LIGHTS FOR AUTOMOTIVE VEHICLE
Daniel E. Chandler, P.O. Box 1893, Cave Creek, Ariz. 85331
Filed Apr. 22, 1988, Ser. No. 184,937
Int. Cl.[4] B60Q *1/24*
U.S. Cl. 362—83 **20 Claims**



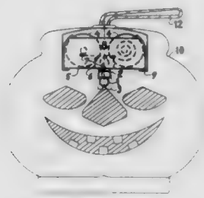
1. A tire-changing safety assembly comprising in combination:
(a) an automotive vehicle having a body and a plurality of tires, each of said tires being mounted for rotation in a different wheel well in said body;
(b) a plurality of cut-outs formed in the body of said vehicle, each of said cut-outs being formed proximate a different one of said wheel wells;
(c) a plurality of tire change lights, each of said lights being mounted in a different one of said cut-outs, each of said lights including
(i) a stationary mounting case mounted in a concealed position in the body of said vehicle,
(ii) a lamp housing mounted for reciprocation from a concealed, retracted position within said mounting case to an extended position outside the body of said vehicle,
(iii) a light source mounted in said lamp housing,
(iv) switch means for connecting said light source to a power source in said vehicle when said lamp housing is in said extended position, causing said light to turn on, and for disconnecting said light source from said power source when said lamp housing is in said retracted position, causing said light to turn off, and
(v) a lens mounted in said lamp housing for allowing light from said light source to be emitted in the direction of one of the tires of said vehicle when said lamp housing is in said extended position.

4,802,070
ELECTRICAL CIRCUIT JEWELRY
Randy C. Westmoland, P.O. Box 92, Skiatook, Okla. 74070
Continuation-in-part of Ser. No. 899,172, Aug. 22, 1986, and Ser. No. 899,171, Aug. 22, 1986. This application Feb. 29, 1988, Ser. No. 161,717
Int. Cl.[4] F21L *15/08*
U.S. Cl. 362—104 **22 Claims**



1. An article of jewelry, comprising:
at least one electrically activated light source;
at least two elongated and stiff electrical conductors connected to and extending from the light source for conducting electrical power to the light source, the conductors being spaced apart to provide an aperture for detachably receiving and retaining an electrical power source having an electrically positive terminal and an electrically negative terminal, at least one conductor contacting the positive terminal and at least one conductor contacting the negative terminal of the power source, the positive terminal contacting conductors being electrically isolated from the negative terminal contacting conductors, the conductors, aperture, and light source being the visible article of jewelry when the article of jewelry is being worn; and
attachment means for attaching the article of jewelry to a wearer.

4,802,071
LANTERN CANDY CARRIER
Herbert J. Schuster, 41 Lakeshore Dr., Apt. 802, Toronto, Ontario, Canada M8V 1Z3
Filed Nov. 20, 1987, Ser. No. 123,418
Int. Cl.[4] F21V *33/00*
U.S. Cl. 362—154 **6 Claims**



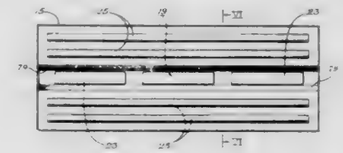
1. A lantern for carrying Halloween treats or the like comprising:
a hollow, pumpkin like shell having a polar axis and including a side wall and top wall bridging said side wall;
a portion of said side wall being configured with a design thereon defining a forward face of said shell; at least said configured portion being translucent;
said shell having an opening therein to provide hand access within said shell for insertion and removal of treats;
handle means secured to said shell for carrying said lantern with the polar axis generally vertically oriented;
said opening located in at least one plane inclined to the polar axis and extending partly in portions of said side wall opposed to said forward face and partly in said top wall; and
illumination means mounted within said shell and located to illuminate said configured portion and simultaneously to be viewable along generally horizontal lines of sight through said access opening; said illumination means comprises an electric lamp supported from said top wall of said shell adjacent said opening to provide hand access.

4,802,072
DIRECTION FIXTURE FOR DECORATIVE LAMP SERIES
Chuan F. Kau, 550, Chung Shan Rd., Hsin Chu City, Taiwan
Filed Feb. 19, 1987, Ser. No. 16,649
Int. Cl.[4] F21V *1/00*
U.S. Cl. 362—238 **5 Claims**



1. A direction fixture for decorative lamp series comprising a socket for a bulb, wires connected to said socket and a retaining ring attached to said socket, said retaining ring being provided with a notch extending longitudinally of the socket with the wires that are connected to said socket being positioned and retained in said socket so as to fix said socket in a desired orientation and wherein said retaining ring has an outer face which is in registry with an end rim of said socket.

4,802,073
LIGHTING LEVEL CONTROL APPARATUS FOR FLUORESCENT LIGHTING INSTALLATIONS
George W. Plumly, 1386 C Crescent, D.C.B.E., Granbury, Tex. 76048
Filed Feb. 3, 1988, Ser. No. 151,887
Int. Cl.[4] F21V *23/04*
U.S. Cl. 362—251 **14 Claims**



1. In a fluorescent lighting installation having a first switch means for applying and removing power from said installation, and a plurality of fluorescent lighting fixtures, with each of said fixtures having a power input and illumination means which includes a plurality of fluorescent lamps; the improvement comprising a plurality of second switch means interconnected with respective said power inputs and respective said illumination means, with each of said second switch means being wholly disposed within respective ones of a plurality of selected fluorescent lighting fixtures denominated equipped fixtures, said second switch means for controlling the light level of said installation, with each of said second switch means in said equipped fixtures being operable to step through plural states to provide plural operating states for said fluorescent lamps in said equipped fixtures, said stepping from one state to

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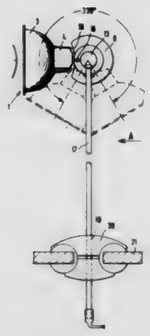
the next state being responsive to the application of power for an indefinite period of time by said first switch means through the respective power input, whereby said stepping of a respective second switch means from one state to the next state provides the selected operating state for said fluorescent lamps.

4,802,074

DIRECTIONALLY ADJUSTABLE LOW-VOLTAGE LAMP

Theodor Puschkaraki, Anhofstrasse 170, A1130 Wien, Austria

Filed Feb. 24, 1988, Ser. No. 159,672
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1987, 3707645; Oct. 2, 1987, 3733392
Int. Cl.[4] F21V *19/02*
U.S. Cl. 362—287 12 Claims



1. A directionally adjustable low-voltage lamp with a concave reflector designed to provide a cone of light and characterized in that the lamp has a holder made up of two rotary disks (9 and 9') which are separated from each other by an insulating disk (8), said two rotary disks made of electrically conducting material, said holder further comprising a swivel joint (7) having a central pivot axis (11) being defined by an axial pin (12) of electrically non-conducting material which is born at opposite ends in bearing members (13 and 13') of electrically conducting material with a certain degree of axial preloading, and rods (17) of electrically conducting material secured in said bearing members (13 and 13'), said rods being connected with an electrical supply and extending perpendicularly to the axis (11) of swivel of the swivel joint (7) and having ends of said rods being supported in holes (19) in holding membranes (20) with a frictional engagement so as to be freely rotatable and axially displaceable.

4,802,075

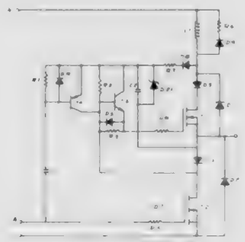
ELECTRONIC CIRCUITRY FOR CONVERTING DIRECT VOLTAGE TO ALTERNATING VOLTAGE

Francesc Casanellas Bassols, C. de la Torre, 7, 08006 Barcelona, Spain

Filed Nov. 18, 1987, Ser. No. 122,210
Claims priority, application Spain, Jan. 8, 1987, 8700033
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—16 2 Claims

1. Electronic circuitry for converting a direct voltage to an alternating voltage, of the kind comprising two MOSFET transistors (T1, T2) series connected with respective blocking diodes (D3, D4) and biased by two further diodes (D1, D2) in the case of an inductive load, the MOSFET transistor (T1) of the direct voltage feed positive side (+) being commanded by control means responsive to a command signal,

characterized in that the control means comprise two low voltage transistors (T4, T3) of which a first transistor (T4) has its base and collector respectively connected to the gate and drain of the MOSFET transistor (T2) of the direct voltage feed negative side (−), to supply this MOSFET transistor (T2) with the drain initial charge current, the base and the emitter of the second low voltage transistor (T3) being connected to ends of the blocking diode (D4) for the MOSFET transistor (T2) for the same negative



side (−) of the direct voltage feed, and to the gate of the MOSFET transistor (T1) of the direct voltage feed positive side (+),

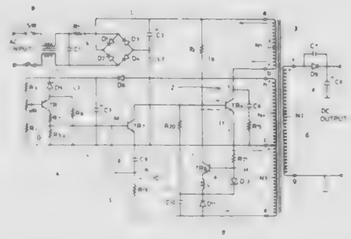
the MOSFET transistor (T1) of the positive side being in open condition when the command signal is positive, and in conducting state when the command signal is null.

4,802,076

SWITCHING REGULATOR TYPE POWER SUPPLY CIRCUIT

Shunji Asai, Yao, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 3, 1987, Ser. No. 92,820
Claims priority, application Japan, Sep. 12, 1986, 61-216517
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—19 10 Claims



1. A switching regulator type power supply circuit comprising:

DC power supply means;

converter transformer means comprising an input winding, a positive feedback winding and an output winding electromagnetically coupled to said input winding, and a detecting winding, electromagnetically coupled to said input winding and said output winding;

rectifying circuit means, coupled to said output winding, for rectifying and smoothing an output voltage from said output winding;

blocking oscillation means comprising first switching transistor means having a common electrode, an output electrode and a control electrode, said blocking oscillation means being coupled to said DC power supply means in series through a first terminal of said input winding and connected to said positive feedback winding at the control electrode of said first switching transistor means, said

blocking oscillation means for performing a blocking oscillating operation;

positive feedback current control means coupled to the control electrode of said first switching transistor means and said positive feedback winding, said positive feedback current control means being responsive to a voltage generated in said positive feedback winding, and applying a positive feedback current to the control electrode of said first switching transistor, said positive feedback current increasing as a function of a lapse of time during an on period of said first switching transistor means; and

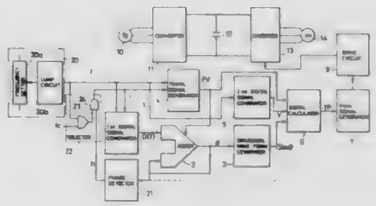
switching control means coupled to said detecting winding, said switching control means being responsive to a fluctuation voltage from said detecting winding, being responsive to a fluctuation of the output voltage of said output winding output from said detecting winding and controlling the duration of the on period of said first switching transistor means.

4,802,077

PWM INVERTER CONTROLLER

Hiroshi Fujii, and Yuichiro Nagato, both of Chiba, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 29, 1988, Ser. No. 162,082
Claims priority, application Japan, Mar. 20, 1987, 62-63917
Int. Cl.[4] H02M *1/12*
U.S. Cl. 363—41 7 Claims



1. In a PWM inverter which, in an asynchronous operation mode of a low output frequency, performs an asynchronous operation in which the cut period remains constant irrespective of the change in the output frequency and which, in a synchronous operation mode of a high output frequency, performs a synchronous operation in which the cut period changes accompanying the change in the output frequency, an inverter controller which comprises:

a frequency commander for commanding a frequency that is to be produced by said inverter;

a first signal generator which receives the output of said frequency commander, and which, in said asynchronous operation mode of a small output, produces a signal of a magnitude that corresponds to said output and produces a signal of a predetermined magnitude in at least a low output frequency range in said synchronous operation region of a large output;

a timing signal generator which generates pulses of a predetermined period in said asynchronous operation mode, and generates pulse signals of a frequency that corresponds to the output of said frequency commander in at least said low output frequency range in said synchronous operation mode;

an adder which adds up signals produced by said first signal generator every time when a signal is produced from said timing signal generator, and produces a value obtained by subtracting an amount of 360 degrees from the added value when the phase of a sinusoidal waveform generator has exceeded 360 degrees;

a phase detector which detects the output of said adder when it lies within a predetermined range; and

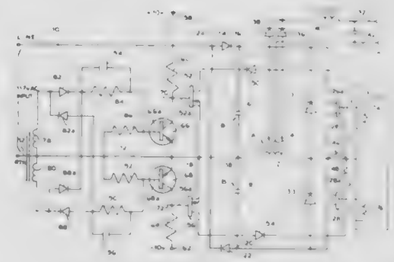
a selector which switches said asynchronous operation into said synchronous operation when the output of said frequency commander exceeds a predetermined value and when it is detected from the output of said phase detector that the output of said adder lies within said predetermined range.

4,802,078

ACTIVE SNUBBING CIRCUIT FOR SWITCHING MODE POWER SUPPLY

Jeremy R. Hill, Weston, Conn., assignor to Power Pac Inc., South Norwalk, Conn.

Filed Apr. 27, 1987, Ser. No. 42,870
Int. Cl.[4] H02M *7/5387*
U.S. Cl. 363—56 4 Claims



1. In a switching mode power supply comprising a transformer having primary and secondary windings, switching means operatively connected to said primary winding for applying an excitation voltage to the said primary winding, said excitation voltage comprising "on" times of alternating polarity separated by "off" times, and a snubbing circuit operatively connected to said transformer to dissipate overshoots, the improvement which comprises said snubbing circuit comprising first and second sections each comprising a power dissipating means, each of said first and second sections being active for a different polarity of said excitation voltage and each rendering its power dissipating means ineffective during both the "on" and "off" times of the active polarity of the other section and the "on" time of the active polarity corresponding to itself and rendering its power dissipating means effective during the "off" time of the polarity corresponding to itself.

4,802,079

PWM CONTROL APPARATUS FOR INTERPHASE REACTOR MULTIPLEX INVERTER

Shoji Mizoguchi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

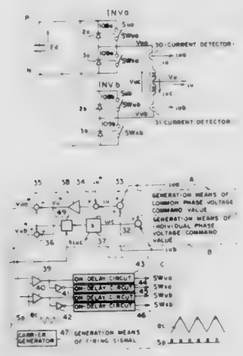
Filed Mar. 2, 1988, Ser. No. 162,900
Claims priority, application Japan, May 15, 1987, 62-119672
Int. Cl.[4] H02M *1/08*
U.S. Cl. 363—71 5 Claims

1. A PWM control apparatus for an interphase reactor multiplex inverter having output terminals of its two inverters con-

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nected with each other through interphase reactors so as to provide parallel multiplex three phase output from midpoints of the interphase reactors, said PWM control apparatus comprising:

(a) generation means of common phase voltage command value for generating phase voltage command value common to both said inverters based on the sum of output currents of said inverters in the same phase;



(b) generation means of individual phase voltage command value for generating phase voltage command values for individual inverters based on the difference between output currents of said inverters in the same phase; and

(c) firing signal generation means for generating firing signals for said individual inverters based on said individual phase voltage command values and a triangular carrier.

4,802,080

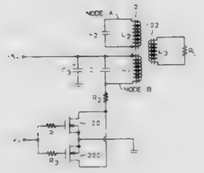
POWER TRANSFER CIRCUIT INCLUDING A SYMPATHETIC RESONATOR

Bart J. Bossi, Indianapolis, and Mark A. Eberhart, Shelbyville, both of Ind., assignors to American Telephone and Telegraph Company, AT&T Information Systems, Holmdel, N.J.

Filed Mar. 18, 1988, Ser. No. 169,901

Int. Cl.[4] H02P *13/00*

U.S. Cl. 363—75 **12 Claims**



1. In a power transfer system for coupling a waveform of predetermined frequency from a primary side of a transformer to a secondary side thereof, said primary and secondary sides being separated by an air-gap or dielectric material, the primary side comprising a first winding that is parallel connected to a first capacitor and coupled to a primary magnetic core, said first winding being connected in series with a switching means between a pair of voltage sources characterized by:

a resonator circuit comprising a second winding that is parallel connected to a second capacitor and shares the primary magnetic core with the first winding, the resonator circuit being magnetically coupled to, and exclusively driven by, signal energy generated by said first winding, the resonator circuit being adapted to parallel resonate at the predetermined frequency.

4,802,081

ELONGATED PHONOGRAPH PICK-UP HEAD WITH SNAP-TOGETHER CONSTRUCTION

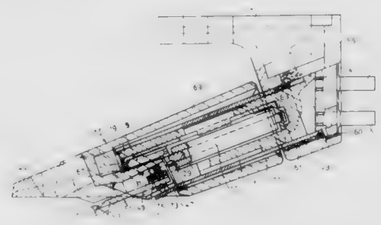
Willi Otzipka; Horst Koltermann; Michael Leipnitz, and Günter Zeuge, all of Berlin, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,120

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228300

Int. Cl.[4] G11B *3/00, 3/44*

U.S. Cl. 369—136 **11 Claims**



1. A pick-up head comprising:

a stylus unit including a stylus support and a stylus carried at one end of the support,

a magnetic system for directing and sensing magnetic fields for cooperation with the stylus unit, comprising two coils and pole pieces, each arranged for sensing a respective one of two orthogonal directions of stylus oscillation, and a third pole piece common to said magnetic fields sensed for said two orthogonal directions of oscillation, and

means for mounting said system and stylus unit,

characterized in that said means for mounting comprises an elongate one-piece nonmagnetic plastic mount having two ends, and electrical connector pins provided at one of said two ends, said coils being elongated in the direction of the elongation of said mount and carried side by side within said mount,

said system comprises two straight rods made of magnetic material, each of said rods having a rear end and a transducing gap end, and each rod having a respective one of said coils disposed around the rod with the ends of the rod protruding from the coil; an elongated flux return member having first and second bent limbs, said first limb being in magnetic contact with the rear ends of said straight rods; and an elongated tubular screening shell made of magnetic material and slid onto and around said mount, and

said stylus unit includes a tubular holder sleeve which is removably slid onto said screening shell at an end opposite said one end of said mount, said screening shell having a shell surface disposed opposite the transducing gap ends of the straight rods, said shell surface constituting the third pole piece, said second bent limb of said flux return member being in magnetic contact with the screening shell.

4,802,082

SUPERVISORY SYSTEM FOR ELEVATORS

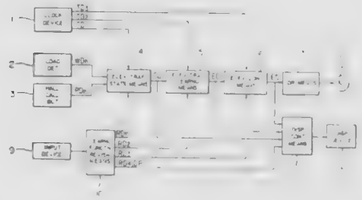
Kenichi Uetani, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 619,913, Jun. 12, 1984, abandoned. This application May 26, 1987, Ser. No. 53,539

Claims priority, application Japan, Jun. 17, 1983, 58-108968

Int. Cl.[4] B66B *1/18*

U.S. Cl. 364—138 **11 Claims**



1. A supervisory system for at least one elevator comprising:

statistical means for generating statistical data of traffic conditions of the elevator over a predetermined period according to at least one threshold value;

means for executing a learning function program for predicting traffic values on the basis of at least one adjustment value and the statistical data from the statistical means and for controlling the elevator in accordance with the predicted traffic value;

information input means for supplying revision information; and

revision means for revising the threshold value and the adjustment value in accordance with the revision information supplied by the information input means, thereby revising the generation of statistical data and the prediction of traffic values.

4,802,083

IMAGE READER GRAPHIC INPUT METHOD

Shinichi Isobe, and Takashi Yamauchi, both of Tokyo, Japan, assignors to Fanuc Ltd, Yamanashi, Japan

PCT No. PCT/JP87/00098, § 371 Date Oct. 8, 1987, § 102(e) Date Oct. 8, 1987, PCT Pub. No. WO87/05131, PCT Pub. Date Aug. 27, 1987

PCT Filed Feb. 17, 1987, Ser. No. 117,196

Claims priority, application Japan, Feb. 17, 1986, 61-032456

Int. Cl.[4] G05B *19/405, 19/403*

U.S. Cl. 364—191 **3 Claims**

1. A graphic input method for inputting graphics from an image reader and displaying graphics on a display screen of a CRT, comprising the steps of:

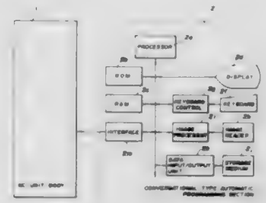
preparing a graphic comprising graphic elements, each element having a nature;

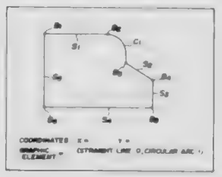
providing marks identifying starting or end points of the graphic elements;

reading from the image reader the prepared graphic;

displaying the read graphic on the CRT;

displaying, on the display screen, inquiries calling for coordinates of positions of the marks and the nature of each graphic element; and





inputting predetermined data in response to said inquiries.

4,802,084

ADDRESS TRANSLATOR

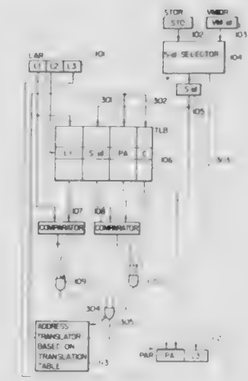
Hiroshi Ikegaya, Yokohama; Hidenori Umeno, Kanagawa; Takashige Kubo, Hachioji; Yoshio Ukai, Yokohama, and Nobuyoshi Sugama, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1986, Ser. No. 827,545

Claims priority, application Japan, Mar. 11, 1985, 60-46549

Int. Cl.[4] G06F *12/06*

U.S. Cl. 364—200 **3 Claims**



1. An address translator for translating a virtual address into a corresponding physical address for use in a virtual machine system having a control program for simultaneously operating plural virtual machines with respective operating systems on one real machine, each of said operating systems holding a first identifier for identifying a virtual machine on which the operating system runs, comprising:

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a segment table origin stack for storing therein identification entries each containing a portion of a segment table origin address for a virtual address, a first identifier and a second identifier representative of a combination of said segment table origin address for a virtual address and said first identifier;

a first comparator for comparing a first identifier for a virtual machine on which a current operation is running with each of said first identifiers stored in said segment table origin stack;

a second comparator for comparing a portion of a segment table origin address for a virtual address specified by said running program with each of the portions of segment table origin addresses for virtual address stored in said segment table origin stack;

an AND gate coupled to receive the outputs of said first and second comparators;

an address translation buffer for storing therein address translation entries each containing a portion of a virtual address, a physical address corresponding to the virtual address, a second identifier and a flag indicative of whether or not said virtual address belongs to a common segment in a virtual machine;

a third comparator for comparing a second identifier read out, in response to the output of said AND gate, from said segment table origin stack in association with the portion of a segment table origin address for said virtual address specified by said running program with each of said second identifiers stored in said address translation buffer; and

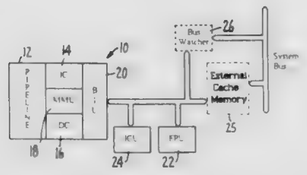
selection means coupled to the outputs of said first and third comparators and responsive to said flag in said address translation buffer for delivering the output of said first comparator when said flag indicates that said virtual address specified by said running program belongs to a common segment and for delivering the output of said third comparator when said flag indicates that said virtual address specified by said running program does not belong to a common segment, whereby that one of said physical addresses stored in said address translation buffer which corresponds to the virtual address specified by said running program is delivered in response to the output of said selection means.

4,802,085

APPARATUS AND METHOD FOR DETECTING AND HANDLING MEMORY-MAPPED I/O BY A PIPELINED MICROPROCESSOR

Simon J. Levy, Kfar Saba, and Donald B. Alpert, Herzlia, both of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 22, 1987, Ser. No. 6,012
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—200 **5 Claims**



1. A method of detecting and handling read references to a peripheral device by a data processing system of the type that implements pipelined instruction processing and wherein the peripheral device exhibits either "destructive reading" or "side-effects-of writing", the method comprising:

activating a first signal if the read references has occurred either in advance of executing an instruction or while a write is pending for a previous instruction;

activating a second signal if the referenced peripheral device exhibits either "destructive reading" "side-effects-of writing"; and

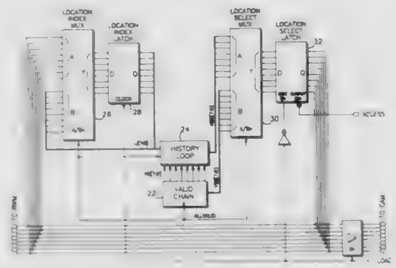
ignoring the read reference if both the first signal and the second signal are activated.

4,802,086

FINUFO CACHE REPLACEMENT METHOD AND APPARATUS

James G. Gay, Pflugerville; Jesse R. Wilson, Austin; William C. Moyer, Dripping Springs, and Terry V. Hulett, San Antonio, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 9, 1987, Ser. No. 2,335
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **14 Claims**



1. In a cache having an ordered plurality of locations into a selected one of which information is loaded in response to a select signal applied thereto, a location selector comprising:

an ordered plurality of valid bit latches, each associated with a respective one of the locations in the cache, for storing valid bits indicative of the validity of the information in the associated location in the cache;

valid select logic, coupled to the valid bit latches, for determining the highest one, if any, of the valid bit latches having a valid bit indicating the invalidity of the information in the associated location in the cache, and providing a first location selection signal corresponding to that location in the cache;

a location index latch, responsive to the select signal, for providing an index signal indicative of an indexed location in the cache relative to the location indicated by the select signal;

an ordered plurality of history bit latches, each associated with a respective one of the locations in the cache, for storing history bits indicative of the replacement status of the information in the associated location in the cache;

replacement select logic, coupled to the history bit latches, for determining the highest one, if any, of the history bit latches having a history bit indicating that the information in the associated location in the cache is replaceable, and providing a second location selection signal corresponding to that location in the cache; and

location select logic, coupled to the valid bit latches, for applying the select signal to the location in the cache selected by the first location selection signal if at least one of the valid bits indicate that the information in the associated location in the cache is invalid, and applying the select signal to the location in the cache selected by the second location selection signal if all of the valid bits indicate that the information in the associated locations in the cache are valid;

characterized in that the location selector includes:

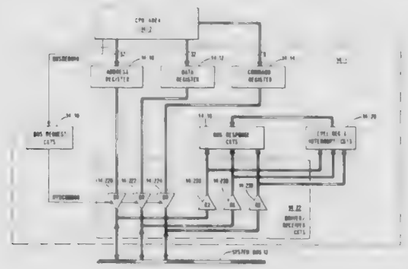
history bit control logic, coupled to the history bit latches and to the location index latch, for storing into each of the history bit latches associated with all locations in the cache lower than the indexed location but higher than the selected location, an indication that the information in the associated location in the cache is replaceable.

4,802,087

MULTIPROCESSOR LEVEL CHANGE SYNCHRONIZATION APPARATUS

James W. Keeley, Nashua, N.H., and George J. Barlow, Tewksbury, Mass., assignors to Honeywell Bull Inc., Waltham, Mass.

Filed Jun. 27, 1986, Ser. No. 879,858
Int. Cl.[4] G06F *13/14*
U.S. Cl. 364—200 **12 Claims**



1. A data processing system comprising:

a plurality of interrupting units and a plurality of processing units coupled in common to a system bus for asynchronously transferring interrupt requests between said plurality of interrupting units and each of said plurality of processing units during different bus cycles of operation, each processing unit sending a notification signal of a priority level change only during a granted bus cycle of operation, thereby eliminating interference from asynchronously occurring events, each of said plurality of processing units including:

command generating means coupled to said bus for applying commands to said bus during bus cycles of operation granted to said processing unit;

interrupt processing apparatus coupled to said bus for receiving said interrupt requests including interrupt level signals specifying any one of a number of interrupt levels; and

response means coupled to said interrupt processing apparatus, said response means for generating signals on said bus in response to requests from said interrupting units;

said response means including decode means coupled to said bus, said decode means being operative in response to a command from any one of said processing units applied to said bus during one of said bus cycles of operation specifying a change in interrupt level to generate and output signals; and

said interrupt processing apparatus including:

means for storing a current interrupt level, said means for storing being coupled to said bus and including comparison means for comparing a currently processed interrupt level with new interrupt level signals from an interrupting unit; and

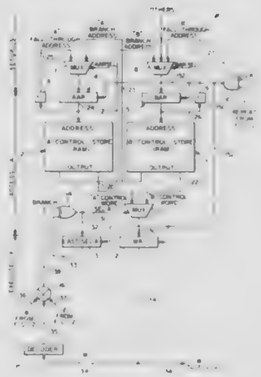
said means for storing being conditioned by said output signal to load said new interrupt level signals from said bus, whereby a change of the respective processing unit's interrupt level is accomplished without interference from other processing units coupled to said system bus.

4,802,088

METHOD AND APPARATUS FOR PERFORMING A PSEUDO BRANCH IN A MICROWORD CONTROLLED COMPUTER SYSTEM

Stephen J. Rawlinson, Sunnyvale; Quang H. Nguyen, San Jose, and Stephen M. Simmonds, Mountain View, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Aug. 11, 1986, Ser. No. 895,274
Int. Cl.[4] G06F *9/22*
U.S. Cl. 364—200 **14 Claims**



1. A microword controlled computer system, for performing a pseudo branch comprising:

a first control store;

a second control store;

a first address register for addressing said first control store;

a second address register for addressing said second control store;

a microword register;

a multiplexer responsive to a first control signal (SELA) having a first and a second value for selectively transferring a microword from said first or said second control store to said microword register in successive cycles, respectively;

a register for providing a second control signal (LAST-SELA) corresponding to the value of said first control signal SELA in a previous cycle;

an exclusive OR gate responsive to said second control signal (LAST-SELA) and a third control signal (BRANCH) for providing said first control signal (SELA);

means in each of said first and second address registers, said microword register and said second control signal providing register which is responsive to a clock signal for latching data into said registers;

means responsive to an algorithm being executed in said computer system that requires that a current microword being executed in a cycle be re-executed in a following cycle for generating a fourth control signal (REPEAT); and

means responsive to said fourth control signal (REPEAT) and said clock signal for inhibiting said clock signal and thereby preventing a change in said registers until said current microword has been re-executed.

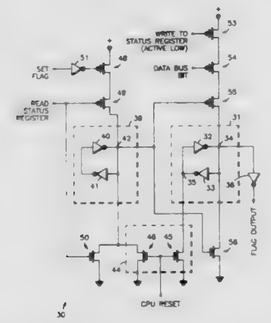
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4,802,089

STATUS FLAG HANDLING IN A DIGITAL DATA PROCESSING SYSTEM

Craig D. Shaw, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1986, Ser. No. 890,269
Int. Cl.[4] G06F *11/30;* **H03K** *17/56*
U.S. Cl. 364—200 **15 Claims**



1. In a digital data processing system, a method of operating an apparatus comprising first and second storage elements, each having only first and second stable states, comprising the steps of:

uninterruptibly forcing each of the storage elements into one of its stable states in response to a set flag control signal;

uninterruptibly altering the state of the second storage element in response to a read flag control signal;

uninterruptibly altering the state of the first storage element in response to a clear flag control signal if and only if the state of the second storage element has previously been altered in response to the read flag control signal; and

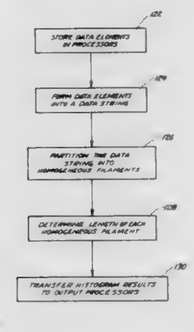
providing a status flag output determined solely by the state of said first storage element.

4,802,090

HISTOGRAMMING OF PIXEL VALUES ON A DISTRIBUTED PROCESSING SYSTEM

Robert M. Matthеyses, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 24, 1987, Ser. No. 65,997
Int. Cl.[4] G06F *1/00, 3/00, 7/00, 9/00*
U.S. Cl. 364—200 **26 Claims**



1. A method for determining the number of times each of a plurality of different element values occurs in a group of data elements, each said data element including one of said element values, said method comprising the steps of:

(a) forming said group of data elements into a data string in which each said data element includes a first pointer identifying an immediately preceding element closer to a true head element in said data string;

(b) partitioning said data string into a plurality of homogeneous filaments each composed only of said data elements having the same element value, so that there is only one of said element values corresponding to each said homogeneous filament; and

(c) determining the number of said data elements composing each said homogeneous filament, the number of said data elements so determined for each said homogeneous filament being the number of times the element value corresponding to that homogeneous filament occurs.

4,802,091

METHOD FOR IMPROVING THE EFFICIENCY OF ARITHMETIC CODE GENERATION IN AN OPTIMIZING COMPILER USING THE TECHNIQUE OF REASSOCIATION

John Cocke, and Peter W. Markstein, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1986, Ser. No. 926,316
Int. Cl.[4] G06F *9/44*
U.S. Cl. 364—300 **5 Claims**



1. In an optimizing compiler, a method for use in a code optimization phase of the compiler's operation to optimize code in a program presented for compilation, said method utilizing reassociation principles to determine a preferred order of combining terms in a sum in order to produce loop invariant subcomputations and to promote common sub-expressions among several essential computations which method comprises the steps of:

1. performing control flow analysis on said code to find and indentify strongly connected regions in said program;
2. identifying and marking USE and DEF functions in said code;
3. locating and marking region constants and induction variables in said code;
4. locating and marking all essential computations in said code;
5. accessing and rewriting every essential computation as a sum of products where necessary;
6. utilizing the previously identified and marked USE and DEF functions to substitute for each operand R in an essential computation, its definition, if there is a unique computation of R in the strongly connected region comprising an addition, subtraction, multiplication or copying operation;
7. altering address displacements to comply with addressing mode constraints;
8. determining from the current form of each essential computation an optimum method for computing same and rewriting code to use this preferred method of computation;

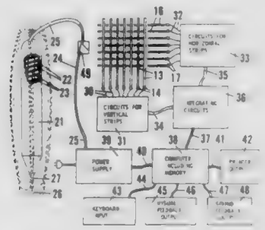
9. replacing old code with newly generated code to update new induction variables;
10. performing linear test replacement, and
11. finally performing dead code elimination and, global constant propagation operations.

4,802,092

ELECTRIC PROBE USED TO ACTIVATE CORRECT AND INCORRECT RESPONSE AREAS IN AN INSTRUCTIONAL APPARATUS

J. Richard Harte, 10 W. Concord, Kansas City, Mo. 64112

Filed Jun. 20, 1985, Ser. No. 746,851
Int. Cl.[4] G09B *7/06;* **G06F** *9/02*
U.S. Cl. 364—411 **8 Claims**



1. An instructional and testing apparatus comprising:

an instructional or testing sheet having answer response areas thereon,

first and second, generally planar sets of elongated conductive elements underlying said sheet, electrically insulated from each other and arranged in a crossing pattern to present points of intersection as viewed orthogonally,

holding means for receiving said sheet and aligning the same relative to said pattern with said response areas in register with corresponding points of intersection therebeneath,

a hand-held probe having a tip and means for producing a magnetic field projecting from said tip,

a programmable digital computer,

circuit means operably interconnecting said first and second sets of elements and said computer for identifying individual points of intersection energized by the user positioning said probe tip at selected response areas and for inputting the point identification information to the computer, and

said computer being programmed to respond to the input point identification information and determine the correctness or incorrectness of the user's answers.

4,802,093

X-RAY IMAGE-PROCESSING APPARATUS UTILIZING GRAYSCALE TRANSFORMATION

Takehiro Ema, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 21, 1986, Ser. No. 933,214
Claims priority, application Japan, Nov. 22, 1985, 60-261284
Int. Cl.[4] A61B *6/00;* **G01N** *23/04;* **G06F** *15/42*
U.S. Cl. 364—413.23 **14 Claims**

1. An X-ray image-processing apparatus comprising:

X-ray radiation means for irradiating X-rays toward an object under examination, to produce X-ray images including a mask image having a determined grayscale and a contrast image having a predetermined grayscale, said mask image being produced before penetration of a contrast medium into a region of interest (ROI) of the object and said contrast image being produced after penetration of the contrast medium into the ROI; and

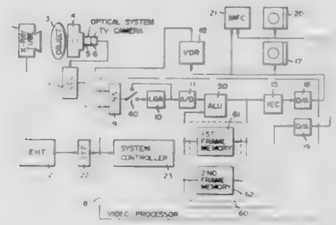
image processing means including:

means for transforming the grayscale of at least one of said images to reduce a difference in the grayscale between said mask image and said contrast image; and

subtraction means for performing subtraction between said mask image and said contrast image and producing a subtraction image.

13. An X-ray image-processing apparatus comprising:

X-ray radiation means for irradiating X-rays toward an object under examination to produce two kinds of X-ray images including a mask image having a determined grayscale and a contrast image having a predetermined grayscale, said mask image being produced before penetration of a contrast medium into a region of interest (ROI) of the



object and said contrast image being produced after penetration of the contrast medium into the ROI; and

image processing means including:

means for transforming the grayscale of one of said images so that said mask image has the grayscale higher than that of said contrast image and a difference in the grayscale between said image and said contrast image is reduced; and

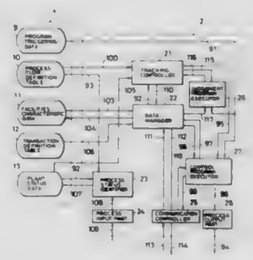
subtraction means for performing subtraction between said mask image and said contrast image, the grayscale of one of which is transformed by said transforming means, and producing a subtraction image.

4,802,094

PROCESS MONITORING APPARATUS FOR PROCESS MANAGEMENT IN PRODUCTION AND ASSEMBLY LINES

Masahiro Nakamura, Ibaragi; Tomohiro Murata, Ebina; Norihisa Komoda, Kawasaki; Kazuo Kera, Hitachi; Kenji Tsuchitani, Katsuta, and Kuniaki Matsumoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 27, 1986, Ser. No. 879,568
Claims priority, application Japan, Jul. 10, 1985, 60-150197; Jul. 22, 1985, 60-161466
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—468 **7 Claims**



1. A process monitoring apparatus adapted to track movement of a plurality of works existing in a plurality of facilities

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in a process based on a condition of work movement detection signal, comprising:

first memory means for holding facility characteristic data for each one of said plurality of facilities and which together with the works constitute a production line in said process, said facility characteristic data defining a manner for storing the works in each facility;

second memory means for holding tracking conditions representing a detection of movement flow of works between facilities;

third, fourth and fifth memory means, said third memory means holding management data for managing update operation of process status data in said fifth memory means, said fourth memory means holding program triggering data for triggering a program which defines contents of an operation represented by said management data concerning said works and said fifth memory means holding process status data including said movement detection signal which indicates the movement of said works in said production line and the number of said works being stored in each facility;

means for extracting management data in said third memory means and means for determining which of said tracking conditions have been completed in response to the contents retrieved from said second and fifth memory means; and

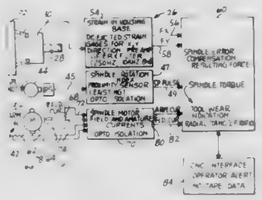
processing means for executing a process corresponding to the contents of said first, second and fourth memory means with respect to the extracted management data.

4,802,095

METHOD FOR INDICATING END MILL WEAR

Jan Jeppsson, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 24, 1986, Ser. No. 946,423
Int. Cl.[4] G05B *19/48*
U.S. Cl. 364—474.17 **4 Claims**



1. A method of determining wear of a rotating end mill having a generally circular cross-section defined by a radius, for use in connection with a milling machine having a spindle motor that rotatingly drives said end mill during a milling operation, the method comprising the following steps:

(a) providing strain gauges operable to sense the value of a resultant side-loading force (FRES) acting on said end mill during said milling operation;

(b) using said strain gauges to continually sense said resultant side-loading force (FRES), wherein said resultant force (FRES) has a radial force component (FR) and a tangential force component (FT) whose magnitudes are mathematically related to said resultant force (FRES) by the following equation:

$$FRES = \sqrt{(FR)^2 + (FT)^2}$$

(c) determining the value of the torque on said end mill by measuring the electrical power required to drive said spindle motor;

(d) calculating the value of said tangential force component (FT) from the value of said torque determined in step (c), by dividing said torque value by the radius of said end mill;

(e) calculating the value of said radial force component (FR) from said sensed value of said resultant force (FRES) and said calculated value of said tangential force component (FT) by using the mathematical relationship set forth in step (b); followed by

(f) calculating the ratio of said radial force component (FR) to said tangential force component (FT); followed by

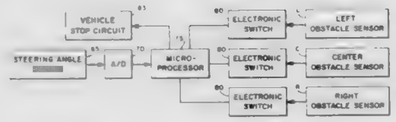
(g) replacing said end mill when ratio calculated in step (f) exceeds a certain value.

4,802,096

CONTROLLED DIRECTION NON-CONTACT DETECTION SYSTEM FOR AUTOMATIC GUIDED VEHICLES

Thomas E. Hainsworth, and William L. King, Jr., both of Holland, Mich., assignors to Bell & Howell Company, Skokie, Ill.

Filed May 14, 1987, Ser. No. 49,584
Int. Cl.[4] G08G *9/02*
U.S. Cl. 364—461 **30 Claims**



1. A non-contact collision avoidance system for a vehicle for preventing collisions between the vehicle and obstacles in the path of the vehicle comprising:

means for providing a signal representative of a predetermined range of steering of the vehicle;

means having a predetermined field of view adapted to be mounted on the vehicle for sensing obstacles in the path of the vehicle;

means for selectively altering the field of view of the obstacle sensor means as a function of the steering angle of the vehicle; and

means for automatically stopping the vehicle upon detection of an obstacle in the path of the vehicle.

4,802,097

CONTROL SYSTEMS OF INJECTION MOLDING MACHINES

Hideo Tanaka; Saburo Bannai; Kiyoshi Sasaki, and Tsuginobu Totani, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1987, Ser. No. 32,787
Claims priority, application Japan, Apr. 1, 1986, 61-075068; Jun. 17, 1986, 61-141089
Int. Cl.[4] B29C *45/00*; G06F *15/00*
U.S. Cl. 364—476 **6 Claims**

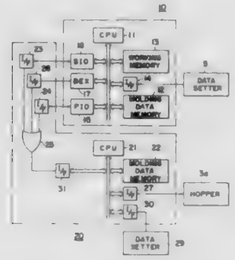
1. A control system of an injection molding machine with a peripheral apparatus, comprising:

control units respectively provided for said molding machine and said peripheral apparatus and each of said control units including means for exchanging signals between said control units;

each control unit having memory means for storing set molding data expressed by numbers or identifications;

means for transmitting from the control unit of said molding machine to the control unit of said peripheral apparatus a set data number or an identification; and

means for reading out from said memory means of said injection molding machine and of said peripheral apparatus set molding data from said memory means respectively of said control units as molding data whose numbers or identifications coincide with each other.

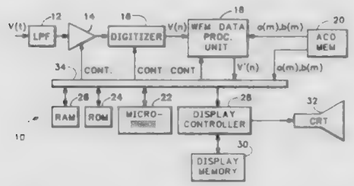


4,802,098

DIGITAL BANDPASS OSCILLOSCOPE

Victor L. Hansen, Beaverton, and Shiv K. Balakrishnan, Aloha, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 3, 1987, Ser. No. 34,312
Int. Cl.[4] G06F *15/31*; G01R *23/16*
U.S. Cl. 364—487 **35 Claims**



1. A digital oscilloscope for displaying a representation of frequency components of an analog signal during a time window, the time window having an adjustable duration, the oscilloscope comprising:

digitizing means responsive to said analog signal for generating a first data sequence representative of said analog signal during said time window;

filter means responsive to said first data sequence for bandpass filtering and first data sequence to produce a second data sequence; and

display means for displaying said representation according to said second data sequence.

4,802,099

PHYSICAL PARAMETER BALANCING OF CIRCUIT ISLANDS IN INTEGRATED CIRCUIT WAFERS

Joseph C. Logue, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

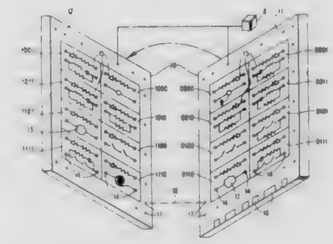
Filed Jan. 3, 1986, Ser. No. 816,093
Int. Cl.[4] G06F *15/60*
U.S. Cl. 364—491 **26 Claims**

24. A method for operating an integrated circuit for optimum parameter invariance comprising the steps of:

dividing the integrated circuit into exercise islands and critical islands for fault bypass and physical parameter balancing;

assigning operational duty to critical exercise islands for purposes of fault bypass;

operating the integrated circuit, and during operation reporting physical parameter values of critical exercise islands; and



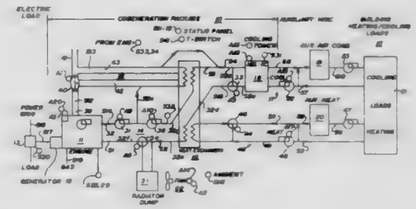
altering circuit exercise within individual critical exercise islands as a function of reported values of physical parameters.

4,802,100

ADVANCED COGENERATION CONTROL SYSTEM

Robert K. Aanes, St. Paul; Donald C. Turck, Minneapolis, and Anoop K. Mathur, Shoreview, all of Minn., assignors to Gas Research Institute, Chicago, Ill.

Filed Aug. 18, 1986, Ser. No. 897,645
Int. Cl.[4] G05F *15/46*; H02P *9/04*
U.S. Cl. 364—494 **36 Claims**



1. A control sub-system for a cogeneration system including a liquid-cooled internal combustion engine, electrical generator means coupled to the engine and driven thereby for generating electrical power, power grid switch means connecting the electrical power output of said generator means with a power grid and an electrical load, a plurality of independent thermal loads, and heat exchanger means coupled to the internal combustion engine for extracting therefrom heat energy generated as a result of operation of the engine and applying same to the independent thermal loads for supplying heating and cooling demands of the installation, a programmed computer for controlling the operation of at least the engine, the independent thermal loads and the power switch means, said control sub-system comprising: a plurality of sensors each providing a sensor signal indicative of a different parameter of the cogeneration system, signal processing means coupled to said plurality of sensors, said signal processing means responding to said sensor signals to at least monitor the operation of functional devices of the cogeneration system, operator interface means coupled to said signal processing means, and tailoring means for enabling modification of the operation of said signal processing means in monitoring said functional devices and operating characteristics of the cogeneration system through entry of information via said operator interface means.

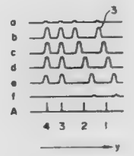
VOL 1098 ISS 5 JAN 31 1989 UMI

4,802,101

SIGNAL PROCESSING METHOD FOR DETERMINING BASE SEQUENCE OF NUCLEIC ACID

Makoto Hara, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Aug. 19, 1986, Ser. No. 897,999
Claims priority, application Japan, Aug. 19, 1985, 60-181432
Int. Cl.[4] G01N *33/58*
U.S. Cl. 364—496 **8 Claims**



1. A signal processing method for determining base sequence of nucleic acids by subjecting digital signals to signal processing, said digital signals corresponding to an autoradiograph of a resolved pattern which is formed by resolving a mixture of base-specific DNA fragments or base-specific RNA fragments labeled with a radioactive element in one-dimensional direction on a support medium, bands of the fragments desirably extending perpendicular to the one-dimensional direction of a row of said bands, which comprises steps of:

(1) preparing at least two one-dimensional waveforms for each band where each waveform is substantially parallel in direction to said row, with position along the resolving direction as abscissa and signal level as ordinate;

(2) detecting positions at which signal level is maximum on each waveform;

(3) comparing the positions having maximum signal level detected on the plural waveforms for each band to determine a position of said band ; and

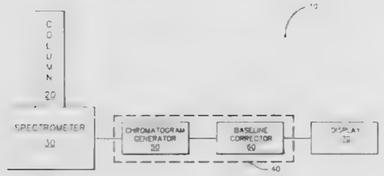
(4) utilizing said position of said band to determine said base sequence of said nucleic acids.

4,802,102

BASELINE CORRECTION FOR CHROMATOGRAPHY

Richard F. Lacey, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 15, 1987, Ser. No. 73,609
Int. Cl.[4] G06F *15/42*; G01N *30/02*
U.S. Cl. 364—497 **10 Claims**



1. A system comprising:

spectra means for generating a series of spectra, each spectrum in said series being constituted by plural data values taken at different wavelengths and a common respective time;

orthonormal error space construction means for constructing an orthonormal spectral space from said series, said spectral space representing systematic errors in said series; and

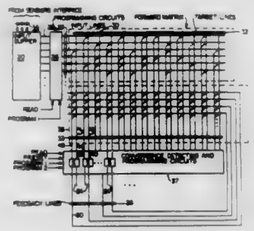
orthonormal subtraction means for subtracting from each spectrum in said series a projection of the same spectrum in said spectral space.

4,802,103

BRAIN LEARNING AND RECOGNITION EMULATION CIRCUITRY AND METHOD OF RECOGNIZING EVENTS

Federico Faggin, Los Altos Hills, and Gary S. Lynch, Irvine, both of Calif., assignors to Synaptics, Inc., San Jose, Calif.

Filed Jun. 3, 1986, Ser. No. 870,241
Int. Cl.[4] G06F *15/18, 15/46*
U.S. Cl. 364—513 **38 Claims**



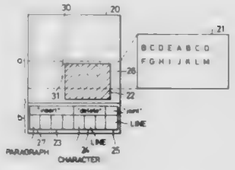
1. An apparatus for associating an input event with a previously learned event comprising an association matrix having a sparse forward matrix characterized by a plurality of input lines randomly coupled by programmable contacts to a plurality of target lines and further comprising a plurality of programming lines, where each programmable contact is comprised of a select transistor coupled to said input line and to said target line and a floating gate MOS contact transistor coupled to said select transistor and to said programming line, and further comprising means coupled to each of said input lines, programming lines and target lines to place predetermined voltages on these lines during a learning mode to cause the charge stored on the floating gates of selected contact transistors to be altered in accordance with a forward matrix learning rule and for placing predetermined voltages on said input, target and programming lines during a recognition mode for allowing selected select and contact transistors to drain amounts of charge out of selected target lines in accordance with the amount of charge stored on the floating gates of said selected contact transistors.

4,802,104

DUAL SCREEN DOCUMENT PROCESSING SYSTEM

Masao Ogiso, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1986, Ser. No. 863,834
Claims priority, application Japan, May 31, 1985, 60-116721
Int. Cl.[4] G06F *15/66*
U.S. Cl. 364—518 **10 Claims**



1. A document processing system comprising:

display means including a first display for displaying document information and a second display for displaying layout information representative of the form of output of said document information displayed on said first display and for displaying a plurality of commands for editing said layout information;

storage means for storing said document information;

indication means for selecting one of said plurality of commands displayed by said second display and for indicating that said layout information displayed by said second display has been edited in accordance with said selected command; and

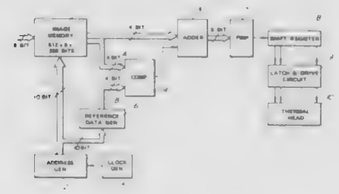
edition means for editing said layout information displayed by said second display in accordance with the one of said plurality of commands selected by said indication means.

4,802,105

PULSE WIDTH MODULATOR FOR A PRINTING APPARATUS

Kiyosuke Suzuki, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 13, 1988, Ser. No. 193,563
Claims priority, application Japan, May 19, 1987, 62-122118
Int. Cl.[4] G01D *15/00*
U.S. Cl. 364—519 **16 Claims**



1. Apparatus for generating a drive signal for a printer head for printing an image in a plurality of lines, said apparatus comprising:

image memory means;

address generating means for generating address data supplied to said image memory means for sequentially reading out image data from said image memory means as upper bit data and lower bit data in parallel;

reference data generating means connected to said address generating means for cyclically generating reference data in association with said address data;

comparing means connected to said image memory means and said reference data generating means for making a comparison of said reference data with said lower bit data and producing a comparator output signal on the basis of said comparison;

adding means connected to said image memory means and said comparing means for adding said upper bit data and said comparator output signal to produce a sum signal; and

modulating means connected to said adding means for generating head drive signals in response to said sum signal.

4,802,106

SWEEP MARKER DISPLAY APPARATUS FOR POLAR COORDINATE DISPLAY

Goro Saito, Kanagawa, and Hiroshi Itaya, Isehara, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

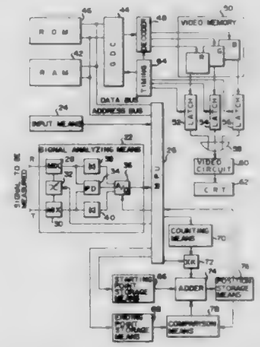
Filed Apr. 16, 1986, Ser. No. 852,413
Claims priority, application Japan, Apr. 22, 1985, 60-58948[U]
Int. Cl.[4] G01R *13/30*; H03J *7/00*
U.S. Cl. 364—521 **12 Claims**

1. A signal analyzer apparatus for displaying analysis results on a polar coordinate system, comprising:

signal measuring means for measuring input signals to be measured, at measuring frequencies between measurement start and end frequencies, and for sequentially determining and outputting measurement vector data which includes a magnitude component and an angle component in polar coordinates, at each of said measuring frequencies;

display means for receiving said measurement vector data output from said signal measuring means, and for sequentially displaying the measurement vector data on a polar coordinate system each time said display means receives said measurement vector data; and

sweep marker display means for displaying on said display



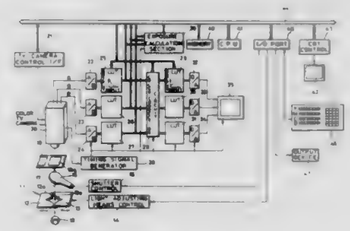
means a sweep marker whose shape changes as the signal measuring means sequences between said measurement start and end frequencies, said sweep marker representing, by its shape, the current measuring frequency used by the signal measuring means to determine the measurement vector data displayed on said display means.

4,802,107

OFFSET DRIFT CORRECTION METHOD IN COLOR FILM INSPECTION APPARATUS

Shohei Yamamoto, and Yukito Kato, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 1, 1987, Ser. No. 91,929
Claims priority, application Japan, Sep. 1, 1986, 61-205703
Int. Cl.[4] G02B *1/00*; G03F *3/10*; G01N *21/85*; G03B *7/091*
U.S. Cl. 364—525 **7 Claims**



1. An offset drift correction method for use in a color film inspection apparatus, which apparatus displays video signals as a color image on a color monitor for visual inspection, said video signals being provided as respective input signals for red, green, and blue, said input signals being obtained by illuminating a color original with regulated light, detecting the color image, converting the detected color image into a digital form, transforming the digital color image into density signals using look-up tables provided for said respective colors, and converting the density signals into analog signals after a color and a gradient correction so as to be reproduced as said color image on said color monitor, said offset drift correction method comprising the steps of:

measuring the changes of said density signals with respect to various amounts of light at intervals of a predetermined

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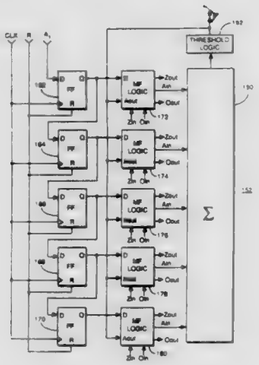
amount of light by using a standardized logarithmic-transforming curve for green in which along the X-axis is an input signal and along the Y-axis is a density signal;
providing table data by shifting said standardized logarithmic-transforming curve for green along the X-axis in such a way that said changes become equal to one another throughout the whole range of said various amounts of light;
writing said table data in said look-up table for green;
measuring input signals for red and blue at intervals of said predetermined amount of light;
substituting said measured input signals for red and blue by said table data of said shifted green standardized logarithmic-transforming curve at corresponding amounts of light; and
writing said substitutions in said look-up tables for red and blue, respectively.

4,802,108

CIRCUIT FOR PROVIDING A SELECT RANK-ORDER NUMBER FROM A PLURALITY OF NUMBERS

Carol Bagdis, Natick; Glenn D. House, Bellingham, and Wanda T. Reiss, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 15, 1987, Ser. No. 61,717
Int. Cl.[4] G06F 7/02
U.S. Cl. 364—715.01 **9 Claims**



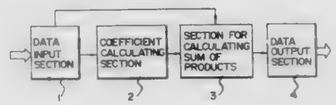
1. A circuit for providing a select rank order number from a plurality of sample value numbers each having a binary format comprising a select number of bits arranged in ordered sequence from the most significant bit to the least significant bit, said circuit comprising:
shift register means for presenting all the binary bits of all the sample value number in selected groups, each of said groups containing an ordered sequence of all the binary bits of the same significance from all the sample value numbers;
logic means responsive to a first select input control signal for transmitting all the binary bits presented from said shift register means for each of said select groups to an output, said logic means responding to a second select input control signal for providing other select binary bits at said output in place of corresponding binary bits from said select groups;
summing means for receiving the binary bits from the output of said logic means and summing all the binary bits having the same select binary digit in each of said groups including said other select binary bits provided by said logic means in place of binary bits from said select groups to provide an output signal indicative of said summation for each of said groups; and
threshold means responsive to the output signal provided by said summation circuit for each of said groups for providing the binary bits of the rank order number as a function of whether the output signal from said summation circuit for each of said group exceeds a predetermined threshold value, said binary bits output by the threshold means also operating as control signals to said logic means.

4,802,109

DATA-PROCESSING SYSTEM FOR OBTAINING EXPANDED AND INTERPOLATED DATA

Yoshio Machida, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1987, Ser. No. 26,878
Claims priority, application Japan, Mar. 18, 1986, 61-59869
Int. Cl.[4] G06F 7/38
U.S. Cl. 364—723 **8 Claims**



1. A data-processing system for obtaining processed data, comprised of discrete data having a density different from raw data comprised of discrete data, through the interpolation of said raw data, which comprises convolution interpolation means including:
(1) coefficient calculating means for calculating weighting coefficients of respective data points of the raw data through a substitution, into a respective function, of the displacement of the data points of a plurality of said raw data in the neighborhood of respective data point of said processed data relative to the data points of said processed data; and
(2) sum-of-products calculating means for obtaining a value of said processed data through the sum-of-products calculation of said raw data and said weighting coefficients obtained at the coefficient calculating means,
wherein the convolution interpolation is performed so that noise components of said processed data have a substantially uniform variance.

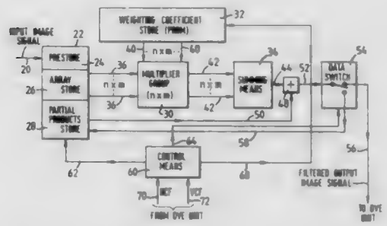
4,802,110

TWO-DIMENSIONAL FINITE IMPULSE RESPONSE FILTER ARRANGEMENTS

John W. Richards, Chilbolton, and Morgan W. A. David, Farnham, both of England, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 3, 1986, Ser. No. 937,326
Claims priority, application United Kingdom, Dec. 17, 1985, [illegible]
Int. Cl.[4] G06F 7/38
U.S. Cl. 364—724.05 **20 Claims**

1. A two-dimensional finite impulse response (FIR) filter arrangement for filtering an image signal formed of a sequence of digital words mutually spaced apart in time by an interval T, the filter arrangement comprising:
a two-dimensional FIR filter operative during each of a plurality of successive clock periods equal to T to effect filtration over a predetermined area of said image by processing a set of said digital words of the image signal having a predetermined spatial relationship to produce therefrom an intermediate word;
storage means for storing at least some intermediate words produced during said successive clock periods; and
control means responsive to a signal indicating an extent to which said image is to be compressed for controlling:
said FIR filter to adopt a bandwidth which is reduced, with respect to a value of the bandwidth for zero compression, by an extent related to said extent of compression, and
for combining a plurality of said intermediate words, the size



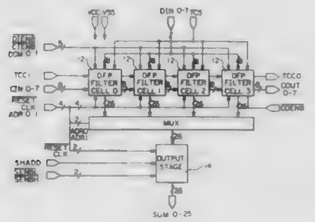
of which plurality is related to said extent of compression, so as to produce output words representative of filtration over a larger area of said image which is a multiple of said predetermined area.

4,802,111

CASCADABLE DIGITAL FILTER PROCESSOR EMPLOYING MOVING COEFFICIENTS

Mordecai Barkan, Palo Alto, Calif.; Alex Genusov; Michael Granski, both of Haifa, Israel; Paul Budnik, Los Gatos, Calif., and Refael Retter, Haifa, Israel, assignors to Zoran Corporation, Santa Clara, Calif.

Filed Mar. 10, 1986, Ser. No. 841,299
Int. Cl.[4] G06F 7/38
U.S. Cl. 364—724.1 **11 Claims**



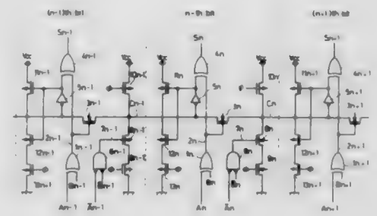
1. A digital filter processor comprising
a plurality of processing cells, each cell including a data register, a coefficient register, a multiplier-accumulator for processing and accumulating the contents of said data register and the contents of said coefficient register and producing an output,
means connecting said plurality of cells whereby a coefficient is serially translated to each cell for multiplying with a data word,
means for applying data in parallel to all cells, and
multiplex means connected to the outputs of said accumulators for receiving outputs from all cells, said multiplex means including a multiplexer for selectively receiving an output from each cell, an output stage for summing said outputs, said output stage including an adder for shifting and adding said outputs from said cells.

4,802,112

MOS TRANSISTOR CIRCUIT

Toyohiko Yoshida, and Tatsuya Ueda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1986, Ser. No. 924,565
Claims priority, application Japan, Oct. 30, 1985, 60-245543
Int. Cl.[4] G06F 7/50
U.S. Cl. 364—784 **5 Claims**



1. A MOS transistor circuit comprising a plurality of bits connected to a plurality of logic circuits, said circuits being connected to each other by signal lines, for propagating prescribed output signals obtained from each of said logic circuits, to the next subsequent circuit through said signal lines, said MOS transistor circuit further including:
a first MOS transistor switching circuit provided between a first potential source and each said signal line for precharging the potential of each said signal line at the potential of said first potential source;
a second MOS transistor switching circuit provided between a second potential source different in potential from said first potential source and each said signal line for driving one of said signal lines in response to said prescribed logical output;
a third MOS transistor switching circuit provided between said first potential source and each said signal line and driven dependent on the potential of said each said signal line for stabilizing the potential of said each said signal line at the potential of said first potential source; and
a fourth MOS transistor switching circuit provided between said second potential source and each said signal line and driven dependent on the potential of said each said signal line for prompting transition of the potential of said signal lines.

4,802,113

PIPELINE CONTROL SYSTEM

Katsumi Onishi, Kawagoe; Yuji Oinaga, Setagaya, and Kohei Otsuyama, Kawasaki, all of Japan, assignors to Fujutsu Limited, Kawasaki, Japan

PCT No. PCT/JP84/00535, § 371 Date Jun. 25, 1985, § 102(e) Date Jun. 25, 1985, PCT Pub. No. WO85/02279, PCT Pub. Date May 23, 1985
PCT Filed Nov. 8, 1984, Ser. No. 758,665
Claims priority, application Japan, Nov. 11, 1983, 58-212021; Nov. 30, 1983, 58-225623
Int. Cl.[4] G06F 9/00
U.S. Cl. 364—900 **5 Claims**

1. A pipeline processing system, comprising:
a first instruction address register for holding a first address of an instruction of be fetched;
instruction fetch means, operatively connected to said first instruction address register, for fetching an addressed instruction;
address calculation means, operatively connected to said instruction fetch means, for calculating one of an operand address and a branching address, said instruction fetch means fetching one of an instruction identified by the

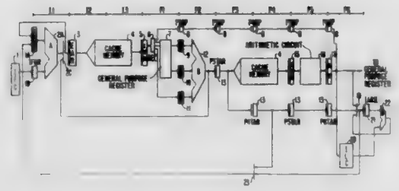
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branching address and an operand identified by the operand address;

operation code pipeline means, operatively connected to said instruction fetch means, for carrying an operation code of the fetched instruction;

operation means, operatively connected to said address calculation means, for performing an operation designated by the fetched instruction;

address register pipeline means, operatively connected to said address calculation means, for holding the branching address of the instruction identified by said branching address and having an intermediate and a final stage, said



intermediate and final stages being operatively connected to said first instruction address register and holding addresses produced by said address calculation means;

a second instruction address register, operatively connected to the final stage of said address register pipeline means, for holding a second address of an oldest instruction being processed in said pipeline processing system; and

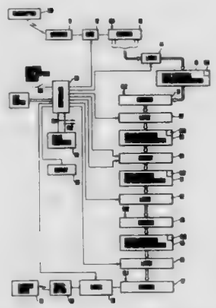
replacement means, operatively connected to instruction fetch means, said first instruction address register and said second instruction address register, for replacing the first address with an incremented branching address when said operation means performs a branch operation based on a branch instruction.

4,802,114

PROGRAMMABLE REMOTE CONTROL TRANSMITTER

Akira Sogame, Higashi-Osaka, Japan, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1986, Ser. No. 941,468
Claims priority, application Japan, Feb. 7, 1986, 61-24229
Int. Cl.⁴ G06F *7/02*; G08C *19/00*
U.S. Cl. 364—900 **10 Claims**



1. A programmable remote control transmitter having learning mode of operation for receiving remote control signals used for remote-controlling various electrical devices and having a remote control mode of operation for remote-controlling said electric devices according to the received remote control signals, comprising:

a detector for receiving, when said transmitter is in said learning mode of operation, said remote control signals from a given transmitter to be emulated, said remote control signals including a pulse burst component and a pulse off component;

a first repetition pattern discriminator for receiving electrical pulses corresponding to said remote control signals detected by said remote control signals into first compressed data comprising a first plurality of pulse burst codes and a second plurality of pulse off codes, wherein each pulse burst code defines a type of said pulse burst component and each pulse off code defines a type of said pulse off component and wherein a code pair comprises a pulse burst code and the pulse off code generated immediately thereafter;

a second repetition pattern discriminator for receiving said first compressed data from said first repetition pattern discriminator and further compressing said first compressed data to form second compressed data by examining said code pairs of said first compressed data for corresponding to predetermined patterns and converting said code pairs corresponding to said predetermined patterns to a third plurality of codes different from said first and second pluralities of codes, wherein a single code of said third plurality of codes represents said code pair of said second plurality of codes;

a memory for storing the second compressed data received from said second repetition pattern discriminator;

a third repetition pattern discriminator for receiving when said transmitter is in said remote control mod ® of operation said second compressed data from said memory to control a selected electric device and converting said second compressed data into a corresponding code pair constituting said first compressed data;

a fourth repetition pattern discriminator for receiving said first compressed data from said third repetition pattern discriminator and for converting said first compressed data into said electrical pulses of said remote control signals corresponding to said electric device to be controlled; and

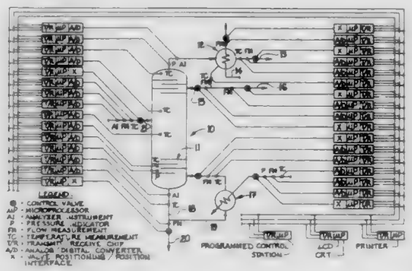
a signal output device for receiving said electric pulses and transmitting a control signal to the electric device to be controlled.

4,802,115

MULTI-UNIT COMMUNICATING SYSTEM

Peter L. Ginn, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 17, 1985, Ser. No. 734,995
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—900 **3 Claims**



1. A process control system which comprises

(a) a two or three wire network having connected thereto

(b) a plurality of process control elements, each associated with and in juxta-position with

(c) a position altering element capable of receiving and responding to an analog signal from an associated juxta-positioned D/A, which position altering element moves the process control element, said D/A is further associated with

(d) a juxta-positioned microprocessor associated with

(e) a juxta-positioned transceiver (T/R) said transceiver (T/R) connected to the network,

said microprocessor capable of recognizing an identifier within a serial digital string for a code that would identify the particular process control element with which the microprocessor is associated

(f) a plurality of instruments including element position indicators each capable of measuring a process variable or process control element position each generating an analog signal and each associated with an having in juxta-position therewith an analog to digital converter (A/D) for converting said instrument analog signal into a digital signal value,

(g) a separate pre-programmed microprocessor associated with each A/D for conversion into engineering notation of the said digital signal and for inclusion of at least an identification code for said measuring instrument or process control element

(h) a transceiver (T/R) associated with each said microprocessor and connected to said network for conversion of said engineering notation and associated identification code into a serial digital string for transmission onto the network, said microprocessor transceiver combination also capable of recognizing the identifiers of other microprocessor transceiver combinations on said network thus enabling it to transmit its serial digital string in proper sequence onto the network, each instrument microprocessor-transceiver combination transmitting its identification-/engineering notation as a serial digital string in an ordered sequence derived from the identification itself, said network also including

(i) a plurality of microprocessors capable of performing at least one of the tasks of storing, visual readout, calculating process parameters from the received signals from selected instruments and/or ordering changes to said process control elements anyone or all of which microprocessors are remote from said instrumentation and/or said process control elements.

4,802,116

PROGRAMMED CONTROLLER

Derek Ward, and David B. Steward, both of Auckland, New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

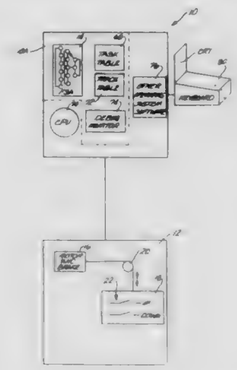
Filed Jun. 3, 1987, Ser. No. 57,786
Claims priority, application New Zealand, Jun. 3, 1986, 216384; Dec. 22, 1986, 218742
Int. Cl.⁴ G06F *1/00*
U.S. Cl. 364—900 **122 Claims**

1. A programmed controller for emulating one or more state diagrams and for controlling the states of operation of at least one machine or process, comprising:

(a) means for execution of an applications statements, each said block of statements (block) corresponding to one of said machine or process states of operation, and at least some of said blocks comprising one or more compound statements which define the next said block to be executed and an action to be taken during the corresponding state of operation by the machine or process, at least some of said blocks defining a different said action to be taken than the other blocks, the applications program comprising one or more program loops corresponding to each of the one or more state diagrams, each said program loop comprising at least one of said blocks;

(b) means for enabling at least one of said program loops to become active for execution, and means for enabling only one of said blocks to become active for execution at any one time in said at least one active program loop; and

(c) the means for execution comprising means for executing said compound statements in each said active block within each said active program loop for controlling the sequence of execution of said blocks and for controlling said action of the machine or process.

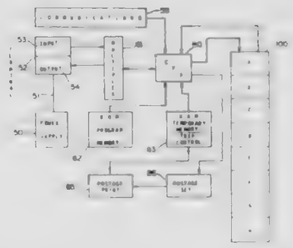


4,802,117

METHOD OF PRESERVING DATA STORAGE IN A POSTAL METER

Wojciech M. Chrosny, Norwalk, and Joel Maybruch, Ridgefield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 16, 1985, Ser. No. 809,454
Int. Cl.⁴ G06F *11/08*
U.S. Cl. 364—900 **26 Claims**



1. A method of relocating data stored in a memory bank comprising the steps of:

(a) partitioning said memory bank at least a first memory part, a second memory part and third memory part;

(b) storing first data in said first memory part;

(c) storing second data in said second memory part, said second data duplicating said first data;

(d) writing and storing one of said first data or said second data stored in said first or said second memory part upon determination of error in the other in said third memory part whereby said data in one memory part is duplicated in said third memory part in substitution for the corresponding data stored in the other of said memory parts; and

(e) thereafter comparing the data in said one memory part with the data in said third memory part for determining errors in the memory parts.

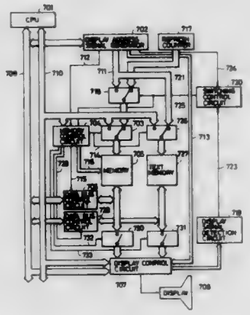
VOL 1098 ISS 5 JA 31 1989 UMI

4,802,118

COMPUTER MEMORY REFRESH CIRCUIT

Toyota Honda, and Shigeru Hirahata, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,774
Claims priority, application Japan, Nov. 25, 1983, 57-220631
Int. Cl.[4] G09G *1/00, 1/04*
U.S. Cl. 364—900 **9 Claims**



1. In a computer including a central processing unit, display means for displaying display data, and memory means having a plurality of addressable storage locations forming a first memory area used for data processing effected in said central processing unit and a second memory area for storing display data to be displayed on said display means, the improvement comprising:

changeover switch means having first, second and third input terminals and an output terminal, the latter connected to an address input terminal of said memory means;

display address signal generating means for generating display address signals corresponding to storage locations of said second memory area of said memory means and for outputting said address signals to said first input terminal of said changeover switch means;

refresh address signal generating means for generating refresh address signals corresponding to storage locations of said second memory area of said memory means and for outputting said refresh address signals to said second input terminal of said changeover switch means;

an address bus, connected to said central processing unit, and being operatively connected to said third input terminal of said changeover switch means, for supplying address signals corresponding to storage locations of said first memory area of said memory means;

display signal detecting means for detecting display data read out of the second memory area of said memory means; and

switching control means for controlling said changeover switch means so that:

(a) the address signal input terminal of said memory means is connected to an output terminal of said display address signal generating means via said first input terminal of said changeover switch means when said display signal detecting means detects display data being read out of said second memory area of said memory means, and

(b) when said display signal detecting means detects no display data being read out of said second memory area of said memory means the address signal input terminal of said memory means is connected to the output terminal of said refresh address signal generating means, via said second input terminal of said changeover switch, for a predetermined time period at predetermined intervals during a display frame time, and the address signal input terminal of said memory means is connected to said address bus, via said third input terminal of said changeover switch means, during a remaining portion of said display frame time.

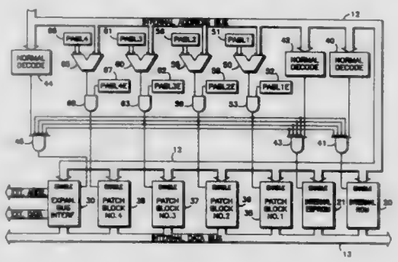
4,802,119

SINGLE CHIP MICROCOMPUTER WITH PATCHING AND CONFIGURATION CONTROLLED BY ON-BOARD NON-VOLATILE MEMORY

Mark R. Heene, Austin, Tex.; Michael H. Menkedick, Kokomo, Ind.; James M. Sibigtroth, Round Rock, and George L. Espinor, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill. and Delco Electronics Corporation, Kokomo, Ind.

Filed Mar. 17, 1987, Ser. No. 26,511
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 **7 Claims**





1. A single chip microcomputer comprising:

a central processing unit adapted to serially execute a plurality of instructions;

an internal address bus connected to said central processing unit;

an internal data bus connected to said central processing unit;

at least one memory block coupled to said internal address and data busses;

at least one patch memory block connected to said internal address and data busses

decode means connected to said internal address bus for examining a portion of an address thereon and responding thereto by enabling an indicated one of said at least one memory block;

at least one register means for containing at least one starting address of said at least one patch memory block;

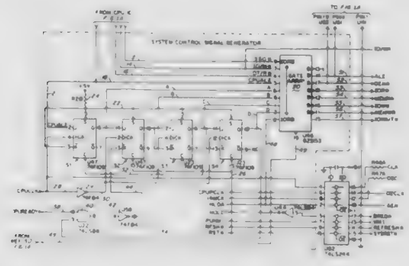
patch means connected to said internal address bus and to said at least one register means for comparing a portion of an address on said address bus and said at least one starting address and for responding thereto by enabling said at least one patch block and disabling said indicated one of said at least one memory block.

4,802,120

MULTISTAGE TIMING CIRCUIT FOR SYSTEM BUS CONTROL

Edward McCoy, Fort Worth, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Continuation of Ser. No. 666,506, Oct. 30, 1984, abandoned.
This application Sep. 14, 1987, Ser. No. 96,672
Int. Cl.[4] G06F *15/00*; G11C *19/00*
U.S. Cl. 364—900 **15 Claims**



1. A system bus controller for coupling from and control by a central processing circuit generating at least one control signal, said controller comprising;

a timing circuit responsive to a processor ready signal coupled from said central processing circuit and having a plurality of successively connected timing stages for respectively generating variable time length interval sequentially time-displaced timing control signals;

a gate array comprising multiple connected logic elements and having a plurality of input lines and a plurality of output lines;

means coupling said at least one control signal from the central processing circuit to one of said plurality of input of lines of the gate array;

means coupling from said timing circuit including multiple lines coupling from respective timing stages to couple said timing control signals to different ones of said plurality of input lines of the gate array,

said gate array generating timing signals that control data bus operation based upon the signals on said plurality of input lines;

said output lines outputting said gate array generated timing signals that control data bus operation; and

means for coupling said processor ready signal to at least one of the timing stages to control the time length interval of the variable time length interval sequentially time-displaced timing control signals.

4,802,121

MEMORY ARRAY WITH PARTITIONED BIT LINES

John F. Schreck, and Jeffrey K. Kaszubinski, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1986, Ser. No. 869,471
Int. Cl.[4] G11C *17/00*
U.S. Cl. 365—104 **12 Claims**

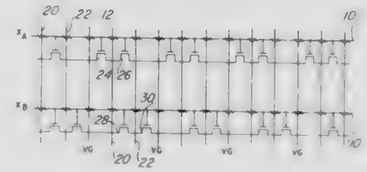
1. An array of memory cells, comprising:

first and second sets further comprised of alternating parallel bit lines;

a set of virtual ground lines, each of which is parallel to and alternating with pairs of said bit lines of said first and second sets;

a plurality of word lines intersecting said parallel bit lines and virtual ground lines;

a plurality of said memory cells arrayed in rows and columns, each of said memory cells coupled to one of said word lines, to one of said parallel virtual ground lines, and to one of said parallel bit lines;



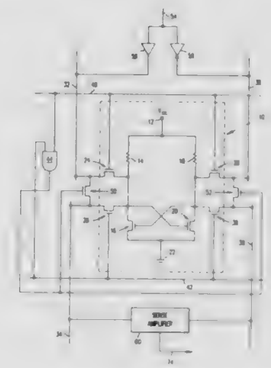
wherein each of said memory cells in alternating rows is connected to a bit line of said first set of alternating parallel bit lines and each of said memory cells in the other alternating rows is connected to a bit line of said second set of said parallel bit lines.

4,802,122

FAST FLUSH FOR A FIRST-IN FIRST-OUT MEMORY

Stuart T. Auvinen, Capitola, and Barry A. Hoberman, Mountain View, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 28, 1987, Ser. No. 43,521
Int. Cl.[4] G11C *11/00*
U.S. Cl. 365—154 **4 Claims**



1. A circuit for reducing the fall-through delay of data in a memory cell comprising:

a write bit-line connected with the memory cell for communicating data to the cell;

a read bit-line connected with the memory cell for communicating data from the cell; and

means selectively connecting the write bit-line with the read bit-line independent of the memory cell so that data carried by the write bit-line can be communicated to the read bit-line independent of the memory cell.

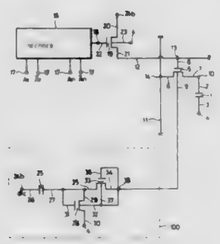
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4,802,123

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Youichi Tobita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1987, Ser. No. 5,855
Claims priority, application Japan, Jan. 22, 1986, 61-13087
Int. Cl.[4] G11C *11/24, 7/00*
U.S. Cl. 365—149 4 Claims



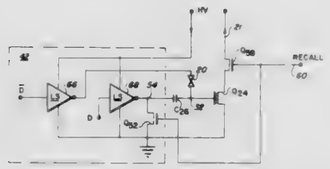
1. An IC memory device comprising:
an address decoder for selecting a memory cell of said memory device;
a bit line for reading information out from a selected memory cell, said selected memory cell including a storage capacitor
and a plurality of FETs, one FET of said plurality of FETs connecting said storage capacitor to said bit line, said FET having a back-gate electrode for controlling a threshold voltage of said FET, a gate electrode connected to an output of said address decoder, a first switched electrode connected to said bit line and a second switched electrode connected to said storage capacitor and
a voltage source circuit which supplies said backgate electrode of said FET with a prescribed voltage for raising the threshold voltage of said FET of said memory cell above threshold voltages of the remaining FET(s) of said plurality of FETs to reduce a charge leakage from said storage capacitor.

4,802,124

NON-VOLATILE SHADOW STORAGE CELL WITH REDUCED TUNNEL DEVICE COUNT FOR IMPROVED RELIABILITY

George D. O'Brien, Jr., Scottsdale, Ariz., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Aug. 3, 1987, Ser. No. 81,032
Int. Cl.[4] G11C *11/34*
U.S. Cl. 365—185 4 Claims



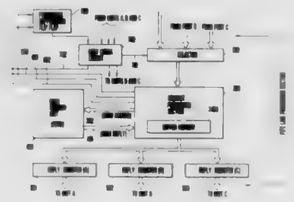
1. A non-volatile shadow memory cell controlled by input switching signals, the combination comprising:
a non-volatile storage element;
an isolation element for charging and discharging said non-volatile storage element;
means for charging said non-volatile storage element in a first direction, said means for charging said non-volatile storage element comprising said isolation element; and
means for discharging said non-volatile storage element in a second direction, said means for discharging said non-volatile storage element comprising said isolation element to provide a discharging current.

4,802,125

MEMORY ACCESS CONTROL APPARATUS

Ikuo Yamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 19, 1987, Ser. No. 122,698
Claims priority, application Japan, Nov. 21, 1986, 61-278442
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—189 5 Claims



1. A memory access control apparatus comprising: a plurality of request reception sections, respectively connected to a plurality of units for supplying requests, of said units, dividing the block read request into a plurality of read requests and outputting the divided read requests; selector means for selecting one of outputs from said plurality of request reception sections and outputting the selected output; a request processing section for processing the request output from said selector means and outputting reply data to a corresponding unit; and a main memory connected to said request processing section; wherein said request reception section comprises counter means for counting the plurality of read requests of the block read request and outputting the obtained count to said request processing section through said selector means, and said request processing section comprises miss detecting means for detecting a miss during processing of a block read request, determining means for determining by an output from said counter means the number of replies to be supplied to said unit that has sent the request when said miss detecting means detects a miss, and means for receiving an output from said miss detecting means and outputting to said request reception section a signal for invalidating requests following the block read request, among the plurality of read requests, in which a miss has occurred.

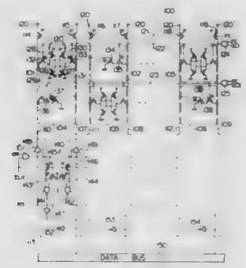
4,802,126

SEMICONDUCTOR MEMORY DEVICE

Shigeru Takayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 18, 1987, Ser. No. 122,737
Claims priority, application Japan, Nov. 18, 1986, 61-275916
Int. Cl.[4] G11C *7/00, 11/00, 11/34, 17/00*
U.S. Cl. 365—190 7 Claims

1. A semiconductor memory device fabricated on a semiconductor substrate and having a read-out mode and a write-in mode, comprising:
(a) a plurality of read only memory cells and random access memory cells arranged in rows and columns to form a memory cell array;
(b) a plurality of word lines each operative to activate said memory cells of each row in said read-out mode and said write-in mode;
(c) a plurality of first data lines each operative to propagate a voltage level;
(d) a plurality of second data lines each paired with each of said first data lines to form a data line pair coupled to said memory cells of each column, each of said second data lines being operative to propagate the complementary voltage level of said voltage level on the first data line, said voltage level and the complementary voltage level representing a bit of data information; and
(d) a plurality of read-write buffer circuits each coupled to each of said data line pair so as to transfer said bit of data



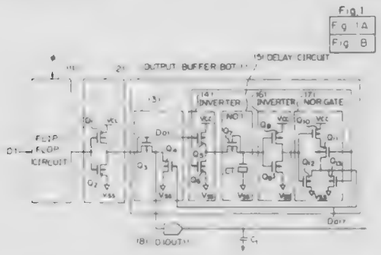
information thereto, wherein each of said read only memory cells comprises a series combination of two transistors capable of providing a conduction path between one of said first and second data lines and a source of voltage in said read-out mode, at least one of said two transistors being operative to block said conduction path in said write-in mode.

4,802,127

OUTPUT BUFFER CIRCUIT FOR A SEMICONDUCTOR MEMORY DEVICE

Takao Akaogi, Kawasaki, and Takeo Tatematsu, Yokohama, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 839,260, Mar. 13, 1986, abandoned.
This application May 18, 1988, Ser. No. 196,772
Claims priority, application Japan, Mar. 14, 1985, 60-49350; Mar. 20, 1985, 60-54666
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—189 3 Claims



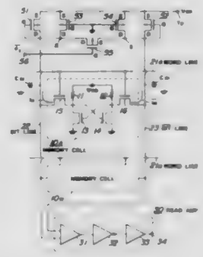
1. A multi-bit semiconductor memory device having a plurality of output buffer circuits, each of said output buffer circuits comprising:
a data output terminal;
an output switching means for pulling up a potential of said data output terminal to a HIGH level;
a charge discharging switching means for pulling down the potential of said data output terminal to a LOW level;
driving means for driving said output switching means to respond to read-out data; and
delay means connected between a drive terminal connected with said output switching means and said charge discharging switching means;
wherein said charge discharging switching means carries out a pull-down operation in response to an output of said delay means, each said delay means of said output buffer circuits provides different delay times from each other, so that the timings of pull-down operations in said output buffer circuits are shifted with each other.

4,802,128

BIT LINE DRIVER

Kazuo Watanabe, Kanagawa; Shunpei Kohri, Tokyo, and Shigeo Araki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 10, 1986, Ser. No. 849,962
Claims priority, application Japan, Apr. 12, 1985, 60-77953
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—203 8 Claims



1. A bit line driver connected between a pair of complementary bit lines and having an equalizing MOS transistor for effecting equalization operation by shorting a pair of the complementary bit lines in response to a clock pulse applied to a gate of the equalizing MOS transistor, which comprises:
(a) a pair of active-load MOS transistors, each respectively connected between one of the complementary bit lines and a power supply, a gate of each of said active-load MOS transistors being connected to ground; and
(b) a pair of clamping MOS transistors each respectively connected in parallel to one of said active-load MOS transistors, each of said clamping MOS transistors being diode connected;
wherein the area of said clamping MOS transistors is about three times greater than that of said active-load MOS transistors and the equalizing MOS transistor.

4,802,129

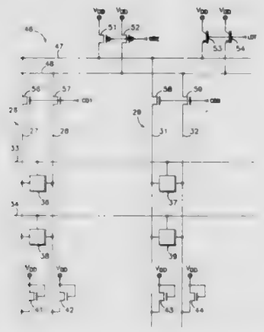
RAM WITH DUAL PRECHARGE CIRCUIT AND WRITE RECOVERY CIRCUITRY

George P. Hoekstra, Fair Oaks, Calif., and Perry H. Pelley, III, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1987, Ser. No. 128,559
Int. Cl.[4] G11C *7/00, 8/00*
U.S. Cl. 365—203 7 Claims

1. A memory having a read mode and a write mode, comprising:
an array of memory cells coupled to bit line pairs and word lines at intersections thereof;
a pair of data lines;
output means, coupled to the pair of data lines, for providing an output signal representative of a logic state present on the data lines when the memory is in the read mode;
input means, coupled to the pair of data lines, for driving the pair of data lines to a logic state representative of a logic state of an input signal when the input means is enabled by a write enable pulse;
first precharge means, coupled to the data lines, for precharging the data lines in response to a data transition pulse;
generator means, coupled to the input means, for providing the write enable pulse in response to the memory making

a transition from the read mode to the write mode, providing the write enable pulse in response to a change in logic state of the input signal when the memory is in the write mode, and providing the data transition pulse in response to the memory making a transition from the write mode to the read mode during the write enable pulse, said data



transition pulse delayed in time from said write enable pulse;

column decoder means, coupled to the bit line pairs, for coupling a selected bit line pair to the pair of data lines as determined by a column address; and

row decoder means, coupled to the work lines, for enabling a selected word line as determined by a row address.

4,802,130

SENSE AMPLIFIER

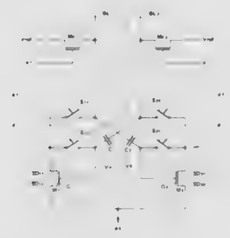
Mitsuo Soneda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 15, 1987, Ser. No. 38,752

Claims priority, application Japan, Apr. 24, 1986, 61-093456

Int. Cl.[4] G11C *7/09*

U.S. Cl. 365—205 **5 Claims**



1. A sense amplifier of the type including first and second bit lines for receiving sensed signals and first and second cross-coupled field effect transistors each having a gate electrode and first and second current carrying electrodes, comprising;

capacitive means for capacitively coupling said gate electrodes of said first and second transistors with said second and first bit lines, respectively;

first switching means for separably connecting said gate electrodes of said first and second transistors with the first current carrying electrodes of said first and second transistors, respectively; and

second switching means for separably connecting said first current carrying electrodes of said first and second transistors with said first and second bit lines, respectively;

said first and second switching means and said second current carrying electrodes of said first and second transistors being responsive to respective control signals for compensating said sense amplifier for threshold voltage differences of said first and second transistors.

4,802,131

SEMICONDUCTOR MEMORY DEVICE HAVING PULSE WIDTH CONTROL CIRCUIT

Kazuhiro Toyoda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

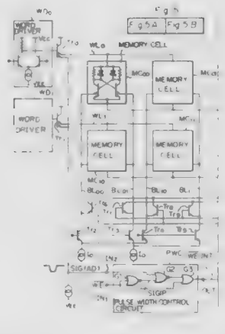
Continuation of Ser. No. 737,465, May 24, 1985, abandoned.

This application Feb. 8, 1988, Ser. No. 152,997

Claims priority, application Japan, May 30, 1984, 59-108516

Int. Cl.[4] G11C *7/00, 8/00*

U.S. Cl. 365—230 **18 Claims**



1. A semiconductor memory device comprising:

an address change detecting means for detecting change in the address of a memory cell in a memory to be written, and for delivering a detection output signal for a predetermined period upon the detection of each said change of address;

a write enable input terminal for receiving a write enable signal; and

a pulse width control means, operatively connected to the address change detection means to receive the detection output signal and operatively connected to the write enable input terminal to receive the write enable signal, for outputting an internal write enable signal in response to said received write enable signal during said predetermined period when said received write enable signal has a pulse width longer than a predetermined pulse width and blocking said internal write enable signal when said received write enable signal has a pulse width less than said predetermined pulse width and outputting said internal write enable signal during a period outside said predetermined period when said received write enable signal has a pulse width of any size.

4,802,132

SEMICONDUCTOR MEMORY DEVICE

Takashi Ohsawa, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 18, 1987, Ser. No. 122,332

Claims priority, application Japan, Nov. 27, 1986, 61-280595

Int. Cl.[4] G11C *8/00*

U.S. Cl. 365—230 **8 Claims**

1. A semiconductor memory device comprising:

at least one memory cell array means having N memory blocks;

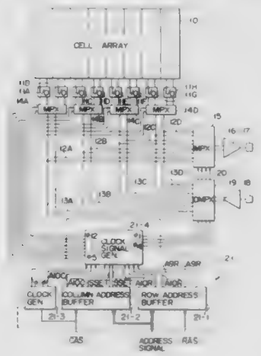
n buffer means for temporarily storing data to be transferred with respect to said memory means, respectively connected to said memory blocks and divided into n groups;

n buffer selection means for selecting data transferred to and from said buffer means and each connected to a corresponding group of said buffer means;

driver means;

data selection means for selecting data transferred to and from said driver means;

n data buses for transferring data between said n buffer selection means and said data selection means; and



control means for supplying control signals to said buffer selection means and data selection means in each operation cycle, causing one of said buffer means belonging to a corresponding one of said groups of buffers to be selectively connected to a corresponding one of said data buses via a corresponding one of said buffer selection means, and causing said data buses to be sequentially connected to said driver means via said data selection means, thereby permitting serial data to be transferred with respect to said memory means via said data buses.

4,802,133

LOGIC CIRCUIT

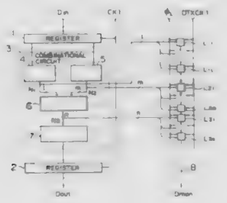
Akira Kanuma, and Toshiyuki Yaguchi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 26, 1986, Ser. No. 844,341

Claims priority, application Japan, Mar. 26, 1985, 60-61202; Mar. 26, 1985, 60-61203

Int. Cl.[4] G11C *8/00*

U.S. Cl. 365—230 **15 Claims**



1. A logic circuit comprising:

a combinational circuit having a plurality of internal nodes;

a plurality of latch circuits respectively connected to preselected internal nodes of said plurality of internal nodes for latching logical states thereof; and

readout means for reading data latched in said respective latch circuits,

wherein said readout means comprises:

a bus line for transmitting said data read from said latch circuit,

an address decoder for decoding addresses indicative of a location of said latch circuits, and

gates interconnected between said latch circuits and said bus line for effecting a switching operation in response to signals decoded from said address decoder,

wherein said readout means reads data in the latch circuit and transfers same to said bus line.

4,802,134

SEMICONDUCTOR MEMORY DEVICE HAVING SERIAL ADDRESSING SCHEME

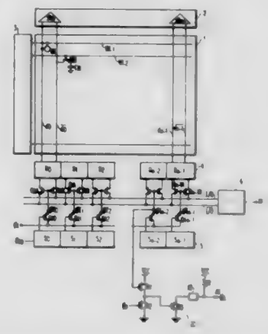
Akira Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1986, Ser. No. 944,115

Claims priority, application Japan, Dec. 20, 1985, 60-288729

Int. Cl.[4] G11C *7/00, 8/00, 11/40*

U.S. Cl. 365—230 **7 Claims**



1. A semiconductor memory device comprising a memory array of memory cells arranged in rows and columns, row selecting means for selecting one of said rows, column selecting means for serially selecting said columns consecutively in synchronism with clock signals, output means for outputting data on the selected column, an external terminal, a column address detecting means for generating a detection signal when a predetermined one of said columns is selected by said column selecting means, and

means for applying said detection signal to said external terminal, whereby the presence of said detection signal at said external terminal indicates that said predetermined column is selected by said column selecting means.

4,802,135

SEMICONDUCTOR MEMORY HAVING MULTIPLE CONTINUOUS ACCESS FUNCTIONS

Takashi Shinoda, and Masamichi Ishihara, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 2, 1986, Ser. No. 902,564

Claims priority, application Japan, Aug. 30, 1985, 60-189502

Int. Cl.[4] G11C *11/40, 7/00*

U.S. Cl. 365—233 **10 Claims**

1. A semiconductor memory comrpising:

a memory array which includes word lines, data lines intersecting said word lines, and memory cells arranged corresponding to intersecting points of said word lines and said data lines;

a first selection means for selecting one of said word lines;

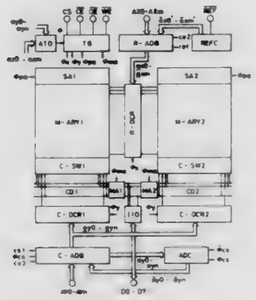
first external address terminals for receiving first external address signals;

a first means for forming first internal address signals;

a first external control terminal for receiving a first external control signal;

internal control signals generating means coupled to said first external control terminal, and for generating internal control signals in accordance with said first external control signal;

a second selection means coupled to said first external address terminals, to said first means and to a third selection means, and for selecting and providing one of the first external address signals and the first internal address sig-



nals as output signals to said third selection means in accordance with a first internal control signal of said internal control signals, wherein said third selection means includes means for selecting one of said date lines in accordance with the output signals provided from said second selection means; and

an output means for outputting to an external data terminal information stored in a memory cell arranged corresponding to an intersecting point of the word line selected by said first selection means and the data line selected by said third selection means.

4,802,136

DATA DELAY/MEMORY CIRCUIT

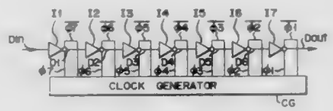
Shigeru Nose, Sagamihara, and Seigo Suzuki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

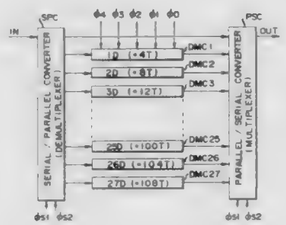
Continuation of Ser. No. 761,708, Aug. 2, 1985, abandoned. This application Apr. 29, 1988, Ser. No. 188,672
Claims priority, application Japan, Aug. 7, 1984, 59-165132
Int. Cl.[4] G11C *8/00, 7/00, 19/00*
U.S. Cl. 365—238 5 Claims

1. A data delay/memory circuit for an integrated circuit (IC) comprising:

a plurality of data shift circuits, each formed of a plurality of clock-controlled data latch circuits which are cascade-connected in a data transfer direction from an initial stage data latch circuit to a final stage data latch circuit, said data shift circuits being arranged in parallel in the IC and parallel to the data transfer direction; and

means for supplying each of the plurality of data latch circuits of each of said data shift circuits with clock signals having more than four different individual clocked phases and being sequentially generated for providing the clocking phase for each of the final stage data latch circuits to said final stage before the clocking phase for each of the initial stage data latch circuits, said supplying means including wirings, formed in said IC across the data transfer





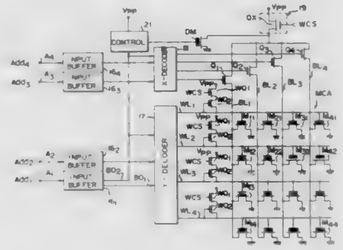
direction, for feeding said clock signals to said data latch circuits.

4,802,137

SEMICONDUCTOR MEMORY DEVICE

Taizo Okada, Himeji; Shinji Saito, and Nobuo Shishikura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1987, Ser. No. 7,582
Claims priority, application Japan, Jan. 30, 1986, 61-18717
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—201 10 Claims



1. A semiconductor memory device comprising:

a plurality of memory cells arranged in rows and columns;

a plurality of bit lines, each coupled to the memory cells forming a respective one of said columns;

a plurality of word lines, each coupled to control gates of the memory cells forming a respective one of said rows;

input buffer means for receiving address signals;

selection means for selectively energizing said bit lines and said word lines in response to the output signals of said input buffer means;

a power supply terminal;

a reference potential terminal;

switching means, coupled at one end to said power supply terminal and at the other end to said bit lines, for selectively coupling said power supply terminal to said bit lines to perform a drain-stress test on said plurality of memory cells;

a test circuit having at least one dummy cell coupled in series with said switching means and to said reference potential terminal, thus forming a series circuit connected between said power supply terminal and said reference potential terminal; and

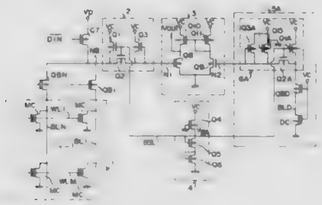
control means for turning on said dummy cell while said memory cells are undergoing said drain-stress test.

4,802,138

SENSE AMPLIFIER CIRCUIT FOR SEMICONDUCTOR MEMORY

Yuji Shimamune, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 3, 1987, Ser. No. 10,443
Claims priority, application Japan, Feb. 24, 1986, 61-38796
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—210 13 Claims



8. A sense amplifier circuit comprising:

first amplifier means for detecting data from a memory cell and generating an output signal in accordance with the detected data;

a first load MOS transistor of one conductivity type connected betewen an output terminal of said first amplifier means and a power source terminal;

second amplifier means for detecting data from a dummy cell and generating an output signal in accordance with the detected data;

a second load MOS transistor of one conductivity type and a third load MOS transistor of an opposite conductivity type which are connected in parallel between an output terminal of said second amplifier means and said power source terminal, a back gate of said third load MOS transistor being connected to a reference potential terminal; and

comparing means for comparing the output signals from said first and second amplifier means and generating an output signal in accordance with the result of the comparison.

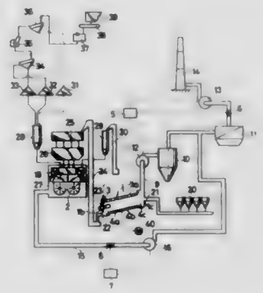
4,802,139

APPARATUS FOR PRODUCING A HEATED REPRODUCTION ASPHALT MIXTURE

Hideo Sasaki, Ageo, Japan, assignor to Taisei Road Construction Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1987, Ser. No. 87,792
Int. Cl.[4] B28C *7/04*; B01F *15/04*
U.S. Cl. 366—16 1 Claim

1. An apparatus for producing a heated reproduction asphalt mixture, improved from an asphalt plant of batch system comprising a new-aggregate handling means including a supply means, a dryer, a sieving means, a storage means, and a measuring tub means, a new-asphalt handling means including a supply means and a measuring tub means, a new-stone-powder handling means including a supply means and a measuring tub means, a mixer for mixing together a new aggregate, new asphalt and new stone powder, exhaust ducts connected to the dryer, sieving means and mixer, and a bag filter and a cyclone collector for collecting dusts from the associated ducts by use of exhausters, the apparatus comprising a base-material-to-be-reproduced handling means including a supply means, a storage means, a measuring means, and an introduction-into-the-mixer means, the base material to be reproduced being prepared by crush/breakage and subsequent classification from a waste asphalt pavement material, the dryer having therein a heated hopper section constituting an aggregate discharge section, the heated hopper section having a corner at which the gas is most likely to stagnate and at which there is disposed a pressure sensor for controlling a pneumatic pressure, whereby the rate at which the gas is exhausted by means of the exhauster is made variable and controlled in accordance with the operation of the pressure sensor so as to cause the internal pressure of the dryer to be maintained at a constant level in corresponding relationship to the amount of combustion gas fed into the dryer from a burner thereof and the amount of vapor generated from the new aggregate therein, the level being substantially the same as that of the pneumatic pressure prevailing outside the dryer and indicating a water column of minus one to minus several millimeters when numerically expressed, the dryer being in the form of a hollow cylinder extending from a raised aggregate introduction port to a lowered aggregate discharge port by way of an intermediate inclined portion where the new aggregate can be permitted to slide and shift toward the lowered discharge port while it is being revolved along an inner surface of the dryer, the dryer having disposed



therein the burner in such a manner that a flame thereof is directed toward the aggregate introduction port from a central part of the cylindrical dryer in the vicinity of the aggregate discharge port thereof, the dryer having an inner wall surface section corresponding to a flame section of the burner, the inner wall surface section being provided with auxiliary blades having a shape permitting the new aggregate to be moved along the entire inner peripheral wall surface without hindering the advance of the flame of the burner, the dryer having another intermediate wall surface section located at a position remote from that corresponding to the flame section of the burner, the another intermediate inner wall surface section being provided with agitating blades permitting the new aggregate to be uniformly distributed over the entire cross-sectional zone of the cylindrical dryer, the dryer having a third inner wall surface section in the vicinity of the aggregate introduction port, the third inner wall surface section being provided with nonreturn blades capable of checking the backward flow of the new aggregate, the measuring tub means and mixer being covered by a covering means from which is led out the exhaust duct connected to the bag filter and the cyclone collector via the exhauster, the exhaust duct being provided at its intermediate portion with an automatic opening/closing mechanism constituted by a damper as well as a blower mechanism.

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4,802,140

METHOD AND MOLDING SCREW FOR INJECTION MOLDING

Edward H. Dowling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1987, Ser. No. 43,779
Int. Cl.[4] B29B 7/10
U.S. Cl. 366—79 8 Claims



1. An injection molding screw comprising:

an elongate barrel having first and second end portions and having a bore extending along the length of the barrel, the barrel having at the first end portion thereof means for receiving sold plastic particulate material into the bore of the barrel,

a first screw positioned within the bore of the barrel and having a helical feed thread on the outer surface thereof defining a feed channel for the plastic material, the screw being rotatable relative to the barrel in a direction to advance particulate material along the barrel bore from the first end portion thereof toward the second end portion thereof, the screw being reciprocal within the barrel while it is being rotated between a forward position and a retracted position with the screw moving toward the first end portion of the barrel as it moves from its forward position to its retracted position and toward the second end portion of the barrel as it moves from its retracted position to its forward position, the screw having a cylindrical cavity therein, the cavity having an opening at the end thereof facing the second end portion of the barrel, and a plurality of drain openings through the screw providing fluid communication between the outer surface of the screw and the cavity,

a second screw positioned within the bore of the barrel and having a helical thread on the outer surface thereof, one end portion of the second screw being in engagement with the second end portion of the barrel and the other end portion of the second screw projecting into the cavity, the one end portion of the second screw having an outlet opening through which all of the melt of the particulate material can pass from the cavity through the opening and out of the barrel.

a first heater located with respect to the first screw to heat the particulate material between the first screw and the barrel to produce a melt that can pass through the drain openings in the first screw into the cavity, and

a second heater located with respect to the second screw to heat the melt in the cavity to a temperature substantially equal to the temperature of the melt between the first screw and the barrel,

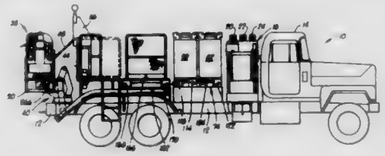
whereby particulate material received at the first end portion of the barrel can be advanced toward the second end portion thereof by rotation of the first screw while the screw is in its retracted position with the first heater heating the material and producing a melt that can flow through the drain openings in the first screw into the cavity, and with the temperature of the melt in the cavity being maintained by the second heater until the first screw is reciprocated to its forward position while it continues to rotate and thereby drive melt from the cavity through the outlet opening in the second screw.

4,802,141

SELF-LEVELING MIXER WITH MECHANICAL AGITATION

Calvin L. Stegemoeller, and Gail F. Davis, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 27, 1988, Ser. No. 199,814
Int. Cl.[4] B01F 15/02
U.S. Cl. 366—132 20 Claims



1. A self-leveling mixer apparatus, comprising:

a base;

a generally downwardly tapered movable mixing tub supported from said base in a manner such that said tub is movable between first and second positions relative to said base;

leveling valve means for controlling a level of fluid in said movable mixing tub;

connector means, operably associated with said mixing tub and said leveling valve means, for adjusting said leveling valve means in response to movement of said mixing tub relative to said base; and

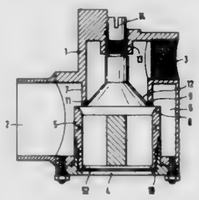
rotating mechanical mixing means, disposed within said tub, for inducing a generally vortex type of fluid flow pattern within said generally downwardly tapered tub.

4,802,142

DEVICE FOR CONTROLLING THE FLOW RATE OF A FUEL GAS/AIR MIXTURE AND/OR THE RATIO BETWEEN FUEL GAS AND AIR IN A FUEL GAS/AIR MIXTURE

Wilhelm Korsmeier, Recklinghausen; Dieter Wolf, Dorsten, and Friedrich Vissel, Recklinghausen, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Mar. 31, 1987, Ser. No. 32,775
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1986, 3611909
Int. Cl.[4] G05D 7/00, 11/00, 11/02; B01F 15/02
U.S. Cl. 366—160 9 Claims



1. In a device for controlling at least one of the flow rate of a fuel gas/air mixture, and the ratio between the fuel gas and air in such a mixture, with said device including a body having an air inlet, a fuel gas inlet, a fuel gas/air mixture outlet, a gas-control passage in said body, with the cross-sectional area of said gas-control passage being variable via a control means for controlling the flow of fuel gas through said device, and an adjustable air-control passage for adjusting the flow of air through said device, the improvement wherein:

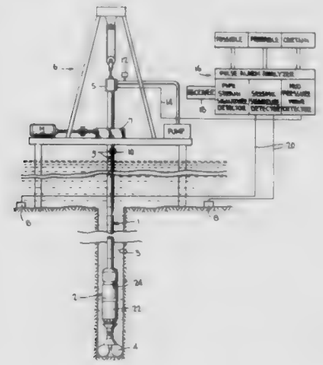
said air control passage having a cross section and said gas-control passage having a cross section which are formed and disposed in said body in such a way that both cross sections with discharge sides thereof along a common edge of a body inner wall cooperate to also form an area at a location in common within said body where said controlled fuel gas and air flows are combined and mixed at once as controlled by both control cross sections where the discharge flow occurs.

4,802,143

ALARM SYSTEM FOR MEASUREMENT WHILE DRILLING OIL WELLS

Robert D. Smith, P.O. Box 219, Plum Branch, S.C. 29845

Filed Apr. 16, 1986, Ser. No. 852,792
Int. Cl.[4] H04H 9/00
U.S. Cl. 367—82 45 Claims



1. An alarm system for detecting the occurrence of undesirable events in a well bore and communicating the occurrence to a remote area comprising:

a sensor means for sensing a change in ambient conditions of predetermined magnitude in a well bore;

an acoustic impulse generator means which functions independently of activities at the remote area for generating an acoustic impulse of a magnitude to enable unambiguous detection of said impulse at the remote area in response to detection by said sensor means of a change of predetermined magnitude in the ambient conditions;

means for supporting said sensor means and impulse generator means in the area being monitored and for conducting an acoustic impulse from said impulse generator means;

self-powered actuating means operatively connecting said sensor means with said impulse generator means for actuating said impulse generator means in response to said sensor means; and

impulse detector means remote from said impulse generator means for detecting an acoustic impulse generated by said impulse generator means.

4,802,144

HYDRAULIC FRACTURE ANALYSIS METHOD

Gary R. Holzhausen, Santa Cruz, and William St. Lawrence, Albany, both of Calif., assignors to Applied Geomechanics, Inc., Santa Cruz, Calif.

Filed Mar. 20, 1986, Ser. No. 841,645
Int. Cl.[4] G01V 1/40
U.S. Cl. 367—35 20 Claims

20. A method of determining the orientation of a hydraulic fracture plane in the earth comprising

positioning an array of sensors for measuring seismic ground motion above a region which includes the fracture,

providing a well bore having fluid therein communicating with the fracture to be defined,

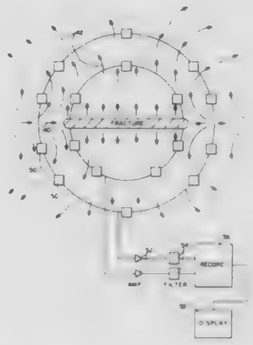
perturbing the fluid to cause transient pressure or flow oscillations in the fluid column in the well bore,

measuring seismic ground motion induced by the transient pressure and flow oscillations in the fracture,

calculating, using theory of wave propagation, the ground motion expected of fractures of different orientations,

comparing the measured ground motion with the calculated ground motion patterns representing fractures of different orientations,

selecting the fracture orientation that yields calculated seismic ground motions most closely resembling the measured seismic ground motions as the most probable fracture orientation, and



calculating a probable fracture orientation based on the seismic motion of the ground,

wherein the measuring step includes the step of measuring particle motion in a plane perpendicular to the fracture plane,

wherein the measuring step measures the history of oscillatory particle motion, and said calculating step studies the symmetry of oscillatory particle motion, and

wherein the fracture to be studied is vertical, and the particle motions are horizontal in a plane that is also horizontal and perpendicular to the fracture.

4,802,145

METHOD AND APPARATUS FOR DETERMINING CEMENT CONDITIONS

Houston B. Mount II, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 893,055, Aug. 1, 1986. This application May 26, 1988, Ser. No. 199,068
Int. Cl.[4] G01V 1/40
U.S. Cl. 367—35 2 Claims

1. A method of determiining the thickness of the cement adjacent a casing set within a wellbore, comprising:

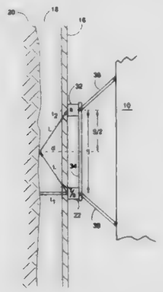
(a) positioning at least one acoustic transmitting and receiving transducer and at least one acoustic receiving transducer into contact with an interior surface of the casing with the at least one acoustic receiving transducer being vertically spaced a predetermined distance from the at least one acoustic transmitting and receiving transducer;

(b) transmitting from the at least one acoustic transmitting and receiving transducer at least one pulse of acoustic energy through the casing to a reflecting boundary representative of an interface between disparate material surrounding the wellbore;

(c) measuring the times between the transmission of the pulse of acoustic energy and the receptions of the acoustic energy by the at least one acoustic transmitting and re-

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ceiving transducer and by the at least one acoustic receiving transducer; and



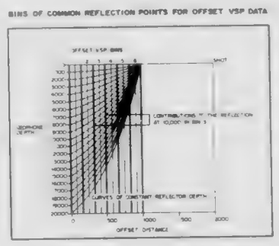
(d) from the measured times and the known distance between the at least one acoustic transmitting and receiving transducer and the at least one acoustic receiving transducer determining the thickness of the cement.

4,802,147

METHOD FOR SEGREGATING AND STACKING VERTICAL SEISMIC PROFILE DATA IN COMMON REFLECTION POINT BINS

George P. Moeckel, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 23, 1985, Ser. No. 737,356
Int. Cl.[4] G01J *1/00;* G06F *15/58*
U.S. Cl. 367—57 5 Claims

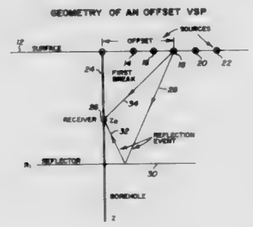


4,802,146

METHOD FOR MOVEOUT CORRECTION AND STACKING VELOCITY ESTIMATION OF OFFSET VSP DATA

George P. Moeckel, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 23, 1985, Ser. No. 737,352
Int. Cl.[4] G01V *1/00, 1/28*
U.S. Cl. 367—52 3 Claims



1. A method for moveout correcting and estimating stacking velocities for offset VSP data comprising the steps of:

receiving vertical seismic profile data from an acoustic pulse receiver located in a borehole beneath the earth's surface and horizontally offset from any acoustic pulse generator on the surface causing reflected acoustic pulses to be received by said acoustic pulse receiver or receiving vertical seismic profile data from acoustic pulse receivers located on the earth's surface horizontally offset from a borehole containing an acoustic pulse generator causing reflected acoustic pulses to be received by said acoustic pulse receivers located on the earth's surface;

applying a dynamic moveout correction based on the two-way primary reflection time, the root mean square acoustic velocity in the formation, and the first arrival time of direct path acoustic pulses to the vertical seismic profile data to align reflection events;

estimating stacking velocities of reflected acoustic pulses;

displaying said moveout corrected vertical seismic profile data.

1. A method for segregating and stacking offset vertical seismic profile data obtained from a seismic receiver located in a wellbore into common reflection point bins comprising the steps of:

providing curves of constant, moveout corrected two-way reflector travel times from predetermined travel time data depending on receiver depth and source offset;

dividing the offset distance of said shot location to the borehole into a predetermined number of equal common reflection point bins having boundaries;

selecting a geophone depth and the corresponding normal incidence two-way travel time to this depth;

sectioning two-way reflector travel time defined by the intersection of said common reflection point bin boundaries and said two-way travel time to the geophone depth crossing curves of constant two-way moveout corrected reflector travel times into two-way travel time segments; and

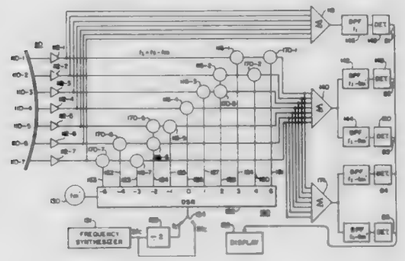
stacking said sectioned two-way travel time segments at the centers of said common reflection point bins with weights appropriate to fold.

4,802,148

SIDE-LOOKING SONAR APPARATUS

George A. Gilmour, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1982, Ser. No. 440,150
Int. Cl.[4] G01S *9/66*
U.S. Cl. 367—88 17 Claims



1. Side looking sonar apparatus comprising:

(A) a receiver transducer having a plurality of active segments arranged along an arc of a circle and each operable to provide output signals in response to receipt of acoustic energy from a target area insonified by repetitive acoustic transmissions;

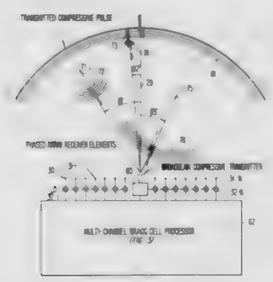
(B) circuit means responsive to said output signals and operable to form at least one receiver beam and for electronically focusing said receiver beam onto said target area at a predetermined initial range and for electronically varying said focusing out to a maximum range, as a function of both time, and altitude of said transducer above said target area.

4,802,149

ACOUSTO-OPTIC TWO-DIMENSIONAL COHERENT OPTICAL MODULATOR

George S. Moore, Colorado Springs, Colo., assignor to Harris Corp., Melbourne, Fla.

Filed Dec. 18, 1986, Ser. No. 943,171
Int. Cl.[4] G01J *9/68*
U.S. Cl. 367—100 19 Claims



1. For use with a signal receiving apparatus wherein respective elements of the apparatus provide output signals representative of a response thereto of one or more waveforms having high correlation properties received thereby, an arrangement for optically processing the output signals produced by said elements comprising:

a multi-channel Bragg cell to respective input transducers of which signals corresponding to the output signals provided by the respective elements of said apparatus are applied, thereby causing acoustic waves associated with each of said channels to be launched into and propagated through the Bragg cell as a composite acoustic wave for which there is no debilitating effect of spreading across the length of travel of the wave in the cell;

means for illuminating said multi-channel Bragg cell with an incident light beam, whereby said light beam is modulated two-dimensionally by information contained in the composite acoustic wave of the multiple channels of the Bragg cell; and

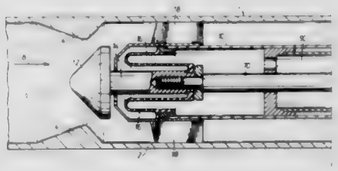
means for forming a Fourier transform of the modulation of said light beam by said multi-channel Bragg cell in a prescribed Fourier transform plane, whereby there is formed in said plane a two-dimensional representation of prescribed characteristics of said one or more waveforms.

4,802,150

MUD PRESSURE CONTROL SYSTEM WITH MAGNETIC TORQUE TRANSFER

Michael K. Russell, and Anthony W. Russell, both of Cheltenham, England, assignors to NL Sperry Sun, Inc., Stafford, Tex.

Filed Aug. 24, 1981, Ser. No. 295,457
Claims priority, application United Kingdom, Nov. 20, 1980, 8037213
Int. Cl.[4] G01V *1/40*
U.S. Cl. 367—85 10 Claims



1. A down-hole signal transmitter for a mud-pulse telemetry system, comprising a flow constrictor defining a throttle orifice for the mud passing along a drill string, a throttling member displaceable with respect to the throttle orifice to vary the throughflow cross-section of the throttle orifice, control means for displacing the throttling member to modulate the mud pressure, and a turbogenerator having an impeller arranged to be driven by the mud passing along the drill string and an electrical generator disposed in a mud-free environment within a casing, the impeller being magnetically coupled to the electrical generator to impart driving torque thereto.

4,802,151

Patent Not Issued For This Number

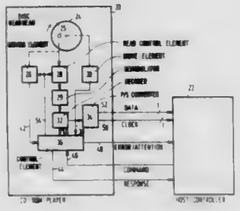
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4,802,152

COMPACT DISC DRIVE APPARATUS HAVING AN INTERFACE FOR TRANSFERRING DATA AND COMMANDS TO AND FROM A HOST CONTROLLER

Jan A. Markvoort; Adrianus J. M. Van Alphen, both of Eindhoven, Netherlands, and Marinus J. B. M. Monen, Colorado Springs, Colo., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1986, Ser. No. 848,614
Int. Cl.[4] G11B *21/10; G06F 3/08*
U.S. Cl. 369—32 **5 Claims**



1. A compact disc drive apparatus for data storage, said data being organized in storage frames in a double cross-interleaved double Reed-Solomon error protection code format modulated by an eight-to-fourteen run-length-restricted channel bit format, non-redundant bytes within said storage frame format being organized in storage sectors and having per sector a sequence of synchronization information, header information, and data information comprising:

electro-mechanical disc-driving means for holding and driving a data storage record;

accessing means for radially accessing a data track on said record;

reading means for reading an accessed data track and a sector thereon as specified by a predetermined data sector specification;

demodulating means coupled to said reading means for receiving channel bits and demodulating such channel bits to a sequence of code bytes;

decoding means coupled to said demodulating means for receiving said code bytes and by means of a code format represented by redundant bytes decoding said code bytes into a sequence of compact-disc user bytes; and

an interface means for interfacing said drive apparatus to an external host controller, said interface means comprising:

parallel-to-serial conversion means fed by said decoding means for producing bit-serially said compact-disc-user bytes as user bits;

clock means fed by said parallel-to-serial conversion means for producing synchronously with said user bits a clock stream having a validating clock pulse for each of said user bits;

control means having a first input for receiving host controller commands, and a recognition means for recognizing any command received as either allowable or non-allowable a first output connected to said reading means for controlling said accessing means, a second input for receiving status information regarding said electro-mechanical driving means from said accessing means and from said decoding means, and a second output for signalling drive error conditions, spin-up/non spin-up situations and non-allowable command situations for use by said controller.

4,802,153

OPTICAL INFORMATION PROCESSOR AND METHOD FOR ACCESSING ROTATING RECORD CARRIER UTILIZING ACOUSTO-OPTIC LIGHT DEFLECTOR INCLUDING HOLDING A FOCUS ERROR SIGNAL DURING TRACK JUMPING

Keiji Kataoka, Kawagoe; Takeshi Maeda, Kokubunji, and Yoshito Tsunoda, Mitaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1986, Ser. No. 842,200
Claims priority, application Japan, Mar. 22, 1985, 60-55829
Int. Cl.[4] G11B *7/09*
U.S. Cl. 369—45 **20 Claims**



1. An accessing method in an auto-focus control system for irradiating a light spot onto a recording surface of a rotating record carrier having tracks formed thereon, photo-electrically converting a light beam reflected from the record carrier, producing a focus error signal indicating a deviation of a focus point of the light spot from the recording surface of the record carrier based on the photo-electrically converted output and controlling the focus point of the light spot by the focus error signal so that the focus point of the light spot coincides with the recording surface, comprising the steps of:

deflecting the light spot by an acousto-optic light deflector; and

holding, during movement of the light spot by said acousto-optic light deflector from said one track to another, the focus error signal in the state prior to said movement.

4,802,154

HIGH DENSITY CODES FOR OPTICAL RECORDING

Johannes J. Verboom, and Christiaan Steenbergen, both of Colorado Springs, Colo., assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 541,753, Oct. 9, 1983, abandoned, and a continuation-in-part of Ser. No. 566,922, Dec. 29, 1983, abandoned, and a continuation-in-part of Ser. No. 578,151, Feb. 8, 1984, abandoned. This application Mar. 21, 1985, Ser. No. 714,585
Int. Cl.[4] G11B *7/00, 20/12*
U.S. Cl. 369—59 **29 Claims**

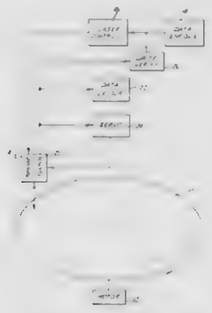
25. A system for recording and reading a plurality of symbols in coded form from a record carrier, comprising:

a record carrier adapted for having two media states, an unaltered state and an altered state;

means for inducing and sensing a signal responsive to said media states, the signal strength varying according to the media state, and being stronger for said altered state, and further varying to a degree according to the length of the altered state, the longer the altered state, the stronger the signal;

information recorded on said record carrier in the form of altered media states, a hole comprising an altered media state of a predetermined length, a monohole comprising a hole having unaltered media states before and after the altered state of a single hole, a group of holes comprising a plurality of adjacent holes with substantially no unaltered media states between adjacent holes and unaltered media states before and after the group of holes;

said information further recorded on said record carrier with a spacing between groups of holes and other groups of holes or monoholes such that the signal strength read at a point midway between the group of holes and the other groups of holes or monoholes is less than the maximum signal strength caused by a monohole;



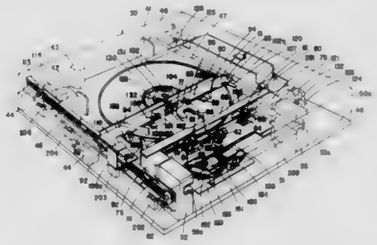
said information recorded on said record carrier further comprising a fixed code for coding said plurality of symbols wherein the fixed block code for each of said plurality of symbols is recorded on said record carrier at a sequence of symbol positions comprising a first position, a last position and a plurality of interior positions, and wherein said code for at least one of said plurality of symbols has at least one monohole at one of said interior positions.

4,802,155

RECORDING DISC PLAYBACK APPARATUS

Ichiro Kawamura; Yoshitaka Fujioka, both of Osaka; Tetsuo Yoshikane, Katano, and Noboru Okuno, Sennan, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP85/00521, § 371 Date Dec. 22, 1986, § 102(e) Date Dec. 22, 1986, PCT Pub. No. WO87/05308, PCT Pub. Date Sep. 11, 1987
PCT Filed Sep. 19, 1985, Ser. No. 7,947
Int. Cl.[4] G11B *17/04, 9/06*
U.S. Cl. 369—77.2 **3 Claims**



1. A recording disc playback apparatus for use with a rectangular disc case having a case body defining therein an accommodating space for storing therein a disc-like recording medium and formed at one end thereof with an opening for drawing out said disc-like recording medium from said accommodating space and a lid removably engaged with said opening, said recording disc playback apparatus comprising:

an external casing having a front surface formed therein with a case insertion opening adapted to receive only a front portion of said disc case including said opening, said lid and a part of said disc case to which said lid is engaged;

a turntable disposed in said external casing and adapted to rotate a said disc-like recording medium drawn out from said case body of said disc case and set thereon;

a reproducing head for reading signals on said disc-like recording medium rotated by said turntable;

a lid releasing means disposed in said external casing in the vicinity of said case insertion opening, for releasing the engagement between said case body of said disc case and said lid;

a clamping means disposed in said external casing for clamping one end of a said recording medium held in said case, once said lid of said disc case is released from said case body, to thereby permit withdrawal of said recording medium from said case body;

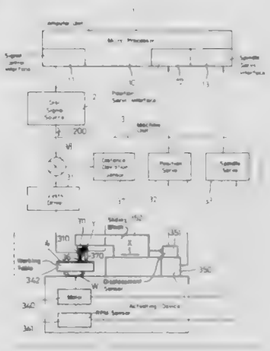
a feed means for reciprocally feeding said clamping means along a feed path between an advanced position where said clamping means is advanced to approach said case insertion opening so that said clamping means can clamp a said recording medium in a said case body, and a retracted position where said clamping means is retracted rearward in said external casing so that a clamped recording medium can be set on said turntable.

4,802,156

CUTTING MACHINE FOR PITS ON CD MASTER

Jia-Ming Shyu; Kwoan Huang, and Jung-Lung Liu, all of Shin Chu Hsien, Taiwan, assignors to Industrial Technology Research Institute, Shin Chu Hsien, Taiwan

Filed Jul. 29, 1987, Ser. No. 79,036
Int. Cl.[4] G11B *3/00*
U.S. Cl. 369—132 **3 Claims**



1. A machine for cutting pits on a compact disc master comprising:

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a disc signal source for generating an adjustable signal corresponding with a length and space of the pits to be cut;

a machine unit including:

a rotary shaft having an axis,

a working table for mounting a master disc perpendicular to said axis,

a motor,

a rpm sensor,

a first servo-control circuit, said first servo-control circuit operating with said rpm sensor and said motor for servo-driving said rotary shaft,

a horizontally moving shaft having a sliding block supported perpendicular to said axis to move horizontally,

a linear actuating means controlled by a second servo-control circuit with a displacement sensor for servo-driving said horizontally moving shaft,

a piezoelectric crystal mounted on said sliding block, perpendicular to said master disc, able to have corresponding extension and contraction motions in an axial direction,

a cutting tool fixedly mounted on a moving end of said piezoelectric crystal, said cutting tool having a suitable blade so as to cut or lift above said master disc in accordance with said motion of said piezoelectric crystal,

distance deviation sensor means for sensing a position error of said piezoelectric crystal along said axial direction, said distance deviation sensor means having a sensing head perpendicular to said master disc and being fixedly mounted on said sliding block close to said cutting tool to sense a distance deviation of said cutting tool to said master disc, converting said deviation into an electric signal, and

distance setting means, responsive to said distance deviation sensor means and said adjustable signal from said disc signal source, for extending or contracting said piezoelectric crystal along said axial direction; and

a computer unit including:

signal control interface means electrically connected to said disc signal source for adjusting said adjustable signal from said disc signal source,

first servo-control interface means for controlling said first servo-control circuit, and

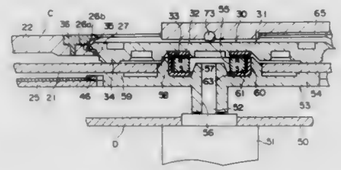
second servo-control interface means for controlling said second servo-control circuit.

4,802,157
Patent Not Issued For This Number

4,802,158
DISC CLAMPING DEVICE FOR A DISC CARTRIDGE PLAYER

Mikio Ogasa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 26, 1985, Ser. No. 813,533
Claims priority, application Japan, Dec. 28, 1984, 59-198375[U]; Dec. 28, 1984, 59-198376[U]
Int. Cl.[4] G11B *25/04*
U.S. Cl. 369—270 **15 Claims**



1. A disc clamping device for a disc cartridge player of a type in which a disc cartridge housing a disc rotably therein is loaded in a disc playback device and the disc is held between a disc stabilizer provided rotatably in said disc cartridge and a turntable provided in said disc playback device during playback of the disc, said disc clamping device including magnetic attraction generating means provided in said disc stabilizer and said turntable for magnetically attracting the stabilizer to the turntable to hold the disc between said disc stabilizer and said turntable.

4,802,159
INFORMATION RECORDING DISC AND INFORMATION SIGNAL RECORDING APPARATUS THEREFOR

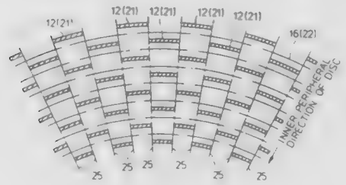
Tadao Nagai, Sagamiko; Hirohisa Yamaguchi, Tokyo, and Akira Mashimo, Tokorozawa, all of Japan, assignors to Teac Corporation, Musashino, Japan

Filed Oct. 9, 1986, Ser. No. 917,188
Claims priority, application Japan, Oct. 16, 1985, 60-230609
Int. Cl.[4] G11B *7/013*; H04N *9/89, 5/84*
U.S. Cl. 369—275 **6 Claims**

1. An information recording disc comprising:

a recording surface, said recording surface being divided into a plurality of imaginary equiangular sectoral regions each of which is defined by two of a plurality of imaginary radial lines; and

a guide track formed on said recording surface at a position different from a track position of an information signal which is to be recorded, said guide track comprising a spiral guide track or concentric guide tracks, each track turn of said guide track being constituted by a row of pits formed in every other of said equiangular sectoral regions, said pit being only formed in one of two mutually adjacent track turns of said guide track in each of said equiangular sectoral regions so that the pits are formed in every other track turn of said guide track in a radial direction of the information recording disc in each of said equiangular sectoral regions, each pit having two ends which respectively lie on two imaginary radial lines defining said each pit, said track position where said information signal is to



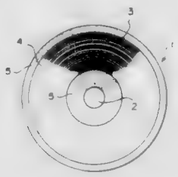
be recorded being located in a region between said two mutually adjacent track turns of said guide track,

said guide track being pre-recorded with a control signal having a frequency band different from a frequency band of said information signal which is to be recorded.

4,802,160
OPTICAL DISK SUBSTRATE

Takashi Yamada; Masaaki Nomura; Ryoichi Yamamoto, and Akira Nahara, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 5, 1987, Ser. No. 104,271
Claims priority, application Japan, Oct. 6, 1986, 61-237729
Int. Cl.[4] G11B *7/24, 7/00, 25/04*
U.S. Cl. 369—284 **3 Claims**

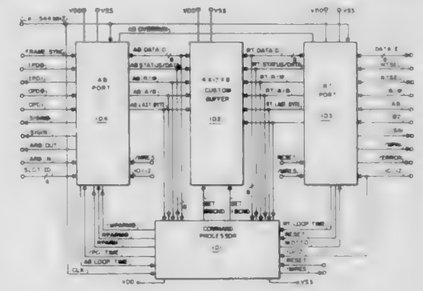


1. An optical disk substrate having a surface on which an annular pre-groove is disposed for light beam tracking and further surfaces on which first and second annular non-pre-grooved regions are respectively disposed outside and inside the annular pre-groove wherein at least one of said first and second annular non-pre-grooved regions extends to the pre-groove and wherein the entirety of the first and second annular non-pre-grooved regions are subjected to surface roughing processing.

4,802,161
PACKET BUS INTERFACE

Steven J. Byars, Chantilly, Va., and William N. Carr, Newark, N.J., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Sep. 16, 1986, Ser. No. 908,055
Int. Cl.[4] H04J *3/26*
U.S. Cl. 370—94 **2 Claims**



1. An arbitrated bus interface circuit for use in a system including a bus and an external processor, said arbitrated bus interface comprising:

an arbitrated bus port connected to said bus and operated to acknowledge receipt of data from said bus; said arbitrated bus port comprising;

address recognition means connected to said bus and operated to decode mini packets and accept those having a predetermined address bit pattern;

frame timing means connected to said bus and operated to detect a sync signal in each mini packet and provide a corresponding timing signal;

flow control means connected to said bus and operable to provide busy and packet transferred signals;

a first custom buffer interface connected to a custom buffer circuit and said flow control means and operable to detect the availability of mini packets from an outbound buffer space in said custom buffer circuit; and

a command processor interface connected to said custom buffer circuit and operated to store parameter information associated with each mini packet;

a receiver-transmitter port connected to said external processor and operable to interrupt said external processor;

said receiver-transmitter port comprises:

a second custom buffer interface operated to transfer data to and from the custom buffer circuit;

an external processor interface connected to said second custom buffer interface and operated to transfer data to and from said external processor; and

control means connected to said second custom buffer interface and said external processor interface and operated to control the transfer of mini packets between the second custom buffer interface and the external microprocessor interface;

a custom buffer circuit comprising inbound and outbound shift registers and connected between said arbitrated bus port and said receiver-transmitter port and operated to store data received from and transmitted to said arbitrated bus port and said receiver-transmitter port, and further operated to provide an interrupt enable signal in response to storing a predetermined amount of data, said receiver transmitter port operated in response to said interrupt enable signal to interrupt said external processor; and

a command processor connected to said arbitrated bus port, said receiver-transmitter port and said custom buffer circuit, and operated to arbitrate on said bus.

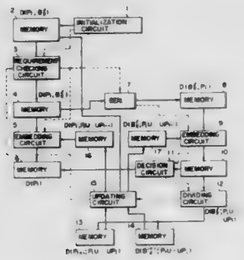
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4,802,162

AUTOMATIC PROTOCOL SYNTHESIZING SYSTEM

Yoshiaki Kakuda, Tokyo; Yasushi Wakahara, Yokohama, and Masamitsu Norigoe, Niza, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1986, Ser. No. 930,341
Claims priority, application Japan, Nov. 14, 1986, 61-253640
Int. Cl.[4] G01R *31/28*; G06F *15/31*
U.S. Cl. 371—15 **2 Claims**



1. An automatic protocol synthesizing system for receiving as inputs incomplete state transition diagrams of at least two functionally incomplete processes forming a protocol and for outputting completed state transition diagrams of the processes, comprising: checking means for making a check for a logical error of the incomplete state transition diagram; embedding means activated by the checking means for embedding the state transition diagram of a process corresponding to the incomplete state transition diagram of an ith (where $1 \leqq i \leqq$) one of the processes in the ith incomplete state transition diagram; state transition diagram generating means activated by the checking means for automatically generating a state transition diagram including all of the remaining (i+1)th and subsequent processes, on the basis of the embedded state transition diagram; and dividing means coactive with said generating means for dividing the thus automatically synthesized state transition diagram into the state transition diagram of the (i+1)th one of all the automatically generated processes and the state transition diagram for the other processes; wherein the operations of the checking means, the embedding means, the state transition diagram generating means and the dividing means are repeated by (N−1) times to complete the state transition diagram for each process, thereby making the protocol functionally complete.

4,802,163

TEST-FACILITATING CIRCUIT AND TESTING METHOD

Kanji Hirabayashi, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 29, 1986, Ser. No. 947,092
Claims priority, application Japan, Mar. 10, 1986, 61-50407
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—15 **18 Claims**

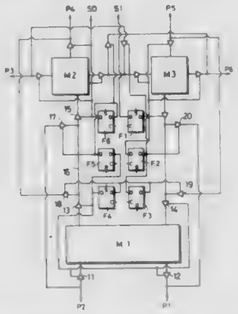
1. A test-facilitating circuit for functionally testing circuit modules comprising:

circuit means of a superior structural hierarchy constructed by connecting circuit modules therebetween and by disconnecting external node means from predetermined circuit modules;

interposed gate means provided in the input and output portions of each circuit module for inputting and outputting signals and performing a functional test to select a specific module;

input and output gate means connected in a mutual wiring between said interposed gate means, and disposed at one end of the mutual wiring, said input-output gate means inputting and outputting signals for performing the functional test to select the specific module, the connections between the circuit modules being tested on the basis of the interposed gate means and the input-output gate means;

means for connecting an input terminal of said input-output gate means to the input external node means of the circuit module which does not belong to the circuit modules on the output side of the mutual wiring;



means for connecting an output terminal of said input-output gate means to an output external node means of the circuit module which does not belong to the circuit modules on the input side of the mutual wiring; and

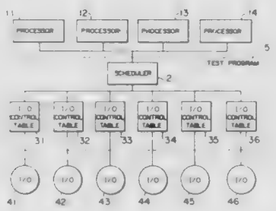
rewritable memory means provided at a control terminal of each of the interposed gate means and the input-output gate means and disposed outside the circuit means.

4,802,164

METHOD AND APPARATUS FOR TESTING A MULTI-PROCESSOR SYSTEM

Kohei Fukuoka, Tokyo; Satoshi Takemura, Hadano; Yatao Takesue, and Hisashi Tamaru, both of Hadano, all of Japan, assignors to Hitachi Ltd. and Hitachi Computer Engineering Co., Ltd., both of Tokyo, Japan

Filed Jan. 6, 1987, Ser. No. 762
Claims priority, application Japan, Jan. 10, 1986, 61-3330
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—16 **6 Claims**



1. A method of testing a multi-processor system including a plurality of processors and peripheral devices adapted to be accessed from said plurality of processors, comprising the steps of:

providing a scheduler for controlling the order of staring of said peripheral devices;

providing peripheral device control tables in one-to-one relation to respective peripheral devices for storing status information thereof, said control table being rewritable and having a lock control flag indicating whether the corresponding peripheral device is occupied by one of said plurality of processors;

switching by means of said scheduler at least one in said plurality of processors to access one of said peripheral devices based on the state of said lock control flag of the corresponding control table each time the peripheral device is started during execution of a task or job for a test program; and

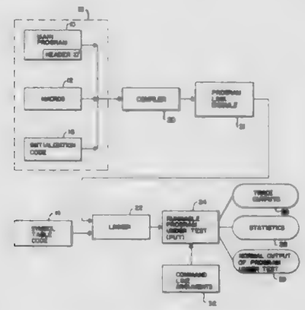
executing a desired test for the accessed peripheral device, said scheduler updating the state of the lock control flag for every starting of the peripheral device.

4,802,165

METHOD AND APPARATUS OF DEBUGGING COMPUTER PROGRAMS

Edward K. Ream, Madison, Wis., assignor to Estelekt, Inc., Madison, Wis.

Filed Oct. 8, 1986, Ser. No. 916,747
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—19 **14 Claims**



2. A method of debugging a program comprising the steps of selectively tracing the program at run time by means of command line arguments without recompiling, including the steps of:

defining each of a plurality of macros to perform selected debugging functions, providing a sub definition in the form of a name string corresponding to each defined macro, and locating the macros in a corresponding file of the program;

providing trace instructions and locating the instructions in a corresponding macro;

defining a series of argument processing instructions and locating them in a corresponding instruction file;

compiling the program with the macros and linking the argument processing instructions therewith to produce a runnable program under test and selectively enabling or disabling the code produced by the compiler from the macros using the name string for each corresponding macro to trace selected portions of program under test by means of selective use of command line arguments.

4,802,166

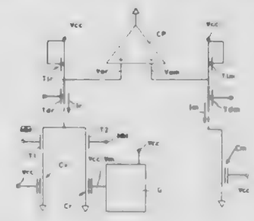
DEVICE FOR THE VERIFICATION OF MEMORY CELLS ON THE BASIS OF THE THRESHOLD DROP OBTAINABLE DURING WRITING

Giulio Casagrande, Vignate, and Roberto Gastaldi, Milan, both of, assignors to SGS Microelecttronics S.p.A, Catania, Italy

Filed Feb. 28, 1986, Ser. No. 835,059
Claims priority, application Italy, Mar. 28, 1985, 20127 A/85
Int. Cl.[4] G11C *11/29*
U.S. Cl. 371—21 **5 Claims**

1. A device for verification of a memory cell under examination on the basis of a threshold drop obtainable in the writing phase of said memory cell under examination, comprising:

a comparator with two controlled inputs, one from a circuit branch including said cell under examination and another from another circuit branch, said another circuit branch



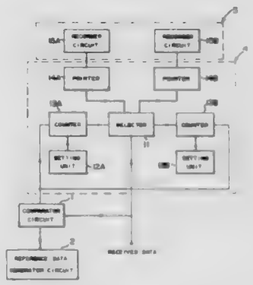
including a virgin cell, and a reference cell in parallel with said virgin cell and controlled in an adjustable manner.

4,802,167

DATA MONITOR APPARATUS

Hajime Sawaya; Yoshinobu Fukuda, and Hiroyuki Sato, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1986, Ser. No. 914,221
Claims priority, application Japan, Oct. 4, 1985, 60-220295
Int. Cl.[4] G01R *31/28*; G06F *11/00*
U.S. Cl. 371—25 **5 Claims**



1. A data monitor apparatus comprising:

(a) reference data generator circuit means for generating reference data representing normal received data;

(b) comparator circuit means for comparing actual received data with said reference data from said reference data generator circuit means, said comparator circuit means producing a signal when it detects a segment of the actual received data which deviates from said normal received data;

(c) recorder circuit means for recording an output from said comparator circuit means;

(d) a compressed data recorder circuit; and

(e) pointer control circuit means cooperable with said compressed data recorder circuit and responsive to the occurrence of said signal from said comparator circuit means for causing said compressed data recorder circuit to store a portion of said actual received data which includes said segment thereof.

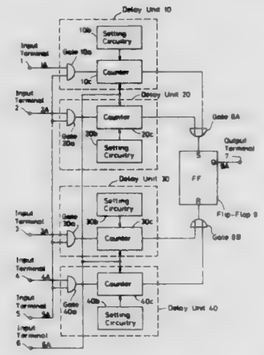
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4,802,168

TEST SIGNAL GENERATING CIRCUIT

Koyu Yamasoi; Yoshio Yoshizakiya, and Masayoshi Dehara, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1987, Ser. No. 11,175
Claims priority, application Japan, Feb. 7, 1986, 61-25178
Int. Cl.[4] G06F *3/04*
U.S. Cl. 371—27 **2 Claims**



1. A test signal generating circuit, comprising:

first, second, third and fourth delay units each including a gate for a predetermined input binary signal for providing an output pulse when the gate is enabled by a repetitive reference signal having a constant interval, a setting circuit for setting a pulse number corresponding to any desired delay period of time, a counter for counting clock pulses given to said counter in a number corresponding to the set number placed in the setting circuit starting from the time when said counter received said output pulse from said gate and for providing an output pulse when said number is reached; and

a flip-flop having a set input terminal to which the outputs from said first and second delay units are applied and a reset input terminal to which the outputs from said third and fourth delay units are applied for obtaining a test signal at an output terminal thereof.

4,802,169

METHOD OF AND DEVICE FOR STORING AND READING DIGITAL INFORMATION AT OPTION PROTECTED OR NOT BY AN ERROR CORRECTING CODE

Tadao Suzuki, Tokyo, Japan; Balthasar A. G. Van Luyt, Eindhoven, and Lambertus M. C. Van Den Hoven, Best, both of Netherlands, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 18,163
Claims priority, application Netherlands, Feb. 24, 1986, 8600450
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—38 **11 Claims**

1. In a method of storing digital information, which method includes the steps of:

a. forming user symbols from the digital information;

b. distributing the user symbols over a sequence of sectors, each sector being provided at its beginning with synchronization symbols;

c. providing each sector with successive header symbols, user symbols and redundancy symbols of a first, systematic, symbol correcting code, which code includes the user symbols;

d. distributing the symbols of a sector over a number of first frames, each of which contains a fixed, first number of symbols;

e. adding second redundancy symbols of a second symbol correcting code to a first frame;

f. interleaving the symbols from a sector and redundancy symbols of a first frame over a plurality of second frames equal to the number of symbols from the sector;

g. adding third redundancy symbols of a third symbol correcting code to a second frame; and

h. making the symbols originating from a first frame and third redundancy symbols bit-serially available for storage;



the improvement comprising the steps of inserting between the header symbols and the user symbols in each sector a number of sub-header symbols, and coding said sub-header symbols to act as data symbols for said first, systematic, symbol correcting code, in which a first sub-mode indication value of said sub-header symbols indicates that said first symbol correcting code is active, and a second sub-mode indication value in a further sector indicates that said first symbol correcting code is not active and that the space of at least a part of said first redundancy symbols is occupied by additional user symbols.

4,802,170

ERROR DISBURSING FORMAT FOR DIGITAL INFORMATION AND METHOD FOR ORGANIZING SAME

Lorne Trottier, Dorval, Canada, assignor to Matrox Electronics Systems Limited, Quevec, Canada

Filed Apr. 29, 1987, Ser. No. 43,939
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—40 **12 Claims**



1. A method for disbursing the adjacently disposed bits in each byte of a digital information bit stream within a reorganized bit stream by multiple stage interleaving of said digital information bit stream through a matrix having either columns or rows of bit locations disposed along a first axis passing therethrough and either rows or columns of bit locations disposed along a second axis passing therethrough orthogonally to said first axis, comprising at least two stages of interleaving with the following steps:

(a) entering consecutive bytes of said digital information bit stream into said columns or rows of said matrix along said first axis to start interleaving stage;

(b) outputting consecutive composite bytes each containing only bits from identical positions within said consecutive bytes of said digital information bit stream entered in each column or row along said first axis during step a) to complete said first interleaving stage;

(c) entering said consecutive composite bytes into said columns or rows of said matrix along one of said first or second axes to start said second interleaving stage; and

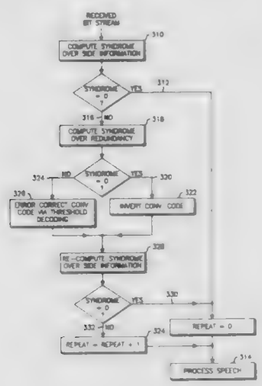
(d) outputting bits in said reorganized bit stream serially from along another axis with the adjacently disposed bits in each byte of said digital information bit stream separated therein by a distance equal to the bit capacity of a plurality of rows or columns along said another axis.

4,802,171

METHOD FOR ERROR CORRECTION IN DIGITALLY ENCODED SPEECH

Phillip D. Rasky, Glenview, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1987, Ser. No. 58,202
Int. Cl.[4] G06F *11/10*; G10L *1/00*
U.S. Cl. 371—43 **13 Claims**



1. A progressive method of decoding a transmitted, digitally encoded speech signal and correcting errors introduced during transmission, the method comprising the following steps:

(a) receiving said transmitted signal and providing therefrom a frame of data bits having at least a first block of information bits and an additionally coded version of said first block of information bits;

(b) computing a first error syndrome over said first block of information bits;

(c) if said first syndrome indicates no error present in said first block of bits, utilizing said bits for speech synthesis;

(d) if said first syndrome indicates error present in said first block of bits, computing a second error syndrome over said additionally coded version of said first block of bits;

(e) if said second syndrome indicates no error present in said additionally coded bits, utilizing said additionally coded bits for speech synthesis;

(f) if said second syndrome indicates error present in said additionally coded bits, combining said additionally coded bits with said first block of information bits for error correction;

(g) computing a third syndrome over the correct bits resulting from steps (e) or (f);

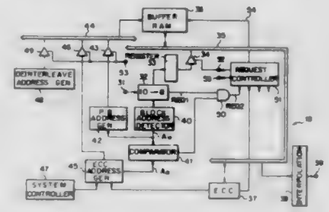
(h) if said thrid syndrome indicates no error present in said resultant bits, utilizing said resultant bits for speech synthesis.

4,802,172

DECODING APPARATUS

Tadashi Fukami; Shinya Ozaki, both of Kanagawa, and Kentaro Odaka, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 27, 1987, Ser. No. 19,583
Claims priority, application Japan, Feb. 28, 1986, 61-43274
Int. Cl.[4] G06F *11/10*; G11B *5/00*
U.S. Cl. 371—38 **7 Claims**



1. A decoding apparatus for decoding input data which was error correction coded, comprising:

memory means for storing data;

writing means for writing said input data into said memory means;

detecting means supplied with said input data for detecting a write address having a first predetermined numerical magnitude and supplying the detected write address to the writing means to cause it to write the input data into said memory means at the detected write address;

decoding means for producing a decoding address having a second predetermined numerical magnitude, reading out the data stored in said memory means at said decoding address, and decoding the read out data;

comparing means for comparing the numerical magnitude of said write address with that of said decoding address; and

control means connected to said comparing means and said writing means for inhibiting the writing means from writing the input data into said memory means when it is detected by said comparing means that the numerical magnitude of the decoding address is not less than that of said write address.

4,802,173

METHOD OF AND DEVICE FOR DECODING A BLOCK OF CODE SYMBOLS WHICH IS DISTRIBUTED BETWEEN CODE WORDS IN TWO WAYS, EACH CODE WORD BEING PROTECTED BY A MAXIMUM DISTANCE SEPARABLE CODE

Constant P. M. J. Baggen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1987, Ser. No. 5,515
Claims priority, application Netherlands, Jan. 5, 1986, 8601446
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—40 **15 Claims**

1. A method of correcting a block of code symbols which is divided into a first series of first code words of a first maximum distance separable code as well as into a second series of code

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words of a second maximum distance separable code, each correct code word of a code having a minimum distance with respect to any other correct code word of at least three, taken over the symbols, all non-redundant code symbols forming part of a first word as well as of a second code word, which method includes the following steps:

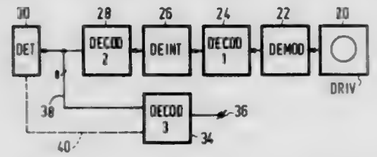
a. collecting a complete block of code symbols;

b. determining all syndrome symbols of the first code words and the second code words, and forming a flag for each code word for which the syndrome deviates from zero;

c. summing for all first code words together a number of flags and summing, separately therefrom, a number of flags for all second code words;

d. determining an error location of a correctable error for a current first code word having a syndrome which deviates from zero;

e. first detecting, whether a current second code word exists which contains the error location, and second detecting whether the current second code word is indicated as incorrect, and correcting the correctable error if the first and second detecting steps give a positive result but omitting correction if the first and second detecting steps give opposite results; and, upon such omitting, addressing a next first code word in accordance with step d;



f. updating the syndromes of the current first code word and the current second code word after a correction in accordance with step e, updating the two flags associated with the current first and second code words to reflect whether the syndromes of the current first and second code words are zero, and decrementing the summing results of the numbers of flags if both syndromes are zero, and subsequently addressing a next first code word in accordance with step d;

g. interchanging the function of first code words and second code words after the addressing of at least all first code words indicated as being incorrect and repeating the steps d, e and f until two successive executions of the steps d, e, f do not produce a further modification for any current first code words; and

h. supplying a block of code symbols including all first and all second code words with signalization of its correctness or incorrectness.

4,802,174

VITERBI DECODER WITH DETECTION OF SYNCHRONOUS OR ASYNCHRONOUS STATES

Hisaki Hiraiwa, and Eiichi Osawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1987, Ser. No. 15,983

Claims priority, application Japan, Feb. 19, 1986, 61-34287

Int. Cl.[4] G06F *11/10*

U.S. Cl. 371—46 **4 Claims**

1. A Viterbi decoder for decoding convolutional coded data having a predetermined coding ratio by use of a Viterbi altorithm, comprising:

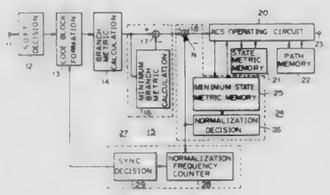
a soft deciding circuit for converting reception data into soft decision data;

a code block forming circuit for segmenting said soft decision data for each code block, corresponding to said predetermined coding ratio;

a branch metric calculating circuit for calculating a plurality of respective branch metrics from output data produced by said code block forming circuit;

normalizing means for subtracting the minimum one of said respective branch metrics from each of said branch metrics;

an arithmetic operating circuit for arithmetically operating state metrics by use of the branch metrics from said normalizing means;



a synchronization detecting circuit for selecting the minimum one of said arithmetically operated state metrics and for detecting the synchronizing state or asynchronizing state on the basis of a time-dependent change in increase in said selected minimum state metric, and

shifting the segmenting position of the code block in said code block forming circuit when the asynchronizing state is detected by said synchronization detecting circuit.

4,802,175

OPTO-ELECTRIC LOGIC ELEMENTS

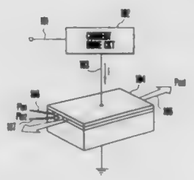
Syuji Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 647,493, Sep. 5, 1984, abandoned. This application May 28, 1986, Ser. No. 845,893

Claims priority, application Japan, Sep. 6, 1983, 58-163449; Apr. 17, 1986, 59-76787

Int. Cl.[4] H01S *3/30*

U.S. Cl. 372—8 **4 Claims**



1. An opto-electric logic element comprising:

a semiconductor laser of a type having a differential gain characteristic with respect to the quantity of input light thereof in relation to the value of an injection current injected thereto;

means for supplying at least one light input signal to said semiconductor laser;

means for supplying an injection current to said semiconductor laser;

said means for supplying an injection current comprising a control circuit for varying said injection current in response to a gate input signal;

said values of said injection current and said at least one light input signal being selected such that said semiconductor laser emits an output optical signal representing a result of one of a logical summing operation and a logical multiplying operation upon said injection current and said at least one light input signal.

4,802,176

DOUBLE MOVING GRATING LASER

Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 17, 1986, Ser. No. 886,468

Int. Cl.[4] H01S *3/098*

U.S. Cl. 372—19 **13 Claims**



8. A frequency stable laser resonator, comprising:

a phase conjugate reflector;

a stimulated Brillouin scattering (SBS) reflection means spaced from said phase conjugate reflector;

a laser gain medium positioned between said phase conjugate reflector and SBS reflection means;

an output coupling means positioned to redirect a predetermined portion of laser radiation in said laser gain medium into an output beam; and

a third reflection means positioned to intercept and redirect a predetermined portion of said output beam into said second reflect ion means in a direction toward said laser gain medium.

4,802,177

SEMICONDUCTOR LASER MOUNT

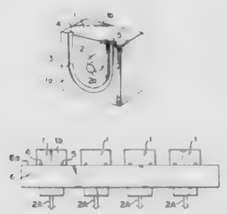
Kenichi Yamagishi; Kazuo Horikawa, and Hiromi Ishikawa, all of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Mar. 18, 1986, Ser. No. 840,738

Claims priority, application Japan, Mar. 20, 1985, 60-56938

Int. Cl.[4] H01S *3/04;* **B31B** *1/60;* **H01L** *39/02*

U.S. Cl. 372—36 **8 Claims**



1. A semiconductor laser mount to which a semiconductor laser is mounted, said laser mount being bonded to a support to mount the semiconductor laser with respect to the support, said laser mount being characterized by having an adhesive retaining groove provided in a mating face thereof which is to be mated with the support, the adhesive retaining groove extending to substantially surround the semiconductor laser in the mating face such that the adhesive is present only in said groove so that the laser mount and the support are bonded to one another only by the adhesive in the groove, and said adhesive retaining groove opening at at least one of the faces other than the mating face at at least two portions of said at least one of said other faces so that the adhesive may be injected into said groove at one of said portions and air may be ejected at the other of said portions when the adhesive is injected into the groove.

4,802,178

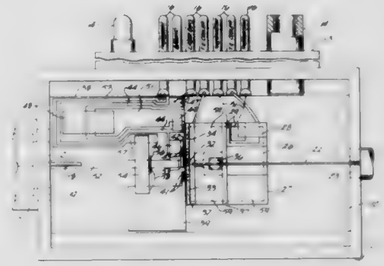
HIGH SPEED FIBEROPTIC LASER MODULE

Israel Ury, Los Angeles, Calif., assignor to Ortel Corporation, Alhambra, Calif.

Filed Apr. 10, 1986, Ser. No. 849,960

Int. Cl.[4] H01S *3/096*

U.S. Cl. 372—36 **25 Claims**



1. A semiconductor laser module comprising:

a housing;

a laser substrate in the housing;

a semiconductor laser diode mounted on the laser substrate;

an optical fiber connected to the same laser substrate in alignment with the laser;

a connection substrate mounted on the base of the housing beside the laser substrate;

a metallized lead line on the connection substrate;

means for bringing an external electrical signal through the housing and applying the signal to the lead line;

means on the connection substrate for matching impedance of the lead line and the laser diode;

means for connecting one terminal of the laser diode to the means for matching impedance; and

means for connecting the other terminal of the laser diode to ground.

4,802,179

APPARATUS FOR CONTROLLING OPTICAL OUTPUT FROM SEMICONDUCTOR LASER

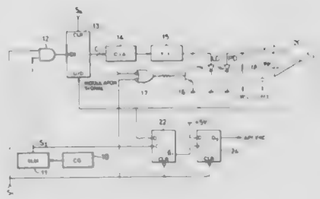
Kiyoshi Negishi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1988, Ser. No. 178,943

Claims priority, application Japan, Apr. 7, 1987, 62-85472

Int. Cl.[4] H01S *3/00*

U.S. Cl. 372—38 **6 Claims**



1. An apparatus for controlling an optical output from a semiconductor laser, having a semiconductor laser, an optical detector for detecting the intensity of emission from said semi-

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conductor laser, comparison means for comparing a detection value supplied from said optical detector with a reference value, and control means for increasing or decreasing a current supplied to said semiconductor laser in response to the result of said comparison performed by said comparison means so that said detection value becomes equal to said reference value, said apparatus comprising:

timing generation means for outputting strobe signals in predetermined cycles;

APC completion signal discrimination means successively storing the result of said comparison by the timing corresponding to said strobe signals by means of a storage device of more than two bits, said APC completion discrimination means outputting an APC completion signal when said stored result of said comparison exhibits successive inversions and when the current detection value is lower than said reference value; and

control termination means for terminating said increasing or decreasing operation by receiving said APC completion signal, before a new strobe signal is supplied.

4,802,180

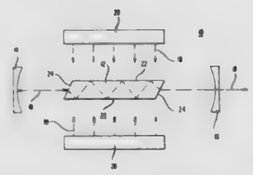
GROWTH OF CONGRUENTLY MELTING GADOLINIUM SCANDIUM GALLIUM GARNET

Charles D. Brandle, Jr., Basking Ridge; Vincent J. Fratello, New Providence, and Alejandro J. Valentino, Colonia, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 30, 1986, Ser. No. 857,846

Int. Cl.[4] H01S *3/16*

U.S. Cl. 372—41 7 Claims



1. A congruent composition of matter comprising a single crystal having a formula given by

$$Gd_{2.96\pm0.03}Sc_{1.90\pm0.05}Ga_{3.14\pm0.05}O_{12},$$

wherein the crystal includes off-site distributions of more than one cation.

4,802,181

SEMICONDUCTOR SUPERLATTICE LIGHT EMITTING SEVICE

Hiroshi Iwata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 27, 1987, Ser. No. 127,015

Claims priority, application Japan, Nov. 27, 1986, 61-283284; Nov. 27, 1986, 61-283286; Feb. 13, 1987, 62-31257; Feb. 13, 1987, 62-31258

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—45 6 Claims

1. A semiconductor superlattice comprising:

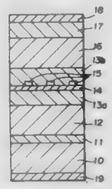
an active layer composed of a superlattice,

p and n-cladding layers positioned respectively above and beneath the active layer,

means for injecting current into said active layer,

an planar quantum well region having a thickness of approximately electron de Broglie wavelength and the two dimensionally spread quantum state, and

at least one local quantum well region which is provided inside said planar quantum well region having a thickness of approximately electron de Broglie wavelength along at least one of the longitudinal and transverse directions parallel to the plane thereof,



wherein the energy level of ground state of said local quantum well region is lower than the energy levels of said planar quantum well region.

4,802,182

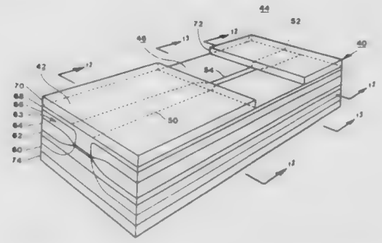
MONOLITHIC TWO DIMENSIONAL WAVEGUIDE COUPLED CAVITY LASER/MODULATOR

Robert L. Thornton, East Palo Alto, and Thomas L. Paoli, Los Altos, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 5, 1987, Ser. No. 117,706

Int. Cl.[4] H01S *3/19, 3/10*

U.S. Cl. 372—50 4 Claims



1. A monolithic two dimensional waveguide coupled cavity laser/modulator structure comprising a plurality of semiconductor layers on a semiconductor substrate, one of said semiconductor layers having a narrower bandgap than at least immediately adjacent layers, a first active medium formed in a first region of said structure including a portion of said narrower bandgap layer and having a two dimensional optical cavity, a second active medium formed in a second region of said structure including a portion of said narrower bandgap layer and having a two dimensional optical cavity in coaxial alignment with the two dimensional optical cavity of said first active medium, one of said active mediums functioning as a laser and the other of said active mediums functioning as a modulator, a passive two dimensional waveguide integrally formed between and to said active mediums and having the highest refractive index at its core with diminishing refractive index omnidirectionally from its core, said two dimensional waveguide core having a energy bandgap level higher than both of said active mediums with low optical absorption at the gain wavelength of either of said active mediums.

4,802,183

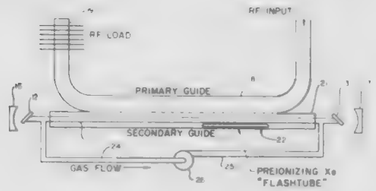
MICROWAVE EXCITED EXCIMER LASER AND METHOD

Stephen E. Harris, Palo Alto, and James F. Young, Stanford, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 7, 1982, Ser. No. 366,384

Int. Cl.[4] H01S *3/22*

U.S. Cl. 372—57 15 Claims



1. An excimer laser comprising a resonant optical cavity containing a gas-phase lasing molecular species, and means for coupling or applying microwave energy to said lasing species whereby the atoms or molecules of the lasing molecular species are excited or pumped into their upper or energetic level from which they can emit photons and make a transition to a lower unbound unexcited state.

4,802,184

HIGH FREQUENCY DISCHARGE EXCITED COAXIAL TYPE CO_2 LASER

Norio Karube, Machida, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

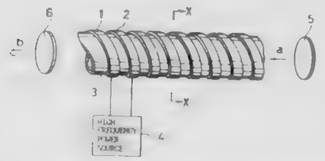
PCT No. PCT/JP87/00060, § 371 Date Sep. 28, 1987, § 102(e) Date Sep. 28, 1987, PCT Pub. No. WO87/04869, PCT Pub. Date Aug. 13, 1987

PCT Filed Jan. 28, 1987, Ser. No. 112,565

Claims priority, application Japan, Jan. 29, 1986, 61-15595

Int. Cl.[4] H01S *3/097, 3/03*

U.S. Cl. 372—82 7 Claims



1. A high frequency discharge excited coaxial type CO_2 laser, comprising:

a laser tube composed of a dielectric material, in which a CO_2 laser gas is passed in an axial direction through said tube;

two helical electric conductors affixed to an outer periphery of said laser tube, said conductors having the same pitch and being films of conductive material, said conductors each having a thickness which is small enough to prevent said conductors from peeling off said laser tube when said conductors and said dielectric material have different thermal properties; and

a high frequency power source for applying a high frequency voltage between said two helical electric conductors, the thickness of said laser tube being equal to the value defined as $D=V\beta/2I$, *wherein*

D is the thickness of said laser tube

V is the discharge sustaining voltage

ϵ is the dielectric constant of said laser tube

ω is the frequency of said high frequency power source, and

I is the current density.

4,802,185

TRANSVERSELY EXCITED ATMOSPHERIC LASER

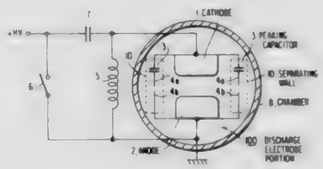
Yukio Kyusho, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 29, 1987, Ser. No. 66,925

Claims priority, application Japan, Jun. 27, 1986, 61-149598

Int. Cl.[4] H01S *3/097*

U.S. Cl. 372—86 13 Claims



1. A transversely excited atmospheric laser comprising:

a pair of main discharge electrodes including an anode electrode having a first predetermined length and extending in a predetermined direction, and a cathode electrode having a second predetermined length and extending in said predetermined direction and disposed opposite and parallel to said anode electrode with a first predetermined gap therebetween to provide a main discharge space;

at least one set of preliminary discharge electrodes, including a pair of electrodes facing each other with a second predetermined gap therebetween which is shorter than said first predetermined gap to provide at least one preliminary discharge space adjacent said main discharge space;

means for applying a first high voltage to said main discharge electrodes and a second high voltage to said at least one set of preliminary discharge electrodes to cause an arc discharge in said second predetermined gap;

a discharge chamber surrounding said main discharge space and said at least one preliminary discharge space thereby containing said main discharge electrodes and said at least one set of preliminary discharge electrodes;

at least one separating wall, made of an insulating material, for separating said main discharge space from said at least one preliminary discharge space to provide a gas-tight sealing and for passing an ultraviolet light emitted by said arc discharge from said at least one preliminary discharge space to said main discharge space; and

a laser gas filling said main discharge space and preionized by said ultraviolet light.

4,802,186

HIGH REFLECTANCE LASER RESONATOR CAVITY

James O. Gibson, El Segundo; Victor C. Gearhart, Torrance; Steven E. Birrell, Lancaster, and Gabriele M. Hawrylow, Sebastopol, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

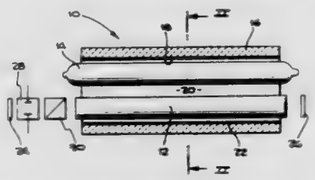
Filed Jul. 6, 1987, Ser. No. 69,802

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—92 13 Claims

1. A ceramic structure for use as a laser pump cavity to surround a rod of laser material and a light source emitting radiation within a range of 0.4 to 2.0 microns, and wherein laser radiation at a lasing wavelength is produced by said laser material upon exposure to said light source, said ceramic structure comprising a ceramic body having an interior surface defining said pump cavity wherein said ceramic body comprises sintered alumina having grain sizes of between about 0.3

to 0.5 microns and a packing density between about 70 to 87 percent such that said grain size and said packing density provide optimum diffuse reflectance of said radiation within said pump cavity.

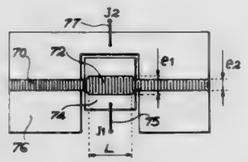


4,802,187

DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER OF CONTINUOUSLY TUNABLE WAVELENGTH

Jean-Claude Bouley, 35 Avenue du Docteur Durand, 94110 Arcueil, and Pascal Correc, 3 Villa d'Aléxia, 75014 Paris, both of France

Filed May 5, 1987, Ser. No. 46,934
Claims priority, application France, May 16, 1986, 86 07064
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—96 6 Claims



1. A distributed feedback semiconductor laser comprising:
a metal electrode;
a substrate on said metal electrode;
a double heterostructure on said substrate formed by a confinement layer on said substrate, an active layer on said confinement layer, and a guiding layer engraved to form a diffraction network on said active layer, the active layer and the guiding layer forming a ribbon having a certain width and a certain thickness and a central portion of larger at least one of width and thickness; and
another metal electrode surmounting the heterostructure enabling charges to be injected through the ribbon, wherein said another metal electrode comprises two distinct portions forming a first electrode disposed above the central portion of the ribbon, the first electrode being connected to a first connection for the injection of a first current and a second electrode disposed above the rest of the ribbon and connected to a second connection for the injection of a second current.

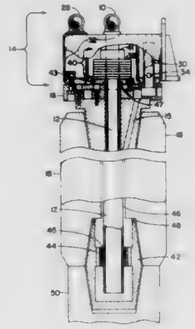
4,802,188

WATER TRAP MANIFOLD FOR WATER COOLED ELECTRODES

Berch Y. Karagoz, Grand Island; Lyman T. Moore, Niagara Falls; Mark D. Travers, Sanborn, and Donald P. Allen, Niagara Falls, all of N.Y., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Sep. 26, 1985, Ser. No. 780,518
Int. Cl.⁴ H05B *7/08*
U.S. Cl. 373—93 5 Claims

1. In a water-cooled electrode for an electric arc furnace, the improvement comprising a water trap manifold in the coolant outlet line having means to prevent the loss of coolant while providing for the escape of generated steam during off-furnace transfer of the electrode, said means comprising a chamber having within it a steam riser tube connected with said coolant outlet line and open at its lower and upper ends, said manifold integral with a header assembly at the upper end of said electrode.



4,802,189

METHOD AND CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF DATA SIGNALS BETWEEN SUBSCRIBER STATIONS OF A DATA NETWORK

Hartmut Wedler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellshaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,436
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3311030
Int. Cl.⁴ H04L *27/00*
U.S. Cl. 375—37 4 Claims

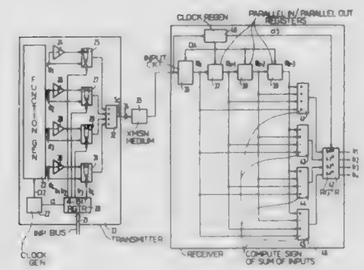
1. A subscriber station for connection between a data terminal and an incoming and an outgoing transmission line of a data network and for transmitting and receiving data via the data network, including data transmission rate information, comprising:
a data circuit terminating equipment by which the data terminal is connected to the incoming and outgoing transmission lines, including storage means for storing data transmission rates for the permissible operating data transmission rates of the subscriber station;
a comparator in said data circuit terminating equipment operable to compare a data transmission rate information received from another subscriber station with the stored data transmission rates and identify the highest available data transmission rate as the rate requested or as the maximum data transmission rate of the subscriber station as a common data transmission rate;
a setting means connected to said comparator and operable to produce setting signals for setting the subscriber station to the common data transmission rate; and
transmission means connected to said setting means for transmitting setting signals to the other subscriber station for setting the same to the common data transmission rate.

4,802,190

METHOD OF TRANSMITTING INFORMATION BY MEANS OF CODE SIGNALS, INFORMATION TRANSMISSION SYSTEM FOR CARRYING OUT THE METHOD, AND TRANSMITTING AND RECEIVING APPARATUS FOR USE IN THE TRANSMISSION SYSTEM

Kornelis A. Schouhamer Immink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 15, 1987, Ser. No. 45,921
Claims priority, application Netherlands, Jan. 26, 1987, 8700175
Int. Cl.⁴ H04L *27/10*
U.S. Cl. 375—38 14 Claims



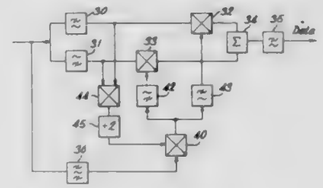
1. A method for transmitting n-bit information words, where n is a positive integer, comprising the step of:
representing the information words by m-bit code signals having a frequency spectrum, where m is an integer greater than or equal to n, the code signals being such that frequency components of the frequency spectrum represent bit positions, so that:
ii. corresponding bit positions in different information words are represented in code words by frequency components situated mainly within a same range of the frequency spectrum; and
iii. bits having different bit positions have frequency components situated mainly within different ranges of the frequency spectrum;
the representing step comprising selecting the code signals from a group of 2^n code signals, the group of 2^n code signals being a subset of the 2^m possible code signals, the subset being such that upon decoding the code signals are correlatable, with n sub-signals having respective frequency spectra containing mainly respective distinct frequency components which correspond to respective ones of said frequency components which represent the bits of the code signals, to produce 2^n combinations of correlation coefficients, the combinations being distinguishable by the signs of the correlation coefficients.

4,802,191

DATA TRANSMISSION USING A TRANSPARENT TONE-IN BAND SYSTEM

Joseph P. McGeehan, Corsham, and Andrew Bateman, Bath, both of England, assignors to National Research Development Corporation, London, England

Filed Feb. 26, 1987, Ser. No. 19,129
Claims priority, application United Kingdom, Feb. 28, 1986, 8604981
Int. Cl.⁴ H04B *1/68*
U.S. Cl. 375—43 15 Claims



15. A receiver method for processing signals received in a communication system which employs a transmission method comprising modulating an information signal with a carrier signal in a baseband to derive a modulated signal, dividing a frequency spectrum including the modulated signal into lower and upper portions with a frequency notch between the lower and upper portions, and transmitting the upper and lower portions and the carrier signal using a transmission signal,
the receiver method comprising:
receiving the transmission signal and providing said upper and lower portions from said transmission signal,
demodulating the upper and lower portions using first and second demodulation signals respectively,
combining the demodulated upper and lower portions to form an output signal,
deriving a correcting signal dependent on any difference in frequency and phase in the lower and upper portions on reception but as referred to the original spectrum of the information signal, and
generating the first and second demodulation signals from the carrier signal used in the transmission method and employing the correcting signal in generating at least one of the first and second demodulation signals.

4,802,192

CIRCUIT FOR DETECTING SYNCHRONIZING CODE

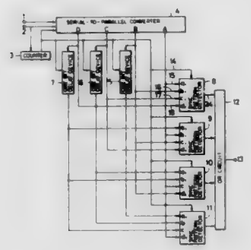
Yoshizumi Eto, Sagamihara; Kazuyuki Takeshita, Hachioji; Hidehiro Kanada, Kodaira, and Masao Umemoto, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1987, Ser. No. 13,114
Claims priority, application Japan, Feb. 14, 1986, 61-28828
Int. Cl.⁴ H04L *7/00*
U.S. Cl. 375—116 3 Claims

1. A synchronizing code detection circuit comprising:
dividing means for dividing an original code series containing a synchronizing code into a code series, n in number, having a bit rate of 1/n of that of the original code series (n is a positive integer);
delay means for delaying a code series, (n−m) in number, (m is a positive integer ranging from 1 to n) out of the code series, n in number, delivered from said dividing means, for a time equivalent to one time-slot of said bit rate of 1/n, respectively; and
synchronizing pattern detecting means for detecting a pattern corresponding to any one of synchronizing patterns of n kinds obtained by rotating an original synchronizing

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pattern, from code series groups in n kinds comprising code series, m in number, out of the ones, n in number,



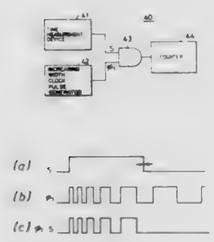
delivered from said dividing means and code series, (n−m) in number, delivered from said delay means.

4,802,194

TIME MEASURING SYSTEM WITH LARGE DYNAMIC RANGE

Takashi Nishibe, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Feb. 11, 1987, Ser. No. 14,252
Claims priority, application Japan, Mar. 5, 1986, 61-46277
Int. Cl.⁴ H03M *7/00*; G06G *7/24*
U.S. Cl. 377—20 **5 Claims**



1. A system for measuring a time interval comprising:

sensing means for generating a signal having a pulse period to indicate a beginning and end of said time interval;

clock means for generating a clock signal composed of a plurality of clock pulses, each of said pulses having a pulse period which is longer than the pulse period of an immediately preceding pulse by a predetermined ratio greater than one, said pulse period of said signal generated by said sensing means being at least as long as the pulse period of each of said clock pulses; and

counter means, coupled to said sensing means and said clock means, for counting the number of said clock pulses in said clock signal generated between the beginning and end of said time interval,

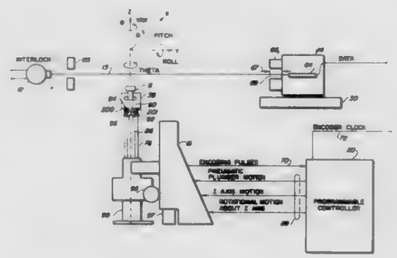
whereby a varying log function time interval is provided for said sensing means.

4,802,195

DEVICE FOR METHOD FOR MANIPULATING A PART

Charles R. Wojcienchowski, West Chester; Douglas S. Steele, Fairfield, both of Ohio, and Henry J. Scudder, III, Boston, Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 25, 1986, Ser. No. 832,974
Int. Cl.⁴ G01B *15/06*
U.S. Cl. 378—58 **7 Claims**



1. A system for positioning parts in an X-ray inspection machine comprising:

transport means for transporting parts from a part load and unload station to an inspection station in an X-ray inspection machine;

gripper means for gripping a part and restraining the part in a predetermined orientation;

means on said transport means for releasably carrying said gripper means;

mandrel means in said X-ray inspection machine for removing said gripper means from said transport means and for positioning the part in said gripper means in a position for X-ray inspection, said mandrel means including:

(i) retaining means for fixedly retaining said gripper means on said mandrel means; and

(ii) locating means for predeterminately locating said gripper means in a preselected orientation on said mandrel means.

4,802,196

X-RAY TUBE TARGET

Thomas C. Tiearney, Jr.; William D. Love, both of Waukesha, and David K. Moorman, New Berlin, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

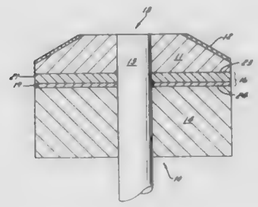
Filed Dec. 31, 1986, Ser. No. 948,205
Int. Cl.⁴ H01J *35/10*
U.S. Cl. 378—143 **4 Claims**

1. A composite X-ray tube target comprising:

a refractory metal portion having a focal track thereon;

a graphite substrate portion; and

a bonding layer joining said graphite substrate portion to said refractory metal portion, said bonding layer comprising platinum containing a dissolved wetting agent selected from the group consisting of tantalum, molybdenum, tungsten and niobium.

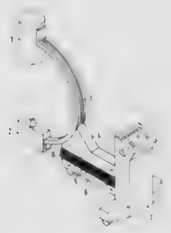


4,802,197

MOBILE X-RAY EXAMINATION UNIT

Hans Juergens, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 18, 1986, Ser. No. 943,194
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1986, 3608041
Int. Cl.⁴ H05G *1/02*
U.S. Cl. 378—197 **3 Claims**



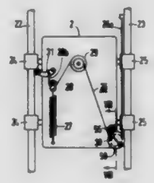
1. A mobile X-ray examination unit including a C-bend that carries an X-radiator and a radiation receiver at its ends and which is displaceably seated on a carriage which includes a horizontally disposed boom, said C-bend being guided in an adjustable fashion in a holder along its circumference, the improvements comprising the holder being directly arranged on the boom and a height-adjustable means being directly connected with the holder and the boom and being formed by a scissors linkage.

4,802,198

X-RAY EQUIPMENT SUPPORT APPARATUS

Werner Guenther, and Heinrich Schmitt, both of Bensheim, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 24, 1986, Ser. No. 843,258
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1985, 3511907
Int. Cl.⁴ H05G *1/02*
U.S. Cl. 378—197 **27 Claims**



1. An apparatus for supporting an x-ray unit in a vertically adjustable manner comprising:

a carrier, the x-ray unit being securd to the carrier;

a frame for supporting the carrier and x-ray unit, the frame including two parallel post members, the post members including longitudinal slots extending for a predetermined distance;

the carrier including guide members for being received in the longitudinal slots of the post members in gliding fashion and the carrier including a counterbalance member having a force element and a support cable, one end of the support cable being secured to one of the post members and a second end of the support cable being secured to the carrier;

a safety brake for preventing the carrier from free falling within the frame, the safety brake including wedging means supported from the carrier for wedging between a guide rod in the post member and the carrier to prevent downward movement of the carrier, the one end of the support cable being secured to the one post member and the second end being secured to the wedging means, the support cable exerting a force on the wedging means;

the carrier includes deflection rollers through which the support cable passes, one of the deflection rollers is coupled to means for adjusting the height of the carrier, the means for adjusting the height of the carrier includes a brake wherein the means for adjusting the height of the carrier is an electrically driven motor and the electrically driven motor and brake are connected to a common drum that is coupled to the deflection roller.

4,802,199

METHOD AND APPARATUS FOR PROVIDING VIRTUAL FACILITY COMMUNICATION SERVICE

Michael D. Lange, Red Bank; Nicholas K. Smith, Aberdeen, and Carl Willems, Ocean, all of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Jun. 22, 1987, Ser. No. 64,648
Int. Cl.⁴ H04M *1/27, 3/42*
U.S. Cl. 379—221 **12 Claims**

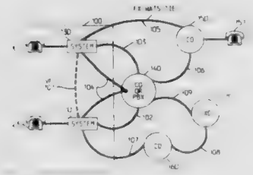
1. A private communication system including a common controller connected over a communication facility to a

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switching office and connected over a communication loop to a station set, said common controller comprising

means for receiving a predetermined signal preceding a called party signal from a user at said station set,

means for accessing a virtual facility table using said predetermined signal to obtain a virtual facility number to establish a connection between said communication system and a second private communication system via said switching



office, said virtual facility number including an intersystem dialing signal and a predefined code identifying the position where said calling party signal should be inserted within said virtual facility number, and

means for sending to said switching office a composite dialing signal including said intersystem dialing signal and said called party dialing signal wherein said called party dialing signal is positioned in said composite dialing signal in accordance with said position identifying code.

4,802,200

RADIO TELEPHONE SYSTEM CONTROL APPARATUS AND METHOD

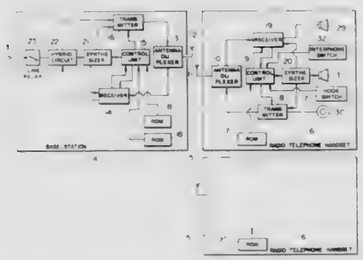
Yoshitoshi Murata, Yokosuka; Kazuhiro Yoshizawa, Kashiwa; Akio Yotsutani, Tokyo, and Koichi Ito, Hino, all of Japan, assignors to Nippon Telegraph and Telephone Corporation and NEC Corporation, both of Tokyo, Japan

Filed Aug. 26, 1986, Ser. No. 900,590

Claims priority, application Japan, Aug. 27, 1985, 60-187760; Aug. 27, 1985, 60-187765

Int. Cl.[4] H04M *11/00*

U.S. Cl. 379—61 **34 Claims**



1. A Radio telephone system control apparatus comprising:

a plurality of radio telephone handsets, each having a handset transceiver;

a base station connected to a wired telephone channel;

a base station transceiver for exchanging signals between the base station and said handset transceiver for each of said plurality of radio telephone handsets;

means provided in said base station for detecting a ring signal on said wired telephone channel;

means for sequentially sending paging signals with a predetermined time delay, each containing a channel designating signal, to said handset transceiver for each of said plurality of radio telephone handsets from said base station transceiver when said ring signal is detected;

means located in said plurality of radio telephone handsets and responsive to said received paging signal, for sending a paging response signal to said base station transceiver from said handset transceiver for each of said plurality of radio telephone handsets, and for switching the radio channel of said handset transceiver for each of said plurality of radio telephone handsets to a radio channel corresponding to said channel designating signal;

means for switching the radio channel of said base station transceiver to a radio channel corresponding to said channel designating signal when said paging response signal is received within a predetermined time interval following transmission of said paging signal by the base station transceiver; and

whereby a single base station controls the connection between said wired telephone channel and either one of said plurality of radio telephone handsets.

4,802,201

CONTROL SYSTEM OF A RADIO TELEPHONE APPARATUS

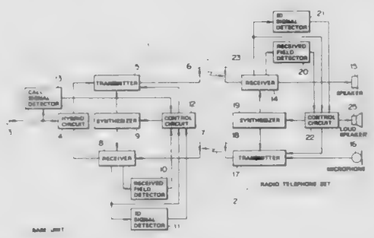
Kazuhiro Yoshizawa, Kashiwa; Akio Yotsutani; Noboru Segusa, both of Tokyo; Koichi Ito, Hino; Syozi Huse, Hachioji, and Akio Toki, Hino, all of Japan, assignors to Nippon Telegraph and Telephone Corporation; NEC Corporation, both of Tokyo and Kabushiki Kaisha Toshiba, Kanagawa, all of, Japan

Filed Sep. 29, 1986, Ser. No. 912,540

Claims priority, application Japan, Sep. 30, 1985, 60-218527

Int. Cl.[4] H04M *1/70*

U.S. Cl. 379—62 **15 Claims**



1. A radio telephone system for use with a wired telephone system, comprising:

a base unit connected to the wired telephone system;

a handset;

means in said base unit, responsive to a call from said wired telephone system, for broadcasting paging signals on a first communications channel;

means in said handset for receiving paging signals from said base unit;

means in said handset, responsive to said received paging signals, for broadcasting on said first communications channel paging response signals having handset identification data;

means in said base unit for receiving said paging response signals from said handset;

field detecting means in said base unit, responsive to said base unit receiving means, for generating a first detection signal when the signal strength of said received paging response signals is stronger than a predetermined signal strength;

means in said base unit, responsive to said base unit receiving means, for generating a second detection signal in response to the detection of said identification data in said received paging response signals; and

means, responsive to the presence of said first detection signal and said second detection signal, for establishing a communication link between said base station and said handset on a second communications channel.

4,802,202

TELEPHONE CALL SELECTOR

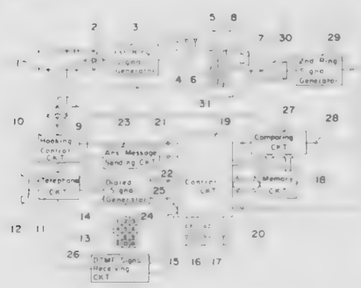
Ryoichi Takahashi, Gunma; Seiichi Ogawa, Ohta, and Isao Ohtawara, Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Sep. 3, 1987, Ser. No. 92,936

Claims priority, application Japan, Sep. 10, 1986, 61-213380; Sep. 19, 1986, 61-222631; Sep. 25, 1986, 61-227775; Oct. 15, 1986, 61-244373; Oct. 27, 1986, 61-255233

Int. Cl.[4] H04M *1/57, 1/64, 1/66*

U.S. Cl. 379—67 **5 Claims**



1. A telephone call selector in a telephone which comprises a memory means for storing a plurality of telephone numbers; an automatic dialing device operable to read out one of the telephone numbers from the memory means and to output a dialed signal representative of said one of the telephone numbers; means for comparing a number, corresponding to a DTMF signal transmitted from a calling party subsequent to the receipt of a ringing signal generated from a local telephone of the calling party, with any one of identifier codes; and means for emitting ringing sounds when the number corresponding to the DTMF signal coincides with such one of the identifier codes, said telephone numbers in the memory means being utilized as the respective identifier codes.

4,802,203

TELEPHONE MESSAGE RECORDING DEVICE WITH DISPLAYS TO INDICATE THE NUMBER OF CALLS RECEIVED AND MESSAGES RECORDED

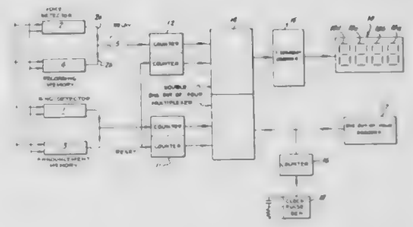
Willy Muller, Guggerstrasse 13, CH-8702 Zollikon, West Zollikon, Fed. Rep. of Germany, and Marcus Moser, Fleet, England, assignors to Willy Muller, Zollikon, Fed. Rep. of Germany

Continuation of Ser. No. 848,286, Apr. 4, 1986, abandoned. This application Sep. 30, 1987, Ser. No. 105,530

Claims priority, application European Pat. Off., Apr. 4, 1985, 85104135.0

Int. Cl.[4] H04M *1/65*

U.S. Cl. 379—80 **2 Claims**



1. A telephone message recording device for recording messages from a caller on an incoming telephone line, comprising recording memory means for recording of calls and incoming messages, announcemnet memory means, detector means responsive to incoming telephone calls and producing a start signal for said announcement memory means, the announcement memory means including means providing a prerecorded message to the caller responsive to the start signal, voice detector switch means fox detecting whether there are voice signals on the incoming line and supplying a start signal to said recording memory means, first and second counters, display means for indicating that a call or calls have been received, the display means including first and second numeric display means, of which the first display means is responsive to said first counter and indicates the number of calls received and the second display means is responsive to said second counter and indicates the number of calls which have been recorded on the recording memory means, the first and second counters each being formed by two-digit BCD counters whose output signals are applied via multiplexers and drive circuits to a digital display, said multiplexers being each formed by two one-out-of- four-multiplexers, means coupling the inputs of a respective one-out-of-four-multiplexer to the corresponding outputs of the two two-digit counters, means connecting the outputs of the four one-out-of-four-multiplexers to the four inputs of a seven segment decoder which controls the segments of the four-digit digital display, means connecting the selection control inputs of the multiplexers to output lines of a clock pulse source having two outputs further connected to a decoder for selecting the respective digit of the four-digit digital display.

4,802,204

SELECTING INTERFACE DEVICE FOR FACSIMILE APPARATUSES

TsaiFa Chang, Taipei, Taiwan, assignor to Climax Technology Co., Ltd., Taipei, Taiwan

Filed Sep. 25, 1987, Ser. No. 100,957

Int. Cl.[4] H04N *1/22*

U.S. Cl. 379—100 **8 Claims**

1. A selecting device for interfacing between a telephone line and two facsimile apparatuses, comprising:

a telephone line terminal adapted to be coupled with said telephone line;

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two facsimile apparatus terminals adapted to be coupled with said two facsimile apparatuses respectively;

a loop selection circuit coupled with said telephone line terminal and said facsimile apparatus terminals; and

means, coupled with said loop selection circuit, for controlling said loop selection circuit selectively to couple any two of said telephone line terminal and said facsimile apparatus terminals with each other; said controlling means including two intercom control circuits coupled with said loop selection circuit, and a ringing signal generating circuit coupled with said intercom control circuits and with said loop selection circuit the controlling means operative such that when said two facsimile apparatus terminals are selected to be coupled with each other, and one of said facsimile apparatuses generates an intercom request signal which in turn is transmitted to one of said intercom control circuits via one of said facsimile apparatus terminals and said loop selection circuit, said one intercom control circuit, in response to said intercom request signal, activates said ringing signal generating circuit to generate an inner ringing signal which in turn is transmitted to the other facsimile apparatus via said loop selection circuit and the other facsimile apparatus terminal; and the controlling means further operative such that when said other facsimile apparatus generates an acknowledgement signal in response to said inner ringing signal, said acknowledgement signal in turn being transmitted to other of said intercom control circuits via said other facsimile apparatus terminal and said loop selection circuit, said other intercom control circuit, in response to said acknowledgement signal, shuts off said ringing signal generating circuit and controls said loop selection circuit to couple said two facsimile apparatus terminals with each other.

4,802,205

CIRCUIT ARRANGEMENT FOR TELECOMMUNICATIONS SWITCHING SYSTEMS, PARTICULARLY FOR TELEPHONE SWITCHING SYSTEMS COMPRISING INFORMATION-PROCESSING SEQUENTIAL LOGIC SYSTEMS AND TRAFFIC MEASURING DEVICES

Michael Eder, Soyen; Klaus Leutner, Unterhaching, and Siegfried Pohl, Oberschleissheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 13, 1986, Ser. No. 896,253

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1985, 3529168

Int. Cl.[4] H04M *15/10*

U.S. Cl. 379—113 **3 Claims**

1. In a circuit arrangement for causing acceptance or rejection of processing requests for an information-processing sequential logic system of a telecommunications switching system from addressable connection-associated switching devices, which logic system has a limited call-handling capability with respect to its information-processing capacity, in which a traffic measuring device identifies the information-processing traffic load of the information-processing sequential logic system caused by processing requests, in which a rejection device serves for defense against such overloads is provided in which a critical limit value can be set based on the measuring of the identified information-processing traffic load, and in which different urgency degrees of different types of processing requests have different urgency values individually assigned thereto, the improvement comprising:

means for comparing the individual urgency values to the critical limit value and producing an acceptance character or a rejection character when the urgency value is greater than or, respectively, lower than the critical limit value;

rejection means for accepting or rejecting the processing requests in response to the acceptance or rejection characters for processing by the sequential logic system so that processing requests having above-average urgency are taken into consideration with a certain priority over processing requests having below-average urgency with respect to their processing in the sequential logic system,

means in said rejection means for generating and storing ordering values for each of the different urgency values and assigning a respective rejection character in cyclical succession to a plurality of processing requests of the same urgency which correspond in number to a respective cycle via the urgency classification defined by the urgency and ordering value of the respective processing request of the appertaining type given transgression of the critical limit value; and

means for cyclically assigning urgency classification in uniform time intervals.

4,802,206

CALLING SYSTEM FOR ENABLING SPEECH TRANSMISSION FROM A CALLER TO A CALLED BUSY PARTY IN A TELEPHONE SYSTEM

Tadahiro Yoshida, and Michinori Hatabe, both of Kawasaki, Japan, assignors to Nitsuko Limited, Kawasaki, Japan

Filed Jul. 16, 1985, Ser. No. 755,425

Claims priority, application Japan, Jul. 17, 1984, 59-147007

Int. Cl.[4] H04M *3/20, 3/56*

U.S. Cl. 379—158 **6 Claims**

1. In a telephone exchange equipment for a plurality of telephone sets, each telephone set being connected to the equipment through a four-wire line comprising a transmitting line and a receiving line, the equipment comprising a switching network for connecting the transmitting line and the receiving line of one telephone set to the receiving line and the transmitting line of another telephone set, respectively, and a control circuit for controlling said switching network, the improvement which comprises:

a combining circuit means having two input terminals and an output terminal for combining two signals at said two input terminals to produce a combined signal at said output terminal;

means for detecting a connection requiring signal sent out from a first one of said telephone sets at a time after said first telephone set has called a second telephone set which is busy due to connection with a third telephone set through said switching network which has established a speech path between said second and third telephone sets; and

said control circuit controlling said switching network in response to a detection output signal from said connection requiring signal detecting means so that the transmitting lines of said first and third telephone sets are connected to said two input terminals, respectively, of said combining circuit means, and the receiving line of said second telephone set is connected to said output terminal of said combining circuit means, while the transmitting line of said second telephone set remains connected through said switching network to the receiving line of said third telephone set, whereby a speech path is established from said first telephone set to said busy second telephone set without interrupting the speech path between said second and third telephone sets.

4,802,207

VOLTAGE-SENSITIVE TELEPHONE LINE MONITOR

Kazuyuki Uchida, Tokyo, Japan, assignor to Tandy Electronics Japan, Ltd., Tokyo, Japan

Filed Oct. 16, 1987, Ser. No. 109,578

Claims priority, application Japan, Oct. 17, 1986, 61-245366

Int. Cl.[4] H04M *3/24*

U.S. Cl. 379—164 **12 Claims**

1. Telephone line monitor apparatus which detects an off-hook condition on a telephone line by monitoring the line voltage, said monitor apparatus comprising,

means responsive to said line voltage for generating an off-hook threshold voltage based on at least one value of said line voltage, and

means responsive to said off hook threshold voltage and to said line voltage for indicating an off hook condition when said line voltage is less than said off-hook threshold voltage.

4,802,208

HOT-LINE DEVICE FOR TELEPHONE SETS

Kou-I Yeh, Taipei, Taiwan, assignor to Inventa Electronics Co., Ltd., Taipei, Taiwan

Filed May 19, 1987, Ser. No. 51,940

Int. Cl.[4] H04M *1/272*

U.S. Cl. 379—216 **7 Claims**

1. A hot-line device for telephone sets having rectifying circuits, a hook switch, a dialing circuit, a ringing circuit, a control circuit, a memory dialing IC for storing a specific call numbers, and a keyboard with a memory key functionally connected to the memory dialing IC, respectively disposed therein comprising:

a logic AND gate means serving as a central unit with its output connected to the control circuit;

a hot line triggering means having its input terminated at the hook switch for detecting the close and open condition thereof, and its output connected to an input of said logic AND gate means for supplying hot-line triggering signals thereto in conjunction with the off and on of the hook switch; and

a ringing detection and delay means with its input connected between the rectifying circuit and the ringing circuit and its output connected to one of the inputs of said logic AND gate means for detecting supplying ringing signals thereto; whereby, when the memory key is preset in the keyboard, automatic dialing can be effected upon the telephone handset being picked up during an emergency situation.

4,802,209

PAGING SYSTEM FOR ELECTRONIC TELEPHONE APPARATUS

Iwao Hasegawa, Tachikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 21, 1987, Ser. No. 75,892

Claims priority, application Japan, Sep. 29, 1986, 61-231056

Int. Cl.[4] H04M *3/50*

U.S. Cl. 379—217 **31 Claims**

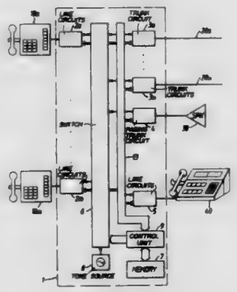
1. In a switching system having an exchange with an exchanging switch coupled to a plurality of telephone lines, a plurality of telephone sets coupled to said exchange, an attendant console coupled to said exchange and speaker means coupled to said exchange, wherein said exchange, responsive to a paging request of an incoming telephone call received from said attendant console, carries out a paging operation by a paging control method, said paging control method comprising the steps of:

(a) receiving said paging request and storing incoming telephone call data in a memory adapted to store data relating to a plurality of incoming telephone calls;

(b) determining data relating to at least one of a plurality of answer codes, said determined answer code data corresponding to the stored incoming telephone call data;

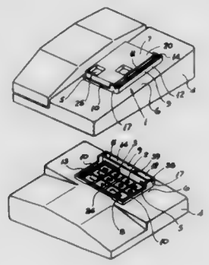
(c) making a speech path between said attendant console and said speaker means;

(d) comparing the determined answer code data with data dialed from one of said telephone sets; and
(e) making a speech path between the last mentioned tele-



phone set and one of said plurality of telephone lines corresponding to the stored incoming telephone call data if the dialed data corresponds to the determined answer code data.

4,802,210
KEYBOARD SECURITY DEVICE
Joseph P. Spencer, Raheen Heights, and Brendan F. Farrell, Killiney, both of Ireland, assignors to Institute for Industrial Research and Standards, Dublin, Ireland
Filed Jun. 22, 1987, Ser. No. 64,474
Claims priority, application Ireland, Jun. 23, 1986, 1662/86
Int. Cl.⁴ H04M *1/66*
U.S. Cl. 379—445 **20 Claims**



1. A keyboard security device for preventing access to at least some of the keys (2) of a keyboard (3), the device comprising:
a base frame member (5) for mounting on a housing (6) of the keyboard, the base frame member forming an access opening (13) to provide access to the keys of the keyboard,
a cover member (7) closing at least a portion of the access opening in the frame member to prevent access to at least some of the keys, and
locking means to lock the cover member to the base frame member, the locking means comprising:
a receiving means (29) formed by a receiving opening in one of said frame member and said cover member, and
at least one resilient member (28) extending from another of said frame member and said cover member and releasably engagable with the receiving opening to secure the cover member to the base frame member, the resilient member being engagable through the receiving opening by a key means (15) for disengagement of the resilient member from the receiving opening.

4,802,211
PORTABLE CORDLESS PHONE HOLDER
James B. Huntley, P.O. Box 55287, Washington, D.C. 20077-4195
Filed Jul. 7, 1986, Ser. No. 882,376
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.⁴ H04R *1/04, 1/05*
U.S. Cl. 379—454 **1 Claim**

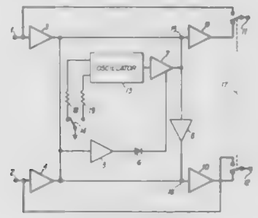


1. An apparatus for supporting a telephone handset comprising first and second members and an adjustable strap means;
the first member comprising first and second legs forming a substantially L-shaped section wherein the first leg is short relative to the second leg, the second longer leg is adapted to be positioned across the chest of the user and the first shorter leg extends from one end of the second leg over one of the user's shoulder toward the rear of the user, the first member further includes a substantially vertical section extending from the other end of the second longer leg and upwardly from the user's shoulder, wherein the substantially vertical section comprises a bracket means for removably attaching the telephone handset;
the second member comprising third and fourth legs forming a substantially L-shaped section wherein the third leg is shorter relative to the fourth leg, the fourth longer leg is pivotally attached to the other end of the first short leg when the third short leg is not connected to the other end of second longer leg adjacent the vertical section wherein the four legs, when connected, form a substantially rectangular configuration having two rear corners and two front corners;
the adjustable strap means comprising two adjustable straps wherein each strap extends from adjacent one rear corner under one of the user's armpits to a point adjacent one front corner of the rectangular configuration; whereby fastening and adjusting of the strap means under the arms provides for comfort and stability.

4,802,212
METHOD AND DEVICE FOR PREVENTING TAPE PIRACY
Samuel R. Freeman, 3159 E. Wood Valley Rd., NW., Atlanta, Ga. 30327, and Thomas G. Wright, Atlanta, Ga., assignors to Samuel R. Freeman, Atlanta, Ga.
Filed Jun. 1, 1987, Ser. No. 57,017
Int. Cl.⁴ G11B *15/04*; H04L *9/00*
U.S. Cl. 380—3 **10 Claims**

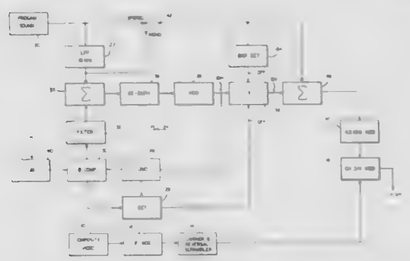
1. A method for preventing the unauthorized duplication of audible left and right channel stereo program material by magnetic tape recording on a stereo tape deck including a bias amplifier for providing a bias signal to the recording head of the tape deck, said method comprising:
encoding an inaudible first low frequency tone on said left channel stereo program material and encoding an inaudible second low frequency tone on said right channel stereo program material, said second low frequency tone being 180° out of phase relative to said first low frequency tone;

recording said encoded left channel and said encoded right channel stereo program material on a master recorder;
installing a decoding circuit on said stereo tape deck;
decoding said encoded left channel and said encoded right channel stereo program material on said stereo tape deck



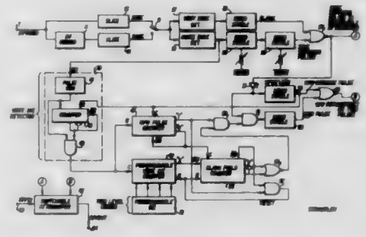
to recover said first low frequency tone and said second low frequency tone; and
shunting said bias signal to ground in response to the recovery of said first low frequency tone and said second low frequency tone.

4,802,213
SOUND MASKING IN PHASE REVERSAL TV SCRAMBLING SYSTEM
Richard W. Citta, Oak Park; John P. Eck, and Dennis M. Mutzabaugh, both of Mount Prospect, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Feb. 26, 1987, Ser. No. 19,445
Int. Cl.⁴ G06K *1/02*
U.S. Cl. 380—7 **4 Claims**



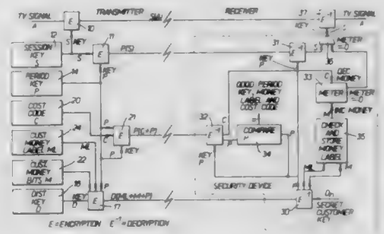
1. In a television scrambling system utilizing carrier phase reversals at horizontal line frequency and including a program sound signal, the improvement comprising a method of sound masking in intercarrier television systems without authorized receivers that correct the carrier phase reversals and that therefore generate harmonics of said horizontal line frequency comprising:
adding an interfering sound signal including a carrier that is a harmonic of said horizontal line frequency and outside the audio spectrum to said program sound signal for reacting with harmonics of said carrier phase reversals to create interference with said program sound signal upon detection by unauthorized intercarrier type receivers.

4,802,214
METHOD AND APPARATUS FOR IDENTIFYING AND RENDERING OPERATIVE PARTICULAR DESCRAMBLERS IN A TELEVISION SIGNAL SCRAMBLING SYSTEM
David A. Barany, Liverpool, N.Y., assignor to Eagle Comtronics, Inc., Clay, N.Y.
Filed Apr. 23, 1982, Ser. No. 370,841
Int. Cl.⁴ H04N *7/167*
U.S. Cl. 380—15 **44 Claims**



1. An apparatus for scrambling a television signal containing horizontal and vertical synchronizing signals and image information signals, said apparatus comprising:
means for receiving said television signal;
a first detector for deriving vertical synchronizing signals from said television signal;
a second detector for deriving horizontal synchronizing signals from said television signal;
means responsive to the outputs of first and second detectors for periodically producing a tier level coding pulse during predetermined fields of said television signal; and
switchable means responsive to said tier level coding pulse for selectively forcing the amplitude of a said television signal to a predetermined whiter-than-white level for a predetermined period of time.

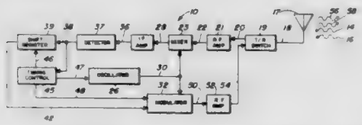
4,802,215
SECURITY SYSTEM FOR TELEVISION SIGNAL ENCRYPTION
Arthur G. Mason, Hampshire, United Kingdom, assignor to Independent Broadcasting Authority, London, England
PCT No. PCT/GB84/00236, § 371 Date Mar. 15, 1985, § 102(e) Date Mar. 15, 1985, PCT Pub. No. WO85/00718, PCT Pub. Date Feb. 14, 1985
PCT Filed Jul. 2, 1984, Ser. No. 713,904
Claims priority, application United Kingdom, Jul. 23, 1983, 8319817
Int. Cl.⁴ H04L *9/04*; H04N *7/167*
U.S. Cl. 380—21 **21 Claims**



1. Apparatus for securely transmitting a scrambled information signal to a receiver, comprising:
means for scrambling an input information signal;

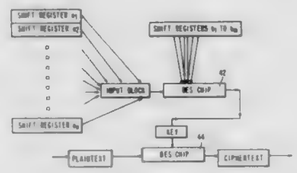
means for transmitting the scrambled information signal;
means for generating a first encryption key required at said receiver to enable descrambling of said transmitted scrambled information signal;
means for generating a second encryption key indicative of an authorized receiver;
means for forming a first block of information including the first encryption key;
first encryption means for encrypting the first block of information using the second encryption key to provide a first encrypted signal;
means for forming a second block of information including the first encryption key;
second encryption means for encrypting the second block of information using the first encryption key to provide a second encrypted signal; and
means for transmitting the first and second encrypted signals with the transmitted scrambled information signal to enable detection in said receiver of transmission errors in the keys.

4,802,216
INTERROGATOR AND TRANSPONDER TEST EQUIPMENT
David J. Irwin, Sparks, and John T. Shaul, Jarrettsville, both of Md., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Continuation of Ser. No. 800,948, Nov. 22, 1985, abandoned. This application Oct. 15, 1987, Ser. No. 110,646
Int. Cl.[4] H04L 9/00; G01S 9/56
U.S. Cl. 380—23 11 Claims



1. A method for testing with test equipment a transponder and an interrogator positioned in close proximity to one another and interconnected with respective suppression signals to cause suppression of its receivers while either transponder or interrogator is transmitting comprising the steps of
initiating the interrogator to transmit a first message, receiving with said test equipment said first message from said interrogator, demodulating and storing said first message in said test equipment,
retransmitting with said test equipiment said first message with the modulation and at the frequency as received with said first message after a first time interval,
said transponder operative to receive said retransmitted first message and to generate and transmit a reply message in response to receiving said retransmitted first message,
receiving with said test equipment said reply message from said transponder,
demodulating and storing said reply message in said test equipment,
retransmitting with said equipment said reply message with the modulation and at the frequency as received with said reply message after a second time interval,
said interrogator operative to receive said retransmitted reply message and to generate friend or foe signals to an indicator in response to receiving said retransmitted reply message.

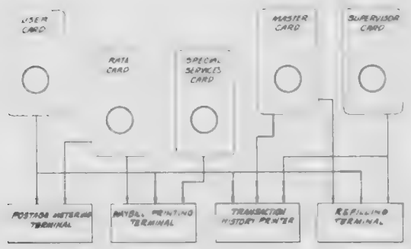
4,802,217
METHOD AND APPARATUS FOR SECURING ACCESS TO A COMPUTER FACILITY
John R. Michener, Princeton, N.J., assignor to Siemens Corporate Research & Support, Inc., Princeton, N.J.
Continuation of Ser. No. 748,487, Jun. 7, 1985, abandoned. This application Nov. 23, 1987, Ser. No. 123,692
Int. Cl.[4] H04L 9/04
U.S. Cl. 380—29 2 Claims



1. Apparatus for generating an essentially non-invertable stream of pseudo-random blocks via a mixer of pseudo-random sequences, the mixer comprising:
first means comprising a first plurality of pseudo-random sequence generators for supplying successive pseudo-random block sequences each block from a successive one of the pseudo-random sequence generators as successive encryption key blocks;
second means comprising a second plurality of pseudo-random sequence generators for supplying successive pseudo-random block sequences each block from a successive one of the pseudo-random sequence generators as successive input blocks;
first means for switching from one pseudo-random sequence generator to another one in said first plurality to obtain new values for the next encryption key block;
second means for switching from one pseudo-random sequence generator to the next one in said second plurality to obtain new values for the next input block; said second means for switching and said first means for switching operating synchronously so that each new input block has a corresponding new encryption key block;
means for mixing each encryption key and each input block utilizing a cryptographic block code according to the Data Encryption Standard (DES) algorithm; where each encryption key block is supplied by said first means for switching and each input block is supplied by said second means for switching; and
means for outputting the resulting output block to provide the essentially non-invertable stream of pseudo-random blocks.

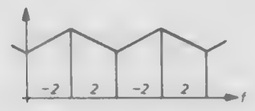
4,802,218
AUTOMATED TRANSACTION SYSTEM
Christopher B. Wright, San Francisco, and Stephen Bristow, Los Altos Hills, both of Calif., assignors to Wright Technologies, L.P., San Francisco, Calif.
Filed Nov. 26, 1986, Ser. No. 935,244
Int. Cl.[4] H04L 9/00
U.S. Cl. 380—23 42 Claims

1. An automated transaction system comprising:
(a) a user card having a card microprocessor mounted therein for maintaining a transaction account, said user card having data output means connected to said microprocessor;
(b) a transaction terminal having first receiving means for receiving said user card inserted therein and establishing a connection with said user card data output means, and operating means including a terminal microprocessor for performing a set of terminal operations;
(c) a value dispensing section securely mounted in said transaction terminal having a dedicated, dispensing section microprocessor incorporated therein for operating said value dispensing section to dispense an item of value separately from performance by said transaction terminal of said set of terminal operations; and
(d) first path means formed in said transaction terminal for establishing a data communication path between said user card microprocessor inserted in said first receiving means



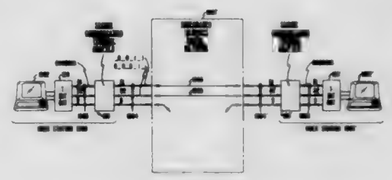
of said transaction terminal and said dispensing section microprocessor of said value dispensing section, such that said user card microprocessor communicates with said dispensing section microprocessor to authorize the dispensing of an item of value by said value dispensing section and correspondingly to update said transaction account maintained by said user card microprocessor.

4,802,219
METHOD AND APPARATUS FOR DISTORTING A SPEECH SIGNAL
Per Tjerlund, Upplands Väsby, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
PCT No. PCT/SE83/00230, § 371 Date Jan. 13, 1984, § 102(e) Date Jan. 13, 1984, PCT Pub. No. WO83/04460, PCT Pub. Date Dec. 22, 1983
PCT Filed Jun. 6, 1983, Ser. No. 573,937
Claims priority, application Sweden, Jun. 11, 1982, 8203648
Int. Cl.[4] H04K 1/04, 1/08
U.S. Cl. 380—39 3 Claims



1. A method of distorting a speech signal, having frequency bands, by at least one of the operations of rearranging and reversing frequency bands in said signal, said method comprising:
dividing the speech signal into a plurality of sub-bands by filtering;
individually sampling each of the sub-bands at a sampling frequency which is the same for each sub-band and which is at least double that of the bandwidth of the sub-bands for providing a plurality of first spectra of samples (FIG. 3*b*), each with periodic repetition of the respective sub-band;
reversing the polarity of alternate of said samples to provide a plurality of second spectra of samples (FIG. 3c), each with periodic repetition of the respective sub-band in a frequency reversed form;
filtering out from said first spectra or from said second spectra a sub-band corresponding to the original sub-band displaced with a desired number of sub-bands in dependence on a control signal; and adding all the obtained sub-bands for transmission of the distorted signal.

4,802,220
METHOD AND APPARATUS FOR MULTI-CHANNEL COMMUNICATION SECURITY
Walter S. Marker, Jr., Warrenville, Ill., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.
Filed Mar. 20, 1985, Ser. No. 714,192
Int. Cl.[4] H04K 1/10; H04L 9/00
U.S. Cl. 380—33 34 Claims



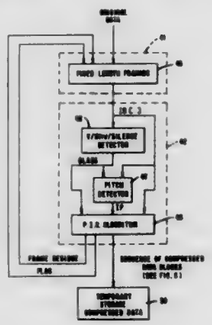
1. A security arrangement for communicating an information message comprising
a plurality of user stations, and
a digital switching network for selectively establishing communication channels among said plurality of user stations and including control means responsive to a request in a first signalling channel from a first one of said user stations for a secure call to a second one of said user stations both for controlling the establishment by said digital switching network of first and second ones of said communication channels from said first user station through said digital switching network without security processing to said second user station and for selecting a splitting routine from a plurality of message splitting routines said control means being responsive to said selected splitting routine for transmitting in said first signaling channel a first security code signal defining said selected splitting routine to said first user station and transmitting a second security code signal defining a combining routine associated with said selected splitting routine in a second signaling channel to said second user station, said first and second signaling channels each being distinct from said first and second communication channels, said first user station comprising
means responsive to said first security code signal defining said selected splitting routine, for splitting said message into first portions and second portions in accordance with said selected splitting routine, and
means for communicating said first portions and said second portions over said first and second communication channels, respectively, through said digital switching network, and said second user station comprising
means responsive to said second security code signal defining said combining routine and to a receipt of said first portions and second portions from said first and second communication channels, for reforming said message in accordance with said combining routine.

4,802,221
DIGITAL SYSTEM AND METHOD FOR COMPRESSING SPEECH SIGNALS FOR STORAGE AND TRANSMISSION
Mahmoud K. Jibbe, Wichita, Kans., assignor to NCR Corporation, Dayton, Ohio
Filed Jul. 21, 1986, Ser. No. 887,492
Int. Cl.[4] G10L 5/00
U.S. Cl. 381—34 10 Claims

1. A method for compressing a serial bit stream of speech encoded data for storage and transmission comprising the steps of:
(a) storing the bits of said serial bit stream;
(b) reading the stored bits in fixed length frames;

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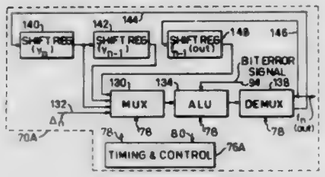
(c) processing each frame of read bits to classify the frame as voiced, unvoiced or silence;
(d) determining the pitch for a frame classified as voiced;
(e) comparing, on a pitch basis, the bits of the present voiced frame with the bits of the preceding voiced frames to detect repetition;



(f) temporarily storing the repetition count, the pitch period, and the repetitive pitch bits; and
(g) repeating steps (b) through (f) to compress the serial bit stream that is temporarily stored.

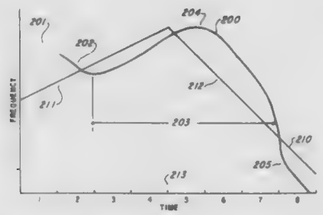
4,802,222
DATA COMPRESSION SYSTEM AND METHOD FOR AUDIO SIGNALS
Charles S. Weaver, Palo Alto, Calif., assignor to SRI International, Menlo Park, Calif.
Continuation-in-part of Ser. No. 568,610, Dec. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 202,457, Oct. 31, 1980, Pat. No. 4,449,536. This application Aug. 25, 1987, Ser. No. 89,487
Int. Cl.[4] G10L 5/00
U.S. Cl. 381—35 23 Claims





1. A signal compression system for processing a stream of fixed length digital sample signals comprising,
linear digital compression filter means responsive to the stream of digital sample signals for generating a stream of compression-filtered sample signals, the Z-transform of the digital compression filter means having one or more zeros on the unit circle at one or more of the following angular positions; 41.41°, 60°, 75.52°, 90°, 104.48°, 120°, 138.59° and 180°, and not having zeros at any positive angular positions other than 0°, 41.41°, 60°, 75.52°, 90°, 104.48°, 120°, 138.59° and 180°.

4,802,223
LOW DATA RATE SPEECH ENCODING EMPLOYING SYLLABLE PITCH PATTERNS
Kun-Shan Lin, and Jay B. Reimer, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 3, 1983, Ser. No. 548,262
Int. Cl.[4] G10L 5/00
U.S. Cl. 381—38 10 Claims

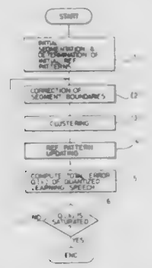


1. A speech encoding apparatus comprising:
input means for receiving speech including one or more words of human language;
analysis means connected to said input means for analyzing said received speech, generating a sequence of phonological linguistic unit indicia corresponding to said received speech, grouping said phonological linguistic unit indicia into syllables, and generating pitch track data corresponding to said received speech:
pitch pattern memory means storing a plurality of predetermined pitch patterns;
pitch pattern recognizer means connected to said analysis means and to said pitch pattern memory means for selecting a pitch pattern from said plurality of predetermined pitch patterns for each syllable grouping of phonological linguistic unit indicia as generated by said analysis means, said pitch pattern being selected in dependence upon said pitch track data corresponding to each syllable grouping of phonological linguistic unit indicia; and
transmission means connected to said analysis means and said pitch pattern recognizer means for transmitting said phonological linguistic unit indicia and pitch pattern indicia corresponding to said selected pitch patterns.

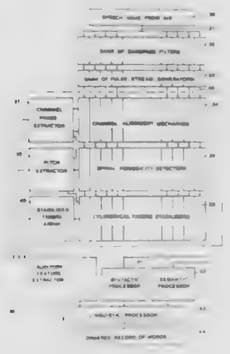
4,802,224
REFERENCE SPEECH PATTERN GENERATING METHOD
Yoshinao Shiraki, Tokyo, and Masaaki Honda, Kodaira, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
Filed Sep. 22, 1986, Ser. No. 909,993
Claims priority, application Japan, Sep. 26, 1985, 60-213193; Mar. 19, 1986, 61-61593
Int. Cl.[4] G10L 5/00
U.S. Cl. 381—41 10 Claims

1. A reference pattern generating method comprising:
a step for inputting a learning speech;
a step for extracting spectral parameters of the learning speech in units of frames;
a segmentation step for dividing a time series of extracted spectral parameters into segments for each voice interval;
a step for clustering the segments into a plurality of clusters;
a step for computing, for each cluster, an initial reference pattern representing the cluster;

a correction step for correcting the segmentation boundaries of the spectral parameter time series through use of the computed reference patterns;
a clustering step for clustering the segments of the spectral parameters corrected in segmentation boundaries into clusters each corresponding to one of the initial reference patterns; and
a corrected reference pattern computing step for computing, for each cluster, a reference pattern representing the cluster and repeating the clustering of the learning speech through use of the computed reference patterns until a measure of error is converged, whereby corrected reference patterns are computed;
the correction step, the clustering step, and the corrected reference pattern computing step being performed at least once and the reference patterns obtained by the last corrected reference pattern computing step being regarded as reference patterns desired to be obtained.

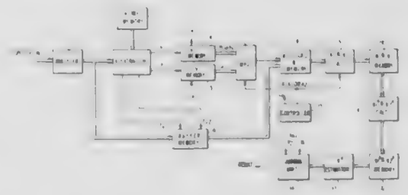


4,802,225
ANALYSIS OF NON-SINUSOIDAL WAVEFORMS
Roy Patterson, Great Shelford, England, assignor to Medical Research Council, London, England
Filed Dec. 30, 1985, Ser. No. 814,321
Claims priority, application United Kingdom, Jan. 2, 1985, 8500006
Int. Cl.[4] G10L 9/00
U.S. Cl. 381—41 13 Claims



1. Apparatus for detecting periodicity in a non-sinusoidal waveform comprising (a) a peak detector for receiving said waveform and for detecting peaks in the waveform, (b) a signal generator coupled to said peak detector for generating a succession of signals each at a time corresponding to a respective detected peak, and (c) a signal analyser coupled to the signal generator and including a signal plotter coupled to input a succession of said signals at times corresponding to the detected peaks and to plot time duration since input of each signal against a logarithmic to the base 2 representation of time, and detector means for indicating occurrence of signals at times having a common mantissa value in said logarithmic representation.

4,802,226
PATTERN MATCHING APPARATUS
Takao Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 946,128, Dec. 23, 1986, abandoned, which is a continuation of Ser. No. 529,813, Sep. 6, 1983, abandoned. This application Feb. 29, 1988, Ser. No. 165,394
Claims priority, application Japan, Sep. 6, 1982, 57-154903
Int. Cl.[4] G10L 5/00
U.S. Cl. 381—43 9 Claims



1. A pattern matching apparatus comprising:
a first memory for storing an input patter $A=\{a(1), a(2), \ldots, a(i), \ldots, a(I)\}$, which is expressed as a sequence of feature vectors;
a second memory for storing a first reference pattern $B_1=\{b_1(1), b_1(2), \ldots, b_1(j), \ldots, b_1(J_1)\}$ and a second reference pattern $B_2=\{b_2(1), b_2(2), \ldots, b_2(j), \ldots, b_2(j_2)\}$, which are expressed as sequences of feature vectors;
a first calculator for calculating first and second quantities representing distances between said features a(i) and $b_1(j)$ and between said features a(i) and $b_2(j)$, respectively, at designated point (i, j);
a second calculator for calculating first and second integrals $g_1(i,j)$ and $g_2(i,j)$ of said first and second quantities at the point (i, j) by a time normalization matching method utilizing dynamic programming on the basis of said first and second quantities at the point (i,j), said first integral being obtained in a positive time direction from $(i,j)=(1,1)$ to (I,J_2) with respect to said first reference pattern, and said second integral being obtained in a negative time direction from $(i,j)=(I_1,J_2)$ to (1,1) with respect to said second reference pattern;
a third calculator for calculating an optimum integral at a designated i as a minimum or maximum value out of a set $\{g_1(i, j), j=1, 2, \ldots, J\}$ of the integrals in the positive direction with respect to the integral $g_1(i,j)$ in a positive direction, and as a value of the integral g(i, 1) at a starting end (i.e. $j=1$) with respect to the integral $g_2(i,j)$ in the negative direction;
a third memory for storing the optimum integral $\{g, (i), i=1, 2, \ldots, I\}$ in the positive direction and the optimum integral $\{g_2(i), [=1, 2, \ldots, I\}$ in the negative direction; and
a determination means for determining a whole quantity between said input pattern and a reference pattern which is obtained by connecting a front portion of said first reference pattern and a second reference pattern together as a minimum or maximum value out of the results obtained by calculating $g^*(i)=g_2(i)+g_2(i)$ for each i.

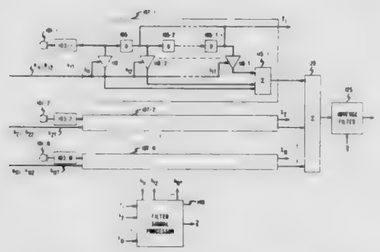
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4,802,227

NOISE REDUCTION PROCESSING ARRANGEMENT FOR MICROPHONE ARRAYS

Gary W. Elko, Summit; Man M. Sondhi, Berkeley Heights, and James E. West, Plainfield, all of N.J., assignors to American Telephone and Telegraph Company and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 3, 1987, Ser. No. 34,816
Int. Cl.[4] H04R *3/00*
U.S. Cl. 381—92 **13 Claims**



1. In apparatus including an array of microphone elements having a prescribed directional response pattern for receiving sound signals, and a signal processor for adjusting said prescribed directional response pattern, the method for processing sound comprising the steps of:

defining a preferred sound source location in said signal processor;

defining a sequence of successive time intervals for analyzing said received sound signals in said signal processor;

receiving a sound signal from said preferred sound source location and a plurality of sound signals from other locations at the microphone elements of the array;

forming a set of weighting signals during each analysis time interval in said signal processor to adjust the directional response pattern of said array of microphone elements;

combining the received sound signals with said weighting signals to produce an output signal corresponding to the sound signal from the preferred location sound source while attenuating the sound signals from said other locations in each analysis time interval;

the weighting signal forming step including;

generating a signal representative of the input power of the received sound signals and a signal representative of the power of an output signal of a current time interval responsive to the sound signals received in the current analysis time interval; and

producing a set of weighting signals for the current analysis time interval in said signal processor to direct the mainlobe of the prescribed directional response pattern toward the sound signal from the preferred location while directing minimum response points of the prescribed directional response pattern toward the sound signals from other locations responsive to the weighting signals of a preceding analysis time interval, the current analysis time interval input power and output power signals and the preferred location defining signal and a calculated, limited distortion.

4,802,228

AMPLIFIER FILTER SYSTEM FOR SPEECH THERAPY

Bernard Silverstein, 7808 Sheffield Dr., and Carl W. Asp, 3815 Dellwood Dr., both of Knoxville, Tenn. 37919

Filed Oct. 24, 1986, Ser. No. 923,004
Int. Cl.[4] H04R *25/00*
U.S. Cl. 381—68 **20 Claims**

1. An instrument for use in the clinical therapeutc correction of defects in speech of a user which comprises:

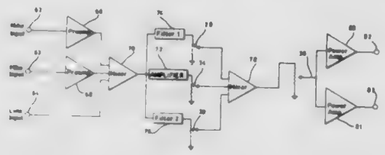
means for generating an electrical signal related to said speech, said speech having an acoustic spectrum;

at least one input for receiving said electrical signal related to said speech;

a broad band amplifier for receiving and selectively increasing said electrical signal;

a first one-octave bandpas amplifier for receiving said electrical signal, said first bandpass amplifier having means for passing and selectively amplifying a first preselected portion of said acoustic spectrum in said electrical signal, said first preselected portion having a center frequency;

a second one-octave bandpass amplifier for receiving said electrical signal having means for passing and selectively



amplifying a second preselected portion of said acoustic spectrum present in said electrical signal, said second preselected portion having a center frequency;

means for individually selecting said portion of said acoustic spectrum to be passed and amplified by said first and second bandpass amplifiers, respectively;

a mixer for selectively combining outputs of said broad band amplifier and said first and second bandpass amplifiers and for providing an output signal corresponding to said combined outputs from said mixer; and

means for converging said output signal from said mixer into audible sound, said audible sound including said speech with said portions of said acoustic spectrum enhanced in amplitude.

4,802,229

IMAGE PROCESSING SYSTEM

Masanori Yamada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 597,934, Apr. 9, 1984, abandoned. This application Jul. 24, 1987, Ser. No. 78,000
Claims priority, application Japan, Apr. 12, 1983, 58-63853; Apr. 12, 1983, 58-63854
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—1 **27 Claims**



1. An image processing system for processing an image of an original document, said system comprising:

means for detecting position coordinates of at least two corners of the original document relative to a coordinate system and for producing a detection signal representing the position coordinates;

means for discriminating an angle of obliqueness relative to the coordinate system in accordance with the detection signal produced by said detecting means;

means for inhibiting the image processing operation of said image processing system when the angle discriminated by said discriminating means is greater than a predetermined angle; and

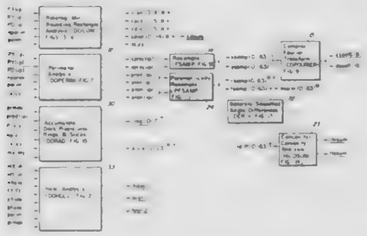
means for releasing an inhibition state of the image processing operation inhibited by said inhibiting means and for allowing the image processing operation even when the discriminated angle is greater than the predetermined angle.

4,802,230

METHOD AND APPARATUS FOR GENERATING SIZE AND ORIENTATION INVARIANT SHAPE FEATURES

Steven L. Horowitz, Piedmont, Calif., assignor to GTX Corporation, Phoenix, Ariz.

Filed Mar. 13, 1987, Ser. No. 26,672
Int. Cl.[4] G06K *9/46*
U.S. Cl. 382—22 **21 Claims**



1. A method of operating a computer to extract size-invariant, orientation-invariant features of an electronically scanned character, the method comprising the steps of:

(a) providing a plurality of x and y coordinates of a plurality of perimeter pixels of the scanned character;

(b) operating on the x and y coordinates to determine values of a preselected parameter of a plurality of minimum bounding polygons each oriented differently relative to the character, each minimum bounding polygon having a plurality of sides each of which touches at least one respective perimeter point of the character, respectively; and

(c) operating on the values of eliminate size and orientation information therefrom, to thereby produce the extracted features.

4,802,231

PATTERN RECOGNITION ERROR REDUCTION SYSTEM

Elliot Davis, 334 Bucyrus Dr., N. Tonawanda, New York, N.Y. 14120

Filed Nov. 24, 1987, Ser. No. 124,650
Int. Cl.[4] G06K *9/68*
U.S. Cl. 382—34 **12 Claims**

1. A device for reducing errors in automated pattern recognition systems comprising:

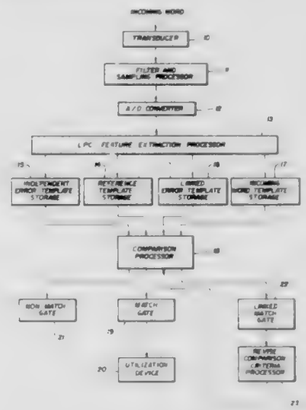
(a) means for creating reference templates which correspond to known patterns;

(b) means for creating test templates which correspond to unknown patterns;

(c) means for creating independent error templates which correspond to erroneously matched patterns;

(d) comparison means for comparing test templates to reference templates and to independent error templates;

(e) means for identifying the unknown pattern as a match whenever its test template is most closely matched to a reference template; and



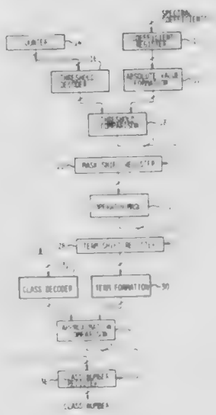
(f) means for discarding the unknown pattern as a non-match whenever its test template is most closely matched to an independent error template.

4,802,232

METHOD FOR REDUCING THE QUANTITY OF DATA IN IMAGE CODING

Harald Altes, Backnang, Fed. Rep. of Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Mar. 13, 1987, Ser. No. 25,719
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1986, 3608491
Int. Cl.[4] G06K *9/36*
U.S. Cl. 382—56 **4 Claims**



1. In a method for reducing the quantity of image data to be transmitted using image coding including the steps of subdividing each image into matrix shaped partial image regions of NXN pixels, discretely transforming the image data of each of said partial image regions from a pixel domain into a spectral domain to produce spectral coefficients, classifying each of said partial image regions, using said spectral coefficients, so

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that each of said partial image regions is characterized by one of predesignated ordered classes, and utilizing the class characterization for the partial image regions to determine which spectral coefficients must be transmitted; the improvement wherein said step of classifying comprises:

forming absolute values from the spectral coefficients of a partial image region;

comparing the absolute values of said spectral coefficients, value for value, with previously determined corresponding visual discernibility thresholds to provide a logic 0 if a spectral coefficient is less than its corresponding visual discernibility threshold and a logic 1 if a spectral coefficient is greater or equal to its corresponding visual discernibility threshold;

intermediately storing the binary comparison results of said step of comparing in a first shift register as a binary bit sequence pattern of logic 0's and logic 1's representing said spectral coefficients of said a partial image region;

using an operator on each binary bit of said sequence pattern stored in said first shift register to suppress singular binary bits representing said spectral coefficients and to obtain a modified binary sequence pattern of logic 0's and logic 1's representing the partial image region;

storing said modified binary bit sequence pattern in a further shift register;

by means of a logical term gate array connected to said further shift register, forming output signals corresponding to term variables of a predetermined set of terms from said modified binary bit sequence pattern, with said terms having been selected as minimum quantities from which all preceding of said ordered classes can be easily compiled and distinguished;

sequentially generating binary signals corresponding to said ordered classes by means of a class decoder;

comparing the output signals from the class decoder and from the logical term gate array with one another until a first one of the ordered classes has been found which is congruent with a term formed by the logical term gate array; and

identifying said first one of the ordered classes by a class code which is forwarded in this form for further processing.

4,802,233

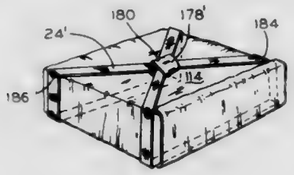
THERMALLY INSULATED FOOD BAG

Ingrid Skanser, Des Plaines, Ill., assignor to Thermal Bags by Ingrid, Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 575,808, Feb. 1, 1984, Pat. No. 4,578,814. This application Nov. 1, 1985, Ser. No. 794,464

Int. Cl.[4] B65D *33/02, 33/14, 33/24, 81/38*

U.S. Cl. 383—15 **8 Claims**



1. A soft bag made of a thermally insulated deformable material and comprising:

at least one opening on one side of said bag;

a plurality of straps attached to said bag in an x-like pattern for carrying said bag;

a plurality of flaps extending from said bag and sequentially coupling each other for sealing of said opening;

said straps secured to said bag at outer confines thereof for stabilizing the position of objects carried inside said bag and permitting access to said objects when said bag is suspended by said straps, said straps having a detachable handle located at the point of intersection of said straps.

4,802,234

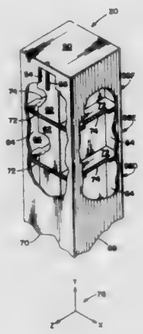
MODE SELECTIVE BAND PASS FILTER

Paul J. Tatomir, Torrance; Martin B. Hammond, Glendora, and Rolf Kich, Redondo Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 16, 1988, Ser. No. 156,119

Int. Cl.[4] H01P *1/208, 1/212, 1/162*

U.S. Cl. 333—211 **19 Claims**



1. A filter comprising:

a plurality of cavities arranged in series;

means for coupling electromagnetic power from one of said cavities to a succeeding one of said cavities in said series of cavities;

a plurality of blocks of dielectric material, one of said blocks being disposed in each of said cavities, each of said blocks being smaller than the volume of the cavity containing the block to define at least one region free of the dielectric material having relatively low dielectric constant and at least one region of relatively high dielectric constant loaded with the dielectric material in each cavity; and wherein

said blocks are positioned within their respective cavities for interacting with higher-order modes of propagation of electromagnetic waves above a fundamental mode, thereby to increase attenuation of frequency components of said higher-order modes which may be present in a microwave signal.

4,802,235

SUBSCRIBER UNIT FOR A FLEXIBLE COMMUNICATION SYSTEM

James E. Treatch, Scottsdale, Ariz., assignor to Comven, Inc., Phoenix, Ariz.

Filed Apr. 26, 1985, Ser. No. 727,898

Int. Cl.[4] H04B *1/40;* **H03L** *7/00*

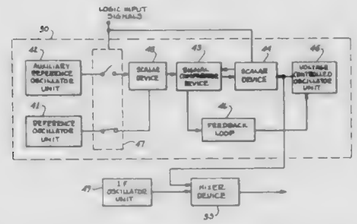
U.S. Cl. 455—76 **14 Claims**

1. A mobile transmit/receive unit for a communication system comprising:

first oscillating means for providing a mixer within a mobile transmit/receive unit with signal frequencies compatible with a first set of channel frequencies, said first set of channel frequencies having a first channel separation frequency between adjacent channels and a first transmit/receive separation frequency separating the transmit frequency from the receive frequency;

second oscillating means for providing said mixer within said mobile transmit/receive unit with signal frequencies compatible with a second set of frequencies, said second set of frequencies having a second separation frequency between adjacent channels, said second channel separation frequency being different than said first channel separation frequency and a second transmit/receive separation frequency separating the transmit frequency from the receive frequency;

controllable oscillator signal means; and



comparison means for comparing a selected fraction of an output signal frequency of said controllable oscillator signal means with a preselected fraction of said first oscillator means signal frequency, a difference between said two frequencies controlling said controllable oscillator means output signal, said comparison means and said controllable oscillator signal means forming part of a phase-locked loop.

4,802,236

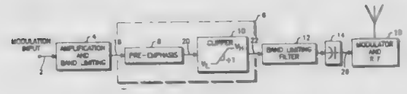
INSTANTANEOUS DEVIATION LIMITER WITH PRE-EMPHASIS AND ZERO AVERAGE VALUE

Thomas J. Walczak, Fox River Grove; Michael E. Rebeschini, Hanover Park, and Melvin A. Schechtman, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 30, 1986, Ser. No. 947,783

Int. Cl.[4] H04B *1/02*

U.S. Cl. 455—110 **14 Claims**



1. A method for clipping an input signal to produce a clipped output signal that has zero average value and a high-pass frequency response, comprising the steps of:

subtracting an error signal from the input signal to produce a modified input signal;

clipping the modified input signal to produce the clipped output signal; and

scaling and integrating the clipped output signal to produce the error signal.

4,802,237

SOLID STATE TRANSMITTER PROTECTOR

Dennis H. Covill, Box 27, Site 20, R.R. #1, Tantallon, Nova Scotia, Canada B0J 3J0

Filed Jul. 2, 1987, Ser. No. 69,492

Int. Cl.[4] H01Q *11/12*

U.S. Cl. 455—117 **7 Claims**

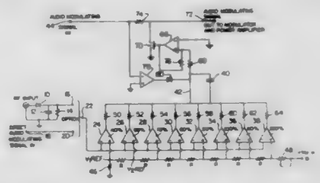
1. A device for use in an amplitude modulated RF transmitter for protecting power transistors located in said RF transmitter, said device comprising:

capacitor means adapted to be charged in a first direction;

detector means for detecting an audio modulating signal;

discharge means connected to said detector means and said capacitor means and operative to selectively discharge said capacitor means when the value of said audio modulating signal reaches a first preset level for a preset time duration during a portion of said audio modulating signal which causes positive modulation of said RF transmitter;

switch means connected to said capacitor means and activated when said capacitor means has discharged to a predetermined level, said switch means operable to remove, when activated, said audio modulating signal from said power transistors; and



reset means for resetting said discharge means and for recharging said capacitor means in said first direction when the level of said audio modulating signal drops to a second preset value.

4,802,238

RADIO RECEIVER

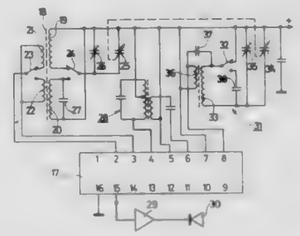
Walter Fischer, and Christian Süss, both of Vienna, Austria, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 9, 1987, Ser. No. 36,220

Claims priority, application Austria, Jul. 29, 1986, 2041/86

Int. Cl.[4] H04B *1/16, 1/26*

U.S. Cl. 455—188 **4 Claims**



1. In a radio receiver switchable between at least a first and a second waverange, said first waverange covering frequencies lower than those covered by said second waverange, said receiver having a selection circuit having a first resonant circuit, an oscillator circuit comprising a second resonant circuit having an oscillator coil, a further coil winding inductively coupled to said oscillator coil, and first and second jointly operable variable capacitor means for tuning said selection circuit and said oscillator circuit, respectively, the improvement comprising:

additional capacitor means;

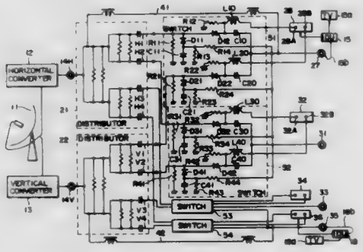
and changeover switch means for connecting said further coil winding in series with said oscillator coil and said additional capacitor means in series with said second variable capacitor means when said receiver is operable in said first wave range, and for connecting said additional capacitor means in parallel with said further coil winding when said receiver is operable in said second wave range.

4,802,239

SWITCH DISTRIBUTING APPARATUS FOR COMMUNITY RECEPTION

Hiroki Ooto, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasakaki, Japan

Filed Jul. 9, 1986, Ser. No. 883,714
Claims priority, application Japan, Jul. 18, 1985, 60-159130
Int. Cl.[4] H04B *1/06*; H04H *1/00*; H04N *5/268*
U.S. Cl. 455—277 **4 Claims**



1. A switch distributing apparatus for community reception comprising:

first distributing means for receiving a first signal and distributing the first signal to a plurality of lines;

second distributing means for receiving a second signal and distributing the second signal to a plurality of lines; and

a plurality of switch means, each designed to receive the first signal from the first distributing means, the second signal from the second distributing means, and control signals supplied from outside said switch distributing apparatus, wherein each said switch means outputs said first signal or said second signal in accordance with said control signals, each switch means comprising:

a first input node connected to one of the lines receiving the first signal;

a second input node connected to one of the lines receiving the second signal;

first diode element and second diode element each having a first electrode and a second electrode, the first electrode of the first diode element and the first electrode of the second diode element being connected to the first input node, and being of the same polarity;

third diode element and fourth diode element each having first electrode and second electrode, the first electrode of the third diode element and the first electrode of the fourth diode element being connected to the second input node, and being of the same polarity;

first and second DC cut capacitors connected in series between the second electrode of the first diode element and the second electrode of the third diode element;

first terminating means connected between the second electrode of the second diode element and a reference potential node;

second terminating means connected between the second electrode of the fourth diode element and the reference potential node;

a first bias element connected between the first input node and the reference potential node;

a second bias element connected between the second input node and the reference potential node;

first control terminal and second control terminal coupled to the second electrode of the first diode element and the second electrode of the third diode element, respectively, for activating one of the first diode element and third diode element and deactivating the other of the first diode element and third diode element in response to said control signals;

an output terminal connected to the connection point between the first and second DC cut capacitors, the output terminal of at least one of said switch means being adapted to receive a DC voltage for driving at least one external device;

first voltage converting means connected between said output terminal receiving the DC voltage and the second electrode of the second diode element for converting the DC voltage to a voltage capable of activating the second diode element in response to the inactivated state of said first diode element including the open state of said first control terminal; and

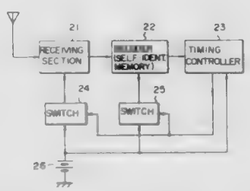
second voltage converting means connected between said output terminal receiving the DC voltage and the second electrode of the fourth diode element for converting the DC voltage to a voltage capable of activating the fourth diode element in response to the inactivated state of said third diode element including the open state of said second control terminal.

4,802,240

SYNCHRONOUS RECEIVING METHOD FOR SELECTIVE CALLING SIGNAL

Hiroyuki Yamaguchi, Hamura, and Naomi Yokoyama, Fukuoka, both of Japan, assignors to Kokusai Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1987, Ser. No. 68,656
Claims priority, application Japan, Jul. 3, 1986, 61-155085
Int. Cl.[4] H04B *1/16*; H04Q *9/14*
U.S. Cl. 455—343 **2 Claims**



1. A synchronous receiving method for a selective calling signal, which detects by a receiving unit first, second and third codes of a received information signal of a predetermined code format, and for enhancing the battery saving efficiency of the receiving unit, comprising the steps of: intermittently operating the receiving unit for a fixed short period of time at regular time interval by turning ON and OFF power supply to the receiving unit under control of a timing control circuit in the receiving unit, before the detection of the first code for indicating that information is being sent on a channel;

continuing the operating of the receiving unit for a fixed period of time, during which a just preceding one of the second codes is detected as a synchronizing code, after the detection of the first code;

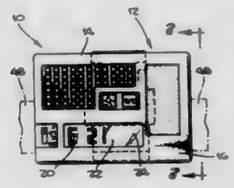
intermittently receiving and detecting by the receiving unit third codes of information, the position of which is determined by a selective calling number sent between adjacent two of the second codes and assigned to the receiving unit, at intervals determined by a self-identification memory in the receiving unit, without causing the receiving unit to receive and detect the second codes which are sent after the just preceding one of the second codes at regular intervals in the time interval between the detection of the just preceding one of the second codes and the detection of a next one of the first codes and utilizing the third codes for deciding whether the receiving unit is synchronized with the transmitted signal of the channel.

4,802,241

PAGER AND ADJUSTABLE CLIP

Michael W. Vickers, Lees' Summit, Md., and David W. Stubbe, Kansas City, Mo., assignors to Maxcom Electronics, Inc., Kansas City, Mo.

Filed Nov. 21, 1986, Ser. No. 933,118
Int. Cl.[4] H04B *1/08*; A45F *5/02*
U.S. Cl. 455—344 **3 Claims**



1. A personal communication device, comprising:

a housing having front and rear faces and means for: receiving information in the form of remotely transmitted electromagnetic signals, converting the signals into a visible array of readable characters, and displaying the array upsidedown on the front face of the housing; and

a clip mechanism for supporting the housing from a belt or pocket of a wearer in a normally vertical position, with the front face facing outwardly and the rear face facing inwardly, and for permitting the housing to be easily swung pivotally upward through about ninety degrees to a horizontal position such that the front face of the device may be viewed in a right-side-up orientation by the wearer, or for permitting the device to be easily detached from the belt or pocket, the clip comprising:

a front plate having a central leg portion with an in-turned ear on each side of said leg portion, said ears being parallel and having aligned openings;

means for removably attaching said front plate to said rear face of said housing so that its ears are near the upper extremity thereof;

a substantially rectangular back plate adapted to be vertically disposed, and having a pair of in-turned ears on its upper end, said ears being parallel and having aligned openings;

said two plates being normally disposed in generally parallel relation with said ears thereof being interengaged and all of said openings being aligned;

a hinge pin extending through all of said ear openings for supporting said two plates in pivotal relation to each other;

said back plate being adapted to be inserted downward along the back side of a belt or pocket and having on its lower end a forwardly extending flange for then retaining it in engagement with such belt or pocket;

a metal spring carried on said hinge pin and having projecting ends engaging respective ones of said plates for urging the lower ends of said plates together; and

an intermediate plate of a generally rectangular configuration, said intermediate plate being disposed between said ears of said front and back plates and having a transverse opening which receives said hinge pin for pivotally supporting said intermediate plate thereon;

said intermediate plate having an upper end which extends above both of said front and back plates and a lower end which extends a substantial distance below said hinge pin, so that when said housing is swung pivotally upward, its pivotal movement is limited by the upper end of said intermediate plate, and when said flange of said back plate is to be disengaged from said belt or pocket, the upper end of said intermediate plate may be grasped and propelled toward the upper end of the housing to thereby cause the lower end of said intermediate plate to open said back plate against the force of said spring.

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DESIGN PATENTS

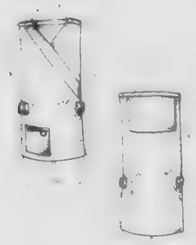
GRANTED JAN. 31, 1989

ERRATA

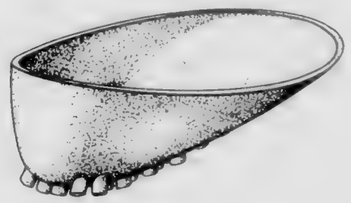
For CLASS	See PATENT NO.
D10-104	299,591
D10-114	299,592
D18-036	299,653

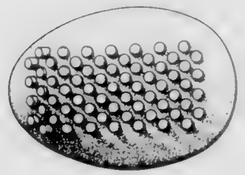
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299,580
COMBINATION BEACH TOWEL AND BEACH COVER-UP
Oscar A. Hansen, 2263 Spruce St., Naples, Fla. 33962
Filed Dec. 1, 1986, Ser. No. 938,124
Term of patent 14 years
U.S. Cl. D2—25



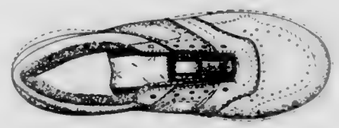
299,581
HEEL CUSHION
Richard Friedenberg, P.O. Box 32, Garnerville, N.Y. 10923
Filed May 27, 1986, Ser. No. 867,387
Term of patent 14 years
U.S. Cl. D2—277





299,582
SHOE UPPER
Mona McCrea, Portland; John Lademann, West Linn, both of Oreg., and Robert Peterson, Taichung, Taiwan, assignors to AVIA Group International, Inc., Portland, Oreg.
Filed Feb. 17, 1988, Ser. No. 156,645
Term of patent 14 years
U.S. Cl. D2—314





299,583
ELEMENT OF A SHOE UPPER
James K. Tong, Portland, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Portland, Oreg.
Division of Ser. No. 866,083, May 22, 1986, Pat. No. Des. 291,144. This application Aug. 4, 1987, Ser. No. 81,169
Term of patent 14 years
U.S. Cl. D2—314

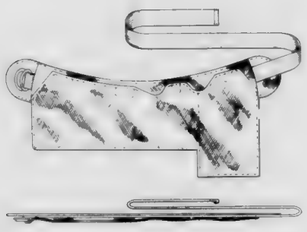


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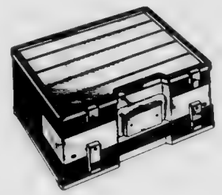
299,584
OUTSOLE
Craig Franklin, Lynn, Mass., and Ken Geer, Exeter, N.H., assignors to Converse Inc., North Reading, Mass.
Filed Mar. 27, 1986, Ser. No. 847,541
Term of patent 14 years
U.S. Cl. D2—320



299,585
COMBINED BELT AND POCKETED CARRIER
Stanley Corwin, and Judith B. Corwin, both of 14 Meadows Dr. #14, Boynton Beach, Fla. 33462
Filed Mar. 31, 1986, Ser. No. 847,581
Term of patent 14 years
U.S. Cl. D2—630



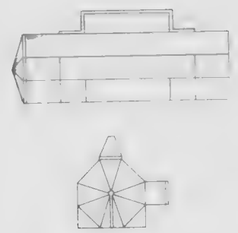
299,586
TACKLE BOX
Charles A. Lanius, Prairie du Sac, Wis., assignor to Flambeau Corporation, Baraboo, Wis.
Filed Dec. 18, 1985, Ser. No. 810,863
Term of patent 14 years
U.S. Cl. D3—38



299,587
TRAVEL BAG
James L. Thomas, 106 W. Fillmore Ave., St. Paul, Minn. 55107
Filed Mar. 25, 1986, Ser. No. 845,822
Term of patent 14 years
U.S. Cl. D3—71



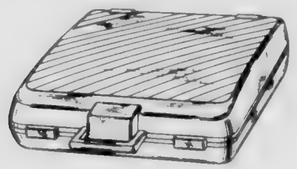
299,588
COMBINATION YARN HOLDER AND DISPENSER
Irene Rosa, 28910 Groveland, Roseville, Mich. 48066
Filed Dec. 27, 1985, Ser. No. 813,990
Term of patent 14 years
U.S. Cl. D3—23



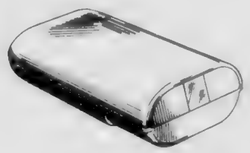
299,589
LUGGAGE
T. Uchiyama, Taipei, Taiwan, assignor to Echolac Co., Ltd., Taipei, Taiwan
Filed Nov. 27, 1985, Ser. No. 806,853
Term of patent 14 years
U.S. Cl. D3—76



299,590
CARRYING CASE
Seiichi Omino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 1, 1985, Ser. No. 794,148
Claims priority, application Japan, Aug. 26, 1985, 60-35935
Term of patent 14 years
U.S. Cl. D3—76



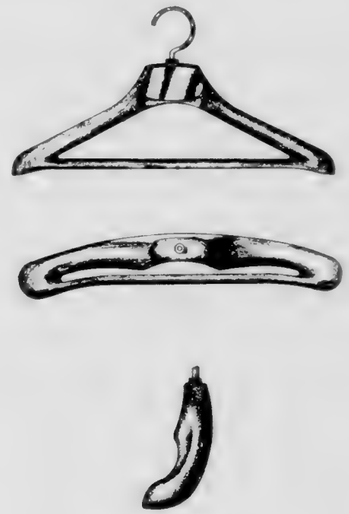
299,591
RADAR DETECTOR
Hari Matsuda, Evanston, and John Hui, Chicago, both of Ill., assignors to Whistler Corporation, Westford, Mass.
Filed Jan. 27, 1986, Ser. No. 822,783
Term of patent 14 years
U.S. Cl. D10—104



299,592
PROTECTIVE CAP FOR A SAFETY FLARE
Kenneth W. Adzima, 2930 S. Tejon St., Englewood, Colo. 80110
Filed Jan. 31, 1986, Ser. No. 824,843
Term of patent 14 years
U.S. Cl. D10—114

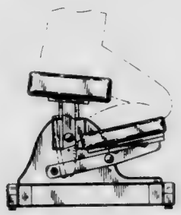


299,593
GARMENT HANGER
Russell O. Blanchard, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.
Continuation-in-part of Ser. No. 681,483, Dec. 13, 1984, Pat. No. D. 286,585. This application Feb. 18, 1986, Ser. No. 833,749
The portion of the term of this patent subsequent to Dec. 6, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—319



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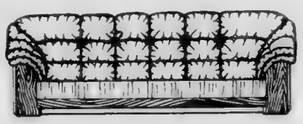
299,594
THERAPEUTIC POSTURE CHAIR
Beverly J. Richardson, 17 W. 163 Oak La., Bensenville, Ill. 60106
Filed Jul. 21, 1986, Ser. No. 887,649
Term of patent 14 years
U.S. Cl. D6—335



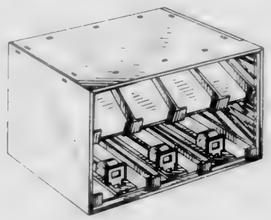
299,595
COMBINED BENCH, GOLF BALL WASHER AND WASTE RECEPTACLE SUPPORT
Robert L. Shields, Rte. 3, Box 72, Miltona, Minn. 56354
Filed Aug. 4, 1986, Ser. No. 892,450
Term of patent 14 years
U.S. Cl. D6—335

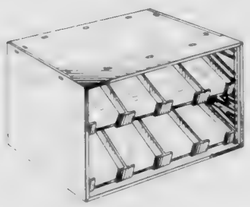


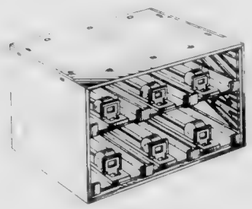
299,596
SOFA
Alan H. Friedman, Millburn, N.J., assignor to Kanowsky Furniture, Inc., Sacramento, Calif.
Filed Jun. 13, 1986, Ser. No. 874,353
The portion of the term of this patent subsequent to May 19, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—381

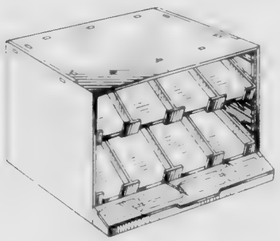


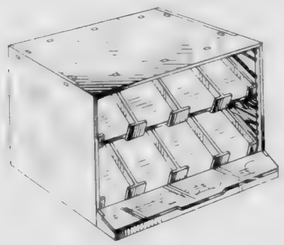
299,597
COMBINED DISPLAY AND DISPENSER RACK
Fred W. Kates, New York, and Karl Yeranossian, Pearl River, both of N.Y., assignors to Revlon, Inc., New York, N.Y.
Filed Mar. 31, 1986, Ser. No. 847,596
Term of patent 14 years
U.S. Cl. D6—408







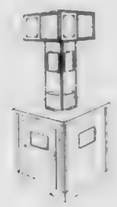




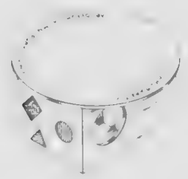
299,598
PHOTO FILM DROP STAND
Lynn E. Everett, New Philadelphia, Ohio, assignor to Tusco Manufacturing Company, Gnadenhutten, Ohio
Filed Jun. 23, 1986, Ser. No. 877,680
Term of patent 14 years
U.S. Cl. D6—432



299,599
PHOTO FILM DROP STAND
Lynn E. Everett, New Philadelphia, and Stephen W. Van Cleave, Kensington, both of Ohio, assignors to Tusco Manufacturing Company, Gnadenhutten, Ohio
Filed Jun. 23, 1986, Ser. No. 877,664
Term of patent 14 years
U.S. Cl. D6—436



299,600
COMBINED CHILD'S TABLE AND STORAGE UNIT
Anthony W. Mollica, 20 Plummer Rd., Windham, Me. 04062
Filed May 27, 1986, Ser. No. 846,996
Term of patent 14 years
U.S. Cl. D6—480



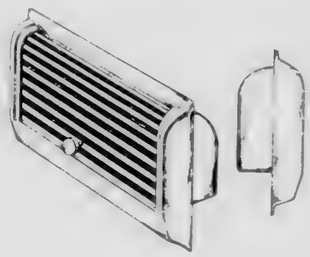
299,601
TABLE
Lisa K. F. Campbell, 1840 Cherri Dr., Falls Church, Va. 22043
Filed Sep. 12, 1986, Ser. No. 906,246
Term of patent 14 years
U.S. Cl. D6—487



299,602
COMBINED TOILET PAPER HOLDER AND DISPENSER
Jan G. O. Nordlander, Goteborg, Sweden, assignor to Molnlycke Aktiebolag, Goteborg, Sweden
Filed Mar. 17, 1986, Ser. No. 840,957
Term of patent 14 years
U.S. Cl. D6—518



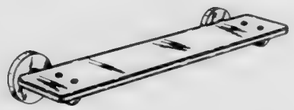
299,603
WALL MOUNTED CONSOLE
Steven E. Flory, Syracuse; Robert T. Morris, Bristol, and Robert J. Morris, Middlebury, all of Ind., assignors to Medallion Plastics, Inc., Middlebury, Ind.
Filed Feb. 19, 1986, Ser. No. 834,058
Term of patent 14 years
U.S. Cl. D6—559



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299,604
WALL SHELF
Peter S. Fayerman, Bryn Mawr, and Leslie A. Meck, Blandan, both of Pa., assignors to Baldwin Hardware Corporation, Reading, Pa.
Filed Oct. 18, 1985, Ser. No. 789,177
The portion of the term of this patent subsequent to Jan. 17, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—572

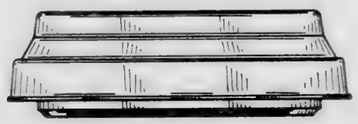




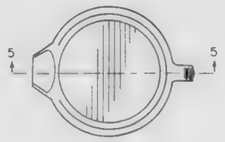
299,605
MUG OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510 Arques, France
Filed Jan. 24, 1986, Ser. No. 822,230
Term of patent 14 years
U.S. Cl. D7—9



299,606
COVERED DISH
James F. Pomroy, St. Paul, Minn., assignor to Plastics, Inc., Wilmington, Del.
Filed Nov. 21, 1985, Ser. No. 806,005
Term of patent 14 years
U.S. Cl. D7—16

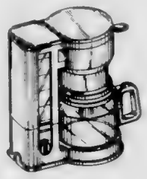


299,607
MEASURING JUG
Rupert T. Ryan, Ormond Road, R.D.5, Hastings, New Zealand
Filed Dec. 12, 1985, Ser. No. 808,256
Term of patent 14 years
U.S. Cl. D7—50

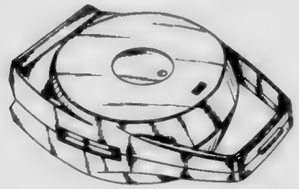


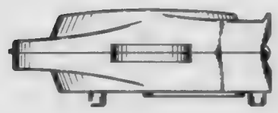


299,608
COFFEEMAKER
Michael Knöchner, Offenbach am Main, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Fed. Rep. of Germany
Filed Nov. 25, 1985, Ser. No. 806,555
Claims priority, application Fed. Rep. of Germany, May 29, 1985, 5 MR 10599
Term of patent 14 years
U.S. Cl. D7—309



299,609
WAFFLE BAKER
Alfred W. Madl, Glendale, Wis., assignor to Sunbeam Corporation, Downers Grove, Ill.
Filed Oct. 31, 1966, Ser. No. 925,448
Term of patent 14 years
U.S. Cl. D7—352

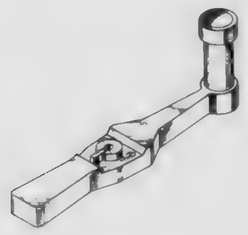




299,610
PIPE WRENCH
Kiyoshi Watanabe, Sanjo, Japan, assignor to Top Kogyo Co., Ltd., Niigata, Japan
Filed Sep. 9, 1985, Ser. No. 776,445
Term of patent 14 years
U.S. Cl. D8—22



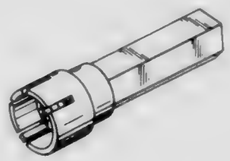
299,611
RATCHET WRENCH
Larry A. Brainard, 1681 Main St., Cuyahoga Falls, Ohio 44221
Filed Jan. 18, 1985, Ser. No. 692,710
Term of patent 14 years
U.S. Cl. D8—25



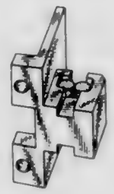
299,612
HANDLE FOR A RATCHET WRENCH
Mark D. Bradley, 308½ Broadway, Steeleville, Ill. 62288
Filed Feb. 4, 1985, Ser. No. 697,753
Term of patent 14 years
U.S. Cl. D8—25



299,613
CLOCK INDEXING DEVICE FOR A CABLE CONNECTOR
George Laurie, Fremont, Calif., assignor to Icore International, Sunnyvale, Calif.
Filed Feb. 8, 1985, Ser. No. 699,601
Term of patent 14 years
U.S. Cl. D8—29

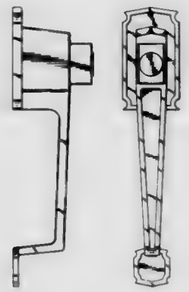


299,614
KNIFE SHARPENER
Raymond A. Young, 2615 S.E. Courtney Sp. 8, Milwaukie, Oreg. 97222
Filed Oct. 13, 1987, Ser. No. 107,530
Term of patent 14 years
U.S. Cl. D8—93

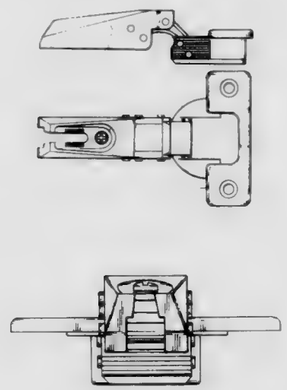


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299,615
DOOR HANDLE
George Wartian, Mt. Clemens, Mich., assignor to Wartian Lock Co., St. Clair Shores, Mich.
Filed Feb. 5, 1987, Ser. No. 11,134
Term of patent 14 years
U.S. Cl. D8—302



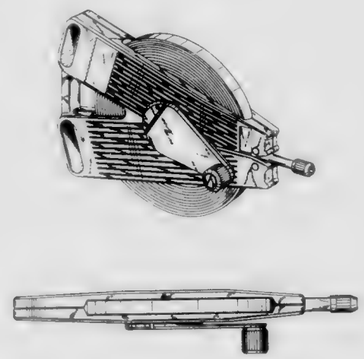
299,616
FURNITURE HINGE
Franco Ferrari, Lecco, Italy, assignor to Agostino Ferrari & C.S.R.1., Lecco, Italy
Filed Jan. 27, 1986, Ser. No. 822,322
Claims priority, application Italy, Aug. 2, 1985, 22716/85[U]
Term of patent 14 years
U.S. Cl. D8—323



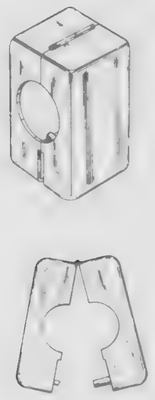
299,617
HINGE FOR REFRIGERATOR DOOR
Tetsuo Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1986, Ser. No. 899,618
Term of patent 14 years
U.S. Cl. D8—329



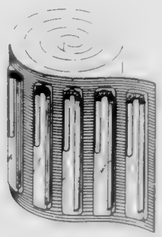
299,618
COMBINATION FLAT HOSE AND REEL CASSETTE FRAME THEREFOR
Nicholas A. M. Drought, Spennymoor, and Keith Vallis, Maidenhead, both of England, assignors to Black & Decker Inc., Newark, Del.
Filed Apr. 11, 1986, Ser. No. 851,431
Claims priority, application United Kingdom, Oct. 14, 1985, 1029811
Term of patent 14 years
U.S. Cl. D8—359



299,619
SHOWER CURTAIN HOLDER
Terry L. Davis, New York, N.Y., assignor to Waterware Corporation, Inc., New York, N.Y.
Filed Jul. 6, 1987, Ser. No. 69,935
Term of patent 14 years
U.S. Cl. D8—376



299,620
BELTED PACKAGE FOR FLEXIBLE DRINKING STRAWS
Jong I. Kim, Kumdan-Myun, Rep. of Korea, assignor to Seoil Industrial Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 4, 1985, Ser. No. 804,640
Term of patent 14 years
U.S. Cl. D9—345



299,621
CARD FOR HOLDING EARRINGS
Alexis V. Kirk, 160 E. 38th St., New York, N.Y. 10016
Filed Dec. 24, 1985, Ser. No. 812,953
Term of patent 14 years
U.S. Cl. D9—457



299,622
RING
Thomas J. Ahmed, 6300 Coleman, and Anthony E. Nerkowski, 5314 Calhoun, both of Dearborn, Mich. 48126
Filed May 19, 1987, Ser. No. 52,021
Term of patent 14 years
U.S. Cl. D11—30



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299,623
CANINE CHRISTMAS STOCKING
Dawn Lauster, P.O. Box 162, Stem, N.C. 27581
Filed Feb. 24, 1987, Ser. No. 27,273
Term of patent 14 years
U.S. Cl. D11—126



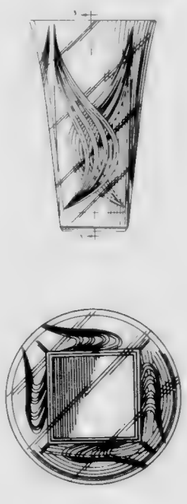
299,624
VASE
Allen J. Rothman, New York, N.Y., and Thomas A. Kligerman, Hoboken, N.J., assignors to Crazy Scenes, Inc., New York, N.Y.
Filed Sep. 22, 1987, Ser. No. 99,499
Term of patent 14 years
U.S. Cl. D11—152



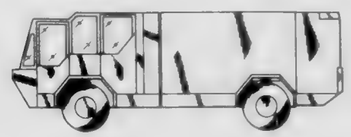
299,625
VASE OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510, Arques, France
Filed Apr. 24, 1987, Ser. No. 42,004
Term of patent 14 years
U.S. Cl. D11—153



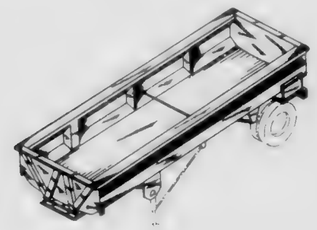
299,626
VASE OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510, Arques, France
Filed May 6, 1987, Ser. No. 46,504
Term of patent 14 years
U.S. Cl. D11—153



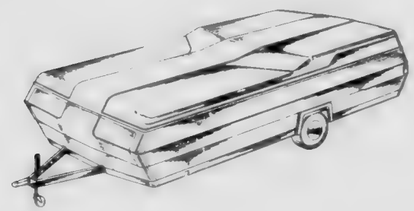
299,627
FIRE FIGHTING VEHICLE
Hermann Staudinger, Neubofen, Austria, assignor to Konrad Rosenbauer K.G., Leonding, Austria
Filed Mar. 21, 1986, Ser. No. 845,617
Term of patent 14 years
U.S. Cl. D12—13



299,628
TRUCK TRAILER BODY
James D. Burke, P.O. Box 760, Vacaville, Calif. 95696
Filed Jul. 28, 1986, Ser. No. 892,570
Term of patent 14 years
U.S. Cl. D12—97



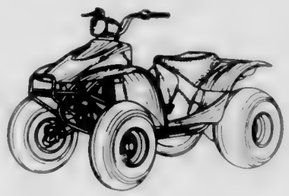
299,629
TRAILER
John A. Irelan, Elkhart, Ind., assignor to Coachmen Industries, Inc., Elkhart, Ind.
Filed Dec. 22, 1986, Ser. No. 944,534
Term of patent 14 years
U.S. Cl. D12—102



299,630
FOUR-WHEELED MOTORCYCLE
Yukihiko Matsue, 19-16, Shimoochiai 2-chome, Shinjuku-ku, Tokyo, Japan
Filed Feb. 28, 1986, Ser. No. 840,718
Claims priority, application Japan, Sep. 5, 1985, 60-37535
Term of patent 14 years
U.S. Cl. D12—107



299,631
FOUR-WHEELED MOTORCYCLE
Yasuhiro Oba, Saitama; Akira Watanabe, Tokyo; Koji Miwa, Tokyo, and Shigeru Kuroda, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 24, 1986, Ser. No. 923,070
Claims priority, application Japan, Apr. 24, 1986, 61-15503
Term of patent 14 years
U.S. Cl. D12—107

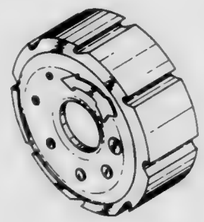


299,632
MOTORCYCLE
Kentaro Ito, and Naoki Hattori, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 26, 1986, Ser. No. 942,573
Claims priority, application Japan, Jun. 25, 1986, 61-24682
Term of patent 14 years
U.S. Cl. D12—110

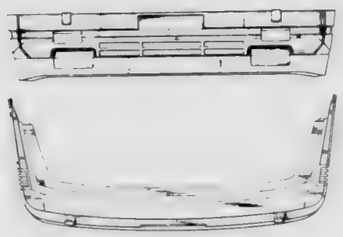


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299,633
SYNCHRONIZED LANDING AIRCRAFT TIRE
Richard D. Pipho, R.R. 3 Box 21A, Eldora, Iowa 50627
Filed Sep. 20, 1985, Ser. No. 778,422
Term of patent 14 years
U.S. Cl. D12—150



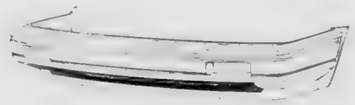
299,634
FRONT BUMPER FOR AUTOMOTIVE VEHICLE
Lucio Ghezzi, Monza, and Ermanno Cressoni, Arese, both of Italy, assignors to Alfa Romeo Auto S.p.A., Napoli, Italy
Filed Jun. 18, 1986, Ser. No. 875,765
Claims priority, application Italy, Dec. 24, 1985, 24251/85[U]
Term of patent 14 years
U.S. Cl. D12—169



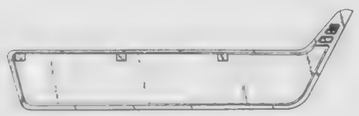
299,635
REAR BUMPER FOR AUTOMOTIVE VEHICLE
Lucio Ghezzi, Monza, and Ermanno Cressoni, Arese, both of Italy, assignors to Alfa Romeo Auto S.p.A., Napoli, Italy
Filed Jun. 18, 1986, Ser. No. 875,766
Claims priority, application Italy, Dec. 24, 1985, 24250/85[U]
Term of patent 14 years
U.S. Cl. D12—169



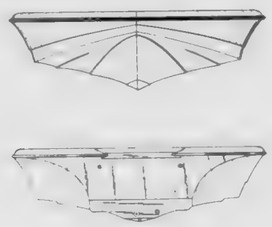
299,636
AUTOMOBILE BUMPER
Ryuzo Kubo, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jun. 9, 1986, Ser. No. 872,458
Claims priority, application Japan, Dec. 23, 1985, 60-53412
Term of patent 14 years
U.S. Cl. D12—169



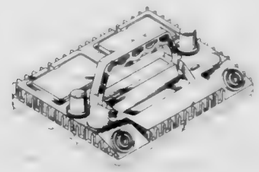
299,637
COVERGUARD FOR PROTECTING THE EXTERIOR OF AN AUTOMOBILE BODY
Patti Wright-Brady, 3009 Raintree, Oklahoma City, Okla. 73120, and Cary D. Callison, 1504 E. Lindsey, Norman, Okla. 73071
Filed Sep. 17, 1986, Ser. No. 908,514
Term of patent 14 years
U.S. Cl. D12—190

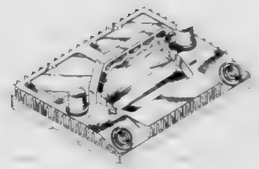


299,638
BOAT HULL
Ernest E. Ard, and Randall E. Ard, both of 9214 Waring Rd., Cantonment, Fla. 32533
Filed Jul. 3, 1986, Ser. No. 881,690
Term of patent 14 years
U.S. Cl. D12—314

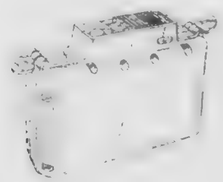


299,639
BATTERY COVER WITH MOVABLE HANDLE
Carl J. Anderson, Hamburg; Scott J. Cronrath, Shillington, and David B. Beidler, Gilbertsville, all of Pa., assignors to General Battery Corporation, Reading, Pa.
Filed Feb. 9, 1987, Ser. No. 12,201
Term of patent 14 years
U.S. Cl. D13—10

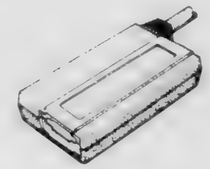




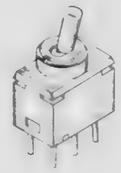
299,640
BATTERY PACK OR SIMILAR ARTICLE
Scott D. Price, Pylesville, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Feb. 12, 1988, Ser. No. 155,654
Term of patent 14 years
U.S. Cl. D13—8



299,641
NETWORK INTERFACE FOR COMPUTER EQUIPMENT OR THE LIKE
John R. Rossum, Jr., San Jose, Calif., assignor to 3Com Corporation, Mountain View, Calif.
Filed Oct. 20, 1986, Ser. No. 922,447
Term of patent 14 years
U.S. Cl. D13—24



299,642
TOGGLE SWITCH
Koji Kamisada, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Japan
Filed Jan. 6, 1986, Ser. No. 816,350
Claims priority, application Japan, Jul. 26, 1985, 60-031944
Term of patent 14 years
U.S. Cl. D13—37



299,643
HEADPHONE-STYLE MICROPHONE
Hiroshi Kubota, Kobe, Japan, assignor to Toa Tokushi Denki Kabushiki Kaisha, Kobe, Japan
Filed Jan. 3, 1986, Ser. No. 815,949
Claims priority, application Japan, Jul. 3, 1985, 60-28441
Term of patent 14 years
U.S. Cl. D14—225



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299,644
TELEPHONE SET
Fumiharu Ohta; Masao Tamura, and Chuan Ming Hung, all of Kanagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 30, 1987, Ser. No. 127,004
Claims priority, application Japan, Jun. 23, 1987, 62-25544
Term of patent 14 years
U.S. Cl. D14—149





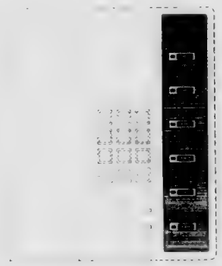
299,645
TELEPHONE SET
Fumiharu Ohta; Masao Tamura, and Satoshi Watanabe, all of Kanagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 7, 1987, Ser. No. 130,339
Claims priority, application Japan, Jun. 23, 1987, 62-25542
Term of patent 14 years
U.S. Cl. D14—149







299,646
FRONT FACE OF A COLUMNAR BUTTON PANEL FOR A TELEPHONE STAND
Harry M. Stierwalt, 102 Mill Estate Rd., Taylors, S.C. 29687
Filed Aug. 26, 1985, Ser. No. 769,024
Term of patent 14 years
U.S. Cl. D14—250



299,647
TELEPHONE HANDSET
John S. Davies, London, England, assignor to British Telecommunications public limited company, Great Britain
Filed Jun. 10, 1987, Ser. No. 60,370
Claims priority, application United Kingdom, Dec. 11, 1986, 1038705
Term of patent 14 years
U.S. Cl. D14—248





299,648
HANDSET TELEPHONE OR SIMILAR ARTICLE
Takei Yoshiharu, Shatin, Hong Kong, assignor to Tasca International Ltd., Kowloon, Hong Kong
Filed Jun. 1, 1987, Ser. No. 56,972
Claims priority, application United Kingdom, Feb. 4, 1987, 1039782
Term of patent 14 years
U.S. Cl. D14—147





299,649
TELEPHONE HANDSET
Steven W. Hughes, Burgess Hill, and Paul L. Brennan, London, both of England, assignors to British Telecommunications, London, England
Filed Jan. 12, 1987, Ser. No. 2,261
Claims priority, application United Kingdom, Jul. 15, 1986, 1035353
Term of patent 14 years
U.S. Cl. D14—248

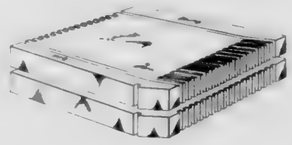




299,650
RADIO AND TAPE PLAYER
Herman E. Mitchell, 5840 Glenmont, Apt. 33, Houston, Tex. 77081
Continuation-in-part of Ser. No. 712,553, Mar. 15, 1985. This application Sep. 18, 1987, Ser. No. 98,691
Term of patent 14 years
U.S. Cl. D14—162

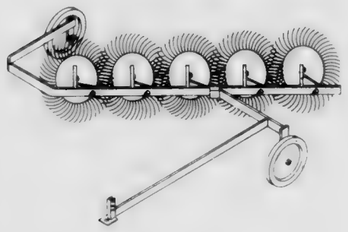


299,651
DESK-TOP COMPUTER HOUSING
Andreas Preussner, Highlands, N.J., assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Division of Ser. No. 672,985, Nov. 19, 1984. This application Dec. 3, 1987, Ser. No. 128,378
Term of patent 14 years
U.S. Cl. D14—100

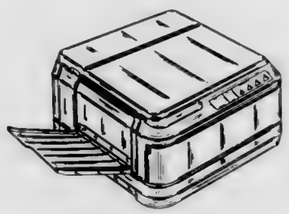


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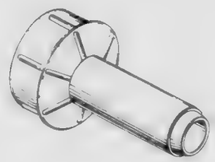
299,652
HAY RAKE
I. Blain Taylor, 101 Toll Gate Clr., Huntsville, Ala. 35801
Filed Feb. 10, 1986, Ser. No. 827,914
Term of patent 14 years
U.S. Cl. D15—11



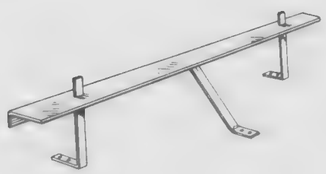
299,653
COPYING MACHINE
Mikio Kosako, and Ritsuko Makihara, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 21, 1986, Ser. No. 888,244
Claims priority, application Japan, Jan. 22, 1986, 61-2474
Term of patent 14 years
U.S. Cl. D18—36



299,654
HANDLE FOR ROLL OF PLASTIC FILM
Joseph Goldstein, 1700 Palisades Dr., Pacific Palisades, Calif. 90272
Filed Sep. 29, 1986, Ser. No. 913,216
Term of patent 14 years
U.S. Cl. D15—145



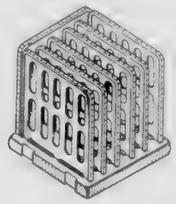
299,655
CONCRETE FORM
Jerome D. Reynolds, 2555 W. Crescent, Anaheim, Calif. 92801, and Robert L. Reynolds, 715 W. North Gate La., #6, Anaheim, Calif. 92805
Filed Aug. 8, 1985, Ser. No. 763,685
Term of patent 14 years
U.S. Cl. D15—136



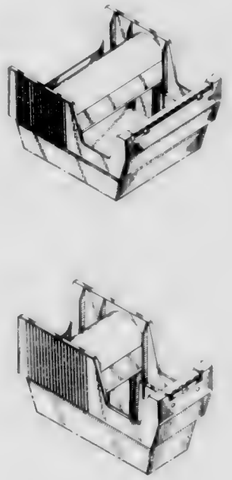
299,656
POINT AND BARREL TIP ASSEMBLY FOR A WRITING INSTRUMENT
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation of Ser. No. 765,290, Aug. 13, 1985. This application Dec. 21, 1987, Ser. No. 136,158
Term of patent 14 years
U.S. Cl. D19—54



299,657
FILE ORGANIZER
Shih-Ming Hwang, No. 11, Alley 12, Lane 7, Ching-Tyan St., Taipei, Taiwan
Filed Dec. 9, 1985, Ser. No. 806,406
Term of patent 14 years
U.S. Cl. D19—90



299,658
ADHESIVE TAPE DISPENSER
Lloyd S. Vasilakes, North St. Paul; Eugene N. Reshanov, Golden Valley, and Alden R. Miles, Burnsville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 26, 1986, Ser. No. 935,536
Term of patent 14 years
U.S. Cl. D19—69



299,659
COMBINED PEN AND HOLDER
Paul D. Lantz, Wilkes-Barre, Pa., assignor to Rifkin Products Co., Wilkes-Barre, Pa.
Filed Nov. 8, 1985, Ser. No. 803,948
Term of patent 14 years
U.S. Cl. D19—36



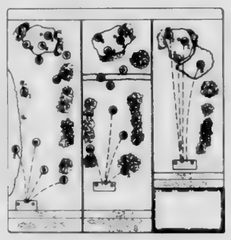
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299,660
POINT AND BARREL TIP ASSEMBLY FOR WRITING INSTRUMENT
Fred L. Gordo, Pacific Palisades, Calif., assignor to The Gillette Company, Boston, Mass.
Continuation of Ser. No. 764,153, Aug. 9, 1985. This application Dec. 21, 1987, Ser. No. 136,153
Term of patent 14 years
U.S. Cl. D19—54

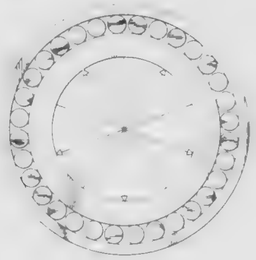




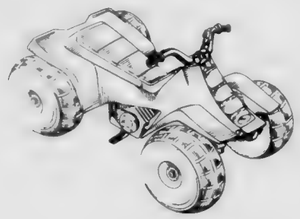
299,661
GOLF GAME BOARD
Richard D. Henken, 13 Ober St., Beverly, Mass. 01915
Filed Oct. 15, 1985, Ser. No. 787,612
Term of patent 14 years
U.S. Cl. D21—27



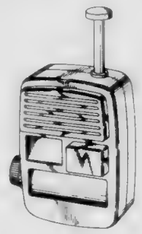
299,662
NOVELTY MANAGEMENT DECISION SPINNER
Don R. Cobb, 1807 Long Pointe Dr., Bloomfield Hills, Mich. 48013
Filed Jun. 11, 1985, Ser. No. 743,638
Term of patent 14 years
U.S. Cl. D21—39



299,663
RIDE-ON TOY VEHICLE
Lawrence R. Harrod, Fort Wayne, Ind., assignor to Kransco, San Francisco, Calif.
Filed Feb. 10, 1986, Ser. No. 827,619
Term of patent 14 years
U.S. Cl. D21—76



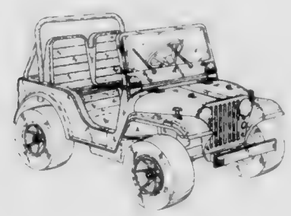
299,664
TOY WALKIE-TALKIE
Edward M. Ferguson, Carson, and Toshinori Tabata, Tokyo, both of Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Feb. 10, 1986, Ser. No. 827,643
Claims priority, application Japan, Aug. 9, 1985, 60-34110
Term of patent 14 years
U.S. Cl. D21—111



299,665
SIMULATIVE DOLL BED
Roberta J. David, 410 E. Houghton Ave., West Branch, Mich. 48661
Filed Jan. 13, 1986, Ser. No. 818,109
Term of patent 14 years
U.S. Cl. D21—121



299,666
RIDE-ON TOY VEHICLE
Lawrence R. Harrod, Fort Wayne, Ind., assignor to Kransco, San Francisco, Calif.
Filed Dec. 30, 1985, Ser. No. 815,028
Term of patent 14 years
U.S. Cl. D21—134



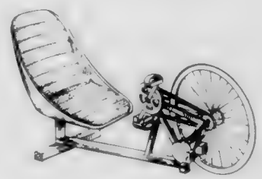
299,667
DOLL
Mora C. Conn, and Robert N. Conn, both of Star Route 3, Box 355, Eustis, Fla. 32726
Filed Apr. 7, 1986, Ser. No. 850,399
Term of patent 14 years
U.S. Cl. D21—174



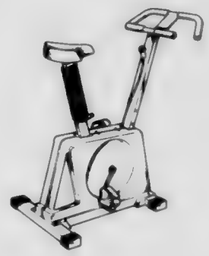
299,668
JUMP ROPE APPARATUS
Nelson A. Cook, 5313 Wynfield Way #3, Sacramento, Calif. 95841
Filed Apr. 24, 1985, Ser. No. 726,776
Term of patent 14 years
U.S. Cl. D21—191



299,669
STATIONARY BICYCLE EXERCISER
Craig L. Harter, 21229 Pacific Coast Hwy., Malibu, Calif. 90265
Filed Jan. 31, 1986, Ser. No. 824,972
Term of patent 14 years
U.S. Cl. D21—194

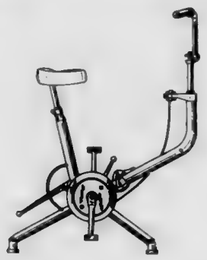


299,670
EXERCISE BICYCLE
Jui-Chin Lin, and Juff S. Pai, both of Taiwan, Taiwan, assignors to Shinn Fu Corporation, Taiwan, Taiwan
Filed Aug. 18, 1986, Ser. No. 897,375
Term of patent 14 years
U.S. Cl. D21—194



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299,671
EXERCISE BICYCLE
Miguel M. Anitua, Eibar, Spain, assignor to Gara Te Anitua Y Cia., S.A., Abadiano, Spain
Continuation-in-part of Ser. No. 501,804, Jun. 7, 1983, abandoned. This application Jan. 31, 1986, Ser. No. 824,427
Term of patent 14 years
U.S. Cl. D21—194



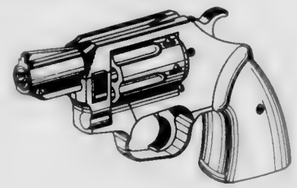
299,672
TENNIS RACQUET
Warren M. Bosworth, Jr., Glastonbury, Conn., assignor to FTM Corporation, Los Angeles, Calif.
Filed Jan. 3, 1986, Ser. No. 815,830
Term of patent 14 years
U.S. Cl. D21—212



299,673
MUZZLE-LOADING RIFLE
William A. Knight, P.O. Box 130, Hiway 136 E., Lancaster, Mo. 63548
Filed Jan. 21, 1986, Ser. No. 819,739
Term of patent 14 years
U.S. Cl. D22—103



299,674
REVOLVER
Robert E. Domian, Somers, Conn., assignor to Kingston Tool Company, Inc., Monson, Mass.
Filed Apr. 21, 1986, Ser. No. 857,418
Term of patent 14 years
U.S. Cl. D22—104



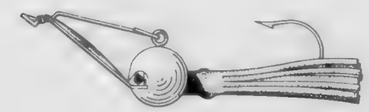
299,675
FISHING LURE
Donald W. Betts, Fuquay-Varina, N.C., assignor to Betts Tackle Ltd., Fuquay-Varina, N.C.
Filed Jun. 8, 1987, Ser. No. 59,470
Term of patent 14 years
U.S. Cl. D22—128



299,676
FISHING LURE
Donald W. Betts, Fuquay-Varina, N.C., assignor to Betts Tackle Ltd., Fuquay-Varina, N.C.
Filed Jun. 8, 1987, Ser. No. 59,469
Term of patent 14 years
U.S. Cl. D22—128



299,677
FISH LURE
Vernon E. Ryan, 621 N. Springfield, Anthony, Kans. 67003
Filed Jul. 15, 1987, Ser. No. 73,624
Term of patent 14 years
U.S. Cl. D22—128



299,678
FISHING LURE
Joseph Butler, 12845 Highway 2 W., Marion, Mont. 59925
Filed Sep. 12, 1986, Ser. No. 906,790
Term of patent 14 years
U.S. Cl. D22—129



299,679
FISHING REEL HANDLE
Kiyoshi Hoshino, and Teruhisa Numata, both of Tokyo, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Nov. 24, 1986, Ser. No. 934,082
Term of patent 14 years
U.S. Cl. D22—140



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF JANUARY, 1989

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-LOK Products Corporation: *See—*
Ditcher, Jack, 4,801,417, Cl. 264-250.000.

Aasen, Robert K.; Turck, Donald C.; and Mathur, Anoop K., to Gas Research Institute. Advanced cogeneration control system. 4,802,100, Cl. 364-494.000.

AB Tetra Pak: *See—*
Carlsson, Lars, 4,801,078, Cl. 229-123.200.

Abe, Hikonori: *See—*
Shigeta, Masatomo; Abe, Hikonori; and Nishiyama, Shinichi, 4,800,887, Cl. 128-639.000.

Abe, Koichi: *See—*
Naito, Susumu; Abe, Koichi; Kiga, Hidetaka; and Onda, Yuzi, 4,801,737, Cl. 560-139.000.

Abe, Shinpei: *See—*
Miyazaki, Hiroshi; Miyatani, Takao; Ishizaki, Akira; and Abe, Shinpei, 4,800,640, Cl. 29-429.000.

Abe, Takao: *See—*
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Abrahamson, Daniel P., to Builders Equipment Company. Acceleration control device for a hydraulic drive unit. 4,800,767, Cl. 74-38.000.

Ackerson, D. Scott; Impink, Albert J., Jr.; Balkey, Kenneth R.; and Andreychek, Timothy S., to Westinghouse Electric Corp. On-line monitoring and analysis of reactor vessel integrity. 4,801,421, Cl. 376-249.000.

Ackland, Martin R., to Metal Box Public Limited Company. Apparatus for detecting micro-organisms. 4,801,546, Cl. 435-291.000.

Ackmann, Stephen A.; Beck, James R.; and Wright, Fred L., to Eli Lilly and Company. 1-phenylpyrazole-4,5-dicarboxylic acid derivatives, composition containing them, and pollen formation inhibiting method of using them. 4,801,326, Cl. 71-92.000.

Adachi, Shin: *See—*
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Adair, Paul C.; and Hess, Todd M., to Mead Corporation, The. Magnetic recording compositions containing ionic dye compounds as initiators. 4,801,392, Cl. 252-62.540.

Adams, Brenda L.: *See—*
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Adams, Tello. Piezoelectric load measurement apparatus and circuits 4,801,837, Cl. 310-316.000.

Adamski, Maximilian; Kosrow, Robert L.; and Ruderman, Stephen, to Union Special Corporation. Hemmer seamer assembly. 4,800,830, Cl. 112-303.000.

Adkins, John. Gun safe with ejectable drawer. 4,800,822, Cl. 109-19.000.

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Agnew, Boyd F., deceased; and by Agnew, Gertrude B. F., legal representative. High efficiency particulate air filter and separators. 4,801,317, Cl. 55-500.000.

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Ahond, Alain; Laboute, Pierre; Laurent, Dominique; Potier, Pierre; Poupat, Christiane; Pusset, Jacques; Pusset, Michele; and Thoison, Odile, to Rhone-Poulenc Sante. New biologically active substance called girolline, extracted from the sponge pseudaxinyssa cantharella process for its preparation and pharmaceutical compositions containing it. 4,801,602, Cl. 514-398.000.

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Aida, Fumio; Shinono, Takeo; Hanai, Misao; and Tassavori, Shahrzad, to Showa Electric Wire & Cable Co., Ltd. Crosslinked polyolefin insulated power cable. 4,801,766, Cl. 174-120.0SC.

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Akaogi, Takao; and Tatematsu, Takeo, to Fujitsu Limited. Output buffer circuit for a semiconductor memory device. 4,802,127, Cl. 365-189.000.

Akasaka, Hidemichi; Komasaki, Hisayuki; and Arai, Takayuki, to Shiseido Company Ltd. Fermentation method for producing hyaluronic acid. 4,801,539, Cl. 435-101.000.

Akashi, Akira, to Canon Kabushiki Kaisha. Camera incorporating automatic focusing apparatus. 4,801,962, Cl. 354-402.000.

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Albanese, Victor A. Convertible bench/table. 4,801,175, Cl. 297-124.000.

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Arnold, William M.; and Zimmermann, Ulrich, to Kerforschungsanlage Julich. Process and device for the differentiation of particles in a medium. 4,801,543, Cl. 435-173.000.

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Arteaga, Alfredo G. Strip-articulated door that turns in small radius. 4,800,945, Cl. 160-196.100.

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Arvola, Ilkka; and Kajamaa, Jaakko. Method and equipment for converting thermal energy to mechanical energy. 4,800,722, Cl. 60-527.000.

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Harada, Yoshiyasu: *See*—
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Harlow, Norman R., to Carlisle Corporation. Insulated conductor with multi-layer, high temperature insulation. 4,801,501, Cl. 428-383.000.

Harold, Franz, to Maschinenfabrik Heid Aktiengesellschaft. Apparatus for the treatment of seed materials. 4,801,374, Cl. 209-135.000.

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Moore, George S., 4,802,149, Cl. 367-100.000.

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Harris, Stephen E.; and Young, James F., to Leland Stanford Junior University, Board of Trustees of the. Microwave excited excimer laser and method. 4,802,183, Cl. 372-57.000.

Hart, Joseph J., to Container Corporation of America. Center-supported microwave tray. 4,801,774, Cl. 219-10.55E.

Harte, J. Richard. Electric probe used to activate correct and incorrect response areas in an instructional apparatus. 4,802,092, Cl. 364-411.000.

Hartmeier, Werner N., to RCA Licensing Corporation. Digitally controlled phase locked loop system. 4,802,009, Cl. 358-158.000.

Harvey Industries, Inc.: *See*—
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Hashimoto, Toshio; Yoshino, Susumu; Ohashi, Akira; Egi, Masao; Shingu, Yasuyuki; Yoshioka, Takashi; and Hattori, Siro, to Yuken Kogyo Kabushiki Kaisha. Variable displacement piston pump. 4,801,247, Cl. 417-213.000.

Hashinoki, Kazuhiro; and Dairiki, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Ultrasonic dimension measuring apparatus. 4,800,757, Cl. 73-597.000.

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Hayes, Peter F., to Omniverse Research, Inc. MIG welder attachment for an electric hand drill. 4,801,780, Cl. 219-130.100.

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Kubota, Shigeru; Kanou, Shoji; and Kubo, Masahiro, to Nitto Kogyo Kabushiki Kaisha. Chip separation and alignment apparatus. 4,801,044, Cl. 221-163.000.

Kudo, Shinichi: *See*—
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Kudzma, Linas V.; and Spencer, H. Kenneth, to BOC Group, Inc., The. 4-heterohexacyclic-4-(N-(phenyl)amido) piperidine derivatives and pharmaceutical compositions and method employing such compounds. 4,801,615, Cl. 514-318.000.

Kuenzly, John D., to TRW Inc. Slagging-combustor sulfur removal process and apparatus. 4,800,825, Cl. 110-345.000.

Kugler, Reinhard: *See*—
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Kuhn, Raymond E.; Estrada, John J.; and Grogl, Max, to Wake Forest University. Immunological methods for diagnosing neurocysticercosis. 4,801,532, Cl. 435-7.000.

Kulitz, Gunter, to ESTA Apparatebau GmbH & Co. KG. Cleaner for swimming pools and the like. 4,801,376, Cl. 210-123.000.

Kumagai, Atuhiro: *See*—
Matsumoto, Yoshiharu; Kumagai, Atuhiro; and Ota, Shuichi, 4,802,034, Cl. 360-85.000.

Kumagai, Yukio, to Pfizer Inc. Automatic gunning apparatus with detachably mounted gunning pipe. 4,801,096, Cl. 239-752.000.

Kumamoto, Kazuo: *See*—
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Kunotori, Tsuneo: *See*—
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Kupper, Robert J.: *See*—
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Kuratani, Takahiro: *See*—
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Kurita, Kozaburo: *See*—
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Kurosawa, Isamu: *See*—
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Kurotobi, Yohji: *See*—
Hanzawa, Yukihiko; Kawauchi, Haruki; Mikami, Tukasa; Takagi, Akinobu; and Kurotobi, Yohji, 4,800,985, Cl. 181-229.000.

Kurotori, Tsuneo: *See*—
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Kuroyanagi, Hirohisa: *See*—
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Kuru, Hiroshi: *See*—
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Kurze, Peter; Rabending, Klaus; Krysmann, Waldemar; Daniel, Peter; Morgenstern, Rainer; Wehner, Wilfried; and Polster, Manfred, to Technische Universitaet Karl-Marx-Stadt. Single part biocompatible hip-joint socket moorable without cement. 4,801,300, Cl. 623-22.000

Kusano, Kazuki: *See*—
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Kusche, Gerhard: *See*—
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Kusumoto, Keiji; and Takano, Yoshiaki, to Minolta Camera Kabushiki Kaisha. Image forming apparatus equipped with a plurality of developing units. 4,801,972, Cl. 355-14.00D.

Kwoka, Mark A.: *See*—
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Kyoe, Shinji: *See*—
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Kyokuwei Optical Glass Co., Ltd.: *See*—
Hirabayashi, Toshihiko; and Honda, Keiji, 4,800,686, Cl. 51-283.00R

Kyusho, Yukio, to NEC Corporation. Transversely excited atmospheric laser. 4,802,185, Cl. 372-86.000.

La Telemecanique Electrique: *See*—
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Laarhoven, Johannes P. M.: *See*—
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Laboute, Pierre: *See*—
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Lacey, Richard F., to Hewlett-Packard Company. Baseline correction for chromatography. 4,802,102, Cl. 364-497.000.

Lachenbruch, Roger B.: *See*—
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Lageder, Heinrich; Masek, Jaroslav; and Prochazka, Kamil, to BBC Brown, Boveri & Company, Ltd. Device for generating a prestress when two connection parts are coupled rigidly. 4,801,216, Cl. 403-24.000.

Laguzza, Bennett C.; and Nichols, Cynthia L., to Eli Lilly and Company. Hydrazone immunoglobulin conjugates. 4,801,688, Cl. 530-391.000.

Laguzza, Bennett C.; Nichols, Cynthia L.; and Bach, Nicholas J., to Eli Lilly and Company. 2-Alkyl(or phenyl)thio-6-n-alkylergolines are dopamine D-1 antagonists without D-2 agonist activity. 4,801,712, Cl. 546-67.000.

Laine, Richard M.: *See*—
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L'Air Liquide, Societe Anonyme Pour L'Etude et Exploitation Des Procedes Georges Claude: *See*—
Jeanne, Francis; Lombard, Serge; and Schmidt, Emmanuel, 4,801,359, Cl. 204-1.00T.

Lakey, Larry D. Hedge hose bibb extension apparatus. 4,800,916, Cl. 137-343.000.

Lama, William L.; Loce, Robert P.; and Durbin, John A., to Xerox Corporation. Image bar printer compensated for vibration-generated scan line errors. 4,801,978, Cl. 355-69.000.

Lamb, Diane J.: *See*—
Jobe, Patrick G.; Lamb, Diane J.; and Martino, Gary T., 4,801,699, Cl. 536-59.000.

Lamb, Donald J. Military boardgame. 4,801,148, Cl. 273-255.000.

Lamm, Hermut: *See*—
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Lammers, James B., to Campbell Hausfeld/Scott Fetzer Company Valve structure for a compressor. 4,801,250, Cl. 417-265.000

Landrau, Felix A.: *See*—
Hamel, Larry G.; Landrau, Felix A.; Guttard, George V.; and Wong, Patrick S. L., 4,801,461, Cl. 424-467.000.

Landry, Vincent E.: *See*—
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Landwehr, Reinhard; and Rebers, Gunter, to Klockner Ferromatik Desma GmbH. Molding outer and inner soles onto shoe uppers. 4,801,256, Cl. 425-119.000.

Lane, Bennie L., to Metal Era, Inc. Fascia assembly for securing edge of rubber roof membrane including reinforcing clips. 4,800,689, Cl. 52-60.000.

Lang, Richard D.; and Bolton, Theodore S., to Carrier Corporation. Fan motor assembly method and apparatus for a room air conditioner. 4,800,735, Cl. 62-298.000.

Lang, Siegfried: *See*—
Goertz, Hans-Helmut; Klimesch, Roger G.; Laemmerhirt, Klaus; Lang, Siegfried; Sanner, Axel; and Spengler, Reinhard, 4,801,460, Cl. 424-465.000.

Lang, Steven C., to General Motors Corporation. Molding/locating and attaching clip device. 4,800,699, Cl. 52-717.100.

Lange, Gerald R., to Eastman Kodak Company. Method and apparatus for measuring optical retardation in transparent materials. 4,801,798, Cl. 250-225.000.

Lange, Michael D.; Smith, Nicholas K.; and Willems, Carl, to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Method and apparatus for providing virtual facility communication service. 4,802,199, Cl. 379-221.000.

Langley, Robert; Stewart, John D.; and Walls, Arthur S., to Ciba-Geigy Corporation. Production of pigmentary copper phthalocyanine. 4,801,634, Cl. 524-88.000.

Langley, Robert; Stewart, John D.; and Walls, Arthur S., to Ciba-Geigy Corporation. Production of pigmentary copper phthalocyanine. 4,801,638, Cl. 524-88.000.

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Laurent, Daniel; and Mayet, Jean C., to Compagnie Generale des Etablissement Michelin-Michelin et Cie. Method for the manufacture of reinforcements for tires. 4,801,344, Cl. 156-117.000.

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LeClerc, Gerard; Huber, Didier; Himber, Jacques; and Andermann, Guy. Iminoimidazolidines useful in lowering intraocular pressure. 4,801,617, Cl. 514-392.000.

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Le Tixerant, Eric. Arrangement for setting back the seat of an equestrian saddle and a damping device adapted to be fitted to said arrangement. 4,800,709, Cl. 54-44.000.

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Levin, Mark R.; Nalley, William M.; and Green, Dwight L., to Levin, Mark R. Handheld cordless hair dryer. 4,800,654, Cl. 34-97.000.

Levitas, Miriam S. Garment bag with strap to secure closure flap in bundled configuration. 4,801,010, Cl. 206-279.000.

Levy, Simon J.; and Alpert, Donald B., to National Semiconductor Corporation. Apparatus and method for detecting and handling memory-mapped I/O by a pipelined microprocessor. 4,802,085, Cl. 364-200.000.

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Lewis, John G., to Emerson Electric Co. Electric motor stator support structure and method of manufacturing same. 4,801,831, Cl. 310-91.000.

Lewis, Martyn; and Anderson, Richard, to Eastman Kodak Company. Motion control system for reel to reel web transport apparatus. 4,801,853, Cl. 318-7.000.

Lewis, William A.; and Baker, Robert G., to Nordson Corporation. Flow control device for a fluid dispensing apparatus. 4,801,051, Cl. 222-309.000.

Leyendecker, Hans-Wilhelm; and Abendroth, Paul, to M.A.N. Roland. Planetary transmission device for driving an oscillating auxiliary gripper of a printing press. 4,800,813, Cl. 101-409.000.

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Login, Robert B.; Hashem, Mohamed M.; and Tracy, David J., to GAF Corporation. Epoxy pyrrolidone based non-ionic surfactants. 4,801,400, Cl. 252-357.000.

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Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith M., to UOP. Titanium-aluminum-phosphorus-silicon-oxide molecular sieves. 4,801,309, Cl. 55-35.000.

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Loori, Phillip E. Portable topical hyperbaric apparatus. 4,801,291, Cl. 604-23.000.

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Mead Corporation, The: *See—*
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Meadows, Patricia H. Bouquet sleeve. 4,801,014, Cl. 206-423.000

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Meessen, Jozef H.; and Sipkema, Rudolf, to Stamicarbon B.V. Improved process for the preparation of urea. 4,801,745, Cl. 564-70.000

Mehrotra, Pankaj K.; and Billman, Elizabeth R., to Kennametal Inc. Alumina coated silcon carbide whisker-alumina composition. 4,801,510, Cl. 428-698.000.

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Meissner, Ralph; and Kess, Helmut, to Siemens Aktiengesellshaft. Nuclear magnetic resonance apparatus for the identification of spectra or images of an examination subject. 4,801,885, Cl. 324-318.000.

Melandri, Bruno, to Ing. C. Olivetti & C., S.p.A. Circuit for regulating a voltage controlled oscillator. 4,801,895, Cl. 331-17.000.

MEMTEC North America Corp.: *See*—
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Menchetti, Robert J., to National Gypsum Company. Electrical raceway floor track. 4,800,695, Cl. 52-221.000.

Menge, Heinrich. Ventilated toilet. 4,800,596, Cl. 4-348.000.

Menkedick, Michael H.: *See*—
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Mensies, Otto, to U.S. Philips Corporation. Display tube with magnetic correction elements. 4,801,843, Cl. 313-421.000.

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Merlo, Mauro; and Coccetti, Silvano, to SGS-Thomson Microelectronics S.p.A. Generator of periodial signals, in particular for switch-mode power supplies. 4,801,816, Cl. 307-228.000.

Merrick, Edwin B., to Hewlett-Packard Company. Transducer calibration circuit. 4,800,749, Cl. 73-4.00R.

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Metabowerke GmbH & Co.: *See*—
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Metal Era, Inc.: *See*—
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Michel, Eberhard; Scholz, Manfred; Berndt, Wolfgang; and Katscher, Peter, to Siemens Aktiengesellschaft. Nuclear power plant having a metallic reactor pressure vessel. 4,801,425, Cl. 376-461.000.

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MicroComputer Accessories Inc.: *See*—
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Micropore International Limited: *See*—
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Microthermia Technology, Inc.: *See*—
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Microwave Products of America, Inc.: *See*—
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Miczka, Lothar. Pressure container for receiving and mixing at least two separate components. 4,801,046, Cl. 222-95.000.

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Mifune, Hiroyuki; Shishido, Tadao; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Process for preparing silver halide emulsion and photographic light-sensitive material containing said emulsion. 4,801,524, Cl. 430-569.000.

Mihara, Yuji; and Ishigaki, Kunio, to Fuji Photo Film Co., Ltd. Infrared sensitized silver halide light-sensitive element with mordant dye over layer. 4,801,525, Cl. 430-518.000.

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Miller, Nicholas A. Brake maintenance monitor. 4,800,991, Cl. 188-1.110.

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Miller, Theodore H., to Emhart Industries Inc. Exit device actuator and dogger. 4,801,163, Cl. 292-92.000.

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Scheibli, Peter; Seitz, Karl; Seiler, Herbert; and Tzikas, Athanassios, to Ciba-Geigy Corporation. Triazinyl reactive dyestuffs in which triazinyl group is further substituted with a beta-chloroethylsulfonyl- or vinylsulfonylbutyrylamino moiety. 4,801,694, Cl. 534-637.000.

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Tanaka, Kimio; and Shiba, Haruo, to TDK Corporation. Disc cartridge. 4,802,047, Cl. 360-133.000.

Tanaka, Kimio; and Sekine, Masaoki, to TDK Corporation. Disc cartridge. 4,802,049, Cl. 360-133.000.

Tanaka, Shinsaku; and Kido, Kunio, to Tanashin Denki Co., Ltd. Auto-reverse tape recorder. 4,802,029, Cl. 360-74.100.

Tanaka, Shinsaku; Arata, Tadao; and Kitazawa, Takayuki, to Tanashin Denki Co., Ltd. Cassette holding device for a tape recorder 4,802,037, Cl. 360-96.500.

Tanaka, Takeo: *See—*
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Tanaka, Tooru: *See—*
Konagaya, Yoshiaki; Tanaka, Tooru; Takaine, Masami; and Tsubouchi, Toshihiro, 4,801,437, Cl. 423-210.000.

Tanaka, Toshikiyo; Yoshida, Ichiro; and Yasuda, Hiroshi, to Toyo Boseki Kabushiki Kaisha. Water-resistant and high-strength laminate 4,801,491, Cl. 428-212.000.

Tanashin Denki Co., Ltd.: *See—*
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Tanikawa, Kowji; Kato, Tadashi; Kanno, Masahide; Yashima, Hiroyuki; Matsueda, Akira; Rokutan, Takao; Harada, Hisayuki; Hirosawa, Isao; and Hibino, Hiroki, to Olympus Optical Co., Ltd. Electronic marking apparatus for identifying a selected image from a plurality of electronically stored images. 4,802,018, Cl. 358-335.000.

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Tatomir, Paul J.; Hammond, Martin B.; and Kich, Rolf, to Hughes Aircraft Company. Mode selective band pass filter. 4,802,234, Cl. 333-211.000.

Tatsuji, Seino, to Honda Giken Kogyo Kabushiki Kaisha. Cantilever rear suspension system for motorcycles. 4,800,979, Cl. 180-227.000.

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Taylor, Lawrence. Ground imbedded support system. 4,801,128, Cl. 256-68.000

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Technische Universitaet Karl-Marx-Stadt: *See—*
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Murray, Mark J.; and Kelly, James D., 4,801,542, Cl. 435-172.300

4N Developments Ltd.: *See—*
Kazuta, Bruce H., 4,800,768, Cl. 74-63.000

501 Den Norske Stats Oljeslenskap A.S.: *See—*
Eri, Sigrid; Goodwin, James G., Jr.; Marcelin, George; and Riis, Trygve, 4,801,573, Cl. 502-302.000

501 Diesel Kiki Co., Ltd.: *See—*
Oshizawa, Hidekazu; and Ishikawa, Masataka, 4,800,861, Cl. 123-506.000.

501 NGK Spark Plug Co., Ltd.: *See—*
Baba, Hidetoshi, 4,801,564, Cl. 501-92.000

671135 Ontario Limited: *See—*
Arnesen, Tore C., 4,801,370, Cl. 204-302.000

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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF JANUARY, 1989

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, to Ricoh Company, Ltd. Film feeding system of a camera. Re. 32,850, Cl. 354-412.000.

Berke, Philip A.; and Rosen, William E., to Sutton Laboratories, Inc. Anti-microbial reaction product of #9 allantoin and formaldehyde. Re. 32,848, Cl. 548-311.000.

Briscoe, Terry L.; and Van Hoomissen, Robert L., to ESCO Corporation. Wedge-type rope socket connection and method. Re. 32,847, Cl. 24-136.00R.

Citizen Watch Co., Ltd.: *See*—
Oguchi, Toshiaki, Re. 32,853, Cl. 334-11.000.

ESCO Corporation: *See*—
Briscoe, Terry L.; and Van Hoomissen, Robert L., Re. 32,847, Cl. 24-136.00R.

Fukushima, Yoshio: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, Re. 32,850, Cl. 354-412.000.

Horigome, Hirofumi: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, Re. 32,850, Cl. 354-412.000.

Iguchi, Susumu: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, Re. 32,850, Cl. 354-412.000.

Litton Systems, Inc.: *See*—
Wei, David T.; and Louderback, Anthony W., Re. 32,849, Cl. 204-192.270.

Louderback, Anthony W.: *See*—
Wei, David T.; and Louderback, Anthony W., Re. 32,849, Cl. 204-192.270.

Nishi, Koichi: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, Re. 32,850, Cl. 354-412.000.

North American Filter Corporation: *See*—
Tarala, Frederick E., Re. 32,851, Cl. 210-455.000.

Oguchi, Toshiaki, to Citizen Watch Co., Ltd. Tuning device. Re. 32,853, Cl. 334-11.000.

Ohguro, Tadafumi: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, Re. 32,850, Cl. 354-412.000.

Ono, Yoshimi: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, Re. 32,850, Cl. 354-412.000.

Paulson, Gary F.: *See*—
Sandberg, Christopher T.; and Paulson, Gary F., Re. 32,846, Cl. 16-381.000.

Ricoh Company, Ltd.: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, Re. 32,850, Cl. 354-412.000.

Rosen, William E.: *See*—
Berke, Philip A.; and Rosen, William E., Re. 32,848, Cl. 548-311.000.

Sandberg, Christopher T.; and Paulson, Gary F., to Truth Incorporated. Snap stud. Re. 32,846, Cl. 16-381.000.

Sutton Laboratories, Inc.: *See*—
Berke, Philip A.; and Rosen, William E., Re. 32,848, Cl. 548-311.000.

Tarala, Frederick E., to North American Filter Corporation. Fluid filter. Re. 32,851, Cl. 210-455.000.

Truth Incorporated: *See*—
Sandberg, Christopher T.; and Paulson, Gary F., Re. 32,846, Cl. 16-381.000.

Van Hoomissen, Robert L.: *See*—
Briscoe, Terry L.; and Van Hoomissen, Robert L., Re. 32,847, Cl. 24-136.00R.

Wei, David T.; and Louderback, Anthony W., to Litton Systems, Inc. Method for fabricating multi-layer optical films. Re. 32,849, Cl. 204-192.270.

Yamane, Satoshi: *See*—
Araki, Kunihiko; Iguchi, Susumu; Ohguro, Tadafumi; Ono, Yoshimi; Nishi, Koichi; Fukushima, Yoshio; Yamane, Satoshi; and Horigome, Hirofumi, Re. 32,850, Cl. 354-412.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Advanced Technology & Research, Inc.: *See*—
Higgins, William E.; and Lazzara, Richard C., B1 4,370,372, Cl. 428-116.000.

Ford Motor Company: *See*—
Mikola, James A., B1 4,513,356, Cl. 362-226.000.

Higgins, William E.; and Lazzara, Richard C., to Advanced Technology & Research, Inc. Method of joining honeycomb panels using a fastener element. B1 4,370,372, 1-31-89, Cl. 428-116.000.

International Telephone and Telegraph Corporation: *See*—
Sodini, Gregory L., B1 4,480,214, Cl. 315-290.000.

Lazzara, Richard C.: *See*—
Higgins, William E.; and Lazzara, Richard C., B1 4,370,372, Cl. 428-116.000.

Lykes Pasco Packing Co. Dispenser Manufacturing Div.: *See*—
Nottke, James E.; and Ruebel, Jack K., B1 4,194,650, Cl. 222-57.000.

Mikola, James A., to Ford Motor Company. Replaceable lamp assembly and locking mechanism for a sealable reflector housing. B1 4,513,356, 1-31-89, Cl. 362-226.000.

Nottke, James E.; and Ruebel, Jack K., to Lykes Pasco Packing Co. Dispenser Manufacturing Div. Liquid mixing and aerating system. B1 4,194,650, 1-31-89, Cl. 222-57.000.

Ruebel, Jack K.: *See*—
Nottke, James E.; and Ruebel, Jack K., B1 4,194,650, Cl. 222-57.000.

Sodini, Gregory L., to International Telephone and Telegraph Corporation. Starter circuit for gaseous discharge lamp. B1 4,480,214, 1-31-89, Cl. 315-290.000.

LIST OF DESIGN PATENTEES

Adzima, Kenneth W. Protective cap for a safety flare. 299,592, 1-31-89, Cl. D10-114.000.

Agostino Ferrari & C.S.R.l.: *See*—
Ferrari, Franco, 299,616, Cl. D8-323.000.

Ahmed, Thomas J.; and Nerkowski, Anthony E. Ring. 299,622, 1-31-89, Cl. D11-30.000.

Alfa Romeo Auto S.p.A.: *See*—
Ghezzi, Lucio; and Cressoni, Ermanno, 299,634, Cl. D12-169.000.
Ghezzi, Lucio; and Cressoni, Ermanno, 299,635, Cl. D12-169.000.

Anderson, Carl J.; Cronrath, Scott J.; and Beidler, David B., to General Battery Corporation. Battery cover with movable handle. 299,639, 1-31-89, Cl. D13-10.000.

Anitua, Miguel M., to Gara Te Anitua Y Cia., S.A. Exercise bicycle. 299,671, 1-31-89, Cl. D21-194.000.

Ard, Ernest E.; and Ard, Randall E. Boat hull. 299,638, 1-31-89, Cl D12-314.000.

Ard, Randall E.: *See*—
Ard, Ernest E.; and Ard, Randall E., 299,638, Cl. D12-314.000.

AVIA Group International, Inc.: *See*—
McCrea, Mona; Ludemann, John; and Peterson, Robert, 299,582, Cl. D2-314.000.
Tong, James K.; and MacGregor, Bruce, 299,583, Cl. D2-314.000.

Baldwin Hardware Corporation: *See*—
Fayerman, Peter S.; and Meck, Leslie A., 299,604, Cl. D6-572.000.

Batts, Inc.: *See*—
Blanchard, Russell O., 299,593, Cl. D6-319.000.

Beidler, David B.: *See*—
Anderson, Carl J.; Cronrath, Scott J.; and Beidler, David B., 299,639, Cl. D13-10.000.

Betts, Donald W., to Betts Tackle Ltd. Fishing lure. 299,675, 1-31-89, Cl. D22-128.000.

Betts, Donald W., to Betts Tackle Ltd. Fishing lure. 299,676, 1-31-89, Cl. D22-128.000.

Betts Tackle Ltd.: *See*—
Betts, Donald W., 299,675, Cl. D22-128.000.
Betts, Donald W., 299,676, Cl. D22-128.000.

Black & Decker Inc.: *See*—
Drought, Nicholas A. M.; and Vallis, Keith, 299,618, Cl. D8-359.000.
Price, Scott D., 299,640, Cl. D13-8.000.

Blanchard, Russell O., to Batts, Inc. Garment hanger. 299,593, 1-31-89, Cl. D6-319.000.

Bosworth, Warren M., Jr., to FTM Corporation. Tennis racquet. 299,672, 1-31-89, Cl. D21-212.000.

Bradley, Mark D. Handle for a ratchet wrench. 299,612, 1-31-89, Cl. D8-25.000.

Brainard, Larry A. Ratchet wrench. 299,611, 1-31-89, Cl D8-25.000.

Brennan, Paul L.: *See*—
Hughes, Steven W.; and Brennan, Paul L., 299,649, Cl. D14-248.000.

British Telecommunications: *See*—
Hughes, Steven W.; and Brennan, Paul L., 299,649, Cl. D14-248.000.

British Telecommunications public limited company: *See*—
Davies, John S., 299,647, Cl. D14-248.000.

Burke, James D. Truck trailer body. 299,628, 1-31-89, Cl. D12-97.000.

Butler, Joseph. Fishing lure. 299,678, 1-31-89, Cl. D22-129.000.

Callison, Cary D.: *See*—
Wright-Brady, Patti; and Callison, Cary D., 299,637, Cl. D12-190.000.

Campbell, Lisa K. F. Table. 299,601, 1-31-89, Cl. D6-487.000.

Canon Kabushiki Kaisha: *See*—
Omino, Seiichi, 299,590, Cl. D3-76.000.

Coachmen Industries, Inc.: *See*—
Irelan, John A., 299,629, Cl. D12-102.000

Cobb, Don R. Novelty management decision spinner. 299,662, 1-31-89, Cl. D21-39.000.

Conn, Mora C.; and Conn, Robert N. Doll. 299,667, 1-31-89, Cl. D21-174.000.

Conn, Robert N.: *See*—
Conn, Mora C.; and Conn, Robert N., 299,667, Cl. D21-174.000.

Converse Inc.: *See*—
Franklin, Craig; and Geer, Ken, 299,584, Cl. D2-320.000.

Cook, Nelson A. Jump rope apparatus. 299,668, 1-31-89, Cl. D21-191.000.

Corwin, Judith B.: *See*—
Corwin, Stanley; and Corwin, Judith B., 299,585, Cl. D2-630.000

Corwin, Stanley; and Corwin, Judith B. Combined belt and pocketed carrier. 299,585, 1-31-89, Cl. D2-630.000.

Crazy Scenes, Inc.: *See*—
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Cressoni, Ermanno: *See*—
Ghezzi, Lucio; and Cressoni, Ermanno, 299,634, Cl. D12-169.000.
Ghezzi, Lucio; and Cressoni, Ermanno, 299,635, Cl. D12-169.000.

Cronrath, Scott J.: *See*—
Anderson, Carl J.; Cronrath, Scott J.; and Beidler, David B., 299,639, Cl. D13-10.000.

David, Roberta J. Simulative doll bed. 299,665, 1-31-89, Cl. D21-121.000

Davies, John S., to British Telecommunications public limited company. Telephone handset. 299,647, 1-31-89, Cl. D14-248.000.

Davis, Terry L., to Waterware Corporation, Inc. Shower curtain holder. 299,619, 1-31-89, Cl. D8-376.000.

Domian, Robert E., to Kingston Tool Company, Inc. Revolver. 299,674, 1-31-89, Cl. D22-104.000.

Drought, Nicholas A. M.; and Vallis, Keith, to Black & Decker Inc. Combination flat hose and reel cassette frame therefor. 299,618, 1-31-89, Cl. D8-359.000.

Durand, Jean-Jacques. Mug or similar article. 299,605, 1-31-89, Cl. D7-9.000.

Durand, Jean-Jacques. Vase or similar article. 299,625, 1-31-89, Cl. D11-153.000.

Durand, Jean-Jacques. Vase or similar article. 299,626, 1-31-89, Cl. D11-153.000.

Echolac Co., Ltd.: *See*—
Uchiyama, T., 299,589, Cl. D3-76.000.

Everett, Lynn E., to Tusco Manufacturing Company. Photo film drop stand. 299,598, 1-31-89, Cl. D6-432.000.

Everett, Lynn E.; and Van Cleave, Stephen W., to Tusco Manufacturing Company. Photo film drop stand. 299,599, 1-31-89, Cl. D6-436.000.

Fayerman, Peter S.; and Meck, Leslie A., to Baldwin Hardware Corporation. Wall shelf. 299,604, 1-31-89, Cl. D6-572.000.

Ferguson, Edward M.; and Tabata, Toshinori, to Tomy Kogyo Co., Inc. Toy walkie-talkie. 299,664, 1-31-89, Cl. D21-111.000

Ferrari, Franco, to Agostino Ferrari & C.S.R.l. Furniture hinge. 299,616, 1-31-89, Cl. D8-323.000.

Flambeau Corporation: *See*—
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Flory, Steven E.; Morris, Robert T.; and Morris, Robert J., to Medallion Plastics, Inc. Wall mounted console. 299,603, 1-31-89, Cl. D6-559.000.

Franklin, Craig; and Geer, Ken, to Converse Inc. Outsole. 299,584, 1-31-89, Cl. D2-320.000.

Friedenberg, Richard. Heel cushion. 299,581, 1-31-89, Cl. D2-277.000

Friedman, Alan H., to Kanowsky Furniture, Inc. Sofa. 299,596, 1-31-89, Cl. D6-381.000.

FTM Corporation: *See*—
Bosworth, Warren M., Jr., 299,672, Cl. D21-212.000

Gara Te Anitua Y Cia., S.A.: *See*—
Anitua, Miguel M., 299,671, Cl. D21-194.000.

Geer, Ken: *See*—
Franklin, Craig; and Geer, Ken, 299,584, Cl. D2-320.000

General Battery Corporation: *See*—
Anderson, Carl J.; Cronrath, Scott J.; and Beidler, David B., 299,639, Cl. D13-10.000.

Ghezzi, Lucio; and Cressoni, Ermanno, to Alfa Romeo Auto S.p.A. Front bumper for automotive vehicle. 299,634, 1-31-89, Cl. D12-169.000.

Ghezzi, Lucio; and Cressoni, Ermanno, to Alfa Romeo Auto S.p.A. Rear bumper for automotive vehicle. 299,635, 1-31-89, Cl. D12-169.000.

Gillette Company, The: *See*—
Gordo, Fred L., 299,660, Cl. D19-54.000
Poisson, Norman D., 299,656, Cl. D19-54.000.

Goldstein, Joseph. Handle for roll of plastic film. 299,654, 1-31-89, Cl. D15-145.000.

Gordo, Fred L., to Gillette Company, The. Point and barrel tip assembly for writing instrument. 299,660, 1-31-89, Cl. D19-54.000

Hansen, Oscar A. Combination beach towel and beach cover-up. 299,580, 1-31-89, Cl. D2-25.000.

Harrod, Lawrence R., to Kransco. Ride-on toy vehicle. 299,663, 1-31-89, Cl. D21-76.000.

Harrod, Lawrence R., to Kransco. Ride-on toy vehicle. 299,666, 1-31-89, Cl. D21-134.000.

Harter, Craig L. Stationary bicycle exerciser. 299,669, 1-31-89, Cl D21-194.000.

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Hoshino, Kiyoshi; and Numata, Teruhisa, to Ryobi Ltd. Fishing reel handle. 299,679, 1-31-89, Cl. D22-140.000.

Hughes, Steven W.; and Brennan, Paul L., to British Telecommunications. Telephone handset. 299,649, 1-31-89, Cl. D14-248.000

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Matsuda, Hari; and Hui, John, 299,591, Cl. D10-104.000.

Hung, Chuan Ming: *See*—
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Hwang, Shih-Ming. File organizer. 299,657, 1-31-89, Cl. D19-90.000.

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Irelan, John A., to Coachmen Industries, Inc. Trailer. 299,629, 1-31-89, Cl. D12-102.000.

Ito, Kentaro; and Hattori, Naoki, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 299,632, 1-31-89, Cl. D12-110.000.

Kamisada, Koji, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Toggle switch. 299,642, 1-31-89, Cl. D13-37.000.

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Kates, Fred W.; and Yeranossian, Karl, to Revlon, Inc. Combined display and dispenser rack. 299,597, 1-31-89, Cl. D6-408.000.
Kim, Jong I., to Seoil Industrial Co., Ltd. Belted package for flexible drinking straws. 299,620, 1-31-89, Cl. D9-345.000.
Kingston Tool Company, Inc.: *See—*
Domian, Robert E., 299,674, Cl. D22-104.000.
Kirk, Alexis V. Card for holding earrings. 299,621, 1-31-89, Cl. D9-457.000.
Kligerman, Thomas A.: *See—*
Rothman, Allen J.; and Kligerman, Thomas A., 299,624, Cl. D11-152.000.
Knight, William A. Muzzle-loading rifle. 299,673, 1-31-89, Cl. D22-103.000.
Knochner, Michael, to Rowenta-Werke GmbH. Coffeemaker. 299,608, 1-31-89, Cl. D7-309.000.
Konrad Rosenbauer K.G.: *See—*
Staudinger, Hermann, 299,627, Cl. D12-13.000.
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Harrod, Lawrence R., 299,666, Cl. D21-134.000.
Kubo, Ryuzo, to Nissan Motor Company, Limited. Automobile bumper. 299,636, 1-31-89, Cl. D12-169.000.
Kubota, Hiroshi, to Toa Tokushi Denki Kabushiki Kaisha. Headphone-style microphone. 299,643, 1-31-89, Cl. D14-225.000.
Kuroda, Shigeru: *See—*
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Lanius, Charles A., to Flambeau Corporation. Tackle box. 299,586, 1-31-89, Cl. D3-38.000.
Lantz, Paul D., to Rifkin Products Co. Combined pen and holder. 299,659, 1-31-89, Cl. D19-36.000.
Laurie, George, to Icore International. Clock indexing device for a cable connector. 299,613, 1-31-89, Cl. D8-29.000.
Lauster, Dawn. Canine Christmas stocking. 299,623, 1-31-89, Cl. D11-126.000.
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McCrea, Mona; Ludemann, John; and Peterson, Robert, 299,582, Cl. D2-314.000.
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Matsue, Yukihiko. Four-wheeled motorcycle. 299,630, 1-31-89, Cl. D12-107.000.
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Ohta, Fumiharu; Tamura, Masao; and Hung, Chuan Ming, 299,644, Cl. D14-149.000.
Ohta, Fumiharu; Tamura, Masao; and Watanabe, Satoshi, 299,645, Cl. D14-149.000.
McCrea, Mona; Ludemann, John; and Peterson, Robert, to AVIA Group International, Inc. Shoe upper. 299,582, 1-31-89, Cl. D2-314.000.
Meck, Leslie A.: *See—*
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Medallion Plastics, Inc.: *See—*
Flory, Steven E.; Morris, Robert T.; and Morris, Robert J., 299,603, Cl. D6-559.000.
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Mitchell, Herman E. Radio and tape player. 299,650, 1-31-89, Cl. D14-162.000.
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Oba, Yasuhiro; Watanabe, Akira; Miwa, Koji; and Kuroda, Shigeru, 299,631, Cl. D12-107.000.
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Morris, Robert T.: *See—*
Flory, Steven E.; Morris, Robert T.; and Morris, Robert J., 299,603, Cl. D6-559.000.
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Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See—*
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Nissan Motor Company, Limited: *See—*
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Nordlander, Jan G. O., to Molnlycke Aktiebolag. Combined toilet paper holder and dispenser. 299,602, 1-31-89, Cl. D6-518.000.
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Ohta, Fumiharu; Tamura, Masao; and Watanabe, Satoshi, to Matsushita Electric Industrial Co., Ltd. Telephone set. 299,645, 1-31-89, Cl. D14-149.000.
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Peterson, Robert: *See—*
McCrea, Mona; Ludemann, John; and Peterson, Robert, 299,582, Cl. D2-314.000.
Pipho, Richard D. Synchronized landing aircraft tire. 299,633, 1-31-89, Cl. D12-150.000.
Plastics, Inc.: *See—*
Pomroy, James F., 299,606, Cl. D7-16.000.
Poisson, Norman D., to Gillette Company, The. Point and barrel tip assembly for a writing instrument. 299,656, 1-31-89, Cl. D19-54.000.
Pomroy, James F., to Plastics, Inc. Covered dish. 299,606, 1-31-89, Cl. D7-16.000.
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33 4,801,360
58.5 4,801,363
157.22 4,801,365
180.1 4,801,366
192.27 Re.32,849
224 M 4,801,367
258 4,801,369
293 4,801,368
302 4,801,370
418 4,801,371

CLASS 206

45.13 4,801,004
304 4,801,006
217 4,801,007
219 4,801,008
222 4,801,009
279 4,801,010
316 4,801,011
366 4,801,012
4,801,013
423 4,801,014
438 4,801,015
455 4,801,016
524.1 4,801,017
586 4,801,018

CLASS 208

22 4,801,372
108 4,801,364
210 4,801,373

CLASS 209

135 4,801,374
538 4,801,020

CLASS 210

100 4,801,375
123 4,801,376
162 4,801,377
169 4,801,378
321.84 4,801,381
323.1 4,801,382
455 Re.32,851
494.1 4,801,383
498 4,801,379
500.21 4,801,380
634 4,801,384
644 4,801,385
680 4,801,386
699 4,801,387
701 4,801,388

CLASS 211

45 4,801,021
50 4,801,022
55 4,801,023
59.4 4,801,024
128 4,801,025
183 4,801,026

CLASS 215

11.1 4,801,027
220 4,801,028
250 4,801,029
252 4,801,030
4,801,031
256 4,801,032
322 4,801,033

CLASS 219

10.55 B 4,801,776
10.55 E 4,801,773
4,801,774
10.55 M 4,801,777
10.55 R 4,801,775
10.81 4,801,778
69 W 4,801,779
130.1 4,801,780
137.71 4,801,781
438 4,801,782
541 4,801,783
548 4,801,784
549 4,801,785

CLASS 220

3.8 4,801,035
23.83 4,801,034
259 4,801,037
269 4,801,038
284 4,801,039
307 4,801,040
359 4,801,041
410 4,801,042

CLASS 221

1 4,801,043
163 4,801,044
305 4,801,045

CLASS 222

57 B1 4,194,650
95 4,801,046
129.1 4,801,048
163 4,801,047
179.5 4,801,049
212 4,801,050
309 4,801,051
386 4,801,052
506 4,801,053
545 4,801,054
590 4,801,055
594 4,801,056

CLASS 223

92 4,801,057

CLASS 224

240 4,801,059
275 4,801,060

CLASS 227

45 4,801,063
120 4,801,061
4,801,064
125 4,801,062

CLASS 228

19 4,801,065
56.3 4,801,066
123 4,801,067
174 4,801,068
180.2 4,801,069
184 4,801,070
212 4,801,071
245 4,801,072

CLASS 229

3.1 4,801,073
71 4,801,074
87 F 4,801,075
92.7 4,801,076
113 4,801,077
123.2 4,801,078
125.19 4,801,080
174 4,801,079

CLASS 232

1 C 4,801,081

CLASS 235

377 4,801,786
380 4,801,787
462 4,801,788
472 4,801,789
487 4,801,790

CLASS 236

46 R 4,801,082

CLASS 238

134 4,801,083
351 4,801,084

CLASS 239

1 4,801,085
3 4,801,086
127.1 4,801,087
152 4,801,088
276 4,801,089
290 4,801,090
381 4,801,091
418 4,801,092
490 4,801,093
533.3 4,801,095
553.3 4,801,094
752 4,801,096

CLASS 241

34 4,801,097
37 4,801,098
101.2 4,801,099
171 4,801,100
240 4,801,101

CLASS 242

7.02 4,801,102
7.21 4,801,103
35.5 A 4,801,108
35.5 R 4,801,104
72.1 4,801,109
107.4 B 4,801,105
159 4,801,106
198 4,801,107

CLASS 244

17.13 4,801,110
55 4,801,058
4,801,111
110 B 4,801,112
121 4,801,113

CLASS 248

188.3 4,801,114
219.3 4,801,115
220.4 4,801,116
237 4,801,117
4,801,118
354.5 4,801,119
441.1 4,801,120
524 4,801,123
551 4,801,121
636 4,801,122

CLASS 250

4,801,791
4,801,794
4,801,795
4,801,792
213 VT 4,801,796
221 4,801,797
225 4,801,798
227 4,801,799
255 4,801,800
327.2 4,801,801
4,801,802
336.1 4,801,803
341 4,801,804
343 4,801,805
484.1 4,801,806
515.1 4,801,807
4,801,808
559 4,801,809
572 4,801,810

CLASS 251

149.4 4,801,124
4,801,125

CLASS 252

8.551 4,801,389
25 4,801,390
32.7 E 4,801,391
51 4,801,362
62.54 4,801,392
4,801,393
75 4,801,394
4,801,395
154 4,801,396
301.4 R 4,801,397
315.01 4,801,398
357 4,801,399
4,801,400
373 4,801,401
378 R 4,801,402
4,801,403
4,801,404
4,801,405

CLASS 254

93 R 4,801,126
134.3 FT 4,801,127

CLASS 256

47 4,800,630
68 4,801,128

CLASS 260

352 4,801,406
502 R 4,801,407
508 4,801,408
543 F 4,801,409

CLASS 261

112.2 4,801,410

CLASS 264

3.3 4,801,413
7 4,801,411
12 4,801,412
40.6 4,801,361
65 4,801,414
120 4,801,415
177.1 4,801,416
250 4,801,417
4,801,418
4,801,419
4,801,420

CLASS 267

52 4,801,129
151 4,801,019

CLASS 269

37 4,801,130
75 4,801,131

CLASS 271

53 4,801,133
55 4,801,132
58 4,801,036

CLASS 271

122 4,801,134
155 4,801,135

CLASS 272

71 4,801,136
75 4,801,137
130 4,801,138
4,801,139
146 4,801,140

CLASS 273

1 E 4,801,141
1.5 R 4,801,142
51 4,801,143
128 R 4,801,144
143 R 4,801,145
173 4,801,146
255 4,801,148
276 4,801,147
302 4,801,149
362 4,801,150
416 4,801,151

CLASS 280

47.34 4,801,152
414.1 4,801,153
615 4,801,154
707 4,801,155
4,801,156

CLASS 283

35 4,801,157

CLASS 285

52 4,801,158
53 4,801,159
81 4,801,160
93 4,801,161
115 4,801,162

CLASS 290

55 4,801,811

CLASS 292

92 4,801,163
204 4,801,164
249 4,801,165

CLASS 294

9 4,801,166
86.3 4,801,167
87.1 4,801,168

CLASS 296

39.1 4,801,169
97.5 4,801,170
100 4,801,171
155 4,801,172
216 4,801,174
218 4,801,173

CLASS 297

44 4,801,176
124 4,801,175
367 4,801,177

CLASS 301

124 H 4,801,178

CLASS 303

22.2 4,801,179

CLASS 307

10 R 4,801,812
40 4,801,813
106 4,801,814
112 4,801,815
228 4,801,816
261 4,801,817
269 4,801,818
4,801,819
4,801,820
311 4,801,821
4,801,822
353 4,801,823
473 4,801,825
482 4,801,826
4,801,824
602 4,801,827
4,801,828

CLASS 310

4,801,829
M II 4,801,830
91 4,801,831
216 4,801,832
239 4,801,833
261 4,801,834
313 D 4,801,836
316 4,801,837
319 4,801,838
358 4,801,835

CLASS 312

115 4,801,180
214 4,801,181
4,801,182

CLASS 313

4,801,839
44 4,801,840
112 4,801,841
402 4,801,842
421 4,801,843
509 4,801,844
579 4,801,845
641 4,801,846

CLASS 315

5.41 4,801,847
4,801,848
111.81 4,801,849
169.3 4,801,850
290 B1 4,480,214
367 4,801,851
400 4,801,852

CLASS 318

7 4,801,853
4,801,854
338 4,801,855
568 4,801,856
626 4,801,857
4,801,858

CLASS 323

224 4,801,859
274 4,801,860

CLASS 324

57 N 4,801,861
61 R 4,801,863
62 4,801,864
65 R 4,801,865
4,801,868
73 PC 4,801,866
73 R 4,801,867
4,801,869
4,801,870
4,801,871
77 K 4,801,872
77 R 4,801,873
142 4,801,874
158 F 4,801,876
158 MG 4,801,877
158 R 4,801,875
4,801,879
158 T 4,801,878
178 4,801,880
4,801,881
248 4,801,882
252 4,801,883
309 4,801,884
318 4,801,885
438 4,801,886
585 C 4,801,862

CLASS 328

26 4,801,887

CLASS 330

4,801,888
4,801,889
126 4,801,890
253 4,801,891
4,801,892
300 4,801,893

CLASS 331

1 A 4,801,894
17 4,801,895
25 4,801,896
65 4,801,897
132 4,801,898

CLASS 332

17 4,801,899
45 4,801,900

CLASS 333

I 4,801,901
1.1 4,801,902
113 4,801,903
182 4,801,904
211 4,802,234
238 4,801,905

CLASS 334

11 Re.32,853

CLASS 335

17 4,801,906
4,801,907
4,801,908
126 4,801,909
230 4,801,910
289 4,801,911

CLASS 336

84 M 4,801,912

CLASS 337

66 4,801,913

CLASS 338

162 4,801,914
221 4,801,916
293 4,801,915

CLASS 340

81 R 4,801,917
114 B 4,801,918
521 4,801,924
573 4,801,921
574 4,801,925
586 4,801,922
624 4,801,926
669 4,801,927
691 4,801,928
692 4,801,929
703 4,801,930
710 4,801,931
781 4,801,920
783 4,801,932
784 4,801,933
825.020 4,801,934
825.34 4,801,935
825.91 4,801,936
870.16 4,801,937

CLASS 341

144 4,801,923

CLASS 342

20 4,801,938
25 4,801,939
359 4,801,940
378 4,801,941
460 4,801,942

CLASS 343

700 MS 4,801,943
744 4,801,944
786 4,801,945
840 4,801,946

CLASS 346

75 4,801,947
76 L 4,801,949
76 PH 4,801,948
108 4,801,950
140 R 4,801,951
4,801,952
4,801,953
4,801,954
4,801,955
153.1 4,801,919

CLASS 350

1.2 4,801,183
96.10 4,801,188
96.14 4,801,184
96.15 4,801,185
4,801,187
4,801,189
96.16 4,801,190
96.20 4,801,191
96.23 4,801,192
96.30 4,801,186
103 4,801,193
356 4,801,194
357 4,801,195
432 4,801,196
622 4,801,197

CLASS 351

111 4,801,199
214 4,801,198
230 4,801,200

CLASS 354

3 4,801,956
147 4,801,957
195.12 4,801,958
266 4,801,959
288 4,801,960
289.12 4,801,793
303 4,801,961
402 4,801,962
403 4,801,963
412 Re.32,850
414 4,801,964

CLASS 355

3 CH 4,801,967
3 FU 4,801,968
3 SH 4,801,981
4 4,801,965
4,801,966
8 4,801,969
10 4,801,970
4,801,971
14 D 4,801,972
4,801,980
14 FU 4,801,974
14 TR 4,801,975
27 4,801,973
28 4,801,976
30 4,801,977
69 4,801,978
106 4,801,979

CLASS 356

4 4,801,201
152 4,801,202
237 4,801,203
336 4,801,205
338 4,801,204
350 4,801,206
376 4,801,207
401 4,801,208
417 4,801,209

CLASS 357

3 4,801,982
15 4,801,983
16 4,801,984
22 4,801,987
23.3 4,801,985
23.4 4,801,986
23.6 4,801,988
4,801,989
30 4,801,990
4,801,991
40 4,801,992
4,801,993
52 4,801,994
4,801,995
68 4,801,996
70 4,801,997
4,801,999
72 4,801,998

CLASS 358

21 R 4,802,000
48 4,802,001
111 4,802,002
133 4,802,003
4,802,004
135 4,802,005
4,802,006
139 4,802,007
141 4,802,008
158 4,802,009
166 4,802,010
213.15 4,802,011
213.18 4,802,012
296 4,802,013
4,802,014
310 4,802,015
315 4,802,016
335 4,802,017
4,802,018
4,802,019
342 4,802,020
4,802,021
349 4,802,022

CLASS 360

14.3 4,802,023
22 4,802,038
36.1 4,802,024
36.2 4,802,025
4,802,026
60 4,802,027
4,802,030
66 4,802,028
74.1 4,802,029
77.04 4,802,033
77.13 4,802,032
77.15 4,802,031
78.04 4,802,040
85 4,802,034
92 4,802,035
4,802,036
96.5 4,802,037
4,802,039
99.06 4,802,041
103 4,802,042
113 4,802,043
132 4,802,044
4,802,045
4,802,048
133 4,802,046
4,802,047
4,802,049
135 4,802,050

CLASS 361

13 4,802,051
42 4,802,052
56 4,802,055
85 4,802,053
91 4,802,054
212 4,802,056
232 4,802,057
315 4,802,058
361 4,802,059
379 4,802,060
400 4,802,061
401 4,802,062
433 4,802,063
519 4,802,064

CLASS 362

20 4,802,065
32 4,802,066
61 4,802,067
4,802,068
83 4,802,069
104 4,802,070
154 4,802,071
226 B1 4,513,356
238 4,802,072
251 4,802,073
287 4,802,074

CLASS 363

16 4,802,075
19 4,802,076
41 4,802,077
56 4,802,078
71 4,802,079
75 4,802,080

CLASS 364

138 4,802,082
191 4,802,083
4,802,084
4,802,085
4,802,086
4,802,087
4,802,088
4,802,089
4,802,090
300 4,802,091
411 4,802,092
413.23 4,802,093
461 4,802,096
468 4,802,094
474.17 4,802,095
476 4,802,097
487 4,802,098
491 4,802,099
494 4,802,100
496 4,802,101
497 4,802,102
513 4,802,103
518 4,802,104
519 4,802,105
521 4,802,106
525 4,802,107
715.01 4,802,108
723 4,802,109
724.05 4,802,110
724.1 4,802,111
784 4,802,112
4,802,113
4,802,114
4,802,115
4,802,116
4,802,117
4,802,118
4,802,119
4,802,120

CLASS 365

104 4,802,121
149 4,802,123
154 4,802,122
185 4,802,124
189 4,802,125
4,802,127
190 4,802,126
201 4,802,137
203 4,802,128
4,802,129
205 4,802,130
210 4,802,138
230 4,802,131
4,802,132
4,802,133
4,802,134
233 4,802,135
238 4,802,136

CLASS 366

16 4,802,139
79 4,802,140
132 4,802,141
156 4,801,210
160 4,802,142

CLASS 367

35 4,802,144
4,802,145
52 4,802,146
57 4,802,147
82 4,802,143
85 4,802,150
88 4,802,148
100 4,802,149

CLASS 369

32 4,802,152
45 4,802,153
59 4,802,154
77.2 4,802,155
132 4,802,156
136 4,802,081
270 4,802,157
4,802,158
275 4,802,159
284 4,802,160

CLASS 370

4,802,161

CLASS 371

15 4,802,162
224 4,801,215

CLASS 403

24 4,801,216

CLASS 404

75 4,801,217
84 4,801,218
125 4,801,219

CLASS 405

31 4,801,220
34 4,801,221
184 4,801,222

CLASS 407

110 4,801,224

CLASS 409

218 4,801,225
234 4,801,227
244 4,801,226

CLASS 410

26 4,801,229
94 4,801,228

CLASS 411

61 4,801,230
432 4,801,231
552 4,801,232

CLASS 414

224 4,801,234
225 4,801,235
416 4,801,236
428 4,801,237
607 4,801,238
680 4,801,239
735 4,801,240
786 4,801,241
789.5 4,801,233

CLASS 416

62 4,801,242
89 4,801,243
146 R 4,801,244

CLASS 417

53 4,801,245
121 4,801,246
213 4,801,247
222 4,801,248
265 4,801,250
269 4,801,249
295 4,801,251
354 4,801,252
427 4,801,253

CLASS 418

94 4,801,254
168 4,801,255

CLASS 422

5 4,801,426
23 4,801,427
52 4,801,430
61 4,801,428
63 4,801,429
100 4,801,434
104 4,801,431
143 4,801,432
186.04 4,801,435
228 4,801,433
245 4,801,436

CLASS 423

210 4,801,437
230 4,801,438
284 4,801,439
415 A 4,801,440
509 4,801,441
510 4,801,442
574 R 4,801,443

CLASS 424

45 4,801,444
68 4,801,447
69 4,801,445
84 4,801,446
4,801,448
85.8 4,801,449
87 4,801,450
94.63 4,801,451
4,801,452
95 4,801,453
131 4,801,454
400 4,801,455
422 4,801,456
4,801,457
443 4,801,458
450 4,801,459
465 4,801,460
467 4,801,461

CLASS 425

119 4,801,256
192 S 4,801,257
238 4,801,258
305.1 4,801,259
527 4,801,260

CLASS 426

16 4,801,462
36 4,801,463
79 4,801,464
116 4,801,465
232 4,801,466
438 4,801,467
578 4,801,470
590 4,801,471

CLASS 427

35 4,801,468
54.1 4,801,477
103 4,801,469
164 4,801,473
217 4,801,472
248.1 4,801,474
338 4,801,475
430.1 4,801,476

CLASS 428

7 4,801,478
31 4,801,479
34.9 4,801,486
4,801,480
64 4,801,481
68 4,801,482
71 4,801,483
116 B1 4,370,372
198 4,801,485
4,801,487
209 4,801,488
4,801,489
211 4,801,490
212 4,801,491
224 4,801,492
258 4,801,493
283 4,801,494
285 4,801,496
286 4,801,495
294 4,801,484
332 4,801,497
334 4,801,498
346 4,801,499
4,801,500
383 4,801,501
397 4,801,502
399 4,801,503
403 4,801,504
404 4,801,505
421 4,801,506
450 4,801,507
483 4,801,508
513 4,801,509
678 4,801,513
698 4,801,510

CLASS 429

167 4,801,514
198 4,801,511
213 4,801,512

CLASS 430

59 4,801,517
66 4,801,515
4,801,527
325 4,801,518
331 4,801,519
378 4,801,520
380 4,801,516
4,801,521
518 4,801,525
567 4,801,526
569 4,801,522
4,801,524
589 4,801,523

CLASS 431

9 4,801,261

CLASS 432

8 4,801,262

CLASS 433

74 4,801,264
90 4,801,263
4,801,265
220 4,801,528

CLASS 434

85 4,801,266
104 4,801,267
265 4,801,268

CLASS 435

5 4,801,529
6 4,801,530
4,801,531
7 4,801,532
4,801,533
13 4,801,534
16 4,801,535
25 4,801,538
68 4,801,536

VOL 1098 ISS 5 JA 31 1989 UMI

	4,801,537	117	4,802,237	333	4,801,598	71	4,801,646	684	4,801,695	56	4,801,733
101	4,801,539	188	4,802,238	340	4,801,594	74	4,801,647	761	4,801,696	73	4,801,734
172.3	4,801,540	277	4,802,239	356	4,801,599		4,801,648		CLASS 536	75	4,801,735
	4,801,541	343	4,802,240	373	4,801,591	183	4,801,649	4.1	4,801,697	84	4,801,736
	4,801,542	344	4,802,241	376	4,801,600	194	4,801,650	[illegible]	4,801,698	139	4,801,737
173	4,801,543		CLASS 474	381	4,801,616	195	4,801,651	59	4,801,699	177	4,801,738
188	4,801,544			384	4,801,601	240	4,801,652	125	4,801,700	185	4,801,739
240.45	4,801,545	82	4,801,287	392	4,801,617	[illegible]	4,801,653		CLASS 540	224	4,801,740
291	4,801,546	140	4,801,288	398	4,801,602	329.4	4,801,655	1	4,801,701	300	4,801,741
292	4,801,547	215	4,801,289	425	4,801,603	333.7	4,801,654	144	4,801,702		CLASS 562
301	4,801,548		CLASS 494	429	4,801,604	344	4,801,656	227	4,801,703	450	4,801,742
	CLASS 436	16	4,801,290	432	4,801,605	350	4,801,665	312	4,801,704	519	4,801,743
63	4,801,549		CLASS 501	452	4,801,606	450	4,801,658	357	4,801,705		CLASS 564
94	4,801,550			[illegible]	4,801,607	471	4,801,657	358	4,801,720	65	4,801,744
133	4,801,551	35	4,801,562	506	4,801,609	479	4,801,659	554	4,801,706	70	4,801,745
173	4,801,552	85	4,801,563	512	4,801,610	[illegible]	4,801,660		CLASS 544		4,801,746
174	4,801,553	92	4,801,564	532	4,801,611	489	4,801,661	135	4,801,707	72	4,801,747
	CLASS 437	98	4,801,565	616	4,801,618	[illegible]	4,801,662	182	4,801,708	126	4,801,748
[illegible]	4,801,554	104	4,801,566	825	4,801,619	[illegible]	4,801,663	194	4,801,709	158	4,801,749
29	4,801,555		CLASS 502		CLASS 515	537	4,801,664	244	4,801,710	[illegible]	4,801,750
32	4,801,556	77	4,801,567	503	4,801,608		CLASS 526	336	4,801,711	305	4,801,751
81	4,801,557	209	4,801,568		CLASS 518	123	4,801,666		CLASS 546	401	4,801,752
170	4,801,558		4,801,569	715	4,801,620	213	4,801,667	67	4,801,712	426	4,801,753
193	4,801,559	220	4,801,570		CLASS 521	214	4,801,671		4,801,714		CLASS 568
195	4,801,560	236	4,801,571	53	4,801,621	237	4,801,668	116	4,801,715	454	4,801,754
207	4,801,561	242	4,801,572	62	4,801,624	238	4,801,669	151	4,801,713	571	4,801,755
	CLASS 439	302	4,801,573	134	4,801,622	263	4,801,670	177	4,801,717	642	4,801,756
63	4,801,269	342	4,801,574	157	4,801,623	348.2	4,801,672	345	4,801,716	720	4,801,757
95	4,801,270		CLASS 514		CLASS 523		CLASS 528		CLASS 548	768	4,801,758
148	4,801,271	4	4,801,575	179	4,801,625	34	4,801,673	139	4,801,718	833	4,801,759
153	4,801,272	8	4,801,578	[illegible]	4,801,626	68	4,801,674	311	Re.32,848	923	4,801,760
269	4,801,273	12	4,801,576	209	4,801,627	73	4,801,675	335	4,801,719		CLASS 570
322	4,801,274		4,801,612	412	4,801,628	170	4,801,676	411	4,801,721	130	4,801,761
350	4,801,275	14	4,801,613	500	4,801,629	176	4,801,677		CLASS 549	177	4,801,763
592	4,801,276	15	4,801,577		CLASS 524	219	4,801,678	211	4,801,722		CLASS 585
680	4,801,277	17	4,801,614	[illegible]	4,801,630		4,801,679	313	4,801,723	[illegible]	4,801,762
746	4,801,278	18	4,801,579	18	4,801,631	272	4,801,680	407	4,801,724		CLASS 604
877	4,801,279		4,801,580	37	4,801,632	336	4,801,681		CLASS 556	23	4,801,291
	CLASS 440	42	4,801,581	88	4,801,634	353	4,801,682	419	4,801,726	36	4,801,292
67	4,801,280	54	4,801,582		4,801,638	485	4,801,683	434	4,801,725	51	4,801,293
73	4,801,281	183	4,801,583	98	4,801,633		CLASS 530		CLASS 558	171	4,801,294
84	4,801,282	210	4,801,584	112	4,801,639	303	4,801,684	[illegible]	4,801,729	198	4,801,295
88	4,801,283	212	4,801,585	156	4,801,635	351	4,801,685	313	4,801,730	272	4,801,296
	CLASS 441	248	4,801,586	236	4,801,636	387	4,801,686	[illegible]	4,801,727	[illegible]	4,801,297
76	4,801,284	274	4,801,587	287	4,801,637	391	4,801,687	319	4,801,731	384	4,801,298
	CLASS 446	291	4,801,588	394	4,801,640	395	4,801,688	320	4,801,728		CLASS 623
298	4,801,285	293	4,801,589	426	4,801,641	396	4,801,689	348	CLASS 560	1	4,801,299
319	4,801,286	300	4,801,590	714	4,801,642	399	4,801,690		4,801,732	22	4,801,300
	CLASS 455	307	4,801,592	832	4,801,643		4,801,691	40		23	4,801,301
76	4,802,235	314	4,801,593	839	4,801,644		CLASS 534				
110	4,802,236	318	4,801,595		CLASS 525	15	4,801,692				
		327	4,801,615	68	4,801,645	637	4,801,693				
		332	4,801,596				4,801,694				
			4,801,597								

CLASSIFICATION OF DESIGNS

D2—	25	299,580		436	299,599		323	299,616			299,631		225	299,643		111	299,664
	277	299,581		480	299,600		329	299,617		110	299,632		248	299,647		121	299,665
	314	299,582		487	299,601		359	299,618		150	299,633			299,649		134	299,666
		299,583		518	299,602		376	299,619		169	299,634		250	299,646		174	299,667
	320	299,584		559	299,603	D9—	345	299,620			299,635	D15—	11	299,652		191	299,668
	630	299,585		572	299,604		457	299,621			299,636		136	299,655		194	299,669
D3—	23	299,588	D7—	9	299,605	D10—	104	299,591		190	299,637		145	299,654			299,670
	38	299,586		16	299,606		114	299,592		314	299,638	D18—	36	299,653			299,671
	71	299,587		50	299,607	D11—	30	299,622	D13—	8	299,640	D19—		299,659		212	299,672
	76	299,589		309	299,608		126	299,623		10	299,639		[illegible]	299,656	D22—	103	299,673
		299,590		352	299,609		152	299,624		24	299,641			299,660		104	299,674
D6—	319	299,593	D8—	22	299,610		153	299,625		37	299,642		69	299,658		128	299,675
	335	299,594		25	299,611			299,626	D14—	100	299,651		90	299,657			299,676
		299,595			299,612	D12—	13	299,627		147	299,648	D21—	27	299,661			299,677
	381	299,596		29	299,613		97	299,628		149	299,644		39	299,662		129	299,678
	408	299,597		93	299,614		102	299,629			299,645		76	299,663		140	299,679
	432	299,598		302	299,615		107	299,630		162	299,650						

CLASSIFICATION OF PLANTS

P—	1	6,577	10	6,569		6,580		6,573	69	6,575	6,571
	9	6,568	48	6,578	68	6,567		6,574	70	6,566	74 6,565
		6,570	49	6,579		6,572		6,576			

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
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Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,800,601	4,801,015	4,801,575	08 :	4,800,835	4,800,705	4,801,029				
	4,800,793	4,801,021	4,801,577		4,800,885	4,800,718	4,801,043				
	4,800,930	4,801,039	4,801,586		4,800,926	4,800,746	4,801,062				
	4,801,033	4,801,066	4,801,611		4,801,022	4,800,822	4,801,097				
	4,801,353	4,801,070	4,801,612		4,801,061	4,800,898	4,801,162				
	4,802,067	4,801,071	4,801,636		4,801,064	4,800,987	4,801,288				
04 :	4,800,592	4,801,080	4,801,685		4,801,117	4,801,065	4,801,342				
	4,800,628	4,801,092	4,801,687		4,801,123	4,801,127	4,801,355				
	4,800,755	4,801,094	4,801,729		4,801,613	4,801,143	4,801,388				
	4,800,767	4,801,105	4,801,783		4,801,795	4,801,157	4,801,456				
	4,800,864	4,801,107	4,801,785		4,801,839	4,801,166	4,801,470				
	4,801,110	4,801,122	4,801,794		4,801,878	4,801,281	4,801,471				
	4,801,119	4,801,126	4,801,820		4,801,905	4,801,399	4,801,535				
	4,801,170	4,801,131	4,801,850		4,802,030	4,801,534	4,801,557				
	4,801,299	4,801,141	4,801,853		4,802,149	4,801,597	4,801,571				
	4,801,350	4,801,145	4,801,865		4,802,154	4,801,607	4,801,610				
	4,801,555	4,801,147	4,801,883	09 :	4,800,707	4,801,721	4,801,625				
	4,801,560	4,801,149	4,801,886		4,800,904	4,801,837	4,801,655				
	4,801,817	4,801,172	4,801,888		4,800,970	4,194,650	4,801,666				
	4,801,825	4,801,174	4,801,890		4,801,058	4,370,372	4,801,671				
	4,801,992	4,801,180	4,801,903		4,801,091	13 : 4,800,594	4,801,674				
	4,802,069	4,801,187	4,801,919		4,801,118	4,800,619	4,801,691				
	4,802,124	4,801,189	4,801,940		4,801,144	4,800,696	4,801,764				
	4,802,235	4,801,206	4,801,941		4,801,163	4,801,010	4,801,769				
05 :	4,801,922	4,801,221	4,801,944		4,801,193	4,801,048	4,801,857				
06 :	Re.32,849	4,801,225	4,801,945		4,801,196	4,801,051	4,801,859				
	4,800,600	4,801,231	4,801,953		4,801,301	4,801,452	4,801,925				
	4,800,603	4,801,241	4,801,970		4,801,356	4,801,482	4,801,946				
	4,800,605	4,801,269	4,801,971		4,801,488	4,801,728	4,802,171				
	4,800,717	4,801,274	4,801,996		4,801,513	4,801,815	4,802,213				
	4,800,754	4,801,277	4,801,999		4,801,549	4,801,902	4,802,220				
	4,800,756	4,801,280	4,802,008		4,801,682	4,801,910	4,802,233				
	4,800,779	4,801,284	4,802,023		4,801,906	4,802,212	4,802,236				
	4,800,794	4,801,293	4,802,024		4,801,907	16 : 4,800,666	18 : 4,800,646				
	4,800,807	4,801,295	4,802,033		4,801,928	17 : 4,800,630	4,800,692				
	4,800,823	4,801,316	4,802,048		4,802,027	4,800,631	4,800,731				
	4,800,825	4,801,317	4,802,056		4,802,065	4,800,649	4,800,844				
	4,800,838	4,801,329	4,802,088		4,802,078	4,800,703	4,800,900				
	4,800,858	4,801,332	4,802,102		4,802,117	4,800,712	4,800,935				
	4,800,865	4,801,375	4,802,103	10 :	4,801,312	4,800,721	4,800,948				
	4,800,873	4,801,377	4,802,111		4,801,327	4,800,725	4,800,991				
	4,800,877	4,801,439	4,802,122		4,801,403	4,800,727	4,801,181				
	4,800,891	4,801,450	4,802,129		4,801,523	4,800,830	4,801,202				
	4,800,893	4,801,457	4,802,144		4,801,528	4,800,843	4,801,228				
	4,800,896	4,801,459	4,802,176		4,801,600	4,800,856	4,801,230				
	4,800,899	4,801,461	4,802,178		4,801,643	4,800,882	4,801,271				
	4,800,905	4,801,511	4,802,182		4,801,647	4,800,894	4,801,313				
	4,800,923	4,801,531	4,802,183		4,801,935	4,800,917	4,801,326				
	4,800,956	4,801,540	4,802,186	11 :	4,801,800	4,800,931	4,801,563				
	4,800,983	4,801,544	4,802,218		4,802,211	4,800,933	4,801,594				
	4,801,004	4,801,545	4,802,222	12 :	4,800,643	4,800,947	4,801,616				
	4,801,005	4,801,561	4,802,230		4,800,672	4,800,982	4,801,688				
	4,801,014	4,801,567	4,802,234		4,800,702	4,801,006	4,801,712				

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4,801,718 4,801,182 4,801,476 4,801,960 42 : 4,800,633 4,800,960
4,801,832 4,801,226 4,801,498 4,801,964 4,800,647 4,800,968
4,801,877 4,801,262 4,801,530 4,801,967 4,800,711 4,800,972
4,801,908 4,801,363 4,801,570 4,801,969 4,800,728 4,800,981
4,801,921 4,801,462 4,801,572 4,801,978 4,800,786 4,801,150
4,802,000 4,801,465 4,801,589 4,801,984 4,800,819 4,801,297
4,802,080 4,801,604 4,801,605 4,801,985 4,800,866 4,801,306
19 : 4,800,653 4,801,642 4,801,609 4,801,986 4,800,867 4,801,328
4,800,681 4,801,646 4,801,615 4,802,052 4,800,895 4,801,373
4,800,811 4,801,698 4,801,626 4,802,090 4,800,915 4,801,380
4,800,840 4,801,805 4,801,633 4,802,099 4,800,952 4,801,411
4,800,946 4,801,833 4,801,659 4,802,140 4,800,984 4,801,478
4,800,964 4,802,096 4,801,670 4,802,188 4,801,032 4,801,558
4,801,151 4,513,356 4,801,692 4,802,214 4,801,056 4,801,587
4,801,218 27 : Re.32,846 4,801,699 4,802,231 4,801,137 4,801,629
4,801,896 4,800,662 4,801,704 37 : 4,800,739 4,801,171 4,801,630
4,801,917 4,800,667 4,801,710 4,800,802 4,801,260 4,801,637
20 : 4,800,701 4,800,758 4,801,724 4,800,986 4,801,261 4,801,662
4,800,827 4,800,765 4,801,836 4,801,104 4,801,319 4,801,668
4,801,142 4,800,816 4,802,055 4,801,169 4,801,367 4,801,731
4,801,210 4,800,868 4,802,180 4,801,303 4,801,369 4,801,755
4,801,410 4,800,875 4,802,199 4,801,507 4,801,387 4,802,054
4,802,221 4,800,969 4,802,217 4,801,522 4,801,417 4,802,073
21 : 4,800,870 4,801,053 4,802,227 4,801,532 4,801,421 4,802,086
4,801,346 4,801,077 35 : 4,801,469 4,802,064 4,801,431 4,802,089
22 : 4,801,059 4,801,114 4,801,780 39 : 4,800,609 4,801,467 4,802,091
4,801,426 4,801,116 36 : Re.32,851 4,800,614 4,801,472 4,802,115
4,851,979 4,801,164 4,800,635 4,800,615 4,801,510 4,802,119
23 : 4,800,641 4,801,335 4,800,680 4,800,651 4,801,512 4,802,120
4,800,919 4,801,435 4,800,685 4,800,652 4,801,551 4,802,121
24 : 4,800,602 4,801,562 4,800,695 4,800,671 4,801,574 4,802,146
4,801,069 4,801,740 4,800,698 4,800,743 4,801,649 4,802,147
4,801,152 4,801,799 4,800,735 4,800,790 4,801,653 4,802,223
4,801,366 4,801,893 4,800,741 4,800,878 4,801,690 49 : 4,800,848
4,801,383 4,802,042 4,800,750 4,800,910 4,801,706 4,801,060
4,801,393 4,802,100 4,800,776 4,800,920 4,801,751 4,801,298
4,801,537 28 : 4,800,800 4,800,788 4,800,925 4,801,757 4,801,566
4,801,678 29 : 4,800,598 4,800,879 4,800,971 4,801,760 4,801,722
4,801,742 4,800,627 4,800,888 4,801,001 4,801,761 4,801,900
4,801,804 4,800,700 4,800,889 4,801,030 4,801,762 4,801,939
4,802,148 4,800,719 4,800,908 4,801,031 4,801,765 50 : 4,800,708
4,802,216 4,800,736 4,800,989 4,801,038 4,801,772 4,801,869
4,802,241 4,800,771 4,801,081 4,801,054 4,801,774 4,801,988
25 : 4,800,597 4,800,880 4,801,103 4,801,085 4,801,891 51 : 4,800,599
4,800,664 4,800,962 4,801,113 4,801,102 44 : 4,800,849 4,800,654
4,800,749 4,801,024 4,801,135 4,801,111 45 : 4,801,019 4,800,663
4,800,998 4,801,025 4,801,140 4,801,124 4,801,128 4,800,715
4,801,008 4,801,049 4,801,176 4,801,217 4,801,311 4,800,876
4,801,136 4,801,088 4,801,184 4,801,240 4,801,492 4,801,082
4,801,234 4,801,101 4,801,194 4,801,250 4,801,533 4,801,422
4,801,243 4,801,165 4,801,199 4,801,276 4,801,874 4,801,464
4,801,352 4,801,278 4,801,213 4,801,392 4,802,063 4,801,483
4,801,361 4,801,466 4,801,246 4,801,454 4,802,143 4,802,161
4,801,423 4,801,665 4,801,264 4,801,479 46 : 4,800,817 53 : 4,800,657
4,801,427 4,801,831 4,801,266 4,801,484 47 : 4,800,637 4,800,670
4,801,430 4,802,057 4,801,270 4,801,490 4,800,804 4,800,716
4,801,529 4,802,092 4,801,307 4,801,568 4,800,828 4,800,785
4,801,536 30 : 4,801,357 4,801,369 4,801,569 4,800,884 4,800,798
4,801,644 4,801,358 4,801,330 4,801,628 4,800,913 4,801,057
4,801,726 31 : 4,801,130 4,801,339 4,801,635 4,801,215 4,801,099
4,801,810 32 : 4,800,911 4,801,364 4,801,727 4,801,263 4,801,138
4,801,841 4,801,089 4,801,365 4,801,743 4,801,362 4,801,198
4,801,846 4,801,175 4,801,384 4,801,791 4,801,397 4,801,200
4,801,851 33 : 4,800,886 4,801,402 4,801,803 4,801,503 4,801,233
4,801,901 4,801,473 4,801,412 4,801,809 4,801,618 4,801,449
4,801,942 4,801,861 4,801,436 4,801,947 4,801,683 4,801,496
4,802,108 4,801,868 4,801,438 4,802,002 4,801,775 4,801,542
26 : 4,800,612 4,802,087 4,801,440 4,802,195 4,801,776 4,801,686
4,800,613 34 : Re.32,848 4,801,441 40 : 4,800,906 4,801,777 4,802,095
4,800,624 4,800,676 4,801,447 4,801,159 4,802,010 54 : 4,800,950
4,800,626 4,800,677 4,801,475 4,801,160 4,802,228 55 : 4,800,689
4,800,638 4,800,841 4,801,493 4,801,167 4,480,214 4,800,706
4,800,665 4,800,845 4,801,501 4,801,389 48 : 4,800,593 4,800,732
4,800,699 4,800,872 4,801,504 4,801,614 4,800,608 4,800,824
4,800,734 4,800,883 4,801,517 4,801,664 4,800,616 4,800,852
4,800,737 4,801,013 4,801,541 4,801,773 4,800,752 4,800,854
4,800,764 4,801,034 4,801,550 4,801,938 4,800,761 4,801,045
4,800,769 4,801,072 4,801,749 4,802,070 4,800,783 4,801,121
4,800,821 4,801,076 4,801,763 4,802,141 4,800,784 4,801,125
4,800,902 4,801,100 4,801,790 4,802,145 4,800,815 4,801,283
4,800,924 4,801,209 4,801,793 4,801,798 41 : Re.32,847 4,800,842 4,801,477
4,800,937 4,801,286 4,801,834 4,800,618 4,800,853 4,801,485
4,800,944 4,801,291 4,801,848 4,800,938 4,800,892 4,801,494
4,800,953 4,801,296 4,801,870 4,801,789 4,800,903 4,801,627
4,800,974 4,801,381 4,801,912 4,801,813 4,800,914 4,801,680
4,800,993 4,801,391 4,801,923 4,801,827 4,800,916 4,801,858
4,801,020 4,801,400 4,801,937 4,801,844 4,800,942 4,802,053
4,801,129 4,801,446 4,801,957 4,801,894 4,800,957 4,802,165
4,801,148 4,801,448 4,801,958 4,802,098 4,800,958 4,802,196
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01 : 299,652 12 : 299,580 19 : 299,633 299,662 299,597 41 : 299,582
06 : 299,613 299,585 20 : 299,677 299,665 299,619 299,583
299,628 299,638 23 : 299,600 27 : 299,587 299,621 299,614
299,641 299,667 24 : 299,640 299,595 299,624 42 : 299,604
299,654 17 : 299,591 25 : 299,584 299,606 37 : 299,623 299,639
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299,660 299,612 299,661 29 : 299,673 299,676 45 : 299,646
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299,669 299,629 299,593 34 : 299,596 299,599 51 : 299,601
08 : 299,592 299,663 299,615 299,651 299,611 55 : 299,586
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